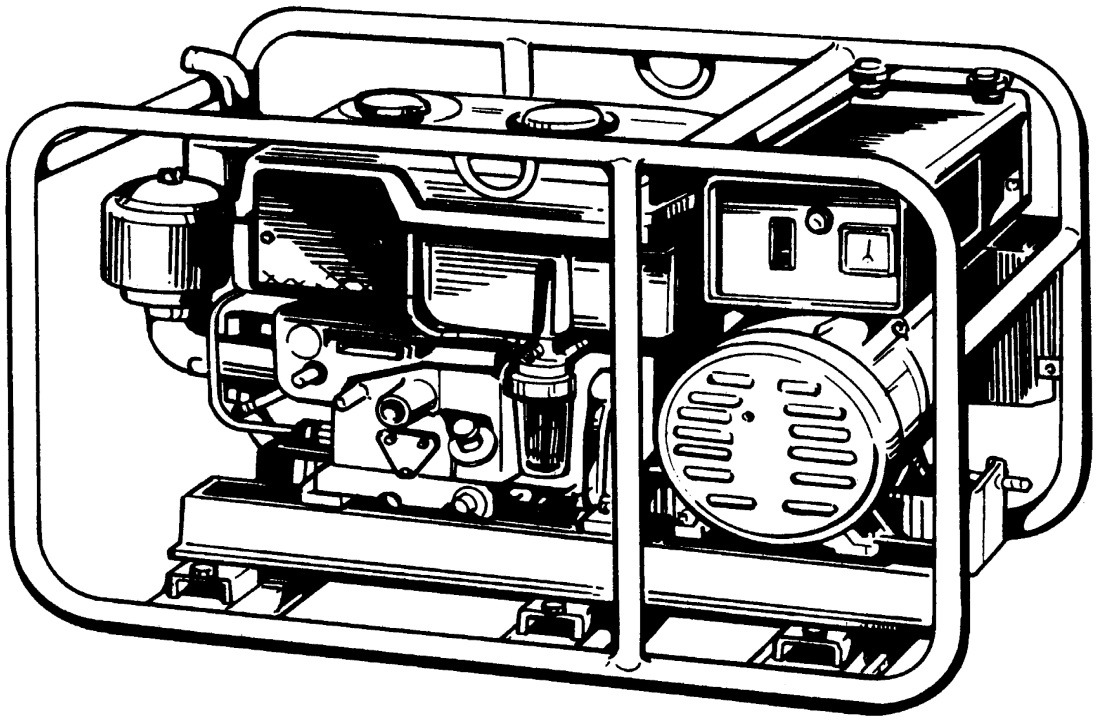
YAMAHA

DIESEL ENGINE GENERATOR

EDA3000
EDA3000DV
EDA4700[E] EDA5000[E]
EDA4700DV[E] EDA5000DV[E]
EDA4700T EDA5000T

SERVICE MANUAL

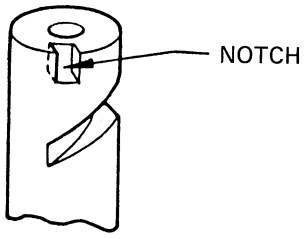


LIT-19616-00-12

78N-28197-10

Injection timing and effective starting

When the plunger closes suction port of the barrel, forced delivery of fuel starts.
Injection timing of this engine is fixed constant (23° before TDC) irrespective of engine rpm. On the other hand, in starting, a proper delay from the timing for high speed running, and increased fuel injection is indispensable for effective starting. For this purpose a notch is made at the starting position of the plunger head, which delays the injection timing by nearly 8° to facilitate starting. (See Fig. 5)



INSTALLED ONLY TO EDA3000/3000DV

Fig. 5

Function of the delivery valve

By the plunger stroke, fuel pressure is raised. When it becomes higher than the pressure in the high pressure pipe the delivery valve spring is pushed down and the valve opens. As the result the fuel in the high pressure pipe is delivered. When the plunger lead groove meets suction port of the plunger barrel, delivery of fuel ends, and the delivery valve is closed by the spring tension of the valve. At this time, the delivery valve prevents reverse flow of the fuel. Also suction back motion of the plunger sucks back the fuel in the equal amount of the stroke [A] and decreases remaining pressure in the high pressure pipe. This prevents fuel dripping after injection. (See Fig.6)

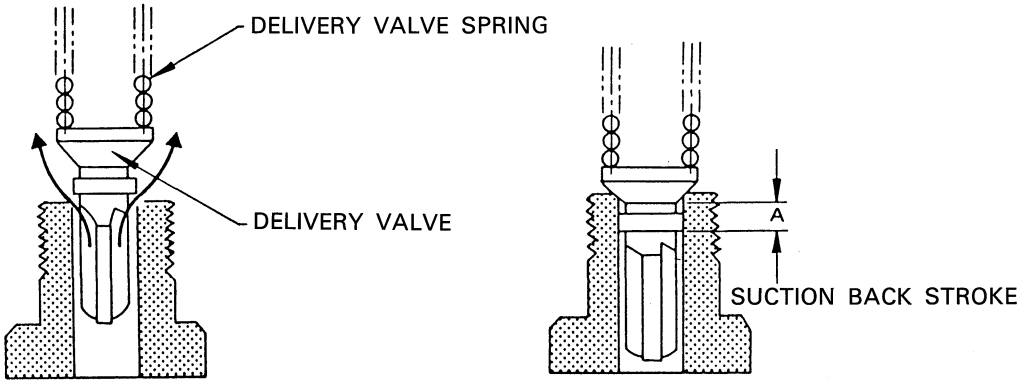


Fig. 6

Function of the damping valve

The damping valve is assembled in the end of injection pump and it reaches its seat before arrival of delivery valve at the seat. The small orifice in the damping valve is the passage of fuel to the chamber in the delivery valve holder. Accordingly, descending velocity of the delivery valve is decreased, which prevents negative pressure being produced suddenly. As a result, proper injection is conducted and the engine noise is decreased. (See Fig. 7)

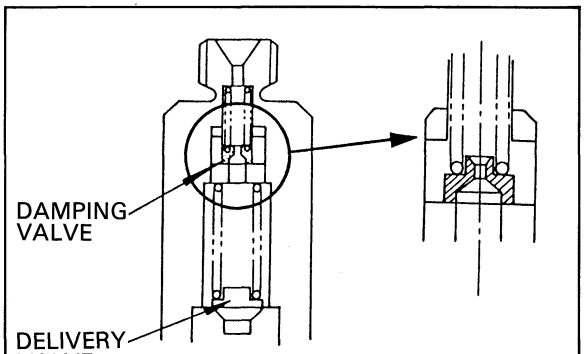
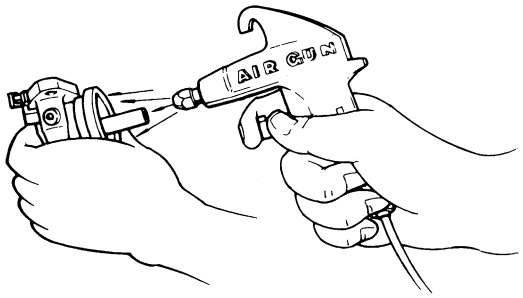
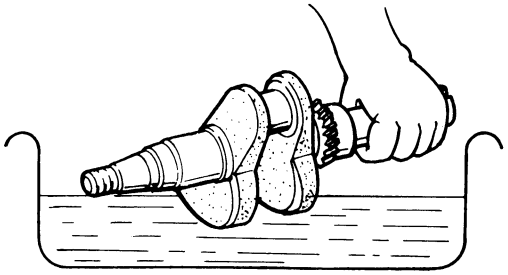


Fig. 7

Notes on disassembly and assembly

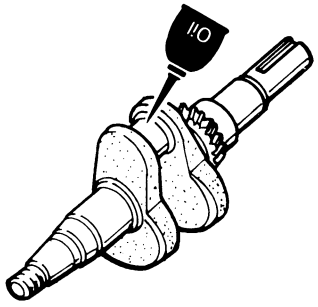
① Parts should be cleaned in solvent and blown off with compressed air after disassembly





Solvent

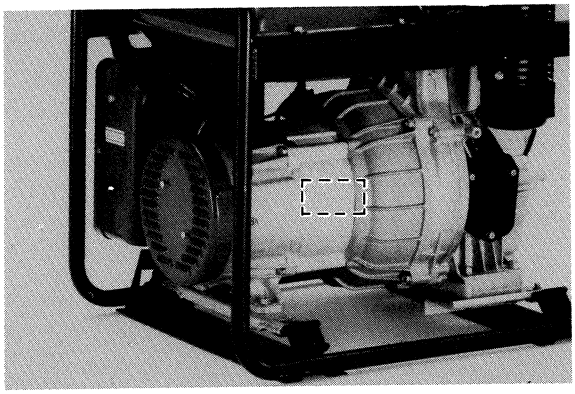
② Contact surfaces of moving parts should be oiled when they are assembled.



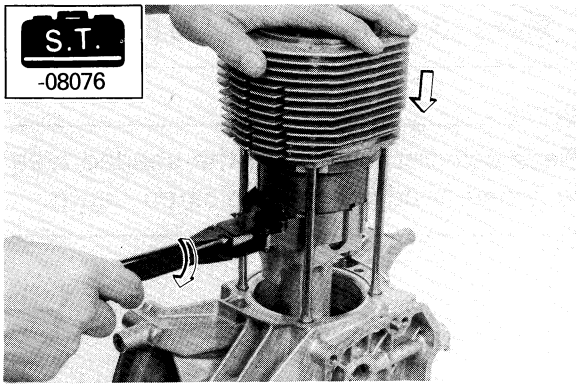
③ Make sure that parts move smoothly, after each section of the machine is assembled.

Generator identification

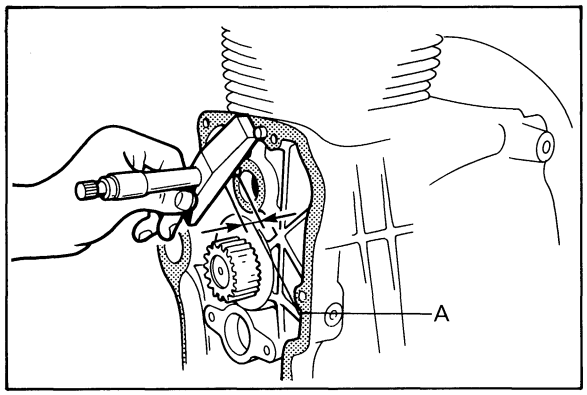
The generator set serial No. is stamped on the position shown in the photo.
The first three digits of these numbers are for model identification; The remaining digts are the unit production number.



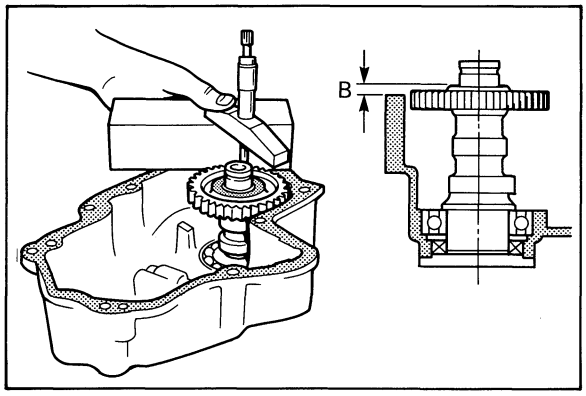
(9) CYLINDER



(10) CAMSHAFT SIDE CLEARANCE ADJUSTMENT

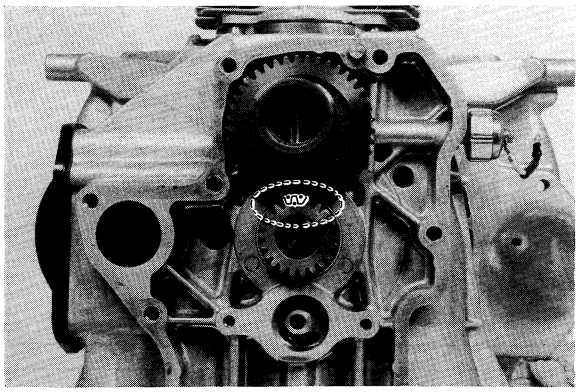


Clearance: 0.1 ~ 0.3 mm
(0.004 ~ 0.012 in)
Shims: 0.8, 1.0, 1.2 mm
(0.031, 0.039, 0.047 in)

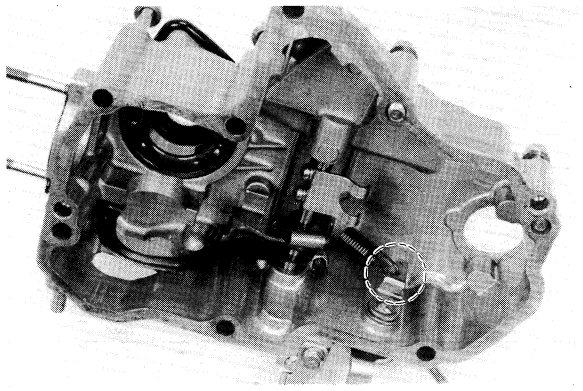


NOTE:
Clearance: (A + gasket thickness) – B
Thickness of gasket is 0.3 mm (0.012 in) under specified torque.

(11) CAMSHAFT

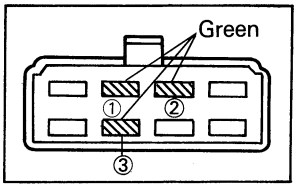


(12) GOVERNOR ARM SPRING HOOK HOLE POSITION



NOTE:
Hook the spring into the hole nearest the nut.

EDA4700T/5000T

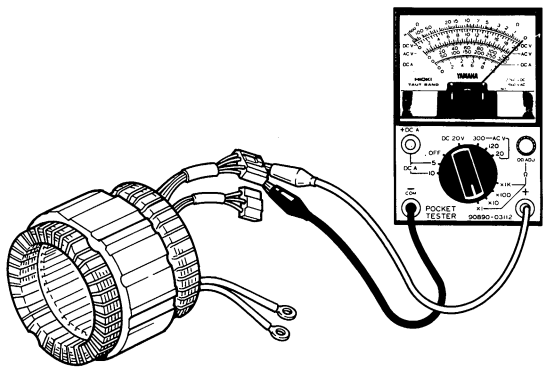


Green ①—Green ②
Green ②—Green ③
Green ①—Green ③

Standard resistance (Ω ± 10%)

	EDA4700T/5000T
50Hz	0.30

(R × 1)

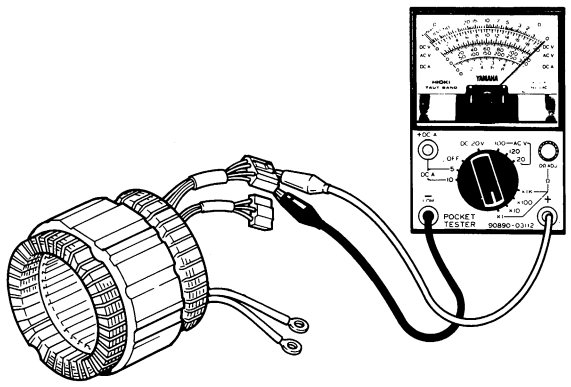


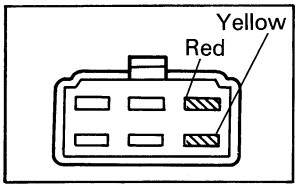
③ Detecting coil

Standard resistance (Ω ± 10%)

	EDA4700(E) EDA5000(E)		EDA4700DV(E) EDA5000DV(E)
	220V	240V	
50Hz	0.15	0.17	0.11
60Hz	—		0.08

(R × 1)

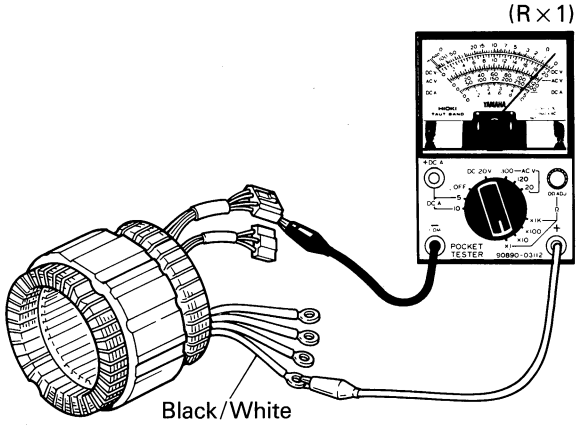


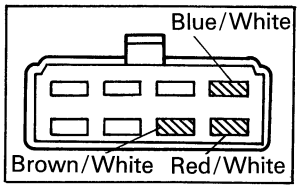


Standard resistance (Ω ± 10%)

	EDA4700T/5000T
50Hz	0.30

(R × 1)

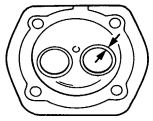
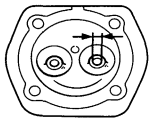
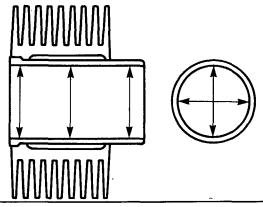
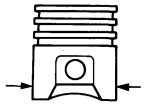
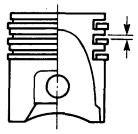
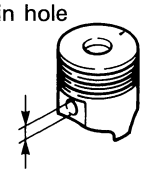
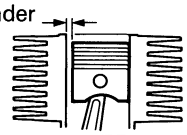




(2) SERVICE DATA

Engine

Unit: mm (in)

ITEM		DY30D		DY41D (S)	
		STD	Limit	STD	Limit
CYLINDER HEAD * Flatness 			0.05 (0.002)		0.05 (0.002)
* Valve seat contact width 	IN, EX	1.4 (0.055)	2.2 (0.087)	1.4 (0.055)	2.2 (0.087)
* Valve guide inside dia. 		7.000 ~ 7.015 (0.2756 ~ 0.2762)	7.15 (0.2815)	7.000 ~ 7.015 (0.2756 ~ 0.2762)	7.15 (0.2815)
CYLINDER *Inside dia. 		76.000 ~ 76.019 (2.9921 ~ 2.9929)	76.25 (3.0020)	82.015 ~ 82.035 (3.2289 ~ 3.2297)	82.25 (3.2382)
PISTON *Piston size (At skirt, in thrust direction) 	STD	75.96 ~ 75.94 (2.9906 ~ 2.9866)	75.86 (3.0020)	81.94 ~ 81.92 (3.2260) ~ 3.2252)	81,84 (3.2220)
	1st o/s	76.21 ~ 76.19 (3.0004 ~ 2.9996)	76.11 (2.9965)	82.19 ~ 82.17 (3.2358 ~ 3.2350)	82.09 (3.2319)
	2nd o/s	76.46 ~ 76.44 (3.0102 ~ 3.0094)	76.36 (3.0063)	82.44 ~ 82.42 (3.2457 ~ 3.2449)	82.34 (3.2417)
* Ring groove side clearance 					
	TOP 2nd	0.05 ~ 0.09 (0.0020 ~ 0.0035)	0.15 (0.0059)	0.05 ~ 0.09 (0.0020 ~ 0.0035)	0.15 (0.0059)
	Oil	0.015 ~ 0.055 (0.0006 ~ 0.0022)	0.1 (0.0039)	0.015 ~ 0.055 (0.0006 ~ 0.0022)	0.1 (0.0039)
* Piston pin hole 		21.001 ~ 21.008 (0.8268 ~ 0.8271)	21.03 (0.8280)	21.001 ~ 21.008 (0.8268 ~ 0.8271)	21.03 (0.8280)
* Piston pin outside dia 		21.000 ~ 21.006 (0.8268 ~ 0.8270)	20.980 (0.8260)	21.000 ~ 21.006 (0.8268 ~ 0.8270)	20.980 (0.8260)
* Clearance between piston and cylinder 		0.040 ~ 0.079 (0.0016 ~ 0.0031)	0.15 (0.0059)	0.060 ~ 0.102 (0.0024 ~ 0.0040)	0.2 (0.0079)

EDA4700(E) For European model
EDA5000(E)