Surface Grinding or Milling of Cylinder Head and Checking for Leaks

Types 220 and 220a

Operation No.
M 21

Procedure:

If mating surface or upper side of cylinder head are uneven or distorted or show minor defects, such as scores, scratches and the like, the damaged surface must be reconditioned. The maximum permissible unevenness is 0.1 mm (0.004") relative to the total length of cylinder head.

It is not permitted to remove **more than a total amount of 0.8 mm (0.032") of material on either side.** In new condition the cylinder head is 84.80 to 85.00 mm (3.3386 to 3.3464") high (see Fig. M 21/00).

The deviation of parallelity of the two surfaces relative to the entire length must not be more than 0.1 mm (0.004").

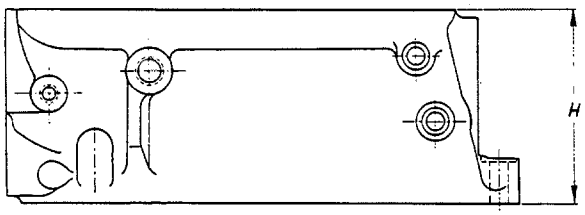

Fig. M 21/00

Check capacity and height of compression area. Correct deviations by milling out the compression area.

Compression Area

Table 11 in ccm (cu.in.)

	Compression ratio	
	6.5 : 1	7.6 : 1
With cylinder head mounted	$66.5 \pm \frac{2.5}{1}$ ($4.056 \pm \frac{0.15}{0.06}$)	55.1+1 (3.385+0.06)
Cylinder head alone	55.5 ± 2 (3.385 ± 0.12)	44.3+1 (2.702+0.06)
Heigh of compression area: 18±0.3 mm (0.71±0.012 in.)		

Note: The compression ratio is stamped into the left side of the cylinder head (light metal head only) at the 4th camshaft bearing bracket (Fig. M 21/01).

The cast iron cylinder head is only available for a compression ratio of 6.5 : 1.

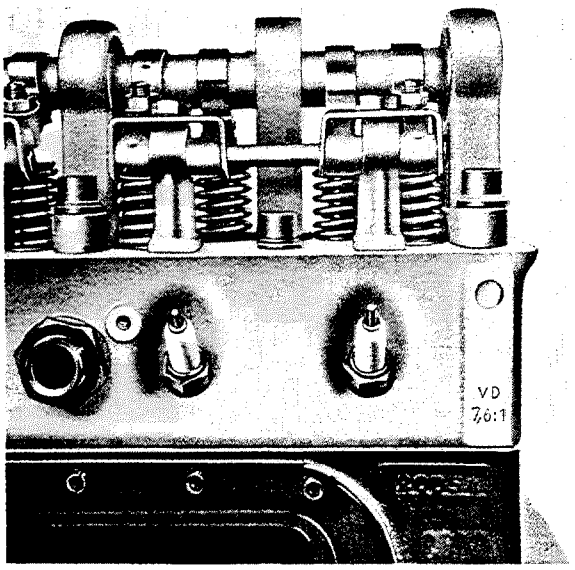

Fig. M 21/01

After the cylinder head surface has been reconditioned, test cylinder head with water for leaks, applying a pressure of **2 atü (28.5 p.s.i.).**

Before testing the cylinder head for leaks, check water ducts with a wire for free passage. See Figs. M 21/01 and 02.

Pass a wire through the front hole for connecting the vent line as shown in Fig. M 21/01. Push wire in as far as it will go. If the water passage is free, the wire will reach to the opposite end of the cylinder head (Fig. M 21/02).

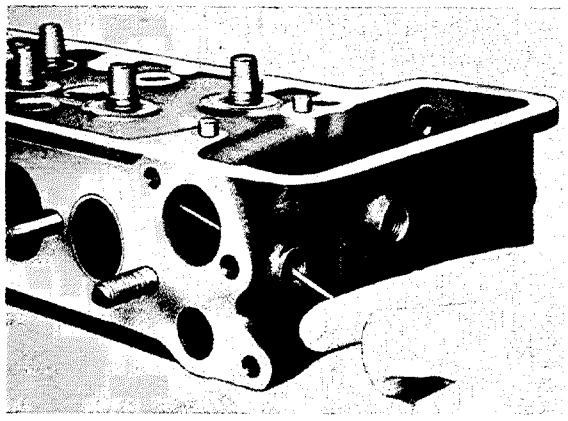

Fig. M 21/02

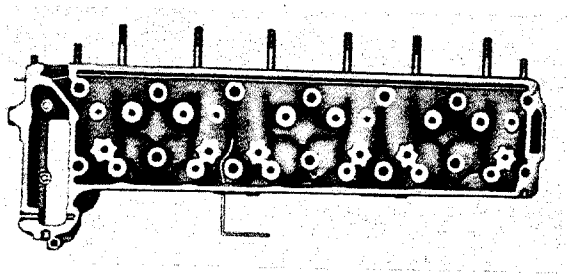

Fig. M 21/03

Another check is made by passing a suitably bent wire through the thermostat and heater connection as shown in Fig. M 21/02.

If the water passages are clogged, clean cylinder head from scale.