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1. STRUCTURE

This service manual has been prepared as an aid to improve the quality of repairs by giving the serviceman an accurate understanding of the product and by showing him the correct way to perform repairs and make judgements. Make sure you understand the contents of this manual and use it to full effect at every opportunity.

This service manual mainly contains the necessary technical information for operations performed in a service workshop.

For ease of understanding, the manual is divided into the following sections.

SECTION 1 GENERAL

This section explains the safety hints and gives the specification of the machine and major components.

SECTION 2 STRUCTURE AND FUNCTION

This section explains the structure and function of each component. It serves not only to give an understanding of the structure, but also serves as reference material for troubleshooting.

SECTION 3 HYDRAULIC SYSTEM

This section explains the hydraulic circuit, single and combined operation.

SECTION 4 ELECTRICAL SYSTEM

This section explains the electrical circuit, monitoring system and each component. It serves not only to give an understanding electrical system, but also serves as reference material for trouble shooting.

SECTION 5 MECHATRONICS SYSTEM

This section explains the computer aided power optimization system and each component.

SECTION 6 TROUBLESHOOTING

This section explains the troubleshooting charts correlating **problems** to **causes**.

SECTION 7 MAINTENANCE STANDARD

This section gives the judgement standards when inspecting disassembled parts.

SECTION 8 DISASSEMBLY AND ASSEMBLY

This section explains the order to be followed when removing, installing, disassembling or assembling each component, as well as precautions to be taken for these operations.

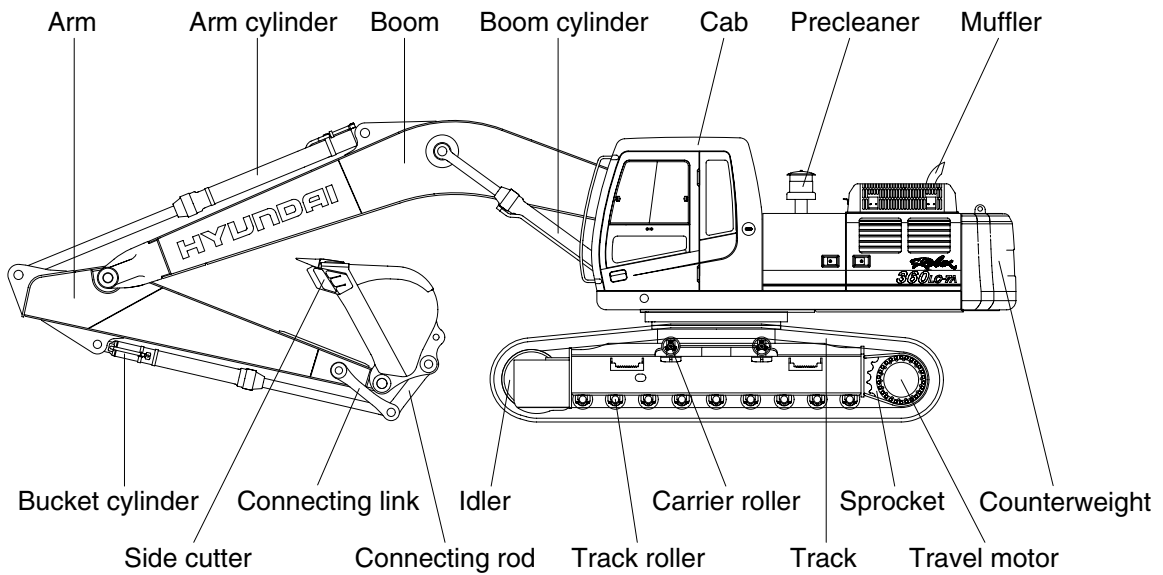
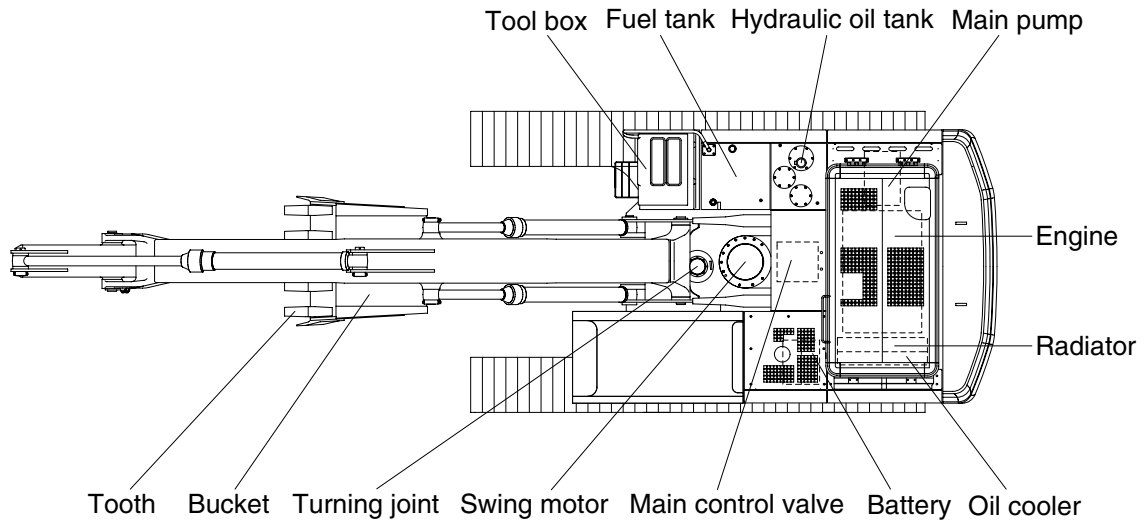
SECTION 9 COMPONENT MOUNTING TORQUE

This section shows bolt specifications and standard torque values needed when mounting components to the machine.

The specifications contained in this shop manual are subject to change at any time and without any advance notice. Contact your HYUNDAI distributor for the latest information.

GROUP 2 SPECIFICATIONS

1. MAJOR COMPONENT



3607A2SP00

9. RECOMMENDED OILS

Use only oils listed below or equivalent.

Do not mix different brand oil.

| Service point | Kind of fluid | Capacity l (U.S. gal) | Ambient temperature °C (°F) | | | | | | |
|------------------------------|--|--------------------------|-------------------------------------|-------------|-----------|------------|------------|------------|-------------|
| | | | -20 (-4) | -10 (14) | 0 (32) | 10 (50) | 20 (68) | 30 (86) | 40 (104) |
| Engine oil pan | Engine oil | 31.7(8.4) | SAE 30 | | | | | | |
| | | | SAE 10W | | | | | | |
| | | | SAE 10W-30 | | | | | | |
| | | | SAE 15W-40 | | | | | | |
| Swing drive | Gear oil | 8.0(2.1) | SAE 85W-140 | | | | | | |
| Final drive | | 5.5 × 2 (1.5 × 2) | | | | | | | |
| Hydraulic tank | Hydraulic oil | Tank; 230(61) | ISO VG 32 | | | | | | |
| | | System; 380(100) | ISO VG 46 | | | | | | |
| | | | ISO VG 68 | | | | | | |
| Fuel tank | Diesel fuel | 520(137) | ASTM D975 NO.1 | | | | | | |
| | | | ASTM D975 NO.2 | | | | | | |
| Fitting (Grease nipple) | Grease | As required | NLGI NO.1 | | | | | | |
| | | | NLGI NO.2 | | | | | | |
| Radiator (Reservoir tank) | Mixture of antifreeze and water 50 : 50 | 45(12) | Ethylene glycol base permanent type | | | | | | |

SAE : Society of Automotive Engineers

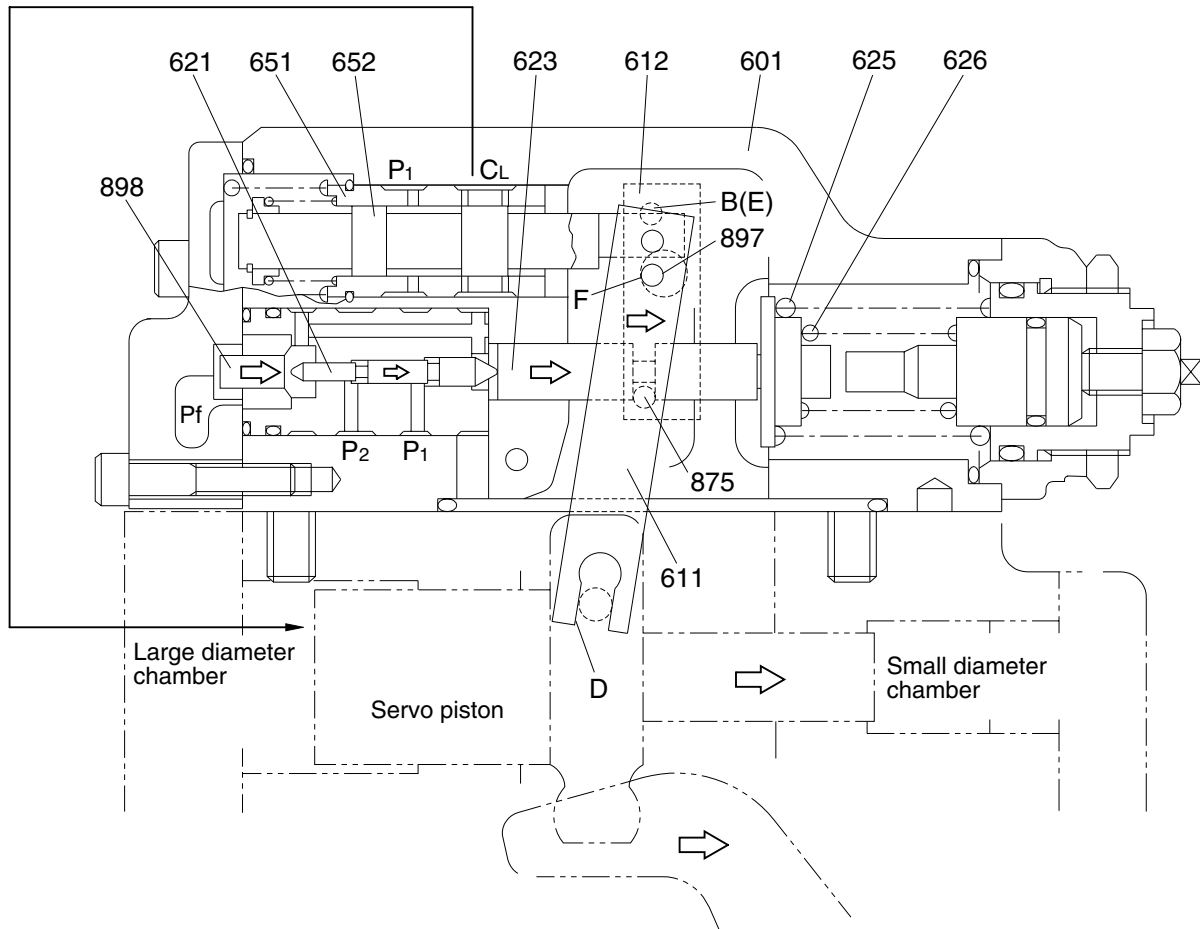
API : American Petroleum Institute

ISO : International Organization for Standardization

NLGI : National Lubricating Grease Institute

ASTM : American Society of Testing and Material

(3) Power shift control



R130RE13

The set horsepower valve is shifted by varying the command current level of the proportional pressure reducing valve attached to the pump. Only one proportional pressure reducing valve is provided.

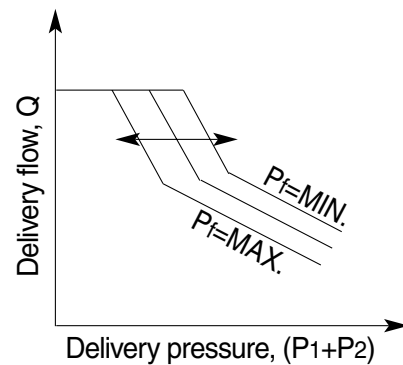
However, the secondary pressure P_f (power shift pressure) is admitted to the horsepower control section of each pump regulator through the pump's internal path to shift it to the same set horsepower level.

This function permits arbitrary setting of the pump output power, thereby providing the optimum power level according to the operating condition.

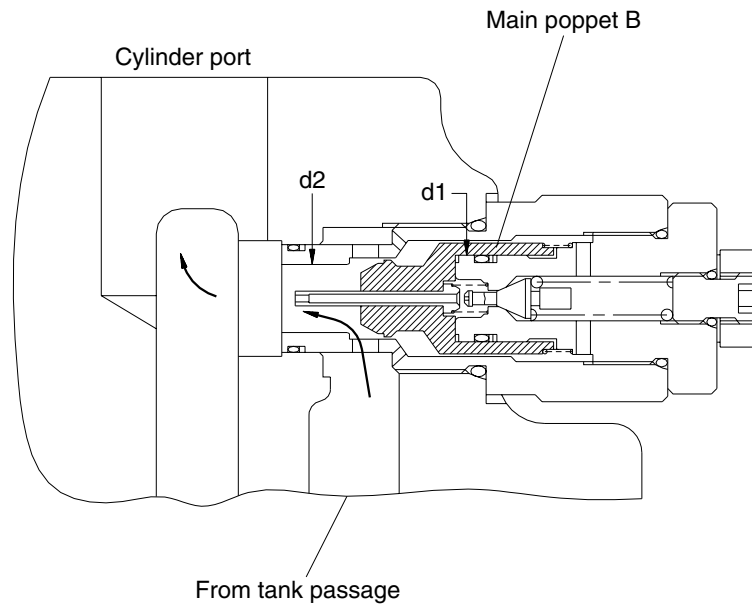
The power shift pressure P_f controls the set horsepower of the pump to a desired level, as shown in the figure.

As the power shift pressure P_f rises, the compensating rod (623) moves to the right via the pin (898) and compensating piston (621).

This decreases the pump tilting angle and then the set horsepower in the same way as explained in the overload preventive function of the horsepower control. On the contrary, the set horsepower rises as the power shift pressure P_f falls.



② Make up operation



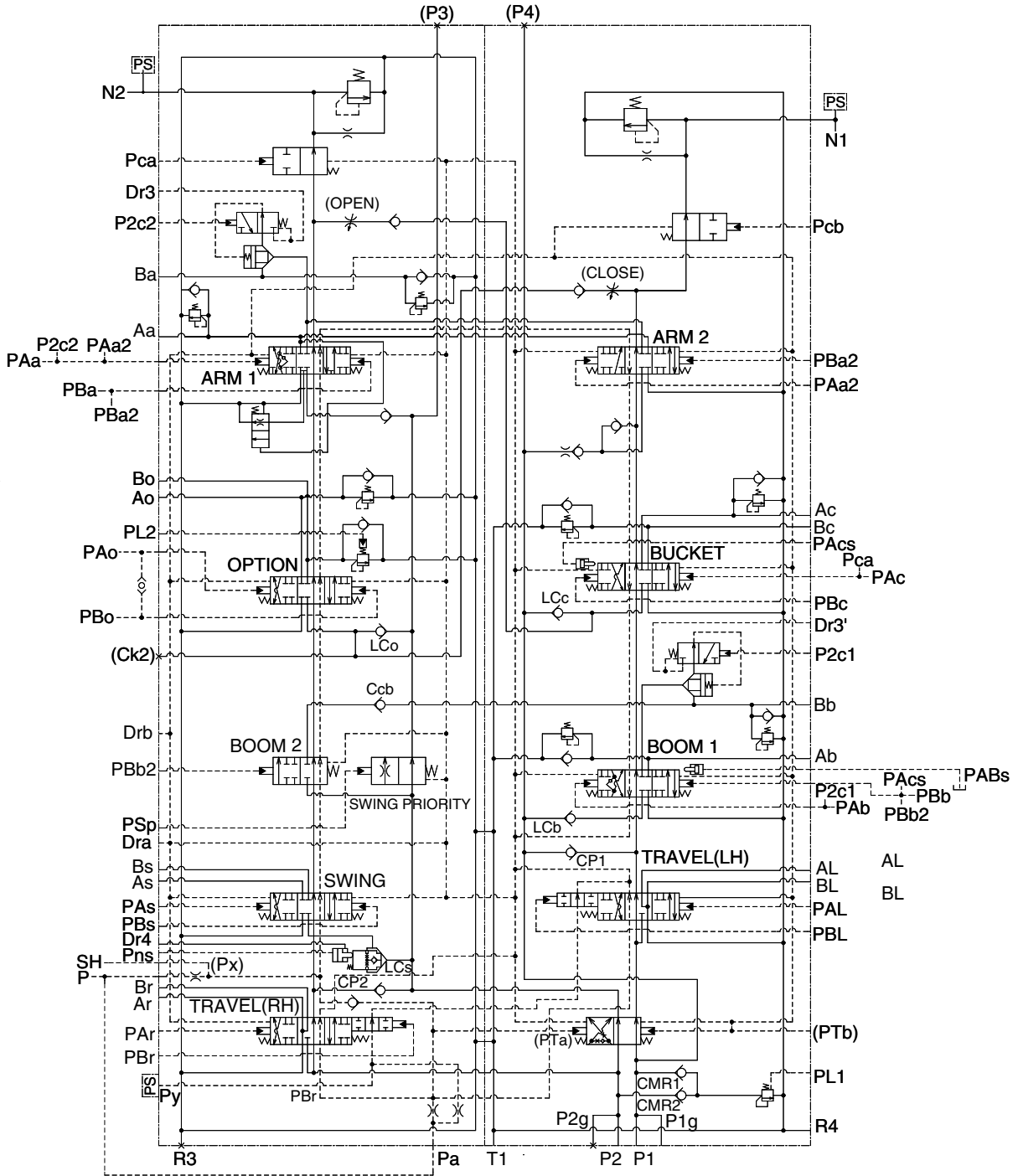
360SMCV16

Poppet (B) is securely seated because the cylinder port pressure is normally higher than the tank pressure and $d1 > d2$.

When the cylinder port pressure drops (closer to negative pressure) until the cylinder port pressure is lower than the tank pressure, poppet (B) opens receiving the tank pressure for the difference in area between $d1$ and $d2$; oil flows from the tank passage to the cylinder port in order to prevent cavitation.

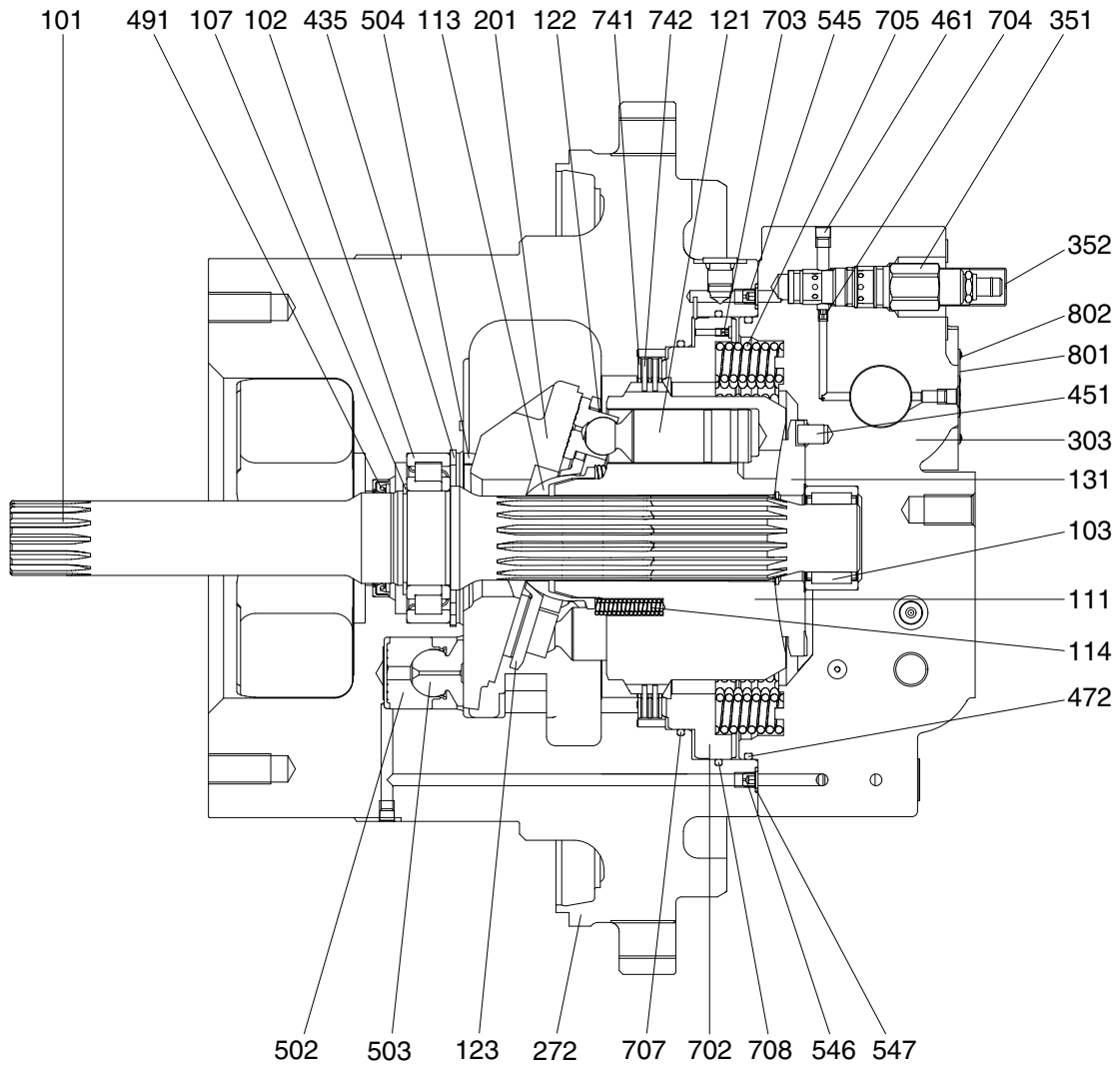
2. FUNCTION

1) HYDRAULIC CIRCUIT



3607A2MC13

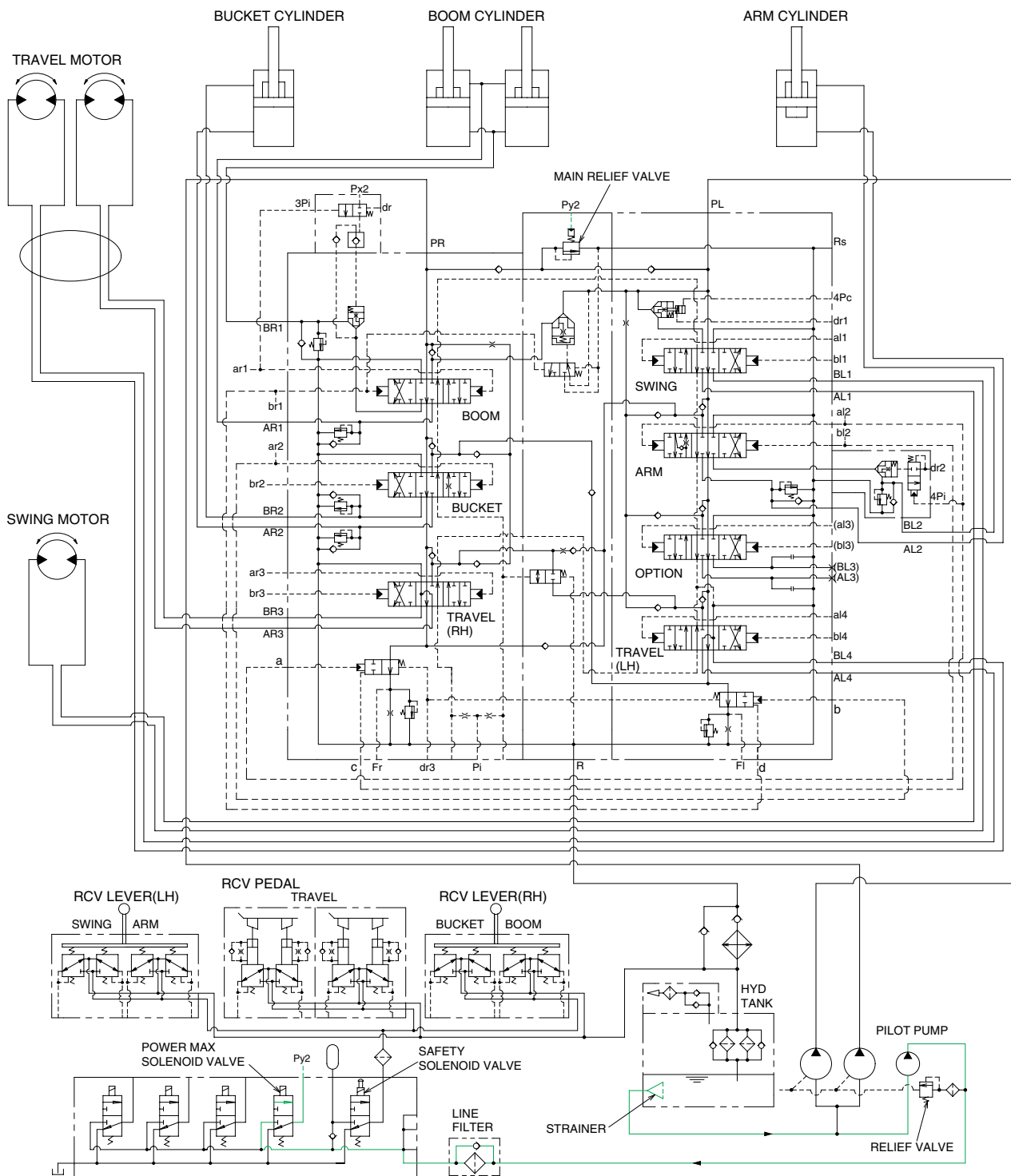
1) TRAVEL MOTOR(1/2)



3607A2TM02

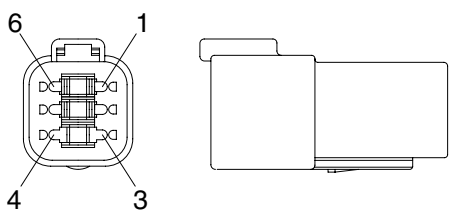
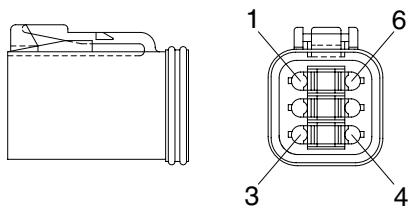
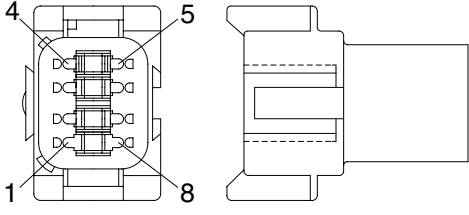
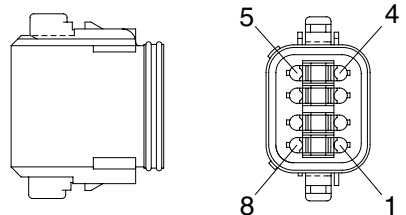
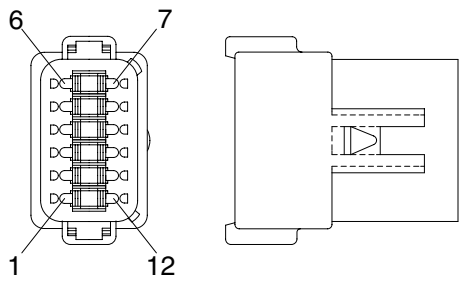
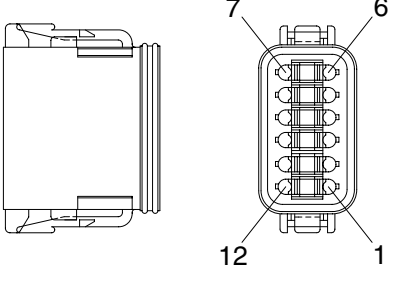
- | | | |
|-----------------------|--------------------|----------------------|
| 101 Drive shaft | 303 Valve casing | 547 O-ring |
| 102 Roller bearing | 351 Reducing valve | 702 Brake piston |
| 103 Needle bearing | 352 Cover | 703 Orifice |
| 107 Snap ring | 435 Snap ring | 704 Orifice |
| 111 Cylinder block | 451 Pin | 705 Brake spring |
| 113 Spherical bushing | 461 Plug | 707 O-ring |
| 114 Cylinder spring | 472 O-ring | 708 O-ring |
| 121 Piston | 491 Oil seal | 741 Separation plate |
| 122 Shoe | 502 Piston | 742 Friction plate |
| 123 Set plate | 503 Shoe | 801 Name plate |
| 131 Valve plate | 504 Pivot ball | 802 Rivet |
| 201 Swash plate | 545 Orifice | |
| 272 Shaft casing | 546 Orifice | |

3. MAIN RELIEF PRESSURE CHANGE CIRCUIT



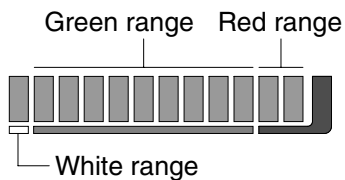
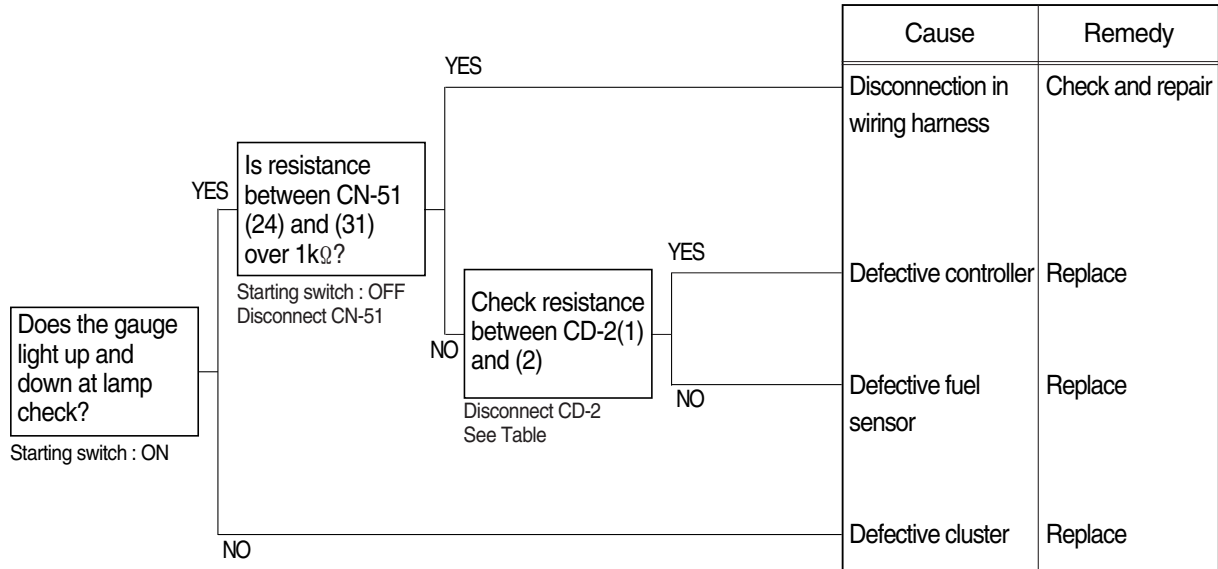
36073HC04

When the power max switch on the left control lever is pushed ON, the power max solenoid valve is actuated, the discharged oil from the pilot pump into Py2 port of the main relief valve of main control valve ; then the setting pressure of the main control valve is raises from 330kgf/cm² to 360kgf/cm² for increasing the digging power. And even when pressed continuously, it is canceled after 8 seconds.

| No. of pin | Receptacle connector(Female) | Plug connector(Male) |
|------------|--|---|
| 6 |  <p style="text-align: right;">DT06-6S</p> |  <p style="text-align: right;">DT04-6P</p> |
| 8 |  <p style="text-align: right;">DT06-8S</p> |  <p style="text-align: right;">DT04-8P</p> |
| 12 |  <p style="text-align: right;">DT06-12S</p> |  <p style="text-align: right;">DT04-12P</p> |

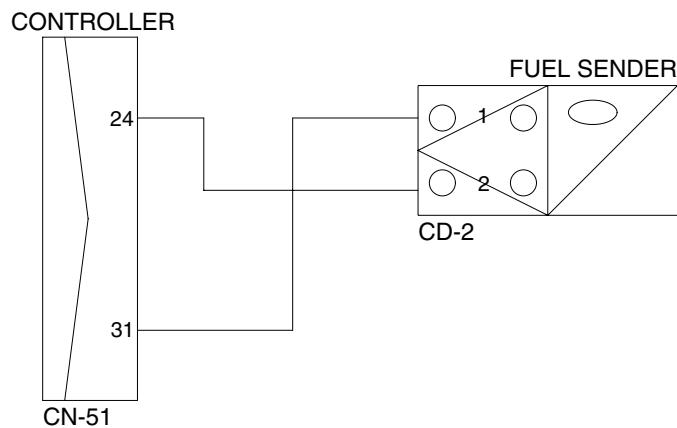
9. WHEN FUEL GAUGE DOES NOT OPERATE (Check warning lamp ON/OFF)

- Before disconnecting the connector, always turn the starting switch OFF.
- Before carrying out below procedure, check all the related connectors are properly inserted.
- After checking, insert the disconnected connectors again immediately unless otherwise specified.

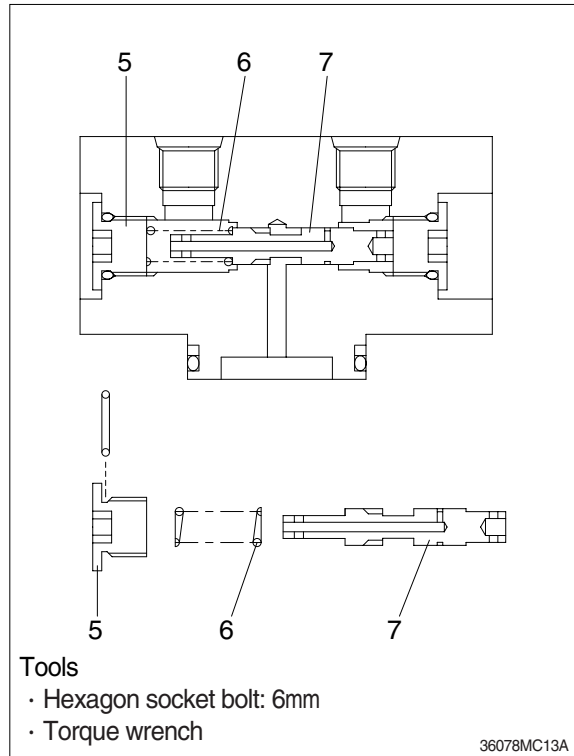


Check Table

| Item \ Level | White range | Green range | Red range |
|------------------------------|-------------|-------------|-----------|
| Unit Resistance (Ω) | 700~601 | 600~101 | ~100 |
| Tolerance (%) | ± 5 | ± 5 | ± 5 |

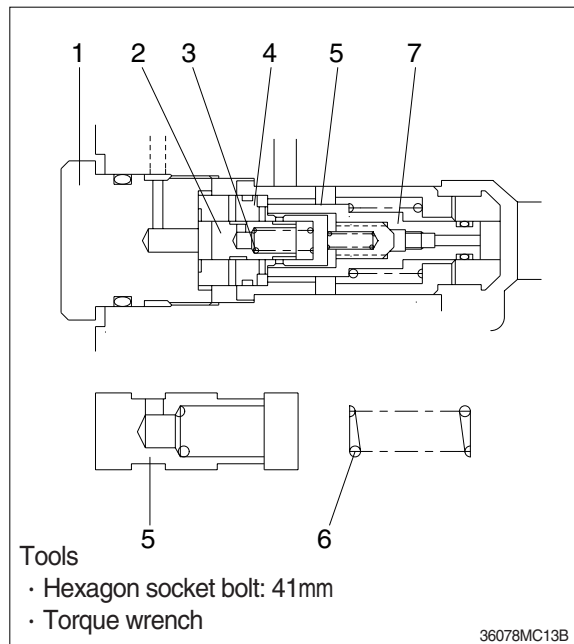


- (3) Remove cap(5).
 Take off spring(6) and spool(7).
 Tightening torque : 3kgf · m (21.7lbf · ft)



11) LOGIC VALVE(FOR BOOM SUMMATION)

- (1) Remove cap(1).
 Take off piston(2) and spring(3).
 Tightening torque : 10kgf · m (72.3lbf · ft)



(4) Air pressing test

Be sure of leakage, after press air into assembled motor.



14078SM232

(5) Leakage check

After cleaning motor by color check No.1, paint No.3 and be sure of leakage.



14078SM233/233A

(6) Mount test bench

Mounting motor test bench, test the availability of each part.



220078SM14

⑨ Assemble O-ring(707, 708) into shaft casing(272).

- ※ Do not reuse the disassembling O-ring (707, 708).
- ※ Coat the O-ring with grease.
(O-ring can be protected by grease)



370078TM59

⑩ Fit valve plate(131) to valve casing(303) sub-assembly. Assemble them to casing, and then tighten them with socket bolt(401, 402).

- Socket bolt(401, 402) Tightening torque : 44kgf · m(318lbf · ft)

- ※ Apply grease on valve plate rear surface and pay attention to not dropping valve plate.
- ※ Use guide bolt.
- ※ Apply grease on roller of needle bearing and pay attention to easy to assemble with driving shaft.
- ※ Use crane in assembling valve casing to shaft casing.



370078TM60



370078TM60A

⑪ Tighten to specified torque plugs, relief valve(350), reducing valve(351), etc. fitted to valve casing sub-assembly.

- Tightening torque :
 - Relief valve(350) : 18kgf · m(130lbf · ft)
 - Reducing valve(351) : 4.5kgf · m(32.5lbf · ft)



370078TM61