



# City of Santa Fe, New Mexico



## SOLE SOURCE REQUEST AND DETERMINATION FORM

This sole source request form **must** be submitted to the City of Santa, Purchasing Division for authorization, determination and processing by the Chief Procurement Officer (CPO).

*Please ensure to complete this form in its entirety - (\*) must be completed.*

\*Date:

\*Prepared By:

\*Title:

\*Vendor Name:

\*Address:

\*City:

\*State:

\*Zip Code:

\*Description of Goods/Service to be procured: **Valves with electrical actuators, including installation**

\*Estimated Cost:

Term of Contract:   
One (1) to Four (4) year from award

**\*Sole Source Request Justification Questions 1-3.**

- 1. Explain the purpose/need of purchase. Ensure to include a thorough scope of work for the services, construction or items of tangible personal property (if this is an amendment request to an existing contract, attach current contract).**

This expenditure is for seven pinch valves, and 5 electric valve actuators, plus their installation. These valves are used in the headworks building and are used with the grit pumping system. Grit is a difficult material to pump since it is a thick slurry of sand, seeds, and other dense particles. The pinch valves are specialty valves that allow closing without binding when used with a grit slurry. These valves must be present so that the grit pumps can be removed from service for maintenance or replacement. The anticipated functional life of the equipment is 20 years. Lead time for delivery of the equipment is 14 – 17 weeks.



# City of Santa Fe, New Mexico



2. Provide a detailed explanation of the criteria developed and specified by the department as necessary to perform and/or fulfill the contract.

The contractor has affirmed sole source for the services, construction or items of tangible personal property (*Attach memo from vendor*). Provide documentation of due diligence for other possible vendors/contractors to provide the requested services/goods proved unsuccessful; or

**Other:** explanation of the reasons, qualifications, proprietary rights or unique capabilities (*unique and how this uniqueness is substantially related to the intended purpose of the contract*) of the prospective contractor that makes the prospective contractor *the one source* capable of providing the required professional service, service, construction or item(s) of tangible personal property. (Please do not state the source is the “best” source or the “least costly” source. Those factors do not justify a “sole source.”) *Unique and how this uniqueness is substantially related to the intended purpose of the contract.*

Valve actuators are used throughout the facility to both remotely operate valves and to provide valve position information to our SCADA system for remote monitoring of valves. We use ROTORK valve actuators at PRWRF. We use this manufacturer exclusively so that we can stock spare parts and are familiar with the maintenance requirements for this equipment without having to stock parts for multiple manufacturers’ equipment. ROTORK is exclusively represented by MISCO Water/TW Associates, in the state of New Mexico. The pricing provided by MISCO Water includes the valves, actuators, shipping, and installation.

3. Explain why other similar professional services, services, construction or item(s) of tangible personal property *cannot* meet the intended purpose of the contract.

This is proprietary equipment. Other equipment will require stocking a separate set of replacement parts and training of maintenance personnel on this separate piece of equipment. Substituting an “as equal” piece of equipment would not be in the best interest of the facility or the City.



# City of Santa Fe, New Mexico



**\*Approvals:**

Based on the above facts, the City of Santa Fe Purchasing Officer has made the determination that the justification for a Sole Source procurement is in accordance with the State Procurement Code, Section 13-1-126 Sole source procurement., NMSA 1978 and shall be posted for a 30-day period prior to award.

For

10/05/22

\_\_\_\_\_  
Fran Dunaway, CPO                      Date  
Purchasing Officer for the  
City of Santa Fe

**Pursuant to the State Procurement Code, Section 13-1-126 Sole source procurement., NMSA 1978, the 30-day posting period of the Notice of Intent to Award this Sole Source request was met and no obligation to the award to the above referenced contractor were received. *This Sole Source determination will be valid for a period of one (1) year from the date of the award.***

\_\_\_\_\_  
Fran Dunaway, CPO                      Date  
Purchasing Officer for the  
City of Santa Fe

**\*Required Attachments:**

- \*Letter from Contractor acknowledging they are the only source (on their business letterhead and signed by the head of business or financial operations),*
- \*Quote from sole source Contractor*
- \*Agenda Item to be presented to City Council if over \$60,000 for Professional Services and \$60,000 for Goods and Non-Professional Services*



October 3rd, 2022

Carlos Casias  
 Maintenance Supervisor  
 City of Santa Fe Paseo Real WWTP

Subject: City of Santa Fe Paseo Real WWTP  
 Headworks Grit Pinch Valves replacement

Dear Mr. Casias:

MISCO Water is pleased to offer the City of Santa Fe a complete furnish and installation quotation for the replacement of QTY of 5 Motor Operated Flanged Pinch valves and QTY of 2 Manual Flanged Pinch valves located in the Paseo Real WWTP Headworks building. The scope of supply includes all labor and materials required to remove and disconnect the existing pinch valves and to install, new flanged pinch valves with Actuators and start-up & commissioning. The scope of supply is outlined in further detail in the table below.

Item	Description
1	QTY of 5 – 6” Full Bore Enclosed Flanged Flowrox Pinch valves, CI body, Nitrile Rubber sleeve, rated for 150 psi with Rotork IQ 12 open and close actuators. QTY of 2 – 6” Manual Full Bore Enclosed Flanged Flowrox Pinch valves, CI body, Nitrile Rubber sleeve, rated for 150 psi with manual actuator.
2	Submittals, Shop Drawings and O&M Manual
3	Freight to site
4	All labor and materials needed for Installation is included: <ul style="list-style-type: none"> <li>- Site measurements to ensure proper installation</li> <li>- Removal of existing 6” pinch valves from the piping.</li> <li>- Installation of new pinch 6” pinch valves</li> <li>- Piping connections including new filler flange fittings and, gaskets to connect new pinch valved to existing piping</li> <li>- On-site actuator start-up and electrical assistance by MISCO Water</li> <li>- Excess material to be placed in owner’s onsite dumpster</li> <li>- Exclusions:               <ul style="list-style-type: none"> <li>• Electrical work of disconnecting of the existing actuators and connecting the of the new actuators not included</li> <li>• CID permits by others</li> <li>• Coatings of existing piping and new valves are not included</li> <li>• Work to be performed during normal working hours.</li> </ul> </li> </ul>



	<ul style="list-style-type: none"><li>• Replacement or upgrades of existing electrical gear, equipment, conduits, wire, etc.</li><li>• SCADA programming</li><li>• Bypass Pumping</li><li>• Upgrade of existing concrete pad</li><li>• Haul-off and disposal of existing valves and actuator</li><li>• Permits, Fees, engineered drawings</li><li>• Seismic calculations or Seismic Upgrades</li><li>• Third party inspection or testing</li><li>• Hazardous material handling or disposal</li><li>• Bonds</li><li>•</li></ul>
--	--

---

ALBUQUERQUE

GOLDEN

FOOTHILL RANCH

LAS VEGAS

PLEASANTON

TEMPE

651 Corporate Circle #100 • Golden, CO 80401 • T 303-309-6150 • F 303-309-6154

[www.miscowater.com](http://www.miscowater.com)



The lead times and construction schedule for the outlined scope of supply are as follows:

- 3-4 weeks from date of agreement with the City of Santa Fe for custom shop drawings (full submittal package to be provided later for informational purposes)
- 12-14 weeks from date of approved shop drawings for shipment of new pinch valves and actuators and needed pipe fittings
- Installation and Start-Up upon delivery of valves and fittings. Exact timing will be coordinated with City staff

The complete price for labor and materials outlined in the scope of supply table above and enclosed valves product data sheet is **\$142,512.**

The pricing is valid until December 31<sup>st</sup> 2022.

Please note the pricing only includes the parts and installation work specifically outlined above. Any additional replacement parts and associated installation work beyond the scope of supply listed above is excluded and MISCO Water reserves the right to reprice should additional replacement parts or site work be needed.

The pricing outlined above does not include New Mexico Gross Receipts tax. The quoted scope of work is based on standard wage rates and insurance policies. MISCO Water reserves the right to reprice our scope of work, should additionally wage, insurance requirements or bonds be deemed necessary by the City.

We trust that you will find this offering complete, but please let us know if you have any additional questions regarding the proposed scope and pricing.

Thank you for your consideration and we look forward to discussing this offering with City staff in more detail in the future.

Nick Lucas  
Stefan Oreshkov

MISCO Water TW Associates  
720-526-7397  
[nlucas@miscowater.com](mailto:nlucas@miscowater.com)  
[soreshkov@miscowater.com](mailto:soreshkov@miscowater.com)  
480-415-7846

# Heavy duty Flowrox™ pinch valves

## Series PV, PVE, PVE/S and PVS

Flowrox™ PV, PVE, PVE/S and PVS heavy duty pinch valves are designed for shut off and control applications involving abrasive or corrosive slurries, powders or granular substances.

In the open position, the valve is full bore with no flow restrictions. During closing, two pinch bars squeeze the valve sleeve shut on the center line. Bubble tight shut-off is provided even if solids have built up on the sleeve wall.

Flowrox control valves are designed for demanding control applications in which conventional valves encounter problems with wear due to increased turbulence. Controllability can be further improved, i.e. linearized and widened, with conical sleeves and smart positioners.

- PV** The open body pinch valve is designed for non-hazardous media, lower pressure, and operating temperatures than the enclosed body. This design isolates vibration and tolerates minor misalignment of the pipeline. It is also light-weight and easy to service.
- PVE** The enclosed body valve is the most common body type for Flowrox pinch valves. Its enclosed design prevents premature sleeve deterioration and protects the sleeve from the environment, making it extremely safe to operate.
- PVE/S** PVE/S includes extra stem and body seals to provide a secondary containment of the fluid in the valve and to prevent leakage to the outside environment from the valve body.
- PVS** The structure of PVS encases all moving parts of the valve. It is optimized for high pressure applications and for aggressive and toxic mediums. The PVS structure has no rising parts.

### Benefits

- Improved process efficiency
- Improved customers' productivity
- Accurate control
- Ease of maintenance
- Extended service intervals

### Features

- 100% tight shut-off
- When compressed, any crystallized particles flake off the sleeve surface.
- Full bore: Ensured free flow of the medium and less pumping energy is required.
- Improved controllability with conical sleeve results in linear control curve.
- Only the sleeve is in contact with the medium and is the only replaceable part. Can be easily changed on site.
- High corrosion resistance and flexible sleeve.



### Sizes

- DN 50 - 800/2" - 32"
- Bigger sizes on request

### Working pressure

Up to 100 bar / 1500 psi

### Pressure classes

- PN 1, PN 4, PN 6, PN 10, PN 16, PN 25, PN 40, PN 64, PN 100

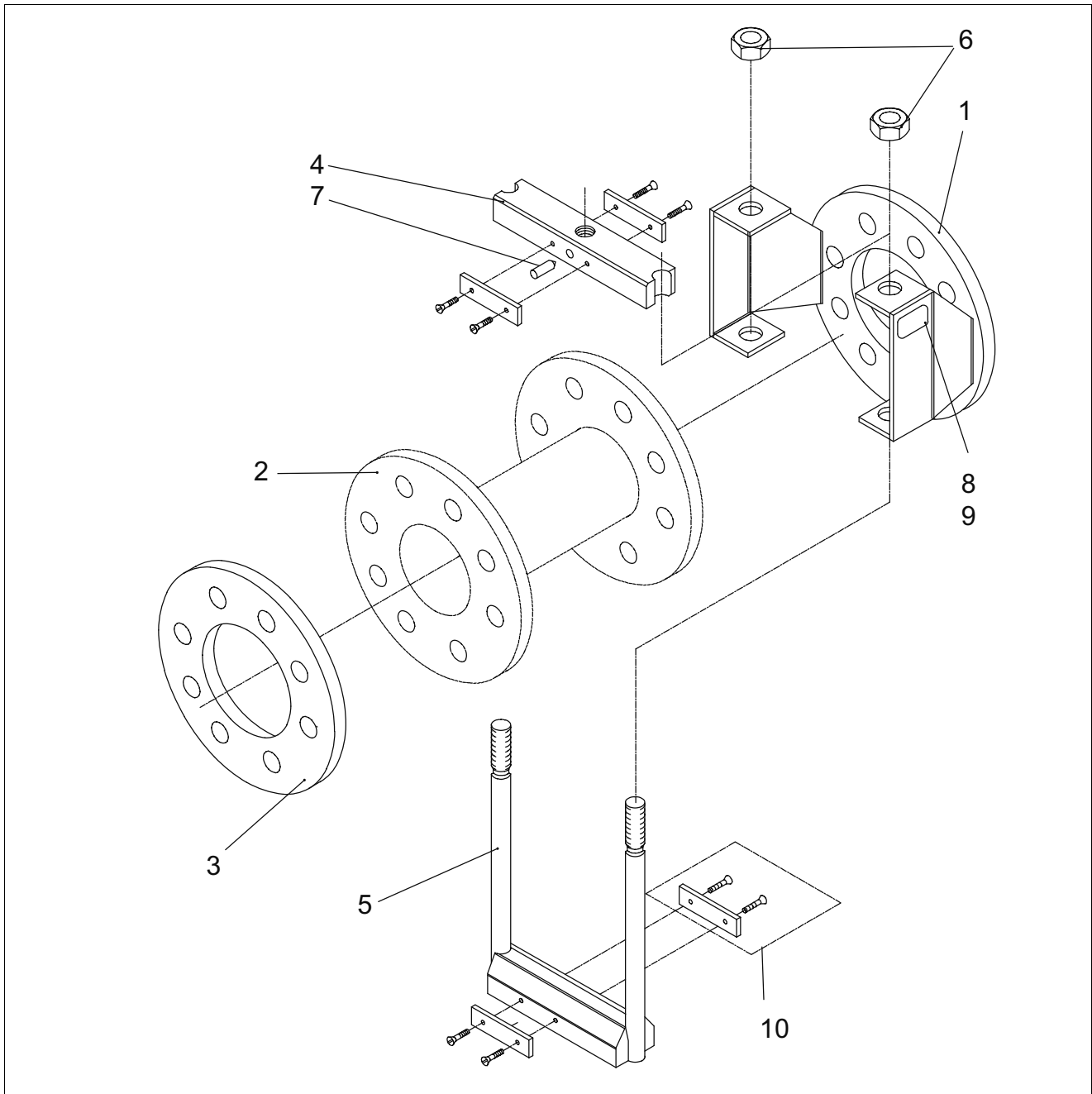
### Materials

- Cast iron / Ductile iron
- Welded steel
- AISI 316
- Aluminium
- Polyurethane / Polyamide

### Flange drillings

- DIN PN 10, DIN PN 16, DIN PN 25, DIN PN 40,
- ASME/ANSI 150, ASME/ANSI 300
- BS TABLE D, AS TABLE D, AS TABLE E
- JIS 10K, JIS 16K
- Others on request

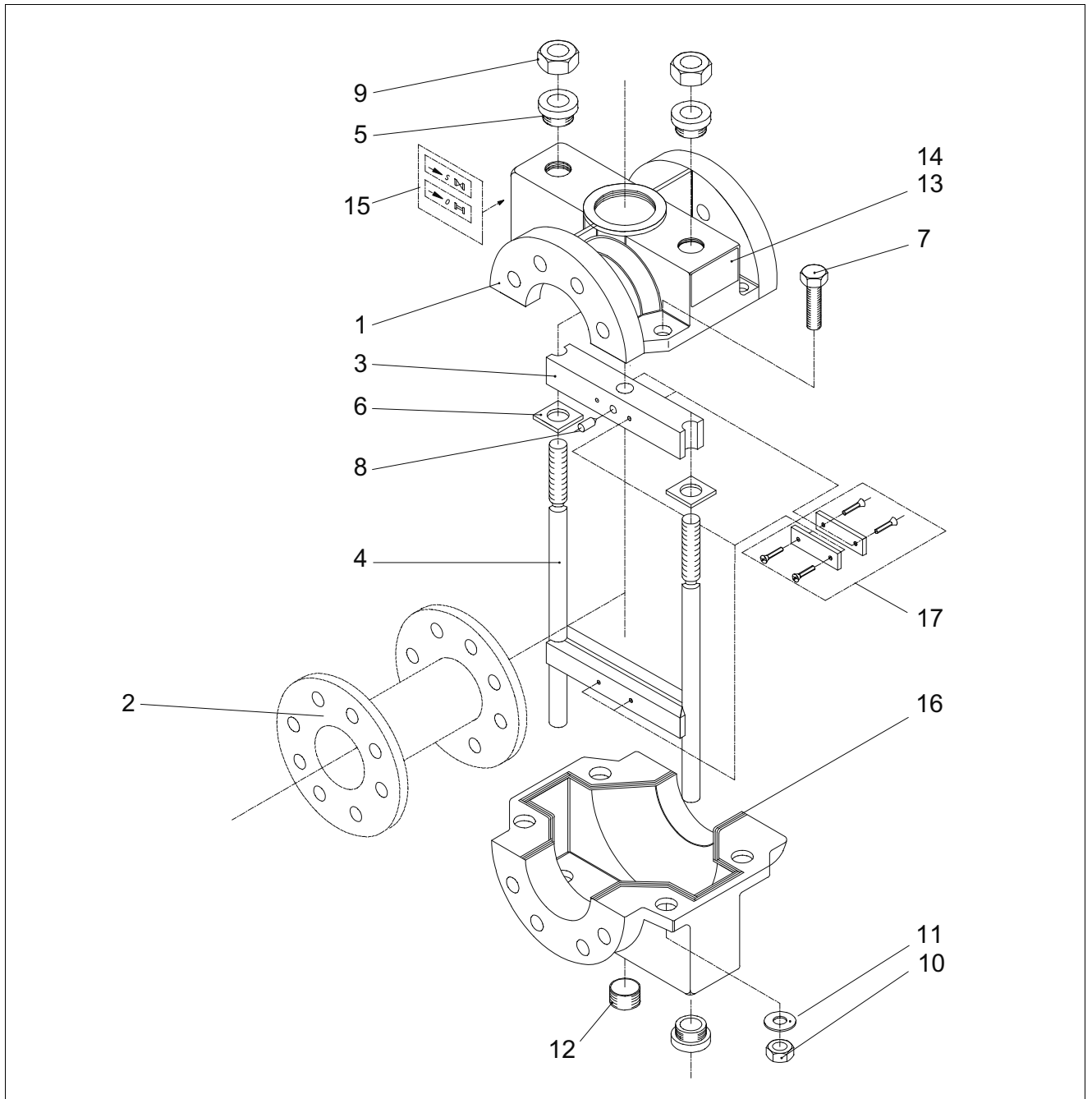
## Exploded view and parts list, type PV



Part	Description
1	Valve body
2	Sleeve
3	Flange
4	Upper pinch bar
5	Lower pinch bar
6	Hex nut
7	Set screw
8	Tag plate
9	Drive screw
10	Fixing set

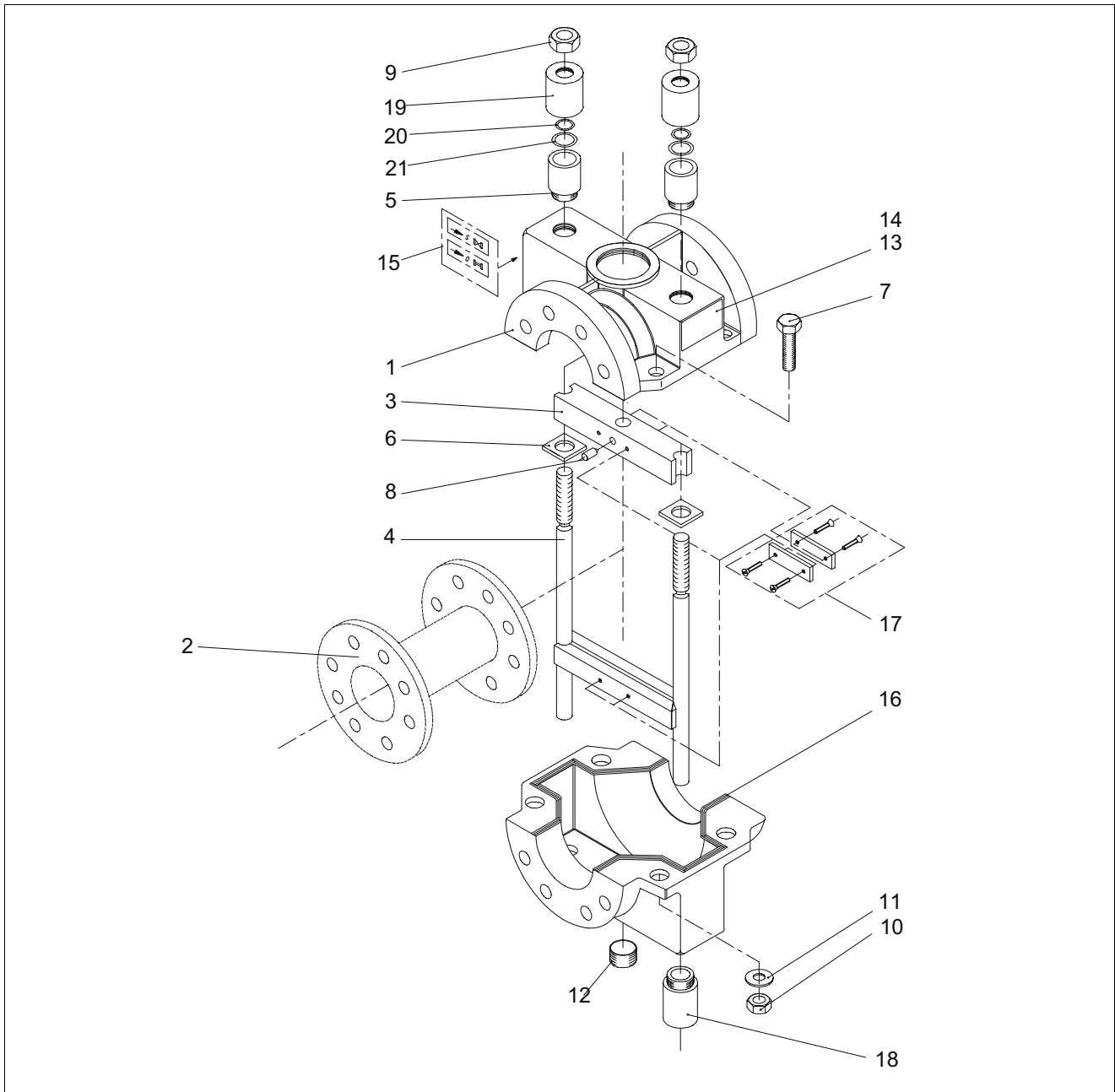


## Exploded view and parts list, type PVE



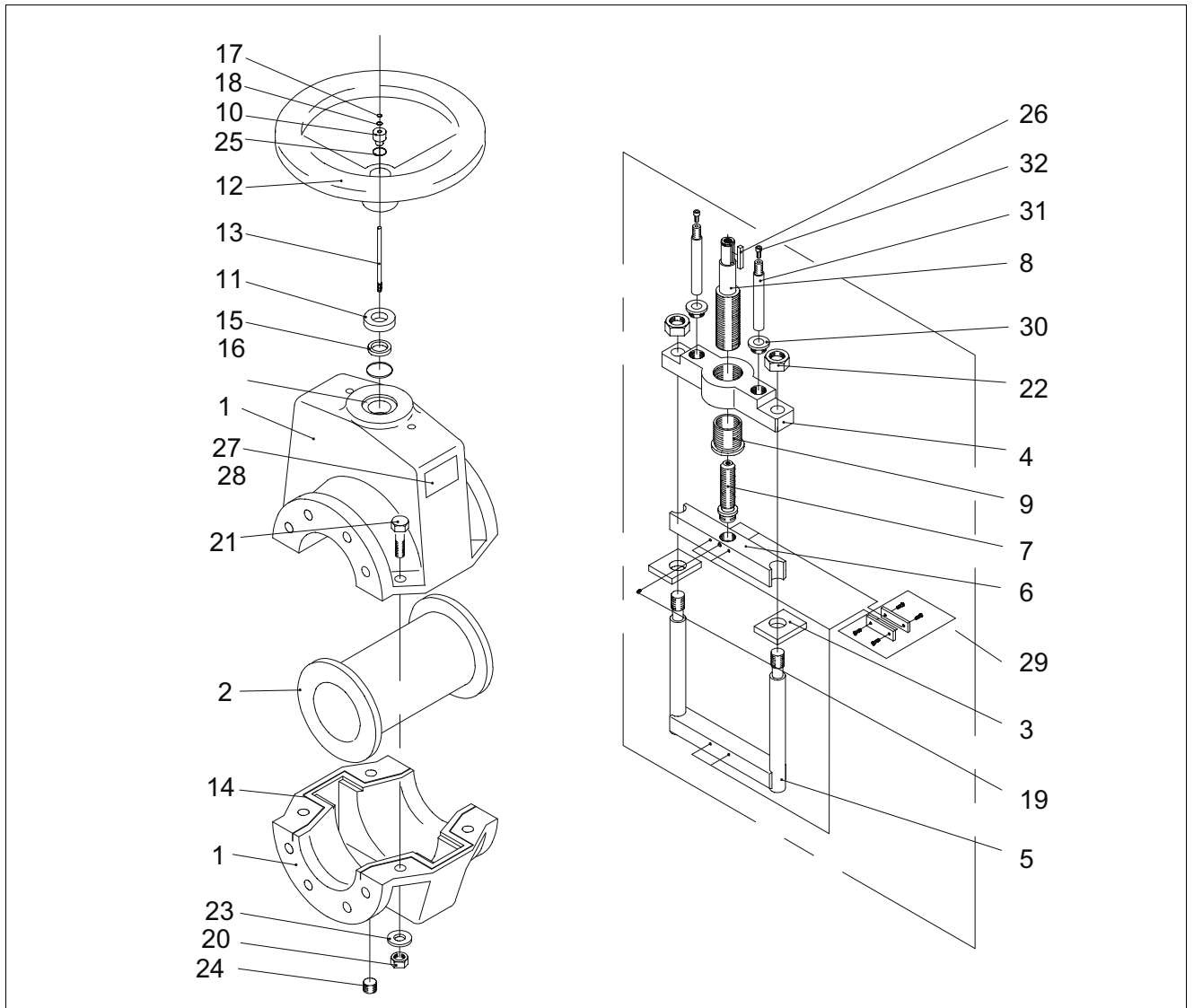
Part	Description	Part	Description
1	Valve body	10	Hex nut
2	Sleeve	11	Washer
3	Upper pinch bar	12	Plug
4	Lower pinch bar	13	Tag plate
5	Bushing	14	Drive screw
6	Guide plate	15	Sticker
7	Hex screw	16	Sealing
8	Set screw	17	Fixing set
9	Hex nut		

## Exploded view and parts list, type PVE/S



Part	Description	Part	Description
1	Valve body	12	Plug
2	Sleeve	13	Tag plate
3	Upper pinch bar	14	Drive screw
4	Lower pinch bar	15	Sticker
5	Bushing	16	Sealing
6	Guide	17	Fixing set
7	Hex screw	18	Bushing
8	Set screw	19	Cover bushing
9	Hex nut	20	Sealing
10	Hex nut	21	Sealing
11	Washer		

## Exploded view and parts list, type PVS



Part	Description	Part	Description
1	Valve body	17	Sealing
2	Sleeve	19	Set screw
3	Quide	20	Hex nut
4	Attachment frame	21	Hex screw
5	Lower pinch bar	22	Hex nut
6	Upper pinch bar	23	Washer
7	Pinch bar stem	24	Plug
8	Handwheel stem	25	Locker
9	Stem nut	26	Wedge
10	Bushing	27	Tag plate
11	Bushing	28	Drive screw
12	Handwheel	29	Fixing set
13	Indicator pin	30	Bushing*
14	Sealing	31	Guide bar*
15	Sealing	32	Hex socket head*
16	Sealing		

\* Not in all sizes

## Technical specifications

### Type:

Heavy duty PV, PVE and PVS type pinch valves.

### Sizes:

PV: DN 80 - 800 / NPS 3" - 32"

PVE, PV/S, PVS: DN 25 - 800 / NPS 1" - 32"

### Temperature range:

-50°C...+160°C / 32°F...+210°F

### Pressures classes:

PV: 25 bar / 375 psi

PVE, PVE/S, PVS: 0 - 100 bar / 0 - 1500 psi

### Actuators:

- Manual
- Manual with gear
- Pneumatic
- Electric
- Hydraulic

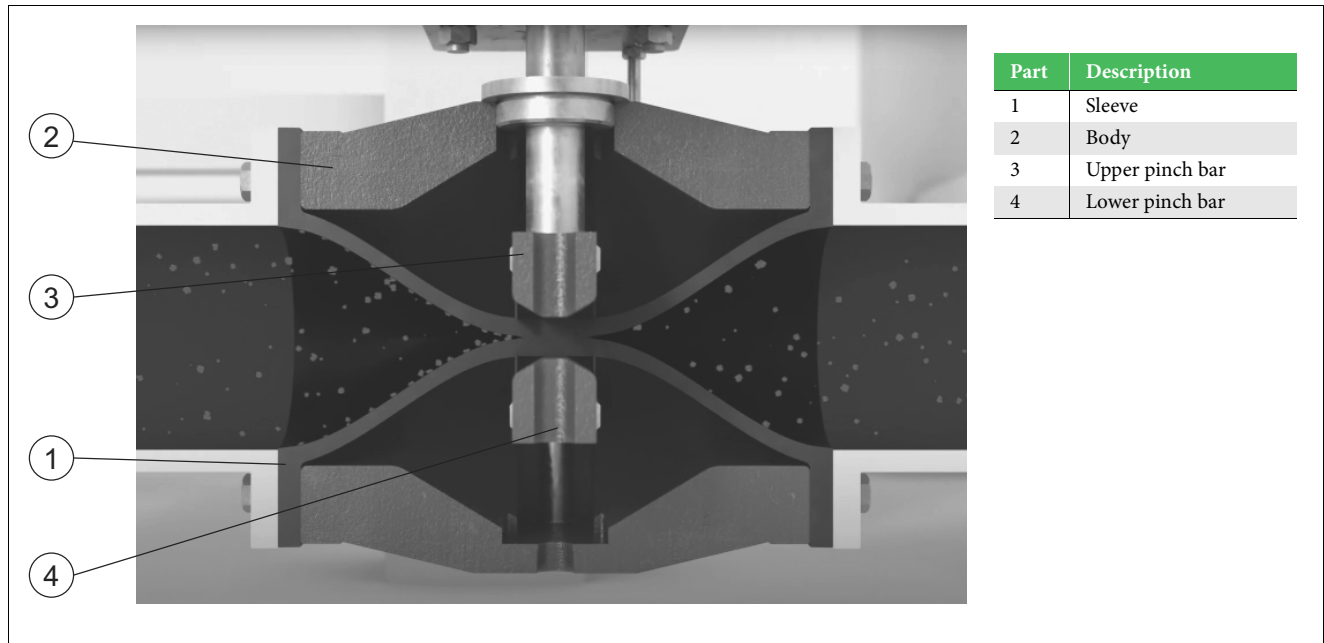
### Construction materials:

Body material:

- Cast iron / Ductile iron
- Welded steel
- AISI 316
- Aluminium

Sleeve material:

- Polyurethane / Polyamide
  - SBRT = Styrene butadiene
  - EPDM = Ethylene propylene
  - NR = Natural rubber
  - NBR = Nitrile
  - CSM = Hypalon
  - EPDMB = Green liquor sleeve
  - CR = Chloroprene
  - IIR = Butyl
  - NRF = Foodstuff natural rubber
  - NBRF = Foodstuff nitrile
  - HNBR = Hydrogenated nitrile
  - FMP = Fluorine rubber
- Additional features:\*
- /M = Flowrox SensoMate sleeve
  - /PU = PU-coating inside the sleeve
  - /VAC = Vacuum sleeve
- \* Some restrictions apply.

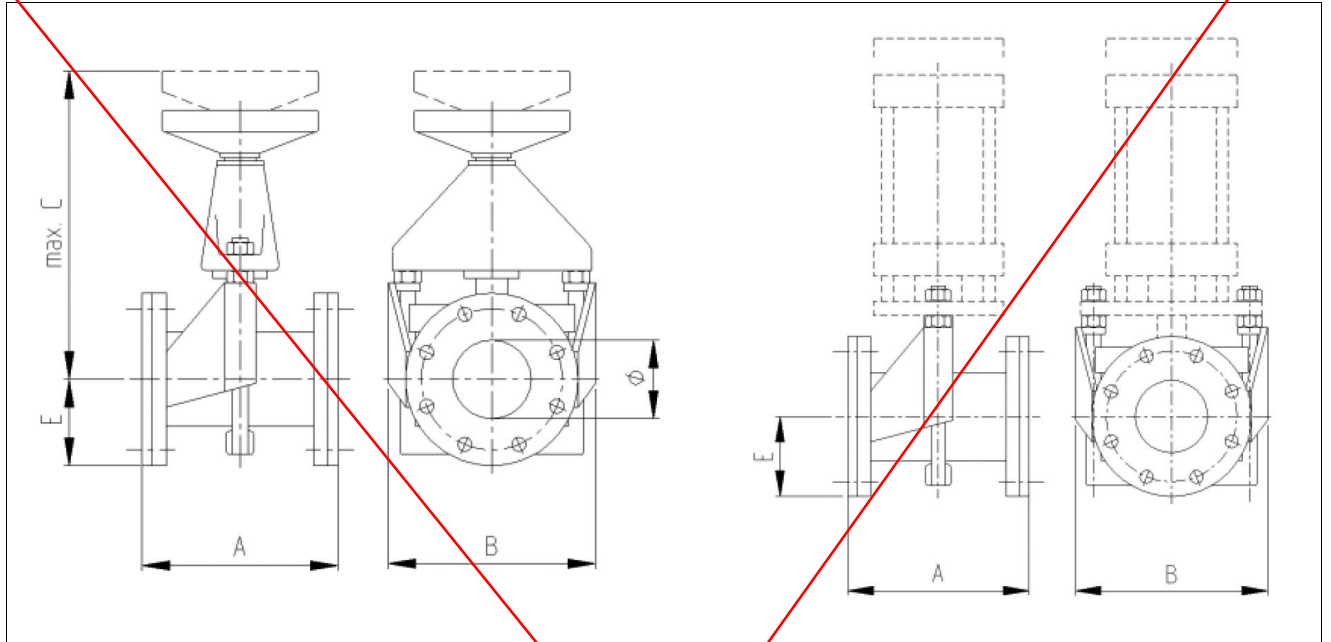


The operating principle of Flowrox pinch valves is simple. In the open position, the valve is full bore with no flow restrictions. During closing, two pinch bars squeeze the valve sleeve shut on the centerline. The sleeve is naturally wear-resistant and when particles hit the sleeve's rubber surface, the energy is absorbed and released when the rubber bounces back.

Heavy duty pinch valves provide bubble tight shut-off even if solids have built up on the sleeve wall. When compressed, any crystallized particles flake off the sleeve surface. The full bore structure ensures free flow of the medium.

The construction and materials of the three main components (sleeve, body and actuator) can be tailored to suit your process conditions.

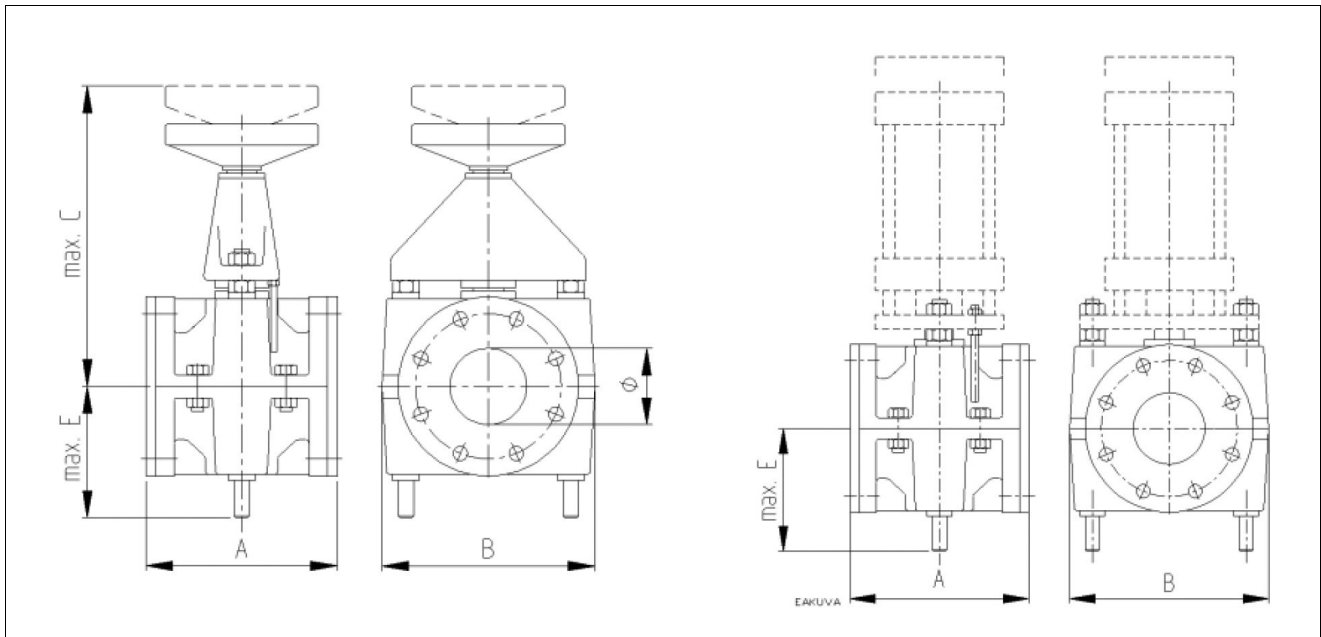
## Dimensions, PV valves



Valve size (PV) M&A	PN (bar)	A	B	C	E	Weight Manual valves (kg)	Weight Automatic valves (kg)
80	1-25	200	235	370	100	22	14
100	1-25	250	265	410	110	29	16
125	1-25	310	325	465	135	46	23
150	1-16	375	381	560	143	67	36
200	1-16	500	461	690	170	88	47
250	1-10	625	545	865	210	137	85
300	1-6	750	704	1020	250	167	100

Valve size (PV) M&A	PN (PSI)	A	B	C	E	Weight Manual valves (lb)	Weight Automatic valves (lb)
3	15-365	7.9	9.3	14.6	3.9	49	31
4	15-365	9.8	10.4	16.1	4.3	64	36
5	15-365	12.2	12.8	18.3	5.3	102	51
6	15-240	14.8	15.0	22.0	5.6	148	80
8	15-240	19.7	18.1	27.2	6.7	194	104
10	15-145	24.6	21.5	34.1	8.3	302	188
12	15-75	29.5	27.7	40.2	9.8	368	221

## Dimensions, PVE valves



Valve size (PVE) M&A	PN (bar)	A	B	C	E	Weight Manual valves (kg)		Weight Automatic valves (kg)	
						FE	AL	FE	AL
25	1-25	165	125	255	87	11	7	8	4
32	1-25	165	140	260	90	14	9	10	5
40	1-25	165	180	265	105	16	9	12	6
50	1-25	165	190	280	120	18	9	13	7
65	1-25	165	210	310	136	22	12	17	9
80	1-25	200	245	370	155	36	17	27	13
100	1-25	250	278	410	175	46	25	33	17
125	1-25	310	340	465	210	74	41	48	25
150	1-16	375	400	560	240	106	74	75	43
200	1-10	500	480	690	295	159	-	119	-
250	1-6	625	570	865	380	213	-	161	-
300	1	750	720	1020	445	279	-	212	-

Valve size (PVE) M&A	PN (PSI)	A	B	C	E	Weight Manual valves (lbs)		Weight Automatic valves (lbs)	
						FE	AL	FE	AL
1	15-365	6.5	5.0	10.1	3.4	25	16	18	9
1.25	15-365	6.5	5.5	10.2	3.5	31	20	22	11
1.5	15-365	6.5	7.1	10.4	4.1	36	20	27	14
2	15-365	6.5	7.5	11	4.7	40	20	29	16
2.5	15-365	6.5	8.3	12.2	5.4	49	27	38	20
3	15-365	8	9.6	14.6	6.1	80	38	60	29
4	15-365	10	10.9	16.1	6.9	102	55	73	38
5	15-365	12.2	13.4	18.3	8.3	163	91	106	55
6	15-240	14.8	15.7	22	9.4	234	163	166	95
8	15-150	19.7	18.9	27.2	11.6	351	-	263	-
10	15-75	24.6	22.4	34.1	15	470	-	355	-
12	15	29.5	28.3	40.2	17.5	615	-	468	-

## How to order

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
PVE	300	A	10	-	2	0	3	L	R2Z3	,	SBRT

1.	Product type
PV	Open
PVE	Enclosed
PVE/S	Enclosed /sealed
PVS	Sealed

2.	Product size DN
25..600	Conical mark with directly with conical reduction Example 50-40

3.	Actuator														
AKUIC								EB				H		MG	
Pneumatic								Electric				Hydraulic		Manual	
Cylinder		Manual override		Positioner		Options		Type		Voltage range		Type		Type	
A	Pneumatic cylinder	BLANK	NONE	BLANK	NONE	BLANK	NONE	E	Electric On-Off/AUMA Norm	BLANK	400V/50hz	H	Hydraulic	M	Manual handwheel
A1S	Pneumatic with stainless piston rod, tie rods and painted cylinder	B	Manual override	K	Positioner Neles ND9000 series	U1C	With pneumatic spring FAIL CLOSE	EP	Electric On-Off with feedback unit EWG 01.1, AUMA	B	380V/50hz	HA	Intergated Solenoid valve 24 VDC	MG	Manual with bevel gear
A2S	Pneumatic "Stainless" no painting			KF	With integrated (Festo DFPI) positioner a)	U1O	With pneumatic spring FAIL OPEN	ES	Electric On-Off AUMA-Matic	C	440V/50hz	HB	Intergated Solenoid valve 110VAC	MCW	Chainwheel
				KL	Standard Positioner with special auxiliaries or other brand than Flowrox Selected Standard	U2C	With pneumatic spring (Pressure switch) FAIL CLOSE c)	EO	Electric On-Off with positioner, Aumatic	D	525V/50hz	HC	Intergated Solenoid valve 230VAC		
						U2O	With pneumatic spring (Pressure switch) FAIL OPEN c)	EL	Electric (Other)	E	460V/60hz	HP	Hydraulic positioner		
						VC	With mechanical spring FAIL CLOSE			N	Other	HL	Other		
						VO	With mechanical spring FAIL OPEN								

4.	Pressure class (PN)*
1	1bar
6	6bar
10	10bar
16	16bar
7	ANSI 300
2	AISI 316
40	40bar
64	64bar
100	100bar

5.	Flange drilling**
2	DIN PN 10
3	DIN PN 16
4	DIN PN 25
5	DIN PN 40
6	ANSI 150
7	ANSI 300
8	BS TABLE D
9A	AS TABLE D
9B	AS TABLE E
9C	JIS 10
9D	JIS 16
9	OTHER

6.	Body material*
0	Cast Iron / Fe
2	AISI 316
3	Aluminium
4	Other
5	Polyurethane / polyamide

7.	Flange type
	Type 1 Type 3 Type 4 Determined by the valve Flowrox

12.	Sleeve material
SBRT	Styrene butadiene
EPDM	Ethylene propylene
NR	Natural rubber
NBR	Nitrile
CSM	Hypalon
EPDMB	Green liqour sleeve
CR	Chloroprene
IIR	Butyl
NRF	Foodstuff natural rubber
NBRF	Foodstuff nitrile
HNBR	Hydrogenated nitrile
FMP	Fluorine rubber
<b>Additional features:*</b>	
/M	Flowrox SensoMate sleeve
/PU	PU-coating inside the sleeve
/VAC	Vacuum sleeve



10.	Auxiliaries			
	Description	Extra info	Applicable actuator	
B	Pressure Booster in air supply	Pressure booster determined by Flowrox, used to increase the supply air pressure to secure enough force for pneumatic cylinder.	PNEUMATIC	*
F	Filter Regulator + gauge	Filter Regulator + Gauge Flowrox selected model.	PNEUMATIC	*
F1	Filter Regulator + gauge (stainless steel AISI 316)	Filter Regulator + Gauge Flowrox selected model. FESTO PCR P G1/4 & G1/2	PNEUMATIC	*
F5	Filter Regulator OR Filter Regulator+ gauge	Filter Regulator OR Filter Regulator+ gauge (Non-standard)	PNEUMATIC	
H	Hydraulic Handpump (For Hydraulic only)	Manual hydraulic handpump for hydraulic actuators H only.	HYDRAULIC	*
J1	Junction box small (Flowrox Standard)	Junction box small, for limit switches or solenoid valve, IP66, plastic, 2 pcs M12x1.5 and 1 pc M20x1.5, pre-wired.	ANY	*
J2	Junction box large (Flowrox Standard)	Junction box large, for limit switches and solenoid valve, IP66, plastic, 4 pcs M12x1.5 and 1 pc M20x1.5, pre-wired.	ANY	*
J4	Junction Box (Non-Standard)	Junction box out of Flowrox standard scope specification clarified on the proposal and under valve serial number.	ANY	
P1	Stainless steel fittings + Corrosion resistant tubing	High temperature & corrosion resistance	PNEUMATIC	
P2	AISI 316 Fitting and piping	Stainless steel fitting and piping	PNEUMATIC	
Q	Quick exhaust valve	Quick exhaust valve to maximize the speed of cylinder.	PNEUMATIC	*
R	Readiness for ind. Limit switches	Readiness for d18mm inductive limit switches.	ANY	*
R1	AC/DC (18mm cylindrical switch) (Flowrox Standard)	AC/DC, 2-wire type, (24...240VAC / 24...240VDC) Flowrox selected model	ANY	*
R2	DC, NPN (18mm cylindrical switch) (Flowrox Standard)	DC, 3-wire type, PNP (12...24V) Flowrox selected model	ANY	*
R3	DC, NPN (18mm cylindrical switch) (Flowrox Standard)	DC, 3-wire type, NPN (12...24V) Flowrox selected model	ANY	*
R5	Limit switch (Non-Standard)	Limit switch out of Flowrox standard scope specification clarified on the proposal and under valve serial number.	ANY	
S	Magnetic limit switches (Flowrox Standard)	Magnetic limit switches, attached to aluminium pneumatic cylinder actuators. Cylinder fitted with magnetic piston.	PNEUMATIC	*
S5	Magnetic limit switches (Non-Standard)	Magnetic limit switches, attached to aluminium pneumatic cylinder actuators. Cylinder fitted with magnetic piston.	PNEUMATIC	
T	Mechan. Limit switches (Flowrox Standard)	Mechanical limit switches Flowrox selected model	ANY	*
T5	Mechan. Limit switches (Non-Standard)	Mechanical limit switches (Non-standard) Consult with Flowrox	ANY	
Z1	Solenoid valve, 24VDC, Monostable (Flowrox Standard)	Solenoid valve 24 VDC (for pneumatic actuator) with necessary tubing Flowrox selected model, monostable (Single coil).	PNEUMATIC	*
Z1B	Solenoid valve, 24VDC, Bistable (Flowrox Standard)	Solenoid valve 24 VDC (for pneumatic actuator) with necessary tubing Flowrox selected model, Bistable (Double coil).	PNEUMATIC	*
Z2	Solenoid valve, 230V, 50/60Hz, Monostable (Flowrox Standard)	Solenoid valve 230V - 50/60Hz (for pneumatic actuator) with necessary tubing Flowrox selected model, monostable (Single coil).	PNEUMATIC	*
Z2B	Solenoid valve, 230V, 50/60Hz, Bistable (Flowrox Standard)	Solenoid valve 230V - 50/60Hz (for pneumatic actuator) with necessary tubing Flowrox selected model, Bistable (Double coil).	PNEUMATIC	*
Z3	Solenoid valve, 110V, 50/60Hz, Monostable (Flowrox Standard)	Solenoid valve 110V, 50/60Hz (for pneumatic actuator) with necessary tubing Flowrox selected model, monostable (Single coil).	PNEUMATIC	*
Z3B	Solenoid valve, 110V, 50/60Hz, Bistable (Flowrox Standard)	Solenoid valve 110V, 50/60Hz (for pneumatic actuator) with necessary tubing Flowrox selected model Bistable (Double coil).	PNEUMATIC	*
Z5	Solenoid valve, 24VDC, Monostable (Non-Standard)	24 VDC monostable (Single coil) solenoid valve out of Flowrox standard scope specification clarified on the proposal and under valve serial number.	PNEUMATIC	
Z5B	Solenoid valve, 24VDC, Bistable (Non-Standard)	24 VDC Bistable (Double coil) solenoid valve out of Flowrox standard scope. To be specified on the proposal and under valve serial number.	PNEUMATIC	
Z6	Solenoid valve, 230V, 50/60Hz, Monostable (Non-Standard)	230V 50/60Hz monostable (Single coil) solenoid valve out of Flowrox standard scope. To be specified on the proposal and under valve serial number.	PNEUMATIC	
Z6B	Solenoid valve, 230V, 50/60Hz, Bistable (Non-Standard)	230V 50/60Hz Bistable (Double coil) solenoid valve out of Flowrox standard scope. To be specified on the proposal and under valve serial number.	PNEUMATIC	
Z7	Solenoid valve, 110V, 50/60Hz, Monostable (Non-Standard)	110V 50/60Hz monostable (Single coil) solenoid valve out of Flowrox standard scope. To be specified on the proposal and under valve serial number.	PNEUMATIC	
Z7B	Solenoid valve, 110V, 50/60Hz, Bistable (Non-Standard)	110V 50/60Hz Bistable (Double coil) solenoid valve out of Flowrox standard scope. To be specified on the proposal and under valve serial number.	PNEUMATIC	
X	Must be specified	Additional auxiliary equipment not listed.	ANY	

\* Flowrox standard options

# rotork®

## Controls

### Introducing the new generation of intelligent valve control.

For over 50 years Rotork has used innovation in designing reliable, flexible and robust valve actuators and control systems. Continuing our ethos of evolving design, the 3<sup>rd</sup> generation IQ multi-turn actuator is now available. Reliability standards have been set even higher, it is simpler to commission and use and is unrivalled in its ability to provide valve and process control operational data.

#### Key benefits of the 3<sup>rd</sup> generation IQ

- Valve position monitoring during power loss through simple and robust Rotork absolute encoder
- Large information-rich backlit display
- Advanced dual stacked display presents valve and process data for asset management and data analysis
- In the event of power failure actuator display and remote contacts are maintained
- Toughened glass screen plus optional environmental shield
- Outstanding environmental protection
- Non-intrusive setting – no cover removal required using secure *Bluetooth*® connection
- Enhanced reliability through solid state controls; reduced internal wiring; simplified torque sensor
- Detachable thrust bases across the entire range
- Advanced realtime status reporting
- Configurable datalogger functionality, including service alarms
- Plug & socket option available



Redefining Flow Control



## IQ Range

### 3<sup>rd</sup> Generation Intelligent Electric Actuator



# rotork®

## Controls



### Outstanding reliability

Valve operation must be reliable. Rotork IQ actuators are designed to meet the toughest applications and engineered for a lifetime of uninterrupted service. Built on the Rotork drive train, proven for over 40 years, 3<sup>rd</sup> generation IQ actuators feature numerous enhancements including:

- Advanced absolute position measurement
- Simplified control components
- Increased thrust base integrity; separable across all sizes
- High immunity from spurious signals
- Configurable motor drive "enable" input which stops the actuator operating unless a signal is applied
- Casing material selection and coatings have been designed for improved corrosion protection

Reliability of equipment depends on the protection provided by its enclosure. IQ retains the Rotork developed double-sealed, non-breathing, non-intrusive enclosure proven to maximise operational reliability. Regardless of whether the actuator is in a hazardous location or not, the fully sealed enclosure provides the highest reliability.

### Asset management

With an advanced dual stacked display, position, torque, status and configuration data is clear and immediate. In addition the valve, actuator and process data is available on screen or in the control room. Valve stroke torque/thrust graphs, duty trend logs, vibration levels and valve & actuator manufacturing data can be extracted by the user and stored as the basis for planned maintenance and operational activities, process performance characteristics and comparison.

Commissioning and configuring 3<sup>rd</sup> generation IQ actuators is faster and simpler than ever. In addition to a new and intuitive user interface, entire operations can now be carried out in moments and datalogger data downloaded using the supplied Rotork Bluetooth® Setting Tool Pro.

### Technological Advances

#### Position

Reliable valve position sensing is critical. Using the latest technology and after years of testing, the patented Rotork IQ absolute encoder is contactless, has only four active parts, can measure up to 8,000 output turns and has redundancy and self checking. Unlike existing absolute encoder designs, this technological breakthrough increases position sensing reliability while providing zero-power position measurement.

#### Display

The dual stacked display allows large segment character position displays down to -50 °C while the matrix display provides detailed setting, status and diagnostic multilingual screens. Overall the display is 30% bigger, is backlit to

Redefining Flow Control

provide excellent contrast even in the brightest ambient light conditions and is protected by a toughened glass window. An optional protective clip-in cover is available where high UV levels or abrasive environments are present.

### Torque

Now enhanced to provide increased integrity and performance, torque sensing is simple, accurate with high resolution and extremely reliable over the life of the actuator. Unlike other systems employed, the IQ system of torque measurement has the advantage of being independent of voltage and temperature variations.

### Control

Control elements such as main control and network interface cards, like those used with fieldbus systems, are connected using an internal bus system based on CAN, reducing wiring and connections and increasing reliability.

### Indication power

With the absolute encoder, a battery is not required for position sensing and tracking. As all configuration and datalogger data is stored in non-volatile EEPROM memory, all settings are safe when no power is available. However, to maintain the display and ensure remote indication is kept updated, allow data logging and power off commissioning, an indication battery is included as standard. Reduced power consumption means the battery has an exceptionally long life and low-cost replacements are available from suppliers globally.

### Optimised for preventative maintenance

All IQ actuators incorporate a sophisticated datalogger, which can provide comprehensive data capture and analysis for planned maintenance and troubleshooting issues with valves and processes. They capture:

- Valve torque profiles
- Operational starts profiles
- Operational, vibration and temperature trend logs
- Event log

In addition, asset management data regarding the actuator and the valve is stored within the actuator and available for download. Specific asset management information includes:

- Running time
- Average torque
- Starts
- Life statistics

As part of the ongoing commitment to improving asset management and providing reliable data for optimised preventative maintenance, the 3<sup>rd</sup> generation IQ now includes configurable service / maintenance alarms.

The alarm parameters can be set in the assets section of the setup menus and include:

- Open torque levels
- Close torque levels
- Starts/Hr
- Total starts
- Total turns
- Service intervals

With 3<sup>rd</sup> generation IQ actuators this data can be viewed in realtime using the large dual stacked display. In addition, the data can be downloaded wirelessly with the Rotork *Bluetooth*® Setting Tool Pro or to a PC and analysed using the Rotork Insight2 software.

### Safe manual operation

In case of an emergency, power outage or failure of the control network, IQ actuators can be operated by hand. A manual clutch and handwheel allow an operator to disengage the motor and operate the valve independently, without risk of damage or injury.

Where the location requires it, the clutch can be padlocked into position to prevent accidental or unauthorised manual operation.

Manual movements of the valve are recorded and logged by the actuator. Position sensing in Rotork IQ actuators is highly reliable (power on or off) thanks to the unique robust and simple design of the absolute encoder.

### Network system connectivity

With the addition of an appropriate option card, the IQ actuator can be incorporated into a number of different fieldbus control systems. The IQ actuator can be utilised within the Rotork Pakscan control system, either wired or wirelessly, and the major open Fieldbus protocols including Profibus®, Foundation Fieldbus®, Modbus and HART®.



# rotork®

## Controls

### 1 Hand operation

Direct drive and geared handwheel sized for effective manual operation of the valve. Handwheel drive is independent of the motor drive and is selected with a lockable hand/auto lever for safe operation even when the motor is running.

Motor operation always has preference unless the hand/auto lever is purposely locked into 'hand drive'. Lost motion 'hammerblow' action is provided with both direct and geared handwheels.

### 2 Environmental sealing

The Rotork double-sealed terminal compartment results in the actuator enclosure being completely sealed, protecting the actuator from the environment for life. Using the supplied Rotork *Bluetooth®* Setting Tool Pro, no covers need to be removed for commissioning, adjusting, analysis or accessing the actuator data log.

### 3 Display

The advanced dual stacked display is significantly larger, clearer and has a wide viewing angle making it easily legible from a distance. In normal mode the LCD display indicates valve position and can operate from -50 °C up to 70 °C.

The matrix layer provides high resolution screens for setting menus, status, alarm and graphical data log screens such as valve torque profiles. Position indication lights (red, yellow and green) are duplicated each side of the display. All display elements are protected by a 13 mm toughened glass window with an optional shield for protection against abrasive media such as sand and UV light.

### 4 Local controls

Local open/close and lockable Local/Stop/Remote selectors are coupled magnetically to the designated switches and therefore do not penetrate the control cover. This further enhances the non-intrusive protection of the IQ.

### 5 Position control

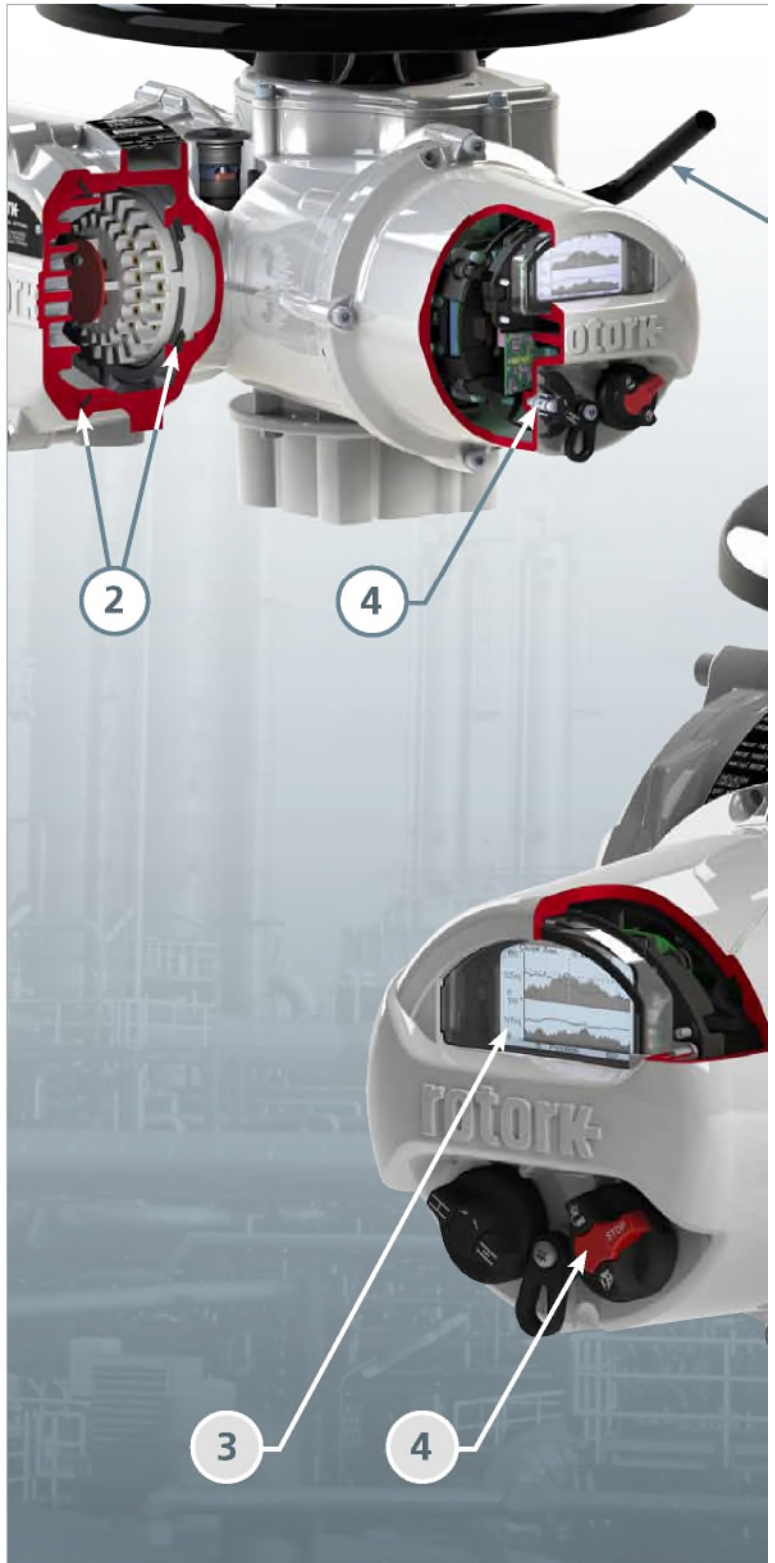
The unique Rotork patented absolute position sensor is highly accurate and can measure up to 8,000 output turns as standard. With only four active parts it is very simple and robust, providing the most reliable position sensing regardless of the availability of electrical power. It also includes built-in redundancy and self-checking.

### 6 Proven drive train

The drive train and motor uses the proven basic design principals employed for over 40 years. Simple, reliable and robust, the components are oil bath lubricated (for life).

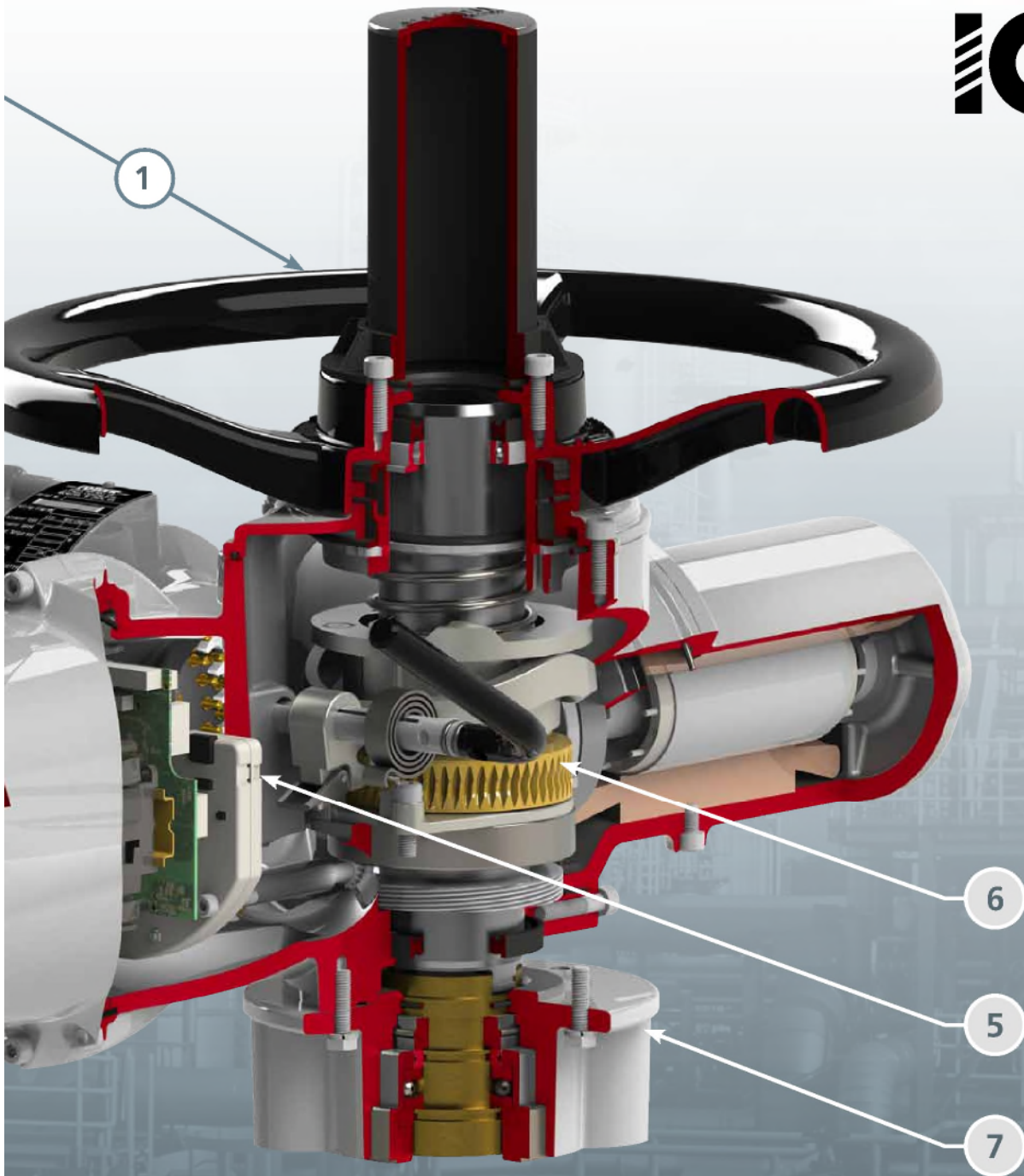
### 7 Separable bases

For all sizes the thrust and non-thrust base types are separate to the gearcase allowing easy installation. Should the actuator be removed, the base can be left on the valve to maintain its position. All bases conform to attachment standards ISO5210 or MSS SP 102.



## Redefining Flow Control

**IQ Range** **IQ<sub>3</sub>**  
Intelligent Electric Actuator



# rotork<sup>®</sup> Controls

## Local diagnostics and setup

The large dual stacked, hi-resolution display, with positional characters that are 25 mm high, is unrivalled in visibility for all lighting and orientation conditions. Consisting of a static, high-contrast positional display and a fully configurable dot-matrix LCD behind, the IQ offers the easiest, user-friendly configuration and data analysis ever seen in the actuation world.

## Configurable Home-screens

With a mixture of the static and dot-matrix displays, there are now four configurable home-screens available to the user. The four screens reflect the parameters most commonly required to analyse operation at-a-glance:

- Positional information with input demand (digital and analogue)



Using the Rotork *Bluetooth*<sup>®</sup> Setting Tool Pro, each of these screens can be easily accessed with a press of a button. Alternatively you can select one of the four screens to be continually displayed in the setup menu.

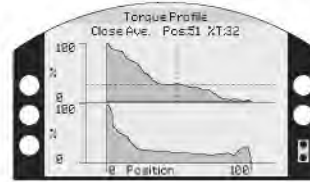
## User friendly setup menus

A single press of a button on the Rotork *Bluetooth*<sup>®</sup> Setting Tool Pro takes you into the user-friendly setup menu. This menu has been designed and structured to reduce reliance on having a written manual to hand. With large, clear characters available in many languages, setup and configuration has never been so easy.



## Graphical datalogger

Greater amounts of data and analytical screens are now available in the datalogger and viewable locally. The datalogger screens are displayed on a 168 x 132 pixel dot-matrix display and can display anything from a torque vs position graph to statistical operational data.



## Asset management

Not only can you store information relating to the actuator, but also the valve and gearbox. This includes data about build (class, size, ratio and tag numbers) along with service information (commission date, service date etc).

- Actuator data



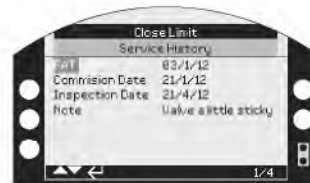
- Valve data



- Gearbox data



- Service history



# IQ Range

## Intelligent Electric Actuator



### Features across the 3<sup>rd</sup> generation IQ range include:

- Three-phase, direct current and single-phase variants
- Watertight and hazardous area enclosures
- Double-sealing
- Handwheels for emergency and ease-of-use operation
- Oil bath lubrication
- Advanced, multilingual display for status and setup
- Detailed datalogging
- Setting and data capture using the supplied Rotork *Bluetooth®* Setting Tool Pro
- InSight2 PC software for valve performance analysis
- Highly intuitive user interface
- Comprehensive control and flexibility



### IQ

IQ multi-turn 3-phase electric actuators designed for isolation or regulation duties (S2 & S3/Class A & B) of up to 60 starts per hour.

Direct torque output range from 34 Nm (25 lbf.ft) to 3,000 Nm (2,200 lbf.ft).

With the addition of second stage gearboxes, multi-turn output torque up to 43,000 Nm (31,715 lbf.ft) and quarter-turn up to 1,000,000 Nm (737,561 lbf.ft) are available.

### IQM

The modulating version of the IQ 3-phase electric actuator has a solid state reversing starter in place of the electro-mechanical contactors. They feature fast-response remote control circuits for rapid control. To optimise positional control, the solid state starter also adds an electronic motor 'brake' feature.

The 'hammer-blow' drive - for shifting infrequently used valves - is not included in this model. IQM is suitable for up to 1,200 starts per hour (S4/Class C).

With the addition of second stage gearboxes, IQM multi-turn output seating torque up to 3,600 Nm (2,655 lbf.ft) and quarter-turn up to 58,000 Nm (42,778 lbf.ft) are available.

### IQML

Benefiting from all the features of the IQM 3-phase electric actuator, the IQML has a linear output drive providing modulating thrust output of up to 150 kN (33,721 lbf).

### IQS

IQS actuators are single phase versions of IQ actuators. Torque range from 65 Nm (48 lbf.ft) to 450 Nm (332 lbf.ft).

With the addition of second stage gearboxes, single-phase multi-turn output torque up to 3,000 Nm (2,212 lbf.ft) and quarter-turn up to 208,500 Nm (153,781 lbf.ft) are available.

### IQD

IQD actuators are direct current powered versions of IQ actuators. Torque range 34 Nm (25 lbf.ft) to 305 Nm (225 lbf.ft). Voltage ranges available are 24 VDC, 48 VDC and 110 VDC (limited size/voltage availability – refer to PUB002-038 for details).

With the addition of second stage gearboxes, DC multi-turn output torque up to 1,500 Nm (1,106 lbf.ft) and quarter-turn up to 132,000 Nm (97,358 lbf.ft) are available.

### Special Designs

If you require an IQ actuator for duties that are not covered by our standard range, we are happy to discuss custom solutions.



**MISCOWATER – TW ASSOCIATES  
TERMS & CONDITIONS OF SALE**

**1. ACCEPTANCE**

When the Buyer signifies acceptance of this quotation by submission of a Purchase Order or signed MISCOWATER Quotation, it shall become a binding contract when accepted and signed by an authorized signer of the Seller (MISCOWATER). Any changes or amendments to this proposal made by the Buyer must have MISCOWATER's approval in writing to become a part of this contract.

**2. DELIVERY**

Any shipment or delivery date recited represents our best estimate, but no liability, direct or indirect, is assumed by MISCOWATER for failure to ship or deliver on such dates. Unless otherwise directed, MISCOWATER shall have the right to make early or partial shipments and invoices covering the same to Buyer shall be due and payable in accordance with payment terms hereof. FOB shall be origin.

**3. APPROVAL DRAWINGS**

Any preliminary drawings or literature attached to our quotation are for illustration purposes only to show approximate arrangements. Specific drawings and submittal data will be furnished for approval as required after receipt and acceptance of the Buyer's order. Fabrication of products or equipment ordered will not begin until approval and direction to proceed is received in writing.

**4. PAYMENT**

Payment terms, upon credit approval, are Net 30 Days from the date of each invoice issued for each partial or final shipment. Flow down provisions are not accepted. Retention is not allowed. In the event any payment becomes past due, a charge of 1.5% will be assessed monthly.

**5. TAXES AND BONDS**

Taxes and bonds are NOT included in our pricing. Any applicable taxes or bonds will be added to the price and shown separately on each invoice.

**6. CLAIMS AND BACKCHARGES**

Buyer agrees to examine all materials immediately upon delivery and report to Seller (MISCOWATER) in writing any defects or shortages noted no later than 10 days following the date of receipt. The parties agree that if no such claim is made within said time, it shall be considered acceptable and in good order with respect to any defect or shortage which would have been revealed by such an inspection. In no event will MISCOWATER be responsible for any charge for modification, servicing, adjustment or for any other expense without written authorization from MISCOWATER prior to the performance of any such work.

**7. SECURITY INTEREST & TITLE**

Until all amounts due MISCOWATER have been paid in full, Seller shall retain a security interest in the product and have all rights of a secured party under the California Uniform Commercial Code, including the right to repossess the product or equipment without legal process.

**8. WARRANTY**

MISCOWATER warrants that the product furnished will be free from defects in material and workmanship when installed, operated and maintained under design conditions and in accordance with the manufacturer's written instructions. Warranties will expire (18) months after shipment or twelve (12) months after start-up, whichever occurs first. Expandable items such as filter or scrubber media are excluded from this warranty.

THIS WARRANTY, INCLUDING THE STATED REMEDIES, IS EXPRESSLY MADE BY SELLER AND ACCEPTED BY PURCHASER IN LIEU OF ALL OTHER WARRANTIES. SELLER MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE, WHICH EXTEND BEYOND THE DESCRIPTION OF THE PRODUCT HEREIN. SELLER WILL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL OR LIQUIDATED DAMAGES, AND IN NO EVENT SHALL BE LIABLE FOR ANY AMOUNT IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT PURCHASED ON THIS ORDER.

The foregoing is Seller's only obligation and Buyer's exclusive remedy for breach of warranty,

**9. CANCELLATION**

Should this order be cancelled, Buyer shall be obligated to pay for the level of work performed and products shipped. Work performed includes any engineering, calculations, preparation of submittals, drawings, and/or travel to job site in relation to this order.

**10. FIELD WORK**

Unless specifically stated on our quotation, installation, start-up service, supervision, operation and training are not included in our pricing of product.

**11. COMPLETE AGREEMENT**

These terms are intended by the parties as a final expression of their agreement and are intended also as a complete and exclusive statement of the terms of their agreement. No course or prior dealings between the parties and no usages of the trade shall be relevant to supplement or explain any term used in this agreement. This agreement supersedes all prior representations and agreements with respect to the matters set forth herein and may be modified only by a written agreement to and signed by each of the parties.

MISCOWATER: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_