



Spring housing cut away

The diagram shows the torque requirement of a typical ball valve under normal conditions. The typical torque output characteristics of Kinetrol and Rack and Pinion actuators, both sized to overcome the valve's breakout torque, are also illustrated. The diagram demonstrates that the Kinetrol actuator will exceed the torque requirement of the valve throughout the entire stroke whilst the rack and pinion unit will fail to reseat the valve.

The higher torque losses associated with the rack and pinion actuators (torque loss can be as high as 70%) dictate the selection of larger units to ensure complete reseating.

Lowest Torque Loss

Typically 20% through 90° yields extra torque through spring stroke - enables the selection of smaller actuators (see diagram)

Reliable low stress range clock type spring

Separate housing for modular assembly, easily retrofitted

Sealed, non-breathing housing

Protects spring in corrosive environments

Adjustable pretension for 'balanced' air and spring stroke torques

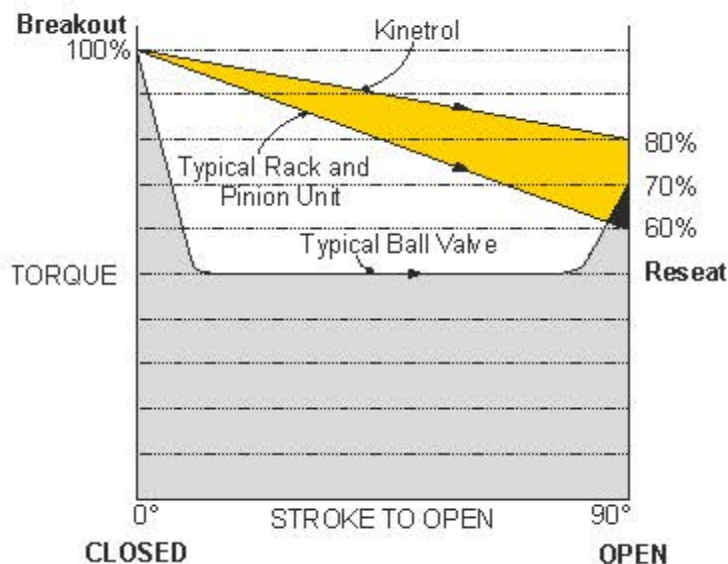
Various combinations available for balanced / optimised torques at various air pressures

Keeper plates available to ensure safe handling of pretensioned springs

Available with ISO/DIN female drive and mounting for models 03-20

Springs guaranteed against failure for lifetime of actuator

ATEX Category 1 approved for many models
Category 2 for other models



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SPRINGS**

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ATEX
UP TO CATEGORY 1
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Direction of Spring Action

Spring units are available for either clockwise or counter clockwise spring action.
Spring units are mounted as standard between the actuator and what it drives. With spring units alone, direction is determined by looking at the unit from the end which interfaces with the actuator.



Suffix - 020 = clockwise
Suffix - 030 = counter clockwise

The direction of actuator/spring assemblies are determined by looking at whole assembly from the non-output end.

Asymmetrical Torque Applications

If high torque is required in one direction and lower torque in the other direction this can be set up easily by changing spring pretension to be higher or lower as required. Air stroke torque will always be double-acting torque (at air pressures available) less spring pretension torque.

Low Air Pressure Applications

If air pressure available for actuator operation is less than 50psi (3.5 bar), 'balanced' torque output on air and spring strokes is still possible by using a spring return unit from a smaller actuator size. Listed below are factory assembled options of this kind.

Replace the '*' used in ordering codes below with a '2' (clockwise) or '3' (counter clockwise) depending on direction of spring action required.

See pages 59 & 60 for full torque details and pages 51 & 52 for dimensions of all models. Refer to TD121 for available male and female drive low pressure spring options.

Ordering Code	Description
03-1*0-5600	03 actuator with one 02 spring unit
07-1*0-4000	07 actuator with one 05 spring unit
09-1*0-4200	09 actuator with one 07 spring unit
10-1*0-5800	10 actuator with one 09 spring unit
12-1*0-4300	12 actuator with one 09 spring unit
12-1*0-4400	12 actuator with two 09 spring units
14-1*0-4900	14 actuator with two 12 spring units
14-1*0-5000	14 actuator with one 12 spring unit
15-1*0-5900	15 actuator with two 14 spring units
16-1*0-6000	16 actuator with one 14 spring unit and one 12 spring unit
16-1*0-6100	16 actuator with one 14 spring unit
18-1*0-7000	18 actuator with one 16 spring unit
20-1*0-7200	20 actuator with two 16 spring units
20-1*0-7300	20 actuator with three 16 spring units
30-1*0-7600	30 actuator with three 16 spring units
30-1*0-7700	30 actuator with four 16 spring units
30-1*0-7800	30 actuator with five 16 spring units

Pretension Setting

Factory assembled actuator/spring return assemblies have the spring pretension set for 'balanced' torque output when the actuator is operated by air at 80psi (5.5bar).

Factory assemblies can be preset for different air pressures below 80psi (5.5 bar) on request.

Spring return units supplied separate from actuators are also pretensioned for 80psi (5.5 bar) air operation unless otherwise stated.

Keeper Plates

These are provided on all pretensioned spring return units supplied separate from actuators. They are also available as spare parts. Refer to TD121 for part numbers.

A keeper plate must always be used to restrain spring tension whenever a spring unit case is removed from the actuator.

Materials Specifications

Spring Casing	Models 02 to 07 pressure die-cast in ZL 16 zinc alloy. Models 08 to 30 in aluminium alloy.
Finish	Epoxy stove enamel.
Spring	Clock type spring steel.
Square Mount Holes (output end)	Steel, zinc plated. Same as matching actuator (except model 01), low pressure combinations & ISO drive versions. See page 51/52 & TD121.

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