

## General Information

### Before replacing devices

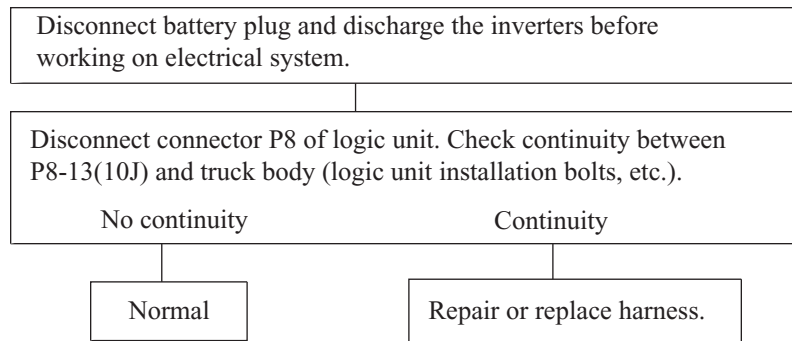
Do not replace devices casually even if replacement is required as a result of troubleshooting. Be sure to check the following items before replacing devices (logic unit, logic card, power supply card, inverters and inverter DSP cards).

- Loose battery connectors
- Abnormal wire harness connections
- Loose connectors
- Broken, bent or loose connector pins
- Dirty connectors

If connectors are dirty, remove the connector and clean connectors.

See “How to clean harness connectors and system components” on page 2-2.

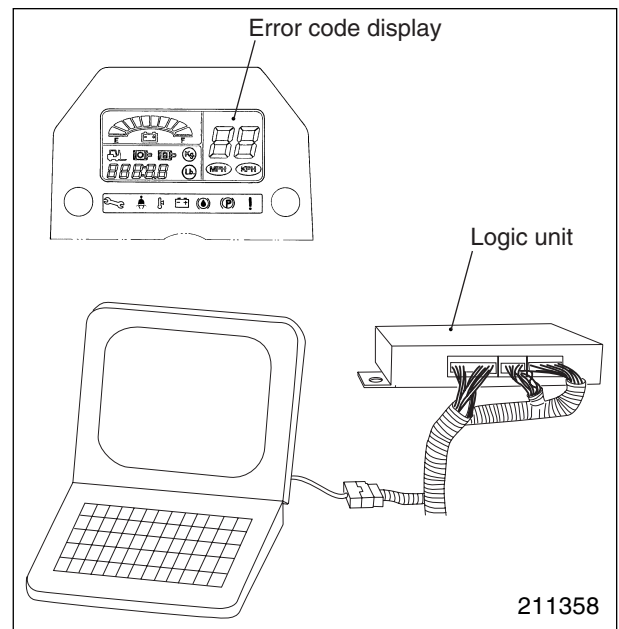
- Ensure that the main harness is not short-circuited to the truck body by using the following procedures.



If any of these items (above items) is a source of the trouble, the device will be damaged even if it is replaced with a new one. Be sure to check the above items and replace carefully.

### Connection of the service tool

1. Turn off the truck power.
2. Remove the rear cover.
3. Find the connector to the service tool near the logic unit.
4. Remove the cover and connect the PC as shown.
5. Turn on the truck power.
6. Start the service tool software.



## How to clean harness connectors and system components

1. Open-circuits are often caused by dirty harness connectors and components. Dust, together with greasy matter, forms grime which, in time, penetrates electrical connections, resulting in loose metal-to-metal contact or, for worse, electrical separation of surfaces in contact. For this reason, it is essential that the connectors and components be cleaned at each periodic inspection and at when servicing the truck. Instead of a commonly used solvent, use electronic parts cleaner (in the manner illustrated on the right).

Electronic parts cleaner	Three Bond 29D or Pow-R-Wash CZ*
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### NOTE

The cleaner liquid is volatile. All you have to do is just give a strong spray to wash off grime.

No need to wipe off the sprayed liquid.

2. After checking the connector for continuity, wash it as shown. Then, uncouple the connector and spray contact surface activator onto contact surfaces.

Install and remove the connector several times to wet the surfaces thoroughly with the activator liquid.

After coupling up the connector, check to be sure that it is in locked state.

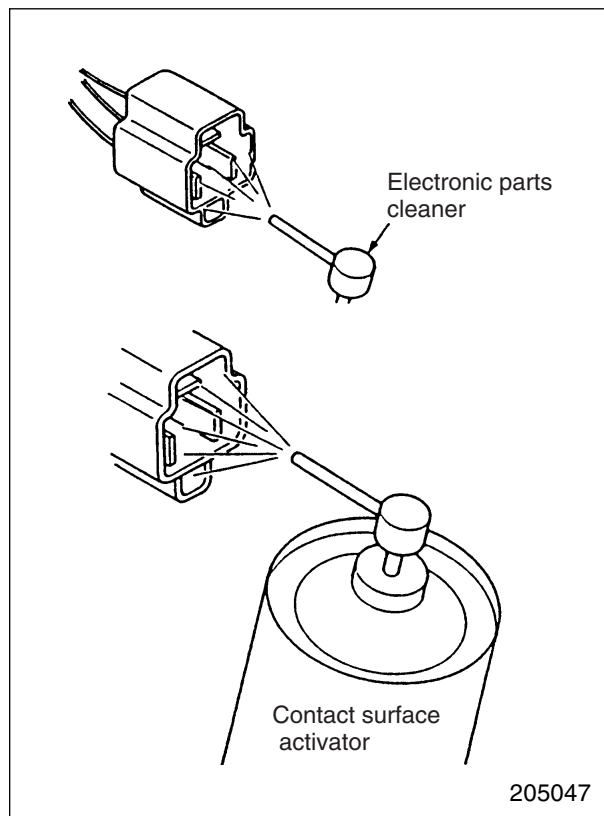
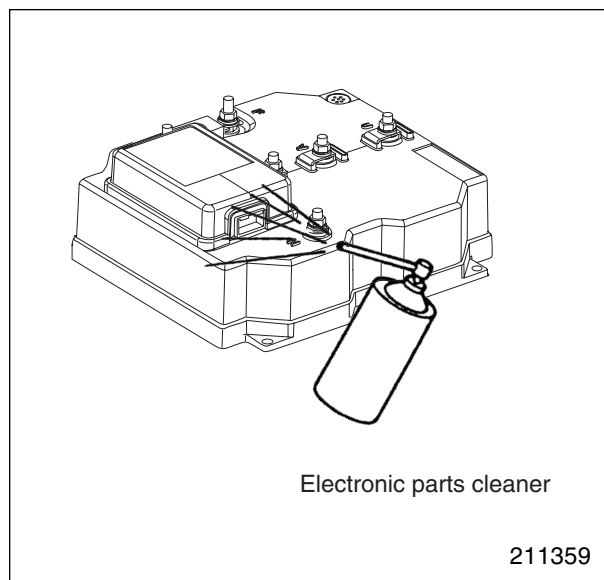
Contact surface activator	Three Bond 2501S (aerosol) or Nyogel 760G*
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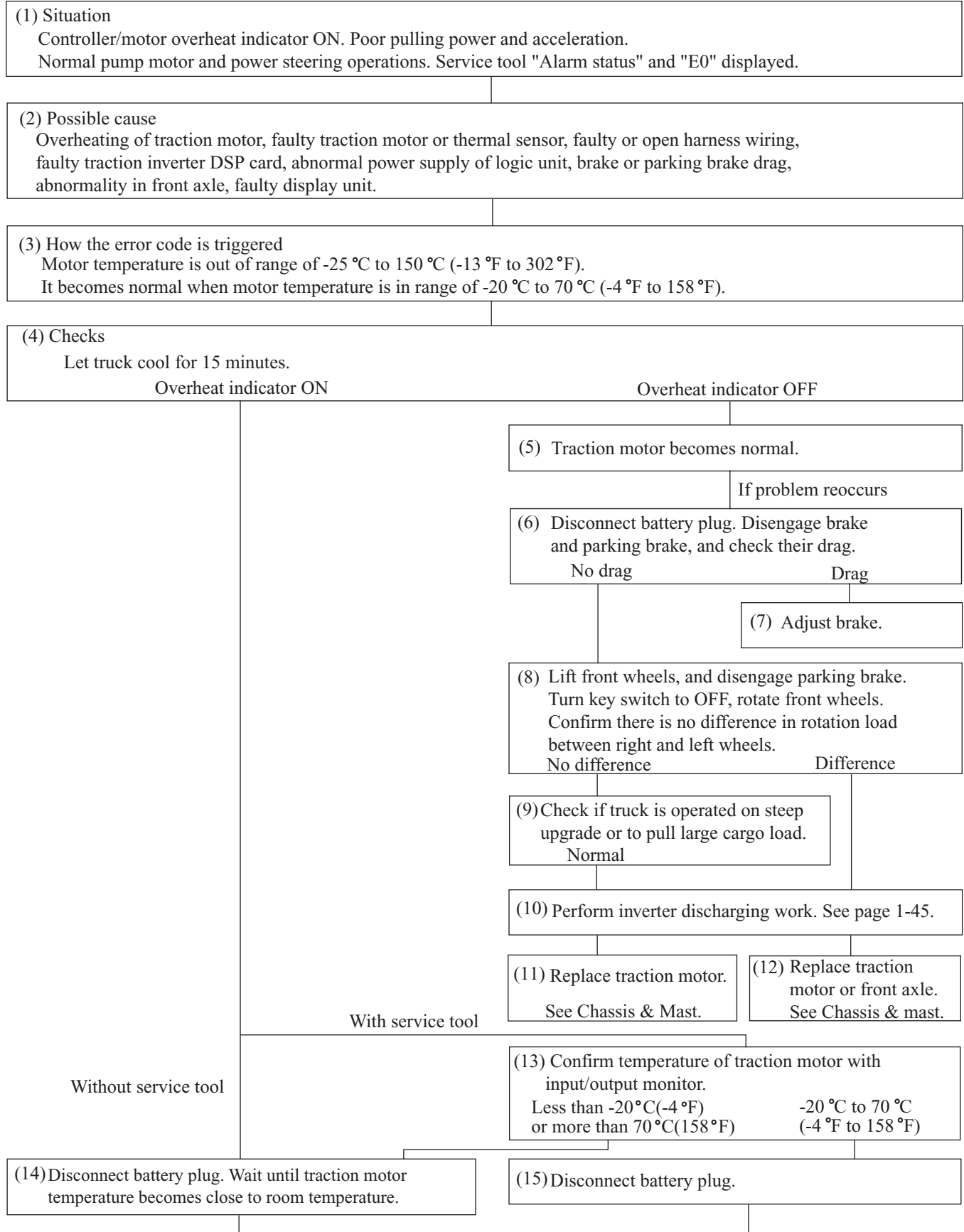
### NOTE

Do not spray too much liquid into the connector.

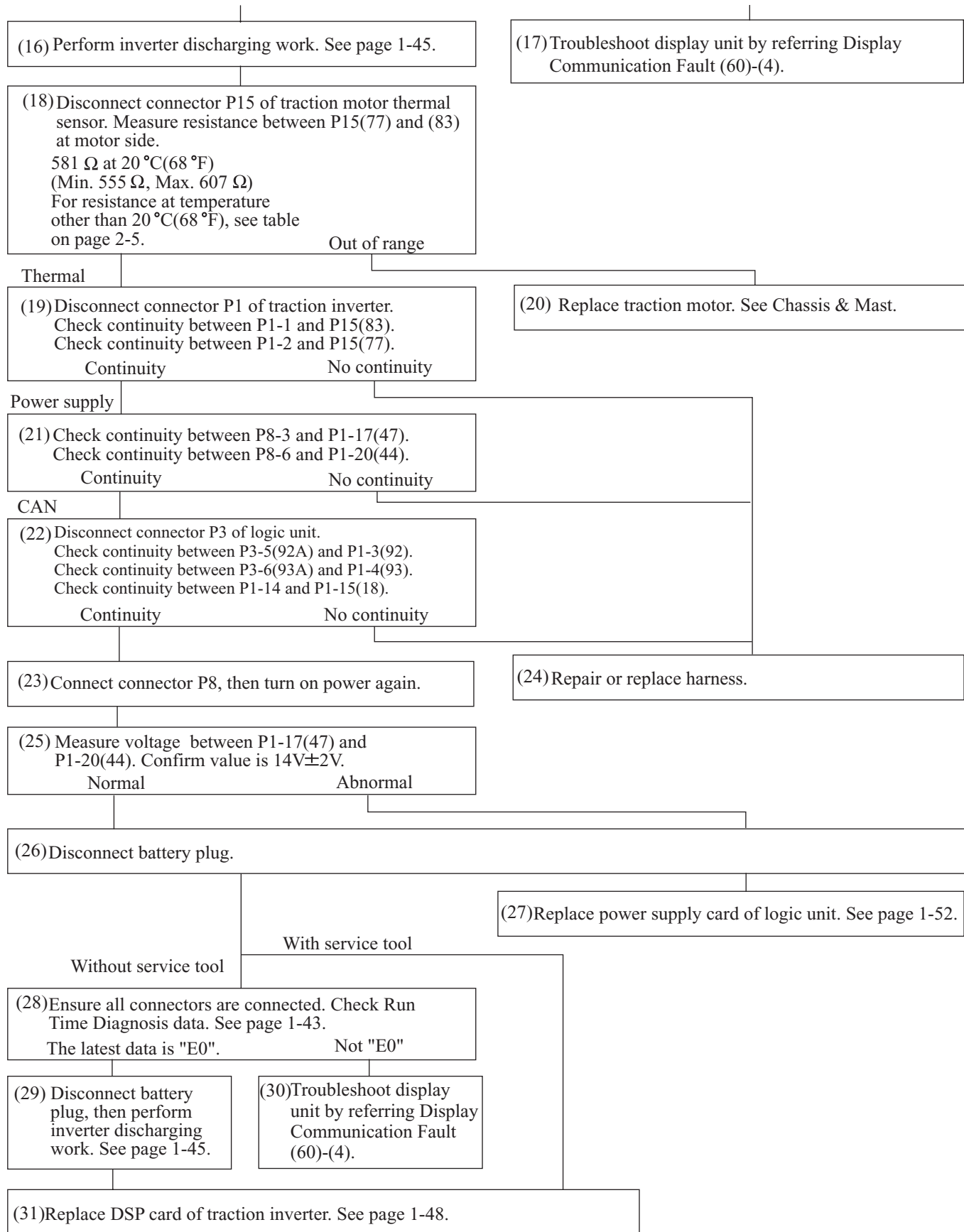
Cleaner liquid reacts differently with some resins (plastic materials).

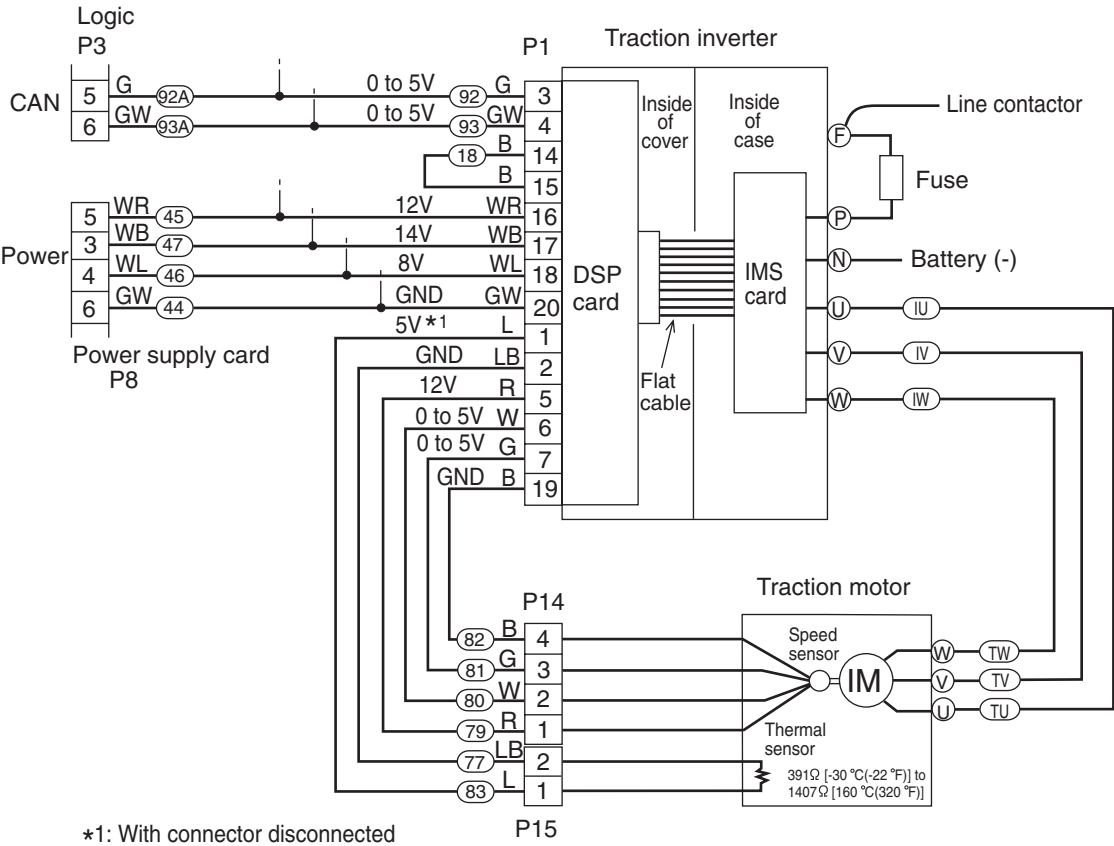
\*: Products contained in Terminal Maintenance Kit (SE000003)



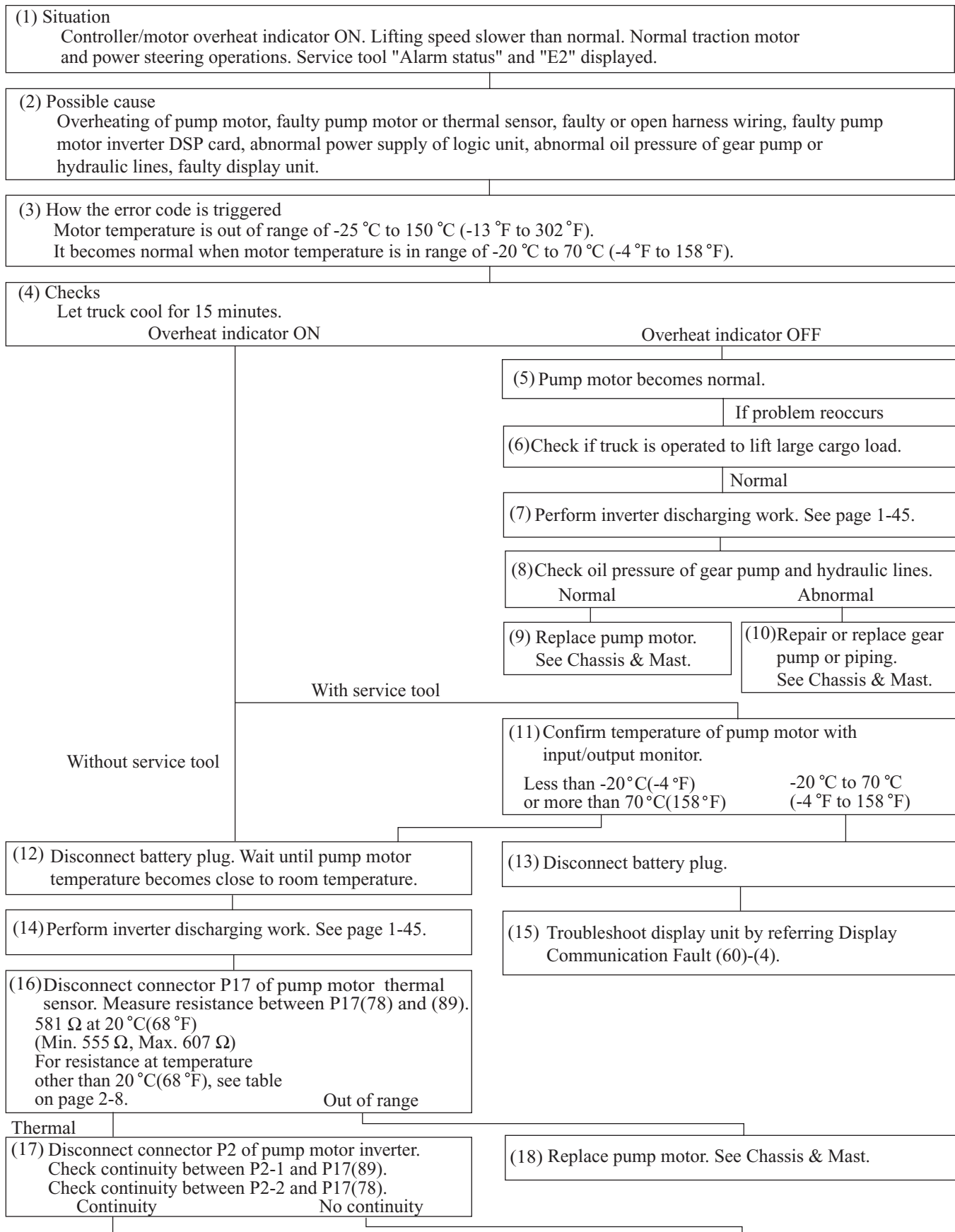
**Problem: Traction Motor, Overheating (E0)**

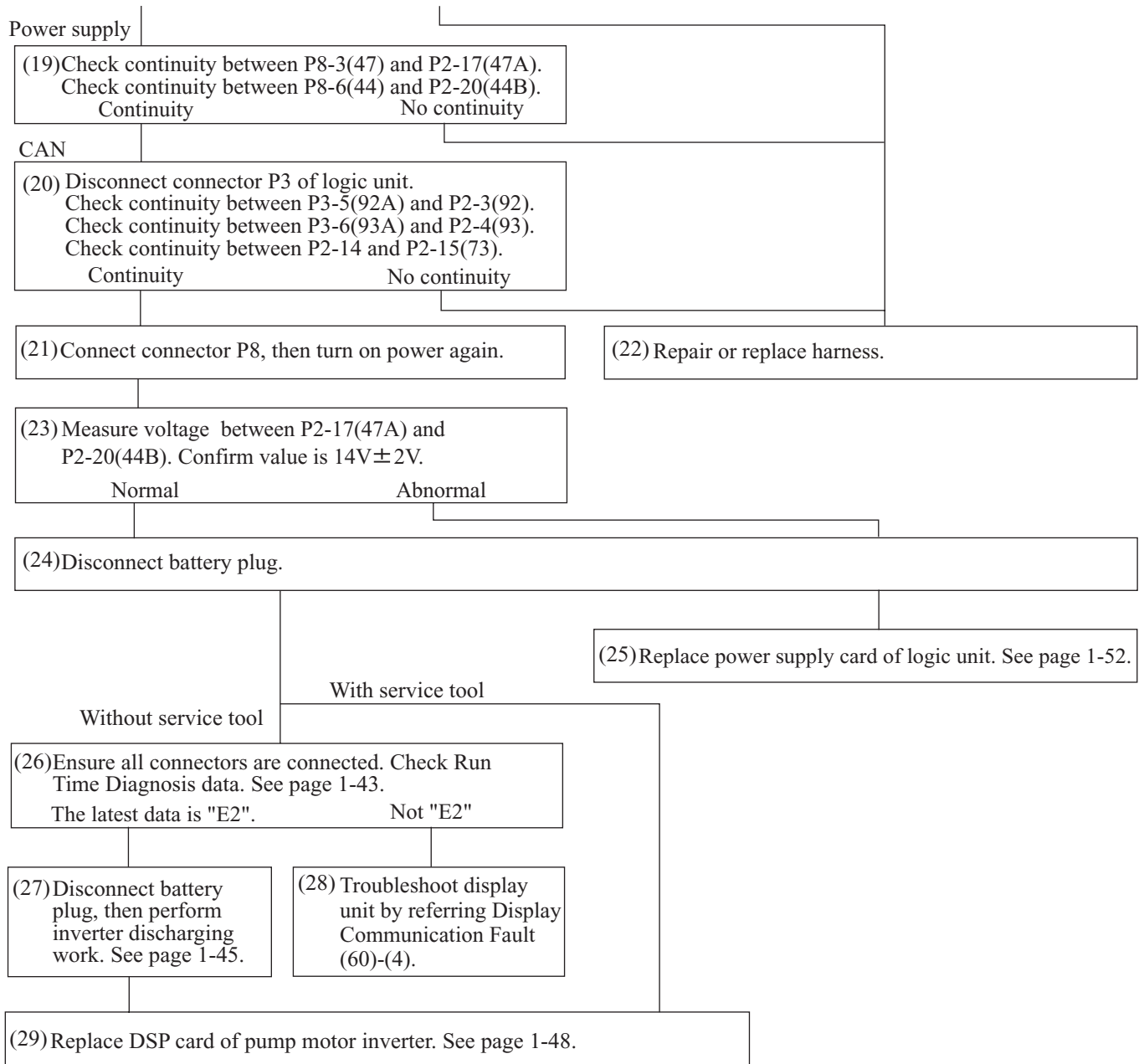
## TROUBLESHOOTING FOR CONTROL CIRCUITS

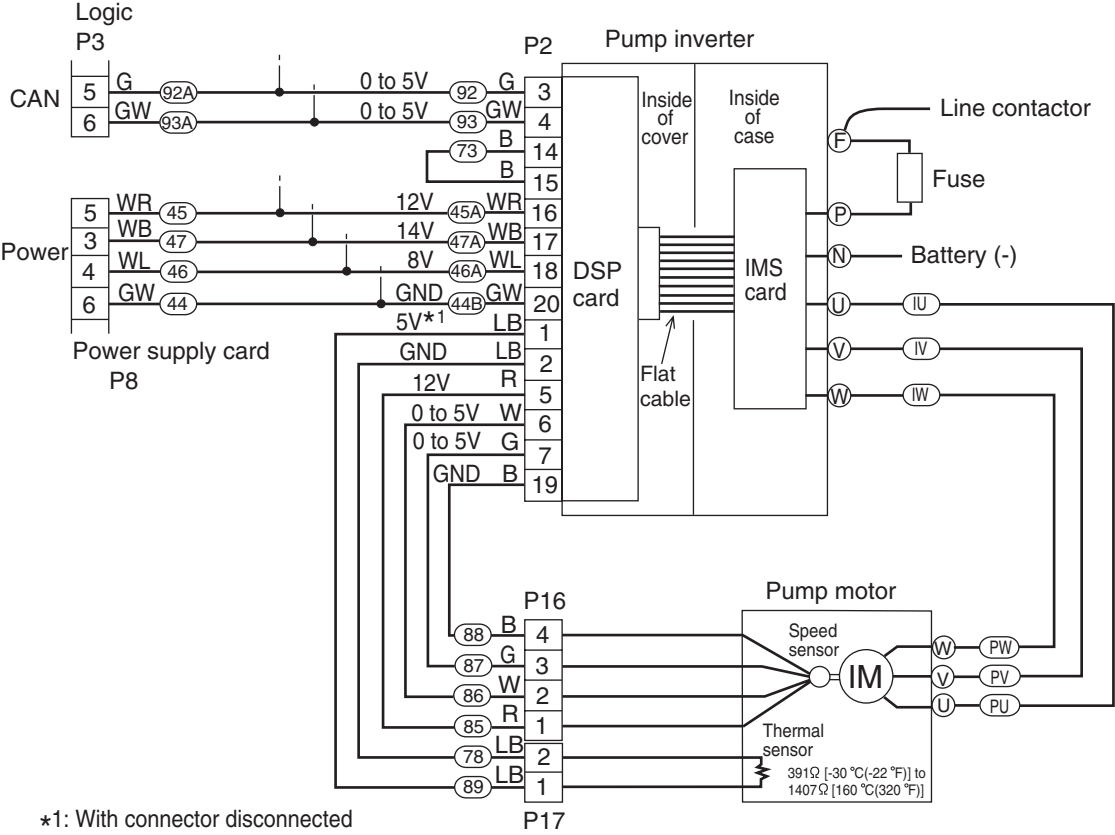




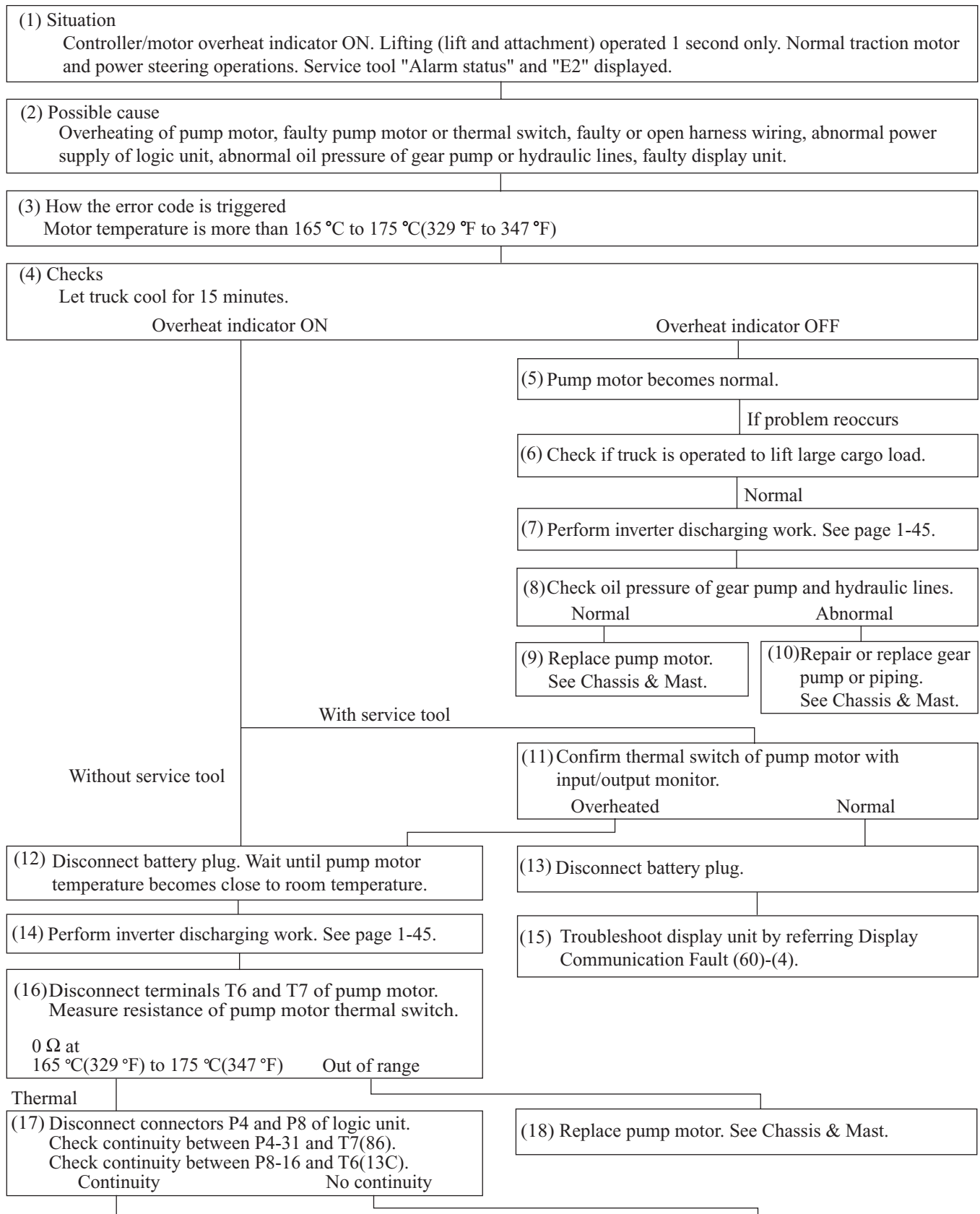
AMBIENT TEMPERATURE		RESISTANCE		
(°C)	(°F)	MIN.	TYP.	MAX.
-30	-22	362	391	419
-10	14	428	460	492
0	32	464	498	532
10	50	503	538	574
30	86	587	626	665
50	122	679	722	764
70	158	781	826	872
90	194	891	940	989
110	230	1007	1062	1117
130	266	1128	1194	1259
150	302	1256	1334	1412

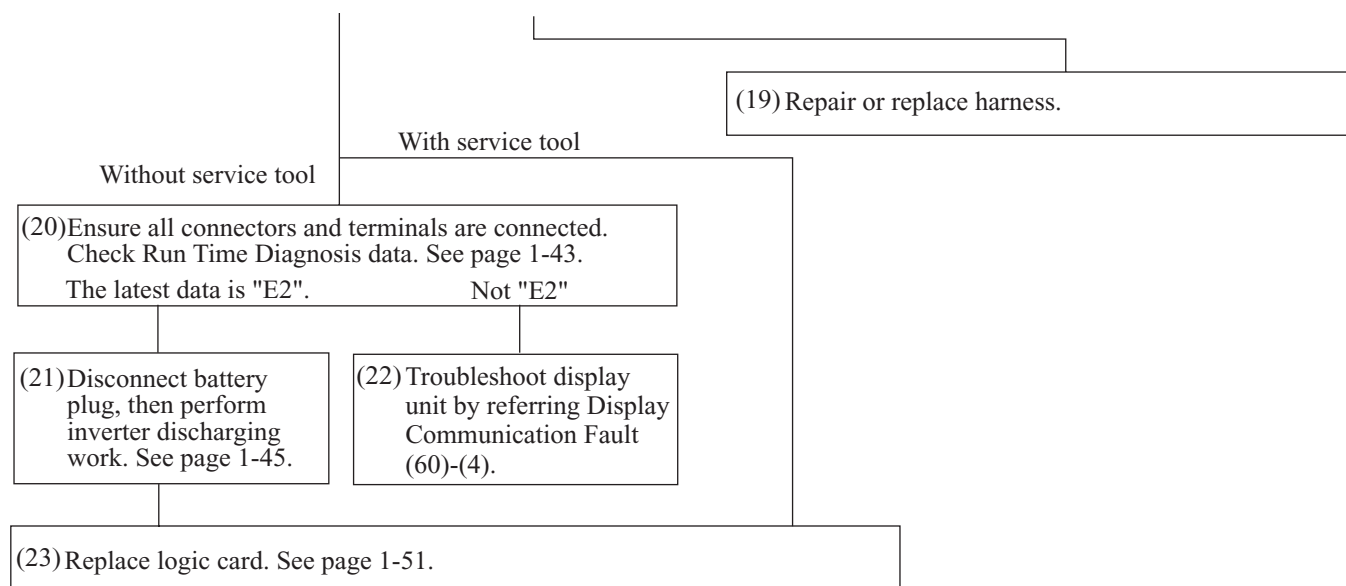
**Problem: Pump Motor, Overheating (Transistor Control Type) (E2)**

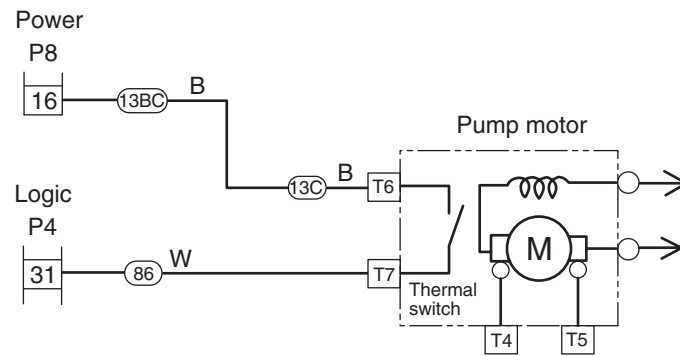




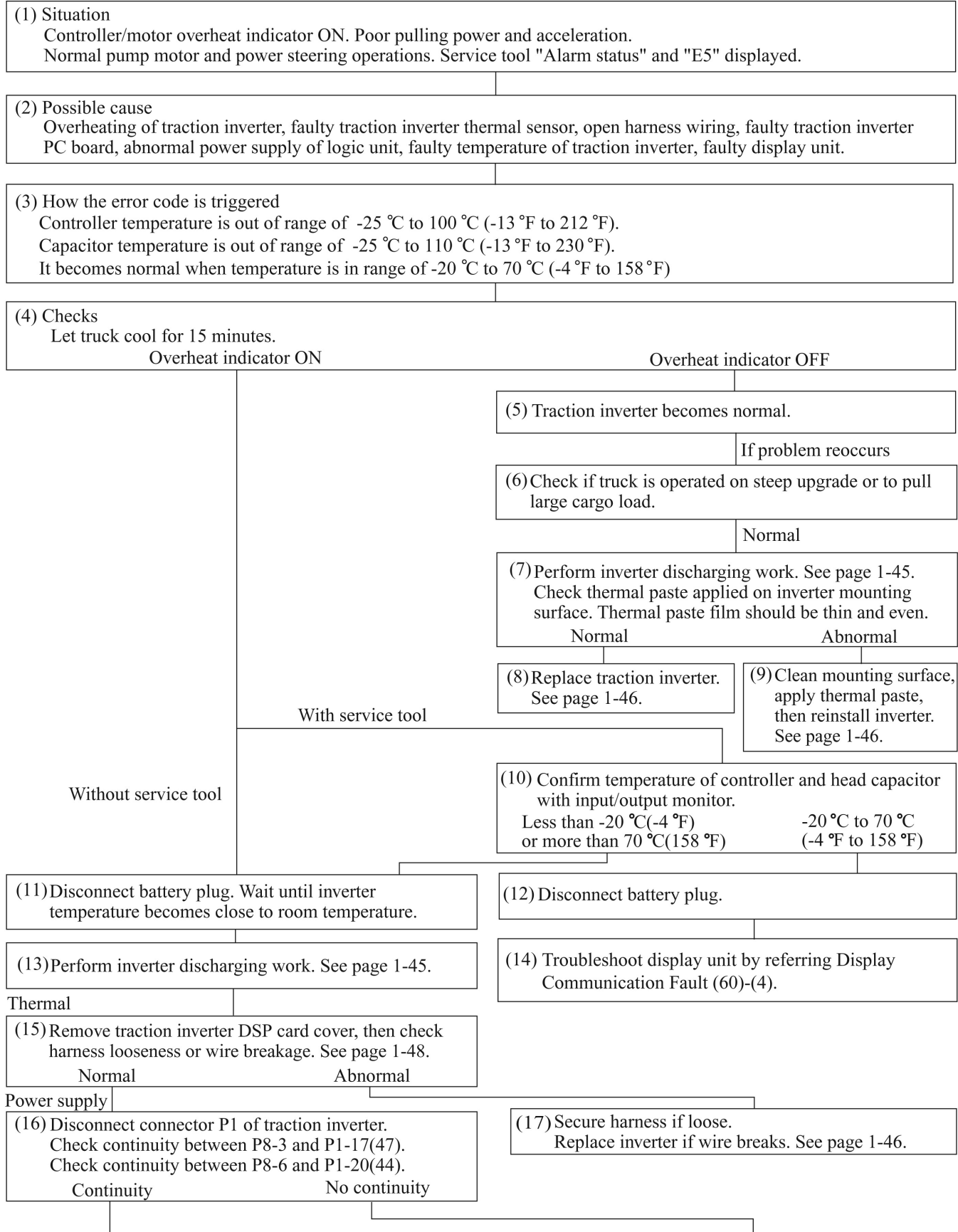
AMBIENT TEMPERATURE		RESISTANCE		
(°C)	(°F)	MIN.	TYP.	MAX.
-30	-22	362	391	419
-10	14	428	460	492
0	32	464	498	532
10	50	503	538	574
30	86	587	626	665
50	122	679	722	764
70	158	781	826	872
90	194	891	940	989
110	230	1007	1062	1117
130	266	1128	1194	1259
150	302	1256	1334	1412

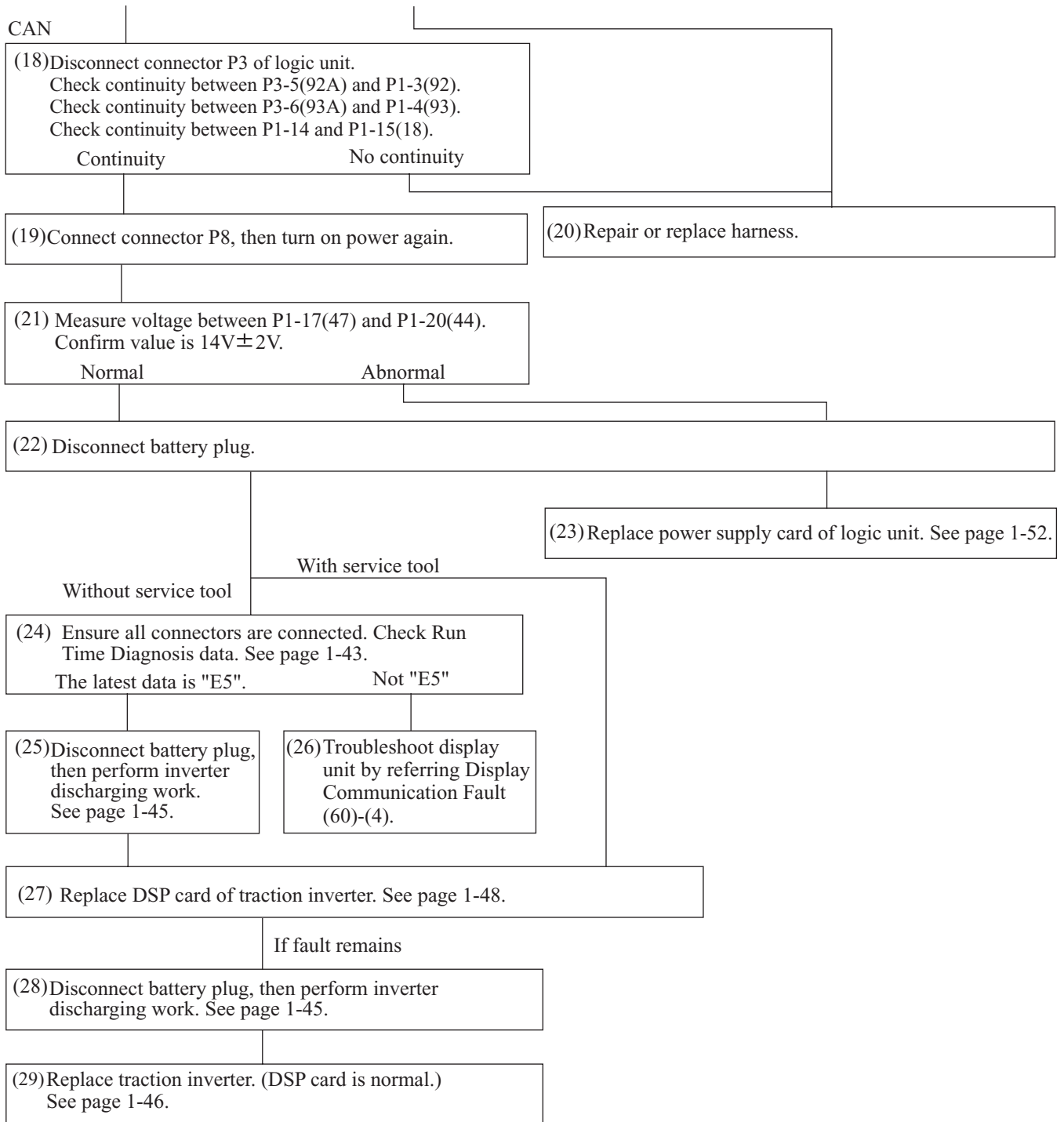
**Problem: Pump Motor, Overheating (Contactor Control Type) (E2)**

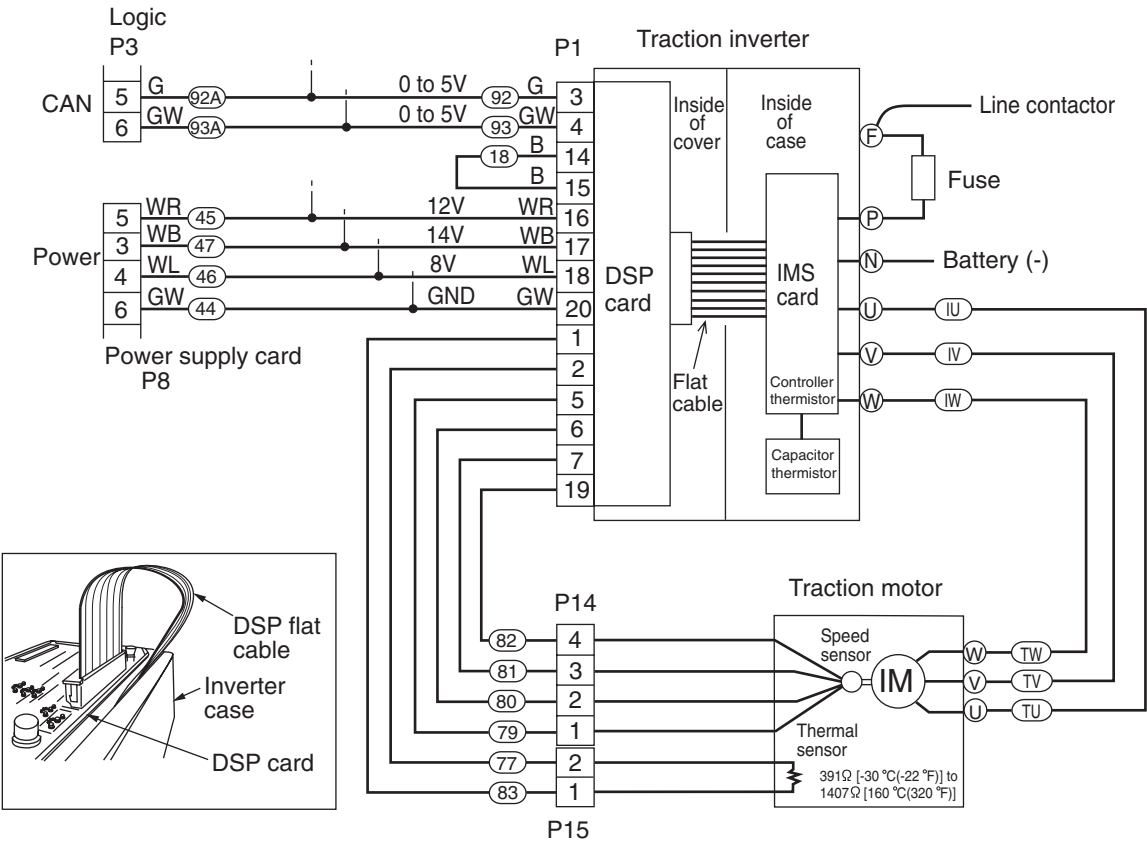




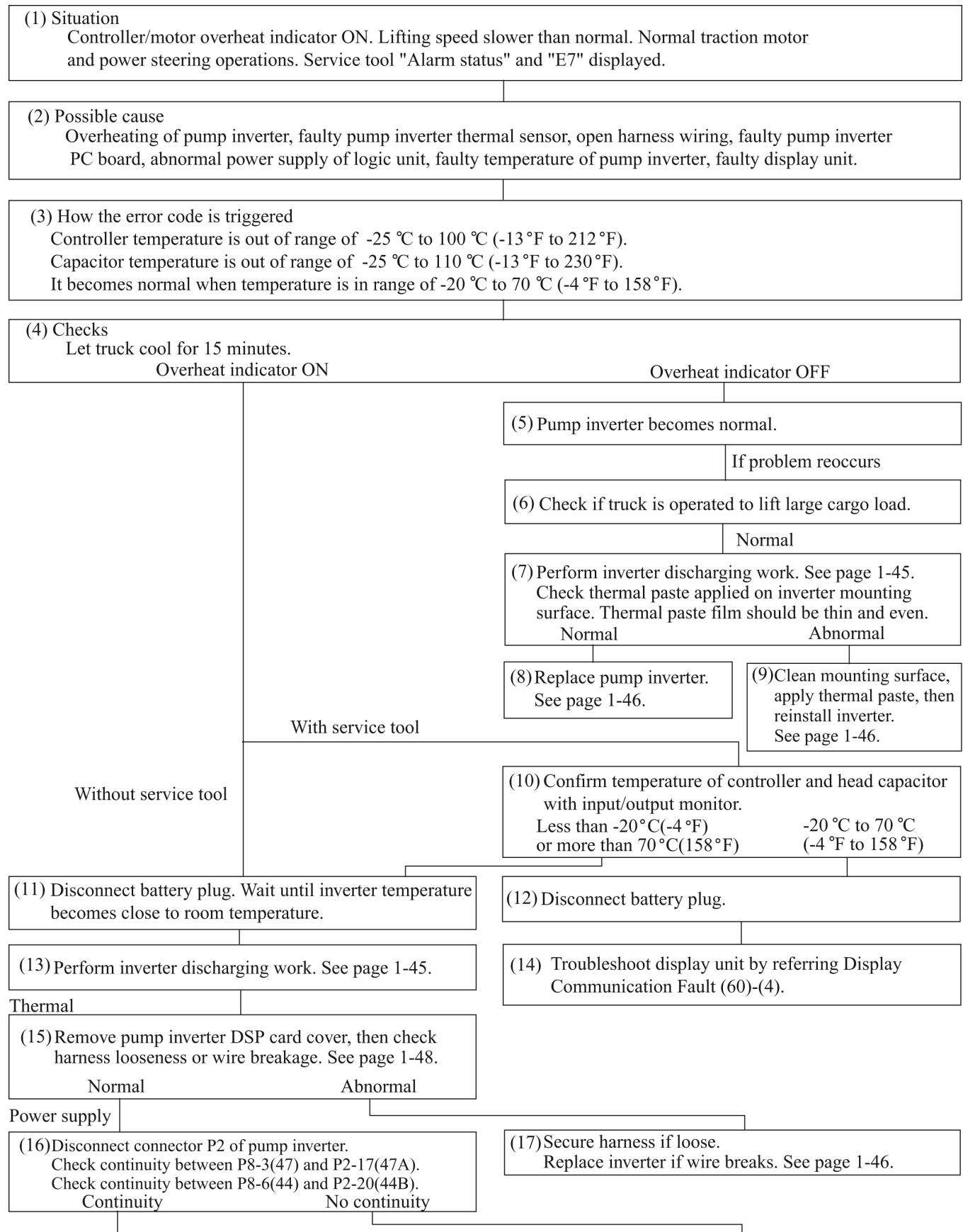
211362

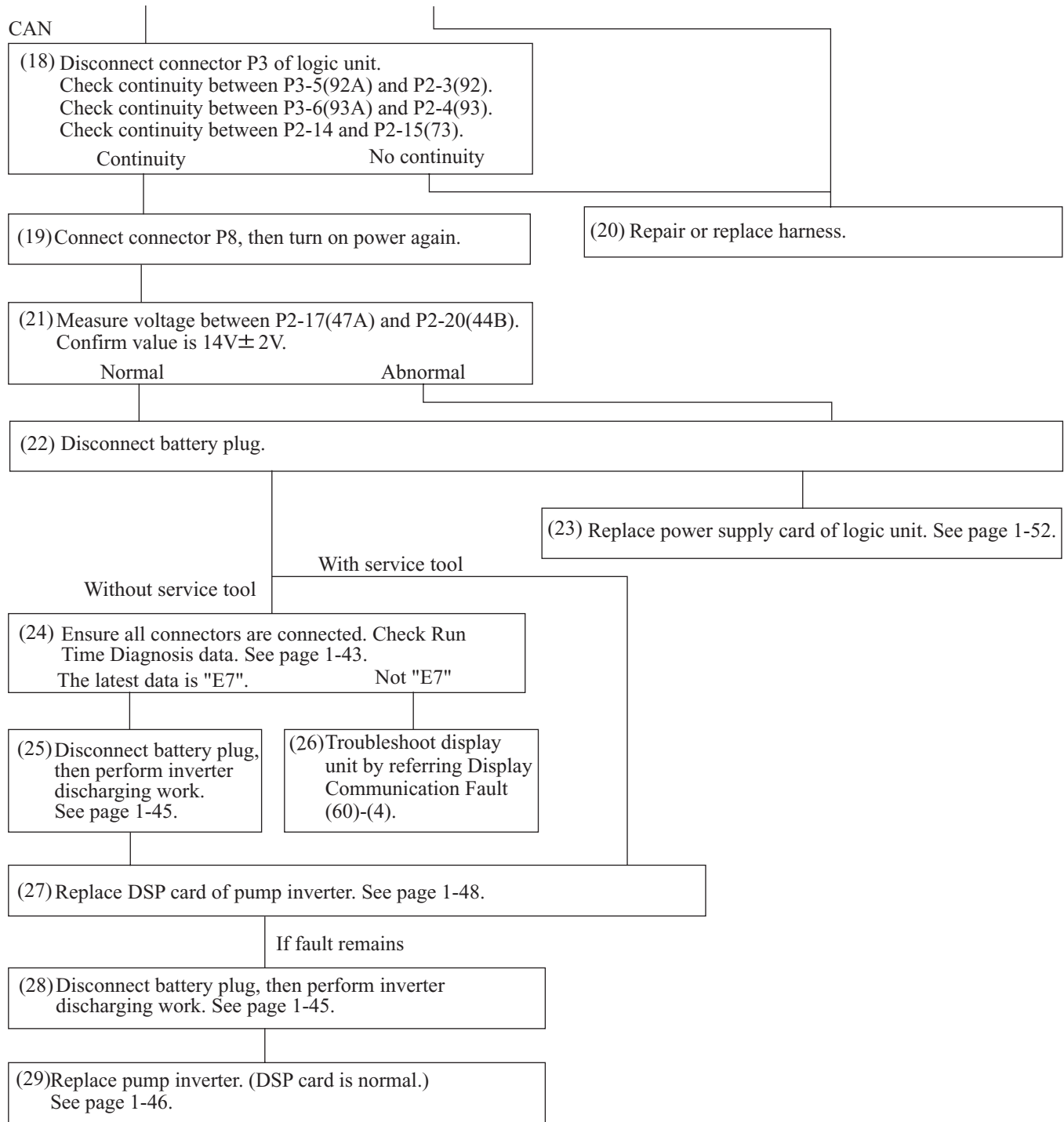
**Problem: Traction Inverter, Overheating (E5)**

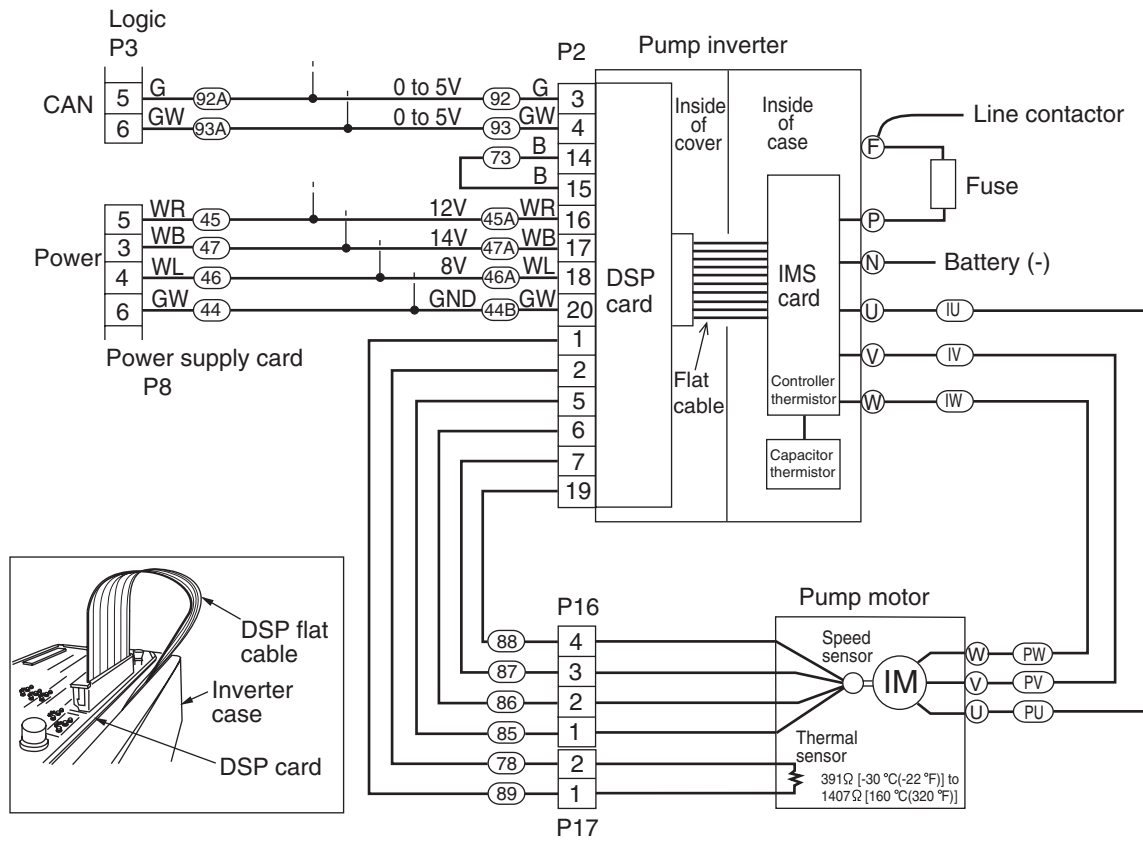




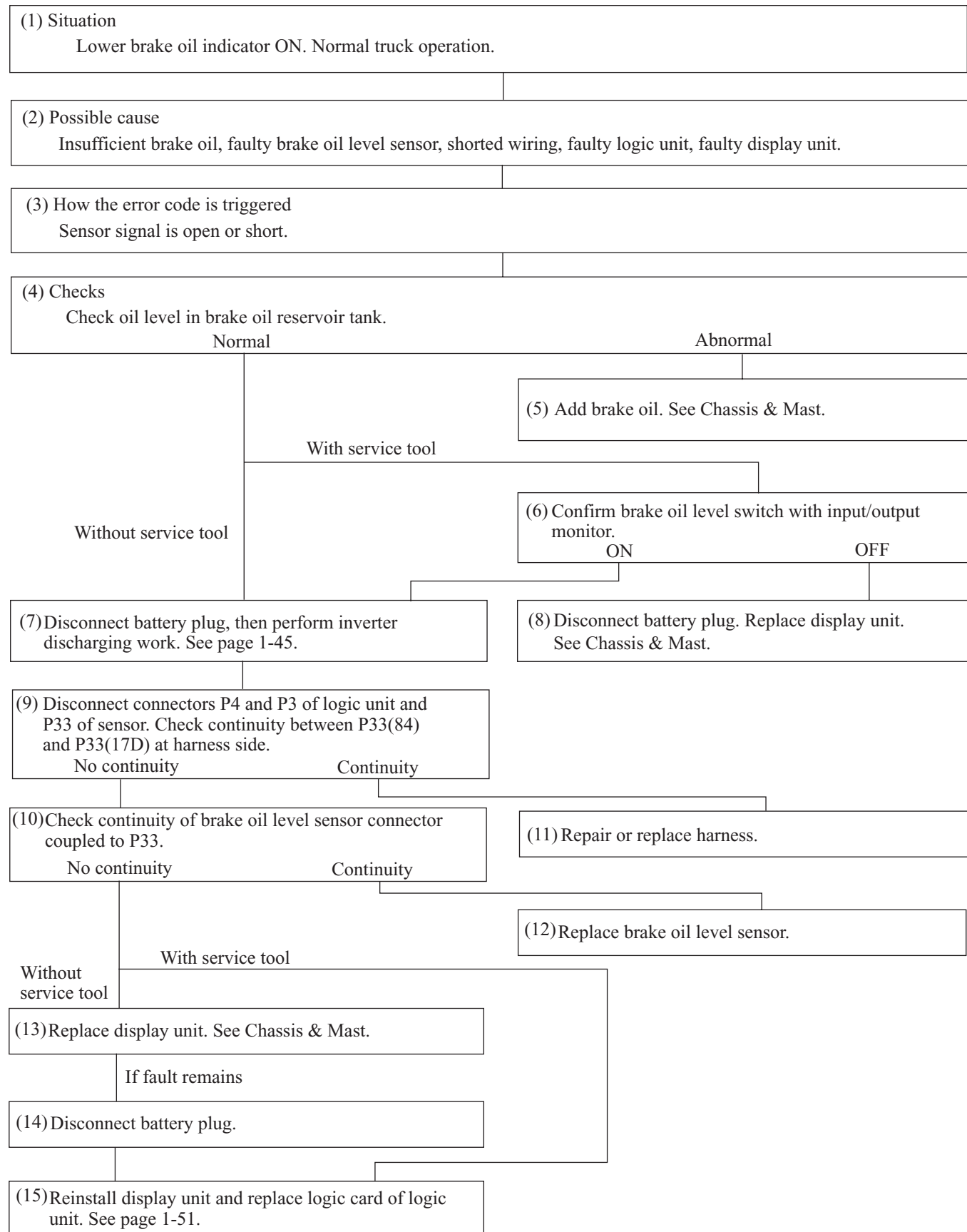
211363

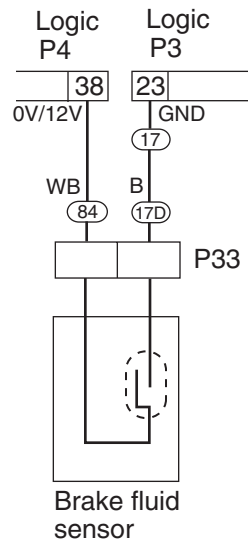
**Problem: Pump Inverter, Overheating (Transistor Control Type Only) (E7)**



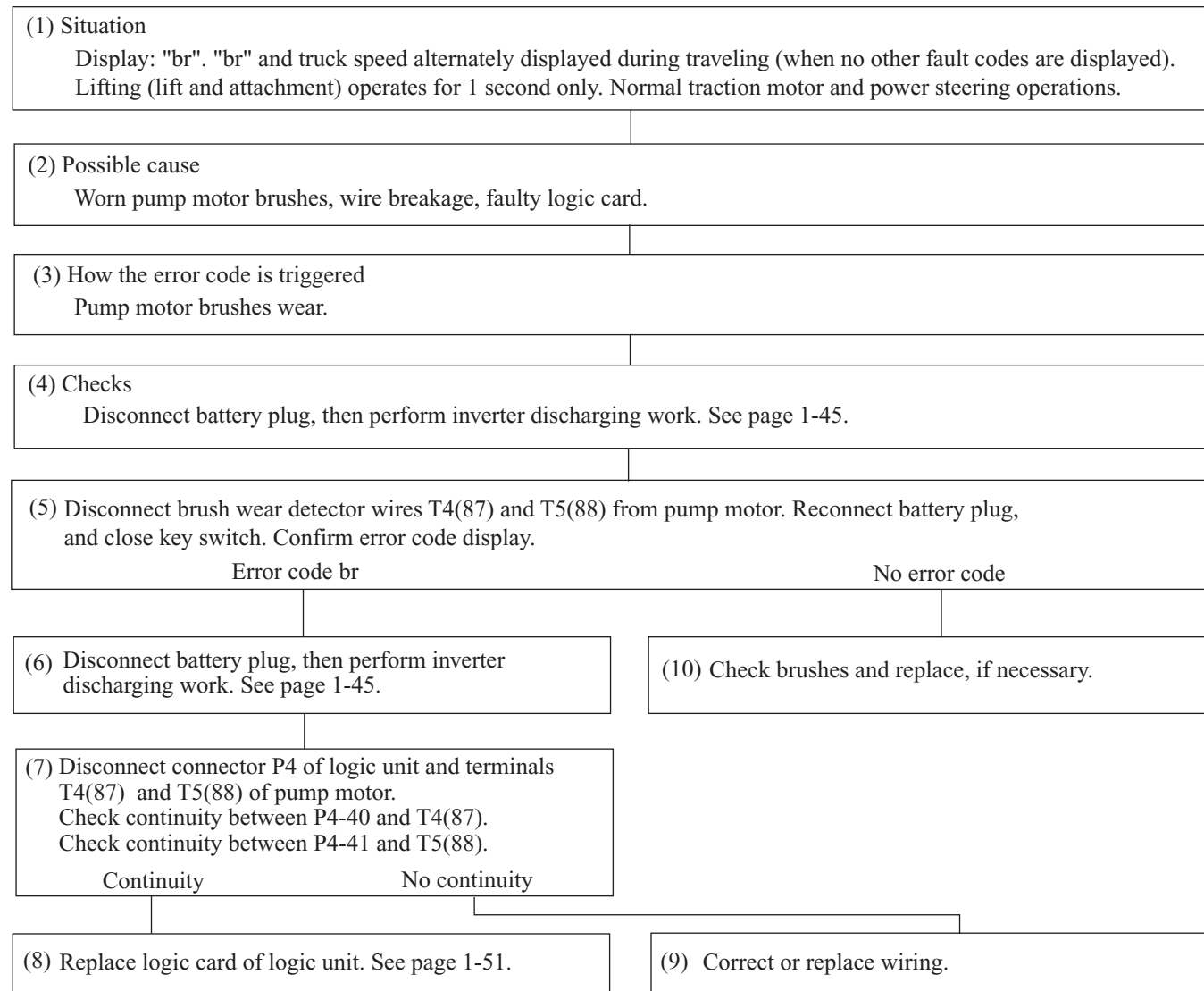


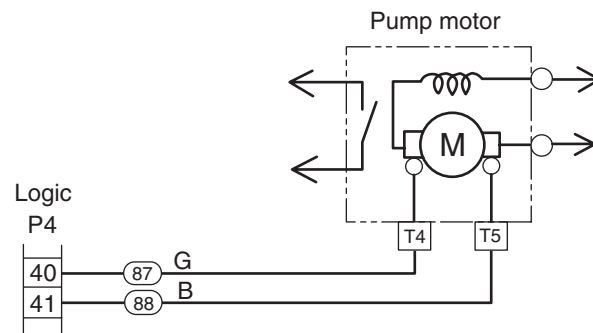
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**Problem: Brake Oil, Low Level**

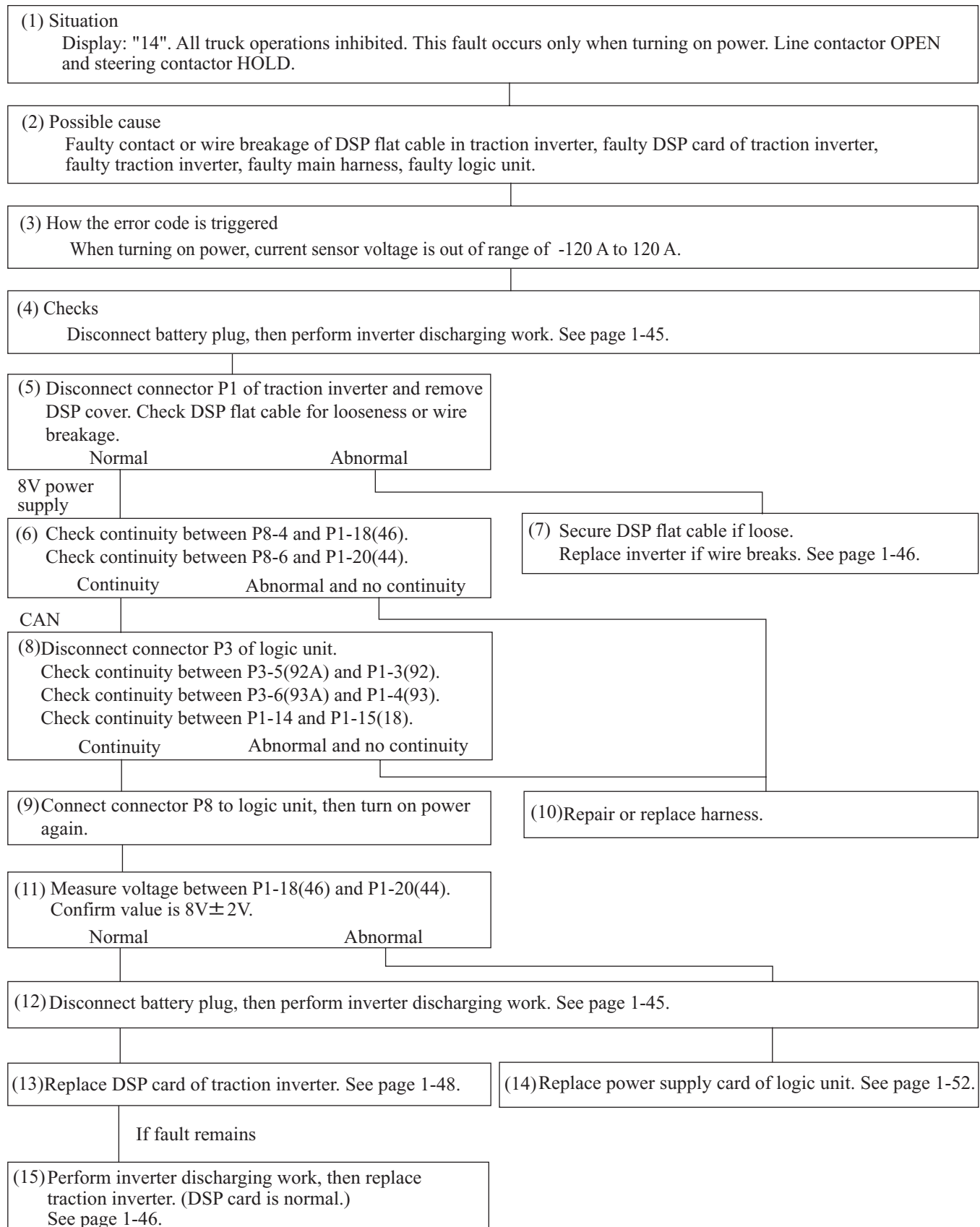


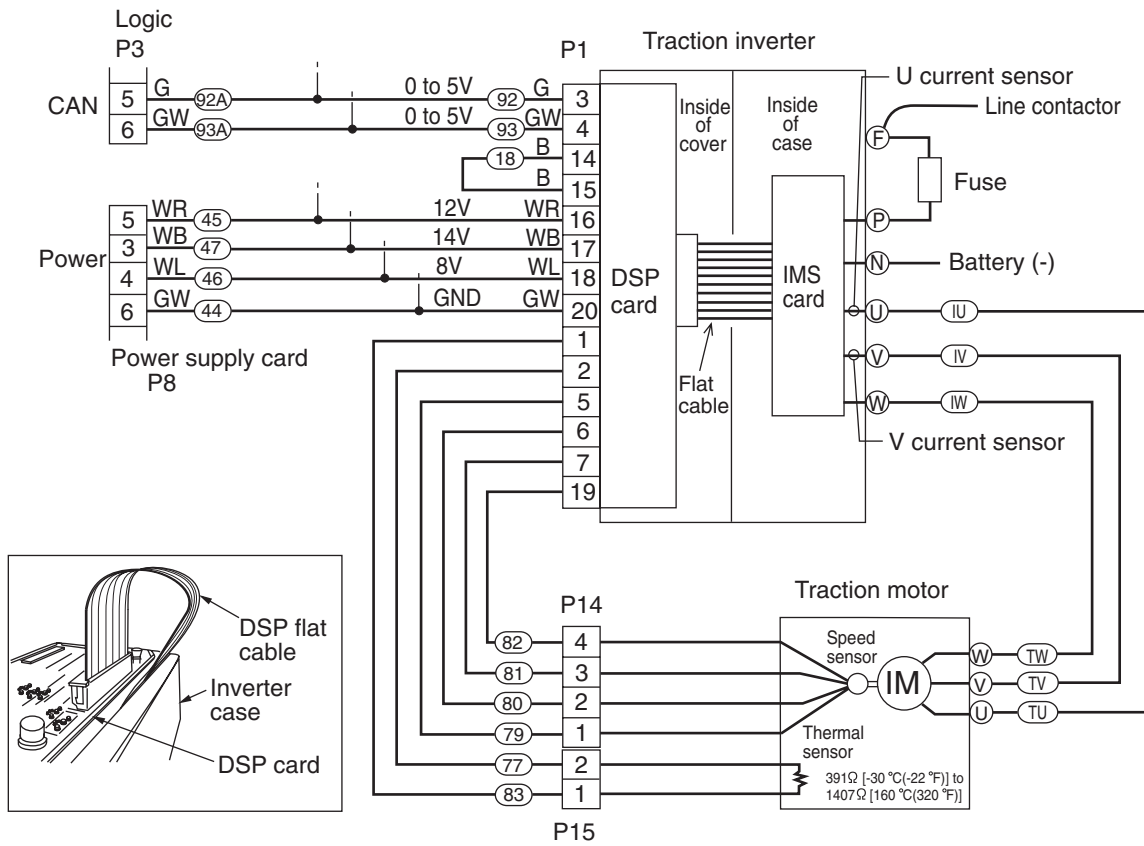
211365

**Problem: Pump Motor, Worn Brushes (Contactor Control Type Only) (br)**

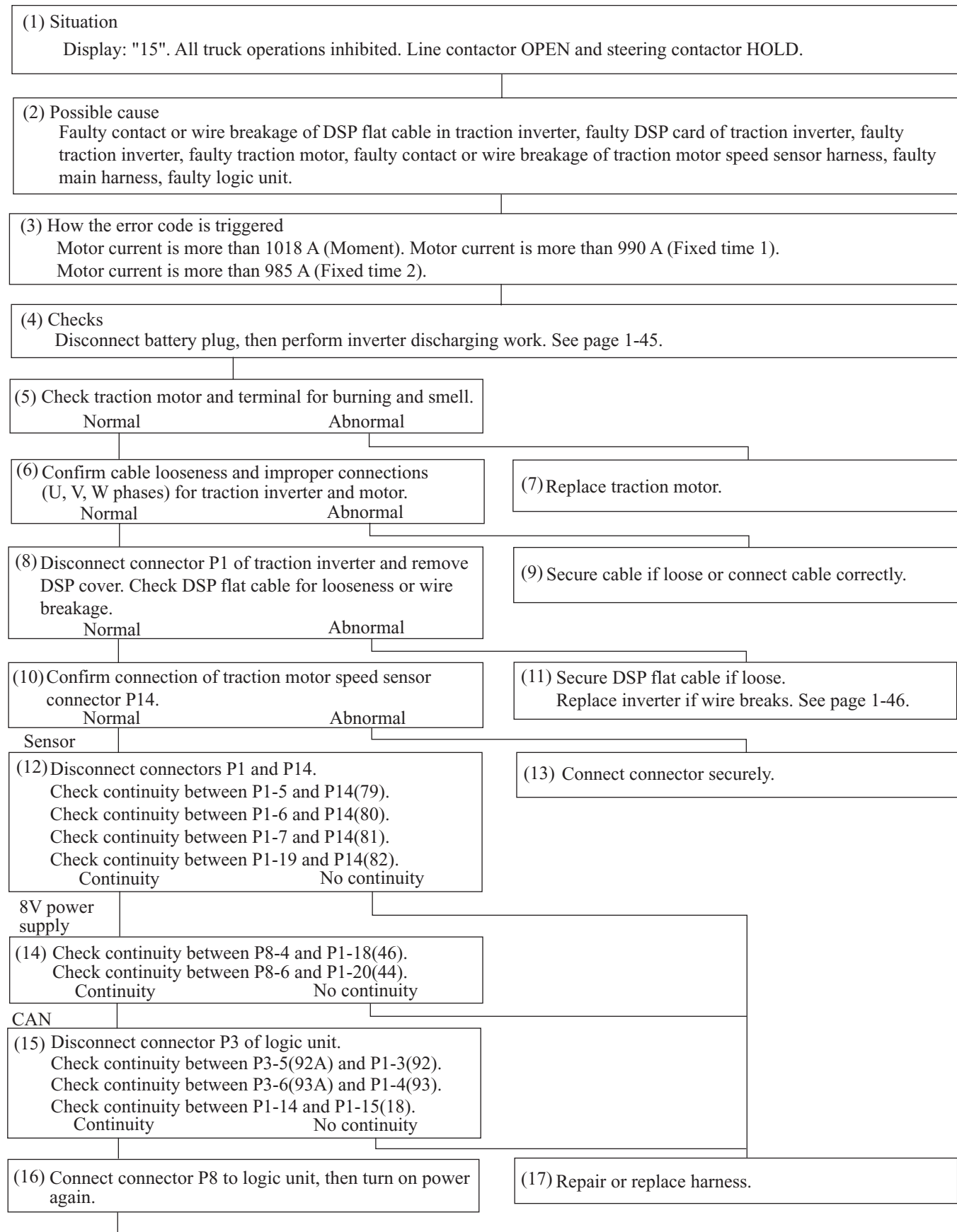


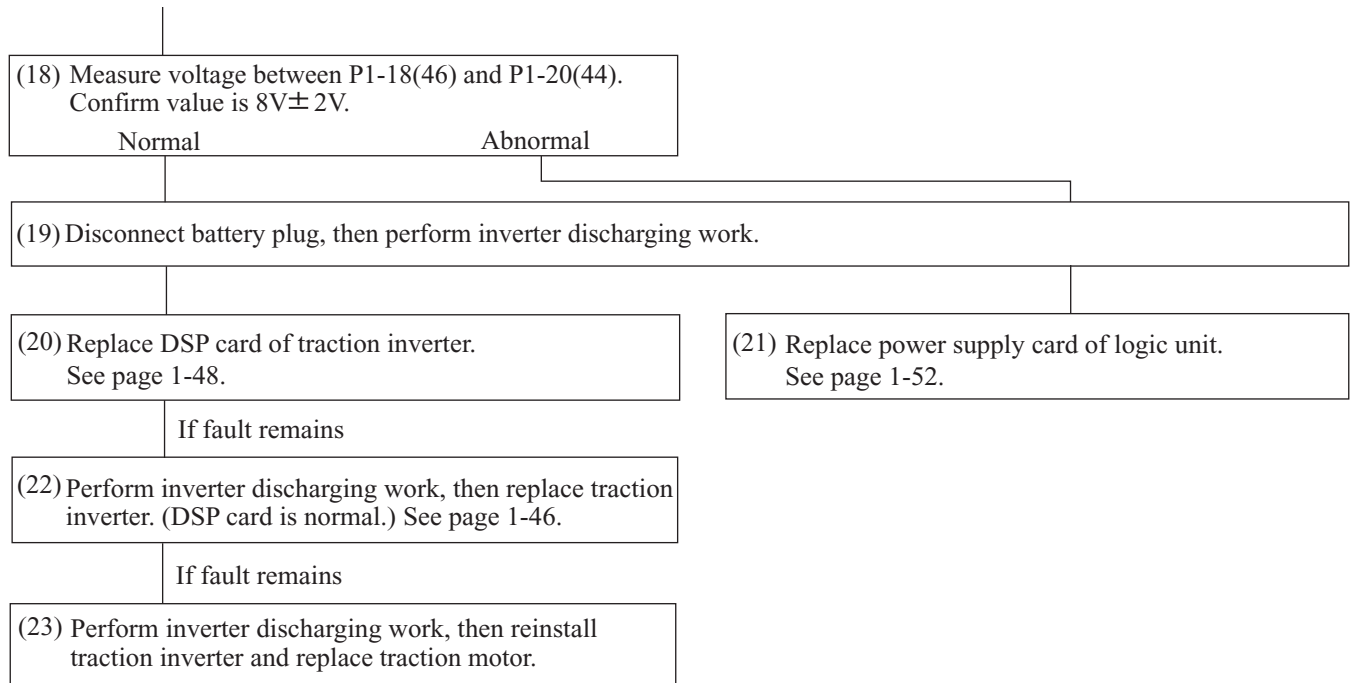
211366

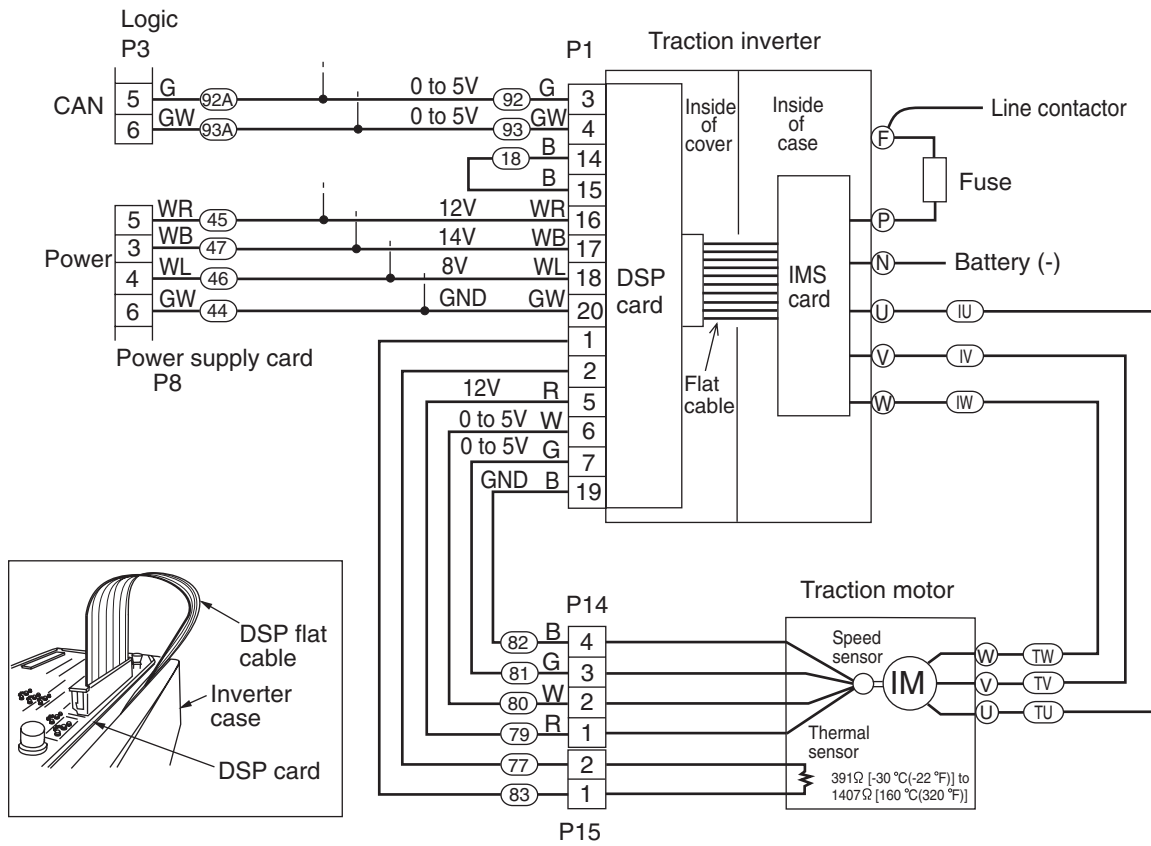
**Problem: Traction Motor Current Sensor Fault (14)**



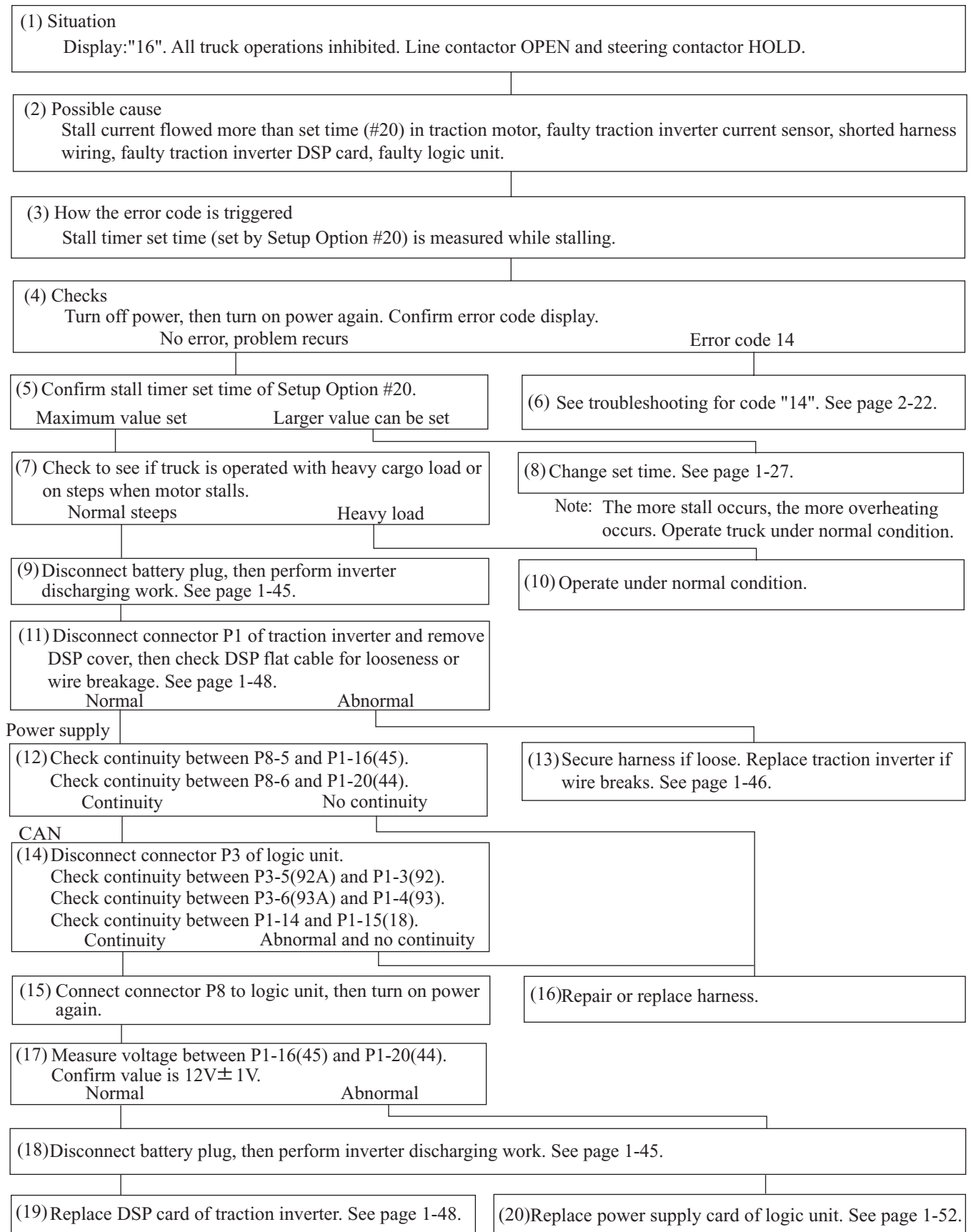
211367

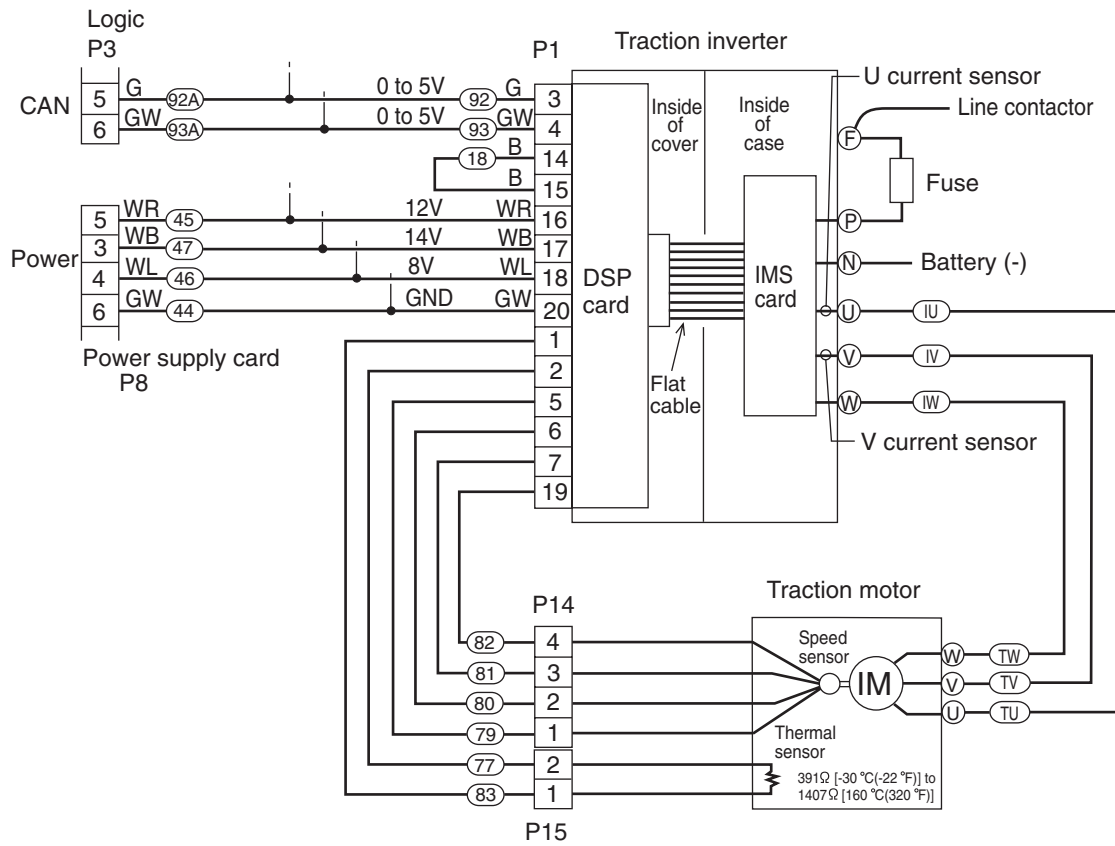
**Problem: Traction Motor, Over-current (15)**





211368

**Problem: Traction Motor, Stall Timer (16)**



211369

**Problem: Pump Motor Current Sensor Fault (Transistor Control Type Only) (34)****(1) Situation**

Display: "34". All truck operations inhibited. This fault occurs only when turning on power.  
Line contactor OPEN and steering contactor HOLD.

**(2) Possible cause**

Faulty contact or wire breakage of DSP flat cable in pump inverter, faulty DSP card of pump inverter, faulty pump inverter, faulty main harness, faulty logic unit.

**(3) How the error code is triggered**

When turning on power, current sensor voltage is out of range of -120 A to 120 A.

**(4) Checks**

Disconnect battery plug, then perform inverter discharging work. See page 1-45.

(5) Disconnect connector P2 of pump inverter and remove DSP cover. Check DSP flat cable for looseness or wire breakage.

Normal

Abnormal

8V power supply

(6) Check continuity between P8-4(46) and P2-18(46A).  
Check continuity between P8-6(44) and P2-20(44B).

Continuity

No continuity

(7) Secure DSP flat cable if loose.

Replace pump inverter if wire breaks. See page 1-46.

CAN

(8) Disconnect connector P3 of logic unit.  
Check continuity between P3-5(92A) and P2-3(92).  
Check continuity between P3-6(93A) and P2-4(93).  
Check continuity between P2-14 and P2-15(73).

Continuity

No continuity

(9) Connect connector P8 to logic unit, then turn on power again.

(10) Repair or replace harness.

(11) Measure voltage between P2-18(46A) and P2-20(44B).  
Confirm value is  $8V \pm 2V$ .

Normal

Abnormal

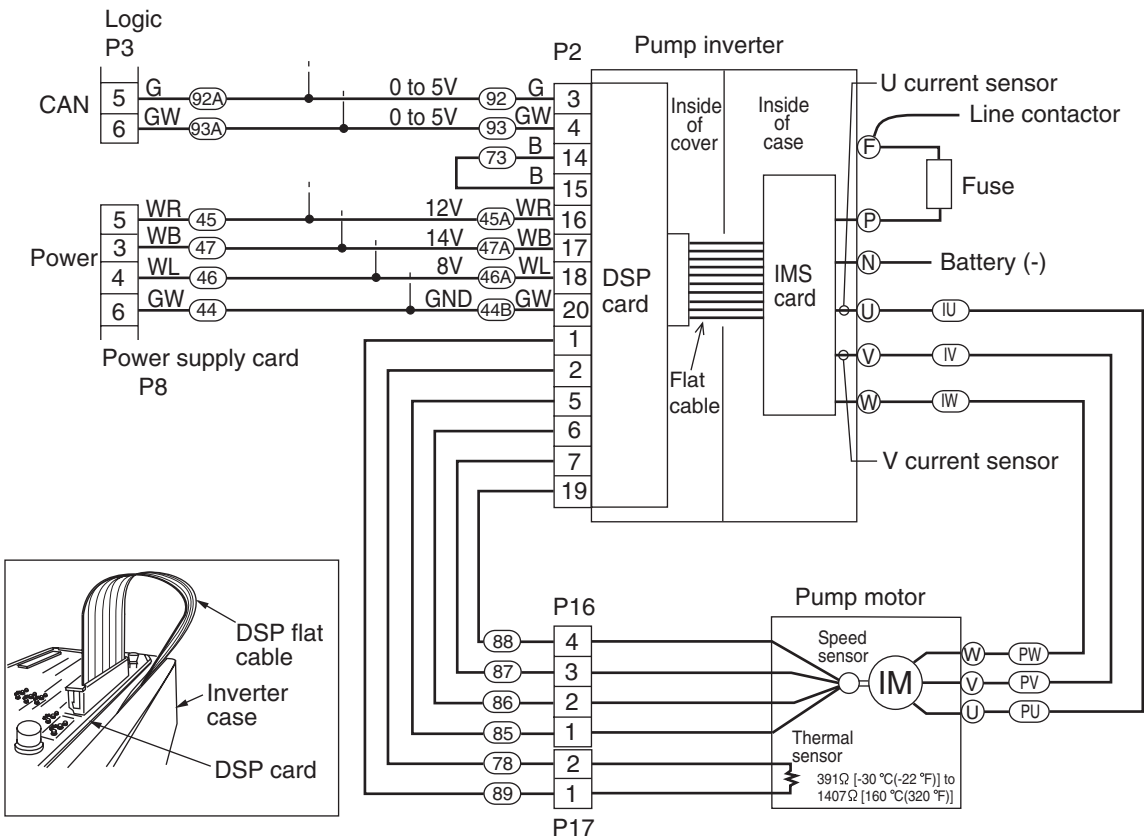
(12) Disconnect battery plug, then perform inverter discharging work. See page 1-45.

(13) Replace DSP card of pump inverter. See page 1-48.

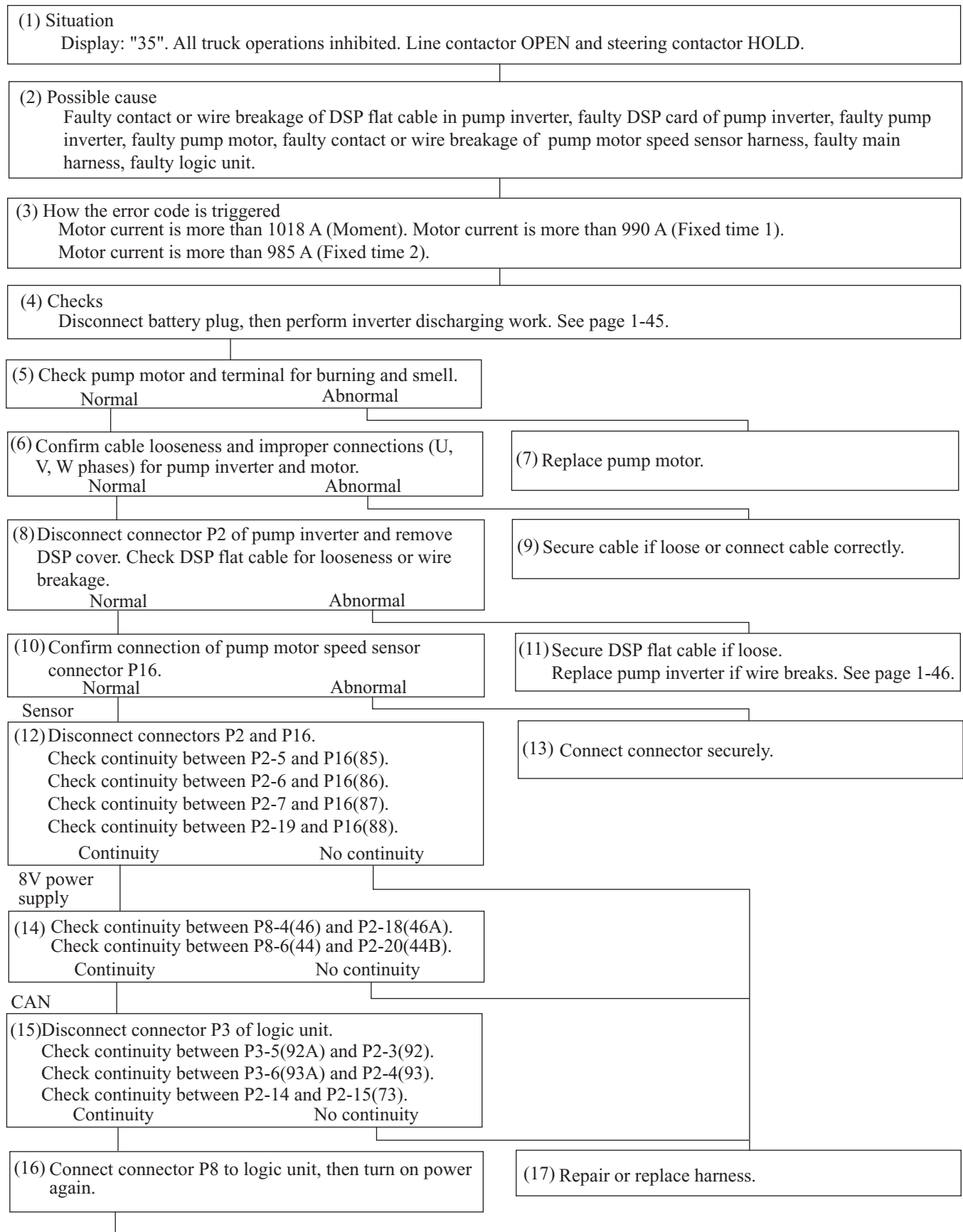
(14) Replace power supply card of logic unit. See page 1-52.

If fault remains

(15) Perform inverter discharging work, then replace pump inverter. (DSP card is normal.) See page 1-46.



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**Problem: Pump Motor Over-current (Transistor Control Type Only) (35)**

(18) Measure voltage between P2-18(46A) and P2-20(44B).  
Confirm value is  $8V \pm 2V$ .

Normal

Abnormal

(19) Disconnect battery plug, then perform inverter discharging work. See page 1-45.

(20) Replace DSP card of pump inverter. See page 1-48.

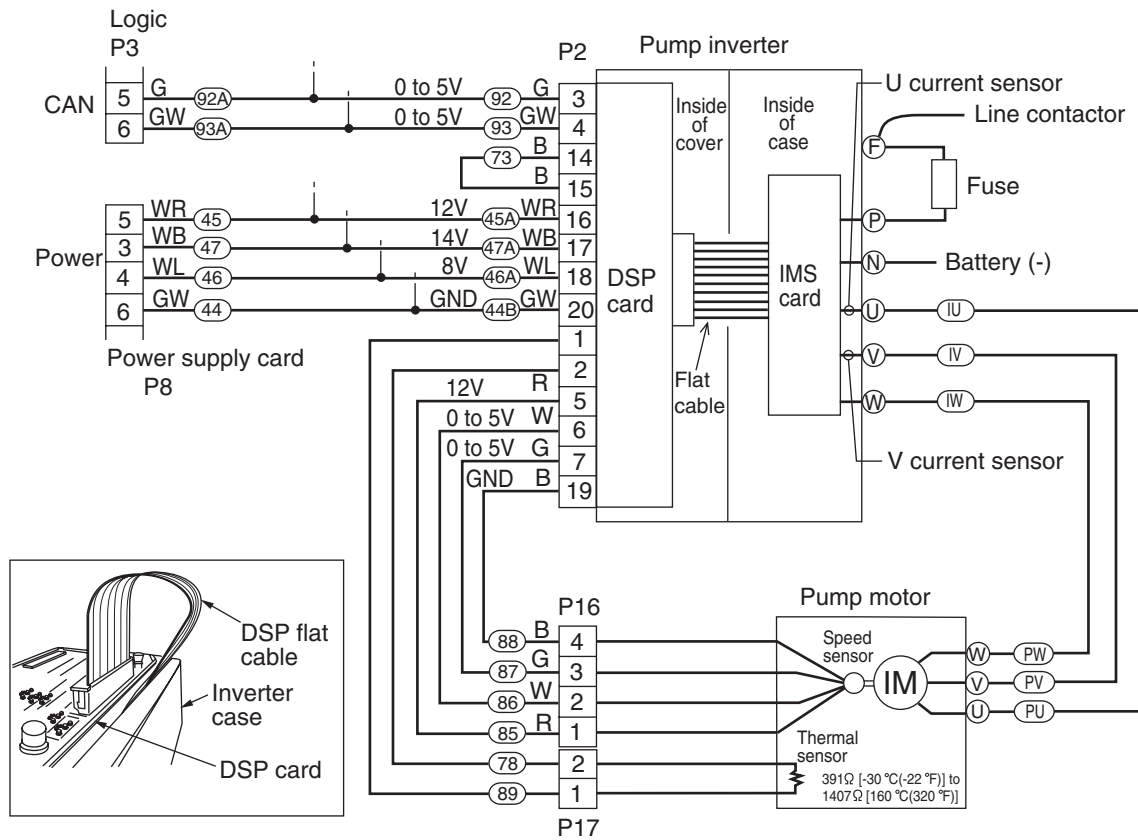
(21) Replace power supply card of logic unit. See page 1-52.

If fault remains

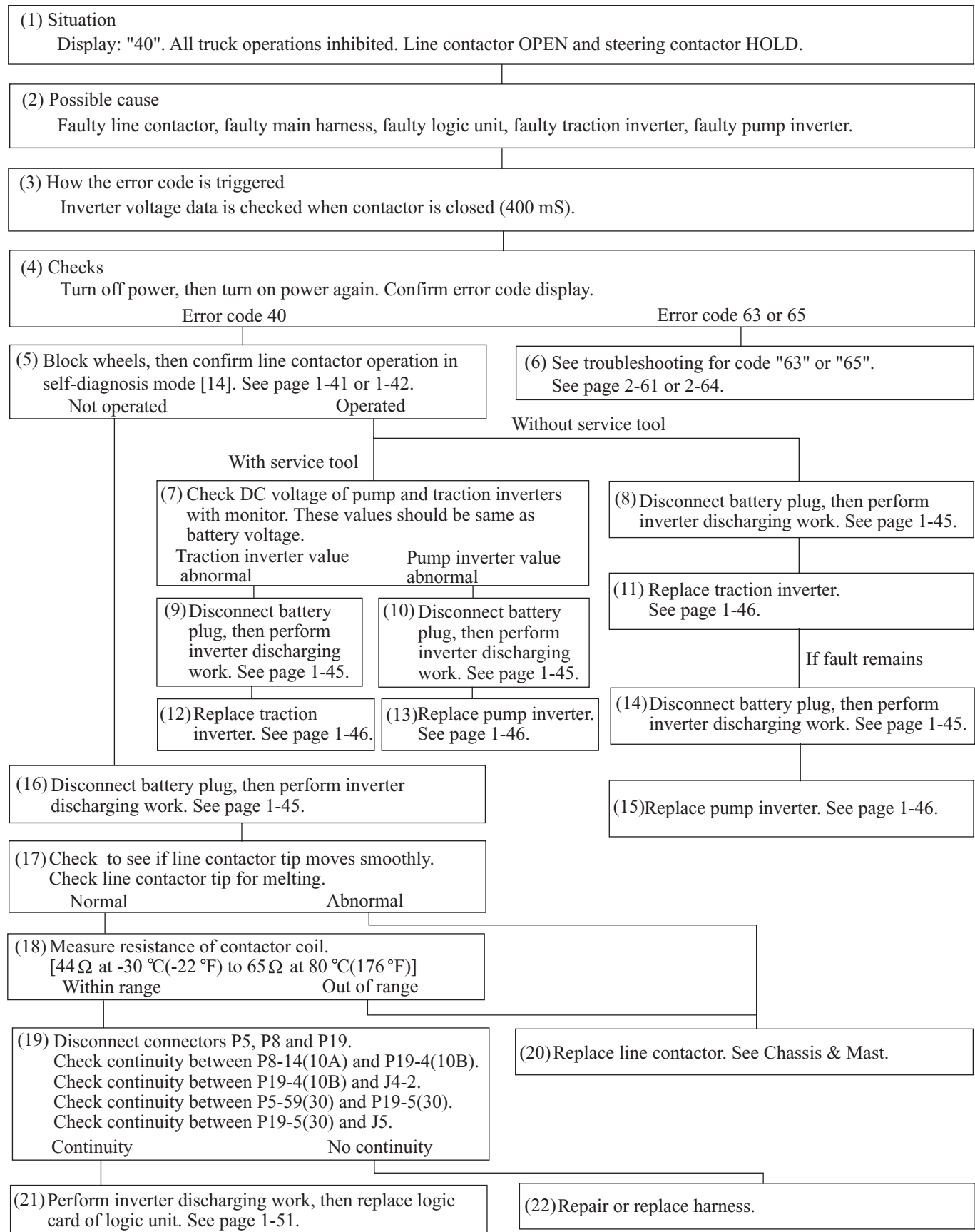
(22) Perform inverter discharging work, then replace pump inverter. (DSP card is normal.) See page 1-46.

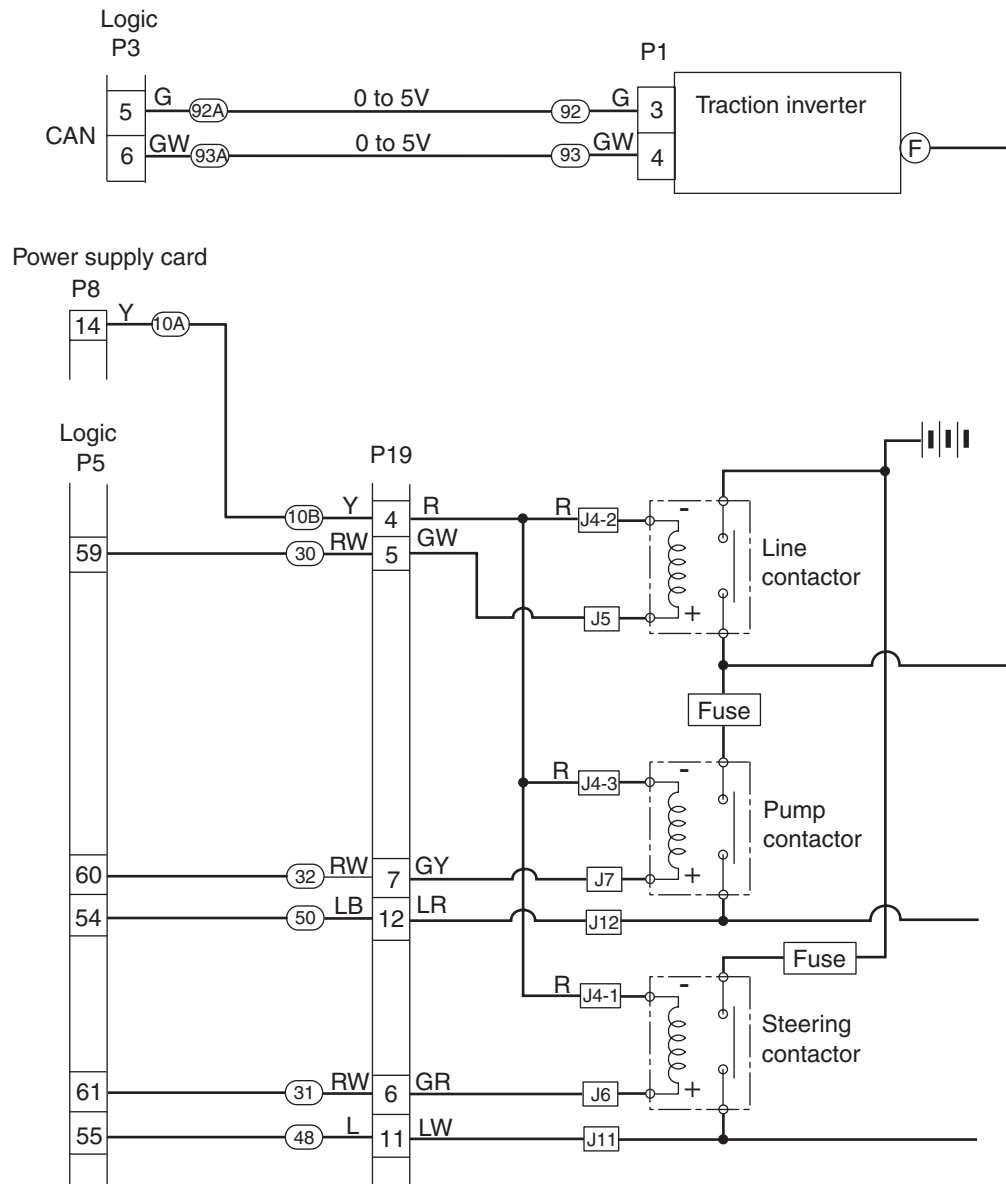
If fault remains

(23) Perform inverter discharging work, then reinstall pump inverter and replace pump motor.



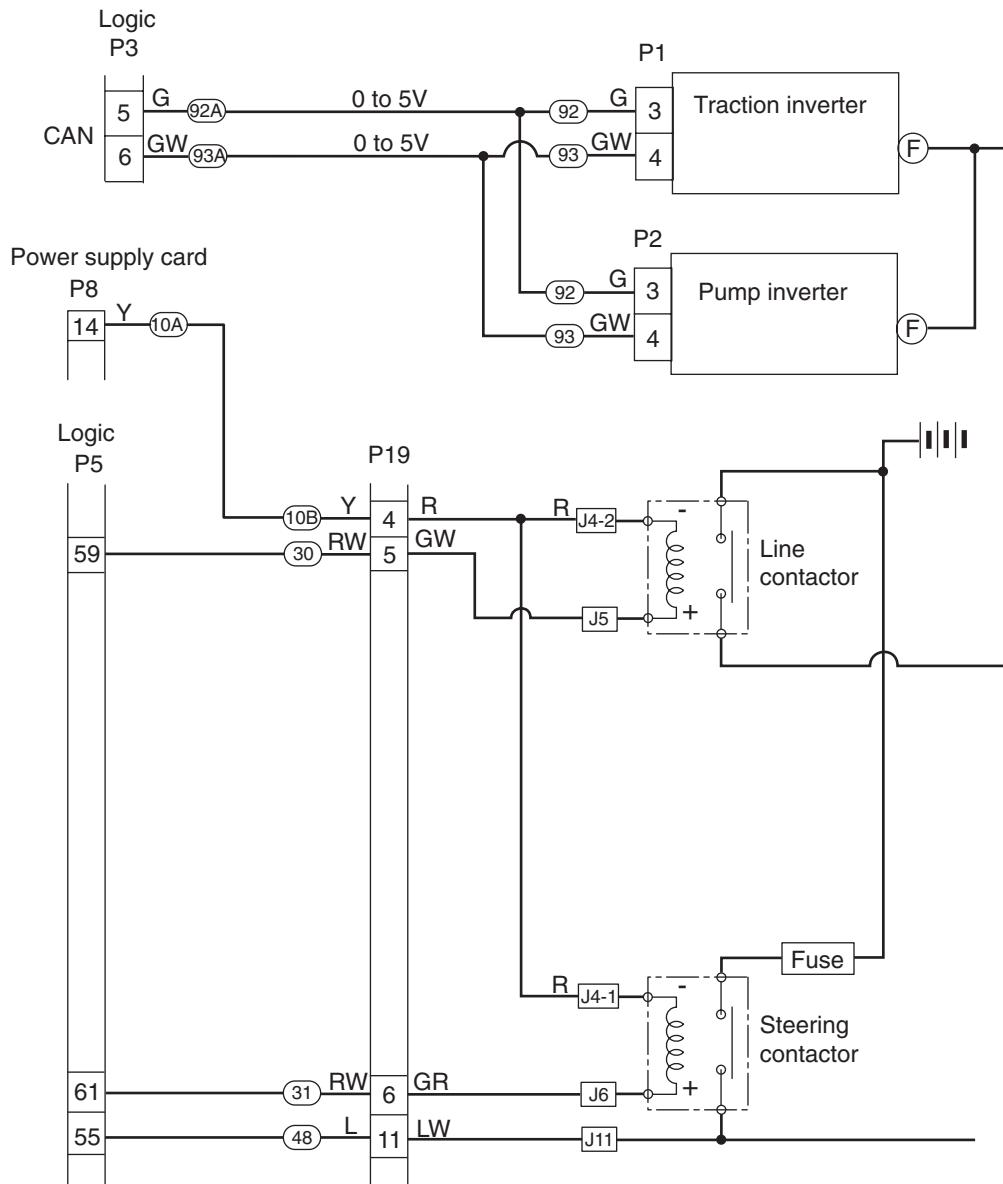
211371

**Problem: Line Contactor Fault (40)**



Contactor Control Type

211372



Transistor Control Type

211373

**Problem: Steering Contactor Fault (41)****(1) Situation**

Display: "41". All truck operations inhibited. Line contactor OPEN and steering contactor OPEN.

**(2) Possible cause**

Faulty steering contactor, faulty main harness, faulty logic unit.

**(3) How the error code is triggered**

Inverter voltage data is checked when contactor is closed (600 mS).

Inverter voltage data is checked when contactor is opened (1400 mS).

**(4) Checks**

Block wheels, then confirm steering contactor operation in self-diagnosis mode [16]. See page 1-41 or 1-42.

Not operated

Operated

**(5) Disconnect battery plug, then perform inverter discharging work. See page 1-45.****(6) Check to see if steering contactor tip moves smoothly.**

Check steering contactor tip for melting.

Normal

Abnormal

**(7) Repair or replace harness.****(8) Measure resistance of contactor coil.**

[44  $\Omega$  at -30 °C(-22 °F) to 65  $\Omega$  at 80 °C(176 °F)]

Within range

Out of range

**(9) Disconnect connectors P5, P8 and P19.**

Check continuity between P8-14(10A) and P19-4(10B).

Check continuity between P19-4(10B) and J4-1.

Check continuity between P5-61(31) and P19-6(31).

Check continuity between P19-6(31) and J6.

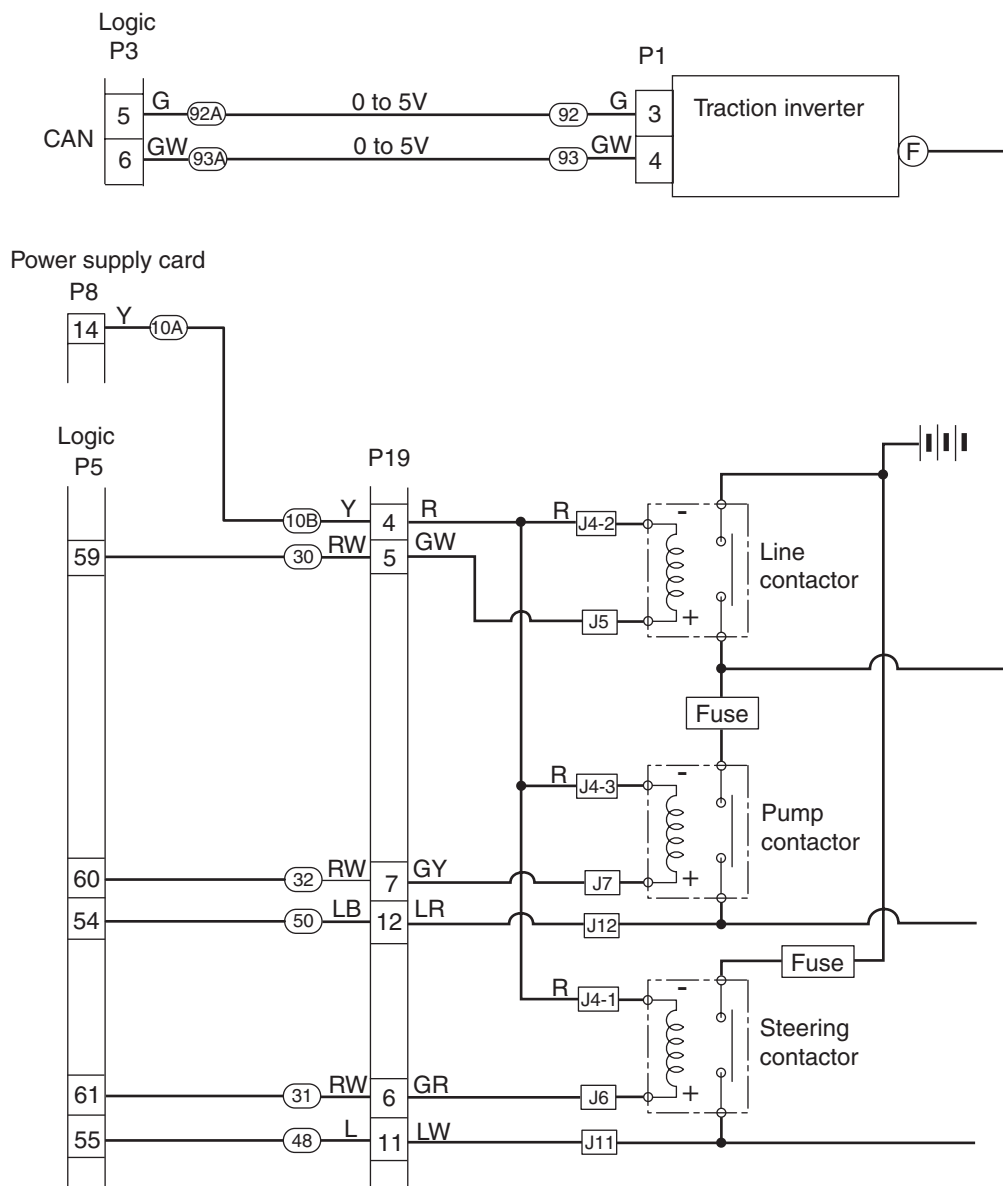
Check continuity between P5-55(48) and P19-11(48).

Check continuity between P19-11(48) and J11.

Continuity

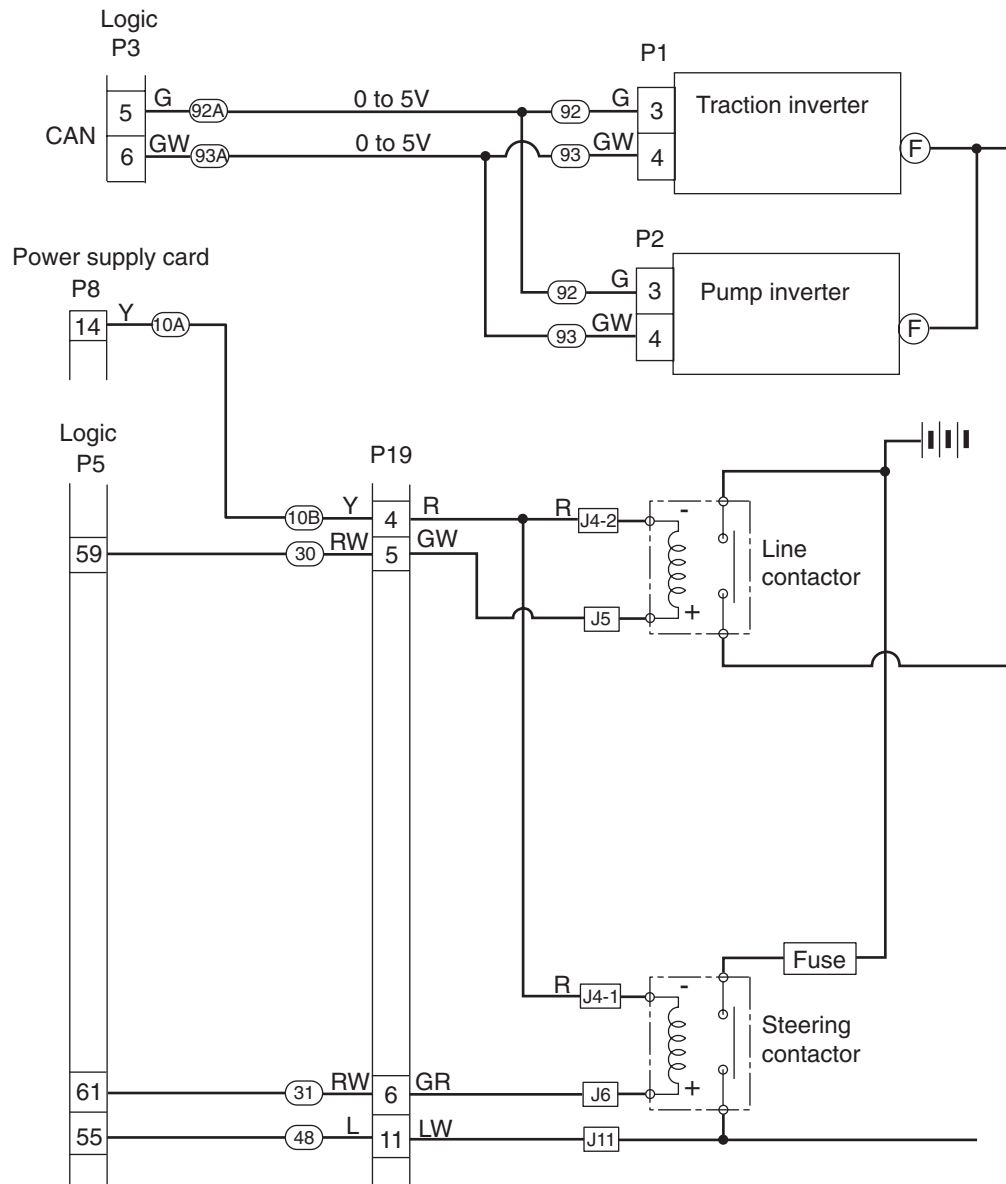
No continuity

**(10) Replace steering contactor. See Chassis & Mast.****(11) Perform inverter discharging work, then replace logic card of logic unit. See page 1-51.****(12) Repair or replace harness.**



Contactor Control Type

211372



Transistor Control Type

211373

**Problem: Pump Contactor Fault (Contactor Control Type Only) (42)****(1) Situation**

Display: "42". All truck operations inhibited. Line contactor OPEN, steering contactor HOLD and pump contactor OPEN.

**(2) Possible cause**

Faulty pump contactor, faulty main harness, faulty logic unit.

**(3) How the error code is triggered**

Inverter voltage data is checked when contactor is closed (600 mS).  
Inverter voltage data is checked when contactor is opened (1400 mS).

**(4) Checks**

Block wheels, then confirm pump contactor operation in self-diagnosis mode[15]. See page 1-42.

Not operated

Operated

(5) Disconnect battery plug, then perform inverter discharging work. See page 1-45.

(6) Check to see if pump contactor tip moves smoothly.

Check pump contactor tip for melting.

Normal

Abnormal

(7) Repair or replace harness.

(8) Measure resistance of contactor coil.

[44  $\Omega$  at -30 °C(-22 °F) to 65  $\Omega$  at 80 °C(176 °F)]

Within range

Out of range

(9) Disconnect connectors P5, P8 and P19.

Check continuity between P8-14(10A) and P19-4(10B).

Check continuity between P19-4(10B) and J4-3.

Check continuity between P5-60(32) and P19-7(32).

Check continuity between P19-7(32) and J7.

Check continuity between P5-54(50) and P19-12(50).

Check continuity between P19-12(50) and J12.

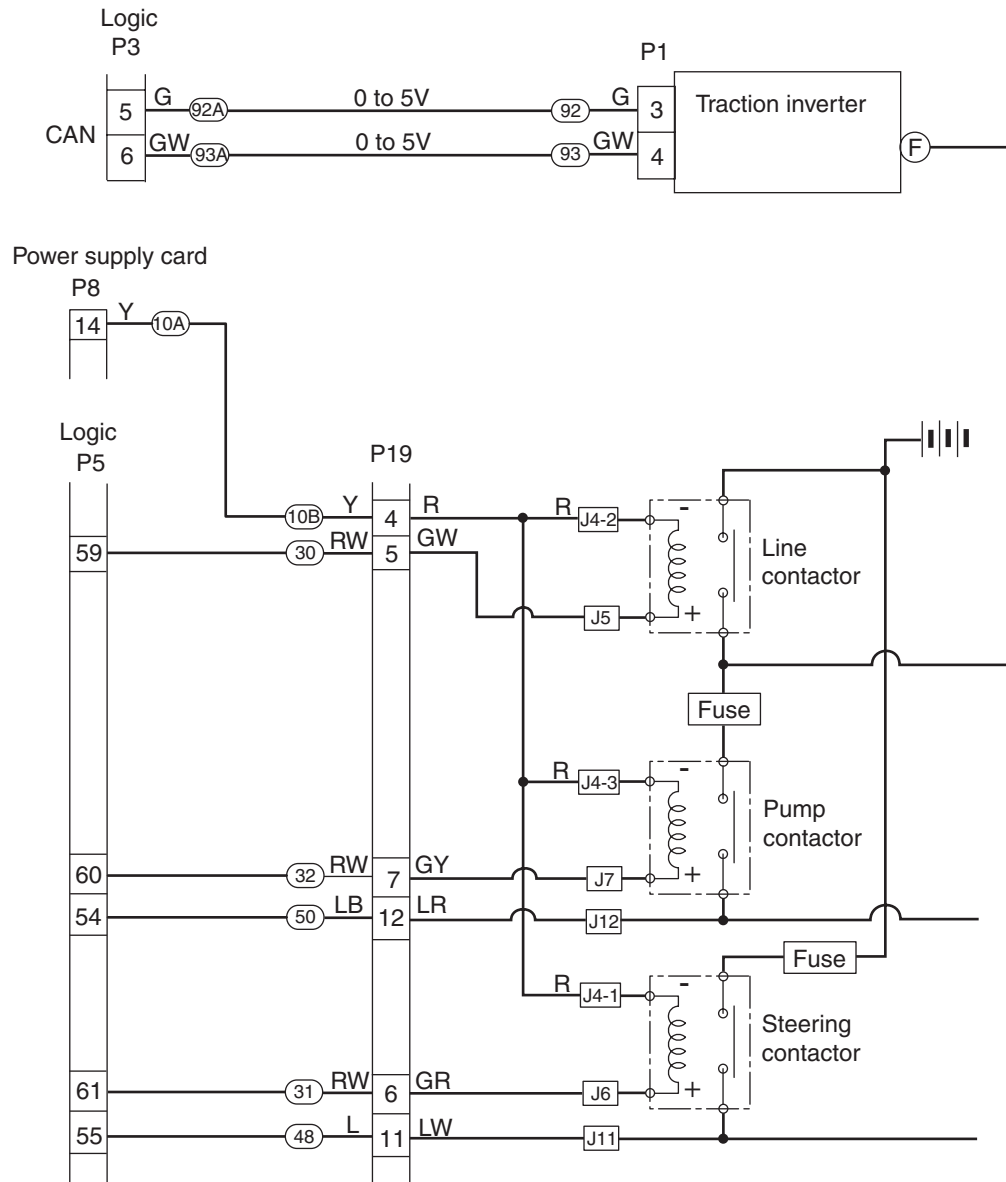
Continuity

No continuity

(10) Replace pump contactor. See Chassis & Mast.

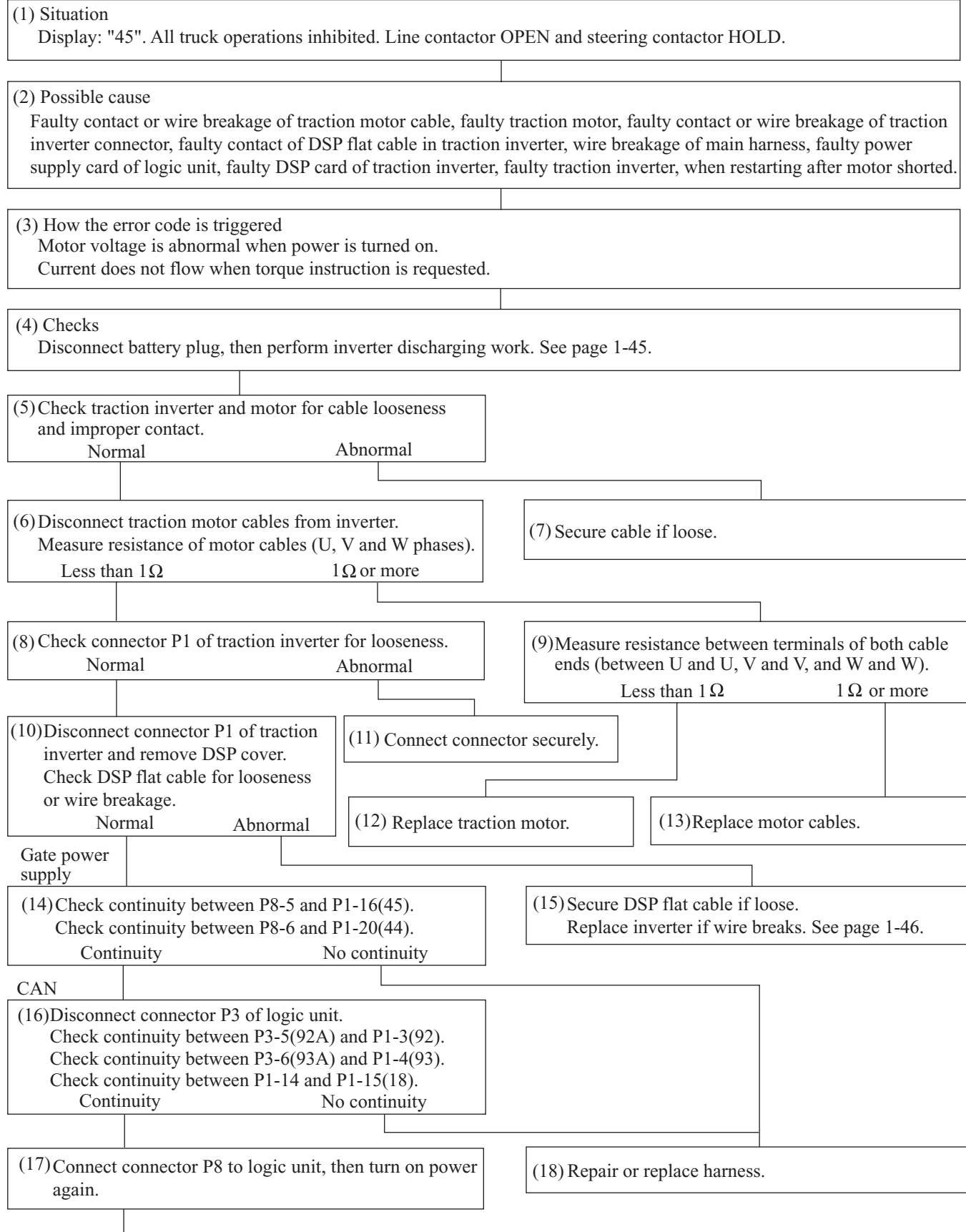
(11) Perform inverter discharging work, then replace logic card of logic unit. See page 1-51.

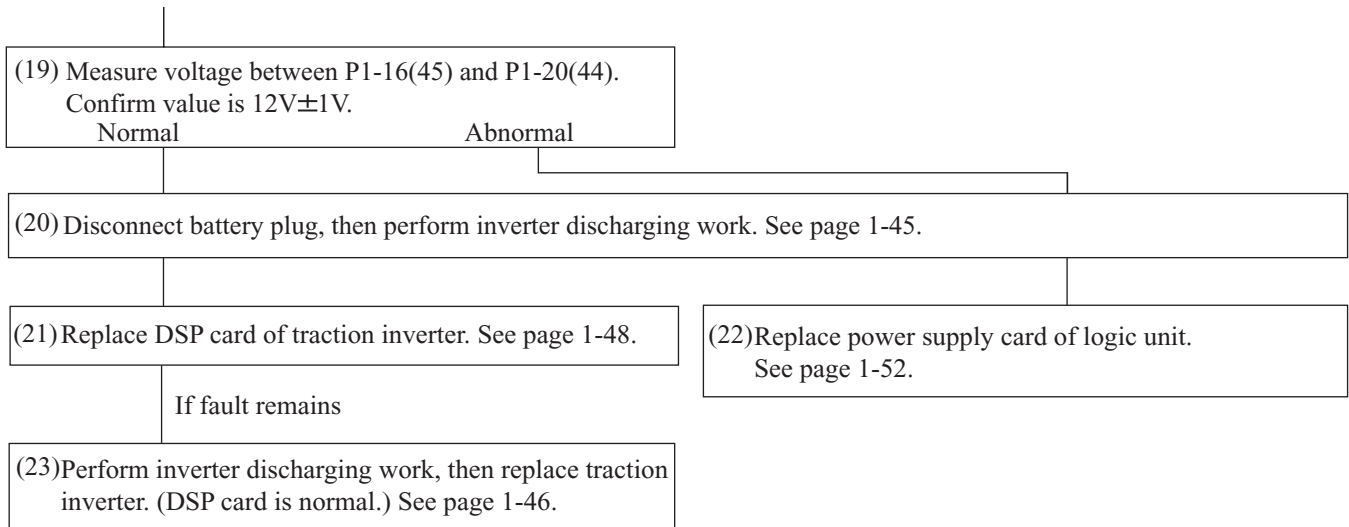
(12) Repair or replace harness.

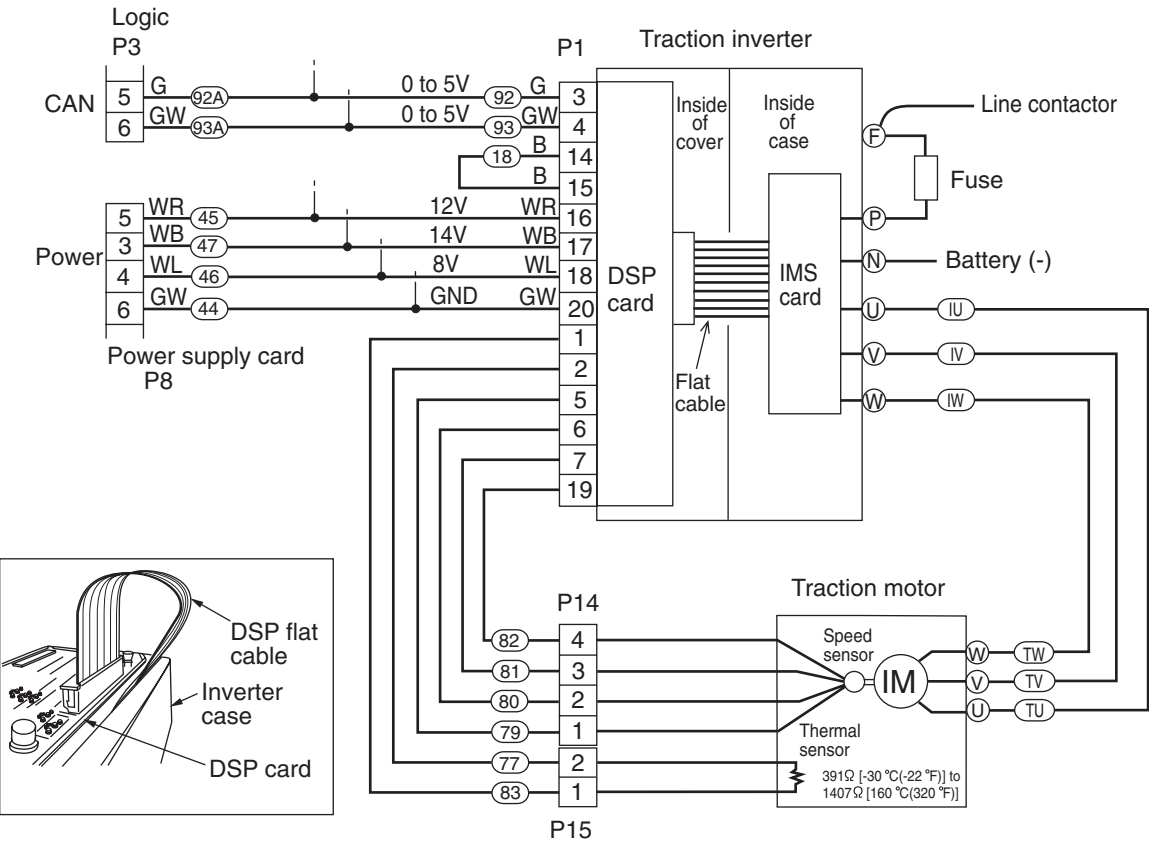


Contactor Control Type

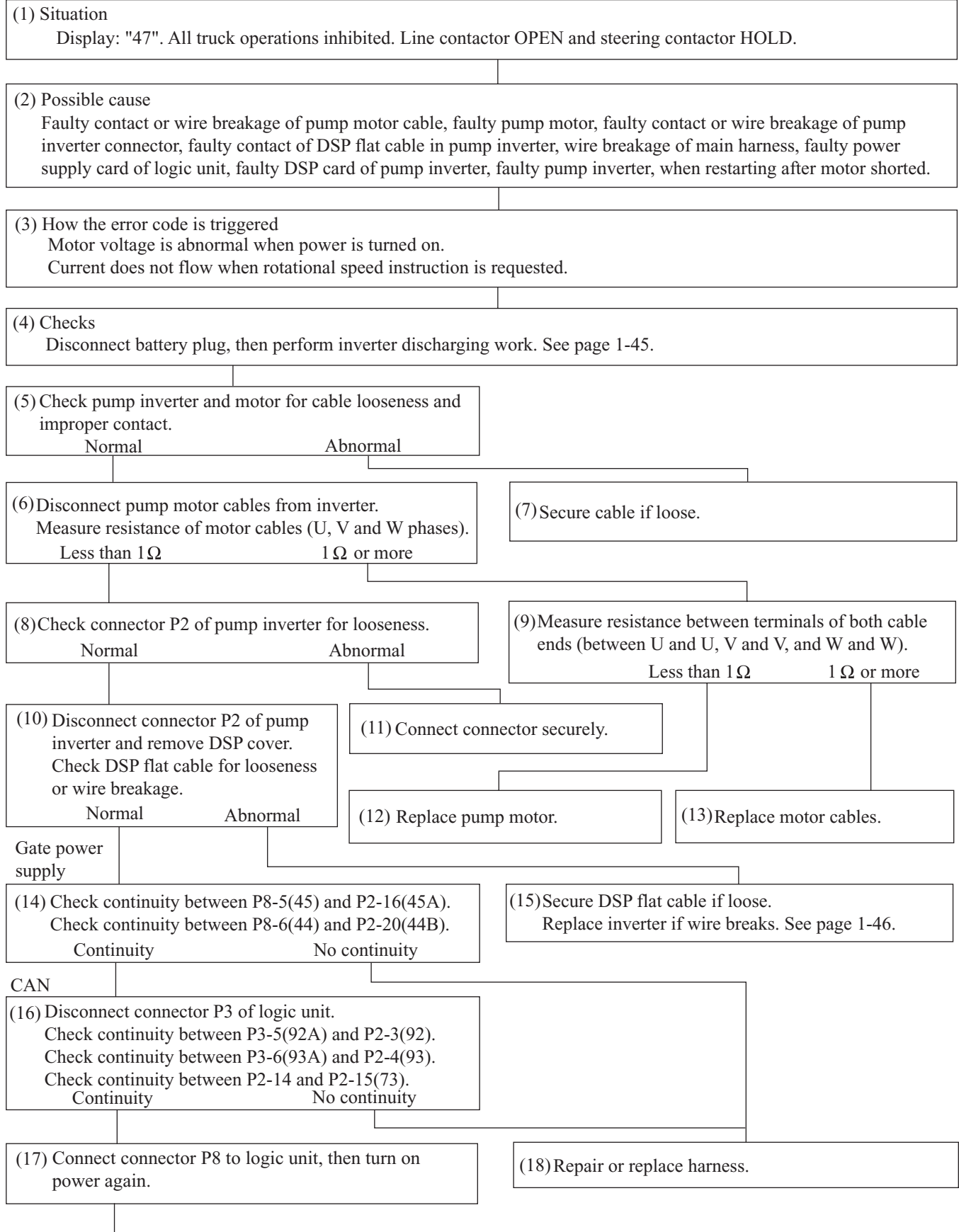
211372

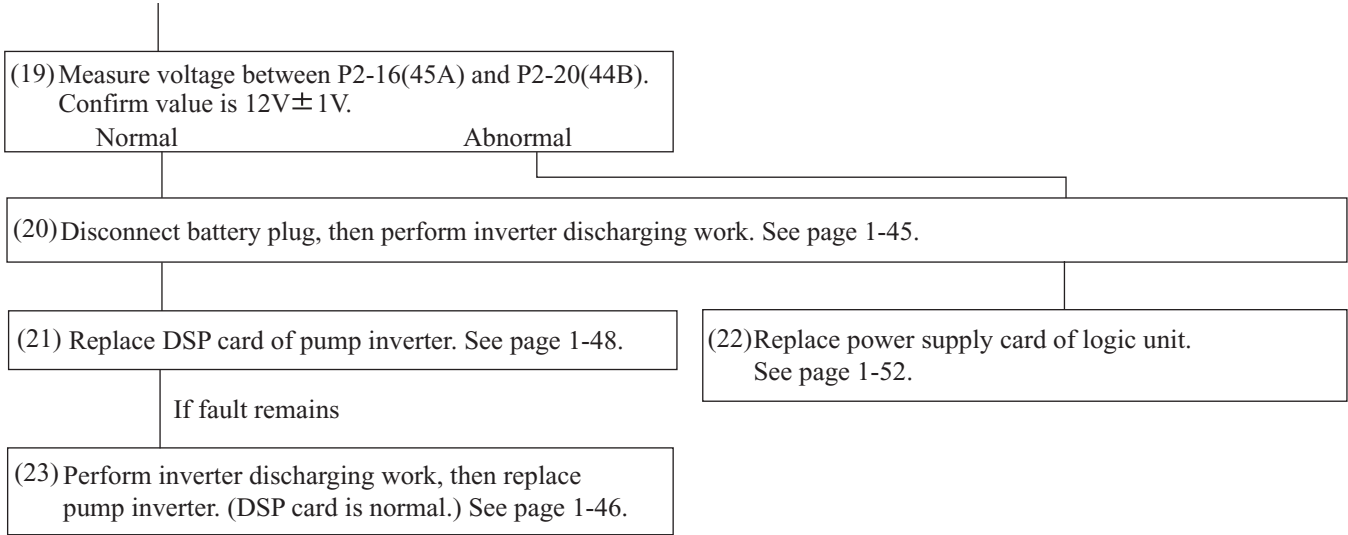
**Problem: Traction Motor Open (45)**

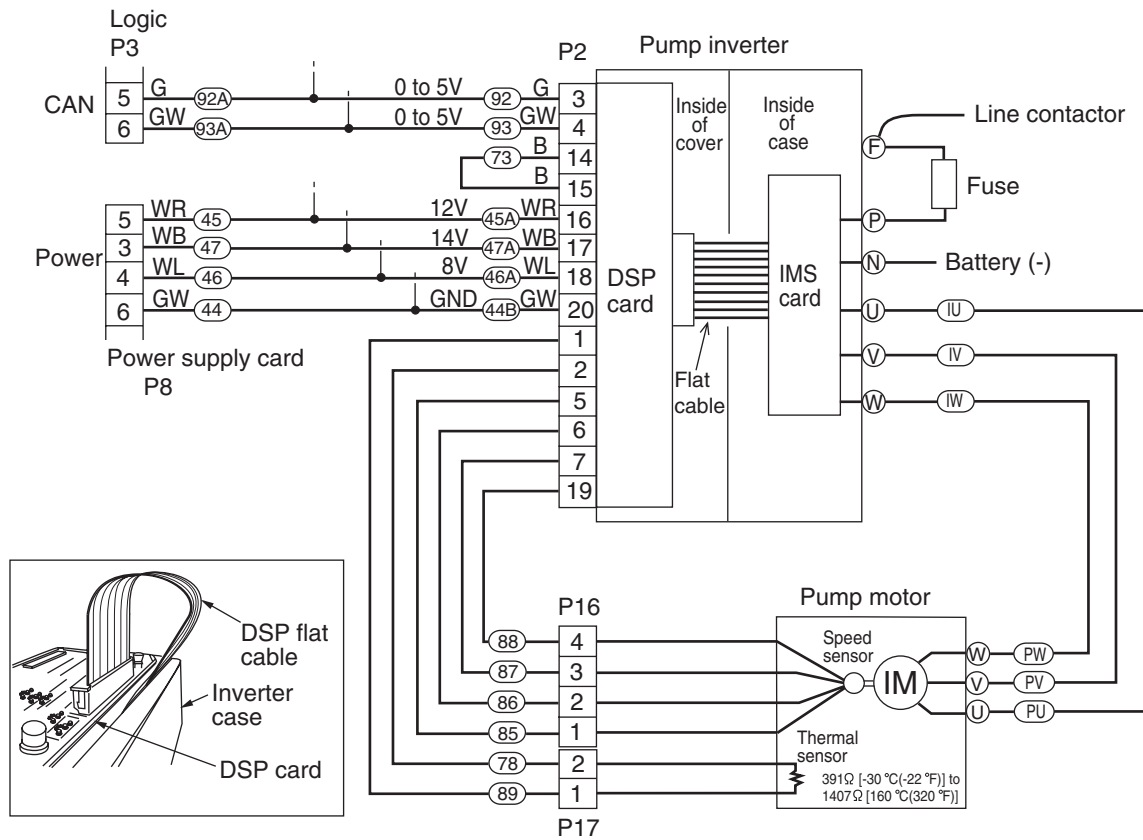




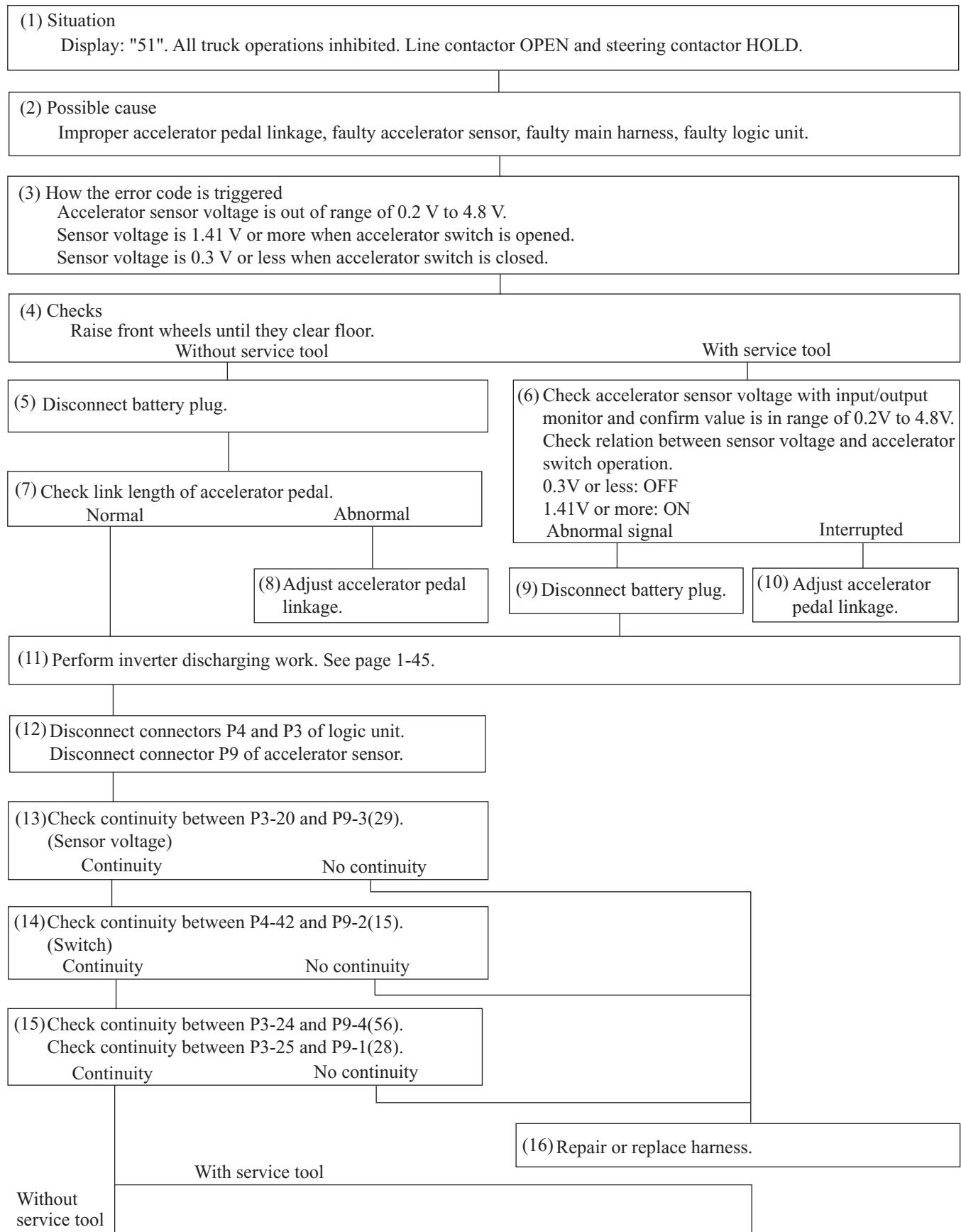
211374

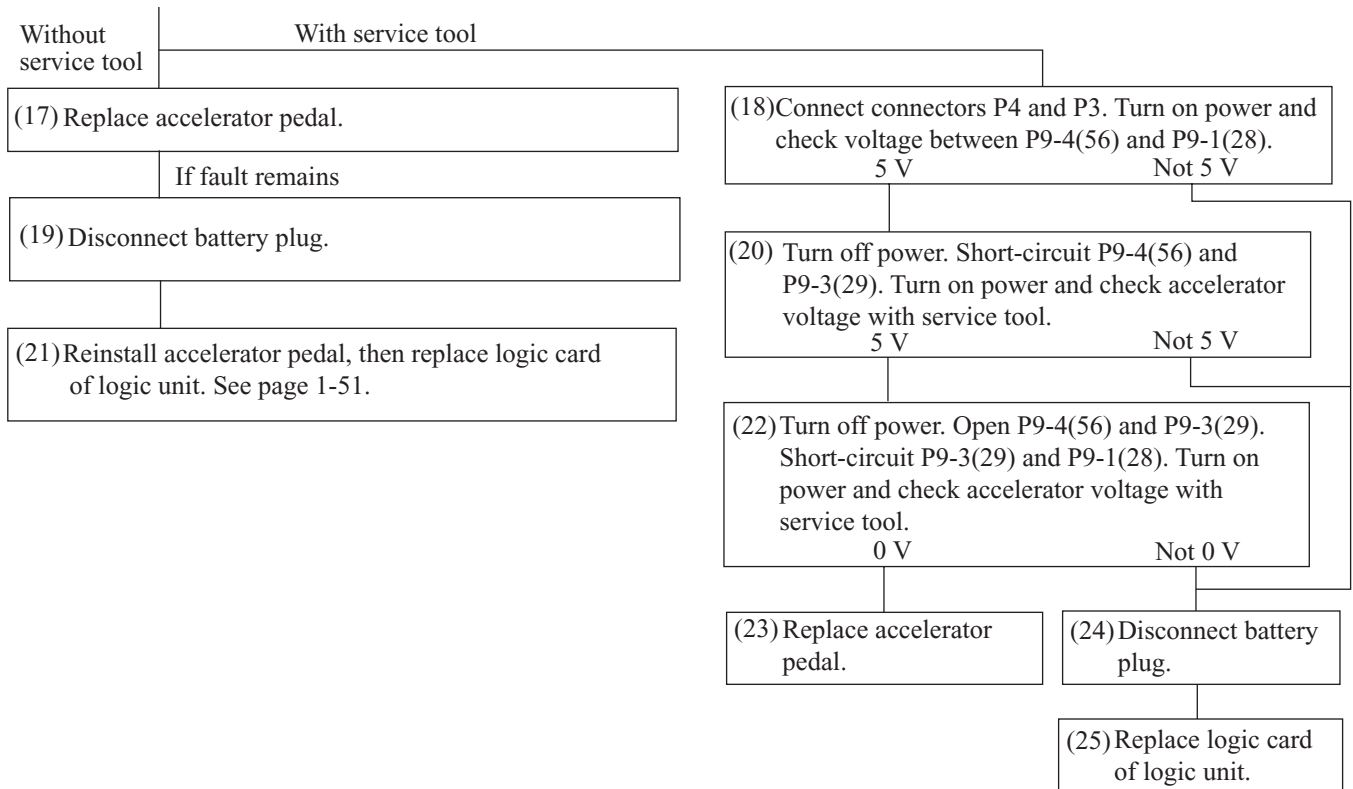
**Problem: Pump Motor Open (Transistor Control Type Only) (47)**

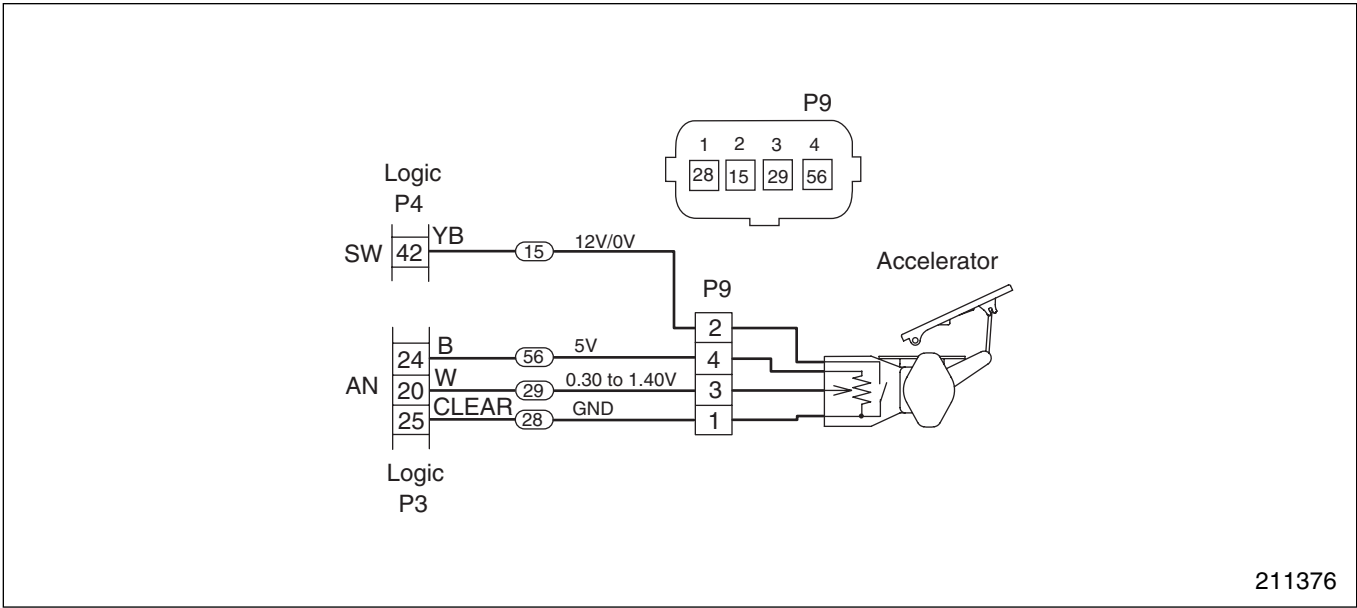




211375

**Problem: Accelerator Sensor Fault (51)**





211376

**Problem: Traction Motor Pulse Input Fault (52)****(1) Situation**

Display: "52". All truck operations inhibited. Line contactor OPEN and steering contactor HOLD.

**(2) Possible cause**

Faulty contact of traction inverter connector, faulty connection of traction motor connector and cable, faulty 12V input voltage of traction inverter, faulty contact or wire breakage of traction motor speed sensor harness, faulty DSP card of traction inverter, faulty traction motor speed sensor.

**(3) How the error code is triggered**

Motor rotation speed is more than 5800 rpm.

**(4) Checks**

Disconnect battery plug, then perform inverter discharging work. See page 1-45.

**(5) Check to see if traction motor cables (U, V and W-phases) are connected to traction inverter properly.**

Normal

Abnormal

**(6) Check to see if connector P1 of traction inverter is fastened securely.**

Normal

Abnormal

(7) Connect cables properly.

**(8) Check to see if connector P14 of traction motor speed sensor is fastened securely.**

Normal

Abnormal

(9) Fasten connector securely.

Sensor

**(10) Disconnect connectors P1 and P14.**

Check continuity between P1-5 and P14(79).

Check continuity between P1-6 and P14(80).

Check continuity between P1-7 and P14(81).

Check continuity between P1-19 and P14(82).

Continuity

No continuity

(11) Fasten connector securely.

Power  
supply

**(12) Check continuity between P8-3 and P1-17(47).**

Check continuity between P8-6 and P1-20(44).

Continuity

No continuity

CAN

**(13) Disconnect connector P3 of logic unit.**

Check continuity between P3-5(92A) and P1-3(92).

Check continuity between P3-6(93A) and P1-4(93).

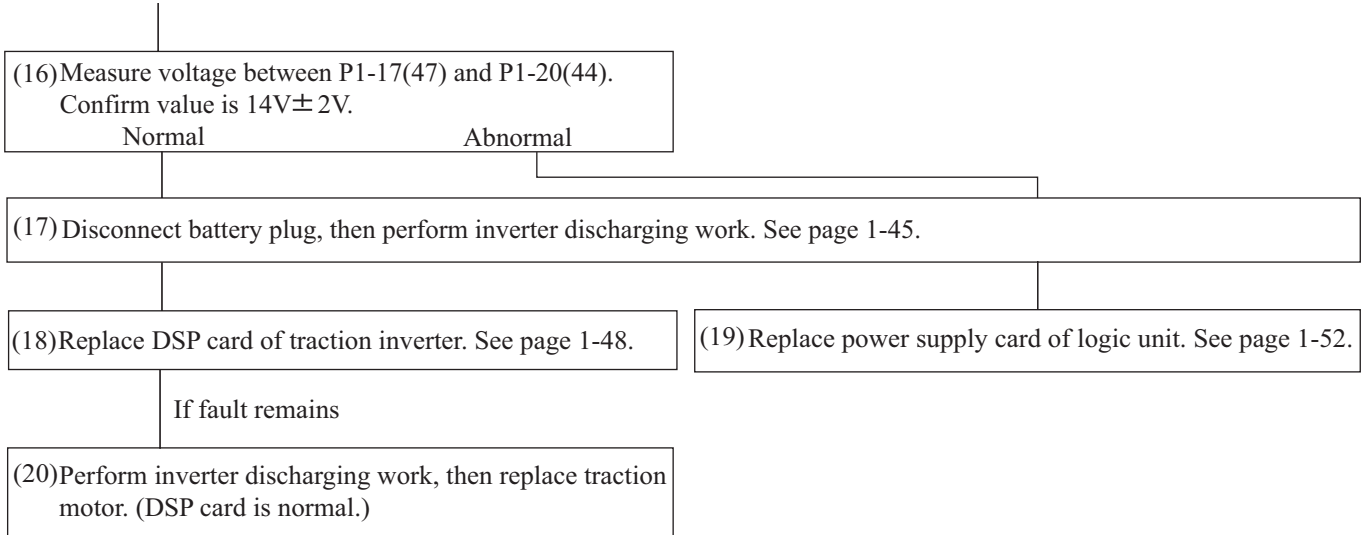
Check continuity between P1-14 and P1-15(18).

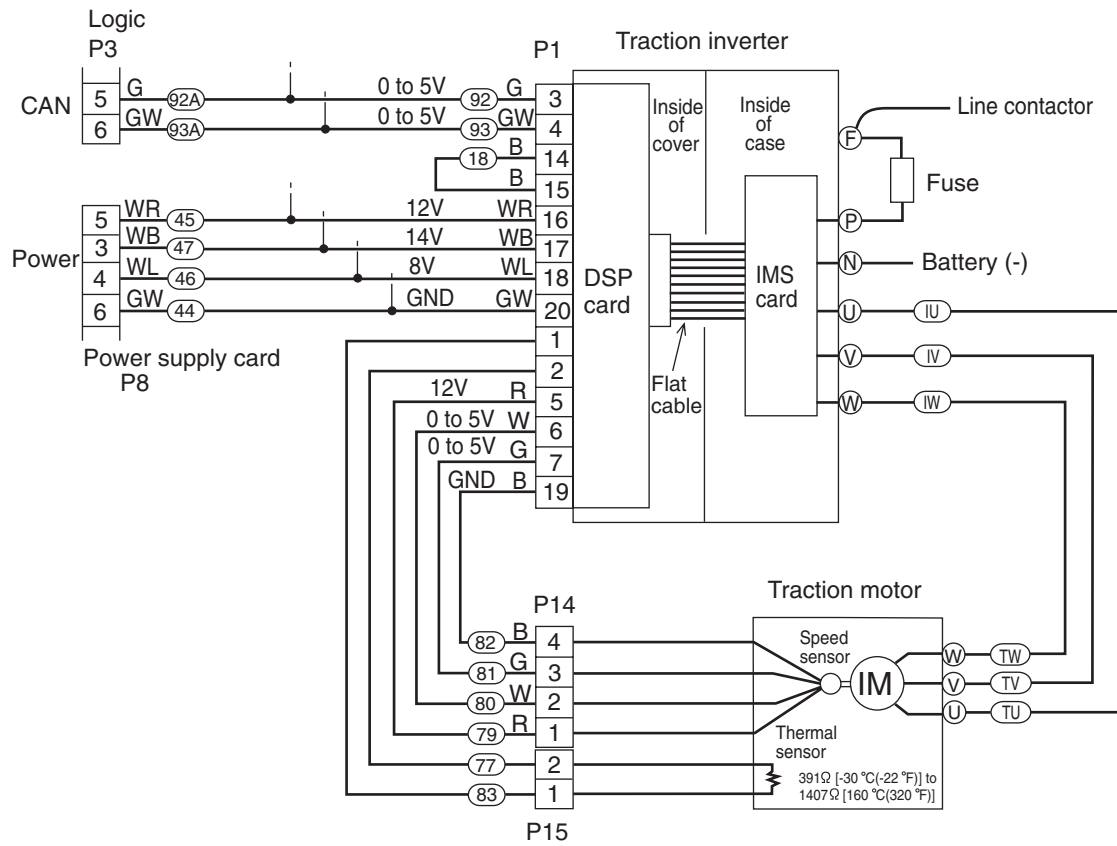
Continuity

No continuity

**(14) Connect connector P8 to logic unit, then turn on power again.**

(15) Repair or replace harness.





211377

**Problem: Pump Motor Pulse Input Fault (Transistor Control Type Only) (57)****(1) Situation**

Display: "57". All truck operations inhibited. Line contactor OPEN and steering contactor HOLD.

**(2) Possible cause**

Faulty contact of pump inverter connector, faulty connection of pump motor connector and cable, faulty 12V input voltage of pump inverter, faulty contact or wire breakage of pump motor speed sensor harness, faulty DSP card of pump inverter, faulty pump motor speed sensor.

**(3) How the error code is triggered**

Motor rotation speed is more than 4000 rpm. Motor rotation speed is zero while current flows to motor.  
Motor rotates in reverse.

**(4) Checks**

Disconnect battery plug, then perform inverter discharging work. See page 1-45.

**(5) Check to see if pump motor cables (U, V and W-phases) are connected to pump inverter properly.**

Normal

Abnormal

**(6) Check to see if connector P2 of pump inverter is fastened securely.**

Normal

Abnormal

(7) Connect cables properly.

**(8) Check to see if connector P16 of pump motor speed sensor is fastened securely.**

Normal

Abnormal

(9) Fasten connector securely.

Sensor

**(10) Disconnect connectors P2 and P16.**

Check continuity between P2-5 and P16(85).

Check continuity between P2-6 and P16(86).

Check continuity between P2-7 and P16(87).

Check continuity between P2-19 and P16(88).

Continuity

No continuity

(11) Fasten connector securely.

Power  
supply

**(12) Check continuity between P8-3(47) and P2-17(47A).**

Check continuity between P8-6(44) and P2-20(44B).

Continuity

No continuity

CAN

**(13) Disconnect connector P3 of logic unit.**

Check continuity between P3-5(92A) and P2-3(92).

Check continuity between P3-6(93A) and P2-4(93).

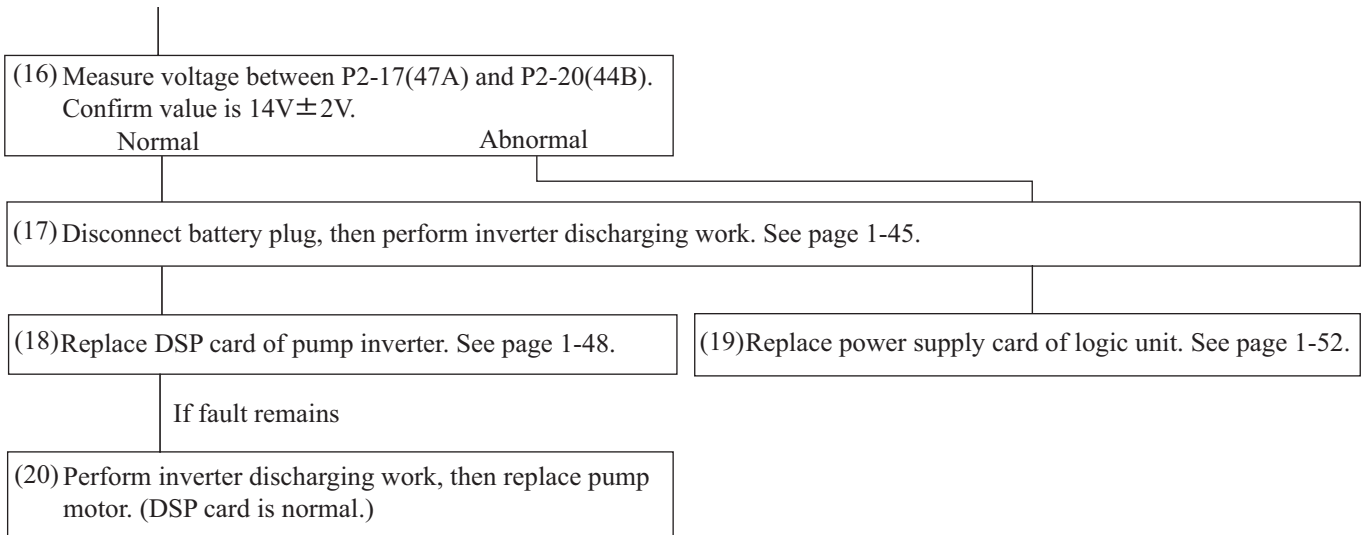
Check continuity between P2-14 and P2-15(73).

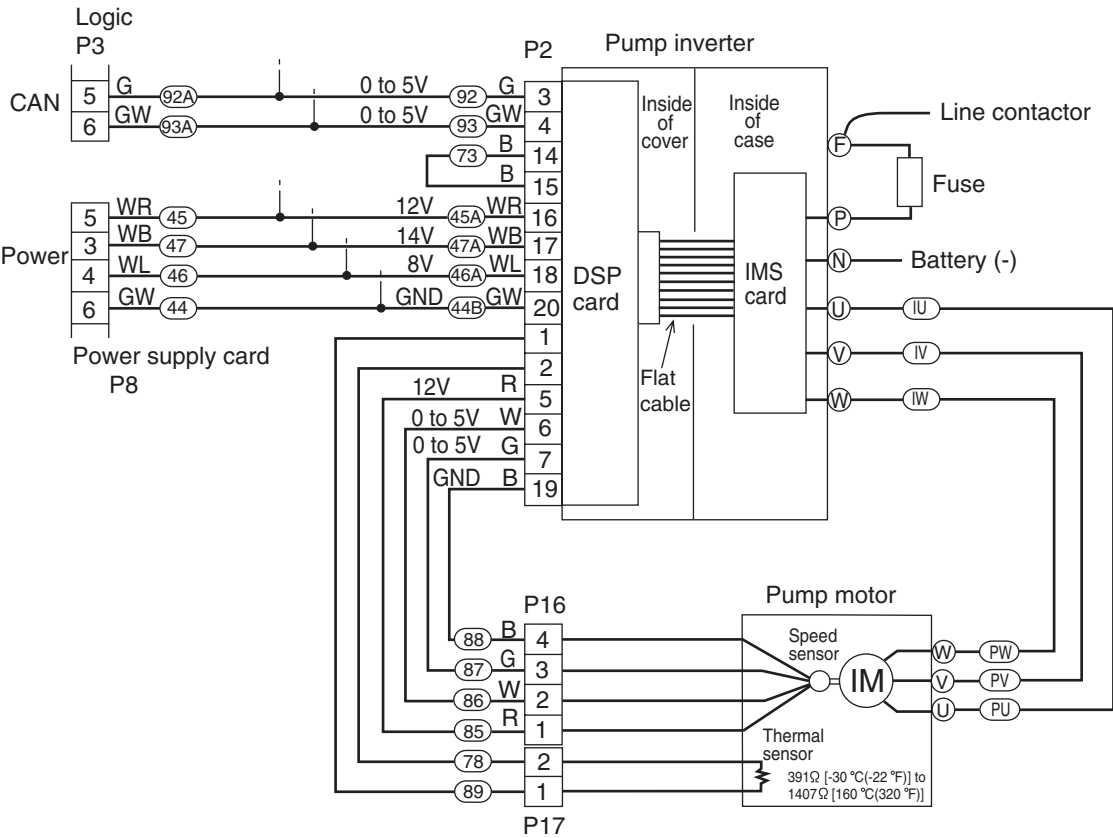
Continuity

No continuity

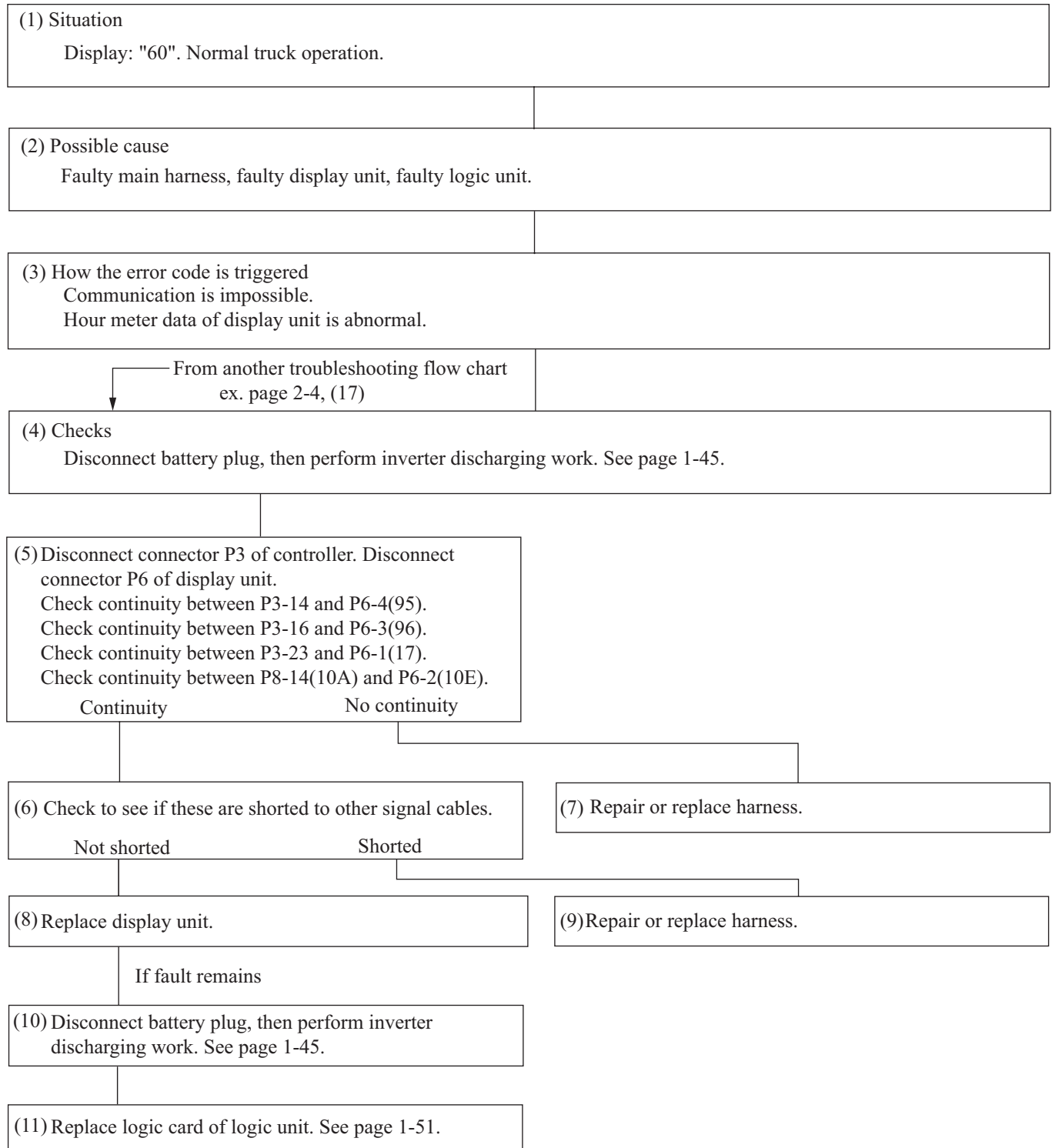
**(14) Connect connector P8 to logic unit, then turn on power again.**

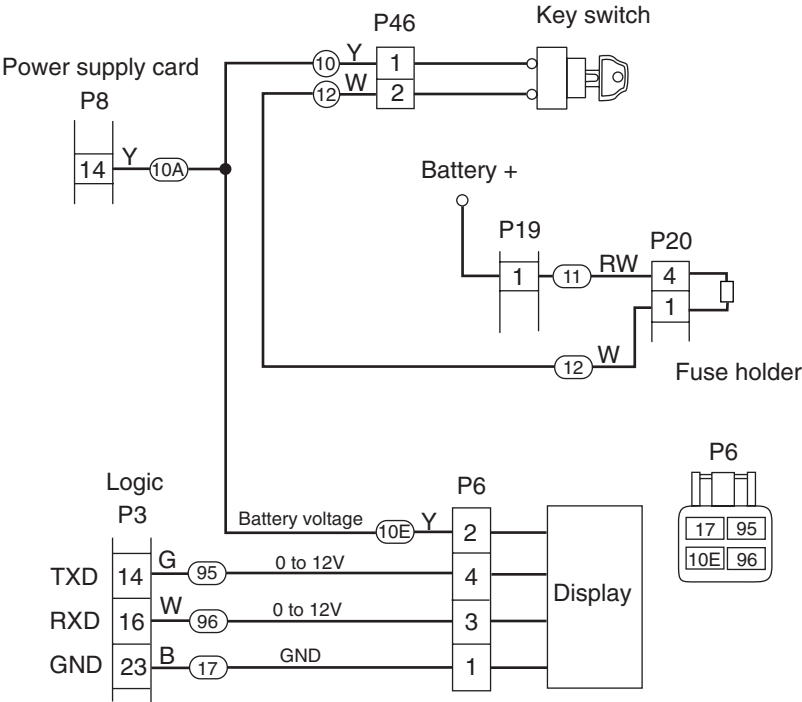
(15) Repair or replace harness.





211378

**Problem: Display Communication Fault (60)**



211379

**Problem: Logic Card Initialize Failure (61)****(1) Situation**

Display: "61". All truck operations inhibited. Line contactor OPEN and steering contactor OPEN.

**(2) Possible cause**

Setup Option Group 3 data not set, Setup Option Group 1 and 2 default data not set, faulty Setup Option data, faulty logic unit.

**(3) How the error code is triggered**

Setup Option data is in abnormal setting range.

**(4) Checks**

Turn off power, then turn on power in Setup Option Group 3 setting. See page 1-19.

(5) Set Setup Option Group 3 data. See page 1-31 to 1-33.

(6) Set Setup Option default data. See page 1-19.

(7) Turn on power in "RUN" mode. See page 1-19.

If fault remains

(8) With service tool, set Setup Option Group 3 data.

(9) With service tool, set Setup Option default data.

If fault remains

(10) Disconnect battery plug.

(11) Replace logic card of logic unit. See page 1-51.

(12) With service tool, set Setup Option Group 3 data.

(13) With service tool, set Setup Option default data.

**Problem: Logics Fault (62)****(1) Situation**

Display: "62". All truck operations inhibited. Line contactor OPEN and steering contactor OPEN.

**(2) Possible cause**

Faulty EEPROM data, faulty logic unit.

**(3) How the error code is triggered**

ROM SUM value of logic card is different from check data. EEPROM SUM value of logic card is different from check data. RAM of logic card is faulty.

**(4) Checks**

Turn off power, then turn on power in Setup Option Group 3 setting. See page 1-19.

(5) Set Setup Option Group 3 data.

(6) Set Setup Option default data.

(7) Turn on power in "RUN" mode. See page 1-19.

If fault remains "62"

Error code "61"

(8) Disconnect battery plug, then perform inverter discharging work. See page 1-45.

(9) See troubleshooting for code "61". See page 2-59.

(10) Replace logic card of logic unit. See page 1-51.

(11) With service tool, set Setup Option Group 3 data.  
Set Setup Option default data.

**Problem: Traction Inverter Fault (63)****(1) Situation**

Display: "63". All truck operations inhibited. Line contactor OPEN and steering contactor OPEN.

**(2) Possible cause**

Faulty contact or wire breakage of DSP flat cable in traction inverter, faulty DSP card of traction inverter, faulty traction inverter, faulty main harness, faulty logic unit.

**(3) How the error code is triggered**

Traction inverter is connected as pump inverter (P1-9 is connected to GND).

ROM SUM value of traction inverter is different from check data.

RAM of traction inverter is faulty. Communication with traction inverter is impossible.

**(4) Checks**

Disconnect battery plug, then perform inverter discharging work. See page 1-45.

**(5) Disconnect connector P1 of traction inverter and remove DSP cover. Check DSP flat cable for looseness or wire breakage.**

Normal

Abnormal

8V power supply

**(6) Check continuity between P8-4 and P1-18(46).**

Check continuity between P8-6 and P1-20(44).

Continuity

No continuity

(7) Refasten flat cable or replace inverter. See page 1-46.

CAN

**(8) Disconnect connector P3 of logic unit.**

Check continuity between P3-5(92A) and P1-3(92).

Check continuity between P3-6(93A) and P1-4(93).

Check continuity between P1-14 and P1-15(18).

Continuity

No continuity

**(9) Measure resistance of CAN with connectors P1 and P3 disconnected.**

Resistance between P3-5(92A) and P3-6(93A)

$120\ \Omega \pm 5\%$

Other than  $120\ \Omega \pm 5\%$

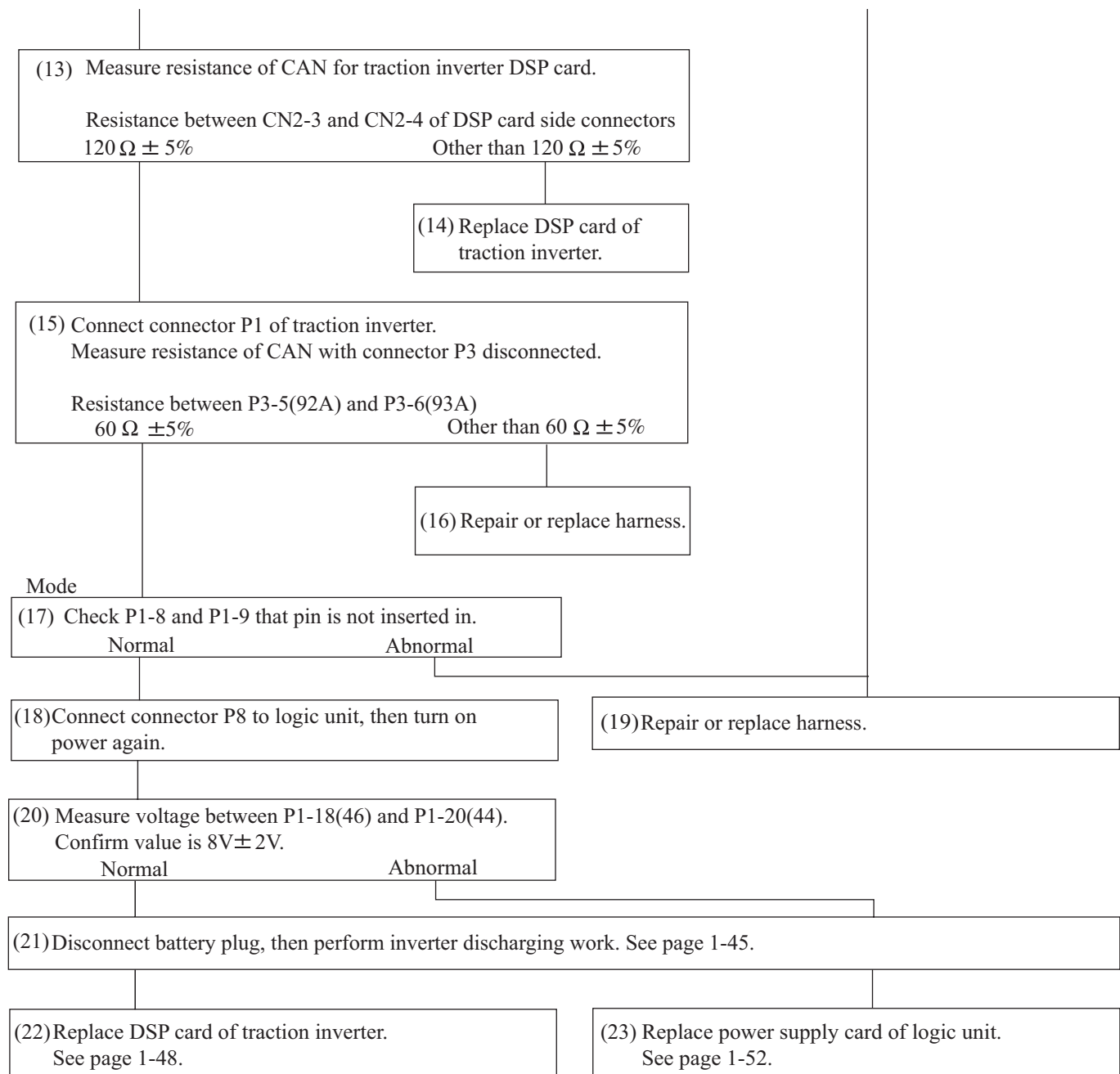
**(10)**

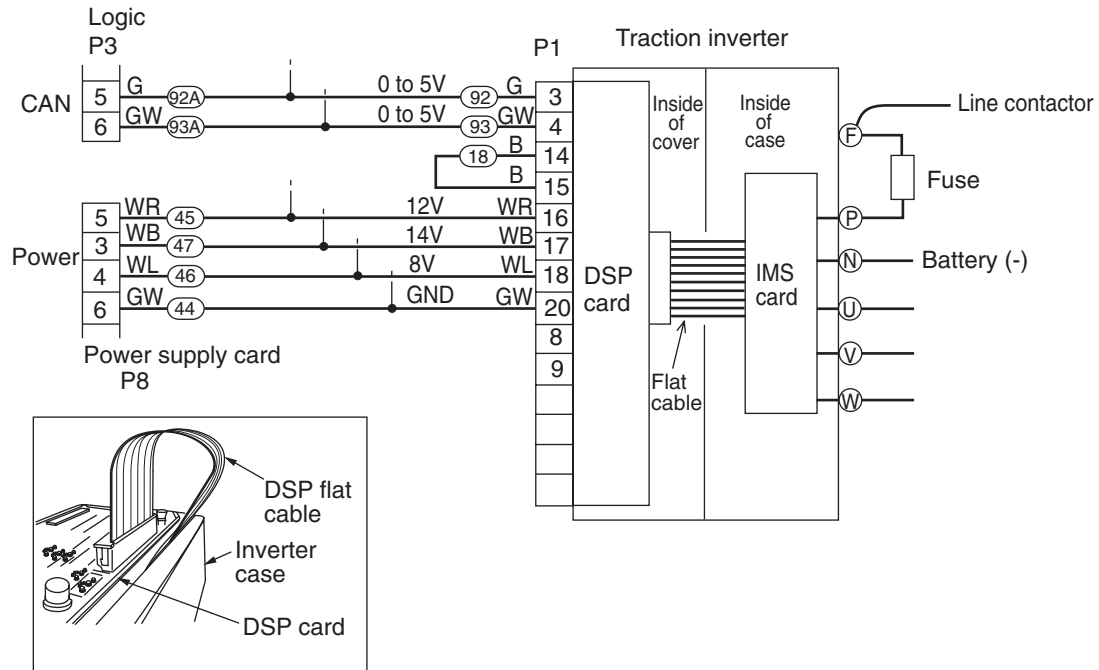
Transistor control

Contactor control

(11) Perform CAN check of Pump Inverter Fault (65).

(12) Repair or replace harness.  
When repairing harness,  
repair resistor ( $120\ \Omega$ ) on  
harness.





211380

**Problem: Pump Inverter Fault (Transistor Control Type Only) (65)****(1) Situation**

Display: "65". All truck operations inhibited. Line contactor OPEN and steering contactor OPEN.

**(2) Possible cause**

Faulty contact or wire breakage of DSP flat cable in pump inverter, faulty DSP card of pump inverter, faulty pump inverter, faulty main harness, faulty logic unit.

**(3) How the error code is triggered**

Pump inverter is connected as traction inverter (P2-9 is opened).  
ROM SUM value of pump inverter is different from check data.  
RAM of pump inverter is faulty. Communication with pump inverter is impossible.

**(4) Checks**

Disconnect battery plug, then perform inverter discharging work. See page 1-45.

**(5) Disconnect connector P2 of pump inverter and remove DSP cover. Check DSP flat cable for looseness or wire breakage.**

Normal

Abnormal

8V power supply

**(6) Check continuity between P8-4(46) and P2-18(46A). Check continuity between P8-6(44) and P2-20(44B).**

Continuity

No continuity

(7) Refasten flat cable or replace inverter. See page 1-46.

CAN

**(8) Disconnect connector P3 of logic unit.**

Check continuity between P3-5(92A) and P2-3(92).  
Check continuity between P3-6(93A) and P2-4(93).  
Check continuity between P2-14 and P2-15(73).

Continuity

No continuity

**(9) Measure resistance of CAN with connectors P2 and P3 disconnected.**

Resistance between P3-5(92A) and P3-6(93A)

$120\ \Omega \pm 5\%$

Other than  $120\ \Omega \pm 5\%$

(10) Perform CAN check of Traction Inverter Fault (63).

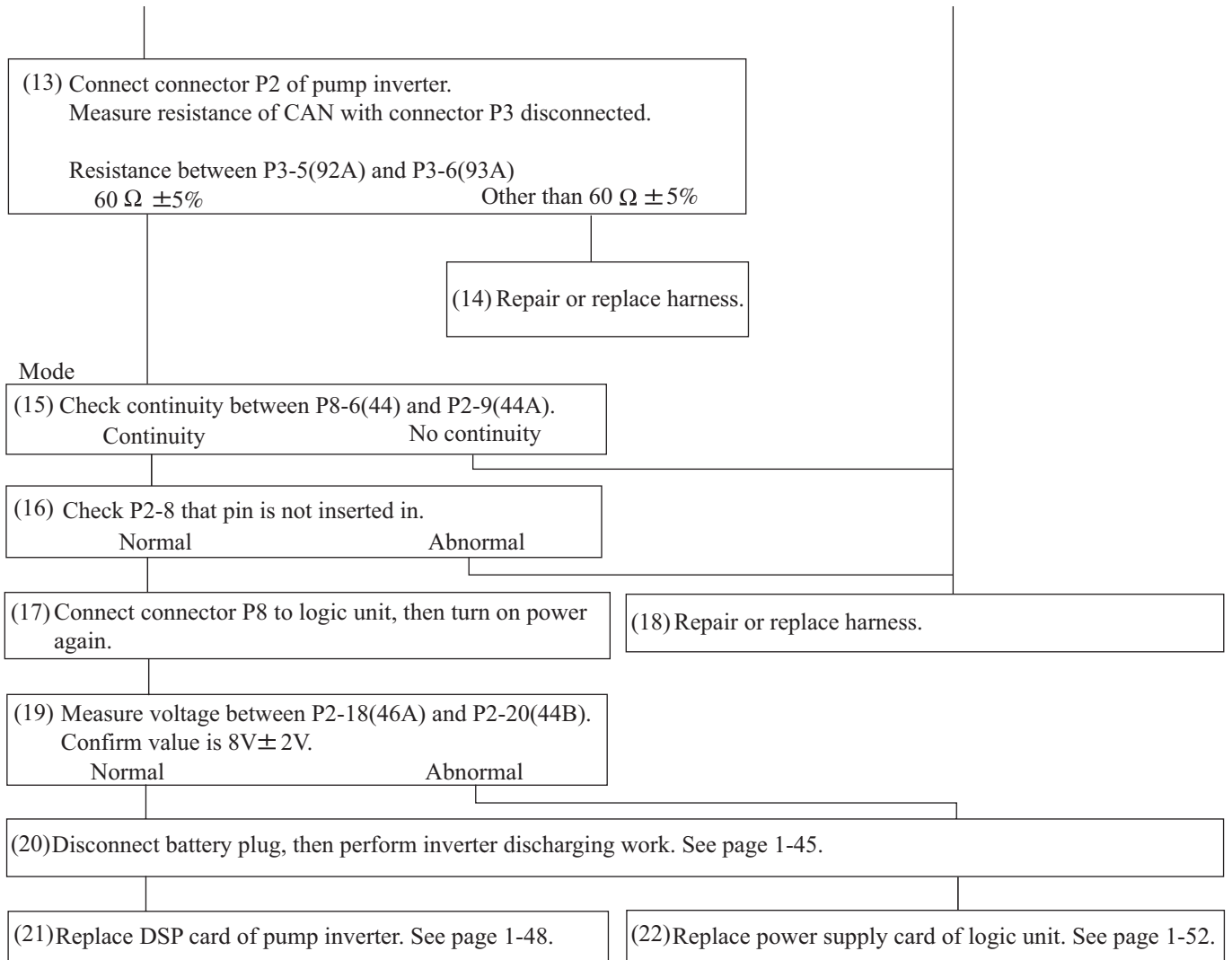
**(11) Measure resistance of CAN for pump inverter DSP card.**

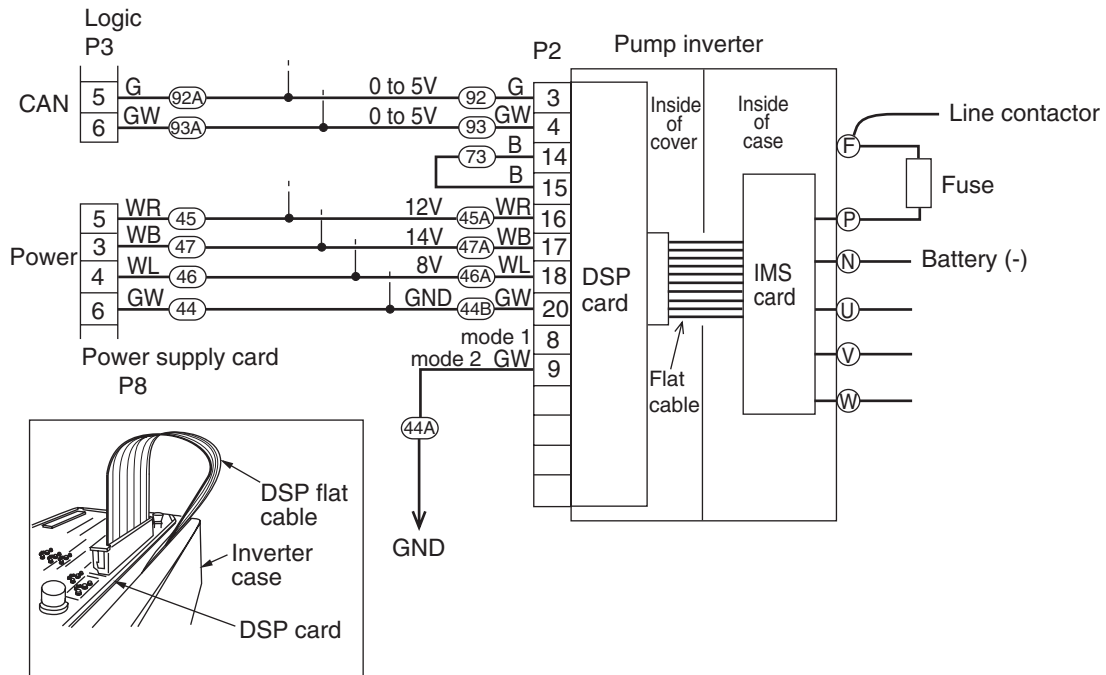
Resistance between CN2-3 and CN2-4 of DSP card side connectors

$120\ \Omega \pm 5\%$

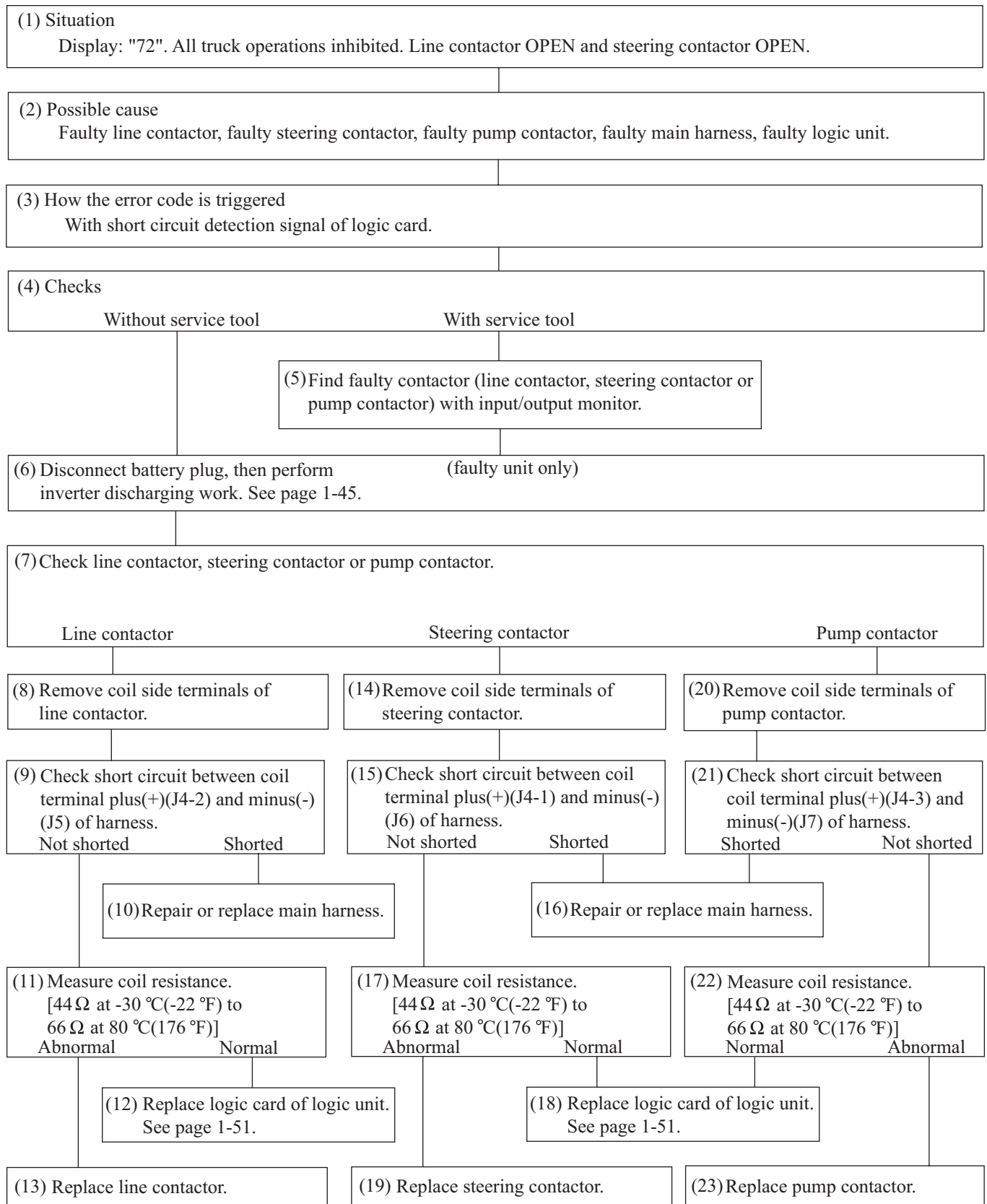
Other than  $120\ \Omega \pm 5\%$

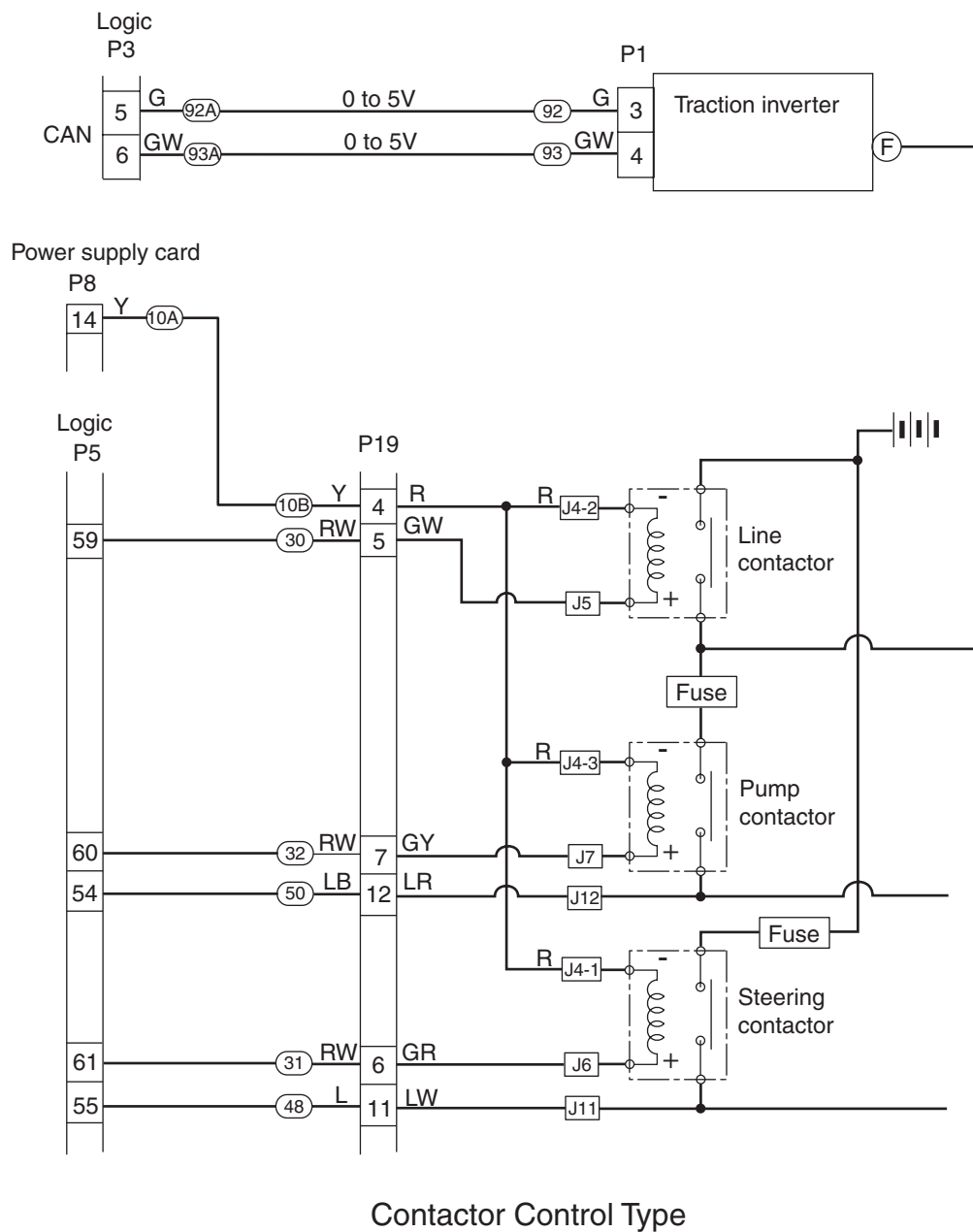
(12) Replace DSP card of pump inverter.



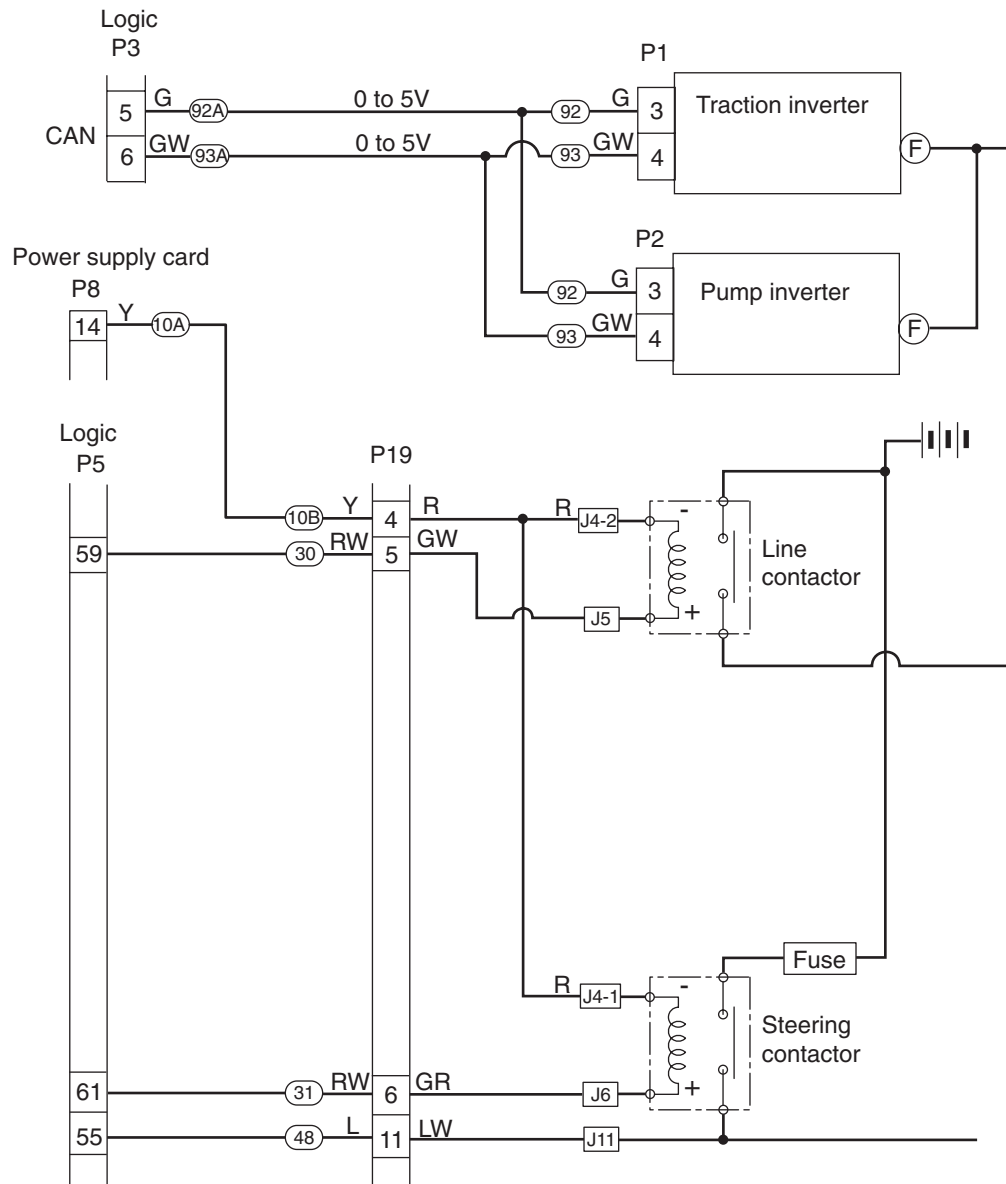


211381

**Problem: Contactor Coil Fault (72)**



211372

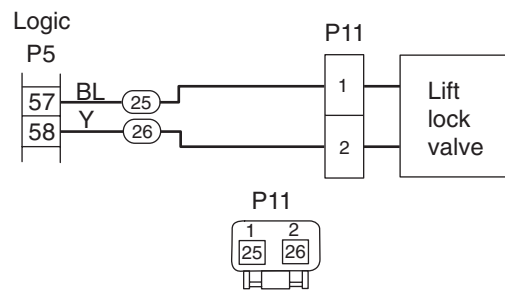


Transistor Control Type

211373

**Problem: Hydraulic Lock Solenoid Fault (74)**

(1) Situation	
Display: "74". Pump motor operation inhibited. Normal traction motor operation and power steering operation.	
(2) Possible cause	
Faulty lift lock valve, faulty main harness, faulty logic unit.	
(3) How the error code is triggered	
With short circuit detection signal of logic card.	
(4) Checks	
Disconnect battery plug, then perform inverter discharging work. See page 1-45.	
(5) Disconnect connector P5 of logic unit. Disconnect connector P11 of lift lock valve.	
(6) Check short circuit between P11-1(25) and P11-2(26).	
Shorted	Not shorted
(7) Repair or replace main harness.	(8) Check short circuit between lift lock valve side connectors. Measure coil resistance. [40.5 Ω at -30 °C(-22 °F) to 52 Ω at 80 °C(176 °F)]
	Normal                      Abnormal
(9) Replace logic card of logic unit. See page 1-51.	(10) Replace lift lock valve.



211382

**Problem: Electromagnetic Brake Solenoid Fault (75)****(1) Situation**

Display: "75". All truck operations inhibited. Line contactor OPEN and steering contactor HOLD.

**(2) Possible cause**

Faulty electromagnetic brake valve, faulty main harness, faulty logic unit.

**(3) How the error code is triggered**

With short circuit detection signal of logic card.

**(4) Checks**

Disconnect battery plug, then perform inverter discharging work. See page 1-45.

(5) Disconnect connector P5 of logic unit. Disconnect connector P24 of electromagnetic brake.

(6) Check short circuit between P24-1(10G) and P24-2(5).

Not shorted

Shorted

(7) Check short circuit between electromagnetic brake side connectors. Measure coil resistance.  
[Approximately 22.1  $\Omega$ ]

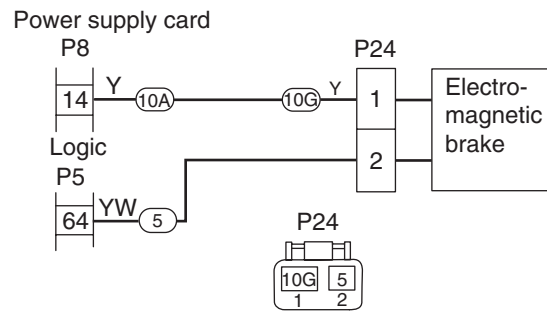
Shorted

Not shorted

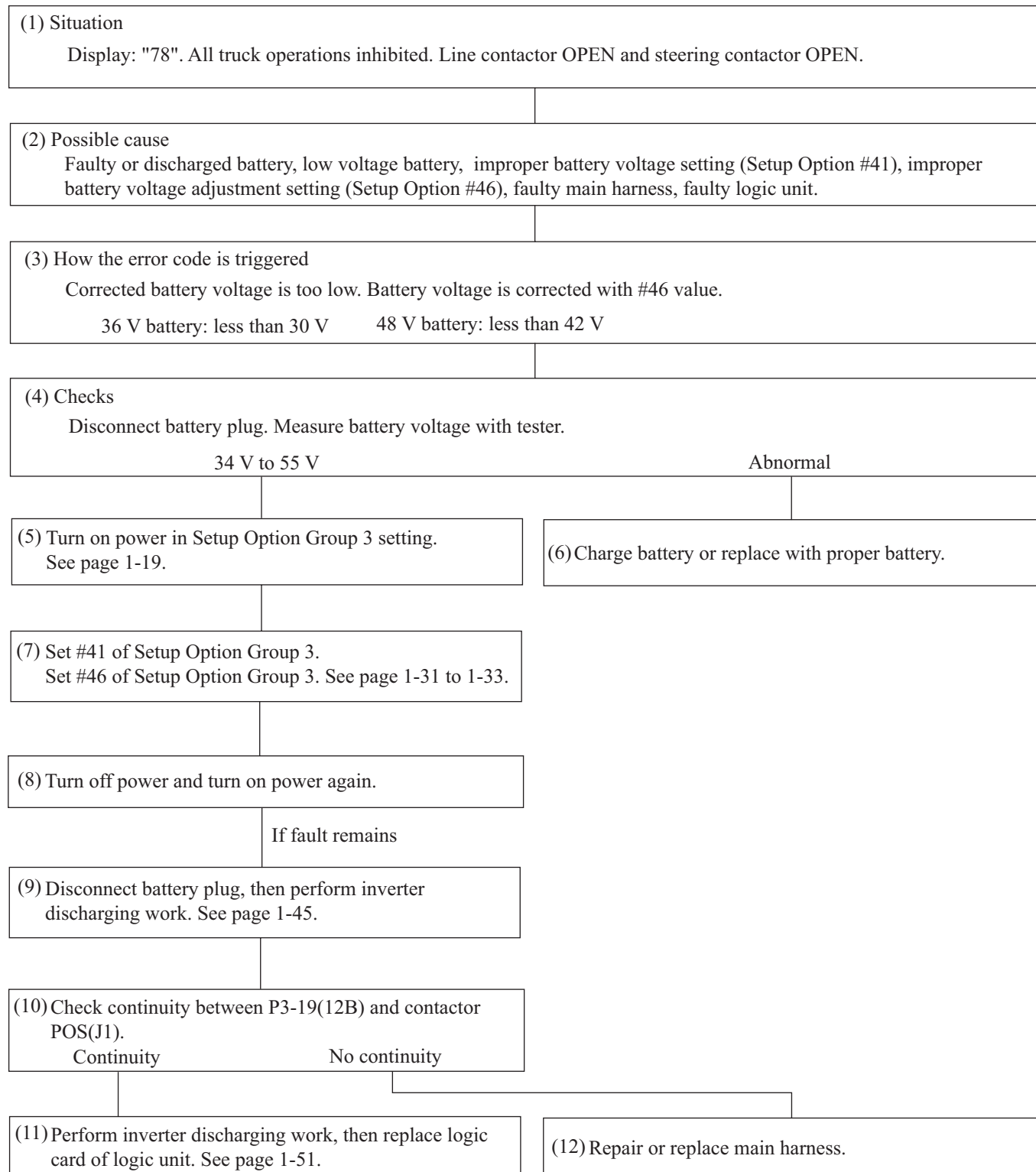
(8) Repair or replace main harness.

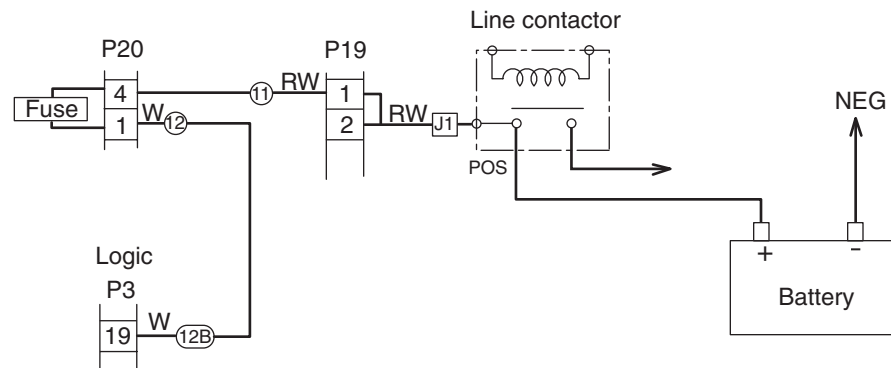
(9) Replace electromagnetic brake.

(10) Replace logic card of logic unit. See page 1-51.



211383

**Problem: Battery Voltage Too Low (78)**



211384

**Problem: Battery Voltage Too High (79)****(1) Situation**

Display: "79". All truck operations inhibited. Line contactor OPEN and steering contactor OPEN.

**(2) Possible cause**

Faulty or highly charged battery, high voltage battery, improper battery voltage setting (Setup Option #41), improper battery voltage adjustment setting (Setup Option #46), faulty logic unit.

**(3) How the error code is triggered**

Corrected battery voltage is too high. Battery voltage is corrected with #46 value.

36 V battery: more than 42 V      48 V battery: more than 60 V

**(4) Checks**

Disconnect battery plug. Measure battery voltage with tester.

34V to 55 V

Abnormal

(5) Turn on power in Setup Option Group 3 setting.  
See page 1-19.

(6) Replace with proper battery.

(7) Set #41 of Setup Option Group 3.  
Set #46 of Setup Option Group 3. See page 1-31 to 1-33.

(8) Turn off power and turn on power again.

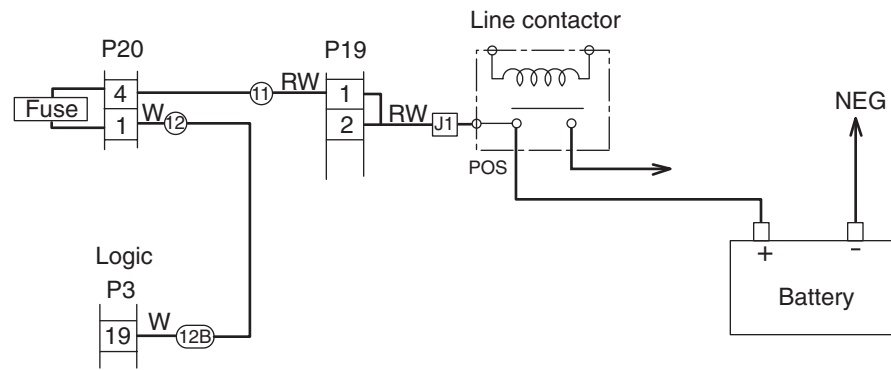
If fault remains

(9) Disconnect battery plug, then perform inverter discharging work. See page 1-45.

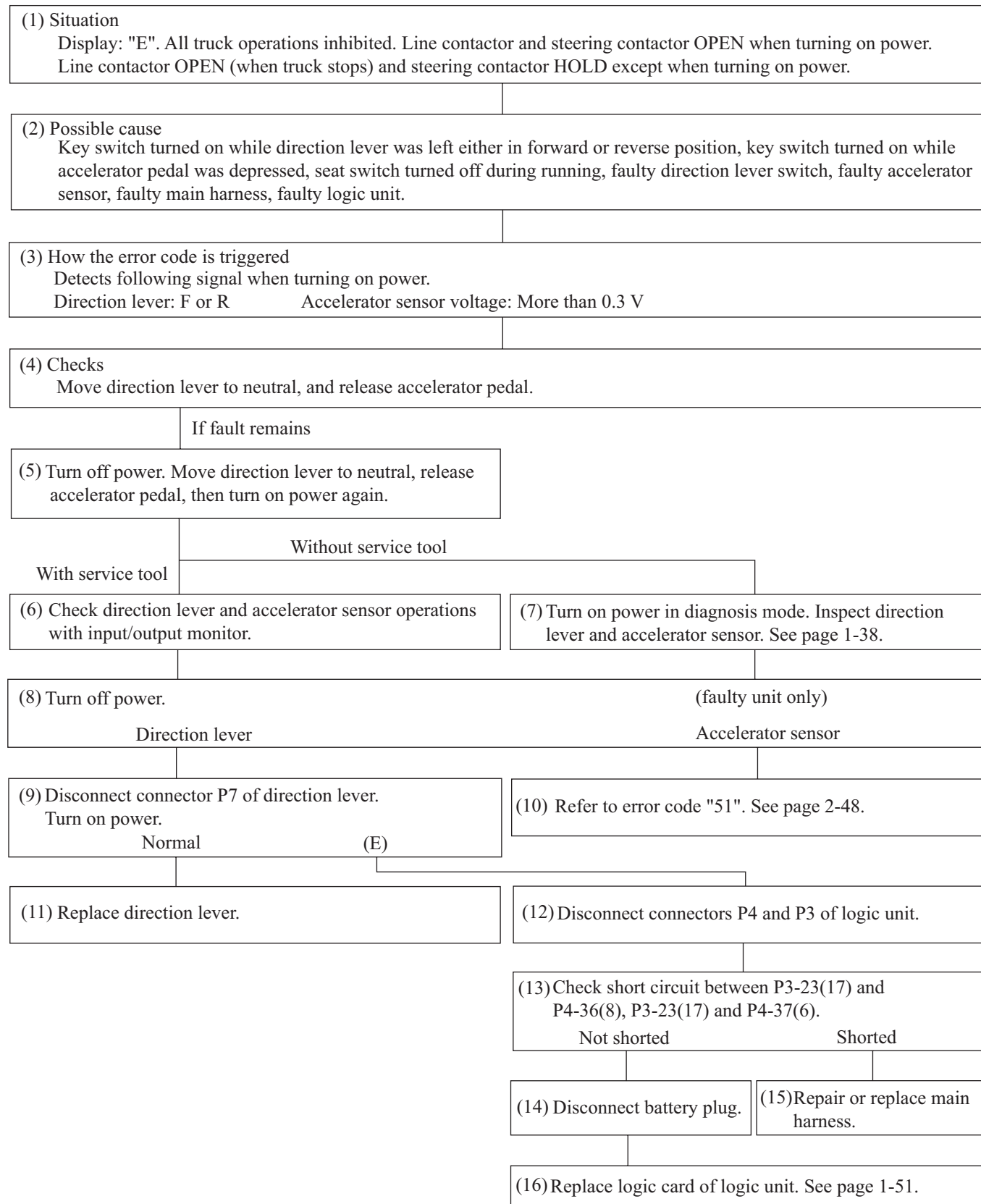
(10) Check continuity between P3-19(12B) and contactor POS(J1).  
Continuity      No continuity

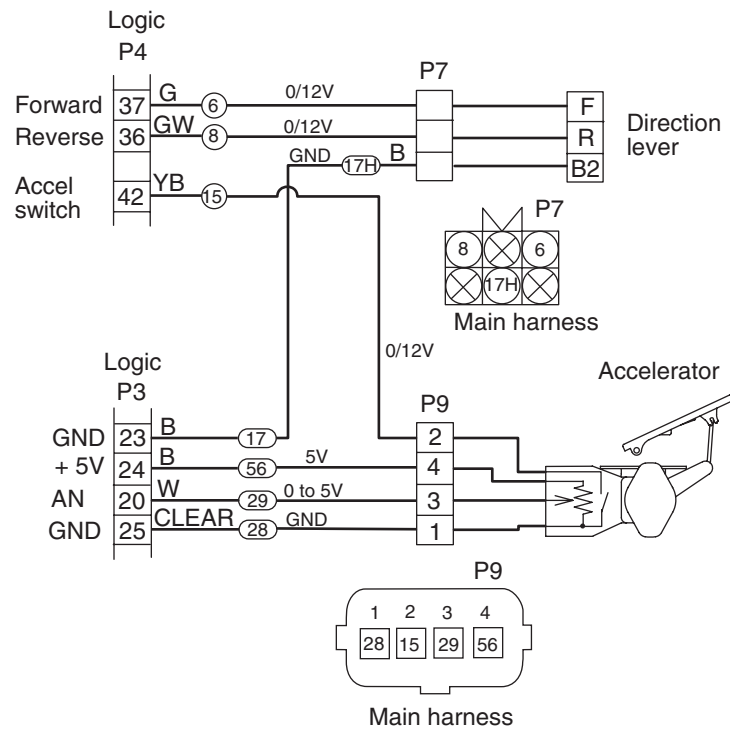
(11) Perform inverter discharging work, then replace logic card of logic unit. See page 1-51.

(12) Repair or replace main harness.

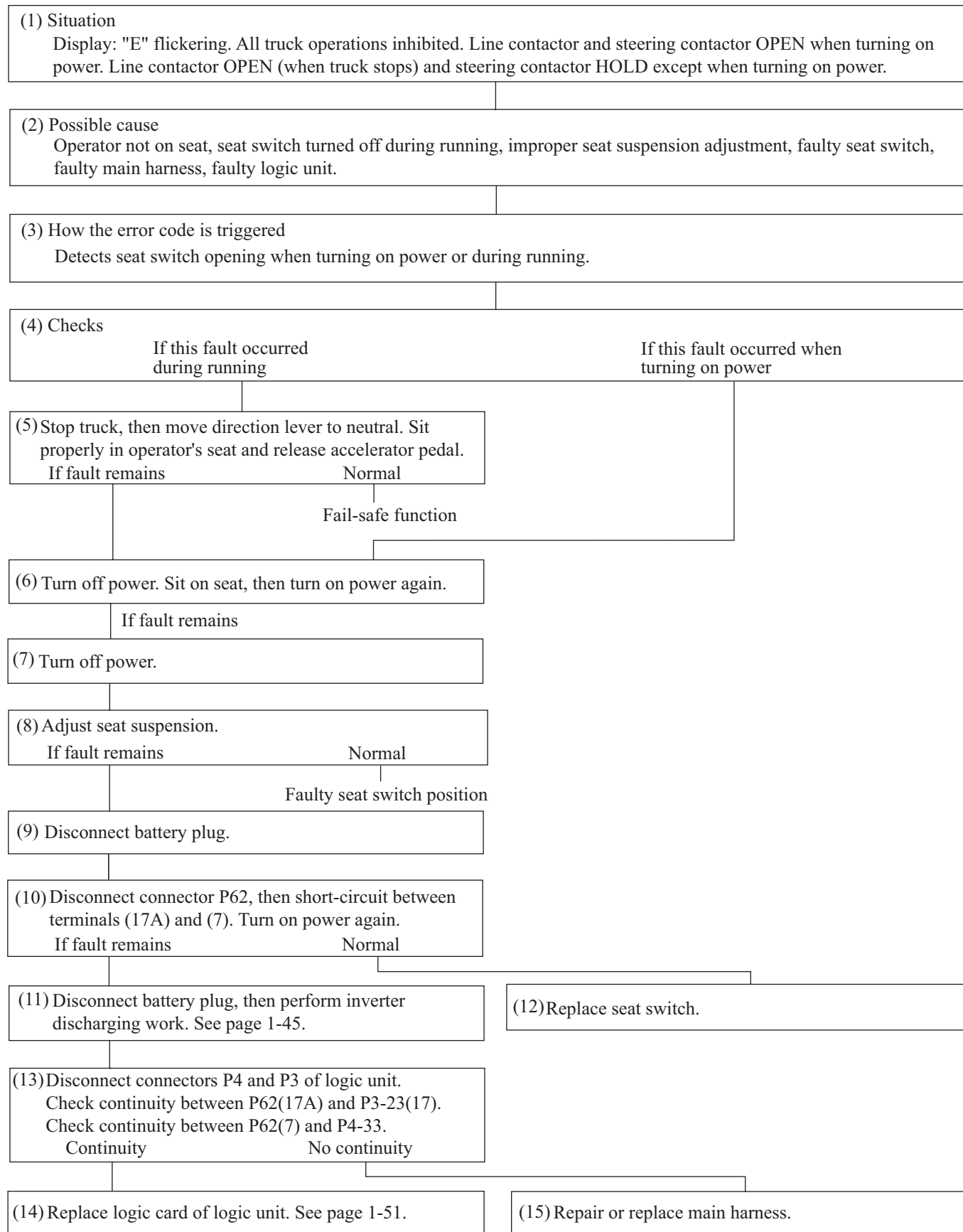


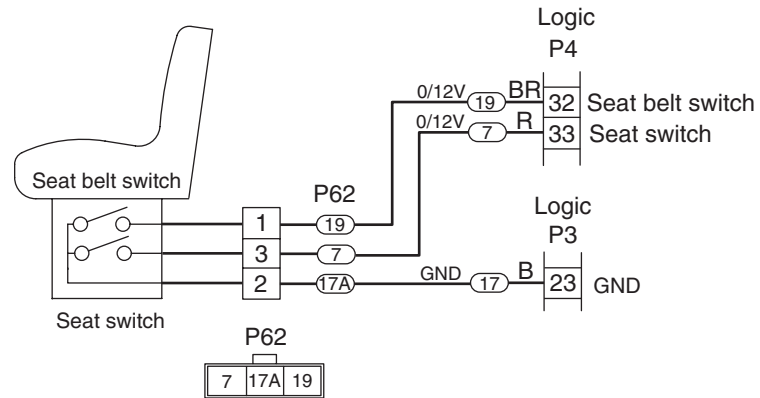
211384

**Problem: Direction Lever or Accelerator, Faulty Setting (E)**



211385

**Problem: Seat Switch, Faulty Setting For Traction ((E))**



211386

**Problem: Seat Switch, Faulty Setting For Hydraulic ((L))****(1) Situation**

Display: "L" flickering. All truck operations inhibited. Line contactor and steering contactor OPEN when turning on power. Line contactor OPEN (when truck stops) and steering contactor HOLD except when turning on power.

**(2) Possible cause**

Operator not on seat, seat switch turned off during pump motor operation, improper seat suspension adjustment, faulty seat switch, faulty main harness, faulty logic unit.

**(3) How the error code is triggered**

Detects seat switch opening when turning on power or during pump operation.

**(4) Checks**

If this fault occurred during  
pump motor operation

If this fault occurred when  
turning on power

**(5) Sit on seat, then stop pump motor operation.**

If fault remains

Normal

Fail-safe function

**(6) Turn off power. Sit on seat, then turn on power again.**

If fault remains

**(7) Turn off power.****(8) Adjust seat suspension.**

If fault remains

Normal

Faulty seat switch position

**(9) Disconnect battery plug.****(10) Disconnect connector P62, then short-circuit between terminals (17A) and (7). Turn on power again.**

If fault remains

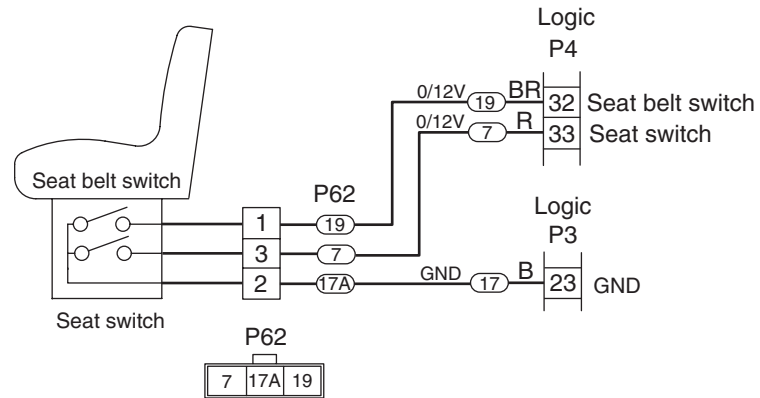
Normal

**(11) Disconnect battery plug, then perform inverter discharging work. See page 1-45.****(12) Replace seat switch.****(13) Disconnect connectors P4 and P3 of logic unit. Check continuity between P62(17A) and P3-23(17). Check continuity between P62(7) and P4-33.**

Continuity

No continuity

**(14) Replace logic card of logic unit. See page 1-51.****(15) Repair or replace main harness.**



211386

**Problem: Lift Lever, Faulty Setting (H1)****(1) Situation**

Display: "H1" flickering. All truck operations inhibited. Line contactor and steering contactor OPEN when turning on power. Line contactor OPEN (when truck stops) and steering contactor HOLD except when turning on power.

**(2) Possible cause**

Key switch turned on while operating lift lever, faulty lift switches 1 and 2, faulty lift down switch, faulty main harness, faulty logic unit.

**(3) How the error code is triggered**

Detects lift microswitch 1 or 2, or lift down microswitch when turning on power.

**(4) Checks**

If this fault occurred during  
pump motor operation

If this fault occurred when  
turning on power

**(5) Sit on seat, then stop pump motor operation.**

If fault remains

Normal

Fail-safe function

**(6) Turn off power. Sit on seat, then turn on power again without lift operation.**

If fault remains

**(7) Turn off power.****(8) Disconnect connector P13 of microswitch. Sit on seat, then turn on power again.**

If fault remains

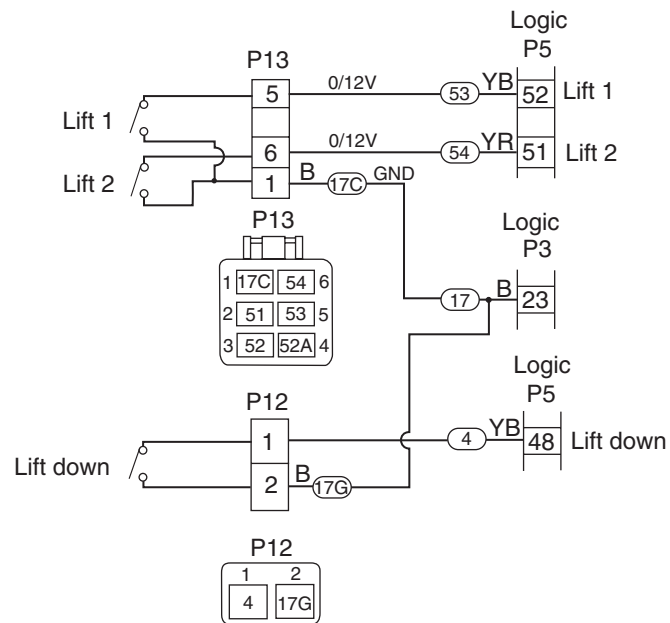
Normal

**(9) Disconnect battery plug, then perform inverter discharging work. See page 1-45.****(10) Replace lift switch 1 or 2.****(11) Check continuity between P5-52 and P13-5(53).  
Check continuity between P5-51 and P13-6(54).  
Check continuity between P5-48 and P12-1(4).  
Check short circuit between P13-5(53) and P13-1(17C).  
Check short circuit between P13-6(54) and P13-1(17C).  
Check short circuit between P12-1(4) and P12-2(17G).**

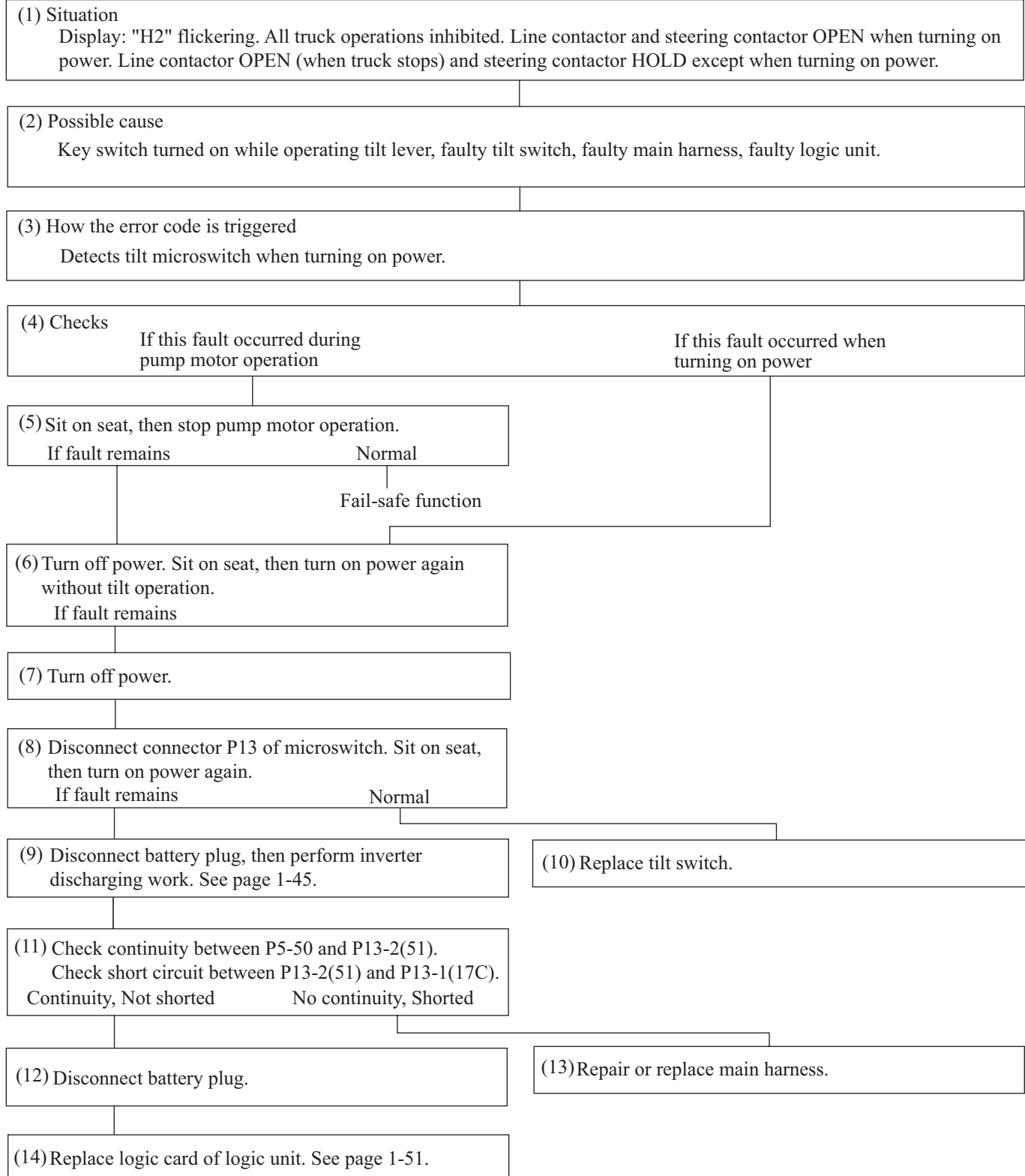
Continuity, Not shorted

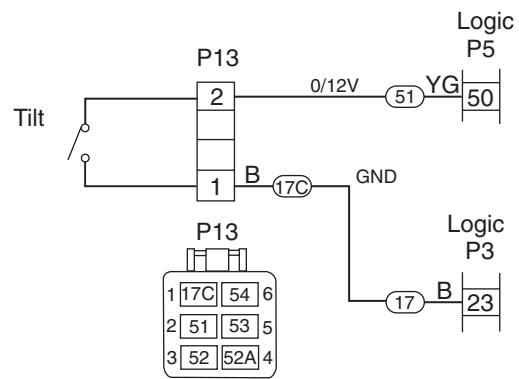
No continuity, Shorted

**(12) Disconnect battery plug.****(13) Repair or replace main harness.****(14) Replace logic card of logic unit. See page 1-51.**



211387

**Problem: Tilt Lever, Faulty Setting (H2)**



211388

**Problem: Attachment 1 Lever, Faulty Setting (H3)****(1) Situation**

Display: "H3" flickering. All truck operations inhibited. Line contactor and steering contactor OPEN when turning on power. Line contactor OPEN (when truck stops) and steering contactor HOLD except when turning on power.

**(2) Possible cause**

Key switch turned on while operating attachment 1 or 2 lever, faulty attachment 1 or 2 switch, faulty main harness, faulty logic unit.

**(3) How the error code is triggered**

Detects attachment 1 or 2 microswitch when turning on power.

**(4) Checks**

If this fault occurred during  
pump motor operation

If this fault occurred when  
turning on power

**(5) Sit on seat, then stop pump motor operation.**

If fault remains

Normal

Fail-safe function

**(6) Turn off power. Sit on seat, then turn on power again without attachment 1 or 2 operation.**

If fault remains

**(7) Turn off power.****(8) Disconnect connector P13 of microswitch. Sit on seat, then turn on power again.**

If fault remains

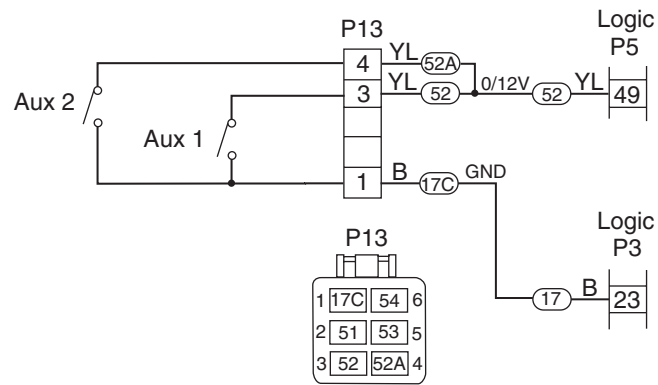
Normal

**(9) Disconnect battery plug, then perform inverter discharging work. See page 1-45.****(10) Replace attachment 1 or 2 switch.****(11) Check continuity between P5-49, P13-3(52) and P13-4(52A).  
Check short circuit between P13-3(52), P13-4(52A) and P13-1(17C).**

Continuity, Not shorted

No continuity, Shorted

**(12) Disconnect battery plug.****(13) Repair or replace main harness.****(14) Replace logic card of logic unit. See page 1-51.**



211389

**Problem: Battery Consumption Too Much ((Lo))****(1) Situation**

Display: "Lo" flickering. Battery low indicator ON. All truck operations inhibited.  
Line contactor OPEN and steering contactor OPEN.

**(2) Possible cause**

Extremely consumed battery, faulty main harness, faulty logic unit.

**(3) How the error code is triggered**

Corrected battery voltage is less than 22 V. Battery voltage is corrected with #46 value.

**(4) Checks**

Disconnect battery plug.

**(5) Check battery voltage.**

22V or more

Less than 22V

(6) Set #46 of Setup Option Group 3. See page 1-33.

(7) Charge battery or replace with new battery.

If fault remains

(8) Perform inverter discharging work. See page 1-45.

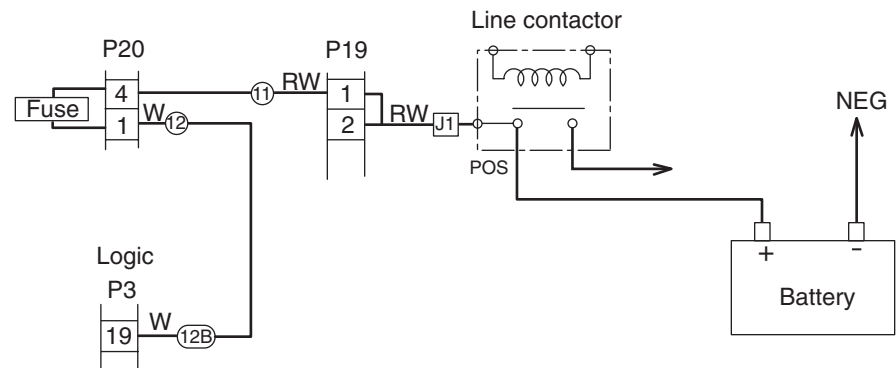
(9) Check continuity between P3-19(12B) and contactor POS(J1).

Continuity

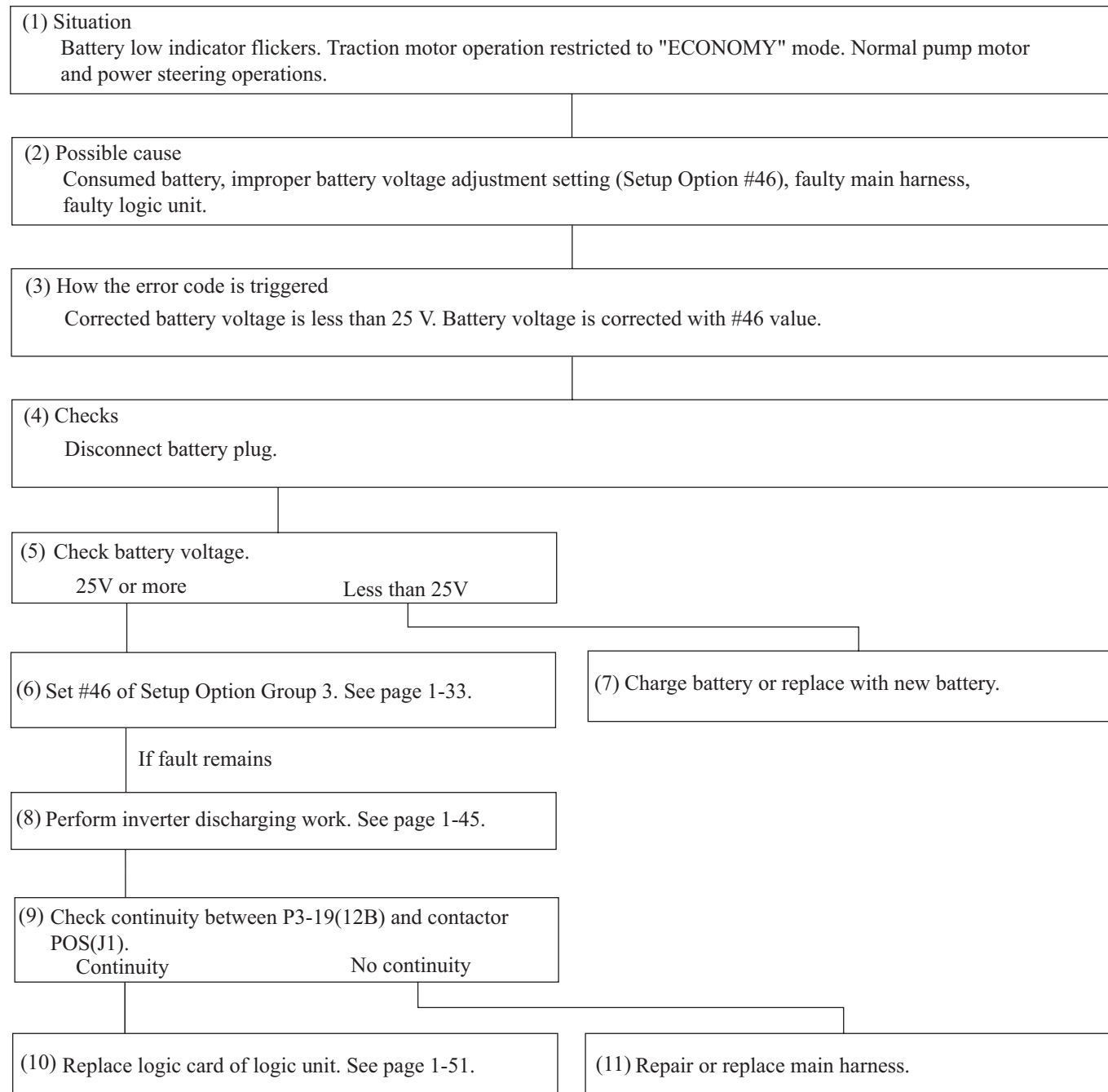
No continuity

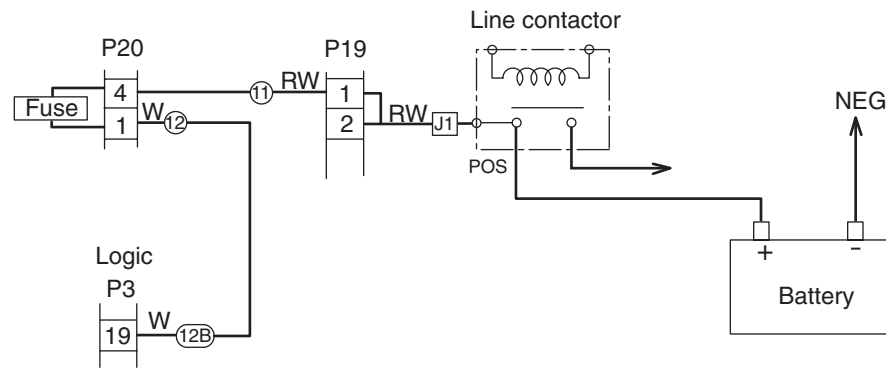
(10) Replace logic card of logic unit. See page 1-51.

(11) Repair or replace main harness.



211384

**Problem: Battery Consumption Much**



211384

