

**Note**

Exchange engines are in part supplied with camshaft bearing intermediate stages and repair stages. In the event of repairs, install pertinent camshafts with reduced bearing dia. Also refer to table: Camshaft housing with 11 bearing points.

Camshaft housings with repair stages are available for camshafts with reground bearing journals. Also refer to table: Camshaft housing with 11 bearing points.

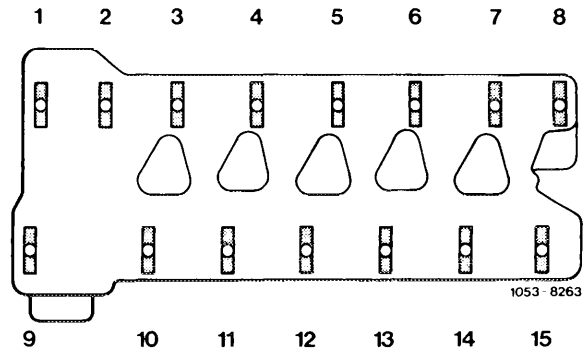
**Camshaft housing with 15 bearing points**

Bearing points		1, 9	2	3, 10, 11	4,5,12,13	6,7,14,15	8
Standard dimension	bearing dia.	<u>38.016</u> 38.000	<u>50.066</u> 50.050	<u>50.016</u> 50.000	<u>51.519</u> 51.500	<u>53.019</u> 53.000	<u>54.019</u> 54.000
	journal dia.	<u>23.993</u> 23.980	<u>49.950</u> 49.934	<u>49.950</u> 49.934	<u>51.440</u> 51.421	<u>52.940</u> 52.921	<u>53.940</u> 53.921
Intermediate stage -0.1 mm (exchange engines)	bearing dia.		<u>49.966</u> 49.950	<u>49.916</u> 49.900	<u>51.419</u> 51.400	<u>52.919</u> 52.900	<u>53.919</u> 53.900
	journal dia.		<u>49.850</u> 49.834	<u>49.850</u> 49.834	<u>51.340</u> 51.321	<u>52.840</u> 52.821	<u>53.840</u> 53.821
Repair stage 1 -0.25 mm	bearing dia.		<u>49.816</u> 49.800	<u>49.765</u> 49.750	<u>51.269</u> 51.250	<u>52.769</u> 52.750	<u>53.769</u> 53.750
	journal dia.		<u>49.700</u> 49.684	<u>49.700</u> 49.684	<u>51.190</u> 51.171	<u>52.690</u> 52.671	<u>53.690</u> 53.671
Repair stage 2 -0.50 mm	bearing dia.		<u>49.566</u> 49.550	<u>49.516</u> 49.500	<u>51.019</u> 51.000	<u>52.519</u> 52.500	<u>53.519</u> 53.500
	journal dia.		<u>49.450</u> 49.434	<u>49.450</u> 49.434	<u>50.940</u> 50.921	<u>52.440</u> 52.421	<u>53.440</u> 53.421
Camshaft bearing play	radial	<u>0.057</u> 0.124	<u>0.100</u> 0.132	<u>0.050</u> 0.082	<u>0.060</u> 0.098	<u>0.060</u> 0.098	<u>0.060</u> 0.098
	axial	<u>0.050</u> 0.120					
Sleeve for bearing a	OD	<u>37.950</u> 37.925	ID	<u>24.013</u> 24.000			

## Combinations in the event of repairs

a) Camshaft housing with 15 bearing points intake-camshaft code number 25, 67 and 33 with 7 bearing journals.

Exhaust-camshaft code number 24, 30, 57 and 71 with 8 bearing journals.

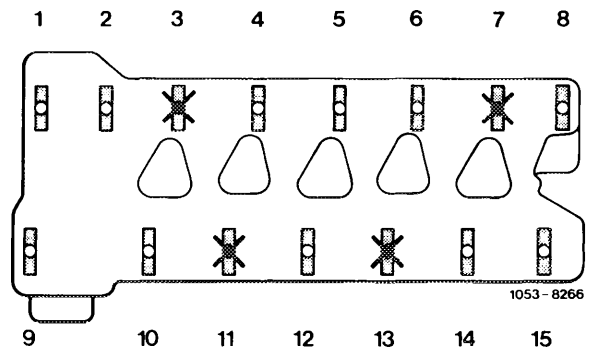


b) Camshaft housing with 15 bearing points, with bearing points 11 and 13 at intake end or 3 and 7 at exhaust end out of function.

Intake camshaft code number 74 and 91 with 5 bearing journals and intermediate stage or repair camshafts with reduced bearing dia.

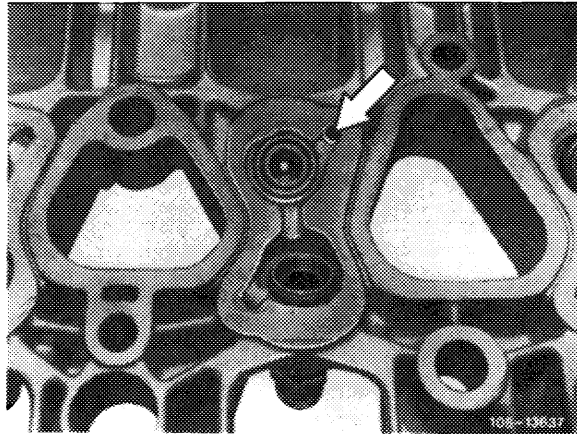
Exhaust camshaft code no. 78 and 95 with 6 bearing journals and intermediate stage or repair camshafts with reduced bearing dia.

In this case, the oil bores of bearing points 11 and 13 or 3 and 7 on removed camshaft housing must be closed.



✗ close oil bores

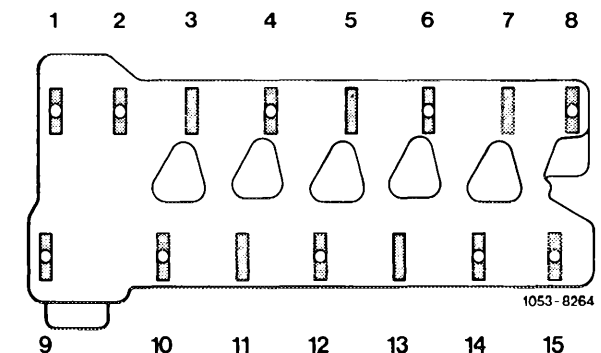
For this purpose, cut threads M 6, approx. 10 mm deep from below into oil bores (arrow) and screw-in threaded plug 000 913 006 110 with sealing compound.



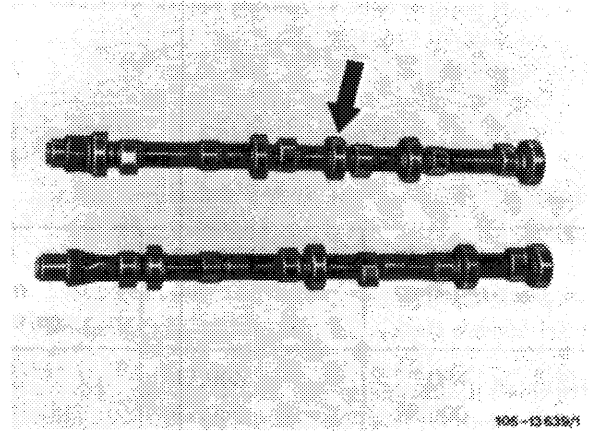
c) Camshaft housing with 15 bearing points, with bearing points 11 and 13 (intake end) or bearing points 3.5 and 7 (exhaust end) without oil supply.

Intake-camshaft code number 25, 67 and 33 with 7 bearing points, of which bearing points 11 and 13 with 1 mm machined off.

Exhaust-camshaft code number 24, 57, 71 and 30, of which bearing points 3, 5 and 7 machined off by 1 mm.



Exchange engines starting unit no. 464.130 are supplied in this version (c). When installing an exhaust-camshaft with code number 78 and 95 into camshaft housing version c, machine 1 mm from bearing journal 5 (arrow).

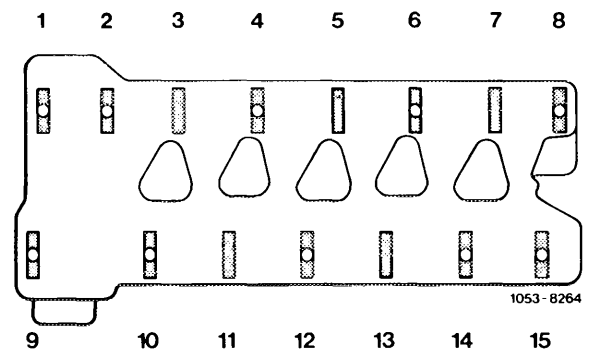


**Camshaft housing with 15 bearing points of which 5 bearing points without oil bore**

Bearing points	1, 9	2	3, 11	4, 12	5, 13	6, 14, 15	7	8	10	
Bearing points	Bearing dia.	$\frac{38.016}{38.000}$	$\frac{50.066}{50.050}$	51.0	$\frac{51.519}{51.500}$	52.5	$\frac{53.019}{53.000}$	54.0	$\frac{54.019}{54.000}$	$\frac{50.016}{50.000}$
	Journal dia.	$\frac{23.993}{23.980}$	$\frac{49.950}{49.934}$	—	$\frac{49.950}{49.934}$	—	$\frac{52.940}{52.921}$	—	$\frac{53.940}{53.921}$	$\frac{49.950}{49.934}$

This camshaft housing is not manufactured as an intermediate or repair stage.

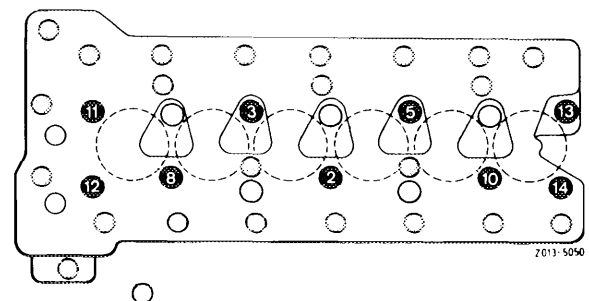
On this camshaft housing, the bearing points 3, 5, 7, 11 and 13 are without oil bore and their ID is 1 mm larger than the respective camshaft bearing journals. This camshaft housing can be used to install **all camshafts with normal dimension**.



This camshaft housing is attached together with cylinder head by means of 9 cylinder head bolts, M 12 x 145 mm (formerly M 12 x 150 mm), since the bolt head contact surfaces in camshaft housing were countersunk by 5 mm.

**Attention!**

On exchange engines starting unit number 496.861 (approx. starting October 1977) these 9 cylinder head bolts are installed with a length of 150 mm. Washers 5 mm thick part no. 186 990 09 40 are fitted to make sure that the thread lugs in cylinder crankcase are not forced off.



**Camshaft housing with 11 bearing points, of which 1 bearing point without oil bore**

Bearing points	1, 9	2	4, 12	5	6, 14, 15	8	10
Bearing dia.	<u>38.016</u>	<u>50.066</u>	<u>51.519</u>	52.5	<u>53.019</u>	<u>54.019</u>	<u>50.016</u>
	<u>38.000</u>	<u>50.050</u>	<u>51.500</u>		<u>53.000</u>	<u>54.000</u>	<u>50.000</u>
Journal dia.	<u>23.993</u>	<u>49.950</u>	<u>51.440</u>	52.5	<u>52.940</u>	<u>53.940</u>	<u>49.950</u>
	<u>23.980</u>	<u>49.934</u>	<u>51.421</u>		<u>52.921</u>	<u>53.921</u>	<u>49.934</u>

Intermediate stage – 0.1 mm (exchange engines only)

Camshaft housing part no. 110 010 20 36

Intake camshaft part no. 110 051 77 01

Exhaust camshaft part no. 110 051 98 01

Bearing dia.	<u>49.966</u>	<u>51.419</u>	52.5	<u>52.919</u>	<u>53.919</u>	<u>49.916</u>
	<u>49.950</u>	<u>51.400</u>		<u>52.900</u>	<u>53.900</u>	<u>49.900</u>
Journal dia.	<u>49.850</u>	<u>51.340</u>	52.5	<u>52.840</u>	<u>53.840</u>	<u>49.850</u>
	<u>49.834</u>	<u>51.321</u>		<u>52.821</u>	<u>53.821</u>	<u>49.834</u>

Repair stage 1 – 0.25 mm

Camshaft housing part no. 110 010 21 36

Intake camshaft part no. 110 051 75 01

Exhaust camshaft part no. 110 051 79 01

Bearing dia.	<u>49.816</u>	<u>51.269</u>	52.5	<u>52.769</u>	<u>53.769</u>	<u>49.765</u>
	<u>49.800</u>	<u>51.250</u>		<u>52.750</u>	<u>53.750</u>	<u>49.750</u>
Journal dia.	<u>49.700</u>	<u>51.190</u>	52.5	<u>52.690</u>	<u>53.690</u>	<u>49.700</u>
	<u>49.684</u>	<u>51.171</u>		<u>52.671</u>	<u>53.671</u>	<u>49.684</u>

Repair stage 2 – 0.50 mm

Camshaft housing part no. 110 010 22 36

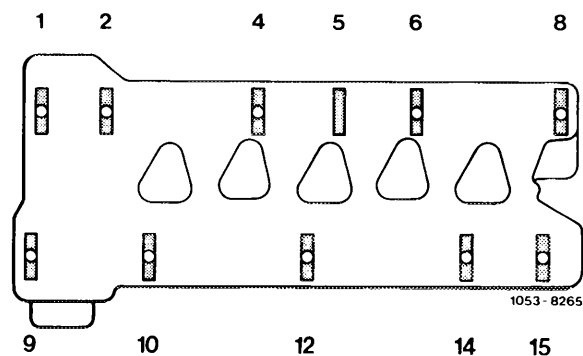
Intake camshaft part no. 110 051 76 01

Exhaust camshaft part no. 110 051 80 01

Bearing dia.	<u>49.566</u>	<u>51.019</u>	52.5	<u>52.519</u>	<u>53.519</u>	<u>49.516</u>
	<u>49.550</u>	<u>51.000</u>		<u>52.500</u>	<u>53.500</u>	<u>49.500</u>
Journal dia.	<u>49.450</u>	<u>50.940</u>	52.5	<u>52.440</u>	<u>53.440</u>	<u>49.450</u>
	<u>49.434</u>	<u>50.921</u>		<u>52.421</u>	<u>53.421</u>	<u>49.434</u>

On this camshaft housing bearing point 5 is without oil bore and its ID is 1 mm larger than the respective camshaft bearing journal.

This camshaft housing can be used to install camshaft without changes on bearing journals.



This camshaft housing is attached together with cylinder head by means of 9 cylinder head bolts M 12 x 145 (formerly M 12 x 150), since the bolt head contact surfaces in camshaft housing were counter-sunk by 5 mm.

**Attention!**

On exchange engines starting unit number 496.861 (approx. starting October 1977) these 9 cylinder head bolts are installed with a length of 150 mm. Washers 5 mm thick part no. 186 990 09 40 are fitted to make sure that the thread lugs in cylinder crankcase are not forced off.

