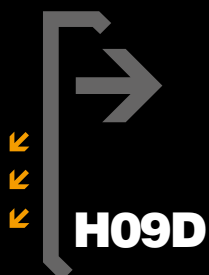
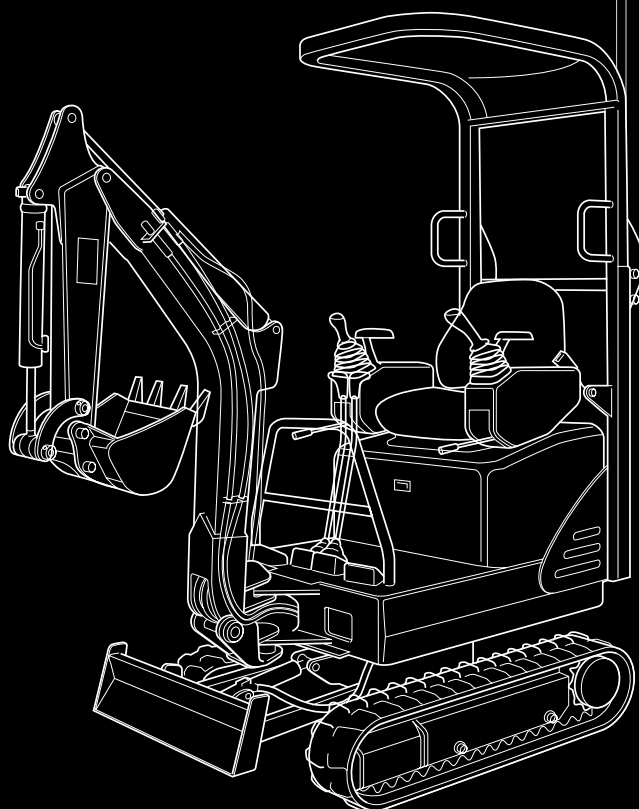


H09D

HANIX
Japanese Craftsmanship

Service Manual



INTRODUCTION

To insure a long life for the machine and the engine and to prevent failure and problems, proper operation, maintenance and repairs are indispensable.

This service manual includes an “outline,” “structure and operation,” “inspection and adjustment,” “disassembly and assembly,” “standard maintenance,” and “repair and replacement of parts” of the machine which are necessary to carry out the inspections and repairs in the repair shop.

We hope that this manual helps you to efficiently and effectively carry out repairs by providing an accurate description of the product and the correct repair techniques.

CONTENTS

1. Precautions on Maintenance
2. Outline
3. Attachment
4. Engine
5. Main Pump
6. Hydraulic Oil Filter
7. Control Valve
8. Joystick Valve (Pilot valve)
9. Solenoid Valve (Swing•PTO)
10. Slew Motor
11. Drive Motor
12. Hydraulic Cylinder
13. Swivel Joint
14. Selector Valve
15. Crawler
16. Idler
17. Sprocket
18. Track Roller
19. Electrical Equipment

1 PRECAUTIONS ON MAINTENANCE

1. Correct operation

Correct operation means to follow the correct “procedure” and “method.”

Procedure focuses on speed and accuracy of each job.

In the method, are addressed what type of facility, tools, instruments, materials, oil should be used, how and which part should be checked, adjusted or disassembled, and what matters to attend to.

2. Precautions on operation

1. Safety check

Check that stoppers and sleepers are correctly installed for the vehicle jack-up operation.

2. Preparation

Prepare all of the tools and inspect and adjust the instruments.

3. For efficiency

1) Understand the state before disassembly.

What is the problem? Is disassembly absolutely necessary?

2) Before disassembly

Determine whether match marks are necessary. For the electrical system, disconnect the cable from the battery terminal.

3) Precautions for disassembly

In stead of checking all of the disassembled parts at once, check each part individually as it is disassembled. When removing the hydraulic unit or the hoses, mount a dust cap on the connection.

4) Repair of disassembled parts

Keep the disassembled parts in order. Clearly distinguish the parts to be replaced with new parts from those to be reused. Packings, seals, rings, split pins must be replaced.

NOTE:

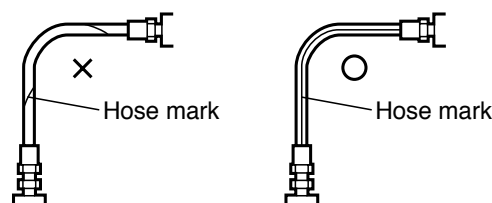
Electrical equipment, rubbers and V belts (which are easily affected by water and oil) must be handled carefully in order to prevent soiling them.

5) Clean disassembled parts

Thoroughly clean the disassembled parts.

6) Assembly

Perform the assembly correctly (tightening torque, application of Three Bond, screw lock, grease, use of seal tape, etc.). Also install the hose correctly.

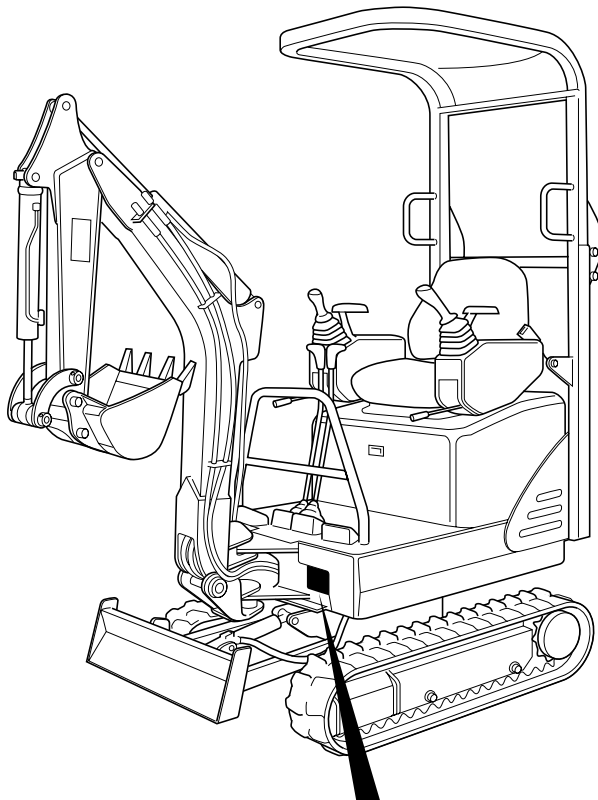


2 OUTLINE

CONTENTS

- 2-1 Location of serial No.
- 2-2 Name of each part
- 2-3 Dimensions and specifications
- 2-4 Weight list
- 2-5 Oil and grease supply points
- 2-6 List of supply oil and grease
- 2-7 When to repair
- 2-8 Hydraulic circuit diagram

2-1 Location of Serial Number

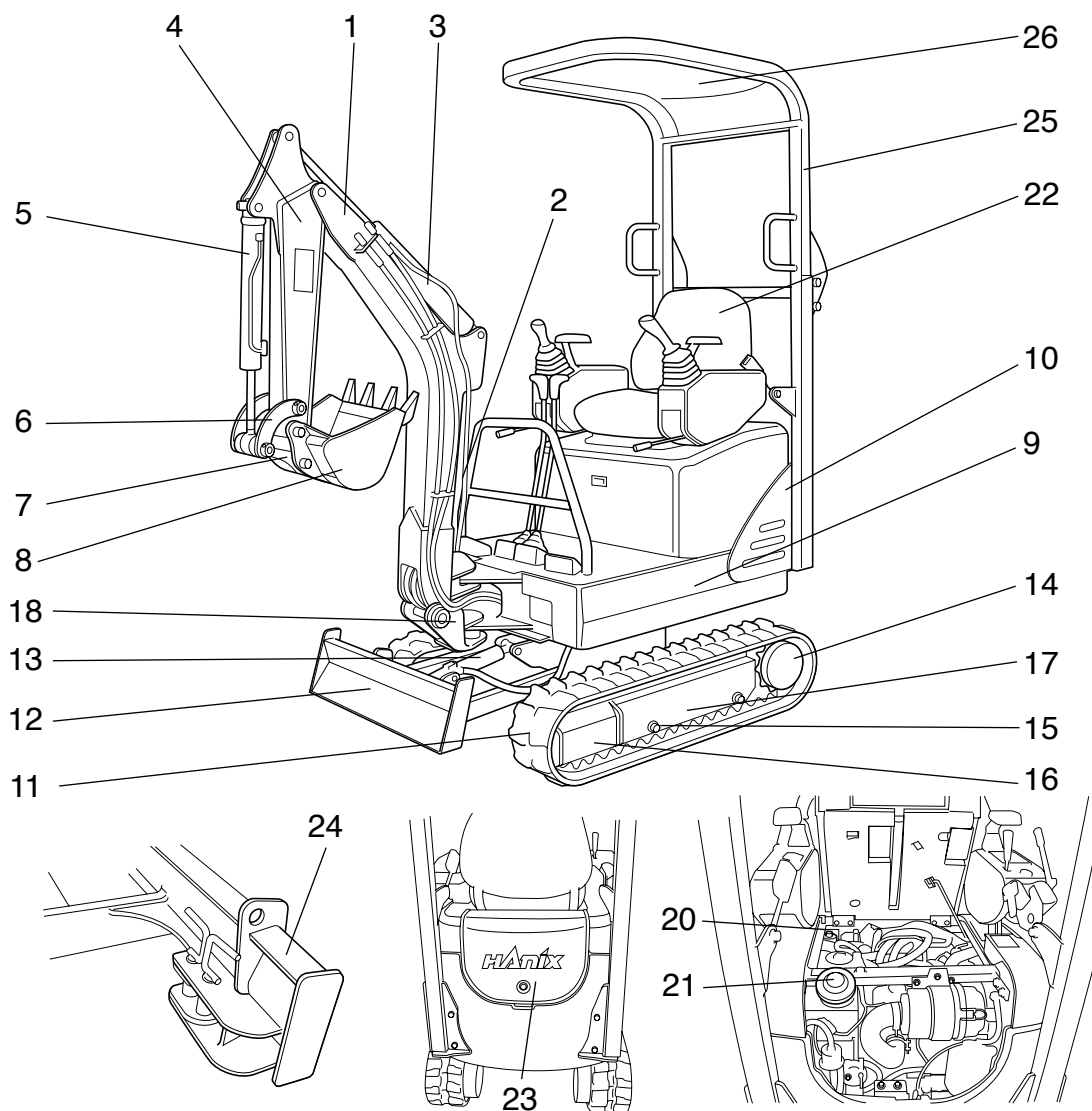


MACHINE MASCHINE MACCHINA MAKUIME MASKIN	MODEL MODELL/MODELLE MODELO/MODELOS				
	NO.				
	WEIGHT/GEWICHT GEWICHT/POID PESO/PESO VIKT			kg	
	YEAR/JAAR BAKUJAHRI/ANNEE ANNO/ANNOJAR				
ENGINE MOTOR MOTEUR MOTORE MODOR	MODEL MODELL/MODELLE MODELO/MODELOS		MAX. DRAWBAR PULL		kN
	NO.		MAX. VERT. LOAD		kN
	POWER/VERMOGEN LEISTUNG/PUISSANCE POTENSA/POTENZA YTELSE		kW/	min ⁻¹	
	HANIX EUROPE LTD. Unit B Windmill Lane, Denton, Manchester M34 3SP, United Kingdom MADE IN JAPAN				

Model name

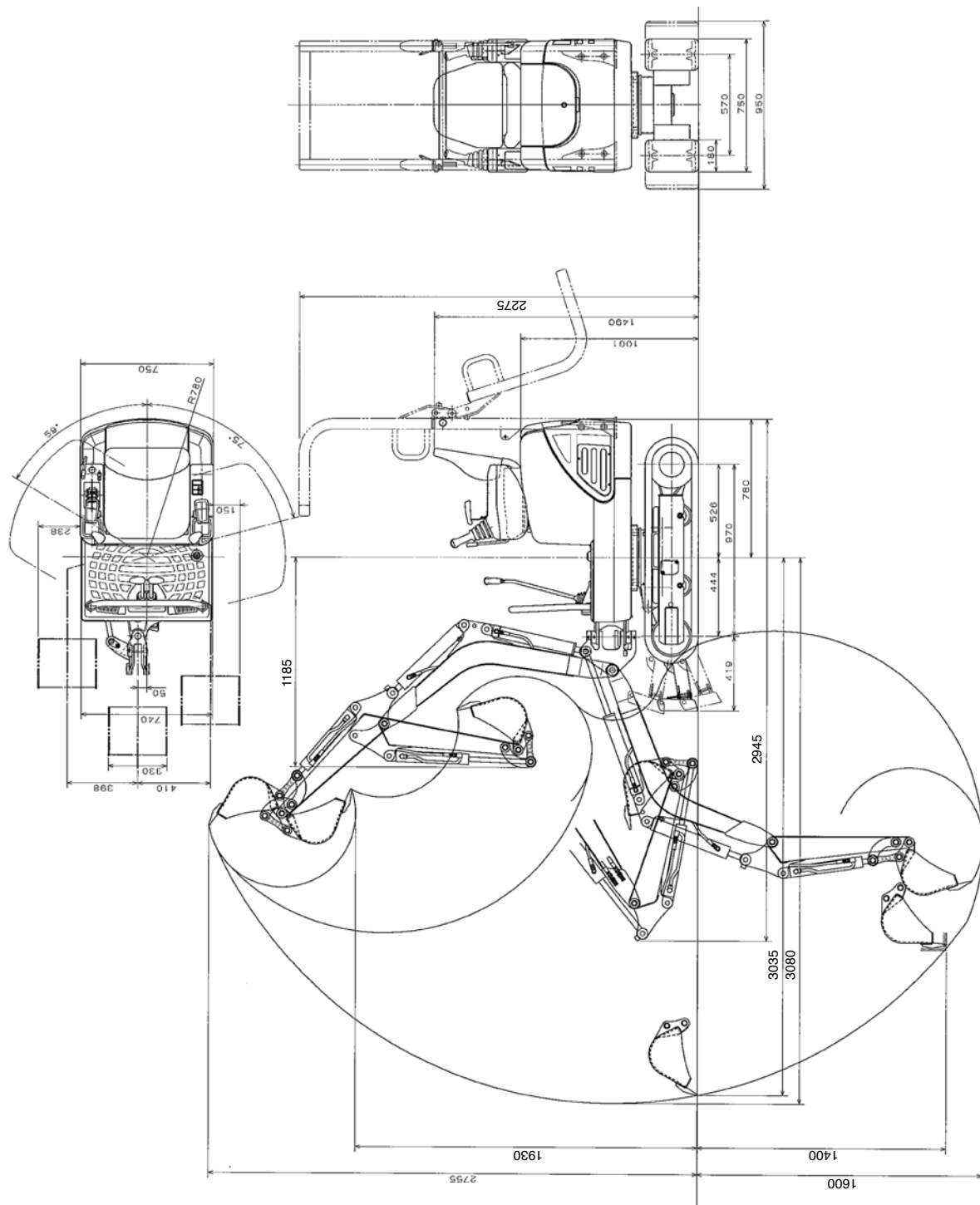
Serial No.

2-2 Name of each part



- | | |
|---------------------|---------------------|
| 1. Boom | 2. Boom cylinder |
| 3. Arm cylinder | 4. Arm |
| 5. Bucket cylinder | 6. Bucket links |
| 7. Dump link | 8. Bucket |
| 9. Swing frame | 10. Counter weight |
| 11. Crawler | 12. Dozer blade |
| 13. Dozer cylinder | 14. Travel motor |
| 15. Track roller | 16. Front idler |
| 17. Grease cylinder | 18. Swing post |
| 19. Swing cylinder | 20. Hydraulic tank |
| 21. Fuel tank | 22. Operator's seat |
| 23. Engine cover | 24. Side blade |
| 25. Roll bar | 26. Canopy |

2-3 Dimensions and Specifications



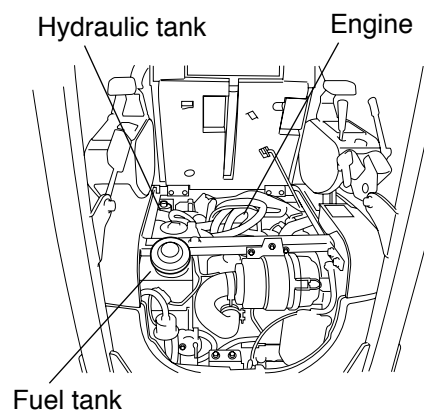
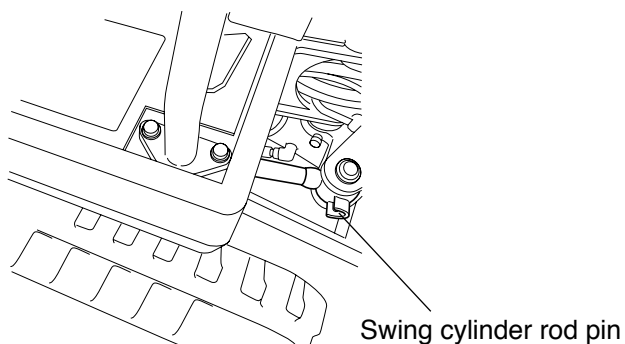
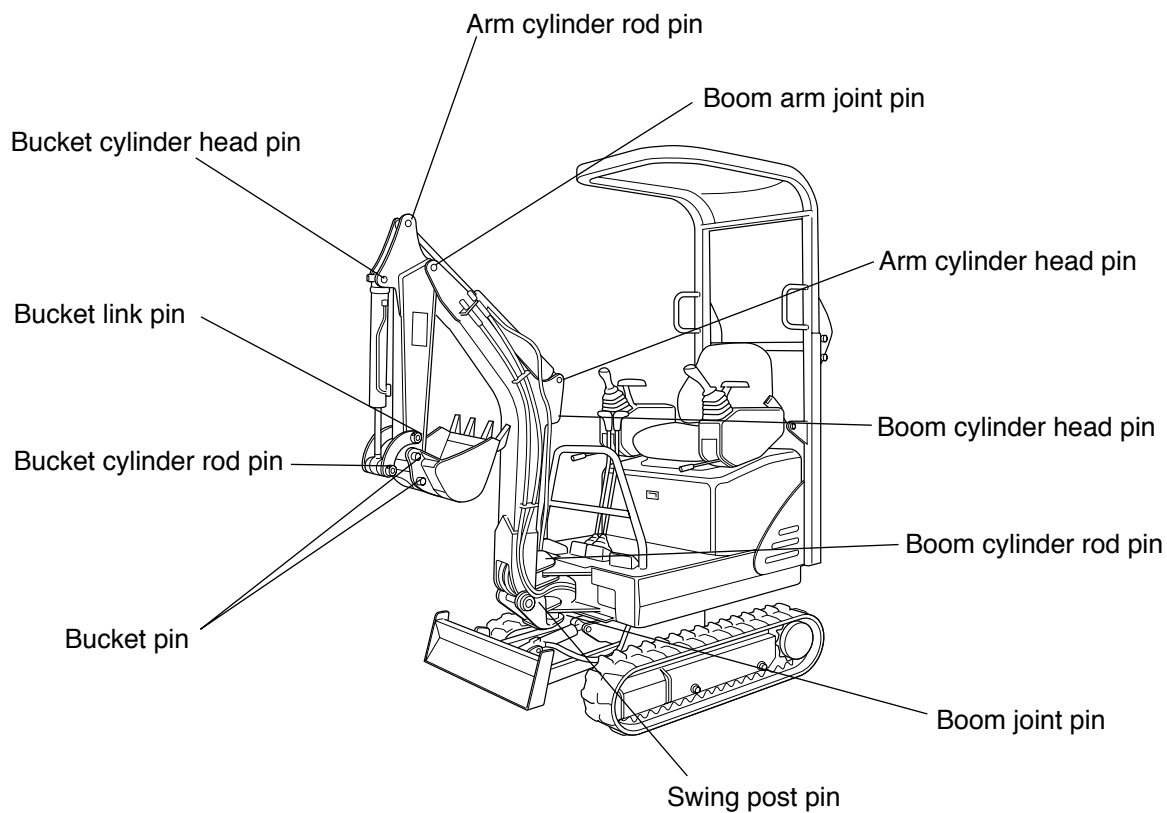
Model			H09D	
Machine weight	Roll bar rubber		kg	980
	Canopy rubber		kg	990
Standard bucket capacity/width			m ³ /mm	0.022/330
Engine	Type			KUBOTA Z602
	Displacement		cc	599
	Rated output		Kw(PS)/min ⁻¹	7.8(10.6)/2400
Dimensions	Overall length		mm	2,945
	Overall width		mm	750<950
	Overall height		mm	2,275
Working range	Max. digging depth		mm	1,600
	Max. vertical digging depth		mm	1,400
	Max. digging height		mm	2,755
	Max. dumping height		mm	1,930
	Max. digging radius		mm	3,080
	Reach at ground		mm	3,035
	Min. turning radius	front	mm	1,185
		swing	mm	680
	Rear turning radius		mm	780
Boom swing angle L/R		deg	L75/R59	
Performance	Max. digging force(Bucket)		kN	8.3
	Max. digging force(Arm)		kN	5.8
	Traction force		kN	7.8
	Travelling speed (low)/(high)		km/h	1.8/3.5
	Slew speed		rpm	8.1
	Gradeability		Angle	30°
Hydraulic system	Pump	Type		Piston2+Gear1
		Oil flow	lit/min	10.8/10.8/7.2
	PTO	Oil flow	lit/min	21.6
	Main relief pressure		Mpa	16.2/16.2/3
Underbody	Dozer blade width×heigh		mm	750-950×200
	Shoe width×tumbler center		mm	180×970
	Ground pressure	Roll bar rubber	kPa	29.3
		Canopy rubber		29.3
	Type of travelling motor			Piston shoe-in type
	Crawler tension system			Grease cylinder
Capacity	Hyd. Tank capacity		lit	10.5
	Fuel tank capacity		lit	12.2
	Engine oil capacity		lit	2.5
	Cooling water capacity		lit	5.0
Noise level Lwa/Lpa			d	93/83

2-4 Weight list

Unit: kg

Part name		Part name	
Boom	33	Extension cylinder	4.2
Arm	17.2	Slew bearing	13.8
Bucket	15.3	Track frame R	31.5
Dump link	2.9	Track frame L	29.8
Bucket link(R)	1.0	Center frame	27.5
Bucket link(L)	0.9	Selector valve	1.7
Boom joint pin	1.2	Dozer	25
Arm joint pin	0.6	Crawler (rubber)	28 × 2
Bucket pin	0.7	Idler	4.5 × 8
Swing post	17	Adjust cylinder	1.6
Swing post pin	0.7 × 2	Track roller	2.6 × 4
Swing frame	87	Sprocket	2.5 × 2
Counter weight	87	Drive motor	16 × 2
Hydraulic oil tank	11.8	Slew motor	9.2
Fuel tank	7.6	Engine	60
Engine cover	8.8	Radiator	3
Floor cover R	4.2	Battery	11.0
Floor cover L	4.2	Seat	8.4
Side cover R	3.9	Swivel joint	9.2
Side cover L	4.7	Pump	10
Boom cylinder	10	Control valve	11
Arm cylinder	10.8	Roll bar	52
Bucket cylinder	8	Canopy	66
Swing cylinder	6.3	J/S valve	2.5 × 2
Dozer cylinder	5.5	Solenoid valve	4

2-5 Oil and grease supply points



2-6 List of lubrication

Name	Quantity of oil/water	Type of oil according to ambient condition
		-10°C~40°C
Engine cooling water	5.0 ℓ	Soft water (antifreeze is mixed in water)
Fuel tank (effective capacity)	12.2 ℓ	Diesel fuel with freezing point below -7°C
Engine lubricating oil	2.5 ℓ	SAE 10W-30
Travel motor (reduction gear)	0.33 ℓ	SAE 30
Hydraulic tank	10.5 ℓ	ISO VG 46

Table of recommended Lubricants

NO.	LIBRICANT	Class
1	Engine Oil	SAE 10W-30 *
2	Gear Oil	SAE 85W-140
3	Hydraulic Oil	VG 46
4	Cup Grease	
5	Fuel	Diesel fuel △

*Use above CF grade engine oil (API Service Classification)

△ Diesel oil shall be used as fuel.

Kerosene must not be used as fuel, because it is extremely low in cetane rating and brings about a damaging effect on the engine.

Nonfreezing diesel oil shall be used when necessary.

Cooling water (antifreeze)

*To prevent the cooling system from freezing, add antifreeze to the cooling water. Replace the cooling water after 1 year from its delivery, because the effect will decrease.

*Use "Long-life coolant" for the antifreeze.

*Mixing ratio of antifreeze.

Temperature	-5°C	-10°C	-15°C	-20°C	-25°C	-30°C
antifreeze ratio	1.7	2.8	2.7	3.1	3.5	3.8

Engine inside capacity	Radiator capacity	Reserve tank capacity	Total
2.8 ℓ	1.6 ℓ	0.6 ℓ (Full level)	5.0 ℓ

2-7 When to repair

It is difficult to judge when to perform periodic inspections, maintenance and repairs. Although the wearing rate of each component differs depending on the grade of daily inspection, the skill in machine operation, the working conditions, the quality of used lubricating oil, the frequency of oil replacement, the quality of land to be dug, the digging rate, the schedule for maintenance and repairs should be decided considering the state of engine, the indication of the hour meter, the degree of wear in each part, the state of hydraulic system, your experience and data.

2-7-1 Maintenance procedure

	Inspection and maintenance item	Inspection and maintenance interval (hours)									
		Check before start up	50	100	200	400	500	800	1000	1500	1 year
1	Engine oil	Check oil level	Replace (New machine only)	Replace							
	Engine oil filter cartridge		Replace (New machine only)		Replace						
2	Fuel filter element			Clean		Replace					
3	Water sediment			Check and clean							
4	Fan belt	Check and adjust		Check and adjust			Replace				
5	Fuel tank	Check fuel level	Clean the strainer			Drain water and sediment					
6	Radiator (Overflow tank)	Check water level									
	Radiator fin		Check and clean								
	Cooling water						Replace				
7	Air cleaner			Check and clean							Replace the element (inner and outer)
8	Engine valve clearance							Inspect and adjust			
9	Engine Injection nozzle condition									Check	
10	Hydraulic oil tank	Check oil level				Drain water and sediment			Replace the oil		
11	Hydraulic line filter cartridge			Replace (New machine only)			Replace				
12	Hydraulic suction filter								Replace		
13	Bucket teeth and others	Inspect									
14	Slew bearing		Inspect and grease								
15	Inspect crawler tension	Check and adjust									
16	Battery electrolyte amount and specific gravity		Inspect and supply distilled water								
17	Inspect each body part for loosening and damage	Check and tighten									
18	Each lever and instrument	Inspect									
19	Lubricating oil of drive reduction gear								Replace		
20	Electrical wiring	Inspect									
21	Water and oil leakage in each body parts	Inspect									
22	inspect and grease attachment	Inspect									
23	Pilot filter element								Replace		

2-7-2 Prestart inspections

(1)Prestart inspections

	Item	Content	Remarks
1	Engine oil pan	Check oil level	Before starting operation.
2	Fuel tank	Check fuel level	Check that the fuel level is above the center of level gauge.
3	Radiator	Check water level	Check that the amount of water in overflow tank is within a specified level.
4	Each oil/grease supply point	Oil and grease	Refer to page 2-6.
5	Inspect each body part for looseness and damage	Looseness, removal, water and oil leakage	Refer to tightening torque list.
6	Each lever and instrument	Operation check	Whether abnormal operation exists or not.
7	Hydraulic oil tank	Check oil level	Add oil if its level falls below the specified level. (Be careful of the position of machine.)
8	Bucket teeth and others	Wear	Check whether the replacement of parts is necessary or not.
9	Electrical wiring	Looseness and tears	Loosened terminal, torn covering, etc.
10	Fan belt	Check and adjust	7mm to 9mm sag at the center.

(2)Post opertaion inspections

	Item	Content	Remarks
1	Each body part	Clean, check for water and oil leaks. Looseness, failure, etc.	Treatment of the part where cleaning was not sufficient such as dirt sticking to the body or muddy water remaining on the body.
2	Fuel tank	Fuel supply	Add fuel.(Diesel fuel)
3	Cooling water	Drain	Only when the danger of freezing exists.

Tightening torque list:

In the present inspection, always check for loosened bolts or nuts and correctly tighten them according to the following tightening torque list.

N-m Tightening torque of bolts and nuts (main machine)

Material Size	8.8 N-m(lb-ft)	10.9 N-m(lb-ft)	12.9 N-m(lb-ft)
M6	8 (6)	14 (11)	18 (14)
M8	19 (15)	33 (25)	42 (31)
M10	36 (27)	65 (48)	75 (56)
M12	64 (48)	108 (80)	123 (91)
M14	98 (73)	177 (131)	210 (155)
M16	157 (116)	275 (203)	323 (239)

N-m Tightening torque of the hydraulic pipings

PF screw

Torque Size	N-m(lb-ft)
1 4	34 (26)
3 8	54 (40)
1 2	64 (48)
3 4	93 (69)
1	108 (80)

2-7-3 Maintenance every 50 service hours

	Item	Content	Remarks
5	Fuel tank	Clean the strainer	Wash strainer with diesel fuel.
6	Radiator fin	Clean the fins	Dust sticking to the fin affects the cooling effect and causes overheating.
14	Slew bearing	Inspect and grease	Always grease the machine after it is used in water.
16	Battery	Electrolyte quantity	Whether the liquid level is proper or not. If short, add distilled water.
		Specific gravity	1.26 when fully charged; 1.20 when discharged (Recharge the battery when 1.20.).
		Clean	Clean each part, brush and connect terminal and apply grease.
20	Each oil/grease supply point	Oil and grease	Refer to page 2-5.

2-7-4 Maintenance every 100 service hours

	Item	Content	Remarks
1	Engine oil	Replace the engine oil	Remove the drain plug on the lower part of the tank.(After 50 service hours for a new machine)
2	Fuel filter	Clean the element	After cleaning, open the cock to vent air.
7	Air cleaner	Clean the dust cover, clean or replace the element	Check also for a loosened band.

2-7-5 Maintenance every 200 service hours

	Item	Content	Remarks
1	Engine oil filter	Replace the cartridge	After 50 service hours for a new machine.

2-7-6 Maintenance every 400 service hours

	Item	Content	Remarks
2	Fuel filter	Replace the element	Clean the inside of bowl.
5	Fuel tank	Drain sediment and water	Remove the drain plug on the lower part of the tank.
10	Hydraulic oil tank	Drain water and sediment	After air is vent, loosen the drain plug.

2-7-7 Maintenance every 500 service hours

	Item	Content	Remarks
4	Fan belt	Replace the fan belt	
6	Radiator	Replace cooling water and clean the radiator	Remove the drain plug, clean the radiator and add water to the overflow tank up to the specified level.
11	Hydraulic line filter	Replace the cartridge	After 100 service hours for a new machine.

2-7-8 Maintenance every 800 service hours

	Item	Content	Remarks
8	Engine valve clearance	Check valve clearance	Clearance between the valve and the rocker.

2-7-9 Maintenance every 1,000 service hours

	Item	Content	Remarks
10	Hydraulic oil tank	Replace the hydraulic oil and clean the oil tank	Clean the inside of the tank.
12	Hydraulic suction filter	Remove the element	
	Lubricating oil of drive reduction gears	Replace lubricating oil	Refer to Table of Oil/ Grease Supply Points.
20	Pilot filter	Replace the filter	

2-7-10 Maintenance every 1,500 service hours

	Item	Content	Remarks
9	Engine injection nozzle	Check a nozzle	

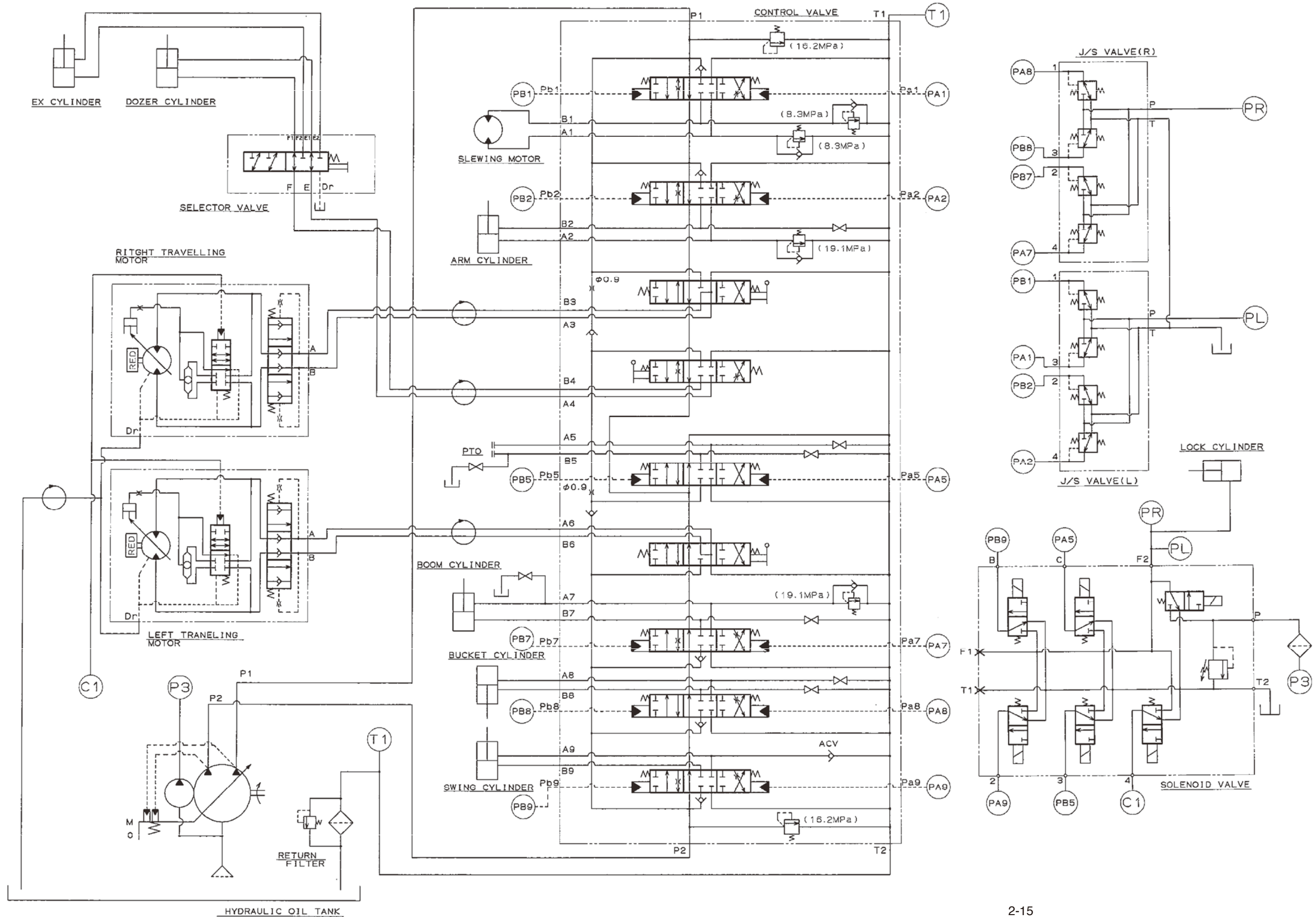
2-7-11 Maintenance every 1 year

	Item	Content	Remarks
7	Air cleaner	Replace the element	

Table of Oil/Grease Supply Points

No.	Oil/Grease Supply Point	Specified oil (genuine part)	Quantity	Time
1	Drive motor	API Classification CD Class SAE30	0.33 ℓ	Every 1,000 service hours (At first, replace after the first 500 service hours).

2-8 Hydraulic circuit diagram



Item	Specification
Boom cylinder	ø55–ø30–315
Arm cylinder	ø55–ø30–320
Bucket cylinder	ø50–ø25–290
Swing cylinder	ø50–ø25–280
Dozer cylinder	ø50–ø25–68
Extension cylinder	ø50–ø25–200

	Item		Specification
Pump capacity	P1		4.5 cm ³ /rev
	P2		4.5 cm ³ /rev
	P3		3 cm ³ /rev
Pressure	Main relief	P1	16.2 MPa
		P2	16.2 MPa
		P3	3 MPa
	Port relief		19.1 MPa
	Slew		8.34 MPa
Pump flow rate	P1		10.8 ℓ /min
	P2		10.8 ℓ /min
	P3		7.2 ℓ /min
Engine	Type		KUBOTA Z602
	Rated output		7.8 kW (10.6 ps)
	Speed		2,400 min ⁻¹
	Max. torque		34.0 N-m±5% / 1,900 min ⁻¹

3 ATTACHMENT CONTENTS

3-1 Standard of maintenance

3-1-1 Attachment

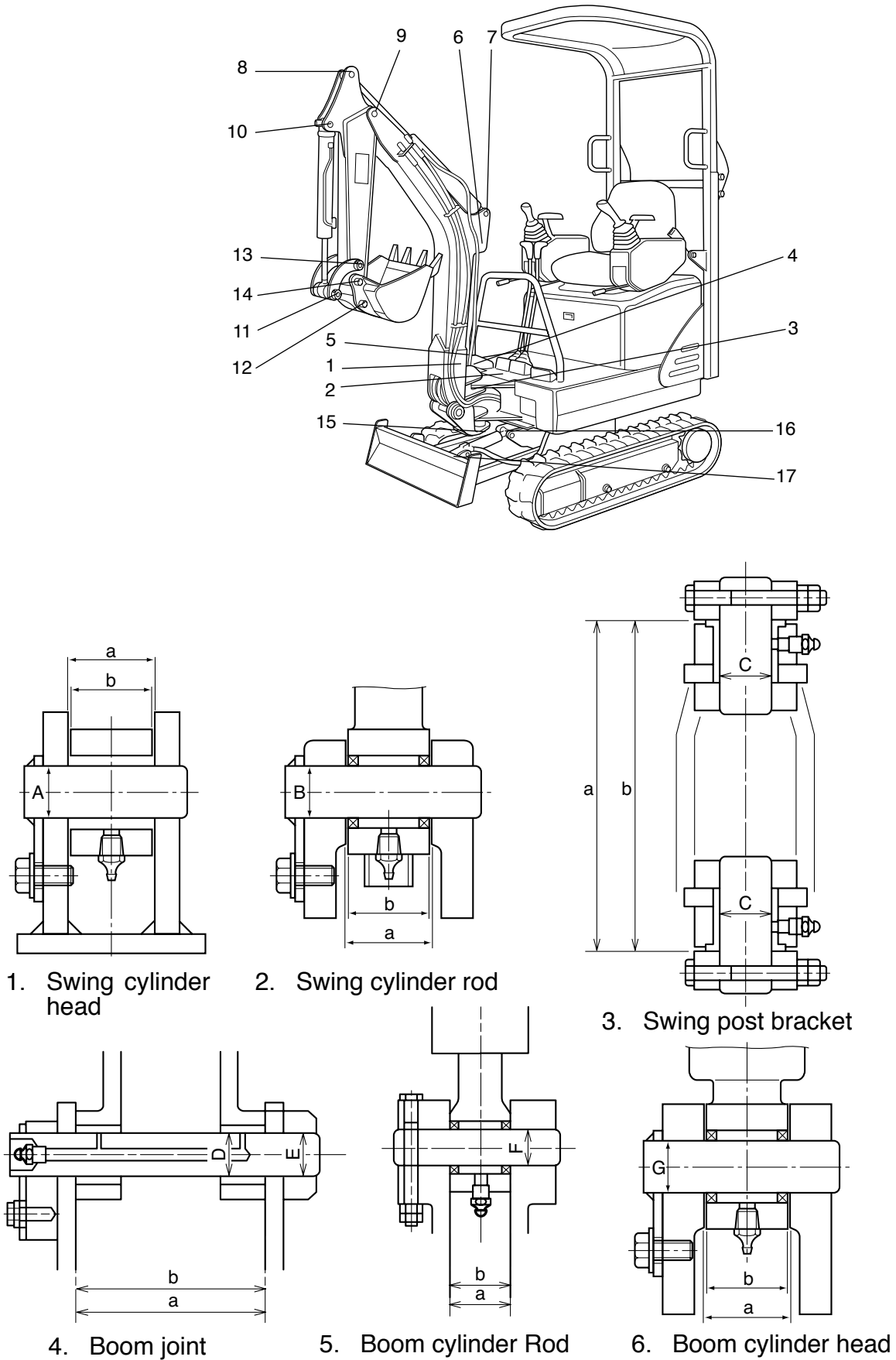
3-2 Inspection and adjustment

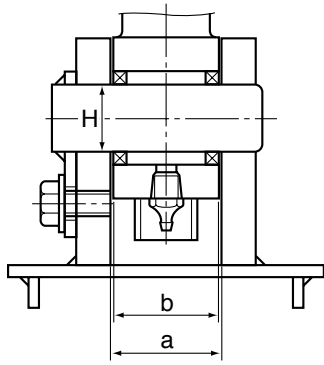
3-2-1 Measuring the fall of the attachment of its
own weight

3-2-2 Measuring the speed of the attachment
cylinder

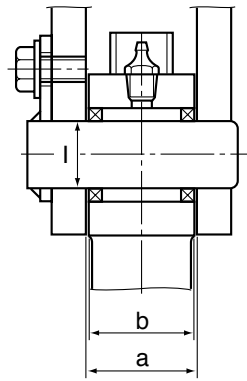
3-1 Standard of maintenance

3-1-1 Attachment

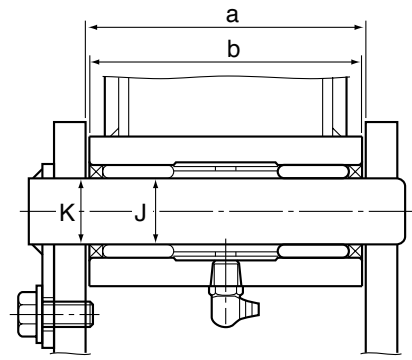




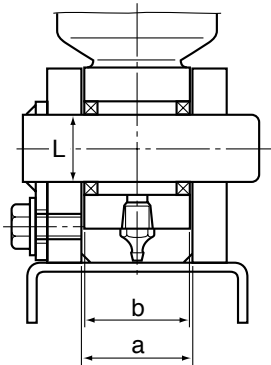
7. Arm cylinder head



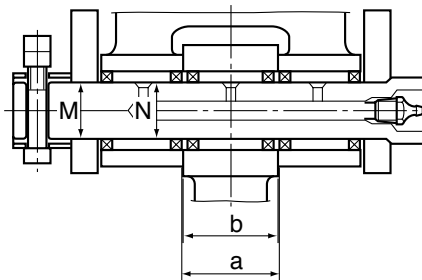
8. Arm cylinder rod



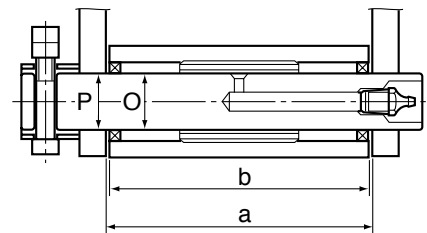
9. Boom/arm joint



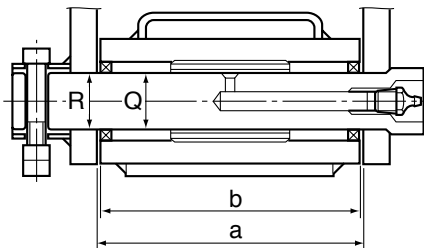
10. Bucket cylinder head



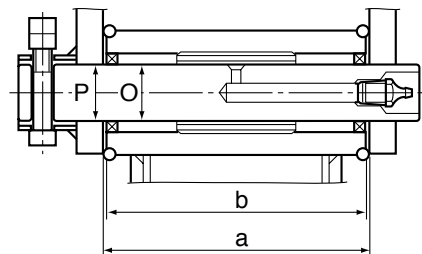
11. Bucket cylinder rod



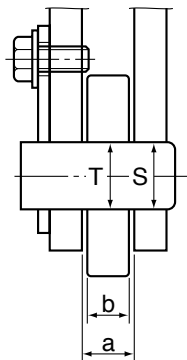
12. Bucket/dump link joint



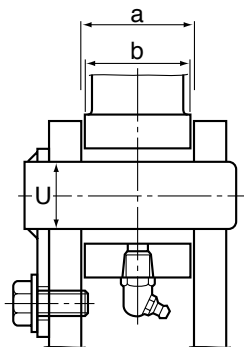
13. Arm/bucket link joint



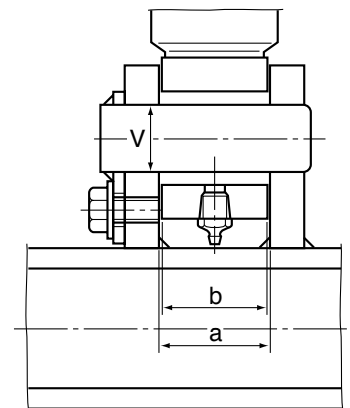
14. Arm/bucket joint



15. Dozer joint



16. Dozer cylinder rod



17. Dozer cylinder head

Basic Dimension

Unit: mm (in)

No.	Item	Basic Dimension	Allowable clearance
A	Swing cylinder head pin and head bracket	ø25 (0.98")	1.0 (0.06")
B	Swing cylinder rod pin and swing post	ø25 (0.98")	1.0 (0.06")
C	Swing post pin and bushing	ø35 (1.38")	1.0 (0.06")
D	Boom joint pin and bushing	ø30 (1.18")	1.0 (0.06")
E	Boom joint pin and boom	ø30 (1.18")	1.0 (0.06")
F	Boom cylinder rod pin and swing post	ø25 (0.98")	1.0 (0.06")
G	Boom cylinder head pin and boom	ø25 (0.98")	1.0 (0.06")
H	Arm cylinder head pin and boom	ø25 (0.98")	1.0 (0.06")
I	Arm cylinder rod pin and arm	ø25 (0.98")	1.0 (0.06")
J	Boom/arm joint pin and bush	ø25 (0.98")	1.0 (0.06")
K	Boom/arm joint pin and boom	ø25 (0.98")	1.0 (0.06")
L	Bucket cylinder head pin and arm	ø25 (0.98")	1.0 (0.06")
M	Bucket cylinder rod pin and dump link	ø25 (0.98")	1.0 (0.06")
N	Bucket cylinder rod pin and bucket link	ø25 (0.98")	1.0 (0.06")
O	Bucket pin and bush	ø25 (0.98")	1.0 (0.06")
P	Bucket pin and bucket	ø25 (0.98")	1.0 (0.06")
Q	Bucket link pin and bush	ø25 (0.98")	1.0 (0.06")
R	Bucket link pin and bucket link	ø25 (0.98")	1.0 (0.06")
S	Dozer joint pin and frame	ø25 (0.98")	1.0 (0.06")
T	Dozer joint pin and dozer	ø25 (0.98")	1.0 (0.06")
U	Dozer cylinder rod pin and frame	ø25 (0.98")	1.0 (0.06")
V	Dozer cylinder head pin and dozer	ø25 (0.98")	1.0 (0.06")

Unit: mm (in)

No.	Item	Criterion			Spacer	
		a	b	Standard clearance	Part Number	Dimension
1	Clearance between swing cylinder head and swing post	41 (1.6")	40 (1.57")	1.0~2.5 (0.04"~0.1")	NTS3-00022 NTS3-00023	ø27 x t1.0 ø27 x t0.5
2	Clearance between swing cylinder rod and head bracket	42 (1.7")	40 (1.57")	2.0~3.0 (0.08"~0.12")	"	"
3	Clearance between swing post and frame	226 (8.9")	225 (8.8")	1.0~1.6 (0.04"~0.06")	MBU3-00020 MBU3-00021	ø36 x t0.5 ø36 x t1.0
4	Clearance between boom and swing post	130 (5.1")	128 (5.0")	2.0~3.0 (0.08"~0.12")	NOS3-00005 NOS3-00006	ø31 x t0.5 ø31 x t1.0
5	Clearance between boom cylinder rod and swing post	42 (1.6")	40 (1.57")	2.0~3.0 (0.08"~0.12")	NTS3-00022 NTS3-00023	ø27 x t1.0 ø27 x t0.5
6	Clearance between boom cylinder head and boom	42 (1.6")	40 (1.57")	2.0~3.0 (0.08"~0.12")	"	"
7	Clearance between arm cylinder head and boom	42 (1.6")	40 (1.57")	2.0~3.0 (0.08"~0.12")	"	"
8	Clearance between arm cylinder rod and arm	42 (1.6")	40 (1.57")	2.0~3.0 (0.08"~0.12")	"	"
9	Clearance between boom and arm	99 (3.9")	98 (3.86")	1.0~2.0 (0.04"~0.08")	"	"
10	Clearance between bucket cylinder head and arm	42 (1.6")	40 (1.57")	1.5~3.0 (0.06"~0.12")	"	"
11	Clearance between bucket cylinder rod and dump link	42 (1.6")	40 (1.57")	1.5~2.5 (0.06"~0.1")	"	"
12	Clearance between dump link and bucket	110 (4.3")	112 (4.4")	1.5~2.5 (0.06"~0.1")	"	"
13	Clearance between arm and bucket link	112 (4.4")	110 (4.3")	1.5~2.5 (0.06"~0.1")	"	"
14	Clearance between arm and bucket	112 (4.4")	110 (4.3")	1.5~2.5 (0.06"~0.1")	"	"
15	Clearance between dozer and frame	19 (0.7")	16 (0.6")	2.5~3.5 (0.1"~0.14")	"	"
16	Clearance between dozer cylinder head and frame	42 (1.6")	40 (1.57")	1.5~2.0 (0.06"~0.08")	"	"
17	Clearance between dozer cylinder rod and dozer	42 (1.6")	40 (1.57")	1.5~2.0 (0.06"~0.08")	"	"

3-2 Inspection and adjustment

3-2-1 Measuring the natural fall of the attachment

1. Measuring the location of the attachment

Set the temperature of the hydraulic oil to $50\pm5^{\circ}\text{C}$. Adjust the height of arm/bucket joint so that it equals that of the boom joint. Then, retract the dozer cylinder to the minimum length and stop the engine.

2. Measurement

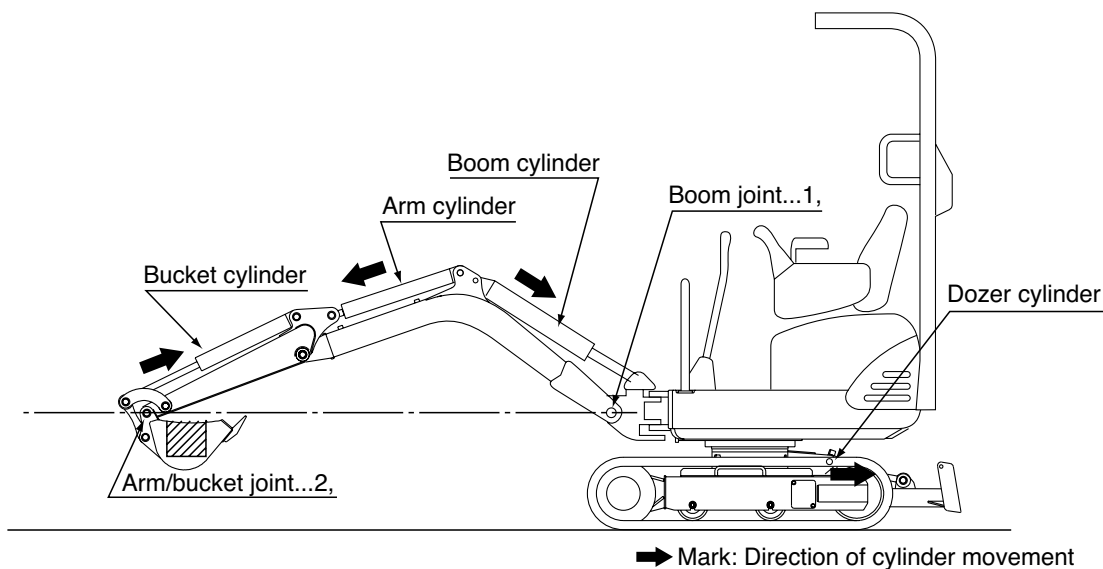
Draw a reference line on the cylinder head with a Magic Marker and measure the length from the line to the cylinder tube. Measure the length again 3 minutes later. Then record the difference in the length

Unit: mm (or less)

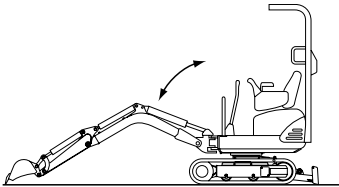
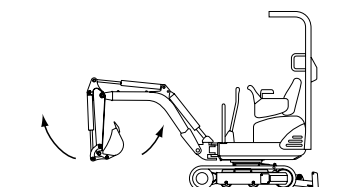
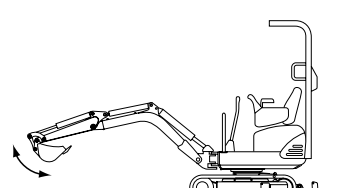
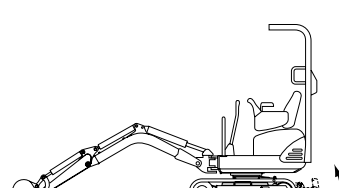
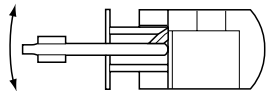
Cylinder name	Standard value	Allowance
Boom cylinder	15	30
Arm cylinder	15	30
Bucket cylinder	15	30
Dozer cylinder	10	20

Make 1 and 2 the same height.

W: Weight	About: 30 kg
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3-2-2 Measuring the speed of attachment cylinder (at full engine speed and oil temperature 50±5°C)

Condition	Machine position	Unit	New standard value	Allowable limit
Boom Make bucket teeth touch the ground		Up	2.8	3.4
Extend cylinder to the maximum length		Down	2.8	3.4
Arm Retract cylinder to the minimum length		Dig	4.4	4.9
Extend cylinder to the maximum length		Dump	3.2	3.7
Bucket Retract cylinder to the minimum length		Dig	3.7	4.3
Extend cylinder to the maximum length		Dump	2.7	3.3
Dozer Make dozer contact the ground		Up	1.4	1.7
Lift dozer to the maximum height		Down	1.1	1.4
Swing Retract cylinder to the minimum length		Right swing	3.7	4.2
Extend cylinder to the maximum ground		Left swing	3.3	3.8

4 ENGINE

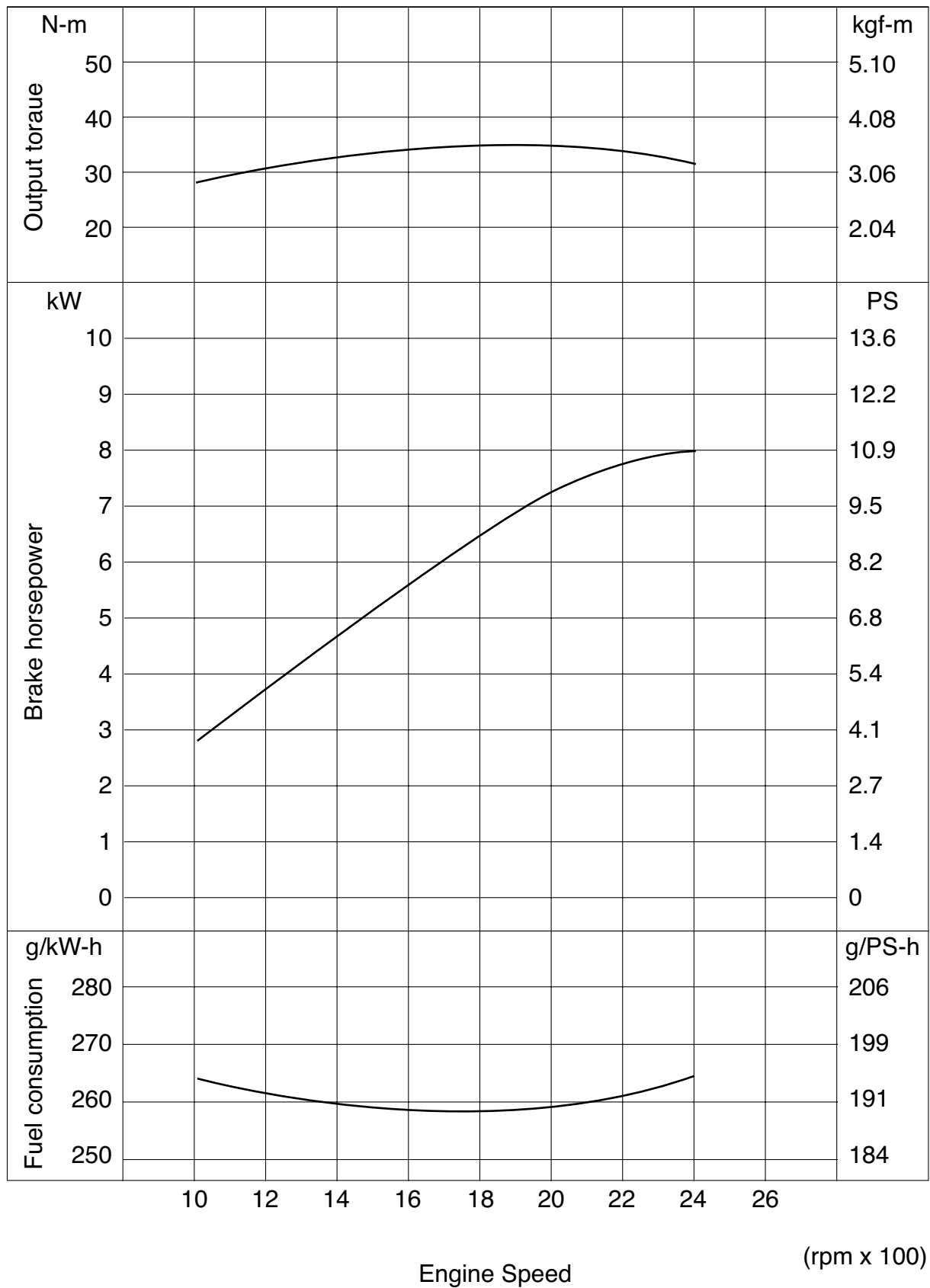
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- 4-1 Specification
- 4-2 Performance curve
- 4-3 Location of serial number
 - 4-3-1 Engine
 - 4-3-2 Standard engine speed
- 4-4 Inspection and maintenance procedure for engine parts

4-1 Specification

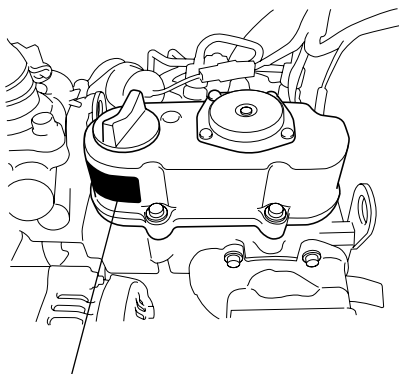
Engine		Z602
Type		Vertical 4-cycle 2 cylinder
Number of cylinders–bore x stroke		2–72 mm × 73.6 mm
Displacement		599 cm ³
Ignition order		1–2
Dimensions	Overall length	419 mm
	Overall width	370 mm
	Overall height	544 mm
Performance	Rated net power	7.8 kW(10.6 ps) / 2,400 rpm
	Maximum torque	34±5% N-m/ 1,900 rpm
	Maximum idling speed (Gross)	2,770 rpm
	Minimum idling speed (Gross)	1,250 rpm ± 50
	Fuel consumption (Net with fan)	195 g/ps.h (265 g/kW-h)
Dry weight		64 kg
Fuel oil		Diesel fuel
Fuel pump		Bosh type
Governor		Centrifugal type
Generator		12V × 480 W
Starter		12V × 1.2 kW
Battery		12V × 36 Ah

4-2 Performance curve



4-3 Location of serial number

4-3-1 Engine



Type of engine and serial No.

4-3-2 Standard engine speed (at new machine delivery)

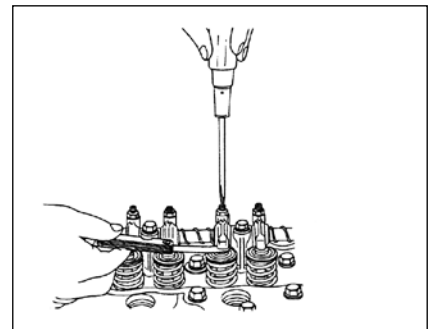
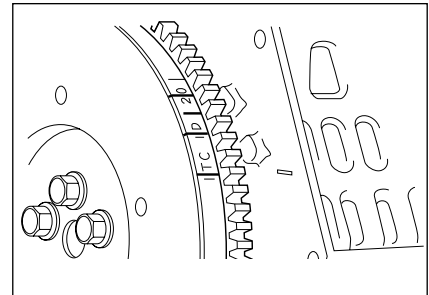
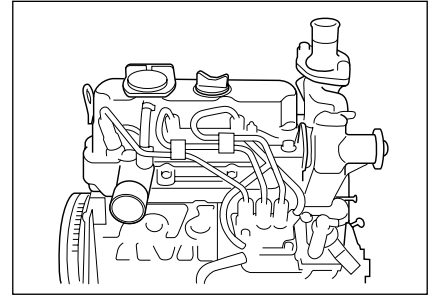
Conditions	Idling speed
Maximum idling speed	2450 0–30 rpm
Minimum idling speed	1450 0+50 rpm

4-4 Inspection and maintenance procedure for engine parts

Valve Clearance

■ IMPORTANT

- Valve clearance must be checked and adjusted when engine is cold.
- 1. Remove the cylinder head cover (1) and the glow plugs.
- 2. Align the “1TC” mark (2) on the flywheel and alignment mark (3) on the rear end plate so that the No. 1 piston comes to the compression top dead center.
- 3. Check the following valve clearance marked with “★” using a feeler gauge.
- 4. If the clearance is not within the factory specifications, adjust with the adjusting screw.
- 5. Then turn the flywheel 6.28 rad (360°), and align the “1TC” mark (2) on the flywheel and alignment mark (3) on the rear end plate so that the No. 1 piston comes to the overlap position.
- 6. Check the following valve clearance marked with “☆” using a feeler gauge.
- 7. If the clearance is not within the factory specifications, adjust with the adjusting screw.

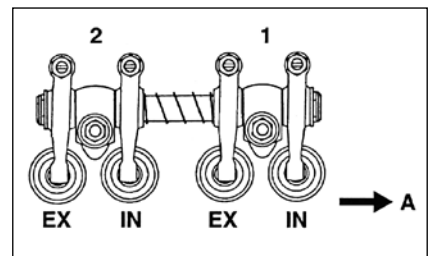


Adjustable cylinder location of piston	Number of cylinders Valve arrangement	Intake valve	Exhaust valve
No. 1		★	★
No. 2		☆	★
No. 3		—	—

★ : When No. 1 piston is at the compression top dead center position.

☆ : When No. 1 piston is at the overlap position.

Intake and exhaust valve clearance (cold)	Factory spec.	0.145 to 0.185 mm 0.00571 to 0.00728 in.
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■ NOTE

- The sequence of cylinder numbers is given as No.1 and No.2 starting from the gear case side.
- After adjusting the valve clearance secure, the adjusting screw with the lock nut.

- (1) Cylinder Head Cover
- (2) “1TC” mark
- (3) Alignment Mark

Inspecting and Adjusting Injection Nozzles

⚠ CAUTION

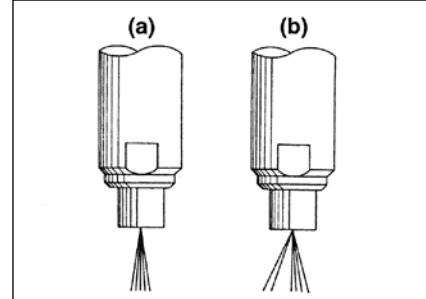
- Check the nozzle injection pressure and condition after confirming that there is nobody standing in the direction the fume goes.
- If the fume from the nozzle directly contacts the human body, cells may be destroyed and blood poisoning may be caused.

Nozzle Spraying Condition

1. Set the injection nozzle to a nozzle tester, and check the nozzle spraying condition.
2. If the spraying condition is defective, replace the nozzle piece.

(a) Good

(b) Bad



Fuel Injection Pressure

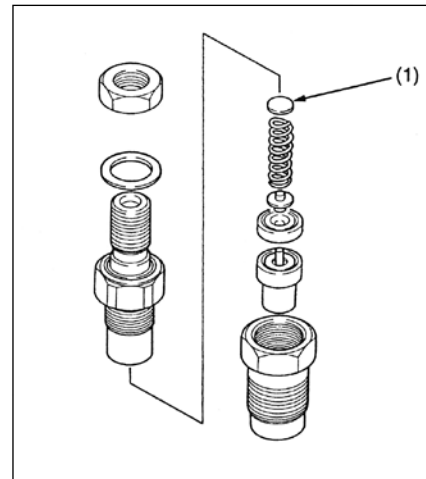
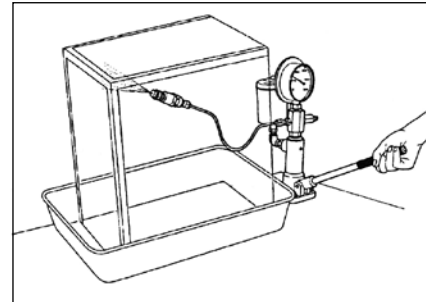
1. Set the injection nozzle to a nozzle tester.
2. Slowly move the tester handle to measure the pressure at which fuel begins jetting out from the nozzle.
3. If the measurement is not within the factory specifications, replace the adjusting washer (1) in the nozzle holder to adjust it.

(Reference)

- Pressure variation with 0.025 mm (0.00098 in.) difference of adjusting washer thickness.
Approx. 590 kpa (6.0 kgf/cm², 85 psi)

Fuel injection pressure	Factory spec.	13.73 to 14.70 MPa 140.0 to 150.0 kgf/cm ² 1992 to 2133 psi
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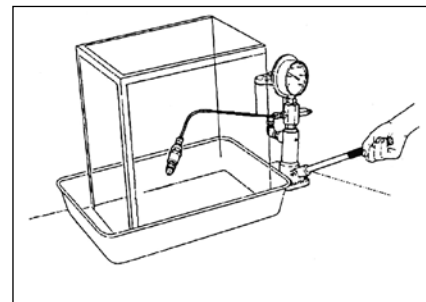
(1) Adjusting Washer



Nozzle Valve Seat Tightness

1. Set the injection nozzle to a nozzle tester.
2. Raise the fuel pressure, and keep at 12.75 MPa (130.0 kgf/cm², 1849 psi) for 10 seconds.
3. If any fuel leak is found, replace the nozzle piece.

Valve seat fitness	Factory spec.	No fuel leak at 12.75 MPa 130.0 kgf/cm ² 1849 psi
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Nozzle Holder

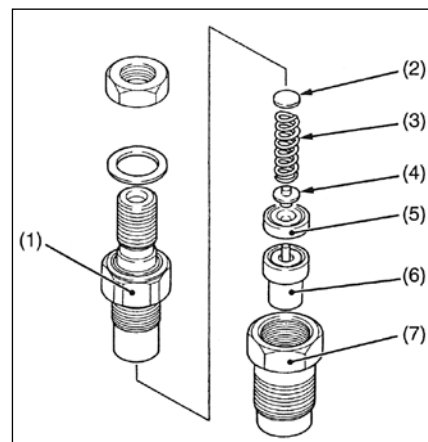
1. Secure the nozzle retaining nut (7) with a vise.
2. Remove the nozzle holder (1), and take out parts inside.

(When reassembling)

- Assemble the nozzle in clean fuel oil.
- Install the push rod (4), noting its direction.
- After assembling the nozzle, be sure to adjust the fuel injection pressure.

Tightening torque	Nozzle holder	35 to 39 N-m 3.5 to 4.0 kgf-m 26 to 28 lbf-ft
	Overflow pipe retaining nut	20 to 24 N-m 2.0 to 2.5 kgf-m 15 to 18 lbf-ft
	Nozzle holder assembly	49 to 68 N-m 5.0 to 7.0 kgf-m 37 to 50 lbf-ft

- (1) Nozzle Holder
- (2) Adjusting Washer
- (3) Nozzle Spring
- (4) Push Rod
- (5) Distance Piece
- (6) Nozzle Piece
- (7) Nozzle Retaining Nut



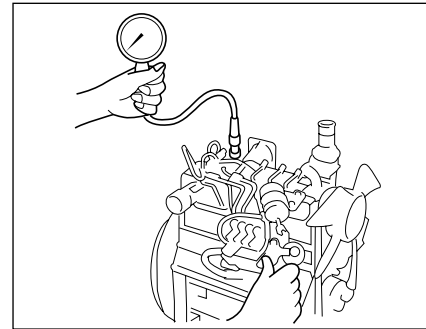
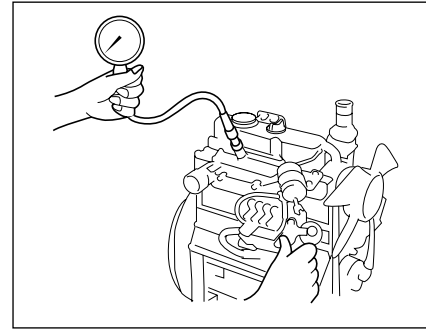
Measuring Compression Pressure

Compression Pressure

1. Run the engine until it is warmed up.
2. Stop the engine
3. **[a] Nozzle Hole Adaptor Setting:**
Remove the air cleaner, the muffler and all injection nozzles.
[b] Glow Plug Hole Adaptor Setting:
Remove the air cleaner, the muffler, the breather tube, the head cover and all glow plugs.
4. **[a] Nozzle Hole Adaptor Setting:**
Set a compression tester (Code No.07909-30208) with the adaptor (Adaptor H, code No.07909-31231) to the nozzle hole.
[b] Glow Plug Hole Adaptor Setting:
Set a compression tester (Code No.07909-30208) with the adaptor (Adaptor L, code No.07909-31301) to the glow plug hole.
5. After making sure that the stop lever is set at the stop position (non-injection), run the engine with the starter and measure the compression pressure.
6. Repeat steps 4 and 5 for each cylinder.
7. If the measurement is below the allowable limit, apply a small amount of oil to the cylinder wall through the glow plug hole (0 nozzle hole) and measure the compression pressure again.
8. If the compression pressure is still less than the allowable limit check the top clearance, valve clearance and cylinder head.
9. If the compression pressure increases after applying oil, check the cylinder wall and piston rings.

■ NOTE

- Check the compression pressure with the specified valve clearance.
- Always use a fully charged battery for performing this test.
- Variances in cylinder compression values should be under 10%.



Compression pressure	Factory spec.	3.53 to 4.02 MPa 36.0 to 41.0 kgf/cm ² 512 to 583 psi
	Allowable limit	2.55 MPa 26.0 kgf/cm ² 370 psi

[a] Nozzle Hole Adaptor Setting

[b] Glow Plug Hole Adaptor Setting

Tightening Torques for Special Use Screws, Bolts and Nuts

■ NOTE

- For “★” marked screws, bolts and nuts on the table, apply engine oil to their threads and seats before tightening.
- The letter “M” in Size x Pitch means that the screw, bolt or nut dimension stands for metric. The size is the nominal outside diameter in mm of the threads. The pitch is the nominal distance in mm between two threads.

Item	Size x Pitch	N-m	kgf-m	lbf-ft
*Cylinder head cover screw	M6 x 1.0	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31
Injection pipe retaining nut	M12 x 1.5	25.0 to 34.0	2.5 to 3.5	18.0 to 25.0
Overflow pipe retaining nut	M12 x 1.5	20.0 to 24.0	2.0 to 2.5	15.0 to 18.0
Nozzle holder assembly	M20 x 1.5	49.0 to 68.0	5.0 to 7.0	37.0 to 50.0
Glow plug	M8 x 1.0	7.9 to 14	0.80 to 1.5	5.8 to 10.0
*Rocker arm bracket nut	M6 x 1.0	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31
*Cylinder head screw	M8 x 1.25	38.0 to 42.0	3.8 to 4.3	28.0 to 31.0
*Fan drive pulley screw	M12 x 1.5	118.0 to 127.0	12.0 to 13.0	86.8 to 94.0
*Idle gear shaft mounting screw	M6 x 1.0	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31
Oil pump mounting screw	M8 x 1.25	17.7 to 21.5	1.80 to 2.20	13.1 to 15.9
*Connecting rod screw	M7 x 0.75	27.0 to 30.0	2.7 to 3.1	20.0 to 22.0
*Flywheel screw	M10 x 1.25	54.0 to 58.0	5.5 to 6.0	40.0 to 43.0
Bearing case cover mounting screw	M6 x 1.0	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31
*Main bearing case screw 2	M7 x 1.0	27.0 to 30.0	2.7 to 3.1	20.0 to 22.0
*Main bearing case screw 1	M6 x 1.0	13.0 to 15.0	1.3 to 1.6	9.4 to 11.0
Oil pressure switch	PT 1/8	15.0 to 19.0	1.5 to 2.0	11.0 to 14.0
Nozzle holder	—	35.0 to 39.0	3.5 to 4.0	26.0 to 28.0
Starter's terminal B mounting nut (Electromagnetic drive type)	M8	7.9 to 9.8	0.80 to 1.8	5.8 to 7.2
Starter's terminal B mounting nut (Planetary gear reduction type)	M8	5.9 to 11.0	0.60 to 1.2	4.4 to 8.6
Dynamo's pulley nut	M10 x 1.25	40.0 to 44.0	4.0 to 4.5	29.0 to 32.0
Alternator's pulley nut	—	58.4 to 78.9	5.95 to 8.05	43.1 to 58.2
Drain plug with copper gasket	M12 x 1.25	33.0 to 37.0	3.3 to 3.8	24.0 to 27.0
Drain plug with copper gasket	M22 x 1.5	64.0 to 73.0	6.5 to 7.5	47.0 to 54.0
Drain plug with rubber coated gasket	M22 x 1.5	45.0 to 53.0	4.5 to 5.5	33.0 to 39.0

Tightening Torques for Standard Bolts and Nuts

Screws, bolts and nuts must be tightened to the specified torque using a torque wrench, several screws, bolts and nuts such as those used on the cylinder head must be tightened in proper sequence and the proper torque.

When the tightening torques are not specified, tighten the screws, bolts and nuts according to the table below.

Grade Nominal Diameter	Unit	Standard Screw and Bolt ④			Special Screw and Bolt ⑦		
		N-m	kgf-m	lbs-ft	N-m	kgf-m	lbs-ft
M6		7.9 to 9.3	0.80 to 0.95	5.8 to 6.8	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31
M8		18.0 to 20.0	1.8 to 2.1	13.0 to 15.0	24.0 to 27.0	2.4 to 2.8	18.0 to 20.0
M10		40.0 to 45.0	4.0 to 4.6	29.0 to 33.0	48.0 to 55.0	4.9 to 5.7	36.0 to 41.0
M12		63.0 to 72.0	6.4 to 7.4	47.0 to 53.0	78.0 to 90.0	7.9 to 9.2	58.0 to 66.0

Screw and bolt material grades are shown by numbers punched on the screw and bolt heads. Prior to tightening, be sure to check out the numbers as shown below.

Punched number	Screw and bolt material grade
None or 4	Standard screw and bolt SS41, S20C
7	Special screw and bolt S43C, S48C (Refined)

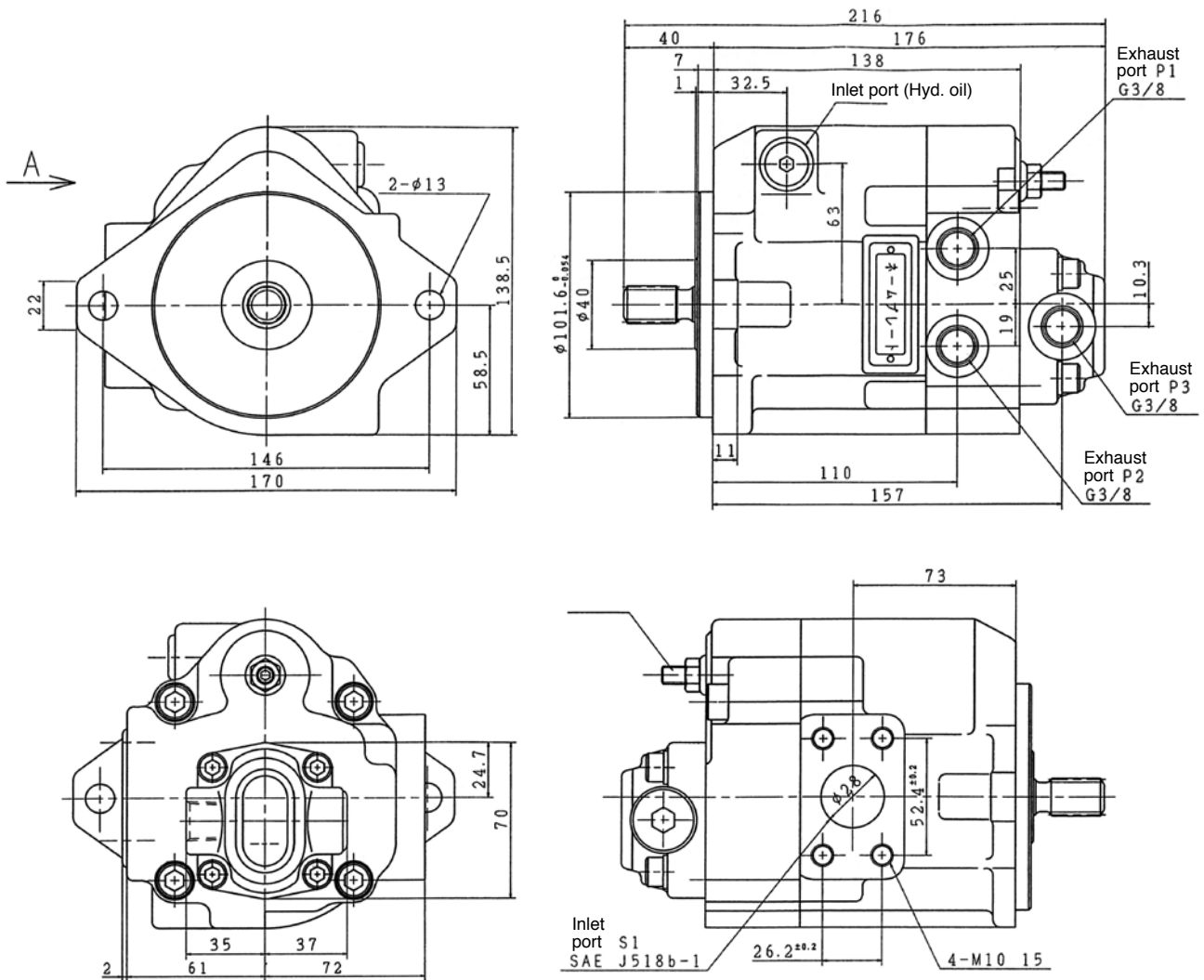
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MAIN PUMP

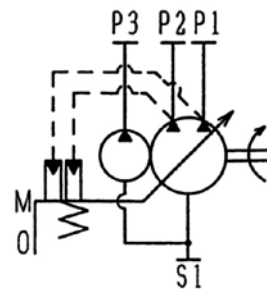
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- 5-1 Specification
- 5-2 Structure
- 5-3 Removing and installing the pump
 - 5-3-1 Removing the pump
 - 5-3-2 Installing the pump
- 5-4 Performance test of the hydraulic pump
 - 5-4-1 Measuring instrument
 - 5-4-2 Preparation
 - 5-4-3 Connecting tester
 - 5-4-4 Measuring procedure
 - 5-4-5 P-Q characteristic curve

5-1 Specification

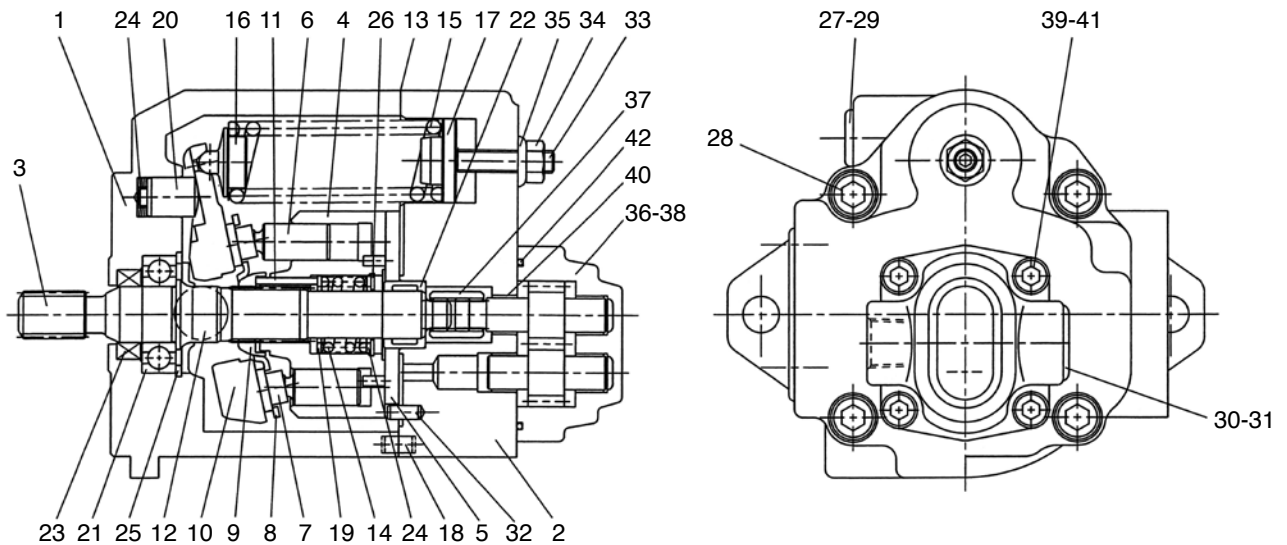


Hydraulic symbol



Pump type		PVD-008-9-3-5126A		
Displacement (cc/rev)		P1	P2	P3
		4.5	4.5	3
Relief pressure (MPa)		16.2	16.2	2.9
Port size	P1, P2, P3	3/8		
	Inlet (Hyd. oil)	1/4		
Direction of rotation		Clockwise seen from shaft side		
Weight (Kg)		10		

5-2 Structure



- | | | |
|--------------------|----------------------|----------------------|
| 1, BODY S | 16, SPRING HOLDER | 31, O-RING |
| 2, BODY H | 17, SPRING GUIDE | 32, SPRING PIN |
| 3, SHAFT | 18, PIN | 33, BOLT SOCKET HEAD |
| 4, CYLINDER BARREL | 19, RETAINER | 34, NUT |
| 5, VALVE PLATE | 20, STOPPER PIN A | 35, SEAL WASHER |
| 6, PISTON | 21, BALL BEARING | 36, GEAR PUMP |
| 7, SHOE | 22, NEEDLE BEARING | 37, JOINT |
| 8, SHOE HOLDER | 23, OIL SEAL | 38, STEEL BALL |
| 9, BARREL HOLDER | 24, DISC SPRING | 39, BOLT SOCKET HEAD |
| 10, SWASH PLATE | 25, SNAP RING | 40, BEARING |
| 11, NEEDLE | 26, SNAP RING | 41, WASHER |
| 12, ROCKING PIN | 27, O-RING | 42, O-RING |
| 13, PACKING | 28, BOLT SOCKET HEAD | |
| 14, SPRING C | 29, PLUG | |
| 15, SPRING T1 | 30, PLUG | |

5-3 Removing and installing the pump

5-3-1 Removing the pump

1. Remove the nipple, TEE, elbow and hoses around the pump. Attach a cap to the removed hoses to keep dust off. Store the nipples and elbows in treated oil.
2. Remove the pump mounting bolts(1).
3. Remove the pump from the flange 2. If removal is difficult, insert a screwdriver and remove the pump little by little with equal force applied on the right and left sides.

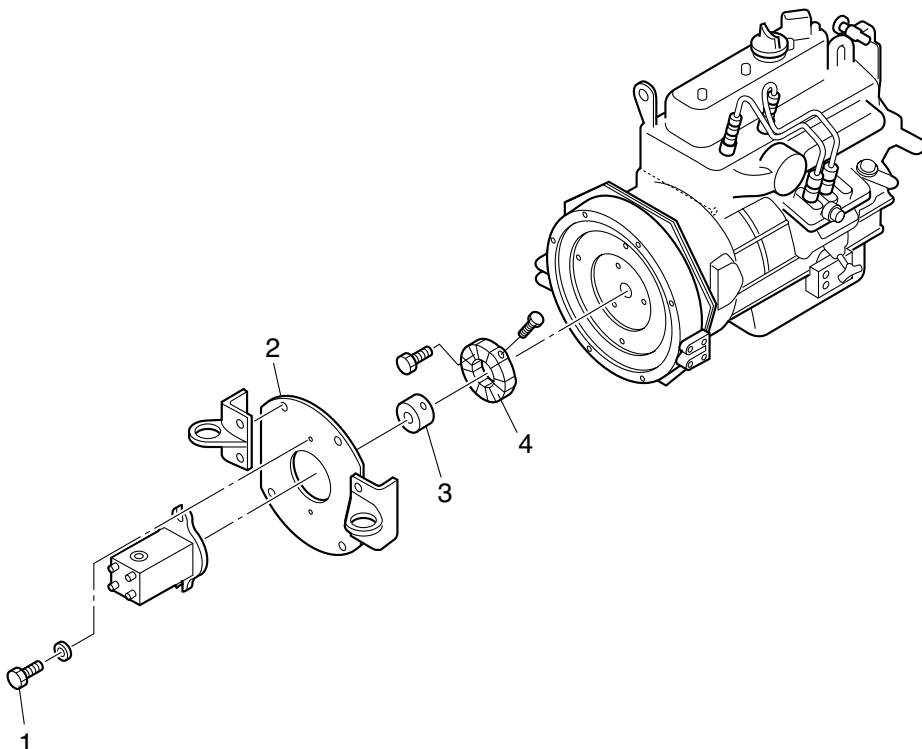
5-3-2 Installing the pump

1. Replace with a new pump and install it on the pump flange 2. Check that the spline of the shaft fits smoothly with the boss of the coupling.
When tightening the bolts 1, tighten the upper and lower side bolts slowly and evenly.

Bolt	Tightening torque
M12 × 25 ℓ	108 N-m (80 lb-ft)

* Precautions on installing the pump

1. When tightening the coupling boss 3, be careful so that coupling 4 does not tilt.
Note) Make sure there is no misalignment.



5-4 Performance test of the hydraulic pump

5-4-1 Measuring instrument

Hydraulic pressure tester	Measuring range of flow rate (/min)	2.6~20.4 mm ³ (0.16~14.57 in ³)
	Measuring range of pressure (MPa)	0 ~ 22.6 MPa(3150 psi)
	Measuring range of temperature (°C)	-20 ~ 80
	Port size	PF1 3/8 O-ring type, PF 1/4 O-ring type
Pressure gauge		49 MPa, 4.9 MPa
Tachometer		Diesel tachometer (digital type)
Hose for testing		Equivalent to the hose of 20.6 MPa (210 kgf/cm ²) high pressure

5-4-2 Preparation

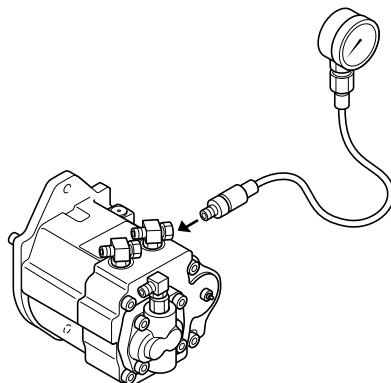
1. Park machine on flat ground and stop engine.

5-4-3 Connecting tester

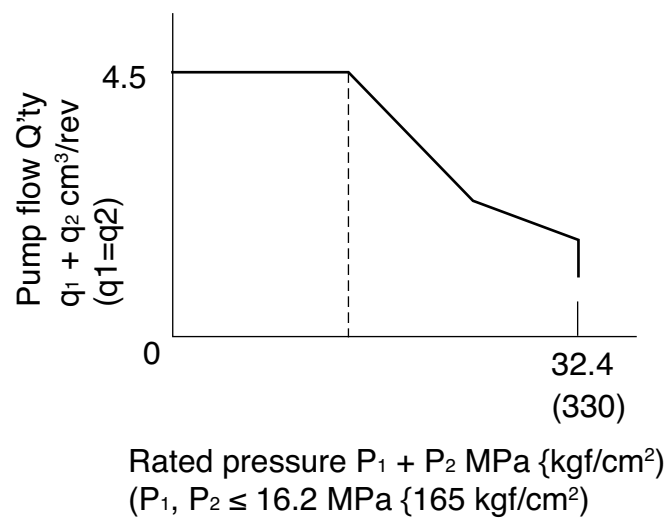
1. Remove the plug from pressure gauge port on the hydraulic pump.
2. Connect pressure gauge to port measuring port.

5-4-4 Measuring procedure

Connect pressure gauge to measuring port. Then, start engine and conduct operations work equipment. For example, fully extends boom cylinder or arm cylinder. Read the pressures on the pressure gauge.



5-4-5 P-Q characteristic curve



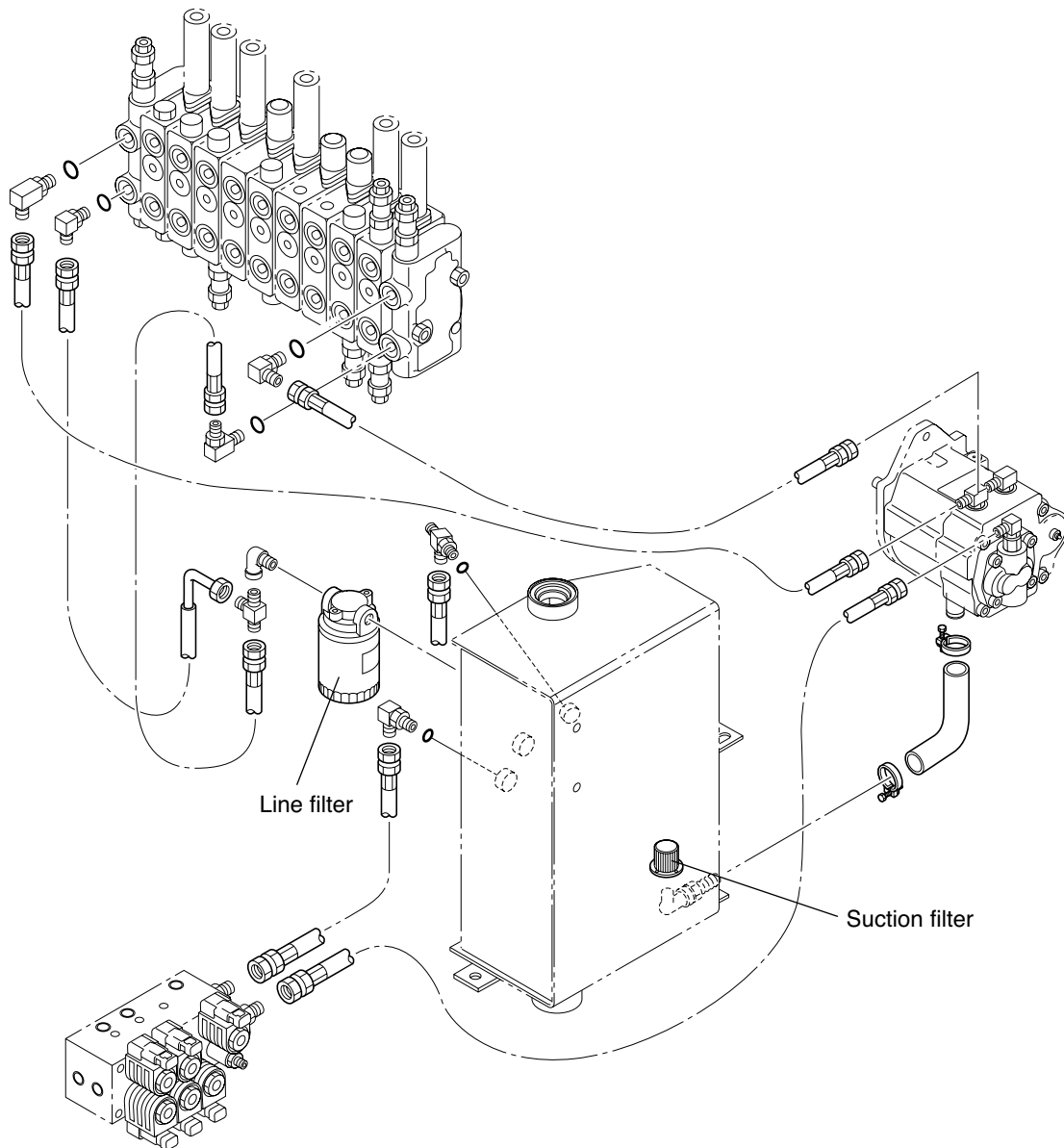
6

HYDRAULIC OIL FILTER

CONTENTS

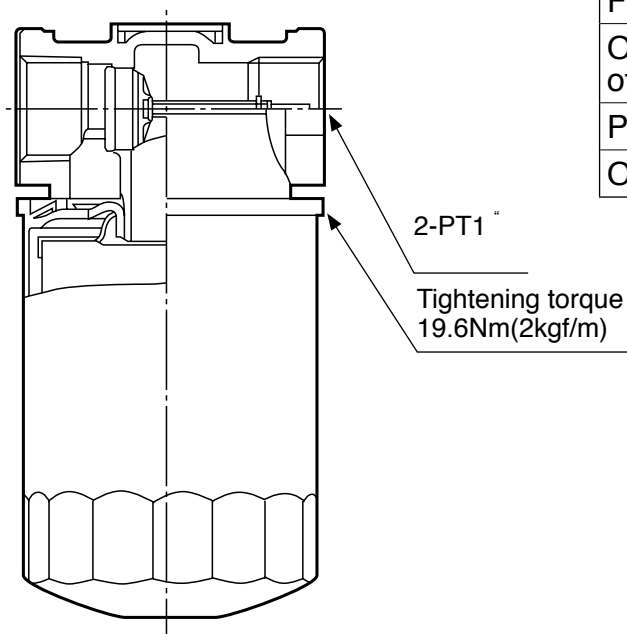
- 6-1 Installation
- 6-2 Hydraulic oil filter
 - 6-2-1 Line filter
 - 6-2-2 Suction filter
- 6-3 Maintenance procedure
 - 6-3-1 Replacing the line filter
 - 6-3-2 Replacing the suction filter

6-1 Installation



6-2 Hydraulic oil filter

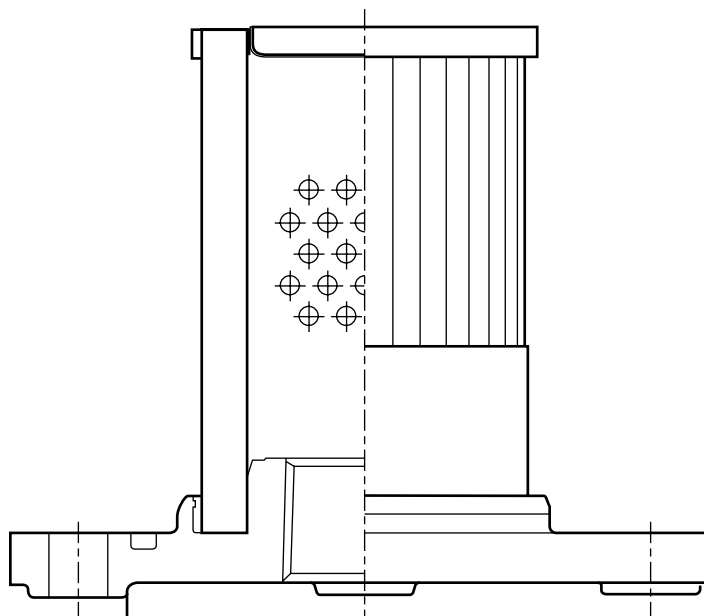
6-2-1 Line filter (SP08)



Filtration accuracy	10 μ
Filtration capacity	15 ℓ
Opening pressure of bypass valve	1.5 MPa
Proof pressure	71.4 MPa
Oil temperature	-10°C~120°C

6-2-2 Suction filter

Grain size	100 mesh
Oil temperature	-25°C~100°C



6-3 Maintenance procedure

6-3-1 Replacing the line filter

1. Open front cover.
 - * Before replacing the filter, be sure to open the hydraulic oil tank to bleed pressure.
2. Slue oil filter cartridge counterclockwise by use of filter wrench, screwing line filter cartridge off line filter cover.
3. Thinly spread hydraulic oil on the O-ring of new line filter cartridge.
4. Screw the new line filter cartridge on line filter cover by sluing it clockwise in place. Do so by hand, without using filter wrench.
5. Close front cover.

6-3-2 Replacing the suction filter

1. Tilt operator's seat forward, then open engine cover.
2. Loosen and remove two M8 bolts, then detach upper side cover (L)(see picture).
3. Loosen and remove three M8 bolts, then detach lower side cover (L)(see picture).
4. Loosen and remove the hydraulic oil tank plug.
5. Loosen and remove the drain plug to eliminate the hydraulic oil.
6. Loosen and remove M8 Bolts. then replacing suction filter with a new one.
7. Attach M8 bolts that was detached in step 6.
8. Attach drain plug that was detached in step 5.
9. Securely replaced the drain plug, and add the specified amount of hydraulic oil through the hydraulic tank oil port.
10. Attach hydraulic oil tank plug that was detached in step 4 .
11. Attach lower side cover (L) that was detached in step 3.
12. Attach upper side cover (R) that was detached in step 2.
13. Close engine cover, then restore operator's seat to the upright position.

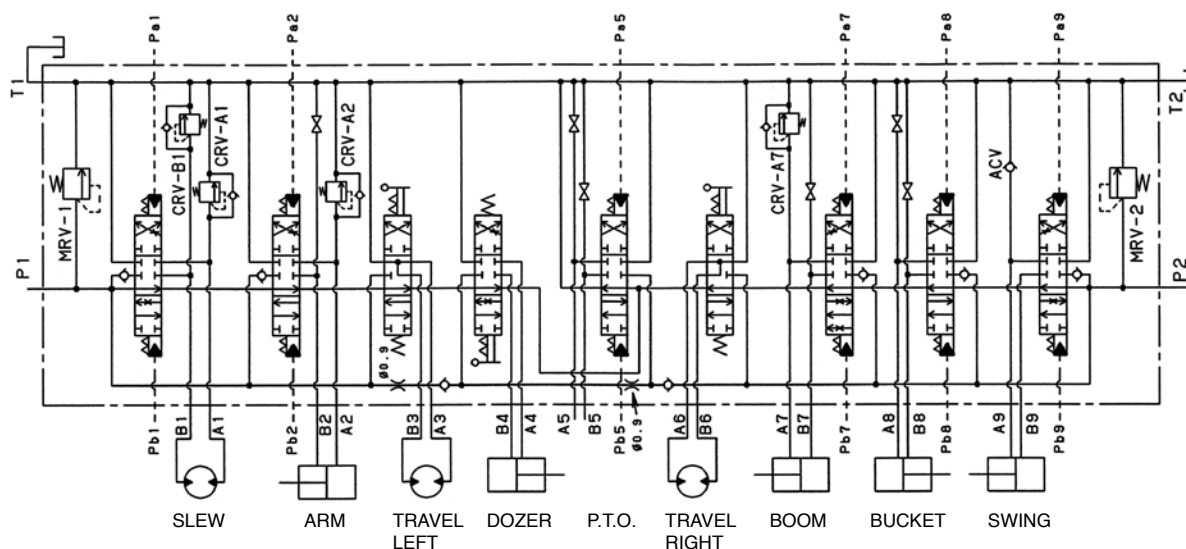
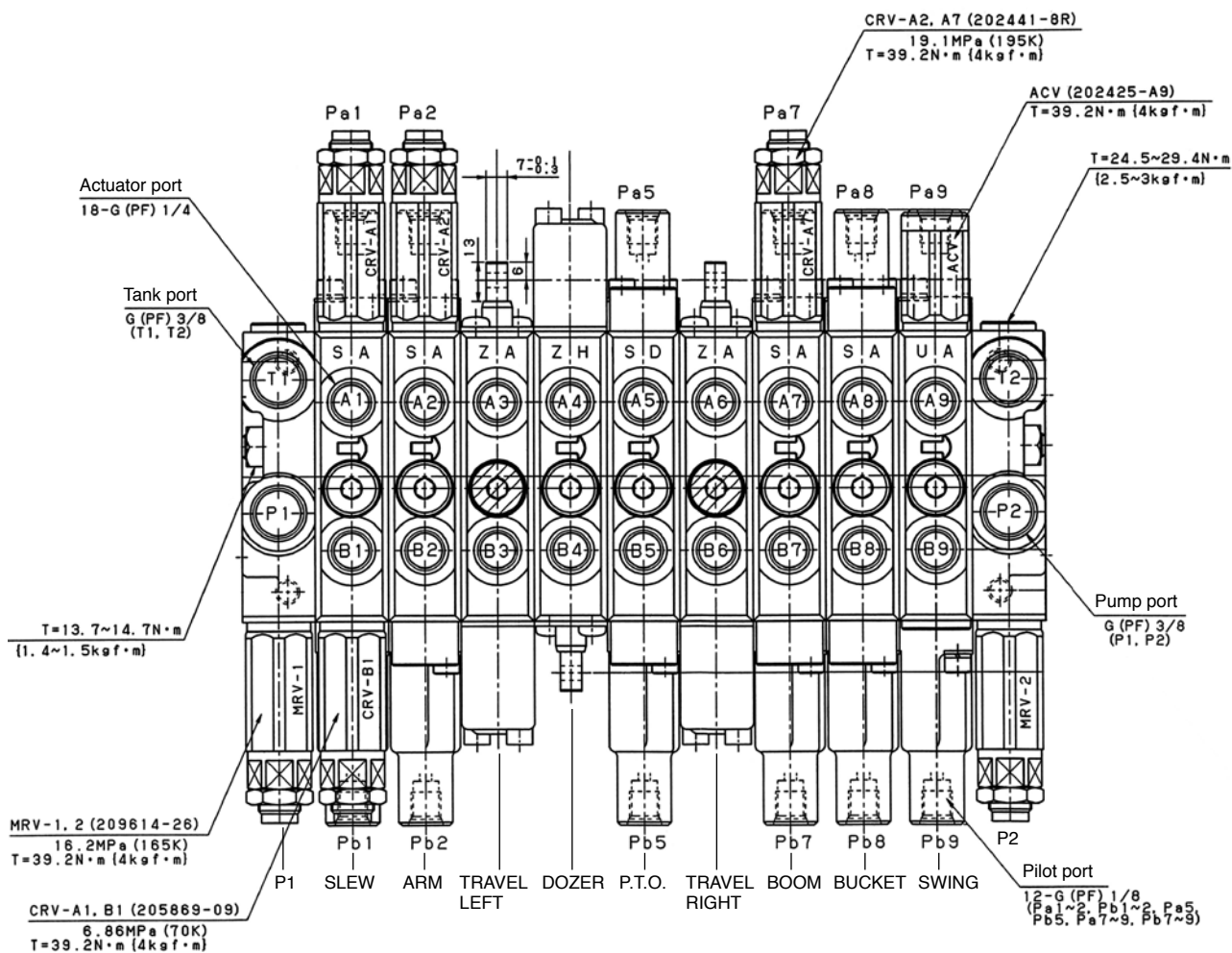
7

CONTROL VALVE

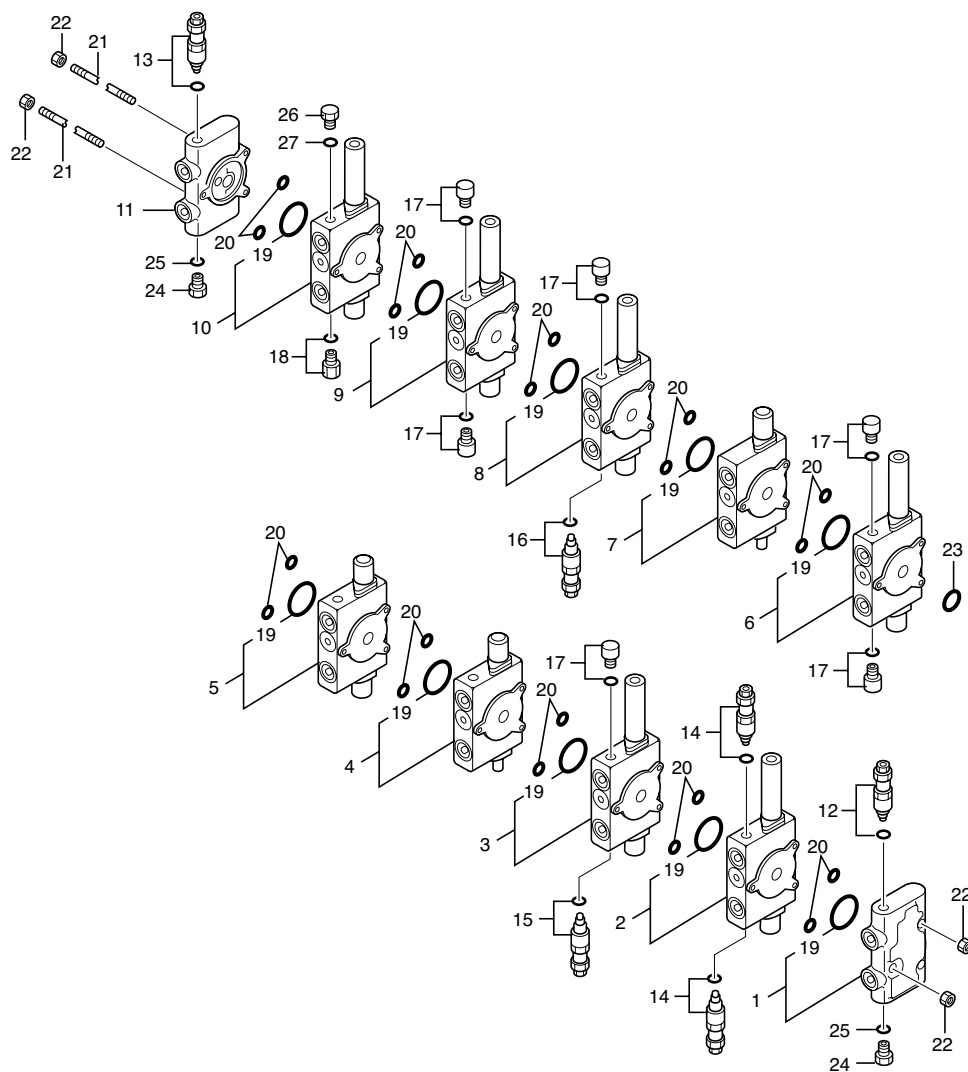
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- 7-1 Specification
- 7-2 Disassembly and assembly
 - 7-2-1 Replacing the O-ring on the contact surface and each block assembly
 - 7-2-2 Replacing the relief valve assembly and the O-ring
- 7-3 Precautions for handling
 - 7-3-1 Handling
 - 7-3-2 Installation
 - 7-3-3 Operation

7-1 Specification

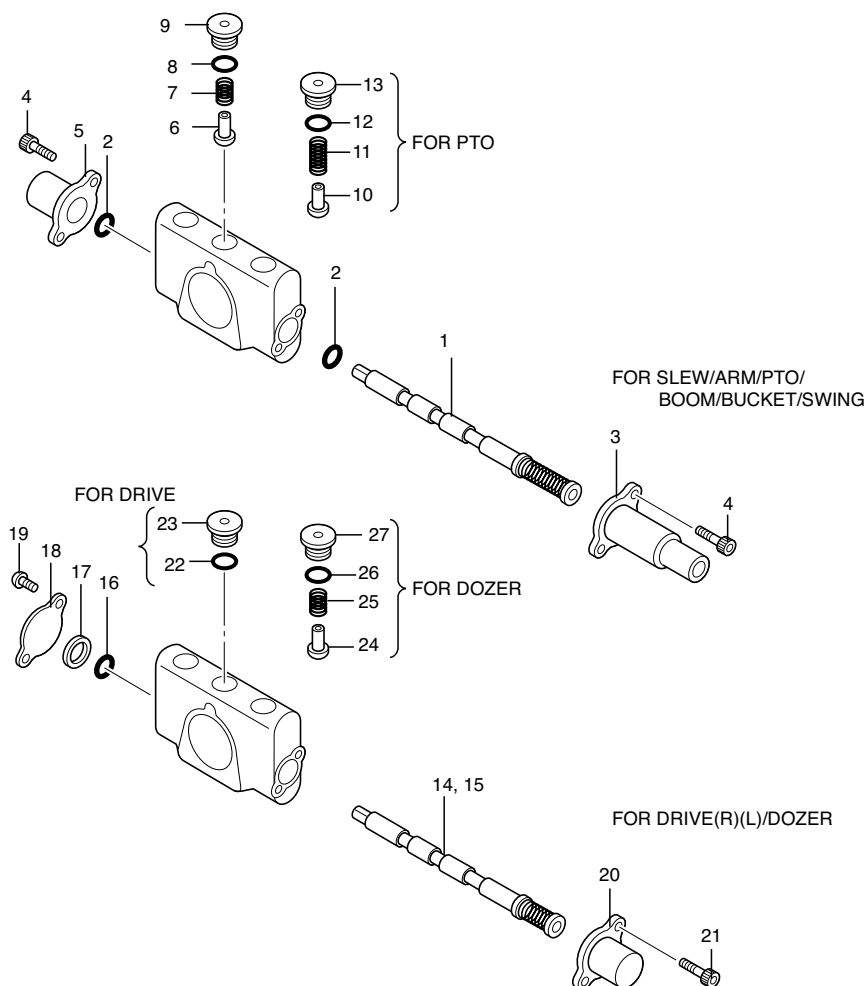


MAIN RELIEF PRESSURE	P1, P2	16.2MPa at 10.2 L/min
PORT RELIEF PRESSURE	A2(ARM), A7(BOOM)	19.1MPa at 10.2 L/min
	A1, B1(SLEW)	6.86MPa at 10.2 L/min



- 1, BLOCK (P1)
- 2, BLOCK (SLEW)
- 3, BLOCK (ARM)
- 4, BLOCK (TRAVEL LEFT)
- 5, BLOCK (DOZER)
- 6, BLOCK (P.T.O.)
- 7, BLOCK (TRAVEL RIGHT)
- 8, BLOCK (BOOM)
- 9, BLOCK (BUCKET)
- 10, BLOCK (SWING)
- 11, BLOCK (P2)

- 12, RELIEF VALVE (P1)
- 13, RELIEF VALVE (P2)
- 14, RELIEF VALVE (SLEW)
- 15, RELIEF VALVE (ARM)
- 16, RELIEF VALVE (BOOM)
- 17, RELIEF PLUG
- 18, ANTI-COMBINATION
- 19, O-RING
- 20, O-RING
- 21, BOLT
- 22, NUT
- 23, O-RING
- 24, PLUG
- 25, O-RING
- 26, PLUG
- 27, O-RING



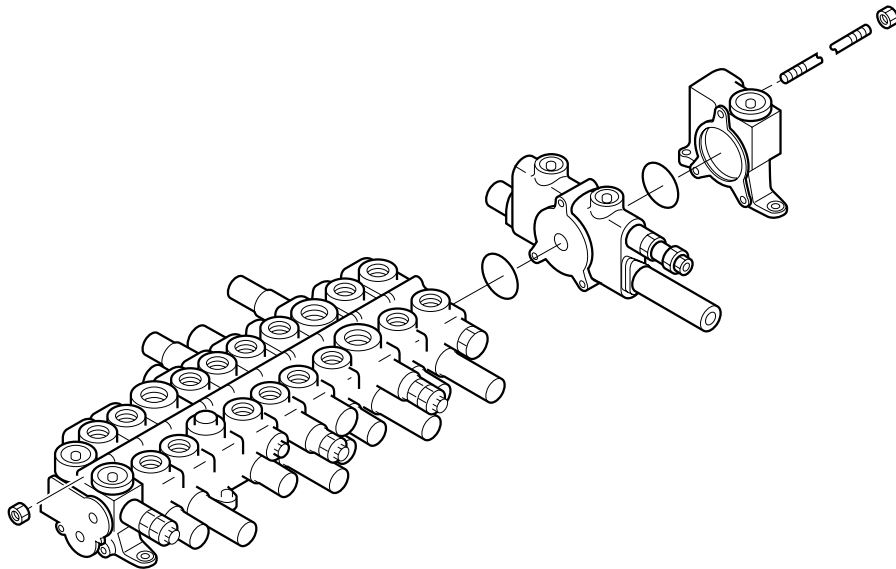
- 1, SPOOL
- 2, O-RING
- 3, CAP
- 4, BOLT
- 5, CAP
- 6, CHECK
- 7, SPRING
- 8, O-RING
- 9, PLUG
- 10, CHECK
- 11, SPRING
- 12, O-RING
- 13, PLUG
- 14, SPOOL

- 15, SPOOL
- 16, SPRING
- 17, RING BACKUP
- 18, PLATE
- 19, SCREW PAN HEAD
- 20, CAP
- 21, BOLT
- 22, O-RING
- 23, PLUG
- 24, SCREW PAN HEAD
- 25, SPRING
- 26, O-RING
- 27, PLUG

7-2 Disassembly and assembly

7-2-1 Replacing the O-ring on the contact surface and each block assembly

1. Loosen the nut of tie rod.
2. Remove each block. Be careful not to damage the machine contact surface.
3. When disassembled, it is recommended to replace the O rings on the contact surface.
4. When assembling, clean the contact surface so that no dust sticks to the surface. Then attach the O ring and reassemble in the reverse order of the above procedure. When attaching the O ring, give grease to it.
5. Tighten nut temporarily.
6. After tightening, place them on their side. Pressing the inlet cover and end cover from above, check the level of the mounting legs and tighten the nut. The tightening torque of the tie rod nut is 23.5N-m(2.4kg-m). While tightening them, check that the spool of each block operates smoothly.



7-2-2 Replacing the relief valve assembly and the O-ring.

1. Remove the inlet section assembly and the relief valve.
2. If necessary, replace the O-ring or the relief valve assembly.
3. During installation, give grease to the O-ring.
4. When the relief set, cap nut of adjusting screw and hexagon nut are loosened, always check relief set pressure using the pressure gauge.
At this time, the relief set pressure and flow rate shall be conformed to the specification indicated on the page of external drawing.
5. When the relief valve assembly is removed, check whether the small hole on the center of relief piston is clogged with foreign matter.

7-3 Precautions for handling (Installation and operation should conform to the following items.)

7-3-1 Handling

When handling and carrying valves, be careful neither to drop them nor bang the spool end and cap.

When stocking a valve for a long time, plug each port to prevent dust and water from entering it.

7-3-2 Installation

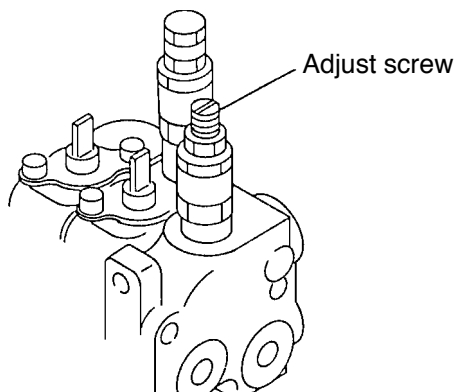
1. Tighten the valve joints with the specified tightening torque. Be careful so that no unnecessary force acts on the valve through the piping.
2. Install the operation link so that the spool moves correct in the direction of shaft.
3. Be careful when welding near a valve, because the high temperature and spatter may damage the O ring of the spool and the dust seal.
4. Do not paint the spool.
5. Never remove the plug on each port to prevent dust from entering until piping work begins.

7-3-3 Operation

1. Before operation, check that the hydraulic circuit and the oil are both clean (cleanliness of hydraulic oil must be higher than the NAS12 class).
2. Keep the oil temperature between -20°C and 80°C. If the temperature falls below 0 °C, warm up the machine.
3. Never raise the set pressure of the main relief valve and port relief valve beyond the specified set pressure. If the set pressure differs from the specified value, adjust it in the following manner.

1) Procedure for adjusting the main relief valve:

- a. Install a pressure gauge between the pump and control valve in the measuring position. If there is a mounting hole for the pressure gauge, use it.
- b. Raise the temperature of the hydraulic oil to 50 to 60°C and set the engine speed to the rated value.
- c. Operate the control lever to read the indication of the pressure gauge when cylinder reaches the stroke end.
- d. When raising the pressure, remove the cap nut and turn adjusting screw of the relief valve installed on the inlet section clockwise with an Allen wrench.



Relief valve pressure adjustment	
Main relief valve	Approx. 12.2 MPa per rotation
Port relief valve	Approx. 12.2 MPa per rotation

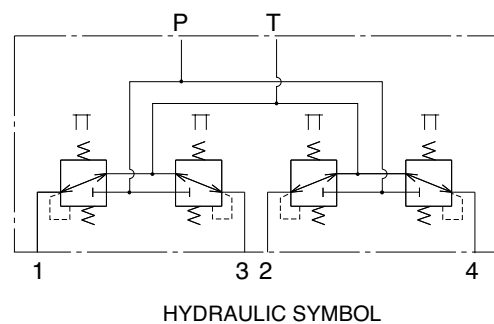
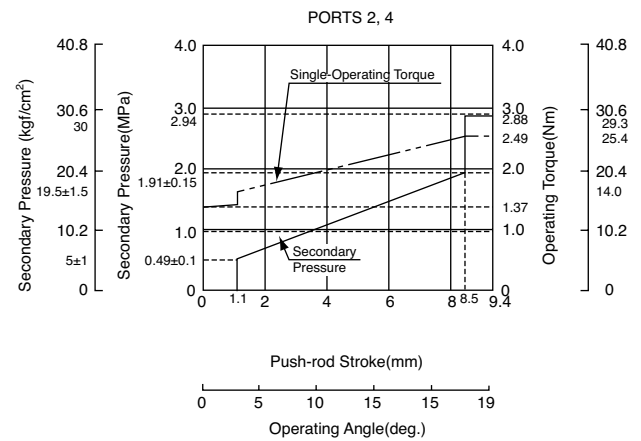
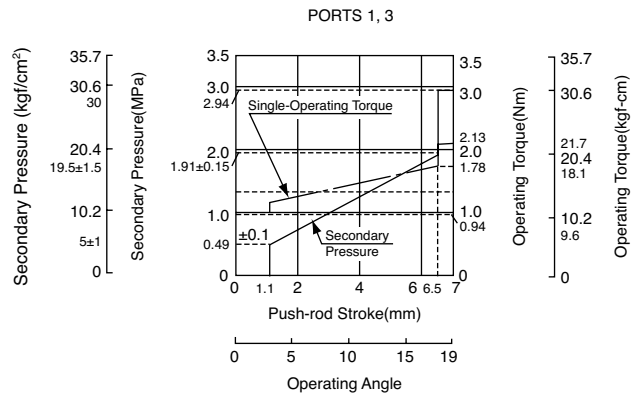
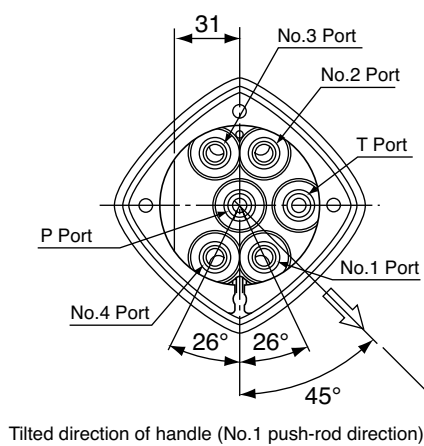
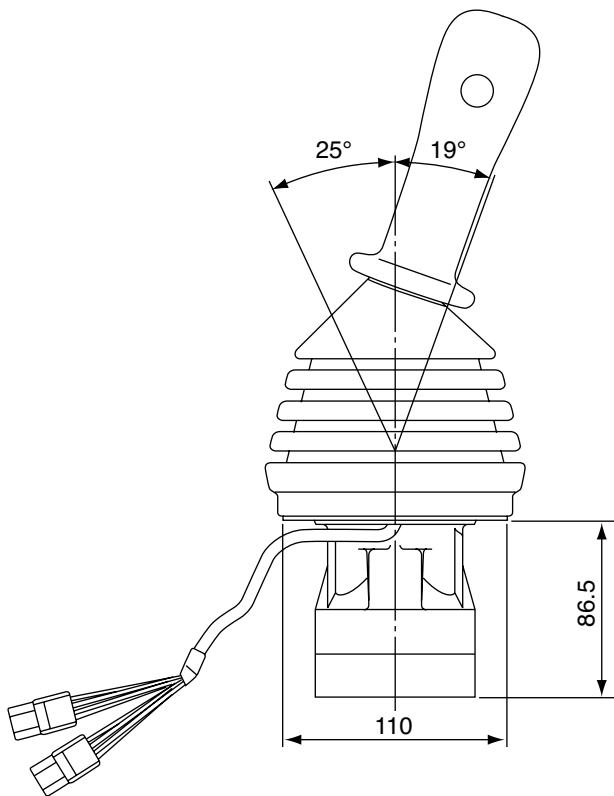
- e. Always lock the valve when it is set to the specified pressure.

8 JOYSTICK (PILOT VALVE)

CONTENTS

- 8-1 Specification
- 8-2 Structure

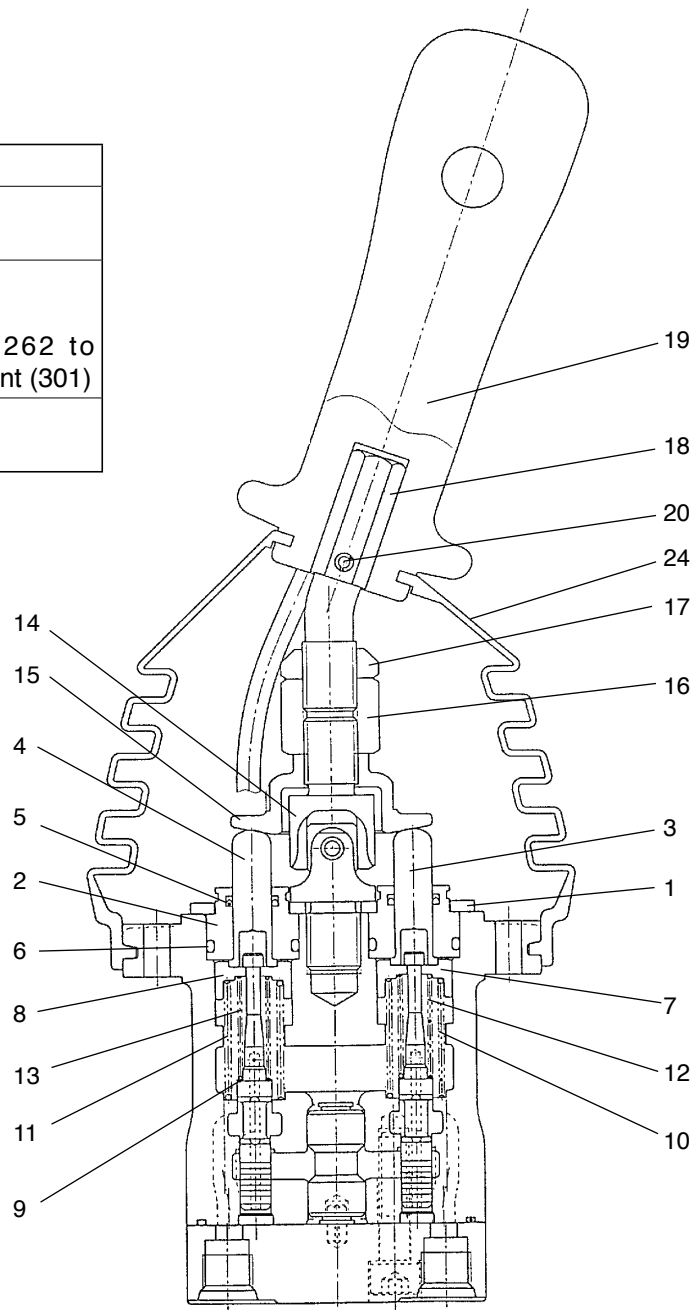
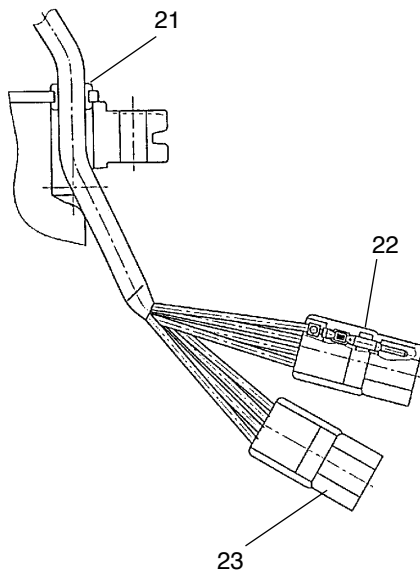
8-1 Specification



8-2 Structure

Tightening torque list

No.	Screw size	Tightening torque
14	M14	47.1 ± 2.9 N-m { 480 ± 30 kgf-cm}
15 16	M14	68.6 ± 4.9 N-m { 700 ± 50 kgf-cm} Apply loctite No.262 to external thread of joint (301)
17	M14	49 ± 3.4 N-m { 500 ± 35 kgf-cm}



- | | |
|--|--|
| 1. PLATE | 13. SPRING (for secondary pressure ports 2, 4) |
| 2. PLUG | 14. JOINT |
| 3. ROD PUSH (for ports 1, 3 7mm Stroke) | 15. PLATE |
| 4. ROD PUSH (for ports 2, 4 9.4mm Stroke) | 16. NUT ADJUSTING |
| 5. SEAL | 17. NUT LOCK |
| 6. O-RING | 18. LEVER |
| 7. SEAT SPRING (for ports 1, 3 7mm Stroke) | 19. KNOB |
| 8. SEAT SPRING (for ports 2, 4 9.4mm Stroke) | 20. PIN SPRING |
| 9. WASHER 2 | 21. BUSH |
| 10. SPRING (for return ports 1, 3) | 22. CONNECTOR |
| 11. SPRING (for return ports 2, 4) | 23. HOUSING (4P) |
| 12. SPRING (for secondary pressure ports 1, 3) | 24. BELLOWS |

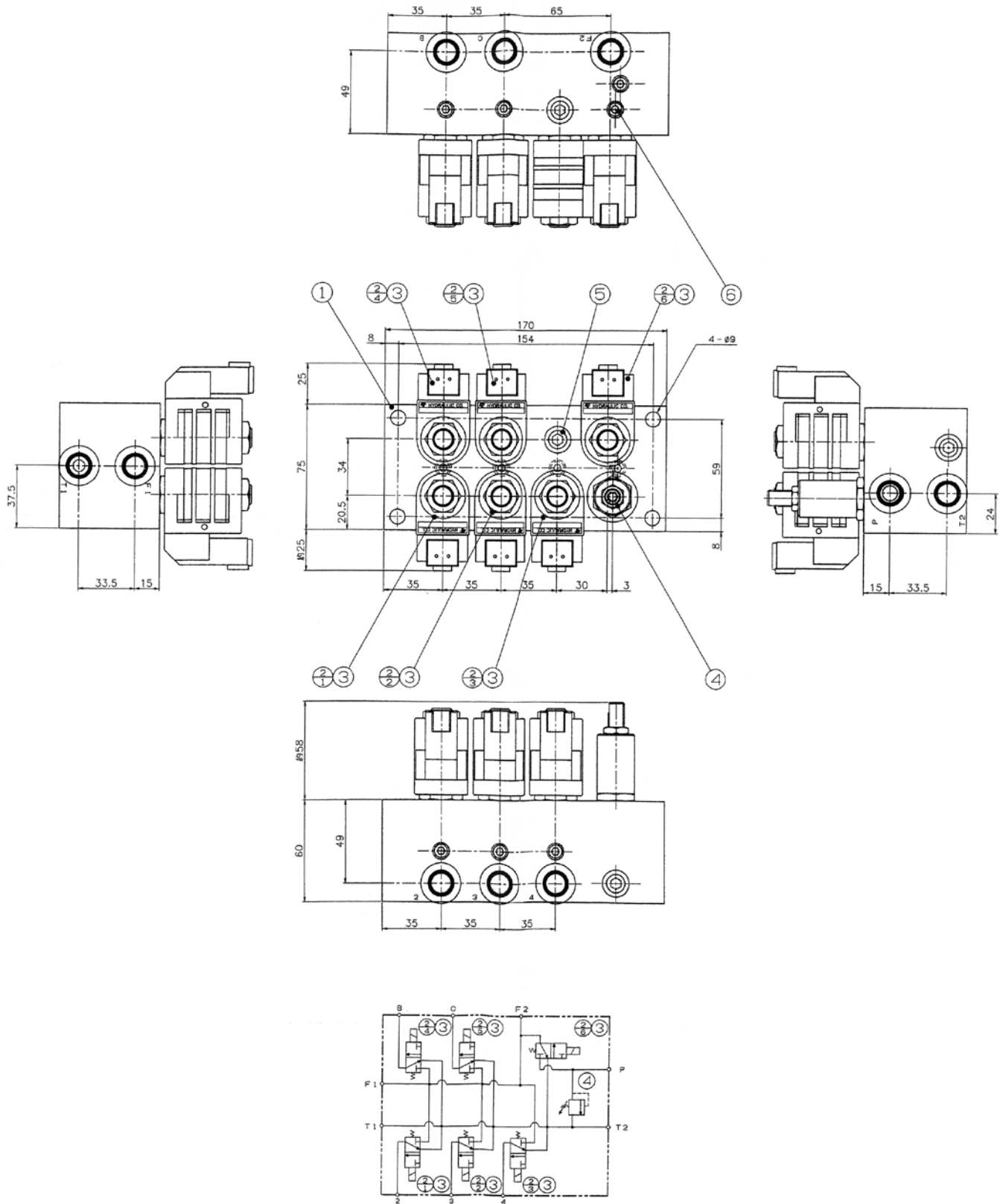
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SOLENOID VALVE (SWING • PTO)

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- 9-1 Specification
- 9-2 Structure

9-1 Specification



Hydraulic circuit diagram

10 SLEW MOTOR

CONTENTS

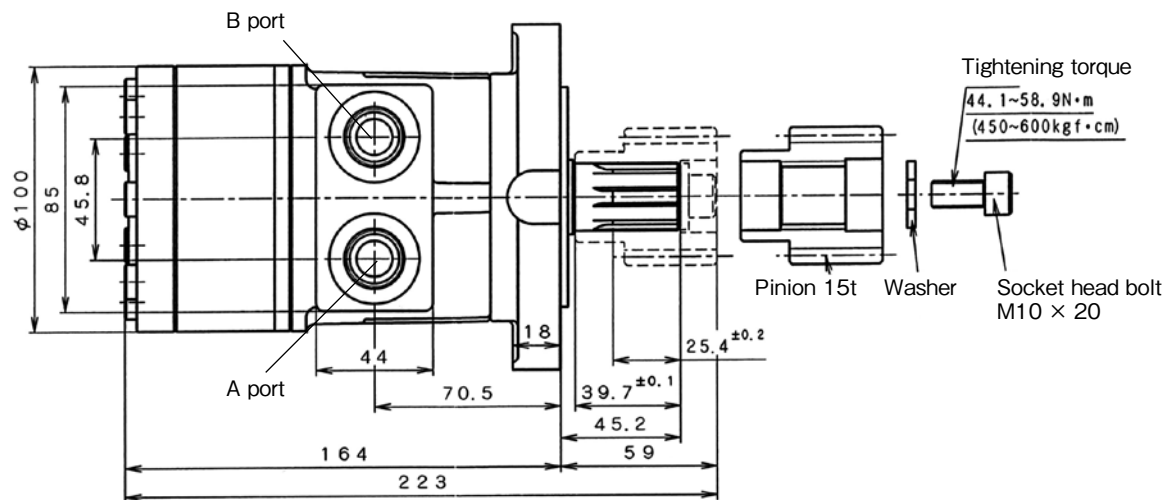
- 10-1 Specification
- 10-2 Standard of maintenance
 - 10-2-1 Slew bearing & slew case
- 10-3 Inspection and adjustment
 - 10-3-1 Measuring the natural slew distance
 - 10-3-2 Measuring the over slew distance after stopping
 - 10-3-3 Measuring the required time for slewing
- 10-4 Structure

10-1 Specification

DIRECTION OF LOTATION
(seen from the output shaft)

DIRECTION OF LOTATION	OIL INLET	OIL OUTLET
CLOCK WISE	A	B
COUNTER CLOCK WISE	B	A

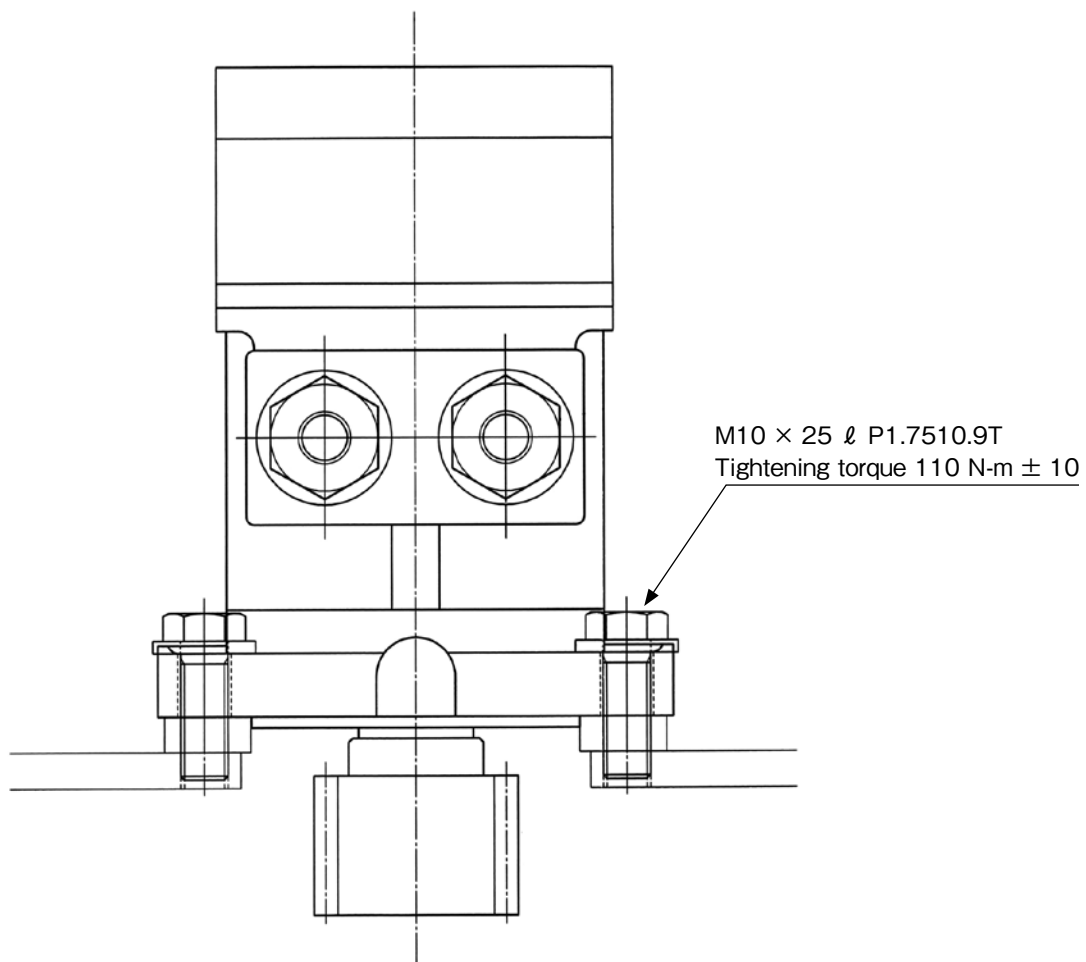
PORT	PORT SIZE
A	PF 1/2
B	PF 1/2



	TYPE	ORB-S-240-2 A S-023
HYDRAULIC MOTOR	CAPACITY	235.5 cm ³ /rev
	MAXIMUM SPEED	300 min ⁻¹
	OUTPUT TORQUE	395 N·m
PINION GEAR	MODULE	3
	NO OF THREADS	15
WEIGHT		9.2 kg

10-2 Standard of maintenance

10-2-1 Slew bearing and slew case

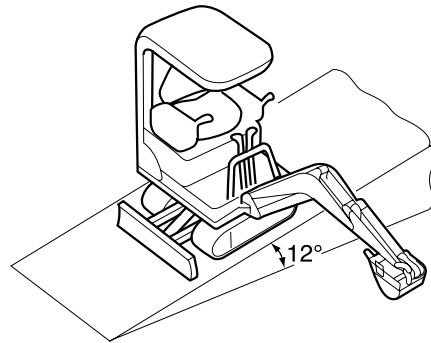


10-3 Inspection and adjustment

10-3-1 Measuring the natural slew distance

1. Position of the machine

Maintain the hydraulic oil temperature at $50 \pm 5^{\circ}\text{C}$. Make a slope or use a sleeper to incline the machine by 12° . Set the attachment diagonally, put a weight (W) in the bucket (filling the bucket with soil), retract the arm cylinder to the minimum length, make the boom parallel to the slope and stop engine.



2. Measurement

Put a mark on the slew bearing outer race and the truck frame and measure the flow rate (deviation rate) of 3 minutes. (Moving distance of slew bearing outer race) Valid gear length

Unit mm(in) or less

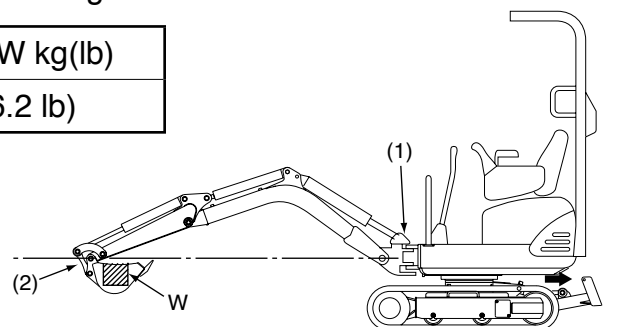
Standard value	Allowance	Weight W kg(lb)
100(3.9")	200(7.9")	30(66.2 lb)

10-3-2 Measuring the over slew distance after stopping

Maintain the oil temperature at $50 \pm 5^{\circ}\text{C}$ while the engine is running at full speed. Stretch the arm to the maximum length on a flat place. Make the boom joint pin (1) and arm bucket pin (2) put on a horizontal line, put a weight(W) in the bucket (filling the bucket with soil), slew the Machine by one turn and measure the over slew length (at bucket edge) after stopping.

Unit : deg

Standard value	Weight W kg(lb)
45	30(66.2 lb)



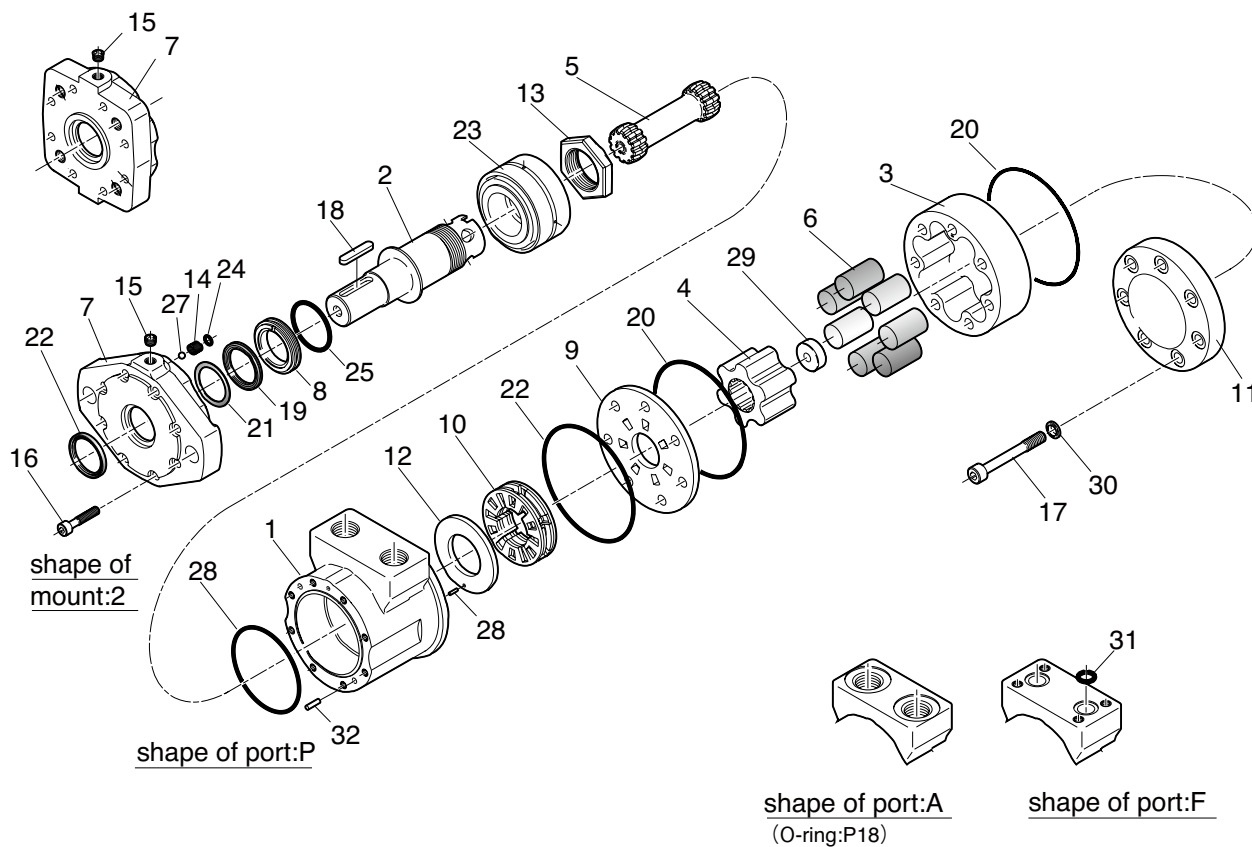
10-3-3 Measuring the required time for slewing

Extend the bucket cylinder to maximum length, empty the bucket and measure the required time for slewing 5 turns following the first turn.

Unit : sec or less

Standard value	Allowance
26 ± 4	42

10-4 Structure



- 1, BODY
- 2, SHAFT
- 3, OUTER ROTER
- 4, INNER ROTER
- 5, SPLINE SHAFT
- 6, ROLLER
- 7, FLANGE
- 8, SEAL COLLER
- 9, VALVE PLATE
- 10, ROTALY VALVE
- 11, END COVER
- 12, PLATE

- 13, NUT
- 14, SPRING
- 15, PLUG (R1/8)
- 16, BOLT SOCKET HEAD (M6)
- 17, BOLT SOCKET HEAD (M8)
- 18, SHAFT KEY
- 19, X-RING
- 20, O-RING
- 21, RING BACKUP
- 22, SEAL DUST
- 23, ROLLER BAERING
- 24, O-RING

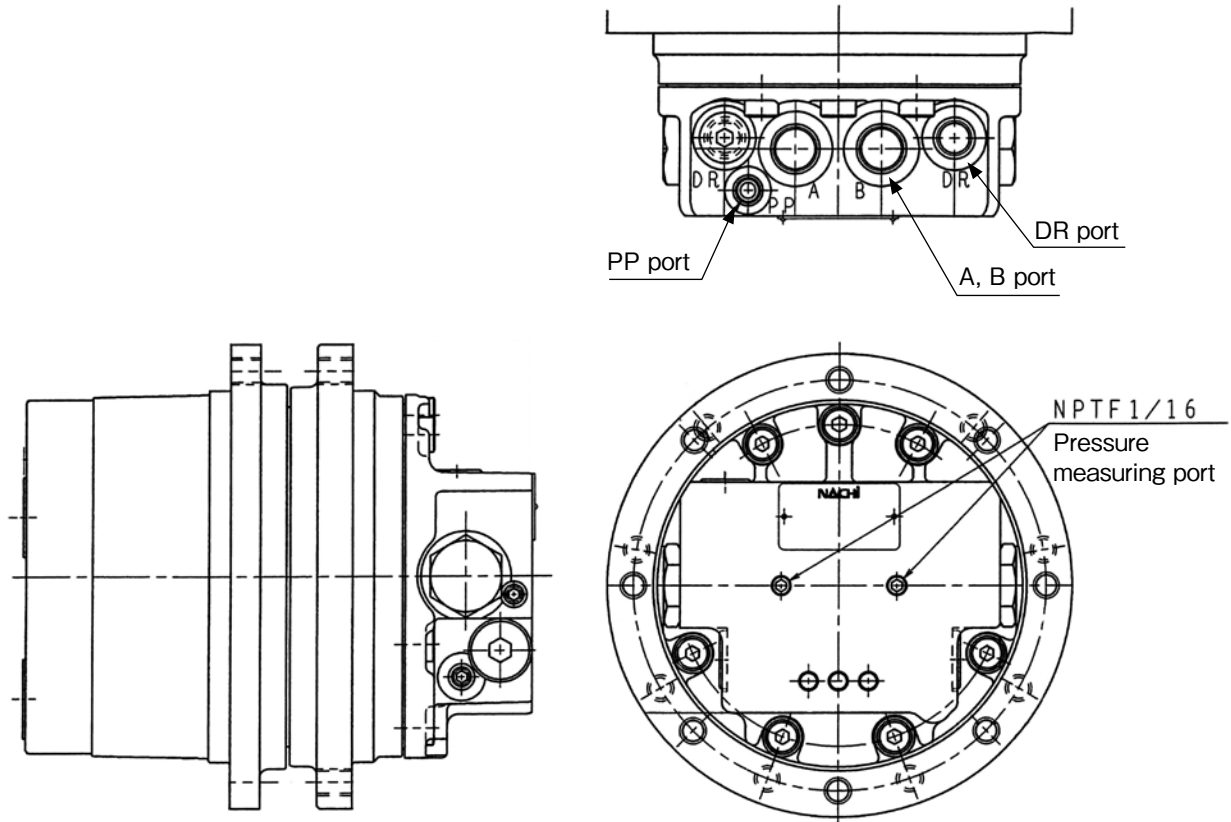
- 25, O-RING
- 26, O-RING
- 27, STEEL BALL
- 28, PIN
- 29, SPACER
- 30, SEAL WASHER
- 31, O-RING
- 32, SPRING PIN

11 DRIVE MOTOR

CONTENTS

- 11-1 Specification
- 11-2 Handling the drive motor
- 11-3 Measuring drive motor idling and traveling time
- 11-4 Inspection and adjustment
- 11-5 Structure

11-1 Specification

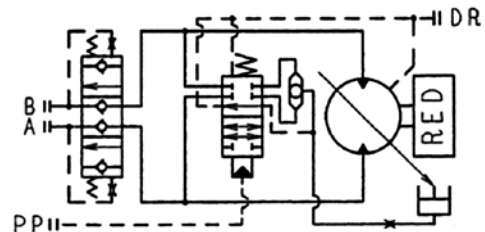


Direction of rotation (viewing from output axis)

Direction of rotation	Oil pouring port	Oil discharging port
Clockwise	B	A
Counterclockwise	A	B

Port	Port size
A, B	PF1/4
Dr	PF1/4
PP	PF1/8

Hydraulic symbol

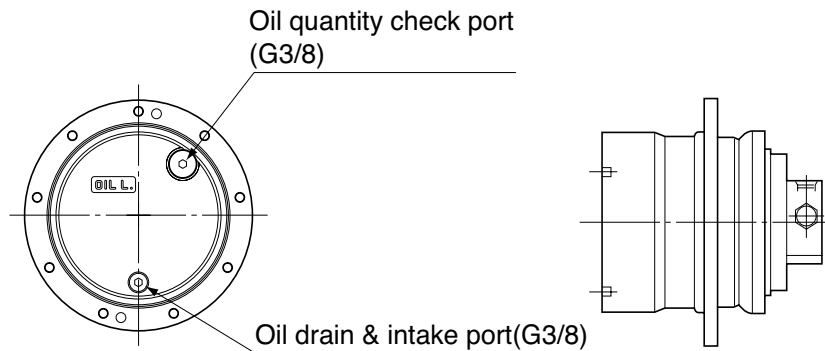


Item			Item		
Reduction gear	Output torque (N-m)	832	Others	Oil	ISO-VG46
	Output speed (rpm) ^{LOW} / _{HIGH}	34.9 / 67.8		Oil temperature(°C)	-20~100
	Reduction ratio	1 / 25.26		Filtering (μm)	10
Hydraulic motor	Capacity (cm ³ /rev) ^{LOW} / _{HIGH}	10.9 / 5.6		Lubricating oil	SAE-30 330 cc
	Working pressure MPa	Max. 19.0		Weight kg	17
	Output speed of hydraulic motor (rpm) ^{LOW} / _{HIGH}	881 / 1,714			
	Flow rate ℓ /min	9.6			

11-2 Handling the drive motor

Add lubricating oil according to the following procedure.

1. The cover has two plugs. Turn the motor so that two plugs are at the right angle to the floor. Use them as the oil quantity check port, oil intake and oil drain ports, starting from the top in that order.



2. First, remove the plugs from the (A) port with an Allen wrench.
3. Add lubricating oil through the oil intake until the oil comes out of the intake port.
4. Plug the (A) port, then wind seal tape around the plug before tightening.

Amount of lubricating oil	330 cm ³
---------------------------	---------------------

Schedule for replacing lubricating oil:

First: After the first 500 service hours
Second and later times : Every 1,000 service hours

Standard maintenance

Tightening torque

Sprocket tightening torque	65 N-m
Motor tightening torque	65 N-m

11-3 Measuring drive motor idling and travelling time

1. Idle crawler for ten turns and measure the required time.

Unit : sec

Standard value
14.2±1

(Engine running at full speed and oil temperature of 50±5°C)

2. After travelling 3m on ground level, measure the required time to travel 20m.

Unit : sec

Standard value
36.3±1

(Engine running at full speed and oil temperature of 50±5°C)

11-4 Inspection and adjustment

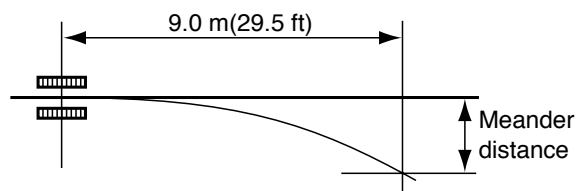
1. Measuring meander distance in travelling

Measure the meandering distance by travelling on hard ground.

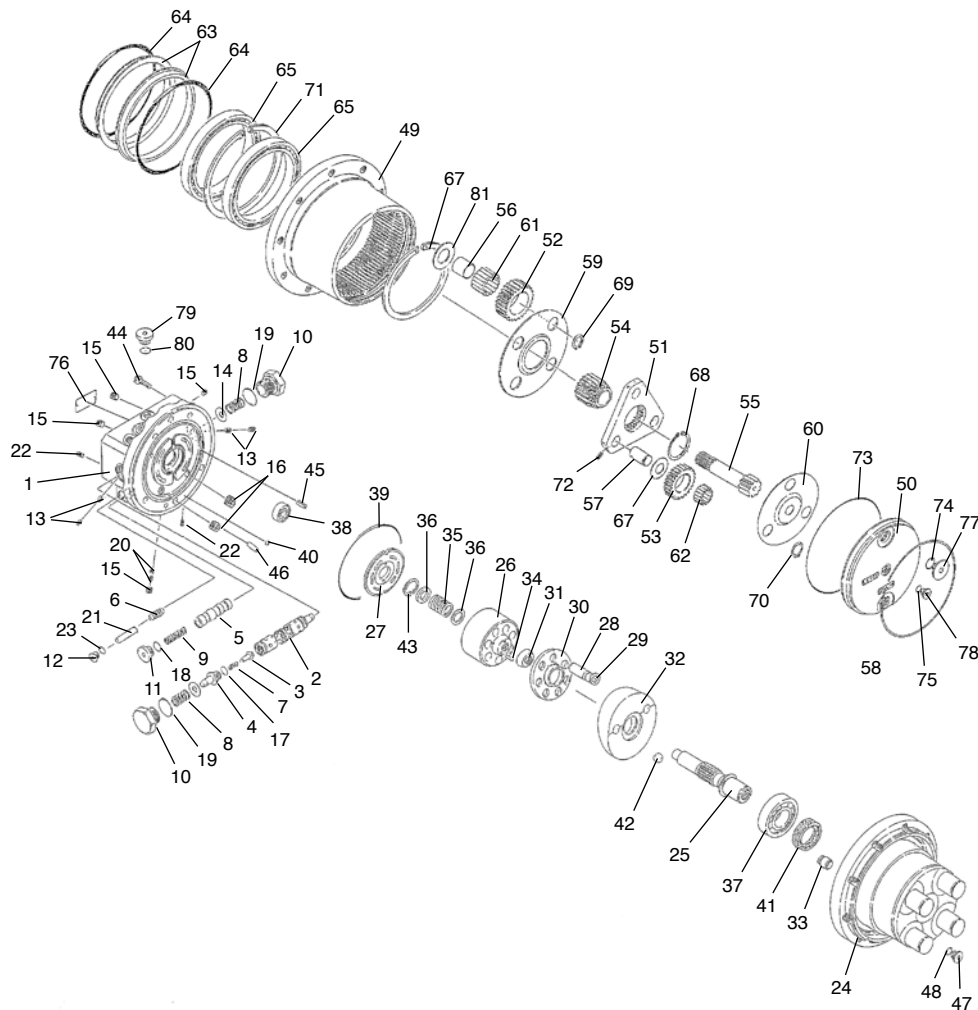
Unit : mm(in) or less

Standard value
450 (17.7")

(Engine running at full speed and oil temperature of 50±5°C)



11-5 Structure



- | | | |
|---------------------|--------------------|--------------------|
| 1. Body-1 | 28. Piston | 55. S2 gear |
| 2. Spool | 29. Shoe | 56. Ring |
| 3. Check valve | 30. Shoe holder | 57. B2 pin |
| 4. Spring guide | 31. Barrel holder | 58. O-snap ring |
| 5. Spool | 32. Swash plate | 59. Thrust plate 1 |
| 6. Shuttle spool | 33. Control piston | 60. Thrust plate 2 |
| 7. Spring V1 | 34. Pin | 61. Needle |
| 8. Spring V2 | 35. Spring C | 62. Needle |
| 9. Spring V3 | 36. Retainer | 63. Floating seat |
| 10. Plug | 37. Bearing | 64. O-ring |
| 11. Plug | 38. Bearing | 65. Bearing |
| 12. Plug | 39. O-ring | 66. Thrust washer |
| 13. Choke | 40. O-ring | 67. Snap ring |
| 14. Ring | 41. Oil seal | 68. Snap ring |
| 15. Plug | 42. Ball | 69. Snap ring |
| 16. Pulg | 43. Snap ring | 70. Snap ring |
| 17. O-ring | 44. Screw | 71. Snap ring |
| 18. O-ring | 45. Spring pin | 72. Spring pin |
| 19. O-ring | 46. Pin | 73. O-ring |
| 20. Choke | 47. Plug | 74. O-ring |
| 21. Needle | 48. O-ring | 75. O-ring |
| 22. Plug | 49. Body | 76. Name plate |
| 23. O-ring | 50. Cover | 77. Plug |
| 24. Body 2 | 51. Carrier 2 | 78. Plug |
| 25. Shaft | 52. B1 gear | 79. Plug |
| 26. Cylinder barrel | 53. B2 gear | 80. O-ring |
| 27. Valve plate | 54. S1 gear | 81. Thrust washer |

12 HYDRAULIC CYLINDER **CONTENTS**

12-1 Structure

12-2 Disassembly and assembly

12-2-1 Disassembly procedure

12-2-2 Procedure for disassembling
inner parts

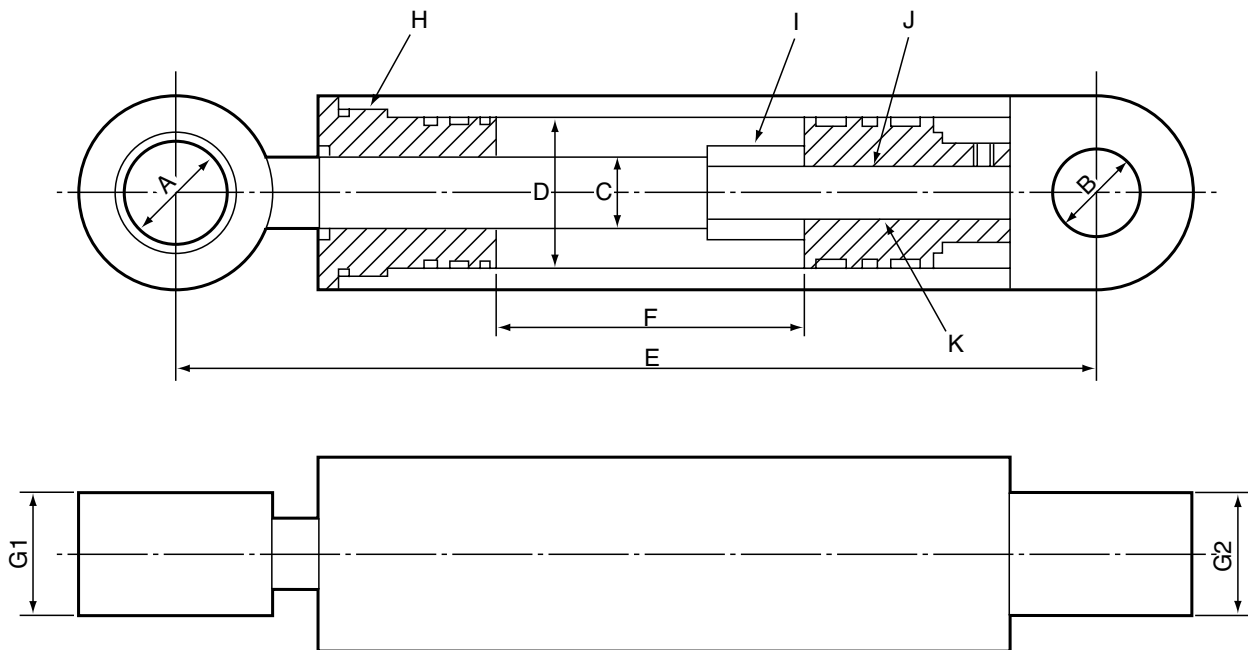
12-3 Assembly

12-3-1 Assembly procedure

12-3-2 Inspection procedure

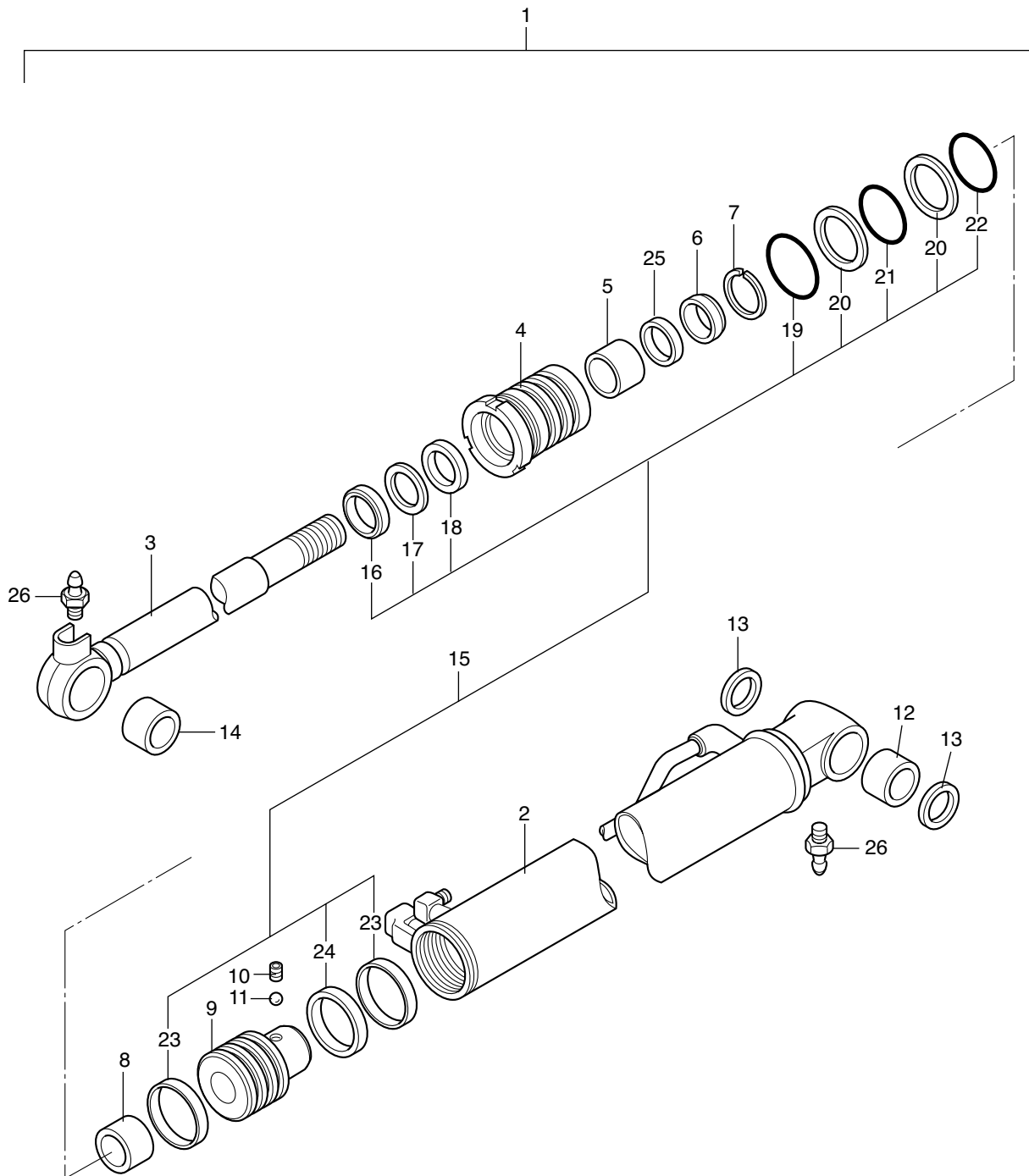
12-3-3 Precautions for assembly

12-1 Structure



Item		Cylinder	Boom	Arm	Bucket	Swing	Dozer	Extension
Weight kg			10	10.8	8	6.3	5.5	4.2
Trust force*	Pushing	kN	38.4	38.4	31.7	31.7	31.7	34.6
	Pulling	kN	27	27	23.8	23.8	23.8	25.9
A	Pin diameter (rod)	mm (in)	ø25 (1.0)					ø20 (0.8)
B	Pin diameter (head)	mm (in)	ø25 (1.0)					ø20 (0.8)
C	Rod diameter	mm (in)	ø30 (1.2)	ø30 (1.2)	ø25 (1.0)	ø25 (1.0)	ø25 (1.0)	ø25 (1.0)
D	Cylinder bore	mm (in)	ø55 (2.2)	ø55 (2.2)	ø50 (2.0)	ø50 (2.0)	ø50 (2.0)	ø50 (2.0)
E	Maximum extended length	mm (in)	887 (35)	875 (34.5)	798 (31.4)	801 (31.6)	360 (14.2)	720 (28.4)
	Minimum contracted length	mm (in)	572 (22.6)	555 (21.9)	508 (20.0)	521 (20.6)	292 (11.5)	520 (20.6)
F	Stroke	mm (in)	315 (12.4)	320 (12.5)	290 (11.4)	280 (11)	68 (2.7)	200 (7.9)
G1	Clevis width	mm (in)	30 (1.2)	30 (1.2)	30 (1.2)	35 (1.4)	40 (1.6)	45 (1.8)
G2			40 (1.6)	40 (1.6)	40 (1.6)	40 (1.6)	40 (1.6)	
H	Tightening torque	N-m (kgf-m)	265 (27.1)	325 (33.2)	255 (26.1)	—	255 (26.1)	—
I	Tightening torque	N-m (kgf-m)	16.8 (1.7)	—	—	—	—	—
J	Tightening torque	N-m (kgf-m)	265 (27.1)	325 (33.2)	167 (17.1)	—	167 (17.1)	—
K	Size of piston screw (size × pitch)		M20×1.5	M22×1.5	M18×1.5	—	M18×1.5	—
*Main relief pressure MPa(kgf-cm ²)			16.2 (165)					

12-2 Disassembly and assembly



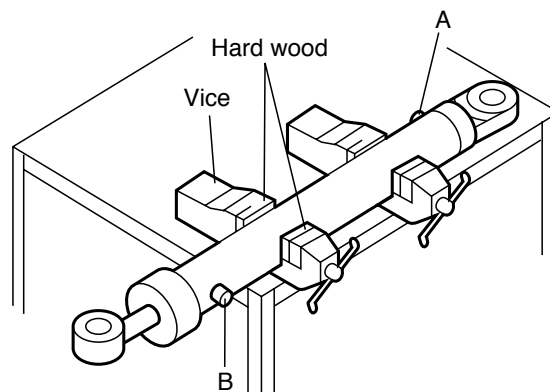
The illustration shows a boom cylinder.

- | | | |
|------------------------|-------------------|---------------------|
| 1. Boom cylinder Ass'y | 11. Steel ball | 21. O-ring |
| 2. Tube | 12. Bush | 22. O-ring |
| 3. Rod | 13. Dust seal | 23. Slide ring |
| 4. Cylinder head | 14. Bush | 24. Seal ring Ass'y |
| 5. Bush | 15. Packing Ass'y | 25. Cushion ring |
| 6. Spacer | 16. Wiper ring | 26. Grease nipple |
| 7. Stopper | 17. Back-up ring | |
| 8. Cushion bearing | 18. U-ring | |
| 9. Piston | 19. O-ring | |
| 10. Set screw | 20. Back-up ring | |

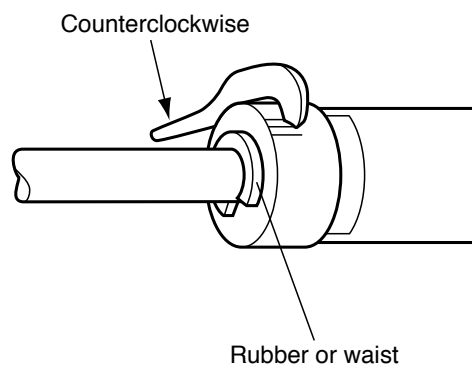
12-2-1 Disassembly procedure

1. Hold the cylinder with the vice.

Tighten the vice carefully; do not deform the cylinder. Blow air alternately from ports A and B and operate the piston rod to drain oil from the cylinder inside. To remove the piston, pull the piston rod about a third of the length.

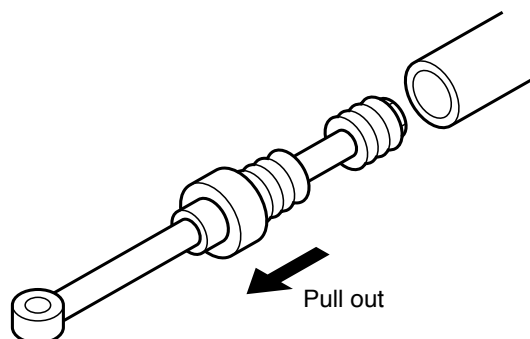


2. Loosen and remove the cylinder head from the cylinder tube assembly with a hook wrench.



3. Disassembling the piston rod assembly

Slowly turn the piston rod assembly to remove it from the cylinder tube assembly. Place the removed piston rod assembly on a wooden bench or a waste to prevent damage.

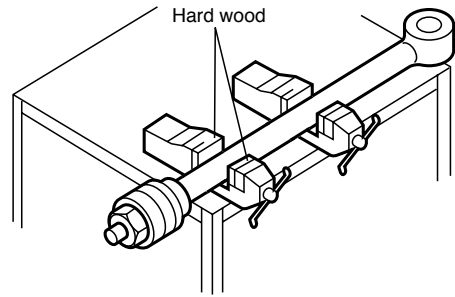


4. Disassembling the piston assembly

Hold the piston rod assembly with a vice.

- Put the waste between hard wood and the piston to prevent the surface sliding from being damaged.
- Set the piston rod assembly on a level block so that it becomes parallel to the level block.

Be careful because the piston rod assembly may come out of the vice and be damaged if it is set diagonally.



12-2-2 Procedure for disassembling inner parts

1. Remove the piston assembly from the piston rod assembly (after removing the set bolts).

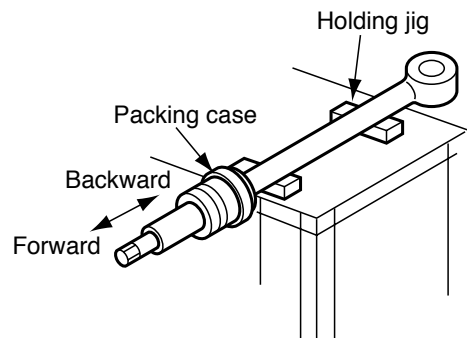
Then remove the cushion bearing in the direction of the arrow.

2. Disassembling rod cover

Put piston rod assembly on a holding jig on the work bench.

Make a working face for the rod cover assembly on the workbench and move the rod cover to and fro to remove it.

Remove the backup ring then the O ring with a screwdriver. If they are to be re-used, be careful not to damage them.

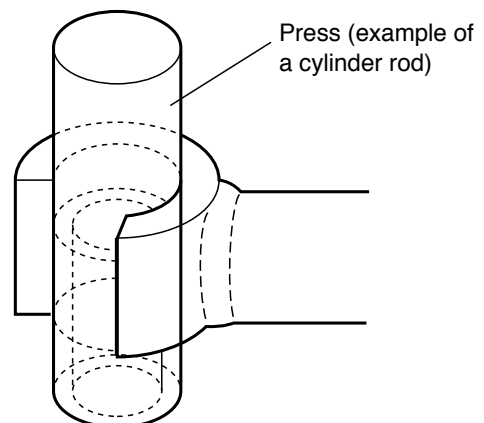


3. Disassembling the packing assembly

Remove the packing by prying it with an eyeleteer or a screwdriver. Be careful not to damage the groove of the cover and piston. Because it is difficult to remove the dust seal and rod packing without damaging them, remove them by inserting a eyeleteer or a similar tool and prying them out. Be careful not to damage the groove on the cover and piston.

4. Disassembling the piston rod and cylinder tube assembly

As the bushes are pressed fit to the rod head, press them out with a pressing machine to remove them. For a spherical bearing, the snap ring must be removed first.



12-3 Assembly

12-3-1 Assembly procedure

1. The assembly procedure is the reverse of disassembly.
2. Before assembly, check whether metallic powder or other foreign matter is not sticking to any of the parts and whether the parts can be reused.
3. Coat hydraulic oil on each part before assembling them.
4. Assemble beforehand the parts into the following assemblies.

- Cylinder tube assembly
- Rod cover assembly
- Piston rod
- Piston assembly

12-3-2 Inspection procedure

Clean each disassembled part with light oil or treated oil except for the packings.

Packings are cleaned with petroleum hydraulic oil.

Other types of oil will remarkably shorten the life of the packing.

Thoroughly clean the sliding surface, oil hole, O ring, packing groove, etc. If the part is not used for a long time after being cleaned, execute a rust proof treatment.

(Coating hydraulic oil is effective for rust prevention to a certain degree.)

1. Check all parts for flaws, cracks, deformation, rust, or burrs which may affect the operation. (Inside of the tube, rod, etc.)
2. Check each part for metallic powder or other foreign matter sticking to it.
3. Check the sliding surface of piston rod for damage, uneven abrasion, discoloring, or any defect which may affect its operation.
4. Packings and seals are usually replaced with new one. If you must reuse them, check that there are no tears, cuts or foreign matter sticking to the packing.

12-3-3 Precautions for assembly

Assemble the cylinder while paying attention to the following matters.

1. Replace the packings with new ones before assembly.
2. Execute assembly work paying attention to the direction of cushion bearings (boom, arm, bucket and swing) and seal rings (arm and swing).
3. Replace the set bolts with new ones.
In assembling, after tightening the set bolts, further tighten and firmly fix them by hitting with punch at two points on the periphery.
4. Tighten the rod cover, piston and nuts with a specified tightening torque shown in the attached table (page 10-1).
5. Check fully before starting assembly work.

13 SWIVEL JOINT

CONTENTS

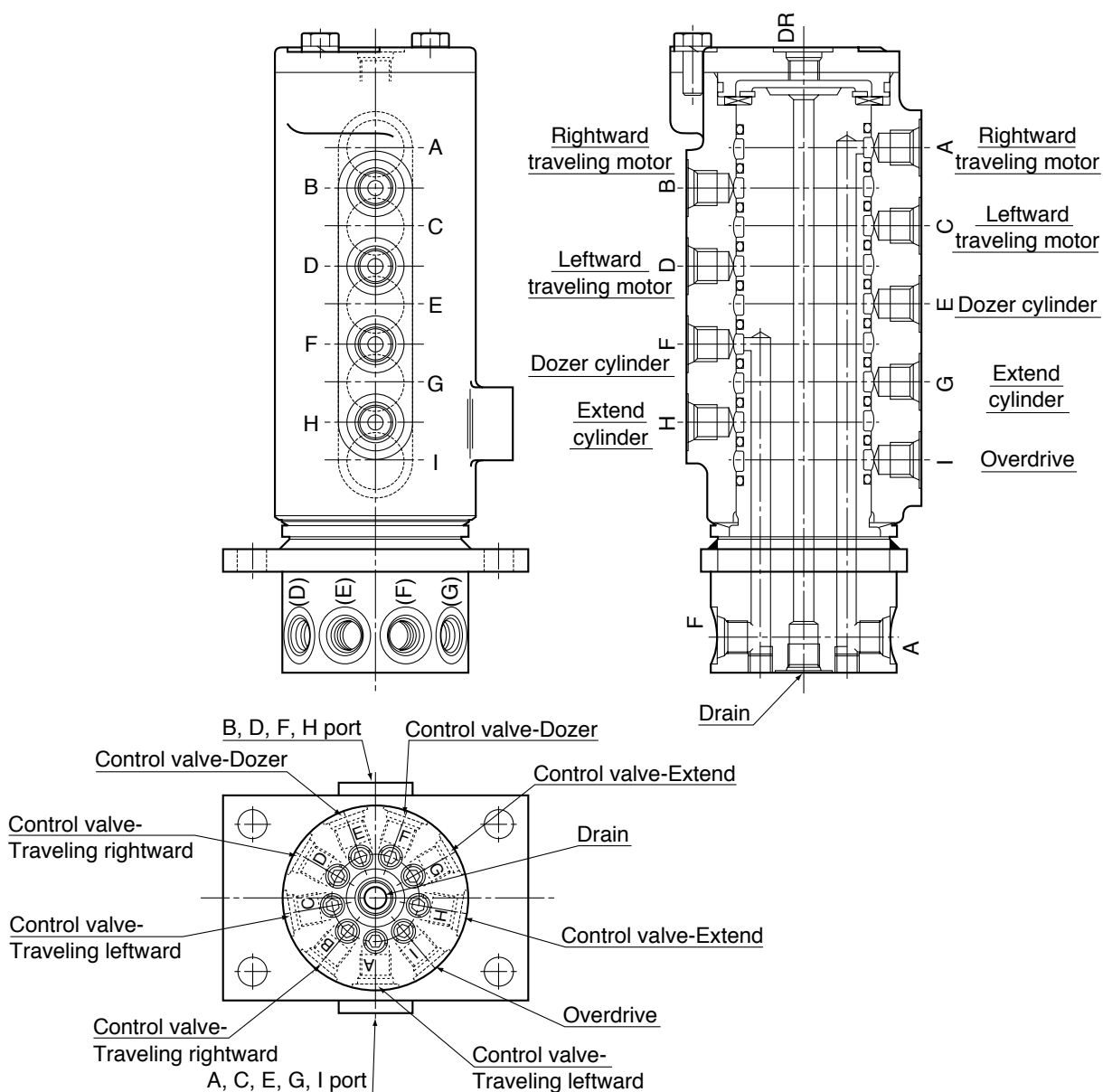
13-1 Specification and Structure

13-2 Structure, disassembly and assembly

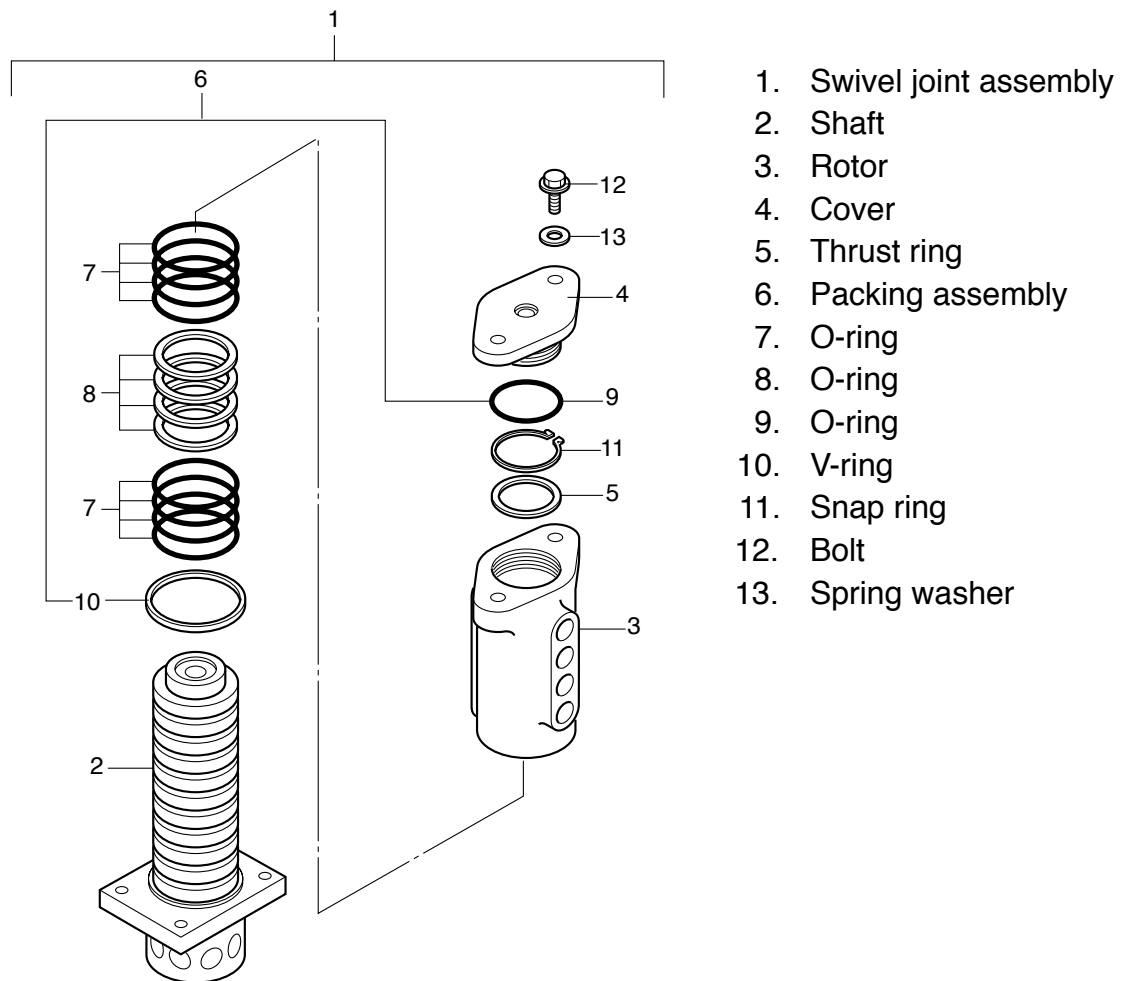
13-1 Specification and Structure

Working pressure	0.3 MPa (3 kgf/cm ²)	DR
	18.6 MPa (190 kgf/cm ²)	A~I
Screw size	PF 1/4	DR
	PF 1/4	A~I
Working speed	15 rpm	

*A to H and D rain denote the position of the port.



13-2 Structure,disassembly and assembly



Disassembly:

1. Remove bolt (12) and cover(4).
2. Remove the snap ring (11).
3. Remove the shaft (2) from the rotor(3). Because the shaft is tightened by the tension of the O ring, tap a hammer on the shaft by rotating it and pull it up.
* Be careful so that O ring does not become trapped.

Assembly:

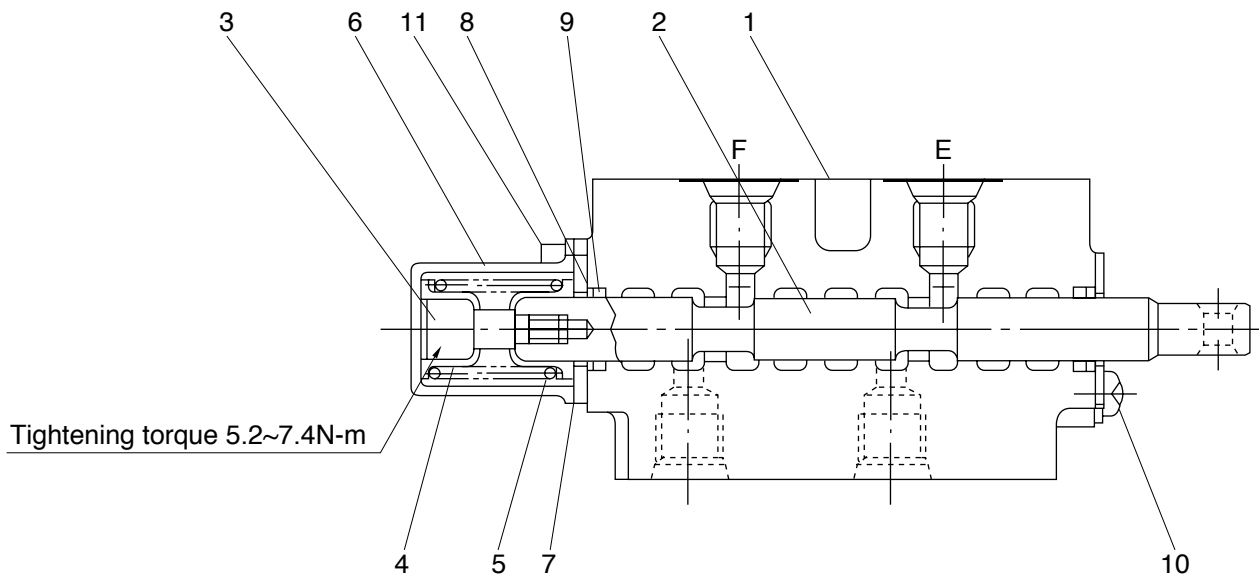
1. Before assembly, check the O ring and sliding part for flaws and other defects.
2. Assembly is usually executed in the opposite order of disassembly.
Coat a little hydraulic oil or grease on the O rings before assembly.

14 SELECTOR VALVE **CONTENTS**

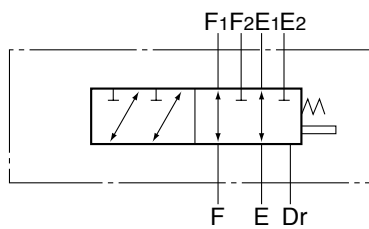
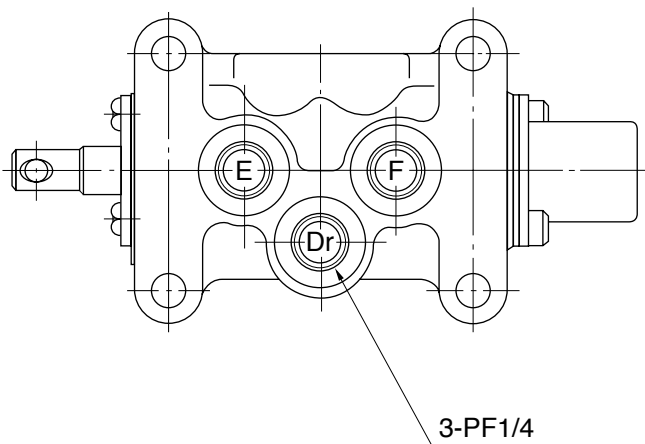
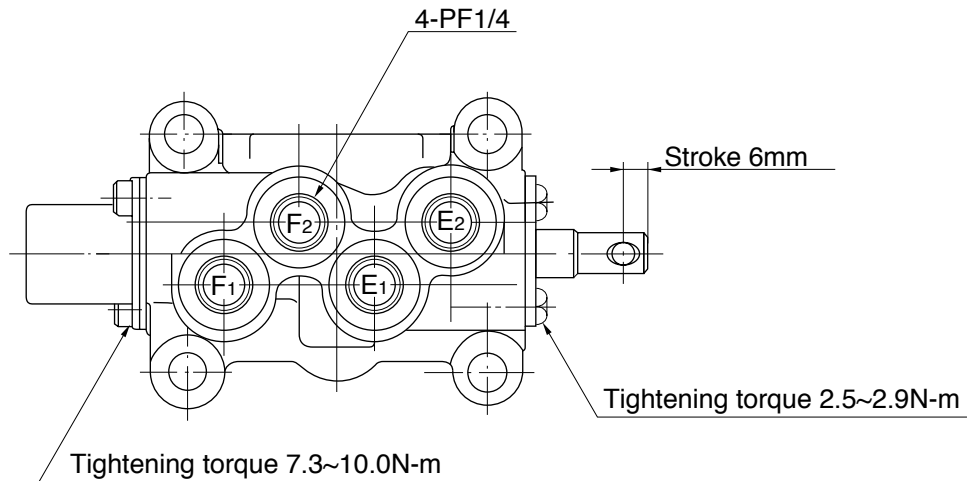
14-1 Structure

14-2 Specification

14-1 Structure



14-2 Specification



No.	Item
E	Control valve A4
F	Control valve B4
E1	Dozer cylinder rod
E2	Extension cylinder head
F1	Extension cylinder rod
F2	Dozer cylinder head
Dr	Drain

15 CRAWLER

CONTENTS

15-1 Structure

15-1-1 Track frame

15-2 Adjustment of undercarriage width

15-3 Disassembly and assembly

15-3-1 Installing the crawler

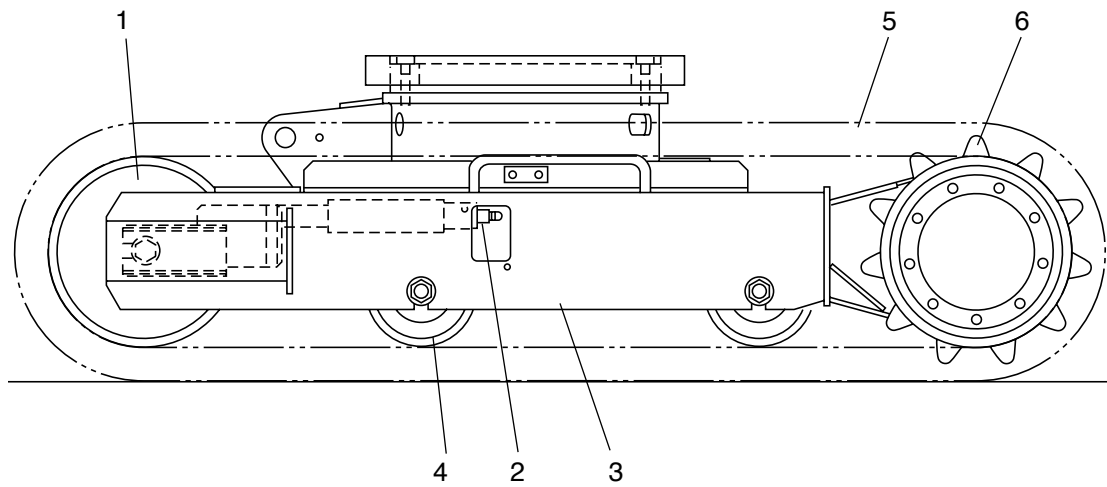
15-3-2 Removing the crawler

15-3-3 Life of the rubber crawler

15-3-4 Handling the rubber crawler

15-1 Structure and operation

15-1-1 Track frame



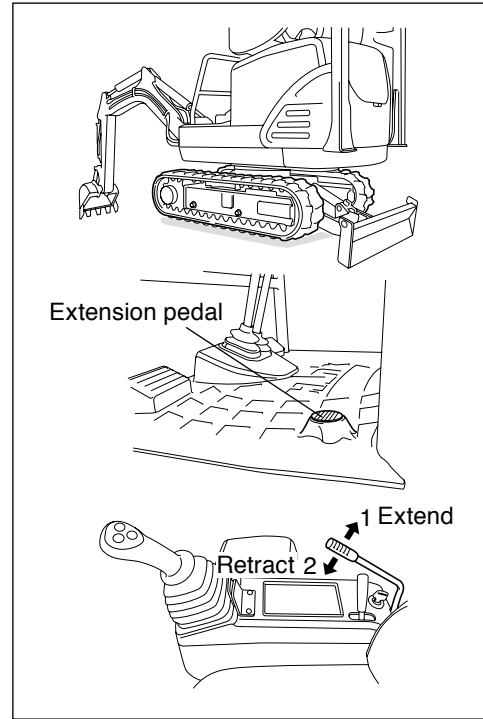
- 1. Idler
- 2. Adjust cylinder
- 3. Track frame
- 4. Track roller
- 5. Rubber crawler
- 6. Sprocket

15-2 Adjustment of undercarriage width

Undercarriage width can be extended by 200mm from 750mm to 950mm.

Adjustment of undercarriage width must be conducted on a level and solid ground surface.

1. Space the undercarriage from the ground surface by use of both the front work equipment and dozer (see picture).
 2. Operate dozer operation lever as instructed below, while securely pressing down on extension pedal located on the floor plate(see picture).
- ① Raise dozer operation lever to extend undercarriage width to 950mm.
 - ② Lower dozer operation lever to retract the extended undercarriage width to 750mm.crawler width because it causes travel motion curvature.

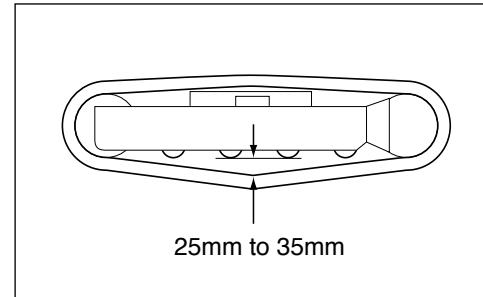


15-3 Disassembly and assembly

15-3-1 Installing the crawler

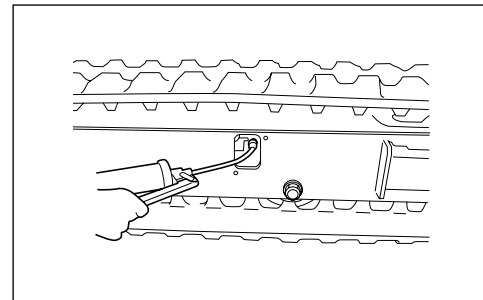
1. Crawler

Insert a grease gun into the grease nipple and pour the grease to strain the crawler.



2. Tension the crawler

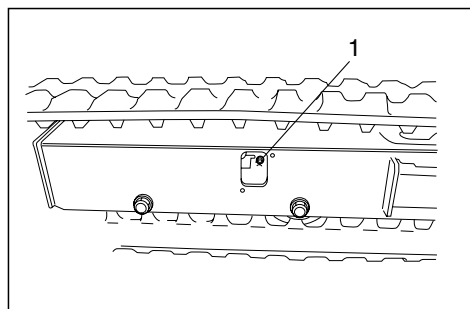
For loosening the crawler, loosen the cartridge valve and the grease in the cylinder automatically comes out.



15-3-2 Removing the crawler

1. Loosen the crawler.

By loosen the cartridge valve of the adjust cylinder, drain grease and loosen the crawler.

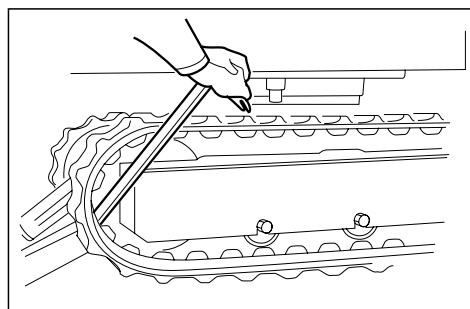


2. Crawler

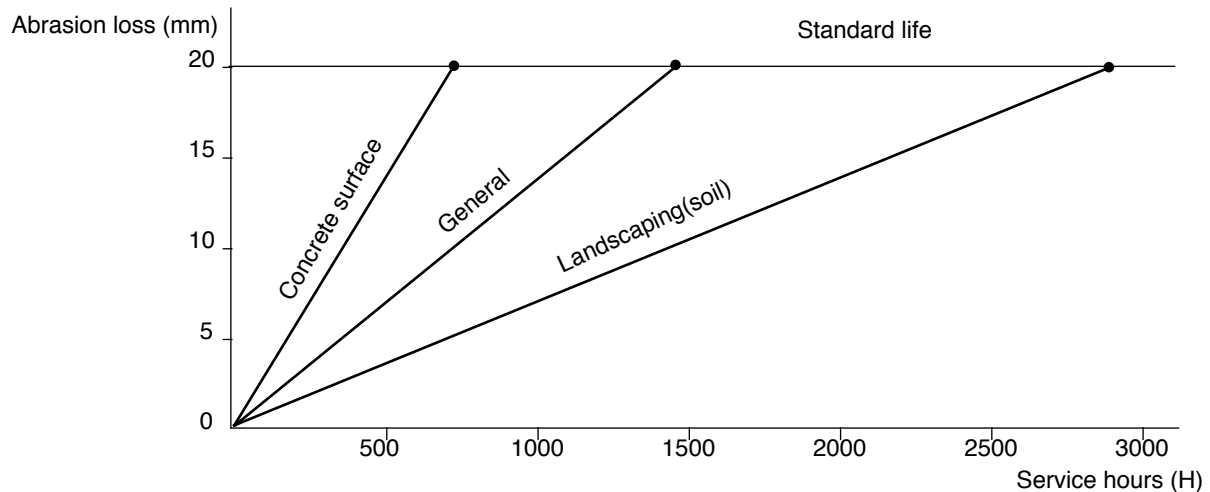
1) Lift the main frame with attachment and put blocks under to lift the machine.

2) As rubber crawler is endless and of solid material, push the idler to the end and remove the rubber crawler by using steel bar from the idler.

Weight (rubber crawler): 56 kg (28×2)



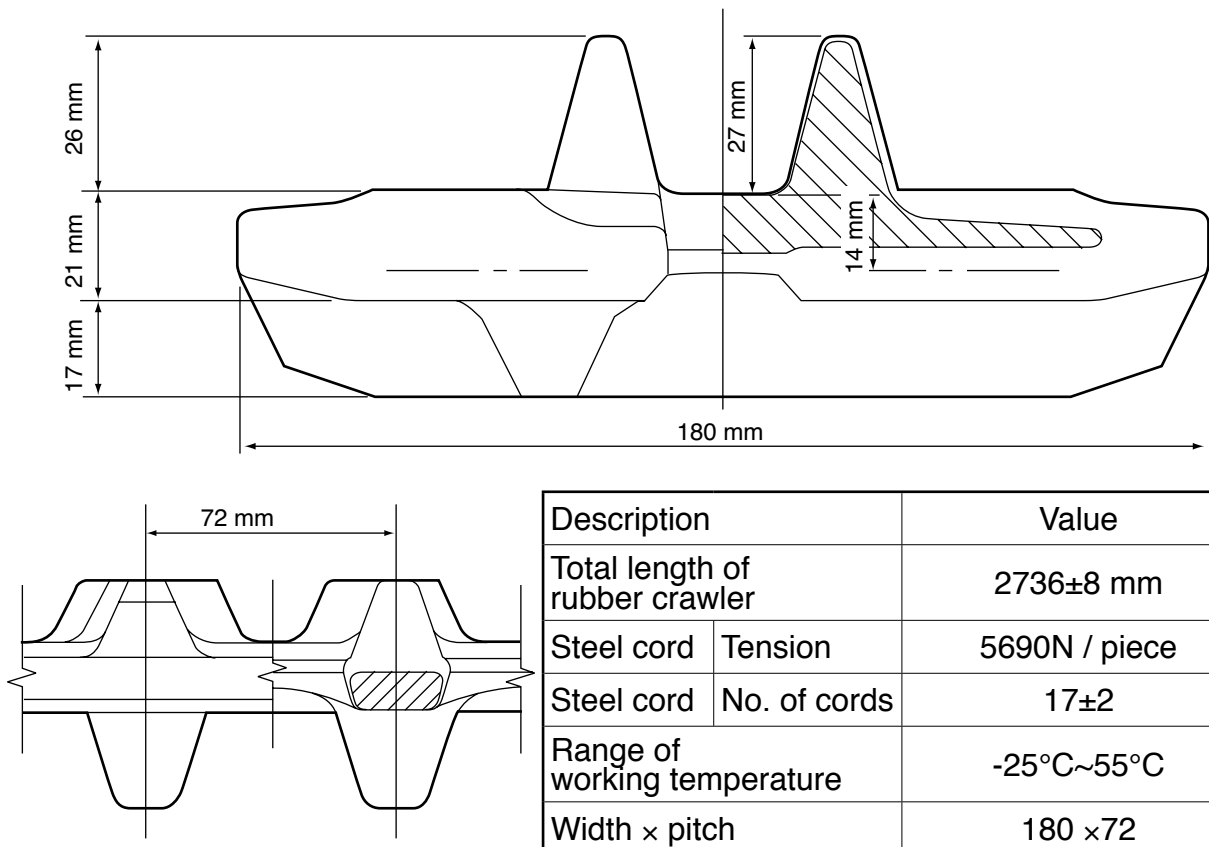
15-3-3 Life of the rubber crawler



Check the remaining life of the rubber crawler by the abrasion loss in the rubber crawler height as shown in the figure below. Note that the life slightly differs depending on the conditions of site and the operation of the machine.

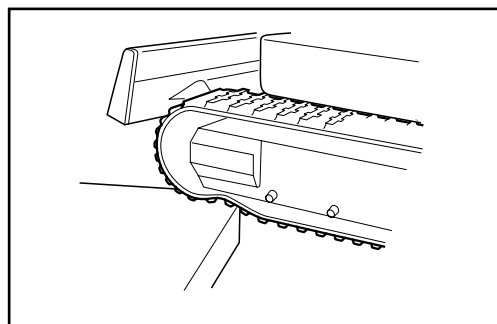
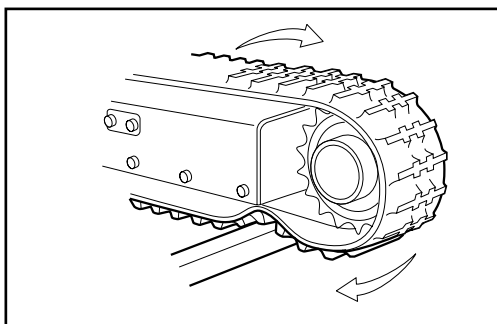
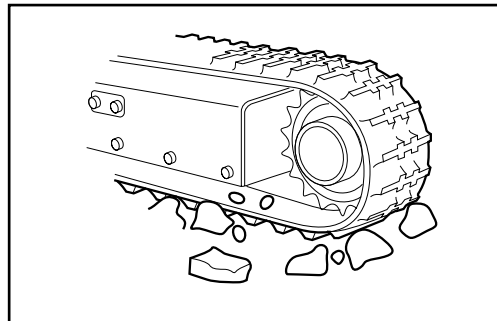
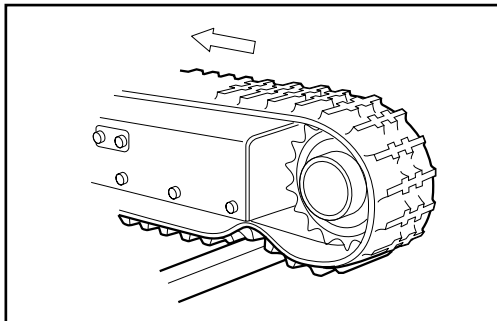
PRECAUTIONS:

- (1) Wipe immediately if fuel or hydraulic oil sticks to rubber crawler.
- (2) Check that there are no sharp edges protruding on the ground.
- (3) Avoid using on beach. (This may affect the adhesion of the core metal.)
- (4) If the machine is going to be stored for a long time, never store it where it will be directly exposed to sunlight.



15-3-4 Handling the rubber crawler

1. Do not run over or turn on a sharp edge
If you run over or turn on a projecting sharp edge or a stepped grade, the machine will partially load on the rubber crawler and split it or cut the threads of the rubber crawler and the inner steel cord.
2. Prevent foreign matter from entering the rubber crawler
Foreign matter will strain the crawler and cut it.
3. No sharp turns
Do not turn sharply on a road with a high-friction factor (such as a concrete road).
4. Keep oil products away from the rubber crawler
If you spill fuel or hydraulic fluid on the rubber crawler, clean it promptly.
5. Protect from salt
Do not operate on beach (Core metal will rust due to salt corrosion).
6. Store indoors
If the machine is not used for a long time, keep it indoors to prevent exposure to direct sunlight and rain.



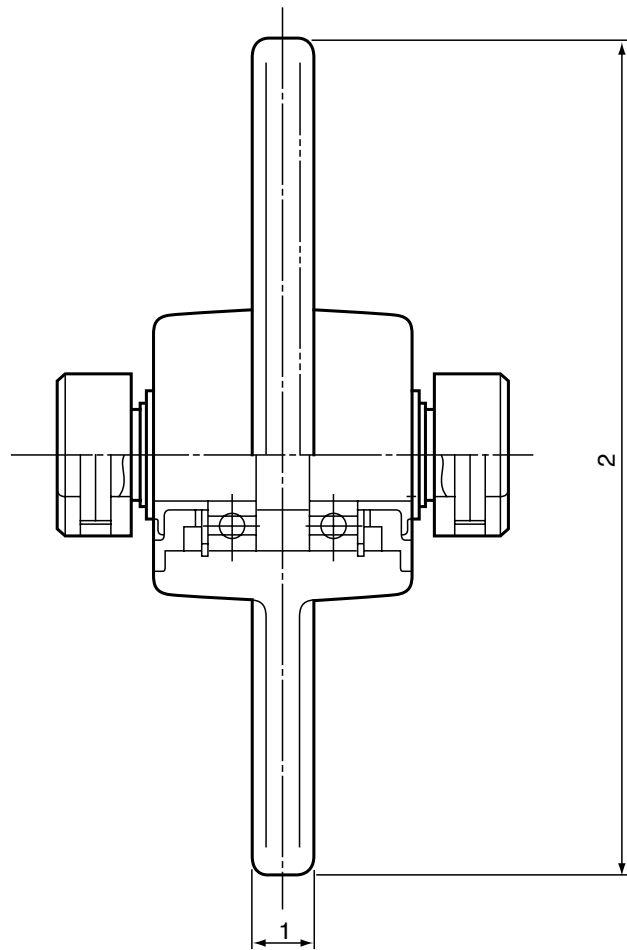
16 IDLER

CONTENTS

16-1 Standard of maintenance
16-1-1 Idler

16-1 Standard of maintenance

16-1-1 Idler



No.	Item	Unit	Standard value	Allowance	Remarks
1	Width of idler teeth	mm	16	14	Pad or replace
2	Diameter	mm	ø224	ø222	Pad or replace
3	Quality of lubricating oil	cm ³	10	—	Grease

17 SPROCKET

CONTENTS

- 17-1 Disassembly and assembly
 - 17-1-1 Removing the sprocket
 - 17-1-2 Installing the sprocket
- 17-2 Standard of maintenance
 - 17-2-1 Sprocket

17-1 Disassembly and assembly

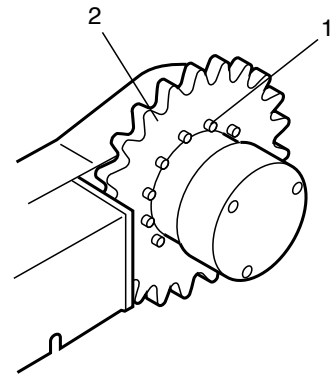
17-1-1 Removing the sprocket

1. Crawler

Refer to the explanation on crawler removal.

2. Sprocket

Remove sprocket mounting bolts (1) and then sprocket (2) from the travelling motor assembly.



17-1-2 Installing the sprocket

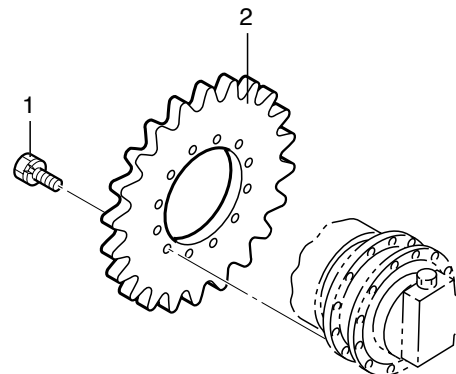
1. Sprocket

Attach the sprocket to travelling motor assembly and tighten the mounting bolts (1).

Tightening torque: 65 N-m (48 lb-ft)

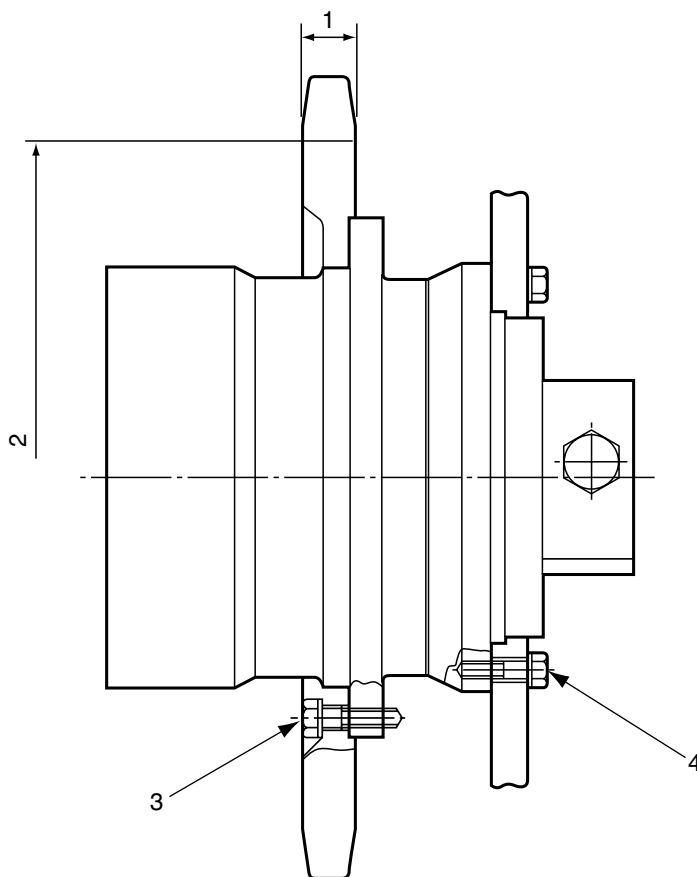
2. Crawler

Refer to the explanation of crawler installation.



17-2 Standard of maintenance

17-2-1 Sprocket



No.	Item	Unit	Standard value	Allowance	Remarks
1	Width of sprocket teeth	mm	20	18	Pad or replace
2	Minor diameter of sprocket	mm	ø224	ø222	Pad or replace
3	Tightening torque of sprocket mounting bolt	N-m (lb-ft)	65 (48)	←	Tighten some more. (M10 P1.5)
4	Tightening torque of motor mounting bolt	N-m (lb-ft)	60.8 (44.8)	←	Tighten some more. (M10 P1.5)

18 TRACK ROLLER

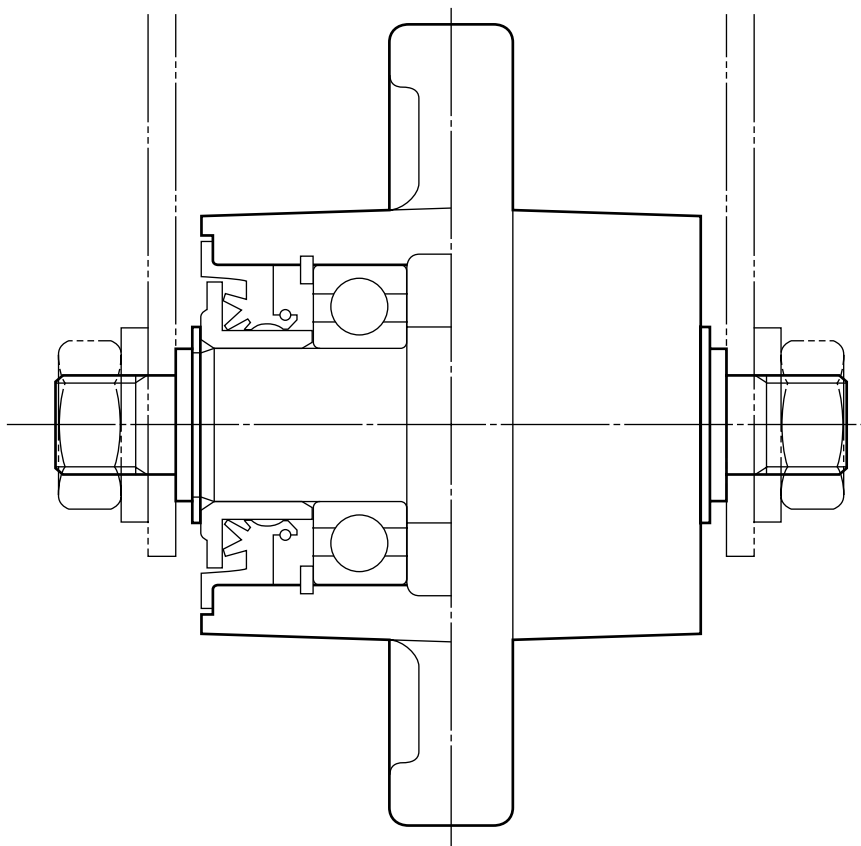
CONTENTS

18-1 Standard of maintenance

18-1-1 Track roller

18-1 Standard of maintenance

18-1-1 Track roller



No.	Item	Unit	Standard value	Allowance	Remarks
1	Outer diameter projected part	mm	ø130	ø128	
2	Outer diameter of tread	mm	ø71	ø69	
3	Width of projected part	mm	20	18	
4	Overall width	mm	80	—	
5	Width of tread	mm	30	—	
6	Tightening torque for mounting roller	N-m	275 (203 lb-ft)	←	Tighten some more. (M16 P2.0)
7	Quality of lubricating oil	cc	80	←	Gear oil or engine oil

19 ELECTRICAL EQUIPMENT CONTENTS

19-1 Structure and function

19-1-1 Electric circuit diagram

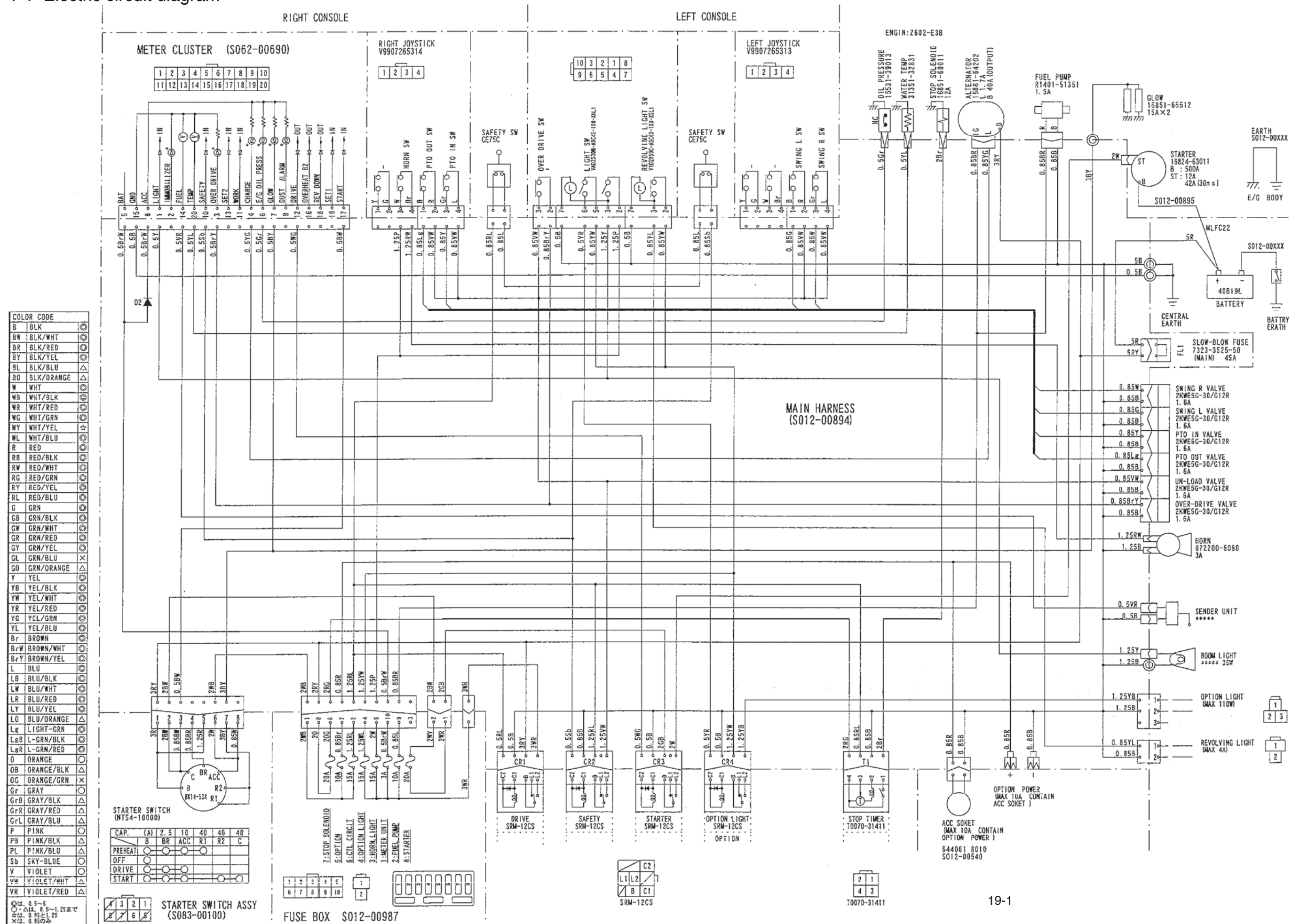
19-2 Failure and remedy

19-2-1 Starter system

19-2-2 Alternator system

19-1 Structure and fuction

19-1-1 Electric circuit diagram



19-2 Failure and remedy

19-2-1 Starter system

Failure	Cause	Remedy
Pinion does not come out even when the starter switch is pressed.	- Disconnection of the wire harness, loose connection of the battery or switch terminal. - Spline which engaged with the pinion of armature shaft is caught and the pinion cannot move. - Malfunction of the plunger of magnetic switch, disconnection or the short-circuit of coil	Reconnect and tighten connections. Free the spline Correct or replace
Starter does not rotate even when the pinion engages with the ring gear.	- Disconnection of the cable between the battery and the magnetic switch, loosening (bad earth) of the connecting wire between magnetic switch and motor terminals - Improper engagement of pinion and ring gear - Wrong installation - Brush is worn out or brush spring is touching. - Commutator is dirty. - Malfunction of armature or field coil - Loosening of field coil and brush - Loose connection of contractor - Contact surface of contractor is rough.	Reconnect cable, tighten connections (make good earth). Correct the engagement. Reinstall Replace or adjust. Clean commutator. Correct or replace Tighten coil and brush. Tighten connections. Correct or replace
Starter rotates at its full speed before the pinion engages with the ring gear.	- Wrong adjustment of plunger gap (distance I) - Permanent set of pinion sleeve spring.	Adjust Replace
Engine does not start even when the pinion engages with the ring gear and the starter rotates.	- Malfunction of overrun clutch	Replace
Starter does not stop even when starter switch is turned off.	- Short-circuit inside switch - Contractor drops and is always connected.	Replace switch Replace

19-2-2 Alternator system

Failure	Cause	Remedy
Cannot be charged.	- Cords between terminals are disconnected or connectors are in loose connection. - Improper earth connection - Brush and slip ring do not contact. - Coil is disconnected or burnt. - Diode is damaged.	Reconnect cord-tighten connections. Make good earth connections. Connect or replace Replace Replace
Insufficient charge	- Loose connection of cords between each terminal - Fan belt slips. - Improper contact or insufficient movement of brush and slip ring - Short-circuit of coil - Defective diode	Tighten connections. Adjust. Clean slip ring and brush holder. Replace Replace
Overcharge	- Defective alternator	Replace
Noise	- Wrong installation - Defective fan belt - Defective bearing	Connect. Replace. Replace.
Fuse melts.	- Diodes on (+) and (-) sides broke down. - Capacitor broke down. - Alternator internal short-circuited	Replace.



Hanix Europe Limited

Unit B Alliance Ind Estate
Windmill Lane, Denton
Manchester, M34 3SP
United Kingdom

Tel: +44 (0)161 335 2330

Fax: +44 (0) 161 335 2349

Email: sales@hanixeurope.com

Website: www.hanixeurope.com

HANIX
Mini Excavators

H09D



Parts Catalogue

How to Use Parts Manual

1. This parts manual covers all components for products in each part.
It also covers the attachment parts etc. in addition to the standard equipment parts.
2. Please inform part center about the following items when ordering supplementary parts etc. There is a possibility that it may take time for supplying the parts if the details of the order is not clear enough.

a) Part number and part name
b) Required quantity
c) Serial number of the machine (Ser. No.)
d) Engine number and hour on service meter
 <Notes> In case that there is an existence of a substitute part number for the ordered part number, there may be a possibility where parts are supplied with substitute part number.
3. To read the parts manual

a) Explanation is stated by group in this parts manual and is indicated on the illustration page and on the list page. The parts for the group are shown by a diagram and marked with Key No. on the illustration page.

<Notes> The illustration may differ from the actual machine in some occations as it is shown in the simplified form.
The part number and part name for the Key No. shown on the illustration page are also shown on the list page.
For the parts kit etc., sub-numbers are added to the Key No..

b) The parts are fundamentally shown in essential numbers for a unit of machine, however, the quantity of the composition is shown for the components and for the group.
As to the part with the statement of AR (AS REQUIRED), the quantity need to be determined by adjusting it to the actual machine.

c) Marks appearing in the column of interchangeability (I.C.) are as follows:
A...New parts can take place of old parts, but no vice-versa.
B...No interchangeability between new and old parts.
C...Discontinued
D...Newly added parts
E...Both new and old parts applicable
Q...Quantity altered

d) In the column of Applicable Ser. No. are shown the machine serial numbers for which the parts in the same column are used. If the column is blank, the machine serial numbers shown on the cover can be used.

e) Standards and dimensions of parts are shown in the column of Remarks. As a rule, the dimensions are in millimeters, however, the unit of mm has been omitted.

f) As to the parts marked with * in the column of Part No., they are not supplied as supplementary parts since there is a possibility that they may have effect on specific characteristic, function, etc. of the products. The illustration is shown for the better understanding of the parts.

g) Description of the abbreviations are as follows.

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
1ST	FIRST	CNT	CONTROL	MIN	MINIMUM
2ND	SECOND	CTRL		PTO	POWER TAKE-OFF
3RD	THIRD	E	EMERGENCY	Q.ty	QUANTITY
4TH	FOURTH	E/G	ENGINE	R/A	RADIATOR
5TH	FIFTH	Gp	GROUP	R/W	REWORK
As	ASSEMBLY	HYD	HYDRAULIC	REV	REVERSE
ASSY		I.C.	INTER CHANGEABILITY	RH	RIGHT HAND
Ass'y				STD	STANDARD
Ar.	ARRANGEMENT	Inc.	INCLUDE	T/D	TURN DECK
AR	AS REQUIRED	LH	LEFT HAND	t=	THICKNESS
BKT	BRACKET	L=	LENGTH	UNDCRG	UNDER CARRIAGE
BUSH	BUSHING	MANIF	MANIFOLD	UNIV	UNIVERSAL
CYL	CYLINDER	MAX	MAXIMUM	w=	WIDTH

4. Please understand beforehand that there may be a possibility of the parts and the part numbers being changed without previous notice.
Due to continuous product improvements, the specification and the contents of this manual may change without prior notice. Please contact Hanix Europe Ltd for updated information.

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LINE Gp-TRAVEL & DOZER	5-15
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CONTROL Gp-TRAVEL	6-02
CONTROL Gp-EX	6-03
CONSOLE Gp-LH	6-04
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LABEL Gp	7-02
LABEL Gp-MODEL	7-03
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TANK Gp-HYD 1-04	COVER Gp-TANK 1-05	WIRING Gp 1-06
WIRING Gp-RELAY 1-07	KEY PLATE Gp 1-08	

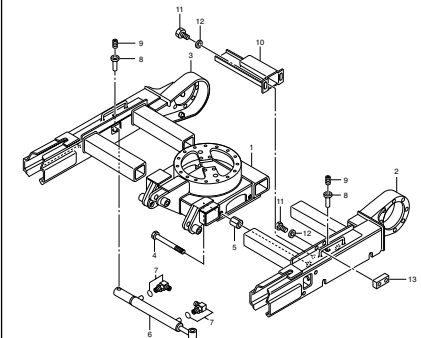
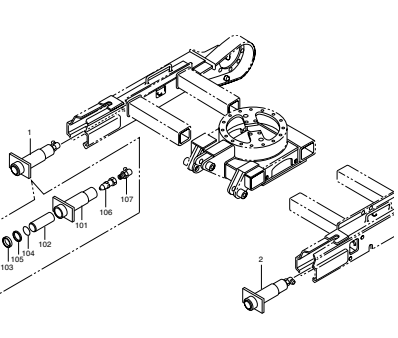
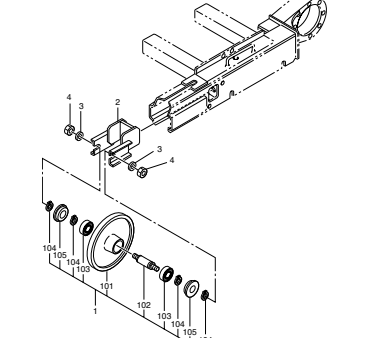
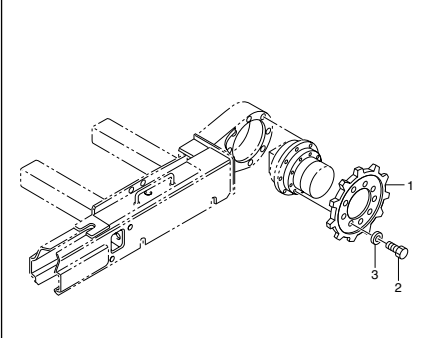
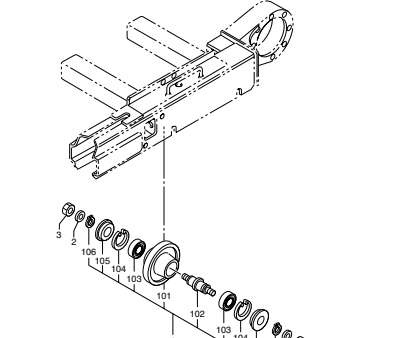
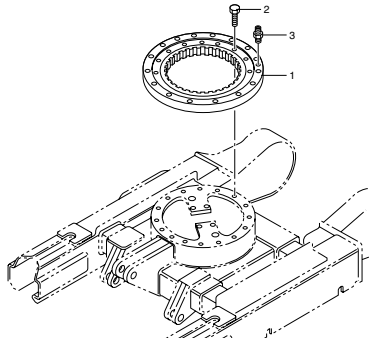
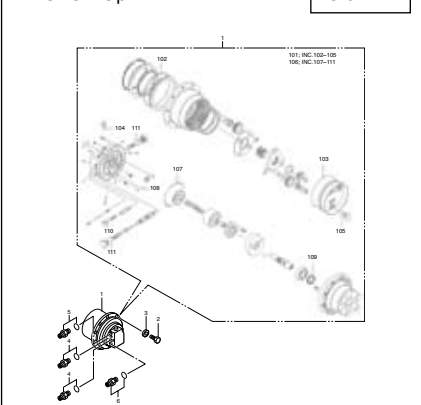
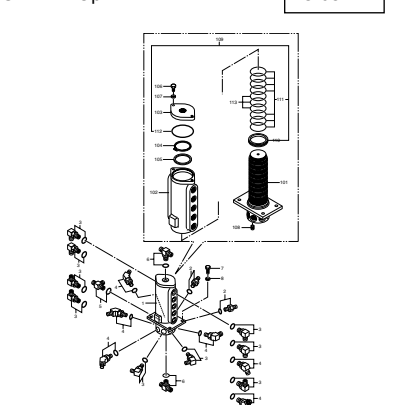
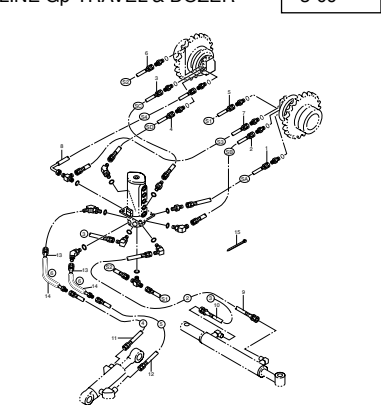
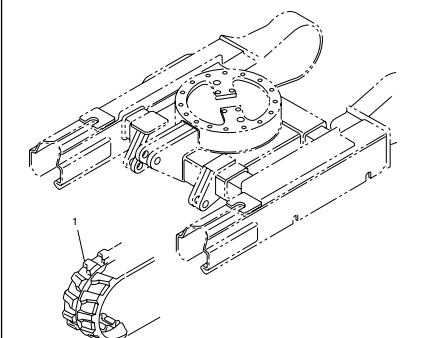
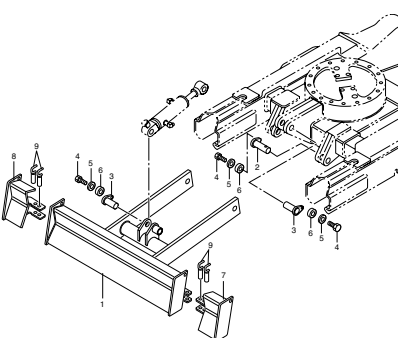
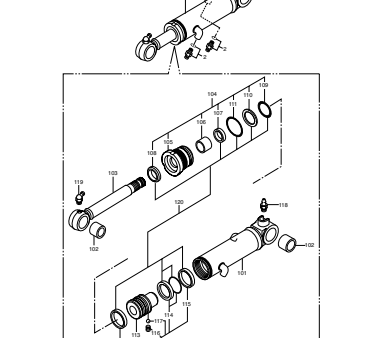
2. WORK Ar.(1)

ILLUSTRATION INDEX

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CYLINDER Gp-ARM 2-04	LINES Gp-WORK 2-05	LAMP Gp-BOOM 2-06
ARM Gp 2-07	LINKAGE Gp-BUCKET 2-08	CYLINDER Gp-BUCKET 2-09
BUCKET Gp 2-50	PIN Gp-BUCKET 2-51	

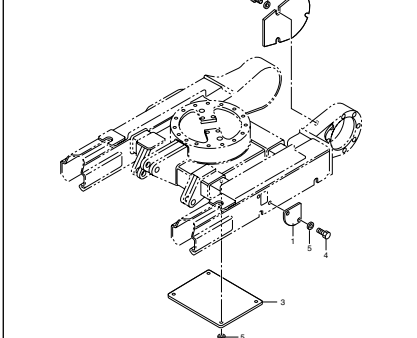
3. CHASSIS Ar.(1)

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FRAME Gp-UNDCRG 3-01 	ADJUSTER Gp 3-02 	IDLER Gp 3-03 
SPROCKET Gp 3-04 	TRACK Gp 3-05 	BEARING Gp-SWING 3-06 
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CRAWLER Gp-RUBBER 3-10 	DOZER Gp 3-11 	CYLINDER Gp-DOZER 3-12 

3. CHASSIS Ar.(2)

ILLUSTRATION INDEX

COVER Gp-UNDCRG 3-13 		

4. ENGINE & RADIATOR Ar.

ILLUSTRATION INDEX

ENGINE Gp	4-01	MOUNT Gp-ENGINE	4-02	RADIATOR Gp	4-03
CLEANER Gp-AIR	4-04	LINE Gp-FUEL	4-05		

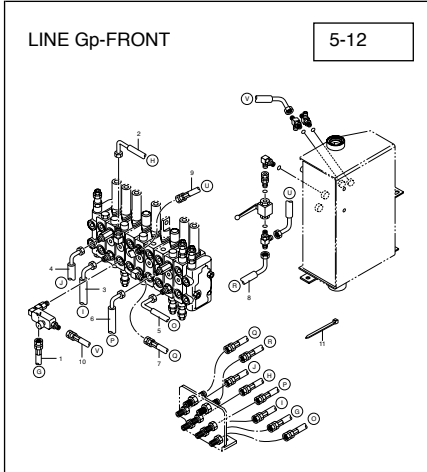
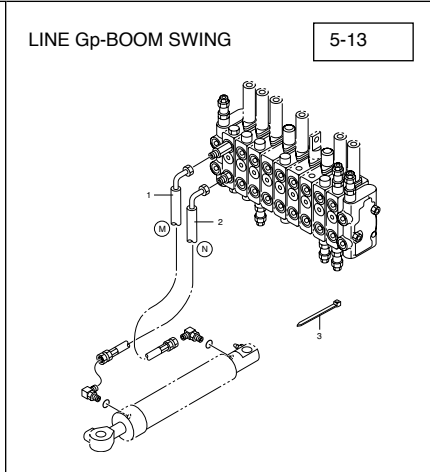
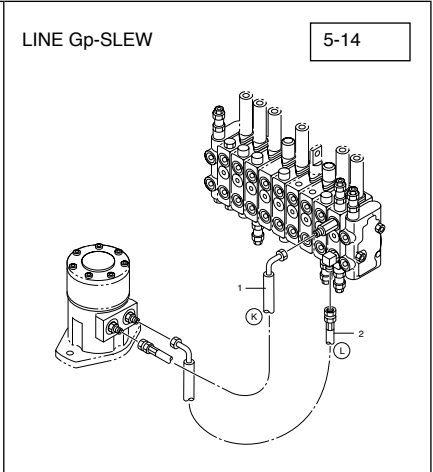
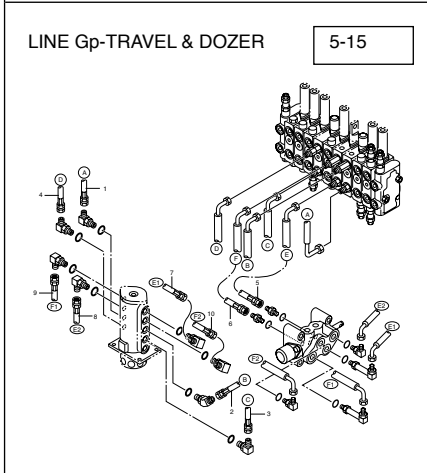
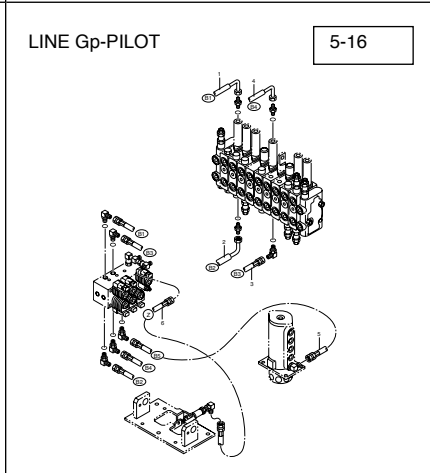
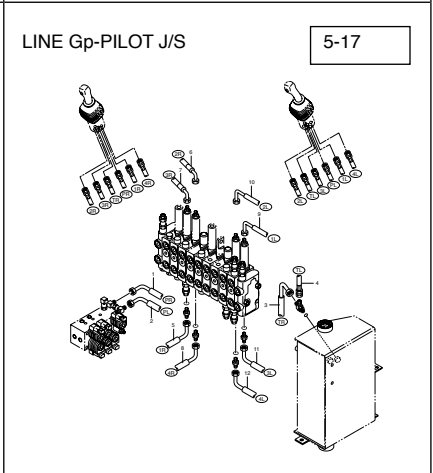
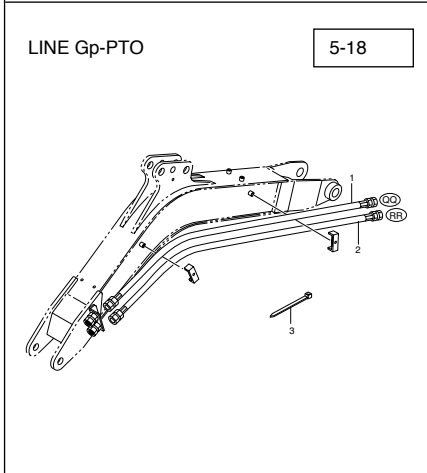
5. HYDRAULIC Ar.(1)

ILLUSTRATION INDEX

PUMP Gp	5-01	MOTOR Gp-SLEW	5-02	VALVE Gp-CONTROL	5-03-1
VALVE Gp-CONTROL	5-03-2	VALVE Gp-JOYSTICK L	5-04	VALVE Gp-JOYSTICK R	5-05
VALVE Gp-SOLENOID	5-06	VALVE Gp-SELECTOR	5-07	CYLINDER Gp-SWING	5-08
MANIFOLD Gp	5-09	LINE Gp-PUMP	5-10	LINE Gp-RETURN	5-11

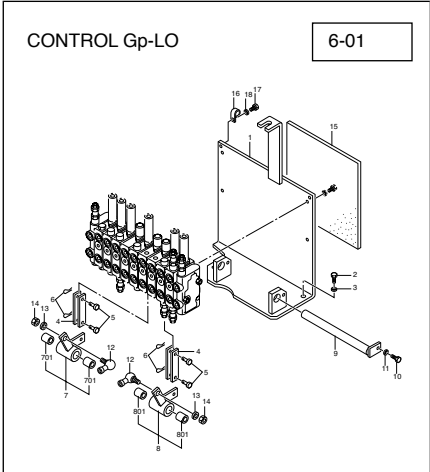
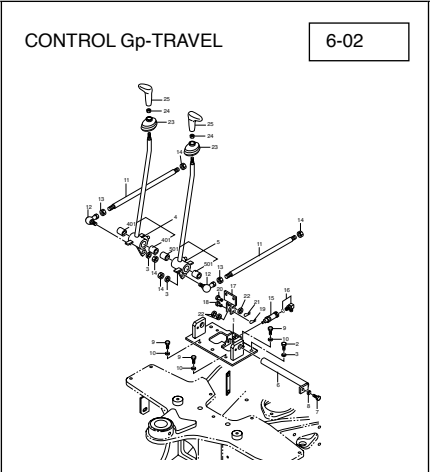
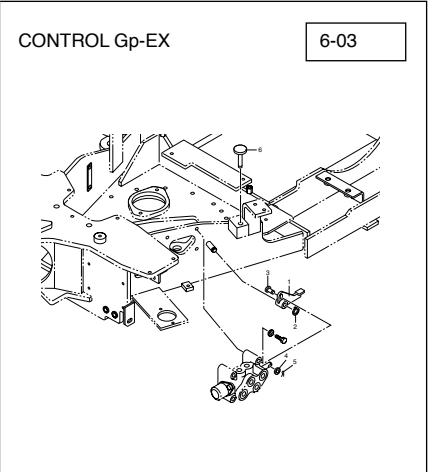
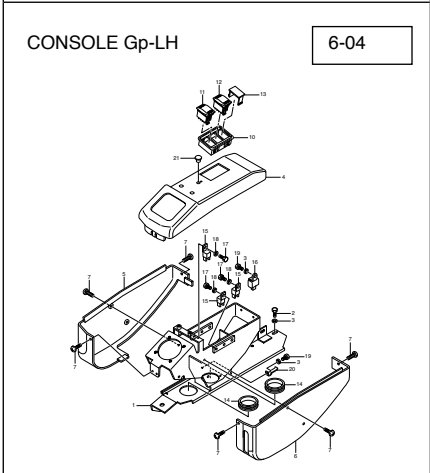
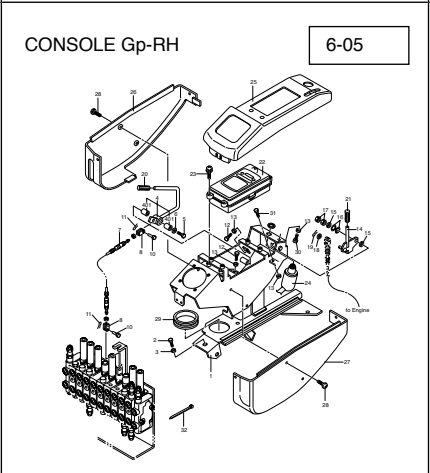
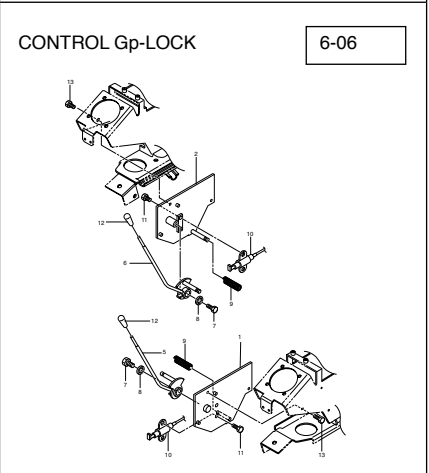
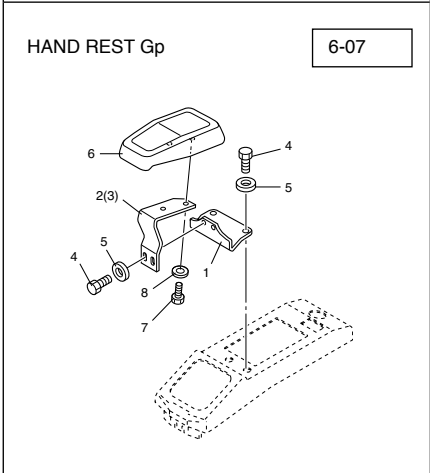
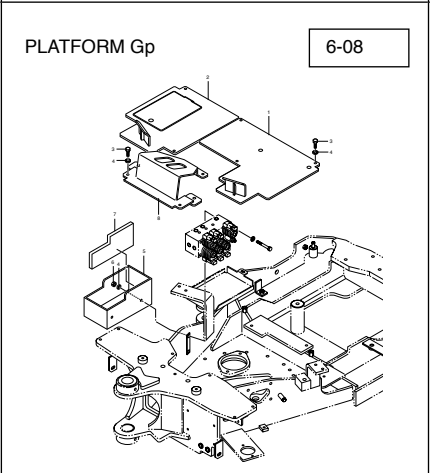
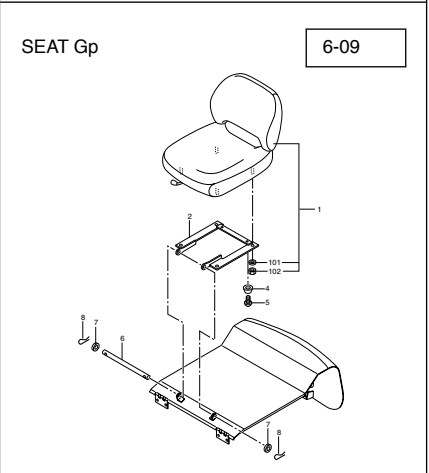
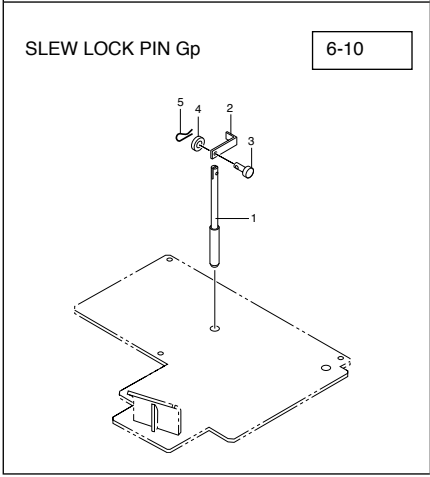
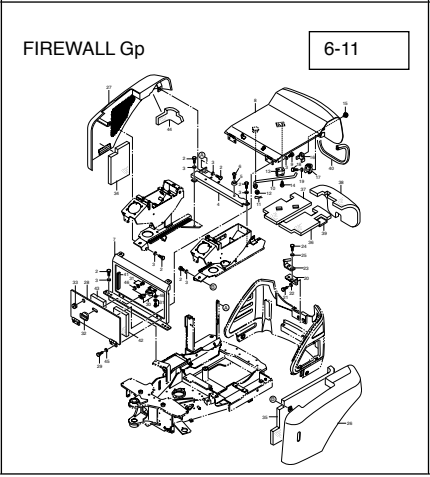
5. HYDRAULIC Ar.(2)

ILLUSTRATION INDEX

LINE Gp-FRONT5-12 	LINE Gp-BOOM SWING5-13 	LINE Gp-SLEW5-14 
LINE Gp-TRAVEL & DOZER5-15 	LINE Gp-PILOT5-16 	LINE Gp-PILOT J/S5-17 
LINE Gp-PTO5-18 		

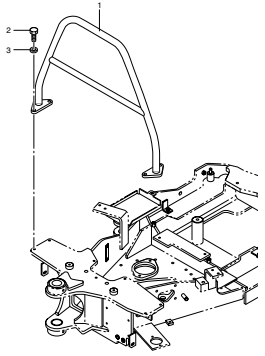
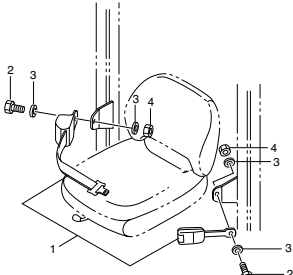
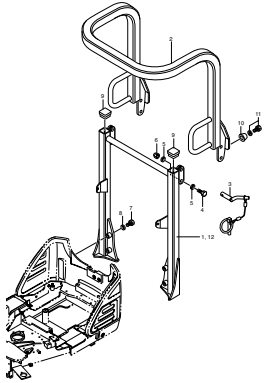
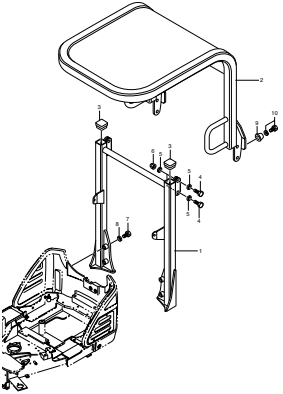
6. OPERATOR Ar.(1)

ILLUSTRATION INDEX

CONTROL Gp-LO6-01 	CONTROL Gp-TRAVEL6-02 	CONTROL Gp-EX6-03 
CONSOLE Gp-LH6-04 	CONSOLE Gp-RH6-05 	CONTROL Gp-LOCK6-06 
HAND REST Gp6-07 	PLATFORM Gp6-08 	SEAT Gp6-09 
SLEW LOCK PIN Gp6-10 	FIREWALL Gp6-11 	MAT Gp6-12 

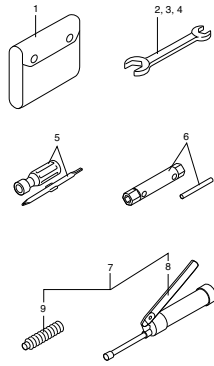
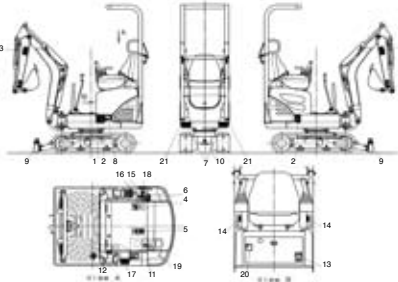
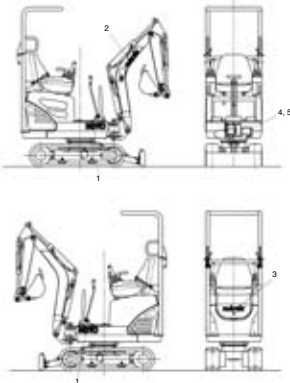
6. OPERATOR Ar.(2)

ILLUSTRATION INDEX

HAND RAIL Gp 6-13 	BELT Gp-SEAT 6-51 	ROLL BAR 6-52 
CANOPY 6-53 		

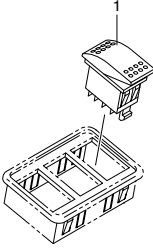
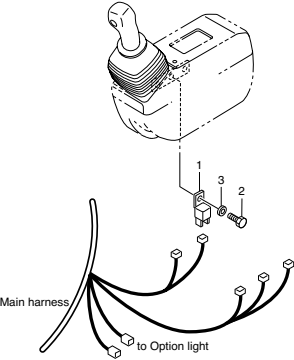
7. MISCELLANEOUS Ar.

ILLUSTRATION INDEX

TOOL Gp 7-01 	LABEL Gp 7-02 	LABEL Gp-MODEL 7-03 
LABEL Gp-ROLL BAR 7-04 	LABEL Gp-CANOPY 7-05 	

9. ATTACHMENT Ar.

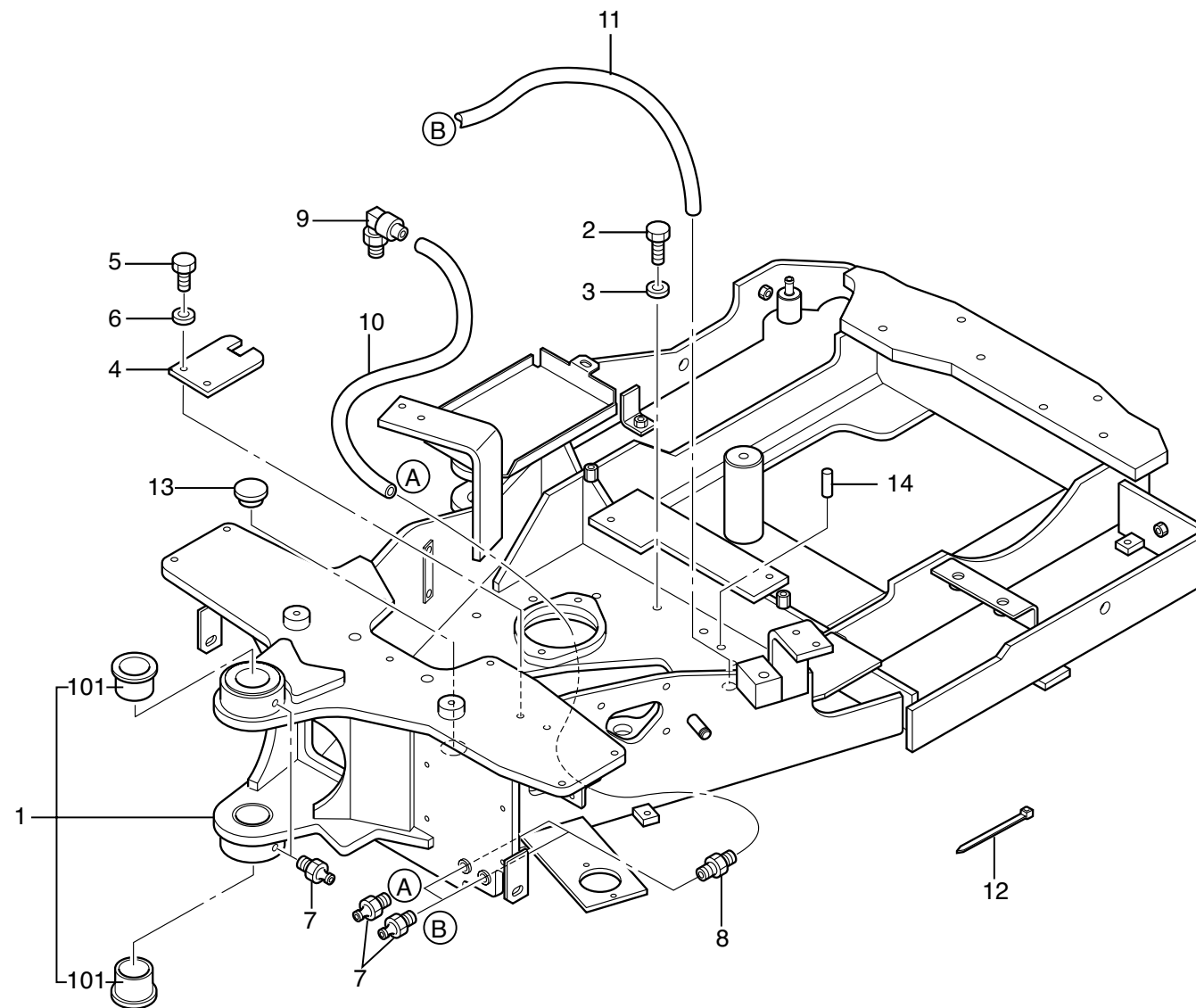
ILLUSTRATION INDEX

SW Gp-SIGNAL 9-01 	OPTION LIGHT HARNESS Gp 9-02 	

SWING Ar.

FRAME Gp-SWING
S011-00245

1-01



FRAME Gp-SWING
S011-00245

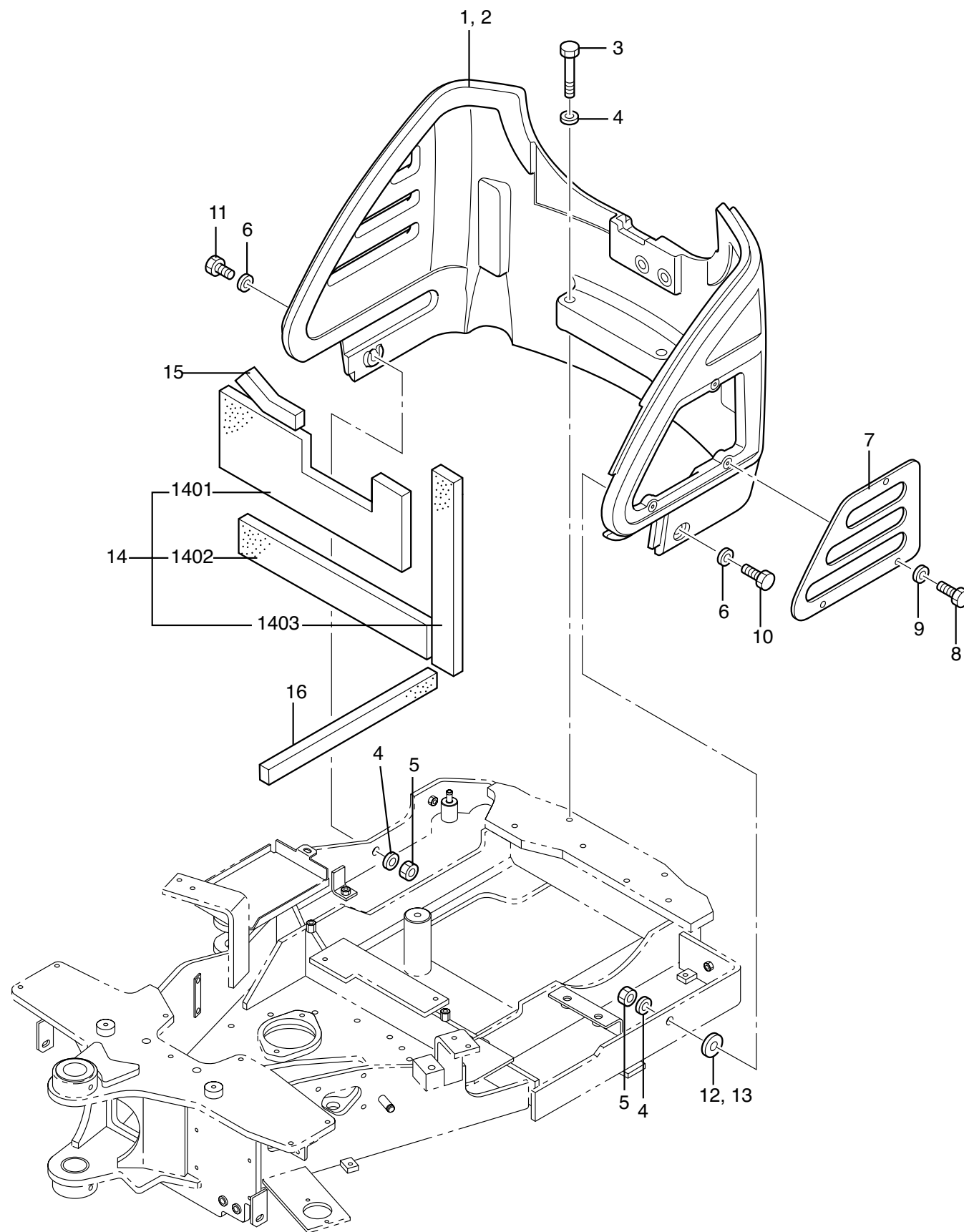
SER No,
H0900051~9999

1-01

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WEIGHT Gp
S011-00249

1-02



WEIGHT Gp
S011-00249

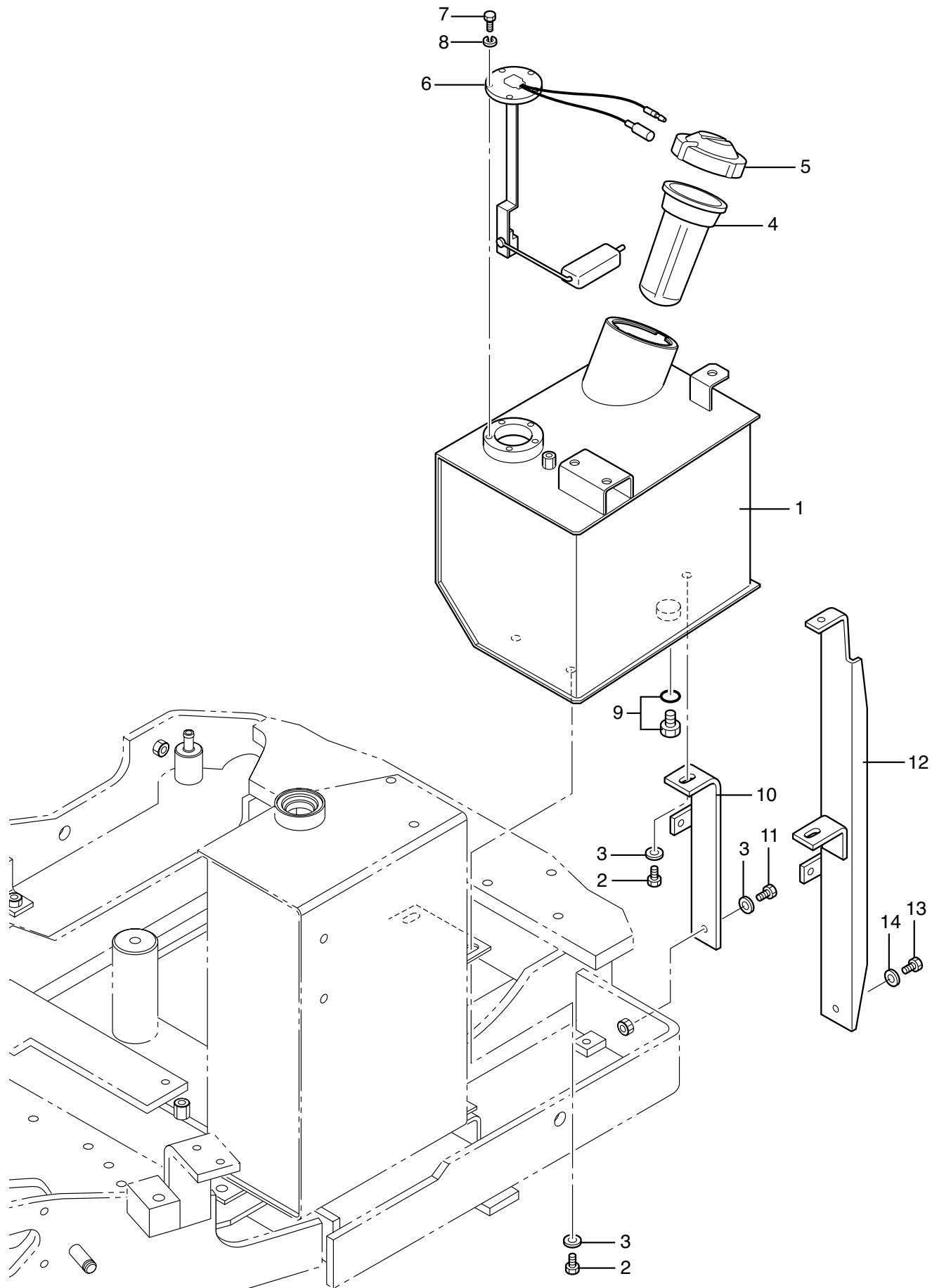
SER No,
H0900051~9999

1-02

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S012-00887	B	COUNTER WEIGHT	1	H0900051~0055 H0900056~	
2	S012-01126		COUNTER WEIGHT	1		
3	0103-12075-a		BOLT	2		
4	0387-12000-a		WASHER	4		
5	0251-12000-a		NUT	2		
6	0389-12000-a		WASHER	2		
7	S012-00979		COVER	1		
8	0102-06016-a		BOLT	3		
9	0389-06000-a		WASHER	3		
10	0103-12050-a		BOLT	1		
11	0103-12045-a		BOLT	1		
12	NPS4-20015		SPACER	AR		
13	NPS4-20016		SPACER	AR		
14	S012-01143		URETHAN FOAMS	1		
14 01	S013-01884		URETHAN FOAM	1		
14 02	S013-01885		URETHAN FOAM	1		
14 03	S013-01886		URETHAN FOAM	1		
15	0815-20015-0		SPONGE	1		
16	0815-20030-0		SPONGE	1		

TANK Gp-FUEL
S011-00246

1-03



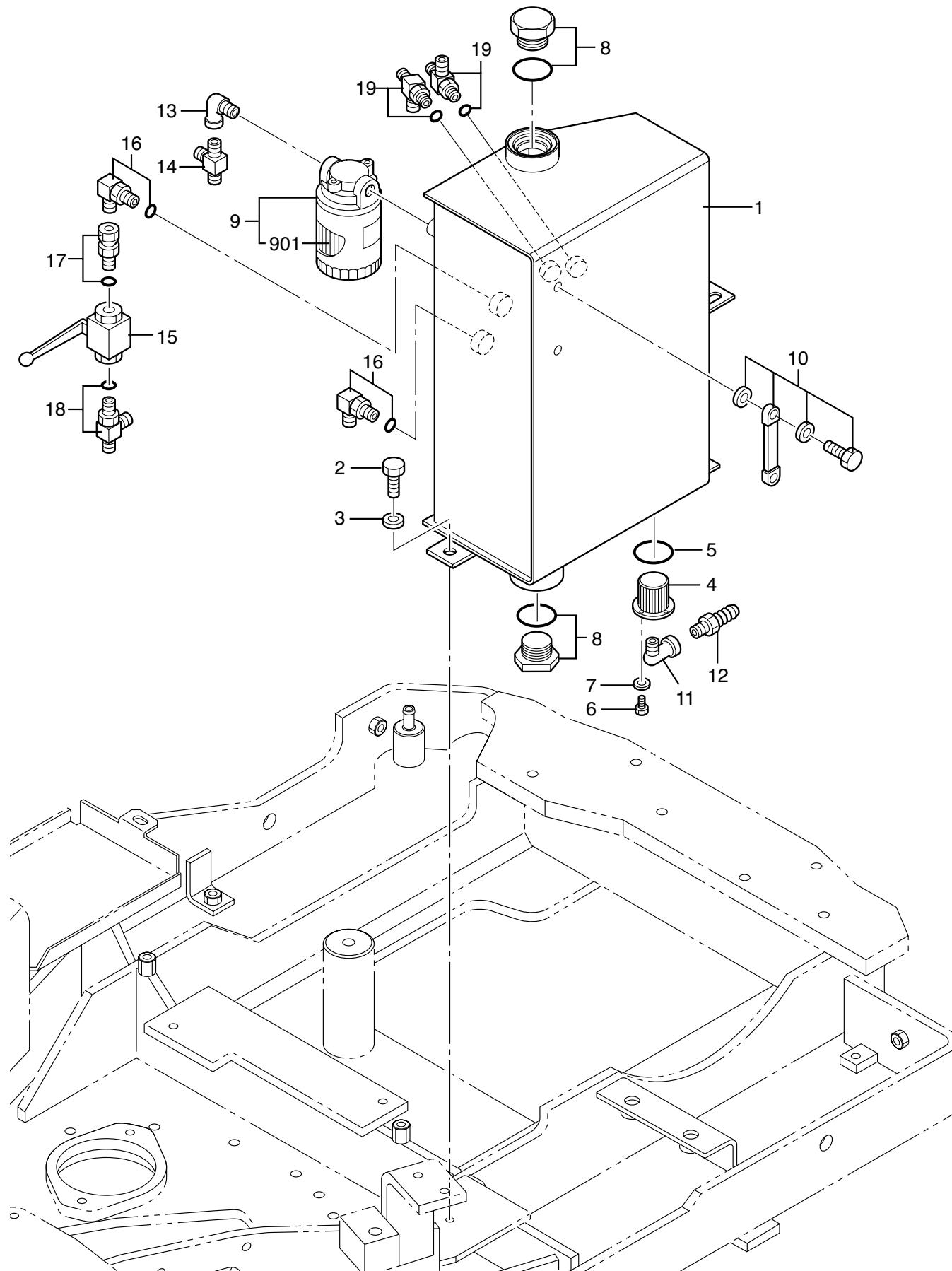
TANK Gp-FUEL
S011-00246

SER No,
H0900051~9999

1-03

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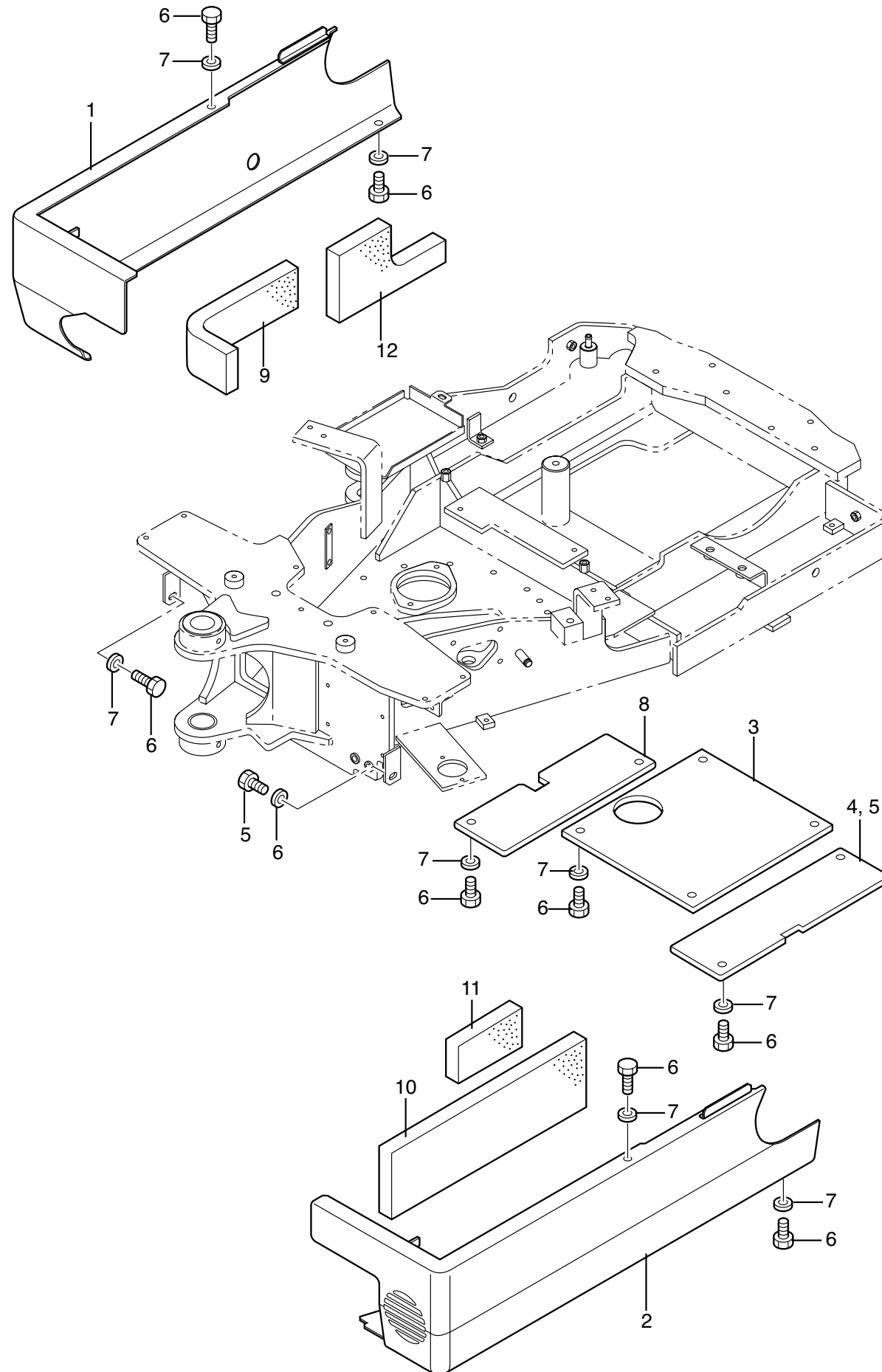
SER No,
H0900051~9999



Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S012-00881		HYD TANK	1		
2	0103-10025-a		BOLT	3		
3	0389-10000-a		WASHER	3		
4	NTS2-22001		STRAINER, SUCTION	1		
5	0491-00070-b		O-RING	1		
6	0102-08025-a		BOLT	4		
7	0389-08000-a		WASHER	4		
8	30554-61024		PLUG	2		
9	12514-1003		FILTER, SPIN	1		
9, 01	12514-1102		CARTRIDGE	1		
10	41301-01240		GAUGE, LEVEL	1		
11	0569-16012-L		ELBOW	1		
12	0620-16025-B		HOSE NIPPLE	1		
13	0569-06006-H		ELBOW	1		
14	0594-06006-H		TEE	1		
15	S052-01071		BALL VALVE	1		
16	0602-06006-X		ELBOW	2		
17	0648-06006-Y		SWIVEL CONNECTOR	1		
18	0576-06006-X		TEE	1		
19	0576-04004-X		TEE	2		

COVER Gp
S011-00250

1-05



COVER Gp
S011-00250

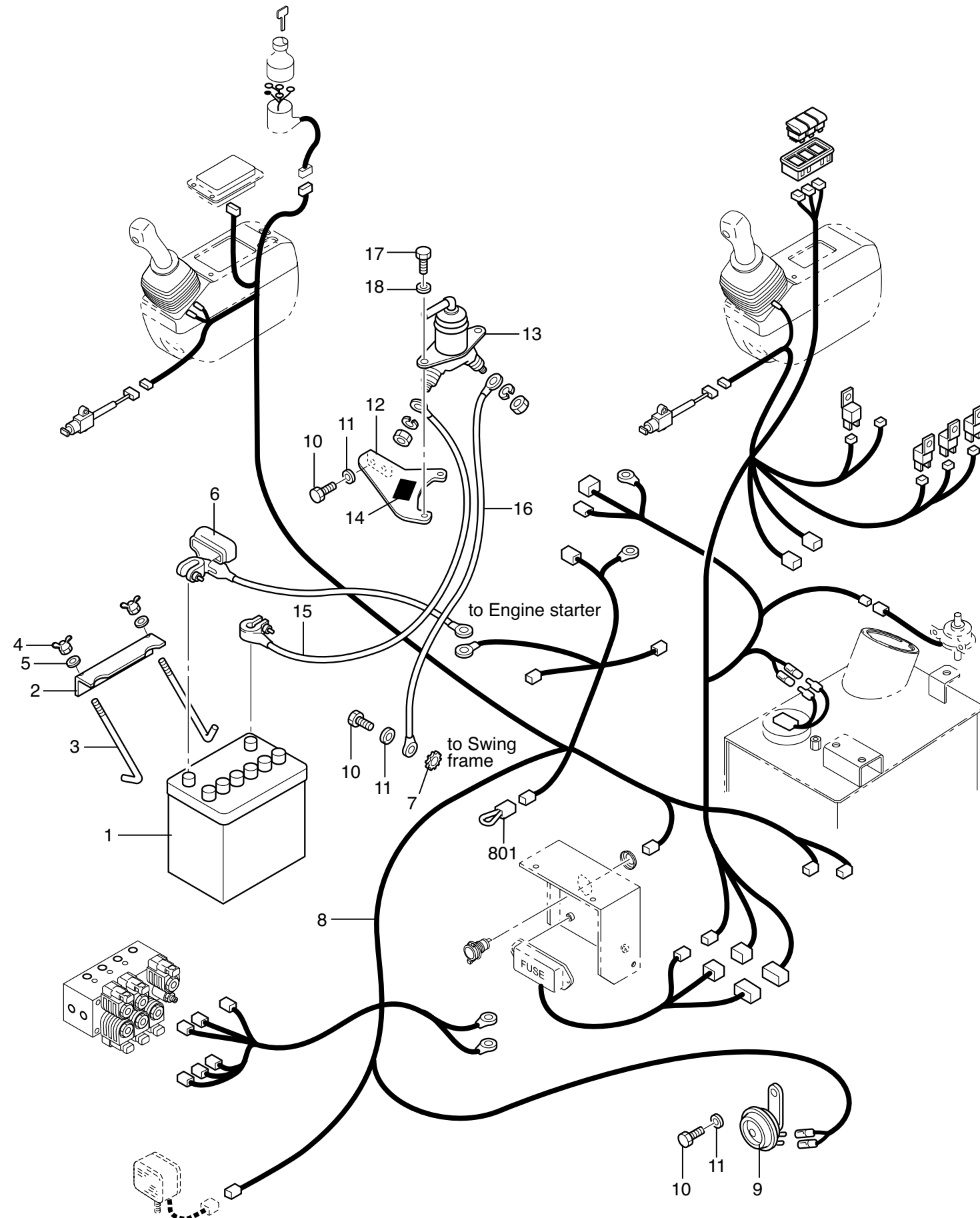
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1-05

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WIRING Gp
S011-00251

1-06



WIRING Gp
S011-00251

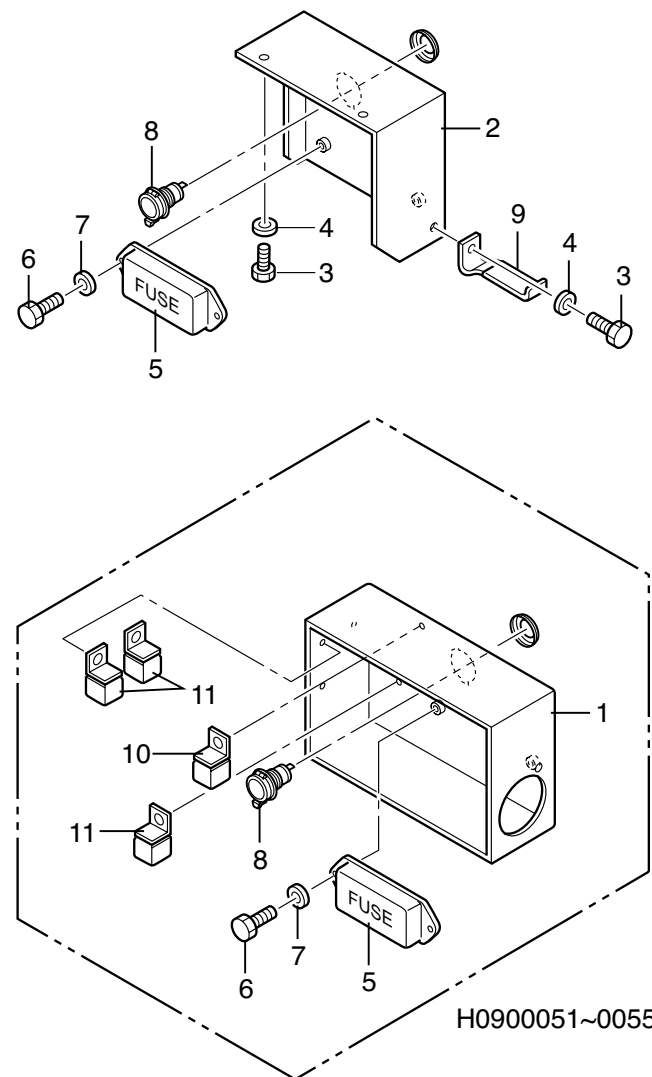
SER No,
H0900051~9999

1-06

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	NTS2-71000-1		BATTERY	1		
2	S012-01114		PLATE	1		
3	NTS2-30010		BOLT, HOOK	2		
4	0276-06000-a		NUT, WING	2		
5	0387-06000-a		WASHER	2		
6	S012-00895		BATTERY (+) CABLE	1		
7	0388-08000-a		TOOTHED WASHER	1		
8	S012-00894		MAIN HARNESS	1		
8, 01	7323-3525-50		LINK, FUSIBLE	1		45A
9	S012-00334		HORN	1		
10	0102-08016-a		BOLT	4		
11	0389-08000-a		WASHER	4		
12	S012-01097		PLATE	1		
13	SP44-00001		CUT SWITCH	1		
14	NHS8-00009		LABEL	1		
15	S012-00460		BATTERY (-) CABLE	1		
16	S012-01076		EARTH CABLE	1		
17	0102-06012-a		BOLT	2		
18	0389-06000-a		WASHER	2		

WIRING Gp-RELAY
S011-00252

1-07



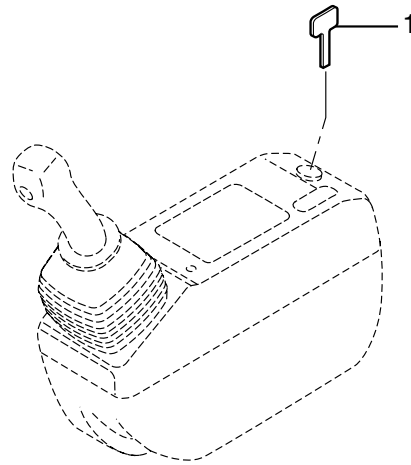
WIRING Gp-RELAY
S011-00252

SER No,
H0900051~9999

1-07

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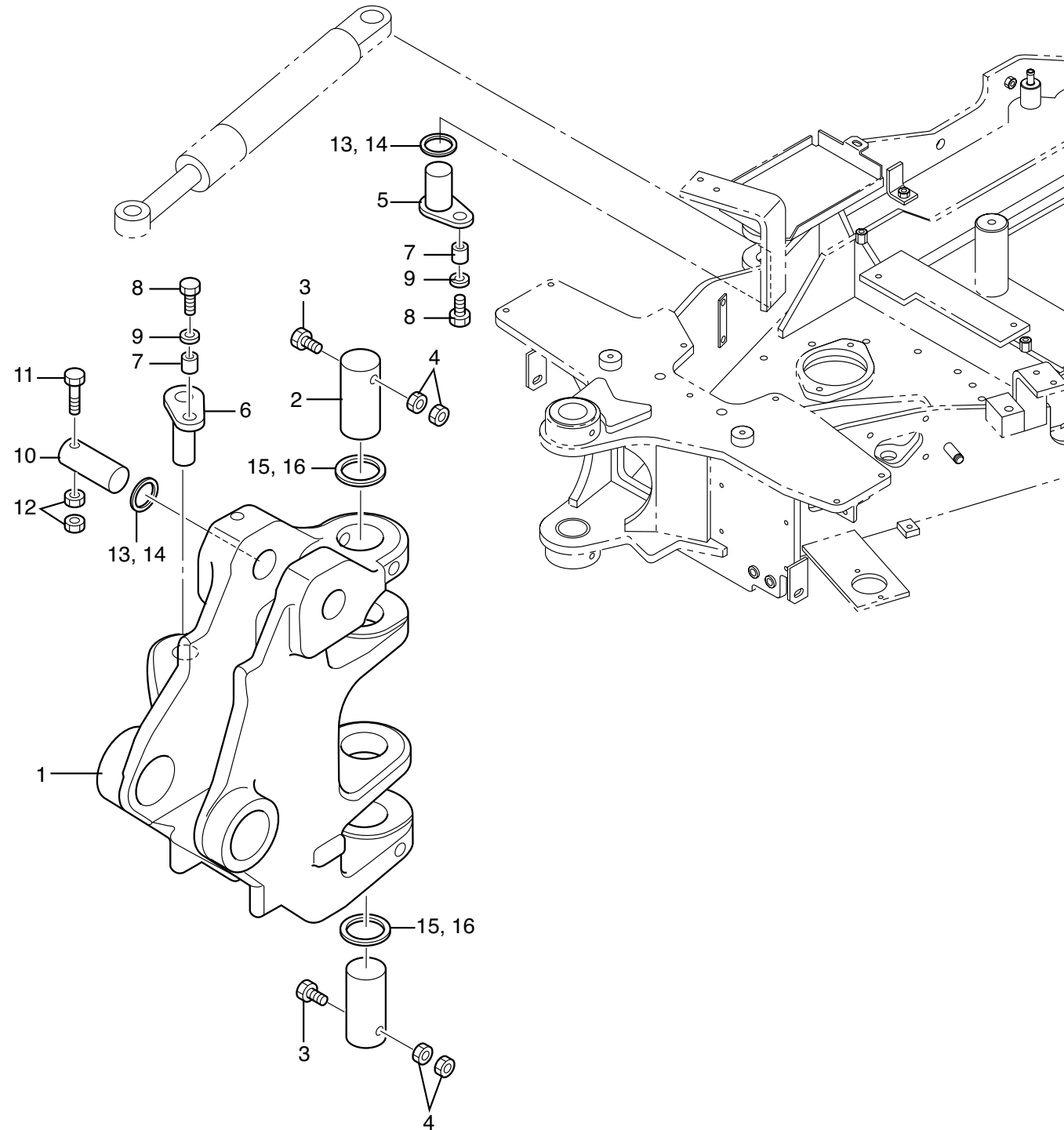
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[illegible]

WORK Ar.

POST Gp-SWING
S021-00198

2-01



POST Gp-SWING
S021-00198

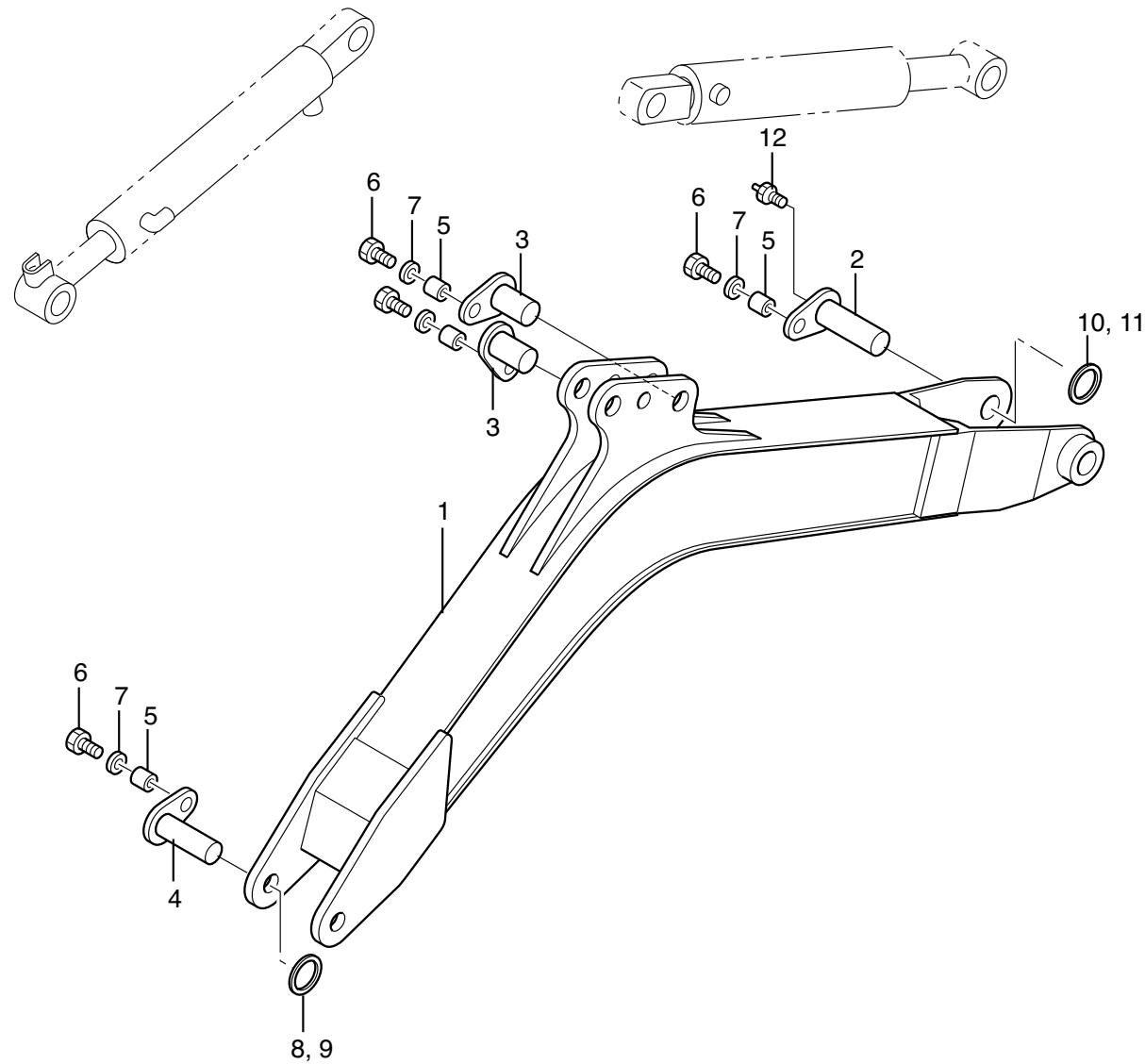
SER No,
H0900051~9999

2-01

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S022-00362		SWING POST	1		
1	S022-00298		BUSH	2		
2	S022-00288		PIN	2		
3	0103-10090-a		BOLT	2		
4	0251-10000-a		NUT	4		
5	NTS1-00600		PIN	1		
6	NTS3-01400		PIN	1		
7	NTS1-00045		COLLAR	2		
8	0102-08020-a		BOLT	2		
9	0387-08000-a		WASHER	2		
10	S022-00289		PIN	1		
11	0102-08085-a		BOLT	1		
12	0251-08000-a		NUT	2		
13	NTS3-00022		SIM	AR		ø27-t1.0
14	NTS3-00023		SIM	AR		ø27-t0.5
15	MBU3-00020		SIM	AR		ø36-t0.5
16	MBU3-00021		SIM	AR		ø36-t1.0

BOOM Gp
S021-00200

2-02



BOOM Gp
S021-00200

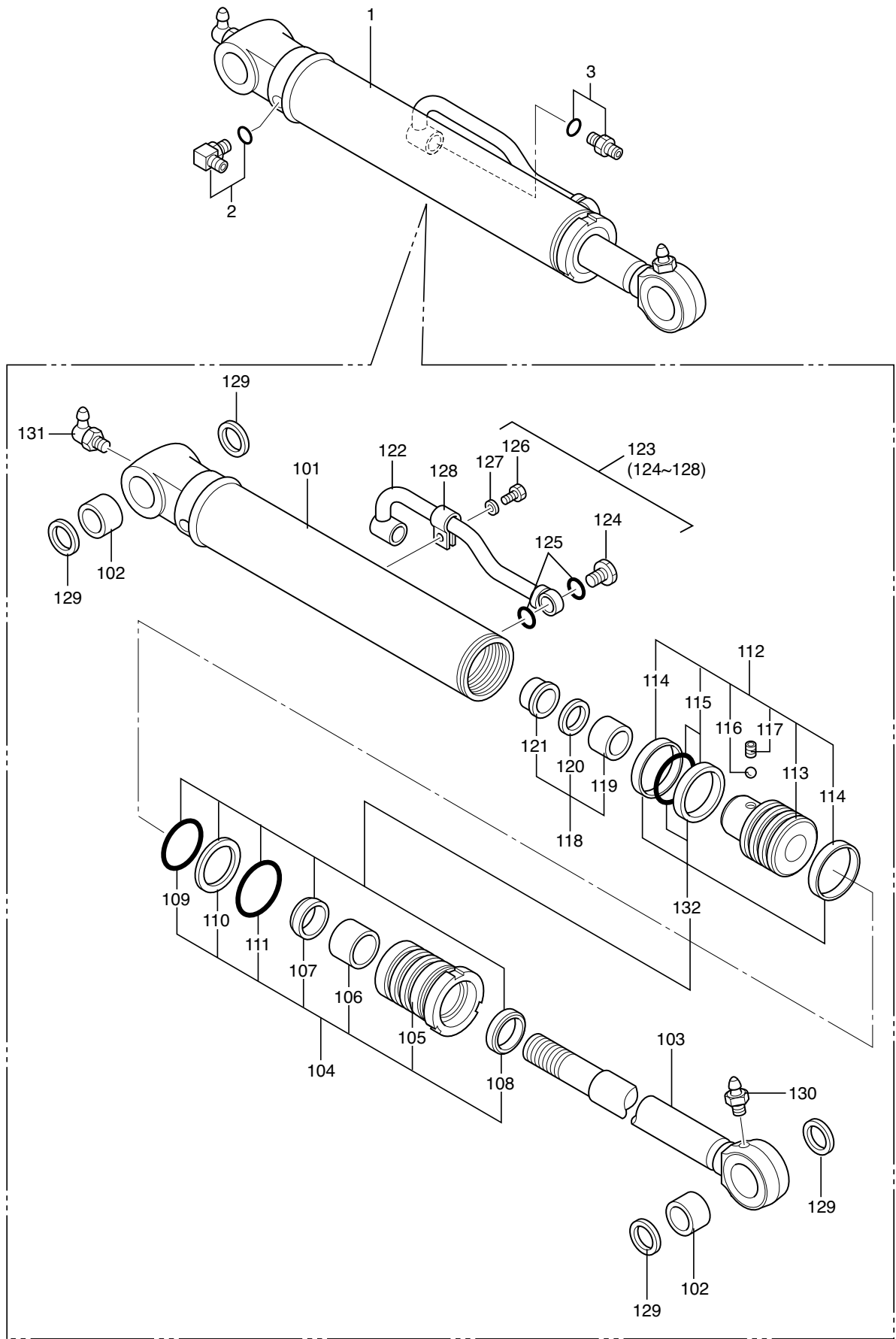
SER No,
H0900051~9999

2-02

[illegible]

CYLINDER Gp-BOOM
S051-00624

2-03



CYLINDER Gp-BOOM
S051-00624

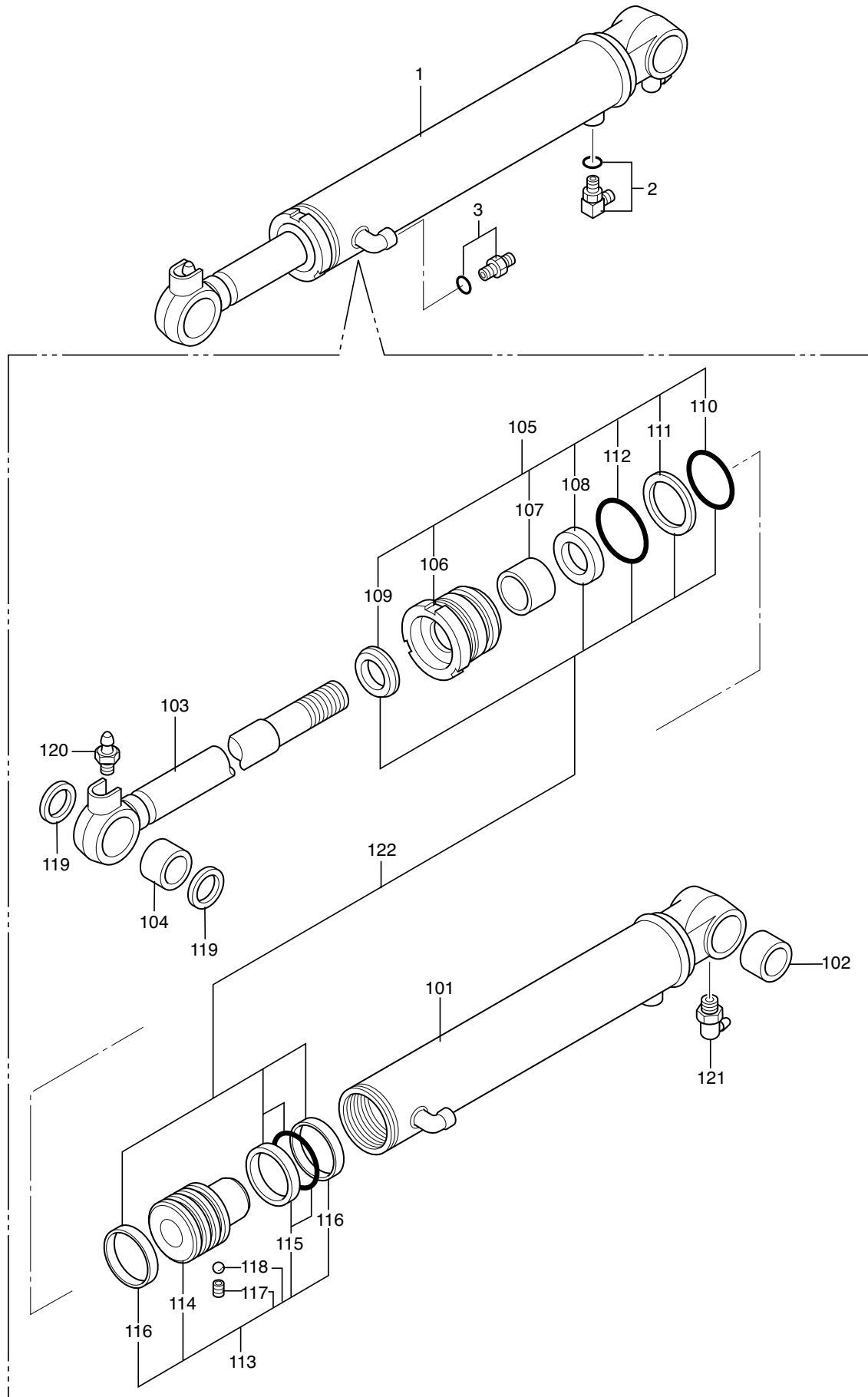
2-03

SER No,
H0900051~9999

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S052-01005		BOOM CYLINDER	1		60650-45700
1 01	S054-01215		CYLINDER TUBE ASSY	1		
1 02	S054-01218		BUSH	2		
1 03	S054-01216		PISTON ROD ASSY	1		
1 04	S054-01217		CYLINDER HEAD ASSY	1		
1 05	S054-00721		CYLINDER HEAD	1		
1 06	S054-01219		BUSH	1		
1 07	S052-00729		U-RING	1		
1 08	S054-00723		RING,WIPER	1		
1 09	S054-00724		O-RING	1		
1 10	S054-00725		RING,BACKUP	1		
1 11	S054-00726		O-RING	1		
1 12	S054-01220		PISTON ASSY	1		
1 13	S054-01221		PISTON	1		
1 14	S054-01222		RING,SLIDE	2		
1 15	S054-00729		SEAL RING ASSY	1		
1 16	S052-00706		BALL,STEEL	1		
1 17	S052-00732		SCREW,SET	1		
1 18	S054-01223		CUSHION ASSY	1		
1 19	S054-01224		CUSHION BEARING	1		
1 20	S054-01225		WASHER	1		
1 21	S054-01226		BOLT,FLANGE HEAD	1		
1 22	S054-01227		PIPE	1		
1 23	S054-01228		PLUG ASSY	1		
1 24	S054-01229		PLUG	1		
1 25	S054-01230		O-RING	2		
1 26	S054-00176		BOLT	1		
1 27	S054-01231		WASHER	1		
1 28	S054-01232		HOLDER	1		
1 29	S054-01233		SEAL,DUST	4		
1 30	0540-02000-F		NIPPLE,GREASE	1		
1 31	0542-02000-F		NIPPLE,GREASE 90°	1		
1 32	S054-01234		SEAL KIT	1		60639-26101
2	0602-04004-X		ELBOW MALE 90°	1		
3	0600-04004-X		CONNECTOR MALE	1		

CYLINDER Gp-ARM
S051-00625

2-04



CYLINDER Gp-ARM
S051-00625

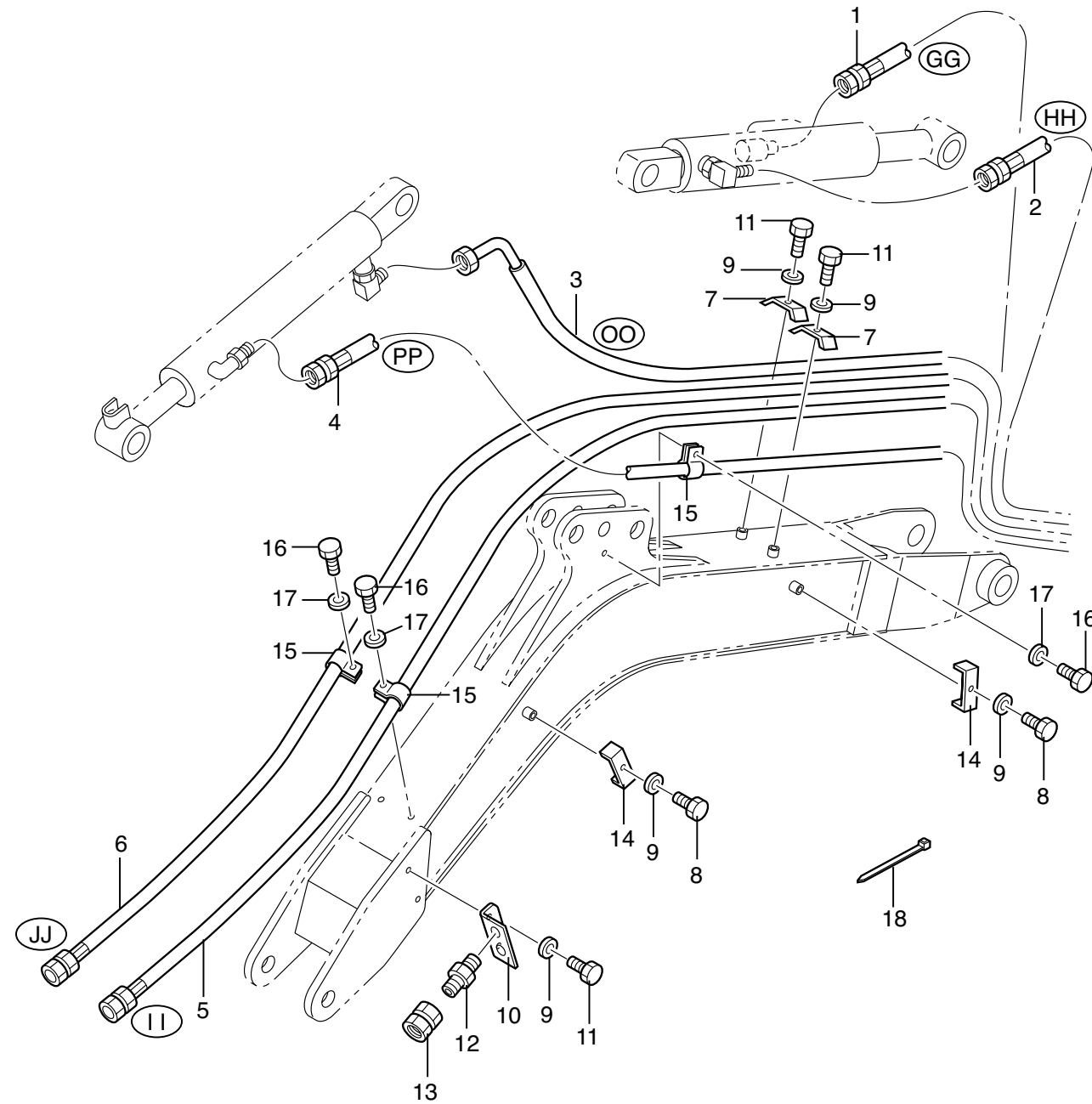
SER No,
H0900051~9999

2-04

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S052-01006		ARM CYLINDER	1		60650-45800
1, 01	S054-01235		CYLINDER TUBE ASSY	1		
1, 02	S054-01238		BUSH	1		
1, 03	S054-01236		PISTON ROD ASSY	1		
1, 04	S054-01218		BUSH	1		
1, 05	S054-01237		CYLINDER HEAD ASSY	1		
1, 06	S054-01239		CYLINDER HEAD	1		
1, 07	S054-01240		BUSH	1		
1, 08	S054-01241		U-RING	1		
1, 09	S054-00723		RING,WIPER	1		
1, 10	S052-00698		O-RING	1		
1, 11	S054-01242		RING,BACKUP	1		
1, 12	S054-00771		O-RING	1		
1, 13	S054-01243		PISTON ASSY	1		
1, 14	S054-01244		PISTON	1		
1, 15	S054-00729		SEAL RING ASSY	1		
1, 16	S054-01245		WERING	2		
1, 17	S052-00732		SCREW,SET	1		
1, 18	S052-00706		BALL,STEEL	1		
1, 19	S054-01233		SEAL,DUST	2		
1, 20	0540-02000-F		NIPPLE,GREASE	1		60659-45801
1, 21	0542-02000-F		NIPPLE,GREASE 90°	1		
1, 22	S054-01246		SEAL KIT	1		
2	0602-04004-X		ELBOW MALE 90°	1		
3	0600-04004-X		CONNECTOR MALE	1		

LINES Gp-WORK
S051-00750

2-05



LINES Gp-WORK
 S051-00750

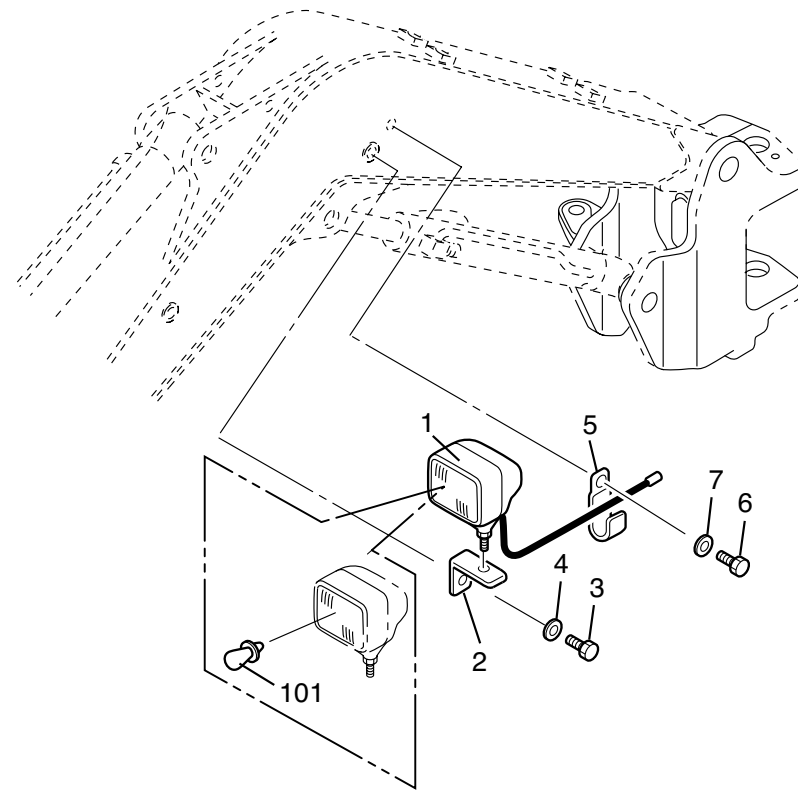
SER No,
H0900051~9999

2-05

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S052-51022		HOSE(GG)	1		
2	S052-50895		HOSE(HH)	1		
3	S052-51023		HOSE(OO)	1		
4	S052-50897		HOSE(PP)	1		
5	S052-51020		HOSE(II)	1		
6	S052-51021		HOSE(JJ)	1		
7	S052-01038		PLATE	2		
8	0102-08020-a		BOLT	2		
9	0389-08000-a		WASHER	6		
10	NTS5-10018		BRACKET	1		
11	0102-08016-a		BOLT	4		
12	0572-06006-0		CONNECTOR	2		
13	0549-06000-X		PLUG	2		
14	NTS5-10017		CLUMP	2		
15	0920-00115-0		CLIP	3		
16	0102-06016-a		BOLT	3		
17	0389-06000-a		WASHER	3		
18	0805-48301-B		BAND NYLON	2		

LAMP Gp-BOOM
S021-00058

2-06



LAMP Gp-BOOM
S021-00058

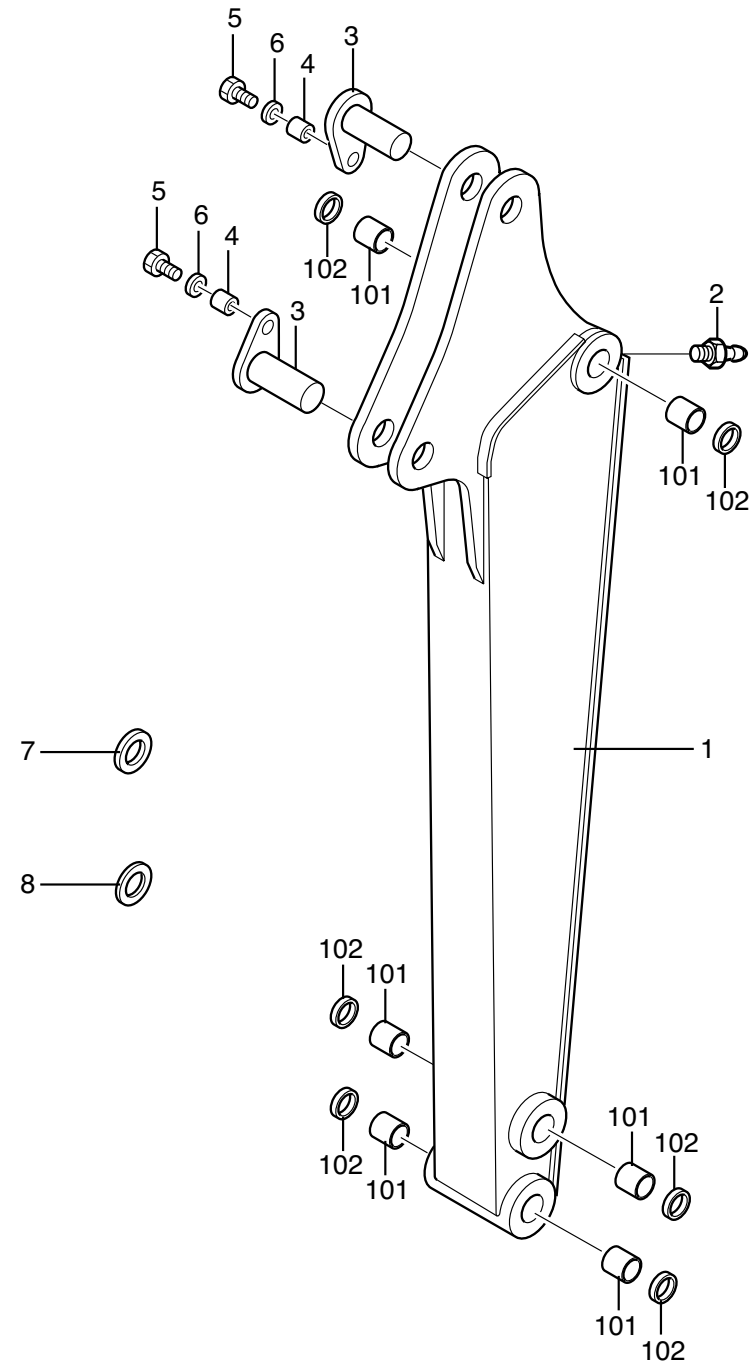
SER No,
H0900051~9999

2-06

[illegible]

ARM Gp
S021-00202

2-07



ARM Gp
S021-00202

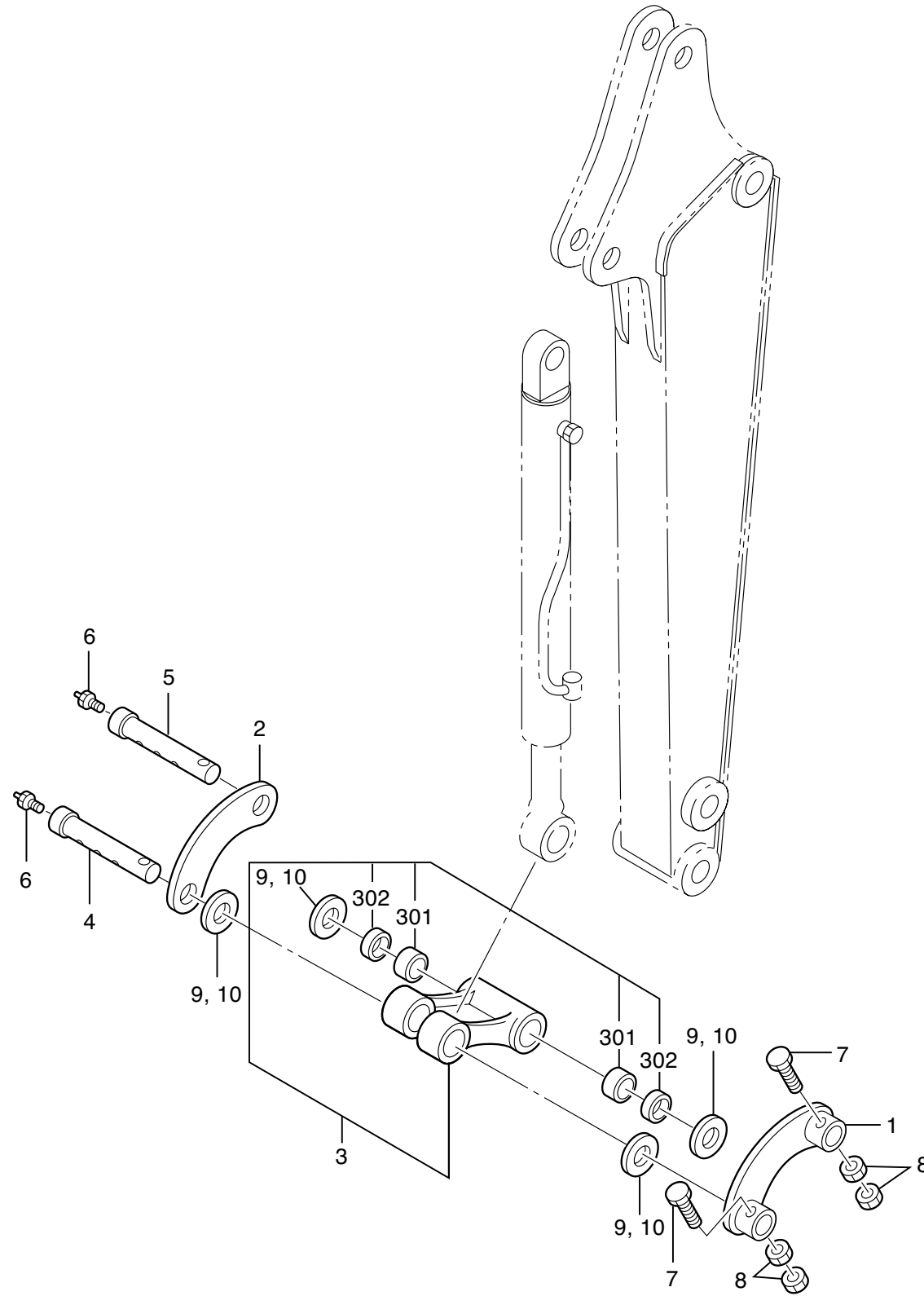
SER No,
H0900051~9999

2-07

[illegible]

LINKAGE Gp-BUCKET
S021-00076

2-08



LINKAGE Gp-BUCKET
S021-00076

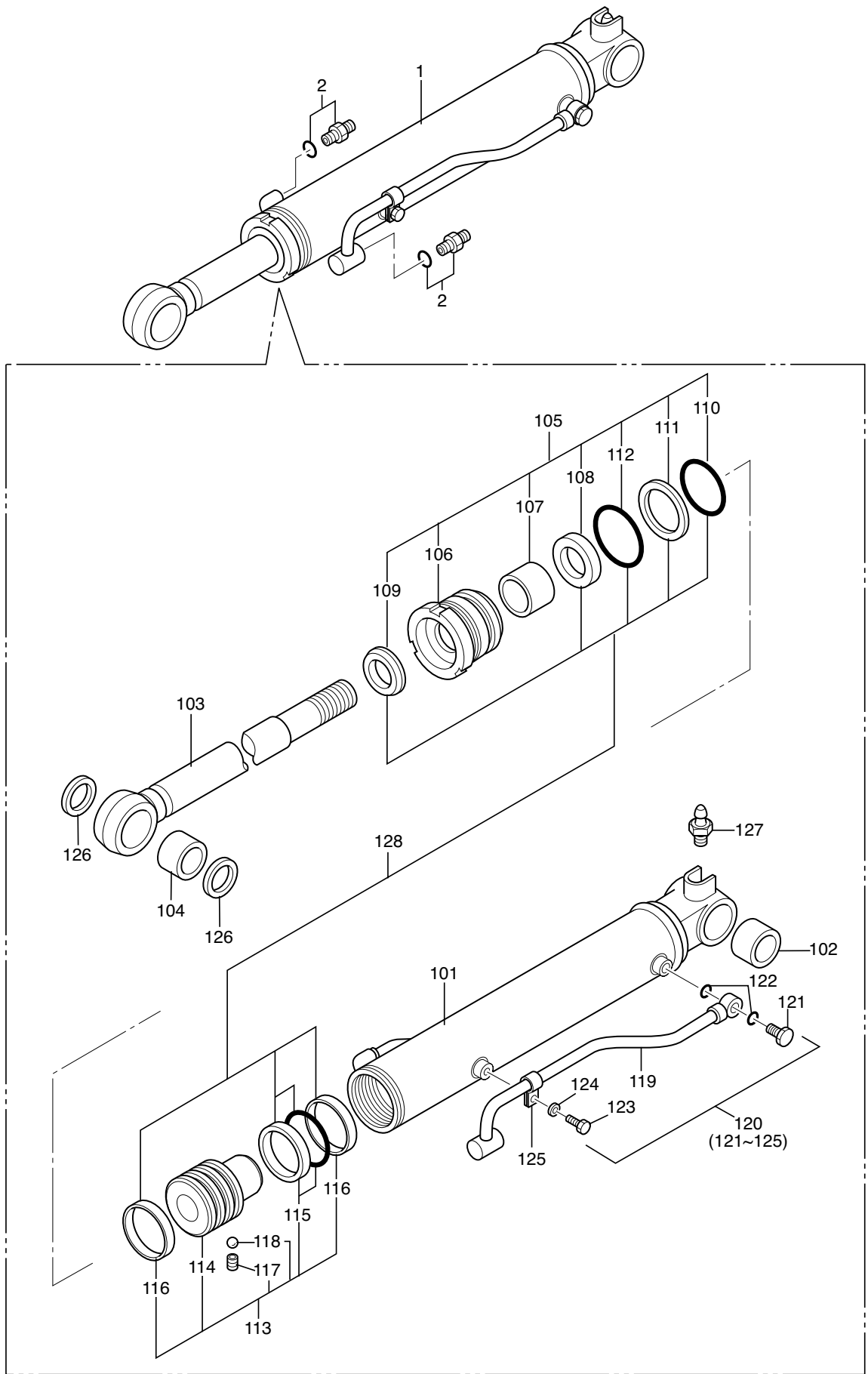
SER No,
H0900051~9999

2-08

[illegible]

CYLINDER Gp-BUCKET
S051-00626

2-09



CYLINDER Gp-BUCKET
S051-00626

2-09

SER No,
H0900051~9999

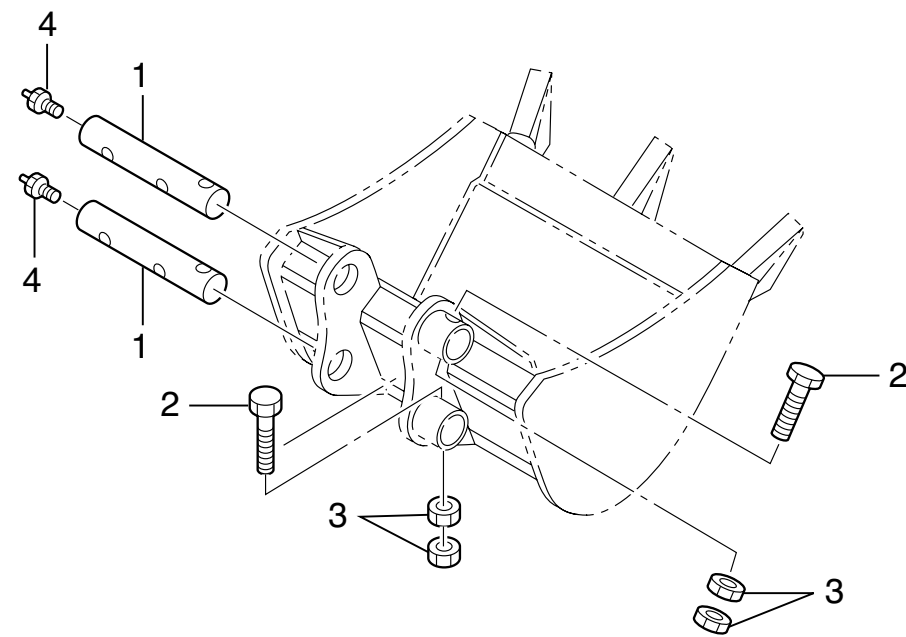
Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S052-01007		BUCKET CYLINDER	1		60650-45900
1 01	S054-01247		CYLINDER TUBE ASSY	1		
1 02	S054-01238		BUSH	2		
1 03	S054-01248		PISTON ROD ASSY	1		
1 04	S054-01218		BUSH	1		
1 05	S054-01249		CYLINDER HEAD ASSY	1		
1 06	S054-00644		CYLINDER HEAD	1		
1 07	S054-01250		BUSH	1		
1 08	S054-00646		U-RING	1		
1 09	S054-01251		RING,WIPER	1		
1 10	S054-00648		O-RING	1		
1 11	S054-00649		RING,BACKUP	1		
1 12	S054-00650		O-RING	1		
1 13	S054-01252		PISTON ASSY	1		
1 14	S054-01253		PISTON	1		
1 15	S054-01254		SEAL RING ASSY	1		
1 16	S054-00255		RING,SLIDE	2		
1 17	S052-00732		SCREW,SET	1		
1 18	S052-00706		BALL,STEEL	1		
1 19	S054-01256		PIPE	1		
1 20	S054-01228		PLUG ASSY	1		
1 21	S054-01229		PLUG	1		
1 22	S054-01230		O-RING	2		
1 23	S054-00176		BOLT	1		
1 24	S054-01231		WASHER	1		
1 25	S054-01232		HOLDER	1		
1 26	S054-01233		SEAL,DUST	2		
1 27	0540-02000-F		NIPPLE,GREASE	1		
1 28	S054-01257		SEAL KIT	1		60649-26401
2	0600-04004-X		CONNECTOR MALE	2		

2-50

[illegible]

PIN Gp-BUCKET
S021-00204

2-51



PIN Gp-BUCKET
S021-00204

SER No,
H0900051~9999

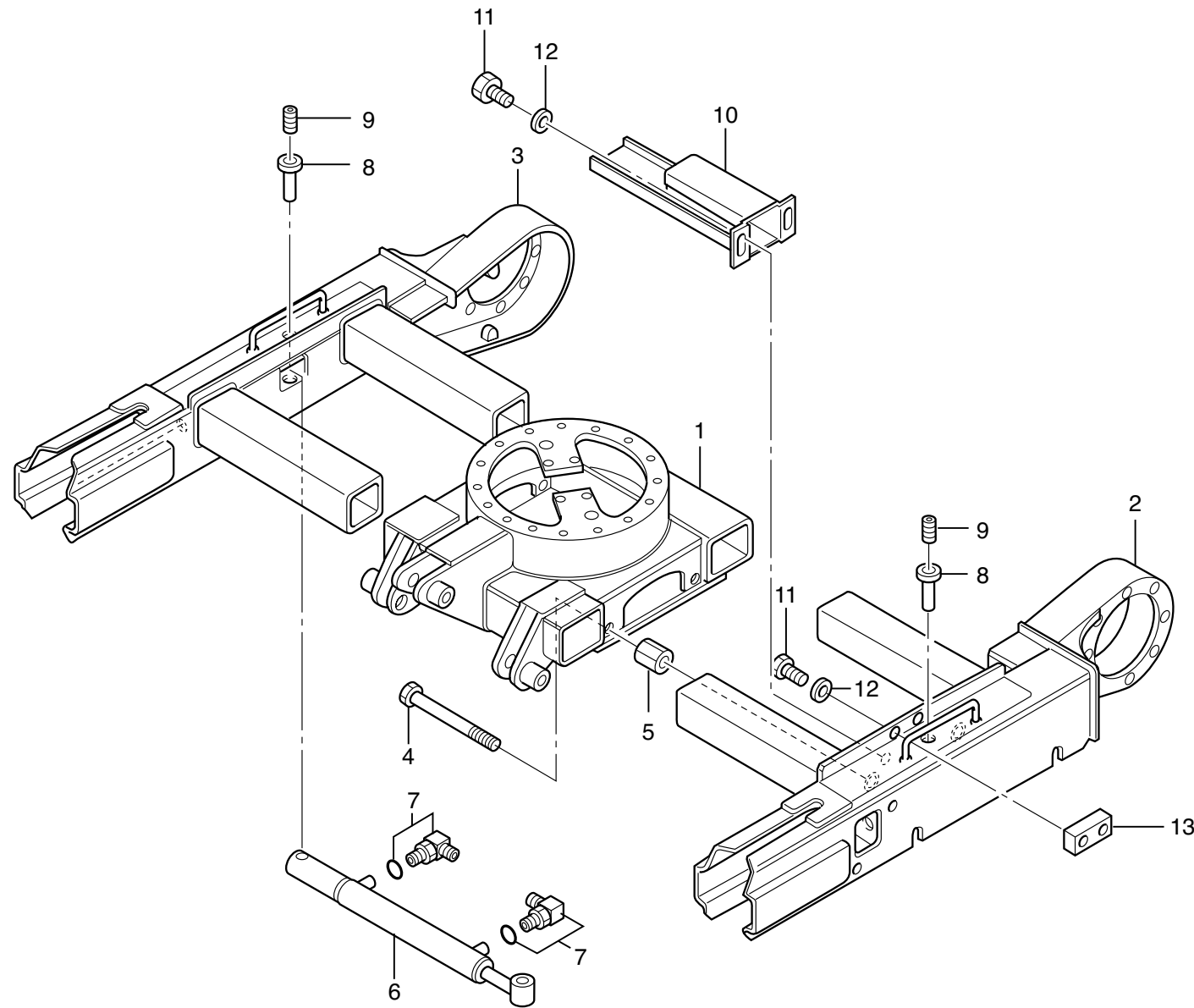
2-51

[illegible]

CHASSIS Ar.

FRAME Gp-UNDCRG
S031-00226

3-01



FRAME Gp-UNDCRG
S031-00226

SER No,
H0900051~9999

3-01

[illegible]

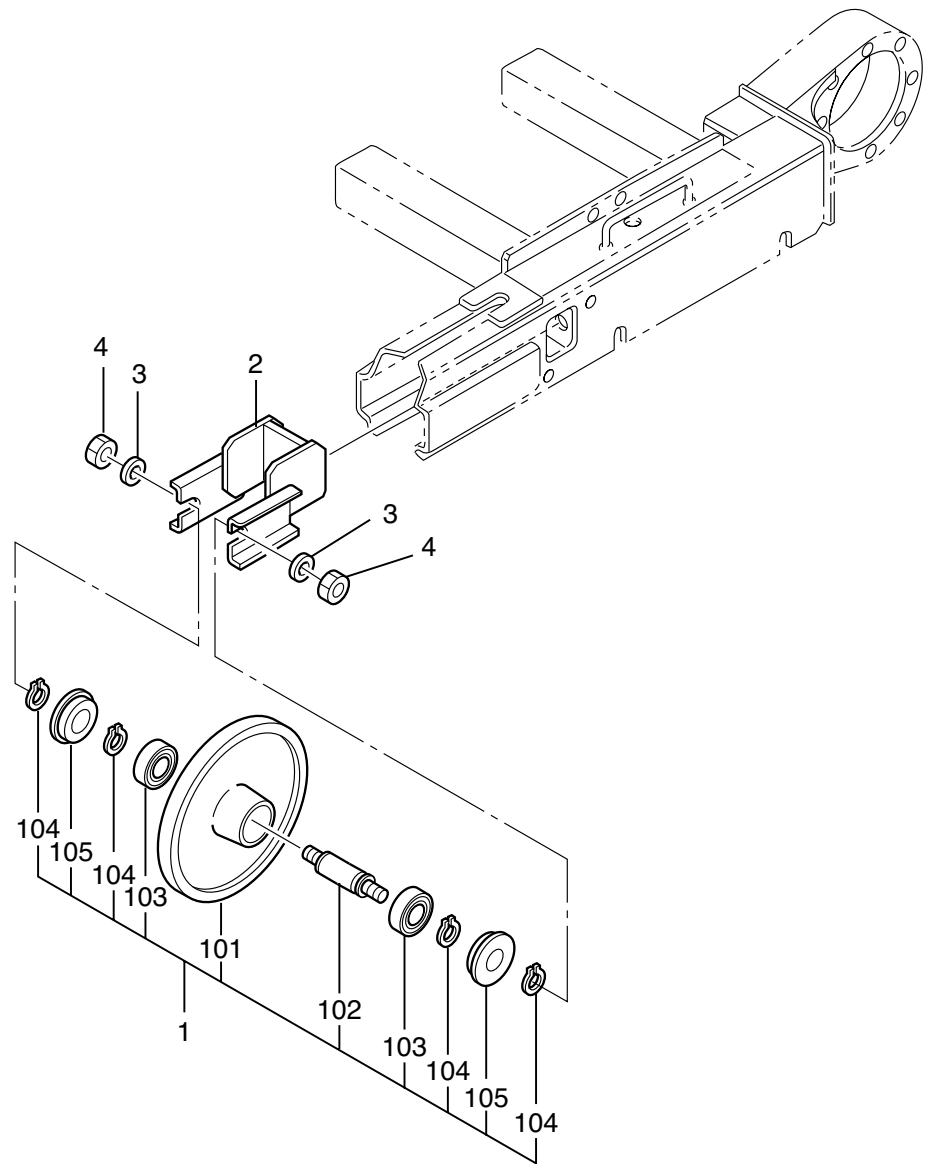
3-02

This technical drawing is an exploded view of a mechanical assembly. It features a central horizontal component with a large circular flange on the right side. Two vertical components, labeled 1 and 2, are shown being inserted into the central component. A detailed inset on the left shows the internal components of these vertical parts, including a shaft (101), a bush (102), a washer (103), a nut (104), a lock washer (105), a pin (106), and a screw (107). The drawing uses solid lines for visible parts and dashed lines for hidden internal features and alignment guides.

[illegible]

IDLER Gp
S031-00083

3-03



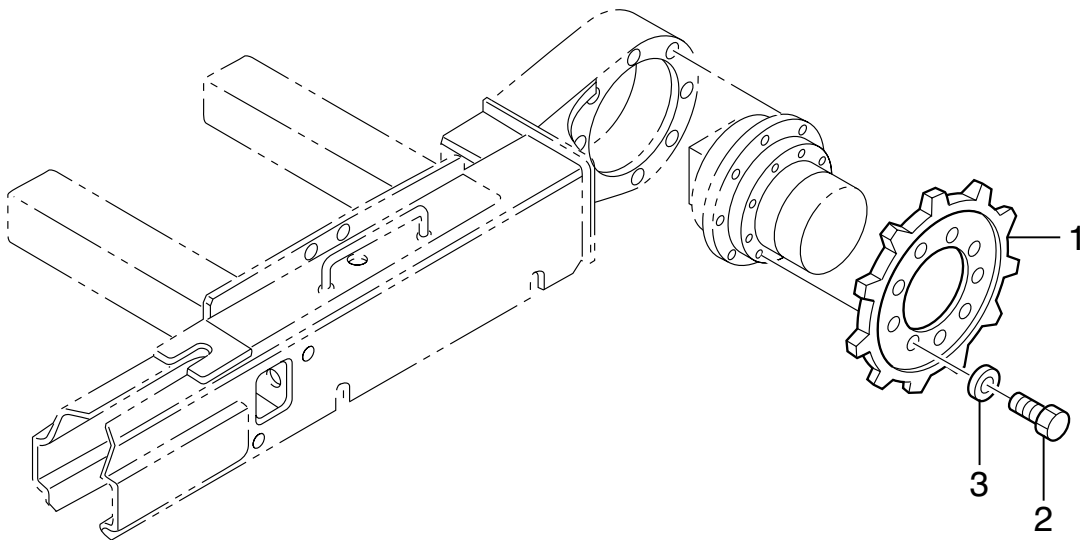
IDLER Gp
S031-00083

SER No,
H0900051~9999

3-03

[illegible]

3-04

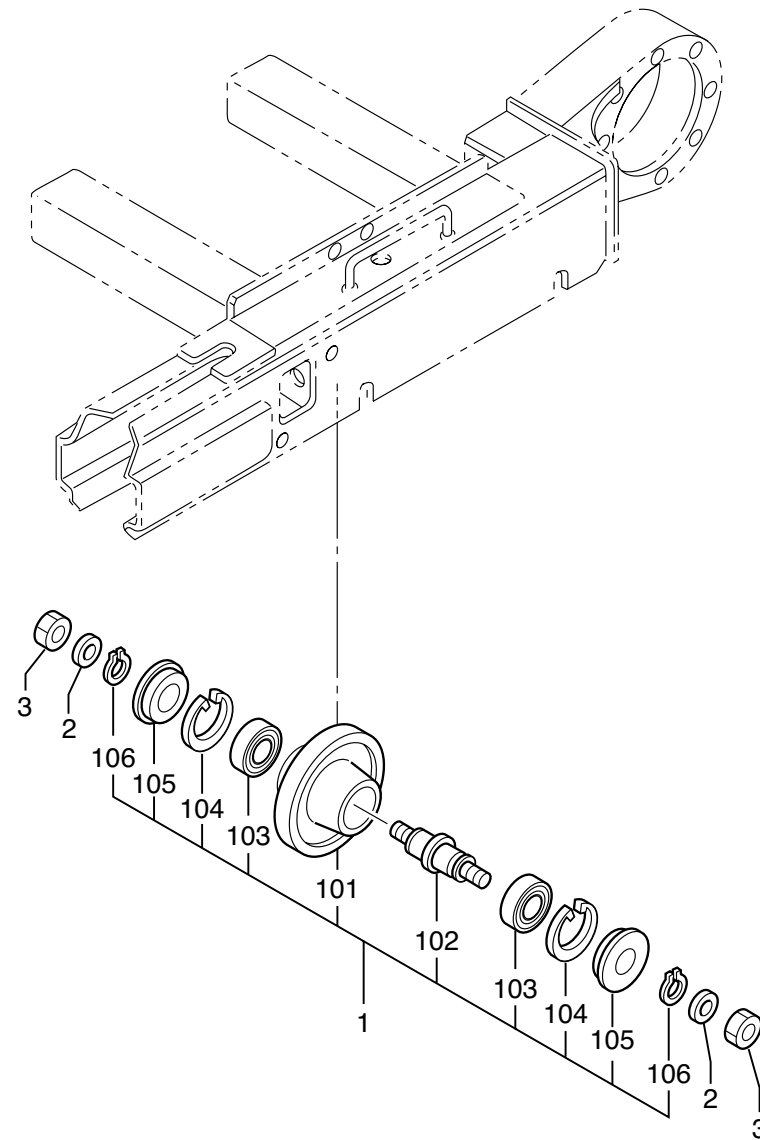


3-04

SER No,
H0900051~9999[illegible]

TRACK Gp
S031-0085

3-05



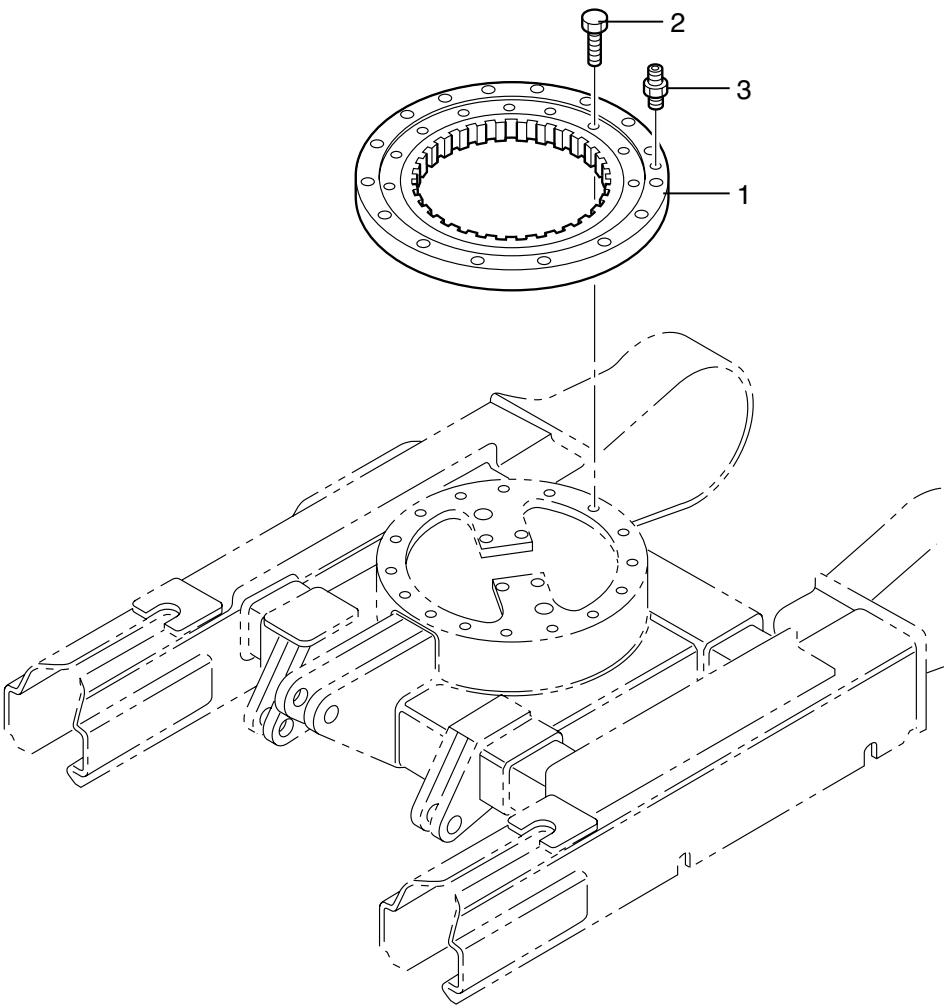
TRACK Gp
S031-00085

SER No,
H0900051~9999

3-05

[illegible]

3-06

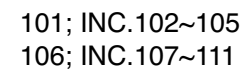


3-06

SER No,
H0900051~9999

[illegible]

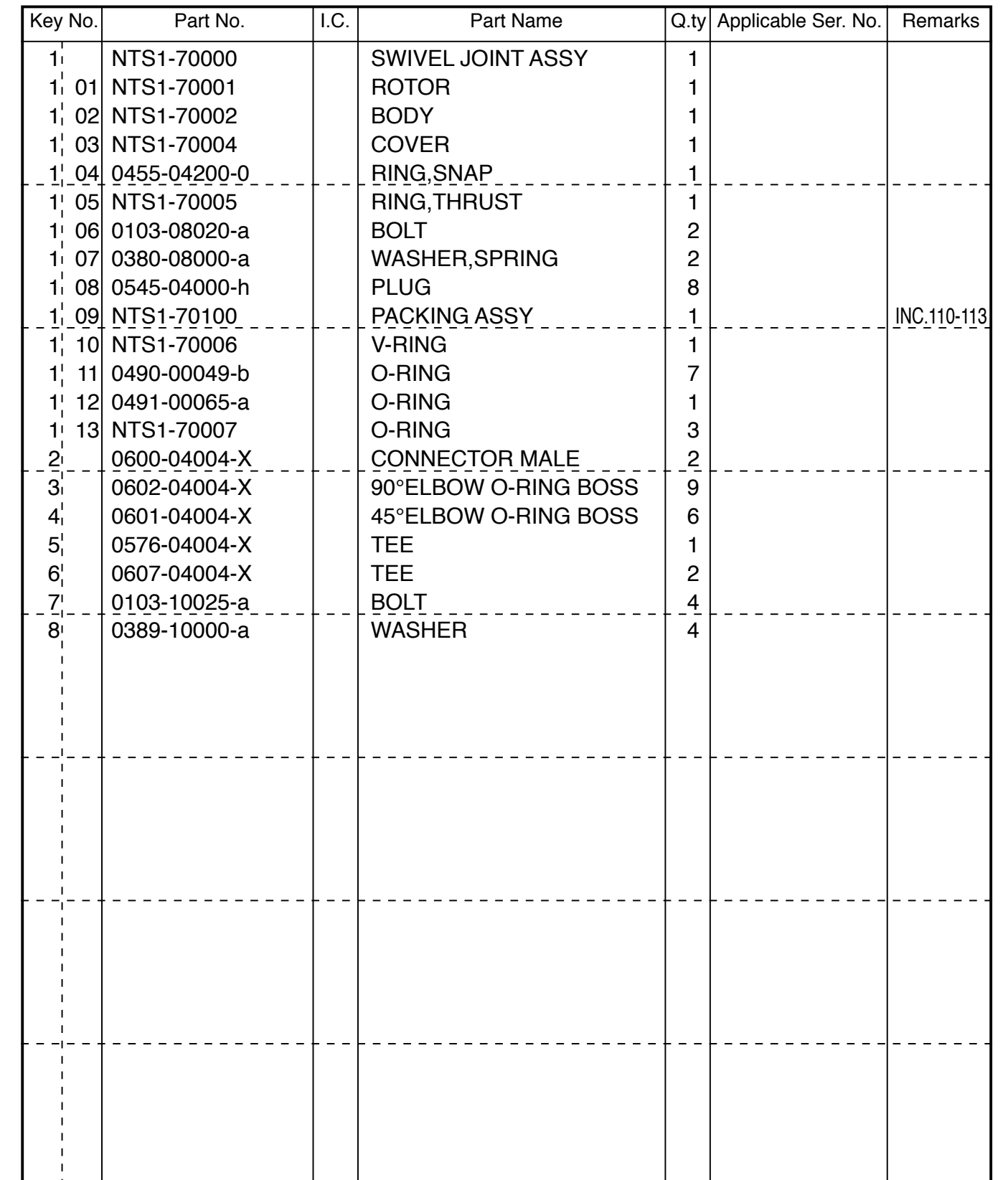
3-07



3-07

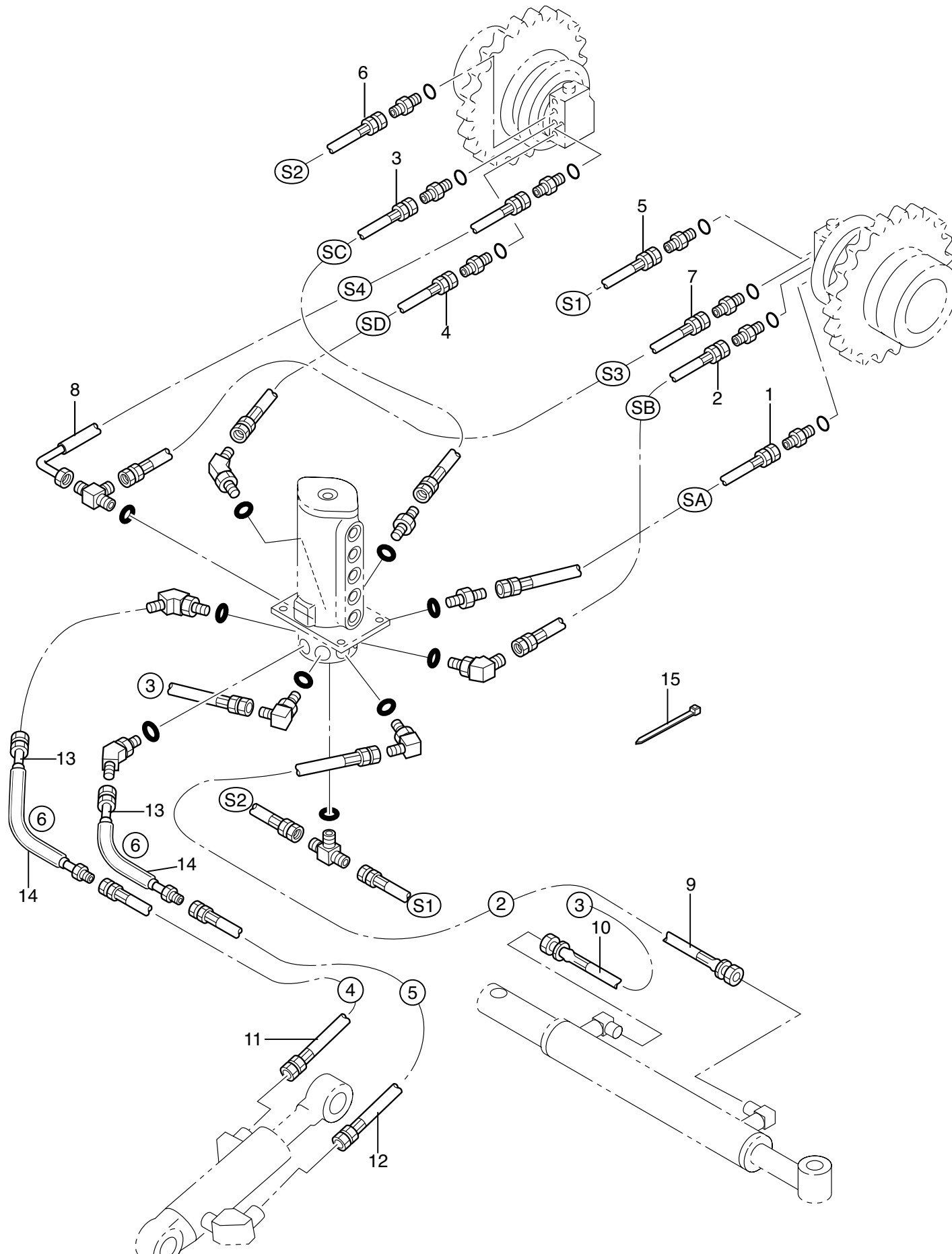
Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S052-01004		DRIVE MOTOR	1		PHV-1B-12A-8891A
1 01	S054-01317		SEAL KIT	1		INC. 102~105
1 02	0491-00130-a		O-RING	1		
1 03	S054-01318		O-RING	1		
1 04	0490-00011-b		O-RING	1		
1 05	0490-00014-b		O-RING	2		
1 06	S054-01319		SEAL KIT	1		INC. 107~111
1 07	0491-00105-b		O-RING	1		
1 08	0490-00006-b		O-RING	1		
1 09	S054-01320		OIL SEAL	1		
1 10	0490-00014-b		O-RING	2		
1 11	0490-00018-b		O-RING	2		
2	0160-10025-a		BOLT SOCKET HEAD	8		
3	0389-10000-a		WASHER HARDEN	8		
4	0600-06004-X		CONNECTOR MALE	2		
5	0600-04004-X		CONNECTOR MALE	1		
6	0600-02004-X		CONNECTOR MALE	1		

3-08



LINES Gp-TRAVEL & DOZER
 S051-00621

3-09



LINES Gp-TRAVEL & DOZER
 S051-00621

SER No,
H0900051~9999

3-09

[illegible]

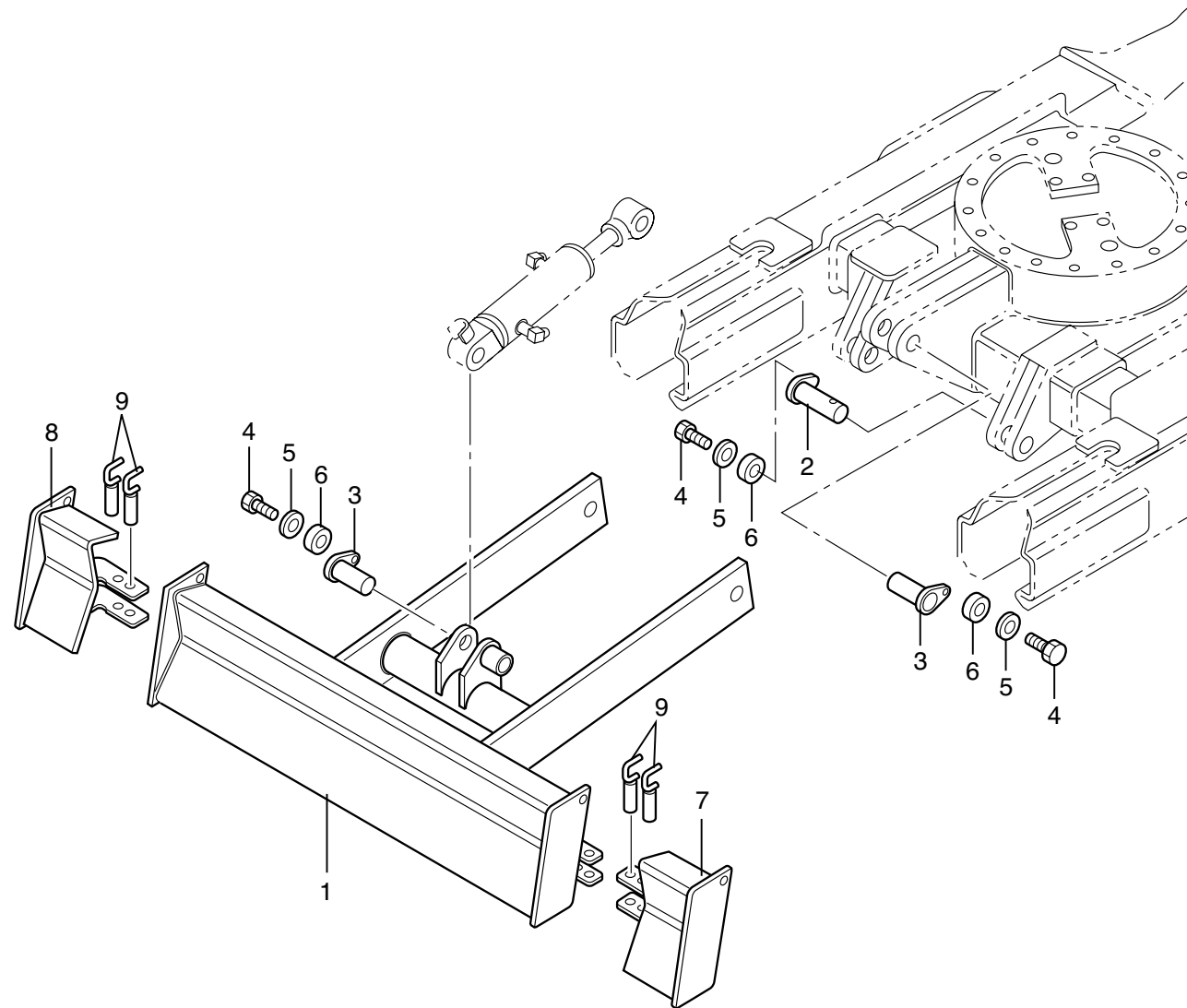
This diagram shows an exploded view of a mechanical assembly. The main components include a central circular plate with a cross-shaped cutout and several mounting brackets. A detailed view of a bracket, labeled with the number 1, is shown in the bottom left corner. The bracket has a curved, ribbed design. The assembly is shown in a perspective view, with dashed lines indicating the relative positions and alignment of the parts.

SER No,
H0900051~9999

[illegible]

DOZER Gp
S031-00252

3-11



DOZER Gp
S031-00252

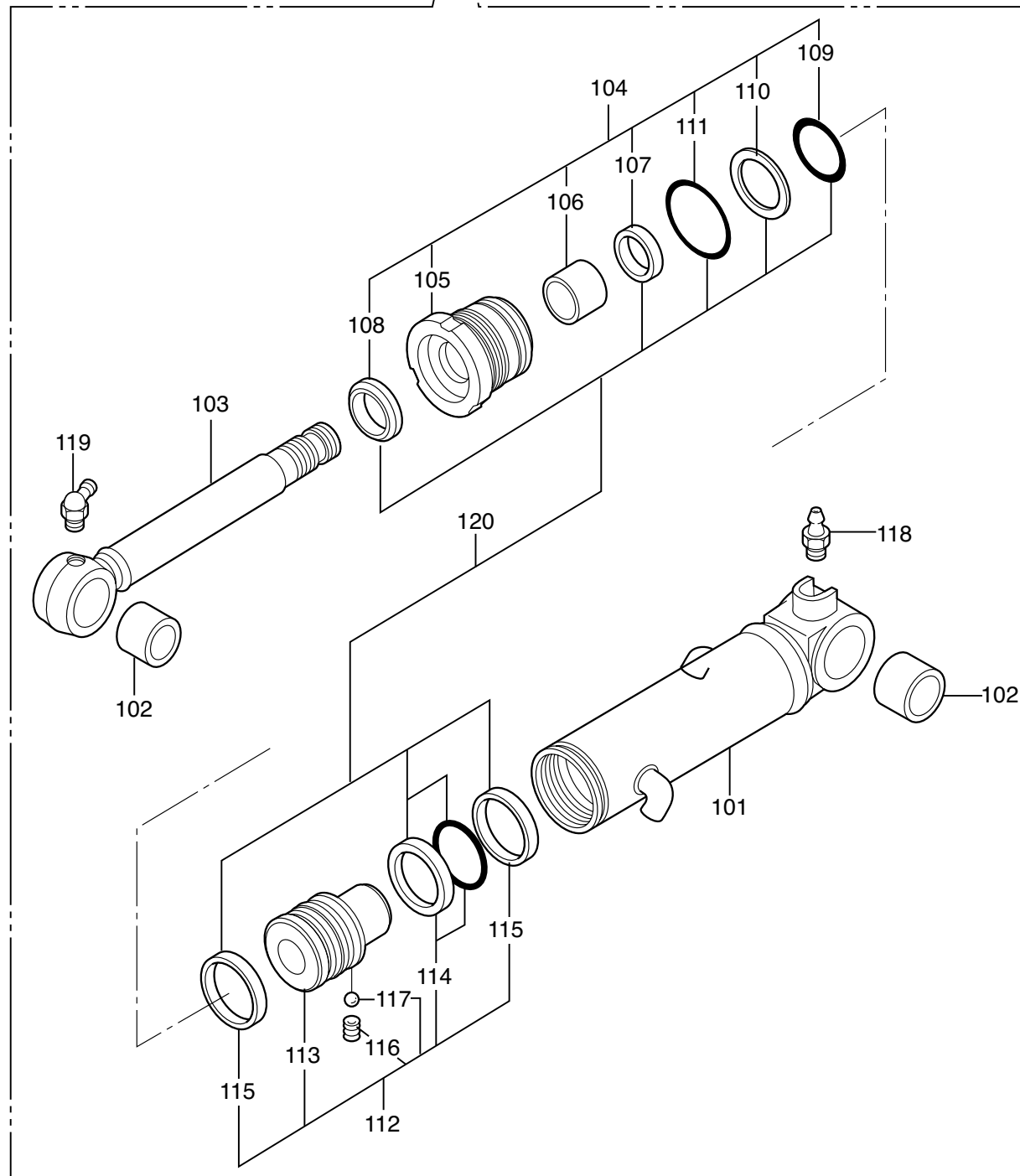
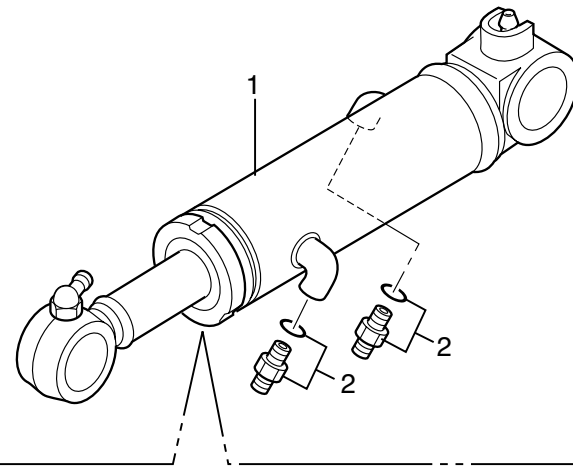
SER No,
H0900051~9999

3-11

[illegible]

CYLINDER Gp-DOZER
S051-00622

3-12



CYLINDER Gp-DOZER
S051-00622

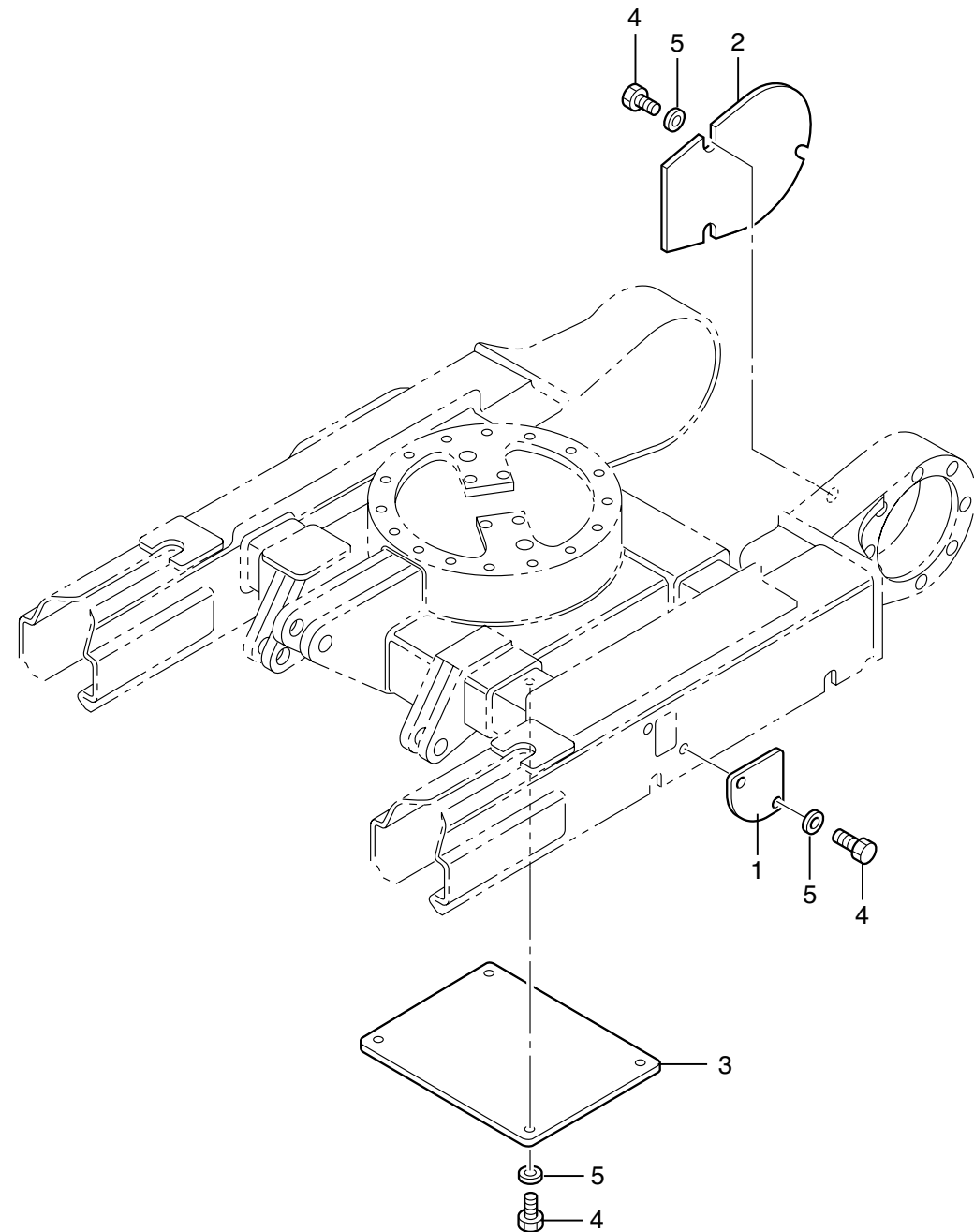
SER No,
H0900051~9999

3-12

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S052-01008		DOZER CYLINDER	1		60650-46000
1 01	S054-01258		CYLINDER TUBE ASSY	1		
1 02	S054-01238		BUSH	2		
1 03	S054-01259		PISTON ROD ASSY	1		
1 04	S054-01249		CYLINDER HEAD ASSY	1		
1 05	S054-00644		CYLINDER HEAD	1		
1 06	S054-01250		BUSH	1		
1 07	S052-00646		U-RING	1		
1 08	S054-01251		RING,WIPER	1		
1 09	S054-00648		O-RING	1		
1 10	S054-00649		RING,BACKUP	1		
1 11	S054-00650		O-RING	1		
1 12	S054-01252		PISTON ASSY	1		
1 13	S054-01253		PISTON	1		
1 14	S054-01254		SEAL RING ASSY	1		
1 15	S054-00255		RING,SLIDE	2		
1 16	S052-00732		SCREW,SET	1		
1 17	S052-00706		BALL,STEEL	1		
1 18	0540-02000-F		NIPPLE,GREASE	1		
1 19	0541-02000-F		NIPPLE,GREASE 45°	1		
1 20	S054-01257		SEAL KIT	1		
2	0600-04004-X		CONNECTOR MALE	2		

COVER Gp-UNDCRG
S031-00228

3-13



COVER Gp-UNDCRG
S031-00228

SER No,
H0900051~9999

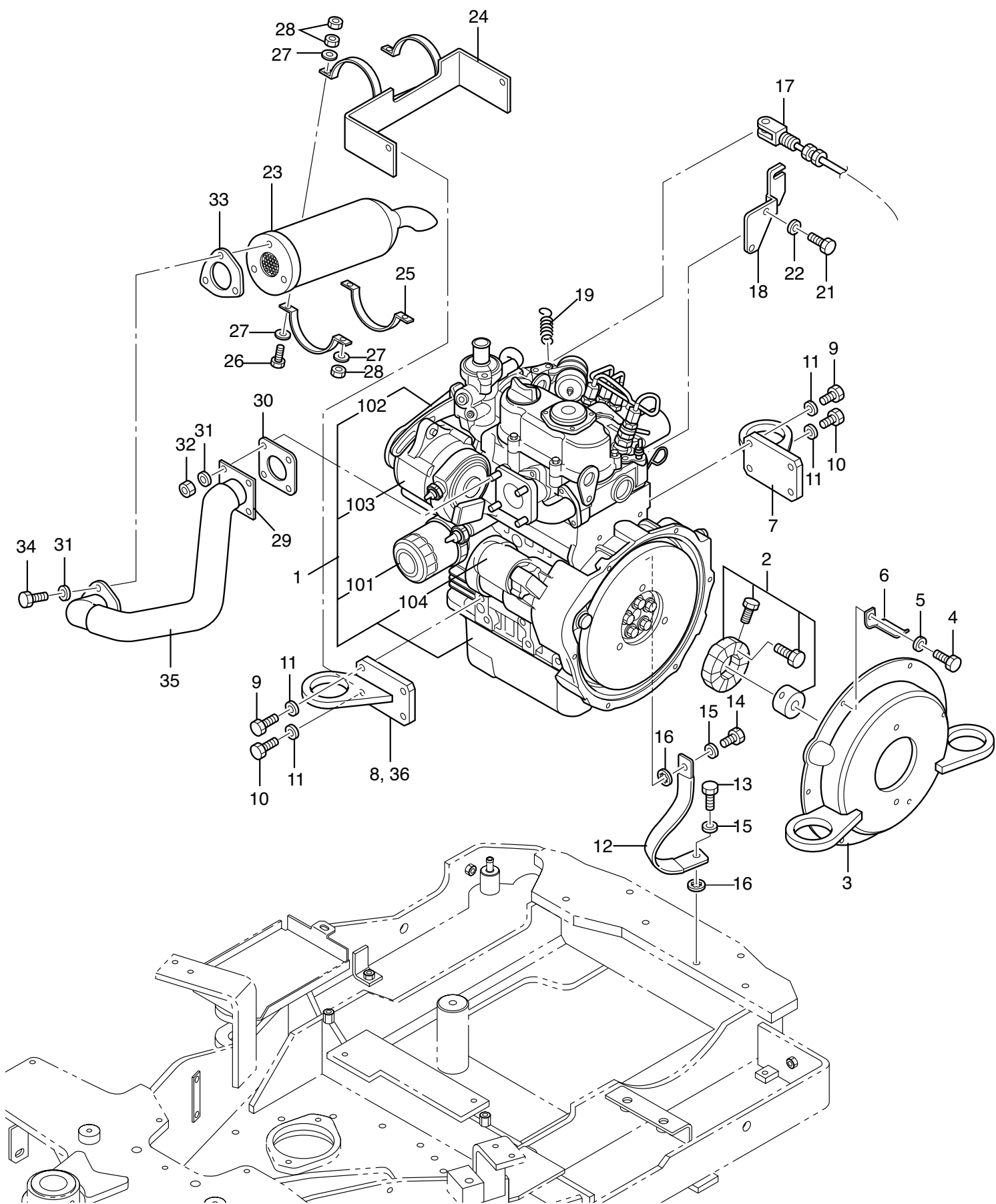
3-13

[illegible]

ENGINE & RADIATOR Ar.

ENGINE Gp
S041-00094

4-01



ENGINE Gp
S041-00094

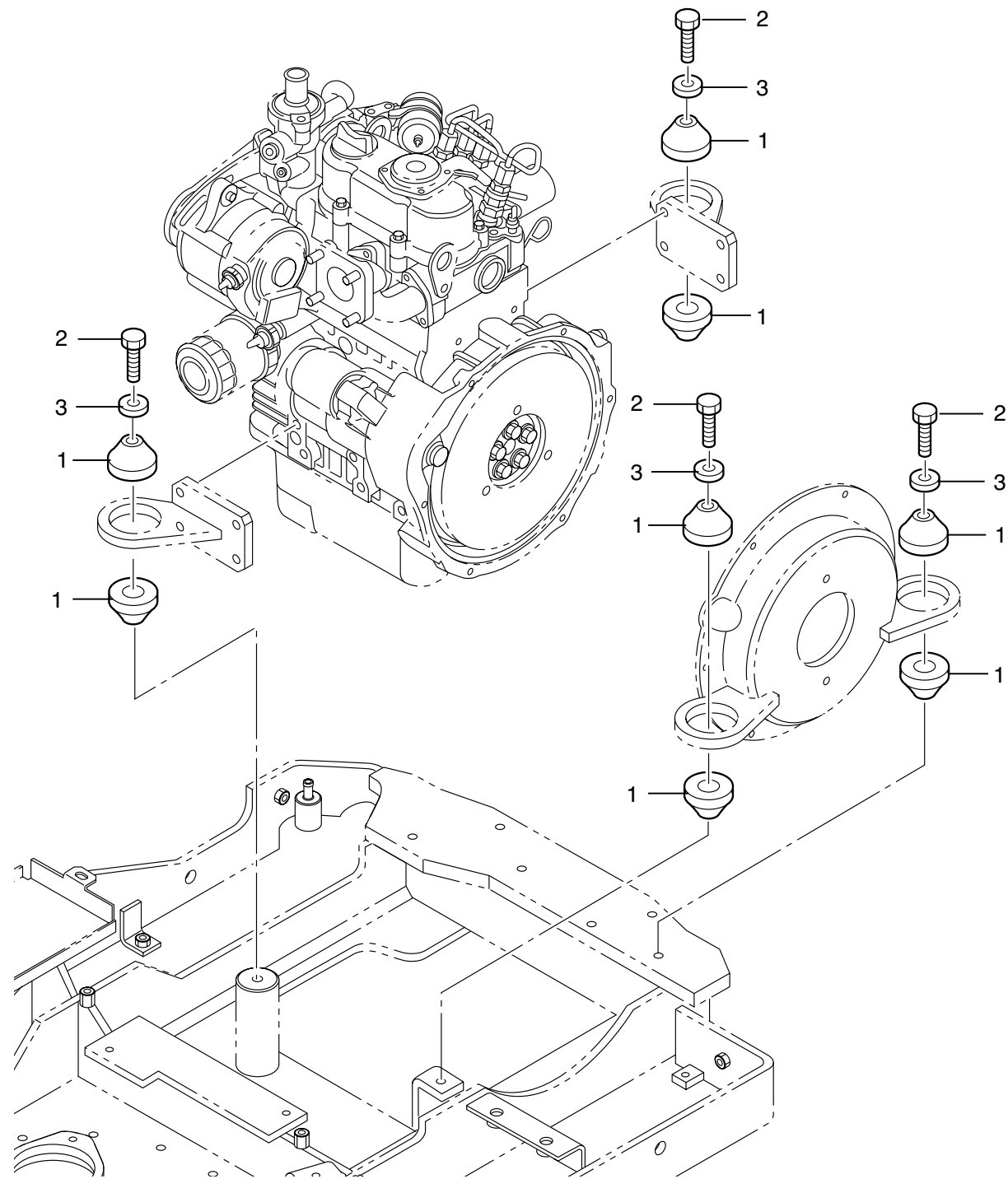
SER No,
H0900051~9999

4-01

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S042-00505		ENGINE As	1		KUBOTA Z602-E3B
1 01	S044-00033		FILTER,OIL	1		
1 02	S044-00034		V-BELT	1		
1 03	S044-00035		ALTERNATOR As	1		
1 04	S044-00036		STARTER As	1		
2	SP17-00006		COUPLING	1		
3	S042-00531		PUMP FLANGE	1		
4	0102-08020-a		BOLT	6		
5	0389-08000-a		WASHER	6		
6	0942-00003-0		PLATE,DEPPING	2		
7	S042-00532	B	BRACKET	1	H0900056~	
8	S042-00675		BRACKET	1		
9	0108-10020-a		BOLT	6		
10	0108-10025-a		BOLT	2		
11	0389-10000-a		WASHER	8		
12	905-00140		EARTH CORD	1		
13	0103-10020-a		BOLT	1		
14	0108-10020-a		BOLT	1		
15	0389-10000-a		WASHER	2		
16	0388-10000-a		WASHER,TOOTHED	2		
17	NTS4-21300		WIRE,ACCELE	1		
18	S042-00611		BRACKET	1		
19	11801-00200		SPRING	1		
20						
21	0102-08020-a		BOLT	2		
22	0389-08000-a		WASHER	2		
23	S042-00542		MUFFLER	1	KUBOTA 16861-12112	
24	S042-00534		MUFFLER CLAMP	1		
25	S042-00535		CLAMP	2		
26	0102-08025-a		BOLT	2		
27	0389-08000-a		WASHER	6		
28	0251-08000-a		NUT	6		
29	S042-00536		EXHUST PIPE	1		
30	S042-00543		PACKING	1	KUBOTA 15263-12371	
31	0389-08000-a		WASHER	7		
32	0251-08000-a		NUT	4		
33	S042-00544		PACKING	1	KUBOTA 15862-12231	
34	0102-08016-a		BOLT	3		
35	S042-00506		INSULATION	2		
36	S042-00533		BRACKET	1	H0900051~0055	2

MOUNTING Gp-ENGINE
S041-00095

4-02



MOUNTING Gp-ENGINE
S041-00095

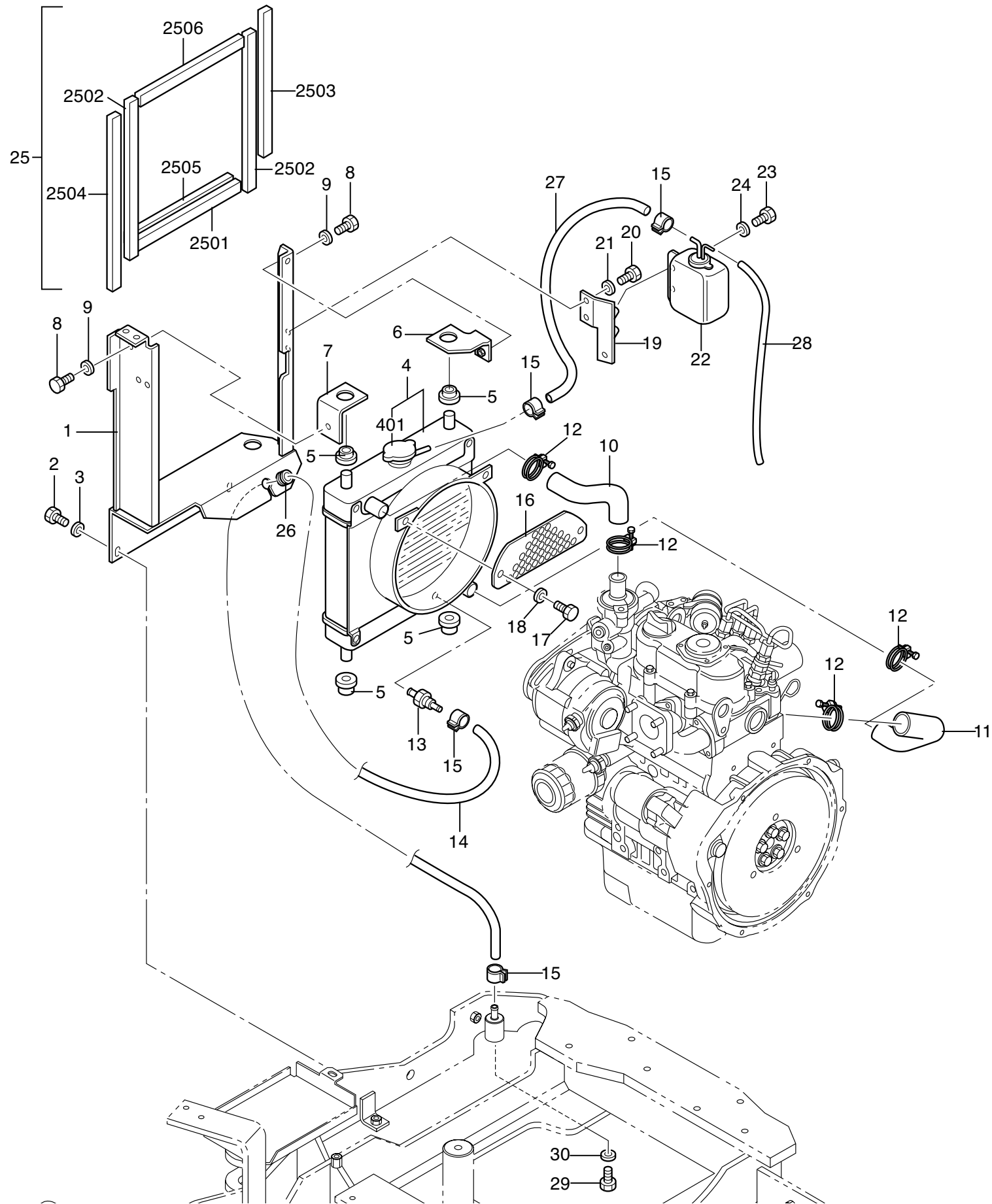
SER No,
H0900051~9999

4-02

[illegible]

RADIATOR Gp
S041-00096

4-03



RADIATOR Gp
S041-00096

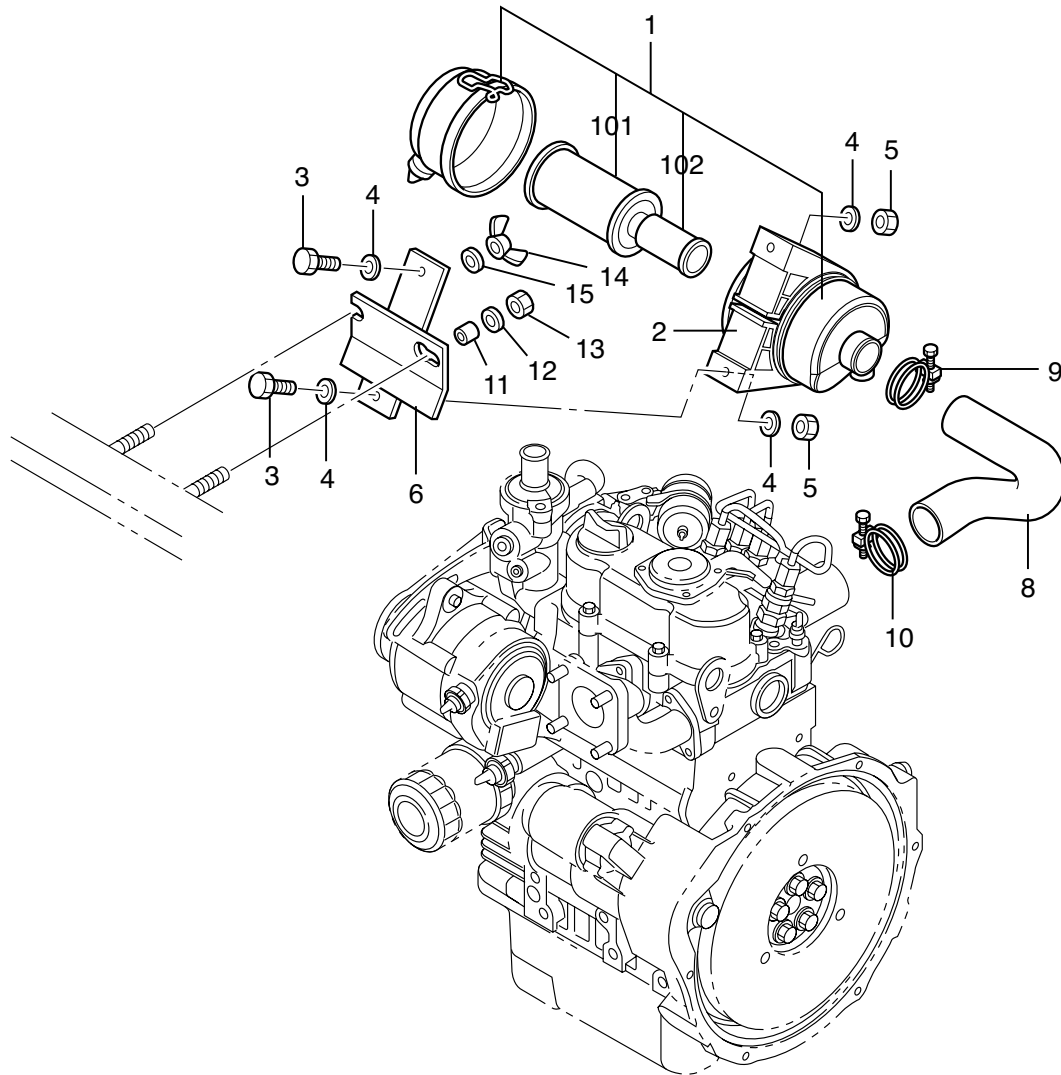
4-03

SER No,
H0900051~9999

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S042-00537		RADIATOR BRACKET	1		
2	0103-08025-a		BOLT	2		
3	0389-08000-a		WASHER,H	2		
4	S042-00545		RADIATOR ASSSY	1		KUBOTA 1G951-72061
4 01	S044-00037		CAP	1		
5	S042-00546		CUSION	4		KUBOTA 6C040-58581
6	S042-00538		BRACKET	1		
7	S042-00539		BRACKET	1		
8	0102-08016-a		BOLT	2		
9	0389-08000-a		WASHER HARDEN	2		
10	S042-00547		HOSE UPPER	1		KUBOTA 1G951-72941
11	S042-00548		HOSE LOW	1		KUBOTA 1G951-72851
12	0759-03400-b		CLAMP HOSE	4		
13	S042-00612		HOSE NIPPLE	1		
14	0753-08025-0		HOSE FUEL	1		
15	0760-12500-0		CLIP	4		
16	S042-00540		FUN GUARD	1		
17	0102-06016-a		BOLT	2		
18	0389-06000-a		WASHER	2		
19	S042-00541		BRACKET	1		
20	0102-08020-a		BOLT	2		
21	0389-08000-a		WASHER	2		
22	S042-00550		RESERVE TANK	1		
23	0102-06016-a		BOLT	2		
24	0389-06000-a		WASHER	2		
25	S042-00613		URETHAN FOAMS	1		
25 01	0815-30030-0		SPONGE	1		
25 02	0815-30038-0		SPONGE	2		
25 03	0815-30033-0		SPONGE	1		
25 04	0815-30044-0		SPONGE	1		
25 05	0815-30036-0		SPONGE	1		
25 06	0815-20032-0		SPONGE	1		
26	0800-25030-0		GROMMET	1		
27	0753-08033-0		HOSE FUEL	1		
28	0757-06050-0		HOSE VINYL	1		
29	S042-00673		PLUG	1		
30	HAS4-20001		PACKING	1		

CLEANER Gp-AIR
S041-00097

4-04



CLEANER Gp-AIR
S041-00097

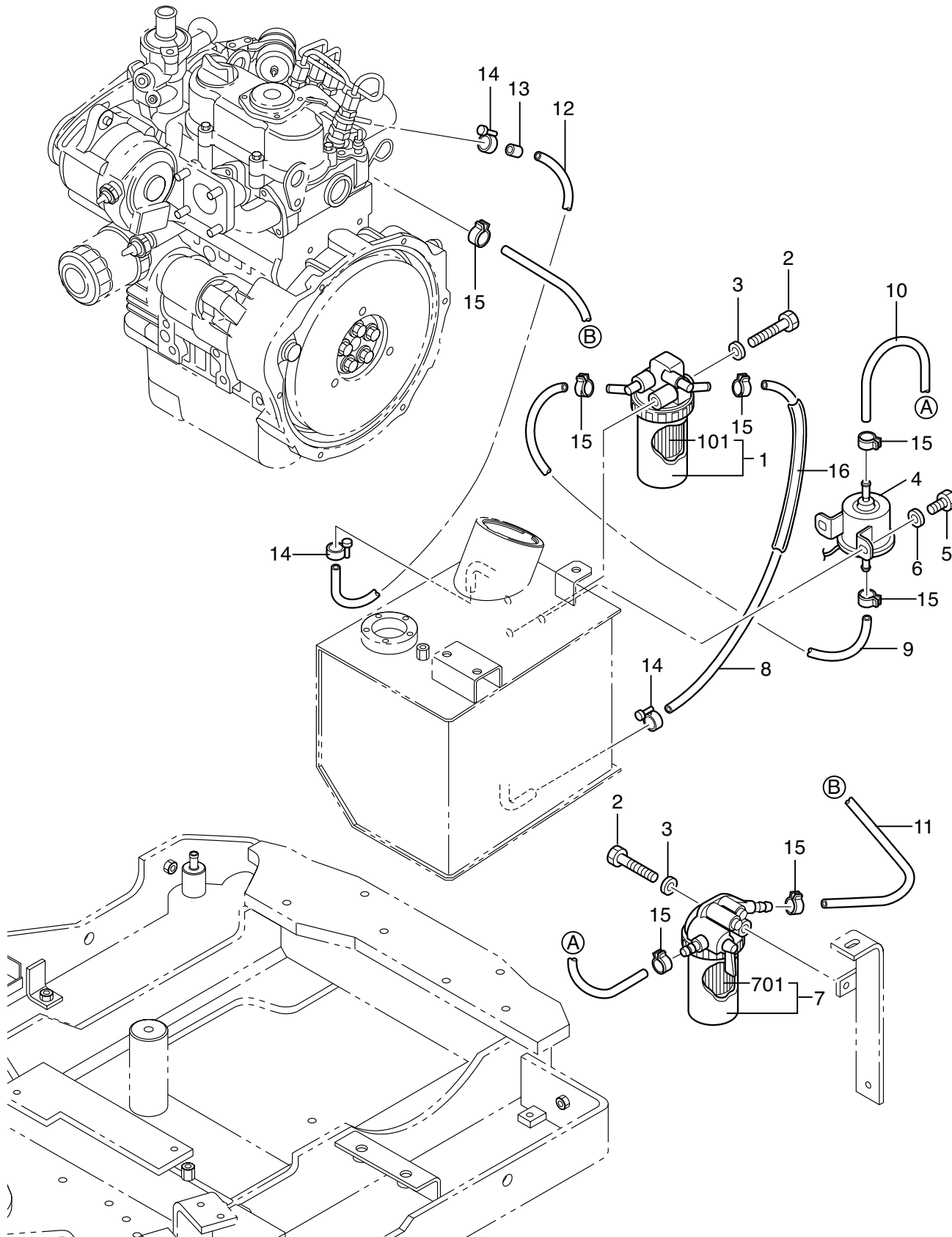
SER No,
H0900051~9999

4-04

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S042-00551		AIR CLEANER	1		KUBOTA 1K121-11011
1 01	S044-00038		OUTER ELEMENT	1		
1 02	S044-00039		INNER ELEMENT	1		
2	S042-00552		BRACKET	1		
3	0102-08030-a		BOLT	2		
4	0389-08000-a		WASHER	4		
5	0251-08000-a		NUT	2		
6	S042-00556		BRACKET	1		
7						
8	S042-00557		AIR HOSE	1		
9	0759-05800-b		CLAMP HOSE	1		
10	0759-05300-b		CLAMP HOSE	1		
11	S042-00652		COLLAR	1		
12	0389-06000-a		WASHER	1		
13	0251-06000-a		NUT	1		
14	0276-06000-a		NUT WING	1		
15	0387-06000-a		WASHER	1		

LINES Gp-FUEL
 S041-00098

4-05



LINES Gp-FUEL
 S041-00098

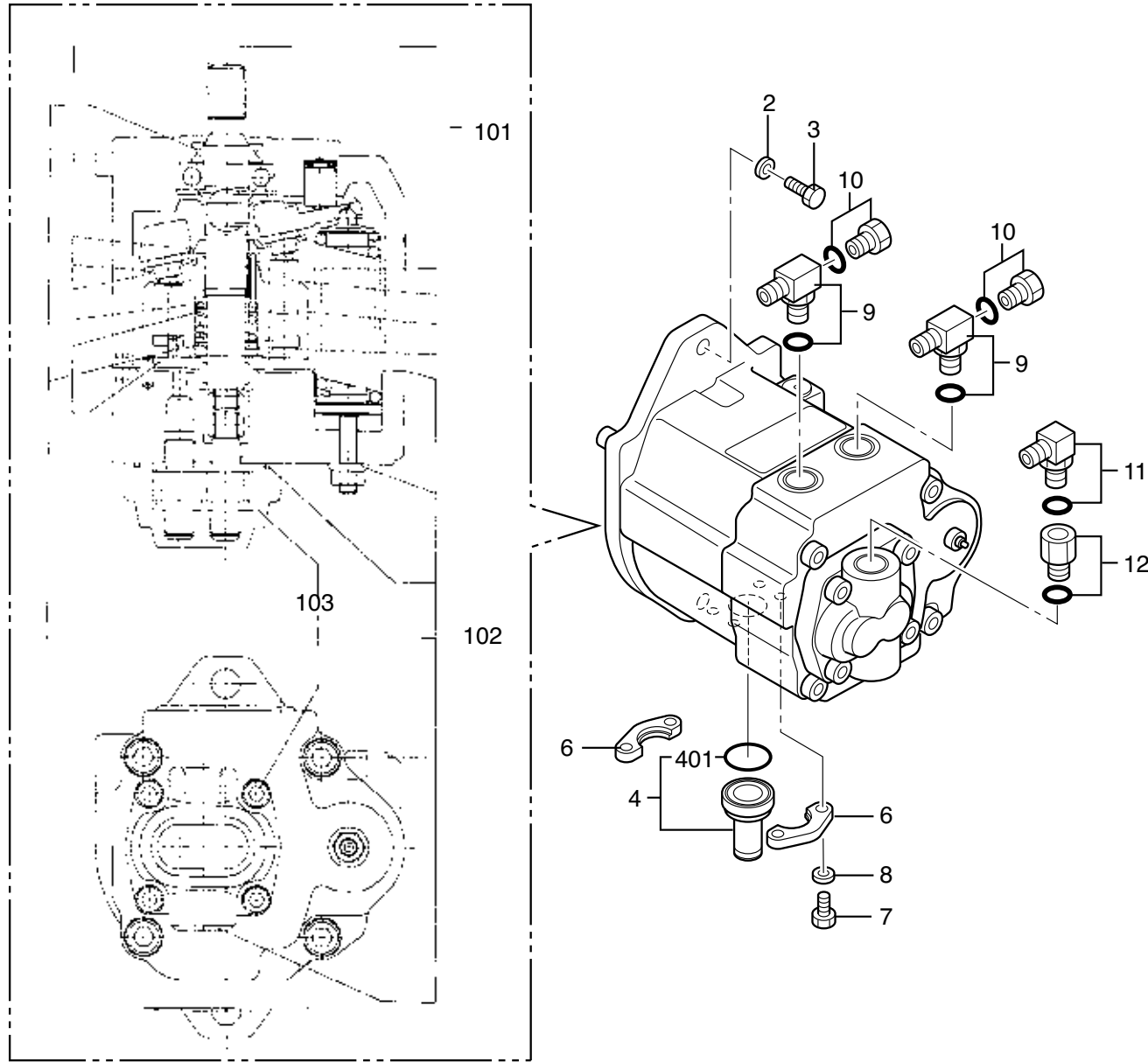
SER No,
H0900051~9999

4-05

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S042-00554		WATER SEDIMENTER	1		KUBOTA 15831-43353
1	S044-00040		ELEMENT	1		
2	0102-08065-a		BOLT	2		
3	0389-08000-a		WASHER	2		
4	S042-00553		FUEL PUMP	1		KUBOTA RC601-51351
5	0102-06016-a		BOLT	2		KUBOTA 15393-43019
6	0389-06000-a		WASHER	2		
7	S042-00555		FUEL FILTER	1		
7	S044-00041		ELEMENT	1		
8	0753-08030-0		HOSE FUEL	1		
9	0753-08032-0		HOSE FUEL	1		
10	0753-08050-0		HOSE FUEL	1		
11	0753-08034-0		HOSE FUEL	1		
12	0751-06015-0		HOSE RUBBER	1		
13	0757-04002-0		HOSE VINYL	1		
14	0750-06015-0		BAND HOSE	3		
15	0760-12500-0		CLIP	7		
16	0809-16020-B		SPIRAL TUBE	1		

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5-01



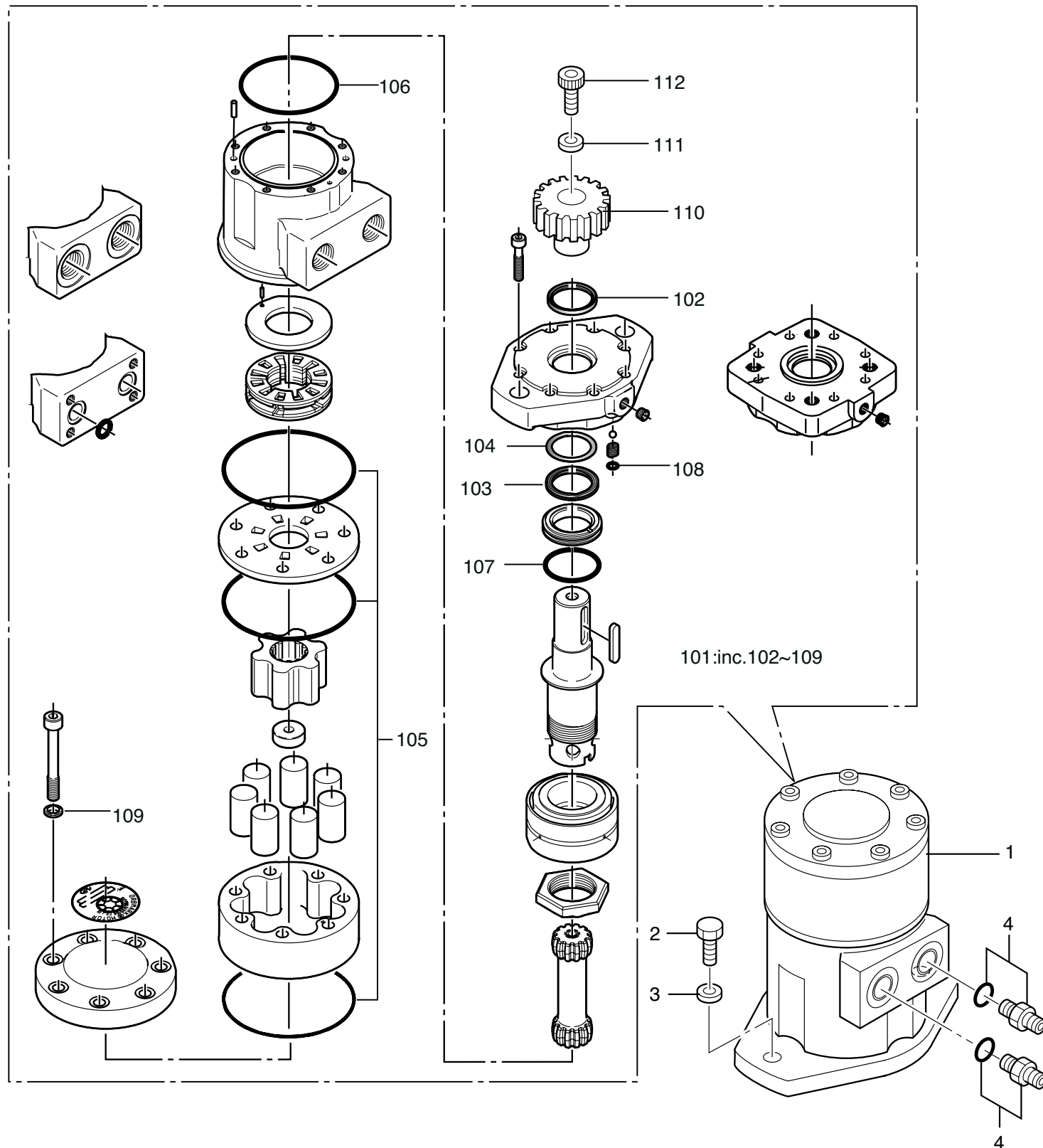
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SER No,
H0900051~9999

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S052-00982		PUMP	1		NACHI PVD-00B-9-3-5128A
1 01	S054-01304		CYLINDER BARREL KIT	1		PDDG-109100
1 02	S054-01305		SEAL KIT	1		PDDS-109102
1 03	S054-01306		GEAR PUMP KIT	1		3A2Z9-R586
2	0103-12025-a		BOLT	2		
3	0389-12000-a		WASHER	2		
4	S052-01011		SUCTION PIPE	1		
4 01	0491-00035-a		O-RING	1		
5						
6	0647-16000-H		FRANGE HALF	2		
7	0160-10030-a		BOLT SOCKET HEAD	4		
8	0389-10000-a		WASHER HARDEN	4		
9	SP31-00006		TEE	2		
10	0547-04000-0		PLUG O-RING BOSS	2		
11	0602-06004-X		ELBOW MALE90°O-RING BOSS	1		
12	0697-06006-0		BUSHING O-RING	1		

MOTOR Gp-SLEW
S051-00630

5-02



MOTOR Gp-SLEW
S051-00630

SER No,
H0900051~9999

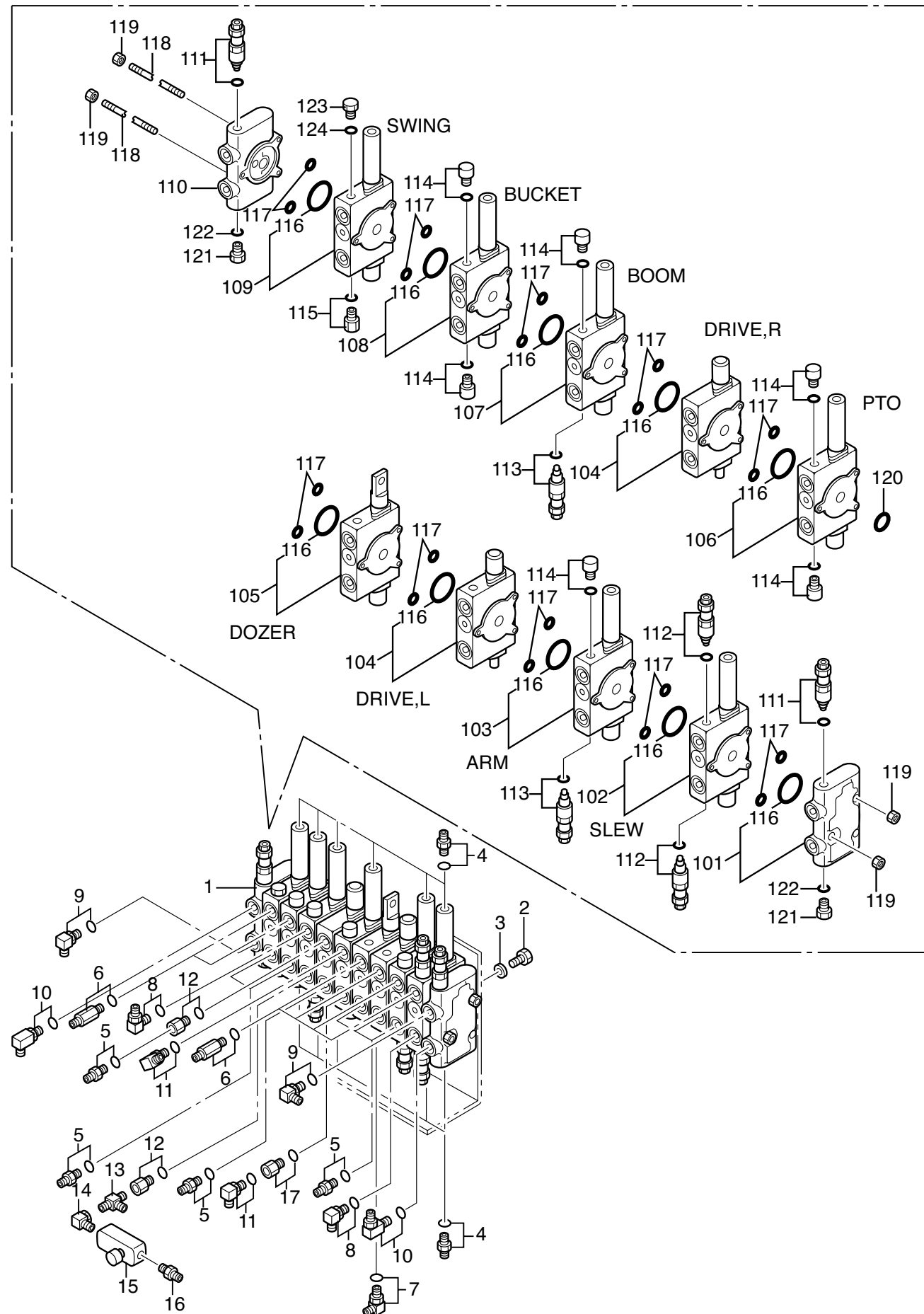
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VALVE Gp-CONTROL(1)

S051-00631

5-03-1



VALVE Gp-CONTROL(1)

S051-00631

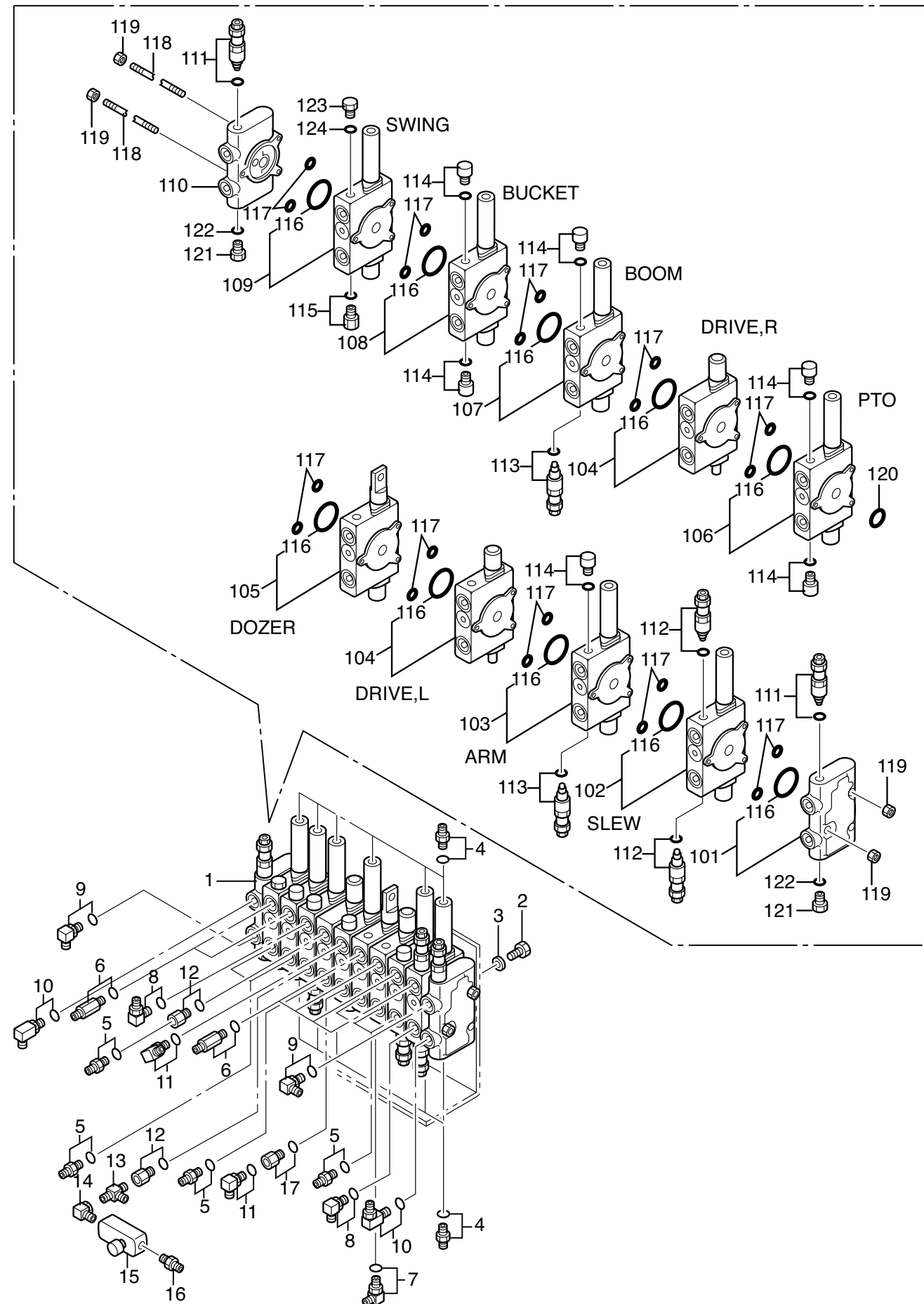
SER No,
H0900051~9999

5-03-1

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S052-00985		CONTROL VALVE	1		Nabtesco 2371-2-217228
1 01	S054-01167		BLOCK	1		P1 T1
1 02	S054-01168		BLOCK	1		SLEW
1 03	S054-01169		BLOCK	1		ARM
1 04	S054-01170		BLOCK	2		DRIVE
1 05	S054-01171		BLOCK	1		DOZER
1 06	S054-01172		BLOCK	1		PTO
1 07	S054-01173		BLOCK	1		BOOM
1 08	S054-01174		BLOCK	1		BUCKET
1 09	S054-01175		BLOCK	1		SWING
1 10	S054-01176		BLOCK	1		P2 T2
1 11	S054-01177		RELIEF VALVE	2		16.2MPa
1 12	S054-01178		RELIEF VALVE	2		8.33MPa
1 13	S054-01179		RELIEF VALVE	2		19.1MPa
1 14	S054-01180		RELIEF PLUG	6		
1 15	S054-01181		ANTI-CABITATION	1		
1 16	0491-00127-b		O-RING	10		
1 17	0490-00010-b		O-RING	20		
1 18	S054-01182		BOLT	3		
1 19	0251-08000-a		NUT	6		
1 20	0490-00004-b		O-RING	1		
1 21	S054-01184		PLUG	2		
1 22	0490-00011-b		O-RING	2		
1 23	S054-01201		PLUG	1		
1 24	0490-00014-b		O-RING	1		
2	0102-08020-a		BOLT	4		
3	0389-08000-a		WASHER HARDEN	4		
4	0600-02004-X		CONNECTOR MALE	11		
5	0600-04004-X		CONNECTOR MALE	7		
6	0695-44065-X		CONNECTOR MALE LONG	6		
7	0602-02004-X		ELBOW MALE90°O-RING BOSS	2		
8	0602-04004-X		ELBOW MALE90°O-RING BOSS	1		
9	0602-06006-X		ELBOW MALE90°O-RING BOSS	2		
10	0603-06006-X		90°LONG O-RING ADAPTER	2		
11	0602-04006-X		ELBOW MALE90°O-RING BOSS	2		
12	0602-04006-X		ELBOW MALE90°O-RING BOSS	1		
13	0697-04004-0		BUSHING O-RING	2		
14	0598-04004-Y		MALE90°UNION ELBOW	1		
15	S052-01066		THROTTLE VALVE	1		
16	NFSH-50001		HOSE ADAPTER	1		

VALVE Gp-CONTROL(1)
S051-00631

5-03-1



VALVE Gp-CONTROL(1)
S051-00631

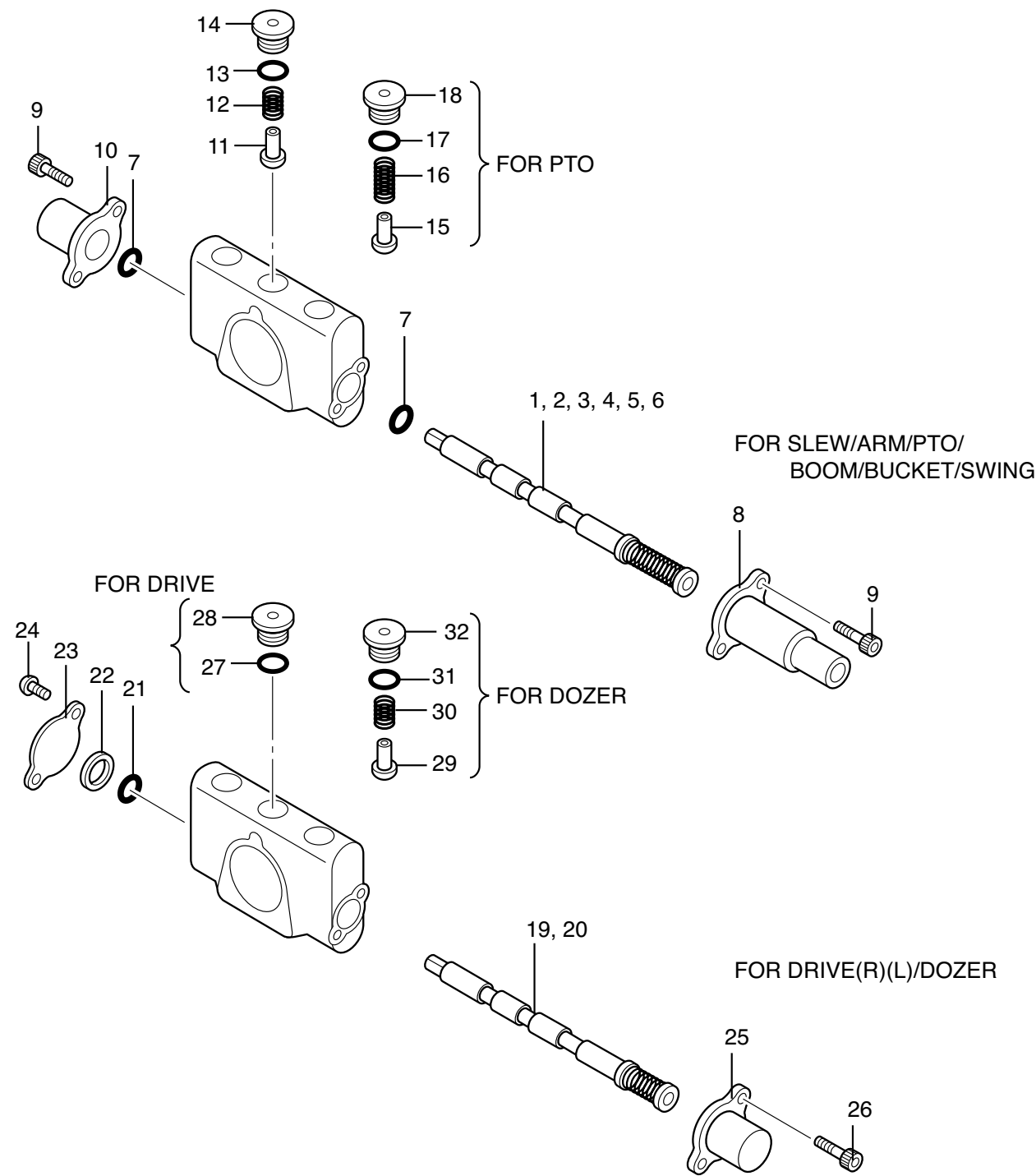
SER No,
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5-03-1

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VALVE Gp-CONTROL(2)
S051-00631

5-03-2



VALVE Gp-CONTROL(2)
S051-00631

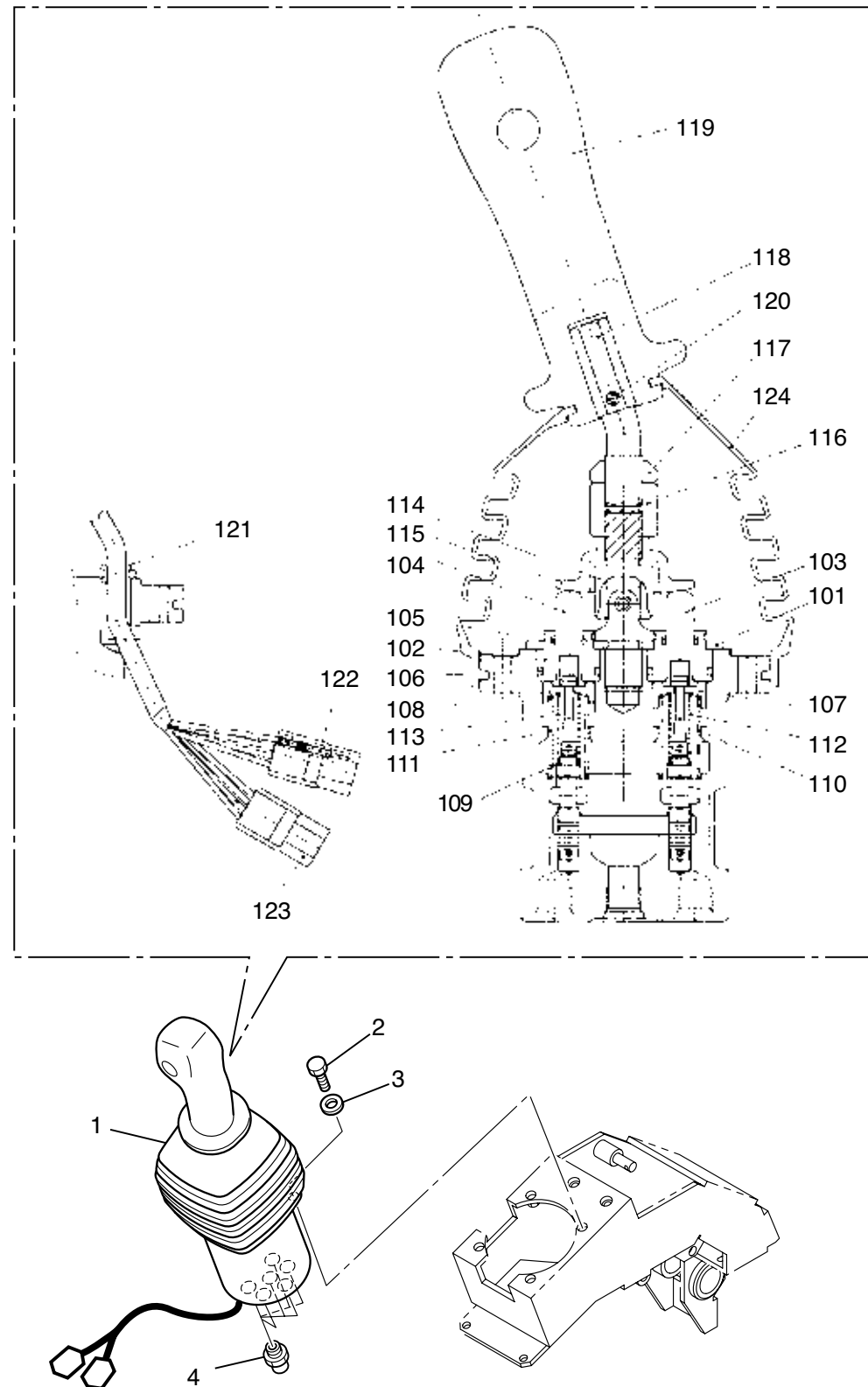
SER No,
H0900051~9999

5-03-2

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S054-01168		SPOOL ASSY	1		SLEW
2	S054-01169		SPOOL ASSY	1		ARM
3	S054-01172		SPOOL ASSY	1		PTO
4	S054-01173		SPOOL ASSY	1		BOOM
5	S054-01174		SPOOL ASSY	1		BUCKET
6	S054-01175		SPOOL ASSY	1		SWING
7	0491-00016-a		O-RING	2		
8	S054-01193		CAP	1		
9	S054-01194		BOLT	4		
10	S054-01195		CAP	1		
11	S054-01196		CHECK	1		
12	S054-01197		SPRING	1		
13	0490-00011-b		O-RING	1		
14	S054-01198		PLUG	1		
15	S054-01203		CHECK	1		
16	S054-01204		SPRING	1		
17	0490-00011-b		O-RING	1		
18	S054-01205		PLUG	1		
19	S054-01170		SPOOL ASSY	2		DRIVE
20	S054-01171		SPOOL ASSY	1		DOZER
21	0490-00010-a		O-RING	1		
22	S054-01199		RING BUCKUP	1		
23	S054-01200		PLATE	1		
24	0330-05010-a		SCREW PAN HEAD	2		
25	S054-01202		CAP	1		
26	0160-05045-a		BOLT	2		
27	0490-00010-a		O-RING	1		
28	S054-01184		PLUG	1		
29	S054-01196		CHECK	1		
30	S054-01197		SPRING	1		
31	0490-00011-b		O-RING	1		
32	S054-01198		PLUG	1		

VALVE Gp-JOYSTICK L
S051-00606

5-04



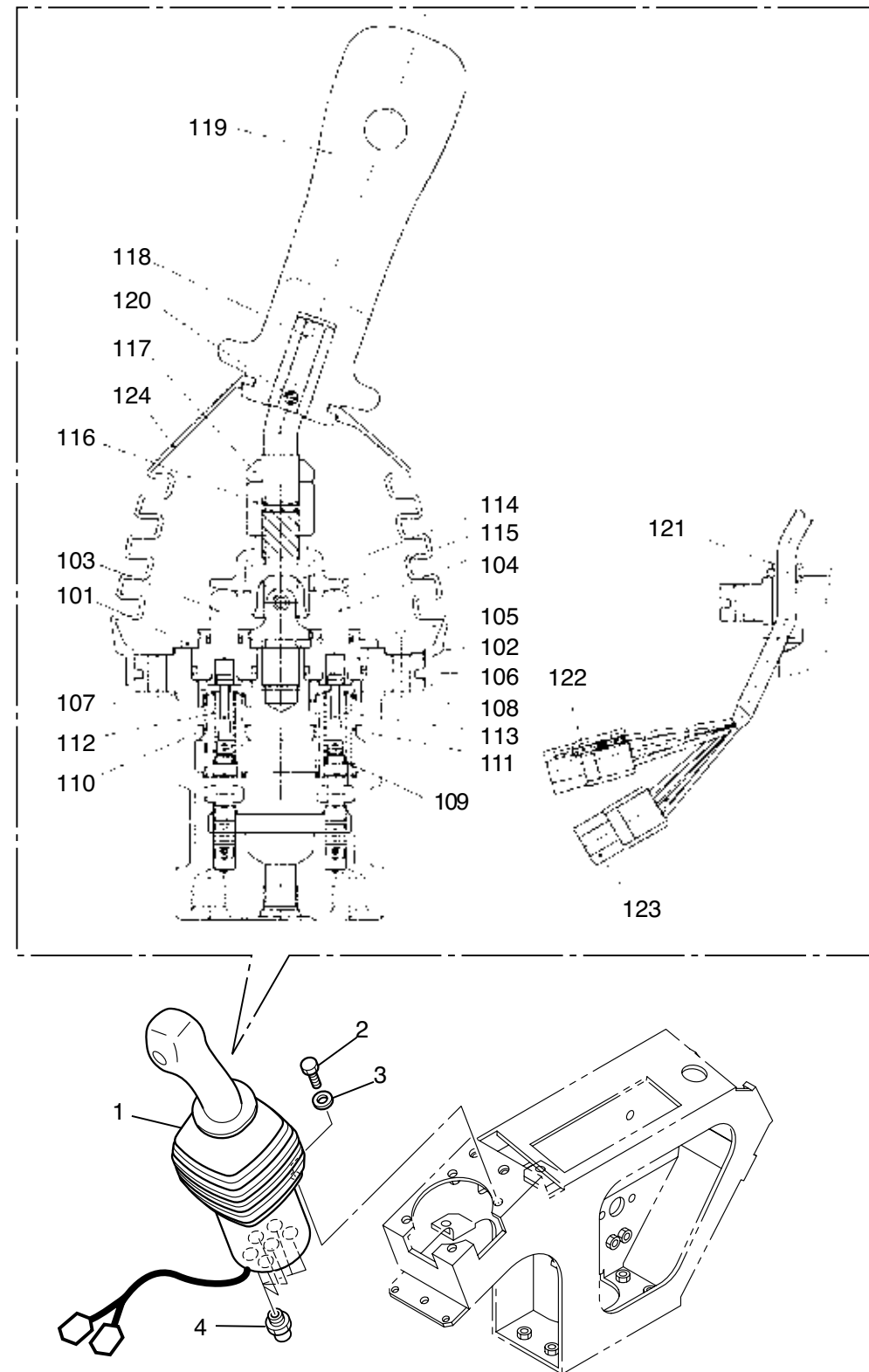
VALVE Gp-JOYSTICK L
S051-00606

5-04

SER No,
H0900051~9999

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S052-00912		VALVE JOYSTICK(LH)	1		
1, 01	S054-01073		PLATE	1		
1, 02	S054-00407		PLUG	4		
1, 03	S054-01074		ROD PUSH	2		
1, 04	S054-01075		ROD PUSH	2		
1, 05	S054-00409		SEAL	4		
1, 06	S054-00410		O-RING	4		
1, 07	S054-01076		SEAT SPRING	2		
1, 08	S054-01077		SEAT SPRING	2		
1, 09	S054-01078		WASHER 2	4		
1, 10	S054-01079		SPRING	2		
1, 11	S054-01080		SPRING	2		
1, 12	S054-01081		SPRING	2		
1, 13	S054-01082		SPRING	2		
1, 14	S054-00405		JOINT	1		
1, 15	S054-00404		PLATE CIRCULAR	1		
1, 16	S054-00403		NUT ADJUSTING	1		
1, 17	S052-00498		NUT LOCK	1		
1, 18	S054-01083		LEVER	1		
1, 19	S054-01084		KNOB	1		
1, 20	S052-00501		PIN SPRING	1		
1, 21	S052-00502		BUSH	1		
1, 22	S052-00503		CONNECTOR	8		
1, 23	S052-00504		HOUSING	2		
1, 24	S052-00505		BELLOWS	1		
2	0102-06025-a		BOLT	4		
3	0389-06000-a		WASHER HARDEN	4		
4	0627-04004-X		NIPPLE HOSE	6		

5-05



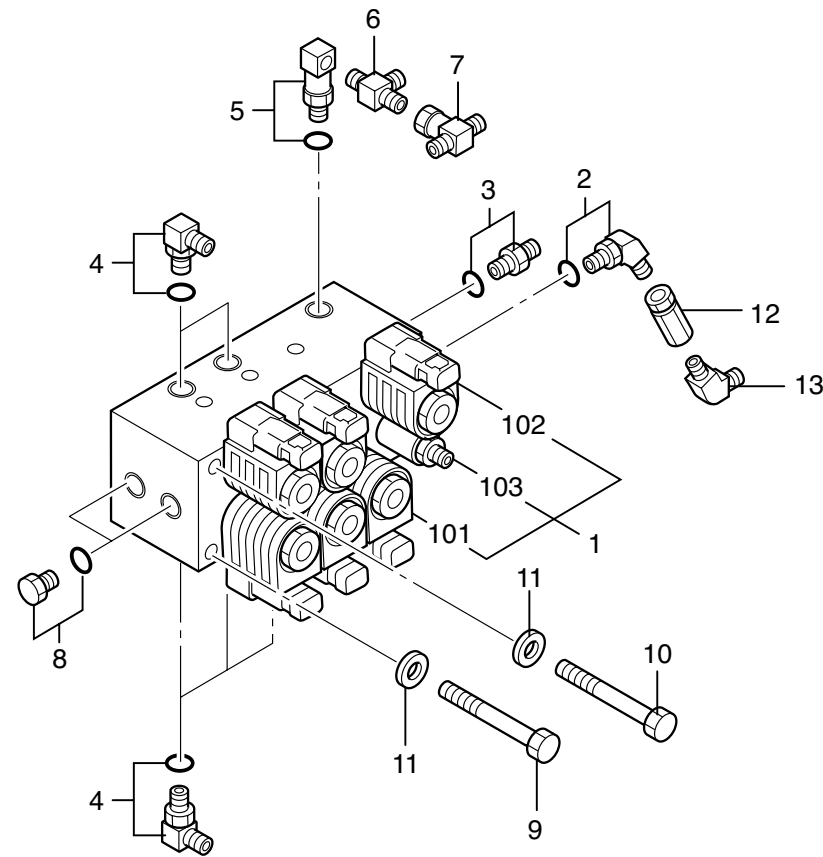
VALVE Gp-JOYSTICK R
S051-00607

SER No,
H0900051~9999

5-05

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S052-00911		VALVE JOYSTICK(RH)	1		
1 01	S054-01073		PLATE	1		
1 02	S054-00407		PLUG	4		
1 03	S054-01074		ROD PUSH	2		
1 04	S054-01075		ROD PUSH	2		
1 05	S054-00409		SEAL	4		
1 06	S054-00410		O-RING	4		
1 07	S054-01076		SEAT SPRING	2		
1 08	S054-01077		SEAT SPRING	2		
1 09	S054-01078		WASHER 2	4		
1 10	S054-01079		SPRING	2		
1 11	S054-01080		SPRING	2		
1 12	S054-01081		SPRING	2		
1 13	S054-01082		SPRING	2		
1 14	S054-00405		JOINT	1		
1 15	S054-00404		PLATE CIRCULAR	1		
1 16	S054-00403		NUT ADJUSTING	1		
1 17	S052-00498		NUT LOCK	1		
1 18	S054-01083		LEVER	1		
1 19	S054-01084		KNOB	1		
1 20	S052-00501		PIN SPRING	1		
1 21	S052-00502		BUSH	1		
1 22	S052-00503		CONNECTOR	8		
1 23	S052-00504		HOUSING	2		
1 24	S052-00505		BELLOWS	1		
2	0102-06025-a		BOLT	4		
3	0389-06000-a		WASHER HARDEN	4		
4	0627-04004-X		NIPPLE HOSE	6		

5-06



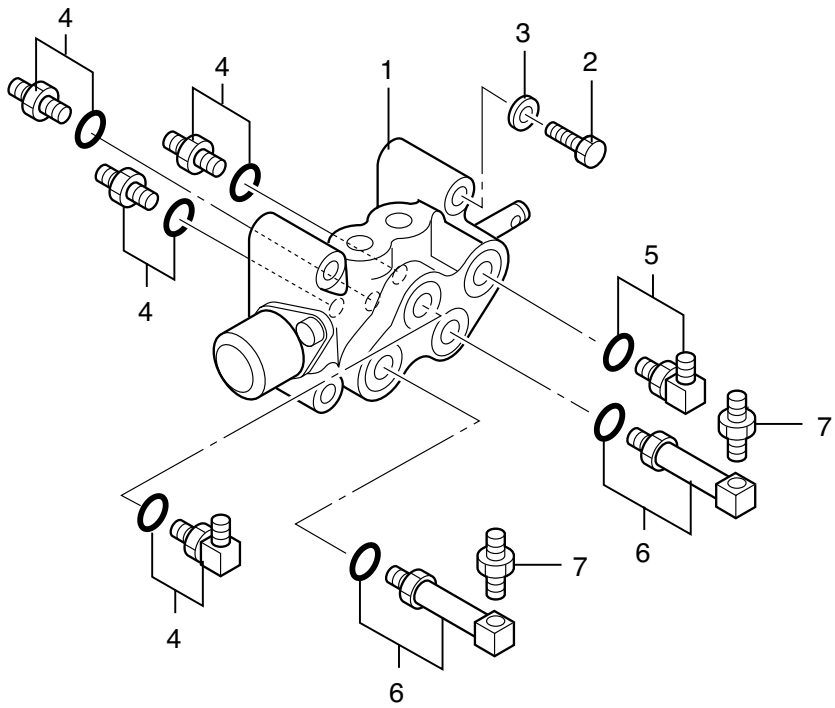
VALVE Gp-SOLENOID
S051-00633

SER No,
H0900051~9999

5-06

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S052-00943		VALVE,SOLENOID	1		
1, 01	S054-01053		SOLENOID VALVE	6		
1, 02	S054-01054		SOLENOID	6		
1, 03	S054-01055		RELIEF VALVE	1		
2	0689-04004-0		ELBOW MALE45°O-RING BOSS	1		
3	0600-04006-X		CONNECTOR MALE	1		
4	0602-04004-X		ELBOW MALE90°O-RING BOSS	5		
5	0605-04004-0		ELBOW O-RING BOSS FEMALE90°	1		
6	0594-04004-H		TEE MALE RUN	1		
7	SP31-00011		TEE	1		
8	0547-04000-0		PLUG O-RING BOSS	2		
9	0102-08075-a		BOLT	1		
10	0102-08085-a		BOLT	2		
11	0389-08000-a		WASHER HARDEN	3		
12	NK27-71600		FILTER	1		
13	0581-04004-X		ELBOW MALE 45°	1		

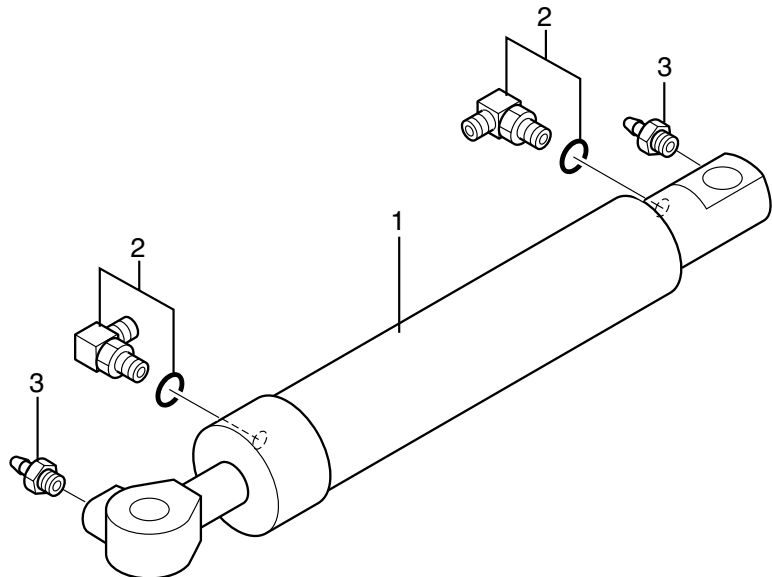
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5-07

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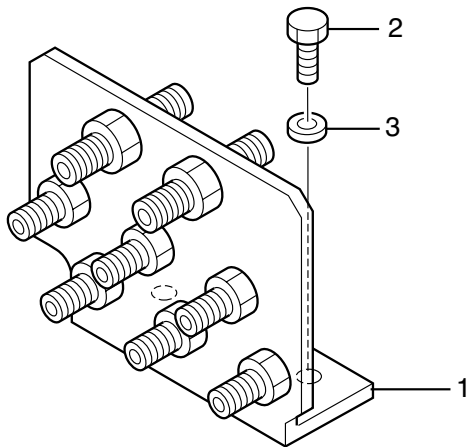


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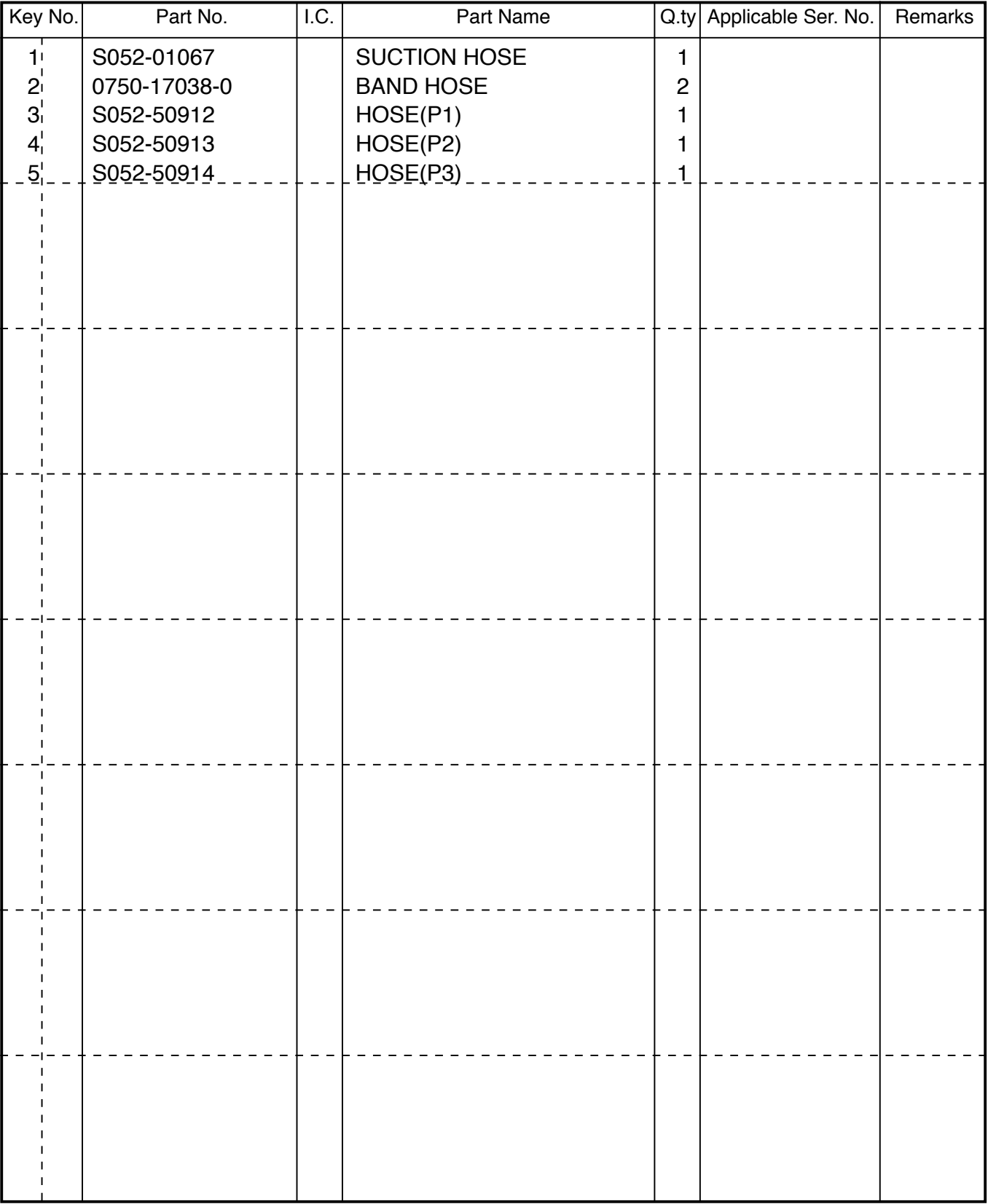


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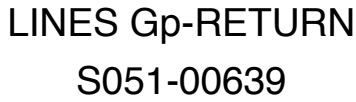
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5-10

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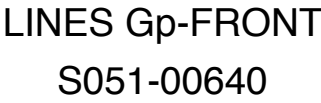


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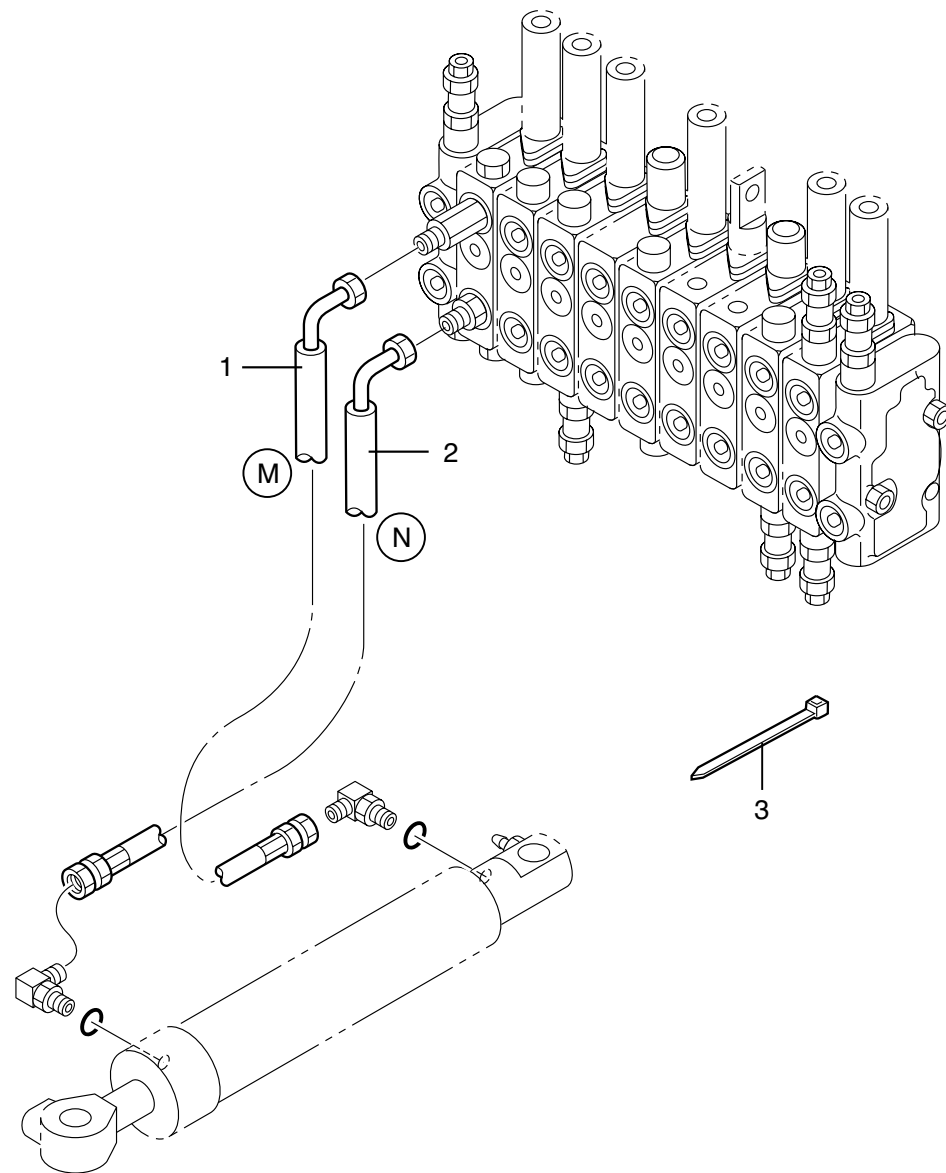
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5-12

PAGE 126

LINES Gp-BOOM SWING
S051-00641

5-13



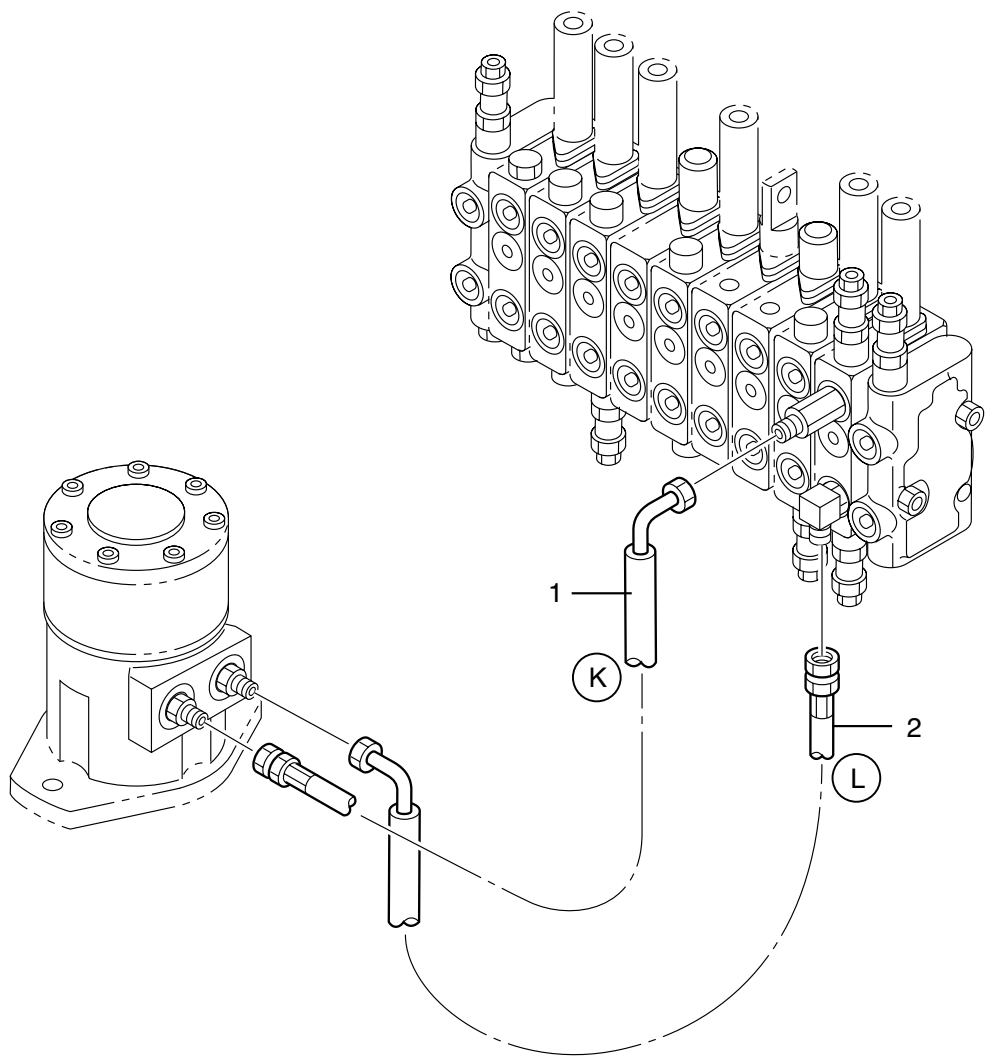
LINES Gp-BOOM SWING
S051-00641

SER No,
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5-13

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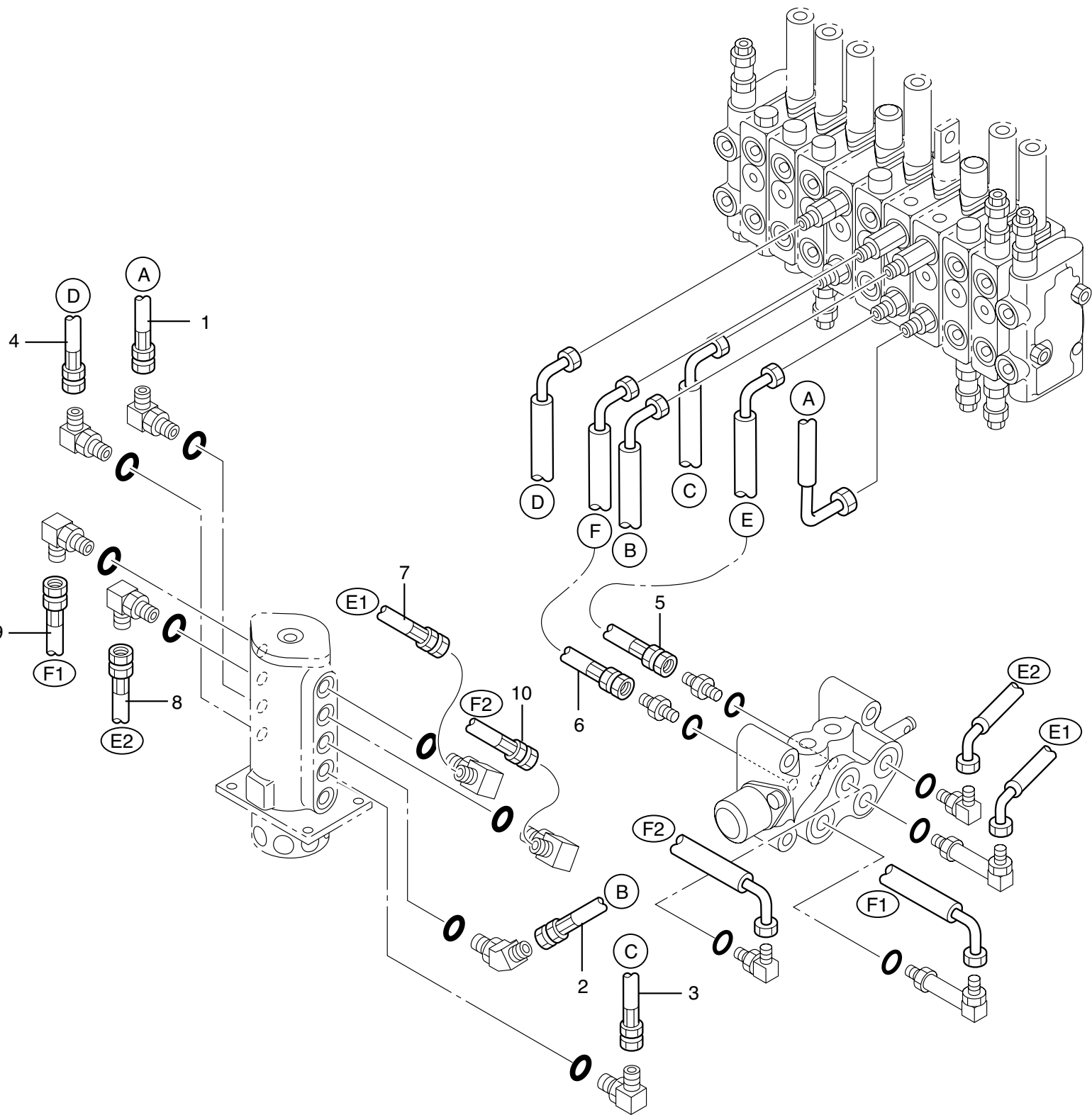
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5-14

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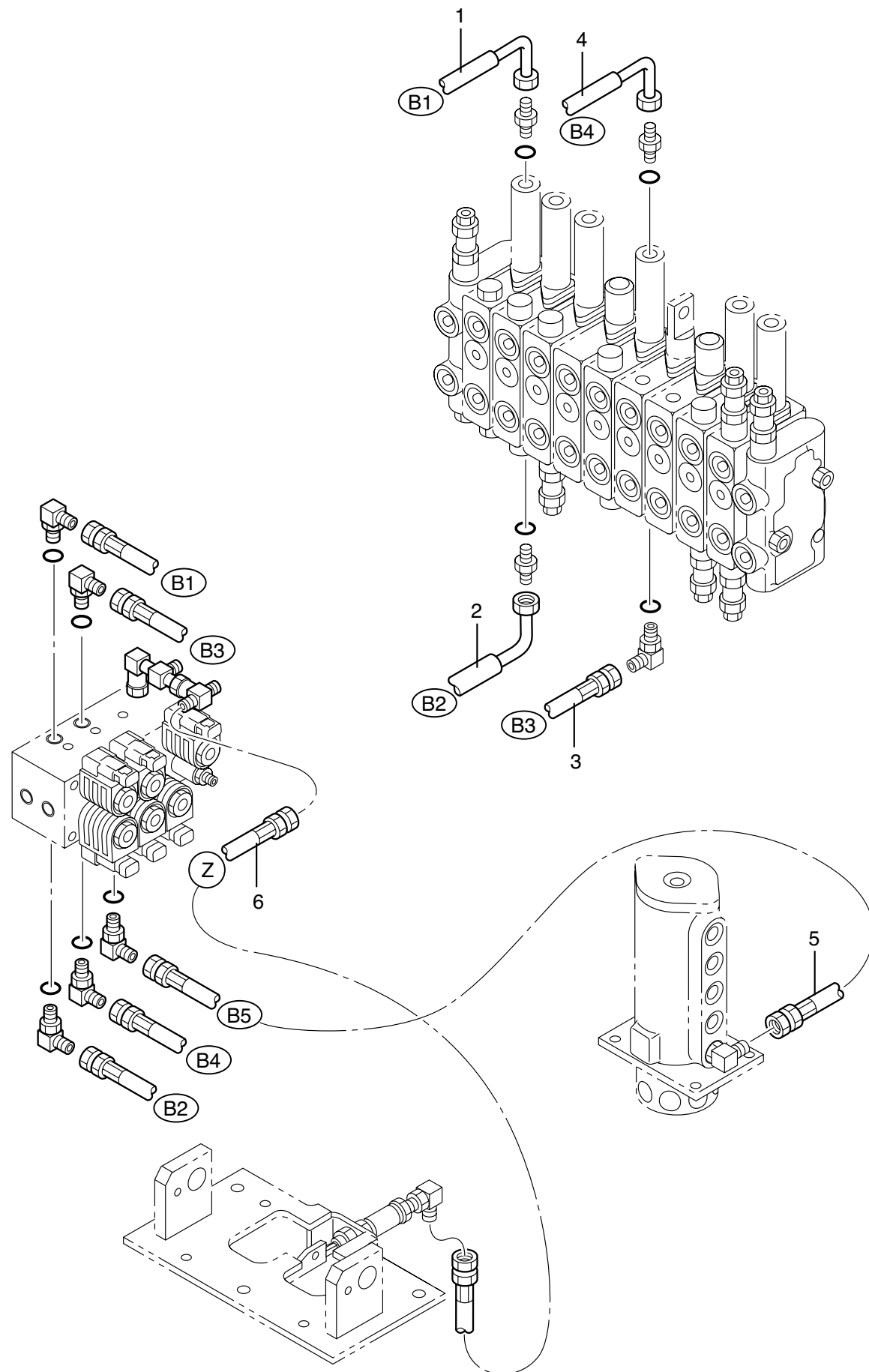


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LINES Gp-PILOT
 S051-00644

5-16



LINES Gp-PILOT
 S051-00644

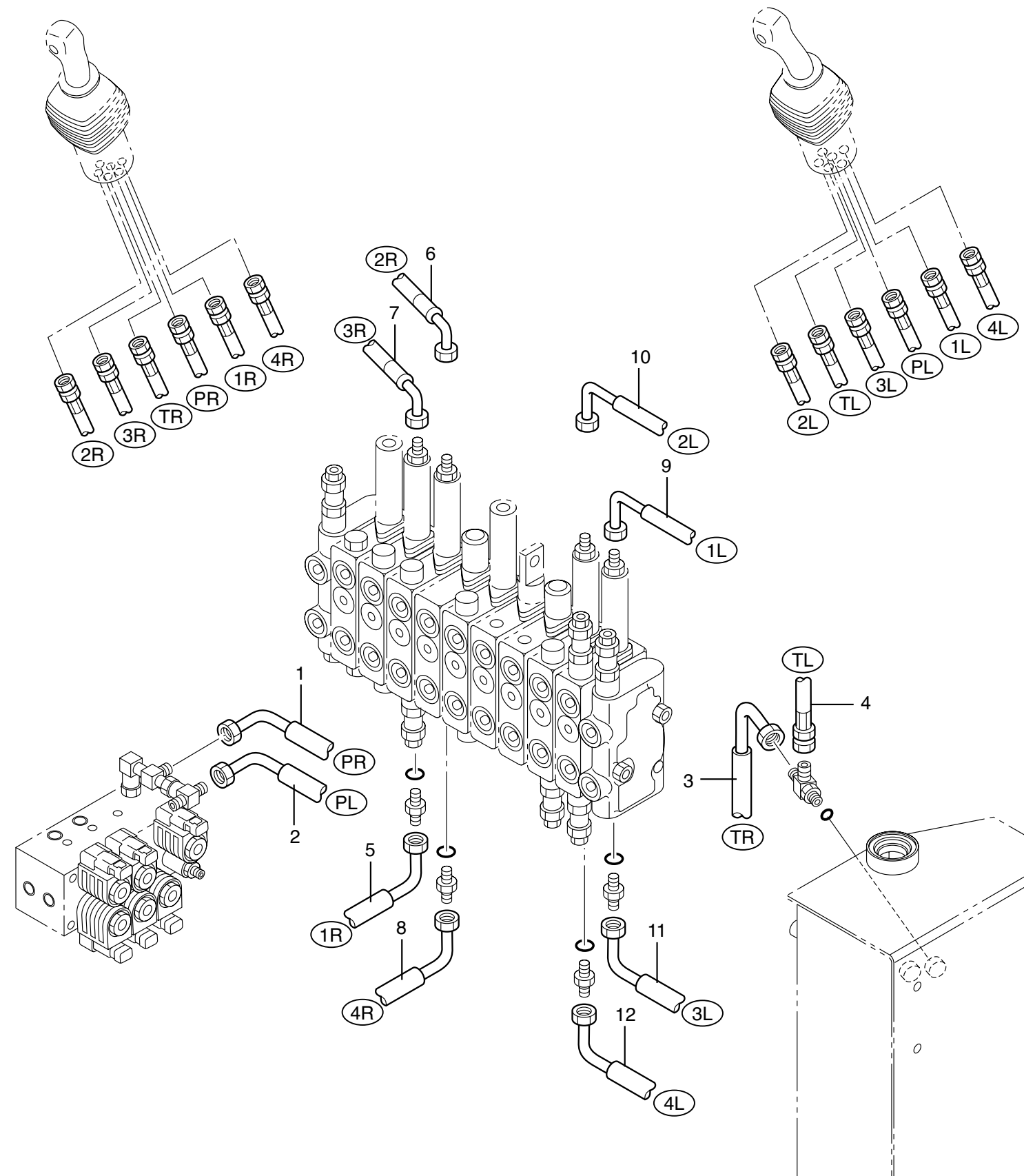
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LINES Gp-PILOT J/S
 S051-00645

5-17



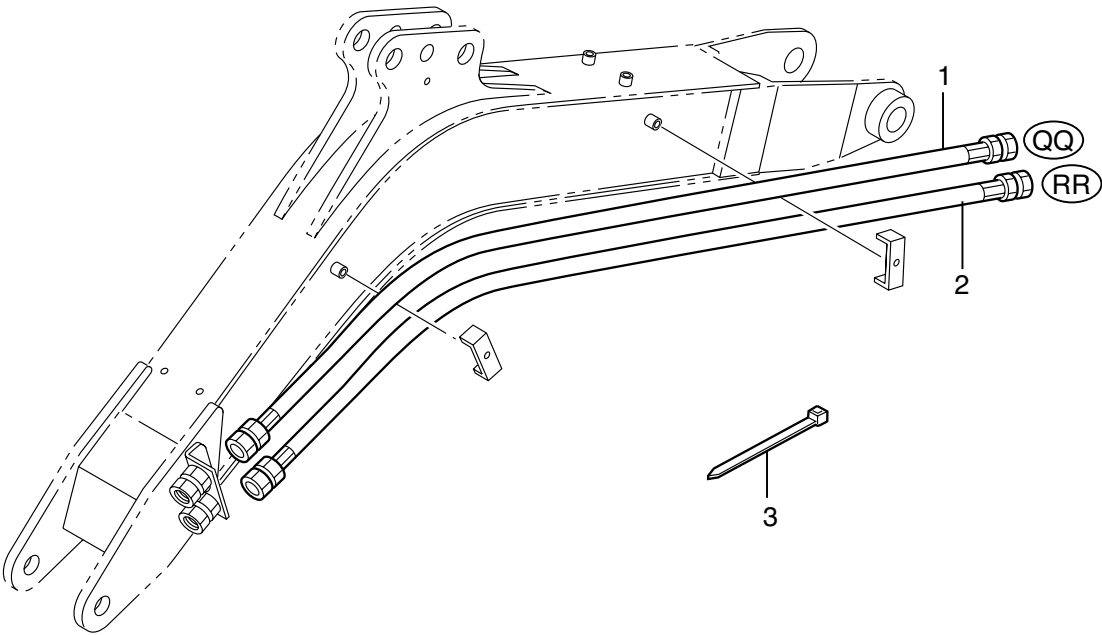
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 S051-00645

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H0900051~9999

5-17

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5-18



5-18

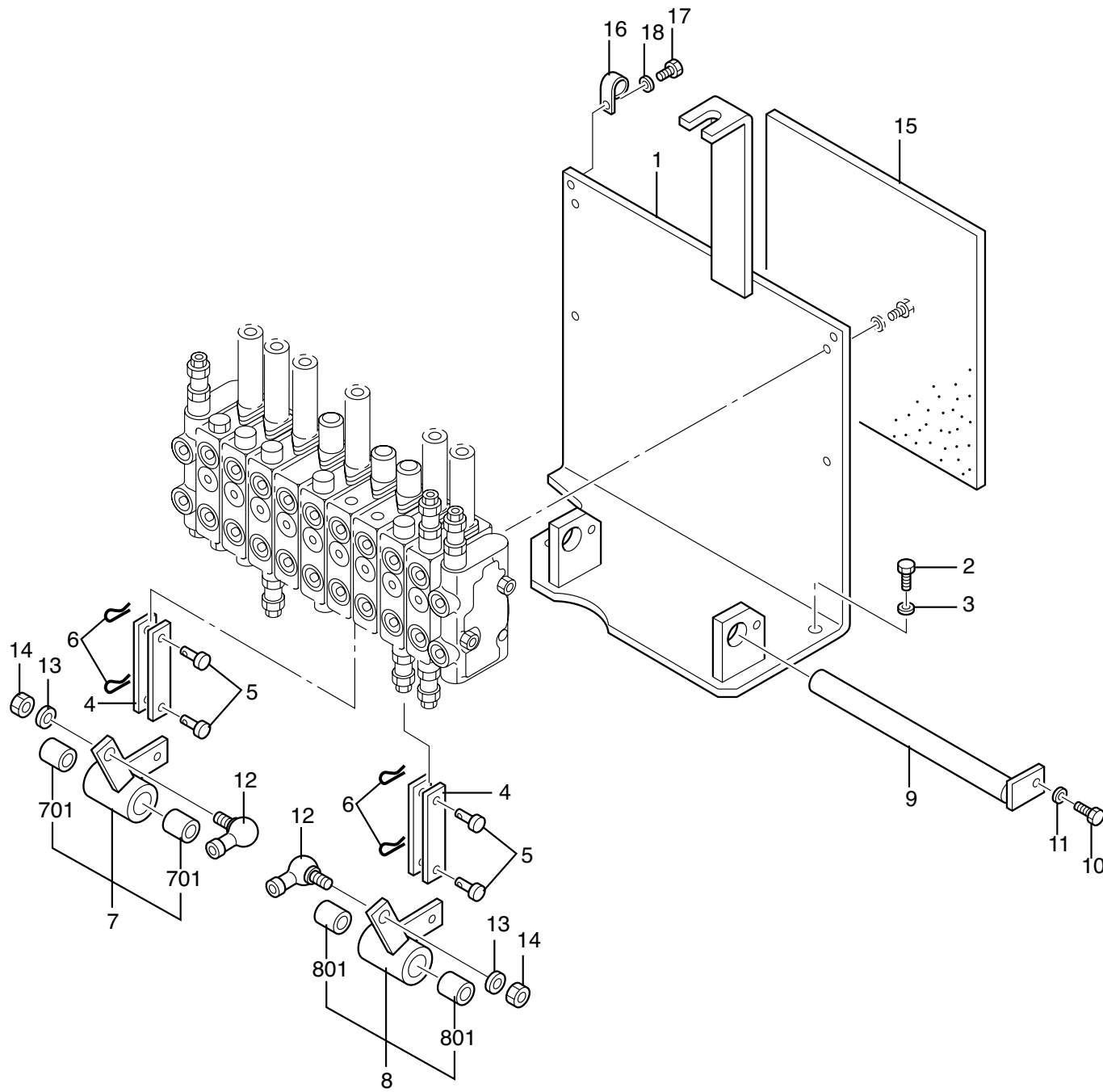
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OPERATOR Ar.

CONTROL Gp-LO
S061-00234

6-01



CONTROL Gp-LO
S061-00234

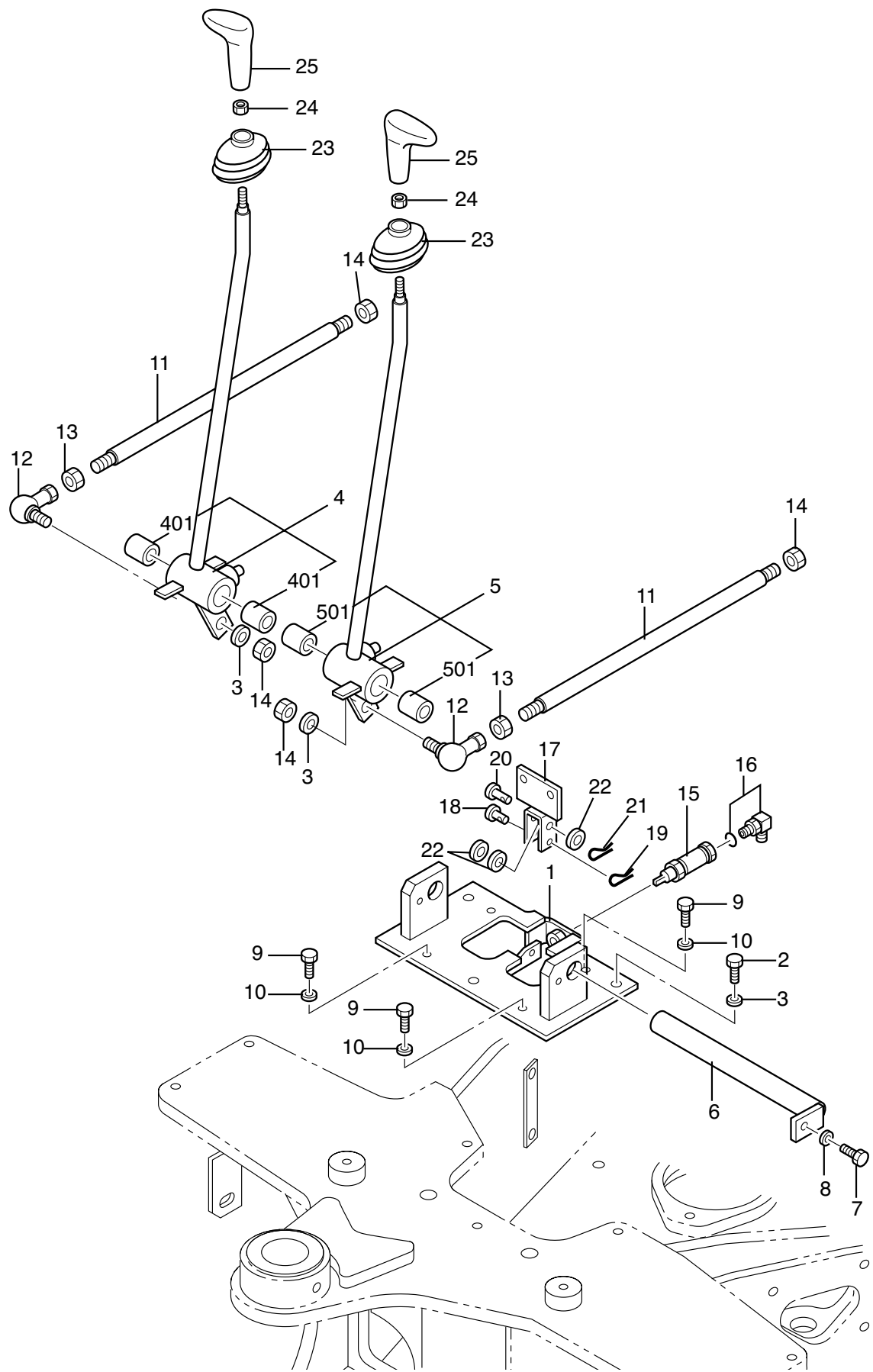
SER No,
H0900051~9999

6-01

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S062-00735		BRACKET	1		
2	0103-10020-a		BOLT	2		
3	0389-10000-a		WASHER HARDEN	2		
4	S062-00736		PLATE	4		
5	NB50-023030		PIN	4		
6	0421-05018-0		PIN SNAP	4		
7	S062-00737		LINK	1		
7 01	0480-20020-0		BUSH	2		
8	S062-00738		LINK	1		
8 01	0480-20020-0		BUSH	2		
9	S062-00739		PIN	1		
10	0102-08020-a		BOLT	1		
11	0389-08000-a		WASHER	1		
12	0450-10015-a		LINK BALL	2		
13	0389-10000-a		WASHER	2		
14	0251-10000-a		NUT	2		
15	S062-00925		INSULATION	1		
16	0920-00115-0		CLIP	1		
17	0102-06016-a		BOLT	1		
18	0389-06000-a		WASHER	1		

CONTROL Gp-TRAVEL
S061-00235

6-02



CONTROL Gp-TRAVEL
S061-00235

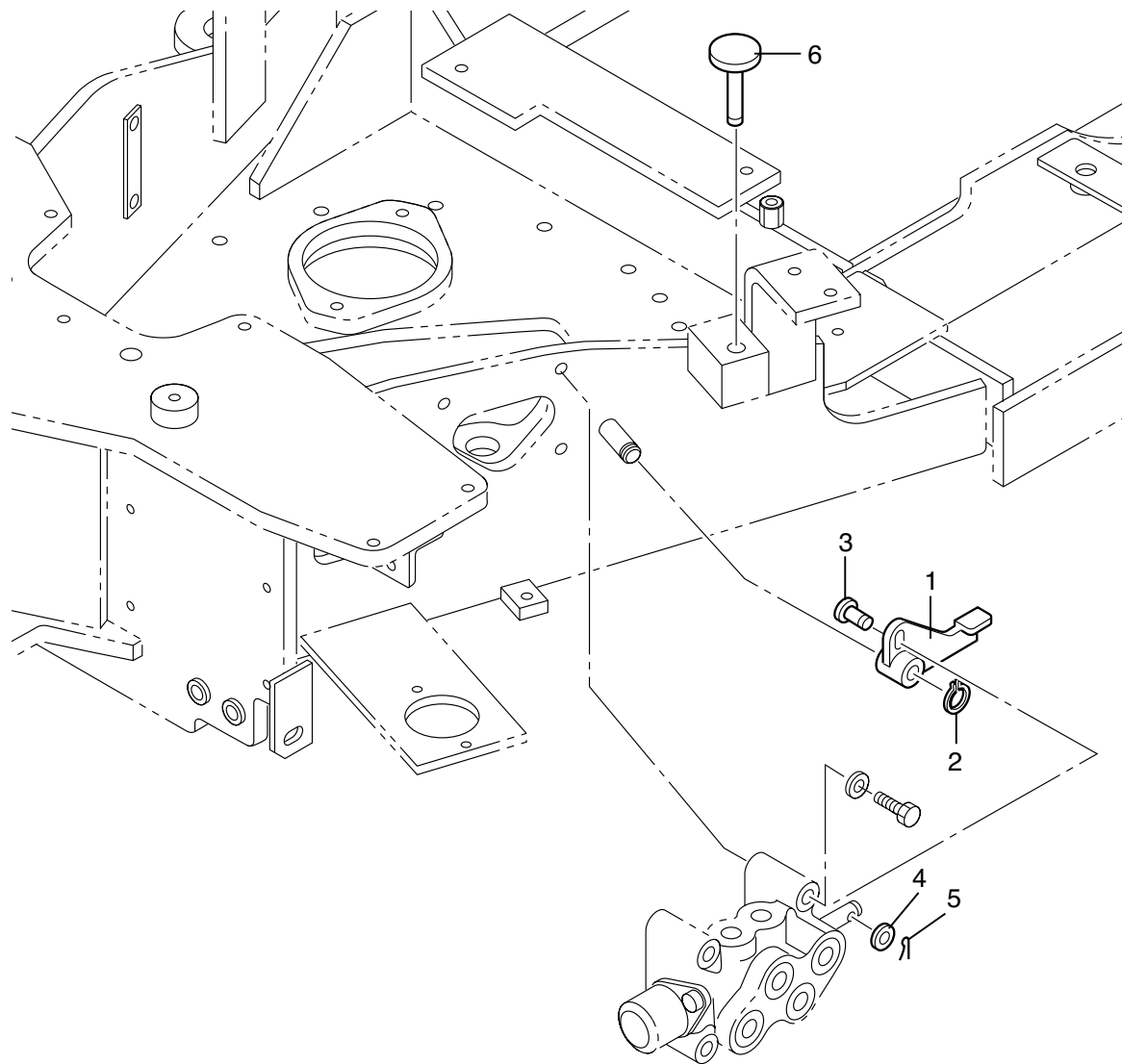
6-02

SER No,
H0900051~9999

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S062-00740		STAND, LEVER	1		
2	0103-10020-a		BOLT	3		
3	0389-10000-a		WASHER	5		
4	S062-00741		DRIVE LEVER(R)	1		
4 01	0480-20020-0		BUSH	2		
5	S062-00742		DRIVE LEVER(L)	1		
5 01	0480-20020-0		BUSH	2		
6	S062-00739		PIN	1		
7	0102-08020-a		BOLT	1		
8	0389-08000-a		WASHER HARDEN	1		
9	0102-08025-a		BOLT	4		
10	0251-08000-a		NUT	4		
11	S062-00743		ROD	2		
12	0450-10015-b		LINK BALL	2		
13	0251-10000-b		NUT(L)	2		
14	0251-10000-a		NUT	4		
15	S052-00986		LOCK CYLINDER	1		
16	0602-04004-X		ELBOW 90° O-RING BOSS	1		
17	S062-00744		LOCK BRACKET	1		
18	S062-00745		PIN	1		
19	0421-05018-0		PIN SNAP	1		
20	071340093		PIN	1		
21	0421-08028-0		PIN SNAP	1		
22	0383-08000-a		WASHER	3		
23	822-00080		BOOT	2		
24	0257-12000-f		NUT	2		
25	S062-00587		GRIP	2		

CONTROL Gp-EX
S061-00236

6-03



CONTROL Gp-EX
S061-00236

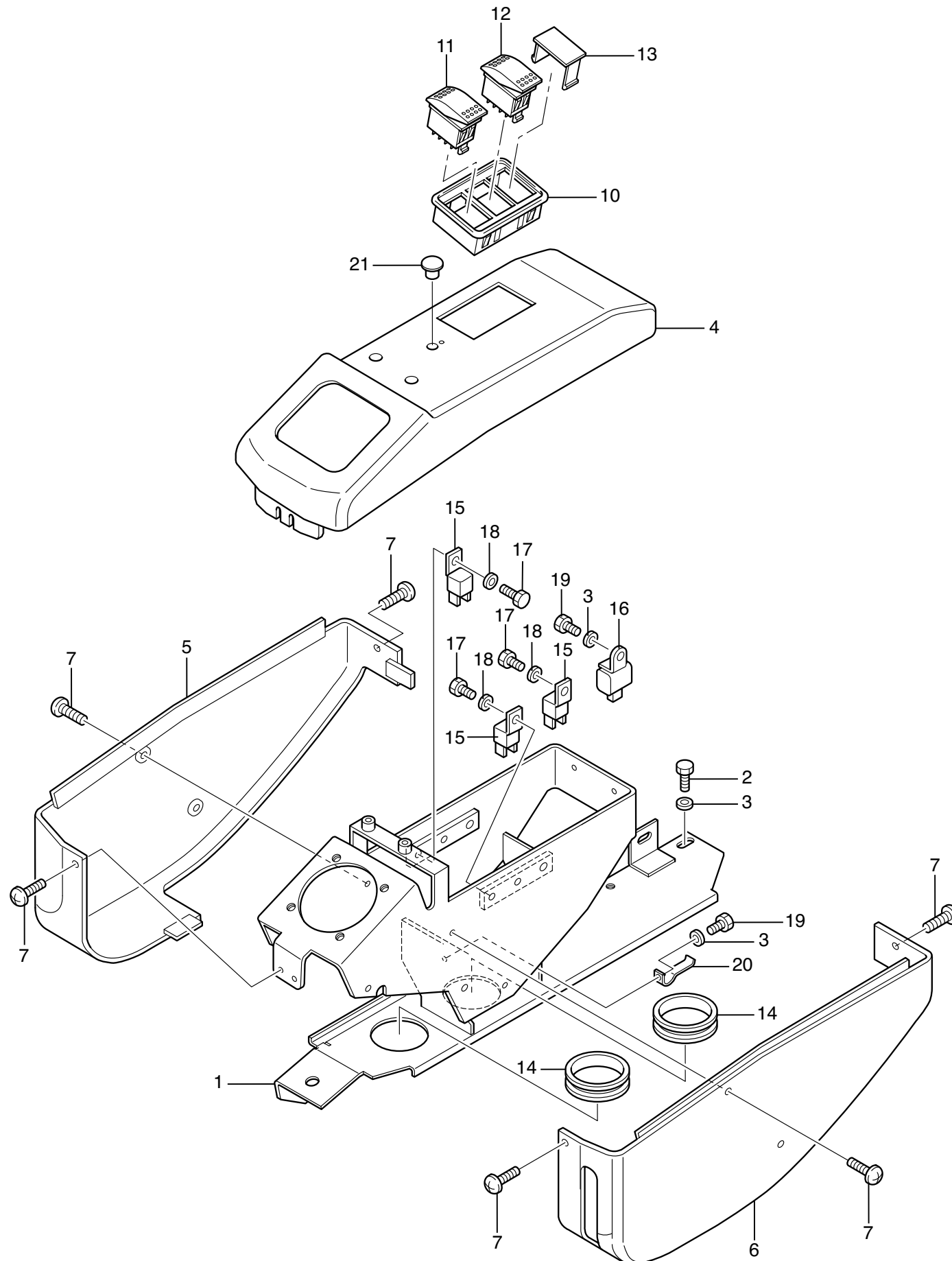
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6-03

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CONSOLE Gp-LH
S061-00237

6-04



CONSOLE Gp-LH
S061-00237

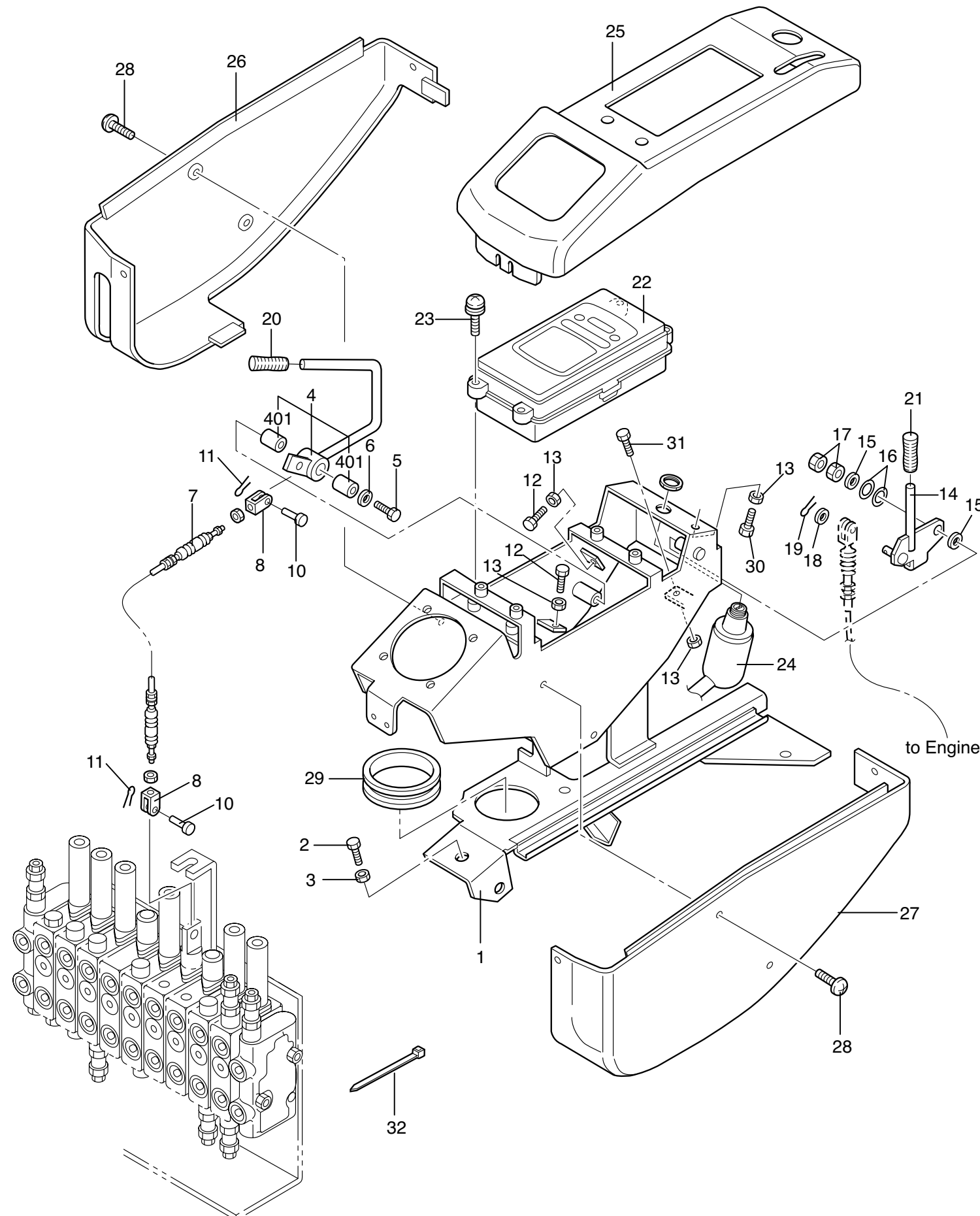
SER No,
H0900051~9999

6-04

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
1	S062-00746		LEVER STAND(L)	1		
2	0102-08020-a		BOLT	4		
3	0389-08000-a		WASHER	6		
4	S062-00697		COVER(L)	1		
5	S062-00700		COVER	1		
6	S062-00701		COVER	1		
7	0333-04016-e		SCREW TRUSSHEAD	8		
8						
9						
10	S062-00881		SW PANEL	1		
11	S062-00596		SW LAMP	1		
12	S062-00882		SW OVER DRIVE	1		
13	S062-00602		SW PLUG	1		
14	0800-60060-0		GROMMET	2		
15	40901-04160	D	RELAY	3	H0900056~	
16	S042-00558	D	TIMER	1	H0900056~	KUBOTA T0070-31411
17	0102-06012-a	D	BOLT	3	H0900056~	
18	0389-06000-a	D	WASHER	3	H0900056~	
19	0102-08012-a	D	BOLT	2	H0900056~	
20	0942-00003-0		DEPPING PLATE	1		
21	0814-16000-0		RUBBER BUSHING	1		

CONSOLE Gp-RH
S061-00238

6-05



CONSOLE Gp-RH
S061-00238

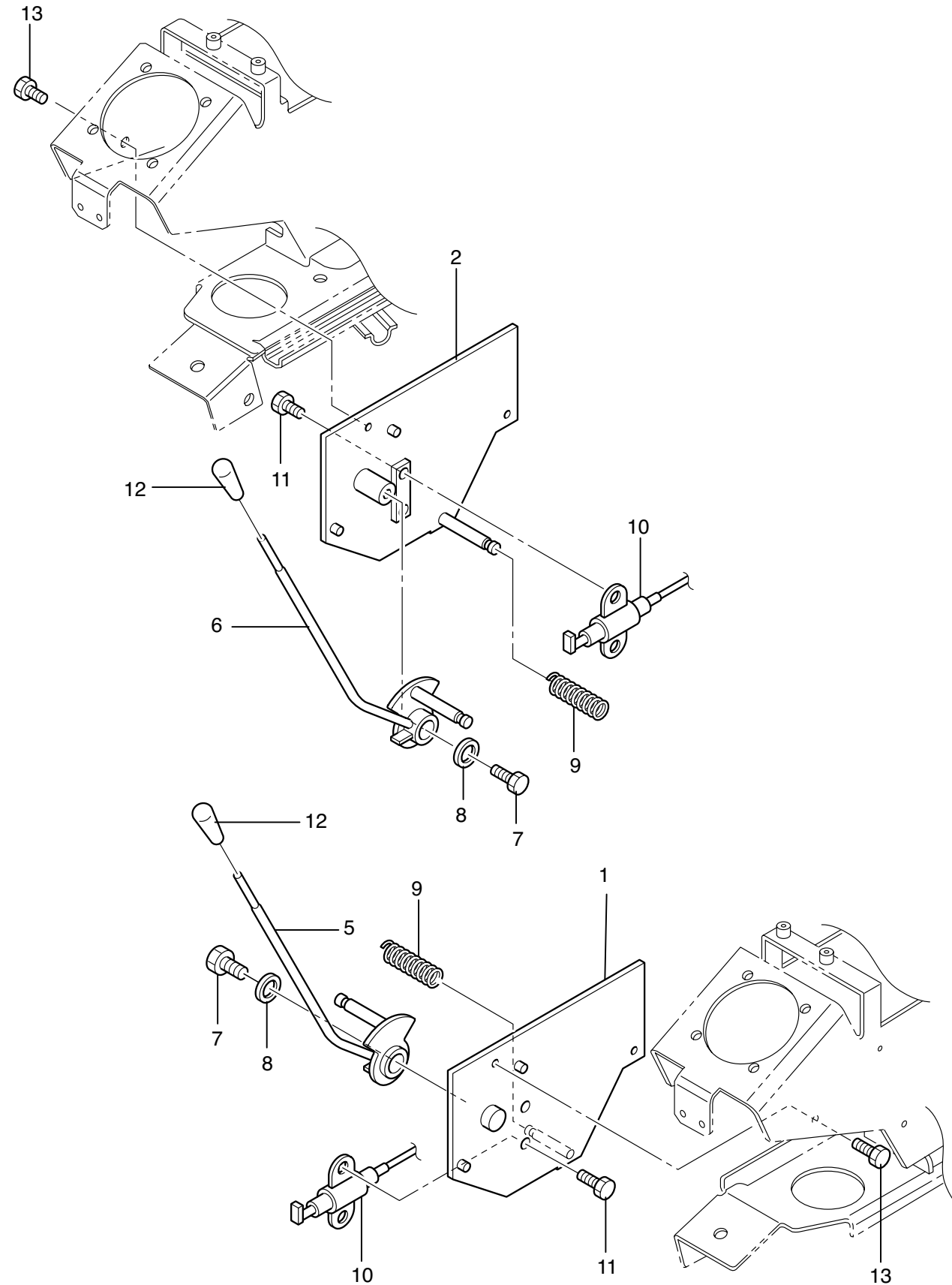
SER No,
H0900051~9999

6-05

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1	S062-00770		LEVER STAND (R)	1		
2	0102-08020-a		BOLT	3		
3	0389-08000-a		WASHER HARDEN	3		
4	S062-00771		DOZER LEVER	1		
4	0480-20015-0		BUSH	2		
5	0102-08016-a		BOLT	1		
6	0387-08000-a		WASHER	1		
7	S062-00885		PUSH PULL CABLE	1		
8	S062-00886		ROD END	2		
10	NB50-023030		PIN	2		
11	0421-05018-0		PIN SNAP	2		
12	0102-06020-a		BOLT	2		
13	0251-06000-a		NUT	2		
14	S062-00772		ACCELE LEVER	4		
15	0389-10000-a		WASHER	1		
16	0390-10000-c		WASHER CONICAL SPRING	2		
17	0251-10000-a		NUT	2		
18	0389-06000-a		WASHER	1		
19	0421-06021-0		PIN SNAP	1		
20	S062-00559		GRIP	1		
21	870-00007		GRIP	1		
22	S062-00690		CLUSTER PANEL	1		
23	0346-04025-a		SCREW PANHEAD	4		
24	S083-00100		KEY SWITCH ASSY	1		
25	S062-00696		COVER(R)	1		
26	S062-00698		COVER	1		
27	S062-00699		COVER	1		
28	0333-04016-a		SCREW TRUSSHEAD	8		
29	0800-60005-0		GROMMET	1		
30	0102-06035-a		BOLT	1		
31	0102-06030-a		BOLT	1		
32	0805-48301-B		BAND NYLON	2		

CONTROL Gp-LOCK
S061-00239

6-06



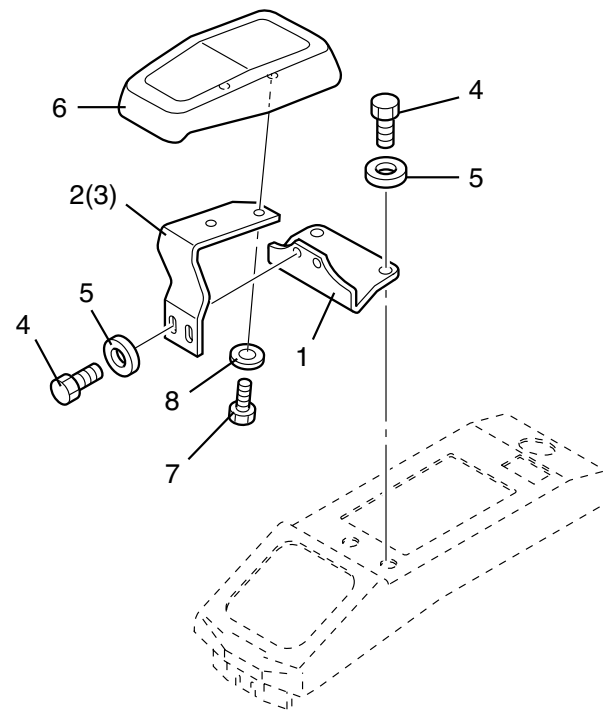
CONTROL Gp-LOCK
S061-00239

SER No,
H0900051~9999

6-06

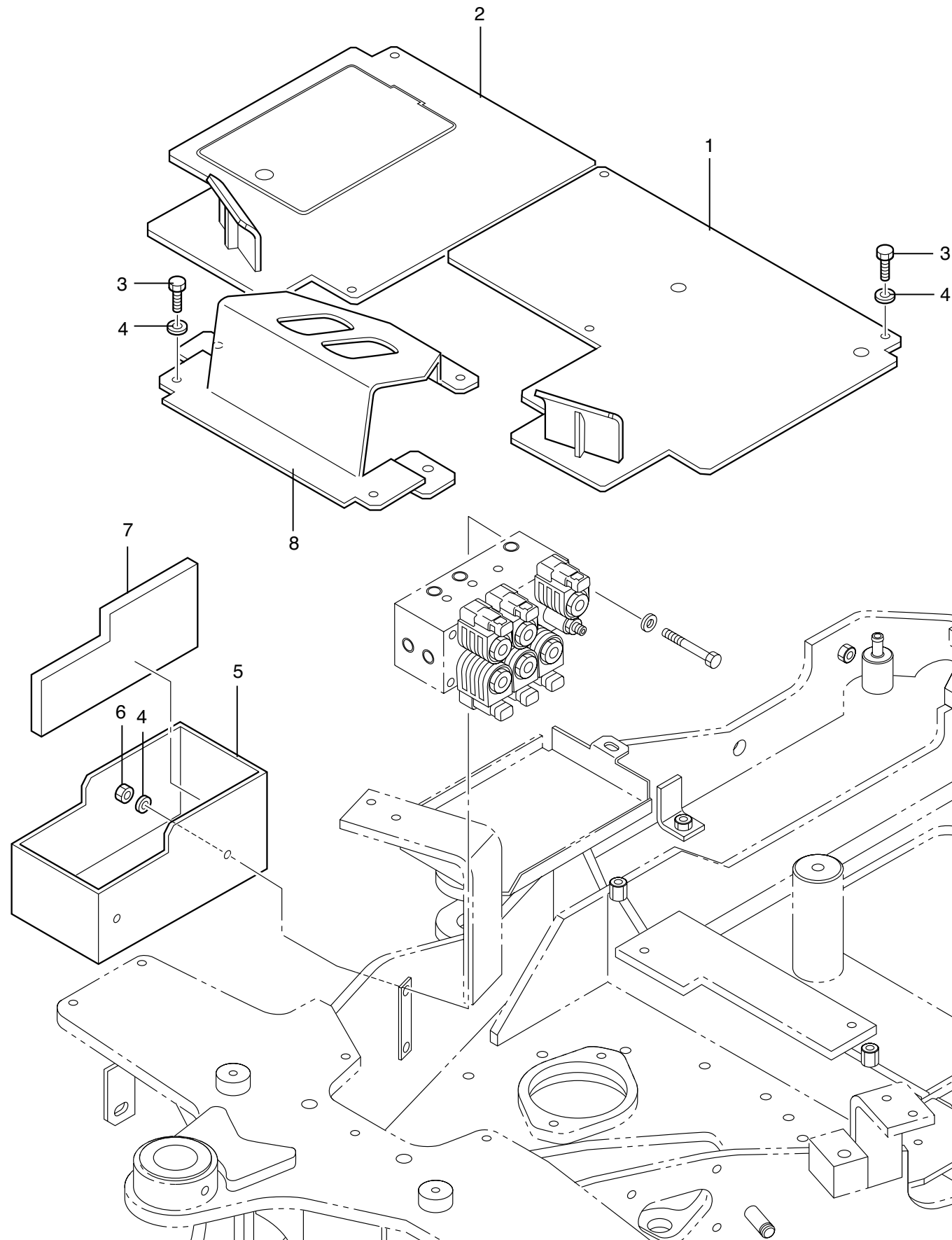
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H0900051~9999

[illegible]

PLATFORM Gp
S061-00240

6-08



PLATFORM Gp
S061-00240

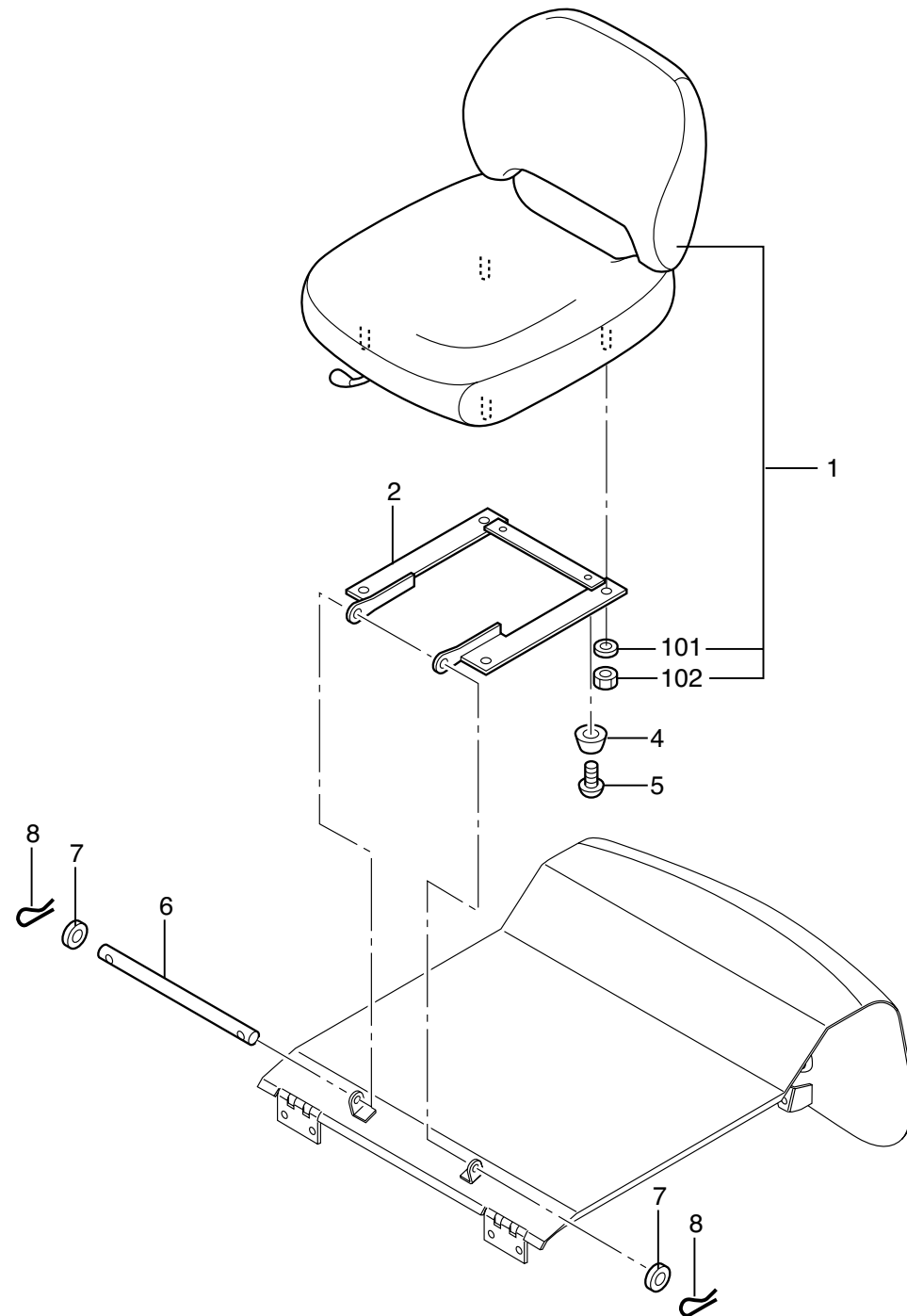
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6-08

[illegible]

SEAT Gp
S061-00241

6-09



SEAT Gp
S061-00241

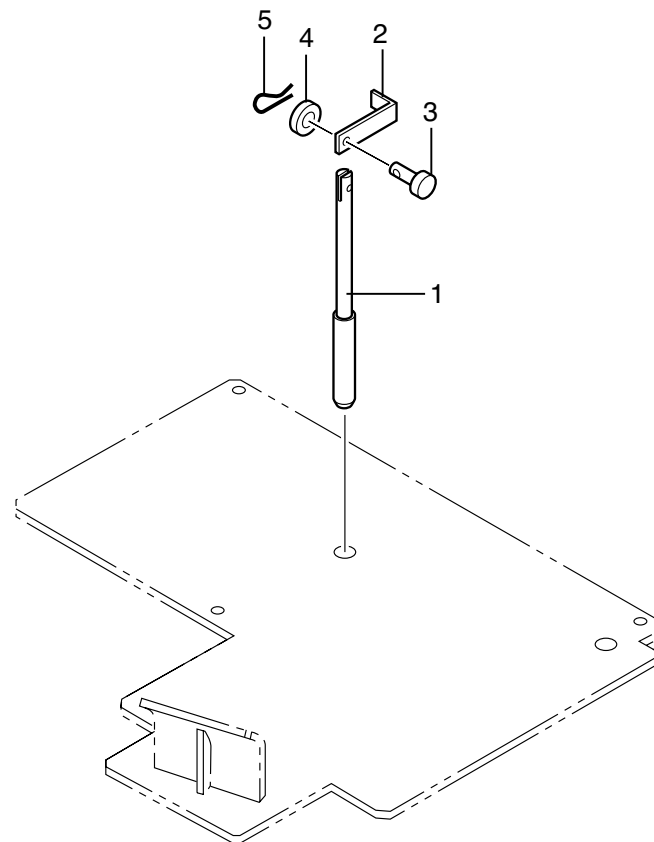
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6-09

[illegible]

SLEW LOCK PIN Gp
S061-00242

6-10



SLEW LOCK PIN Gp
S061-00242

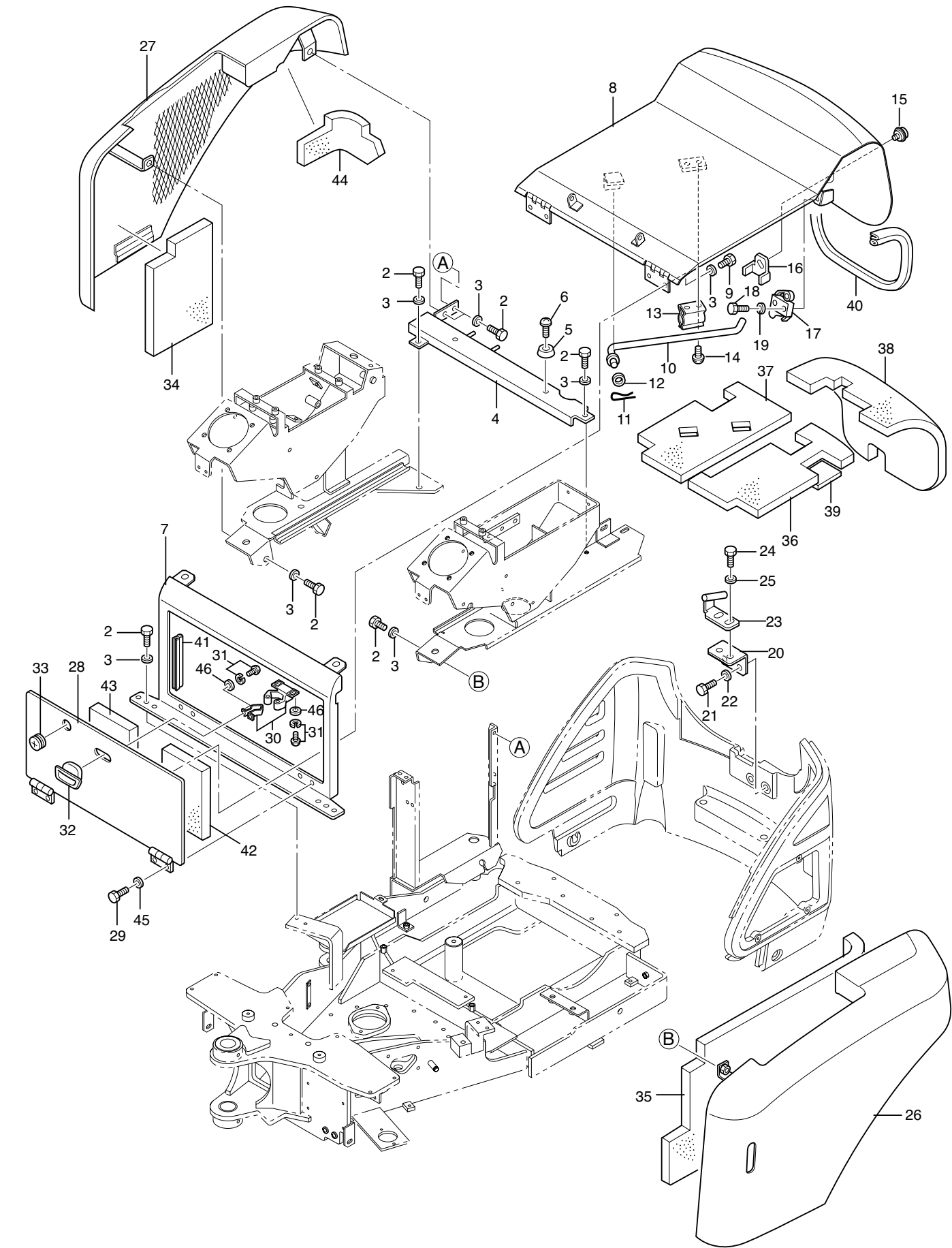
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6-10

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FIREWALL Gp
S061-00243

6-11



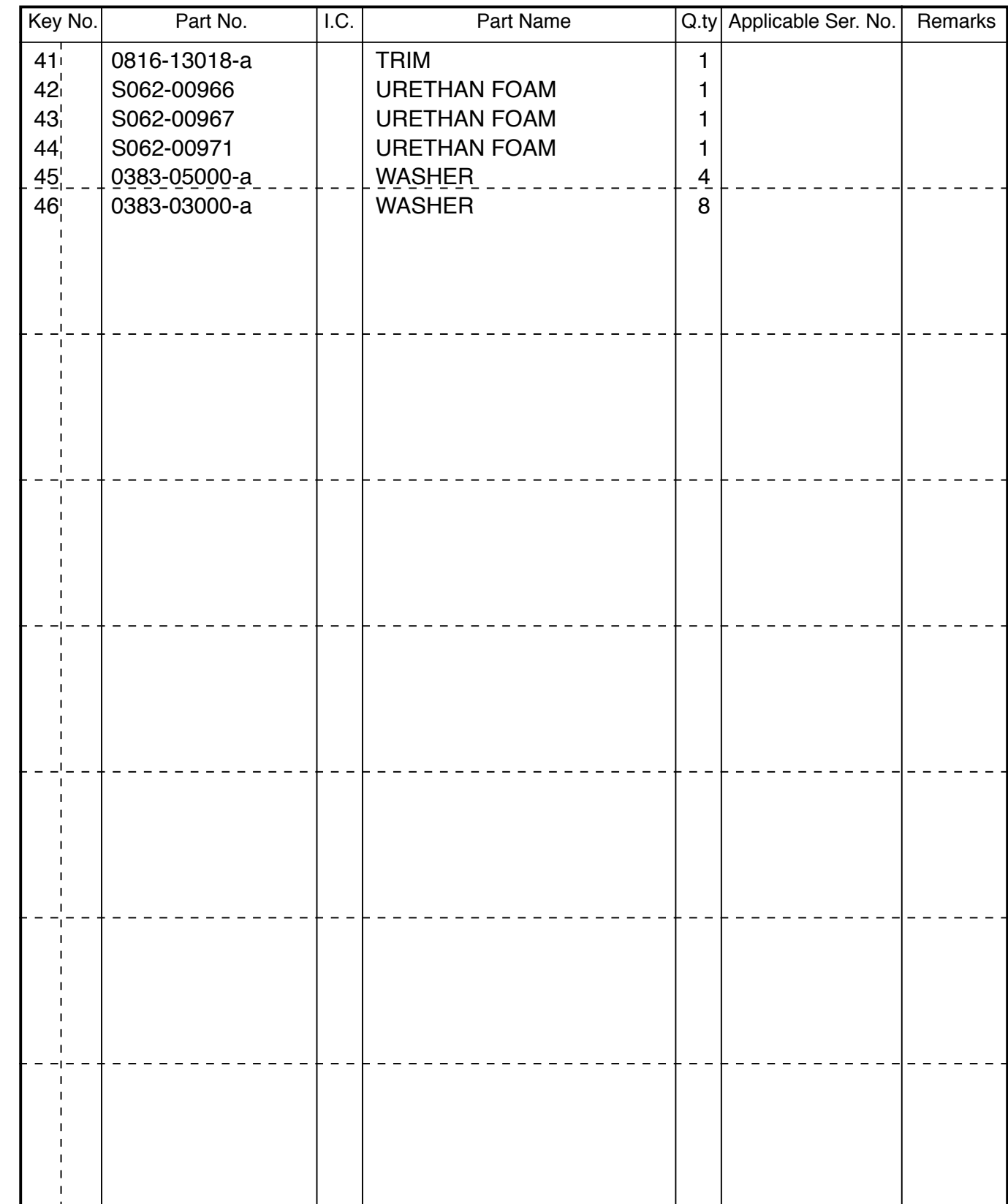
FIREWALL Gp
S061-00243

SER No,
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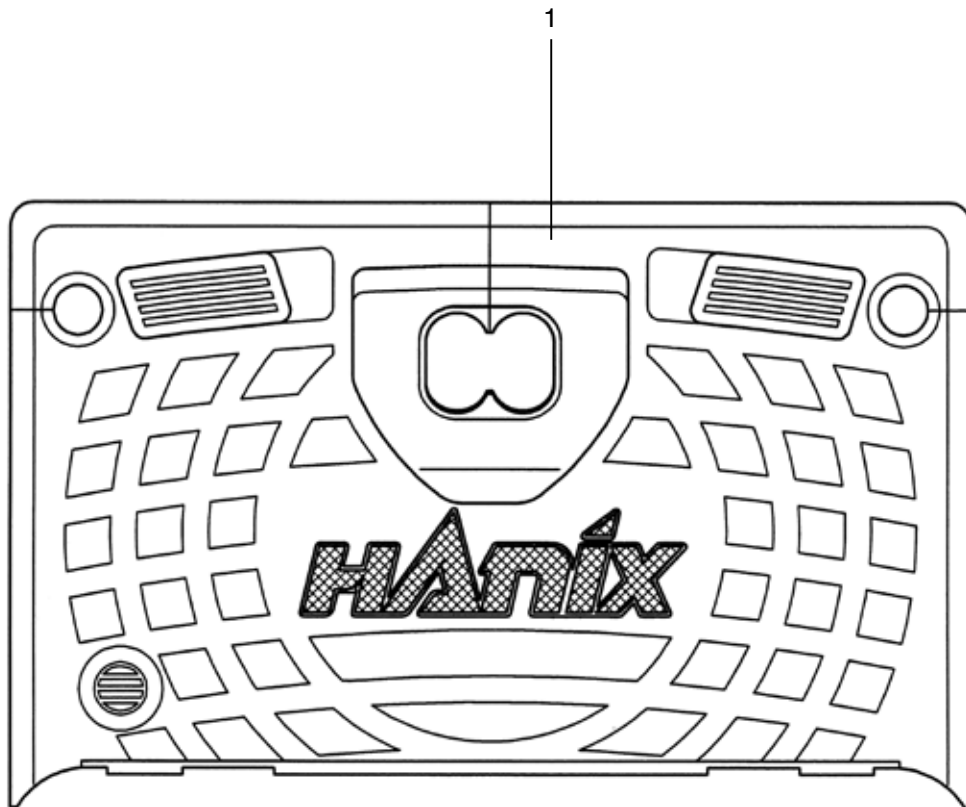
6-11

Key No.	Part No.	I.C.	Part Name	Q.ty	Applicable Ser. No.	Remarks
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2	0102-08020-a		BOLT	9		
3	0389-08000-a		WASHER	13		
4	S062-00763		BRACKET	1		
5	0801-24010-0		RUBBER FOOT	2		
6	0347-04010-a		SCREW PANHEAD	2		
7	S062-00754		FRONT BRACKET	1		
8	S062-00753		ENGINE COVER	1		
9	0102-08016-a		BOLT	4		
10	S062-00768		BAR	1		
11	0421-08028-0		PIN SNAP	1		
12	0383-08000-a		WASHER	1		
13	S062-00766		HOLDER	1		
14	0347-05008-a		SCREW PANHEAD	2		
15	SP62-00001		KEY	1		
16	S062-00940		PLATE	1		
17	S012-00120		SNATCH LOCK	1		
18	0102-06025-a		BOLT	2		
19	0389-06000-a		WASHER HARDEN	2		
20	S062-00948		BRACKET	1		
21	0103-10020-a		BOLT	2		
22	0389-10000-a		WASHER	2		
23	S062-00765		STRIKER	1		
24	0102-08025-a		BOLT	2		
25	0387-08000-a		WASHER	2		
26	S062-00751		SIDE COVER (L)	1		
27	S062-00752		SIDE COVER (R)	1		
28	S062-00755		FRONT COVER	1		
29	0102-05016-a		BOLT	4		
30	1350-01300-A		ROLLAR CATCH	2		
31	0347-03008-a		SCREW PANHEAD	8		
32	S062-00767		HANDLE	1		
33	0800-32023-S		GROMMET	1		
34	S062-00917		URETHAN FOAM	1		
35	S062-00918		URETHAN FOAM	1		
36	S062-00919		URETHAN FOAM	1		
37	S062-00921		URETHAN FOAM	1		
38	S062-00922		URETHAN FOAM	1		
39	S062-00923		URETHAN FOAM	1		
40	0813-08128-0		WEATHER STRIP	1		

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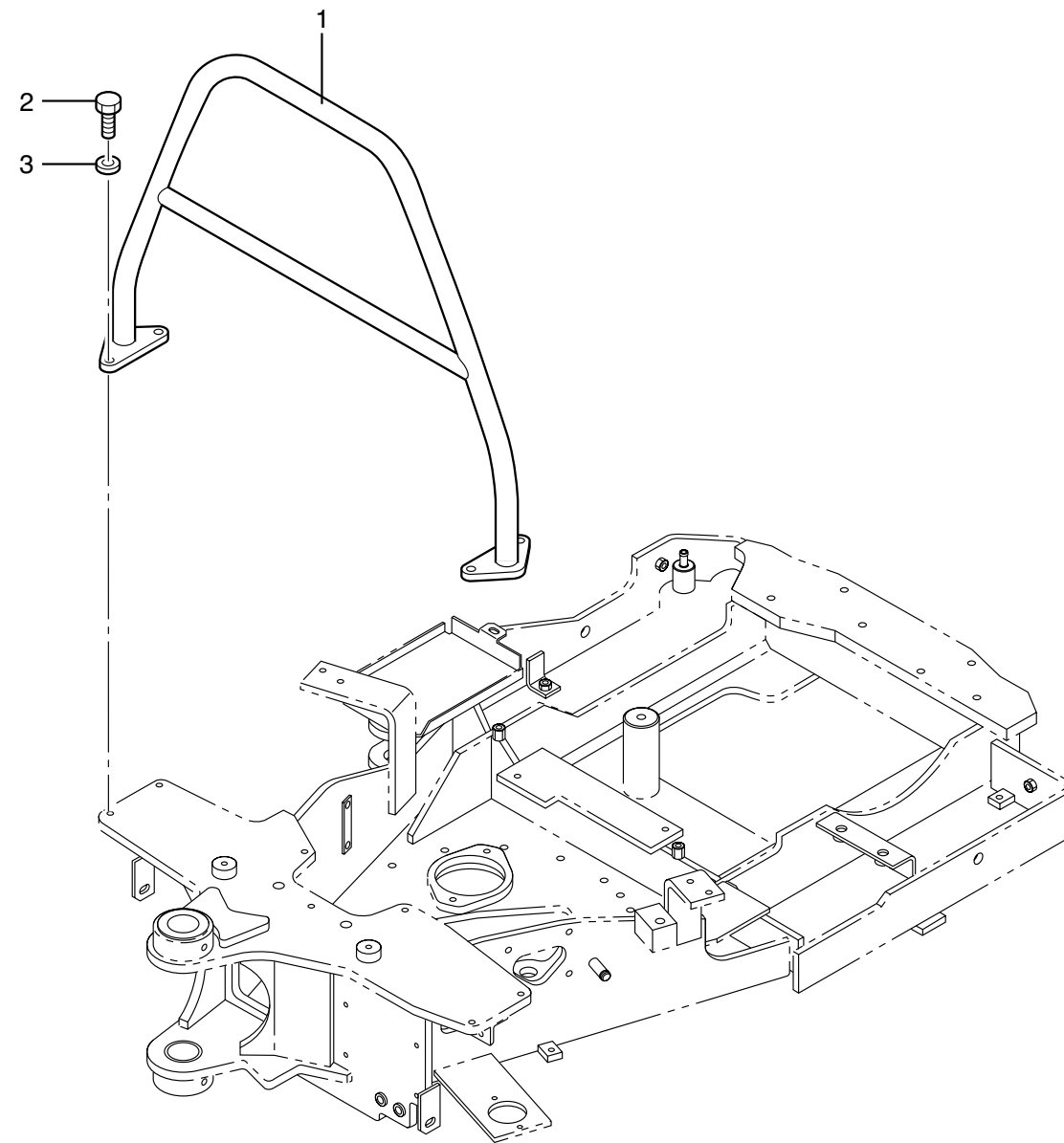


6-12

[illegible]

HAND RAIL Gp
S061-00248

6-13



HAND RAIL Gp
S061-00248

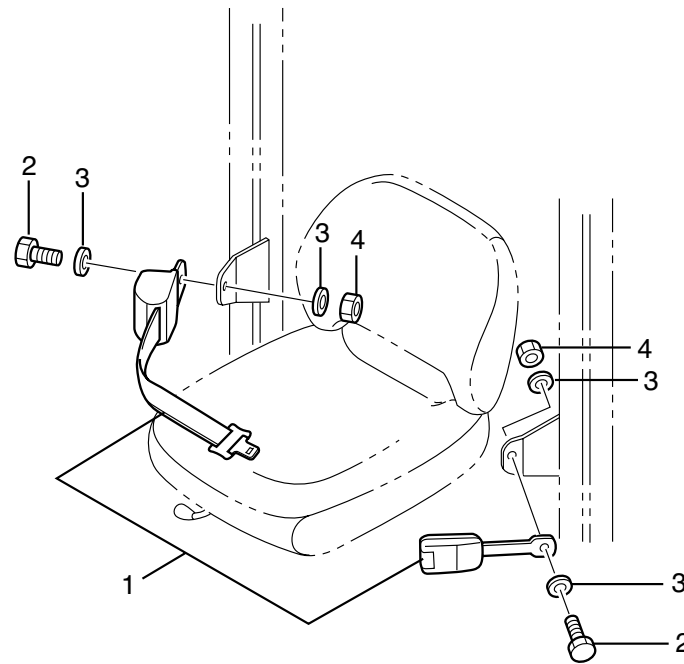
SER No,
H0900051~9999

6-13

[illegible]

BELT Gp-SEAT
S061-00287

6-51



BELT Gp-SEAT
S061-00287

SER No,
H0900051~9999

6-51

[illegible]

6-52

This exploded view diagram illustrates the assembly of a vehicle's rear window. The main components are labeled as follows:

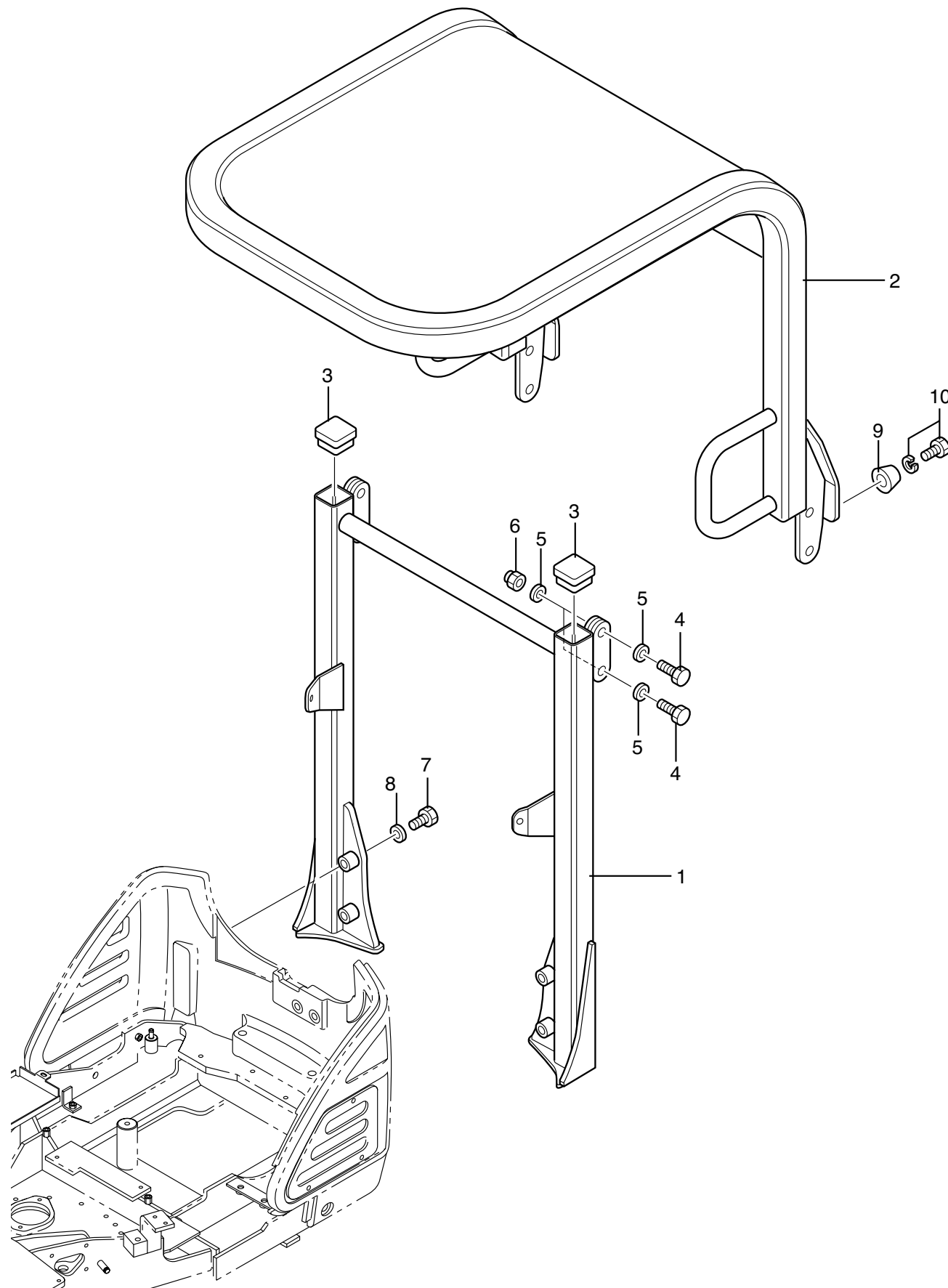
- 1, 12**: The rear window frame or sash.
- 2**: A curved upper trim or seal piece.
- 3**: A small curved trim piece.
- 4**: A small cylindrical pin or clip.
- 5**: A small cylindrical pin or clip.
- 6**: A small cylindrical pin or clip.
- 7**: A small cylindrical pin or clip.
- 8**: A small cylindrical pin or clip.
- 9**: A small rectangular block or spacer.
- 10**: A small cylindrical pin or clip.
- 11**: A small cylindrical pin or clip.

The diagram shows the window frame (1, 12) being assembled with the upper trim (2) and various pins (4, 5, 6, 7, 8, 10, 11) to secure the window in place. The lower trim piece (3) is also shown separately. The background shows a partial view of the vehicle's rear interior structure.

[illegible]

CANOPY Gp
S061-00289

6-53



CANOPY Gp
S061-00289

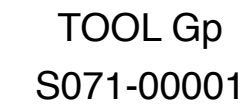
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[illegible]

MISCELLANEOUS Ar.

7-01

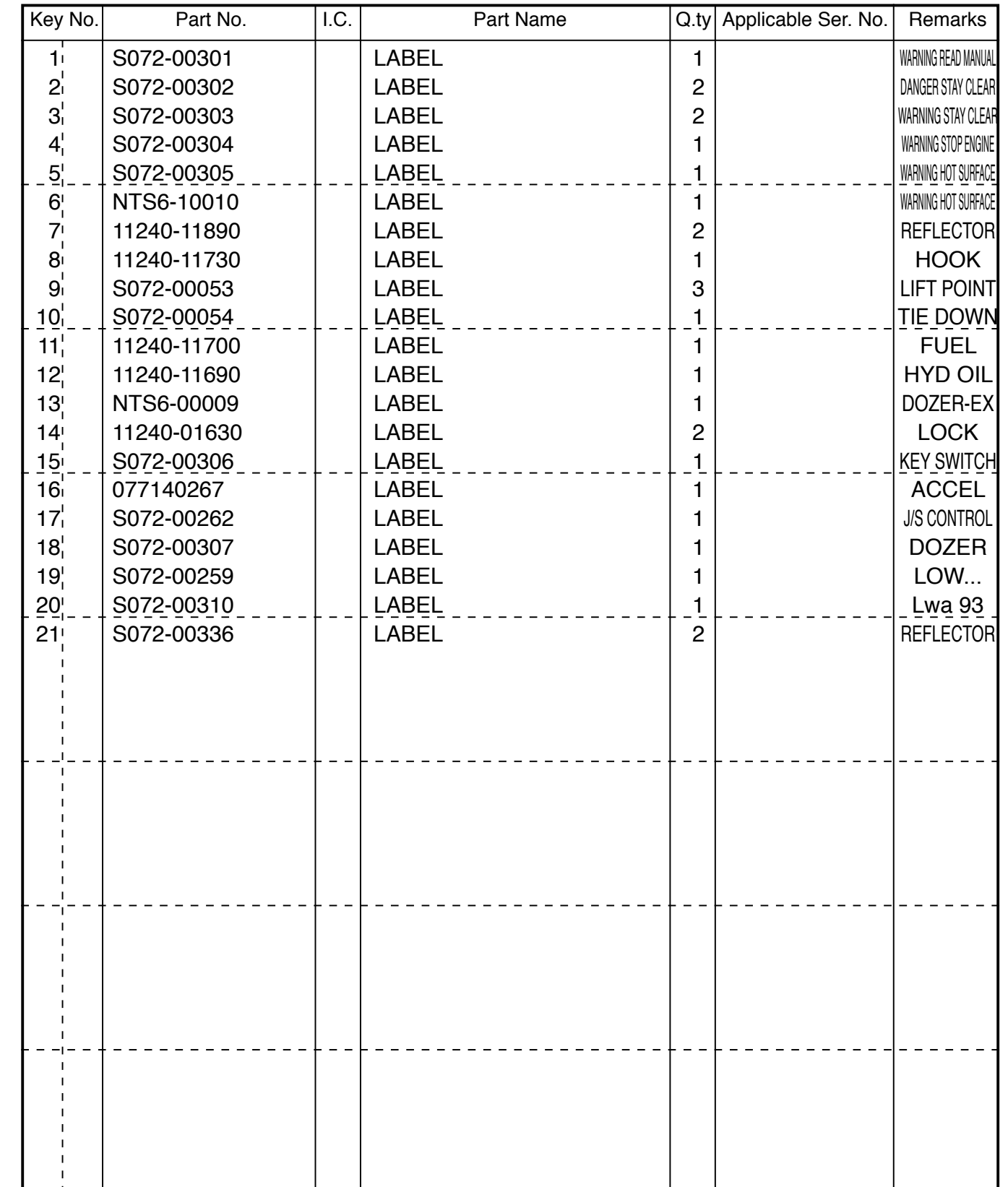


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H0900051~9999

7-01

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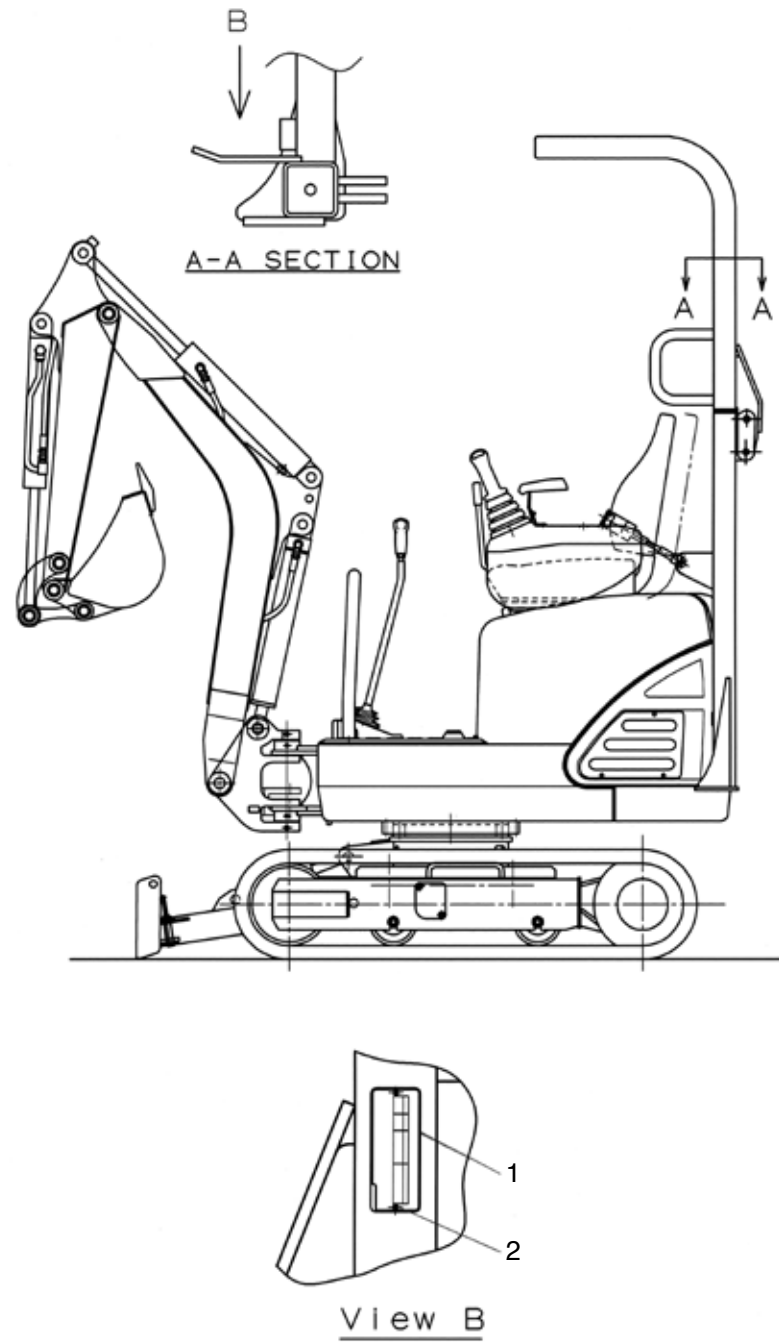
7-02



7-03

[illegible]

7-04



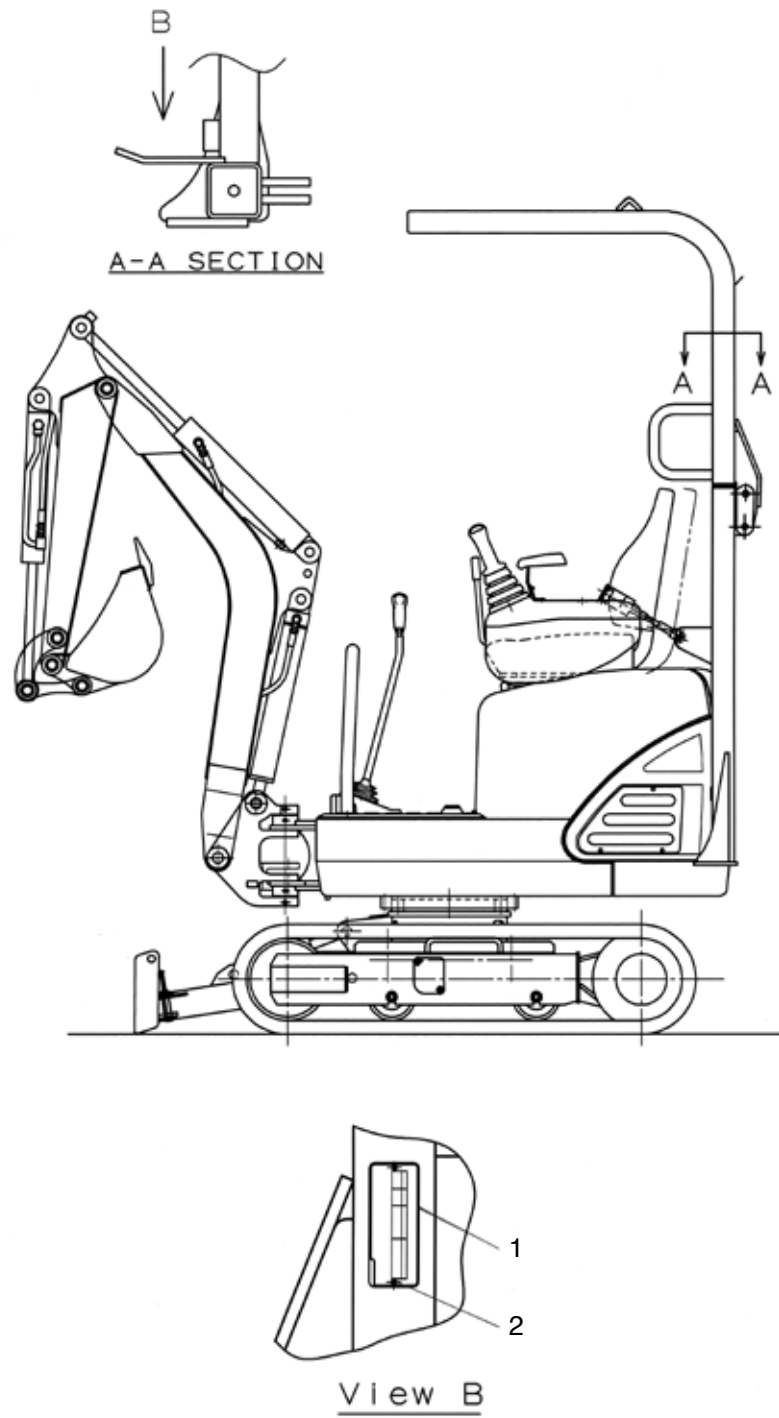
LABEL Gp-ROLL BAR
S071-00181

SER No,
H0900051~9999

7-04

[illegible]

7-05



LABEL Gp-CANOPY
S071-00182

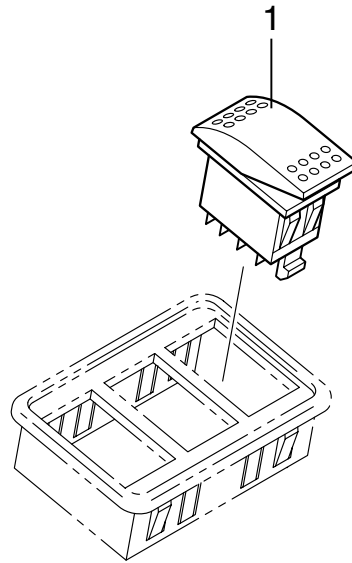
SER No,
H0900051~9999

7-05

[illegible]

ATTACHMENT Ar.

9-01

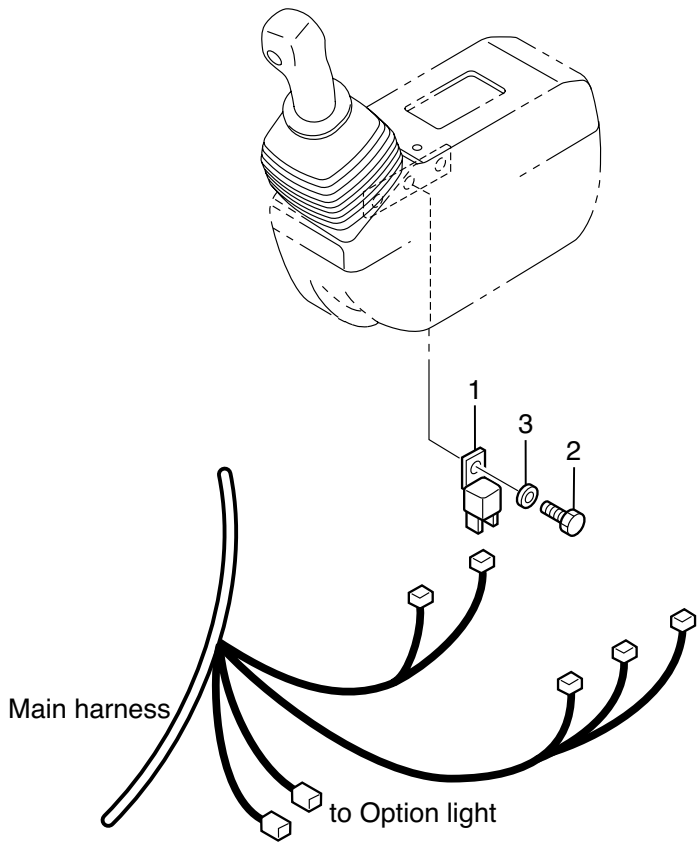


SER No,
H0900051~9999

9-01

[illegible]

9-02



9-02

SER No,
H0900051~9999[illegible]

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0101-			0102-08050-a	2	2-51
0101-05010-a	7	1-03	0102-08050-a	2	5-07
0101-06016-a	6	1-07	0102-08065-a	2	4-05
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0102-05016-a	29	6-11	0102-08085-a	10	5-06
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0102-06016-a	16	2-05	0103-10016-a	2	1-03
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0102-06020-a	12	6-05	0103-10020-a	21	6-11
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0102-06025-a	2	5-05	0103-10025-a	7	3-08
0102-06025-a	18	6-11	0103-10025-a	2	6-51
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0102-08014-a	2	5-09	0103-10050-a	2	3-06
0102-08016-a	6	1-05	0103-10090-a	3	2-01
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0102-08016-a	5	6-05	0103-14060-a	7	6-53
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0251-16000-a	4	3-03	0387-08000-a	25	6-11
0257-			0387-12000-a	4	1-02
0257-12000-f	24	6-02	0388-		
0275-			0388-08000-a	7	1-06
0275-16000-a	3	3-05	0388-10000-a	16	4-01
0276-			0389-		
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0294-			0389-06000-a	7	1-07
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0383-08000-a	22	6-02	0389-08000-a	3	6-11

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0389-10000-a	3	1-03	0490-00004-b	120	5-03-1
0389-10000-a	3	1-04	0490-00006-b	108	3-07
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0389-10000-a	8	3-08	0490-00010-b	117	5-03-1
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0389-10000-a	15	6-05	0490-00018-b	111	3-07
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0421-05018-0	11	6-05	0540-02000-F	120	2-04
0421-05018-0	5	6-10	0540-02000-F	2	2-07
0421-06021-0	19	6-05	0540-02000-F	6	2-08
0421-08028-0	21	6-02	0540-02000-F	127	2-09
0421-08028-0	8	6-09	0540-02000-F	4	2-51
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0576-04004-X	5	3-08	0647-16000-H	6	5-01
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0580-			0648-06006-Y	17	1-04
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0581-			0689-04004-0	2	5-06
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0594-			0695-44065-X	6	5-03-1
0594-04004-H	6	5-06	0697-		
0594-06006-H	14	1-04	0697-04004-0	13	5-03-1
0598-			0697-06006-0	12	5-01
0598-04004-Y	14	5-03-1	07134		
0600-			071340093	20	6-02
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0600-02004-X	4	5-03-1	0730-02004-0	8	1-01
0600-04004-X	3	2-03	0730-02004-0	3	3-06
0600-04004-X	3	2-04	0731-		
0600-04004-X	2	2-09	0731-02004-0	9	1-01
0600-04004-X	5	3-07	0750-		
0600-04004-X	2	3-08	0750-06015-0	14	4-05
0600-04004-X	2	3-12	0750-17038-0	2	5-10
0600-04004-X	5	5-03-1	0751-		
0600-04004-X	4	5-07	0751-06015-0	12	4-05
0600-04006-X	3	5-06	0753-		
0600-06004-X	4	3-07	0753-08025-0	14	4-03
0600-08004-X	4	5-02	0753-08030-0	8	4-05
0601-			0753-08032-0	9	4-05
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0602-04004-X	2	2-03	0754-		
0602-04004-X	2	2-04	0754-04048-0	10	1-01
0602-04004-X	7	3-01	0754-04052-0	11	1-01
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0602-04004-X	8	5-03-1	0757-04002-0	13	4-05
0602-04004-X	4	5-06	0757-06050-0	28	4-03
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0602-04004-X	2	5-08	0759-03400-b	12	4-03
0602-04004-X	16	6-02	0759-05300-b	10	4-04
0602-04006-X	11, 12	5-03-1	0759-05800-b	9	4-04
0602-06004-X	11	5-01	0760-		
0602-06006-X	16	1-04	0760-12500-0	15	4-03
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0603-06006-X	10	5-03-1	077140267	16	7-02
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				40901-	1-04
	0805-25100-B	15	3-09	40901-04160	11
	0805-35150-B	12	1-01	40901-04160	15
	0805-48301-B	18	2-05	40901-04160	1
	0805-48301-B	3	5-18	41301-	
	0805-48301-B	32	6-05	41301-01240	10
	0805-50250-B	11	5-12	562-	1-04
	0805-50250-B	3	5-13	562-00800	5
0809-	0805-50250-B	14	5-17	562-00900	4
				7323-	1-03
	0809-16005-B	14	3-09	7323-3525-50	801
0813-	0809-16020-B	16	4-05	81005	1-06
				810050001	104
0814-	0813-08128-0	40	6-11	822-	3-05
				822-00080	23
0815-	0814-16000-0	21	6-04	870-	6-02
	0814-28000-0	13	1-01	870-00007	21
0816-				870-00008	12
	0815-20015-0	15	1-02	902-	6-05
	0815-20030-0	16	1-02	902-00450	1
	0815-20032-0	2506	4-03	905-	6-06
	0815-30030-0	2501	4-03	905-00140	12
	0815-30033-0	2503	4-03	933-	4-01
	0815-30036-0	2505	4-03	933-59007	5
	0815-30038-0	2502	4-03	HAS4-	2-06
	0815-30044-0	2504	4-03	HAS4-20001	30
				MBU3-	4-03
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0942-	0920-00115-0	15	2-05	MBU6-	4-02
	0920-00115-0	16	6-01	MBU6-28002-1	9
10-				NB50-	6-06
	0942-00003-0	9	1-07	NB50-023030	5
	0942-00003-0	6	4-01	NB50-023030	10
11240-	0942-00003-0	20	6-04	NB50-023030	3
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	11240-11690	12	7-02	NK27-	1-06
1350-	11240-11700	11	7-02	NK27-71600	12
	11240-11730	8	7-02	NOS-	5-06
1350-	11240-11890	7	7-02	NOS3-00005	10
				NOS3-00006	11
1350-	11-3208700-2	101	2-06	NPS4-	2-02
				NPS4-20015	12
1350-	11801-00200	19	4-01	NPS4-20016	13
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1350-	12514-1003	9	1-04	NSS2-45970	1
	12514-1102	901	1-04	NTS1-	6-07
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	NTS1-00018	10	3-01	NTS5-10018	10
	NTS1-00045	7	2-01	NTS5-60000	1
	NTS1-00045	5	2-02	NTS6-	5-07
	NTS1-00045	4	2-07	NTS6-00009	13
	NTS1-00045	6	3-11	NTS6-10010	6
	NTS1-00500	2	3-11	S012-	7-02
	NTS1-00600	5	2-01	S012-00120	17
	NTS1-00600	3	2-02	S012-00247	1
NTS1-	NTS1-00600	3	2-07	S012-00334	9
	NTS1-00600	3	3-11	S012-00460	15
	NTS1-50000	1	3-05	S012-00689	6
	NTS1-50001	101	3-05	S012-00877	1
	NTS1-50002	102	3-05	S012-00880	1
	NTS1-60000	1	3-03	S012-00881	1
	NTS1-60001	101	3-03	S012-00887	1
	NTS1-60002	102	3-03	S012-00894	8
	NTS1-60003	104	3-03	S012-00895	6
	NTS1-70000	1	3-08	S012-00910	2
NTS1-	NTS1-70001	101	3-08	S012-00911	3
	NTS1-70002	102	3-08	S012-00912	4
	NTS1-70004	103	3-08	S012-00917	1
	NTS1-70005	105	3-08	S012-00919	101
	NTS1-70006	110	3-08	S012-00979	7
	NTS1-70007	113	3-08	S012-00986	1
	NTS1-70100	109	3-08	S012-00987	5
	NTS1-92000	1	3-06	S012-01067	8
				S012-01068	9
				S012-01069	10
NTS2-	NTS2-22001	4	1-04	S012-01076	16
	NTS2-30004-1	4	1-01	S012-01097	12
NTS2-	NTS2-30010	3	1-06	S012-01105	5
	NTS2-71000-1	1	1-06	S012-01114	2
NTS3-				S012-01120	2
	NTS3-00014	4	2-08	S012-01126	2
	NTS3-00015	5	2-08	S012-01135	10
	NTS3-00016	1	2-51	S012-01143	14
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	NTS3-00022	8	2-02	S012-01151	12
	NTS3-00022	7	2-07		1-05
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	NTS3-00023	14	2-01	S013-01884	1401
	NTS3-00023	9	2-02	S013-01885	1402
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	NTS3-00023	10	2-08	S022-	1-02
	NTS3-01300	4	2-02	S022-00287	1
	NTS3-01400	6	2-01	S022-00288	2
	NTS3-31010	101	2-07	S022-00289	10
	NTS3-31010	301	2-08	S022-00298	101
	NTS3-40001	2	2-08	S022-00299	2
	NTS3-40200	1	2-08	S022-00312	1
	NTS3-43000	3	2-08	S022-00362	1
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	NTS4-21300	17	4-01	S032-00120	1
	NTS4-30004	3	6-03	S032-00121	2
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S032-00125	1	3-10	S044-00040	101	4-05
S032-00126	1	3-13	S044-00041	701	4-05
S032-00127	2	3-03	S052-	S052-00258	17
S032-00216	2	3-01		S052-00498	117
S032-00217	3	3-01		S052-00498	117
S032-00218	1	3-01		S052-00501	120
S032-00223	1	3-04		S052-00501	120
S032-00250	1	3-11		S052-00502	121
S032-00251	7	3-11		S052-00502	121
S032-00252	8	3-11		S052-00503	122
S032-00257	9	3-11		S052-00503	122
S042-	S042-00505	1		S052-00504	123
	S042-00506	35		S052-00504	123
	S042-00531	3		S052-00505	124
	S042-00532	7		S052-00505	124
	S042-00533	36		S052-00646	107
	S042-00534	24		S052-00698	110
	S042-00535	25		S052-00706	116
	S042-00536	29		S052-00706	118
	S042-00537	1		S052-00706	118
	S042-00538	6		S052-00706	117
S042-00539	7	4-03	S052-00729	107	2-03
S042-00540	16	4-03	S052-00732	117	2-03
S042-00541	19	4-03	S052-00732	117	2-04
S042-00542	23	4-01	S052-00732	117	2-09
S042-00543	30	4-01	S052-00732	116	3-12
S042-00544	33	4-01	S052-00911	1	5-05
S042-00545	4	4-03	S052-00912	1	5-04
S042-00546	5	4-03	S052-00943	1	5-06
S042-00547	10	4-03	S052-00982	1	5-01
S042-00548	11	4-03	S052-00984	1	5-02
S042-00550	22	4-03	S052-00985	1	5-03-1
S042-00551	1	4-04	S052-00986	15	6-02
S042-00552	2	4-04	S052-00987	1	5-08
S042-00553	4	4-05	S052-00988	6	3-01
S042-00554	1	4-05	S052-01004	1	3-07
S042-00555	7	4-05	S052-01005	1	2-03
S042-00556	6	4-04	S052-01006	1	2-04
S042-00557	8	4-04	S052-01007	1	2-09
S042-00558	10	1-07	S052-01008	1	3-12
S042-00558	16	6-04	S052-01011	4	5-01
S042-00611	18	4-01	S052-01023	1	5-09
S042-00612	13	4-03	S052-01038	7	2-05
S042-00613	25	4-03	S052-01066	15	5-03-1
S042-00652	11	4-04	S052-01067	1	5-10
S042-00673	29	4-03	S052-01071	15	1-04
S042-00675	8	4-01	S052-50895	2	2-05
S044-	S044-00033	101	S052-50897	4	2-05
	S044-00034	102	S052-50900	1	3-09
	S044-00035	103	S052-50901	2	3-09
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S052-50907	8	3-09	S052-50963	2	5-18
S052-50908	9	3-09	S052-51020	5	2-05
S052-50909	10	3-09	S052-51021	6	2-05
S052-50910	11	3-09	S052-51022	1	2-05
S052-50911	12	3-09	S052-51023	3	2-05
S052-50912	3	5-10	S052-51112	13	3-09
S052-50913	4	5-10	S054-		
S052-50914	5	5-10		S054-00176	126
S052-50915	1	5-11		S054-00176	123
S052-50916	2	5-11		S054-00255	116
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S052-50918	4	5-11		S054-00403	116
S052-50919	5	5-11		S054-00403	116
S052-50920	10	5-12		S054-00404	115
S052-50921	1	5-15		S054-00404	115
S052-50922	2	5-15		S054-00405	114
S052-50923	3	5-15		S054-00405	114
S052-50924	4	5-15		S054-00407	102
S052-50925	5	5-15		S054-00407	102
S052-50926	6	5-15		S054-00409	105
S052-50927	7	5-15		S054-00409	105
S052-50928	8	5-15		S054-00410	106
S052-50929	9	5-15		S054-00410	106
S052-50930	10	5-15		S054-00644	106
S052-50931	1	5-12		S054-00644	105
S052-50932	2	5-12		S054-00646	108
S052-50933	3	5-12		S054-00648	110
S052-50934	4	5-12		S054-00648	109
S052-50935	5	5-12		S054-00649	111
S052-50936	6	5-12		S054-00649	110
S052-50937	7	5-12		S054-00650	112
S052-50938	8	5-12		S054-00650	111
S052-50939	9	5-12		S054-00721	105
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S052-50948	5	5-16		S054-01053	101
S052-50949	6	5-16		S054-01054	102
S052-50950	1	5-17		S054-01055	103
S052-50951	2	5-17		S054-01073	101
S052-50952	3	5-17		S054-01073	101
S052-50953	4	5-17		S054-01074	103
S052-50954	5	5-17		S054-01074	103
S052-50955	6	5-17		S054-01075	104
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S052-50957	8	5-17		S054-01076	107
S052-50958	9	5-17		S054-01076	107
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S054-01079	110	5-04	S054-01218	104	2-09
S054-01079	110	5-05	S054-01219	106	2-03
S054-01080	111	5-04	S054-01220	112	2-03
S054-01080	111	5-05	S054-01221	113	2-03
S054-01081	112	5-04	S054-01222	114	2-03
S054-01081	112	5-05	S054-01223	118	2-03
S054-01082	113	5-04	S054-01224	119	2-03
S054-01082	113	5-05	S054-01225	120	2-03
S054-01083	118	5-04	S054-01226	121	2-03
S054-01083	118	5-05	S054-01227	122	2-03
S054-01084	119	5-04	S054-01228	123	2-03
S054-01084	119	5-05	S054-01228	120	2-09
S054-01167	101	5-03-1	S054-01229	124	2-03
S054-01168	102	5-03-1	S054-01229	121	2-09
S054-01168	1	5-03-2	S054-01230	125	2-03
S054-01169	103	5-03-1	S054-01230	122	2-09
S054-01169	2	5-03-2	S054-01231	127	2-03
S054-01170	104	5-03-1	S054-01231	124	2-09
S054-01170	19	5-03-2	S054-01232	128	2-03
S054-01171	105	5-03-1	S054-01232	125	2-09
S054-01171	20	5-03-2	S054-01233	129	2-03
S054-01172	106	5-03-1	S054-01233	119	2-04
S054-01172	3	5-03-2	S054-01233	126	2-09
S054-01173	107	5-03-1	S054-01234	132	2-03
S054-01173	4	5-03-2	S054-01235	101	2-04
S054-01174	108	5-03-1	S054-01236	103	2-04
S054-01174	5	5-03-2	S054-01237	105	2-04
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S054-01175	6	5-03-2	S054-01238	102	2-09
S054-01176	110	5-03-1	S054-01238	102	3-12
S054-01177	111	5-03-1	S054-01239	106	2-04
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Japanese Craftsmanship

Hanix Europe Limited

Unit B Alliance Ind Estate
Windmill Lane, Denton
Manchester, M34 3SP
United Kingdom

Tel: +44 (0)161 335 2330

Fax: +44 (0) 161 335 2349

Email: sales@hanixeuropa.com

Website: www.hanixeuropa.com