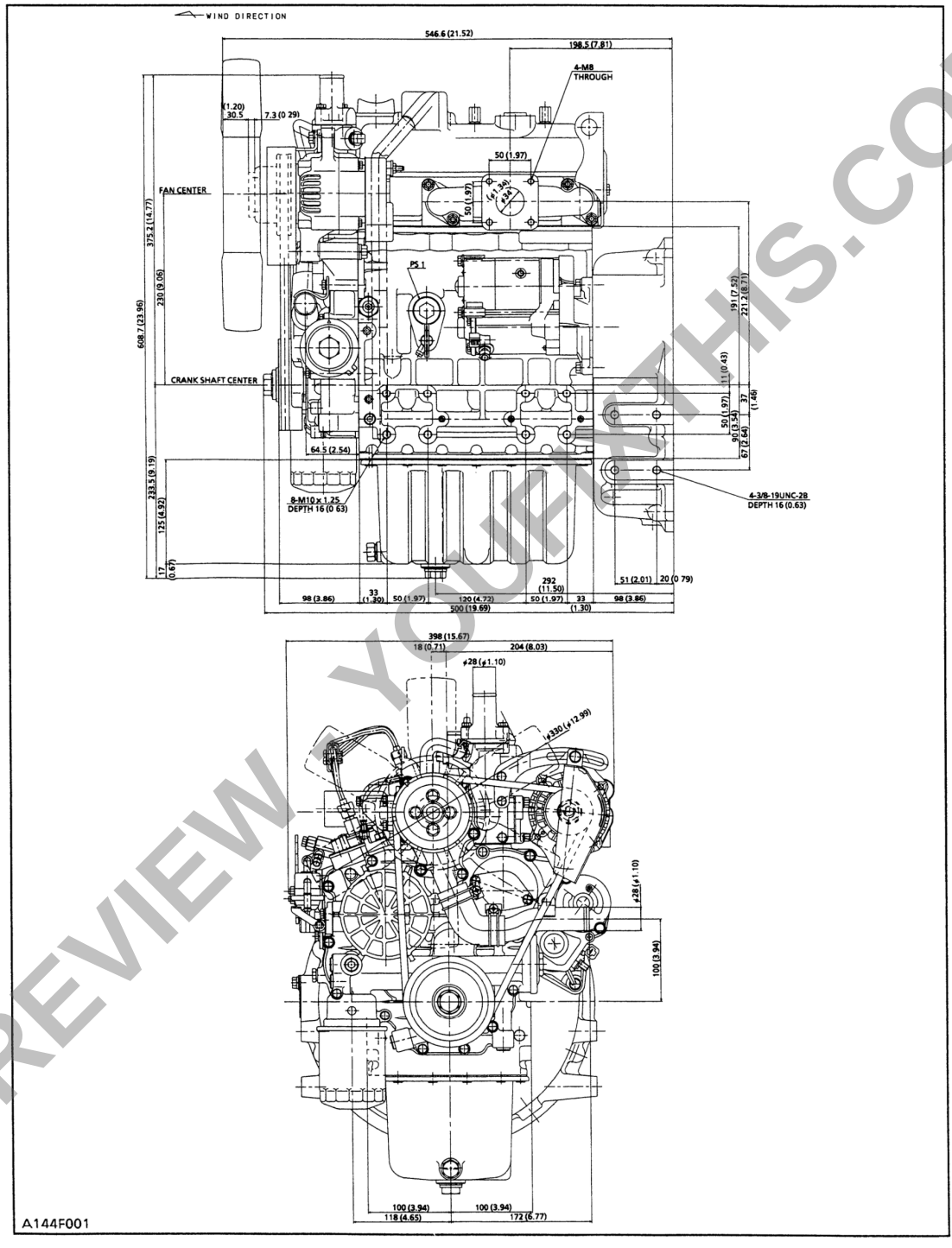
■ D905-BG, D1005-BG, D1105-BG

Unit, Unité, Einheit: mm (in.)



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SPECIFICATIONS

Item \ Model			D905-(E)BG-SAE		D1005-(E)BG-SAE	
			BG1	BG2	BG1	BG2
Type			Vertical, water-cooled, 4-cycle diesel engine			
Number of Cylinder			3			
Bore x Stroke mm (in.)			72 x 73.6 (2.83 x 2.90)		76 x 73.6 (2.99 x 2.90)	
Total Displacement cm^3 (cu.in.)			898 (54.86)		1001 (61.08)	
Brake Horse Power	STAND-BY	SAE J-1349	11.9 HP/1800 rpm	9.9 HP/1500 rpm	13.1 HP/1800 rpm	11.0 HP/1500 rpm
		ISO 3046	8.8 kw/1800 rpm	7.3 kw/1500 rpm	9.7 kw/1800 rpm	8.2 kw/1500 rpm
	NET CONT.	SAE J-1349	10.5 HP/1800 rpm	8.8 HP/1500 rpm	11.6 HP/1800 rpm	9.7 HP/1500 rpm
		ISO 3046	7.8 kw/1800 rpm	6.5 kw/1500 rpm	8.6 kw/1800 rpm	7.2 kw/1500 rpm
Governor Regulation			Less than 5%			
Combustion Chamber			E TVCS (Spherical Type)			
Fuel Injection Pump			Bosch "Mini" Type			
Governor			Mechanical Governor			
Nozzle			Bosch "Throttle" Type			
Injection Timing			0.29 to 0.32 rad. (16.5 to 18.5°) before T.D.C.	0.27 to 0.31 rad. (15.5 to 17.5°) before T.D.C.	0.29 to 0.32 rad. (16.5 to 18.5°) before T.D.C.	0.27 to 0.31 rad. (15.5 to 17.5°) before T.D.C.
Injection Pressure			13.73 MPa, 140 kgf/cm^2, 1991 psi			
Compression Ratio			23 : 1			
Lubricating System			Forced Lubricating by Trochoid Pump			
Lubricating Filter			Cartridge Type (full flow paper filter)			
Lubricating Oil			Class CF lubricating oil as per API classification is recommended. If this class of lubricating oil is not available, preferably use Class CD or CE lubricating oil. For details on recommended lubricating oils, see page S-80.			
Lubricating Oil Capacity			5.1 ℓ (5.39 U.S.qts.)			
Fuel			Diesel Fuel No.2-D (ASTM D975)			
Cooling System			Pressurized Radiation, Forced Circulation with Water Pump			
Fan Type			Pusher Type			
Flywheel Type			Clutch No.6-1/2			
Flywheel Housing Type			SAE No.5			
Starting System			Electric Starting with Starter (12 V, 1.0 kw)			
Starting Support Device			By Glow Plug in Combustion Chamber			
Dynamo for Charging			12 V, 360 W			
Weight			110 kg (242.6 lbs)			
Direction of Rotation			Counterclockwise (from flywheel side)			

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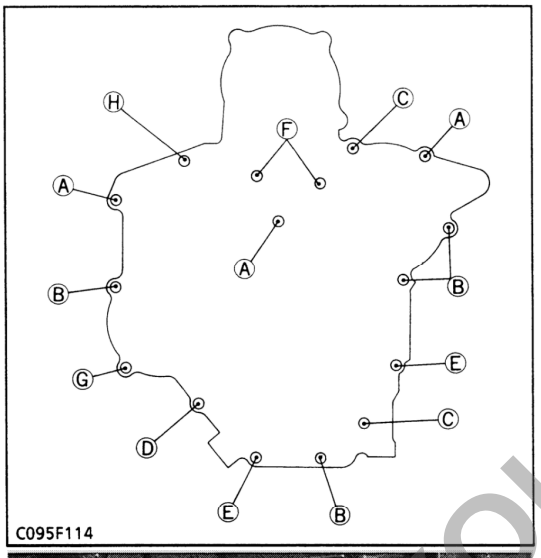
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1 ENGINE BODY

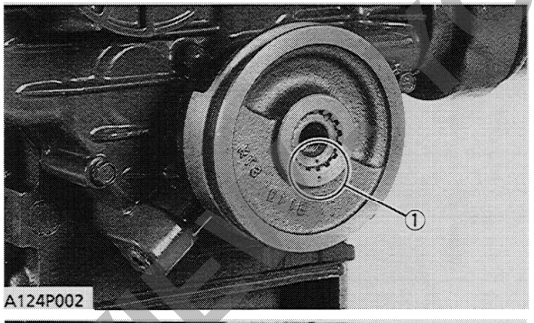
DISASSEMBLING AND ASSEMBLING

[1] GEAR CASE

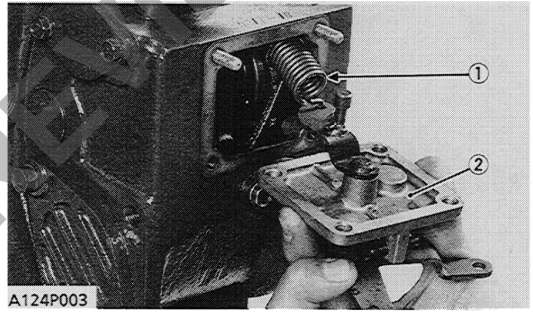
[73.6 MM / 78.4 MM STROKE SERIES]



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A124P002



A124P003

Gear Case

(When reassembling)

- Install the pulley (D905-BG, D1005-BG, D1105-BG) to the crankshaft, aligning the marks (1) on them. (See photo)

  Length of the gear case mounting bolts (refer to the figure)

(A)	45 mm (1.77 in.)	(E)	68 mm (2.68 in.)
(B)	50 mm (1.97 in.)	(F)	80 mm (3.15 in.)
(C)	55 mm (2.17 in.)	(G)	82 mm (3.23 in.)
(D)	59 mm (2.32 in.)	(H)	Nut

(1) Marks

Speed Control Plate

1. Remove the speed control plate (2).

(When reassembling)

- Be careful not to drop the governor spring (1) into the crankcase.
- Apply a liquid gasket (three bond 1215 or equivalent) to both sides of the speed control plate gasket.

(1) Governor Spring (2) Speed Control Plate

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⚠ SAFETY FIRST

This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and decals on the machine itself to warn of the possibility of personal injury. Read these instructions carefully.
It is essential that you read the instructions and safety regulations before you attempt to repair or use this unit.

⚠ **DANGER** : Immediate hazards which WILL result in severe personal injury or death.

⚠ **WARNING** : Hazards or unsafe practices which COULD result in severe personal injury or death.

⚠ **CAUTION** : Hazards or unsafe practices which COULD result in minor personal injury.

■ **IMPORTANT** : Indicates that equipment or property damage could result if instructions are not followed.

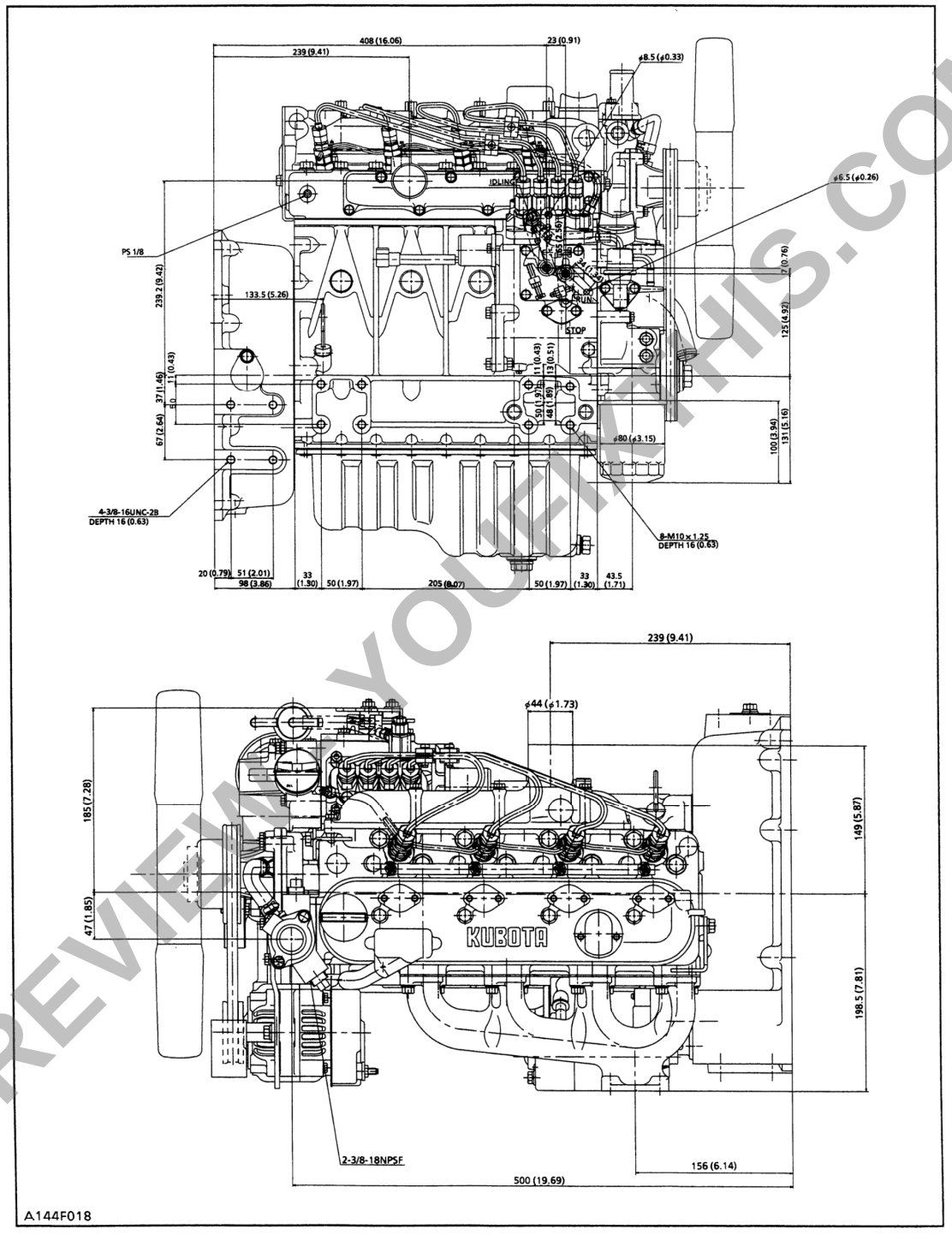
■ **NOTE** : Gives helpful information.

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■ V1205-BG, V1305-BG, V1505-BG

Unit, Unité, Einheit: mm (in.)

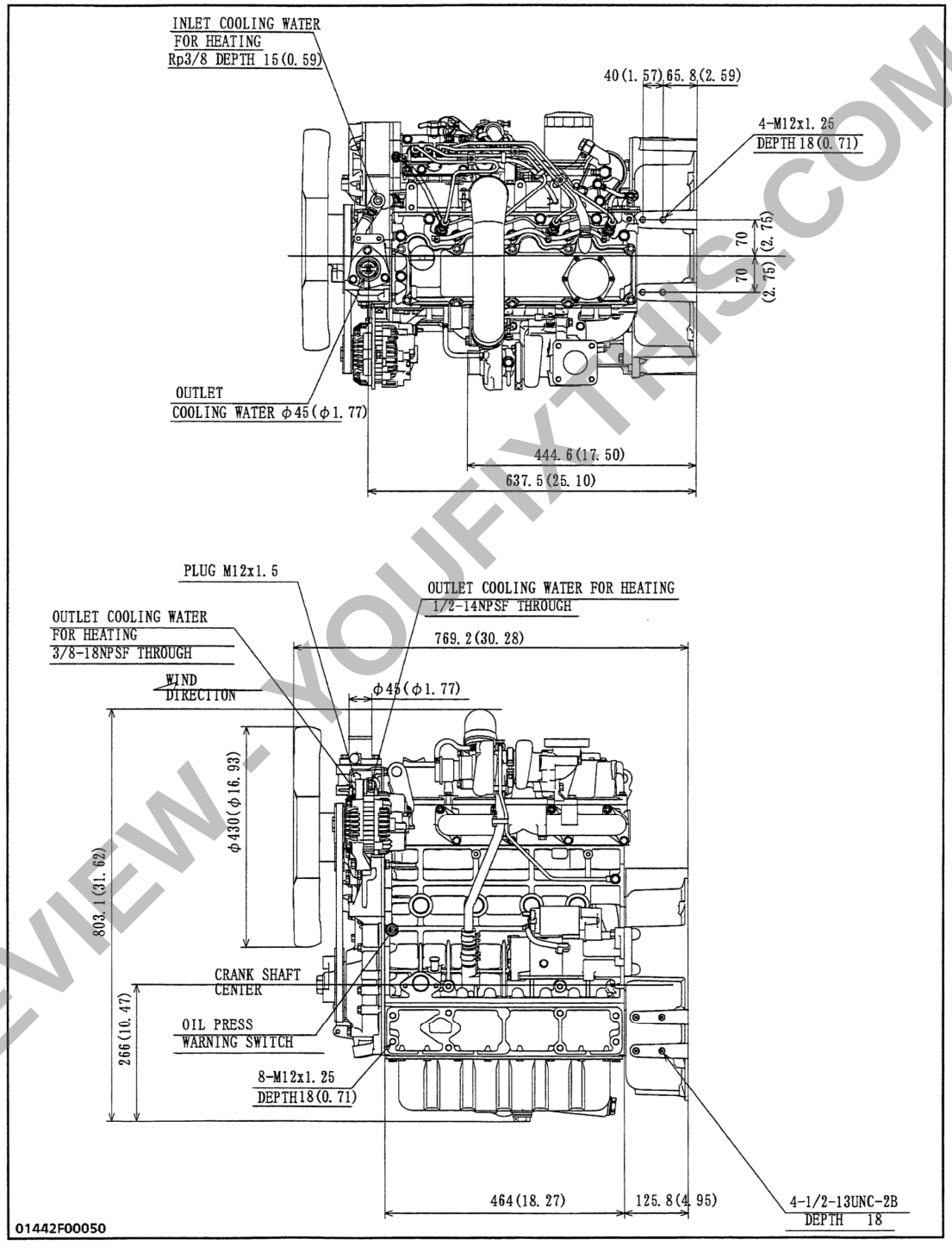


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■ V3300-T-BG

Unit, Unité, Einheit: mm (in.)



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G GENERAL

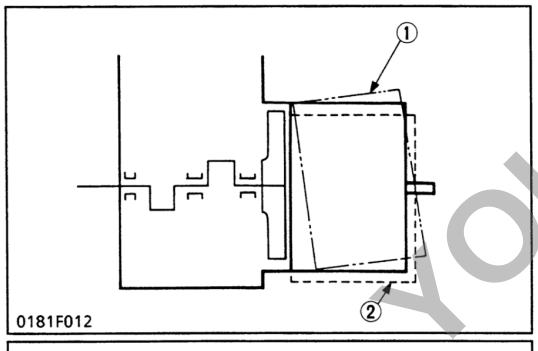
[1] APPLICATIONS

(1) General

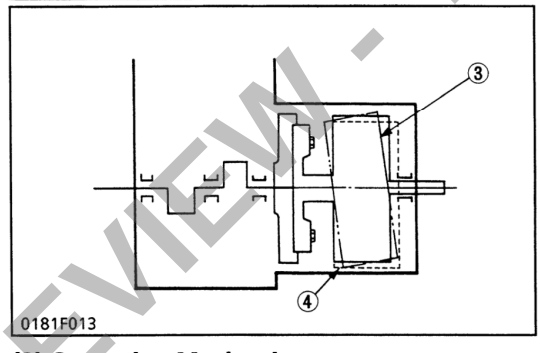
When setting an engine on a machine major importance should be given to assembling the parts with precision of parts connected to flywheels, and crank shafts which rotate at high speeds.
The following points must be carefully observed:

1. Do not apply excessive force to the engine during assembly (for prevention of off-centering, surface deflection, excessive clearance and thrust).
2. Minimize bending moment to rotating shaft (for extended life of shafts and bearings).
3. Avoid resonance around the engine mounting frame (use of appropriate supporting method and rigid mounting frame).
4. Avoid torsional vibration between the engine and the driven components (connection with a roter).
5. Take air flow into consideration when enclose cover is used (for proper cooling).
6. Provide access for easy maintenance when covering engine or parts (for easy maintenance).
7. Take maintenance and reliability into consideration for remote control (for positive operation).

(2) Direct Connection To Housing



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0181F013

Rigid connection of generator to the engine flywheel housing can make the system compact. Special attention should be paid to the assembly precision for this type of connection. Improper assembly will result in excessive power loss and premature parts failure.

(1) Case Inclination (Squareness)
(2) Off-Centering of Case
(3) Roter Inclination (Squareness)
(4) Off- Centering of Roter

(3) Operating Mechanism

If an engine is covered, starting, speed changing, and stopping must be controlled remotely via a mechanical (rod or wire) or electrical system.

In this case, consider clearances of link-mechanism, wear and aging factors carefully.

Improper installation will adversely affect engine performance. Provide special attention to frequency of use and force applied to levers.

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(4) FUEL SYSTEM

Injection pump

Item		Factory specification	Allowable Limit
Injection timing	D1403-BG, D1703-BG V1903-BG, V2203-BG V2003-T-BG, F2803-BG	0.30 to 0.33 rad. (17 to 19°) Before T.D.C	—
Fuel tightness of pump element		—	14.7 MPa 150 kgf/cm^2 2133 psi
Fuel tightness of drivery valve		More 10 seconds 14.7→13.7 MPa 150→140 kgf/cm^2 2133→1990 psi	5 seconds 14.7→13.7 MPa 150→140 kgf/cm^2 2133→1990 psi

Injection Nozzle

Fuel injection pressure	13.73 to 14.71 MPa 140 to 150kgf/cm^2 1991 to 2133 psi	–
Fuel tightness of nozzle valve seat	When the pressure is 12.75 MPa (130 kgf/cm^2, 1849 psi), the valve seat must be fuel tightness.	–

(5) ELECTRICAL SYSTEM

Starter

Commutator O.D.	30.0 mm 1.1811 in.	29.0 mm 1.1417 in.
Mica undercut	0.5 to 0.8 mm 0.0197 to 0.0315 in.	0.2 mm 0.0079 in.
Brush length	15.0 mm 0.591 in.	10.0 mm 0.394 in.

Alternator

Output current		14 V,35 A/4000 rpm	—
Rotor coil resistance (F-E)	V2203-BG	4Ω	—
	D1403-BG, D1703-BG, V1903-BG, V2003-T-BG F2803-BG	2.9Ω	
Slip ring O.D.	V2203-BG	32.5 mm 1.2795 in.	32.1 mm 1.2638 in.
	D1403-BG, D1703-BG, V1903-BG, V2003-T-BG F2803-BG	14.4 mm 0.567 in.	14.0 mm 0.551 in.
Brush length	V2203-BG	12.5 mm 0.4921 in.	5.5 mm 0.2165 in.
	D1403-BG, D1703-BG, V1903-BG, V2003-T-BG, F2803-BG	10.5 mm 0.413 in.	4.5 mm 0.177 in.

Glow Plug

Glow plug resistance	0.8Ω	–

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