KM-927E-04

Engine Manual

S12A2

HITACHI

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Table 1-1 Main specification(3 / 3)

Engine type			S12A2-Y1TAA1
Fuel system	Injection pump	Model (abbreviation)	NP-PE6P / S7S (S7S)
		Manufacturer	Bosch Corporation
		Plunger outside diameter	13 mm [0.51 in.]
		Plunger lead	Clockwise, 40 lead on both sides
		Cam lift	12 mm [0.47 in.]
	Feed pump	Model	NP-FP/KD-P7S
		Manufacturer	Bosch Corporation
		Cam lift	4 mm [0.157 in.]
	Governor and actuator	Control system	(Electric) Woodward PROACT-I
	Injection nozzle	Model	Hole type
		Manufacturer	Bosch Corporation
		No. of spray holes	8
		Spray hole diameter	ø 0.26 mm [0.01102 in.]
		Spray angle	158°
		Injection pressure	29.4 MPa (300 kgf/cm²) [4267 psi]
	Fuel filter		Primary: Water separator type (cellulose element)Filtration accuracy of 30 µn Secondary: Cartridge type (paper element)Filtration accuracy of 5 µn
Electrical system	Voltage - polarity		24 V - Negative (-) ground
	Starter	Manufacturer	Nikko Electric Industry
		Piston mesh type	Pinion shift
		Output	24 V-11 kW
		No. of units	2
	Alternator	Type	3-phase alternating-current generator, built-in IC regulator
		Manufacturer	Mitsubishi Electric
		Output	24 V-150 A
		Rated output generating speed	Hot 5000 min^{-1} or less (at 27 V, 143 A)
		Regulated voltage	28.5±0.5 V
	Magnetic relay (two starters for parallel operation)	Manufacturer	Nikko Electric Industry
		Nominal voltage	24 V
		Rating	30 sec.
		Operating voltage	8 to 24 V
		Operating interval (at 24 V)	1 ON-OFF cycle between SS and SW 2.5 to 3.0 sec.
		Allowable temperature	-30 to +80 °C [-54+144 °F]
		Grounding system	2-wire system
	Alternator belt	Type	Ribbed belt (RG1482)
		Manufacturer	Bando Chemical Industries, Ltd
		Outside circumference	920 mm [36 in.]

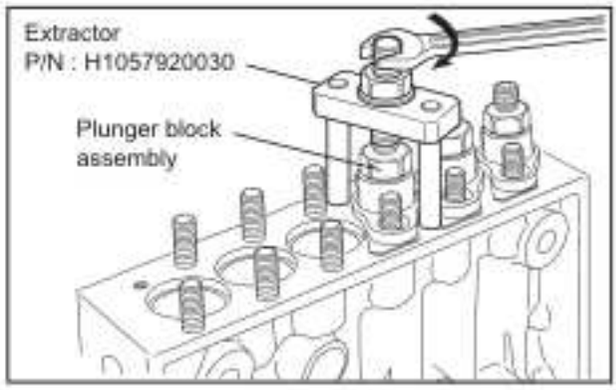
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(21)By turning the bolt on the special tool (extractor) with an open end wrench, remove plunger block assembly.

CAUTION

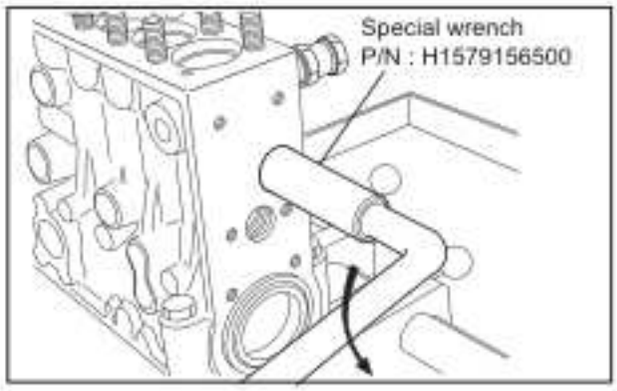
Put each removed plunger block assembly together with the corresponding plunger removed previously, and place them in order in a tray with diesel fuel.

Note: If plunger block assemblies need to be disassembled, proceed to step (bb).



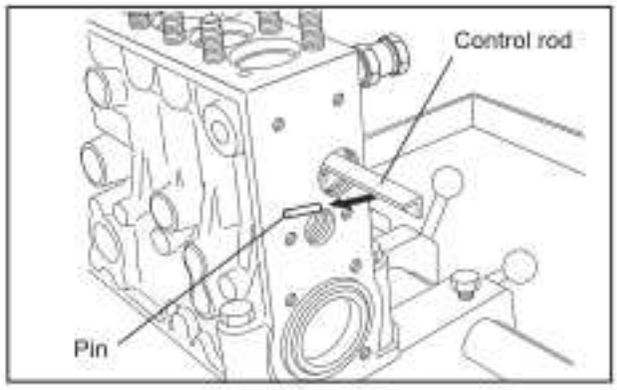
Removing plunger block assembly (3)

(22)Using special tool (special wrench), remove the screw bushing from the counter drive side.



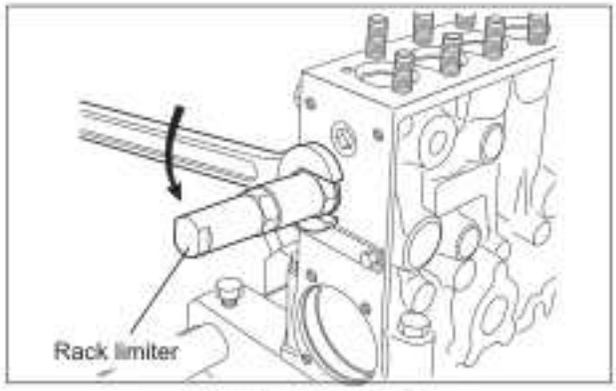
Removing screw bushing

(23)Remove pin from the governor side.



Removing pin

(24)Using an open-end wrench, remove the rack limiter from the drive side.



Removing rack limiter

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2. Preparation for adjustment

2.1 Required equipment

(1) Prepare the fuel injection pumps that the injection amount are adjusted with control rack setting, when the injection pump shall be changed.

(2) In order to adjust the controller, prepare the PC, harnesses and software.

Equipment for controller adjustment

IBM-PC or IBM-PC fully compatible computer 486 Hz or higher processor 3.5 inch floppy drive RS-232C port Color display
RS-232C adapter (as required) (D-SUB 9-pin to 25-pin adapter)
IBM PC-DOS Version 3.3 or higher (CANNOT run correctly under Windows 98 DOS mode)
Service program applicable to the controller "PCSVC.EXE"

(3) Controller and software
(for matching service soft floppy)

Table 15-1 Engine controller and floppy disc

Engine Model	Engine Serial No.	Controller		Floppy Disc Part No.
		Part No.	Version	
S6R-YITAA1	15712 to	H3756309500	09500	H3756309511
	16230 to	H3756319500	19500	H3756319511
	16529 to	H3756329500	29500	H3756329511
	17574 to	H3756339500	39500	H3756339511
S6R2-Y2TAA-2	17300 to	H3756309800	09800	H3756309811
	17691 to	H3756319800	19800	H3756319811
	17931 to	H3756329800	29800	H3756329811
S16R-YITAA1	10847 to	H3786300100	00100	H3786300111
	11004 to	H3786310100	10100	H3786310111
	11111 to	H3786320100	20100	H3786320111
	11571 to	H3786320100	30100	H3786330111
S16R-YITAA2	11677 to	H3786303100	03100	H3786303111
		H3786313100	13100	H3786313111
S12A2-YITAA1	22328 to	H3266302100	02100	H3266302111
	22676 to	H3266322100	22100	H3266322111
	23385 to	H3266332100	32100	H3266332111

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⚠ Caution About Warning Labels

Always keep warning labels clean and legible

Make sure all warning labels are legible.

If the description and/or illustration on a warning label cannot be seen clearly, clean or replace the label.

To clean warning labels, use a cloth, water and soap. Do not use solvents, gasoline or other chemicals to clean warning labels. Cleaning with chemicals may cause the letters to fade away or the labels to peel off.

If warning labels are damaged or missing, replace with new labels.

If a part of the engine with warning label is replaced with new part, also attach new warning label to the new part.

To obtain replacement warning labels, contact a Mitsubishi dealer.



Warninh labeles

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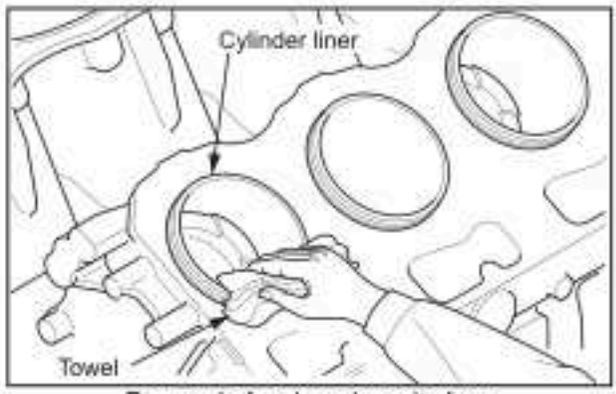
4.2 Removal of carbon deposits from cylinder liner upper areas

CAUTION

Before removing the pistons, always clear carbon deposits completely from the upper areas of the cylinder liners. An attempt to pull out a piston without carbon deposits removed may cause damage to the piston and piston ring

If carbon deposits are present at the upper section of the cylinder liner, remove the carbon deposits with a cloth or oil paper.

Note: Be careful not to damage the inner surface of the cylinder liner.



Removal of carbon deposits from cylinder liner upper areas

4.3 Removal of pistons engine right bank cylinder

⚠ CAUTION

be careful with the position of hands so that the hands may not be injured by the swing of the connecting rod.

CAUTION

When pulling out the piston, be careful not to drop the connecting rod bearing upper. If the connecting rod upper dropped, it will cause damage to the cylinder liner and the crankshaft

Be careful not to damage the inner surface of the cylinder with the connecting rod

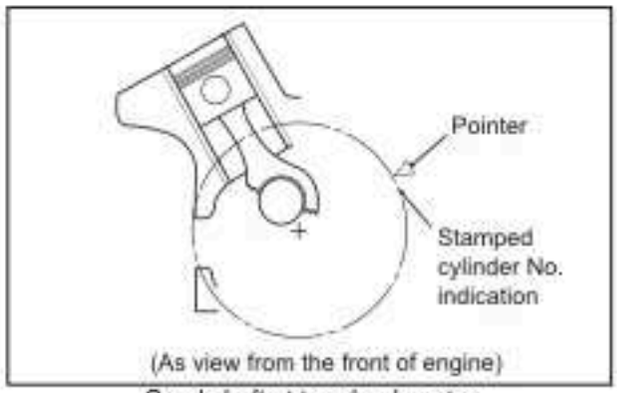
When the number of the cylinders in which pistons are inserted decreases, there will be cases where the crankshaft revolves. Fix the crankshaft so that it may not revolve

Raise the piston carefully so that the connecting rod will not interfere with the piston cooling nozzle

Because the piston swings suddenly as it comes out of the cylinder liner, support the piston to prevent the piston skirt from hitting the connecting rod

(1) After removing the connecting rod cap, rotate the crankshaft to position the piston at the T.D.C

Note: Visually check and make sure that the piston is at the T.D.C. on compression stroke according to the pointer attached to the rear end of the engine and the stamped cylinder number on the flywheel



Crankshaft at top dead center

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