

# 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° 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.



# VKD SERIES PVC BALL VALVE – TRUE UNION, PNEUMATIC

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

### PVC w PTFE Seats

S/T	1/2	VKDBV103-DA	253296	VKDBV203-DA	253305
S/T	3/4	VKDBV104-DA	253297	VKDBV204-DA	253306
S/T	1	VKDBV105-DA	253298	VKDBV205-DA	253307
S/T	1-1/4	VKDBV106-DA	253299	VKDBV206-DA	253308
S/T	1-1/2	VKDBV107-DA	253300	VKDBV207-DA	253309
S/T	2	VKDBV108-DA	253301	VKDBV208-DA	253310
Socket	2-1/2	VKDAV109-DA	253302	VKDAV209-DA	253311
Socket	3	VKDAV110-DA	253303	VKDAV210-DA	253312
Socket	4	VKDAV111-DA	253304	VKDAV211-DA	253313



## Pneumatic – SPRING RETURN, NORMALLY CLOSED

### PVC w PTFE Seats

S/T	1/2	VKDBV103-NC	253332	253341	253341
S/T	3/4	VKDBV104-NC	253333	253342	253342
S/T	1	VKDBV105-NC	253334	253343	253343
S/T	1-1/4	VKDBV106-NC	253335	253344	253344
S/T	1-1/2	VKDBV107-NC	253336	253345	253345
S/T	2	VKDBV108-NC	253337	253346	253346
Socket	2-1/2	VKDAV109-NC	253338	253347	253347
Socket	3	VKDAV110-NC	253339	253348	253348
Socket	4	VKDAV111-NC	253340	253349	253349

## Pneumatic – SPRING RETURN, NORMALLY OPEN

### PVC w PTFE Seats

S/T	1/2	VKDBV103-NO	253368	253377	253377
S/T	3/4	VKDBV104-NO	253369	253378	253378
S/T	1	VKDBV105-NO	253370	253379	253379
S/T	1-1/4	VKDBV106-NO	253371	253380	253380
S/T	1-1/2	VKDBV107-NO	253372	253381	253381
S/T	2	VKDBV108-NO	253373	253382	253382
Socket	2-1/2	VKDAV109-NO	253374	253383	253383
Socket	3	VKDAV110-NO	253375	253384	253384
Socket	4	VKDAV111-NO	253376	253385	253385

# VKD SERIES PVC BALL VALVE, ELECTRIC - 100-240 VAC

End Connection	Size inches	Significant Number	EPDM Product Code	Significant Number	FPM Product Code
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## Electric – DOUBLE ACTING

### PVC w PTFE Seats

S/T	1/2	VKDBV103-EL	253404	VKDBV203-EL	253413
S/T	3/4	VKDBV104-EL	253405	VKDBV204-EL	253414
S/T	1	VKDBV105-EL	253406	VKDBV205-EL	253415
S/T	1-1/4	VKDBV106-EL	253407	VKDBV206-EL	253416
S/T	1-1/2	VKDBV107-EL	253408	VKDBV207-EL	253417
S/T	2	VKDBV108-EL	253409	VKDBV208-EL	253418
Socket	2-1/2	VKDAV109-EL	253410	VKDAV209-EL	253419
Socket	3	VKDAV110-EL	253411	VKDAV210-EL	253420
Socket	4	VKDAV111-EL	253412	VKDAV211-EL	253421



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