SHOP MANUAL
E50
HYDRAULIC EXCAVATORS
TABLE OF CONTENTS

SECTION 1
STANDARD SPECIFICATIONS AND MAINTENANCE
Table of Contents I
(Book/Form Number: 6-80950 NA)

CHAPTER 1
GENERAL INFORMATION AND SAFETY
Table of Contents 1-1
(Book/Form Number: 6-80960 NA)

CHAPTER 2
SPECIFICATIONS
Table of Contents 2-1
(Book/Form Number: 6-80970 NA)

CHAPTER 3
ATTACHMENT DIMENSIONS
Table of Contents 3-1
(Book/Form Number: 6-80980 NA)

CHAPTER 11
TOOLS
Table of Contents 11-1
(Book/Form Number: 6-80990 NA)

CHAPTER 12
STANDARD MAINTENANCE TIME TABLE
Table of Contents 12-1
(Book/Form Number: 6-81000 NA)

CHAPTER 13
MAINTENANCE STANDARDS AND TEST PROCEDURES
Table of Contents 13-1
(Book/Form Number: 6-81010 NA)

SECTION 2
HYDRAULIC, ELECTRICAL, AND COMPONENT SYSTEMS
Table of Contents I
(Book/Form Number: 6-81020 NA)

CHAPTER 22
HYDRAULIC SYSTEM
Table of Contents 22-1
(Book/Form Number: 6-81030 NA)

CHAPTER 23
ELECTRICAL SYSTEM
Table of Contents 23-1
(Book/Form Number: 6-81040 NA)

CHAPTER 24
COMPONENTS SYSTEM
Table of Contents 24-1
(Book/Form Number: 6-81050 NA)

SECTION 3
GENERAL DISASSEMBLY AND ASSEMBLY
Table of Contents I
(Book/Form Number: 6-81060 NA)

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

2.3 SPECIFICATIONS AND PERFORMANCE

2.3.1 SPEED AND GRADEABILITY

Applicable Machines		PJ04-03001~			
Shoe Type		Rubber shoe		Iron shoe (OPT)	
Slewing Speed	min.$^{-1}$ {rpm}	8.8 {8.8}			
Travel Speed	km/h (mph)	Low (1st)	High (2nd)	Low (1st)	High (2nd)
		2.8	4.6	2.8	4.6
Grade ability	% (degree)	58(30)			

2.3.2 ENGINE

Model (YANMAR)		**4TNV88-XYB**
Type		Water-cooled, 4-cycle type Swirl chamber type diesel engine
Number of cylinders-Bore x Stroke		4 - ø88 mm x 90 mm (3.46 in x 3.54 in)
Total Displacement	L	2.189 (134 cu. in)
Output Rating	kW/min^{-1} {PS/rpm}	30.4/2,400 {41.3/2,400}
Maximum Torque	Nm/min^{-1} (lb. ft./rpm)	139/1,440 (103/1,440)
Starting Motor	V x kW	12 x 2.3
Generator	V x A	12 x 55

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	11-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 & DOZER

Type		**Boom swing by hydraulic cylinder**
Boom Swing Angle	Right	60°
	Left	70°
Stroke of Dozer (above/below)	mm (in)	495 / 375 (19.5/14.8)

2.3.5 WEIGHT

Machine Weight	kg (lb.)	**Rubber shoe**	**Iron shoe**
		4,660 (10,300)	4,760 (10,500)
Upper slewing body	kg (lb.)	2,310 (5,100)	"
Travel system	kg (lb.)	1,720 (3,790)	1,820 (4,010)
Attachment (Boom + STD Arm + STD Bucket)	kg (lb.)	535 (1,180)	
Oil & Water	kg (lb.)	95 (209)	

PREVIEW - YOUFIXTHIS.COM

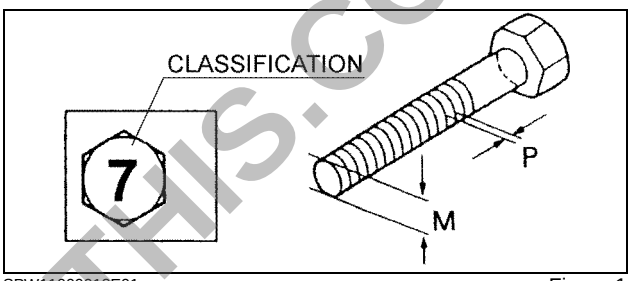
Download full manual at youfixthis.com

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 intervals. Retighten and replace as needed. For a new machine, check and retorque after the first 50 hours of 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

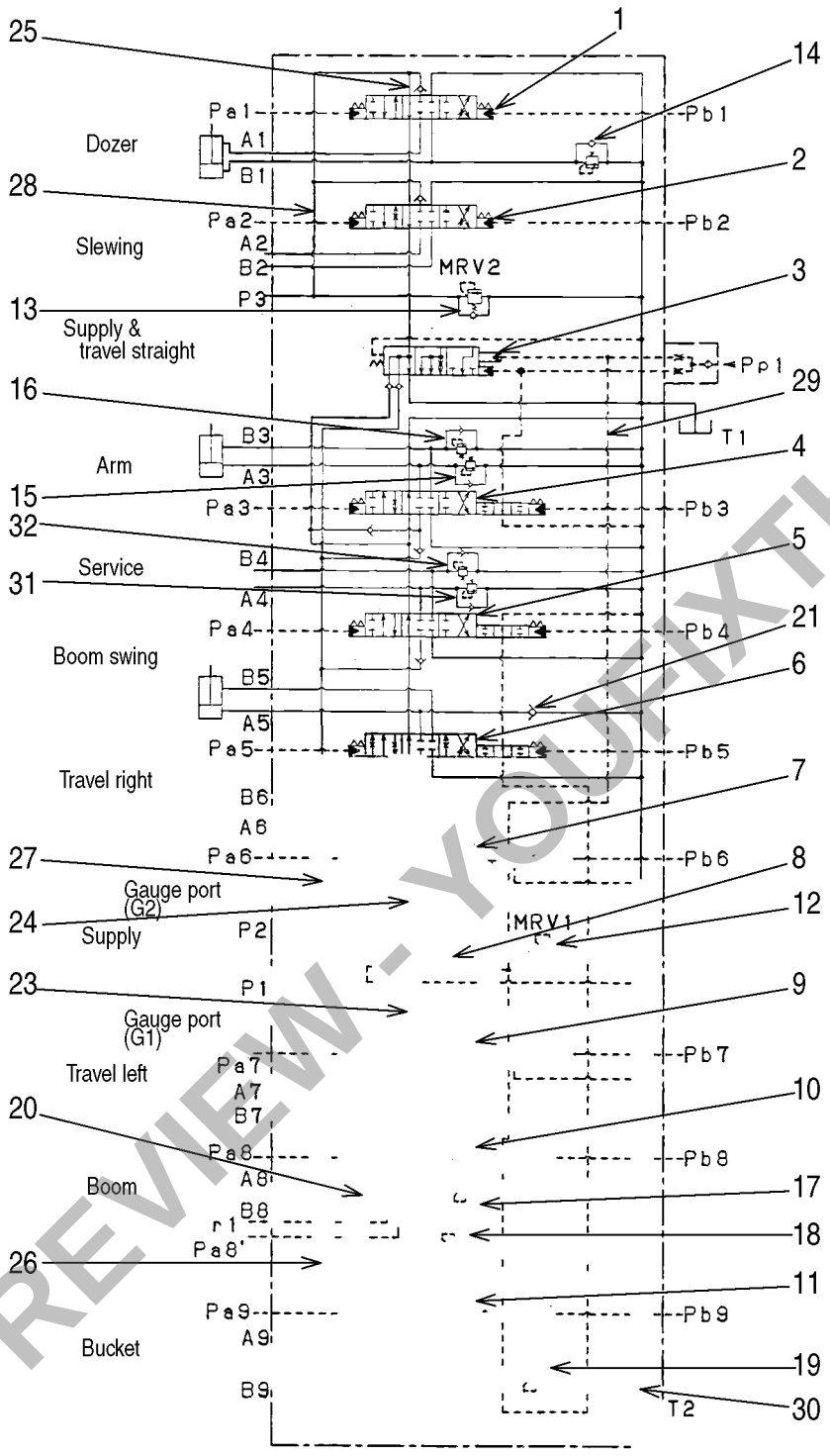
11.1.1 METRIC COARSE THREAD STANDARD TIGHTENING TORQUE VALUES

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)

Download full manual at youfixthis.com
PREVIEW - YOUFIXTHIS.COM

24.1.4.1.10 HYDRAULIC CIRCUIT



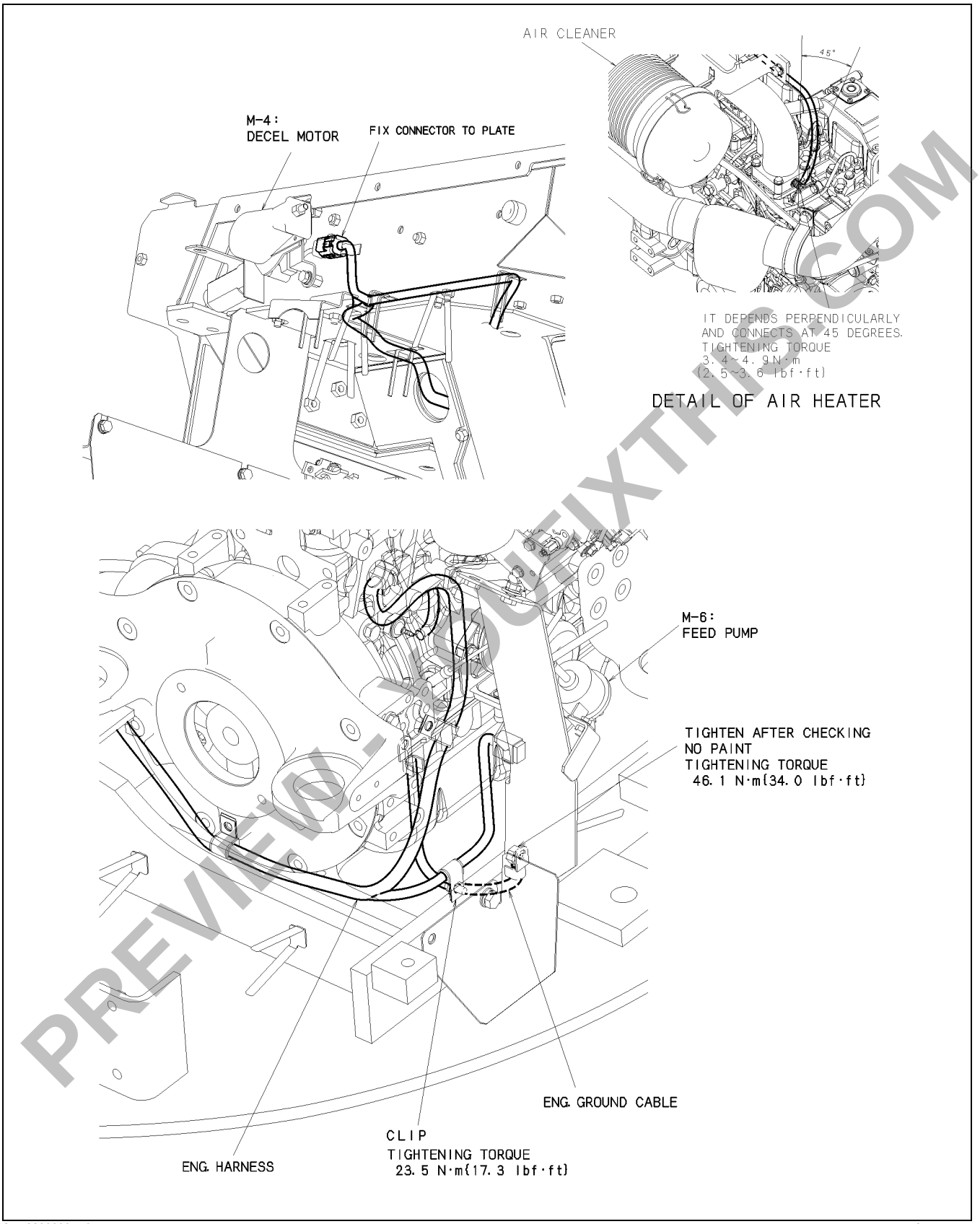
No.	NAME
1	Dozer spool
2	Slewing spool
3	Travel straight & Arm conflux spool
4	Arm spool
5	Service spool
6	Boom swing spool
7	Travel right spool
8	Supply spool
9	Travel left spool
10	Boom spool
11	Bucket spool
12	P1 (Rv1) Relief valve
13	P3 (Rv3) Relief valve
14	B1 Over load relief valve
15	A3 Over load relief valve
16	B3 Over load relief valve
17	A8 Over load relief valve
18	B8 Over load relief valve
19	B9 Over load relief valve
20	Boom lock valve
21	Anti cavitation valve
22	
23	P1 by-pass passage
24	P2 by-pass passage
25	P3 by-pass passage
26	P1 parallel passage
27	P2 parallel passage
28	P3 parallel passage
29	PP1 Pilot passage
30	Tank passage
31	A4 over load relief valve
32	B4 over load relief valve

SPJ24000005E01

Figure 32

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



SPH23000005E01

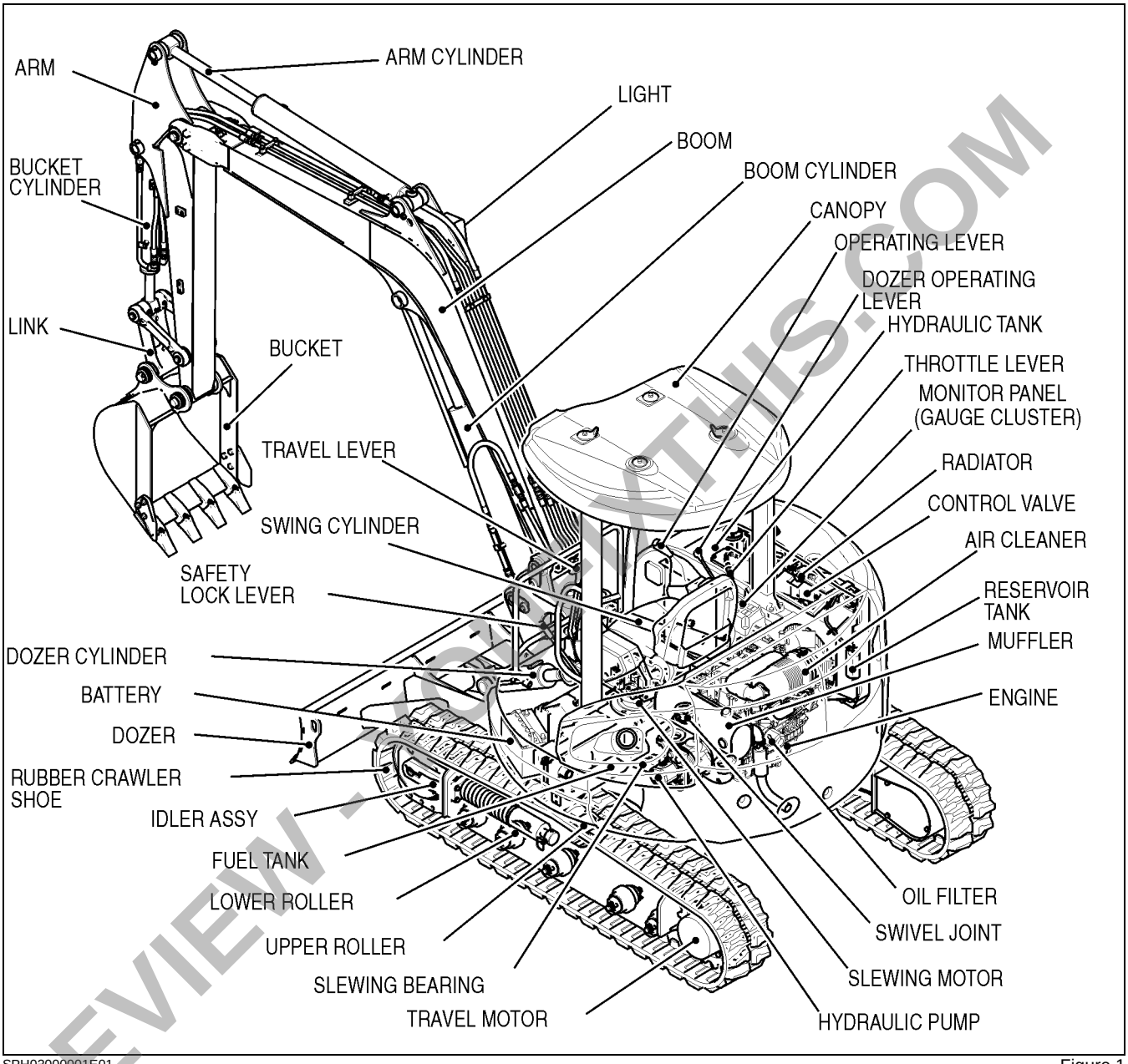
Figure 11

FIG. 23-5 UPPER FRAME PORTION (5/8)

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

2.1 COMPONENTS NAME



SPH02000001E01

Figure 1

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

42.2 TROUBLE DIAGNOSIS: HYDRAULIC

Classification	Reference No.		Phenomenon / Causes	Pump			Valve								Actuator		
				Main pump	Trochoid pump	Gear pump	Travel & ATT main R/V	Main gear pump R/V	Each overload R/V	Travel straight valve	Travel spool	Attachment spool	Check valve	Shuttle valve	Slewing motor unit	Travel motor unit	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

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Group	Code	Name	Part No.
Solenoid	SV-1	LEVER LOCK SOL.	PX35V00003F1
	SV-2	2-SPEED SELECT SOL.	
	SV-3	E/G STOP SOL.	E/G accessory (119233–77932)
	SV-5	POWER SHIFT SOL. (Cooler Spec)	YJ35V00004F2
	SV-9	NIBBLER OPEN SOL.	PY35V00005F1
	SV-10	NIBBLER CLOSE SOL.	
	SV-12	SLEW/SWING SELECT SOL.	PE35V00001F2
Switch	SW-1	KEY SWITCH	PH50S00008S002
	SW-2	WORKING LIGHT SW.	PV24E01001P1
	SW-3	2-SPEED SELECT SW.	YN03M01286S002
	SW-4	WIPER WASHER SW.	PY50S00004P2
	SW-5	E/G COOLANT TEMP. SW.	PM50S00006P1
	SW-6	E/G OIL PRESSURE SW.	E/G accessory (114250–39450)
	SW-7	HORN SW.	YN50E01001P1
	SW-9	LEVER LOCK SW.	PA50S00001P1
	SW-10	HEATER SW. (OPT)	PY50S00003P2
	SW-11	DECELERATION SW.	PM50S00005P1
	SW-14	AIR FILTER RESTRICTION SW.	PW11P00010S004
	SW-23	TRAVEL ALARM SELCT SW. (OPT)	2479U1190F16
	SW-24	TRAVEL RIGHT (FORWARD) PRESSURE SW. (OPT)	GB50S00049F2
	SW-25	TRAVEL RIGHT (REVERSE) PRESSURE SW. (OPT)	
	SW-26	TRAVEL LEFT (FORWARD) PRESSURE SW. (OPT)	
	SW-27	TRAVEL LEFT (REVERSE) PRESSURE SW. (OPT)	
	SW-28	SLEW/SWING SELECT SW.	LF03M01005F3
	SW-30	SLEW/SWING LEVER PRESS. SW. (LEFT)	GB50S00049F2
	SW-31	SLEW/SWING LEVER PRESS. SW. (RIGHT)	
	SW-33	NIBBLER OPEN SW.	LF03M01005F3
	SW-34	NIBBLER CLOSE SW.	
	M-6	FUEL PUMP	PW22P00001P1

NOTE: *The part number may be changed because of modification, use them only for reference.*
NOTE: *NA: North America, AUST: Australia.*

23.2.2 HARNESS & CABLE LIST

Code	Name	Part No.	Remarks
H-1	Inst • Main Harness	PH14E01019P2	
H-3	Engine Harness	PH16E01011P2	
H-4	Starter Cable (+)	PH13E01074D1	
H-5	Battery Ground Cable (–)	PH13E01076D2	
H-6	Engine Ground Cable	PW13E01043D1	
H-7	Boom Harness	PM15E01012D4	
H-8	Key Switch Harness	PW50E01002P1	
H-9	Canopy Work Light Harness	PW11E01026D4	
H-10	Boom Work Light Extension Harness	PH14E01018D1	
H-11	Connection Harness with Cab	PW14E01041P1	(OPT.)
H-12	Air Filter Harness	PW11E01032D2	
H-16	Hand Control and Slew/Swing Harness	PW14E01037P1	
H-17	Horn Switch Harness	PH14E01013D1	
H-18	Instrument Panel Harness (Left)	PH14E01016P1	

NOTE: *The part number may be changed because of modification, use them only for reference.*

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

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.

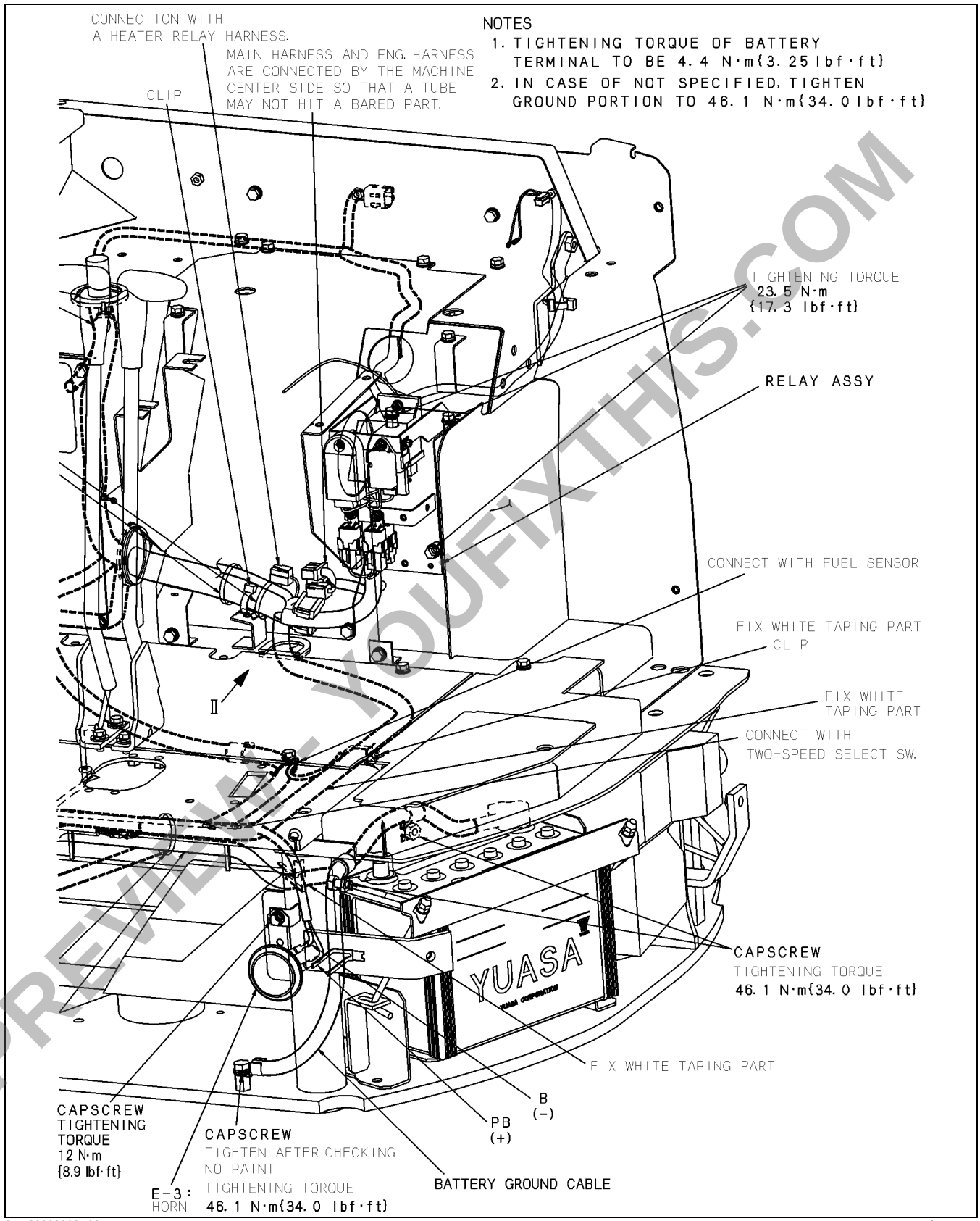
1.3.3 DISASSEMBLING AND ASSEMBLING HYDRAULIC EQUIPMENT



1. Removing hydraulic equipment
   A. Before disconnecting pipes, release the hydraulic pressure in the system.
   B. Carefully drain oil from 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 markings 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.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



SPH23000002E02

Figure 8

FIG. 23-2 UPPER FRAME PORTION (2/8)

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

CHAPTER 31
GENERAL DISASSEMBLY AND ASSEMBLY
Table of Contents 31-1
(Book/Form Number: 6-81070 NA)

CHAPTER 32
ATTACHMENTS
Table of Contents 32-1
(Book/Form Number: 6-81080 NA)

CHAPTER 33
UPPER SLEWING STRUCTURE
Table of Contents 33-I
(Book/Form Number: 6-81090 NA)

CHAPTER 34
TRAVEL SYSTEM
Table of Contents 34-1
(Book/Form Number: 6-81100 NA)

SECTION 4
TROUBLESHOOTING
Table of Contents I
(Book/Form Number: 6-81110 NA)

CHAPTER 42
TROUBLESHOOTING (HYDRAULIC SYSTEM)
Table of Contents 42-1
(Book/Form Number: 6-81120 NA)

CHAPTER 43
TROUBLESHOOTING (ELECTRICAL SYSTEM)
Table of Contents 43-1
(Book/Form Number: 6-81130 NA)

CHAPTER 44
TROUBLESHOOTING (ENGINE)
Table of Contents 44-1
(Book/Form Number: 6-81140 NA)

SECTION 5
ENGINE
Table of Contents I
(Book/Form Number: 6-81150 NA)

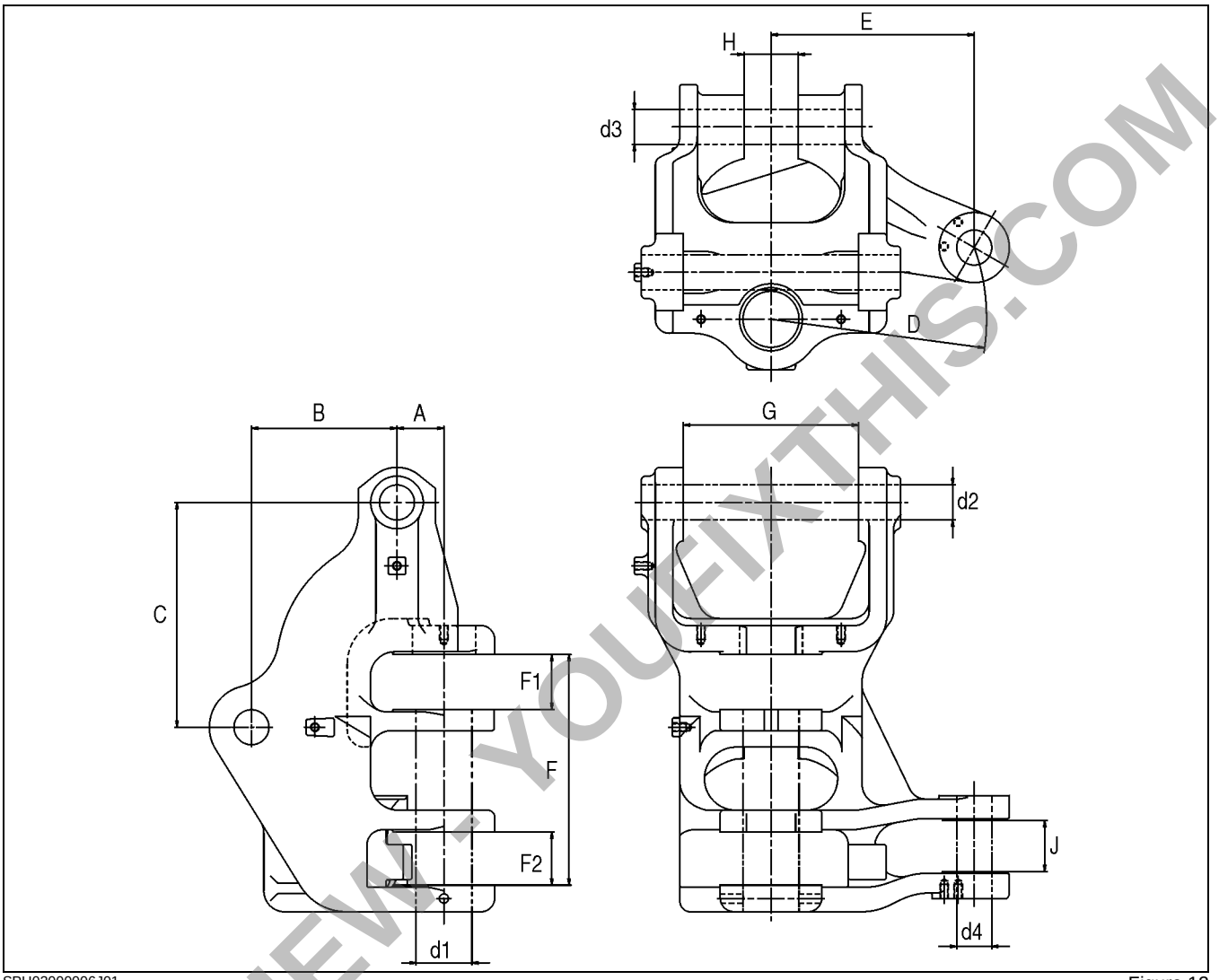
CHAPTER 51
THIS MANUAL EXPLAINS THE ENGINE PROPER AND IS FAITHFUL TO YANMAR DIESEL ENGINE'S SERVICE MANUALS.
. 1
(Book/Form Number: 6-80460 NA)

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

3.5 SWING

3.5.1 SWING BRACKET DIMENSIONAL DRAWINGS



SPH03000006J01

Figure 12

SWING BRACKET DIMENSIONS		
No.	NAME	Dimensions MM. (in)
A	Distance between swing center pin and boom foot pin	67 (2.64)
B	Distance between boom foot pin and boom cylinder pin	207.6 (8.17)
C	- ditto -	320.7 (12.6)
D	Distance between swing center pin and swing cylinder pin	307.5 (12.1)
E	- ditto -	290 (11.4)
F	Inside width of swing center	329 (13.0)
F1	- ditto -	78.5 (3.09)
F2	- ditto -	76 (2.99)
G	Inside width of boom foot	250 (9.84)
H	Inside width for installing boom cylinder	77 (3.03)
J	Inside width for installing swing cylinder	73 (2.87)
d1	Pin dia. of swing center	ø80 (3.15)
d2	Pin dia. of boom foot	ø50 (1.97)
d3	Pin dia. of boom cylinder	ø50 (1.97)
d4	Pin dia. of swing cylinder	ø50 (1.97)

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

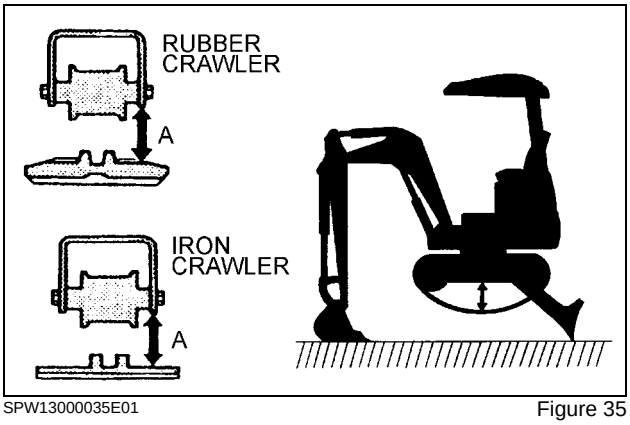
13.9 MEASURING TRACK TENSION

13.9.1 TRACK TENSION

1. Raise the machine completely off the ground using the hoe attachment and dozer blade.

   Then measure the distance (of sag) between the center point on the track frame and top of the track shoe.

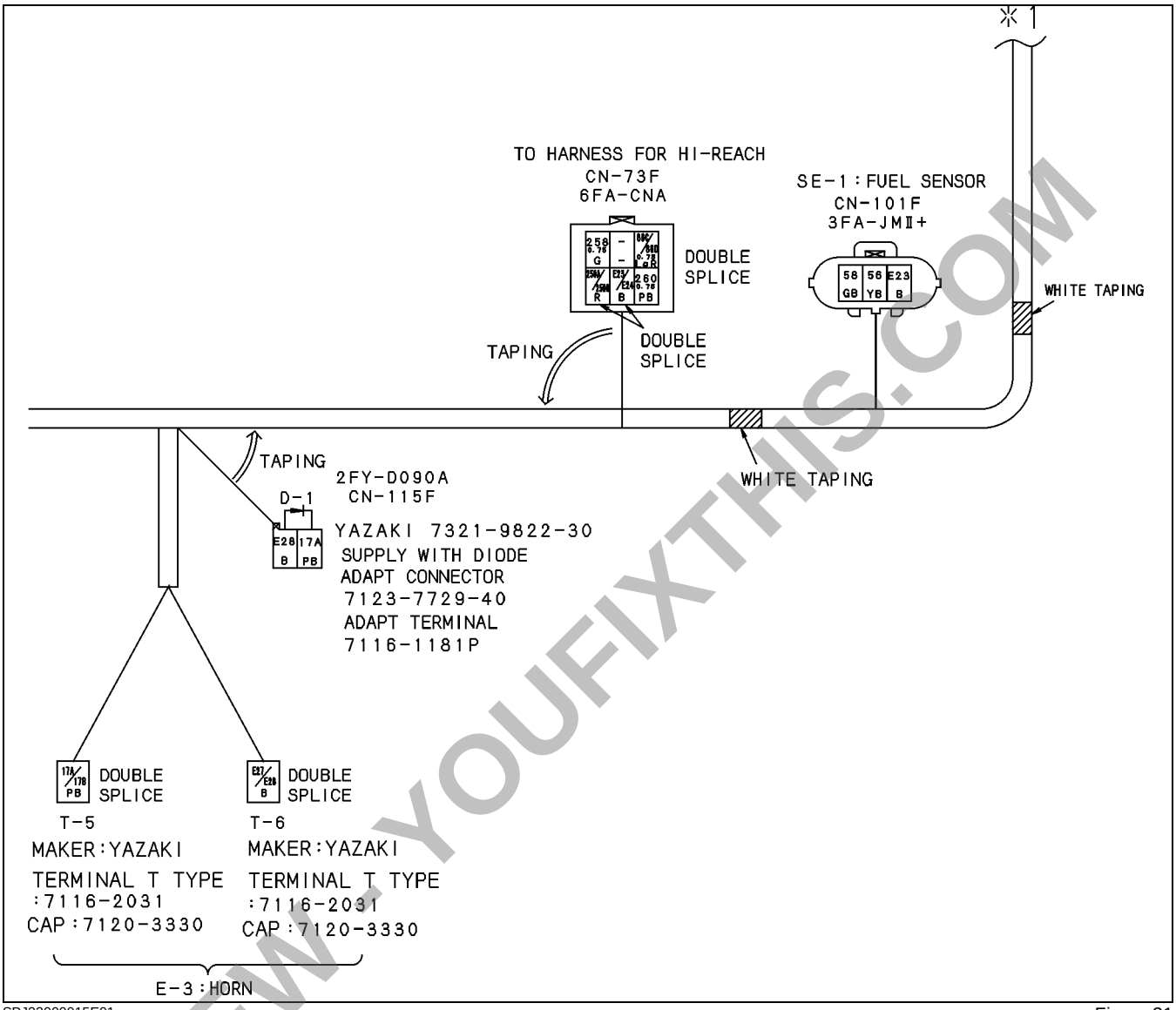
   NOTE: *Rubber track measurements should be taken by placing the marked joint at the top center position.*



SPW13000035E01 Figure 35

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



SPJ23000015E01

Figure 31

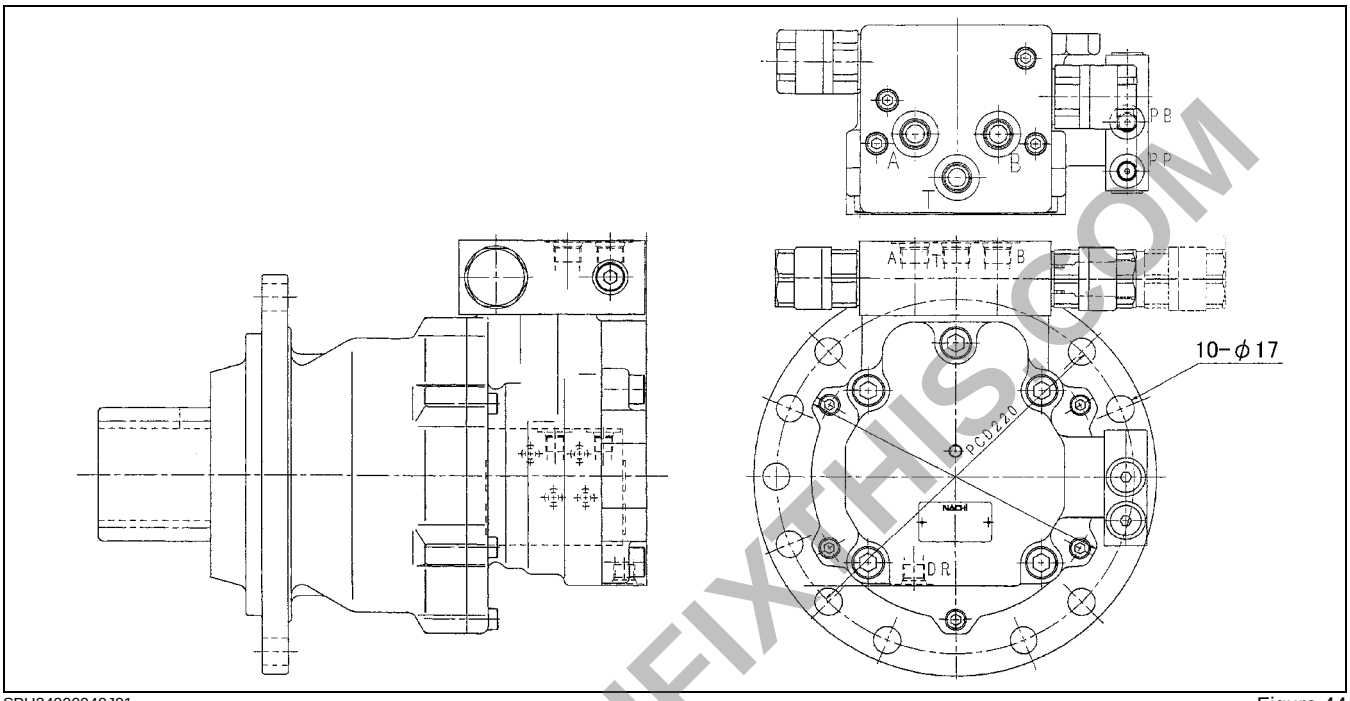
FIG. 23-22 INST • MAIN HARNESS (NO. H-1) — (6/8)

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

24.1.5 SLEWING MOTOR

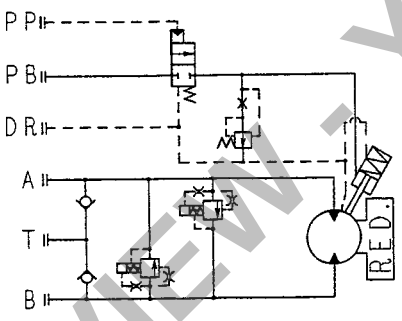
24.1.5.1 GENERAL VIEW



SPH24000040J01

Figure 44

24.1.5.2 HYDRAULIC CIRCUIT



Port	NAME	Size
A	Main port	PF3/8
B	Main port	
T	Tank port	
DR	Drain port	PF1/4
PB	Slewing parking brake release port	
PP	Slewing parking brake pilot port	

Rotational direction (Seen from shaft side) : Inlet A port : Clockwise
: Inlet B port : Counter clockwise

SPH24000041E01

Figure 45

24.1.5.3 SPECIFICATIONS

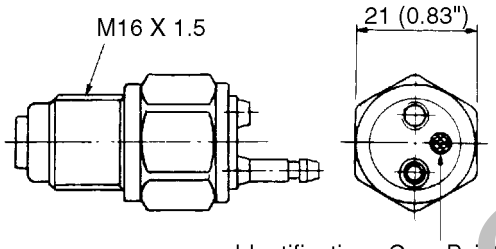
Part No.	Type	Slewing motor unit	PY15V00012F1	PLC-120–18B-1FS2–8284A
		Slewing motor		PM-1B-22B-FS2–4572A
Hydraulic motor		Displacement	cm^3/rev (cu in/rev)	22.1 (1.35)
		Rated flow	L/min (gal/min)	33.8 (8.93)
Parking brake		Static friction torque	Nm (lb ft)	73.0 (54)
		Release pressure	MPa (psi)	Min. 2.5 (363) Max. 4. 9 (710)
Relief valve		Set pressure	MPa (psi)	21.0 (3045) at 34l/min (9.0 gal/min)
		Cracking pressure	MPa (psi)	16.5 (2393) at 1l/min (0.26 gal/min)
Reduction unit		Reduction ratio		17.7
Weight			kg (lb)	Approx. 40 (88)

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

24.2.2.38 ENGINE TEMPERATURE SWITCH

YANMAR Part No.	121250-44901
Operating temperature	ON : 110 ± 3℃, OFF : 100℃ or less
Electric capacity	DC12V 1A
Insulation resistance	100MΩ or more / 500V Megger
Tightening torque	27Nm (19.9 lbf ft)



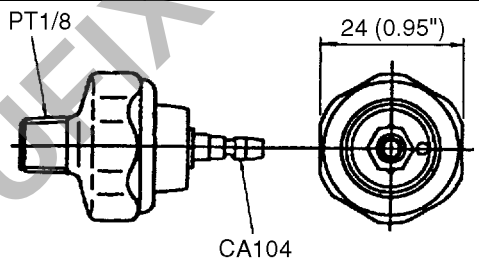
SPW24000117E01 Figure 114

Specifications and Description

Code No. SW-5
Parts Name ..... Switch
Parts No. PM50S00006P1
Use ..... E/G water temperature
Applicable Machines..... PW10-22001~, PX11-08901~, PW11-30001~, PX12-11001~,PH05-03501~,PJ04-03001~

24.2.2.39 ENGINE OIL PRESSURE SWITCH

YANMAR Part No.	114250-39450
Rated voltage	DC6V, 12V, 24V
Rated load	5W (Lamp load)
Operating pressure	49 ± 1 kPa (7.1 ± 1.4 psi)



SPW24000118E01 Figure 115

Specifications and Description

Code No. SW-6
Parts Name ..... Switch
Parts No. 114250-39450
Use ..... E/G oil pressure
Applicable Machines..... PW10-22001~, PX11-08901~, PW11-30001~, PX12-11001~,PH05-03501~,PJ04-03001~

PREVIEW - YOUFIXTHIS.COM

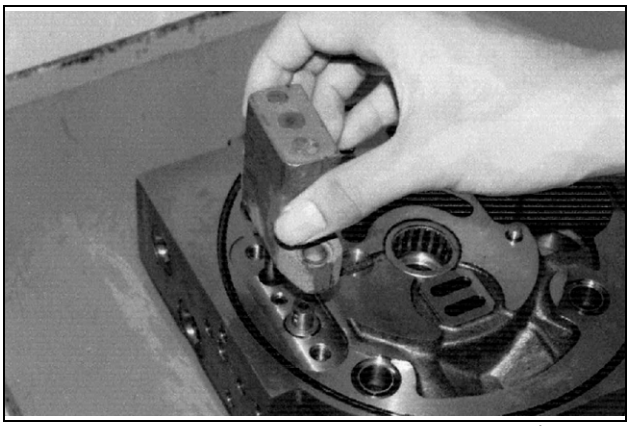
Download full manual at youfixthis.com

33.1.13.3 Installation 33-26
33.1.14 MUFFLER 33-27
33.1.14.1 Removal Preparation 33-27
33.1.14.2 Removal 33-27
33.1.14.3 Installation 33-27
33.1.15 CONTROL STAND 33-28
33.1.15.1 Removal Preparation 33-28
33.1.15.2 Removal 33-28
33.1.15.3 Installation 33-33
33.1.16 STARTER 33-34
33.1.16.1 Removal Preparation 33-34
33.1.16.2 Removal 33-34
33.1.16.3 Installation 33-34
33.1.17 RADIATOR 33-35
33.1.17.1 Removal Preparation 33-35
33.1.17.2 Removal 33-35
33.1.17.3 Installation 33-36
33.1.18 ENGINE 33-37
33.1.18.1 Removal Preparation 33-37
33.1.18.2 Removal 33-37
33.1.18.3 Installation 33-37
33.1.19 PILOT VALVE 33-39
33.1.19.1 Preparation For Removal 33-39
33.1.19.2 Removal 33-39
33.1.19.3 Installation 33-39
33.1.20 SLEWING MOTOR 33-40
33.1.20.1 Removal Preparation 33-40
33.1.20.2 REMOVAL 33-40
33.1.20.3 Installation 33-41
33.1.21 SWIVEL JOINT 33-42
33.1.21.1 Removal Preparation 33-42
33.1.21.2 Removal 33-42
33.1.21.3 Installation 33-44
33.1.22 UPPER FRAME 33-45
33.1.22.1 Removal Preparation 33-45
33.1.22.2 Removal 33-45
33.1.22.3 Installation 33-46

33.2 DISASSEMBLING AND ASSEMBLING
33.2.1 HYDRAULIC PUMP 33-47
33.2.1.1 Construction 33-47
33.2.1.2 Disassembly And Assembly 33-48
33.2.1.2.1 Tools and Jig 33-48
33.2.1.3 Maintenance Standard 33-65
33.2.2 CONTROL VALVE 33-66
33.2.2.1 Assembly Drawing 33-66
33.2.2.2 Precautions For Disassembly 33-69
33.2.2.3 Required Tools and Others 33-69
33.2.2.4 Disassembling 33-70
33.2.2.5 Precautions When Assembling 33-75
33.2.2.6 Precautions When Installing Seals 33-75
33.2.2.7 Assembly 33-75
33.2.2.8 Maintenance standard 33-78
33.2.2.9 Cause of failure and corrective action 33-79
33.2.3 PILOT VALVE (Attachment) 33-81
33.2.3.1 Construction 33-81
33.2.3.2 Disassembly and Assembly 33-82

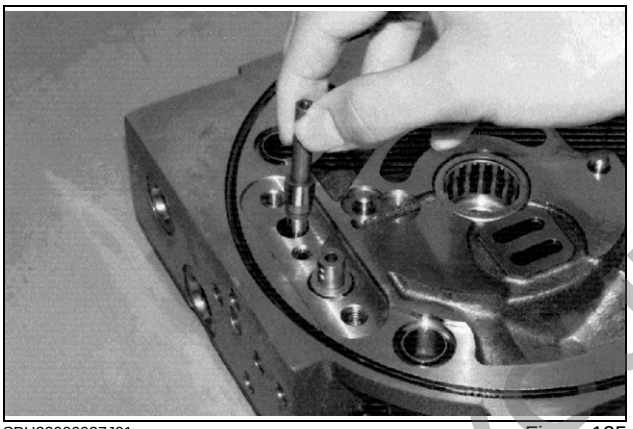
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



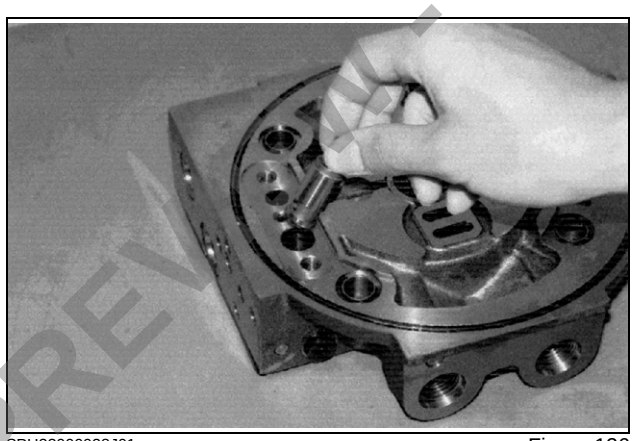
SPH33000026J01 Figure 124

23. Remove cylinder and parallel pin.



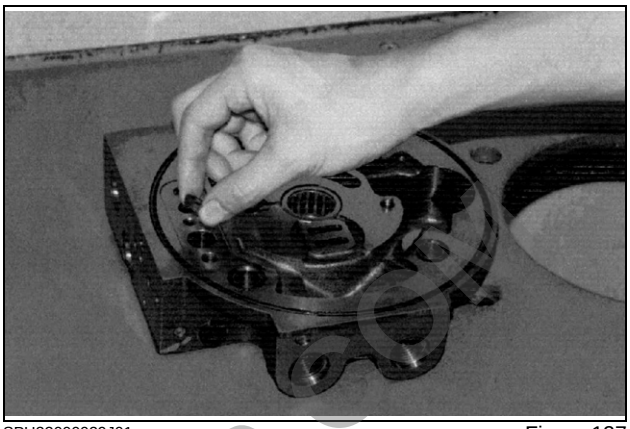
SPH33000027J01 Figure 125

24. If equipped, remove piston for air condition mode.



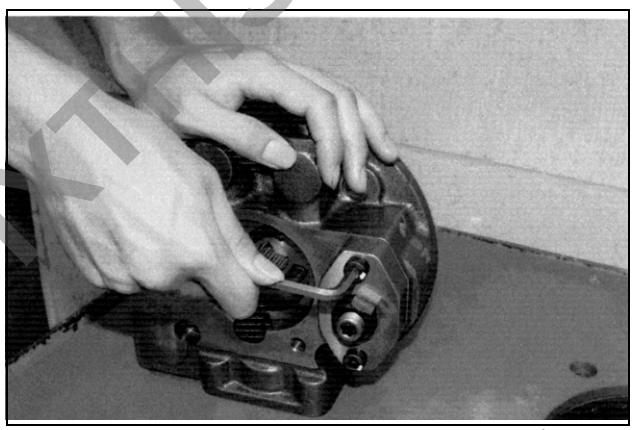
SPH33000028J01 Figure 126

25. Remove piston.



SPH33000029J01 Figure 127

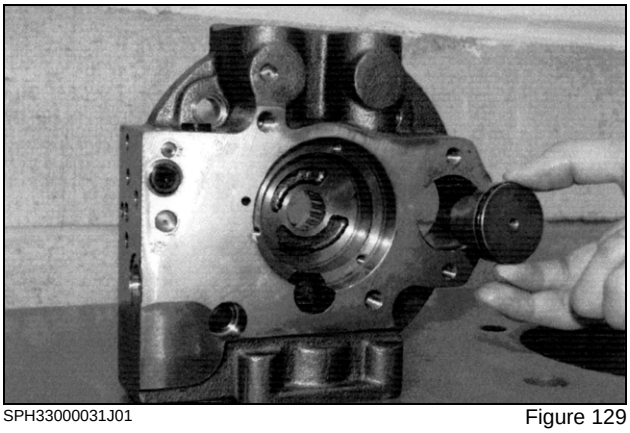
26. Remove three disk springs and spring seats.



SPH33000030J01 Figure 128

27. Remove two socket bolts (M8x30) and remove the cover.

: 6 mm

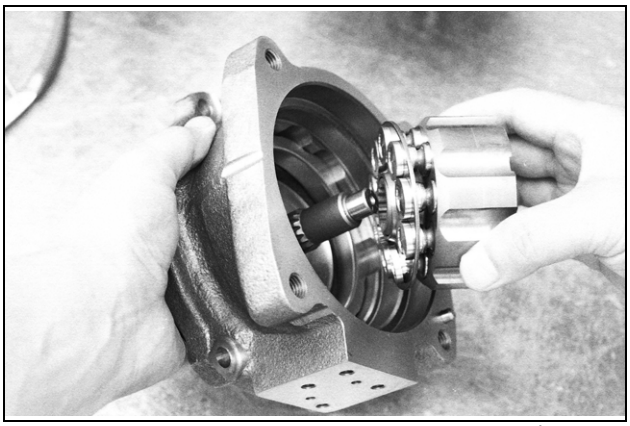


SPH33000031J01 Figure 129

28. Remove spring seat.

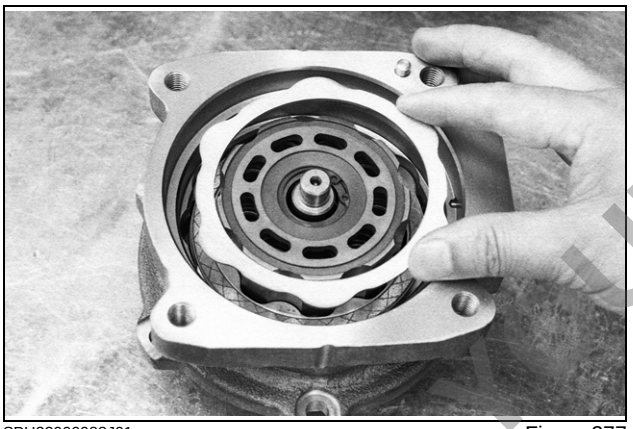
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



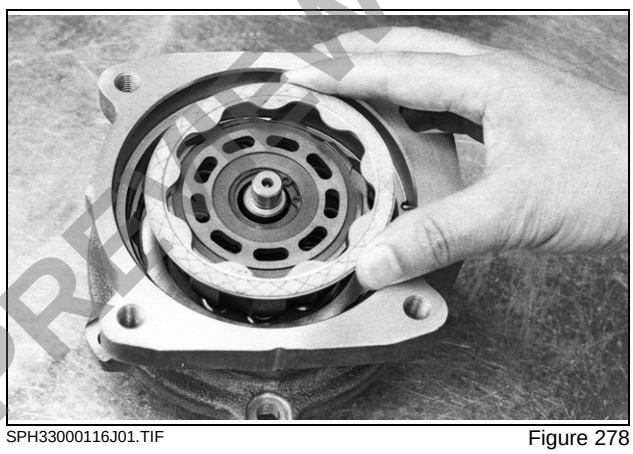
SPH33000089J01 Figure 276

8. Install the cylinder assy assembled in para. 7 into housing (202) through shaft (203) till shoes (207) touche the swash plate (210).



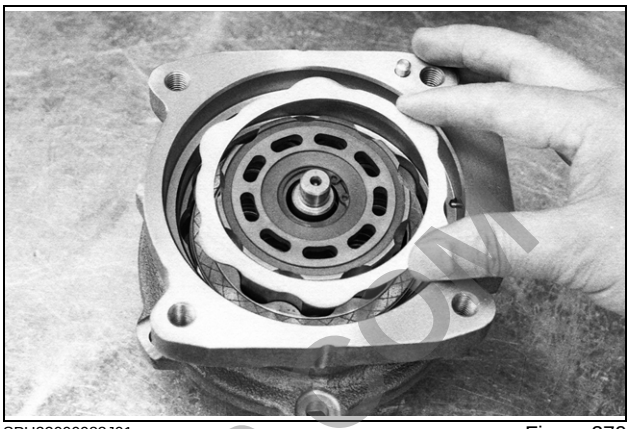
SPH33000088J01 Figure 277

9. Install one separator plate (234) into the groove of housing (202).



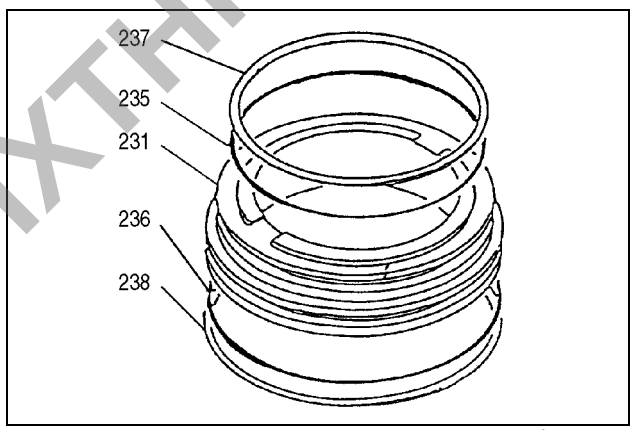
SPH33000116J01.TIF Figure 278

10. Install one friction plate (233) on the outer circumference of the cylinder assy to the groove of housing (202).



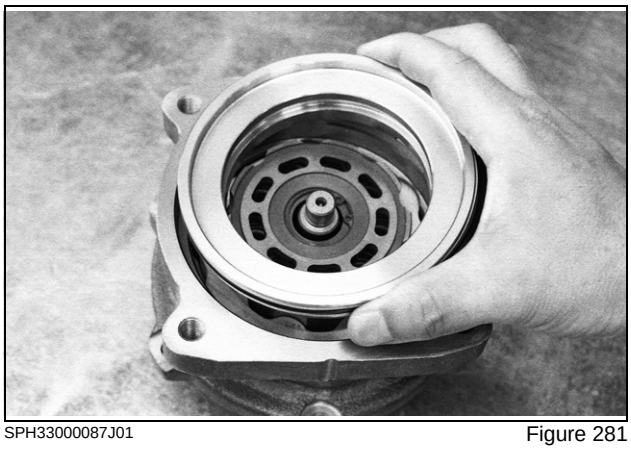
SPH33000088J01 Figure 279

11. Install second separator plate (234) into the groove of housing (202).



SPH33000117J01 Figure 280

12. Install O-rings (235), (236) and backup rings (237), (238) to assemble the piston assy (231).



SPH33000087J01 Figure 281

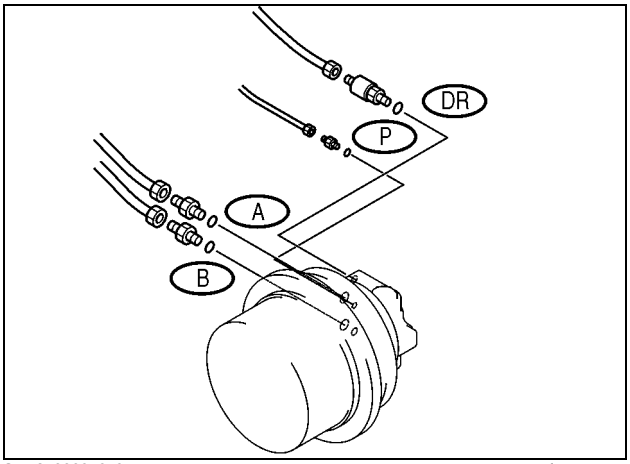
13. Installing the piston assy into the housing (202).
    - Coat the O-ring with a thin film of grease. Use care not to damage seal.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

2. Coat the threaded part of the mounting capscrew (B3) with Loctite #262 and tighten them.

: 22 mm,T=181 Nm (133 lb ft)



SPH34000079J01 Figure 85

FIG. 34-82 INSTALLING HYDRAULIC PIPINGS (LH-TRAVEL MOTOR)

3. Reconnect the hydraulic hoses, tighten the joints to the specified torque. Remove tags.
   - Make sure the motor is full of hydraulic oil prior to connecting return hose.

			Tightening torque Nm (lb ft)	
Port	Thread size (PF)	Spanner used (mm)	O-ring type fitting	30° flare type fitting
A,B	1/2	27	108 (80)	78.5 (58)
P	1/4	17	36.3 (27)	29.4 (22)
DR	3/8	22	73.5 (54)	49.0 (36)

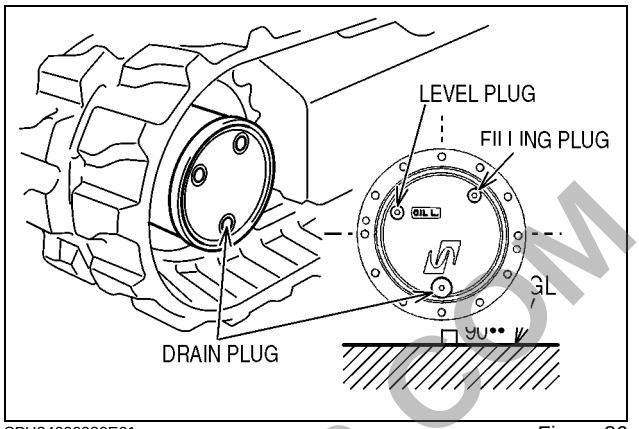
4. Install the covers (A1) located inside the lower frame, and tighten capscrews (A4). (See Fig. 34-79)

: 17mm

5. Remove the wooden block supporting the lower frame and install the track.

6. Check the oil level in the reduction unit of travel motor [See Item (7) below] and fill as required.
   Oil: GEAR OIL SAE#90 GL-4
   900 cc (55 cu in)

: 8mm



SPH34000080E01 Figure 86

FIG. 34-83 CHECKING OIL LEVEL

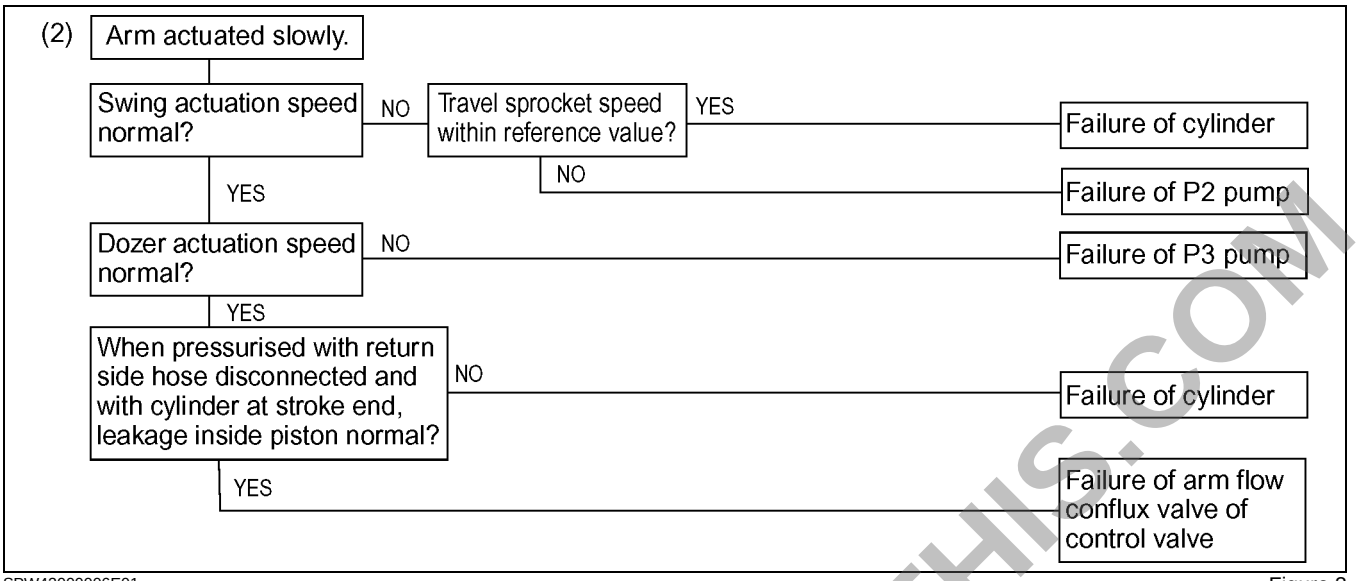
7. Checking oil level in reduction unit
   A. Stop the machine so that the drain plug of the reduction unit is located in the lowest position.
   B. Remove the level plug and check the oil level. If the oil level is correct, close to the plug bore.
   C. Start and run the engine at low idle and the travel motor at low speed for several minutes. Check for oil leaks and noise.

34.1.10.2 MAINTENANCE STANDARDS

	ITEM	SPEC.
TIGHTENING TORQUE	Sprocket mounting Capscrew M14	Apply Loctite #262 181 Nm (133 lb ft)
	Travel motor mounting Capscrew M14	
OIL	Spec. and grade	Gear oil SAE#90 GL-4
	Volume	900cc (55 cu in)

PREVIEW - YOUFIXTHIS.COM

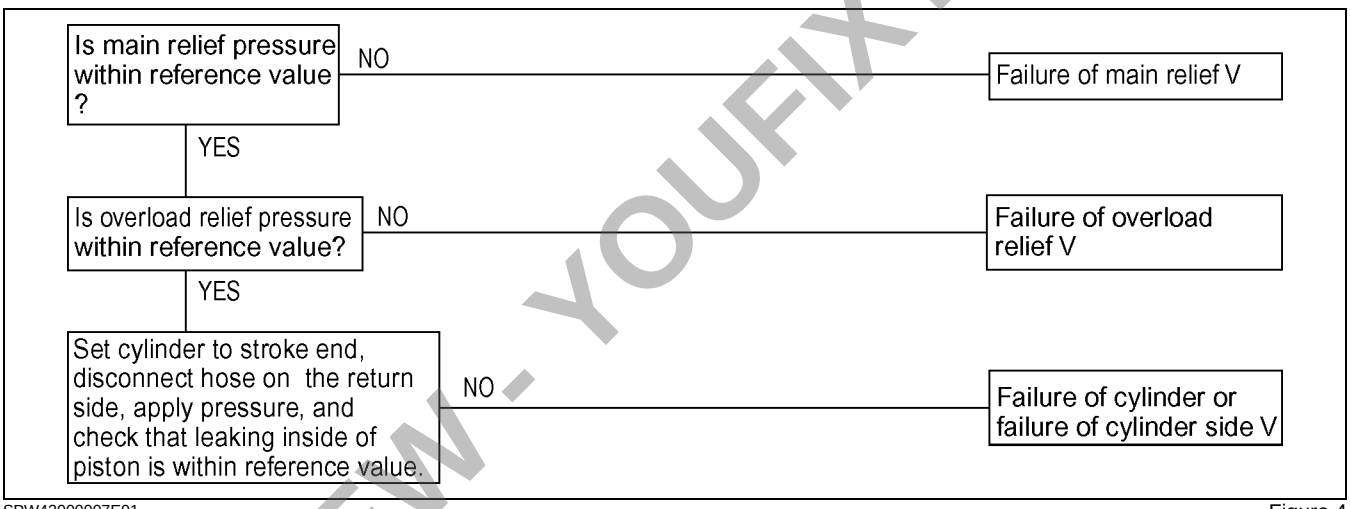
Download full manual at youfixthis.com



SPW42000006E01

Figure 3

42.3.1.3 ATTACHMENT OPERATING POWER IS LOW



SPW42000007E01

Figure 4

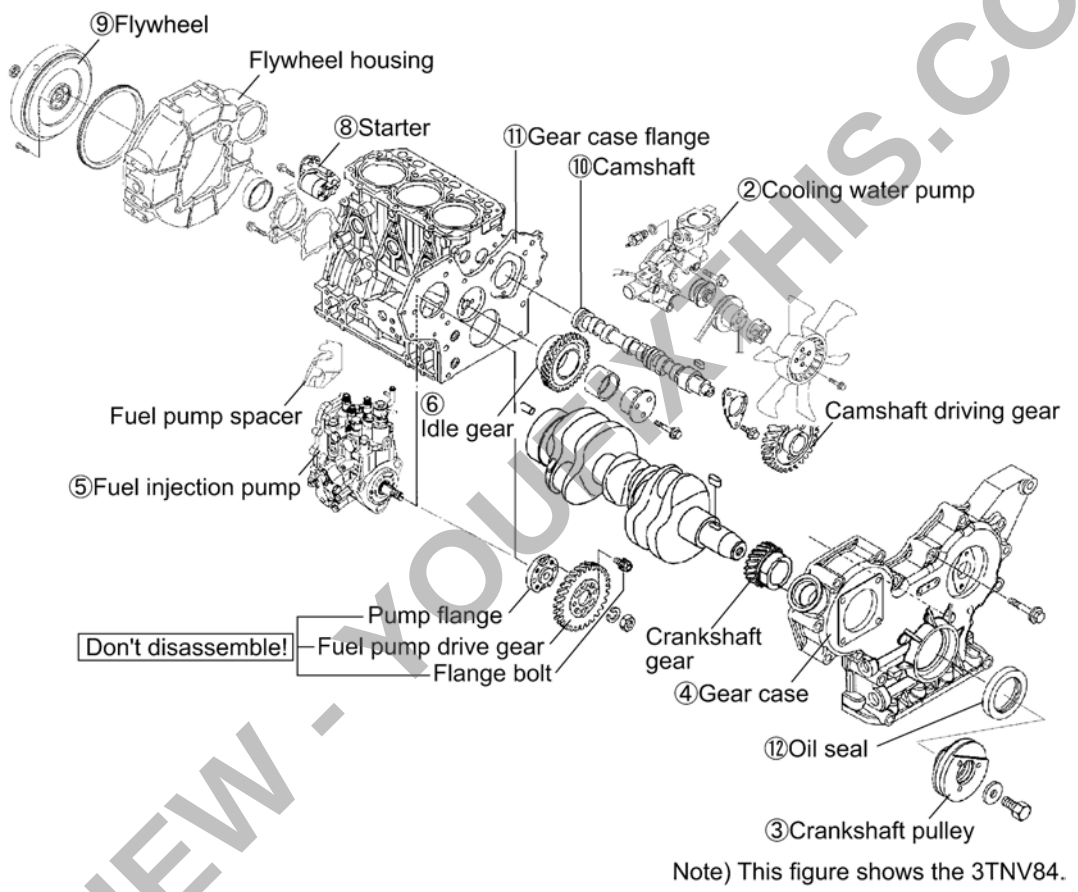
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

(2) How to Read the Explanations

- An exploded view, sectional views, a system diagram, etc. are shown at the beginning of each section as required for easy understanding of the mounted states of the components.
- For the removal/installation of each part, the procedure is shown with the procedural step No. in the illustration.
- Precautions and key points for disassembly and reassembly of parts are described as **points**. In the explanation for each point, detailed operation method, information, standard and precautions are described.

Description Example



Note) This figure shows the 3TNV84.

The job contents are described in the disassembly procedure for Nos. not shown in the illustration.

- Disassembly procedure

1) Follow steps (1) to (15) of the cylinder head disassembly procedure.
2) Remove the cooling water pump.
3) Remove the crankshaft pulley. (**Point 1**) ← Operation point to be explained on a later page.

- Operation points

Disassemble: Service point for removal
Reassemble: Service point for installation
Disassemble-Reassemble: Service point required in both removal and installation.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

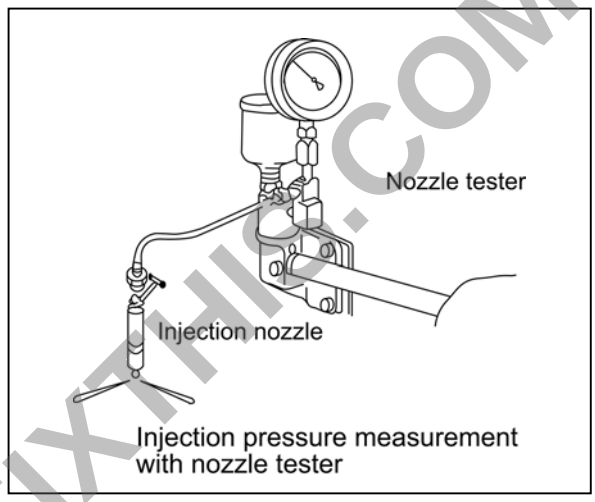
(5) Fuel injection nozzle pressure inspection

⚠ CAUTION

Wear protective glasses when testing injection from the fuel injection valve. Never approach the injection nozzle portion with a hand. The oil jetting out from the nozzle is at a high pressure to cause loss of sight or injury if coming into careless contact with it.

(a) Injection pressure measurement

Model	Standard MPa(kgf/cm^2)
3TNV82A～TNV88 (CL)	19.6-20.6 (200-210)
3TNV82A～TNV88 (VM)	21.6-22.6 (220-230)
4TNV94L～4TNV106(T)	



Injection pressure measurement with nozzle tester

[NOTICE]

As for the opening pressure of the brand-new fuel nozzle, about 0.5Mpa(5kgf/cm) declines by the engine operation for about 5 hours because of the initial wear-out of a spring etc. Therefore, adjust 0.5MPa(5kgf/cm) higher than the standard value of the above table when adjusting a new fuel nozzle of a spare part.

Remove carbon deposit at the nozzle hole thoroughly before measurement.

1) Connect the fuel injection valve to the high pressure pipe of the nozzle tester.
2) Operate the nozzle tester lever slowly and read the pressure at the moment when the fuel injection from the nozzle starts.
3) If the measured injection pressure is lower than the standard level, replace the pressure adjusting shim with a thicker one.

Thickness of pressure adjusting shims mm	Injection pressure adjustment
0.13, 0.15, 0.18, 0.4, 0.5, 0.8	The injection pressure is increased by approx. l.9 MPa(l9 kgf/cm^2), when the adjusting shim thickness is increased by 0.l mm.

PREVIEW. YOUFIXTHIS.COM

Download full manual at youfixthis.com

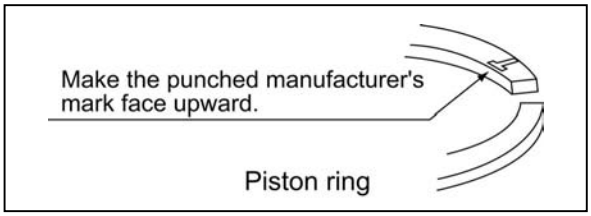
Point6: Piston pin and rings

[Disassemble]

- Using the piston ring replacer (see 4.1.2 in Chapter 4), remove the piston rings.
- Remove the circlip and remove the piston pin by pushing it out.

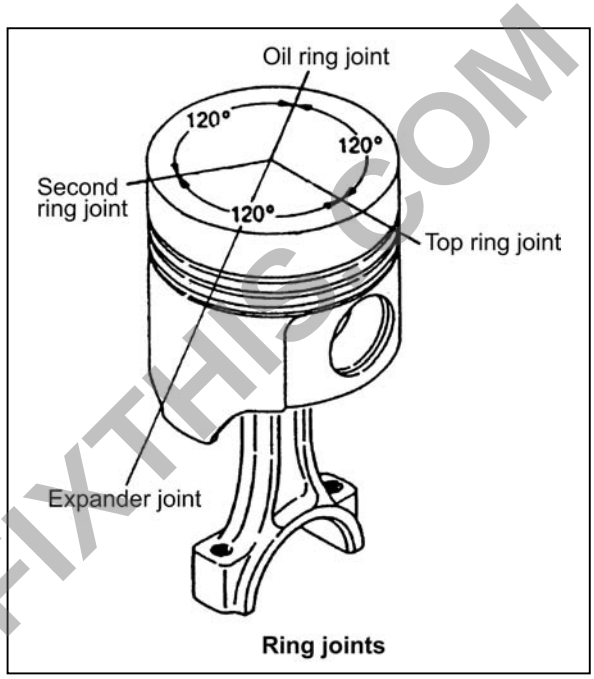
[Reassemble]

- Install each piston ring on the piston, with the punched manufacturer's mark facing upward.



[Reassemble]

- The piston ring joints shall be staggered at by 120° intervals. Do not position the top ring joint vertical to the piston pin. The coil expander joint shall be opposite to the oil ring joint.



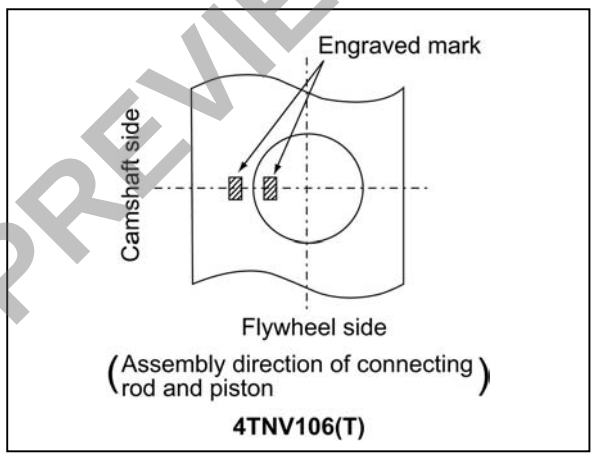
Ring joints

[Reassemble]

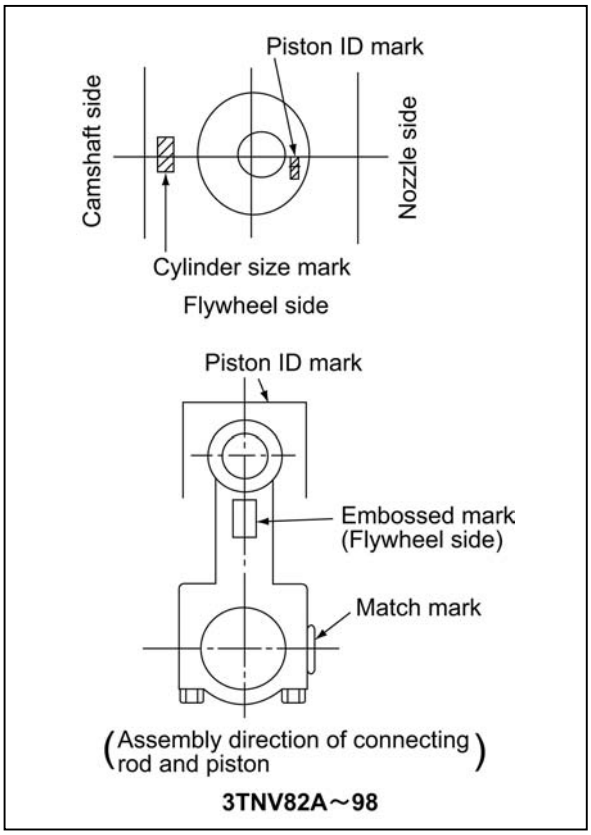
- When installing the piston pin to the rod and piston, the punched match mark on the big end of the connecting rod shall be opposite to the size mark on the piston top.

[Reassemble]

- Install the piston in the cylinder clock with the punched mark on the big end of the rod on the nozzle side. (The embossed mark at the connecting rod I-beam section shall be on the flywheel side.)



4TNV106(T)



3TNV82A～98

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

(2) Disassembly procedure

1) Nut M8
Remove the magnetic switch nut M8 (12 mm), and disconnect the connecting wire.

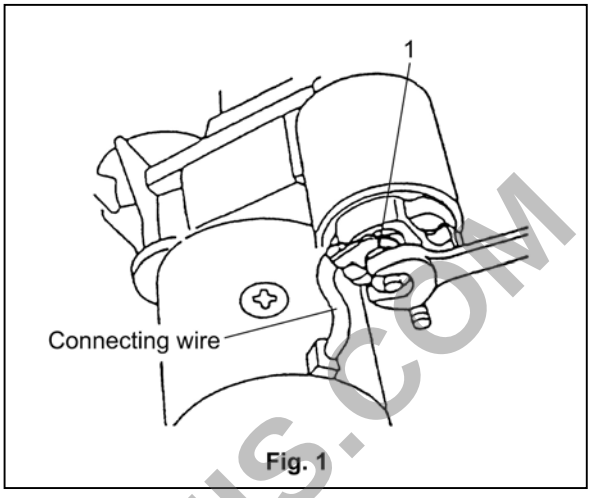


Fig. 1

2) Screw M4 (2)

3) Through bolt M5 (2)

4) Rear cover
Remove the M4 screw fastening the brush holder and remove through bolt M5 for rear cover removal.

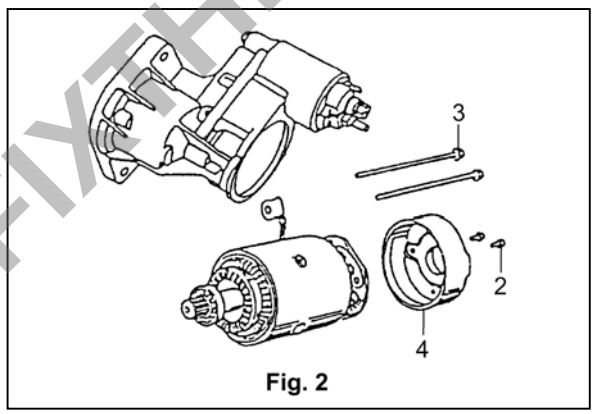
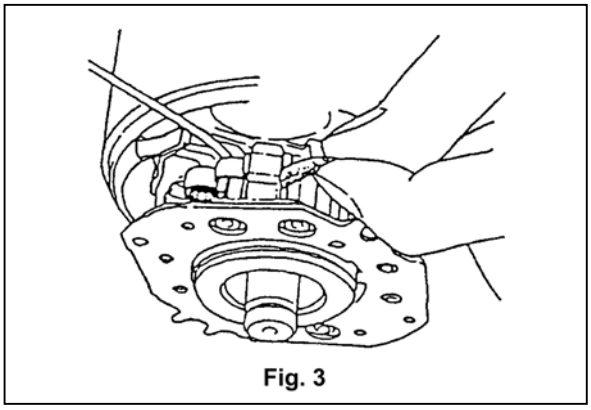


Fig. 2

5) Brush holder
Pull the brush spring up with the brush spring puller. On the negative (-) side, bring the brush spring into contact with the side of the brush for lifting from the commutator surface. On the positive (+) side, extract the brush from the brush holder.


Fig. 3

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

PREVIEW ONLY

You're viewing 25 of 764 pages

The full manual includes:

- All 764 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

New Holland E50 Shop Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual