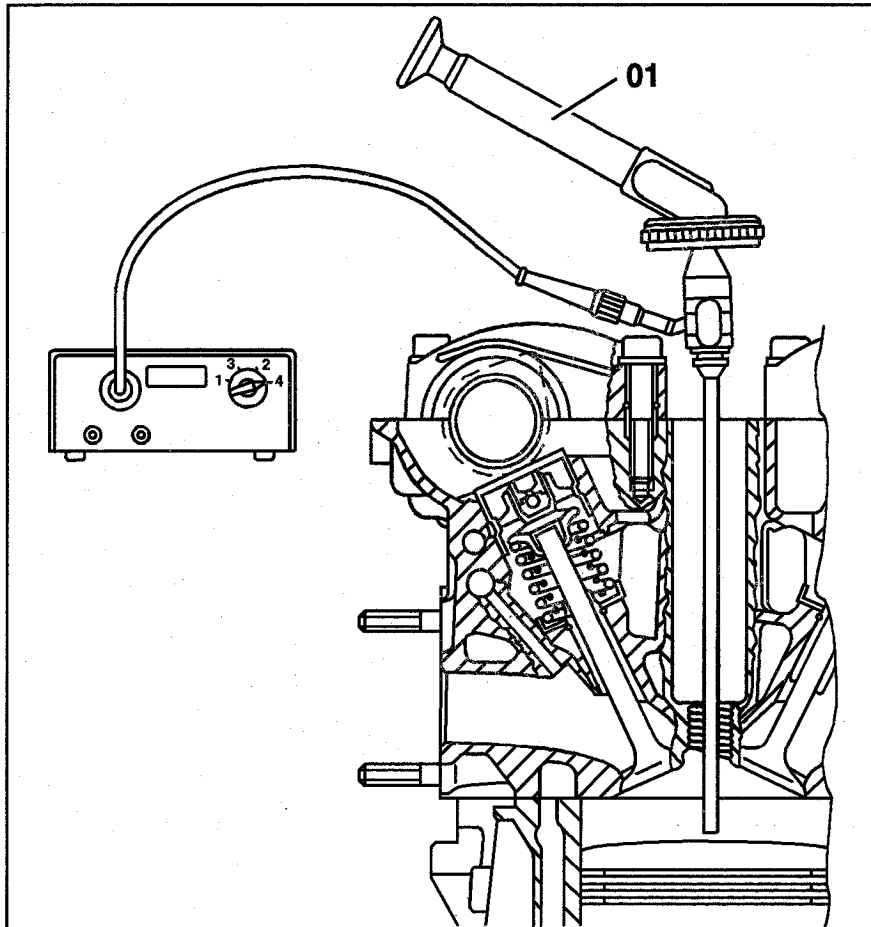


## 01-0200 Inspecting cylinders with light pobe, assessing cylinders

Preceding work:  
 Removing, installing spark plugs (AP15.00-1580CA)  
 Hazard warnings when hood opened (01-0085)

Operation no. of operation texts and work units or standard texts  
 and flat rates  
 01-1321



P01-6031-37

Piston .....	position to BDC, see table.
Motoskop and lens probe .....	connect. Motoskop TW 12 V to car battery Motoskop TW 220 V to mains.
Lens probe .....	insert into cylinder, remove.
Cylinder .....	inspect, assess, see note.

## Commercially available tool

---

Cylinder inspection lamp

e.g. Karl Storz GmbH,  
78532 Tuttlingen  
Motoskop TW (cold light)  
with lens probe  
103 26 CT (210 mm)

---

Marking index on TDC pointer	Piston in BDC position
0	4 and 7
90	8 and 2
180	1 and 6
270	5 and 3

### Note

If complaints are received regarding an engine because of noises, overheating, oil consumption etc., it is good practice to perform a visual inspection with a cylinder inspection lamp with the cylinder head installed.

The information which follows is designed to help in assessing the cylinder walls, in taking a proper professional decision regarding the condition and further use of the crankcase.

#### 1. Normal condition

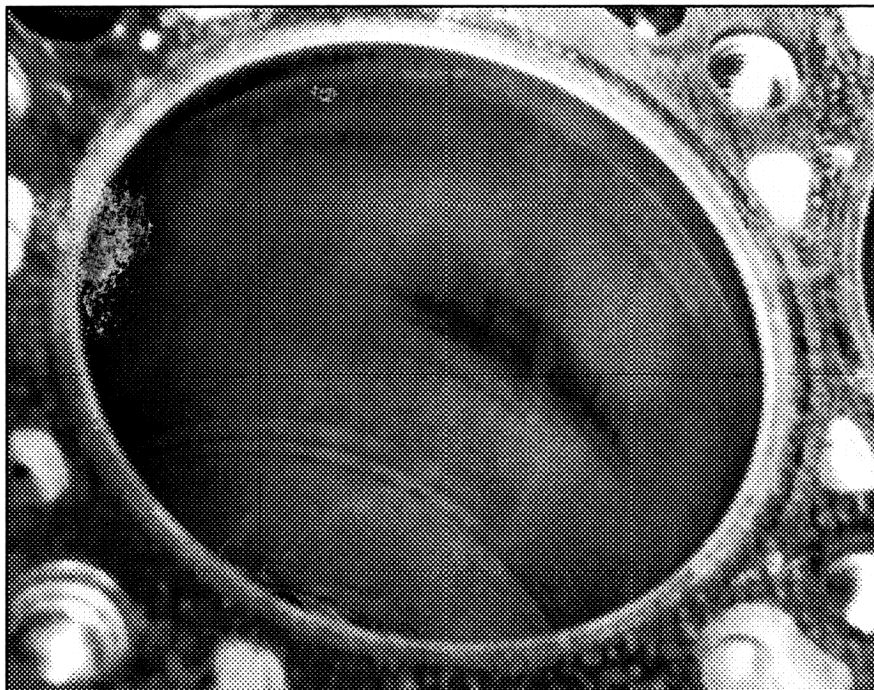
Mat grey surface, no honing pattern.

If it is not possible to assess the cylinders with sufficient certainty by means of a visual inspection with the cylinder inspection lamp, the cylinder head should then be removed.

**2. Bright pressure marks, smoothing**

Individual bright points e.g. in the middle of the cylinder or in the area of the cylinder head bolt pipes.

Continue using crankcase.

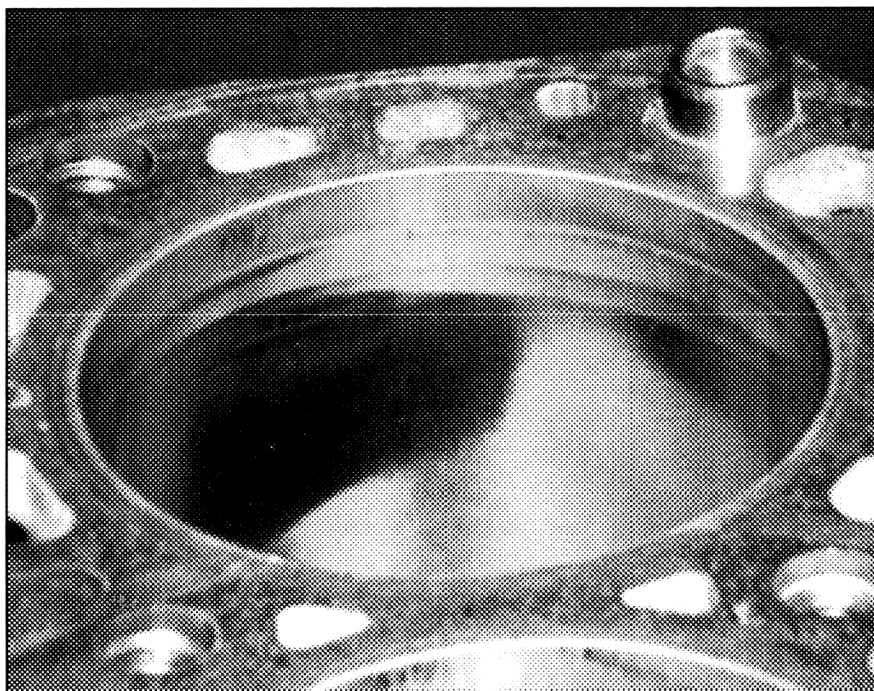


P01.40-0265-35

**3. Bright cylinder surfaces, polished and reflective all round**

Usually starting from the first piston ring, in the top area of cylinder, with measurable partial cylinder wear.

Cylinder wall un-serviceable.

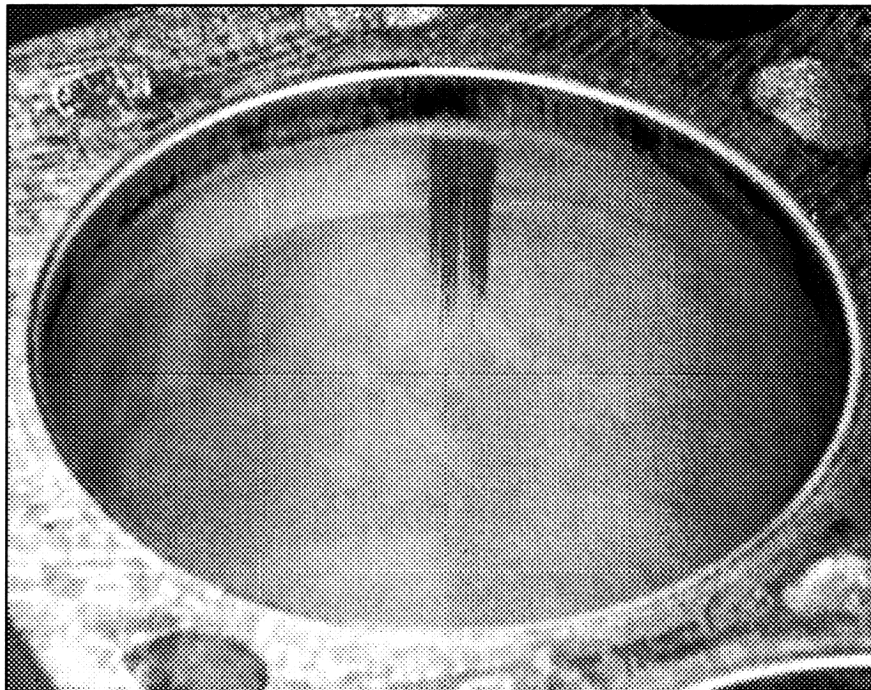


P01.40-0266-35



#### 4. Visual streaks, traces of rubbing

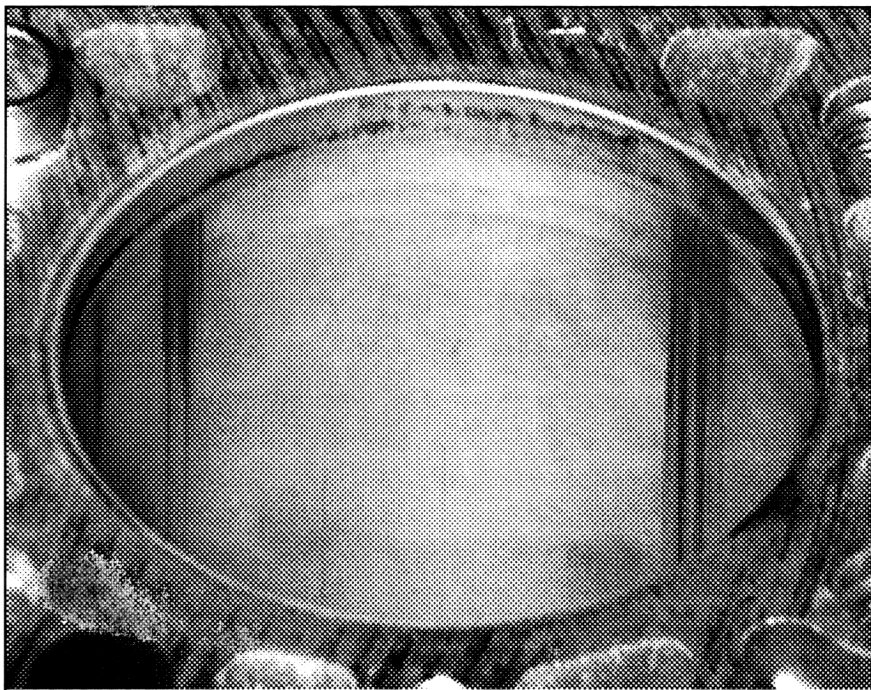
Starting from first piston ring, extending for about 30 mm. Traces of dry rubbing which cannot be felt, caused by fuel ablation of the oil film, e.g. frequent cold starting in short-distance driving. These traces of rubbing, which are likely to be found in the area of the cylinder head bolts and on the pressure side, are acceptable if smoothed. The piston rings are not damaged. Continue using crankcase.



P01.40-0267-35

#### 5. Roughened streaks, traces of seizure

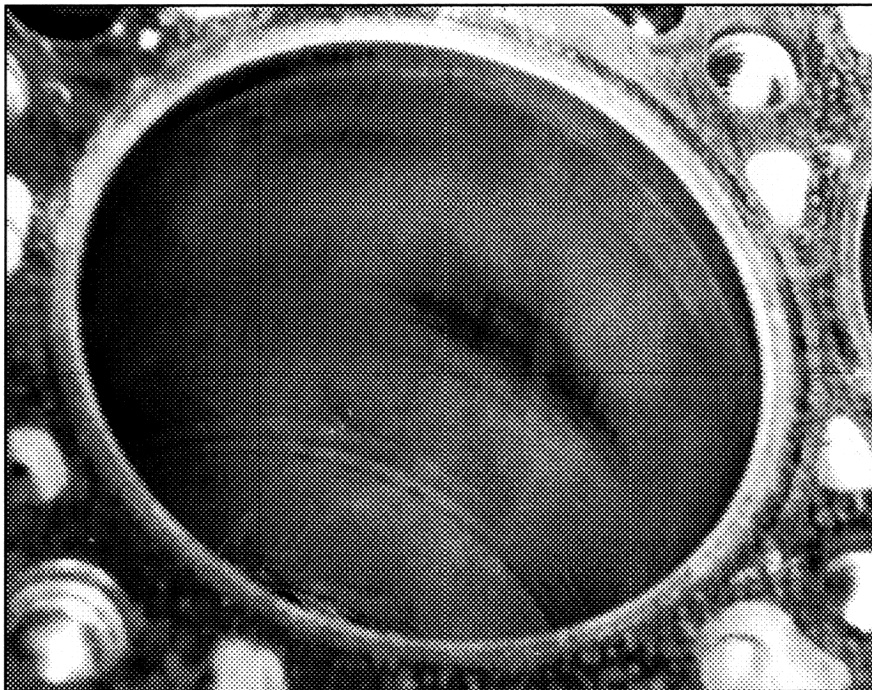
Starting from the first and second piston ring and extending initially to the bottom part of the cylinder. Traces of rubbing as described in section 4 have progressed to seizure. Piston rings may be damaged. If the streaks can be felt, cylinder wall unserviceable.



P01.40-0268-35

#### 6. **Ring-shaped impressions**

Visible in the top and bottom piston ring reversal area, are acceptable.  
Continue using crankcase.



P01.40-0265-35

#### 7. **Traces of individual, continuous scratches**

Caused by dirt, e.g. by soot particles being pulsated back out of the exhaust.  
Continue using crankcase.

#### 8. **Piston seizure**

Cylinder wall usually roughened over the entire length to the extent that this can be felt.  
Material accumulation and traces of seizure on cylinder wall and piston skirt which can be felt.  
Cylinder wall unserviceable.

#### 9. **Brown discoloration of cylinder surfaces**

Oil varnish exists over considerable areas of the cylinder wall and indicates that the engine has been driven in a very high temperature level.  
Continue using crankcase provided no impermissible cylinder distortion exists.  
Oil varnish above the piston ring zone is normal and is acceptable.