

Engineered Composite Rotary Actuators

PATENT 6,511,040, 6,318,701

PURETORQ ACTUATORS

With Worldwide patents for its innovative design, the Puretorq rotary actuator is the only vane type actuator on the market today with a fixed seal and moving vane. The innovative fixed seal eliminates the need for separate shaft and body seals because they are all incorporated into the "Tri-seal".

The "Tri-seal" is pressure assisted and is inherently self compensating for wear giving it unprecedented cycle life.

The actuator bodies are designed to give maximum strength to shape ratio. They are made from an engineered composite material which has exceptional mechanical strength and corrosion resistance.

The vane consists of a stainless steel support structure with an integral vane shaft over which a composite material outer layer is injection molded.

This construction provides a smooth vane surface which moves

within a static pressure assisted vane seal.

This extremely simple design results in a wide range of benefits which include high cycle life, fast response, very low internal friction, and compact design with minimum parts.

The Puretorq actuator is available in both double acting and spring return configurations.

All units meet ISO and NAMUR standard in mounting external components.



PURETORQ FEATURES AND BENEFITS

FEATURES	BENEFITS
Simple design.	Low maintenance, best dollar to torque output ratios available.
Engineered composite material body.	Exceptional mechanical strength and high corrosion resistance.
Single moving vane with a fixed seal.	Revolutionary and reliable design means less maintenance and extremely long life.
Patented tri-seal design.	Seals the output shaft, body halves and vane with a single molded polyurethane component. Reduces costs and assembly time.
Pressure assisted seals.	Inherently self compensating for wear because the air pressure creates the seal.
Direct NAMUR mount pad for solenoid.	Provides compatibility with broad range of solenoid suppliers, plus the option of direct piping.
Dual VDI/VDE 3845 mounting pad.	Allows for direct mount of positioner or limit switch with mounting compatibility to broad range of auxiliary products. Also used to mount to valve with a universal mounting pad.
External spring return unit.	Provides reliable high output torque with minimum spring stress. Less than 8% power decay through 90 degrees is typical. Spring units can be sold separately for "Dead Man" Handles.
No load full stroke operation with less than 3 PSI air supply.	Low friction means that almost all the plant air to the actuator is being utilized to operate the valve instead of overcoming the friction in the actuator. Excellent for modulating applications.
Adjustable end stops.	98 degrees of travel allows adjustment of the stroke for accurate positioning of the valve trim in the open and closed position.
Thrust bearing support of the vane.	Eliminates possible damage due to end loading. Vane is supported independently of the seals allowing use of more flexible seals. Reduces internal friction dramatically.
SS Hardware. (Available as an option)	304 SS bolting and outserts or 316 SS available as an option. Output shafts are 316 SS. Standard bolting is nickel plated C.S.
Universal mounting bracket.	A variety of universal mounting brackets are available with the full range of ISO 5211 bolting patterns and couplings are available to suit all valve stem configurations.
Dual output drive.	Mounting surfaces and output drives on both actuator faces allow for mounting two valves on one actuator, or one valve with a manual override.

MATERIALS OF CONSTRUCTION

PURETORQ SPRING RETURN

PURETORQ ACTUATOR



ITEM	Description	QTY	Material	Optional
1	Spring Case Bolts	8	Nickel Plated Steel	316 SS
2	Spring Cover	1	Glass Reinforced Polyamide	N/A
3	Bearing	2	Filled Delrin	N/A
4	Arbour	1	316 SS	N/A
5	Spring	1	Steel	N/A
6	Mounting Bolts	4	Nickel Plated Steel	316 SS
7	Spring Cover O Ring	1	Buna N.	N/A
8	Spring Base	1	Glass Reinforced Polyamide	N/A
9	Body Actuator Case Half Nuts	Varies	Nickel Plated Steel	316 SS
10	Stop Bolt	2	Nickel Plated Steel	316 SS
11	Stop Nut	2	Nickel Plated Steel	316 SS
12	Stop Washer	2	Nickel Plated Steel	316 SS
13	Stop O Ring	2	Buna N.	N/A
14	Case Half	2	Glass Reinforced Polyamide	N/A
15	Tri-Seal	1	Polyeurathane	N/A
16	Output Shaft	1	316 SS	N/A
17	Universal ISO 5211 Mounting Pad	1	Glass Reinforced Polyamide	316 SS
18	Output Shaft Bearings	2	Filled Delrin	N/A
19	Body Actuator Case Half Nuts	Varies	Nickel Plated Steel	316 SS

PURETORQ ACTUATOR OUTPUT CHARTS

DOUBLE ACTING TORQUE OUTPUT										
ACTUATOR MODEL	AIR SUPPLY									
PSIG	30	40	50	60	70	80	90	100	110	120
VDA 200	67	91	116	141	165	190	215	239	264	289
VDA 400	133	182	232	281	330	380	429	478	528	577
VDA 700	238	327	415	503	591	680	768	856	945	1033
VDA 1200	421	576	732	888	1044	1200	1355	1511	1667	1823
VDA 1700	610	836	1062	1288	1514	1740	1966	2192	2418	2644
VDA 3800	1332	1826	2319	2813	3306	3800	4293	4787	5280	5774

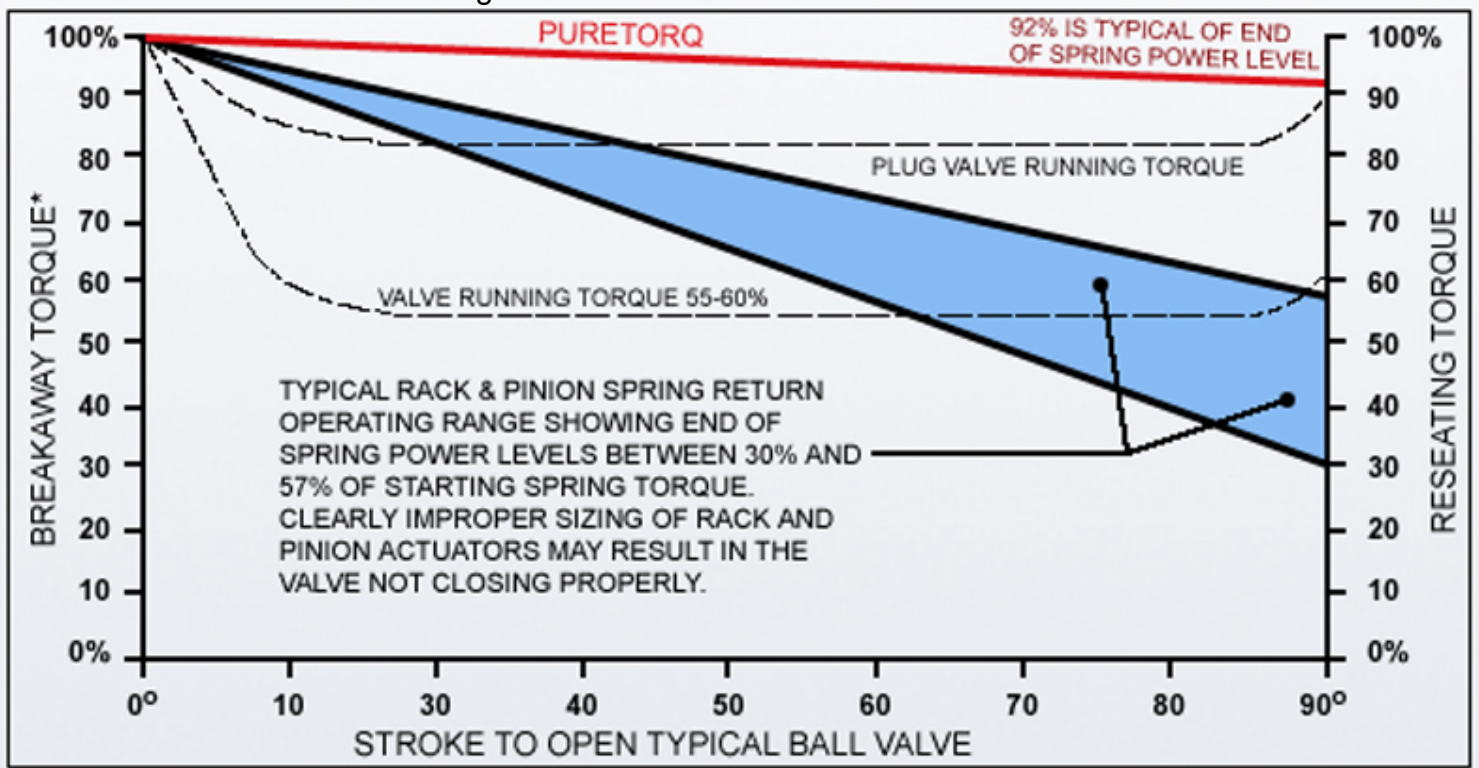
SPRING RETURN TORQUE OUTPUT					
ACTUATOR MODEL	AIR SUPPLY				
PSIG	40	60	80	100	
VSR 100	Start	46	71	96	121
	Finish	42	65	88	111
VSR 200	Start	91	141	191	240
	Finish	85	131	177	223
VSR 300	Start	165	254	343	432
	Finish	152	234	317	399
VSR 600	Start	290	447	605	762
	Finish	268	413	559	704
VSR 800	Start	421	649	877	1104
	Finish	389	599	810	1020
VSR 1800	Start	920	1418	1916	2413
	Finish	850	1309	1769	2228

SPRING RETURN ACTUATOR TORQUE LOSS

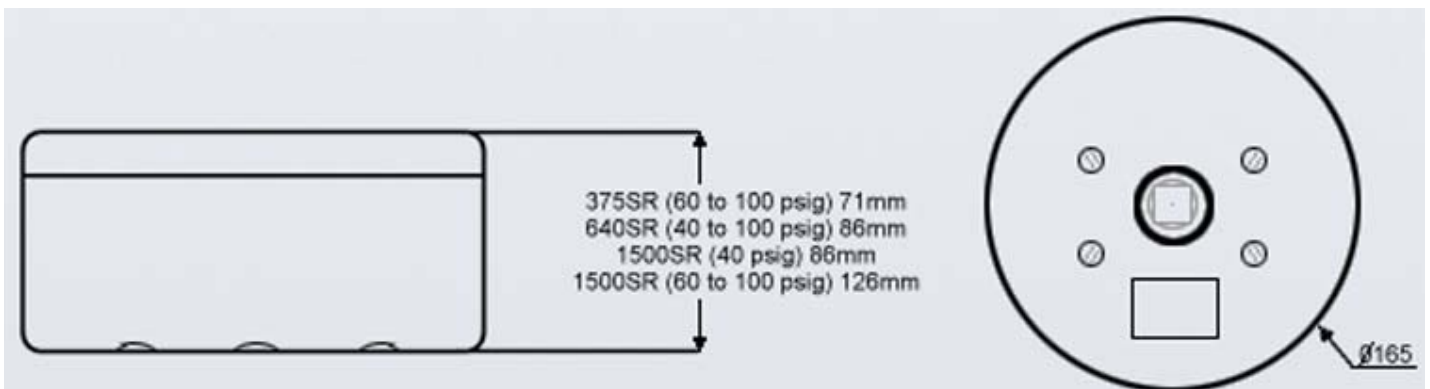
The diagram shows the typical torque requirement of a ball valve and a plug valve under normal conditions. Together with the torque output characteristics of a Puretorq and a Rack and Pinion actuator both sized to overcome the valves breakaway torque.

The graph demonstrates that the Puretorq actuator exceeds the torque requirement of the valve through the entire stroke, whilst the Rack and Pinion unit may fail to reseat the valve.

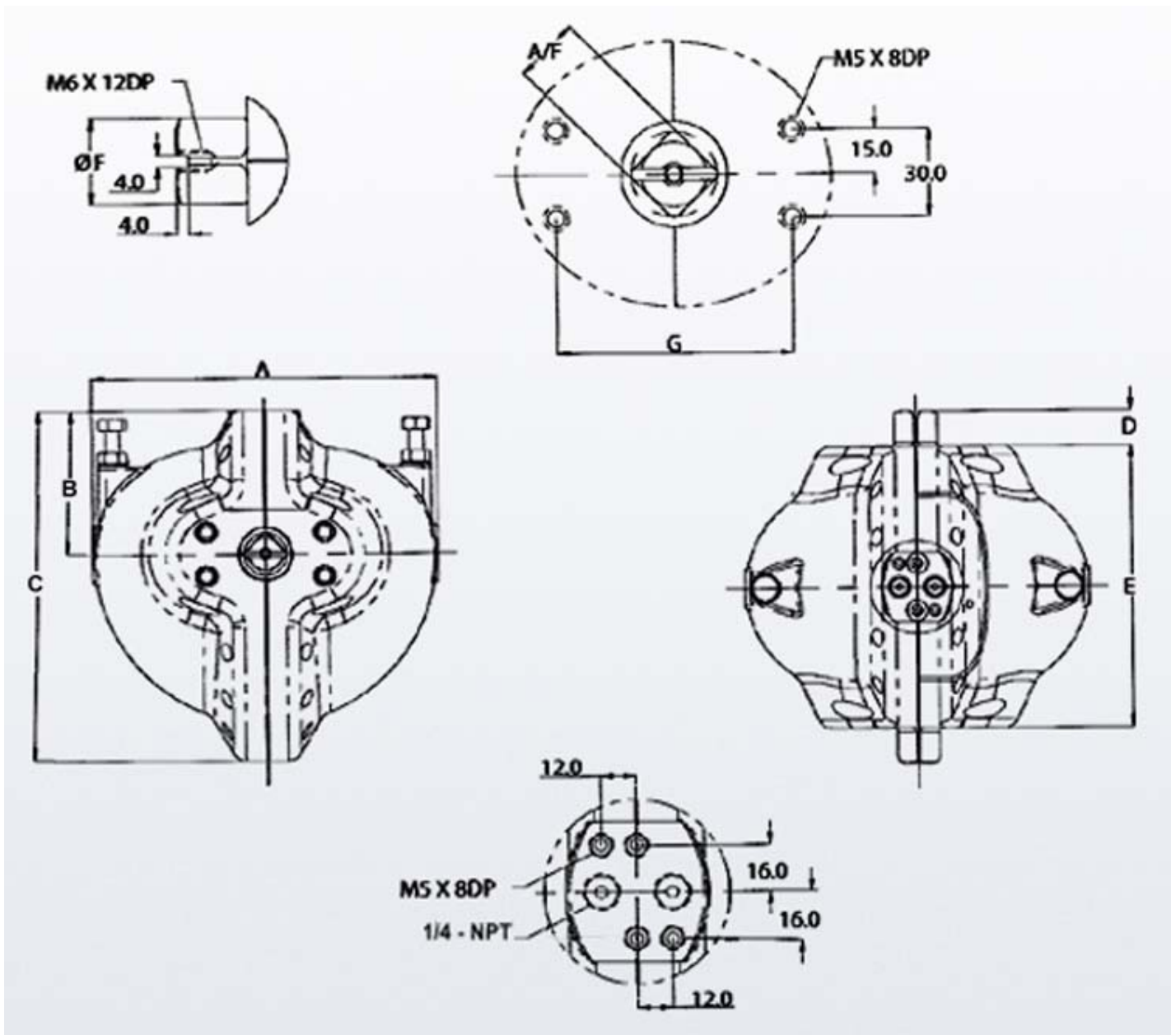
The higher torque losses of Rack and Pinion actuators may require the selection of a larger unit to ensure reliable valve reseating.



SPRING RETURN MEASUREMENTS



PURETORQ ACTUATOR MEASUREMENTS



Model	A	B	C	D	E	A/F	G
PT375DA	129	50	122	17	117	14	80
PT640DA	169	55	151	17	116	14	80
PT1500DA	233	134	240	24	192	22	80
PT3800DA	300	174	321	32	250	27	80/130

Puretorq is available with many standard accessories.

Limit Switches: Puretorq is compatible with all manufacturers adhering to VDI/VDE mounting standards. Some manufacturers also supply case materials similar to Puretorq composites.

Positioners: A variety of positioners are available from your choice of manufacturers with input signals of 4 to 20 ma or 3 to 15 PSIG. Our preferred supplier is Veltri Technologies of Burlington Ontario .

Solenoids: Our standard solenoid comes in voltages from 24VDC through 240VAC. They are NAMUR compatible and is manufactured by V-Controls Inc.

Operating Instructions

Assembly and operating instructions are available upon request. Please contact your local Representative/Distributor.

Warranty

The Seller warrants its products against all defects in material or workmanship, when used on those services approved by the Seller for a period of one (1) year from the date of original shipment. The Seller's liability under warranty shall be limited to repair or replacement at Seller's option of such defective products, F.O.B. factory, upon proof of defect satisfactory to Seller.

Our Policy

Our policy is one of continuous improvement, and we reserve the right to change the details of the products in this brochure without notice. To ensure you have the most up to date copy of this brochure, or if you require catalogues on the Puretorq products, please contact your local distributor.