

## Valve Failure Analysis: Impact and Fatigue

Since the least common result of valve failure is the valve itself, it is always necessary to determine the cause of failure prior to replacement of the damaged valves (**Figure 1**).



Figure 1.

### Impact Failure

The illustration in **Figure 2** shows the characteristic appearance of an impact failure.



Figure 2.

*NOTE:* Breakage by impact is a sudden failure. Example: piston-to-valve collision.

### Fatigue Failure

The illustration in **Figure 3** shows the characteristic appearance of a fatigue failure.



Figure 3.

*NOTE:* Breakage by material fatigue happens after thousands of cycles, starting in a small defect and advancing until breakage occurs.

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