

# VALVE FITTING

## 1. REMOVAL



- ☑ Remove the cylinder head as per manufacturer specifications.
- ☑ Mark all parts and note the installation direction.
- ☑ Do not place the removed cylinder head on its end face as this could damage the valve.
- ☑ Remove the hydraulic pushers.
- ☑ Using an appropriate tool, pre-load the valve spring and remove the valve collets.
- ☑ Important: Old keys must not be reused.
- ☑ Remove the valve springs.
- ☑ Remove the valve stem seals.
- ☑ If necessary, drive out the valve guides and bore out the valve seat inserts.

## 2. TESTING



- ☑ If used parts are refitted, they must all be inspected for dimensional accuracy and damage.
- ☑ Check the cylinder head for distortion and cracks.
- ☑ Bent valves are indicative of impact on the piston—due to over-speeding or incorrect valve protrusion, for example. Therefore, check the valve clearance, timing, and depth.
- ☑ Burnt valve discs indicate that the valves are overheating—due to incorrect valve clearance, a poorly machined seat, or restricted rotation when using old keys.
- ☑ Check the valve springs for dimensional accuracy and perpendicularity.
- ☑ Prior to fitting, compare the old part with the new part.
- ☑ Caution: Use extreme caution when reworking sodium-filled hollow valves. Damage to the cavity and sodium leakage must be avoided at all costs.

## 3. FITTING



- ☑ If new seat rings are fitted, these must be shrink-fitted and milled to the correct angle.
- ☑ Used valves may have to be resealed with diamond grinding paste.
- ☑ Check the leak tightness of the valves—either with a vacuum tester or using fuel. When doing so, check to see if fluid is leaking or if the valves are sealing tightly and the fuel remains in the circuit.
- ☑ New valve guides must be reamed to the correct diameter since deformation can occur as a result of pressing in.
- ☑ Prior to assembly, clean all parts and lubricate well.
- ☑ Always use a mounting device to fit new valve stem seals.
- ☑ After fitting the valve spring, make sure it is seated properly—otherwise the valve may shear off if the spring cants.
- ☑ Use new valve collets.
- ☑ If necessary, adjust the valve clearance as specified.
- ☑ For engines with hydraulic valve lash adjustment (hydraulic pushers), wait at least 30 minutes after fitting before starting the engine.
- ☑ Then check the valve depth and adjust if necessary.