

05—135 Checking and replacing valve guides

Data

Valve guide	Part No.	Version	Color Code	OD	Bore in cylinder head	Overlap	Valve guide ID		Length	Valve guide shape					
							as new	tolerance limit							
Exhaust	621 053 15 29 ¹⁾ 616 053 00 29	normal size		$\frac{14.04}{14.03}$	$\frac{14.00}{14.02}$	+0.01 to +0.04	$\frac{10.000}{10.015}$	10.025	61 ¹⁾ 60						
	621 053 16 29 ¹⁾ 616 053 01 29	repair stage	red	$\frac{14.24}{14.23}$	$\frac{14.20}{14.22}$										
Intake	621 053 36 30 ¹⁾ 616 053 00 30	normal size		$\frac{14.04}{14.03}$	$\frac{14.00}{14.02}$						+0.01 to +0.04	$\frac{10.000}{10.015}$	10.025	49.5 ¹⁾ 48.5	
	621 053 37 30 ¹⁾ 616 053 01 30	repair stage	red	$\frac{14.24}{14.23}$	$\frac{14.20}{14.22}$										

Test pressure

3000—3500 N (300—350 kp)

¹⁾ These valve guides are 1 mm shorter (see note).


Special tools¹⁾

Plug gauge 10 mm dia.  615 589 00 21 00

Remover 10 mm dia.  615 589 01 15 00

Installer 10 mm dia.  615 589 00 15 00

Special reamer 9.99 H 7  000 589 11 53 00

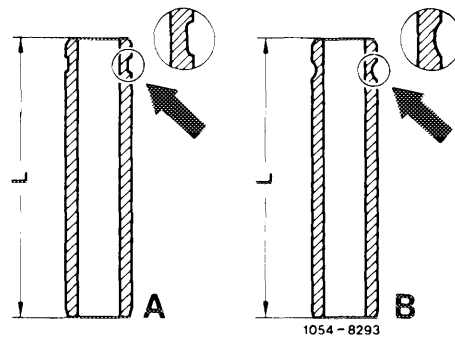
Hand broach for repair stage 14.2 dia.  115 589 00 53 00

¹⁾ Identical for intake and exhaust

Note

The 61 mm and 49.5 mm long valve guides have been replaced by types of 60 mm and 48.5 mm length, respectively.

They can be distinguished not only by the different lengths but also by the different groove shapes (arrows).



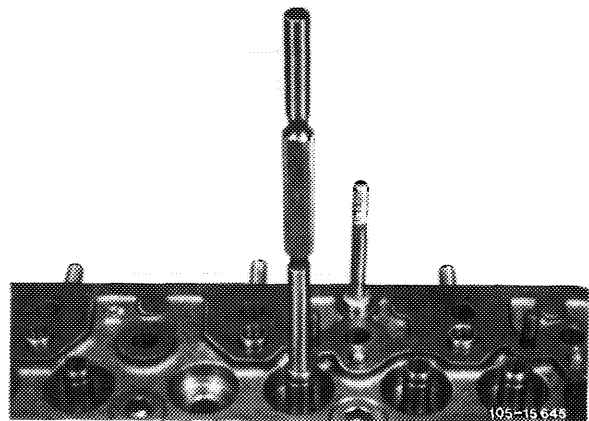
Uprated engines, being of greater valve lift, will only accept the shorter valve guides (B):

Engines 615.940 (44 kW)
616.912 (53 kW)

Checking

- 1 Clean valve guide.
- 2 Measure bore using plug gauge.

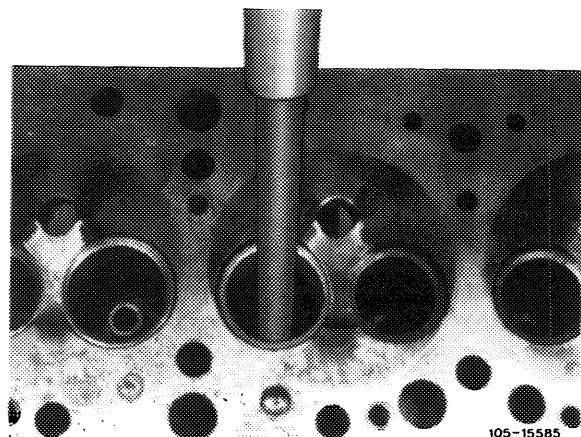
Replace valve guide if "no go" side of gauge slips easily and fully home.



Replacement

- 3 Force out valve guide, using remover.
- 4 Check basic bore in cylinder head for scoring.

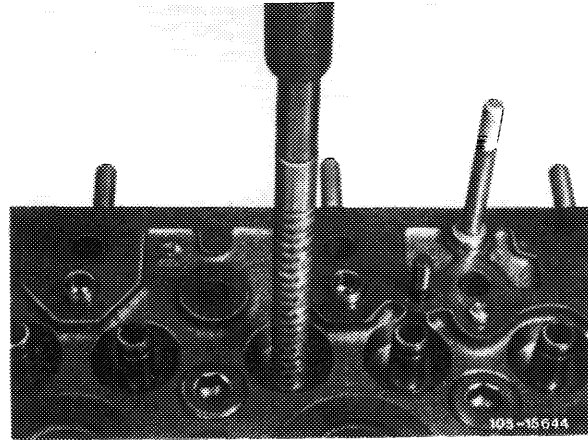
Provided specified overlap is still obtained (see job No. 6) normal size valve guides can be used without necessitating any treatment of basic bore.



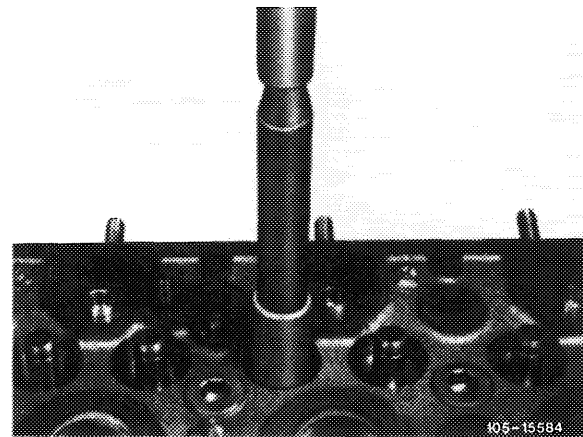
5 If repair stage valve guides are going to be used it is necessary to force appropriate hand broach through basic bore in cylinder head.

This operation can be executed on a drill press. A hand press is unsuitable for this job because the spindle is not accurate enough.

It is essential to position the hand broach perpendicularly over the cylinder head surface.



6 Coat valve guides with tallow and, using installer, press home until table dimension is obtained between cylinder head parting surface and underside of valve guide.

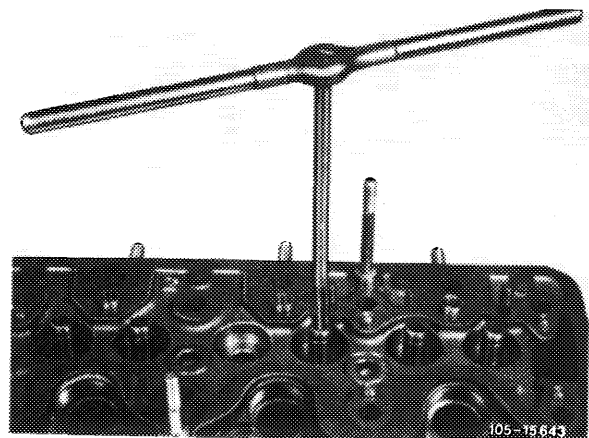


7 Wait until cylinder head has cooled down prior to checking valve guide for firm fit.

Test pressure for firm fit 3500 N (350 kp).



8 Enlarge inside diameter using reamer.



9 Check inside diameter of valve guide with plug gauge.

The "go" side ought to drop in.

The "no go" side must just kiss the surface.

10 Reface valve seats (05—155).

