

MSIV Repair Tool

Liburdi and VoTech Automated Welding Systems



Interchangeable
Process Head

Co-ordinated
Motion

Laser CMM for
Precise Measurement

FireView™
Control Console

Reduce your setup and total repair time with the MSIV Repair Tool.

Our fully automated Main Steam Isolation Valve (MSIV) Repair Tool is the only system that has interchangeable process heads. The GoldTrack VI™ power supply and advanced FireView™ control technology provides co-ordinated motion while inspecting, welding, machining, milling, and grinding the repair area.

This unique system is capable of performing all tasks necessary to refurbish a MSIV in a single setup. A common cage and plug assembly secures the robust boring bar for the tool post to travel axially.

Once installed and aligned, the MSIV Repair Tool remains in a fixed position until the repair process is completed. The FireView™ Control Console provides programming flexibility by allowing multiple screen configurations, specifically designed for each MSIV repair operation.

The MSIV Repair Tool incorporates six different operations:

- Laser CMM Inspection
- Milling
- GTAW Cladding
- Single Point Machining
- Grinding
- Lapping



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Local Station and Remote Station Assemblies

Local Station:

GTVI:

- Up to 600 amps GTAW
- Up to 12 servos
- Ethernet connection with FireView™ Cabinet
- Water cooler and gas controls
- 85 ft long pendant cable
- Additional specs: Refer to GTVI data sheet

FireView™ Control Console:

- Industrial PC with touch screen control interface
- Smart servo drives with position feedback
- Analog and digital camera capability
- Laser CMM controller
- Input power: 3 phases 480 V 50/60 Hz



Remote Station:

Features and dimensions for MSIV repair:

- Multiple slip rings to allow continuous rotation of machine heads
- Secondary industrial touch screen controller
- Quick disconnect hot block for simplified setup

Cage Assembly:

- Mounts on the flange of the MSIV
- Adjustable cage bearing assembly

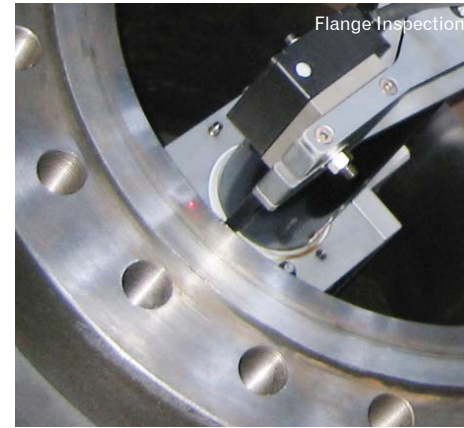
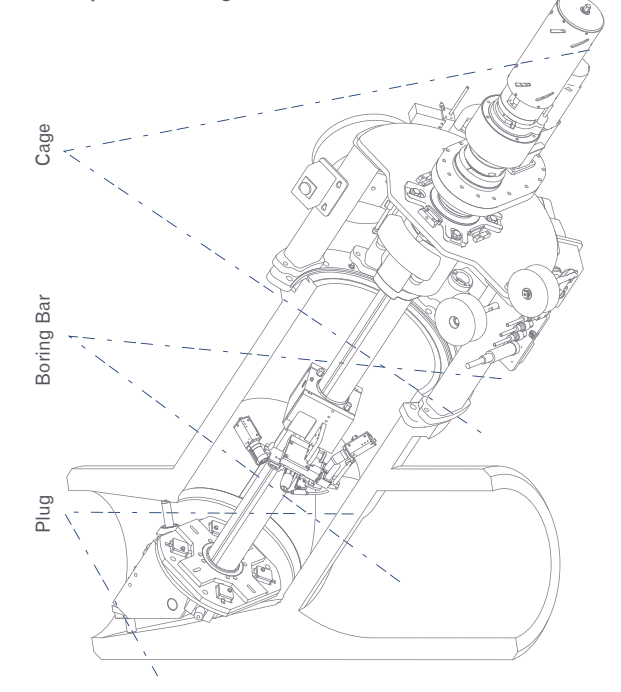
Boring Bar Assembly:

- Secured between Cage Assembly and Plug Assembly
- Hardened, precision ground chrome plated boring bar
- Tool post featuring a unique one bolt locking mechanism that is used to secure all tooling attachments
- Various tool travel ranges available

Plug Assembly:

- Secured in place with adjustable supports, so that allowances can be made for casting variations
- Adjustable plug bearing assembly

MSIV Repair Tool Configuration



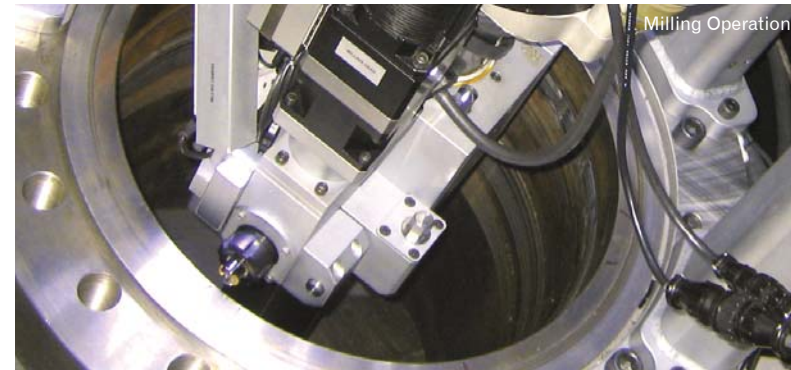
Inspection Head

Features:

- Non-contact laser displacement sensors
- Complete dimensional data report for the valve profile
- Reports include five operations:
- Tooling alignment setup
- Flange
- Valve bore
- Bore guide rib
- Bore guide pad
- All surfaces are measured, recorded, and charted, thus providing a true valve dimensional history.

Specifications:

- Resolution: Measurement Sensor ± 0.0001 "
- Z Axis ± 0.0005 "
- Theta Axis $\pm 0.01^\circ$



Milling Head

Features:

- Used for local repair on internal valve body
- Primarily used to remove material for weld preparation on the guide pads and guide ribs
- Consists of a driven collet chuck equipped with an indexable endmill
- Brushless motor with encoder
- Vision camera with external LED lighting
- Linear gauge with remote digital readout

Specifications:

- Resolution: Manual Plunge ± 0.0005 "
- Z Axis ± 0.0005 "
- Theta Axis $\pm 0.01^\circ$



Weld Head

Features:

- Easily configurable weld head for cladding multiple locations: flange, valve bore, guide rib, guide pad, and seat bore
- Standard GTAW machine torch
- Multiple high resolution cameras with automatic weld lens selection
- Four servos control: AVC, X-Y wire positioners, and wire feeder
- Suitable for carbon steel and hard face alloys

Specifications:

- Current Rating: 300 Amperes @ 100%
- AVC (Arc Voltage Control): 1.5" travel
- Wire Feeder accepts $\varnothing.030$ " to $\varnothing.063$ "



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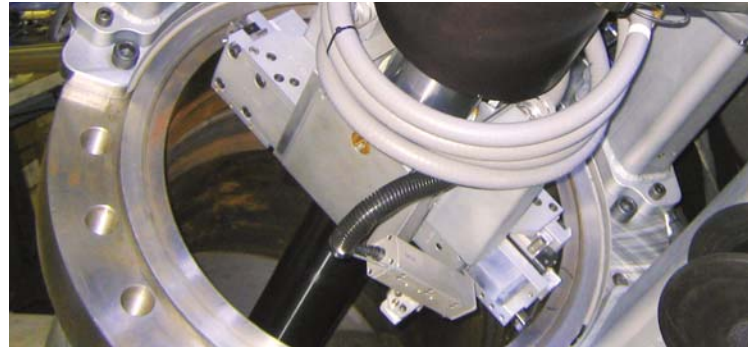
Machine Heads

Features:

- Designed to cover all machining requirements on flange, bore, guide rib, guide pad, and seat bore.
- Dual head system allowing two simultaneously cuts
- Motorized tool cutter (R Axis)
- Vision camera with external LED lighting
- Home position limit switch

Specifications:

- Resolution: R Axis $\pm 0.0005''$
Z Axis $\pm 0.0005''$
Theta Axis $\pm 0.01^\circ$



Grinding Head

Features:

- Grinding head is used to establish a true and good surface on the valve seat.

Specifications:

- Maximum 3" grinding wheel diameter.

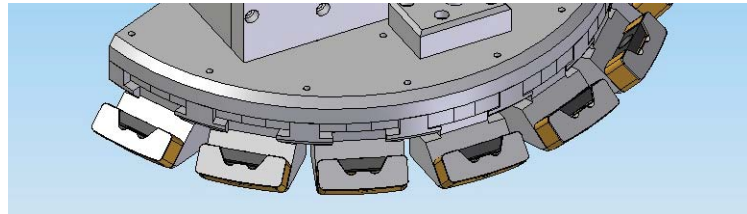
Lapping Heads

Features:

- Extendable lapping head is used for final polishing of the valve seat to desired micro-finish.
- Vision camera with LED light

Specifications:

- Seat angle: 45°



Fireview™ User Interface

- Application specific control interfaces
- Automatic and manual control
- Linkable programs and program library
- Data Logging
- MPEG-4 video recording and playback
- Dual selectable camera views
- Simultaneously collects and displays acquired valve profile data
- Automatic Excel report and graph generation
- Automatic weld lens selection
- AVC and wire feed control
- Motorized wire position control
- Coordinated motion for advanced cuts

