NEW HOLLAND

SHOP MANUAL

E27
HYDRAULIC EXCAVATOR

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HYDRAULIC EXCAVATOR
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1.1 GENERAL SAFETY INFORMATION

WARNING: *Do not operate or perform any maintenance on this machine until all instructions in the OPERATOR'S MANUAL and this MANUAL have been thoroughly read and understood.*

WARNING: *Improper operation or maintenance of this machine may cause accidents and could result in serious injury or death.*

WARNING: *Always keep the manual in storage.*
If it is missing or damaged, place an order with an authorized Distributor for a replacement.
If you have any questions, please consult your dealer.

1. Most accidents, which occur during operation, are due to neglect of precautionary measures and safety rules. Sufficient care should be taken to avoid these accidents. Erroneous operation, lubrication or maintenance services are very dangerous and may cause injury or death of personnel. Therefore all precautionary measures, NOTES, DANGERS, WARNINGS and CAUTIONS contained in the manual and on the machine should be read and understood by all personnel before starting any work with or on the machine.
2. Operation, inspection, and maintenance should be carefully carried out, safety must be given the first priority. The safety information contained in the manual is intended only to supplement safety codes, insurance requirements, local laws, rules and regulations.
3. Messages of safety appear in the manual and on the machine:

   All messages of safety are identified by either word of DANGER, WARNING, and CAUTION.

DANGER: *Shows an imminently hazardous situation which, if not avoided, will result in death or serious injury.*

WARNING: *Shows a potentially hazardous situation which, if not avoided, could result in death or serious injury.*

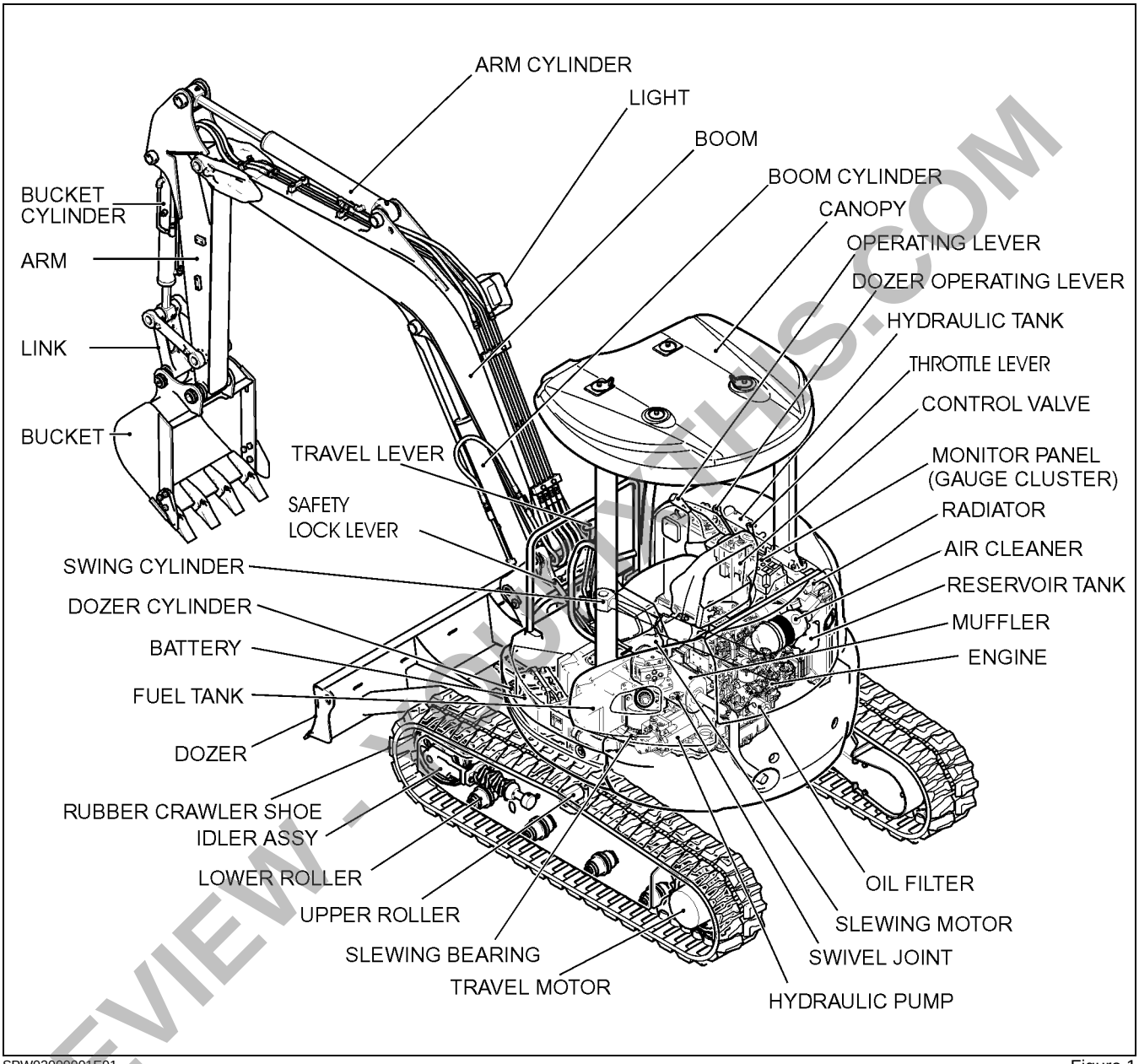
CAUTION: *Shows a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against possible damage to the machine and its components.*

4. It is very difficult to foresee every danger that may occur during operation. However, safety can be ensured by fully understanding proper operating procedures for this machine according to methods recommended.
5. While operating the machine, be sure to perform work with great care, so no damage to the machine or accidents will occur.
6. Continue studying the manual until all Safety, Operation and Maintenance procedures are completely understood by all persons working with the machine.

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2.1 COMPONENTS NAME



SPW02000001E01

Figure 1

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2.3 SPECIFICATIONS AND PERFORMANCE

2.3.1 SPEED AND GRADE ABILITY

Applicable Machines		PV10-27001~			
Shoe Type		Rubber shoe		steel shoe (OPT)	
Slewing Speed	min^{-1} {rpm}	8.7 {8.7}			
Travel Speed	km/h (mph)	Low (1st)	High (2nd)	Low (1st)	High (2nd)
		2.3	4.1	2.3	4.1
Grade ability	% (degree)	58(30)			

2.3.2 ENGINE

Model (YANMAR)		3TNV82A-SYB
Type		Water-cooled, 4-cycle type Swirl chamber type diesel engine
Number of cylinders-Bore x Stroke		3 - ø82 mm x 84 mm (3.23 in x 3.31 in)
Total Displacement	L	1.330 (81.2 cu in)
Output Rating	kW/min^{-1} {PS/rpm}	15.9/2,200 {21.6/2,200}
Maximum Torque	Nm/min^{-1} (lbf•ft/rpm)	79.0~86.0/1,320±100 (58.3~63.4/1,320±100)
Starting Motor	V x kW	12 x 1.7
Generator	V x A	12 x 40

2.3.3 HYDRAULIC COMPONENTS

Hydraulic Pump	Variable displacement axial piston + gear pump
Hydraulic Motor	Axial piston
Hydraulic Motor w/Reducer (Travel)	2-Axial piston, 2-Speed motor
Control Valve	10-spool multiple control valve
Cylinder (Boom, Arm, Swing, Bucket, Dozer)	Double action cylinder
Return Filter	Safety valve containing/Filter Type (30)

2.3.4 SIDE DIGGING AND DOZER

Type		**Boom swing by hydraulic cylinder**
Boom Swing Angle	Right	55°
	Left	60°
Stroke of Dozer (above/below)	mm (in)	445 / 335 (17.5/13.2)

2.3.5 WEIGHT

		RUBBER SHOE	**STEEL SHOE**
Machine Weight	kg (lb)	2,490 (5490)	2,620 (5780)
Upper slewing body	kg (lb)	1,310 (2890)	1,310 (2890)
Travel system	kg (lb)	830 (1830)	960 (2120)
Attachment (Boom + STD Arm + STD Bucket)	kg (lb)	300 (660)	
Oil & Water	kg (lb)	50 (110)	

NOTE 1: *This figure is calculated with standard bucket.*

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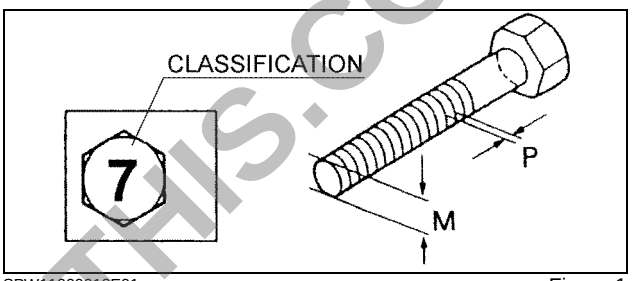
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11.1 TORQUE SPECIFICATIONS FOR CAPSCREWS AND NUTS

The following Torque Specifications are provided for use when actual torque value of a fastener is not known. Check the capscrews and nuts for their tightness and the loss of before starting work and at periodic maintenance. Retighten and replace as needed. For a new machine, check and retorque after the first 50 hours operation. Replace with genuine parts.

Refer to the table below for the tightening and retightening of capscrews.

1. The table below is not applicable for the capscrews that secure plastic covers. For the tightening torque for such capscrews, contact your dealer. Over-tightening may cause damage to the plastic parts.
2. In case that the tightening torque is specified in the manual, use those torque values regardless to the table below.
3. Numerical indication on the capscrew head shows the classification for strength (e.g., 7=7 T). No indication is provided for smaller size of capscrews, M5 or less.



SPW11000018E01 Figure 1

11.1.1 METRIC COARSE THREAD STANDARD TIGHTENING TORQUE VALUES

Make sure to tighten all Capscrews and Nuts to proper torque values.

METRIC COARSE THREAD STANDARD TIGHTENING TORQUE VALUES							
Classification		4.8T		7T		10.9T	
Nominal size		No lubrication	Oil lubrication	No lubrication	Oil lubrication	No lubrication	Oil lubrication
M6	P=1	4.4±0.5 (3.2±0.4)	3.7±0.4 (2.7±0.3)	9.6±1.0 (7.1±0.7)	8.1±0.8 (6.0±0.6)	17.4±1.8 (12.8±1.3)	14.7±1.5 (10.8±1.1)
M8	P=1.25	10.7±1.1 (7.9±0.8)	9.0±0.9 (6.6±0.7)	23.5±2.0 (17.3±1.5)	19.6±2.0 (14.5±1.5)	42.2±3.9 (31.1±2.9)	35.3±3.9 (26.0±2.9)
M10	P=1.5	21.6±2.0 (15.9±1.4)	17.9±1.8 (13.2±1.3)	46.1±4.9 (34.0±3.6)	39.2±3.9 (28.9±2.9)	83.4±8.8 (61.5±6.5)	70.6±6.9 (52.1±5.1)
M12	P=1.75	36.3±3.9 (26.8±2.9)	31.4±2.9 (23.2±2.1)	79.4±7.8 (58.6±5.8)	66.7±6.9 (49.2±5.1)	143±15 (105±11)	121±12 (89.2±8.9)
M14	P=2	57.9±5.9 (42.7±4.4)	49.0±4.9 (36.1±3.6)	126±13 (92.9±9.6)	106±10 (78.2±7.4)	226±20 (167±15)	191±19 (141±14)
M16	P=2	88.3±8.8 (65.1±6.5)	74.5±6.9 (55.0±5.1)	191±20 (141±15)	161±16 (119±12)	343±39 (253±29)	284±29 (209±21)
M18	P=2.5	122±12 (90.0±8.9)	103±10 (75.8±7.2)	265±29 (195±21)	226±20 (167±15)	481±49 (355±36)	402±39 (297±29)
M20	P=2.5	172±17 (127±13)	144±14 (106±10)	373±39 (275±29)	314±29 (232±21)	667±69 (492±51)	559±59 (412±44)
M22	P=2.5	226±20 (167±15)	192±20 (142±15)	500±49 (369±36)	422±39 (311±29)	902±88 (665±65)	755±78 (557±58)
M24	P=3	294±29 (217±21)	235±29 (173±21)	637±69 (470±51)	520±49 (383±36)	1160±118 (856±87)	941±98 (694±72)
M27	P=3	431±39 (318±29)	353±39 (260±29)	941±98 (694±72)	765±78 (564±58)	1700±167 (1250±123)	1370±137 (1010±101)
M30	P=3.5	588±59 (434±44)	490±49 (361±36)	1285±127 (948±94)	1079±108 (796±80)	2300±235 (1700±173)	1940±196 (1430±145)
M33	P=3.5	794±78 (586±58)	667±69 (492±51)	1726±177 (1270±131)	1451±147 (1070±108)	3110±314 (2290±232)	2610±265 (1930±195)
M36	P=4	1030±98 (760±72)	863±88 (637±65)	2226±226 (1640±167)	1863±186 (1370±137)	4010±402 (2960±297)	3360±333 (2480±246)

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NOTES

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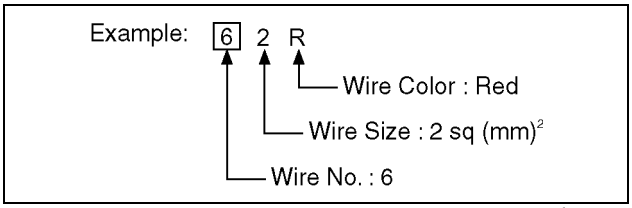
23.1 HOW TO READ CIRCUIT DIAGRAM AND HARNESS CONNECTION

23.1.1 ELECTRIC CIRCUIT DIAGRAM

NOTE: *For the electric circuit diagram, refer to Fold Out Schematic.*

In the diagram, the number, size and color of wires are shown on the wiring line.

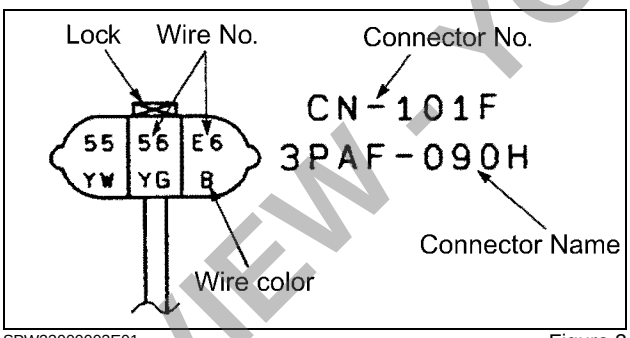
The size of the wire is to be 0.75 sq. (square mm = mm^2) unless otherwise specified.



SPW23000001E01 Figure 1

SYMBOL	COLOR	SYMBOL	COLOR
B	Black	P	Pink
Br	Brown	R	Red
G	Green	Sb	Sky Blue
Gr	Gray	V	Violet
L	Blue	W	White
Lg	Light Green	Y	Yellow
O	Orange		

23.1.2 HARNESS CONNECTION

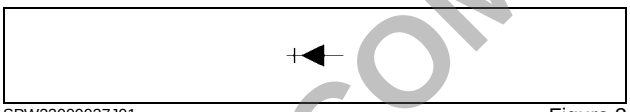


SPW23000002E01 Figure 2

1. Indication for Connector
   1. The figure for the connector pin arrangement is shown by putting the lock (nail) to upper portion, and looking from the fitting face.
   2. The numbers in the connector show the wire No., and alphabetical letters show the wire color.
   3. On the side face of connector, the connector name and serial number of the connector No. are indicated.
   4. At the place indicated as DOUBLE SPLICE, Two wires are connected to one place.
2. The connector is to be connected by engaging the male (M) and female (F) connectors of the same number.

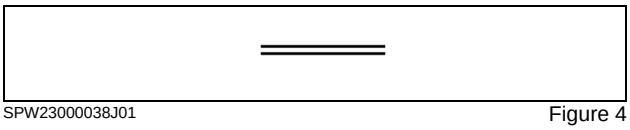
   Example: CN-101M and CN-101F

   Where: M for Male, and F for Female.



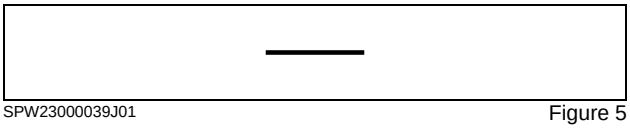
SPW23000037J01 Figure 3

3. This mark means a connector with a diode. The direction for diode is shown by the arrow.
4. The AVSS wires are to be used for the size between 0.75 sq. and 2 sq. AVS wires between 3 sq. and 5 sq. and others are AV wires, unless otherwise specified.
5. The wire size is 0.75 sq., unless otherwise specified.
6. The treatment for the harness end is to be as follows:



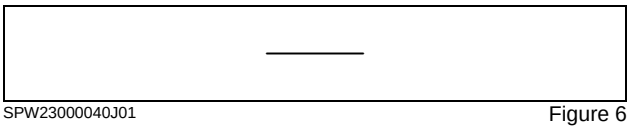
SPW23000038J01 Figure 4

   1. After roughly applying harness taping, wires are installed in a corrugated tube.



SPW23000039J01 Figure 5

   2. Harness taping by two plies.



SPW23000040J01 Figure 6

   3. No harness treatment for connection.
7. The length for the above (6)-3) is to be 30 ± 10 mm. (1.2 ± 0.4 in), and the length includes in the total length of wire shown in the diagram.

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1.3 GENERAL PRECAUTIONS FOR REPAIRS

1.3.1 PREPARATION BEFORE DISASSEMBLING



1. Understand operating procedure

   Read OPERATOR'S MANUAL and this MANUAL carefully prior to operating the machine.

2. Cleaning machines

   Remove soil, mud, and dust from the machine before service. This will prevent loss of work efficiency, damaged parts, and difficulty in rust prevention and dust protection while reassembling.

3. Inspecting machines

   Identify the parts to be disassembled before starting work, determine the disassembling procedure considering the workshop situations etc., request necessary parts in advance.

4. Record the following items
   A. Inspection date and place
   B. Model name, applicable machine number, and hour meter reading
   C. Trouble condition, place and cause.
   D. Visible oil leakage, water leakage and damage
   E. Clogged filters, oil level, oil quality, oil contamination and loose connections
   F. Is it a recurring fault at approximately the same amount of operating hours.

5. Arrangement and cleaning in service shop
   A. Tools required for repair work.
   B. Prepare space to place the disassembled parts.
   C. Prepare oil containers for draining oil etc.

1.3.2 SAFETY IN DISASSEMBLING AND ASSEMBLING



1. Wear appropriate clothes with long sleeves, safety shoes, safety helmet and protective glasses.
2. Suspend warning tag DO NOT OPERATE from the doorknob or the operating lever.
3. Stop the engine before starting inspection and maintenance.
4. Identify the location of a first-aid kit and a fire extinguisher, also who to contact in case of an emergency.
5. Choose a hard, level and safe place, and place the attachment on the ground securely.
6. Use a hoist to remove heavy parts (20 kg [45 lbs] or more) from the machine.
7. Use proper tools, and replace or repair defective tools.
8. Support the machine and attachment with supports or blocks if the work is performed in the lifted condition.

1.3.3 DISASSEMBLING AND ASSEMBLING HYDRAULIC EQUIPMENT

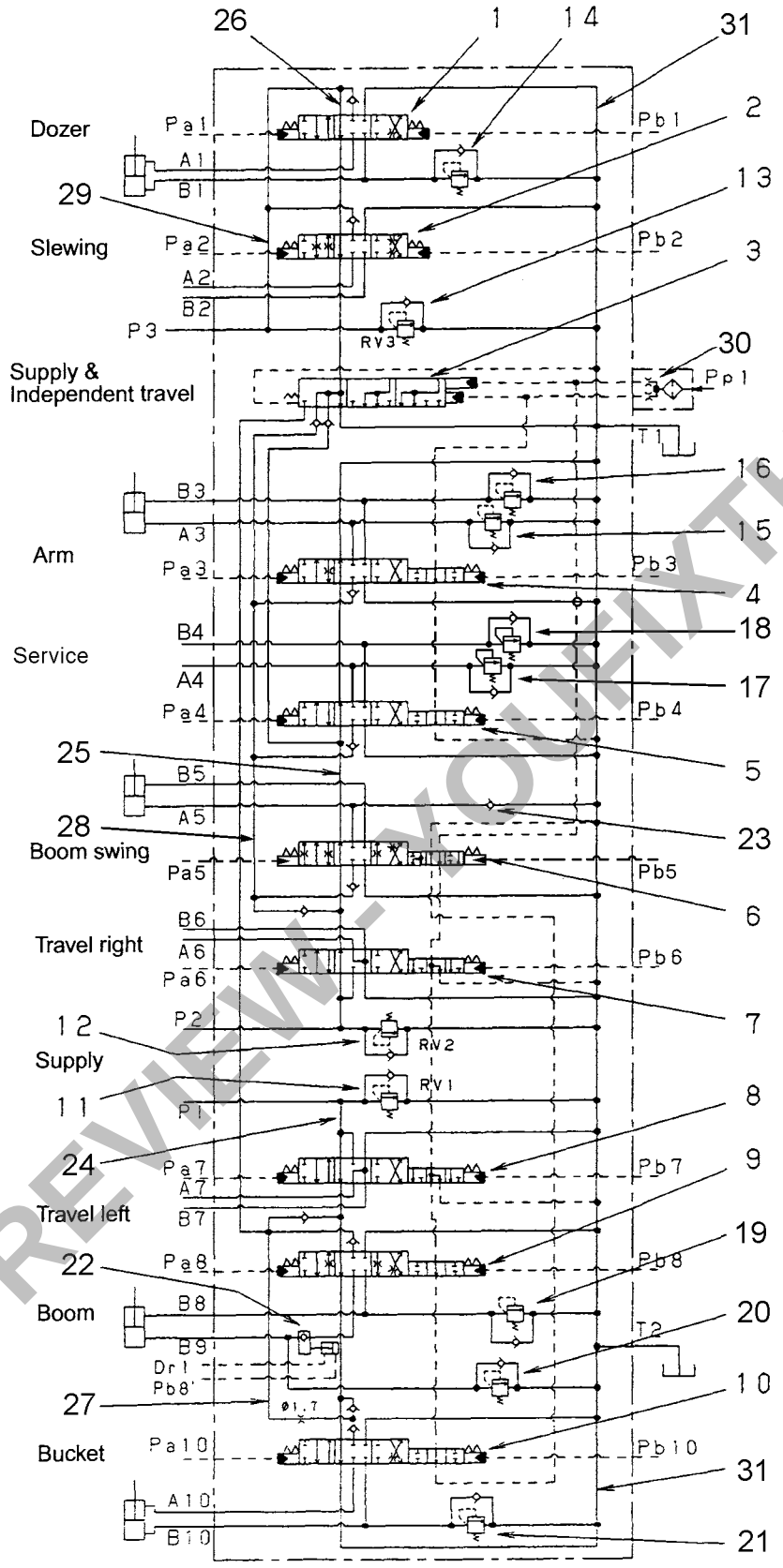


1. Removing hydraulic equipment
   A. Before disconnecting pipes, release the hydraulic pressure in the system.
   B. Carefully drain oil of the removed pipes into a containers without spilling on the floor.
   C. Install plugs or caps on the pipe ends to avoid oil spillage and contamination.
   D. Clean off the external surface of the equipment before disassembling, drain hydraulic and gear oil before placing component on the workbench.
2. Disassembling hydraulic equipment
   A. Do not modify the hydraulic equipment without the permission of the manufacturer. Manufacturer will not be responsible for the performance and function of the product after modification.
   B. When disassembling and reassembling for repair, refer the work to qualified personnel who have the knowledge or have completed the service training.
   C. Provide aligning marks to facilitate reassembly.
   D. Before starting the work, read the manual for disassembly procedures and decide whether the work can be performed by yourself or if assistance is required.
   E. Use the special jig or tools if they are specified.

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24.1.4.2 HYDRAULIC CIRCUIT



No.	NAME
1	Dozer spool
2	Slewing spool
3	Travel Independent & conflux spool
4	Arm spool
5	Service spool
6	Boom swing spool
7	Travel right spool
8	Travel left spool
9	Boom spool
10	Bucket spool
11	P1 (RV1) relief valve
12	P2 (RV2) relief valve
13	P3 (RV3) relief valve
14	B1 Over load relief valve
15	A3 Over load relief valve
16	B3 Over load relief valve
17	A4 Over load relief valve
18	B4 Over load relief valve
19	B8 Over load relief valve
20	B9 Over load relief valve
21	B10 Over load relief valve
22	Boom lock valve
23	Anti cavitation valve
24	P1 by-pass passage
25	P2 by-pass passage
26	P3 by-pass passage
27	P1 parallel passage
28	P2 parallel passage
29	P3 parallel passage
30	PP1 Pilot passage
31	Tank passage

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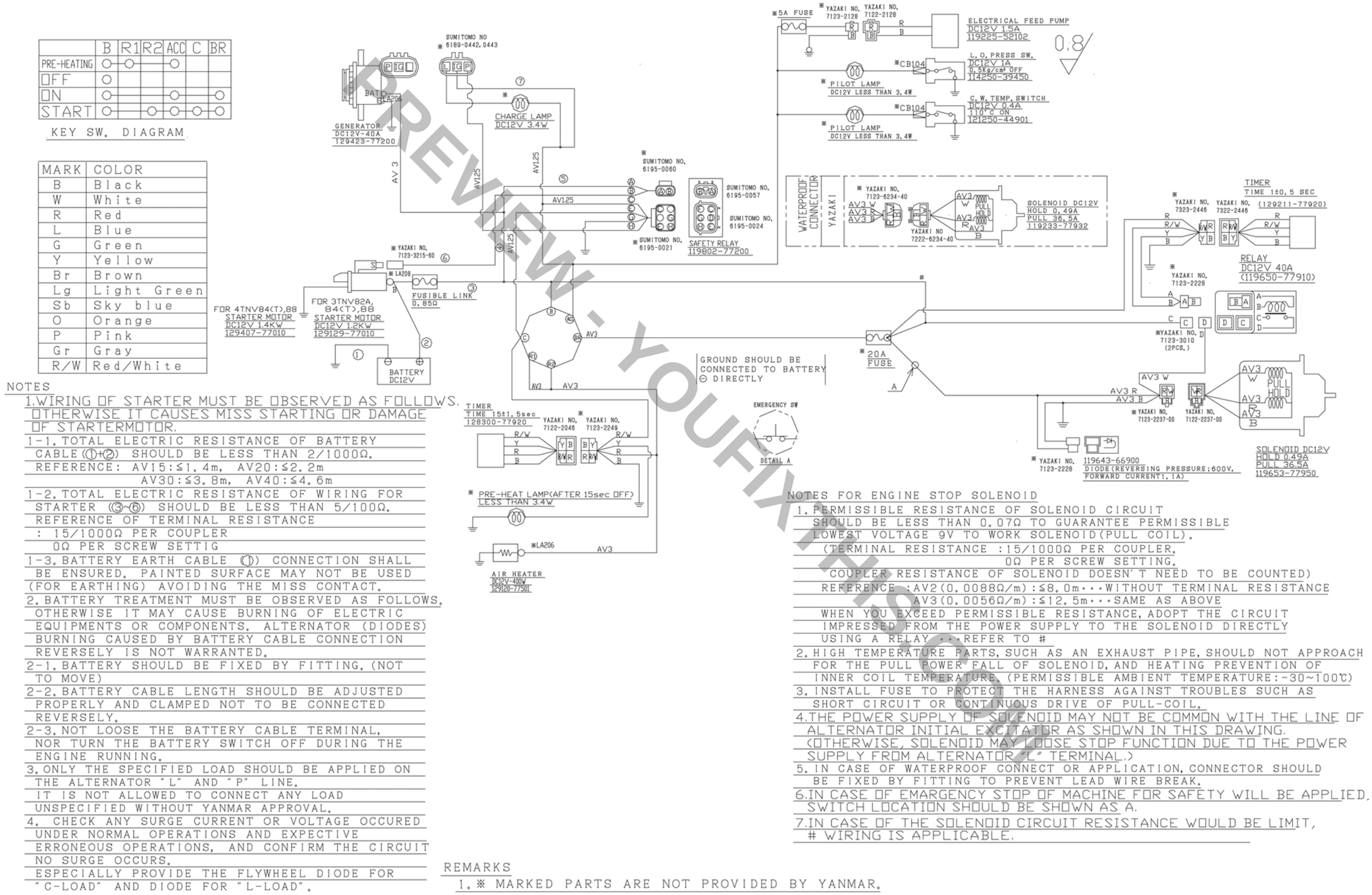
Figure 29

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11. ELECTRIC WIRING

11.1 Electric Wiring Diagram



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42.2 TROUBLE DIAGNOSIS: HYDRAULIC

Classification	Reference No.		Phenomenon / Causes	Pump: Main pump	Pump: Trochoid pump	Pump: Gear pump	Valve: Travel & ATT main R/V	Valve: Main gear pump R/V	Valve: Each overload R/V	Valve: Travel straight valve	Valve: Travel spool	Valve: Attachment spool	Valve: Check valve	Valve: Shuttle valve	Actuator: Slewing motor unit	Actuator: Travel motor unit	Actuator: Hydraulic cylinder
Attachment	1	(1)	Attachment operational failure	X							X	X					
		(2)	Travel speed is slow.	X								X					X
		(3)	Attachment operating power is low.				X		X								X
		(4)	Malfunction of attachment							X		X					X
Travel operation	2	(1)	Travel operational failure	X							X					X	
		(2)	Travel speed is slow.	X							X					X	
		(3)	Travel operating power is low.				X									X	
		(4)	It deviates in travel independent operation.	X						X	X					X	
Slewing operation	3	(1)	Slewing operational failure									X			X		
		(2)	Slewing speed is slow.			X											
		(3)	Slewing operating power is low.					X	X						X		
		(4)	Malfunction of slewing operation									X		X	X		
Pump	4	(1)	Engine speed is reduced due to pump load.	X													
		(2)	Malfunction of pump	X	X	X											

Abbreviation

E/G : Engine
SOL : Solenoid
SW : Switch
ATT : Attachment
C/V : Control valve
R/V : Relief valve
V : Valve

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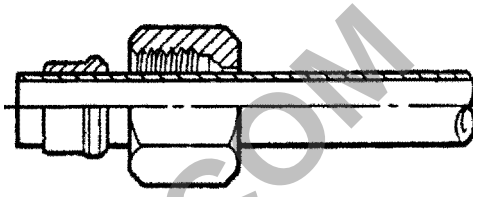
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11.4 TORQUE SPECIFICATIONS FOR SLEEVE TYPE TUBE FITTINGS

11.4.1 SLEEVE TYPE TUBE FITTINGS

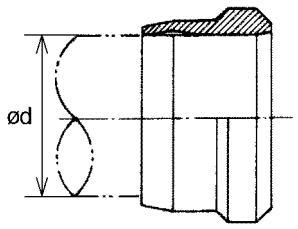
Tube size OD x Thickness (MM.)	Spanner size (MM.)	Tightening Torque Nm (lb ft)
10 x 1.5	19	44±4.9 (33±4)
15 x 2.0	27	147±20 (110±14)
18 x 2.5	32	177±20 (130±14)
22 x 3.0	36	216±20 (160±14)
28 x 4.0	41	275±29 (200±22)
35 x 5.0	55	441±44 (330±33)



SPW11000020E01 Figure 6

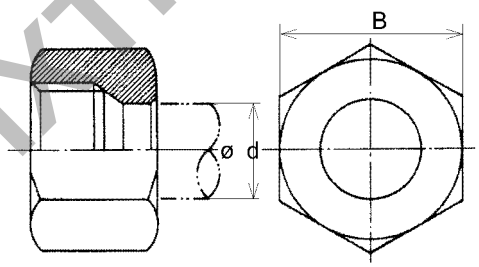
11.4.2 PART NUMBER

SLEEVE



SPW11000004E01 Figure 7

NUT



SPW11000005E01 Figure 8

Tube size OD	Part NO.		Tube size OD	Opposing flats (HEX) B	Part NO.	
	Ihara Koatu	Nippon A.M.C			Ihara Koatu	Nippon A.M.C
6	ZF93S06000	—	6	14	ZF93N06000	—
8	ZF93S08000	—	8	17	ZF93N08000	—
10	ZF93S10000	ZA93S10000	10	19	ZF93N10000	ZA93N10000
12	ZF93S12000	—	12	22	ZF93N12000	—
15	ZF93S15000	ZA93S15000	15	27	ZF93N15000	ZA93N15000
18	ZF93S18000	ZA93S18000	18	32	ZF93N18000	ZA93N18000
22	ZF93S22000	ZA93S22000	22	36	ZF93N22000	ZA93N22000
28	ZF93S28000	ZA93S28000	28	41	ZF93N28000	ZA93N28000
32	ZF93S32000	—	32	50	ZF93N32000	—
35	ZF93S35000	ZA93S35000	35	55	ZF93N35000	ZA93N35000
38	ZF93S38000	—	38	60	ZF93N38000	—

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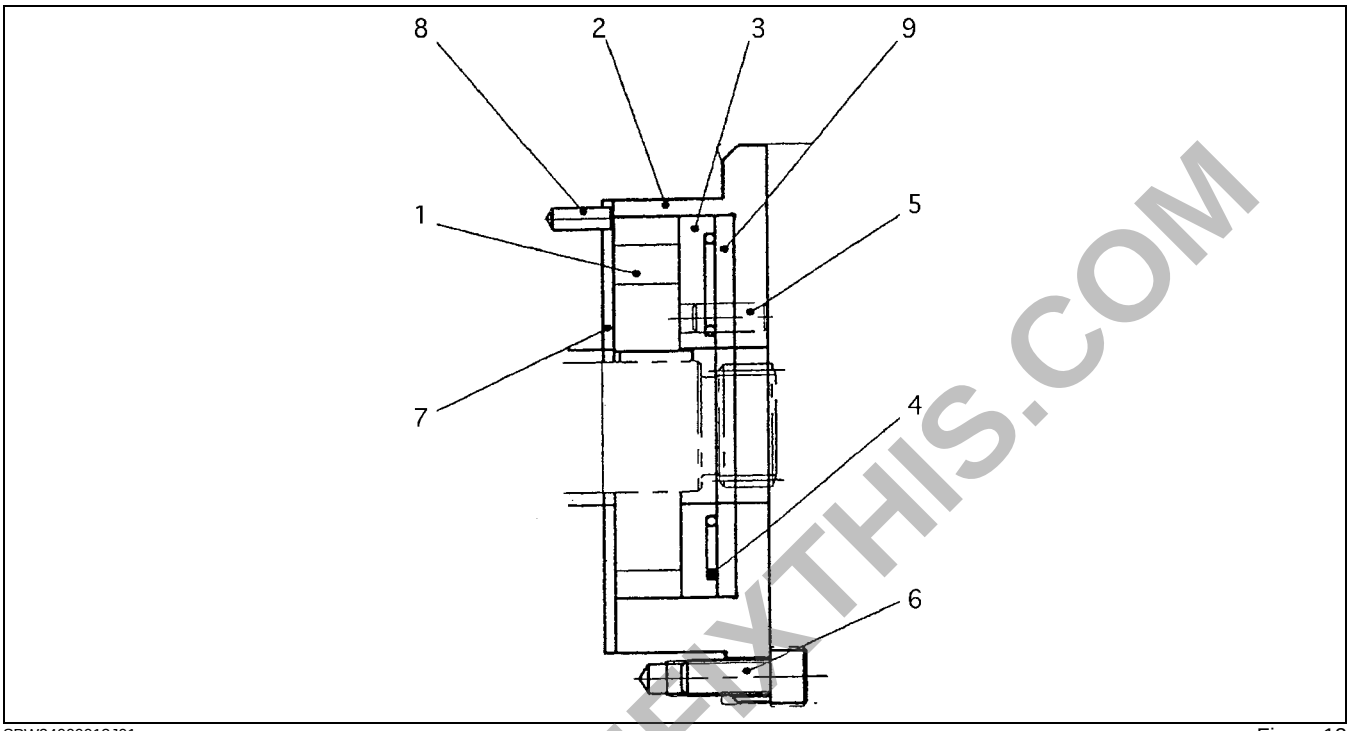
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NOTES

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24.1.1.3.8 TROCHOID PUMP



SPW24000013J01

Figure 13

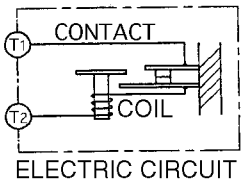
No.	Name	Qty	No.	Name	Qty	No.	Name	Qty
1	Gear	1	4	O-ring	1	7	Side plate (B)	1
2	Casing	1	5	Spring pin	1	8	Spring pin	1
3	Side plate (A)	1	6	Capscrew	3	9	Plate	1

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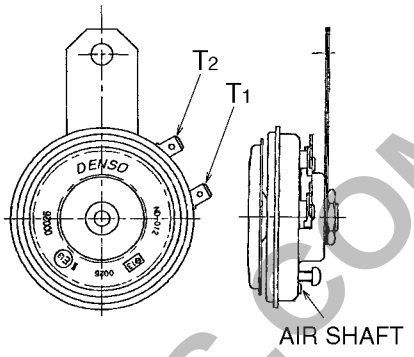
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24.2.0.6 HORN

Maker Part No.	ND-012
Rated Voltage	DC12V
Rated current	3±1A
Basic frequency	350±30Hz
Sound level	113±5dB
Insulation resistance	3MΩ or more/500VMegger



ELECTRIC CIRCUIT



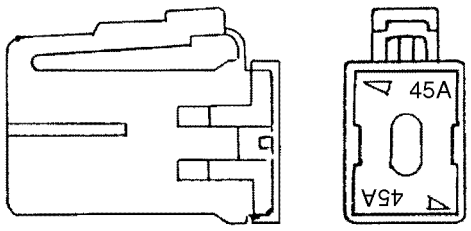
SPW24000086E01 Figure 90

Specifications and Description

Code No. E-3
Parts Name ..... Horn
Parts No. PY53S00002P1
Use ..... Warning sound
Applicable Machines ..... PM07-07001~PV10-27001~

24.2.0.7 FUSIBLE LINK

Allowable current	45A



SPW24000087E01 Figure 91

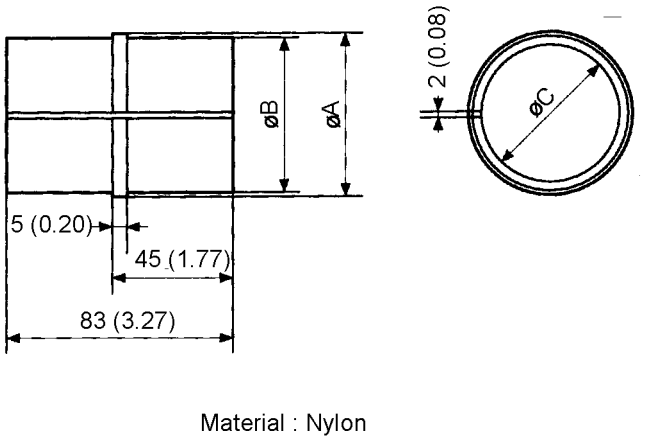
Specifications and Description

Code No. E-4
Parts Name ..... Fusible link
Parts No. PH73S00001P1
Use ..... Fuse
Applicable Machines ..... PW08-20001~, PX09-08001~, PW10-22001~, PX11-08901~, PW11-30001~, PX12-110 01~PM07-07001~PV10-27001~

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4. Pushing Jig (D) for Seal Ring (18)



Material : Nylon

Unit : mm (in)

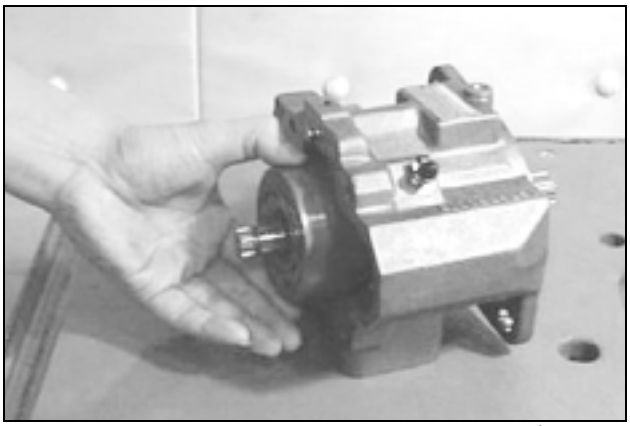
Applicable Cylinder		Dimension
(Tube dia ;ø 60 (2.36)) Bucket	A	65.0 (2.56)
	B	63.0 (2.48)
	C	55.0 (2.17)
(Tube dia ;ø 70 (2.76)) Boom Arm	A	75.0 (2.95)
	B	73.0 (2.87)
	C	65.0 (2.56)
(Tube dia ;ø 75 (2.95)) Swing	A	80.0 (3.13)
	B	78.0 (3.07)
	C	70.0 (2.76)
(Tube dia ;ø 85 (3.35)) Dozer	A	90.0 (3.54)
	B	88.0 (3.46)
	C	80.0 (3.15)

SPM32000017E01

Figure 63

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SPM33000033J01 Figure 153

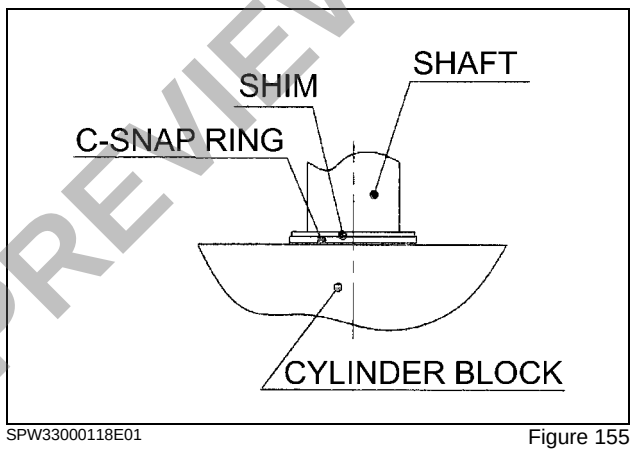
13. Installing rotary group

    Install the rotary group aligning it to the spline of the shaft.

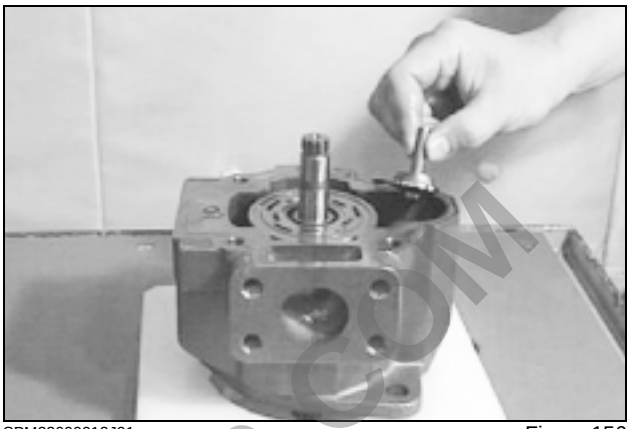


SPM33000013J01 Figure 154

14. Install the snap ring (20) onto the shaft and insert the shim.
    Snap ring plier



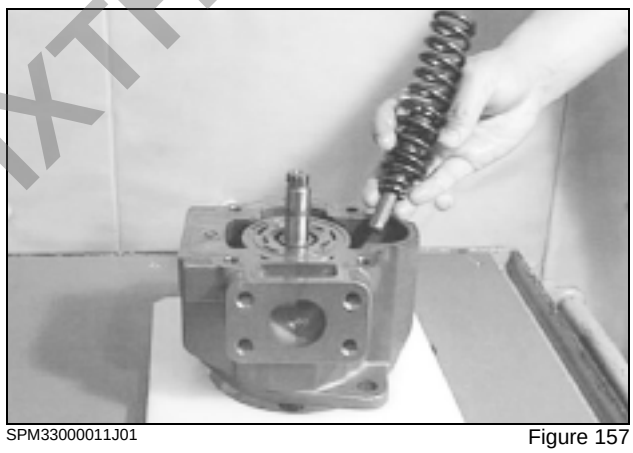
SPW33000118E01 Figure 155



SPM33000012J01 Figure 156

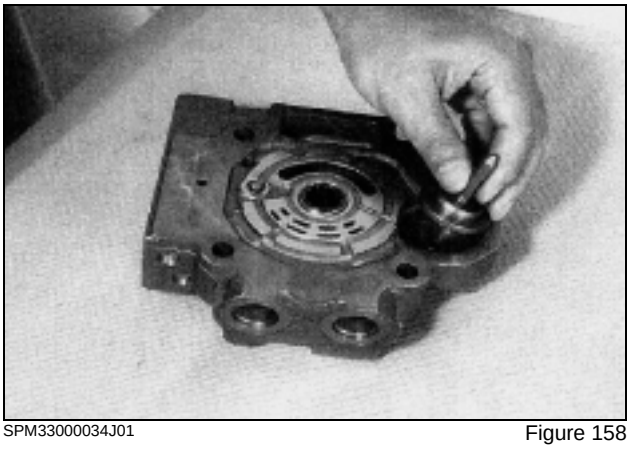
15. Installing control spring section

    Apply grease on the spherical section of the spring seat and install the control spring section.



SPM33000011J01 Figure 157

16. Insert two springs (inner and outer) and the guide.



SPM33000034J01 Figure 158

17. Assembling cover

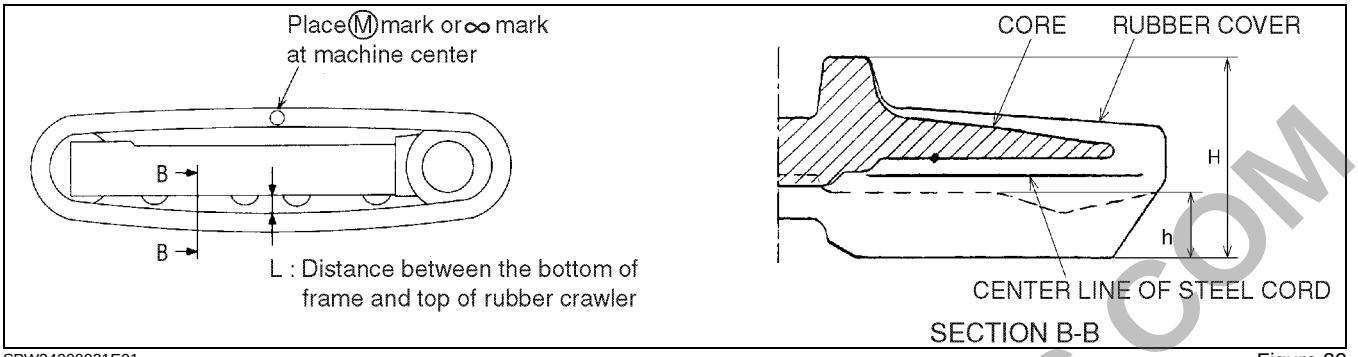
    Insert the spring seat in the cover.

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34.1.2.4 MAINTENANCE STANDARDS

1. Rubber track

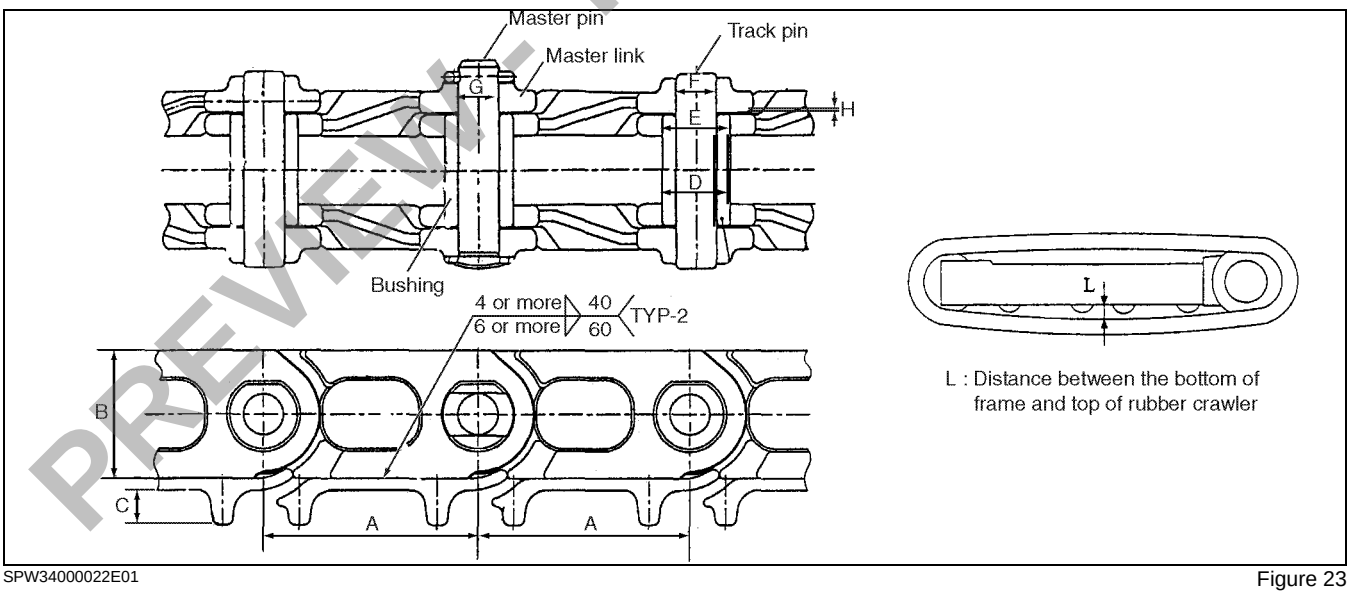


SPW34000021E01 Figure 22

FIG. 34-21 RUBBER TRACK SHOE

ITEM	STANDARD VALUE	REPAIRABLE LEVEL	SERVICEABILITY LIMIT	REMEDY
Sag of rubber track L	80~90 (3.1~3.5)	—	—	Adjustment
Cracks and notch on rubber track	None	Where the depth of them does not reach to the steel cords.	Where the depth of them reaches to the steel cords.	Replace
Breakage of steel cords	None	None	Exist	Replace
Contact surface of rubber track and lower roller	None	Where 10 percent of cores are visible from outside.	Where half of cores are visible from outside.	Replace
Height (H)	76.5(3.0)	—	54(2.1)	Replace
Lug projection (h)	22.4 (0.88)	—	0 (0)	Replace
Unit: mm (in)				

2. Steel track (Track link)



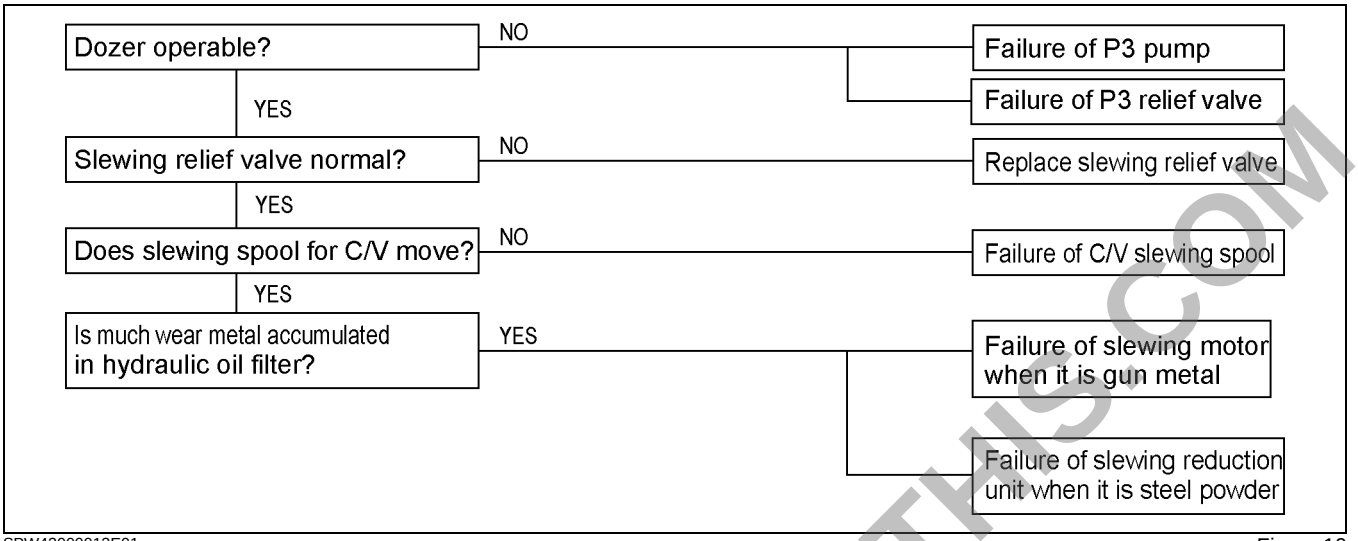
SPW34000022E01 Figure 23

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42.3.3 SLEWING OPERATION

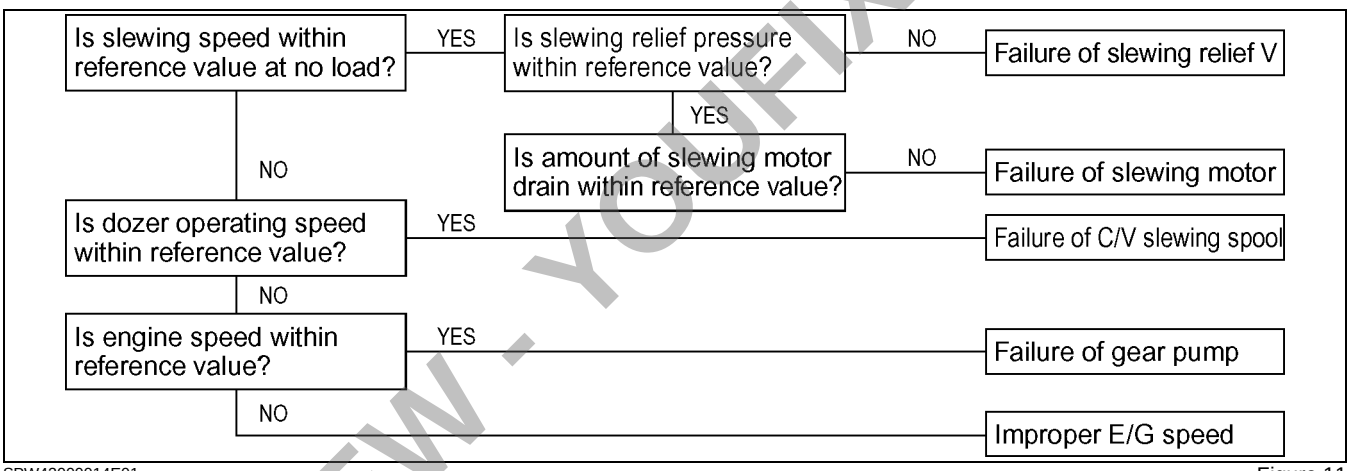
42.3.3.1 SLEWING OPERATIONAL FAILURE



SPW42000013E01

Figure 10

42.3.3.2 SLEWING SPEED IS SLOW



SPW42000014E01

Figure 11

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(10) 4TNV98T

Engine name		Unit	4TNV98T						
Engine specification class		-	CL		VM				
Type		-	Vertical, in-line, 4-cycle, water-cooled diesel engine						
Combustion chamber		-	Direct injection						
Number of cylinders		-	4						
Cylinder bore×stroke		mm×mm	88×110						
Displacement		L	3.318						
Continuous rating	Revolving speed	Min^{-1}	1500	1800	-				
	Output	kW (hp)	37.9 (51.5)	45.6 (62.0)	-				
Rated output	Revolving speed	Min^{-1}	1500	1800	2000	2200	2400	2500	2600
	Output	kW (hp)	41.9 (57.0)	50.4 (68.5)	50.7 (69.0)	55.5 (75.5)	60.3 (82.0)	62.5 (85.0)	64.0 (87.0)
Max. no-load speed (±25)		min^{-1}	1600	1895	2180	2400	2590	2700	2810
Ignition order		-	1-3-4-2-1(No.1 cylinder on flywheel side)						
Power take off		-	Flywheel						
Direction of rotation		-	Counterclockwise (viewed from flywheel)						
Cooling system		-	Radiator						
Lubrication system		-	Forced lubrication with trochoid pump						
Starting system		-	Electric						
Applicable fuel		-	Diesel oil-ISO 8217 DMA, BS 2869 A1 or A2 (cetane No.45 min.)						
Applicable lubricant		-	API grade class CD or CF						
Lubricant capacity (oil pan) *	Total	L	10.2						
	Effective	L	4.5						
Coolant water capacity (engine only)		L	4.2						
Engine dimensions ** (with flywheel housing)	Overall length	mm	715						
	Overall width	mm	575						
	Overall height	mm	779						
Engine mass (dry) ** (with flywheel housing)		kg	258 (equivalent to SAE#3)		245 (equivalent to SAE#4)				
Cooling fan (std.)		mm	430 mm O/D, 8 blades suction type						
Crankshaft V pulley diameter & Fun V pulley diameter (std.)		mm	130×130						

* Engine oil capacity may differ from the above depending on an engine installed on a machine unit.
** Engine mass and dimensions without radiator

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4.2.4 Servicing points

Point1

[Disassemble]

- Loosen the mounting bolt while supporting the alternator.

⚠ CAUTION

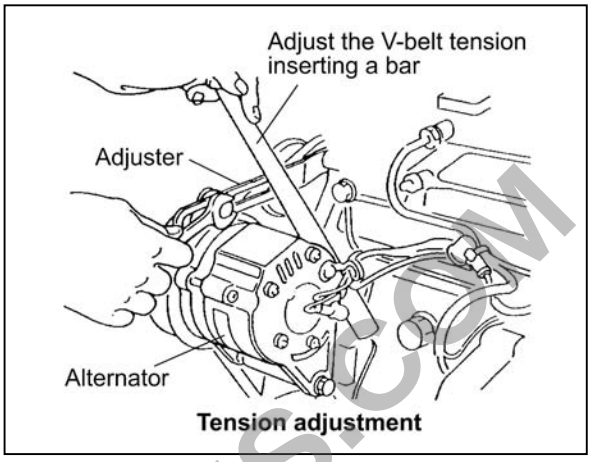
Do not tilt the alternator toward the cylinder block in haste since it may damage the alternator or pinch a finger.

[Reassemble]

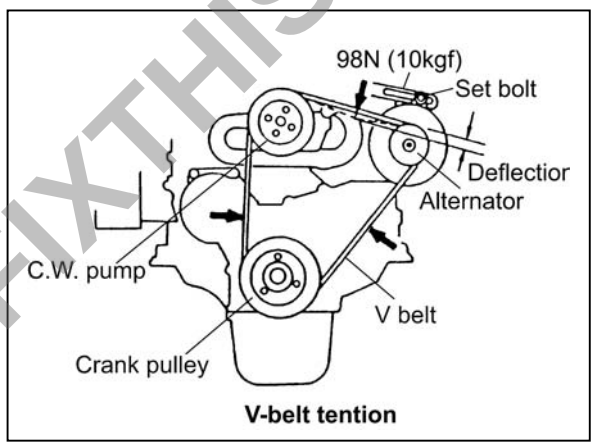
- The belt deflection shall be checked according to 2.2.2. in Chapter2.

[Reassemble]

- Replace the belt with a new one if cracked, worn or damaged.
- Carefully prevent the belt from being smeared with oil or grease.



Tension adjustment



V-belt tention

Point2

[Reassemble]

- Check the thermostat function. (See3.9 in Chapter 3 for the check procedure.)

Pont3

[Reassemble]

- Replace the fuel filter element with a new one.

[Disassemble]

- Cover the fuel pipe opening with tape to prevent intrusion of foreign matters.

Point4

[Reassemble]

- Replace the oil filter with a new one.
- After fully tightening the filter manually, retighten it with a filter wrench (see 11.1-6 in Chapter 11) by 3/4 turn.

Point5

[Disassemble]

- Cover the fuel injection pipe and pump inlets and outlets with tape or the like to prevent intrusion of foreign matters.

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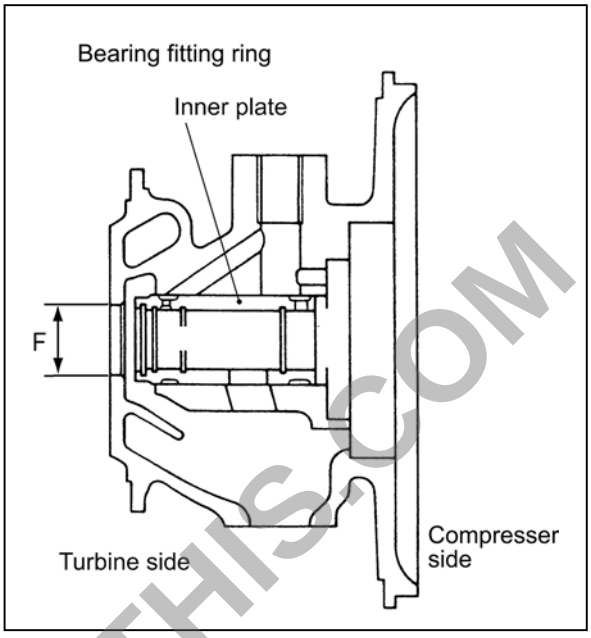
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(8) Bearing housing 15

1) Inspect the housing for cast surface exfoliation due to oxidation and degradation, dent or crack.
2) Inspect circlip 16 for chipping or crack, and replace with a new one if defective.
3) Measure the (B) and (F) portions of the bearing housing shown in the figure below. Replace with a new one if either wear limit is exceeded.

Wear limit of bearing housing inside diameter (B)
RHF5 ····· 12.42mm
RHB51 ····· 12.42mm
RHB31 ····· 10.01mm

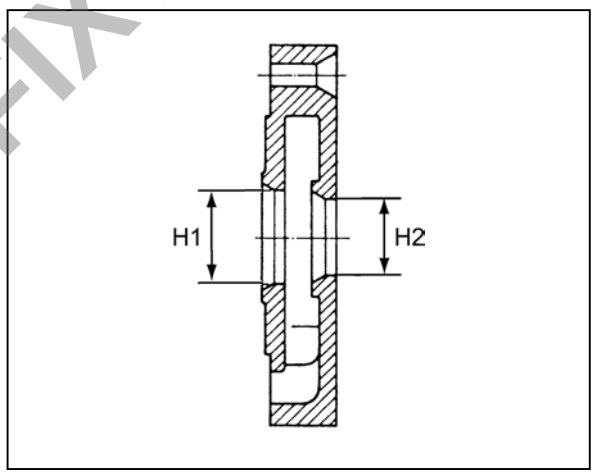
Wear limit of turbine side seal ring inserting portion (F)
RHF5 ····· 15.05mm
RHB51 ····· 15.05mm
RHB31 ····· 11.03mm



(9) Seal plate 4

1) Inspect the seal plate for any contact trace, joint surface defect, dent or crack. Replace it if defective.
2) Measure the seal ring inserting dimensions (H1 and H2) on the compressor side, and replace the seal ring with a new one if either wear limit is exceeded.

Wear limits
RHF5 ····· H1: 12.45mm, H2: 10.05mm
RHB51 ····· H1: 12.45mm, H2: 10.05mm
RHB31 ····· H1: 10.04mm, H2: 8.01mm



(10) Seal rings
Replace seal rings with new ones.

(11) Inspect keep plates 10, 13 and bolts for any deformation, and replace defective parts with new ones. Also replace M3 Torx machine screws with new ones.

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