YANMAR

SERVICE MANUAL

EXCAVATOR

SV100-1A

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2. TECHNICAL DATA

2. Technical Data

2-1 Specifications

Item				Unit	SV100-1A
Main specifications of machine					
Dimensions					
Overall length (Transportation position)				in. (mm)	251.6 (6390)
Cabin	Overall height	Transportation position		in. (mm)	110.2 (2800)
		Traveling position		in. (mm)	110.2 (2800)
	Overall width	Full machine width		in. (mm)	91.3 (2320)
Canopy	Overall height	Transportation position		in. (mm)	-
		Traveling position		in. (mm)	-
	Overall width	Full machine width		in. (mm)	-
Tumbler center distance (steel / rubber)				in. (mm)	93.0 (2362) / 92.7 (2354)
Track gauge				in. (mm)	73.6 (1870)
Minimum ground clearance				in. (mm)	17.7 (450)
Traveling performance					
Travel speed	Steel crawler	Low speed (Forward/Reverse)		MPH (km/hr)	1.37 (2.2)
		High speed (Forward/Reverse)		MPH (km/hr)	2.49 (4.0)
	Rubber crawler	Low speed (Forward/Reverse)		MPH (km/hr)	1.55 (2.5)
		High speed (Forward/Reverse)		MPH (km/hr)	2.73 (4.4)
Permissible water depth limit				in. (mm)	23.6 (600)
Work performance					
Bucket	Width (Standard) *including side cutter			in. (mm)	31.5 (800)
	[Standard. JIS heaped capacity]			cu.ft. (cu.m)	10.6 (0.30)
	Number of teeth / Installation method			pcs.	4 / rubber pin lock type
Maximum digging depth	With blade raised			in. (mm)	168.9 (4290)
	With blade on the ground			in. (mm)	179.9 (4570)
Maximum depth of vertically digging				in. (mm)	152.4 (3870)
Maximum dumping height				in. (mm)	202.8 (5150)
Minimum front swing radius (with boom in front)				in. (mm)	97.6 (2480)
Minimum front swing radius (at boom swing)			Cabin	in. (mm)	83.1 (2110)
			Canopy	in. (mm)	-
Rear end swing radius				in. (mm)	52.4 (1330)
Boom swing angle		Cabin	Left	degrees	60
			Right	degrees	60
		Canopy	Left	degrees	-
			Right	degrees	-
Maximum digging force		Bucket		lbs. (k•N)	15388 (68.5)
		Arm		lbs. (k•N)	10296 (45.8)

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3-7 List of Tightening Torque

3-7-1 Machine

Applicable model			SV100-1A		
Equipment No.		Tightening part	Thread size	Tightening torque ft•lbf (N•m)	Adhesive
Engine / Electrical equipment					
	1	Engine mount vibroisolating rubber	M16	195.3 to 224.2 (264.8 to 304)	Three Bond 1324
	2	Engine × Engine mount (Radiator side)	M10 (11T)	61.4 (83.3)	Three Bond 1324
	3	Engine × Engine mount (Flywheel side)	M12 (10.9T)	79.7 to 94.4 (108 to 128)	Three Bond 1324
	4	Air cleaner	M8	14.5 to 16.6 (19.6 to 22.6)	
	5	Air cleaner intake hose (Engine side)	Hose clip 70	1.8 to 2.5 (2.5 to 3.4)	
	6	Air cleaner intake hose (Air cleaner)	Hose clip 80	1.8 to 2.5 (2.5 to 3.4)	
	7	Air cleaner intake hose (Air cleaner intake side)	Hose clip 90	0.9 to 1.1 (1.2 to 1.5)	
	8	Cooling water hose	Hose clip 48	1.8 to 2.5 (2.5 to 3.4)	
	9	Fuel gauge unit	Pan-head machine screw M5	0.9 to 1.1 (1.18 to 1.47)	
	10	Fuel tank holding band (Upper side)	Nut M10	1.8 to 2.1 (2.5 to 2.9)	
	11	Fuel tank holding band (Lower side)	Nut M10	18.1 to 23.9 (24.5 to 32.4)	
	12	Buttery holding rod	Nut M8	2.2 (2.94)	
	13	Heater hose	Hose clip 22	1.6 to 1.8 (2.16 to 2.45)	
	14	Air conditioner hose joint	M6	3.0 to 4.4 (4.0 to 6.0)	
	15	Air conditioner hose X Receiver dryer	M16	8.9 to 11.1 (12 to 15)	
	16	Safety switch	Fine lock nut M18	21.7 to 25.3 (29.4 to 34.3)	
	17	Heater valve X Connector	Rc3/8	10.1 to 11.6 (13.7 to 15.7)	
	18	Compressor X Bracket and Plate	M8	18.4 to 22.1 (25 to 30)	
	19	Compressor bracket X Engine	Hexagon socket head bolt M8	14.5 to 21.7 (19.6 to 29.4)	
	20	Accelerator dial	Nut M9 (Fine thread)	1.1 (1.47) or less	
	21	Mount X Air conditioner Bracket	Nut M8	9.4 to 12.3 (12.7 to 16.7)	

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⚠ WARNING



HIGH-PRESSURE HAZARD!

- **Avoid skin contact with the high-pressure diesel fuel spray caused by a fuel system leak such as a broken fuel injection line. High-pressure fuel can penetrate your skin and result in serious injury. If you are exposed to high-pressure fuel spray, obtain prompt medical treatment.**
- **NEVER check for a fuel leak with your hands. ALWAYS use a piece of wood or cardboard. Have your authorized Yanmar industrial engine dealer or distributor repair the damage.**
- **Failure to comply could result in death or serious injury.**

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⚠ WARNING



SHOCK HAZARD!

- **Turn off the battery switch (if equipped) or disconnect the negative battery cable before servicing the electrical system.**
- **Check the electrical harnesses for cracks, abrasions, and damaged or corroded connectors. ALWAYS keep the connectors and terminals clean.**
- **Failure to comply could result in death or serious injury.**

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⚠ WARNING



ENTANGLEMENT HAZARD!

- **Stop the engine before you begin to service it.**
- **NEVER leave the key in the key switch when you are servicing the engine. Someone may accidentally start the engine and not realize you are servicing it. This could result in a serious injury.**
- **If you must service the engine while it is operating, remove all jewelry, tie back long hair, and keep your hands, other body parts and clothing away from moving / rotating parts.**
- **Failure to comply could result in death or serious injury.**

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⚠ WARNING



BURN HAZARD!

- **Wait until the engine cools before you drain the engine coolant. Hot engine coolant may splash and burn you.**
- **Failure to comply could result in death or serious injury.**

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1 – Crankcase Breather Cover
2 – Diaphragm Spring
3 – Diaphragm Cup
4 – Crankcase Breather Diaphragm
5 – Oil Fill Cap
6 – Valve Cover Nut
7 – Valve Cover Nut O-Ring
8 – Valve Cover Gasket
9 – Support Bolt
10 – Rocker Arm Shaft Support
11 – Wave Washer
12 – Fuel Injector Retainer Bolt
13 – Valve Adjusting Screw (Primary)
14 – Valve Adjusting Screw Lock Nut (Primary)
15 – Rocker Arm Shaft Aligning Stud
16 – Fuel Injector Retainer
17 – Valve Stem Seal
18 – Valve Guide
19 – Cylinder Head
20 – Intake Valve
21 – Exhaust Valve
22 – Cylinder Head Gasket
23 – Fuel Injector Nozzle Protector
24 – Fuel Injector Nozzle Seat
25 – Valve Spring
26 – Valve Bridge Guide
27 – Spring Retainer
28 – Valve Keepers
29 – Valve Bridge
30 – Valve Bridge Seat
31 – Valve Adjusting Screw Lock Nut (Secondary)
32 – Valve Adjusting Screw (Secondary)
33 – Push Rod
34 – Rocker Arm Shaft
35 – Crankcase Breather Components
36 – Valve Cover

Disassembly of 4-Valve Cylinder Head

Prepare a clean, flat working surface on a workbench large enough to accommodate the cylinder head assembly. Discard all gaskets, O-rings and seals. Use new gaskets, O-rings and seals on reassembly of the cylinder head.

1. Drain the coolant from the engine into a suitable container.

CAUTION

Identify all parts and their location using an appropriate method. It is important that all parts are returned to the same position during the reassembly process.

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2. Remove the high pressure fuel injection lines **(Figure 4-1-2, (1))**. *See Removal of Fuel Injectors.*

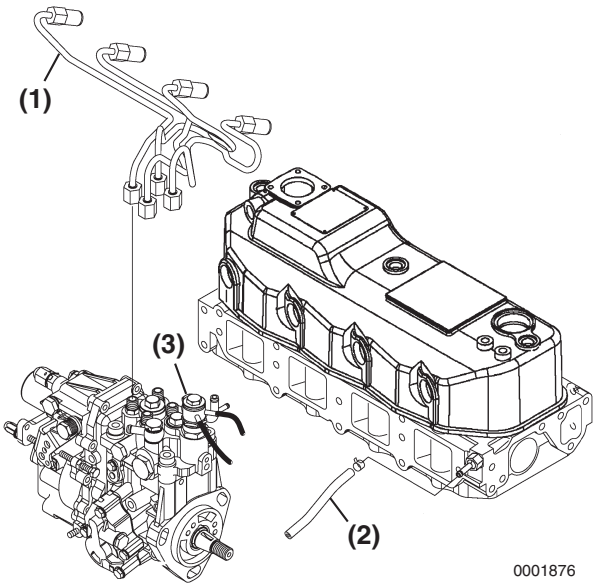


Figure 4-1-2

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Valve Stem Bend

Place the valve stem on a flat inspection block or layout bed. Roll the valve until a gap can be observed between a portion of the valve stem and the surface of the block or bed. Use a feeler gauge to measure the gap **(Figure 4-1-19)**. *See "3-2 Engine Service Standard" section for the service limit*.

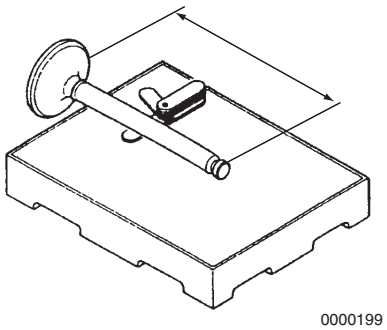


Figure 4-1-19

Valve Recession

Note: The valve guides must be installed to perform this check.

Insert the valves into their original locations and press them down until they are fully seated. Use a depth micrometer **(Figure 4-1-20)** to measure the difference between the cylinder head gasket surface and the combustion surface of each exhaust and intake valve **(Figure 4-1-21)**. *See "3-2 Engine Service Standard" section for the service limit*.

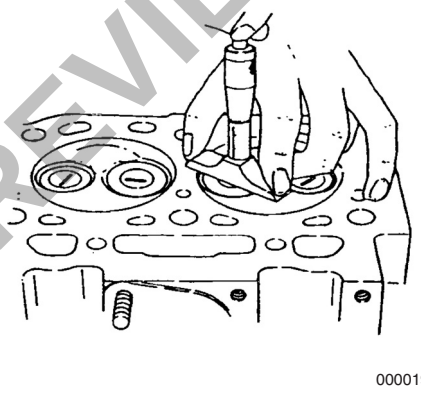


Figure 4-1-20

Note: 2-Valve cylinder head is shown. 4-Valve cylinder head is similar.

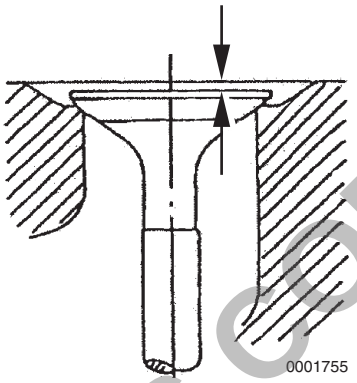


Figure 4-1-21

Valve Face and Valve Seat

Always check the clearance between the valve and valve guide before grinding or lapping the valve seats. If the clearance exceeds the limit, replace the valve and/or valve guide to bring the clearance within the limit.

Roughness or burrs will cause poor seating of a valve. Visually inspect the seating surfaces of each valve and valve seat to determine if lapping or grinding is needed.

Visually inspect all valves faces and valve seats for pitting, distortion, cracking, or evidence of overheating. Usually the valves and valve seats can be lapped or ground to return them to serviceable condition. Severely worn or damaged components will require replacement.

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Disassembly of Rocker Arm Assembly

Note: Identify the rocker arms so they can be reinstalled with the original matching valve and pushrod.

1. Remove the rocker arm shaft alignment studs **(Figure 4-1-7, (5))** from the rocker arm shaft supports **(Figure 4-1-7, (6))**.
2. Slide the supports, wave washers **(Figure 4-1-7, (7))**, rocker arms **(Figure 4-1-7, (8))**, and fuel injector retainers **(Figure 4-1-7, (4))** off the rocker shaft **(Figure 4-1-7, (1))**, leaving these parts in order on the bench surface.

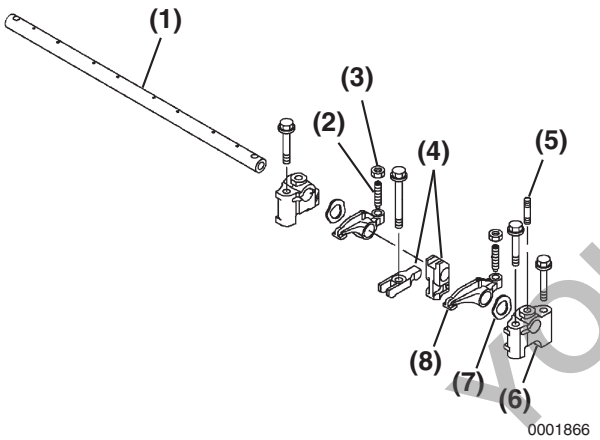


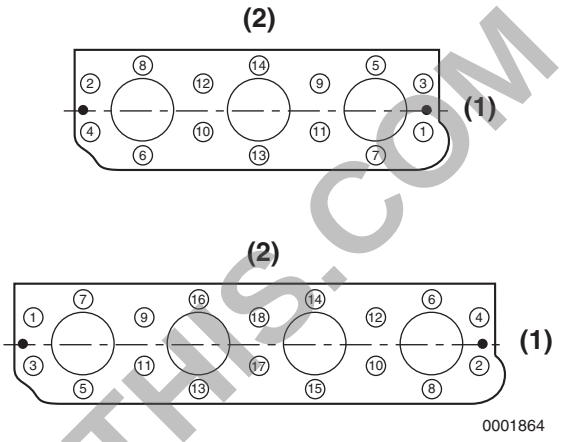
Figure 4-1-7

Note: **Figure 4-1-7,** shows components for one cylinder. Components for all remaining cylinders are assembled in the same order.

3. Remove the valve adjusting screw **(Figure 4-1-7, (2))** and the lock nut **(Figure 4-1-7, (3))** from the rocker arms.

Removal of Cylinder Head

1. Loosen the cylinder head bolts following the sequence shown in **(Figure 4-1-8)**.



1 – Cooling Fan End
2 – Camshaft Side

Figure 4-1-8

2. Remove the cylinder head bolts **(Figure 4-1-9, (1))**.
3. Lift the cylinder head away from the cylinder block. Discard the cylinder head gasket **(Figure 4-1-9, (2))**. Place the cylinder head on the work bench to prevent damage to the combustion surface.

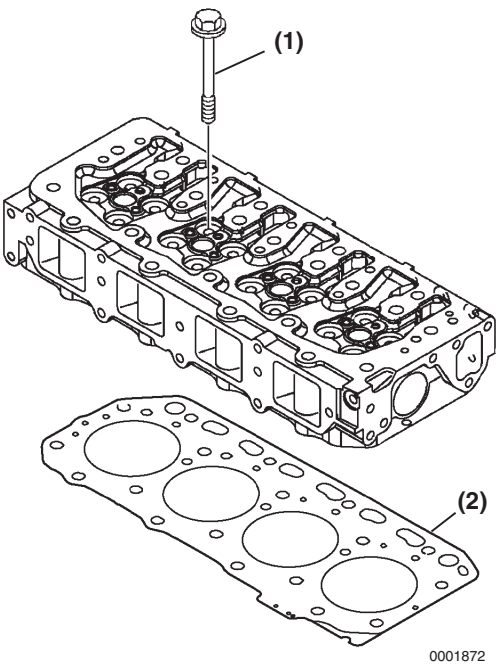


Figure 4-1-9

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4-1-7 Crankshaft and Camshaft Components

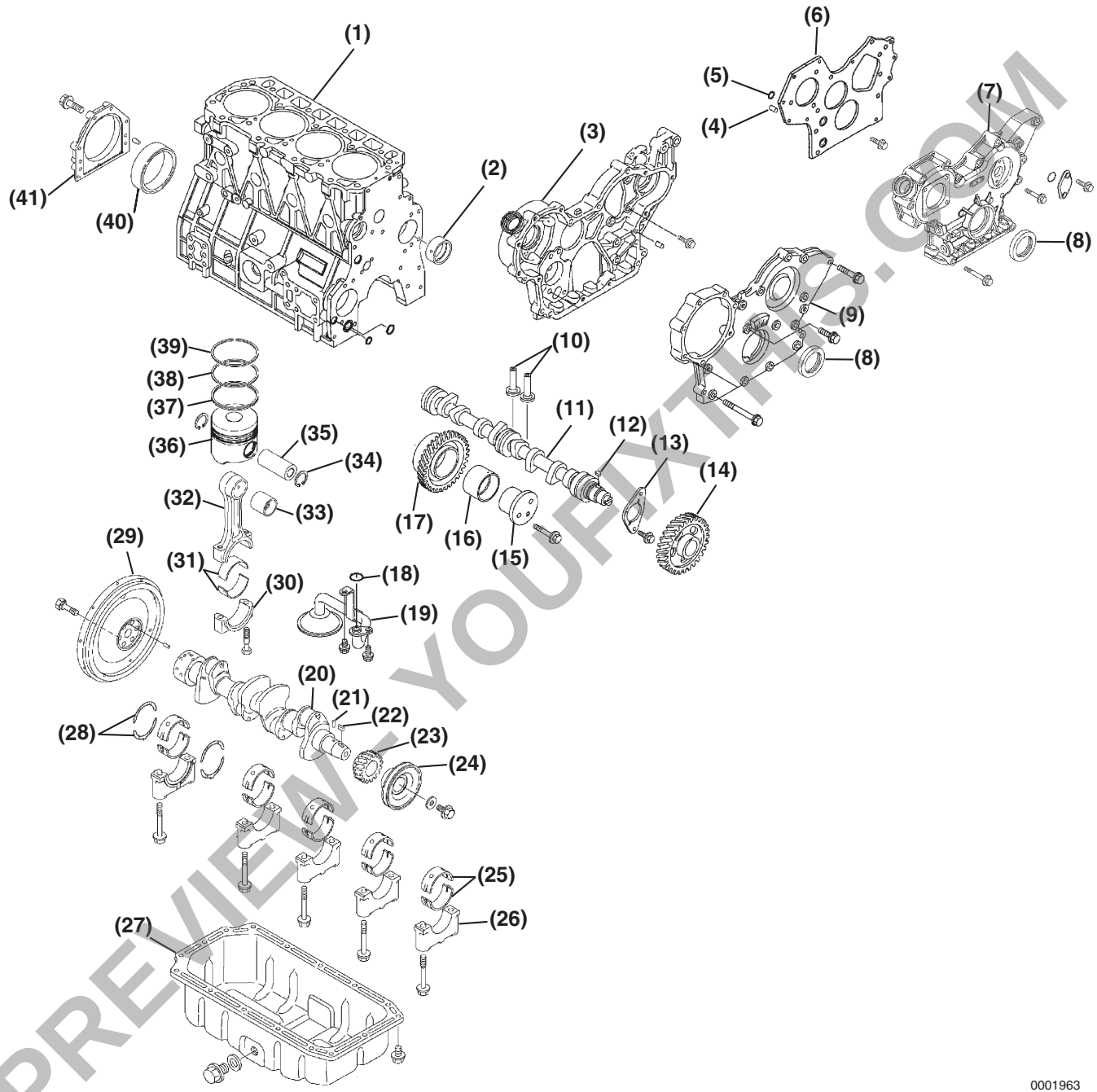
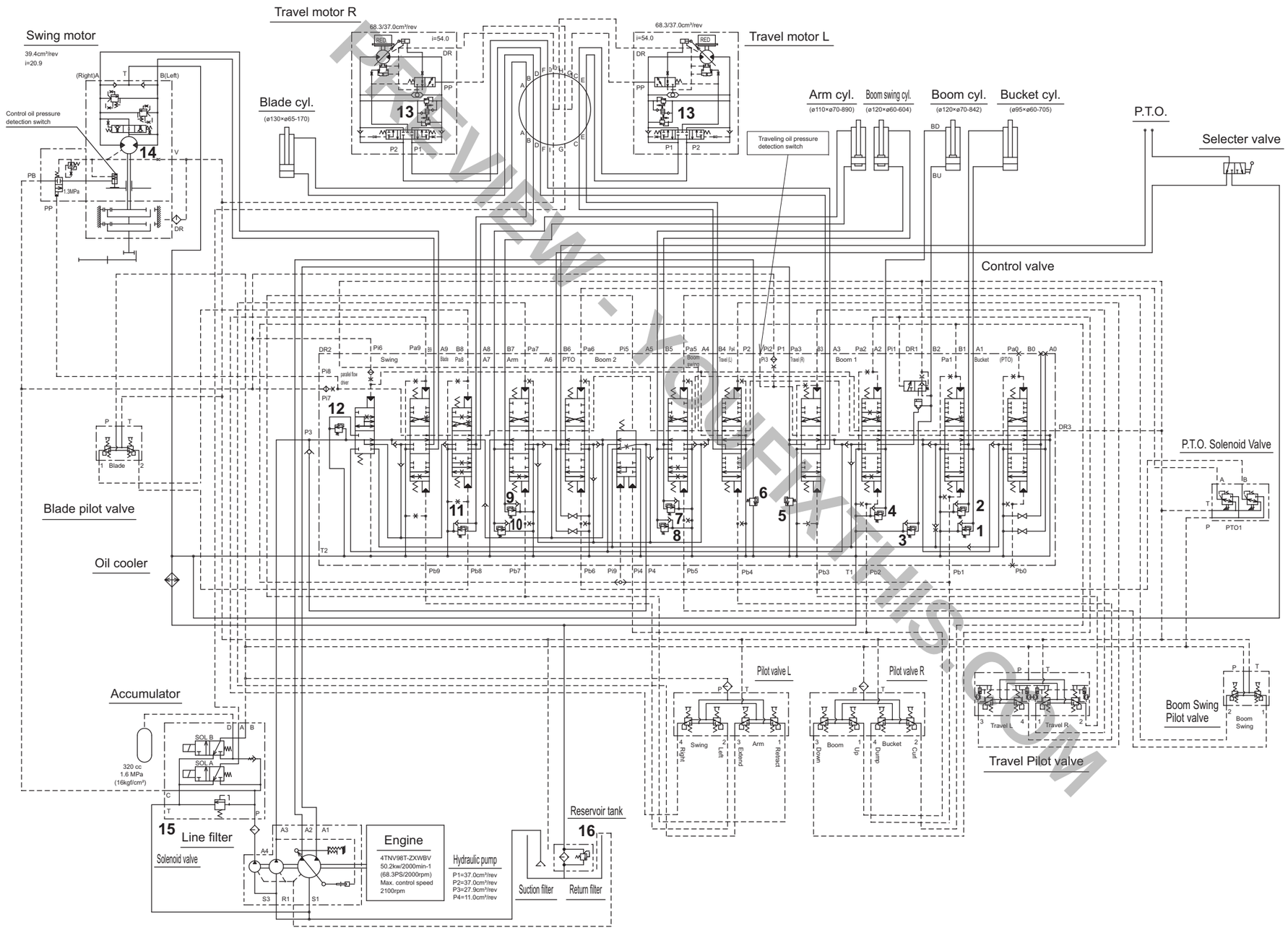


Figure 4-1-46

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5. HYDRAULIC SYSTEM

5-2 Hydraulic Circuit Schematic



Relief valve set pressure

No.	PSI	MPa
1	4496	31
2	4496	31
3	4496	31
4	4496	31
5	3989	27.5
6	3989	27.5
7	4496	31
8	4496	31
9	4496	31
10	4496	31
11	2176	15
12	3418	24
13	3989	27.5
14	3481	24
15	426.4	2.94
16	21.3	0.147

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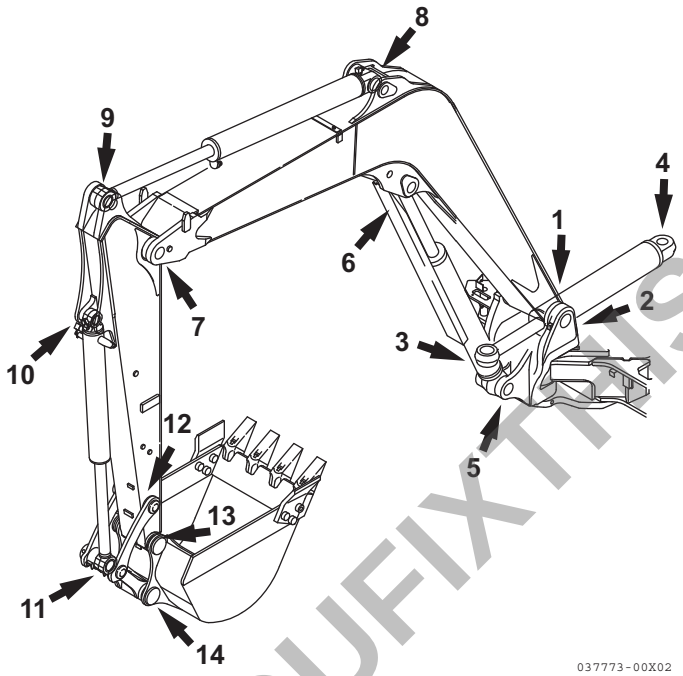
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3-6 Implement

3-6-1 Front Attachments



Unit : in. (mm)

No.	Applicable model: SV100-1A Measuring point	Standard	Wear limit	
			Pin	Bore of bush or hole
1	Boom swing fulcrum	Ø3.94 (Ø100)	-0.02 (-0.5)	+0.02 (+0.5)
2	Boom fulcrum	Ø3.15 (Ø80)		
3	Boom swing cylinder, rod	Ø2.36 (Ø60)		
4	Boom swing cylinder, bottom	Ø2.36 (Ø60)		
5	Boom cylinder, bottom	Ø2.76 (Ø70)		
6	Boom cylinder, rod	Ø2.76 (Ø70)		
7	Arm fulcrum	Ø2.76 (Ø70)		
8	Arm cylinder, bottom	Ø2.36 (Ø60)		
9	Arm cylinder, rod	Ø2.36 (Ø60)		
10	Bucket cylinder, bottom	Ø1.97 (Ø50)		
11	Bucket cylinder, rod	Ø2.36 (Ø60)		
12	Link “A” arm	Ø1.97 (Ø50)		
13	Bucket fulcrum	Ø1.97 (Ø50)		
14	Bucket “link A”	Ø1.97 (Ø50)		

Note : *Allowable clearance is 0.04 in. (1.0 mm).*

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4-1-6 Measuring and Adjusting Valve Clearance

Measure and adjust while the engine is cold.

Notes:

- The No. 1 piston position is on the flywheel end of the engine, opposite the radiator. The firing order is 1-3-2 for 3-cylinder engines and 1-3-4-2 for 4-cylinder engines.
- 3-cylinder engines fire every 240° of crankshaft rotation.
- 4-cylinder engines fire every 180° of crankshaft rotation.
- Valve clearance of both the intake and exhaust valves can be checked with the piston for that cylinder at top dead center (TDC) of the compression stroke. When a piston is at TDC of the compression stroke, both rocker arms will be loose and the cylinder TDC mark on the flywheel will be visible in the timing port of the flywheel housing.
- If there is no valve clearance, and the cylinder is at TDC of the compression stroke, extreme wear, or damage to the cylinder head or valves may be possible.
- If adjusting each cylinder individually, the cylinder to be adjusted first does not have to be the No. 1 cylinder. Select and adjust the cylinder where the piston is nearest to the top dead center after turning. Make adjustment for the remaining cylinders in the order of firing by turning the crankshaft each time.
- To decrease the number of rotations required to check all cylinders, other cylinders can also be checked as indicated in the chart below.

Example: On a 3-cylinder engine, with the No. 1 piston at TDC on the compression stroke (both valves closed), the valves indicated on the top line of the chart can be adjusted without rotating the crankshaft. To adjust the remaining two valves, rotate the crankshaft until the No. 1 piston is at TDC on the exhaust stroke (exhaust valve only open).

3-Cylinder Engines

Cylinder No.	1		2		3	
Valve	Intake	Exhaust	Intake	Exhaust	Intake	Exhaust
No. 1 Cylinder at TDC Compression	•	•	•			•
No. 1 Cylinder at TDC Exhaust				•	•	

4-Cylinder Engines

Cylinder No.	1		2		3		4	
Valve	Intake	Exhaust	Intake	Exhaust	Intake	Exhaust	Intake	Exhaust
No. 1 Cylinder at TDC Compression	•	•	•			•		
No. 4 Cylinder at TDC Compression				•	•		•	•

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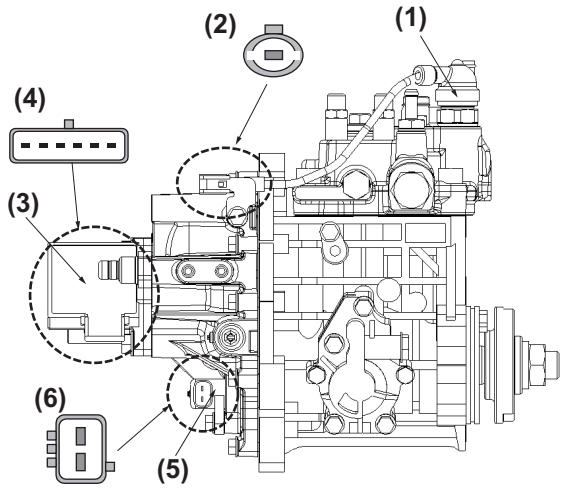


Figure 4-2-120

11. Remove the throttle cable from the fuel injection pump.
12. Separate the stop solenoid wiring connector **(Figure 4-2-121, (2))**.
    For electronically controlled engines, remove the solenoid valve connector **(Figure 4-2-120, (2))**, rack actuator connector **(Figure 4-2-120, (4))**, and engine speed sensor connector **(Figure 4-2-120, (6))**.
13. Remove the rear fuel injection pump bracket(s) **(Figure 4-2-121, (1))** from the fuel injection pump.

Note: Configuration of the fuel injection pump rear brackets may vary depending upon engine model.

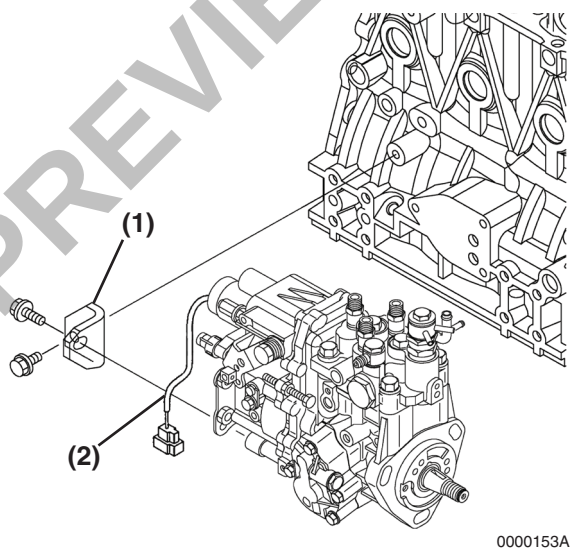


Figure 4-2-121

14. Disconnect the lube oil line **(Figure 4-2-122, (1))** and the clamp **(Figure 4-2-122, (2))** from the pump.

IMPORTANT

Take care to not damage or bend the oil line. In some applications, it may be preferable to remove the complete oil line assembly from the engine before proceeding.

Note: The fuel injection pump drive gear cover is retained to the gear case cover by 7 bolts.

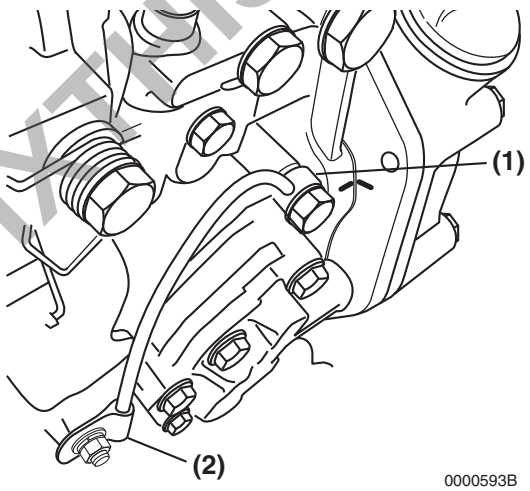


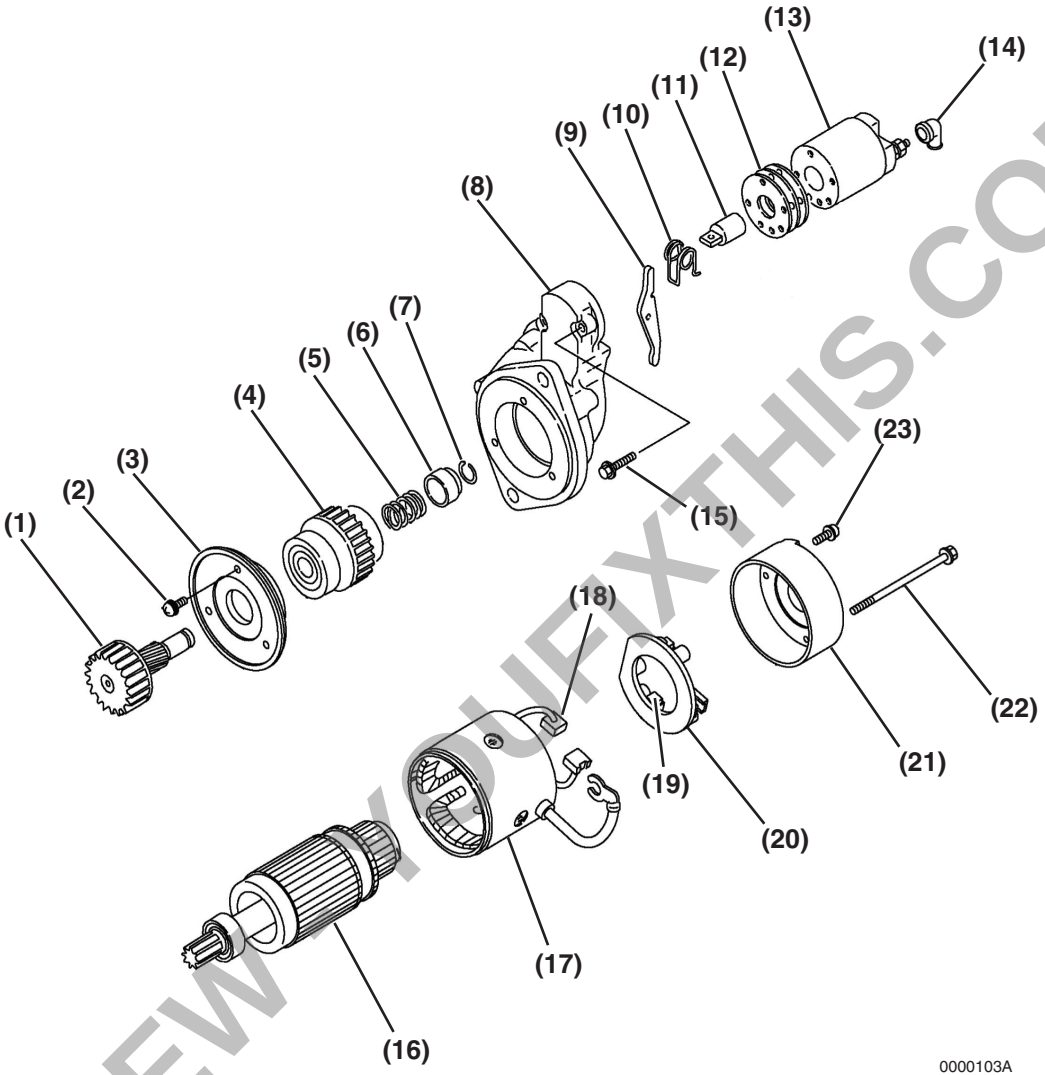
Figure 4-2-122

15. Remove the fuel injection pump drive gear cover **(Figure 4-2-123, (1))** from the gear case cover **(Figure 4-2-123, (2))**.

Note: The fuel injection pump drive gear cover is secured with an adhesive sealant. Use a gasket scraper to separate the fuel injection pump cover from the gear case cover.

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4-6-5 Starter Motor Components



1 – Pinion Shaft
2 – M4 Bolts (3 used)
3 – Bearing Retainer
4 – Pinion Clutch Assembly
5 – Return Spring
6 – Pinion Stop
7 – Retaining Ring
8 – Gear Housing
9 – Shift Lever
10 – Torsion Spring
11 – Plunger
12 – Dust Covers (Shims)
13 – Magnetic Switch Assembly (Solenoid)
14 – Cover
15 – M6 Bolts (2 used)
16 – Armature Assembly
17 – Field Coil Assembly
18 – Positive (+) Brushes
19 – Negative (-) Brushes
20 – Brush Holder Assembly
21 – Rear Cover
22 – M5 Through Bolts (2 used)
23 – M4 Bolts (2 used)

Figure 4-6-198

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5-3-7 Travel

1) Forward Travel (Right)

(1) Pilot pressure flow

When the right travel lever is pushed forward, the oil from the pilot pump P4 flows through the port B of the cut-off valve and the port 1 of the travel pilot valve to the port Pa3 of the travel section to move its spool.

(2) Oil Flow from Hydraulic Pump

The oil from the piston pump P1 flows through the port P1 of the inlet section, the port A3 of the right travel section and the port F of the swivel joint to the port P2 of the right travel motor to rotate it.

The return oil from the port P1 of the right travel motor flows back to the hydraulic oil tank through the port D of the swivel joint, the port B3 of the right travel section, the ports T1 and T2 of the control valve and the oil cooler.

2) Forward Travel (Left)

(1) Pilot pressure flow

When the left travel lever is pushed forward, the oil from the pilot pump P4 flows through the port B of the cut-off valve and the port 3 of the travel pilot valve to the port Pa4 of the travel section to move its spool.

(2) Oil Flow from Hydraulic Pump

The oil from the piston pump P2 flows through the port P2 of the inlet section, the port A4 of the left travel section and the port C of the swivel joint to the port P1 of the left travel motor to rotate it.

The return oil from the port P2 of the left travel motor flows back to the hydraulic oil tank through the port E of the swivel joint, the port B4 of the left travel section, the ports T1 and T2 of the control valve and the oil cooler.

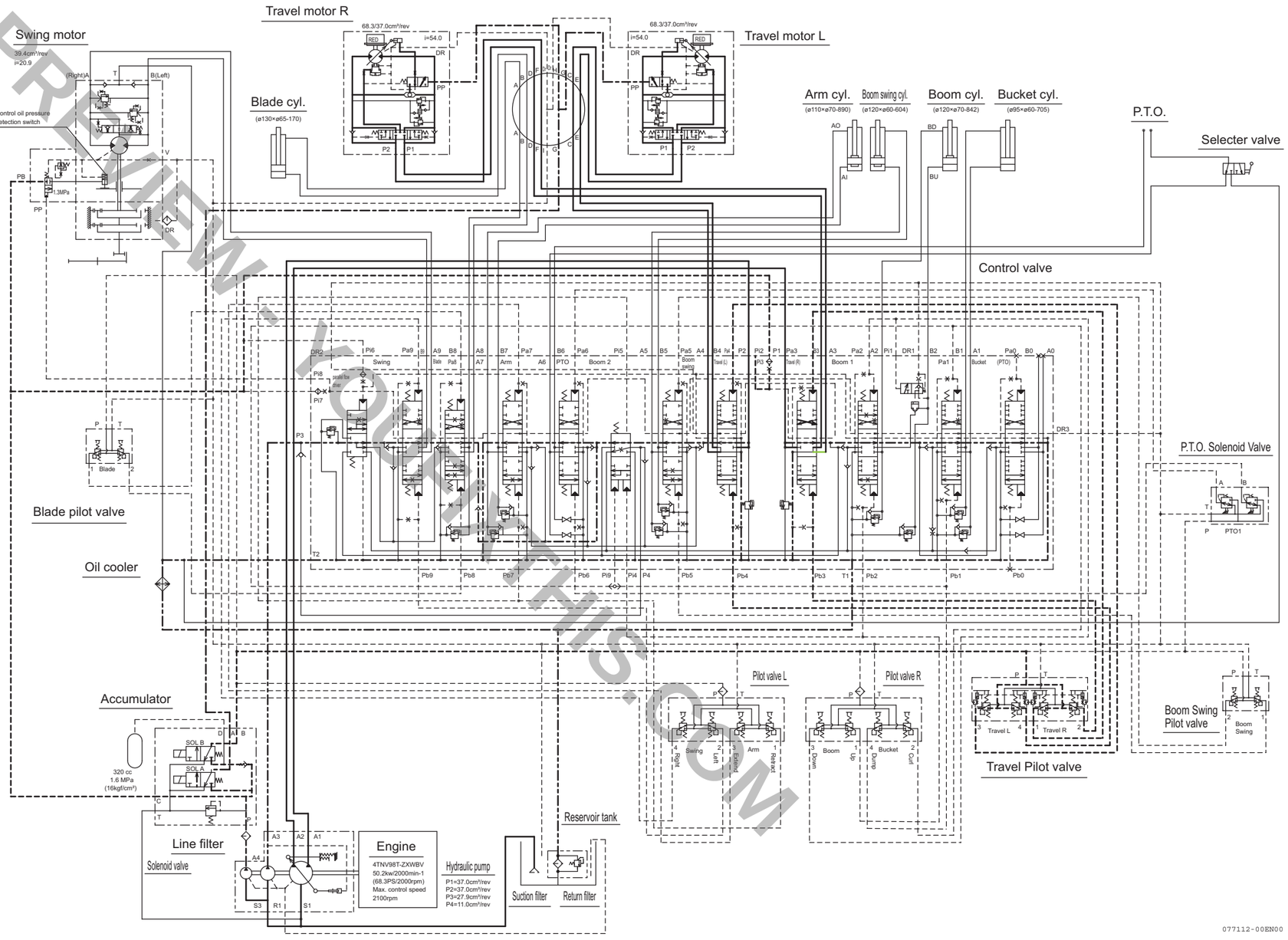
3) Reverse Travel (Right and Left)

(1) Pilot pressure flow

When the right (left) travel lever is pulled backwards, the oil from the pilot pump P4 flows through the port B of the cut-off valve and the port 2 (4) of the travel pilot valve to the port Pb3 (Pb4) of the travel section to move its spool.

(2) Oil Flow from Hydraulic Pump

The oil flows in the opposite direction to the oil flow in the Forward Travel operation with regard to the right or left travel motor.



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1. Disassembly of accessories

Remove the relief valve assembly **18**, **19**, **20**, **21** and the shutoff valve assembly **22** in Fig. 2-1.

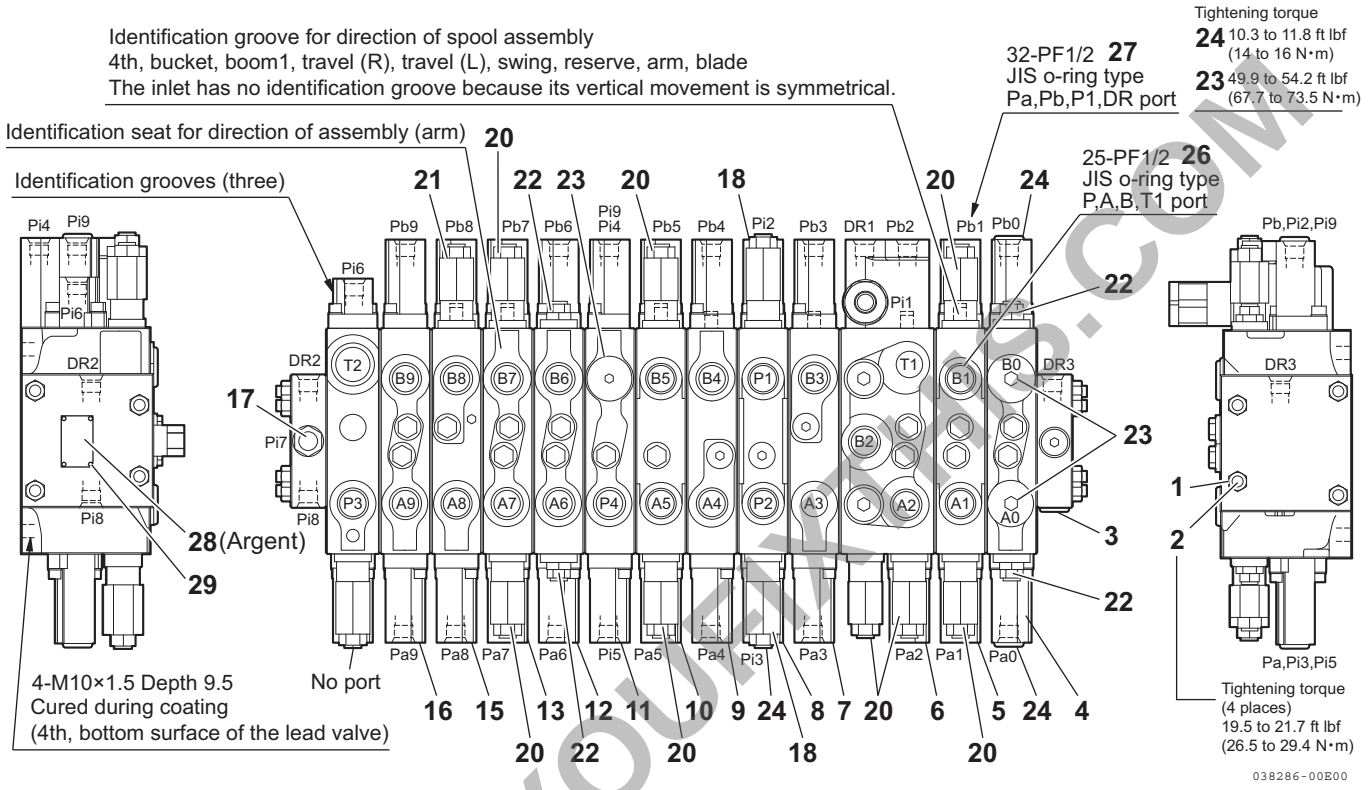


Fig. 2-1

No.	Description	Q'ty	Remark	No.	Description	Q'ty	Remark
1	Nut	8		16	Spool S/assy	1	Parallel flow divider (P3)
2	Tie rod	4		17	Body assembly	1	
3	Body assembly	1		18	Relief valve assy	2	P1, P2
4	Spool S/assy	1	4th P.T.O.	19	Relief valve assy	1	P3
5	Spool S/assy	1	Bucket	20	Relief valve assy	8	A1, B1, A2, B2, A5, B5, A7, B7
6	Spool S/assy	1	Boom 1	21	Relief valve assy	1	B8
7	Spool S/assy	1	Travel right	22	Shut off valve assy	4	A0, B0, A6, B6
8	Spacer S/assy	1	Inlet (P1, P2)	23	Plug assy	3	A0, B0, boom 2
9	Spool S/assy	1	Travel left	24	Plug assy	3	Pa0, Pb0, Pi3
10	Spool S/assy	1	Boom swing	25	Shipping plug	1	PF3/4
11	Spool S/assy	1	Boom 2	26	Shipping plug	23	PF1/2
12	Spool S/assy	1	P.T.O.	27	Shipping plug	29	PF1/4
13	Spool S/assy	1	Arm	28	Nameplate	1	
14	Spool S/assy	1	Blade	29	Drive screw	2	1.85×4.81
15	Spool S/assy	1	Swing				

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3) Troubleshooting and corrective measures

Troubleshooting is not easy. Some assumed causes are listed in the table below. Since repair is difficult, refer to the assumed causes and corrective measures in the table.

Symptoms, assumed causes, and corrective measures in general are listed in the table below.

In most cases, a trouble is not caused by a failure only with a single part, but caused by a failure involving more than one part. For this reason, be aware of the fact that corrections may also be necessary other than listed.

Also, the table below does not cover all the assumed causes and corrective measures. The persons in charge of repair must further investigate problems and causes as necessary.

Symptom	Cause	Correction
Secondary pressure does not rise.	(1) Insufficient primary pressure (2) The secondary-pressure-setting spring **26** no longer has enough elasticity. (3) The gap between the spool and the casing is too wide. (4) The operating section is not fixed firmly.	(1) Secure primary pressure. (2) Replace with a new one. (3) Replace with a new pilot valve Complete unit. (4) Disassembling/reassembling, and replacement of the operating section.
Secondary pressure is unstable.	(1) Sticking portion in sliding part. (2) Fluctuations in tank line pressure. (3) Air trapped in the pipe.	(1) Correct the sticking portion. (2) Return the oil into the oil tank directly. (3) Bleed the pipe several times.
Secondary pressure is too high.	(1) Tank line pressure is high. (2) Sticking portion in sliding part.	(1) Return the oil into the oil tank directly. (2) Correct the sticking portion.
Damping function does not work.	(1) Air is trapped inside the piston chamber. (2) Sticking portion in sliding part. (3) The damping spring **10** no longer has enough elasticity. (4) The gap between the damping piston **9** and the casing (damper) **23** is too wide. (5) Malfunction of the check valve. (6) The orifice of the damping piston **9** is too large.	(1) Bleed the air several times. (2) Correct the sticking portion. (3) Replace with a new one. (4) Replace with a new pilot valve complete unit. (5) Disassemble and investigate the check valve portion. (6) Replace the damping piston.
Damping torque is large.	(1) Sticking portion in sliding part. (2) Clogging of the orifice in the damping piston **9**.	(1) Correct the sticking portion. (2) Correct or replace the damping piston.
Excess play of lever.	(1) Wear-out of push rod and/or steel ball due to lack of grease.	(1) Exchange push rod and/or steel ball for new one. (2) Apply grease within every shorter term either 6 months or 500 service hours. (Refer to P.18)

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6-5 Travel Motor

6-5-1 Product Overview

1. Product Users

This product is a hydraulic driven rotary actuator.
The product contains a reduction gear, hydraulic motor, brake valve and parking brake in one compact unit. It has been developed for use as an actuator for application requiring low-rpm, high torque operation such as construction and marine machinery.

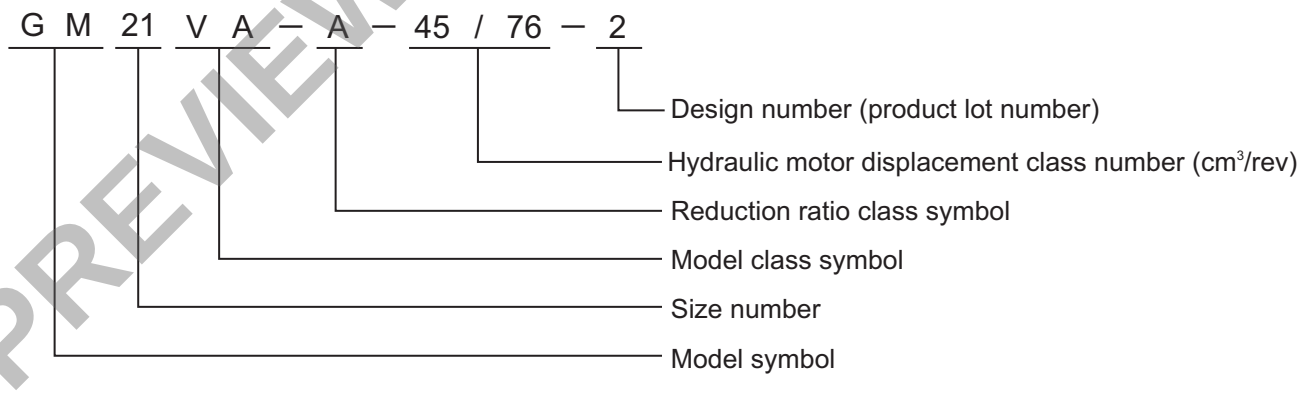
2. Specifications

The specifications shown are general specifications for each item listed.

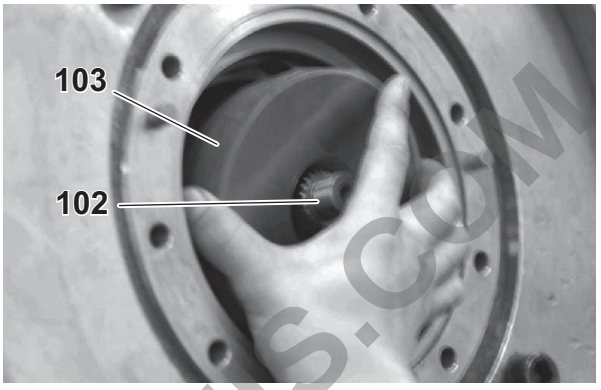
Item \ Model			GM21VA
Rated output torque		ft•lbf (N•m)	15195 (20600)
Max. speed		min^{-1}	60
Reduction ratio			1/54.0
Hydraulic motor	Max. displacement	cu.in./rev (cu. cm/rev)	5.1 (82.8)
	Max. speed	min^{-1}	3000
	Max. pressure	PSI (MPa)	5047 (34.8)
	2-speed switch	PSI (MPa)	284 to 995 (1.96 to 6.86)
Parking brake	Brake torque	ft•lbf (N•m)	152 (206)
	Brake free pressure	PSI (MPa)	110 (0.76)

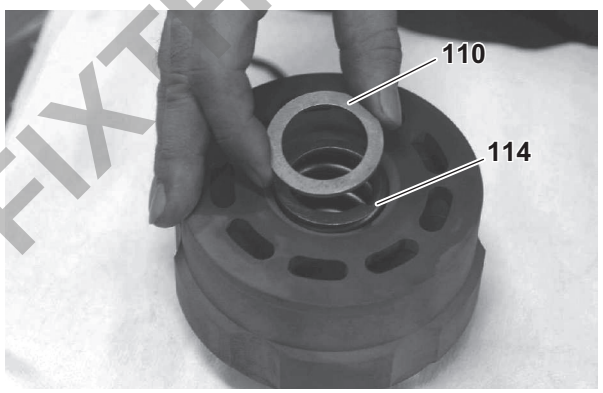
3. Model Labeling

Model numbers are indicated on the product name plate.



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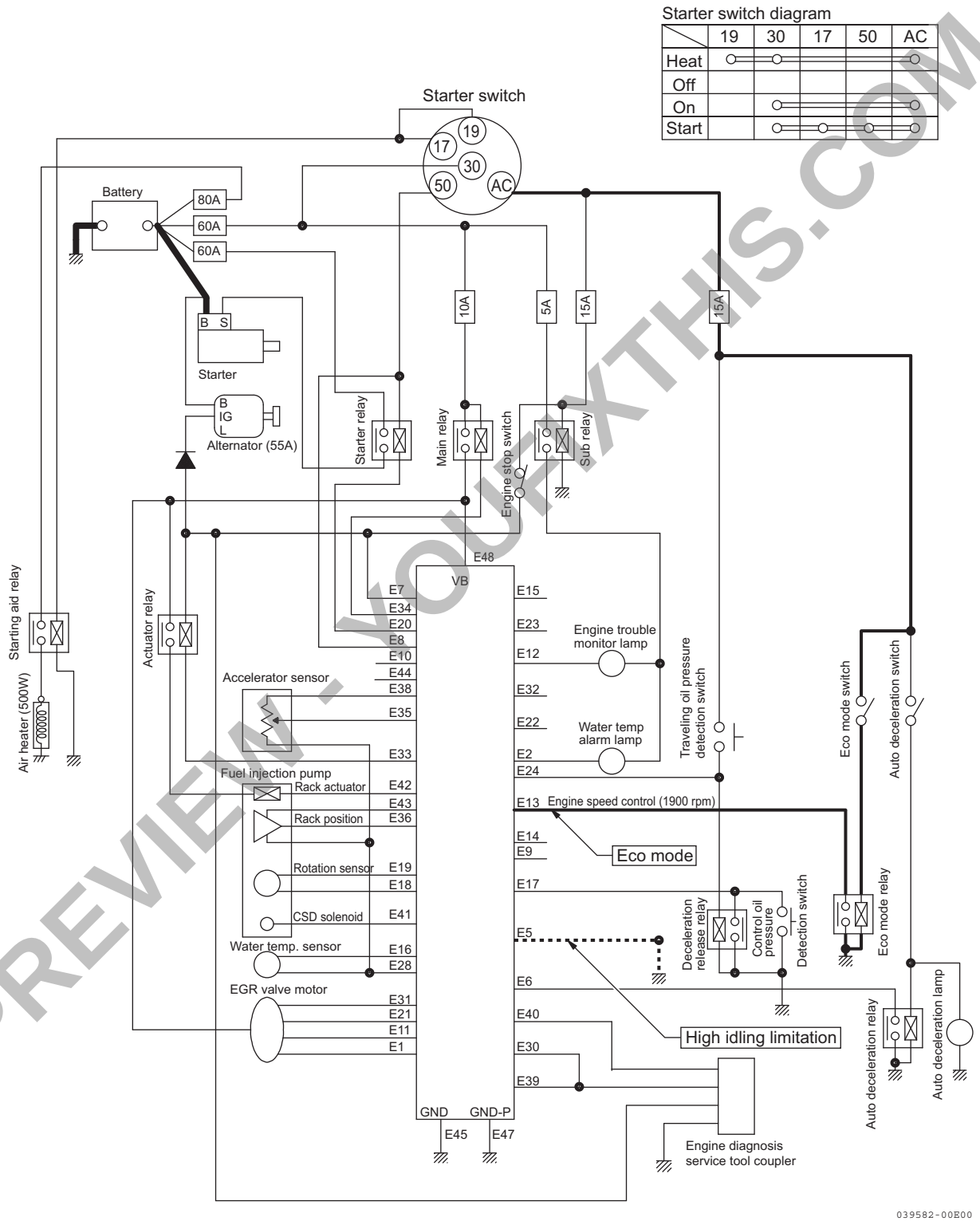
Procedure	
(4) Insert swash plate **103** into spindle **2**. ***Note:*** *Apply lithium grease on swash plate **103** where mating surface of spindle **2**.* *Make sure that the locating pivots **167** of spindle **2** enter pivots' holes of swash plate **103**.*	

7. Assembling cylinder block interior ***Note:*** *The sharp edge of snap ring **145** is turned and put into the entrance side of cylinder block **104**.* *Washer **110** which touches snap ring **145** turns and puts its sharp edge side into snap ring side.* (1) Insert washer **110**, spring **114**, washer **110** and snap ring **145** in that order into cylinder block **104**. (2) Place cylinder block **104** on the press bench.	

CAUTION *When mounting snap ring **145**, if the tip of the pliers slips out of the hole of snap ring **145**, snap ring **145** could jump out.* ***Note:*** *Press force of spring **114** is 253.6 lbf (1128 N) or more.* *Protect by covering cylinder block **104** with a vinyl sheet so the contact surface with timing plate **109** of cylinder block **104** does not become damaged.* (3) Place holder (I) on washer **110**, and while clamping with the press, fit snap ring **145** in the snap ring groove of cylinder block **104** with the snap ring pliers.	

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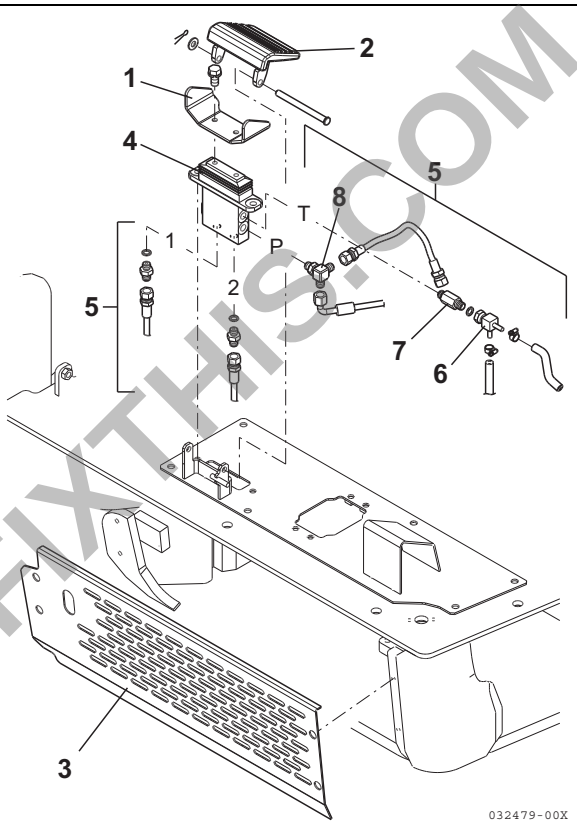
Circuit description of electronic control



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7-5-6 Removal and Reinstallation of Boom Swing Pilot Valve

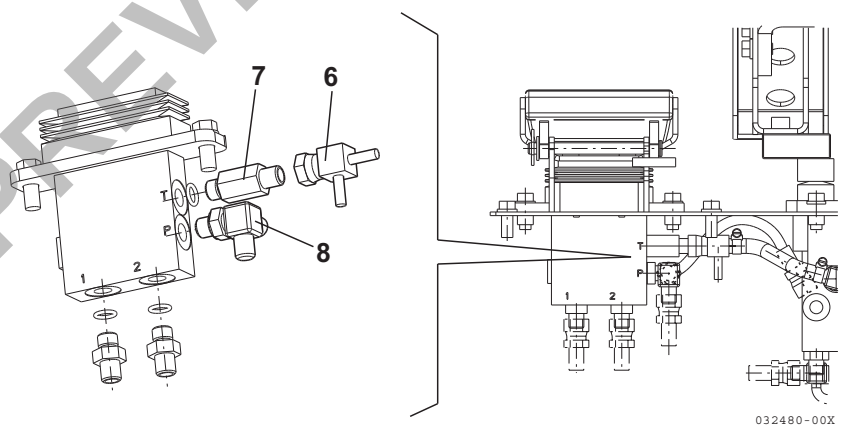
1) Removal

Procedure	
(1) Remove boom swing pedal **1**, cover **2** and frame FL **3**. Disconnect hoses (G804YY010, H603BB020, F403BC148, F403BB048 and F403BB048) **5** from boom swing pilot valve **4**. (2) Remove nipple female G1/4 **6**, connector 1/4-1/4 **7** and adjustable elbow 1/4 **8**. And then remove boom swing pilot. ***Note :*** *Make a mark on the installation position of each hoses in advance.*	

2) Reinstallation

Reinstall boom swing pilot valve in the reverse order of the removal procedure.

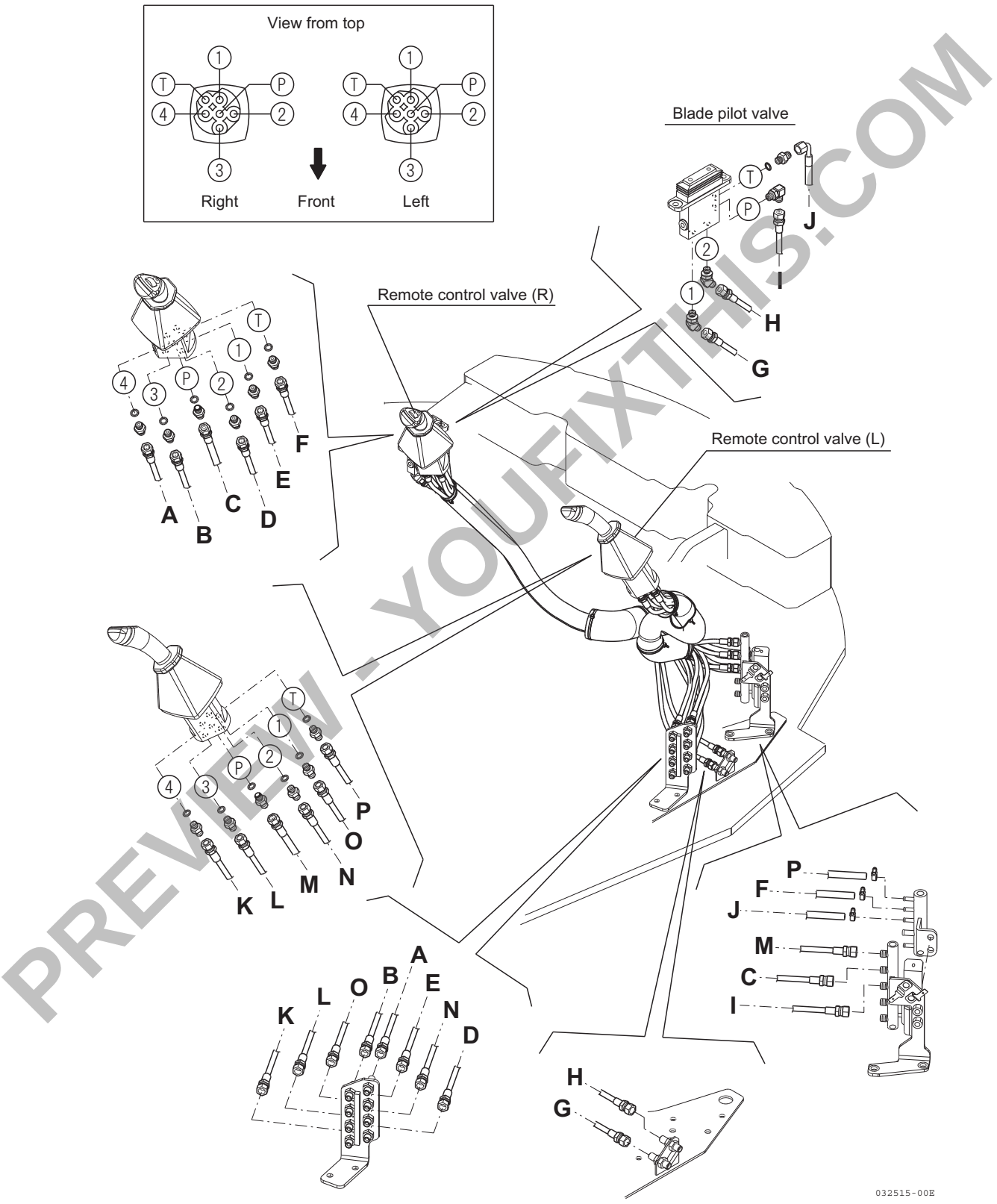
Connector and join setting angles



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7) Pilot control

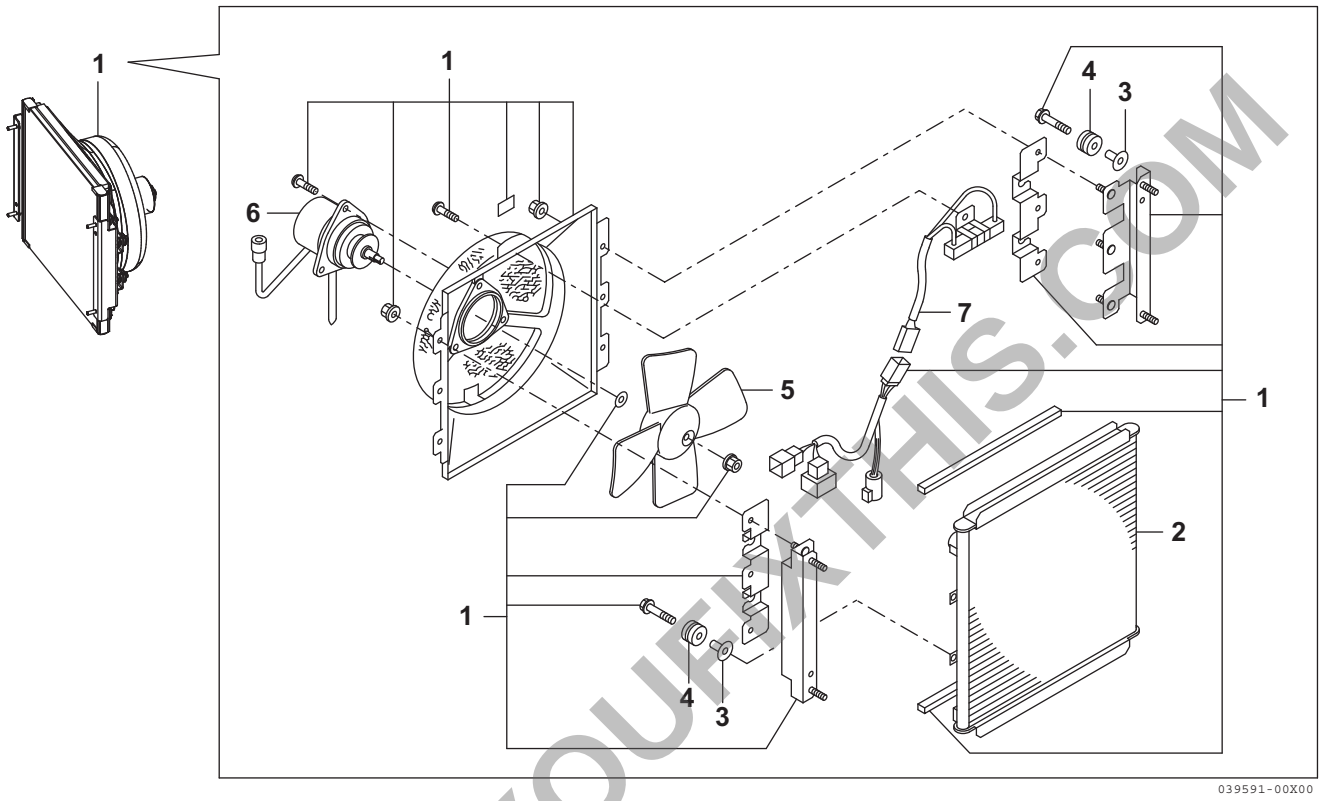
• Remote control valve and blade pilot valve ←→ pipe bracket



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(3) Condenser

Parts list



No.	Part name	No.	Part name
1	Condenser ASSY	5	Fan ASSY
2	Condenser core	6	Fan motor ASSY
3	Bush	7	Blower resister
4	Grommet		

Specifications

Item			Specifications
Core element	Dimensions	Height	12.06 in (306.2 mm)
		Width	12.60 in (320 mm)
		Thickness	0.63 in (16 mm)
	Fin pitch		0.16 in (3.95 mm)
	Bus structure		13-13-11-10
Test pressure		Resisting pressure	783 PSI (5.4 MPa)
		Air tightness	522 PSI (3.6 MPa)
Maximum working pressure			522 PSI (3.6 MPa)
Vibration resistance			223 ft/s^2 (68.0 m/s^2)
Airflow (Motor Hi)			31783 to 45908 cu.ft./h (900 to 1300 m^3/h)
Motor revolution			2200 to 2600 rpm
Rated voltage			12 V
Power consumption			110 W or below
Register resistance value			0.7 Ω

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