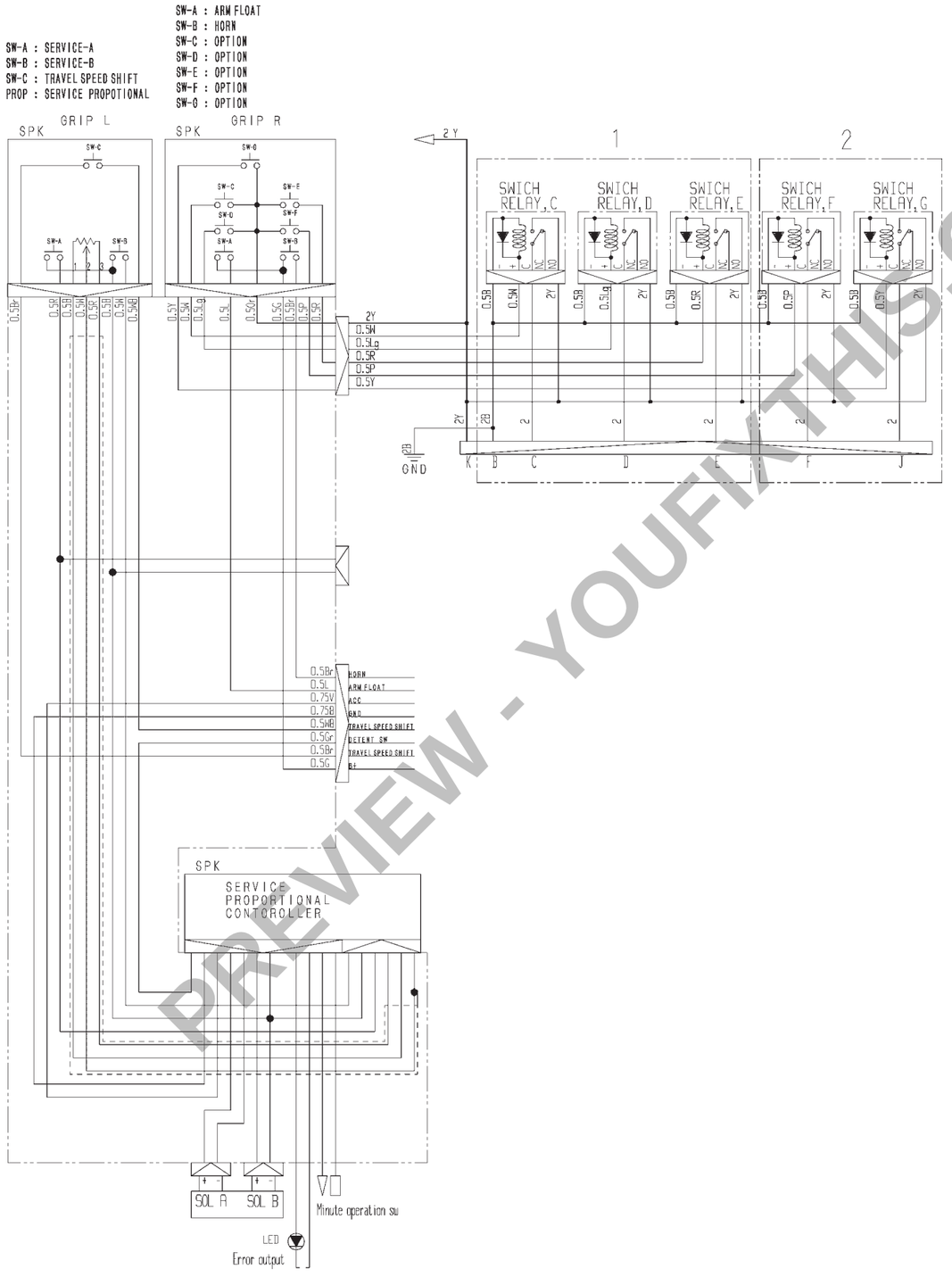
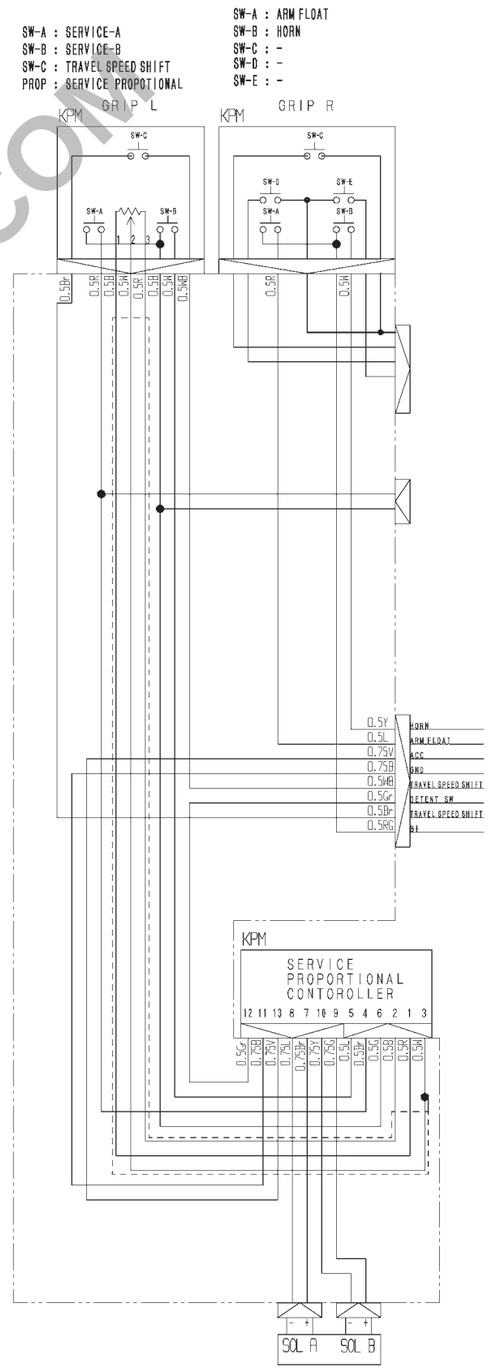



| Drawing No. | 2/2 |
|---|---|
| 06801-00130 | |

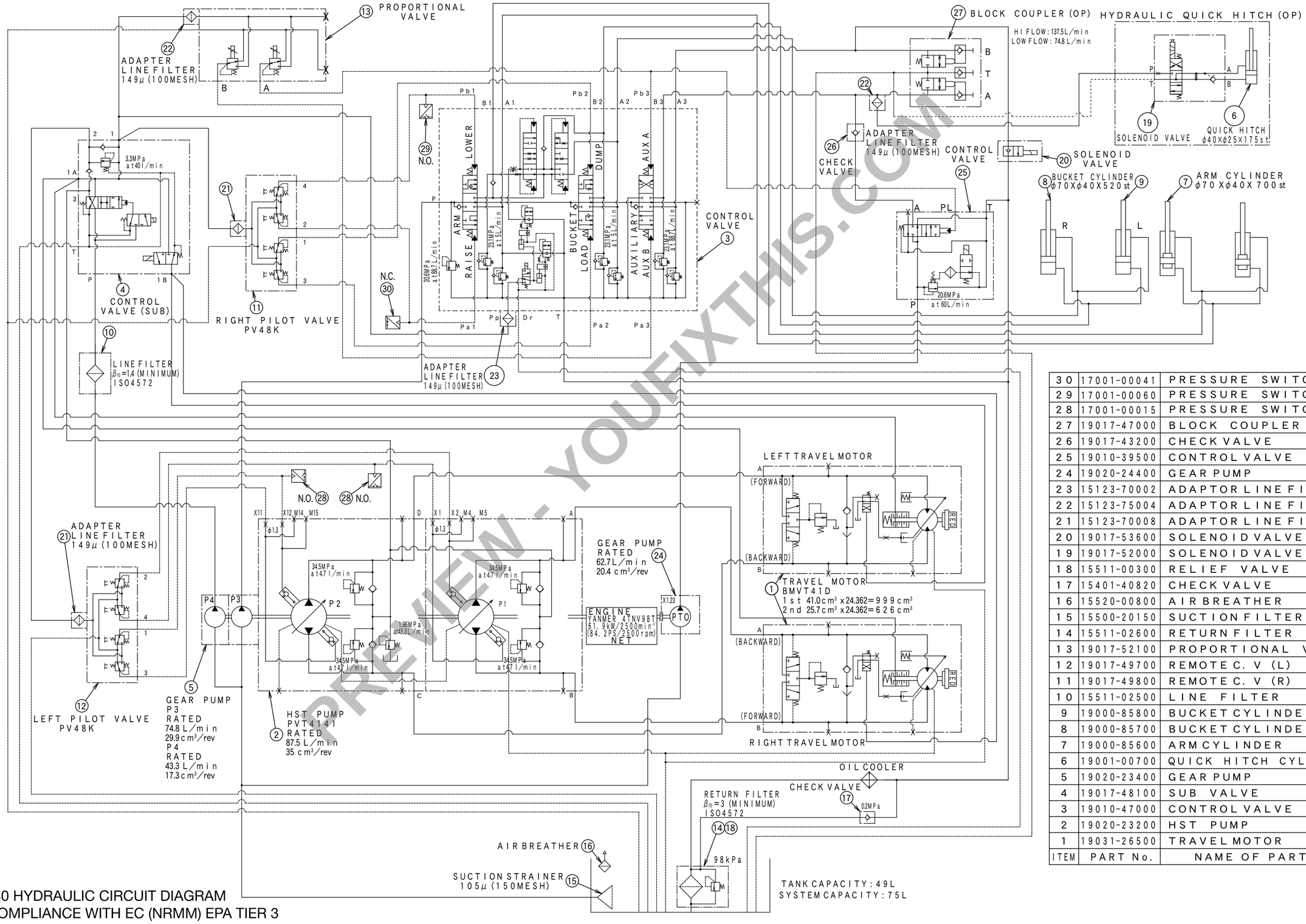
2GAC04Z

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## High Flow




| ITEM | PART No. | NAME OF PART |
|---|---|---|
| 30 | 17001-00041 | PRESSURE SWITCH |
| 29 | 17001-00060 | PRESSURE SWITCH |
| 28 | 17001-00015 | PRESSURE SWITCH |
| 27 | 19017-47000 | BLOCK COUPLER |
| 26 | 19017-43200 | CHECK VALVE |
| 25 | 19010-39500 | CONTROL VALVE |
| 24 | 19020-24400 | GEAR PUMP |
| 23 | 15123-70002 | ADAPTOR LINE FILTER |
| 22 | 15123-75004 | ADAPTOR LINE FILTER |
| 21 | 15123-70008 | ADAPTOR LINE FILTER |
| 20 | 19017-53600 | SOLENOID VALVE |
| 19 | 19017-52000 | SOLENOID VALVE |
| 18 | 15511-00300 | RELIEF VALVE |
| 17 | 15401-40820 | CHECK VALVE |
| 16 | 15520-00800 | AIR BREATHER |
| 15 | 15500-20150 | SUCTION FILTER |
| 14 | 15511-02600 | RETURN FILTER |
| 13 | 19017-52100 | PROPORTIONAL VALVE |
| 12 | 19017-49700 | REMOTE C. V (L) |
| 11 | 19017-49800 | REMOTE C. V (R) |
| 10 | 15511-02500 | LINE FILTER |
| 9 | 19000-85800 | BUCKET CYLINDER (L) |
| 8 | 19000-85700 | BUCKET CYLINDER (R) |
| 7 | 19000-85600 | ARM CYLINDER |
| 6 | 19001-00700 | QUICK HITCH CYLINDER |
| 5 | 19020-23400 | GEAR PUMP |
| 4 | 19017-48100 | SUB VALVE |
| 3 | 19010-47000 | CONTROL VALVE |
| 2 | 19020-23200 | HST PUMP |
| 1 | 19031-26500 | TRAVEL MOTOR |

TL240 HYDRAULIC CIRCUIT DIAGRAM
IN COMPLIANCE WITH EC (NRMM) EPA TIER 3

2FAC02Z

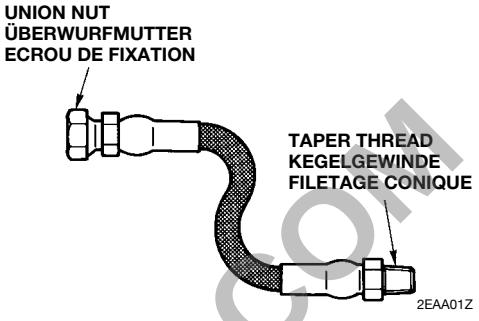
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# TIGHTENING TORQUE

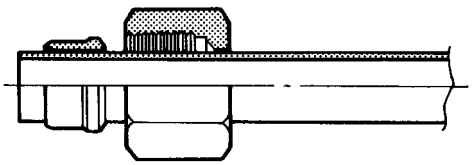
## Hydraulic hose

| Hose fitting size | Tightening torque | |
|---|---|---|
| | Union nut (G) | Taper thread (R) |
| | N·m | N·m |
| 1/8 | $9.8^{+4.9}_{0}$ | 11.8 ±1.2 |
| 1/4 | $24.5^{+4.9}_{0}$ | 29.4 ±2.9 |
| 3/8 | $49.0^{+4.9}_{0}$ | 53.9 ±5.4 |
| 1/2 | $58.8^{+4.9}_{0}$ | 88.3 ±8.8 |
| 3/4 | $117.7^{+4.9}_{0}$ | 147.1 ±14.7 |
| 1 | $137.3^{+4.9}_{0}$ | 196.1 ±19.6 |




## Bite-type pipe fitting for steel pipe

| Pipe outer diameter (mm) | Tightening torque |
|---|---|
| | N·m |
| 8 | 34.3 ±4.9 |
| 10 | 41.7 ±2.5 |
| 12 | 58.8 ±4.9 |
| 15 | 88.3 ±4.9 |
| 16 | 93.2 ±4.9 |
| 18 | 132.4 ±4.9 |
| 22 | 205.9 ±9.8 |
| 27.2 | 245.2 ±9.8 |
| 28 | 313.8 ±19.6 |
| 32 | 313.8 ±19.6 |
| 35 | 411.9 ±19.6 |



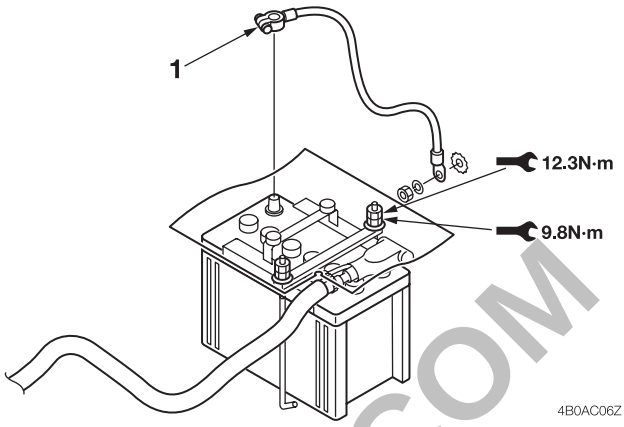

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# DRIVE SYSTEM

## Removing the engine

1. Disconnect the battery ground cable (1) from the battery terminal.




2. Remove the canopy.
   ☞ "Removing the canopy"

3. Remove the floor frame.
   ☞ "Removing the floor frame"

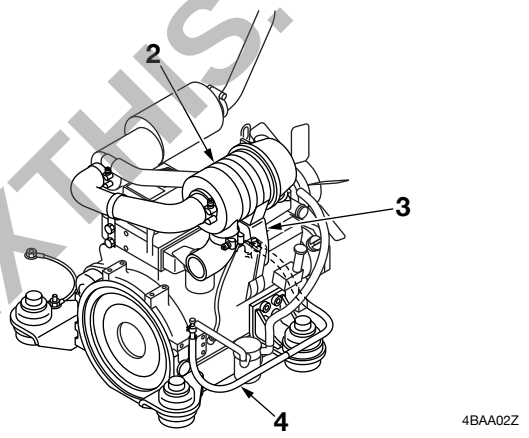
4. Disconnect the electrical wiring to the air cleaner (2).

5. Remove the bracket (3) together with the air cleaner (2).

6. Remove the radiator.
   ☞ "Removing the radiator"

7. Remove the drain hose (4).

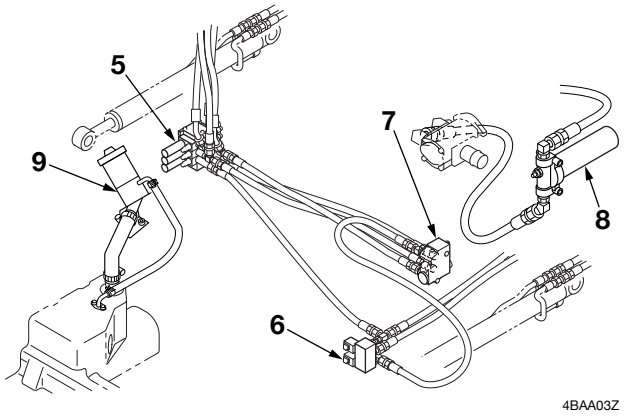
8. Remove the hydraulic pump.
   ☞ "Removing the hydraulic pump"



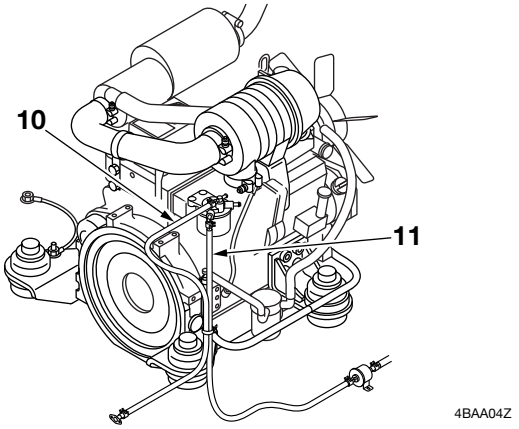

9. Remove the control valve (5), the solenoid valve (6) and the sub valve (7).

10. Remove the line filter (8).

11. Remove the filler opening (9).




12. Disconnect the fuel hoses (10) and (11).



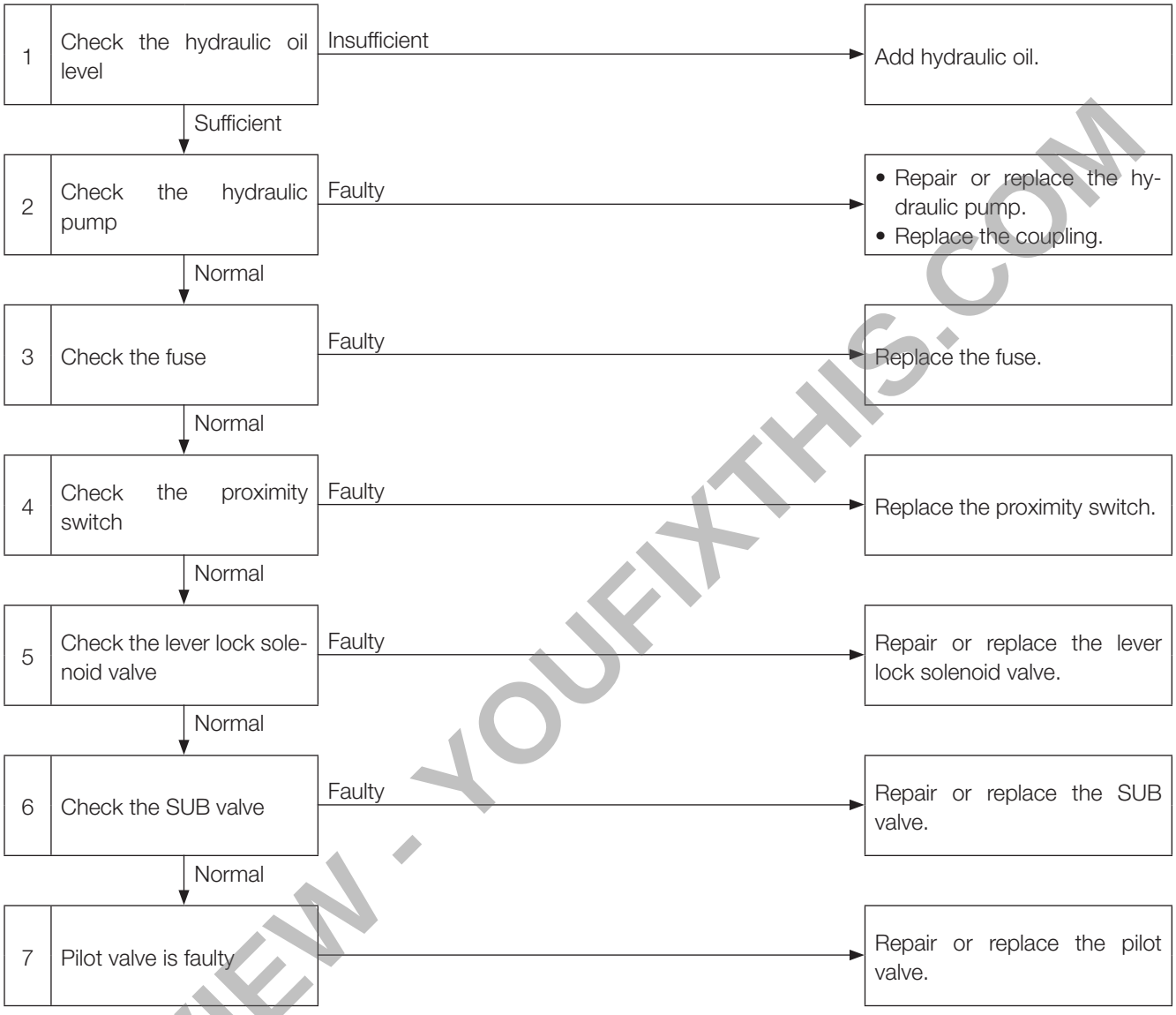

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# OVERALL MACHINE

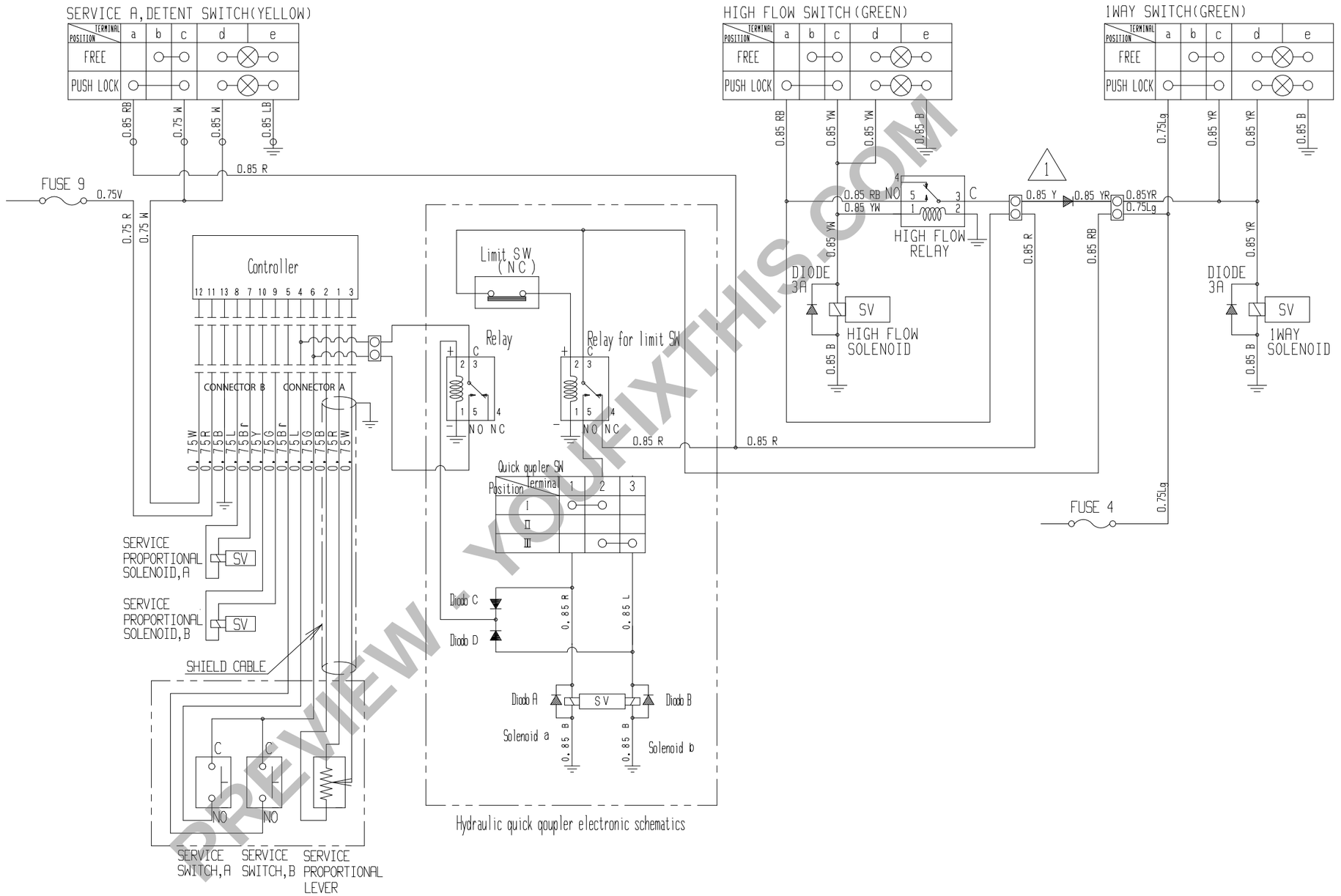
**No operation is possible.**




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# TL200 series hydraulic quick coupler electronic schematics

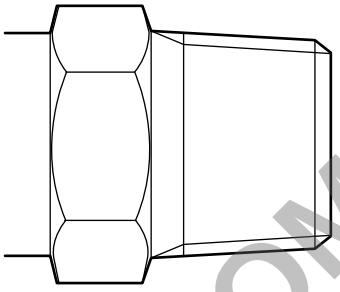
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## Joint for piping

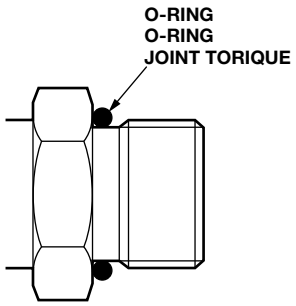
| Nominal thread diameter | Tightening torque | |
|---|---|---|
| | Steel | Cast steel |
| | N·m | N·m |
| 1/8 | 11.8 ±1.2 | 10.8 ±1.1 |
| 1/4 | 29.4 ±2.9 | 24.5 ±2.5 |
| 3/8 | 53.9 ±5.4 | 49.0 ±4.9 |
| 1/2 | 88.3 ±8.8 | 73.5 ±7.4 |
| 3/4 | 147.1 ±14.7 | 127.5 ±12.7 |
| 1 | 196.1 ±19.2 | 171.6 ±17.2 |


2EAA03Z

## Joint for piping (O-ring seal type)

| Nominal thread diameter (G) | Tightening torque |
|---|---|
| | N·m |
| 1/8 | 19.6 ±2.0 |
| 1/4 | 34.3 ±4.9 |
| 3/8 | 53.9 ±4.9 |
| 1/2 | 63.7 ±4.9 |
| 3/4 | 93.2 ±4.9 |
| 1 | 107.9 ±9.8 |
| 1-1/4 | 117.7 ±9.8 |
| 1-1/2 | 137.3 ±9.8 |

| Nominal thread diameter (UNF) | Tightening torque |
|---|---|
| | N·m |
| 7/19-20 | 16.7 ±2.0 |
| 1/2-20 | 22.6 ±2.0 |
| 9/16-18 | 31.4 ±2.9 |
| 3/4-16 | 59.8 ±4.9 |
| 1-1/16-12 | 102.0 ±5.9 |
| 1-5/16-12 | 135.3 ±7.8 |
| 1-5/8-20 | 181.4 ±9.8 |



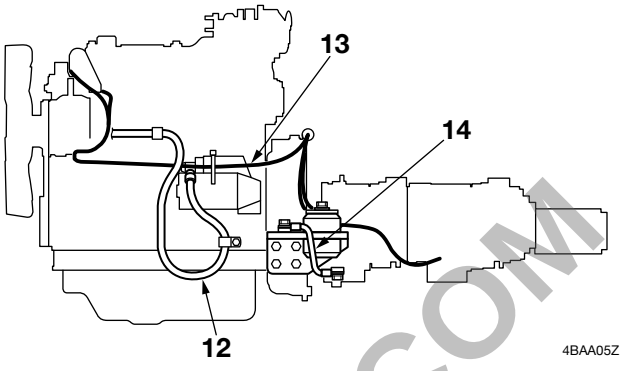
2EAA04Z

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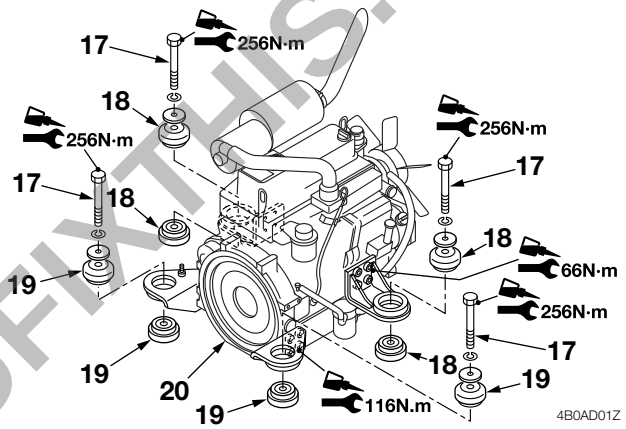
13. Disconnect the battery cable (12) and the electrical wirings (13) from the engine side.
    - Attach an identification label to each wiring.

14. Disconnect the engine ground cable (14).




15. Remove the bolts (17) and the cushion rubbers (18) {black in color} and (19) {gray in color}.
    Bolt: ThreeBond #1324
    Bolt: 256 N·m

16. Suspend the engine (20).
    : 260 kg



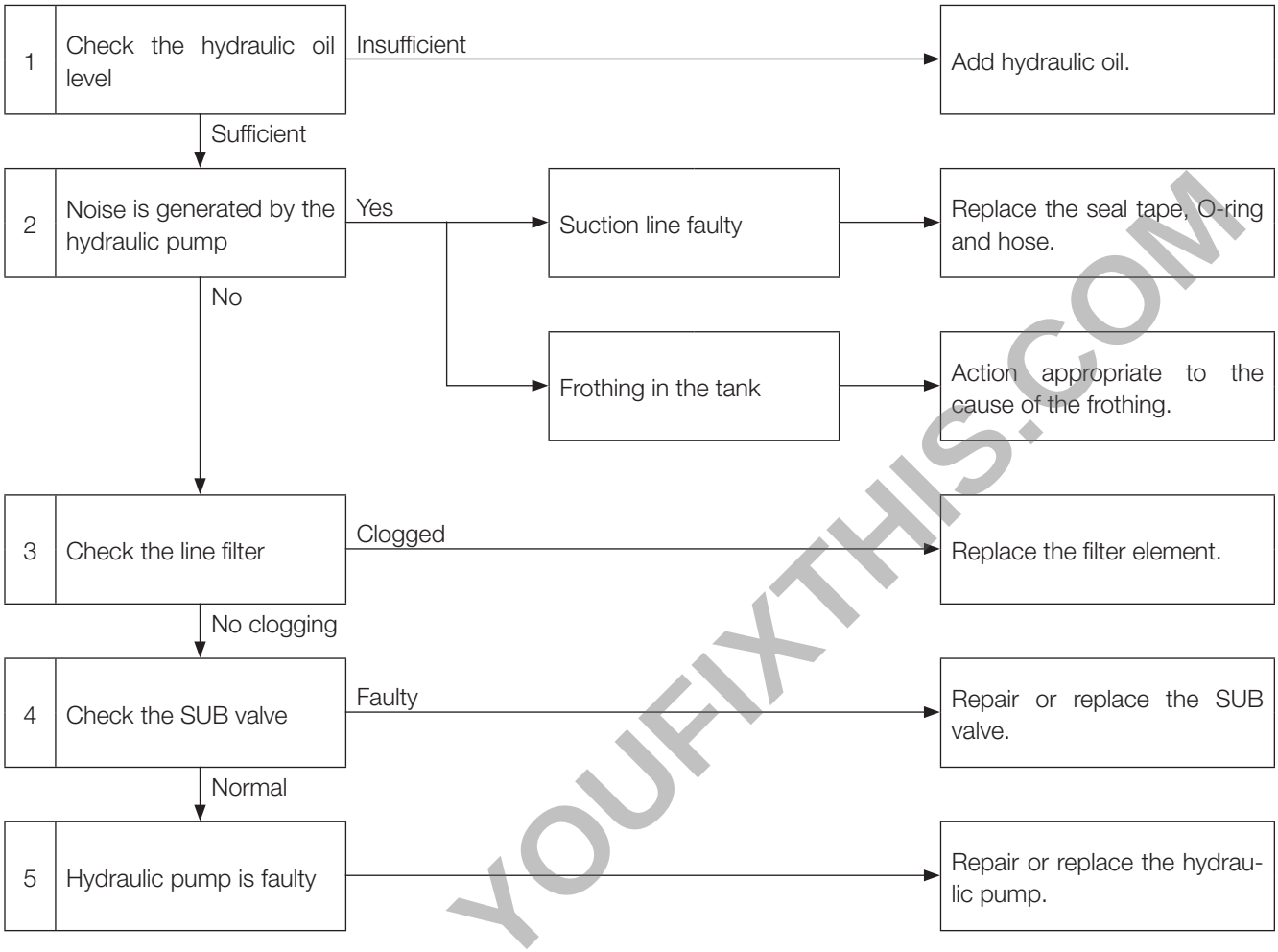

## Installing the engine

For installation of the engine, follow the same procedure as for removal in the reverse order.

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**All systems working, but insufficient power.**




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## Bolts and nuts (JIS strength category 10.9)

| Thread | Size × pitch | Tightening torque | |
|---|---|---|---|
| | | General tightening points | Special tightening points |
| | | N·m | N·m |
| Coarse | M6 × 1.0 | 9.8 ±0.5 | 11.8 ±1.1 |
| | M8 × 1.25 | 22.6 ±1.1 | 26.5 ±2.5 |
| | M10 × 1.5 | 47.1 ±2.4 | 54.9 ±4.9 |
| | M12 × 1.75 | 83.4 ±4.1 | 97.1 ±7.4 |
| | M14 × 2.0 | 134.4 ±6.7 | 155.9 ±12.7 |
| | M16 × 2.0 | 207.9 ±10.4 | 241.2 ±17.2 |
| | M20 × 2.5 | 410.9 ±20.5 | 475.6 ±23.7 |
| Fine | M8 × 1.0 | 24.5 ±1.2 | 28.4 ±1.4 |
| | M10 × 1.25 | 50.0 ±2.5 | 58.8 ±2.9 |
| | M12 × 1.5 | 87.3 ±4.3 | 102.0 ±5.1 |
| | M14 × 1.5 | 135.3 ±6.8 | 157.9 ±7.8 |
| | M16 × 1.5 | 220.6 ±11.0 | 256.0 ±12.7 |
| | M20 × 1.5 | 452.1 ±22.6 | 524.7 ±26.1 |

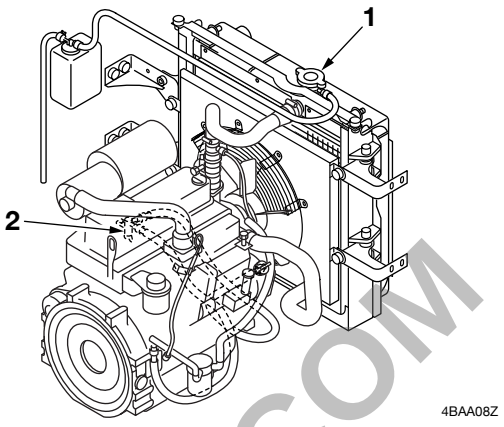
1. General tightening points (non-lubricated)
   All securing points that have no special tightening torque specified in this manual and that are not special tightening points.
2. Special tightening points (grease with molybdenum disulfide applied)
   Points where a specific tightening torque is specified in this manual.
3. Points where thread-locking compound should be applied (ThreeBond #1324).
4. If a tightening torque value is specified in this manual for a point not listed in the table above, follow the specification in the manual.
5. To tighten multiple bolts and nuts evenly, alternately tighten opposite bolts/nuts as a pair.

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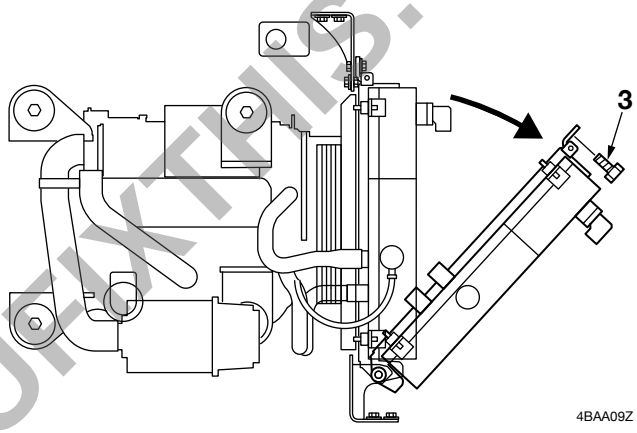

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## Removing the radiator

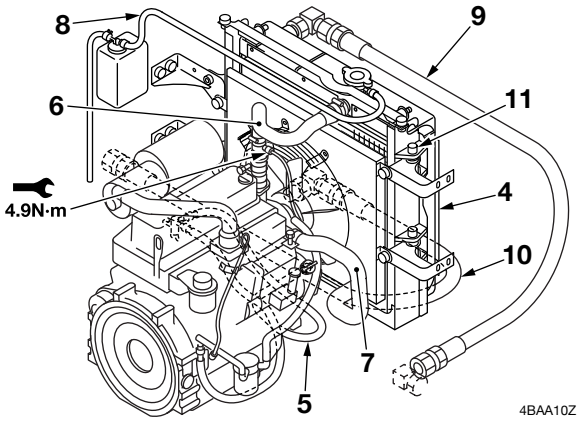
1. Loosen the radiator cap (1), and bleed out the engine coolant from the drain valve (2).
   • Engine coolant volume: 16.5 L




2. Remove the bolts (3) and open the radiator assembly (4).

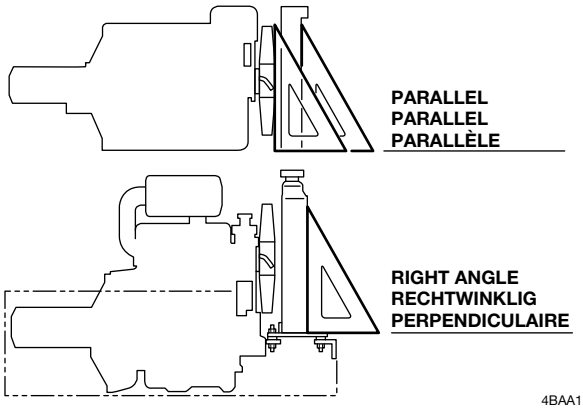



3. Disconnect the drain hose (5).
4. Disconnect the radiator hoses (6) and (7) and the hose (8).
5. Disconnect the oil cooler hoses (9) and (10).
   • Prepare a plate to catch drips of the hydraulic oil.
6. Disconnect the R-pins and remove the pins (11).
7. Remove the radiator assembly (4).
   kg : 58 kg




## Installing the radiator

For installation of the radiator, follow the same procedure as for removal in the reverse order.
The radiator must be mounted at right angles to the frame and parallel to the cooling fan.

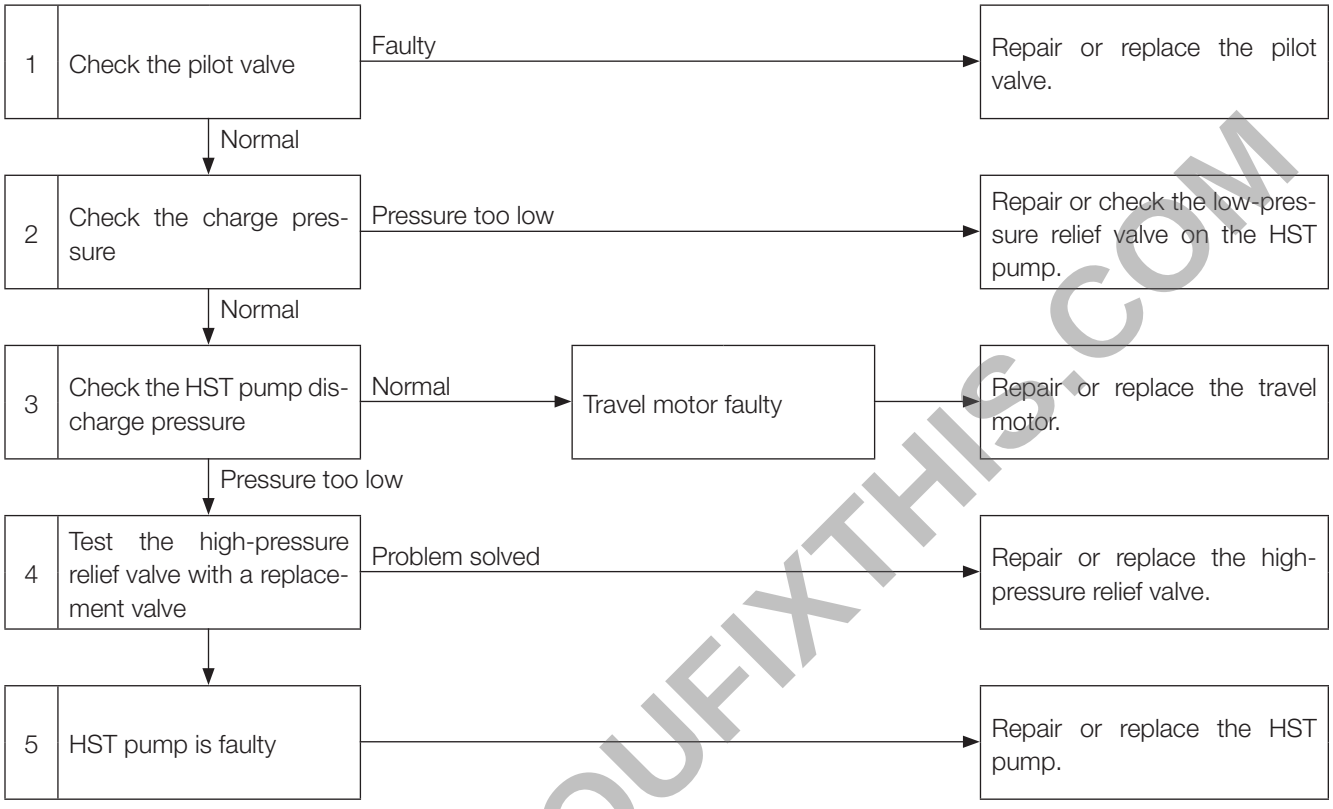





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# TRAVELING

**Traveling fails.**




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# FOREWORD

This manual, which is written for engineers who service the machine, describes procedures for disassembly and assembly, inspection and maintenance, and troubleshooting, as well as maintenance reference values and an outline of the specifications. Refer to this manual during daily work to improve your services. Note that the information is subject to change without notice due to design modifications made to the machine from time to time by the manufacturer.

## Directional terms: front, rear, left, right

In this manual, the “front” refers to the end of the machine where the bucket is mounted, while the “rear” refers to the other end where the travel motor is mounted. The “right” or “left” refers to the side viewed by a person sitting in the operator’s seat.

## Machine serial number

The machine serial number is stamped on the identification plate. Be sure to include this number when sending a report or inquiry or when ordering parts.

## Control of manual

Appoint a person in charge of keeping the manuals up to date in your company and inform us of the person’s name for our records. Any revisions or additions to this manual will be sent to the person.

## Symbols used in this manual

The symbols used in this manual have the following meanings.

S/N Indicates the machine serial number.
☞ Means “Refer to the section quoted.”
kg Indicates the mass of the equipment or machine.
Means “Tighten to the torque specified here.”
Indicates the use of thread-locking compound.
Indicates the use of grease.

## Manual structure

This manual consists of the following parts.

1. Safety
2. Service data
3. Function
4. Disassembly and assembly
5. Troubleshooting
6. Engine

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# SAFETY ALERT SYMBOL



This symbol represents the safety alert. The message that follows the symbol contains important information regarding human safety.
Read and understand the message to avoid personal injury or death.

## Safety label

Safety labels are used to alert operators or other people exposed to the risks of injury or damage. There are the following three types of labels.
Read the labels carefully as they are important for your safety.

**⚠ DANGER**

**The word "DANGER" indicates an imminently hazardous situation which, if not avoided, is likely to result in serious injury or death.**

**⚠ WARNING**

**The word "WARNING" indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death.**

**⚠ CAUTION**

**The word "CAUTION" indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.**

**IMPORTANT: The word "IMPORTANT" is used to alert operators and maintenance personnel about situations which could result in damage to the machine and its components.**

This manual is intended for trained and qualified personnel only. Warnings or cautions described in this manual do not necessarily cover all safety measures. It is also impossible to cover all hazards and risks which may be associated with the maintenance of the machine in every environment. For maintenance work, each person must take adequate safety precautions against possible hazards in the respective working environment.

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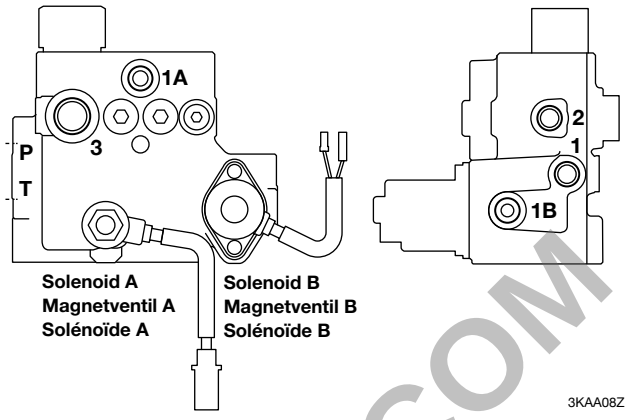


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# SUB VALVE

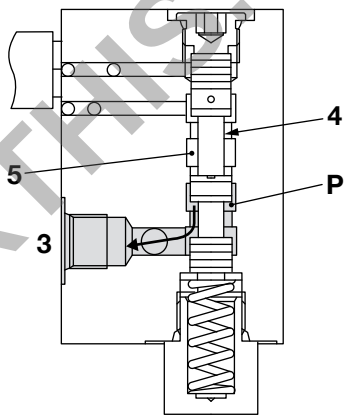
This valve is composed of the solenoid valve A (lever lock), the solenoid valve B (2nd speed travel) and the relief valve. It supplies the HST charge pressure from the pump P4 and the pilot pressure.

| Port | Connected to: |
|---|---|
| Port 1 | Right pilot valve, proportional control valve |
| Port 1A | Parking brake release |
| Port 1B | 2nd speed travel |
| Port 2 | Left pilot valve |
| Port 3 | HST charge |
| Port P | Pump P4 |
| Port T | Tank |



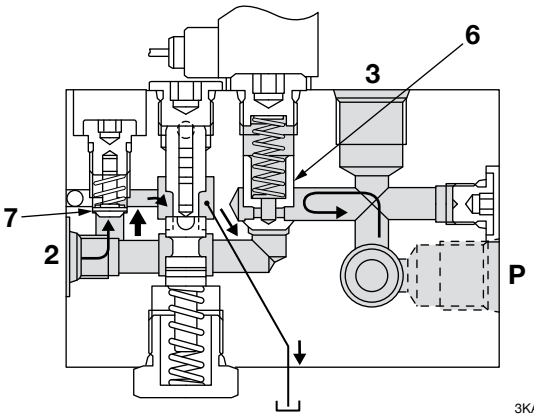
3KAA08Z

**When the solenoid valve A is not energized:**
The port P is connected with the circuit of the port 3 through the spool (4).
The pressure oil from the port P flows into the port 3, while the port P is disconnected from the circuit (5) of the ports 1A and 1B.



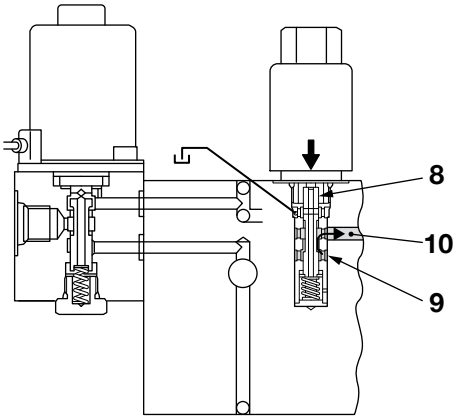
3KAA01Z

The port P is disconnected from the circuit of the port 2 by the spool (6).
The hydraulic oil from the port 2 pushes up the plunger (7), flows into the port 1 circuit and then enters the port T together with the oil from the port 1A.



3KAA02Z

**When the solenoid valve A is energized**
A magnetic field is generated around the coil that causes the push rod to be pulled downward and the spool (8) to be pushed downward. Then the pressure oil from the port P flows through the passages (9) and (10), and then enters the chamber C.



3KAA03Z

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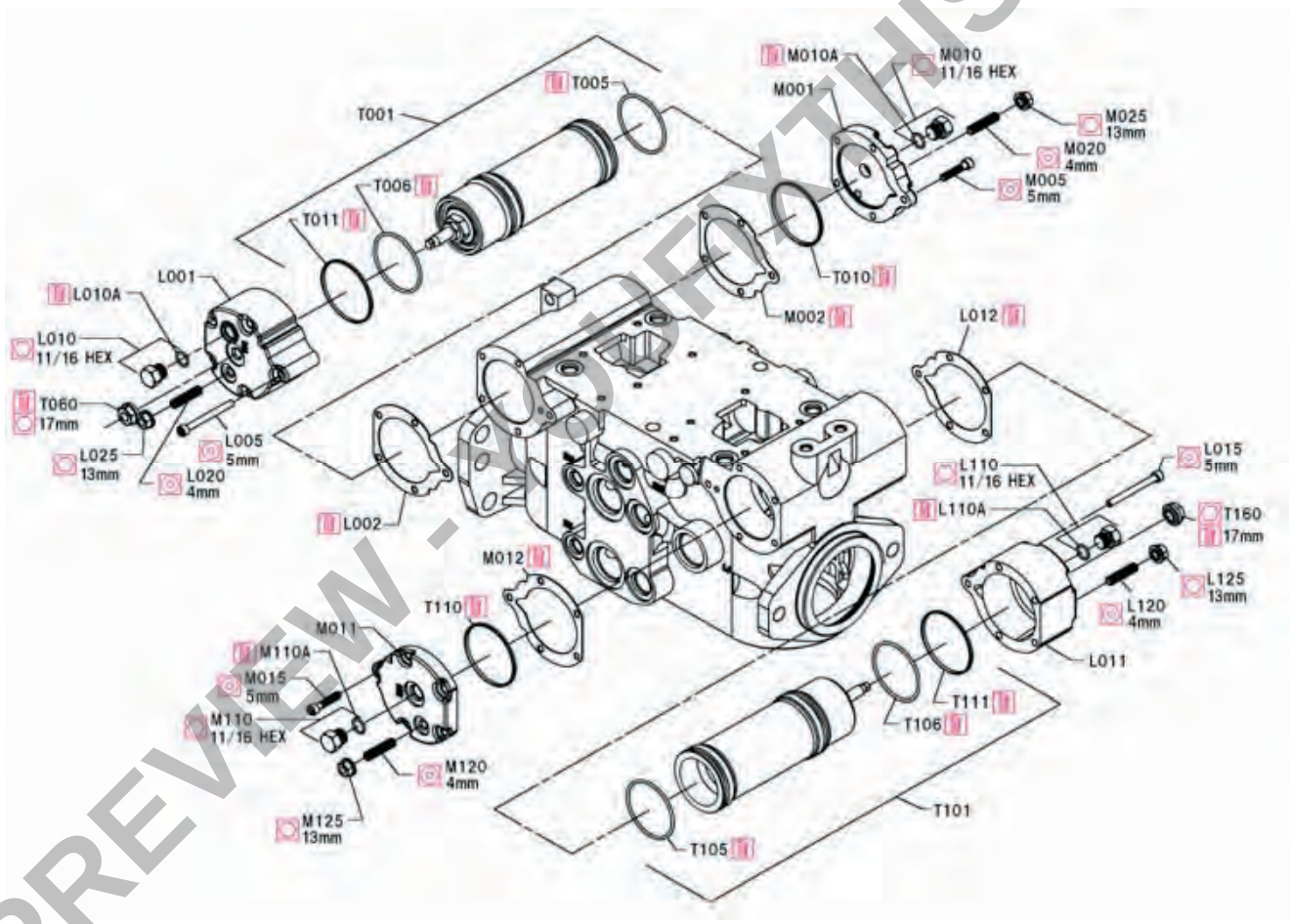
SAUER DANFOSS

**4T Tandem Piston Pump**
**Repair Instructions**
**Disassembly**

Genuine Parts

## REMOVE SERVO PISTON, COVERS AND DISPLACEMENT LIMITERS

*Removing servo piston, covers, and displacement limiters*

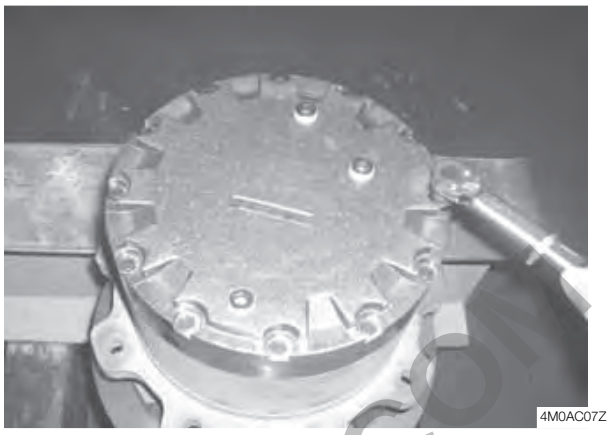



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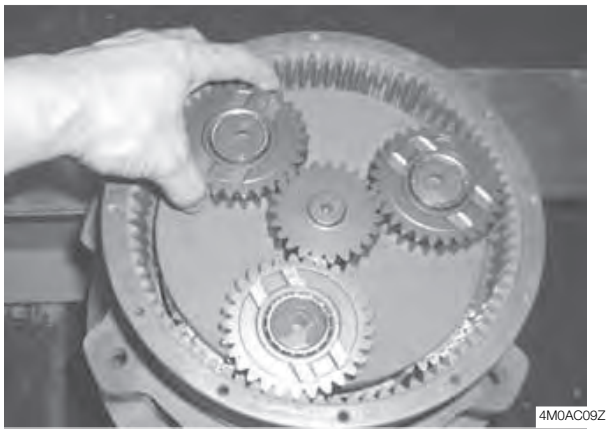
2. Take out the bolts and remove the cover (2).
   - If it is hard to remove, lightly tap the side of the cover with the rubber hammer.


4M0AC07Z

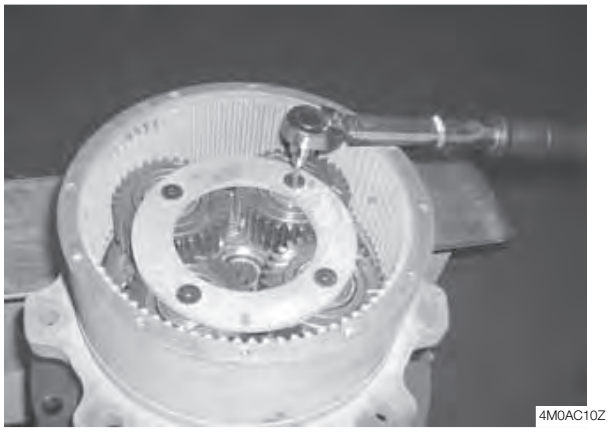
3. Take out the bolts and remove the thrust plate (9).


4M0AC08Z

4. Take out the sun gear (4), and remove the planet gears (6) and the carrier (3).
   - Remove the planet gears (6) together with the needle bearing (14).


4M0AC09Z

5. Take out the screws and remove the thrust plate (10).


4M0AC10Z

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