



- **Valve Remote Control System**
- **Anti Heeling System**
- **Valve**
- **Actuator**

Valve Remote Control System

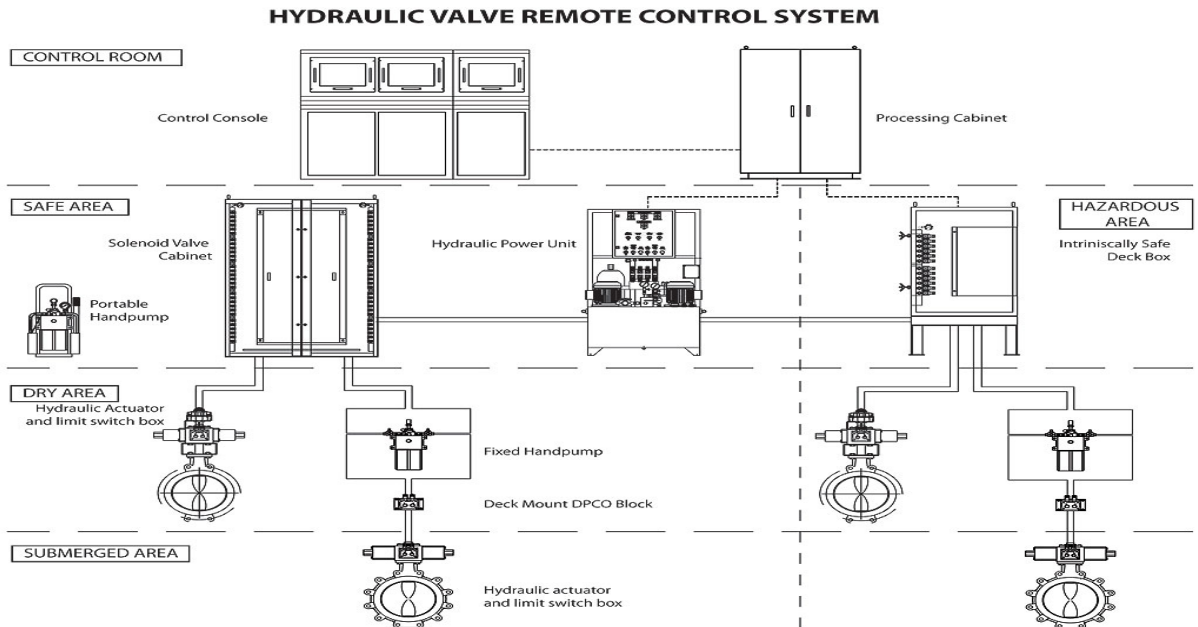
> General

Valve Remote Control System is applied for remote control of valves and designed primarily for use on board ship. The remote valves to be provided with hydraulic actuator powered from hydraulic power unit and controlled by solenoid valves. All remote valve actuators are designed to be capable of local manual operation.

> Standard Specification

Oil Tank Volume	100~1000 Liters	
Electric Motor	Voltage - 3Ø440V 60Hz	
	Enclosure - IP44	
Pump Capacity	2.6 ~ 12.1 Liters	
Accumulator	32 Liters	
Max. Working Pressure	105 bar	
Pressure Switch Setting	Pump	Start at 90 bar
		Stop at 105 bar
Relief Valve Setting	120 bar	
Alarm	Level, Temperature, Low pressure & High pressure	

> Type



> Main Components

1. Control Console

Electric Control Console for centralization control of all valves Included in the system. The Control Consoles are designed and Manufactured to include Cargo Handling and Monitoring systems.



2. Hydraulic Actuator

Rack & Pinion Hydraulic Actuators are designed to the operation of Various type of valves including butterfly valve, globe valve, angle valve And other special valves and have been proved high efficiency and reliability Of Performance.



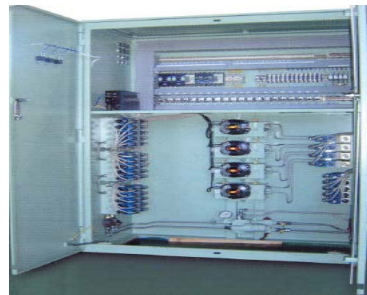
3. VPI

Position indicator for valve open/close is designed to indicate the position of hydraulically actuated valves. in general, the valve position indication to be obtained with the limit switch or potentiometer mounted on the valve directly respectively. Both On/Off and Throttle types are available.



4. Solenoid Valve Cabinet

Solenoid Valve Cabinet is designed to install of solenoid vales regulating the oil flow to each actuator according to the requirements and to contain complete manifold systems consisting of manifolds, solenoid valves and electric control components. The solenoid cabinet shall be installed in safety area.



5. Emergency Hand Pump Unit

Portable hand pump, when open/close operation of hydraulic remote valve cannot be done due to damage of hydraulic piping, electric power failure or malfunction of hydraulic pump, etc., the operation can be done manually by the hand pump



6. Hydraulic Power Unit

HPU is designed to operate hydraulic pressure to open/close operation of the hydraulically operated valve. HPU consists of main electric motor & hydraulic pump. All components are selected to ensure high reliability and low noise. Accumulator will be provided.

Anti Heeling System

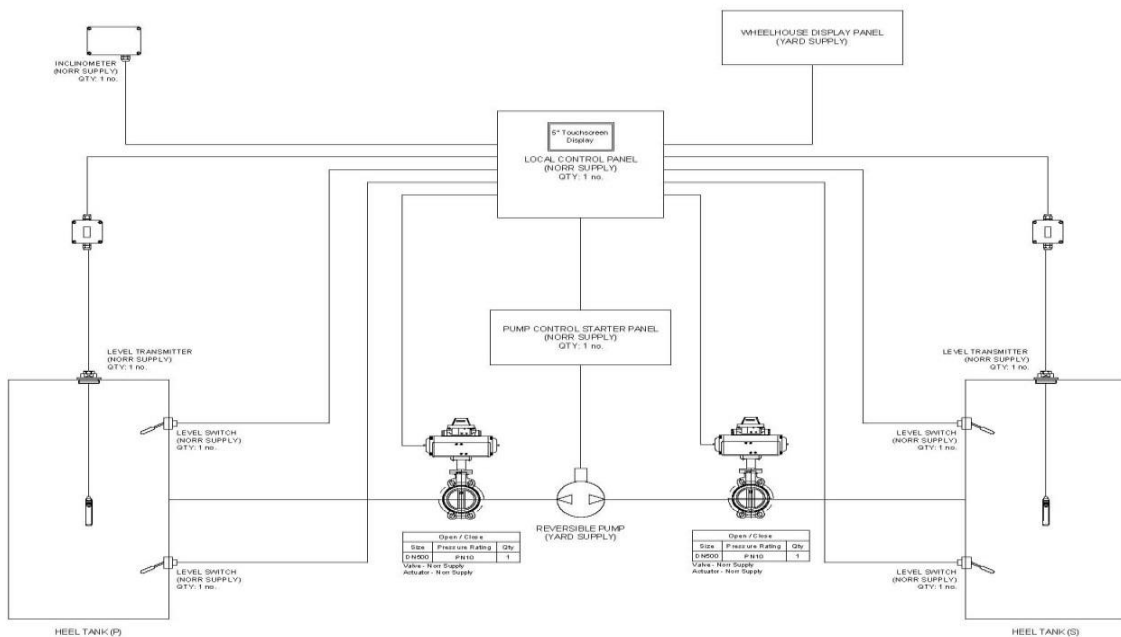
> General

Anti heeling system is designed to automatically balance the vessel in upright position by pumping ballast water of ballast tank during loading and unloading. The main components of system are main control panel including inclinometer, pump starter panel, reversible propeller pump and pneumatic actuator valve.

> Requirements

- The inclination angle, fault signal and system status shall be centrally controlled and monitored.
- The control console shall be provided with a manual emergency OFF switch for ships which are operated only under supervision
- Systems which are also operated without supervision shall be provided with a manual emergency OFF switch and an automatic stop device which shuts down the system independently of the control when the maximum permitted angle of inclination is reached.

> Type of anti heeling system



> Main Components



Main control panel

This system can be automatically and manually controlled by the panel. - Because the relevant information of system is indicated and control buttons are installed on front panel, the crew easily controls the system and checks each component simultaneously.



Inclinometer and Tilt Switch

The electronic two-axis inclination sensor continuously detects the vessel's heeling angle and provides this data to the PLC for the process control. The use of a two-axis inclinometer makes the installation of the system very flexible, as the axis used can be simply changed by software setup. The tilt switch is necessary for the automated unattended operation of the system. It provides the safety feature of stopping the system safely when a critical angle is reached.



Reversible Propeller Pump

The reversible propeller pump is available in sizes from DN250 up to DN400 to cover wide capacity ranges. The robust design allows easy maintenance and space saving installation. The pump is completely supplied with marine type electric motor and motor starter cabinet.



Butterfly valve with Pneumatic actuator

The butterfly valve is operated by pneumatic actuator and normally installed between pump and ballast tank. Valve condition is indicated on main control panel.



Level switch

- In order to prevent damage of pump, the level switch could be installed at low Level of each water ballast tank upon request.

VALVE

OUR VALVES ARE SUITABLE FOR ONSHORE, OFFSHORE AND SUBSEA APPLICATIONS

Our Quality Management System and products are certified to all standards including ISO 9001, API 6D, API 6DSS, API 6A, API 17D, CE-PED, CE-ATEX, EN 14141, IEC 61508, ISO 17025. We are an approved manufacturer with over 100 major oil and gas operators and EPC's worldwide.

We comply and meet the most stringent customer's requirements for the qualification of our products through extensive testing such as fire safe, low temperature down to -125°C, fugitive emission, endurance, high pressure gas, TAT and others, QC inspection at our supply sources and 100% incoming inspection for all components and materials arriving to our plants.

NORR SYSTEM KOREA aspires to deliver on-time world-class quality products managed by a highly experienced management team, continued investment, customer focus and continuous alignment to the dynamics driving the global markets.

> INDUSTRIES

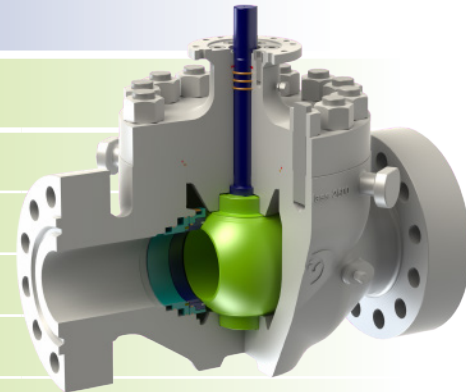
Oil & Gas
 Pipelines & Processing Plants
 Refining & Petrochemical
 LNG
 FPSO & Shipbuilding



> Product Range & Benefits (BALL VALVE)

TOP-ENTRY BALL VALVE

SERVICE	ASME CL. 150-600	ASME CL. 900	ASME CL. 1500	ASME CL. 2500
Standard	2"-60"	2"-48"	2"-36"	2"-16"
Low temp. down to -125°C (DT)	2"-60"	2"-48"	2"-36"	2"-16"
Subsea	2"-60"	2"-48"	2"-36"	2"-16"
Underground	2"-60"	2"-48"	2"-36"	2"-16"
High temp. +220°C to +400°C (DT)	2"-36"	2"-36"	2"-24"	2"-12"

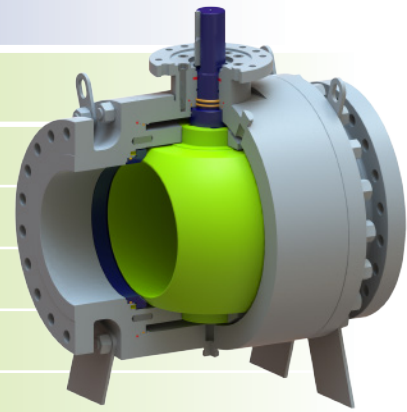


BENEFITS OF THE TOP-ENTRY DESIGN

- > **Full in-line maintenance** in vertical or horizontal position. The bolted construction allows disassembly on site for inspections and possible repairs. Clearing the bonnet off the valve allows free access to the ball and the seats, which can simultaneously be taken out with special maintenance tools.
- > **Reduced number of potential leak paths.**
- > After maintenance, the valve can be **fully retested without pipeline pressure** (for DIB-1 Valves) (DPE Valves).
- > Sized to **withstand external loads from the pipeline** even when the bonnet, the ball and the seats are removed for maintenance.
- > Can be welded directly onto the pipeline assembly.
- > Available for all industries and applications.

SIDE-ENTRY BALL VALVE

SERVICE	ASME CL. 150-600	ASME CL. 900	ASME CL. 1500	ASME CL. 2500
Standard	2"-60"	2"-48"	2"-36"	2"-16"
Low temp. down to -125°C (DT)	2"-60"	2"-48"	2"-36"	2"-16"
Subsea	2"-60"	2"-48"	2"-36"	2"-16"
Underground	2"-60"	2"-48"	2"-36"	2"-16"
High temp. +220°C to +400°C (DT)	2"-36"	2"-36"	2"-24"	2"-12"

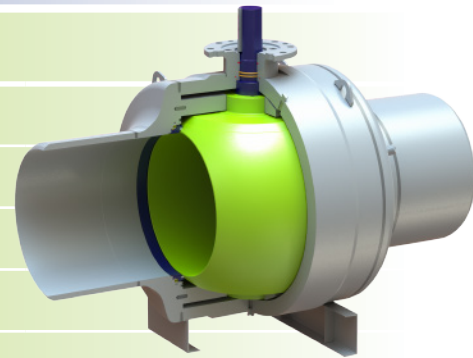


BENEFITS OF THE SIDE-ENTRY DESIGN

- › Most **common and popular design** as it can be easily **removed from the pipeline** for maintenance due to bolted design.
- › **Most competitive design** of all the ball valves in terms of cost and delivery.
- › The split body construction allows the use of forged materials in various grades of CS, SS and high alloys, thus **suitable for the most severe service conditions**.
- › **Large inventory** of parts kept available in-house.
- › Available for **short delivery** 16 weeks or less.
- › Available for all industries and applications.

FULLY-WELDED BALL VALVE

SERVICE	ASME CL. 150-600	ASME CL. 900	ASME CL. 1500	ASME CL. 2500
Standard	2"-60"	2"-48"	2"-36"	2"-16"
Low temp. down to -125°C (DT)	2"-60"	2"-48"	2"-36"	2"-16"
Subsea	2"-60"	2"-48"	2"-36"	2"-16"
Underground	2"-60"	2"-48"	2"-36"	2"-16"
High temp. +220°C to +400°C (DT)	2"-36"	2"-36"	2"-24"	2"-12"



BENEFITS OF THE FULLY-WELDED DESIGN

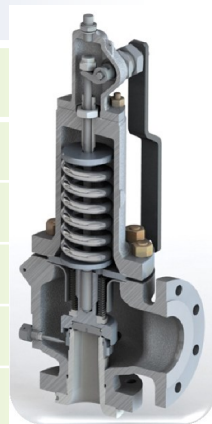
- › 3-piece design welded body **reduces the number of potential leak paths**.
- › Allows for **reduction in weight**, especially if the welded end version is selected.
- › The split body construction allows the use of forge materials in the various grades of CS, SS and high alloys, thus **suitable for the most severe service conditions**.
- › **Compact design** available with weld end/weld end connections.
- › Alternative option to the side-entry bolted body.
- › **Typically used on gas** transmission pipeline.
- › Available for all industries and applications.

> Product Range (SAFETY VALVE)

SMU-7000

Media : gas and liquid

Size inlet	: from 1" to 8"
Size outlet	: from 1-½" to 12"
Ratings	: up to class 2500
Temperature range	: from -267°C to 750 °C
Set pressure range	: from 0,4 bar to 414 bar
Overpressure	: gas 3% or 10%, liquid 10%



> Standards: ASME Sect.VIII, API 526, EN ISO 4126-1 (special constructions upon request)

SMS-7100

Flanged, spring loaded, direct acting, full nozzle safety relief valves for steam service (ASME Sect.I).

Media : Steam

Size inlet	: from 1" to 8"
Size outlet	: from 2" to 12"
Ratings	: up to class 2500
Temperature range	: up to 600 °C
Set pressure range	: up to 414 bar
Overpressure	: 3% or 0,14 bar



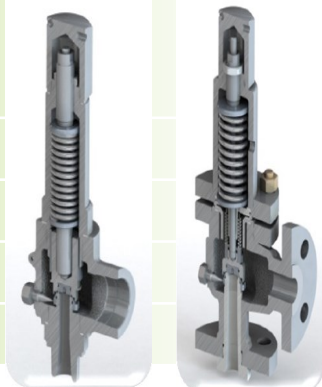
> Standards: ASME Sect.I, EN ISO 4126-1 (special constructions upon request)

SMFN-7000,SU-7000

Screwed and flanged, spring loaded, direct acting, full nozzle safety relief valves.

Media : gas, steam and liquid

Size inlet	: from ½" to 1"
Size outlet	: from 1" to 1 ½"
Ratings	: up to API 6000 or ASME 2500
Temperature range	: from -200°C to 400 °C
Set pressure range	: from 0,8 bar to 400 bar (for gas), up to 1500 bar for liquid
Overpressure	: gas, steam and liquid 10%



> Standards: ASME Sect.VIII, EN ISO 4126-1 (special constructions upon request)



6DSS-0018

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Actuator

< Product >

1. Pneumatic Actuator

Pneumatic actuators are specifically designed to respond to your demanding needs on automation valve market. We can provide a wide range of torque outputs to suit quarter turn ball, butterfly, plug valves and dampers for complete valve automation solutions.

> Specification

Torque range : 3.8Nm~1,878Nm

Rack & pinion design

Single acting or Double acting

Pressure range

- Max working pressure : 10Bar

Temperature range

- Standard : -20°C~80°C

- Option : -35°C~80°C(low)

-20°C~150°C(high)

90 Degree standard adjustable -5°~+5°(travel stopper)

All moving parts are lubricated at the factory for long-life cycle of the actuator

Mounting

- Top/side : VDI/VDE 3845 NAMUR standard

- Bottom : ISO 5211 standard



Torque range : 1,507Nm~5,022Nm

Scotch yoke design

Single acting or Double acting

Pressure range

- Max working pressure : 10bar

Temperature range

- Standard : -20°C~80°C

- Option : -35°C~80°C(low)

-20°C~150°C(high)

90 Degree standard adjustable

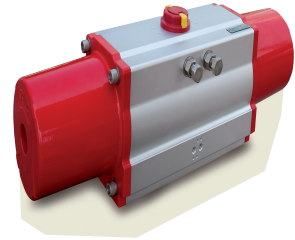
-5°~+5°(travel stopper)

All moving parts are lubricated at the factory for long-life cycle of the actuator

Mounting

- Top/side : VDI/VDE 3845 NAMUR standard

- Bottom : ISO 5211 standard



2. Electric Actuator

Electric Actuator is newly designer and invented for small size valve automation

Like ball, butterfly plug and even dampers. Small, light and compact design, high

Torque and various control options will meet your specification requirements.

Electric actuator provides high technical service & quality products for your automation system.

> Specification

Quarter-turn actuator for 60Nm

Enclosure : weather proof - IP67

Motor power : DC 24V, AC 110/220V, 1PH, 50/60Hz, ±10%

Standard 4 limit switches - 2 for operation, 2 for extra(dry contact)

Paint : polyester powder coating

Limit switches for easy and tight setting

Manual handwheel

ON/OFF or Modulating

ISO 5211 mounting base



Quarter-turn actuator for 80Nm~3,000Nm

Enclosure : weather proof - IP67, IP68

explosion proof - Ex d IIB T4(ATEX)

Motor Power : DC 24V, AC 110/220V, 1PH, 50/60Hz, ±10%

AC 220/380/440/460/480V, 3PH, 50/60Hz, ±10%

4x travel limit switches(standard) - except HQ-008/010

2x torque limit switches(standard) - except HQ-008/010

Reversible fan cooling motor

Declutchable handwheel

ON/OFF or Modulating

ISO 5211 mounting base



3. Hydraulic Actuator

Hydraulic Actuator is specifically designed for marine and offshore applications. Focused on compact, simple, rugged and long lasting rack and pinion design philosophy. Wide Range from 250NM to 26000NM. Material Range from Standard Carbon steel with Options for Stainless Steel316 material.

Features specifically

- > **Unique** and simple design with built in bleed valve.
- > **Compact** with high torque output.
- > **Reliable** and rugged Rack and Pinion design used by many other manufacturers worldwide.
- > **Operate** in Sea air & Sea water.
- > **Simple** speed regulation.
- > **Easy** adaptation of major quarter turn valves.
- > **High quality** steel grade from G8 countries.
- > **Unlimited** mounting possibilities with adjustments for final closing and opening positions.
- > **High quality** painting specs meeting specifically to demanding Marine and offshore environment.
- > **Wide range** of accessories and blocks to complete Marine and Offshore Applications.



> Specification

KEY REFERENCE DATA (Model : BT 200 S ~ BT 6000 S)

Optimal Working Pressure	50 ~ 135 BAR (725 Psi to 1958 Psi)
Torque Output	80 NM @ 130 BAR ~ 2310 NM @ 130BAR
Burst Test Pressure	540 BAR (7900 Psi)
Total Dry Weight	19kg ~ 220kg
Oil Volume	39cc ~ 975cc
Temperature Range	-20 deg C to + 80 deg C
Angle of Rotation	90 deg +/- 3 % (Travel Stop setting on both ends)
Hydraulic Medium	200 cSt (cSt = cP • fluid density) (centistroke = cSt and centipoise = cP)

KEY DIMENSIONS

Shaft Size (mm)	17 ~ 55
Shaft Depth (mm)	30 ~ 53

4. Heavy-duty pneumatic actuator

Torque range : 495Nm ~ 750,000Nm

Scotch yoke design

Symmetric or Canted yoke design

Single acting or Double acting

Pressure range

- Max working pressure : 10bar

Temperature range

- Standard : -20°C ~ 80°C

- Option : -35°C ~ 80°C (low)

-20°C ~ 150°C (high)

90 degree standard adjustable -5° ~ +5° (travel stopper)

Safe piston guide bar

Easy setting indicator

Spring rod guide

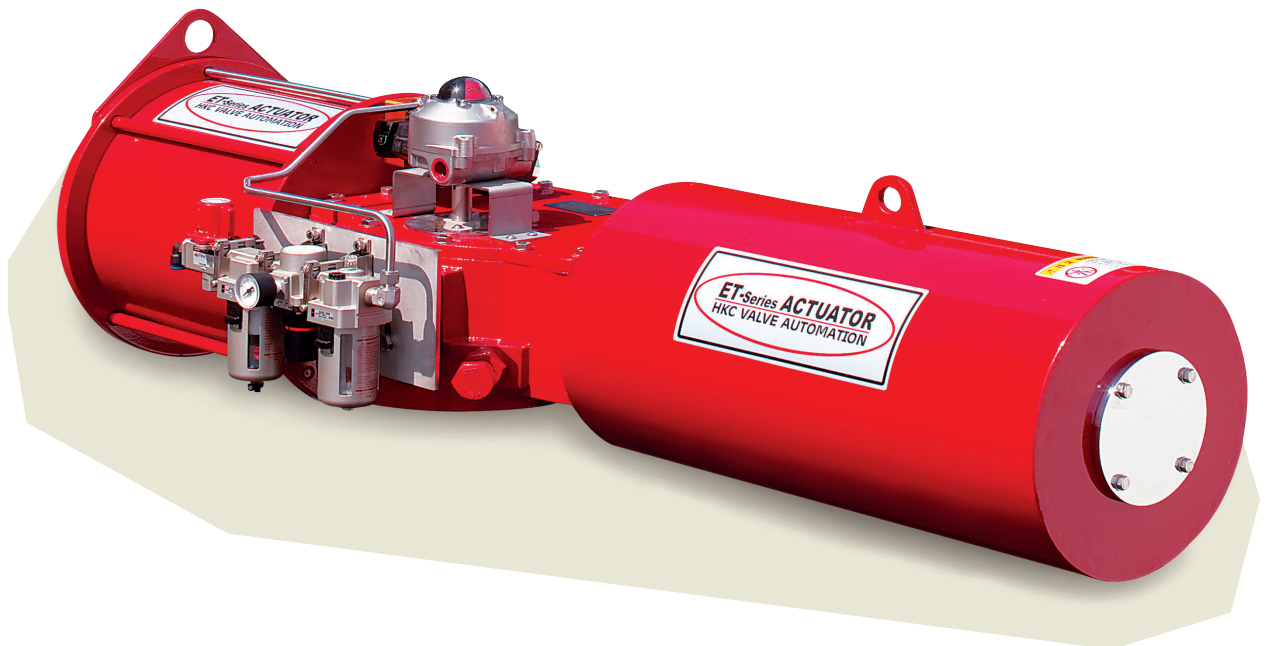
Compact air tubing(option)

- Built-in pipe and in/out air block in both end of a cylinder cover

Manual override

- Jack screw override(option)

- Hydraulic override(option)





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