WORKSHOP MANUAL

TB215R

Serial No.215000003~

Book No. CC8E001

WETB215R-AC



MINI EXCAVATOR

TAKEUCHI

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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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SPECIFICATION TABLES

Operating mass	Rubber crawler	Canopy	kg (lb)	1575 (3470)
		Cab	kg (lb)	–
	Steel crawler	Canopy	kg (lb)	–
		Cab	kg (lb)	–
Rated horse power*			kW (hp)	11.5 (15.4)
			min^{-1} (rpm)	2400 (2400)
Bucket capacity	Heaped capacity		m^3 ($ft.^3$)	0.038 (1.34)
	Struck capacity		m^3 ($ft.^3$)	0.028 (0.99)

*: Based on ISO9249 or SAEJ1349

Performance

Standard loading mass			kg (lb)	70 (150)
Slew speed			min^{-1} (rpm)	9.2 (9.2)
Travel speed	Rubber crawler	1st	km/h (mph)	2.2 (1.37)
		2nd	km/h (mph)	4.2 (2.61)
	Steel crawler	1st	km/h (mph)	–
		2nd	km/h (mph)	–
Maximum tractive force			kN (lbf)	19.4 (4360)
Gradeability			%	58
			deg.	30
Ground pressure	Rubber crawler	Canopy	kPa (psi)	26.2 (3.8)
		Cab	kPa (psi)	–
	Steel crawler	Canopy	kPa (psi)	–
		Cab	kPa (psi)	–
Noise level	Sound-power level		dB (A)	93
	Sound-pressure level*		dB (A)	–

*: At the operator location as stipulated by ISO 6396: 2008.

Dimensions of completed machine

Overall length	Standard arm		mm (in.)	3445 (135.6)
	Middle arm		mm (in.)	–
	Long arm		mm (in.)	–
Overall width	During normal operation		mm (in.)	1300 (51.2)
	Track retracted		mm (in.)	980 (38.6)
Overall height	Rubber crawler	Canopy	mm (in.)	2345 (92.2)
		Cab	mm (in.)	–
	Steel crawler	Canopy	mm (in.)	–
		Cab	mm (in.)	–

Dimensions of base machine

Overall length of base machine		mm (in.)	1560 (61.4)
Overall width of base machine	During normal operation	mm (in.)	1300 (51.2)
	Track retracted	mm (in.)	980 (38.6)
Upper structure overall width		mm (in.)	980 (38.5)
Upper structure overall width	Left	mm (in.)	495 (19.4)
	Right	mm (in.)	485 (19.1)
Cab overall width		mm (in.)	–

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OVERALL MACHINE

No operation is possible.

1	Check the hydraulic oil level	Insufficient	Add hydraulic oil.
	Sufficient		
2	Check the hydraulic pump	Faulty	• Repair or replace the hydraulic pump. • Replace the coupling.

1. Check the hydraulic oil level.

Check the hydraulic oil tank level.

☞ "4. Disassembly and assembly, Hydraulic oil tank"

When adding, use the same brand of oil currently being used.

☞ "2. Service data, Fuel and lubricant table"

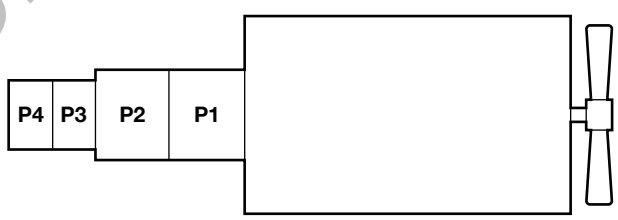
2. Check the hydraulic pump.

- Check the discharge pressure of the pumps P1 and P2 (piston pumps).

☞ "2. Service data, Performance criteria"
☞ "5. Troubleshooting, Piston pump"

- Check the pumps P3 and P4 (gear pumps).

☞ "2. Service data, Performance criteria"
☞ "5. Troubleshooting, Piston pump"



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Removing the engine

1. Remove the battery ground cable from the battery terminal.
2. Remove the covers.
   ☞ "Removing the covers"
3. Disconnect the hoses, and take out the air cleaner assembly (3).
4. Loosen the radiator cap, and bleed out the engine coolant from the drain valve (8).
   • Engine coolant volume: 3.9 L (4.1 USLqt)
5. Disconnect the hoses (21) and (22) from the radiator assembly (1).
6. Disconnect the hose from the drain valve (8).
7. Disconnect the hose from the sub-tank (9), and remove the sub-tank.
8. Drain the hydraulic oil from the tank.
   ☞ "Removing the hydraulic tank"
9. Disconnect the hydraulic hoses (20) and (21) from the radiator assembly (1).
10. Remove the fan guard (2).
11. Take out the fixing nuts holding the cushion rubber in place, and remove the radiator assembly (1).
    • Slowly hoist up the radiator assembly while slowly pulling it forward so that the shroud does not strike the cooling fan.
    kg : 13 kg (28 lbs)
12. Remove the hydraulic pump.
    ☞ "Removing the hydraulic pump"
13. Disconnect the fuel hoses on the engine side.
    ☞ "Removing the hydraulic tank"
14. Disconnect the battery cable and the engine electrical wiring on the engine side.
    • Attach an identification label to each wiring.
    ☞ "2. Wire harness diagram"
    ☞ "Removing the battery"
15. Disconnect the engine ground cable (11).
16. Take out the nuts, and suspend the engine.
    • Use a shim to adjust the clearance between the engine hood and the stopper (6).
    Upper side of the nut: 54.9 N·m (40.5 ft-lb)
    Lower side of the nut: 44.1 N·m (32.5 ft-lb)
    ☞ Refer to the construction diagram
    kg : 103 kg (227 lb)

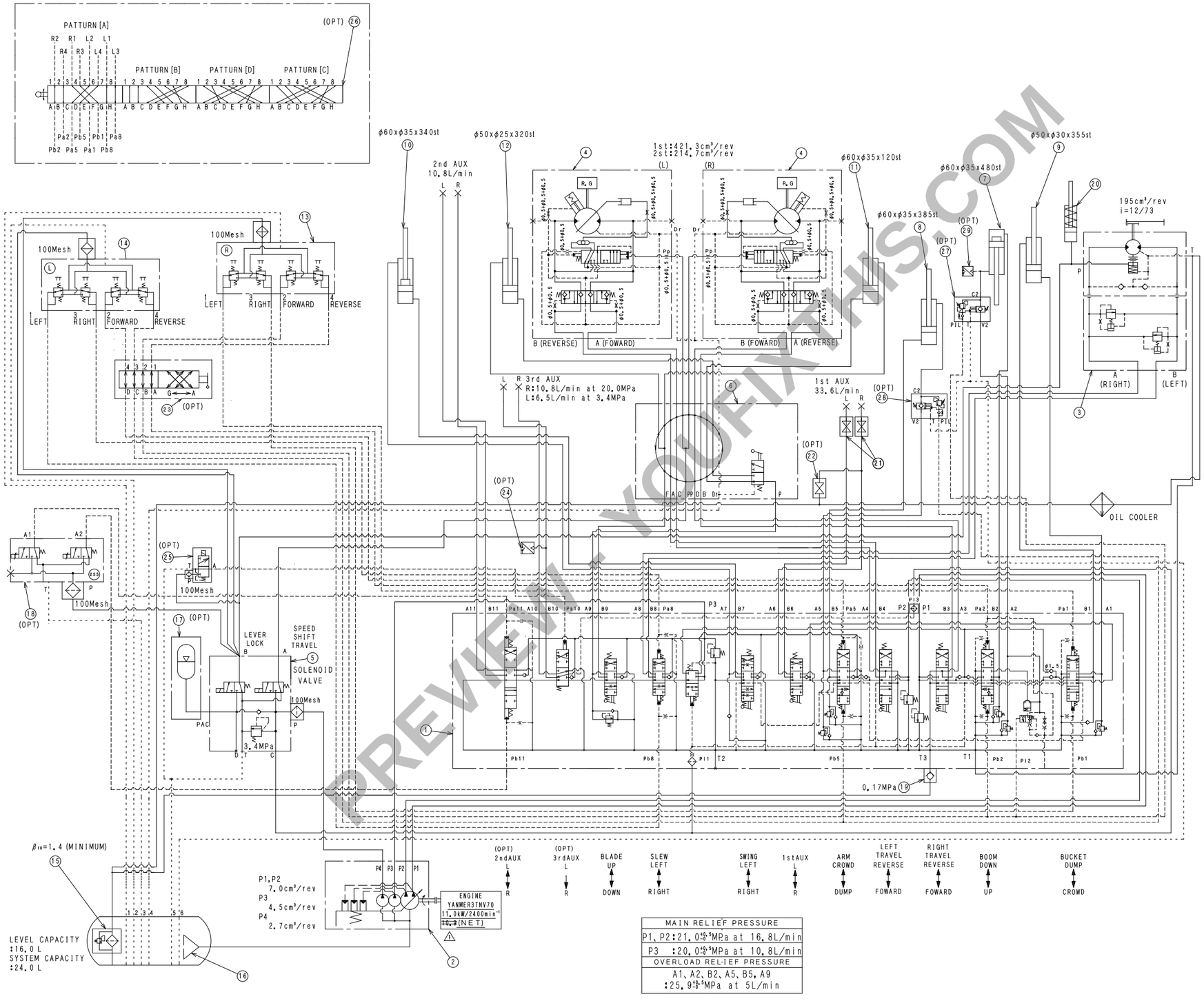
Installing the engine

For installation of the engine, follow the same procedures as for removal but in the reverse order.
The radiator must be mounted at a right angle to the frame and parallel to the cooling fan.

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HYDRAULIC CIRCUIT DIAGRAM



MAIN RELIEF PRESSURE
P1、P2:21.0$^{+0.5}_{-1.5}$MPa at 16.8L/min
P3 :20.0$^{+0.5}_{-1.5}$MPa at 10.8L/min
OVERLOAD RELIEF PRESSURE
A1、A2、B2、A5、B5、A9 :25.9$^{+0.5}_{-1.5}$MPa at 5L/min

No	NAME OF PART
2-9	PRESSURE SWITCH
2-8	LOAD HOLDING VALVE
2-7	LOAD HOLDING VALVE
2-6	MULTI SLECTOR VALVE
2-5	SOLENOID VALVE
2-4	PRESSURE SWITCH
2-3	SELECTOR VALVE
2-2	STOP VALVE
2-1	STOP VALVE
2-0	TRAVEL LEVER LOCK CYLINDER
1-9	CHECK-VALVE
1-8	SOLENOID VALVE
1-7	ACCUMULATOR
1-6	SUCTION FILTER
1-5	RETURN-FILTER
1-4	REMOTE C.V
1-3	REMOTE C.V
1-2	SPAN CYLINDER
1-1	BLADE CYLINDER
1-0	SWING CYLINDER
9	BUCKET GYLINDER
8	ARM CYLINDER
7	BOOM CYLINDER
6	SWIVEL JOINT
5	SOLENOID VALVE
4	TRAVEL MOTOR
3	SLEW MOTOR
2	HYDRAULIC PUMP
1	CONTROL VALVE

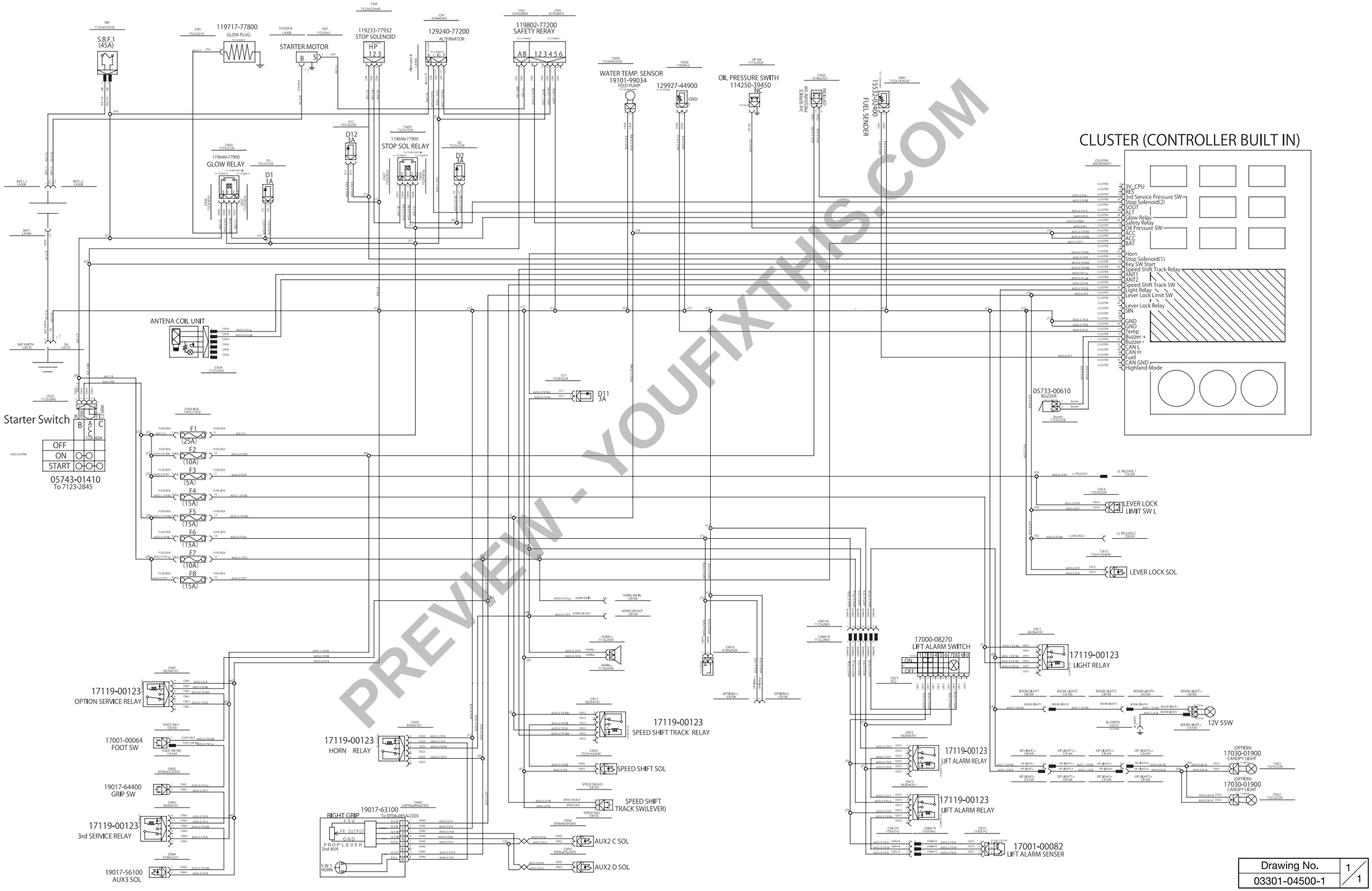
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Electrical Schematic Diagram



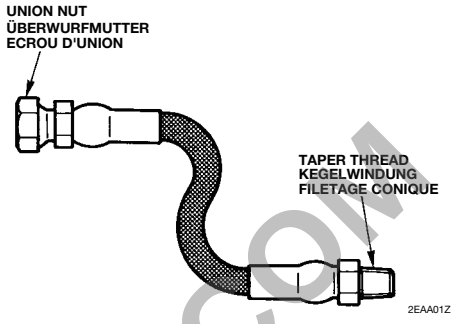
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TIGHTENING TORQUE

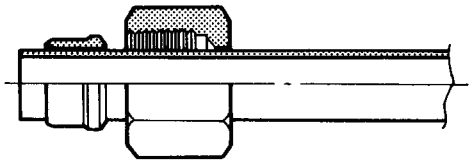
Hydraulic hose

Hose fitting size	Tightening torque			
	Union nut (G)		Taper thread (R)	
	N·m	ft.-lb	N·m	ft.-lb
1/8	$9.8^{+4.9}_{0}$	$7.3^{+3.5}_{0}$	11.8 ± 1.2	8.7 ± 0.8
1/4	$24.5^{+4.9}_{0}$	$18.1^{+3.5}_{0}$	29.4 ± 2.9	21.7 ± 2.1
3/8	$49.0^{+4.9}_{0}$	$36.2^{+3.5}_{0}$	53.9 ± 5.4	39.8 ± 3.9
1/2	$58.8^{+4.9}_{0}$	$43.4^{+3.5}_{0}$	88.3 ± 8.8	65.1 ± 6.4
3/4	$117.7^{+4.9}_{0}$	$86.8^{+3.5}_{0}$	147.1 ± 14.7	108.5 ± 10.7
1	$137.3^{+4.9}_{0}$	$101.3^{+3.5}_{0}$	196.1 ± 19.6	144.7 ± 14.3



Bite-type pipe fitting for steel pipe

Outer diameter of pipe (mm)	Tightening torque	
	N·m	ft.-lb
8	34.3 ± 4.9	23.5 ± 3.5
10	41.7 ± 2.5	30.7 ± 1.7
12	58.8 ± 4.9	43.4 ± 3.5
15	88.3 ± 4.9	65.1 ± 3.5
16	93.2 ± 4.9	68.7 ± 3.5
18	132.4 ± 4.9	97.6 ± 3.5
22	205.9 ± 9.8	151.8 ± 7.2
27.2	245.2 ± 9.8	181.0 ± 7.2
28	313.8 ± 19.6	231.4 ± 14.3
32	313.8 ± 19.6	231.4 ± 14.3
35	411.9 ± 19.6	303.7 ± 14.3



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Control valve

Part number			19010-50900 19010-51000* 19010-51100**
Type			KVSE-36B-2
Set main relief valve pressure	P1, P2	MPa at L/min. (psi at US gal./min.)	21.0 at 16.8 (3045 at 4.4)
	P3	MPa at L/min. (psi at US gal./min.)	20.0 at 10.8 (2900 at 2.9)
Set overload relief valve pressure	A1, A2, B2, A5, B5, A9	MPa at L/min. (psi at US gal./min.)	25.9 at 5.0 (3756 at 1.3)

* 2nd auxiliary line piping attached
** 2nd, 3rd auxiliary line piping attached

Main pump

Part number			19020-28700
Type			PVD00B-14D-5G3
Engine RPM		min^{-1} (rpm)	2400 (2400)
Displacement	P1, P2	cm^3/rev (cu. in./rev)	7.0 (0.4)
	P3	cm^3/rev (cu. in./rev)	4.5 (0.3)
	P4	cm^3/rev (cu. in./rev)	2.7 (0.2)
Delivery	P1, P2	L/min. (US gal./min.)	16.8 (4.4)
	P3	L/min. (US gal./min.)	10.8 (2.9)
	P4	L/min. (US gal./min.)	6.5 (1.7)

Slew motor

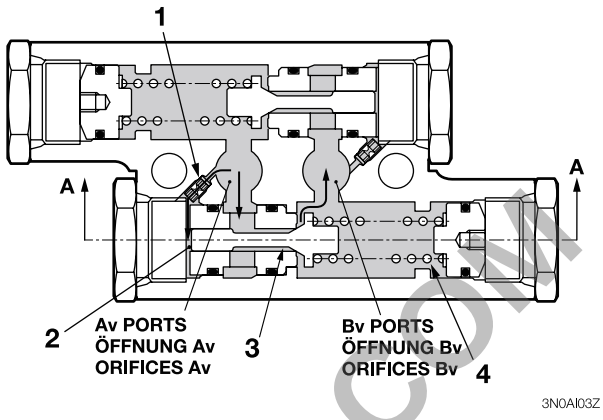
Part number		19031-30600
Type		2PC20C3233-C
Total displacement	cm^3/rev (cu. in./rev)	195 (11.9)
Motor displacement	cm^3/rev (cu. in./rev)	32.1 (2.0)
Reduction gear ratio		12/73
Set relief valve pressure	MPa at L/min. (psi at US gal./min.)	13.4 at 10.8 (1943 at 2.9)
Parking brake torque	N·m (ft.-lb.)	441 (325)
Parking brake release pressure	MPa (psi)	2 (290)

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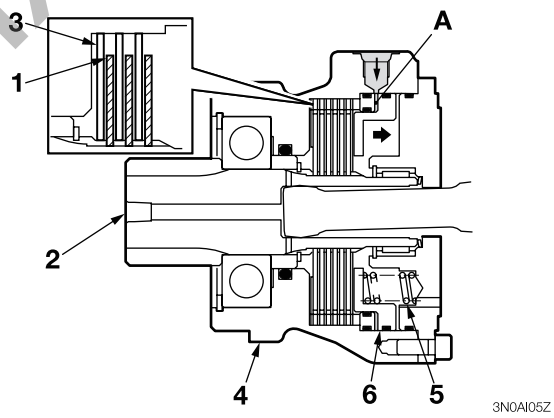
Brake valve

This valve is equipped with a shockless function.
When the high-pressure oil enters the port Av, it flows through the orifice (1) and into the damper chamber (2) where it attempts to move the plunger (3) to the right. At this time, the spring (4) remains in its set position.
When the pressure in the pressure oil increases to where it overpowers the spring force of the spring (4), the plunger (3) is moved to the right. This causes the pressure in the pressure oil to be released into the Bv port through a relief operation.
At the same time, the pressure oil flows through the orifice (6) and enters the piston chamber (B), where it works in the direction of spring compression to compress the spring (4). At this time, the spring force increases in proportion to the distance traveled by the piston (5), which causes the relief pressure to increase.
The spring (4) is compressed the most when the piston (5) is moved left to the stroke end. At this time, the pressure becomes the set relief pressure.



Parking brake

The friction discs (1) are each connected to the pinion gear (2) via the spline, and the center discs (3) are also each connected to the bearing housing (4) via the spline.
The friction discs (1) and the center discs (3) are each pressed against the bearing housing (4) by the springs (5) via the brake piston (6). The friction force between these discs generates a braking torque that prevents the pinion gear (3) from rotating.
When the oil is directed from the parking brake release port to the piston chamber (A), the oil pressure overpowers the spring force and acts to move the brake piston (6). This creates a clearance between the friction discs (1) and the center discs (3), which works to release the parking brake function.



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Table of Connections

1	R1 ↔ Pa1	4
1	R2 ↔ Pb2	4
1	R3 ↔ Pb1	4
1	R4 ↔ Pa2	4
1	RP ↔ SOL B1	3
1	RT ↔ T1	5
2	L1 ↔ Pb8	4
2	L2 ↔ Pa5	4
2	L3 ↔ Pa8	4
2	L4 ↔ Pb5	4
2	LP ↔ SOL B2	3
2	LT ↔ T2	5
4	Pi2 ↔ Pb2	4

1. Pilot valve (Right)
2. Pilot valve (Left)
3. Solenoid valve (Lever lock)
4. Control valve
5. Hydraulic tank

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Inspection and adjustment

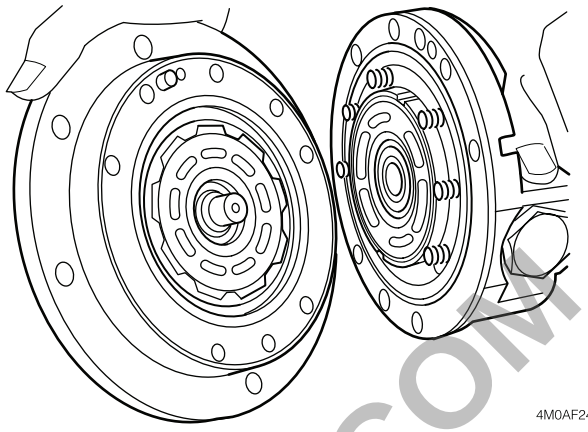
Checking the parts

Part	Criteria	Action
O-ring	—	• Replace
Seal	—	• Replace
Spool	• Wear on the sliding surfaces is 10 µm or more than the non-sliding surfaces. • Scratches on the sliding surfaces. • Spool does not move smoothly.	• Replace • Replace • Replace
Push rod	• Tip is worn 1 mm or more • Scratches on the sliding surfaces	• Replace • Replace
Plug	• Imperfect sealing due to damage	• Repair or replace
Controls	• Looseness in the pin, shaft or joint of the controls results in 2 mm play, or more. • Wear of the pin, shaft or joint of the controls results in 2 mm play, or more.	• Tighten to the specified torque • Replace
Casing, port plate	• Scratches, rust, or corrosion at the parts in sliding contact with the spool. • Scratches, rust, or corrosion of the part of the seal in contact with the O-ring	• Replace • Repair or replace

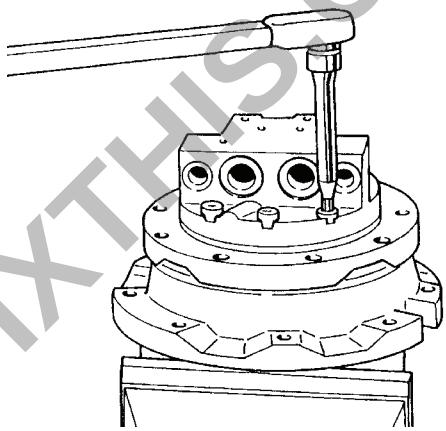
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24. Fill the flange holder with 100 ml (3.4 fl.oz) hydraulic oil, and align the valve body with the flange holder.

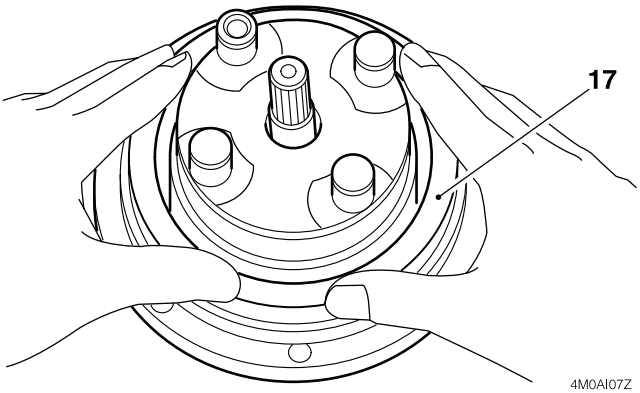

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25. Secure the hydraulic motor in a vise, and tighten the screws.
    - Screw: 28.4 to 30.4 N·m (20.9 to 22.4 ft.-lb)
    - Insert an aluminum plate or the like between the motor and the vise to prevent the outer surface of the valve body from becoming damaged.


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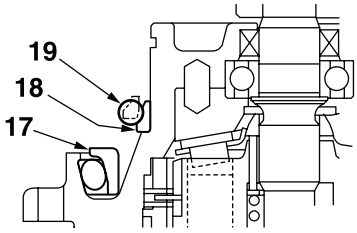
Reduction gears

1. Attach the floating seat (17) and the O-ring to the flange holder.
    - Apply grease to the O-ring.

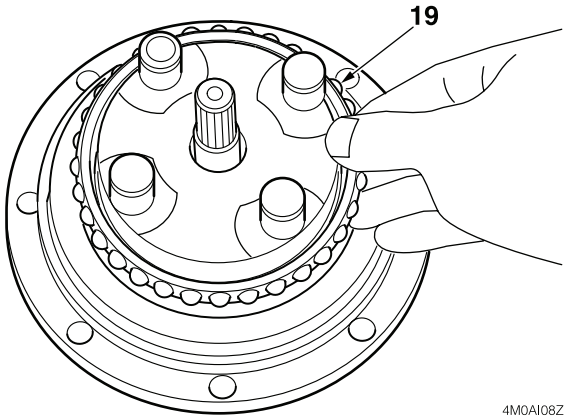


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2. Insert the inner race (18) of the bearing and the steel balls (19) with retainers into the flange holder.



4M0AI09Z

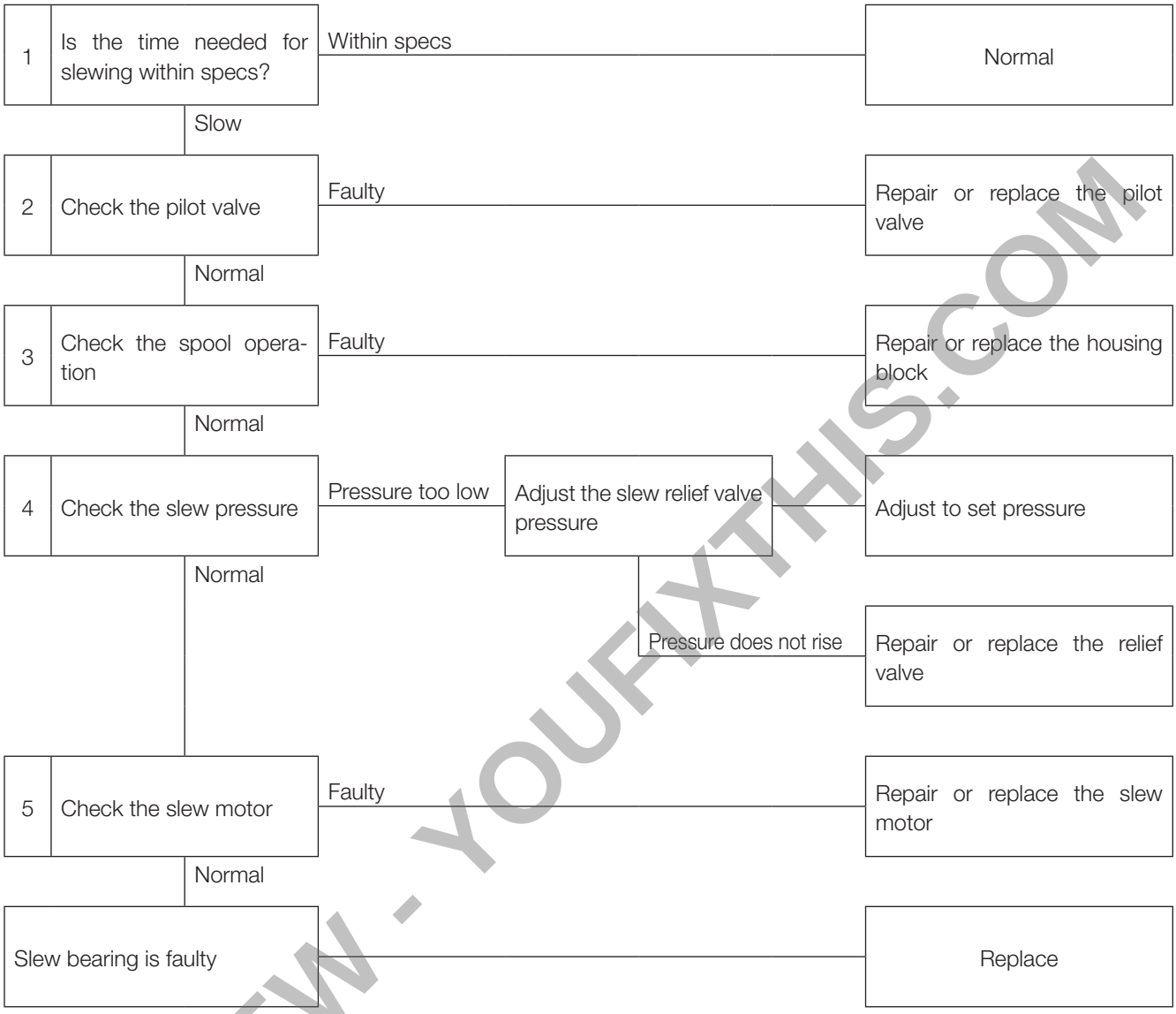


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Slewing is slow or lacks force



1. Is the time needed for slewing within specifications?
☞ "2. Service data, Performance criteria"

2. Check the pilot valve
☞ "No slewing is possible, 2. Check the pilot valve"

3. Check the spool operation
☞ "No slewing is possible, 3. Check the spool operation"

4. Check the slew pressure
☞ "No slewing is possible, 4. Check the slew pressure"

5. Check the slew motor
☞ "4. Disassembly and assembly, Slew motor"

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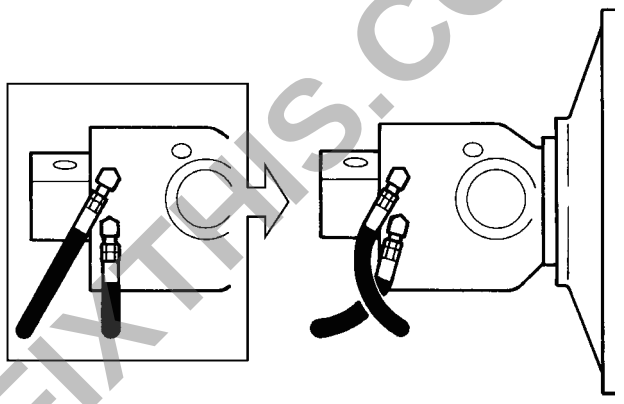
1. Is the veering within specs?
If the veering is within specifications, the machine is normal. Problem is caused by the combination of devices.
☞ "2. Service data, Performance criteria"

2. Check the crawler tension
☞ "2. Service data, Performance criteria"

3. Check the spool operation
☞ "No travel is possible, 2. Check the linkage."

4. Switch the discharge hoses between the pumps
Switch the discharge hoses between the pumps P1 and P2. If the veering direction is changed to the opposite side, the pumps are faulty.
- Disassemble and check the pump

☞ "4. Disassembly and assembly, Hydraulic pump"


5C0AF05Z

5. Test by switching the main relief valves
Switch the main relief valves between the right travel circuit and the left travel circuit, and operate the machine. If the veering is changed to the opposite side, one of the main relief valves is faulty.
- Check the main relief valve

☞ "5. Troubleshooting, Overall machine, All systems working, but insufficient force, 4. Check the main relief valve."

6. Check the swivel joint
☞ "Right or left travel is impossible, 4. Check the swivel joint"

7. Check the counter balance valve
Check to see if the spool of the counter balance valve moves smoothly.
☞ "Right or left travel is impossible, 5. Check the counter balance valve"

8. Check the travel motor
☞ "4. Disassembly and assembly, Travel motor"

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Parking brake

Symptoms	Major causes	Remedies
Braking force is insufficient or not evenly applied	• Disc surface is faulty. • Spring is damaged. • Bolt for manual releasing is being fitted.	• Repair or replace • Replace the spring. • Remove the bolt for manual release, and fit the plug.
Abnormal heat generation due to brake drag	• Release of braking is faulty. • Oil leak due to O-ring breakage. • Orifice is clogged. • Pilot pressure for the releasing is not working.	• Replace the O-ring. • Clean the orifice. • Check whether the specified pressure is generated in the pilot port, and then check and repair each device.

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Hydraulic system

Hydraulic pump drive system				Engine direct coupling
Hydraulic pump	Type			Variable displacement type double axial piston + double gear
	Quantity			1
	Delivery	P1	L/min. (US gal./min.)	16.8 (4.44)
		P2	L/min. (US gal./min.)	16.8 (4.44)
		P3	L/min. (US gal./min.)	10.8 (2.85)
		P4	L/min. (US gal./min.)	6.5 (1.72)
	Hydraulic pump control system			Total horsepower control
Main relief valve pressure setting			MPa (psi)	21.0 (3050)
			MPa (psi)	21.0 (3050)
			MPa (psi)	20.0 (2900)
			MPa (psi)	3.4 (490)
Hydraulic tank pressure				Pressure tank
Control valve	Type			Directional control valve with 10 valves in series
	Operation type			–
Hydraulic oil filter	Type			Glass fiber filter type
	Filter precision			BETA10 = 1.4
	Installation position			Return circuit (in hydraulic tank)
Hydraulic oil cooler	Cooling system			Air cooling
	Radiation surface area		m^2 ($ft.^2$)	1.45 (15.6)

Operating device

Cab	Position	Center
	Construction	Suspension seat
Cab or canopy	Construction	Canopy with steel support columns
Control levers and pedals	Shifting operation	Variable travel speed switch (handle grip of operating lever)
	Travel operation	Mechanical system, 2 levers
	Slew operation	Hydraulic pilot-operated
	Arm operation	Hydraulic pilot-operated
	Bucket operation	Hydraulic pilot-operated
	Boom operation	Hydraulic pilot-operated
	Boom swing operation	Hydraulic pilot-operated, pedal-operated system
	Other	Blade, spanner function operation: Mechanical, lever-operated system Auxiliary line piping operation: Mechanical, pedal-operated system
Instruments, switches		Water temperature gauge, fuel gauge, low fuel level warning indicator, clock, hour meter, charge, engine oil, water temperature, glow, and 2nd speed travel
Lighting device		Headlight, boom light (12V-55W H3 halogen bulb)
Warning, safety devices		Horn (12 V, 110 dB)
Others		–

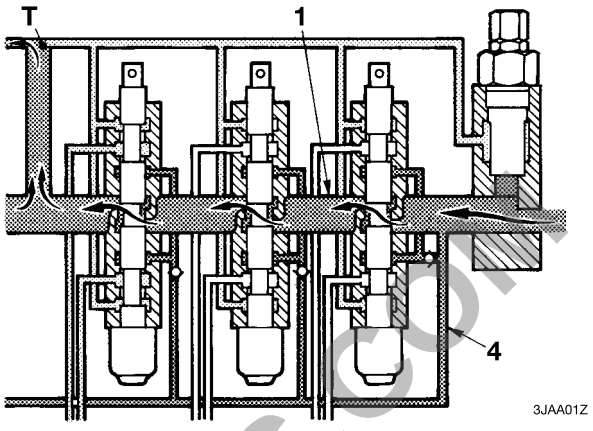
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CONTROL VALVE

When the spools are in the neutral position:

When the control valve spools are not moved, the oil flows through the center bypass passage (1) and the tank passage T to return to the tank, as shown by the arrow.

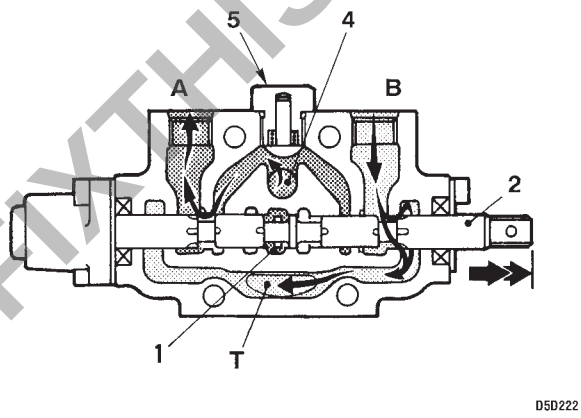


When the spool is being operated:

The description given here uses an example in which the spool (2) is moved to the right.

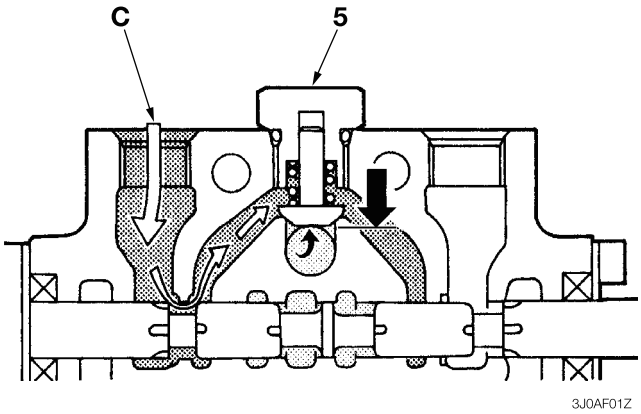
When the spool (2) is moved to the right, the center bypass passage (1) is closed and the oil that has flowed into the valve from the pump passes through the parallel passage (4), the load check valve (5), and port A into the actuator.

Meanwhile, oil returning from port B returns to the tank through the tank passage T.



Load check valve

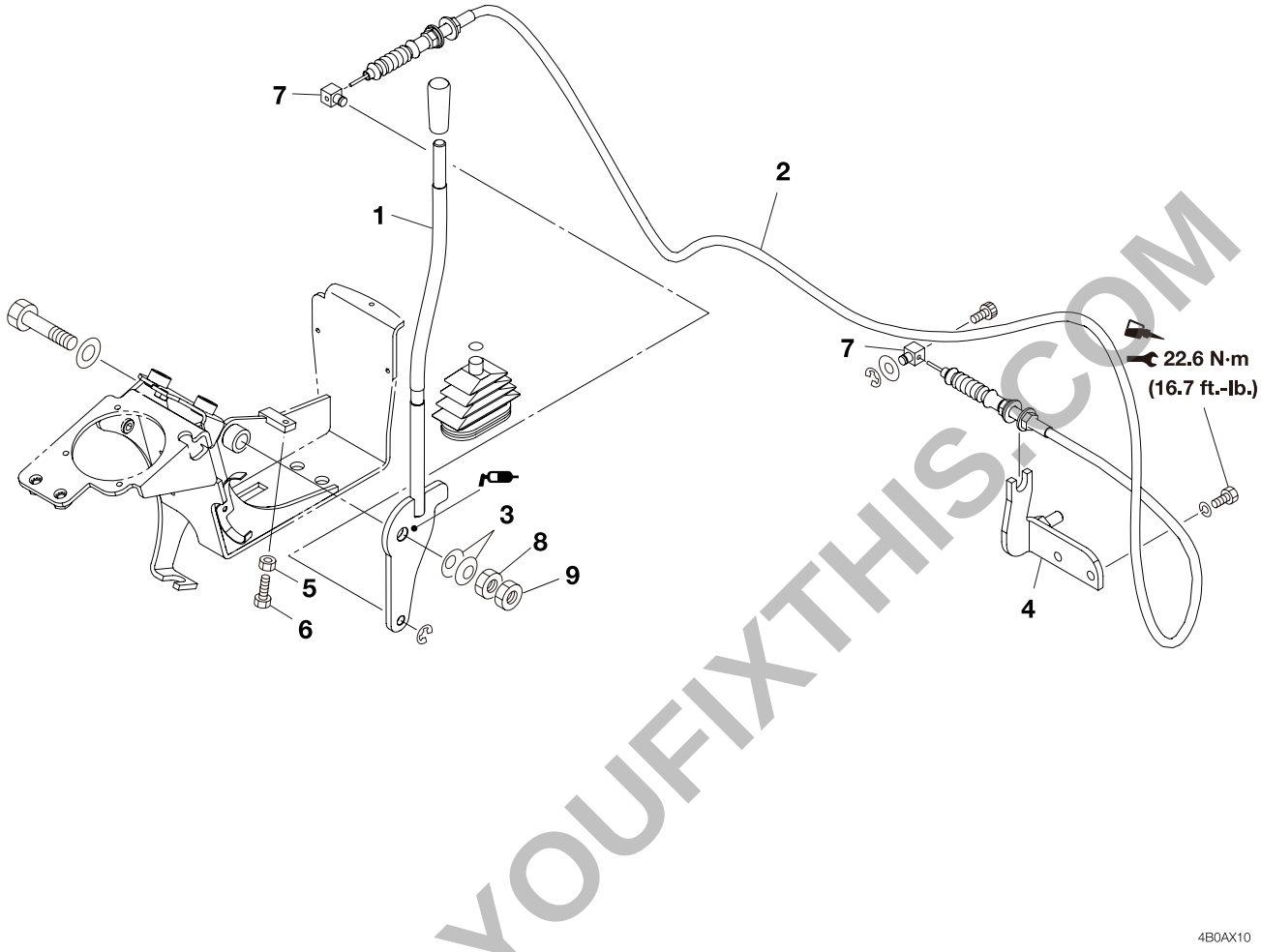
This valve prevents oil from flowing backward while the spool switching operation is being performed due to the load pressure C coming from the actuator port.



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Throttle lever



Apply molybdenum disulfide grease to both surfaces of the lever.

- Line up the conical washers (3) so that the indented sides are all on the same side.

ThreeBond #1324

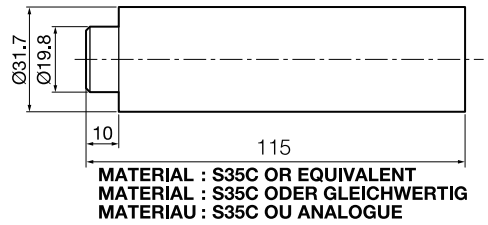
1. Lever
2. Wire
3. Conical washer
4. Bracket
5. Lock nut
6. Stopper
7. Wire lock pin
8. Lock nut
9. Nut

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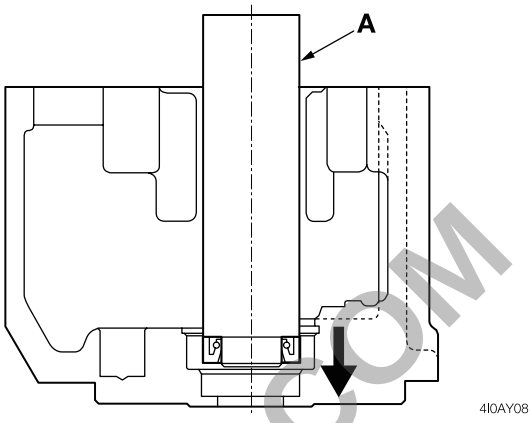
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Assembly

1. Insert the oil seal (25) into the body S (1).
   - Make sure to use a new oil seal.
   - Apply a small amount of grease to the lip on the oil seal and around the outer circumference of the oil seal itself.
   - Insert the oil seal using the press-fitting jig A (see the figure below), tapping it lightly with a hammer to make it go in.

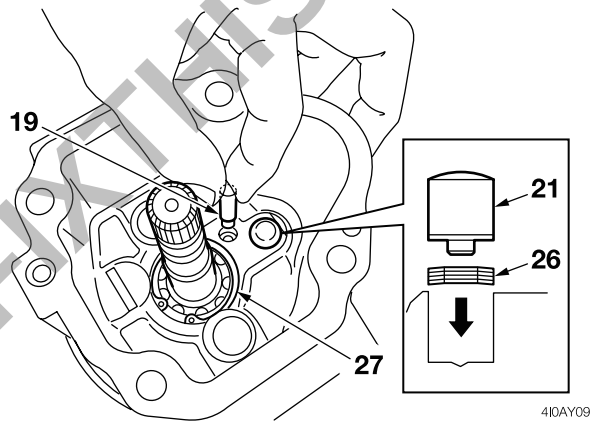


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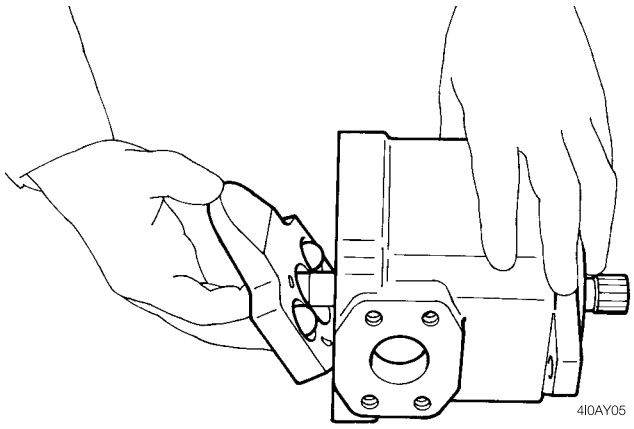
4I0AY08

2. Insert the shaft (3) into the body S (1), and secure it in place using the snap ring (27).
   - Be careful not to damage the lip on the oil seal while inserting the part.
3. Place the four belleville springs (26) onto the stopper pin A (21), and insert the resulting assembly into the body S (1).
   - Be careful not to attach the belleville springs in the wrong direction.
4. Insert the piston (19) into the body S (1).

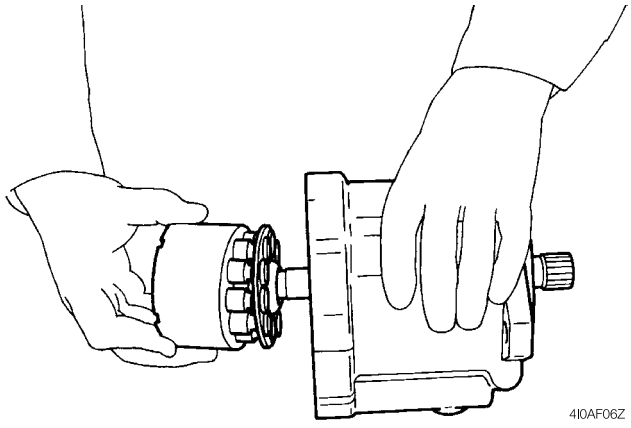


4I0AY09

5. Attach the oscillating pin (12) to the swash plate (10), and attach the resulting assembly to the spherical hole on the body S (1).
   - Apply grease to the oscillating pin.


4I0AY05

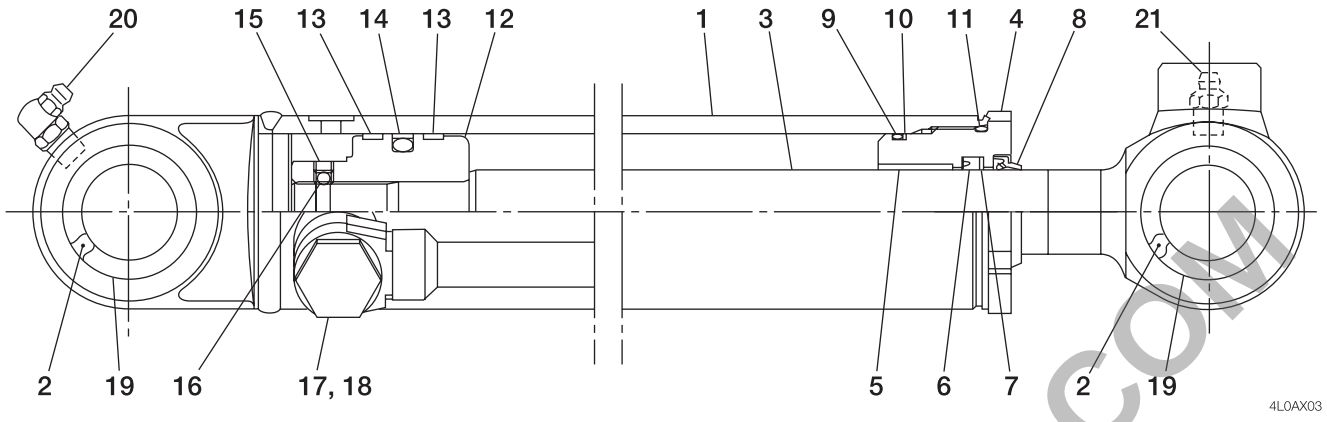
6. Insert the cylinder block assembly (4) into the body S (1).


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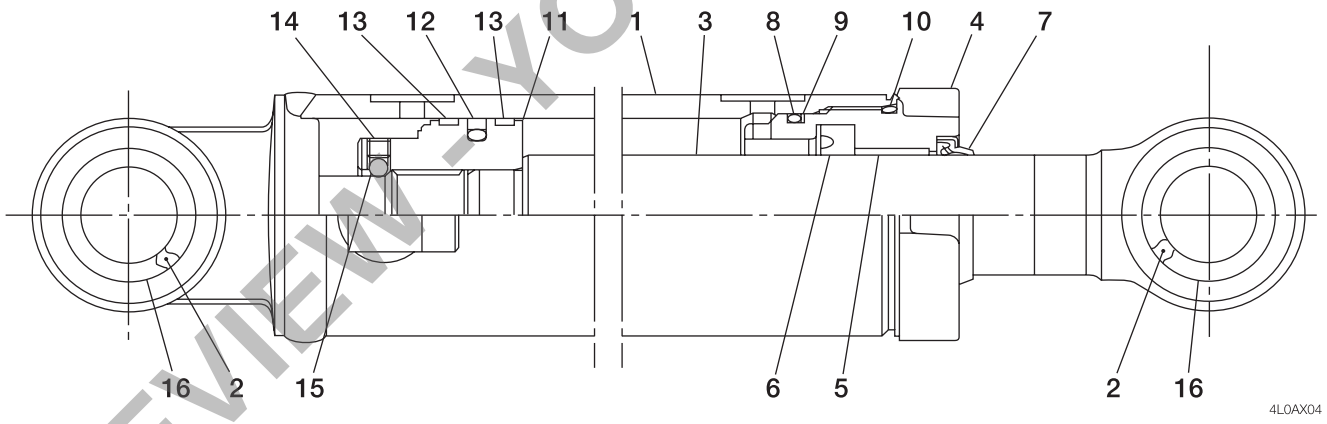
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Bucket cylinder



1. Tube
2. Bushing
3. Piston rod
4. Rod cover
5. Bushing
6. Rod packing
7. Backup ring
8. Dust seal
9. O-ring
10. Backup ring
11. O-ring
12. Piston
13. Wear ring
14. Piston packing
15. Set screw
16. Ball
17. Plug
18. O-ring
19. Dust seal
20. Grease fitting
21. Grease fitting

Dozer blade cylinder

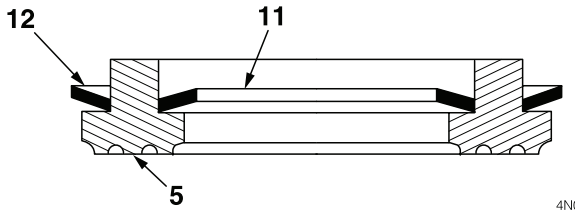


1. Tube
2. Bushing
3. Piston rod
4. Rod cover
5. Bushing
6. Rod packing
7. Dust seal
8. O-ring
9. Backup ring
10. O-ring
11. Piston
12. Piston packing
13. Wear ring
14. Set screw
15. Ball
16. Dust seal

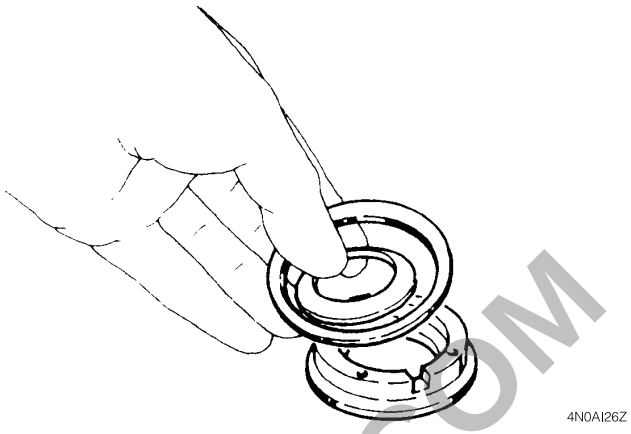
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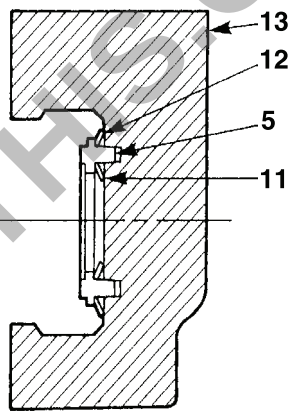
17. Fit the inner face seal (11) and the outer face seal (12) to the balancing plate (5).



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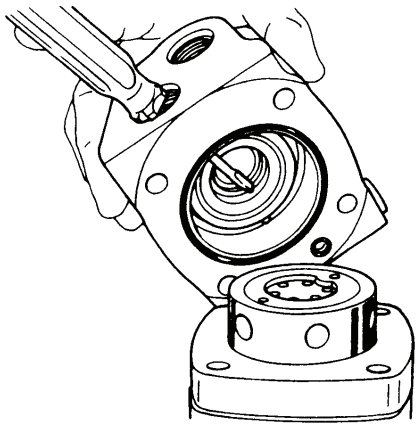

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18. Align the notch on the balancing plate (5) with the pin, and attach the plate to the valve housing (13).



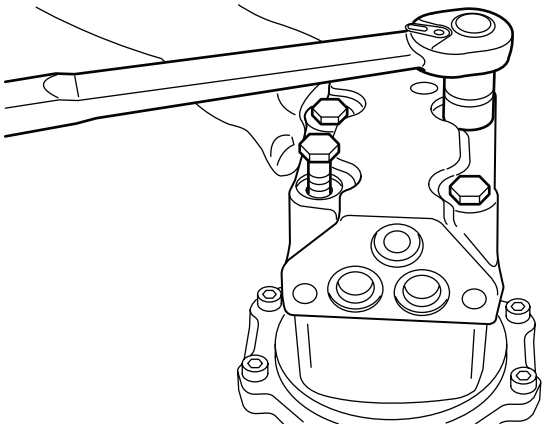
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19. Attach the O-rings (large and small) to the housing.
20. Attach the valve housing to the valve while preventing the balancing plate from becoming disconnected by pushing against it with a thin bar, such as a screwdriver, inserted from the port.
    - When attaching, be sure to align the drain hole on the valve housing with the drain hole on the valve plate.


4N0AI28Z

21. Align the bolt holes, and tighten the bolts.
    - Apply Loctite #242 to the bolt threads.

Bolt: 53 N·m (39.1 ft.-lb)

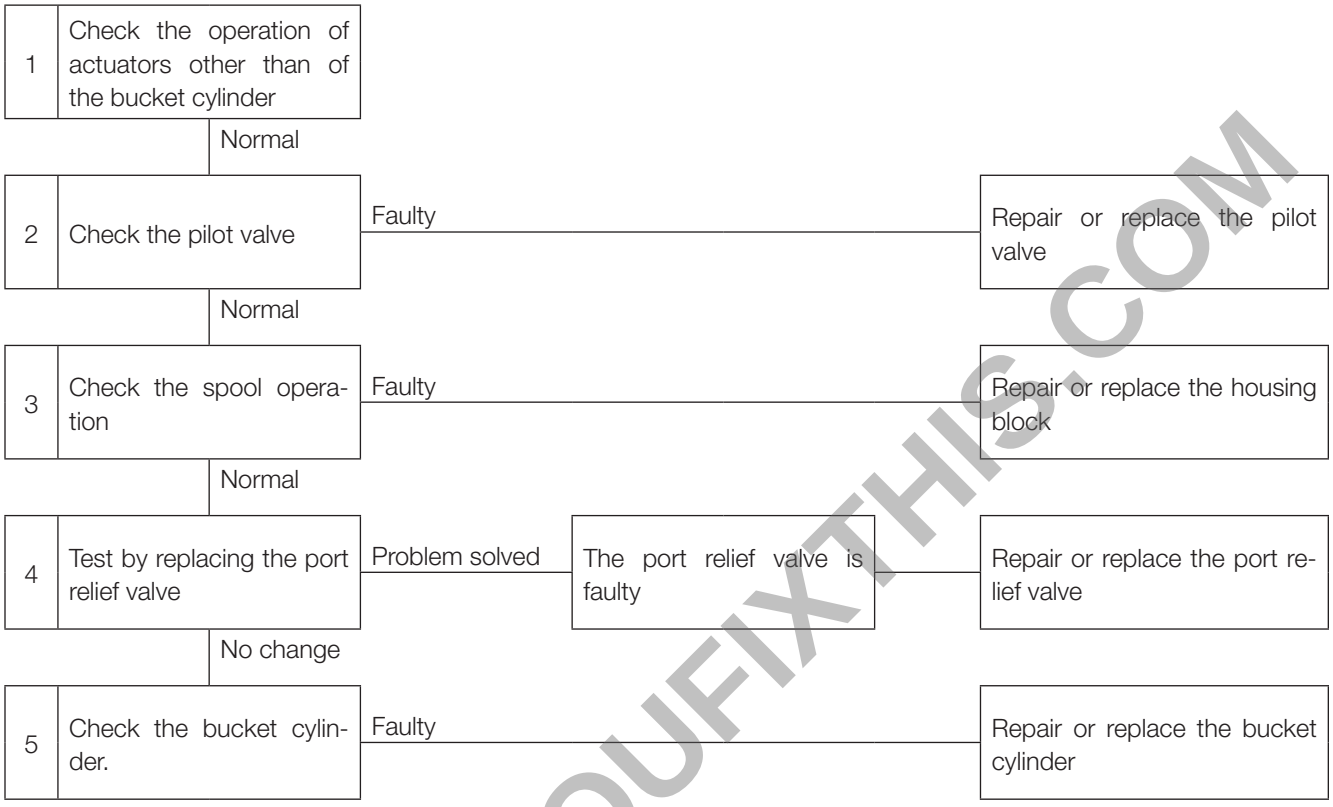

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BUCKET

Bucket cylinder does not move or lacks force



1. Check the operation of actuators other than of the bucket cylinder

Determine if only the bucket cylinder is faulty by checking the operation of actuators for the devices listed in the table on the right. If one of them is faulty, check the main relief valve and the hydraulic pump (main).

☞ "5. Troubleshooting, Overall machine, All systems working, but insufficient force"

Lever to operate	Device to check	
	Relief valve	Pump
Right travel	R1	P1

2. Check the pilot valve

Disconnect the hose connecting the pilot valve and the control valve (bucket block) from the control valve. Fit the pressure gauge to the hose just disconnected.

- Operate the lever (bucket) and measure the pressure.
- If the pressure is between 0 and 3.4 MPa (0 to 493 PSI) depending on the lever angle, the pilot valve is normal.

3. Check the spool operation

Disconnect the bucket hose connected to the pipe at the boom foot, then install a pressure gauge in the disconnected hose.

- Operate the lever (bucket) and measure the pressure.
- If the measured value is within the specifications, the spool is normal.
  Supply pressure: 21.0 MPa (3046 PSI)

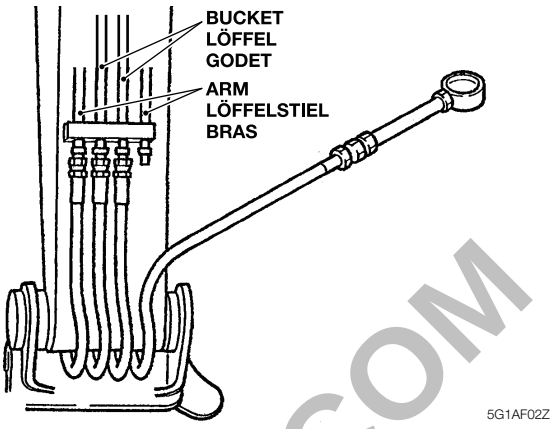
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3. Check the spool operation

Disconnect the arm hose connected to the pipe at the boom foot, then install a pressure gauge in the disconnected hose.

- Operate the lever (arm) and measure the pressure.
- If the measured value is within the specifications, the spool is normal.
  Supply pressure: 21.0 MPa (3046 PSI)



4. Test by replacing the port relief valve

Replace the port relief valve in question with a normal port relief valve. If the arm cylinder operates with the replacement valve, the port relief valve used on the boom side is faulty.

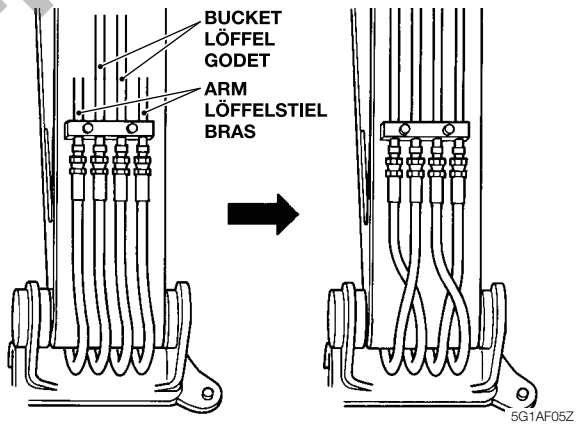
Make sure to return the port relief valve to its regular position after the above inspection.

5. Check the arm cylinder

Switch between the arm hose and the bucket hose connected to the piping at the boom foot.

- Move the lever (bucket) and try to operate the arm cylinder.
- If the cylinder fails to operate, it is faulty.

Before performing the steps above, fully extend the bucket cylinder, completely retract the arm cylinder and lower the bucket to the ground.



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