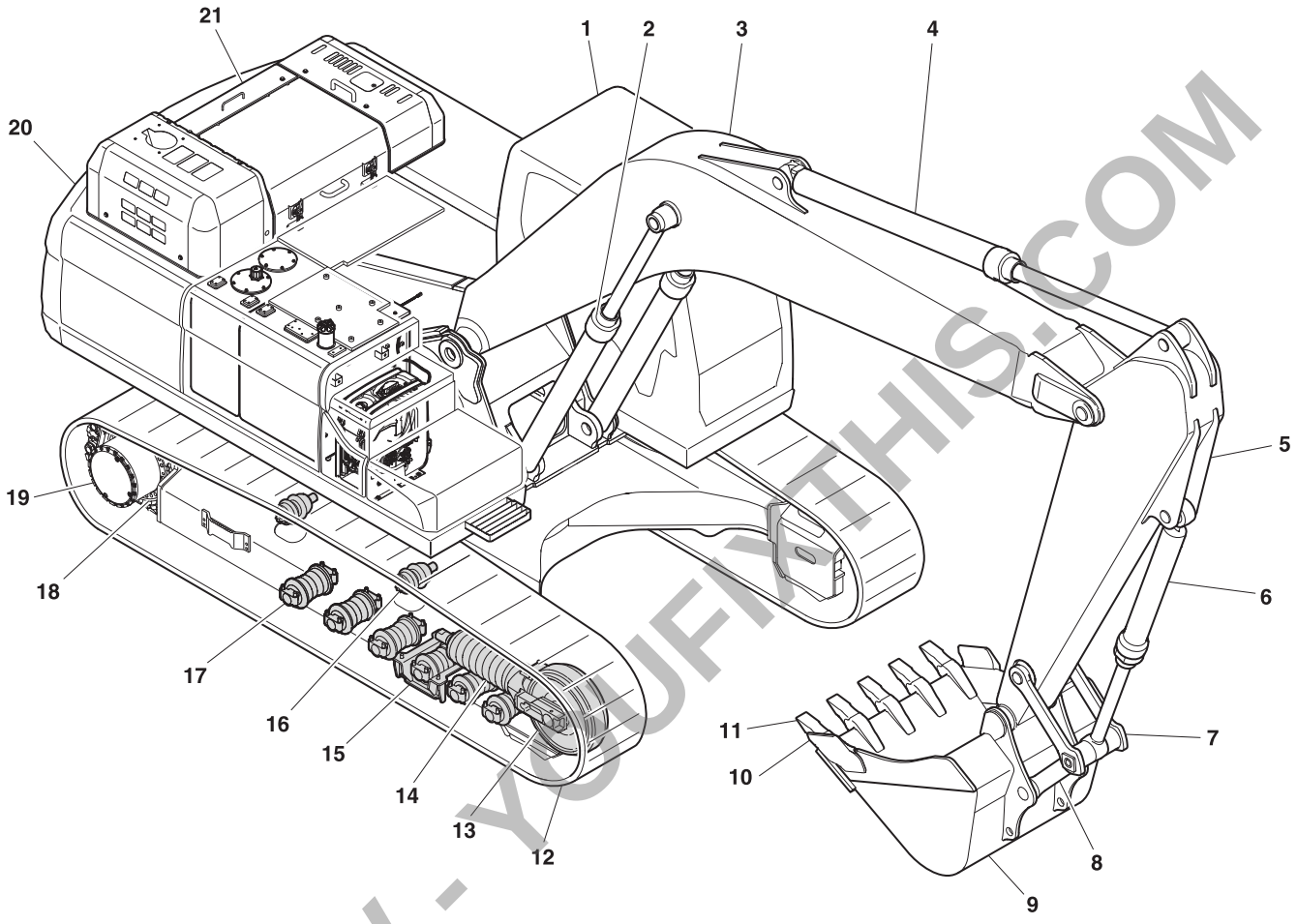
COMPONENT LOCATIONS



EX1301458

Figure 1

Reference Number	Description
1	Cabin
2	Boom Cylinder
3	Boom
4	Arm Cylinder
5	Arm
6	Bucket Cylinder
7	Guide Link
8	Push Link
9	Bucket
10	Side Cutter
11	Tooth Point

Reference Number	Description
12	Track Link and Shoe
13	Idler
14	Track Adjuster
15	Track Guard
16	Upper Roller
17	Lower Roller
18	Sprocket
19	Travel Motor
20	Counterweight
21	Hood

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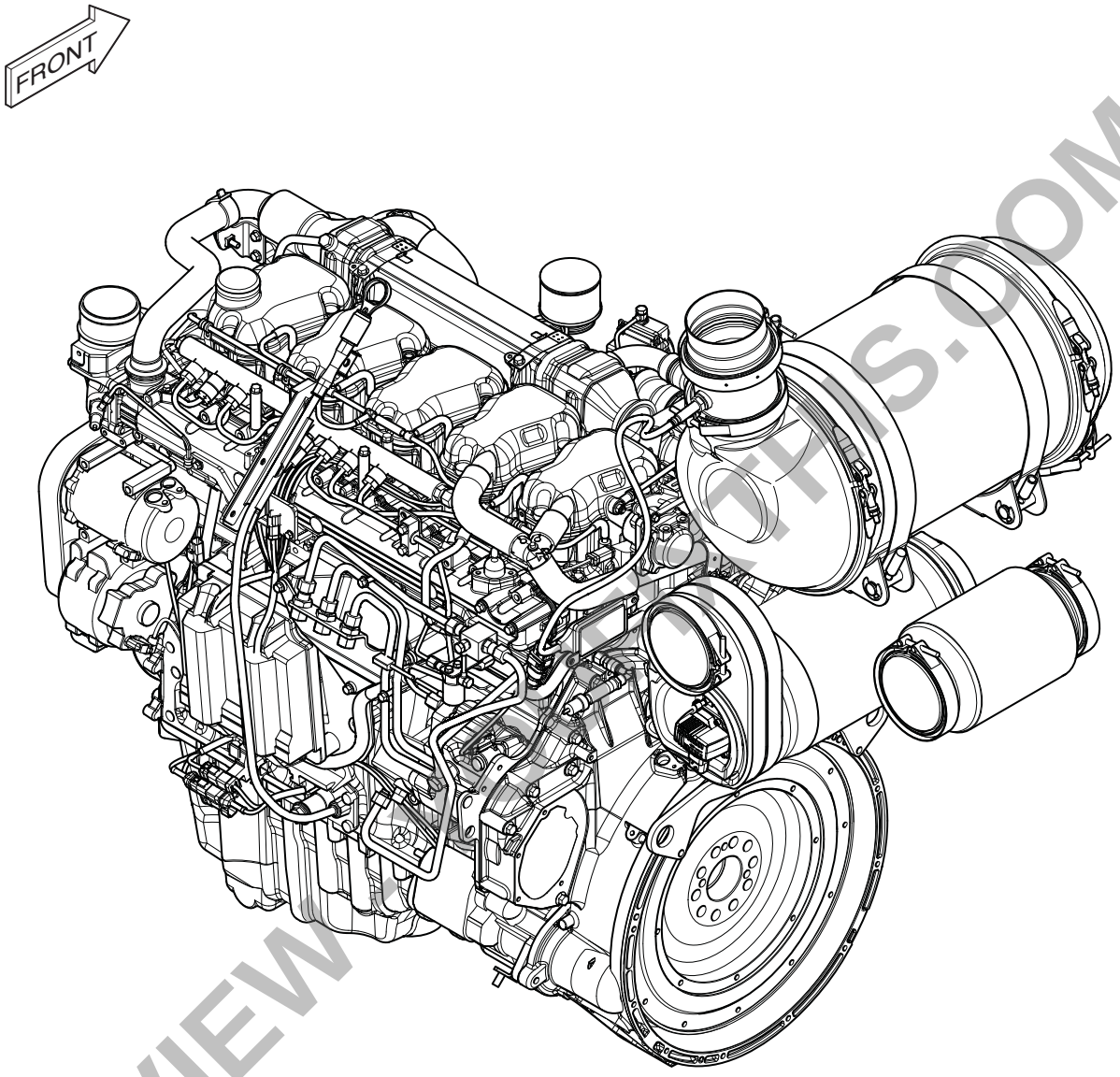
TORQUE VALUES FOR STANDARD METRIC FASTENERS

NOTE: *The units for the torque values are kg.m (ft lb).*

Dia. x Pitch (mm)	Grade										
	3.6 (4A)	4.6 (4D)	4.8 (4S)	5.6 (5D)	5.8 (5S)	6.6 (6D)	6.8 (6S)	6.9 (6G)	8.8 (8G)	10.9 (10K)	12.9 (12K)
M5 x Std.	0.15 (1.08)	0.16 (1.15)	0.25 (1.80)	0.22 (1.59)	0.31 (2.24)	0.28 (2.02)	0.43 (3.11)	0.48 (3.47)	0.50 (3.61)	0.75 (5.42)	0.90 (6.50)
M6 x Std.	0.28 (2.02)	0.30 (2.16)	0.45 (3.25)	0.40 (2.89)	0.55 (3.97)	0.47 (3.39)	0.77 (5.56)	0.85 (6.14)	0.90 (6.50)	1.25 (9.04)	1.50 (10.84)
M7 x Std.	0.43 (3.11)	0.46 (3.32)	0.70 (5.06)	0.63 (4.55)	0.83 (6.00)	0.78 (5.64)	1.20 (8.67)	1.30 (9.40)	1.40 (10.12)	1.95 (14.10)	2.35 (16.99)
M8 x Std.	0.70 (5.06)	0.75 (5.42)	1.10 (7.95)	1.00 (7.23)	1.40 (10.12)	1.25 (9.04)	1.90 (13.74)	2.10 (15.18)	2.20 (15.91)	3.10 (22.42)	3.80 (27.48)
M8 x 1	0.73 (5.28)	0.80 (5.78)	1.20 (8.67)	1.00 (7.23)	1.50 (10.84)	1.35 (9.76)	2.10 (15.18)	2.30 (16.63)	2.40 (17.35)	3.35 (24.23)	4.10 (29.65)
M10 x Std.	1.35 (9.76)	1.40 (10.12)	2.20 (15.91)	1.90 (13.74)	2.70 (19.52)	2.35 (19.99)	3.70 (26.76)	4.20 (30.37)	4.40 (31.18)	6.20 (44.84)	7.20 (52.07)
M10 x 1.25	1.50 (10.84)	1.60 (11.57)	2.50 (18.08)	2.10 (15.18)	3.10 (22.42)	2.80 (20.25)	4.30 (31.10)	4.90 (35.44)	5.00 (36.16)	7.00 (50.63)	8.40 (60.75)
M12 x Std.	2.40 (17.35)	2.50 (18.08)	3.70 (26.76)	3.30 (23.86)	4.70 (33.99)	4.20 (30.37)	6.30 (45.56)	7.20 (52.07)	7.50 (54.24)	10.50 (75.94)	12.50 (90.41)
M12 x 1.25	2.55 (18.44)	2.70 (19.52)	4.00 (28.93)	3.50 (25.31)	5.00 (36.16)	4.50 (32.54)	6.80 (49.18)	7.70 (55.69)	8.00 (57.86)	11.20 (81.00)	13.40 (96.92)
M14 x Std.	3.70 (26.76)	3.90 (28.20)	6.00 (13.23)	5.20 (37.61)	7.50 (54.24)	7.00 (50.63)	10.00 (72.33)	11.50 (83.17)	12.00 (86.79)	17.00 (122.96)	20.00 (144.66)
M14 x 1.5	4.10 (29.65)	4.30 (31.10)	6.60 (47.73)	5.70 (41.22)	8.30 (60.03)	7.50 (54.24)	11.10 (80.28)	12.50 (90.41)	13.00 (94.02)	18.50 (11.26)	22.00 (158.12)
M16 x Std.	5.60 (40.50)	6.00 (43.39)	9.00 (65.09)	8.00 (57.86)	11.50 (83.17)	10.50 (75.94)	15.50 (112.11)	17.90 (129.47)	18.50 (133.81)	26.00 (188.05)	31.00 (224.22)
M16 x 1.5	6.20 (44.84)	6.50 (47.01)	9.70 (70.16)	8.60 (62.20)	12.50 (90.41)	11.30 (81.73)	17.00 (122.96)	19.50 (141.04)	20.00 (144.66)	28.00 (202.52)	35.50 (256.77)
M18 x Std.	7.80 (56.41)	8.30 (60.03)	12.50 (90.41)	11.00 (79.56)	16.00 (115.72)	14.50 (104.87)	21.00 (151.89)	27.50 (198.90)	28.50 (206.14)	41.00 (296.55)	43.00 (311.01)
M18 x 1.5	9.10 (65.82)	9.50 (68.71)	14.40 (104.15)	12.50 (90.41)	18.50 (133.81)	16.70 (120.79)	24.50 (177.20)	27.50 (198.90)	28.50 (206.14)	41.00 (296.55)	49.00 (354.41)
M20 x Std.	11.50 (83.17)	12.00 (86.79)	18.00 (130.19)	16.00 (115.72)	22.00 (159.12)	19.00 (137.42)	31.50 (227.83)	35.00 (253.15)	36.00 (260.38)	51.00 (368.88)	60.00 (433.98)
M20 x 1.5	12.80 (92.58)	13.50 (97.64)	20.50 (148.27)	18.00 (130.19)	25.00 (180.82)	22.50 (162.74)	35.00 (253.15)	39.50 (285.70)	41.00 (296.55)	58.00 (419.51)	68.00 (491.84)
M22 x Std.	15.50 (112.11)	16.00 (115.72)	24.50 (177.20)	21.00 (151.89)	30.00 (216.99)	26.00 (188.05)	42.00 (303.78)	46.00 (332.71)	49.00 (354.41)	67.00 (484.61)	75.00 (542.47)
M22 x 1.5	17.00 (122.96)	18.50 (133.81)	28.00 (202.52)	24.00 (173.59)	34.00 (245.92)	29.00 (209.75)	47.00 (339.95)	52.00 (44.76)	56.00 (405.04)	75.00 (542.47)	85.00 (614.80)
M24 x Std.	20.50 (148.27)	21.50 (155.50)	33.00 (238.68)	27.00 (195.29)	40.00 (289.32)	34.00 (245.92)	55.00 (397.81)	58.00 (419.51)	63.00 (455.67)	82.00 (593.10)	92.00 (655.43)
M24 x 2.0	23.00 (166.35)	35.00 (253.15)	37.00 (267.62)	31.00 (224.22)	45.00 (325.48)	38.00 (202.52)	61.00 (441.21)	67.00 (484.61)	74.00 (535.24)	93.00 (672.66)	103.00 (744.99)

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EX1301800

Figure 1

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SAFETY INSTRUCTIONS

⚠ WARNING

AVOID DEATH OR SERIOUS INJURY

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments repairs or service. Untrained operators and failure to follow instructions can cause death or serious injury.

CABIN IDENTIFICATION

Roll-over Protective Structure (ROPS)

General ROPS Instructions for ROPS Certified Cabins

The operator's cabin is a ROPS certified structure for protecting the seat-belted operator. It absorbs the impact energy of a rollover impact. Do not allow machine weight (mass) to exceed certified value on certification plate. If weight is exceeded, the ROPS structure will not be able to fulfill its safety function.

Do not increase machine weight beyond certified value by modifying machine or by installing attachments on machine. If weight limit of protective equipment is exceeded, protective equipment will not be able to protect operator, and operator may suffer death or serious injury. Always observe the following:

- This machine is equipped with a protective structure. Do not remove protective structure and perform operations without it.
- Never modify the operator's cabin by welding, grinding, drilling holes or adding attachments unless instructed by DOOSAN. Changes to the cabin can cause loss of operator protection from rollover and falling objects, and operator may suffer death or serious injury.
- When protective structure is damaged or deformed by falling objects or by rolling over, its strength will be reduced and it will not be able to properly fulfill its function. In these cases, always contact your DOOSAN distributor for advice. Never repair a ROPS cabin.
- Always wear your seat belt when operating machine.

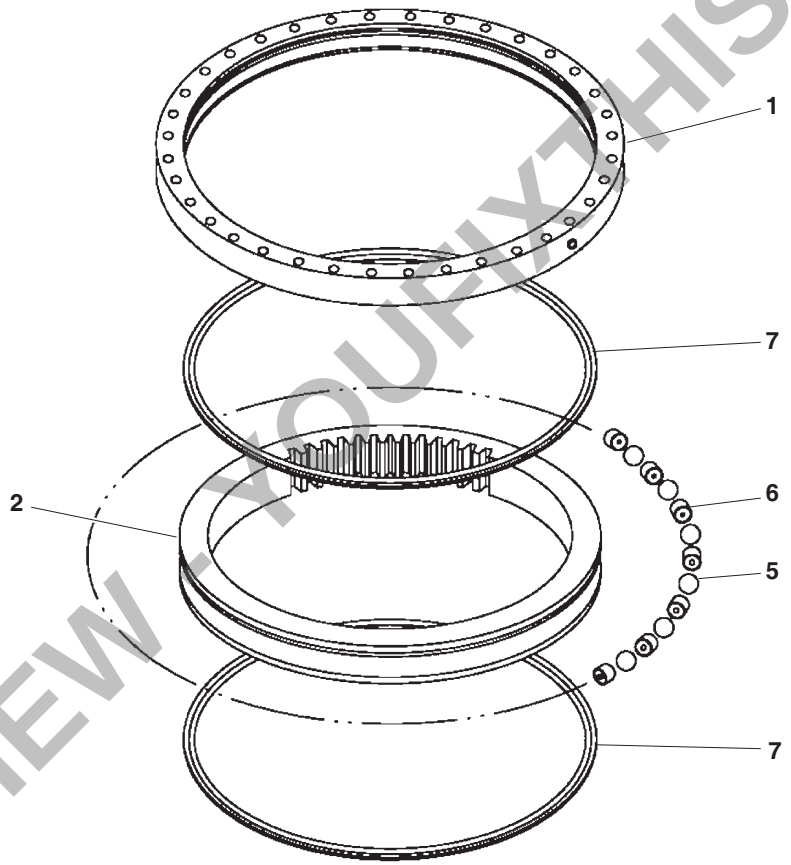
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GENERAL

General Description

The swing bearing, which connects the upper structure with the lower structure, consists of a inner ring, outer ring and ball bearings. During swing movement, power from the swing motor is transferred to the pinion by planetary gears connected to gears on the inner ring, which is fixed in the undercarriage. Ball bearings turn the outer ring.

Parts List



FG1301305

Figure 1

Reference Number	Description
1	Outer Ring
2	Inner Ring
3	Tapered Pin
4	Plug

Reference Number	Description
5	Ball
6	Retainer
7	Seal

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SPECIFICATIONS

The table below has a complete listing of dimensional specifications for all mounting pins used on the front attachment.

NOTE: *Some mounting pins must be drilled and tapped for lubrication fittings and piping, or may have other required specifications. Consult DOOSAN After Sales Service for information on wear tolerances and replacement limits for mounting pins.*

One - Piece Boom

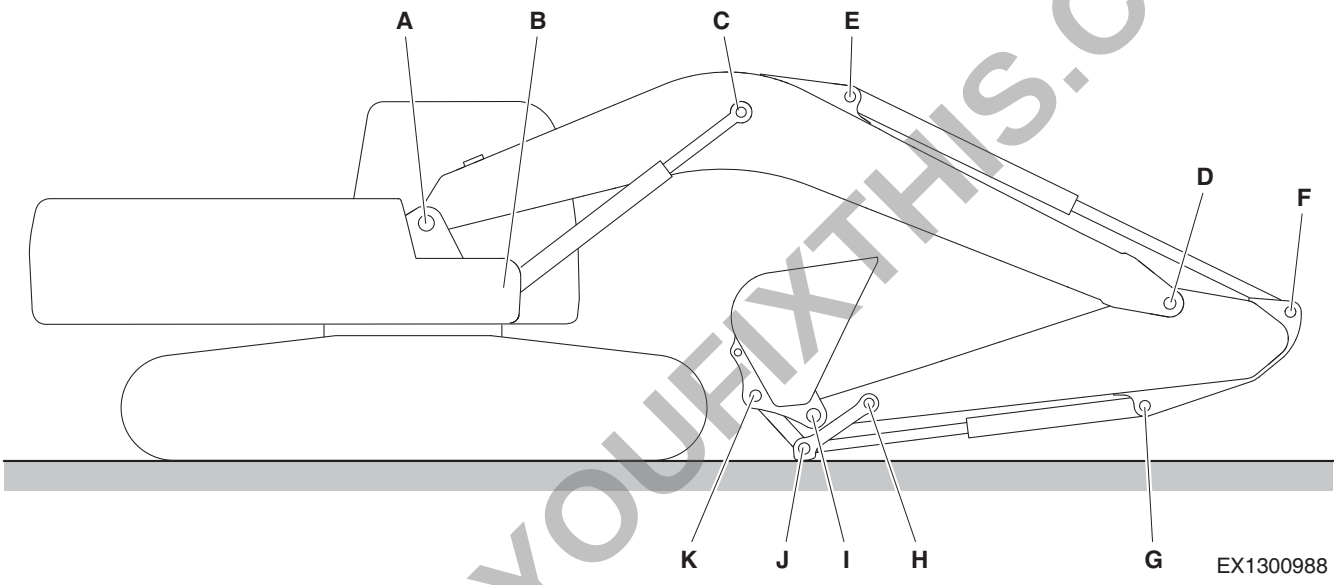
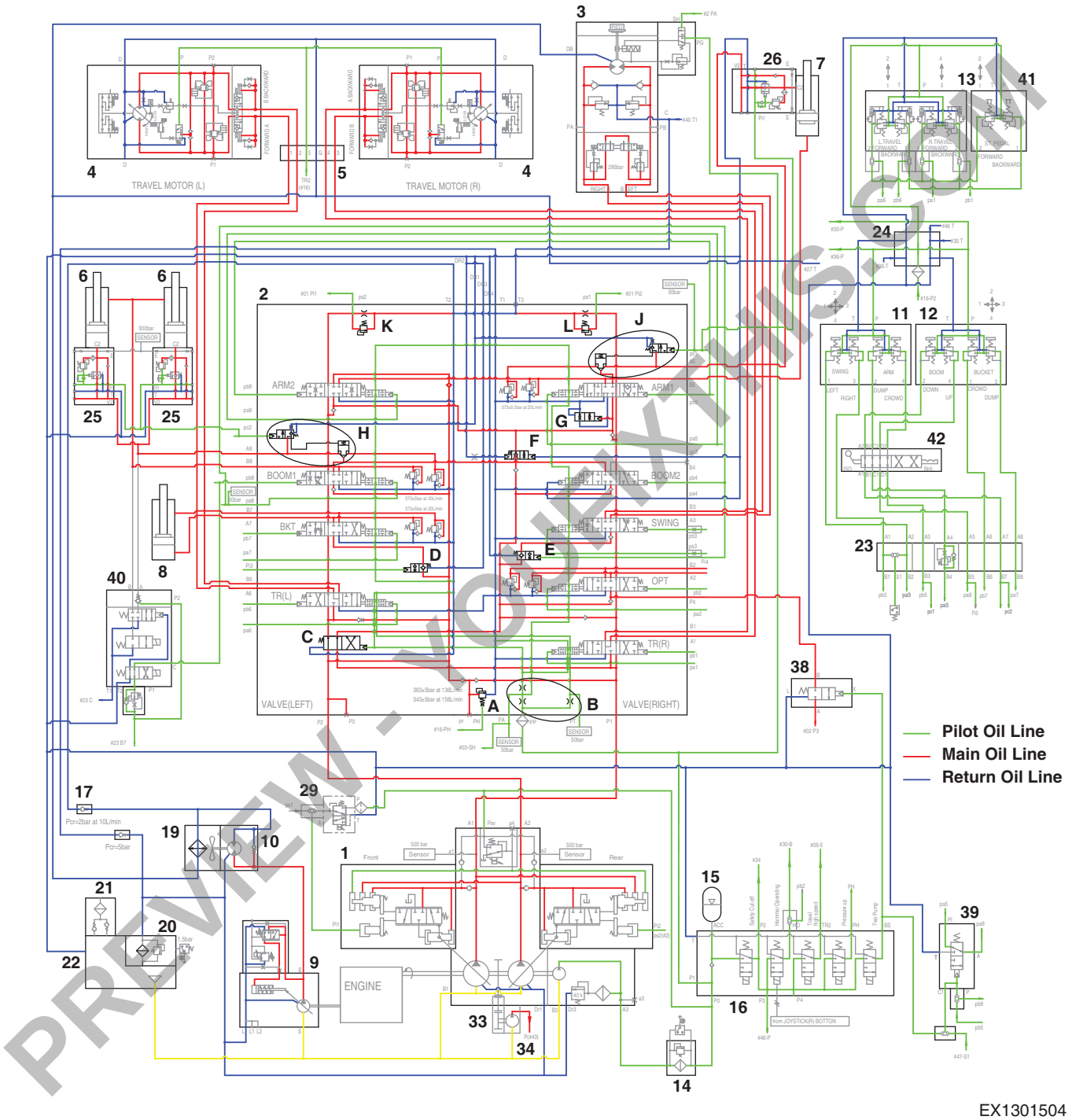


Figure 1

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HYDRAULIC COMPONENT AND OIL FLOW

Hydraulic Components



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Figure 1

ELECTRICAL SUPPLY SYSTEM

The electric power circuit supplies electric current to each electric component. It consists of a battery, battery relay, starter switch, circuit breaker, fusible link and fuse box.

The negative terminal of the battery is grounded to the machine body.

Even when the starter switch (5) is in the "OFF" position, electric current is supplied to the following components through battery (1) →fusible link (3) →fuse box (6).

1. Terminal "5" of stereo.
2. Terminal "B" of starter switch.
3. Hour meter.
4. Engine controller. (ECU + SCU)
5. Terminal "2" of fuel auto shutoff controller.
6. Terminal "6" of wiper motor.
7. Terminal "13" of wiper controller.
8. Terminal "CN7-5, CN7-6" of instrument panel controller.
9. Terminal "CN9-6" of air conditioner panel.
10. Cabin light
11. Terminal "11" of diesel heater timer.
12. Terminal "12" of diesel heater.
13. Terminal "1" of TMS controller.

When the starter switch (5) is in the "ON" or "START" positions, the current flows from the battery (1) →fusible link (3) →fuse box (6) →"B" terminal of starter switch (5) →"BR" terminal of starter switch (5) →"BR" terminal of battery relay (2) which activates the coil of the battery relay and the electric supply system is energized.

When the battery relay's contacts are connected, all electric devices can be operated.

While the engine is not running, the electric power for all electric devices are supplied by the battery. Once the engine is started the power is supplied from the alternator (7).

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SAFETY INSTRUCTIONS

⚠ WARNING

AVOID DEATH OR SERIOUS INJURY

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments repairs or service. Untrained operators and failure to follow instructions can cause death or serious injury.

GENERAL

General Description

The following description is of the installation of a pipe to operate an attachment such as a breaker.

This description explains how to install a new pipe in equipment in which a breaker operating pipe is not installed.

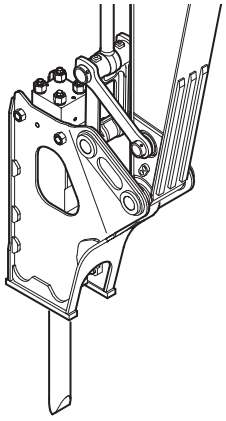


Figure 1 EX1301482

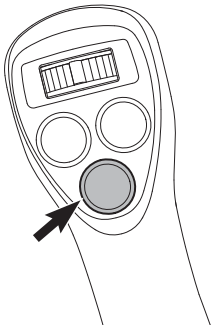
Theory of Operation

When a breaker (hammer) switch located at a right side joystick lever is operated, an OPT spool will move to the maximum extent possible through a hammer-operated solenoid valve.

Oil ejected from the front (P1) pump is connected to a high-pressure line from the breaker through the OPT spool, and the pressure thereof is controlled by a PPR valve connected to the high-pressure line (the variable pressure being controlled according to a current value).

The low-pressure oil of a breaker return line is returned to the tank through a return filter and an oil cooler.

The flow rate through the front (P1) pump is controlled by an instrument panel.

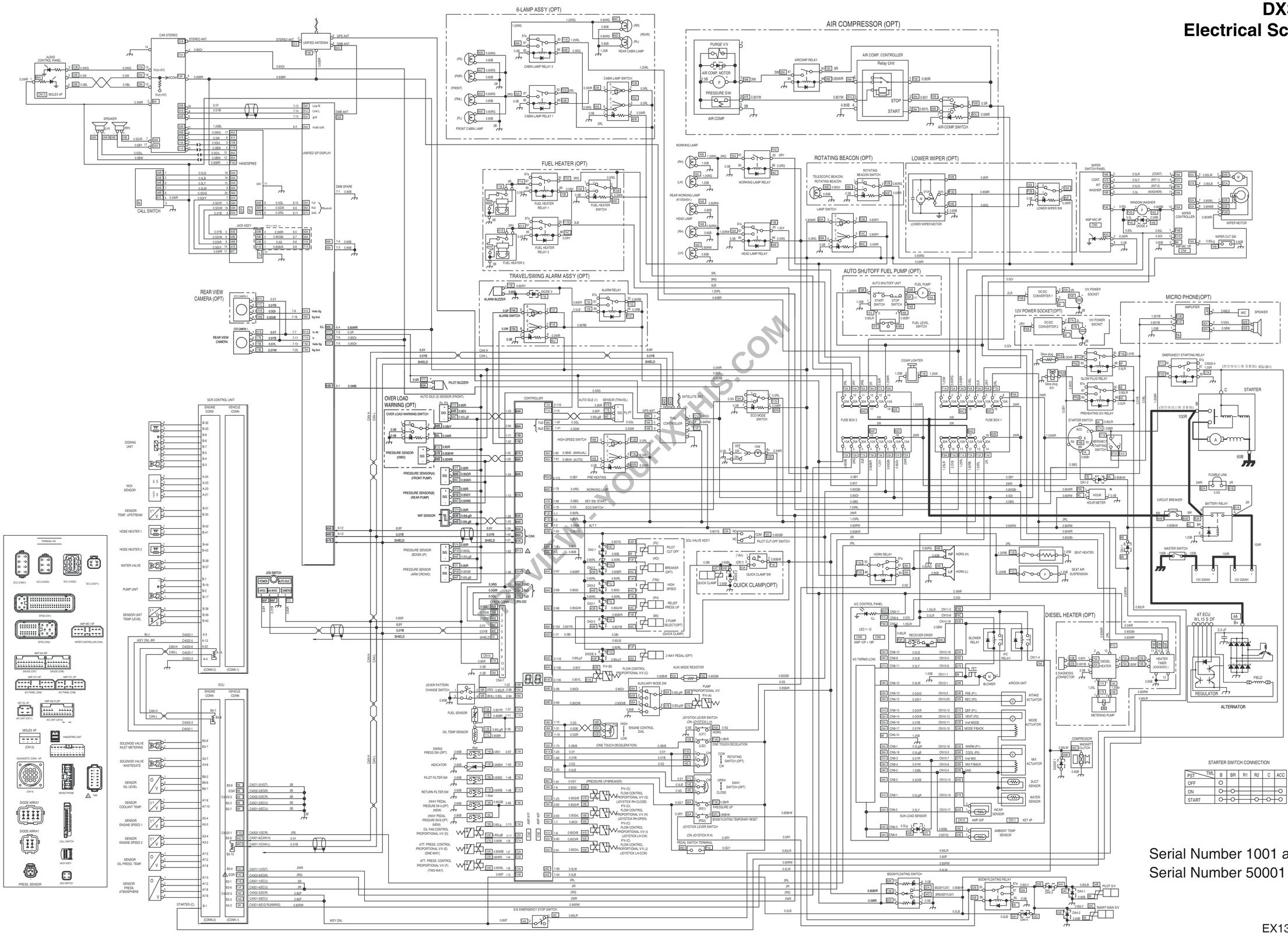


EX1301342

Figure 2

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DX300LC-5
Electrical Schematic



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Safe Operation is Operator's Responsibility

Only trained and authorized personnel should operate and maintain the machine.

Follow all safety rules, regulations and instructions when operating or performing maintenance on machine.

- Do not operate machine if you are under the influence of drugs or alcohol. An operator who is taking prescription drugs must get medical advice to determine if he or she can safely operate a machine.
- When working with other personnel on a work site, be sure that all personnel know nature of work and understand all hand signals that are to be used.
- Be sure that all guards and shields are installed in their proper location. Have guards and shields repaired or replaced immediately if damaged.
- Be sure that you understand the use and maintenance of all safety features such as safety lever and seat belt. Use them properly.
- Never remove, modify or disable any safety features. Always keep them in good operating condition.
- Always check for and know the location of underground and overhead utility lines before excavating.
- Failure to use and maintain safety features according to instructions in this manual, Safety Manual and Shop Manual can result in death or serious injury.

Know Your Machine

Know how to operate your machine. Know the purpose of all controls, gauges, signals, indicators and monitor displays. Know the rated load capacity, speed range, braking and steering characteristics, turning radius and operating clearances. Keep in mind that rain, snow, ice, loose gravel, soft ground, slopes etc., can change operating capabilities of your machine.

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WELDING PRECAUTIONS AND INSTRUCTIONS

WARNING

AVOID DEATH OR SERIOUS INJURY

To avoid accidents, personal injury and the possibility of causing damage to the machine or to components, welding must only be performed by properly trained and qualified personnel, who possess the correct certification (when required) for the specific welding fabrication or specialized repair being performed.

WARNING

AVOID DEATH OR SERIOUS INJURY

Structural elements of the machine may be built from a variety of steels. These could contain unique alloys or may have been heat-treated to obtain particular strength characteristics. It is extremely important that welding repairs on these types of steel are performed with the proper procedures and equipment. If repairs are performed incorrectly, structural weakening or other damage to the machine (that is not always readily visible) could result. Always consult DOOSAN After Sales Service before welding on integral components (loader arm, frames, car body, track frames, upper structure, attachment, etc.) of the machine. It is possible that some types of structurally critical repairs may require Magnetic Particle or Liquid Penetrant testing, to make sure there are no hidden cracks or damage, before the machine can be returned to service.

WARNING

AVOID DEATH OR SERIOUS INJURY

Always perform welding procedures with proper safety equipment and adequate ventilation in a dry work area. Keep a fire extinguisher near and wear personal protective equipment.

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10. Clean around the bearing contact surface.

NOTE: *The marking on the drift must be uppermost and vertical so the oil hole in the bearing will be central to the oil ways.*

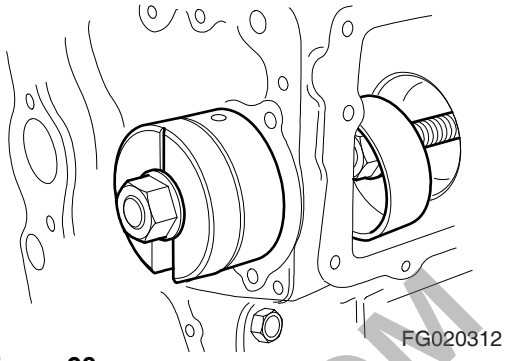
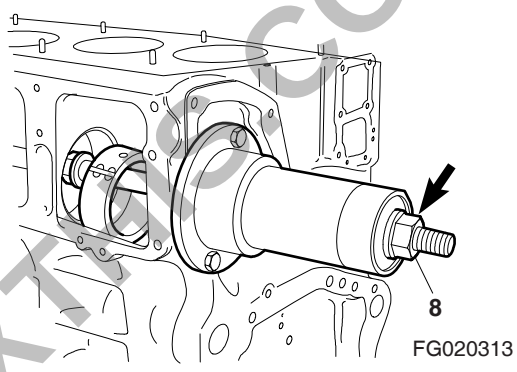

FG020312

Figure 90

11. Hold the press drift with the new bearing against the old. Secure the threaded stem between the press drift and hydraulic cylinder 99 003 by tightening flange nut 8 on the stem.

NOTE: *Secure the threaded stem by tightening flange nut 8.*

The new bearing is in the correct position before the old bearing is completely released. The new bearing has the correct position when the distance from the front Table for correctly located camshaft bearing edge of the cylinder block to the front edge of the press drift has a permitted value according to the table. -12 mm means that drift protrudes 12 mm from the cylinder block.



FG020313

Figure 91

Table for correctly located camshaft bearing

Camshaft Bearing No.	Distance (mm)
1	-12 - -14
2	150 - 152
3	314 - 316
4	478 - 480
5	642 - 644
6	806 - 808

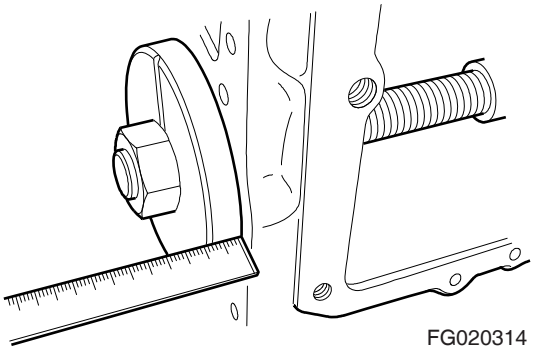

FG020314

Figure 92 Check measurement of bearing number 1.

12. Press in the new bearing at the same time as pressing out the old bearing with hydraulic cylinder 99 003 and hydraulic pump 99 004. Measure to check that bearing is correctly positioned.

13. Remove press drift by detaching flange nut 8 and pushing in the threaded stem.

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- The process to reduce the quantity of NOx starts in the SCR catalytic converter (9).
- **Starting when heating frozen reductant**
- The EEC control unit monitors the values and functions of all sensors.
- The engine is started.
- The EEC control unit opens the coolant valve (4) so coolant can heat the reductant tank (1) and reductant pump (11). The EEC control unit also activates electrical heating of the reductant hoses (2, 3) and the electric heating in the reductant doser (12).
- The EEC control unit registers, by the temperature sensor in the reductant tank (1) and the reductant doser (12), when the reductant is at a temperature above -5°C, at which the reductant pump (11) starts.
- When the temperature sensor (10) shows that temperature of the exhaust gases has reached 200 - 250°C and the value at the NOx sensor (8) has been reported to the engine control unit, the EEC control unit activates the reductant doser (12). The reductant doser then starts reductant injection into the evaporator (6). The dose is determined by the engine control unit on the basis of the combustion control in the engine which is currently being operated by the engine control unit.
- The process to reduce the quantity of NOx starts in the SCR catalytic converter (9).

Operation and Reductant Metering

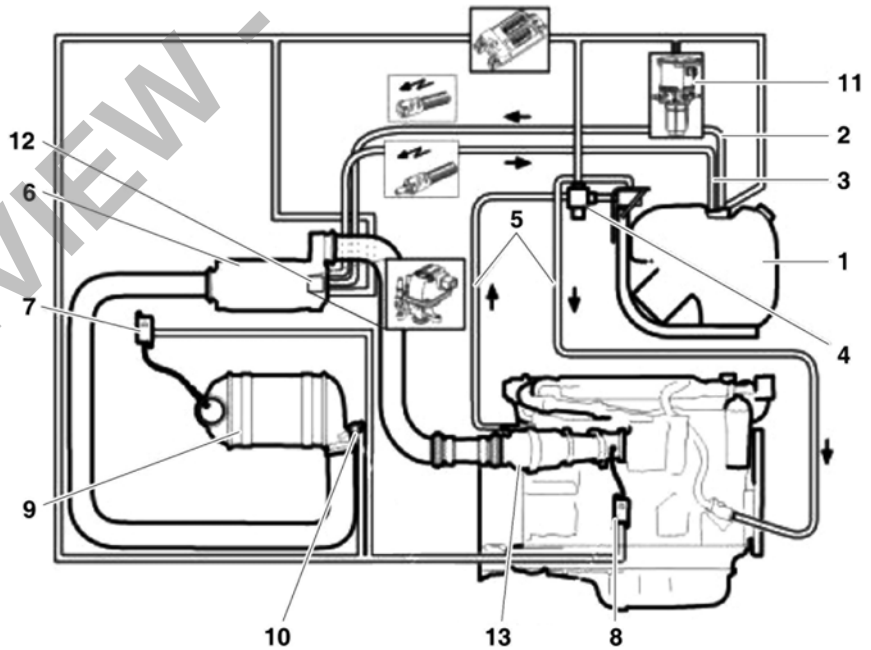


Figure 357

EX1302187

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Installing the High-pressure Pump

1. Lift the high-pressure pump into position and screw into place.
2. Undo the tapered joint which holds the high-pressure pump bracket against the cylinder block, and then tighten it again. This is done to remove any stresses.

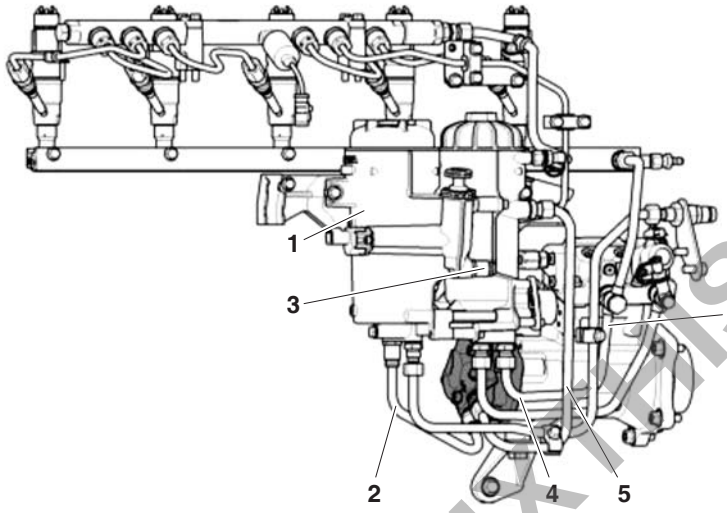


Figure 537 EX1302182

Reference Number	Description
1	Fuel filter housing.
2	Fuel pipe between the feed pump and the control unit cooler.
3	Fuel inlet pipe.
4	Fuel pipe between the fuel filter and the high-pressure pump.
5	Fuel pipe between the high-pressure pump and accumulator.
6	Return pipe between the high-pressure pump and the fuel filter.
7	Return pipe between the fuel manifold and the high-pressure pump.

Replacing the Cylinder Head for The High-pressure Pump on Engines

WARNING

AVOID DEATH OR SERIOUS INJURY

The fuel system has a very high fuel pressure of up to 3,000 bars (43,500 psi). The fuel system must be depressurized using checking tool before any work is started.

The system should always be treated as pressurized, even when the engine is switched off.

Wear protective gloves and goggles.

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Changing the Temperature Sensor

Removal

1. Remove heater.
2. Disconnect the electrical connections.

WARNING

AVOID DEATH OR SERIOUS INJURY

Leaking hot coolant can cause burns.

3. Unscrew and remove temperature sensor (6, Figure 2) and remove it with the round sealing ring (5, Figure 2).
4. Complete the work on stripped-down components.

Installation

1. Apply acid-free grease (Vaseline) to the round sealing ring (5, Figure 2).
2. Install the temperature sensor (6, Figure 2) with the round sealing ring (5, Figure 2) and screw it into the heat exchanger (4, Figure 2).

   Tighten to 1.5 Nm ±10%.
3. Connect the electrical connections.
4. Install the heater.

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7. Position valve block (312) in pump casing (271) and tighten hex socket head bolts (401).

IMPORTANT

Assemble the rear pump side first, to make the procedure easier.

Do not mistake direction of valve block.

Clockwise rotation (viewed from input shaft side) - Install block with regulator up and with delivery flange left, viewed from front side.

Counterclockwise rotation (viewed from input shaft side) - Install block with regulator up and with delivery flange right, viewed from front side.

8. Place feedback pin on tilting pin into feedback lever in regulator. Attach regulator with hex socket head bolts (412 and 413).

IMPORTANT

Do not mistake regulator of front pump for that of rear pump.

9. Install drain port plug (468).

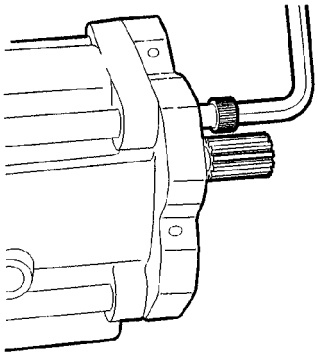

HDM3030P

Figure 53

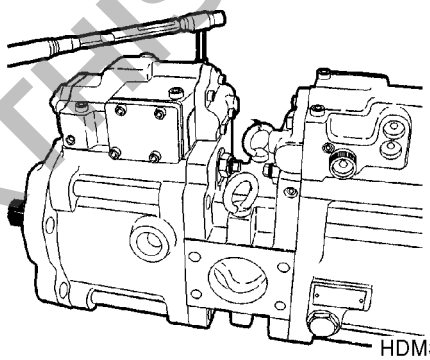
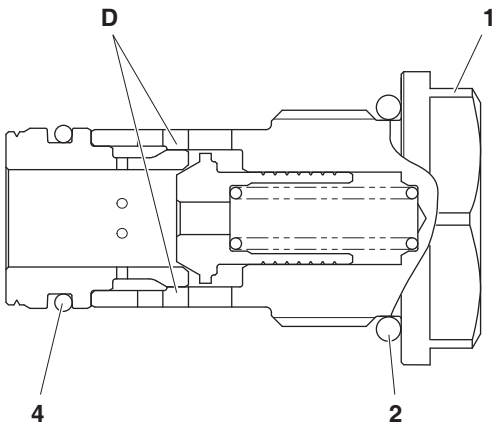

HDM3031P

Figure 54

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EX1401504

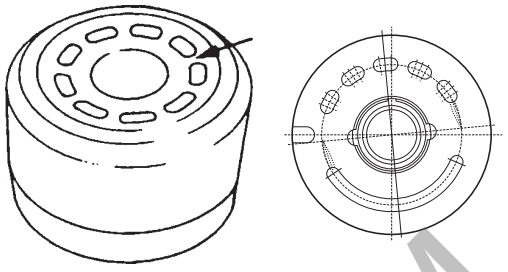
Figure 75

No.	Item	Tool	Torque
1	Plug	Wrench 32	8.8 kg.m
2	O-ring		
4	O-ring		

1. This unit has press install portion (D) and it must be replaced as a complete assembly.

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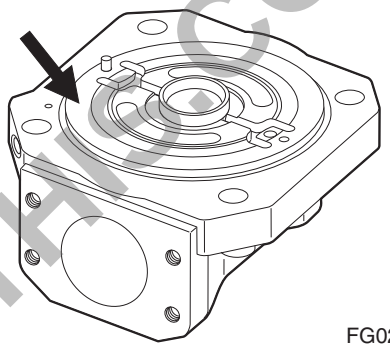
7. Cylinder sliding surface are free of grooves, no wear, no embedded foreign particles. That there are no scratches on control plate. (Only replace them as a set).



FG024402

Figure 57

8. Mounting surface - control plate is not damaged.



FG024403

Figure 58

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TRACK SHOES AND LINKS

Parts List

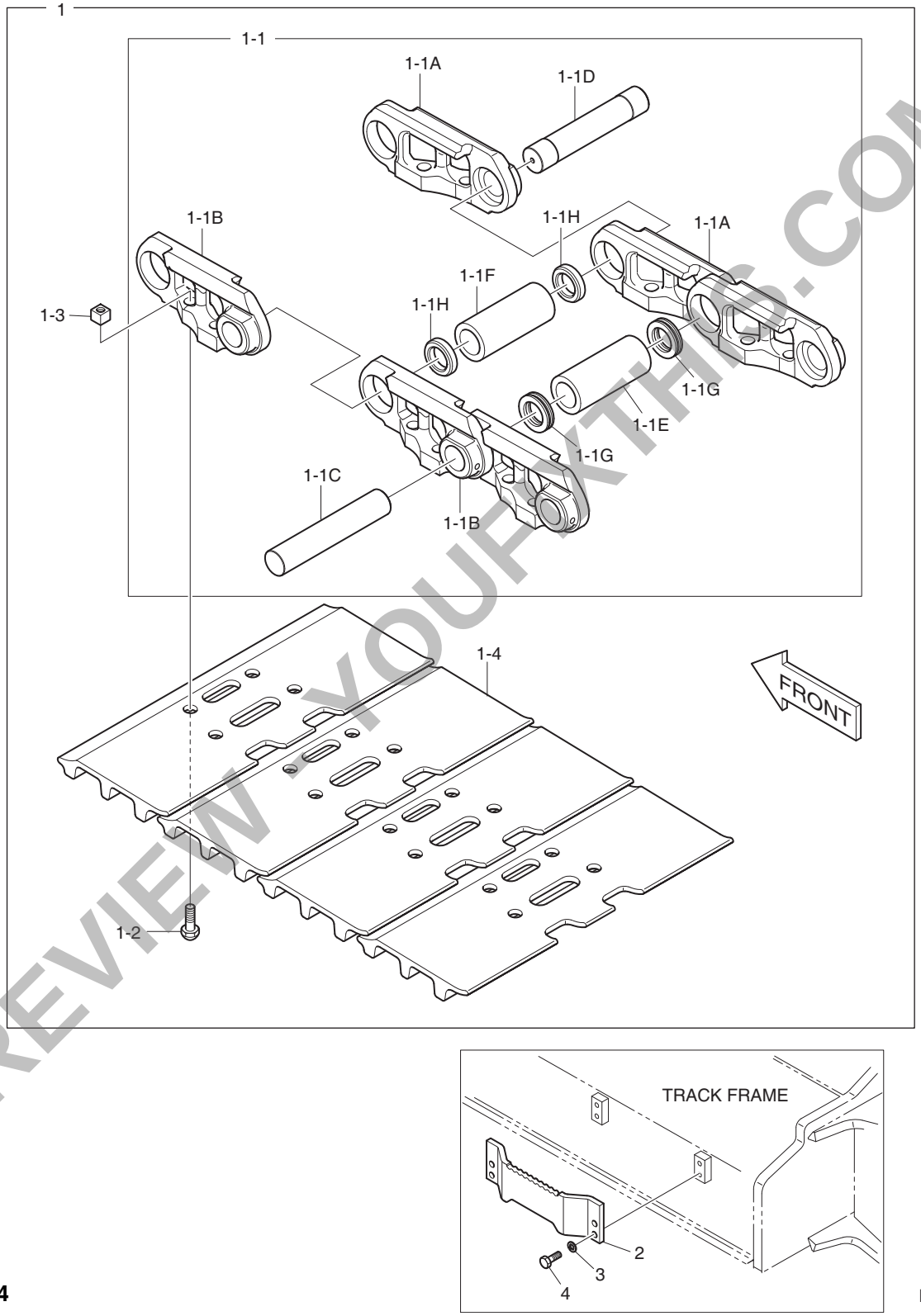


Figure 4

EX1301740

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SWING BRAKE RELEASE OPERATION

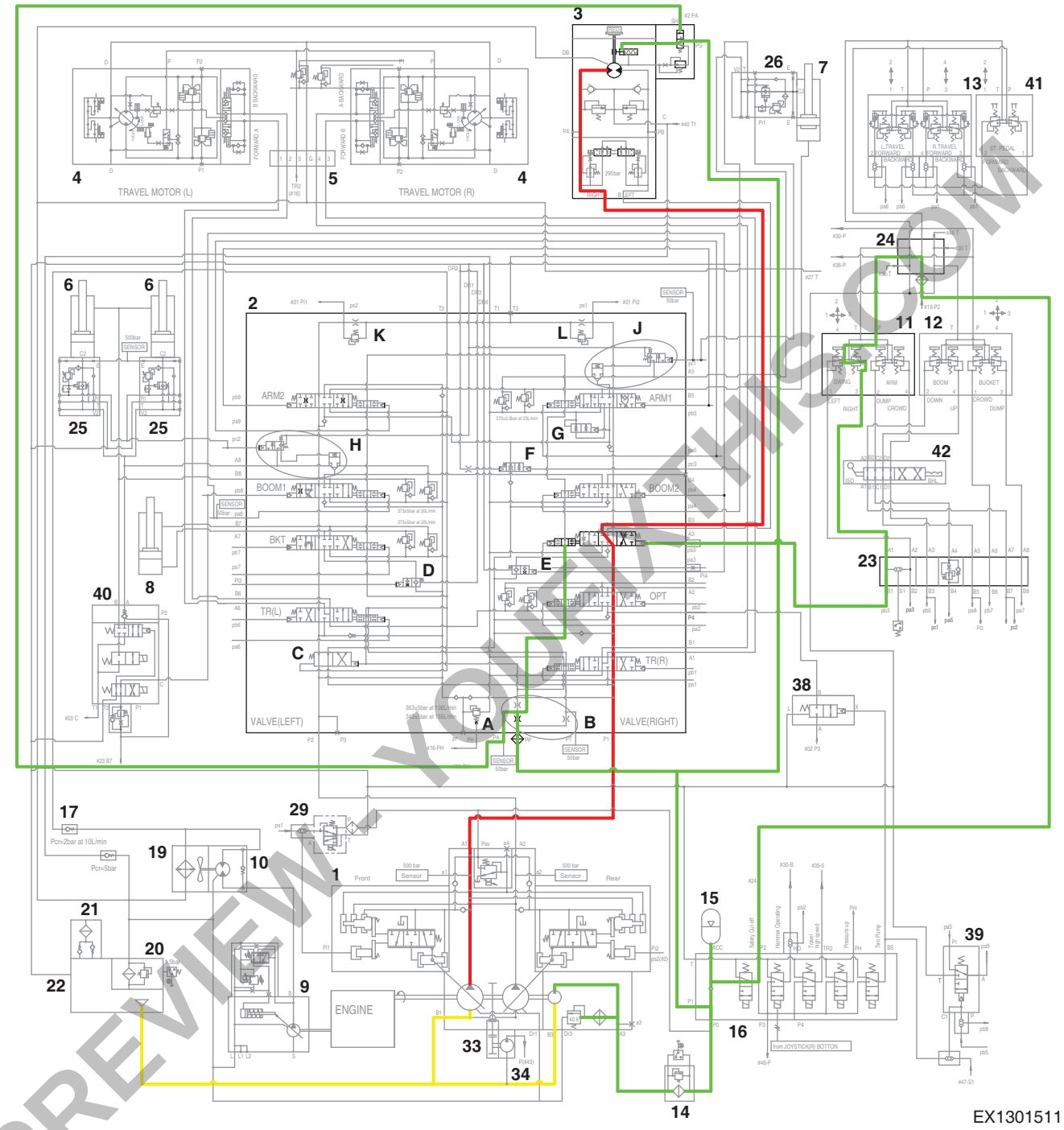


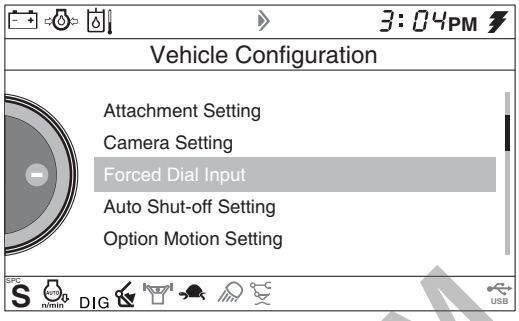
Figure 10

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D. Forced Dial Input

The forced dial input screen provides a method whereby to use the gauge panel's jog switch and control the engine rpm, replacing the engine control dial.

From the vehicle configuration, select the jog shuttle for dial to access it.

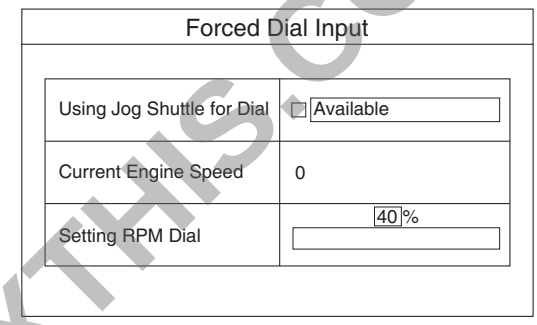


EX1301039

Figure 42

If you access the jog shuttle for dial screen, the initial cursor is located at the using jog shuttle for dial.

If the using jog shuttle for dial is shown as disable, the cursor cannot be moved.



EX1301423

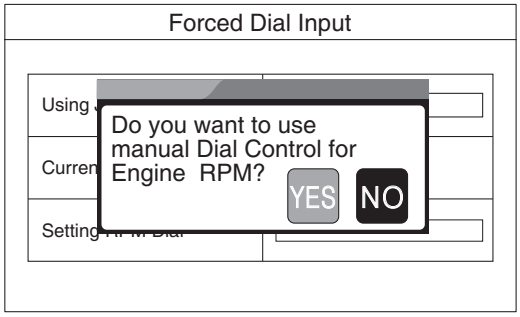
Figure 43

When the cursor is placed at the using jog shuttle for dial, if you click on the jog switch, a pop-up window will be created, saying "Do you want to use manual Dial Control for Engine rpm?".

Operate the jog switch and select "YES/NO" to determine whether to use jog shuttle for dial.

If you select "YES", then using jog shuttle for dial is enabled, causing the pop-up window to disappear.

If you select "NO", then using jog shuttle for dial remains disabled, causing the pop-up window to disappear.



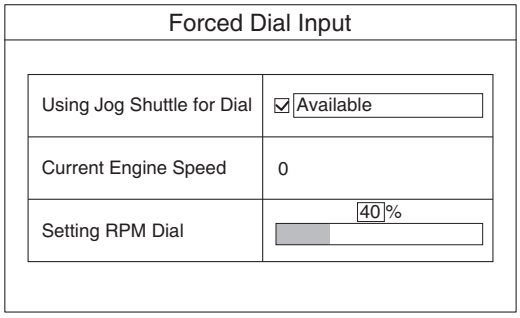
EX1301424

Figure 44

If the using jog shuttle for dial is shown as enable, operate the jog switch clockwise and move the cursor to the setting rpm dial. When the cursor is placed at the setting rpm dial, click on the jog switch to cause the cursor to flicker, changing into an editing mode to set up the rpm dial. When the cursor is placed at the editing mode, operate the jog switch clockwise/ counterclockwise, thus setting up the engine rpm.

When the cursor is at the editing mode, press the ESC button to disable the editing mode. When the cursor is not at the editing mode, press the ESC button to return to the previous screen.

Before keying off the gauge panel or disabling the using jog shuttle for dial, control the engine rpm only with the shuttle of the gauge panel's jog shuttle.



EX1301425

Figure 45

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Lighting System Circuit Diagram

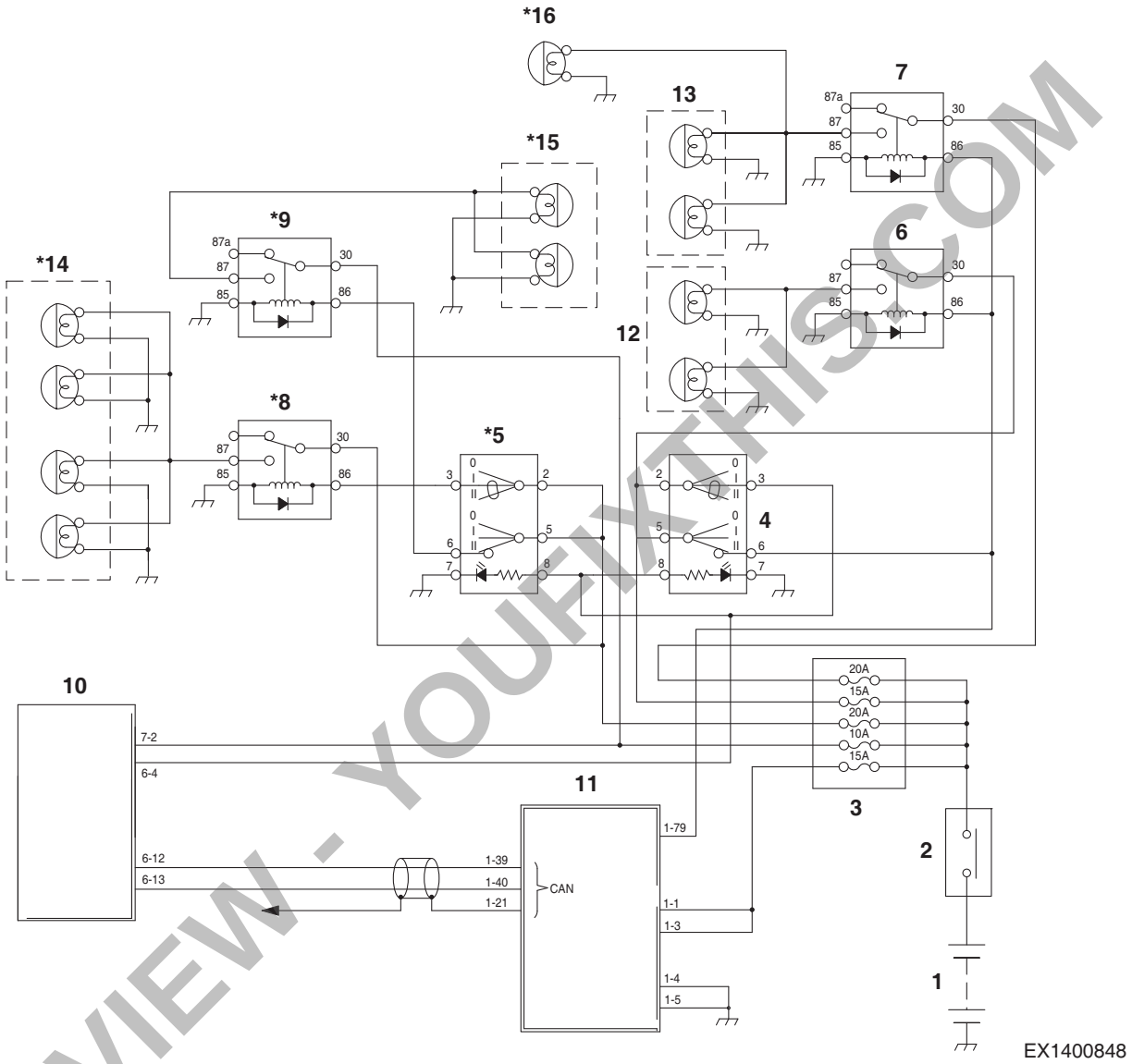


Figure 203

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