

TOSHIBA's MSV Bypass Valve Upgrade offers a unique main stop valve bypass configuration that addresses commonly experienced solid particle erosion (SPE) issues. It's the answer to time and resource-consuming inspections and maintenance of conventional design bypass valves. The multi-hole MSV bypass valve greatly reduces O&M costs, while increasing steam turbine availability. The design dramatically extends bypass valve service life and requires only minor modifications to install.

Upgrades are available for valve sizes from 8 to 13 inches.

The Challenge

Conventional MSV bypass valves are configured in such a way that steam is forced to change direction via a solid-surface impact. This makes these valves highly susceptible to SPE and steam cutting. Increased frequency of unit starts and total runtime on bypass further accelerate this deterioration. Severe erosion can lead to bypass valve failure and solid object damage to the turbine, resulting in costly forced outages.



The Solution

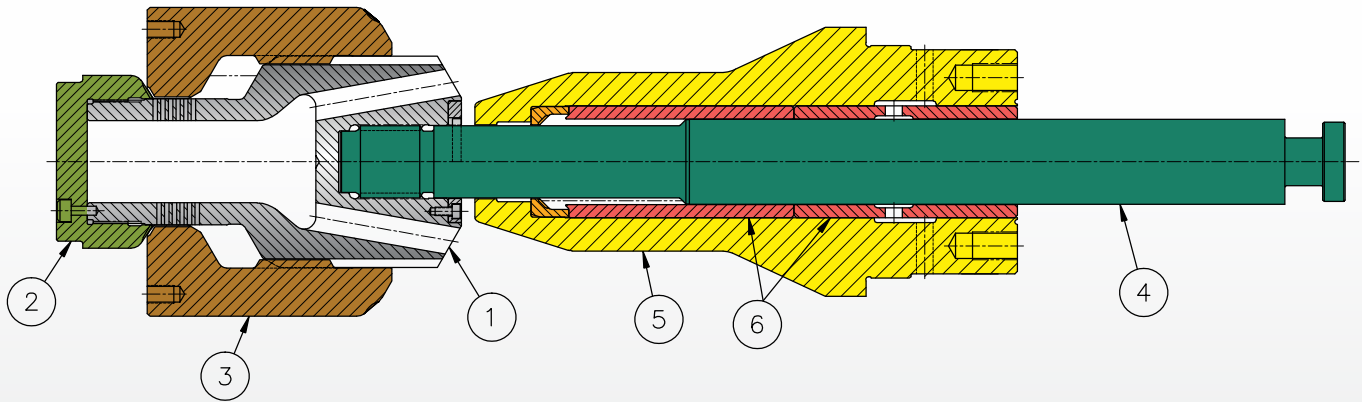
TOSHIBA's improved design redirects the steam path to prevent solid-surface impact, thereby eliminating erosion problems. Stellite coatings in high-wear areas, as well as upgraded valve stem and bushing materials, also ensure worry-free performance.



Proven Toshiba-patented Technology

- Installations range from recent replacements to many dating back more than 20 years
- Hundreds of multi-hole valves serving Toshiba OEM fleet and others
- Fleet average starts on bypass are in excess of 350 times
- Greatest number of starts on bypass—over 1,200





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| ① Bypass valve | ④ Valve stem |
| ② Bypass valve cap | ⑤ Pressure seal head |
| ③ Main valve disc | ⑥ Bushings |

Cost-reduction benefits of TOSHIBA's Multi-hole Bypass Valve Upgrade

- Reduces planned outages to replace or repair parts
- Reduces forced outages due to valve failure
- Eliminates annual bypass valve and stem replacement
- Minimizes valve stem blue blush and scale
- Extends seal head bushing replacement
- Inspection outage intervals are increased

