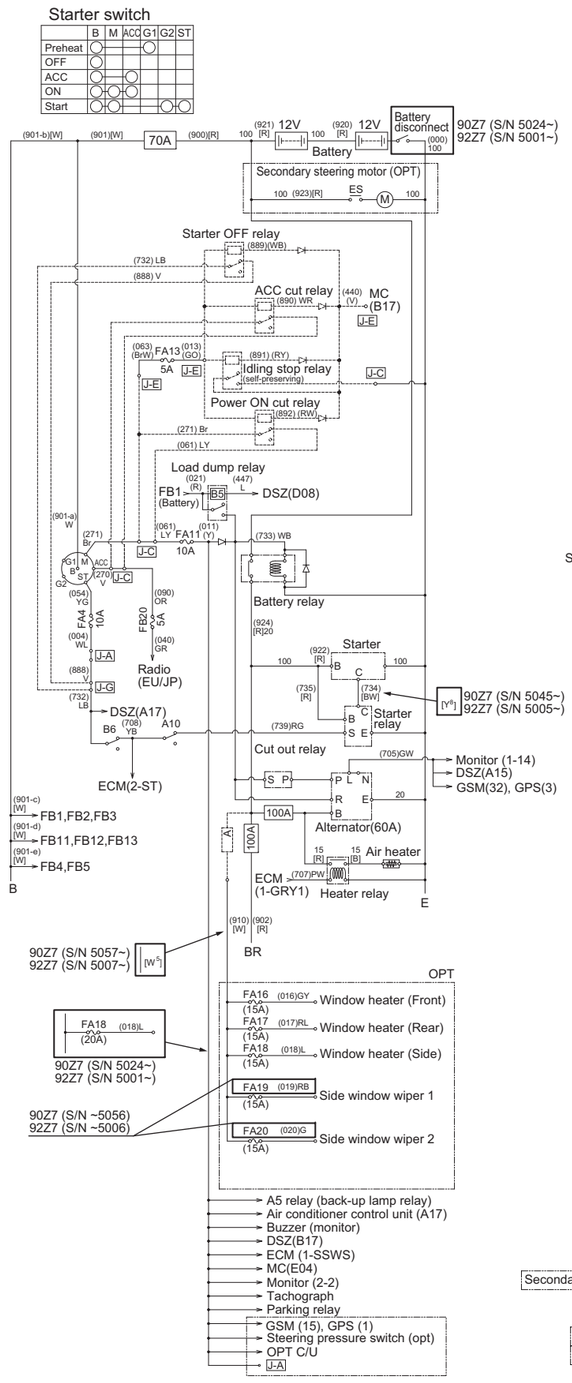
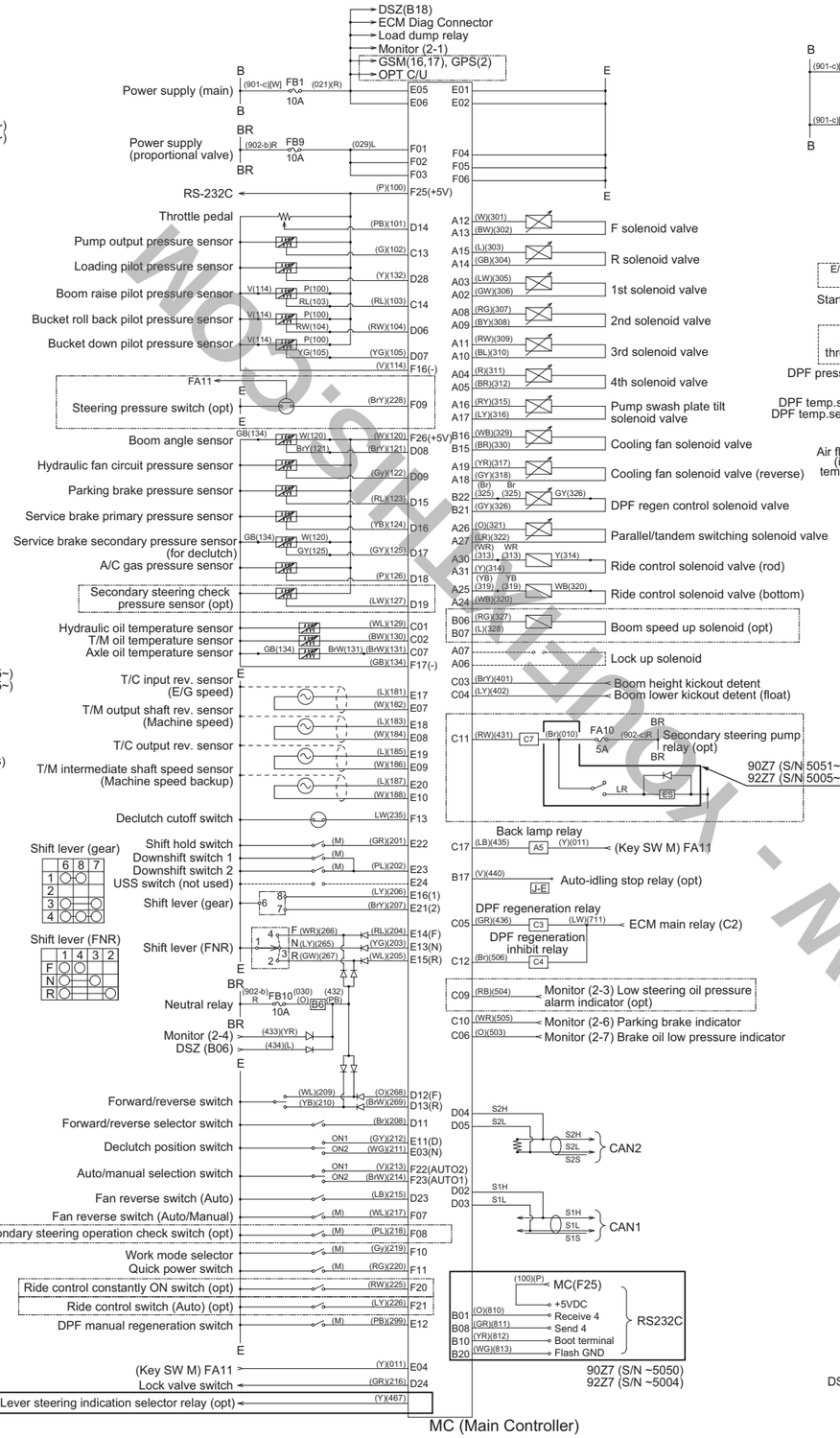
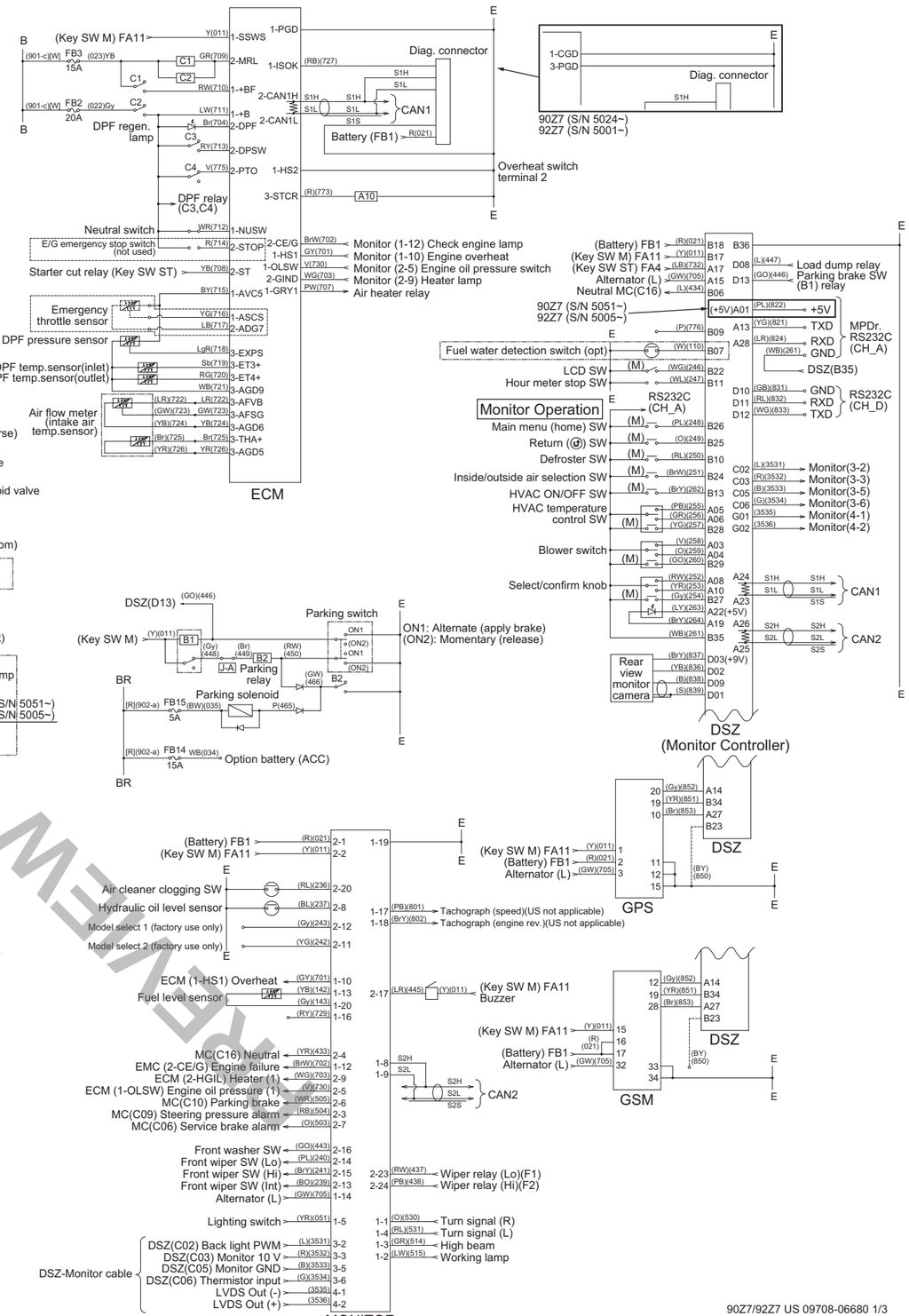
90Z7/92Z7 ELECTRICAL CONNECTION DIAGRAM (1/2)





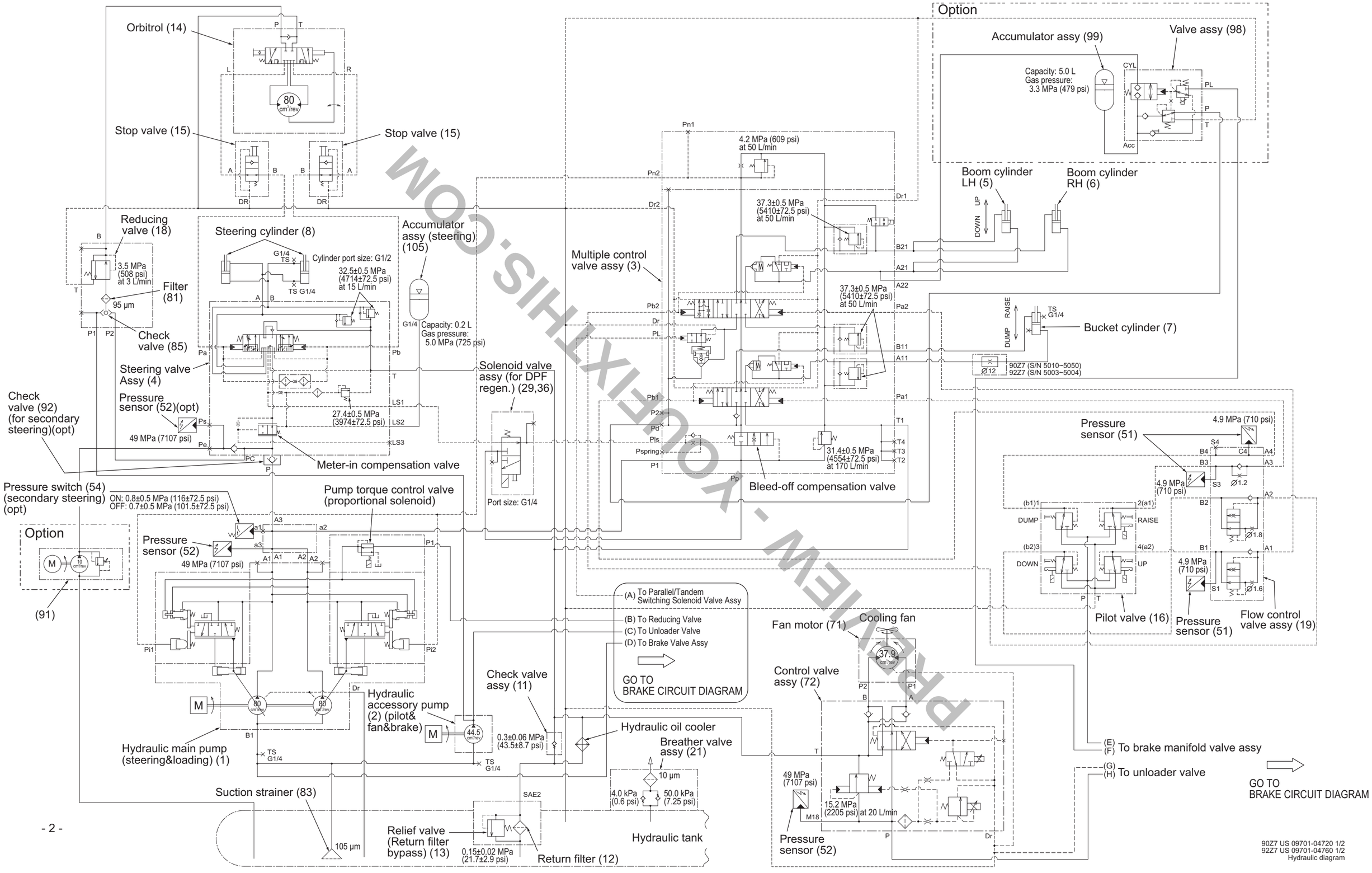


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90Z7/92Z7 US 09708-06680 1/3
09708-07360 1/3

90Z7/92Z7 HYDRAULIC CIRCUIT DIAGRAM



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MPDr. Fault Code Reference Table

Fault Code	MPDr. Message	Category	Reference 1	Reference 2
111000-2	Abnormal EEPROM	MC	T5-5-9	T5-5-45
111001-2	Abnormal RAM	MC	T5-5-9	T5-5-45
111002-2	Abnormal A/D Converter	MC	T5-5-9	T5-5-45
111003-3	Abnormal Sensor Voltage	MC	T5-5-9	T5-5-46
111006-2	(MC) Engine Controller Communication Error	MC	T5-5-10	T5-5-48
111007-2	(MC) Information Controller Communication Error 1	MC	T5-5-10	T5-5-48
111008-2	(MC) Information Controller Communication Error 2	MC	T5-5-10	T5-5-52
111009-2	(MC) Monitor Controller Communication Error 1	MC	T5-5-10	T5-5-48
111010-2	(MC) Monitor Controller Communication Error 2	MC	T5-5-10	T5-5-52
111014-2	(MC) Air Conditioner Controller Communication Error	MC	T5-5-10	T5-5-52
111025-2	(MC) Column Monitor Controller Communication Error	MC	T5-5-10	T5-5-52
111103-3	Accelerator Pedal Circuit High Input	MC	T5-5-11	T5-5-57
111103-4	Accelerator Pedal Circuit Low Input	MC	T5-5-11	T5-5-57
111105-3	Abnormal Engine Speed Sensor	MC	T5-5-11	T5-5-57
111200-3	Lift Arm Raise Pilot Pressure Sensor Circuit High Input	MC	T5-5-13	T5-5-59
111200-4	Lift Arm Raise Pilot Pressure Sensor Circuit Low Input	MC	T5-5-13	T5-5-59
111202-3	Bucket Tilt Pilot Pressure Sensor Circuit High Input	MC	T5-5-13	T5-5-59
111202-4	Bucket Tilt Pilot Pressure Sensor Circuit Low Input	MC	T5-5-13	T5-5-59
111203-3	Bucket Dump Pilot Pressure Sensor Circuit High Input	MC	T5-5-13	T5-5-59
111203-4	Bucket Dump Pilot Pressure Sensor Circuit Low Input	MC	T5-5-13	T5-5-59
111204-3	Pump Delivery Pressure Sensor Circuit High Input	MC	T5-5-12	T5-5-61
111204-4	Pump Delivery Pressure Sensor Circuit Low Input	MC	T5-5-12	T5-5-61
111205-3	Lift Arm Angle Sensor Circuit High Input	MC	T5-5-25	T5-5-58
111205-4	Lift Arm Angle Sensor Circuit Low Input	MC	T5-5-25	T5-5-58
111206-3	Hyd. Fan Circuit Pressure Sensor Circuit High Input	MC	T5-5-12	T5-5-61
111206-4	Hyd. Fan Circuit Pressure Sensor Circuit Low Input	MC	T5-5-12	T5-5-61
111207-3	Refrigerant Pressure Sensor Circuit High Input	MC	T5-5-25	T5-5-58
111207-4	Refrigerant Pressure Sensor Circuit Low Input	MC	T5-5-25	T5-5-58
111208-3	Emergency Steering Check Pressure Sensor Circuit High Input	MC	T5-5-12	T5-5-62
111208-4	Emergency Steering Check Pressure Sensor Circuit High Input	MC	T5-5-12	T5-5-62
111217-3	Pilot Pressure Sensor Circuit High Input	MC	T5-5-14	T5-5-60
111217-4	Pilot Pressure Sensor Circuit Low Input	MC	T5-5-14	T5-5-60
111311-3	Service Brake Primary Pressure Sensor Circuit High Input	MC	T5-5-14	T5-5-63
111311-4	Service Brake Primary Pressure Sensor Circuit Low Input	MC	T5-5-14	T5-5-63
111312-3	Service Brake Secondary Pressure Sensor Circuit High Input	MC	T5-5-15	T5-5-60
111312-4	Service Brake Secondary Pressure Sensor Circuit Low Input	MC	T5-5-15	T5-5-60
111313-3	Parking Brake Pressure Sensor Circuit High Input	MC	T5-5-15	T5-5-63
111313-4	Parking Brake Pressure Sensor Circuit Low Input	MC	T5-5-15	T5-5-63

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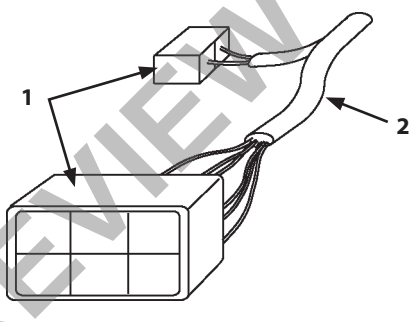
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Troubleshooting B (Machine Diagnosis by Using Troubleshooting Symptom) Procedure

Refer to troubleshooting B procedures for diagnosis by using trouble symptom when no fault codes are displayed.

- Diagnosis Procedure
  - The diagnosis procedures for the observed machine abnormality without any fault codes are explained in this group.
  - Perform diagnosis by using MPDr. or the service menu of monitor first.
  - In case any fault code has not been displayed by diagnosis, perform inspection according to the procedures when diagnosing.
  - When the fault code is displayed, refer to the troubleshooting A group and diagnose.
  - On the front section pages of this group, there are the tables indicating the relationship between machine trouble symptoms and related parts which may cause such trouble if failed. Start the troubleshooting with more probable causes selected by referring to these tables.

NOTE: Harness end connector viewed from the open end side by the all connectors image shown in this section.



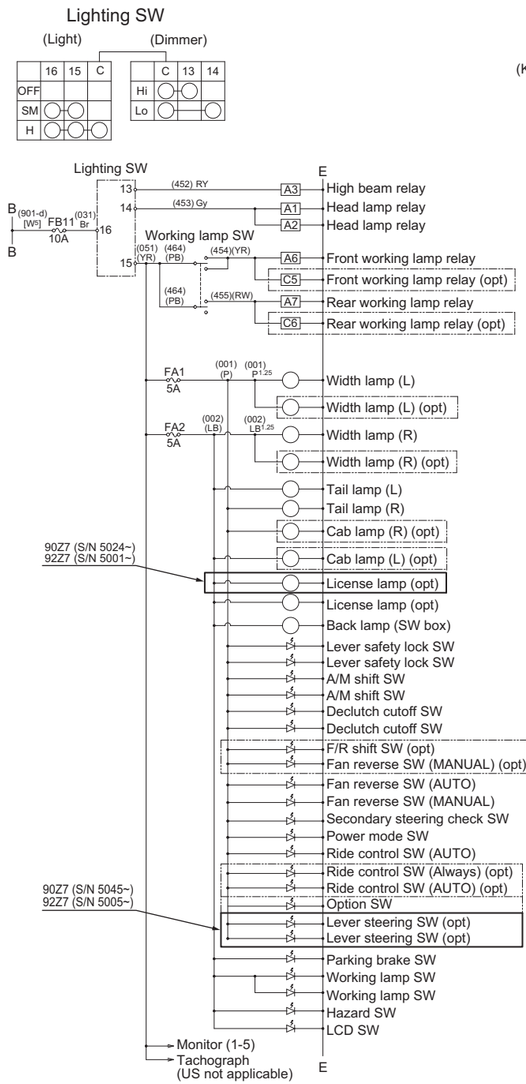
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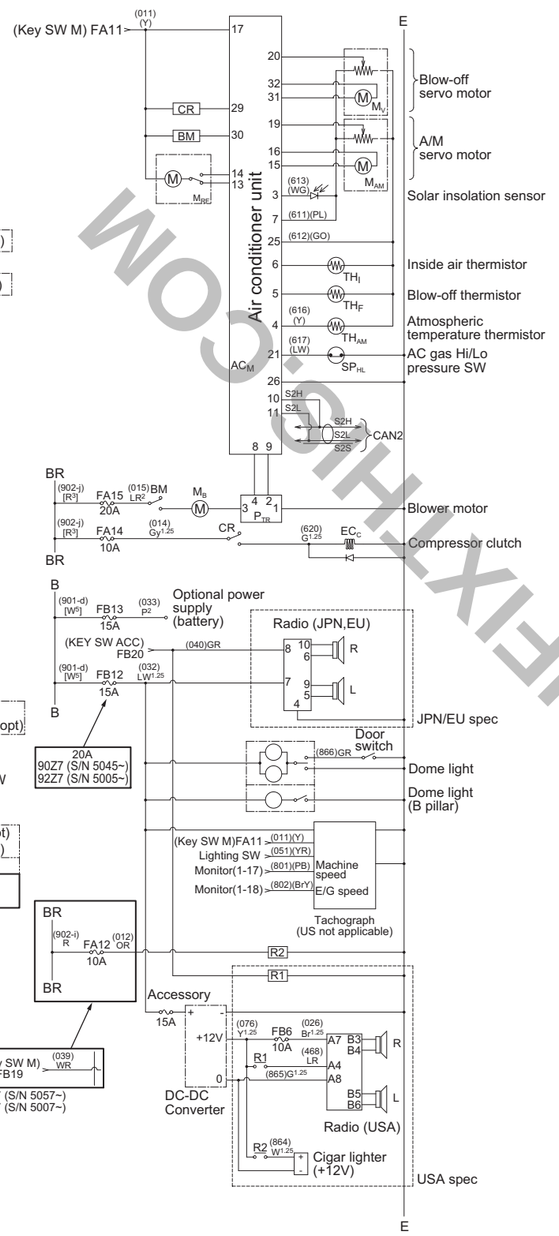
1- Harness End Connector 2- Harness

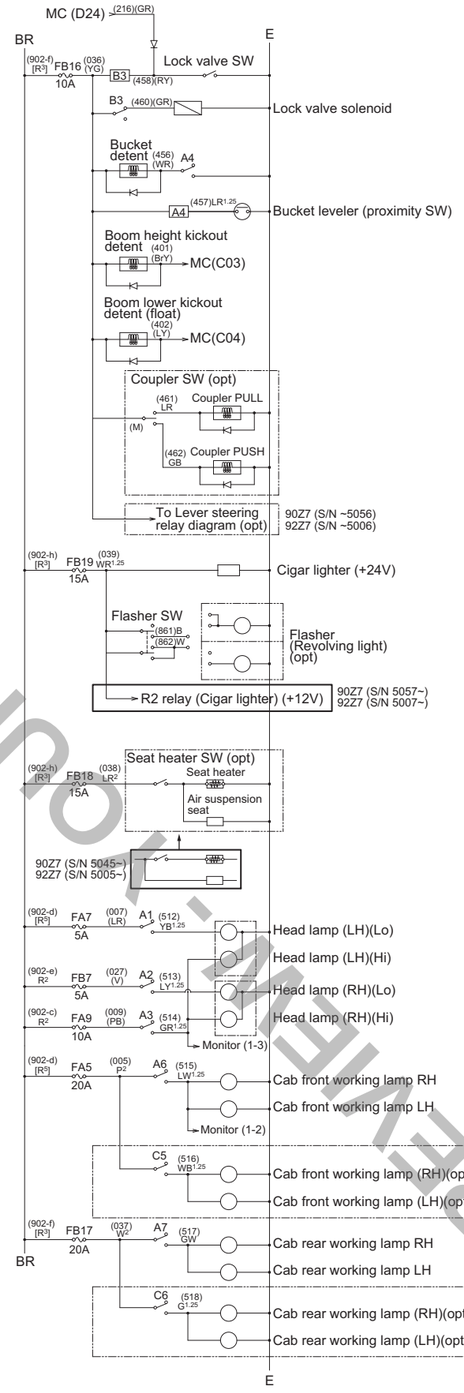
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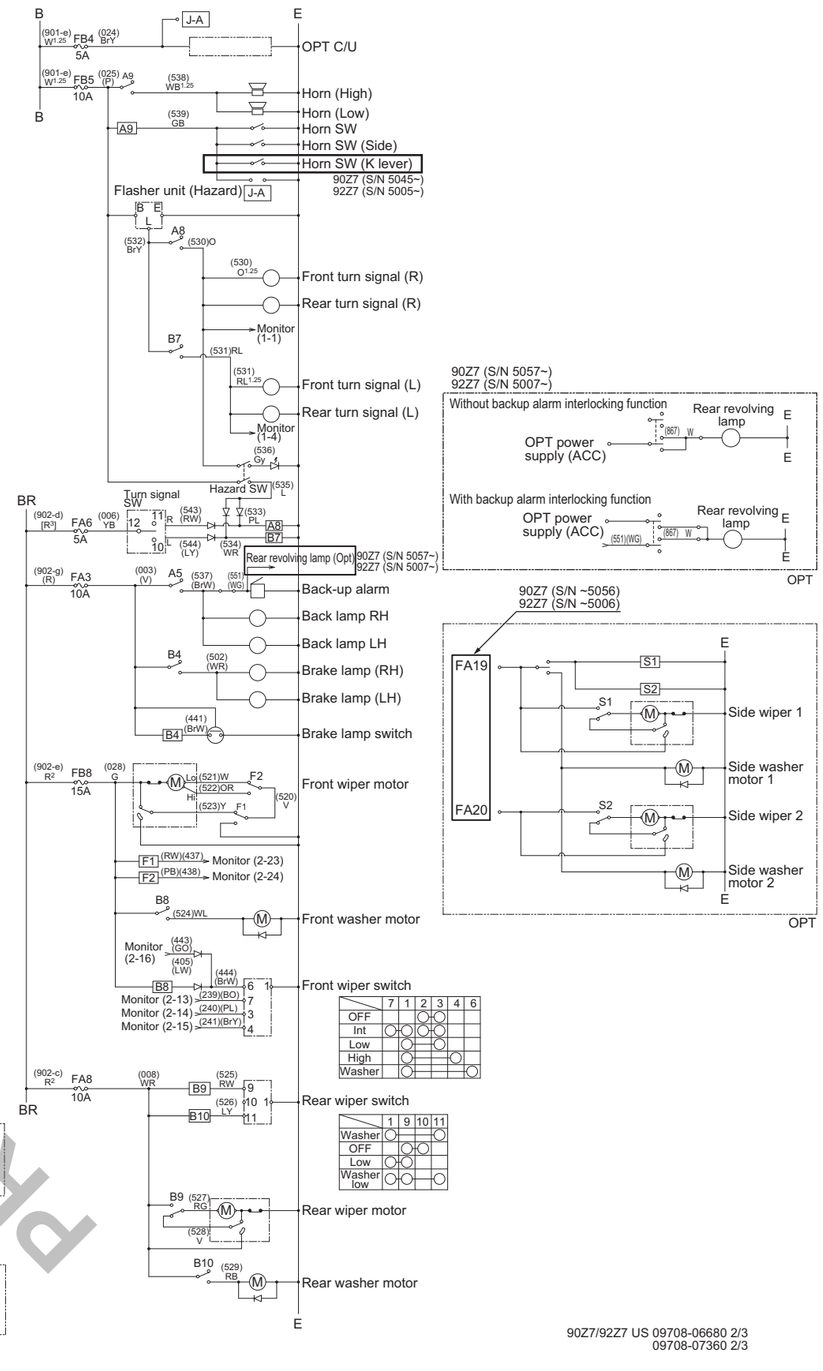
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90Z7/92Z7 ELECTRICAL CONNECTION DIAGRAM (2/2)





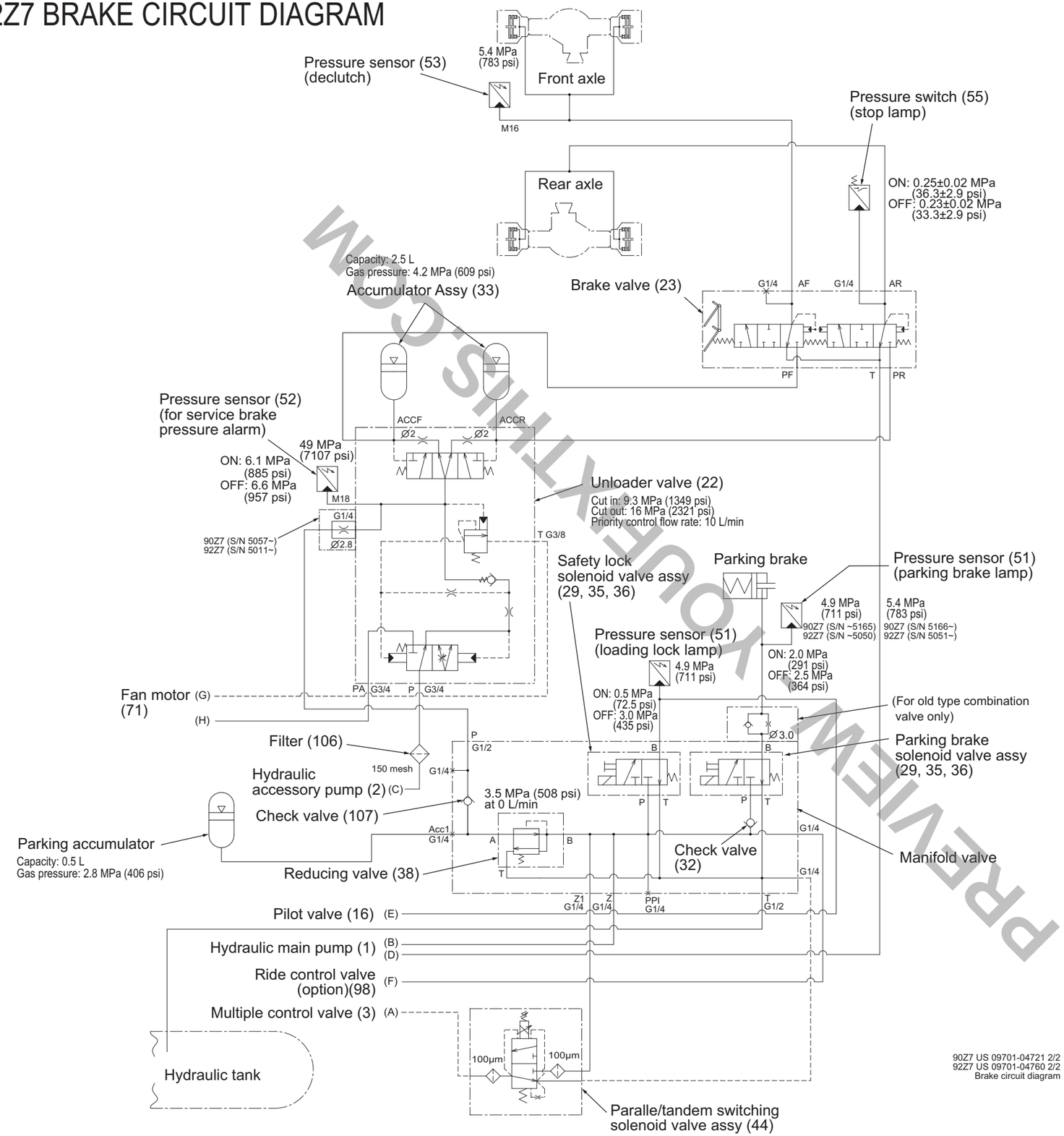




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90Z7/92Z7 BRAKE CIRCUIT DIAGRAM



90Z7 US 09701-04721 2/2
92Z7 US 09701-04760 2/2
Brake circuit diagram

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MPDr. Fault Code Reference Table (Continued)

Fault Code	MPDr. Message	Category	Reference 1	Reference 2
111406-2	Muffler Filter Regeneration Control P/S Valve Abnormal FB	MC	T5-5-16	T5-5-64
111406-3	Muffler Filter Regeneration Control P/S Valve FB High Current	MC	T5-5-16	T5-5-64
111406-4	Muffler Filter Regeneration Control P/S Valve FB Low Current	MC	T5-5-16	T5-5-64
111407-2	Lift Speed Increase P/S Valve Abnormal FB	MC	T5-5-16	T5-5-65
111407-3	Lift Speed Increase P/S Valve FB High Current	MC	T5-5-16	T5-5-65
111407-4	Lift Speed Increase P/S Valve Low Current	MC	T5-5-16	T5-5-65
111410-2	Parallel/Tandem Control P/S Valve Abnormal FB	MC	T5-5-17	T5-5-66
111410-3	Parallel/Tandem Control P/S Valve FB High Current	MC	T5-5-17	T5-5-66
111410-4	Parallel/Tandem Control P/S Valve FB Low Current	MC	T5-5-17	T5-5-66
111411-2	Hydraulic Fan Reverse Rotation P/S Valve Abnormal FB	MC	T5-5-17	T5-5-67
111411-3	Hydraulic Fan Reverse Rotation P/S Valve FB High Current	MC	T5-5-17	T5-5-67
111411-4	Hydraulic Fan Reverse Rotation P/S Valve FB Low Current	MC	T5-5-17	T5-5-67
111412-2	Hyd. Fan P/S Valve Abnormal Feedback	MC	T5-5-18	T5-5-68
111412-3	Hyd. Fan P/S Valve Feedback High Current	MC	T5-5-18	T5-5-68
111412-4	Hyd. Fan P/S Valve Feedback Low Current	MC	T5-5-18	T5-5-68
111413-2	Pump Swash Angle P/S Valve Abnormal FB	MC	T5-5-18	T5-5-69
111413-3	Pump Swash Angle P/S Valve FB High Current	MC	T5-5-18	T5-5-69
111413-4	Pump Swash Angle P/S Valve FB Low Current	MC	T5-5-18	T5-5-69
111414-2	T/M Clutch 1st P/S Valve Abnormal FB	MC	T5-5-20	T5-5-70
111414-3	T/M Clutch 1st P/S Valve FB High Current	MC	T5-5-20	T5-5-70
111414-4	T/M Clutch 1st P/S Valve FB Low Current	MC	T5-5-20	T5-5-70
111415-2	T/M Clutch 2nd P/S Valve Abnormal FB	MC	T5-5-20	T5-5-70
111415-3	T/M Clutch 2nd P/S Valve FB High Current	MC	T5-5-20	T5-5-70
111415-4	T/M Clutch 2nd P/S Valve FB Low Current	MC	T5-5-20	T5-5-70
111416-2	T/M Clutch 3rd P/S Valve Abnormal FB	MC	T5-5-20	T5-5-70
111416-3	T/M Clutch 3rd P/S Valve FB High Current	MC	T5-5-20	T5-5-70
111416-4	T/M Clutch 3rd P/S Valve FB Low Current	MC	T5-5-20	T5-5-70
111417-2	T/M Clutch 4th P/S Valve Abnormal FB	MC	T5-5-20	T5-5-70
111417-3	T/M Clutch 4th P/S Valve FB High Current	MC	T5-5-21	T5-5-70
111417-4	T/M Clutch 4th P/S Valve FB Low Current	MC	T5-5-21	T5-5-70
111418-2	T/M Clutch Forward P/S Valve Abnormal FB	MC	T5-5-21	T5-5-70
111418-3	T/M Clutch Forward P/S Valve FB High Current	MC	T5-5-21	T5-5-70
111418-4	T/M Clutch Forward P/S Valve FB Low Current	MC	T5-5-21	T5-5-70
111419-2	T/M Clutch Reverse P/S Valve Abnormal FB	MC	T5-5-21	T5-5-70
111419-3	T/M Clutch Reverse P/S Valve FB High Current	MC	T5-5-21	T5-5-70
111419-4	T/M Clutch Reverse P/S Valve FB Low Current	MC	T5-5-21	T5-5-70

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Contents of Diagnosis

Trouble Symptom

Preparation

Viewpoints for a diagnosis and contents needing inspection beforehand are explained.

How to Read Table

Procedure	Inspection Method	Condition	Evaluation	Cause
(A)	(B)	(C)	(D)	(E)
(F)	(G)	(H)	(I)	(J)

- A, F: Inspection order
- B, G: Inspection method for trouble cause
- C, H: Conditions for inspection
- D, I: Evaluation specification of check results
- E, J: Trouble cause for trouble symptom

Procedure:

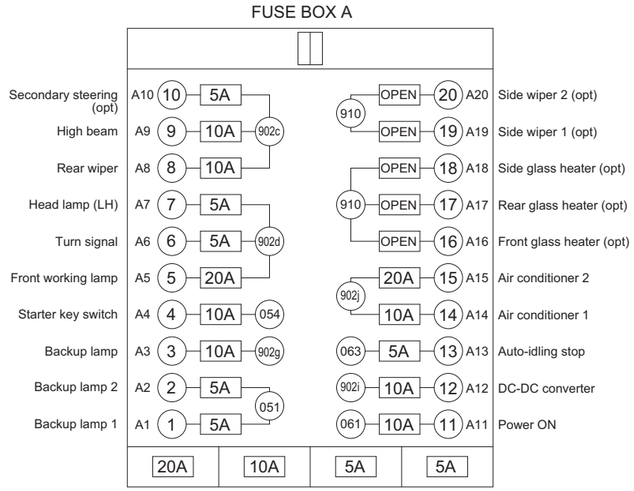
1. Perform inspection according to Inspection Method (B) and Condition (C) of Procedure (A).
2. In case the results are applied to Evaluation (D), the trouble cause becomes Cause (E).

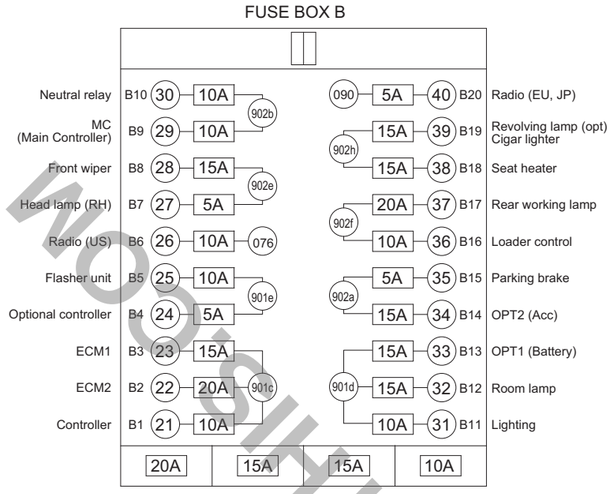
   In case the results are not applied to Evaluation (D), go to the next procedure, Procedure (F).

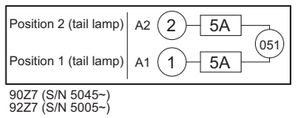
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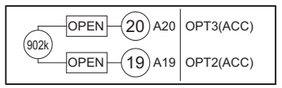
90Z7/92Z7 Fuse Box and Relay Box



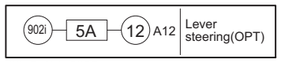




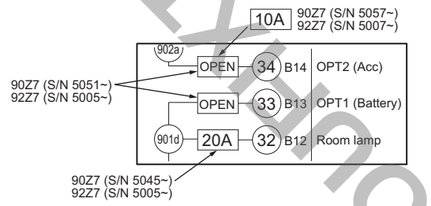
90Z7 (S/N 5045~)
92Z7 (S/N 5005~)



90Z7 (S/N 5057~)
92Z7 (S/N 5007~)

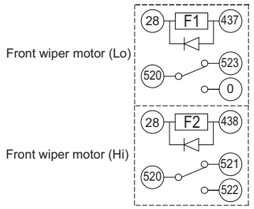


90Z7 (S/N 5057~)
92Z7 (S/N 5007~)

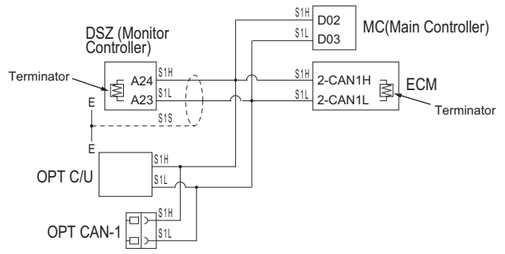


90Z7 (S/N 5051~)
92Z7 (S/N 5005~)

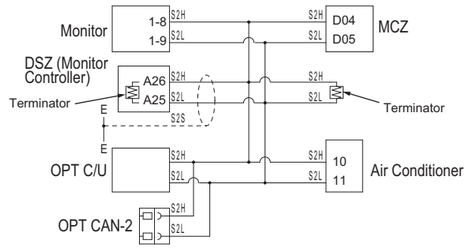
90Z7 (S/N 5045~)
92Z7 (S/N 5005~)

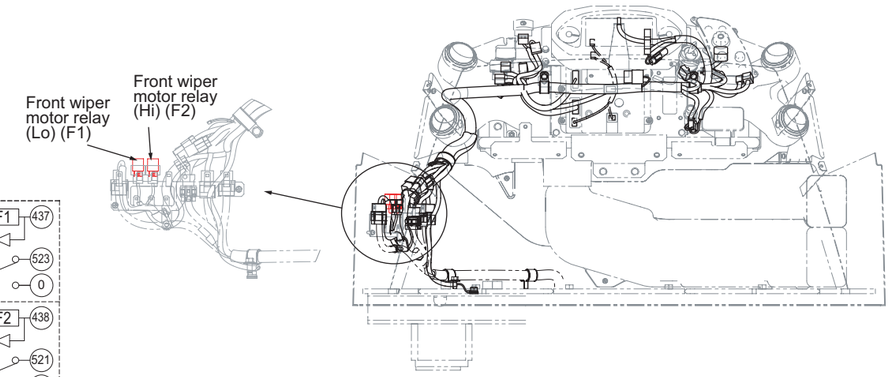


CAN1 (J1939) Power Train

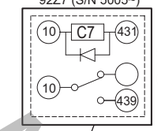


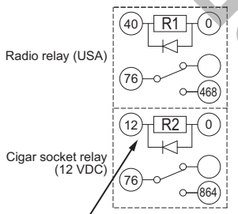
CAN1 (J1939) Machine Control

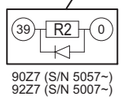




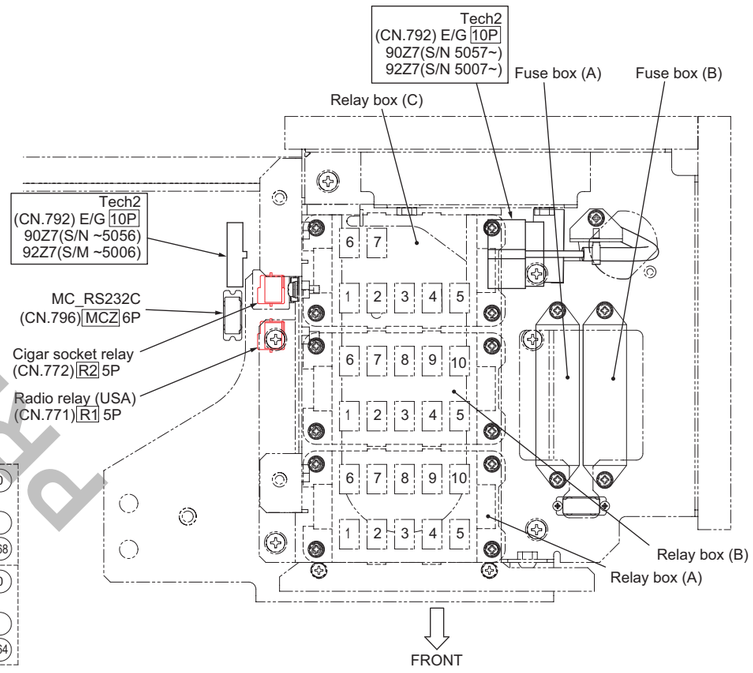
Location of Wiper Motor Relays (Floor board - Front console wiring)



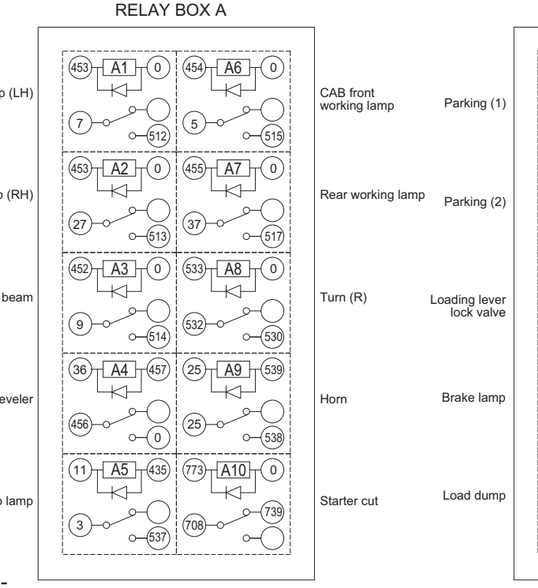


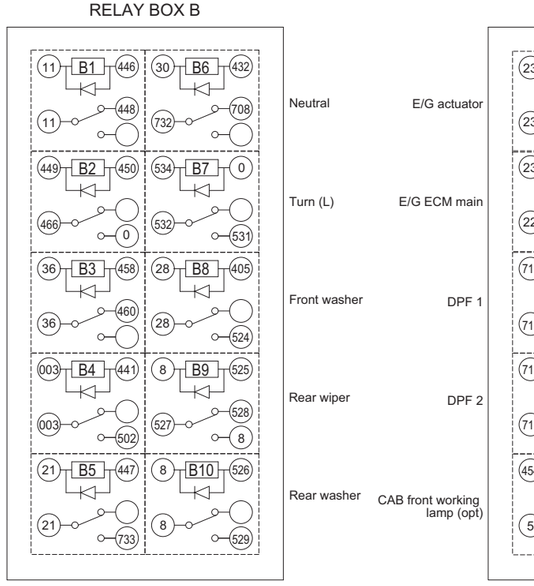


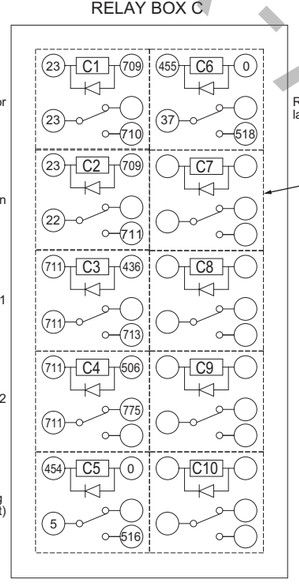
90Z7 (S/N 5057~)
92Z7 (S/N 5007~)



Relay Box, Fuse Box (Floor board - Rear console wiring)







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09708-07360 3/3
03255-02190 2/3
90Z7/92Z7 Fuse & Relay

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MPDr. Fault Code Reference Table (Continued)

Fault Code	MPDr. Message	Category	Reference 1	Reference 2
111422-2	Ride Control (Bottom) P/S Valve Abnormal FB	MC	T5-5-19	T5-5-71
111422-3	Ride Control (Bottom) P/S Valve FB High Current	MC	T5-5-19	T5-5-71
111422-4	Ride Control (Bottom) P/S Valve FB Low Current	MC	T5-5-19	T5-5-71
111423-2	Ride Control (Rod) P/S Valve Abnormal FB	MC	T5-5-19	T5-5-72
111423-3	Ride Control (Rod) P/S Valve FB High Current	MC	T5-5-19	T5-5-72
111423-4	Ride Control (Rod) P/S Valve FB Low Current	MC	T5-5-19	T5-5-72
111600-3	T/M Out Speed Sensor Failure	MC	T5-5-22	T5-5-63
111600-4	T/M Out Speed Sensor Circuit Low Input	MC	T5-5-22	T5-5-63
111601-3	Torque Converter Output Speed Sensor Failure	MC	T5-5-22	T5-5-63
111602-3	Intermediate Shaft Speed Sensor Failure	MC	T5-5-22	T5-5-63
111700-xx	Calibration Abort Forward	MC	T5-5-23	T5-5-76, 77
111700-31	Calibration Abort Forward: Un-Calibration	MC	T5-5-23	T5-5-77
111701-xx	Calibration Abort Reverse	MC	T5-5-23	T5-5-76, 77
111701-31	Calibration Abort Reverse: Un-Calibration	MC	T5-5-23	T5-5-77
111702-xx	Calibration Abort 1st	MC	T5-5-23	T5-5-76, 77
111702-31	Calibration Abort 1st: Un-Calibration	MC	T5-5-23	T5-5-77
111703-xx	Calibration Abort 2nd	MC	T5-5-23	T5-5-76, 77
111703-31	Calibration Abort 2nd: Un-Calibration	MC	T5-5-23	T5-5-77
111704-xx	Calibration Abort 3rd	MC	T5-5-23	T5-5-76, 77
111704-31	Calibration Abort 3rd: Un-Calibration	MC	T5-5-23	T5-5-77
111705-xx	Calibration Abort 4th	MC	T5-5-23	T5-5-76, 77
111705-31	Calibration Abort 4th: Un-Calibration	MC	T5-5-23	T5-5-77
111720-2	Lift arm angle sensor is uncalibrated.	MC	T5-5-23	-
111900-3	Torque Converter Oil Temperature Sensor Circuit High Input	MC	T5-5-24	T5-5-73
111900-4	Torque Converter Oil Temperature Sensor Circuit Low Input	MC	T5-5-24	T5-5-73
111901-3	Hyd. Oil Temp Sensor Circuit High Input	MC	T5-5-24	T5-5-74
111901-4	Hyd. Oil Temp Sensor Circuit Low Input	MC	T5-5-24	T5-5-74
111902-3	Axle Oil Temperature Sensor Circuit High Input	MC	T5-5-24	T5-5-75
111902-4	Axle Oil Temperature Sensor Circuit Low Input	MC	T5-5-24	T5-5-75
111904-2	Column FNR SW Failure	MC	T5-5-23	-
111905-2	Implement FNR SW Failure	MC	T5-5-23	-

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Relationship between Machine Trouble Symptoms and Related Parts

This table indicates the relationship between machine trouble symptoms and the potential problem parts, which may cause trouble if failed, and the evaluation methods of these components.

Parts / Item	MC (Main Controller)	Accelerator Pedal (Accelerator Pedal Sensor)	Travel Mode Selector Switch
Function	Controls engine, pump, and valve operation.	Instructs target engine speed according to accelerator pedal depressing amount.	Shifts the travel mode into AUTO 1, AUTO 2, and Manual modes.
Symptoms in control system when trouble occurs	Depending on trouble situations, control system malfunction may differ. (The following symptoms in machine operation indicates that MC logic circuit has failed.)	MC holds engine speed in 1000 min^{-1}.	MC holds the travel mode in Manual mode.
Symptoms in machine operation when trouble occurs	The engine speed is fixed to 1000 min^{-1}. As pump displacement is held at minimum, all actuator speeds are slow.	Although the accelerator pedal is operated during exhaust filter manual regeneration, hydraulic load is not released.	Open circuit: Travel mode is always Manual mode. Shorted circuit: Travel mode is always AUTO 1/ AUTO 2 mode.
Evaluation by Fault Code	111000, 111001, 111002, 111003	111103	-
Evaluation by Monitoring	-	MC: Demand Engine Speed ECM: Actual Engine Speed	MC: Travel Mode Selector Switch
Evaluation by using Test Harness	-	-	-
Note	-	See p. T5-5-57 for the accelerator pedal sensor.	-
Descriptions of Control (Refer to F&S S/M)	T2-2	T2-2	T2-2

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SECTION AND GROUP CONTENTS

SHOP MANUAL

(Function & Structure)

All information, illustrations and specifications in this manual are based on the latest product information available at the time of publication. The right is reserved to make changes at any time without notice.

SECTION 1 GENERAL

Group 1 Specifications	
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SECTION 2 SYSTEM

Group 1 Controller	
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SECTION 3 COMPONENT OPERATION

Group 1 Pump Device	
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Group 6 Pilot Valve	
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Group 9 Axle	
Group 10 Brake Valve	
Group 11 Others	

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To The Reader

This manual is written for trained and skilled technicians to provide technical information needed to maintain and repair this machine.

- Be sure to thoroughly read this manual for correct product information and service procedures.

Additional References

Please refer to the other materials (Operation and Maintenance Manual, parts catalog, engine technical material and Kawasaki Shop Manual, etc.) in addition to this manual.

Manual Composition

This manual consists the Technical Manual, the Workshop Manual and the Engine Manual.

- Information included in the Technical Manual: Technical information needed for machine pre-delivery and delivery, operation and activation of all devices and systems, operational performance tests, and troubleshooting procedures.
- Information included in the Workshop Manual: Technical information needed for maintenance and repair of the machine, tools and devices needed for maintenance and repair, maintenance standards, and removal / installation and assembly / disassembly procedures.
- Information included in the Engine Manual: Technical information needed for machine pre-delivery and delivery and maintenance and repair of the engine, operation and activation of all devices and systems, troubleshooting and assembly / disassembly procedures.

Page Number

Each page has a number, located on the center lower part of the page, and each number contains the following information:

Example:

- Shop Manual: T 1-3-5

T	Technical Manual
1	Section Number
3	Group Number
5	Consecutive Page Number for Each Group

- Workshop Manual: W 1-3-2-5

W	Workshop Manual (disassembly and reassembly)
1	Section Number
3	Group Number
2	Sub Group Number
5	Consecutive Page Number for Each Group

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Base Torque Control

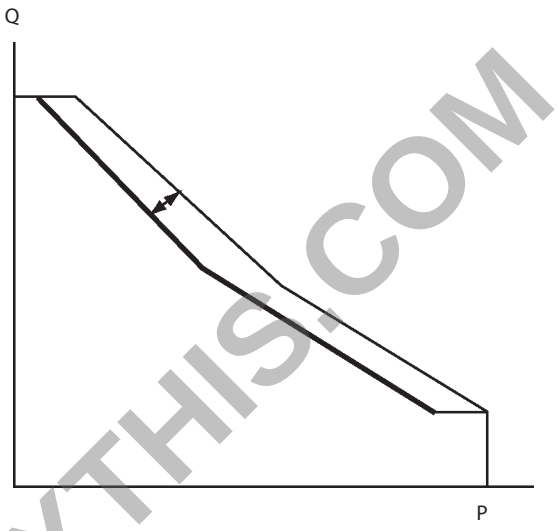
Purpose:
The base, or standard, torque control controls the hydraulic pump delivery flow rate in response to the engine speed changes due to variations in load so that the engine output power can be used more efficiently.

Operation:

1. Torque converter input speed sensor (19) sends an engine speed signal to Main Controller (MC) (3).
2. MC (3) sends a signal to hydraulic pump load torque control solenoid valve (30) relative to the actual engine speed as communicated by CAN communication (5) from ECM (10).
3. Torque control solenoid valve (30) delivers pilot pressure oil to the regulator depending on the signal received to control the pump delivery flow rate.

NOTE: The calculated values of MC (3) are different at low temperature and at high temperature.

NOTE: Refer to Torque Decrease Control While Dumping Bucket while dumping the bucket.

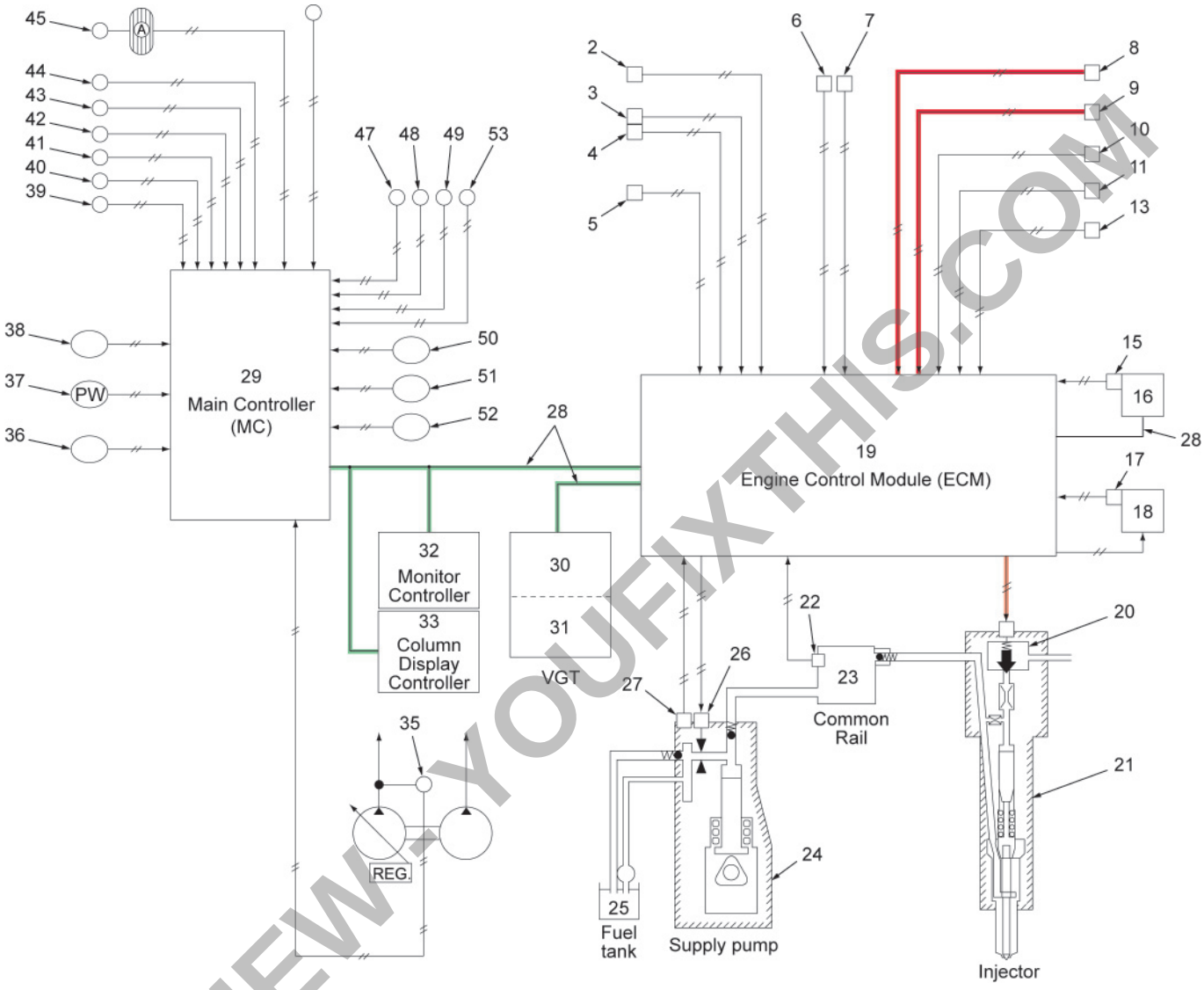


TNED-02-02-024

P - Pressure Q - Flow Rate

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90Z7-02-03-EC02

2- Atmospheric Pressure Sensor
3- Intake-Air Temperature Sensor
4- Mass Air Flow (MAF) Sensor
5- Exhaust Filter Differential Pressure Sensor
6- Diesel Oxidation Catalyst (DOC) Exhaust Temperature Sensor
7- Diesel Particulate Filter Exhaust Temperature Sensor
8- Engine Speed Sensor (Main)
9- Engine Speed Sensor (Sub)
10- Coolant Temperature Sensor
11- Boost Pressure Sensor
13- Engine Oil Pressure Sensor
15- EGR Motor Position Sensor
16- EGR Motor
17- Intake Throttle Position Sensor
18- Intake Throttle
19- Engine Control Module (ECM)
20- Two-Way Valve
21- Injector
22- Common Rail Pressure Sensor
23- Common Rail
24- Supply Pump
25- Fuel Tank
26- Suction Control Valve
27- Fuel Temperature Sensor
28- Controller Area Network (CAN)
29- Main Controller (MC)
30- Variable Geometry Turbo (VGT) Controller
31- VGT Actuator
32- Monitor Controller
33- Column Display Controller
35- Pump Delivery Pressure Sensor
36- Declutch Position Switch
37- Power Mode Selector Switch
38- Driving Mode Switch
39- Lift Arm (Boom) Angle Sensor
40- Pressure Sensor (Parking Brake)
41- Pressure Sensor (Lift Arm (Boom) Raise)
42- Pressure Sensor (Bucket Roll Back)
43- Pressure Sensor (Bucket Dump)
44- Pressure Sensor (Brake Secondary Pressure)
45- Accelerator Pedal Sensor
46- Hydraulic Oil Temperature Sensor
47- Torque Converter Input Speed Sensor
48- Torque Converter Output Speed Sensor
49- Machine Speed Sensor
50- Shift Switch
51- Forward/Reverse Lever
52- Forward/Reverse Switch
53- Transmission Middle Gear Revolution Sensor

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Electric Power Circuit (Key Switch: OFF)

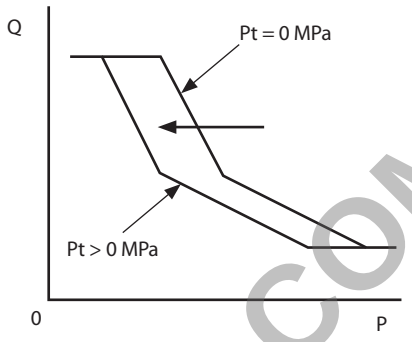
The battery (1) minus terminal is grounded to the chassis. Current from the battery (1) plus terminal flows as shown below when key switch (4) is in the OFF position.

Battery (1)	Fusible Link A (3)	Key Switch (4) Terminal B		
		Fuse Box B (5)	Terminal #11	Light Switch (19)
			Terminal #12	Cab Light (20)
				Radio (Backup Power) (21)
			Terminal #13	Auxiliary (Power) (22)
			Terminal #4	Auxiliary (Power) (14)
			Terminal #5	Flasher Unit (15)
				Hazard Light Switch (16)
				Horn (Power) (17)
			Terminal #1	Load Dump Relay (6)
				Main Controller (Power) (7)
				Monitor Controller (Power) (8)
				Column Display Controller (Power) (9)
			Terminal #2	ECM Main (Power) (12)
			Terminal #3	ECM Actuator (Power) (13)

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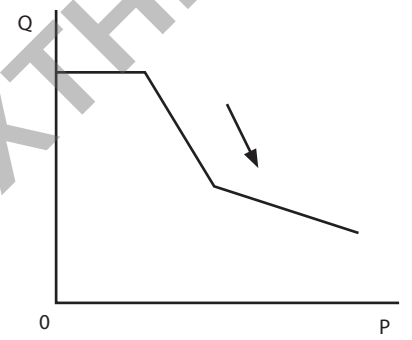
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- Control by Pilot Pressure from Torque Control Solenoid Valve
  MC (Main Controller) calculates the operating conditions of the machine and, using the calculation, the MC sends the pump torque control solenoid the appropriate signal for correct valve.
  The torque control solenoid valve (Tc) delivers torque control pressure (Pt) to the regulator in response to this signal.
  When this pressure (Pt) increases, the flow rate decreases limiting spool (8) movement to the left, thus prevents the servo piston control pressure (Ps2) from lowering to the minimum level. Also servo piston (14) movement to Ps2 side is limited and the maximum pump delivery flow rate decreases. (Torque Shift Control)



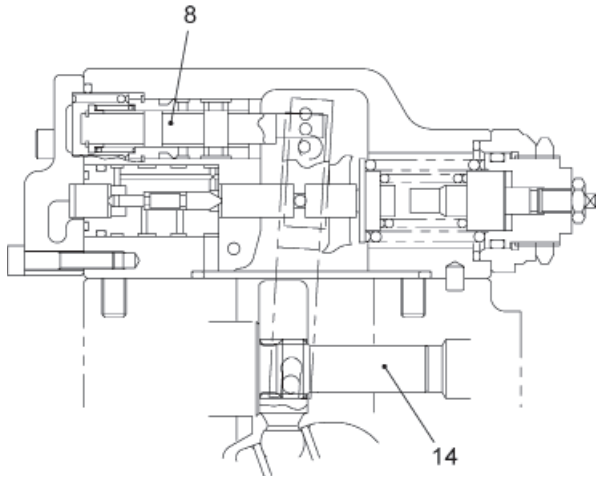
Q- Flow Rate P- Pressure

- Maximum Torque Control
  Servo piston control spool (8) is operated by the resultant pressure FC (Pp1 + Pp2). (See the previous page)
  When the main pump delivery flow (input torque) is below the specified maximum level, the spring force (SF) exceeds the pressure force (FC) to operate servo piston spool (8), and the pump delivery flow rate can keep at the maximum.
  When the main pump delivery flow (input torque) reaches the specified maximum level or more, the pressure force (FC) exceeds the spring force (SF) and moves servo piston spool (8) right to decrease the pump delivery flow rate.



Q- Flow Rate P- Pump Delivery Pressure

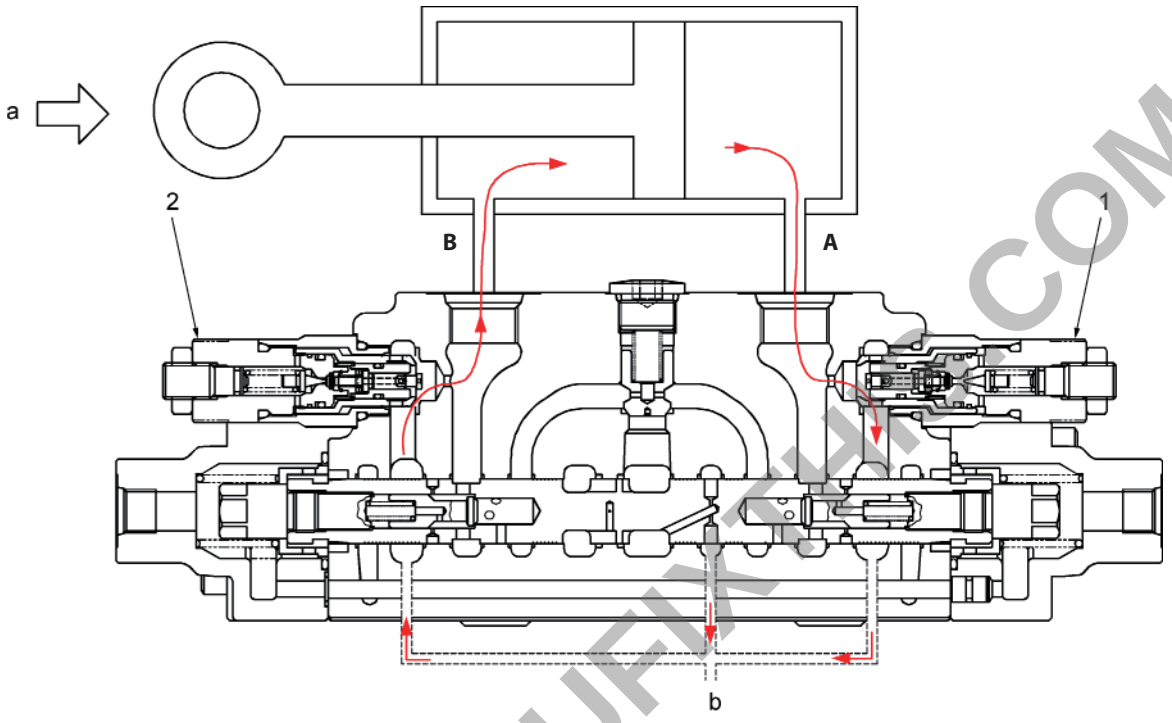
NOTE: According to the rise of pump delivery pressure, the tilting angle of swash plate automatically decreases, and the pump torque is controlled at a constant level.



90Z7-03-01-06

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90Z7-03-05-08

NOTE: The steering valve for the 90Z7 is shown above.

a- External Force

b- To Tank

1- Overload Relief Valve (Overload Relief Function)

2- Overload Relief Valve (Make-Up Function)

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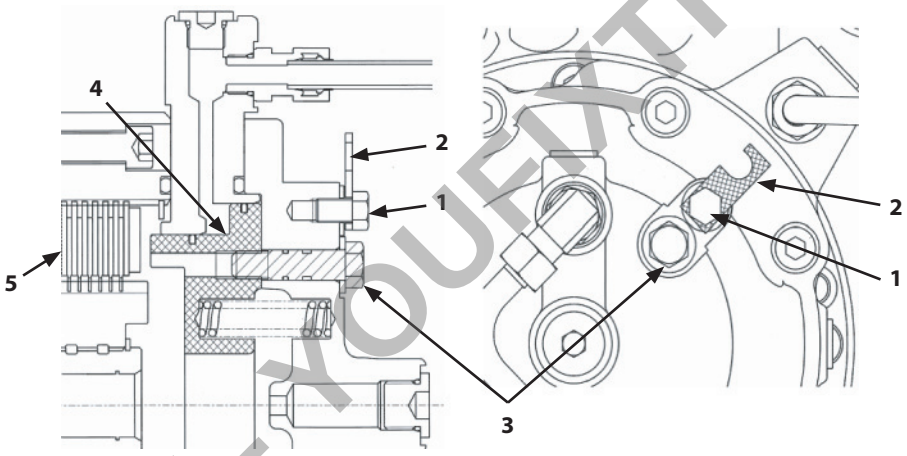
Parking Brake Manual Release

WARNING: Sudden accidental movement of the machine could result in serious injury or death. Before manually operating the parking brake solenoid:

- **Lower the boom and attachment to the ground.**
- **Place chocks on both sides of the tires.**
- **Be sure the machine is in neutral and engine is stopped.**

If the parking brake cannot be released due to an engine or electrical problem, such as a failed parking brake solenoid valve coil or electrical circuit, perform the following operation.

1. Loosen bolts (1) and turn plates (2) to release it from manual release bolts (3) (at two positions).
2. Press two manual release bolts (3) until both reach to brake piston (4).
3. Tighten manual release bolts (3) alternately and evenly. This returns brake piston (4).
4. Further tighten bolts (3) until you feel they are rather tight; the brake is released.



90Z7-03-08-15

1- Bolt
2- Plate
3- Bolt for Parking Brake Manual Release
4- Brake Piston
5- Disc Brake

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90Z7 S/N 5051~ FLOOR WIRING DIAGRAM (Rear Console) (1/2)
92Z7 S/N 5005~ FLOOR WIRING DIAGRAM (Rear Console) (1/2)

To Floor Wiring Diagram (Rear Console) (2/2)

A

E: To floor side console (1) (p.19)

A: To front chassis (p.7)

E: To floor side console (2) (p.19)

D: To transmission (p.15)

B: To floor front console (p.17)

C: To rear chassis (p.14)

To CAB (p.28)

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90/92Z7 33194-42390
33194-42950

Brake Warning Pressure (Pressure-Increasing)

CAUTION: If air is mixed in the brake system, the brake function is reduced and serious hazard may occur. Bleed air from the brake system after removing and installing the pipe lines and replacing hydraulic oil. (Refer to Troubleshooting B.)

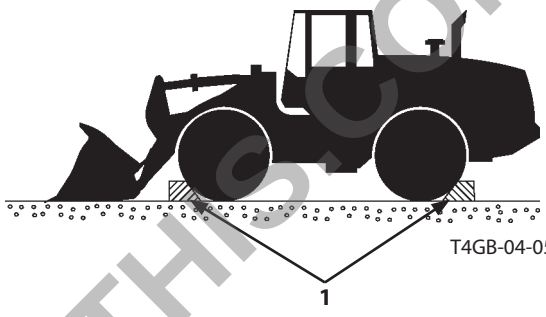
Summary:

Measure the pressure at the accumulator output port when the low pressure alarm indicator turns OFF while increasing the accumulated brake pressure.

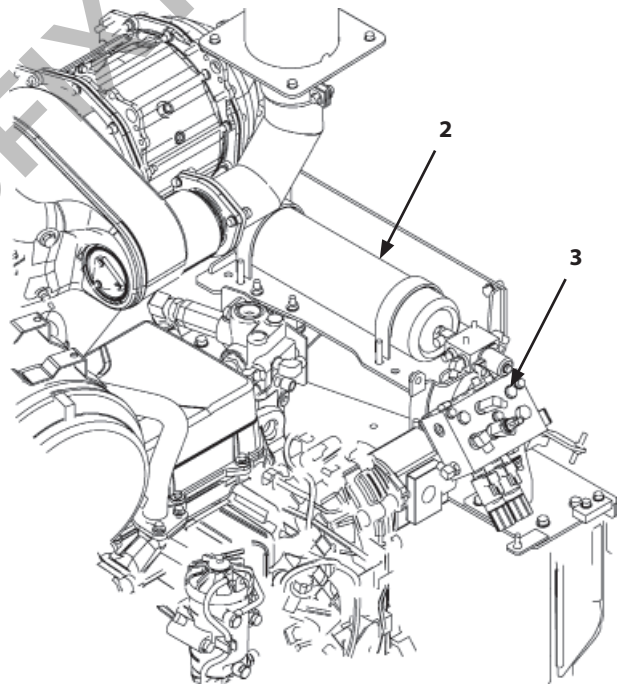
Preparation:

CAUTION: Set blocks (1) at the front and rear tires in order not to move the machine. Keep away from the front or back of the machine.

1. Stop the engine.
2. Push the air bleed valve on top of the hydraulic oil tank and bleed air.
3. Depress the brake pedal at least 50 strokes in order to decrease the accumulated pressure left in accumulator (2) circuit.
4. Remove plug (3) on the manifold block of combination valve.
   Install the pressure gauge to the port.
5. Start the engine. Confirm that no oil leakage is observed at the pressure gauge connection.
6. Maintain the hydraulic oil temperature at 55±5°C (131±9°F).



T4GB-04-05-017



90TNED-04-05-01a

2- Brake Accumulator
3- Plug

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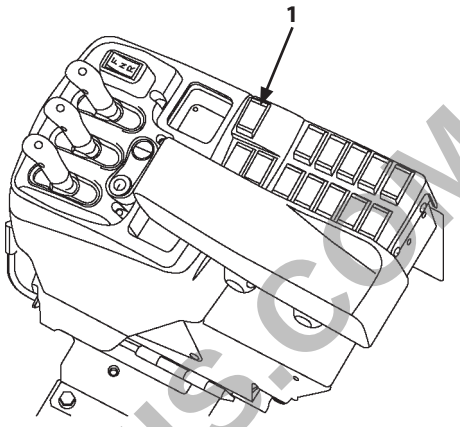
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Lift Arm Angle Sensor Learning

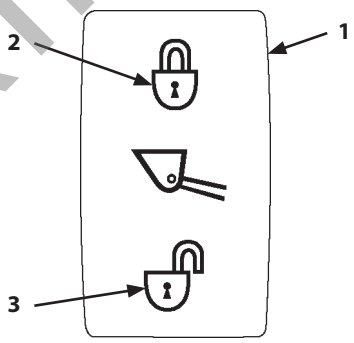
IMPORTANT: When lift arm angle sensor has been replaced, perform lift arm angle sensor learning.

Preparation:

1. Start the engine.
2. Set front control lever lock switch (1) to UNLOCK Position (3).
3. Raise lift arms to the highest level by lift arm raise operation.
4. Set front control lever lock switch (1) to LOCK Position (2).
5. Set the key switch to the OFF position.



MNEC-01-041



MNEC-01-015

2- LOCK 3- UNLOCK

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Fault Code	Trouble or MP Dr. Message	Cause	Symptoms in Machine Operation When Trouble Occurs	Remedy
113303-2	Abnormal thermistor temperature (monitor inside temperature)	Thermistor temperature: 85°C (185°F) or more	The screen of the monitor becomes dark.	Cool the monitor and so on until the temperature inside the monitor is less than 85°C (185°F). Replace the monitor.

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Parts / Item	Parking Brake Switch	Front Control Lever Lock Switch	Pilot Shut-Off Solenoid Valve
Function	Shifts parking brake solenoid valve.	Shifts pilot shut-off (control lever lock) solenoid valve.	Opens and closes the front pilot circuit.
Symptoms in control system when trouble occurs	Same as shown below.	Same as shown below.	Same as shown below.
Symptoms in machine operation when trouble occurs	Although the parking brake switch is turned ON/OFF, the parking brake is not released/ applied with the engine running.	Open circuit: Front control lever lock switch is always OFF. Pilot shut-off solenoid valve is not shifted. The lift arm and bucket are not operated although the control lever is operated with the front control lever lock switch set in UNLOCK position. Shorted circuit: Front control lever lock switch is always ON.	When closed: The lift arm and bucket are not operated. (Pilot pressure oil is not supplied to pilot valve.) When open: Pilot pressure oil is always supplied to pilot valve.
Evaluation by Fault Code	-	-	-
Evaluation by Monitoring	Column Display Controller: Parking Brake Signal Output	MC: Pilot Primary Pressure	-
Evaluation by using Test Harness	-	-	-
Note	Although the parking brake is turned OFF, the parking brake is applied with the engine stopped.	-	The pilot shut-off solenoid valve can be manually turned ON/OFF.
Descriptions of Control (Refer to F&S S/M)	T2-2, T2-5	T2-4	T2-5

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T-8 Speed shift is not held when pushing hold switch.

Preparation

- Check that the travel mode is AUTO 1/AUTO 2 mode.
- Refer to SYSTEM / Control System / Shift Holding Control (p. T2-2-38).
- Check the wiring connections first.

Procedure	Inspection Method	Condition	Evaluation	Cause
1	Monitor Shift Hold Switch	Hold switch: ON	OFF is displayed	Faulty shift hold switch Open circuit in harness between shift hold switch and main controller (MC)
2	-	-	The check (1) above resulted normal.	Faulty MC

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