2. Engine number stamp.

   The engine number is stamped on injection pump mounting portion of cylinder block (on upper side of tie rod cover).

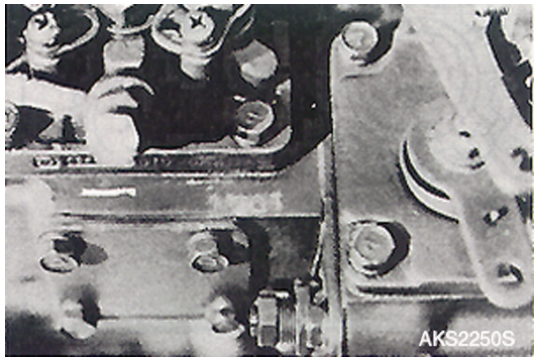
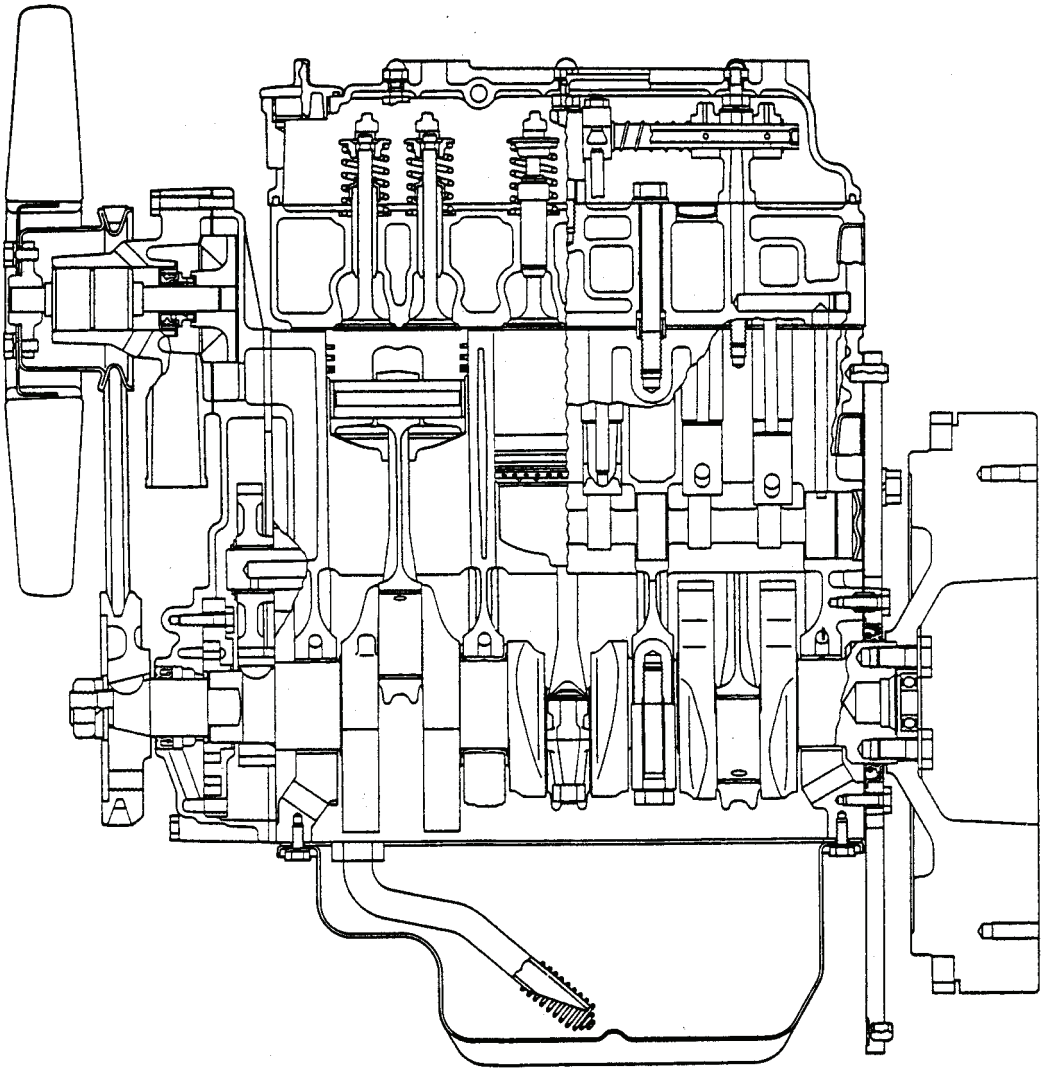


Figure 2 Engine Number

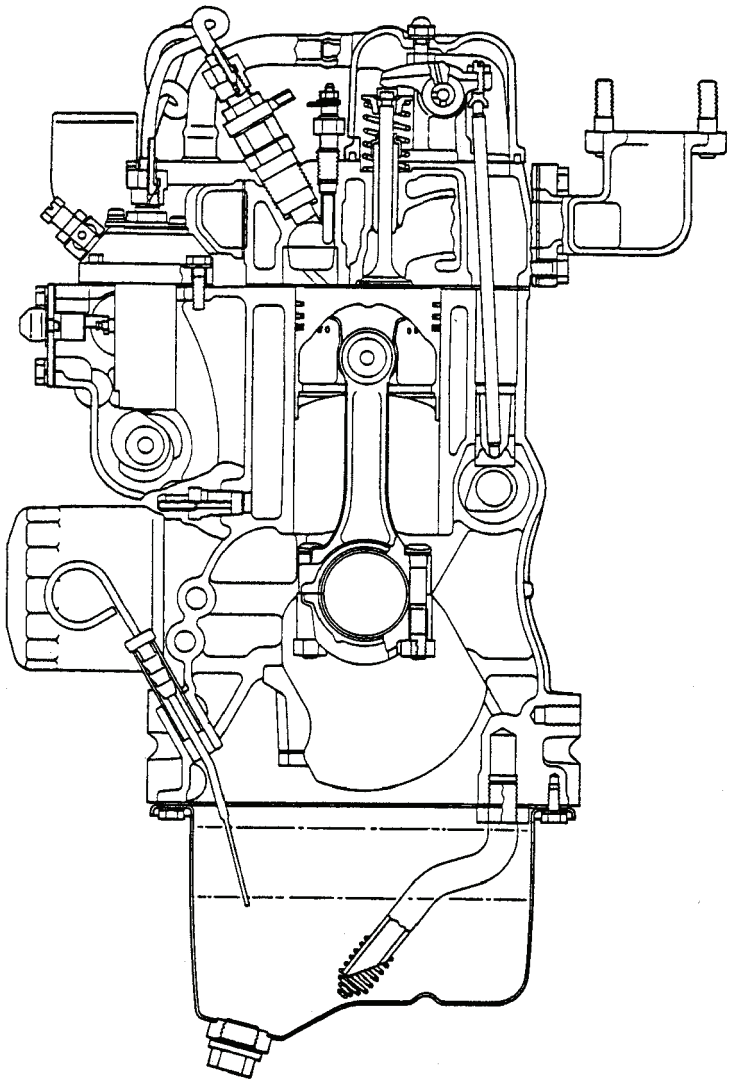
Sectional Views

Longitudinal Section (L3C)



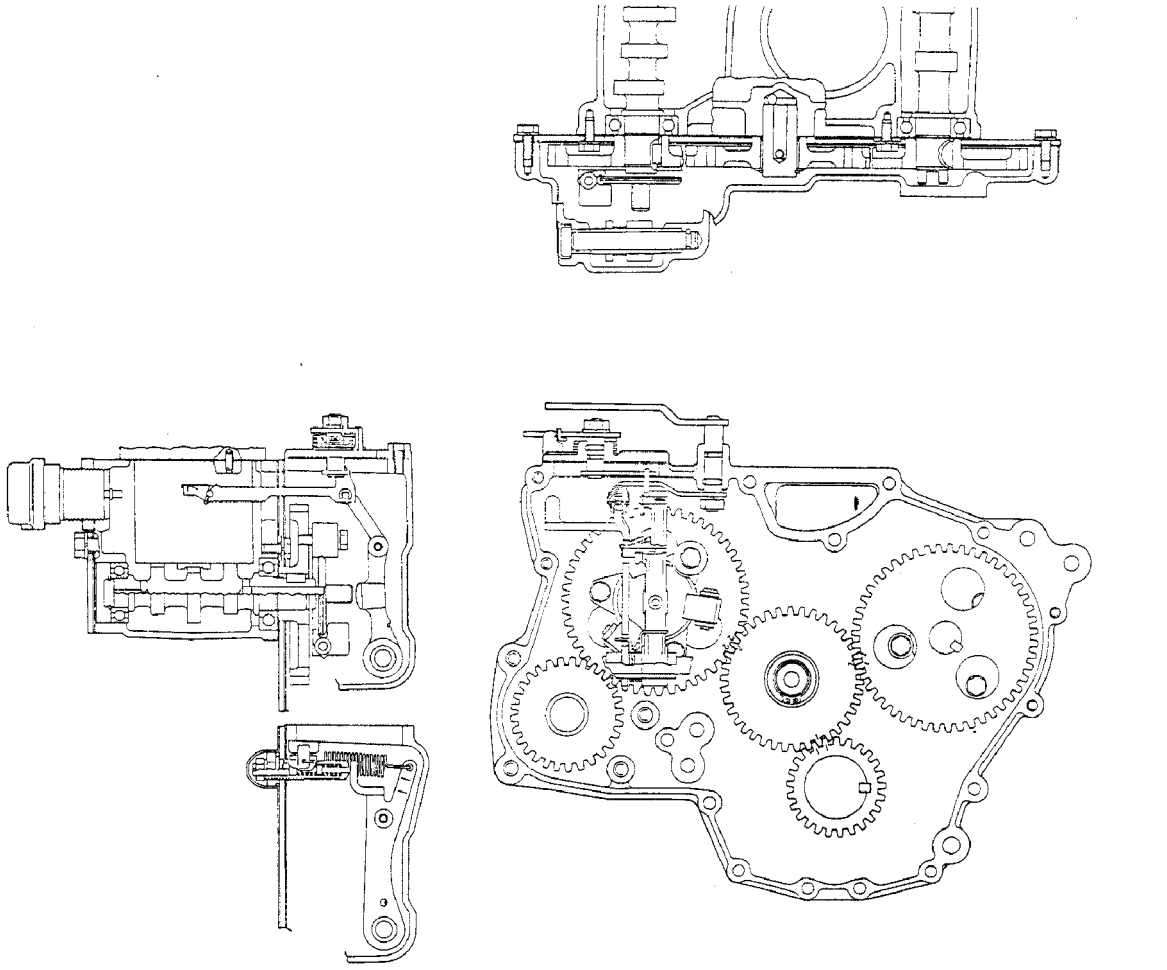
AKS2260S

Figure 3



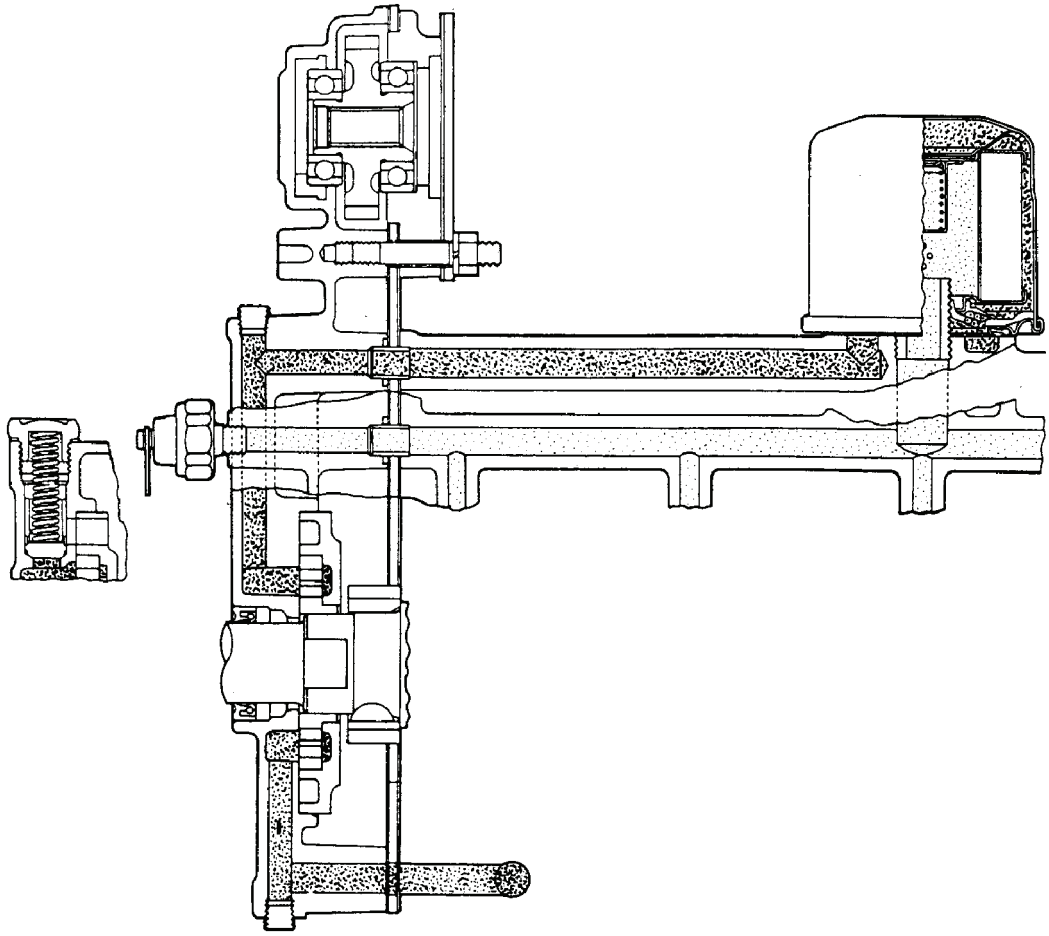
AKS2270S

Figure 4



AKS2280S

Figure 5



AKS2730S

Figure 6

Features

1. Small and lightweight engine.

   The new series are 10 - 20% smaller in weight and 15 - 20% smaller in contour volume than the same class of engines of competitors

2. Low noise and economical fuel consumption.

   Low noise and economical fuel consumption are attained by the well designed cylinder block construction (having curved side faces), the rearranged combustion chambers, and the small sized fuel Injection system.

3. Easy starting.

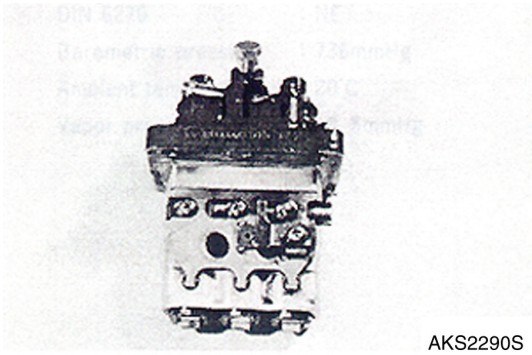
   The engine can be started instantly only by keeping the starter switch key in the ON position for about 6 seconds to allow automatic feeding of current to the glow plugs, eliminating the necessity of setting the key to the HEAT position. (For engines with the automatic glow plug system.)

   The new governor mechanism also contributes to easy engine start, because it increases fuel injection and delays injection timing for easy engine start without necessity of moving the throttle lever to the "full throttle" position.

4. Multipurpose engine.

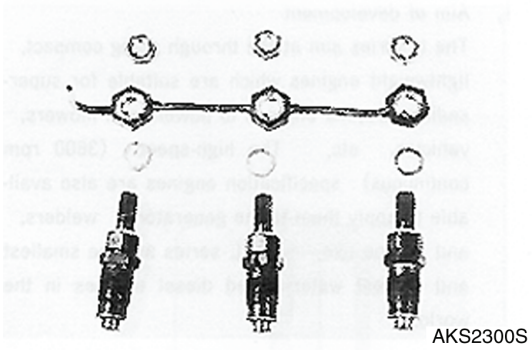
   The L series engine can be equipped with various kinds of optional devices.

   - Key off stop system (Fuel cutoff valve).
   - Torque spring.
   - Manual stop lever.



AKS2290S

Figure 7 Injection Pump

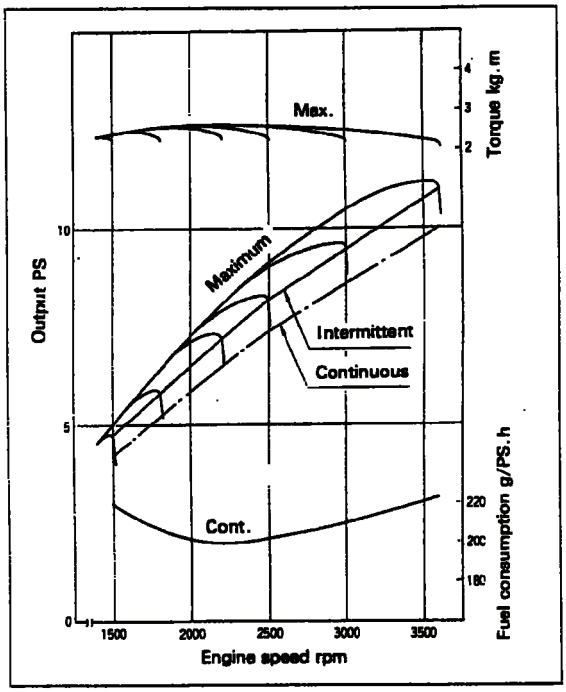


AKS2300S

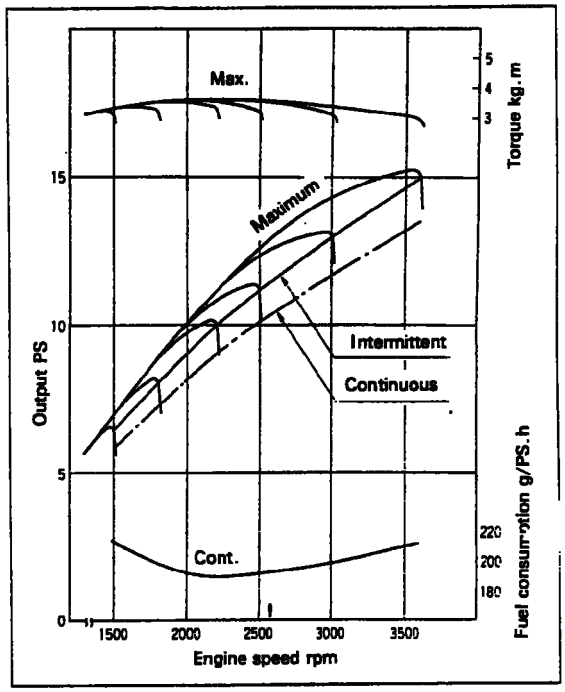
Figure 8 Injection Pump

Performance Curves

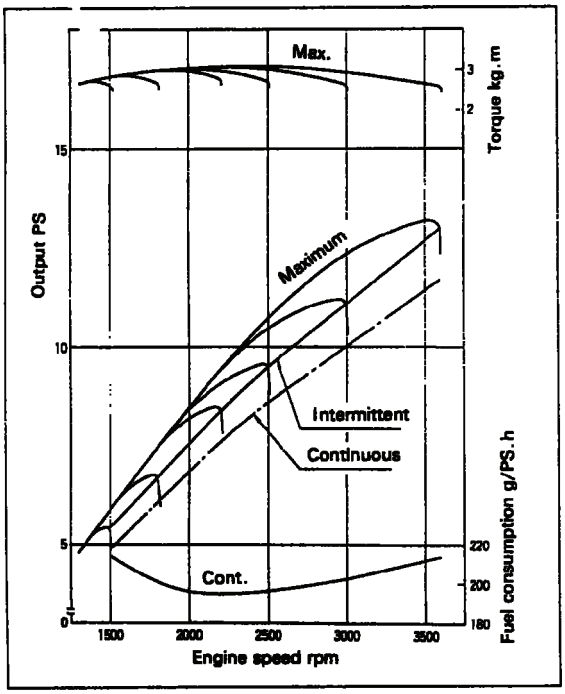
L2 Series Performance Curves



L2A



L2E

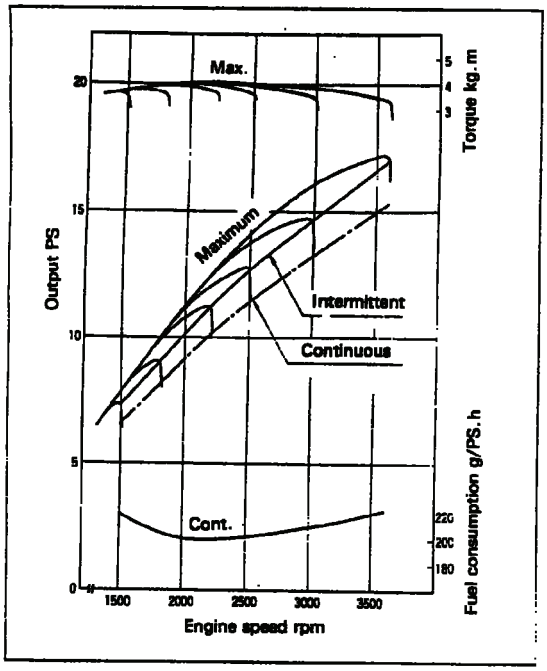


L2C

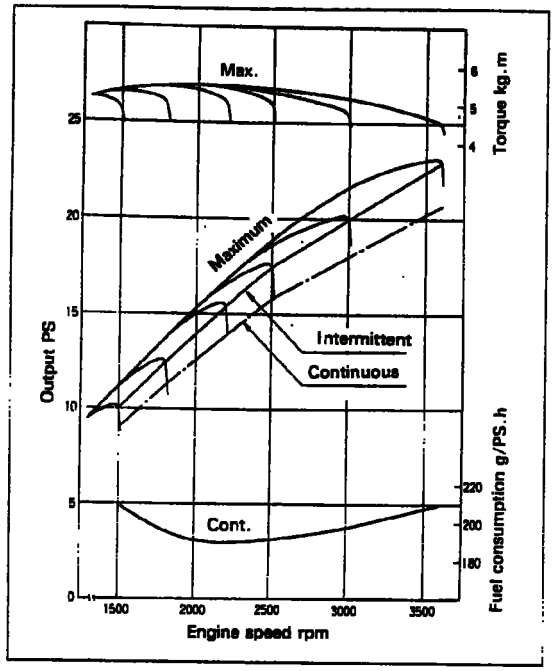
DIN 6270	: NET
Barometric pressure	: 736mmHg
Ambient temperature	: 20°C
Vapor pressure	: 10.5mmHg

AKS2310S

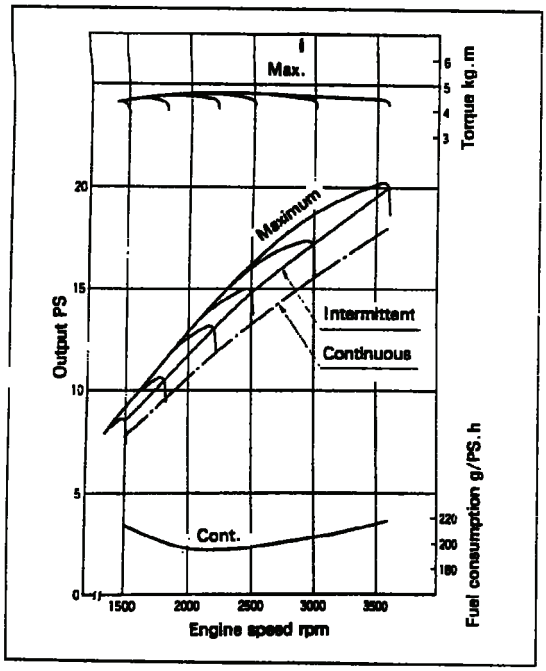
Figure 9



L3A



L3C



L3C

DIN 6270	: NET
Barometric pressure	: 736mmHg
Ambient temperature	: 20°C
Vapor pressure	: 10.5mmHg

AKS2320S

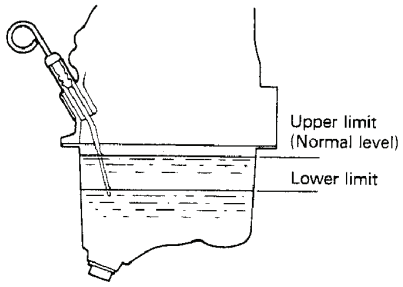
Figure 10

Engine Specifications

Model		Item					
		L2A	L2C	L2E	L3A	L3C	L3E
General	Engine Type	4-cycle, Water Cooled, Vertical, Diesel					
	Firing Order	1-2			1-3-2		
	Compression Ratio	23:1					
	Combustion Chamber	Swirl Chamber					
	Dry Weight	61 kg (134 lb)			75 kg (165 lb)		
Cylinders	Number of Cylinders	2			3		
	Bore x Stroke	65 x 70 mm (2.56 x 2.76 in)	70 x 70 mm (2.76 - 2.76 in)	76 x 70 mm (2.99 - 2.76 in)	65 x 70 mm (2.56 x 2.76 in)	70 x 70 mm (2.76 - 2.76 in)	76 x 70 mm (2.99 - 2.76 in)
	Total Displacement	464 cc (28.32 in^3)	538 cc (32.83 in^3)	635 cc (38.75 in^3)	696 cc (42.47 in^3)	808 cc (49.31 in^3)	952 cc (58.09 in^3)
Performance	Maximum Power Maximum Torque Specific Fuel Consumption	See the engine performance curves.					
List Ability	In every direction (to lower limit of oil level)	25° continuous			30° in a short time (within 30 min.)		
Fuel System	Injection Pump	Bosch NC type					
	Nozzle	Throttle type					
	Fuel	JIS No. 2 or No. 3 Diesel Fuel					
Lubrication System	Lubricating Method	Forced Lubrication					
	Oil Filtration	Paper Element Filter (Full-flow Type)					
	Oil Capacity Upper Limit/Lower Limit (Excluding 0.5 liters (0.13 U.S. gal.) for oil filter)	2.4/1.4 liters (0.63/0.37 U.S. gal.)			3.0/1.5 liters (0.79 - 0.40 U.S. gal.) 3.6/1.8 liters (0.95 - 0.48 U.S. gal.) or 4.8/3.0 liters (1.3 - 0.79 U.S. gal.)		
Cooling System	Cooling Method	Forced water circulation with pressurized radiator.					
	Coolant Capacity (Except Radiator and Hose)	1.20 liters (0.32 U.S. gal.)			1.80 liters (0.48 U.S. gal.)		
Accessories	Alternator	12 V @ 15 A or 12 V @ 40 A					
	Starting Motor	12 V @ 1.2 kW or 12 V @ 0.6 kW					
	Battery	45 Ah or more			60 Ah or more		

Engine Oil and Oil Filter

1. Checking and correcting the engine oil level.
   A. Place the engine horizontally.
   B. Check the oil level with oil level dipstick. If the oil level has fallen to the lower limit, add oil up to the upper limit.
   C. Check the oil level before (everyday) operation of the engine.



AKS2330S

Figure 11 Checking Oil Level

CAUTION

Whenever oil is added, check the oil level again after waiting for about 1 minute.

When adding oil, use only the same engine oil used in the engine.

When checking the oil level in an engine which has been long out of use, run the engine for several minutes, shut down engine, and check the oil level after a while.

2. Oil change intervals.
   A. Change oil after first 50 hours of operation (on new engine) and every 100 hours operation thereafter.
   B. Replace oil filter after first 50 hours of operation (on a new engine) and every 200 hours of operation thereafter.
3. Engine oil to be used.
   A. Engine oil must conform to the API classification and viscosity number specified in the following table.

AKS2340S

Figure 12 Checking Oil Level

API Classification	Atm. Temperature	Viscosity
Class CC or Better (Class CD for 3000 or higher speed specification engine.)	Above 20°C (68°F)	SAE 30
	5° - 20°C (41° - 68°F)	SAE 20
	Below 5°C (41°F)	SAE 10W30
	All seasons	SAE 10W30

4. When replacing oil filter, use only original equipment filter.
5. Changing oil.
   A. To change oil, first warm up engine and remove drain plug to let oil completely drain.
   B. Install drain plug and fill oil pan with fresh engine oil through oil fill cap.

   NOTE: *Oil pan drain plug tightening torque: 5.0 - 6.0 kg•m (36 - 43 ft lb).*

   NOTE: *For oil capacity (Upper limit/Lower limit) see "Engine Specifications" on page 1-16.*

AKS2350S

Figure 13 Oil Filter

6. Replacing oil filter.
   A. Remove oil filter with a filter wrench or similar device.
   B. Thoroughly clean filter mounting surface of filter bracket. Install new filter with O-ring coated with engine oil and tighten securely by hand.

   NOTE: *Tightening torque 1.0 - 1.3 kg•m (7 - 10 ft lb)*

CAUTION

Be careful not to twist O-ring.

   C. Run engine for several minutes and make sure that no oil leaks.
   D. After stopping engine, check oil level. If necessary, add oil.

AKS2360S

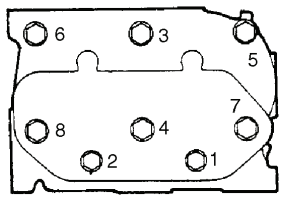
Figure 14 Oil Filter Wrench

Retightening Cylinder Head Bolts

1. When retightening cylinder head bolts, draw out coolant, loosen bolts slightly, and then tighten bolts to specified torque in numerical order shown in Figure 15.

   NOTE: *Tightening torque:*

   M10 bolt 7.5 - 8.5 kg•m (54 - 61 ft lb).
   M8 bolt 2.0 - 3.0 kg•m (14 - 21 ft lb).



AKS0170S

Figure 15 Cylinder Head Bolt Tightening Sequence (L2)