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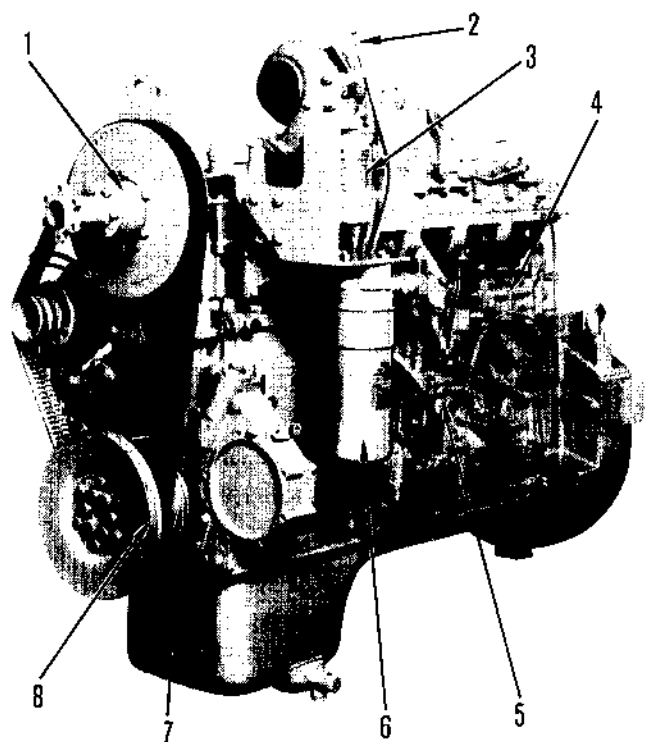
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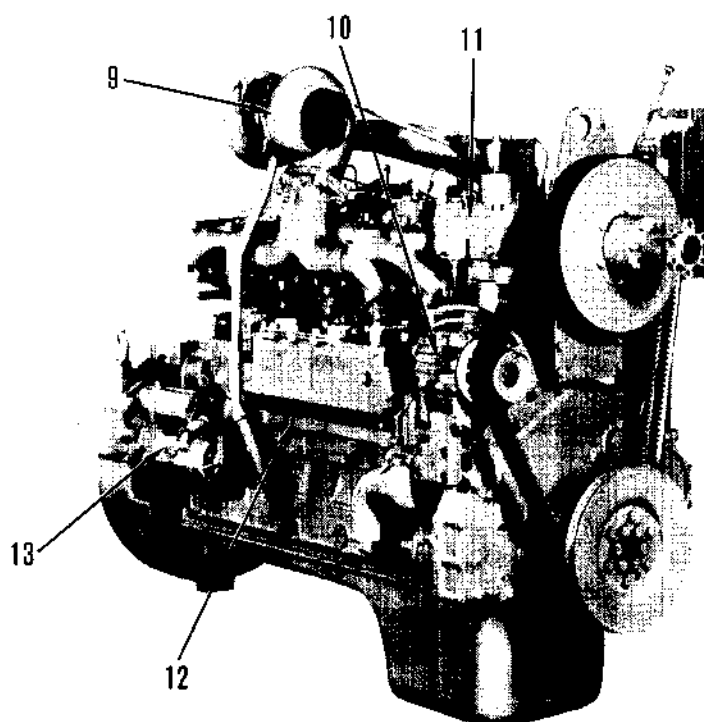
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S6D125-1



1. Fan pulley
2. Dipstick
3. Fuel filter
4. Adapter
5. Fuel injection pump
6. Oil filter
7. Crankshaft pulley
8. Vibration damper

6150P003



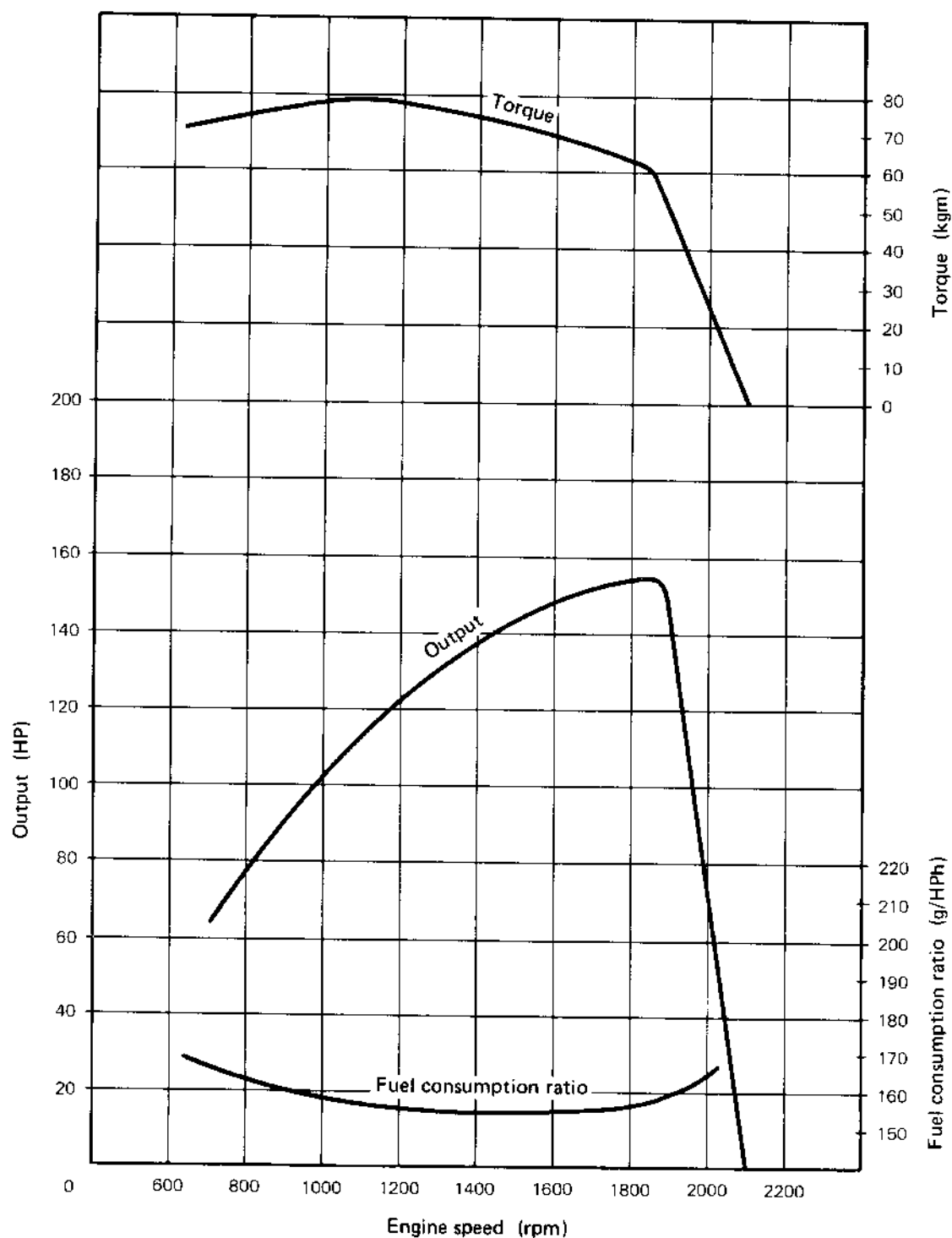
9. Turbocharger
10. Alternator
11. Thermostat housing
12. Oil cooler
13. Starting motor

6150P004

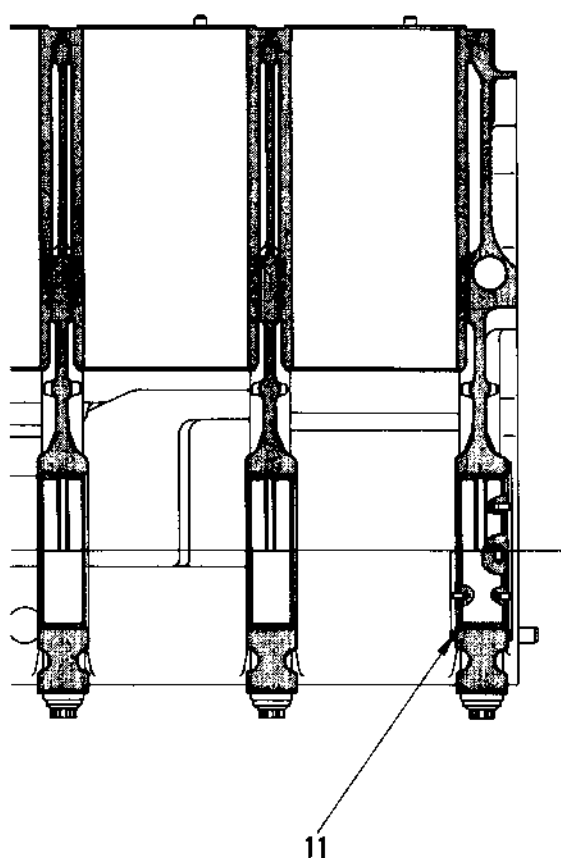
Engine model			SA6D125-1		
Applicable machine			SA6D125-M-1		
Number of cylinder – Bore x Stroke		(mm)	6 – 125 x 150		
Total piston displacement		(cc)	11,040		
Firing order			1 – 5 – 3 – 6 – 2 – 4		
Dimensions	Overall length	(mm)	1,340		
	Overall width	(mm)	784		
	Overall height (excluding exhaust pipe)	(mm)	1,105		
	Overall height (including exhaust pipe)	(mm)	–		
Performance	Flywheel horsepower	(HP/rpm)	440/2,300		
	Maximum torque	(kgm/rpm)	–		
	High idling speed	(rpm)	2,450 – 2,550		
	Low idling speed	(rpm)	650 – 700		
	Minimum fuel consumption ratio	(g/HPh)	–		
Dry weight		(kg)	920		
Fuel pump			Bosch PE-P type		
Governor			Bosch RSV centrifugal, all-speed type		
Lubricating oil amount (refill capacity)		(ℓ)	26		
Coolant amount (engine only)		(ℓ)	20 (engine only)		
Alternator		}	Selected by A.D.E.		
Starting motor					
Battery					
Turbocharger		}	Selected by A.D.E.		
Air compressor					
Others					

6D125-1 (For D65A-8)

Flywheel horsepower: 155HP/1,850 rpm
Maximum torque: 78 kgm/1,100 rpm
Minimum fuel consumption ratio: 155 g/HPH



F615001003



6150F108

CYLINDER BLOCK

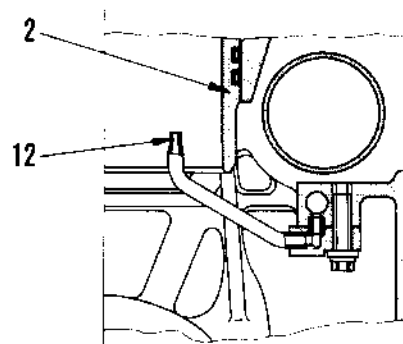
- Crankshaft: 7 bearings
- Camshaft: 7 bearings

FRONT SEAL

- Single lip with dust seal

PISTON COOLING

- With piston cooling nozzle (S6D125, SA6D125)



6150F109A

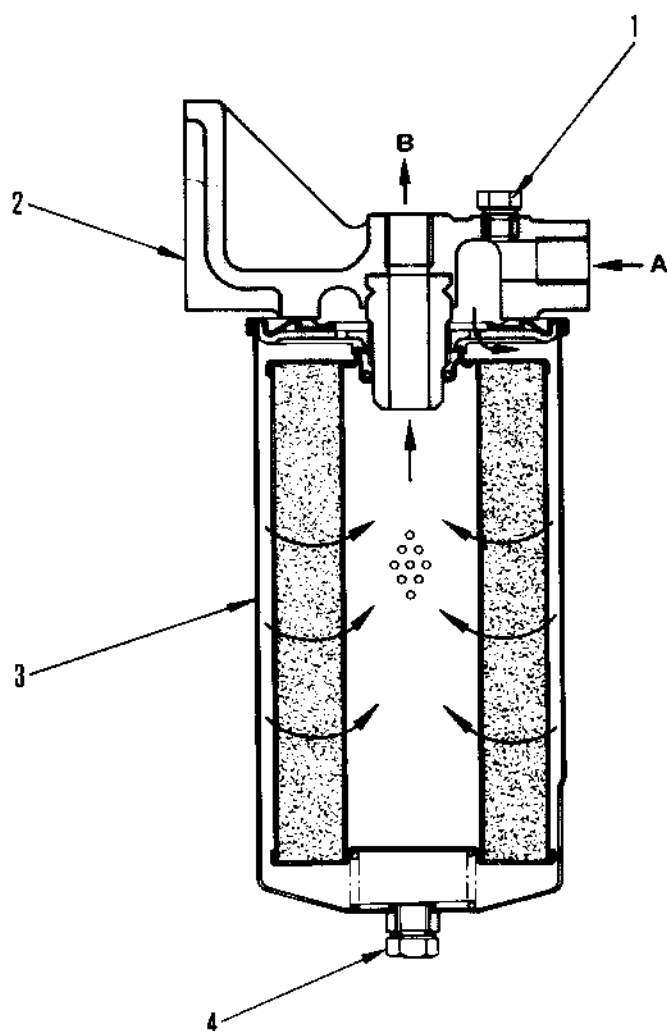
CYLINDER LINER

- Wet type
- Treatment: Plateau honing finish
Tufftride treated (S6D125, SA6D125)

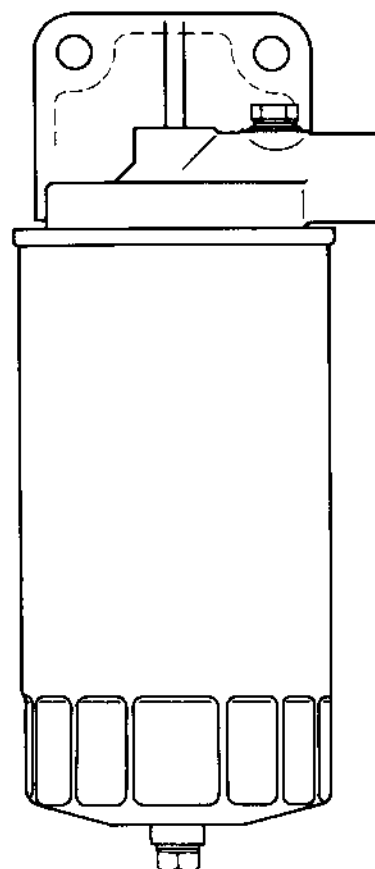
LINER SEAL

- Top: Clevis seal
- Middle: O-ring (Ethylene propylene rubber)
- Bottom: O-ring (Silicon rubber)

FUEL FILTER



- 1. Air bleed plug
- 2. Bracket
- 3. Cartridge
- 4. Water drain plug
- A. Fuel inlet
- B. Fuel outlet



6150F133

FUEL FILTER

• Filtration area: 0.3 m²

MEASURING COMPRESSION PRESSURE

MEASUREMENT PROCEDURE



While measuring the compression pressure, take care not burn yourself on the exhaust manifold or muffler, and be careful not to get caught in any revolving part of the engine.

- ★ Measure the compression pressure while the engine is warm.

(Oil temperature: 40 – 60°C)

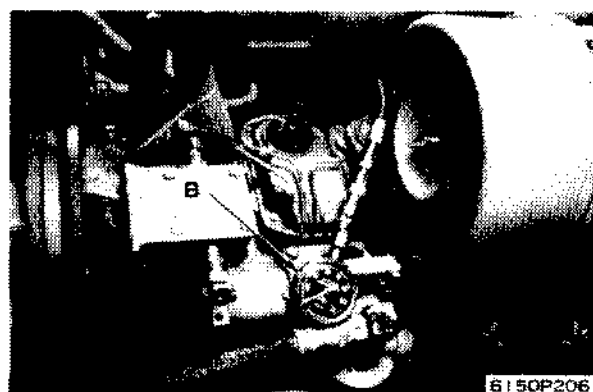
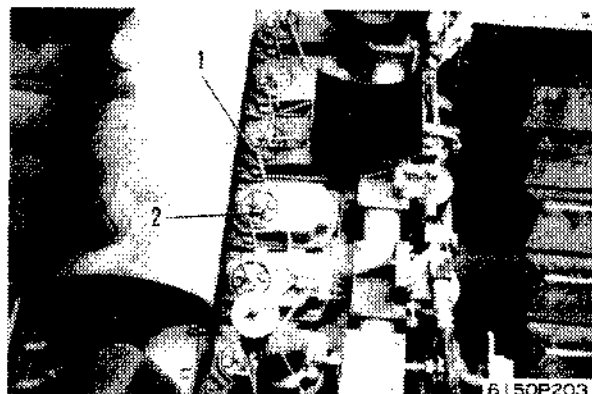
1. Adjust the valve clearance properly. For details, see ADJUSTING VALVE CLEARANCE.
2. Remove spill tube (1) and disconnect fuel injection pipe (2).
3. Remove nozzle holder assembly (3) for each cylinder.
 - ★ Remove the nozzle holder assembly by prying it with two mounting bolts.
 - ★ Take care not to let any dirt or foreign matter get into the cylinder.
4. Install adapter **A** to the nozzle holder mounting section of the cylinder to be measured, and tighten the adapter to the specified torque.

 Torque: 2.2 ± 0.3 kgm
5. Connect compression gauge **B** to the adapter.
6. Place the fuel control lever in NO INJECTION position, crank the engine with the starting motor, and read the gauge when the pointer is stabilized.



If you do not put the fuel control lever in NO INJECTION position, fuel will blow out.

- ★ Most compression leakage can be prevented by applying a small amount of oil to the mounting section of the adapter.
- ★ For the reference values of the compression pressure, see TESTING AND ADJUSTING DATA.



Machine Model	Engine Model	Injection Pump Type	Pump Manufacturer
D63E-1	6D125-1	NB (EP9)	NIPPON DENSO

Pump Assembly Number

6150-71-1270 (191000-6420) ... 1

Injection Timing

	Unit	Basis	Allowance
Rotating direction		Counterclockwise viewed from drive end	
Injection order		1 - 5 - 3 - 6 - 2 - 4	
Injection interval		60°	59°30' to 60°30'
Plunger pre-stroke	mm	3.0	
Delivery valve retraction volume	mm ³	59	

Specification for engine with fan (reference only)

Rated horsepower:	HP/rpm	140/1900
Maximum torque:	kgm/rpm	68/1300
High idling:	rpm	2050 to 2150
Low idling:	rpm	800 to 850

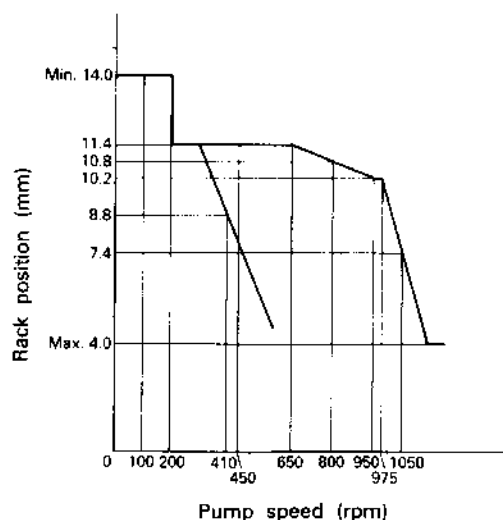
Calibration Standard

Conditions	Unit	Manufacturer standard (with nearly the same actual machine parts)	Service standard (with calibration test parts)
Nozzle part no.			093400-0540 (DN12SD12A)
Nozzle holder part no.			093100-0190 (EF8511/9A)
Injection pipe (O/D x I/D x length)	mm		6 x 2 x 600
Test oil		ASTM D975 No. 2 diesel fuel or equivalent	
Oil temperature	°C		40 to 45
Nozzle opening pressure	kg/cm ²		175
Transfer pump pressure	kg/cm ²		1.6

Specifications

			Injection volume (mm ³ /st) for manufacturer standard			Injection volume (mm ³ /st) for service standard		
	Rack position (mm)	Pump speed (rpm)	Basis	Allowance	Maximum variance between cylinder	Basis	Allowance	Maximum variance between cylinder
	Calibration basic point	10.2	950	73.0	Each cyl.	73.0	Each cyl. 70.0 to 76.0	max. 6.0
• Rack positions B to E are the reference volume when adjusting the injection volume.	B	11.4	650	103.0	*	103.0	*	100.0 to 106.0 max. 8.0
	C	8.8	410	16.0	*	16.0	*	14.0 to 16.0 max. 5.0
	D			*		*		
• Marks * are average volumes.	E			*		*		

Governor performance



Machine Model	Engine Model	Injection Pump Type	Pump Manufacturer
D60F-8A	S6D125-1	PE-6P	DIESEL KIKI

Pump Assembly Number

6151-71-1721 (106692-4100) ... 0
6151-71-1722 (106692-4102) ... 1
6151-71-1723 (106692-4103)

Injection Timing

	Unit	Basis	Allowance
Rotating direction		Counterclockwise viewed from drive end	
Injection order		1 - 5 - 3 - 6 - 2 - 4	
Injection interval		60°	59°30' to 60°30'
Plunger pre-stroke	mm	3.75	3.70 to 3.80
Delivery valve retraction volume	mm ³	60	

Specification for engine with fan (reference only)

Rated horsepower:	HP/rpm	219/2000
Maximum torque:	kgm/rpm	92/1500
High idling:	rpm	2200 to 2300
Low idling:	rpm	600 to 630

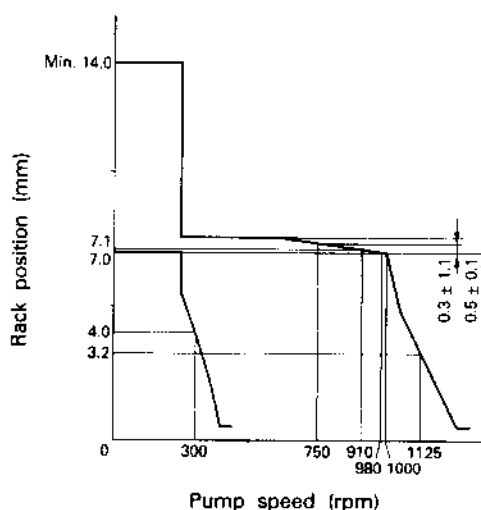
Calibration Standard

Conditions	Unit	Manufacturer standard (with nearly the same actual machine parts)	Service standard (with calibration test parts)
Nozzle part no.		(105015-5370)	
Nozzle holder part no.		(105041-7030)	
Injection pipe (O/D x I/D x length)	mm	6 x 2.2 x 710	
Test oil		ASTM D975 No. 2 diesel fuel or equivalent	
Oil temperature	°C	43 to 47	
Nozzle opening pressure	kg/cm ²	250	
Transfer pump pressure	kg/cm ²	1.6	

Specifications

			Injection volume (mm ³ /st) for manufacturer standard			Injection volume (mm ³ /st) for service standard		
	Rack position (mm)	Pump speed (rpm)	Basis	Allowance	Maximum variance between cylinder	Basis	Allowance	Maximum variance between cylinder
Calibration basic point	7	1000	126.5	Each cyl. 124.5 to 128.5	± 3	Each cyl.		
• Rack positions B to E are the reference volume when adjusting the injection volume.	B 7.3	750	132.5	★ 130.5 to 134.5	± 4	★		
• Marks ★ are average volumes.	C 4	300	15	★ 13.5 to 16.5	± 15	★		
	D			★		★		
	E			★		★		

Governor performance



Machine Model	Engine Model	Injection Pump Type	Pump Manufacturer
PC400, 400LC-5 PC400-5 for Sweden PC400-5 for cold weather PC400-5C	S6D125-1	NB (EP9)	NIPPON DENSO

Pump Assembly Number

6151-73-1210 (191000-7350) ... 1
6151-73-1220 (191000-7903)
6151-73-1230 (191000-9666) ... 1
6151-73-1240 (191000-9623) ... 1

Injection Timing

	Unit	Basis	Allowance
Rotating direction		Counterclockwise viewed from drive end	
Injection order		1 - 5 - 3 - 6 - 2 - 4	
Injection interval		60°	59°30' to 60°30'
Plunger pre-stroke	mm	4.7	
Delivery valve retraction volume	mm ³	90	

Specification for engine with fan (reference only)

Rated horsepower:	HP/rpm	276/2000
Maximum torque:	kgm/rpm	115/1400
High idling:	rpm	2150 to 2250
Low idling:	rpm	600 to 700

Calibration Standard

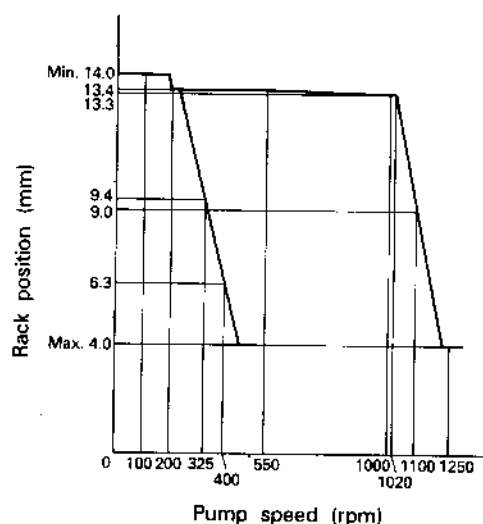
Conditions	Unit	Manufacturer standard (with nearly the same actual machine parts)	Service standard (with calibration test parts)
Nozzle part no.			093400-0540 (DN12SD12A)
Nozzle holder part no.			093100-0190 (EF8511/9A)
Injection pipe (O/D x I/D x length)	mm		6 x 2 x 600
Test oil		ASTM D975 No. 2 diesel	fuel or equivalent
Oil temperature	°C		40 to 45
Nozzle opening pressure	kg/cm ²		175
Transfer pump pressure	kg/cm ²		1.6

Specifications

Specifications

			Injection volume (mm ³ /st) for manufacturer standard			Injection volume (mm ³ /st) for service standard		
	Rack position (mm)	Pump speed (rpm)	Basis	Allowance	Maximum variance between cylinder	Basis	Allowance	Maximum variance between cylinder
	Calibration basic point	13.3	1000	154	Each cyl.	154	Each cyl. 151 to 157	max. 8.0
• Rack positions B to E are the reference volume when adjusting the injection volume.	B	9.4	325	15	★	15	★	13 to 17
	C				★		★	
	D				★		★	
	E				★		★	
• Marks ★ are average volumes.								

Governor performance



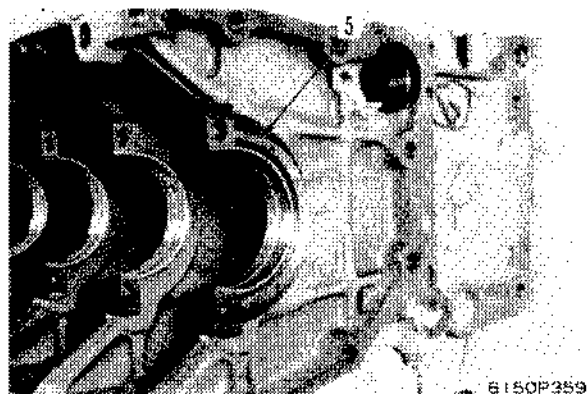
- ★ Load are given for the case of the dynamometer arm length is 716 mm.
This list shows the standard on condition that the fan is removed.

Engine model	Applicable machine	Item		Order					
				1	2	3	4	5	6
6D125-1	GD600R-3 GD605R-3 GD605A-3 with 146 HP engine	Running time	min.	5	10	10	15	15	5
		Engine speed	rpm	650 — 700	900	1,150	1,450	1,600	1,800
		Load	kg	0	105.5	104.4	98	91.5	86.1
		Output	HP	0	92	116.5	137.5	146.5	150.5
	GD605A-3 with 155 HP engine	Running time	min.	5	10	10	15	15	5
		Engine speed	rpm	650 — 700	900	1,150	1,450	1,650	1,800
		Load	kg	0	100	111	104.5	97.5	92
		Output	HP	0	88.5	126	150	158.5	163.5
	GD613A-1 GD622A-1 GD623A-1 GD625A-1 GD625A-1C	Running time	min.	4	8	2	2	9	35
		Engine speed	rpm	650 — 700	1,000	1,200	1,200	1,500	2,200
		Load	kg	0	20	36	63	94	75
		Output	HP	0	19.7	42.6	74.5	139	162.7
	GD650R-3 GD655R-3 GD655A-3	Running time	min.	5	10	10	15	15	5
		Engine speed	rpm	650 — 700	900	1,150	1,450	1,650	1,800
		Load	kg	0	105.5	109.6	106.2	101.8	97.2
		Output	HP	0	92	122	149.5	163	170
	GD663A-1	Running time	min.	5	10	10	15	15	5
		Engine speed	rpm	650 — 700	1,100	1,390	1,740	2,000	2,200
		Load	kg	0	21	33	52	68	83
		Output	HP	0	22.7	45	89	134	180
	GD705R-3 GD705R-4	Running time	min.	5	10	10	15	15	5
		Engine speed	rpm	650 — 700	900	1,150	1,450	1,700	1,850
		Load	kg	0	117.9	110.7	112.2	107.1	104.9
		Output	HP	0	104.5	125.5	160.5	179.5	191
		Running time	min.						
		Engine speed	rpm						
		Load	kg						
		Output	HP						
		Running time	min.						
		Engine speed	rpm						
		Load	kg						
		Output	HP						

6D125-1

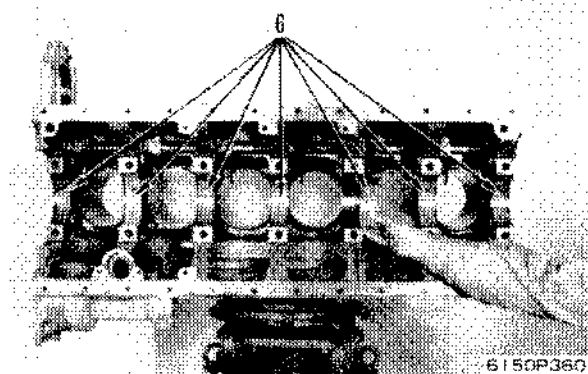
D60A-8		D60E-8		D60P-8 D60PL-8		D60S-8	
Standard value	Permissible value	Standard value	Permissible value	Standard value	Permissible value	Standard value	Permissible value
2,050 — 2,100	2,050 — 2,150	2,050 — 2,150	2,050 — 2,150	2,050 — 2,150	2,050 — 2,150	1,950 — 2,050	1,950 — 2,050
600 — 630	600 — 630	600 — 630	600 — 630	600 — 630	600 — 630	600 — 630	600 — 630
Min. 100	—	Min. 100	—	Min. 100	—	Min. 100	—
Min. 85	—	Min. 85	—	Min. 85	—	Min. 85	—
Max. 300	635	Max. 300	635	Max. 300	635	Max. 300	635
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
Max. 600	Max. 650	Max. 600	650	Max. 600	650	Max. 600	650
Max. 4.5	5.5	Max. 4.5	5.5	Max. 4.5	5.5	Max. 4.5	5.5
—	—	—	—	—	—	—	—
Max. 1.0	2.0	Max. 1.0	2.0	Max. 1.0	2.0	Max. 1.0	2.0
0.33	—	0.33	—	0.33	—	0.33	—
0.71	—	0.71	—	0.71	—	0.71	—
Min. 34	24	Min. 34	24	Min. 34	24	Min. 34	24
(200 — 250)	(200 — 250)	(200 — 250)	(200 — 250)	(200 — 250)	(200 — 250)	(200 — 250)	(200 — 250)
Max. 100	200	Max. 100	200	Max. 100	200	Max. 100	200
2.5 — 5.5	2.5 — 5.5	2.5 — 5.5	2.5 — 5.5	2.5 — 5.5	2.5 — 5.5	2.5 — 5.5	2.5 — 5.5
—	—	—	—	—	—	—	—
Min. 1.0	0.7	Min. 1.0	0.7	Min. 1.0	0.7	Min. 1.0	0.7
—	—	—	—	—	—	—	—
80 — 110	120	80 — 110	120	80 — 110	120	80 — 110	120
Max. 0.5	1.0	Max. 0.5	1.0	Max. 0.5	1.0	Max. 0.5	1.0
225^{+10}_{-5}	186	225 ± 10	180	225^{+10}_{-5}	186	225^{+10}_{-5}	186
22 ± 1	22 ± 1	22 ± 1	22 ± 1	22 ± 1	22 ± 1	22 ± 1	22 ± 1
0.75 ± 0.1	0.75 ± 0.1	0.75 ± 0.1	0.75 ± 0.1	0.75 ± 0.1	0.75 ± 0.1	0.75 ± 0.1	0.75 ± 1
13	10 — 16	13	10 — 16	13	10 — 16	13	10 — 16

- 5) Remove upper thrust bearing (5).



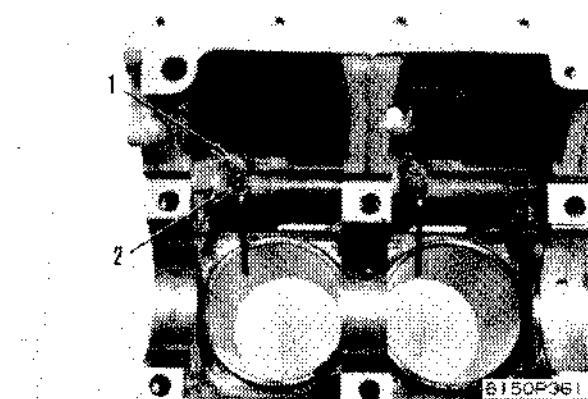
- 6) Remove upper bearing (6).

- ★ Put identification tags on the main caps, main bearings, and thrust bearings or mark their installation positions with a felt-tip pen, segregate them for each cap, and store them properly to protect them from damage.



43. Piston cooling nozzle (S6D125-1, SA6D125-1)

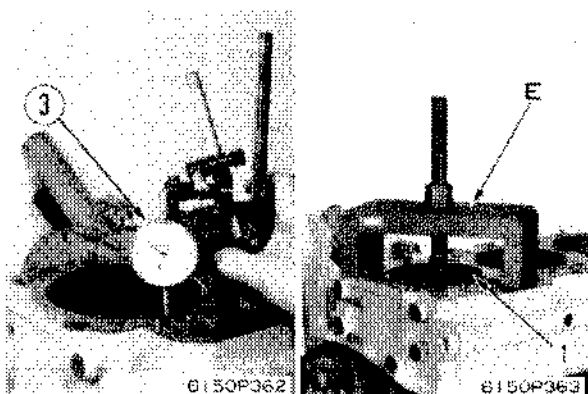
Remove mounting bolts (1) and each piston cooling nozzle (2).



44. Cylinder liner

- ★ If necessary, measure the cylinder liner protrusion using dial gauge (3) before removing the cylinder liners.

Pull out cylinder liners (1) using liner puller E.



Unit: mm

No.	Item	Criteria				Remedy	
2	Thickness of valve lip	Valve	Standard	Repair limit	Replace		
		Intake	2.10	1.7			
		Exhaust	1.50	1.2			
3	Valve seat angle	Valve	Standard	Tolerance	Repair or replace		
		Intake	60°	±0° 15'			
		Exhaust	45°	±0° 15'			
4	Outside diameter of valve stem	Valve	Standard	Tolerance	Replace		
		Intake	9	-0.045 -0.065			
		Exhaust	9	-0.050 -0.070			
	Inside diameter of valve guide	Before inserting	9	+0.015 -0.005	Replace		
		After inserting	9	±0.010			
	Clearance between valve guide and valve stem	Valve	Standard	Clearance limit	Replace		
		Intake	0.035 – 0.075	0.22			
		Exhaust	0.040 – 0.080	0.24			
	Bend of valve stem	Repair limit: 0.02 (Total indicated runout for 100 mm)				Replace	
5	Protrusion of valve guide	Standard		Tolerance		Repair	
		20		±0.2			
6	Free length of valve spring	Engine	Valve	Color code	Free length	Repair limit	Replace
		6D125-1	Intake	Yellow	66.9	64.7	
			Exhaust	Yellow	66.9	64.7	
		S6D125-1 SA6D125-1	Intake	Purple	61.3	58.9	
			Exhaust	Yellow	66.9	64.7	
				White	75.2	—	
	Installed load of valve spring	Engine	Valve	Color code	Installed length	Installed load	Repair limit
		6D125-1	Intake	Yellow	56.0	30.0 ± 1.5 kg	27.0 kg
			Exhaust	Yellow	56.0	30.0 ± 1.5 kg	27.0 kg
		S6D125-1 SA6D125-1	Intake	Purple	49.5	40.0 ± 2.0 kg	36.0 kg
			Exhaust	Yellow	56.0	30.0 ± 1.5 kg	27.0 kg
				White	56.0	53.0 ± 2.6 kg	47.7 kg
	Squareness of valve spring	Repair limit: 2° (for both end)					