CODE OF PRACTICE

Improved Engine Reconditioning Standards

1. CYLINDER BLOCK

1. Old engine block and components should be disassembled and thoroughly chemically cleaned both inside and outside. All core plugs should be removed.
2. Block should be machined to applicable surface finish. Allied components should be machined as required so as to maintain compatibility with the cylinder block. All screw threads should be checked for service ability.
3. All main bearing tunnels should be measured for size, checked for concentricity alignment and remachined or line bored as required.
4. All cylinders should be rebored (or sleeved) and honed to within the limits of oversize, with an appropriate surface finish.
5. The crankshaft should be thoroughly cleaned and inspected for damage. All crank pins and main journals should be checked and if necessary ground to the same relative undersize and finish. One or more crankshaft journals may be built up, reground and finished so as to maintain parity with the other journals.
6. (a) All camshaft profiles should be checked and where rectification is found necessary the profiles should be ground (if permitted by the manufacturer) alternatively, camshaft should be replaced.

   (b) The camshaft and auxiliary shaft journals should be inspected and if necessary be reground or replaced.
7. All connecting rod assemblies (including bolts) should be checked for alignment and integrity. Connecting rod bores should be checked for concentricity and where necessary they should be resized or, alternatively, the connecting rod(s) should be replaced,
8. (a) The cylinder block and components should be thoroughly cleaned prior to assembly. All, plugs should be removed prior to cleaning and replaced with new plugs after cleaning. Non-expendable plugs may be replaced if inspected and are in good condition.

   (b) All running surfaces should be lubricated with an appropriate lubricant.

   (c) All main and conrod bearings to be replaced, and other bearings should be checked and replaced where necessary.

   (d) Timing chains and/or non-metallic gears should be replaced with new. Metallic timing gears should be inspected and may be reused. Timing chain tensioners and chain guides should be replaced where necessary.

   (e) All pistons, rings and pins be replaced with new.

   (f) All cam followers (lifters) may be reused if they are radius ground. In addition, hydraulic type lifters should be dismantled, inspected, serviced, reassembled and tested. If any of these items fail to meet these tests they should be replaced with new.

   (g) All seals and gaskets to be replaced with new.

   (h) The oil pump to be reconditioned or replaced.

   (i) All relevant bolts, nuts, screws, etc., should be tightened to the torque specifications as laid down by the manufacturer.

2. CYLINDER HEAD

1. Cylinder head to be disassembled, and chemically cleaned both inside and out to remove all remaining foreign matter.
2. Cylinder head should be inspected for damage and crack tested and/or pressure tested.
3. In the case of overhead camshaft configurations, the camshaft tunnels should be measured for size, checked for concentricity, alignment and machined or line bored as required.
4. The cylinder head should be refinished to the appropriate surface finishes. All screw threads should be checked for serviceability.

5. All valve guide bores should be inspected and restored to a concentric condition, in relation to the valve seat.
6. All valve seats should be subjected to the following operations.

Integral Valve Seats

Where valve recession has occurred beyond acceptable limits valve inserts should be fitted.

Inserted Valve Seats

Where head cracks are evident in the insert recess, the insert should be removed prior to crack repairs. All defective valve inserts should be replaced. All replacement valve inserts should be fitted in accordance with the appropriate interference fits.

7. Valves should be new or machined, provided that, manufacturers valve height specifications are maintained.
8. All valve springs should be tested for free height and spring force at installed height and valve open height.
9. (a) On O.H.C. assemblies all camshaft profiles should be checked. Where rectification is found necessary the profiles should be ground or replaced.
   (b) Inspect camshaft and auxiliary shaft journals to ensure within specifications. If not, they should be reground or replaced.
10. All rocker arm/shaft assemblies should be completely dismantled, cleaned and inspected for wear and other defects. Components should be machined and/or renewed as necessary.
11. All push rods should be inspected for alignment, damage and wear and replaced as necessary.
12. The head and components should be thoroughly cleaned prior to assembly.
13. Assembly - During assembly the following procedures should be observed.
    (a) All running surfaces should be lubricated with an appropriate lubricant.
    (b) All camshaft and auxiliary shaft bearings/bushes should be replaced as required.
    (c) Timing chains and/or non-metallic gears should be replaced with new. Metallic timing gears should be inspected and may be reused. Timing chain tensions and chain guides should be replaced where necessary.
    (d) All cam followers (lifters) may be reused provided that they are radius ground.
    (e) All seals and gaskets should be replaced with new.
    (f) All relevant bolts, nuts, screws, etc., should be tightened to the torque specifications laid down by the manufacturer.
    (g) All valve retaining components, i.e. colletts, keepers etc., should be inspected for serviceability and renewed where necessary.
    (h) Correct spring installed height should be verified for each valve. Valve spring spacers may be used.