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## **and then there are valves**

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# 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.

### 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  $0^\circ$  to  $90^\circ$  but  $0^\circ$  to  $90^\circ$  to  $180^\circ$ . 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.



# FK SERIES BUTTERFLY VALVE, PNEUMATIC

Size inches	Significant Number	EPDM Product Code	Significant Number	FPM Product Code
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## Pneumatic – DOUBLE ACTING

### PP Disc, Wafer Style

1-1/2	FKOM107-DA	253536	253546	253546
2	FKOM108-DA	253537	253547	253547
2-1/2	FKOM109-DA	253538	253548	253548
3	FKOM110-DA	253539	253549	253549
4	FKOM111-DA	253540	253550	253550
5	FKOM112-DA	253541	253551	253551
6	FKOM113-DA	253542	253552	253552
8	FKOM114-DA	253543	253553	253553
10	FKOM115-DA	253544	253554	253554
12	FKOM116-DA	253545	253555	253555



### PP Disc, SS Lugs

2-1/2	FKLM109-DA	253556	FKLM209-DA	253564
3	FKLM110-DA	253557	FKLM210-DA	253565
4	FKLM111-DA	253558	FKLM211-DA	253566
5	FKLM112-DA	253559	FKLM212-DA	253567
6	FKLM113-DA	253560	FKLM213-DA	253568
8	FKLM114-DA	253561	FKLM214-DA	253569
10	FKLM115-DA	253562	FKLM215-DA	253570
12	FKLM116-DA	253563	FKLM216-DA	253571

## Pneumatic - SPRING RETURN, NORMALLY CLOSED

### PP Disc, Wafer Style

1-1/2	FKOM107-NC	253572	FKOM207-NC	253582
2	FKOM108-NC	253573	FKOM208-NC	253583
2-1/2	FKOM109-NC	253574	FKOM209-NC	253584
3	FKOM110-NC	253575	FKOM210-NC	253585
4	FKOM111-NC	253576	FKOM211-NC	253586
5	FKOM112-NC	253577	FKOM212-NC	253587
6	FKOM113-NC	253578	FKOM213-NC	253588
8	FKOM114-NC	253579	FKOM214-NC	253589
10	FKOM115-NC	253580	FKOM215-NC	253590
12	FKOM116-NC	253581	FKOM216-NC	253591

### PP Disc, SS Lugs

2-1/2	FKLM109-NC	253592	FKLM209-NC	253600
3	FKLM110-NC	253593	FKLM210-NC	253601
4	FKLM111-NC	253594	FKLM211-NC	253602
5	FKLM112-NC	253595	FKLM212-NC	253603
6	FKLM113-NC	253596	FKLM213-NC	253604
8	FKLM114-NC	253597	FKLM214-NC	253605
10	FKLM115-NC	253598	FKLM215-NC	253606
12	FKLM116-NC	253599	FKLM216-NC	253607

Note: PVC, CPVC, ABS, and PVDF discs are available on request. 10" and 12" electrically actuated butterfly valves are available on request.

Note: 24 VDC, 4-20 mA Positioner, Fail Safe Battery Backup available. Consult IPEX Corrosion Resistant Thermoplastic Valves Price List or IPEX Representative