DX225LC-5
Hydraulic Schematic

OPTION	APPLIED PART			
SWING ALARM	(31)			
LOCK VALVE	(32) (60)			
ONE-WAY	(33) (36) (37)		TWO PUMP	FILTER
TWO-WAY	(33) (34) (36) (37)	PEDAL (58) (59)	(38) (51)	(35)
ROTATING	(39) (40) (41) (42)			
STRAIGHT TRAVEL	(43)			
QUICK COUPLER	(44) (45)			
ARTI. BOOM	(46) (47) (48) (49) (50) (51)		LOCK VALVE (48)	
INTELLIGENT FLOATING BOOM	(52)			
PATTERN CHANGE VALVE (ISO↔BHL)	(53)			
DOZER	(54) (55) (56) (57)			

STANDARD

1. MAIN PUMP
2. PILOT FILTER
3. SOLENOID VALVE (CUT OFF)
4. ACCUMULATOR
5. SOLENOID VALVE (PACKAGE)
6. JOYSTICK VALVE (L)
7. JOYSTICK VALVE (R)
8. TRAVEL PEDAL VALVE
9. PILOT JOINT BRACKET
10. MAIN CONTROL VALVE
11. BOOM CYLINDER
12. ARM CYLINDER
13. BUCKET CYLINDER
14. SWING DEVICE
15. TRAVEL DEVICE
16. CENTER JOINT
17. BY-PASS CHECK VALVE (C1)
18. BY-PASS CHECK VALVE (C2)
19. OIL COOLER
20. FULL FLOW FILTER
21. AIR BREATHER
22. HYDRAULIC TANK
23. PT BLOCK

OPTION

31. SHUTTLE VALVE(for SWING ALARM)
32. LOCK VALVE(for BOOM)
33. EPPR V/V(for 1 or 2 WAY)
34. EPPR V/V(for 2 WAY)
35. HIGH PRESS. RETURN FILTER
36. PROPORTIOAL RELIEF V/V
37. STOP VALVE
38. TWO PUMP FLOW VALVE
39. PTO
40. GEAR PUMP(for ROTATING)
41. EPPR V/V(for ROTATING)
42. ROTATING VALVE
43. STRAIGHT TRAVEL PEDAL V/V
44. QUICK COUPLER VALVE
45. QUICK COUPLER
46. ARTI. BOOM CYLINDER
47. SHUTTLE VALVE(for ARTI)
48. LOCK VALVE(for ARTI BOOM)
49. ARTI. VALVE
50. ARTI. PEDAL VALVE
51. CENTER BY-PASS CUT-OFF V/V
52. BOOM FLOATING V/V
53. PATTERN CHANGE VALVE
54. DOZER REMOCON. VALVE
55. DOZER VALVE
56. DOZER CYLINDER
57. SHUTTLE VALVE(for DOZER)
58. TWO WAY PEDAL V/V
59. TWO WAY PEDAL SAFETY V/V
60. ARM LOCK VALVE
61. SWITCH VALVE(for CLAMSHELL)

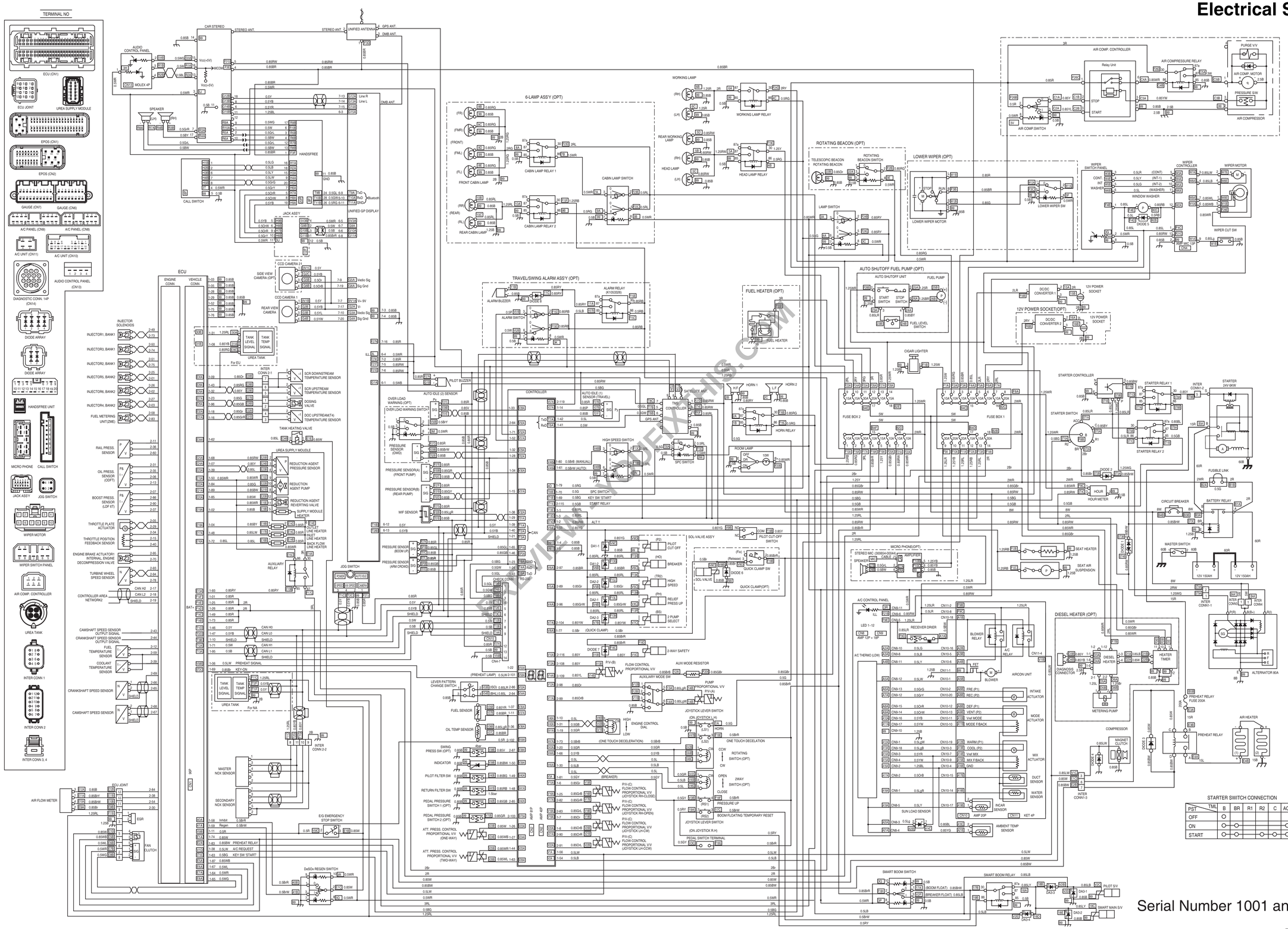
Serial Number 1001 and Up

EX1404250

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DX225LC-5
Electrical Schematic



Serial Number 1001 and Up

EX1404254

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SAFETY INSTRUCTIONS

⚠ WARNING

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AXIAL PISTON PUMP

Specifications

Discharge-Capacity/rev	Double	117 x 2 cm^3/rev
Pressure	Rating	343 bar (350 kg/cm^2, 4,975 psi)
	Peak	392 bar (400 kg/cm^2, 5,685 psi)
Number of Revolutions	Peak. Self-priming.	2,450 rpm
	Peak	2,700 rpm
Hydraulic Oil	Type	Anti-wear Type Hydraulic Oil
	Temperature Range	-20 ~ +95°C
	Viscosity Range	10 ~ 1,000 cst
	Filtration	80 ~ 150 (mesh)
		10 m

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GENERAL

Specification

Control Method		Negative Control
Rated Flow		250 L/min (50 L/min in neutral)
Main Relief Pressure	High	348 bar (355 kg/cm^2, 5,047 psi) at 136 L/min
	Low	328 bar (334 kg/cm^2, 4,757 psi) at 156 L/min
Overload Relief Pressure		353 bar (360 kg/cm^2, 5,120 psi) at 20 L/min
Permitted Back Pressure		Max. Pressure of 1.5 MPa or Less
		Used Pressure of 0.5 MPa or Less
Permitted Use of Oil Temperature		Normally -20 ~ +80°C
		Highest 100°C
		(Use of the Rubber for NBR)
Weight		193 kg (425 lb)

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Swing Bearing

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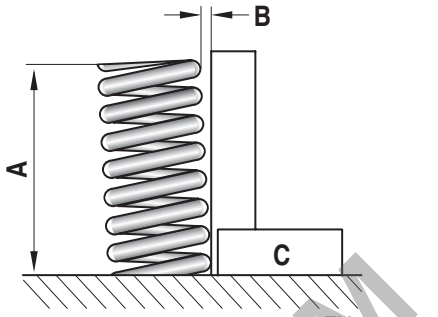
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3. Check the squareness of the valve spring.

Reference Number	Description
A	Free Length
B	Squareness
C	Straightedge

A. Use a surface plate and straightedge to measure the squareness of the valve spring.

B. If the measurement is over the allowable limit, replace the valve spring.



EX1403756

Figure 153

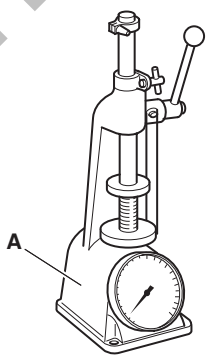
	Specification	Allowable Limit
Valve Spring Squareness	1.4 mm or below	2.0 mm

4. Check the tension of the valve spring.

A. Use a spring tester (A) to measure the tension of the valve spring.

B. If the measurement is below the allowable limit, replace the valve spring.

Item	Setting Length	Spring Tension	Allowable Limit
Intake/ Exhaust Valves	39.4 mm	28.8 kg	±2 kg
	29.67 mm	50 kg	±2 kg



EX1403757

Figure 154

Rocker Arm Removal

1. Use pliers to remove the snap rings from both ends of the rocker arm shaft.
2. Remove the washer, rocker arm bracket, rocker arm spring and rocker arm in order.

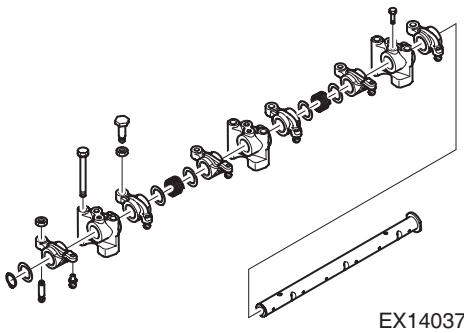

EX1403758

Figure 155

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The common rail features the injection characteristics as follows:

1. Compared to the conventional system's injection characteristics, the common rail manages the fuel injection amount and injection pressure separately to satisfy with any engine condition in order to ensure optimum fuel injection.
2. In the initial fuel injection period, i.e. the ignition delay from the beginning of fuel injection until the beginning of combustion, the fuel injection amount should be adjusted to a low level.
3. The common rail system is a modular type and has the following major components for is injection characteristics:
   A. Injector solenoid valve (installed to cylinder head)
   B. Common rail
   C. Fuel high-pressure pump
   D. ECU (Electronic Control Unit)
   E. Crankshaft speed sensor

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REMOVAL

WARNING

AVOID DEATH OR SERIOUS INJURY

Death or serious injury can occur from a counterweight falling during removal or installation. Do not allow personnel under or around the counterweight during removal or installation.

Use certified cables and shackles of adequate load rating. Improper lifting can allow the load to shift and cause death or serious injury.

1. Park on firm and level ground.
2. Lower front attachment (bucket) to ground.
3. Stop engine.
4. Move safety lever to "UNLOCK" position.
5. Turn starter switch to "I" (ON) position.

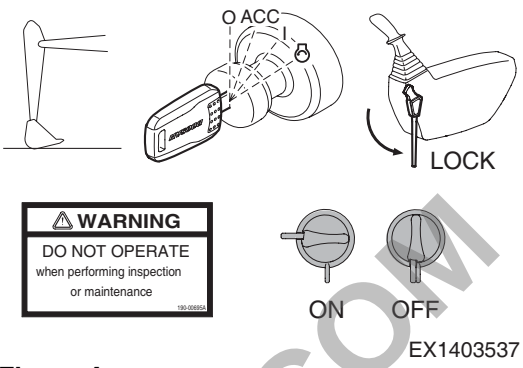


Figure 4

WARNING

AVOID DEATH OR SERIOUS INJURY

If engine must be running while performing maintenance, use extreme care. Always have one person in the cabin at all times. Never leave the cabin with the engine running.

6. Fully stroke work levers (joysticks) in all directions to relieve any pressure from accumulators.
7. Move safety lever to "LOCK" position.
8. Turn key to "O" (OFF) position and remove from starter switch.
9. Attach maintenance warning tag on controls.
10. Turn battery disconnect switch to "OFF" position.
11. Make sure all electrical and other items are disconnected.
12. Using a suitable lifting device capable of handling a heavy load, partially support counterweight from lifting holes (5, Figure 5), counterweight (1) before loosening four bolts (2). Stop lifting with assist crane as soon as lifting slings are taut.
13. Remove four bolts (2, Figure 5) and washers (3) from counterweight (1).
    - Tool: 46 mm ( )

    NOTE: *Heat bolts, if necessary, to free them.*

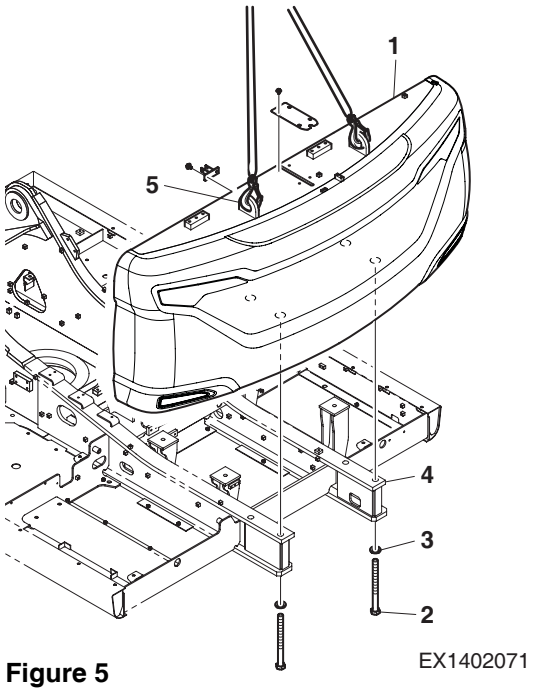


Figure 5

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7. Assemble cylinder block subassembly (14), swash plate subassembly and large/small actuator piston (223 and 224) in casing.

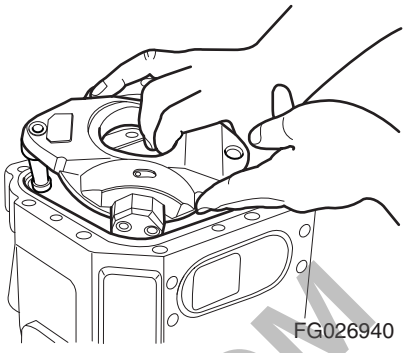


Figure 55

8. Insert shaft (111) into cylinder block with taper roller bearing facing upwards. Mate cylinder block and spherical bushing, and spline of the spline coupling and that of the shaft.

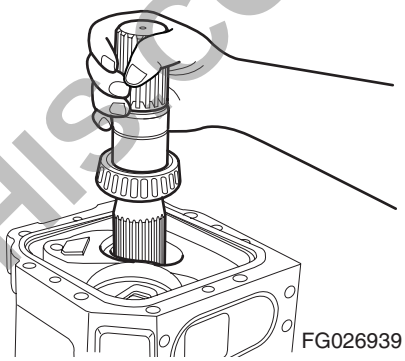


Figure 56

9. Align sliding surface of swash plate (211) and metal bearing surface of cover (314), and cover.

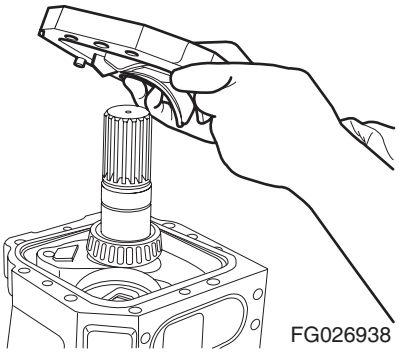


Figure 57

10. Place bearing spacer (319) on outer ring of taper roller bearing and cover with pump cover. Fasten socket bolt applying a specified torque.

IMPORTANT

Carefully assemble so that pump cover (316) can be balanced.

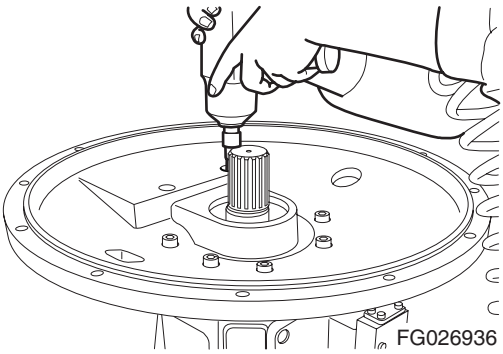


Figure 58

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B. Variable regeneration

When crowding arm, after return oil from port (A5) flows through notch (a), one portion of the oil returns through fixed orifice (d), passage (e) and variable orifice (f) and to tank passage (Ta). The other portion of the oil flows through fixed orifice (b), regeneration check (c), and fixed orifice (i) in arm 1 spool, and joins in bridge passage (S5-1).
From there, if load pressure of port (B5) is increased, it flows through regeneration release valve piston (g) and pushes regeneration release spool (h), as a result area of variable orifice (f) is increased, and oil returning to tank (Ta) is increased, and some oil to regenerate in port (B5) is decreased.

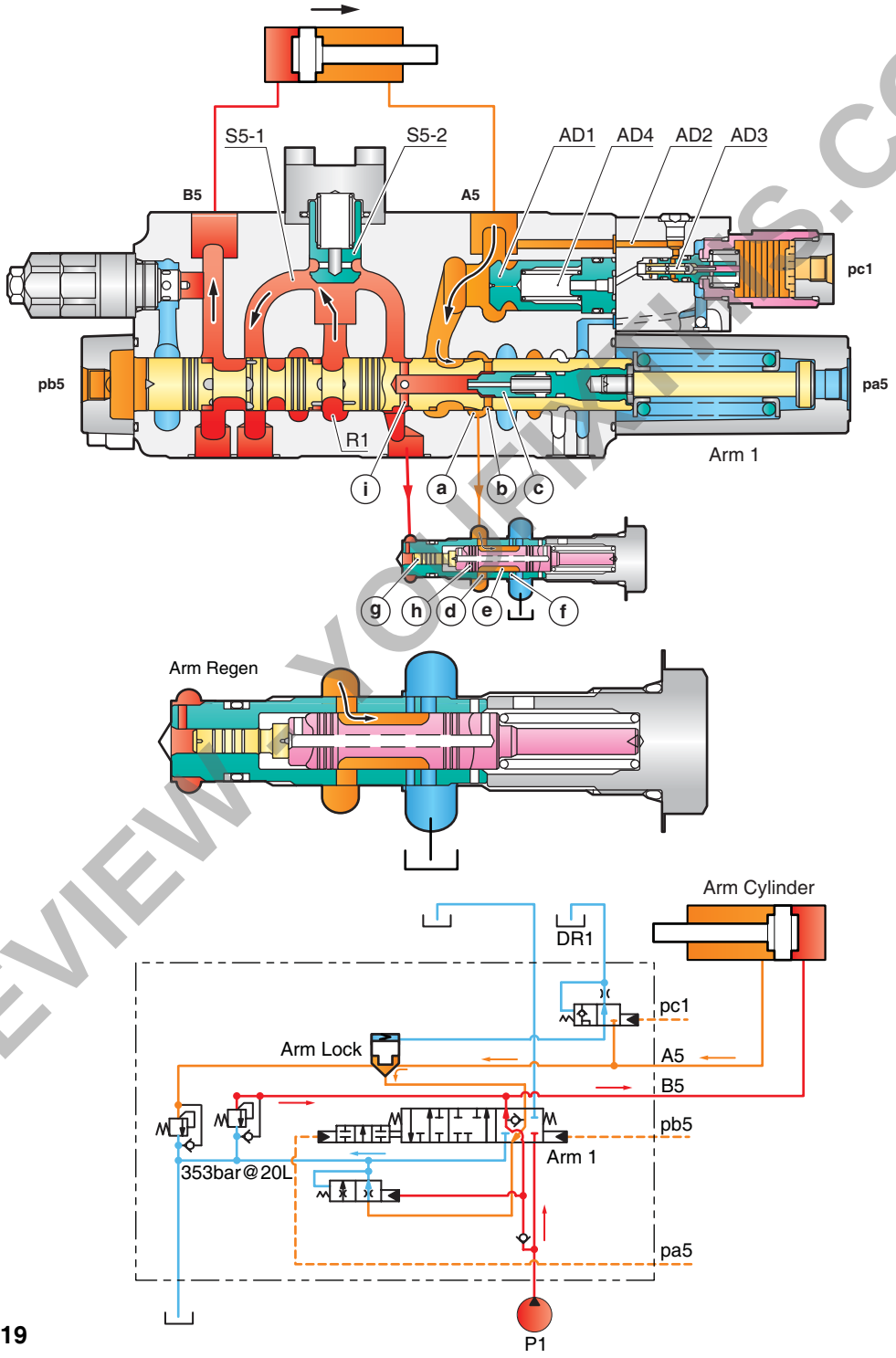


Figure 19

EX1404114

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Here, the Pg is the pressure in the chamber g which is pressurized by the oil through the orifice m, and when it reaches the pressure defined by the spring (321) pressing the piston (302), the piston starts to move to the left.

$$P1 \times A1 = F_{sp} + P_g \times A2$$

$$P1 = \frac{F_{sp} + P_g \times A2}{A1}$$

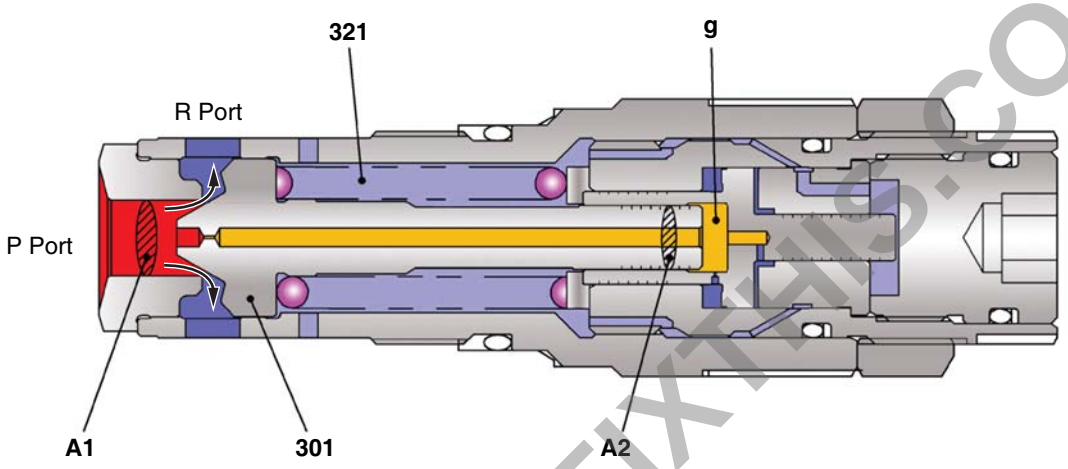


Figure 9

EX1301687

3. Chamber h acts as a damping chamber by the orifice (n) formed on the side of the piston (302).

   By this, the pressure in the chamber g increases smoothly until piston (302) reaches the end of the adjustment plug (401).

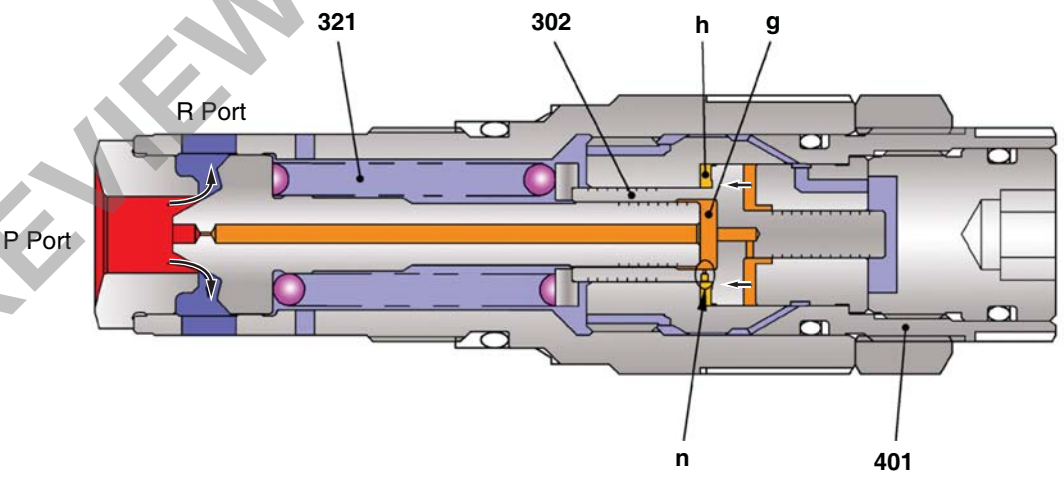
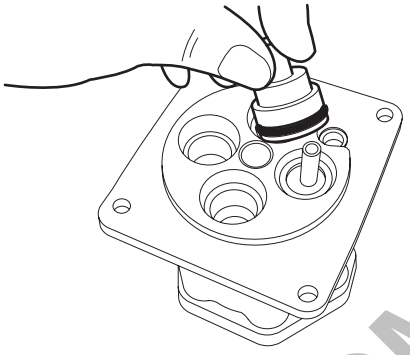


Figure 10

EX1301688

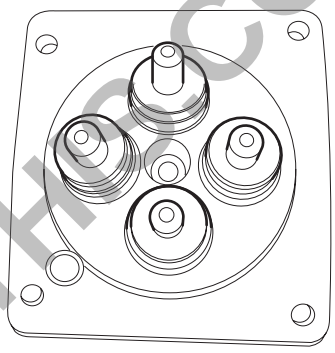
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FG000811

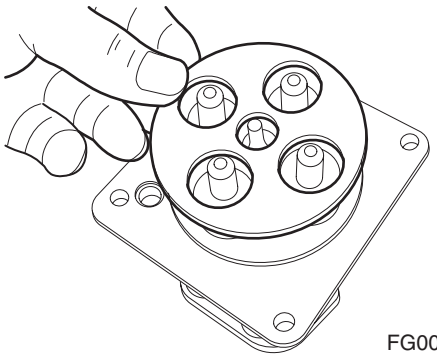
Figure 53



FG000823

Figure 54

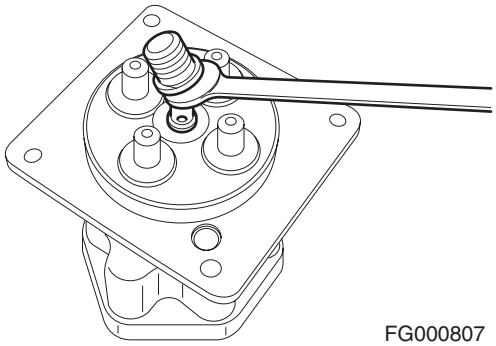
8. Install plate (19) into case (1).



FG000808

Figure 55

9. Install joint assembly (21) into case (1).



FG000807

Figure 56

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WARNING

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Specification

Max. Supply Pressure	40 bar (40 kg/cm^2, 580 psi)
Back Pressure	3 bar (3 kg/cm^2, 43 psi)
Max. Supply Rate	18.9 L/min (5 U.S. gal)
Weight	0.68 kg (1.5 lb)

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IMPORTANT

Care must be taken not to make a scratch or damage the surface of the spindle when disassembling the hub of the spindle.

6. Disassemble the spindle from the hub.

   It can be disassembled easily by fixing the hub, tightening at least 2 ~ 10 mm eyebolts on the spindle, and lifting it with a hoist slowly. (Figure 18)

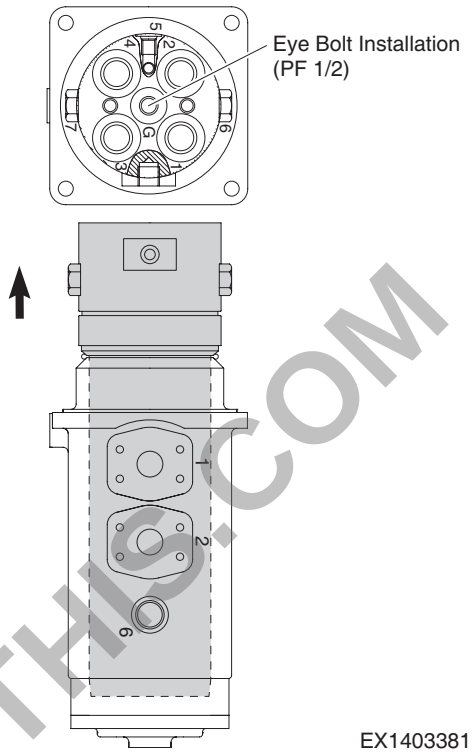


Figure 18

7. Remove the slipper seal (7, Figure 20) (9 ea), O-ring (8) (1 ea), O-ring (9) (1 ea) and dust seal (19) (1 ea) from the hub.

IMPORTANT

Care must be taken not to damage the inside of the hub because it is likely to be damaged when disassembling the slipper seal. It may be disassembled more easily with a screwdriver whose tip is bent as shown in Figure 19.

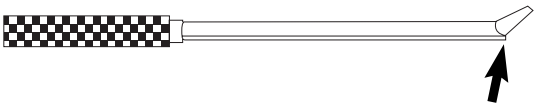


Figure 19 FG021966

8. Remove foreign substance on pieces disassembled and wash them out.
9. Replace disassembled O-rings and slipper seals with new ones, for they cannot be reused.
10. Clearance between the spindle and body of the center joint must be tight. Replace or repair either component if there is more than 0.1 mm (0.0039") of measurable wear.

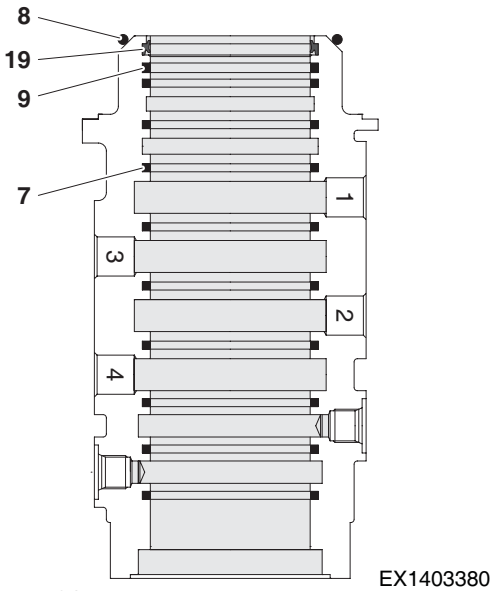


Figure 20

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Track Assembly

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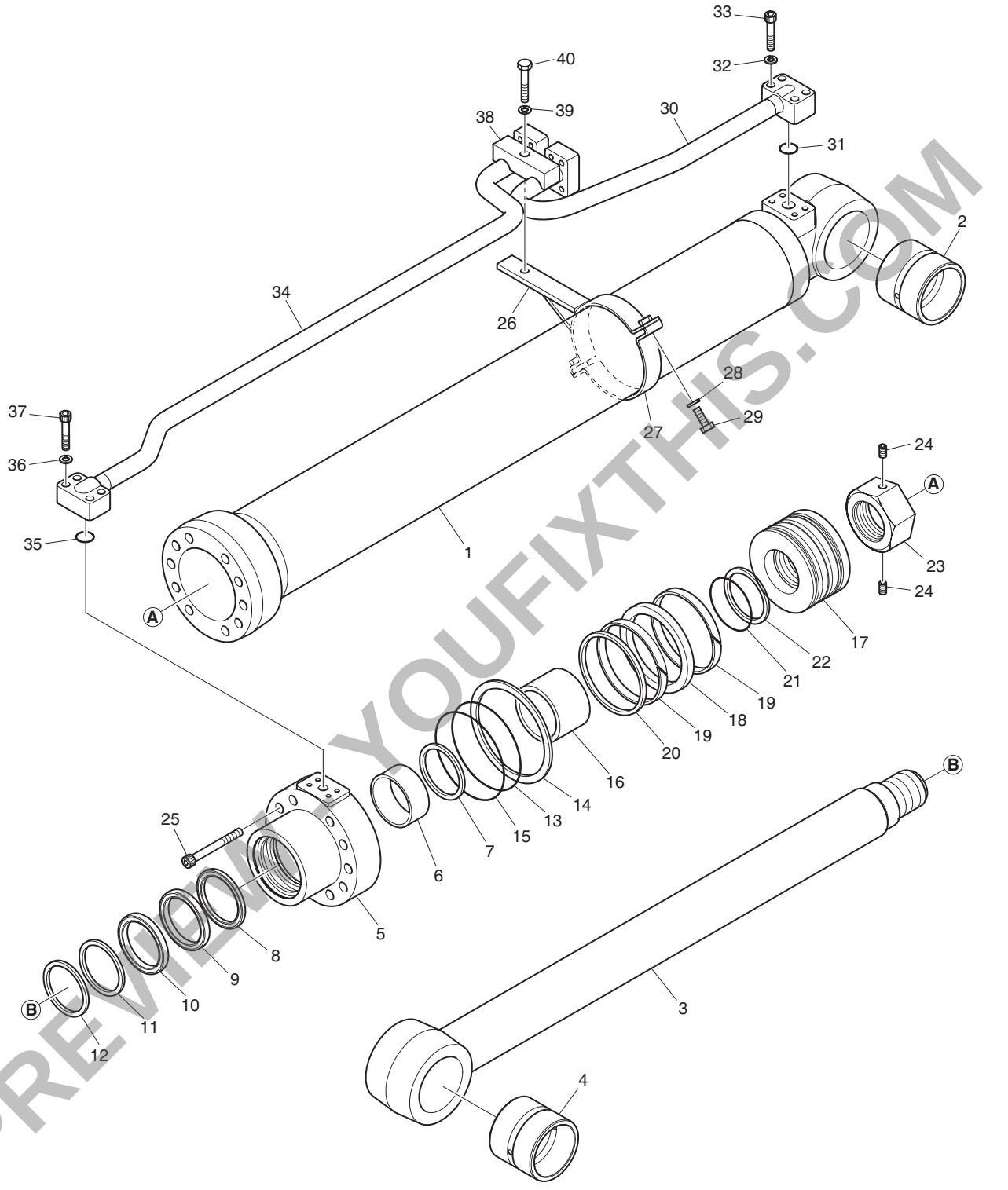


Figure 3

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available to the actuator. Poor flow through the individual circuit may indicate that component is worn beyond tolerance limits, while all other hydraulic functions are adequate.

IMPORTANT

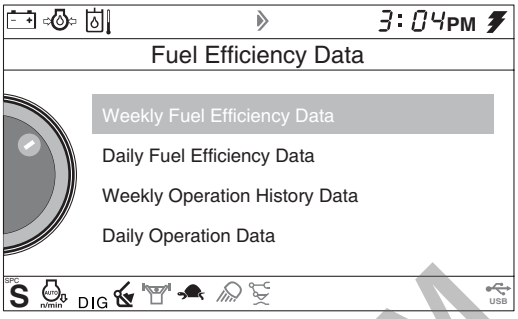
It is suggested that troubleshooter maintain the testing sequence of the preceding list. Checks and adjustments nearer the middle or the end of the list may depend on adequate functioning of systems tested nearer the top of the list.

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D. Fuel Efficiency Data

It is possible to check the weekly fuel efficiency data, daily fuel efficiency data, weekly operation history data and daily operation data.

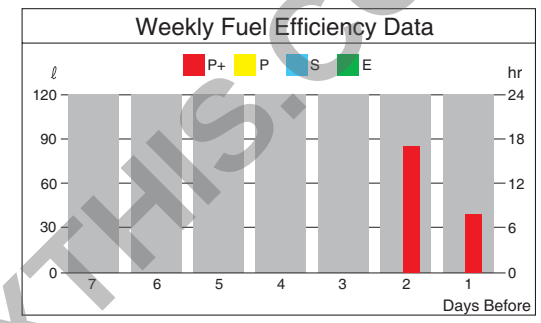


EX1402169

Figure 28

1) Weekly Fuel Efficiency Data

The amount of fuel used by each operating mode in a week can be checked.

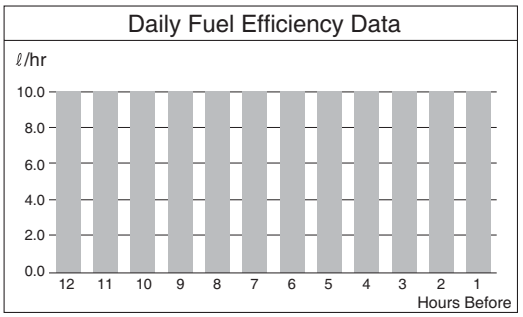


EX1402170

Figure 29

2) Daily Fuel Efficiency Data

The amount of fuel used in a day can be checked.



EX1402171

Figure 30

3) Weekly Operation History Data

The amount of fuel used, operating period and daily average fuel efficiency in a week can be checked.

Weekly Operation History Data

Days Before	Amount of Fuel Used	Operation Period	Daily Average Fuel Efficiency
1	0 ℓ	9.1 hr	0.0 ℓ/hr
2	0 ℓ	16.6 hr	0.0 ℓ/hr
3	0 ℓ	0.0 hr	0.0 ℓ/hr
4	0 ℓ	0.0 hr	0.0 ℓ/hr
5	0 ℓ	0.0 hr	0.0 ℓ/hr
6	0 ℓ	0.0 hr	0.0 ℓ/hr
7	0 ℓ	0.0 hr	0.0 ℓ/hr

EX1402172

Figure 31

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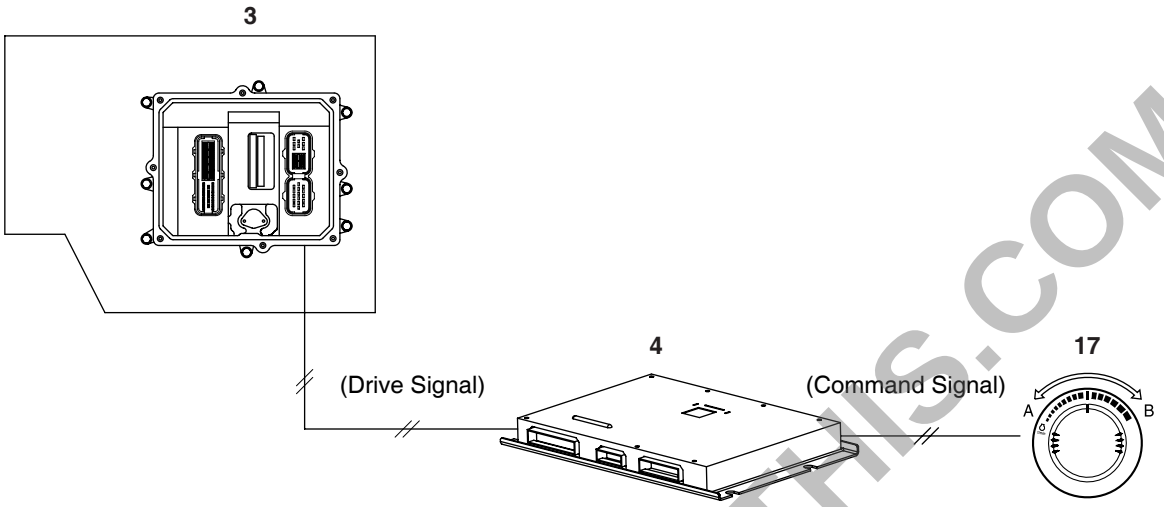


Figure 173

Reference Number	Description
3	Engine Controller
4	EPOS Controller

Reference Number	Description
17	Engine Control Dial

When the engine control dial is moved the output voltage changes according to the dial position.

The EPOS controller converts this output voltage of dial to digital signal and sends it to the engine controller by CAN line. According to the dial command, the quantity of fuel injection is adjusted.

Power Output Value Using Ramp and Power

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COMPLETING WORK

Breaker line overload relief valve can be changed from the monitor (range 140 - 250 bar (142.8 - 255 kg/cm^2)).

Set to 250 bar (255 kg/cm^2). Check the pressure at maximum flow.
(If maximum control pressure is out of tolerance, check EPPR current)

How to Set Up Attachments

Attachment setting items include attachment use, max E/G limit, max pressure (ATT), max flow (ATT), min flow (ATT), and user setting max flow. Operate the jog switch clockwise/ counterclockwise to locate the cursor. Then, click on the jog switch to set up relevant items.

The cursor movement order goes like this:

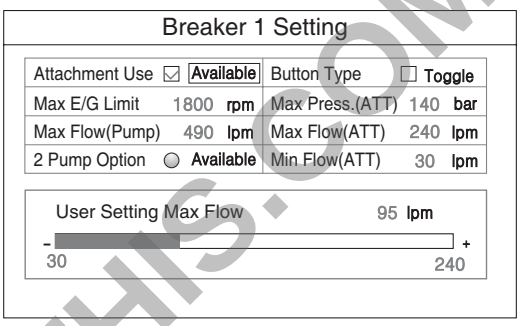
1. Breaker Setting

   Attachment Use ↔ **Toggle** ↔ **Max E/G Limit** ↔ **Max Pressure** ↔ **Max Flow** ↔ **Min Flow** ↔ **User Setting Max Flow**

2. Two-way Setting

   Attachment Use ↔ **Max E/G Limit** ↔ **Max Pressure** ↔ **Max Flow** ↔ **Min Flow** ↔ **User Setting Max Flow**

For details, See “Attachment Setting (Optional)” on page -9-1-34, Electrical System Section in this manual.



EX1301419

Figure 11

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