Mov Limited

FR Coating FR Jacket FR Box FR Board

FIREPROOFING

Intumescent shell - Flexible jacket - Fire box - Intumescent board



- Valve actuator
- Cable tray
- Junction box
- Air tank
- Steel structure

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Mov Limited OPERATIONS

Mov Limited

Mov Limited founded in 1997 and the market leader in manufacturing and supplying engineered fire protection enclosures for valve actuators (Electric & Pneumatic). We also manufacture specialized fire protection boards for cable tray and structural steel.

In addition to our quality products, we provide value-added services including design engineering and fabrication and installation supports. We maintain a high ethical and moral standard with regard to our customers, suppliers and employees.
Our manufacturing facility is ISO 9001:2008 and ISO 14001:2004 Certified.

Mov Limited

FIRE PROTECTION REQUIREMENTS FOR VALVE ACTUATORS

Generally the equipment located in or above the identified fire hazardous zones are required to be fireproofed.

These are:

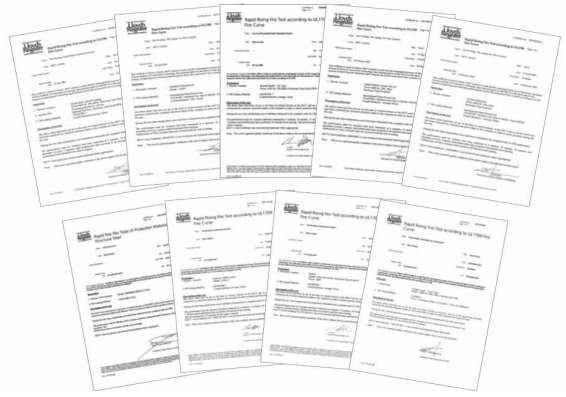
- Emergency valve actuators
- Components of valve actuator's electrical system
- Local control panels
- Air reservoirs
- Power and control cables that pass through the fire hazardous zone

QUALITY CONTROL

Each and every design and manufacturing step is carefully controlled to ensure complete compliance with the Quality Assurance Manual.

Our specific steps include (but not limited to):

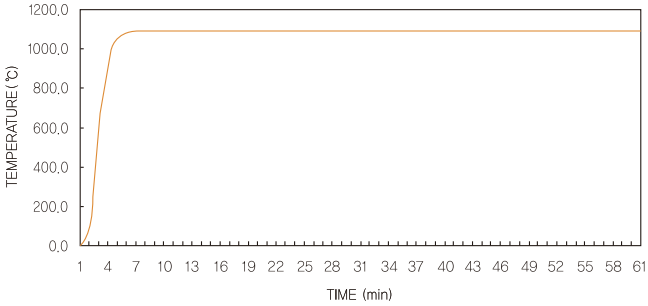
- Raw material
- Parts list compliance and marking
- Cross checking of bill of materials with design drawings
- And others



COMPLIANCE CRITERIA FOR VALVE ACTUATORS

The PFP System is required to be tested at independent internationally recognized fire testing laboratories in accordance with ANSI/UL1709 methodology. This ensures that the actuators are capable of providing a minimum 30 minutes of endurance (while maintaining circuit / control system integrity) in petroleum and hydrocarbon processing facilities both on and off shore.

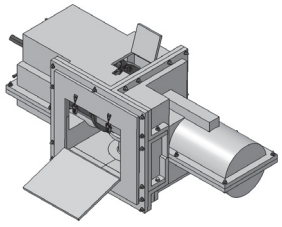
The PFP system should provide the valve actuators an endurance period of 30 minutes under UL1709 methodology.

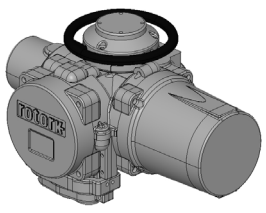


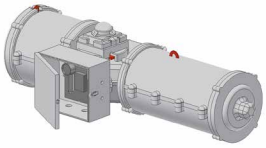
DESIGN SOFTWARE

3D Modeler

CATIA / AutoCAD / AutoDesk Inventor



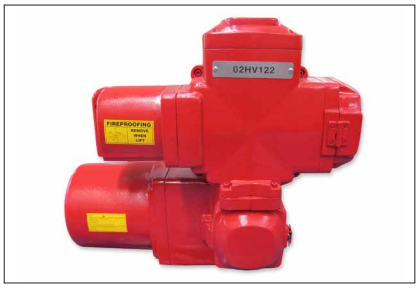




FR COATING

◎ FR COATING (FR SHELL)



FEATURES

- FR Coating is a removable / shell type of intumescent PFP system.
- The removable / shell system is very effective for any kind of valve actuator and equipment.
- The FR Coating consists of 15mm thick epoxy intumescent pre-cut casting with steel mesh reinforcement at mid depth.
- The FR Coating is supplied in pre-engineered pieces which are then assembled onto the valve actuator in the field.
- This completely eliminates the need for transporting the valve actuator to a faraway assembly location at substantial logistics costs, project delays and related complexities.
- FR Coating can be installed on site for existing actuators without any modification of the actuator.
- All FR Coating component pieces are attached using Stainless Steel (SS304) bolts.
- FR Coating may be painted with an approved paint to provide UV resistance and long-term service durability.
- FR Coating component pieces can be "disassembled" to allow maintenance and can be reassembled to resume safe PFP service.

◎ FR COATING (FR SHELL)

ACCESS DOOR

FR Coating Access door is provided on the pushbutton and lamp for easy operation.

MANUAL HANDWHEEL

Manual handwheel and hand / auto declutch lever is located outside of removable intumescent coating.

USES / APPLICATIONS

- Electric actuator
- Pneumatic actuator
- Junction box
- Air tank

INSTALLATION

It is recommended that FR Coating is installed at the site after the valve is installed in pipeline to avoid damages to the intumescent material.
Pre-Engineered FR Coating components can be easily assembled by site technicians.

COMPLIANCE CERTIFICATES

- Lloyd's Register Certified UL1709 hydrocarbon fire
- Jet Fire as per ISO 22899-1

◎ FR COATING (FR SHELL)

MATERIAL DESCRIPTION

MATERIAL	Intumescent epoxy based reinforced panels
COLOR	Grey
GLOSS LEVEL	not applicable
VOLUME SOLIDS	100%
TYPICAL THICKNESS	15mm
CURED DENSITY	1000kg/m3 casting
METHOD OF FABRICATION	Casting

AMBIENT / SERVICE TEMPERATURE TOLERANCE RANGE

- -30°C to +85°C
- -50°C to +150°C (Optional)

SPECIFIC ADVANTAGES

- Designed shape in valve actuator / customized product
- Light weight design
- Easy to install / remove / re-install / maintenance
- Less installation space at site
- Quick delivery terms
- Material used are waterproof, UV stabilized, oil and acid resistant
- Can be installed on existing actuator
- No special tools are required
- Can be re-used in the event of actuator replacement
- If a part fails (i.e. motor), re-coating is not required
- Excellent finishes in decorative grade

FR COATING FOR DRAIN PLUG

Drain plug is installed on the lower explosion-proof equipment such as explosion-proof box, explosion proof conduit. It drains water to avoid condensation inside the equipments.

AMBIENT / SERVICE TEMPERATURE TOLERANCE RANGE

- -30°C to +85°C
- -50°C to +150°C (Optional)

MATERIAL DESCRIPTION

MATERIAL	Intumescent epoxy based reinforced panels
COLOR	Grey
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TYPICAL THICKNESS	15mm
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METHOD OF FABRICATION	Casting

COMPLIANCE CERTIFICATES

- Lloyd's Register Certified UL1709 hydrocarbon fire

FR JACKET

◎ FR JACKET (FIREPROOFING BLANKET)

FEATURES

- FR Jacket is a flexible mattress jacket that consists of four (4) 25mm thick ceramic fiber layers (128kg/m3 density) separated by aluminum foils.
- An angular frame is provided for site installation. The compressed thickness of FR Jacket is 50mm to 60mm.
- It is easily assembled and disassembled on the valve actuator for maintenance purpose. Site installation is possible.
- FR Jacket is pre-fabricated to be easily assembled of the valve actuators at site.
- Several pieces of prefabricated loose pieces are supplied.

ASSEMBLY

Stainless steel 304 (SS304) angle frame is secured and installed on the valve actuator prior to jacket installation. The angle frame is secured with SS304 bolt and nut.
The angle frame is required to protect the limit switches and other accessories.
After the jacket is installed on the angular frame, it is stitched by using PVC coated stainless steel wire. It is rigid enough after installation is completed.

AMBIENT / SERVICE TEMPERATURE TOLERANCE RANGE

- -30°C to +90°C
- -50°C to +600°C (Optional)

ACCESS DOOR

Access door is provided to monitor the solenoid valve, filter regulator, control unit and limit switch without fully removing the jacket from the valve actuator.

USES / APPLICATIONS

- Electric actuator
- Pneumatic actuator
- Junction box
- Cable tray
- Air tank

COMPLIANCE CERTIFICATES

- Lloyd's Register Certified UL1709 hydrocarbon fire
- Jet Fire as per ISO 22899-1

MATERIAL DESCRIPTION

The jacket material is asbestos free.
The outer and inner clothes are PVC coated clothes. The clothes have good resistance against weather and chemical.
Quality of materials is properly selected to produce the jacket based on our long term experiences.

CERAMIC FIBRE	128kg/m3, 25t
NUMBER OF LAYERS	4 layers
ALUMINUM FOIL	40 micron of 3 layers
INNER CLOTHES	Tarpaulin PVC coated clothes, green, 0.35 mm
OUTER CLOTHES	Pro-Sol PVC coated clothes, grey, 0.55 mm
LACING WIRE	PVC coated stainless steel wire, 3 mm
FRAME	SS304, 50L angle
BOLT / NUT	SS304
BAND	SS316
FINAL THICKNESS	50 to 60mm

ADVANTAGES

- Site installation is possible
- Site modification is possible

DISADVANTAGES

- Installation space is required
- Heavier than epoxy intumescent coating system weight

MANUAL HANDWHEEL

Manual handwheel is located outside of removable jacket. It is required when emergency operation is called for.

FR BOX

◎ FR BOX (RIGID BOX)

FEATURES

- FR Box is composite of stainless steel, CSB and intumescent material to protect valve actuators from the fire.
- FR Box is designed for a fire endurance rating for the 30 minutes in accordance with UL1709 fire scenario.
- FR Box is rigid enclosure and good finishes product to meet customer's requirements.
- FR Box is easily disassembled and reassembled for maintenance.
- Toggle clamps are provided on top side for quick disassembly.
- FR Box is an advanced design for pneumatic actuator PFP system.
- Only the top side of the FR Box needs to be removed for quick maintenance work. The top side of FR Box can be disassembled easily by releasing toggle clamps and remove from the body of FR Box.

ASSEMBLY

FR Box can be assembled on site after valve and actuator are installed on pipeline. It is not necessary to disassemble actuator and valve body to install the FR Box.
Each side of FR Box is assembled by bolts and clamps.
Installation space shall be considered for site modification of FR Box.

ACCESS DOOR

Access door is provided for pushbutton and lamp where operation and monitoring is required.

MANUAL HANDWHEEL

Manual handwheel is located inside of FR Box.
Our design ensure that the manual handwheel and hand / auto declutch lever has enough clearance and working space.
Optionally, manual handwheel can be extended to be located outside of FR Box.
The handwheel stem extension work shall be done by actuator manufacturer.

USES / APPLICATIONS

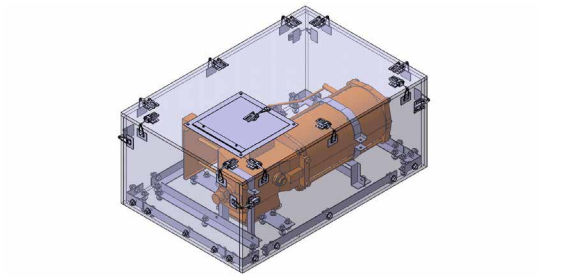
- Electric actuator
- Pneumatic actuator
- Valve body

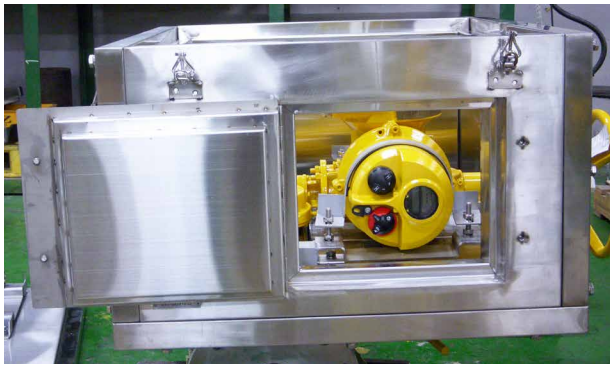
COMPLIANCE CERTIFICATES

- Lloyd's Register Certified UL1709 hydrocarbon fire

MATERIAL DESCRIPTION

BODY	Composite of stainless steel, CSB and intumescent material
BOLT,NUT & CLAMP	SS304
FRAME	SS304





AMBIENT / SERVICE TEMPERATURE TOLERANCE RANGE

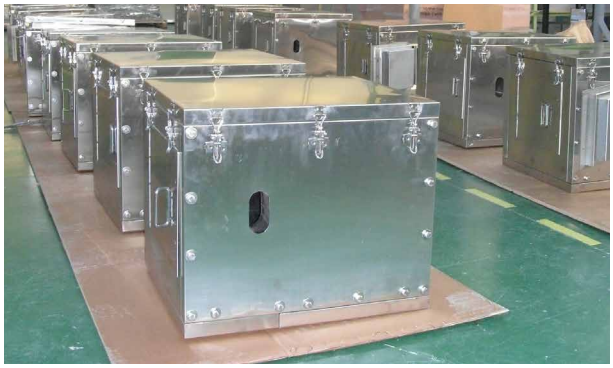
- -30°C to +90°C
- -50°C to +150°C (Optional)

ADVANTAGES

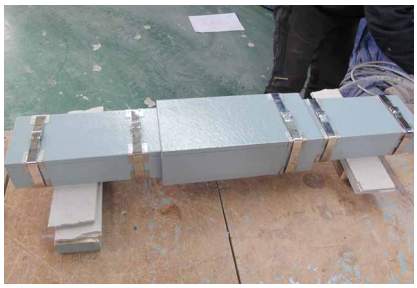
- Can be installed on site
- Good / excellent weather protection
- Rigid and excellent finish
- Simple design

DISADVANTAGES

- Installation space is required
- Site modifications are not easy



◎ FR BOARD (FIREPROOFING REMOVABLE BOARD)

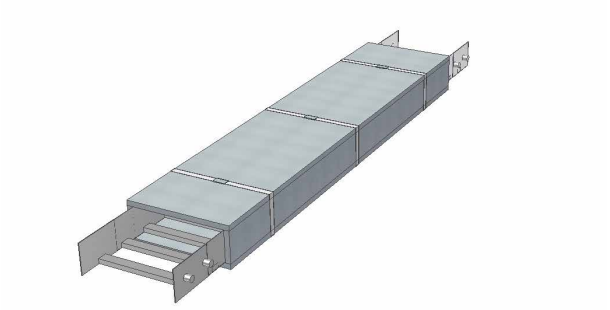


FEATURES

- If cable tray is required for fireproofing, it should be considered that the fireproofing is removable for future cable installation. The spray type fireproofing is not acceptable for the purpose.
- FR Board is good fireproofing product to meet customer's requirements.
- FR Board is press-molded Calcium Silicate Board with intumescent epoxy.
- FR Board can be installed after cable tray and cables are completely installed. Any modification is not required of existing cable tray.

MATERIAL DESCRIPTION

- Composite of CSB (Calcium Silicate Board) and intumescent material
- Dead Load: 22kg/m2 (Approximately)



USES / APPLICATIONS

- Cable tray
- Conduit

AMBIENT / SERVICE TEMPERATURE TOLERANCE RANGE

- -30°C to +85°C

COMPLIANCE CERTIFICATES

- Lloyd's Register Certified UL1709 hydrocarbon fire
- Lloyd's Register Certified ASTM E-119

ADVANTAGES

- Easy to install
- Easy to removal for maintenance
- Modification is not required of existing cable tray
- Site modification is easy
- Special tool is not required
- Additional steel jacketing is not required

JUNCTION BOX FIREPROOFING



FEATURES

- Intumescent fireproofing box is available for junction boxes.
- The junction boxes can be installed in the fireproofing box.
- Intumescent fireproofing box has access door to access the junction box without removing fireproofing box.
- Intumescent fireproofing box can be removed for maintenance of junction box.
- Incoming and outgoing cables should be considered additional fireproofing by customer.

DIRECT INTUMESCENT COATING (OPTIONAL SYSTEM)

- Direct intumescent coating on the junction box body can be applied as an option.
- Both of EExd and EExe junction box can be protected with intumescent coating.
- The junction boxes should be sent to our factory for coating.

APPLICATIONS

- EExd junction box
- EExe junction box

COMPLIANCE CERTIFICATES

- Lloyd's Register Certified UL1709 hydrocarbon fire
- Lloyd's Register Certified ASTM E-119

MATERIAL DESCRIPTION

- Composite of CSB (Calcium Silicate Board) and intumescent material.

AMBIENT / SERVICE TEMPERATURE TOLERANCE RANGE

- -30°C to +85°C
- -50°C to +150°C (Optional)

ADVANTAGES

- Easy to install
- Easy removal for maintenance
- Special tools are not required

JET FIRE RATED REMOVABLE PFP FOR STEEL STRUCTURES

PFP FOR AREAS WHERE JET FIRE AND BLAST TEST COMPLIANCE ARE REQUIRED



FEATURES

- Removable type of intumescent castings are available for jet fire and blast overpressure rated areas.
- The removable type of intumescent casting can be installed on existing steel structure without extensive surface preparations.
- No necessary to remove existing paint from the steel structures.
- Removable types of intumescent castings are made in site-specific designed molds.
- H beam, I beam, deck, ceiling and any kinds of equipment can be protected by removable type of intumescent castings.
- Installation spaces should be considered for the free from obstruction at mold design stage.
- Structure or equipment drawings are necessary to develop mold designs.
- Installation detail drawings are provided for site installations.
- Site survey is required to manufacture removable type of intumescent casting. After site surveying, manufacturing drawings can be produced.
- Stainless steel perforated mesh is installed in mid depth of removable type of intumescent casting.
- Finished feature is decorated grade.

USES / APPLICATIONS

- Steel structures
- Vessel supports
- Valve bodies
- Riser clamps
- Hatch
- Pad eye
- Flange
- Firewall

COMPLIANCE CERTIFICATES

- ISO 22899-1 Jet fire with Blast test 2.0 bars
- Lloyd's Register Type approval Certificate
- DNV-GL Type approval Certificate

MATERIAL (INTUMESCENT) DESCRIPTION

- Intumescent epoxy 20mm thickness
- 20kg/m2

MATERIAL (FLEXIBLE JACKET) DESCRIPTION

- Ceramic fibre: 128kg/m3, 25t
- Number of layers: 4 layers

AMBIENT / SERVICE TEMPERATURE TOLERANCE RANGE

- -30°C to +85°C
- -50°C to +150°C (Optional)

ADVANTAGES

- Removable type
- No necessary to remove of existing paint
- Rigid feature after installation
- Decoration grade finish

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