

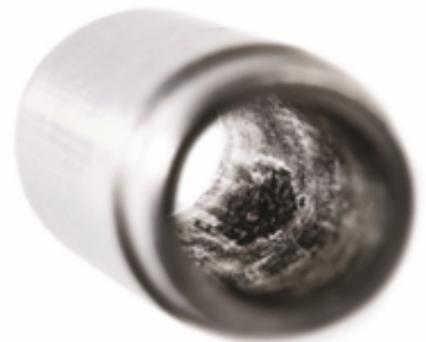


Valve Stem and Valve Guide Failures

1.Excessive Valve Stem and Guide Wear

This can apply to both inlet and exhaust valves but, is probably more prevalent on exhausts. There can be many reasons for its occurrence and, expert advice is usually required. However, the most likely causes are:

- Incorrect stem to guide clearances, usually fitted with too much clearance, resulting in bellmouthing of the guide.
- Excessive carbon packing of the port end of the guide, leading to stem scuffing.
- Scoring and scuffing of the stem due to lack of oil or breakdown of the oil film.
- Abrasive wear from foreign bodies trapped between stem and guide, for example residual carborundum particles after overhaul.
- Temporary lack of coverage by the engine lubrication supply when starting a cold engine in sub-zero temperatures.
- Misalignment of valve guide to valve seat, resulting in high side loading.
- On rocker operated valves, excessive side thrust due to incorrect valve height after overhaul - i.e. valve heavily recessed due to too much metal removal from valve seat and face. Incorrect fitting of special high lift cams which affects the rocker geometry.
- A bent valve stem.
- A badly worn valve tip - this increases side loading.





Valve Stem and Valve Guide Failures

2. Valve Stem Seizure causes

- A Bent valve stem.
- Seizure due to metal to metal contact, due to lack of lubrication or insufficient stem to guide clearance.
- Excessive damage on valve stem.

3. Valve Stem Sticking

Usually cold sticking due to excessive gumming deposits on the stem. Can also be a hot stick due to progressive carbon packing between the stem and the guide. These problems are usually brought about by either worn guides or too much stem to guide clearance. Other causes are:

- Wrong grade of lubricating oil.
- Overloaded engine
- Too much cold running under light load.
- Failure of oil seal leading to the formation of excessive oxidised lubricating oil on the valve stem
- Weak or broken valve springs.

4. Valve Tip Wear

Badly worn valve tips may be the result of one or more of the following:

- Tip matched with worn rocker pad.
- Rocker misalignment.
- Incorrectly hardened tip end.
- Lubrication faulty.
- Valve springs too strong.
- Incorrect timing, leading to the exhaust valve having to open against excessive back pressures.
- A wrong grade of lubricating oil.
- Excessive tappet clearances.

5. Valve Stems Bent

Valve timing slipped or incorrect. Piston to valve collision due to over-speed in valve bounce.