FAILURE CODE [989M00]

Action level	Failure code	Failure phenomenon	Lock Caution2 (Monitor panel system)
-	989M00		
Detail of failure	An abnormal condition of the monitor panel lock is sensed. (Factor 2)		
Action of controller	• None • When the cause of failure is corrected, the vehicle will be restored by itself.		
Problem on lift truck	Cannot move, and work equipment and steering wheel cannot be operated.		
Related information	• If this failure code is shown after the monitor panel is replaced, the user password must be changed to the one before replacement. • How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	After you replace monitor panel	This problem can be caused by the replacement of the monitor panel.
2	Defective monitor panel	If this failure code is shown even though the monitor panel was not replaced, the monitor panel is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [989N00]

Action level	Failure code	Failure phenomenon	Lock Caution3 (Monitor panel system)
-	989N00		
Detail of failure	An abnormal condition of the monitor panel lock is sensed. (Factor 3)		
Action of controller	• Tries to recover automatically. • When the cause of failure is corrected, the vehicle will be restored by itself.		
Problem on lift truck	None.		
Related information	How to reproduce failure code: Recovers automatically and cannot be reproduced.		

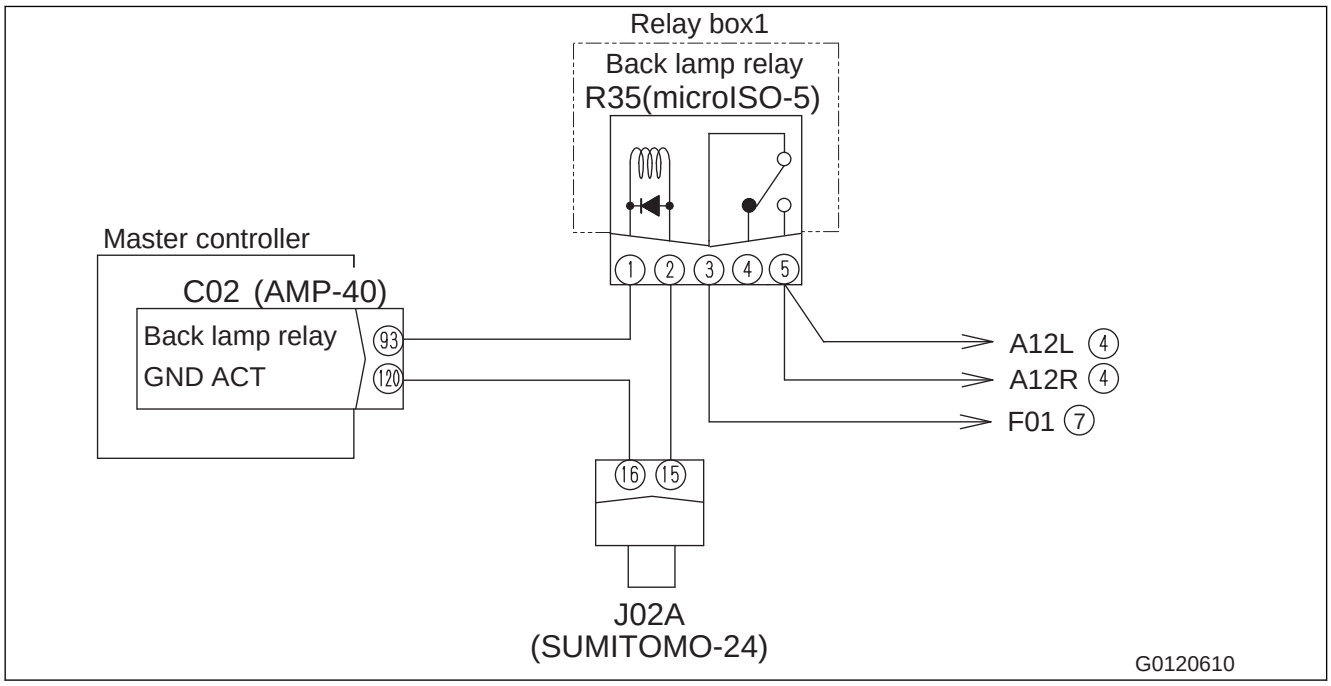
No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective monitor panel	If the failure occurs again, the monitor panel is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [D160KB]

Action level	Failure code	Failure phenomenon	SHORT) Back Lamp RLY (Master controller system)
L01	D160KB		
Detail of failure	Over current protection is sensed for 100 milliseconds continuously while relay output is ON.		
Action of controller	• Turns the backup lamp relay output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The backup lamp does not come on.		
Related information	• This is not sensed in charging mode. • This failure code senses an abnormality on the coil side of the backup lamp relay, but not on the contact side. • How to reproduce failure code: Turn the starting switch to the ON position, and set the directional (FNR) lever to R.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective backup lamp relay (R35) (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R35 to do the troubleshooting.		
		Resistance	Between R35 (male) (2) and (1)	Approx. 400Ω
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector C02 and R35 to do the troubleshooting.		
		Resistance	Between R35 (female) (2) and (1)	Min. 1MΩ
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of the backup lamp relay

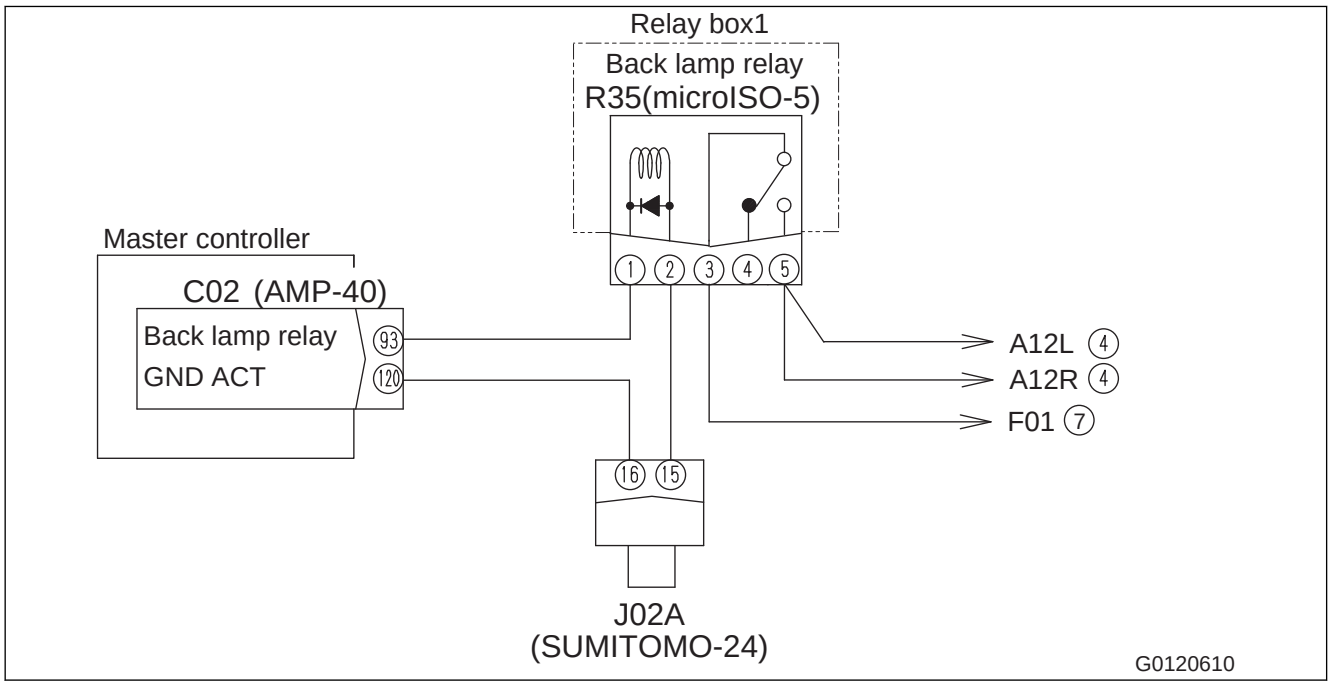


FAILURE CODE [D160KY]

Action level	Failure code	Failure phenomenon	SHORT_P) Back Lamp RLY (Master controller system)
L01	D160KY		
Detail of failure	While the output to the relay is OFF, an output voltage of ≥ 7V is sensed continuously for 100ms.		
Action of controller	• Turns the backup lamp relay output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The backup lamp stays on.		
Related information	• This is not sensed in charging mode. • This failure code senses an abnormality on the coil side of the backup lamp relay, but not on the contact side. • How to reproduce failure code: Turn the starting switch to the ON position. (Set the directional (FNR) lever to N.)		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R35. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between R35 (female) (1) and (2)	Max. 1V
2	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of the backup lamp relay

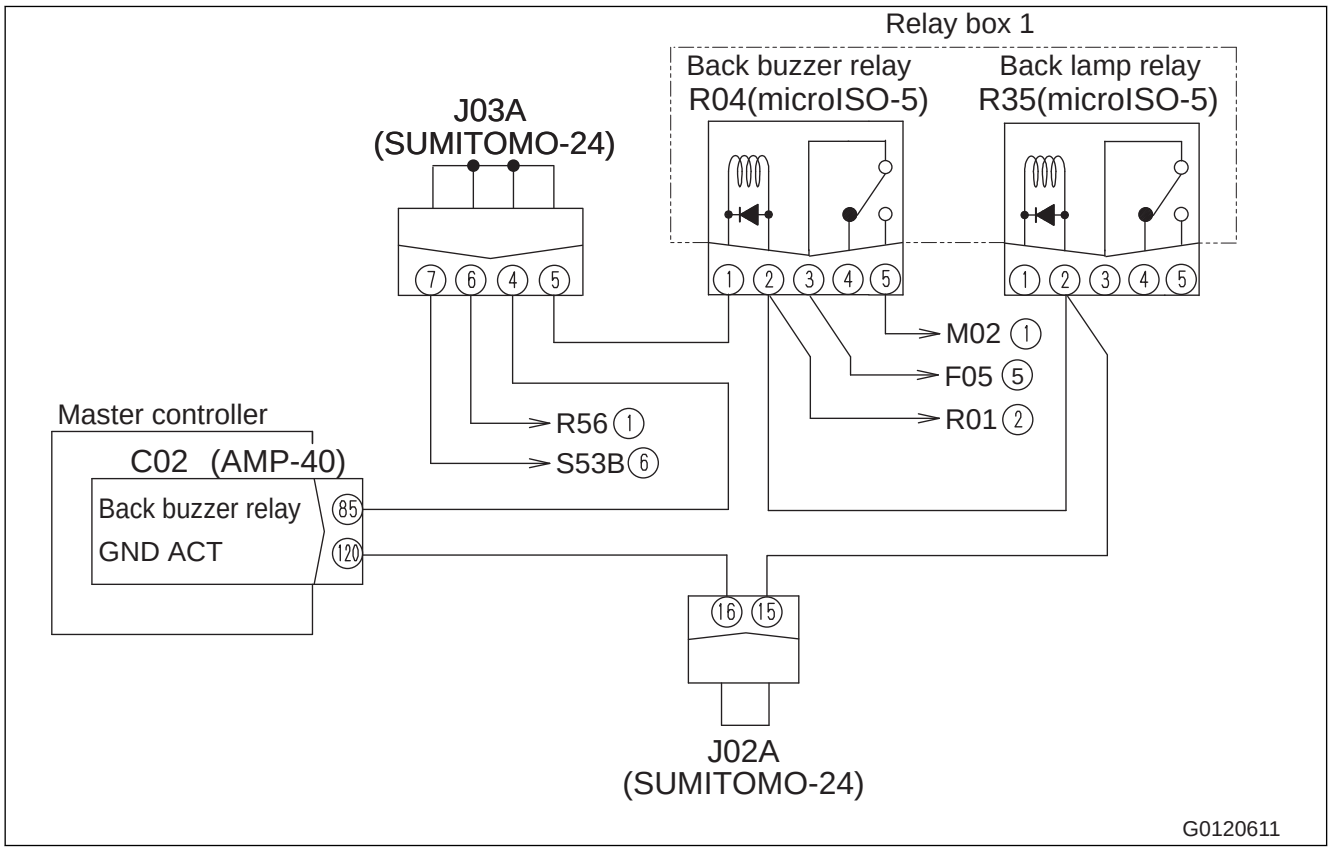


FAILURE CODE [D161KB]

Action level	Failure code	Failure phenomenon	SHORT) Back Alarm RLY (Master controller system)
L01	D161KB		
Detail of failure	Over current protection is sensed for 100 milliseconds continuously while relay output is ON.		
Action of controller	• Turns the backup buzzer relay output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The backup buzzer does not make sound.		
Related information	• This is not sensed in charging mode. • This failure code shows an abnormality on the coil side of the backup buzzer relay, but not on the contact side. • How to reproduce failure code: Turn the starting switch to the ON position, and set the directional (FNR) lever to R.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective back buzzer relay (R04) (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R04 to do the troubleshooting.		
		Resistance	Between R04 (male) (2) and (1)	Approx. 400Ω
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector C02 and R04 to do the troubleshooting.		
		Resistance	Between R04 (female) (2) and (1)	Min. 1MΩ
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of the backup buzzer relay

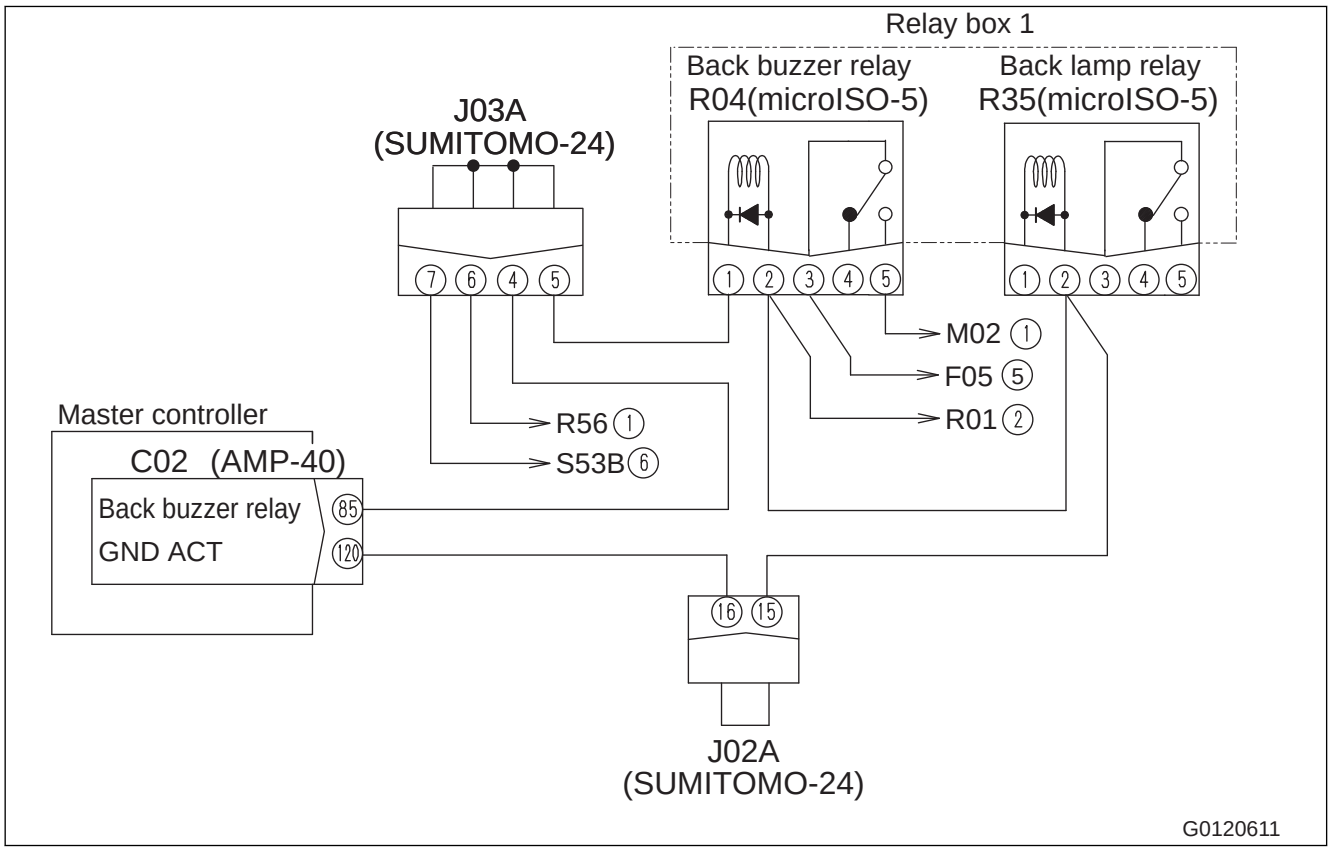


FAILURE CODE [D161KY]

Action level	Failure code	Failure phenomenon	SHORT_P) Back Alarm RLY (Master controller system)
L01	D161KY		
Detail of failure	While the output to the relay is OFF, an output voltage of ≥ 7V is sensed continuously for 100ms.		
Action of controller	• Turns the backup buzzer relay output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The backup buzzer stays on.		
Related information	• This is not sensed in charging mode. • This failure code senses an abnormality on the coil side of the backup buzzer relay, but not on the contact side. • How to reproduce failure code: Turn the starting switch to the ON position. (Set the directional (FNR) lever to N.)		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R04. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between R04 (female) (1) and (2)	Max. 1V
2	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of the backup buzzer relay

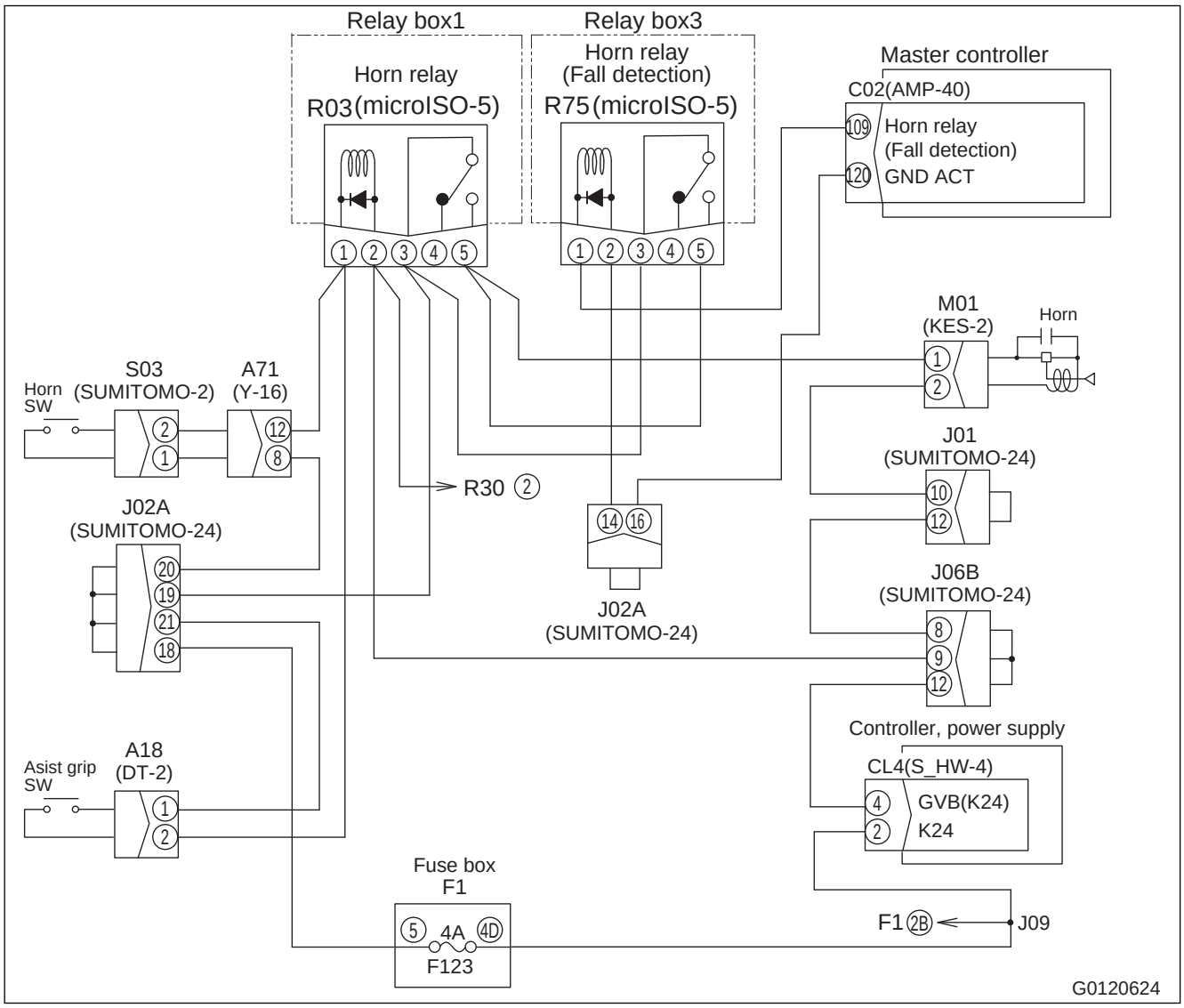


FAILURE CODE [D162KA]

Action level	Failure code	Failure phenomenon	DISC) Horn RLY (Master controller system)
L01	D162KA		
Detail of failure	While the output to the horn relay is OFF, an output voltage of ≥ 1.9V and < 7V is sensed continuously for 100ms.		
Action of controller	• Turns the horn relay output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The horn does not make a sound in case of fall detection.		
Related information	• This is not sensed in the charging mode or when the fall detection setting is Invalid. • This failure code senses failure on the coil side of the main contactor, but not on the contact side. • How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective horn relay (for fall detection) (R75) (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R75 to do the troubleshooting.		
		Resistance	Between R75 (male) (2) and (1)	Approx. 400Ω
2	Open circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C02 and R75. Connect the socket to the female side of C02 to do the troubleshooting.		
		Resistance	Between R75 (female) (2) and C02 (female) (120)	Max. 1Ω
			Between R75 (female) (1) and C02 (female) (109)	Max. 1Ω
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of horn relay

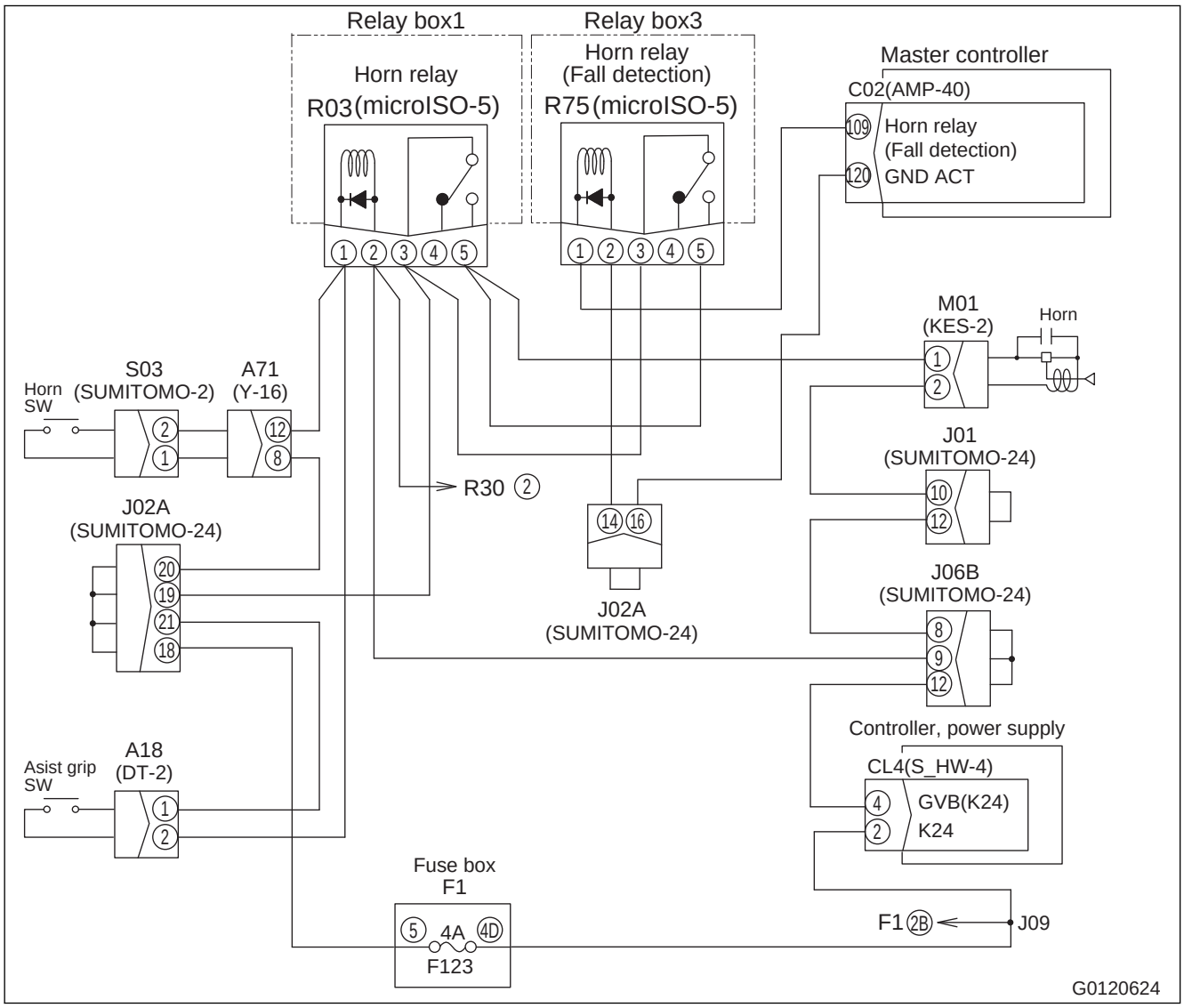


FAILURE CODE [D162KB]

Action level	Failure code	Failure phenomenon	SHORT) Horn RLY (Master controller system)
L01	D162KB		
Detail of failure	An over current is sensed continuously for 100ms while the output to the horn relay is ON.		
Action of controller	• Turns the horn relay output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The horn does not make a sound in case of fall detection.		
Related information	• This is not sensed in the charging mode or when the fall detection setting is Invalid. • This failure code senses failure on the coil side of the main contactor, but not on the contact side. • How to reproduce failure code: After you turn the starting switch to the ON position, do a horn operation check in the service menu.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective horn relay (for fall detection) (R75) (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R75 to do the troubleshooting.		
		Resistance	Between R75 (male) (2) and (1)	Approx. 400Ω
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector C02 and R75 to do the troubleshooting.		
		Resistance	Between R75 (female) (2) and (1)	Min. 1MΩ
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of horn relay

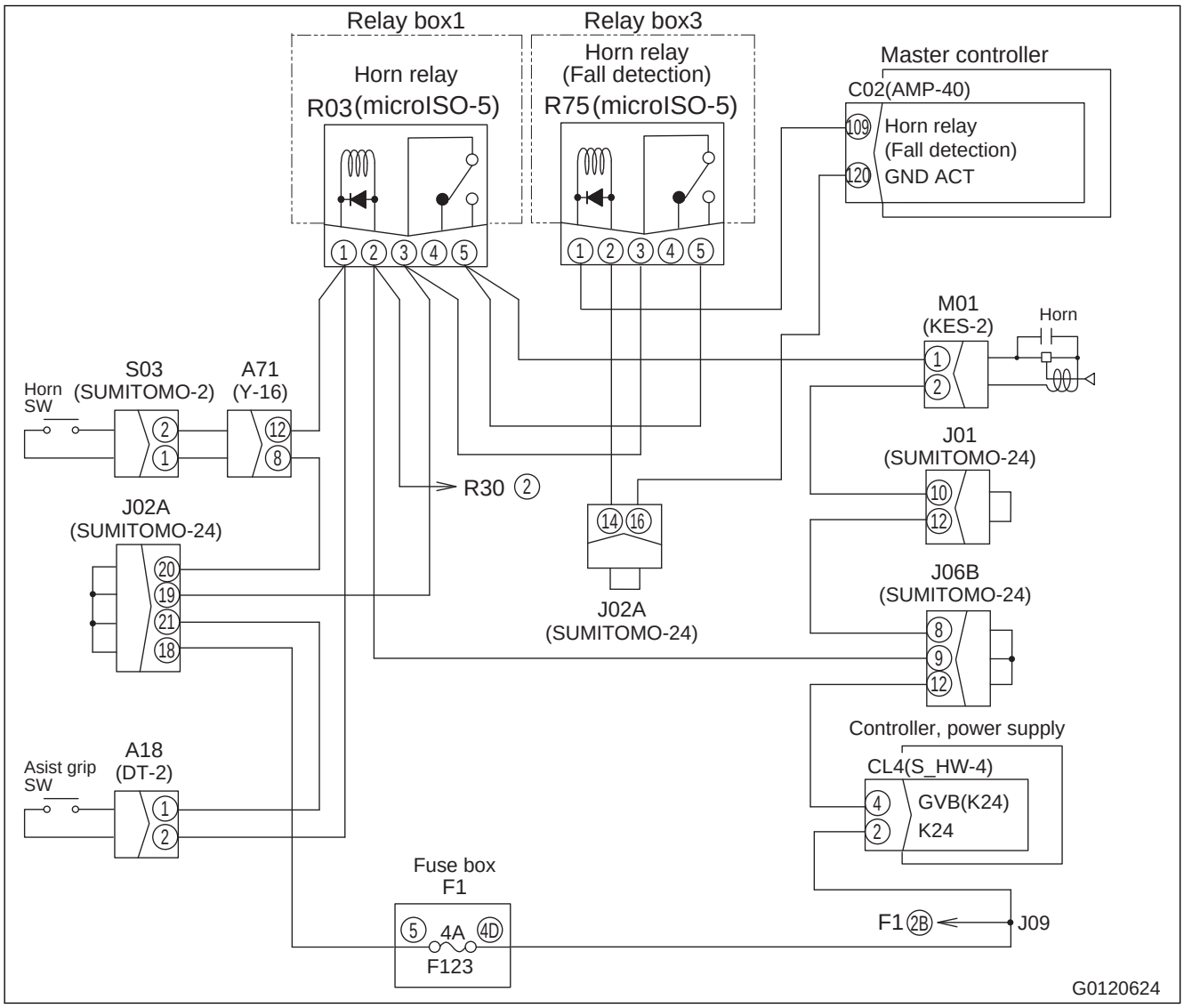


FAILURE CODE [D162KY]

Action level	Failure code	Failure phenomenon	SHORT_P) Horn RLY (Master controller system)
L01	D162KY		
Detail of failure	While the output to the horn relay is OFF, an output voltage of ≥ 7V is sensed continuously for 100ms.		
Action of controller	• Turns the horn relay output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The horn stays on.		
Related information	• This is not sensed in the charging mode or when the fall detection setting is Invalid. • This failure code senses failure on the coil side of the main contactor, but not on the contact side. • How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R75. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between R75 (female) (1) and (2)	Max. 1V
2	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of horn relay

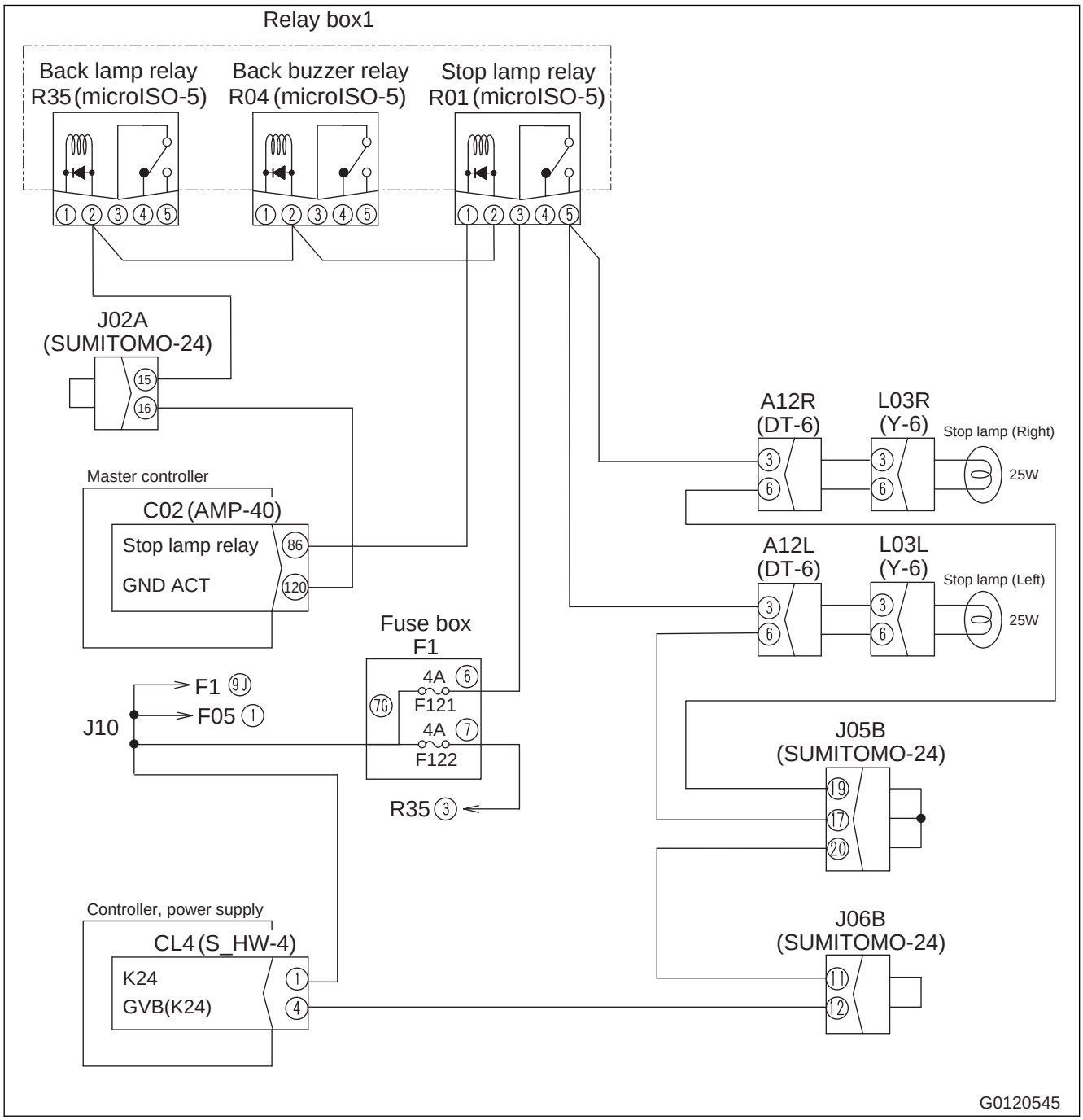


FAILURE CODE [D19HKA]

Action level	Failure code	Failure phenomenon	DISC) Stop Lamp RLY (Master controller system)
L01	D19HKA		
Detail of failure	While the output to the stop lamp relay is OFF, an output voltage of ≥ 1.9V and < 7V is sensed for 100msec continuously.		
Action of controller	• Turns the stop lamp relay output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The stop lamp does not come on.		
Related information	• This is not sensed in charging mode. • This failure code shows an abnormality on the coil side of the stop lamp relay, but not on the contact side. • How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective stop lamp relay (R01) (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R01 to do the troubleshooting.		
		Resistance	Between R01 (male) (2) and (1)	Approx. 400Ω
2	Open circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C02 and R01. Connect the socket to the female side of C02 to do the troubleshooting.		
		Resistance	Between R01 (female) (2) and C02 (female) (120)	Max. 1Ω
			Between R01 (female) (1) and C02 (female) (86)	Max. 1Ω
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of stop lamp relay

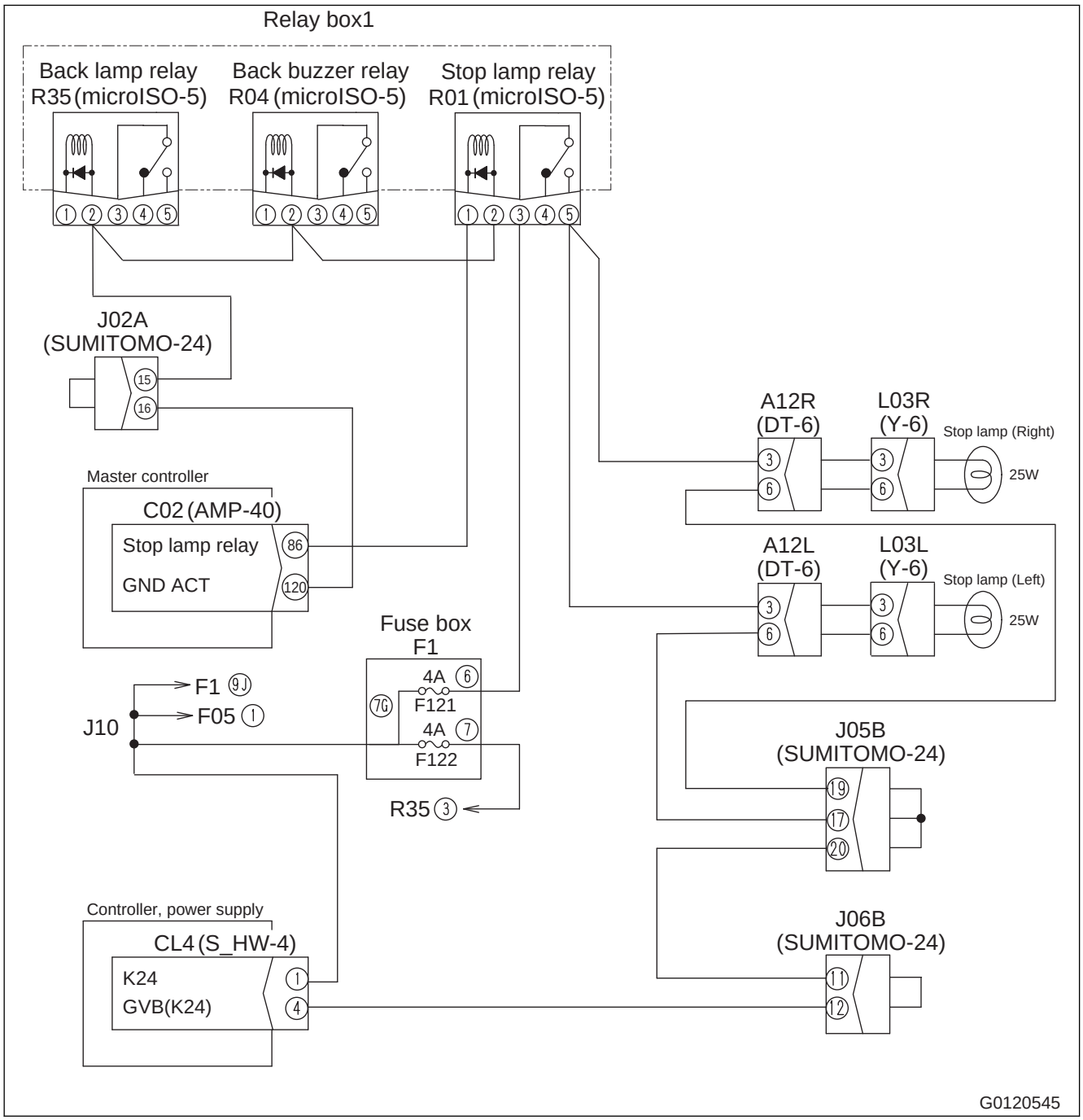


FAILURE CODE [D19HKB]

Action level	Failure code	Failure phenomenon	SHORT) Stop Lamp RLY (Master controller system)
L01	D19HKB		
Detail of failure	An over current is sensed continuously for 100msec while the stop lamp relay output is ON.		
Action of controller	• Turns the stop lamp relay output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The stop lamp does not come on.		
Related information	• This is not sensed in charging mode. • This failure code shows an abnormality on the coil side of the stop lamp relay, but not on the contact side. • How to reproduce failure code: Turn the starting switch to the ON position. Push the brake pedal.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective stop lamp relay (R01) (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R01 to do the troubleshooting.		
		Resistance	Between R01 (male) (2) and (1)	Approx. 400Ω
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector C02 and R01 to do the troubleshooting.		
		Resistance	Between R01 (female) (2) and (1)	Min. 1MΩ
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of stop lamp relay

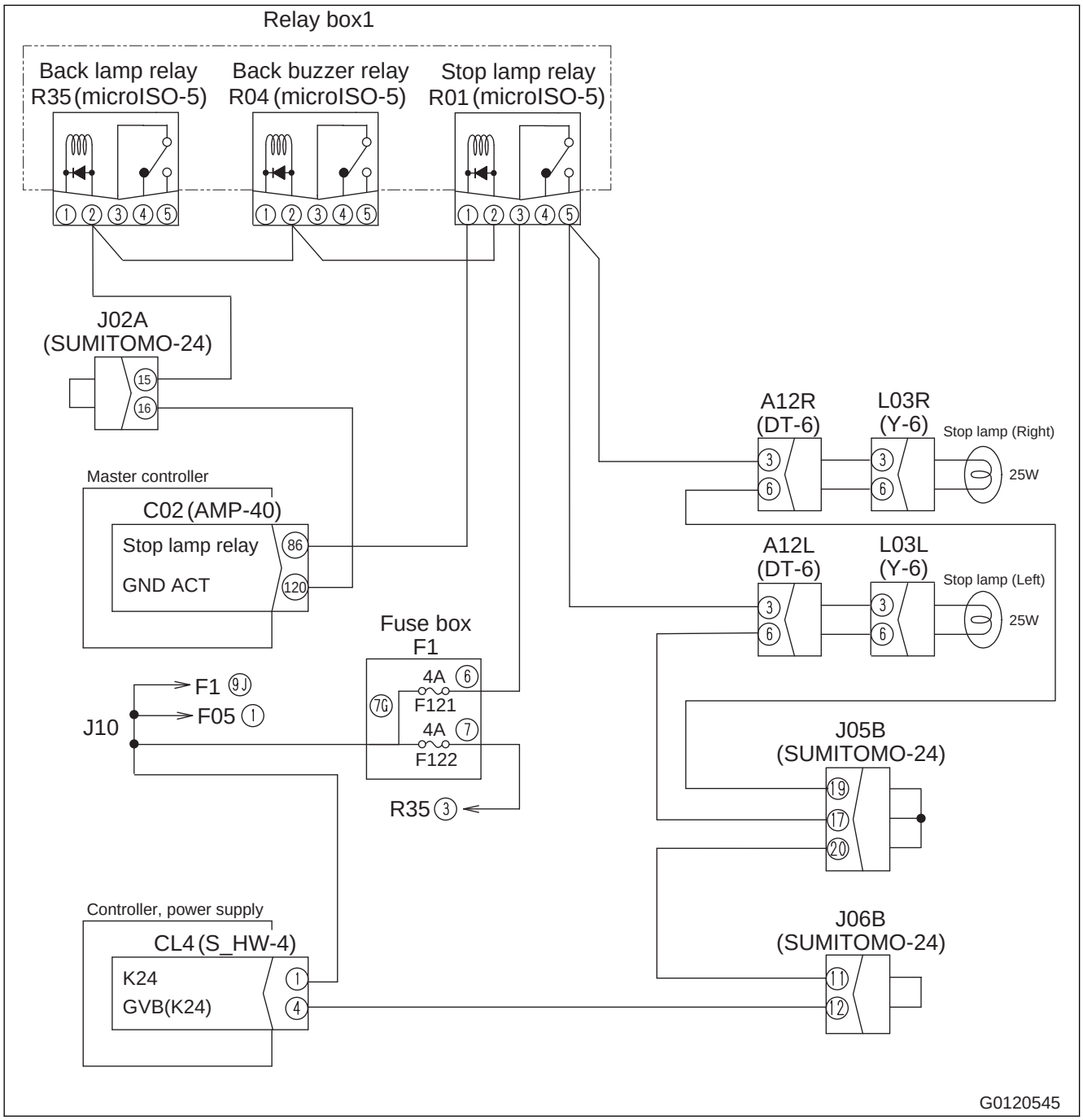


FAILURE CODE [D19HKY]

Action level	Failure code	Failure phenomenon	SHORT_P) Stop Lamp RLY (Master controller system)
L01	D19HKY		
Detail of failure	While the output to the stop lamp relay is OFF, an output voltage of ≥ 7V is sensed continuously for 100ms.		
Action of controller	• Turns the stop lamp relay output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The stop lamp stays on.		
Related information	• This is not sensed in charging mode. • This failure code shows an abnormality on the coil side of the stop lamp relay, but not on the contact side. • How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R01. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between R01 (female) (1) and (2)	Max. 1V
2	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of stop lamp relay

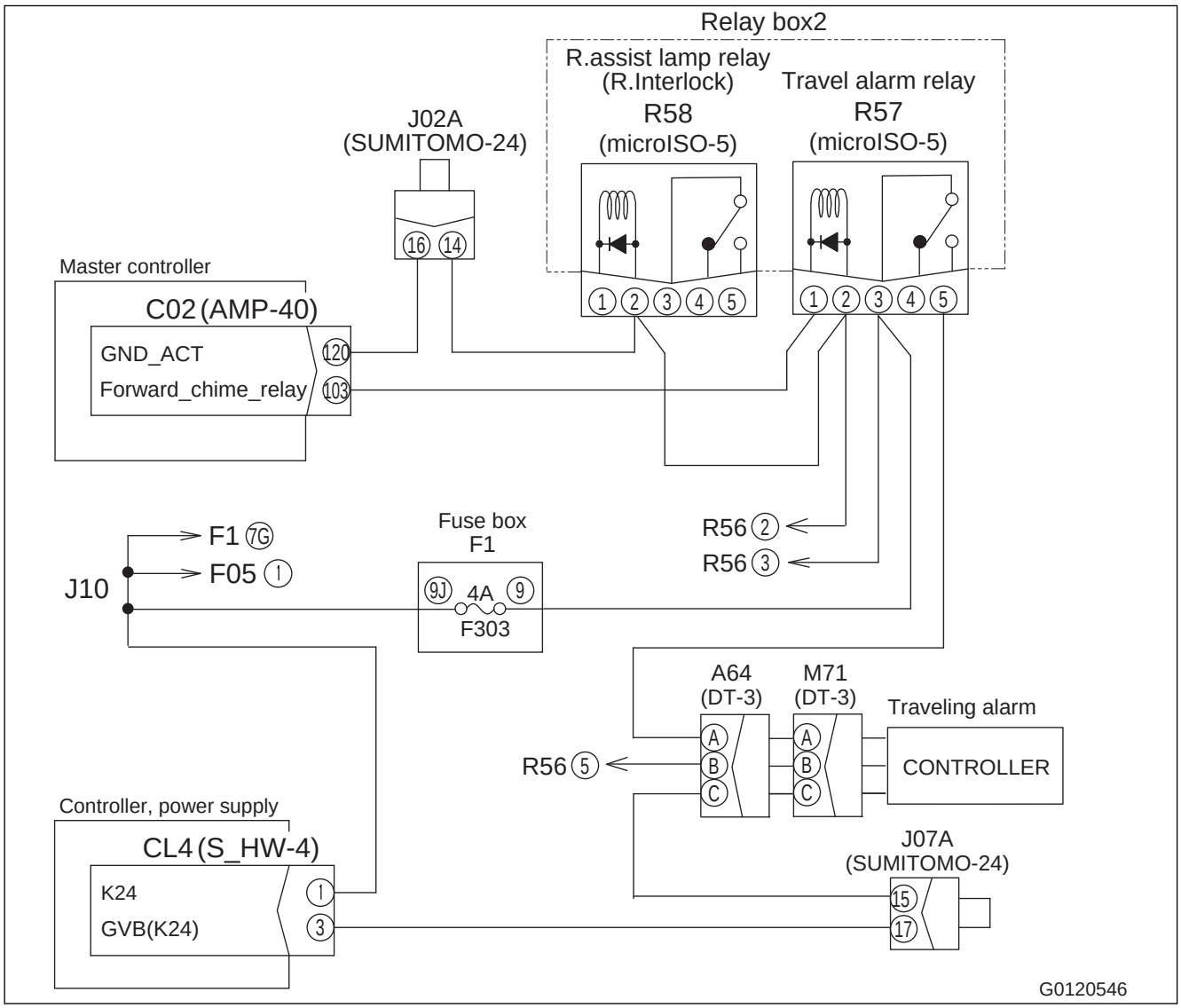


FAILURE CODE [D19SKB]

Action level	Failure code	Failure phenomenon	SHORT) Forward Alarm RLY (Master controller system)
L01	D19SKB		
Detail of failure	An output current of ≥ 1.4A or an over current is sensed for 100msec continuously while the travel alarm relay output is ON.		
Action of controller	• Turns the travel alarm relay output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The travel alarm does not operate even if the directional (FNR) lever is set to F.		
Related information	• This is not sensed in charging mode. • How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective travel alarm relay (R57) (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R57 to do the troubleshooting.		
		Resistance	Between R57 (male) (2) and (1)	Approx. 400Ω
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector C02 and R57 to do the troubleshooting.		
		Resistance	Between R57 (female) (2) and (1)	Min. 1MΩ
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of travel alarm relay

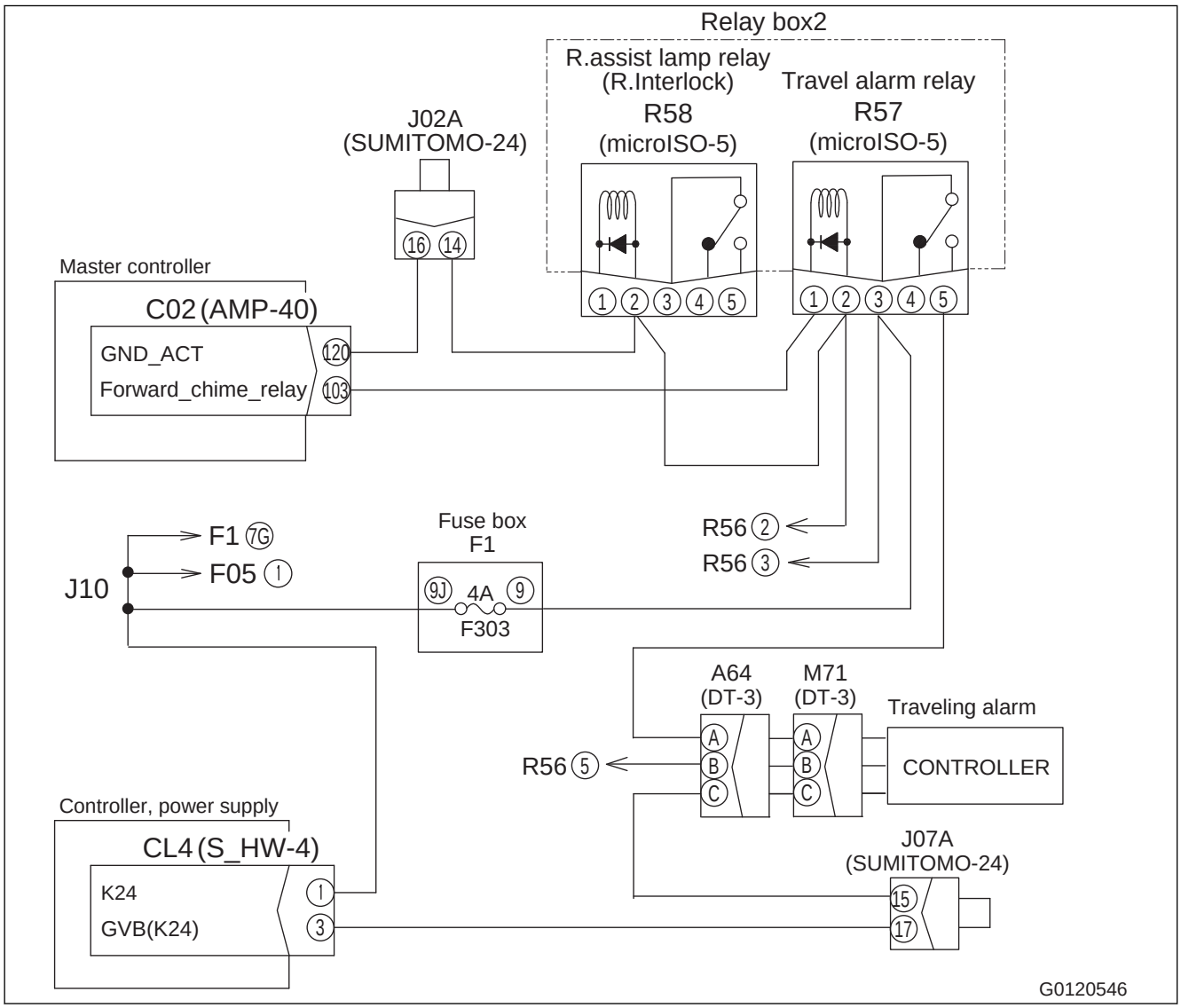


FAILURE CODE [D19SKY]

Action level	Failure code	Failure phenomenon	SHORT_P) Forward Alarm RLY (Master controller system)
L01	D19SKY		
Detail of failure	While the output to the travel alarm relay is OFF, an output voltage of ≥ 2.6V is sensed continuously for 100ms.		
Action of controller	• Turns the travel alarm relay output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The travel alarm does not stop.		
Related information	• This is not sensed in charging mode. • How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R57. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between R57 (female) (1) and (2)	Max. 1V
2	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of travel alarm relay

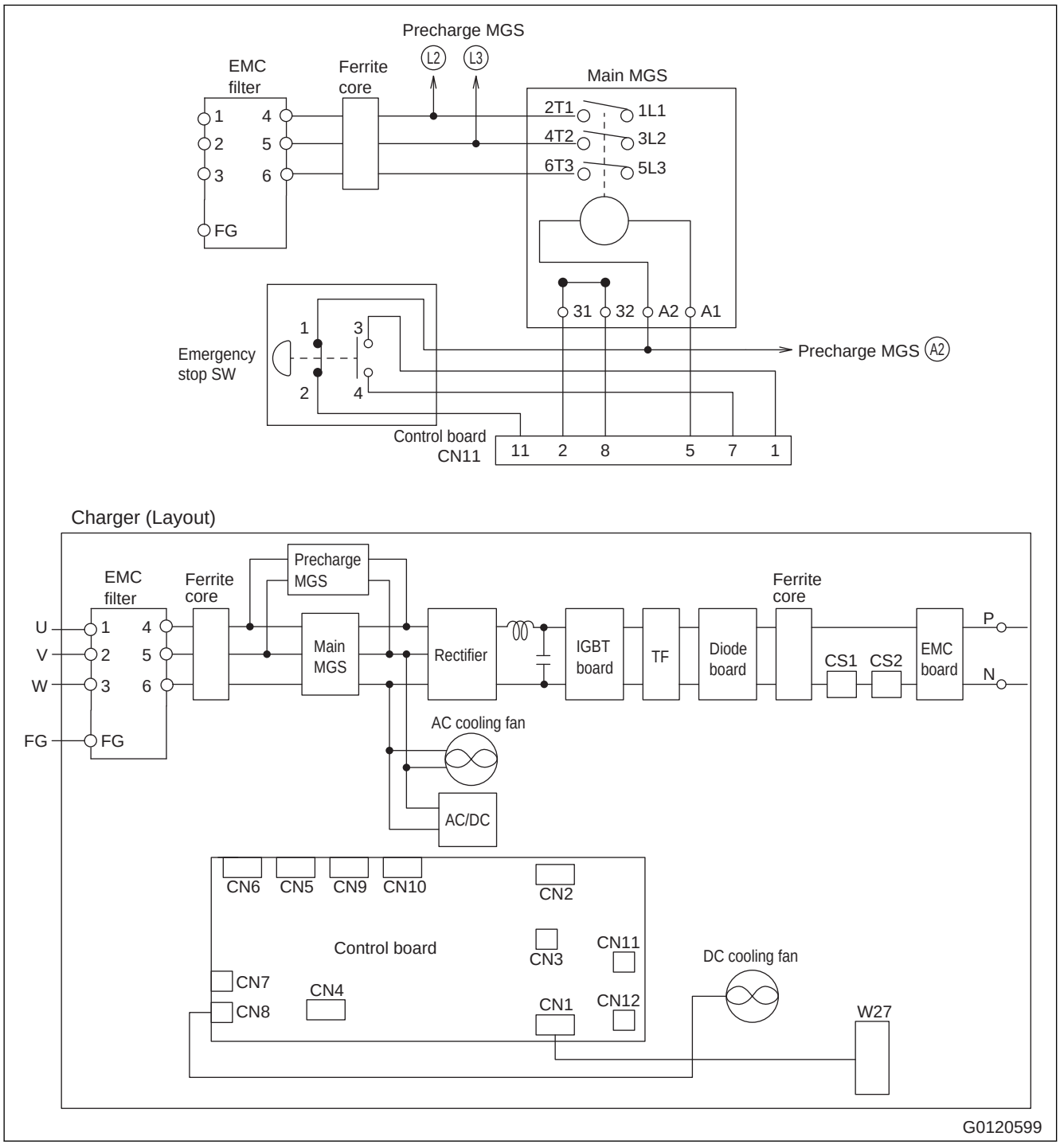


FAILURE CODE [D1H0KA]

Action level	Failure code	Failure phenomenon	DISC) MGS SYSTEM (Charger system)
L03	D1H0KA		
Detail of failure	The MGS contacts in the stationary charger do not close when the emergency stop switch is not pushed.		
Action of controller	• Stops the charge • Shows a caution symbol on the monitor panel and operates the alarm buzzer.		
Problem on lift truck	Charge is not possible.		
Related information	⚠ **There are high voltage and high temperature parts. Be careful not to get an electric shock or burn injury.**		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective emergency stop switch	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Make sure that the emergency stop switch is not pushed to do the troubleshooting.		
		Resistance	Between emergency stop switch (1) and (2)	Min. 1MΩ
			Between emergency stop switch (3) and (4)	Min. 1MΩ
2	Defective coil of main MGS (Open circuit)	Open the cover of the stationary charger in the procedure that follows, and then measure. 1. Measure the coil resistance of the main MGS to do the troubleshooting.		
		Resistance	Between MGS-A1 and MGS-A2	Approx. 48Ω
3	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Remove the wiring harness between each circuit board to do the troubleshooting.		
		Resistance	Between control board CN11 (5) and MGS-A1	Max. 1Ω
			Between MGS-A2 and emergency stop switch (1)	Max. 1Ω
			Between emergency stop switch (2) and CN11 (11)	Max. 1Ω
			Between CN11 (1) and emergency stop switch (3)	Max. 1Ω
			Between emergency stop switch (4) and CN11 (7)	Max. 1Ω
			Between CN11 (2) and MGS-31	Max. 1Ω
			Between CN11 (8) and MGS-32	Max. 1Ω
4	Defective main MGS	If no failure is found by the above checks, the main MGS is defective. (Troubleshooting cannot be done because this is an internal failure.)		
5	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		
6	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of stationary charger MGS system

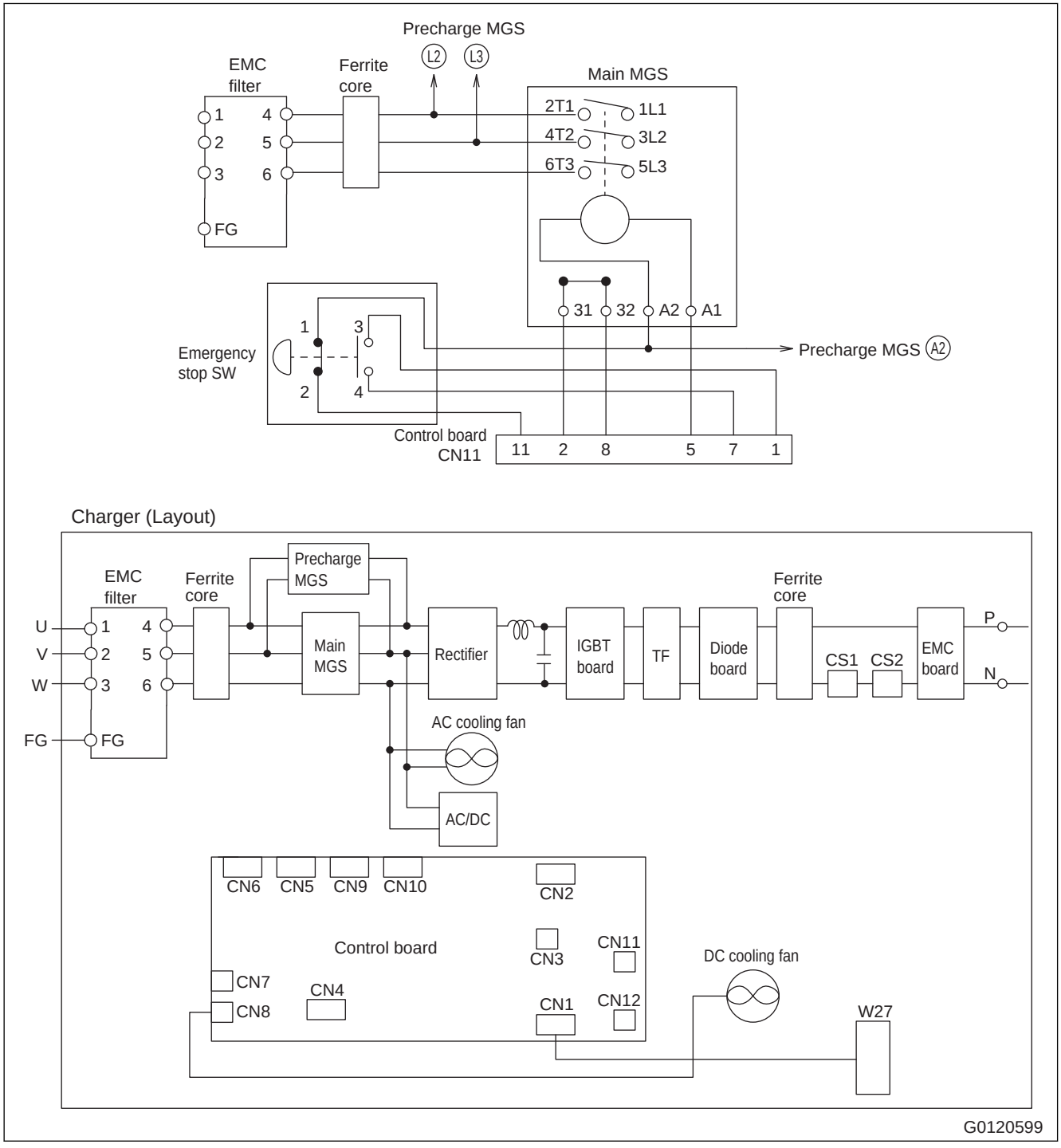


FAILURE CODE [D1H0KB]

Action level	Failure code	Failure phenomenon	SHORT_P) MGS SYSTEM (Charger system)
L03	D1H0KB		
Detail of failure	The contacts of the MGS in the stationary charger stay closed and do not open.		
Action of controller	• Stops the charge • Shows a caution symbol on the monitor panel and operates the alarm buzzer.		
Problem on lift truck	Charge is not possible.		
Related information	⚠ **There are high voltage and high temperature parts. Be careful not to get an electric shock or burn injury.**		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective main MGS contacts	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Measure between the contacts of the main MGS to do the troubleshooting.		
		Resistance	Between 2T1 and 1L1	Min. 1MΩ
			Between 4T2 and 3L2	Min. 1MΩ
			Between 6T3 and 5L3	Min. 1MΩ
			Between (31) and (32)	Max. 1Ω
2	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of stationary charger MGS system



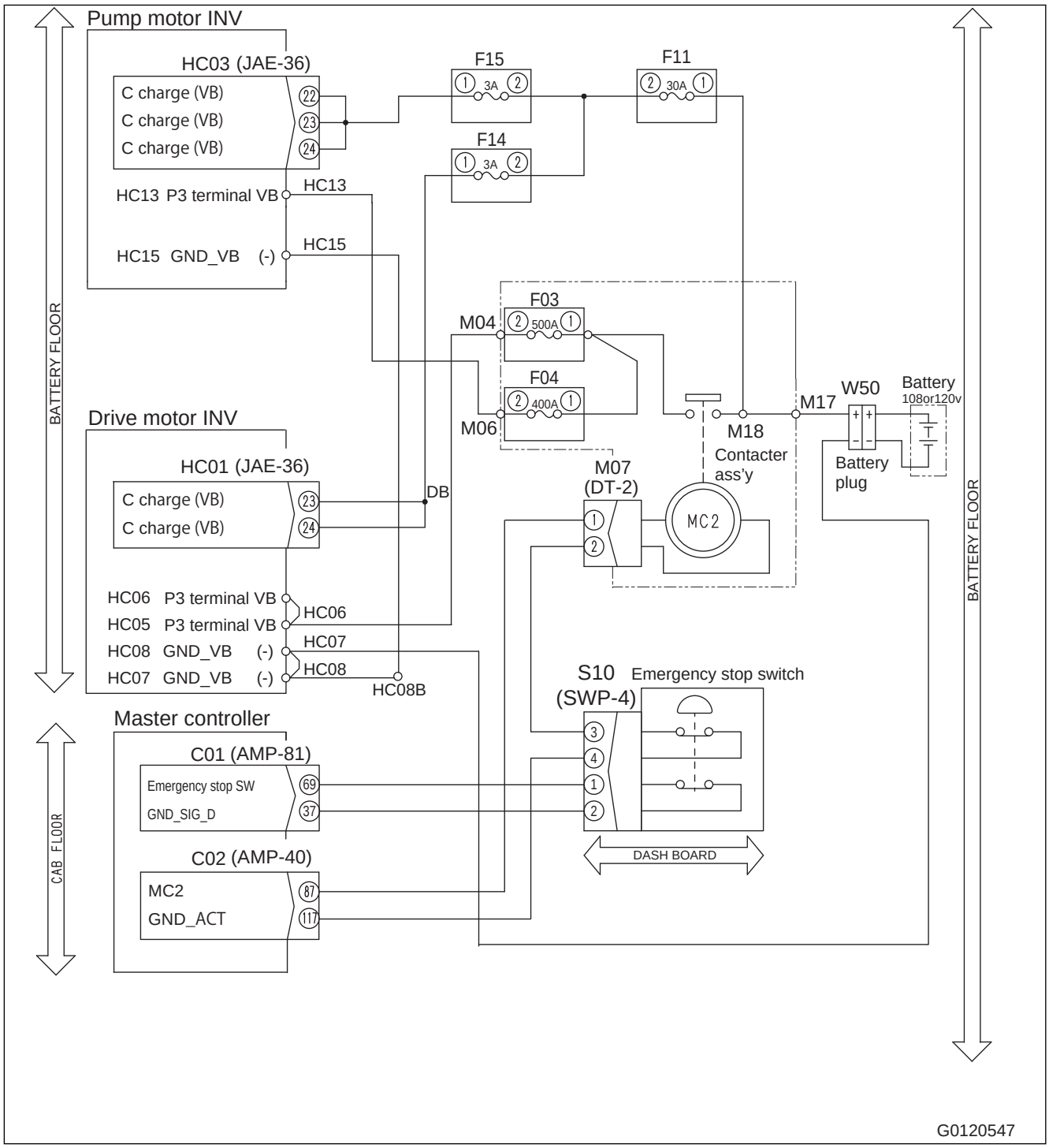
FAILURE CODE [D1HBKA]

Action level	Failure code	Failure phenomenon	DISC) Main Contactor2 (Master controller system)
L04	D1HBKA		
Detail of failure	(Command value - current detector circuit) ≥ 200mA is sensed for 500 milliseconds continuously while the main contactor 2 output is ON.		
Action of controller	• Stops the output to the main contactor 2. Travel and the work equipment do not operate. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	If [GF16KA] or [GF26KA] is shown at the same time, the vehicle cannot move, or the work equipment does not operate (open circuit in wiring harness or defective main contactor 2), the PS (power steering) also does not operate.		
Related information	• This is not sensed in charging mode. • This failure code senses failure on the coil side of the main contactor, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks			
1	Defective main contactor (MC2)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector M07. Connect the T-adapter to male side to do the troubleshooting. **REMARK** • Measure the coil resistance of the main contactor (MC2). • If no failure is found by these checks, replace the contactor.			
		Resistance	Between M07 (male) (1) and (2)		Approx. 15Ω
2	Defective emergency stop switch	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector S10 and connect the T-adapter to the male side. 4. Operate the emergency stop switch to do the troubleshooting.			
		Resistance	Between S10 (male) (3) and (4)	Emergency stop switch: OFF	Max. 1Ω
			Between S10 (male) (1) and (2)	Emergency stop switch: ON	Min. 1MΩ
3	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Make sure that the emergency stop switch is not pushed. 4. Disconnect the connectors C02, M07 and S10. Connect the socket to the female side of C02 and to the female side of M07 and S10 to do the troubleshooting.			
		Resistance	Between M07 (female) (1) and C02 (female) (87)		Max. 1Ω
			Between M07 (female) (2) and C02 (female) (117)		Max. 1Ω
			Between S10 (female) (1) and (2)		Min. 1MΩ

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="2">4</td><td rowspan="2">Hot short circuit in wiring harness</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Make sure that the emergency stop switch is not pushed.
4. Disconnect the connector M07. Connect the T-adapter to the female side.
5. Connect the battery plug W50.
6. Insert charge plug W25 into the charge connector.
7. Turn the breaker switch to the ON position. Then, do the troubleshooting.
REMARK
The connector is disconnected. If it is correct, shown failure code is [D1HBKA].</td></tr>
<tr><td>Voltage</td><td>Between M07 (female) (1) and (2)</td><td>Max. 1V</td></tr>
<tr><td>5</td><td>Defective master controller</td><td colspan="3">If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of main contactor2

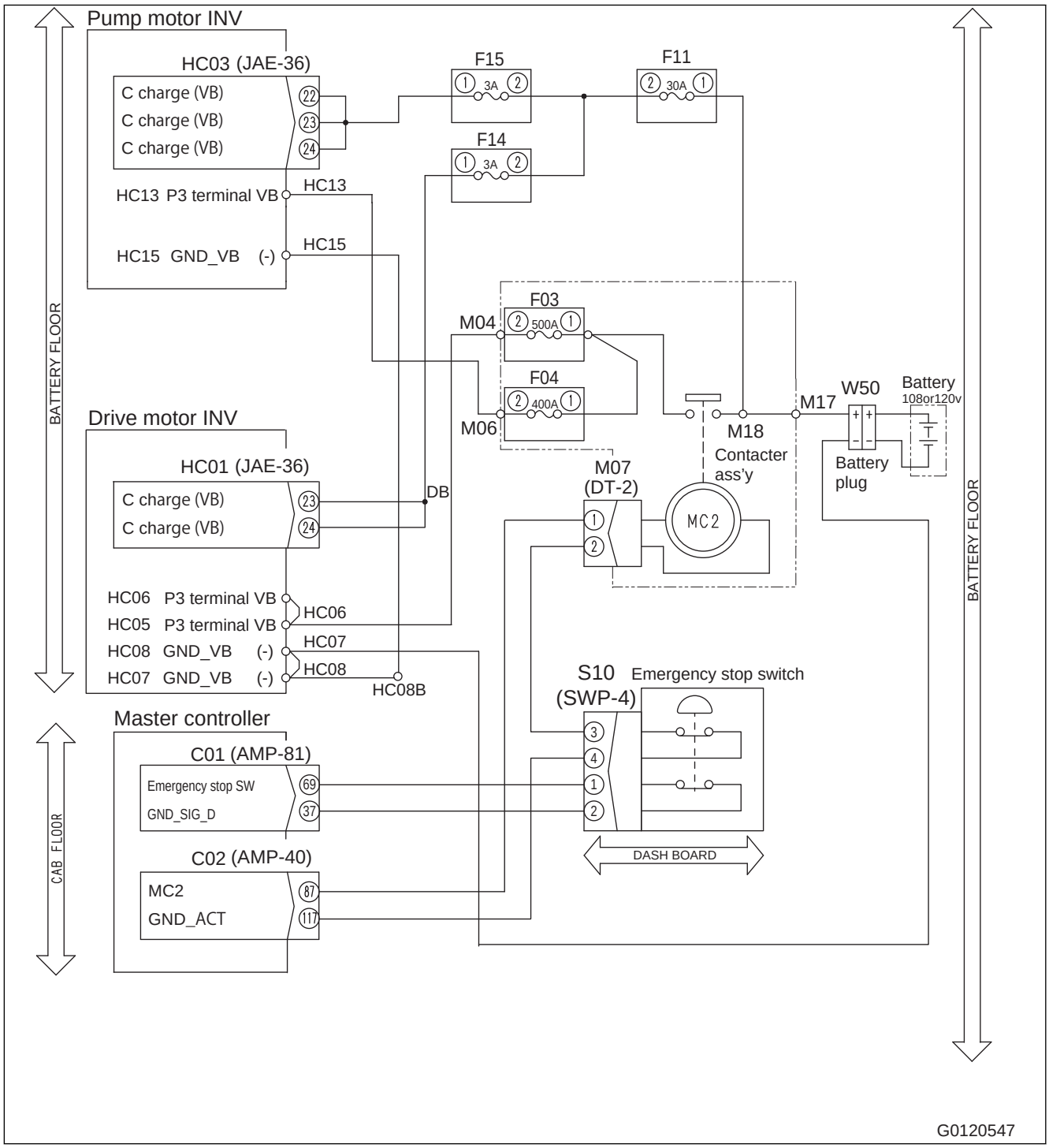


FAILURE CODE [D1HBKB]

Action level	Failure code	Failure phenomenon	SHORT) Main Contactor2 (Master controller system)
L04	D1HBKB		
Detail of failure	Output current ≥ 1.4A or over current protection is detected for 100milliseconds continuously while main contactor 2 output is ON.		
Action of controller	• Turns off the output to main contactor 2. Travel and the work equipment do not operate. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The vehicle cannot move. The work equipment and PS (power steering) cannot be operated.		
Related information	• This is not sensed in charging mode. • This failure code senses a failure on the coil side of MC2, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective main contactor (MC2) (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector M07. Connect the T-adapter to male side to do the troubleshooting. **REMARK** • Measure the coil resistance of the main contactor (MC2). • If no failure is found by these checks, replace the contactor.		
		Resistance	Between M07 (male) (1) and (2)	Approx. 15Ω
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Make sure that the emergency stop switch is not pushed. 4. Disconnect the connectors M07 and C02, and connect the T-adapter to the female side of M07 to do the troubleshooting.		
		Resistance	Between M07 (female) (1) and (2)	Min. 1MΩ
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of main contactor 2

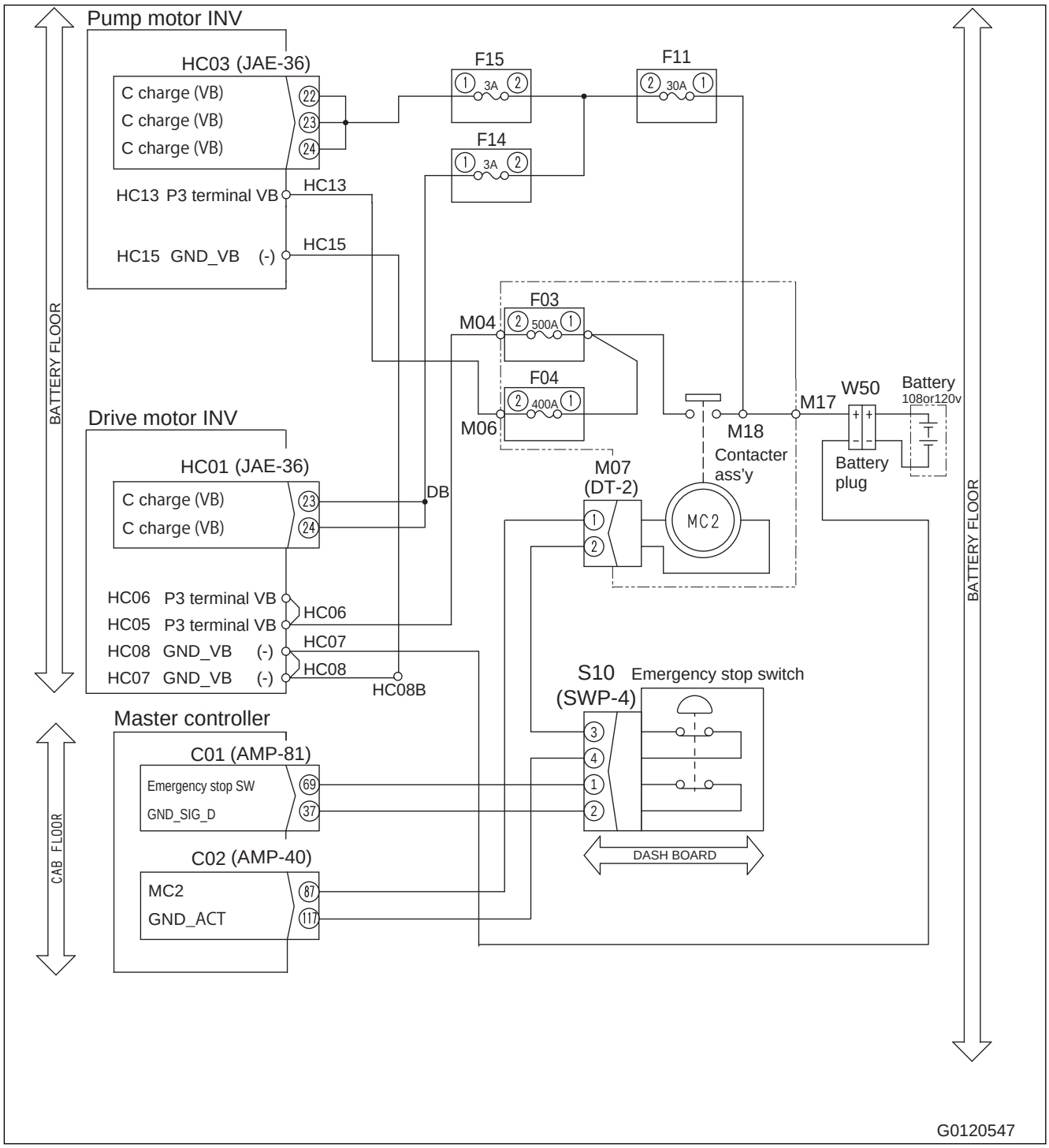


FAILURE CODE [D1HBKY]

Action level	Failure code	Failure phenomenon	Main Contactor 2 short circuit (Master controller system)
L03	D1HBKY		
Detail of failure	While the output to the main contactor 2 is OFF, an output voltage of ≥ 3.5V is sensed continuously for 100ms.		
Action of controller	• Restricts the travel speed to 2.5km/h. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch or AC200V (breaker switch) is turned to the OFF position one time.		
Problem on lift truck	The travel speed is restricted to 2.5km/h.		
Related information	• This failure code senses a failure on the coil side of MC2, but not on the contact side. • Reproduction method of failure code: Set to charging mode.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Make sure that the emergency stop switch is not pushed. 4. Disconnect the connector M07. Connect the T-adapter to the female side. 5. Connect the battery plug W50. 6. Insert charge plug W25 into the charge connector. 7. Turn the breaker switch to the ON position. Then, do the troubleshooting. **REMARK** The connector is disconnected. If it is correct, shown failure code is [D1HBKA].		
		Voltage	Between M07 (female) (1) and (2)	Max. 1V
2	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of main contactor 2



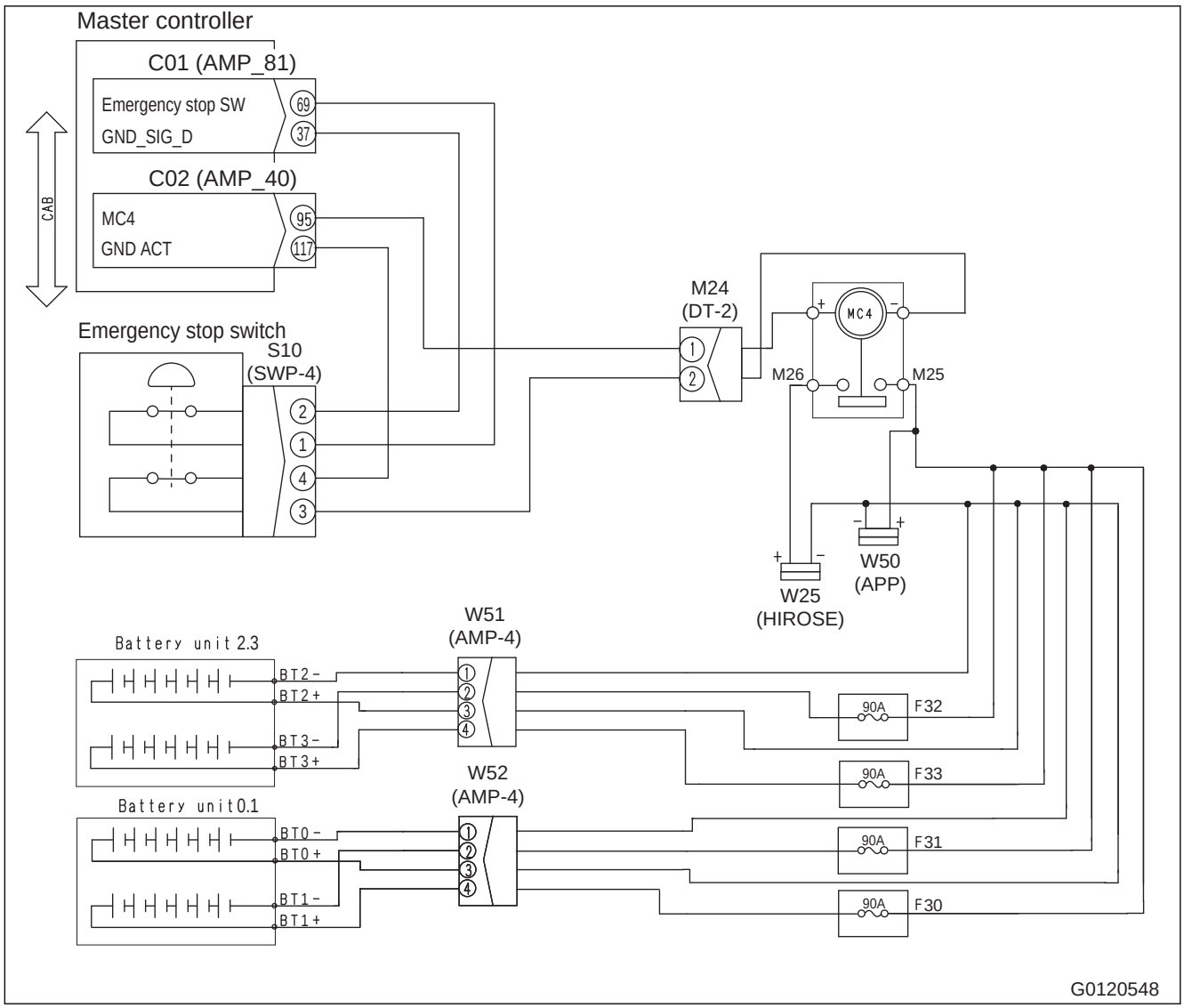
FAILURE CODE [D1HDKA]

Action level	Failure code	Failure phenomenon	DISC) Main Contactor4 (Master controller system)
L03	D1HDKA		
Detail of failure	The main contactor (MC4) does not operate at a main contactor (MC4): ON command because there is an open circuit in the main contactor (MC4) drive circuit.		
Action of controller	Turns off the main contactor (MC4).		
Problem on lift truck	The battery cannot be charged.		
Related information	• You can examine the drive current value of the main contactor (MC4) with the monitor panel. (Code: 56528 (mA)) • Reproduction method of failure code: Charge the battery.		

No.	Cause	Procedure, measurement location, criteria and remarks			
1	Defective main contactor (MC4)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector M24. Connect the T-adapter to male side to do the troubleshooting. **REMARK** Measure the coil resistance of the main contactor (MC4).			
		Resistance	Between M24 (male) (1) and (2)		Approx. 15Ω
2	Defective emergency stop switch	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector S10 and connect the T-adapter to the male side. 4. Operate the emergency stop switch to do the troubleshooting.			
		Resistance	Between S10 (male) (3) and (4)	Emergency stop switch: OFF	Max. 1Ω
			Between S10 (male) (1) and (2)	Emergency stop switch: ON	Min. 1MΩ
3	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Make sure that the emergency stop switch is not pushed. 4. Disconnect the connectors C02, M24 and S10. Connect the socket to the female side of C02 and to the female side of M24 and S10 to do the troubleshooting. **REMARK** Measure on the female side of C02.			
		Resistance	Between M24 (female) (1) and C02 (female) (95)		Max. 1Ω
			Between M24 (female) (2) and C02 (female) (117)		Max. 1Ω
			Between S10 (female) (1) and (2)		Min. 1MΩ

4	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

Circuit diagram of main contactor 4

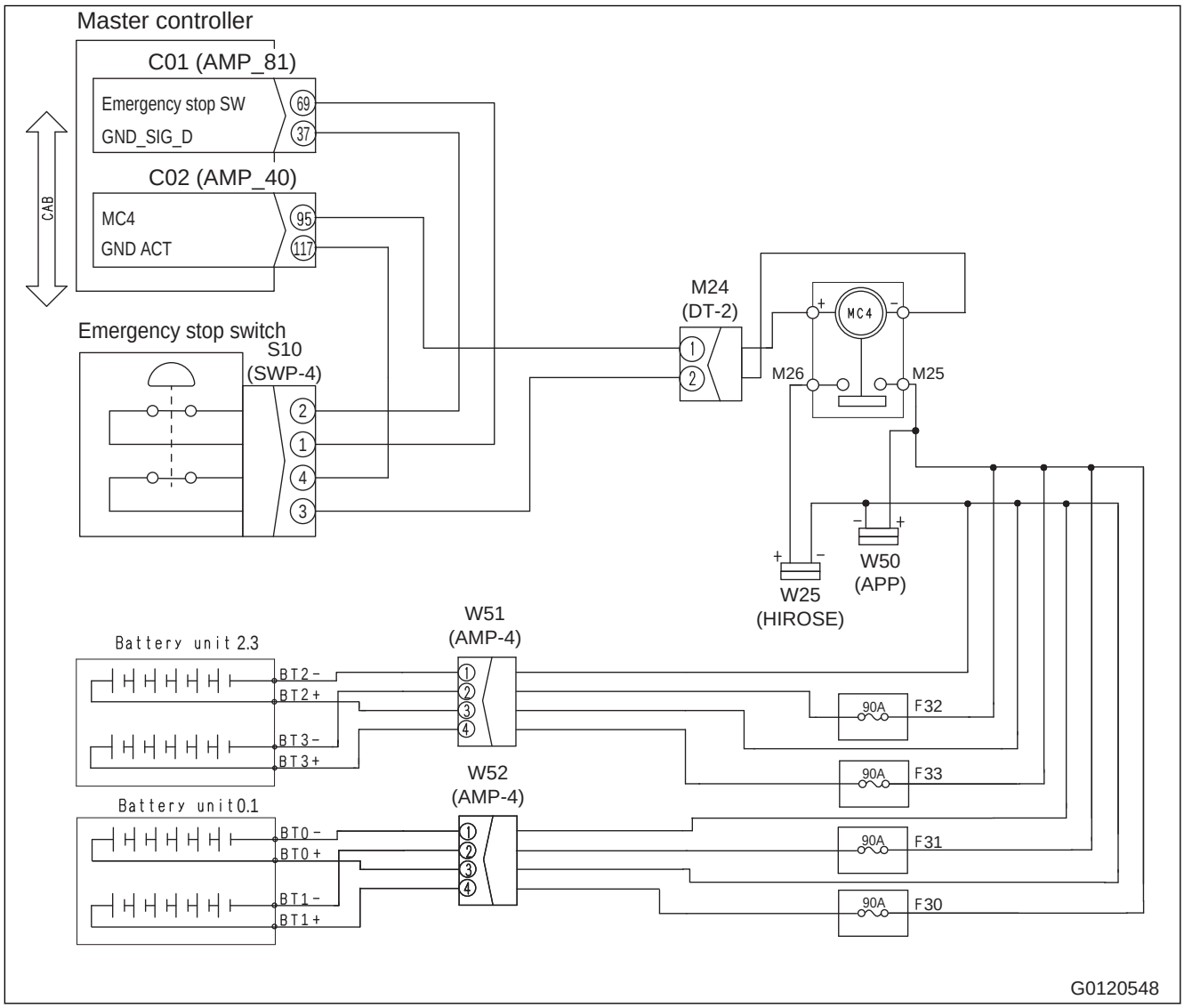


FAILURE CODE [D1HDKB]

Action level	Failure code	Failure phenomenon	SHORT) Main Contactor4 (Master controller system)
L03	D1HDKB		
Detail of failure	An abnormal current flows at a main contactor (MC4): ON command because of a ground fault in the main contactor (MC4) drive circuit.		
Action of controller	Turns off the main contactor (MC4).		
Problem on lift truck	The battery cannot be charged.		
Related information	• You can examine the drive current value of the main contactor (MC4) with the monitor panel. (Code: 56528 (mA)) • Reproduction method of failure code: Charge the battery.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective main contactor (MC4)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector M24. Connect the T-adapter to male side to do the troubleshooting. **REMARK** Measure the coil resistance of the main contactor (MC4).		
		Resistance	Between M24 (male) (1) and (2)	Approx. 15Ω
2	Ground fault in wiring harness (Contact with GND circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Make sure that the emergency stop switch is not pushed. 4. Disconnect the connector M24. Connect the T-adapter to the female side of M24 to do the troubleshooting.		
		Resistance	Between M24 (female) (1) and (2)	Min. 1MΩ
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of main contactor 4

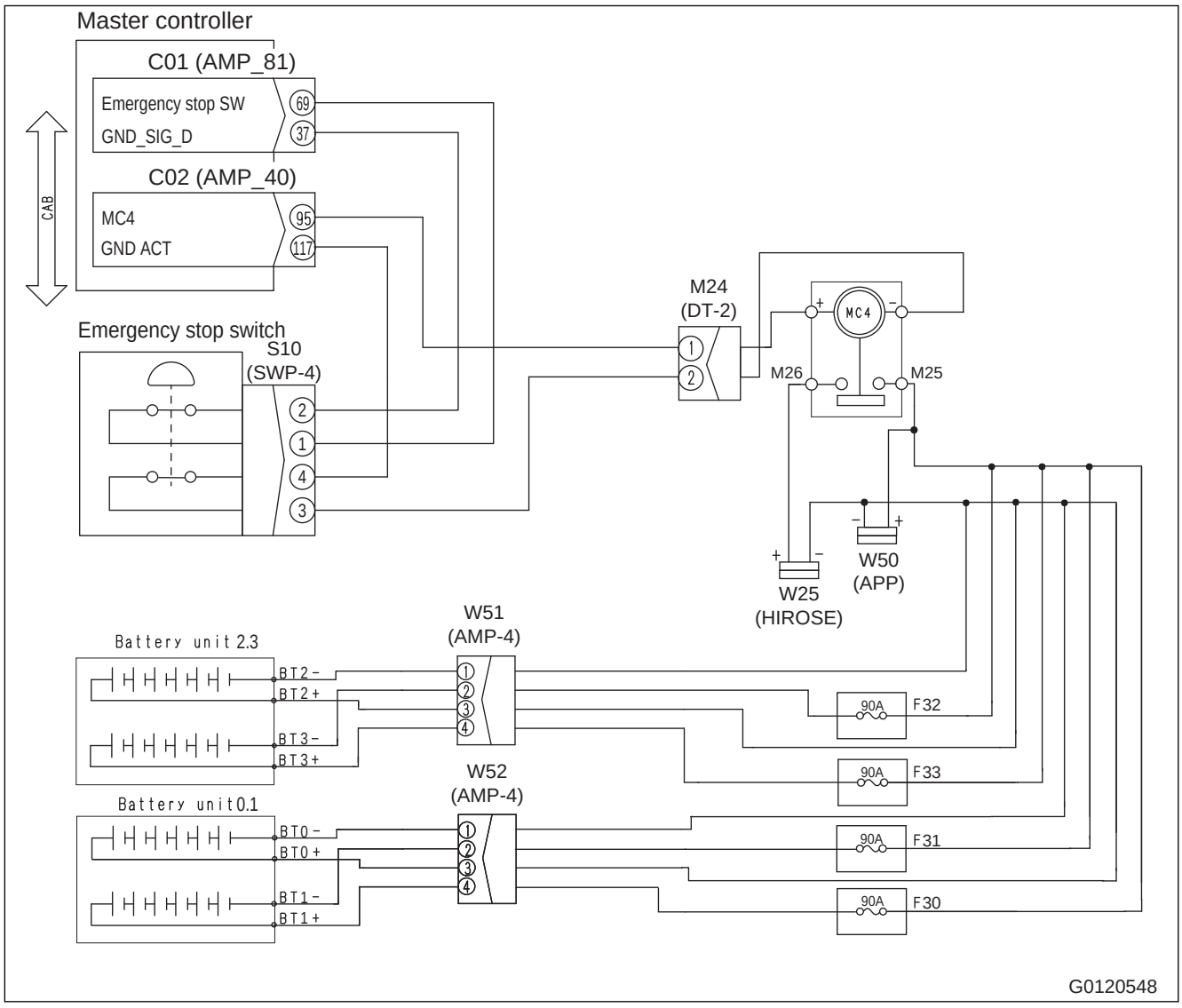


FAILURE CODE [D1HDKY]

Action level	Failure code	Failure phenomenon	SHORT_P) Main Contactor4 (Master controller system)
L03	D1HDKY		
Detail of failure	An abnormal voltage occurs at a main contactor (MC4): OFF command because there is a hot short circuit in main contactor (MC4) drive circuit.		
Action of controller	Turns off the main contactor (MC4).		
Problem on lift truck	• Battery voltage (108V or 120V) is applied to charge plug W25 part of the vehicle. • The battery charger control power remains on even after the charge is done.		
Related information	• You can examine the drive current value of the main contactor (MC4) with the monitor panel. (Code: 56528 (mA)) • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Make sure that the emergency stop switch is not pushed. 4. Disconnect the connector M24. Connect the T-adapter to the female side to do the troubleshooting.		
		Voltage	Between M24 (female) (1) and (2)	Max. 1V
2	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of main contactor 4

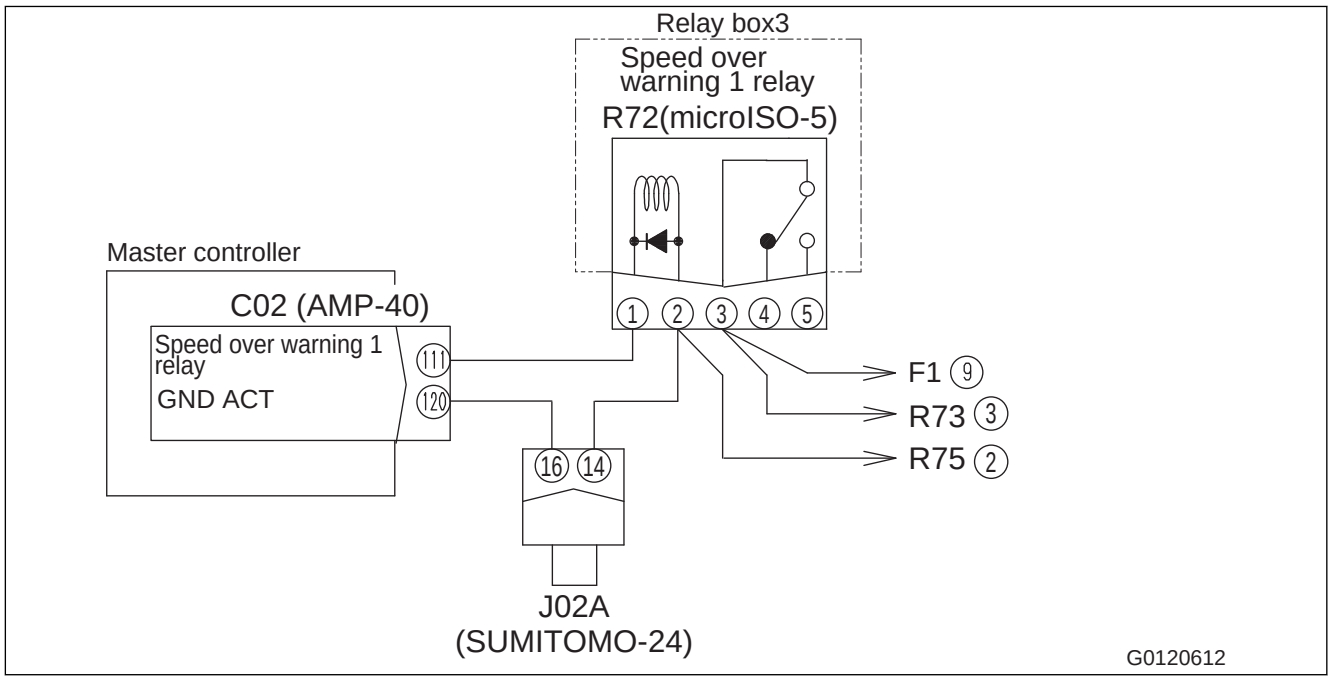


FAILURE CODE [D1HPKB]

Action level	Failure code	Failure phenomenon	SHORT) Speed Alarm RLY 1 (Master controller system)
L01	D1HPKB		
Detail of failure	Over current protection is sensed for 100 milliseconds continuously while relay output is ON.		
Action of controller	• Turns the speed alarm relay 1 output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The external devices connected to the travel speed alarm 1 relay output do not operate.		
Related information	• This failure code senses an abnormality on the coil side of the travel speed alarm 1 relay, but not on the contact side. • How to reproduce failure code: Turn the starting switch to the ON position. Travel the vehicle at a speed between TravelSpeed Alarm1_Lower and TravelSpeed Alarm1_Upper. (You can see the setting values in the Adjustment menu in the service mode.)		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective travel speed alarm 1 relay (R72)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R72 to do the troubleshooting. **REMARK** Do a check of the coil resistance of the relay.		
		Resistance	Between R72 (male) (2) and (1)	Approx. 400Ω
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R72 and C02 to do the troubleshooting.		
		Resistance	Between R72 (female) (2) and (1)	Min. 1MΩ
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of travel speed alarm 1 relay

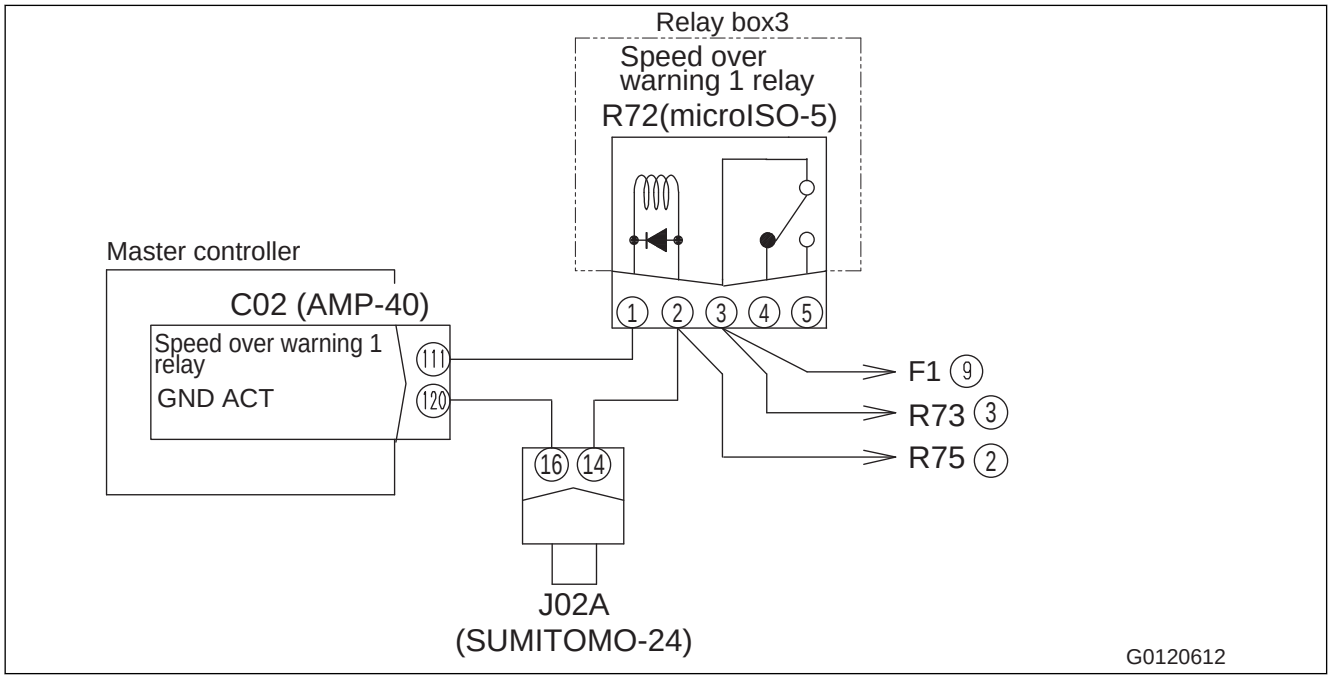


FAILURE CODE [D1HPKY]

Action level	Failure code	Failure phenomenon	SHORT_P) Speed Alarm RLY 1 (Master controller system)
L01	D1HPKY		
Detail of failure	While the output to the relay is OFF, an output voltage of ≥ 2.6V is sensed continuously for 100ms.		
Action of controller	• Turns the speed alarm relay 1 output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The external device connected to the travel speed alarm 1 relay output stays ON.		
Related information	• This failure code senses an abnormality on the coil side of the travel speed alarm 1 relay, but not on the contact side. • How to reproduce failure code: After the starting switch is turned to the ON position, move the vehicle at a speed less than TravelSpeed Alarm1_Lower or more than TravelSpeed Alarm1_Upper. (You can see the setting values in the Adjustment menu in the service mode.)		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R72. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between R72 (female) (1) and (2)	Max. 1V
2	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of travel speed alarm 1 relay

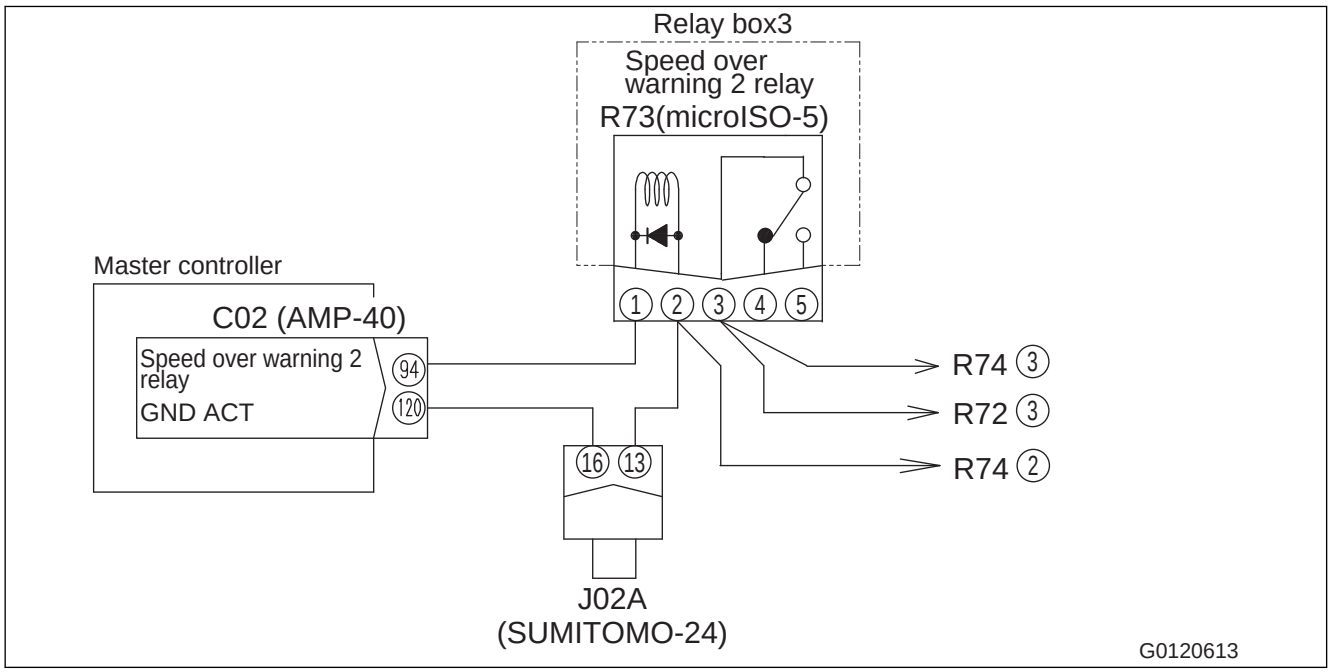


FAILURE CODE [D1HQKB]

Action level	Failure code	Failure phenomenon	SHORT) Speed Alarm RLY 2 (Master controller system)
L01	D1HQKB		
Detail of failure	Over current protection is sensed for 100 milliseconds continuously while relay output is ON.		
Action of controller	• Turns the speed alarm relay 2 output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The external devices connected to the travel speed alarm 2 relay output do not operate.		
Related information	• This failure code senses an abnormality on the coil side of the travel speed alarm 2 relay, but not on the contact side. • How to reproduce failure code: Turn the starting switch to the ON position. Travel the vehicle at a speed between TravelSpeed Alarm2_Lower and TravelSpeed Alarm2_Upper. (You can see the setting values in the Adjustment menu in the service mode.)		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective travel speed alarm 2 relay (R73)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R73 to do the troubleshooting. **REMARK** Do a check of the coil resistance of the relay.		
		Resistance	Between R73 (male) (2) and (1)	Approx. 400Ω
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R73 and C02 to do the troubleshooting.		
		Resistance	Between R73 (female) (2) and (1)	Min. 1MΩ
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of travel speed alarm 2 relay

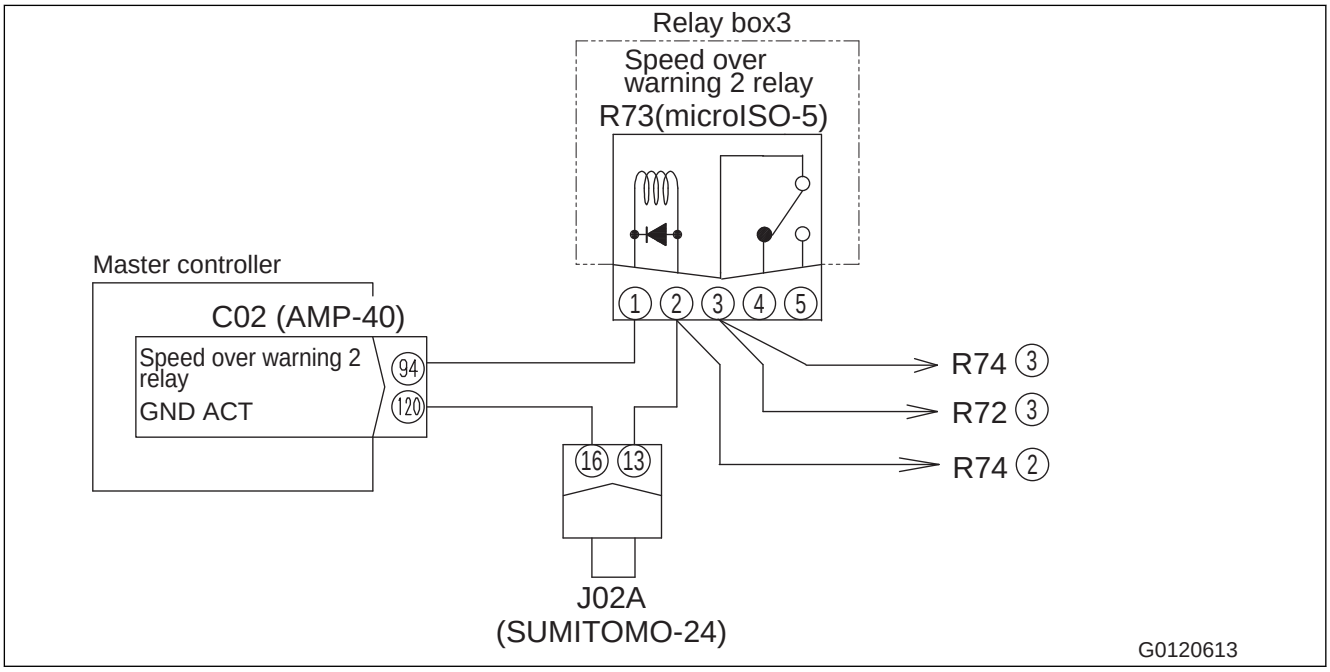


FAILURE CODE [D1HQKY]

Action level	Failure code	Failure phenomenon	SHORT_P) Speed Alarm RLY 2 (Master controller system)
L01	D1HQKY		
Detail of failure	While the output to the relay is OFF, an output voltage of ≥ 7V is sensed continuously for 100ms.		
Action of controller	• Turns the speed alarm relay 2 output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The external device connected to the travel speed alarm 2 relay output stays ON.		
Related information	• This failure code senses an abnormality on the coil side of the travel speed alarm 2 relay, but not on the contact side. • How to reproduce failure code: After the starting switch is turned to the ON position, move the vehicle at a speed less than TravelSpeed Alarm2_Lower or more than TravelSpeed Alarm2_Upper. (You can see the setting values in the Adjustment menu in the service mode.)		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R73. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between R73 (female) (1) and (2)	Max. 1V
2	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of travel speed alarm 2 relay

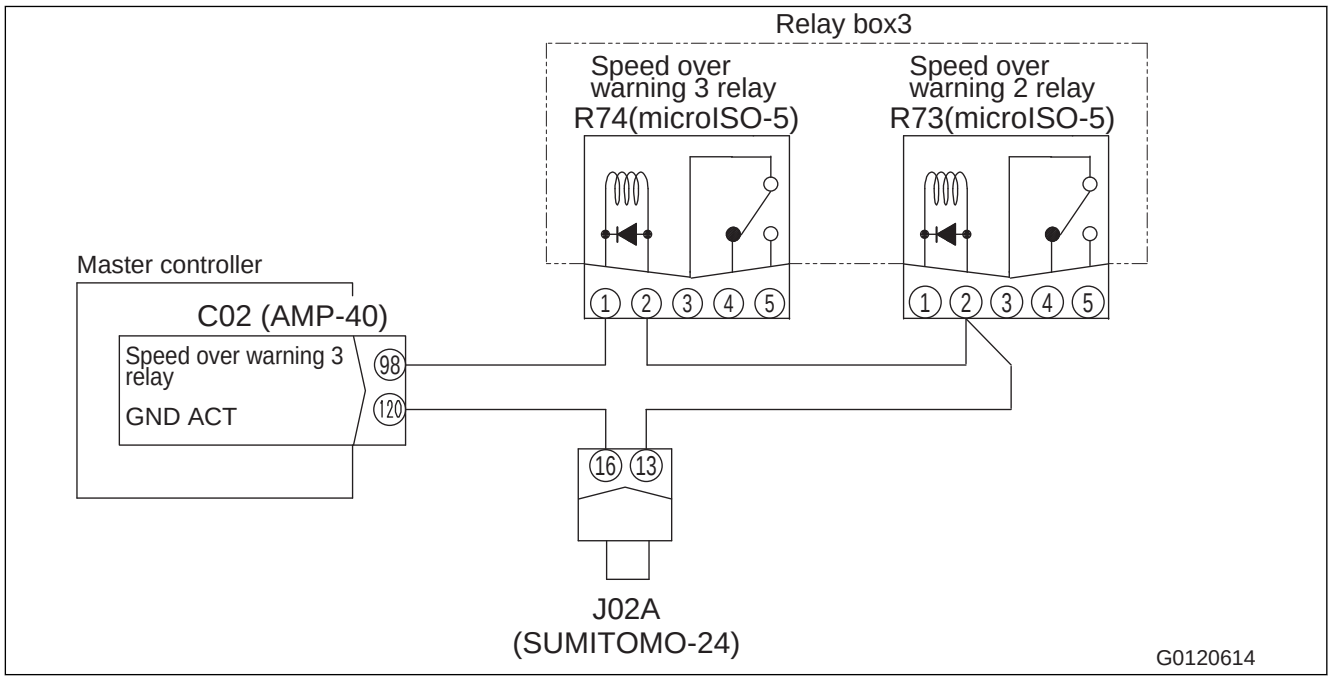


FAILURE CODE [D1HRKB]

Action level	Failure code	Failure phenomenon	SHORT) Speed Alarm RLY 3 (Master controller system)
L01	D1HRKB		
Detail of failure	Over current protection is sensed for 100 milliseconds continuously while relay output is ON.		
Action of controller	• Turns the speed alarm relay 3 output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The external devices connected to the travel speed alarm 3 relay output do not operate.		
Related information	• This failure code senses an abnormality on the coil side of the travel speed alarm 3 relay, but not on the contact side. • How to reproduce failure code: Turn the starting switch to the ON position. Travel the vehicle at a speed between TravelSpeed Alarm3_Lower and TravelSpeed Alarm3_Upper. (You can see the setting values in the Adjustment menu in the service mode.)		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective travel speed alarm 3 relay (R74)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R74 to do the troubleshooting. **REMARK** Do a check of the coil resistance of the relay.		
		Resistance	Between R74 (male) (2) and (1)	Approx. 400Ω
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R74 and C02 to do the troubleshooting.		
		Resistance	Between R74 (female) (2) and (1)	Min. 1MΩ
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of travel speed alarm 3 relay

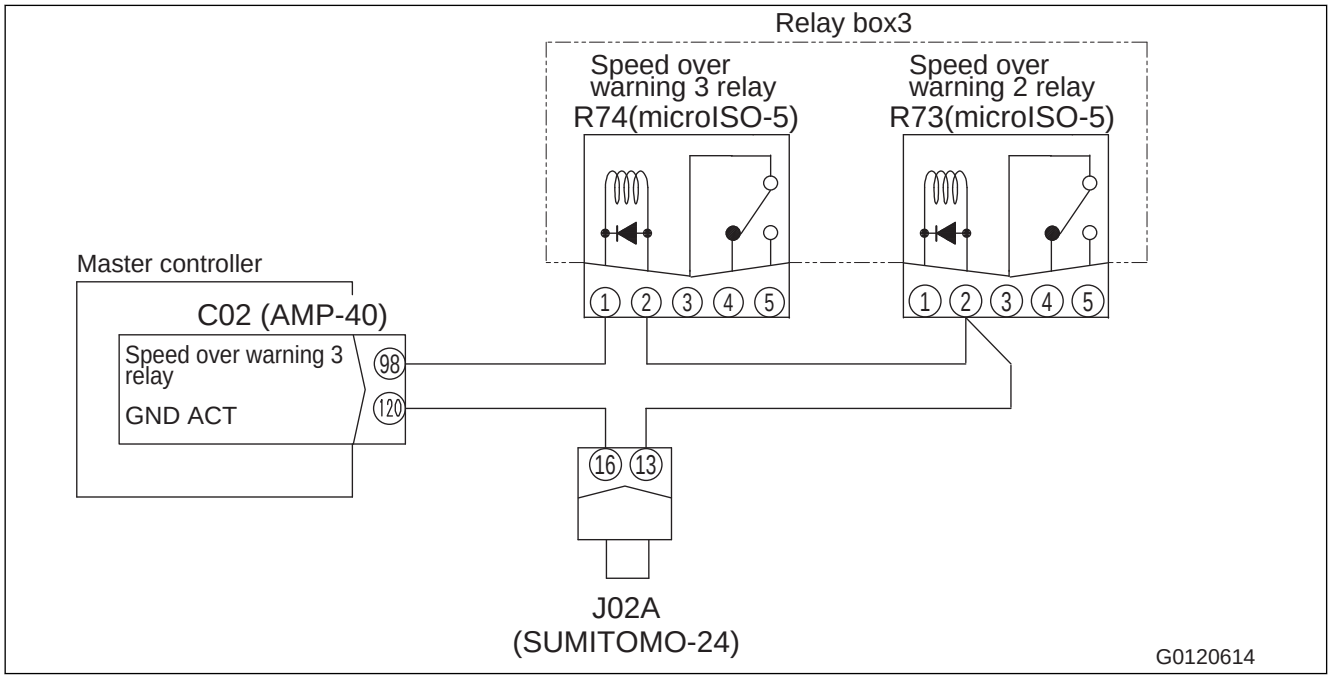


FAILURE CODE [D1HRKY]

Action level	Failure code	Failure phenomenon	SHORT_P) Speed Alarm RLY 3 (Master controller system)
L01	D1HRKY		
Detail of failure	While the output to the relay is OFF, an output voltage of ≥ 5.7V is sensed continuously for 100ms.		
Action of controller	• Turns the speed alarm relay 3 output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The external device connected to the travel speed alarm 3 relay output stays ON.		
Related information	• This failure code senses an abnormality on the coil side of the travel speed alarm 3 relay, but not on the contact side. • How to reproduce failure code: After the starting switch is turned to the ON position, move the vehicle at a speed less than TravelSpeed Alarm3_Lower or more than the TravelSpeed Alarm3_Upper. (You can see the setting values in the Adjustment menu in the service mode.)		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R74. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between R74 (female) (1) and (2)	Max. 1V
2	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of travel speed alarm 3 relay

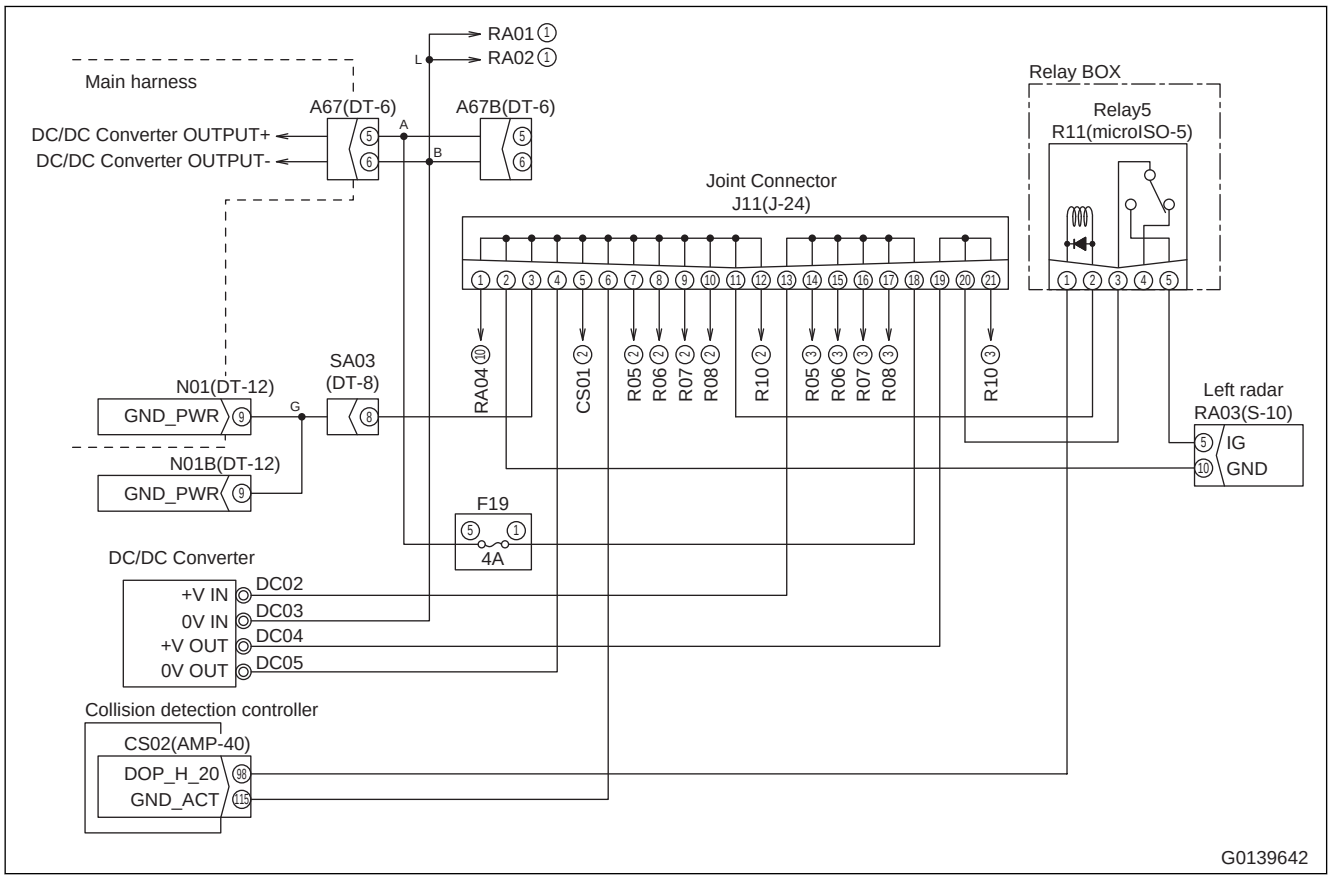


FAILURE CODE [D1J1KA]

Action level	Failure code	Failure phenomenon	Radar 1 Power Supply Relay Control Output Open Circuit (Proximity detection controller system)
L01	D1J1KA		
Detail of failure	While the output to the relay is OFF, 1.9V ≤ output voltage <7.0V is sensed continuously for 100ms.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Collision detection radar (left) power supply Defective relay	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R11 to do the troubleshooting.		
		Resistance	Between R11 (male) (1) and (2)	Approx. 400Ω
2	Open circuit in wiring harness (open circuit or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CS02 and R11. Connect the socket to the female side of CS02 to do the troubleshooting.		
		Resistance	Between R11 (female) (1) and CS02 (female) (98)	Max. 1Ω
			Between R11 (female) (2) and CS02 (female) (115)	Max. 1Ω
3	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of collision detection radar (rear left)

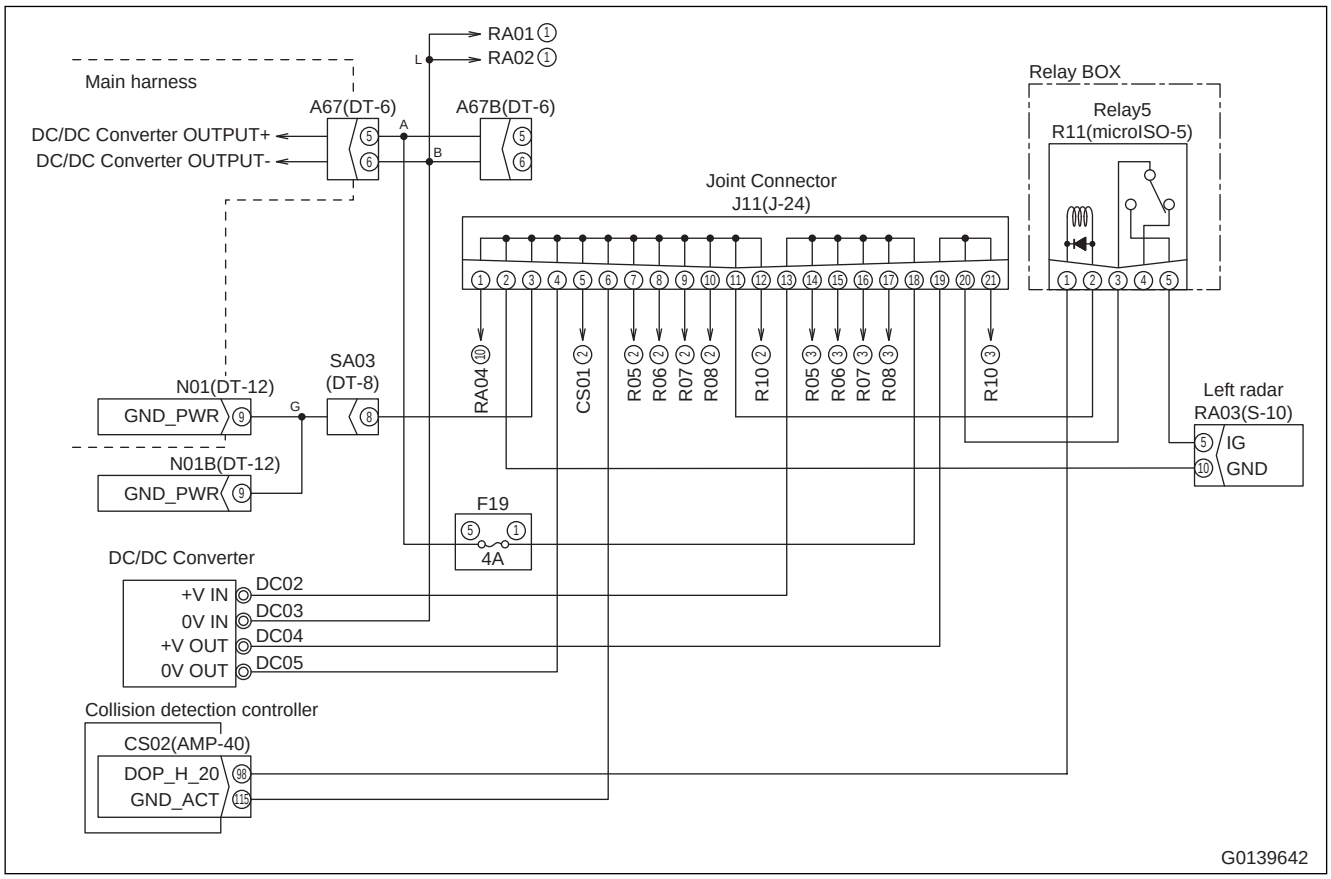


FAILURE CODE [D1J1KB]

Action level	Failure code	Failure phenomenon	Radar 1 Supply Voltage Relay Control Output Hot Short Circuit (Proximity detection controller system)
L01	D1J1KB		
Detail of failure	While the output to the relay is OFF, an output voltage of ≥ 7.0V is sensed continuously for 100ms.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R11. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between R11 (female) (1) and (2)	Max. 1V
2	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of collision detection radar (Rear left)

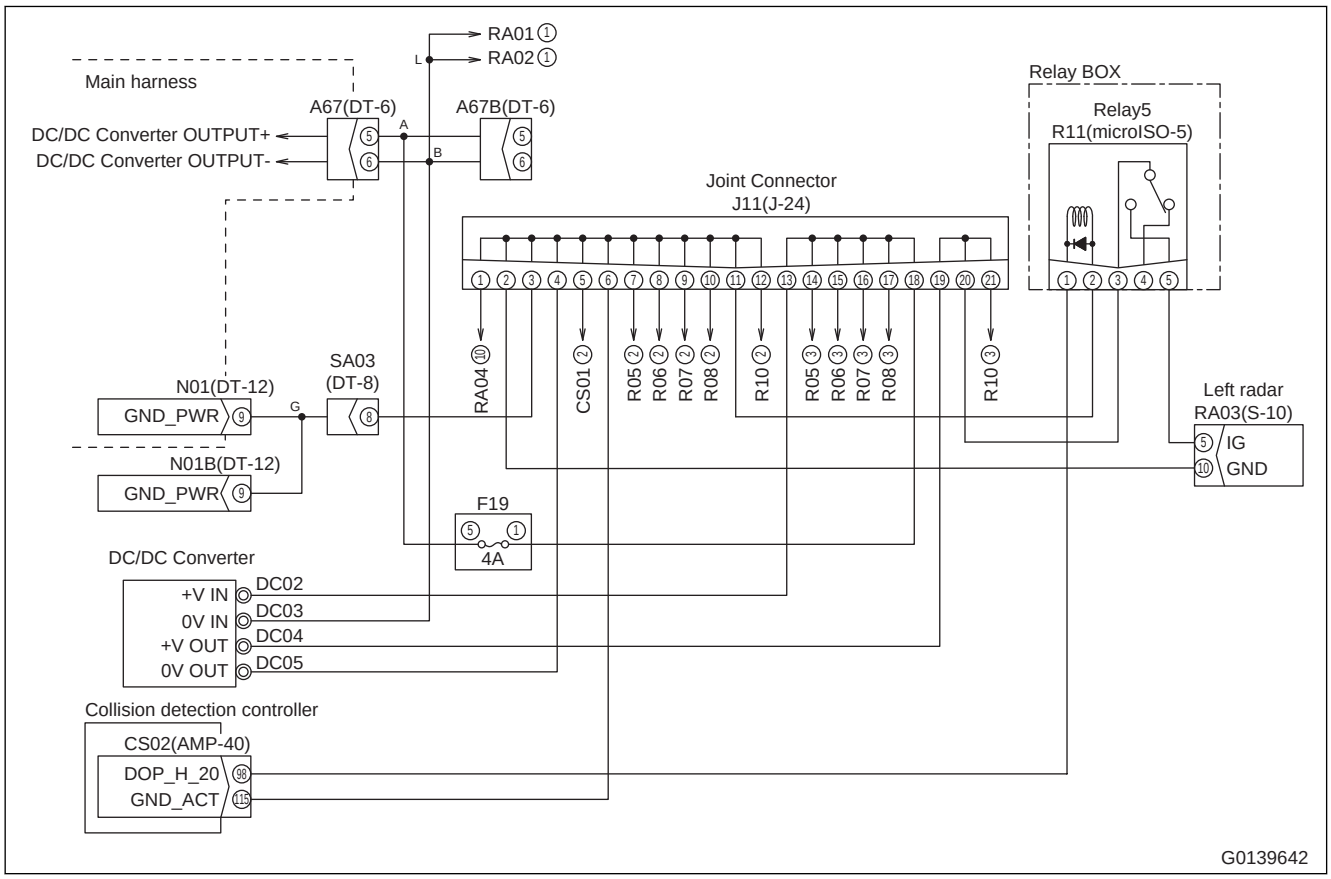


FAILURE CODE [D1J1KY]

Action level	Failure code	Failure phenomenon	Radar 1 Power Supply Voltage Relay Output Short Circuit (Proximity detection controller system)
L01	D1J1KY		
Detail of failure	Over current protection is sensed for 100 milliseconds continuously while relay output is ON.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Collision detection radar (L.H.) power supply Relay (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R11 to do the troubleshooting.		
		Resistance	Between R11 (male) (1) and (2)	Approx. 400Ω
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R11 and CS02 to do the troubleshooting.		
		Resistance	Between R11 (female) (1) and (2)	Min. 1MΩ
3	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of collision detection radar (Rear left)

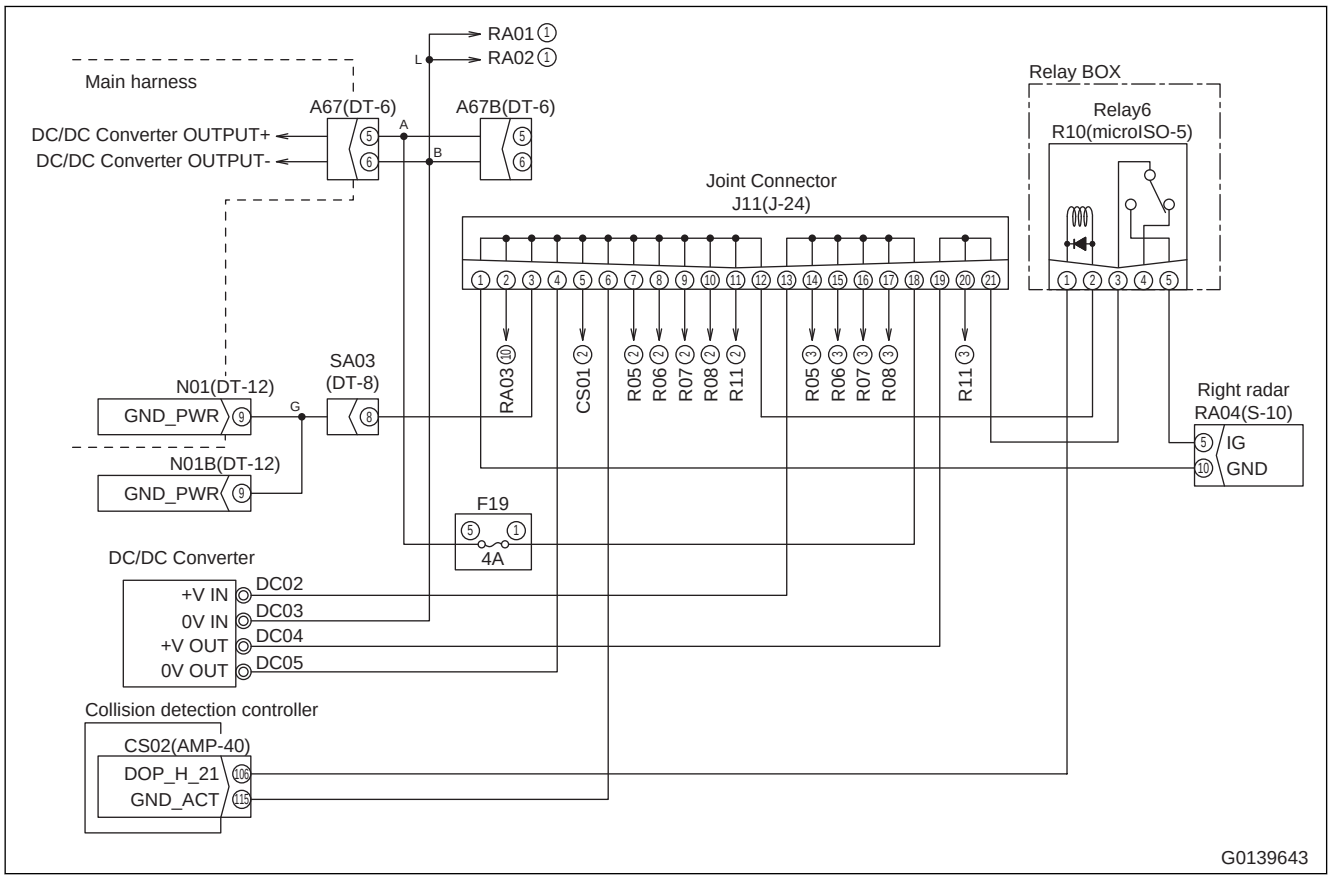


FAILURE CODE [D1J2KA]

Action level	Failure code	Failure phenomenon	Radar 2 Power Supply Relay Control Output Open Circuit (Proximity detection controller system)
L01	D1J2KA		
Detail of failure	While the output to the relay is OFF, 1.9V ≤ output voltage <7.0V is sensed continuously for 100ms.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Collision detection radar (R.H.) power supply Defective relay	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R10 to do the troubleshooting.		
		Resistance	Between R10 (male) (1) and (2)	Approx. 400Ω
2	Open circuit in wiring harness (open circuit or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CS02 and R10. Connect the socket to the female side of CS02 to do the troubleshooting.		
		Resistance	Between R10 (female) (1) and CS02 (female) (106)	Max. 1Ω
			Between R10 (female) (2) and CS02 (female) (115)	Max. 1Ω
3	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of collision detection radar (Rear right)

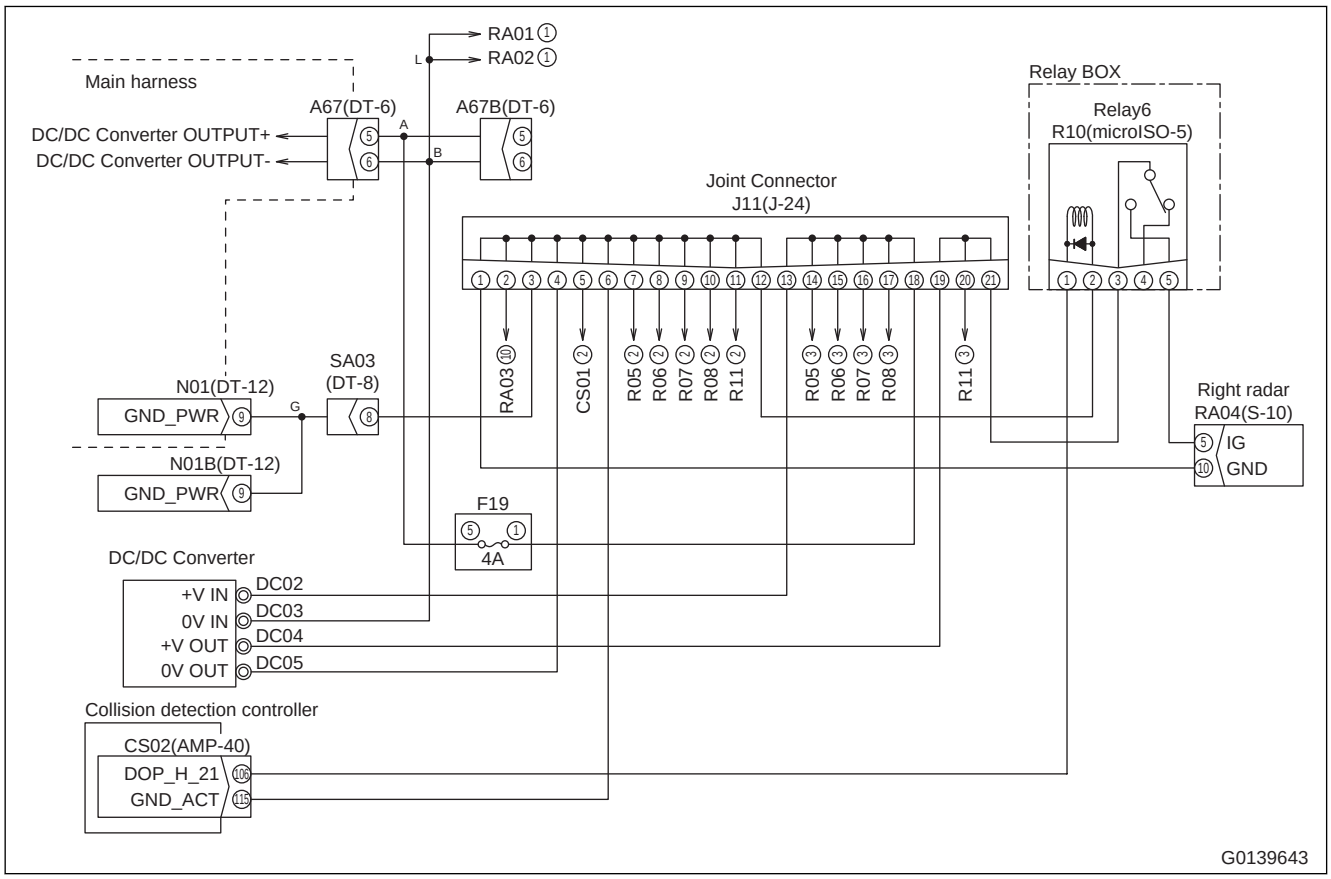


FAILURE CODE [D1J2KB]

Action level	Failure code	Failure phenomenon	Radar 2 Power Supply Relay Control Output Hot Short Circuit (Proximity detection controller system)
L01	D1J2KB		
Detail of failure	While the output to the relay is OFF, an output voltage of ≥ 7.0V is sensed continuously for 100ms.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R10. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between R10 (female) (1) and (2)	Max. 1V
2	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of collision detection radar (rear right)

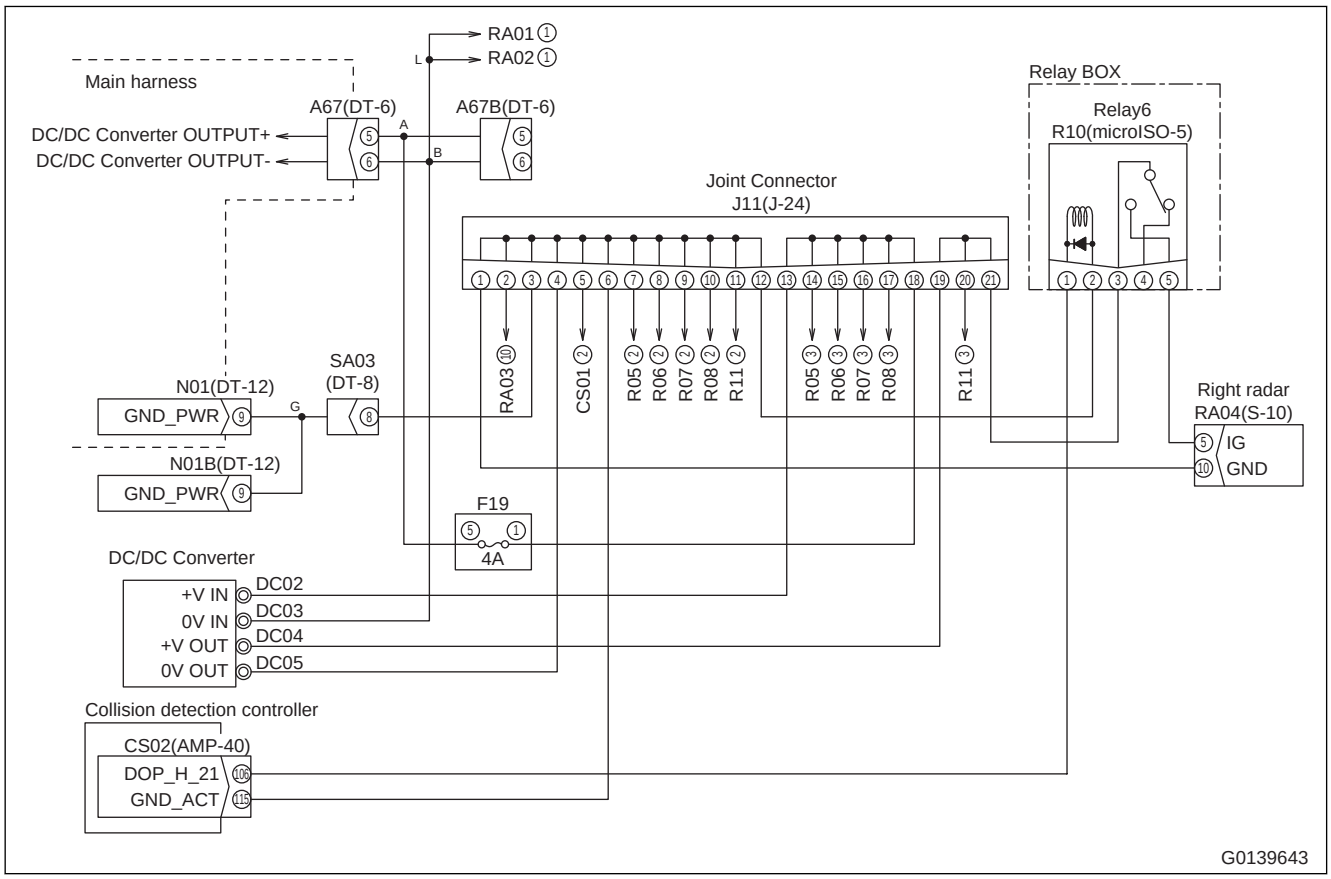


FAILURE CODE [D1J2KY]

Action level	Failure code	Failure phenomenon	Radar 2 Power Supply Relay Control Output Short Circuit (Proximity detection controller system)
L01	D1J2KY		
Detail of failure	Over current protection is sensed for 100 milliseconds continuously while relay output is ON.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Collision detection radar (right) power supply Relay (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R10 to do the troubleshooting.		
		Resistance	Between R10 (male) (1) and (2)	Approx. 400Ω
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R10 and CS02 to do the troubleshooting.		
		Resistance	Between R10 (female) (1) and (2)	Min. 1MΩ
3	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of collision detection radar (Rear right)



FAILURE CODE [D5XWKA]

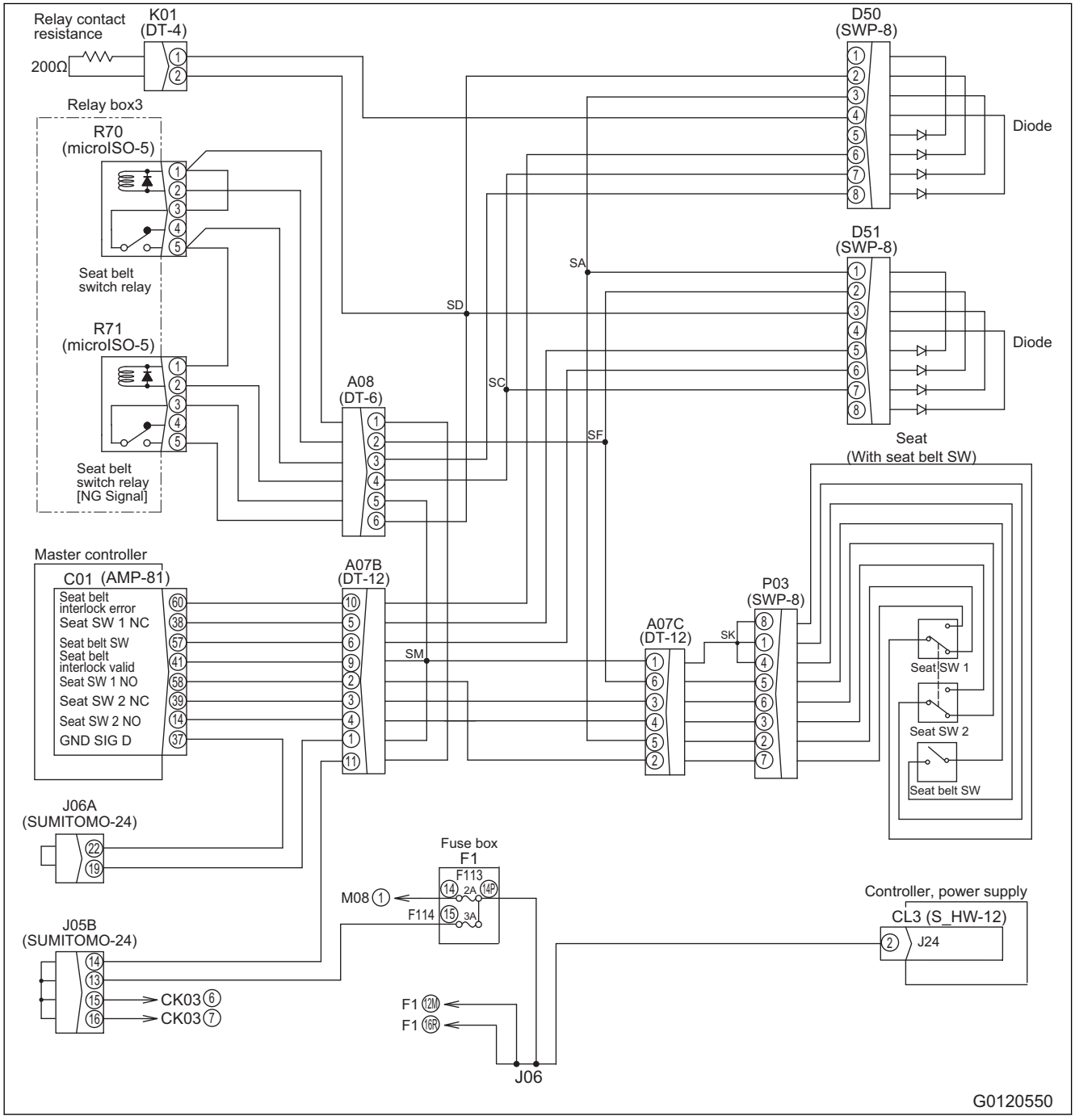
Action level	Failure code	Failure phenomenon	DISC) SEATBELT ERROR SIG (Master controller system)
L01	D5XWKA		
Detail of failure	When the procedure to fasten the seat belt is not correct the seat belt interlock error signal does not turn on.		
Action of controller	• Gives only an announcement. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	None.		
Related information	• If a failure code related to the seat switch is shown at the same time, do the troubleshooting for it first. • How to reproduce failure code: Sit in the operator seat, turn the starting switch to the ON position, fasten the seat belt, and get off the seat.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuse F114. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F114	Continuity
2	Defective diode D50	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector D50. Connect the T-adapter to male side to do the troubleshooting. **REMARK** Do the measurement with the diode range of the multimeter.		
		Continuity	Between D50 (male) (2) (+) and (6) (-)	No continuity
			Between D50 (male) (6) (+) and (2) (-)	Continuity
			Between D50 (male) (4) (+) and (8) (-)	No continuity
			Between D50 (male) (8) (+) and (4) (-)	Continuity

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="3">3</td><td rowspan="3">Defective diode D51</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector D51. Connect the T-adapter to male side to do the troubleshooting.
REMARK
Do the measurement with the diode range of the multimeter.</td></tr>
<tr><td>Continuity</td><td>Between D51 (male) (3) (+) and (7) (-)</td><td>No continuity</td></tr>
<tr><td>Between D51 (male) (7) (+) and (3) (-)</td><td>Continuity</td></tr>
<tr><td rowspan="11">4</td><td rowspan="11">Open circuit in wiring harness
(wire breakage or defective contact of connector)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors C01, CL3, K01, D50, D51, R70, and R71. Connect a socket to the female side of C01, and connect a T-adapter to the female side of K01, D50, and D51 to do the troubleshooting.</td></tr>
<tr><td rowspan="10">Resistance</td><td>Between C01 (female) (60) and D50 (female) (6)</td><td>Max. 1Ω</td></tr>
<tr><td>Between D50 (female) (2) and K01 (female) (2)</td><td>Max. 1Ω</td></tr>
<tr><td>Between K01 (female) (1) and D50 (female) (4)</td><td>Max. 1Ω</td></tr>
<tr><td>Between D50 (female) (8) and R70 (female) (5)</td><td>Max. 1Ω</td></tr>
<tr><td>Between D50 (female) (8) and R71 (female) (1)</td><td>Max. 1Ω</td></tr>
<tr><td>Between R71 (female) (2) and D50 (female) (7)</td><td>Max. 1Ω</td></tr>
<tr><td>Between R71 (female) (2) and D51 (female) (7)</td><td>Max. 1Ω</td></tr>
<tr><td>Between D51 (female) (3) and R71 (female) (5)</td><td>Max. 1Ω</td></tr>
<tr><td>Between R71 (female) (3) and C01 (female) (37)</td><td>Max. 1Ω</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">Defective seat belt switch relay (R70)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector R70 and replace with the same type relay.
4. Connect the battery plug W50.
5. Sit on the seat.
6. Turn the starting switch to the ON position.
7. Fasten the seat belt.
8. Get off the seat.</td></tr>
<tr><td colspan="3">If it recovers when the relay is replaced with a correct one, the seatbelt switch relay (R70) before replacement is defective.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Defective seat switch relay (NG signal) (R71)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector R71 and replace with the same type relay.
4. Connect the battery plug W50.
5. Sit on the seat.
6. Turn the starting switch to the ON position.
7. Fasten the seat belt.
8. Get off the seat.</td></tr>
<tr><td colspan="3">If it recovers when the relay is replaced with a correct one, the seat switch relay (R71) before replacement is defective.</td></tr>
<tr><td rowspan="2">7</td><td rowspan="2">Defective resistor (K01)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector K01. Connect the T-adapter to male side to do the troubleshooting.</td></tr>
<tr><td>Resistance</td><td>Between K01 (male) (1) and K01 (male) (2)</td><td>Approx. 200Ω</td></tr>
<tr><td>8</td><td>Defective master controller</td><td colspan="3">If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of seat belt interlock



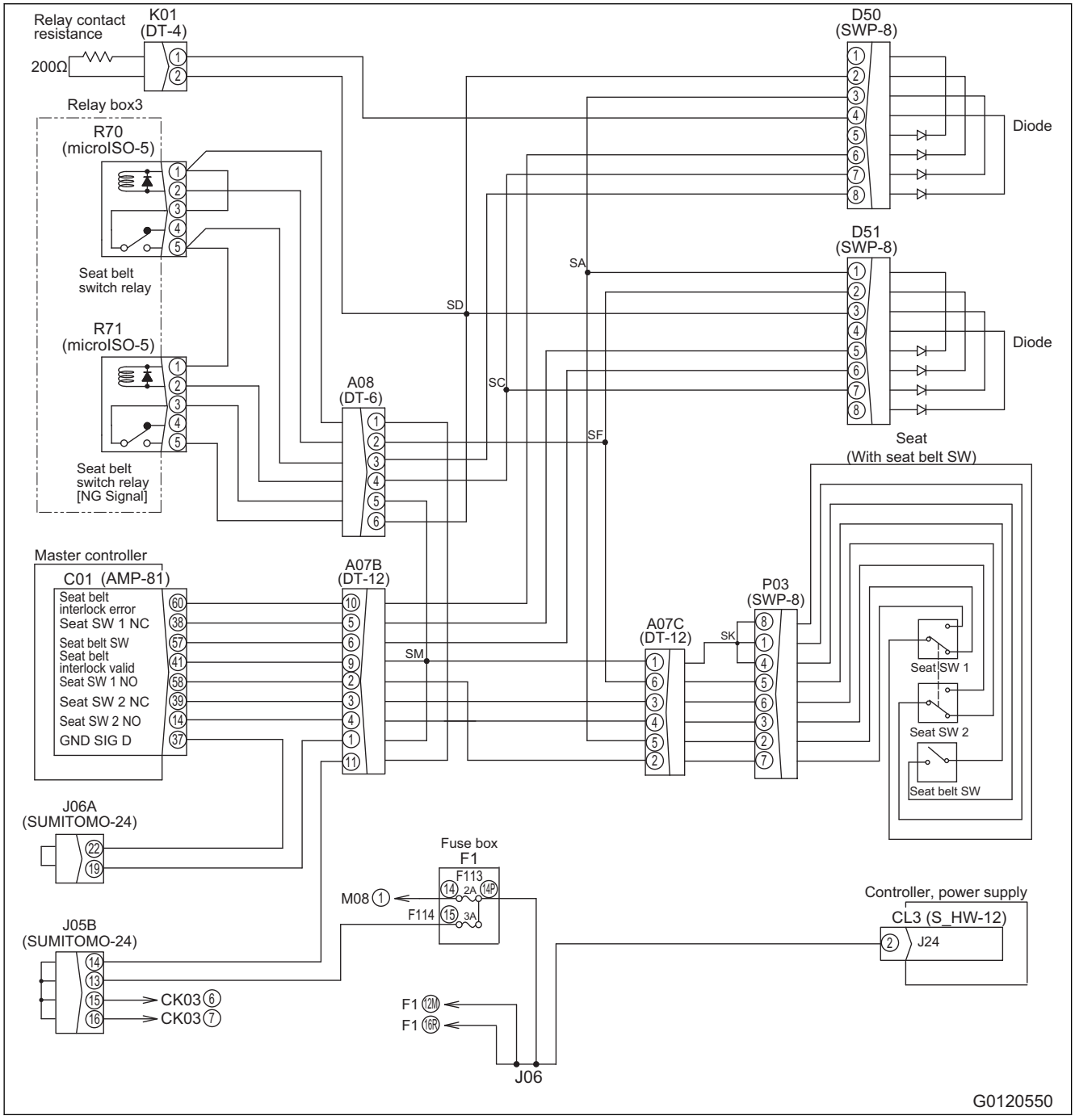
FAILURE CODE [D5XWKY]

Action level	Failure code	Failure phenomenon	SHORT_P) SeatBelt Error Sig (Master controller system)
L01	D5XWKY		
Detail of failure	When the procedure to fasten the seat belt is correct the seat belt interlock error signal does not turn off.		
Action of controller	• Gives only an announcement. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	When the starting switch is turned from the OFF position to the ON position, the seat belt caution lamp flashes even if the seat belt was fastened in the correct procedure. (After the starting switch is turned to the ON position, the vehicle operates normally.)		
Related information	• If a failure code related to the seat switch is shown at the same time, do the troubleshooting for it first. • How to reproduce failure code: Sit in the operator seat and fasten the seat belt, and turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective seat belt switch relay (R70)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R70. Replace with the same type relay. 4. Connect the battery plug W50. 5. Sit on the seat. 6. Fasten the seat belt. 7. Turn the starting switch to the ON position.		
		If it recovers when the relay is replaced with a correct one, the seatbelt switch relay (R70) before replacement is defective.		
2	Defective seat switch relay (NG signal) (R71)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R71. Replace with the same type relay. 4. Connect the battery plug W50. 5. Sit on the seat. 6. Fasten the seat belt. 7. Turn the starting switch to the ON position.		
		If it recovers when the relay is replaced with a correct one, the seat switch relay (R71) before replacement is defective.		
3	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R71. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position.		
		Voltage	Between R71 (female) (3) and (5)	Min. 5V

No.	Cause	Procedure, measurement location, criteria and remarks
4	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

Circuit diagram of seat belt interlock

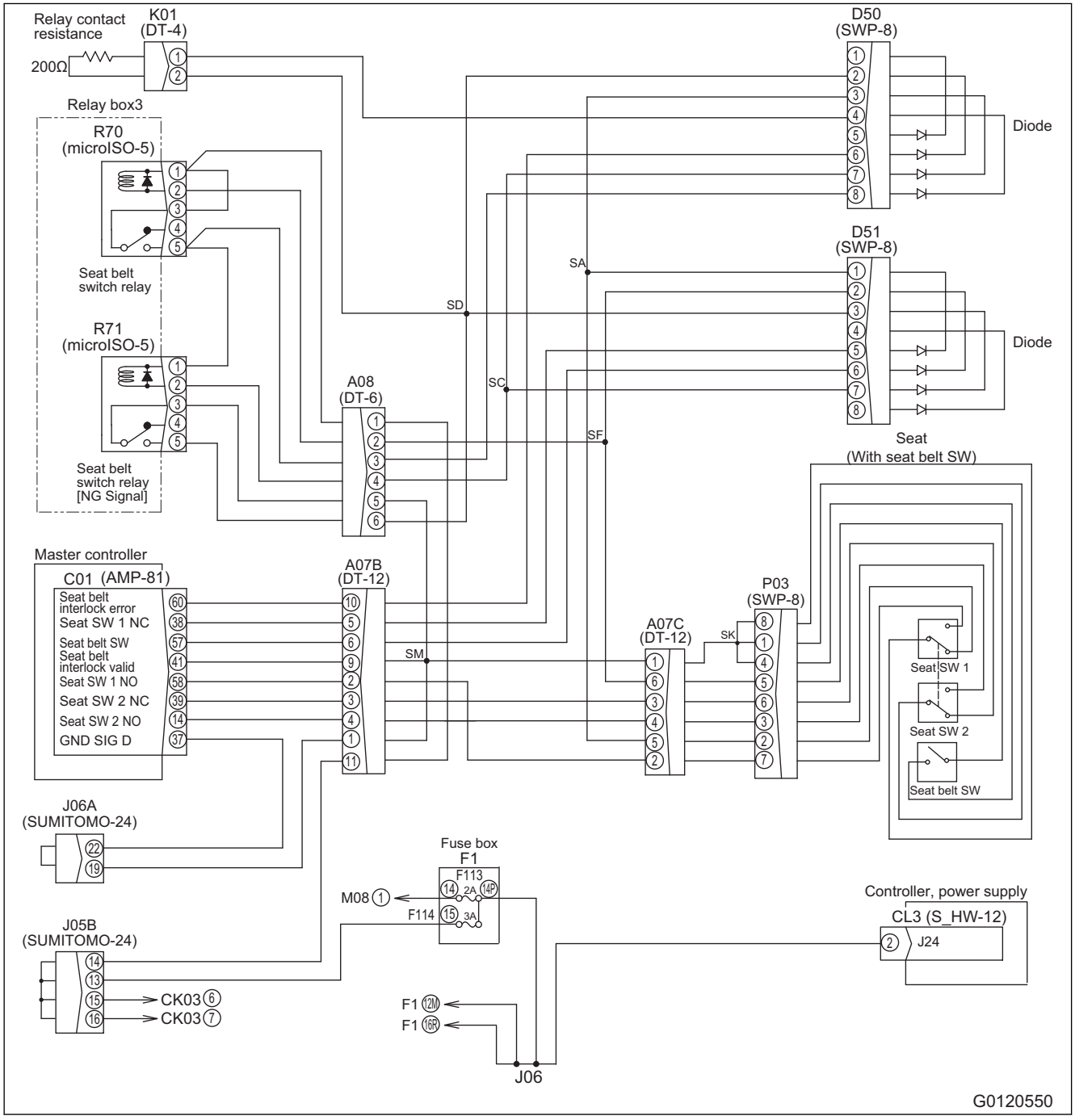


FAILURE CODE [D5XXKA]

Action level	Failure code	Failure phenomenon	Seat Belt Interlock Valid Signal Open Circuit (Master controller system)
L01	D5XXKA		
Detail of failure	The entered seat belt interlock valid signal is OFF even if the seat belt interlock state saved in the master controller is “Valid”.		
Action of controller	• Gives only an announcement. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The vehicle operates normally.		
Related information	• If a failure code related to the seat switch is shown at the same time, do the troubleshooting for it first. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector C01. Connect the socket to the female side to do the troubleshooting.		
		Resistance	Between C01 (female) (41) and (37)	Max. 1Ω
2	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of seat belt interlock



FAILURE CODE [D5XXKY]

Action level	Failure code	Failure phenomenon	Seat Belt Interlock Valid Signal Open and Short Circuit (Master controller system)
L01	D5XXKY		
Detail of failure	The entered seat belt interlock valid signal is ON even if the seat belt interlock state saved in the master controller is “Invalid”.		
Action of controller	• Gives only an announcement. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The functions related to the seat belt interlock are disabled.		
Related information	• If a master controller that was used even one time on a forklift truck without seat belt interlock is installed in a forklift truck with seat belt interlock, this error can occur. If this occurs, install a master controller that is not used yet. • Reproduction method of failure code: Turn the starting switch to the ON position.		

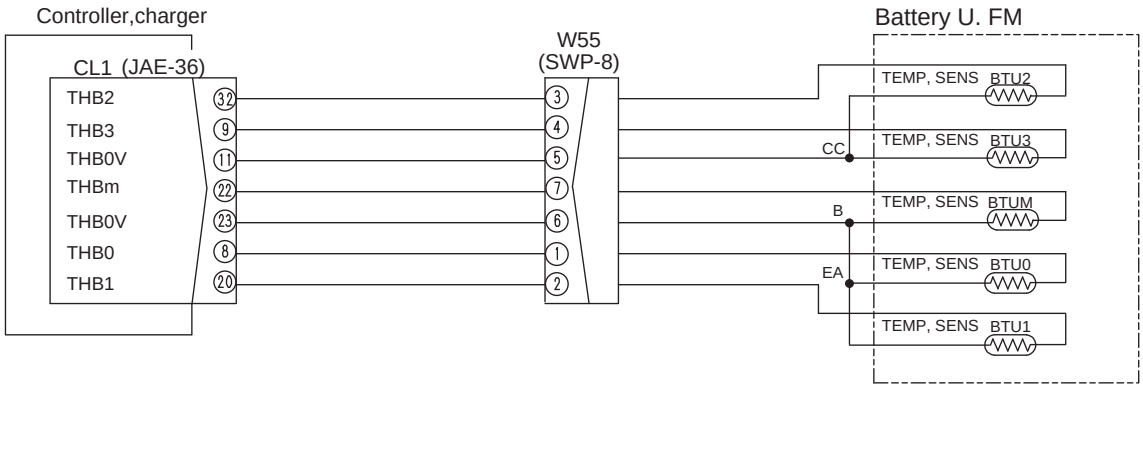
No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective master controller	The master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [D61000]

Action level	Failure code	Failure phenomenon	OVER) Temp. OF BATTERY (Master controller system)
L01	D61000		
Detail of failure	The detection temperature of one of the battery temperature sensors 1 to 4 exceeds 55℃.		
Action of controller	During operation • Operates the vehicle normally for 1 second after the abnormality is sensed. • If the detection continues for 1 second, shows a caution symbol on the monitor panel and puts the vehicle in free run temporarily. • Restricts travel speed to 2.5km/h after you set the state of travel speed ≤ 2km/h and accelerator remains OFF for 1 second. • When the sensed temperature becomes 50℃ or less, the vehicle goes back to the correct state. During charging • Operates the vehicle normally for 1 second after the abnormality is sensed. • If the detection continues for 1 second, shows a caution symbol on the monitor panel and restricts the charge current to 60% of the usual level. • When the sensed temperature becomes 50℃ or less, the vehicle goes back to the correct state.		
Problem on lift truck	• Travel speed is restricted during operation. • When the battery is charged, the charge current decreases and the charge time becomes longer.		
Related information	• Travel speed is restricted during operation. • When the battery is charged, the charge current decreases and the charge time becomes longer.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Clogged battery cooling slits	Examine the battery cooling slits and clean to make sure they are not clogged.
2	Environmental temperature is high.	If the vehicle is used in an environment of 40℃ or more, make the operating environment better.
3	Continuous operation	If the vehicle is operated and quick-charged continuously without interruption, give a period for the battery to cool down.
4	Defective battery	Replace the battery unit.

Circuit diagram of battery temperature sensor



Monitor display	Vehicle circuit diagram and wiring harness mask tube name
Battery 1 temperature (Code: 56535 (℃))	BTU0
Battery 2 temperature (Code: 56536 (℃))	BTU1
Battery 3 temperature (Code: 56537 (℃))	BTU2
Battery 4 temperature (Code: 56538 (℃))	BTU3

FAILURE CODE [D610KE]

Action level	Failure code	Failure phenomenon	TIME-UP) Charge-1 (Master controller system)
-	D610KE		
Detail of failure	Each step of charge is not completed in the specified period.		
Action of controller	• In 3 hours after step 4 (12A (240Ah battery), 9A (180Ah battery)), stops the charge. • In 3 hours after step 5 (6A (240Ah battery), 4.5A (180Ah battery)), stops the charge. • If the battery voltage after 3 hours from the start in step 5 (6A (240Ah battery), 4.5A (180Ah battery)) is lower than the battery voltage after 1.5 hours after the start, stops the charge. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch or AC200V (breaker switch) is turned to the OFF position one time.		
Problem on lift truck	Stops the charge.		
Related information	Reproduction method of failure code: Start charge. (If the battery is defective, it is not reproduced in some cases after the charge is continued.)		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Time exceeded by charge current limit	If failure codes [D61000] and [GFAF00] are also shown, do the troubleshooting for them first.
2	Defective battery	If the problem occurs again when the battery is charged again, the battery is defective.

FAILURE CODE [D610KF]

Action level	Failure code	Failure phenomenon	TIME-UP) Charge-2 (Master controller system)
L03	D610KF		
Detail of failure	Each step of charge is not completed in the specified time.		
Action of controller	• In 6 hours after step 2 (48A (240Ah battery), 36A (180Ah battery)), stops the charge. • In 3 hours after step 3 (24A (240Ah battery), 18A (180Ah battery)), stops the charge. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch or AC200V (breaker switch) is turned to the OFF position one time.		
Problem on lift truck	Stops the charge.		
Related information	Reproduction method of failure code: Start charge. (When the battery is defective, it is not reproduced in some cases if the charge is continued.)		

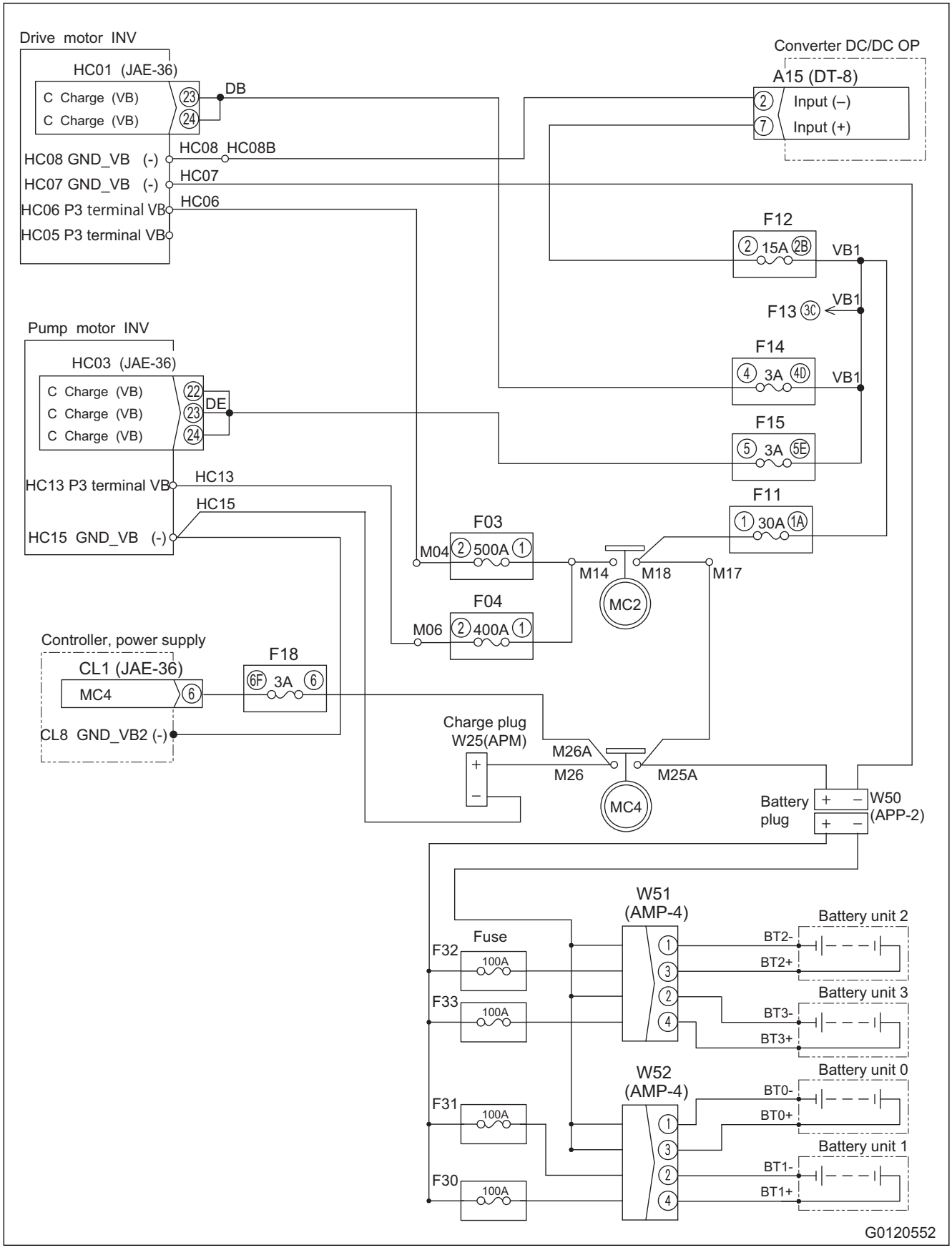
No.	Cause	Procedure, measurement location, criteria and remarks
1	Time exceeded by charge current limit	If failure codes [D61000] and [GFAF00] are also shown, do the troubleshooting for them first.
2	Defective battery	If the problem occurs again when the battery is charged again, the battery is defective.

FAILURE CODE [D610KL]

Action level	Failure code	Failure phenomenon	LOW VOLTAGE) BATTERY (Master controller system)
L03	D610KL		
Detail of failure	The battery voltage is low.		
Action of controller	During operation • Lets the vehicle operate normally until the detection continues for 10 second. • If the detection continues for 10 seconds, shows a caution symbol on the monitor, operates the buzzer, and stops the vehicle. Stops the charge in the middle of a charge.		
Problem on lift truck	• When the vehicle is in operation, it cannot move or handle the cargo. • The battery cannot be charged when a charge is activated.		
Related information	• You can examine the value of the battery voltage with the monitor panel. (Code: 56534 (V)) • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective battery (Voltage Low)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect battery plug W50. Measure it on the battery side.		
		Voltage	Between W50 (battery side) (+) and (-)	Min. 81V (FE25-2) Min. 90V (FE30-2)
2	Low battery voltage	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the battery plug W50. Measure it on the battery side. 4. If the voltage is low, charge the battery. **REMARK** If the voltage does not exceed the reference value, the battery is defective.		
		Voltage	Between W50 (battery side) (+) and (-)	Min. 102V (FE25-2) Min. 113V (FE30-2)
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of system power supply

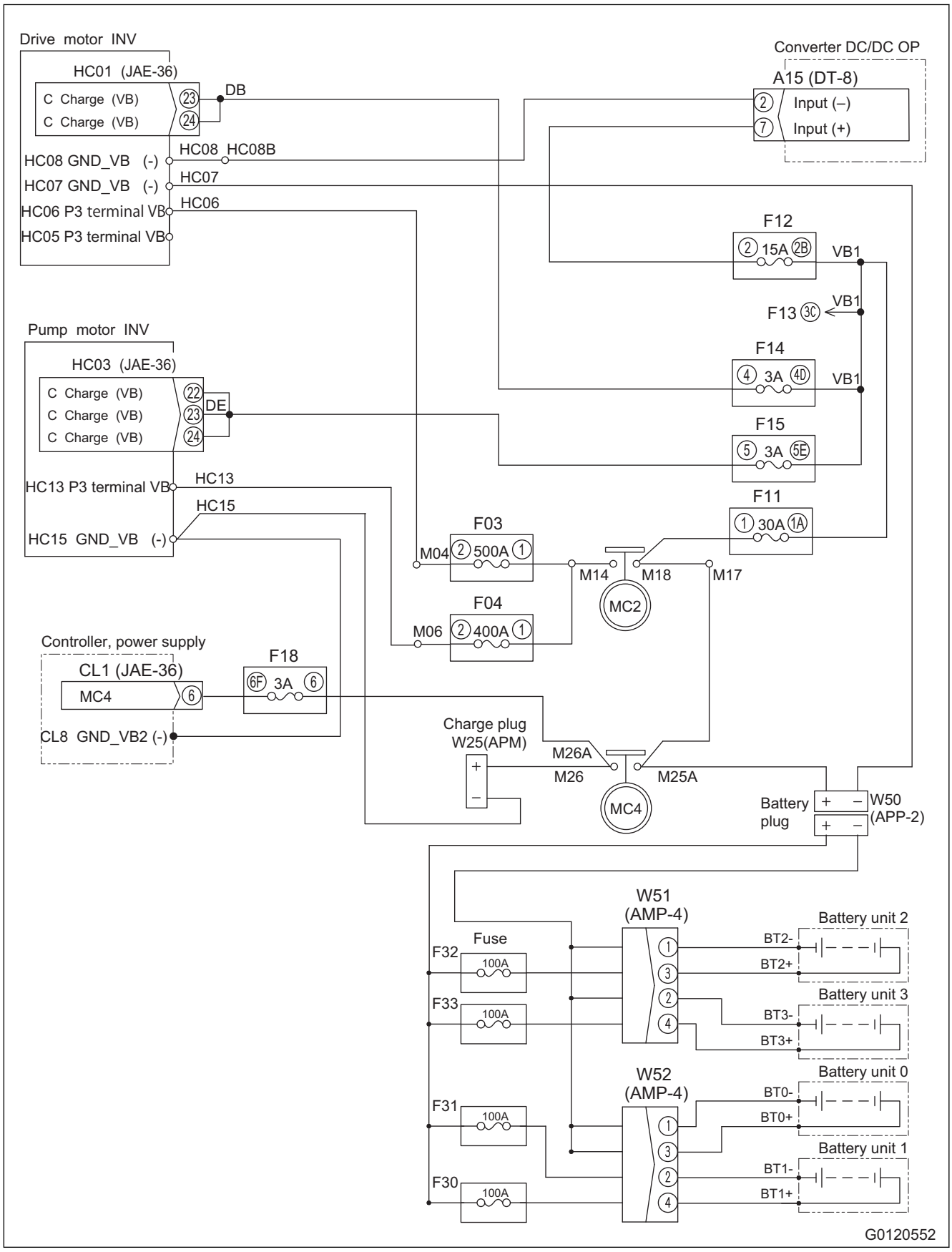


FAILURE CODE [D610KU]

Action level	Failure code	Failure phenomenon	HIGH VOLTAGE) BATTERY (Master controller system)
L03	D610KU		
Detail of failure	A high battery voltage occurs during the charge.		
Action of controller	Stops the charge		
Problem on lift truck	The battery cannot be charged.		
Related information	• You can examine the value of the battery voltage with the monitor panel. (Code: 56534 (V)) • This is not sensed in the operation mode.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective battery	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the battery plug W50. Measure it on the battery side.		
		Voltage	Between W50 (battery side) (+) and (-)	Max. 158V (FE25-2) Max. 175V (FE30-2)
2	Defective power supply controller	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the battery plug W50. Measure it on the battery side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. 6. Measure the battery voltage value with the monitoring function. Make sure that the difference from the voltage measured in step 3 is in the reference value.		
		Voltage	Between W50 (battery side) (+) and (-)	The difference from the monitored voltage is ±5V.
3	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of system power supply

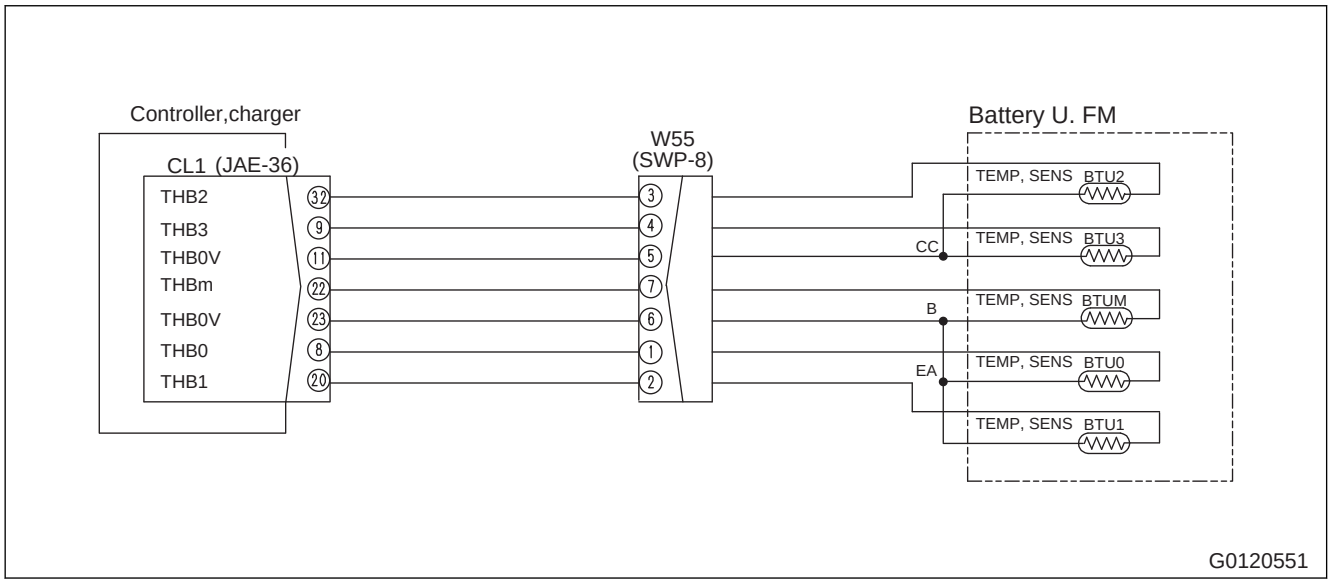


FAILURE CODE [D610NS]

Action level	Failure code	Failure phenomenon	HIGH) Temp. OF BATTERY (Master controller system)
L03	D610NS		
Detail of failure	The detection temperature of one of the battery temperature sensors 1 to 4 exceeds 60℃.		
Action of controller	During operation • Operates the vehicle normally for 1 second after the abnormality is sensed. • If the detection continues for 1 second, shows a caution symbol and puts the vehicle in free run temporarily. During charging • Operates the vehicle normally for 1 second after the abnormality is sensed. • If the detection continues for 1 second, shows a caution symbol and stops the charge.		
Problem on lift truck	• When the vehicle is in operation, it cannot travel or handle the cargo. • The battery cannot be charged when a charge is activated.		
Related information	• You can examine the battery temperature with the monitor panel. Battery 1 Temp (Code: 56535 (℃)) Battery 2 Temp (Code: 56536 (℃)) Battery 3 Temp (Code: 56537 (℃)) Battery 4 Temp (Code: 56538 (℃)) • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Do the troubleshooting for failure code [D61000].	

Circuit diagram of battery temperature sensor

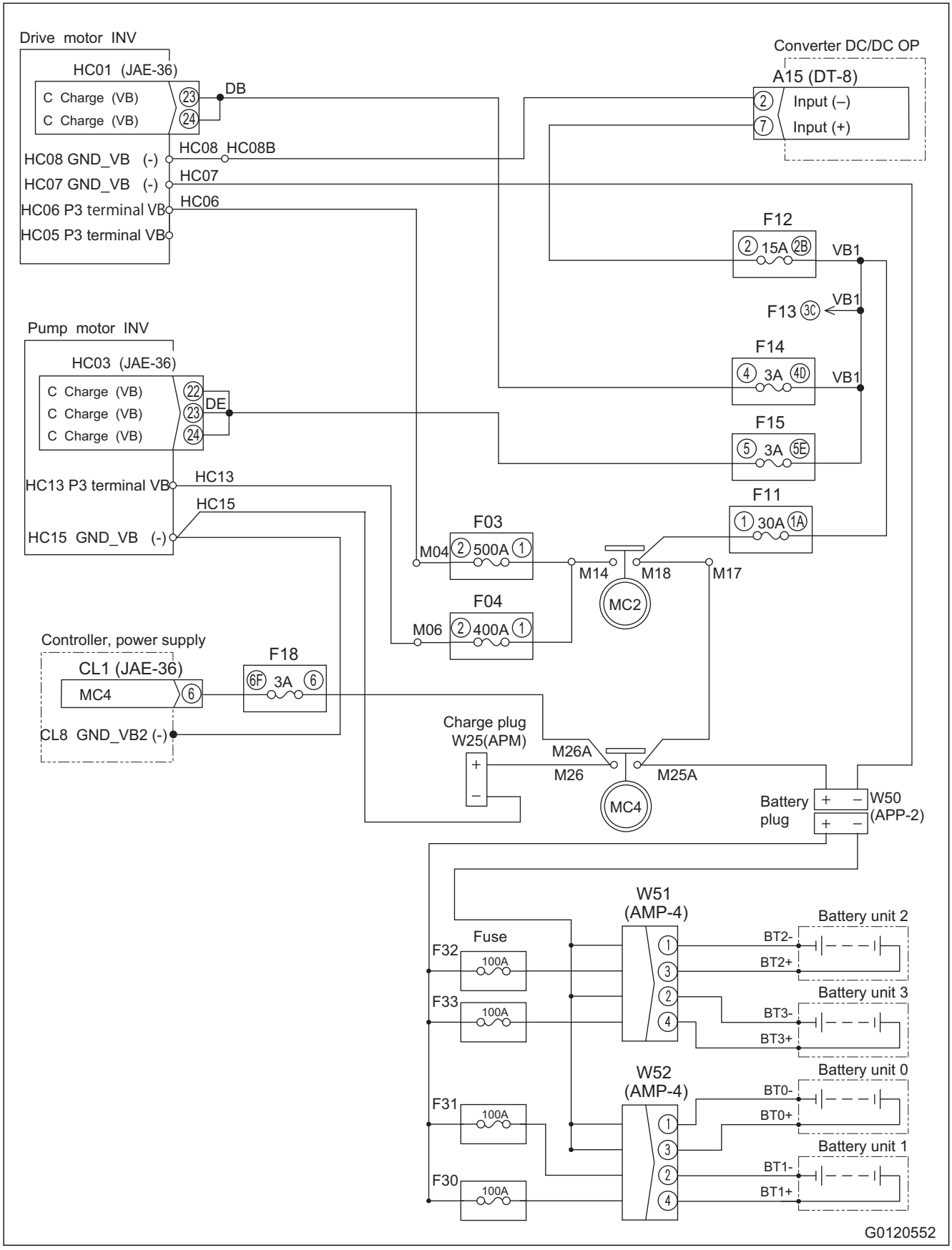


FAILURE CODE [D610ZU]

Action level	Failure code	Failure phenomenon	Battery Temperature Imbalance (Master controller system)
L01	D610ZU		
Detail of failure	The battery temperature sensors of batteries 1 to 4, and the 5 battery temperature inputs from the minimum battery temperature sensors sense a difference of 10℃ or more between the maximum and minimum temperatures.		
Action of controller	Shows a caution symbol on the monitor.		
Problem on lift truck	None		
Related information	• If the vehicle is operated with a temperature difference between the batteries, the battery life can probably be reduced or some other effects can occur. • You can examine the battery temperature with the monitor panel. Battery 1 Temp (Code: 56535 (℃)) Battery 2 Temp (Code: 56536 (℃)) Battery 3 Temp (Code: 56537 (℃)) Battery 4 Temp (Code: 56538 (℃)) Minimum Battery Temp (Code: 56552 (℃)) • If a fuse is blown out, the wiring harness probably has ground fault.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuses F30, F31, F32 and F33. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F30	Continuity
			Between two terminals of F31	Continuity
			Between two terminals of F32	Continuity
			Between two terminals of F33	Continuity
2	Clogged battery cooling ports	Examine the battery cooling slits and clean to make sure that they are not clogged.		
3	Defective battery temperature sensor	1. Turn the starting switch to the OFF position and stop the vehicle for 24 hours or more. 2. Examine each battery temperature with the monitoring function.		
		Temperature difference	Difference between maximum and minimum values of each battery temperature	Max. 5℃
4	Defective battery	If no failure is found by the above checks, the battery is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of system power supply



Monitor display	Vehicle circuit diagram and wiring harness mask tube name
Battery 1 temperature (Code: 56535 (℃))	BTU0
Battery 2 temperature (Code: 56536 (℃))	BTU1
Battery 3 temperature (Code: 56537 (℃))	BTU2
Battery 4 temperature (Code: 56538 (℃))	BTU3

FAILURE CODE [D811MC]

Action level	Failure code	Failure phenomenon	ABNL) KOMTRAX (KOMTRAX system)
-	D811MC		
Detail of failure	KOMTRAX senses a malfunction.		
Action of controller	None.		
Problem on lift truck	The KOMTRAX system does not operate correctly.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

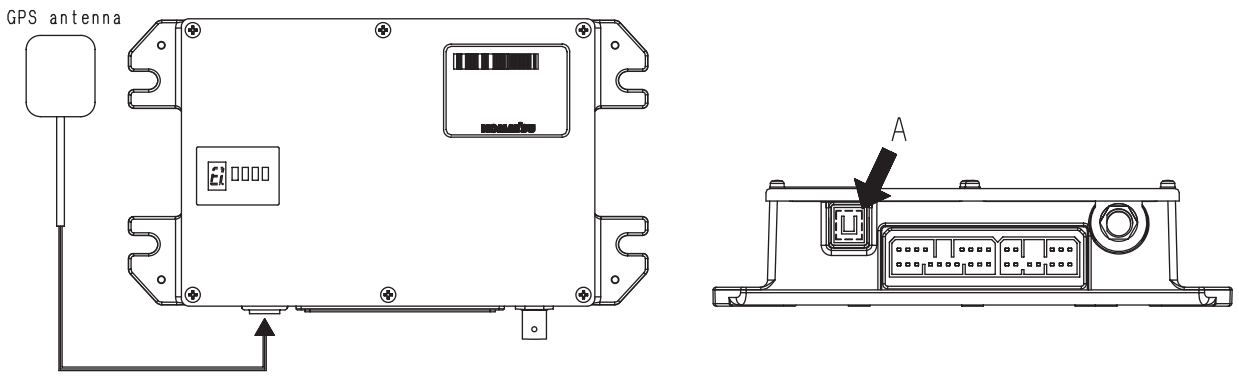
No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective KOMTRAX terminal	The KOMTRAX terminal is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [D862KA]

Action level	Failure code	Failure phenomenon	DISC) GPS Antenna (KOMTRAX system)
-	D862KA		
Detail of failure	KOMTRAX senses GPS antenna open circuit.		
Action of controller	• None • When the cause of failure is corrected, the vehicle will be restored by itself.		
Problem on lift truck	GPS positioning is not possible.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective GPS antenna or antenna cable	There is a possibility of a defective GPS antenna, open or short circuit in the antenna cable, or defective connection of the GPS antenna cable (A).

Circuit diagram of KOMTRAX



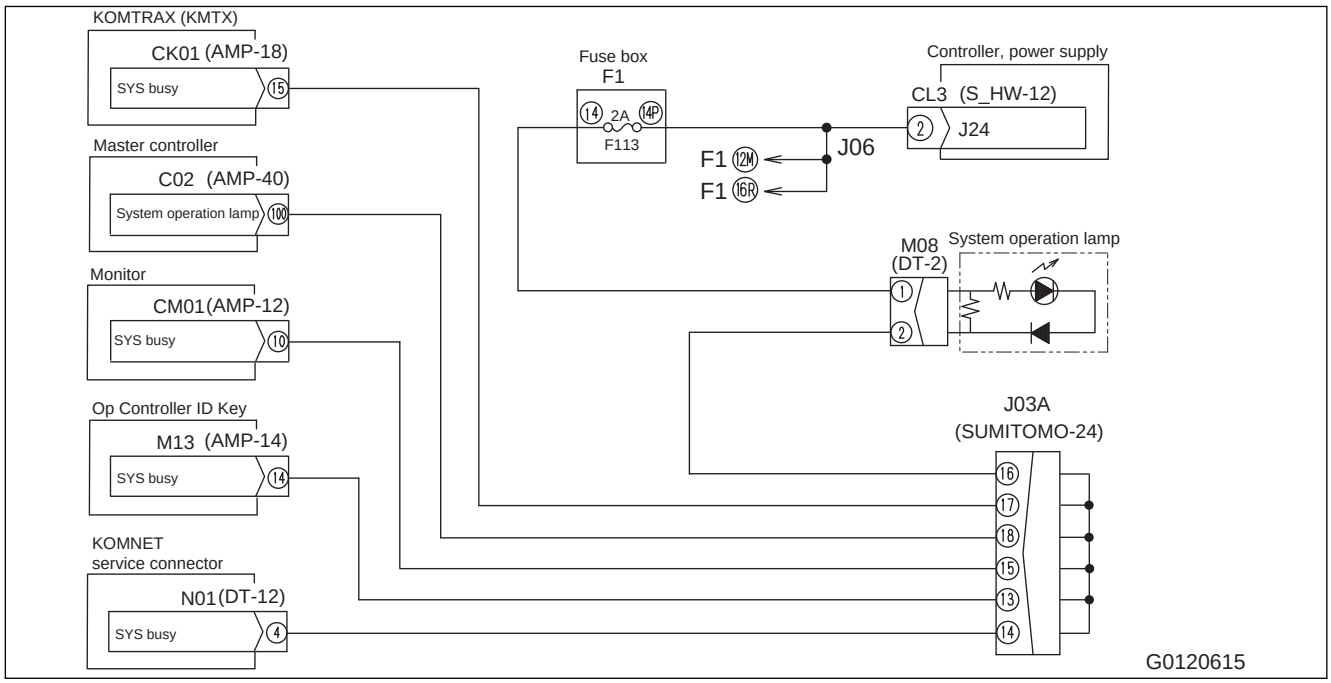
G0120631

FAILURE CODE [D8ALKA]

Action level	Failure code	Failure phenomenon	DISC) SYS-OPE Lamp (KMTX) (KOMTRAX system)
-	D8ALKA		
Detail of failure	KOMTRAX senses an open circuit because the voltage of the system operating lamp output line is approximately 5V or less for approximately 3 seconds after the starting switch is turned to the ON position and before KOMTRAX sends an output.		
Action of controller	Turns the system operating lamp output to OFF.		
Problem on lift truck	While the system operating lamp comes on, do not disconnect the battery plug W50. If the battery plug W50 is disconnected, data stored in the KOMTRAX memory can have damage.		
Related information	• You cannot turn on the system operating lamp from KOMTRAX, but there is no problem unless the battery plug W50 is disconnected. • When the system operating lamp is on, the output voltage is at low level. • Since no controller activates the system operating lamp for approximately 3 seconds after the starting switch is turned to the ON position, an open circuit can be found. • How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. When this failure code is active or left in the abnormality record, you cannot examine whether the controller shuts down correctly even if the system operating lamp is turned off. In this case, turn the starting switch to the OFF position. Wait for 10 minutes or more. Then, disconnect the battery plug W50. 3. Remove fuse F113. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F113	Continuity
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. When this failure code is active or left in the abnormality record, you cannot examine whether the controller shuts down correctly even if the system operating lamp is turned off. In this case, turn the starting switch to the OFF position. Wait for 10 minutes or more. Then, disconnect the battery plug W50. 3. Disconnect the connectors CK01, M08, and CL3. Connect a T-adapter to the female side of CK01 and M08 to do the troubleshooting.		
		Resistance	Between M08 (female) (1) and CL3 (male) (2)	Max. 1Ω
			Between CK01 (female) (15) and M08 (female) (2)	Max. 1Ω
3	Defective KOMTRAX terminal	If no failure is found by the above checks, KOMTRAX terminal is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of system operating lamp

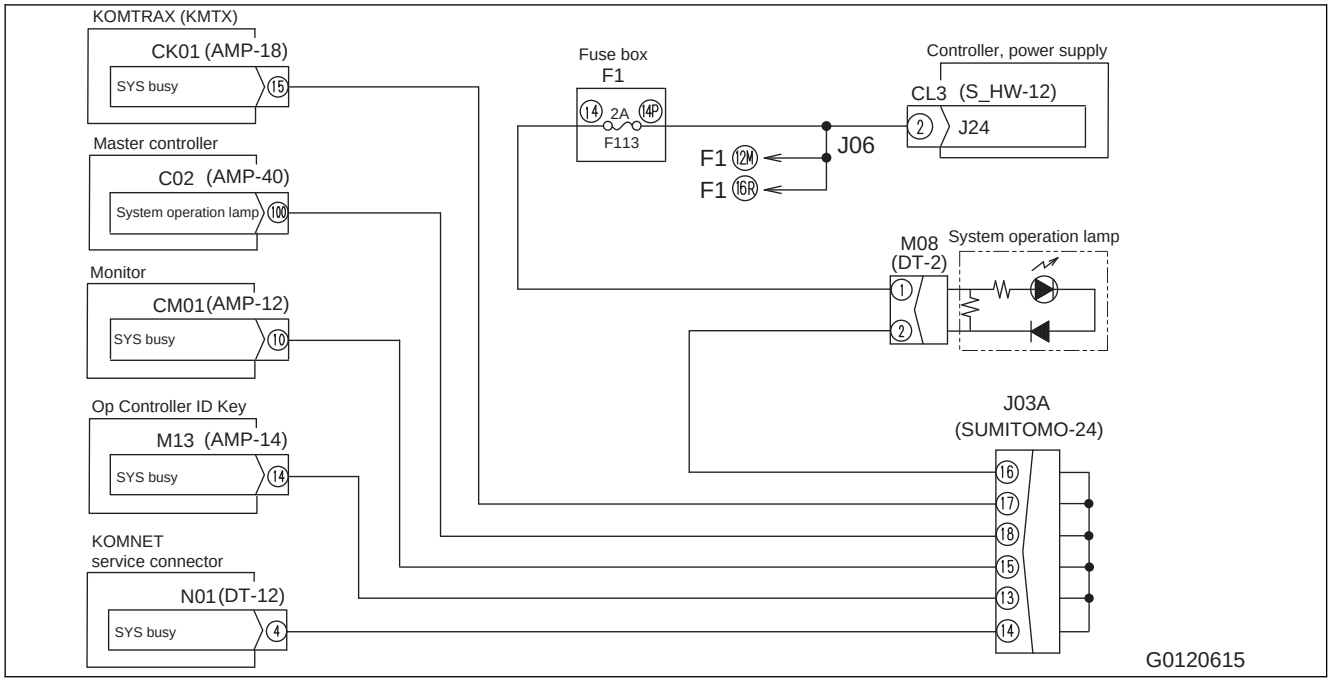


FAILURE CODE [D8ALKB]

Action level	Failure code	Failure phenomenon	SHORT) SYS-OPE Lamp (KMTX) (KOMTRAX system)
-	D8ALKB		
Detail of failure	KOMTRAX senses a short circuit because the output voltage does not become Low when it sends an output to the system operating lamp.		
Action of controller	Turns the system operating lamp output to OFF.		
Problem on lift truck	If the system operating lamp does not come on, data stored in the KOMTRAX memory can be broken.		
Related information	• You cannot turn on the system operating lamp from KOMTRAX, but there is no problem unless the battery plug W50 is disconnected. • When the system operating lamp is on, the output voltage is at low level. • How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. When this failure code is active or left in the abnormality record, you cannot examine whether the controller shuts down correctly even if the system operating lamp is turned off. In this case, turn the starting switch to the OFF position. Wait for 10 minutes or more. Then, disconnect the battery plug W50. 3. Disconnect the connectors C02, CM01, CK01, M13, M08 and CL3. Connect the T-adapter to the female side of M08 to do the troubleshooting.		
		Resistance	Between M08 (female) (1) and (2)	Min. 1MΩ
2	Defective KOMTRAX terminal	If no failure is found by the above checks, KOMTRAX terminal is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of system operating lamp



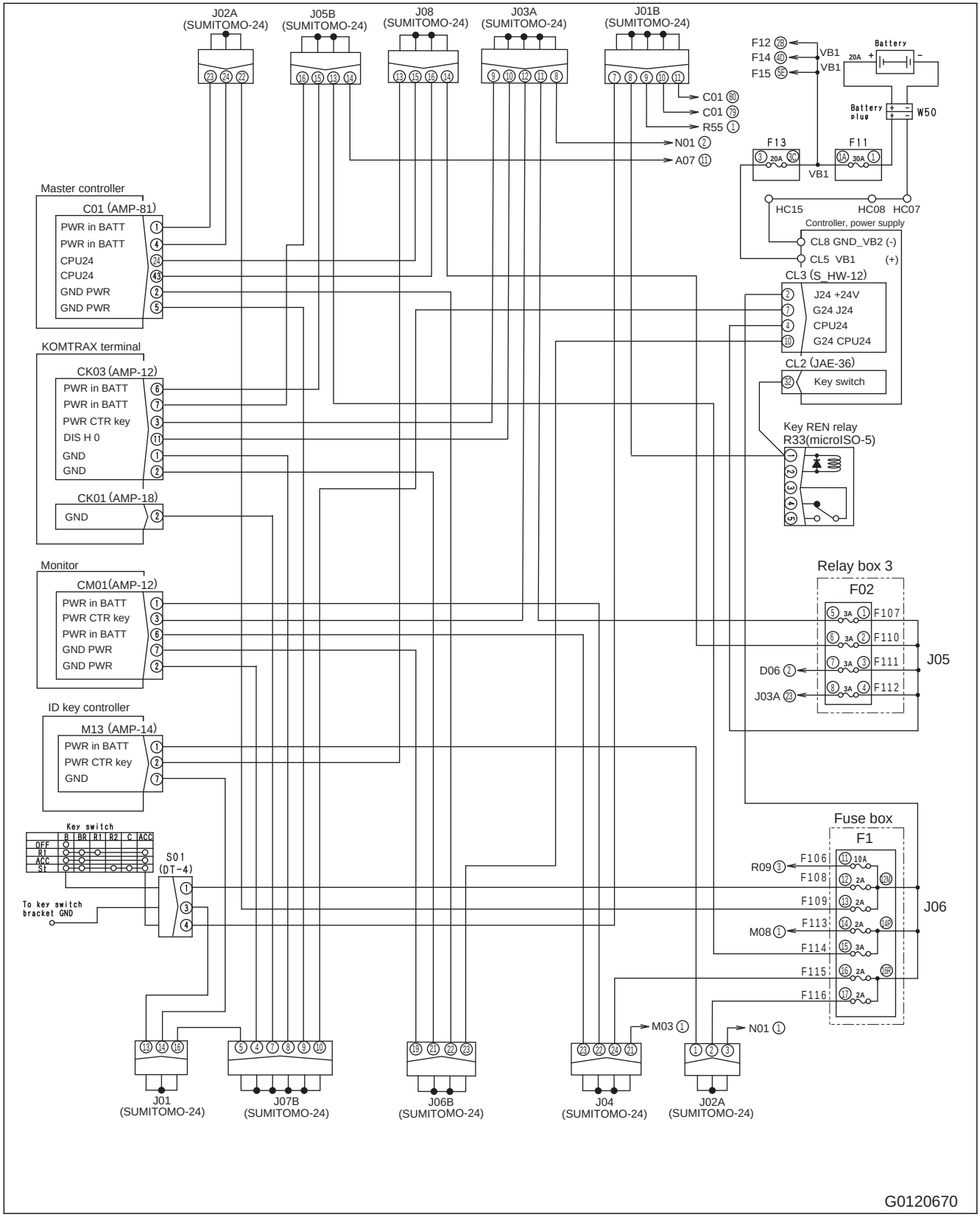
FAILURE CODE [D8AQK4]

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. 2 (KMTX) (Monitor panel system)
L03	D8AQK4		
Detail of failure	While the remote lock is ON, the monitor panel cannot receive the communication from the KOMTRAX terminal for 3 seconds continuously.		
Action of controller	• Gives only a notification. • When a normal communication is received, the vehicle goes back to the correct state.		
Problem on lift truck	• The remote lock cannot be released. • Data cannot be sent to KOMTRAX.		
Related information	• When failure codes [DBNRKR] and [F7FQKR] are also shown, the master controller or ID key controller can be defective. (ID key controller is an option) • Start of CAN communication is recognized by each controller and monitor panel by means of the CPU24 signal which is output by the power supply controller when ACC signal of starting switch is received. • Each controller and monitor panel receive the current even if the starting switch is turned to the OFF position. • As the signal of active CAN communication line is pulse voltage, it cannot be measured with a multimeter. • The 120Ω of termination resistor of the CAN communication line is in N03 and in monitor panel. • Reproduction method of failure code: Turn the starting switch to the ON position. (When the remote lock is engaged)		

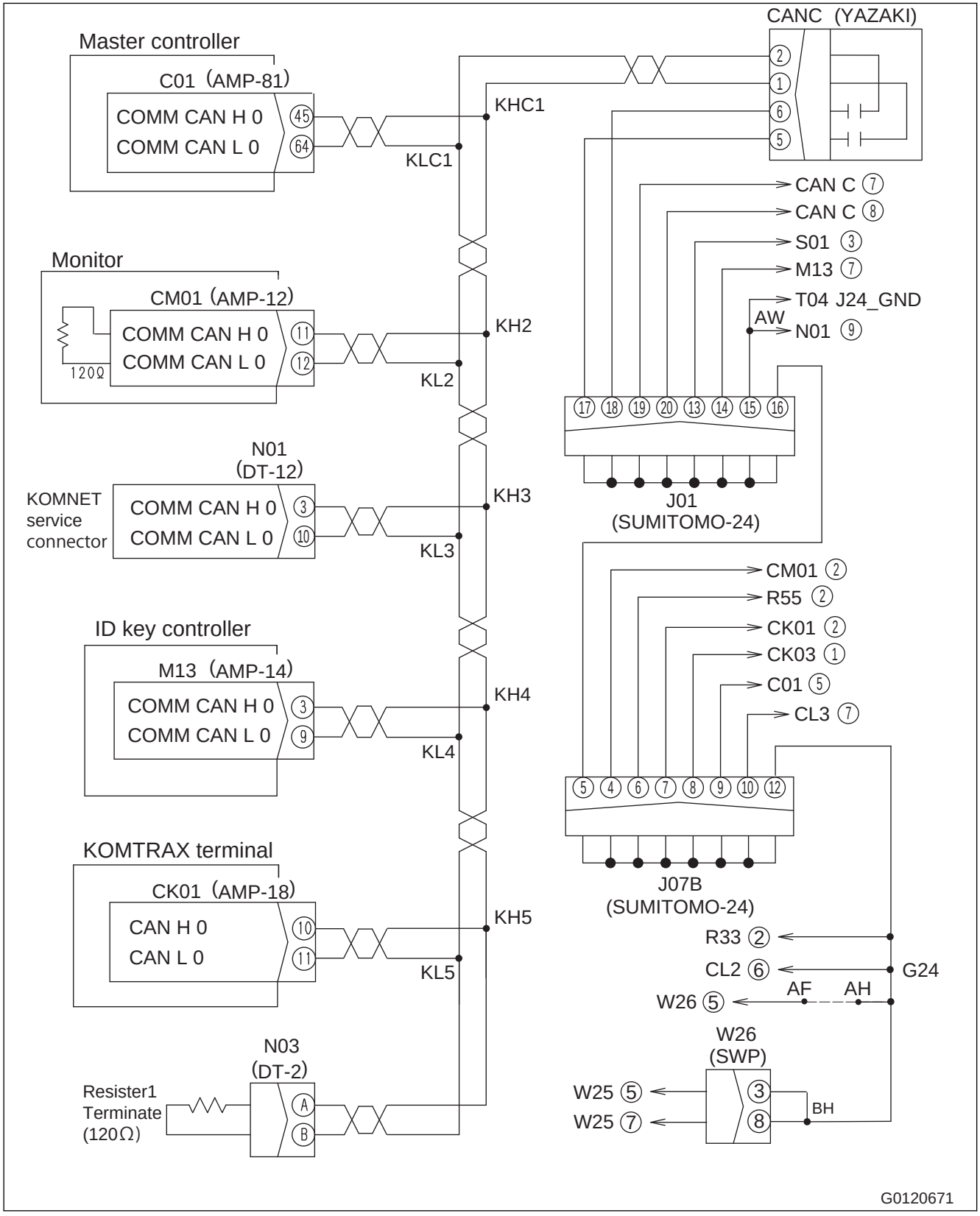
No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective CAN communication system	When the failure code [DBNRKR] is shown, do the troubleshooting for [DBNRKR] first.		
2	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuses F107 and F114. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If a fuse is blown out, the wiring harness probably has ground fault.		
		Continuity	Between two terminals of F107	Continuity
			Between two terminals of F114	Continuity

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="5">3</td><td rowspan="5">Defective power supply system to KOMTRAX terminal</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector CK03. Connect the T-adapter to the female side.
4. Connect the battery plug W50.
5. Turn the starting switch to the ON position. Then, do the troubleshooting.
REMARK
If a failure is found, the wiring harness is defective.</td></tr>
<tr><td rowspan="3">Voltage</td><td>Between CK03 (female) (6) and (1)</td><td>Approx. 24V</td></tr>
<tr><td>Between CK03 (female) (7) and (2)</td><td>Approx. 24V</td></tr>
<tr><td>Between CK03 (female) (3) and (1)</td><td>Approx. 24V</td></tr>
<tr><td rowspan="4">4</td><td rowspan="4">Open circuit in wiring harness
(wire breakage or defective contact of connector)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors CM01 and CK01. Connect the T-adapter to each female side to do the troubleshooting.</td></tr>
<tr><td rowspan="2">Resistance</td><td>Between CM01 (female) (11) and CK01 (female) (10)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CM01 (female) (12) and CK01 (female) (11)</td><td>Max. 1Ω</td></tr>
<tr><td>5</td><td>Defective KOMTRAX terminal</td><td colspan="3">If no failure is found by the above checks, KOMTRAX terminal is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of monitor panel power supply



Circuit diagram of CAN communication



FAILURE CODE [D8AQKR]

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. 2 (KMTX) (Monitor panel system)
-	D8AQKR		
Detail of failure	The monitor panel cannot receive the communication from KOMTRAX for 3 seconds continuously.		
Action of controller	• Gives only an announcement. • When a normal communication is received, the vehicle goes back to the correct state.		
Problem on lift truck	Data cannot be sent to KOMTRAX.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective CAN communication system	Do the troubleshooting for failure code [D8AQK4].

FAILURE CODE [DAF0KT]

Action level	Failure code	Failure phenomenon	ABNL) EEPROM (MON) (Monitor panel system)
L03	DAF0KT		
Detail of failure	An abnormality is sensed when the data stored in the monitor panel memory is read.		
Action of controller	• Gives only an announcement. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The SMR or vehicle setting, etc. is possibly incorrect.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective monitor panel	The monitor panel is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [DAF0MB]

Action level	Failure code	Failure phenomenon	ABNL) Monitor ROM (Monitor panel system)
-	DAF0MB		
Detail of failure	The monitor panel senses an abnormality of the internal ROM.		
Action of controller	None.		
Problem on lift truck	• The monitor panel display is unreliable. • The monitor panel cannot send and receive data to and from each controller normally.		
Related information	• Abnormality announcements are not sent to the monitor. • How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective monitor panel	The monitor panel is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [DAF0MC]

Action level	Failure code	Failure phenomenon	ABNL) Monitor (Monitor panel system)
-	DAF0MC		
Detail of failure	The monitor panel senses a malfunction.		
Action of controller	None.		
Problem on lift truck	• The monitor panel display is unreliable. • The monitor panel cannot send and receive data to and from each controller normally.		
Related information	• Abnormality announcements are not sent to the monitor. • How to reproduce failure code: Turn the starting switch to the ON position.		

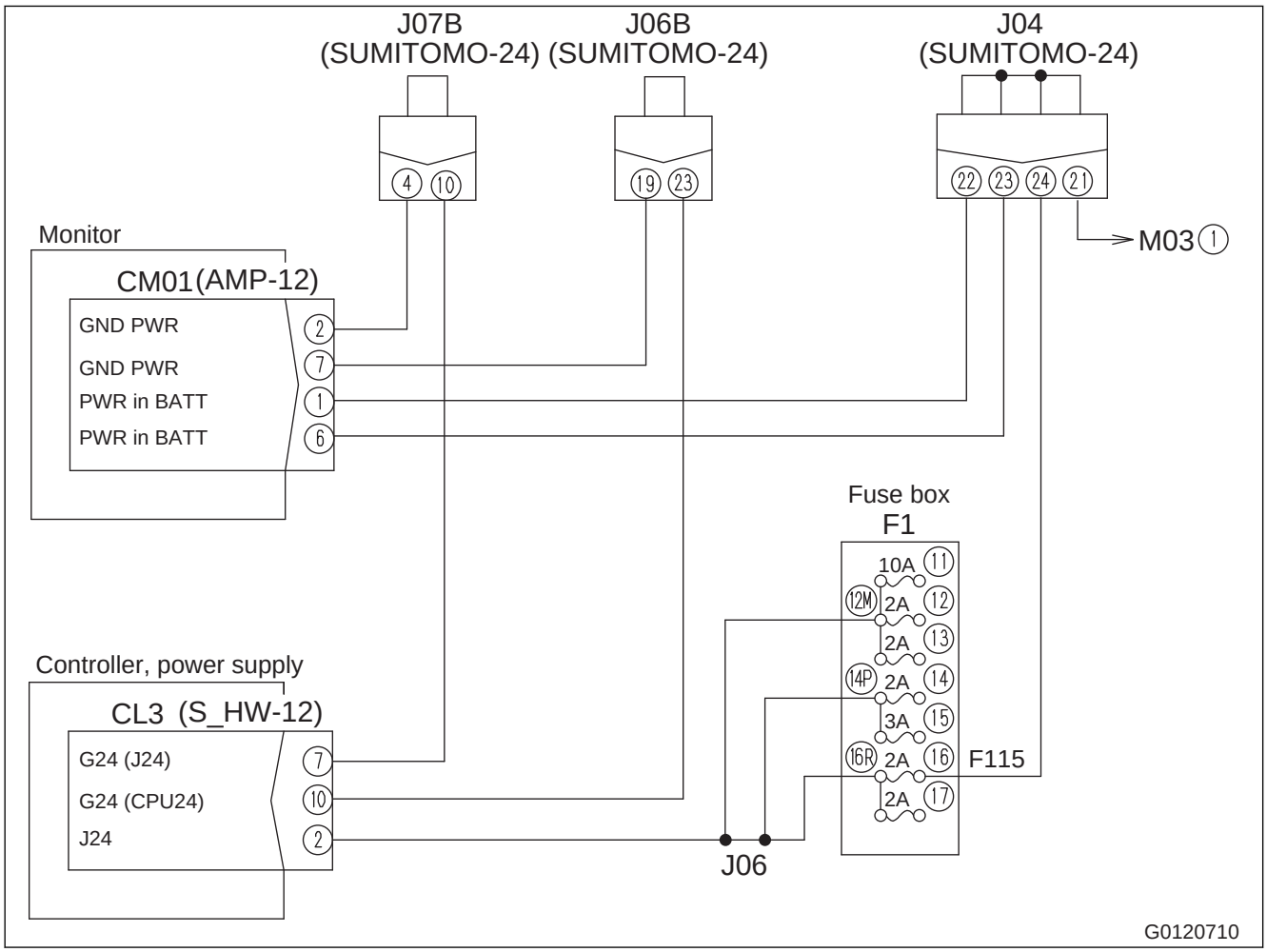
No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective monitor panel	The monitor panel is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [DAF3KK]

Action level	Failure code	Failure phenomenon	LOW) Power Source (MON) (Monitor panel system)
-	DAF3KK		
Detail of failure	A low power source voltage supplied to the monitor panel is sensed.		
Action of controller	None.		
Problem on lift truck	If no data is got, no value is shown.		
Related information	• Abnormality announcement is not sent to the monitor panel. • How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuse F115. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F115	Continuity
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CL3 and CM01. Connect the T-adapter to the female side of CM01 to do the troubleshooting.		
		Resistance	Between CM01 (female) (1) or (6) and CL3 (male) (2)	Max. 1 Ω
3	Short circuit in wiring harness (Contact with GND circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CM01. Connect the T-adapter to the female side to do the troubleshooting.		
		Resistance	Between CM01 (female) (1) or (6) and (2)	Min. 1MΩ
4	Defective power supply controller	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CM01. Connect the T-adapter to the female side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between CM01 (female) (1) or (6) and (2)	20 to 30 V
5	Defective monitor panel	If no failure is found by the above checks, the monitor panel is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of main power supply



FAILURE CODE [DAFGMC]

Action level	Failure code	Failure phenomenon	ABNL) GPS Module (KOMTRAX system)
-	DAFGMC		
Detail of failure	KOMTRAX senses malfunction of the GPS module.		
Action of controller	None.		
Problem on lift truck	The KOMTRAX system does not operate correctly.		
Related information	• Abnormality announcements are not sent to the monitor. • How to reproduce failure code: Turn the starting switch to the ON position.		

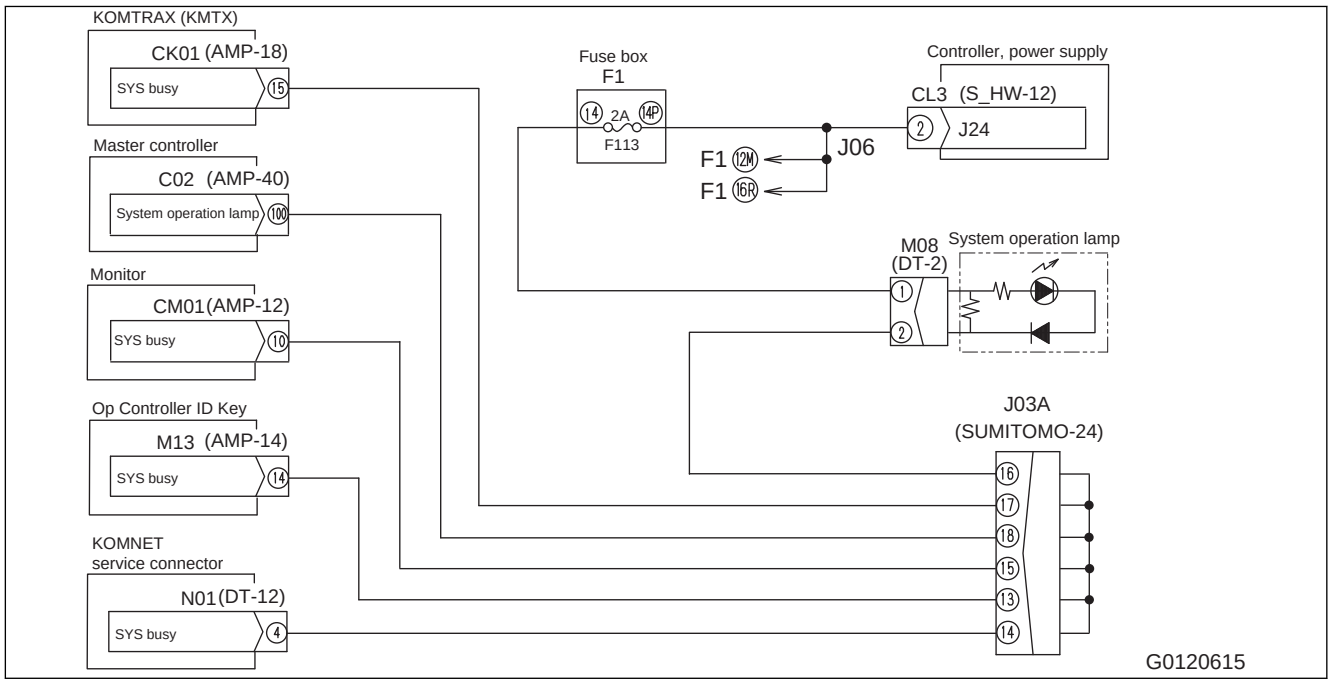
No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective GPS module	The GPS module of the KOMTRAX terminal is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [DAFLKA]

Action level	Failure code	Failure phenomenon	DISC) SYS-OPE Lamp (MON) (Monitor panel system)
-	DAFLKA		
Detail of failure	The monitor panel senses an open circuit because the voltage of the system operating lamp output line is approximately 5V or less for approximately 3 seconds after the starting switch is turned to the ON position and before the monitor panel sends an output.		
Action of controller	Turns the system operating lamp output to OFF.		
Problem on lift truck	While the system operating lamp comes on, do not disconnect the battery plug W50. If the battery plug W50 is disconnected, data stored in the monitor panel memory can have damage.		
Related information	• You cannot turn on the system operating lamp from the monitor panel, but there is no problem unless the battery plug W50 is disconnected. • When the system operating lamp is on, the output voltage is at low level. • Since no controller activates the system operating lamp for approximately 3 seconds after the starting switch is turned to the ON position, an open circuit can be found. • How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. When this failure code is active or left in the abnormality record, you cannot examine whether the controller shuts down correctly even if the system operating lamp is turned off. In this case, turn the starting switch to the OFF position. Wait for 10 minutes or more. Then, disconnect the battery plug W50. 3. Remove fuse F113. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F113	Continuity
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. When this failure code is active or left in the abnormality record, you cannot examine whether the controller shuts down correctly even if the system operating lamp is turned off. In this case, turn the starting switch to the OFF position. Wait for 10 minutes or more. Then, disconnect the battery plug W50. 3. Disconnect the connectors CM01, M08, and CL3. Connect a T-adapter to the female side of CM01 and M08 to do the troubleshooting.		
		Resistance	Between M08 (female) (1) and CL3 (male) (2)	Max. 1Ω
			Between CM01 (female) (10) and M08 (female) (2)	Max. 1Ω
3	Defective monitor panel	If no failure is found by the above checks, the monitor panel is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of system operating lamp

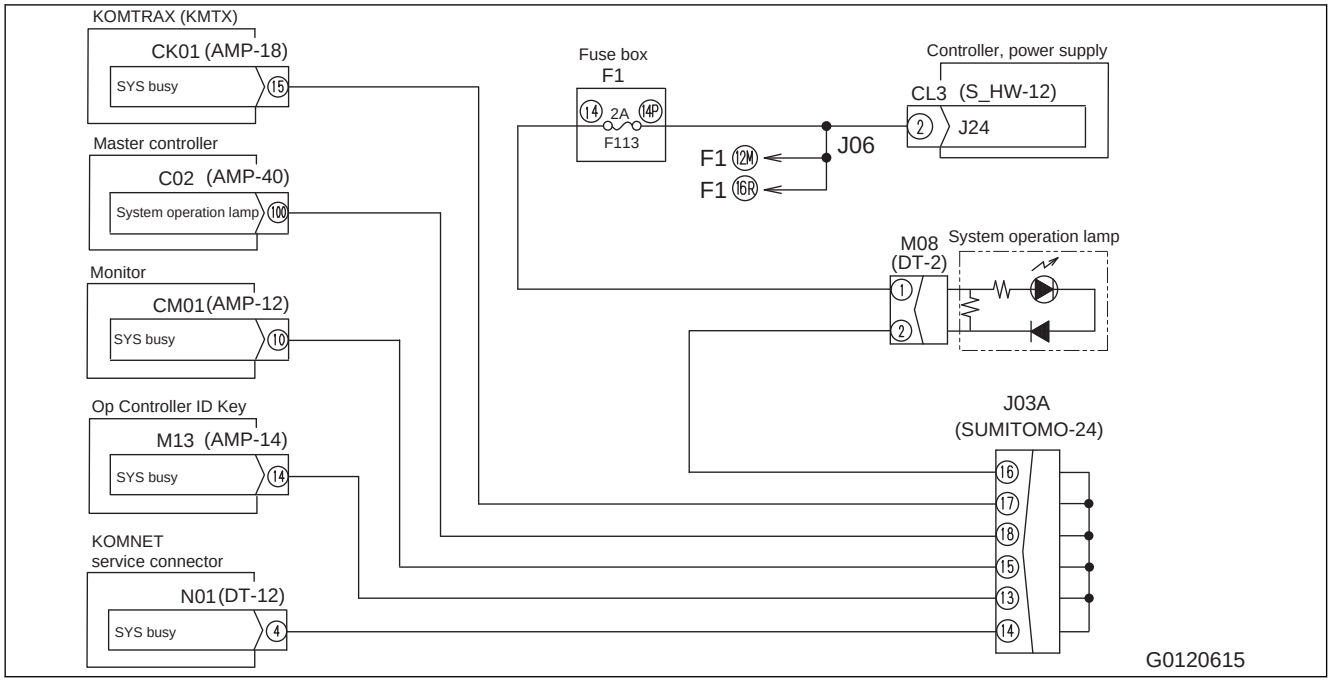


FAILURE CODE [DAFLKB]

Action level	Failure code	Failure phenomenon	SHORT) SYS-OPE Lamp (MON) (Monitor panel system)
-	DAFLKB		
Detail of failure	The monitor panel senses a short circuit because when it sends an output to the system operating lamp the output voltage does not become Low.		
Action of controller	Turns the system operating lamp output to OFF.		
Problem on lift truck	While the system operating lamp comes on, do not disconnect the battery plug W50. If the battery plug W50 is disconnected, data stored in the monitor panel memory can have damage.		
Related information	• You cannot turn on the system operating lamp from the monitor panel, but there is no problem unless the battery plug W50 is disconnected. • When the system operating lamp is on, the output voltage is at low level. • How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. When this failure code is active or left in the abnormality record, you cannot examine whether the controller shuts down correctly even if the system operating lamp is turned off. In this case, turn the starting switch to the OFF position. Wait for 10 minutes or more. Then, disconnect the battery plug W50. 3. Disconnect the connectors C02, CM01, CK01, M08 and CL3. Connect a T-adapter to the female side of M08 to do the troubleshooting.		
		Resistance	Between M08 (female) (1) and (2)	Min. 1MΩ
2	Defective monitor panel	If no failure is found by the above checks, the monitor panel is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of system operating lamp



FAILURE CODE [DAFQKR]

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (MON) (sensed by KOMTRAX terminal) (KOMTRAX system)
-	DAFQKR		
Detail of failure	KOMTRAX senses defective communication with the monitor panel.		
Action of controller	None.		
Problem on lift truck	None.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective power supply to monitor panel	Do the troubleshooting for failure code [DAF3KK].
2	Defective CAN communication	Do the checks on causes 4 to 7 for failure code [DBNRKR].

FAILURE CODE [DBN000]

Action level	Failure code	Failure phenomenon	ABNL) EEPROM (M/C) (Master controller system)
L01	DBN000		
Detail of failure	When the memory (EEPROM) is read at startup, the CRC of the main area or backup area does not align the calculated value.		
Action of controller	When the error is in the main area, it uses the data of the backup area. When the error is in the backup area, it uses the data of the main area.		
Problem on lift truck	None.		
Related information	How to reproduce failure code: Recovers automatically and cannot be reproduced.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective master controller	If the failure occurs again, the master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [DBN0KT]

Action level	Failure code	Failure phenomenon	ABNL) EEPROM (M/C) (Master controller system)
L01	DBN0KT		
Detail of failure	• When memory (EEPROM) readout is done at start, CRC of main area and backup area do not align to the calculated value or reading cannot be done. • The read setting value is out of the setting range.		
Action of controller	• If both of the CRC do not align or data cannot be read from both of the memory areas, overwrites the default settable items in the ones stored in the EEPROM with default values. • If the setting value to be read is out of the setting area: Overwrites with default values for items of which initialization is possible if out of range in the items stored in the EEPROM.		
Problem on lift truck	• The vehicle settings will be initialized. • The operation record information is not stored normally.		
Related information	• Option selections must also be set again. • How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective master controller	The master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [DBN0MC]

Action level	Failure code	Failure phenomenon	RESET) Controller(M/C) (Master controller system)
L01	DBN0MC		
Detail of failure	The master controller is reset by a run-time error.		
Action of controller	• Resets the controller and starts it again. • After it starts again, it shows the error.		
Problem on lift truck	The neutral start function can possibly operate because the master controller is reset and starts again.		
Related information	How to reproduce failure code: Recovers automatically and cannot be reproduced.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective master controller	If the failure occurs again, the master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

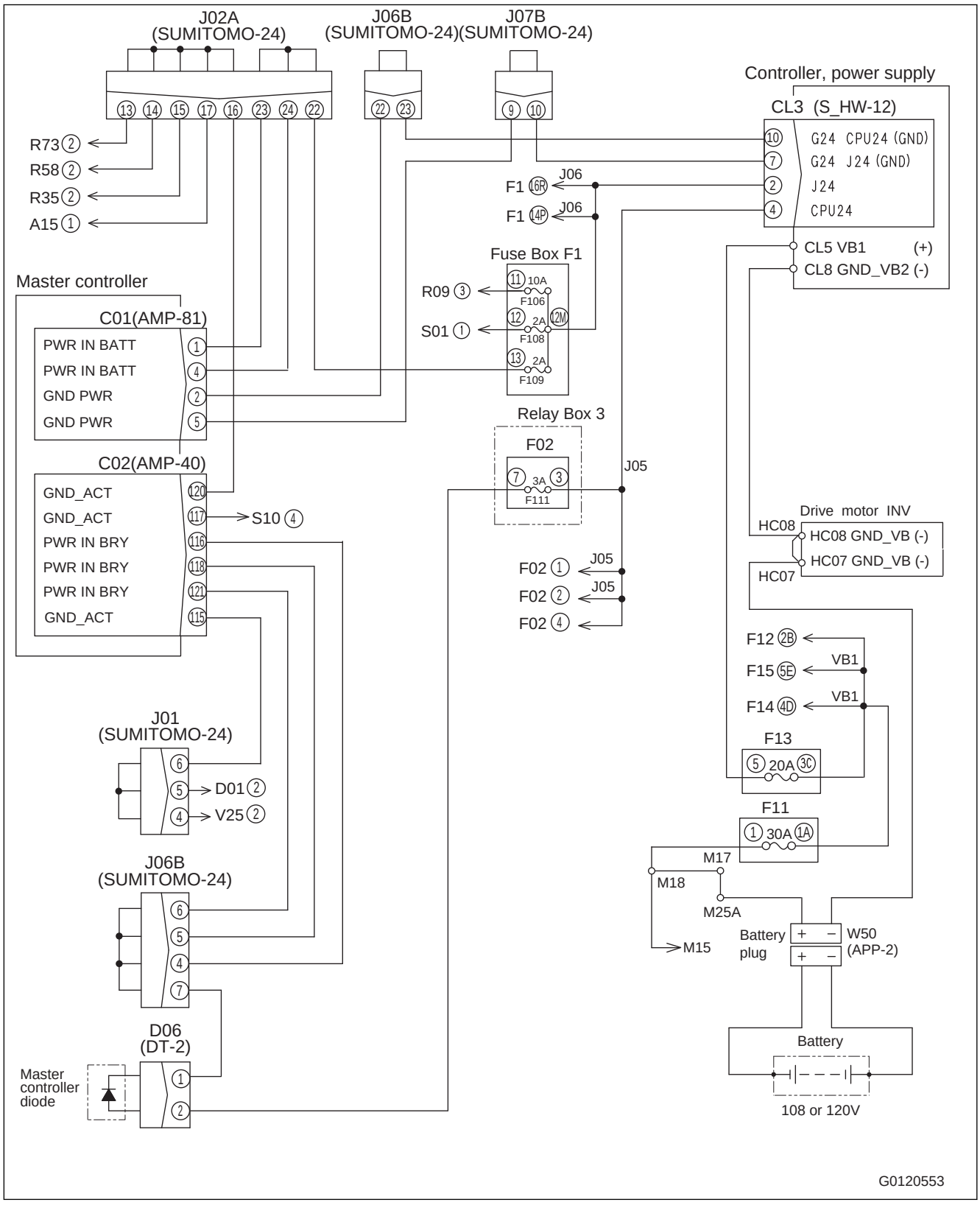
FAILURE CODE [DBN2KK]

Action level	Failure code	Failure phenomenon	LOW) Output Power (M/C) (Master controller system)
L03	DBN2KK		
Detail of failure	Continuous power supply (PWR_IN_BATT) voltage of master controller ≥ 20V and also load power supply (PWR_IN_BRY) voltage ≤ 18V is sensed for 3 seconds continuously.		
Action of controller	• Stops the outputs other than the external OFF signal, MC2 output, MC4 output, and battery charger start relay. • Charge is not possible. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch or AC200V (breaker switch) is turned to the OFF position one time.		
Problem on lift truck	Buzzer, chime and cooling fan stop.		
Related information	• While this error is sensed, the failure of the output from the master controller is not sensed. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuse F111. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F111	Continuity
2	Defective diode D06	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector D06. Connect the T-adapter to male side to do the troubleshooting. **REMARK** Do the measurement with the diode range of the multimeter.		
		Continuity	Between D06 (male) (1) (+) and (2) (-)	No continuity
			Between D06 (male) (2) (+) and (1) (-)	Continuity
3	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect connectors C02, D06 and CL3. Connect the socket to the female side of C02, and connect T-adapter to the female side of D06 to do the troubleshooting.		
		Resistance	Between C02 (female) (116), (118) or (121) and D06 (female) (1)	Max. 1Ω
			Between D06 (female) (2) and CL3 (male) (4)	Max. 1Ω

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="5">4</td><td rowspan="5">Short circuit in wiring harness</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors C02, D06, and CL3. Connect the socket to the female side of C02 to do the troubleshooting.</td></tr>
<tr><td rowspan="3">Resistance</td><td>Between C02 (female) (116), (118) or (121) and (115)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between C02 (female) (116), (118) or (121) and (117)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between C02 (female) (116), (118) or (121) and (120)</td><td>Min. 1MΩ</td></tr>
<tr><td>5</td><td>Defective master controller</td><td colspan="3">If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of load power supply

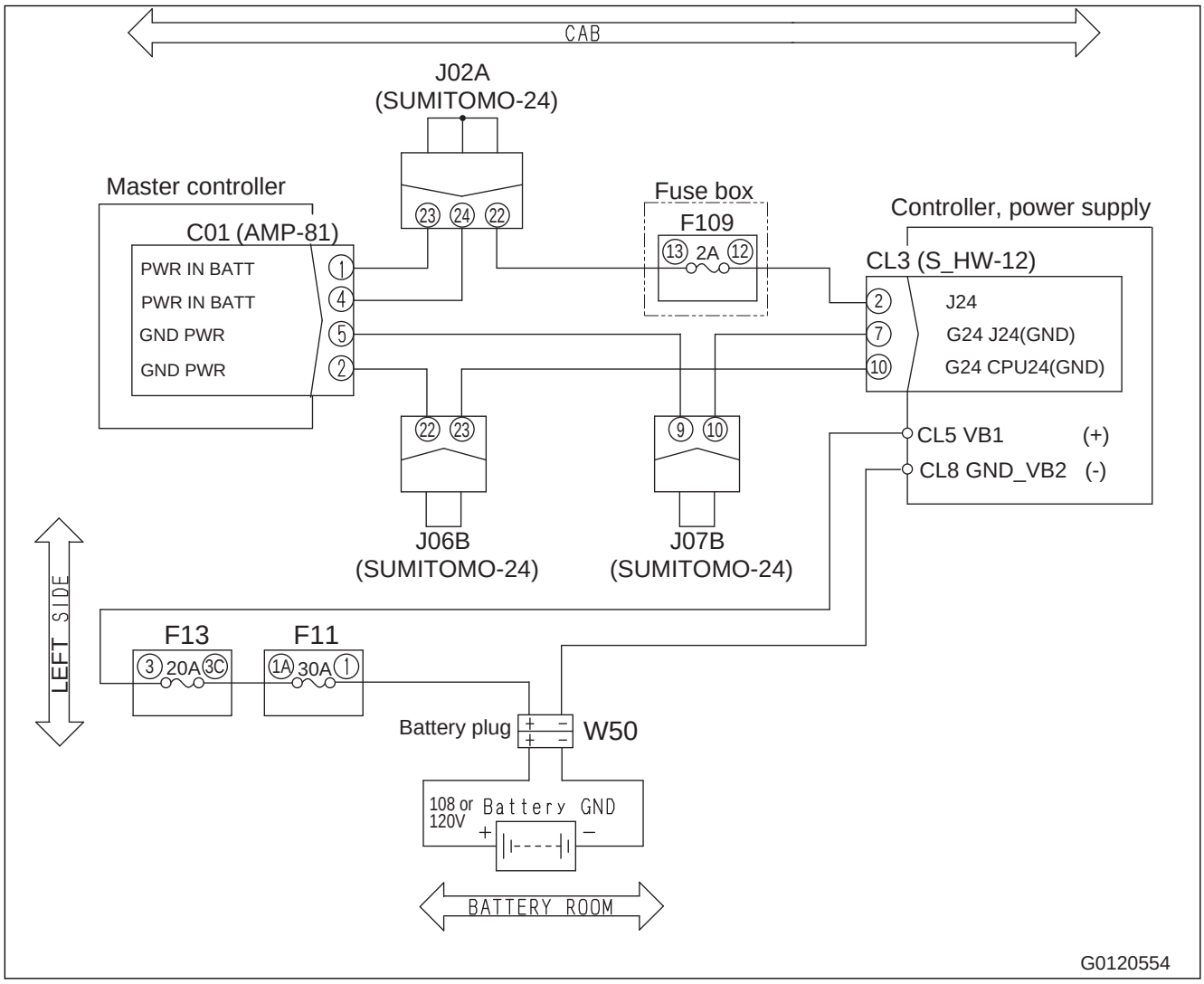


FAILURE CODE [DBN3KK]

Action level	Failure code	Failure phenomenon	LOW) Power Source (M/C) (Master controller system)
L04	DBN3KK		
Detail of failure	A continuous power supply (PWR_IN_BATT) voltage to the master controller of 18V or below is sensed for 2 seconds continuously.		
Action of controller	• Stops output to the travel inverter and pump inverter. • Stops the outputs other than the external OFF signal, MC2 output, MC4 output, and battery charger start relay. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch or AC200V (breaker switch) is turned to the OFF position one time.		
Problem on lift truck	• Travel system and work equipment do not operate. • The PS (power steering) can operate. • Charge is not possible.		
Related information	• While this error is sensed, other failures are not sensed. • Reproduction method of failure code: Turn the starting switch to the ON position or set to charging mode.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuse F109. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F109	Continuity
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CL3 and C01, and connect the socket to the female side of C01 to do the troubleshooting.		
		Resistance	Between C01 (female) (1) or (4) and CL3 (male) (2)	Max. 1Ω
3	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.) 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector C01 and connect the socket to the female side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between C01 (female) (1) or (4) and (2)	Min. 21V
4	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of main power supply

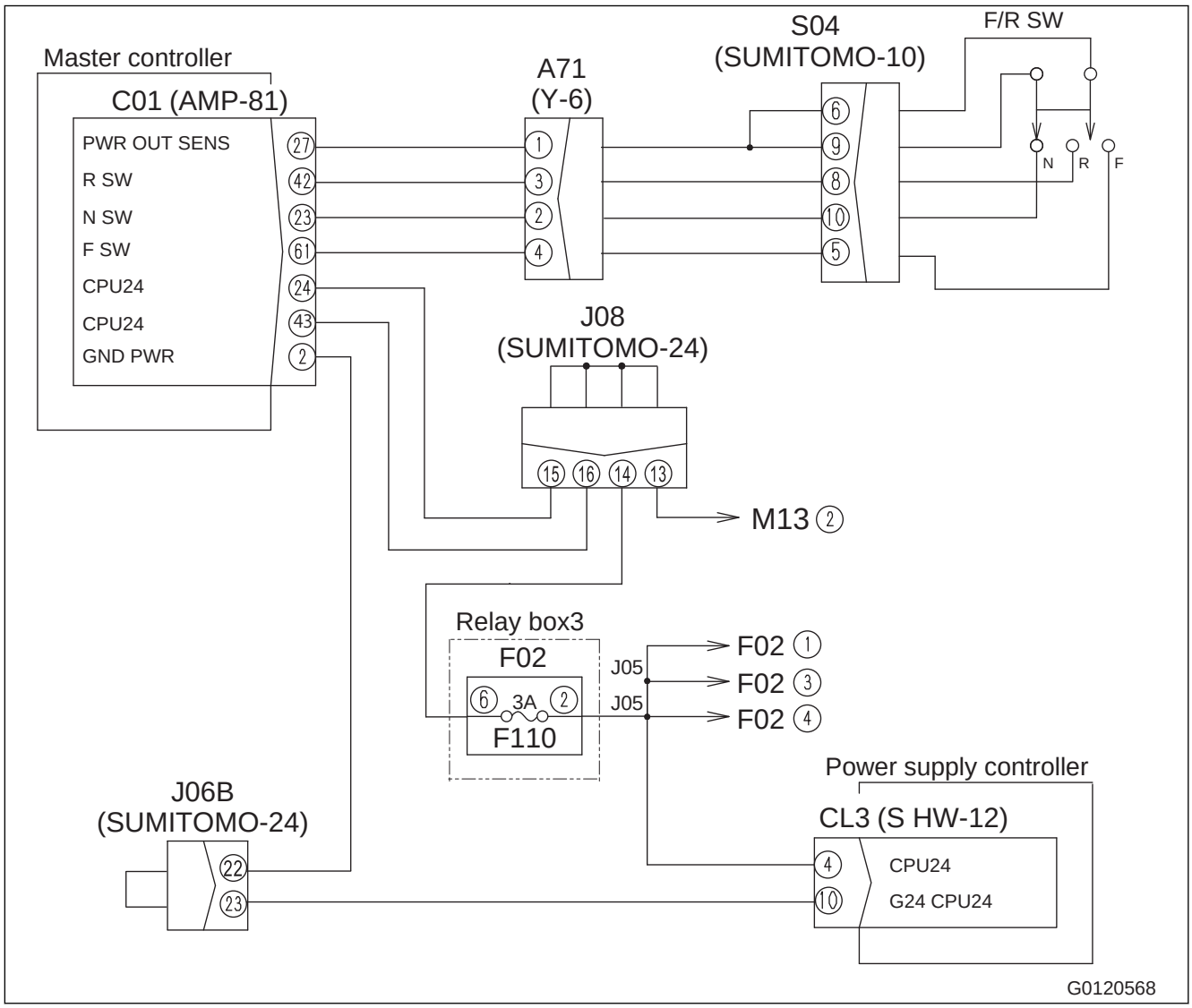


FAILURE CODE [DBN4KX]

Action level	Failure code	Failure phenomenon	OUT OF RNG) SNSR-POWER (24V) (M/C) (Master controller system)
L03	DBN4KX		
Detail of failure	A sensor 24V power supply output of ≤ 19V is sensed continuously for 100msec.		
Action of controller	• Gives only an announcement. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Travel interlock operates and the vehicle cannot move.		
Related information	• This is not sensed in charging mode. • When this error is sensed, failure code [DDK6KA] is shown at the same time. • How to reproduce failure code: Turn the starting switch to the ON position, and set the directional (FNR) lever to F, N, and R.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector C01. Connect the socket to the female side to do the troubleshooting.		
		Resistance	Between C01 (female) (27) and (2)	Min. 1MΩ
2	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of OUT OF RNG) SNSR-POWER (24V)



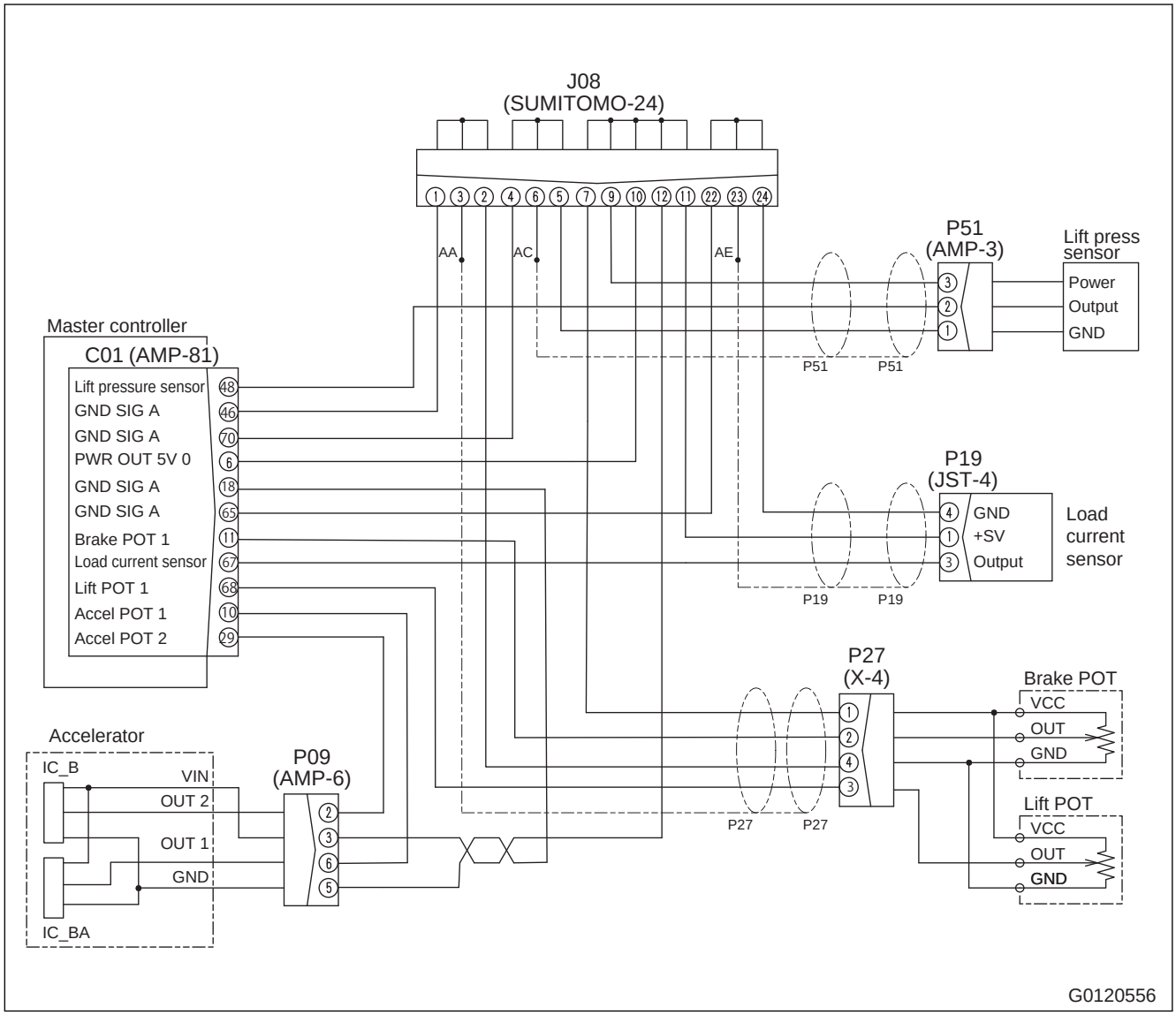
FAILURE CODE [DBN5KX]

Action level	Failure code	Failure phenomenon	OUT OF RANGE) Sensor Power1 (Master controller system)
L04	DBN5KX		
Detail of failure	Sensor 5V power supply 0 output is not between 4.7V and 5.3V is detected for 1 second continuously.		
Action of controller	• Stops output to travel inverter and pump inverter. • Does not integrate the charged electric power. • Does not integrate the power consumption (lifetime accumulation). • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch or AC200V (breaker switch) is turned to the OFF position one time.		
Problem on lift truck	• Travel system and work equipment do not operate. PS (power steering) operates. • The load checker is not shown. • ECO gauge and average power consumption meter do not shown anything.		
Related information	• Failure of analog sensor can be sensed at the same time. • Reproduction method of failure code: Turn the starting switch to the ON position or set to charging mode.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective load current sensor, defective lift potentiometer, defective brake potentiometer, defective lift pressure sensor, defective accelerator (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect connectors of the following sensors one by one. Turn the starting switch to the ON position to do the troubleshooting. **REMARK** • If this failure code turns off, the disconnected sensor is defective. • Because the connector is disconnected, other failure codes are also shown. Ignore all failure codes other than this one. 4. After the troubleshooting, go back to 1.		
		Connector	Load current sensor	P19
			Lift potentiometer, brake potentiometer	P27
			Lift pressure sensor	P51
			Accelerator	P09
2	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect all of the above sensors. 4. Connect the T-adapter to female side of the connectors P51 and P27. 5. Connect the battery plug W50. 6. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between P51 (female) (1) and (3), or between P27 (female) (1) and (4)	4.8 to 5.2V

No.	Cause	Procedure, measurement location, criteria and remarks		
3	Short circuit in wiring harness (contact between 5V line and ground line)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector C01. Connect the socket to the female side of C01 to do the troubleshooting.		
		Resistance	Between C01 (female) (6) and (18)	Min. 1MΩ
			Between C01 (female) (6) and (46)	Min. 1MΩ
			Between C01 (female) (6) and (65)	Min. 1MΩ
			Between C01 (female) (6) and (70)	Min. 1MΩ
4	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of sensor 1 power supply



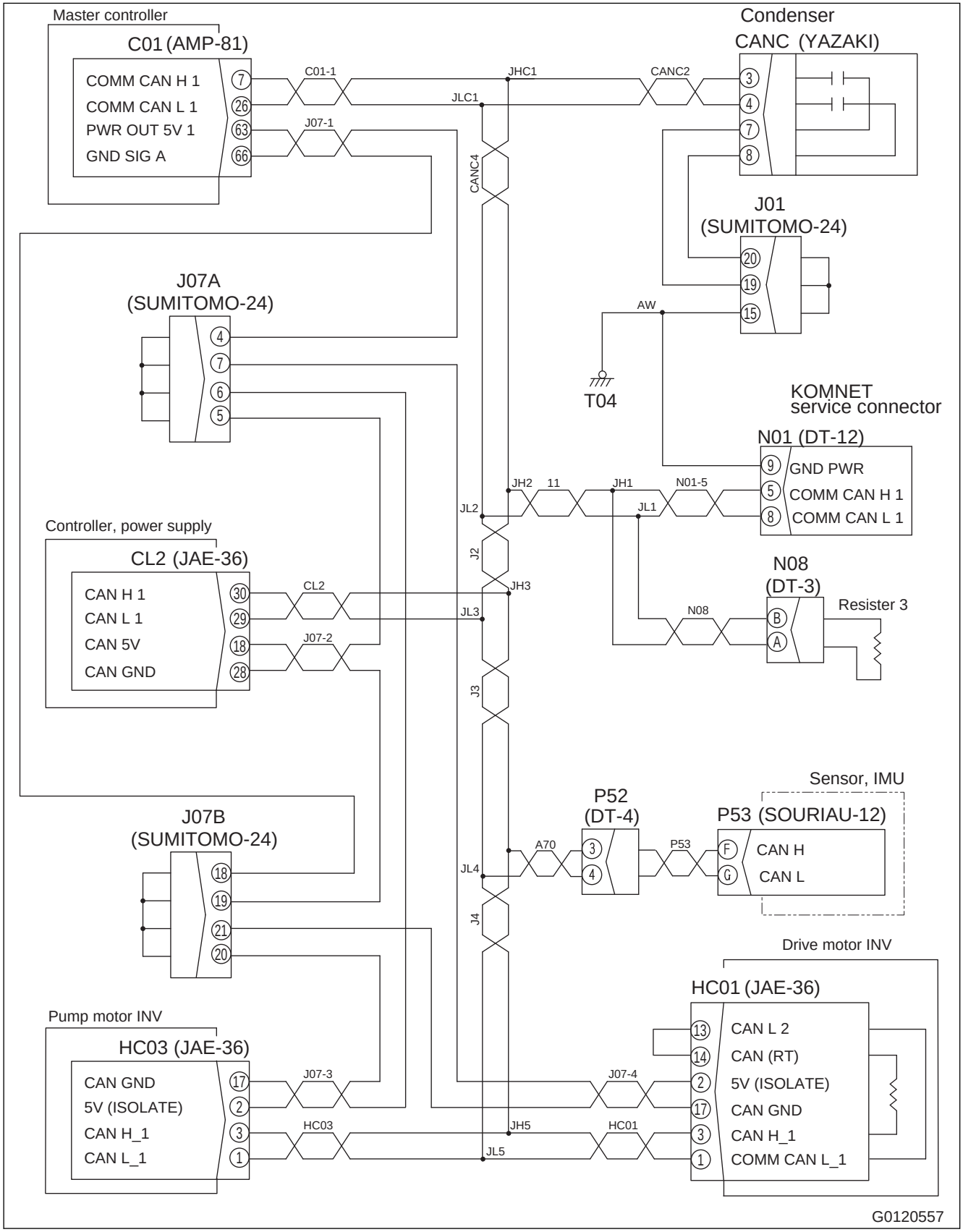
FAILURE CODE [DBN6KX]

Action level	Failure code	Failure phenomenon	OUT OF RANGE) Sensor Power2 (Master controller system)
L03	DBN6KX		
Detail of failure	A sensor 5V power supply_1 output of 4.7V to 5.3V is sensed for 1 second continuously.		
Action of controller	• Gives only an announcement. • When the cause of failure is corrected, the vehicle will be restored by itself.		
Problem on lift truck	If the communication with the travel inverter, pump inverter, and power supply controller is disabled, it will be judged as a CAN communication error. The travel system and work equipment possibly do not operate.		
Related information	• A CAN communication error is possibly sensed at the same time. • How to reproduce failure code: Turn the starting switch to the ON position or set to charging mode.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective travel inverter, pump inverter, power supply controller, or IMU	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors that follow one by one. Each time a connector is disconnected, connect the battery plug W50 and turn the starting switch to the ON position to do the troubleshooting. 4. After the troubleshooting, go back to 1. **REMARK** • If this code is no longer shown, the disconnected device is defective. • Many other failure codes are also shown at the same time. This is because of disconnection of connectors. Ignore failure codes other than this code [DBN6KX].		
		Connector	Travel inverter	HC01
			Pump inverter	HC03
			Power supply controller	CL2
			IMU	P53
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01, HC01, HC03, CL2 and P53 to do the troubleshooting. **REMARK** Measure on the female side for HC01, HC03, CL2, and P53.		
		Resistance	Between HC01 (female) (2) and (17)	Min. 1MΩ
			Between HC03 (female) (2) and (17)	Min. 1MΩ
			Between CL2 (female) (18) and (28)	Min. 1MΩ
			Between P53 (female) (F) to (G)	Min. 1MΩ

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Hot short circuit in wiring harness</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors HC01, HC03, CL2 and P53.
4. Connect the battery plug W50.
5. Turn the starting switch to the ON position. Then, do the troubleshooting.</td></tr>
<tr><td>Voltage</td><td>One of between HC01 (female) (2) and (17), between HC03 (female) (2) and (17), between CL2 (18) and (28), and between P53 (F) and (G)</td><td>4.8 to 5.2V</td></tr>
<tr><td>4</td><td>Defective master controller</td><td colspan="3">If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of sensor 2 power supply



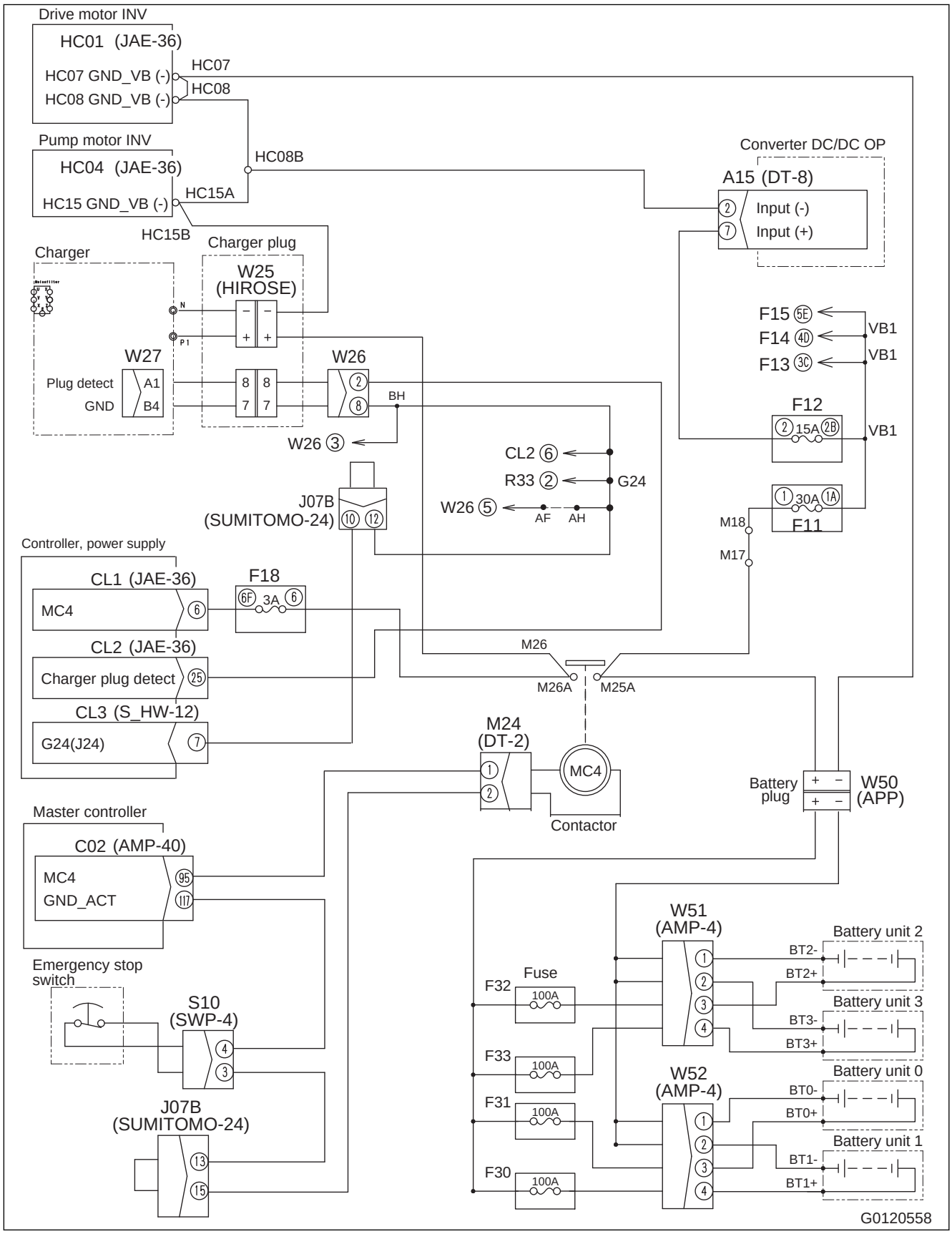
FAILURE CODE [DBN7KA]

Action level	Failure code	Failure phenomenon	DISC) MC4 (M/C) (Master controller system)
L03	DBN7KA		
Detail of failure	A low voltage occurs in the battery charger system while the output to the main contactor (MC4) is ON because of an open circuit in the main contactor (MC4).		
Action of controller	Stops the charge		
Problem on lift truck	The battery cannot be charged.		
Related information	• You can examine the charge system voltage with the monitor panel. (Code: 56550 (V)) • Reproduction method of failure code: Start charge.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuse F18. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F18	Continuity
2	Defective main contactor (MC4) (defective contact, defective coil)	Check contact of MC4. Visual check cannot be done because the contacts are under a cover. So, do these checks. • Examine terminal parts for looseness. • Make sure that the operation sound comes out when a charge is started. **REMARK** If there is foreign matter, remove it.		
		Do a check of the coil resistance of the contactor. 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector M24. Connect the T-adapter to male side to do the troubleshooting.		
		Resistance	Between M24 (male) (1) and (2)	Approx. 15Ω
3	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect terminal M26A. 4. Disconnect the connector CL1 to do the troubleshooting.		
		Resistance	Between M26A (wiring harness side) and CL1 (female) (6)	Max. 1Ω

No.	Cause	Procedure, measurement location, criteria and remarks
4	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)
5	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

Circuit diagram of main contactor 4

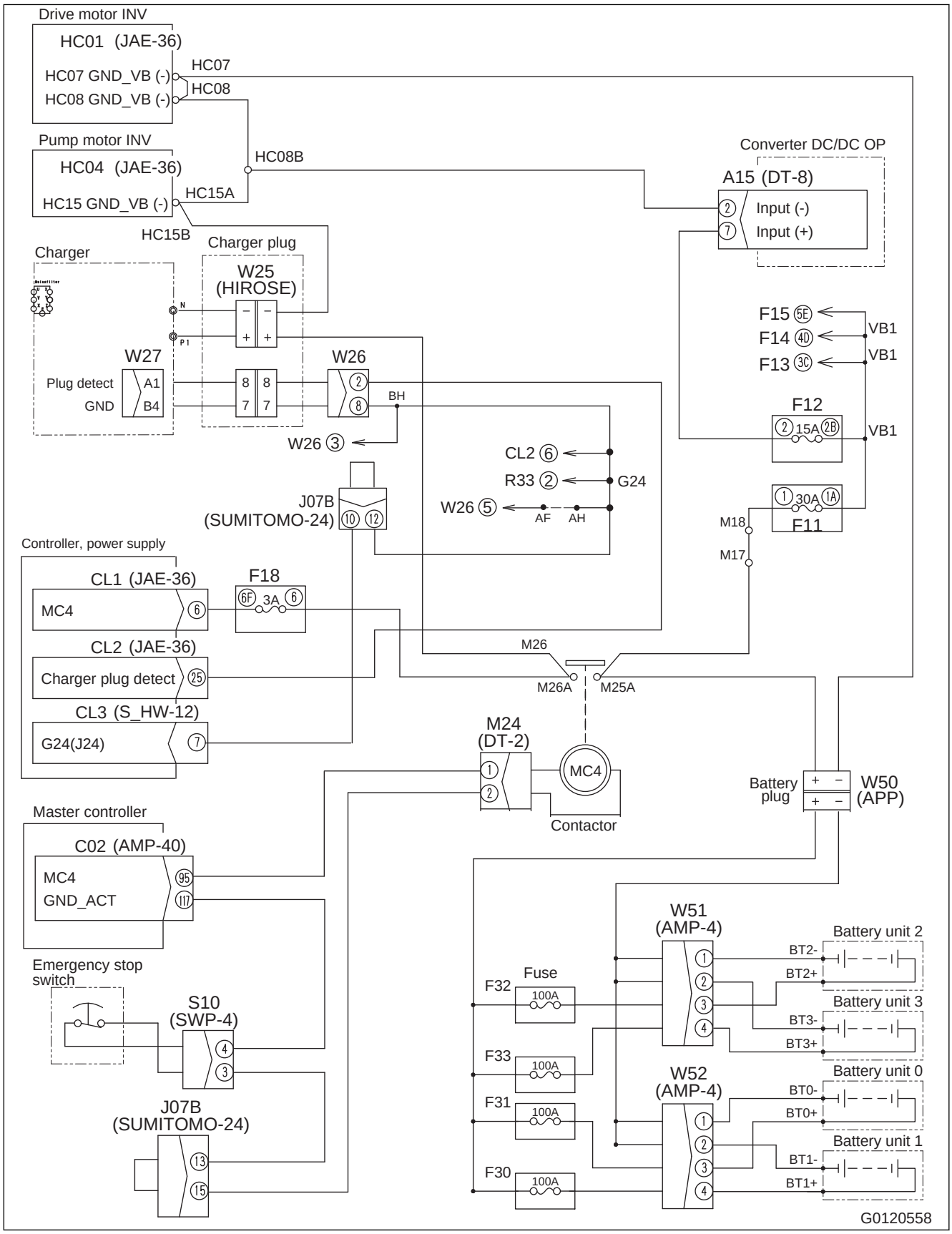


FAILURE CODE [DBN7KB]

Action level	Failure code	Failure phenomenon	SHORT_P) MC4 (M/C) (Master controller system)
L03	DBN7KB		
Detail of failure	An abnormal voltage occurs in the battery charger system while the output to the main contactor (MC4) is OFF because of a short circuit in the main contactor (MC4).		
Action of controller	Stops the charge		
Problem on lift truck	The battery cannot be charged.		
Related information	• You can examine the charge system voltage with the monitor panel. (Code: 56550 (V)) • If charge plug W25 is not connected, this is not sensed. • Reproduction method of failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective main contactor (MC4) (Contacts melted and stuck together)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the terminals M25A, M26 and M26A to do the troubleshooting.		
		Resistance	Between M25A (contactor side) and M26A (contactor side)	Min. 1MΩ
2	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the terminals M25A, M26 and M26A to do the troubleshooting.		
		Resistance	Between M25A (wiring harness side) and M26A (wiring harness side)	Min. 1MΩ
3	Charge plug W25 connection detection Short circuit in signal	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Make sure that charge plug W25 is disconnected. 4. Disconnect the connector CL2 and CL3 to do the troubleshooting.		
		Resistance	Between CL2 (female) (25) and CL3 (male) (7)	Min. 1MΩ
4	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		
5	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of main contactor 4



FAILURE CODE [DBN9KQ]

Action level	Failure code	Failure phenomenon	MISMATCH) Model Select (Master controller system)
L03	DBN9KQ		
Detail of failure	The model selection setting on the monitor panel is different from the model selection setting saved in the master controller.		
Action of controller	• None. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	None.		
Related information	• This failure code can be sensed when the master controller or the monitor panel is replaced. • If a memory abnormality occurs in the master controller or the monitor panel, this failure code can be shown. • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Inconsistency by replacement of master controller or monitor panel	Do a model selection setting on the monitor panel.

FAILURE CODE [DBNCMA]

Action level	Failure code	Failure phenomenon	MISMATCH) OPT-Setting (M/C) (Master controller system)
L01	DBNCMA		
Detail of failure	The option setting of the monitor panel is different from that stored in the master controller memory.		
Action of controller	• Operates with the setting stored in the master controller memory. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	If the actual installation state of optional equipment is different from the setting stored in the memory, incorrect detection occurs in failure detection.		
Related information	• This failure code can be sensed when the master controller or the monitor panel is replaced. • If a memory abnormality occurs in the master controller or the monitor panel, this failure code can be shown. • How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Inconsistency by replacement of master controller or monitor panel	Do the option setting of monitor panel.

FAILURE CODE [DBNEKR]

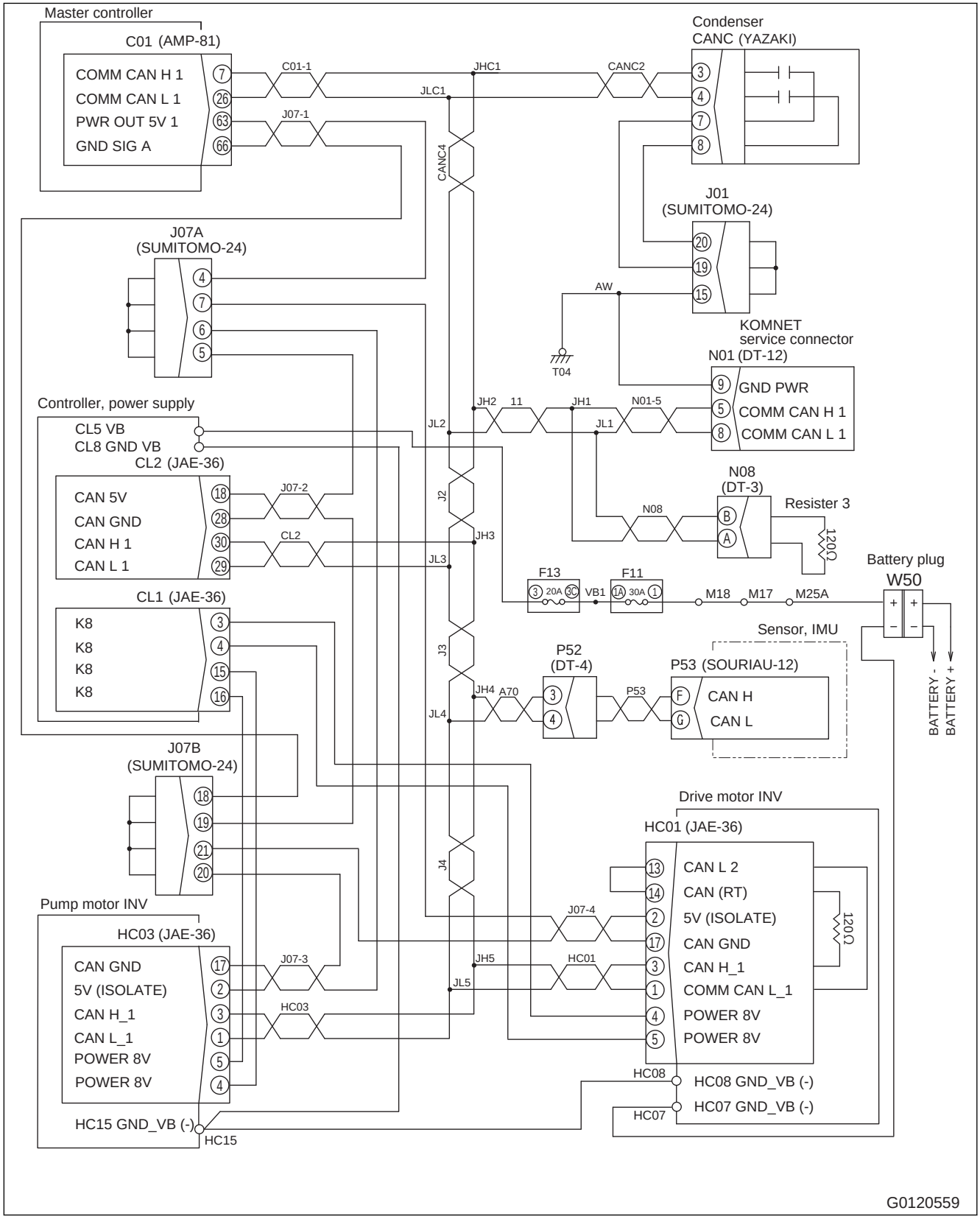
Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (for TRV) (Master controller system)
L04	DBNEKR		
Detail of failure	On the CAN1 communication line, the master controller cannot receive the communication from the travel inverter for 3 seconds continuously.		
Action of controller	• Stops the output to the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	• The vehicle does not move. • Travel speed is not shown.		
Related information	• If this error is shown, one of the failures below possibly exists. 1. CAN communication with the travel inverter is disabled. 2. Power is not supplied to the travel inverter. 3. 5V power for CAN communication is not supplied to the travel inverter. 4. The CAN communication GND line of the travel inverter has an open circuit. • If the main contactor (MC2) is not turned on, the power of the travel inverter is possibly off. • The GND terminals of the travel inverter are HC07 and HC08. • One of the 120Ω termination resistors of the CAN communication line is in the travel inverter. • The T-adapter of the master controller connector is “socket type box” adapter. The operating voltage cannot be measured with the master controller connector. • As the signal of active CAN communication line is pulse voltage, it cannot be measured with a multimeter. • Reproduction method of failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective CAN terminating resistor	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors N08 and HC01. Connect the T-adapter to the male side of N08 to do the troubleshooting.		
		Resistance	Between N08 (male) (A) and (B)	Approx. 120Ω
			Between HC01 (male) (3) and (14)	Approx. 120Ω

No.	Cause	Procedure, measurement location, criteria and remarks		
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors HC01 and C01, and connect the socket to the female side of C01 to do the troubleshooting.		
		Resistance	Between HC01 (female) (1) and C01 (female) (26)	Max. 1Ω
			Between HC01 (female) (3) and C01 (female) (7)	Max. 1Ω
			Between HC01 (female) (2) and C01 (female) (63)	Max. 1Ω
			Between HC01 (female) (17) and C01 (female) (66)	Max. 1Ω
			Between HC01 (female) (13) and (14)	Max. 1Ω
3	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors HC01, HC03, C01, CL2, P53, N01, N08, and CANC. Connect a socket to the female side of C01 to do the troubleshooting.		
		Resistance	Between C01 (female) (26) and (7)	Min. 1MΩ
			Between C01 (female) (26) and (63)	Min. 1MΩ
			Between C01 (female) (7) and (63)	Min. 1MΩ
			Between C01 (female) (26) and (66)	Min. 1MΩ
			Between C01 (female) (7) and (female) (66)	Min. 1MΩ
			Between C01 (female) (63) and (female) (66)	Min. 1MΩ
4	Defective master controller	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors HC01 and HC03. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between HC01 (female) (2) and (17), or between HC03 (female) (2) and (17)	Approx. 5V
5	Open circuit in wiring harness (K8 line) (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC01 and CL1 to do the troubleshooting.		
		Resistance	Between HC01 (female) (4) and CL1 (female) (3)	Max. 1Ω
			Between HC01 (female) (5) and CL1 (female) (4)	Max. 1Ω
6	Short circuit in wiring harness (K8 line)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC01 to do the troubleshooting.		
		Resistance	Between HC01 (female) (4) and HC08 terminal	Min. 1MΩ
			Between HC01 (female) (5) and HC08 terminal	Min. 1MΩ

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="4">7</td><td rowspan="4">Defective power supply controller
(Not sufficient K8 line voltage)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors HC01 and HC03.
4. Connect the battery plug W50 to do the troubleshooting.</td></tr>
<tr><td rowspan="2">Voltage</td><td>Between HC01 (female) (4) and HC08 terminal</td><td>Approx. 8V</td></tr>
<tr><td>Between HC01 (female) (5) and HC08 terminal</td><td>Approx. 8V</td></tr>
<tr><td></td></tr>
<tr><td rowspan="3">8</td><td rowspan="3">Defective pump inverter
(Defective CAN communication line)</td><td colspan="3">When failure code [DBNFKR] is also shown
1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector HC03.
4. Connect the battery plug W50.
5. Turn the starting switch to the ON position. Then, do the troubleshooting.</td></tr>
<tr><td colspan="2">Is this failure code no longer shown?</td><td>If this failure code is no longer shown, the pump inverter is defective.</td></tr>
<tr><td></td></tr>
<tr><td>9</td><td>Defective travel inverter</td><td colspan="3">If no failure is found by the above checks, the travel inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of CAN communication



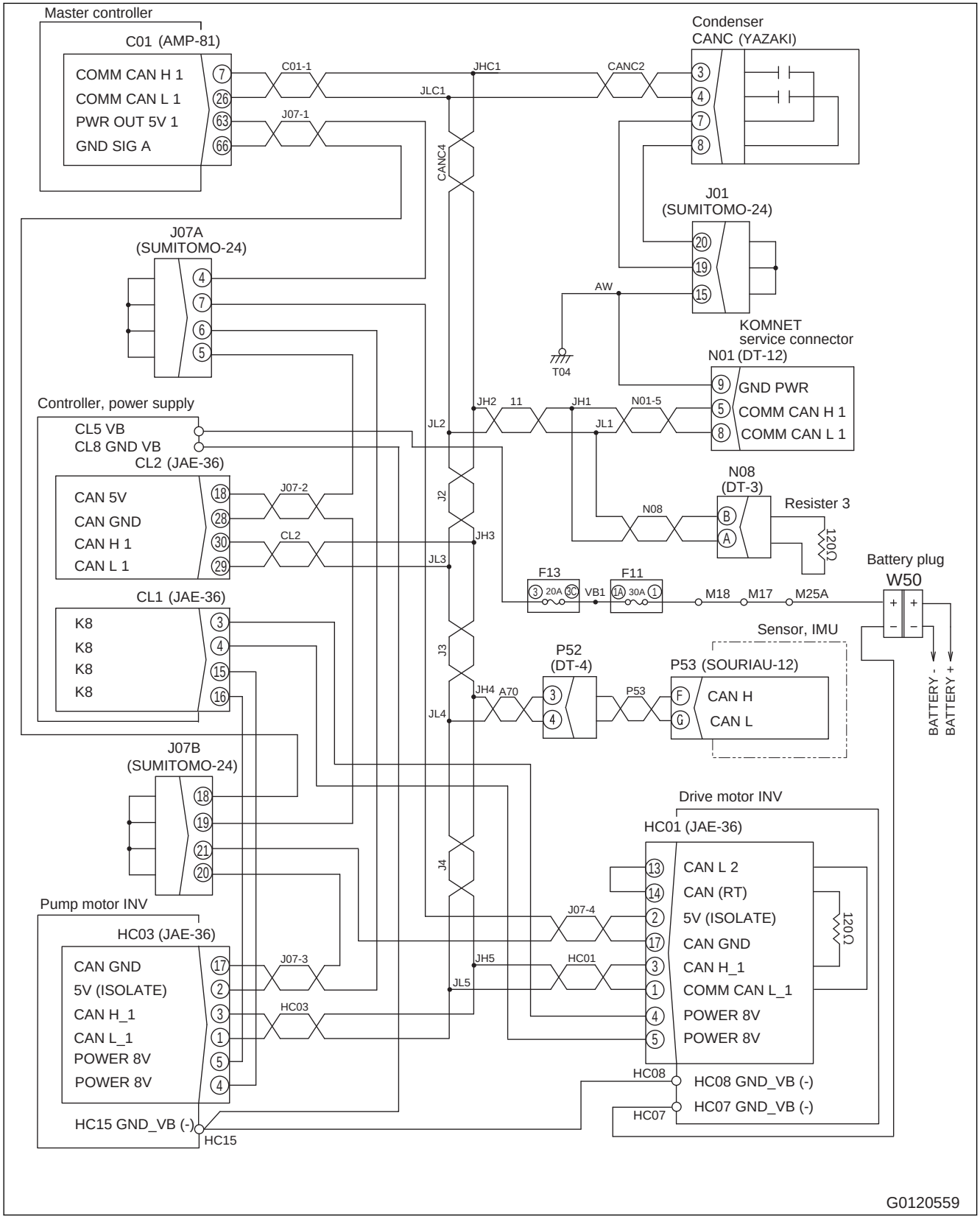
FAILURE CODE [DBNFKR]

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (for PMP) (Master controller system)
L03	DBNFKR		
Detail of failure	On the CAN1 communication line, the master controller cannot receive the communication from the pump inverter for 3 seconds continuously.		
Action of controller	• Stops the output to the pump inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	• Work is not possible. • Travel speed decreases. • The PS (power steering) can operate.		
Related information	• If this error is shown, one of the failures below possibly exists. 1. CAN communication with the pump inverter is disabled. 2. Power is not supplied to the pump inverter. 3. 5V power for CAN communication is not supplied to the pump inverter. 4. The CAN communication GND line of the pump inverter has an open circuit. • If the main contactor (MC2) is not turned on, the power of the pump inverter is possibly off. • The GND terminal of the pump inverter is HC15. • One of the 120Ω termination resistors of the CAN communication line is in the travel inverter. • The T-adapter of the master controller connector is “socket type box” adapter. The operating voltage cannot be measured with the master controller connector. • As the signal of active CAN communication line is pulse voltage, it cannot be measured with a multimeter. • Reproduction method of failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective CAN communication system and defective power supply system	Do the checks on causes 1, 3, and 4 for failure code [DBNEKR].		
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors HC03 and C01, and connect the socket to the female side of C01 to do the troubleshooting.		
		Resistance	Between HC03 (female) (1) and C01 (female) (26)	Max. 1Ω
			Between HC03 (female) (3) and C01 (female) (7)	Max. 1Ω
			Between HC03 (female) (2) and C01 (female) (63)	Max. 1Ω
			Between HC03 (female) (17) and C01 (female) (66)	Max. 1Ω

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="3">3</td><td rowspan="3">Open circuit in wiring harness
(K8 line)
(wire breakage or defective contact of connector)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector HC03 and CL1 to do the troubleshooting.</td></tr>
<tr><td rowspan="2">Resistance</td><td>Between HC03 (female) (4) and CL1 (female) (15)</td><td>Max. 1Ω</td></tr>
<tr><td>Between HC03 (female) (5) and CL1 (female) (16)</td><td>Max. 1Ω</td></tr>
<tr><td rowspan="3">4</td><td rowspan="3">Short circuit in wiring harness
(K8 line)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect terminal HC15.
4. Disconnect the connector HC03 to do the troubleshooting.</td></tr>
<tr><td rowspan="2">Resistance</td><td>Between HC03 (female) (4) and HC15 terminal</td><td>Min. 1MΩ</td></tr>
<tr><td>Between HC03 (female) (5) and HC15 terminal</td><td>Min. 1MΩ</td></tr>
<tr><td rowspan="3">5</td><td rowspan="3">Defective power supply controller
(Not sufficient K8 line voltage)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors HC01 and HC03.
4. Connect the battery plug W50.
5. Turn the starting switch to the ON position. Then, do the troubleshooting.</td></tr>
<tr><td rowspan="2">Voltage</td><td>Between HC03 (female) (4) and HC15 terminal</td><td>Approx. 8V</td></tr>
<tr><td>Between HC03 (female) (5) and HC15 terminal</td><td>Approx. 8V</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Defective travel inverter
(Defective CAN communication line)</td><td colspan="3">When failure code [DBNEKR] is also shown
1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector HC01.
4. Connect the battery plug W50.
5. Turn the starting switch to the ON position. Then, do the troubleshooting.</td></tr>
<tr><td colspan="2">Is this failure code no longer shown?</td><td>If this failure code is no longer shown, the travel inverter is defective.</td></tr>
<tr><td>7</td><td>Defective pump inverter</td><td colspan="3">If no failure is found by the above checks, the pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of CAN communication

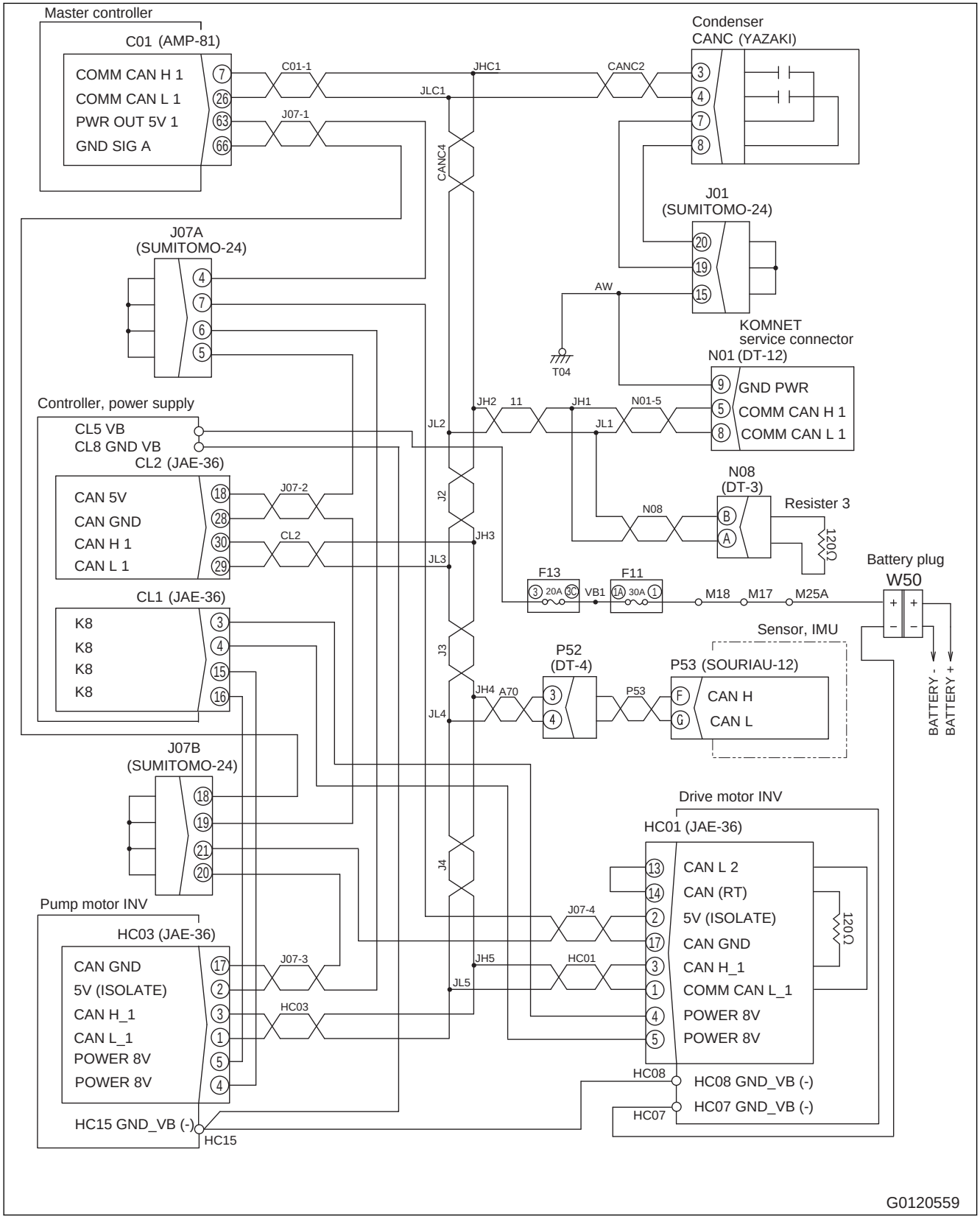


FAILURE CODE [DBNGKR]

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (for CHGR/C) (Master controller system)
L03	DBNGKR		
Detail of failure	The master controller cannot receive communication from the power supply controller on the CAN communication line.		
Action of controller	• If the master controller cannot receive communication from the power supply controller, it operates with the value received last. • Shows a caution symbol on the monitor panel if it cannot receive continuously for 3 seconds. Then, takes the measures that follow. During operation: Does not show the BDI on the monitor panel. During a charge: Stops the charge.		
Problem on lift truck	• The battery fan does not operate during operation or a charge. • The BDI is not shown during operation. • The battery cannot be charged when a charge is activated.		
Related information	• If [DBNEKR] and [DBNFKR] are also shown at the same time, the wiring harness is probably defective. • As the signal of active CAN communication line is pulse voltage, it cannot be measured with a multimeter. • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective CAN communication system and defective power supply system	Do the checks on causes 1, 3, and 4 for failure code [DBNEKR].		
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01 and CL2. Connect the socket to the female side of C01 to do the troubleshooting.		
		Resistance	Between C01 (female) (26) and CL2 (female) (29)	Max. 1Ω
			Between C01 (female) (7) and CL2 (female) (30)	Max. 1Ω
			Between C01 (female) (63) and CL2 (female) (18)	Max. 1Ω
			Between C01 (female) (66) and CL2 (female) (28)	Max. 1Ω
3	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of CAN communication

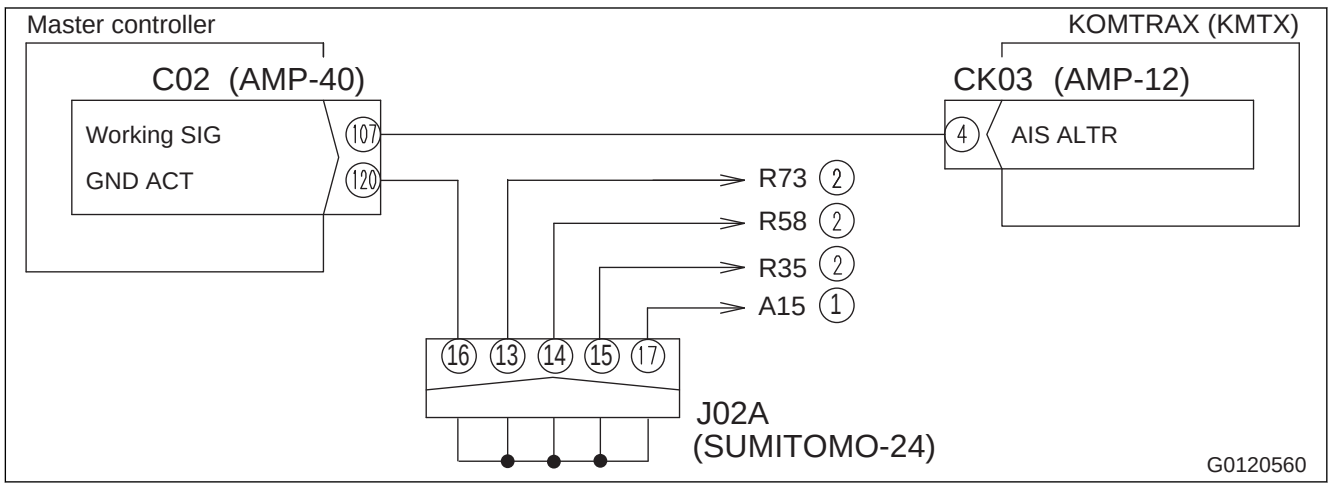


FAILURE CODE [DBNJKB]

Action level	Failure code	Failure phenomenon	SHORT) Operating States (Master controller system)
L01	DBNJKB		
Detail of failure	An over current protection is sensed for 100msec continuously while the operating status signal output is ON.		
Action of controller	• Turns the operating status signal output to OFF. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	KOMTRAX cannot show an in-operation display even in operation mode.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CK03 and C02, and connect the socket to the female side of C02 to do the troubleshooting.		
		Resistance	Between C02 (female) (107) and (120)	Min. 1MΩ
2	Defective KOMTRAX terminal	If no failure is found by the above checks, KOMTRAX terminal is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of operating status signal

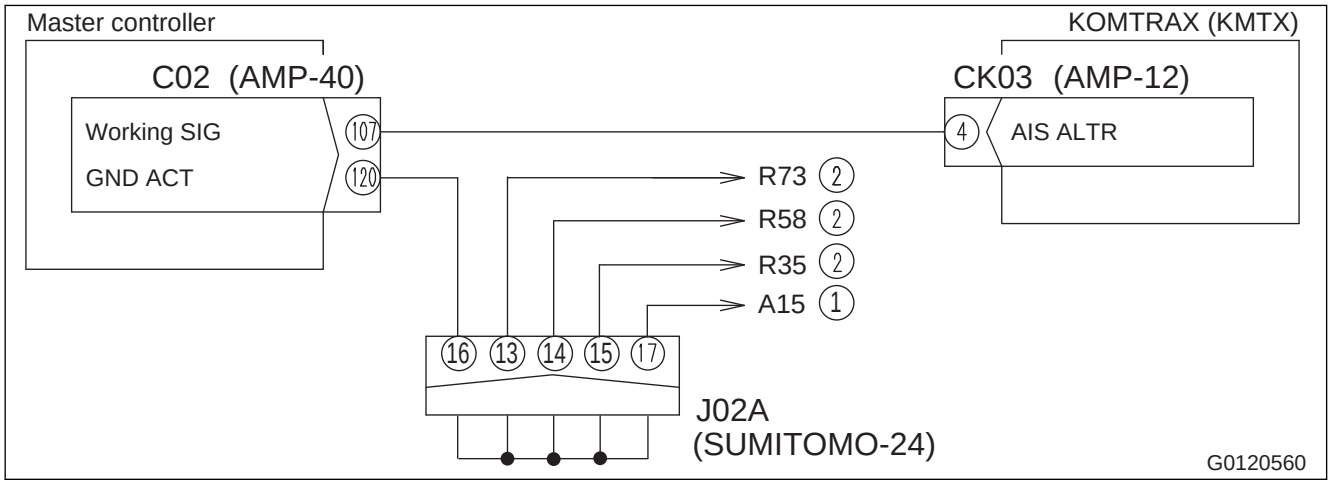


FAILURE CODE [DBNJKY]

Action level	Failure code	Failure phenomenon	SHORT_P) Operating States (Master controller system)
L01	DBNJKY		
Detail of failure	While the operating status signal output is OFF, an output voltage of ≥ 7V is sensed continuously for 100ms.		
Action of controller	• Turns the operating status signal output to OFF. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Even in charging mode, in-operation is shown in the operation monitor of KOMTRAX.		
Related information	How to reproduce failure code: Set to charging mode.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CK03. Connect a T-adapter to the female side. 4. Disconnect the connector A15. Connect a T-adapter to the female side. 5. Connect the battery plug W50. 6. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between CK03 (4) and A15 (female) (1)	Max. 6V
2	Defective KOMTRAX terminal	If no failure is found by the above checks, KOMTRAX terminal is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of operating status signal

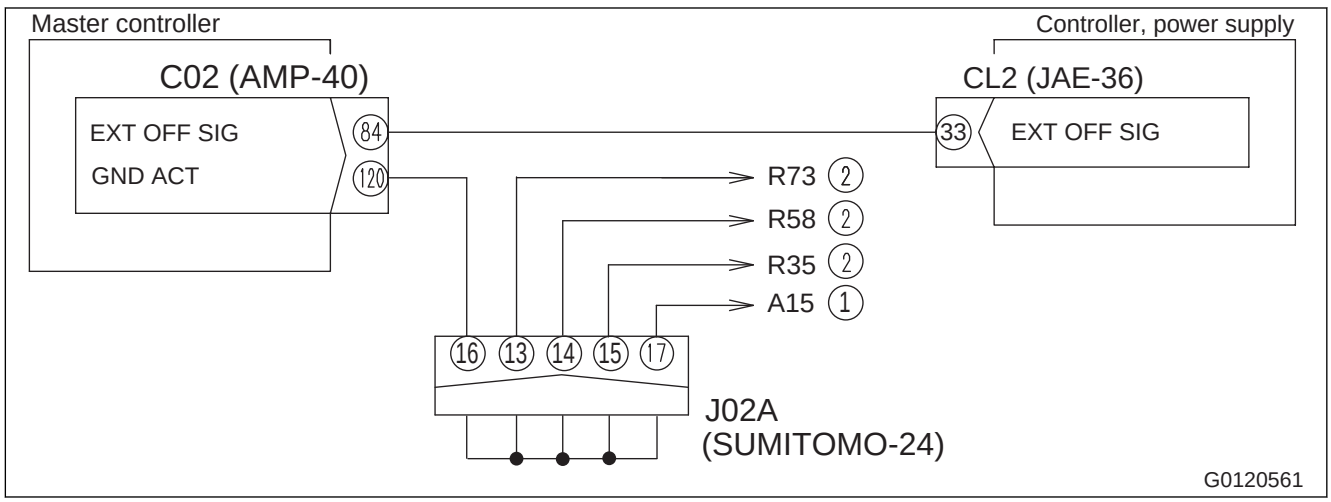


FAILURE CODE [DBNKKA]

Action level	Failure code	Failure phenomenon	DISC) CutOFF OutSide (Master controller system)
L03	DBNKKA		
Detail of failure	While the external OFF signal is OFF, an output signal of ≥ 1.9V and < 7V is sensed continuously for 100msec.		
Action of controller	• Turns the external OFF signal output to OFF. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The auto-power-off function does not operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CL2 and C02, and connect the socket to the female side of C02 to do the troubleshooting.		
		Resistance	Between CL2 (female) (33) and C02 (female) (84)	Max. 1Ω
2	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of external OFF signal

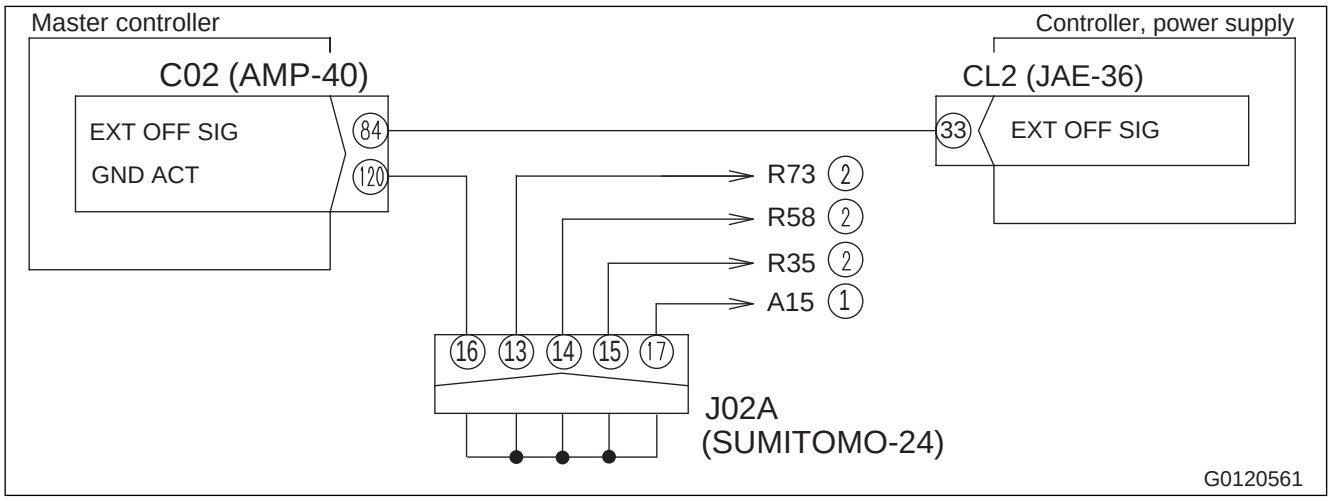


FAILURE CODE [DBNKKB]

Action level	Failure code	Failure phenomenon	SHORT) CutOFF OutSide (Master controller system)
L03	DBNKKB		
Detail of failure	Over current protection is sensed for 100msec continuously while the external OFF signal output is ON.		
Action of controller	• Turns the external OFF signal output to OFF. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The auto-power-off function does not operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting. Then, keep it as is for 15 minutes or more, or keep it in the charging mode (do not start charge) for 5 minutes or more.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness (Contact with GND circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C02 and CL2. Connect the socket to the female side of C02 to do the troubleshooting.		
		Resistance	Between C02 (female) (84) and (120)	Min. 1MΩ
2	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of external OFF signal

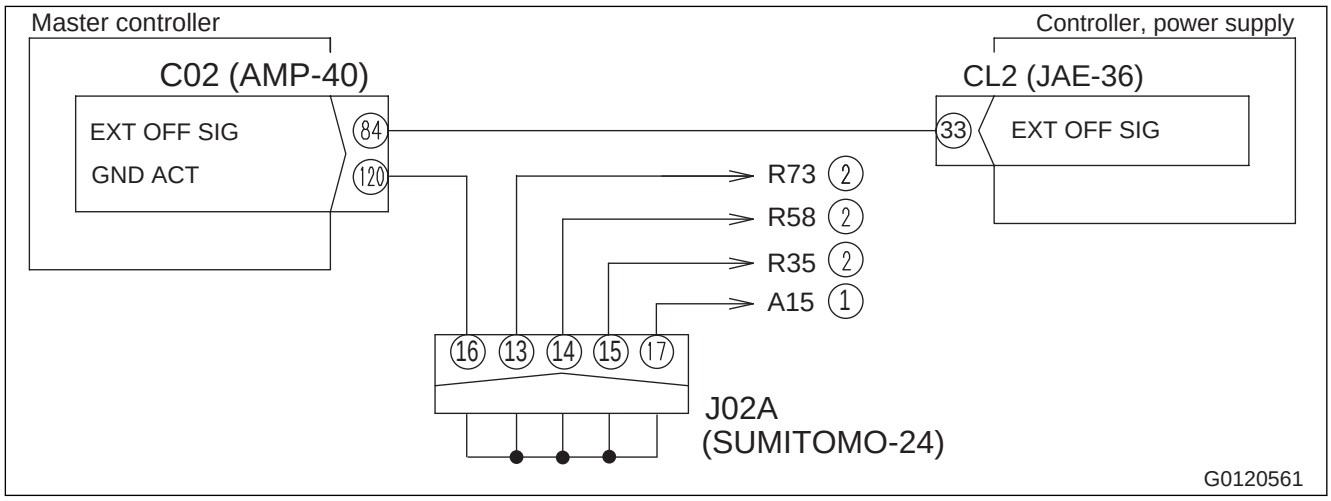


FAILURE CODE [DBNKKY]

Action level	Failure code	Failure phenomenon	SHORT_P) CutOFF OutSide (Master controller system)
L03	DBNKKY		
Detail of failure	While the external OFF signal output is OFF, an output signal of ≥ 7V is sensed continuously for 100msec.		
Action of controller	• Turns the external OFF signal output to OFF. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The auto-power OFF function was possibly activated.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C02 and CL2. Connect the socket to the female side of C02 to do the troubleshooting.		
		Resistance	Between C02 (female) (84) and each pin other than pin (84)	Min. 1MΩ
2	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of external OFF signal



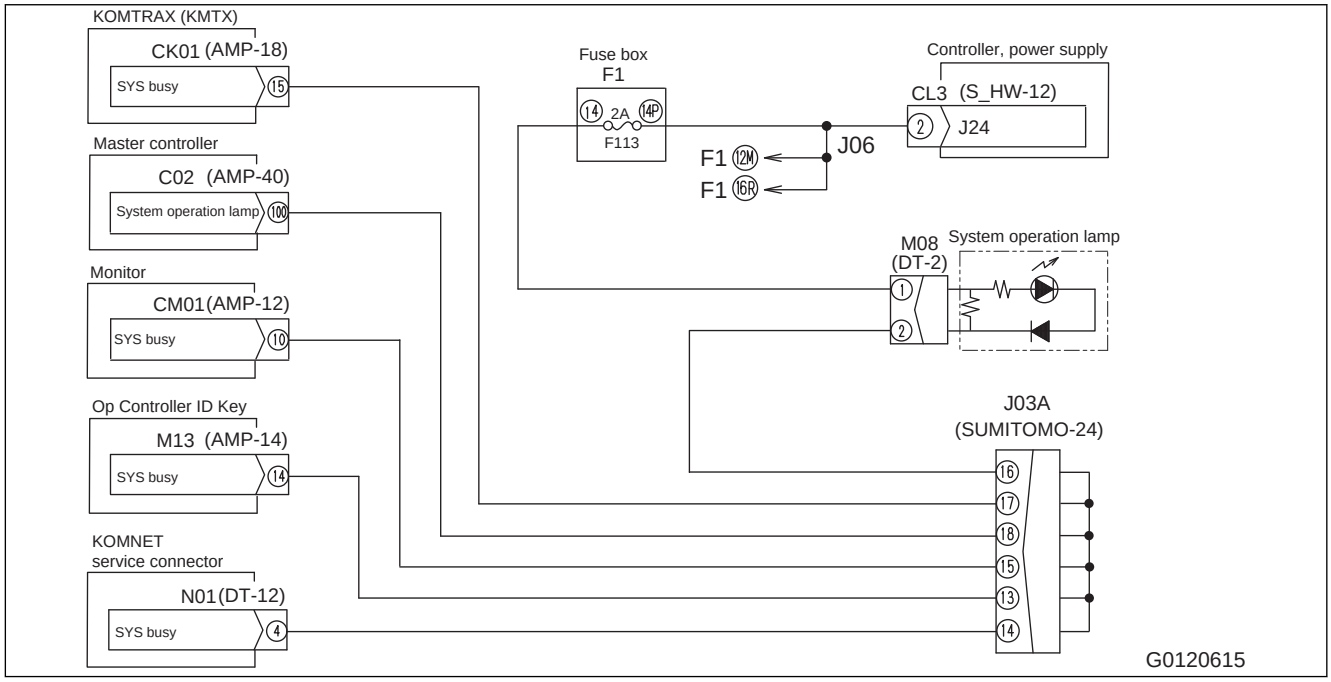
FAILURE CODE [DBNLKA]

Action level	Failure code	Failure phenomenon	DISC) Sys-Ope. Lamp (Master controller system)
-	DBNLKA		
Detail of failure	The master controller senses an open circuit because the output line voltage of the system operation lamp is approximately 6V or less for approximately 3 seconds after the starting switch is turned to the ON position while the master controller does not send a current.		
Action of controller	Does not turn on the system operating lamp.		
Problem on lift truck	• While the system operating lamp comes on, do not disconnect the battery plug W50. If the battery plug W50 is disconnected, data stored in the master controller memory can have damage. • The master controller cannot turn on the system operating lamp. • When failure codes [D**LKA] and [D**LKB] are not shown in other area, the other controller can turn on the system operating lamp.		
Related information	• You cannot turn on the system operating lamp from the monitor panel, but there is no problem unless the battery plug W50 is disconnected. • When the system operating lamp is on, the output voltage is at low level. • Since no controller activates the system operating lamp for approximately 3 seconds after the starting switch is turned to the ON position, an open circuit can be found. • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. When this failure code is active or left in the abnormality record, you cannot examine whether the controller shuts down correctly even if the system operating lamp is turned off. In this case, turn the starting switch to the OFF position. Wait for 10 minutes or more. Then, disconnect the battery plug W50. 3. Remove fuse F113. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F113	Continuity
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. When this failure code is active or left in the abnormality record, you cannot examine whether the controller shuts down correctly even if the system operating lamp is turned off. In this case, turn the starting switch to the OFF position. Wait for 10 minutes or more. Then, disconnect the battery plug W50. 3. Disconnect connectors C02, M08 and CL3. Connect the socket to the female side of C02, and connect T-adapter to the female side of M08 to do the troubleshooting.		
		Resistance	Between C02 (female) (100) and M08 (female) (2)	Max. 1Ω
			Between M08 (female) (1) and CL3 (male) (2)	Max. 1Ω

No.	Cause	Procedure, measurement location, criteria and remarks
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

Circuit diagram of system operating lamp

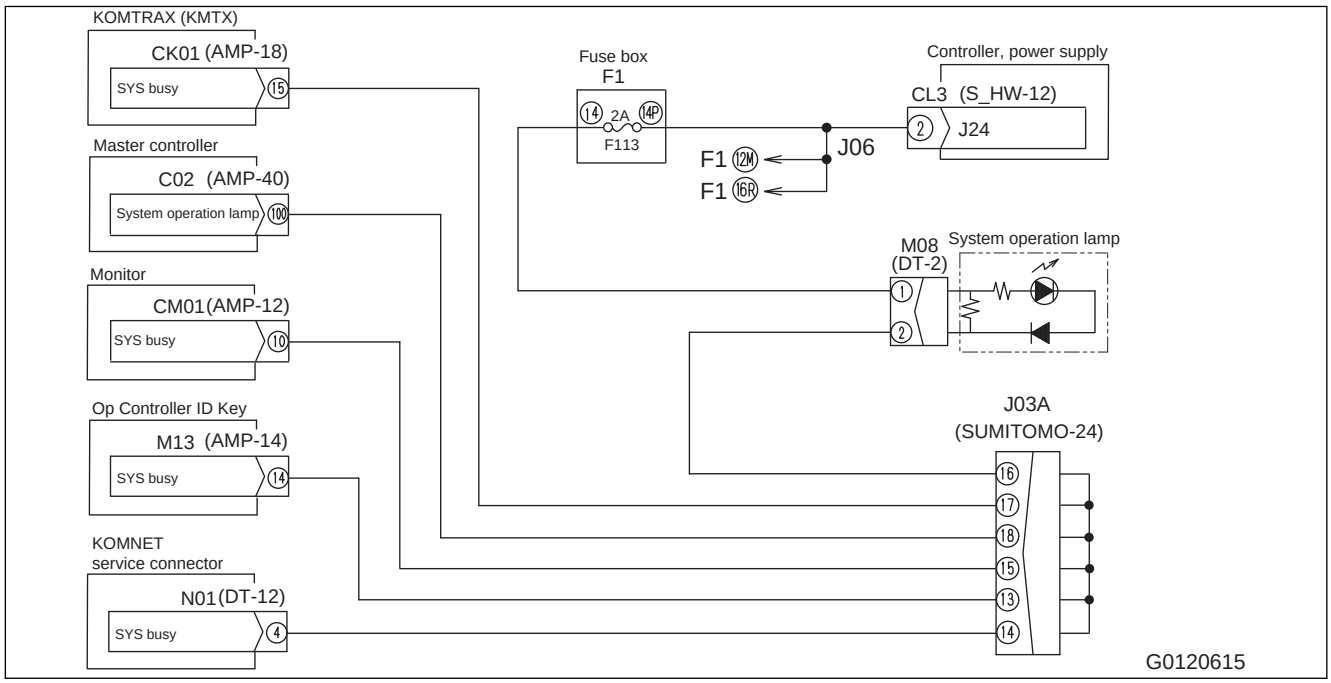


FAILURE CODE [DBNLKB]

Action level	Failure code	Failure phenomenon	SHORT_P) Sys- Ope. Lamp (Master controller system)
-	DBNLKB		
Detail of failure	The master controller senses a short circuit because the output voltage does not become LOW when the master controller sends an output to the system operating lamp.		
Action of controller	Turns the system operating lamp output to OFF.		
Problem on lift truck	• While the system operating lamp comes on, do not disconnect the battery plug W50. If the battery plug W50 is disconnected, data stored in the master controller memory can have damage. • The master controller cannot turn on the system operating lamp. • When failure codes [D**LKA] and [D**LKB] are not shown in other area, the other controller can turn on the system operating lamp.		
Related information	• You cannot turn on the system operating lamp from the master controller, but there is no problem unless the battery plug W50 is disconnected. • When the system operating lamp is on, the output voltage is at low level. • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. When this failure code is active or left in the abnormality record, you cannot examine whether the controller shuts down correctly even if the system operating lamp is turned off. In this case, turn the starting switch to the OFF position. Wait for 10 minutes or more. Then, disconnect the battery plug W50. 3. Remove fuse F113 in the fuse box. 4. Disconnect the connectors CM01, M13, C02, CK01 and M08. Connect a T-adapter to the female side of M08 to do the troubleshooting.		
		Resistance	Between M08 (female) (1) and (2)	Min. 1MΩ
2	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of system operating lamp



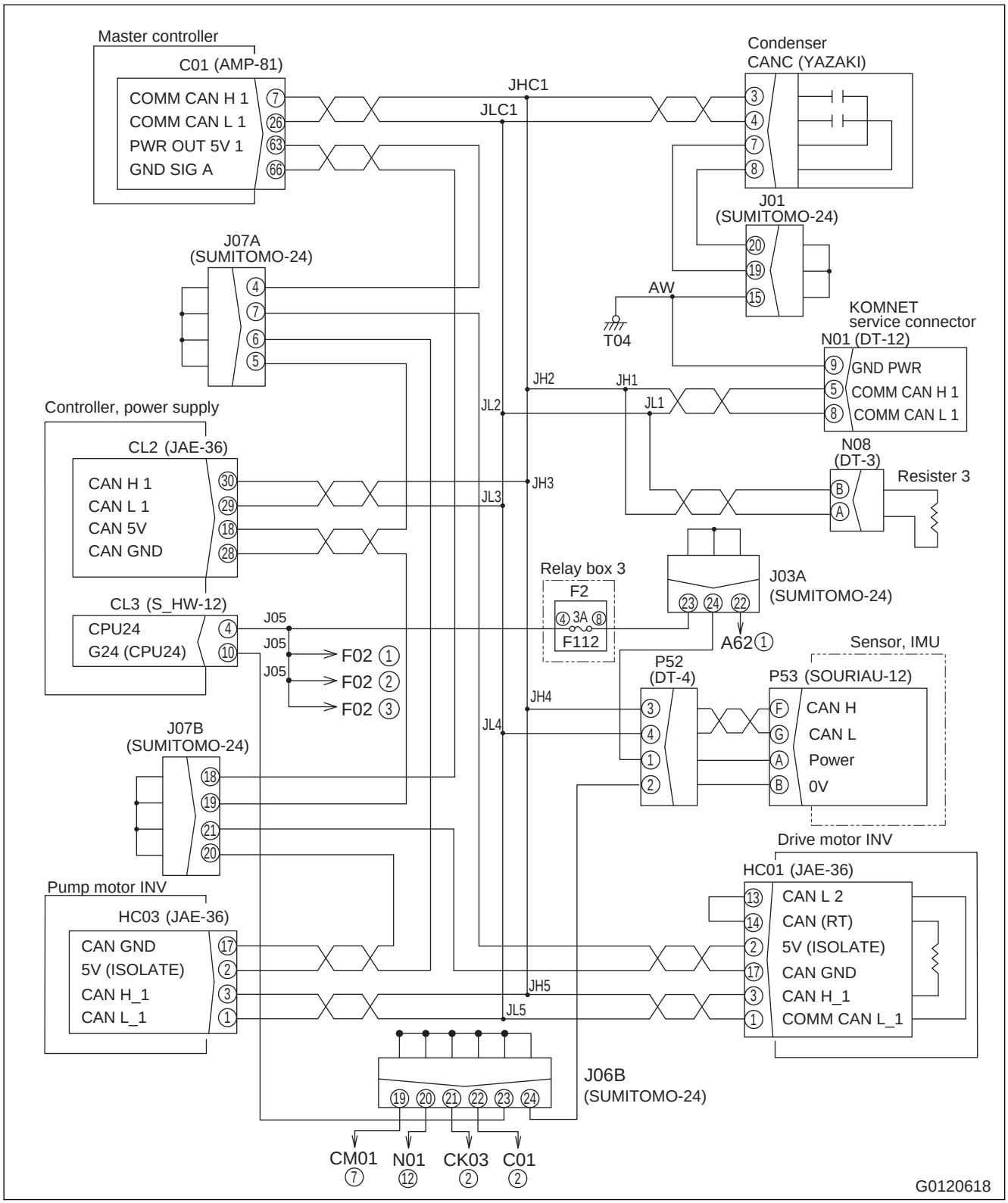
FAILURE CODE [DBNQKR]

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (for IMU) (Master controller system)
L01	DBNQKR		
Detail of failure	• The master controller cannot receive the communication from the IMU for 3 seconds continuously. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time. • The vehicle does not recover until Angle Senser Set is set to Invalid. **REMARK** To set Angle Senser Set to Invalid, see TESTING AND ADJUSTING, “SET AND OPERATE MONITOR PANEL”.		
Action of controller	Disables the power assist system on slope, inclination warning, fall detection, and impact detection functions.		
Problem on lift truck	The power assist system on slope, inclination warning, fall detection, and impact detection functions do not operate.		
Related information	• As the signal of active CAN communication line is pulse voltage, it cannot be measured with a multimeter. • The 120Ω of termination resistor of the CAN communication line is in N08 and in the travel inverter. • How to reproduce failure code: Turn the starting switch to the ON position. • The T-adapter of the master controller connector is “socket type box” adapter. The operating voltage cannot be measured with the master controller connector.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuse F112. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If a fuse is blown out, the wiring harness probably has ground fault.		
		Continuity	Two terminals of F112	Continuity
2	Defective CAN terminating resistor	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors N08 and HC01. Connect the T-adapter to the male side of N08 to do the troubleshooting.		
		Resistance	Between N08 (male) (A) and (B)	Approx. 120Ω
			Between HC01 (male) (3) and (14)	Approx. 120Ω

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="5">3</td><td rowspan="5">Open circuit in wiring harness
(wire breakage or defective contact of connector)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect connectors P53, C01 and CL3. Connect the socket to the female side of C01, and connect T-adapter to the female side of P53 to do the troubleshooting.</td></tr>
<tr><td rowspan="4">Resistance</td><td>Between P53 (female) (F) and C01 (female) (7)</td><td>Max. 1 Ω</td></tr>
<tr><td>Between P53 (female) (G) and C01 (female) (26)</td><td>Max. 1 Ω</td></tr>
<tr><td>Between P53 (female) (A) and CL3 (male) (4)</td><td>Max. 1Ω</td></tr>
<tr><td>Between P53 (female) (B) and CL3 (male) (10)</td><td>Max. 1Ω</td></tr>
<tr><td rowspan="7">4</td><td rowspan="7">Short circuit in wiring harness</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors P53, HC01, HC03, N08, C01 and CL3. Connect a T-adapter to the female side of C01 to do the troubleshooting.</td></tr>
<tr><td rowspan="6">Resistance</td><td>Between C01 (female) (26) and (7)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between CL3 (male) (4) and (10)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between C01 (female) (26) and CL3 (male) (4)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between C01 (female) (26) and CL3 (male) (10)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between C01 (female) (7) and CL3 (male) (4)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between C01 (female) (7) and CL3 (male) (10)</td><td>Min. 1MΩ</td></tr>
<tr><td rowspan="3">5</td><td rowspan="3">Defective power supply controller (Not sufficient CPU24 line voltage)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector P53. Connect the T-adapter to the female side.
4. Connect the battery plug W50.
5. Turn the starting switch to the ON position. Then, do the troubleshooting.</td></tr>
<tr><td>Voltage</td><td>Between P53 (female) (A) and (B)</td><td>Approx. 24V</td></tr>
<tr><td></td></tr>
<tr><td>6</td><td>Defective IMU</td><td colspan="3">If no failure is found by the above checks, the IMU is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of CAN COMM. (for IMU)



FAILURE CODE [DBNRKR]

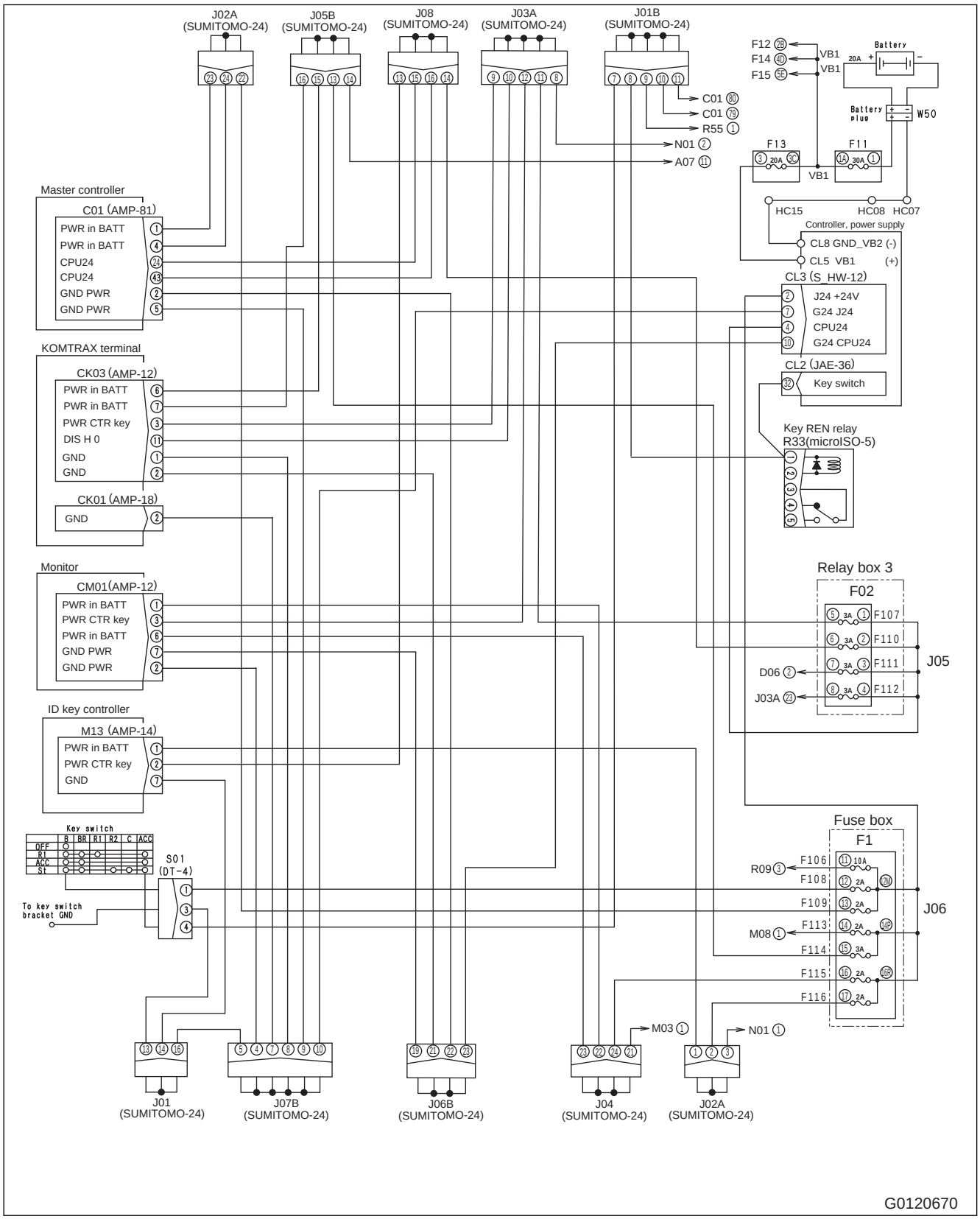
Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (M/C) (Monitor panel system)
L03	DBNRKR		
Detail of failure	The monitor panel cannot receive the communication from the master controller for 3 seconds continuously.		
Action of controller	• Gives only a notification. • When a normal communication is received, the vehicle goes back to the correct state.		
Problem on lift truck	• The master controller cannot inform the failure. • The value is not shown with the monitoring function. • If the master controller is not started, travel, work equipment and steering wheel cannot be operated.		
Related information	• When failure codes [D8AQKR], [D8AQK4] and [F7FQKR] are also shown, the ID key controller or KOMTRAX terminal can be defective. (When ID key controller or KOMTRAX terminal is installed) • Start of CAN communication is recognized by each controller and monitor panel by means of the CPU24 signal which is output by the power supply controller when ACC signal of starting switch is received. • Each controller and monitor panel receive the current even if the starting switch is turned to the OFF position. • As the signal of active CAN communication line is pulse voltage, it cannot be measured with a multimeter. • The 120Ω of termination resistor of the CAN communication line is in N03 and in monitor panel. • The T-adapter of the master controller connector is “socket type box” adapter. The operating voltage cannot be measured with the master controller connector. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuses F109 and F110. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If a fuse is blown out, the wiring harness probably has ground fault.		
		Continuity	Between two terminals of F109	Continuity
			Between two terminals of F110	Continuity

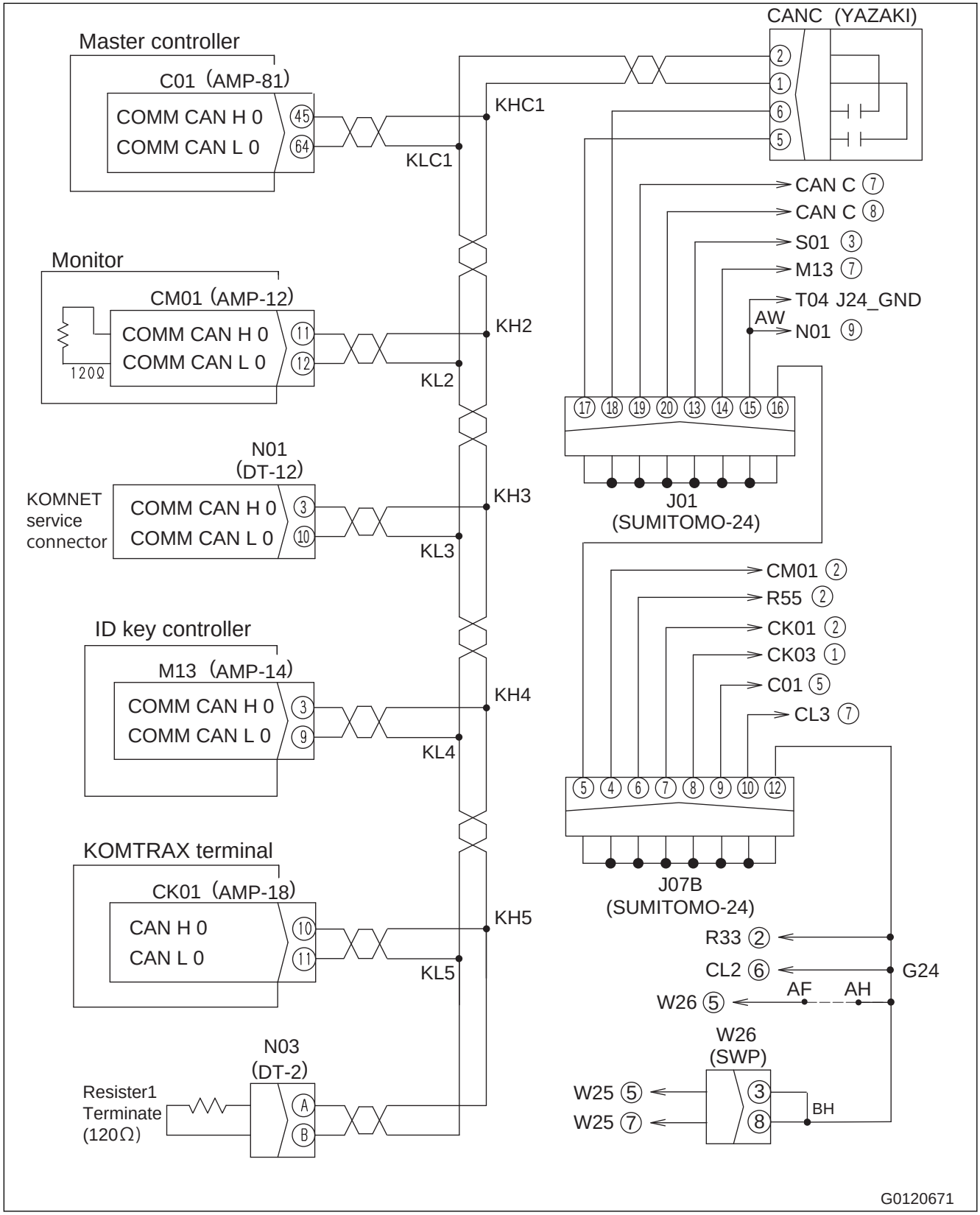
<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="5">2</td><td rowspan="5">Defective power supply system to the master controller</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector C01 and connect the socket to the female side.
4. Connect the battery plug W50.
5. Turn the starting switch to the ON position. Then, do the troubleshooting.
REMARK
If a trouble is found, do the troubleshooting for the failure code [DBN3KK].</td></tr>
<tr><td rowspan="3">Voltage</td><td>Between C01 (female) (1) and (2)</td><td>Approx. 24V</td></tr>
<tr><td>Between C01 (female) (4) and (5)</td><td>Approx. 24V</td></tr>
<tr><td>Between C01 (female) (43) and (5)</td><td>Approx. 24V</td></tr>
<tr><td rowspan="3">3</td><td rowspan="3">Defective CAN terminating resistor</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors N03 and CM01, and connect the T-adapter to each male side to do the troubleshooting.</td></tr>
<tr><td rowspan="2">Resistance</td><td>Between N03 (male) (A) and (B)</td><td>Approx. 120Ω</td></tr>
<tr><td>Between CM01 (male) (11) and (12)</td><td>Approx. 120Ω</td></tr>
<tr><td rowspan="5">4</td><td rowspan="5">Open circuit in wiring harness
(wire breakage or defective contact of connector)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors CM01 and C01. Connect a socket to the female side of C01 and connect a T-adapter to the female side of CM01 to do the troubleshooting.</td></tr>
<tr><td rowspan="4">Resistance</td><td>Between CM01 (female) (11) and C01 (female) (45)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CM01 (female) (12) and C01 (female) (64)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CM01 (female) (11) and N03 (female) (A)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CM01 (female) (12) and N03 (female) (B)</td><td>Max. 1Ω</td></tr>
<tr><td rowspan="6">5</td><td rowspan="6">Short circuit in wiring harness</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors CM01, C01, CK01, M13, N03, and N06. Connect the T-adapter to the female side of CM01 to do the troubleshooting.</td></tr>
<tr><td rowspan="5">Resistance</td><td>Between CM01 (female) (11) and (female) (12)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between CM01 (female) (6) and (female) (11)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between CM01 (female) (6) and (female) (12)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between CM01 (female) (7) and (female) (11)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between CM01 (female) (7) and (female) (12)</td><td>Min. 1MΩ</td></tr>
</table>

<table>
<tr><th>No.</th><th>Cause</th><th colspan="2">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Defective ID key controller or KOMTRAX terminal (defective CAN communication line)</td><td colspan="2">When the ID key controller or KOMTRAX terminal is installed, and one of failure codes [D8AQKR], [D8AQK4], and [F7FQKR] is also shown
REMARK
• To identify the defective controller, do the steps 1 through 5 again and again to disconnect the controllers one by one from the CAN communication line.
• Record all the shown failure codes on a paper in advance.
1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the ID key controller (connector M13) and KOMTRAX terminal (connector CK01) one by one from the CAN communication line.
4. Connect the battery plug W50.
5. Turn the starting switch to the ON position. Then, do the troubleshooting.
6. Go back to step 1 to examine the next controller.</td></tr>
<tr><td>Did the number of failure codes shown decrease? (Especially, was this failure code no longer cleared?)</td><td>If YES, the disconnected controller is defective.</td></tr>
<tr><td>7</td><td>Defective master controller</td><td colspan="2">If no failure is found by the above checks, the master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of master controller power supply



Circuit diagram of CAN communication

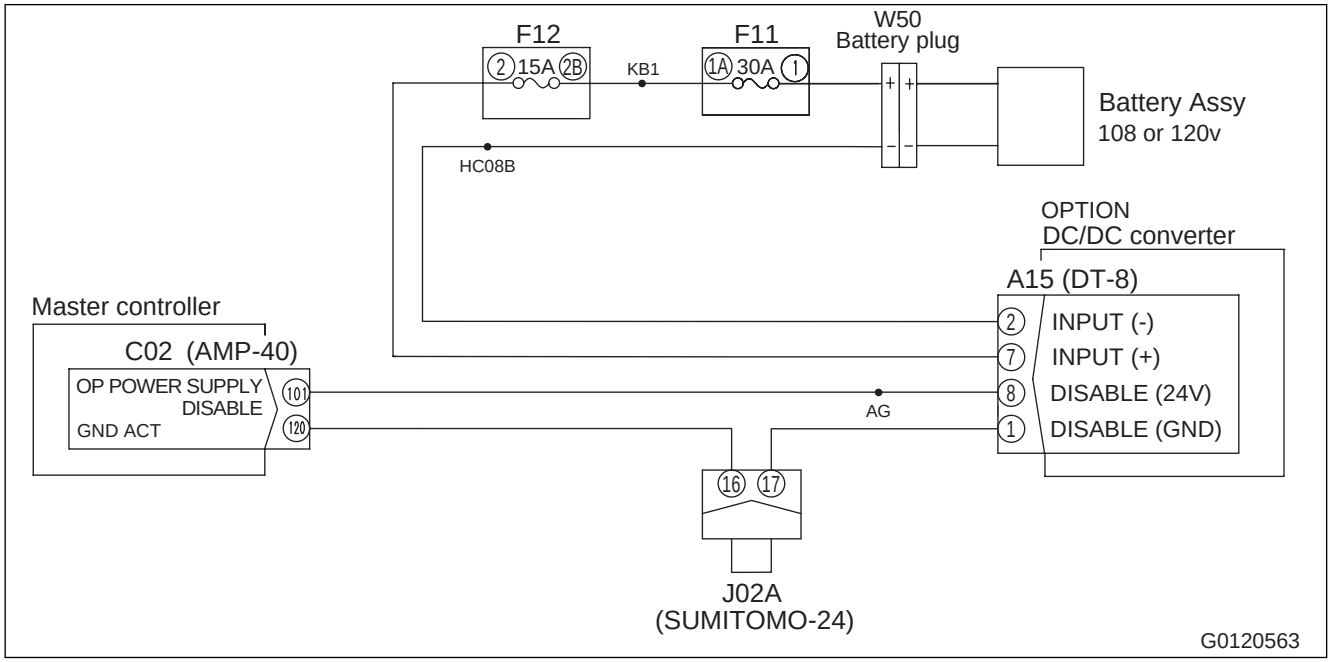


FAILURE CODE [DBNSKA]

Action level	Failure code	Failure phenomenon	DISC) OP-POWER DISABLE (Master controller system)
L03	DBNSKA		
Detail of failure	When the “OP power supply DISABLE setting” is “Enabled” and in the charging mode, 1.9V ≤ output voltage < 7V is continuously sensed for 100ms while the output to the OP power supply relay is OFF.		
Action of controller	• Stops the output to the OP power supply relay. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch or AC200V (breaker switch) is turned to the OFF position one time.		
Problem on lift truck	The lights connected to the OP power supply remain operated.		
Related information	• This is not sensed while the starting switch is in the ON position. • Reproduction method of failure code: Start charge.		

No.	Cause	Procedure, measuring location, criteria, and remarks		
1	Open circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C02 and A15. Connect a socket to the female side of C02 and connect the T-adapter to the female side of A15 to do the troubleshooting.		
		Resistance	Between A15 (female) (1) and C02 (female) (120)	Max. 1 Ω
			Between A15 (female) (8) and C02 (female) (101)	Max. 1 Ω
2	Defective OP DC/DC converter	If no failure is found by the above checks, OP DC/DC converter is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of OP power supply DISABLE

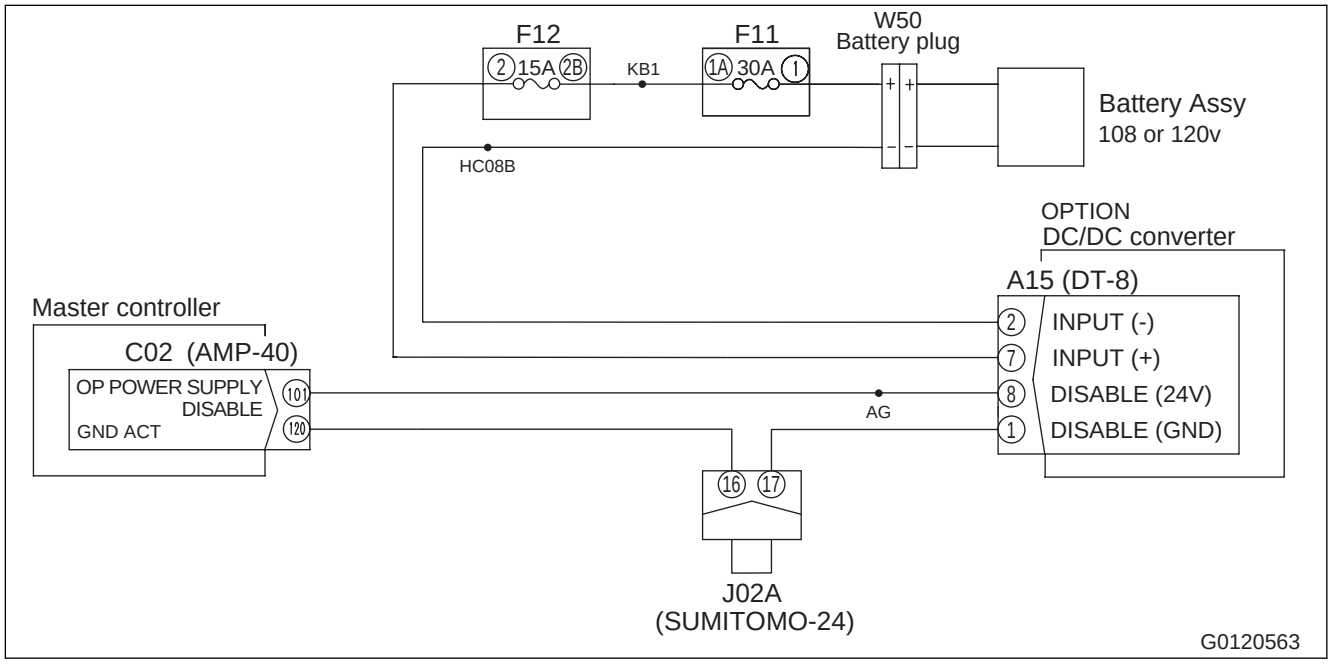


FAILURE CODE [DBNSKB]

Action level	Failure code	Failure phenomenon	SHORT) OP-POWER DISABLE (Master controller system)
L03	DBNSKB		
Detail of failure	When the “OP power supply DISABLE setting” is “Enabled” and in charging mode, an overcurrent protection is sensed continuously for 100ms while the output to the OP power supply relay is ON.		
Action of controller	• Stops the output to the OP power supply relay. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch or AC200V (breaker switch) is turned to the OFF position one time.		
Problem on lift truck	The lights connected to the OP power supply remain operated.		
Related information	• This is not sensed while the starting switch is in the ON position. • Reproduction method of failure code: Start charge.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C02 and A15. Connect the T-adapter to the female side of A15 to do the troubleshooting.		
		Resistance	Between A15 (female) (1) and (8)	Min. 1MΩ
2	Defective OP DC/DC converter	If no failure is found by the above checks, OP DC/DC converter is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of OP power supply DISABLE

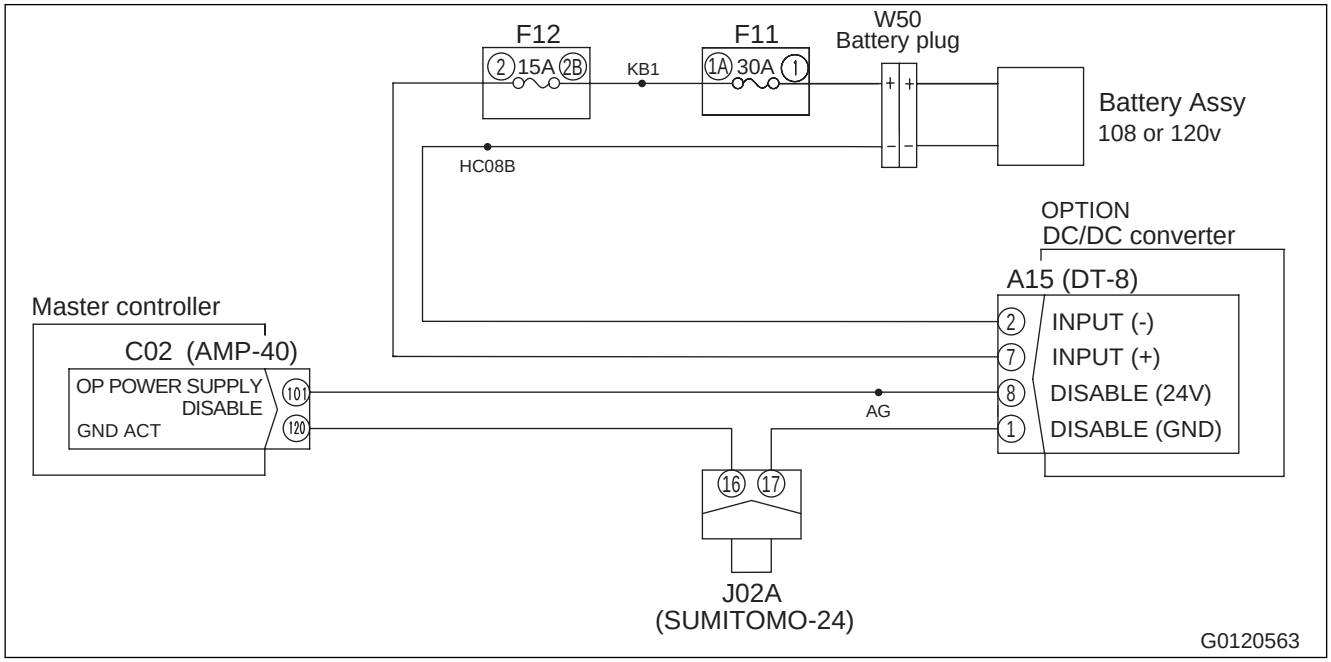


FAILURE CODE [DBNSKY]

Action level	Failure code	Failure phenomenon	SHORT_P) OP-POWER DISABLE (Master controller system)
L03	DBNSKY		
Detail of failure	When the “OP power supply DISABLE setting” is “Enabled”, an output voltage of ≥ 7V is sensed continuously for 100ms while the output to the OP power supply relay is OFF.		
Action of controller	• Stops the output to the OP power supply relay. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The lights connected to the OP power supply do not operate.		
Related information	• This is not sensed while the starting switch is in the OFF position. • Reproduction method of failure code: Turn the starting switch to the ON position or set to charging mode.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector A15. Connect the T-adapter to the female side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between A15 (female) (8) and (1)	Max. 1V
2	Defective OP DC/DC converter	If no failure is found by the above checks, OP DC/DC converter is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of OP power supply DISABLE

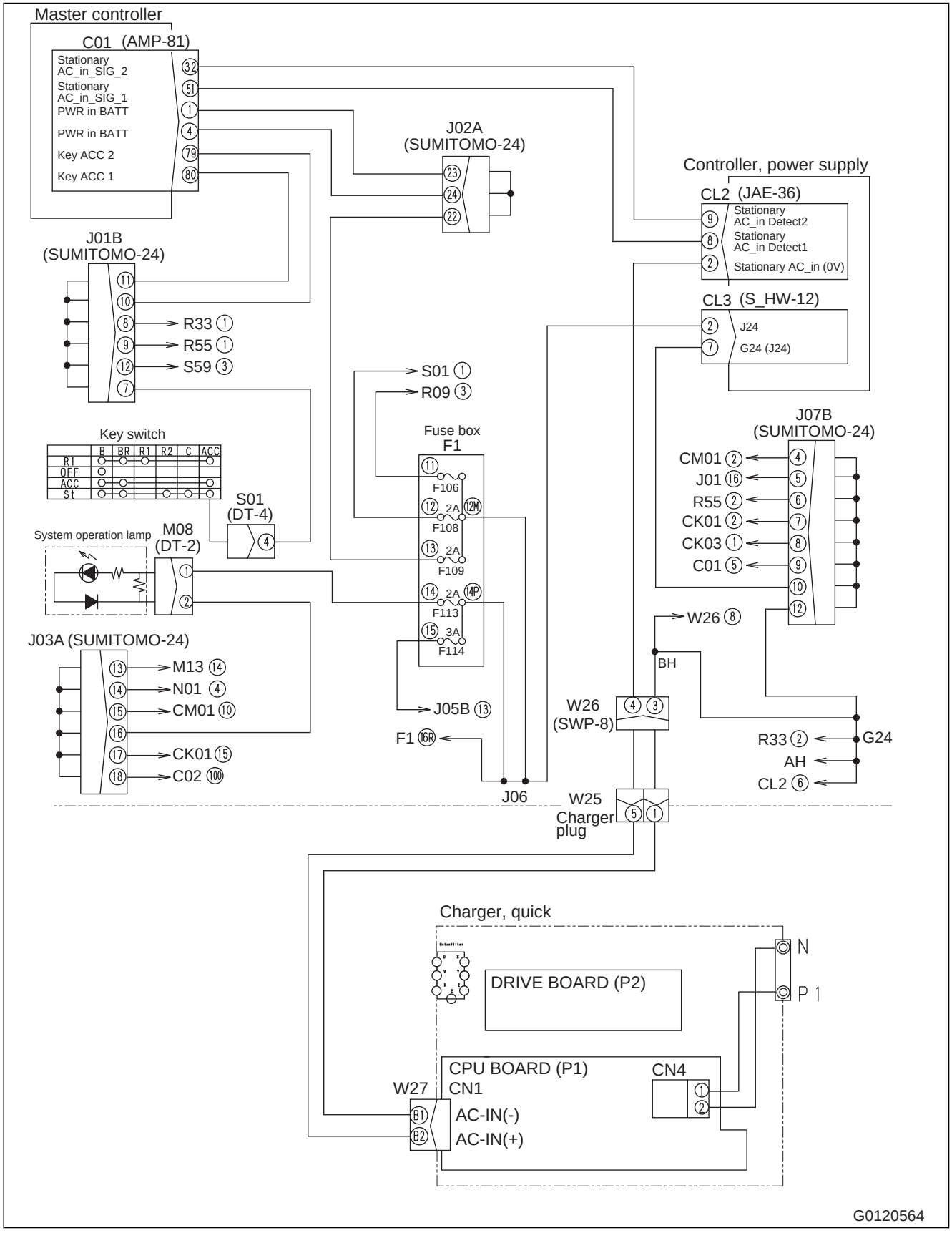


FAILURE CODE [DBNTKA]

Action level	Failure code	Failure phenomenon	DISC) Key Signal (Master controller system)
L01	DBNTKA		
Detail of failure	The state in which 2 KEYACC signals are different is sensed for 60 seconds continuously.		
Action of controller	• Gives only a notification. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch or AC200V (breaker switch) is turned to the OFF position one time.		
Problem on lift truck	None.		
Related information	• Since 2 signals are input as OR, system operates normally when only 1 signal has open circuit. • Reproduction method of failure code: Turn the starting switch to the ON position or set to charging mode.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01 and S01. Connect a socket to the female side of C01 and connect a T-adapter to the female side of S01 to do the troubleshooting.		
		Resistance	Between S01 (female) (4) and C01 (female) (79)	Max. 1Ω
			Between S01 (female) (4) and C01 (female) (80)	Max. 1Ω
2	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of key signal

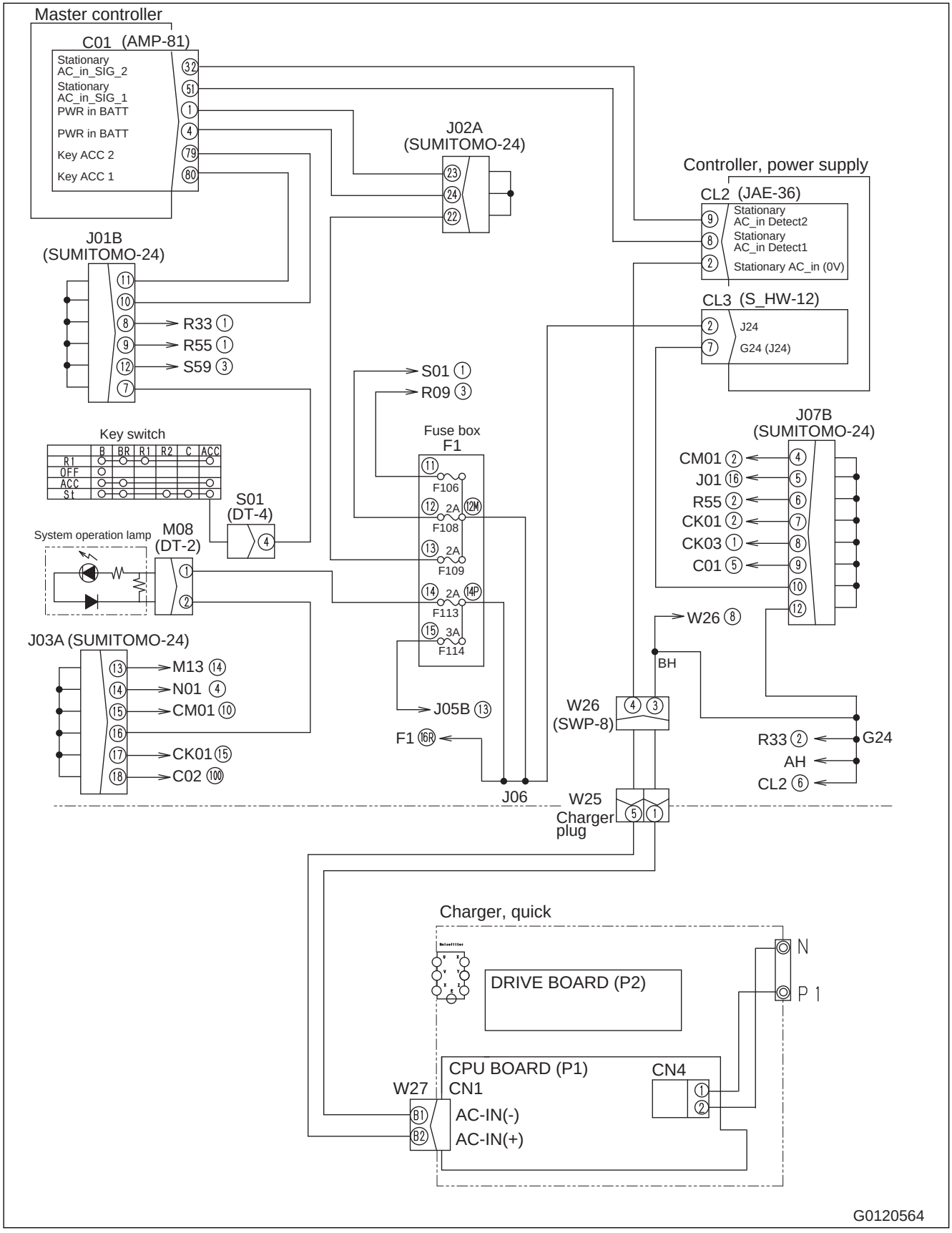


FAILURE CODE [DBNVMA]

Action level	Failure code	Failure phenomenon	ABNL) Start-up Signal (Master controller system)
L04	DBNVMA		
Detail of failure	PWR_CTR_KEY = ON and external AC power supply connection = OFF (AC_IN signal 1 = OFF, AC_IN signal 2 = OFF) and key signal state = OFF (KEY_ACC_1 = 1, KEY_ACC_2 = 1) is sensed for 1 second continuously.		
Action of controller	• Gives only a notification. • If the capacitor voltage increases to 50V after 5 minutes from detection of error, the vehicle will not go back to the correct state. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Operation lock is activated and vehicle cannot operate.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect connectors C01, CL2 and S01. Connect the socket to the female side of C01, and connect T-adapter to the female side of S01 to do the troubleshooting.		
		Resistance	Between C01 (female) (32) and CL2 (female) (9)	Max. 1Ω
			Between C01 (female) (51) and CL2 (female) (8)	Max. 1Ω
			Between C01 (female) (79) and S01 (female) (4)	Max. 1Ω
			Between C01 (female) (80) and S01 (female) (4)	Max. 1Ω
2	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of system starting signal

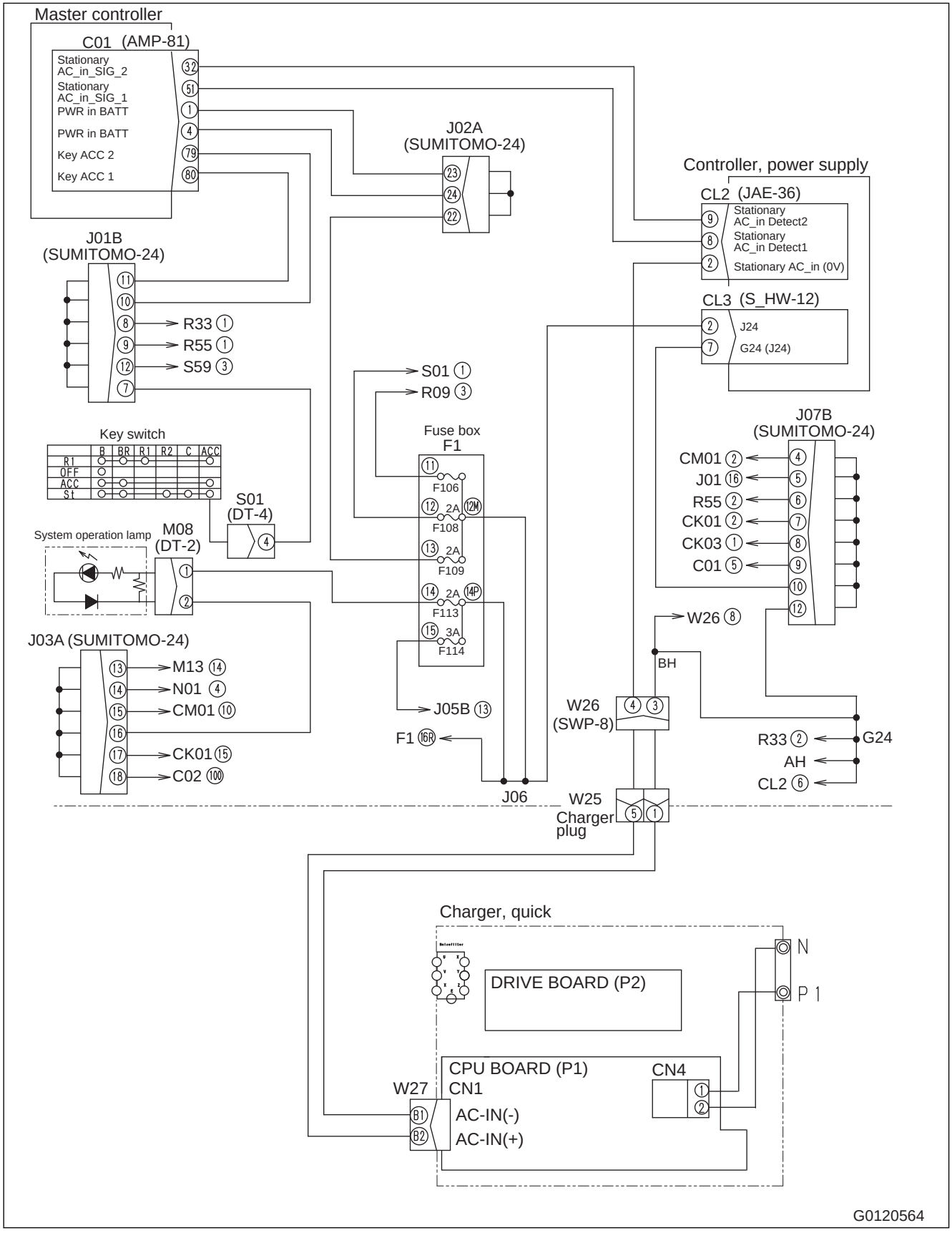


FAILURE CODE [DBNYKA]

Action level	Failure code	Failure phenomenon	DISC) AC INPUT LINE(M/C) (Master controller system)
L03	DBNYKA		
Detail of failure	The input states of Chg. AC Power-IN 1 and Chg. AC Power-IN 2 are different.		
Action of controller	• Lets the vehicle operate normally for 60 seconds after the detection. • If the state is sensed for 60 seconds continuously, shows a caution symbol.		
Problem on lift truck	None.		
Related information	• If there is no open circuit in the 2 lines, the vehicle operates correctly. * Since 2 signals are input as OR, it operates normally when only 1 signal has open circuit. • You can examine the input state of Chg. AC Power-IN 1 with the monitor panel. (Chg. AC Power-IN 1 code: 56430 (ON/OFF), Chg. AC Power-IN 2 code: 56431 (ON/OFF)) • Reproduction method of failure code: Wait for 60 seconds while the vehicle is in the charge standby state.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01 and CL2. Connect the socket to the female side of C01 to do the troubleshooting.		
		Resistance	Between C01 (female) (51) and CL2 (female) (8)	Max. 1Ω
			Between C01 (female) (32) and CL2 (female) (9)	Max. 1Ω
2	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of AC power supply input signal



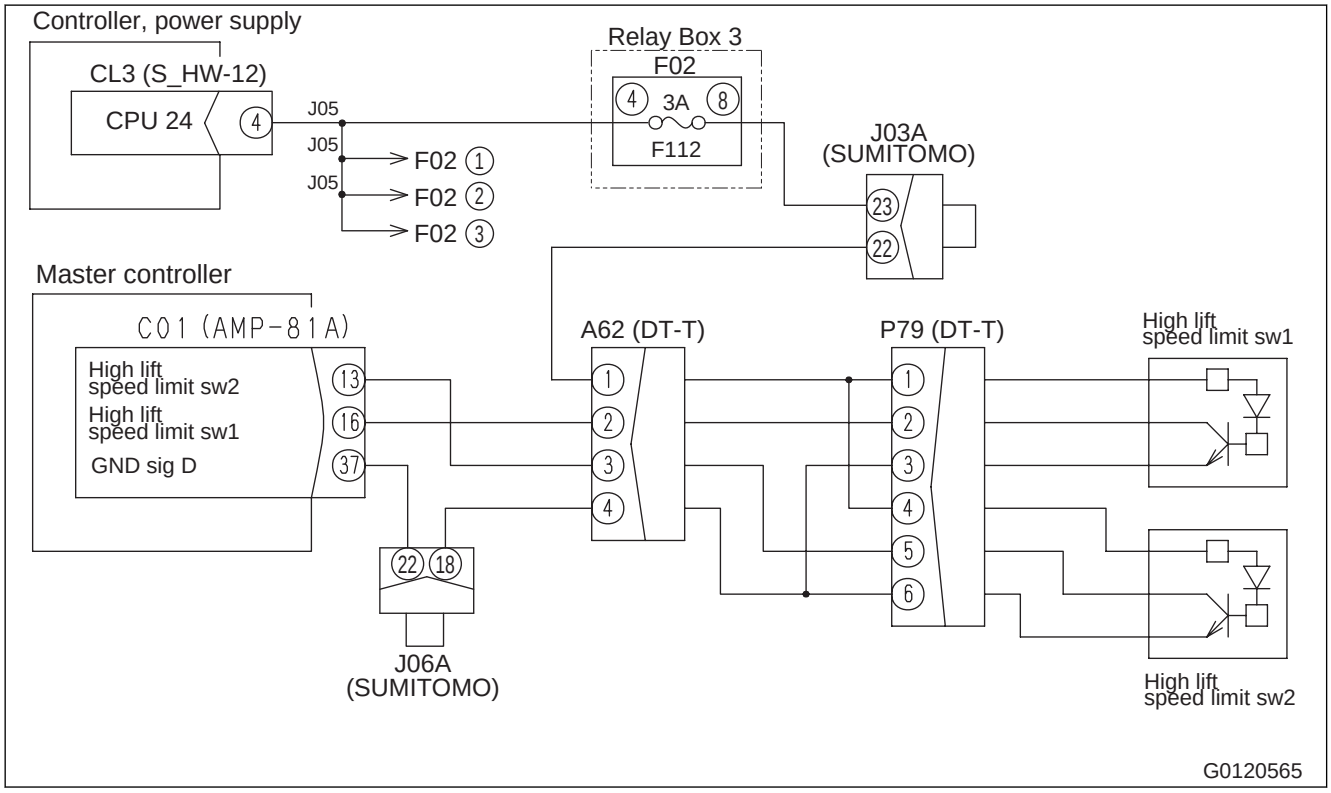
FAILURE CODE [DDDQKA]

Action level	Failure code	Failure phenomenon	DISC) HIGH LIFT HIGHT2 SW (Master controller system)
L01	DDDQKA		
Detail of failure	It is sensed that the input signals from the 2 systems of travel speed limit switches are ON or OFF at the same time continuously for 3 seconds.		
Action of controller	Judges that the vehicle is in the high lift state.		
Problem on lift truck	The travel speed limit at high lift function operates to restrict the travel speed.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuse F112. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F112	Continuity
2	Open circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect connectors C01, P79 and CL3. Connect the socket to the female side of C01, and connect T-adapter to the female side of P79 to do the troubleshooting.		
		Resistance	Between C01 (female) (16) and P79 (female) (2)	Max. 1Ω
			Between C01 (female) (13) and P79 (female) (5)	Max. 1Ω
			Between C01 (female) (37) and P79 (female) (3)	Max. 1Ω
			Between C01 (female) (37) and P79 (female) (6)	Max. 1Ω
			Between CL3 (male) (4) and P79 (female) (1)	Max. 1 Ω
			Between CL3 (male) (4) and P79 (female) (4)	Max. 1Ω
3	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01 and P79. Connect the T-adapter to the female side of P79 to do the troubleshooting.		
		Resistance	Between P79 (female) (2) and (3)	Min. 1MΩ
			Between P79 (female) (5) and (6)	Min. 1MΩ

No.	Cause	Procedure, measurement location, criteria and remarks
4	Defective travel speed limit switch	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P79. Replace the travel speed limit switch with the same type. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.
		If you replace the switch with a good switch and the operation becomes correct, the switch before replacement is defective.
5	Defective master controller	If no failure is found by the above checks, master controller is defective. (Trouble-shooting cannot be done because this is an internal failure.)

Circuit diagram of high lift high travel speed limit switch

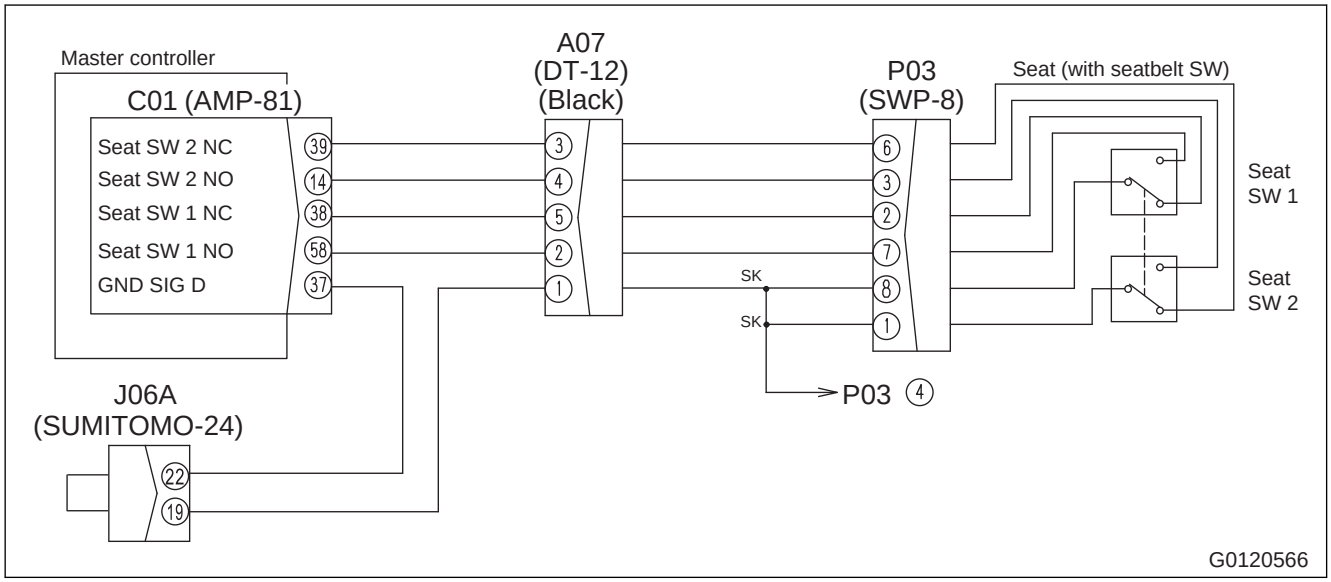


FAILURE CODE [DDDTKA] (FORKLIFT TRUCK WITHOUT SEAT BELT INTERLOCK SYSTEM)

Action level	Failure code	Failure phenomenon	DISC) Seat SW1 (Forklift truck without seat belt interlock system) (Master controller system)
L01	DDDTKA		
Detail of failure	The NO and NC of seat switch 1 in the seat switch circuit turn off (open) at the same time.		
Action of controller	Turns on the error caution lamp. (Seat switch alarm (yellow))		
Problem on lift truck	None.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position. Sit in or get off the operator seat, and hold this condition for 1 second or more.		

No.	Cause	Procedure, measurement location, criteria and remarks				
1	Defective seat switch (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P03. Connect the T-adapter to male side to do the troubleshooting.				
		Resistance	Between P03 (male) (8) and (7)	Operator seat	Seated	Max. 1Ω
					Not seated	Min. 1MΩ
			Between P03 (male) (8) and (2)		Seated	Min. 1MΩ
					Not seated	Max. 1Ω
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01 and P03. Connect a socket to the female side of C01 and connect a T-adapter to the female side of P03 to do the troubleshooting.				
		Resistance	Between P03 (female) (7) and C01 (female) (58)			Max. 1Ω
			Between C01 (female) (38) and P03 (female) (2)			Max. 1Ω
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)				

Circuit diagram of seat switch 1 (Forklift truck without seat belt interlock system)

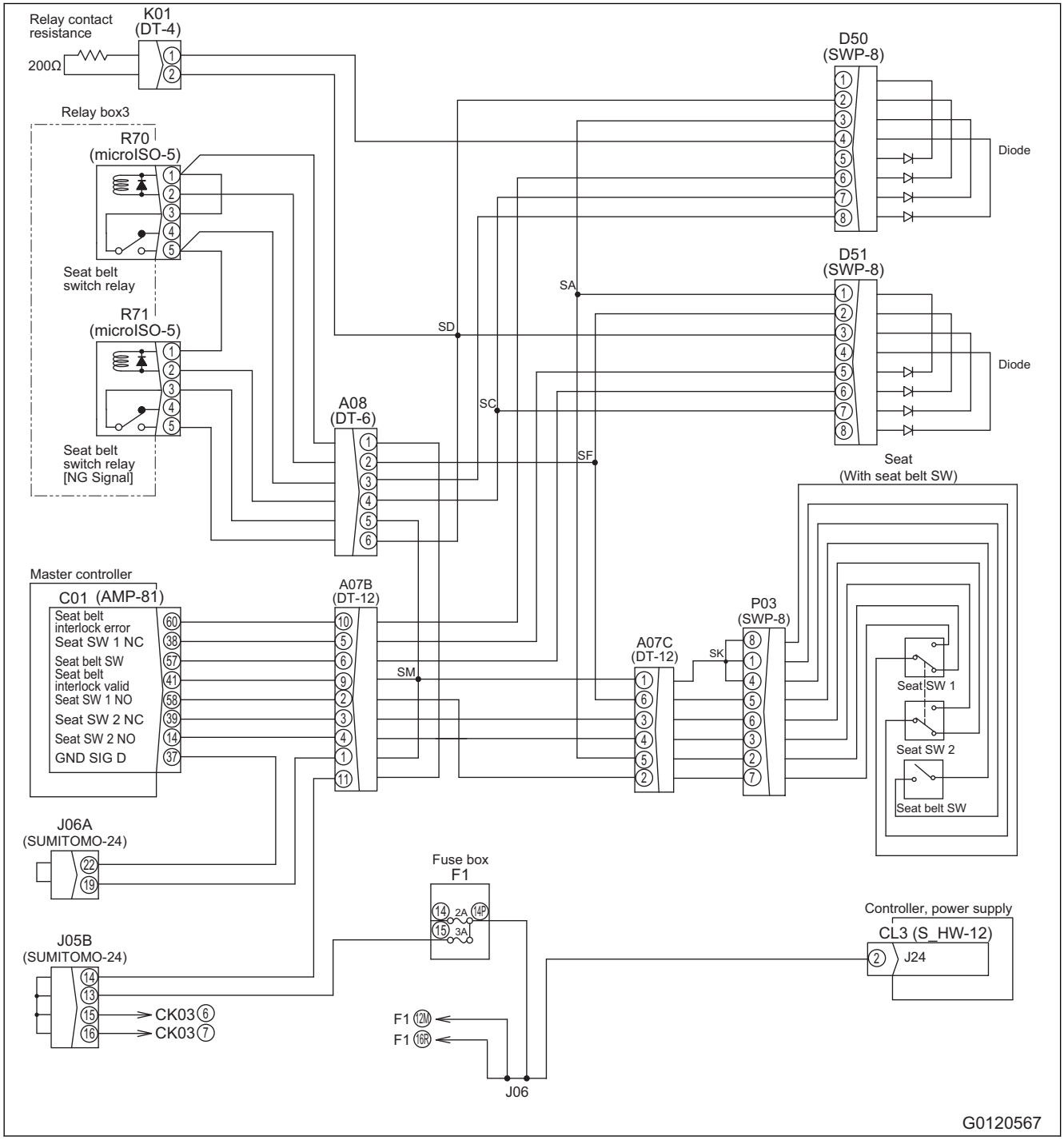


FAILURE CODE [DDDTKA] (FORKLIFT TRUCK WITH SEAT BELT INTERLOCK SYSTEM)

Action level	Failure code	Failure phenomenon	DISC) Seat SW1 (Forklift truck with seat belt interlock system) (Master controller system)
L01	DDDTKA		
Detail of failure	The NO and NC of seat switch 1 in the seat switch circuit turn off (open) at the same time.		
Action of controller	Turns on the error caution lamp. (Seat switch alarm (yellow))		
Problem on lift truck	None.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position. Sit in or get off the operator seat, and hold this condition for 1 second or more.		

<table>
<tr><th>No.</th><th>Cause</th><th colspan="5">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="5">1</td><td rowspan="5">Defective seat switch
(internal short circuit)</td><td colspan="5">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector P03. Connect the T-adapter to male side to do the troubleshooting.</td></tr>
<tr><td rowspan="4">Resistance</td><td rowspan="2">Between P03 (male) (8) and (7)</td><td rowspan="4">Operator seat</td><td>Seated</td><td>Max. 1Ω</td></tr>
<tr><td>Not seated</td><td>Min. 1MΩ</td></tr>
<tr><td rowspan="2">Between P03 (male) (8) and (2)</td><td>Seated</td><td>Min. 1MΩ</td></tr>
<tr><td>Not seated</td><td>Max. 1Ω</td></tr>
<tr><td rowspan="4">2</td><td rowspan="4">Open circuit in wiring harness
(wire breakage or defective contact of connector)</td><td colspan="5">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors C01 and P03. Connect a socket to the female side of C01 and connect a T-adapter to the female side of P03 to do the troubleshooting.</td></tr>
<tr><td>Resistance</td><td colspan="3">Between P03 (female) (7) and C01 (female) (58)</td><td>Max. 1Ω</td></tr>
<tr><td rowspan="2">Continuity</td><td colspan="3">Between C01 (female) (38) (+) and P03 (female) (2) (-)
REMARK
Do the measurement with the diode range of the multimeter.</td><td rowspan="2">Continuity</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>3</td><td>Defective master controller</td><td colspan="5">If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of seat switch 1 (Forklift truck with seat belt interlock system)

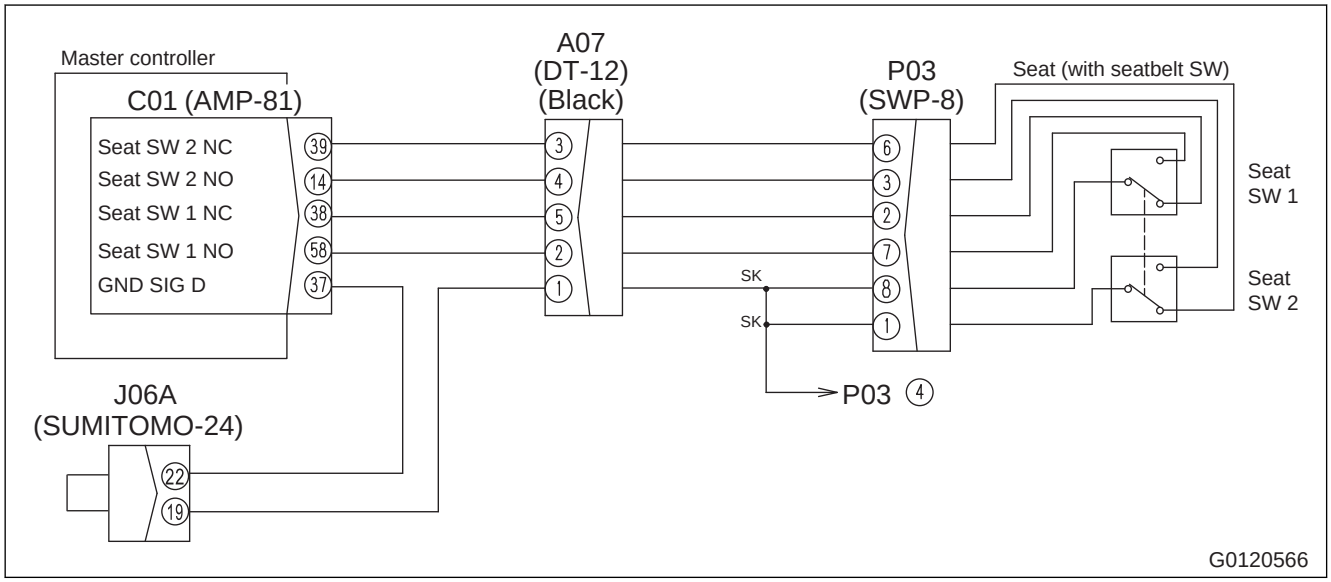


FAILURE CODE [DDDTKB] (FORKLIFT TRUCK WITHOUT SEAT BELT INTERLOCK SYSTEM)

Action level	Failure code	Failure phenomenon	SHORT_G) Seat SW1 (Forklift truck without seat belt interlock system) (Master controller system)
L01	DDDTKB		
Detail of failure	The NO and NC of seat switch 1 in the seat switch circuit turn on at the same time.		
Action of controller	Turns on the error caution lamp. (Seat switch alarm (yellow))		
Problem on lift truck	None.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position. Sit in or get off the operator seat, and hold this condition for 1 second or more.		

No.	Cause	Procedure, measurement location, criteria and remarks				
1	Defective seat switch (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P03. Connect the T-adapter to male side to do the troubleshooting.				
		Resistance	Between P03 (male) (8) and (7)	Operator seat	Seated	Max. 1Ω
					Not seated	Min. 1MΩ
			Between P03 (male) (8) and (2)		Seated	Min. 1MΩ
					Not seated	Max. 1Ω
2	Ground fault in wiring harness (Contact with GND circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01 and P03. Connect the T-adapter to the female side of P03 to do the troubleshooting.				
		Resistance	Between P03 (female) (7) and (8)			Min. 1MΩ
			Between P03 (female) (2) and (8)			Min. 1MΩ
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)				

Circuit diagram of seat switch 1 (Forklift truck without seat belt interlock system)

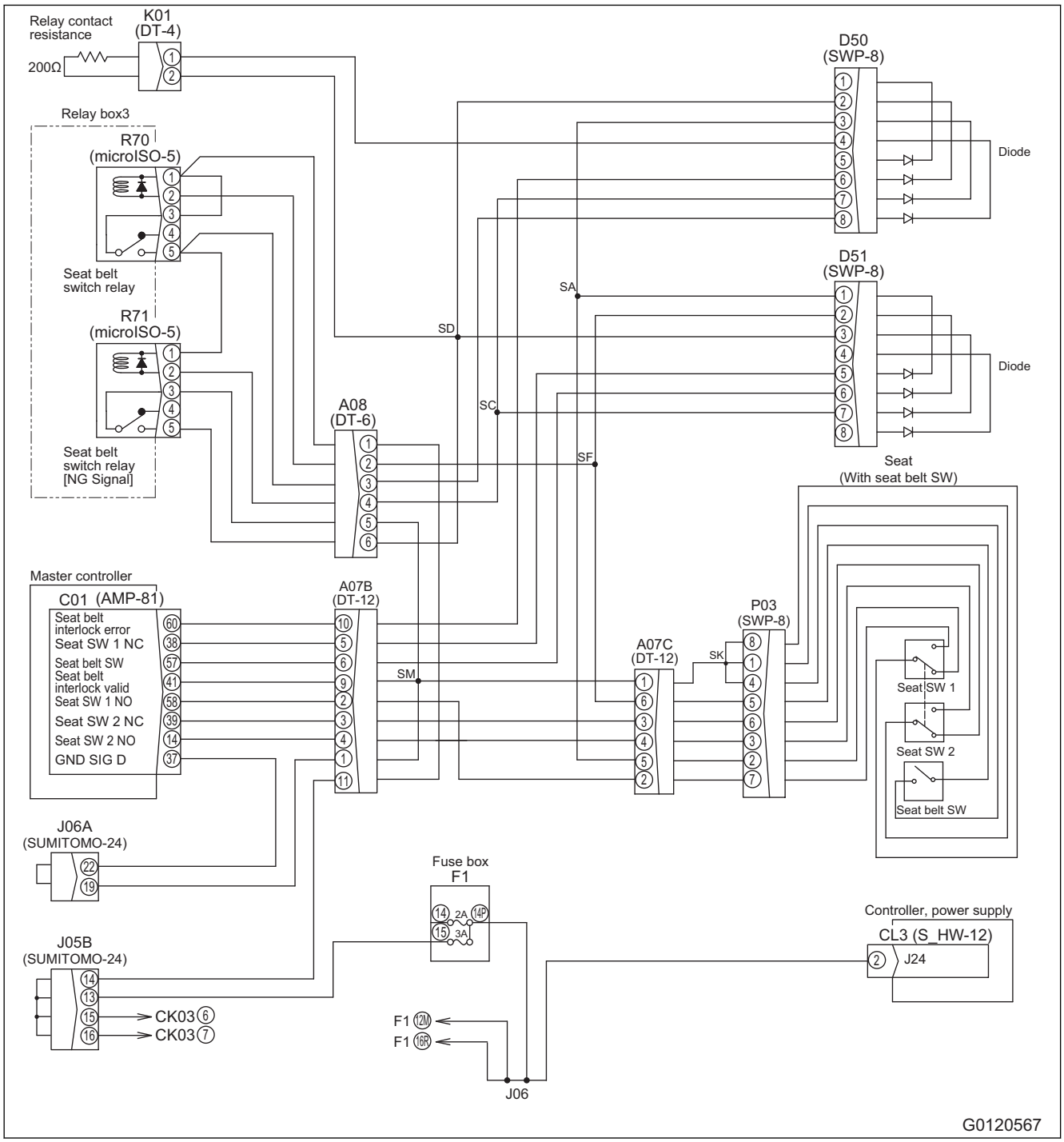


FAILURE CODE [DDDTKB] (FORKLIFT TRUCK WITH SEAT BELT INTERLOCK SYSTEM)

Action level	Failure code	Failure phenomenon	SHORT_G) Seat SW1 (Forklift truck with seat belt interlock system) (Master controller system)
L01	DDDTKB		
Detail of failure	The NO and NC of seat switch 1 in the seat switch circuit turn on at the same time.		
Action of controller	Turns on the error caution lamp. (Seat switch alarm (yellow))		
Problem on lift truck	None.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position. Sit in or get off the operator seat, and hold this condition for 1 second or more.		

No.	Cause	Procedure, measurement location, criteria and remarks				
1	Defective seat switch (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P03. Connect the T-adapter to male side to do the troubleshooting.				
		Resistance	Between P03 (male) (8) and (7)	Operator seat	Seated	Max. 1Ω
					Not seated	Min. 1MΩ
			Between P03 (male) (8) and (2)		Seated	Min. 1MΩ
					Not seated	Max. 1Ω
2	Ground fault in wiring harness (Contact with GND circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01 and P03. Connect the T-adapter to the female side of P03 to do the troubleshooting.				
		Resistance	Between P03 (female) (7) and (8)			Min. 1MΩ
			Between P03 (female) (2) and (8)			Min. 1MΩ
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)				

Circuit diagram of seat switch 1 (Forklift truck with seat belt interlock system)

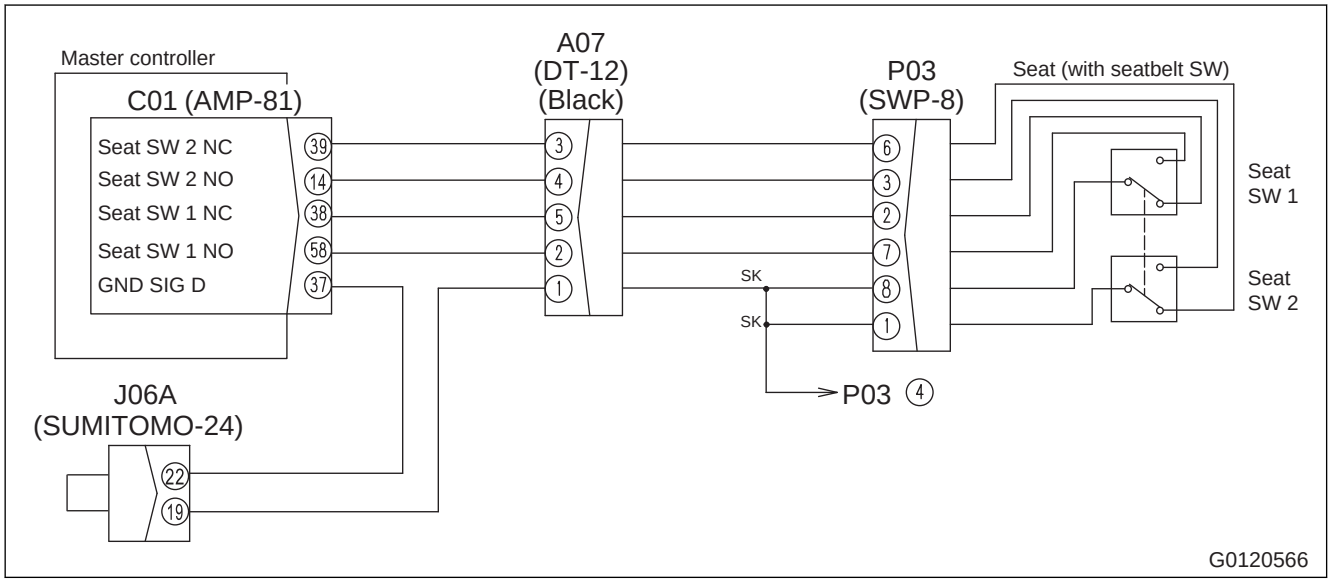


FAILURE CODE [DDDUKA] (FORKLIFT TRUCK WITHOUT SEAT BELT INTERLOCK SYSTEM)

Action level	Failure code	Failure phenomenon	DISC) Seat SW2 (forklift truck without seat belt interlock system) (Master controller system)
L01	DDDUKA		
Detail of failure	The NO and NC of seat switch 2 in the seat switch circuit turn off (open) at the same time.		
Action of controller	Turns on the error caution lamp. (Seat switch alarm (yellow))		
Problem on lift truck	None.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position. Sit in or get off the operator seat, and hold this condition for 1 second or more.		

No.	Cause	Procedure, measurement location, criteria and remarks				
1	Defective seat switch (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P03. Connect the T-adapter to male side to do the troubleshooting.				
		Resistance	Between P03 (male) (1) and (3)	Operator seat	Seated	Max. 1Ω
					Not seated	Min. 1MΩ
			Between P03 (male) (1) and (6)		Seated	Min. 1MΩ
					Not seated	Max. 1Ω
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01 and P03. Connect a socket to the female side of C01 and connect a T-adapter to the female side of P03 to do the troubleshooting.				
		Resistance	Between P03 (female) (3) and C01 (female) (14)			Max. 1Ω
			Between P03 (female) (6) and C01 (female) (39)			Max. 1Ω
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)				

Circuit diagram of seat switch 1 (Forklift truck without seat belt interlock system)

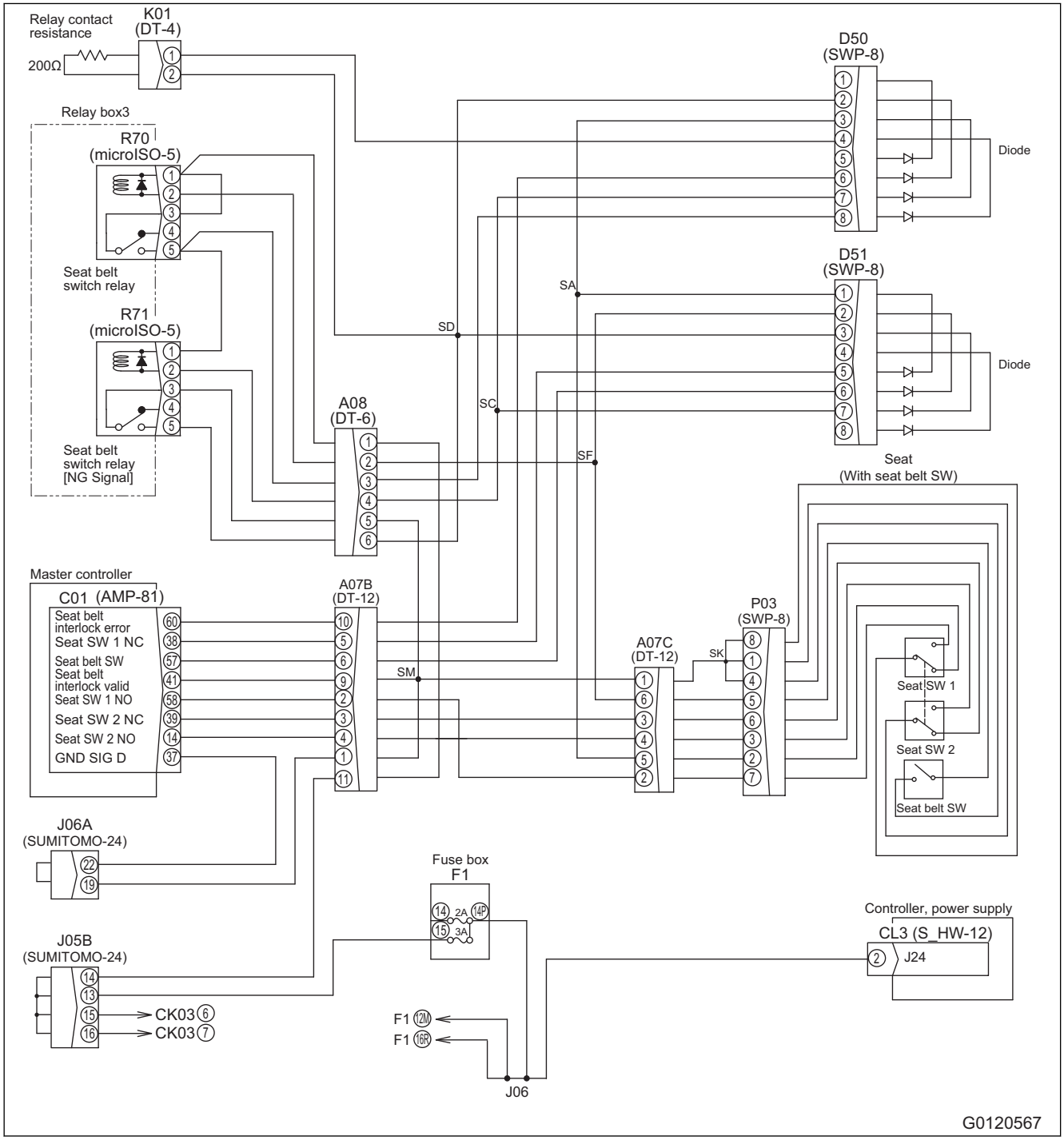


FAILURE CODE [DDDUKA] (FORKLIFT TRUCK WITH SEAT BELT INTERLOCK SYSTEM)

Action level	Failure code	Failure phenomenon	DISC) Seat SW2 (Forklift truck with seat belt interlock system) (Master controller system)
L01	DDDUKA		
Detail of failure	The NO and NC of seat switch 2 in the seat switch circuit turn off (open) at the same time.		
Action of controller	Turns on the error caution lamp. (Seat switch alarm (yellow))		
Problem on lift truck	None.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position. Sit in or get off the operator seat, and hold this condition for 1 second or more.		

No.	Cause	Procedure, measurement location, criteria and remarks				
1	Defective seat switch (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P03. Connect the T-adapter to male side to do the troubleshooting.				
		Resistance	Between P03 (male) (1) and (3)	Operator seat	Seated	Max. 1Ω
					Not seated	Min. 1MΩ
			Between P03 (male) (1) and (6)		Seated	Min. 1MΩ
					Not seated	Max. 1Ω
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01 and P03. Connect a socket to the female side of C01 and connect a T-adapter to the female side of P03 to do the troubleshooting.				
		Resistance	Between P03 (female) (3) and C01 (female) (14)			Max. 1Ω
			Between P03 (female) (6) and C01 (female) (39)			Max. 1Ω
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)				

Circuit diagram of seat switch 1 (Forklift truck with seat belt interlock system)

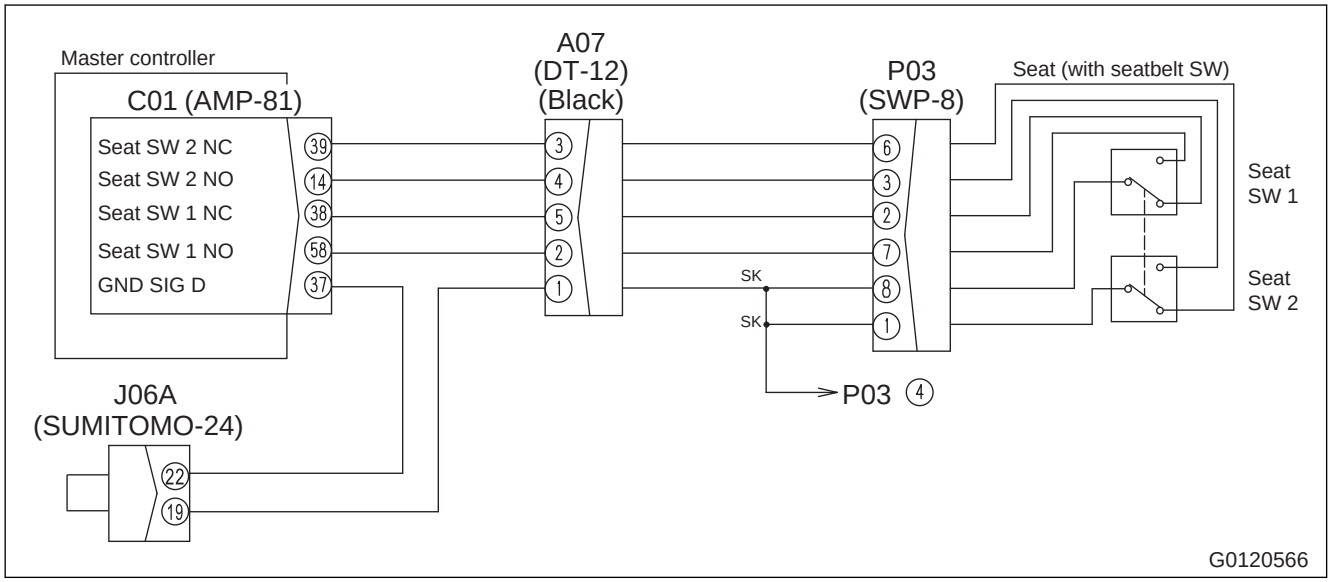


FAILURE CODE [DDDUKB] (FORKLIFT TRUCK WITHOUT SEAT BELT INTERLOCK SYSTEM)

Action level	Failure code	Failure phenomenon	SHORT_G) Seat SW2 (Forklift truck without seat belt interlock system) (Master controller system)
L01	DDDUKB		
Detail of failure	The NO and NC of seat switch 2 in the seat switch circuit turn on at the same time.		
Action of controller	Turns on the error caution lamp. (Seat switch alarm (yellow))		
Problem on lift truck	None.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position. Sit in or get off the operator seat, and hold this condition for 1 second or more.		

No.	Cause	Procedure, measurement location, criteria and remarks				
1	Defective seat switch (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P03. Connect the T-adapter to male side to do the troubleshooting.				
		Resistance	Between P03 (male) (1) and (3)	Operator seat	Seated	Max. 1Ω
					Not seated	Min. 1MΩ
			Between P03 (male) (1) and (6)		Seated	Min. 1MΩ
					Not seated	Max. 1Ω
2	Ground fault in wiring harness (Contact with GND circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01 and P03. Connect the T-adapter to the female side of P03 to do the troubleshooting.				
		Resistance	Between P03 (female) (3) and (1)			Min. 1MΩ
			Between P03 (female) (6) and (1)			Min. 1MΩ
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)				

Circuit diagram of seat switch 1 (Forklift truck without seat belt interlock system)

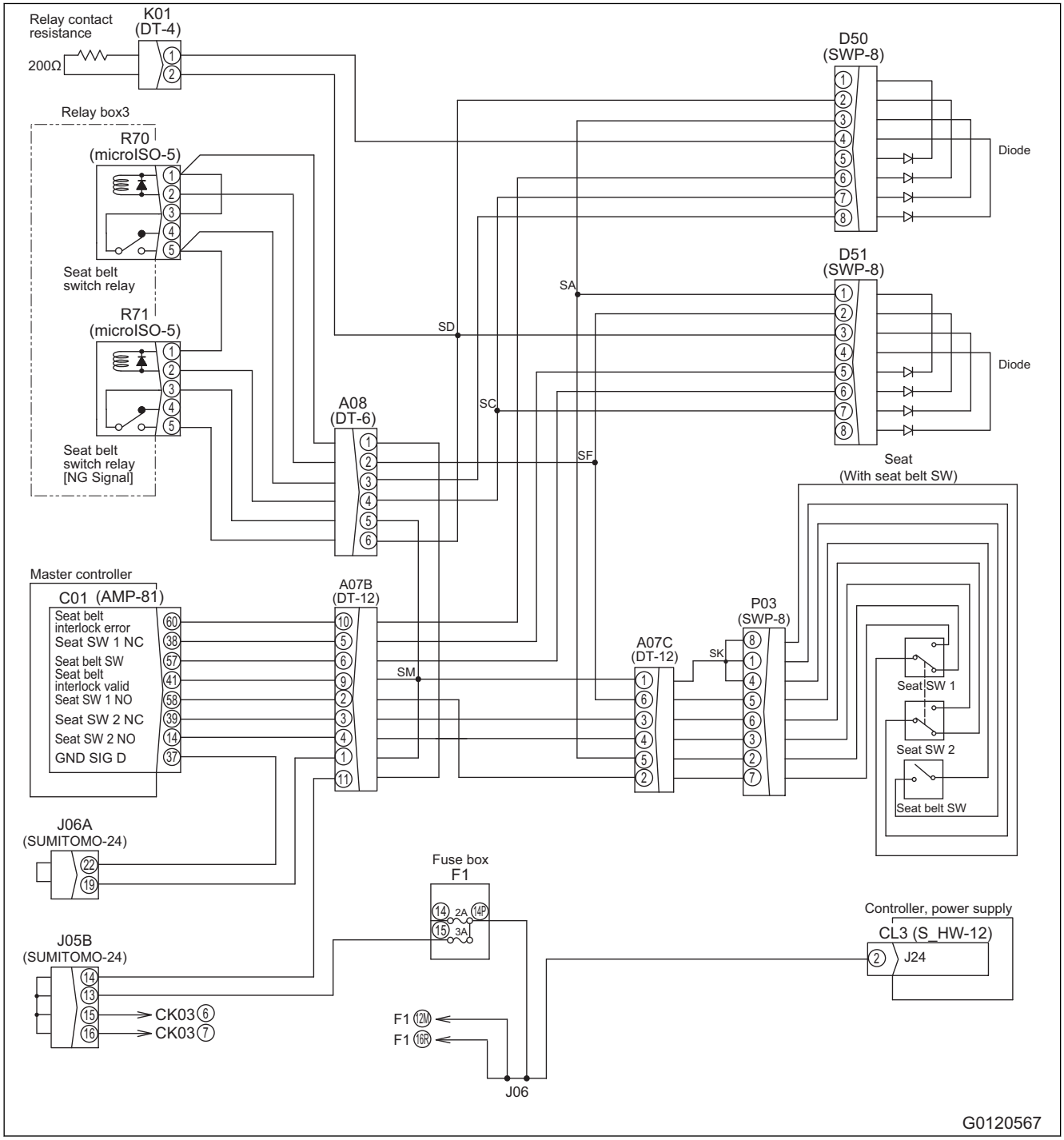


FAILURE CODE [DDDUKB] (FORKLIFT TRUCK WITH SEAT BELT INTERLOCK SYSTEM)

Action level	Failure code	Failure phenomenon	SHORT_G) Seat SW2 (Forklift truck with seat belt interlock system) (Master controller system)
L01	DDDUKB		
Detail of failure	The NO and NC of seat switch 2 in the seat switch circuit turn on at the same time.		
Action of controller	Turns on the error caution lamp. (Seat Switch (yellow))		
Problem on lift truck	None.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position. Sit in or get off the operator seat, and hold this condition for 1 second or more.		

No.	Cause	Procedure, measurement location, criteria and remarks				
1	Defective seat switch (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P03. Connect the T-adapter to male side to do the troubleshooting.				
		Resistance	Between P03 (male) (1) and (3)	Operator seat	Seated	Max. 1Ω
					Not seated	Min. 1MΩ
			Between P03 (male) (1) and (6)		Seated	Min. 1MΩ
					Not seated	Max. 1Ω
2	Ground fault in wiring harness (Contact with GND circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01 and P03. Connect the T-adapter to the female side of P03 to do the troubleshooting.				
		Resistance	Between P03 (female) (3) and (1)			Min. 1MΩ
			Between P03 (female) (6) and (1)			Min. 1MΩ
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)				

Circuit diagram of seat switch 1 (Forklift truck with seat belt interlock system)



FAILURE CODE [DDDVKA] (FORKLIFT TRUCK WITHOUT SEAT BELT INTERLOCK SYSTEM)

Action level	Failure code	Failure phenomenon	ABNL) Seat SW (Forklift truck without seat belt interlock system) (Master controller system)
L04	DDDVKA		
Detail of failure	The 2 circuits of the seat switch circuit have logical errors that follow at the same time. **REMARK** For logical errors, see Table 1.		
Action of controller	• Activates the lift interlock and the travel interlock. • Turns on the error caution lamp. (Seat switch alarm (red)) • Operates the alarm buzzer. (continuously)		
Problem on lift truck	• Load handling and travel are not possible. (Based on the lift interlock function) • If this failure occurs during travel, the forklift truck stops in the N position. (Based on the travel interlock function)		
Related information	How to reproduce failure code: Turn the starting switch to the ON position. Sit in or get off the operator seat, and hold this condition for 1 second or more.		

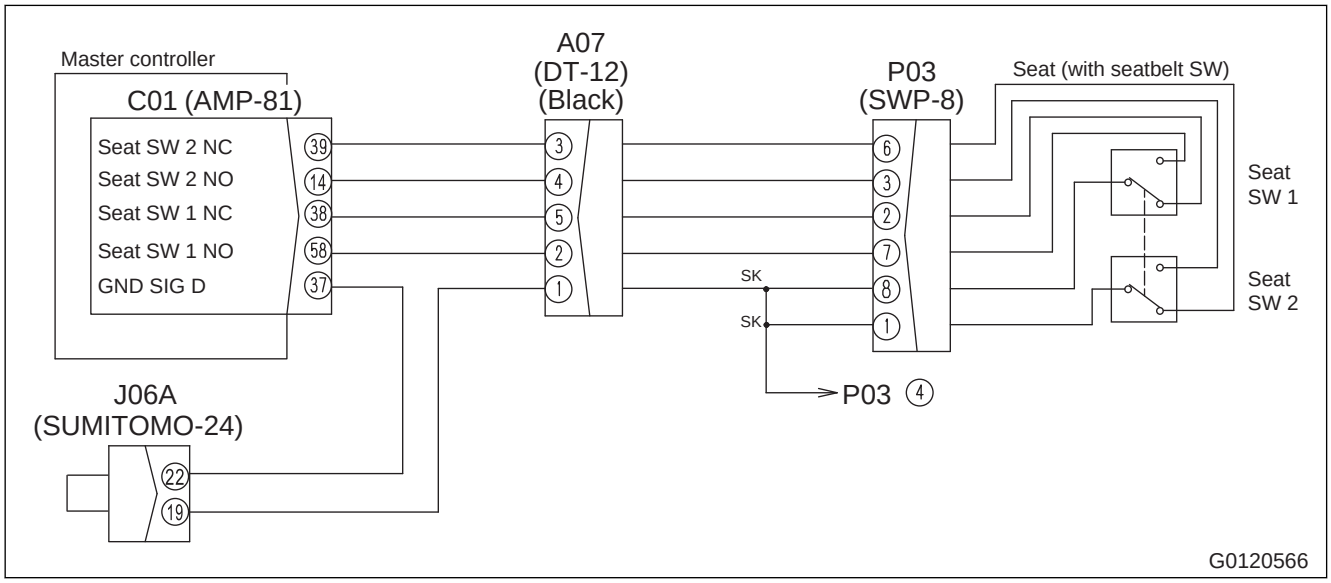
No.	Cause	Procedure, measurement location, criteria and remarks				
1	Defective seat switch (open or internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P03. Connect the T-adapter to male side to do the troubleshooting.				
		Resistance	Between P03 (male) (1) and (3), and between (7) and (8)	Operator seat	Seated	Max. 1Ω
					Not seated	Min. 1MΩ
			Between P03 (male) (1) and (6), and between (2) and (8)		Seated	Min. 1MΩ
					Not seated	Max. 1Ω
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01 and P03. Connect a socket to the female side of C01 and connect a T-adapter to the female side of P03 to do the troubleshooting.				
		Resistance	Between P03 (female) (7) and C01 (female) (58)			Max. 1Ω
			Between P03 (female) (6) and C01 (female) (39)			Max. 1Ω
			Between P03 (female) (3) and C01 (female) (14)			Max. 1Ω
			Between P03 (female) (8) and C01 (female) (37)			Max. 1Ω
			Between P03 (female) (1) and C01 (female) (37)			Max. 1Ω
			Between C01 (female) (38) and P03 (female) (2)			Max. 1Ω
3	Ground fault in wiring harness (Contact with GND circuit)	See the details in 2. Ground fault in wiring harness (contact with GND circuit) of failure codes [DDDTKB] and [DDDUKB].				

No.	Cause	Procedure, measurement location, criteria and remarks
4	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

Table 1

	Seat switch 1		Seat switch 2	
Condition	NO1	NC1	NO2	NC2
1	ON	ON	OFF	OFF
2	OFF	OFF	ON	ON
3	ON	ON	ON	ON
4	OFF	OFF	OFF	OFF

Circuit diagram of seat switch 1 (Forklift truck without seat belt interlock system)



FAILURE CODE [DDDVKA] (FORKLIFT TRUCK WITH SEAT BELT INTERLOCK SYSTEM)

Action level	Failure code	Failure phenomenon	ABNL) Seat SW (Forklift truck with seat belt interlock system) (Master controller system)
L04	DDDVKA		
Detail of failure	The 2 circuits of the seat switch circuit have logical errors that follow at the same time. **REMARK** For logical errors, see Table 1.		
Action of controller	• Activates the lift interlock and the travel interlock. • Turns on the error caution lamp. (Seat switch alarm (red)) • Operates the alarm buzzer. (continuously)		
Problem on lift truck	• Load handling and travel are not possible. (Based on the lift interlock function) • If this failure occurs during travel, the forklift truck stops in the N position. (Based on the travel interlock function)		
Related information	How to reproduce failure code: Turn the starting switch to the ON position. Sit in or get off the operator seat, and hold this condition for 1 second or more.		

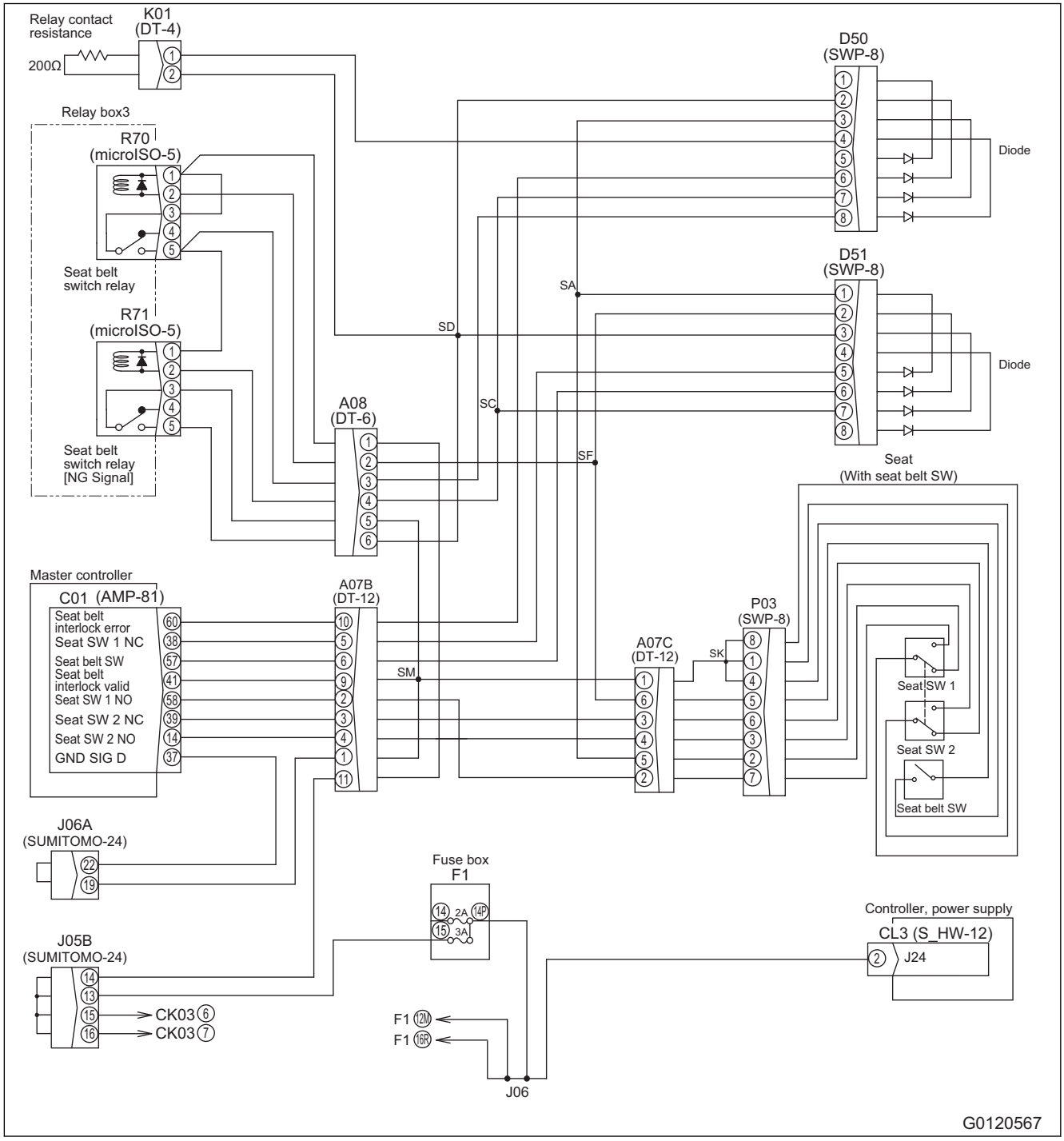
No.	Cause	Procedure, measurement location, criteria and remarks				
1	Defective seat switch (open or internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P03. Connect the T-adapter to male side to do the troubleshooting.				
		Resistance	Between P03 (male) (1) and (3), and between (7) and (8)	Operator seat	Seated	Max. 1Ω
					Not seated	Min. 1MΩ
			Between P03 (male) (1) and (6), and between (2) and (8)		Seated	Min. 1MΩ
					Not seated	Max. 1Ω
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01 and P03. Connect a socket to the female side of C01 and connect a T-adapter to the female side of P03 to do the troubleshooting.				
		Resistance	Between P03 (female) (7) and C01 (female) (58)			Max. 1Ω
			Between P03 (female) (6) and C01 (female) (39)			Max. 1Ω
			Between P03 (female) (3) and C01 (female) (14)			Max. 1Ω
			Between P03 (female) (8) and C01 (female) (37)			Max. 1Ω
			Between P03 (female) (1) and C01 (female) (37)			Max. 1Ω
		Continuity	Between C01 (female) (38) (+) and P03 (female) (2) (-) **REMARK** Do the measurement with the diode range of the multimeter.			Continuity

No.	Cause	Procedure, measurement location, criteria and remarks
3	Ground fault in wiring harness (Contact with GND circuit)	See the details in 2. Ground fault in wiring harness (contact with GND circuit) of failure codes [DDDTKB] and [DDDUKB].
4	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

Table 1

	Seat switch 1		Seat switch 2	
Condition	NO1	NC1	NO2	NC2
1	ON	ON	OFF	OFF
2	OFF	OFF	ON	ON
3	ON	ON	ON	ON
4	OFF	OFF	OFF	OFF

Circuit diagram of seat switch 1 (Forklift truck with seat belt interlock system)



FAILURE CODE [DDDVKM] (FORKLIFT TRUCK WITHOUT SEAT BELT INTERLOCK SYSTEM)

Action level	Failure code	Failure phenomenon	OPE-ERROR) Seat SW (Forklift truck without seat belt interlock system) (Master controller system)
L04	DDDVKM		
Detail of failure	The seat switch circuit has a logical error that follows because of a dual failure or because the operator sits only on one side. **REMARK** For logical errors, see Table 1.		
Action of controller	• Activates the lift interlock and the travel interlock. • Turns on the error caution lamp. (Seat switch alarm (red)) • Operates the alarm buzzer. (continuously)		
Problem on lift truck	• Load handling and travel are not possible. (Based on the lift interlock function) • If this failure occurs during travel, the forklift truck stops in the N position. (Based on the travel interlock function)		
Related information	How to reproduce failure code: Turn the starting switch to the ON position. Sit in the operator seat, get off from it, or sit on halfway (let only one of two seat switch circuits be activated). Keep it for 20 seconds or more.		

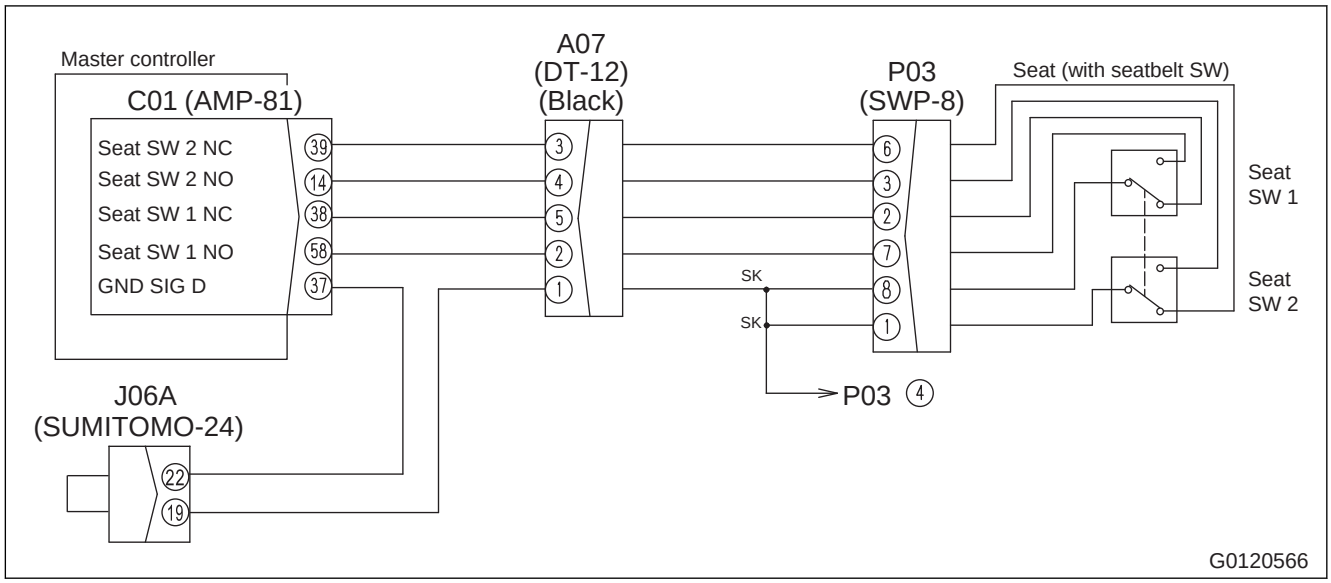
No.	Cause	Procedure, measurement location, criteria and remarks				
1	Defective seat switch (open or internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P03. Connect the T-adapter to male side to do the troubleshooting.				
		Resistance	Between P03 (male) (1) and (3), and between (7) and (8)	Operator seat	Seated	Max. 1Ω
					Not seated	Min. 1MΩ
			Between P03 (male) (1) and (6), and between (2) and (8)		Seated	Min. 1MΩ
					Not seated	Max. 1Ω
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01 and P03. Connect a socket to the female side of C01 and connect a T-adapter to the female side of P03 to do the troubleshooting.				
		Resistance	Between P03 (female) (7) and C01 (female) (58)			Max. 1Ω
			Between P03 (female) (6) and C01 (female) (39)			Max. 1Ω
			Between P03 (female) (3) and C01 (female) (14)			Max. 1Ω
			Between P03 (female) (8) and C01 (female) (37)			Max. 1Ω
			Between P03 (female) (1) and C01 (female) (37)			Max. 1Ω
			Between C01 (female) (38) and P03 (female) (2)			Max. 1Ω

No.	Cause	Procedure, measurement location, criteria and remarks
3	Ground fault in wiring harness (Contact with GND circuit)	See the details in 2. Ground fault in wiring harness (contact with GND circuit) of failure codes [DDDTKB] and [DDDUKB].
4	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

Table 1

	Seat switch 1		Seat switch 2	
Condition	NO1	NC1	NO2	NC2
1	ON	OFF	OFF	ON
2	OFF	ON	ON	OFF

Circuit diagram of seat switch 1 (Forklift truck without seat belt interlock system)



FAILURE CODE [DDDVKM] (FORKLIFT TRUCK WITH SEAT BELT INTERLOCK SYSTEM)

Action level	Failure code	Failure phenomenon	OPE-ERROR) Seat SW (Forklift truck with seat belt interlock system) (Master controller system)
L04	DDDVKM		
Detail of failure	The seat switch circuit has a logical error that follows because of a dual failure or because the operator sits only on one side. **REMARK** For logical errors, see Table 1.		
Action of controller	• Activates the lift interlock and the travel interlock. • Turns on the error caution lamp. (Seat switch alarm (red)) • Operates the alarm buzzer. (continuously)		
Problem on lift truck	• Load handling and travel are not possible. (Based on the lift interlock function) • If this failure occurs during travel, the forklift truck stops in the N position. (Based on the travel interlock function)		
Related information	How to reproduce failure code: Turn the starting switch to the ON position. Sit in the operator seat, get off from it, or sit on halfway (let only one of two seat switch circuits be activated). Keep it for 20 seconds or more.		

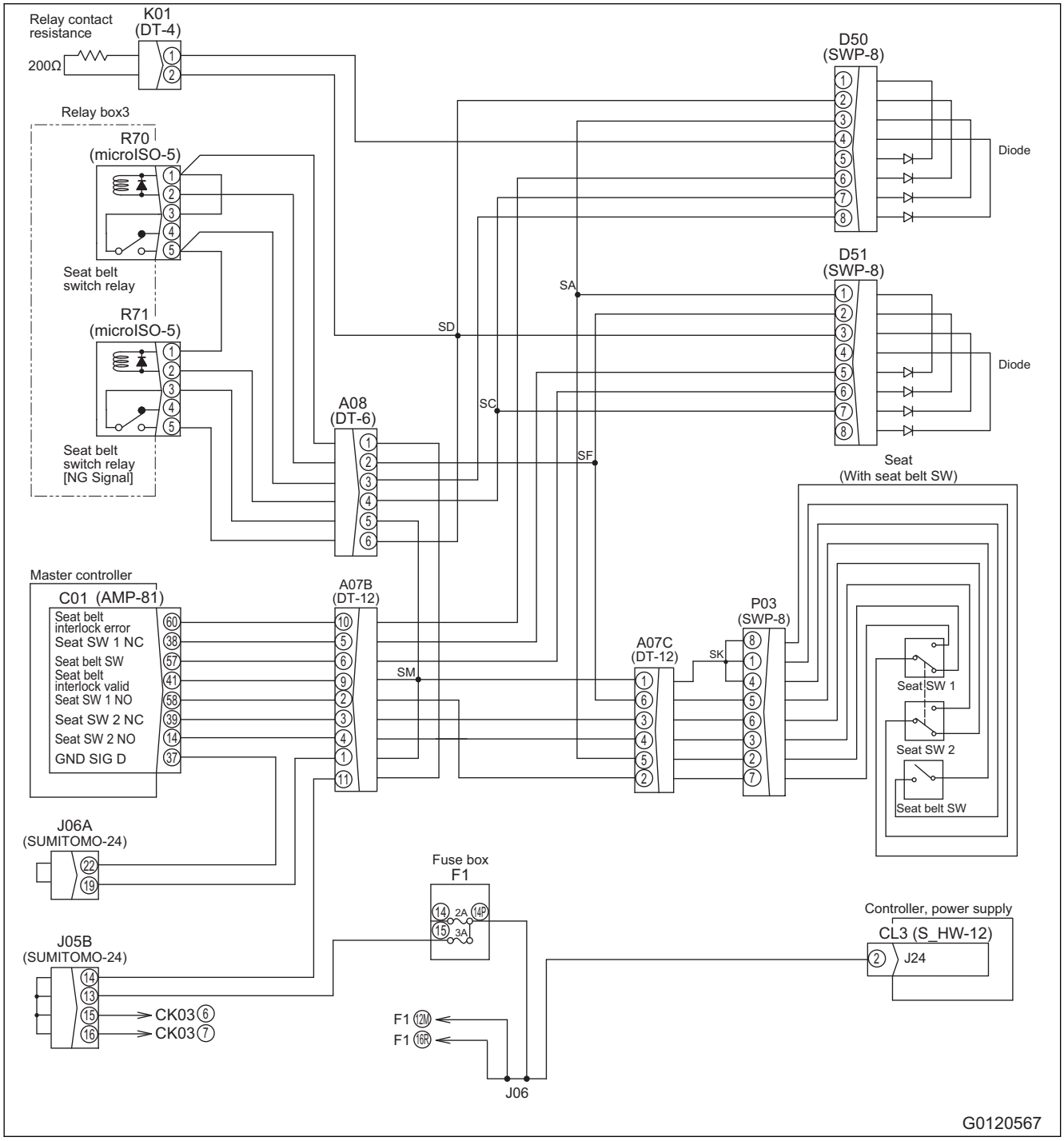
No.	Cause	Procedure, measurement location, criteria and remarks				
1	Defective seat switch (open or internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P03. Connect the T-adapter to male side to do the troubleshooting.				
		Resistance	Between P03 (male) (1) and (3), and between (7) and (8)	Operator seat	Seated	Max. 1Ω
					Not seated	Min. 1MΩ
			Between P03 (male) (1) and (6), and between (2) and (8)		Seated	Min. 1MΩ
					Not seated	Max. 1Ω
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01 and P03. Connect a socket to the female side of C01 and connect a T-adapter to the female side of P03 to do the troubleshooting.				
		Resistance	Between P03 (female) (7) and C01 (female) (58)			Max. 1Ω
			Between P03 (female) (6) and C01 (female) (39)			Max. 1Ω
			Between P03 (female) (3) and C01 (female) (14)			Max. 1Ω
			Between P03 (female) (8) and C01 (female) (37)			Max. 1Ω
			Between P03 (female) (1) and C01 (female) (37)			Max. 1Ω
		Continuity	Between C01 (female) (38) (+) and P03 (female) (2) (-) **REMARK** Do the measurement with the diode range of the multimeter.			Continuity

No.	Cause	Procedure, measurement location, criteria and remarks
3	Ground fault in wiring harness (Contact with GND circuit)	See the details in 2. Ground fault in wiring harness (contact with GND circuit) of failure codes [DDDTKB] and [DDDUKB].
4	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

Table 1

	Seat switch 1		Seat switch 2	
Condition	NO1	NC1	NO2	NC2
1	ON	OFF	OFF	ON
2	OFF	ON	ON	OFF

Circuit diagram of seat switch 1 (Forklift truck with seat belt interlock system)



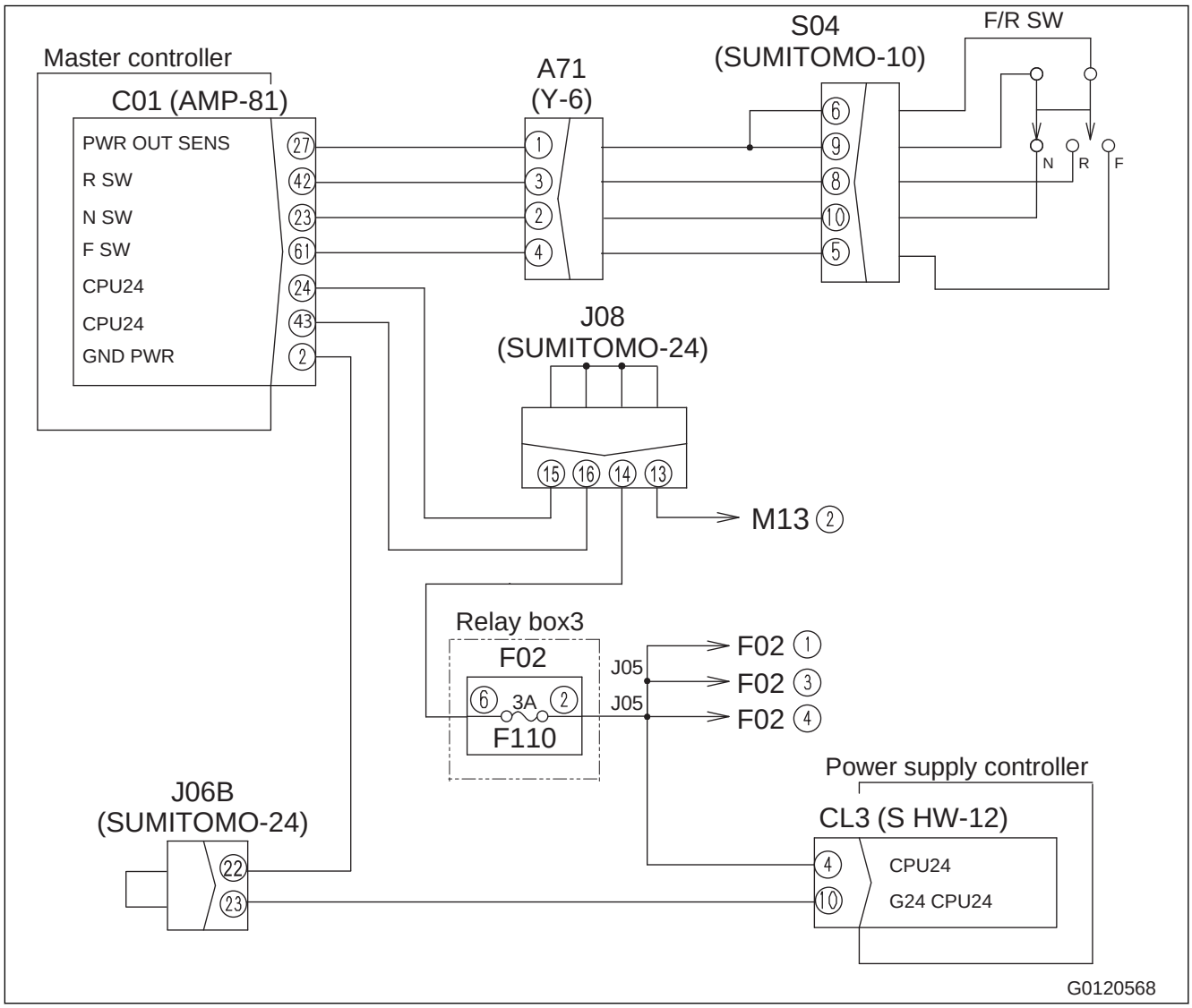
FAILURE CODE [DDK6KA]

Action level	Failure code	Failure phenomenon	DISC) Direction Lever (Master controller system)
L03	DDK6KA		
Detail of failure	The all OFF states of F/N/R lever signals are sensed for 10 seconds continuously.		
Action of controller	• Operates the travel interlock. • If the input is correct continuously for 3 seconds, the vehicle goes back to correct state directly.		
Problem on lift truck	Travel interlock operates and the vehicle cannot move.		
Related information	• This is not sensed in charging mode. • The input (ON/OFF) from the direction F switch can be examined with the monitoring function. (Code: 91107) • The input (ON/OFF) from the direction R switch can be examined with the monitoring function. (Code: 91108) • The input (ON/OFF) from the direction N switch can be examined with the monitoring function. (Code: 91109) • How to reproduce failure code: Turn the starting switch to the ON position. Set the directional (FNR) lever to F, N, and R.		

No.	Cause	Procedure, measurement location, criteria and remarks			
1	Defective directional selector (FNR) switch (internal open or short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector S04. Connect the T-adapter to male side to do the troubleshooting.			
		Resistance	Between S04 (male) (9) and (10)	Directional (FNR) lever: N (neutral)	Max. 1Ω
				Directional (FNR) lever: Other than N	Min. 1MΩ
			Between S04 (male) (5) and (6)	Directional (FNR) lever: F (forward)	Max. 1Ω
				Directional (FNR) lever: Other than F	Min. 1MΩ
			Between S04 (male) (8) and (6)	Directional (FNR) lever: R (reverse)	Max. 1Ω
				Directional (FNR) lever: Other than R	Min. 1MΩ

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="8">2</td><td rowspan="8">Open circuit in wiring harness
(wire breakage or defective contact of connector)</td><td colspan="3">Directional (FNR) lever (F) line
1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors S04 and C01. Connect a socket to the female side of C01 and connect a T-adapter to the female side of S04 to do the troubleshooting.</td></tr>
<tr><td rowspan="2">Resistance</td><td>Between S04 (female) (5) and C01 (female) (61)</td><td>Max. 1Ω</td></tr>
<tr><td>Between S04 (female) (6) and C01 (female) (27)</td><td>Max. 1Ω</td></tr>
<tr><td colspan="3">Directional (FNR) lever (N) line
1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors S04 and C01. Connect a socket to the female side of C01 and connect a T-adapter to the female side of S04 to do the troubleshooting.</td></tr>
<tr><td>Resistance</td><td>Between S04 (female) (10) and C01 (female) (23)</td><td>Max. 1Ω</td></tr>
<tr><td colspan="3">Directional (FNR) lever (R) line
1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors S04 and C01. Connect a socket to the female side of C01 and connect a T-adapter to the female side of S04 to do the troubleshooting.</td></tr>
<tr><td>Resistance</td><td>Between S04 (female) (8) and C01 (female) (42)</td><td>Max. 1Ω</td></tr>
<tr><td rowspan="5">3</td><td rowspan="5">Short circuit in wiring harness
(Contact with GND circuit)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors S04 and C01, and connect the socket to the female side of C01 to do the troubleshooting.</td></tr>
<tr><td rowspan="4">Resistance</td><td>Between C01 (female) (27) and (2)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between C01 (female) (23) and (2)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between C01 (female) (42) and (2)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between C01 (female) (61) and (2)</td><td>Min. 1MΩ</td></tr>
<tr><td>4</td><td>Defective master controller</td><td colspan="3">If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of FNR lever signal

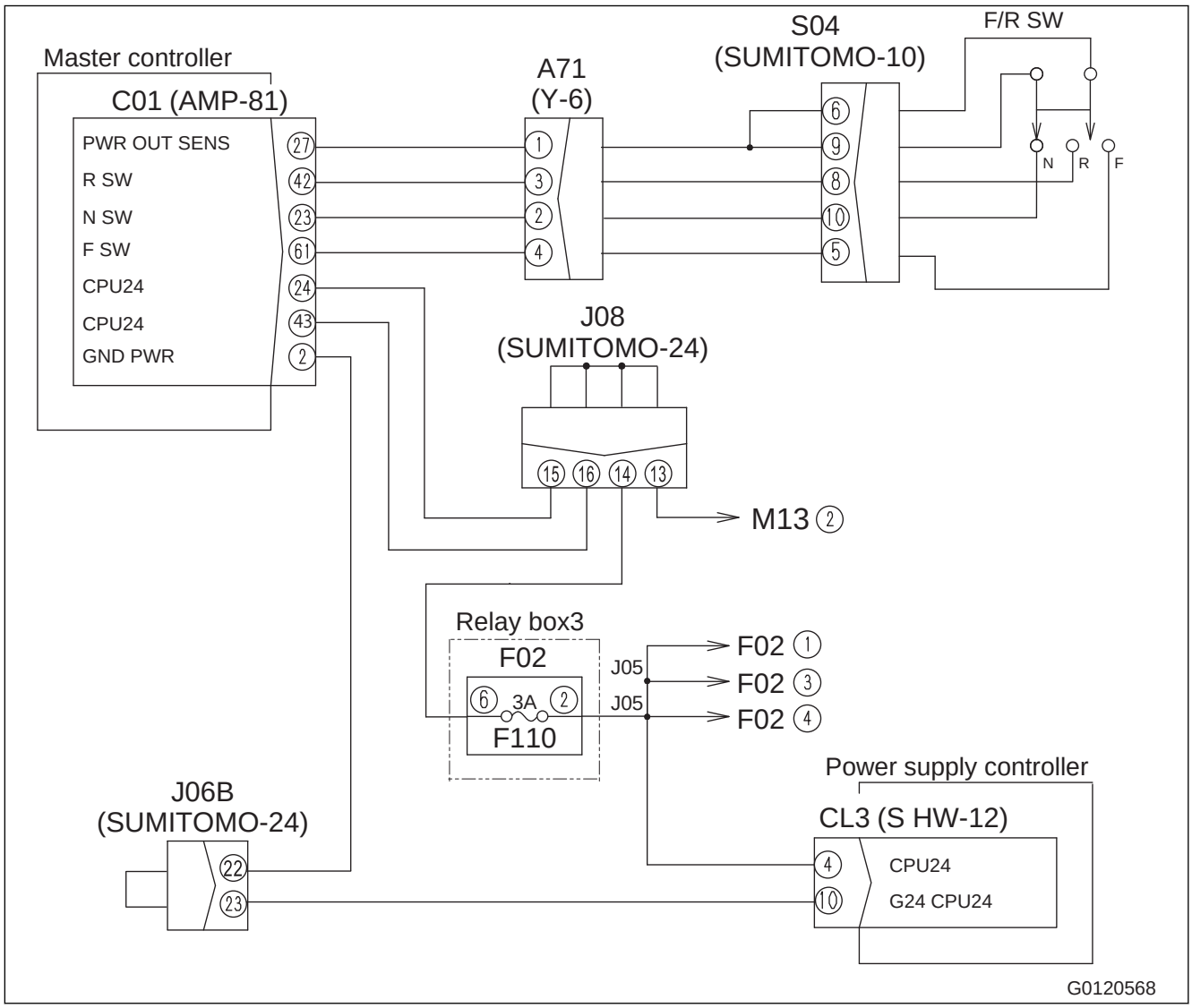


FAILURE CODE [DDK6KY]

Action level	Failure code	Failure phenomenon	SHORT_P) Direction Lever (Master controller system)
L03	DDK6KY		
Detail of failure	Several ON states of F/N/R lever signals are sensed for 1 second continuously.		
Action of controller	• Operates the travel interlock. • If the input is correct continuously for 3 seconds, the vehicle goes back to correct state directly.		
Problem on lift truck	Travel interlock operates and the vehicle cannot move.		
Related information	• This is not sensed in charging mode. • The input (ON/OFF) from the direction F switch can be examined with the monitoring function. (Code: 91107) • The input (ON/OFF) from the direction R switch can be examined with the monitoring function. (Code: 91108) • The input (ON/OFF) from the direction N switch can be examined with the monitoring function. (Code: 91109) • How to reproduce failure code: Turn the starting switch to the ON position. Set the directional (FNR) lever to F, N, and R.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective directional selector (FNR) switch (internal open or short circuit)	1. Turn the starting switch to the ON position. 2. Set the directional (FNR) lever to the F, N, and R positions, and see if this failure code is shown. 3. Turn the starting switch to the OFF position. 4. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 5. Disconnect the connector S04. 6. Connect the battery plug W50. 7. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** If failure code [DDK6KY] remains shown, the wiring harness has a short circuit or the master controller is defective.		
		If the failure code changes from [DDK6KY] to [DDK6KA], the directional (FNR) lever is defective.		
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01 and S04. Connect the socket to the female side of C01 to do the troubleshooting.		
		Resistance	Between C01 (female) (23) and (27)	Min. 1MΩ
			Between C01 (female) (42) and (27)	Min. 1MΩ
			Between C01 (female) (61) and (27)	Min. 1MΩ
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of FNR lever signal



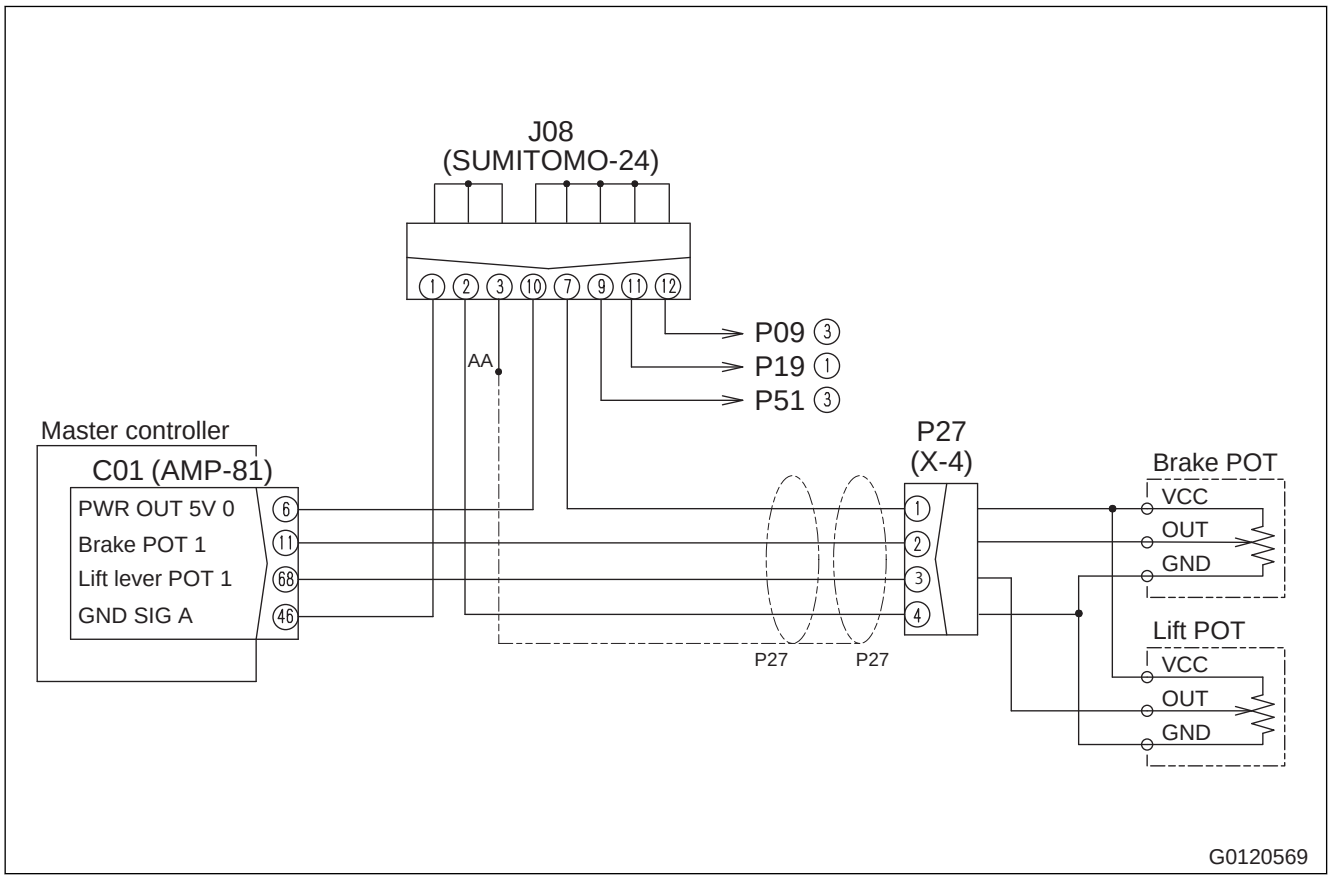
FAILURE CODE [DFC1KA]

Action level	Failure code	Failure phenomenon	DISC) Lift lever POT (Master controller system)
L03	DFC1KA		
Detail of failure	A lift lever POT signal voltage of ≤ 0.3V is sensed for 200msec continuously.		
Action of controller	• Judges that there is no lift lever operation. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	• The fork cannot be raised. • The fork can be lowered.		
Related information	• This is not sensed in charging mode. • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective 5V sensor power supply 1 system	If failure code [DBN5KX] is shown at the same time, do the troubleshooting for it first.		
		1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P27. Connect the T-adapter to the female side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** If the power supply voltage is abnormal, go to the cause 3 and after.		
		Voltage	Between P27 (female) (1) and (4)	4.8 to 5.2V

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="6">2</td><td rowspan="6">Defective lift lever angle sensor
(internal open or short circuit)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector P27. Connect the T-adapter to male side to do the troubleshooting.</td></tr>
<tr><td>Resistance</td><td>Between P27 (male) (1) and (4)</td><td>Approx. 2kΩ</td></tr>
<tr><td colspan="3">REMARK
Operate the lift lever and examine if the resistance changes.</td></tr>
<tr><td>Resistance</td><td>Between P27 (female) (3) and (4)</td><td>0 to 2kΩ</td></tr>
<tr><td colspan="3">Replace the sensor, and make sure that the failure code is cleared.
1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector P27. Replace the lift lever angle sensor with the same type.
4. Connect the battery plug W50.
5. Turn the starting switch to the ON position. Then, do the troubleshooting.
REMARK
Make sure that this failure code is not shown.</td></tr>
<tr><td rowspan="4">3</td><td rowspan="4">Open circuit in wiring harness
(wire breakage or defective contact of connector)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors P27 and C01. Connect a socket to the female side of C01 and connect a T-adapter to the female side of P27 to do the troubleshooting.</td></tr>
<tr><td rowspan="3">Resistance</td><td>Between C01 (female) (6) and P27 (female) (1)
REMARK
If the power supply voltage in check on cause 1 is correct, this check is not required.</td><td>Max. 1 Ω</td></tr>
<tr><td>Between C01 (female) (68) and P27 (female) (3)</td><td>Max. 1Ω</td></tr>
<tr><td>Between C01 (female) (46) and P27 (female) (4)
REMARK
If the power supply voltage in check on cause 1 is correct, this check is not required.</td><td>Max. 1 Ω</td></tr>
<tr><td>4</td><td>Defective master controller</td><td colspan="3">If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of lift lever angle sensor



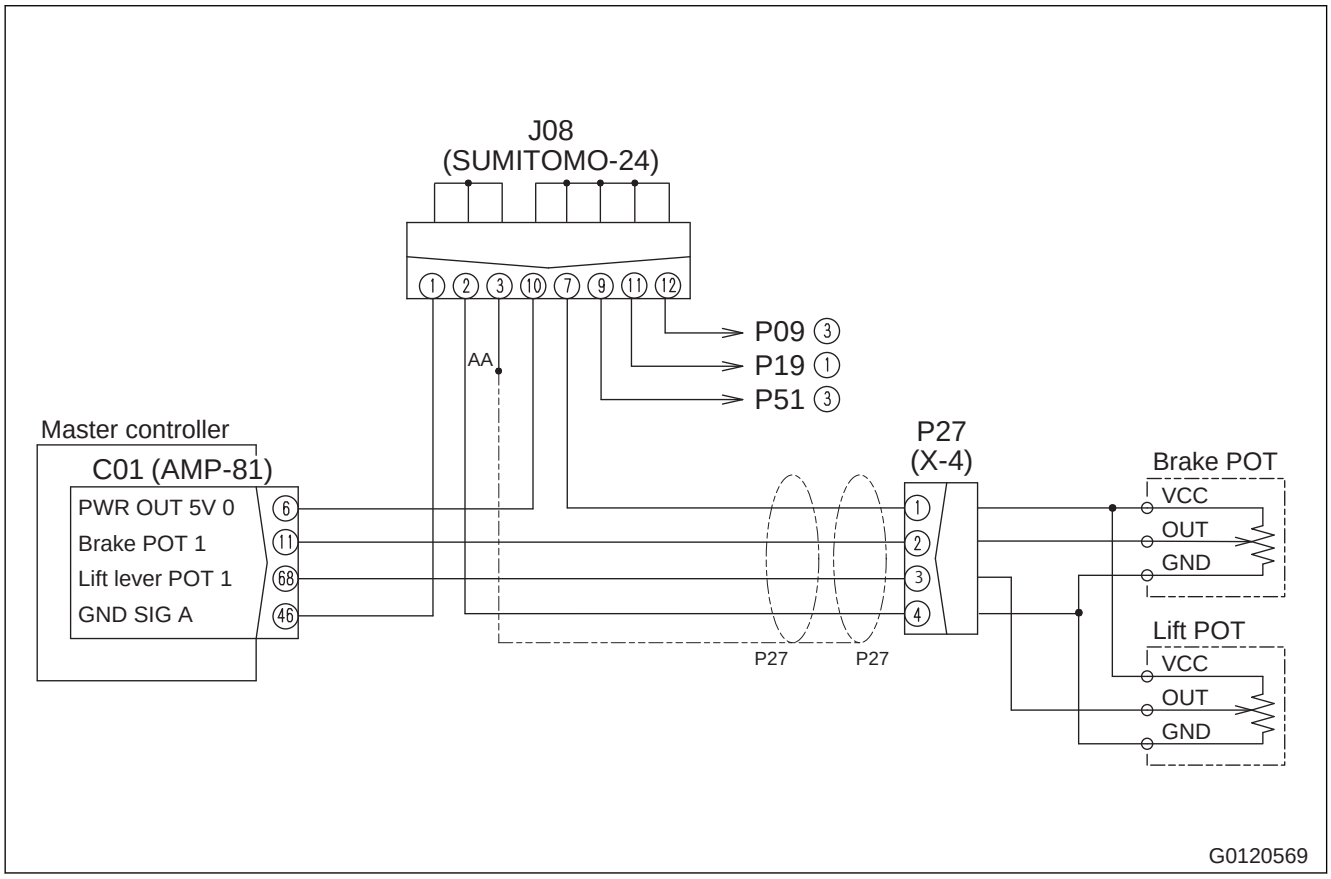
FAILURE CODE [DFC1KB]

Action level	Failure code	Failure phenomenon	SHORT) Lift lever POT (Master controller system)
L03	DFC1KB		
Detail of failure	A lift lever POT signal voltage of ≥ 4.7V is sensed for 200msec continuously.		
Action of controller	• Judges that there is no lift lever operation. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	• The fork cannot be raised. • The fork can be lowered.		
Related information	• This is not sensed in charging mode. • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective 5V sensor power supply 1 system	If failure code [DBN5KX] is shown at the same time, do the troubleshooting for it first.		
		1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P27. Connect the T-adapter to the female side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** If the power supply voltage is abnormal, go to the cause 3 and after.		
		Voltage	Between P27 (female) (1) and (4)	4.8 to 5.2V
2	Defective lift lever angle sensor (internal open or short circuit)	Make sure that failure code [DFC1KB] is shown. 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P27. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		If the failure code changes from [DFC1KB] to [DFC1KA], the lift lever angle sensor is defective.		
		If failure code [DFC1KB] remains shown, the wiring harness has a short circuit or the master controller is defective.		

No.	Cause	Procedure, measurement location, criteria and remarks		
3	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P27. Connect a T-adapter to the female side of P27. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Other failure codes are shown at the same time. This occurs because the connector is disconnected. Ignore other codes than this failure code.		
		Voltage	Between P27 (female) (3) and (4)	Max. 4.7V
4	Open circuit in wiring harness (Analog GND open circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors P27 and C01. Connect a socket to the female side of C01 and connect a T-adapter to the female side of P27 to do the troubleshooting.		
		Resistance	Between C01 (female) (46) and P27 (female) (4)	Max. 1Ω
5	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of lift lever angle sensor

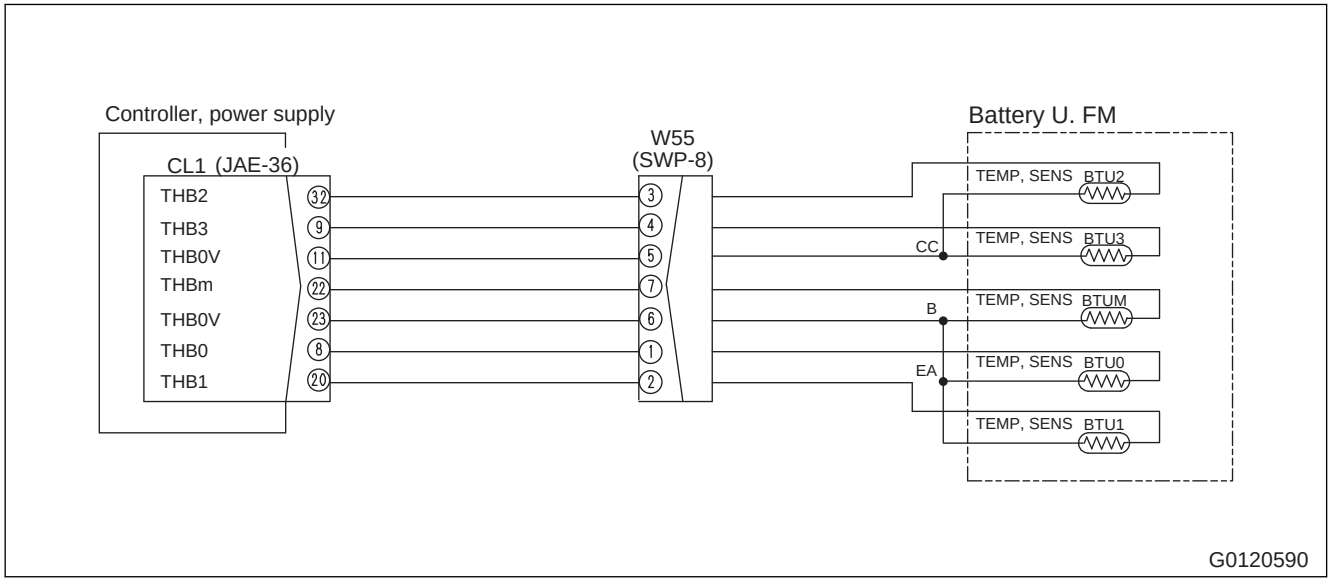


FAILURE CODE [DGA1MA]

Action level	Failure code	Failure phenomenon	ABNL) Temp.Sensor1 (Battery) (Power controller system)
L03	DGA1MA		
Detail of failure	The battery temperature signal is out of the correct range because there is an open circuit or a short circuit in the signal system of the battery temperature sensor 1. (Battery temperature sensor 1 signal voltage: 0.07V and below, or 4.80V and above)		
Action of controller	During operation • Operates the vehicle normally for 1 second after the abnormality is sensed. • If the detection continues for 1 second, shows a caution symbol and puts the vehicle in free run temporarily. • Restricts travel speed to 2.5km/h after you set the state of travel speed ≤ 2km/h and accelerator remains OFF for 1 second. During charging • Operates the vehicle normally for 1 second after the abnormality is sensed. • If the detection continues for 1 second, stops the charge.		
Problem on lift truck	During operation • The travel speed is restricted. During charging • The battery cannot be charged.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CL1 and W55. Connect the T-adapter to the female side of W55 to do the troubleshooting.		
		Resistance	Between CL1 (female) (8) and W55 (female) (1)	Max. 1Ω
			Between CL1 (female) (23) and W55 (female) (6)	Max. 1Ω
2	Defective temperature sensor	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector W55. Connect the T-adapter to male side to do the troubleshooting.		
		Resistance	Between W55 (male) (1) and (6)	1kΩ to 50kΩ
3	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery temperature sensor



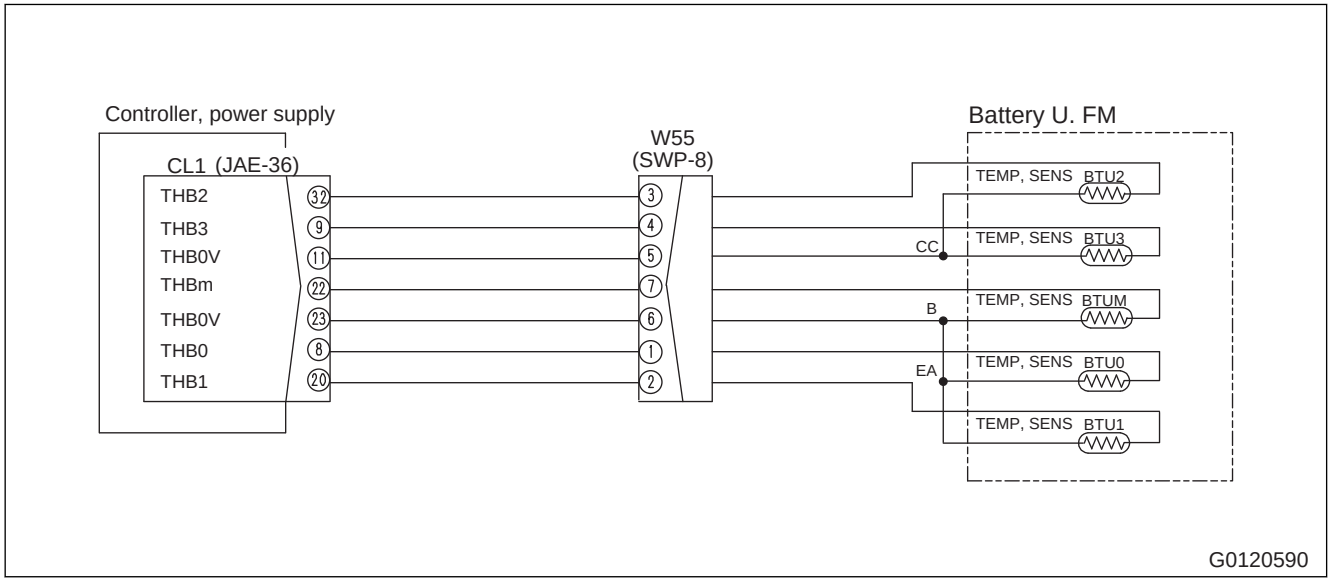
Monitor display	Vehicle circuit diagram and wiring harness mask tube name
Battery 1 temperature (Code: 56535 (℃))	BTU0
Battery 2 temperature (Code: 56536 (℃))	BTU1
Battery 3 temperature (Code: 56537 (℃))	BTU2
Battery 4 temperature (Code: 56538 (℃))	BTU3

FAILURE CODE [DGA2MA]

Action level	Failure code	Failure phenomenon	ABNL) Temp.Sensor2 (Battery) (Power controller system)
L03	DGA2MA		
Detail of failure	The battery temperature signal is out of the correct range because there is an open circuit or a short circuit in the signal system of the battery temperature sensor 2. (Battery temperature sensor 2 signal voltage: 0.07V or less, or 4.80V or more)		
Action of controller	During operation • Operates the vehicle normally for 1 second after the abnormality is sensed. • If the detection continues for 1 second, shows a caution symbol and puts the vehicle in free run temporarily. • Restricts travel speed to 2.5km/h after you set the state of travel speed ≤ 2km/h and accelerator remains OFF for 1 second. During charging • Operates the vehicle normally for 1 second after the abnormality is sensed. • If the detection continues for 1 second, stops the charge.		
Problem on lift truck	During operation • The travel speed is restricted. During charging • The battery cannot be charged.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CL1 and W55. Connect the T-adapter to the female side of W55 to do the troubleshooting.		
		Resistance	Between CL1 (female) (20) and W55 (female) (2)	Max. 1Ω
			Between CL1 (female) (23) and W55 (female) (6)	Max. 1Ω
2	Defective temperature sensor	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector W55. Connect the T-adapter to male side to do the troubleshooting.		
		Resistance	Between W55 (male) (2) and (6)	1kΩ to 50kΩ
3	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery temperature sensor



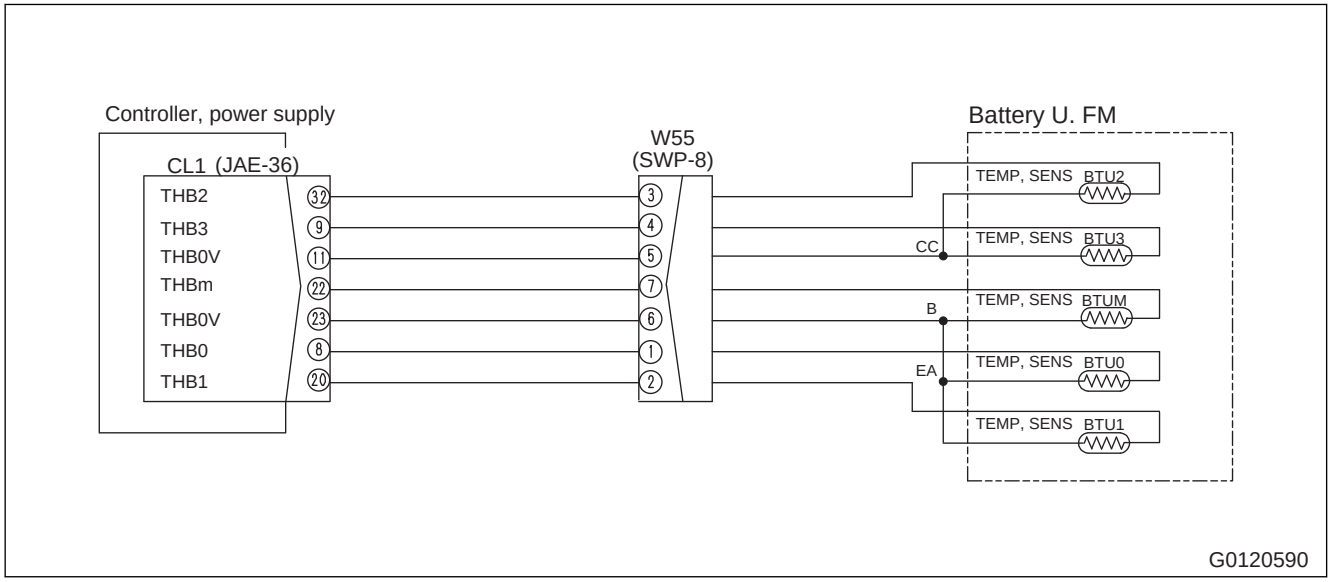
Monitor display	Vehicle circuit diagram and wiring harness mask tube name
Battery 1 temperature (Code: 56535 (℃))	BTU0
Battery 2 temperature (Code: 56536 (℃))	BTU1
Battery 3 temperature (Code: 56537 (℃))	BTU2
Battery 4 temperature (Code: 56538 (℃))	BTU3

FAILURE CODE [DGA3MA]

Action level	Failure code	Failure phenomenon	ABNL) Temp.Sensor3 (Battery) (Power controller system)
L03	DGA3MA		
Detail of failure	The battery temperature signal is out of the correct range because there is an open circuit or a short circuit in the signal system of the battery temperature sensor 3. (Battery temperature sensor 3 signal voltage: 0.07V or less, or 4.80V or more)		
Action of controller	During operation • Operates the vehicle normally for 1 second after the abnormality is sensed. • If the detection continues for 1 second, shows a caution symbol and puts the vehicle in free run temporarily. • Restricts travel speed to 2.5km/h after you set the state of travel speed ≤ 2km/h and accelerator remains OFF for 1 second. During charging • Operates the vehicle normally for 1 second after the abnormality is sensed. • If the detection continues for 1 second, stops the charge.		
Problem on lift truck	During operation • The travel speed is restricted. During charging • The battery cannot be charged.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CL1 and W55. Connect the T-adapter to the female side of W55 to do the troubleshooting.		
		Resistance	Between CL1 (female) (32) and W55 (female) (3)	Max. 1Ω
			Between CL1 (female) (11) and W55 (female) (5)	Max. 1Ω
2	Defective temperature sensor	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector W55. Connect the T-adapter to male side to do the troubleshooting.		
		Resistance	Between W55 (male) (3) and (5)	1kΩ to 50kΩ
3	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery temperature sensor



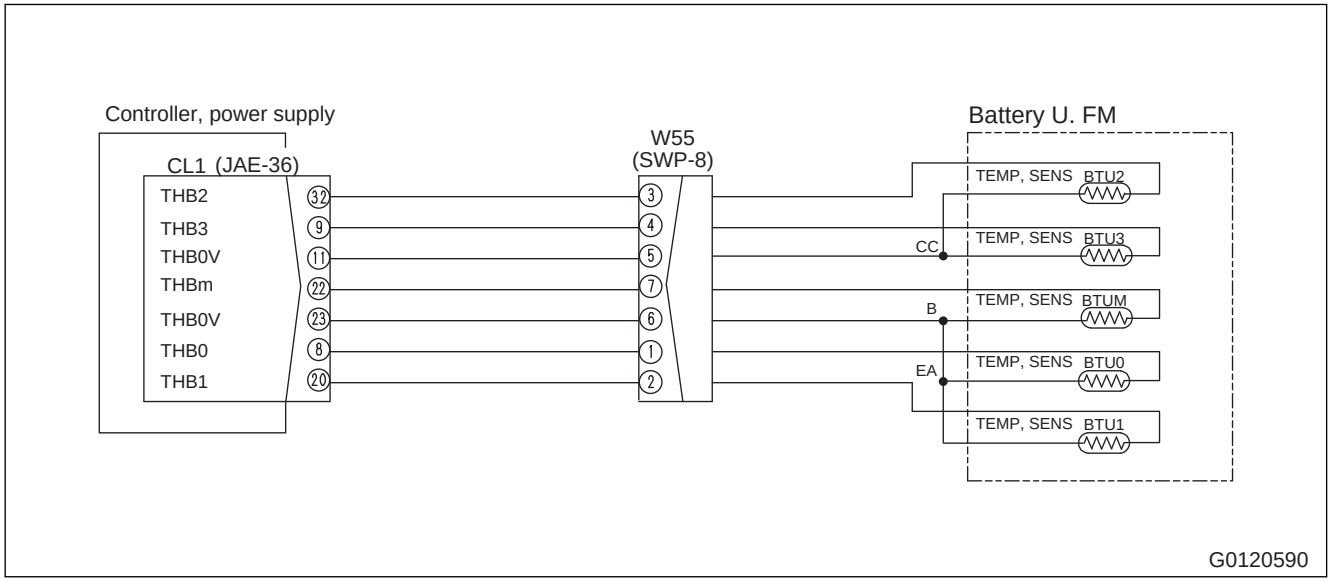
Monitor display	Vehicle circuit diagram and wiring harness mask tube name
Battery 1 temperature (Code: 56535 (℃))	BTU0
Battery 2 temperature (Code: 56536 (℃))	BTU1
Battery 3 temperature (Code: 56537 (℃))	BTU2
Battery 4 temperature (Code: 56538 (℃))	BTU3

FAILURE CODE [DGA4MA]

Action level	Failure code	Failure phenomenon	ABNL) Temp.Sensor4 (Battery) (Power controller system)
L03	DGA4MA		
Detail of failure	The battery temperature signal is out of the correct range because there is an open circuit or a short circuit in the signal system of the battery temperature sensor 4. (Battery temperature sensor 4 signal voltage: 0.07V or less, or 4.80V or more)		
Action of controller	During operation • Operates the vehicle normally for 1 second after the abnormality is sensed. • If the detection continues for 1 second, shows a caution symbol and puts the vehicle in free run temporarily. • Restricts travel speed to 2.5km/h after you set the state of travel speed ≤ 2km/h and accelerator remains OFF for 1 second. During charging • Operates the vehicle normally for 1 second after the abnormality is sensed. • If the detection continues for 1 second, stops the charge.		
Problem on lift truck	During operation • The travel speed is restricted. During charging • The battery cannot be charged.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CL1 and W55. Connect the T-adapter to the female side of W55 to do the troubleshooting.		
		Resistance	Between CL1 (female) (9) and W55 (female) (4)	Max. 1Ω
			Between CL1 (female) (11) and W55 (female) (5)	Max. 1Ω
2	Defective temperature sensor	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector W55. Connect the T-adapter to male side to do the troubleshooting.		
		Resistance	Between W55 (male) (4) and (5)	1kΩ to 50kΩ
3	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery temperature sensor



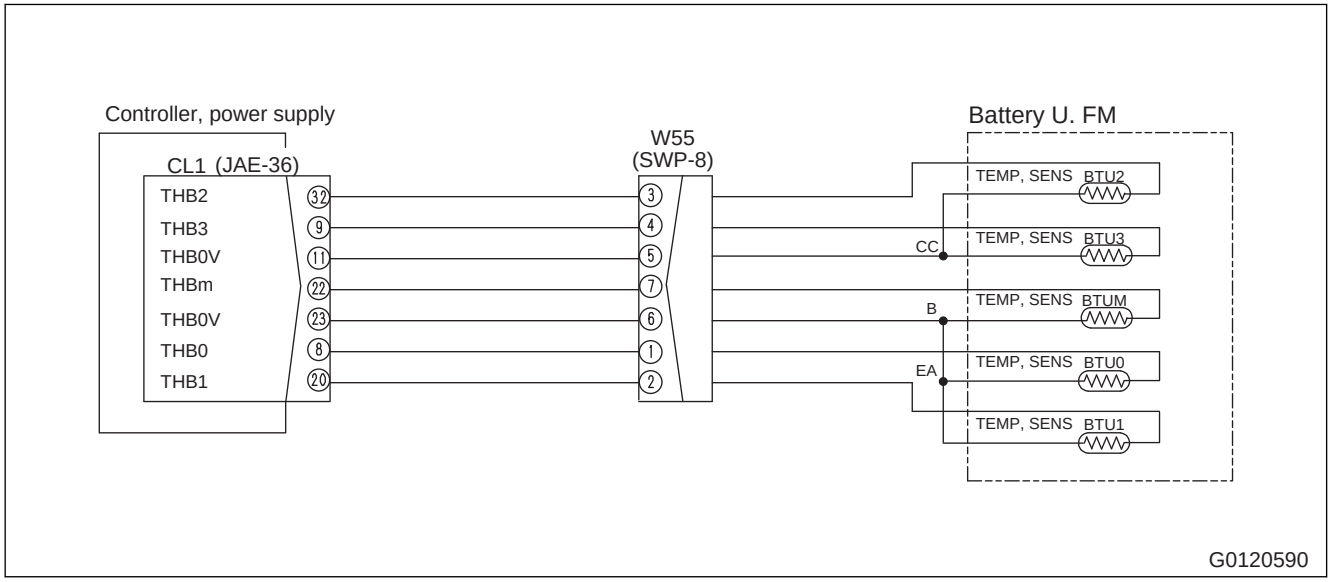
Monitor display	Vehicle circuit diagram and wiring harness mask tube name
Battery 1 temperature (Code: 56535 (℃))	BTU0
Battery 2 temperature (Code: 56536 (℃))	BTU1
Battery 3 temperature (Code: 56537 (℃))	BTU2
Battery 4 temperature (Code: 56538 (℃))	BTU3

FAILURE CODE [DGA9MA]

Action level	Failure code	Failure phenomenon	ABNL) Temp.SensorMIN (Batt) (Power controller system)
L03	DGA9MA		
Detail of failure	The battery temperature signal is out of the correct range because there is an open circuit or a short circuit in the signal system of the low temperature part battery temperature sensor. (Low temperature part battery temperature sensor signal voltage: 0.07V and below, or 4.80V and above)		
Action of controller	• Operates the vehicle normally for 1 second after the abnormality is sensed. • If the detection continues for 1 second, shows a caution symbol.		
Problem on lift truck	None		
Related information	• Reproduction method of failure code: Turn the starting switch to the ON position. • Failure code [D610ZU] for temperature imbalance error can be shown.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CL1 and W55. Connect the T-adapter to the female side of W55 to do the troubleshooting.		
		Resistance	Between CL1 (female) (22) and W55 (female) (7)	Max. 1Ω
			Between CL1 (female) (23) and W55 (female) (6)	Max. 1Ω
2	Defective temperature sensor	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector W55. Connect the T-adapter to male side to do the troubleshooting.		
		Resistance	Between W55 (male) (7) and (6)	1kΩ to 50kΩ
3	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery temperature sensor



Monitor display	Vehicle circuit diagram and wiring harness mask tube name
Battery 1 temperature (Code: 56535 (℃))	BTU0
Battery 2 temperature (Code: 56536 (℃))	BTU1
Battery 3 temperature (Code: 56537 (℃))	BTU2
Battery 4 temperature (Code: 56538 (℃))	BTU3

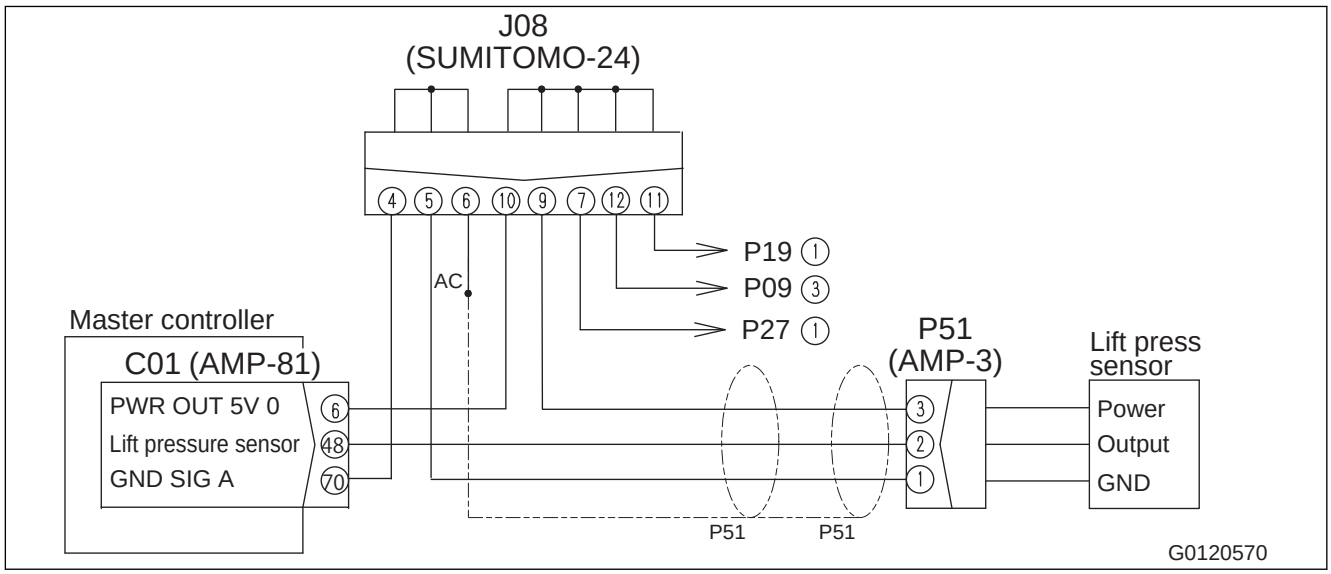
FAILURE CODE [DHPCKA]

Action level	Failure code	Failure phenomenon	DISC) HYDR-PRESS SNSR (Master controller system)
L01	DHPCKA		
Detail of failure	A lift pressure sensor signal voltage of ≤ 0.3V is sensed for 200msec continuously.		
Action of controller	• Gives only an announcement. • Judges that the lift pressure is 0MPa {0kgf/cm^2}. • If a correct input is sensed continuously for 1 sec or the vehicle enters the charging mode, the vehicle goes back to the correct state.		
Problem on lift truck	The load checker is not shown.		
Related information	• This is not sensed in charging mode. • This is not sensed when the load checker setting is “Invalid”. • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting. (When load checker setting is “Valid”)		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective 5V sensor power supply 1 system	If failure code [DBN5KX] is shown at the same time, do the troubleshooting for it first.		
		1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P51. Connect the T-adapter to the female side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** If the power supply voltage is abnormal, go to the cause 3 and after.		
		Voltage	Between P51 (female) (3) and (1)	4.8 to 5.2V

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="3">2</td><td rowspan="3">Defective lift pressure sensor
(internal open or short circuit)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Insert a T-adapter into the connector P51.
4. Connect the battery plug W50.
5. Turn the starting switch to the ON position. Then, do the troubleshooting.</td></tr>
<tr><td>Voltage</td><td>Between P51 (2) and (1)</td><td>0.4 to 4.6V</td></tr>
<tr><td colspan="3">Replace the sensor, and make sure that the failure code is cleared.
1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector P51. Replace the lift pressure sensor with one of the same type.
4. Connect the battery plug W50.
5. Turn the starting switch to the ON position. Then, do the troubleshooting.
REMARK
Make sure that this failure code is not shown.</td></tr>
<tr><td rowspan="4">3</td><td rowspan="4">Open circuit in wiring harness
(wire breakage or defective contact of connector)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors P51 and C01. Connect a socket to the female side of C01 and connect a T-adapter to the female side of P51 to do the troubleshooting.</td></tr>
<tr><td rowspan="3">Resistance</td><td>Between C01 (female) (6) and P51 (female) (3)
REMARK
If the power supply voltage in check on cause 1 is correct, this check is not required.</td><td>Max. 1 Ω</td></tr>
<tr><td>Between C01 (female) (48) and P51 (female) (2)</td><td>Max. 1Ω</td></tr>
<tr><td>Between C01 (female) (70) and P51 (female) (1)
REMARK
If the power supply voltage in check on cause 1 is correct, this check is not required.</td><td>Max. 1 Ω</td></tr>
<tr><td>4</td><td>Defective master controller</td><td colspan="3">If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of lift pressure sensor



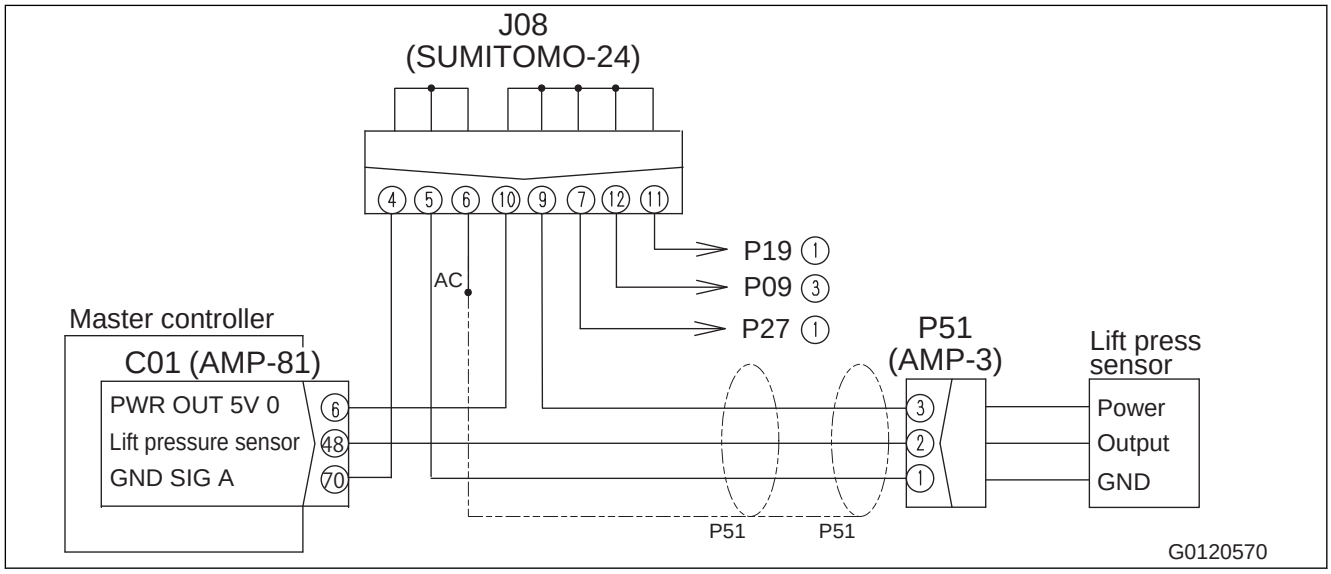
FAILURE CODE [DHPCKB]

Action level	Failure code	Failure phenomenon	SHORT) HYDR-PRESS SNSR (Master controller system)
L01	DHPCKB		
Detail of failure	A lift pressure sensor signal voltage of ≥ 4.7V is sensed for 200msec continuously.		
Action of controller	• Gives only an announcement. • Judges that the lift pressure is 20MPa {203.8kgf/cm^2}. • If a correct input is sensed continuously for 1 sec or the vehicle enters the charging mode, the vehicle goes back to the correct state.		
Problem on lift truck	The load checker is not shown.		
Related information	• This is not sensed in charging mode. • This is not sensed when the load checker setting is “Invalid”. • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting. (When load checker setting is “Valid”)		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective 5V sensor power supply 1 system	If failure code [DBN5KX] is shown at the same time, do the troubleshooting for it first.		
		1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P51. Connect the T-adapter to the female side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** If the power supply voltage is abnormal, go to the cause 3 and after.		
		Voltage	Between P51 (female) (3) and (1)	4.8 to 5.2V
2	Defective lift pressure sensor (internal open or short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P51. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		If the failure code changes from [DHPCKB] to [DHPCKA], the lift pressure sensor is defective. **REMARK** If failure code [DHPCKB] remains shown, the wiring harness has a short circuit or the master controller is defective.		

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="3">3</td><td rowspan="3">Hot short circuit in wiring harness</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors P51 and C01. Connect a T-adapter to the female side of P51.
4. Connect the battery plug W50.
5. Turn the starting switch to the ON position. Then, do the troubleshooting.
REMARK
Other failure codes are shown at the same time. This occurs because the connector is disconnected. Ignore other codes than this failure code.</td></tr>
<tr><td>Voltage</td><td>Between P51 (female) (2) and (1)</td><td>Max. 4.6V</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td rowspan="3">4</td><td rowspan="3">Short circuit in wiring harness</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors P51 and C01, and connect the T-adapter to the female side of P51 to do the troubleshooting.</td></tr>
<tr><td>Resistance</td><td>Between P51 (female) (3) and (2)</td><td>Min. 1MΩ</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td rowspan="3">5</td><td rowspan="3">Open circuit in wiring harness
(open circuit in analog GND)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors P51 and C01. Connect a T-adapter to the female side of P51 and connect a socket to the female side of C01 to do the troubleshooting.</td></tr>
<tr><td>Resistance</td><td>Between C01 (female) (70) and P51 (female) (1)</td><td>Max. 1Ω</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>6</td><td>Defective master controller</td><td colspan="3">If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of lift pressure sensor



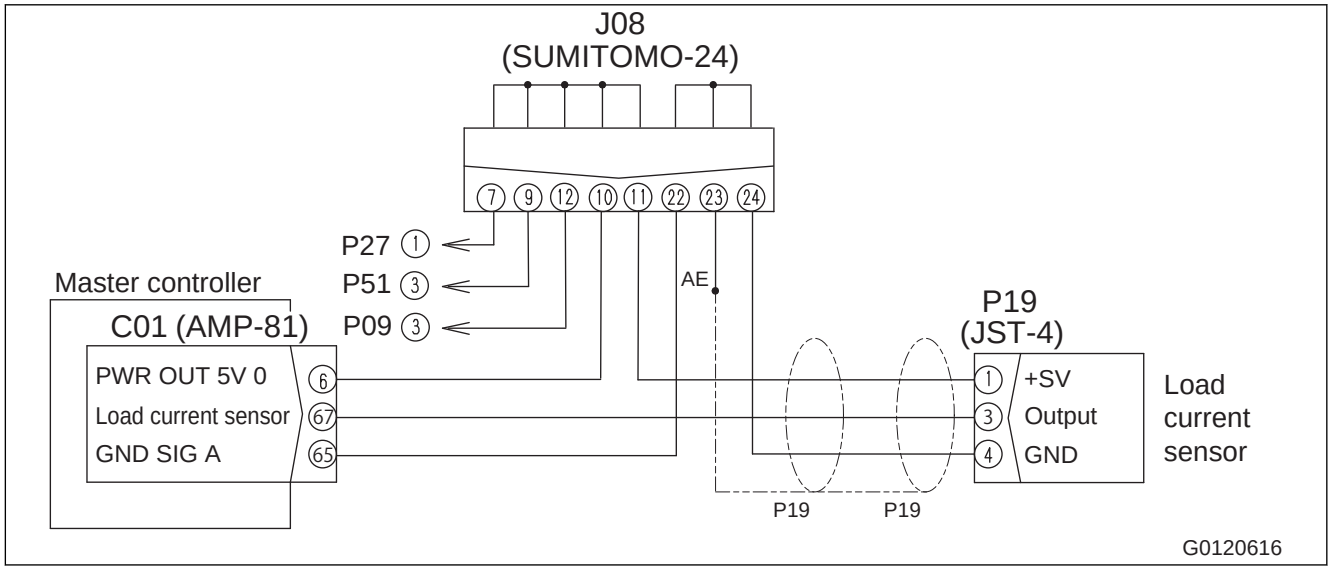
FAILURE CODE [DJK1KA]

Action level	Failure code	Failure phenomenon	DISC) Load Current Sensor (Master controller system)
L01	DJK1KA		
Detail of failure	A load current sensor signal voltage of ≤ 0.3V is sensed for 100ms continuously.		
Action of controller	• Power consumption is not integrated. • If a correct input is sensed continuously for 1 sec or the vehicle enters the charging mode, the vehicle goes back to the correct state.		
Problem on lift truck	ECO gauge and average power consumption meter do not shown anything.		
Related information	• This is not sensed in charging mode. • Reproduction method of failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective 5V sensor power supply 1 system	If failure code [DBN5KX] is shown at the same time, do the troubleshooting for it first.		
		1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P19. (Measure on the female side.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** If the power supply voltage is abnormal, go to the cause 3 and after.		
		Voltage	Between P19 (female) (1) and (4)	4.8 to 5.2V
2	Defective load current sensor (internal open or short circuit)	Replace the sensor, and make sure that the failure code is cleared. 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P19. Replace the load current sensor with one of the same type. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Make sure that this failure code is not shown.		

No.	Cause	Procedure, measurement location, criteria and remarks		
3	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors P19 and C01. Connect a socket to the female side of C01 and connect a T-adapter to the female side of P19 to do the troubleshooting.		
		Resistance	Between C01 (female) (6) and P19 (female) (1) **REMARK** If the power supply voltage in check on cause 1 is correct, this check is not required.	Max. 1Ω
			Between C01 (female) (67) and P19 (female) (3)	Max. 1Ω
			Between C01 (female) (65) and P19 (female) (4) **REMARK** If the power supply voltage in check on cause 1 is correct, this check is not required.	Max. 1Ω
4	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of load current sensor



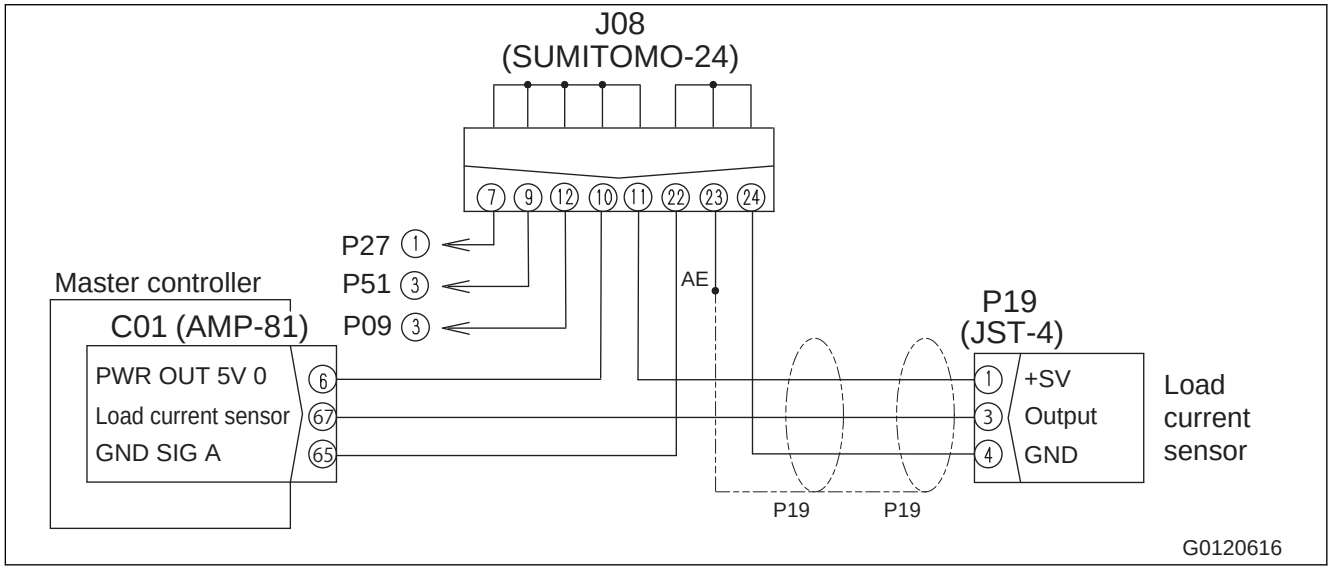
FAILURE CODE [DJK1KB]

Action level	Failure code	Failure phenomenon	SHORT) Load Current Sensor (Master controller system)
L01	DJK1KB		
Detail of failure	A load current sensor signal voltage of ≥ 4.0V is sensed for 100ms continuously.		
Action of controller	• Power consumption is not integrated. • If a correct input is sensed continuously for 1 sec or the vehicle enters the charging mode, the vehicle goes back to the correct state.		
Problem on lift truck	ECO gauge and average power consumption meter do not shown anything.		
Related information	• This is not sensed in charging mode. • Reproduction method of failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective 5V sensor power supply 1 system	If failure code [DBN5KX] is shown at the same time, do the troubleshooting for it first.		
		1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P19. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** If the power supply voltage is abnormal, go to the cause 3 and after.		
		Voltage	Between P19 (female) (1) and (4)	4.8 to 5.2V
2	Defective load current sensor (internal open or short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P19. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** If failure code [DHPCKB] remains shown, the wiring harness has a short circuit or the master controller is defective.		
		If shown failure code changes from [DHPCKB] to [DHPCKA], the load current sensor is defective.		

No.	Cause	Procedure, measurement location, criteria and remarks		
3	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors P19 and C01, and connect the socket to the female side of C01 to do the troubleshooting. **REMARK** If resistance is 1Ω or below, the wiring harness has a short circuit.		
		Resistance	Between C01 (female) (6) and (67)	Min. 1MΩ
4	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of load current sensor

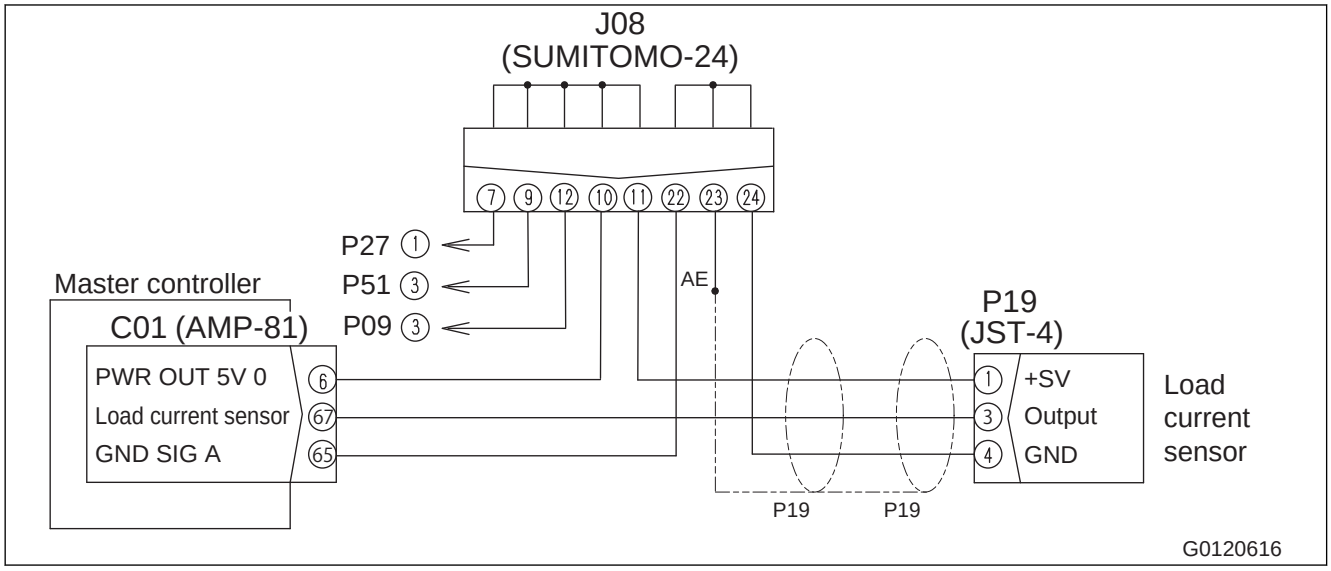


FAILURE CODE [DJK1MA]

Action level	Failure code	Failure phenomenon	INIT) Load Current Sensor (Master controller system)
L01	DJK1MA		
Detail of failure	While you calibrate the load current sensor, output voltage which is not between 2.3V and 2.7V is sensed.		
Action of controller	• Power consumption is not integrated. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	ECO gauge and average power consumption meter do not shown anything.		
Related information	• This is not sensed in charging mode. • Reproduction method of failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Do the troubleshooting for failure codes [DJK1KA] and [DJK1KB].	

Circuit diagram of load current sensor

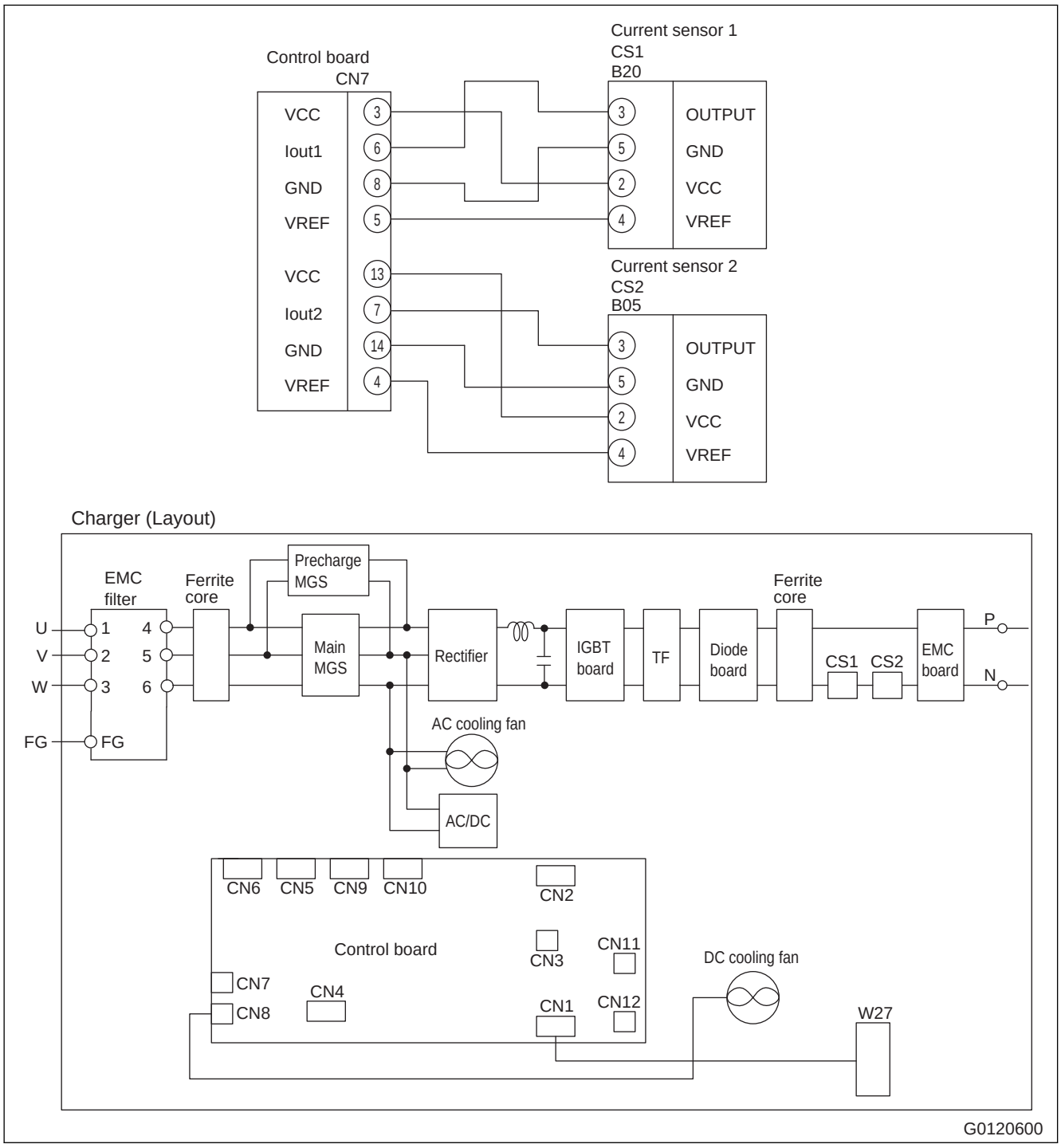


FAILURE CODE [DJK200]

Action level	Failure code	Failure phenomenon	INIT) Current SNSR (CHGR) (Charger system)
L01	DJK200		
Detail of failure	Calibration (zero point correction) of the small charge current sensor (CS2) in the stationary charger cannot be done.		
Action of controller	Changes to use only the charge large current sensor (CS1).		
Problem on lift truck	The battery is charged with a current that is different from the command, and the battery becomes overcharged or low charged.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective contact of connector, open circuit in wiring harness	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Measure the resistance of the wiring harness between the current sensor CS2 and the CPU board to do the troubleshooting.		
		Resistance	Between CS2 (2) and CN7 (13)	Max. 1Ω
			Between CS2 (3) and CN7 (7)	Max. 1Ω
			Between CS2 (4) and CN7 (4)	Max. 1Ω
			Between CS2 (5) and CN7 (14)	Max. 1Ω
2	Defective small charge current sensor (CS2)	If no failure is found by the above checks, small charge current sensor (CS2) is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of charge current sensor

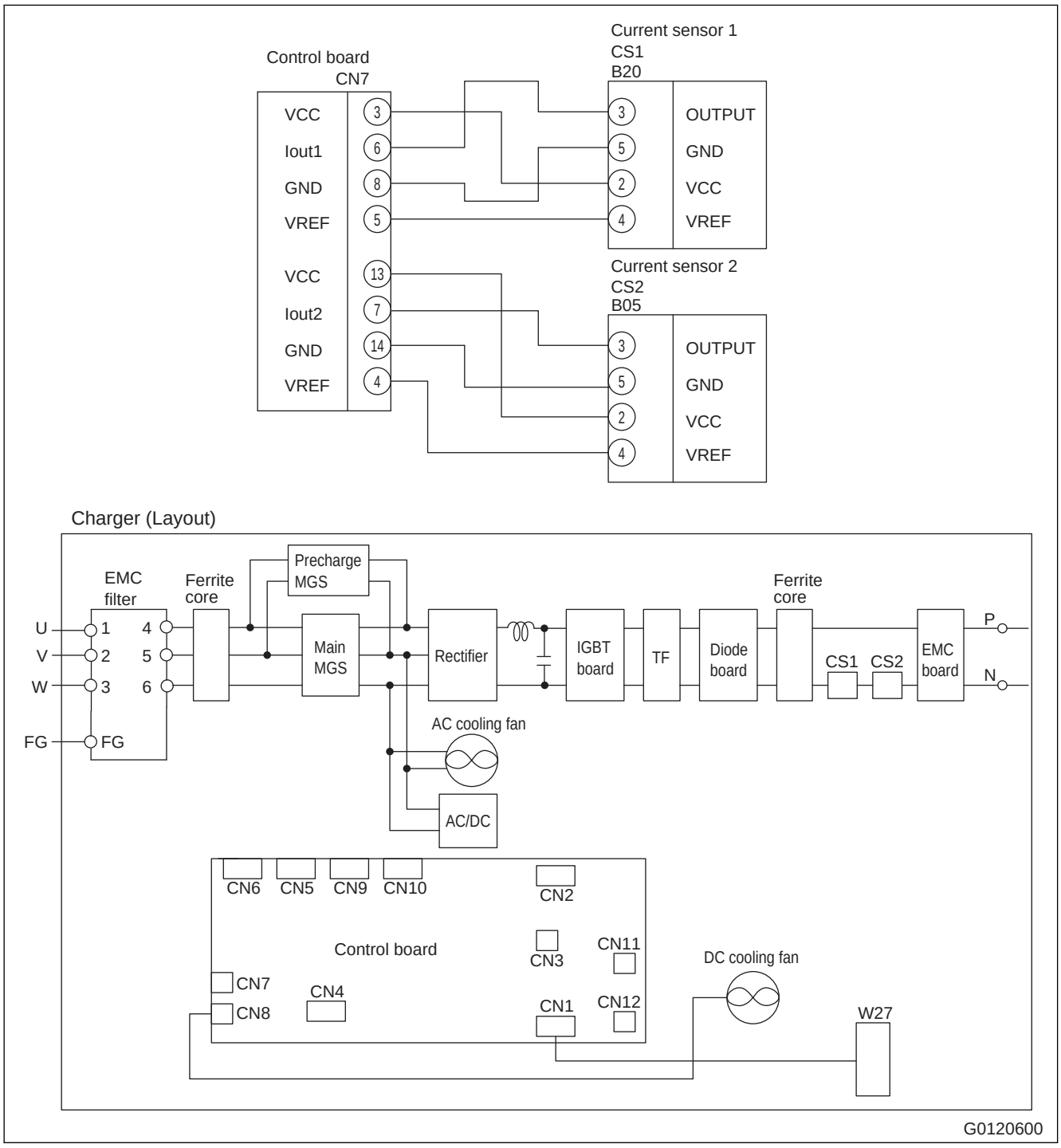


FAILURE CODE [DJK2MA]

Action level	Failure code	Failure phenomenon	Charge Current Sensor Calibration Error (Charger system)
L03	DJK2MA		
Detail of failure	Calibration (zero point correction) of the large charge current sensor (CS1) in the stationary charger cannot be done.		
Action of controller	• Stops the charge • Shows a caution symbol on the monitor panel and operates the alarm buzzer.		
Problem on lift truck	Charge is not possible.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective contact of connector, open circuit in wiring harness	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Measure the resistance of the wiring harness between the current sensor (CS1) and the control board to do the troubleshooting.		
		Resistance	Between CS1 (2) and CN7 (3)	Max. 1Ω
			Between CS1 (3) and CN7 (6)	Max. 1Ω
			Between CS1 (4) and CN7 (5)	Max. 1Ω
			Between CS1 (5) and CN7 (8)	Max. 1Ω
2	Defective large charge current sensor (CS1)	If no failure is found by the above checks, the large charge current sensor (CS1) is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of charge current sensor

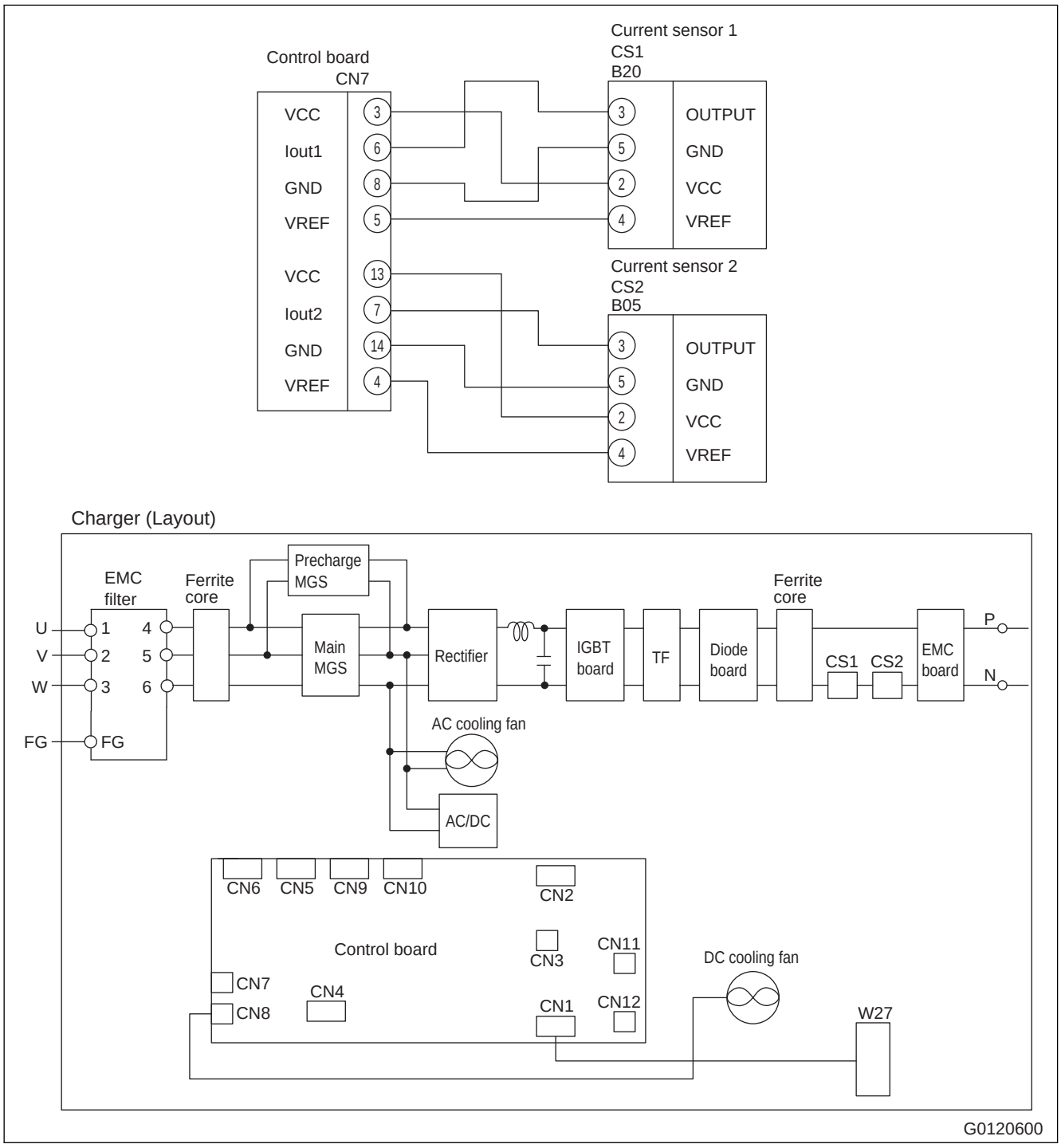


FAILURE CODE [DJK2NA]

Action level	Failure code	Failure phenomenon	Charger Current Sensor Calibration Time Over (Master controller system)
L03	DJK2NA		
Detail of failure	When the charge current is changed during charge, the master controller does not receive “Calibration state = completed” communication from the power supply controller.		
Action of controller	Stops the charge		
Problem on lift truck	Charge is not possible.		
Related information	The “Calibration state = completed” communication is sent from the stationary charger to the master controller through the power supply controller.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective CAN communication	If the failure code [DBNGKR] or [GFBRKR] is shown at the same time, do the troubleshooting for it first.
2	Defective current sensor	If failure code [DJK2MA] is shown at the same time, do the troubleshooting for it first.
3	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)

Circuit diagram of charge current sensor



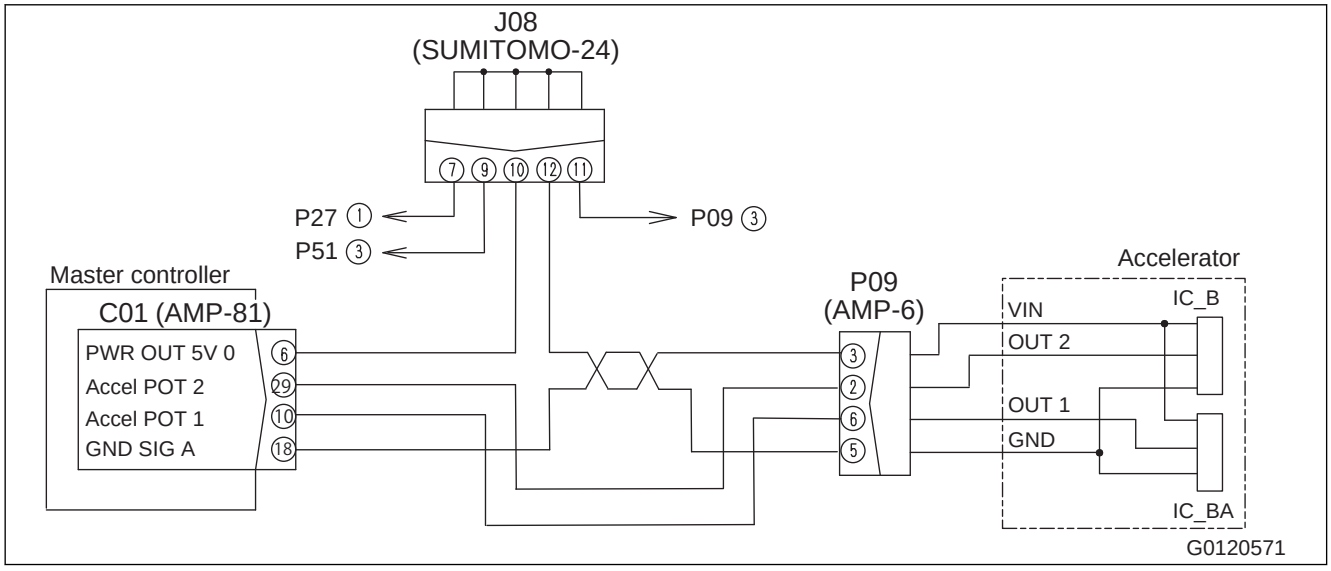
FAILURE CODE [DK10KA]

Action level	Failure code	Failure phenomenon	DISC) Accelerator POT (Master controller system)
L03	DK10KA		
Detail of failure	An accelerator POT_1 signal output voltage of ≤ 0.3V is sensed continuously for 200msec.		
Action of controller	• Stops the travel inverter output to OFF temporarily. (Free run) • After the accelerator was off for 1sec at ≤ 2km/h, activates travel with accelerator POT_2 signal only. But, it restricts the output of the travel inverter. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	After the travel speed is reduced by coasting, a speed limit is activated.		
Related information	• This is not sensed in charging mode. • While you adjust the accelerator pedal, set the directional (FNR) lever to N (neutral) position and put chocks on the tires. • The accelerator pedal angle sensor (POT_1) voltage value can be examined with the monitoring function. (Code: 31702 (Accelerator1 Voltage)) • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective 5V sensor power supply 1 system	If failure code [DBN5KX] is shown at the same time, do the troubleshooting for it first.		
		1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P09. (Measure on the female side.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** If the power supply voltage is abnormal, go to the cause 3 and after.		
		Voltage	Between P09 (female) (3) and (5)	4.8 to 5.2V
2	Defective accelerator pedal angle sensor (internal open or short circuit)	Replace the sensor, and make sure that the failure code is cleared. (You cannot replace the sensor alone. Replace the accelerator assembly.) 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P09. Replace with the same type accelerator assembly. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Make sure that this failure code is not shown.		

No.	Cause	Procedure, measurement location, criteria and remarks		
3	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors P09 and C01, and connect the socket to the female side of C01 to do the troubleshooting.		
		Resistance	Between C01 (female) (6) and P09 (female) (3) **REMARK** If the power supply voltage in check on cause 1 is correct, this check is not required.	Max. 1 Ω
			Between C01 (female) (18) and P09 (female) (5) **REMARK** If the power supply voltage in check on cause 1 is correct, this check is not required.	Max. 1 Ω
			Between C01 (female) (10) and P09 (female) (6)	Max. 1Ω
4	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of accelerator pedal angle sensor



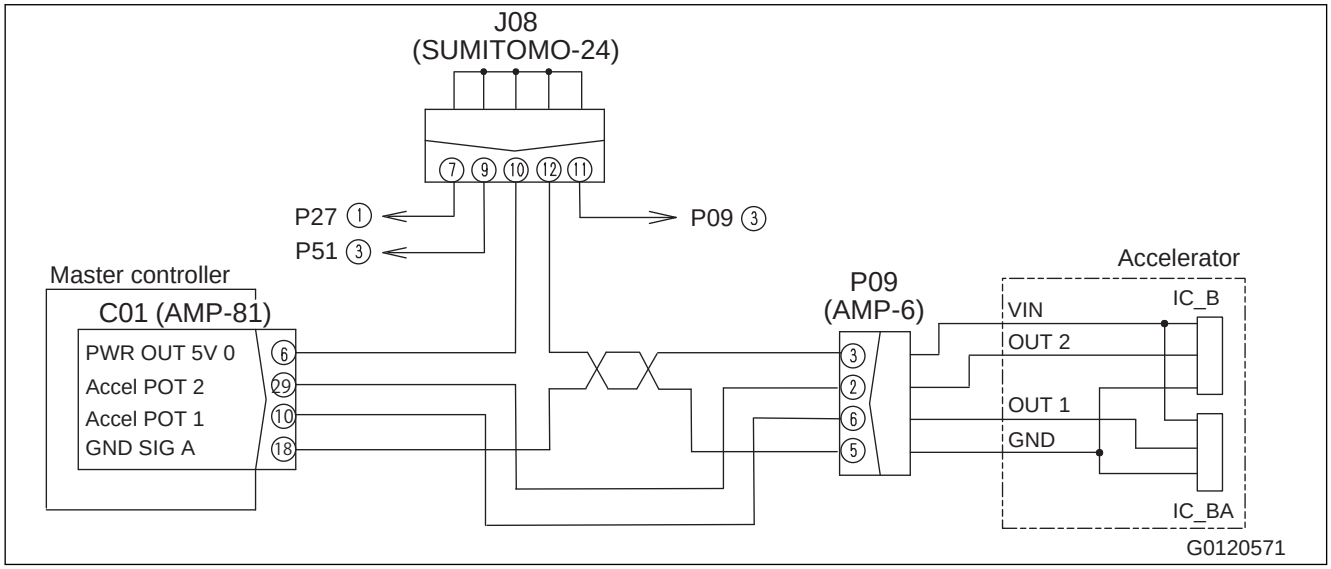
FAILURE CODE [DK10KB]

Action level	Failure code	Failure phenomenon	SHORT) Accelerator POT (Master controller system)
L03	DK10KB		
Detail of failure	An accelerator POT_1 signal output voltage of ≥ 4.7V is sensed continuously for 200msec.		
Action of controller	• Stops the travel inverter output to OFF temporarily. (Free run) • After the accelerator was off for 1sec at ≤ 2km/h, activates travel with accelerator POT_2 signal only. But, it restricts the output of the travel inverter. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	After the travel speed is reduced by coasting, a speed limit is activated.		
Related information	• This is not sensed in charging mode. • While you adjust the accelerator pedal, set the directional (FNR) lever to N (neutral) position and put chocks on the tires. • The accelerator pedal angle sensor (POT_1) voltage value can be examined with the monitoring function. (Code: 31702 (Accelerator1 Voltage)) • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective 5V sensor power supply 1 system	If failure code [DBN5KX] is shown at the same time, do the troubleshooting for it first.		
		1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P09. Connect the T-adapter to the female side to do the troubleshooting. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** If the power supply voltage is abnormal, go to the cause 3 and after.		
		Voltage	Between P09 (female) (3) and (5)	4.8 to 5.2V
2	Defective accelerator pedal angle sensor (internal open or short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P09. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Ignore shown failure code [DK11KA] because the connector is disconnected.		
		If the failure code changes from [DK10KB] to [DK10KA], the accelerator pedal angle sensor is defective.		
		If failure code [DK10KB] remains shown, the wiring harness has a short circuit or the master controller is defective.		

No.	Cause	Procedure, measurement location, criteria and remarks		
3	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors P09 and C01, and connect the socket to the female side of C01 to do the troubleshooting. **REMARK** If resistance is 1Ω or below, the wiring harness has a short circuit.		
		Resistance	Between C01 (female) (6) and (10)	Min. 1MΩ
4	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of accelerator pedal angle sensor



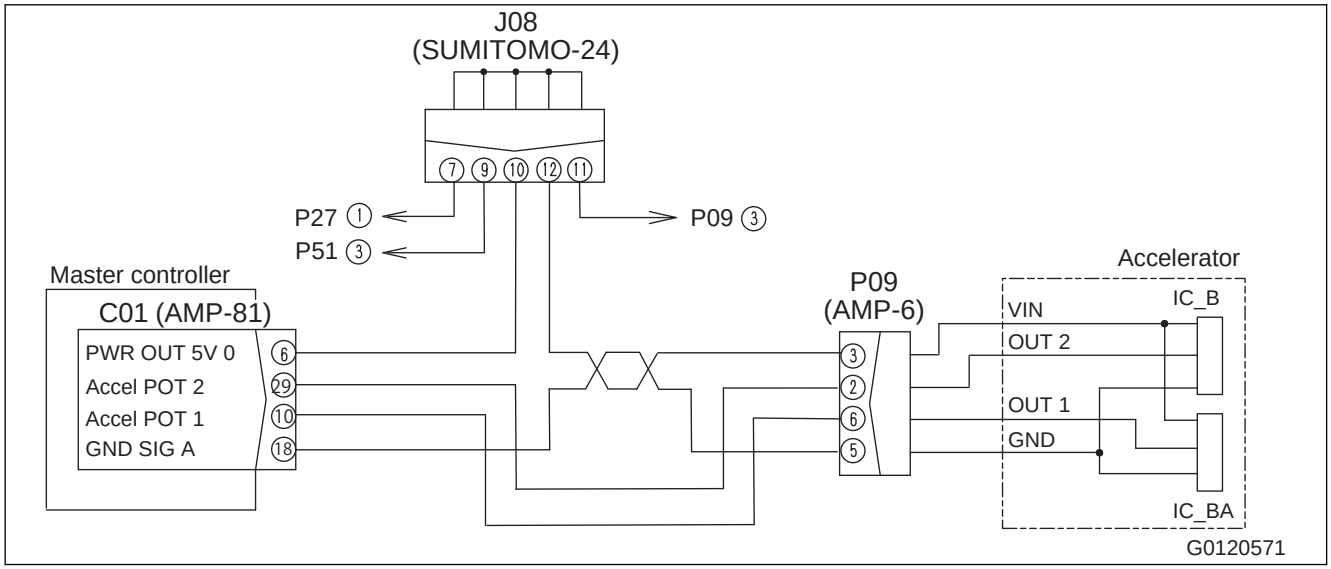
FAILURE CODE [DK11KA]

Action level	Failure code	Failure phenomenon	DISC) Accelerator POT2 (Master controller system)
L03	DK11KA		
Detail of failure	An accelerator POT_2 signal output voltage of ≤ 0.3V is sensed continuously for 200msec.		
Action of controller	• Stops the travel inverter output to OFF temporarily. (Free run) • After the accelerator was off for 1sec at ≤ 2km/h, activates travel with accelerator POT_1 signal only. But, it restricts the output of the travel inverter. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	After the travel speed is reduced by coasting, a speed limit is activated.		
Related information	• This is not sensed in charging mode. • While you adjust the accelerator pedal, set the directional (FNR) lever to N (neutral) position and put chocks on the tires. • The accelerator pedal angle sensor (POT_2) voltage value can be examined with the monitoring function. (Code: 31707 (Accelerator2 Voltage)) • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective 5V sensor power supply 1 system	If failure code [DBN5KX] is shown at the same time, do the troubleshooting for it first.		
		1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P09. (Measure on the female side.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** If the power supply voltage is abnormal, go to the cause 3 and after.		
		Voltage	Between P09 (female) (3) and (5)	4.8 to 5.2V
2	Defective accelerator pedal angle sensor (internal open or short circuit)	Replace the sensor, and make sure that the failure code is cleared. (You cannot replace the sensor alone. Replace the accelerator assembly.) 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P09. Replace with the same type accelerator assembly. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Make sure that this failure code is not shown.		

No.	Cause	Procedure, measurement location, criteria and remarks		
3	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors P09 and C01. Connect a socket to the female side of C01 and connect a T-adapter to the female side of P09 to do the troubleshooting.		
		Resistance	Between C01 (female) (6) and P09 (female) (3) **REMARK** If the power supply voltage in check on cause 1 is correct, this check is not required.	Max. 1 Ω
			Between C01 (female) (18) and P09 (female) (5) **REMARK** If the power supply voltage in check on cause 1 is correct, this check is not required.	Max. 1 Ω
			Between C01 (female) (29) and P09 (female) (2)	Max. 1Ω
4	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of accelerator pedal angle sensor



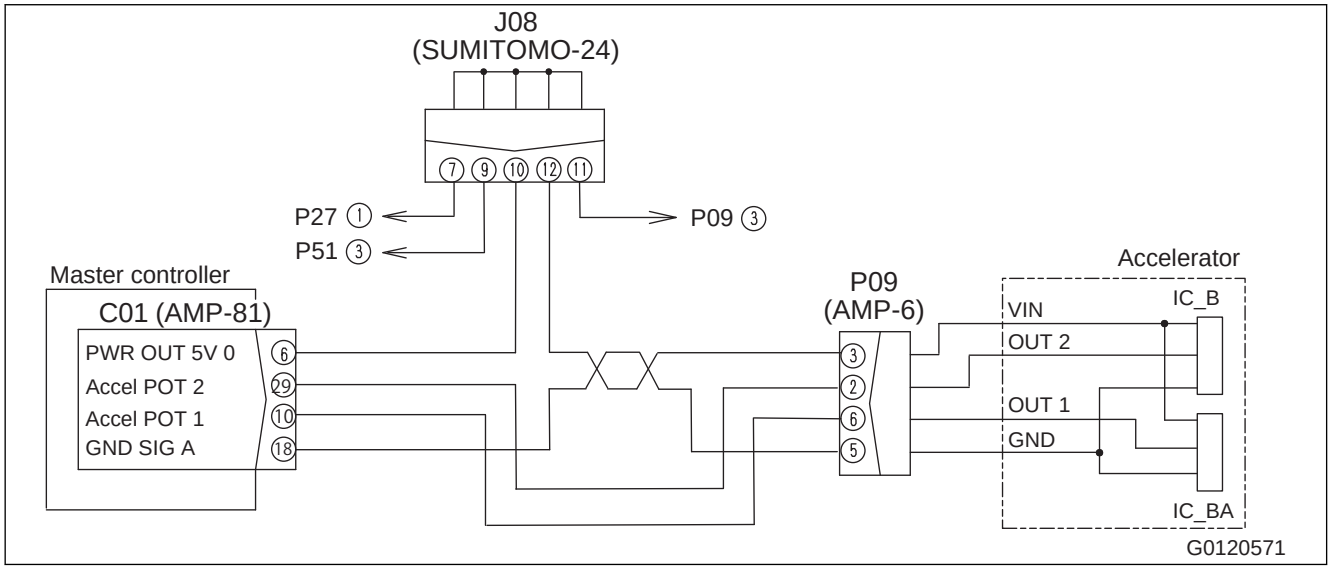
FAILURE CODE [DK11KB]

Action level	Failure code	Failure phenomenon	SHORT) Accelerator POT2 (Master controller system)
L03	DK11KB		
Detail of failure	An accelerator POT_2 signal output voltage of ≥ 4.7V is sensed continuously for 200msec.		
Action of controller	• Stops the travel inverter output to OFF temporarily. (Free run) • After the accelerator was off for 1sec at ≤ 2km/h, activates travel with accelerator POT_1 signal only. But, it restricts the output of the travel inverter. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	After the travel speed is reduced by coasting, a speed limit is activated.		
Related information	• This is not sensed in charging mode. • While you adjust the accelerator pedal, set the directional (FNR) lever to N (neutral) position and put chocks on the tires. • The accelerator pedal angle sensor (POT_2) voltage value can be examined with the monitoring function. (Code: 31707 (Accelerator2 Voltage)) • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective 5V sensor power supply 1 system	If failure code [DBN5KX] is shown at the same time, do the troubleshooting for it first.		
		1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P09. Connect the T-adapter to the female side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** If the power supply voltage is abnormal, go to the cause 3 and after.		
		Voltage	Between P09 (female) (3) and (5)	4.8 to 5.2V
2	Defective accelerator pedal angle sensor (internal open or short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P09. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Ignore shown failure code [DK10KA] because the connector is disconnected.		
		If the failure code changes from [DK11KB] to [DK11KA], the accelerator pedal angle sensor is defective.		
		If failure code [DK11KB] remains shown, the wiring harness has a short circuit or the master controller is defective.		

No.	Cause	Procedure, measurement location, criteria and remarks		
3	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors P09 and C01, and connect the socket to the female side of C01 to do the troubleshooting. **REMARK** If resistance is 1Ω or below, the wiring harness has a short circuit.		
		Resistance	Between C01 (female) (6) and (29)	Min. 1MΩ
4	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of accelerator pedal angle sensor



FAILURE CODE [DK13KX]

Action level	Failure code	Failure phenomenon	OUT OF RNG) Accelerator SNSR (Master controller system)
L04	DK13KX		
Detail of failure	1 and 2 below are sensed continuously for 200msec. 1. Accelerator POT_1 signal output voltage ≤ 0.3V or accelerator POT_1 signal output voltage ≥ 4.7V 2. Accelerator POT_2 signal output voltage ≤ 0.3V or accelerator POT_2 signal output voltage ≥ 4.7V		
Action of controller	• Stops the output to the travel inverter. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The vehicle does not move.		
Related information	• This is not sensed in charging mode. • While you adjust the accelerator pedal, set the directional (FNR) lever to N (neutral) position and put chocks on the tires. • The accelerator pedal angle sensor (POT_1) voltage value can be examined with the monitoring function. (Code: 31702 (Accelerator1 Voltage)) • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	One of failure codes [DK10KA], [DK10KB], [DK11KA], and [DK11KB] is shown. Do a troubleshooting for it first.	

FAILURE CODE [DK13L8]

Action level	Failure code	Failure phenomenon	ABNL) Accelerator POT (Master controller system)
L03	DK13L8		
Detail of failure	A total input voltage of accelerator POT_1 and POT_2 of 5.63V or more, or 4.37V or less is sensed for 400msec continuously.		
Action of controller	• Stops the travel inverter output to OFF temporarily. (Free run) • After the accelerator was off for 1sec at a travel speed of ≤ 2km/h, move at a limited travel speed. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	After the travel speed is reduced by coasting, a speed limit is activated.		
Related information	• This is not sensed in charging mode. • While you adjust the accelerator pedal, set the directional (FNR) lever to N (neutral) position and put chocks on the tires. • The accelerator pedal angle sensor (POT_1) voltage value can be examined with the monitoring function. (Code: 31702 (Accelerator1 Voltage)) • The accelerator pedal angle sensor (POT_2) voltage value can be examined with the monitoring function. (Code: 31707 (Accelerator2 Voltage)) • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Do the troubleshooting for failure codes [DK10KA], [DK10KB], [DK11KA] and [DK11KB].	

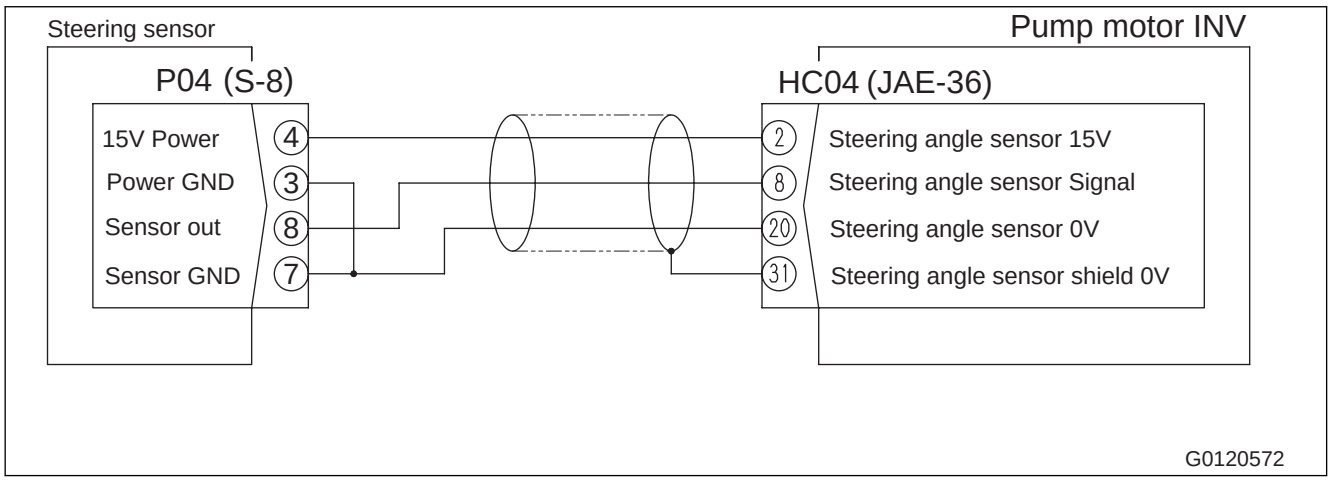
FAILURE CODE [DK30MA]

Action level	Failure code	Failure phenomenon	ABNL) Steering Sensor (Pump inverter system)
L01	DK30MA		
Detail of failure	A voltage from the steering angle sensor of less than 0.25V or 4.75V or more is sensed continuously for 200msec.		
Action of controller	• Controls the steering wheel interlocked with F/R. • Stops the EPACS control. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	• The steering wheel cannot be operated unless the direction is set to F or R. • The knob will be out of calibration.		
Related information	• This failure is possibly not sensed in some steering wheel positions. • How to reproduce failure code: Turn the steering wheel slowly.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Incorrect power supply voltage of steering angle sensor	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P04. Connect the T-adapter to the female side. 4. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between P04 (female) (4) and (3)	Approximately 15V
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors HC04 and P04. Connect the T-adapter to the female side of P04 to do the troubleshooting.		
		Resistance	Between HC04 (female) (2) and P04 (female) (4) (red)	Max. 1Ω
			Between HC04 (female) (8) and P04 (female) (8) (white)	Max. 1Ω
			Between HC04 (female) (20) and P04 (female) (3) (black)	Max. 1Ω
			Between HC04 (female) (20) and P04 (female) (7) (green)	Max. 1Ω
3	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC04 and P04 to do the troubleshooting.		
		Resistance	Between HC04 (female) (2) and (20)	Min. 1MΩ
			Between HC04 (female) (8) and (2)	Min. 1MΩ
			Between HC04 (female) (8) and (20)	Min. 1MΩ
4	Defective steering angle sensor	The steering angle sensor is defective. (Troubleshooting cannot be done because this is an internal failure.)		

No.	Cause	Procedure, measurement location, criteria and remarks
5	Defective pump inverter	If no failure is found by the above checks, the pump inverter is defective. (Trouble-shooting cannot be done because this is an internal failure.)

Circuit diagram of steering angle sensor



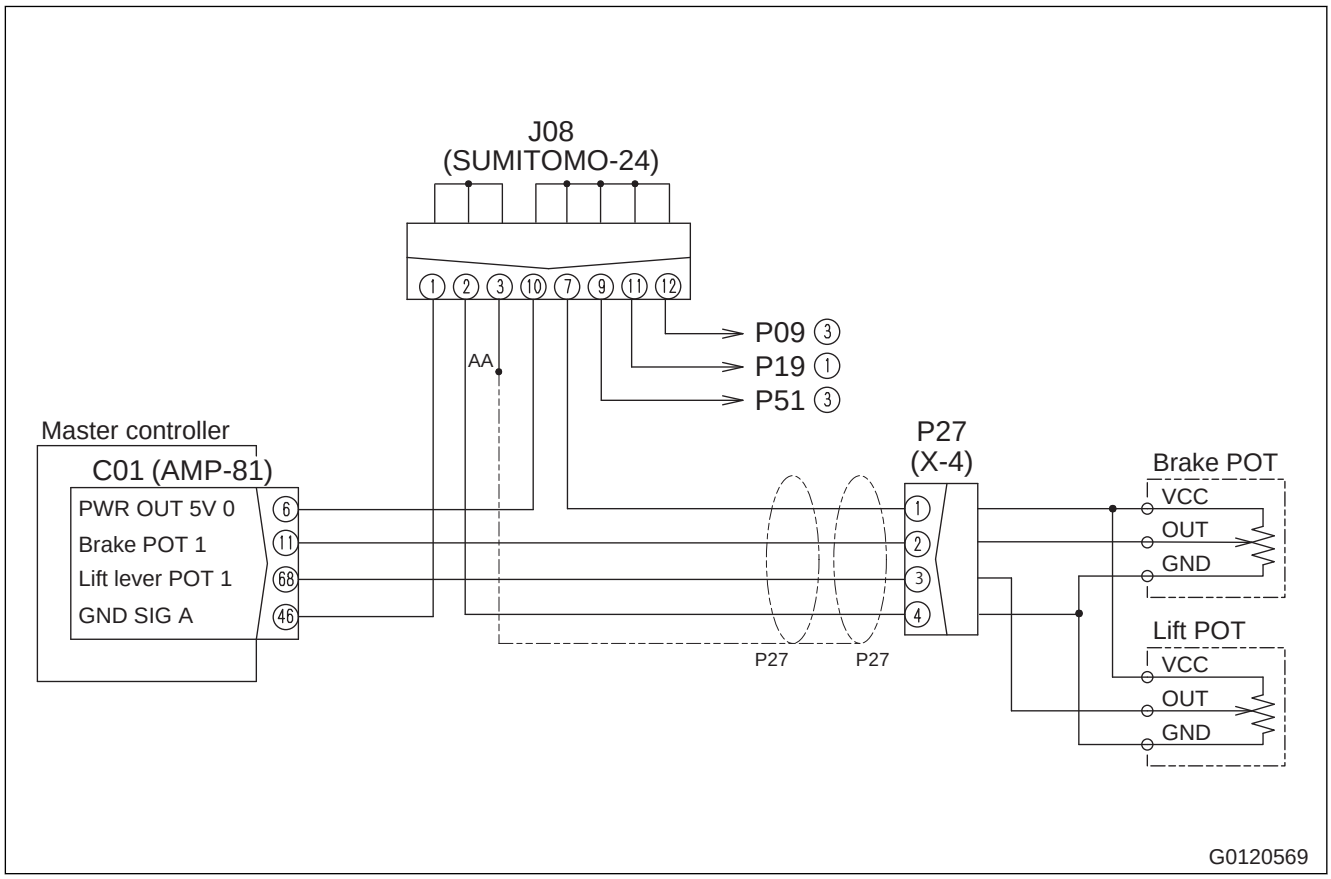
FAILURE CODE [DK40KA]

Action level	Failure code	Failure phenomenon	DISC) Brake POT (Master controller system)
L03	DK40KA		
Detail of failure	A brake POT signal voltage of ≤ 0.3V is sensed for 200ms continuously.		
Action of controller	• Turns off brake regeneration. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The regenerative brake does not operate. (The vehicle can decelerate and stop with the mechanical brake.)		
Related information	• This is not sensed in charging mode. • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective 5V sensor power supply 1 system	If failure code [DBN5KX] is shown at the same time, do the troubleshooting for it first.		
		1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P27. Connect the T-adapter to the female side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** If the power supply voltage is abnormal, go to cause 3 and after.		
		Voltage	Between P27 (female) (1) and (4)	4.8 to 5.2V

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="6">2</td><td rowspan="6">Defective brake pedal angle sensor (internal open or short circuit)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector P27. Connect the T-adapter to male side to do the troubleshooting.</td></tr>
<tr><td>Resistance</td><td>Between P27 (male) (1) and (4)</td><td>Approx. 2kΩ</td></tr>
<tr><td colspan="3">REMARK
Operate the brake pedal and examine if the resistance changes.</td></tr>
<tr><td>Resistance</td><td>Between P27 (male) (2) and (4)</td><td>0 to 2kΩ</td></tr>
<tr><td colspan="3">Replace the sensor, and make sure that the failure code is cleared.
1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector P27. Replace the brake pedal angle sensor with the same type.
4. Connect the battery plug W50.
5. Turn the starting switch to the ON position. Then, do the troubleshooting.
REMARK
Make sure that this failure code is not shown.</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td rowspan="4">3</td><td rowspan="4">Open circuit in wiring harness
(wire breakage or defective contact of connector)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors P27 and C01. Connect a socket to the female side of C01 and connect a T-adapter to the female side of P27 to do the troubleshooting.</td></tr>
<tr><td rowspan="3">Resistance</td><td>Between C01 (female) (6) and P27 (female) (1)
REMARK
If the power supply voltage in check on cause 1 is correct, this check is not required.</td><td>Max. 1 Ω</td></tr>
<tr><td>Between C01 (female) (11) and P27 (female) (2)</td><td>Max. 1Ω</td></tr>
<tr><td>Between C01 (female) (46) and P27 (female) (4)
REMARK
If the power supply voltage in check on cause 1 is correct, this check is not required.</td><td>Max. 1 Ω</td></tr>
<tr><td>4</td><td>Defective master controller</td><td colspan="3">If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of brake pedal angle sensor



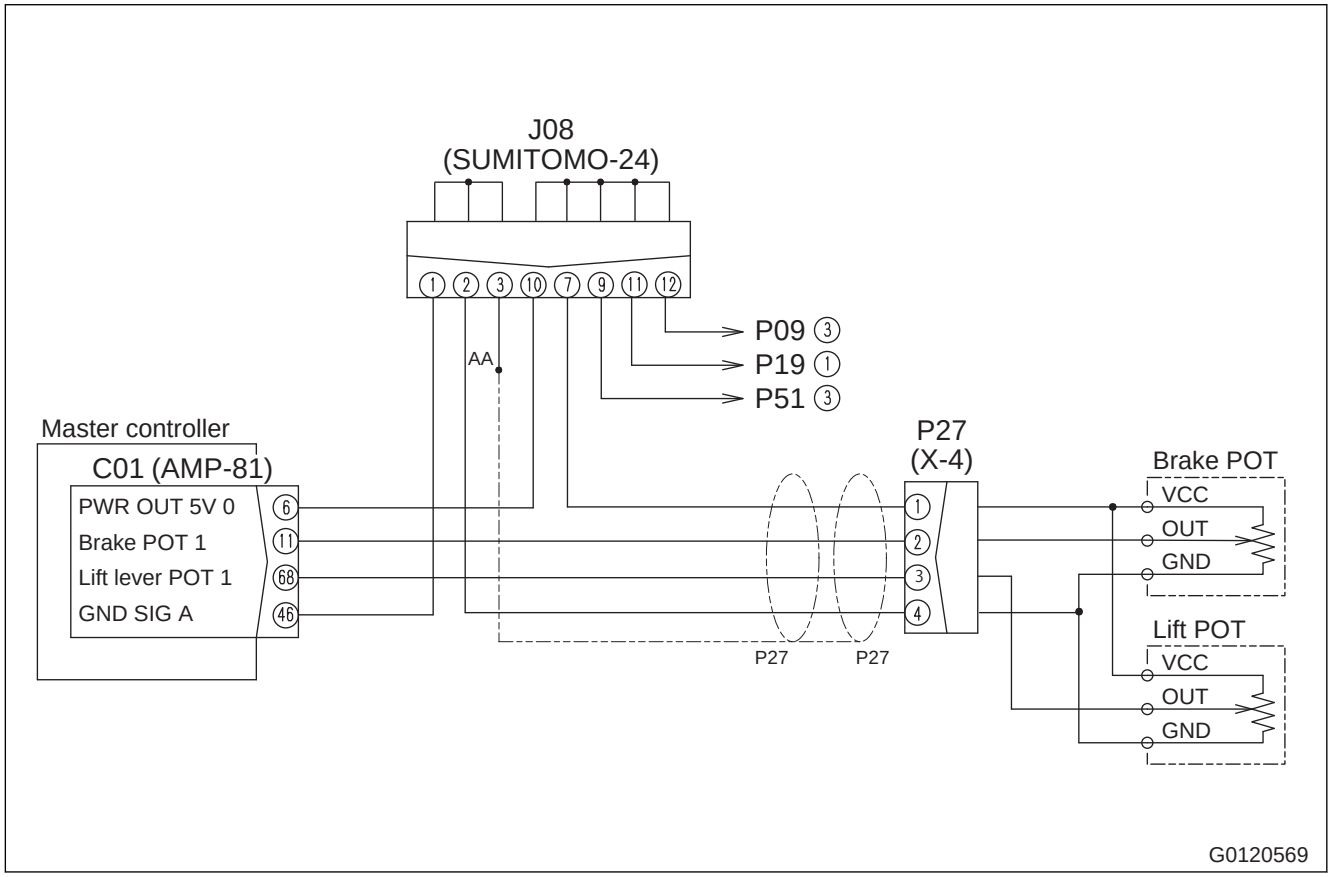
FAILURE CODE [DK40KY]

Action level	Failure code	Failure phenomenon	SHORT_P) Brake POT (Master controller system)
L03	DK40KY		
Detail of failure	A brake POT signal voltage of ≥ 4.7V is sensed for 200ms continuously.		
Action of controller	• Turns off brake regeneration. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	• The regenerative brake operates constantly. • After a stop, the vehicle cannot start again by inching control. • The stop lamp stays on.		
Related information	• This is not sensed in charging mode. • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective 5V sensor power supply 1 system	If failure code [DBN5KX] is shown at the same time, do the troubleshooting for it first.		
		1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P27. Connect the T-adapter to the female side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** If the power supply voltage is abnormal, go to cause 3 and after.		
		Voltage	Between P27 (female) (1) and (4)	4.8 to 5.2V
2	Defective brake pedal angle sensor (internal open or short circuit)	Make sure that failure code [DK40KY] is shown. 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P27. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		If the failure code changes from [DK40KY] to [DK40KA], the brake pedal angle sensor is defective.		
		If failure code [DK40KY] remains shown, the wiring harness has a short circuit or the master controller is defective.		

No.	Cause	Procedure, measurement location, criteria and remarks		
3	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P27. Connect the T-adapter to the female side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Other failure codes are shown at the same time. This occurs because the connector is disconnected. Ignore other codes than this failure code.		
		Voltage	Between P27 (female) (2) and (4)	Max. 4.7V
4	Open circuit in wiring harness (Analog GND open circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors P27 and C01. Connect a socket to the female side of C01 and connect a T-adapter to the female side of P27 to do the troubleshooting.		
		Resistance	Between C01 (female) (46) and P27 (female) (4)	Max. 1Ω
5	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of brake pedal angle sensor



FAILURE CODE [DK40MA]

Action level	Failure code	Failure phenomenon	ABNL) Brake POT (Master controller system)
L01	DK40MA		
Detail of failure	A brake POT signal voltage of > 0.3V and ≤ 1.1V is sensed for 400msec continuously.		
Action of controller	• Gives only an announcement. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The regenerative brake does not operate as the operator intends.		
Related information	• This is not sensed in charging mode. • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Incorrect adjustment of brake pedal neutral position	Adjust the brake pedal neutral position.
2	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

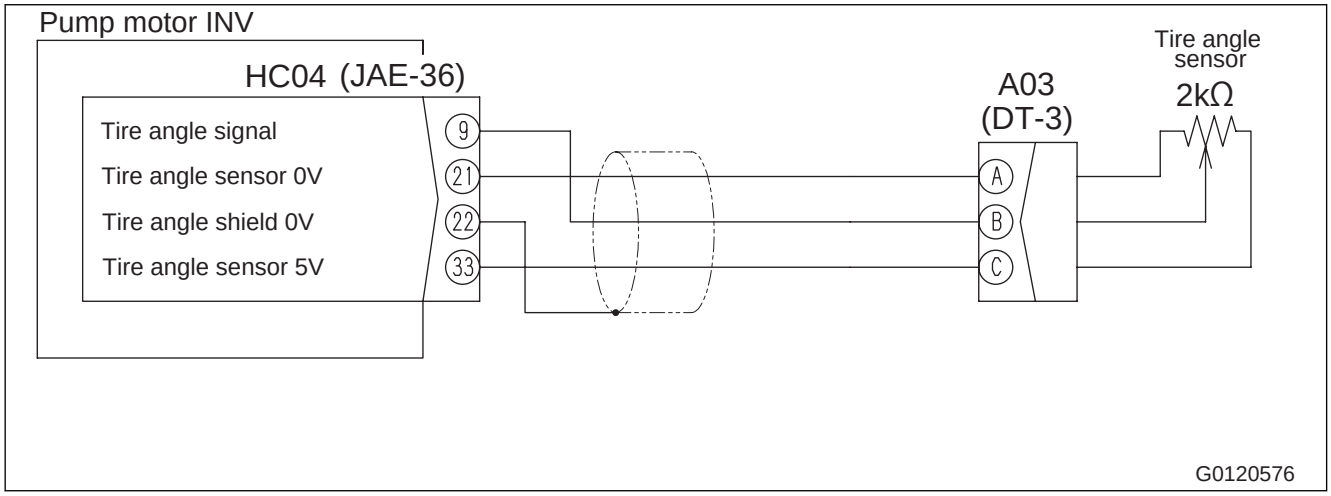
FAILURE CODE [DK5YMA]

Action level	Failure code	Failure phenomenon	ABNL) Tire Sensor (Pump inverter system)
L03	DK5YMA		
Detail of failure	The tire angle sensor senses a voltage of less than 0.25V or 4.75V or more continuously for 200msec.		
Action of controller	• Stops the EPACS control. • Restricts the travel speed to a maximum of 2.5km/h.		
Problem on lift truck	The knob will be out of calibration.		
Related information	• This failure code is possibly not sensed for some tire angles. • How to reproduce failure code: Steer the tires from the left end to the right end slowly.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Incorrect voltage of tire angle sensor power supply	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector A03. Connect the T-adapter to the female side. 4. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between A03 (female) (C) and (A)	Approx. 5V
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors HC04 and A03. Connect the T-adapter to the female side of A03 to do the troubleshooting.		
		Resistance	Between HC04 (female) (33) and A03 (female) (C)	Max. 1 Ω
			Between HC04 (female) (9) and A03 (female) (B)	Max. 1Ω
			Between HC04 (female) (21) and A03 (female) (A)	Max. 1Ω
3	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors HC04 and A03. Connect the T-adapter to the female side of A03 to do the troubleshooting.		
		Resistance	Between A03 (female) (A) and (B)	Min. 1MΩ
			Between A03 (female) (A) and (C)	Min. 1MΩ
			Between A03 (female) (B) and (C)	Min. 1MΩ
4	Defective tire angle sensor	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector A03. Connect the T-adapter to male side to do the troubleshooting.		
		Resistance	Between A03 (male) (C) and (A)	2kΩ
			Between A03 (male) (C) and (B)	0 to 2kΩ
			Between A03 (male) (B) and (A)	0 to 2kΩ

No.	Cause	Procedure, measurement location, criteria and remarks
5	Defective pump inverter	If no failure is found by the above checks, the pump inverter is defective. (Trouble-shooting cannot be done because this is an internal failure.)

Circuit diagram of tire angle sensor

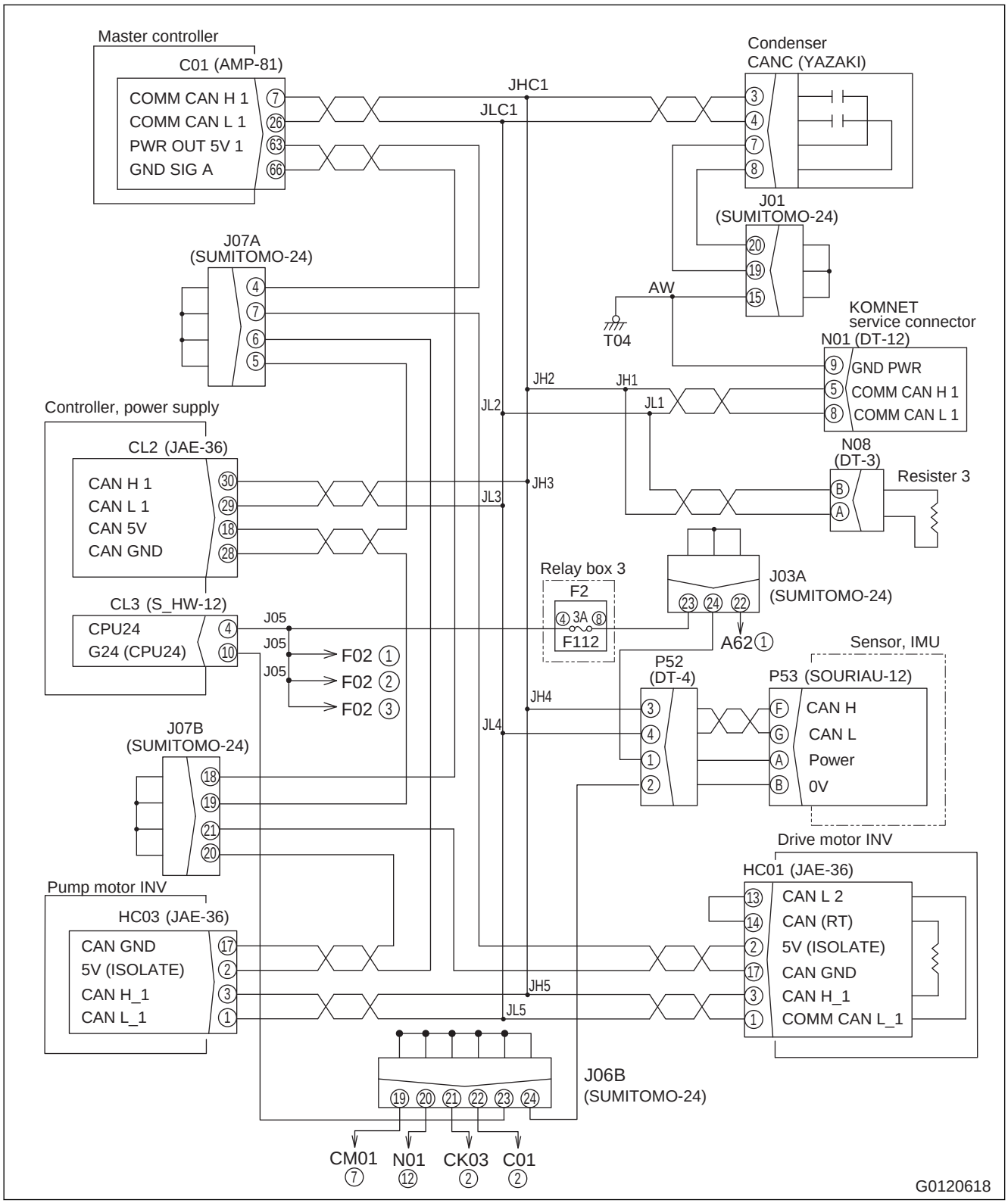


FAILURE CODE [DK80MA]

Action level	Failure code	Failure phenomenon	ABNL) Tilt Angle Sense (Master controller system)
L01	DK80MA		
Detail of failure	The IMU senses a status of “Abnormality”.		
Action of controller	• Disables the power assist system on slope, inclination warning, fall detection, and impact detection functions. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time. • The vehicle does not recover until Angle Senser Set is set to Invalid. **REMARK** To set Angle Senser Set to Invalid, see TESTING AND ADJUSTING, “SET AND OPERATE MONITOR PANEL”.		
Problem on lift truck	The power assist system on slope, inclination warning, fall detection, and impact detection functions do not operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect connectors P53, C01 and CL3. Connect the socket to the female side of C01, and connect T-adapter to the female side of P53 to do the troubleshooting.		
		Resistance	Between P53 (female) (F) and C01 (female) (7)	Max. 1 Ω
			Between P53 (female) (G) and C01 (female) (26)	Max. 1 Ω
			Between P53 (female) (A) and CL3 (male) (4)	Max. 1Ω
			Between P53 (female) (B) and CL3 (male) (10)	Max. 1Ω
2	Defective IMU	If no failure is found by the above checks, the IMU is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Individual circuit diagram of ABNL) Tilt Angle Sense



FAILURE CODE [DQA1KM]

Action level	Failure code	Failure phenomenon	ABNL) Radar1 Setting (Proximity detection controller system)
L01	DQA1KM		
Detail of failure	When the starting switch is in the ON position, the setting information sent from the collision detection radar (at the rear left) is different from that stored in the proximity detection controller.		
Action of controller	Stops the alarm function of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	The initial setting of the collision detection system is not done yet.	Do the initial setting for the collision system. For details, see “SET EACH EQUIPMENT” in “Service mode”, “TEST AND ADJUST COLLISION DETECTION SYSTEM”.
2	Defective collision detection radar (rear left)	If no failure is found by the previous checks, the collision detection radar (rear left) is defective. (Troubleshooting cannot be done because this is an internal failure.)
3	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

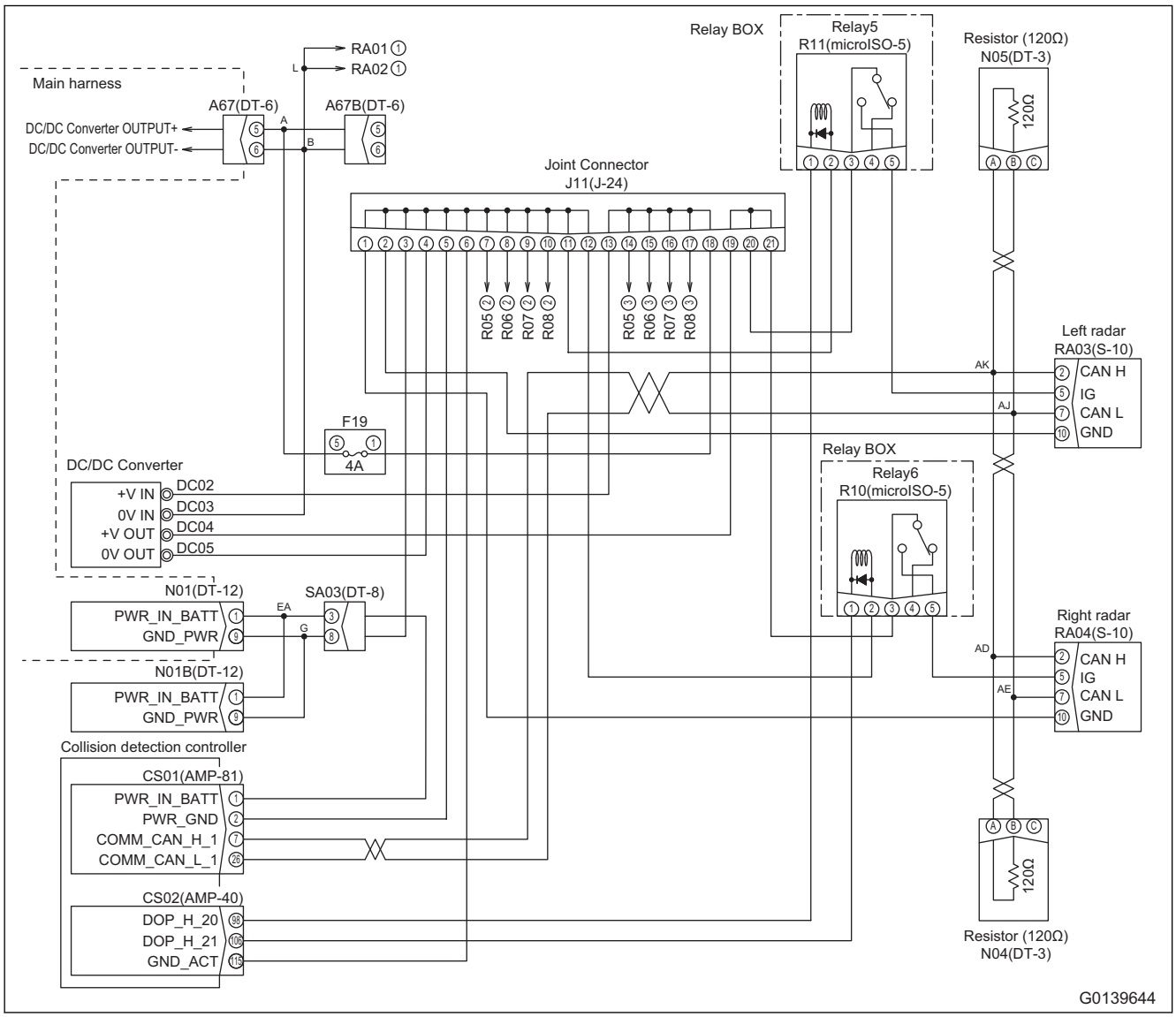
FAILURE CODE [DQA1KR]

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (Radar1) (Proximity detection controller system)
L01	DQA1KR		
Detail of failure	The proximity detection controller cannot receive the communication from the collision detection radar (rear left) for more than 3 seconds.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	• As the signal of active CAN communication line is pulse voltage, it cannot be measured with a multimeter. • The 120Ω termination resistor of the CAN communication line is in N04 and N05. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective power supply system to collision detection radar (rear left)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector RA03. Connect the T-adapter to the female side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between RA03 (female) (5) and (10)	Approx. 12V
2	Open circuit in wiring harness (open circuit or defective contact of connector)	If no failure is found by check on cause 1, this check is not required. 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors RA03, R11, terminal DC04, and DC05. Connect the T-adapter to the female side of RA03 to do the troubleshooting.		
		Resistance	Between R11 (female) (5) and RA03 (female) (5)	Max. 1Ω
			Between terminal DC04 and R11 (female) (3)	Max. 1Ω
			Between terminal DC05 and RA03 (female) (10)	Max. 1Ω
3	Defective collision detection radar (left) power supply relay	If no failure is found by check on cause 1, this check is not required. 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R11 and replace with the same type relay. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position.		
		If it goes back to the correct state when it is replaced with a correct relay, the collision detection radar (L.H.) power supply relay (R11) before replacement is defective.		
4	Defective DC/DC converter	If no failure is found by the above checks, the DC/DC converter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="7">5</td><td rowspan="7">Open circuit in wiring harness (wire breakage or defective contact of connector) (CAN communication circuit)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors CS01, RA03, N04 and N05. Connect the socket to the female side of CS01 and connect a T-adapter to RA03, N04 and N05 to do the troubleshooting.</td></tr>
<tr><td rowspan="6">Resistance</td><td>Between RA03 (female) (2) and CS01 (female) (7)</td><td>Max. 1Ω</td></tr>
<tr><td>Between RA03 (female) (7) and CS01 (female) (26)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CS01 (female) (7) and N04 (female) (A)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CS01 (female) (26) and N04 (female) (B)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CS01 (female) (7) and N05 (female) (A)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CS01 (female) (26) and N05 (female) (B)</td><td>Max. 1Ω</td></tr>
<tr><td rowspan="6">6</td><td rowspan="6">Short circuit in wiring harness (CAN communication circuit)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors CS01, RA03, N04, and N05. Connect the socket to the female side of CS01 to do the troubleshooting.</td></tr>
<tr><td rowspan="5">Resistance</td><td>Between CS01 (female) (7) and (26)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between CS01 (female) (7) and (1)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between CS01 (female) (7) and (2)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between CS01 (female) (26) and (1)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between CS01 (female) (26) and (2)</td><td>Min. 1MΩ</td></tr>
<tr><td rowspan="4">7</td><td rowspan="4">Defective CAN terminating resistor</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors N04 and N05, and connect the T-adapter to each male side to do the troubleshooting.</td></tr>
<tr><td rowspan="2">Resistance</td><td>Between N04 (male) (A) and (B)</td><td>Approx. 120Ω</td></tr>
<tr><td>Between N05 (male) (A) and (B)</td><td>Approx. 120Ω</td></tr>
<tr><td>8</td><td>Defective collision detection radar (rear left)</td><td colspan="3">If no failure is found by the previous checks, the collision detection radar (rear left) is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
<tr><td>9</td><td>Defective proximity detection controller</td><td colspan="3">If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of collision detection radar communication

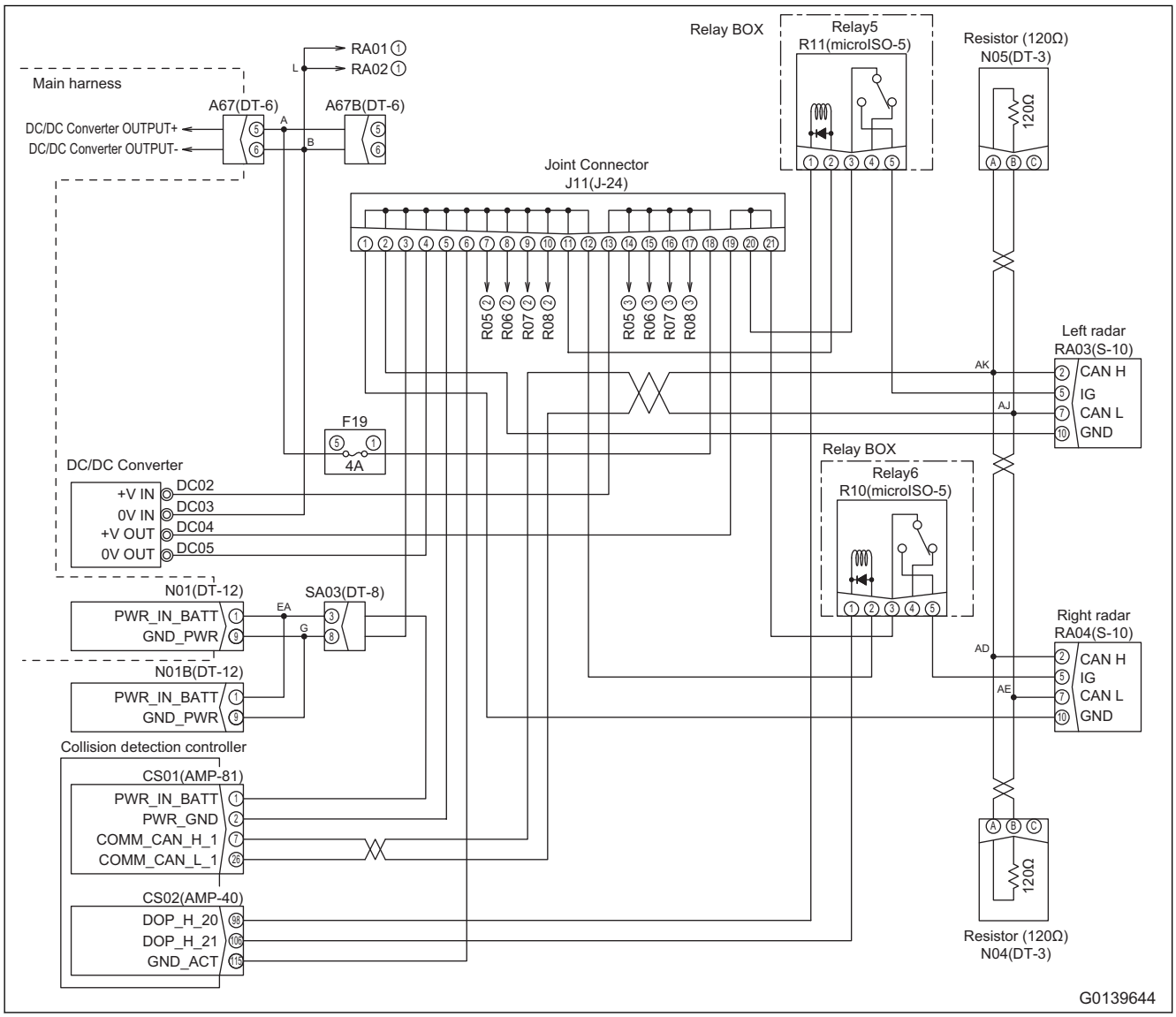


FAILURE CODE [DQA1KT]

Action level	Failure code	Failure phenomenon	ABNL) Radar1 (Proximity detection controller system)
L01	DQA1KT		
Detail of failure	The proximity detection controller receives an internal error from the collision detection radar (rear left).		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective power supply system to collision detection radar (rear left)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector RA03. Connect the T-adapter to the female side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between RA03 (female) (5) and (10)	Approx. 12V
2	Open circuit in wiring harness (open circuit or defective contact of connector)	If no failure is found by check on cause 1, this check is not required. 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors RA03, R11, terminal DC04, and DC05. Connect the T-adapter to the female side of RA03 to do the troubleshooting.		
		Resistance	Between R11 (female) (5) and RA03 (female) (5)	Max. 1Ω
			Between terminal DC04 and R11 (female) (3)	Max. 1Ω
			Between terminal DC05 and RA03 (female) (10)	Max. 1Ω
3	Defective collision detection radar (left) power supply relay	If no failure is found by check on cause 1, this check is not required. 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R11 and replace with the same type relay. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position.		
		If it goes back to the correct state when it is replaced with a correct relay, the collision detection radar (L.H.) power supply relay (R11) before replacement is defective.		
4	Defective DC/DC converter	If no failure is found by the above checks, the DC/DC converter is defective. (Troubleshooting cannot be done because this is an internal failure.)		
5	Defective collision detection radar (rear left)	If no failure is found by the previous checks, the collision detection radar (rear left) is defective. (Troubleshooting cannot be done because this is an internal failure.)		
6	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of collision detection radar communication



FAILURE CODE [DQA2KM]

Action level	Failure code	Failure phenomenon	ABNL) Radar2 Setting (Proximity detection controller system)
L01	DQA2KM		
Detail of failure	When the starting switch is in the ON position, the setting information sent from the collision detection radar (at the rear right) is different from that stored in the proximity detection controller.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	The initial setting of the collision detection system is not done yet.	Do the initial setting for the collision system. For details, see “SET EACH EQUIPMENT” in “Service mode”, “TEST AND ADJUST COLLISION DETECTION SYSTEM”.
2	Defective collision detection radar (right rear)	If no failure is found by the previous checks, the collision detection radar (rear right) is defective. (Troubleshooting cannot be done because this is an internal failure.)
3	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

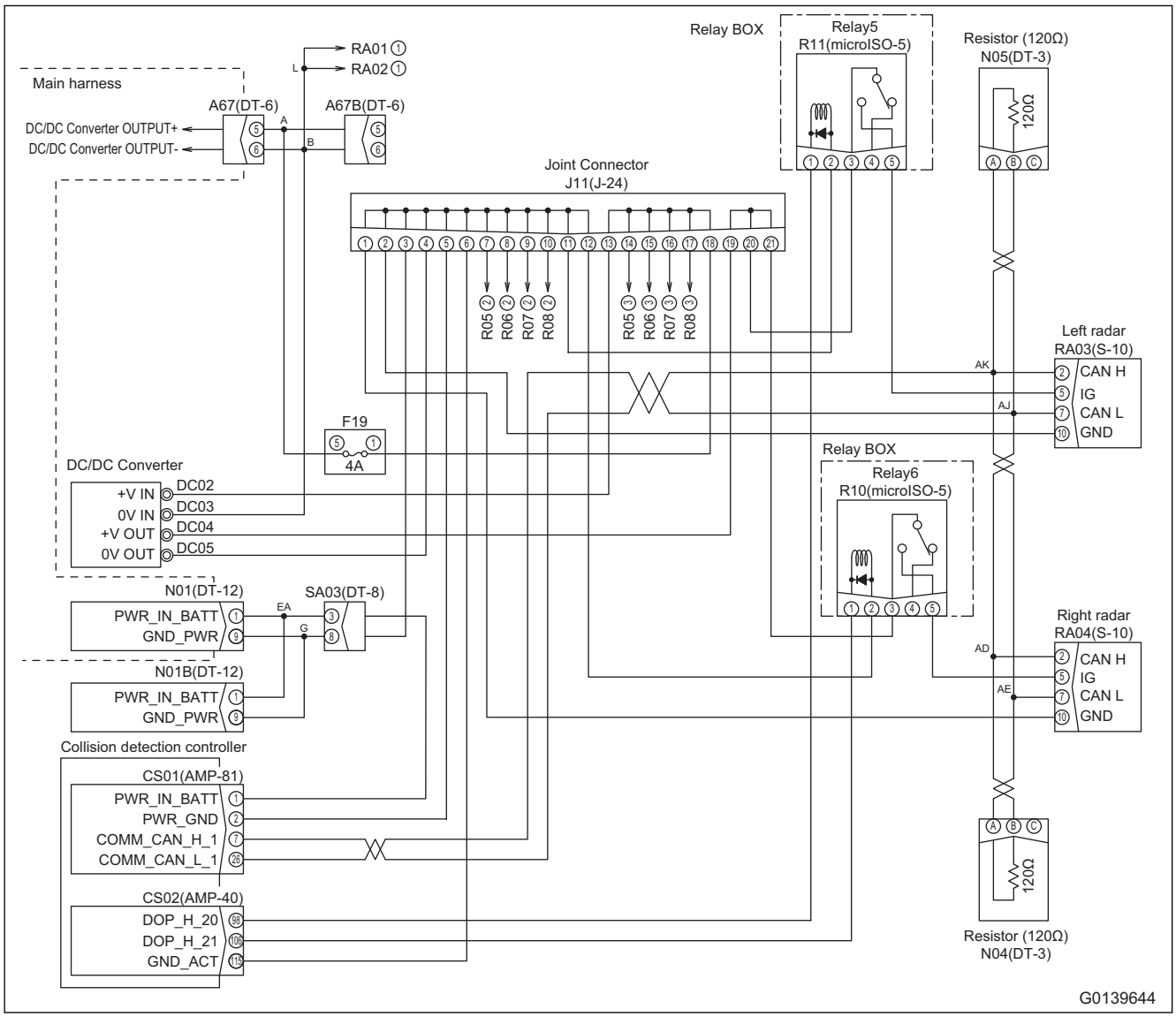
FAILURE CODE [DQA2KR]

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (Radar2) (Proximity detection controller system)
L01	DQA2KR		
Detail of failure	The proximity detection controller cannot receive a communication from the collision detection radar (rear right) for more than 3 seconds.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	• As the signal of active CAN communication line is pulse voltage, it cannot be measured with a multimeter. • The 120Ω termination resistor of the CAN communication line is in N04 and N05. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective power supply system to collision detection radar (rear right)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector RA04. Connect the T-adapter to the female side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between RA04 (female) (5) and (10)	Approx. 12V
2	Open circuit in wiring harness (open circuit or defective contact of connector)	If no failure is found by check on cause 1, this check is not required. 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors RA04, R10, terminal DC04, and DC05. Connect the T-adapter to the female side of RA04 to do the troubleshooting.		
		Resistance	Between R10 (female) (5) and RA04 (female) (5)	Max. 1Ω
			Between terminal DC04 and R10 (female) (3)	Max. 1Ω
			Between terminal DC05 and RA04 (female) (10)	Max. 1Ω
3	Defective collision detection radar (right) power supply relay	If no failure is found by check on cause 1, this check is not required. 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R10 and replace with the same type relay. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position.		
		If it goes back to the correct state when it is replaced with a correct relay, the collision detection radar (R.H.) power supply relay (R10) before replacement is defective.		
4	Defective DC/DC converter	If no failure is found by the above checks, the DC/DC converter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="7">5</td><td rowspan="7">Open circuit in wiring harness (wire breakage or defective contact of connector) (CAN communication circuit)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors CS01, RA04, N04 and N05. Connect the socket to the female side of CS01 and connect a T-adapter to RA04, N04 and N05 to do the troubleshooting.</td></tr>
<tr><td rowspan="6">Resistance</td><td>Between RA04 (female) (2) and CS01 (female) (7)</td><td>Max. 1Ω</td></tr>
<tr><td>Between RA04 (female) (7) and CS01 (female) (26)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CS01 (female) (7) and N04 (female) (A)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CS01 (female) (26) and N04 (female) (B)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CS01 (female) (7) and N05 (female) (A)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CS01 (female) (26) and N05 (female) (B)</td><td>Max. 1Ω</td></tr>
<tr><td rowspan="7">6</td><td rowspan="7">Short circuit in wiring harness (CAN communication circuit)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors CS01, RA04, N04, and N05. Connect the socket to the female side of CS01 to do the troubleshooting.</td></tr>
<tr><td rowspan="5">Resistance</td><td>Between CS01 (female) (7) and (26)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between CS01 (female) (7) and (1)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between CS01 (female) (7) and (2)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between CS01 (female) (26) and (1)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between CS01 (female) (26) and (2)</td><td>Min. 1MΩ</td></tr>
<tr><td rowspan="4">7</td><td rowspan="4">Defective CAN terminating resistor</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors N04 and N05, and connect the T-adapter to each male side to do the troubleshooting.</td></tr>
<tr><td rowspan="2">Resistance</td><td>Between N04 (male) (A) and (B)</td><td>Approx. 120Ω</td></tr>
<tr><td>Between N05 (male) (A) and (B)</td><td>Approx. 120Ω</td></tr>
<tr><td>8</td><td>Defective collision detection radar (right rear)</td><td colspan="3">If no failure is found by the previous checks, the collision detection radar (rear right) is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
<tr><td>9</td><td>Defective proximity detection controller</td><td colspan="3">If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of collision detection radar communication

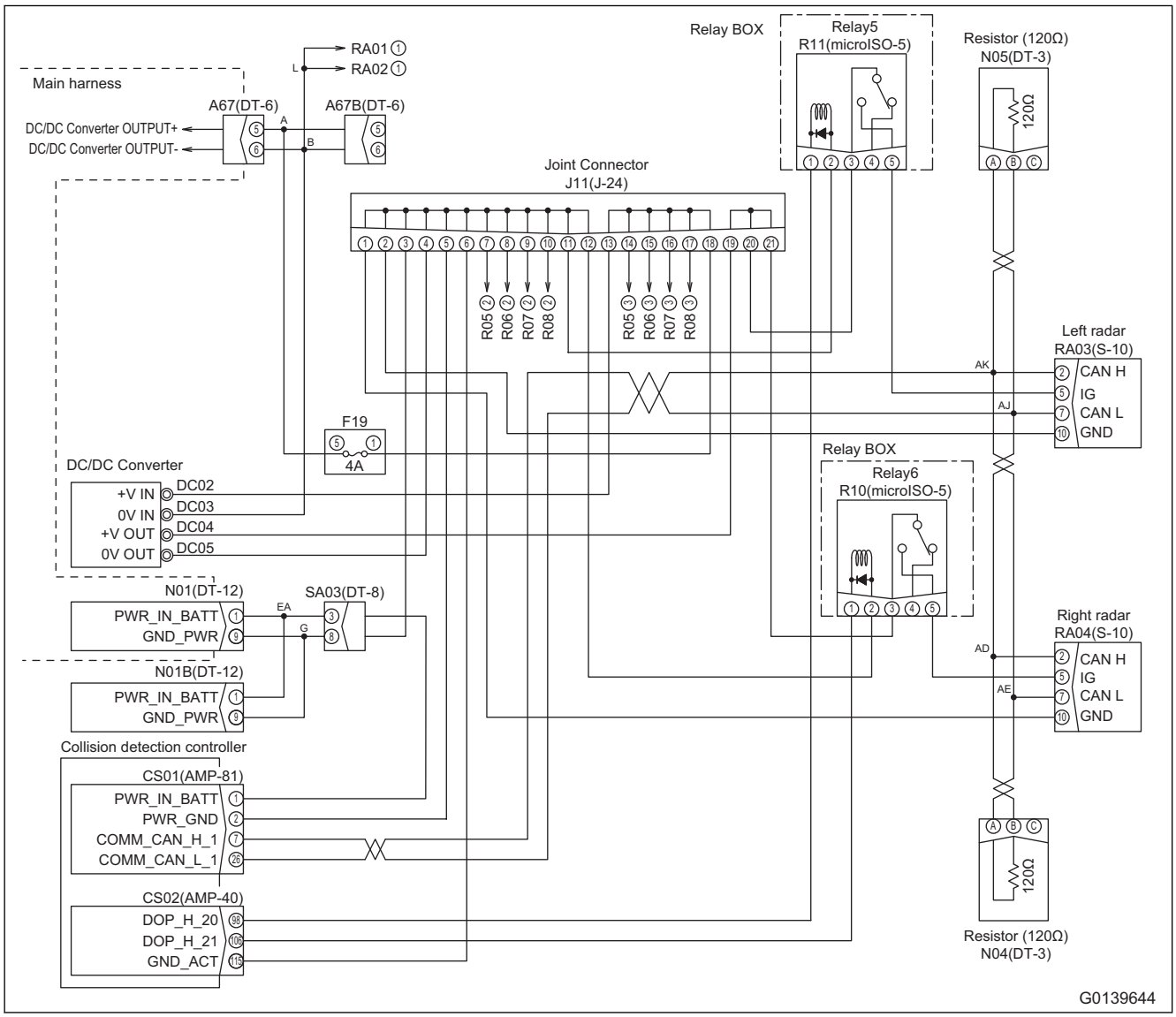


FAILURE CODE [DQA2KT]

Action level	Failure code	Failure phenomenon	ABNL) Radar2 (Proximity detection controller system)
L01	DQA2KT		
Detail of failure	The proximity detection controller receives an internal error from collision detection radar (rear right).		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective power supply system to collision detection radar (rear right)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector RA04. Connect the T-adapter to the female side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between RA04 (female) (5) and (10)	Approx. 12V
2	Open circuit in wiring harness (open circuit or defective contact of connector)	If no failure is found by check on cause 1, this check is not required. 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors RA04, R10, terminal DC04, and DC05. Connect the T-adapter to the female side of RA04 to do the troubleshooting.		
		Resistance	Between R10 (female) (5) and RA04 (female) (5)	Max. 1Ω
			Between terminal DC04 and R10 (female) (3)	Max. 1Ω
			Between terminal DC05 and RA04 (female) (10)	Max. 1Ω
3	Defective collision detection radar (R.H.) power supply relay	If no failure is found by check on cause 1, this check is not required. 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R10 and replace with the same type relay. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position.		
		If it goes back to the correct state when it is replaced with a correct relay, the collision detection radar (R.H.) power supply relay (R10) before replacement is defective.		
4	Defective DC/DC converter	If no failure is found by the above checks, the DC/DC converter is defective. (Troubleshooting cannot be done because this is an internal failure.)		
5	Defective collision detection radar (right rear)	If no failure is found by the previous checks, the collision detection radar (rear right) is defective. (Troubleshooting cannot be done because this is an internal failure.)		
6	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of collision detection radar communication



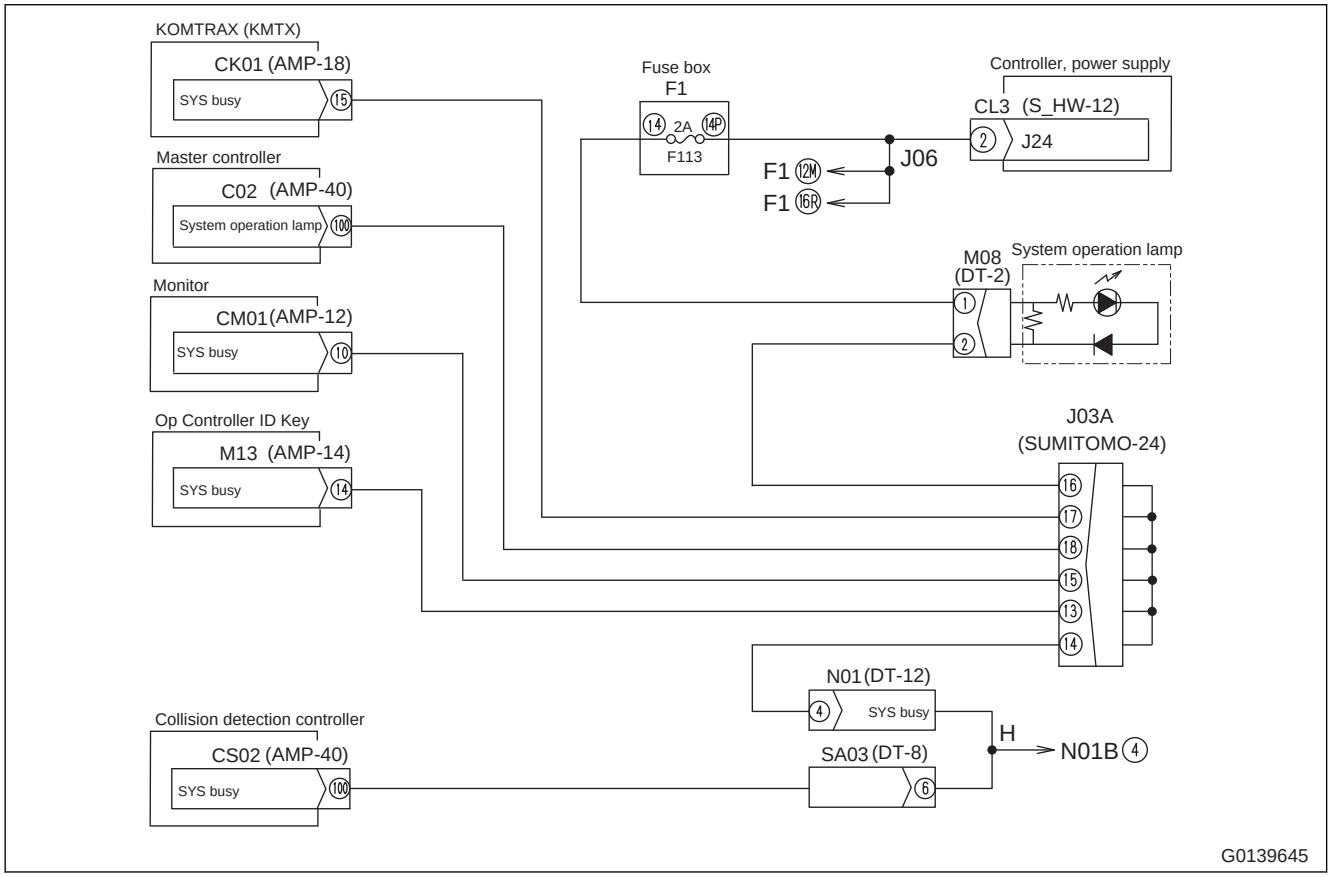
FAILURE CODE [DUS1KA]

Action level	Failure code	Failure phenomenon	System Operating Lamp Output Open Circuit (PDC) (Proximity detection controller system)
-	DUS1KA		
Detail of failure	The proximity detection controller senses an open circuit because the output line voltage of the system operation lamp is approximately 6V or below for approximately 3 seconds after the starting switch is turned to the ON position while the proximity detection controller does not output a current.		
Action of controller	Does not turn on the system operating lamp.		
Problem on lift truck	• While the system operating lamp comes on, do not disconnect the battery plug W50. If the battery plug W50 is disconnected, data stored in the proximity detection controller memory can have damage. • The proximity detection controller cannot turn on the system operating lamp. • When failure codes [D**LKA] and [D**LKB] are not shown in other area, the other controller can turn on the system operating lamp.		
Related information	• You cannot turn on the system operating lamp from the proximity detection controller. But, no trouble will occur unless battery plug W50 is disconnected. • When the system operating lamp is on, the output voltage is at low level. • Since no controller activates the system operating lamp for approximately 3 seconds after the starting switch is turned to the ON position, an open circuit can be found. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. When this failure code is active or left in the abnormality record, you cannot examine whether the controller shuts down correctly even if the system operating lamp is turned off. In this case, turn the starting switch to the OFF position. Wait for 10 minutes or more. Then, disconnect the battery plug W50. 3. Remove fuse F113. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F113	Continuity
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. When this failure code is active or left in the abnormality record, you cannot examine whether the controller shuts down correctly even if the system operating lamp is turned off. In this case, turn the starting switch to the OFF position. Wait for 10 minutes or more. Then, disconnect the battery plug W50. 3. Disconnect connectors CS02, M08 and CL3. Connect the socket to the female side of CS02, and connect T-adapter to the female side of M08 to do the troubleshooting.		
		Resistance	Between CS02 (female) (100) and M08 (female) (2)	Max. 1Ω
			Between M08 (female) (1) and CL3 (male) (2)	Max. 1Ω

No.	Cause	Procedure, measurement location, criteria and remarks
3	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

Circuit diagram of system operating lamp

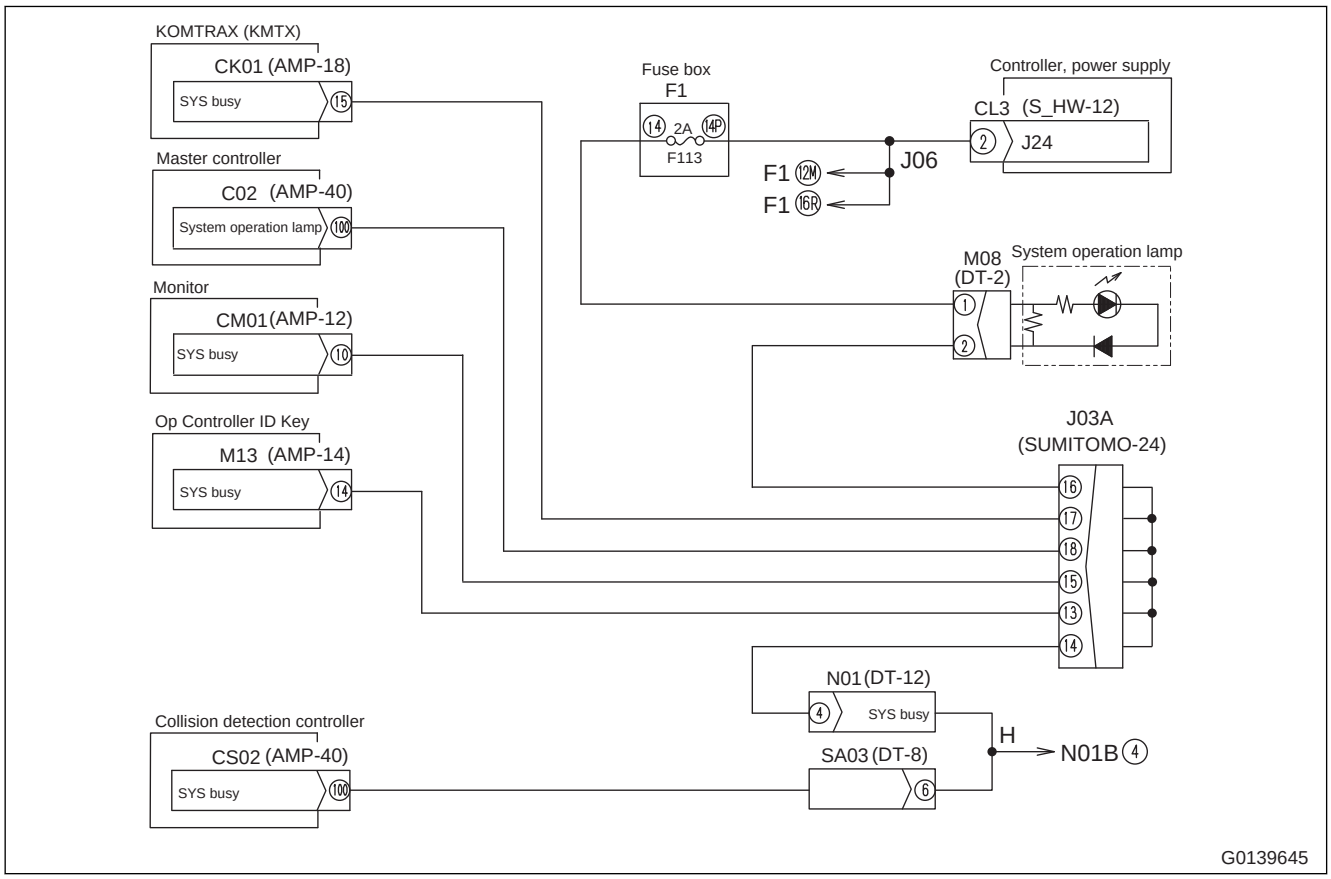


FAILURE CODE [DUS1KY]

Action level	Failure code	Failure phenomenon	System Operating Lamp Output Short Circuit (PDC) (Proximity detection controller system)
-	DUS1KY		
Detail of failure	The proximity detection controller senses a short circuit because the output voltage does not become low level while the proximity detection controller outputs current to the system operating lamp.		
Action of controller	Turns the system operating lamp output to OFF.		
Problem on lift truck	• While the system operating lamp comes on, do not disconnect the battery plug W50. If the battery plug W50 is disconnected, data stored in the proximity detection controller memory can have damage. • The proximity detection controller cannot turn on the system operating lamp. • When failure codes [D**LKA] and [D**LKB] are not shown in other area, the other controller can turn on the system operating lamp.		
Related information	• You cannot turn on the system operating lamp from the proximity detection controller. But, no trouble will occur unless the battery plug W50 is disconnected. • When the system operating lamp is on, the output voltage is at low level. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. When this failure code is active or left in the abnormality record, you cannot examine whether the controller shuts down correctly even if the system operating lamp is turned off. In this case, turn the starting switch to the OFF position. Wait for 10 minutes or more. Then, disconnect the battery plug W50. 3. Remove fuse F113 in the fuse box. 4. Disconnect the connectors CM01, M13, C02, CK01, M08 and CS02. Connect the T-adapter to the female side of M08 to do the troubleshooting.		
		Resistance	Between M08 (female) (1) and (2)	Min. 1MΩ
2	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of system operating lamp

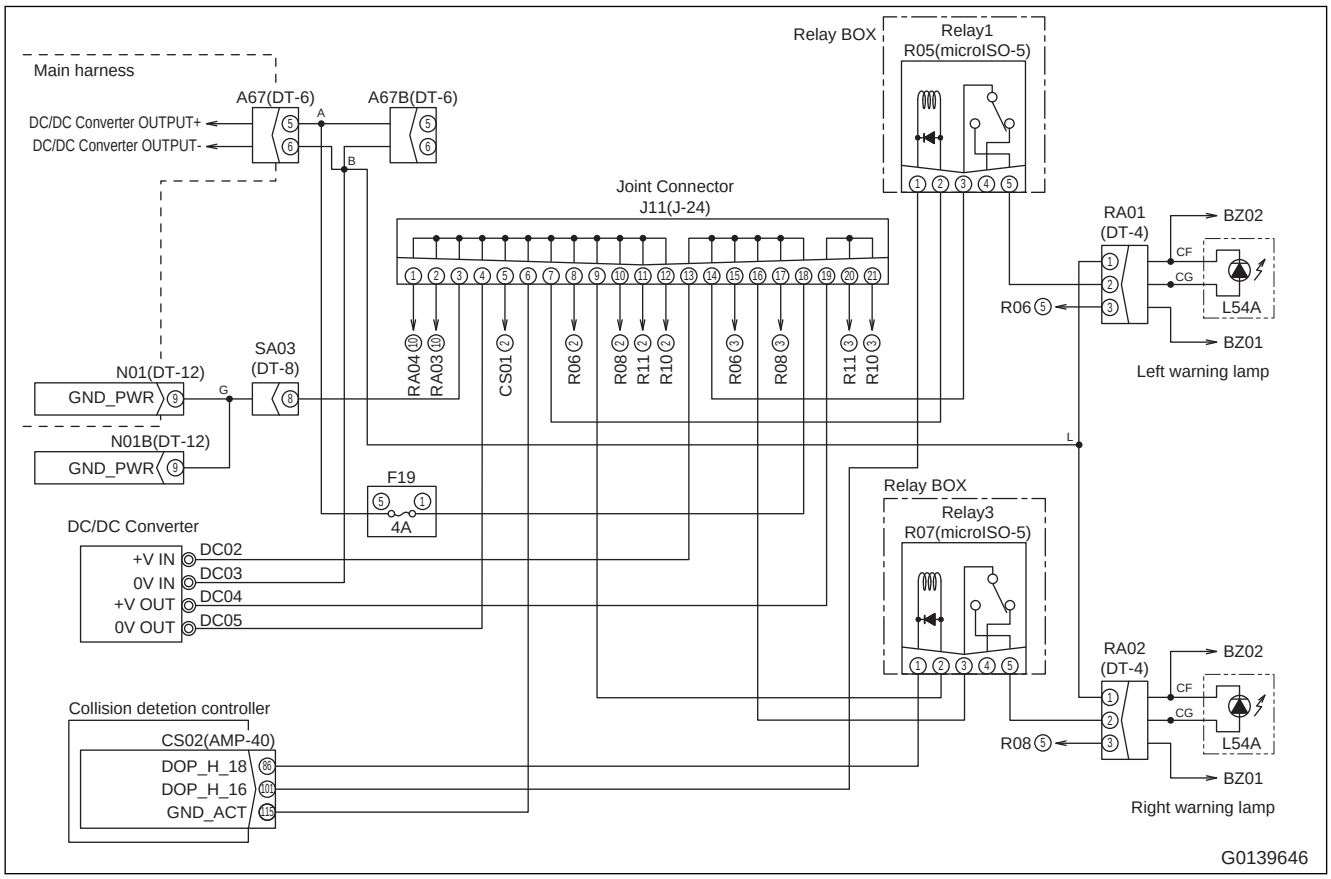


FAILURE CODE [DUS6KA]

Action level	Failure code	Failure phenomenon	Alarm Lamp 1 Output Open Circuit (Proximity detection controller system)
L01	DUS6KA		
Detail of failure	While the output to the relay is OFF, 1.9V ≤ output voltage <7.0V is sensed continuously for 100ms.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp does not come on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective alarm lamp 1 power supply relay	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R05 to do the troubleshooting.		
		Resistance	Between R05 (male) (1) and (2)	Approx. 400Ω
2	Open circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors R05 and CS02, and connect the socket to the female side of CS02 to do the troubleshooting.		
		Resistance	Between R05 (female) (1) and CS02 (female) (101)	Max. 1Ω
			Between R05 (female) (2) and CS02 (female) (115)	Max. 1Ω
3	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of alarm lamp

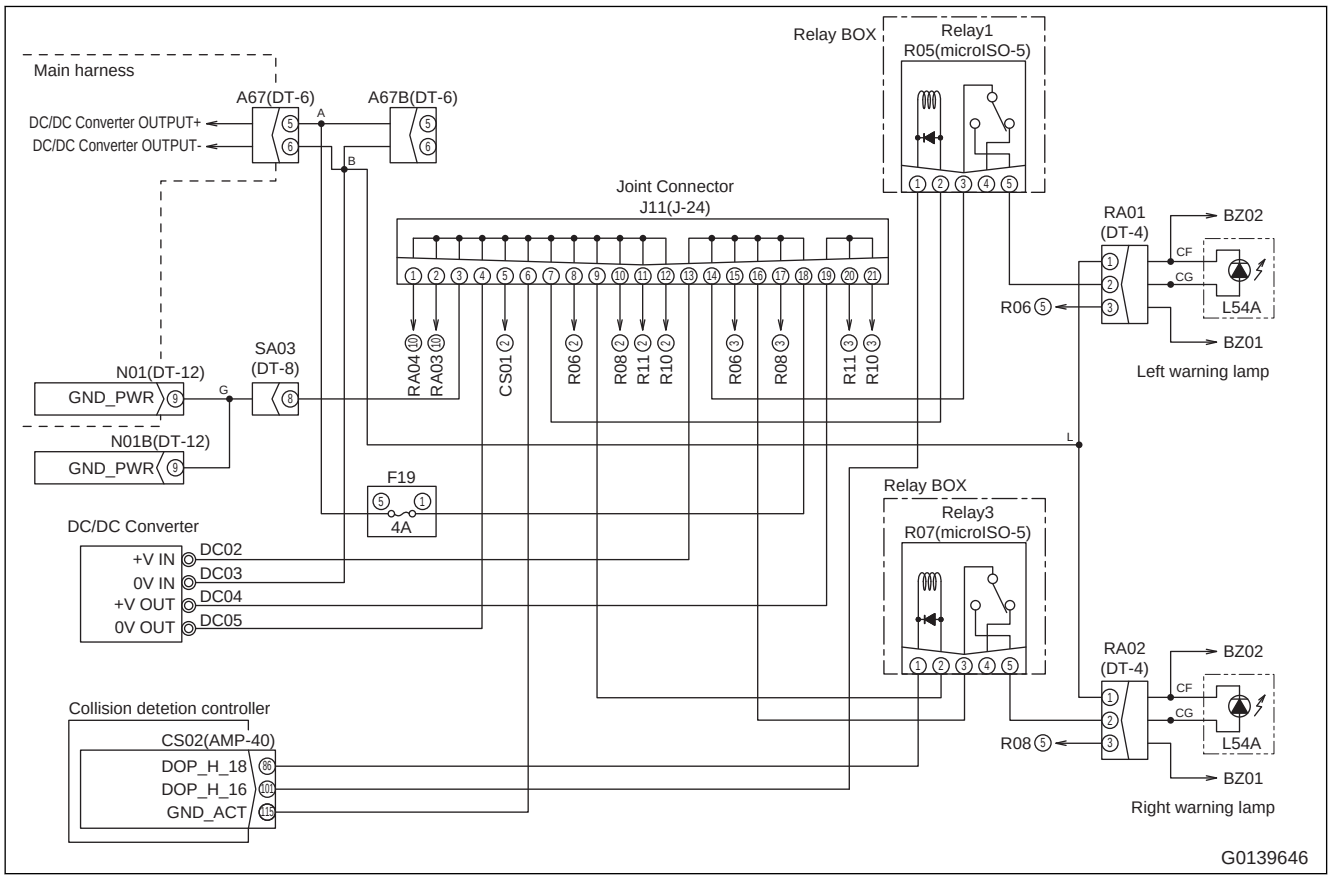


FAILURE CODE [DUS6KB]

Action level	Failure code	Failure phenomenon	Alarm Lamp 1 Output Hot Short Circuit (Proximity detection controller system)
L01	DUS6KB		
Detail of failure	While the output to the relay is OFF, an output voltage of ≥ 7.0V is sensed continuously for 100ms.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R05. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between R05 (female) (1) and (2)	Max. 1V
2	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of alarm lamp

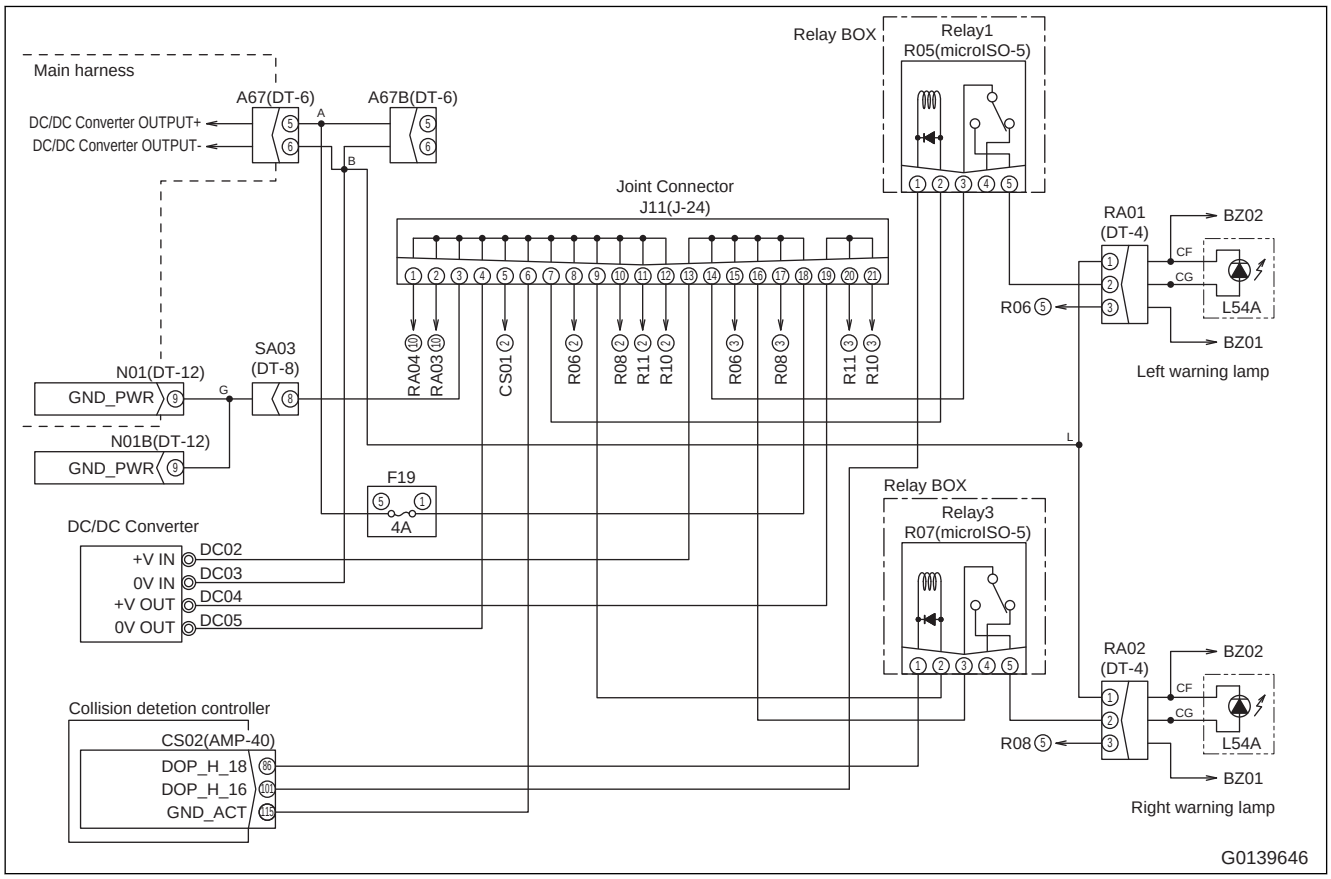


FAILURE CODE [DUS6KY]

Action level	Failure code	Failure phenomenon	Alarm Lamp 1 Output Short Circuit (Proximity detection controller system)
L01	DUS6KY		
Detail of failure	Over current protection is sensed for 100 milliseconds continuously while relay output is ON.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp does not come on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in alarm lamp 1 power supply relay (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R05 to do the troubleshooting.		
		Resistance	Between R05 (male) (1) and (2)	Approx. 400Ω
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R05 and CS02 to do the troubleshooting.		
		Resistance	Between R05 (male) (1) and (2)	Min. 1MΩ
3	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of alarm lamp

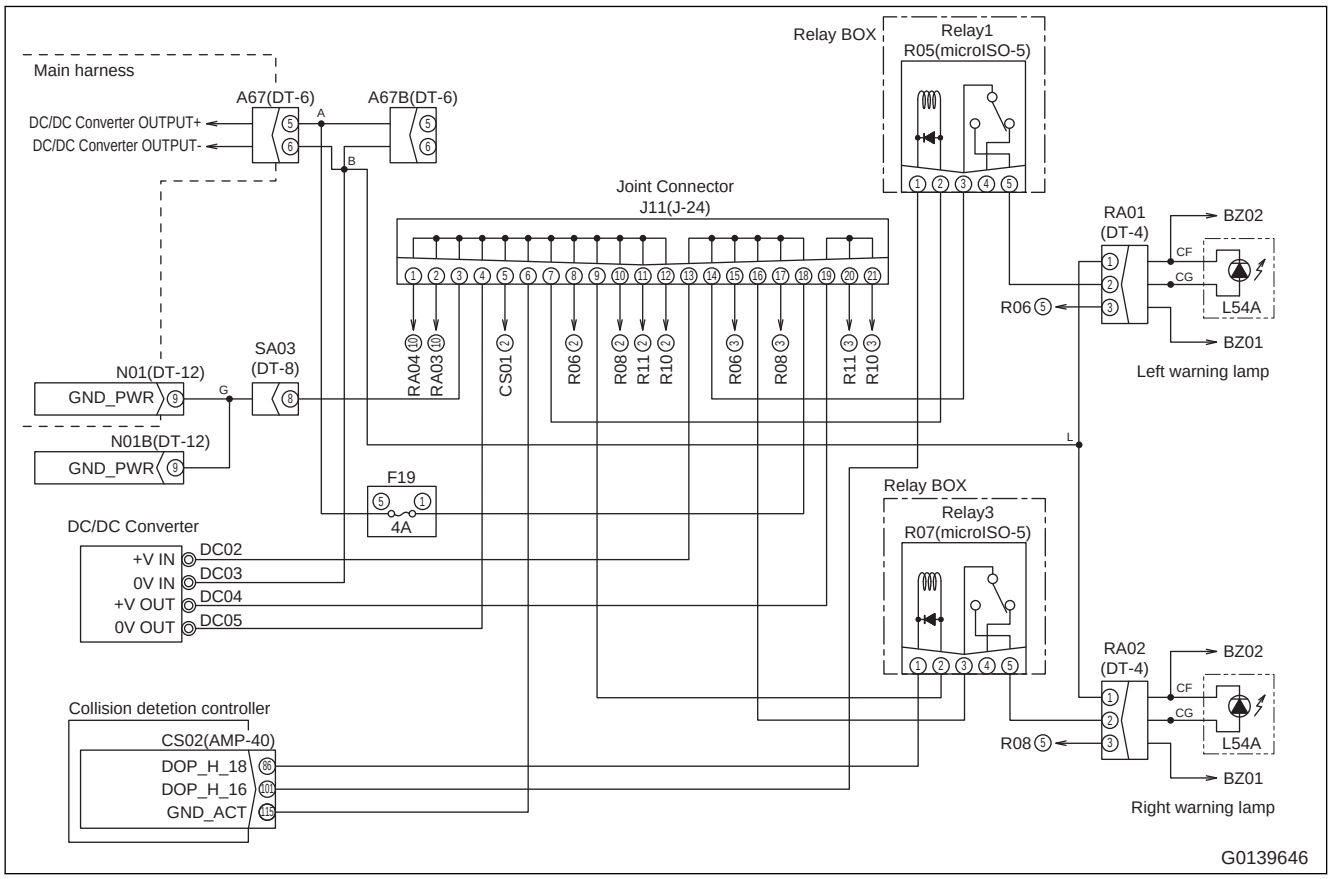


FAILURE CODE [DUS7KA]

Action level	Failure code	Failure phenomenon	Alarm Lamp 2 Output Open Circuit (Proximity detection controller system)
L01	DUS7KA		
Detail of failure	While the output to the relay is OFF, 1.9V ≤ output voltage <7.0 V is sensed continuously for 100ms.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp does not come on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective alarm lamp 2 power supply relay	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R07 to do the troubleshooting.		
		Resistance	Between R07 (male) (1) and (2)	Approx. 400Ω
2	Open circuit in wiring harness (open circuit or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors R07 and CS02, and connect the socket to the female side of CS02 to do the troubleshooting.		
		Resistance	Between R07 (female) (1) and CS02 (female) (86)	Max. 1Ω
			Between R07 (female) (2) and CS02 (female) (115)	Max. 1Ω
3	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of alarm lamp

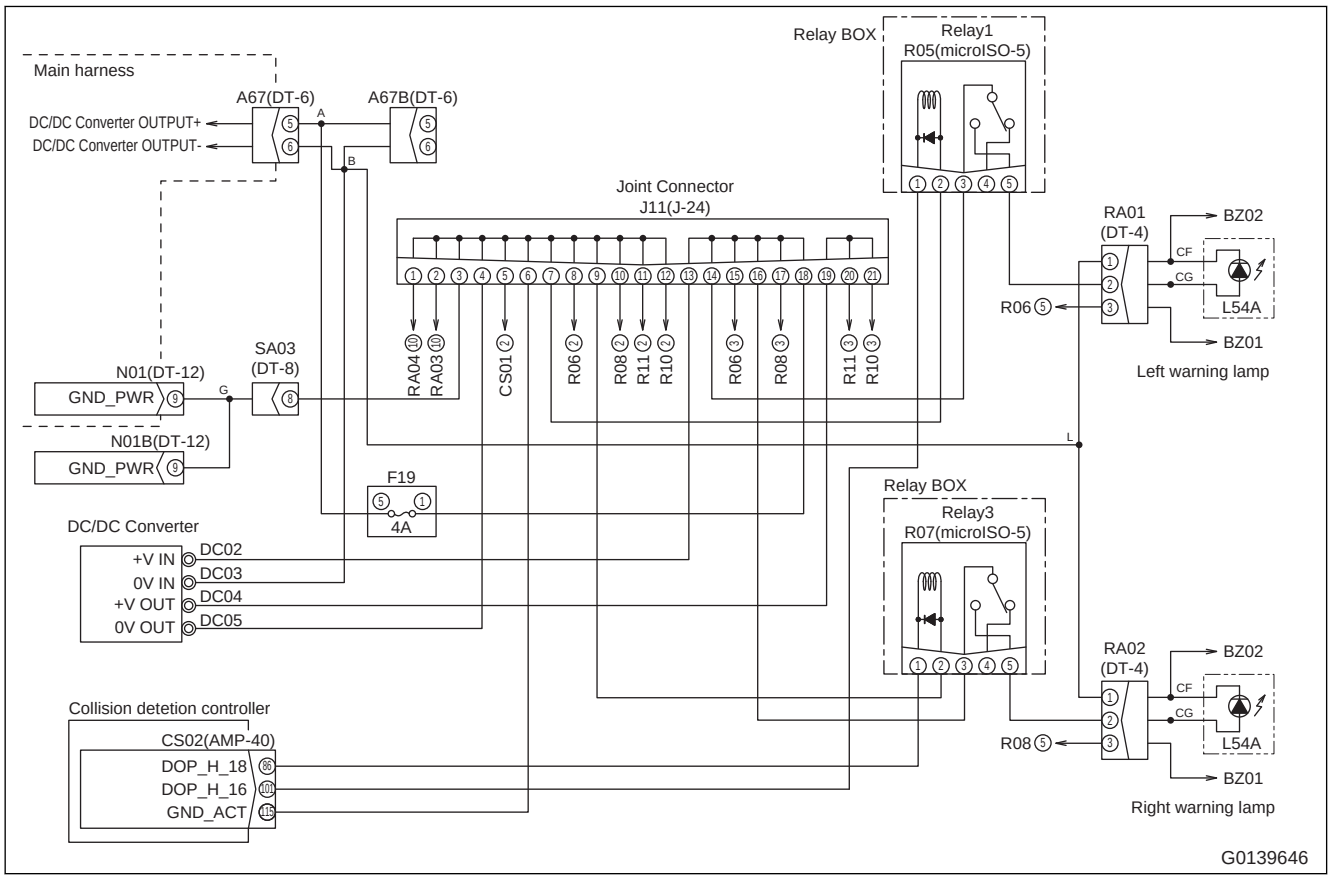


FAILURE CODE [DUS7KB]

Action level	Failure code	Failure phenomenon	Alarm Lamp 2 Output Hot Short Circuit (Proximity detection controller system)
L01	DUS7KB		
Detail of failure	While the output to the relay is OFF, an output voltage of ≥ 7.0V is sensed continuously for 100ms.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R07. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between R07 (female) (1) and (2)	Max. 1V
2	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of alarm lamp

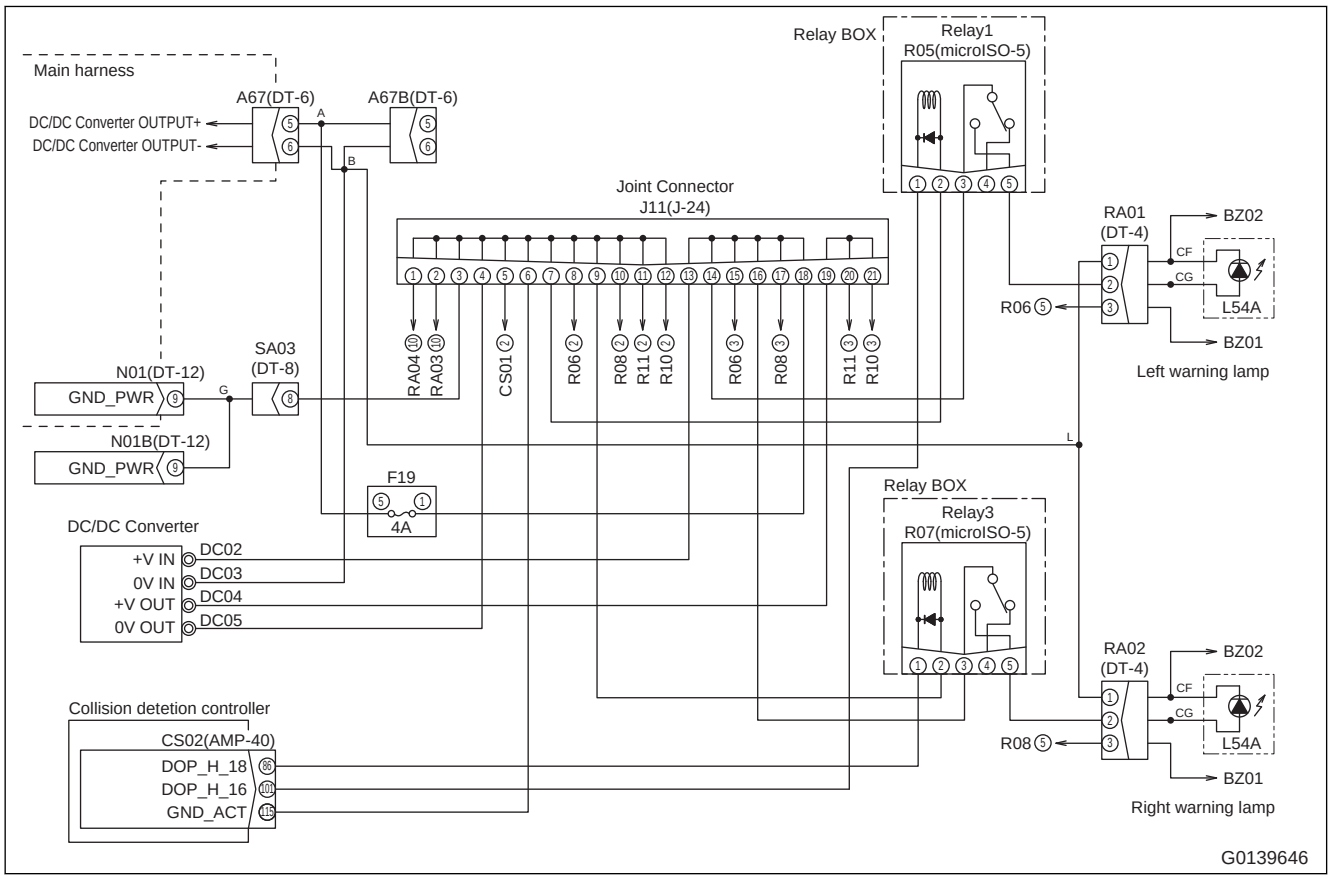


FAILURE CODE [DUS7KY]

Action level	Failure code	Failure phenomenon	Alarm Lamp 2 Output Short Circuit (Proximity detection controller system)
L01	DUS7KY		
Detail of failure	Over current protection is sensed for 100 milliseconds continuously while relay output is ON.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp does not come on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in alarm lamp 2 power supply relay (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R07 to do the troubleshooting.		
		Resistance	Between R07 (male) (1) and (2)	Approx. 400Ω
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R07 and CS02 to do the troubleshooting.		
		Resistance	Between R07 (female) (1) and (2)	Min. 1MΩ
3	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of alarm lamp



FAILURE CODE [DV00KB]

Action level	Failure code	Failure phenomenon	SHORT) Buzzer Output (Monitor panel system)
L01	DV00KB		
Detail of failure	The detection circuit in the monitor panel senses this.		
Action of controller	• Turns the buzzer output to OFF. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The monitor panel buzzer does not operate.		
Related information	-		

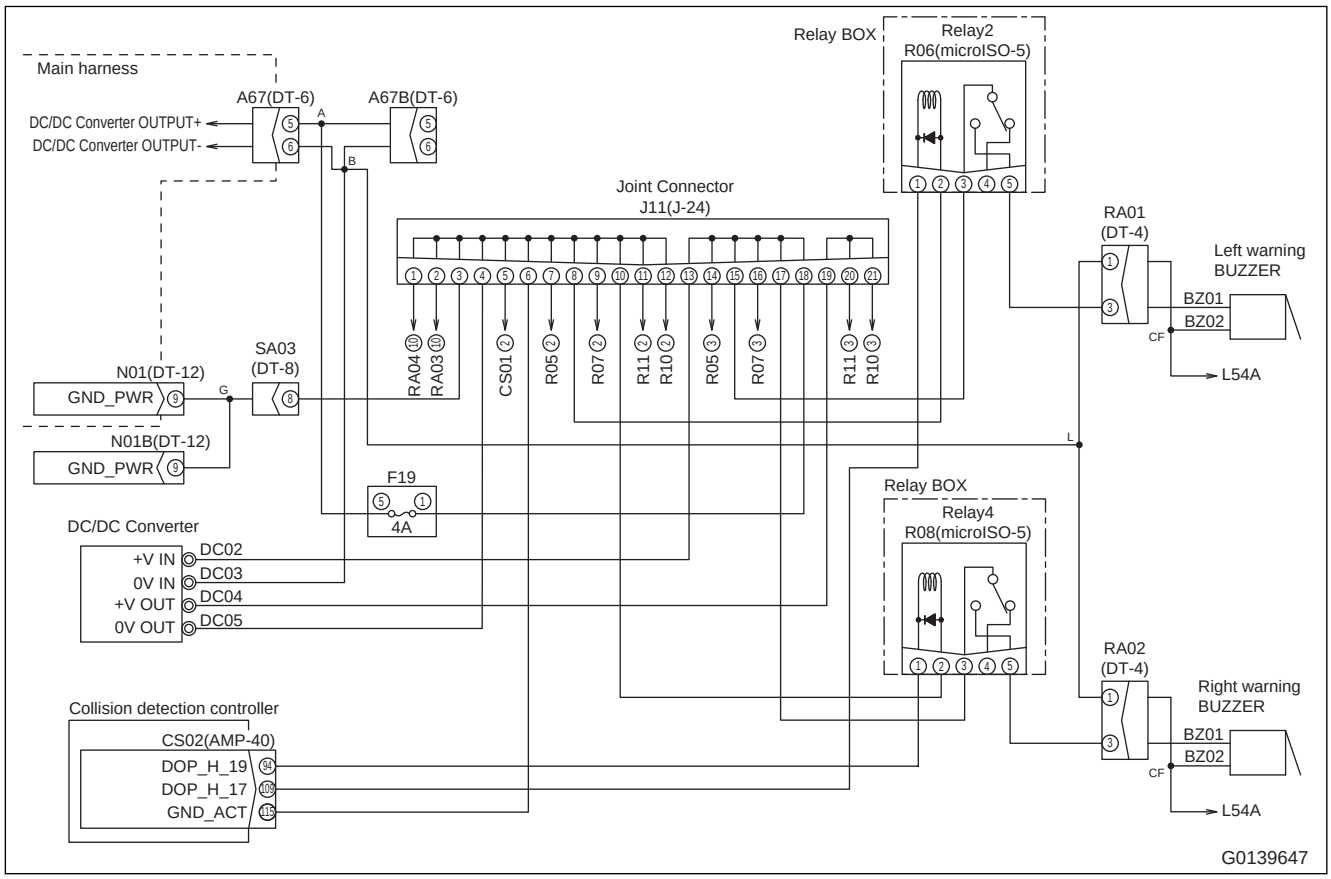
No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective monitor panel	The monitor panel is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [DV01KA]

Action level	Failure code	Failure phenomenon	Buzzer 1 Output Open Circuit (Proximity detection controller system)
L01	DV01KA		
Detail of failure	While the output to the relay is OFF, 1.9V ≤ output voltage <7.0V is sensed continuously for 100ms.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective alarm buzzer 1 power supply relay	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R06 to do the troubleshooting.		
		Resistance	Between R06 (male) (1) and (2)	Approx. 400Ω
2	Open circuit in wiring harness (open circuit or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors R06 and CS02, and connect the socket to the female side of CS02 to do the troubleshooting.		
		Resistance	Between R06 (female) (1) and CS02 (female) (109)	Max. 1Ω
			Between R06 (female) (2) and CS02 (female) (115)	Max. 1Ω
3	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of alarm buzzer

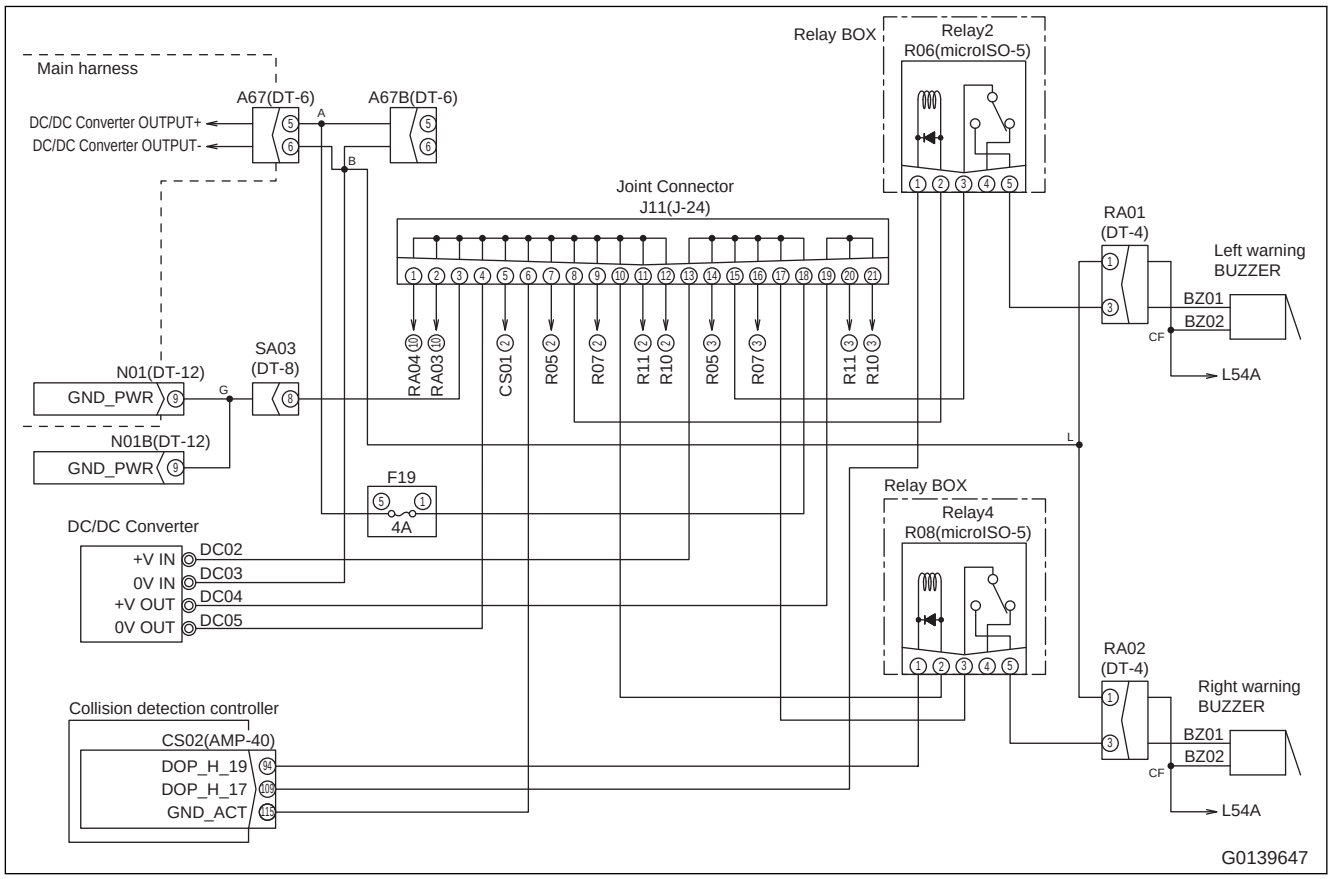


FAILURE CODE [DV01KB]

Action level	Failure code	Failure phenomenon	Buzzer 1 Output Hot Short Circuit (Proximity detection controller system)
L01	DV01KB		
Detail of failure	While the output to the relay is OFF, an output voltage of ≥ 7.0V is sensed continuously for 100ms.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R06. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between R06 (female) (1) and (2)	Max. 1V
2	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of alarm buzzer

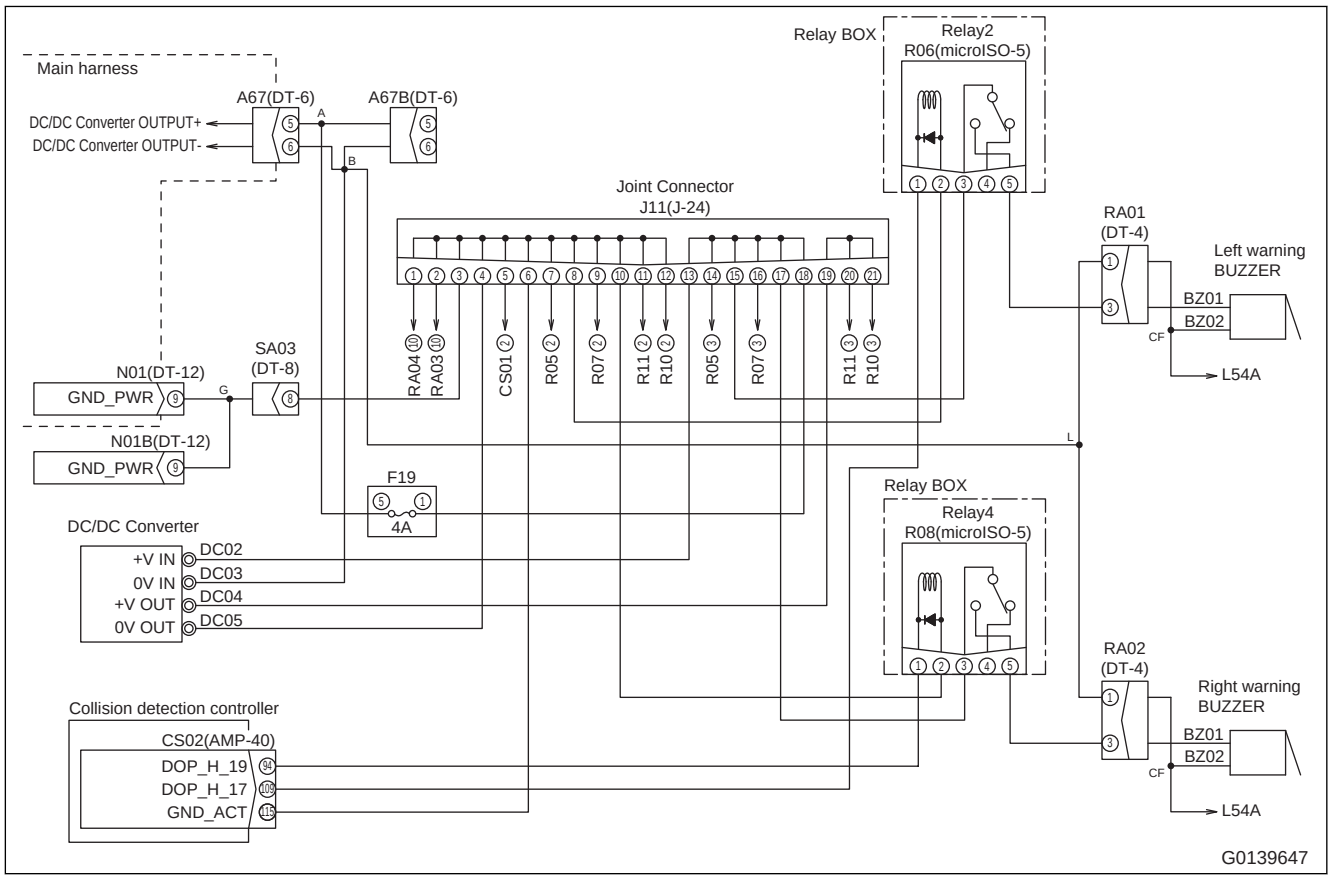


FAILURE CODE [DV01KY]

Action level	Failure code	Failure phenomenon	SHORT) Buzzer 1 Output (Proximity detection controller system)
L01	DV01KY		
Detail of failure	Over current protection is sensed for 100 milliseconds continuously while relay output is ON.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Alarm Buzzer 1 Supply Voltage Relay Internal Short Circuit (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R06 to do the troubleshooting.		
		Resistance	Between R06 (male) (1) and (2)	Approx. 400Ω
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R06 and CS02 to do the troubleshooting.		
		Resistance	Between R06 (female) (1) and (2)	Min. 1MΩ
3	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of alarm buzzer

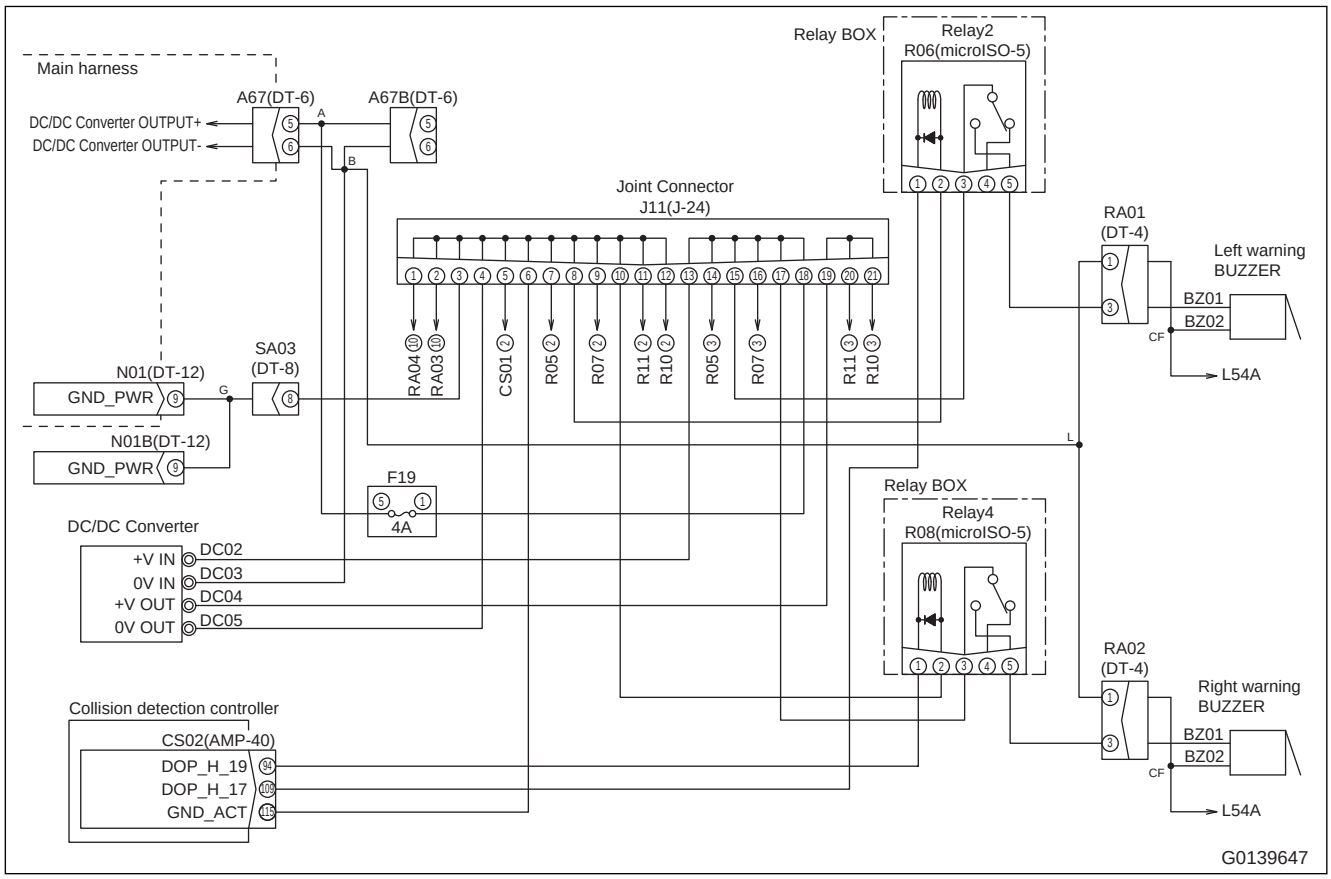


FAILURE CODE [DV02KA]

Action level	Failure code	Failure phenomenon	Buzzer 2 Output Open Circuit (Proximity detection controller system)
L01	DV02KA		
Detail of failure	While the output to the relay is OFF, 1.9V ≤ output voltage <7.0V is sensed continuously for 100ms.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective alarm buzzer 2 power supply relay	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R08 to do the troubleshooting.		
		Resistance	Between R08 (male) (1) and (2)	Approx. 400Ω
2	Open circuit in wiring harness (open circuit or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors R08 and CS02, and connect the socket to the female side of CS02 to do the troubleshooting.		
		Resistance	Between R08 (female) (1) and CS02 (female) (94)	Max. 1Ω
			Between R08 (female) (2) and CS02 (female) (115)	Max. 1Ω
3	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of alarm buzzer

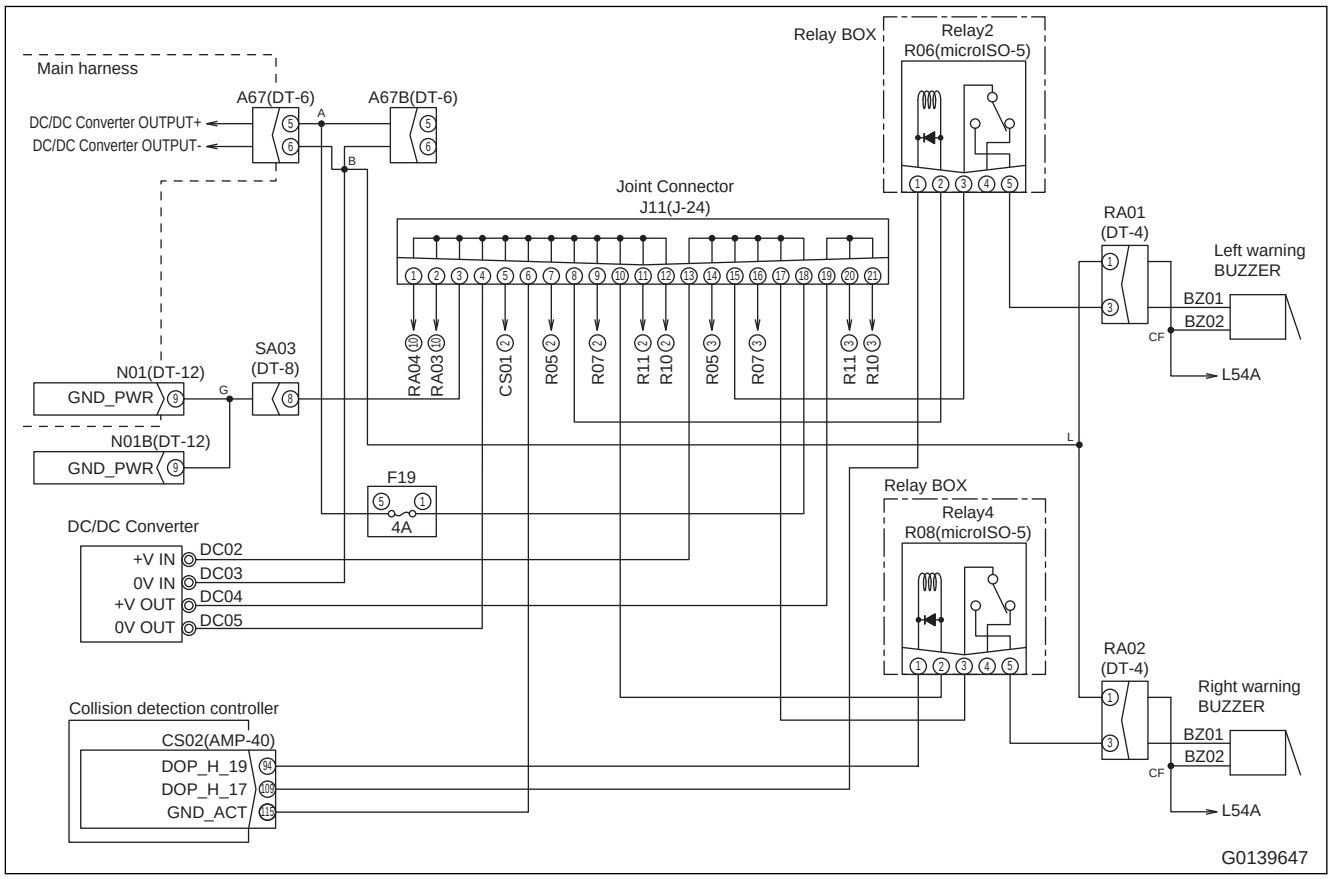


FAILURE CODE [DV02KB]

Action level	Failure code	Failure phenomenon	Buzzer 2 Output Hot Short Circuit (Proximity detection controller system)
L01	DV02KB		
Detail of failure	While the output to the relay is OFF, an output voltage of ≥ 7.0V is sensed continuously for 100ms.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R08. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between R08 (female) (1) and (2)	Max. 1V
2	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of alarm buzzer

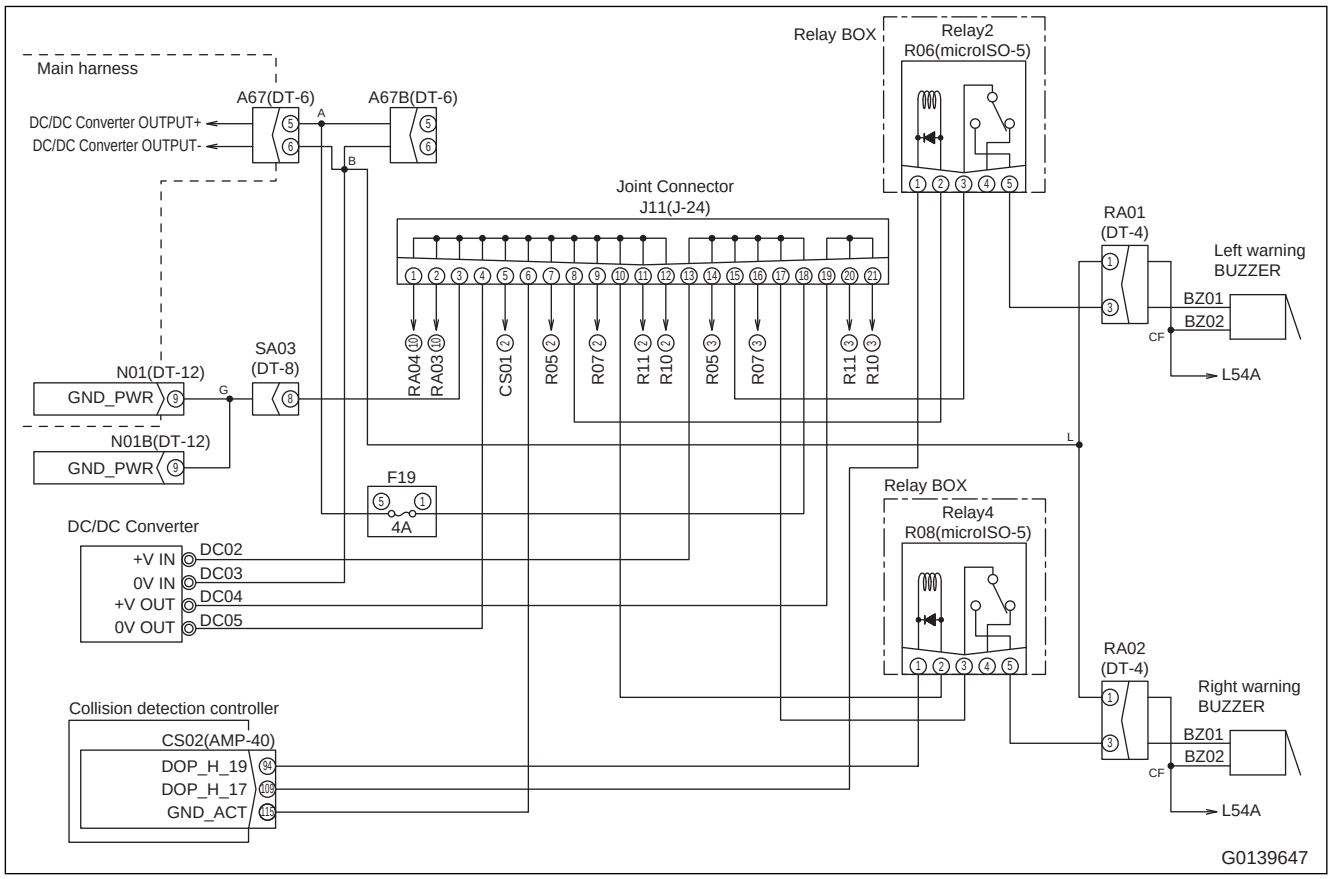


FAILURE CODE [DV02KY]

Action level	Failure code	Failure phenomenon	SHORT) Buzzer 2 Output (Proximity detection controller system)
L01	DV02KY		
Detail of failure	Over current protection is sensed for 100 milliseconds continuously while relay output is ON.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	• This failure code senses the failure on the coil side of the relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Alarm Buzzer 2 Supply Voltage Relay Internal Short Circuit (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R08 to do the troubleshooting.		
		Resistance	Between R08 (male) (1) and (2)	Approx. 400Ω
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R08 and CS02 to do the troubleshooting.		
		Resistance	Between R08 (female) (1) and (2)	Min. 1MΩ
3	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of alarm buzzer

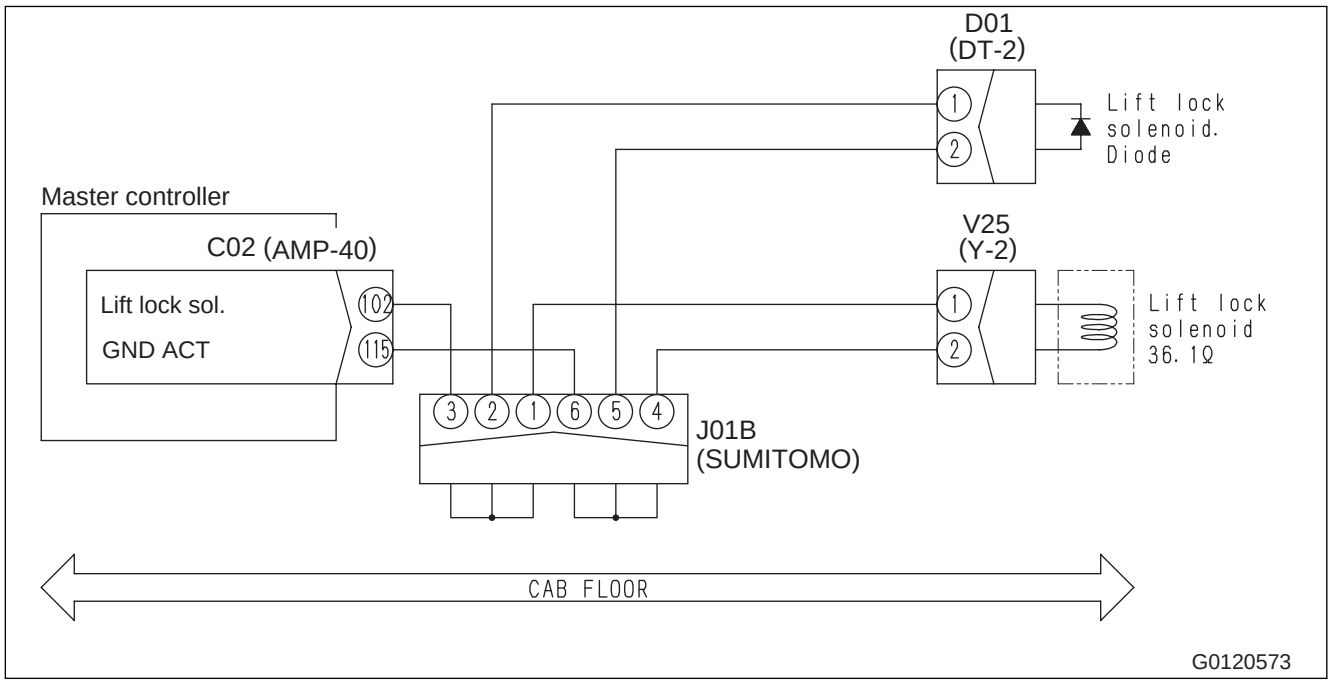


FAILURE CODE [DW9MKA]

Action level	Failure code	Failure phenomenon	DISC) Lift Lock Solenoid (Master controller system)
L03	DW9MKA		
Detail of failure	An output current of < 100mA is sensed for 500msec continuously while the output to the lift lock solenoid is ON.		
Action of controller	• Gives only an announcement. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The fork cannot be lowered.		
Related information	• This is not sensed in charging mode. • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting. (When the operator is seated)		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective lift lock solenoid	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector V25. Connect the T-adapter to male side to do the troubleshooting.		
		Resistance	Between V25 (male) (1) and (2)	32Ω to 40Ω
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C02 and V25. Connect a socket to the female side of C02 and connect a T-adapter to the female side of V25 to do the troubleshooting.		
		Resistance	Between V25 (female) (1) and C02 (female) (102)	Max. 1Ω
			Between V25 (female) (2) and C02 (female) (115)	Max. 1Ω
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of lift lock solenoid

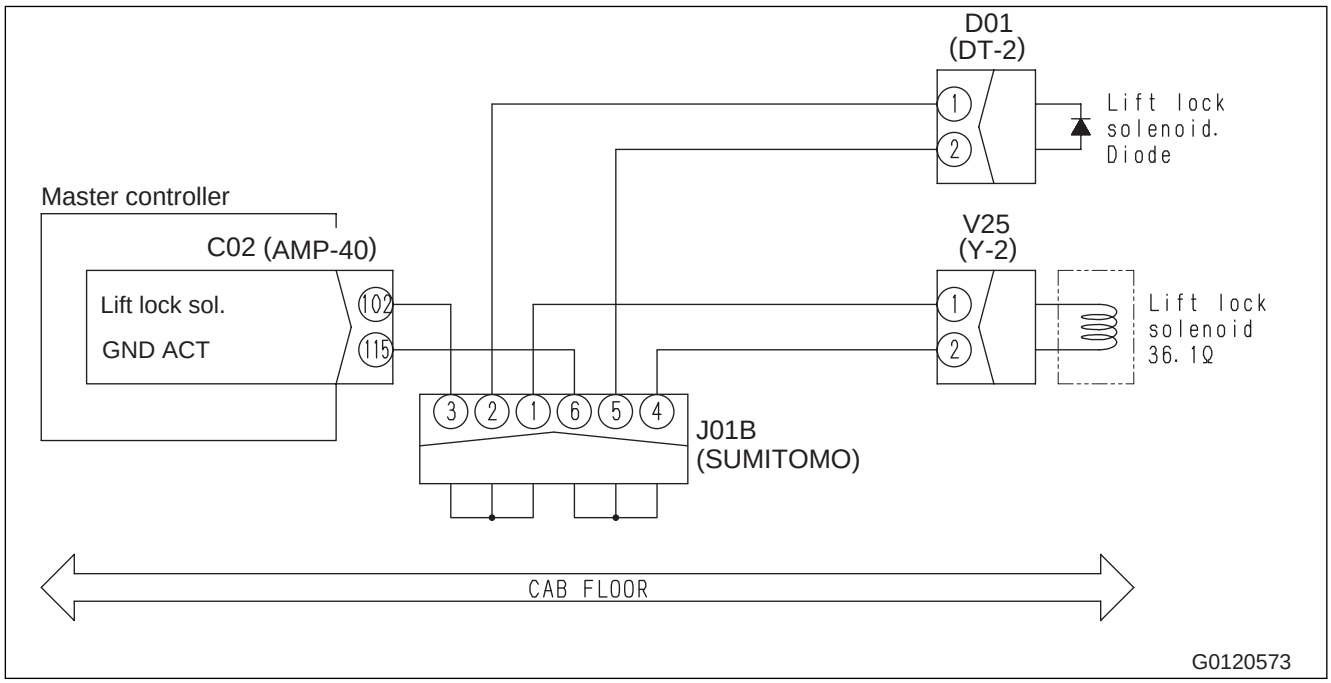


FAILURE CODE [DW9MKB]

Action level	Failure code	Failure phenomenon	SHORT) Lift Lock Solenoid (Master controller system)
L03	DW9MKB		
Detail of failure	An output current of ≥ 1.4A or an over current protection is sensed for 100msec continuously while the lift lock solenoid output is ON.		
Action of controller	• Gives only an announcement. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The fork cannot be lowered.		
Related information	• This is not sensed in charging mode. • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting. (When the operator is seated)		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective lift lock solenoid	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector V25. Connect the T-adapter to male side to do the troubleshooting.		
		Resistance	Between V25 (male) (1) and (2)	32Ω to 40Ω
2	Defective diode D01	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector D01. Connect the T-adapter to male side to do the troubleshooting. **REMARK** Do the measurement with the diode range of the multimeter.		
		Continuity	Between D01 (male) (1) (+) and (2) (-)	No continuity
			Between D01 (male) (2) (+) and (1) (-)	Continuity
3	Open or short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors D01 and C02, and connect the socket to the female side of C02 to do the troubleshooting.		
		Resistance	Between C02 (female) (102) and (115)	32Ω to 40Ω
4	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of lift lock solenoid

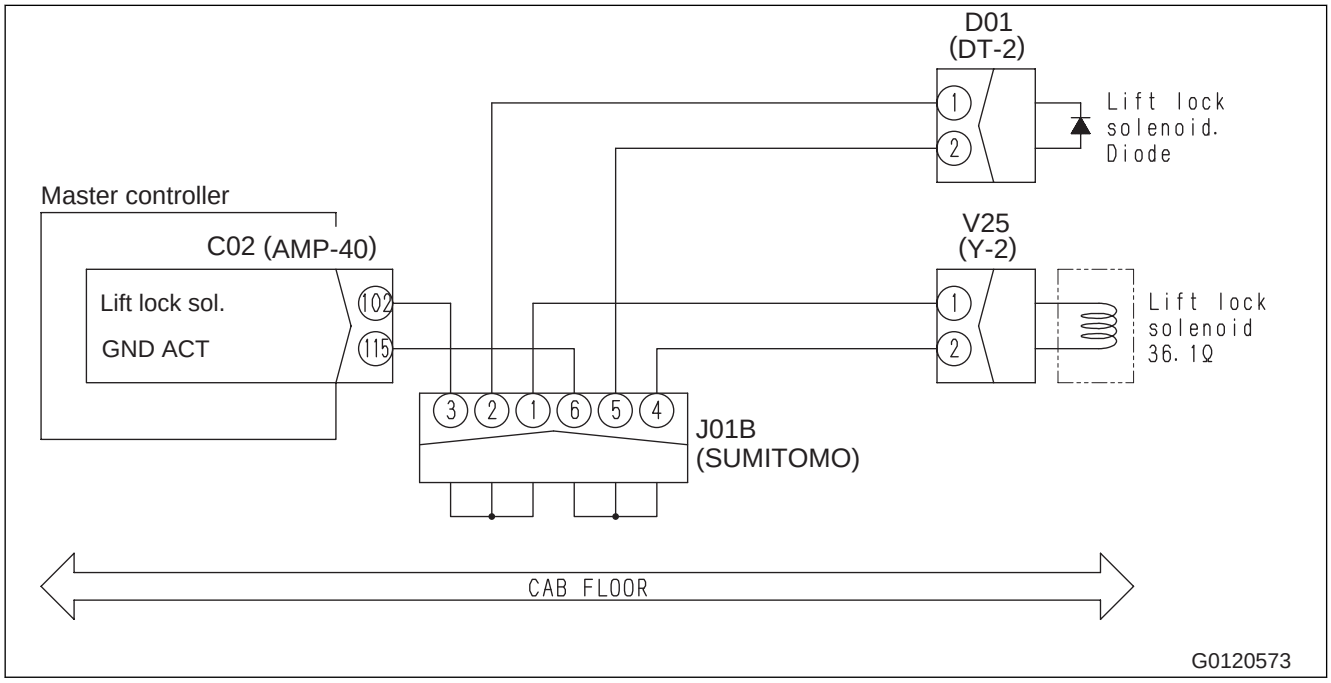


FAILURE CODE [DW9MKY]

Action level	Failure code	Failure phenomenon	SHORT_P) Lift Lock Solenoid (Master controller system)
L03	DW9MKY		
Detail of failure	An output voltage of ≥ 2.6V is sensed for 100msec continuously while the output to the lift lock solenoid is OFF.		
Action of controller	• Turns the lift lock solenoid output to OFF. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch or AC200V (breaker switch) is turned to the OFF position one time.		
Problem on lift truck	The fork can be lowered even when the operator is off the seat.		
Related information	• This is also sensed in charge mode. • How to reproduce failure code: Turn the starting switch to the ON position to do the troubleshooting. (When the operator is not seated)		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector V25. Connect the T-adapter to the female side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between V25 (female) (1) and (2)	Max. 2.5V
2	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of lift lock solenoid

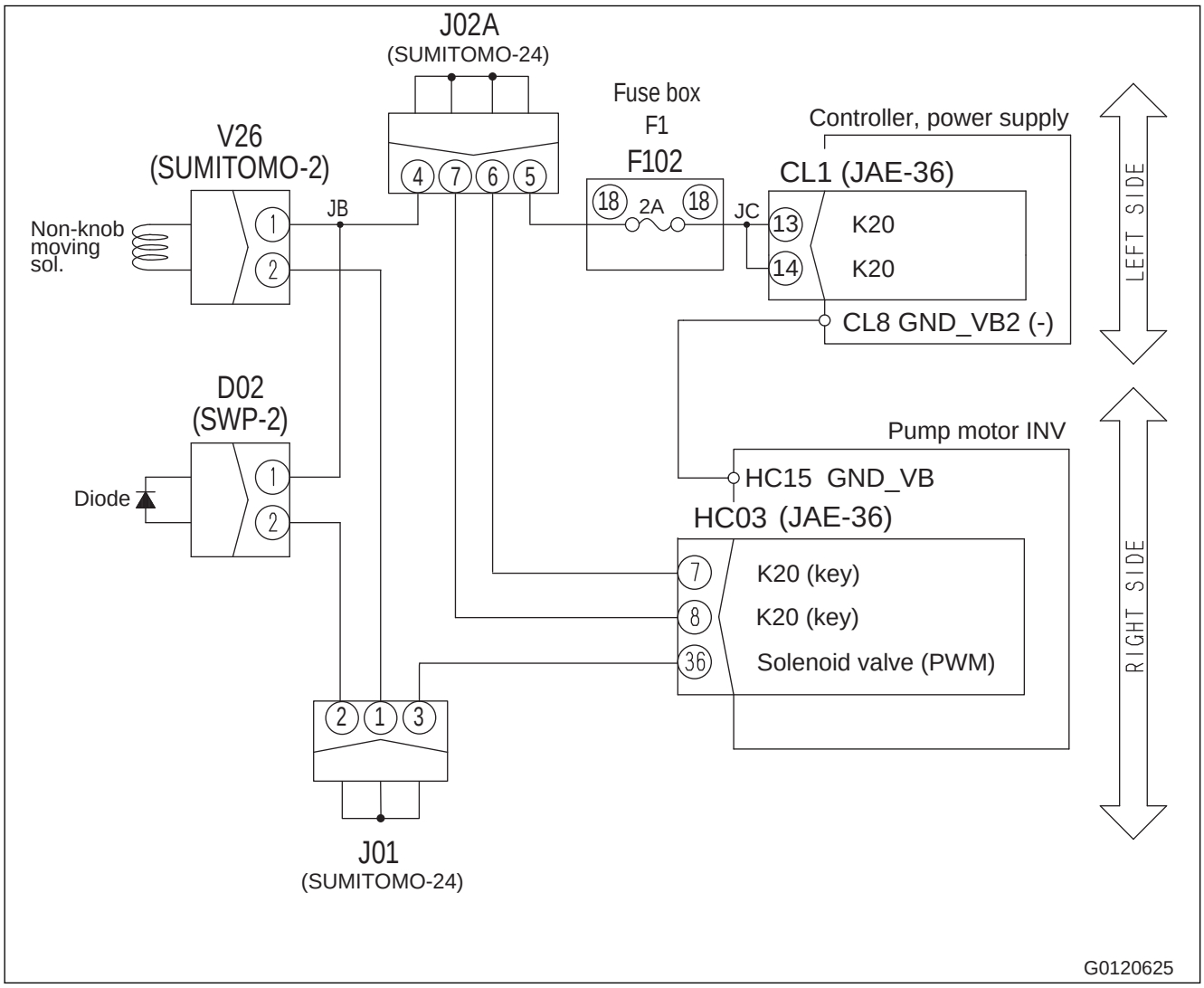


FAILURE CODE [DWP0KA]

Action level	Failure code	Failure phenomenon	DISC) Steering SOL (Pump inverter system)
L03	DWP0KA		
Detail of failure	When the EPACS solenoid is energized, 0.01A or less is continuously sensed for 200msec.		
Action of controller	• Stops the EPACS control. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The knob will be out of calibration.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors HC03 and V26. Connect the T-adapter to the female side of V26 to do the troubleshooting.		
		Resistance	Between HC03 (female) (36) and V26 (female) (2)	Max. 1Ω
			Between HC03 (female) (7) and V26 (female) (1)	Max. 1Ω
			Between HC03 (female) (8) and V26 (female) (1)	Max. 1Ω
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors HC03, V26 and D02 to do the troubleshooting.		
		Resistance	Between HC03 (female) (36) and (7)	Min. 1MΩ
			Between HC03 (female) (36) and (8)	Min. 1MΩ
3	Defective EPACS solenoid	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector V26. Connect the T-adapter to male side to do the troubleshooting.		
		Resistance	Between V26 (male) (1) and (2)	9Ω
4	Defective pump inverter	If no failure is found by the above checks, the pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of EPACS solenoid

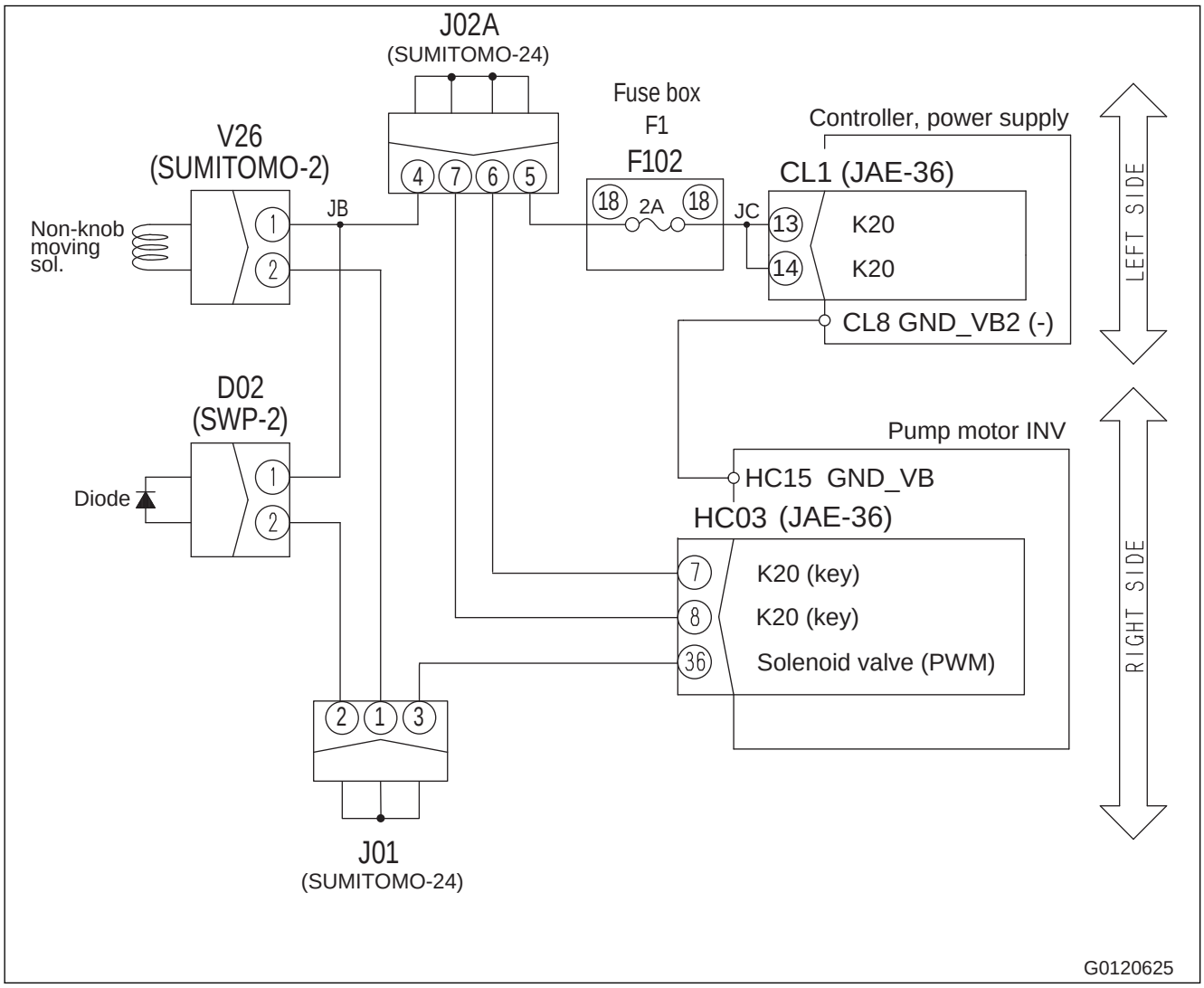


FAILURE CODE [DWP0KB]

Action level	Failure code	Failure phenomenon	SHORT) Steering SOL (Pump inverter system)
L03	DWP0KB		
Detail of failure	When the output to the EPACS solenoid is stopped, 0.8A or more is continuously sensed for 100msec.		
Action of controller	• Stops the EPACS control. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The knob will be out of calibration.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors HC03, V26 and CL1 to do the troubleshooting.		
		Resistance	Between HC03 (female) (36) and all pins other than (36)	Min. 1MΩ
2	Defective pump inverter	If no failure is found by the above checks, the pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of EPACS solenoid



FAILURE CODE [E111KM]

Action level	Failure code	Failure phenomenon	ABNL) Model Setting(PDC) (Proximity detection controller system)
L01	E111KM		
Detail of failure	The initial setting of the collision detection system is not done yet.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	The initial setting of the collision detection system is not done yet.	Do the initial setting for the collision detection system. For details, see “SET EACH EQUIPMENT” in “Service mode”, “TEST AND ADJUST COLLISION DETECTION SYSTEM”.
2	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [E111KQ]

Action level	Failure code	Failure phenomenon	MISMATCH) Model Setting(PDC) (Proximity detection controller system)
L01	E111KQ		
Detail of failure	It is sensed that a proximity detection controller is installed on the model which is not compatible with the collision detection system.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	The initial setting of the collision detection system is not done yet.	Do the initial settings for the collision detection system. For details, see “SET EACH EQUIPMENT” in “Service mode”, “TEST AND ADJUST COLLISION DETECTION SYSTEM”.
2	The installation model is incorrect.	Make sure that the collision detection system is installed on the correct model.
3	Defective collision detection radar (rear left) or collision detection radar (rear right)	The collision detection radar (rear left) or the collision detection radar (rear right) is defective. (Troubleshooting cannot be done because this is an internal failure.)
4	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [E111KR]

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (PDC - M/C) (Proximity detection controller system)
L01	E111KR		
Detail of failure	The proximity detection controller cannot receive the communication from the master controller for 3 seconds continuously.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective CAN communication system	If failure code [DBNRKR] is shown, do the troubleshooting for [DBNRKR] first.
2	Defective master controller	If no failure is found by the above checks, the master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)
3	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [E111MC]

Action level	Failure code	Failure phenomenon	ABNL) PDC (Proximity detection controller system)
L01	E111MC		
Detail of failure	The proximity detection controller senses a malfunction.		
Action of controller	Resets the controller and starts it again.		
Problem on lift truck	The collision detection system starts again.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

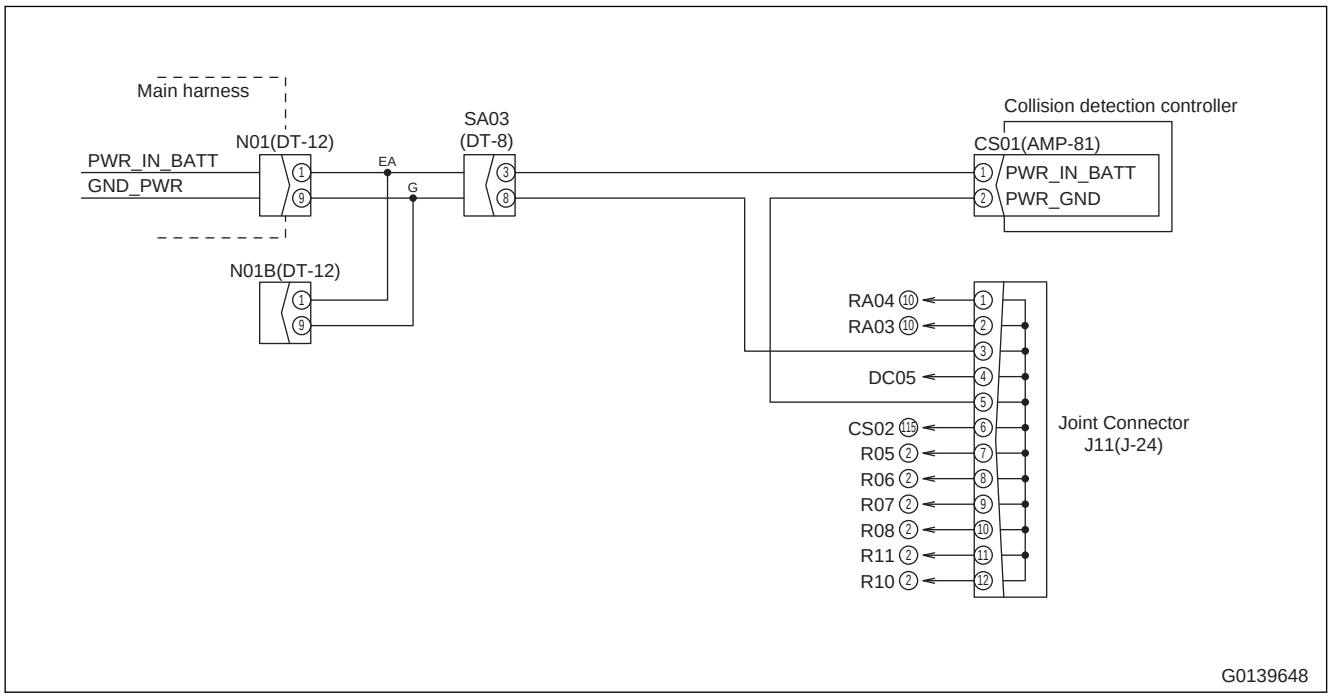
No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective proximity detection controller	If the failure occurs again, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [E112KK]

Action level	Failure code	Failure phenomenon	ABNL) Power Source(PDC) (Proximity detection controller system)
L01	E112KK		
Detail of failure	A continuous power supply (PWR_IN_BATT) voltage to the proximity detection controller of 18V or below is sensed for 2 seconds continuously.		
Action of controller	Stops the alarm of the collision detection system.		
Problem on lift truck	• The alarm lamp stays on. • The alarm buzzer does not make sound.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (open circuit or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CS01 and N01. Connect a socket to the female side of CS01 and connect a T-adapter to the female side of N01 to do the troubleshooting.		
		Resistance	Between CS01 (female) (1) and N01 (female) (1)	Max. 1Ω
2	Defective proximity detection controller	If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of ABNL) Power Source(PDC)

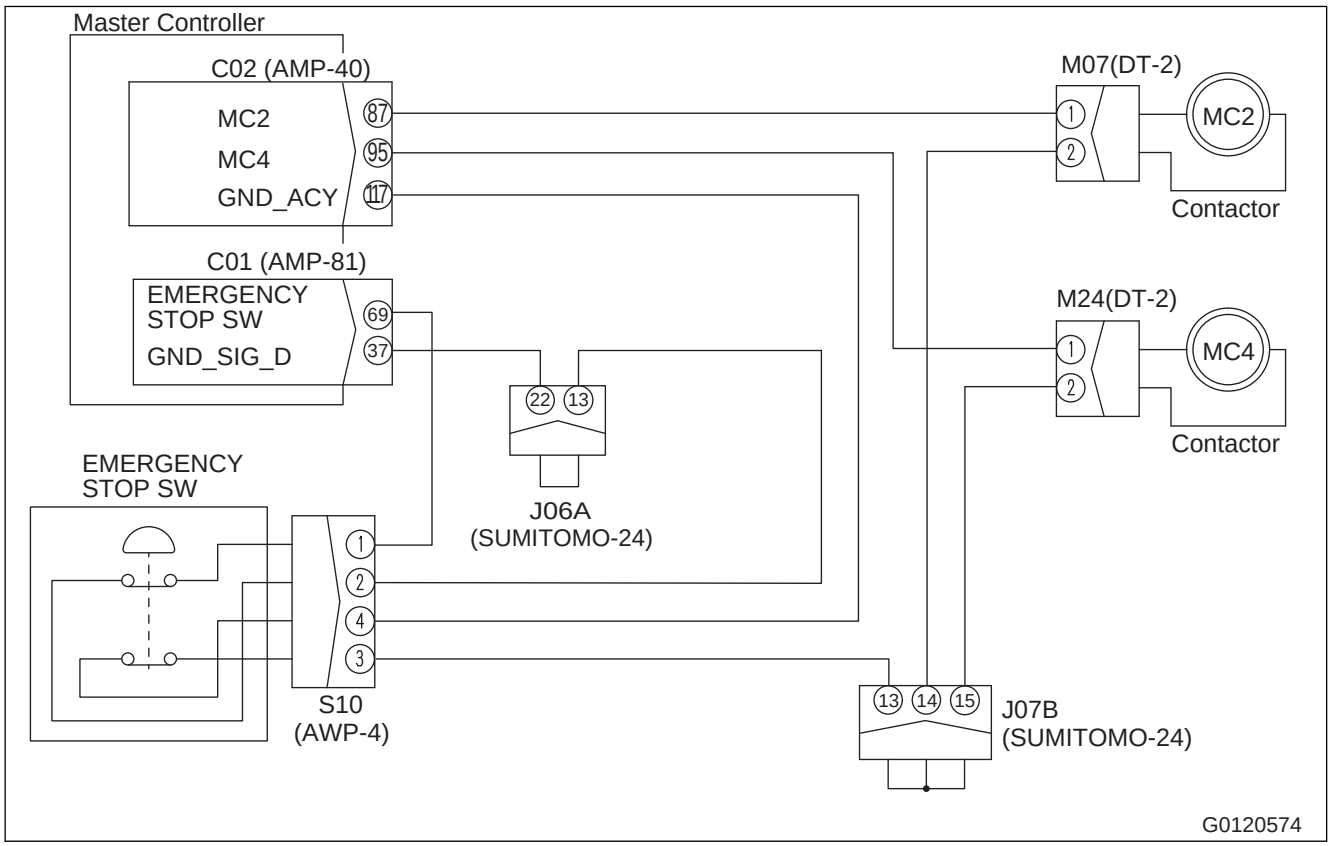


FAILURE CODE [F1A100]

Action level	Failure code	Failure phenomenon	Vehicle Emergency Stop Switch Activated (Master controller system)
-	F1A100		
Detail of failure	The “Emergency SW(BODY)” detection signal is ON. (Switch operation) (MC2, MC4 judged to be open state)		
Action of controller	Gives only a notification.		
Problem on lift truck	• The vehicle does not move, and work equipment and PS (power steering) cannot be operated. • The emergency stop symbol is shown on the monitor panel.		
Related information	This failure code is not intended for failure but for notification.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	The emergency stop switch is pushed.	If the emergency stop switch of the vehicle is pushed, turn the button to go back to the OFF state.		
2	Defective emergency stop switch	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector S10 and connect the T-adapter to the male side. 4. Make sure that the emergency stop switch is not pushed to do the troubleshooting.		
		Resistance	Between S10 (male) (1) and (2)	Max. 1Ω
3	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors S10 and C01. Connect a socket to the female side of C01 and connect a T-adapter to the female side of S10 to do the troubleshooting.		
		Resistance	Between C01 (female) (69) and S10 (female) (1)	Max. 1Ω
			Between C01 (female) (37) and S10 (female) (2)	Max. 1Ω
4	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of vehicle emergency stop switch



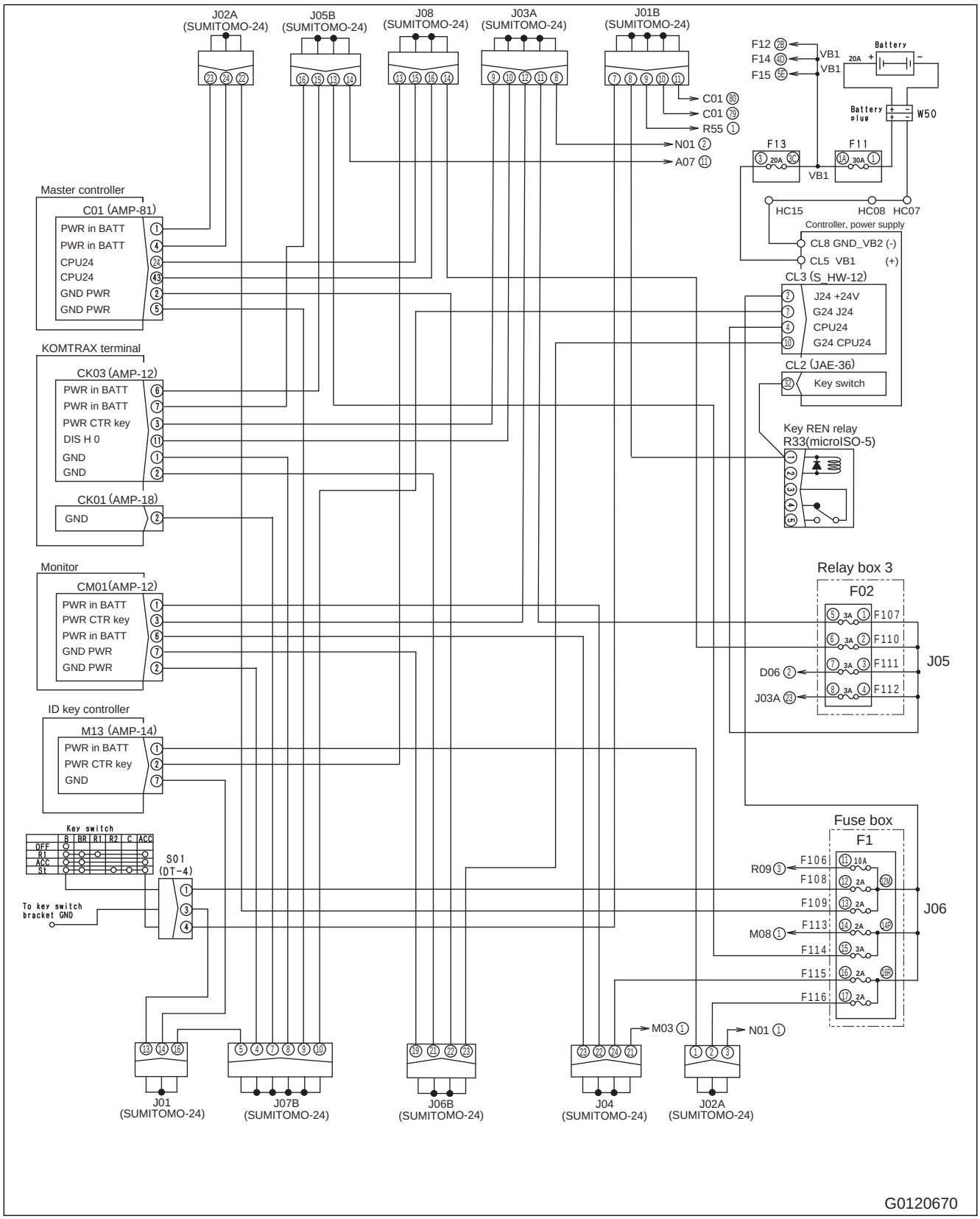
FAILURE CODE [F7FQKR]

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (IDKey) (Monitor panel system)
L03	F7FQKR		
Detail of failure	The monitor panel cannot receive the communication from ID key for 3 seconds continuously.		
Action of controller	• Stops output to travel inverter and pump inverter, because the signal cannot be received from ID key controller and it cannot judge if lift truck can start. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	• New registration of ID key or its cancellation cannot be done. • If this occurs when the starting switch is turned to the ON position, travel, work equipment, and steering wheel cannot be operated.		
Related information	• When failure codes [DBNRKR], [D8AQKR] and [D8AQK4] are also shown, the master controller or KOMTRAX terminal can be defective. • Start of CAN communication is recognized by each controller and monitor panel by means of the CPU24 signal which is output by the power supply controller when ACC signal of starting switch is received. • Each controller and monitor panel receive the current even if the starting switch is turned to the OFF position. • As the signal of active CAN communication line is pulse voltage, it cannot be measured with a multimeter. • The 120Ω of termination resistor of the CAN communication line is in N03 and in monitor panel. • Reproduction method of failure code: Turn the starting switch to the ON position.		

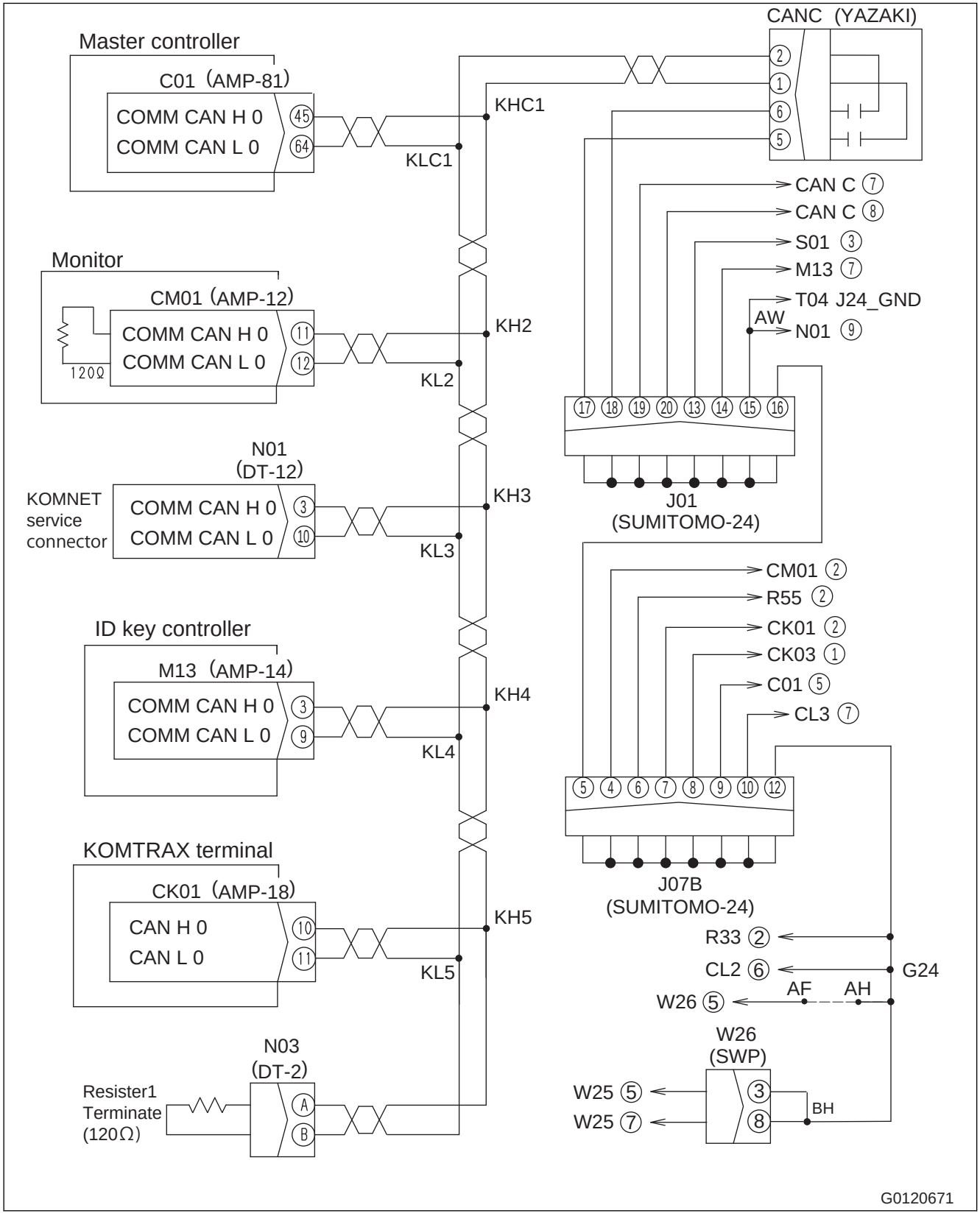
No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective CAN communication system	When the failure code [DBNRKR] is shown, do the troubleshooting for [DBNRKR] first.		
2	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuses F110 and F116. 4. Examine the continuity of the fuse. 5. Examine if the fuse is blown. **REMARK** If a fuse is blown out, the wiring harness probably has ground fault.		
		Continuity	Between two terminals of F110	Continuity
			Between two terminals of F116	Continuity

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="4">3</td><td rowspan="4">Open circuit in wiring harness
(wire breakage or defective contact of connector)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors CM01 and M13. Connect the T-adapter to the female side to do the troubleshooting.</td></tr>
<tr><td rowspan="3">Resistance</td><td>Between M13 (female) (7) and GND terminal of starting switch</td><td>Max. 1Ω</td></tr>
<tr><td>Between CM01 (female) (11) and M13 (female) (3)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CM01 (female) (12) and M13 (female) (9)</td><td>Max. 1Ω</td></tr>
<tr><td rowspan="4">4</td><td rowspan="4">Defective power supply system to ID key controller</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector M13. Connect the T-adapter to the female side to do the troubleshooting.
4. Connect the battery plug W50.
5. Turn the starting switch to the ON position. Then, do the troubleshooting.
REMARK
If a failure is found, replace the wiring harness.</td></tr>
<tr><td rowspan="2">Voltage</td><td>Between M13 (female) (1) and (7)</td><td>Approx. 24V</td></tr>
<tr><td>Between M13 (female) (2) and (7)</td><td>Approx. 24V</td></tr>
<tr><td>5</td><td>Defective ID key controller</td><td colspan="3">If no failure is found by the above checks, the ID key controller is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of ID key controller power supply



Circuit diagram of CAN communication

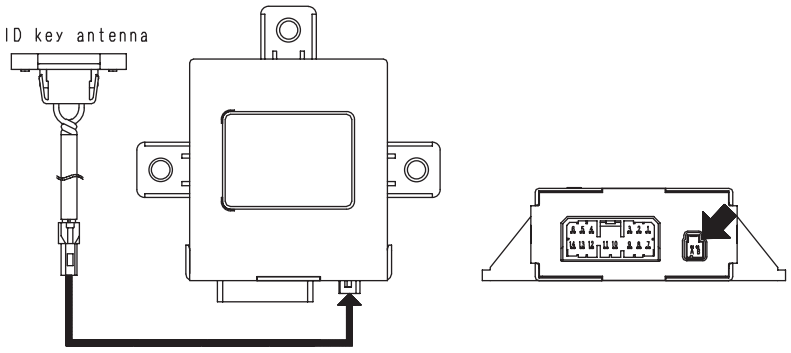


FAILURE CODE [F7G0MC]

Action level	Failure code	Failure phenomenon	ABNL) ID Key Antenna (Monitor panel system)
-	F7G0MC		
Detail of failure	An abnormality is sensed in the ID key antenna circuit.		
Action of controller	• Stops output to travel inverter and pump inverter, because the signal cannot be received from ID key controller and it cannot judge if lift truck can start. • When the cause of failure is corrected, the vehicle will be restored by itself.		
Problem on lift truck	Cannot move, and work equipment and steering wheel cannot be operated.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective ID key receiving antenna or antenna cable	There is a possibility of a defective ID key receiving antenna, open or short circuit in the antenna cable, or defective contact at the antenna cable connections.

Circuit diagram of ID key antenna



G0120632

FAILURE CODE [FJAA00]

Action level	Failure code	Failure phenomenon	Impact Detection (Master controller system)
-	FJAA00		
Detail of failure	The impact detection system is active.		
Action of controller	Gives only an announcement.		
Problem on lift truck	• The buzzer operates. • The inclination caution symbol is shown on the monitor panel.		
Related information	• This failure code is not intended for failure but for notification. • The sensitivity (acceleration) of impact detection is set on the monitor. (Impact detect G Set)		

No.	Cause	Procedure, measurement location, criteria and remarks
1	An impact acceleration is sensed.	An impact acceleration of the monitor setting value or more is sensed.
2	Defective IMU installation	Examine the IMU for looseness and disconnection.
3	Defective IMU	If no failure is found by the above checks, the IMU is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [FJAB00]

Action level	Failure code	Failure phenomenon	Tilt Caution(Load,Turning) (Master controller system)
-	FJAB00		
Detail of failure	The inclination warning system is activated.		
Action of controller	Gives only an announcement.		
Problem on lift truck	• The buzzer operates. • The inclination caution symbol is shown on the monitor panel.		
Related information	• This failure code is not intended for failure but for notification. • If a work equipment operation or a turn operation at an inclination angle more than the set value is sensed, this warning is activated. • Set the inclination angle for the warning on the monitor. (Slant Detect Angle Set)		

No.	Cause	Procedure, measurement location, criteria and remarks
1	An inclination is sensed.	An inclination more than the monitor setting is sensed.
2	Inclination angle starting point shift	Adjust the origin on the monitor. (Angle Sense Neutral Adjust)
3	Defective installation of IMU	Examine the IMU for looseness and disconnection.
4	Defective tire angle sensor	Do the troubleshooting for failure code [DK5YMA].
5	Defective lift lever angle sensor	Do the troubleshooting for failure code [DFC1KA].
6	Defective IMU	If no failure is found by the above checks, the IMU is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [FJAC00]

Action level	Failure code	Failure phenomenon	Fall Detection (Master controller system)
L03	FJAC00		
Detail of failure	The fall detection function is activated.		
Action of controller	• Stops the output of the travel inverter (puts in free run) and does a power limitation. • Restricts the operation of the pump inverter. • Does not recover until the Angle Senser Set is set to Invalid or Clear Fall Error is done. **REMARK** • To set Angle Senser Set to Invalid, see TESTING AND ADJUSTING, “SET AND OPERATE MONITOR PANEL”. • To do Clear Fall Error, see TESTING AND ADJUSTING, “SET AND OPERATE MONITOR PANEL”.		
Problem on lift truck	• Travel speed decreases. • The work equipment cannot be operated. • The PS (power steering) can operate. • The horn makes a sound.		
Related information	• Only the horn turns off when the starting switch is turned to the OFF position. • This notice is given when the IMU senses an inclination angle equal to the specified value (60 [deg]) or more.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	A fall over is sensed.	An inclination equal to the specified value or more is sensed.
2	Inclination angle starting point shift	Adjust the origin on the monitor. (Angle Sense Neutral Adjust)
3	Defective installation of IMU	Examine the IMU for looseness and disconnection.
4	Defective IMU	If no failure is found by the above checks, the IMU is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [FJB1KM]

Action Level	Failure code	Failure phenomenon	MISMATCH) Setting(PDC) (Monitor panel system)
L01	FJB1KM		
Detail of failure	On a vehicle with the collision detection system, “CD alarm setting” is set to “Disable”.		
Action of controller	• Makes these monitoring items invisible. 20325 Assembly P/N (PDC) 20326 Serial No. (PDC) 20327 Software P/N (PDC) 20328 Application (PDC)		
Phenomenon on vehicle	The monitoring items above are not shown.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measuring location, criteria and remarks
1	The CD alarm setting is set to OFF.	Do the setting for the collision detection system. For details, see “TEST AND ADJUST COLLISION DETECTION SYSTEM”, “SERVICE MODE”, “SET EACH EQUIPMENT”.
2	Defective monitor panel	If no abnormality is found by above checks, the monitor panel is defective. (Troubleshooting cannot be done because this is an internal failure.)

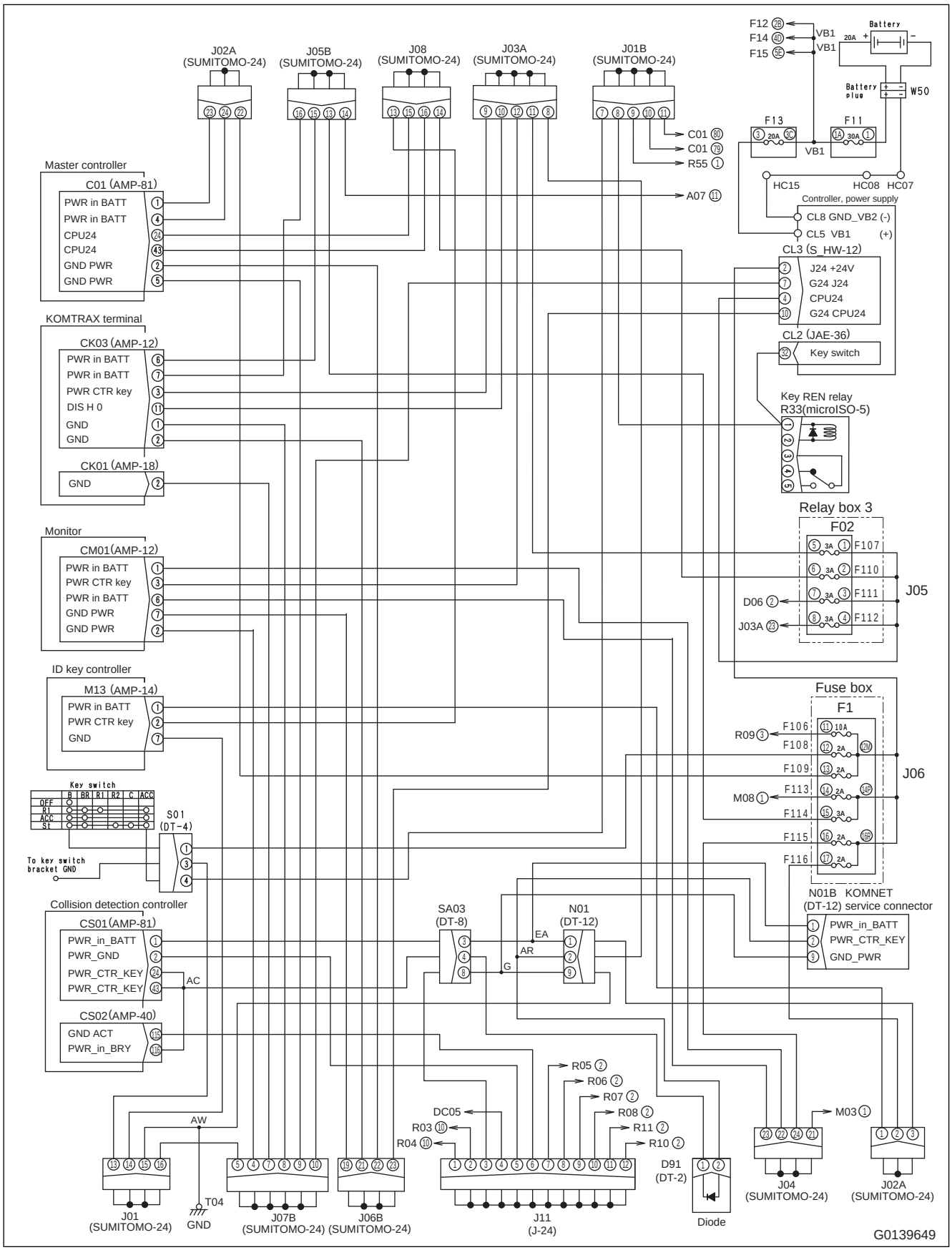
FAILURE CODE [FJBAKR]

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (PDC) (Monitor panel system)
L01	FJBAKR		
Detail of failure	The monitor panel cannot receive communication from the proximity detection controller continuously for 3 seconds.		
Action of controller	Gives only a notification.		
Problem on lift truck	• The proximity detection controller cannot give a failure announcement. • The value is not shown with monitoring function.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

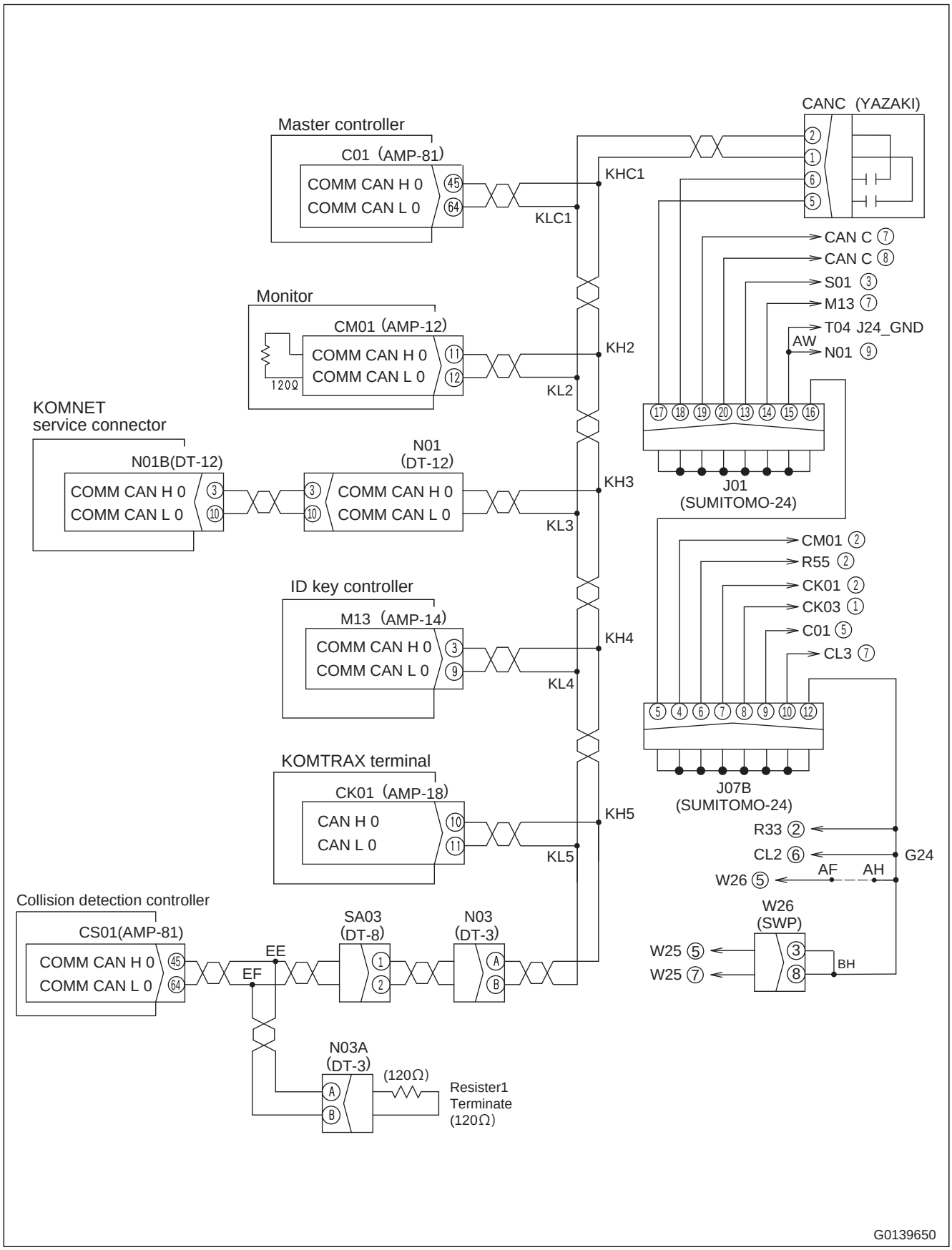
No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective CAN communication system	If failure code [DBNRKR] is shown, do the troubleshooting for [DBNRKR] first.		
2	Defective diode D91	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector D91. Connect the T-adapter to male side to do the troubleshooting. **REMARK** Do the measurement with the diode range of the multimeter.		
		Continuity	Between D91 (male) (1) (+) and (2) (-)	No continuity
			Between D91 (male) (2) (+) and (1) (-)	Continuity
3	Defective power supply system of proximity detection controller	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CS01 and CS02. Connect the socket to each female side. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between CS01 (female) (1) and (2)	Approx. 24V
			Between CS01 (female) (24) and (2)	Approx. 24V
			Between CS01 (female) (43) and (2)	Approx. 24V
			Between CS02 (female) (116) and CS01 (female) (2)	Approx. 24V

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="8">4</td><td rowspan="8">Open circuit in wiring harness (open circuit or defective contact of connector)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors CS01, CS02, N01, and D91. Connect a socket to the female side of CS01, CS02. Connect a T-adapter to the female side of N01 and D91 to do the troubleshooting.</td></tr>
<tr><td rowspan="6">Resistance</td><td>Between CS01 (female) (1) and N01 (female) (1)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CS01 (female) (2) and N01 (female) (9)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CS01 (female) (24) and D91 (female) (1)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CS01 (female) (43) and D91 (female) (1)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CS02 (female) (116) and D91 (female) (1)</td><td>Max. 1Ω</td></tr>
<tr><td>Between D91 (female) (2) and N01 (female) (2)</td><td>Max. 1Ω</td></tr>
<tr><td rowspan="4">5</td><td rowspan="4">Open circuit in wiring harness (CAN communication circuit)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connectors CS01 and N03. Connect the socket to female side of CS01, and connect T-adapter to the male side of N03 to do the troubleshooting.</td></tr>
<tr><td rowspan="2">Resistance</td><td>Between CS01 (female) (45) and N03 (male) (A)</td><td>Max. 1Ω</td></tr>
<tr><td>Between CS01 (female) (64) and N03 (male) (B)</td><td>Max. 1Ω</td></tr>
<tr><td>6</td><td>Defective proximity detection controller</td><td colspan="3">If no failure is found by the above checks, the proximity detection controller is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of proximity detection controller power supply



Circuit diagram of CAN communication

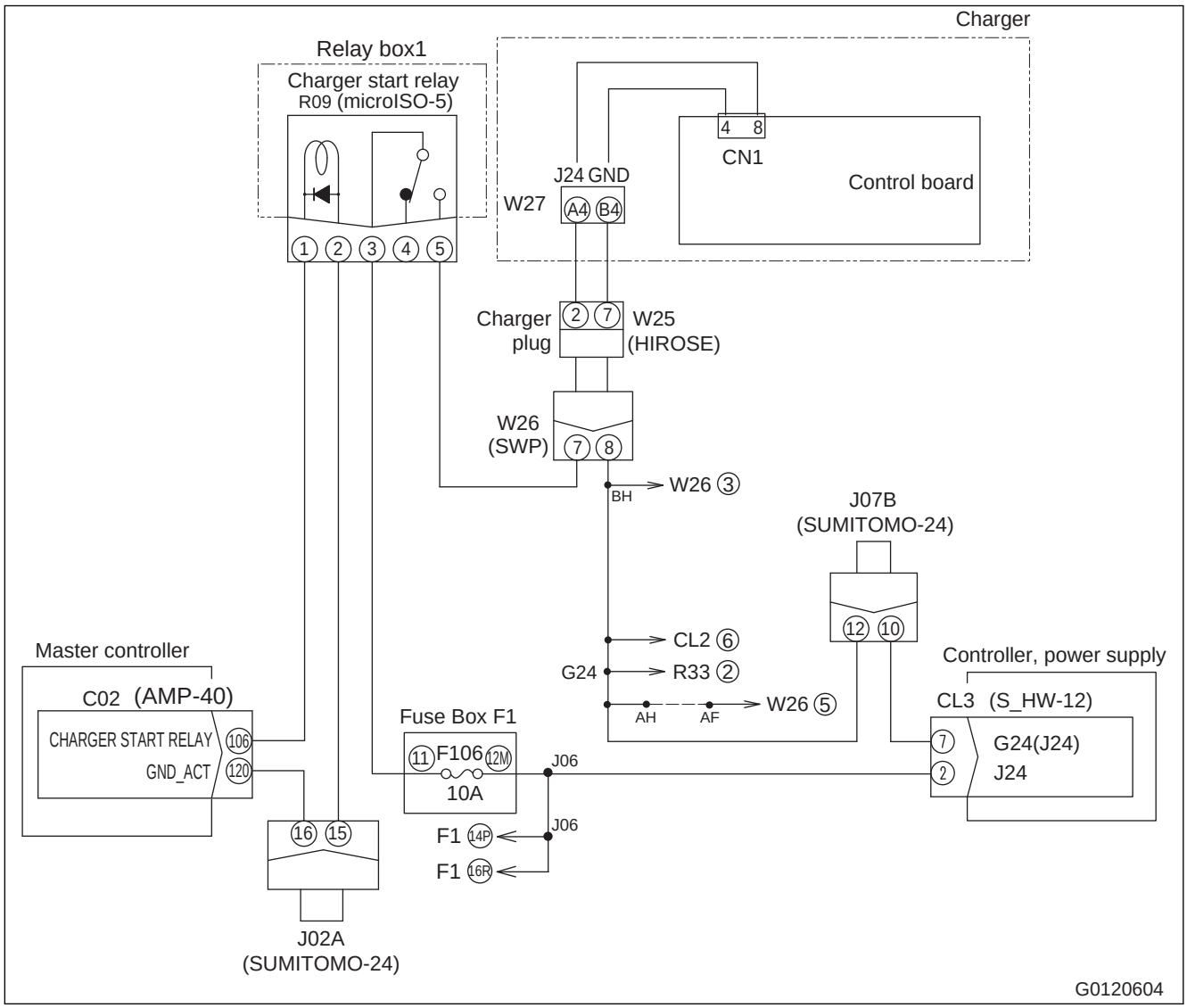


FAILURE CODE [GB11KA]

Action level	Failure code	Failure phenomenon	DISC) Start RLY (CHGR) (Master controller system)
L03	GB11KA		
Detail of failure	While the output to the battery charger start relay is OFF, 1.9V ≤ output voltage <7V is sensed for 100ms continuously.		
Action of controller	• Stops the output to the battery charger start relay. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The charge cannot be done.		
Related information	• This is not sensed in charging mode. • This failure code senses failure on the coil side of the battery charger start relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective battery charger start relay (R09) (internal open circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R09 to do the troubleshooting.		
		Resistance	Between R09 (male) (2) and (1)	Approx. 400Ω
2	Open circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C02 and R09. Connect the socket to the female side of C02 to do the troubleshooting.		
		Resistance	Between R09 (female) (2) and C02 (female) (120)	Max. 1Ω
			Between R09 (female) (1) and C02 (female) (106)	Max. 1Ω
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery charger start relay

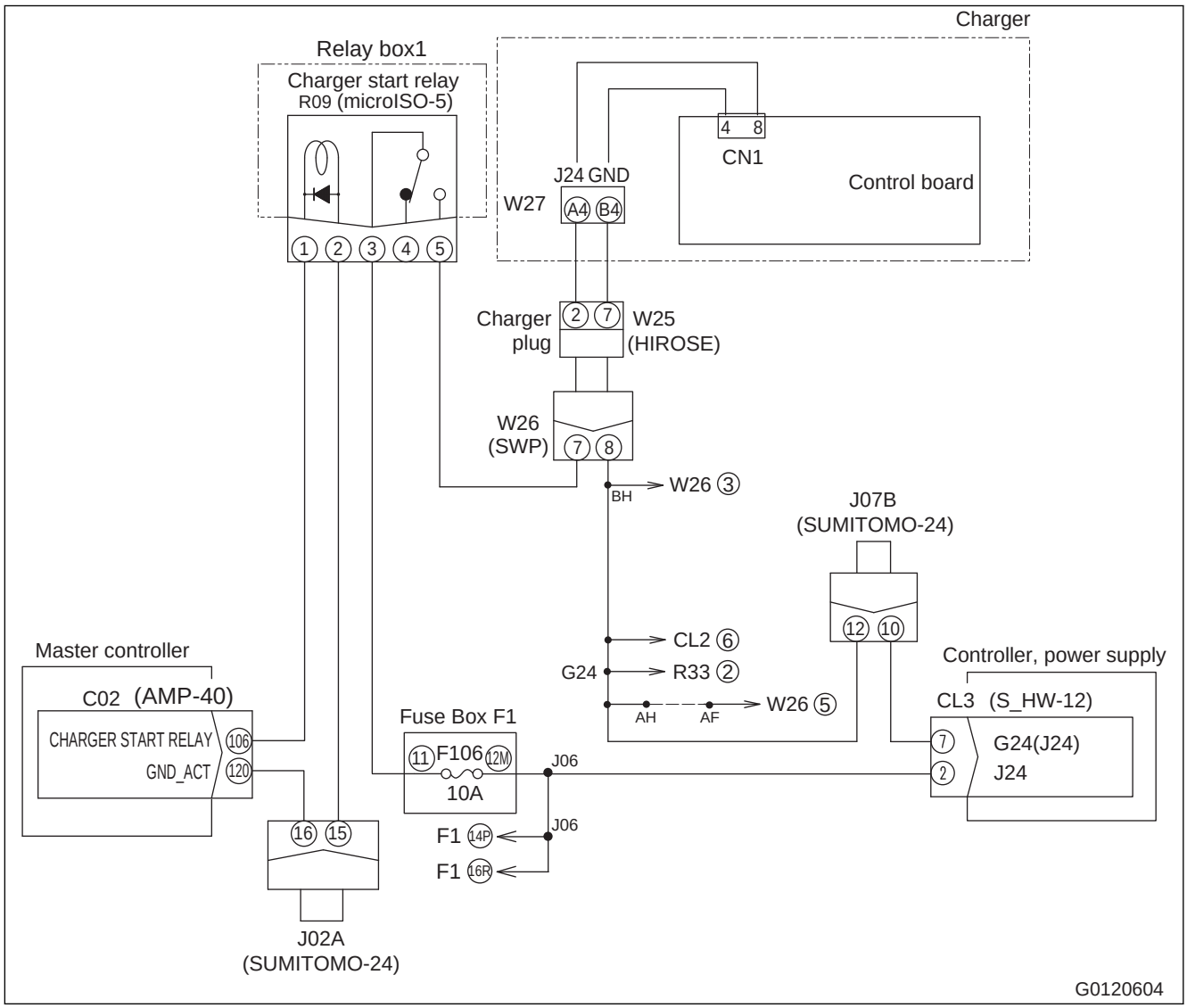


FAILURE CODE [GB11KB]

Action level	Failure code	Failure phenomenon	SHORT) Start RLY (CHGR) (Master controller system)
L03	GB11KB		
Detail of failure	Over current protection is sensed continuously for 100ms while the output to the battery charger start relay is ON.		
Action of controller	• Stops the output to the battery charger start relay. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch or AC200V (breaker switch) is turned to the OFF position one time.		
Problem on lift truck	The charge cannot be done.		
Related information	• This is not sensed while the starting switch is in the ON position. • This failure code senses failure on the coil side of the battery charger start relay, but not on the contact side. • Reproduction method of failure code: Start charge.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective battery charger start relay (R09) (internal short circuit)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R09 to do the troubleshooting.		
		Resistance	Between R09 (male) (2) and (1)	Approx. 400Ω
2	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector C02 and R09 to do the troubleshooting.		
		Resistance	Between R09 (female) (2) and (1)	Min. 1MΩ
3	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery charger start relay

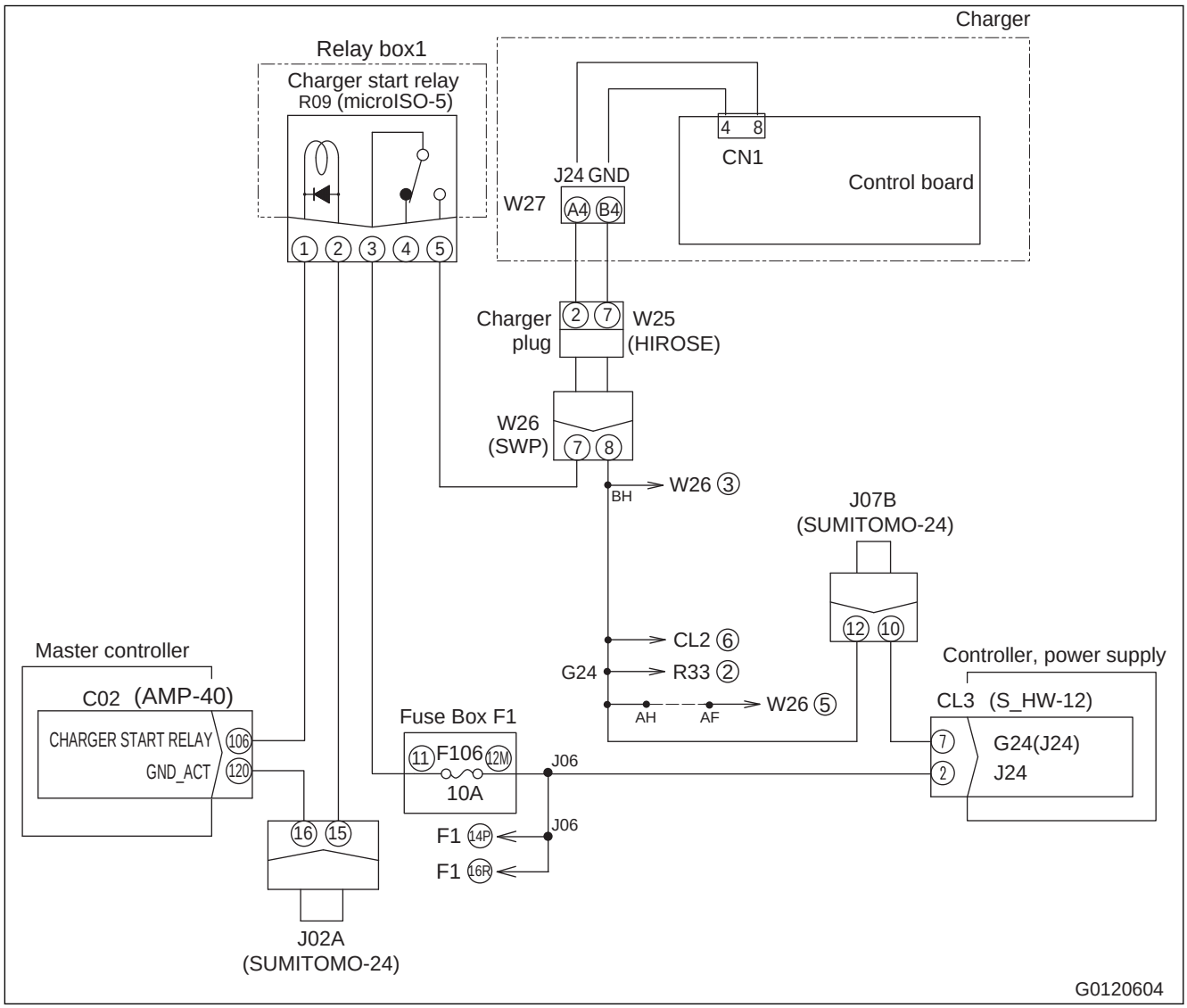


FAILURE CODE [GB11KY]

Action level	Failure code	Failure phenomenon	SHORT_P) Start RLY (CHGR) (Master controller system)
L03	GB11KY		
Detail of failure	While the output to the battery charger start relay is OFF, an output voltage of ≥ 7V is sensed continuously for 100ms.		
Action of controller	• Stops the output to the battery charger start relay. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The battery charger power does not turn off even after the charge is done. (Charger LED does not go out)		
Related information	• This is not sensed in charging mode. • This failure code senses failure on the coil side of the battery charger start relay, but not on the contact side. • Reproduction method of failure code: Turn the starting switch to the ON position to do the troubleshooting.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R09. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between R09 (female) (1) and (2)	Max. 1V
2	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery charger start relay



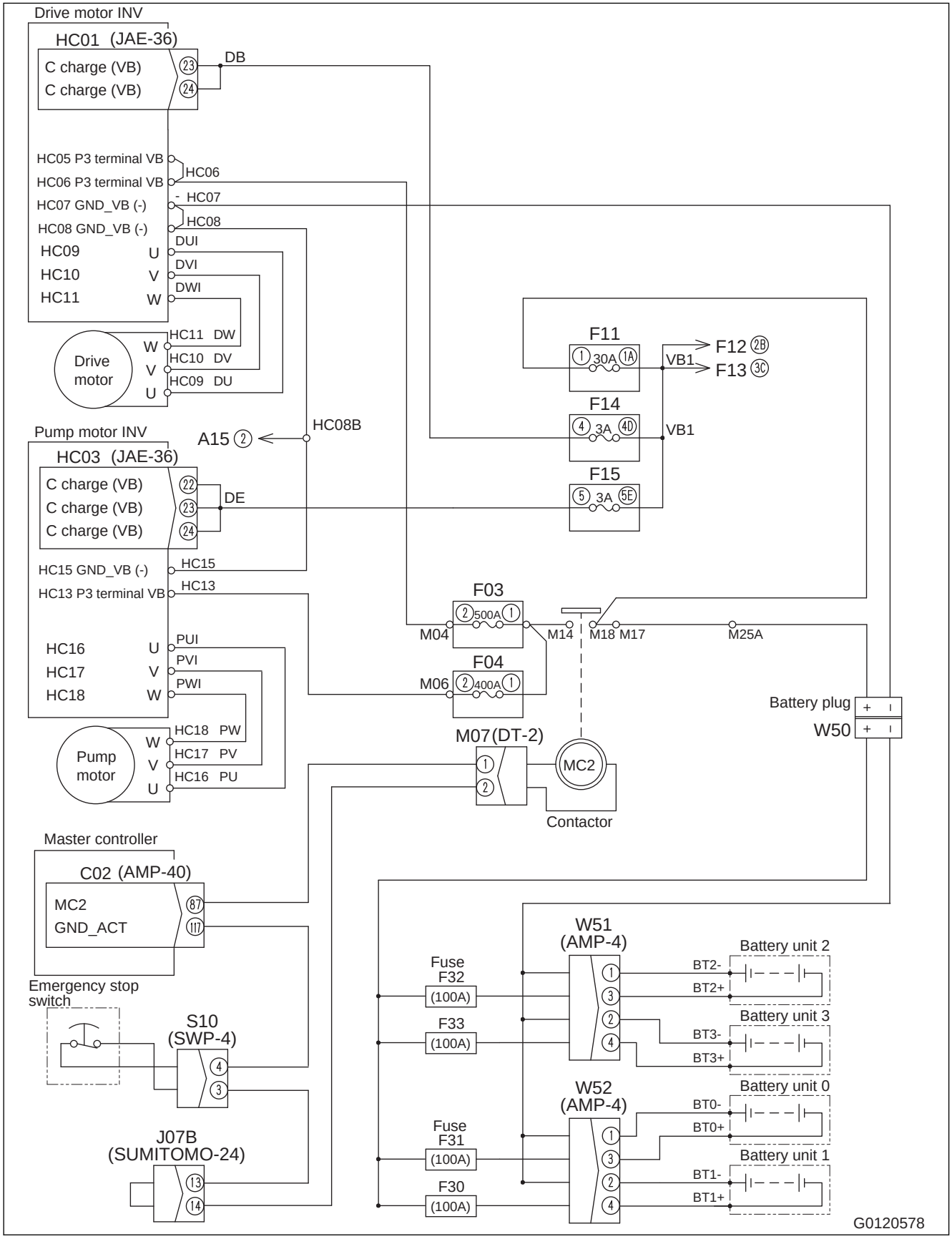
FAILURE CODE [GF10KN]

Action level	Failure code	Failure phenomenon	OVER) CURRENT (TRV-INV) (Travel inverter system)
L04	GF10KN		
Detail of failure	A current higher than 696A is sensed in the V or W phase of the travel inverter.		
Action of controller	• Does not turn on the main contactor (MC2). • Stops the output to the travel inverter. (Free run) • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Travel, work equipment, and PS (power steering) cannot be operated.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position and do a travel operation.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit of motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Visually examine motor cable terminals DUI, DVI, DWI, HC06, HC07, and HC08 for foreign matter. 4. Disconnect each terminal DUI, DVI, DWI, HC06, HC07, and HC08 to do troubleshooting.		
		Resistance	Between DUI (cable side) and HC06 (cable side)	Min. 1MΩ
			Between DVI (cable side) and HC06 (cable side)	Min. 1MΩ
			Between DWI (cable side) and HC06 (cable side)	Min. 1MΩ
			Between DUI (cable side) and HC07 (cable side)	Min. 1MΩ
			Between DVI (cable side) and HC07 (cable side)	Min. 1MΩ
			Between DWI (cable side) and HC07 (cable side)	Min. 1MΩ

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="7">2</td><td rowspan="7">Defective travel inverter (breakage of FET (short circuit))</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect each terminal DUI, DVI, DWI, HC06 (VB), HC07 (-), and HC08 (-) to do the troubleshooting.
REMARK
For each of these tests, reverse the polarity of the tester and do a check again. (Do the check 12 times in total.)</td></tr>
<tr><td rowspan="6">Resistance</td><td>Between DUI (inverter side) and HC06 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between DVI (inverter side) and HC06 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between DWI (inverter side) and HC06 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between DUI (inverter side) and HC07 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between DVI (inverter side) and HC07 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between DWI (inverter side) and HC07 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>3</td><td>Defective travel inverter</td><td colspan="3">If no failure is found by the above checks, the travel inverter is defective. (Trouble-shooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of travel inverter

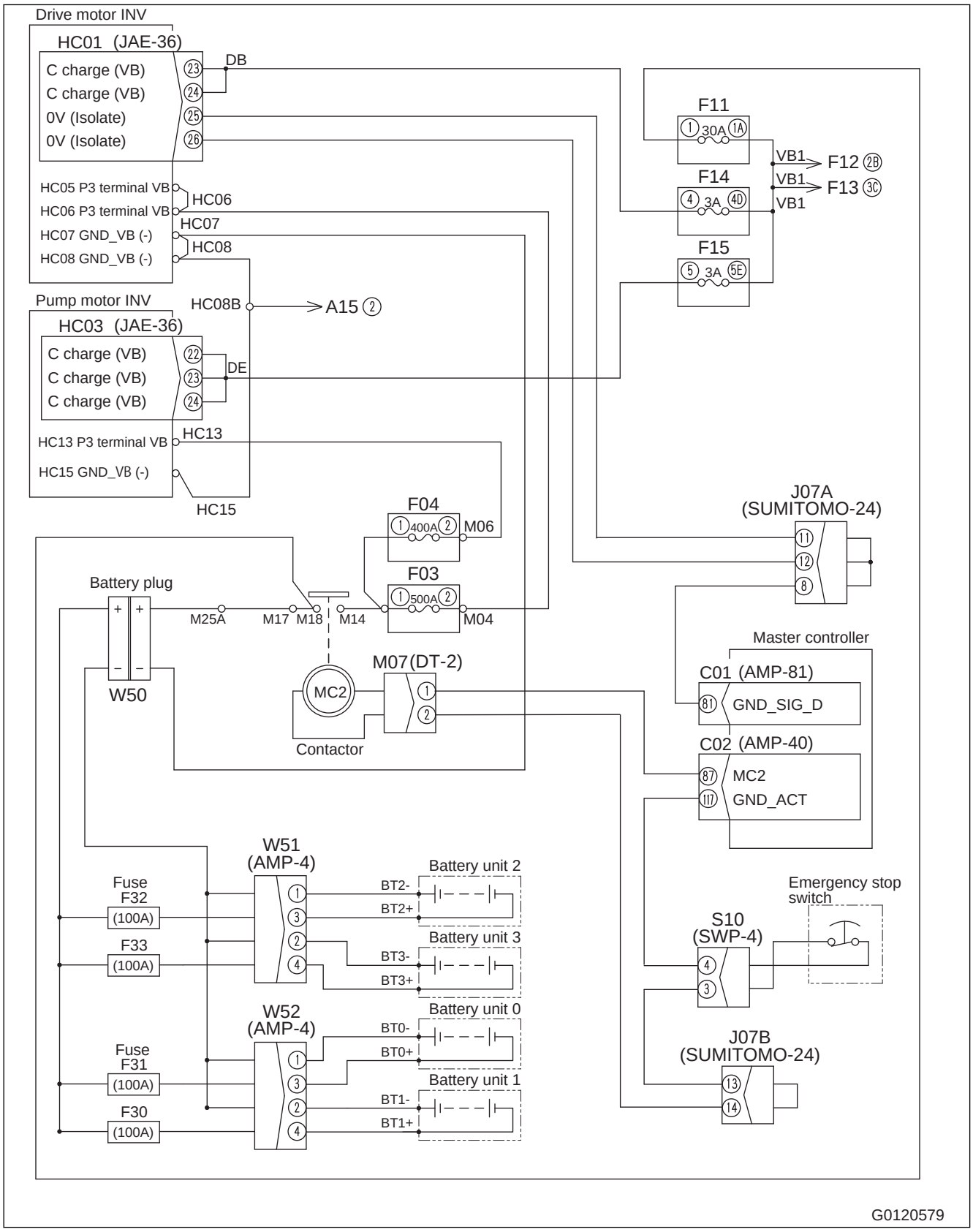


FAILURE CODE [GF11KG]

Action level	Failure code	Failure phenomenon	HIGH) Power Source (TRV-INV) (Travel inverter system)
-	GF11KG		
Detail of failure	Excessive voltage is applied to travel inverter and the capacitor voltage of 181V and above is sensed consecutively 10 times or more in 200 milliseconds.		
Action of controller	• Stops the output to the travel inverter. • When the voltage is in the correct range, the vehicle goes back to the correct state automatically.		
Problem on lift truck	• The vehicle does not move. • If this failure occurs during travel, the vehicle moves freely and coasting.		
Related information	• If battery plug W50 is disconnected while you regenerate of travel or charging, this failure code can be shown. • If failure code [GF21KG] is shown at the same time, the pump inverter also stops. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Incorrect battery voltage	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off. Disconnect the battery plug W50 to do the troubleshooting. (Wait for 10 minutes or more.) **REMARK** If the battery voltage is abnormal, replace the battery.		
		Voltage	Between battery plug W50 (battery side) (+) and (-)	Max. 181V
2	Defective pump inverter	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuse F14. 4. Connect the battery plug W50 to do the troubleshooting. **REMARK** When the voltage is higher than that measured in step of cause 1, the pump inverter is probably defective.		
		Voltage	Between F14 (4) and HC07 (-) terminal	Max. 181V
3	Defective travel inverter	If no failure is found by the previous checks, replace the travel inverter. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of travel inverter battery power supply

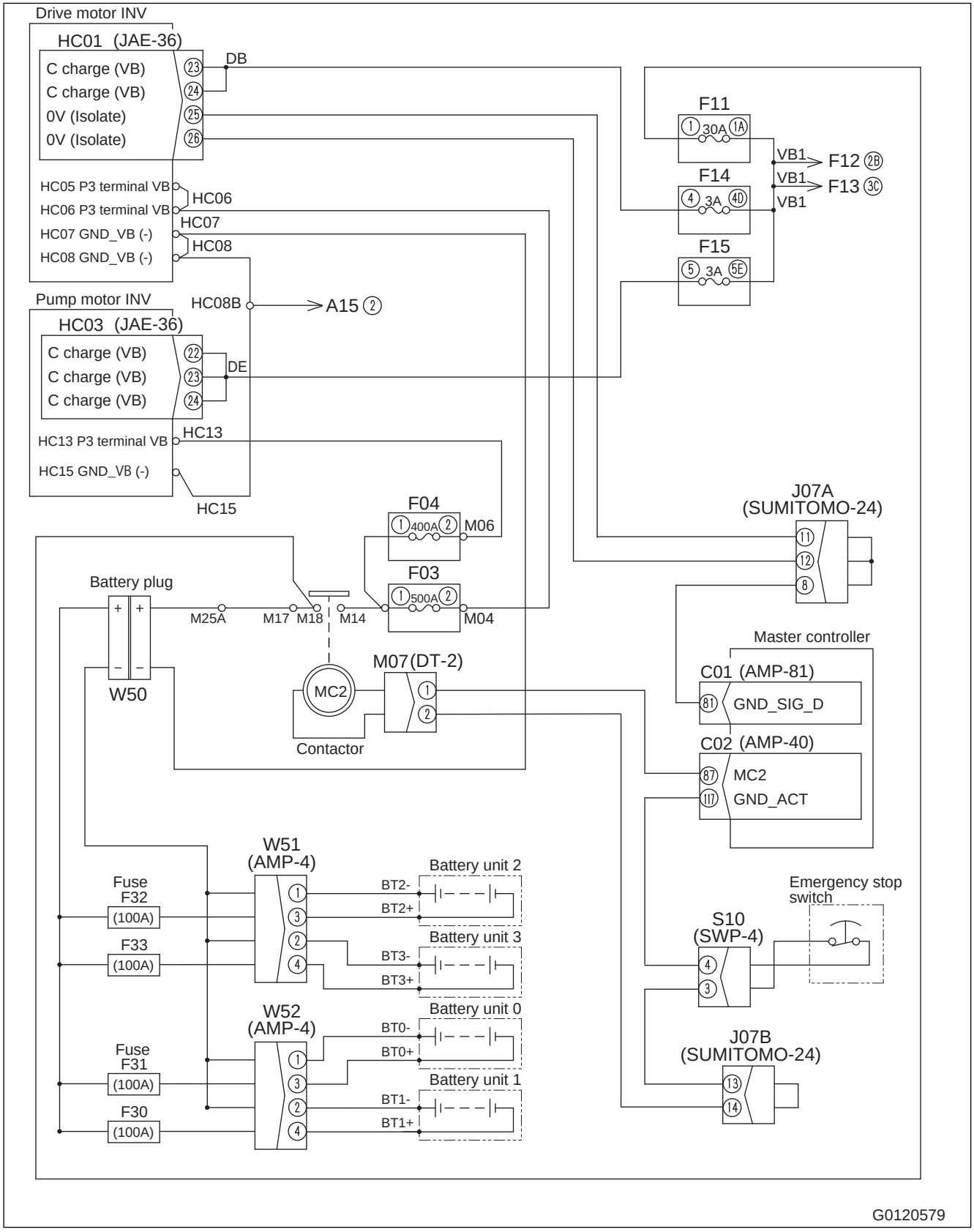


FAILURE CODE [GF11KK]

Action level	Failure code	Failure phenomenon	LOW) Power Source (TRV-INV) (Travel inverter system)
L02	GF11KK		
Detail of failure	A battery voltage of approximately 63V or less is sensed continuously for 800ms.		
Action of controller	• Turns off the main contactor (MC2). • Stops the output to the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Travel, work equipment, and PS (power steering) do not operate.		
Related information	Reproduction method of failure code: Turn the starting switch to the OFF position. **REMARK** It is easily reproduced if you apply load suddenly (such as sudden starts, etc.).		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Low battery voltage	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off. Disconnect the battery plug W50 to do the troubleshooting. (Wait for 10 minutes or more.) **REMARK** Measure the voltage and charge the battery if necessary.		
		Voltage	Between battery plug W50 (battery side) (+) and (-)	Min. 81V

Circuit diagram of travel inverter battery power supply

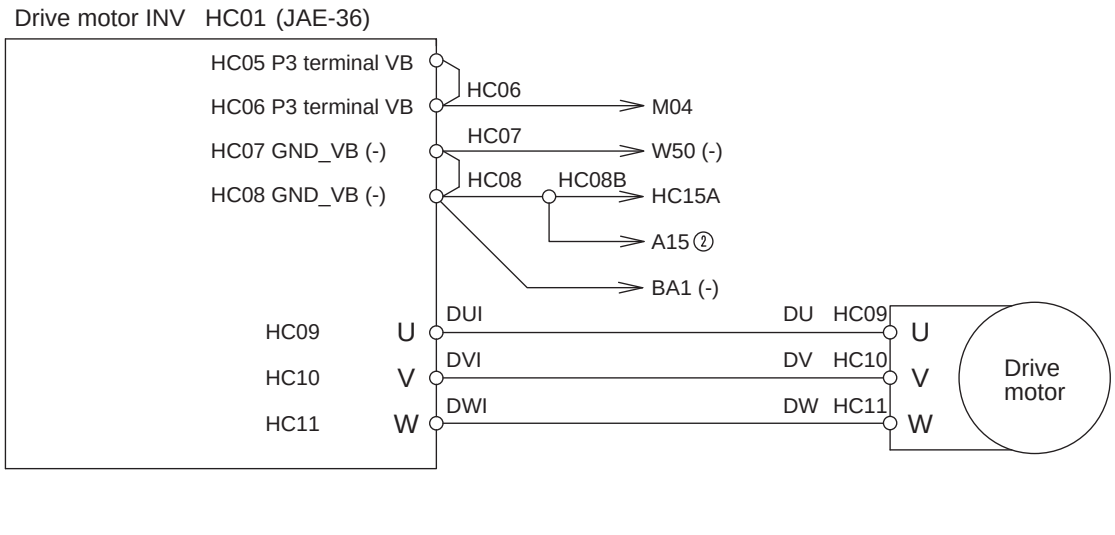


FAILURE CODE [GF12KA]

Action level	Failure code	Failure phenomenon	DISC) U Phase (TRV-INV) (Travel inverter system)
L04	GF12KA		
Detail of failure	The FET in the travel inverter is broken and has an open circuit. For a torque command of 25% or more, a motor current of 20A or less is sensed for 300msec continuously.		
Action of controller	• Stops the output to the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The vehicle does not move.		
Related information	• This failure code is also sensed when the travel motor cable is disconnected. In such case, failure code [GF1NKB] can be sensed when the forklift truck is stopped. • How to reproduce failure code: Push the accelerator pedal while the lift truck is on the ground.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective connection of travel motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Visually examine the motor terminals of the travel inverter for looseness and foreign matter to do the troubleshooting. **REMARK** If looseness or foreign matter is found, remove the foreign matter and tighten it to specified torque.		
2	Open circuit of travel motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect each terminal of DUI and DU. Examine the continuity of the motor cable for troubleshooting. **REMARK** If an abnormality is found, replace the travel motor cable.		
		Resistance	Between DUI (cable side) and DU (cable side)	Max. 1Ω
3	Defective travel inverter	If no failure is found by the above checks, the travel inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of travel inverter FET

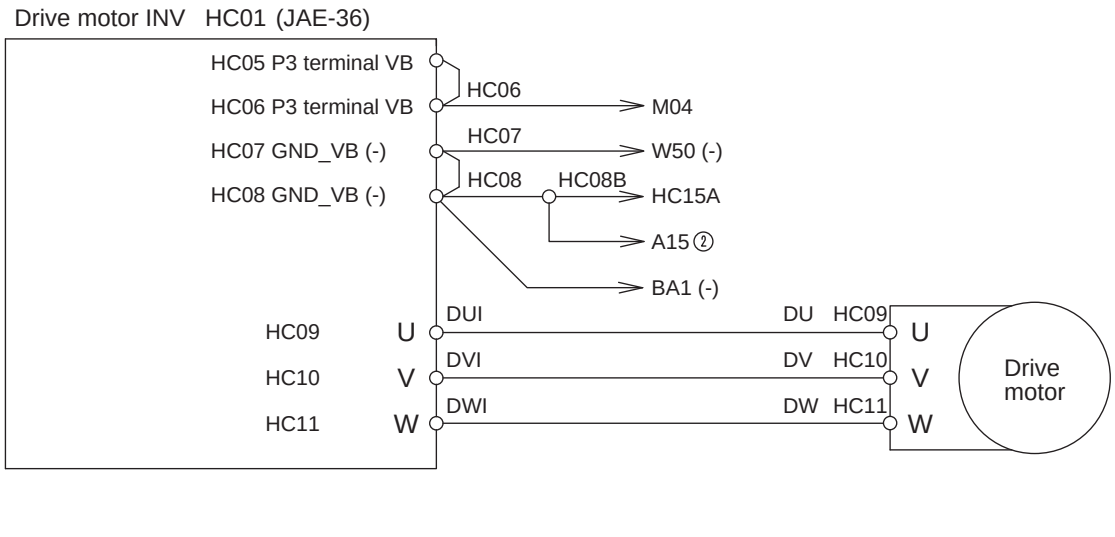


FAILURE CODE [GF13KA]

Action level	Failure code	Failure phenomenon	DISC) V Phase (TRV-INV) (Travel inverter system)
L04	GF13KA		
Detail of failure	The FET in the travel inverter is broken and has an open circuit. For a torque command of 25% or more, a motor current of 20A or less is sensed for 300msec continuously.		
Action of controller	• Stops the output to the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The vehicle does not move.		
Related information	• This failure code is also sensed when the travel motor cable is disconnected. In such case, failure code [GF1NKB] can be sensed when the forklift truck is stopped. • How to reproduce failure code: Push the accelerator pedal fully with forklift truck on the ground.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective connection of travel motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Visually examine the motor terminals of the travel inverter for looseness and foreign matter to do the troubleshooting. **REMARK** If looseness or foreign matter is found, remove the foreign matter and tighten it to specified torque.		
2	Open circuit of travel motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect each terminal DVI and DV to do the troubleshooting. **REMARK** If an abnormality is found, replace the travel motor cable.		
		Resistance	Between DVI (cable side) and DV (cable side)	Max. 1Ω
3	Defective travel inverter	If no failure is found by the above checks, the travel inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of travel inverter FET

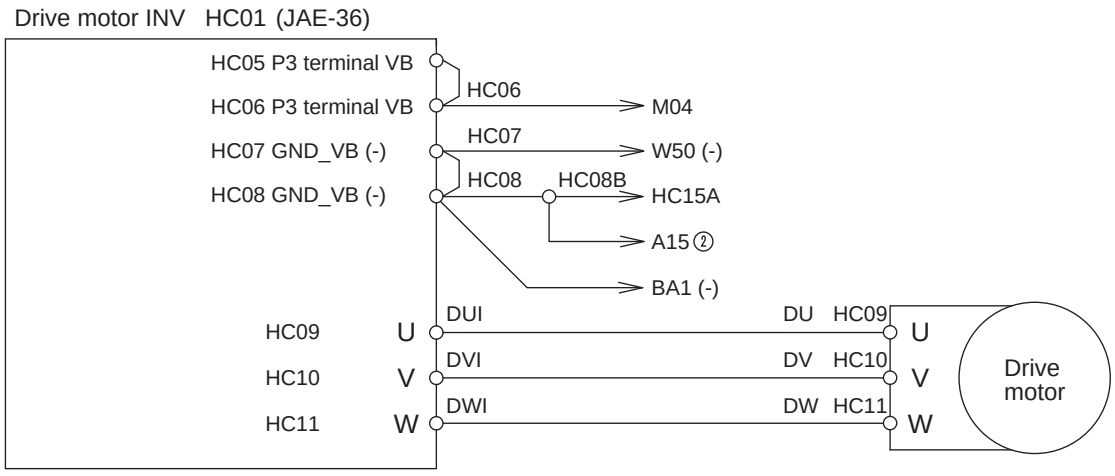


FAILURE CODE [GF14KA]

Action level	Failure code	Failure phenomenon	DISC) W Phase (TRV-INV) (Travel inverter system)
L04	GF14KA		
Detail of failure	The FET in the travel inverter is broken and has an open circuit. For a torque command of 25% or more, a motor current of 20A or less is sensed for 300msec continuously.		
Action of controller	• Stops the output to the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The vehicle does not move.		
Related information	• This failure code is also sensed when the travel motor cable is disconnected. In such case, failure code [GF1NKB] can be sensed when the forklift truck is stopped. • How to reproduce failure code: Push the accelerator pedal fully with forklift truck on the ground.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective connection of travel motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Visually examine the motor terminals of the travel inverter for looseness and foreign matter to do the troubleshooting. **REMARK** If looseness or foreign matter is found, remove the foreign matter and tighten it to specified torque.		
2	Open circuit of travel motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect each terminal of DWI and DW to do troubleshooting. **REMARK** If an abnormality is found, replace the travel motor cable.		
		Resistance	Between DWI (cable side) and DW (cable side)	Max. 1Ω
3	Defective travel inverter	If no failure is found by the above checks, the travel inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of travel inverter FET



FAILURE CODE [GF15KQ]

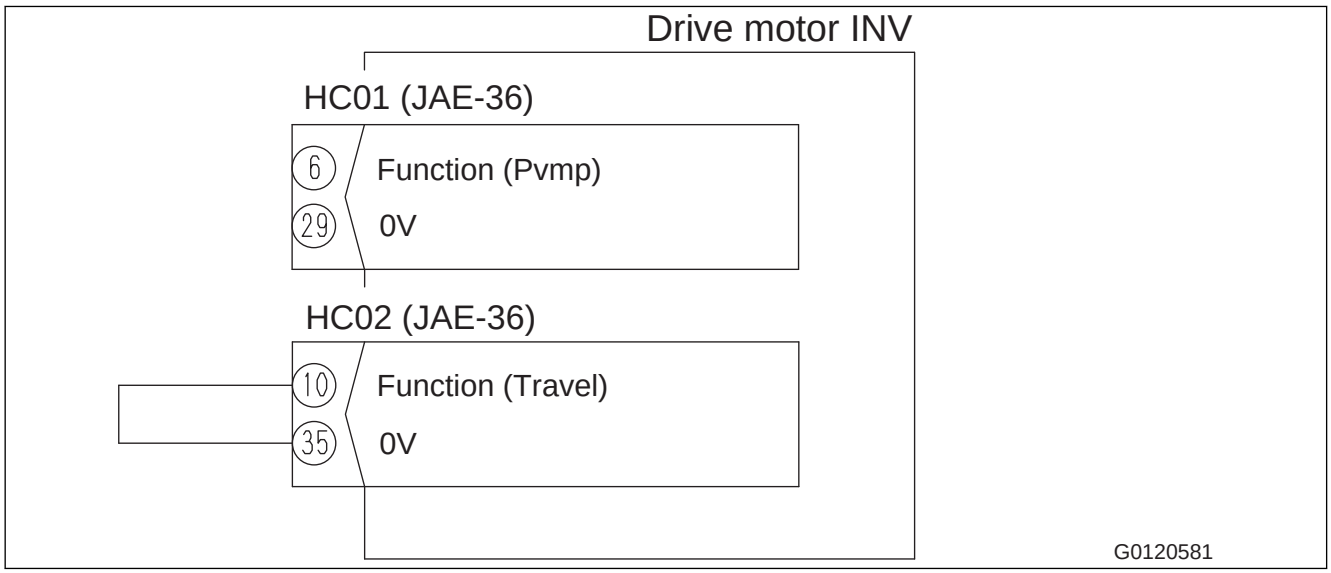
Action level	Failure code	Failure phenomenon	Inconsistency of Travel INV capacity (Travel inverter system)
L03	GF15KQ		
Detail of failure	Model information from master controller and capacity or function (program) of travel inverter are different.		
Action of controller	• Restricts the output of the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Travel speed decreases.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

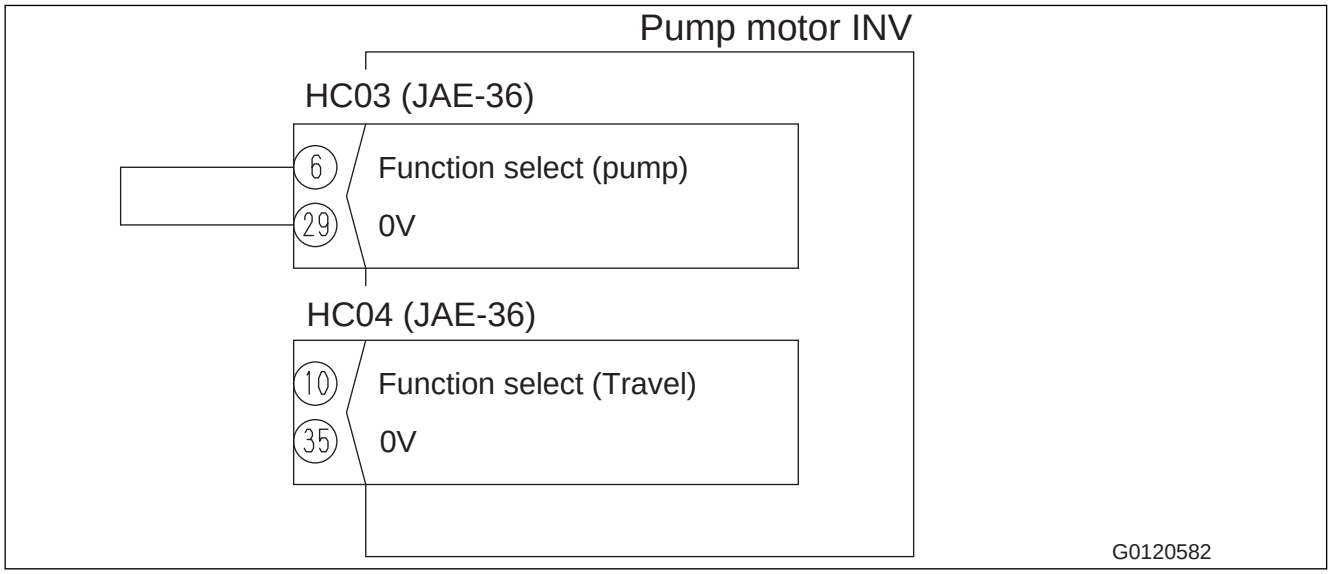
No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Examine the inverter connector for looseness. 4. Disconnect the connector HC01, HC02, HC03 and HC04 to do the troubleshooting.		
		Resistance	Between HC01 (female) (6) and (29)	Min. 1MΩ
			Between HC02 (female) (10) and (35)	Max. 1Ω
			Between HC03 (female) (6) and (29)	Max. 1Ω
			Between HC04 (female) (10) and (35)	Min. 1MΩ
2	Incorrect model of travel inverter	Make sure that the travel inverter which agrees with the model is installed. If it is different, replace it with correct unit.		

Inverter type by vehicle model

Machine model	Travel inverter	Pump inverter
FE25-2, FE30-2	AC400L	AC400S

Circuit diagram of inverter setting





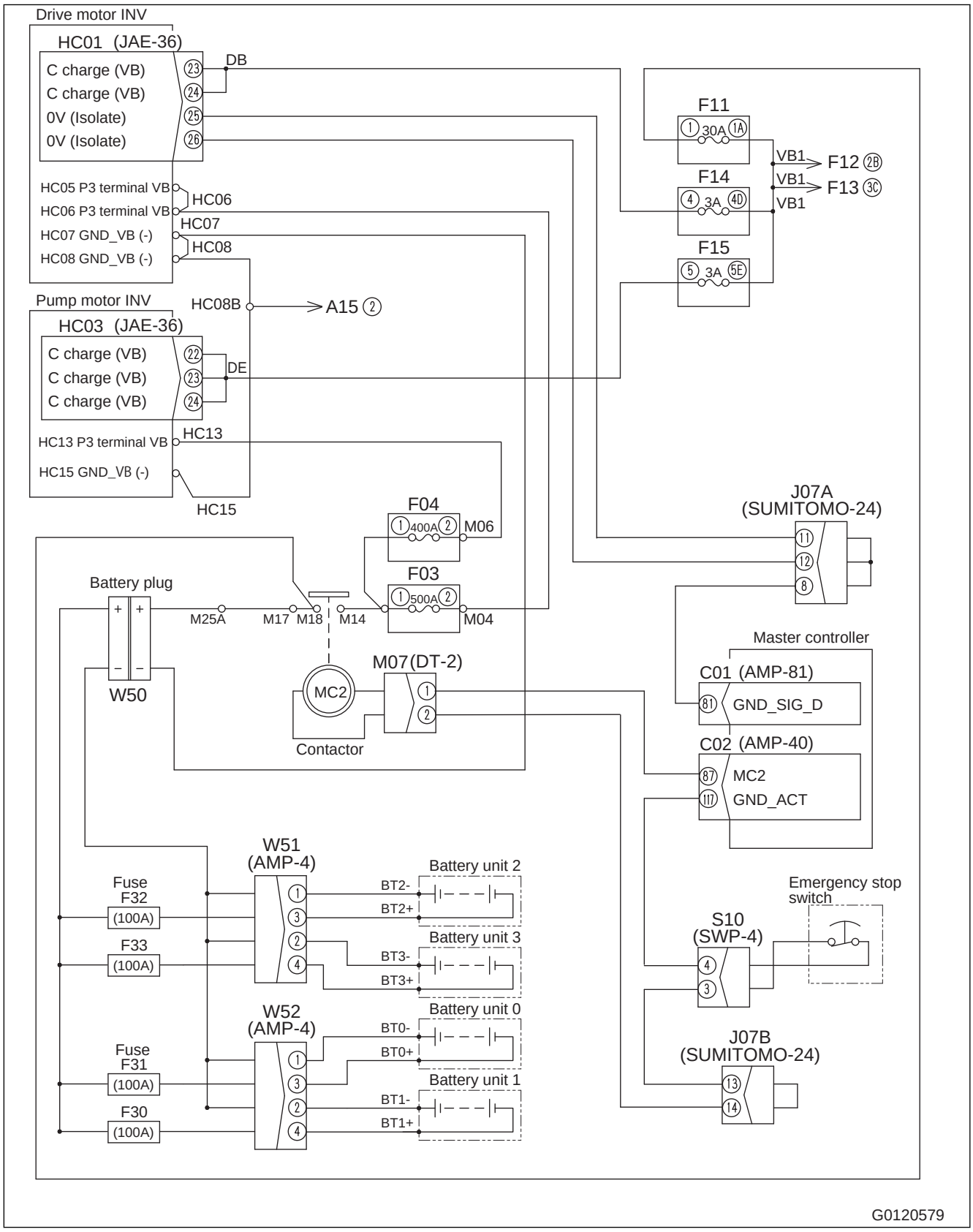
FAILURE CODE [GF16KA]

Action level	Failure code	Failure phenomenon	DISC) MC2 Line (TRV-INV) (Travel inverter system)
L04	GF16KA		
Detail of failure	When the starting switch is turned to the ON position, the secondary voltage of the main contactor (MC2) is sensed to be 90% or less of the battery voltage continuously for 2 seconds.		
Action of controller	• Stops the output to the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The vehicle cannot move.		
Related information	• This failure code can be shown when the emergency stop switch of the vehicle is pushed. In this case, it is not a failure. • When this error is sensed, failure code [GF26KA] can be also sensed at the same time. • When failure code [GF26KA] is not sensed at the same time, fuse F03 is probably blown out or the cable probably has discontinuity. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective contact of main circuit cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Visually examine the battery cable and terminals HC05, HC06 (VB), HC07, and HC08 (-) for looseness and foreign matter to do the troubleshooting. **REMARK** If looseness or foreign matter is found, remove the foreign matter and tighten it to specified torque.		
2	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuse F03. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F03	Continuity
3	Open circuit in cable 1	Between contactor and travel inverter terminal 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off. Disconnect the battery plug W50 to do the troubleshooting. (Wait for 10 minutes or more.)		
		Resistance	Between terminal M04 and terminal HC06	Max. 1Ω

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="2">4</td><td rowspan="2">Open circuit in cable 2</td><td colspan="3">Between battery plug W50 (+) terminal and main contactor (MC2) (+) terminal
1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off. Disconnect the battery plug W50 to do the troubleshooting. (Wait for 10 minutes or more.)</td></tr>
<tr><td>Resistance</td><td>Between battery plug W50 (+) terminal and terminal M18</td><td>Max. 1Ω</td></tr>
<tr><td rowspan="3">5</td><td rowspan="3">Defective main contactor (MC2)
(defective contact, defective coil)</td><td colspan="3">Check contact of MC2.
Since the contact area is covered, direct visual check is not possible.
Do these checks.
• Examine for loose terminal parts.
• Make sure if the operation sound comes out when the starting switch is turned to the ON position.
REMARK
If there is foreign matter, remove it.</td></tr>
<tr><td colspan="3">Coil resistance check of contactor
1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector M07. Connect the T-adapter to male side to do the troubleshooting.</td></tr>
<tr><td>Resistance</td><td>Between M07 (male) (1) and (2)</td><td>15Ω</td></tr>
<tr><td rowspan="3">6</td><td rowspan="3">Open circuit in wiring harness
(wire breakage or defective contact of connector)</td><td colspan="3">Coil of contactor MC2, coil, control line
1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Make sure that the emergency stop switch is not pushed.
4. Disconnect the connectors M07 and C02. Connect a socket to the female side of C02 and connect a T-adapter to the female side of M07 to do the troubleshooting.</td></tr>
<tr><td rowspan="2">Resistance</td><td>Between M07 (female) (2) and C02 (female) (117)</td><td>Max. 1Ω</td></tr>
<tr><td>Between M07 (female) (1) and C02 (female) (87)</td><td>Max. 1Ω</td></tr>
<tr><td>7</td><td>Defective main contactor (MC2)</td><td colspan="3">Replace the main contactor (MC2).</td></tr>
<tr><td>8</td><td>Defective travel inverter</td><td colspan="3">If no failure is found by the above checks, the travel inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of main contactor 2 of travel inverter



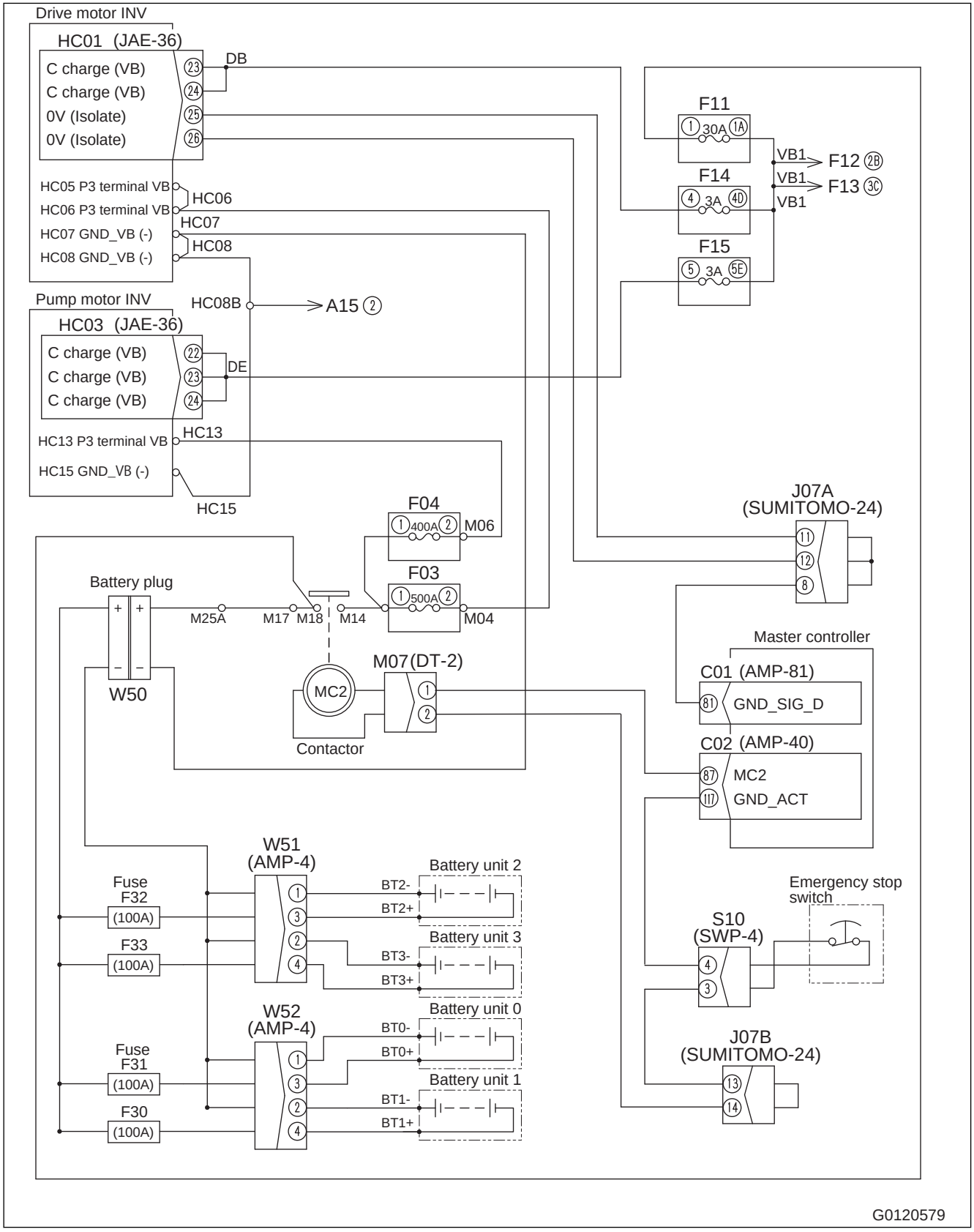
FAILURE CODE [GF16KB]

Action level	Failure code	Failure phenomenon	SHORT) MC2 Line (TRV-INV) (Travel inverter system)
L03	GF16KB		
Detail of failure	When the starting switch is turned to the ON position, the secondary voltage of the main contactor (MC2) is sensed to be 90% or more of the battery voltage continuously for 200ms.		
Action of controller	• Operates the vehicle normally. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Travel speed decreases.		
Related information	• When this error is sensed, failure code [GF26KB] can be also sensed at the same time. • This error cannot be sensed after some time from disconnection of battery plug W50. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit of main contactor (MC2) and main circuit cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Check the continuity of the primary and secondary sides of the main contactor (MC2) to do the troubleshooting. **REMARK** When no continuity is found, go to check on cause 2.		
		Continuity	Between battery plug W50 (+) terminal and F03 (1) terminal	No continuity
		When continuity is found 1. Disconnect each terminal of fuses M04 and M06. 2. Remove the fuse F11 to do the troubleshooting.		
		Continuity	Between battery plug W50 (+) terminal and F03 (1) terminal	No continuity
2	Defective main contactor (MC2) (defective contact, defective coil)	Check contact of MC2. Since the contact area is covered, direct visual check is not possible. Do these checks. • Examine for loose terminal parts. • Make sure if the operation sound comes out when the starting switch is turned to the ON position. **REMARK** If there is foreign matter, remove it.		
		Coil resistance check of contactor 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector M07. Connect the T-adapter to male side to do the troubleshooting.		
		Resistance	Between M07 (male) (1) and (2)	15Ω

No.	Cause	Procedure, measurement location, criteria and remarks
3	Defective travel inverter	If no failure is found by the above checks, the travel controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

Circuit diagram of main contactor 2 of travel inverter



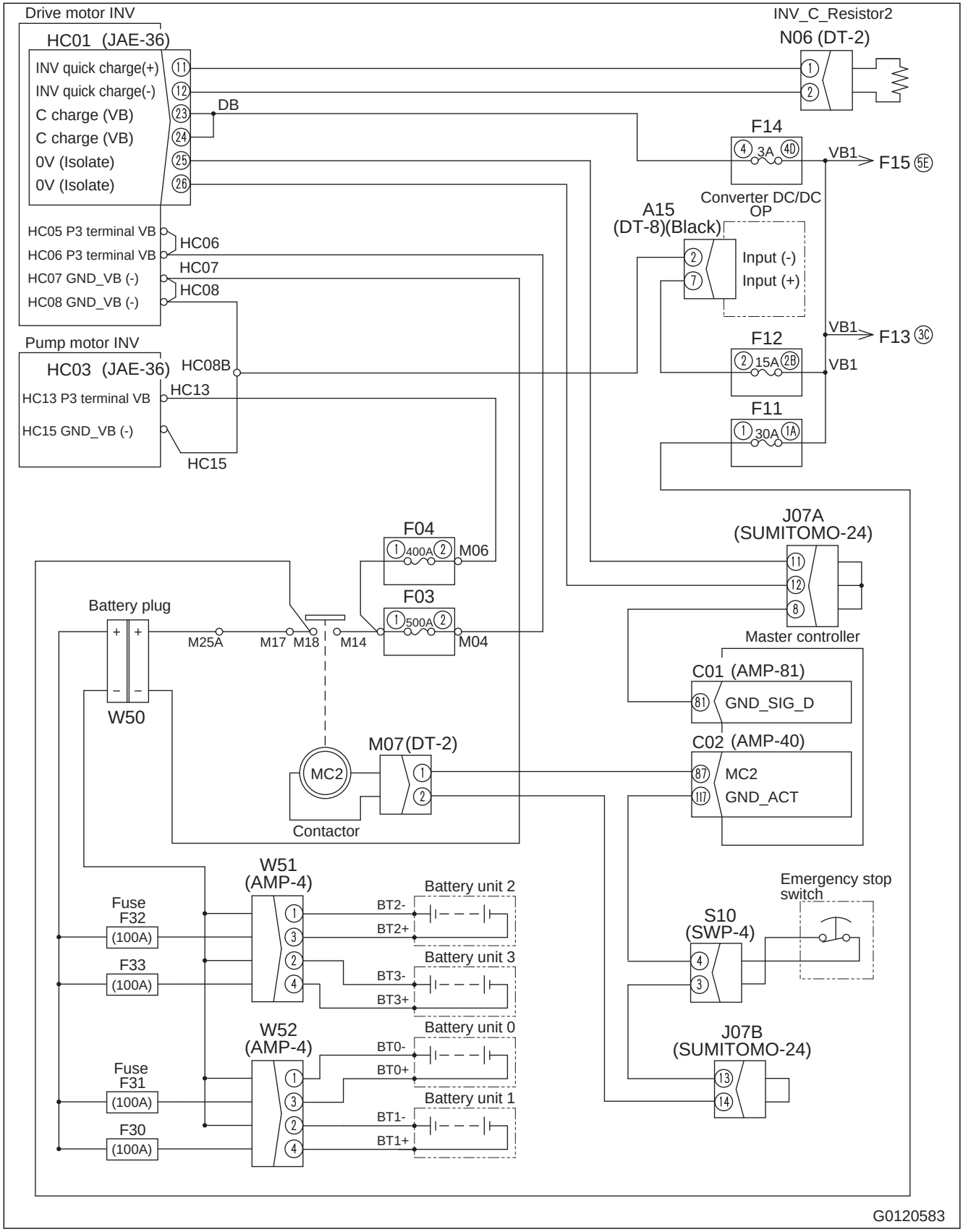
FAILURE CODE [GF17MA]

Action level	Failure code	Failure phenomenon	ABNL) Quick Charge (TRV-INV) (Travel inverter system)
L03	GF17MA		
Detail of failure	The capacitor voltage in the travel inverter does not increase to 63V even 2.6 seconds after the starting switch is turned to the ON position.		
Action of controller	• Does not turn on the main contactor (MC2). (Stops the output of enable signal.) • Stops the output to the travel inverter. • After the cause of the failure is corrected, the vehicle will go back to the correct state when the starting switch is turned to the OFF position one time. • If the capacitor voltage increases to 70V approximately 5 minutes after the error is sensed, controller resets the system.		
Problem on lift truck	Travel, work equipment and steering wheel cannot be operated. After the vehicle goes back to the correct state, it operates normally.		
Related information	• Failure code [GF27MA] is probably sensed at the same time. • If FET in the travel inverter is short-circuited, this error code is sensed. In that case, failure codes [GF1LKB] and [GF2LKB] can be sensed 15 seconds after you turn the starting switch to the ON position. • If failure codes [GF1LKB] and [GF2LKB] occur after this error occurs, see “[GF1LKB]” and “[GF2LKB]”. • Reproduction method of failure code: Turn the starting switch to the ON position. Wait for 15 seconds or more.		

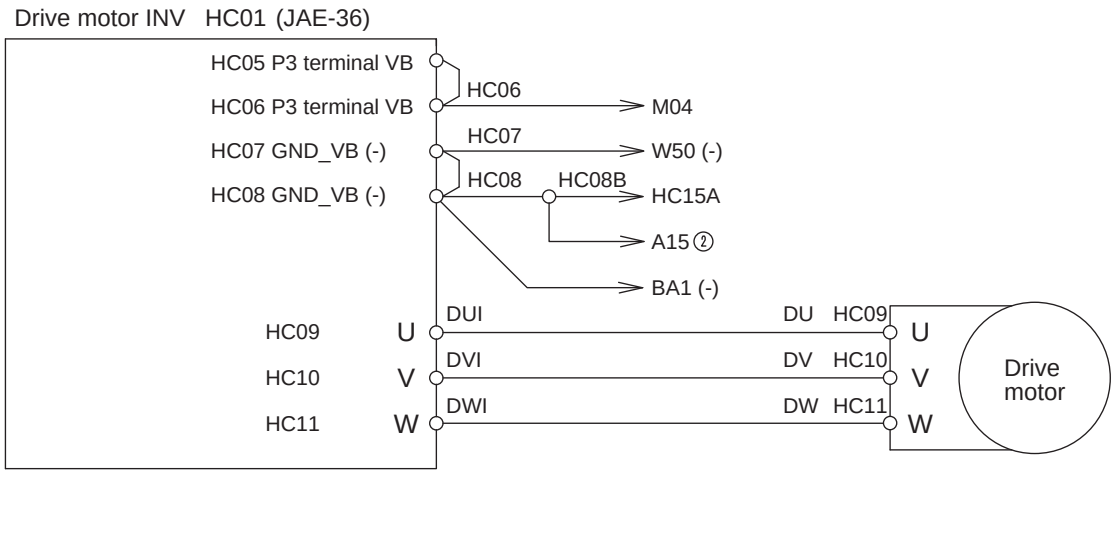
No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective quick charging resistance	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector N06 (quick charging resistance) from the contactor panel to do the troubleshooting.		
		Resistance	Between N06 (male) (1) and (2)	Approx. 39Ω
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector N06 (quick charging resistance) from the contactor panel. 4. Disconnect the connector HC01 to do the troubleshooting.		
		Resistance	Between N06 (female) (1) and HC01 (female) (11)	Max. 1Ω
			Between N06 (female) (2) and HC01 (female) (12)	Max. 1Ω
3	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC01 to do the troubleshooting.		
		Resistance	Between HC01 (female) (11) and (23)	Min. 1MΩ
			Between HC01 (female) (11) and (25)	Min. 1MΩ
			Between HC01 (female) (12) and (24)	Min. 1MΩ
			Between HC01 (female) (12) and (26)	Min. 1MΩ

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="2">4</td><td rowspan="2">Defective fuse</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Remove fuse F14.
4. Examine if the fuse is blown.
5. Examine the continuity of the fuse.
REMARK
If the fuse is blown out, the wiring harness probably has short circuit.</td></tr>
<tr><td>Continuity</td><td>Between two terminals of F14</td><td>Continuity</td></tr>
<tr><td rowspan="7">5</td><td rowspan="7">Defective travel inverter (breakage of FET (short circuit))</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect each terminal DUI, DVI, DWI, HC06 (VB), and HC07 (-) to do the troubleshooting.
REMARK
For each of these tests, reverse the polarity of the tester and do a check again. (Do the check 12 times in total.)</td></tr>
<tr><td rowspan="6">Resistance</td><td>Between DUI (inverter side) and HC06 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between DVI (inverter side) and HC06 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between DWI (inverter side) and HC06 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between DUI (inverter side) and HC07 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between DVI (inverter side) and HC07 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between DWI (inverter side) and HC07 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>6</td><td>Defective travel inverter</td><td colspan="3">If no failure is found by the above checks, the travel inverter is defective. (Trouble-shooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of travel inverter quick charge



Circuit diagram of travel motor

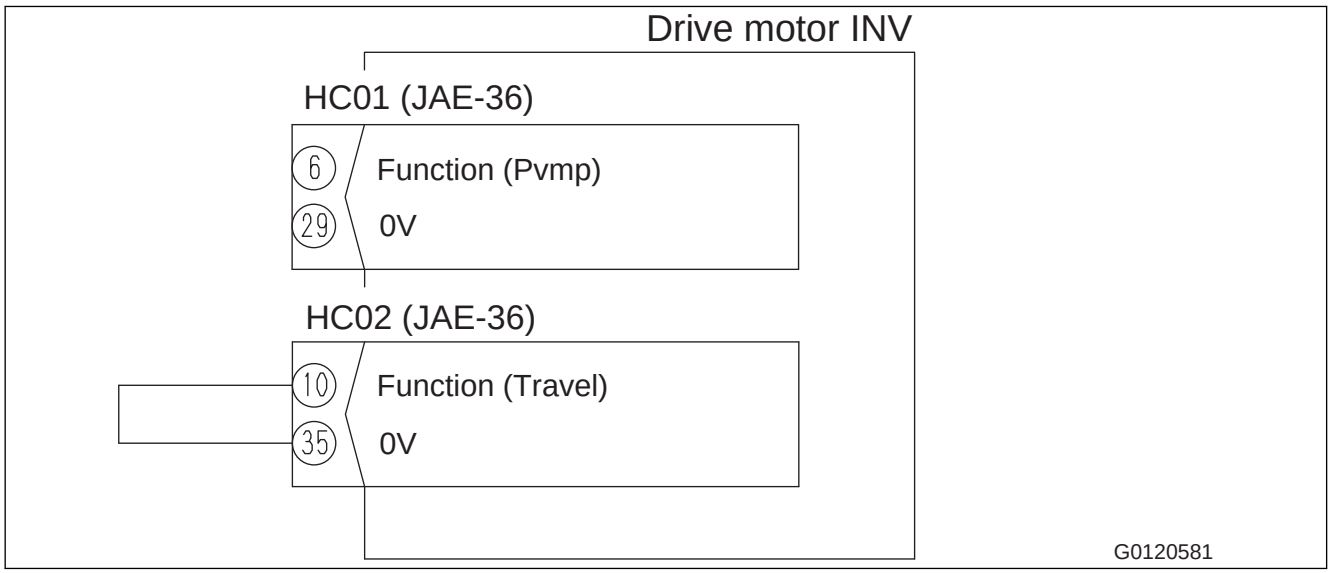


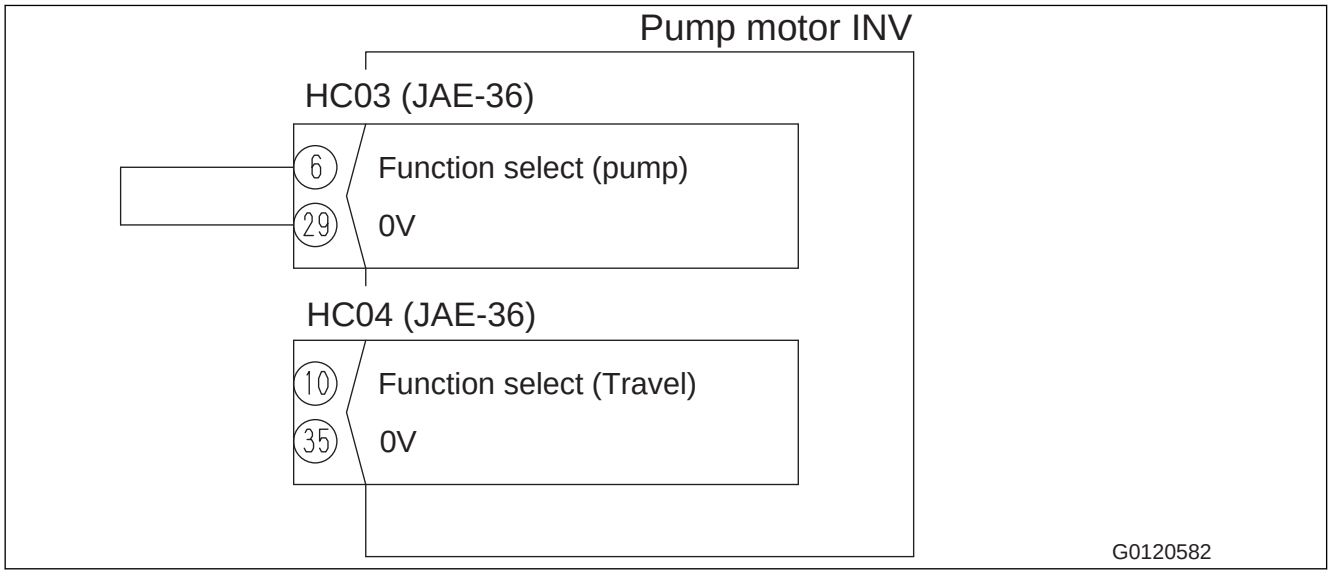
FAILURE CODE [GF18KQ]

Action level	Failure code	Failure phenomenon	MISMATCH) Func.SEL (TRV-INV) (Travel inverter system)
L04	GF18KQ		
Detail of failure	When the battery plug W50 is connected, it is sensed that both of the function identification signals are ON or OFF.		
Action of controller	• Does not turn on the main contactor (MC2). (Stops the output of enable signal.) • Stops the output to the travel inverter. • Judges a travel inverter error because of a mismatch of the function identification signals. • Even after the cause of failure is corrected, the vehicle will not go back to the correct state until the battery plug W50 is connected again.		
Problem on lift truck	Travel, work equipment, and PS (power steering) do not operate.		
Related information	• If failure code [DBNFKR] is shown at the same time, do the troubleshooting for the pump inverter first. • How to reproduce failure code: Connect the battery plug W50. Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in travel inverter wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Examine the inverter connector for looseness. 4. Disconnect the connector HC01 and HC02 to do the troubleshooting.		
		Resistance	Between HC01 (female) (6) and (29)	Min. 1MΩ
			Between HC02 (female) (10) and (35)	Max. 1Ω
		The pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		
2	Open circuit in pump inverter wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Examine the inverter connector for looseness. 4. Disconnect the connector HC03 and HC04 to do the troubleshooting.		
		Resistance	Between HC03 (female) (6) and (29)	Max. 1Ω
			Between HC04 (female) (10) and (35)	Min. 1MΩ
		If no failure is found by the above checks, the travel inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of inverter setting





FAILURE CODE [GF1AMA]

Action level	Failure code	Failure phenomenon	ABNL) Current SNSR (TRV-INV) (Travel inverter system)
L04	GF1AMA		
Detail of failure	The current sensor in the travel inverter does not work normally.		
Action of controller	• Stops the output to the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The vehicle does not move.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective travel inverter	The travel inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [GF1BMA]

Action level	Failure code	Failure phenomenon	ABNL) Temp. Sensor (TRV-INV) (Travel inverter system)
L03	GF1BMA		
Detail of failure	The travel inverter temperature sensor senses 0.15V or less or 4.95V or more continuously for 200msec.		
Action of controller	• Operates with the travel inverter temperature as 20℃. • When the voltage falls into the correct value (0.15 to 4.95V), the vehicle goes back to the correct state directly.		
Problem on lift truck	• Operates with the travel inverter temperature as normal temperature. • The cooling fan operates constantly.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective travel inverter	The travel inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [GF1C00]

Action level	Failure code	Failure phenomenon	HIGH) Temp. of TRV-INV (Travel inverter system)
-	GF1C00		
Detail of failure	Travel inverter temperature becomes 97℃ and above.		
Action of controller	Limits output of travel inverter. • Starts the current limit at 94℃ or more. • Senses alarm conditions at 97℃ or more. • Cancels the alarm at 94℃ or less.		
Problem on lift truck	Travel speed decreases.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Overload on travel inverter	If lift truck is used for long time or under overload, stop the forklift truck and cool the travel inverter.
2	Defective cooling fan 1	Examine the cooling fan 1 (connector M09). If an abnormality is found, repair or replace it.
3	Defective temperature sensor of travel inverter	If the failure occurs frequently in usual operation, the travel inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [GF1CNS]

Action level	Failure code	Failure phenomenon	OVER) Temp. of TRV-INV (Travel inverter system)
L02	GF1CNS		
Detail of failure	Travel inverter temperature becomes 109℃ and above.		
Action of controller	• Stops the output to the travel inverter. • When the temperature becomes the correct value (108℃ or less), the vehicle goes back to the correct state directly.		
Problem on lift truck	The vehicle does not move.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Overload on travel inverter	If lift truck is used for long time or under overload, stop the forklift truck and cool the travel inverter.
2	Defective cooling fan 1	Examine the cooling fan 1 (connector M09). If an abnormality is found, repair or replace it.
3	Defective temperature sensor of travel inverter	If the failure occurs frequently in usual operation, the travel inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [GF1EKT]

Action level	Failure code	Failure phenomenon	ABNL) EEPROM (TRV-INV) (Travel inverter system)
-	GF1EKT		
Detail of failure	A memory read error occurs in the travel inverter.		
Action of controller	• Operates with default values used for all setting values of the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The vehicle operates with default setting.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

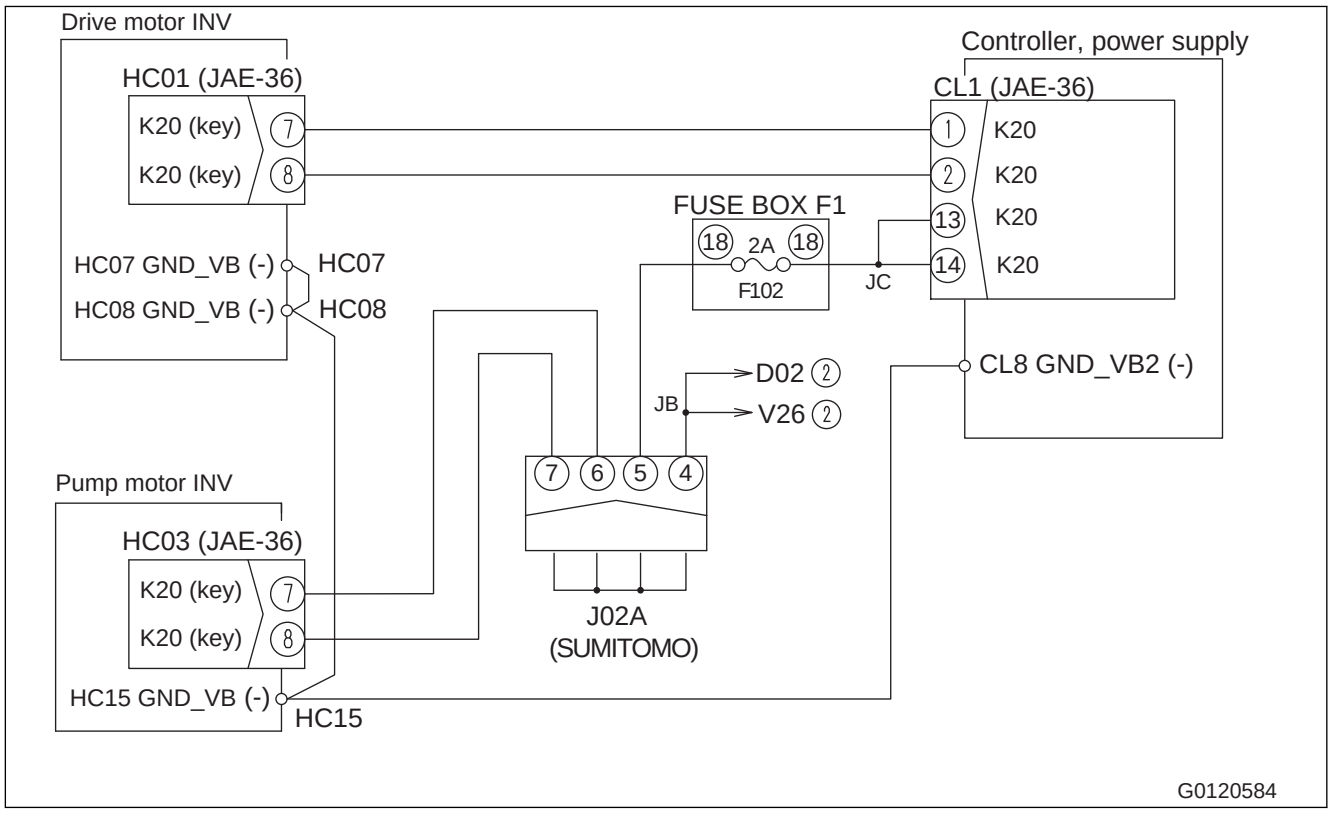
No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective travel inverter	The travel inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [GF1FMA]

Action level	Failure code	Failure phenomenon	ABNL) KEY-POWER (TRV-INV) (Travel inverter system)
L04	GF1FMA		
Detail of failure	The key signal state = ON (KEY_ACC_1 or KEY_ACC_2 is ON) and key power input (travel) = OFF is sensed for 1 second continuously.		
Action of controller	• Turns off the main contactor (MC2). • Stops the output to the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	• Travel, work equipment, and PS (power steering) cannot be operated. • Travel speed is not shown.		
Related information	• This is not sensed in 4 seconds after the starting switch is turned to the ON position. • This failure is not sensed while a CAN communication error (for travel inverter) [DBNEKR] is shown.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuse F102. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F102	Continuity
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC01 and CL1 to do the troubleshooting.		
		Resistance	Between HC01 (female) (7) and CL1 (female) (1)	Max. 1Ω
			Between HC01 (female) (8) and CL1 (female) (2)	Max. 1Ω
3	Defective travel inverter	If no failure is found by the above checks, the travel inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of travel inverter key power supply

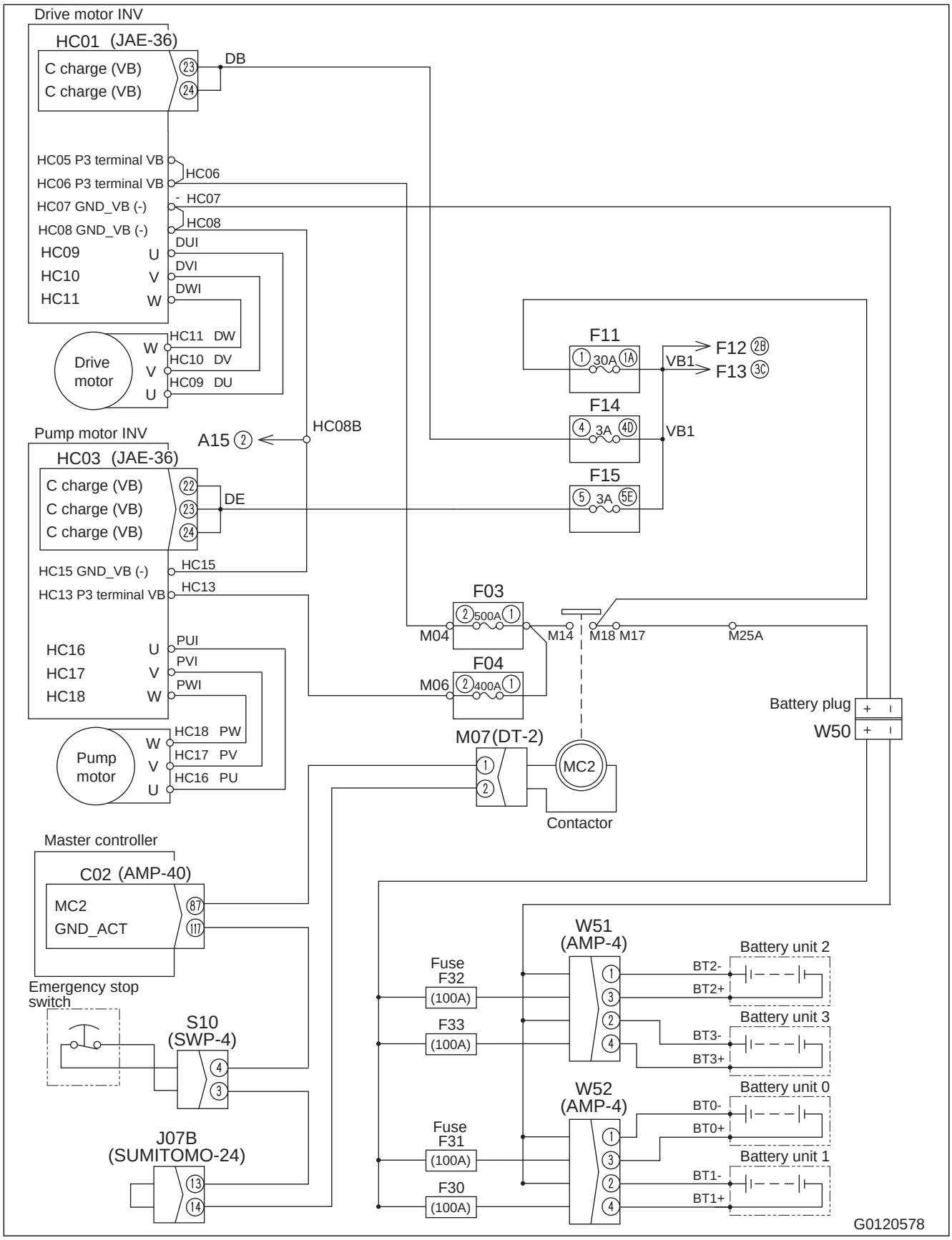


FAILURE CODE [GF1JKA]

Action level	Failure code	Failure phenomenon	DISC) Output Power (TRV-INV) (Travel inverter system)
L04	GF1JKA		
Detail of failure	C charge voltage of 33.75V or below is sensed for 30ms continuously.		
Action of controller	• Turns off the main contactor (MC2). • Stops the output to the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Travel, work equipment, and PS (power steering) do not operate.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuses F11 and F14. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F11	Continuity
			Between two terminals of F14	Continuity
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	C charge line 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC01 to do the troubleshooting. **REMARK** If a wiring harness is open, remove fuses F11 and F14, and identify open circuit area.		
		Resistance	Between battery plug W50 (+) terminal and HC01 (female) (23) or (24)	Max. 1Ω
3	Defective travel inverter	If no failure is found by the above checks, the travel inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of travel inverter load power supply line

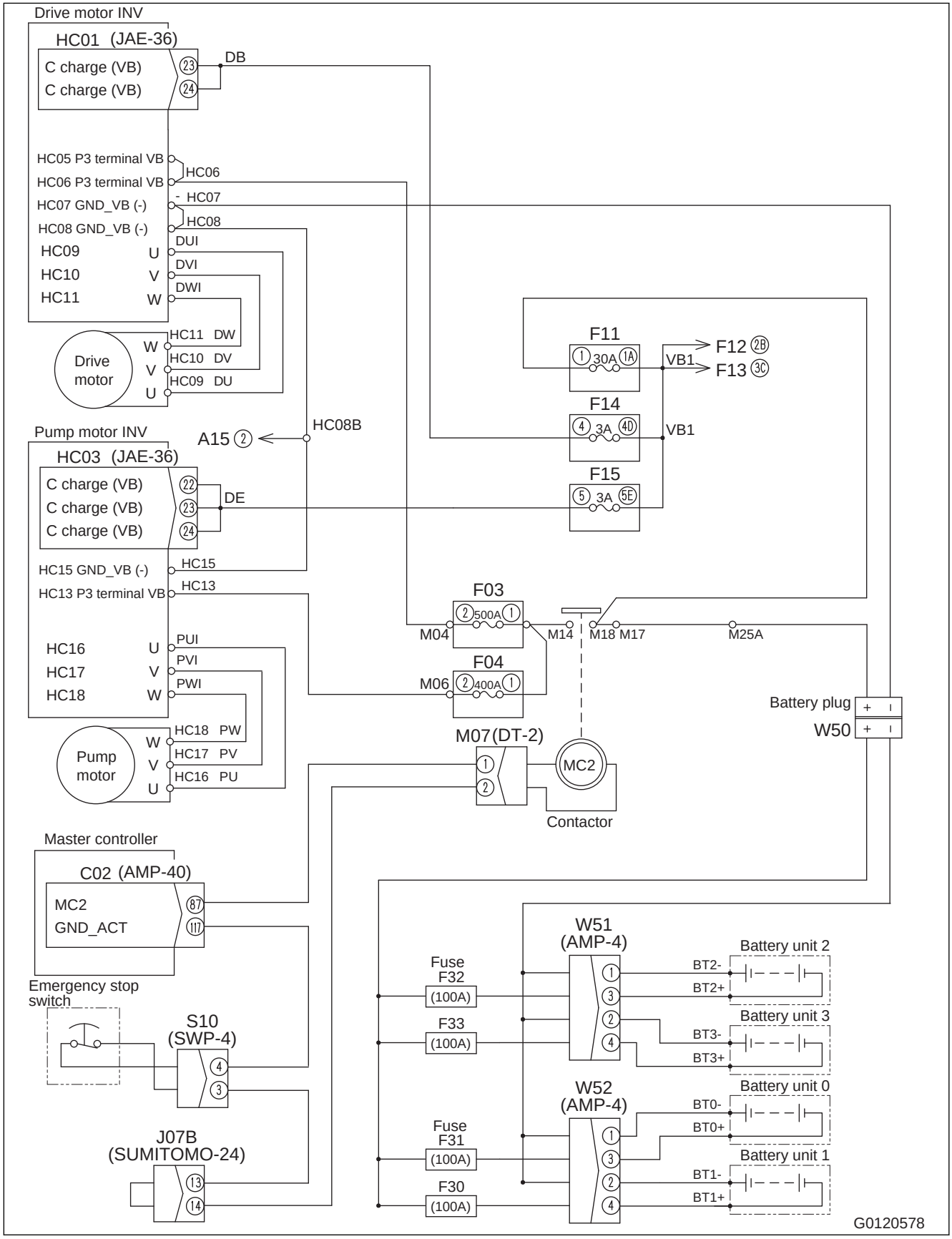


FAILURE CODE [GF1LKB]

Action level	Failure code	Failure phenomenon	SHORT) FET (TRV-INV) (Travel inverter system)
L04	GF1LKB		
Detail of failure	FET in travel inverter has damage and has a short circuit. The capacitor voltage of 3V is sensed for 15 seconds continuously.		
Action of controller	• Does not turn on the main contactor (MC2). • Stops the output to the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Travel, work equipment, and PS (power steering) do not operate.		
Related information	• Failure codes [GF17MA] and [GF27MA] are sensed immediately after the starting switch is turned to the ON position, and then this failure code is sensed. • If FET in the pump inverter has a short circuit, this error code occurs. When it occurs alone, fuses F03 or F04 can be blown out. • Reproduction method of failure code: Turn the starting switch to the ON position. Wait for 15 seconds or more.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit of battery cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off. Disconnect the battery plug W50 to do the troubleshooting. (Wait for 10 minutes or more.) **REMARK** When no failure is found, go to check on cause 3.		
		Resistance	Between M04 terminal and battery plug W50 (-) (inverter side)	Min. 1MΩ
			Between M06 terminal and battery plug W50 (-) (inverter side)	Min. 1MΩ
		When continuity is found 1. Disconnect the terminals HC06 and HC15 to do the troubleshooting.		
		Resistance	Between HC06 terminal and battery plug W50 (-) (inverter side)	Min. 1MΩ
			Between HC15 terminal and battery plug W50 (-) (inverter side)	Min. 1MΩ
2	Defective travel inverter (breakage of FET (short circuit))	Do check on cause 5 in troubleshooting for failure code [GF17MA].		
3	Defective travel inverter	If no failure is found by the above checks, the travel inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of travel inverter FET



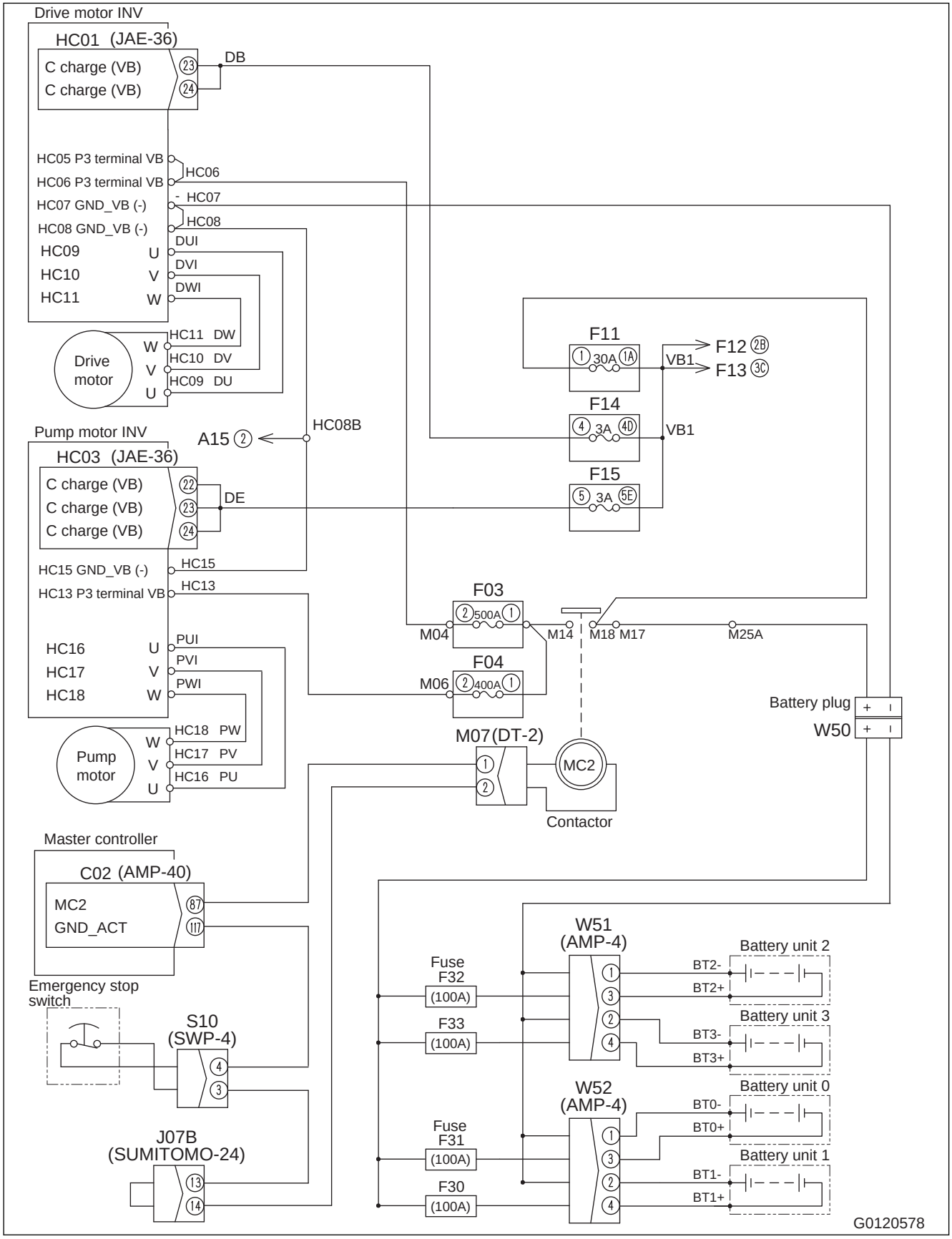
FAILURE CODE [GF1MKB]

Action level	Failure code	Failure phenomenon	SHORT) Upper FET(TRV-INV) (Travel inverter system)
L04	GF1MKB		
Detail of failure	FET in the travel inverter has damage and has a short circuit. The travel motor terminal voltage which is 80% or above of P3 (inverter main circuit capacitor) voltage is sensed for 50 milliseconds continuously.		
Action of controller	• Does not turn on the main contactor (MC2). • Stops the output to the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Travel, work equipment, and PS (power steering) do not operate.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit of motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Visually examine motor cable terminals DUI, DVI, DWI, and HC06 for foreign matter. 4. Disconnect each terminal DUI, DVI, DWI, and HC06 to do the troubleshooting.		
		Resistance	Between DUI (cable side) and HC06 (cable side)	Min. 1MΩ
			Between DVI (cable side) and HC06 (cable side)	Min. 1MΩ
			Between DWI (cable side) and HC06 (cable side)	Min. 1MΩ
2	Defective travel inverter (breakage of FET (short circuit))	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect each terminal DUI, DVI, DWI, HC06 (VB), and HC07 (-) to do the troubleshooting. **REMARK** For each of these tests, reverse the polarity of the tester and do a check again. (Do the check 12 times in total.)		
		Resistance	Between DUI (inverter side) and HC06 (VB) (inverter side)	Min. 1kΩ
			Between DVI (inverter side) and HC06 (VB) (inverter side)	Min. 1kΩ
			Between DWI (inverter side) and HC06 (VB) (inverter side)	Min. 1kΩ
			Between DUI (inverter side) and HC07 (-) (inverter side)	Min. 1kΩ
			Between DVI (inverter side) and HC07 (-) (inverter side)	Min. 1kΩ
			Between DWI (inverter side) and HC07 (-) (inverter side)	Min. 1kΩ

No.	Cause	Procedure, measurement location, criteria and remarks
3	Defective travel inverter	If no failure is found by the above checks, the travel inverter is defective. (Trouble-shooting cannot be done because this is an internal failure.)

Circuit diagram of travel inverter FET



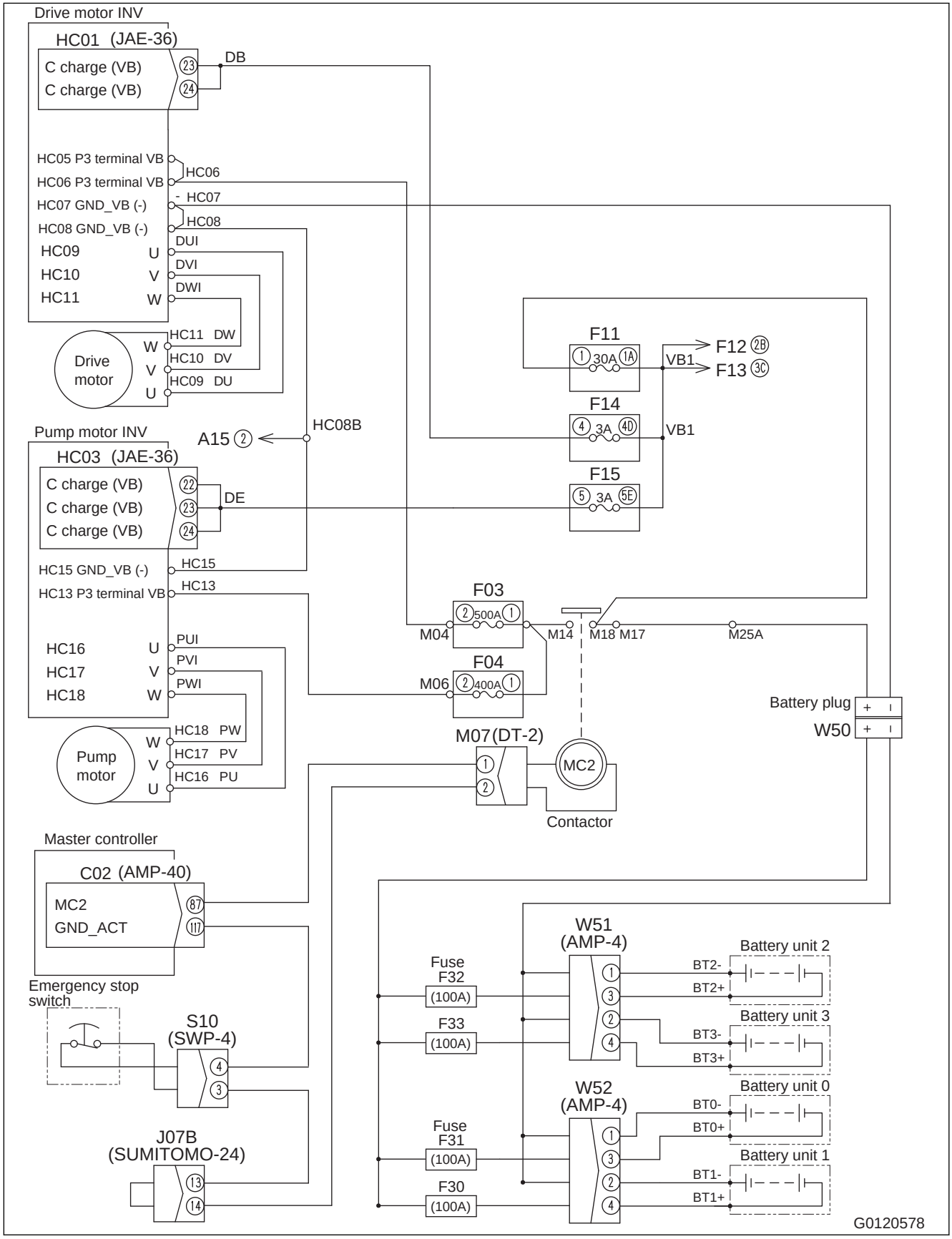
FAILURE CODE [GF1NKB]

Action level	Failure code	Failure phenomenon	SHORT) Lower FET(TRV-INV) (Travel inverter system)
L04	GF1NKB		
Detail of failure	FET in the travel inverter has damage and has a short circuit. The travel motor terminal voltage which is 12% or below of P3 (inverter main circuit capacitor) voltage is sensed for 50 milliseconds continuously.		
Action of controller	• Does not turn on the main contactor (MC2). • Stops the output to the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Travel, work equipment, and PS (power steering) do not operate.		
Related information	• Even if the motor cable comes off, this failure code can be sensed. • If failure code [GF12KA], [GF13KA], or [GF14KA] is shown when you push down the accelerator pedal, do the troubleshooting for each failure code first. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit of travel motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Visually examine pump motor cable terminals DUI, DVI, DWI, HC07, and HC08 for foreign matter. 4. Disconnect each terminal DUI, DVI, DWI, HC07, and HC08 to do the troubleshooting.		
		Resistance	Between DUI (cable side) and HC07 (cable side)	Min. 1MΩ
			Between DVI (cable side) and HC07 (cable side)	Min. 1MΩ
			Between DWI (cable side) and HC07 (cable side)	Min. 1MΩ

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="7">2</td><td rowspan="7">Defective travel inverter (breakage of FET (short circuit))</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect each terminal DUI, DVI, DWI, HC06 (VB), and HC07 (-) to do the troubleshooting.
REMARK
For each of these tests, reverse the polarity of the tester and do a check again. (Do the check 12 times in total.)</td></tr>
<tr><td rowspan="6">Resistance</td><td>Between DUI (inverter side) and HC06 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between DVI (inverter side) and HC06 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between DWI (inverter side) and HC06 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between DUI (inverter side) and HC07 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between DVI (inverter side) and HC07 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between DWI (inverter side) and HC07 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>3</td><td>Defective travel inverter</td><td colspan="3">If no failure is found by the above checks, the travel inverter is defective. (Trouble-shooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of travel inverter FET



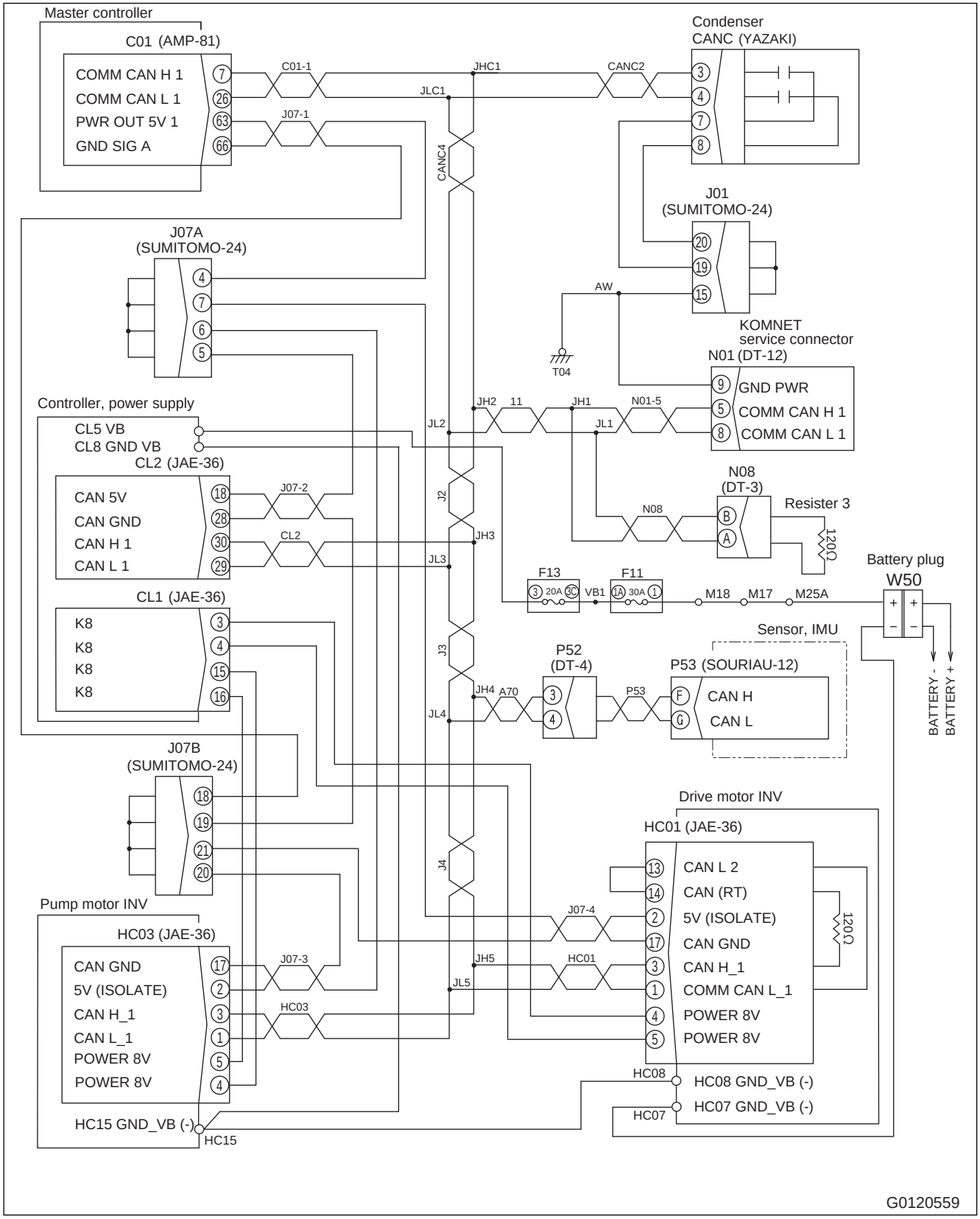
FAILURE CODE [GF1QKR]

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (TRV-INV) (Travel inverter system)
L04	GF1QKR		
Detail of failure	The travel inverter cannot receive regular communication data from the master controller by CAN communication 10 times in a row even 3 seconds after the starting switch is turned to the ON position.		
Action of controller	• Stops the output to the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The vehicle does not move.		
Related information	• If there is an open circuit in the CAN wiring harness, the travel inverter error is not shown on the monitor panel but failure code [DBNEKR] is shown. • This failure code is received by CAN communication. If this failure code is shown, there is no open or short circuit in the CAN communication line. • How to reproduce failure code: Turn the starting switch to the ON position. Wait for 3 seconds.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective contact of connector	Examine the connectors C01, HC01, HC03, and N08.		
2	Defective CAN terminating resistor	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors N08 and HC01. Connect the T-adapter to the male side of N08 to do the troubleshooting.		
		Resistance	Between N08 (male) (A) and (B)	Approx. 120Ω
			Between HC01 (male) (3) and (14)	Approx. 120Ω
3	Defective master controller or defective power supply controller	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC01. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between HC01 (female) (2) and (17)	Approximately 5V
			Between HC01 (female) (4) and HC08 terminal	Approx. 8V
			Between HC01 (female) (5) and HC08 terminal	Approx. 8V

No.	Cause	Procedure, measurement location, criteria and remarks
4	Defective pump inverter	When failure code [GF2QKR] is also shown 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC03. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.
		As the connector HC03 is disconnected, ignore failure code other than [GF1QKR]. If failure code [GF1QKR] is no longer shown, the pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)
5	Defective travel inverter	If no failure is found by the above checks, the travel inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)

Circuit diagram of CAN communication



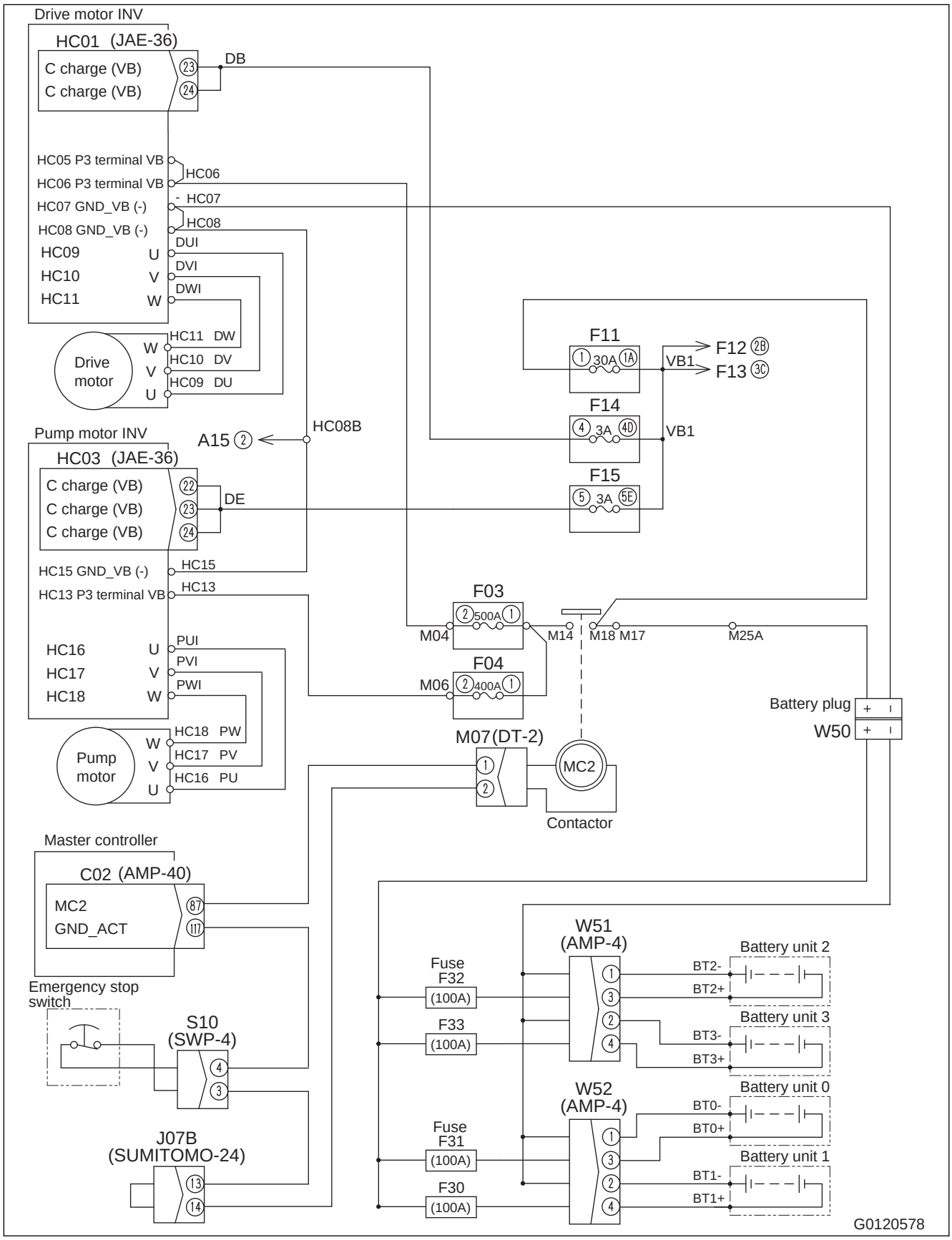
FAILURE CODE [GF20KN]

Action level	Failure code	Failure phenomenon	OVER) CURRENT (PMP-INV) (Pump inverter system)
L04	GF20KN		
Detail of failure	A current higher than 348A is sensed in the U or W phase of the pump inverter.		
Action of controller	• Does not turn on the main contactor (MC2). • Stops the output to the pump inverter. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Travel, work equipment, and PS (power steering) do not operate.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position. Operate the work equipment control lever.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit of motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Visually examine motor cable terminals PUI, PVI, PWI, HC13, and HC15 for foreign matter. 4. Disconnect each terminal PUI, PVI, PWI, HC13, and HC15 to do troubleshooting.		
		Resistance	Between PUI (cable side) and HC13 (cable side)	Min. 1MΩ
			Between PVI (cable side) and HC13 (cable side)	Min. 1MΩ
			Between PWI (cable side) and HC13 (cable side)	Min. 1MΩ
			Between PUI (cable side) and HC15 (cable side)	Min. 1MΩ
			Between PVI (cable side) and HC15 (cable side)	Min. 1MΩ
			Between PWI (cable side) and HC15 (cable side)	Min. 1MΩ

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="7">2</td><td rowspan="7">Defective pump inverter (breakage of FET (short circuit))</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect each terminal PUI, PVI, PWI, HC13 (VB), and HC15 (-) to do the troubleshooting.
REMARK
For each of these tests, reverse the polarity of the tester and do a check again. (Do the check 12 times in total.)</td></tr>
<tr><td rowspan="6">Resistance</td><td>Between PUI (inverter side) and HC13 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between PVI (inverter side) and HC13 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between PWI (inverter side) and HC13 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between PUI (inverter side) and HC15 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between PVI (inverter side) and HC15 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between PWI (inverter side) and HC15 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>3</td><td>Defective pump inverter</td><td colspan="3">If no failure is found by the above checks, the pump inverter is defective. (Trouble-shooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of pump inverter

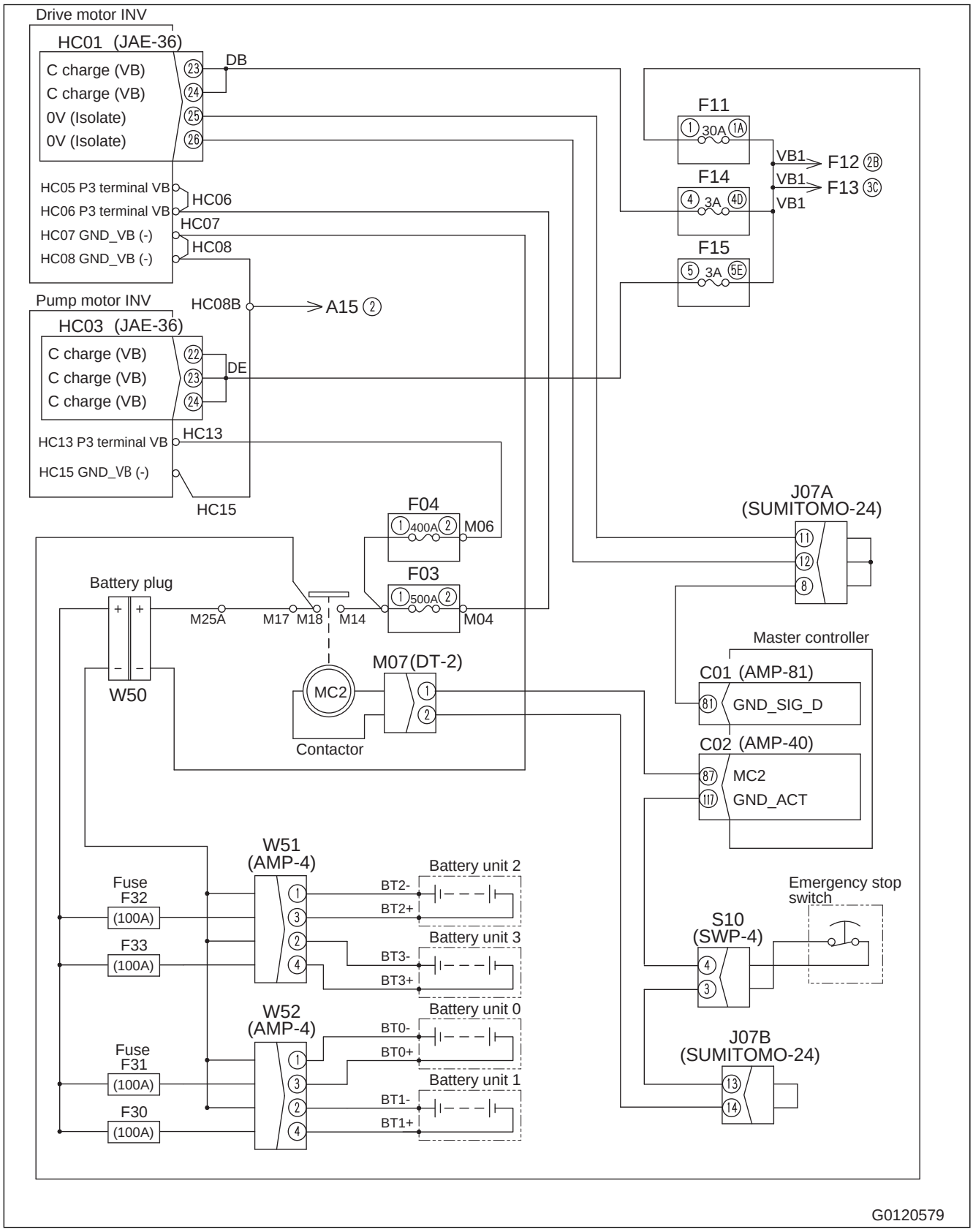


FAILURE CODE [GF21KG]

Action level	Failure code	Failure phenomenon	HIGH) Power Source (PMP-INV) (Pump inverter system)
-	GF21KG		
Detail of failure	Excessive voltage is applied to the pump inverter and the capacitor voltage of 181V and above is sensed consecutively 10 times or above in 200 milliseconds.		
Action of controller	• Stops the output to the pump inverter. • When the voltage falls into the correct range, the vehicle goes back to the correct state.		
Problem on lift truck	The work equipment and PS (power steering) do not operate.		
Related information	• While you regenerate travel, this failure is hard to occur in load handling alone. • If failure code [GF11KG] is shown at the same time, the travel inverter also stops. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Incorrect battery voltage	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off. Disconnect the battery plug W50 to do the troubleshooting. (Wait for 10 minutes or more.) **REMARK** If the battery voltage is abnormal, replace the battery.		
		Voltage	Between battery plug W50 (battery side) (+) and (-)	Max. 181V
2	Defective travel inverter	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuse F15. 4. Connect the battery plug W50 to do the troubleshooting. **REMARK** When the voltage is higher than that measured in step of cause 1, the travel inverter is probably defective.		
		Voltage	Between F15 (5) and HC15 (-) terminal	Max. 181V
3	Defective pump inverter	If no failure is found by the previous checks, replace the pump inverter. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of pump inverter battery power supply

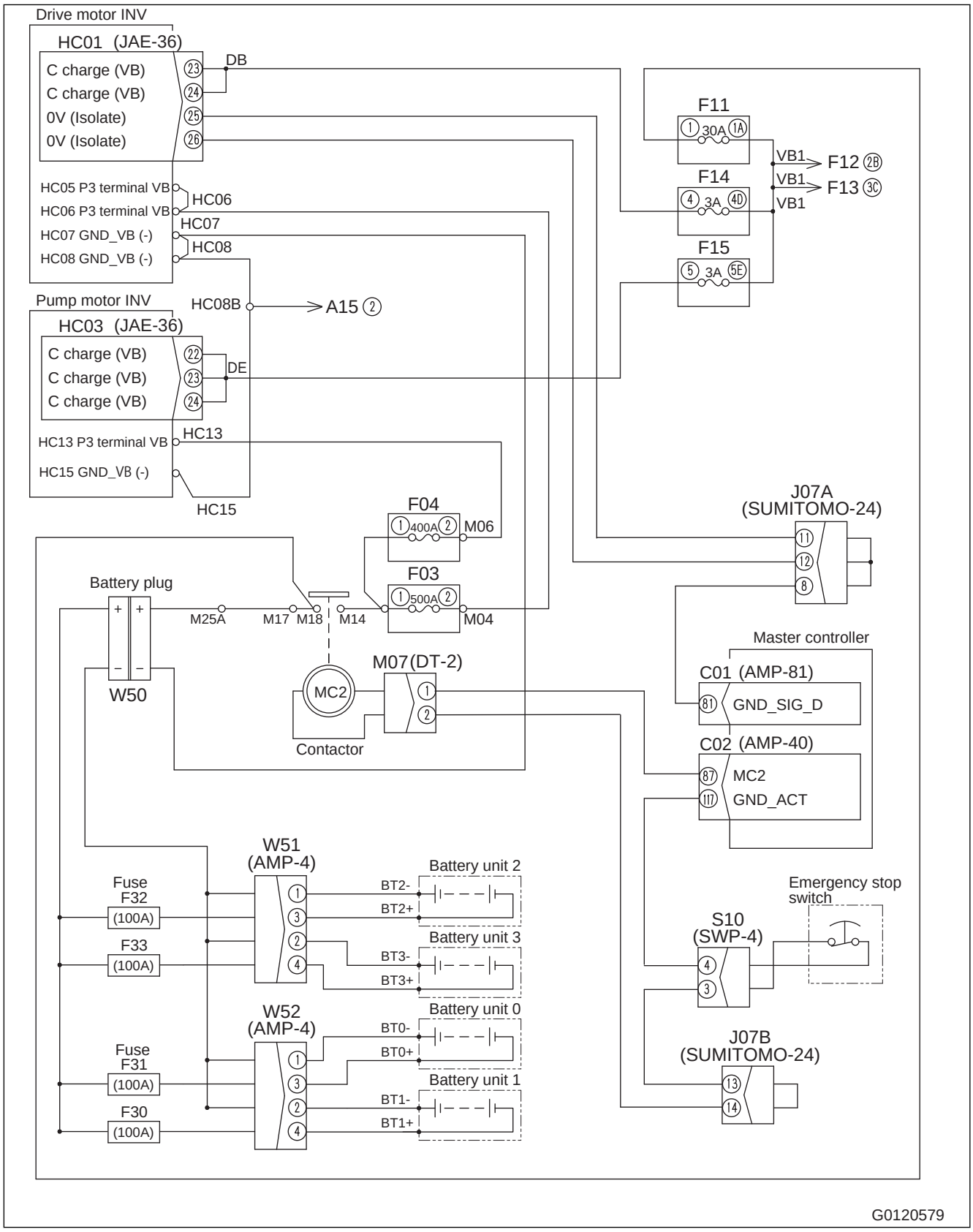


FAILURE CODE [GF21KK]

Action level	Failure code	Failure phenomenon	LOW) Power Source (PMP-INV) (Pump inverter system)
L02	GF21KK		
Detail of failure	A battery voltage of approximately 63V or below for 800ms continuously.		
Action of controller	• Turns off the main contactor (MC2). • Stops the output to the pump inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Travel, work equipment, and PS (power steering) do not operate.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position. **REMARK** It is easily reproduced if you apply load suddenly (such as steering wheel operation at tire-end or relieving work equipment circuit, etc.).		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Drop of battery voltage	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off. Disconnect the battery plug W50 to do the troubleshooting. (Wait for 10 minutes or more.) **REMARK** Measure the voltage and charge the battery if necessary.		
		Voltage	Between battery plug W50 (battery side) (+) and (-)	Min. 81V

Circuit diagram of pump inverter battery power supply

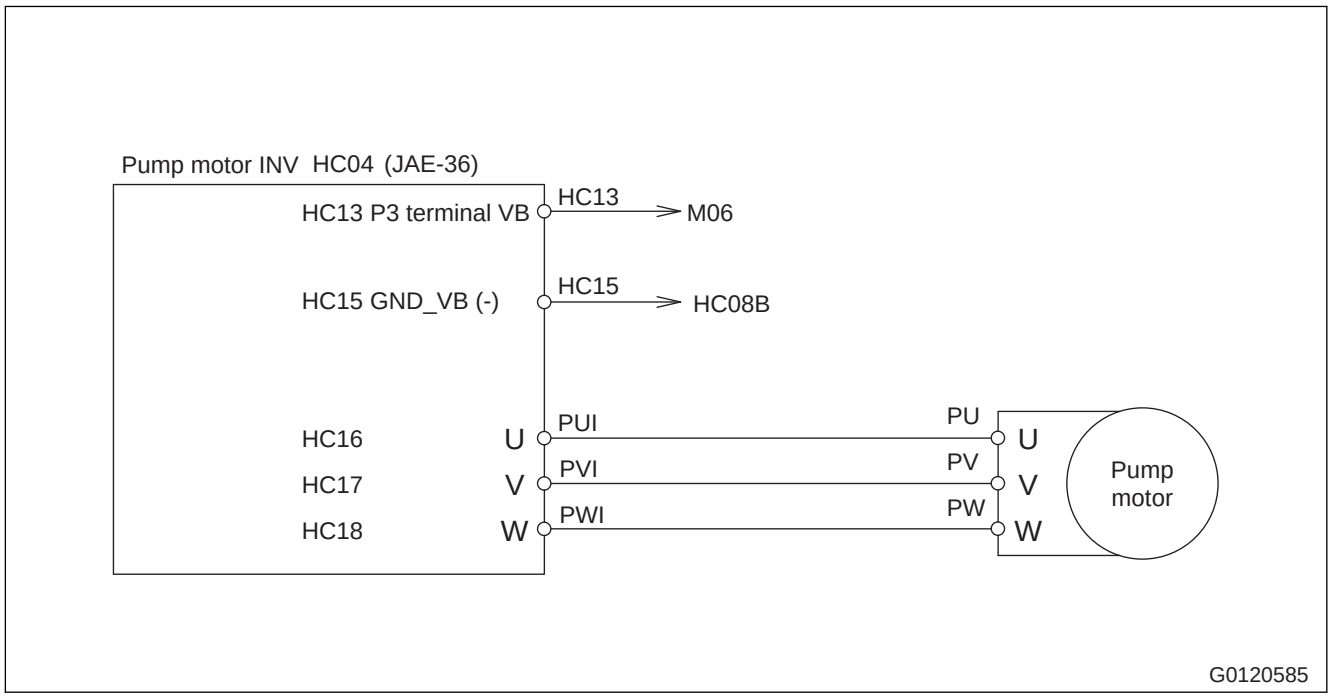


FAILURE CODE [GF22KA]

Action level	Failure code	Failure phenomenon	DISC) U Phase (PMP-INV) (Pump inverter system)
L03	GF22KA		
Detail of failure	The FET in the pump inverter is broken and has an open circuit. For a torque command of 25% or more, a motor current of 20A or less is sensed for 300msec continuously.		
Action of controller	• Stops the output to the pump inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The work equipment and PS (power steering) cannot operate.		
Related information	• This failure code is also sensed when the pump motor cable is disconnected. In such case, failure code [GF2NKB] can be sensed when the vehicle is stopped. • How to reproduce failure code: Operate the fork or other work equipment.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective connection of pump motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Visually examine the motor terminals of the pump inverter for looseness and foreign matter to do the troubleshooting. **REMARK** If looseness or foreign matter is found, remove the foreign matter and tighten it to specified torque.		
2	Open circuit of pump motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect each terminal PUI and PU to do the troubleshooting.		
		Resistance	Between PUI (cable side) and PU (cable side)	Max. 1Ω
3	Defective pump inverter	If no failure is found by the above checks, the pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of pump inverter FET

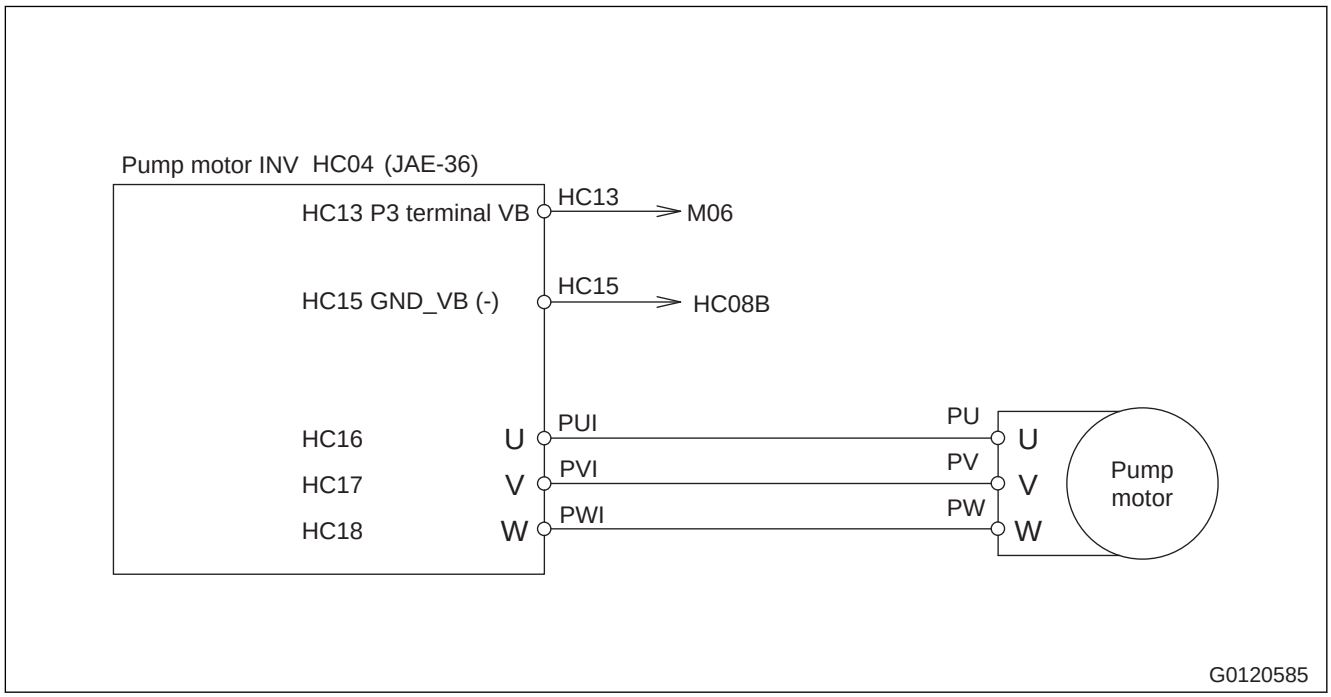


FAILURE CODE [GF23KA]

Action level	Failure code	Failure phenomenon	DISC) V Phase (PMP-INV) (Pump inverter system)
L03	GF23KA		
Detail of failure	The FET in the pump inverter is broken and has an open circuit. For a torque command of 25% or more, a motor current of 20A or less is sensed for 300msec continuously.		
Action of controller	• Stops the output to the pump inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The work equipment and PS (power steering) cannot operate.		
Related information	• This failure code is also sensed when the pump motor cable is disconnected. In such case, failure code [GF2NKB] can be sensed when the vehicle is stopped. • How to reproduce failure code: Operate the fork or other work equipment.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective connection of pump motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Visually examine the motor terminals of the pump inverter for looseness and foreign matter to do the troubleshooting. **REMARK** If looseness or foreign matter is found, remove the foreign matter and tighten it to specified torque.		
2	Open circuit of pump motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect each terminal of PVA and PV to do the troubleshooting. **REMARK** If an abnormality is found, replace the travel motor cable.		
		Resistance	Between PVI (cable side) and PV (cable side)	Max. 1Ω
3	Defective pump inverter	If no failure is found by the above checks, the pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of pump inverter FET

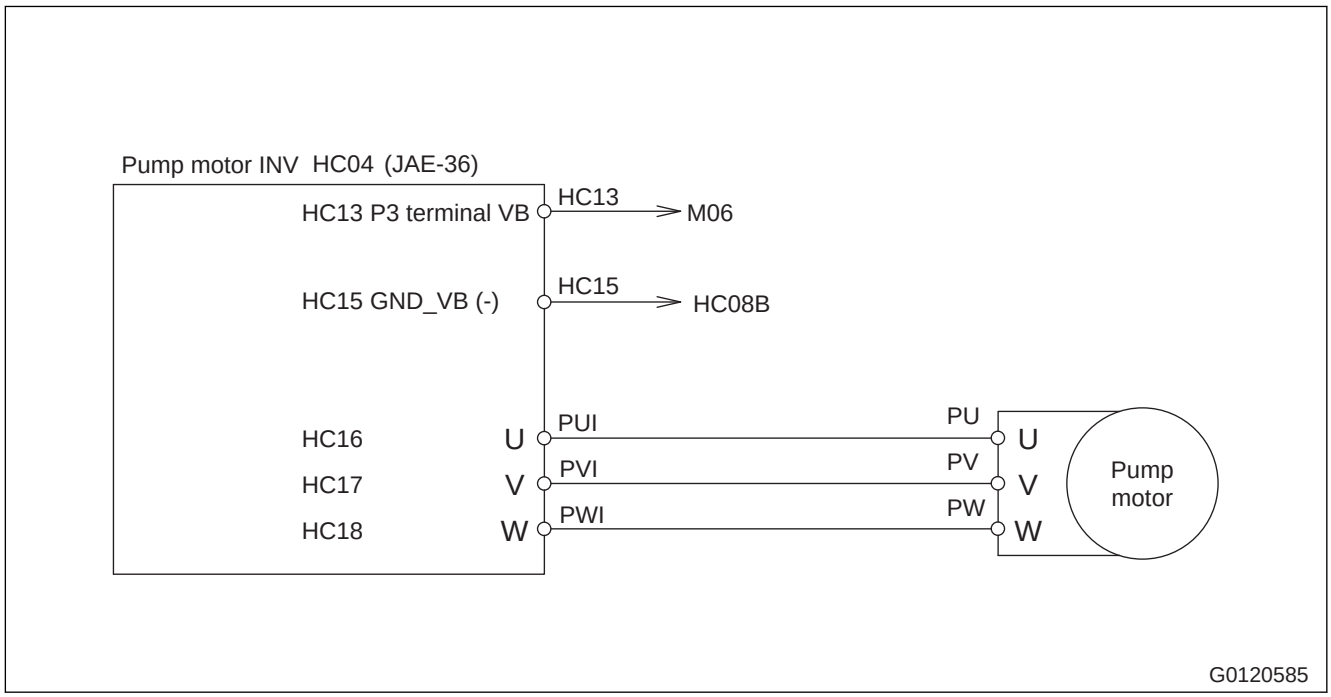


FAILURE CODE [GF24KA]

Action level	Failure code	Failure phenomenon	DISC) W Phase (PMP-INV) (Pump inverter system)
L03	GF24KA		
Detail of failure	The FET in the pump inverter is broken and has an open circuit. For a torque command of 25% or more, a motor current of 20A or less is sensed for 300msec continuously.		
Action of controller	• Stops the output to the pump inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The work equipment and PS (power steering) cannot operate.		
Related information	• This failure code is also sensed when the pump motor cable is disconnected. In such case, failure code [GF2NKB] can be sensed when the vehicle is stopped. • How to reproduce failure code: Operate the fork or other work equipment.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective connection of pump motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Visually examine the motor terminals of the pump inverter for looseness and foreign matter to do the troubleshooting. **REMARK** If looseness or foreign matter is found, remove the foreign matter and tighten it to specified torque.		
2	Open circuit of pump motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect each terminal PWI and PW to do the troubleshooting.		
		Resistance	Between PWI (cable side) and PW (cable side)	Max. 1Ω
3	Defective pump inverter	If no failure is found by the above checks, the pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of pump inverter FET



FAILURE CODE [GF25KQ]

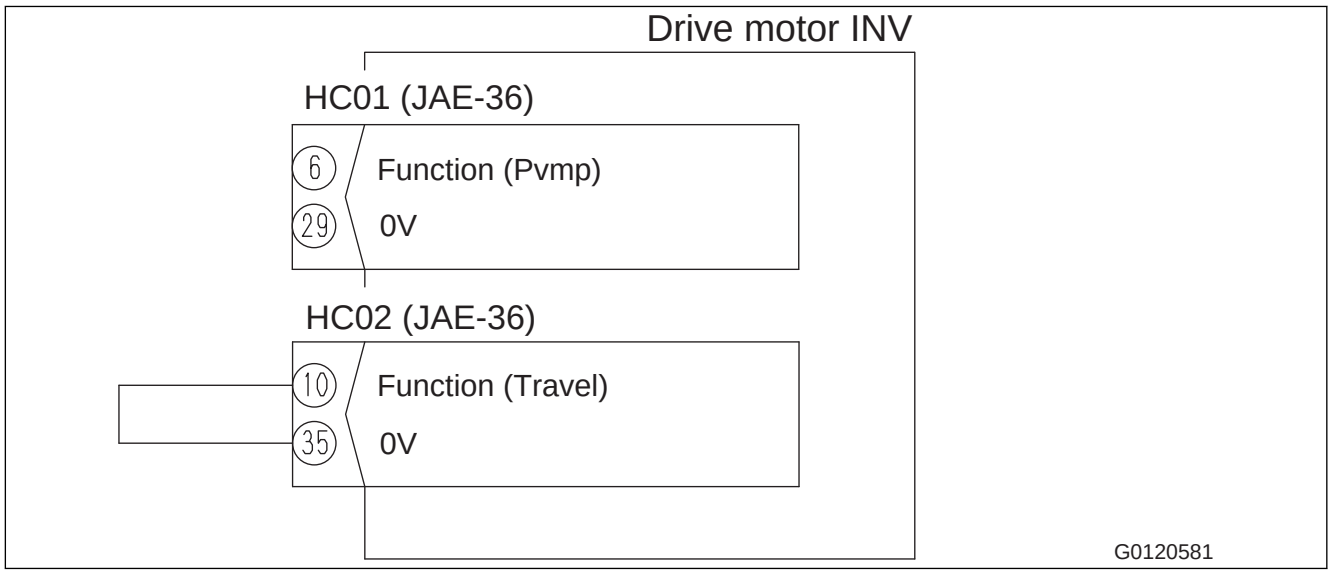
Action level	Failure code	Failure phenomenon	MISMATCH) Capacity (PMP-INV) (Pump inverter system)
L03	GF25KQ		
Detail of failure	Model information from master controller and capacity or function (program) of pump inverter are different.		
Action of controller	• Restricts the output of the pump inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Work equipment operates slowly.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

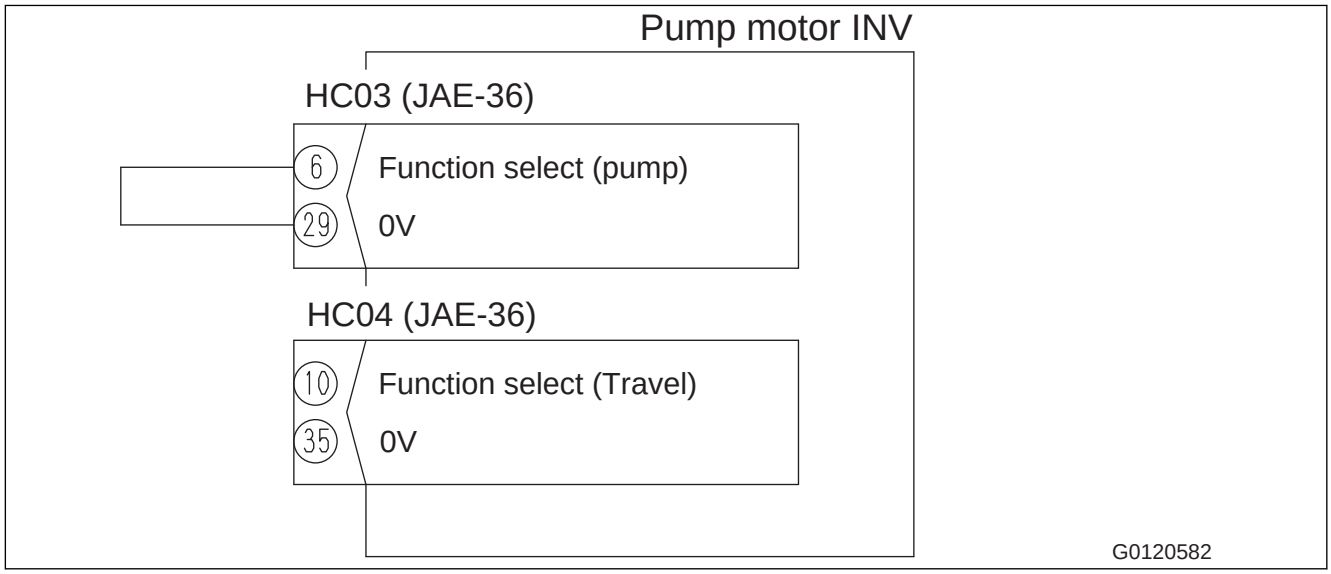
No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Examine the inverter connector H03 for looseness. 4. Disconnect the connector HC01, HC02, HC03 and HC04 to do the troubleshooting.		
		Resistance	Between HC01 (female) (6) and (29)	Min. 1MΩ
			Between HC02 (female) (10) and (35)	Max. 1Ω
			Between HC03 (female) (6) and (29)	Max. 1Ω
			Between HC04 (female) (10) and (35)	Min. 1MΩ
2	Incorrect model of pump inverter	Make sure that the pump inverter for the model is installed. If it is different, replace it with correct unit.		

Inverter type by vehicle model

Machine model	Travel inverter	Pump inverter
FE25-2, FE30-2	AC400L	AC400S

Circuit diagram of inverter setting





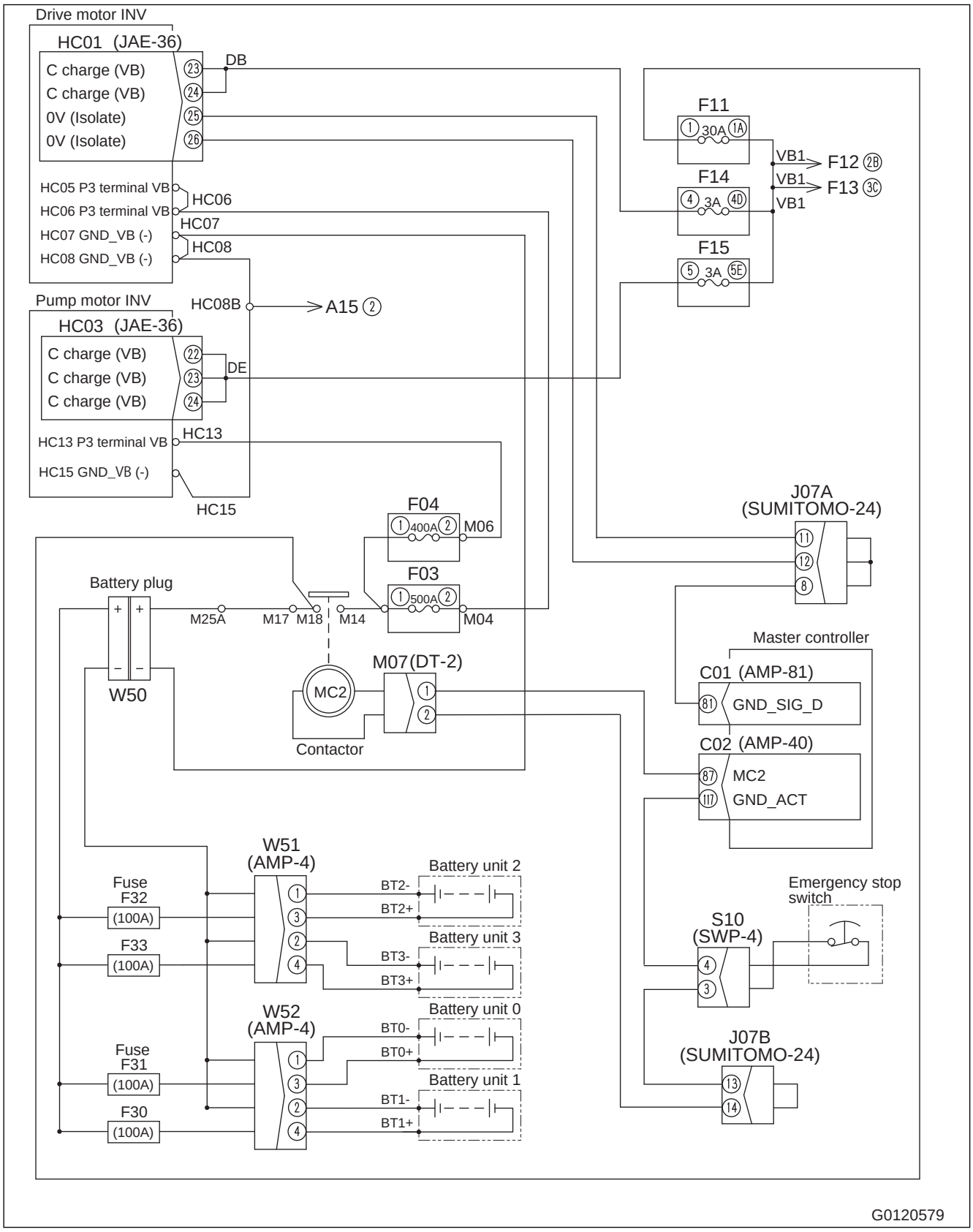
FAILURE CODE [GF26KA]

Action level	Failure code	Failure phenomenon	DISC) MC2 Line (PMP-INV) (Pump inverter system)
L04	GF26KA		
Detail of failure	When the starting switch is turned to the ON position, the secondary voltage of the main contactor (MC2) is sensed to be 90% or less of the battery voltage continuously for 2 seconds.		
Action of controller	• Stops the output to the pump inverter. • Restricts the output of the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	• The work equipment and PS (power steering) cannot operate. • Travel speed decreases.		
Related information	• This failure code can be shown when the emergency stop switch of the vehicle is pushed. In this case, it is not a failure. • When this error is sensed, failure code [GF16KA] can be also sensed at the same time. • When this failure code is not sensed at the same time with failure code [GF16KA], fuse F04 is probably blown out or the cable probably has discontinuity. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective contact of main circuit cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Visually examine the battery cable and terminals HC13 (VB) and HC15 (-) for looseness and foreign matter to do the troubleshooting. **REMARK** If looseness or foreign matter is found, remove the foreign matter and tighten it to specified torque.		
2	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuse F04. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F04	Continuity
3	Open circuit in cable 1	Between contactor and pump inverter terminal 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off. Disconnect the battery plug W50 to do the troubleshooting. (Wait for 10 minutes or more.)		
		Resistance	Between terminal M06 and terminal HC13	Max. 1Ω

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="3">4</td><td rowspan="3">Open circuit in cable 2</td><td colspan="3">Between battery plug W50 (+) terminal and main contactor (MC2) (+) terminal
1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off. Disconnect the battery plug W50 to do the troubleshooting. (Wait for 10 minutes or more.)</td></tr>
<tr><td>Resistance</td><td>Between battery plug W50 (+) terminal and terminal M18</td><td>Max. 1Ω</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td rowspan="4">5</td><td rowspan="4">Defective main contactor (MC2)
(defective contact, defective coil)</td><td colspan="3">Check contact of MC2.
Since the contact area is covered, direct visual check is not possible.
Do these checks.
• Examine for loose terminal parts.
• Make sure if the operation sound comes out when the starting switch is turned to the ON position.</td></tr>
<tr><td colspan="3">Coil resistance check of contactor
1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector M07. Connect the T-adapter to male side to do the troubleshooting.</td></tr>
<tr><td>Resistance</td><td>Between M07 (male) (1) and (2)</td><td>15Ω</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td rowspan="4">6</td><td rowspan="4">Open circuit in wiring harness
(wire breakage or defective contact of connector)</td><td colspan="3">Coil of contactor MC2, coil, control line
1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Make sure that the emergency stop switch is not pushed.
4. Disconnect the connectors M07 and C02. Connect a socket to the female side of C02 and connect a T-adapter to the female side of M07 to do the troubleshooting.</td></tr>
<tr><td rowspan="2">Resistance</td><td>Between M07 (female) (2) and C02 (female) (117)</td><td>Max. 1Ω</td></tr>
<tr><td>Between M07 (female) (1) and C02 (female) (87)</td><td>Max. 1Ω</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>7</td><td>Defective main contactor (MC2)</td><td colspan="3">Replace the main contactor (MC2).</td></tr>
<tr><td>8</td><td>Defective pump inverter</td><td colspan="3">If no failure is found by the above checks, the pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of main contactor 2 of pump inverter



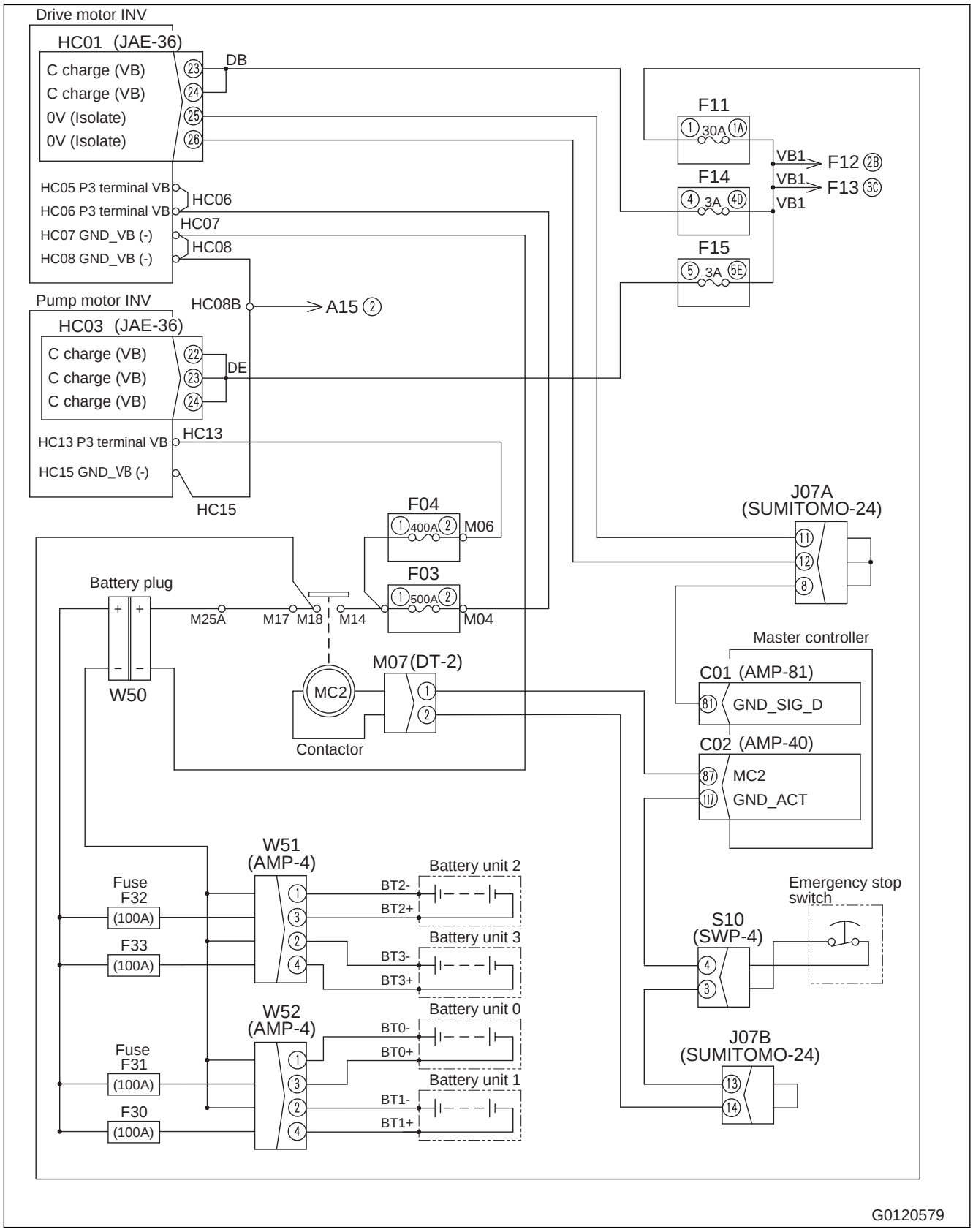
FAILURE CODE [GF26KB]

Action level	Failure code	Failure phenomenon	SHORT) MC2 Line (PMP-INV) (Pump inverter system)
L03	GF26KB		
Detail of failure	When the starting switch is turned to the ON position, the secondary voltage of the main contactor (MC2) is sensed to be 90% or more of the battery voltage continuously for 200ms.		
Action of controller	• Restricts the output of the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Travel speed decreases.		
Related information	• When this error is sensed, failure code [GF16KB] can be also sensed at the same time. • This error cannot be sensed after some time from disconnection of battery plug W50. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective pump inverter	When failure code [GF16KB] is also shown at the same time, do the following troubleshooting. If failure code [GF16KB] is not shown, the pump inverter is defective.		
2	Short circuit of contactor and main circuit cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Check the continuity of the primary and secondary sides of the main contactor (MC2) to do the troubleshooting. **REMARK** When no continuity is found, go to check on cause 2.		
		Resistance	Between battery plug W50 (+) terminal and F04 (1) terminal	Min. 1MΩ
		When continuity is found 1. Disconnect each terminal of fuses M04 and M06. 2. Remove the fuse F11 to do the troubleshooting.		
		Resistance	Between battery plug W50 (+) terminal and F04 (1) terminal	Min. 1MΩ

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="3">3</td><td rowspan="3">Defective main contactor (MC2)
(defective contact, defective coil)</td><td colspan="3">Check contact of MC2.
Since the contact area is covered, direct visual check is not possible.
Do these checks.
• Examine for loose terminal parts.
• Make sure if the operation sound comes out when the starting switch is turned to the ON position.
REMARK
If there is foreign matter, remove it.</td></tr>
<tr><td colspan="3">Coil resistance check of contactor
1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector M07. Connect the T-adapter to male side to do the troubleshooting.</td></tr>
<tr><td>Resistance</td><td>Between M07 (male) (1) and (2)</td><td>Approx. 15Ω</td></tr>
<tr><td>4</td><td>Defective travel inverter</td><td colspan="3">If no failure is found by the above checks, the travel inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of main contactor 2 of pump inverter



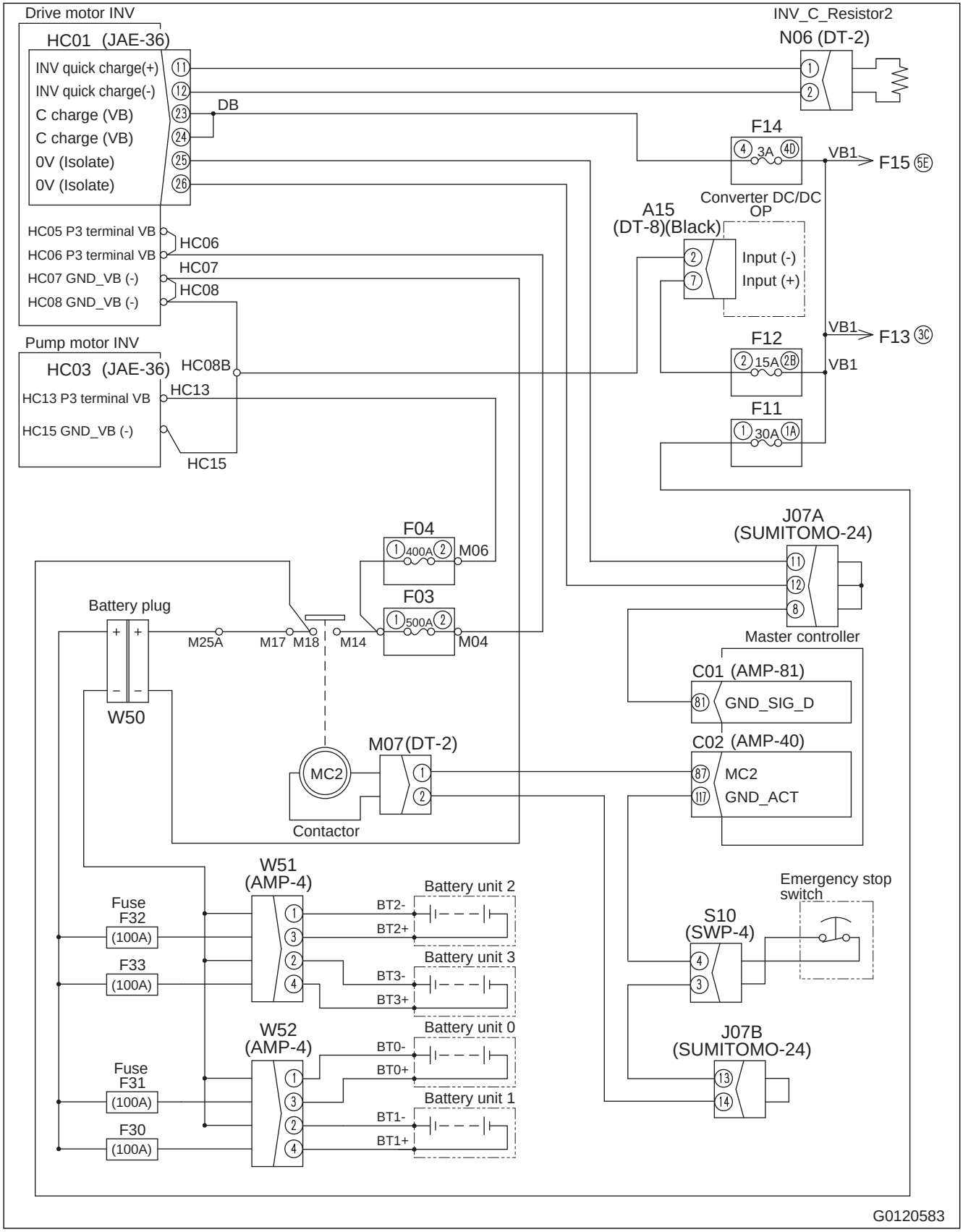
FAILURE CODE [GF27MA]

Action level	Failure code	Failure phenomenon	ABNL) Quick Charge (PMP-INV) (Pump inverter system)
L04	GF27MA		
Detail of failure	The capacitor voltage does not increase to 63V even 2.6 seconds after the starting switch is turned to the ON position.		
Action of controller	• Does not turn on the main contactor (MC2). (Stops the output of enable signal.) • Stops the output to the pump inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time. • If the capacitor voltage increases to 70V approximately 5 minutes after the error is sensed, controller resets the system.		
Problem on lift truck	Travel, work equipment, and PS (power steering) do not operate. After the vehicle goes back to the correct state, it operates normally.		
Related information	• Failure code [GF17MA] is probably sensed at the same time. • If failure codes [GF1LKB] and [GF2LKB] occur after this error occurs, see “FAILURE CODE [GF1LKB]” and “FAILURE CODE [GF2LKB]”. **REMARK** If FET in pump inverter is short-circuited, this error code is sensed. In that case, failure codes [GF1LKB] and [GF2LKB] can be sensed 15 seconds after you turn the starting switch to the ON position. • Reproduction method of failure code: Turn the starting switch to the ON position. Wait for 15 seconds or more.		

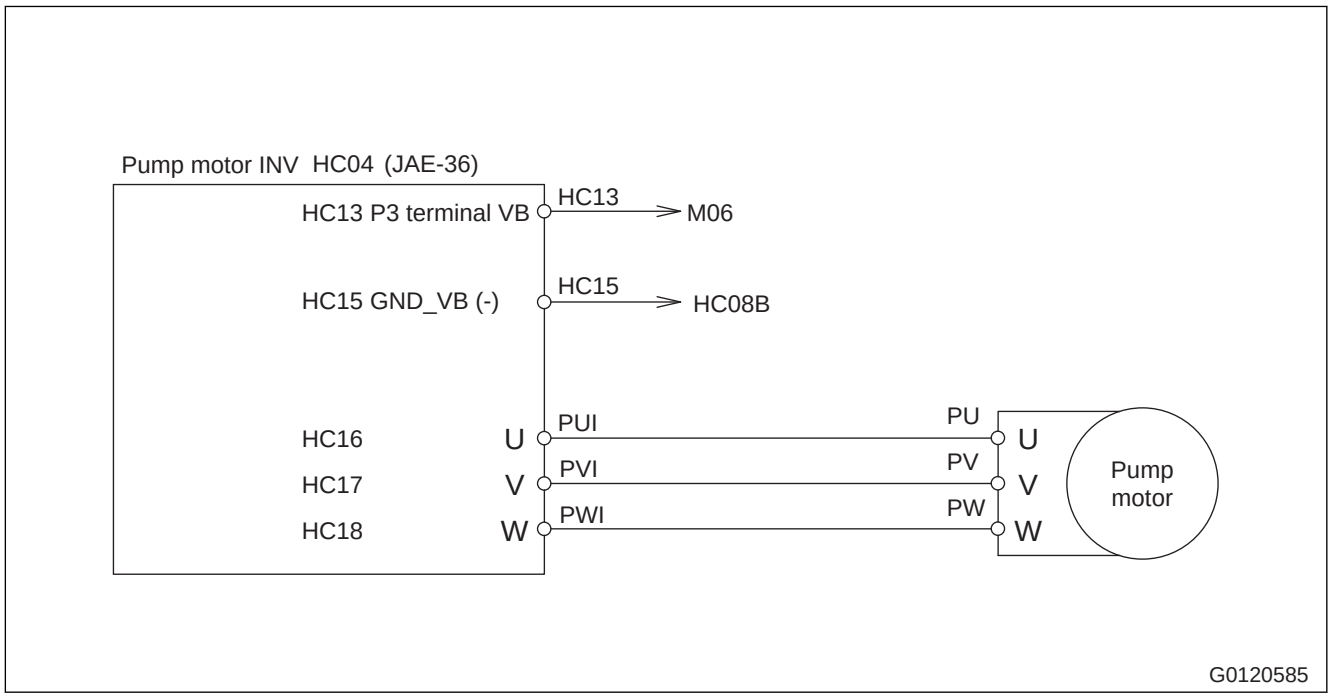
No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective quick charging resistance	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector N06 (quick charging resistance) from the contactor panel to do the troubleshooting.		
		Resistance	Between N06 (male) (1) and (2)	Approx. 39Ω
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC01. 4. Disconnect the connector N06 (quick charging resistance) from the contactor panel to do the troubleshooting.		
		Resistance	Between N06 (female) (1) and HC01 (female) (11)	Max. 1Ω
			Between N06 (female) (2) and HC01 (female) (12)	Max. 1Ω

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="5">3</td><td rowspan="5">Short circuit in wiring harness</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector HC01 to do the troubleshooting.</td></tr>
<tr><td rowspan="4">Resistance</td><td>Between HC01 (female) (11) and (23)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between HC01 (female) (11) and (25)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between HC01 (female) (12) and (24)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between HC01 (female) (12) and (26)</td><td>Min. 1MΩ</td></tr>
<tr><td rowspan="3">4</td><td rowspan="3">Defective fuse</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Remove fuse F14.
4. Examine if the fuse is blown.
5. Examine the continuity of the fuse.
REMARK
If the fuse is blown out, the wiring harness probably has short circuit.</td></tr>
<tr><td>Continuity</td><td>Between two terminals of F14</td><td>Continuity</td></tr>
<tr><td></td></tr>
<tr><td rowspan="8">5</td><td rowspan="8">Defective pump inverter (breakage of FET (short circuit))</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect each terminal PUI, PVI, PWI, HC13 (VB), and HC15 (-) to do the troubleshooting.
REMARK
For each of these tests, reverse the polarity of the tester and do a check again. (Do the check 12 times in total.)</td></tr>
<tr><td rowspan="6">Resistance</td><td>Between PUI (inverter side) and HC13 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between PVI (inverter side) and HC13 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between PWI (inverter side) and HC13 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between PUI (inverter side) and HC15 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between PVI (inverter side) and HC15 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between PWI (inverter side) and HC15 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td></td></tr>
<tr><td>6</td><td>Defective pump inverter</td><td colspan="3">If no failure is found by the above checks, the pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of travel inverter quick charge



Circuit diagram of quick charge of pump inverter

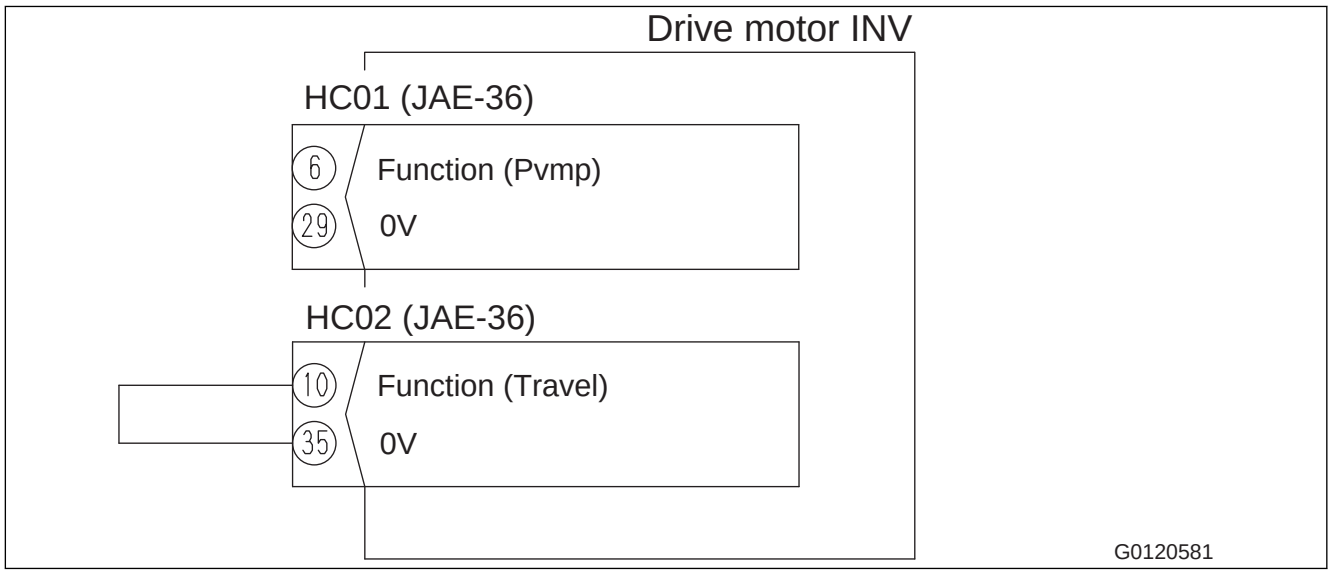


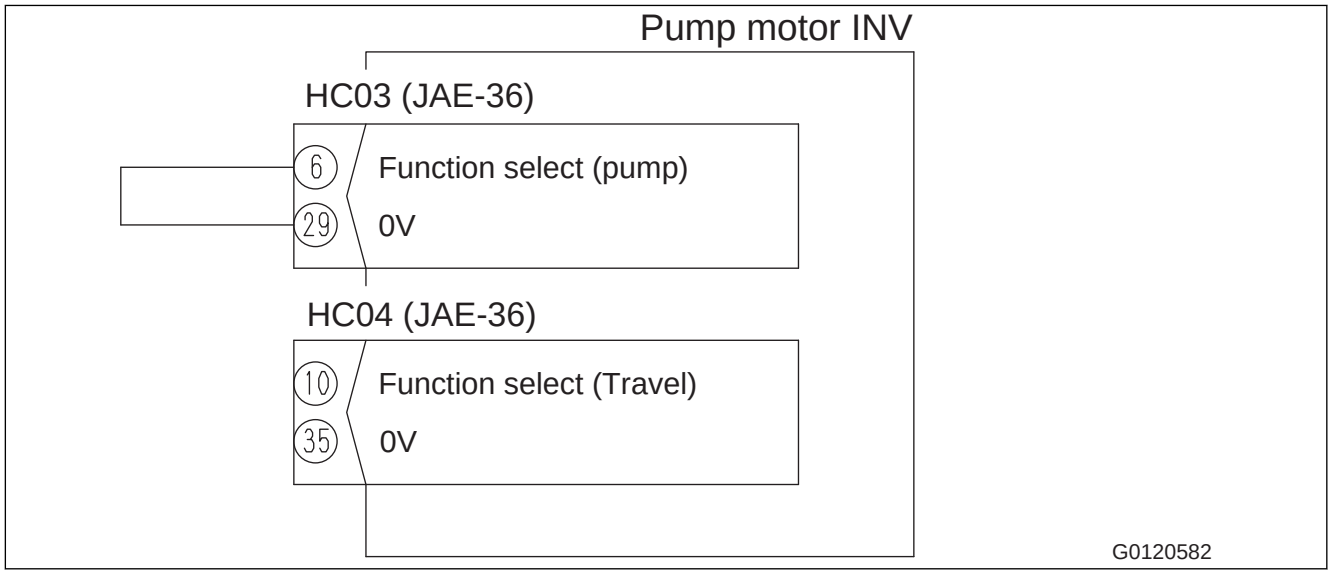
FAILURE CODE [GF28KQ]

Action level	Failure code	Failure phenomenon	MISMATCH) Func.SEL (PMP-INV) (Pump inverter system)
L04	GF28KQ		
Detail of failure	When the battery plug W50 is connected, it is sensed that both of the function identification signals are ON or OFF.		
Action of controller	• Does not turn on the main contactor (MC2). (Stops the output of enable signal.) • Stops the output to the pump inverter. • Judges a pump inverter error because of a mismatch of the function identification signals. • Even after the cause of failure is corrected, the vehicle will not go back to the correct state until the battery plug W50 is connected again.		
Problem on lift truck	Travel, work equipment, and PS (power steering) do not operate.		
Related information	• If failure code [DBNFKR] is shown at the same time, do the troubleshooting for the pump inverter first. • How to reproduce failure code: Connect the battery plug W50. Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in travel inverter wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Examine the inverter connector for looseness. 4. Disconnect the connector HC01 and HC02 to do the troubleshooting.		
		Resistance	Between HC01 (female) (6) and (29)	Min. 1MΩ
			Between HC02 (female) (10) and (35)	Max. 1Ω
		The pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		
2	Open circuit in pump inverter wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Examine the inverter connector for looseness. 4. Disconnect the connector HC03 and HC04 to do the troubleshooting.		
		Resistance	Between HC03 (female) (6) and (29)	Max. 1Ω
			Between HC04 (female) (10) and (35)	Min. 1MΩ
		If no failure is found by the above checks, the travel inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of inverter setting





FAILURE CODE [GF2AMA]

Action level	Failure code	Failure phenomenon	ABNL) Current SNSR (PMP-INV) (Pump inverter system)
L03	GF2AMA		
Detail of failure	The current sensor in the pump inverter does not work normally.		
Action of controller	• Stops the output to the pump inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The work equipment and PS (power steering) do not operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective pump inverter	The pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [GF2BMA]

Action level	Failure code	Failure phenomenon	ABNL) Temp. Sensor (PMP-INV) (Pump inverter system)
L03	GF2BMA		
Detail of failure	A voltage from the pump inverter temperature sensor of less than 0.15V or 4.95V or more is continuously sensed for 200msec.		
Action of controller	• Operates with the pump inverter temperature as 20℃. • When the voltage from the pump motor temperature sensor becomes the correct value (0.15 to 4.95V), the vehicle goes back to the correct state directly.		
Problem on lift truck	• Normal operation is possible. • Operates with the pump inverter temperature as normal temperature. • The cooling fan and charge cooling fan operates constantly.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective pump inverter	The pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [GF2C00]

Action level	Failure code	Failure phenomenon	HIGH) Temp. of PMP-INV (Pump inverter system)
-	GF2C00		
Detail of failure	The temperature of the pump inverter is 97℃ or more.		
Action of controller	Restricts the output of the pump inverter. • Starts the current limit at 94℃ or more. • Senses alarm conditions at 97℃ or more. • Cancels the alarm at 94℃ or less.		
Problem on lift truck	The work equipment operates slowly.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Overload on pump inverter	If the forklift truck is used for a long time or under overload, stop the forklift truck and cool the pump inverter.
2	Defective cooling fan 1	Examine the cooling fan 1 (connector M09).
3	Defective temperature sensor of pump inverter	If the failure occurs frequently in usual operation, the pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [GF2CNS]

Action level	Failure code	Failure phenomenon	OVER) Temp. of PMP-INV (Pump inverter system)
L02	GF2CNS		
Detail of failure	The temperature of the pump inverter is 109℃ or more.		
Action of controller	• Stops the output to the pump inverter. • When the temperature of the pump inverter becomes the correct value (108℃ or less), the vehicle goes back to correct state directly.		
Problem on lift truck	Work equipment and PS (power steering) do not operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Overload on pump inverter	If the forklift truck is used for a long time or under overload, stop the forklift truck and cool the pump inverter.
2	Defective cooling fan 1	Examine the cooling fan 1 (connector M09).
3	Defective temperature sensor of pump inverter	If the failure occurs frequently in usual operation, the pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [GF2EKT]

Action level	Failure code	Failure phenomenon	ABNL) EEPROM (PUMP INV) (Pump inverter system)
L01	GF2EKT		
Detail of failure	A memory read error occurs in the pump inverter.		
Action of controller	• Operates with default values for all setting values of the pump inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	• The vehicle operates with default setting. • The knob will be out of calibration.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

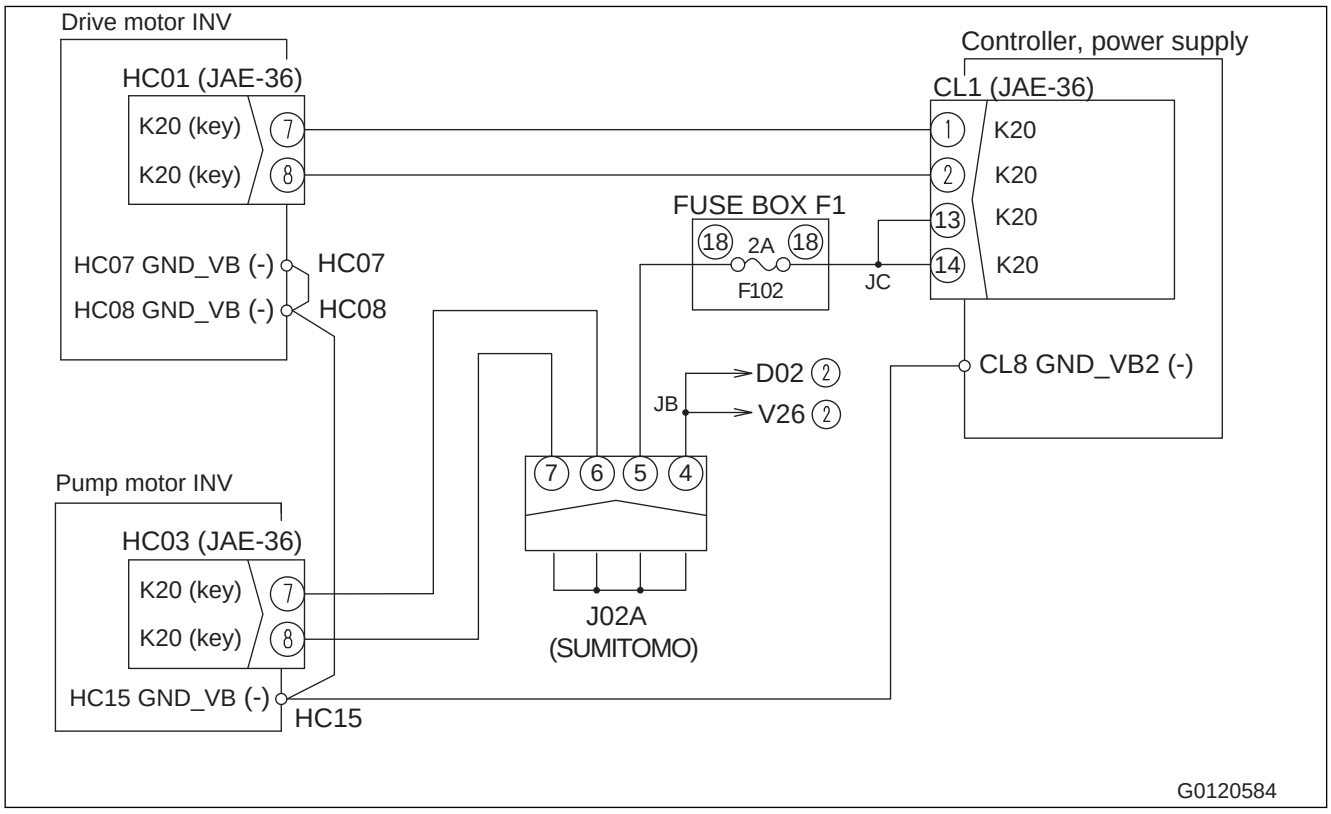
No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective pump inverter	The pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [GF2FMA]

Action level	Failure code	Failure phenomenon	ABNL) KEY-POWER (PMP-INV) (Pump inverter system)
L04	GF2FMA		
Detail of failure	The key signal state = ON (KEY_ACC_1 or KEY_ACC_2 is ON) and key power input (pump) = OFF is sensed for 1 second continuously.		
Action of controller	• Turns off the main contactor (MC2). • Stops the output to the pump inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Travel, work equipment, and PS (power steering) cannot be operated.		
Related information	• This is not sensed in 4 seconds after the starting switch is turned to the ON position. • This failure code is not sensed while ABNL) CAN COMM. (for PMP) [DBNFKR] is shown.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuse F102. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F102	Continuity
2	Open circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC03 and CL1 to do the troubleshooting.		
		Resistance	Between HC03 (female) (7) and CL1 (female) (13)	Max. 1Ω
			Between HC03 (female) (8) and CL1 (female) (14)	Max. 1Ω
3	Defective pump inverter	If no failure is found by the above checks, the pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of pump inverter key power supply

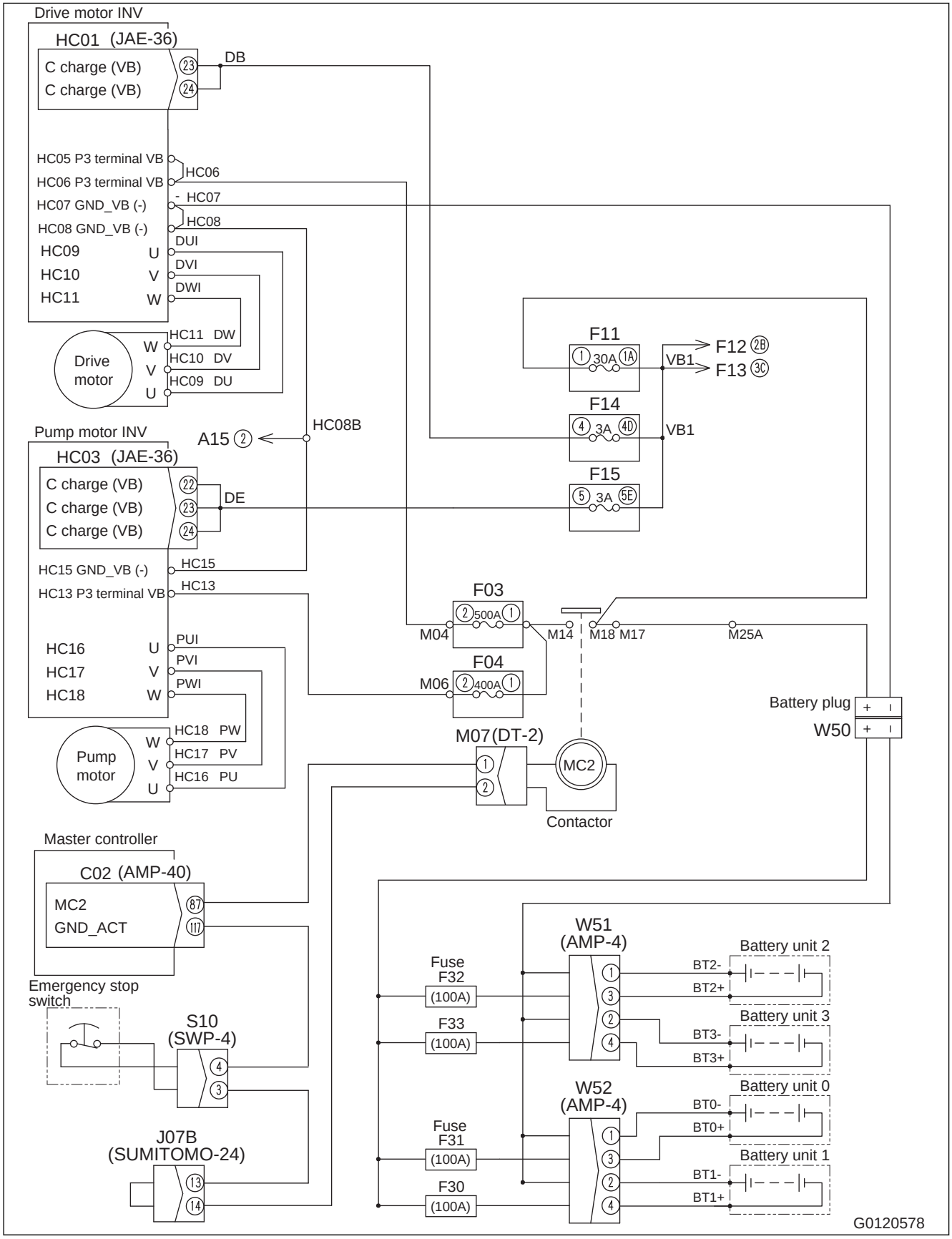


FAILURE CODE [GF2JKA]

Action level	Failure code	Failure phenomenon	DISC) Output Power (PMP-INV) (Pump inverter system)
L04	GF2JKA		
Detail of failure	A C charge voltage of 33.75V or less is continuously sensed for 30ms.		
Action of controller	• Stops the output to the pump inverter. • Restricts the output of the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	• The work equipment and PS (power steering) do not operate. • Travel speed decreases.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuses F11 and F15. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F11	Continuity
			Between two terminals of F15	Continuity
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Examine the pump inverter connector for looseness. 4. Disconnect the connector HC03 to do the troubleshooting. **REMARK** When no continuity is found, remove fuses F11 and F15, and identify open circuit part.		
		Resistance	Between battery plug W50 (harness side) (+) to HC03 (female), (22), (23), or (24)	Max. 1Ω
3	Defective pump inverter	If no failure is found by the above checks, the pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of pump inverter load power supply line

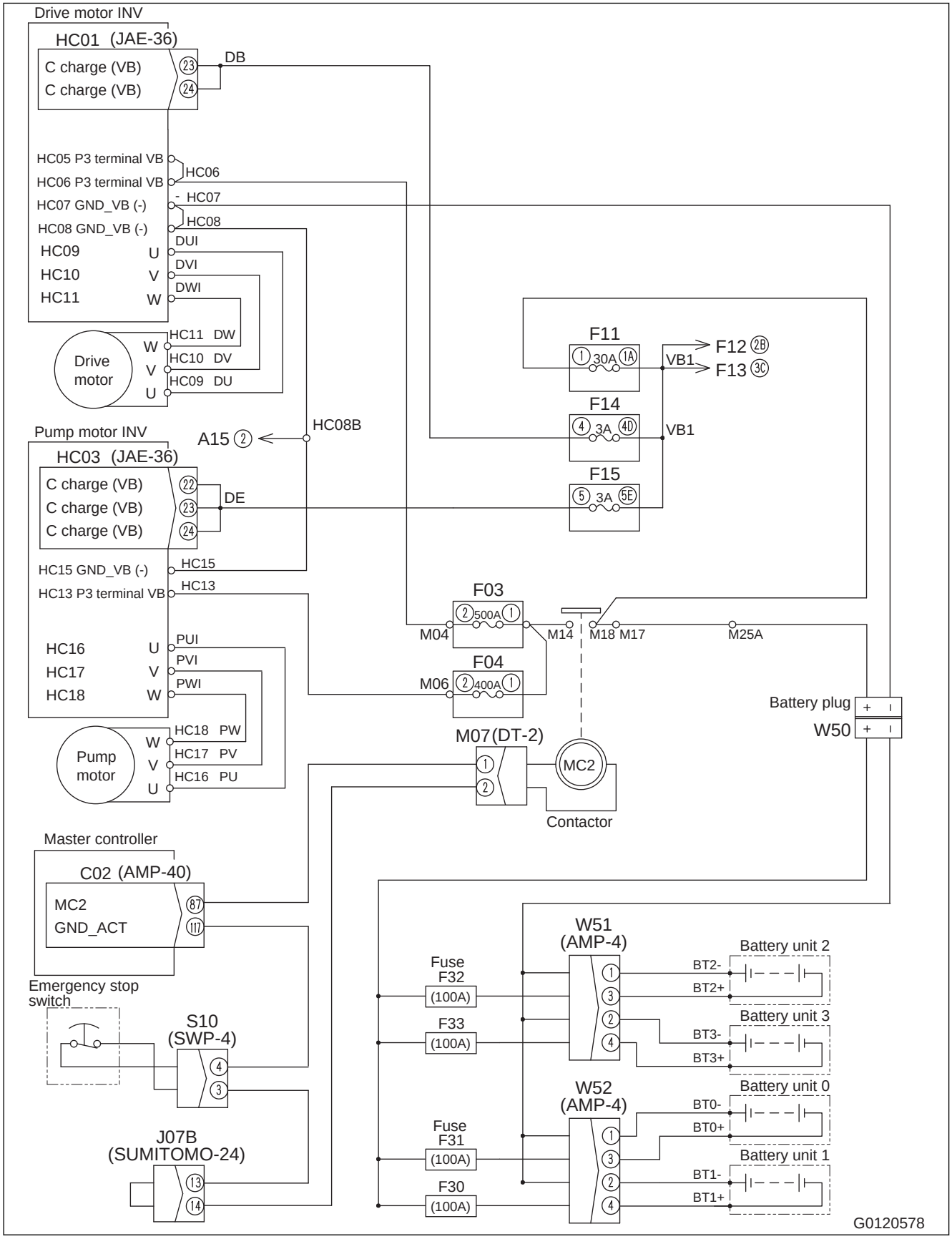


FAILURE CODE [GF2LKB]

Action level	Failure code	Failure phenomenon	SHORT) FET (PMP-INV) (Pump inverter system)
L04	GF2LKB		
Detail of failure	FET in the pump inverter has damage and has a short circuit. The capacitor voltage of 3V is sensed for 15 seconds continuously.		
Action of controller	• Does not turn on the main contactor (MC2). • Stops the output to the pump inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Travel, work equipment, and PS (power steering) do not operate.		
Related information	• Failure codes [GF17MA] and [GF27MA] are sensed immediately after the starting switch is turned to the ON position, and then this failure code is sensed. • If FET in the pump inverter is short-circuited, this failure code is shown. When it is shown alone, fuses F03 or F04 can be blown out. • Reproduction method of failure code: Turn the starting switch to the ON position. Wait for 15 seconds or more.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective INV P line	If failure codes [GF26KA] and [GF27MA] are also shown, do the troubleshooting for them first.		
2	Short circuit of battery cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off. Disconnect the battery plug W50 to do the troubleshooting. (Wait for 10 minutes or more.) **REMARK** When no failure is found, go to check on cause 3.		
		Resistance	Between M04 terminal and battery plug W50 (-) (inverter side)	Min. 1MΩ
			Between M06 terminal and battery plug W50 (-) (inverter side)	Min. 1MΩ
		When continuity is found 1. Disconnect the terminals HC13 (VB) and HC06 (VB) to do the troubleshooting.		
		Resistance	Between HC13 (VB) terminal and battery plug W50 (-) (inverter side)	Min. 1MΩ
3	Defective pump inverter (breakage of FET (short circuit))	Do check on cause 5 in troubleshooting for failure code [GF27MA].		
4	Defective pump inverter	If no failure is found by the above checks, the pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of pump inverter FET



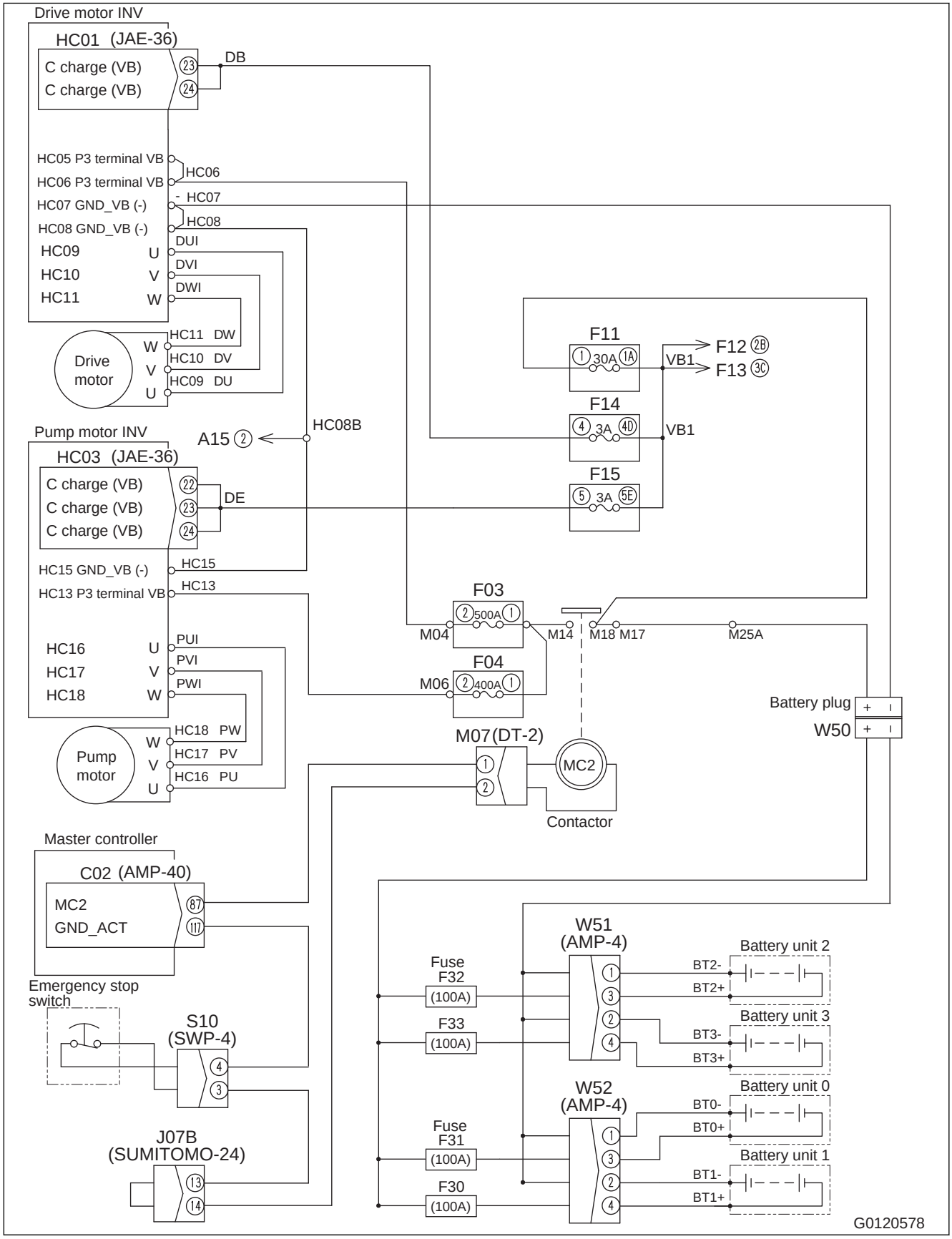
FAILURE CODE [GF2MKB]

Action level	Failure code	Failure phenomenon	SHORT) Upper FET(PMP-INV) (Pump inverter system)
L04	GF2MKB		
Detail of failure	FET in pump inverter has damage and has a short circuit. The pump motor terminal voltage which is 80% or above of P3 (inverter main circuit capacitor) voltage is sensed for 50 milliseconds continuously.		
Action of controller	• Does not turn on the main contactor (MC2). • Stops the output to the pump inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Travel, work equipment, and PS (power steering) do not operate.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective connection of pump motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Visually examine pump motor cable terminals PUI, PVI, PWI, and HC13 (VB) for foreign matter. 4. Disconnect each terminal PUI, PVI, PWI, and HC13 (VB) to do the troubleshooting.		
		Resistance	Between PUI (cable side) and HC13 (cable side)	Min. 1MΩ
			Between PVI (cable side) and HC13 (cable side)	Min. 1MΩ
			Between PWI (cable side) and HC13 (cable side)	Min. 1MΩ
2	Defective pump inverter (breakage of FET (short circuit))	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect each terminal PUI, PVI, PWI, HC13 (VB), and HC15 (-) to do the troubleshooting. **REMARK** For each of these tests, reverse the polarity of the tester and do a check again. (Do the check 12 times in total.)		
		Resistance	Between PUI (inverter side) and HC13 (VB) (inverter side)	Min. 1kΩ
			Between PVI (inverter side) and HC13 (VB) (inverter side)	Min. 1kΩ
			Between PWI (inverter side) and HC13 (VB) (inverter side)	Min. 1kΩ
			Between PUI (inverter side) and HC15 (-) (inverter side)	Min. 1kΩ
			Between PVI (inverter side) and HC15 (-) (inverter side)	Min. 1kΩ
			Between PWI (inverter side) and HC15 (-) (inverter side)	Min. 1kΩ

No.	Cause	Procedure, measurement location, criteria and remarks
3	Defective pump inverter (breakage of FET (short circuit))	If no failure is found by the above checks, the pump inverter is defective. (Trouble-shooting cannot be done because this is an internal failure.)

Circuit diagram of pump inverter FET



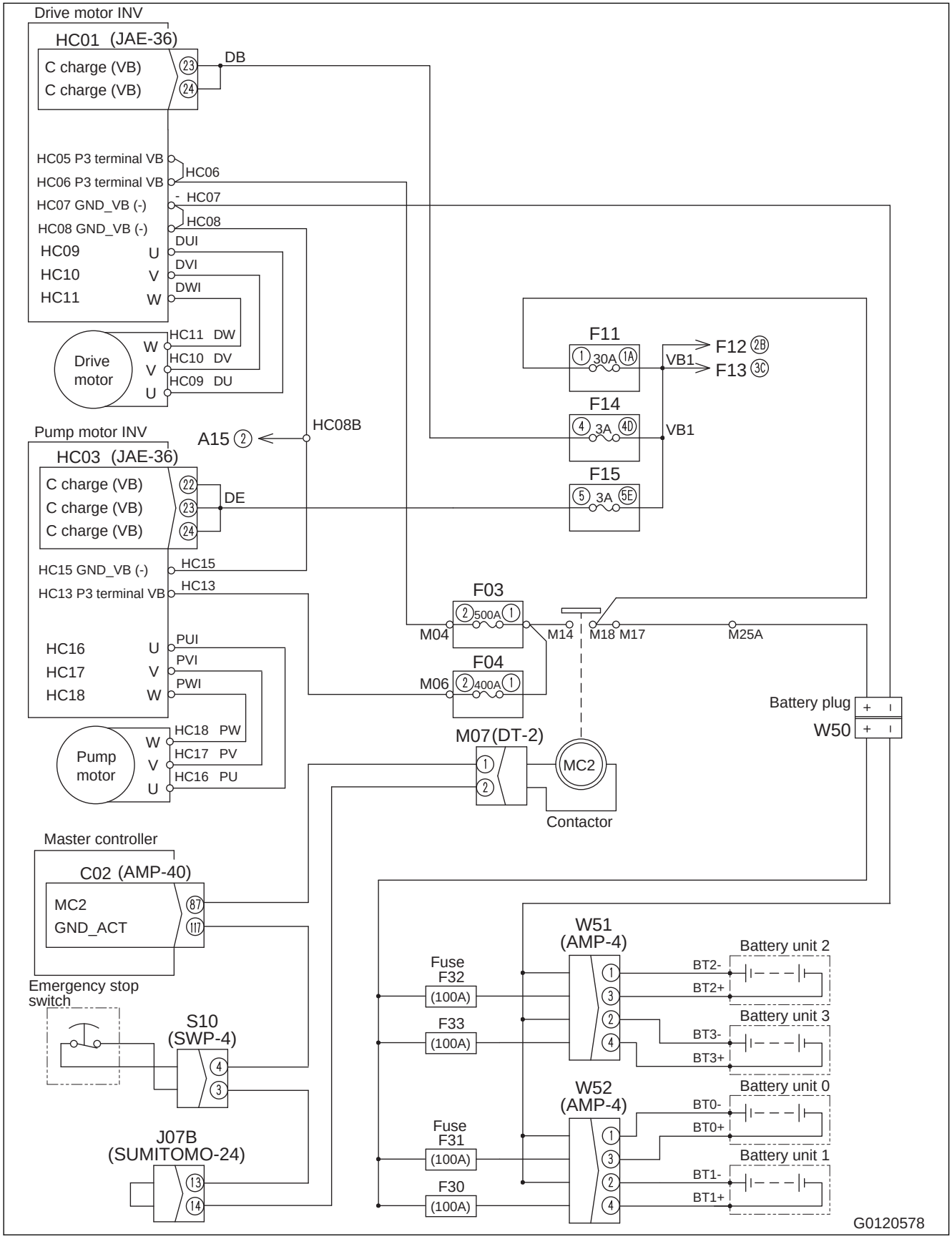
FAILURE CODE [GF2NKB]

Action level	Failure code	Failure phenomenon	SHORT) Lower FET(PMP-INV) (Pump inverter system)
L04	GF2NKB		
Detail of failure	FET in pump inverter has damage and has a short circuit. The pump motor terminal voltage which is 12% or less of P3 (inverter main circuit capacitor) voltage is sensed for 50 milliseconds continuously.		
Action of controller	• Does not turn on the main contactor (MC2). • Stops the output to the pump inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	Travel, work equipment, and PS (power steering) cannot be operated.		
Related information	• This failure code can be sensed when pump motor cable has come off as well. • When failure codes [GF22KA], [GF23KA], and [GF24KA] are shown after you operate the work equipment, do the troubleshooting for the failure code in the sequence of appearance. • Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit of pump motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Visually examine pump motor cable terminals PUI, PVI, PWI, and HC13 (VB) for foreign matter. 4. Disconnect each terminal PUI, PVI, PWI, and HC13 (VB) to do the troubleshooting.		
		Resistance	Between PUI (cable side) and HC13 (cable side)	Min. 1MΩ
			Between PVI (cable side) and HC13 (cable side)	Min. 1MΩ
			Between PWI (cable side) and HC13 (cable side)	Min. 1MΩ

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="8">2</td><td rowspan="8">Defective pump inverter (breakage of FET (short circuit))</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect each terminal PUI, PVI, PWI, HC13 (VB), and HC15 (-) to do the troubleshooting.
REMARK
For each of the tests that follow, reverse the polarity of the tester and do a check again. (Do the check 12 times in total.)</td></tr>
<tr><td rowspan="6">Resistance</td><td>Between PUI (inverter side) and HC13 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between PVI (inverter side) and HC13 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between PWI (inverter side) and HC13 (VB) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between PUI (inverter side) and HC15 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between PVI (inverter side) and HC15 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>Between PWI (inverter side) and HC15 (-) (inverter side)</td><td>Min. 1kΩ</td></tr>
<tr><td>3</td><td>Defective pump inverter</td><td colspan="3">If no failure is found by the above checks, the pump inverter is defective. (Trouble-shooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of pump inverter FET

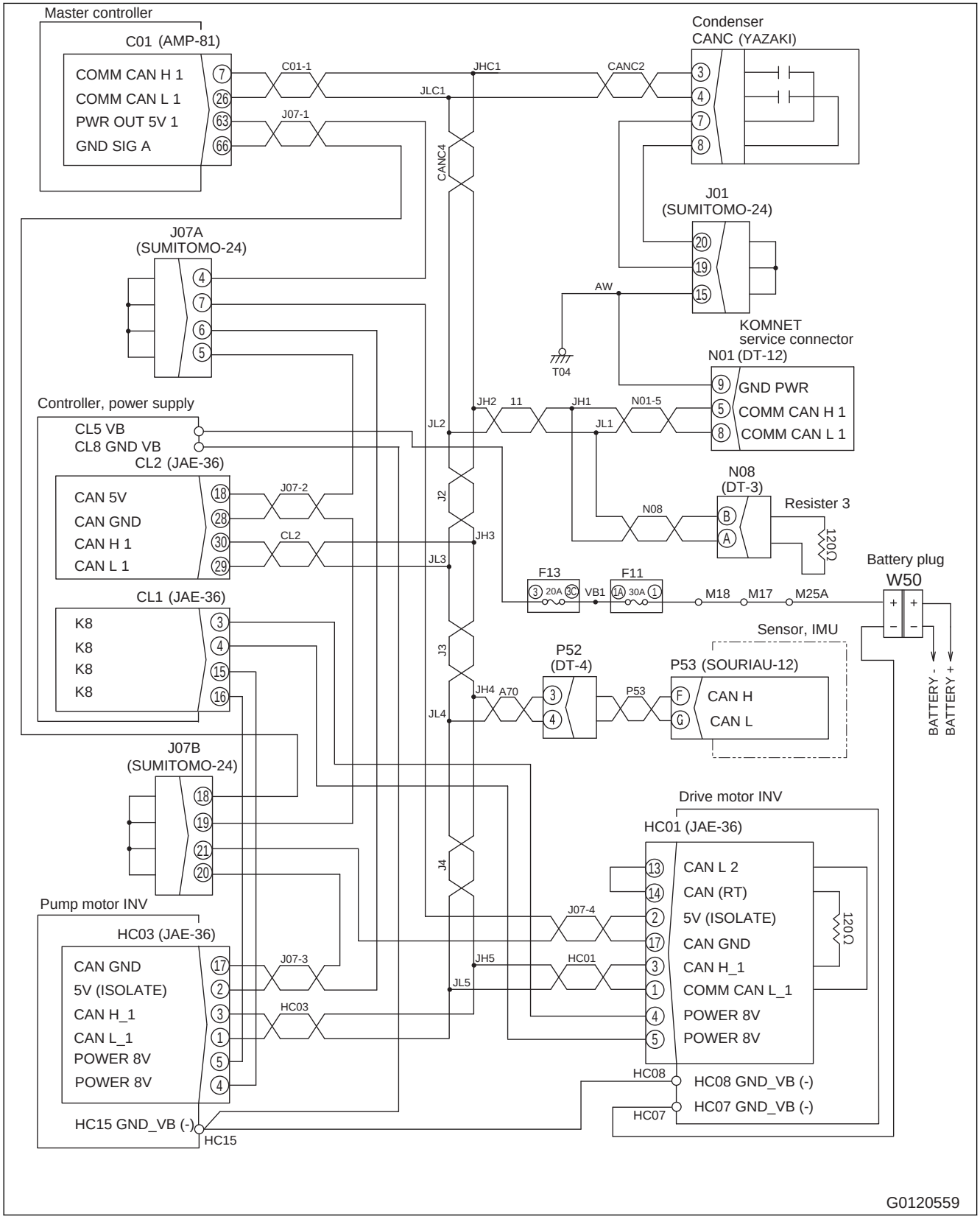


FAILURE CODE [GF2QKR]

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (PMP-INV) (Pump inverter system)
L03	GF2QKR		
Detail of failure	The pump inverter cannot receive regular communication data from the master controller by CAN communication 10 times in a row even 3 seconds after the starting switch is turned to the ON position.		
Action of controller	• Does not accept load handling commands. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	• The work equipment cannot be operated. • The PS (power steering) can operate.		
Related information	• If there is an open circuit in the CAN wiring harness, the inverter error is not shown on the monitor panel but failure code [DBNFKR] is shown. • This failure code is received by CAN communication. If this failure code is shown, there is no open or short circuit in the CAN communication line. • How to reproduce failure code: Turn the starting switch to the ON position. Wait for 3 seconds.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective CAN communication system	Do the checks on causes 1 and 2 in the troubleshooting for failure code [GF1QKR].		
2	Defective master controller or defective power supply controller (Not sufficient K8 line voltage)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC03. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between HC03 (female) (2) and (17)	Approximately 5V
			Between HC03 (female) (4) and HC15 terminal	Approx. 8V
			Between HC03 (female) (5) and HC15 terminal	Approx. 8V
3	Defective travel inverter	When failure code [GF1QKR] is also shown 1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC01. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		As the connector HC01 is disconnected, ignore failure code other than [GF2QKR]. If failure code [GF2QKR] is not shown, the travel inverter is defective.		
4	Defective pump inverter	If no failure is found by the above checks, the pump inverter is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of CAN communication

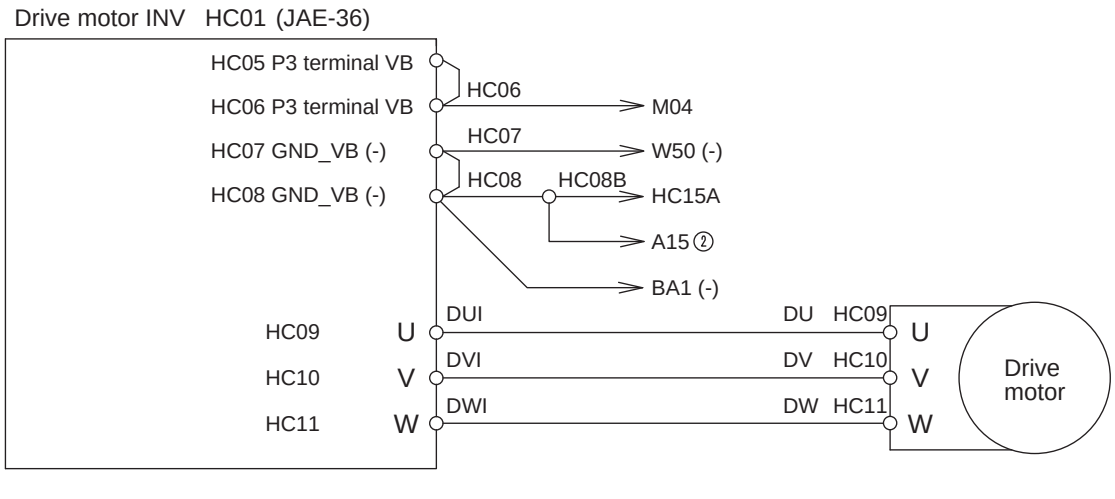


FAILURE CODE [GF30KB]

Action level	Failure code	Failure phenomenon	Short Circuit of Travel Motor (Travel inverter system)
L04	GF30KB		
Detail of failure	When the starting switch is turned to the ON position, an abnormal current flows through the travel motor circuit. (100A or more for 3 times in a row)		
Action of controller	• Stops the output to the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The vehicle does not move.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit of travel motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect each terminal DUI, DVI, DWI, DU, DV, and DW to do troubleshooting. **REMARK** Take out the travel motor cable. Examine if wire inside are exposed because of rubbing of the coating or if the coating has damage.		
2	Defective contact of travel motor cable terminal	Visually examine the U, V, and W terminals on the travel inverter side and the travel motor side for sticking of foreign material. **REMARK** If foreign material is attached, remove it.		
3	Defective travel inverter (short circuit of motor terminal)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect each terminal DUI, DVI, and DWI to do the troubleshooting. **REMARK** If continuity is found, replace the travel inverter.		
		Resistance	Between DUI (inverter side) and DVI (inverter side)	Min. 1MΩ
			Between DVI (inverter side) and DWI (inverter side)	Min. 1MΩ
			Between DWI (inverter side) and DUI (inverter side)	Min. 1MΩ
4	Defective travel motor	Replace the travel motor.		

Circuit diagram of travel motor



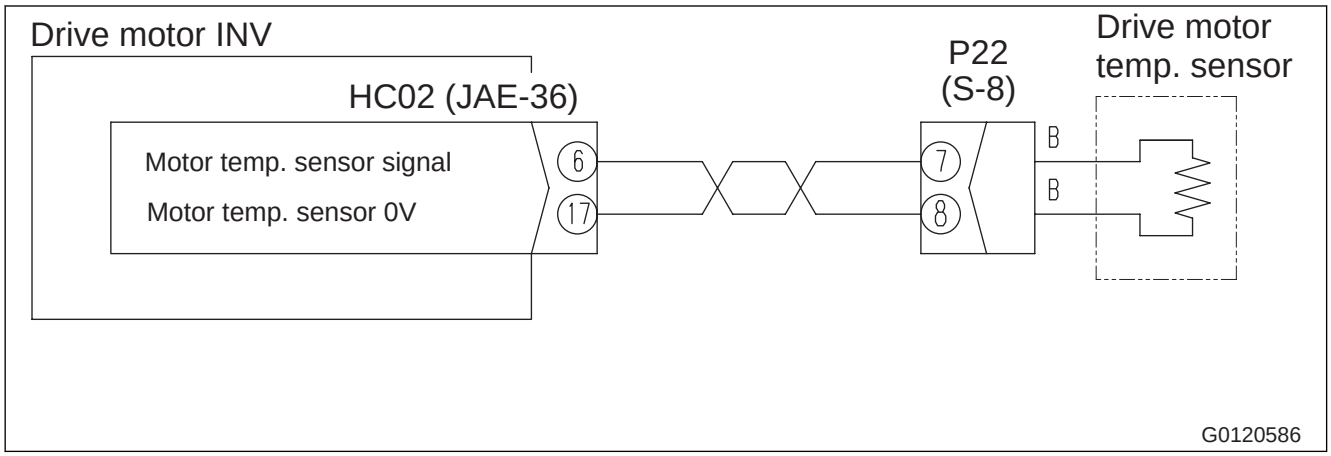
FAILURE CODE [GF31MA]

Action level	Failure code	Failure phenomenon	ABNL) Temp. SNSR (TRV-MOT) (Travel inverter system)
L03	GF31MA		
Detail of failure	A voltage from the travel motor temperature sensor of less than 0.15V or 4.95V or more is continuously sensed for 200msec.		
Action of controller	• Operates with the travel motor temperature as 20℃. • When the voltage from the travel motor temperature sensor becomes the correct value (0.15 to 4.95V), the vehicle goes back to the correct state directly.		
Problem on lift truck	Operates with the travel motor temperature as normal temperature.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective contact of travel motor temperature sensor connector	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Examine the connectors of the travel inverter and the travel motor for looseness to do the troubleshooting. **REMARK** If loose, insert again correctly.		
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors HC02 and P22. Connect the T-adapter to the female side of P22 to do the troubleshooting.		
		Resistance	Between HC02 (female) (6) and P22 (female) (7)	Max. 1Ω
			Between HC02 (female) (17) and P22 (female) (8)	Max. 1Ω
3	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors HC02 and P22. Connect the T-adapter to the female side of P22 to do the troubleshooting.		
		Resistance	Between P22 (female) (7) and (8)	Min. 1MΩ

<table>
<tr><th>No.</th><th>Cause</th><th colspan="4">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="6">4</td><td rowspan="6">Defective temperature sensor of travel motor</td><td colspan="4">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector P22. Connect the T-adapter to male side to do the troubleshooting.
REMARK
If an abnormality is found, replace the travel motor.</td></tr>
<tr><td rowspan="4">Resistance</td><td rowspan="4">Between P22 (male) (7) and (8)</td><td>25℃</td><td>Approx. 10.7kΩ</td></tr>
<tr><td>50℃</td><td>Approx. 4.4kΩ</td></tr>
<tr><td>100℃</td><td>Approx. 1.0kΩ</td></tr>
<tr><td>150℃</td><td>Approx. 320Ω</td></tr>
<tr><td>5</td><td>Defective travel inverter</td><td colspan="4">If no failure is found by the above checks, the travel inverter is defective. (Trouble-shooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of travel motor temperature sensor



FAILURE CODE [GF3200]

Action level	Failure code	Failure phenomenon	HIGH) Temp. of TRV-INV (Travel inverter system)
-	GF3200		
Detail of failure	The travel motor temperature is 145℃ or more.		
Action of controller	• Restricts the output of the travel inverter. Starts the current limit at 135℃ or more. Senses alarm conditions at 145℃ or more. • Cancels the alarm at 142℃ or less.		
Problem on lift truck	Travel speed decreases.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Overload of travel motor	If the vehicle is used for a long time or under overload, stop the vehicle and wait until the travel motor becomes cool.
2	Defective temperature sensor of travel motor	If this occurs frequently in usual operation, do the troubleshooting for [GF31MA].

FAILURE CODE [GF32NS]

Action level	Failure code	Failure phenomenon	OVER) Temp. of TRV-INV (Travel inverter system)
L02	GF32NS		
Detail of failure	The travel motor temperature is 155℃ or more.		
Action of controller	• Stops the output to the travel inverter. • When the temperature becomes the correct value (154℃ or less), the vehicle goes back to the correct state directly.		
Problem on lift truck	The vehicle does not move.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Overload of travel motor	If the vehicle is used for a long time or under overload, stop the vehicle and wait until the travel motor becomes cool.
2	Defective temperature sensor of travel motor	If this occurs frequently in usual operation, do the troubleshooting for [GF31MA].

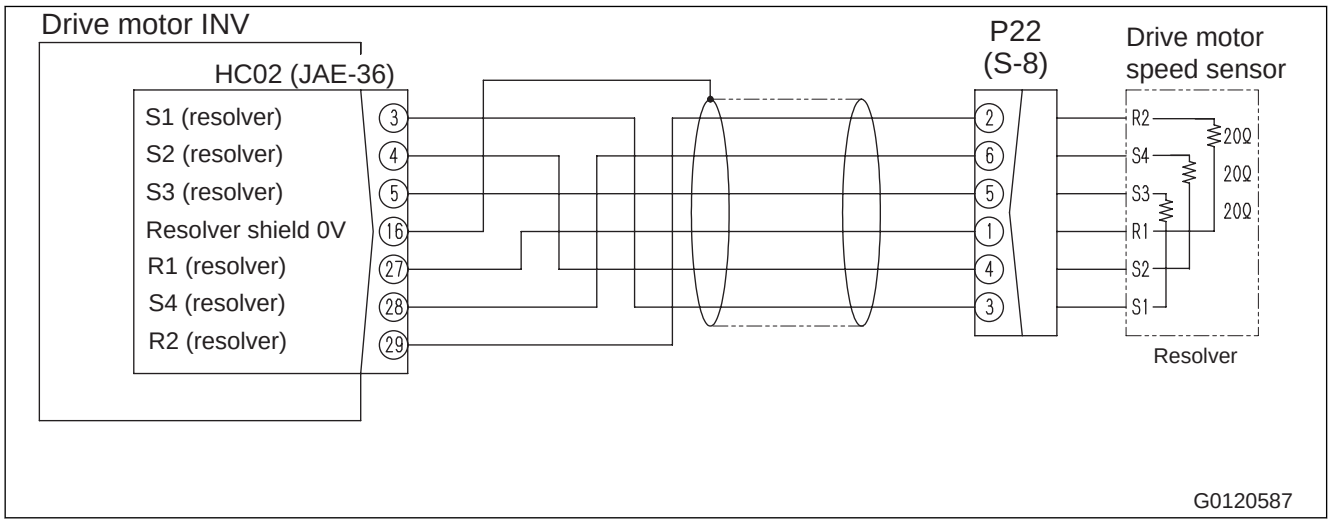
FAILURE CODE [GF33MA]

Action level	Failure code	Failure phenomenon	ABNL) Rotation SNSR(TRV-MOT) (Travel inverter system)
L04	GF33MA		
Detail of failure	• The speed variation sensed by the travel motor speed sensor is abnormal. • An open circuit in the travel motor speed sensor is sensed.		
Action of controller	• Stops the output of the travel inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The vehicle does not move.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness of travel motor speed sensor (resolver)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors HC02 and P22. Connect the T-adapter to the female side of P22 to do the troubleshooting.		
		Resistance	Between HC02 (female) (3) and P22 (female) (3)	Max. 1Ω
			Between HC02 (female) (4) and P22 (female) (4)	Max. 1Ω
			Between HC02 (female) (5) and P22 (female) (5)	Max. 1Ω
			Between HC02 (female) (28) and P22 (female) (6)	Max. 1Ω
			Between HC02 (female) (27) and P22 (female) (1)	Max. 1Ω
			Between HC02 (female) (29) and P22 (female) (2)	Max. 1Ω
2	Short circuit in travel motor speed sensor (resolver)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC02 and P22 to do the troubleshooting.		
		Resistance	Between HC02 (female) (3) and (16)	Min. 1MΩ
			Between HC02 (female) (4) and (16)	Min. 1MΩ
			Between HC02 (female) (5) and (16)	Min. 1MΩ
			Between HC02 (female) (27) and (16)	Min. 1MΩ
			Between HC02 (female) (28) and (16)	Min. 1MΩ
			Between HC02 (female) (29) and (16)	Min. 1MΩ

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="5">3</td><td rowspan="5">Defective travel motor speed sensor (resolver)</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector P22. Connect the T-adapter to male side to do the troubleshooting.
REMARK
If an abnormality is found, replace the travel motor.</td></tr>
<tr><td rowspan="3">Resistance</td><td>Between P22 (male) (3) and (5)</td><td>Approx. 20Ω</td></tr>
<tr><td>Between P22 (male) (4) and (6)</td><td>Approx. 20Ω</td></tr>
<tr><td>Between P22 (male) (1) and (2)</td><td>Approx. 20Ω</td></tr>
<tr><td>4</td><td>Defective travel inverter</td><td colspan="3">If no failure is found by the above checks, the travel inverter is defective. (Trouble-shooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of travel motor speed sensor

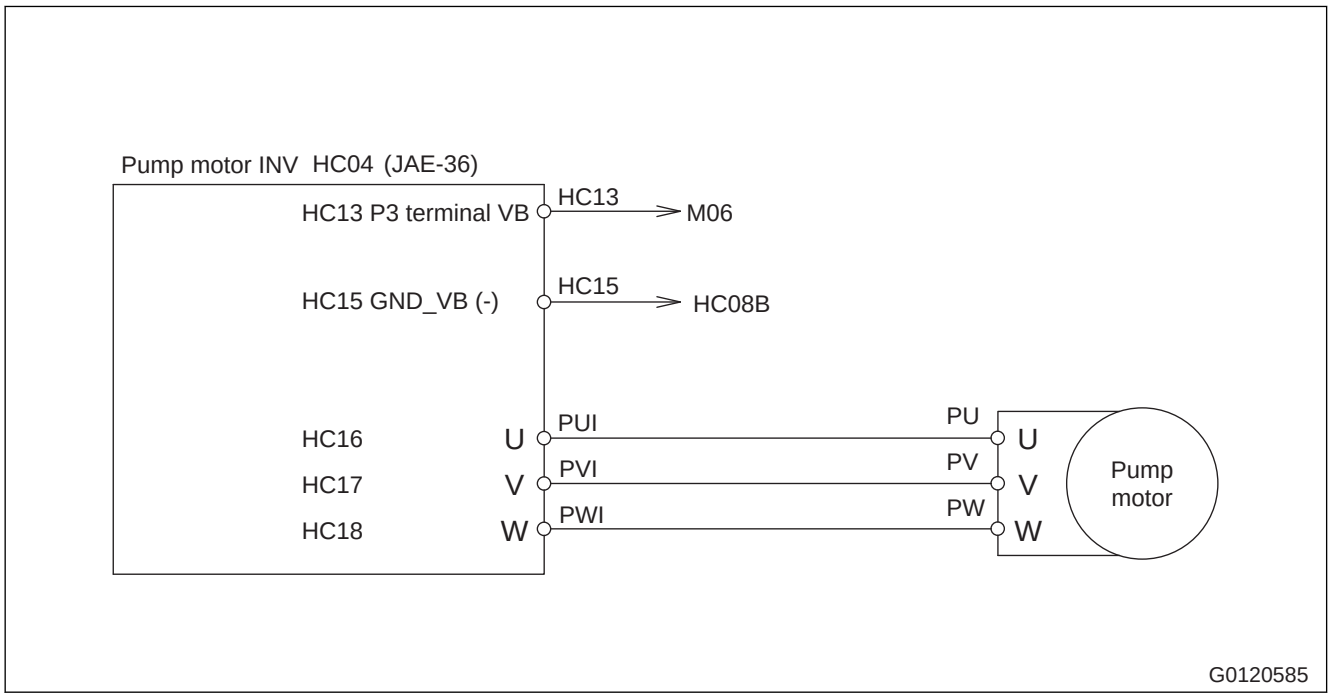


FAILURE CODE [GF50KB]

Action level	Failure code	Failure phenomenon	SHORT) Pump Motor (Pump inverter system)
L03	GF50KB		
Detail of failure	When the starting switch is turned to the ON position, an abnormal current flows through the pump motor circuit. (100A or more for 3 times in a row)		
Action of controller	• Stops the output to the pump inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The work equipment and PS (power steering) cannot operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit of pump motor cable	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect each terminal PUI, PVI, PWI, PU, PV, and PW to do the troubleshooting. **REMARK** Take out the pump motor cable. Examine if wires inside are exposed because of rubbing of the coating or if the coating has damage.		
2	Defective contact of pump motor cable terminals	Visually examine the U, V, and W terminals on the pump inverter side and the pump motor side for sticking of foreign matter. **REMARK** If foreign material is attached, remove it.		
3	Defective pump inverter (short circuit of motor terminals)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect each terminal PUI, PVI, and PWI to do the troubleshooting. **REMARK** If there is continuity, the lift controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		
		Resistance	Between PUI (inverter side) and PVI (inverter side)	Min. 1MΩ
			Between PVI (inverter side) and PWI (inverter side)	Min. 1MΩ
			Between PWI (inverter side) and PUI (inverter side)	Min. 1MΩ
4	Defective pump motor	If no failure is found by the above checks, the pump motor is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of pump motor



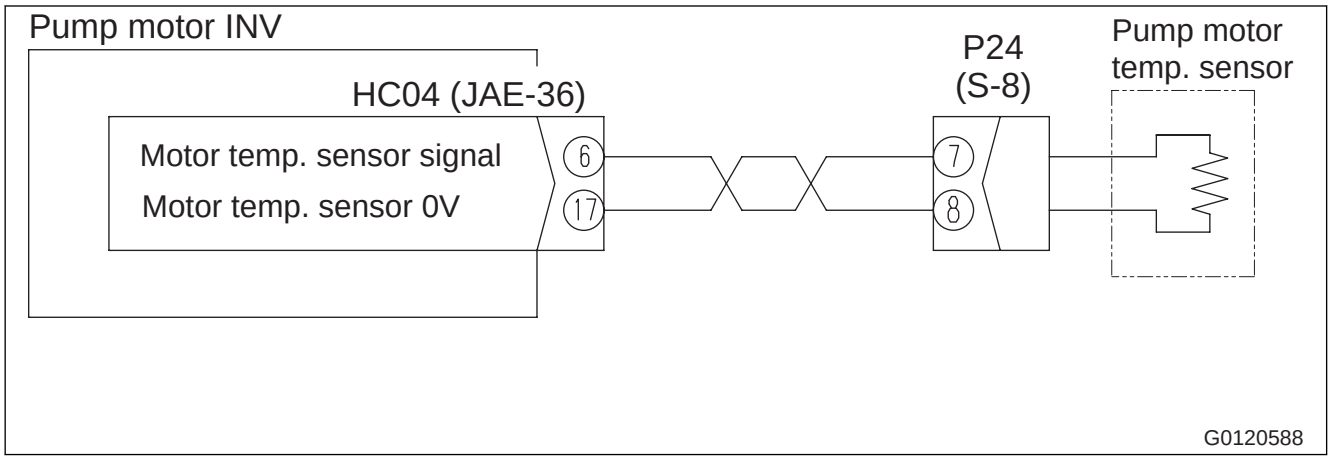
FAILURE CODE [GF51MA]

Action level	Failure code	Failure phenomenon	ABNL) Temp. Sensor (PMP-MOT) (Pump inverter system)
L03	GF51MA		
Detail of failure	A voltage from the pump motor temperature sensor of less than 0.15V or 4.95V more is continuously sensed for 200msec.		
Action of controller	• Judges the pump motor temperature as 20℃ and operates the pump inverter. • When the voltage from the pump inverter temperature sensor becomes the correct value (0.15 to 4.95V), the vehicle goes back to the correct state directly.		
Problem on lift truck	Operates with the pump motor temperature as normal temperature.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective contact of pump motor temperature sensor connector	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Examine the connectors of the pump inverter and the pump motor for looseness to do the troubleshooting. **REMARK** If loose, insert again correctly.		
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors HC04 and P24. Connect the T-adapter to the female side of P24 to do the troubleshooting.		
		Resistance	Between HC04 (female) (6) and P24 (female) (7)	Max. 1Ω
			Between HC04 (female) (17) and P24 (female) (8)	Max. 1Ω
3	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors HC04 and P24. Connect the T-adapter to the female side of P24 to do the troubleshooting.		
		Resistance	Between P24 (female) (7) and (8)	Min. 1MΩ

<table>
<tr><th>No.</th><th>Cause</th><th colspan="4">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="6">4</td><td rowspan="6">Defective temperature sensor of pump motor</td><td colspan="4">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Disconnect the connector P24. Connect the T-adapter to male side to do the troubleshooting.
REMARK
If an abnormality is found, replace the travel motor.</td></tr>
<tr><td rowspan="4">Resistance</td><td rowspan="4">Between P24 (male) (7) and (8)</td><td>25℃</td><td>Approx. 10.7kΩ</td></tr>
<tr><td>50℃</td><td>Approx. 4.4kΩ</td></tr>
<tr><td>100℃</td><td>Approx. 1.0kΩ</td></tr>
<tr><td>150℃</td><td>Approx. 320Ω</td></tr>
<tr><td>5</td><td>Defective pump inverter</td><td colspan="4">If no failure is found by the above checks, the pump inverter is defective. (Trouble-shooting cannot be done because this is an internal failure.)</td></tr>
</table>

Circuit diagram of pump motor temperature sensor



FAILURE CODE [GF5200]

Action level	Failure code	Failure phenomenon	HIGH) Temp. of PMP-INV (Pump inverter system)
-	GF5200		
Detail of failure	The temperature of the pump motor is 145℃ or more.		
Action of controller	Restricts the output of the pump inverter. Starts the current limit at 135℃ or more. Senses alarm conditions at 145℃ or more. Cancels the alarm at 142℃ or less.		
Problem on lift truck	The work equipment operates slowly.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Overload on pump motor	If the vehicle is used for a long time or under overload, stop the vehicle and cool the pump motor.
2	Defective temperature sensor of pump inverter	If this occurs frequently in usual operation, do the troubleshooting for [GF51MA].

FAILURE CODE [GF52NS]

Action level	Failure code	Failure phenomenon	OVER) Temp. of PMP-INV (Pump inverter system)
L02	GF52NS		
Detail of failure	The temperature of the pump motor is 155℃ or more.		
Action of controller	• Stops the output to the pump inverter. • When the temperature becomes the correct value (154℃ or less), the vehicle goes back to the correct state directly.		
Problem on lift truck	The work equipment and PS (power steering) cannot operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Overload on pump motor	If the vehicle is used for a long time or under overload, stop the vehicle and cool the pump motor.
2	Defective temperature sensor of pump inverter	If this occurs frequently in usual operation, do the troubleshooting for [GF51MA].

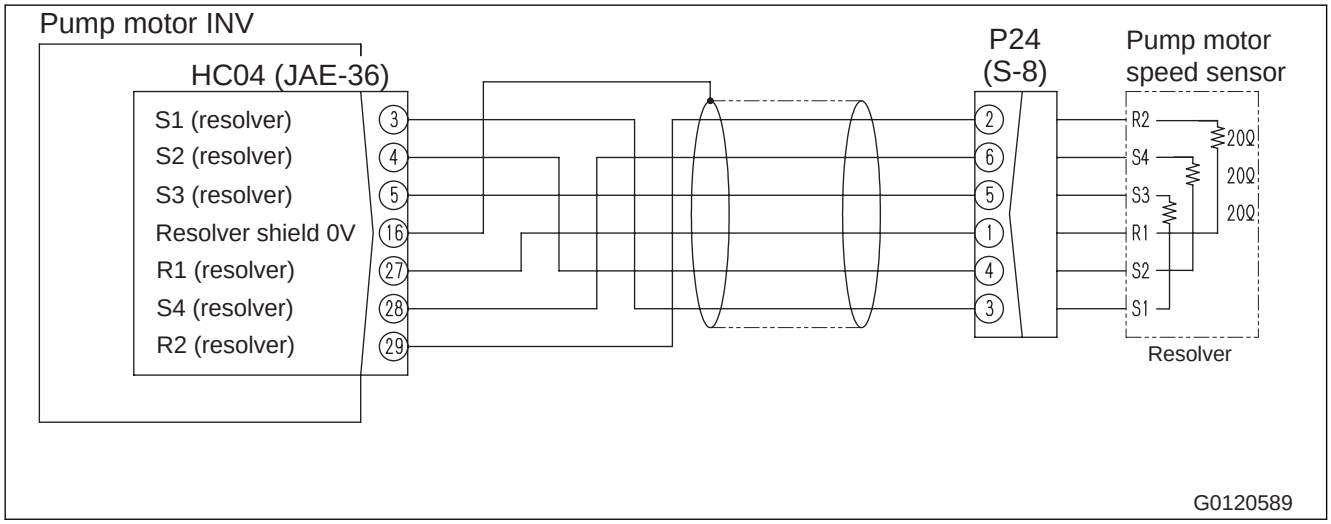
FAILURE CODE [GF53MA]

Action level	Failure code	Failure phenomenon	ABNL) Rotation SNSR(PMP-MOT) (Pump inverter system)
L03	GF53MA		
Detail of failure	• The change quantity in the speed of the pump motor is abnormal. • An open circuit in the pump motor speed sensor is sensed.		
Action of controller	• Stops the output of the pump inverter. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The work equipment and PS (power steering) do not operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness of pump motor speed sensor (resolver).	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors HC04 and P24. Connect the T-adapter to the female side of P24 to do the troubleshooting.		
		Resistance	Between HC04 (female) (3) and P24 (female) (3)	Max. 1Ω
			Between HC04 (female) (4) and P24 (female) (4)	Max. 1Ω
			Between HC04 (female) (5) and P24 (female) (5)	Max. 1Ω
			Between HC04 (female) (28) and P24 (female) (6)	Max. 1Ω
			Between HC04 (female) (27) and P24 (female) (1)	Max. 1Ω
			Between HC04 (female) (29) and P24 (female) (2)	Max. 1Ω
2	Short circuit in wiring harness of pump motor speed sensor (resolver).	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC04 and P24 to do the troubleshooting.		
		Resistance	Between HC04 (female) (3) and (16)	Min. 1MΩ
			Between HC04 (female) (4) and (16)	Min. 1MΩ
			Between HC04 (female) (5) and (16)	Min. 1MΩ
			Between HC04 (female) (27) and (16)	Min. 1MΩ
			Between HC04 (female) (28) and (16)	Min. 1MΩ
			Between HC04 (female) (29) and (16)	Min. 1MΩ

No.	Cause	Procedure, measurement location, criteria and remarks		
3	Defective pump motor speed sensor (resolver).	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P24. Connect the T-adapter to male side to do the troubleshooting.		
		Resistance	Between P24 (male) (3) and (5)	Approx. 20Ω
			Between P24 (male) (4) and (6)	Approx. 20Ω
			Between P24 (male) (1) and (2)	Approx. 20Ω
4	Defective pump inverter	If no failure is found by the above checks, the pump inverter is defective. (Trouble-shooting cannot be done because this is an internal failure.)		

Circuit diagram of pump motor speed sensor

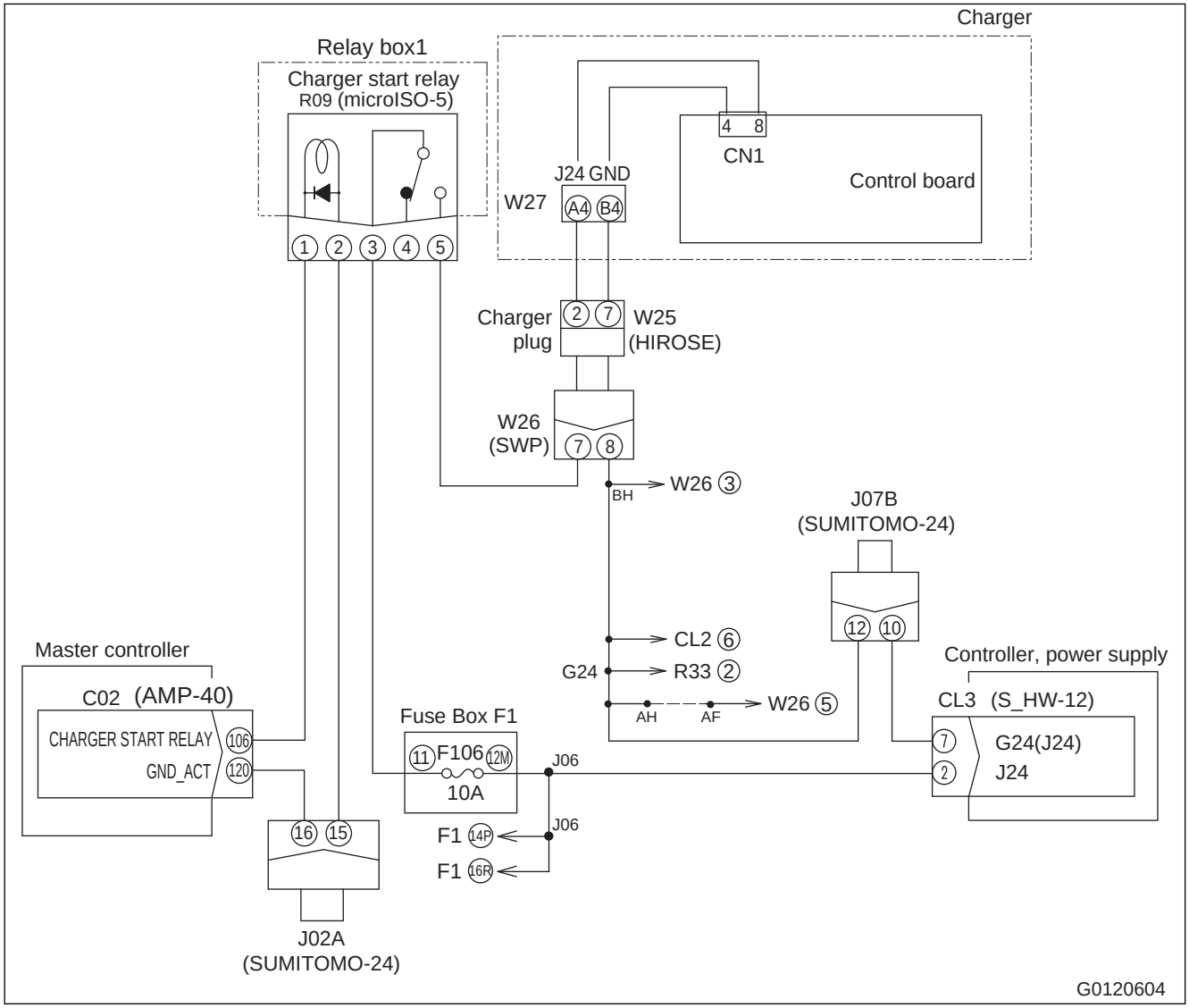


FAILURE CODE [GFA0NA]

Action level	Failure code	Failure phenomenon	ABNL) CHARGER SYSTEM (Master controller system)
L03	GFA0NA		
Detail of failure	• The master controller transmits “Charger READY command = ON” when the charge starts, but does not receive “Charger enable = ON” communication. • The master controller transmits “Charger READY command = OFF” when the charge completes/stops, but does not receive “Charger enable = OFF” communication.		
Action of controller	• The master controller stays at charge current command = 0 until “Charger enable = ON” is received when the charge starts. • If “Charger enable = ON” is not received for 10 seconds, the charge stops.		
Problem on lift truck	The charge cannot be done.		
Related information	“Stationary Charger Enable” communication is sent from the charger to the master controller through the charge controller.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective CAN communication	If failure codes [GFNGKR], [GFBRKR], [GF11KA], and [GF11KB] is shown at the same time, do the troubleshooting for them first.		
2	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuse F106. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F106	Continuity
3	Open circuit in wiring harness (vehicle side) (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect charge plug W25. 4. Disconnect the connector CL3 and R09 to do the troubleshooting.		
		Resistance	Between CL3 (male) (2) and R09 (female) (3)	Max. 1Ω
			Between R09 (female) (5) and W25 (female) (2)	Max. 1Ω
			Between CL3 (male) (7) and W25 (7)	Max. 1Ω
4	Open circuit in wiring harness (Charger side) (wire breakage or defective contact of connector)	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. Wait for 10 minutes. Then open the cover of the stationary charger. 2. Disconnect the connector W27 to do the troubleshooting.		
		Resistance	Between W27 (A4) and charge plug W25 (2)	Max. 1Ω
			Between W27 (B4) and charge plug W25 (7)	Max. 1Ω
5	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery charger

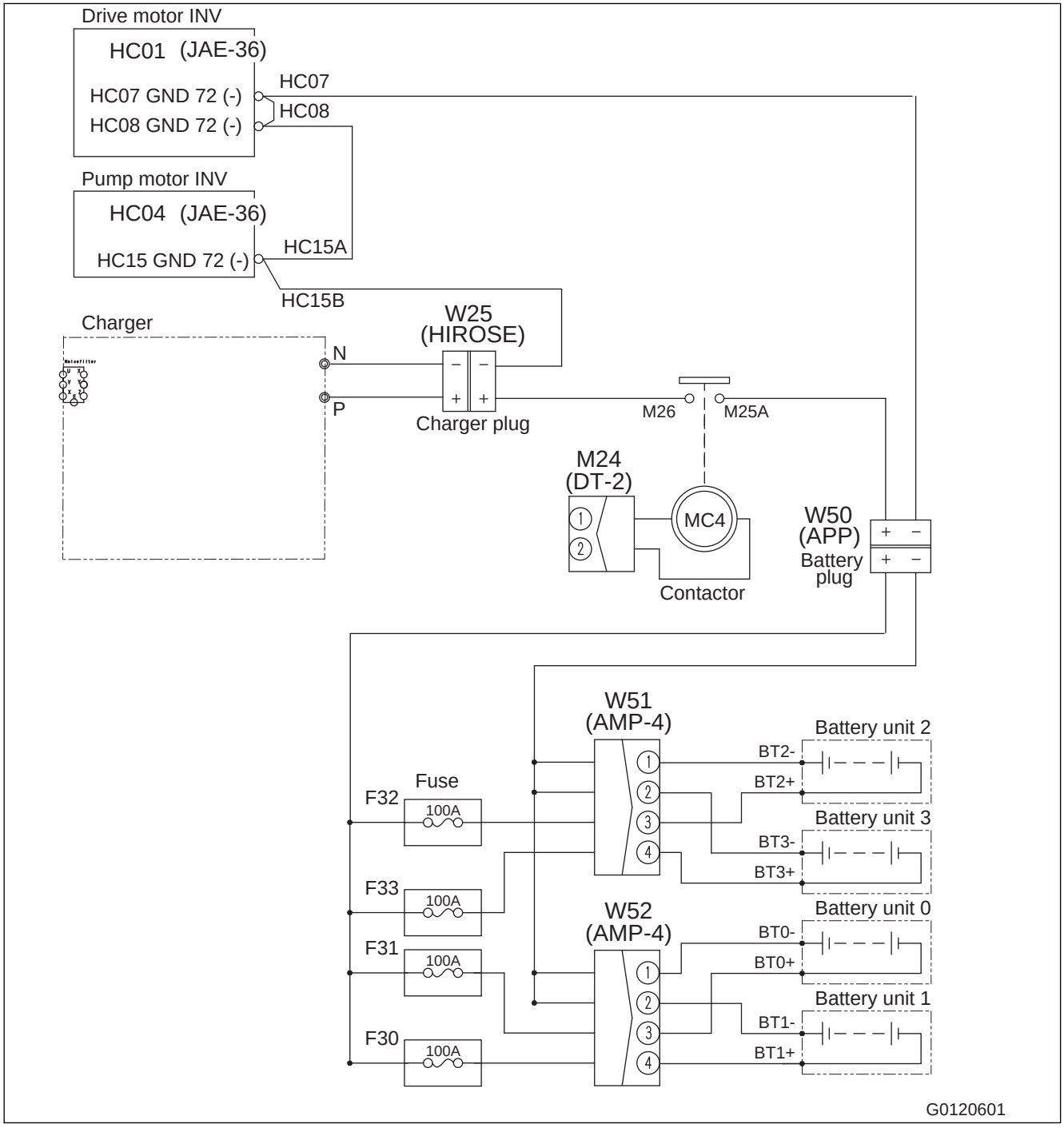


FAILURE CODE [GFA1KG]

Action level	Failure code	Failure phenomenon	HIGH) POWER SOURCE (CHGR) (Charger system)
L03	GFA1KG		
Detail of failure	The output voltage of the stationary charger is high.		
Action of controller	• Stops the charge • Shows a caution symbol on the monitor and operates the alarm buzzer.		
Problem on lift truck	Charge is not possible.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuses F30, F31, F32 and F33. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F30	Continuity
			Between two terminals of F31	Continuity
			Between two terminals of F32	Continuity
			Between two terminals of F33	Continuity
2	Open circuit in wiring harness (Open circuit, defective contact of charge plug W25)	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Measure the resistance of wiring harness to do the troubleshooting.		
		Resistance	Between stationary charger terminal P and W25 (charger side) (+) terminal	Max. 1Ω
			Between stationary charger terminal N and W25 (charger side) (-) terminal	Max. 1Ω
			Between terminal M26 and terminal W25 (vehicle side) (+)	Max. 1Ω
			Between W50 (vehicle side) (-) and W25 (vehicle side) (-) terminal	Max. 1Ω
3	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		
4	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery charger overvoltage

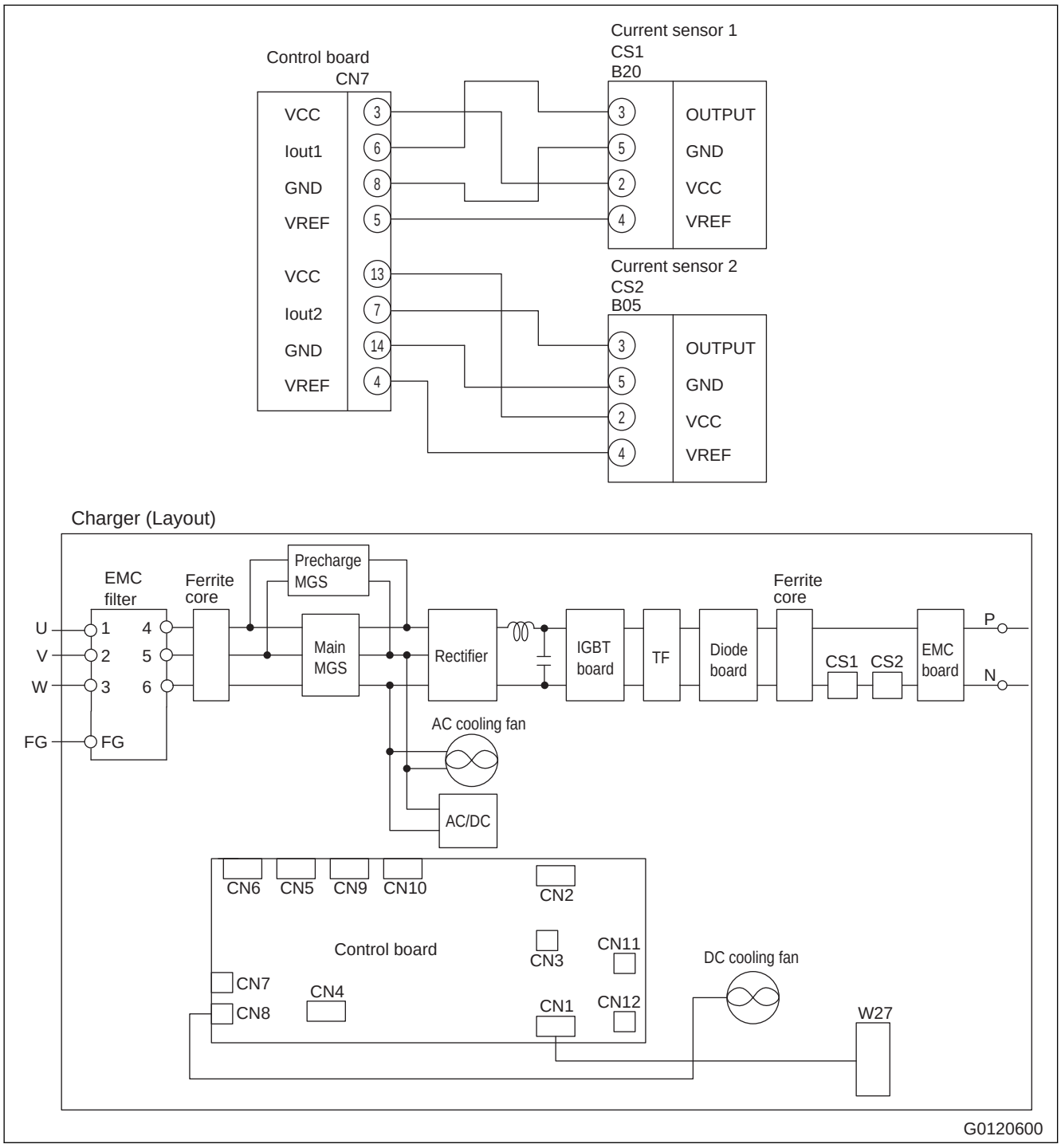


FAILURE CODE [GFA1KN]

Action level	Failure code	Failure phenomenon	ABNL) POWER CURRENT (CHGR) (Charger system)
L03	GFA1KN		
Detail of failure	Excessive charge current flows through the circuit.		
Action of controller	• Stops the charge • Shows a caution symbol on the monitor and operates the alarm buzzer.		
Problem on lift truck	Charge is not possible.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Voltage drop of AC power supply	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. 2. Make sure that there is no failure in the other load devices. Then turn the breaker of the AC power supply to ON. 3. Measure the voltage of the AC power supply to do the troubleshooting. ⚠ **Be careful not to get an electric shock when you measure AC voltage.**		
		Voltage	Between U and V of breaker for AC power supply	AC182 to 222V
			Between V and W of breaker for AC power supply	AC182 to 222V
			Between W and U of breaker for AC power supply	AC182 to 222V
2	Open circuit in wiring harness (current sensor CS1)	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Disconnect the connector CN7 of the control board. 3. Disconnect the connector of the current sensor CS1. Measure the resistance of the wiring harness to do the troubleshooting.		
		Resistance	Between CS1 (2) and CN7 (3)	Max. 1Ω
			Between CS1 (3) and CN7 (6)	Max. 1Ω
			Between CS1 (4) and CN7 (5)	Max. 1Ω
			Between CS1 (5) and CN7 (8)	Max. 1Ω
3	Defective large charge current sensor (CS1)	If no failure is found by the above checks, the large charge current sensor (CS1) is defective. (Troubleshooting cannot be done because this is an internal failure.)		
4	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		
5	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of charge current sensor

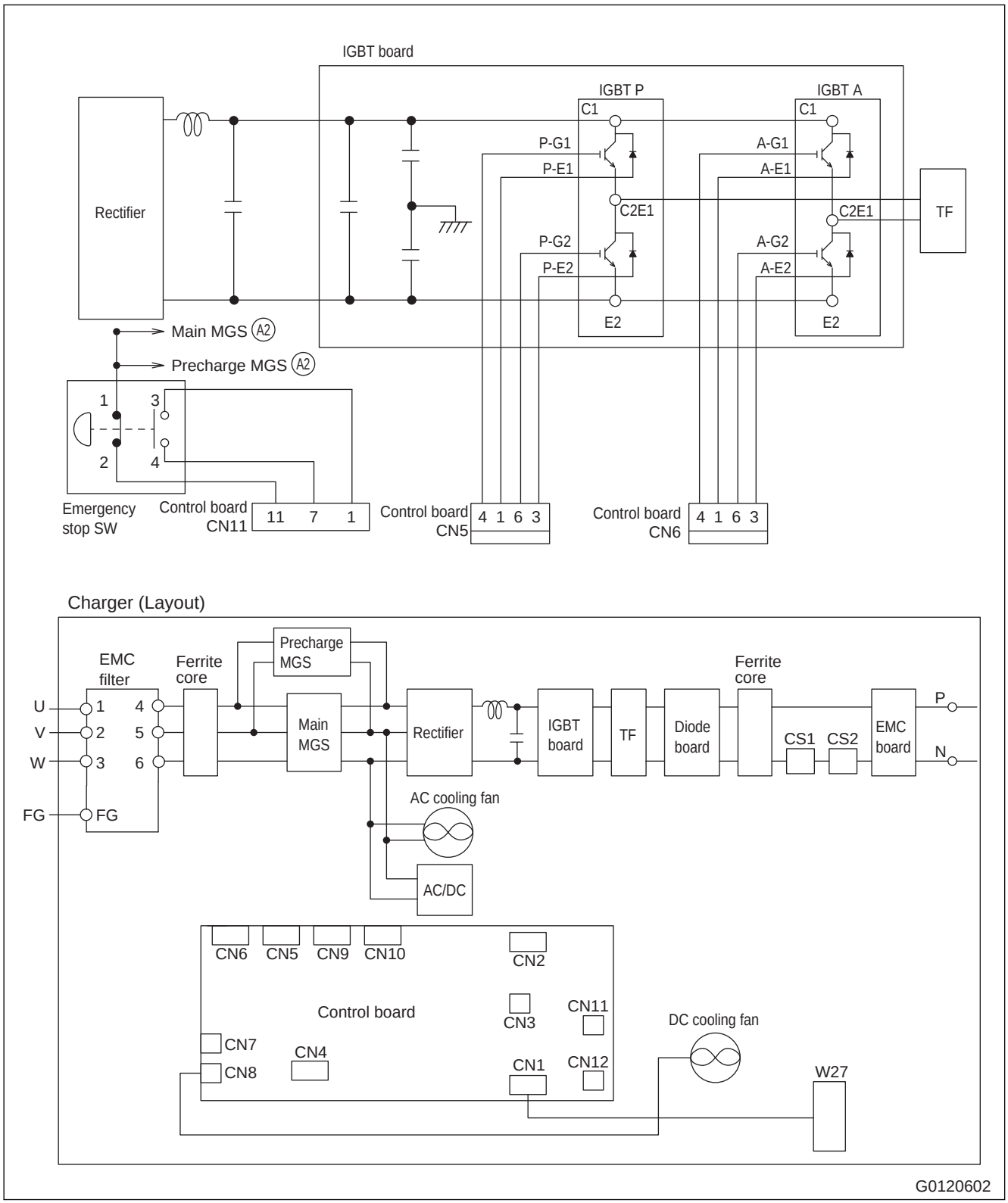


FAILURE CODE [GFA2KB]

Action level	Failure code	Failure phenomenon	SHORT) IGBT (CHGR) (Charger system)
L03	GFA2KB		
Detail of failure	The IGBT in the stationary charger has a damage and a short circuit.		
Action of controller	• Stops the charge • Shows a caution symbol on the monitor and operates the alarm buzzer.		
Problem on lift truck	Charge is not possible.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective IGBT	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Measure the resistance between the IGBT (IGBTP, IGBTA) terminals with the 1kΩ range of an analog tester to do the troubleshooting. **REMARK** (+) and (-) are the polarities of the tester.		
		Resistance	Between C1 (+) and C2E1 (-)	Some kΩ
			Between C2E1 (+) and C1 (-)	Some kΩ
			Between C2E1 (+) and E2 (-)	Some kΩ
			Between E2 (+) and C2E1 (-)	Some kΩ
		If there is an abnormality in the IGBT, disconnect the cables connected to the terminals C1, C2E1, E2 of the IGBT (IGBTP, IGBTA). Measure the resistance with the 1kΩ range of an analog tester to do the troubleshooting.		
		Resistance	Between C1 (+) and C2E1 (-)	Some kΩ
			Between C2E1 (+) and C1 (-)	∞
			Between C2E1 (+) and E2 (-)	Some kΩ
			Between E2 (+) and C2E1 (-)	∞
2	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of charger IGBT error

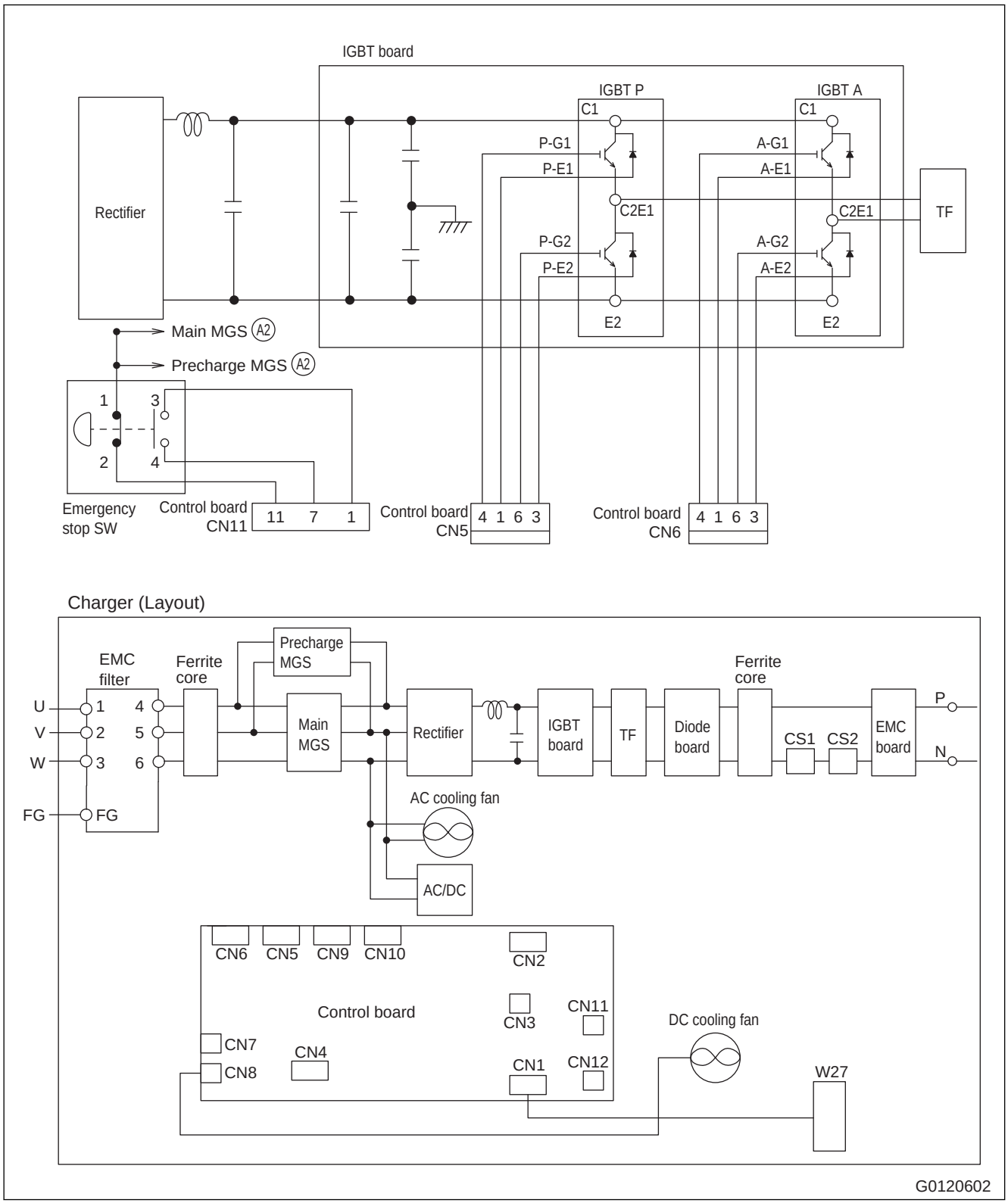


FAILURE CODE [GFA2MA]

Action level	Failure code	Failure phenomenon	ABNL) IGBT (CHGR) (Charger system)
L03	GFA2MA		
Detail of failure	The DC power supply of the IGBT drops to 200V or less when the emergency stop switch is not pushed.		
Action of controller	• Stops the charge • Shows a caution symbol on the monitor and operates the alarm buzzer.		
Problem on lift truck	Charge is not possible.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Voltage drop of AC power supply	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. 2. Make sure that there is no failure in the other load devices. Then turn the breaker of the AC power supply to ON. 3. Measure the voltage of the AC power supply to do the troubleshooting. ⚠ **Be careful not to get an electric shock when you measure AC voltage.**		
		Voltage	Between U and V of breaker for AC power supply	AC182 to 222V
			Between V and W of breaker for AC power supply	AC182 to 222V
			Between W and U of breaker for AC power supply	AC182 to 222V
2	Defective emergency stop switch	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Set the emergency stop switch in the pushed position to do the troubleshooting.		
		Resistance	Between emergency stop switch (3) and (4)	Max. 1Ω
3	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		
4	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of charger IGBT error

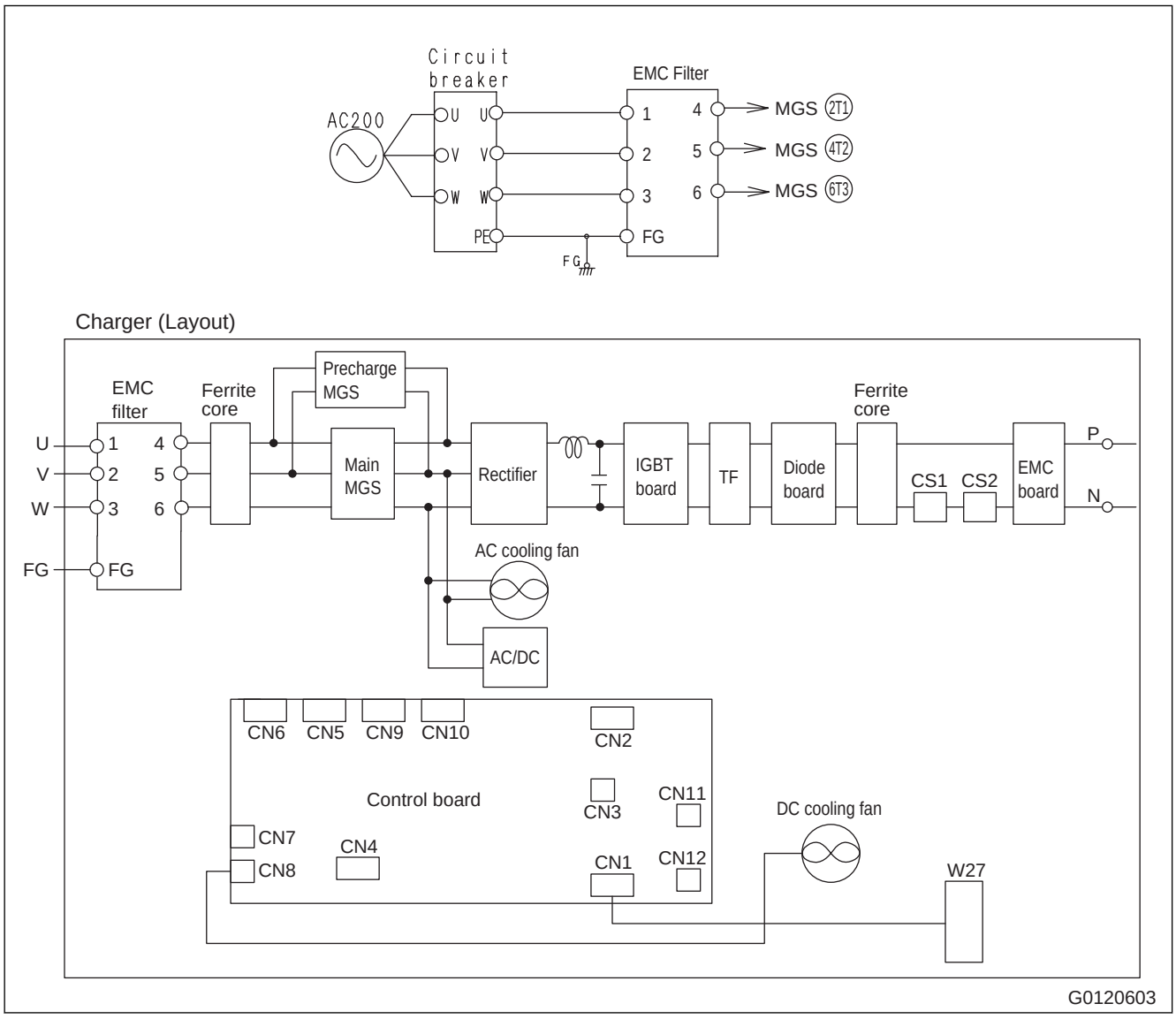


FAILURE CODE [GFA3MA]

Action level	Failure code	Failure phenomenon	MISMATCH)POWER CURRENT(CHGR) (Charger system)
L03	GFA3MA		
Detail of failure	The charge current does not flow as instructed by the current command.		
Action of controller	• Stops the charge • Shows a caution symbol on the monitor and operates the alarm buzzer.		
Problem on lift truck	Charge is not possible.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Voltage drop of AC power supply	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. 2. Make sure that there is no failure in the other load devices. Then turn the breaker of the AC power supply to ON. 3. Measure the voltage of the AC power supply to do the troubleshooting. ⚠ **Be careful not to get an electric shock when you measure AC voltage.**		
		Voltage	Between U and V of breaker for AC power supply	AC182 to 222V
			Between V and W of breaker for AC power supply	AC182 to 222V
			Between W and U of breaker for AC power supply	AC182 to 222V
2	Open circuit in wiring harness	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Measure the resistance of wiring harness to do the troubleshooting.		
		Resistance	Between EMC filter terminal U and plug terminal U	Max. 1Ω
			Between EMC filter terminal V and plug terminal V	Max. 1Ω
			Between EMC filter terminal W and plug terminal W	Max. 1Ω
			Between EMC filter terminal PE and plug terminal PE	Max. 1Ω
3	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		
4	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery charger battery power supply current



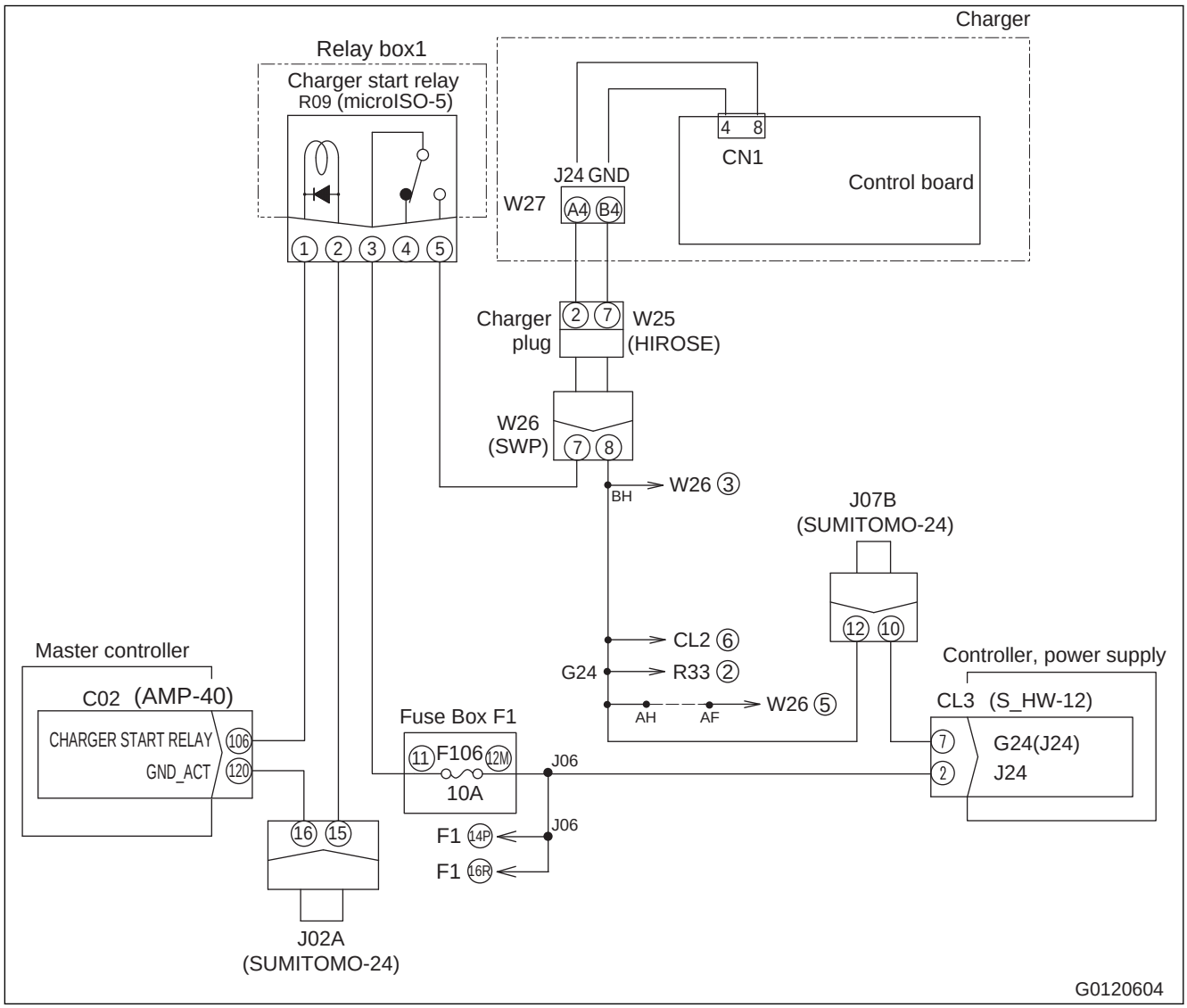
FAILURE CODE [GFA4KK]

Action level	Failure code	Failure phenomenon	LOW VOLTAGE) POWER (CHGR) (Charger system)
L03	GFA4KK		
Detail of failure	The power supply voltage of the control board is low.		
Action of controller	Stops the charge.		
Problem on lift truck	Charge is not possible.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective fuse	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuse F106. 4. Examine if the fuse is blown. 5. Examine the continuity of the fuse. **REMARK** If the fuse is blown out, the wiring harness probably has short circuit.		
		Continuity	Between two terminals of F106	Continuity
2	Internal open circuit or defective contact of battery charger start relay (R09)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector R09 to do the troubleshooting.		
		Resistance	Between R09 (male) (2) and (1)	Approx. 400Ω
3	Open circuit in wiring harness (vehicle side) (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C02, CL3, and R09. Connect the socket to the female side of C02 to do the troubleshooting.		
		Resistance	Between R09 (female) (2) and C02 (female) (120)	Max. 1Ω
			Between R09 (female) (1) and C02 (female) (106)	Max. 1Ω
			Between CL3 (male) (2) and R09 (female) (3)	Max. 1Ω
			Between R09 (female) (5) and W25 (female) (2)	Max. 1Ω
			Between W25 (7) and CL3 (male) (7)	Max. 1Ω
4	Open circuit in wiring harness (Charger side) (wire breakage or defective contact of connector)	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Measure the resistance of wiring harness to do the troubleshooting.		
		Resistance	Between W25 (2) and CN1 (8)	Max. 1Ω
			Between W25 (7) and CN1 (4)	Max. 1Ω

No.	Cause	Procedure, measurement location, criteria and remarks
5	Defective battery charger start relay	If no failure is found by the previous checks, the battery charger start relay contact side is defective. (Troubleshooting cannot be done because this is an internal failure.)
6	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)
7	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)
8	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

Circuit diagram of LOW VOLTAGE) POWER (CHGR)



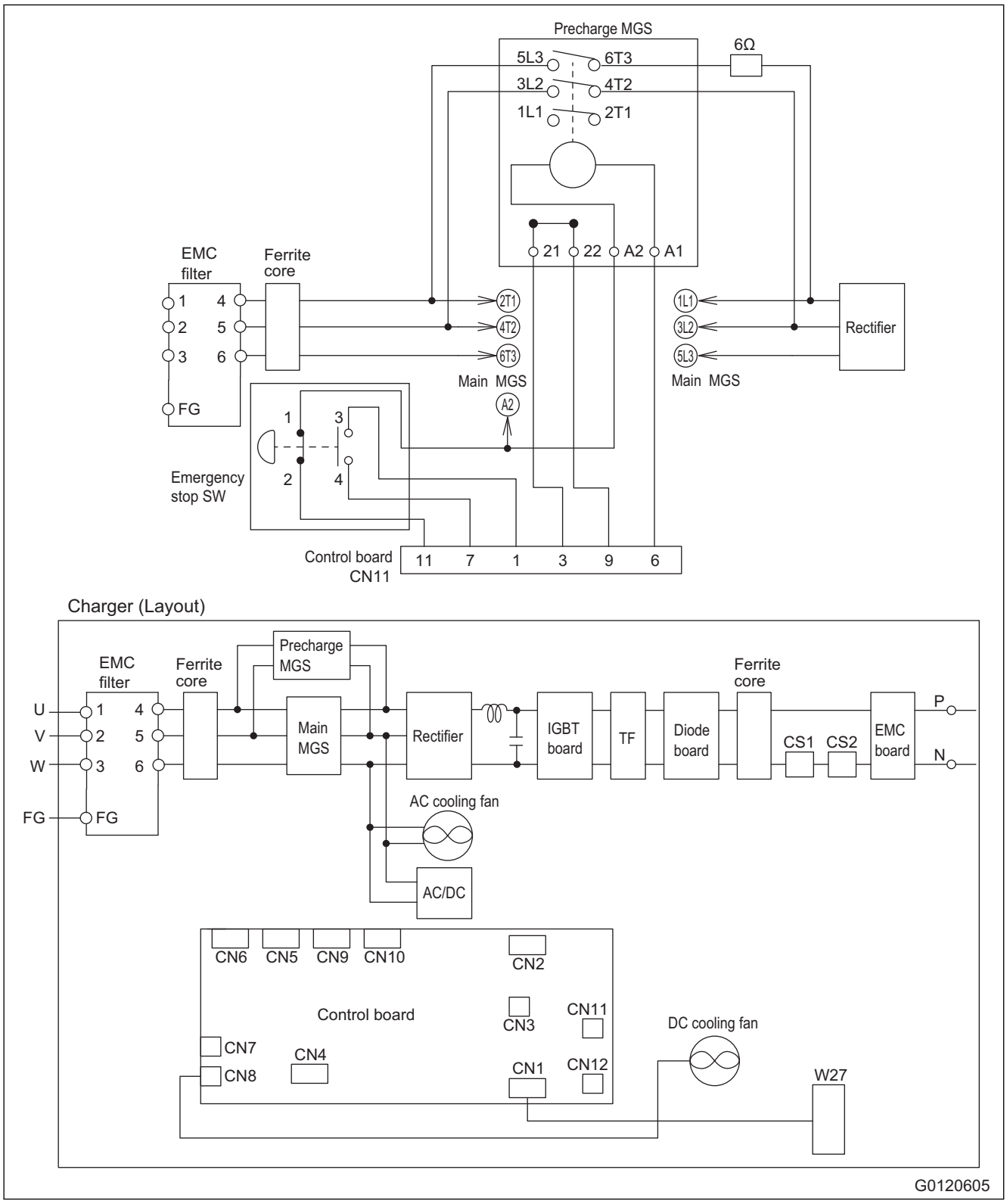
FAILURE CODE [GFA5KA]

Action level	Failure code	Failure phenomenon	DISC) Pre-chrg MGS (Charger system)
L01	GFA5KA		
Detail of failure	One of these occurs. • The contacts of the precharge MGS in the stationary charger do not close when the emergency stop switch is not pushed. • The voltage does not rise when the precharge MGS is turned on and the emergency stop switch is not pushed.		
Action of controller	Gives only a notification.		
Problem on lift truck	• Precharge is not possible. • When the main MGS is turned on, the inrush current becomes large. • Intermediate capacitor charge flows in. (Charge is possible.)		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective emergency stop switch	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Do troubleshooting while the emergency stop switch is not pushed.		
		Resistance	Between emergency stop switch (1) and (2)	Max. 1Ω
			Between emergency stop switch (3) and (4)	Min. 1MΩ
2	Defective coil of precharge MGS	Open the cover of the stationary charger in the procedure that follows, and then measure. 1. Measure the coil resistance of the precharge MGS to do the troubleshooting.		
		Resistance	Between MGS (A1) and (A2)	Approx. 240Ω
3	Defective precharge resistance	Open the cover of the stationary charger in the procedure that follows, and then measure. 1. Measure the resistance at two ends of the precharge resistance to do the troubleshooting.		
		Resistance	Between precharge MGS (6T3) and main MGS (1L1)	Approx. 6Ω

No.	Cause	Procedure, measurement location, criteria and remarks		
4	Defective wiring harness	Open the cover of the stationary charger in the procedure that follows, and then measure. 1. Remove the wiring harness between each printed circuit board to do the troubleshooting.		
		Resistance	Between CN11 (6) and precharge MGS (A1)	Max. 1Ω
			Between precharge MGS (A2) and emergency stop switch (1)	Max. 1Ω
			Between emergency stop switch (2) and CN11 (11)	Max. 1Ω
			Between CN11 (1) and emergency stop switch (3)	Max. 1Ω
			Between emergency stop switch (4) and CN11 (7)	Max. 1Ω
			Between CN11 (3) and precharge MGS (21)	Max. 1Ω
			Between CN11 (9) and precharge MGS (22)	Max. 1Ω
			Between EMC filter (4) and precharge MGS (5L3)	Max. 1Ω
			Between EMC filter (5) and precharge MGS (3L2)	Max. 1Ω
			Between precharge MGS (6T3) and main MGS (1L1)	Approx. 6Ω
			Between precharge MGS (4T2) and main MGS (3L2)	Max. 1Ω
5	Defective precharge MGS	If no failure is found by the above checks, the precharge MGS is defective. (Troubleshooting cannot be done because this is an internal failure.)		
6	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		
7	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of precharge MGS error

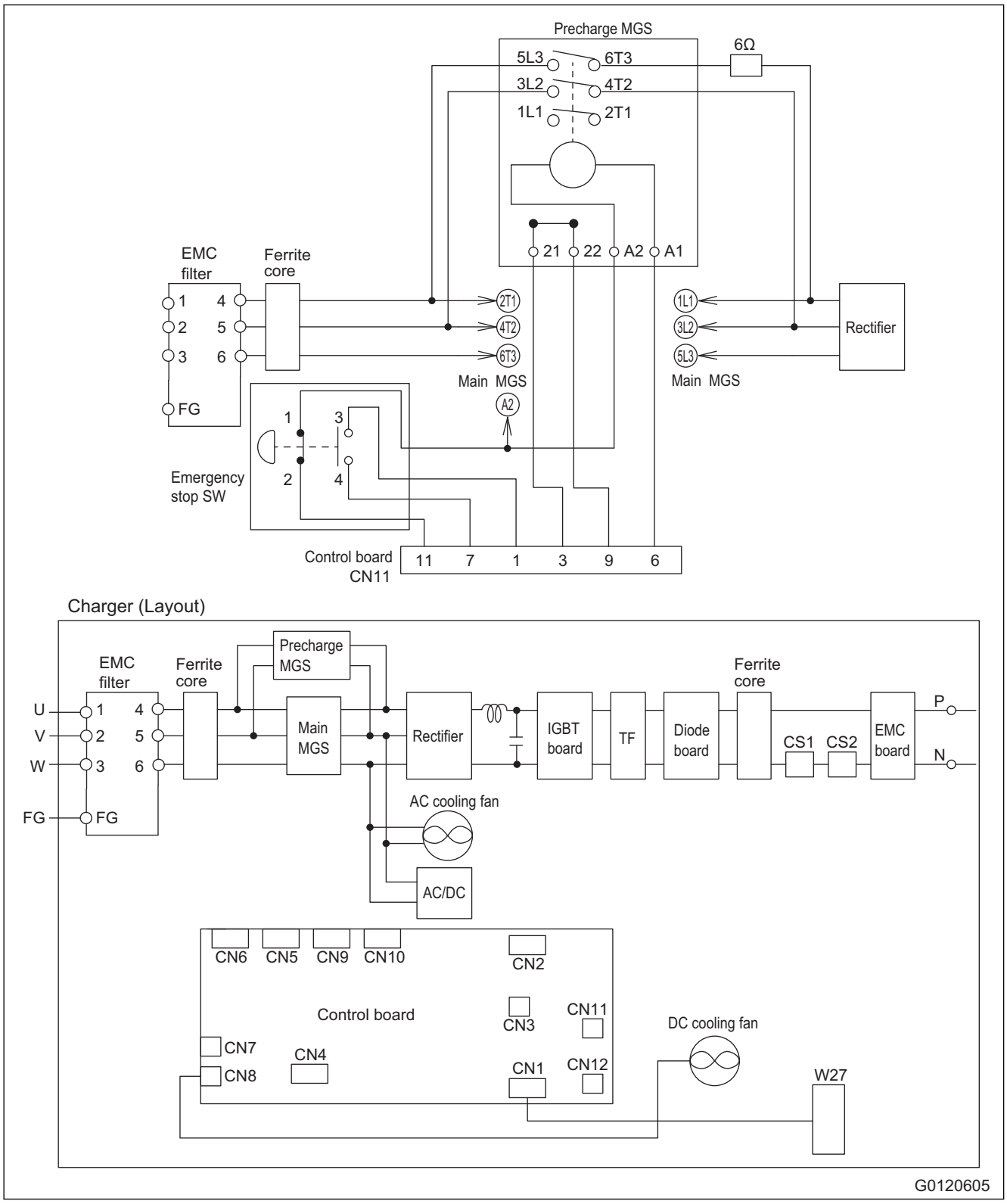


FAILURE CODE [GFA5KB]

Action level	Failure code	Failure phenomenon	SHORT_P) Pre-chrg MGS (Charger system)
L01	GFA5KB		
Detail of failure	The contacts of the precharge MGS in the precharger stay closed and do not open while the emergency stop switch is not pushed.		
Action of controller	Gives only a notification.		
Problem on lift truck	• The power cannot be turned off when an abnormality occurs. • When the emergency stop switch of the battery charger is activated, it can cause damage to the pre-charging resistance.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective contacts of precharge MGS	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Measure between the precharge MGS contacts to do the troubleshooting.		
		Resistance	Between 5L3 and 6T3	Min. 1MΩ
			Between 3L2 and 4T2	Min. 1MΩ
			Between (21) and (22)	Max. 1Ω
2	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of precharge MGS error

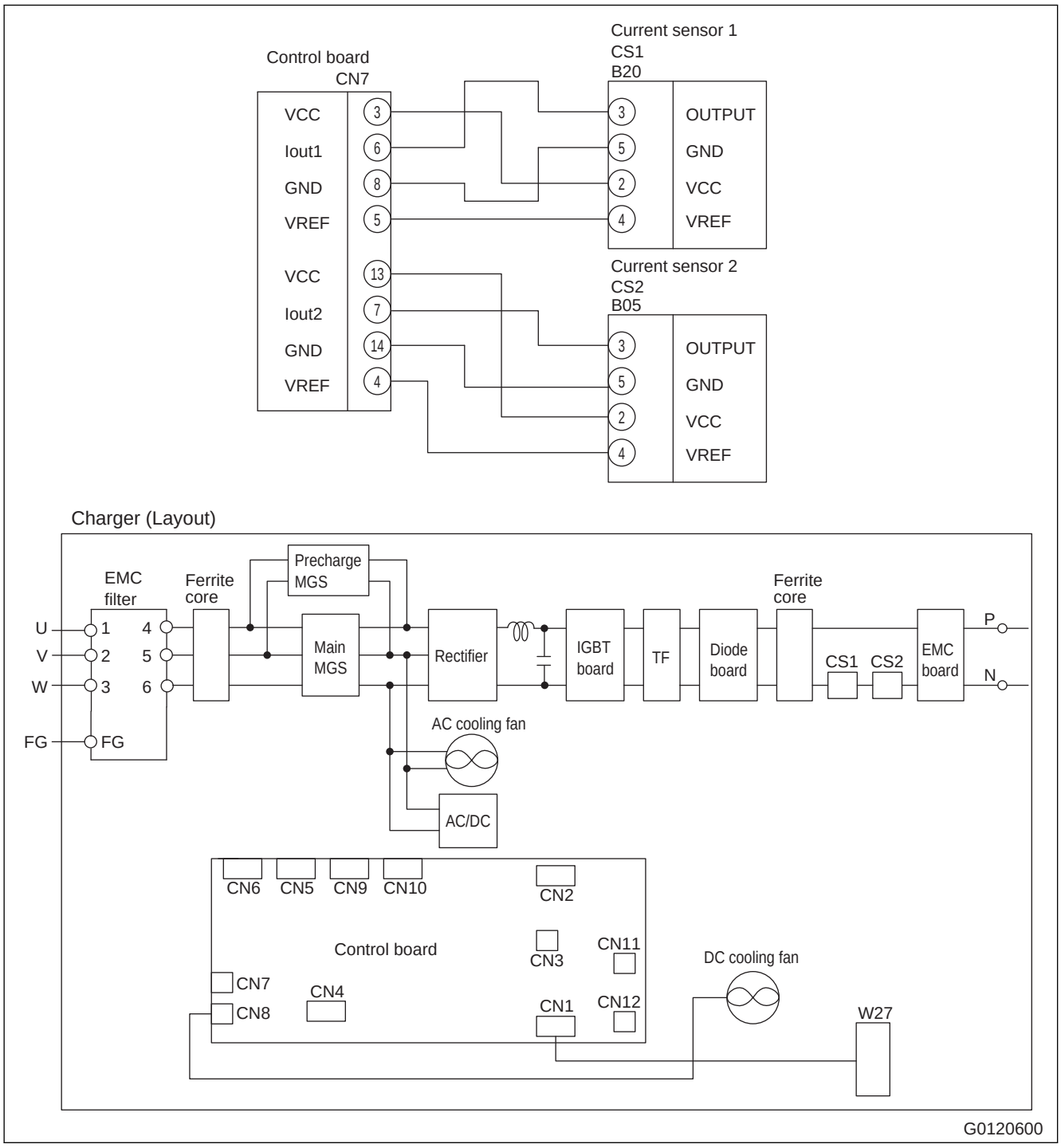


FAILURE CODE [GFA6KA]

Action level	Failure code	Failure phenomenon	DISC) Current Sensor (Charger system)
L03	GFA6KA		
Detail of failure	The large charge current sensor (CS1) in the battery charger has an open circuit.		
Action of controller	Stops the charge		
Problem on lift truck	Charge is not possible.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Do the troubleshooting for failure code [DJK2MA].	

Circuit diagram of charge current sensor

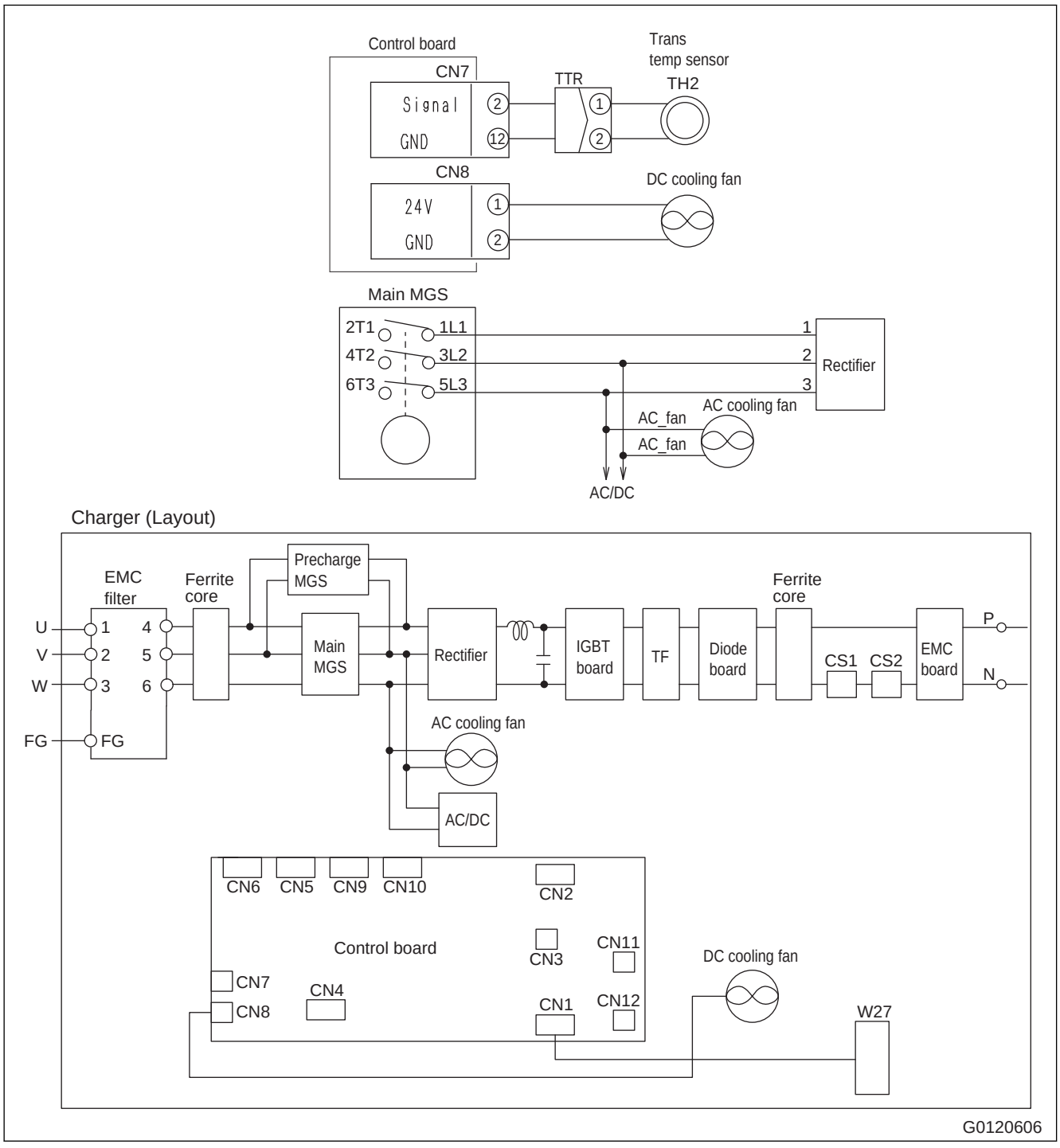


FAILURE CODE [GFA7NX]

Action level	Failure code	Failure phenomenon	ABNL) FILTER (CHGR) (Charger system)
L01	GFA7NX		
Detail of failure	The temperature of the transformer in the battery charger exceeds 101℃. But the temperature exceeds 131℃ while the DC cooling fan is stopped and for 80 seconds after the start of fan drive.		
Action of controller	Lets the battery charger filter clogging lamp flash.		
Problem on lift truck	• The next time the battery is charged, the filter cleaning confirmation screen is shown on the monitor panel. • Stop the alarm by operation on the monitor.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Do the troubleshooting for failure code [GFAF00].	

Circuit diagram of transformer temperature sensor

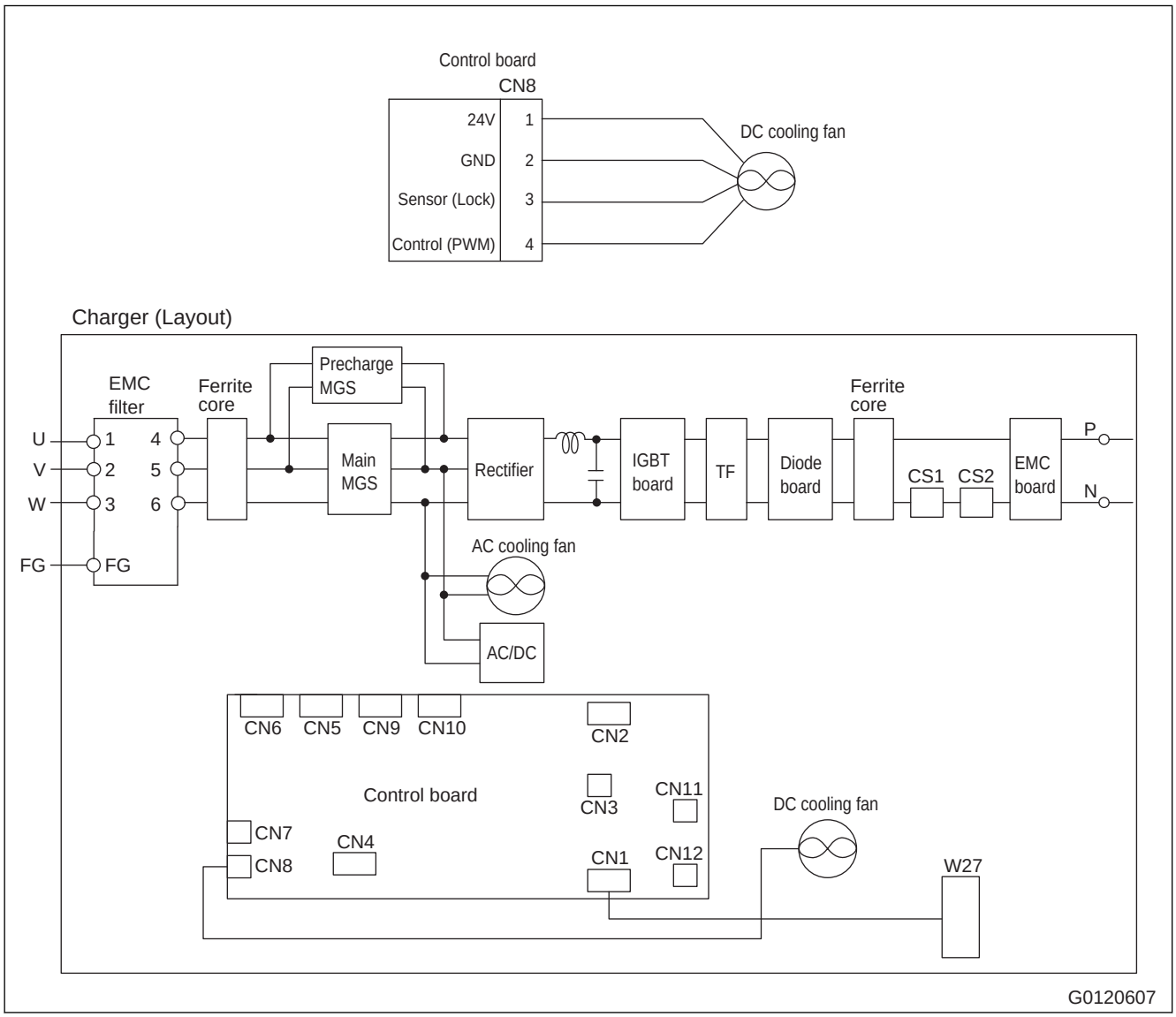


FAILURE CODE [GFA8MC]

Action level	Failure code	Failure phenomenon	ABNL) Fan (CHGR) (Charger system)
L01	GFA8MC		
Detail of failure	A DC cooling fan speed of ≤ 1000 min $^{-1}$ {1000rpm} is continuously sensed for 10 seconds or more.		
Action of controller	• Gives only an announcement. • When a DC cooling fan speed of > 1000min $^{-1}$ {1000rpm} is sensed continuously for 10 seconds or more, the vehicle goes back to the correct state automatically.		
Problem on lift truck	The fan stops. The temperature in the stationary charger rises.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective DC cooling fan	Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.)
		If you find an open circuit in the wiring harness, a damaged connector, or a damaged fan blade, the fan is defective.
2	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)

Circuit diagram of ABNL) Fan (CHGR)

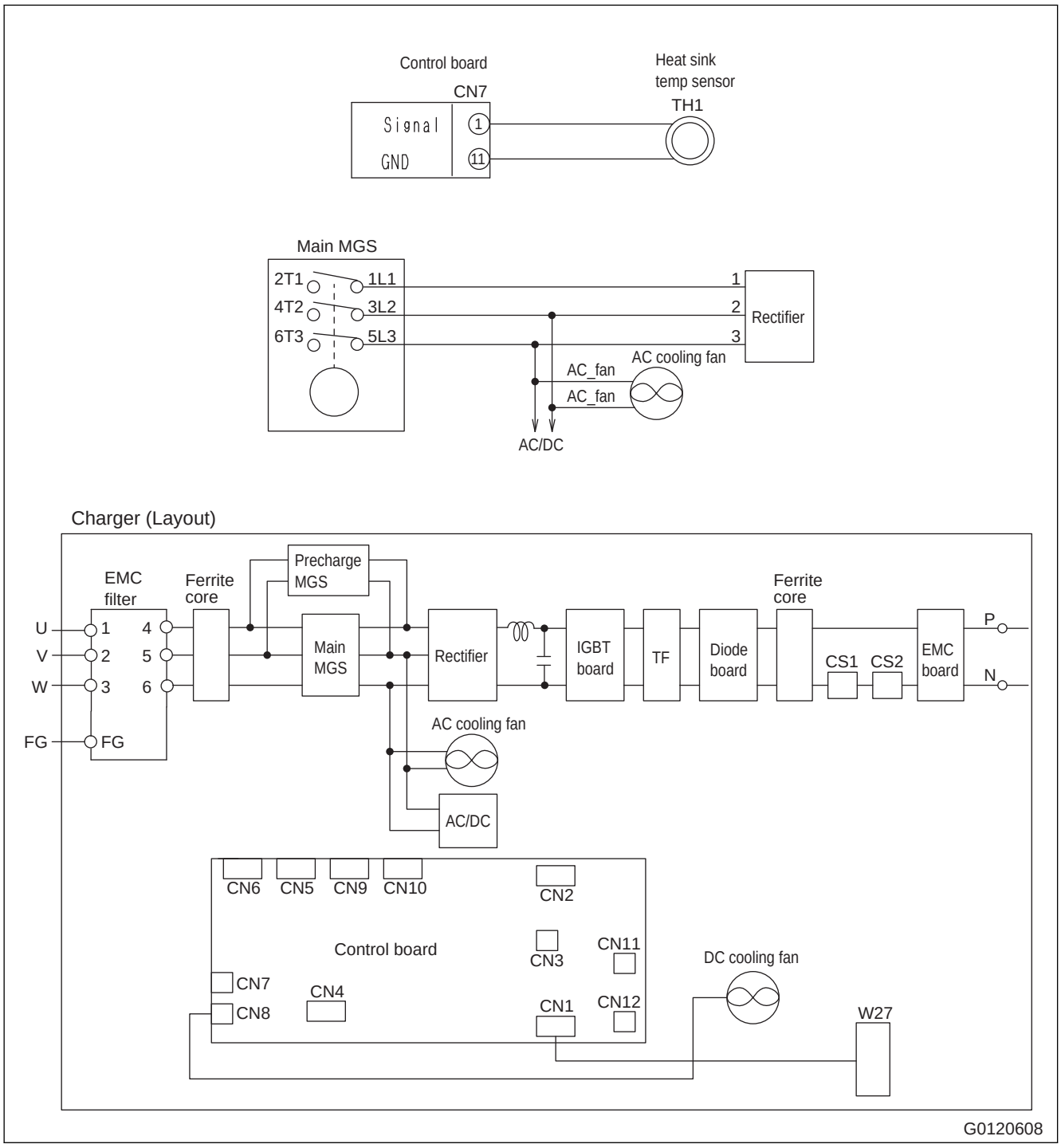


FAILURE CODE [GFABMA]

Action level	Failure code	Failure phenomenon	Chg. Heatsink Temp sensor defective (Charger system)
L03	GFABMA		
Detail of failure	The temperature signal of the heat sink in the stationary charger is out of the correct range. (0.3V and below or 4.7V and above)		
Action of controller	• Stops the charge • Shows a caution symbol on the monitor and operates the alarm buzzer.		
Problem on lift truck	Charge is not possible.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective temperature sensor, open circuit in wiring harness	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Disconnect the connector CN7. Measure the resistance of the temperature sensor TH1 to do the troubleshooting.		
		Resistance	Between CN7 (1) and (11)	150Ω to 450Ω
2	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of heat sink temperature sensor

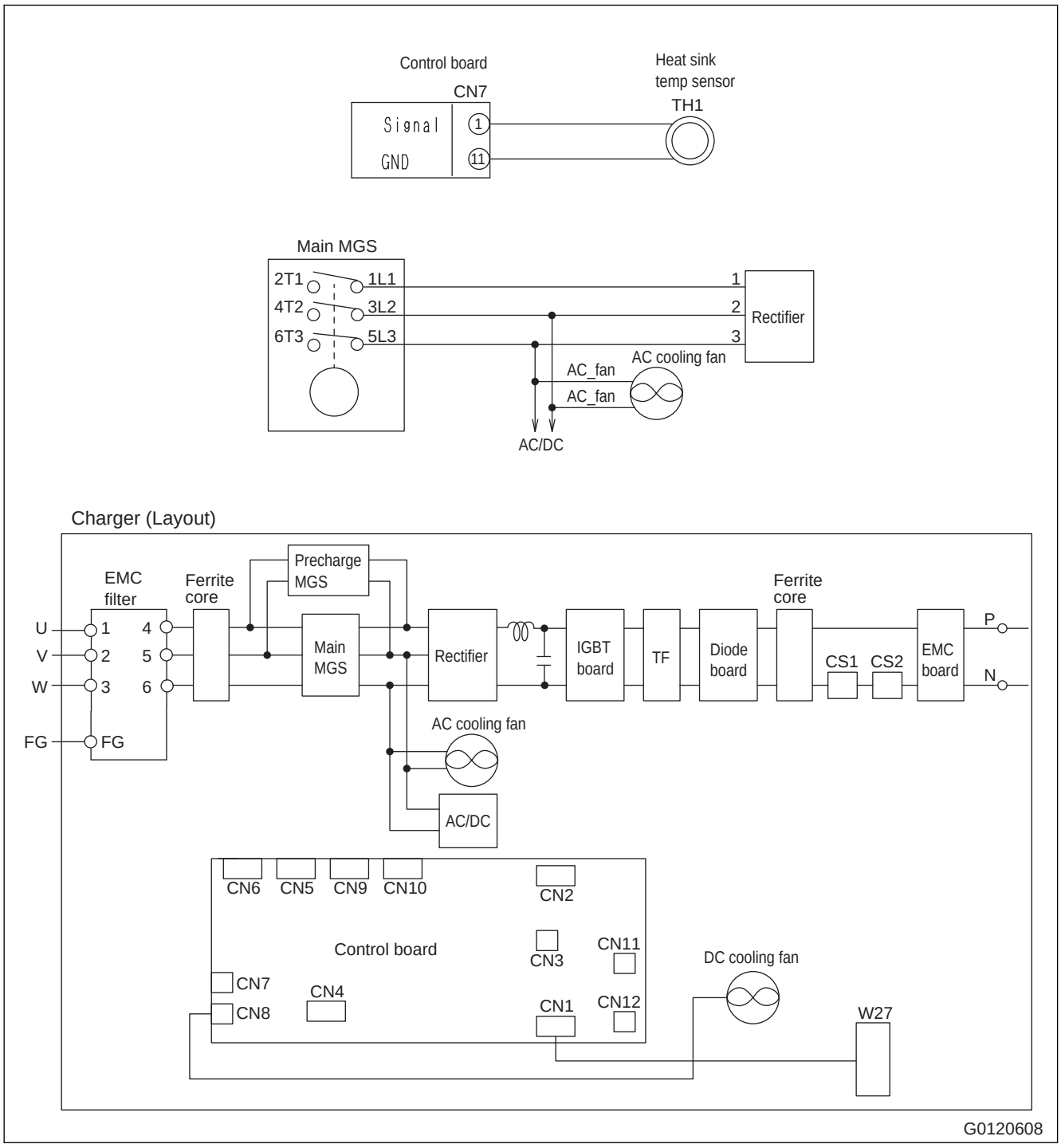


FAILURE CODE [GFAD00]

Action level	Failure code	Failure phenomenon	Chg. Heatsink Temp Alarm (Charger system)
L03	GFAD00		
Detail of failure	The input value of the heat sink temperature in the stationary charger exceeds 120℃.		
Action of controller	• The vehicle operates normally until 1 second after the detection. • If the detection continues for 1 second, shows a caution symbol on the monitor panel and restricts the charge current to 60% of the usual level. • When the sensed temperature becomes 115℃ or less, the vehicle goes back to the correct state.		
Problem on lift truck	The charge current decreases and the charge time becomes longer.		
Related information	• You can examine the numeric input of heat sink temperature with the monitor panel. (Code: 56541 (℃)) • Reproduction method of failure code: Set to charging mode.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Clogged filter	Judge if it is the time to replace or clean the filter.		
		Replacement period of the dust filter (STD)	2000h (12 months)	
		Cleaning period of the dust filter (STD)	1000h (6 months)	
		Replacement period of the salt damage filter (OPT)	1000h (6 months)	
2	Defective installation area of stationary charger	Examine the area where the stationary charger is installed.		
		Height from the floor	Min. 250mm	
		Distance from the wall	Min. 250mm	
3	Open circuit in wiring harness (AC cooling FAN)	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Disconnect the connector AC_FAN of the AC cooling FAN. Measure the resistance of the wiring harness to do the troubleshooting.		
		Resistance	Between main MGS (3L2) and AC_FAN	Max. 1Ω
			Between main MGS (5L3) and AC_FAN	Max. 1Ω
4	Defective AC cooling fan	If no failure is found by the above checks, the AC cooling fan is defective. (Troubleshooting cannot be done because this is an internal failure.)		
5	Defective heat sink temperature sensor	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Disconnect the connector CN7. Measure the resistance of the temperature sensor TH1 to do the troubleshooting.		
		Resistance	Between CN7 (1) and (11)	150Ω to 450kΩ
6	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		
7	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of heat sink temperature sensor

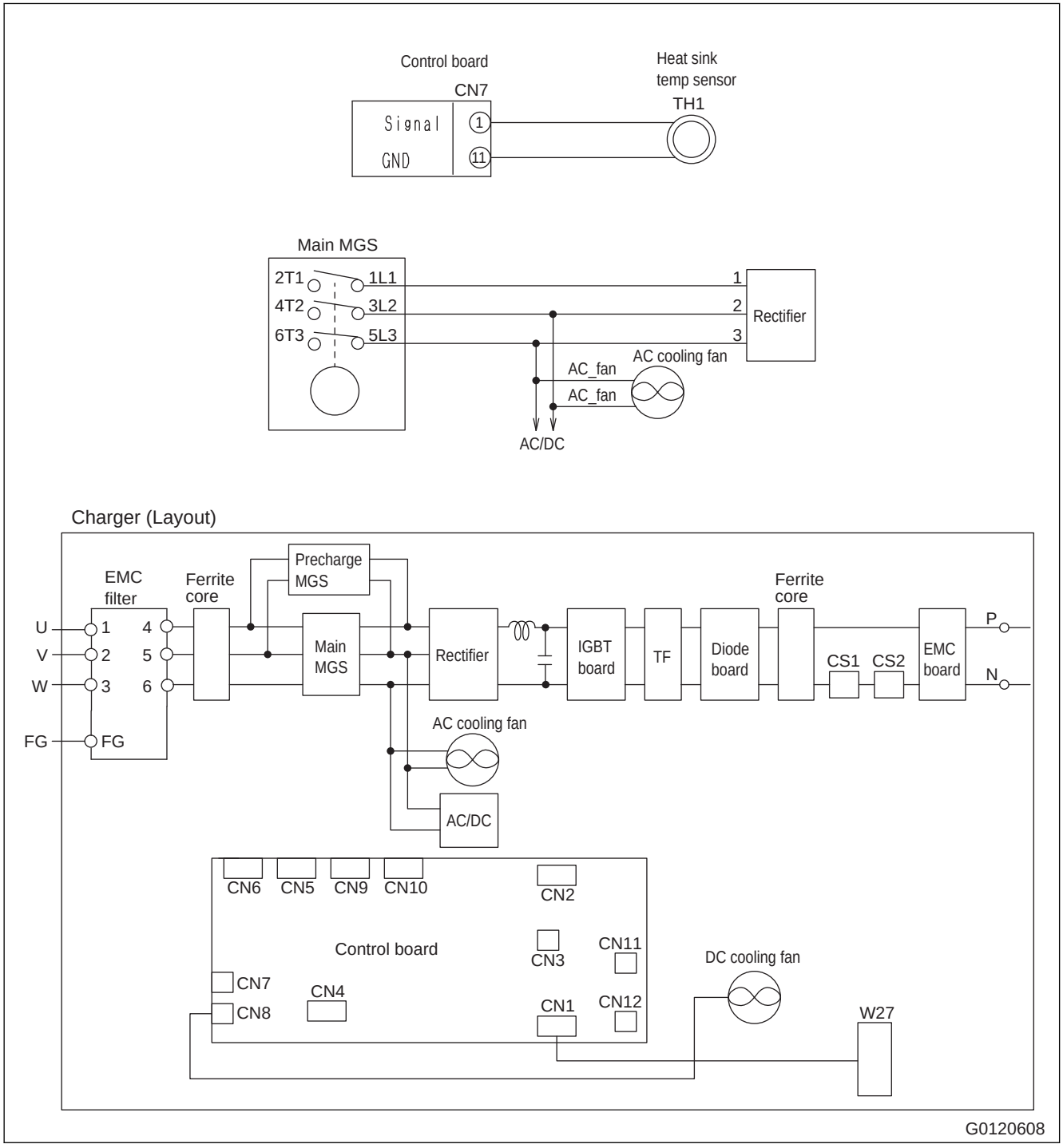


FAILURE CODE [GFADNT]

Action level	Failure code	Failure phenomenon	Chg. Heatsink Temp Error (Charger system)
L03	GFADNT		
Detail of failure	The temperature of the heat sink in the stationary charger exceeds 125℃.		
Action of controller	• Stops the charge • Shows a caution symbol on the monitor and operates the alarm buzzer.		
Problem on lift truck	Charge is not possible.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Clogged filter	Judge if it is the time to replace or clean the filter.		
		Replacement period of the dust filter (STD)		2000h (12 months)
		Cleaning period of the dust filter (STD)		1000h (6 months)
		Replacement period of the salt damage filter (OPT)		1000h (6 months)
2	Defective installation area of stationary charger	Examine the area where the stationary charger is installed.		
		Height from the floor		Min. 250mm
		Distance from the wall		Min. 250mm
3	Open circuit in wiring harness (AC cooling FAN)	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Disconnect the connector AC_FAN of the AC cooling FAN. Measure the resistance of the wiring harness to do the troubleshooting.		
		Resistance	Between main MGS (3L2) and AC_FAN	Max. 1Ω
			Between main MGS (5L3) and AC_FAN	Max. 1Ω
4	Defective AC cooling fan	If no failure is found by the above checks, the AC cooling fan is defective. (Troubleshooting cannot be done because this is an internal failure.)		
5	Defective heat sink temperature sensor	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Disconnect the connector CN7. Measure the resistance of the temperature sensor TH1 to do the troubleshooting.		
		Resistance	Between CN7 (1) and (11)	150Ω to 450kΩ
6	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		
7	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of heat sink temperature sensor

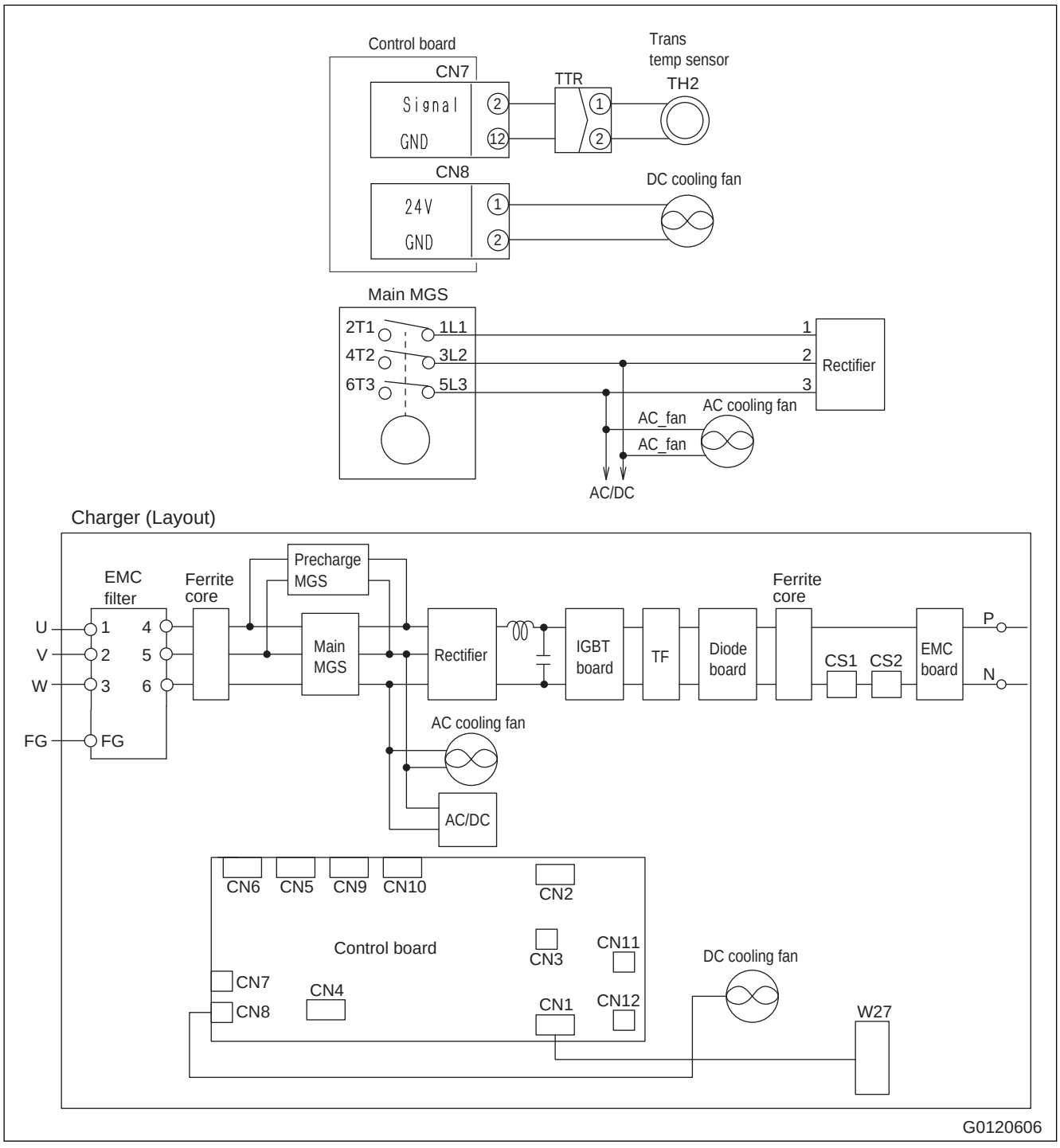


FAILURE CODE [GFAEMA]

Action level	Failure code	Failure phenomenon	Chg. Trans. Temp Sensor Defective (Charger system)
L03	GFAEMA		
Detail of failure	The temperature signal of the transformer in the stationary charger is out of the correct range. (0.3V and below or 4.6V and above)		
Action of controller	• Stops the charge • Shows a caution symbol on the monitor and operates the alarm buzzer.		
Problem on lift truck	Charge is not possible.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Disconnect the connectors CN7 and TTR. Measure the resistance of the transformer temperature sensor signal wire to do the troubleshooting.		
		Resistance	Between CN7 (2) and TTR (1)	Max. 1Ω
			Between CN7 (12) and TTR (2)	Max. 1Ω
2	Defective temperature sensor	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Disconnect the connector TTR. Measure the resistance of the temperature sensor TH2 to do the troubleshooting.		
		Resistance	Between TTR (1) and (2)	150Ω to 450kΩ
3	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		
4	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of transformer temperature sensor

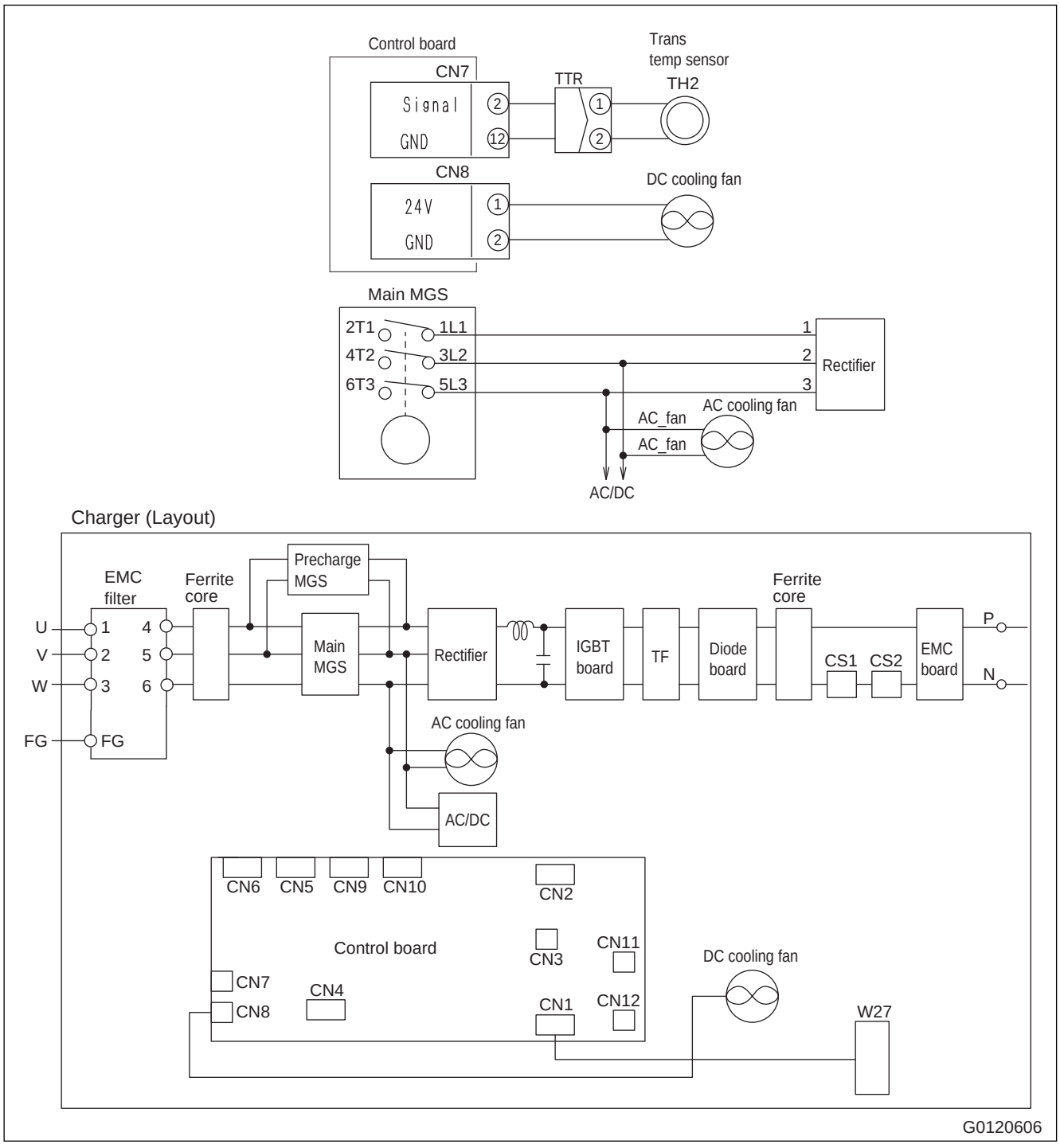


FAILURE CODE [GFAF00]

Action level	Failure code	Failure phenomenon	Chg. Trans. Temp alarm (Charger system)
L03	GFAF00		
Detail of failure	The temperature of the transformer in the stationary charger exceeds 106℃.		
Action of controller	• Operates the vehicle normally for 1 second after the abnormality is sensed. • If the detection continues for 1 second, shows a caution symbol on the monitor, and restricts the charge current to 60% of the usual level. • When the sensed temperature becomes 101℃ or less, the vehicle goes back to the correct state.		
Problem on lift truck	The charge current decreases and the charge time becomes longer.		
Related information	• You can examine the numeric input of transformer temperature with the machine monitor. (Code: 56553 (℃)) • Reproduction method of failure code: Set to charging mode.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Clogged filter	Judge if it is the time to replace or clean the filter.		
		Replacement period of the dust filter (STD)	2000h (12 months)	
		Cleaning period of the dust filter (STD)	1000h (6 months)	
		Replacement period of the salt damage filter (OPT)	1000h (6 months)	
2	Defective installation area of stationary charger	Examine the area where the stationary charger is installed.		
		Height from the floor	Min. 250mm	
		Distance from the wall	Min. 250mm	
3	Defective DC cooling fan	Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.)		
		If you find an open circuit in the wiring harness, a damaged connector, or a damaged fan blade, the fan is defective.		
4	Open circuit in wiring harness (AC cooling FAN)	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Disconnect the connector AC_FAN of the AC cooling FAN. Measure the resistance of the wiring harness to do the troubleshooting.		
		Resistance	Between main MGS (3L2) and AC_FAN	Max. 1Ω
			Between main MGS (5L3) and AC_FAN	Max. 1Ω
5	Defective AC cooling fan	If you find an open circuit in the wiring harness, a damaged connector, or a damaged fan blade, the fan is defective.		
6	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		
7	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of transformer temperature sensor

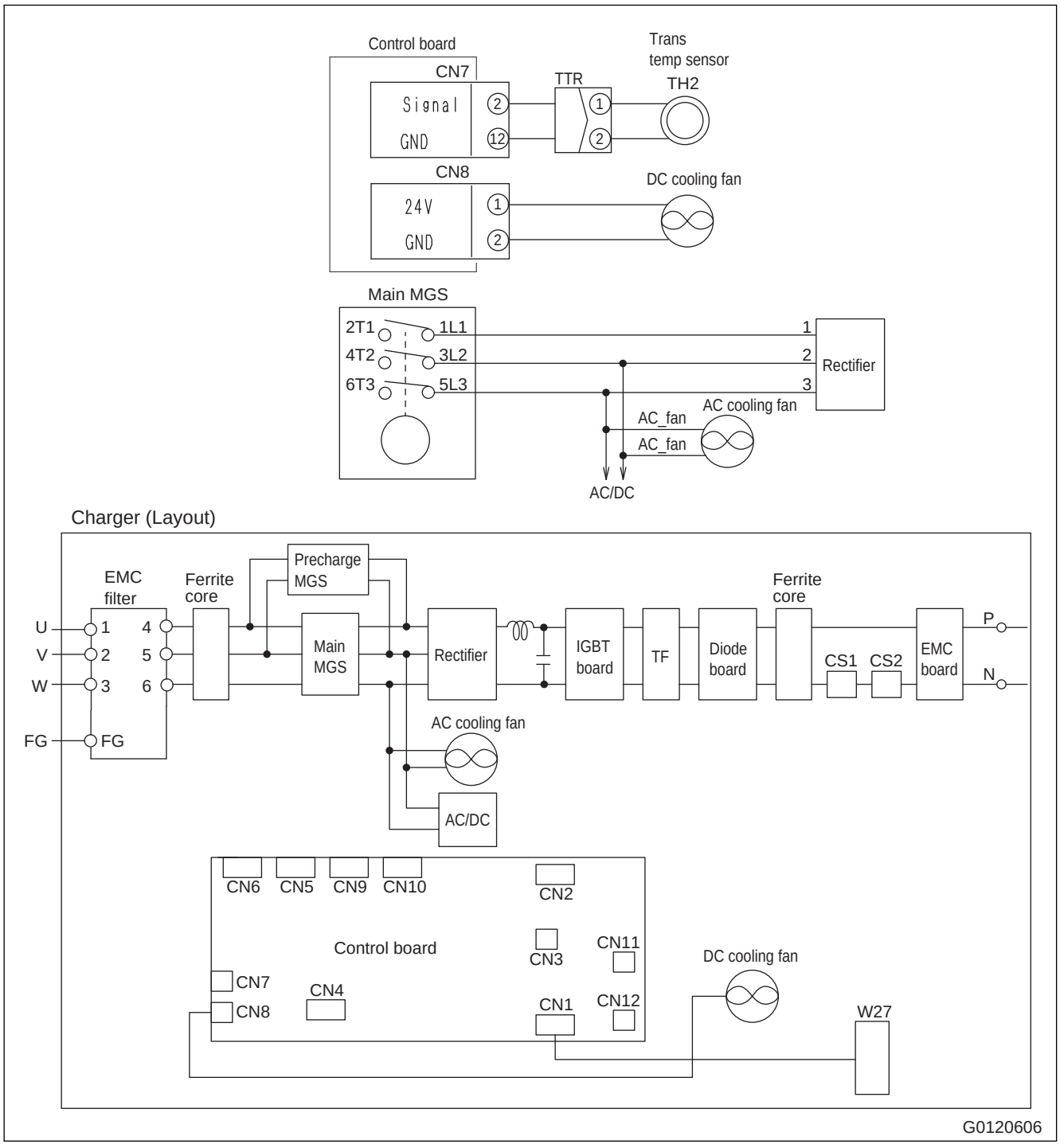


FAILURE CODE [GFAFNT]

Action level	Failure code	Failure phenomenon	Chg. Trans. Temp Error (Charger system)
L03	GFAFNT		
Detail of failure	The temperature of the transformer in the stationary charger exceeds 111℃. But it is not judged as a failure until the temperature exceeds 131℃ while the DC cooling fan is stopped and for 80 seconds after the start of fan drive.		
Action of controller	• Stops the charge • Shows a caution symbol on the monitor and operates the alarm buzzer.		
Problem on lift truck	Charge is not possible.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Clogged filter	Judge if it is the time to replace or clean the filter.		
		Replacement period of the dust filter (STD)	2000h (12 months)	
		Cleaning period of the dust filter (STD)	1000h (6 months)	
		Replacement period of the salt damage filter (OPT)	1000h (6 months)	
2	Defective installation area of stationary charger	Examine the area where the stationary charger is installed.		
		Height from the floor	Min. 250mm	
		Distance from the wall	Min. 250mm	
3	Defective DC cooling fan	Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.)		
		If you find an open circuit in the wiring harness, a damaged connector, or a damaged fan blade, the fan is defective.		
4	Open circuit in wiring harness (AC cooling FAN)	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Disconnect the connector AC_FAN of the AC cooling FAN. Measure the resistance of the wiring harness to do the troubleshooting.		
		Resistance	Between main MGS (3L2) and AC_FAN	Max. 1Ω
			Between main MGS (5L3) and AC_FAN	Max. 1Ω
5	Defective AC cooling fan	If you find an open circuit in the wiring harness, a damaged connector, or a damaged fan blade, the fan is defective.		
6	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		
7	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of transformer temperature sensor

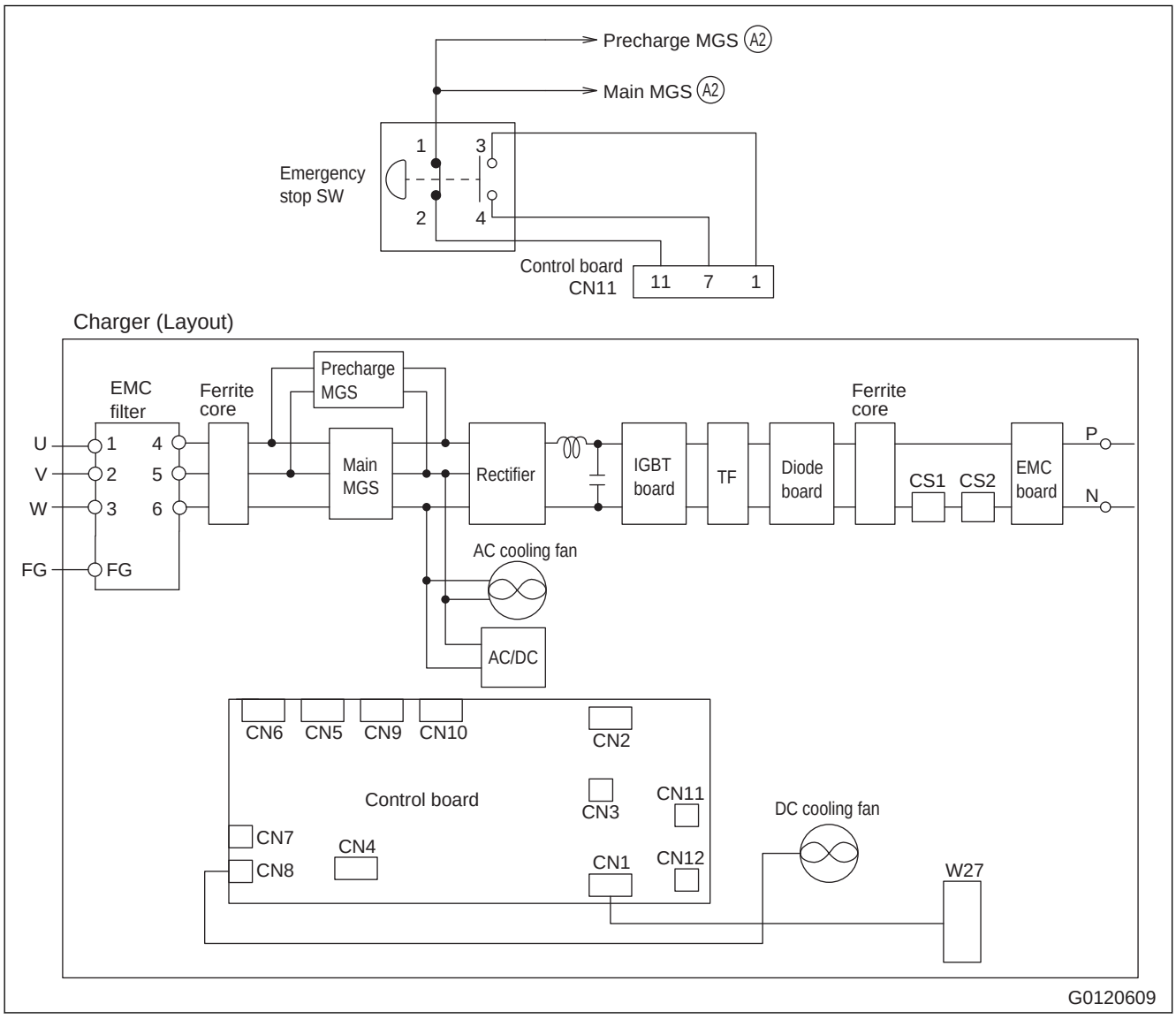


FAILURE CODE [GFAG00]

Action level	Failure code	Failure phenomenon	Power Cut SW Operation(CHGR) (Charger system)
L03	GFAG00		
Detail of failure	The state signal of the emergency stop switch of the stationary charger is ON.		
Action of controller	• Shows a caution symbol and prevents charges. • After the cause is resolved, the vehicle goes back to the correct state and the battery can be charged.		
Problem on lift truck	Charge is not possible.		
Related information	You can examine the state of the emergency stop switch with the monitor panel. (Code: 56447 (ON/OFF))		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	The emergency stop switch is pushed.	If the emergency stop switch is pushed, turn the button to go back to the OFF state.		
2	Defective emergency stop switch	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Make sure that the emergency stop switch is not pushed. 3. Disconnect the connector CN11. Do the measurement at the male side to do the troubleshooting.		
		Resistance	Between CN11 (male) (1) and (7)	Min. 1MΩ
3	Defective control board	If no failure is found by the above checks, the controller circuit board is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of power supply cut-out switch



FAILURE CODE [GFAMKM]

Action level	Failure code	Failure phenomenon	Unplugging Abnormality
-	GFAMKM		
Detail of failure	The charge plug is disconnected during the charge operation. The charge plug is probably disconnected while the charge is not stopped during the charge operation. Failure does not occur immediately, but if it is done again and again, the power supply terminals will have damage. The power supply terminal will weld after some time, and you cannot move the forklift truck or charge the battery.		
Action of controller	Gives only an announcement.		
Problem on forklift truck	• The buzzer operates. • The Unplugging Abnormality symbol is shown on the monitor panel.		
Related information	This failure code is not intended for failure but for notification.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Incorrect charge operation	Do not disconnect the charge plug during the charge operation. If it is necessary to disconnect the charge plug during the charge operation, instruct the operator to stop the charge operation first before disconnection of the charge plug.

FAILURE CODE [GFAMMB]

Action level	Failure code	Failure phenomenon	CHARGER PLUG DETERIORATION
L01	GFAMMB		
Detail of failure	The failure code [GFAMKM] is sensed 4 times or more.		
Action of controller	Gives only an announcement.		
Problem on forklift truck	• The buzzer operates. • The Unplugging Abnormality symbol is shown on the monitor panel.		
Related information	Reproduction method of failure code: Turn the key switch to the ON position or set to the charging mode.		

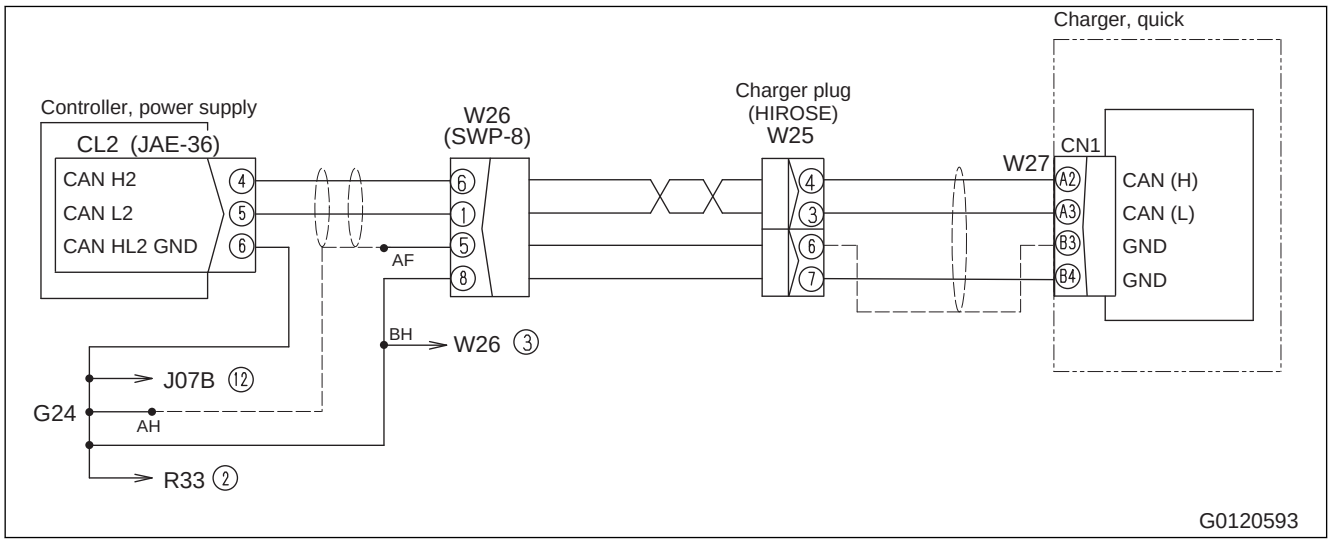
No.	Cause	Procedure, measurement location, criteria and remarks
1	Incorrect charge operation	1. Do not disconnect the charge plug during the charge operation. If it is necessary to disconnect the charge plug during the charge operation, instruct the operator to stop the charge operation first before disconnection of the charge plug. 2. Examine the power supply terminal of the charge plug. **REMARK** When you examine the power supply terminal of the charge plug, see TESTING AND ADJUSTING, “TEST STRONG ELECTRIC TERMINAL OF CHARGE PLUG ON FORKLIFT TRUCK” or “TEST STRONG ELECTRIC TERMINAL OF CHARGE PLUG ON CHARGER”.

FAILURE CODE [GFAQKR] (L-shaped leg battery charger)

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (for CHGR) (Charger system)
L03	GFAQKR		
Detail of failure	CAN communication with the power supply controller is disabled.		
Action of controller	• Stops the charge • Shows a caution symbol on the monitor panel and operates the alarm buzzer.		
Problem on lift truck	Charge is not possible.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (vehicle side) (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more) 3. Disconnect the connector CL2 to do the troubleshooting.		
		Resistance	Between CL2 (female) (4) and W25 (vehicle side) (4)	Max. 1Ω
			Between CL2 (female) (5) and W25 (vehicle side) (3)	Max. 1Ω
			Between CL2 (female) (6) and W25 (vehicle side) (6)	Max. 1Ω
			Between CL2 (female) (6) and W25 (vehicle side) (7)	Max. 1Ω
2	Open circuit in wiring harness (Charger side) (wire breakage or defective contact of connector)	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Disconnect the connector W27 to do the troubleshooting.		
		Resistance	Between W27 (A2) and W25 (battery charger side) (4)	Max. 1Ω
			Between W27 (A3) and W25 (battery charger side) (3)	Max. 1Ω
			Between W27 (B3) and W25 (battery charger side) (6)	Max. 1Ω
			Between W27 (B4) and W25 (battery charger side) (7)	Max. 1Ω
3	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		
4	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of CAN communication (for battery charger)

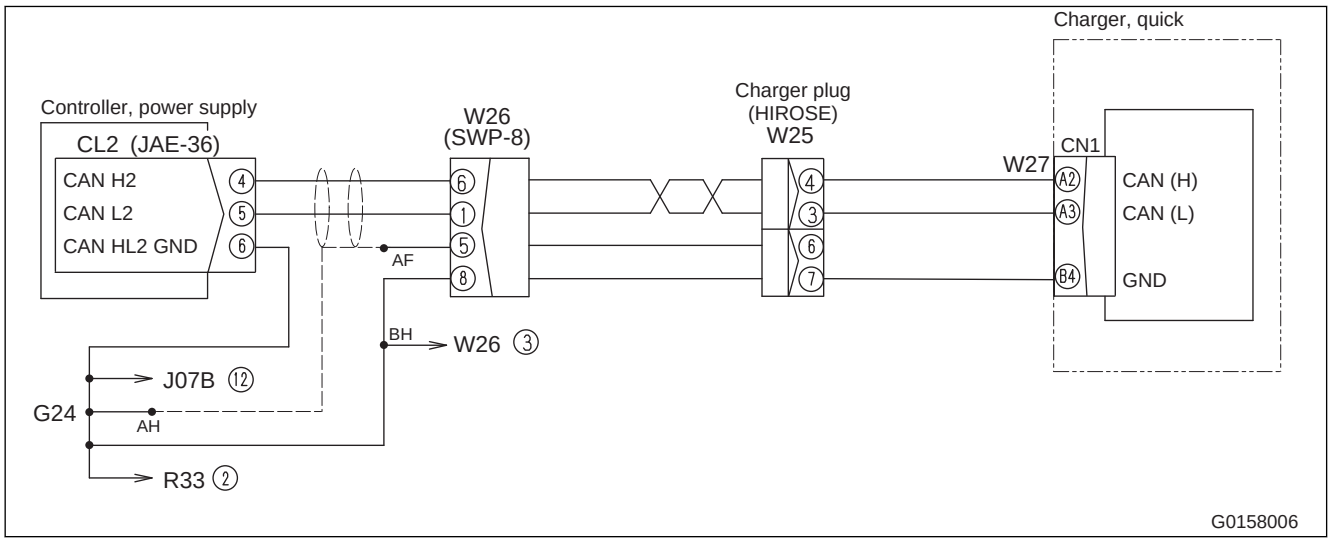


FAILURE CODE [GFAQKR] (U-shaped leg battery charger)

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (for CHGR) (Charger system)
L03	GFAQKR		
Detail of failure	CAN communication with the power supply controller is disabled.		
Action of controller	• Stops the charge • Shows a caution symbol on the monitor panel and operates the alarm buzzer.		
Problem on lift truck	Charge is not possible.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (vehicle side) (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more) 3. Disconnect the connector CL2 to do the troubleshooting.		
		Resistance	Between CL2 (female) (4) and W25 (vehicle side) (4)	Max. 1Ω
			Between CL2 (female) (5) and W25 (vehicle side) (3)	Max. 1Ω
			Between CL2 (female) (6) and W25 (vehicle side) (6)	Max. 1Ω
			Between CL2 (female) (6) and W25 (vehicle side) (7)	Max. 1Ω
2	Open circuit in wiring harness (Charger side) (wire breakage or defective contact of connector)	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Disconnect the connector W27 to do the troubleshooting.		
		Resistance	Between W27 (A2) and W25 (battery charger side) (4)	Max. 1Ω
			Between W27 (A3) and W25 (battery charger side) (3)	Max. 1Ω
			Between W27 (B4) and W25 (battery charger side) (7)	Max. 1Ω
3	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		
4	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of CAN communication (for battery charger)

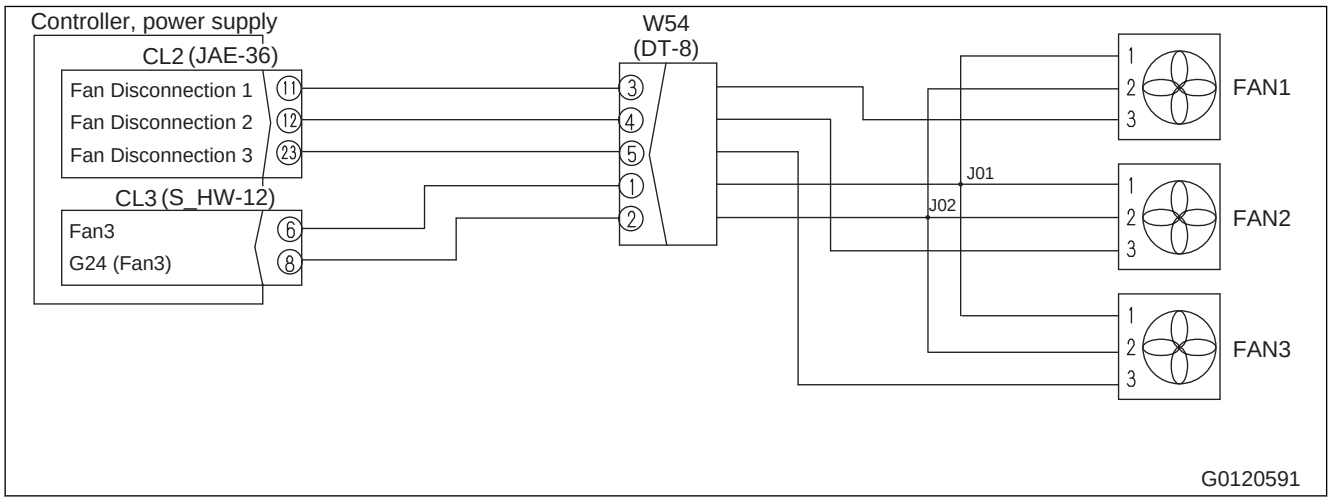


Failure code [GFB8MC] (FE25-2)

Action level	Failure code	Failure phenomenon	ABNL) BATTERY FAN(CHGR/C) (FE25-2) (Power controller system)
L03	GFB8MC		
Detail of failure	The battery fan operating signal is not output while the battery fan operates.		
Action of controller	• Operates the vehicle normally for 1 second after the abnormality is sensed. • If the detection continues for 1 second, shows a caution symbol.		
Problem on lift truck	• When the fan stops, the battery temperature rises. • If the vehicle is used continuously as it is, a battery temperature alarm can occur or the battery temperature cannot become equal.		
Related information	• Wait for 1 second after the fan starts to operate, and then monitor the failure. • You can examine the state of the fan operation signal with the monitor panel. (Battery Fan 1 to Battery Fan 3: Code 56544 to 56546 (ON/OFF)) • Reproduction method of failure code: Start charge.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective battery fan	1. Turn the starting switch to the OFF position. 2. Go to the TESTING MENU in service mode of the monitor panel, and set “Cooling Fan Operation Set” to “1: Forced operation”. 3. Make sure that all the battery fans run to do the troubleshooting.		
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CL2 and W54. Connect the T-adapter to the female side of W54 to do the troubleshooting.		
		Resistance	Between CL2 (female) (11) and W54 (female) (3)	Max. 1Ω
			Between CL2 (female) (12) and W54 (female) (4)	Max. 1Ω
			Between CL2 (female) (23) and W54 (female) (5)	Max. 1Ω
3	Defective battery fan (Defective state output circuit)	If no failure is found by the above checks, the battery fan is defective. (Troubleshooting cannot be done because this is an internal failure.)		
4	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery cooling fan (FE25-2)

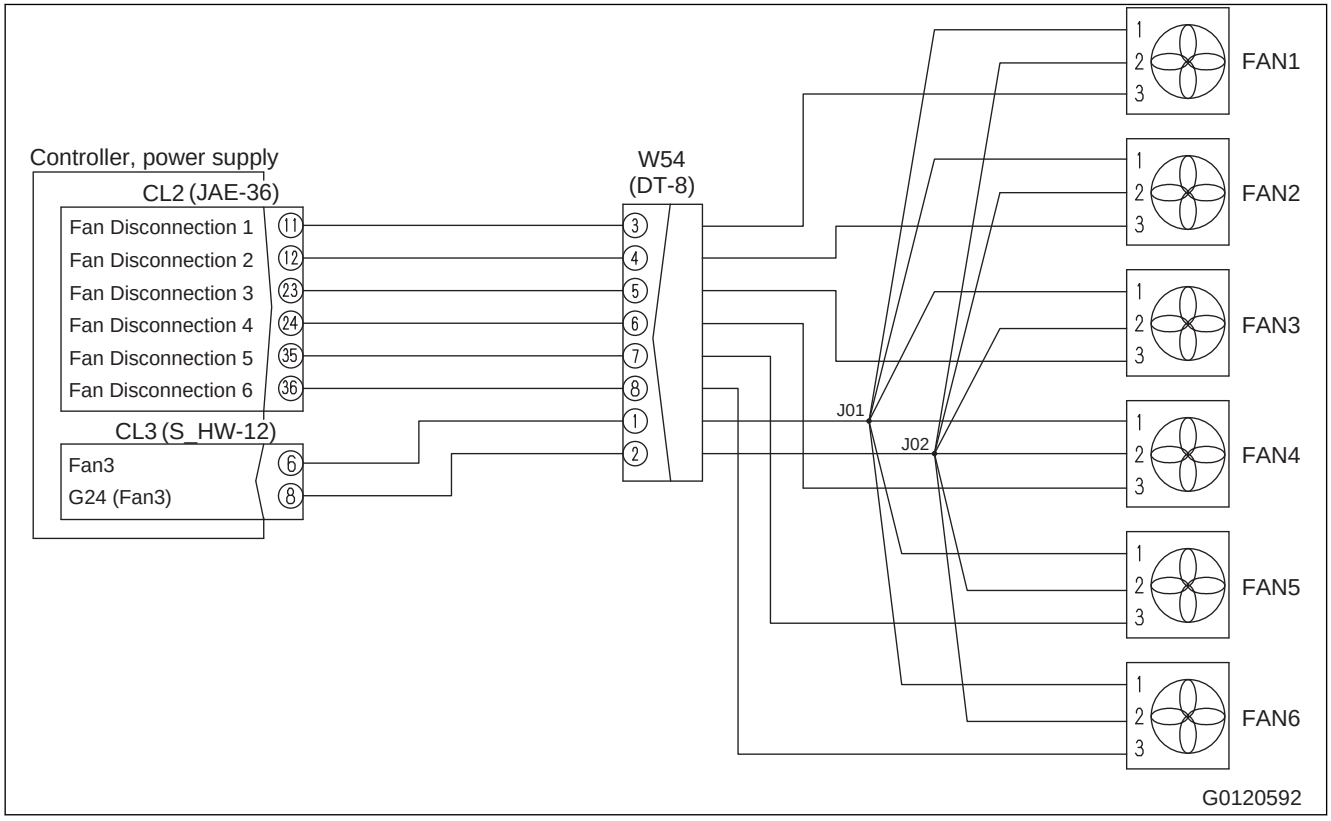


Failure code [GFB8MC] (FE30-2)

Action level	Failure code	Failure phenomenon	ABNL) BATTERY FAN(CHGR/C) (FE30-2) (Power controller system)
L03	GFB8MC		
Detail of failure	The battery fan operating signal is not output while the battery fan operates.		
Action of controller	• Operates the vehicle normally for 1 second after the abnormality is sensed. • If the detection continues for 1 second, shows a caution symbol.		
Problem on lift truck	• When the fan stops, the battery temperature rises. • If the vehicle is used continuously as it is, a battery temperature alarm can occur or the battery temperature cannot become equal.		
Related information	• Wait for 1 second after the fan starts to operate, and then monitor the failure. • You can examine the state of the fan operation signal with the monitor panel. (Battery Fan 1 to Battery Fan 6: Code 56544 to 56549 (ON/OFF)) • Reproduction method of failure code: Start charge.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective battery fan	1. Turn the starting switch to the OFF position. 2. Go to the TESTING MENU in service mode of the monitor panel, and set “Cooling Fan Operation Set” to “1: Forced operation”. 3. Make sure that all the battery fans run to do the troubleshooting.		
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CL2 and W54. Connect the T-adapter to the female side of W54 to do the troubleshooting.		
		Resistance	Between CL2 (female) (11) and W54 (female) (3)	Max. 1Ω
			Between CL2 (female) (12) and W54 (female) (4)	Max. 1Ω
			Between CL2 (female) (23) and W54 (female) (5)	Max. 1Ω
			Between CL2 (female) (24) and W54 (female) (6)	Max. 1Ω
			Between CL2 (female) (35) and W54 (female) (7)	Max. 1Ω
			Between CL2 (female) (36) and W54 (female) (8)	Max. 1Ω
3	Defective battery fan (Defective state output circuit)	If no failure is found by the above checks, the battery fan is defective. (Troubleshooting cannot be done because this is an internal failure.)		
4	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery cooling fan (FE30-2)

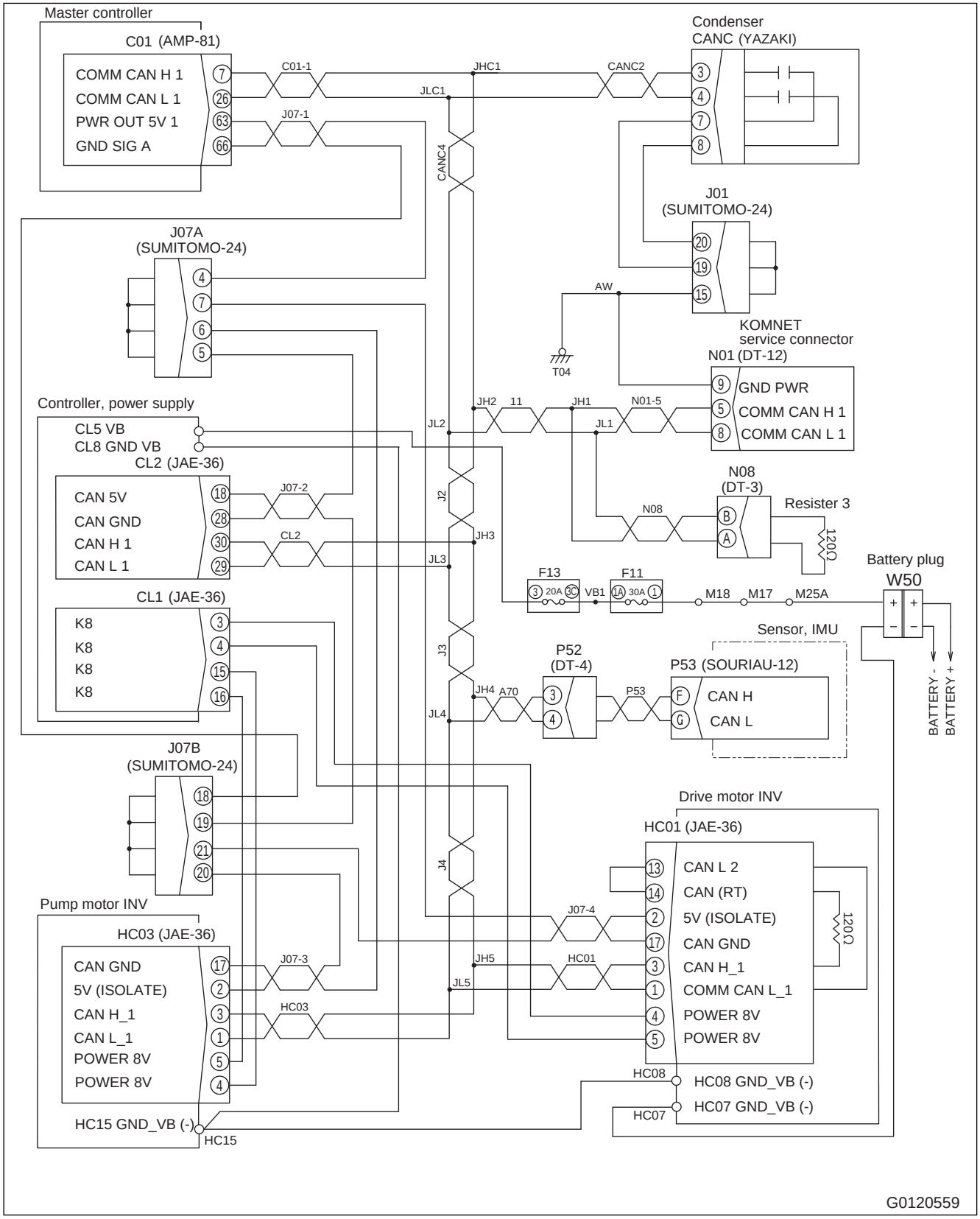


FAILURE CODE [GFBQKR]

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (for M/C) (Power controller system)
L03	GFBQKR		
Detail of failure	The power supply controller cannot receive CAN communication from the master controller.		
Action of controller	• If the power supply controller cannot receive CAN communication from the master controller, it operates at the value received last. • If it cannot receive CAN communication continuously for 1 second, it shows a caution symbol. If during a charge, it stops the charge.		
Problem on lift truck	• The time and date display is not updated. • The battery fan does not operate. • The battery cannot be charged.		
Related information	Reproduction method of failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Defective CAN communication system and defective power supply system	Do the checks on causes 1, 3, and 4 for failure code [DBNEKR].		
2	Open circuit in wiring harness (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors C01 and CL2. Connect the socket to the female side of C01 to do the troubleshooting.		
		Resistance	Between C01 (female) (26) and CL2 (female) (29)	Max. 1Ω
			Between C01 (female) (7) and CL2 (female) (30)	Max. 1Ω
			Between C01 (female) (63) and CL2 (female) (18)	Max. 1Ω
			Between C01 (female) (66) and CL2 (female) (28)	Max. 1Ω
3	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of CAN communication

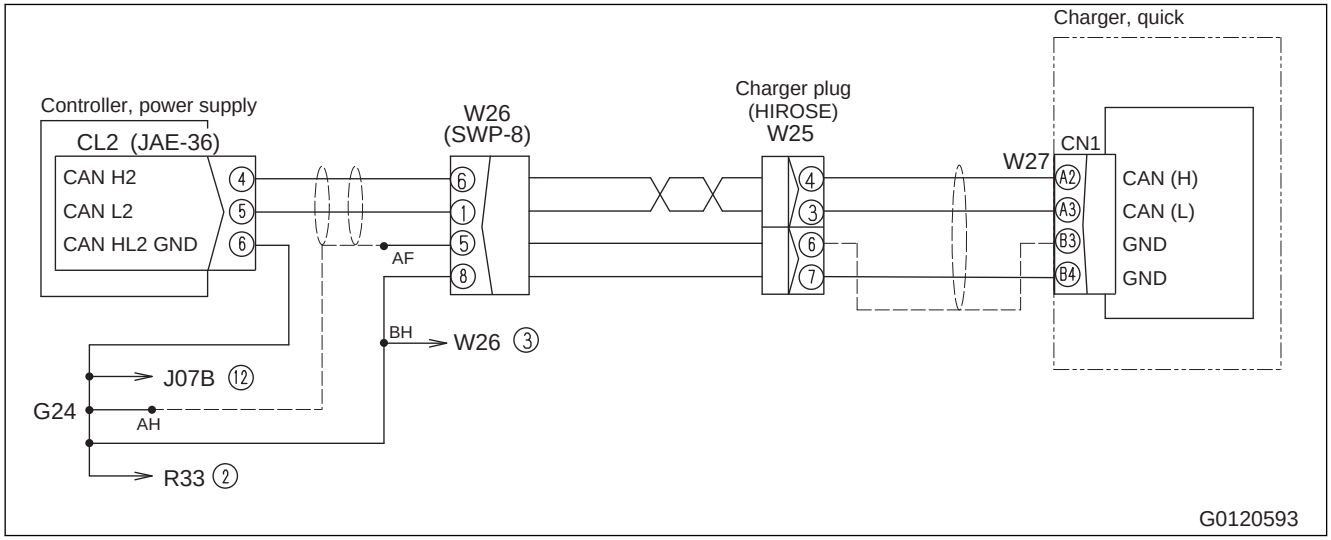


FAILURE CODE [GFBRKR] (L-shaped leg battery charger)

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (for CHGR) (Power controller system)
L03	GFBRKR		
Detail of failure	The power supply controller cannot receive CAN communication from the stationary charger.		
Action of controller	• If the power supply controller cannot receive CAN communication from the stationary charger, the controller operates at the value received last. • If it cannot receive continuously for 1 second, it stops the charge.		
Problem on lift truck	The battery cannot be charged.		
Related information	Reproduction method of failure code: Start charge.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (vehicle side) (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL2 to do the troubleshooting.		
		Resistance	Between CL2 (female) (4) and W25 (vehicle side) (4)	Max. 1Ω
			Between CL2 (female) (5) and W25 (vehicle side) (3)	Max. 1Ω
			Between CL2 (female) (6) and W25 (vehicle side) (6)	Max. 1Ω
			Between CL2 (female) (6) and W25 (vehicle side) (7)	Max. 1Ω
2	Open circuit in wiring harness (Charger side) (wire breakage or defective contact of connector)	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Disconnect the connector W27 to do the troubleshooting.		
		Resistance	Between W27 (A2) and W25 (battery charger side) (4)	Max. 1Ω
			Between W27 (A3) and W25 (battery charger side) (3)	Max. 1Ω
			Between W27 (B3) and W25 (battery charger side) (6)	Max. 1Ω
			Between W27 (B4) and W25 (battery charger side) (7)	Max. 1Ω
3	Defective stationary charger, control board system	Do the checks on causes 1, 2, 3, and 4 for failure code [GFA4KK].		
4	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		
5	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of CAN communication (for battery charger)

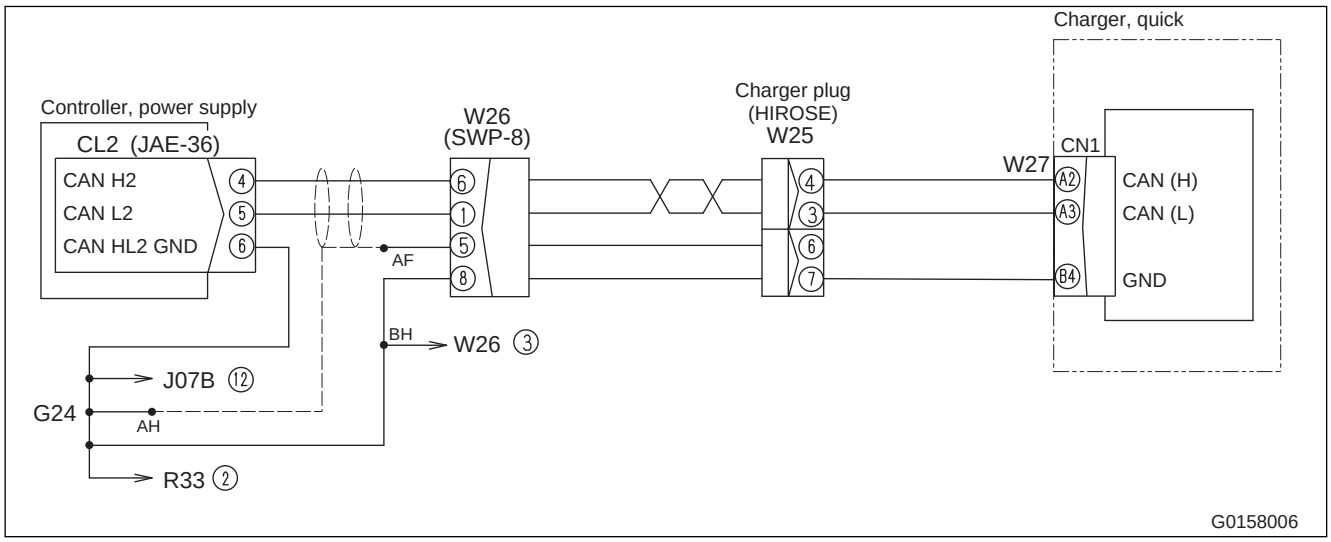


FAILURE CODE [GFBRKR] (U-shaped leg battery charger)

Action level	Failure code	Failure phenomenon	ABNL) CAN COMM. (for CHGR) (Power controller system)
L03	GFBRKR		
Detail of failure	The power supply controller cannot receive CAN communication from the stationary charger.		
Action of controller	• If the power supply controller cannot receive CAN communication from the stationary charger, it operates at the value received last. • If it cannot receive continuously for 1 second, it stops the charge.		
Problem on lift truck	The battery cannot be charged.		
Related information	Reproduction method of failure code: Start charge.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Open circuit in wiring harness (vehicle side) (wire breakage or defective contact of connector)	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL2 to do the troubleshooting.		
		Resistance	Between CL2 (female) (4) and W25 (vehicle side) (4)	Max. 1Ω
			Between CL2 (female) (5) and W25 (vehicle side) (3)	Max. 1Ω
			Between CL2 (female) (6) and W25 (vehicle side) (6)	Max. 1Ω
			Between CL2 (female) (6) and W25 (vehicle side) (7)	Max. 1Ω
2	Open circuit in wiring harness (Charger side) (wire breakage or defective contact of connector)	1. Disconnect charge plug W25. Turn off the breaker of the AC power supply. (Wait for 10 minutes or more before you open the cover of the stationary charger.) 2. Disconnect the connector W27 to do the troubleshooting.		
		Resistance	Between W27 (A2) and W25 (battery charger side) (4)	Max. 1Ω
			Between W27 (A3) and W25 (battery charger side) (3)	Max. 1Ω
			Between W27 (B4) and W25 (battery charger side) (7)	Max. 1Ω
3	Defective stationary charger, control board system	Do the checks on causes 1, 2, 3, and 4 for failure code [GFA4KK].		
4	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		
5	Defective stationary charger	If no failure is found by the above checks, the stationary charger is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of CAN communication (for battery charger)



FAILURE CODE [GFD6MA]

Action level	Failure code	Failure phenomenon	ABNL) TEMP SENSOR(P-CON) (Power controller system)
L01	GFD6MA		
Detail of failure	(Senses one of the below) • An input voltage from the main circuit board temperature sensor of ≤ 0.15V is sensed continuously for 500msec. (Short circuit) • An input voltage from the main circuit board temperature sensor of ≥ 4.85V is sensed continuously for 500msec. (Open circuit)		
Action of controller	• Gives only an announcement. • Even after the cause of failure is corrected, the vehicle will not go back to the correct state until the battery plug W50 is connected again.		
Problem on lift truck	The internal temperature of the power supply controller cannot be measured correctly.		
Related information	How to reproduce failure code: Connect the battery plug W50.		

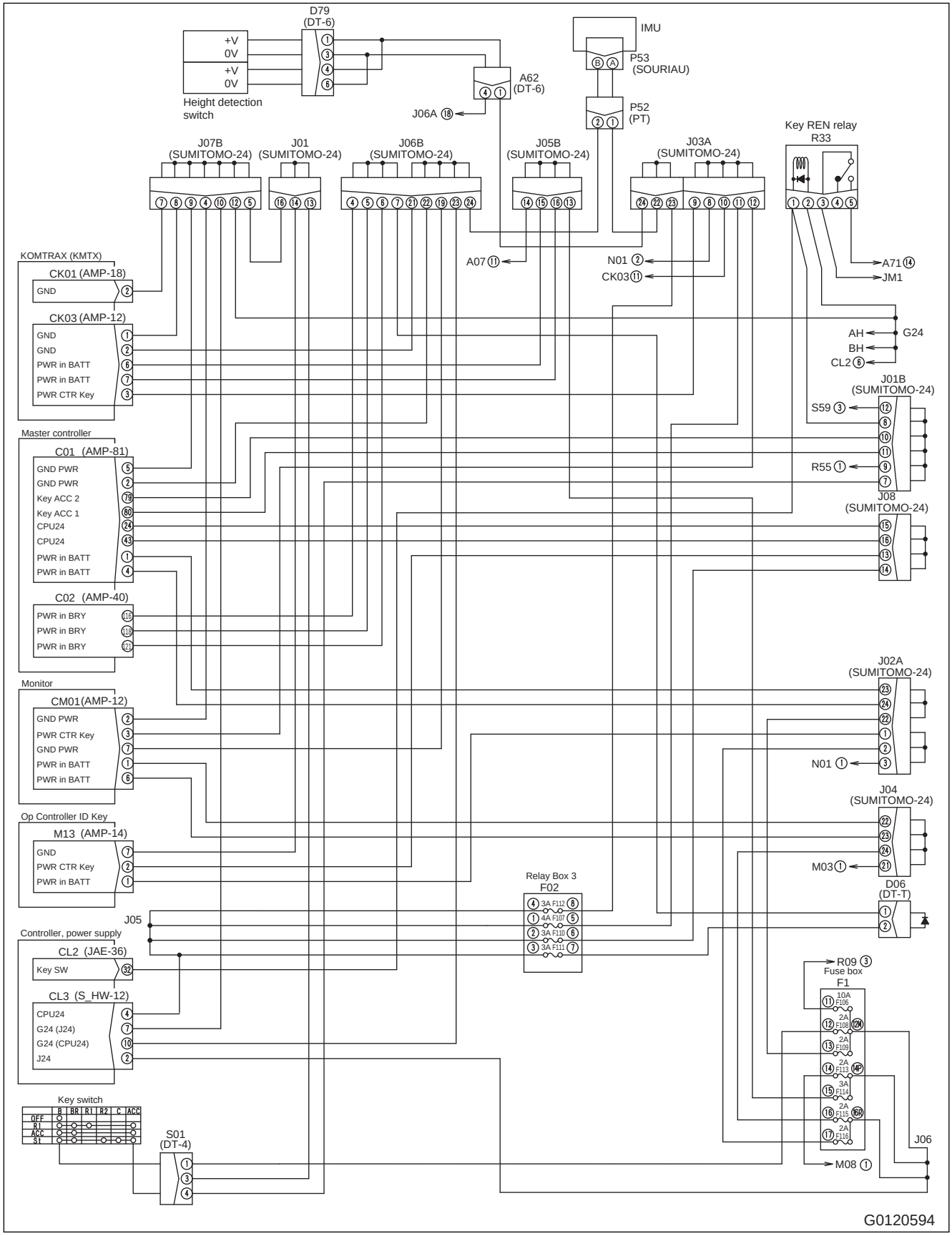
No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective power supply controller	The power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [GFDAKG]

Action level	Failure code	Failure phenomenon	HIGH VOLTAGE) CPU24 (Power controller system)
L04	GFDAKG		
Detail of failure	A CPU24 detection voltage of ≥ 29.06V is sensed continuously for 250msec.		
Action of controller	• Even after the cause of failure is corrected, the vehicle will not go back to the correct state until the battery plug W50 is connected again. Starting switch: ON • Turns all power supply outputs other than K24 to OFF. In charging mode • Turns all power supply output to OFF.		
Problem on lift truck	The vehicle cannot be operated.		
Related information	How to reproduce failure code: Connect the battery plug W50.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL3. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between CL3 (male) (4) and (10)	Max. 1V
2	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of CPU24V system



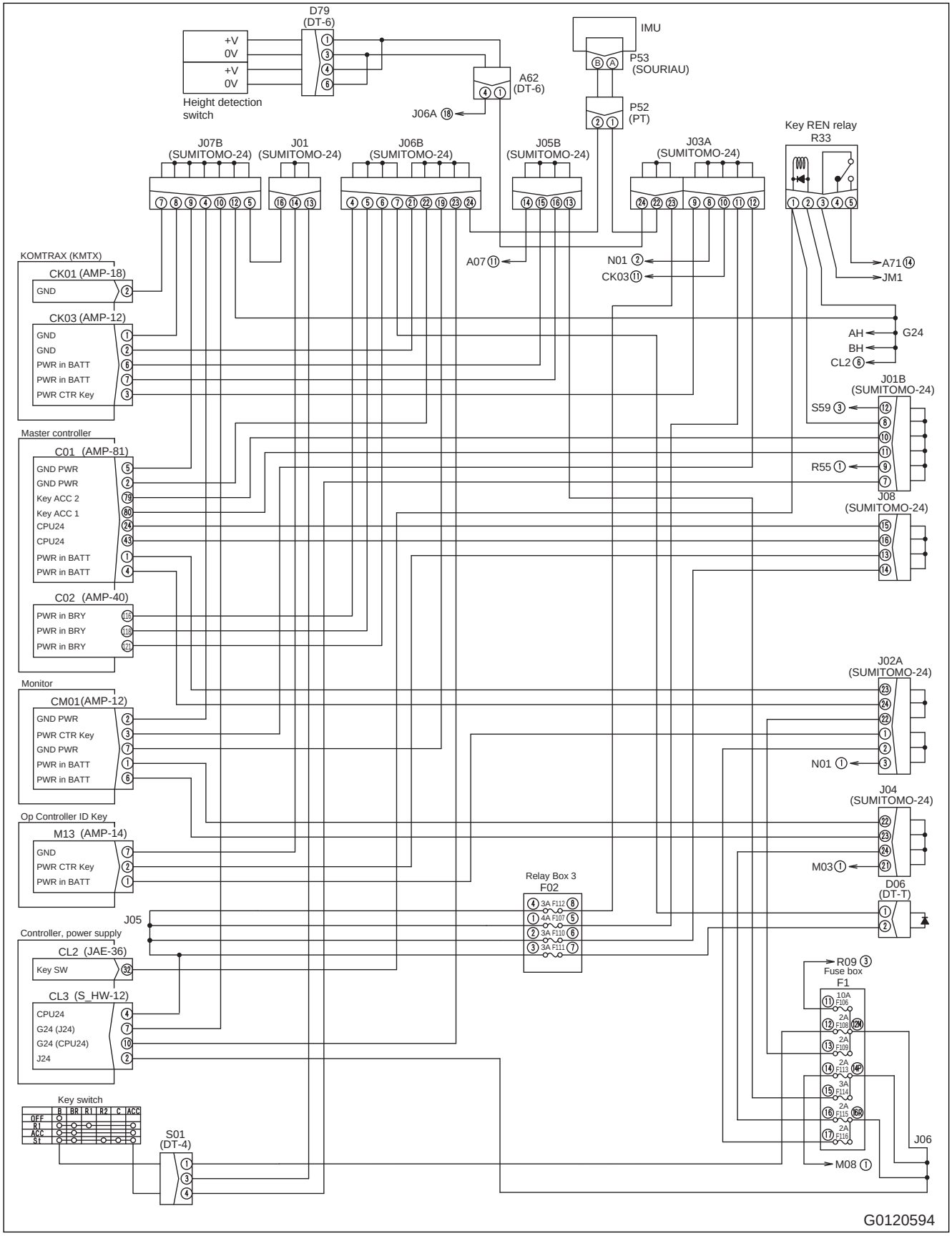
FAILURE CODE [GFDAKN]

Action level	Failure code	Failure phenomenon	OVER) CURRENT CPU24 (Power controller system)
L04	GFDAKN		
Detail of failure	When the CPU starting signal is ON, a CPU24 detection current of ≥ 16.17 to 29.14A is sensed continuously for 200 to 400µsec.		
Action of controller	• Turns CPU24 power supply output to OFF. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch or AC200V (breaker switch) is turned to the OFF position one time.		
Problem on lift truck	The vehicle cannot be operated.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position or set to charging mode.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL3, C01, C02, CM01, CK03, M13, P52 and A62 to do the troubleshooting.		
		Resistance	Between CL3 (male) (4) and (10)	Min. 1MΩ
2	Defective KOMTRAX terminal	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CK03. (Disconnect only the KOMTRAX terminal from the CPU24 output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDAKN] is shown.		
3	Defective ID key controller	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector M13. (Disconnect only the ID key controller from the CPU24 output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDAKN] is shown.		

No.	Cause	Procedure, measurement location, criteria and remarks
4	Defective IMU	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P52. (Disconnect only the IMU from the CPU24 output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDAKN] is shown.
5	Defective lifting height detection SW	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector A62. (Disconnect only the lifting height detection SW from the CPU24 output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDAKN] is shown.
6	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)
7	Defective monitor panel	If no failure is found by the above checks, the monitor panel is defective. (Troubleshooting cannot be done because this is an internal failure.)
8	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

Circuit diagram of CPU24V system



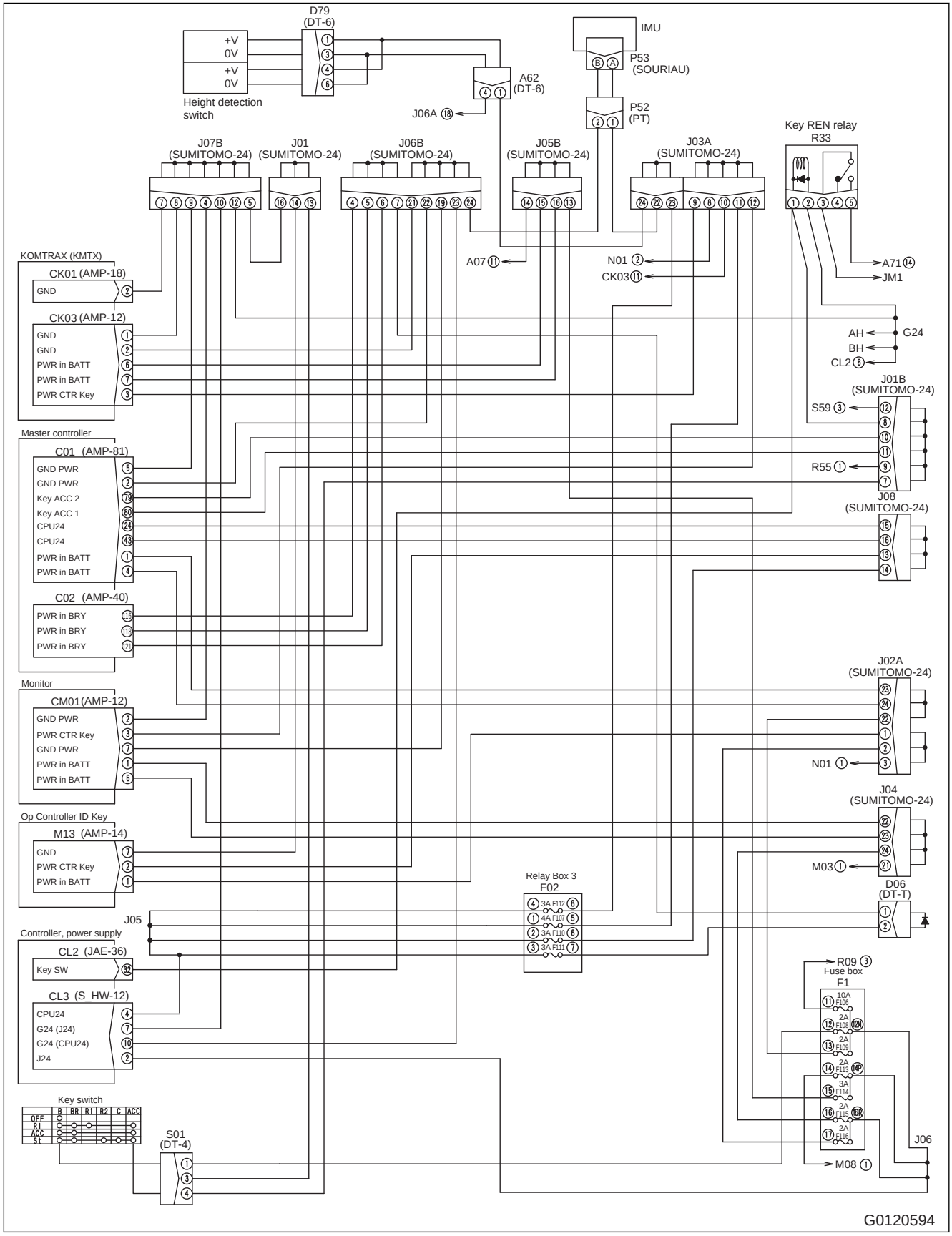
FAILURE CODE [GFDAKP]

Action level	Failure code	Failure phenomenon	LOW VOLTAGE) CPU24 (Power controller system)
L04	GFDAKP		
Detail of failure	When the CPU starting signal is ON, a CPU24 detection voltage of ≥ 19.43V is sensed continuously for 250msec.		
Action of controller	• Turns CPU24 power supply output to OFF. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch or AC200V (breaker switch) is turned to the OFF position one time.		
Problem on lift truck	The vehicle cannot be operated.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position or set to charging mode.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL3, C01, C02, CM01, CK03, M13, P52 and A62 to do the troubleshooting.		
		Resistance	Between CL3 (male) (4) and (10)	Min. 1MΩ
2	Defective KOMTRAX terminal	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CK03. (Disconnect only the KOMTRAX terminal from the CPU24 output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDAKP] is shown.		
3	Defective ID key controller	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector M13. (Disconnect only the ID key controller from the CPU24 output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDAKP] is shown.		

No.	Cause	Procedure, measurement location, criteria and remarks
4	Defective IMU	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector P52. (Disconnect only the IMU from the CPU24 output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDAKP] is shown.
5	Defective lifting height detection SW	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector A62. (Disconnect only the lifting height detection SW from the CPU24 output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDAKP] is shown.
6	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)
7	Defective monitor panel	If no failure is found by the above checks, the monitor panel is defective. (Troubleshooting cannot be done because this is an internal failure.)
8	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

Circuit diagram of CPU24V system

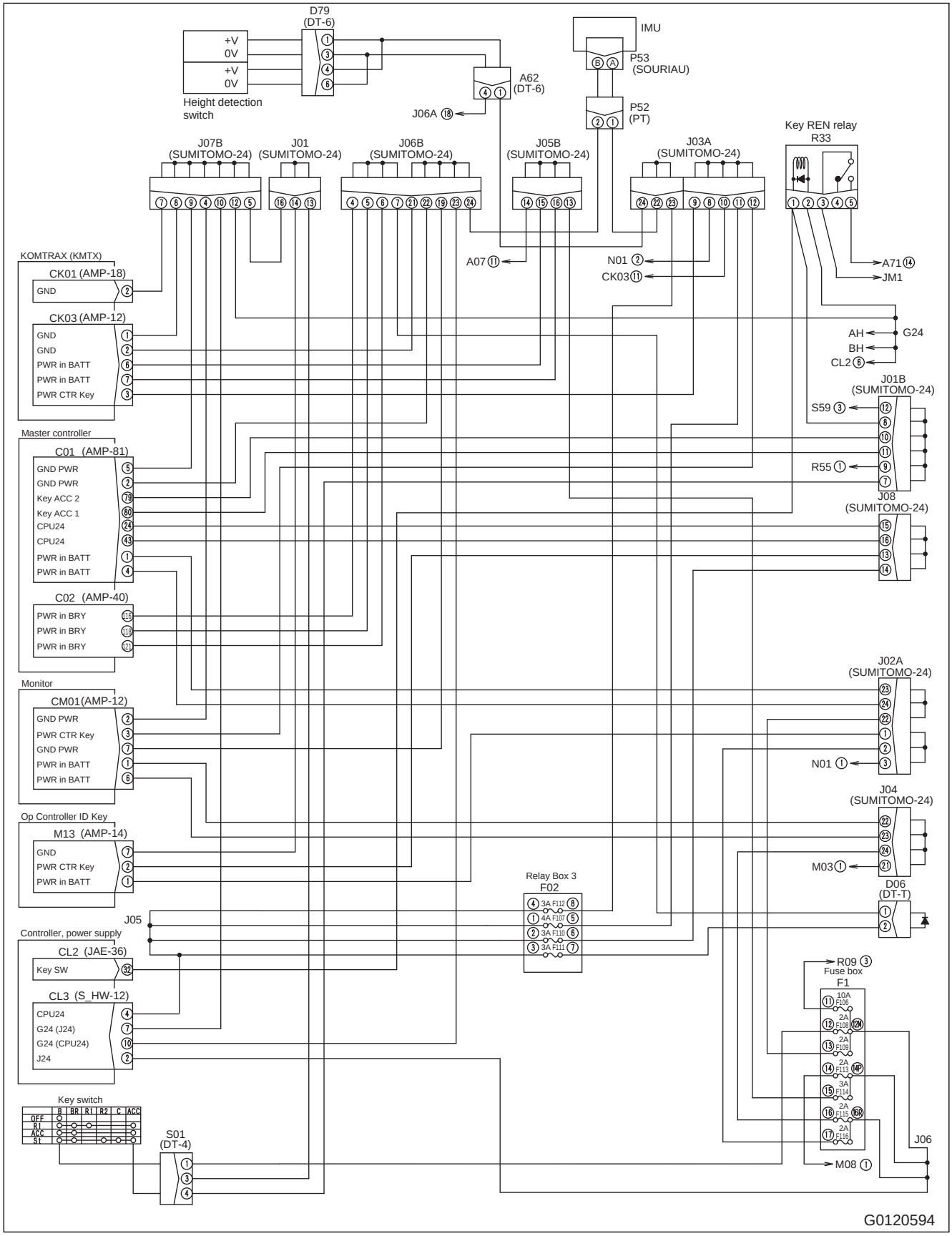


FAILURE CODE [GFDAKY]

Action level	Failure code	Failure phenomenon	SHORT_P) CPU24 (Power controller system)
L04	GFDAKY		
Detail of failure	When the CPU starting signal is OFF, a CPU24 detection voltage of ≥ 5V is sensed continuously for 80msec.		
Action of controller	• Even after the cause of failure is corrected, the vehicle will not go back to the correct state until the battery plug W50 is connected again. Starting switch: ON • Turns all power supply outputs other than K24 to OFF. In charging mode • Turns all power supply output to OFF.		
Problem on lift truck	The vehicle cannot be operated.		
Related information	How to reproduce failure code: Connect the battery plug W50.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL3. 4. Connect the battery plug W50 to do the troubleshooting.		
		Voltage	Between CL3 (male) (4) and (10)	Max. 1V
2	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of CPU24V system

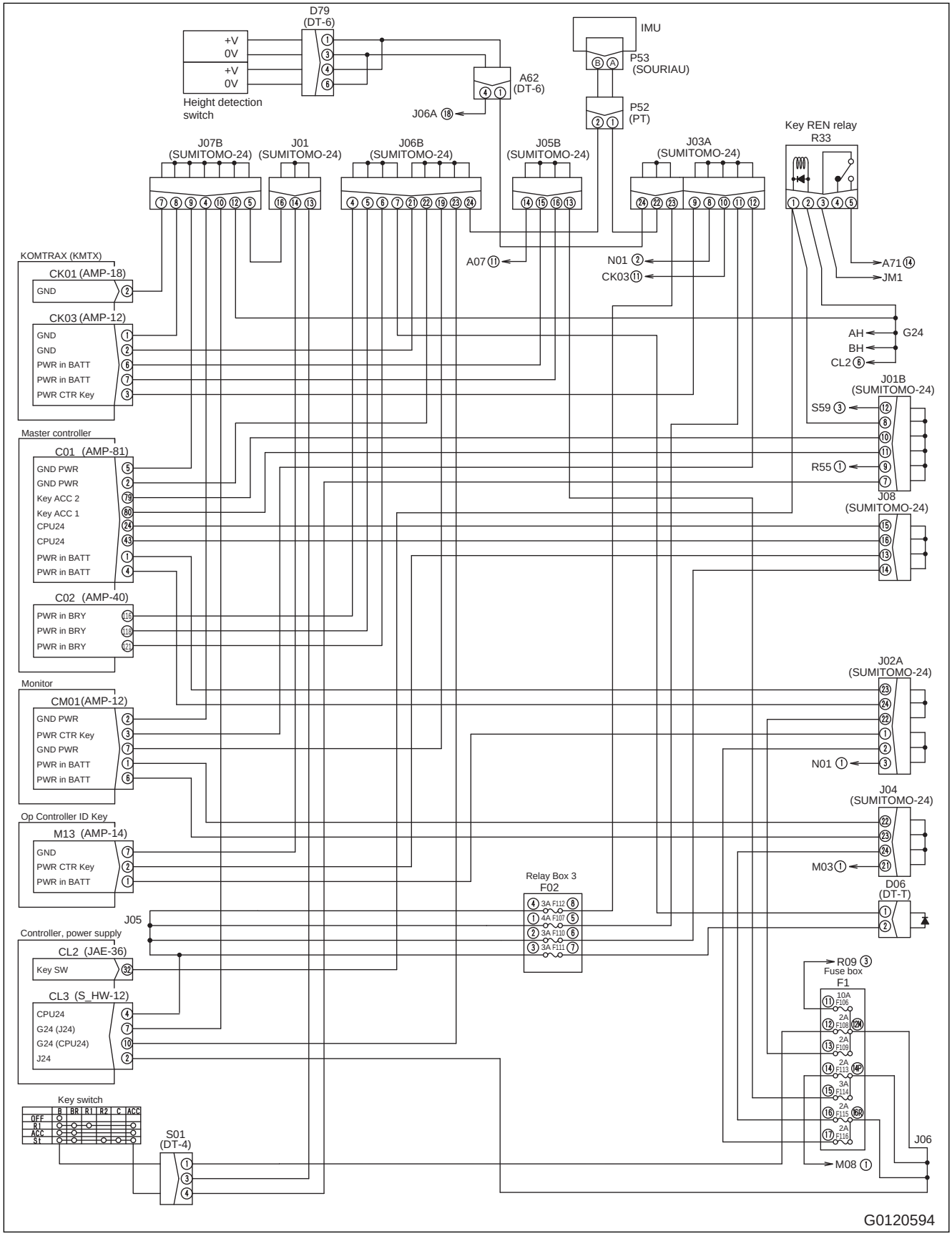


FAILURE CODE [GFDDKG]

Action level	Failure code	Failure phenomenon	HIGH VOLTAGE) J24 (Power controller system)
L04	GFDDKG		
Detail of failure	A J24 detection voltage of ≥ 29.06V is sensed continuously for 250msec.		
Action of controller	• Even after the cause of failure is corrected, the vehicle will not go back to the correct state until the battery plug W50 is connected again. Starting switch: ON • Turns all power supply outputs other than K24 to OFF. In charging mode • Turns all power supply output to OFF.		
Problem on lift truck	The vehicle cannot be operated.		
Related information	How to reproduce failure code: Connect the battery plug W50.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL3. 4. Connect the battery plug W50 to do the troubleshooting.		
		Voltage	Between CL3 (male) (2) and (7)	Max. 1V
2	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of continuous 24V system



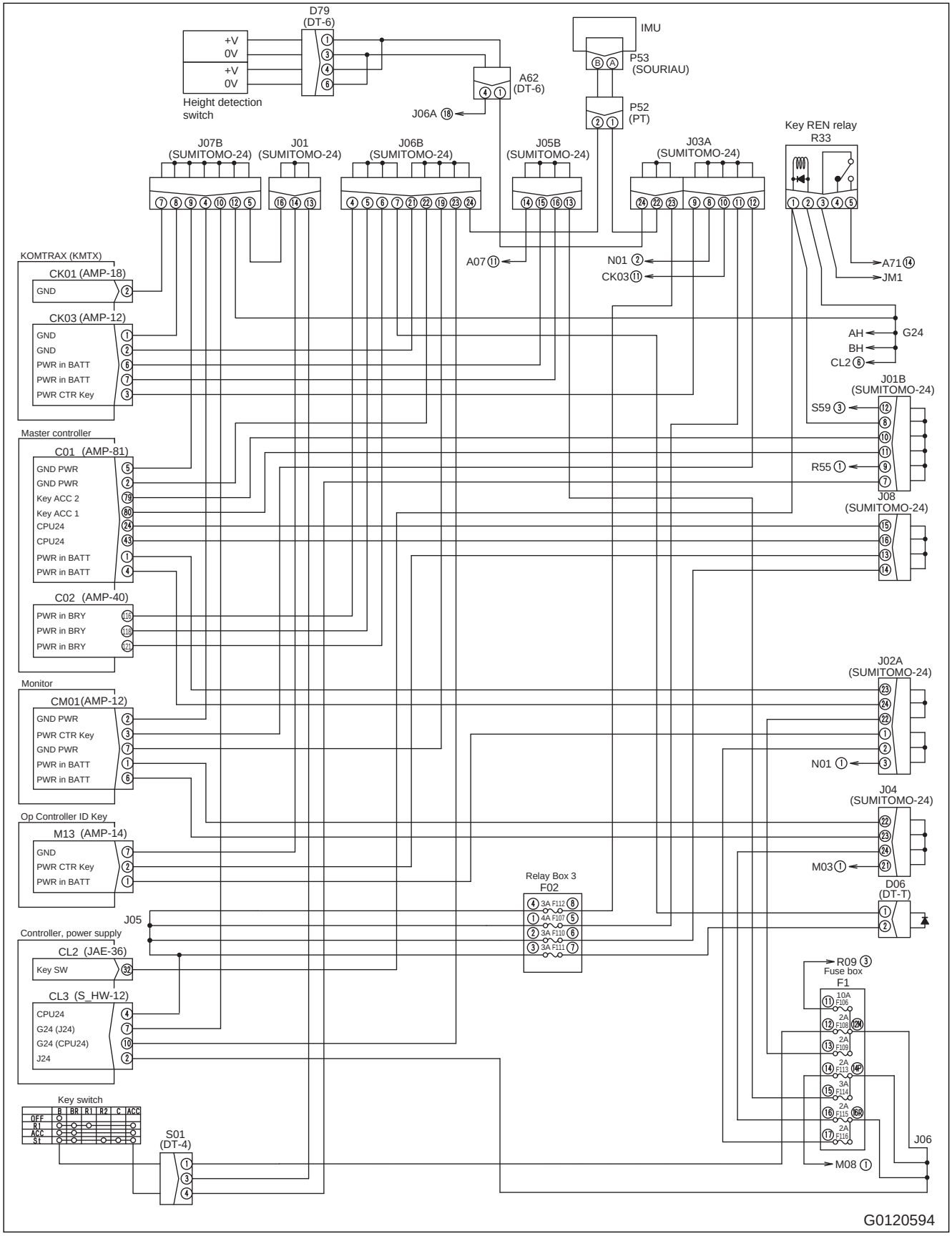
FAILURE CODE [GFDDKN]

Action level	Failure code	Failure phenomenon	OVER1) CURRENT J24 (Power controller system)
L04	GFDDKN		
Detail of failure	When the J24 starting signal is ON, a J24 current of ≥ 26A is continuously sensed for 500msec.		
Action of controller	• Turns all power supply outputs other than J24 to OFF. • Even after the cause of failure is corrected, the vehicle will not go back to the correct state until the battery plug W50 is connected again.		
Problem on lift truck	The vehicle cannot be operated.		
Related information	How to reproduce failure code: Connect the battery plug W50.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL3, C01, CM01, CK03, M13 and charge plug W25 to do the troubleshooting.		
		Resistance	Between CL3 (male) (2) and (7)	Min. 1MΩ
2	Defective stationary charger	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect charge plug W25. (Disconnect only the stationary battery charger from the continuous 24V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDDKN] is shown.		
3	Defective KOMTRAX terminal	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CK03. (Disconnect only the KOMTRAX terminal from the continuous 24V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDDKN] is shown.		

No.	Cause	Procedure, measurement location, criteria and remarks
4	Defective ID key controller	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector M13. (Disconnect only the ID key controller from the continuous 24V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDDKN] is shown.
5	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)
6	Defective monitor panel	If no failure is found by the above checks, the monitor panel is defective. (Troubleshooting cannot be done because this is an internal failure.)
7	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

Circuit diagram of continuous 24V system



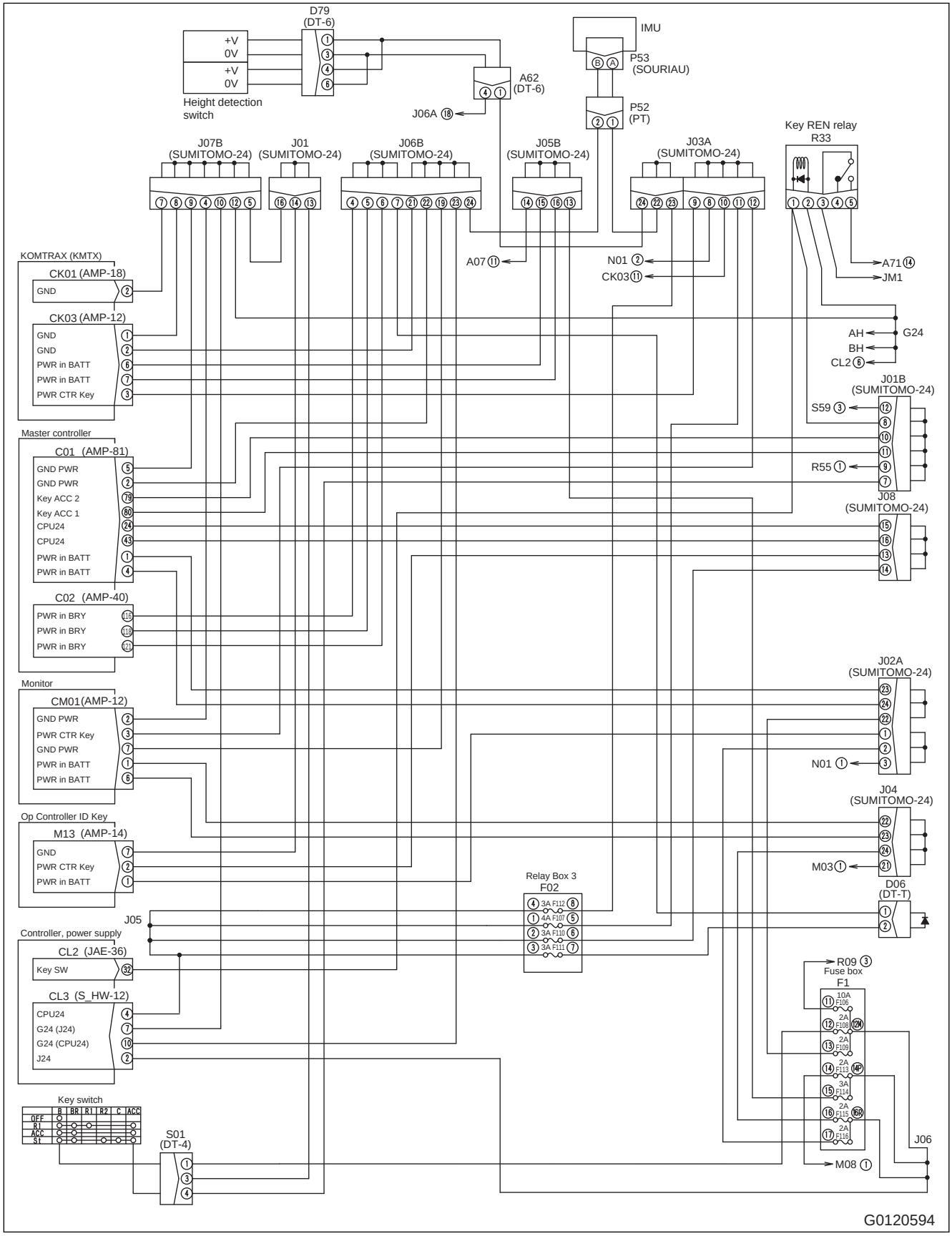
FAILURE CODE [GFDDKP]

Action level	Failure code	Failure phenomenon	LOW VOLTAGE) J24 (Power controller system)
L04	GFDDKP		
Detail of failure	When the J24 starting signal is ON, a J24 detection voltage of < 19.43V is sensed continuously for 250msec.		
Action of controller	• Even after the cause of failure is corrected, the vehicle will not go back to the correct state until the battery plug W50 is connected again. Starting switch: ON • Turns all power supply outputs other than K24 to OFF. In charging mode • Turns all power supply output to OFF.		
Problem on lift truck	The vehicle cannot be operated.		
Related information	How to reproduce failure code: Connect the battery plug W50.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL3, C01, CM01, CK03, M13 and charge plug W25 to do the troubleshooting.		
		Resistance	Between CL3 (male) (2) and (7)	Min. 1MΩ
2	Defective stationary charger	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect charge plug W25. (Disconnect only the stationary battery charger from the continuous 24V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDDKP] is shown.		
3	Defective KOMTRAX terminal	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CK03. (Disconnect only the KOMTRAX terminal from the continuous 24V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDDKP] is shown.		

No.	Cause	Procedure, measurement location, criteria and remarks
4	Defective ID key controller	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector M13. (Disconnect only the ID key controller from the continuous 24V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDDKP] is shown.
5	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)
6	Defective monitor panel	If no failure is found by the above checks, the monitor panel is defective. (Troubleshooting cannot be done because this is an internal failure.)
7	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

Circuit diagram of continuous 24V system



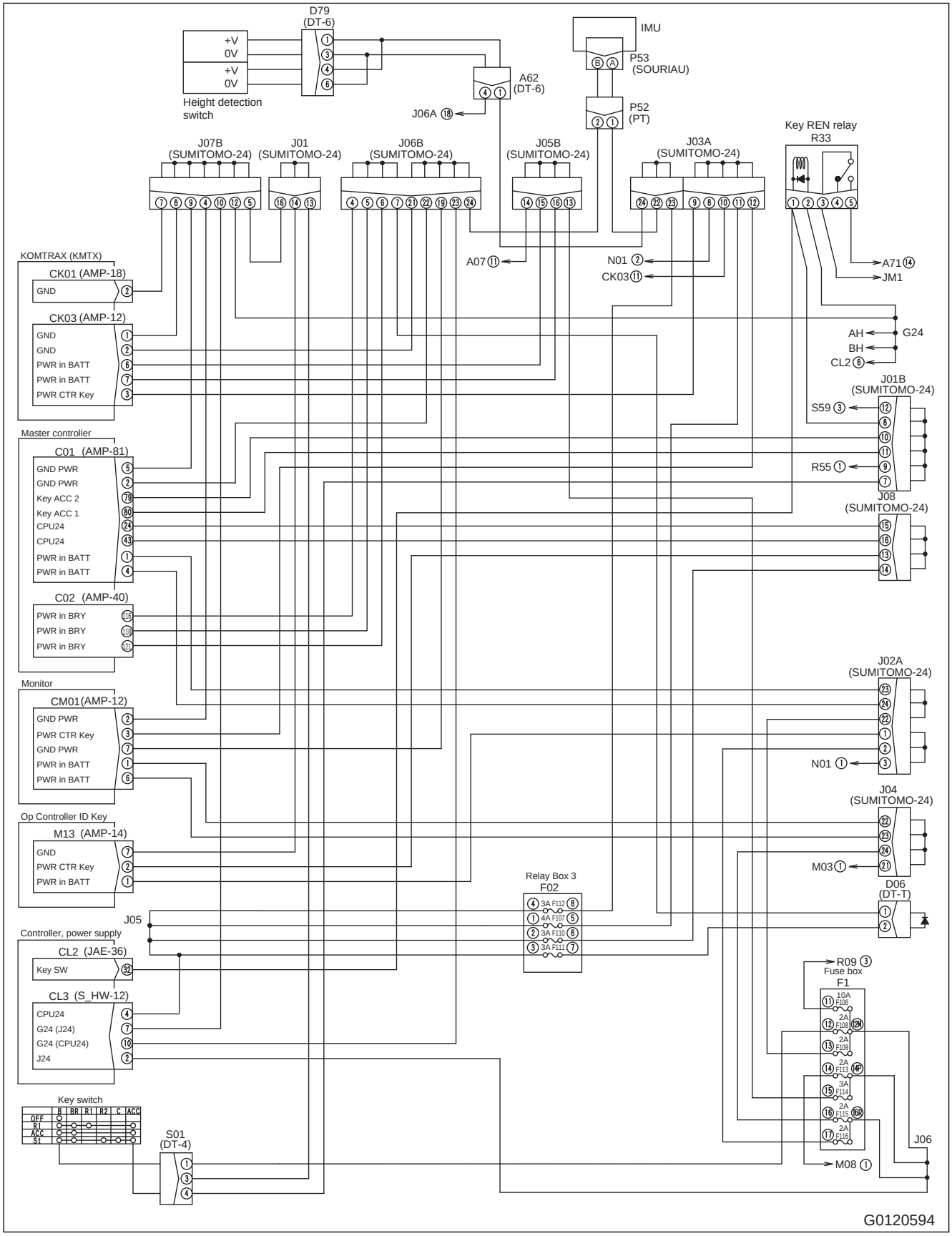
FAILURE CODE [GFDEKN]

Action level	Failure code	Failure phenomenon	OVER2) CURRENT J24 (Power controller system)
L04	GFDEKN		
Detail of failure	When the J24 starting signal is ON, a J24 current of ≥ 32.5A is continuously sensed for 1msec.		
Action of controller	• Turns all power supply output to OFF. • Even after the cause of failure is corrected, the vehicle will not go back to the correct state until the battery plug W50 is connected again.		
Problem on lift truck	The vehicle cannot be operated.		
Related information	How to reproduce failure code: Connect the battery plug W50.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL3, C01, CM01, CK03, M13 and charge plug W25 to do the troubleshooting.		
		Resistance	Between CL3 (male) (2) and (7)	Min. 1MΩ
2	Defective stationary charger	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect charge plug W25. (Disconnect only the stationary battery charger from the continuous 24V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDEKN] is shown.		
3	Defective KOMTRAX terminal	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CK03. (Disconnect only the KOMTRAX terminal from the continuous 24V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDEKN] is shown.		

No.	Cause	Procedure, measurement location, criteria and remarks
4	Defective ID key controller	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector M13. (Disconnect only the ID key controller from the continuous 24V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDEKN] is shown.
5	Defective master controller	If no failure is found by the above checks, master controller is defective. (Troubleshooting cannot be done because this is an internal failure.)
6	Defective monitor panel	If no failure is found by the above checks, the monitor panel is defective. (Troubleshooting cannot be done because this is an internal failure.)
7	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

Circuit diagram of continuous 24V system

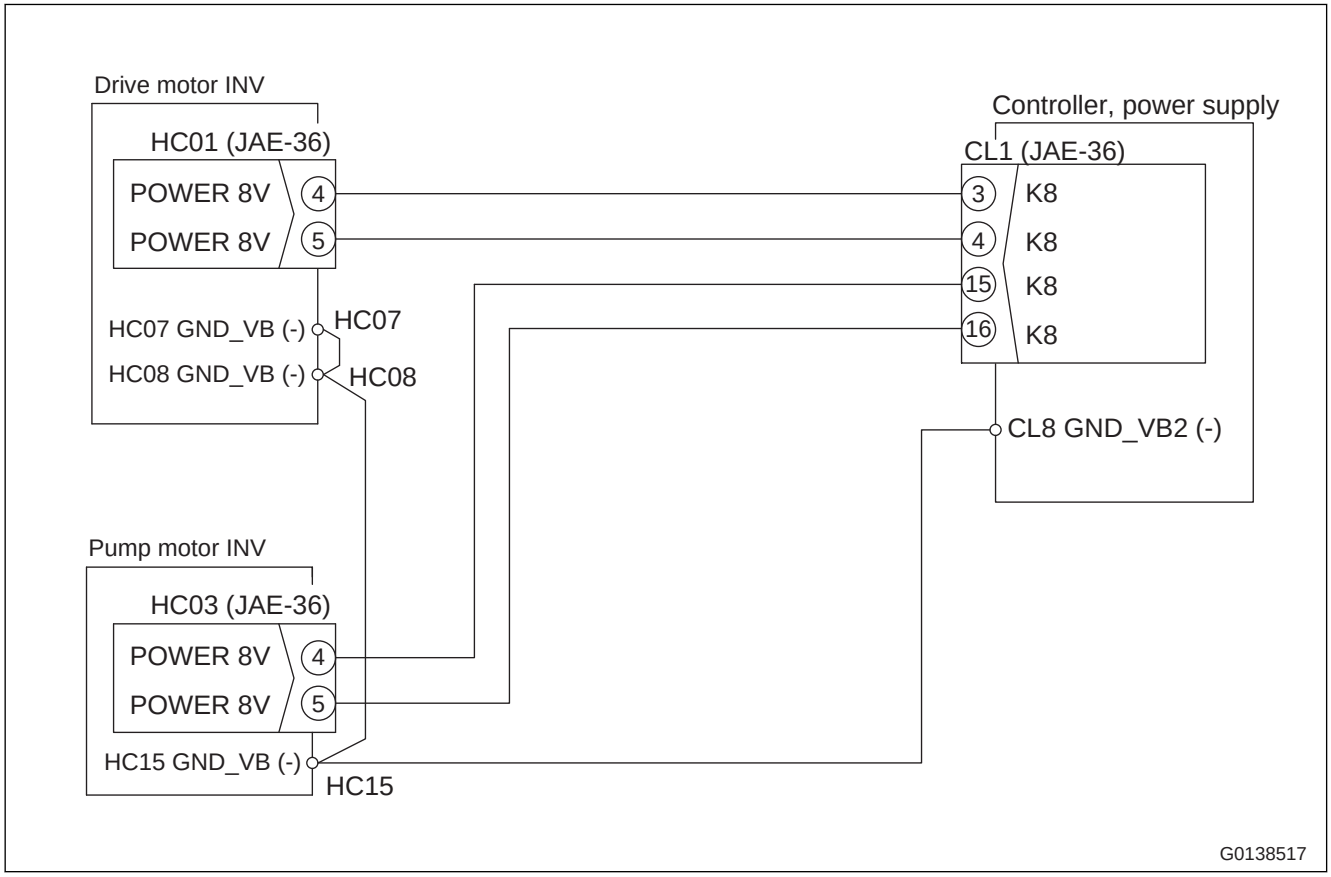


FAILURE CODE [GFDGKB]

Action level	Failure code	Failure phenomenon	SHORT) K8 (Power controller system)
L04	GFDGKB		
Detail of failure	When the K8 start signal is ON, the hardware senses a K8 short circuit.		
Action of controller	• Latches the K8 output to shut down by hardware. (After it is shut down, the software senses the error.) • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The components (travel inverter and pump inverter) that use K8 cannot operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CL1, HC01 and HC03 to do the troubleshooting.		
		Resistance	Between CL1 (female) (3) and CL8	Min. 1MΩ
			Between CL1 (female) (4) and CL8	Min. 1MΩ
			Between CL1 (female) (15) and CL8	Min. 1MΩ
			Between CL1 (female) (16) and CL8	Min. 1MΩ
2	Defective travel inverter	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC01. (Disconnect only the travel inverter from the key 8V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDGKB] is shown.		
3	Defective pump inverter	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC03. (Disconnect only the pump inverter from the key 8V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDGKB] is shown.		
4	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of key 8V system

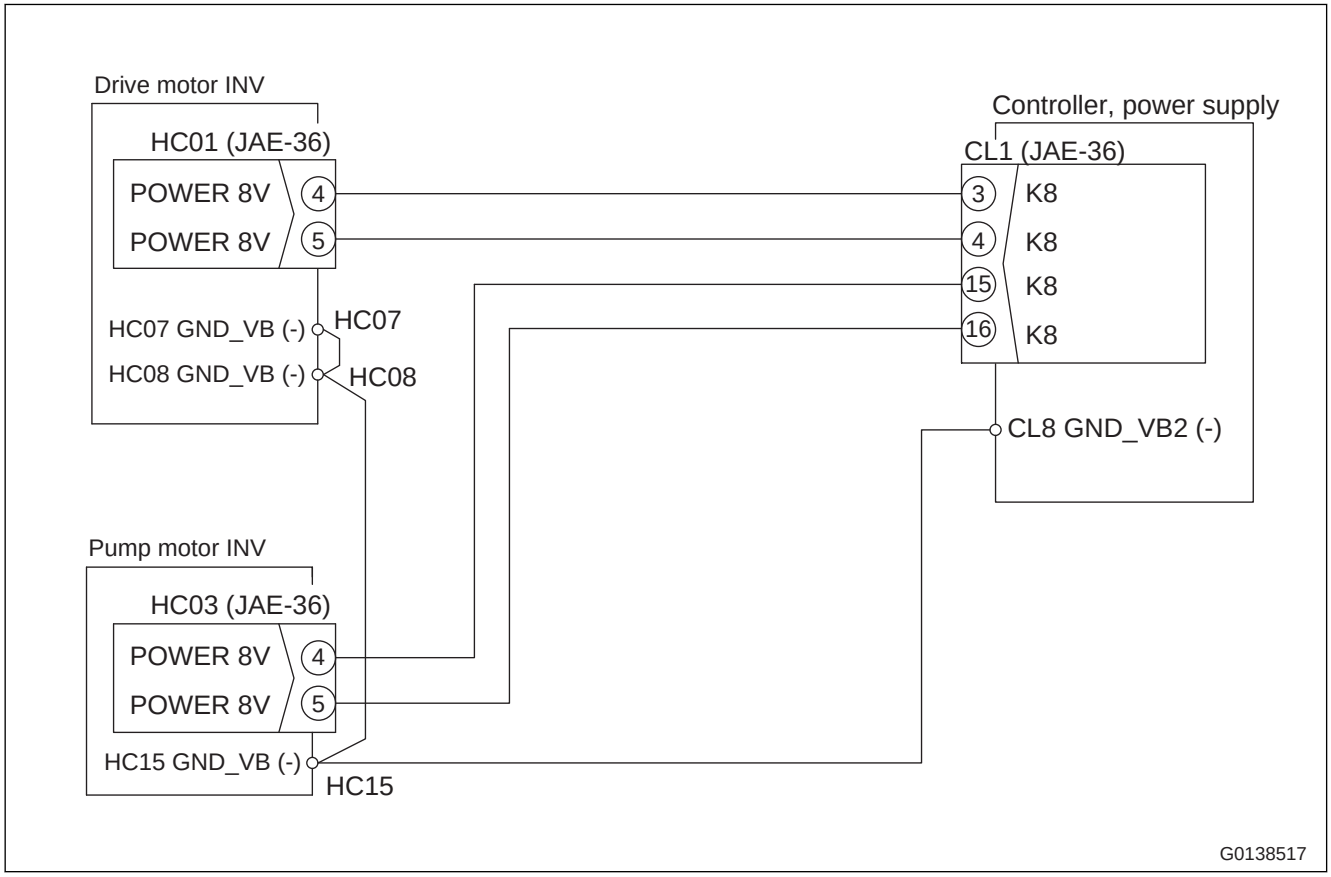


FAILURE CODE [GFDGKG]

Action level	Failure code	Failure phenomenon	HIGH VOLTAGE) K8 (Power controller system)
L03	GFDGKG		
Detail of failure	A K8 detection voltage of ≥ 9.24V is sensed continuously for 250msec.		
Action of controller	• Gives only an announcement. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The components that use K8 (the travel inverter and the pump inverter) can have damage.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL1. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between CL1 (female) (3) and CL8	Max. 1V
			Between CL1 (female) (4) and CL8	Max. 1V
			Between CL1 (female) (15) and CL8	Max. 1V
			Between CL1 (female) (16) and CL8	Max. 1V
2	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of key 8V system

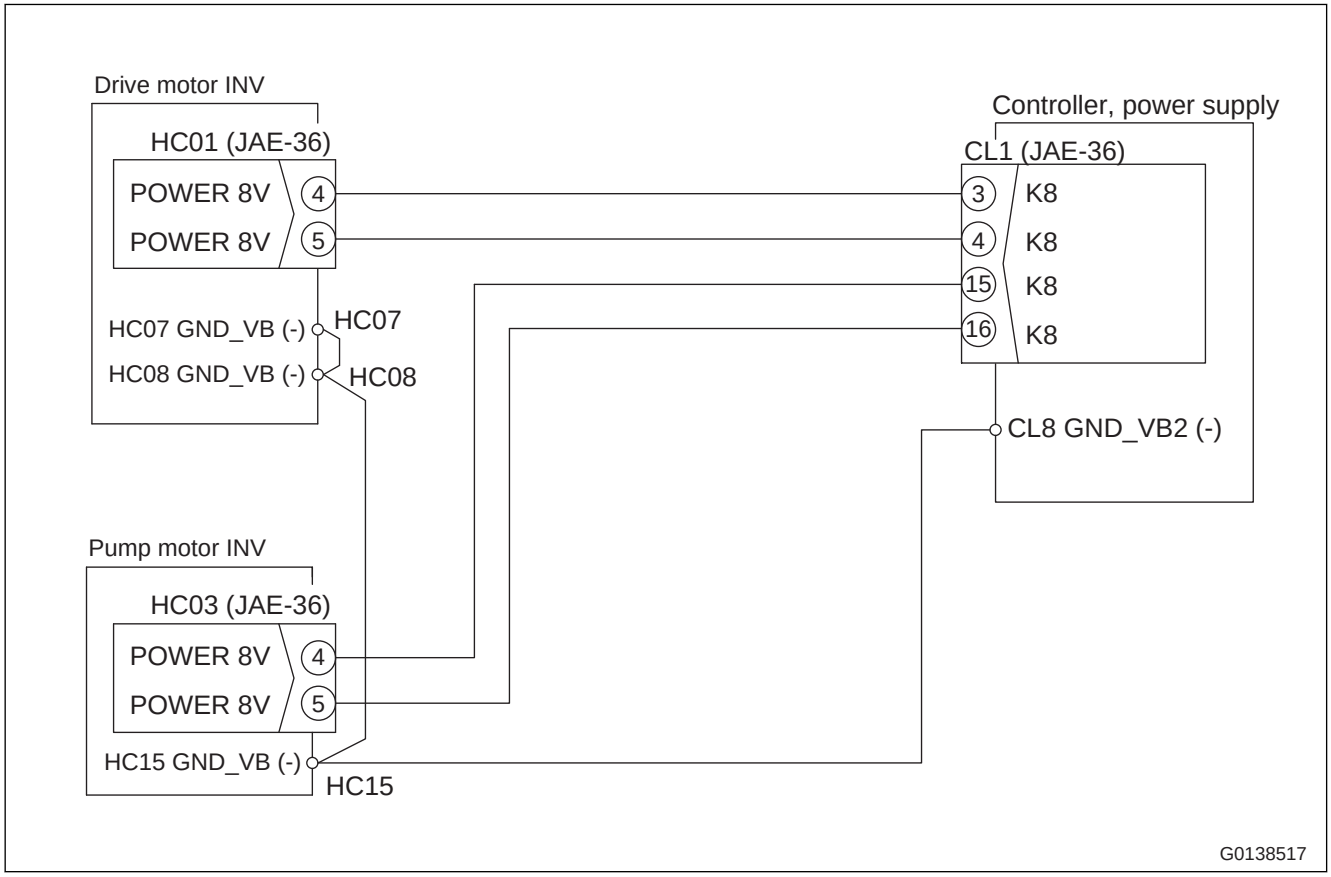


FAILURE CODE [GFDGKP]

Action level	Failure code	Failure phenomenon	LOW VOLTAGE) K8 (Power controller system)
L03	GFDGKP		
Detail of failure	When the K8 starting signal is ON, a K8 detection voltage of < 5.32V is sensed continuously for 250msec.		
Action of controller	• Gives only an announcement. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The components that use K8 (the travel inverter and the pump inverter) cannot operate correctly.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CL1, HC01 and HC03 to do the troubleshooting.		
		Resistance	Between CL1 (female) (3) and CL8	Min. 1MΩ
			Between CL1 (female) (4) and CL8	Min. 1MΩ
			Between CL1 (female) (15) and CL8	Min. 1MΩ
			Between CL1 (female) (16) and CL8	Min. 1MΩ
2	Defective travel inverter	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC01. (Disconnect only the travel inverter from the key 8V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDGKB] is shown.		
3	Defective pump inverter	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC03. (Disconnect only the pump inverter from the key 8V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDGKB] is shown.		
4	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of key 8V system

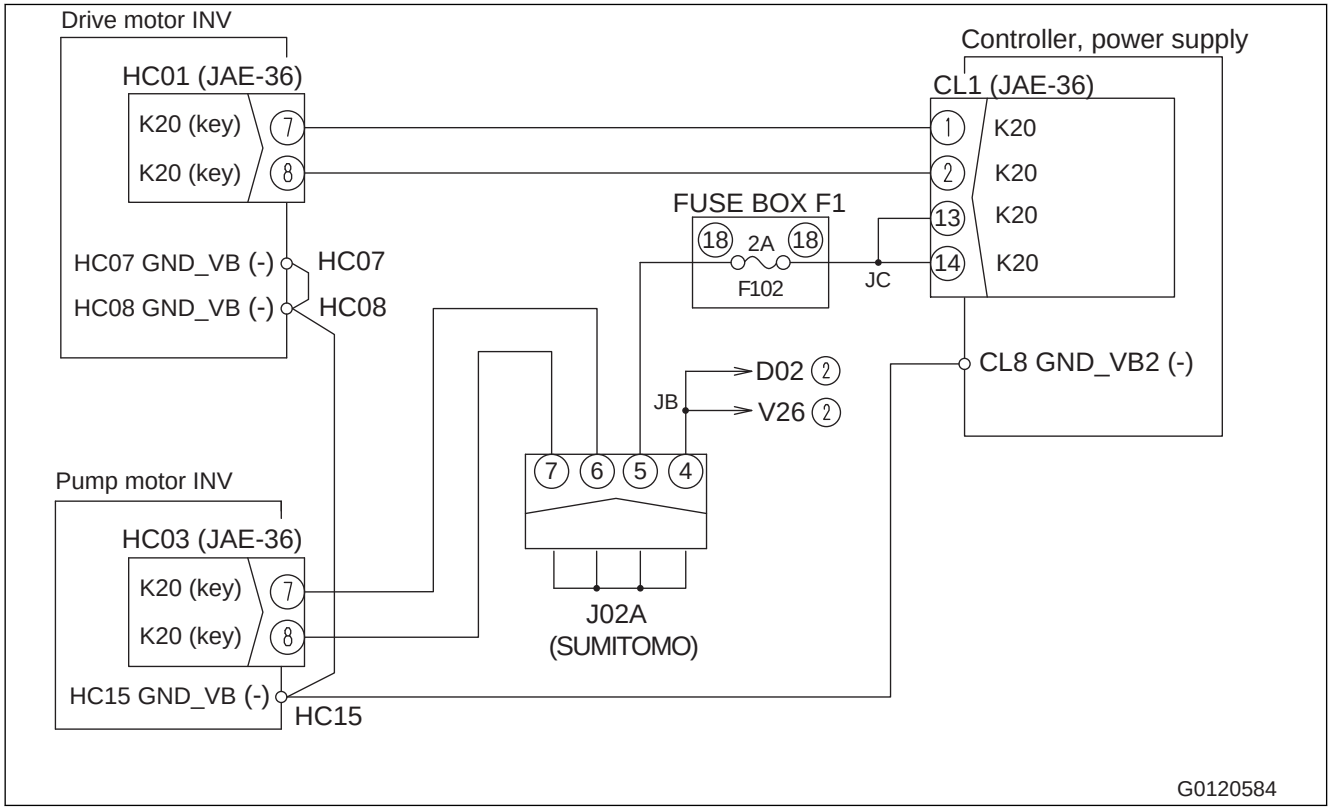


FAILURE CODE [GFDKKB]

Action level	Failure code	Failure phenomenon	SHORT) K20 (Power controller system)
L04	GFDKKB		
Detail of failure	When the K20 start signal turns from OFF to ON, a K20 detection voltage of ≤ 1.1V is sensed continuously for 50msec.		
Action of controller	• Turns K20 power supply output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The components (travel inverter and pump inverter) that use the K20 cannot operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CL1, HC01 and HC03 to do the troubleshooting.		
		Resistance	Between CL1 (female) (1) and CL8	Min. 1MΩ
			Between CL1 (female) (2) and CL8	Min. 1MΩ
			Between CL1 (female) (13) and CL8	Min. 1MΩ
			Between CL1 (female) (14) and CL8	Min. 1MΩ
2	Defective travel inverter	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC01. (Disconnect only the travel inverter from the key 20V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDKKB] is shown.		
3	Defective pump inverter	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC03. (Disconnect only the pump inverter from the key 20V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDKKB] is shown.		
4	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of key 20V system

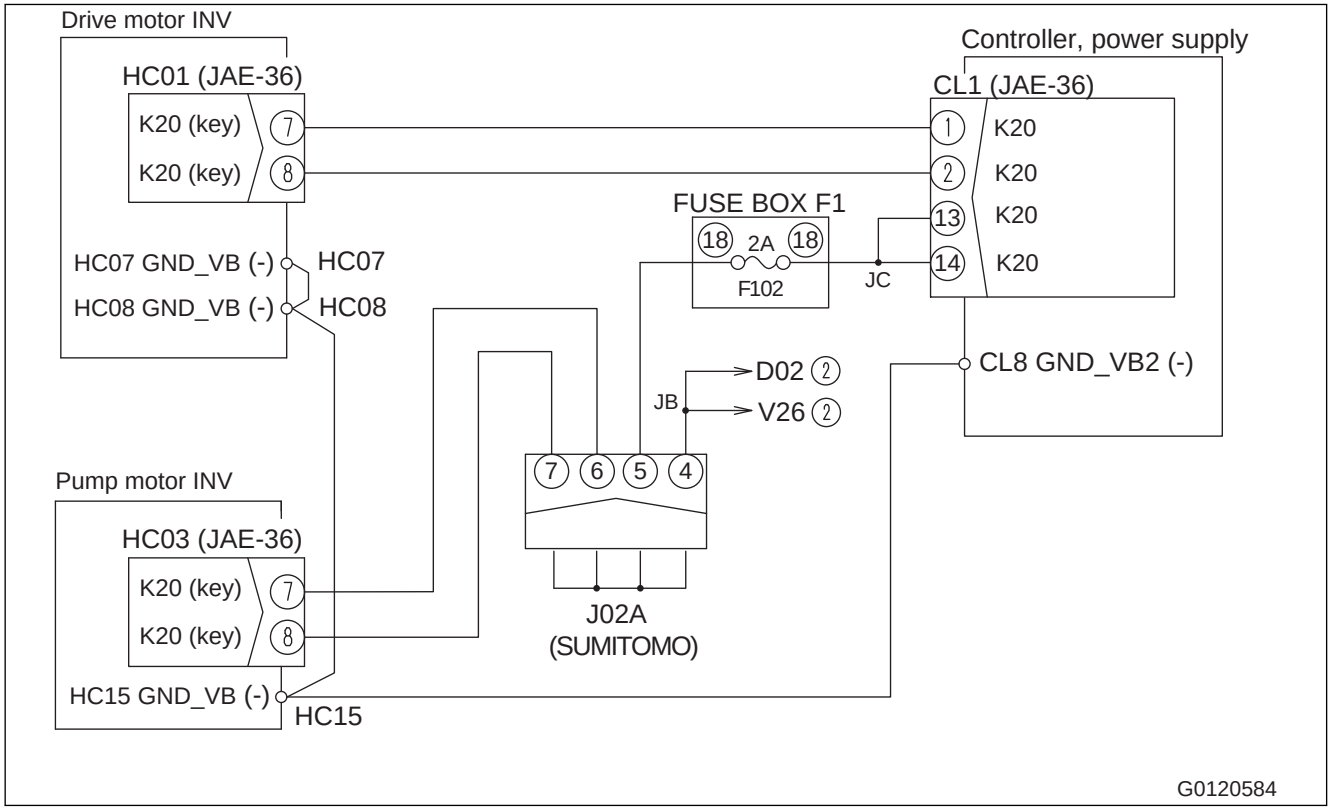


FAILURE CODE [GFDKKG]

Action level	Failure code	Failure phenomenon	HIGH VOLTAGE) K20 (Power controller system)
L04	GFDKKG		
Detail of failure	A K20 detection voltage of ≥ 23.1V is sensed continuously for 250msec.		
Action of controller	• Turns K20 power supply output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The components (travel inverter and pump inverter) that use the K20 cannot operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL1. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between CL1 (female) (1) and CL8	Max. 1V
			Between CL1 (female) (2) and CL8	Max. 1V
			Between CL1 (female) (13) and CL8	Max. 1V
			Between CL1 (female) (14) and CL8	Max. 1V
2	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of key 20V system

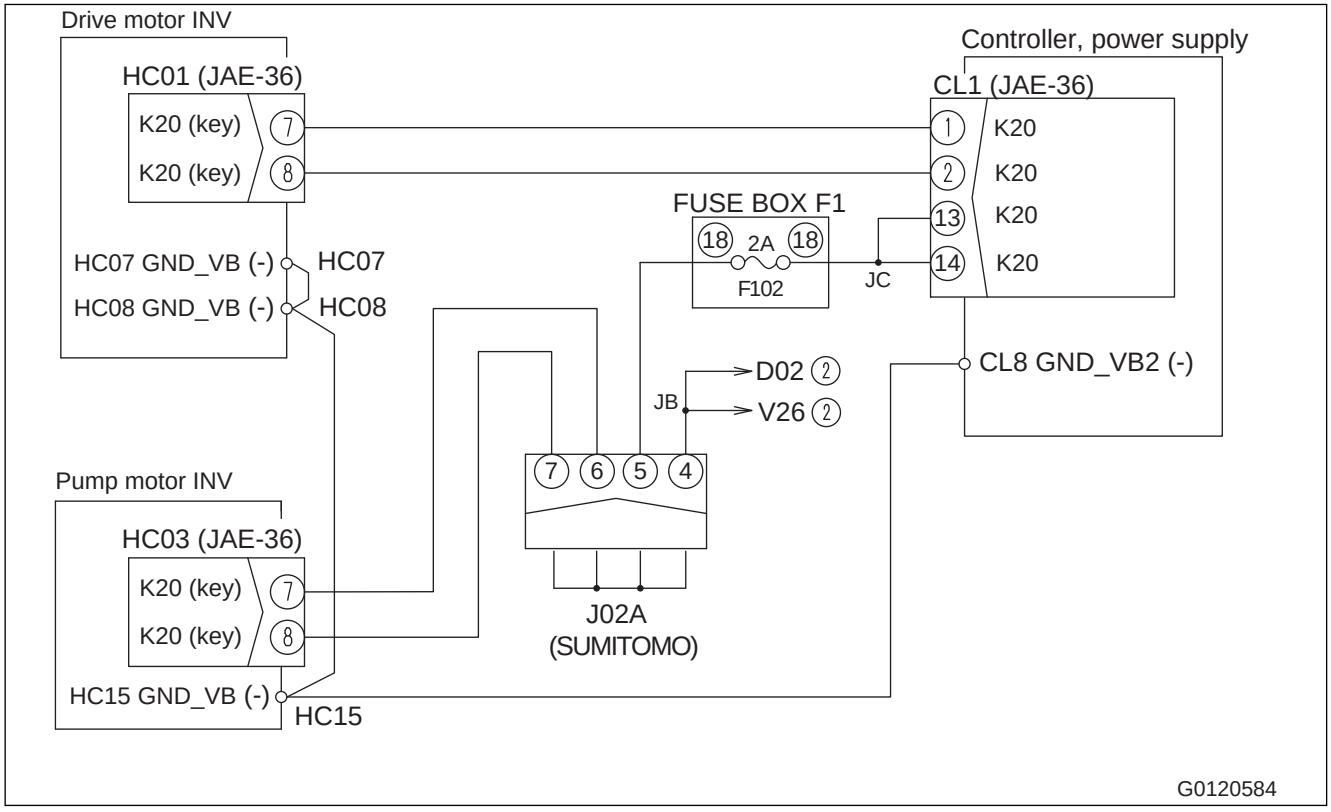


FAILURE CODE [GFDKKN]

Action level	Failure code	Failure phenomenon	OVER1) CURRENT K20 (Power controller system)
L04	GFDKKN		
Detail of failure	When the K20 starting signal is ON, a K20 current of ≥ 9.27 to 16.7A is continuously sensed for 200 to 400µsec.		
Action of controller	• Turns K20 power supply output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The components (travel inverter and pump inverter) that use the K20 cannot operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CL1, HC01 and HC03 to do the troubleshooting.		
		Resistance	Between CL1 (female) (1) and CL8	Min. 1MΩ
			Between CL1 (female) (2) and CL8	Min. 1MΩ
			Between CL1 (female) (13) and CL8	Min. 1MΩ
			Between CL1 (female) (14) and CL8	Min. 1MΩ
2	Defective travel inverter	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC01. (Disconnect only the travel inverter from the key 20V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDKKN] is shown.		
3	Defective pump inverter	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC03. (Disconnect only the pump inverter from the key 20V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDKKN] is shown.		
4	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of key 20V system

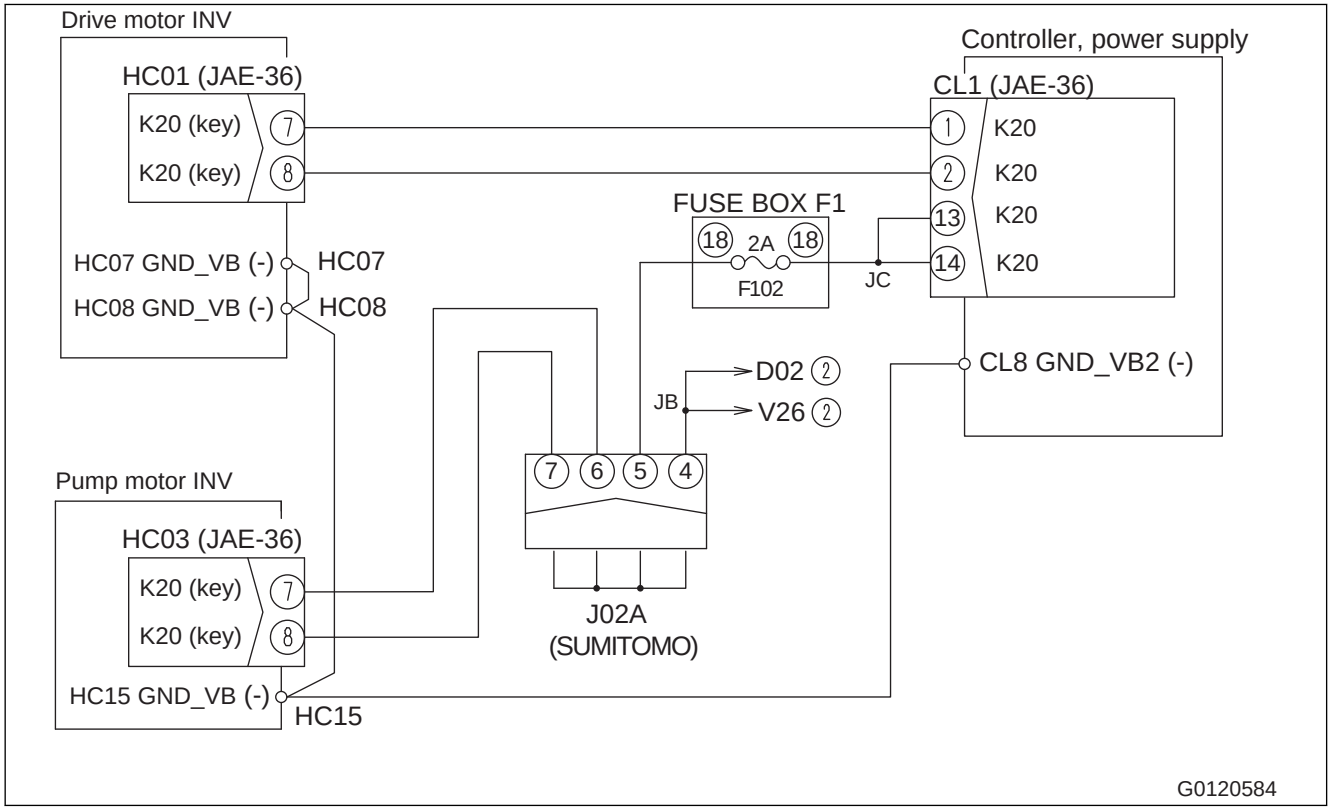


FAILURE CODE [GFDKKP]

Action level	Failure code	Failure phenomenon	LOW VOLTAGE) K20 (Power controller system)
L04	GFDKKP		
Detail of failure	When the K20 starting signal is ON, a K20 detection voltage of < 17.11V is sensed continuously for 250msec.		
Action of controller	• Turns K20 power supply output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The components (travel inverter and pump inverter) that use the K20 cannot operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CL1, HC01 and HC03 to do the troubleshooting.		
		Resistance	Between CL1 (female) (1) and CL8	Min. 1MΩ
			Between CL1 (female) (2) and CL8	Min. 1MΩ
			Between CL1 (female) (13) and CL8	Min. 1MΩ
			Between CL1 (female) (14) and CL8	Min. 1MΩ
2	Defective travel inverter	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC01. (Disconnect only the travel inverter from the key 20V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDKKP] is shown.		
3	Defective pump inverter	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC03. (Disconnect only the pump inverter from the key 20V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDKKP] is shown.		
4	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of key 20V system

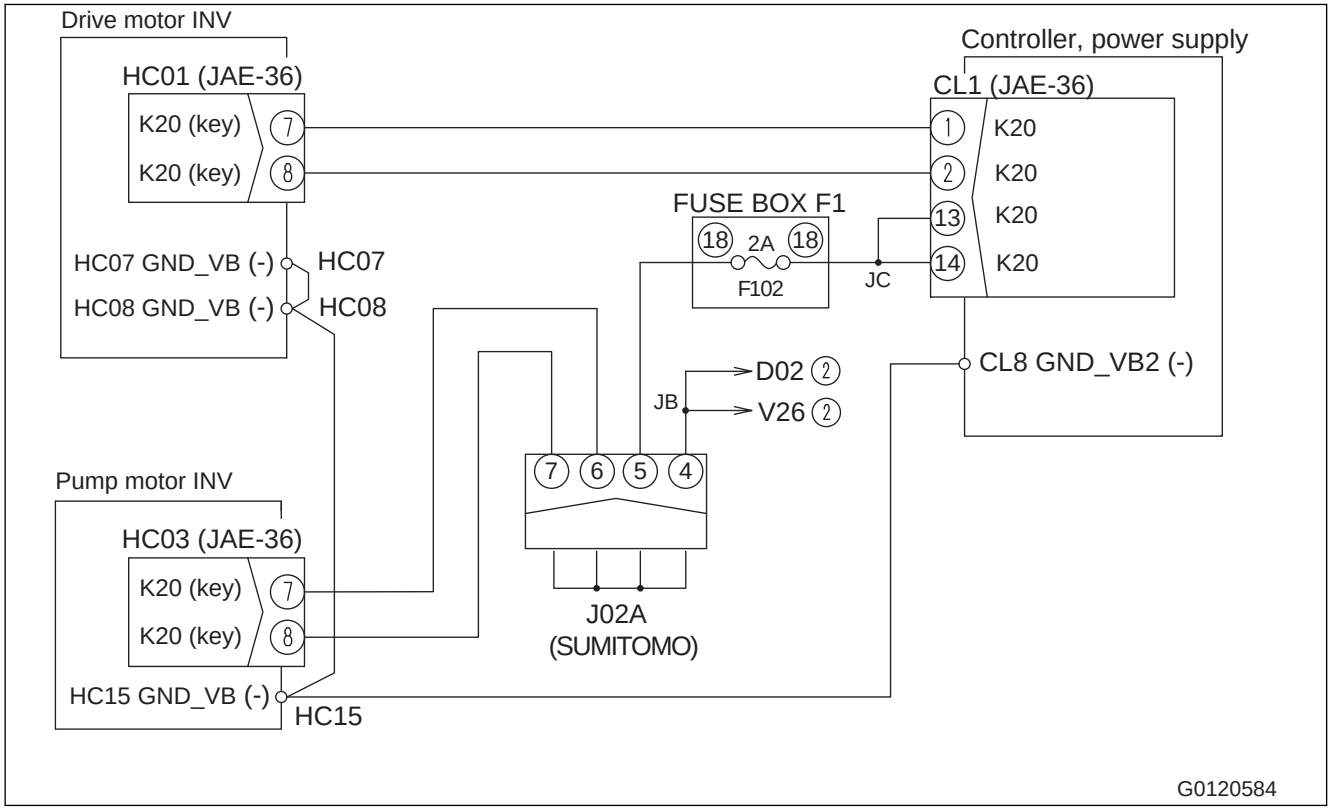


FAILURE CODE [GFDKKY]

Action level	Failure code	Failure phenomenon	SHORT_P) K20 (Power controller system)
L04	GFDKKY		
Detail of failure	When the K20 start signal is OFF, a K20 detection voltage of ≥ 5V is sensed continuously for 40 seconds.		
Action of controller	• Turns K20 power supply output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The components (travel inverter and pump inverter) that use the K20 cannot operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL1. 4. Connect the battery plug W50 to do the troubleshooting.		
		Voltage	Between CL1 (female) (1) and CL8	Max. 1V
			Between CL1 (female) (2) and CL8	Max. 1V
			Between CL1 (female) (13) and CL8	Max. 1V
			Between CL1 (female) (14) and CL8	Max. 1V
2	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of key 20V system



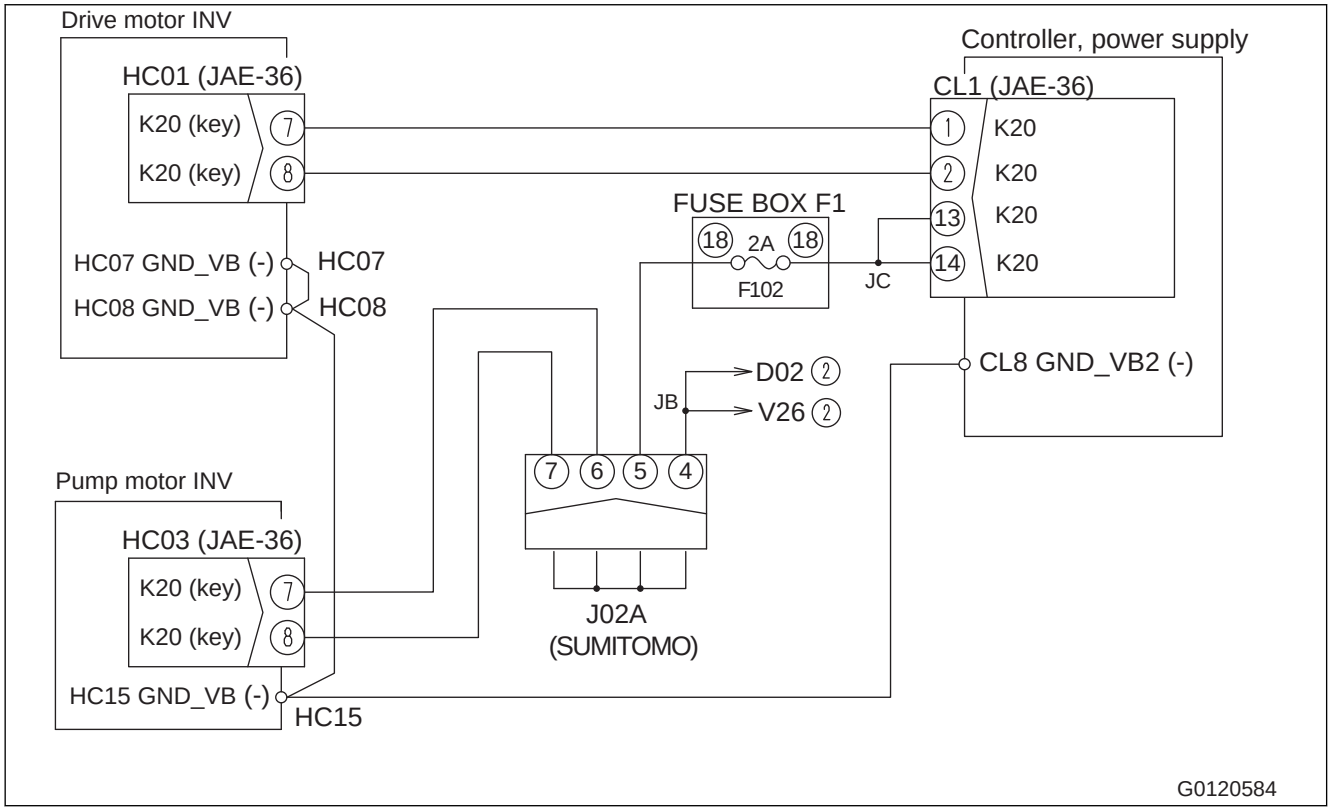
FAILURE CODE [GFDLKN]

Action level	Failure code	Failure phenomenon	OVER2) CURRENT K20 (Power controller system)
L04	GFDLKN		
Detail of failure	(Senses one of the below) • A K20 current of ≥ 9A is sensed continuously for 500msec. • A K20 current of ≥ 11.3A is sensed continuously for 1msec.		
Action of controller	• Turns K20 power supply output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The components (travel inverter and pump inverter) that use the K20 cannot operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connectors CL1, HC01 and HC03 to do the troubleshooting.		
		Resistance	Between CL1 (female) (1) and CL8	Min. 1MΩ
			Between CL1 (female) (2) and CL8	Min. 1MΩ
			Between CL1 (female) (13) and CL8	Min. 1MΩ
			Between CL1 (female) (14) and CL8	Min. 1MΩ
2	Defective travel inverter	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC01. (Disconnect only the travel inverter from the key 20V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDLKN] is shown.		
3	Defective pump inverter	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector HC03. (Disconnect only the pump inverter from the key 20V output.) 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting. **REMARK** Examine if failure code [GFDLKN] is shown.		

No.	Cause	Procedure, measurement location, criteria and remarks
4	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

Circuit diagram of key 20V system

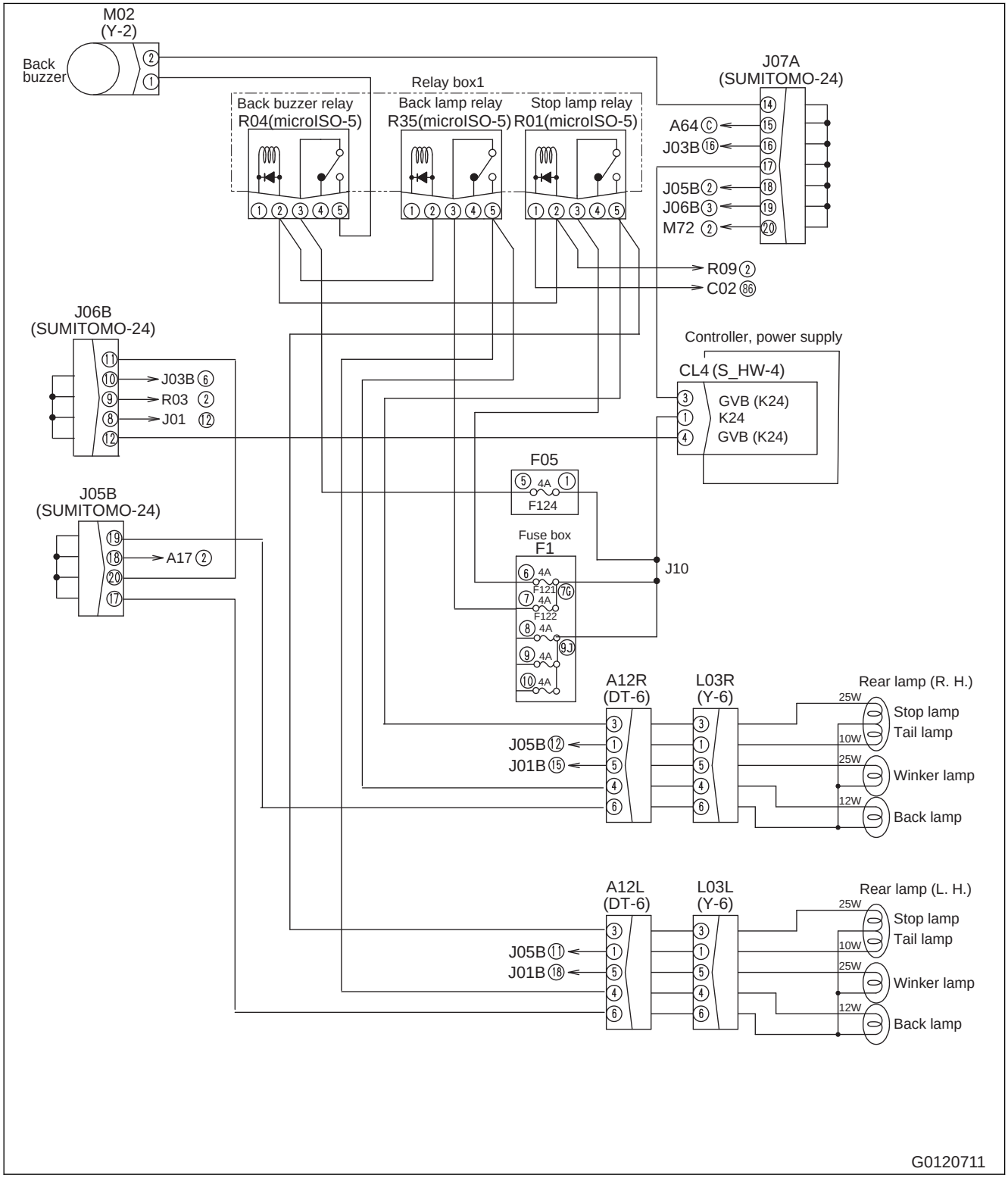


FAILURE CODE [GFDNKG]

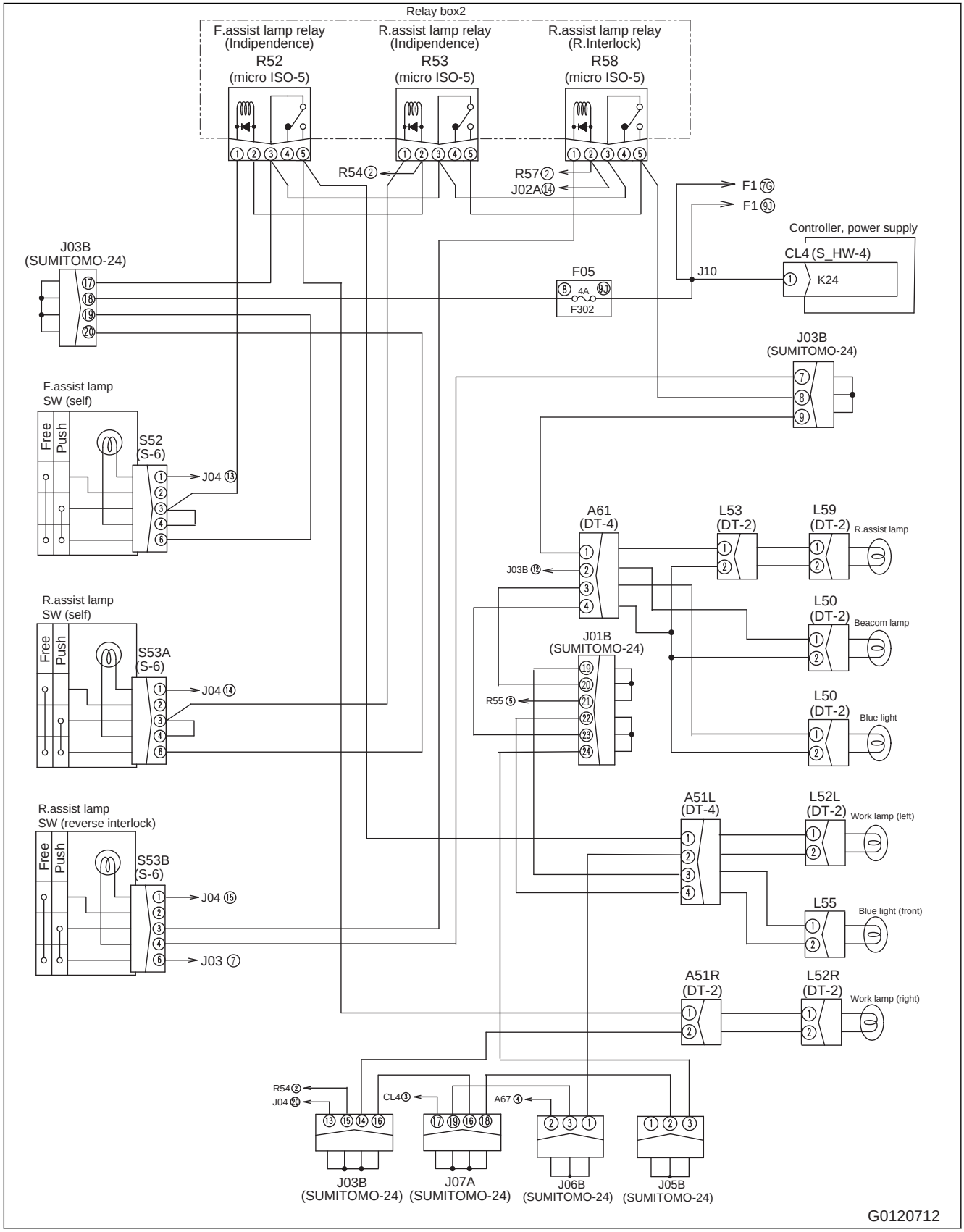
Action level	Failure code	Failure phenomenon	HIGH VOLTAGE) K24 (Power controller system)
L03	GFDNKG		
Detail of failure	A K24 detection voltage of ≥ 29.06V is sensed continuously for 250msec.		
Action of controller	• Turns K24 power supply output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The electrical parts (lamps, etc.) that use K24 cannot operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Hot short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL4. 4. Connect the battery plug W50. 5. Turn the starting switch to the ON position. Then, do the troubleshooting.		
		Voltage	Between CL4 (male) (1) and (3)	Max. 1V
			Between CL4 (male) (2) and (4)	Max. 1V
2	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

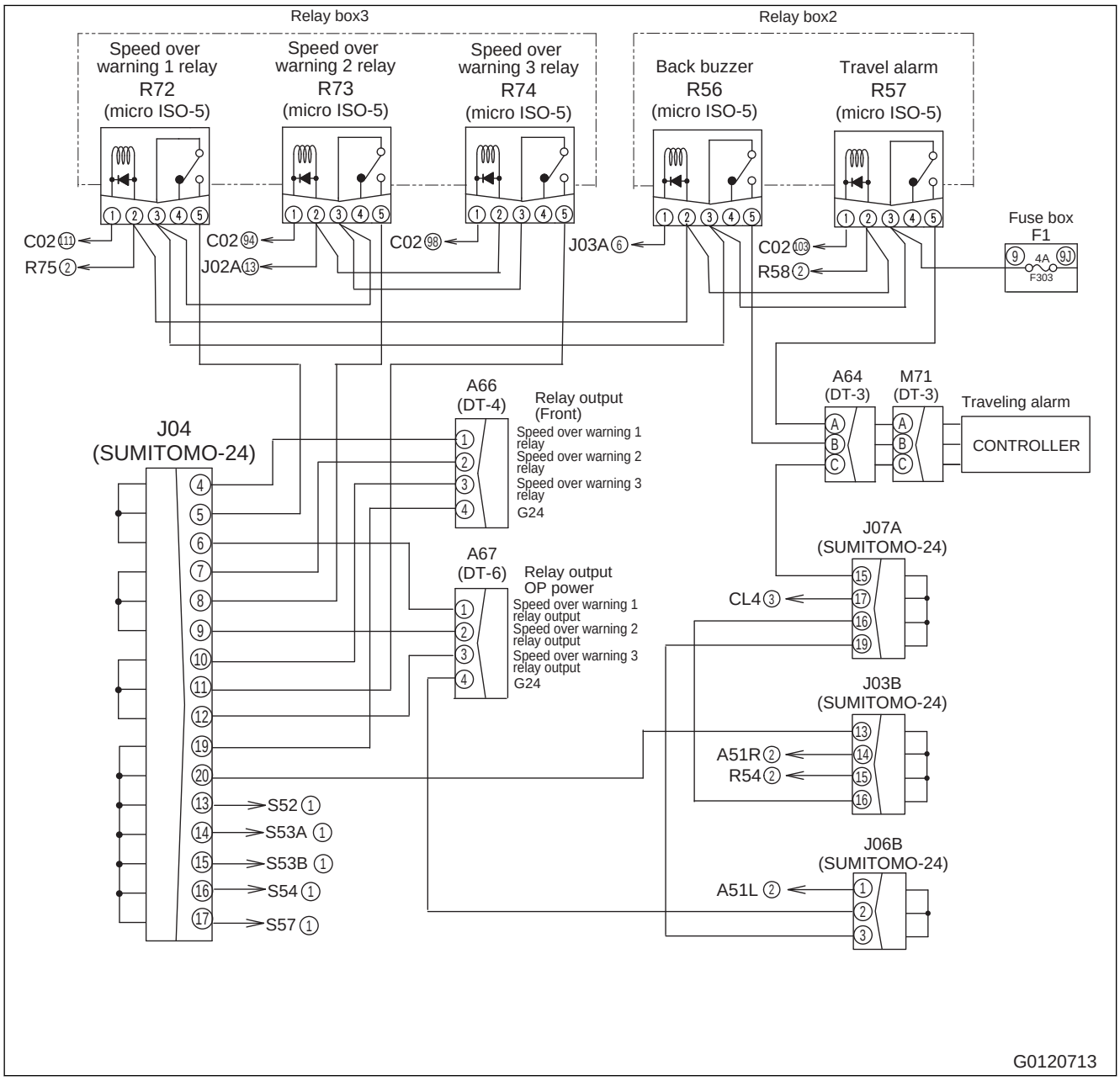
Circuit diagram of stop lamp, backup lamp, and backup buzzer



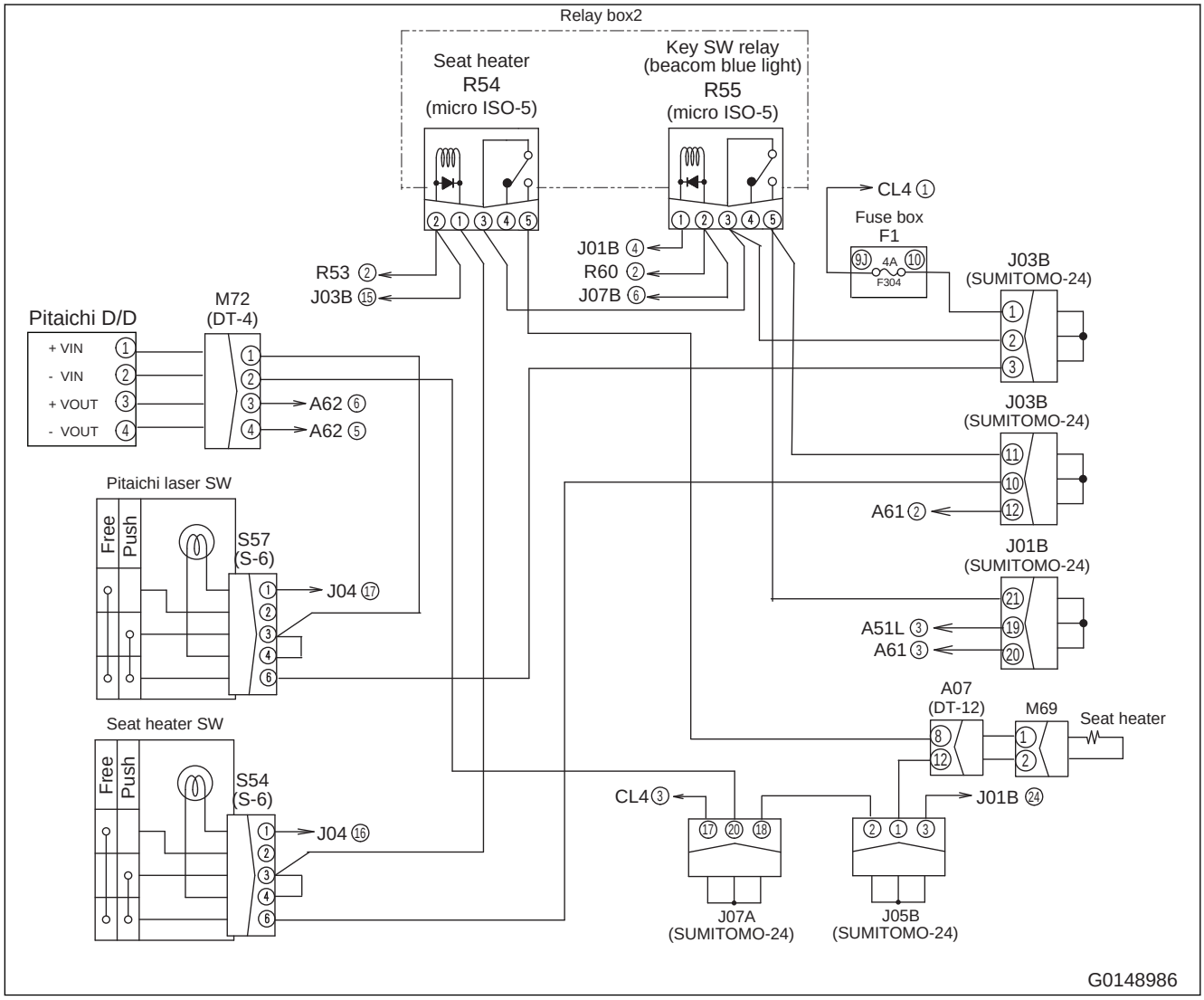
Circuit diagram of working lamp



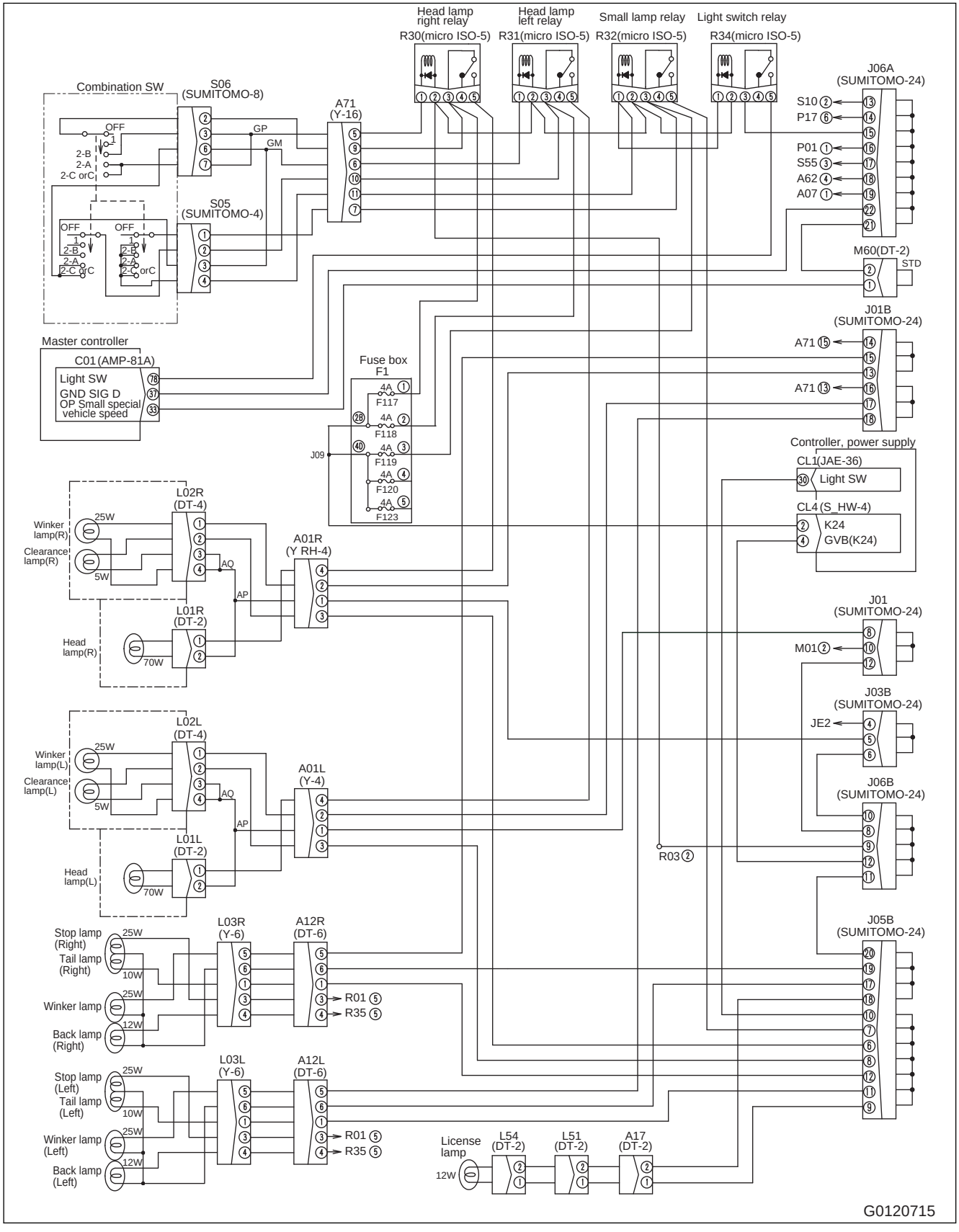
Circuit diagram of travel alarm and travel speed alarm



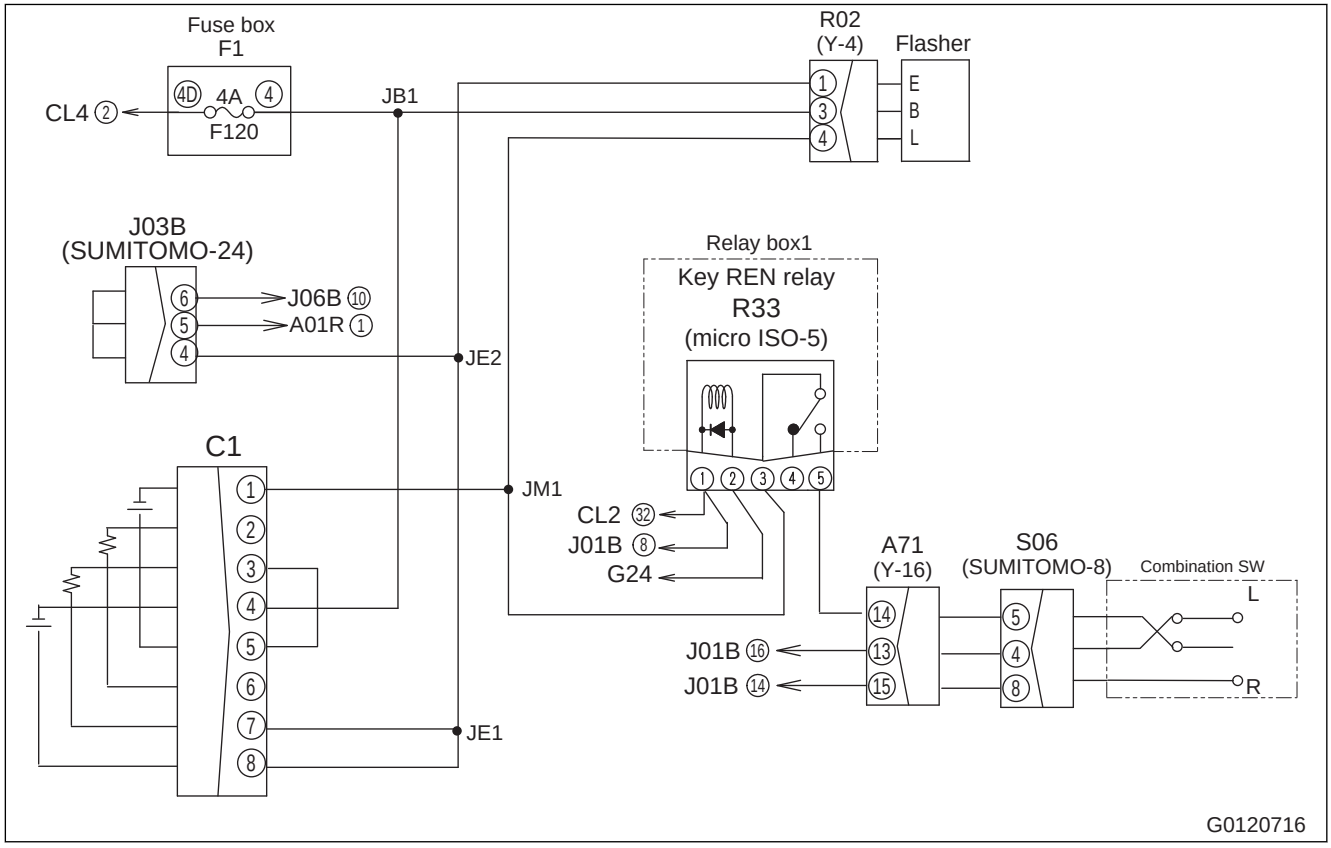
Circuit diagram of seat heater, laser lift height sensor, beacon lamp, and blue light



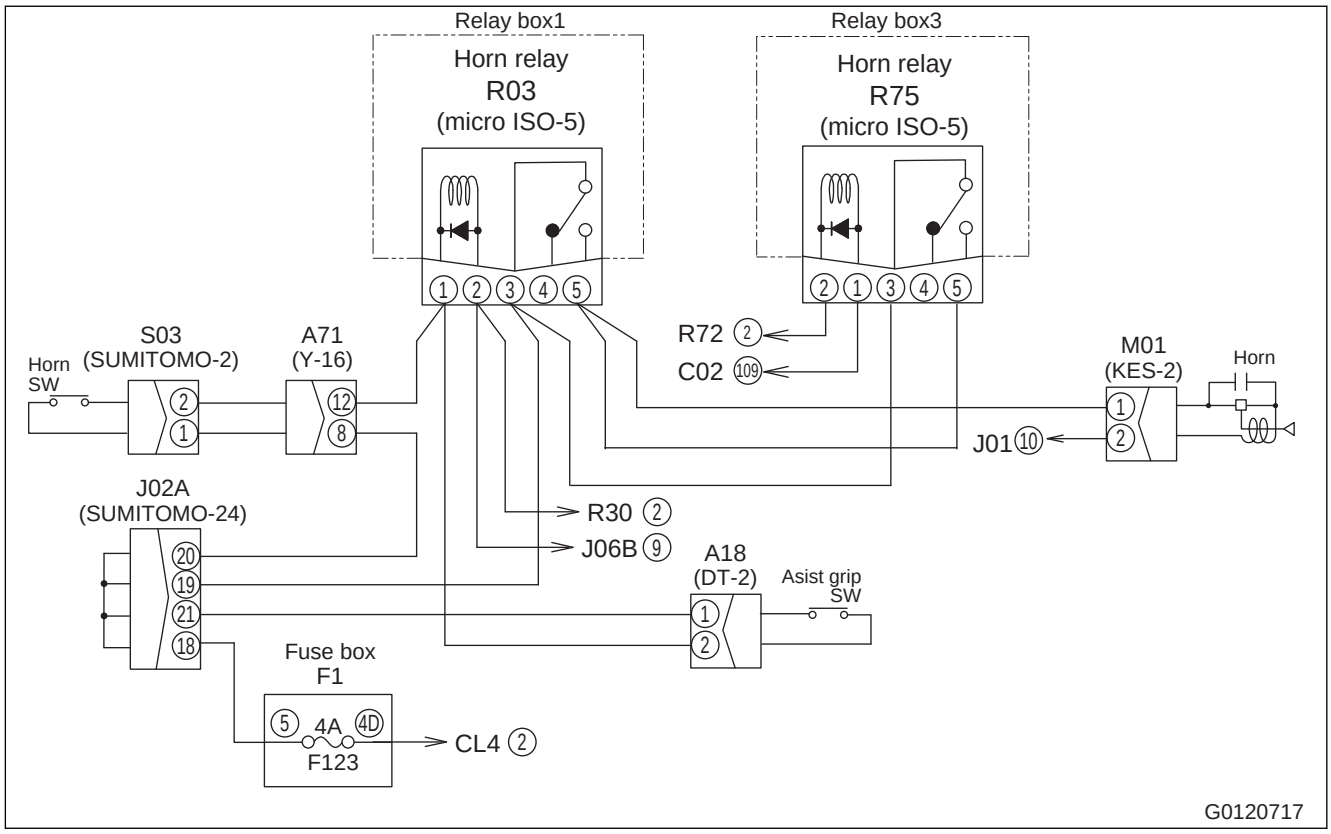
Circuit diagram of headlamp and clearance lamp



Circuit diagram of turn signal lamp



Circuit diagram of horn



FAILURE CODE [GFDNKN]

Action level	Failure code	Failure phenomenon	OVER) CURRENT K24 (Power controller system)
L03	GFDNKN		
Detail of failure	(Senses one of the below) • When the K24 starting signal is ON, a K24 current of ≥ 23A is continuously sensed for 500msec. • When the K24 starting signal is ON, a K24 current of ≥ 29A is continuously sensed for 3msec.		
Action of controller	• Turns K24 power supply output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The electrical parts (lamps, etc.) that use K24 cannot operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

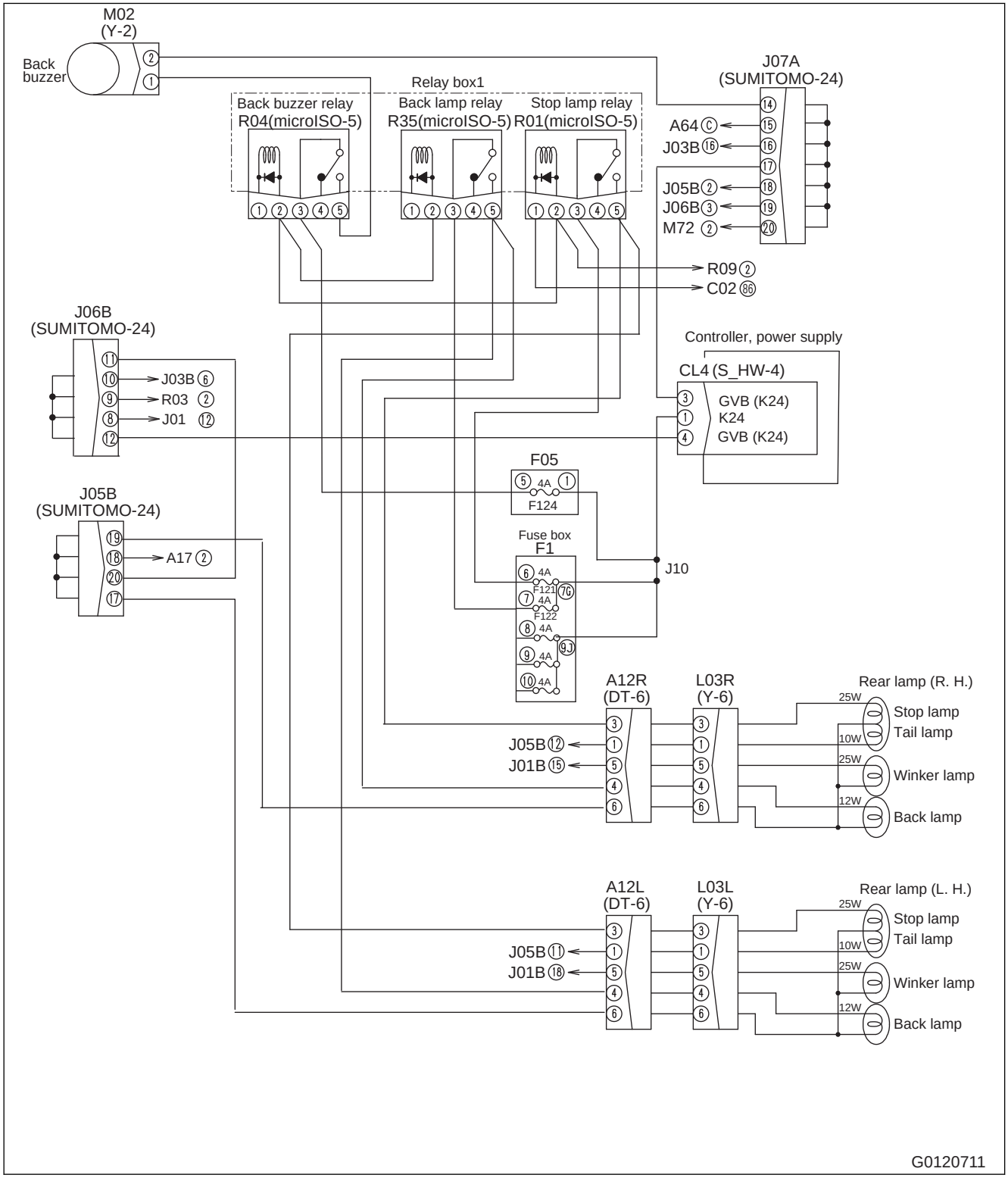
No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness (1) Stop lamp wiring	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuses F122, F124, F302, F303 and F304. 4. Disconnect the connectors CL4, L03L, and L03R. Connect a T-adapter to the female side of L03L and L03R to do the troubleshooting.		
		Resistance	Between CL4 (male) (1) and (4)	Min. 1MΩ
			Between L03L (female) (3) and L03L (female) (6)	Min. 1MΩ
			Between L03R (female) (3) and L03R (female) (6)	Min. 1MΩ
2	Short circuit in wiring harness (2) Back lamp wiring	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuses F121, F124, F302, F303 and F304. 4. Disconnect the connectors CL4, L03L, and L03R. Connect a T-adapter to the female side of L03L and L03R to do the troubleshooting.		
		Resistance	Between CL4 (male) (1) and (4)	Min. 1MΩ
			Between L03L (female) (4) and L03L (female) (6)	Min. 1MΩ
			Between L03R (female) (4) and L03R (female) (6)	Min. 1MΩ
3	Short circuit in wiring harness (3) Back buzzer wiring	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuses F121, F122, F302, F303 and F304. 4. Disconnect the connectors CL4 and M02. Connect the T-adapter to the female side of M02 to do the troubleshooting.		
		Resistance	Between CL4 (male) (1) and (3)	Min. 1MΩ
			Between M02 (female) (1) and (2)	Min. 1MΩ

No.	Cause	Procedure, measurement location, criteria and remarks		
4	Short circuit in wiring harness (4) Working lamp wiring	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuses F121, F122, F124, F303 and F304. 4. Disconnect the connectors CCL4, A51L, A51R, and A61. Connect a T-adapter to the female side of A51L, A51R, and A61 to do the troubleshooting.		
		Resistance	Between CL4 (male) (1) and (3)	Min. 1MΩ
			Between A51L (female) (1) and A51L (female) (2)	Min. 1MΩ
			Between A51R (female) (1) and A51R (female) (2)	Min. 1MΩ
			Between A61 (female) (1) and A61 (female) (4)	Min. 1MΩ
5	Short circuit in wiring harness (5) Travel alarm and travel speed alarm wirings	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuses F121, F122, F124, F302 and F304. 4. Disconnect the connectors CCL4, M71, A66, and A67. Connect a T-adapter to the female side of M71, A66, and A67 to do the troubleshooting.		
		Resistance	Between CL4 (male) (1) and (3)	Min. 1MΩ
			Between M71 (female) (A) and (C)	Min. 1MΩ
			Between M71 (female) (B) and (C)	Min. 1MΩ
			Between A66 (female) (1) and (4)	Min. 1MΩ
			Between A66 (female) (2) and (4)	Min. 1MΩ
			Between A66 (female) (3) and (4)	Min. 1MΩ
			Between A67 (female) (1) and (4)	Min. 1MΩ
			Between A67 (female) (2) and (4)	Min. 1MΩ
			Between A67 (female) (3) and (4)	Min. 1MΩ
6	Short circuit in wiring harness (6) Seat heater, laser lift height sensor, beacon lamp, and blue light wirings	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuses F121, F122, F124, F302 and F303. 4. Disconnect the connectors CL4, M69, M72, A51L, and A61. Connect a T-adapter to the female side of M69, M72, A51L, and A61 to do the troubleshooting.		
		Resistance	Between CL4 (male) (1) and (3)	Min. 1MΩ
			Between M69 (female) (1) and (2)	Min. 1MΩ
			Between M72 (female) (1) and (2)	Min. 1MΩ
			Between A51L (female) (3) and (4)	Min. 1MΩ
			Between A61 (female) (3) and (4)	Min. 1MΩ
			Between A61 (female) (2) and (4)	Min. 1MΩ

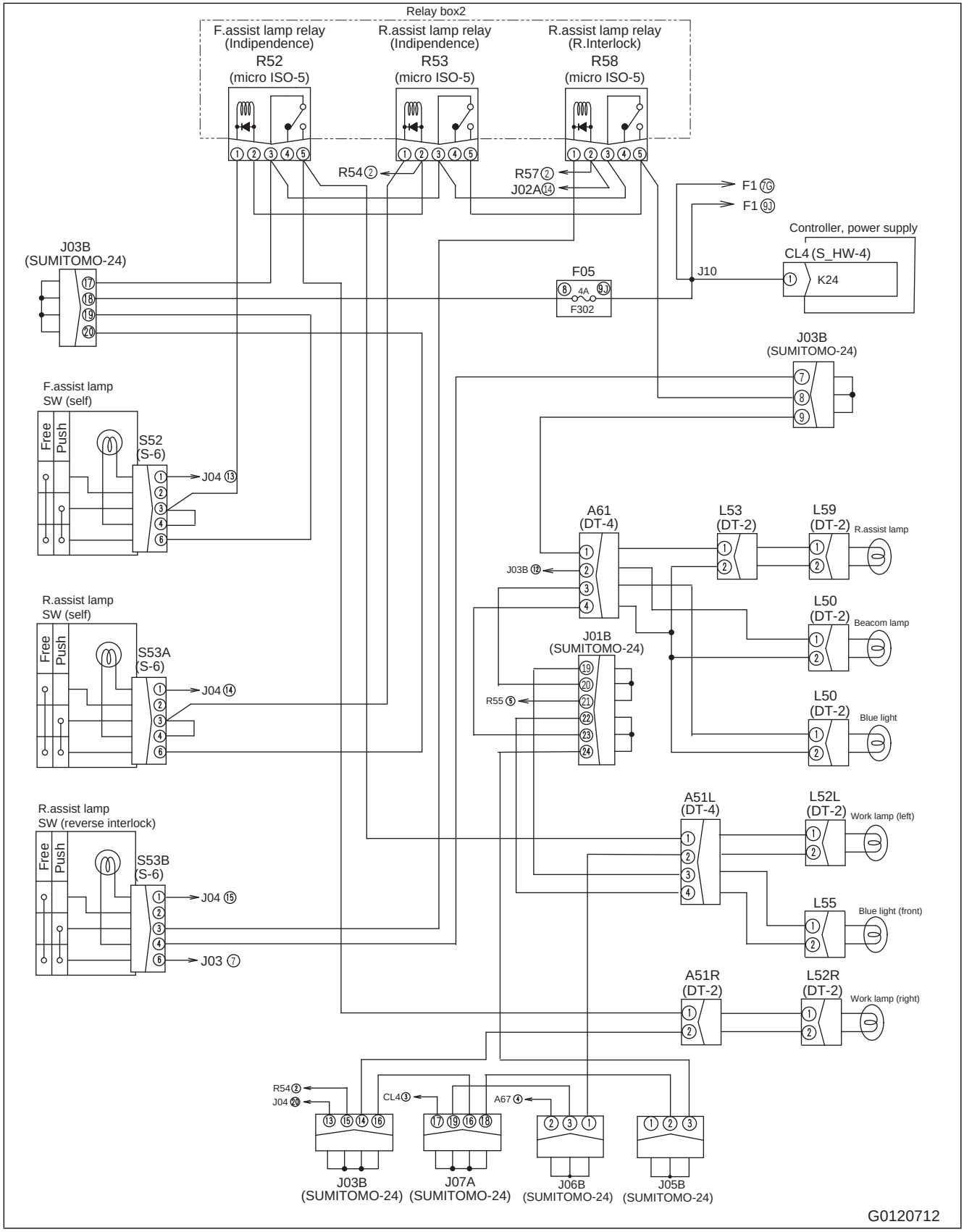
No.	Cause	Procedure, measurement location, criteria and remarks		
7	Short circuit in wiring harness (7) Head lamp wiring	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuses F119, F120 and F123. 4. Disconnect the connectors CL4, L01L, and L01R. Connect a T-adapter to the female side of L01L and L01R to do the troubleshooting.		
		Resistance	Between CL4 (male) (2) and (3)	Min. 1MΩ
			Between L01L (female) (1) and (2)	Min. 1MΩ
			Between L01R (female) (1) and (2)	Min. 1MΩ
8	Short circuit in wiring harness (8) Clearance lamp wiring	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuses F117, F118, F120 and F123. 4. Disconnect the connectors CL4, L02L, L02R, L03L, and L03R. Connect a T-adapter to the female side of L02L, L02R, L03L, and L03R to do the troubleshooting.		
		Resistance	Between CL4 (male) (2) and (3)	Min. 1MΩ
			Between L02L (female) (2) and (3)	Min. 1MΩ
			Between L02R (female) (2) and (3)	Min. 1MΩ
			Between L03L (female) (1) and (6)	Min. 1MΩ
			Between L03R (female) (1) and (6)	Min. 1MΩ
9	Short circuit in wiring harness (9) Turn signal lamp wiring	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Remove fuses F117, F118, F119 and F123. 4. Disconnect the connectors CL4, R02, R33, L02L, L02R, L03L, and L03R. Connect a T-adapter to the female side of L02L, L02R, L03L, and L03R to do the troubleshooting.		
		Resistance	Between CL4 (male) (2) and (4)	Min. 1MΩ
			Between R02 (female) (3) and CL4 (male) (4)	Min. 1MΩ
			Between R33 (female) (3) and CL4 (male) (4)	Min. 1MΩ
			Between R33 (female) (5) and CL4 (male) (4)	Min. 1MΩ
			Between L02L (female) (1) and (4)	Min. 1MΩ
			Between L02R (female) (1) and (4)	Min. 1MΩ
			Between L03L (female) (5) and (6)	Min. 1MΩ
			Between L03R (female) (5) and (6)	Min. 1MΩ

<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measurement location, criteria and remarks</th></tr>
<tr><td rowspan="4">10</td><td rowspan="4">Short circuit in wiring harness
(10) Horn wiring</td><td colspan="3">1. Turn the starting switch to the OFF position.
2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.)
3. Remove fuses F117, F118, F119 and F121.
4. Disconnect the connectors CL4 and M01. Connect the T-adapter to the female side of M01 to do the troubleshooting.</td></tr>
<tr><td rowspan="2">Resistance</td><td>Between CL4 (male) (2) and (4)</td><td>Min. 1MΩ</td></tr>
<tr><td>Between M01 (female) (1) and (2)</td><td>Min. 1MΩ</td></tr>
<tr><td></td><td></td><td colspan="3"></td></tr>
<tr><td>11</td><td>Defective power supply controller</td><td colspan="3">If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)</td></tr>
</table>

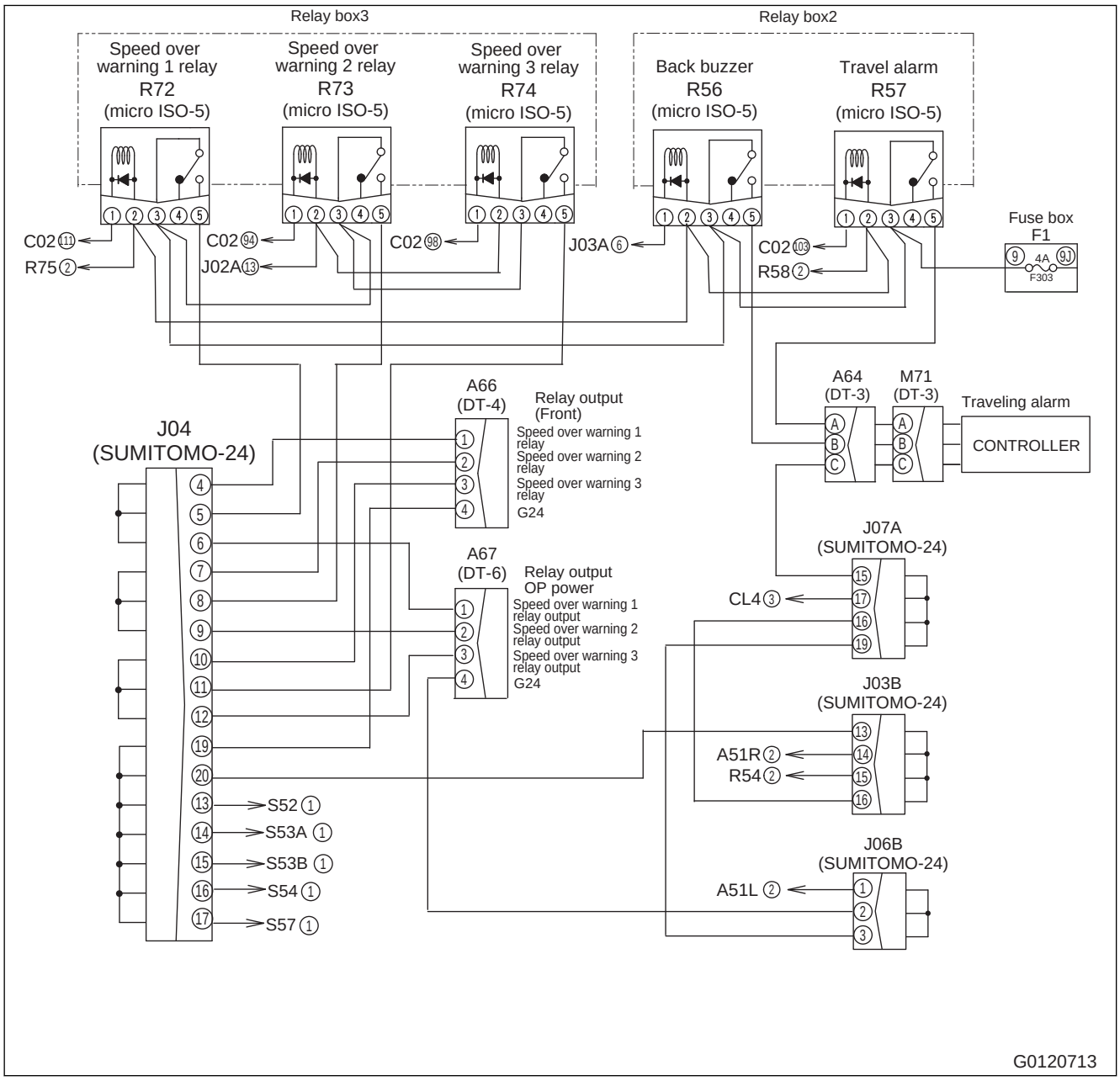
Circuit diagram of stop lamp, backup lamp, and backup buzzer



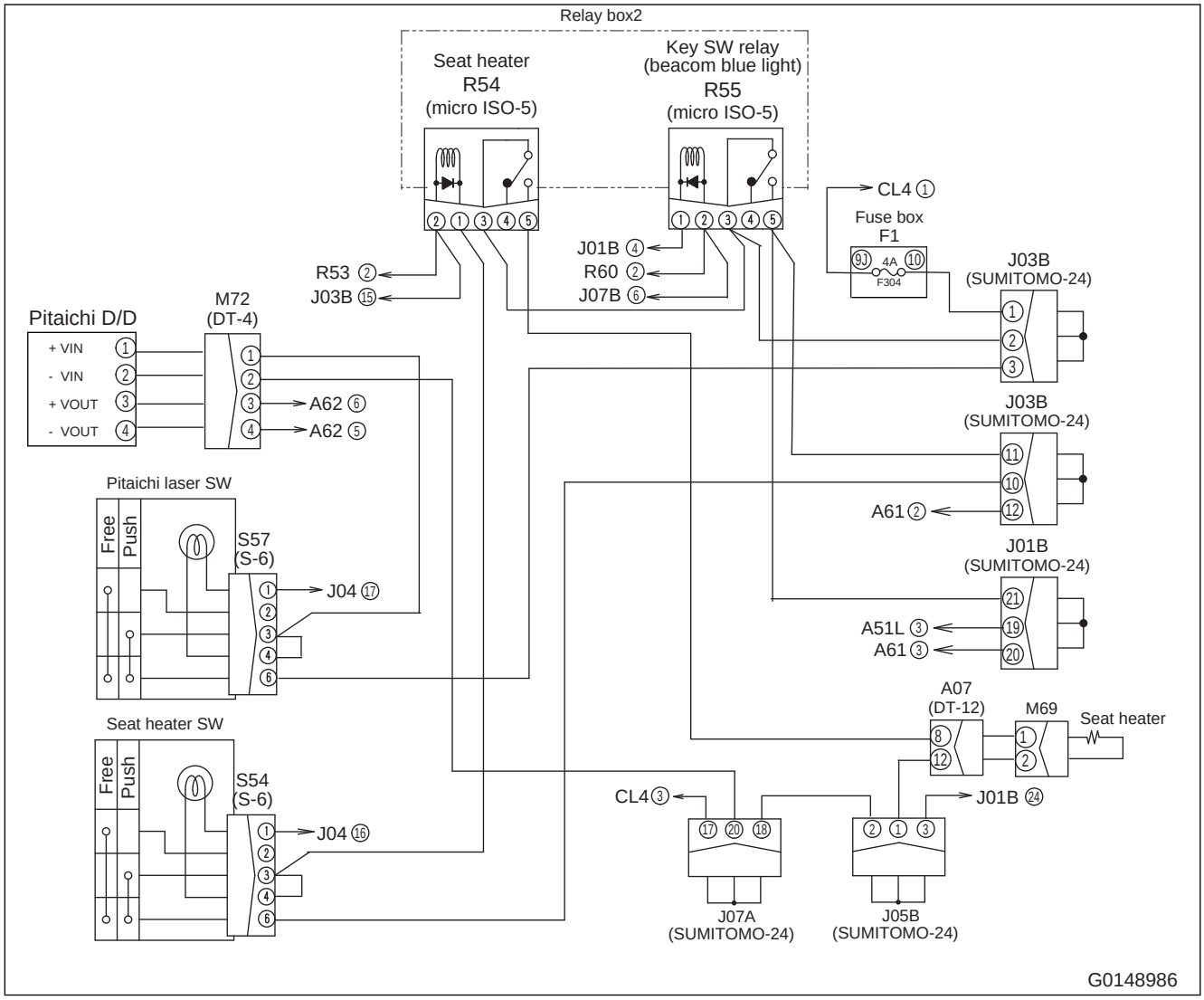
Circuit diagram of working lamp



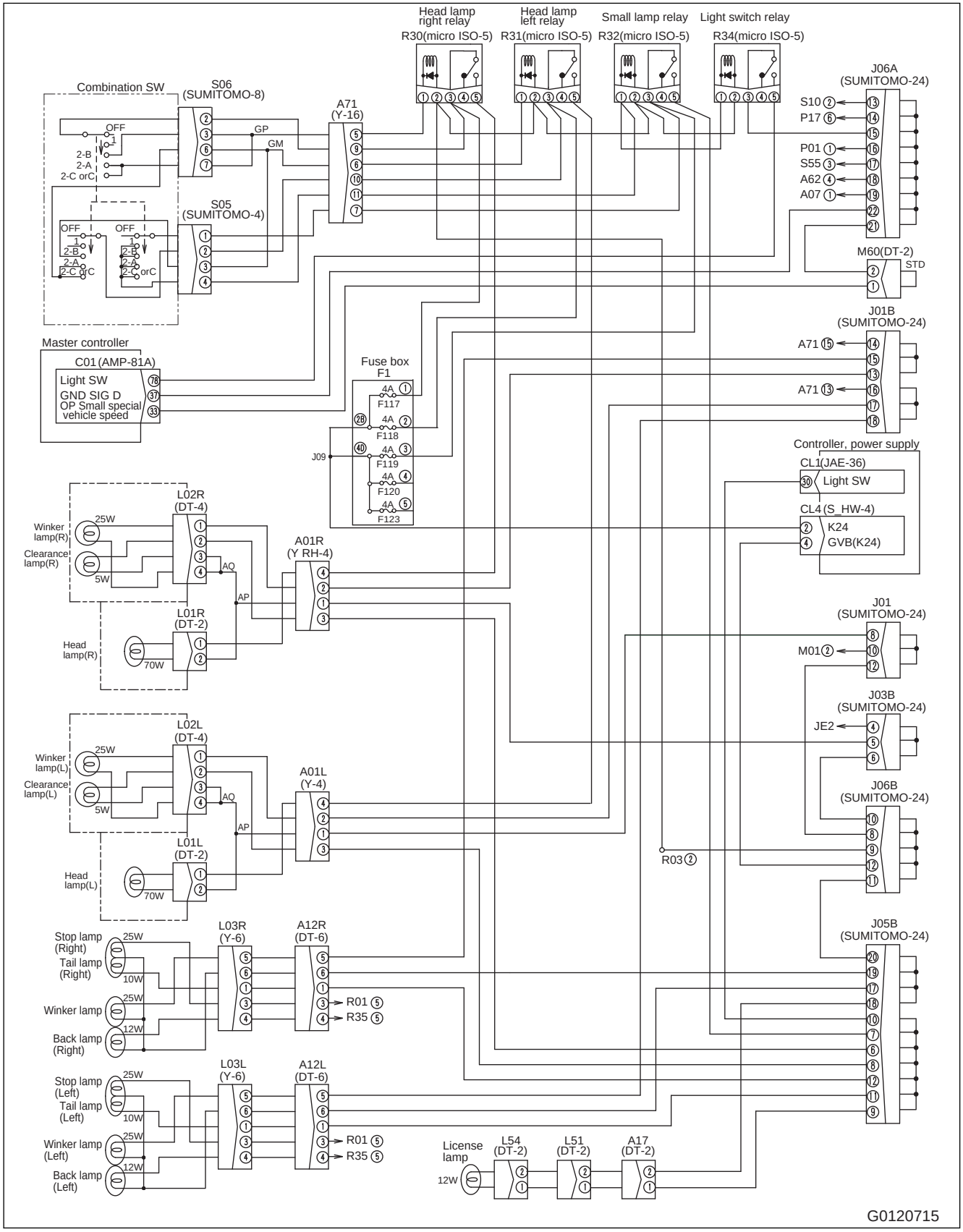
Circuit diagram of travel alarm and travel speed alarm



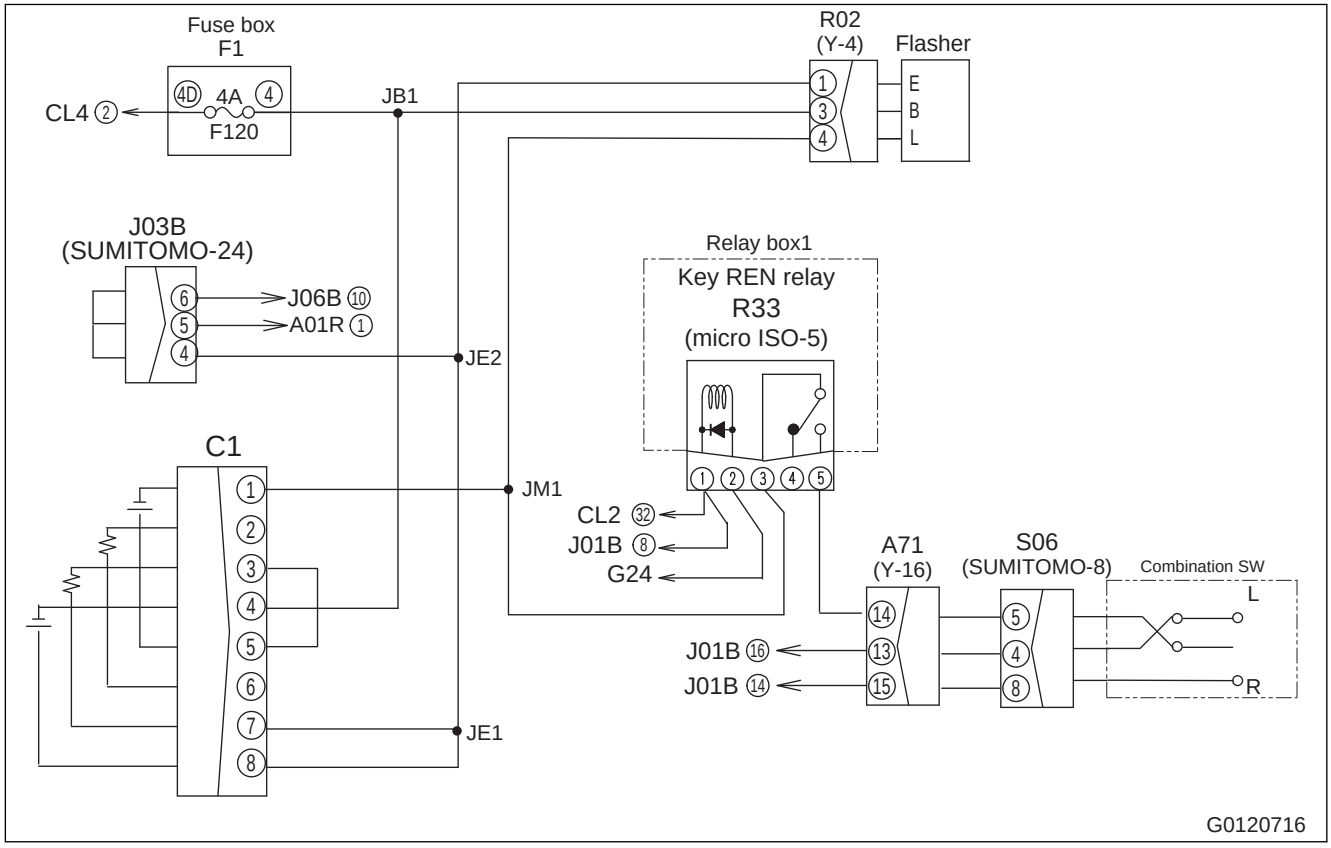
Circuit diagram of seat heater, laser lift height sensor, beacon lamp, and blue light



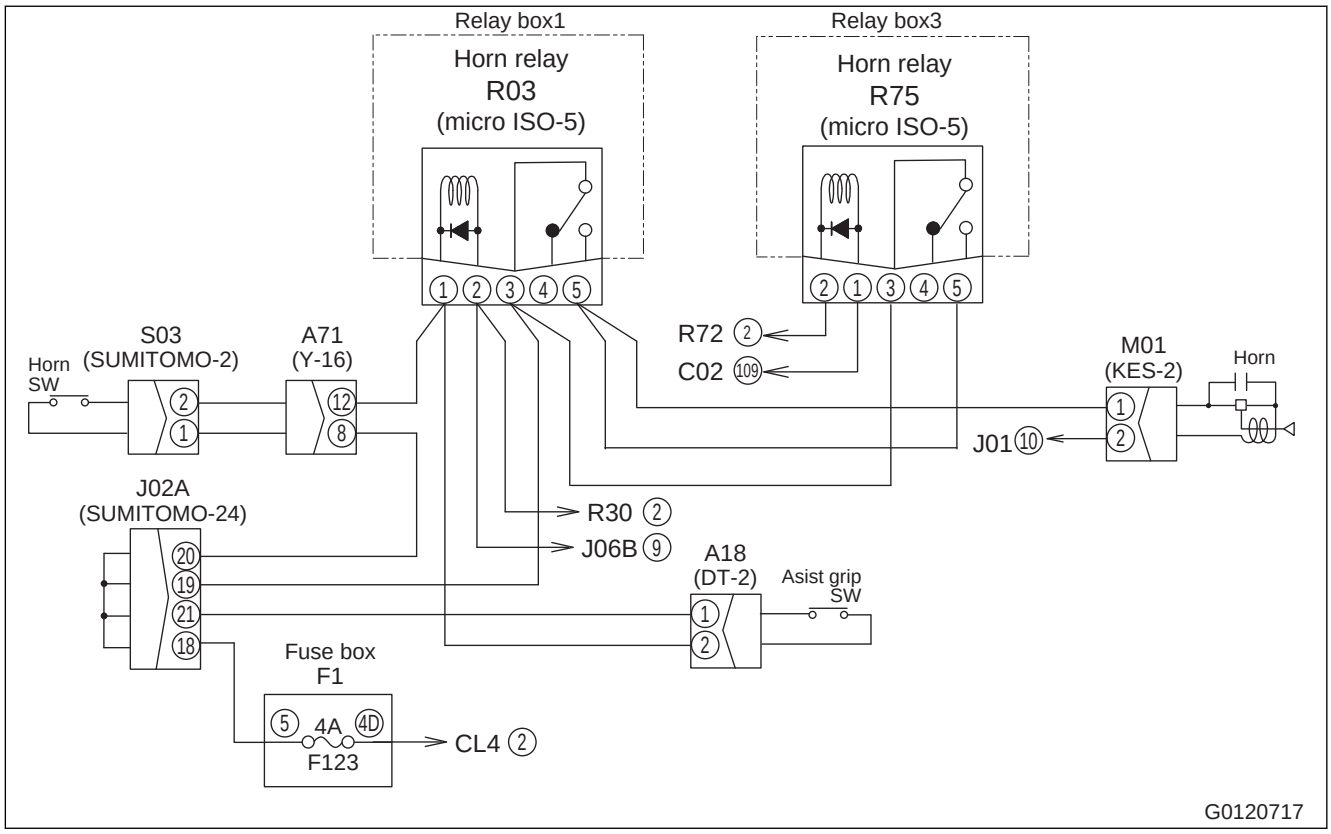
Circuit diagram of headlamp and clearance lamp



Circuit diagram of turn signal lamp



Circuit diagram of horn



FAILURE CODE [GFDNKP]

Action level	Failure code	Failure phenomenon	LOW VOLTAGE) K24 (Power controller system)
L03	GFDNKP		
Detail of failure	(Senses one of the below) • When the battery voltage is ≥ 75V, a K24 detection voltage of < 19.43V is sensed continuously for 250msec. • When the battery voltage is < 75V, a K24 detection voltage of < 16.02V is sensed continuously for 250msec.		
Action of controller	• Turns K24 power supply output to OFF. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The electrical parts (lamps, etc.) that use K24 cannot operate.		
Related information	How to reproduce failure code: Turn the starting switch to the ON position.		

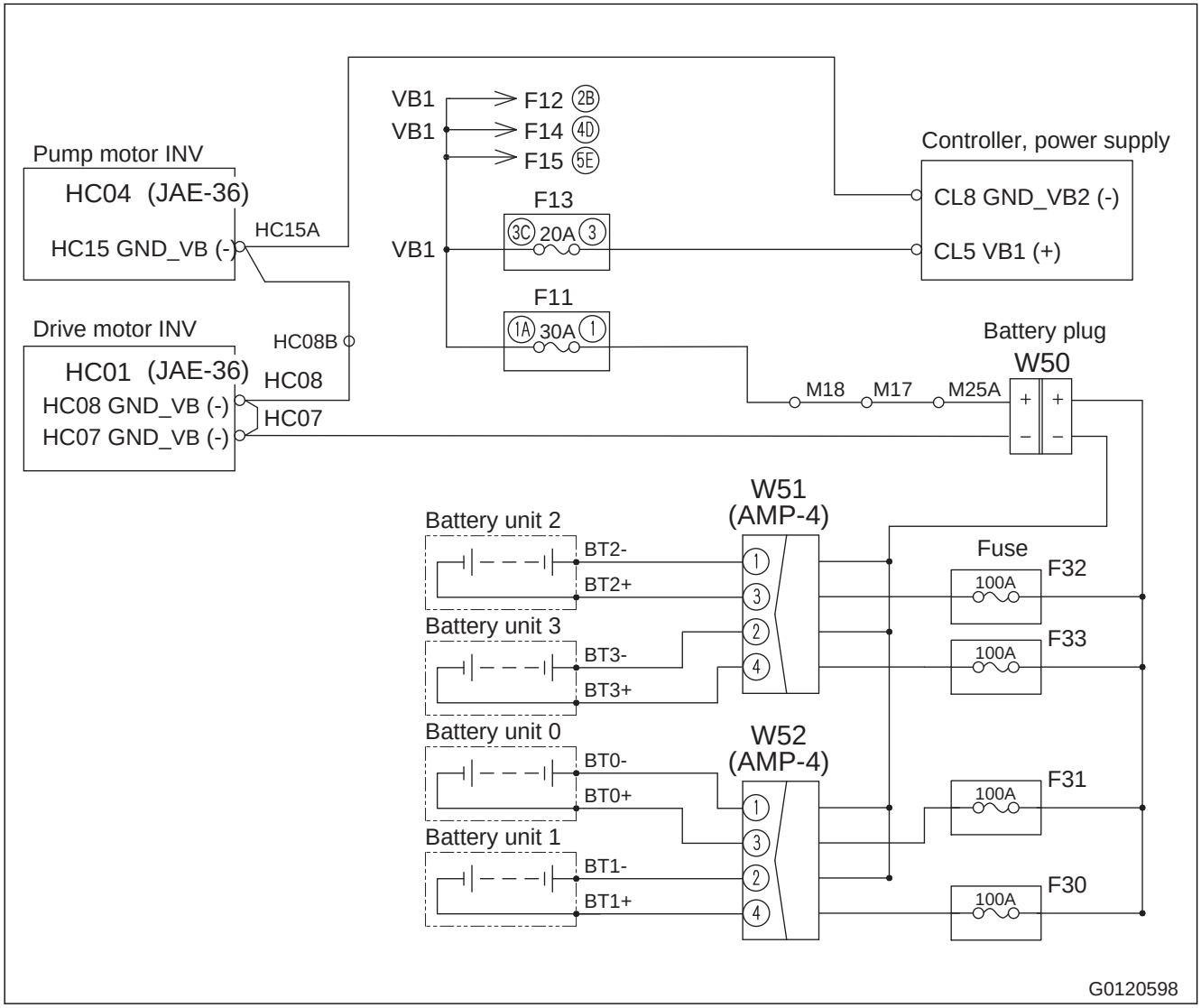
No.	Cause	Procedure, measurement location, criteria and remarks
1	Do the troubleshooting for failure code [GFDNKN].	

FAILURE CODE [GFDRKK]

Action level	Failure code	Failure phenomenon	LOW VOLTAGE1) INPUT (P-CON) (Power controller system)
L04	GFDRKK		
Detail of failure	A battery detection voltage of ≤ 52V is sensed continuously for 250msec.		
Action of controller	• Turns all power supply output to OFF. • Even after the cause of failure is corrected, the vehicle will not go back to the correct state until the battery plug W50 is connected again. • If a battery detection voltage of ≥ 54V is sensed continuously for 250msec, the vehicle goes back to the correct state automatically.		
Problem on lift truck	The vehicle does not operate.		
Related information	Reproduction method of failure code: Connect the battery plug W50. Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Low battery voltage	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) **REMARK** Measure the voltage and charge the battery if necessary.		
		Voltage	Between battery plug W50 (battery side) (+) and (-)	Min. 81V

Circuit diagram of power supply system

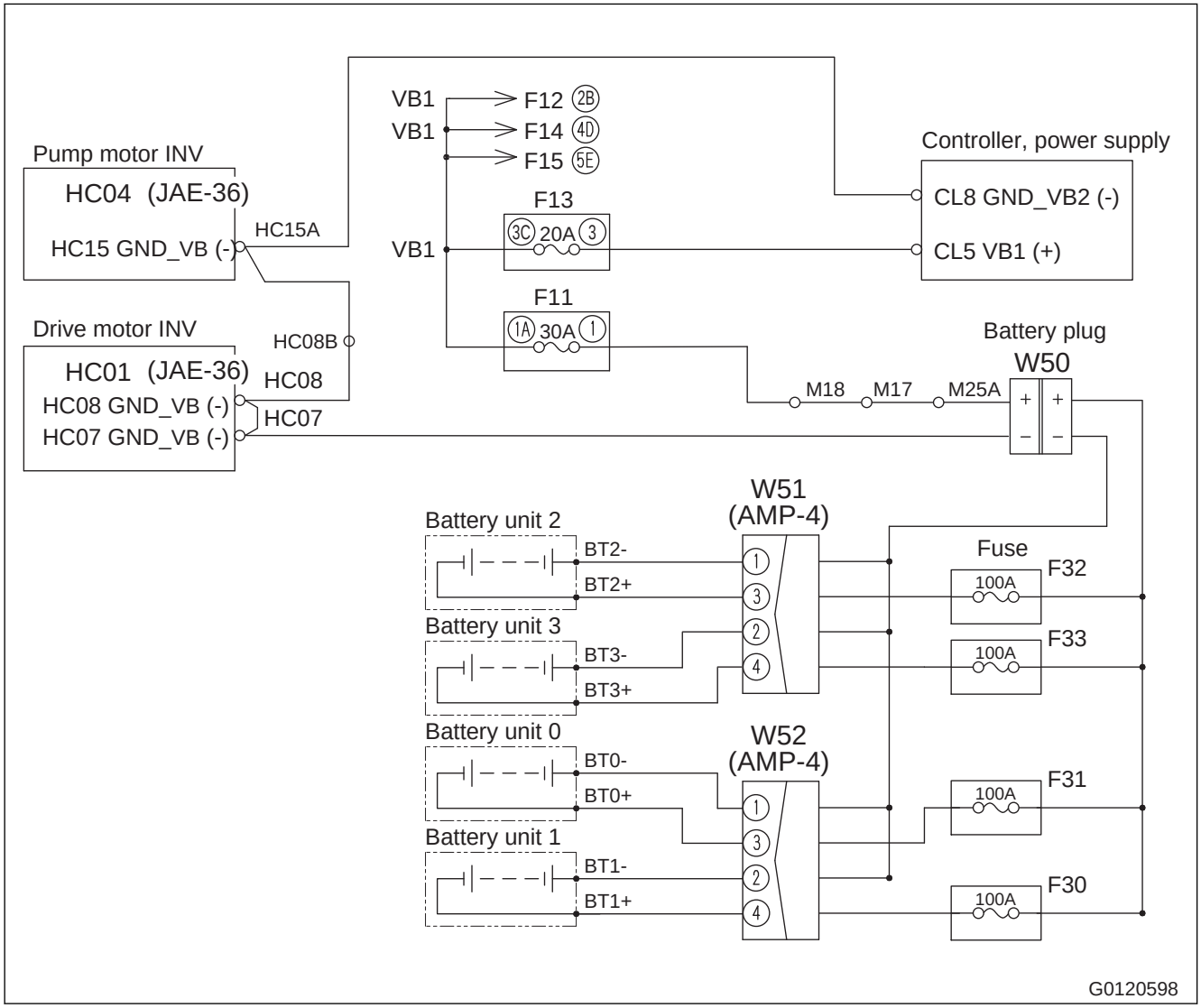


FAILURE CODE [GFDRKU]

Action level	Failure code	Failure phenomenon	HIGH VOLTAGE1) INPUT (P-CON) (Power controller system)
L04	GFDRKU		
Detail of failure	A battery detection voltage of ≥ 187V is sensed continuously for 250ms.		
Action of controller	• Turns all power supply output to OFF. • Even after the cause of failure is corrected, the vehicle will not go back to the correct state until the battery plug W50 is connected again. • If a battery detection voltage of < 185V is sensed for 250msec continuously, the vehicle goes back to the correct state automatically.		
Problem on lift truck	The vehicle does not operate.		
Related information	Reproduction method of failure code: Connect the battery plug W50. Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Incorrect battery voltage	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) **REMARK** If the voltage is abnormal, replace the battery.		
		Voltage	Between battery plug W50 (battery side) (+) and (-)	Max. 187V
2	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of power supply system

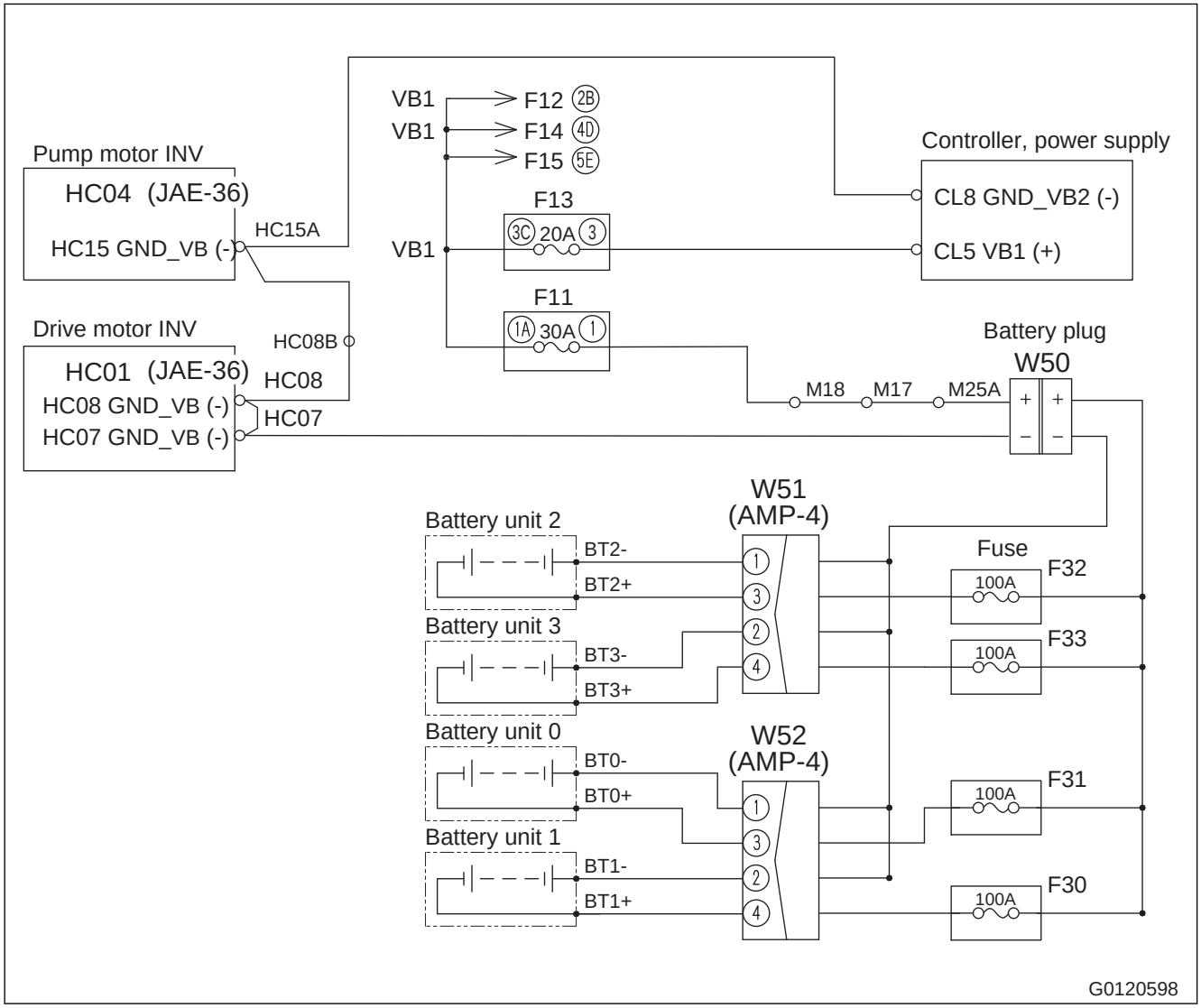


FAILURE CODE [GFDSKK]

Action level	Failure code	Failure phenomenon	LOW VOLTAGE2) INPUT (P-CON) (Power controller system)
L04	GFDSKK		
Detail of failure	A battery detection voltage of ≤ 50V is sensed continuously for 250msec.		
Action of controller	• Turns all power supply output to OFF. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the battery plug W50 is connected again.		
Problem on lift truck	The vehicle does not operate.		
Related information	Reproduction method of failure code: Connect battery plug W50. Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Low battery voltage	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) **REMARK** Measure the voltage and charge the battery if necessary.		
		Voltage	Between battery plug W50 (battery side) (+) and (-)	Min. 81V

Circuit diagram of power supply system

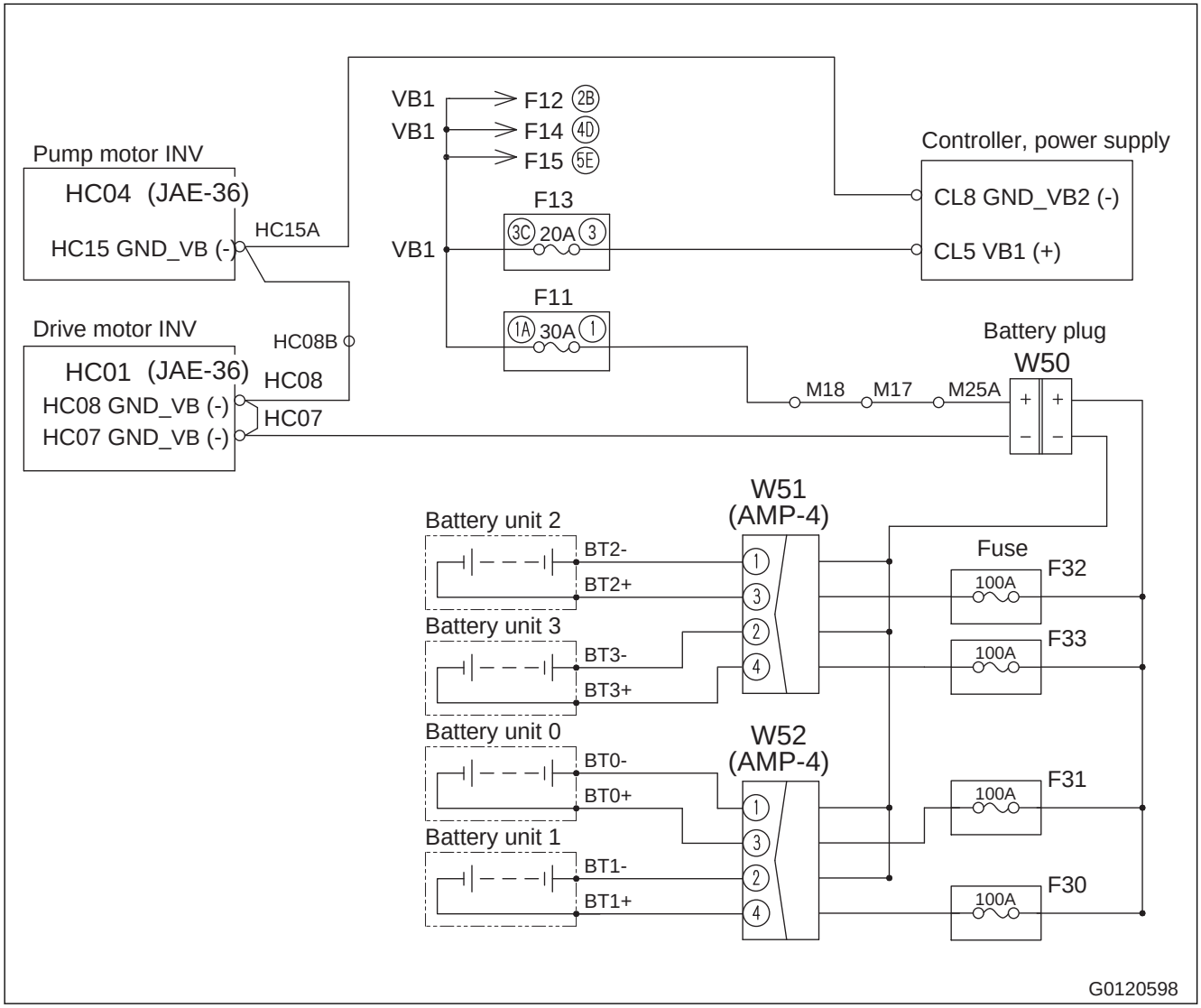


FAILURE CODE [GFDSKU]

Action level	Failure code	Failure phenomenon	HIGH VOLTAGE2) INPUT (P-CON) (Power controller system)
L04	GFDSKU		
Detail of failure	A battery detection voltage of ≥ 200V is sensed continuously for 250ms.		
Action of controller	• Turns all power supply output to OFF. • Even after the cause of failure is corrected, the vehicle will not go back to the correct state until the battery plug W50 is connected again.		
Problem on lift truck	The vehicle cannot be operated.		
Related information	Reproduction method of failure code: Connect battery plug W50. Turn the starting switch to the ON position.		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Incorrect battery voltage	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) **REMARK** If the voltage is abnormal, replace the battery.		
		Voltage	Between battery plug W50 (battery side) (+) and (-)	Max. 187V
2	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of power supply system



FAILURE CODE [GFDUN7]

Action level	Failure code	Failure phenomenon	LOW) TEMP (P-CON) (Power controller system)
L01	GFDUN7		
Detail of failure	A power supply controller internal temperature of ≤ -30℃ is sensed for 500msec.		
Action of controller	• Gives only an announcement. • When the internal temperature becomes -30℃ or more, it recovers automatically.		
Problem on lift truck	There is a possibility that the power supply controller does not operate correctly.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks
1	The vehicle was in a low temperature (-30℃ or less) environment.	Put the vehicle in a room temperature environment for a while.
2	Defective power supply controller temperature sensor	If the problem occurs in a room temperature environment, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [GFDUN8]

Action level	Failure code	Failure phenomenon	HIGH1) TEMP (P-CON) (Power controller system)
L04	GFDUN8		
Detail of failure	An internal temperature of the power supply controller of ≥100℃ is continuously sensed for 500msec.		
Action of controller	• Turns the power supply outputs of K8, K20, and K24 to OFF. • When the internal temperature drops to 100℃ or less, it recovers automatically.		
Problem on lift truck	The components and electrical parts that use K8, K20, and K24 cannot operate.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Power supply controller overload	Stop the vehicle, and wait until the power supply controller is cool.
2	Defective power supply controller temperature sensor	If the failure occurs frequently during usual operation, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [GFDVN8]

Action level	Failure code	Failure phenomenon	HIGH2) TEMP (P-CON) (Power controller system)
L04	GFDVN8		
Detail of failure	An internal temperature of the power supply controller of ≥110℃ is continuously sensed for 500msec.		
Action of controller	• Turns all power supply output to OFF. • When the internal temperature drops to 110℃ or less, it recovers automatically.		
Problem on lift truck	The vehicle cannot be operated.		
Related information	-		

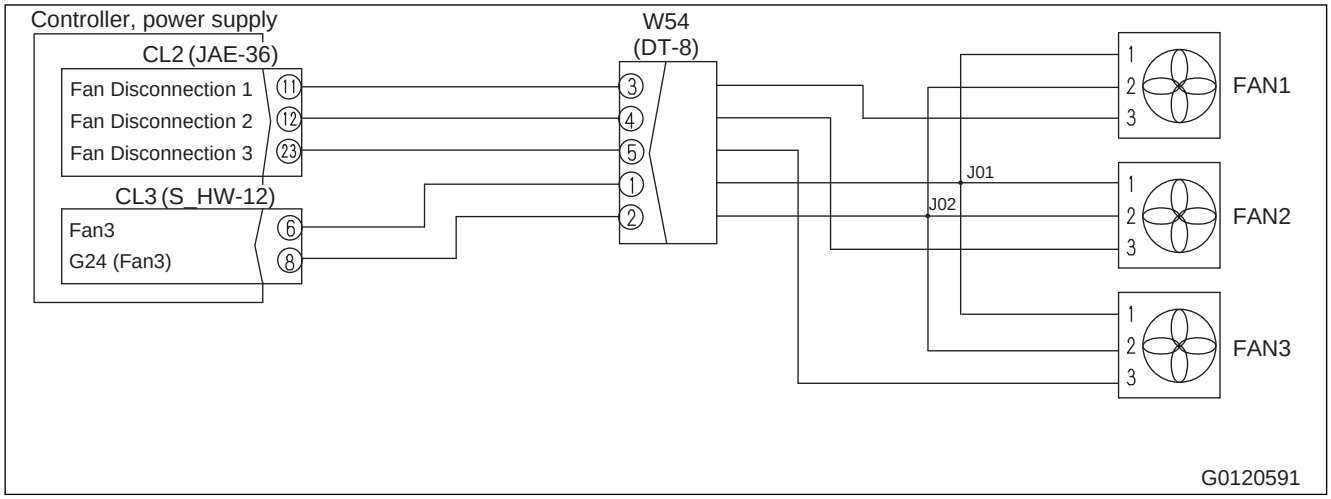
No.	Cause	Procedure, measurement location, criteria and remarks
1	Power supply controller overload	Stop the vehicle, and wait until the power supply controller is cool.
2	Defective power supply controller temperature sensor	If the failure occurs frequently during usual operation, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [GFDXKB] (FE25-2)

Action level	Failure code	Failure phenomenon	SHORT) BATTERY FAN POWER (FE25-2) (Power controller system)
L03	GFDXKB		
Detail of failure	During the diagnosis-before-fan-is-driven is done, a fan circuit resistance of 52Ω or less is sensed for the test voltage of 5.5V.		
Action of controller	• Stops the output to the fan. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The battery fan does not operate.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL3 and W54 to do the troubleshooting.		
		Resistance	Between CL3 (male) (6) and (8)	Min. 1MΩ
2	Defective battery fan	If no failure is found by the above checks, the battery fan is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery cooling fan (FE25-2)

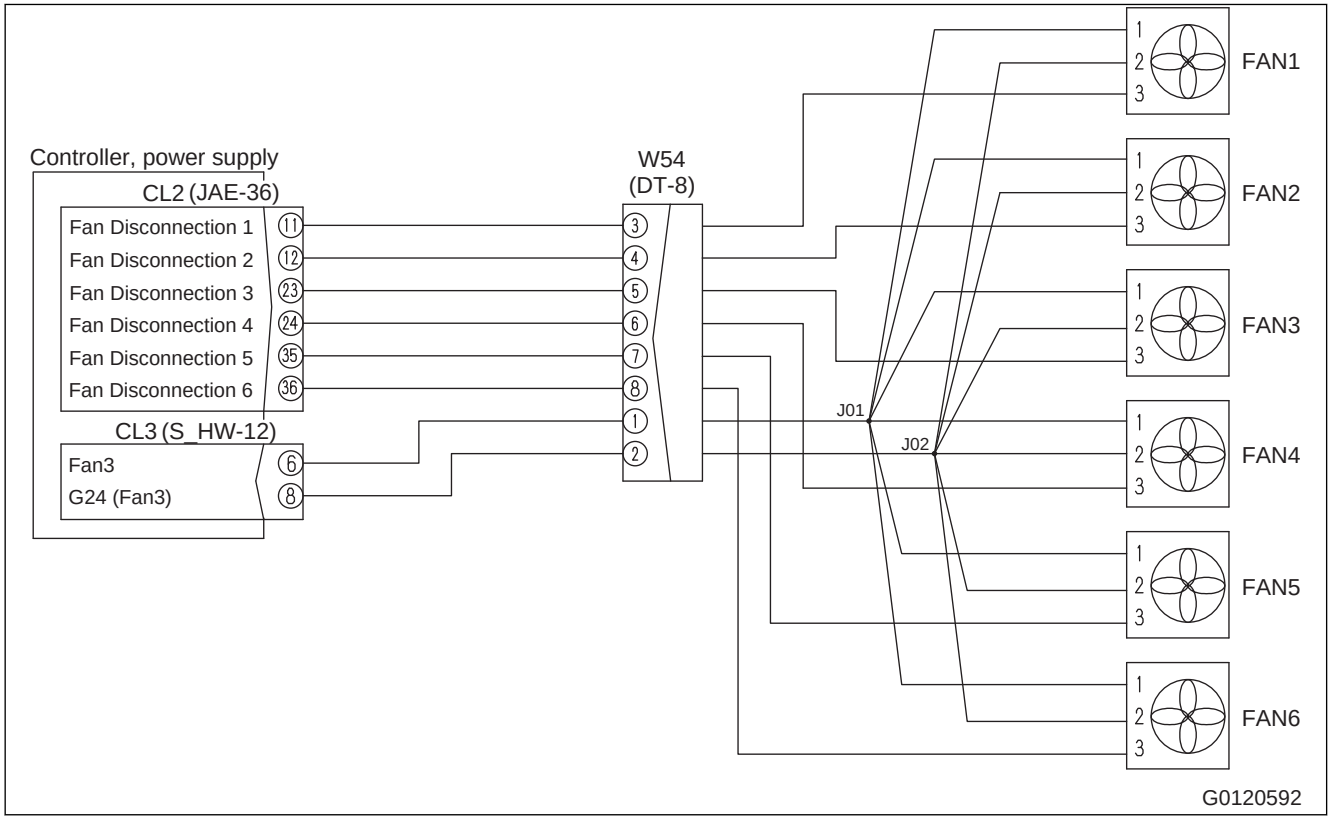


FAILURE CODE [GFDXKB] (FE30-2)

Action level	Failure code	Failure phenomenon	SHORT) BATTERY FAN POWER (FE30-2) (Power controller system)
L03	GFDXKB		
Detail of failure	During the diagnosis-before-fan-is-driven is done, a fan circuit resistance of 52Ω or less is sensed for the test voltage of 5.5V.		
Action of controller	• Stops the output to the fan. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The battery fan does not operate.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL3 and W54 to do the troubleshooting.		
		Resistance	Between CL3 (male) (6) and (8)	Min. 1MΩ
2	Defective battery fan	If no failure is found by the above checks, the battery fan is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery cooling fan (FE30-2)

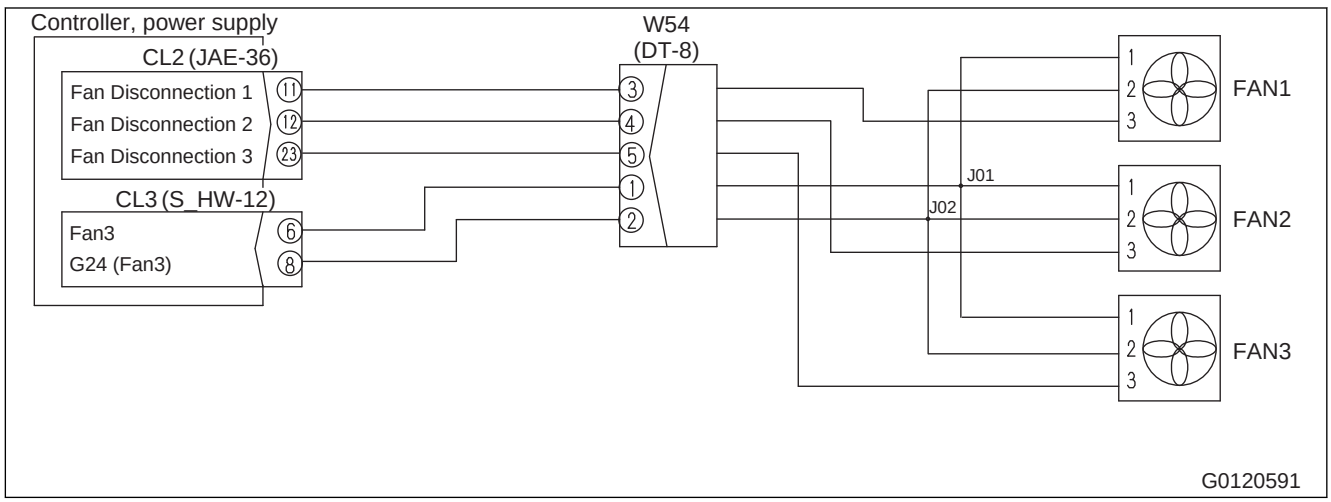


FAILURE CODE [GFDXKN] (FE25-2)

Action level	Failure code	Failure phenomenon	OVER1) CURRENT BATT FAN-P (FE25-2) (Power controller system)
L03	GFDXKN		
Detail of failure	A fan current of ≥ 8.3A is sensed continuously for 500msec.		
Action of controller	• Stops the output to the fan. • Even if the cause of the failure is corrected, the vehicle will not go back to the correct state until the starting switch is turned to the OFF position one time or it is set to the charging mode.		
Problem on lift truck	The battery fan does not operate.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL3 and W54 to do the troubleshooting.		
		Resistance	Between CL3 (male) (6) and (8)	Min. 1MΩ
2	Defective battery fan	If no failure is found by the above checks, the battery fan is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery cooling fan (FE25-2)

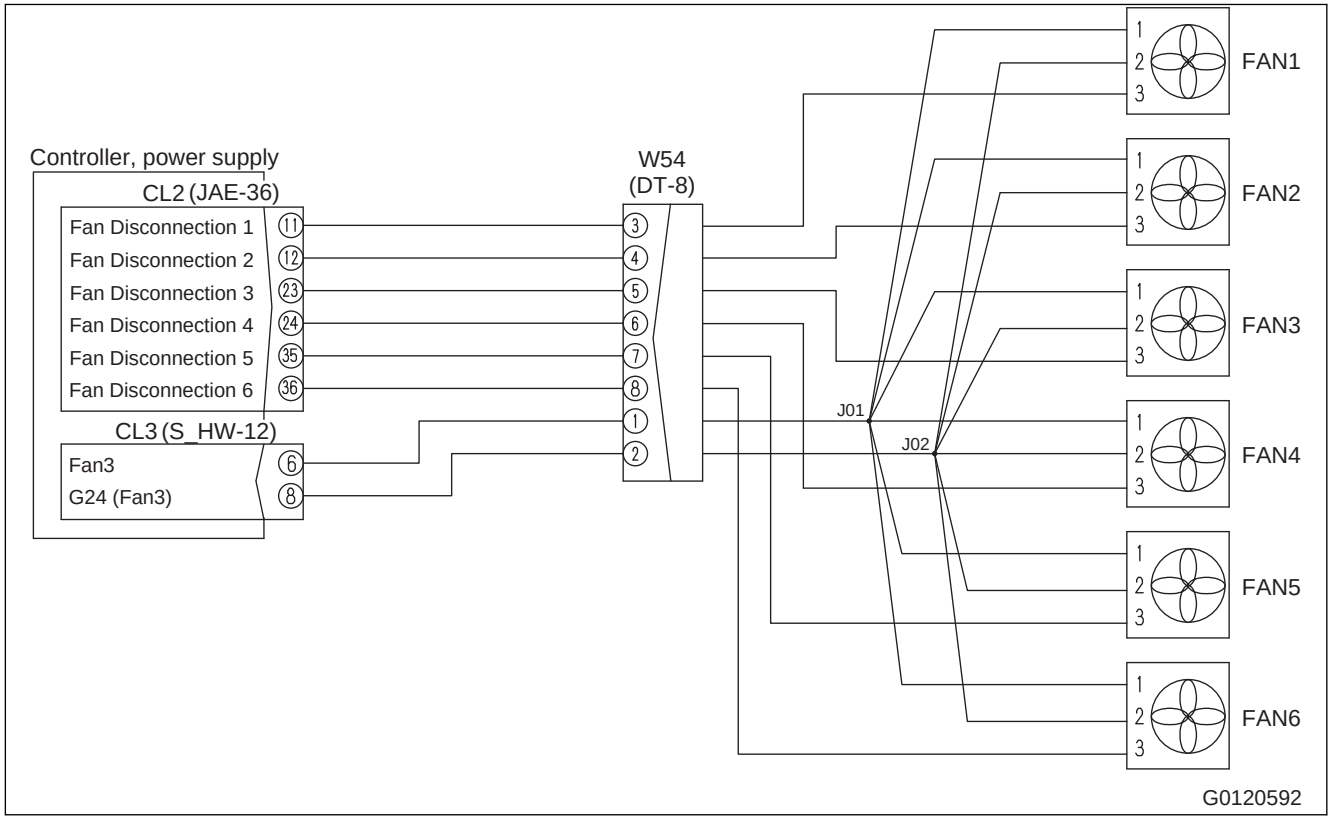


FAILURE CODE [GFDXKN] (FE30-2)

Action level	Failure code	Failure phenomenon	OVER1) CURRENT BATT FAN-P (FE30-2) (Power controller system)
L03	GFDXKN		
Detail of failure	A fan current of ≥ 8.3A is sensed continuously for 500msec.		
Action of controller	• Stops the output to the fan. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The battery fan does not operate.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL3 and W54 to do the troubleshooting.		
		Resistance	Between CL3 (male) (6) and (8)	Min. 1MΩ
2	Defective battery fan	If no failure is found by the above checks, the battery fan is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery cooling fan (FE30-2)

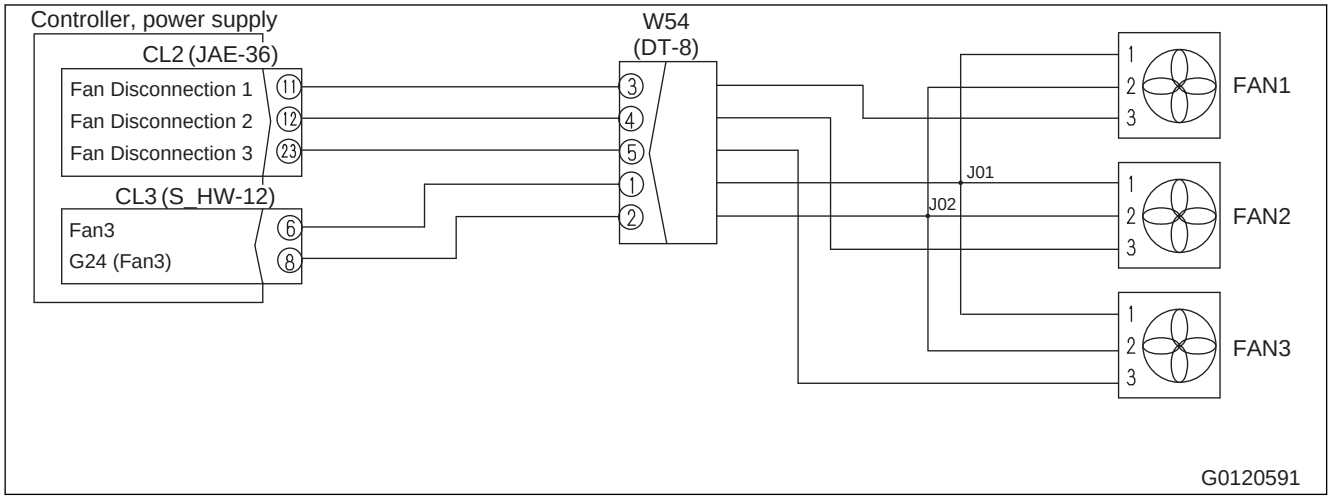


FAILURE CODE [GFDYKN] (FE25-2)

Action level	Failure code	Failure phenomenon	OVER2) CURRENT BATT FAN-P (FE25-2) (Power controller system)
L03	GFDYKN		
Detail of failure	A fan current of ≥ 11A is sensed continuously for 1msec.		
Action of controller	• Stops the output to the fan. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The battery fan does not operate.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL3 and W54 to do the troubleshooting.		
		Resistance	Between CL3 (male) (6) and (8)	Min. 1MΩ
2	Defective battery fan	If no failure is found by the above checks, the battery fan is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery cooling fan (FE25-2)

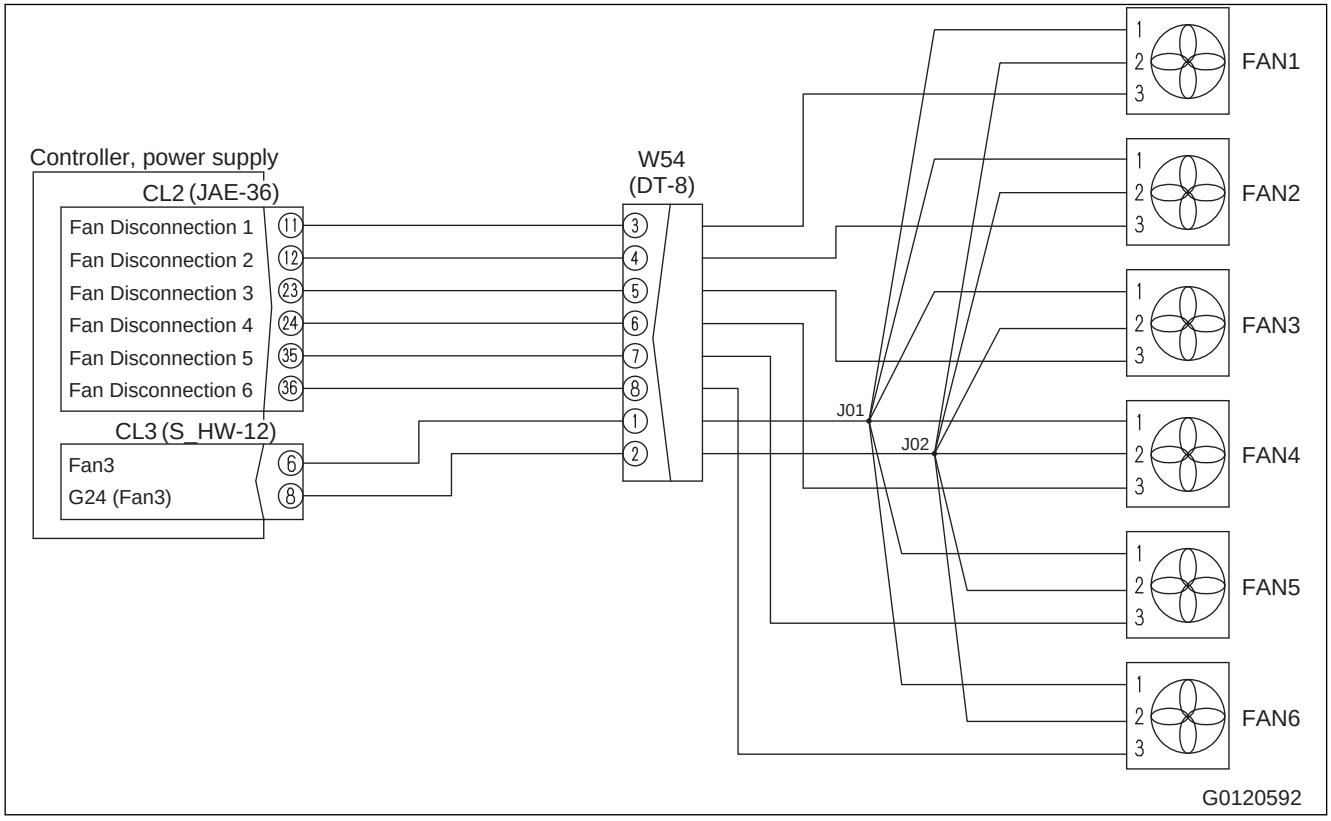


FAILURE CODE [GFDYKN] (FE30-2)

Action level	Failure code	Failure phenomenon	OVER2) CURRENT BATT FAN-P (FE30-2) (Power controller system)
L03	GFDYKN		
Detail of failure	A fan current of ≥ 11A is sensed continuously for 1msec.		
Action of controller	• Stops the output to the fan. • Even if the cause of the failure is corrected, the machine will not go back to the correct state until the starting switch is turned to the OFF position one time.		
Problem on lift truck	The battery fan does not operate.		
Related information	-		

No.	Cause	Procedure, measurement location, criteria and remarks		
1	Short circuit in wiring harness	1. Turn the starting switch to the OFF position. 2. Make sure that the system operating lamp is off, and then disconnect the battery plug W50. (Wait for 10 minutes or more.) 3. Disconnect the connector CL3 and W54 to do the troubleshooting.		
		Resistance	Between CL3 (male) (6) and (8)	Min. 1MΩ
2	Defective battery fan	If no failure is found by the above checks, the battery fan is defective. (Troubleshooting cannot be done because this is an internal failure.)		
3	Defective power supply controller	If no failure is found by the above checks, the power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)		

Circuit diagram of battery cooling fan (FE30-2)



FAILURE CODE [GFEAKA]

Action level	Failure code	Failure phenomenon	OPEN) LOAD SW (P-CON) (Power controller system)
L04	GFEAKA		
Detail of failure	When the load detection switch signal is ON and the K24 power supply output is OFF, a K24 detection voltage of < 7.5V is sensed continuously for 750msec.		
Action of controller	• Turns the power supply outputs of J24 and CPU24 to OFF. • Turns K24 power supply output to ON. • Even after the cause of failure is corrected, the vehicle will not go back to the correct state until the battery plug W50 is connected again.		
Problem on lift truck	The vehicle cannot be operated.		
Related information	How to reproduce failure code: Connect the battery plug W50, turn the starting switch to the ON position, and turn on the switch of electrical parts (lamps) that uses K24.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective power supply controller	The power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [GFEAKB]

Action level	Failure code	Failure phenomenon	SHORT1) LOAD SW (P-CON) (Power controller system)
L04	GFEAKB		
Detail of failure	When the load detection switch signal is OFF, K24 load is sensed continuously for 50msec.		
Action of controller	• Turns the power supply outputs of J24 and CPU24 to OFF. • Turns K24 power supply output to ON. • Even after the cause of failure is corrected, the vehicle will not go back to the correct state until the battery plug W50 is connected again.		
Problem on lift truck	The vehicle cannot be operated.		
Related information	How to reproduce failure code: Connect the battery plug W50.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective power supply controller	The power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)

FAILURE CODE [GFEBKB]

Action level	Failure code	Failure phenomenon	SHORT2) LOAD SW (P-CON) (Power controller system)
L04	GFEBKB		
Detail of failure	When the load detection switch signal is OFF and the K24 power supply output is OFF, a K24 detection voltage of ≥ 20V is sensed for a cumulative 80sec.		
Action of controller	• Turns the power supply outputs of J24 and CPU24 to OFF. • Turns K24 power supply output to ON. • Even after the cause of failure is corrected, the vehicle will not go back to the correct state until the battery plug W50 is connected again.		
Problem on lift truck	The vehicle cannot be operated.		
Related information	How to reproduce failure code: Connect the battery plug W50.		

No.	Cause	Procedure, measurement location, criteria and remarks
1	Defective power supply controller	The power supply controller is defective. (Troubleshooting cannot be done because this is an internal failure.)