

LUBRICATING SYSTEM

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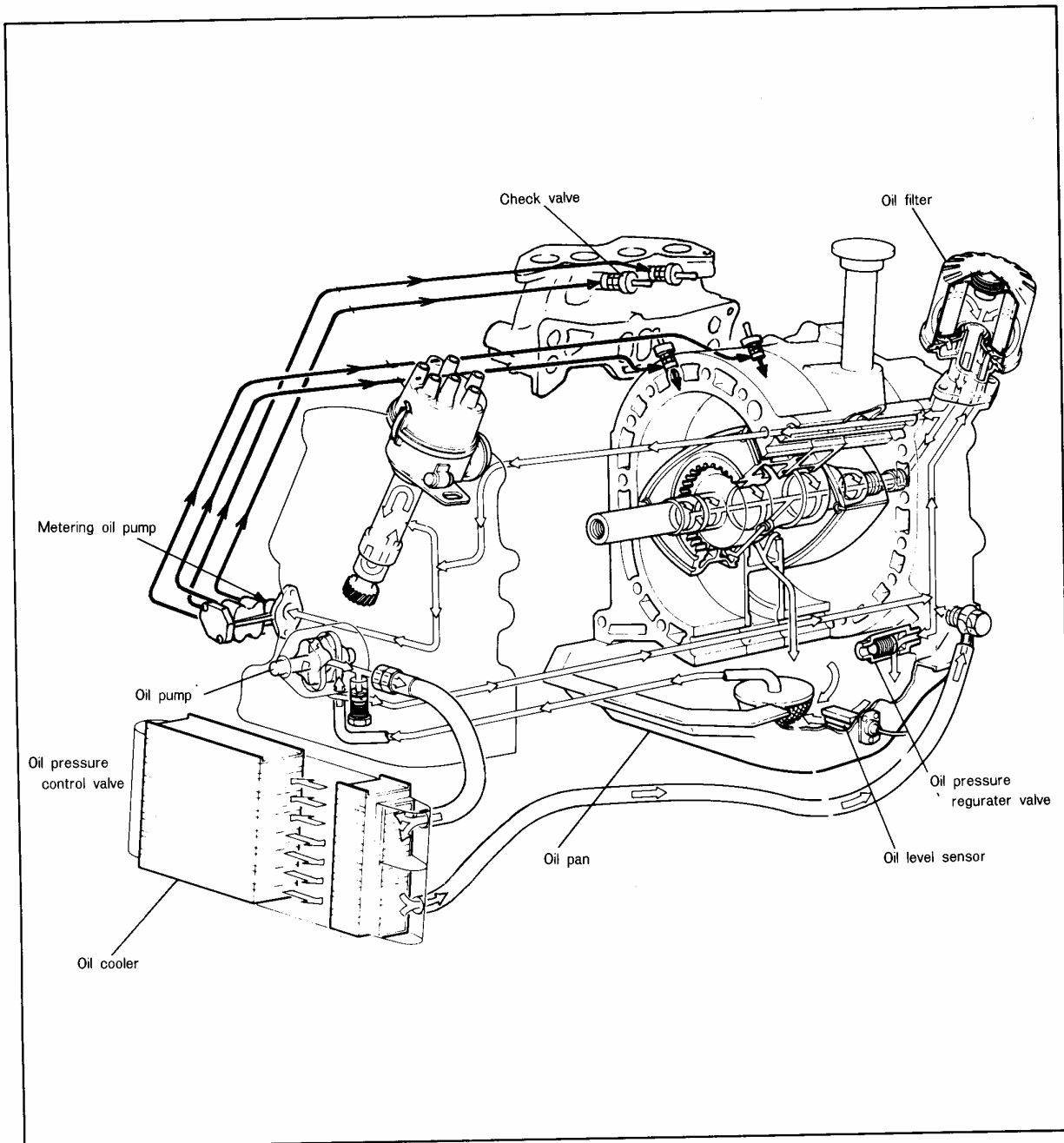
OUTLINE

OUTLINE OF CONSTRUCTION

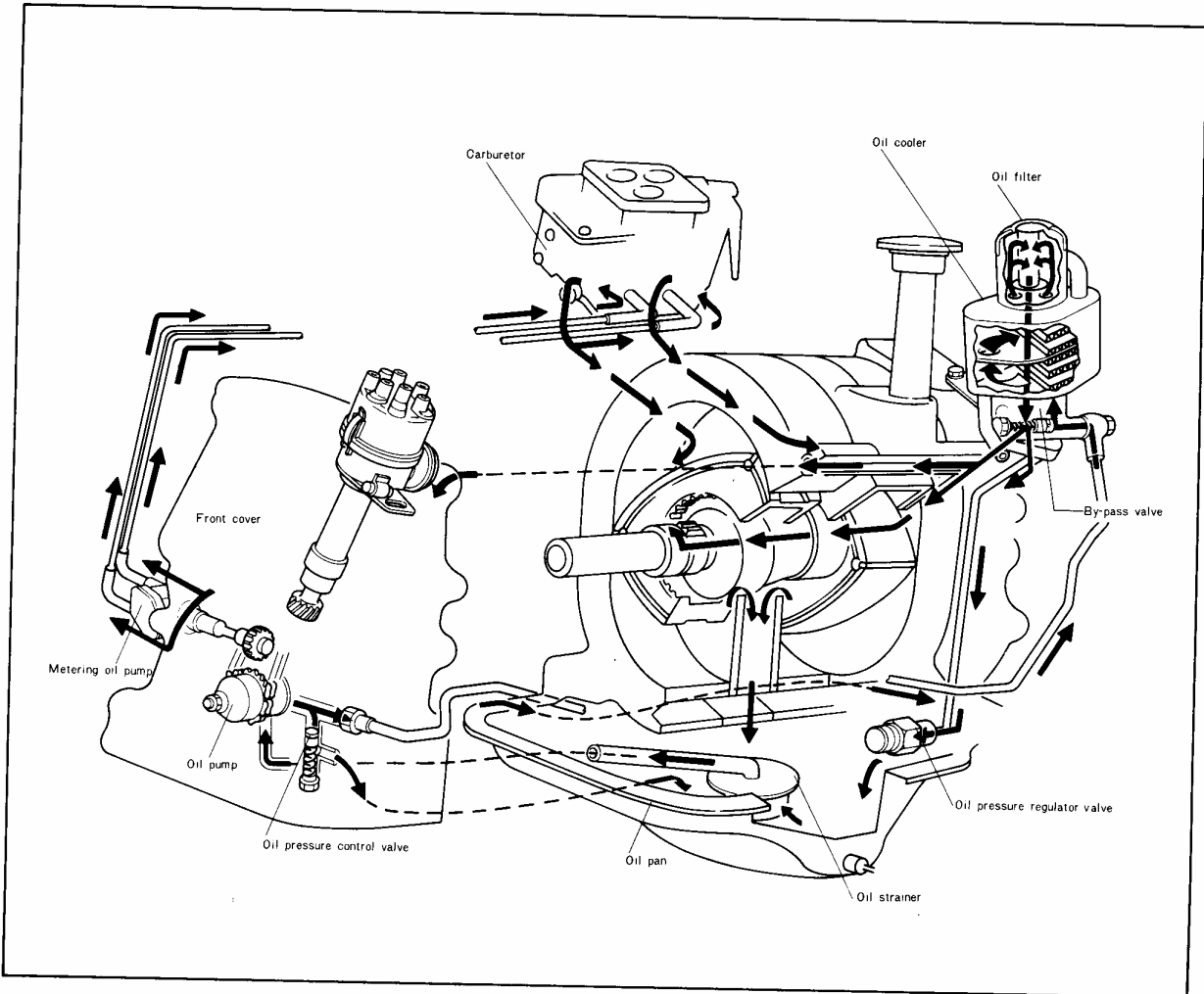
- The oil-cooling system employed for the 13B engine is the air-cooled system, and, for the 12A engine, is the water-cooled system. As a result, the oil flow is different for each engine type.
- For lubrication in the 13B engine, the metering oil pump sends oil to the intake manifold (2 places) and to the combustion chamber (2 places), for a total of 4 places.
- The oil pressure control valve is different for the 13B engine and the 12A engine.

OIL FLOWCHART

13B engine



12A engine



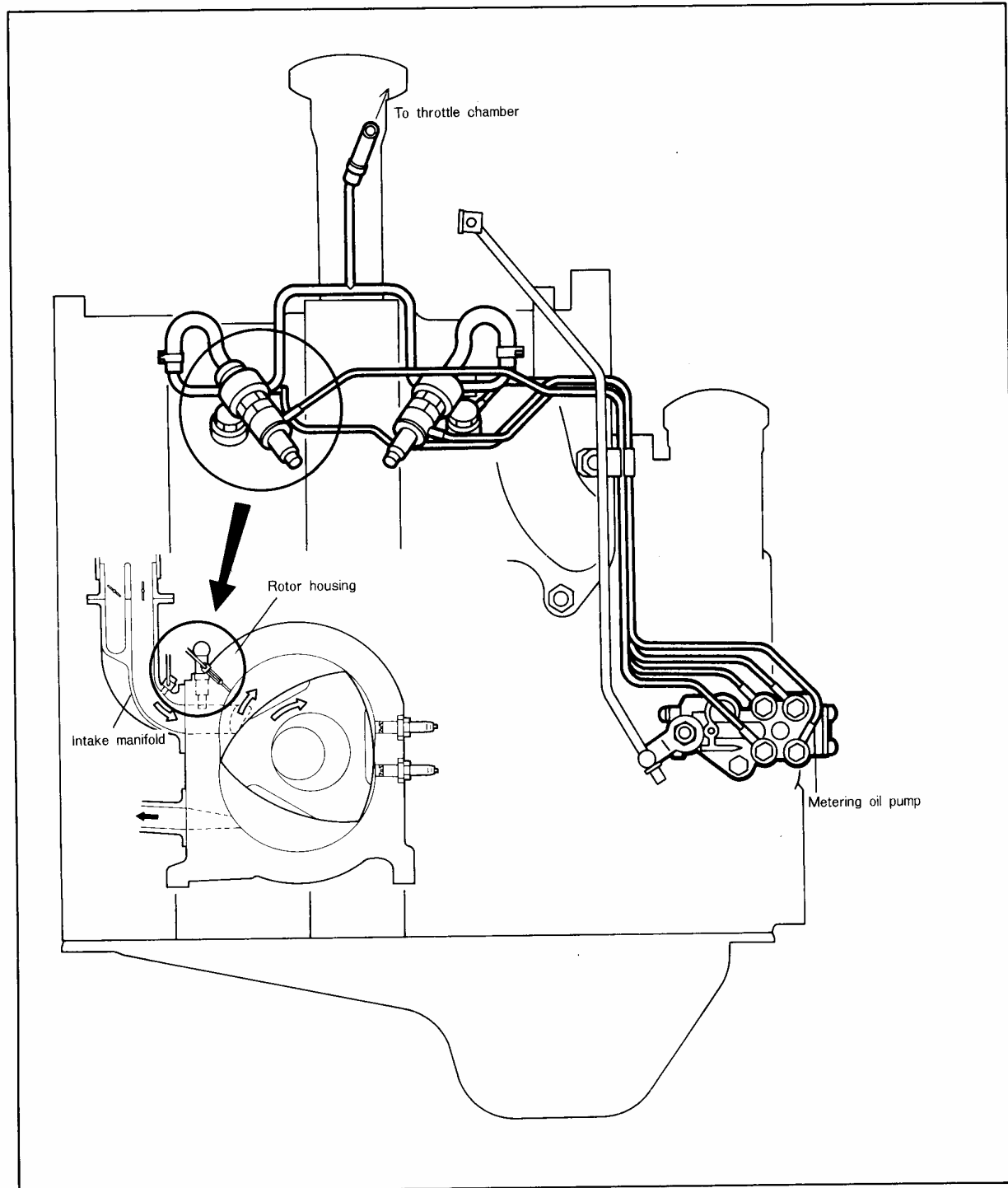
SPECIFICATIONS

Engine model		12A	13B
Lubricating system		Forced-fed type	
Oil pump	Type	Trochoid type	
	Pressure-control valve opening pressure	900 kPa (128 psi)	
Oil filter	Type	Full-flow type, paper filter	
	Relief-valve opening pressure	100 kPa (14 psi)	
Oil capacity	Total	13B engine	5.6 liters (5.8 U.S. qts., 5.1 Imp. qts.)
		12A engine	4.6 liters (4.9 U.S. qts., 4.0 Imp. qts.)
	Oil pan	4.2 liters (4.4 U.S. qts., 3.7 Imp. qts.)	
	Oil filter	0.3 liters (0.32 U.S. qts., 0.26 Imp. qts.)	
Engine oil		API service SD, SE or SF	

METERING OIL PUMP

For the 13B engine, a parallel system is used by which the engine oil sent from the metering oil pump is sent to the intake manifold and also directly to the rotor housing trochoid surface and the apex seal, where lubrication conditions are most severe. As a result, durability is improved.

Location of components related to 13B engine metering oil pump



Check valve

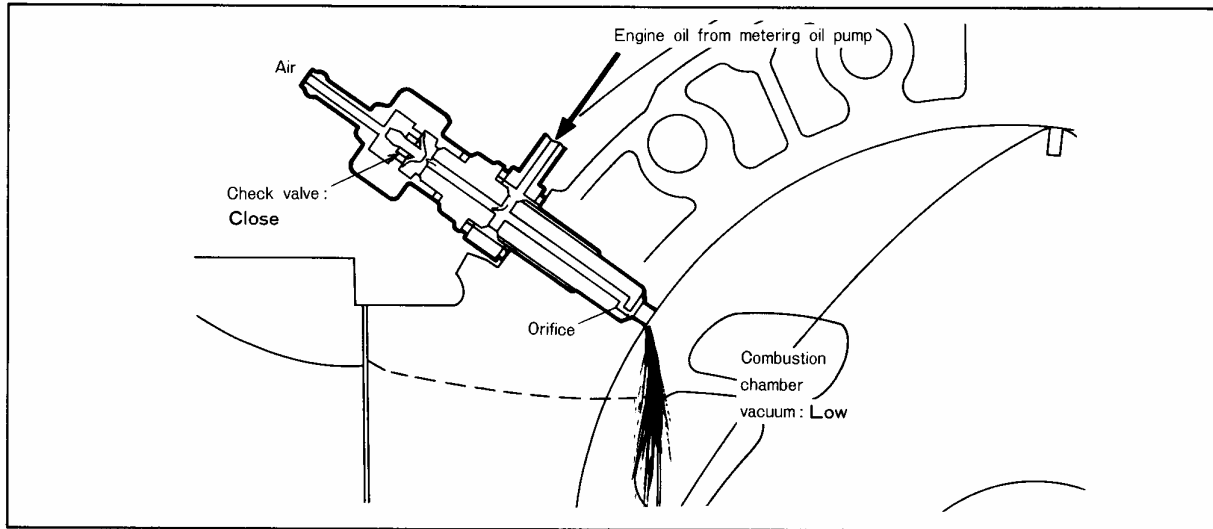
A check valve is installed at the oil discharge port.

The purpose of the check valve is to prevent a reverse flow of the engine oil in the air passages during high-load, low-rpm conditions of the engine, in other words when the vacuum of the intake manifold and combustion chamber becomes low.

To test the check valve, check to be sure that there is:

- continuity when it is blown
- no continuity when it is inhaled

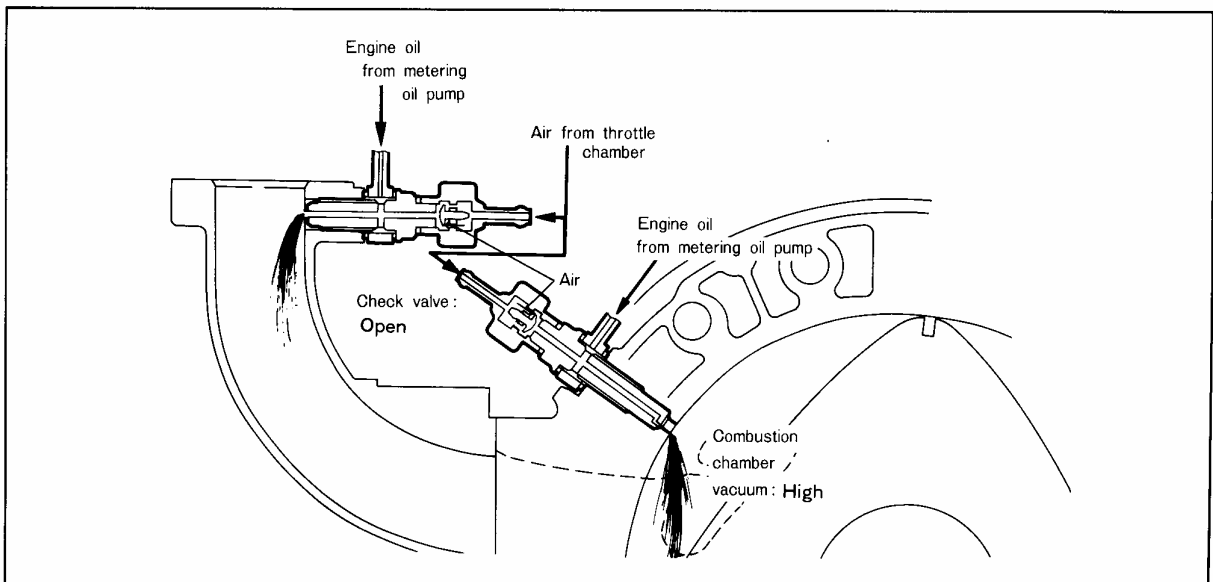
Replace the valve if necessary.

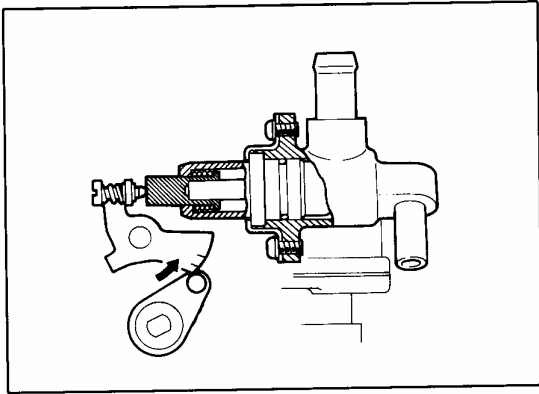
**Throttle chamber air**

Air is led from the throttle chamber to the check valve.

The reason for this is to prevent the suction of a large quantity of oil by the vacuum when the vacuum of the intake manifold and combustion chamber becomes high during rapid deceleration, etc.

Consequently, the amount of engine oil measured by the metering oil pump is supplied, regardless of the vacuum caused by the check valve.

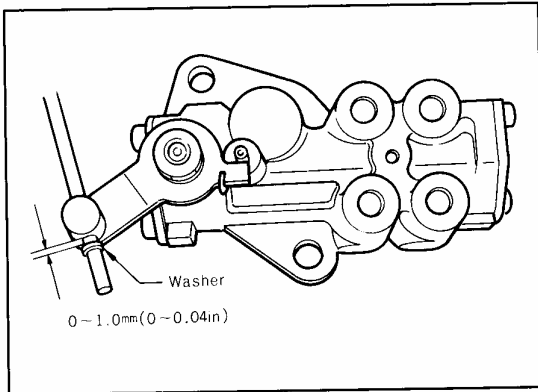


**Adjustment of the metering oil pump (13B engine)**

Because, for the 13B engine, the discharge amount test conducted for the 12A engine cannot be used, the discharge amount can be judged by visually checking the play of the oil pump rod.

The adjustment procedure is as described below.

1. Press the fast-idle cam in the direction of the arrow, by using a flat-tip screwdriver, to forcefully release the cam.



2. Then adjust rod and lever clearance.

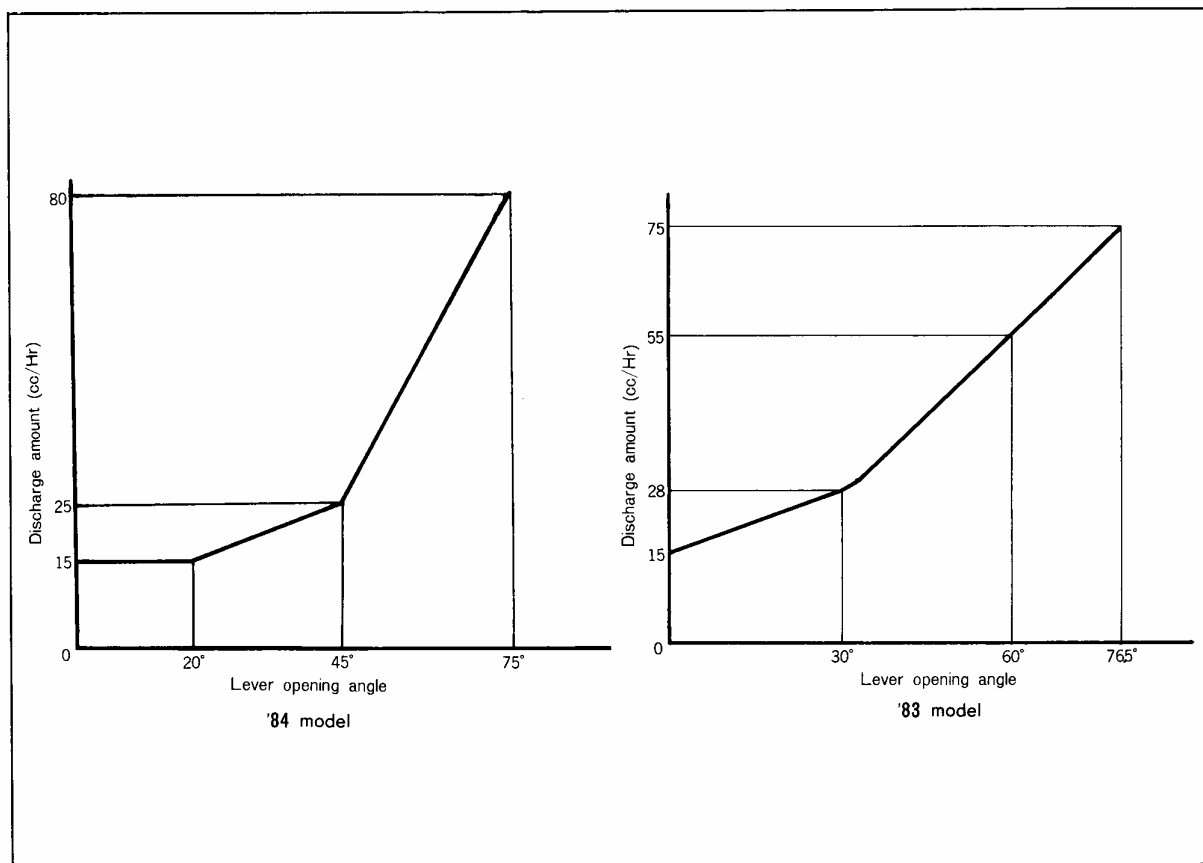
Standard clearance: 0 ~ 1.0 mm (0 ~ 0.01 in)

12A engine metering oil pump discharge characteristics

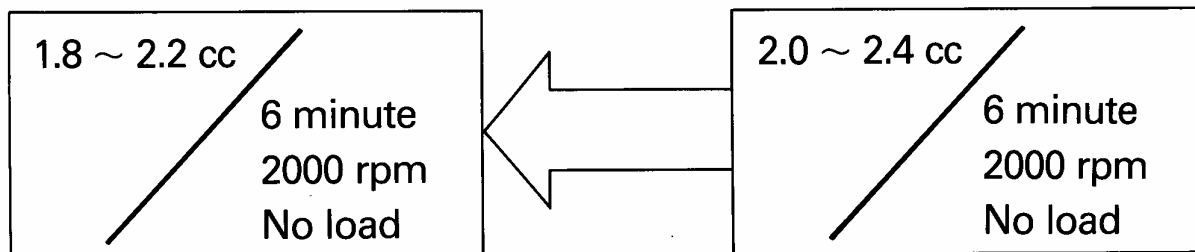
The 12A engine metering oil pump discharge characteristics have been changed so as to optimize the discharge amount. As a result, oil consumption has also been improved. The discharge characteristics are as shown in the figure.

Note

The graphs show the discharge amount of a discharge nozzle at 1,500 rpm on the worm shaft.



As a result, the standards to be used when checking the discharge amount have been changed.



OIL PRESSURE VALVE SPRING

The oil pressure control valve spring located in the front cover is different between the 13B engine and the 12A engine.

To avoid oil leakage from the oil cooler mating surface, the free length oil pressure control valve spring of the 12A engine is the shorter than that of the 13B engine, and lowers the oil pressure. For indication, the oil pressure control valve spring of the 12A engine is painted yellow.

