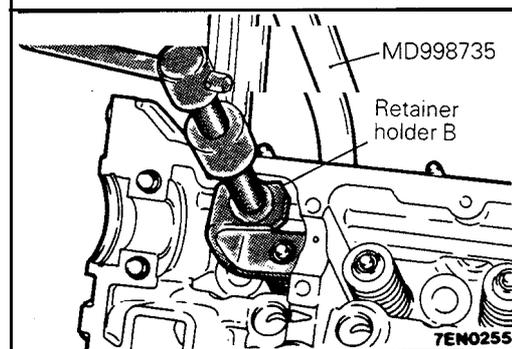
**SERVICE POINTS OF REMOVAL**

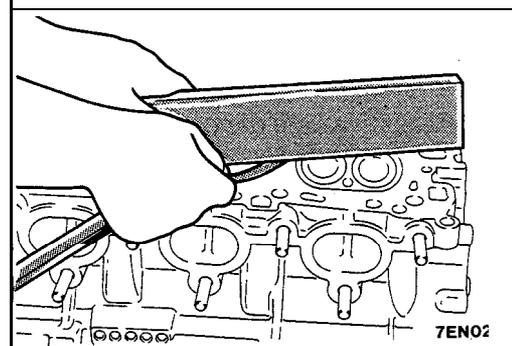
M110BAC

1. REMOVAL OF CYLINDER HEAD BOLT

Using the special tool, remove the cylinder head bolts.

**5. 9. REMOVAL OF RETAINER LOCK**

Using the special tool, remove the retainer lock.

**INSPECTION**

M110CAO

CYLINDER HEAD

- (1) Using a straight edge and feeler gauge, measure the flatness of the cylinder head gasket surface.

Standard value: 0.03 mm (.0012 in.) or less

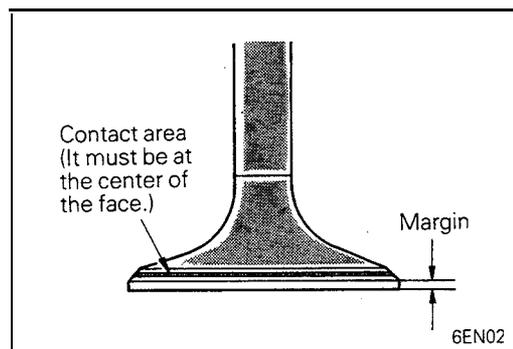
Limit: 0.2 mm (.008 in.)

- (2) If the measured flatness exceeds the limit, grind and repair the surface to gain the flatness of standard value or less.

Grinding Limit: 0.2 mm (.008 in.)

Caution

When the cylinder block is assembled, 0.2 mm (.008 in.) or less of grinding is permissible.

**VALVES**

Replace the valve if the margin (thickness of the valve head) exceeds the limit.

Standard value:

Intake side

1.0 mm (.039 in.)

Exhaust side

1.5 mm (.059 in.)

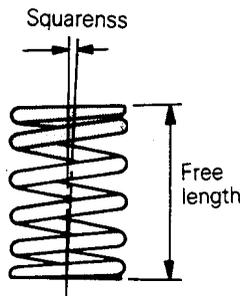
Limit:

Intake side

0.5 mm (.019 in.)

Exhaust side

1.0 mm (.039 in.)



1 EN035

VALVE SPRINGS

- (1) Check free length of each valve spring and replace if necessary.

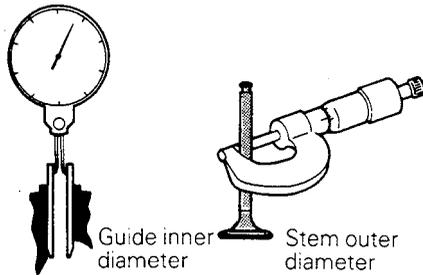
Standard value: 46.9 mm (1.846 in.)

Limit: 45.9 mm (1.807 in.)

- (2) Using a square, test squareness of each valve spring. If spring is excessively out of square, replace it.

Standard value: Less than 2°

Limit: 4



1EN296

VALVE GUIDES

Check the valve stem-to-guide clearance. If the clearance exceeds the service limit, replace the valve guide with new oversize part.

Standard value:

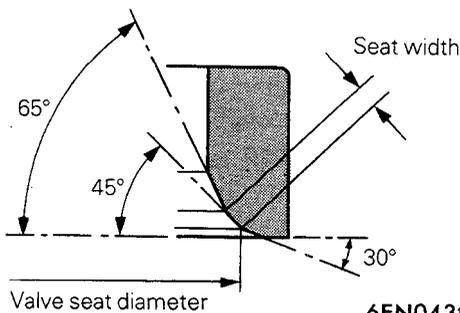
Intake 0.02 – 0.05 mm (.0008 – .0020 in.)

Exhaust 0.05 – 0.09 mm (.0020 – .0035 in.)

Limit:

Intake 0.10 mm (.0039 in.)

Exhaust 0.12 mm (.0047 in.)



6EN0431

VALVE SEAT RECONDITIONING PROCEDURES

- (1) Before valve seat reconditioning, check valve stem to guide clearance.

- (2) Recondition the valve seat with a seat grinder or cutter. The valve seat width should be the specified value at the center of the valve face.

Inspect the valve seat with prussian blue to determine where the valve contacts the seat. To do this, coat valve seat lightly with prussian blue, and then set valve in place. Rotate the valve with light pressure. If the blue is transferred to the center of valve face, contact is satisfactory.

If the blue is transferred to top edge of the valve face, lower valve seat with a 30 degrees stone or cutter. If the blue is transferred to the bottom edge of valve face, raise valve seat with a 65 degrees stone or cutter.

Valve seat diameter:

Intake 34 mm (1.34 in.)

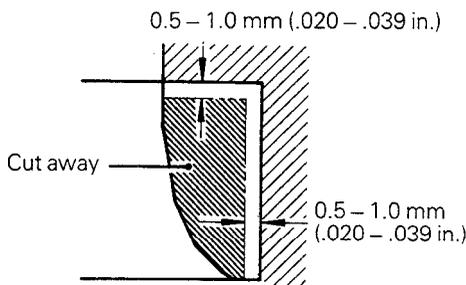
Exhaust 29.5 mm (1.16 in.)

Seat width: 0.9 – 1.3 mm (.035 – .051 in.)

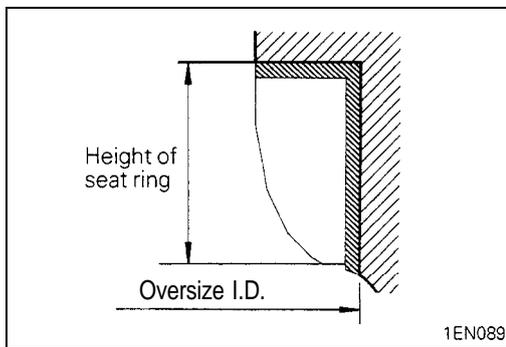
- (3) The valve and valve seat should be lapped with a lapping compound.

VALVE SEAT REPLACEMENT PROCEDURE

- (1) Grind the valve seat to be replaced from the inside to thin the wall thickness. Then, remove the valve seat.



1EN088



- (2) Rebore the valve seat hole in cylinder head to a selected oversize valve seat diameter.

Valve Seat Insert Oversizes

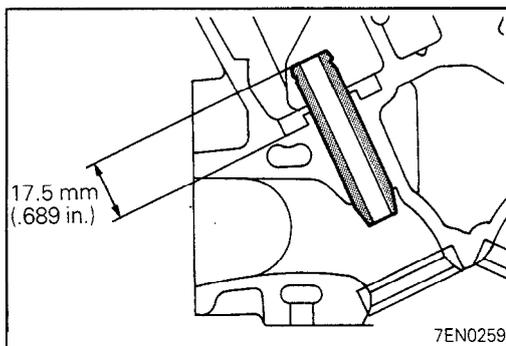
Description	Size mm (in.)	Size mark	Seat insert height H mm (in.)	Cylinder head I.D. mm (in.)
Intake valve seat insert	0.3 (.012) O.S.	30	7.5 – 7.7 (.295 – .303)	36.300-36.325 (1.4291–1.4301)
	0.6 (.024) O.S.	60	7.8 – 8.0 (.307 – .315)	36.600-36.625 (1.4409–1.4419)
Exhaust valve seat insert	0.3 (.012) O.S.	30	7.9 – 8.1 (.311 – .319)	33.300-33.325 (1.3110–1.3120)
	0.6 (.024) O.S.	60	8.2 – 8.4 (.323 – .331)	33.600-33.625 (1.3228-1.3238)

- (3) When press-fitting the valve seat, chill the valve seat with liquid nitrogen so that the cylinder head bore is not damaged by galling.
- (4) Using the valve seat grinder or cutter, correct the valve seat to the specified width and angle.
- (5) See “VALVE SEAT RECONDITIONING PROCEDURES.”

VALVE GUIDE REPLACEMENT PROCEDURE M11PJDB

- (1) Using suitable rod and a press, press the valve guide out of the cylinder head toward the cylinder block side.
- (2) Rebore the valve guide hole to the oversize valve guide outside diameter to be press-fitted.

Caution
Do not use a valve guide of the same size as the one removed.



Size mm (in.)	Size mark	Cylinder head hole size mm (in.)
0.05 (.002) O.S.	5	12.050–12.068 (.4744–.4751)
0.25 (.010) O.S.	25	12.250-12.268 (.4823–.4830)
0.50 (.020) O.S.	50	12.500-12.518 (.4921–.4928)

- (3) Install the valve guide until a protrusion of 17.5 mm (.689 in.) is obtained. See the illustration.

- NOTE**
1. Press-fit the valve guide from the cylinder head top surface.
 2. Note the difference in lengths of the valve guides for the intake and exhaust: intake 45.5 mm (1.791 in.) and exhaust 50.5 mm (1.988 in.).
 3. After the valve guide has been installed in position, insert a new valve to ensure that it slides smoothly.