Allocation	Group No.	Cylinder dia.	Piston dia.
Engine 116.960/961/964/965			
Standard dimension Std 92.0 dia.	0	91.998–92.003	91.985–91.990
	0+	92.003–92.008	91.990–91.995
	1	92.008–92.013	91.995–92.000
	1+	92.013–92.018	92.000–92.005
	2	92.018–92.023	92.005–92.010
	2+	92.023–92.028	92.010–92.015
1st repair stage +0.5	0	92.498–92.503	92.485–92.490
	1	92.508–92.513	92.495–92.500
	2	92.518–92.523	92.505–92.510
2nd repair stage +1.0	0	92.998–93.003	92.985–92.990
	1	93.008–93.013	92.995–93.000
	2	93.018–93.023	93.005–93.010
Engine 116.960 (AUS) (J) (USA), 116.961 (AUS) (J) (S) (USA) 116.962/963			
Standard dimension Std 88.0 dia.	0	87.998–88.003	87.985–87.990
	0+	88.003–88.008	87.990–87.995
	1	88.008–88.013	87.995–88.000
	1+	88.013–88.018	88.000–88.005
	2	88.018–88.023	88.005–88.010
	2+	88.023–88.028	88.010–88.015
1st repair stage +0.5[1])	0	88.498–88.503	88.485–88.490
	1	88.508–88.513	88.495–88.500
	2	88.518–88.523	88.505–88.510
2nd repair stage +1.0[1])	0	88.998–89.003	88.985–88.990
	1	89.008–89.013	88.995–89.000
	2	89.018–89.023	89.005–89.010
Engine 117.960 up to end No. 000885			
Standard dimension Std 97.0 dia.	0	96.998–97.003	96.985–96.990
	0+	97.003–97.008	96.990–96.995
	1	97.008–97.013	96.995–97.000
	1+	97.013–97.018	97.000–97.005
	2	97.018–97.023	97.005–97.010
	2+	97.023–97.028	97.010–97.015
1st repair stage +0.5	0	97.498–97.503	97.485–97.490
	1	97.508–97.513	97.495–97.500
	2	97.518–97.523	97.005–97.510

[1]) Repair stage pistons are only available with the group numbers 0, 1 and 2.

Standard dimension Std 96.5 dia.	0	96.498–96.503	96.485–96.490
	0+	96.503–96.508	96.490–96.495
	1	96.508–96.513	96.495–96.500
	1+	96.513–96.518	96.500–96.505
	2	96.518–96.523	96.505–96.510
	2+	96.523–96.528	96.510–96.515
1st repair stage +0.5	0	96.998–97.003	96.985–96.990
	1	97.008–97.013	96.995–97.000
	2	97.018–97.023	97.005–97.010
2nd repair stage +1.0	0	97.498–97.503	97.485–97.490
	1	97.508–97.513	97.495–97.500
	2	97.518–97.523	97.505–97.510

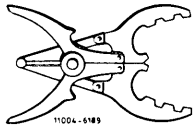
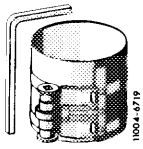
[1]) Repair stage pistons are only available with the group numbers 0, 1 and 2.

Piston clearance	when new	0.008–0.018
	wear limit	0.08
Max. wear limit of cylinder bores in direction of driving or transverse direction at the upper and lower point of return of the 1st piston ring		0.10
Piston weight difference within one engine		4 g

Tightening torque

Connecting rod nuts	Initial torque	40–50 Nm
	Angle of rotation torque	90–100°

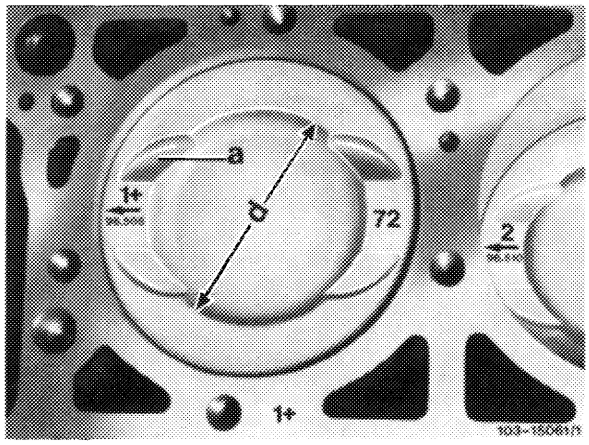
Special tools

Piston ring spreader		000 589 51 37 00
Piston ring clamping strap		000 589 04 14 00
Cover sleeves (2) for connecting rod and connecting rod bolts during piston installation		117 589 00 98 00

Note

As standard, the pistons are subdivided into six tolerance groups (group numbers). The following information is stamped into the piston crown:

1. Piston diameter e.g. 96.505
2. Piston code number e.g. 72
3. Group number e.g. 1+
4. Direction of driving arrow

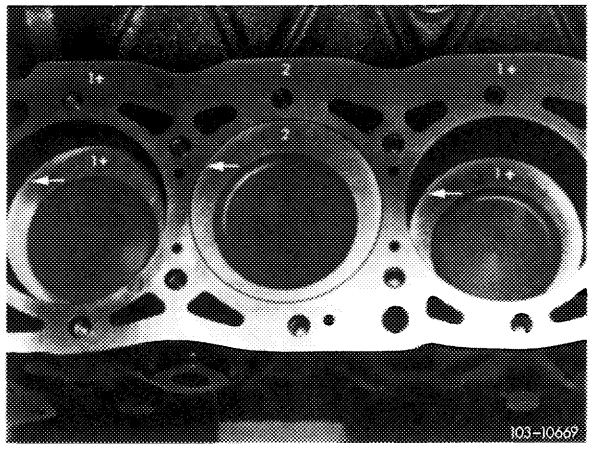


a Valve recesses
b Trough diameter

The group number is also stamped into the crankcase mating surface.

The piston group number (e.g. 2) must correspond with the group number of the cylinder bores (series manufacture).

This will ensure that the piston clearance is maintained.



In the event of repairs, hone cylinder bores according to the dimensions of the existing pistons plus the piston clearance (see table).

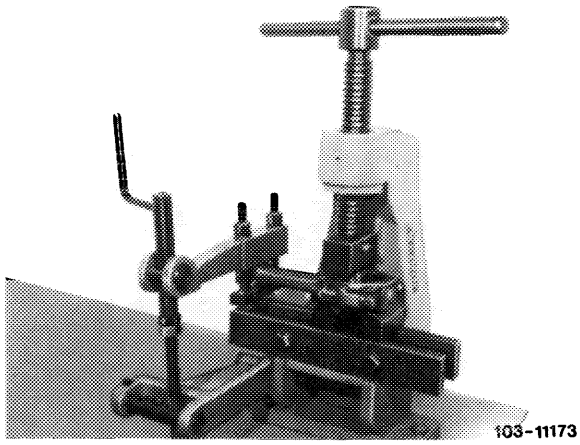
The piston pins of the engines 117.967/968 have different inside diameters for weight compensation purposes together with the piston. In the case of repairs, the piston pins must remain with their respective piston.

Removal

1 Remove connecting rod with piston in upward direction. For this purpose, cover connecting rod with cover sleeves to prevent damage to the cylinder wall.

2 Remove piston pin circlip and push out piston pin.

3 Recondition connecting rod and square (03–313).

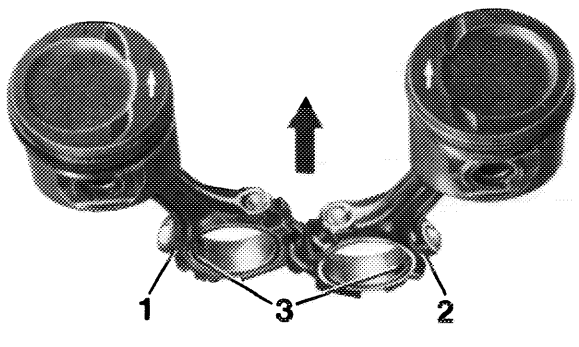


Installation

4 On used pistons, check piston ring gap and axial clearance.

5 Lubricate piston pins and connecting rod bushings.

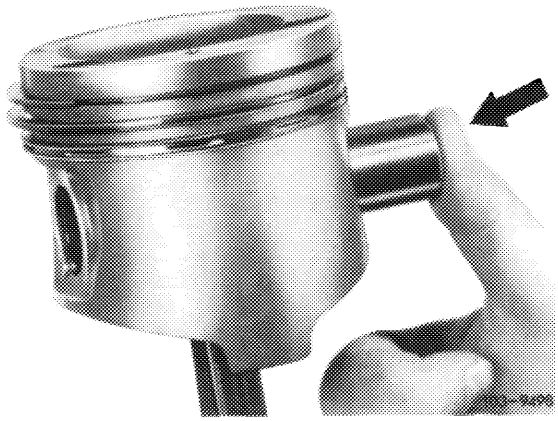
6 Mount pistons in such a way that the arrow points in the direction of driving and the locating grooves (3) in the connecting rod are facing to the engine outside.



1 Connecting rod contact side
3 Locating grooves

7 Push piston pin in manually.

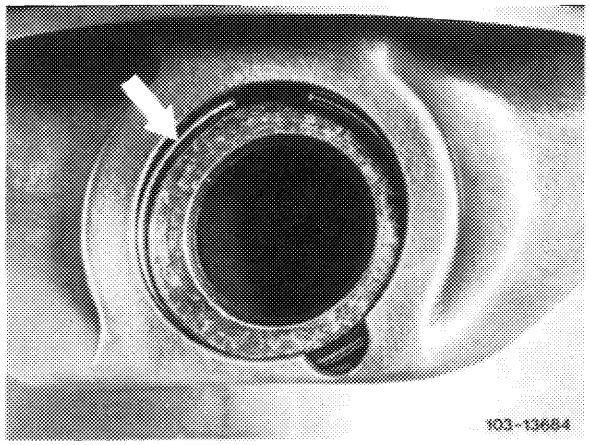
Caution!
Do not heat piston.



8 Insert piston pin circlip into the groove.

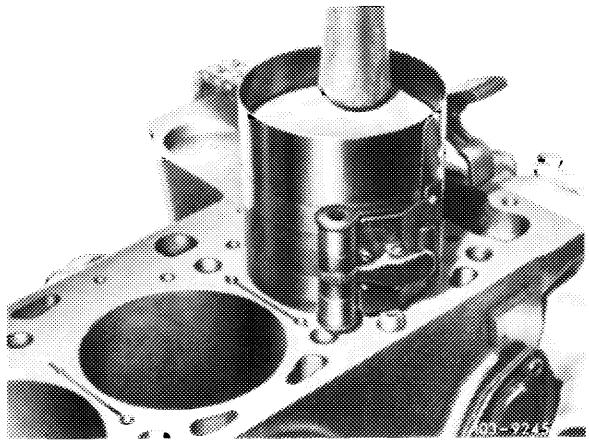
9 Lubricate cleaned cylinder bores, connecting rod bearing journals, connecting rod bearing shells and pistons.

10 Distribute piston ring gaps uniformly around the piston circumference.



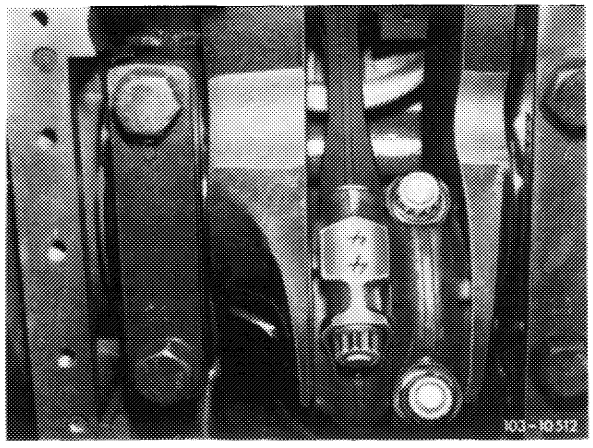
11 Position piston ring clamping strap and introduce pistons into cylinder bore with arrow in the direction of driving.

To do so, fit cover sleeves to connecting rod to avoid damage to the cylinder wall.



12 Mount connecting rod bearing caps along connecting rod with matching identification number and tighten connecting rod nuts with 40–50 Nm initial torque and 90–100° angle of rotation torque.

13 Rotate crankshaft and check clearance between piston pin eye and connecting rod.



14 Measure distance between piston crown and crankcase mating surface with the piston at TDC