

# QUARTER TURN AUTOMATION

## Quarter Turn Automation – Pneumatic / Electric

Automation is an ideal solution for precise control of many valves in a system, when valves are remotely located, or when the process requires constant monitoring and adjustment. Pneumatic and electric actuators can be easily fitted on our ball, multi-port, and butterfly valves. Some features and functions include normally closed, normally open, or double-acting operation; corrosion resistant aluminum bodies, pre-loaded springs, and adjustable cams. Many accessories such as visual position indicators, limit switches, 3 and 4-way solenoids, and positioners are also available. For further information, please refer to the IPEX *Industrial Technical Manual Volume IX* entitled, "Quarter Turn Automation".

### PNEUMATIC ACTUATORS OVERVIEW

Pneumatic actuators are the most common choice for quarter turn plastic valves in process applications. Compressed air systems are readily available in any plant, and the cost of the actuator itself is generally lower than that of an electric unit with a comparable torque output. Typical quarter turn automation seldom requires positioning (something achieved more easily with an electric actuator), therefore the cycle life of a pneumatic unit will be substantially greater, and will be intrinsically safer than an electric actuator in volatile environments. While there are many different kinds of pneumatic actuators, a rack and pinion style is the preferred choice within the plastic piping industry. This type of actuator is quite tough and rugged, and has a high cycle life. They generally have a compact, simple construction, and certain models can be quite light in weight. The design also allows the same basic actuator to be used as a double acting or (with minor additions) a spring return unit.



## **i** DID YOU KNOW?

The three basic control functions available through quarter turn automation are:

- 1. Double Acting** – This requires external power for each stroke. For example, power to open the valve, then power to close the valve.
- 2. Normally Closed** – Also referred to as “fail safe closed”, the default position is closed and the actuator requires power to open the valve.
- 3. Normally Open** – Also referred to as “fail safe open”, the default position is open and the actuator requires power to close the valve.

## **ELECTRICAL ACTUATORS OVERVIEW**

Although slightly more expensive than pneumatics, electric actuators have certain desirable benefits. They are the preferred choice when cycle time is an issue, as a quick closing pneumatically actuated valve could cause a damaging pressure surge condition (water hammer). The use of an electric actuator may also be preferred when the distance from the power source is considerable. The friction losses in long runs of compressed air line may result in reduced efficiency and/or additional compressor stations. In addition, electric actuators are the preferred (if not the only) choice when a quarterturn valve like a multi-port is used. In this case, it is possible that the travel required is not just 0° to 90° but 0° to 90° to 180°. A rack and pinion actuator would need four separate pistons and a multiplicity of related air chambers, whereas this is easily accomplished with an electric unit. Most electric actuators have a cam/limit switch arrangement which allows the unit to be set up for a variety of rotations. The two standard limit switches can be used to provide a remote location with an open or closed signal. A multitude of voltages both for AC and DC current are also typically available.



# ACCESSORIES — PNEUMATIC ACTUATOR

Component Style	Product Code	Universal Number
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## Pilot Solenoids – 110 VAC, 3/4-Way



NEMA 4/4X	253055	SV61CSA110VAC
NEMA 7/9	253056	SV91

Pilot solenoids meet NAMUR mounting specifications.

## Pilot Solenoids – 24 VDC, 3/4-Way

NEMA 4/4X	253088	SV61CSA24VDC
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Pilot solenoids meet NAMUR mounting specifications.

## Limit Switches – NEMA 4/4X



Mechanical	253057	MS41-2
Proximity	253058	PS41-2AL

Limit switches include universal mounting brackets (ISO 5211)

## Positioners



3-15 psi	253061	PNY01
4 - 20 mA	253059	PEY01
4 - 20 mA, w/ limit switch (LS)	253816	PEY02
4 - 20 mA, w/ position transmitter (PT)	253817	PEY03
4 - 20 mA, w/ LS & PT	253818	PEY04
4 - 20 mA, I-safe	253062	PEI01

All positioners include universal mounting brackets (ISO 5211) and gages.

Several other positioners available, including Intrinsically Safe, Explosion proof, Smart, Stainless Steel and High Vibration models, with limit switch and position transmitter options. Please contact IPEX for more information.

## Manual Override



Sandwich Declutch. Gearbox ISO 5211	253819	PV01-GOJ26
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Declutchable gearbox has MAXIMUM torque rating of 2600 in-lbs. For higher torque values, please contact IPEX for larger size gearbox models.

## Other



Muffler - Brass/Bronze	253065	MUFF-NPT
Speed Control - Brass/Bronze	253066	SPEED-NPT
L-Port Actuator Beacon Kit	253089	BEACON-3W-L
T-Port Actuator Beacon Kit	253090	BEACON-3W-T

Customer must specify at time of order if accessories are to be factory assembled with the actuated valves.