



# ENAPART



93 S Railroad Avenue Unit C  
Bergenfield NJ 07621 USA  
[www.enapart.com](http://www.enapart.com)  
[sales@enapart.com](mailto:sales@enapart.com)



Via del Canneto 35,  
Borgosatollo, Brescia - Italia  
[www.enapart.it](http://www.enapart.it)  
[vendite@enapart.it](mailto:vendite@enapart.it)



Barbaros Mah. Ihlamur Bul. Ağaoğlu  
My Newwork No:3/15 Ataşehir / İstanbul  
[www.enapart.net](http://www.enapart.net)  
[satis@enapart.net](mailto:satis@enapart.net)



PRIVADA 10 B SUR #3908 COL.  
ANZUREZ, C.P. 72530, PUEBLA, PUE  
[www.enapart.com.mx](http://www.enapart.com.mx)  
[sales@enapart.com.mx](mailto:sales@enapart.com.mx)



Friedrich-Ebert-Anlage 36, 60325  
Frankfurt am Main, Germany  
[www.enapart.de](http://www.enapart.de)  
[anfrage@enapart.de](mailto:anfrage@enapart.de)



4 boulevard Carnot, 95400  
villiers-le-bel, Paris, France  
[www.enapart.fr](http://www.enapart.fr)  
[sales@enapart.fr](mailto:sales@enapart.fr)



65049, ОДЕСА, ВУЛИЦЯ ІВАНА  
ФРАНКА, БУДИНОК 55, ПОВЕРХ 3  
[www.enapart.com.ua](http://www.enapart.com.ua)  
[sales@enapart.com.ua](mailto:sales@enapart.com.ua)



MUNICIPIUL BUCUREȘTI, SECTOR 3,  
B-DUL BASARABIA, NR.250, CORP P+5  
[www.enapart.ro](http://www.enapart.ro)  
[sales@enapart.ro](mailto:sales@enapart.ro)



〒584-0023 大阪府富田林市若松町  
東2丁目2番16号  
[www.enapart.co.jp](http://www.enapart.co.jp)  
[sales@enapart.co.jp](mailto:sales@enapart.co.jp)



PLAZA NUESTRA SEÑORA DE LAS  
NIEVES 12 ,LOCAL ,50012,ZARAGOZA  
[www.enapart.es](http://www.enapart.es)  
[ventas@enapart.es](mailto:ventas@enapart.es)



Складова база „Онгъл“, Склад А2, п.к.  
4006, гр. Пловдив, България  
[www.enapart.bg](http://www.enapart.bg)  
[sales@enapart.bg](mailto:sales@enapart.bg)



3 Austin Mews, High Street, Hemel  
Hempstead, HP1 3AF , United Kingdom  
[www.enapart.co.uk](http://www.enapart.co.uk)  
[sales@enapart.co.uk](mailto:sales@enapart.co.uk)

































































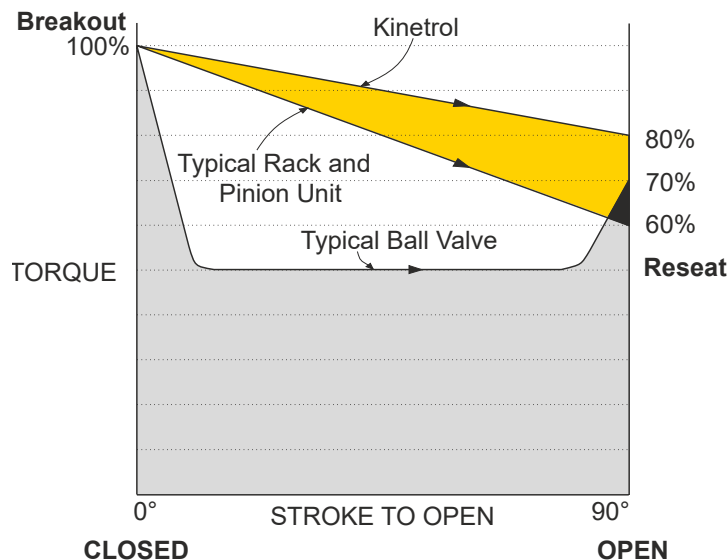
Spring housing cut away

- **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

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.

All spring units are guaranteed, in normal use, to operate correctly for as long as the original actuators to which they were fitted.



**KINETROL SPRINGS**

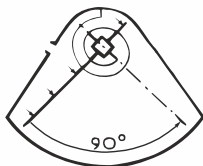
Lifetime Guarantee



**ATEX**  
UP TO CATEGORY 1  
APPROVED

## 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 (except model 01 & 60). 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 7 & 8 for full torque details and pages 59 & 60 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
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*0-8000	20 actuator with one 18 spring unit
20-1*0-7300	20 actuator with three 16 spring units
30-1*0-7600	30 actuator with three 16 spring units
30-1*0-8300	30 actuator with two 18 spring units
30-1*0-7800	30 actuator with five 16 spring units
60-1*0-8400	60 actuator with four 18 spring units
60-1*0-8500	60 actuator with five 18 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 TD129 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

<b>Spring Casing</b>	Models 02 to 05 pressure die-cast in ZL 16 zinc alloy. Models 07 to 60 in aluminium alloy.
<b>Finish</b>	Epoxy stove enamel.
<b>Spring</b>	Clock type spring steel.
<b>Square</b>	Steel, zinc plated.
<b>Mount Holes (output end)</b>	Same as matching actuator (except model 01 & 60), low pressure combinations & ISO drive versions. See pages 59/60 & TD121.





- Simple, elegant direct-mount interface for most valves
- Multiple ISO mounting flange hole drillings for each model
- Large ISO/DIN compatible 'star' drive for most models
- Valve leak tell-tale/relief slots in mounting face
- Female serrated insert drive options available for maximum direct mount flexibility on some models
- Keeper plates available to ensure safe handling
- Same reliable, long-life, fully sealed spring unit as on male-drive units
- Allows accessories to be direct mounted to top of actuator (e.g positioner)

Torques are identical to standard and low pressure spring torques given on pages 7 & 8.

Directions of spring action are as described on page 28. Female drive spring units are always designed to be mounted between the actuator and the application. Consequently, a female spring designated 'clockwise' as a separate module will, when mounted below an actuator, result in a 'clockwise' assembly. Female drive springs are not designed to interface directly with modular switch boxes, positioners etc.

## ISO/DIN 'Star' Drives

Female bi-square (star) drive spring fail-safe units are available for models 03 to 20.

Star drive units are specified by adding a 'F' to the DIN/ISO code:

e.g. for a standard model 07 actuator with a female star drive, a regular 074-120 code becomes 073F120.

See page 60 for full dimensions.

## Serrated Drives

Female serrated drive spring fail-safe units are available for models 05, 07, 08, 09 & 10 to give maximum mounting flexibility.

Features include:

- Can accommodate large diameter valve stems
- Deep hole in shaft for long valve stems
- Precision stainless steel inserts
- Common internal drive shapes available
- Same spring can be used with different valve type/sizes
- 48 teeth allow many different orientations

Serrated drive units are (excluding couplings) specified by adding an 'S' to the ISO/DIN code:

e.g. for a standard model 07 actuator with a serrated female drive, a regular 074-120 code becomes 073S120.

See TD141 for full dimensions of the serrated drive springs and associated couplings.

A range of blank and internally profiled serrated stainless steel couplings are available (see TD141 for codes).

## Coding of Alternative Flange Drillings

Some female spring fail-safe star and serrated drive models are available with alternative ISO mounting hole patterns (see page 60 and TD141). The digits '8' and '9' are used to designate clockwise and anti-clockwise versions respectively:

e.g. clockwise code 053F180 specifies the F04 flange alternative of the 053F120 which specifies the clockwise F03/05/07 version.

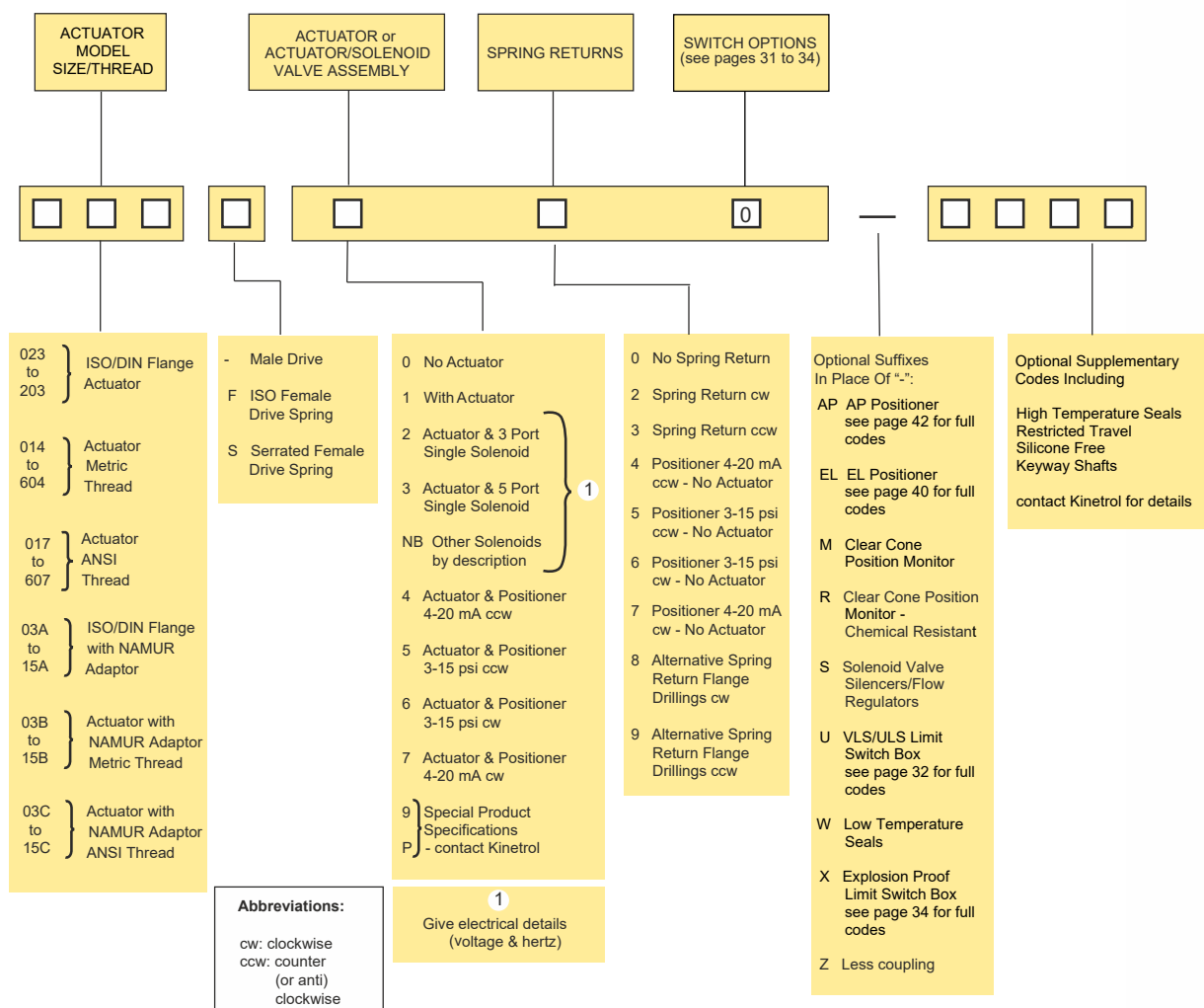
**KINETROL  
SPRINGS**

Lifetime Guarantee





## Kinetrol Actuators and Add-On Control Units



### EXAMPLES

- A. 054-100 Double acting actuator (Metric threads) no optional supplementary items
- B. 054-120M A + spring return (fail-safe cw) + Clear Cone monitor
- C. 057-100 Double acting actuator (ANSI threads)
- D. 144-130-4900 144 actuator (Metric threads) + spring return fail-safe ccw (2 x 124 springs)
- E. 053F100 Double acting actuator with ISO adaptor

- 180° Actuator ordering codes - see page 51
- Damper Drive ordering codes - see page 54
- Female Drive Spring Unit ordering codes - see page 29
- Geared Manual Override ordering codes - see page 55
- ISO Adaptor ordering codes - see page 26
- Low Pressure Air Application ordering codes - see page 28
- Manual Fail-Safe Unit ordering codes - see page 47
- Fire Fail-Safe Unit ordering codes - see page 49
- P3 On/Off Positioner ordering codes - see page 44
- Explosion Proof P3 On/Off Positioner ordering codes - see page 45
- Spring to Centre ordering codes - see page 50
- DeviceNet ordering codes - see page 37



Offers a wide range of signalling options in a fully enclosed, corrosion resistant metal case. Available for direct mounting onto Kinetrol rotary actuators or discrete mounting via an industry standard VDI/VDE interface onto any make of rotary actuator. Easy to wire and set up with industrial standard robustness. Internally fitted options include AS Interface digital communication and a 4-20mA, 2-wire modulating angle retransmit circuit.

The range of switch and terminal arrangements includes 2 or 4 switches, extra connections allowing single point termination of wiring for limit switches and solenoid valves. ATEX approved Ex d (Category 2) explosion proof and Ex ia intrinsically safe packages (Category 1). Integral sealed Clear Cone Monitor and red/green Led indicator options also give high visibility external visual indication of position.

## Specification

### Casing

Precision diecast aluminium alloy, switch option 003  
Ex d diecast zinc alloy

### Finish

Epoxy stove enamel

### Seals

Nitrile rubber 'O' ring seals

### Cable entry options

2 or 4 entries

M20 x 1.5 Conduit thread  
or  
1/2 NPS Conduit thread

4 Way plug DIN 43650A  
(fits either conduit thread)

4 Way M12 Connector  
(M20 Conduit thread only)

### Dimensions

See page 61

- Units sealed to IP67/NEMA 6 (ATEX units IP66/NEMA 4X, IP67 option available)
- Robust corrosion resistant epoxy painted diecast box
- Easy and accurate setting of switch position
- Available for direct mounting to Kinetrol models 03 to 15 (for minimum height)  
Discrete Kinetrol 05 square drive insert for use with Kinetrol actuator models 16 to 60
- Quick access - No special tools required
- Discrete VDI/VDE (NAMUR) interface option for use with industry standard actuators
- Two or four cable entries as standard to allow back wiring of solenoid valves
- Multiple switch options available for general and hazardous areas
- AS Interface bus circuit option inside box reads up to 4 switch inputs, drives up to 2 solenoids powered by bus only (see pages 35 & 36)
- DeviceNet option inside box with various network speeds allows 2 on / off inputs and drives up to 2 solenoids (see page 37)
- Optional Clear Cone monitor available
- Integral LED indicator lamps and angle retransmit circuit options are available
- Compact SPST version of type 004 available for model 02 actuator

### LOAD RATINGS FOR STANDARD MICROSWITCHES (type 004)

Voltage	Resistive Load
125 V AC	15A
250 V AC	15A
up to 12 V DC	15A
up to 24 V DC	10A
up to 48 V DC	3A
up to 250 V DC	0.25A

### MULTIPLICATION FACTORS FOR NON-RESISTIVE LOADS

Steady state tungsten lamp load	- x 0.1
Steady state inductive load	- x 0.2
Peak inductive load	- x 1.0

### Weight

VLS	–	0.68kg
Uls Switch Options		
001 and 009	–	1.05kg
003	–	1.4kg

### Temperature Range

Standard -20°C to +80°C  
High Temp Seals up to 100°C  
Also see switch temperatures on page 32

# VLS/ULS Limit Switch Box

## KINETROL 32





The Explosion Proof Limit Switch Box offers a wide range of signalling options in a compact corrosion resistant aluminium alloy housing. Available for close - mounting onto Kinetrol actuators or discrete mounting via a Kinetrol 05 square or industry standard VDI/VDE interface onto any make of rotary actuator. Easy to wire and set up with true industrial robustness.

Internally fitted options include AS interface digital communication and a 4-20mA, 2-wire, modulating angle retransmit circuit. The range of switches and terminal arrangements includes 2 or 4 switches and extra connections - allowing single point termination of wiring for limit switches and solenoid valves. This product is available to mount on Kinetrol models 03 - 60.

- Wide range of worldwide explosion proof approvals including IECEX, ATEX & FM (for USA & Canada) - all in one device
- All units protected to IP66 / NEMA 4X / TYPE 4X
- Attractive, functional and part-spherical profile. Robust corrosion resistant, anodised & epoxy painted diecast aluminium alloy housing
- Close - mount to Kinetrol actuator models 03 - 15 for low profile
- Discrete Kinetrol 05 square drive insert for use with Kinetrol actuator models 16 - 60
- Discrete NAMUR drive for use with VDI/VDE 3845 drive actuators
- 2 or 4 cable entries available to allow back wiring of solenoid valves
- Up to 4 switches available for SPDT, DPDT or multiple circuit operation
- Easy and accurate setting of switching position
- Optional antistatic Clear Cone Monitor available
- Integral angle retransmit circuit options are available
- Integral AS interface bus circuit option reads up to 4 switch inputs and drives up to 2 bus powered solenoids
- -40° C to +80° C ambient operating temperatures (dependent on switch options)
- Positioner options available



## Switching Operation Conditions

Switch Code	Voltage		Current	Temperature Range
	AC	DC		
1/A	—	8	6mA	-20°C to +80°C
4/7	250	48	2.4A AC/1.8A DC	-40°C to +80°C
5/B	250	300	100mA	-25°C to +70°C
6/C	—	60	100mA	-20°C to +80°C
9/D	—	30	100mA	-40°C to +80°C
E/F	140	140	200mA	-25°C to +80°C
M/N	—	30	100mA	-25°C to +70°C

## Labels

### IECEX & ATEX - Approval type E



### FMC/U, IECEx & ATEX - Approval type F & P



## Specification

### NORTH AMERICAN APPROVAL

**Type of protection, Explosion Proof**  
 US: Class I, Division 1, Gas groups B,C,D. Class II, Division 1, Dust groups E,F,G. T5 NEMA 4X.  
 For Gas group A use order code "P".  
 CANADA: Class I, Division 1, Gas groups B,C,D. Class II, Division 1, Dust groups E,F,G. T5 TYPE 4X.

**EUROPE/GLOBAL - ATEX / IECEx APPROVAL**  
**Protection concept, Flame Proof 'd'**  
 Group II C/A21, Category 2, Gas & Dust, T5, IP66

**Casing** precision diecast LM24 alloy, anodised & epoxy stove enamel.

**Coupling** zinc plated steel.

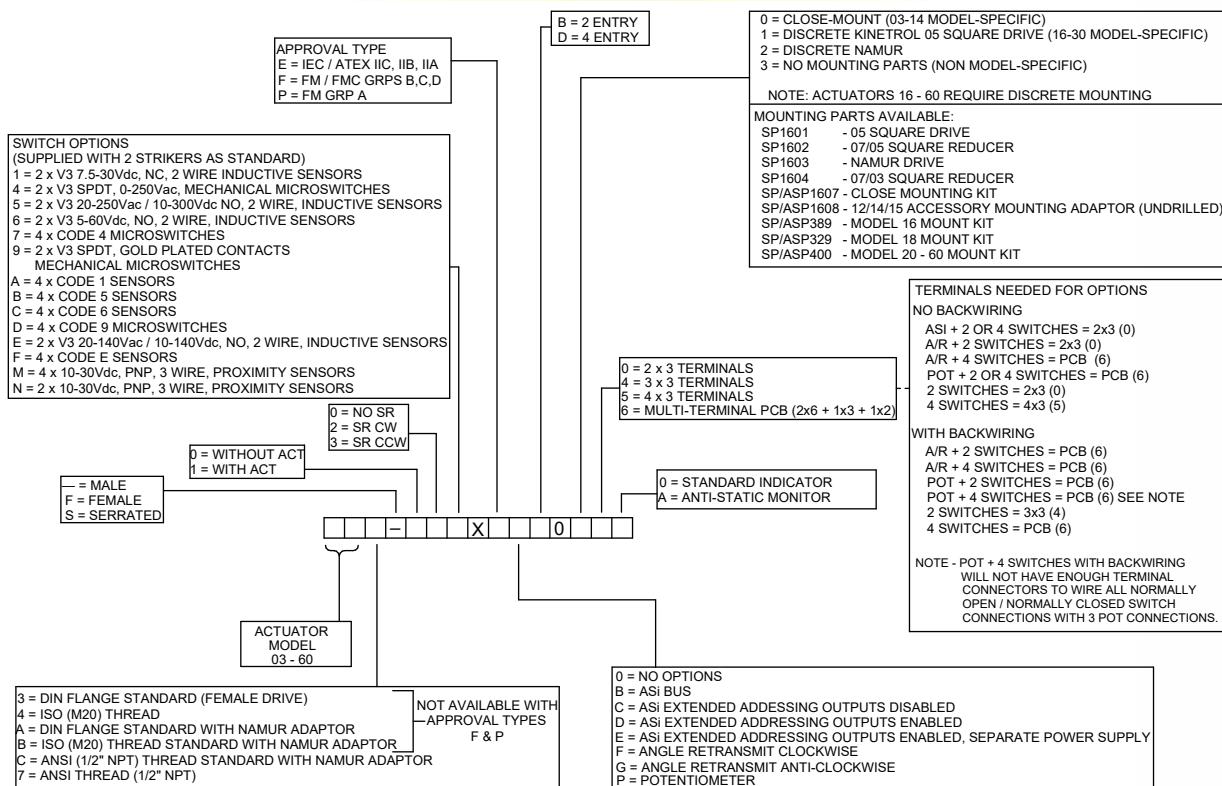
**Seals** fluoropolymer dynamic seals and NBR static seals.

**Weight** 1.5 kg

**Cable Entry Options** M20 x 1.5 or 1/2" 14 NPT conduit entry threads.

**Dimensions** see page 61

## Ordering Codes



For more information  
see KF-619







## AS Interface Bus

The Actuator Sensor Interface card allows easy digital serial communication for your sensors and actuators, allowing your actuators to be controlled and monitored when they are in the field, via a single 2 wire cable.

AS interface devices are used to make up control systems based on a two-wire communication cable known as a bus. These can be controlled or monitored by means of a digital signal sent via the bus to and from a "master" device (which can be a computer or a PLC).

The slave devices will always function in response to commands sent by the master device, either to actuate or to return a message reporting the value of a sensed variable, or both. The AS Interface specification allows 31 or fewer slave devices to be powered by a DC voltage fed into the same two wire cable used as the communication bus, with allowed power consumption adequate to drive the slave plus a standard pneumatic solenoid valve.

An AS Interface bus can be used as the final field link in a more complex hierarchy of devices making up a large plant-wide control system. Actuators and sensors must often be installed in unprotected environments where conditions can be demanding; the AS Interface bus can be used as the link between these field devices and the "indoor" equipment making up the upper part of the control system.

The AS Interface bus is designed for on/off control and monitoring. It is a good choice when a simple, economical, reliable and robust solution is required for controlling and monitoring a series of actuators and sensors in a process control or machine application.

## The Kinetrol AS Interface Card

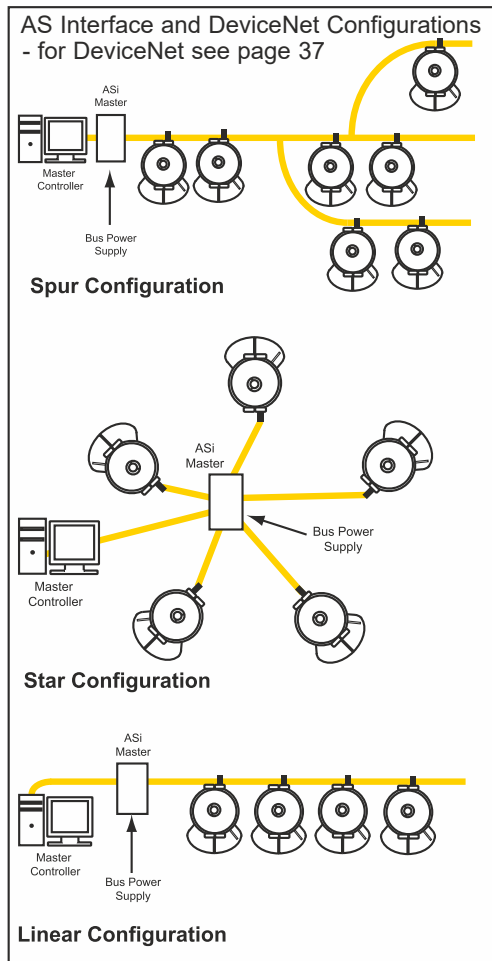
The Kinetrol AS Interface card is fitted inside the Kinetrol VLS Limit Switch box, thus combining the industrial quality robustness of the box with the advantages of digital serial communication.

The AS interface bus cable can be routed in through the conduit entries and connected to the internal terminal blocks. Alternatively, an M12 connector plug facing outwards from the conduit entry can be supplied to allow quick connection from M12 sockets or with clip on adaptations for ribbon type yellow AS interface cables.

## AS Interface Card Features

- AS interface 2.1 compatibility
- Up to 31 units with solenoid valve on-off control, powered and controlled via a single, two core cable
- Up to 62 units (using extended addressing)
- All metal robust industrial-quality limit switch box, direct mounted on a Kinetrol actuator
- 2 on/off outputs per unit
- 4 on/off inputs per unit
- Reads mechanical switches or inductive sensors
- Retrofittable to standard Kinetrol VLS Limit Switch Box
- Can also be supplied in an explosion proof housing and with European, North American and Worldwide approvals
- LED external indicator option
- Up to 31 24V 2.5W solenoid valves can be connected to bus with no separate power supply
- M12 connector plug option available for instant bus connection
- Cable clamping connector block for yellow ribbon-type AS interface cable available with M12 socket to fit onto plug option
- Output short circuit protection built in
- Operating temperature range  
-20°C to +80°C  
(-40°C option available - contact Kinetrol)





## AS Interface 2.1 Specification

- Master - Slave protocol
- Up to 31 Slaves per Master
- Each Slave has its own unique address (set by user)
- All Slaves can be scanned every 5 milliseconds
- Baud Rate - 197 Kbits/second
- Slaves may be added anywhere in the bus
- Slaves may be parallel connected on the bus, using star or spur configurations
- Up to 124 inputs per bus
- Up to 124 outputs per bus, 62 using the Kinetrol device
- 26.5 to 31.5 Vdc, 8 A max power supply
- 100 m (325ft) maximum cable length (repeaters may extend network distance)
- Untwisted, unshielded, 2-wire (1.5mm<sup>2</sup>) cable can be used

## AS Interface Extended Addressing

Kinetrol's AS Interface circuit is a slave device to allow 32 devices (usually 31 slaves plus an AS Interface master device) to be powered and controlled via a 2-wire bus cable, with full capability to energise one solenoid on every unit all at the same time. This is the standard (Option code B).

The AS Interface 2.1 specification also allows for an extended address option, whereby 62 addresses can be connected and powered via one bus cable. The specified limits on device capacitance however, mean that if the full extended-address compliment of slaves all had standard solenoid valves connected, the bus limit would be exceeded.

Kinetrol offer these options to allow use of extended addressing:

### 1. (Option Code C)

AS Interface circuit with extended addressing enabled and outputs disabled, to read limit switch sensors only. If a solenoid is connected it will not function.

### 2. (Option Code D)

AS Interface circuit with extended addressing and outputs enabled (one solenoid per interface card), plus added isolating relay option fitted to outputs, to allow up to 31 solenoids to be energised simultaneously even from the bus, though up to 60 slave units may be connected to the bus. This requires the user's control system to include a pre-programmed limit on the maximum number of solenoids to be energised. If the system instructs too many units to switch on solenoids, they will obey, and the bus capacitance limit will be exceeded – thus this option must be at the user's risk with regard to this issue.

### 3. (Option Code E)

AS Interface circuit with extended addressing and outputs enabled (one solenoid per interface card), plus added relay options fitted to outputs to allow solenoid valves to be powered by a supply separate from the AS Interface bus. This option requires a separate 24V DC power supply to each actuator, and allows up to 60 slave units to energise their solenoids simultaneously.

To order the Kinetrol AS Interface card refer to codes for VLS/ULS Limit Switch Box or Explosion Proof Limit Switch Box on pages 32 and 34.

For more information  
see KF-496





## DeviceNet Protocol

DeviceNet allows the user to build an intelligent communication network with various control devices, all feeding back to a central control unit. Using the Master-Slave model, up to 63 devices can be monitored and controlled in a single network. (see page 36 for DeviceNet configurations).

The control network is formed using the DeviceNet 5-core bus cable, providing both communication transport and power to each node within the system. The power provided through the bus is enough to drive the DeviceNet card with additional power available to drive one solenoid valve at each node. The bus cable can be routed to the terminal blocks via the switch box conduit entries or alternately, M12 connector plugs can be installed for quicker and easier connection.

The DeviceNet card can be installed remotely or locally, using either the Master controller or the provided DIP switches to set up each node in the system.

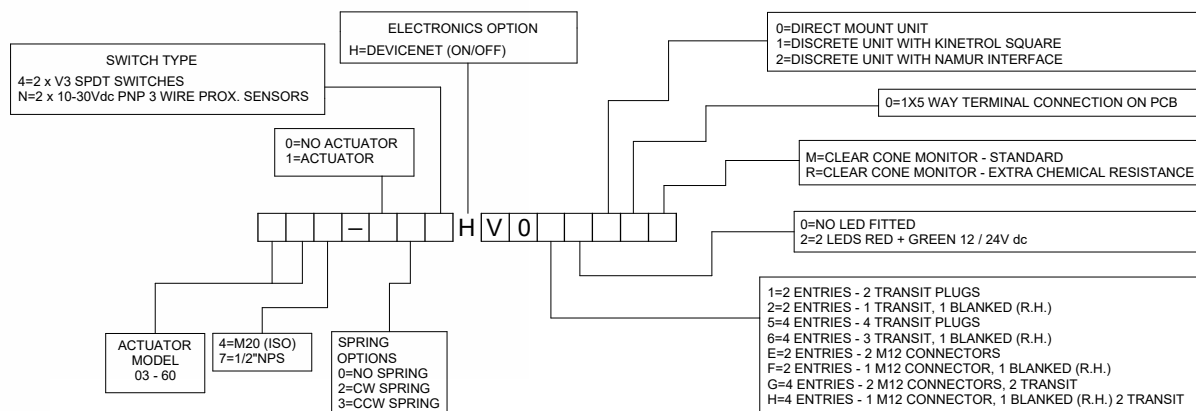
## DeviceNet On/Off Communication Card

Kinetrol's DeviceNet communication option is available within the Kinetrol VLS limit switch box and offers the same advantages plus the highly specified DeviceNet circuit to give genuine industrial quality and integration capabilities into existing DeviceNet networks.

### Specification

- Up to 63 units with on-off control, powered and controlled using DeviceNet's 5-core cable
- Single 5-way terminal provided with each card
- Field selectable network speeds (125, 250 and 500 Kbits/s)
- Available in the Kinetrol VLS limit switch box and is retrofittable
- 2 on/off outputs and inputs per unit
- Reads mechanical switches or inductive sensors
- LED external indicator option
- Up to 63 24V 1W solenoid valves can be connected to the bus with no separate power supply
- 11.0 to 26.4V dc, 3 W max power supply
- Unique Node ID for each unit in the network (1 to 63)
- M12 connector plug option available for faster installation
- Operating temperature range 0°C to +60°C
- Output short circuit protection built in

## Ordering Codes





## Clear Cone Monitor

The optional Clear Cone provides all round high visibility position monitoring on all limit switch boxes and positioner models. A red/green colour coded monitor is sealed inside a robust, clear polycarbonate cover. Positioner models are marked with black printed legible angle scales.

The monitor is also available directly mounted onto actuator models 03, 05, 07, 08, 09 and 10, all EHD units and 12, 14 & 15 using an adaptor plate.

For highly corrosive environments special cover materials are available - contact Kinetrol for details.

Conductive ATEX approved versions (to Category 1) are available for switch boxes and positioners - contact Kinetrol for details.

For dimensions see pages 61, 62, 63 & 64.



## Solenoid Valves

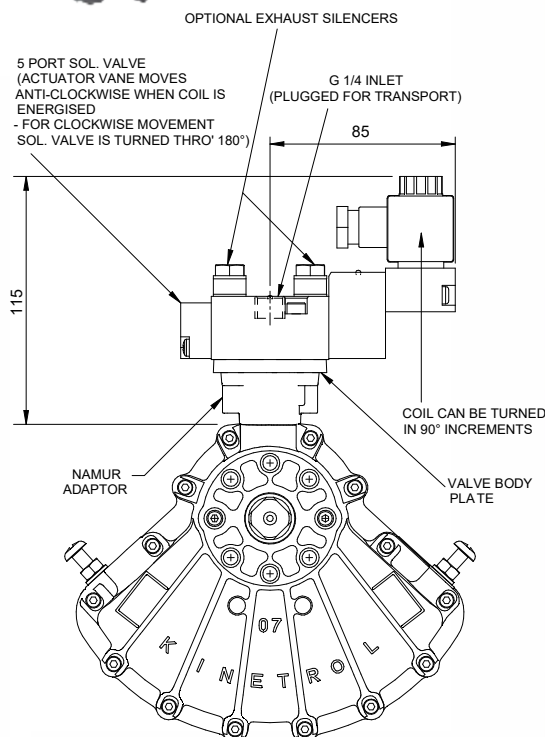
As an option Kinetrol actuator sizes 03 to 15 can be supplied with integral solenoid valves with NAMUR interface. Air is ported through the actuator body via an adaptor so no external tubing is necessary.

Standard optional solenoid valves can be converted to 5 or 3 port versions by changing the valve body plate supplied with the valve.



### Specification

<b>Coil Voltages</b>	AC: 50/60Hz 110V ac, 240V ac and 24V dc For other voltages contact Kinetrol
<b>Electrical Connection</b>	DIN 43650 plug with Pg9 cable gland (6-8mm dia) as standard
<b>Manual Override</b>	extra to order
<b>Exhaust Silencers / Flow Regulators</b>	extra to order
<b>Hazardous Areas</b>	certified solenoids are available as extras to order
<b>Environmental Protection</b>	to IP65 as standard
<b>Minimum Air Supply</b>	2 bar



Single solenoid, 3 or 5 port, interchangeable for double acting or spring return, NAMUR interface. Most brands of NAMUR interface solenoid valve can be supplied to special order.





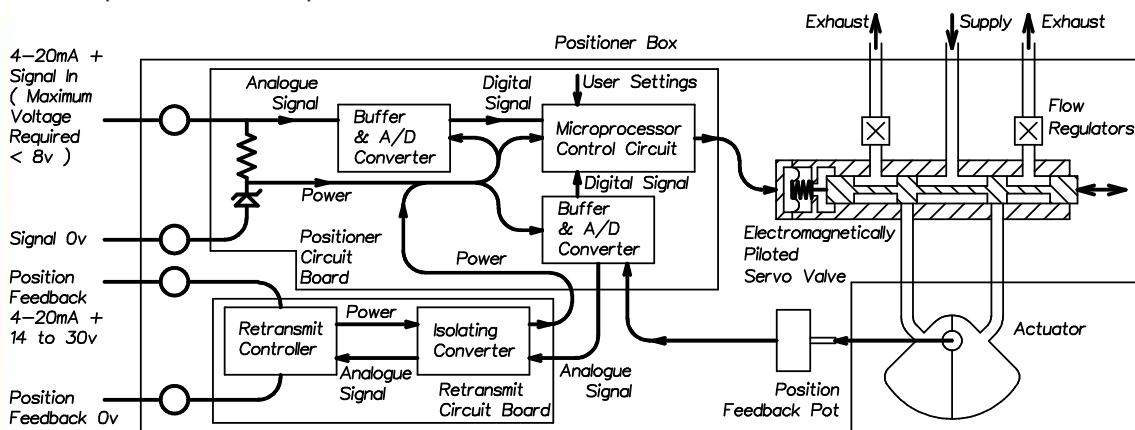
## Operation

The EL positioner uses a unique low power proportional servo valve to control the position of a quarter-turn actuator.

The microprocessor in the loop-powered 4-20mA position circuit reads the signal via one channel of a 12-bit A-D converter, reads the position voltage from the feedback potentiometer via the second channel of the A-D converter, and compares the two. If it detects a position which is different from that required by the signal, it changes the output to the servo valve, in order to drive the actuator in the direction required to reach the correct position. As the actuator moves, the feedback potentiometer voltage changes and the microprocessor continually calculates the adjustments required for the servo valve in order to guide the actuator accurately into position. The microprocessor is programmed with a sophisticated but compact algorithm which allows this critical dynamic valve adjustment to be made correctly. This in turn gives optimal results with any actuator/load combination - slow or fast, low or high friction, low or high inertia. All can be optimised by tuning the PGAIN and DAMP parameters via the positioner circuit push buttons.

The EL positioner controls airflow to an actuator and moves it to a position determined by a 4-20mA signal. Its features are:

- **Fast, smooth and precise control from a digital circuit and proportional servo valve**
- **Simple time saving field set up**  
Quick calibration via push buttons and LED feedback and easy reversal of rotation sense (clockwise/counter clockwise) without special tools or parts change.
- **Universal application**  
The unit can be mounted in any orientation on to any quarter turn or linear application by connection via a NAMUR or Kinetrol square interface.
- **Loop powered**  
No separate power needed, just a 4-20mA signal plus air supply.
- **Integral options - easily retrofitted modules include:**
  - two wire 4-20mA isolated angle retransmit
  - mechanical or inductive position indicator switches (general or hazardous areas)
  - Clear Cone high visibility indicator
  - Threaded conduit entries or DIN plugs for external connection.
- **Intrinsically safe approved options**
- **Weatherproof, compact and robust metal housing**
- **Zero backlash coupling with easily adjustable switch strikers**
- **Vibration and shock resistant to 4G**
- **Built in gauge ports/external connections**



Simplified Functional Diagram of EL Positioner



## Application

The EL positioner can be directly mounted on standard Kinetrol actuator models 05 to 15, both double acting and spring return, giving an assembly with no external plumbing, wiring or mechanical connections and the best backlash free control. Mount kits are available for models 16, 18, 20, 30 and 60 actuators.

Alternatively, discrete versions mount on any actuator via VDI/VDE 3845 NAMUR drive, or Kinetrol male square, with mounting bracket. Special adaptations for linear cylinders are also available - consult Kinetrol for details.

The EL Positioner ATEX approval includes the fitting of a special version of the popular Clear Cone high visibility monitor.

## Travel Times

Maximum velocity (no load) at 80 psi / 5.5 Bar  
Direct mount from EL positioner to actuator

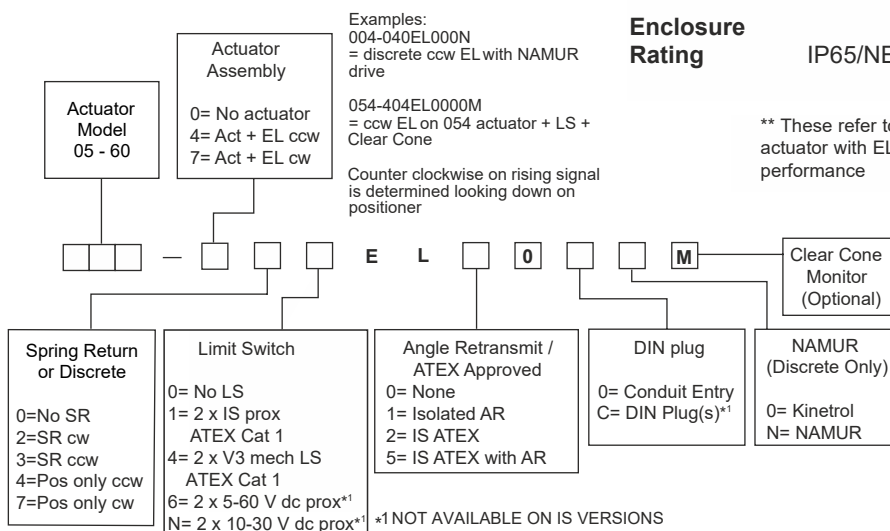
Model	05	07	08	09	10	12	14	15
Deg/Sec	129	65	38	33	22	15	7.5	4.3

\*Externally piped from EL positioner to actuator

Model	7*	8*	9*	10*	12*	14*
Deg/Sec	76	46	38	28	18	8.6

Model	15*	16*	18*	20*	30*	60*
Deg/Sec	4.3	4.1	2	1	0.7	0.3

## Ordering Codes



## Specification

**Air Supply** instrument quality (dry, clean, oil free Class 6.4.4 ISO8573.2001), 3.5 to 7 bar (50 psi to 100 psi). Consult Kinetrol for 5µm inlet air filter option

**Signal** 4-20mA, requiring max 8V to drive through positioner circuit

**Control Response** 0-90° positioning with one linear and 10 non-linear preselected characteristics as standard. Consult Kinetrol for the following versions:  
i) linearisation of butterfly valve characteristics  
ii) Pre-selected travel time extension option (with active feedback control of travel speed)  
iii) customised responses

**Sensitivity** better than 0.1mA\*\*

**Hysteresis** better than 0.7% of span\*\*

**Repeatability** better than 0.7% of span\*\*

**Deviation from Linearity** less than 0.7% of span\*\*

**Flowrate** 3.3 scfm/93 l/m @ 5.5 bar

**Operating Temperature** -20° to +70°C

**Adjustments** low & high points (define range), proportional gain, velocity proportional setpoint advance (damping)

**Weight** 2.95 kg/6.5 lb

**Dimensions** see page 63

**Materials** case and cover - zinc alloy  
spool and liner - stainless steel

**Finish** epoxy stove enamel

**Enclosure Rating** IP65/NEMA 4X

\*\* These refer to the combination of Kinetrol actuator with EL positioner - not just the positioner performance

For more information see KF-372





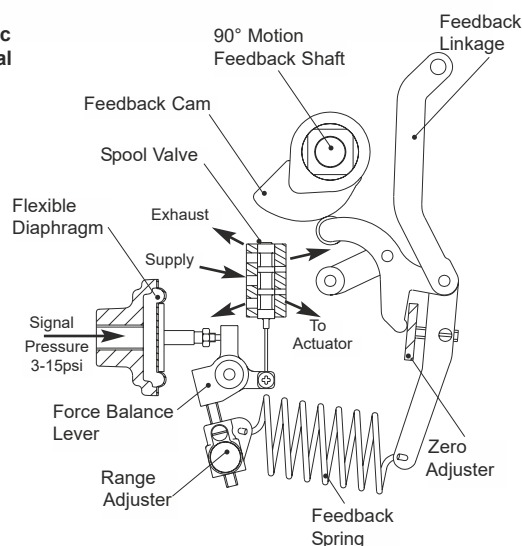


## Operation

The AP Positioner is designed to drive a rotary or linear actuator to a position set by a 3-15 psi (0.2 to 1.0 bar) signal and hold it there until the signal changes. When a signal pressure is applied to the diaphragm it moves the force balance lever clockwise against the tension of the feedback spring. This moves the spool valve, supplying air pressure to one side of the actuator while exhausting trapped air from the other side. The feedback shaft follows the movement of the actuator and turns the cam counter clockwise, pushing the cam follower and increasing the tension on the feedback spring until it balances the forces on the diaphragm and moves the spool valve to its hold position.

The input signal and desired position is determined by the cam profile. A cam giving 0-90° output movement linearly proportional to a 3-15 psi (0.2-1.0 bar) signal is standard, and almost any desired characteristic can be supplied to order; if it cannot be found in the list of existing options contact Kinetrol.

**Schematic Functional Diagram**



The AP positioner moves an actuator to a position set by a 3-15psi control signal and holds it there. Its features are:

- **Fast, smooth, accurate response**
- **Simple, all-mechanical function for unbeatable reliability**
- **Three flow options to optimise control on all actuator sizes**
- **Universal application**  
The unit can be mounted in any orientation on to any quarter-turn or linear application
- **Easy set up**  
Quick calibration and reversal of rotational sense (clockwise and counter clockwise) without special tools or parts change
- **ATEX CAT 1 / IECEx approved versions available**
- **Easily retrofitted integral module options include:**
  - Two wire 4-20mA angle retransmit (inside the same case)
  - Mechanical or inductive limit switches (general or hazardous areas)
  - 4-20mA I/P convertors (general or hazardous areas)
  - Clear Cone visual position indicator (general or hazardous areas)
  - DIN plug option for retransmit connection
  - Low (-40°C) and high (100°C) temperature versions available
  - Fail hold options available
  - Choice of mount options - see opposite
- **Weatherproof, compact and robust metal housing**
- **Vibration and shock resistant to 4G**
- **Built in ports for signal air supply and gauge connections**
- **ATEX CAT 2 Exd switch option available**



The AP positioner can be directly mounted on standard Kinetrol models 05, 07, 08, 09, 10, 12, 14 and 15 actuators, both double acting and spring return, giving an assembly with no external plumbing, wiring or mechanical connections and the best in direct backlash free control. Mount kits are available for models 16, 18, 20, 30 and 60.

Alternatively, discrete versions mount on any actuator using VDI/VDE 3845 NAMUR drive, or Kinetrol male square with mounting brackets. Neat adaptations for linear cylinders are also available - consult Kinetrol for details.

## Specification

<b>Air Supply</b>	instrument quality (dry, clean, oil free) 3.5 to 7 bar, (50 psi to 100 psi) standard. Consult Kinetrol for low pressure application
<b>Signal</b>	3-15psi (0.2-1.0 bar) standard. Consult Kinetrol for split range, 6-30 psi etc.
<b>Control Response</b>	0-90° linear output standard. Consult Kinetrol for other characteristic cam options
<b>Sensitivity</b>	better than 0.7% of span*
<b>Hysteresis</b>	better than 0.7% of span*
<b>Deviation from linearity</b>	less than 1% of span*
<b>Flowrates @ 5.5 bar</b>	AP: 3.3 scfm (93nl/min) MP: 10.0 scfm (283nl/min) HP: 27.0 scfm (764nl/min)
<b>Operating Temperature Range</b>	-20° to +80°C Standard -20° to +100°C High Temp -40° to +80°C Low Temp
<b>Weight</b>	2.8 kg/6.2 lb
<b>Materials</b>	<ul style="list-style-type: none"> <li>case and cover - zinc alloy</li> <li>spool and liner - stainless steel</li> <li>diaphragm: <ul style="list-style-type: none"> <li>- reinforced polyurethane (standard)</li> <li>- fluorocarbon rubber (high temp)</li> <li>- silicone rubber (low temp)</li> </ul> </li> <li>feedback spring - steel</li> </ul>
<b>Dimensions</b>	see page 62
<b>Finish</b>	epoxy stove enamel
<b>Enclosure Rating</b>	IP54
<b>Output Torque</b>	same as double acting or spring return actuator. When controlling fast movement of inertia loads consult Kinetrol

\* These refer to the combination of Kinetrol actuator with AP positioner - not just the positioner performance

**Maximum Vibration Tolerance** 4G, 100Hz

**I/P Converter Options** see page 46

## Travel Times

Maximum velocity (no load) at 80 psi / 5.5 bar

Model	05	07	08	09	10	12	14	15
Deg/Sec	180	90	53	45	33	25	10.6	6.0

\*Externally piped from AP positioner to actuator

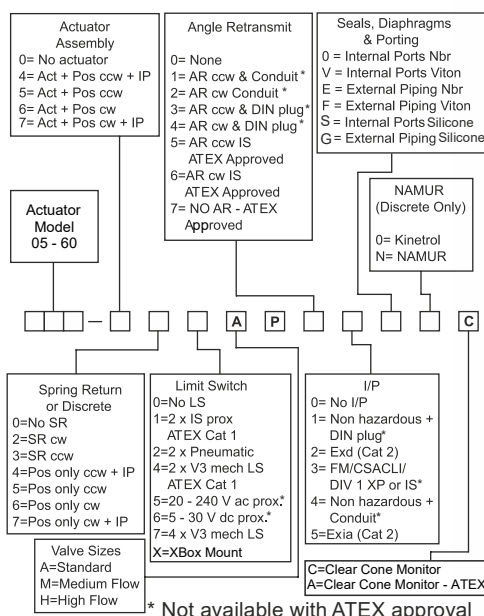
Model	12*	14*	15*	16*	18*	20*	30*	60*
Deg/Sec	32	13.8	7.5	22.5	11.3	5.6	3.8	1.9

## Cam Options

Giving typical control characteristics. Contact Kinetrol for details of other options or see TD112.

Input Control				
Air Signal	Electrical Signal	Output Movement	Characteristic	Cam No.
3-15 psi 0.2-1.0 bar	4-20mA	0-90°	Linear	5-1A
3-9psi 0.2-0.6 bar	4-12mA	0-90°	Linear	5-2A
6-12 psi 0.4-0.8 bar	8-16mA	0-90°	Linear	5-3A
9-15psi 0.6-1.0 bar	12-20mA	0-90°	Linear	5-4A
3-15 psi 0.2-1.0 bar	4-20mA	0-60°	Linear	5-5A
3-15 psi 0.2-1.0 bar	4-20mA	0-45°	Linear	5-6A
3-15 psi 0.2-1.0 bar	4-20mA	0-90°	Proportional Flow	5-7A
3-9 psi 0.2-0.6 bar	4-12mA	0-90°	Proportional Flow	5-8A
9-15 psi 0.6-1.0 bar	12-20mA	0-90°	Proportional Flow	5-22A
3-12 psi 0.2-0.8 bar	4-16mA	0-90°	Linear	5-13A
9-15 psi 0.6-1.0 bar	12-20mA	0-60°	Linear	5-14A

## Ordering Codes



\* Not available with ATEX approval

\* 'A' Valve is supplied with all sizes up to and inc' 09  
\* 'M' Valve is supplied with 10-15  
\* 'H' Valve is supplied with sizes 16-60

UNLESS SPECIFICALLY REQUESTED OTHERWISE  
Recommended spring unit for model 14 actuator is 4900 type. This should be coded 12□49AP or 13□49AP instead of the usual 12□AP or 13□AP. The same applies to other specially coded spring assemblies.

For more information  
see KF-391







The P3 On/Off positioner consists of an electronic positioning circuit mounted in a robust all-metal enclosure, which controls a ¼-turn rotary pneumatic actuator via standard on-off solenoid valves which are direct-mounted on the actuator's own interface.

The P3 circuit is designed so that its assembly can be mounted inside a standard Kinetrol limit switch box (either ULS-type, or explosion proof XLS-type), using only two screws. The P3 assembly includes a feedback potentiometer and anti-backlash gear drive, which engages with gear teeth on the limit switch coupling, to read the actuator's position. The limit switch coupling, complete with gear teeth, needs to replace the standard coupling if a standard box is being retrofitted with a P3.

The positioner circuit is powered by the mid-point input voltage. It functions by comparing the actual mid-point position (read by the feedback potentiometer) with the set position (set via an on-board preset or a remote preset or a remote 4-20mA signal). The positioner circuit uses its solid-state switched outputs to power solenoid valves which drive the actuator towards the position where the set position corresponds with the actual position. When it gets there, the solenoids are switched to hold that position.

The positioner circuit incorporates a unique power supply allowing it to be powered by any of 24V dc, 115V ac or 230V ac, 50/60 Hz, without the need for any change. The supply maintains full isolation of the low voltage control circuit from the power input line (up to 5KV). Switching of the solenoid valve outputs is achieved through opto-isolated solid state switches which operate at all the above voltages – only the solenoid coils themselves need to be adapted specifically to the supply voltage. The use of solid state switching avoids any limitations on relay contact life.

Double acting models are available as fail-free (standard), fail-down (moves clockwise or counter clockwise on loss of electrical power if air supply is still present) and fail-hold (holds position on loss of electrical and / or air supply) variants. Spring return models move in the direction of the spring on loss of electrical or air supply.

An optional angle retransmit (AR) circuit can be retrofitted by plugging it into the top of the positioner circuit and fixing with three screws. The AR circuit is a 2-wire loop-powered 4-20mA device, which reads the position of the positioner's feedback pot. It is fully functional whether or not the positioner circuit is powered. The feedback signal is electronically isolated (ie. floating) relative to the low voltage positioner circuit (which in turn is electrically isolated from the power supply and solenoid connections).

Extra solid-state switches have been incorporated on the positioner board to allow supply to both solenoid valves via a single cable for movement to the upscale position when the positioner is in spring-return or fail-down mode, while still allowing the positioner to control the two valves independently for the mid position. If the mid-position input is energised, then these extra switches isolate the solenoids from the upscale/downscale inputs.

The three power input lines (for up, mid, down positions) are independently fused using plug-in miniature fuses on the positioner circuit board.

External connections are made via a multi-option connector board, which allows simultaneous connection of up to four changeover limit switches, three control supply inputs plus neutral/negative, and a single low-voltage signal. This connector board, like the positioner circuit assembly, mounts in either the standard ULS or XLS box using two screws.

If an angle retransmit circuit is fitted using the low voltage signal terminal, optional 4-20mA inputs or external setpoint pot wires can be connected, either directly to the terminal block on the positioner circuit or, if only three or less limit switches are in use, relayed through an unused limit switch terminal on the connector board.

The limit switch box is fitted with a ground terminal which must be connected to a suitable external ground.

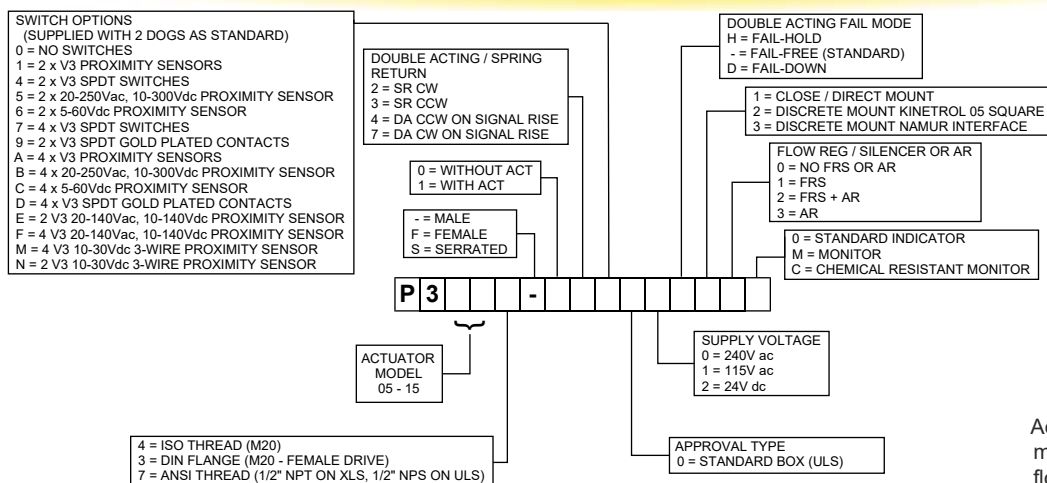
Industrial solenoid valves which permit the use of standard quality air supplies (instrument quality air is not necessary), are direct-mounted on adaptor blocks on the side of the actuator, and electrically connected via steel-armoured flying leads with DIN sockets on the solenoid end. At the positioner end, they connect to two 2-way terminal blocks on the circuit board. A range of solenoid valve options are available, determined by the function required, the supply voltage, and whether or not the unit requires hazardous area certification. Customer selection is via the order code.

- Robust modulating actuator control - tolerant of standard quality air supplies (instrument quality air is not necessary) via industrial solenoid valves.
- Three position rotary control using only three electrical inputs plus air supply, for filling applications etc.
- Two endstop positions + adjustable mid position anywhere in angular range of actuator (90 or 180°).
- Control circuit mounts inside standard all metal industrial quality Kinetrol ULS or XLS limit switch boxes – available fully assembled, or (on non-explosion proof models only) for user retrofit to existing boxes.
- Direct mounting onto model 05 to 15 actuators. Namur mounting options available.
- Uses direct-mounting standard solenoid valves outside box to position actuator.
- Easy adjustment of mid position set point by switch-selectable choice of methods: on-board pot, remote pot or 4-20mA input signal.
- Explosion proof options available (approved to IECEx, ATEX) by use of XLS housing plus standard explosion proof solenoid valves (see page 45).
- All new positioner circuit – runs on 24V dc, 115V ac or 230V ac power without any adjustment.
  - Solid-state universal-voltage solenoid switching -no mechanical contacts.
  - Three separate on-board mains fuses for three inputs.
  - Switchable selection of mid-point setting method (on-board preset, remote preset, remote 4-20mA signal).
  - Switchable selection of double acting or spring return operating mode.
  - Power input isolated from signal inputs and outputs for all voltage options.
  - Moulded reinforced plastic internal circuit cover for insulated safety.
  - Positioner has user-adjustable zero, span, deadband and damping parameters via preset pots for easy optimisation of positioning performance.
  - Damping parameter gives velocity-proportional setpoint advance to allow better stabilisation of fast-moving or high-inertia loads while maintaining resolution and repeatability.
- Retrofittable isolated loop-powered 4-20mA angle-retransmit circuit available – just plugs in inside same enclosure – with its own user-adjustable zero and span presets.

## Specification

<b>Compatible Actuator Sizes</b>	models 05 to 15
<b>Supply Voltages</b>	230V ac $\pm$ 10%, 50 or 60 Hz 115V ac $\pm$ 10%, 50 or 60 Hz 24V dc $\pm$ 10%
<b>Power Consumption</b>	positioner 1.5W max. solenoids 5 VA max. per solenoid.
<b>Operating Temperature Range</b>	-5 to +50°C (limited by solenoid valve specification) explosion proof option see page 45
<b>Operating Pressure</b>	30 to 100 psi 2.0 to 7.0 Bar
<b>Selectable External Inputs</b>	4-20mA - impedance 250 ohm. Potentiometer - minimum resistance 10K ohm.
<b>Positioner Performance</b>	linearity - better than 1% of range deadband - 0.1 to 3% of range repeatability - better than 1% of range
<b>Optional 2-wire Angle Transducer</b>	supply voltage - 14.7 to 27V dc. output - 4-20mA. linearly proportionate to angular position, electrically isolated from all other inputs and outputs functions with or without positioner circuit energisation
<b>Dimensions</b>	see page 64

## Ordering Codes



For more information  
see KF-633

Actuator size 05  
must be fitted with  
flow regulators



The explosion proof P3 on/off positioner offers a robust three position rotary control device with a fast, smooth, accurate response in a compact corrosion resistant, aluminium housing.

The unit is available ATEX approved to Category 2 and offers four voltages, many switch options and angle position feedback. Available for close mounting on Kinetrol actuator models 05 to 15 or discrete mounting via a Kinetrol 05 square or NAMUR drive.

## Specification

### European / Global Protection ATEX / IECEx Approval

Exd Group IIC Category 2  
Gas & Dust T5, IP66

### Voltages

240V ac, 115V ac  
48V dc, 24V dc

### Working Temperature Range

-20°C to +60°C

### Power Consumption

positioner 1.5 W max.  
solenoids 5 VA max. per  
solenoid.

### Selected External Inputs

4-20mA - impedance  
250 ohm.  
potentiometer - minimum  
resistance 10K ohm.

### Casing

precision diecast LM24 alloy,  
anodised & epoxy stove enamel.

### Coupling

zinc plated steel or stainless  
steel option.

### Positioner Performance

linearity -  
better than 1% of range  
deadband -  
0.1 to 3% of range  
(subject to optimisation  
of speed, deadband and  
damping).

### Optional 2-wire Angle Transducer

supply voltage -  
8.5 to 27V dc  
output -  
4-20mA, linearly proportionate  
to angular position, electrically  
isolated from all other inputs  
and outputs  
functions with or without  
positioner circuit energisation

### Dimensions

see page 64

## Ordering Codes

**SWITCH OPTIONS**  
(SUPPLIED WITH 2 DOGS AS STANDARD)  
0 = NO SWITCHES  
1 = 2 x V3 PROXIMITY SENSORS  
4 = 2 x V3 SPDT SWITCHES  
5 = 2 x 20-250Vac, 10-300Vdc PROXIMITY SENSOR  
6 = 2 x 5-60Vdc PROXIMITY SENSOR  
7 = 4 x V3 SPDT SWITCHES  
9 = 2 x V3 SPDT GOLD PLATED CONTACTS  
A = 4 x V3 PROXIMITY SENSORS  
B = 4 x 20-250Vac, 10-300Vdc PROXIMITY SENSOR  
C = 4 x 5-60Vdc PROXIMITY SENSOR  
D = 4 x V3 SPDT GOLD PLATED CONTACTS  
E = 2 V3 20-140Vac, 10-140Vdc PROXIMITY SENSOR  
F = 4 V3 20-140Vac, 10-140Vdc PROXIMITY SENSOR  
N = 2 V3 10-30Vdc 3-WIRE PROXIMITY SENSOR

**DOUBLE ACTING / SPRING  
RETURN**  
2 = SR CW  
3 = SR CCW  
4 = DA CCW ON SIGNAL RISE  
7 = DA CW ON SIGNAL RISE

0 = WITHOUT ACT  
1 = WITH ACT

- = MALE  
F = FEMALE  
S = SERRATED

**DOUBLE ACTING FAIL MODE**  
H = FAIL-HOLD  
- = FAIL-FREE (STANDARD)  
D = FAIL-DOWN

1 = CLOSE / DIRECT MOUNT  
2 = DISCRETE MOUNT KINETROL 05 SQUARE  
3 = DISCRETE MOUNT NAMUR INTERFACE

**FLOW REG / SILENCER OR AR**  
0 = NO FRS OR AR  
1 = FRS  
2 = FRS + AR  
3 = AR

0 = STANDARD INDICATOR  
A = ANTI-STATIC MONITOR  
M = MONITOR  
C = CHEMICAL RESISTANT MONITOR } NOT AVAILABLE WITH  
APPROVAL TYPES E, F & P

**ACTUATOR  
MODEL**  
05 - 15

**SUPPLY VOLTAGE**  
0 = 240V ac  
1 = 115V ac  
2 = 24V dc  
3 = 48V dc

4 = ISO THREAD (M20)  
3 = DIN FLANGE (M20 - FEMALE DRIVE)  
7 = ANSI THREAD (1/2" NPT ON XLS, 1/2" NPS ON ULS)

**APPROVAL TYPE**  
E = IEC / ATEX IIC, IIB, IIA (XLS)

Actuator size 05  
must be fitted with  
flow regulators





The optional Kinetrol I/P Controller is mounted in place of the standard diaphragm housing on the side of the AP positioner case. The AP positioner can still be mounted in any orientation and gives an angular output position which is proportional to the input current control signal between 4-20mA.

The 4-20mA signal is converted to an air pressure by a coil and magnet and flapper valve arrangement. This air pressure controls the positioner in the normal way.

Zero and range adjustment is done within the positioner in the same way as with a standard pneumatic positioner. No adjustment is necessary within the I/P Controller. The cover is removed only to connect the two wires - this is not necessary with the DIN plug option.



### Specification - Safe Area

<b>Electrical Control Signal</b>	4-20mA
<b>Coil Impedance</b>	20 ohms typical
<b>Cable Entry</b>	16mm conduit or gland (mini DIN plug, IP 65 with Pg9 cable gland, 6-8mm dia optional)
<b>Air Supply</b>	80 psi/5.5 bar nominal
<b>Air Entry</b>	G <sup>1</sup> / <sub>8</sub> (fitted with 6mm pipe dia. push in connector)
<b>Weight</b>	1.2 kg
<b>Dimensions</b>	see page 62
<b>Linearity</b>	1.5%*
<b>Hysteresis</b>	less than 1%*
<b>Sensitivity/Deadband</b>	less than 1%*
<b>Supply Pressure Influence</b>	0.2% per psi between 80 and 60 psi
<b>Quiescent Air Consumption</b>	3.5 l/min free air max
<b>Working Temperature Range</b>	-20°C to +80°C

Instrument quality dry, clean air obligatory (Class 6.4.4 ISO8573.2001)

\* These refer to the combination of Kinetrol actuator with I/P controller - not just the positioner performance

### I/P Controller - Hazardous Area

Kinetrol offers various optional I/P converters which are explosion proof or intrinsically safe certified for use in ATEX Zones 1 & 2 or NEC and CSA CLASS I DIVISION 1. They are mounted directly onto Kinetrol AP positioners with integral air supply.

### Specification - Hazardous Area

<b>Electrical Control Signal</b>	4-20mA
<b>Input Resistance</b>	260 ohms at 24°C
<b>Cable Entry</b>	Exd - M20 x 1.5 conduit entry FM/CSA - 1/2 NPT conduit entry
<b>Air Supply</b>	50-100 psi/3.5 to 7 bar
<b>Air Entry</b>	Exd (AP & MP) G <sup>1</sup> / <sub>4</sub> (1/4 NPT) (HP) G <sup>3</sup> / <sub>8</sub> (3/8 NPT)
<b>Working Temperature</b>	-40°C to 75°C for Exd -55°C to 85°C for Exia

Instrument quality dry, clean air obligatory (Class 3.4.4 ISO 8573.1)

### ATEX certificated as follows:

Explosion proof

Ex II 2G Ex d IIB+H2 T6 Ta= -40°C to +75°C  
Ex II 2D Ex tD A21 IP65 T85°C Ta= -40°C to +75°C

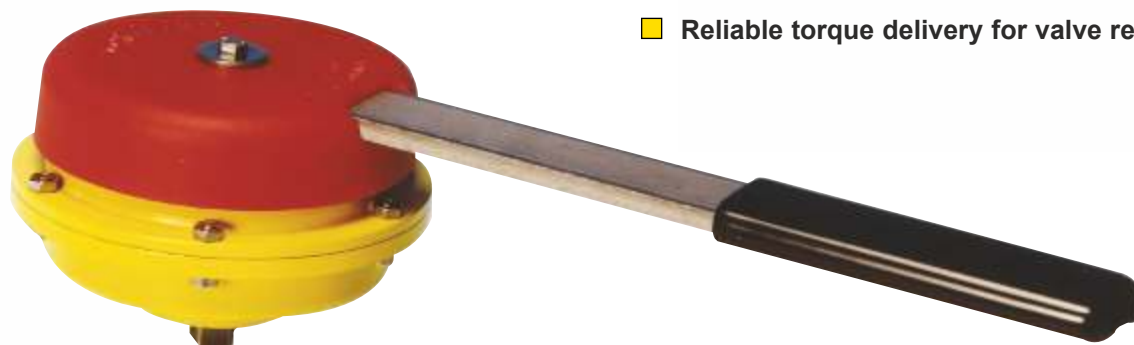
Intrinsically safe

Ex II 1G Ex ia IIC T4 Ta= -55°C to +85°C

For FM Approved version - contact Kinetrol



If you want to operate a valve manually, but maintain the advantage of the fail-safe spring's certainty of position when unattended, use this device.



- Manual unit, cannot be left in the wrong position
- Reliable torque delivery for valve reseal

- ISO5211 female drive & ATEX Category 2 approved options available for models 02, 03, 05 and 07
- Clockwise or counter clockwise 90° spring action
- Spring housing sealed to IP65 to protect from internal corrosion
- Bi-square (star) and serrated female drive options available

## Application

Manual fail-safe spring units are available in Kinetrol sizes 02, 03, 05 and 07 with factory adjusted torques from 1.4Nm to 45.5Nm.

## ISO/Female Drive Versions

The 03, 05 and 07 models are available with female drives for direct mount. The model 03 has F03/05 or F04 mounting flanges, the model 05 has F03/05/07 or F04 flanges and the model 07 has a F05/07 flange.

To order female drive versions, replace the '0-' in the product code with '3F'. For example a model 05 ISO female drive manual fail-safe cw handle with F03/05/07 flanges is coded: 053F020-1006. The F04 flange version is coded 053F020-1006/F4.

Female drive versions with the same flange dimensions are available with ANSI threads eg 057F020-1006/F4.

Serrated female drive options can also be supplied for models 05 and 07. To order these replace the 'F' in the product code with an 'S'.

Female 02 versions are available by use of an ISO adaptor. Refer to page 26 for details.

## Specification

Spring Case	
02, 03, 05 & 07 ATEX	Die cast zinc alloy, epoxy paint finish
07 non-ATEX	Die cast aluminium alloy, epoxy paint finish
Shaft	Stainless steel or carbon steel zinc plated
Manual lever	03 & 05 - Stainless Steel 02 - Aluminium
Working Temperature range	-40°C to +80°C

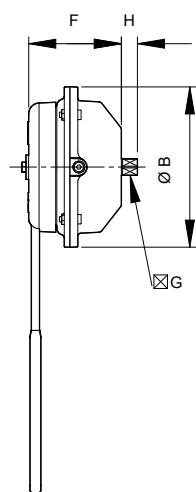
## Ordering Codes

To order a manual fail-safe spring unit, quote model number, direction of spring (as per technical data on page 28) followed by product type code:

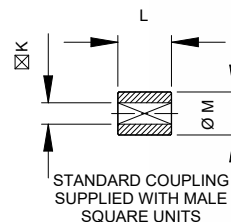
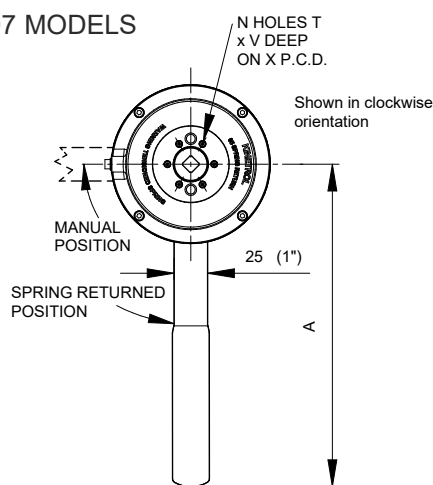
Type Codes:     -1006     Manual spring unit (e.g. 054-020-1006)  
                       -1016     ATEX manual spring unit

For reduced torque versions contact Kinetrol.



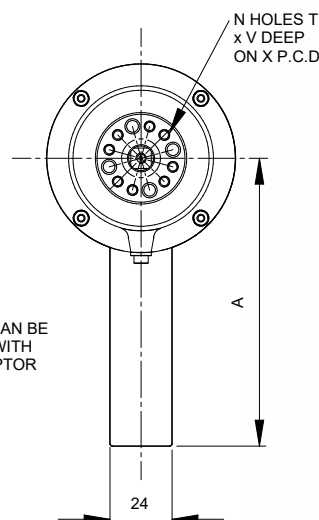
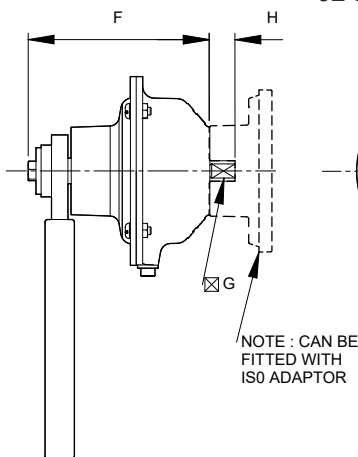
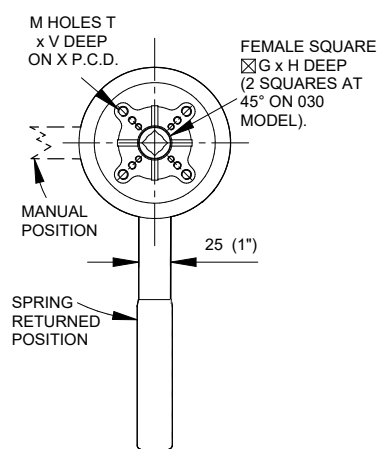


03, 05 and 07 MODELS



ISO MOUNT

02 MODEL



## Dimensions/Torques

### Metric Units

	A	B	C	D	F	G	H†	K	L	M	N	T	V	X	Maximum Torque Nm	Torque Reduction Thro' Stroke Nm
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	mm		
024-020-1006	110	73	-	-	70	7.98 7.93	10.0	8.022 8.000	22.0	16.0	4	M4	8.0	25.5	5.1	1.0
034-020-1006	238	108	-	-	62	8.98 8.93	12.0	9.022 9.000	22.0	18.0	4	M5	10.0	31.1	14.0	3.0
054-020-1006	238	118	-	-	68.5	9.525 9.470	13.0	9.58 9.55	25.4	19.0	6	M5	8.0	34.9	24.0	3.5
074-020-1006	360	152	-	-	103	15.98 15.93	20.0	16.027 16.000	40.0	32.0	4	M8	15.0	50.8	45.5	5.8
033F020-1006	238	108	-	-	66	11.0	12.0	-	-	-	4	M5/M6	10/12	36/50	14.0	3.0
033F020-1006/F4	238	108	-	-	66	11.0	12.0	-	-	-	4	M5	10.0	42.0	14.0	3.0
053F020-1006	238	118	-	-	68.5	14.0	16.0	-	-	-	4	M5/M6/M8	10/12/13	36/50/70	24.0	3.5
053S020-1006	238	118	-	-	68.5	*	*	-	-	-	4	M5/M6/M8	10/12/13	36/50/70	24.0	3.5
053F020-1006/F4	238	118	-	-	68.5	14.0	16.0	-	-	-	4	M5	10.0	42.0	24.0	3.5
073F020-1006	360	152	-	-	103	17.0	22.0	-	-	-	4	M6/M8	14	50/70	45.5	5.8
073S020-1006	360	152	-	-	103	*	*	-	-	-	4	M6/M8	14	50/70	45.5	5.8

### English Units

	A	B	C	D	F	G	H†	K	L	M	N	T	V	X	Maximum Torque lbf.ins	Torque Reduction Thro' Stroke lbf.ins
	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch		inch	inch		
027-020-1006	4.33	2.87	-	-	2.76	0.314 0.312	0.39	0.316 0.315	0.86	0.63	4	8-32	0.310	1.00	45	8.00
037-020-1006	9.37	4.25	-	-	2.44	0.354 0.352	0.47	0.355 0.354	0.86	0.70	4	10-24	0.390	1.22	124	26.55
057-020-1006	9.37	4.64	-	-	2.70	0.375 0.373	0.51	0.377 0.376	1.00	0.75	6	10-24	0.310	1.37	212	31.00
077-020-1006	14.17	5.98	-	-	4.06	0.629 0.627	0.79	0.631 0.630	1.57	1.26	4	½-18	0.625	2.00	400	51.00
037F020-1006	9.37	4.25	-	-	2.60	0.43	0.47	-	-	-	4	10-24 / ¼	0.31/0.39	1.42/1.97	124	26.55
037F020-1006/F4	9.37	4.25	-	-	2.60	0.43	0.47	-	-	-	4	10-24	0.390	1.65	124	26.55
057F020-1006	9.37	4.64	-	-	2.70	0.55	0.63	-	-	-	4	10-24 / ¼ / ⅜	0.39/0.47/0.51	1.42/1.97/2.76	212	30.98
057S020-1006	9.37	4.64	-	-	2.70	*	*	-	-	-	4	10-24 / ¼ / ⅜	0.39/0.47/0.51	1.42/1.97/2.76	212	30.98
057F020-1006/F4	9.37	4.64	-	-	2.70	0.55	0.63	-	-	-	4	10-24	0.390	1.65	212	30.98
077F020-1006	14.17	5.98	-	-	4.06	0.669	0.75	-	-	-	4	¼ / ⅜	0.39/0.51	1.97/2.76	400	51.00
077S020-1006	14.17	5.98	-	-	4.06	*	*	-	-	-	4	¼ / ⅜	0.39/0.51	1.97/2.76	400	51.00

\* Refer to TD141 for details on serrations and inserts

† Minimum

### Weights – Metric

02 Models	-	0.50 kg
03 Models	-	1.87 kg
05 Models	-	1.87 kg
07 Models		
(Non-ATEX)	-	4.21 kg
(ATEX)	-	5.17 kg

### Weights – English

02 Models	-	1.102 lb
03 Models	-	4.123 lb
05 Models	-	4.123 lb
07 Models		
(Non-ATEX)	-	9.281 lb
(ATEX)	-	11.374 lb





To open or close a valve or damper automatically in case of a fire this device allows the valve to operate using a fusible link mechanism designed to yield at a set temperature.



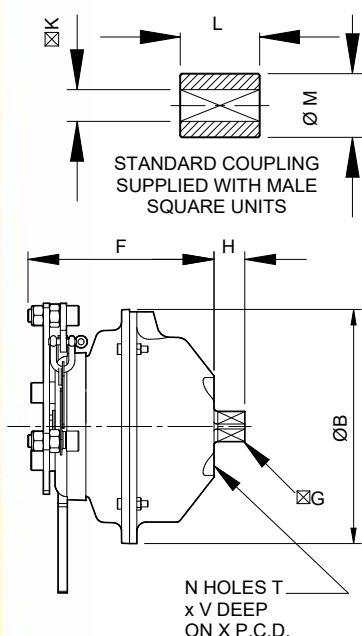
## Yield Temperatures

Fire fail-safe fusible links  
Solder type (UL approved)

Yield temperature options	74°C	100°C
Max. normal ambient temperature	38°C	66°C

## ISO/Female Drive Options

All models are available with female drive options for direct mount - see page 60



### Weights – Metric

05 Models –	2.70 kg
07 Models –	4.30 kg
09 Models –	9.20 kg
12 Models –	22.50 kg

### Weights – English

05 Models –	5.95 lb
07 Models –	9.48 lb
09 Models –	20.28 lb
12 Models –	49.60 lb



- Reliable torque delivery for valve reseal
- Available for Models 05, 07, 09 and 12 (maximum torque 226 Nm 2300 lbf ins)
- Two Yield Temperature Options
- Clockwise or counter clockwise 90° spring action
- ISO5211 female drive options available
- Spring housing sealed to IP65 to protect from internal corrosion
- ATEX Category 2 approved options available

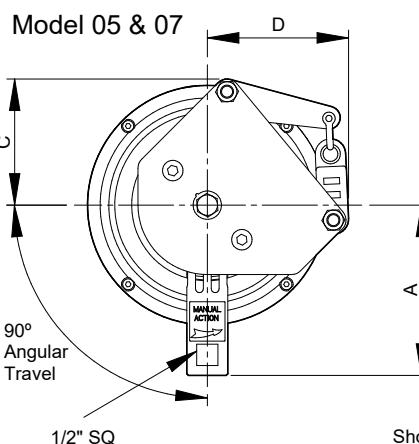
## Ordering Codes

To order a fire fail-safe spring unit, quote model number, direction of spring (as per coding guide on page 47) followed by product type code:

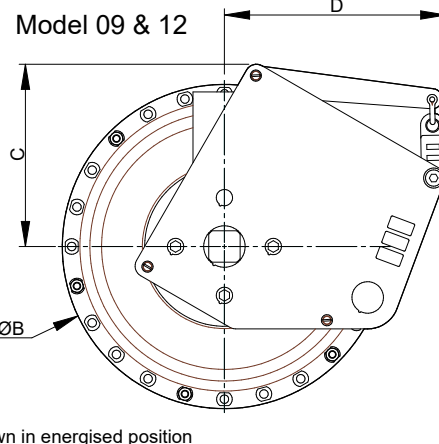
- 0074 Fire fail-safe spring unit 74°C
- 0100 Fire fail-safe spring unit 100°C
- 1074 ATEX fire fail-safe spring unit 74°C
- 1100 ATEX fire fail-safe spring unit 100°C (example: 054-020-0074)

For reduced torque versions contact Kinetrol

Model 05 & 07



Model 09 & 12



## Metric Units

	A mm	B mm	C mm	D mm	F mm	G mm	H mm	K mm	L mm	M mm	N	T	V mm	X mm	Maximum Torque Nm
054-020-0074	108	118	80	90	88	9.525 9.470	13.0	9.58 9.55	25.4	19.0	6	M5	13.0	34.9	24.0
074-020-0074	108	152	80	90	121	15.98 15.93	20.0	16.027 16.000	40.0	32.0	4	M8	15.0	50.8	45.5
094-020-0074	-	200	108	130	144	18.98 18.93	26.0	19.033 19.000	50.0	38.0	4	M10	20.0	65	95.0
124-020-0074	-	258	145	176	209	25.00 24.90	31.0	25.06 25.00	56.0	50.0	4	M12	24.0	77.8	205.0

## English Units

	A inch	B inch	C inch	D inch	F inch	G inch	H inch	K inch	L inch	M inch	N	T	V inch	X inch	Maximum Torque lbf.ins
057-020-0074	4.25	4.64	3.15	3.54	3.47	0.375 0.373	0.51	0.377 0.376	1.00	0.75	6	10-24	0.510	1.37	212
077-020-0074	4.25	5.98	3.15	3.54	4.76	0.629 0.627	0.79	0.631 0.630	1.57	1.26	4	5/16-18	0.625	2.00	400
097-020-0074	-	7.87	4.25	5.12	5.67	0.747 0.745	1.02	0.749 0.748	1.97	1.50	4	3/8	0.787	2.56	841
127-020-0074	-	10.16	5.71	6.93	8.23	0.984 0.980	1.22	0.986 0.984	2.20	1.97	4	1/2	0.944	3.06	1814

A patented part-turn rotary actuator that is driven to an end stop, in either direction, from an initial centre position and is spring returned to an accurate and positive mid point when the air supply is removed. The mid-position can be set mechanically anywhere in the actuator's travel range.

The spring to centre assemblies consist of one double acting actuator fitted with two or more opposing clock type springs contained within a single housing. Controlled with a dual coil, 5/3 solenoid valve (or two 3/2 single coil valves) which, when totally de-energised, allow the springs to precisely centre the actuator against physical stops. When either coil is energised the actuator will travel towards one of its end stops. As the vane moves towards an end stop the air stroke torque reduces as the spring torque increases and vice versa. When the coil is de-energised the vane will spring return to its original centre position. The usual 'centre' position will be in the middle of the actuator's 0 - 90 degree travel, but this can easily be adjusted to any mid-stroke location. A vernier scale on the adjustable plate (see attached picture) permits precise mid-position setting to within 1 degree.



(Actuator should be mounted to application to enable adjustable centre position and stationary end points)

- Reliable low stress clock type springs.
- Sealed, non-breathing housing protects spring in corrosive environments.
- Available in models 05 to 18 (excluding 15).
- Stroke up to 100° (200° option available - contact Kinetrol)
- Mid position can be set mechanically anywhere in the actuator's travel range using 'vernier' type scale.
- Self contained spring assembly which can be easily removed without a keeper plate.
- Can be used in aggressive or hazardous environments without the need for complex or sensitive instruments.
- Can be fitted with high temperature seal option for up to 100°C

Actuator Model	Torque - Nm Based on 5.5 bar			Torque - lbf ins Based on 80 psi		
	*Start	—	Finish	*Start	—	Finish
050-1205	19.2	—	17.5	170.0	—	169.9
070-1205	49.6	—	42.4	412.0	—	375.2
090-1205	99.0	—	93.8	876.0	—	830.1
120-1205	221.0	—	204.0	1956.0	—	1805.5
140-1205	533.0	—	478.0	4717.0	—	4230.6
160-1205	1009.0	—	933.0	8930.0	—	8257.7
180-1205	2686.0	—	2417.0	23771.0	—	21392.2

\* Start torque when angle adjusted to mid position  
Note: can be ordered without actuator eg. 050-0205







- **Simple compact unit**  
No external moving parts
- **Unique linkage design**  
converts to 180° travel  
120° option available
- **Constant gear-up ratio through travel range**  
Hence constant output torque
- **Rolling contact linkage mechanism**  
Ensures low wear, long life, low friction
- **Linkage sealed for life**  
Protected from the environment, long maintenance free life
- **Compatible with all Kinetrol modules**  
Direct mounted spring returns, limit switch boxes, positioners etc.
- **Adjustable endstops**

## Operation

Kinetrol's 180° actuator is produced by adding a 2:1 step-up linkage onto the output shaft of well proven 90° vane actuators.

Factory fitted, direct mount linkage units are available to suit model 02, 03, 05, 07, 09, 12, 14 and 16 actuators, giving a neat single unit with no mount kits or brackets. The linkage's unique geometry gives constant 2:1 step-up so that the output torque remains constant throughout the actuator's travel.

The all-steel mechanism of the linkage employs rolling contacts to minimise frictional losses and wear, and to maximise life. The linkage is lubricated for life, and encased in a robust, fully sealed, die cast alloy casing. Exterior surfaces are protected by a corrosion resistant epoxy stove enamel finish. Standard adjustable endstops on the 90 degree actuator can be used to set the angle of travel. The other end of the 90 degree actuator allows the full range of Kinetrol modular accessories to be fitted directly.

120 degree actuators are also available with adjustable end stops to give up to 133° of travel for the above model range - contact Kinetrol for details.

## Ordering Codes

To order a 180° actuator, add a '1' to the end of the code for the 90° actuator on which it is based and a '2' for a 120° actuator.

Examples:

To order an 074 cw spring return actuator plus 180° linkage, use code: 074-1201.

To order an 074 cw spring return actuator plus 120° linkage, use code: 074-1202.



### Double Acting Torques/Metric Units Nm

Actuator Model	1.4	2.0	2.8	3.5	4.1	4.8	5.5	6.2	6.9
	Pressure (bar)								
02-1001	0.6	1.1	1.6	2.2	2.7	3.2	3.7	4.2	4.8
03-1001	1.3	2.4	3.5	4.6	5.6	6.7	7.8	8.8	10.0
05-1001	3.2	5.2	7.2	9.3	11.3	13.6	15.6	17.8	19.9
07-1001	7.9	12.6	17.6	22.6	27.6	33.0	38.4	43.2	48.8
09-1001	16.3	20.0	37.1	47.6	58.0	69.2	80.4	91.2	103.0
12-1001	37.5	60.8	84.4	108.0	131.0	156.0	181.0	202.0	226.0
14-1001	97.2	151.0	206.0	262.0	316.0	375.0	434.0	488.0	542.0
16-1001	235.0	357.0	479.1	605.7	727.7	849.8	976.3	1098.4	1220.4

### Double Acting Torques/English Units lbf ins

Actuator Model	20	30	40	50	60	70	80	90	100
	Pressure (psi)								
02-1001	5.6	10	14	19	24	28	33	37	42
03-1001	12	21	31	40	50	59	69	78	88
05-1001	28	46	64	82	100	120	138	157	176
07-1001	70	112	156	200	244	292	340	384	432
09-1001	144	236	328	420	512	612	712	808	912
12-1001	332	540	748	960	1160	1376	1588	1792	2000
14-1001	860	1340	1820	2320	2800	3320	3840	4320	4800
16-1001	2080	3160	4240	5360	6440	7520	8640	9720	10800

### Spring Return Torques/Metric Units Nm

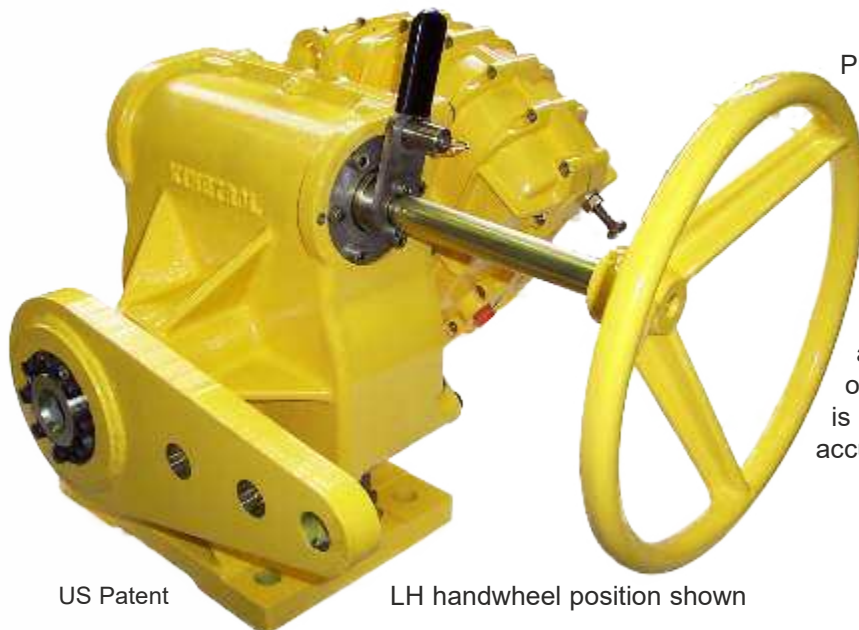
Actuator Model	Position of air OR spring stroke	3.5	4	4.5	5	5.5
		Pressure Setting (bar)				
02-1201	Start	1.1	1.3	1.4	1.6	1.8
	Finish	0.5	0.7	0.9	1.2	1.4
03-1201	Start	3.3	3.7	4.0	4.3	4.9
	Finish	1.0	1.5	1.9	2.2	2.8
05-1201	Start	4.9	5.5	6.2	7.0	7.9
	Finish	3.2	4.0	4.9	5.8	6.7
07-1201	Start	11.6	13.5	15.5	17.4	19.3
	Finish	7.5	9.5	11.6	13.8	16.1
09-1201	Start	23.2	27.4	31.1	35.3	39.5
	Finish	19.1	23.2	27.0	31.4	35.6
12-1201	Start	55.1	64.8	75.6	81.1	90.4
	Finish	42.2	52.0	60.0	68.9	77.5
14-1201-4900	Start	135.0	156.0	178.0	195.0	201.0
	Finish	109.0	131.0	148.0	164.0	170.0
16-1201	Start	346.8	391.0	426.0	465.0	504.3
	Finish	181.4	237.0	282.0	332.0	381.9

### Spring Return Torques/English Units lbf ins

Actuator Model	Position of air OR spring stroke	50	60	70	80
		Pressure Setting (psi)			
02-1201	Start	10.3	12.2	14.1	16.0
	Finish	4.6	6.8	9.5	12.5
03-1201	Start	29.6	33.4	37.2	43.7
	Finish	8.7	13.7	19.0	24.7
05-1201	Start	44	51	61	70
	Finish	28	38	49	59
07-1201	Start	103	126	146	171
	Finish	67	92	116	143
09-1201	Start	205	251	300	351
	Finish	169	215	266	315
12-1201	Start	486	595	693	802
	Finish	374	479	585	688
14-1201-4900	Start	1200	1420	1670	1780
	Finish	969	1200	1400	1500
16-1201	Start	3069	3534	3998	4463
	Finish	1605	2197	2788	3380

For dimensions see page 65



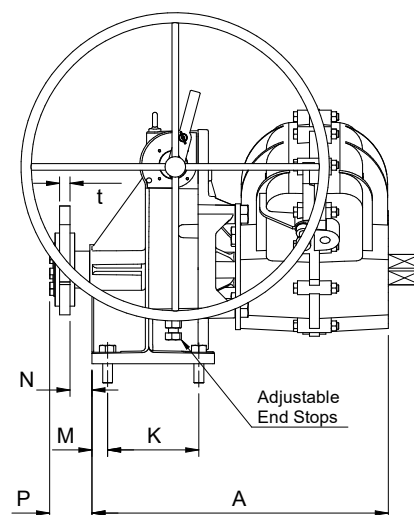
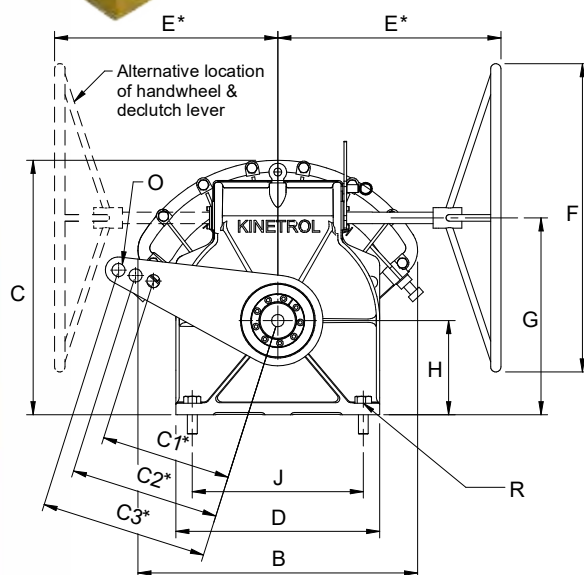


US Patent

LH handwheel position shown

Purpose designed, factory built and tested drives for air/gas flow control dampers on burner, heater, boiler and turbine systems in power plants, refineries and a wide range of industrial applications.

Combining the proven performance of Kinetrol's vane type actuator with an equally rugged integral manual override/mounting frame, the G3 drive is compact with unbeatable control, accuracy and cycle life.



## Metric Units

Model	A mm	B mm	C mm	D mm	E* mm	F* mm	G mm	H mm	J mm	K mm	ØR mm	M mm	P mm	Weight† kgs
124	366	294	336	275	205	300	300	165	216	152	21	25	70	46
144	410	380	390	275	300	300	300	165	216	152	21	25	70	46
164	495	530	470	275	330	400	300	165	216	152	21	25	70	51
184	721	680	620	496	430	760	479	229	416	222	27	38	94	141
204	981	680	620	496	508	600	479	229	416	222	27	38	94	158

## English Units

Model	A inch	B inch	C inch	D inch	E* inch	F* inch	G inch	H inch	J inch	K inch	ØR inch	M inch	P inch	Weight† lbs
127	14.4	11.6	13.2	10.8	11.0	12.0	12.0	6.5	8.50	6.00	0.83	1	2.8	102
147	16.2	15.0	15.4	10.8	12.0	12.0	12.0	6.5	8.50	6.00	0.83	1	2.8	102
167	19.5	20.9	18.5	10.8	13.0	16.0	12.0	6.5	8.50	6.00	0.83	1	2.8	112
187	28.4	26.8	24.4	19.5	17.0	30.0	18.9	9.0	16.38	8.74	1.05	1.6	3.7	310
207	38.6	26.8	24.4	19.5	20.0	24.0	18.9	9.0	16.38	8.74	1.05	1.6	3.7	350

\* Default dimensions may change according to ordering code options

† Listed weights exclude actuator

- Integral manual override
- Suitable for new installations or replacement of existing electric or pneumatic drives
- Available with same mounting foot print to replace existing floor mount drives
- Can result in lower energy costs resulting from accurate flow control
- Reduced operating costs due to long maintenance-free life (2 million operation warranty)
- Compact space saving design
- Quick and easy installation and set up
- Robust construction with durable epoxy finish
- Manual override usable with actuator removed





## Options

- Double acting and spring fail-safe (open or closed)
- Modulating (3-15 psi and 4-20mA signal)
- Fail to low signal
- Lock in last position
- Limit switch remote position indication
- 4-20mA angle retransmission
- High visibility position indication
- Different sided/diameter handwheels and extensions
- Infinitely adjustable output levers to suit existing or new requirements
- High temperature option available



## Ordering Codes

**HANDWHEEL SIDE (SEE SKETCH)**  
L=LEFT  
R=RIGHT

**WHERE APPLICABLE:**  
S = STANDARD  
Y = NO COST OPTION  
E = EXTRA COST OPTION  
□ = NOT AVAILABLE

**HANDWHEEL DIAMETER (F)**

	AVAILABLE ON MODELS:				
	12	14	16	18	20
3=300mm 12"	S	S	E		
4=400mm 16"	E	E	S		
5=600mm 24"			E	E	S
6=762mm 30"				S	

**OUTPUT LEVER THICKNESS (t)**  
1=3/8"  
2=1/2"  
3=5/8"  
4=3/4"  
5=7/8"  
6=1"  
7=1 1/8"  
8=1 1/4"  
9=1 1/2"

**OPTIONAL LIMIT SWITCH BOX (TO INDICATE IF HANDWHEEL IS ENGAGED OR DISENGAGED)**  
OPTIONS:  
0 = NO LIMIT SWITCH  
1 = 2 x i/s PROX. SENSORS  
2 = 2 x PNEUMATIC LS  
4 = 2 x V3 MECH LS  
5 = 2 x 20-260V ac PROX.\*  
6 = 2 x 5-60V dc PROX.\*  
7 = 4 x V3 MECH LS

**INCLUDING D/A ACTUATOR:**  
124 }  
144 } = ISO D/A ACT (FOR USE WITH OR WITHOUT POSITIONER)  
164 }  
184 }  
204 }  
127 }  
147 } = ANSI D/A ACT (FOR USE WITH OR WITHOUT POSITIONER)  
167 }  
187 }  
207 }

**HANDWHEEL OFFSET (E)**

	AVAILABLE ON MODELS:				
	12	14	16	18	20
1=300mm 12"	S	S			
2=330mm 13"			S		
3=430mm 17"	E	E	E	S	
4=508mm 20"	E	E	E	E	S
5=600mm 24"	E	E	E	E	E

**HOLE DIAMETER (d)**  
2=12.7mm 1/2"  
3=15.9mm 5/8"  
A=11/16"  
4=19.1mm 3/4"  
5=22.2mm 7/8"  
6=25.4mm 1"  
7=28.6mm 1 1/8"  
8=31.8mm 1 1/4"  
9=38.1mm 1 1/2"

**LEVER HOLE PATTERN**

No.	DISTANCE FROM CENTRE			AVAILABLE ON MODELS:				
	C1	C2	C3	12	14	16	18	20
01	101.6mm 4"	152.4mm 6"	203.2mm 8"	Y	Y			
02	127mm 5"	152.4mm 6"	177.8mm 7"	Y	Y	Y		
03	127mm 5"	198.1mm 7.8"	254mm 10"	Y	Y	Y		
04	152.4mm 6"	254mm 10"	304.8mm 12"	Y	Y	Y	Y	
05	165.1mm 6.5"	190.5mm 7.5"	215.9mm 8.5"	Y	Y	Y	Y	
06	190.5mm 7.5"	215.9mm 8.5"	241.3mm 9.5"	Y	Y	Y	Y	
07	266.7mm 10.5"	292.1mm 11.5"	317.5mm 12.5"	Y	Y	Y	Y	Y
08	228.6mm 9"	342.9mm 13.5"	457.2mm 18"	Y	Y	Y	Y	
09	254mm 10"	304.8mm 12"	381mm 15"	Y	Y	Y	Y	Y
10	254mm 10"	381mm 15"	508mm 20"	Y	Y	Y	Y	Y
11	254mm 10"	317.5mm 12.5"	406.4mm 16"	Y	Y	Y	Y	Y
12	254mm 10"	330.2mm 13"	406.4mm 16"	Y	Y	Y	Y	Y
13	304.8mm 12"	406.4mm 16"	444.5mm 17.5"	Y	Y	Y	Y	Y
14	317.5mm 12.5"	363.2mm 14.3"	406.4mm 16"	Y	Y	Y	Y	Y
15	147.3mm 5.8"	279.4mm 11"	304.8mm 12"	Y	Y	Y	Y	
16	152.4mm 6"	190.5mm 7.5"	228.6mm 9"	Y	Y	Y		
17	101.6mm 4"		304.8mm 12"	Y	Y			
18			127mm 5"	Y	Y	Y		
19			203.2mm 8"	Y	Y	Y	Y	

**POSITION MONITOR ON LS BOX:**  
C=YES  
0=NO

**IF NECESSARY, FIT OPTIONAL EXTENSION TO ENSURE THAT HANDWHEEL IS AT A SAFE DISTANCE FROM MOVING OUTPUT LEVER.**

\* Not available with ATEX approval

For torque outputs see pages 6-8

For more information  
see KF-535



■ Declutch lever switch available

■ Corrosion resistant - fully sealed to IP65

## Handwheel Orientation

Models 05 - 14  
Standard - Right Hand  
- Left Hand option available

Models 16 - 20  
Standard - Left Hand only

## Working Temperature Range

-20°C to +80°C

Low / High temperature options available on sizes 05 - 14 - contact Kinetrol

Kinetrol declutchable geared overrides are available for models 05 to 20 (excluding model 15), rated for the same torques as the actuators and fitted between the actuator and the load. The standard unit is supplied with the right hand handwheel option (see drawing below), whereby when the handwheel is moved in a clockwise direction the actuator moves in a counter clockwise direction. A left hand handwheel option is also available on some models (see below).

## Dimensions

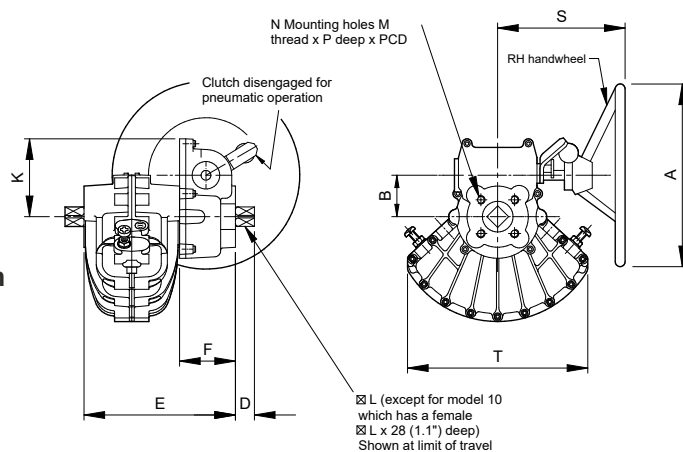


PHOTO SHOWS LEFT HAND HANDWHEEL.

DRAWING SHOWS RIGHT HAND HANDWHEEL.

## Metric Units

Actuator Model (ISO)	A mm	B mm	D mm	E mm	F mm	K mm	∅L mm	M	N No.	P mm	PCD mm	S mm	T mm	Wt kgs
05	300	67.8	13	170	103	127	9.5	M5	6	12	34.9	220	137	9.18
07	300	67.8	20	192	92	127	16.0	M8	4	16	50.9	220	178	11.20
08	300	67.8	19	202	92	127	17.0	M8	4	16	70.0	220	208	10.61
09	300	67.8	26	218	92	127	19.0	M10	4	20	65.0	220	227	12.06
10	300	67.8	-	267	92	127	22.0	M10	4	20	102.0	220	230	13.40
12	300	67.8	31	248	92	127	25.0	M12	4	25	77.8	220	294	15.40
14	400	67.8	38	292	92	127	28.6	M16	4	28	98.8	250	380	22.36
16*	600	141.0	55	462	188	200	41.0	M20	4	28	165.0	376	530	45.00
18*	920	165.0	78	655	295	225	57.0	M16	8	24	254.0	440	679	75.00
20*	610	150.0	100	600	240	300	75.0	M30	8	35	226.3	640	679	113.00

## English Units

Actuator Model (ANSI)	A inch	B inch	D inch	E inch	F inch	K inch	∅L inch	M UNC	N No.	N inch	PCD inch	S inch	T inch	Wt lbs
05	11.81	2.67	0.51	6.69	4.06	5.0	0.375	10-24	6	0.47	1.375	8.66	5.39	20.2
07	11.81	2.67	0.79	7.56	3.62	5.0	0.630	1/4	4	0.63	2.000	8.66	7.01	24.7
08	11.81	2.67	0.75	7.95	3.62	5.0	0.670	1/4	4	0.63	2.760	8.66	8.19	23.4
09	11.81	2.67	1.02	8.58	3.62	5.0	0.748	1/4	4	0.79	2.560	8.66	8.94	26.6
10	11.81	2.67	-	10.51	3.62	5.0	0.866	1/4	4	0.79	4.016	8.66	9.06	29.5
12	11.81	2.67	1.22	9.76	3.62	5.0	0.984	1/2	4	0.98	3.060	8.66	11.57	33.9
14	15.70	2.67	1.50	11.50	3.62	5.0	1.125	1/2	4	1.10	3.890	9.84	14.96	49.2

## Handwheel Orientation

MODEL	RH HANDWHEEL		LH HANDWHEEL	
	HANDWHEEL DIRECTION	OUTPUT DIRECTION	HANDWHEEL DIRECTION	OUTPUT DIRECTION
05 to 14	CW	CCW	CW	CW
	CCW	CW	CCW	CCW
16 to 20	N/A		CW	CW
			CCW	CCW

## Ordering Codes

Models 05 to 14:

- (Standard right hand handwheel)

Example: 074 K/Box (ISO Version)

077 K/Box (ANSI Version)

- (Left hand handwheel)

Example: 074 K/Box LH (ISO Version)

\* For model 16, 18 and 20 replace 'K' with 'G' and add 'LH'

Example: 164 G/Box LH (ISO Version)



## Kinetrol's Blueline Food Grade Finish Product

Kinetrol's Blueline coating solution for food production applications meets FDA and BfR L1 specification and is available on all Kinetrol actuators and accessories offering significant advantages including:

- Good resistance to "caustic washdown"
- Exceptional resistance to chipping / flaking
- Good non-stick properties
- Good resistance to salt-laden environments
- In extreme circumstances if the coating becomes dislodged, it is clearly visible to the human eye, and sensors/detectors used in food production



## Kinetrol's Valve Automation Service & Interfacing Options

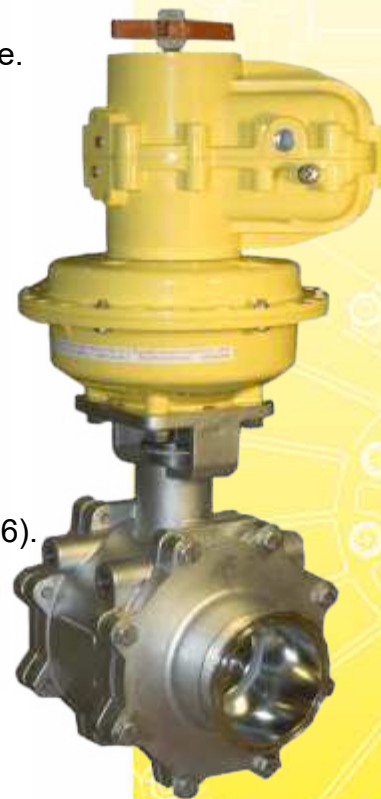
Kinetrol can select, supply and actuate ball, butterfly and plug valves from across the industry or mount free issue valves to Kinetrol actuators and control units for either on / off or modulating valve service.

With over 50 years of valve automation experience Kinetrol can also offer a wide range of engineered and customised packages including assemblies which are SIL rated and/or fully compliant with ATEX, NEC or IEC requirements.

Kinetrol is continually responding to the evolving requirements of the industry for interfacing and mounting arrangements that satisfy user needs and conform to industry standards. The Kinetrol female drive spring fail safe and hand spring unit options with topworks details that conform to ISO 5211 standard, facilitate direct mounting to valves. The innovative, patented ISO adaptor for Kinetrol Models 02 – 09 provides versatile direct mounting to ISO top works valves (see page 26).

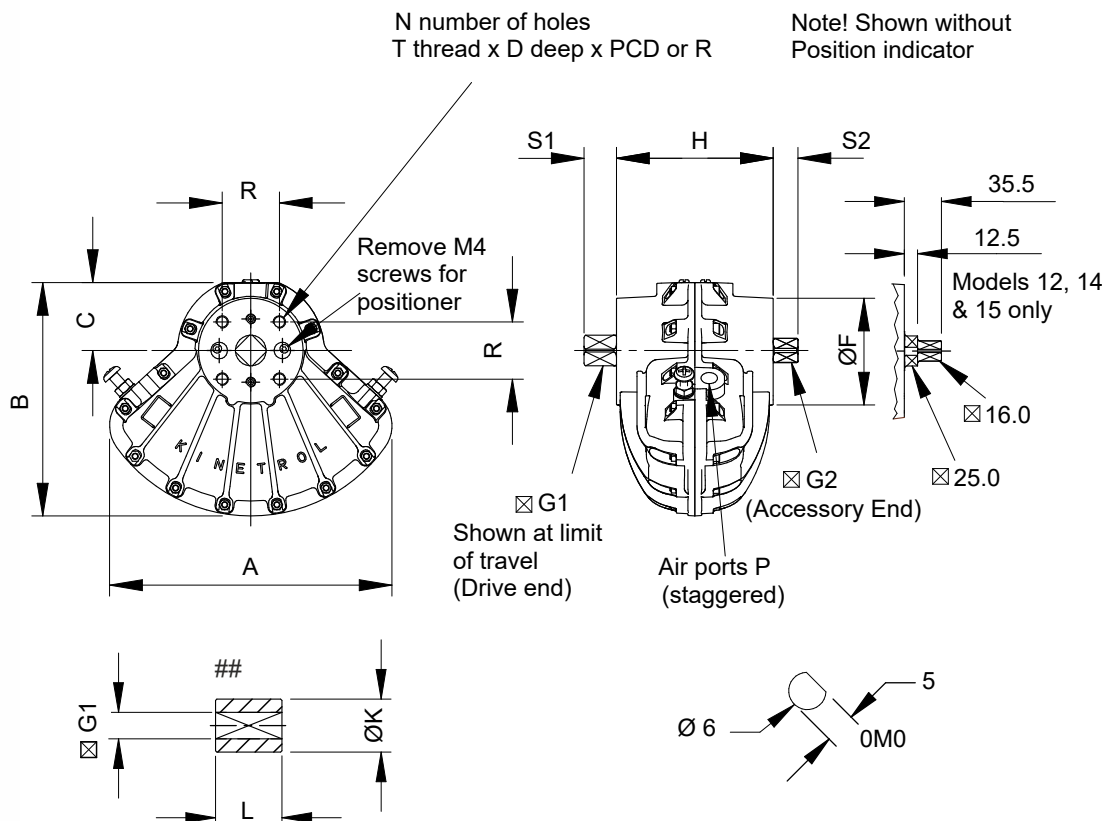
Kinetrol's direct mounting limit switch boxes, positioners and other control modules eliminate the cost of interfacing hardware resulting in compact assemblies. Our larger actuators, models 16 and above also offer a drive slot and insert option which is designed to interface with ancillary drives which comply to VDI/VDE 3485 norm.

Our rigorous QA and test procedures ensure that effective solutions are engineered and built to the highest standard.



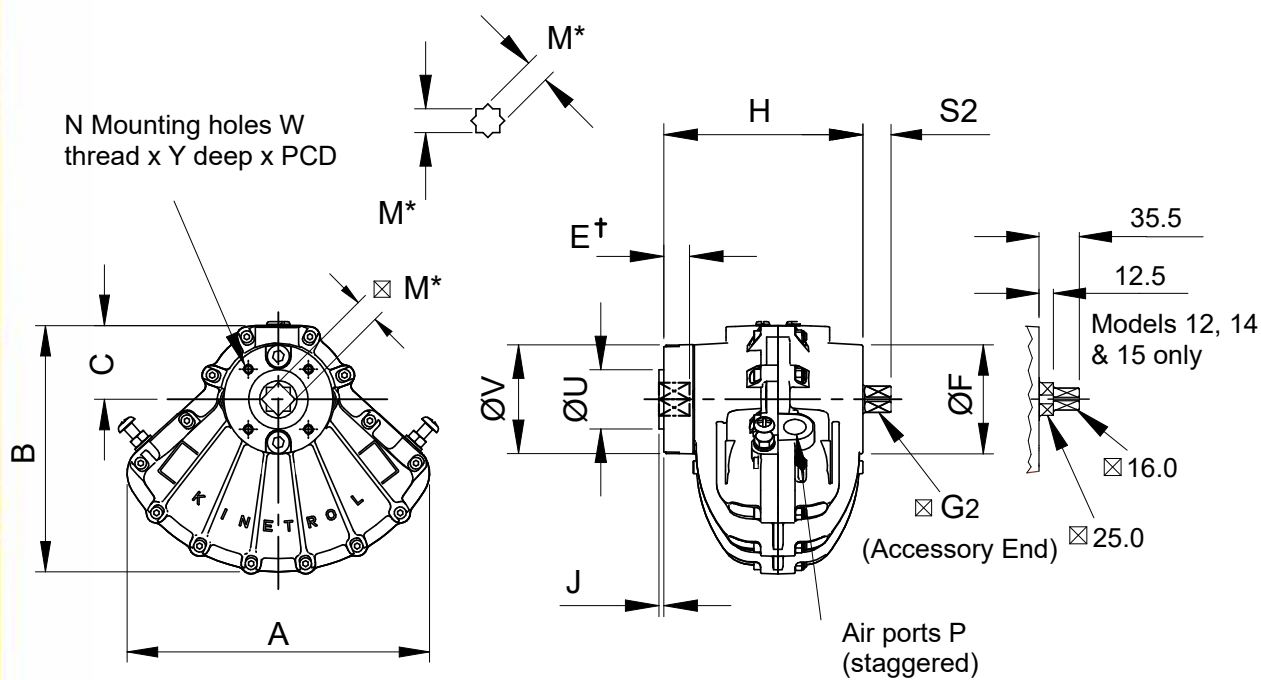


## Standard Actuator



## For Model 15, 16, 18, 20, 30 and 60  
coupling details see pages 20 to 25

## ISO/DIN Options



## Actuator Metric Units

Actuator Model	A mm	B mm	C mm	G1 mm	G2 mm	H mm	ØF mm	S1 mm	S2 mm	N No.	T ISO	D mm	R mm	PCD mm	P ISO	ØK mm	L mm	Wt kg †
0M0	32	31	12.5	SEE PAGE 57		36	22	10.0	10.0	4	M3	5.0	-	16.0**	M5	-	-	0.12
014	72	59	14.0	4.8	4.8	38	26	12.7*	7.0	4	M4	6.0	-	19.0**	G½	9.5	12.7	0.29
014P	74	60	14.0	4.8	4.8	38	26	12.7*	7.0	4	Ø4.2	UNIQUE MOUNTING CRS.			G½	9.5	12.7	0.35
024	91	76	24.1	8.0	8.0	50	29	10.0	10.0	4	M4	8.0	18.0	25.5	G½	16.0	20.0	0.46
034	113	92	28.0	9.0	9.0	60	36	12.0	12.0	4	M5	10.0	22.0	31.1	G½	18.0	22.0	0.73
054	137	113	33.6	9.5	9.5	67	50	13.0	13.0	6	M5	10.0	-	34.9	G½	19.0	25.4	1.28
074	178	147	43.4	16.0	16.0	100	68	20.0	20.0	4	M8	16.0	36.0	50.9	G¾	32.0	40.0	1.97
084	208	167	46.3	17.0	16.0	110	65	19.0	20.0	4	M8	16.0	49.5	70.0	G¾	36.0	42.0	2.78
094	227	187	54.7	19.0	16.0	126	84	26.0	20.0	4	M10	20.0	46.0	65.0	G¾	38.0	50.0	4.16
124	294	239	68.0	25.0	16.0	156	100	31.0	35.5	4	M12	24.0	55.0	77.8	G¾	50.0	56.0	7.30
144	380	308	84.0	28.6	16.0	200	128	38.0	35.5	4	M16	28.5	69.9	98.8	G½	57.0	63.5	14.10
154	433	353	101.0	36.0	16.0	245	138	41.0	35.5	4	M16	28.5	99.0	140.0	G½	70.0	80.0	22.70
164	530	427	125.0	41.0	41.0	274	175	55.0	55.0	4	M24	38.0	108.0	152.7	G½	85.0	90.0	39.77
184	680	554	162.0	57.0	57.0	360	286	78.0	78.0	4	M30	50.0	160.0	226.3	G¾	115.0	130.0	94.00
204	680	554	162.0	73.0	73.0	620	286	100.0	100.0	8	M30	50.0	160.0	226.3	G1	150.0	170.0	211.00
304	680	554	162.0	73.0	73.0	880	286	100.0	100.0	8	M30	50.0	160.0	226.3	G1	150.0	170.0	288.40
604	1204	944	257.0	100.0	73.0	590	428	100.0	120.0	8	M30	80.0	-	356.0	G2	200.0	140.0	497.00

\* INCLUDES PLAIN SHAFT Ø6.35 x 8 LONG

\*\* HOLES ON CENTRE LINES

† All weights include coupling - except 103

## Actuator English Units

Actuator Model	A inch	B inch	C inch	G1 inch	G2 inch	H inch	ØF inch	S1 inch	S2 inch	N No.	T UNC	D inch	R inch	PCD inch	P NPT	ØK inch	L inch	Wt lb †	
0M0	1.26	1.22	0.49	SEE PAGE 57		1.42	0.87	0.39	0.39	4	M3	0.20	0.390	0.630	M5	-	-	0.26	
017	2.83	2.32	0.55	0.187	0.19	1.50	1.02	0.50*	0.28	4	8-32	0.24	-	0.750	½	0.37	0.50	0.63	
017P	2.91	2.36	0.55	0.187	0.19	1.50	1.02	0.50*	0.39	4	Ø0.17	UNIQUE MOUNTING CRS.				½	0.37	0.50	0.78
027	3.58	3.00	0.95	0.315	0.32	1.97	1.14	0.39	0.47	4	8-32	0.31	0.709	1.000	¾	0.63	0.79	1.01	
037	3.62	3.60	1.10	0.354	0.35	2.36	1.42	0.47	0.51	4	10-24	0.39	0.866	1.225	¾	0.71	0.87	1.61	
057	4.45	3.62	1.32	0.375	0.37	2.64	1.97	0.51	0.51	6	10-24	0.39	-	1.375	¾	0.75	1.00	2.82	
077	5.79	4.45	1.71	0.630	0.63	3.94	2.68	0.79	0.79	4	⅝-18	0.63	1.417	2.000	¾	1.26	1.57	4.34	
087	6.57	5.79	1.82	0.669	0.63	4.33	2.56	0.75	0.79	4	⅝-18	0.63	1.949	2.756	¾	1.42	1.65	6.10	
097	8.94	7.36	2.16	0.748	0.63	4.96	3.31	1.02	0.79	4	¾-16	0.79	1.811	2.560	¾	1.50	1.97	9.15	
107 #	9.00	7.40	2.20	0.866	0.63	6.89	5.43	0.94	0.79	4	¾-16	0.63	2.839	4.016	¾	-	-	11.90	
127	11.57	9.41	2.68	0.984	0.63	6.14	3.94	1.22	1.40	4	½-13	0.94	2.165	3.060	¾	1.97	2.20	16.11	
147	14.96	12.13	3.31	1.125	0.63	7.87	5.00	1.50	1.40	4	⅝-11	1.12	2.750	3.890	½	2.24	2.50	31.10	
157	17.05	13.90	3.98	1.417	0.63	9.65	6.70	1.61	1.40	4	⅝-11	1.12	3.900	5.512	½	2.76	3.15	49.90	
167	20.87	16.81	4.92	1.614	1.61	10.79	6.90	2.17	2.17	4	⅞-9	1.50	4.250	6.010	½	3.35	3.54	87.49	
187	26.77	21.81	6.38	2.244	2.24	14.17	11.26	3.07	3.07	4	1½-7	1.97	6.300	8.910	¾	4.53	5.12	207.23	
207	26.77	21.81	6.38	2.874	2.87	24.41	11.26	3.94	3.94	8	1½-7	1.97	6.300	8.910	1	5.91	6.69	464.20	
307	26.77	21.81	6.38	2.874	2.87	34.65	11.26	3.94	3.94	8	1½-7	1.97	6.300	8.910	1	5.91	6.69	634.50	
607	47.40	37.17	10.12	3.937	2.87	23.23	16.85	4.72	3.94	8	1½-7	3.15	-	14.020	2	7.87	5.51	1095.70	

# FEMALE DRIVE

† All weights include coupling - except 107

## ISO/DIN Options

Actuator Model	A mm	B mm	C mm	H mm	ØF mm	ISO/DIN flange no.	M* mm	V mm	ØU mm	PCD mm	N No.	W mm	Y(Min) mm	J mm	E † mm	P Port	G2 mm	S2 mm
023	91	76	24.1	66	29	F03	9	46	25	36	4	M5	8	2	10	G½	8.0	10.0
033	113	92	28.0	74	36	F03	9	46	25	36	4	M5	8	2	10	G½	9.0	12.0
053	137	113	33.6	81	50	F04	11	54	30	42	4	M5	8	2	12	G½	9.5	13.0
073	178	147	43.4	117	68	F05	14	64	35	50	4	M6	10	3	16	G¾	16.0	20.0
083	208	167	46.3	133	65	F07	17	70	55	70	4	M8	16	3	19	G¾	16.0	20.0
093	227	187	54.7	146	84	F07	17	85	55	70	4	M8	13	3	19	G¾	16.0	20.0
103	229	188	57.0	175	77	F10	22	-	-	102	4	M10	16	-	24	G¾	16.0	20.0
123	294	239	68.0	181	100	F10	22	125	70	102	4	M10	16	3	24	G¾	16.0	35.5
143	380	308	84.0	227	128	F12	27	150	85	125	4	M12	20	3	29	G½	16.0	35.5
163	530	427	125.0	380	175	F16	46	203	130	165	4	M20	32	4	48	G½	41.0	55.0
183	680	554	162.0	501	286	F25	55	300	200	254	8	M16	24	4	57	G¾	57.0	78.0
203	680	554	162.0	800	286	F30	75	350	230	298	8	M20	30	4	77	G1	73.0	100.0

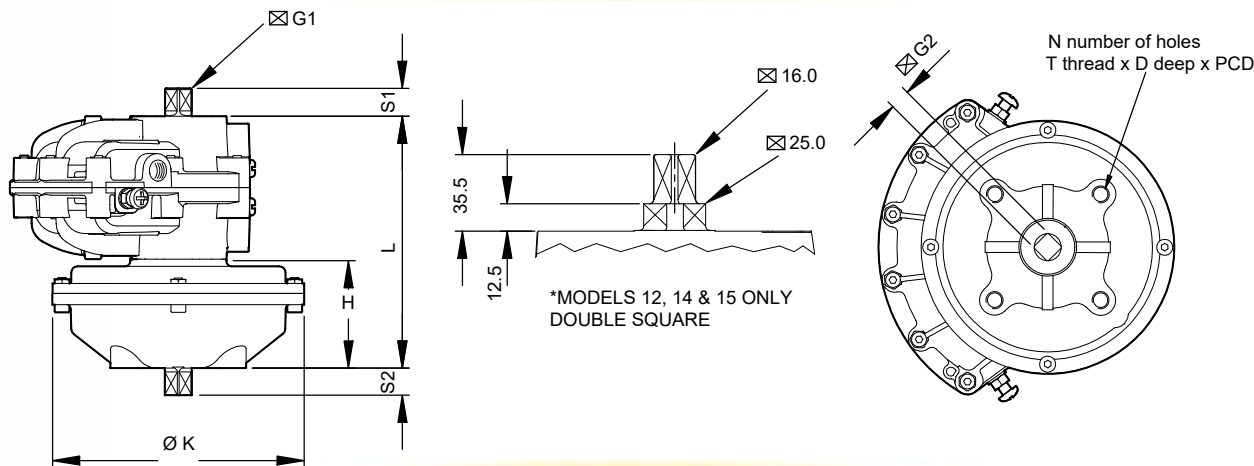
† Minimum

\* Models 02, 03, 05, 07, 09, 12 and 14 are female star drive, all other models are female square drive





## Male Spring Return Actuator Dimensions



### Metric Units

Actuator** Model	L mm	H mm	$\varnothing K$ mm	$\square G1$ mm	$\square G2$ mm	S1 mm	S2 mm	N No.	T ISO	D mm	PCD mm	Wt kg †
024-120	90	40	73	8.0	8.0	10	10	4	M4	8.0	25.5	0.93
034-120	103	43	108	9.0	9.0	12	12	4	M5	10.0	31.1	2.03
054-120	117	50	119	9.5	9.5	13	13	6	M5	8.0	34.9	3.12
074-120	182	82	152	16.0	16.0	20	20	4	M8	16.0	50.9	4.71
084-120	197	87	174	16.0	17.0	20	19	4	M8	16.0	70.0	7.62
094-120	218	92	200	16.0	19.0	20	26	4	M10	20.0	65.0	11.06
104-120	285	110	206	16.0	22.0	20	26	4	M10	16.0	102.0	14.80
124-120	292	136	258	16.0*	25.0	36	31	4	M12	24.0	77.8	23.50
144-120-4900	417	217	258	16.0*	28.6	36	38	4	M16	28.5	98.8	43.10
144-120	387	187	396	16.0*	28.6	36	38	4	M16	28.5	98.8/140.0	64.10
144-120-5000	337	137	258	16.0*	28.6	36	38	4	M16	28.5	98.8	38.18
154-120	432	187	396	16.0*	36.0	36	41	4	M16	28.5	140.0	77.00
164-120-6100	461	187	396	41.0	41.0	55	55	4	M24	28.0	152.7	88.10
164-120	486	212	524	41.0	41.0	55	55	4	M24	38.0	152.7	140.0
184-120-7000	572	212	524	57.0	57.0	78	78	4	M30	50.0	226.3	161.0
184-120	602	242	634	57.0	57.0	78	78	4	M30	50.0	226.3	278.0
204-120-8000	861	238	634	73.0	73.0	100	100	8	M30	50.0	226.3	390.0
204-120-7300	1032	412	524	73.0	73.0	100	100	8	M30	50.0	226.3	408.0
204-120	982	359	634	73.0	73.0	100	100	8	M30	50.0	226.3	538.0
304-120-7600	1293	412	524	73.0	73.0	100	100	8	M30	50.0	226.3	524.0
304-120-8300	1243	358	634	73.0	73.0	100	100	8	M30	50.0	226.3	630.4
304-120-7800	1493	612	524	73.0	73.0	100	100	8	M30	50.0	226.3	688.0
304-120	1354	483	634	73.0	73.0	100	100	8	M30	50.0	226.3	768.4
600-120-8400***	1194	604	634	***	***	***	***	***	***	***	***	1125.0
600-120-8500***	1315	725	634	***	***	***	***	***	***	***	***	1272.0
600-120***	1436	846	634	***	***	***	***	***	***	***	***	1420.0

\*\*\* Springs mounted above actuator - see page 25 for mounting details

† All weights include coupling - except 103

### English Units

Actuator** Model	L inch	H inch	$\varnothing K$ inch	$\square G1$ inch	$\square G2$ inch	S1 inch	S2 inch	N No.	T UNC	D inch	PCD inch	Wt lb †
027-120	3.54	1.58	2.87	0.315	0.315	0.39	0.39	4	8-32	0.31	1.00	2.05
037-120	4.06	1.69	4.21	0.354	0.354	0.47	0.47	4	10-24	0.39	1.225	4.48
057-120	4.61	1.97	4.69	0.375	0.375	0.51	0.51	6	10-24	0.31	1.375	6.88
077-120	7.17	3.23	6.00	0.630	0.630	0.79	0.79	4	5/16-18	0.63	2.00	10.38
087-120	7.76	3.43	6.85	0.630	0.669	0.79	0.75	4	5/16-18	0.63	2.76	16.80
097-120	8.58	3.62	7.90	0.630	0.748	0.79	1.02	4	3/8-16	0.79	2.56	24.38
107-120	11.22	4.33	8.11	0.630	0.866	0.79	1.02	4	3/8-16	0.63	4.02	32.63
127-120	11.50	5.35	10.16	0.630*	0.984	1.40	1.22	4	1/2-13	0.94	3.06	51.81
147-120-4900	16.43	8.54	10.16	0.630*	1.125	1.40	1.50	4	5/8-11	1.12	3.89	95.02
147-120	15.24	7.36	15.59	0.630*	1.125	1.40	1.50	4	5/8-11	1.13	5.51	141.32
147-120-5000	13.27	5.40	10.16	0.630*	1.125	1.40	1.50	4	5/8-11	1.13	3.89	84.19
157-120	17.00	7.36	15.59	0.630*	1.417	1.40	1.61	4	5/8-11	1.13	5.51	170.0
167-120-6100	18.15	7.36	15.59	1.614	1.614	2.17	2.17	4	7/8-9	1.10	6.01	194.2
167-120	19.11	8.33	20.63	1.614	1.614	2.17	2.17	4	7/8-9	1.50	6.01	308.0
187-120-7000	22.50	8.33	20.63	2.244	2.244	3.07	3.07	4	1 1/8-7	1.97	8.91	356.0
187-120	23.69	9.52	24.96	2.244	2.244	3.07	3.07	4	1 1/8-7	1.97	8.91	612.9
207-120-8000	33.90	9.37	24.96	2.874	2.874	3.94	3.94	8	1 1/8-7	1.97	8.91	859.8
207-120-7300	40.61	16.20	20.63	2.874	2.874	3.94	3.94	8	1 1/8-7	1.97	8.91	901.0
207-120	38.67	14.13	24.96	2.874	2.874	3.94	3.94	8	1 1/8-7	1.97	8.91	1186.1
307-120-7600	50.91	16.20	20.63	2.874	2.874	3.94	3.94	8	1 1/8-7	1.97	8.91	1158.0
307-120-8300	48.93	14.13	24.96	2.874	2.874	3.94	3.94	8	1 1/8-7	1.97	8.91	1389.8
307-120-7800	58.78	24.07	20.63	2.874	2.874	3.94	3.94	8	1 1/8-7	1.97	8.91	1520.0
307-120	53.68	19.02	24.96	2.874	2.874	3.94	3.94	8	1 1/8-7	1.97	8.91	1694.0
609-120-8400***	47.01	23.78	24.96	***	***	***	***	***	***	***	***	2480.0
609-120-8500***	51.77	28.54	24.96	***	***	***	***	***	***	***	***	2804.0
609-120***	56.54	33.31	24.96	***	***	***	***	***	***	***	***	3131.0

\*\*\* Springs mounted above actuator - see page 25 for mounting details

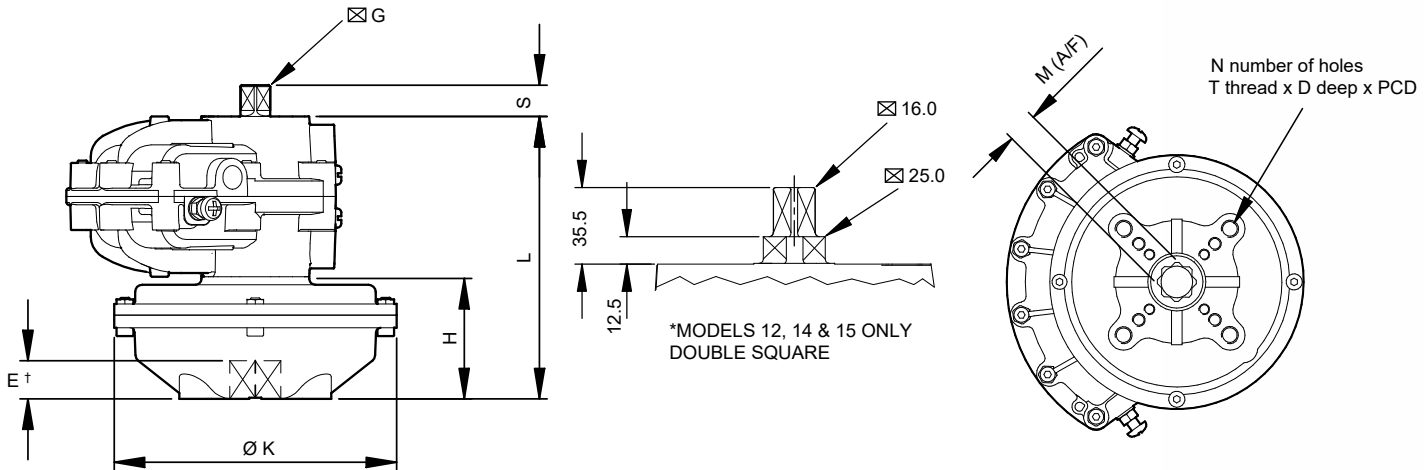
† All weights include coupling - except 107



\*\* Clockwise (120) and counter-clockwise (130) units have identical dimensions

# ISO Flange Female Spring Return Actuator Dimensions

## Spring Return Actuator Dimensions



### Metric Units

Actuator** Model	ISO Flange No.	L mm	H mm	ØK mm	M mm	S mm	⊠G mm	E † mm	N No.	T ISO	D mm	PCD mm
033F120	F03/F05	103	43	108	11	12	9.0	12	4	M5/M6	8/10	36/50
033F180	F04	103	43	108	11	12	9.0	12	4	M5	10	42
053F120	F03/F05/F07	117	50	119	14	13	9.5	16	4	M5/M6/M8	10/12/13	36/50/70
053F180	F04	117	50	119	14	13	9.5	16	4	M5	10	42
073F120-4000	F03/F05/F07	150	50	118	14	20	16.0	16	4	M5/M6/M8	10/12/13	36/50/70
073F120	F05/F07	182	82	152	17	20	16.0	19	4	M6/M8	10/13	50/70
083F120	F07	197	87	174	17	20	16.0	19	4	M8	16	70
093F120-4200	F05/F07	208	82	152	17	20	16.0	19	4	M6/M8	10/13	50/70
093F120	F07/F10	218	92	200	22	20	16.0	24	4	M8/M10	13/16	70/102
103F120-5800	F07/F10	268	92	200	22	20	16.0	24	4	M8/M10	13/16	70/102
103F120	F10	285	110	206	22	20	16.0	24	4	M10	16	102
123F120-4300	F10	248	92	200	22	35.5	16.0*	25	4	M10	16	102
123F120	F10	292	136	258	22	35.5	16.0*	25	4	M10	16	102
123F180	F12	292	136	258	27	35.5	16.0*	29	4	M12	20	125
143F120-4900	F12	417	217	258	27	35.5	16.0*	29	4	M12	20	125
143F120-5000	F12	337	136	258	27	35.5	16.0*	29	4	M12	20	125
143F120	F12	387	187	396	27	35.5	16.0*	29	4	M12	24	125
153F120***	F14	432	187	396	36	35.5	16.0*	38	4	M16	28	140
163F120***	F14	486	212	524	36	55	41.0	38	4	M16	24	140
183F120-7000***	F16	572	212	524	46	78	57.0	48	4	M20	30	165
183F120***	F16	602	242	634	46	78	57.0	48	4	M20	30	165
203F120-8000***	F25	861	238	634	55	100	73.0	57	8	M16	24	254
203F120-7300***	F25	1032	412	524	55	100	73.0	57	8	M16	24	254
203F120***	F25	982	359	634	55	100	73.0	57	8	M16	24	254

### English Units

Actuator** Model	ISO Flange No.	L inch	H inch	ØK inch	M inch	S inch	⊠G inch	E † inch	N No.	T UNC	D inch	PCD inch
037F120	F03/F05	4.06	1.69	4.21	0.433	0.47	0.354	0.47	4	10-24 1/4	0.31/0.39	1.41/1.97
037F180	F04	4.06	1.69	4.21	0.433	0.47	0.354	0.47	4	10-24	0.39	1.65
057F120	F03/F05/F07	4.61	1.97	4.69	0.551	0.51	0.374	0.63	4	10-24 1/4 5/16	0.39/0.47/0.51	1.42/1.97/2.76
057F180	F04	4.61	1.97	4.69	0.551	0.51	0.374	0.63	4	10-24	0.39	1.65
077F120-4000	F03/F05/F07	5.91	1.97	4.65	0.551	0.79	0.630	0.63	4	10-24 1/4 5/16	0.39/0.47/0.51	1.42/1.97/2.76
077F120	F05/F07	7.17	3.23	5.98	0.669	0.79	0.630	0.75	4	1/4 5/16	0.39/0.51	1.97/2.76
087F120	F07	7.76	3.43	6.85	0.669	0.79	0.630	0.75	4	5/16	0.63	2.76
097F120-4200	F05/F07	8.19	3.23	5.98	0.669	0.79	0.630	0.75	4	1/4 5/16	0.39/0.51	1.97/2.76
097F120	F07/F10	8.58	3.62	7.87	0.866	0.79	0.630	0.94	4	5/16 3/8	0.51/0.63	2.76/4.01
107F120-5800	F07/F10	10.55	3.62	7.87	0.866	0.79	0.630	0.94	4	5/16 3/8	0.51/0.63	2.76/4.01
107F120	F10	11.22	4.33	8.11	0.866	0.79	0.630	0.94	4	3/8	0.63	4.02
127F120-4300	F10	9.76	3.62	7.87	0.866	1.40	0.630*	0.94	4	3/8	0.63	4.02
127F120	F10	11.50	5.35	10.16	0.866	1.40	0.630*	0.98	4	3/8	0.63	4.02
127F180	F12	11.50	5.35	10.16	1.063	1.40	0.630*	0.98	4	1/2	0.79	4.92
147F120-4900	F12	16.42	8.54	10.16	1.063	1.40	0.630*	1.14	4	1/2	0.79	4.92
147F120-5000	F12	13.27	5.35	10.16	1.063	1.40	0.630*	1.14	4	1/2	0.79	4.92
147F120	F12	15.24	7.36	15.59	1.063	1.40	0.630*	1.14	4	1/2	0.94	4.92
157F120***	F14	17.00	7.36	15.59	1.420	1.40	0.630*	1.50	4	5/8	1.10	5.51
167F120***	F14	19.13	8.35	20.63	1.417	2.17	1.614	1.50	4	5/8	0.94	5.51
187F120-7000***	F16	22.52	8.35	20.63	1.811	3.07	2.244	1.89	4	3/4	1.18	6.50
187F120***	F16	23.69	9.52	24.96	1.811	3.07	2.244	1.89	4	3/4	1.18	6.50
207F120-8000***	F25	33.90	9.37	24.96	2.165	3.94	2.874	2.24	8	5/8	0.94	10.00
207F120-7300***	F25	40.63	16.22	20.63	2.165	3.94	2.874	2.24	8	5/8	0.94	10.00
207F120***	F25	38.67	14.13	24.96	2.165	3.94	2.874	2.24	8	5/8	0.94	10.00

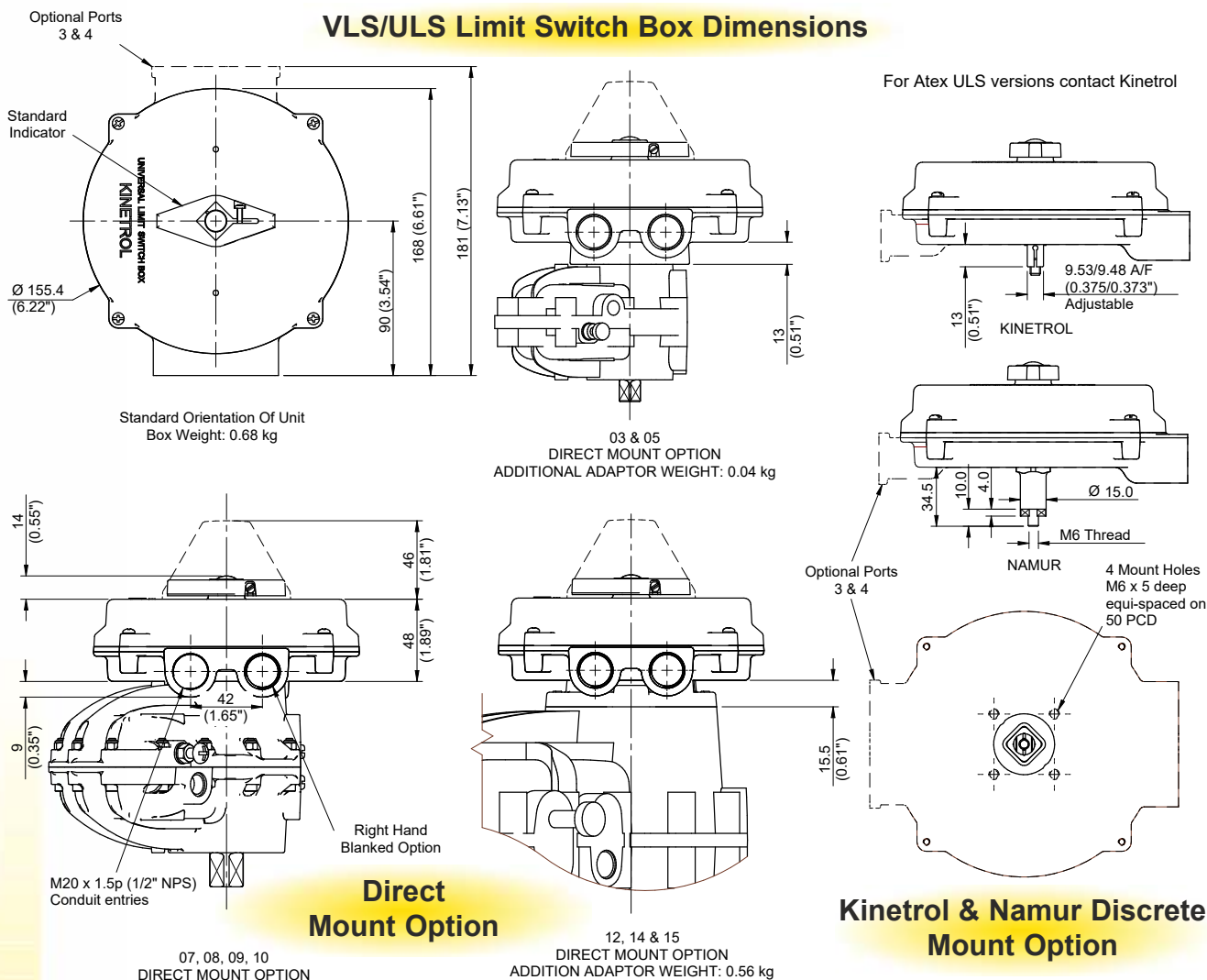
† Minimum



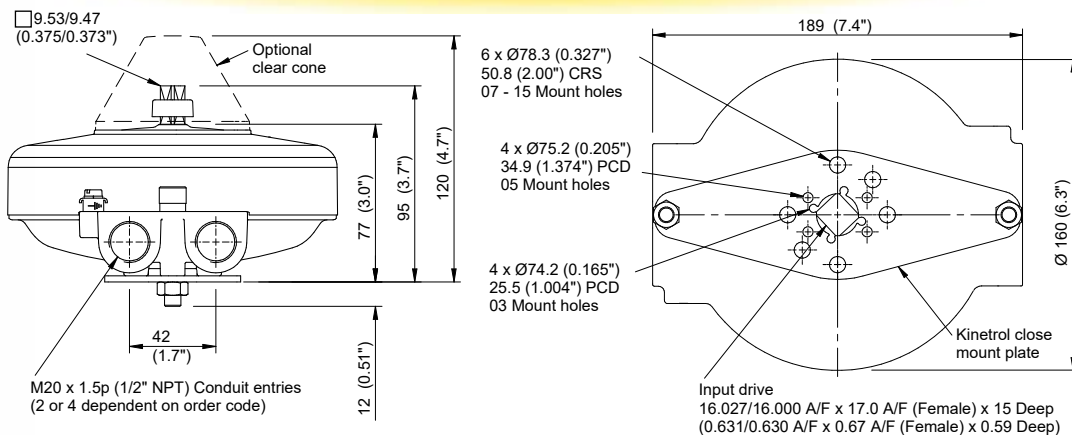
\*\* Clockwise (120 or 180) and counterclockwise (130 or 190) units have identical dimensions

All female drives are "Star" type except for sizes marked "\*\*\*\*" where square orientation is shown by dimension "M"

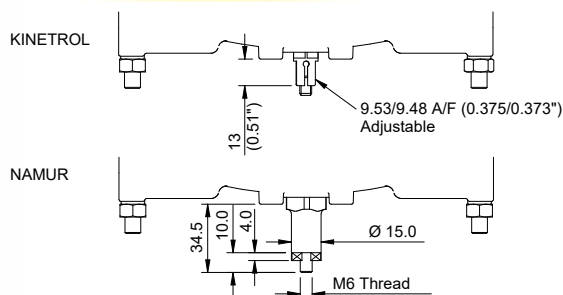
## VLS/ULS Limit Switch Box Dimensions



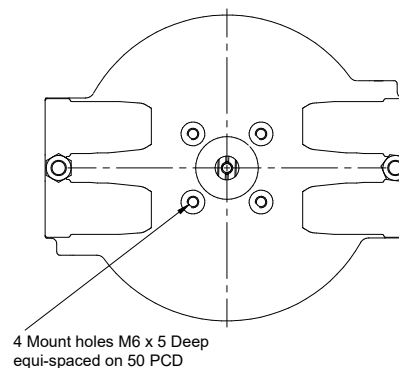
## Explosion Proof Limit Switch Box Dimensions



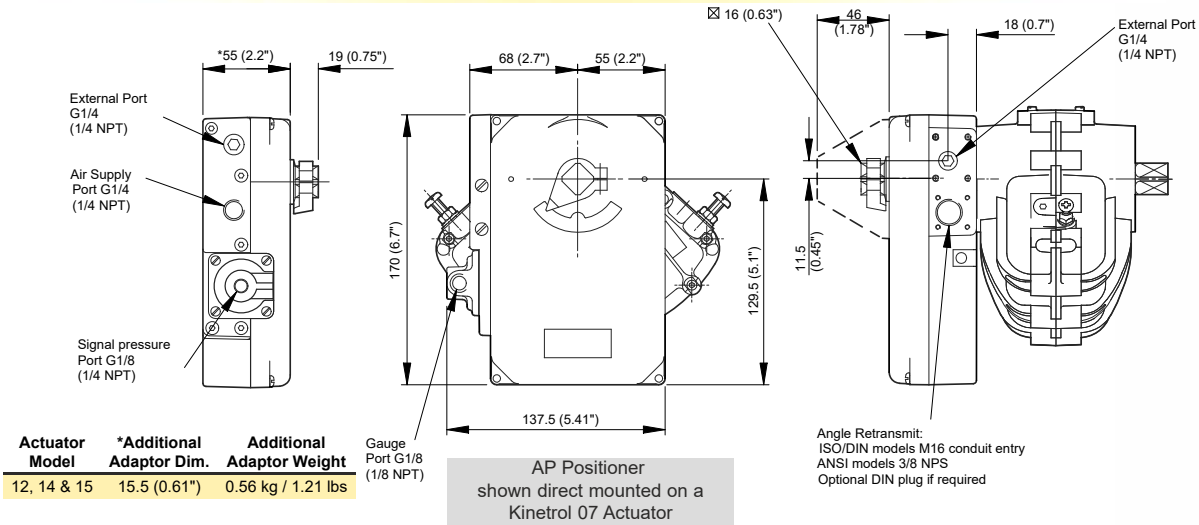
## Kinetrol Close Mount Option



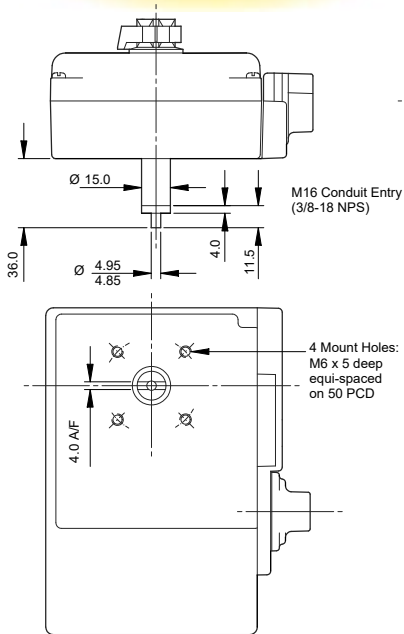
## Discrete Mount Option



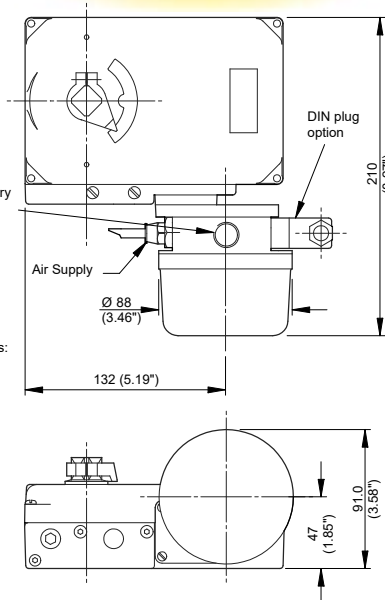
## AP Positioner Dimensions



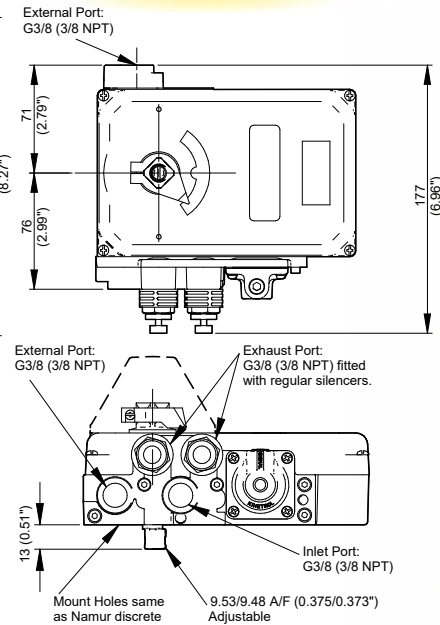
### Namur Discrete Version



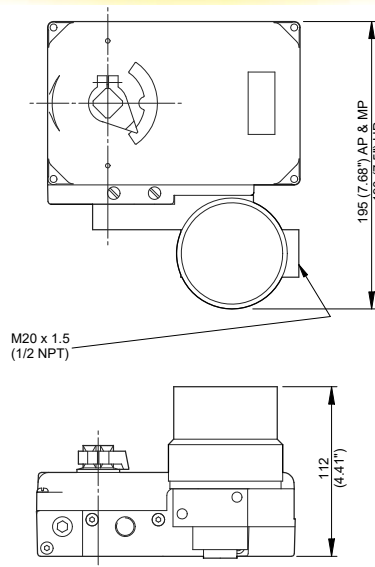
### Non-Hazardous I/P Version



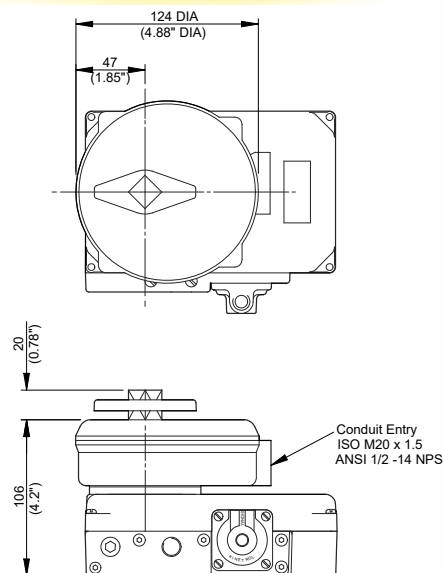
### Kinetrol Discrete/ High Flow Version



### Explosion Proof I/P Version



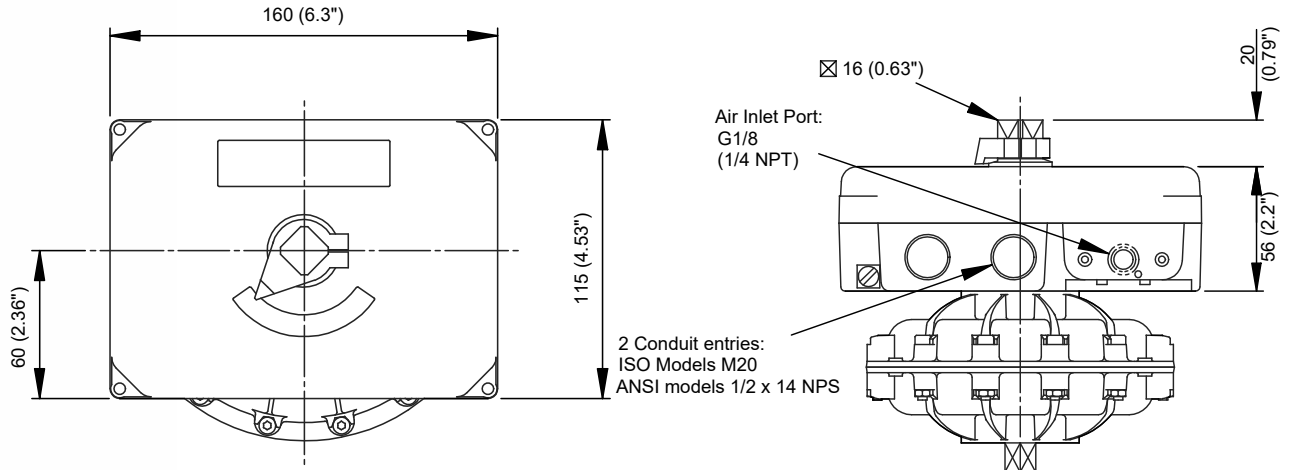
### Switch Box Version



Where drawing information is not given - it is the same as the direct mount version



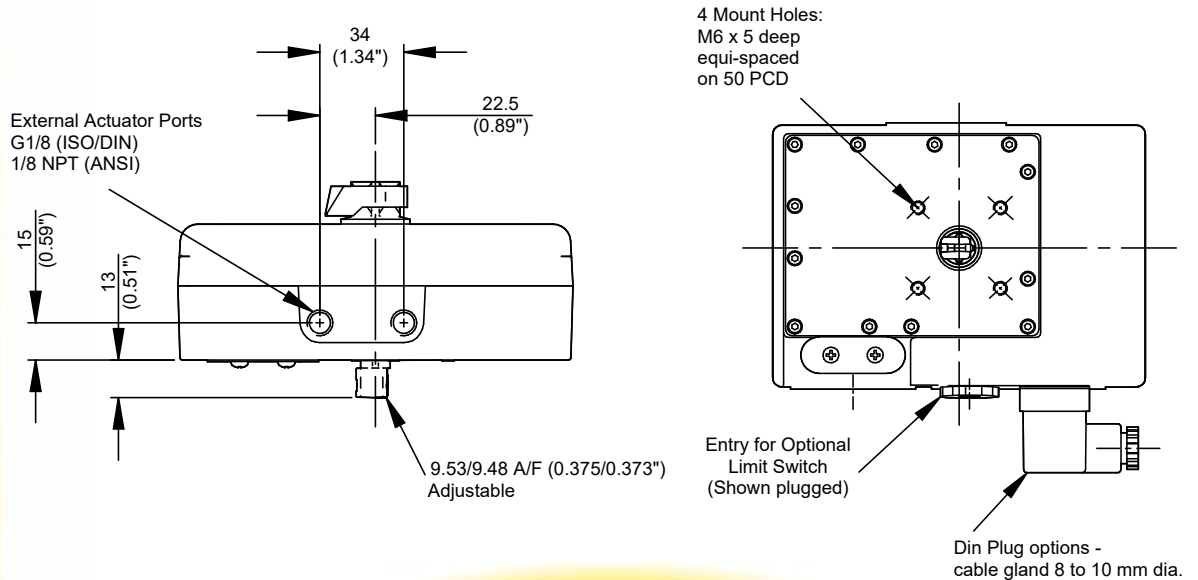
## EL Positioner Dimensions



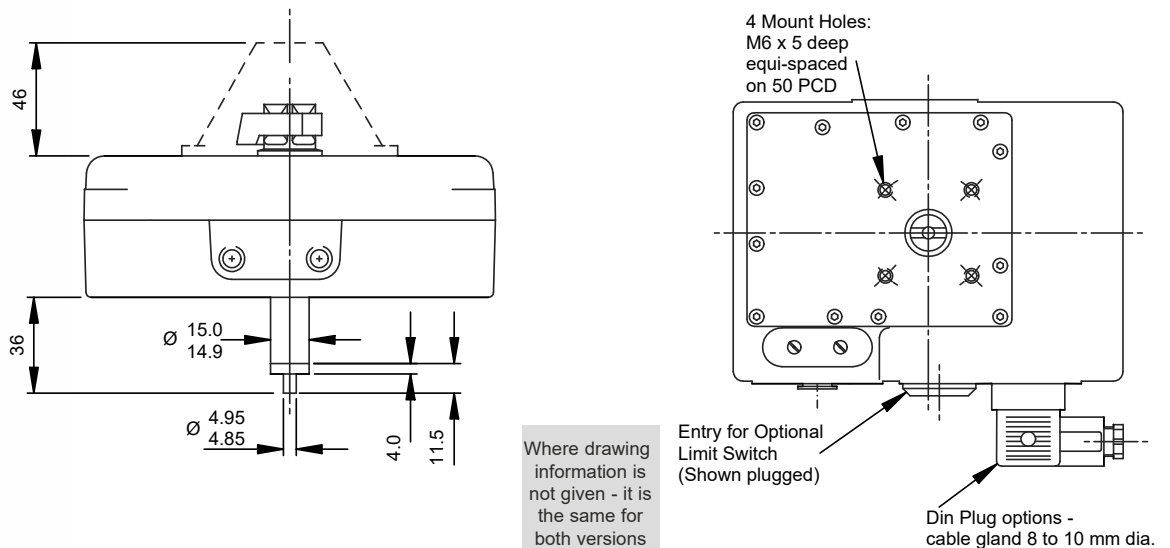
Actuator Model	*Additional Adaptor Dim.	Additional Adaptor Weight
12, 14 & 15	15.5 (0.61")	0.56 kg / 1.21 lbs

EL Positioner shown direct mounted on a Kinetrol 05 actuator

## Kinetrol Discrete Version

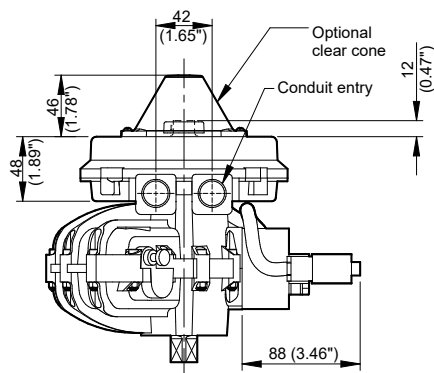
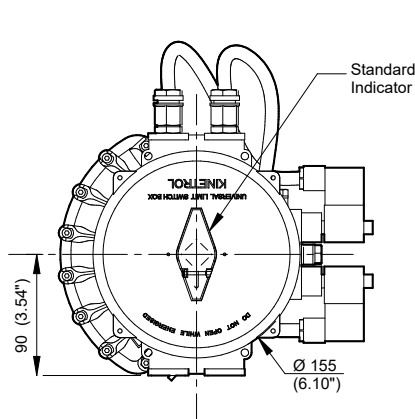


## Namur Discrete Version



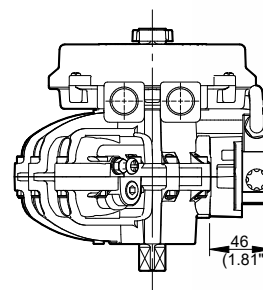
## P3 On/Off Pneumatic Positioner Dimensions

### Fail free / Fail down / Spring return units



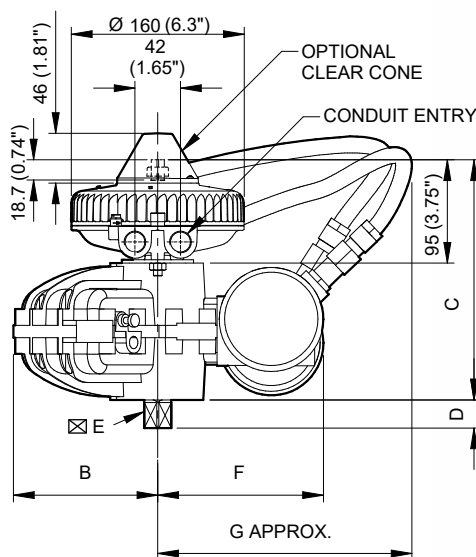
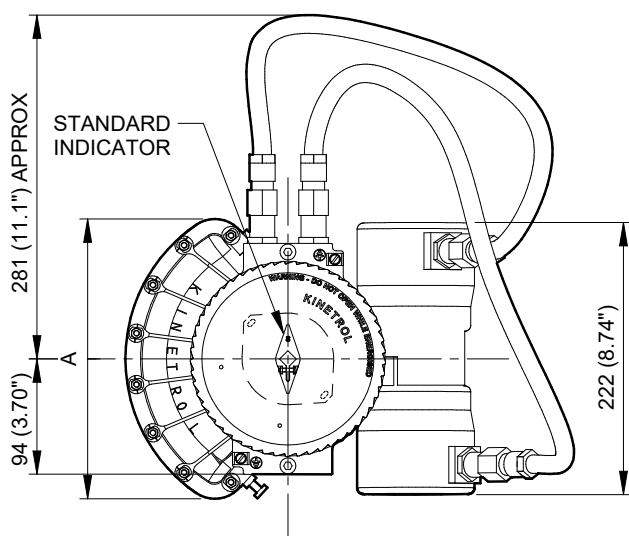
G 1/8 (1/8" NPT) PORT POSITION ON BLOCK  
DEPENDS ON ORDER SPECIFICATION

### Fail hold unit



G 1/4" (1/4" NPT) PORT  
ON SOLENOID

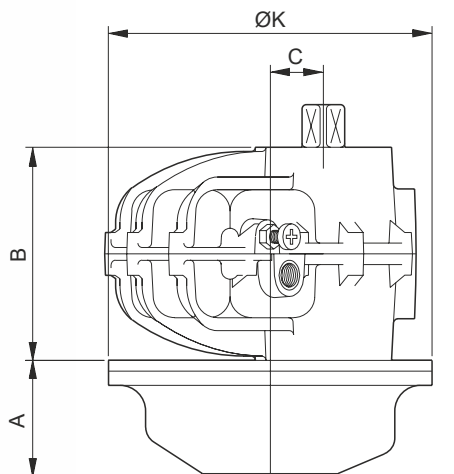
## Explosion Proof P3 On/Off Positioner Dimensions



Model	A	B	C	D	⊠E	F	G
05	137.0 (5.39")	78.4 (3.09")	162 (6.4")	13.0 (0.51")	9.5 (0.375")	133 (5.2")	214 (8.4")
07	178.0 (7.01")	102.6 (4.04")	195 (7.7")	20.0 (0.79")	16.0 (0.630")	142 (5.6")	223 (8.8")
08	208.0 (8.19")	120.7 (4.75")	205 (8.1")	19.0 (0.75")	17.0 (0.669")	145 (5.7")	226 (8.9")
09	227.0 (8.94")	133.0 (5.24")	221 (8.7")	26.0 (1.02")	19.0 (0.748")	153 (6.0")	234 (9.2")
10	229.0 (9.00")	130.5 (5.14")	273 (10.75")	24.0 (0.94")	22.0* (0.870")	155 (6.2")	236 (9.3")
12	294.0 (11.57")	171.0 (6.73")	266 (10.5")	31.0 (1.22")	25.0 (0.984")	167 (6.6")	218 (8.6")
14	380.0 (14.96")	222.0 (8.74")	314 (12.4")	38.0 (1.50")	28.6 (1.125")	183 (7.2")	264 (10.4")
15	433.0 (17.05")	252.0 (9.92")	355 (14.0")	41.0 (1.61")	36.0 (1.417")	200 (7.9")	281 (11.1")

\* Model 10 DIN (F10) Female Drive

## 180 Degree Actuator Dimensions



Output square is shown at limit of travel (orientation is offset 45° to actuator shaft)

⊠ G x S long

N holes x T thread x D Deep x PCD  
Mounting holes are aligned with actuator interface

### Dimensions/Metric Units

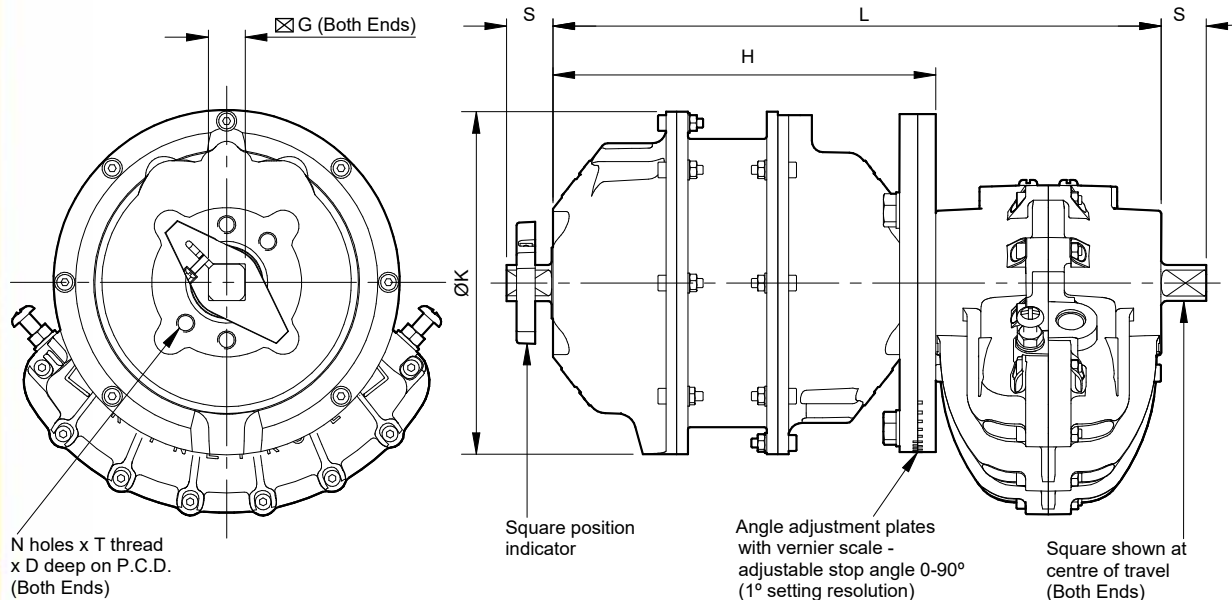
Actuator Model	A mm	B mm	C mm	K mm	G mm	S mm	N	T ISO	D mm	PCD mm	W kg
02 - 1001	32	50	12.5	73	8.0	10.0	4	M4	8.0	25.5	1.1
03 - 1001	36	60	20	108	9.0	12.0	4	M5	10.0	31.1	2
05 - 1001	42	67	20	119	9.5	13.0	6	M5	8.0	34.9	2.5
07 - 1001	59	100	25	152	16.0	20.0	4	M8	16.0	50.9	4.57
09 - 1001	70	126	35	200	19.0	26.0	4	M10	20.0	65.0	13.2
12 - 1001	99	156	45	258	25.0	31.0	4	M12	22.0	77.8	20.45
14 - 1001	125	200	70	396	28.6	38.0	4	M16	28.5	98.8	35.25
16 - 1001	176	274	100	520	41.0	55.0	4	M24	38.0	152.7	125

### Dimensions/English Units

Actuator Model	A inch	B inch	C inch	K inch	G inch	S inch	N	T UNC	D inch	PCD inch	W lb
02 - 1001	1.24	1.97	0.49	2.87	0.315	0.39	4	8-32	0.31	1.000	2.43
03 - 1001	1.40	2.36	0.79	4.25	0.354	0.47	4	10-24	0.39	1.225	4.41
05 - 1001	1.65	2.64	0.79	4.69	0.375	0.51	6	10-24	0.31	1.375	5.51
07 - 1001	2.32	3.94	0.98	6.00	0.630	0.79	4	5/16-18	0.63	2.000	11.68
09 - 1001	2.76	4.96	1.38	7.90	0.748	1.02	4	3/8-16	0.79	2.560	29.10
12 - 1001	3.90	6.14	1.77	10.16	0.984	1.22	4	1/2-13	0.87	3.060	44.99
14 - 1001	4.92	7.87	2.76	15.59	1.125	1.50	4	5/8-11	1.13	3.890	77.55
16 - 1001	6.93	10.79	3.94	20.47	1.614	2.17	4	3/4-9	1.50	6.012	275.00

N.B. Weights are inclusive of actuator and 180 degree assembly, coupling and indicator (except models 14 & 16).

## Spring to Centre Dimensions



Actuator Model	L mm	H mm	K mm	⊠ G mm	S mm	N No.	T ISO	D mm	PCD mm	Wgt* kg
050-1205	178	111	119	9.5	13	6	M5	10	34.9	4.0
070-1205	270	170	152	16.0	20	4	M8	16	50.9	10.2
090-1205	328	202	200	19.0	26	4	M10	20	65.0	23.6
120-1205	466	310	258	25.0	31	4	M12	22	77.8	36.0
140-1205	640	440	400	28.6	38	4	M16	28	98.8	124.0
160-1205	880	606	400	41.0	55	4	M24	38	152.7	200.0
180-1205	1163	803	532	57.0	78	4	M30	50	226.3	445.0

\* Weight includes standard coupling

## Spring Fail-Safe Electric Actuators

Kinetrol's double acting and spring return electrohydraulic actuators are designed for use in locations without a compressed air supply. A hydraulic pump delivers pressurised oil to a Kinetrol quarter-turn actuator, providing a double acting torque output up to 1220 Nm/10800 lbf in.

In the case of single acting units, a Kinetrol spring return and fail-open solenoid valve produce a positive fail-safe action.

A 100% rated pump motor and pressure release valve provide stall protection. This, together with the units capacity for up to 3000 starts per hour, make it ideal for both high cycle double acting or modulating applications.

Various AC and DC voltage builds are available and options include auxiliary limit switches and/or a 4-20 mA transducer for position feedback.

See leaflet KF-503 for further information.



## Rotary Dampers

Kinetrol's range of fluid dashpots are used to steady drives, decelerate motion and damp vibration. Standard designs include fixed and adjustable rate devices for limited angle or continuous rotation damping in one or both directions of travel.

Applications for these robust, industrial dampers include the precise control of:

- tension on wire/paper/film/textile handling equipment
- the rate of descent of curtains, shutters, etc.
- oscillations of pendulums, gimbals, etc.
- jerk on camera & simulator systems
- vibration on transfer machinery.

See catalogue KF-72 for more information.  
If required, Kinetrol can engineer special designs to meet customers specifications.





## WORLDWIDE DISTRIBUTION

### Australia

IMI Australia Pty Ltd  
Tel: 1800 NORGREN (667473)  
email: [australia@imi-precision.com](mailto:australia@imi-precision.com)  
web: [www.imi-precision.com/au](http://www.imi-precision.com/au)

### Austria

Dietrich Schwabe GmbH  
Tel: (49) 6071 922290  
email: [info@schwabe-sra.de](mailto:info@schwabe-sra.de)  
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### Bahrain

Kinetrol Middle East Actuators  
and Valves Trading LLC  
email: [middleeast@kinetrol.com](mailto:middleeast@kinetrol.com)  
web: [www.kinetrol.ae](http://www.kinetrol.ae)

### Belgium

NV Prodim SA  
Tel: 02 726 3300  
email: [info@prodim.biz](mailto:info@prodim.biz)  
web: [www.prodim.biz](http://www.prodim.biz)

### Brasil

FS Representacoes  
Imp.e Exp Tuchler Ltda  
Tel: 11 2914 1112  
email: [contato@fsrepresentacoes.com.br](mailto:contato@fsrepresentacoes.com.br)  
web: [www.fsrepresentacoes.com.br](http://www.fsrepresentacoes.com.br)

### Cambodia

Kinetrol Asia Sdn Bhd  
Tel: +606 671 6046  
email: [info@kinetrol.my](mailto:info@kinetrol.my)  
web: [www.kinetrol.my](http://www.kinetrol.my)

### Canada

Gosco Engineering  
Tel: 905 825 2627  
email: [sales@goscovalves.com](mailto:sales@goscovalves.com)  
web: [www.goscovalves.com](http://www.goscovalves.com)

### China

Shanghai Kinetrol  
Control Equipment Co. Ltd.  
Tel: 21 5431 2366  
email: [sales@kinetrolchina.com](mailto:sales@kinetrolchina.com)  
web: [www.kinetrolchina.com](http://www.kinetrolchina.com)

### Czech Republic

Tech Con Czech Republic, s.r.o.  
Tel: 277 004 705  
email: [info.cz@tech-congroup.com](mailto:info.cz@tech-congroup.com)  
web: [www.tech-con.cz](http://www.tech-con.cz)

### Denmark

Armtec A/S  
Tel: 4696 0000  
email: [armtec@armtec.dk](mailto:armtec@armtec.dk)  
web: [www.armtec.com/dk](http://www.armtec.com/dk)

### Egypt

Kinetrol Middle East Actuators  
and Valves Trading LLC  
email: [middleeast@kinetrol.com](mailto:middleeast@kinetrol.com)  
web: [www.kinetrol.ae](http://www.kinetrol.ae)

### Finland

Oy Armtec Finland Ab  
Tel: 9 8874340  
email: [finland@armtec.com](mailto:finland@armtec.com)  
web: [www.armtec.fi](http://www.armtec.fi)

### France

Kinetrol Sarl  
Tel: 0450 22 19 26  
email: [kinetrol@kinetrol.fr](mailto:kinetrol@kinetrol.fr)  
web: [www.kinetrol.fr](http://www.kinetrol.fr)

### Germany

Dietrich Schwabe GmbH  
Tel: 6071 922290  
email: [info@schwabe-sra.de](mailto:info@schwabe-sra.de)  
web: [www.schwabe-sra.de](http://www.schwabe-sra.de)

### Hong Kong

Kinetrol Asia Sdn Bhd  
Tel: +606 671 6046  
email: [info@kinetrol.my](mailto:info@kinetrol.my)  
web: [www.kinetrol.my](http://www.kinetrol.my)

### India

Peregrine Technologies Pvt Ltd  
Tel: 22 2882 1497  
email: [sales@peregrinetechnologies.co.in](mailto:sales@peregrinetechnologies.co.in)  
web: [www.peregrinetechnologies.co.in](http://www.peregrinetechnologies.co.in)

### Indonesia

Kinetrol Asia Sdn Bhd  
Tel: +606 671 6046  
email: [info@kinetrol.my](mailto:info@kinetrol.my)  
web: [www.kinetrol.my](http://www.kinetrol.my)

### Israel

Baccara Geva Ltd  
Tel: 4 6535960  
email: [info@baccara-geva.com](mailto:info@baccara-geva.com)  
web: [www.baccara.co.il](http://www.baccara.co.il)

### Italy

Bellkin S.R.L.  
Tel: 0362 330269  
email: [info@bellkin.com](mailto:info@bellkin.com)  
web: [www.bellkin.com](http://www.bellkin.com)

### Japan

Sankyo Shoji Co. Ltd  
Tel: 81 6 6202 8121  
email: [info@kksankyoshoji.co.jp](mailto:info@kksankyoshoji.co.jp)  
web: [www.kksankyoshoji.co.jp](http://www.kksankyoshoji.co.jp)

### Korea

Doldam FA Co. Ltd.  
Tel: 052-254-2816  
email: [doldamenv@daum.net](mailto:doldamenv@daum.net)  
web: [www.doldam.com](http://www.doldam.com)

### Kuwait

Kinetrol Middle East Actuators  
and Valves Trading LLC  
email: [middleeast@kinetrol.com](mailto:middleeast@kinetrol.com)  
web: [www.kinetrol.ae](http://www.kinetrol.ae)

### Laos

Kinetrol Asia Sdn Bhd  
Tel: +606 671 6046  
email: [info@kinetrol.my](mailto:info@kinetrol.my)  
web: [www.kinetrol.my](http://www.kinetrol.my)

### Macau

Kinetrol Asia Sdn Bhd  
Tel: +606 671 6046  
email: [info@kinetrol.my](mailto:info@kinetrol.my)  
web: [www.kinetrol.my](http://www.kinetrol.my)

### Malaysia

Kinetrol Asia Sdn Bhd  
Tel: +606 671 6046  
email: [info@kinetrol.my](mailto:info@kinetrol.my)  
web: [www.kinetrol.my](http://www.kinetrol.my)

### Mexico

Equipos Refacciones y Controles  
de Occidente S.A. de C.V. (ERCO)  
Tel: 33 3811 0202  
email: [octavio@erco.com.mx](mailto:octavio@erco.com.mx)  
web: [www.erco.com.mx](http://www.erco.com.mx)

### Netherlands

Delan BV  
Tel: 0252 528870  
email: [info@delan.nl](mailto:info@delan.nl)  
web: [www.delan.nl](http://www.delan.nl)

### New Zealand

IMI Precision Engineering  
Tel: 0800 763 862  
email: [sales.nz@imi-precision.com](mailto:sales.nz@imi-precision.com)  
web: [www.imi-precision.com/nz](http://www.imi-precision.com/nz)

### Norway

Armtec AS  
Tel: 23 24 55 00  
email: [firmapost@armtec.no](mailto:firmapost@armtec.no)  
web: [www.armtec.no](http://www.armtec.no)

### Oman

Kinetrol Middle East Actuators  
and Valves Trading LLC  
email: [middleeast@kinetrol.com](mailto:middleeast@kinetrol.com)  
web: [www.kinetrol.ae](http://www.kinetrol.ae)

### Pakistan

Kinetrol Middle East Actuators  
and Valves Trading LLC  
email: [middleeast@kinetrol.com](mailto:middleeast@kinetrol.com)  
web: [www.kinetrol.ae](http://www.kinetrol.ae)

### Philippines

Kinetrol Asia Sdn Bhd  
Tel: +606 671 6046  
email: [info@kinetrol.my](mailto:info@kinetrol.my)  
web: [www.kinetrol.my](http://www.kinetrol.my)

### Poland

STIM Sp. z o.o. Sp.k.  
Tel: 32 281 45 01  
email: [info@stim.bytom.pl](mailto:info@stim.bytom.pl)  
web: [www.stim.bytom.pl](http://www.stim.bytom.pl)

### Portugal

Kinetrol SLU  
Tel: 93 7862496  
email: [kinetrol@kinetrol.es](mailto:kinetrol@kinetrol.es)  
web: [www.kinetrol.es](http://www.kinetrol.es)

### Qatar

Kinetrol Middle East Actuators  
and Valves Trading LLC  
email: [middleeast@kinetrol.com](mailto:middleeast@kinetrol.com)  
web: [www.kinetrol.ae](http://www.kinetrol.ae)

### Saudi Arabia

Shahig Company  
Tel: 03 811 0083  
email: [pipe@shahig.com](mailto:pipe@shahig.com)  
web: [www.shahig.com](http://www.shahig.com)

### Singapore

Kinetrol Asia Sdn Bhd  
Tel: +606 671 6046  
email: [info@kinetrol.my](mailto:info@kinetrol.my)  
web: [www.kinetrol.my](http://www.kinetrol.my)

### South Africa

Rotatech cc.  
Tel: +11 708 6455  
email: [sales@rotatech.co.za](mailto:sales@rotatech.co.za)  
web: [www.rotatech.co.za](http://www.rotatech.co.za)

### Spain

Kinetrol SLU  
Tel: 93 7862496  
email: [kinetrol@kinetrol.es](mailto:kinetrol@kinetrol.es)  
web: [www.kinetrol.es](http://www.kinetrol.es)

### Sweden

Armtec AB  
Tel: 31 890100  
email: [info@armtec.se](mailto:info@armtec.se)  
web: [www.armtec.se](http://www.armtec.se)

### Switzerland

Dietrich Schwabe GmbH  
Tel: (49) 6071 922290  
email: [info@schwabe-sra.de](mailto:info@schwabe-sra.de)  
web: [www.schwabe-sra.de](http://www.schwabe-sra.de)

### Taiwan

Controltek International Co. Ltd  
Tel: 2 26277671  
email: [contek@ms14.hinet.net](mailto:contek@ms14.hinet.net)  
web: [www.ctk1980.com](http://www.ctk1980.com)

### Thailand

Kinetrol Asia Sdn Bhd  
Tel: +606 671 6046  
email: [info@kinetrol.my](mailto:info@kinetrol.my)  
web: [www.kinetrol.my](http://www.kinetrol.my)

### Turkey

Mor Endustri Ltd  
Tel: 212 249 09 36  
email: [info@morendustri.com](mailto:info@morendustri.com)  
web: [www.morendustri.com](http://www.morendustri.com)

### United Arab Emirates

Kinetrol Middle East Actuators  
and Valves Trading LLC  
email: [middleeast@kinetrol.com](mailto:middleeast@kinetrol.com)  
web: [www.kinetrol.ae](http://www.kinetrol.ae)

### USA

Kinetrol USA Inc  
Tel: 972 447 9443  
email: [sales@kinetrolusa.com](mailto:sales@kinetrolusa.com)  
web: [www.kinetrolusa.com](http://www.kinetrolusa.com)

### Vietnam

Kinetrol Asia Sdn Bhd  
Tel: +606 671 6046  
email: [info@kinetrol.my](mailto:info@kinetrol.my)  
web: [www.kinetrol.my](http://www.kinetrol.my)

# KINETROL

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Kinetrol Ltd, Trading Estate, Farnham, Surrey,  
GU9 9NU, England  
Telephone: +44 (0)1252 733838  
Fax: +44 (0)1252 713042  
[www.kinetrol.com](http://www.kinetrol.com)  
e-mail: [sales@kinetrol.com](mailto:sales@kinetrol.com)

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