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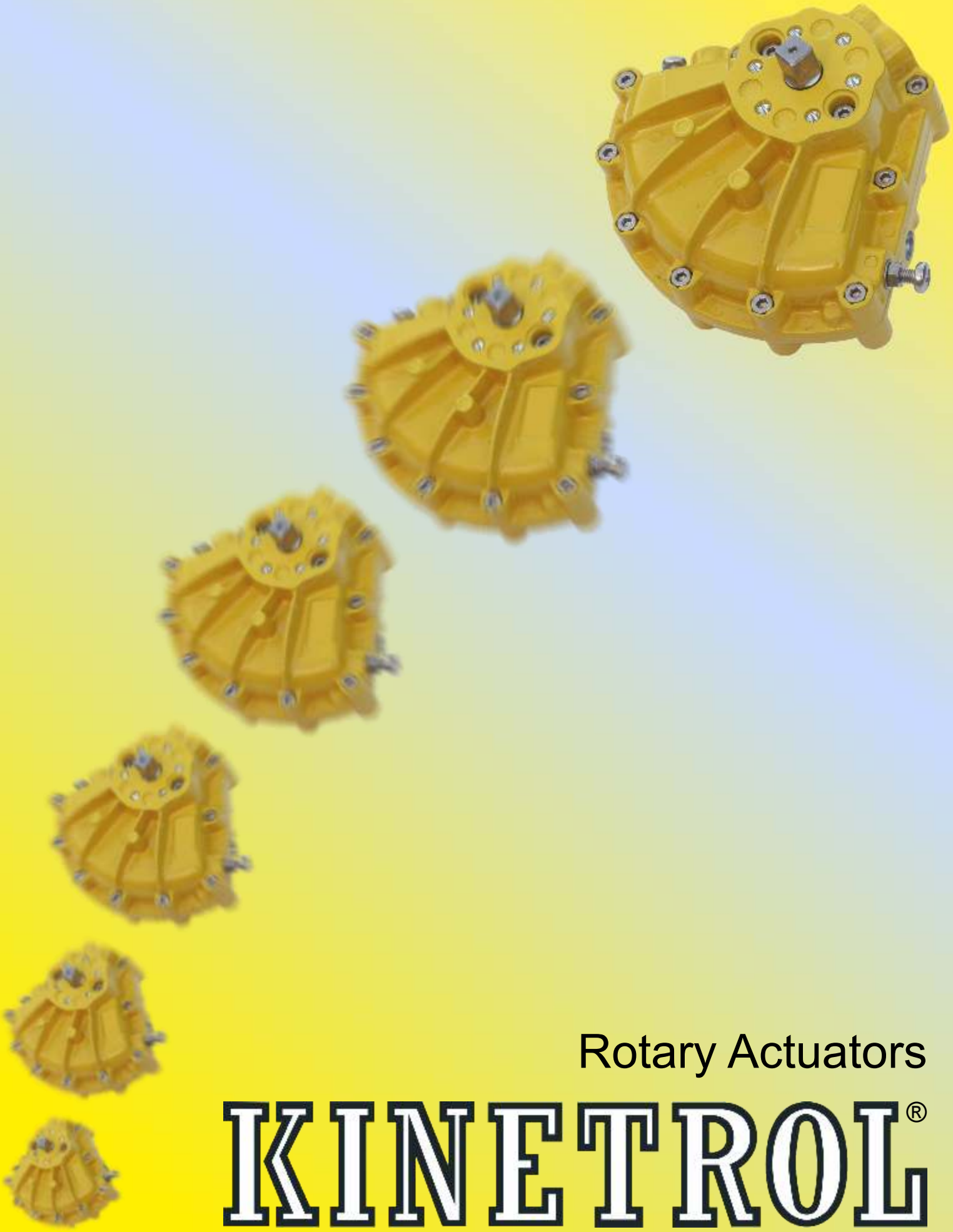
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Rotary Actuators

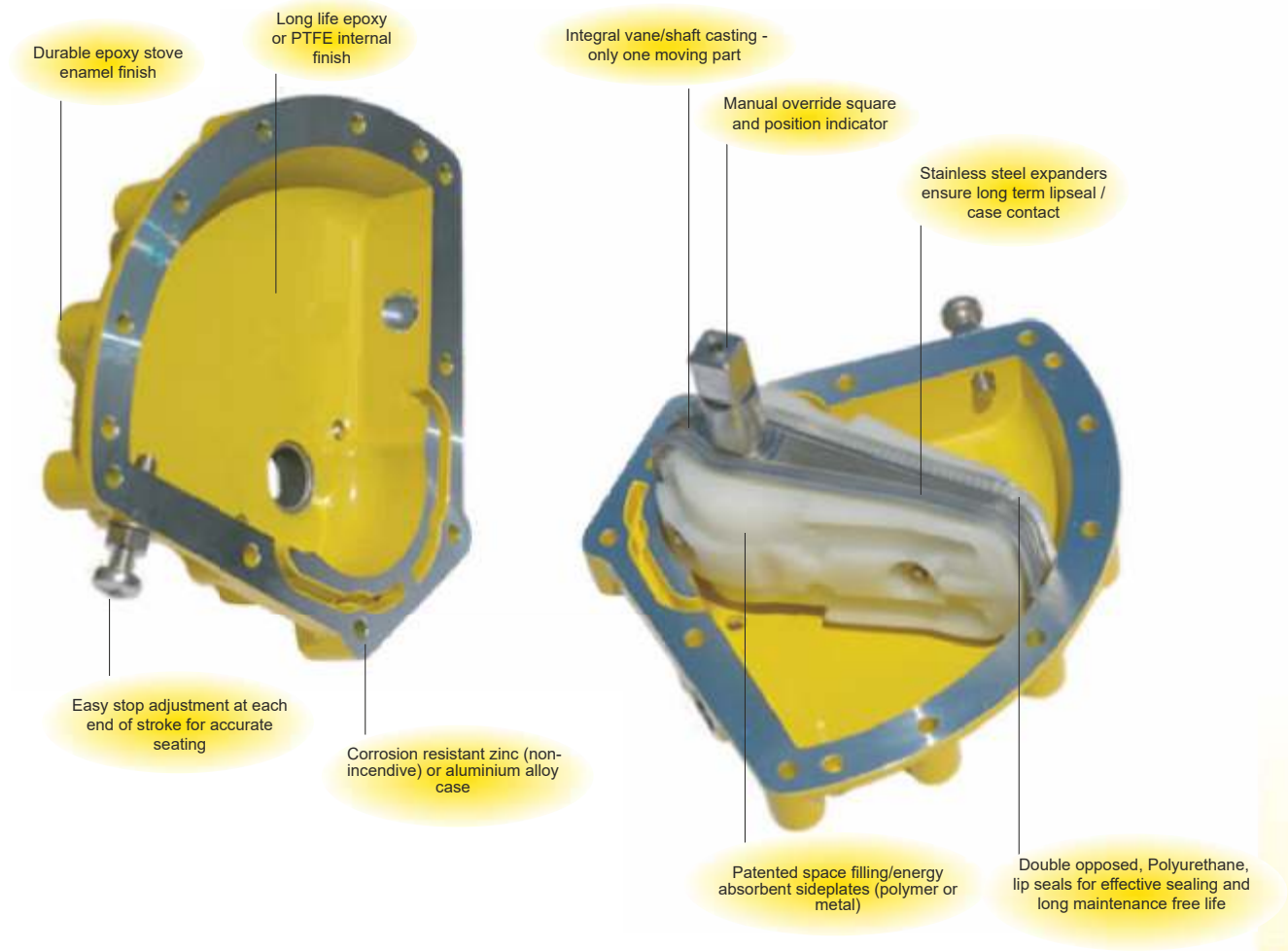
KINETROL®

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- **Single moving part**
  Simplest and most reliable mechanism for quarter-turn rotary actuation.
- **Close couple control modules**
  Fail-safe spring returns, limit switches, positioners and solenoid valves all close couple to the actuators.
- **No cranks or gearing**
  No power loss or backlash - allows accurate positioning.
- **Durable corrosion resistant finish**
- **Long maintenance-free life**
  Up to 4 million operations guaranteed.
- **Compact - space saving - efficient**
  Best torque/size package available, fast operating speeds, best air consumption, proven design.
- **Millions of units in trouble free service all over the world**
- **Choice of male or female output drive square - easy to interface to application**
- **Unique serial number for identification and traceability**

Applications

Operation or positioning of ball, butterfly and plug valves, ventilation dampers and automatic doors. Uses also include movement and positioning of components during manufacture - in fact anything that needs to be turned through 90° or less, automatically or by remote control.

For ordering codes see page 62

Certificate No. FM22163

Kinetrol's rigorous quality program is approved to ISO 9001:2015 ensuring that each unit is manufactured to the highest standards.

The policy of KINETROL is one of continuous improvement. We reserve the right to alter the product as described and illustrated without notice.

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Kinetrol modular concept easily provides the control assembly needed

1. Visual Indicator
Gives visual indication of valve position as standard except models 0M0, 01, 16, 18, 20 and 30.

2. Clear Cone Monitor
Gives 360° and overhead position indication. Available on actuator models 03, 05, 07, 08, 09, 10, 12, 14, 15, limit switch boxes, AP positioners, EL positioners, P3 positioners and EHD models (details page 20).

3. I/P Controller
4-20mA electrical signal controls main air supply to pneumatic positioner as alternative to air signal control (details page 19).

4. AP Positioner
3-15psi (0.2-1 bar) air signal controls main air supply to turn, stop or hold the actuator vane in proportional response to that air signal. Limit switch and angle retransmit options available (details pages 17/18).

5. EL Electropneumatic Positioner
A single unit gives smooth accurate control in response to a 4-20mA signal. Limit switch and angle retransmit options in same housing (details pages 15/16).

6. P3 On/Off Positioner
Modulation and/or two endstop positions and a mid-range setpoint anywhere within the 90° span. Easy setpoint adjustment and integral position feedback options (details page 21/22).

7. Explosion Proof P3 On/Off Positioner
Provides the same basic options as the P3 Positioner but in a flame proof enclosure with ATEX approval (details page 23).

8. Universal Limit Switch Box
Weathertight unit with up to 4 switches for remote position indication or control use. Optional switches for flame proof/explosion proof needs and high visibility Clear Cone monitor (details pages 9/10).

9. Explosion Proof Limit Switch Box
Provides the same basic options as the Universal Limit Switch Box but in a flame proof enclosure with ATEX, FM and IEC approvals (details page 11/12).

10. Solenoid
Optional integral pneumatic solenoid valve for actuators. Various electrical, environmental and explosion proof requirements covered (details page 20).

11. Actuator
16 sizes covering torque range 0.5 Nm (5 lbf in) to 19140 Nm (168,000 lbf in). Operating air pressure range 1.4 bar (20 psi) to 7 bar (100 psi). Adjustable stops as standard. Restricted travel stops and ISO/DIN versions available (details pages 29 to 44).

12. 180° Converter
Compact units give constant torque output through up to 200° travel (details pages 25/26).

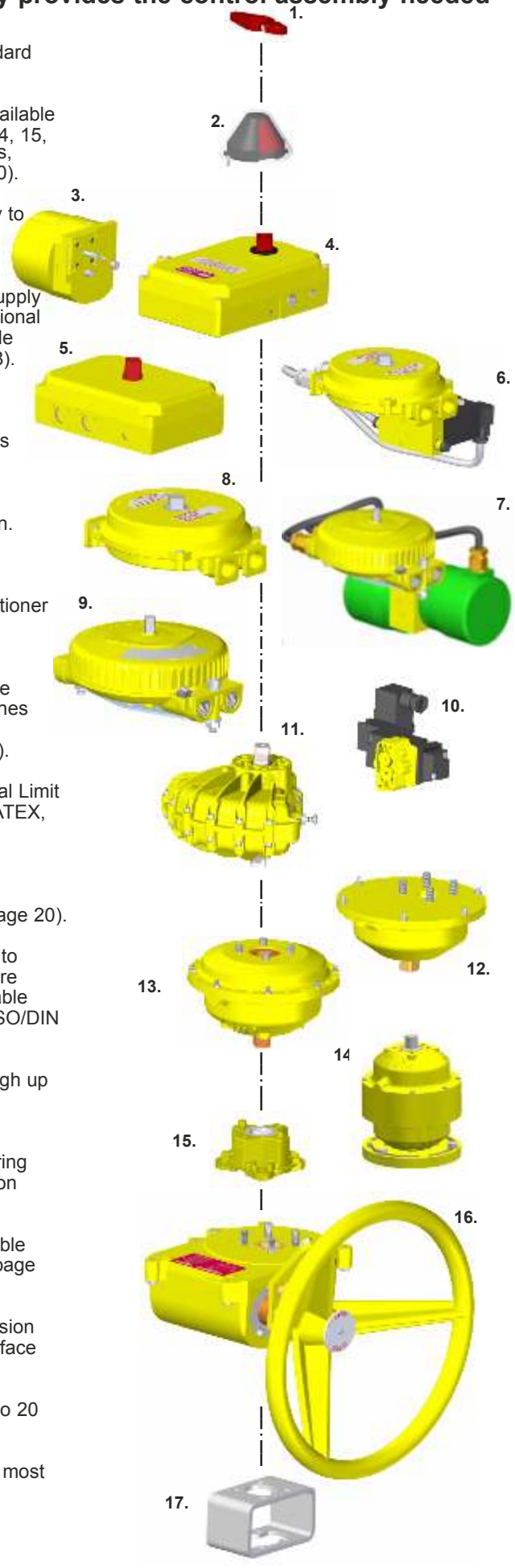
13. Fail-Safe Spring Return Units
Clock type spring return gives reliable fail-safe operation with high torque output throughout spring stroke, yet has easy adjustment to suit application (details pages 5 to 7).

14. Spring To Centre
Patented spring unit to provide accurate adjustable port travel position on loss of air/signal (details page 24).

15. ISO Adaptor
The patented ISO adaptor provides easy conversion from a Kinetrol male drive to an ISO flange interface for ultimate mounting flexibility (details page 8).

16. Gearbox
Geared manual override on all models from 05 to 20 excluding model 15 (details page 46).

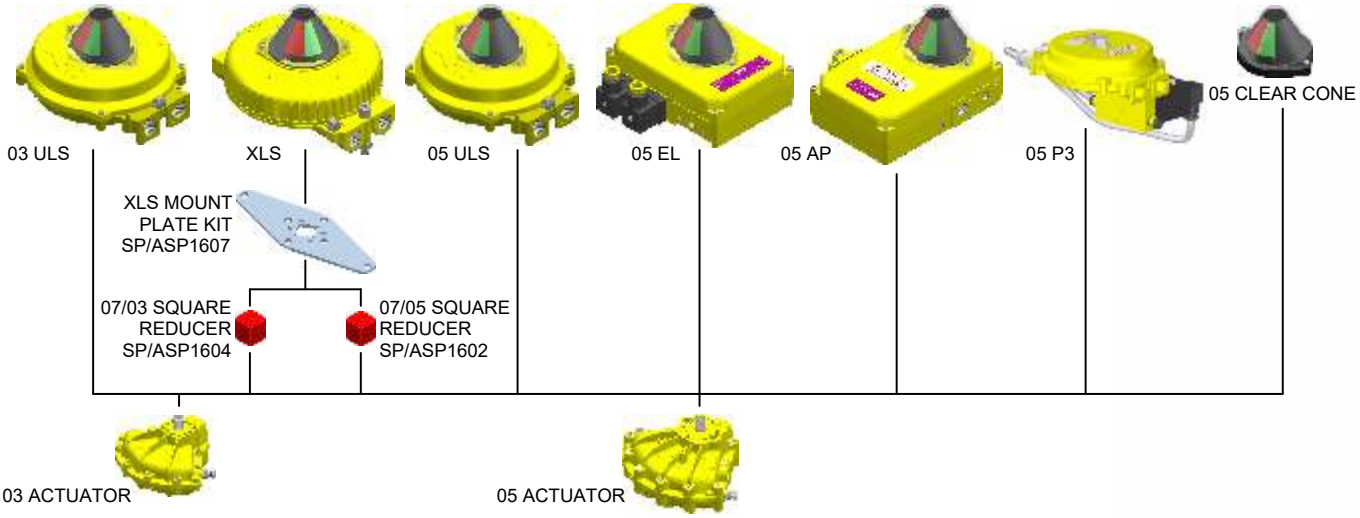
17. Mounting Bracket
A comprehensive range of brackets provides for most ball, plug and butterfly valves (details page 45).



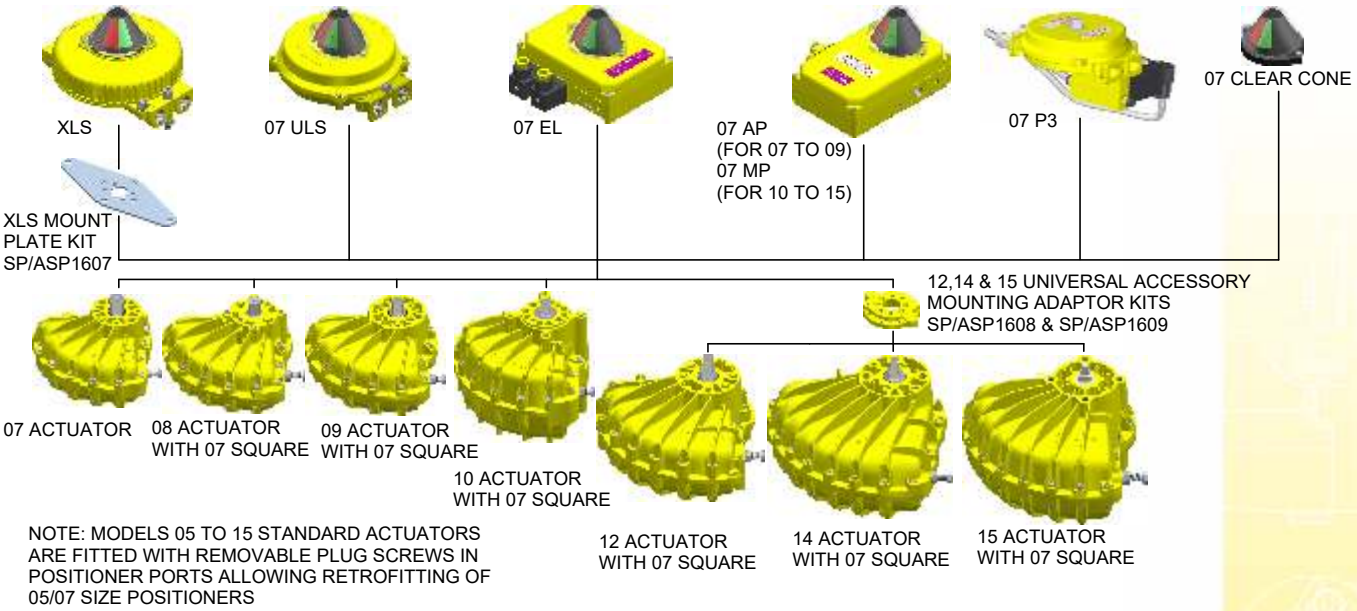
Kinetrol Actuators, Springs and Accessories are approved up to ATEX Category 1.

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Models 03 & 05

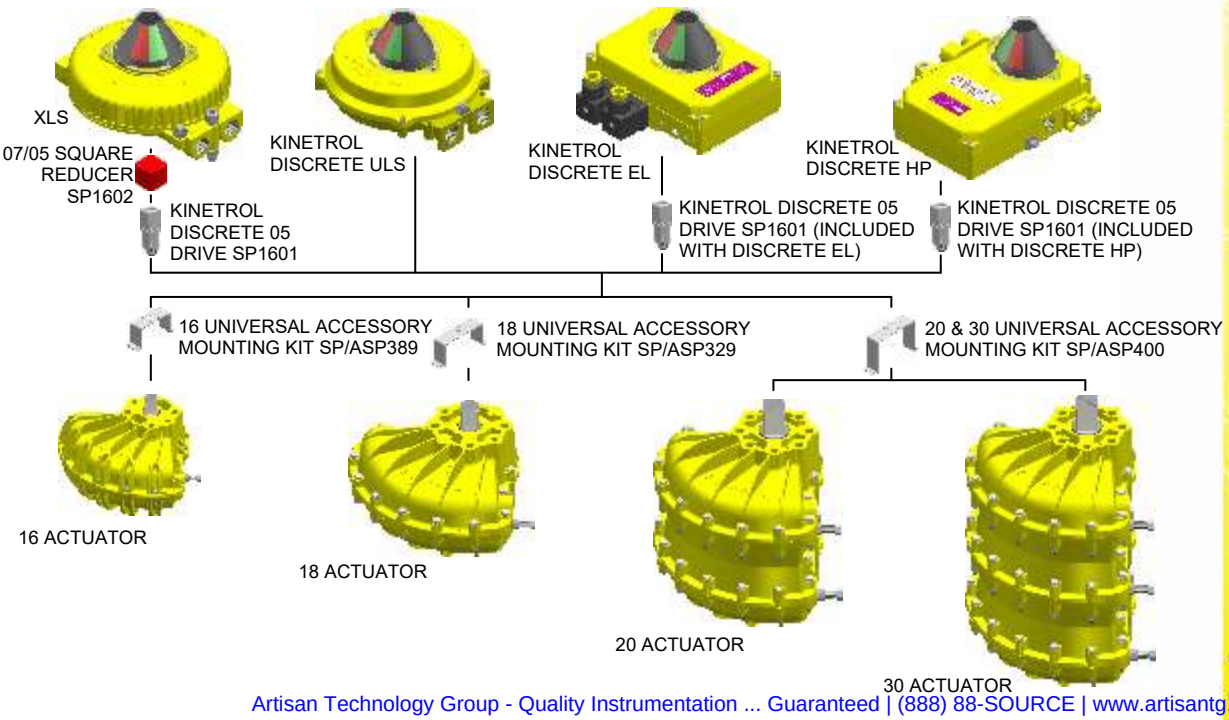


Models 07 to 15



NOTE: MODELS 05 TO 15 STANDARD ACTUATORS ARE FITTED WITH REMOVABLE PLUG SCREWS IN POSITIONER PORTS ALLOWING RETROFITTING OF 05/07 SIZE POSITIONERS

Models 16 to 30



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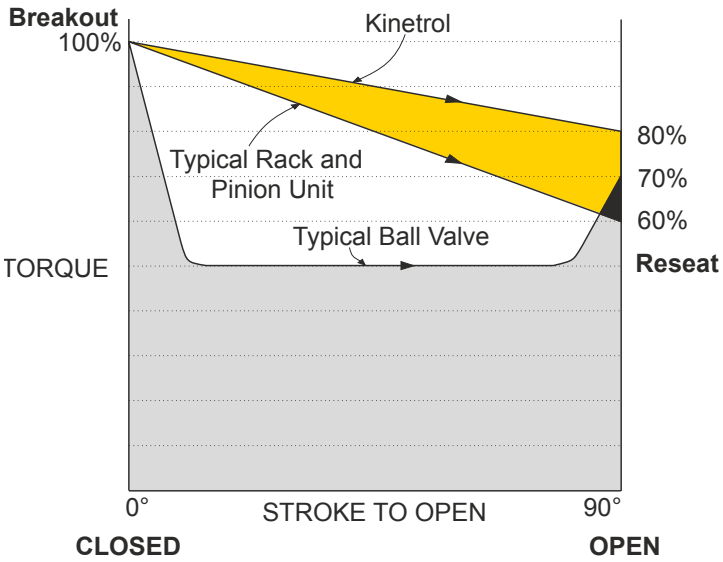
Spring housing cut away

- **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 as long as the original actuators to which they were fitted.



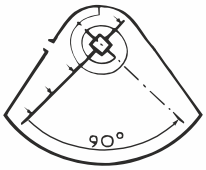
KINETROL SPRINGS
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Direction of Spring Action

Spring units are available for either clockwise or counter clockwise spring action.
Spring units are mounted as standard between the actuator and what it drives (except model 01).
With spring units alone, direction is determined by looking at the unit from the end which interfaces with the actuator.



Suffix - 020 = clockwise
Suffix - 030 = counter clockwise

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

Asymmetrical Torque Applications

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

Low Air Pressure Applications

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

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

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

Ordering Code	Description
03-1*0-5600	03 actuator with one 02 spring unit
07-1*0-4000	07 actuator with one 05 spring unit
09-1*0-4200	09 actuator with one 07 spring unit
10-1*0-5800	10 actuator with one 09 spring unit
12-1*0-4300	12 actuator with one 09 spring unit
12-1*0-4400	12 actuator with two 09 spring units
14-1*0-4900	14 actuator with two 12 spring units
14-1*0-5000	14 actuator with one 12 spring unit
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

Pretension Setting

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

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

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

Keeper Plates

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

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

Materials Specifications

Spring Casing	Models 02 to 05 pressure die-cast in ZL 16 zinc alloy. Models 07 to 30 in aluminium alloy.
Finish	Epoxy stove enamel.
Spring	Clock type spring steel.
Square	Steel, zinc plated.
Mount Holes (output end)	Same as matching actuator (except model 01), low pressure combinations & ISO drive versions. See page 51/52 & TD121.

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- **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 59 & 60.

Directions of spring action are as described on page 6. 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 52 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 52 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.

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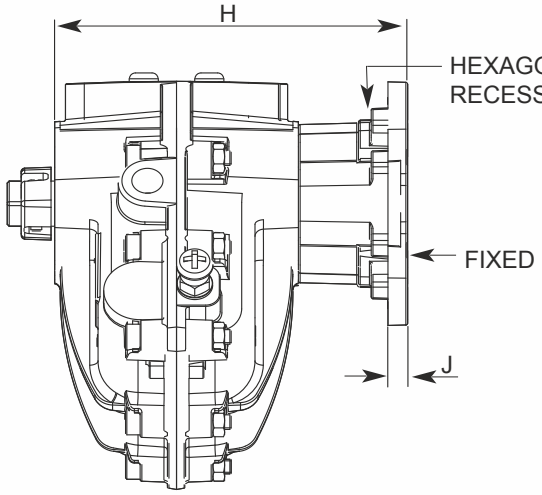
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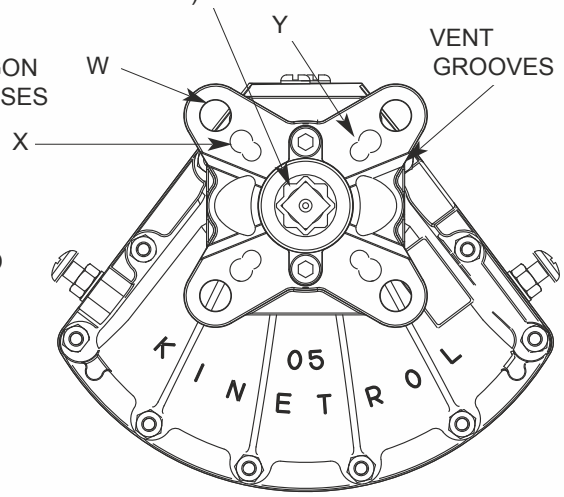
Ultimate Mounting Flexibility

- **Low cost direct mount flange and coupling for mounting to valves with ISO 5211 drive interfaces, available for actuator models 02, 03, 05, 07, 08 and 09**
- **Mounting directly to standard Kinetrol double acting actuator thereby reducing stocking requirements**
- **Multiple mounting hole sets in one part**
- **International patents.** The novel design allows metric mounting screws to face in either direction. Valve flanges with tapped holes can easily be interfaced for the first time. Nut recesses in flange make for easy installation
- **Robust epoxy coated zinc alloy adaptor with no threads for maximum corrosion resistance**
- **Female drive bi-square (star) coupling is retained by adaptor and made from zinc plated steel** (other materials available on request)
- **Serrated drive versions also available.**



International Patents





Adaptor Kit*	Order Codes	ISO Flange Sizes	H mm	J mm	G mm	E † mm	W PCD mm	X PCD mm	Y PCD mm	Weight Kg
SP 1406 ♦	023F120 / 023F100	F03/F05	74	5.0	11	12	6.6 50	5.5 36	-	0.13
SP 1407 ♦	023F180 / (024-100Z fitted with SP1407)	F04	74	5.0	11	12	5.5 42	-	-	0.13
SP 1449	033F100**	F03/F05	84	5.0	11	12	6.6 50	5.5 36	-	0.13
SP 1454	034-100Z fitted with SP1454	F04	84	5.0	11	12	5.5 42	-	-	0.13
SP 1450 ♦	053F100	F04/F05/F07	97	5.4	14	17	9.0 70	6.6 50	5.5 42	0.27
SP 1451 ♦	073F100	F05/F07	140	8	17	19	9.0 70	6.6 50	-	0.53
SP 1445 ♦	083F100	F07/F10	160	10	22	24	11.0 102	9.0 70	-	1.04
SP 1452 ♦	093F100	F07/F10	176	10	22	24	11.0 102	9.0 70	-	1.04

* ANSI (e.g. ASP1449) colour versions (identical dimensions) also available.
** Default 03 version
† Minimum
♦ Also mounts directly to male drive spring units

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Universal Limit Switch Box



Offers a wide range of signalling options in a fully enclosed corrosion resistant 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 real industrial quality 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 Eexed (Category 2) explosion proof and Eexia intrinsically safe packages (Category 1). Integral sealed Clear Cone Monitor and red/green Led indicator options also give excellent external visual indication of position.

See KF-487 for full details.

Specification

Casing
Precision diecast aluminium alloy, switch option 003 Eex ed diecast zinc alloy

Finish
Epoxy stove enamel

Seals
Nitrile rubber 'O' ring seals

Weight
1.05 kg
Switch option 003 - 1.4 kg

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 any conduit thread)

4 Way M12 Connector (M20 Conduit thread only)

Temperature Range
Standard -20°C to +80°C

High Temp Seals up to 100°C
Also see switch temperatures on page 10

Dimensions
See page 53

- **All units sealed to 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**
- **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**
- **Many 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 13 & 14)
- **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



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Ordering Codes

Switch Type 001
2 intrinsically safe 2 wire inductive proximity sensors for hazardous areas (ATEX CAT 1), normally closed.
Ambient temperature range -20°C to +80°C

Switch Type 002
2 pneumatic switches with 4mm (5.32") push in fittings (ATEX CAT 2), normally closed.
Ambient temperature range -20°C to +80°C

Switch Type 003
Certificated unit to EEx ed II T6 for hazardous areas to Zone 1 (ATEX CAT 2) 2 x 3 wire switches for SPDT.
Ambient temperature range -20°C to +70°C

Switch Type 004
2 x 3 wire microswitches for SPDT.
Ambient temperature range -40°C to +80°C

Switch Type 005
2 x 2 wire proximity sensors 20-250 volts AC, normally open.
Ambient temperature range -25°C to +70°C

Switch Type 006
2 x 2 wire proximity sensors 5-60 volts DC, normally open, with Led switch status indicators.
Ambient temperature range -20°C to +80°C

Switch Type 007
4 x 3 wire microswitches for DPDT.
Ambient temperature range -40°C to +80°C

Switch Type 008
2 x 2 wire inductive slotted proximity sensors, normally closed.
Ambient temperature range -20°C to +80°C

Switch Type 009
2 x 3 wire gold plated contacts intrinsically safe microswitches for SPDT (ATEX CAT 1).
Ambient temperature range -20°C to +80°C

Switch Type 00E
2 x 2 wire proximity sensors 20-140 volts AC / 10-140 volts DC.
Ambient temperature range -25°C to +80°C

Switch Type 00M
4 x 3 wire inductive proximity sensors 10-30 volts DC, normally open.
Ambient temperature range -25°C to +70°C

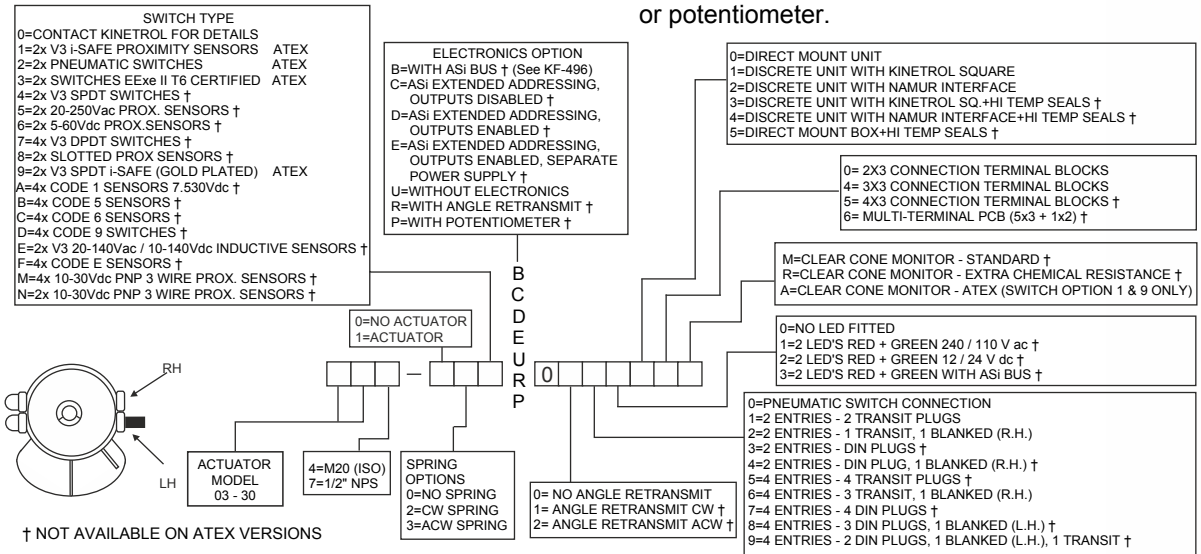
Switch Type 00N
2 x 3 wire inductive proximity sensors 10-30 volts DC, normally open.
Ambient temperature range -25°C to +70°C

Electronics Option B - E
AS interface options are available with both the two and four entry Kinetrol Universal Limit Switch Box. Options B to E allow for different extended addressing options. For more information on the Kinetrol AS interface card see page 13 & 14.

Electronics Option P
Two or four way Universal Limit Switch Box fitted with potentiometer (20K ohms conductive plastic type).

Electronics Option R
Two or four entry Universal Limit Switch Box fitted with angle retransmit, loop powered two wire circuit passes 4-20mA current, proportional to 0-90° position of actuator.

Electronics Option U (standard)
Two or four entry Universal Limit Switch Box without AS interface card, angle retransmit or potentiometer.



† NOT AVAILABLE ON ATEX VERSIONS

For more information see KF-487

EXAMPLES:
054 - 001U001000 = 05 ULS BOX WITH 2 X V3 i-SAFE PROXIMTY SENSORS, 2 TRANSIT PLUGS & 2 X 3 WAY TERMINALS ATEX APPROVED
054 - 001R011000 = 05 ULS BOX WITH 2 X V3 i-SAFE PROXIMTY SENSORS, 2 TRANSIT PLUGS & 2 X 3 WAY TERMINALS, AR CW NOT APPROVED
074 - 004R022000 = 07 ULS BOX WITH 2 X V3 SPDT SWITCHES + 1 TRANSIT & 1 BLANKING PLUG & ANGLE RETRANSMIT ACW NOT APPROVED
074 - 004U001200 = 07 ULS BOX WITH 2 X V3 SPDT SWITCHES + 2 TRANSIT PLUGS + LED'S RED / GREEN 12 / 24 V dc NOT APPROVED
074 - 009C001000 = 07 ULS BOX WITH 2 X V3 i-SAFE MECH.SWITCHES G / PLATED, ASi WITH EXTENDED ADDRESSING OUTPUTS DISABLED + 2 TRANSIT PLUGS NOT APPROVED
094 - 124B00A00M = 09 SPRING RETURN ACTUATOR & ULS BOX WITH 2 X V3 SPDT SWITCHES + STANDARD ASi & ASi TERMINALS + M12 PLUG +TRANSIT PLUG + CLEAR CONE MONITOR NOT APPROVED
074 - 009B001300 = 07 ULS BOX WITH 2 X V3 i-SAFE MECH.SWITCHES G / PLATED, STANDARD ASi + 2 TRANSIT PLUGS & ASi TERMINALS + 2 LED'S RED & GREEN NOT APPROVED

Further switch options are available upon request -contact Kinetrol for details

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Explosion Proof Limit Switch Box



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 - 30.

- **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 - 30**
- **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**

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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

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 53

Labels

IECEx & ATEX - Approval type E



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



Ordering Codes

APPROVAL TYPE
E = IEC / ATEX IIC, IIB, IIA
F = FM / FMC GRPS B,C,D
P = FM GRP A

B = 2 ENTRY
D = 4 ENTRY

0 = CLOSE-MOUNT (03-14 MODEL-SPECIFIC)
1 = DISCRETE KINETROL 05 SQUARE DRIVE (16-30 MODEL-SPECIFIC)
2 = DISCRETE NAMUR
3 = NO MOUNTING PARTS (NON MODEL-SPECIFIC)

NOTE: ACTUATORS 16 - 30 REQUIRE DISCRETE MOUNTING

MOUNTING PARTS AVAILABLE:
SP1601 - 05 SQUARE DRIVE
SP1602 - 07/05 SQUARE REDUCER
SP1603 - NAMUR DRIVE
SP1604 - 07/03 SQUARE REDUCER
SP/ASP1607 - CLOSE MOUNTING KIT
SP/ASP1608 - 12/14/15 ACCESSORY MOUNTING ADAPTOR (UNDRILLED)
SP/ASP389 - MODEL 16 MOUNT KIT
SP/ASP329 - MODEL 18 MOUNT KIT
SP/ASP400 - MODEL 20/30 MOUNT KIT

SWITCH OPTIONS
(SUPPLIED WITH 2 STRIKERS AS STANDARD)
1 = 2 x V3 7.5-30Vdc, NC, 2 WIRE INDUCTIVE SENSORS
4 = 2 x V3 SPDT, 0-250Vac, MECHANICAL MICROSWITCHES
5 = 2 x V3 20-250Vac / 10-300Vdc NO, 2 WIRE, INDUCTIVE SENSORS
6 = 2 x V3 5-60Vdc, NO, 2 WIRE, INDUCTIVE SENSORS
7 = 4 x CODE 4 MICROSWITCHES
9 = 2 x V3 SPDT, 0-250Vac, GOLD PLATED CONTACTS MECHANICAL MICROSWITCHES
A = 4 x CODE 1 SENSORS
B = 4 x CODE 5 SENSORS
C = 4 x CODE 6 SENSORS
D = 4 x CODE 9 MICROSWITCHES
E = 2 x V3 20-140Vac / 10-140Vdc, NO, 2 WIRE, INDUCTIVE SENSORS
F = 4 x CODE E SENSORS
M = 4 x 10-30Vdc, PNP, 3 WIRE, PROXIMITY SENSORS
N = 2 x 10-30Vdc, PNP, 3 WIRE, PROXIMITY SENSORS

0 = 2 x 3 TERMINALS
4 = 3 x 3 TERMINALS
5 = 4 x 3 TERMINALS
6 = MULTI-TERMINAL PCB (2x6 + 1x3 + 1x2)

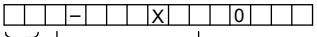
TERMINALS NEEDED FOR OPTIONS
NO BACKWIRING
ASI + 2 OR 4 SWITCHES = 2x3 (0)
A/R + 2 SWITCHES = 2x3 (0)
A/R + 4 SWITCHES = PCB (6)
POT + 2 OR 4 SWITCHES = PCB (6)
2 SWITCHES = 2x3 (0)
4 SWITCHES = 4x3 (5)
WITH BACKWIRING
A/R + 2 SWITCHES = PCB (6)
A/R + 4 SWITCHES = PCB (6)
POT + 2 SWITCHES = PCB (6)
POT + 4 SWITCHES = PCB (6) SEE NOTE
2 SWITCHES = 3x3 (4)
4 SWITCHES = PCB (6)
NOTE - POT + 4 SWITCHES WITH BACKWIRING WILL NOT HAVE ENOUGH TERMINAL CONNECTORS TO WIRE ALL NORMALLY OPEN / NORMALLY CLOSED SWITCH CONNECTIONS WITH 3 POT CONNECTIONS.

0 = NO SR
2 = SR CW
3 = SR CCW

0 = WITHOUT ACT
1 = WITH ACT

0 = STANDARD INDICATOR
A = ANTI-STATIC MONITOR

— = MALE
F = FEMALE
S = SERRATED



ACTUATOR MODEL 03 - 30

3 = DIN FLANGE STANDARD (FEMALE DRIVE)
4 = ISO (M20) THREAD
A = DIN FLANGE STANDARD WITH NAMUR ADAPTOR
B = ISO (M20) THREAD STANDARD WITH NAMUR ADAPTOR
C = ANSI (1/2" NPT) THREAD STANDARD WITH NAMUR ADAPTOR
7 = ANSI THREAD (1/2" NPT)

NOT AVAILABLE WITH APPROVAL TYPES F & P

0 = NO OPTIONS
B = ASi BUS
C = ASi EXTENDED ADDESSING OUTPUTS DISABLED
D = ASi EXTENDED ADDRESSING OUTPUTS ENABLED
E = ASi EXTENDED ADDRESSING OUTPUTS ENABLED, SEPARATE POWER SUPPLY
F = ANGLE RETRANSMIT CLOCKWISE
G = ANGLE RETRANSMIT ANTI-CLOCKWISE
P = POTENTIOMETER

For more information see KF-619

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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 Universal Limit Switch box, thus combining the industrial quality robustness of the box with the advantages of digital serial communication.

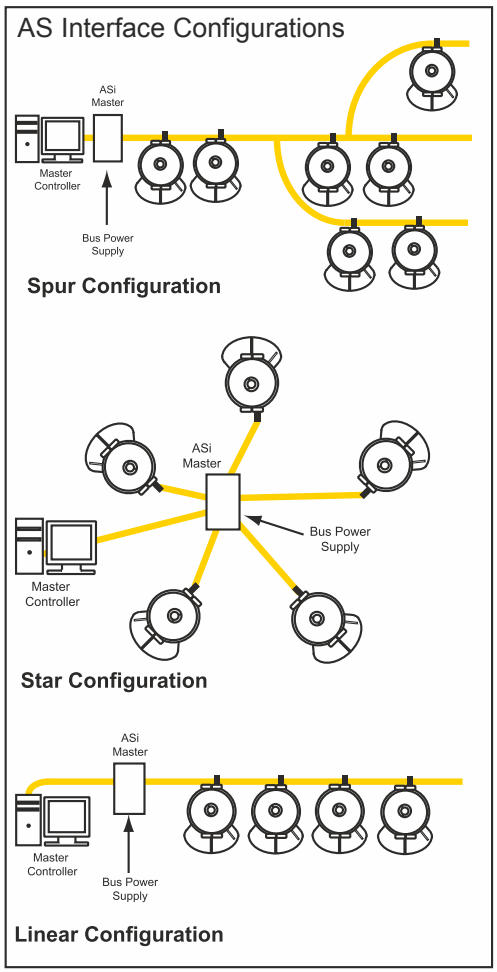
The AS interface bus cable can be routed in through the conduit entries and connected to the internal terminal blocks. Alternatively, an M12 connector plug facing outwards from the conduit entry can be supplied to allow quick connection from M12 sockets or with clip on adaptations for ribbon type yellow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

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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^2) 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 Universal Limit Switch Box or Explosion Proof Limit Switch Box on pages 10 and 12.

For more information see KF-496

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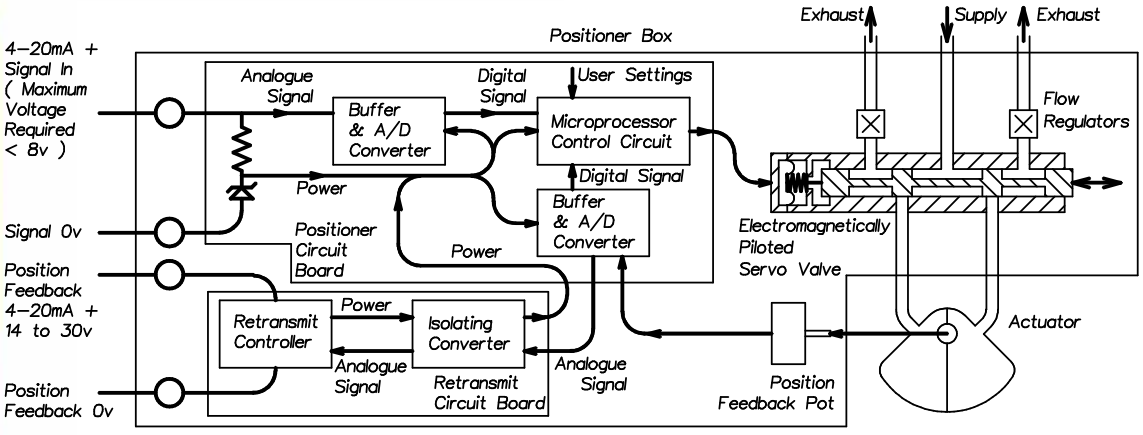
Operation

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 push buttons 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. It's 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

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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 and 30 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

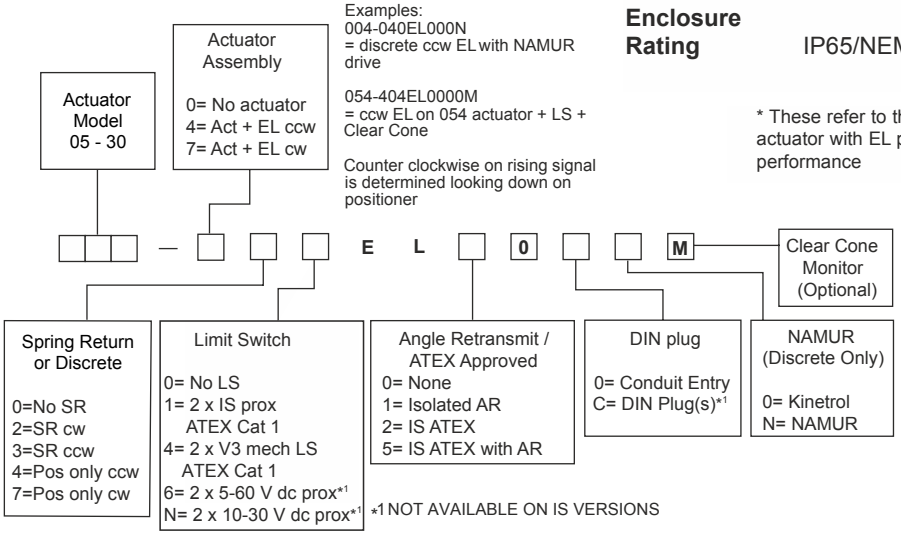
Direct mount from EL positioner to actuator (zero load)

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 (zero load)

Model	07	08	09	10	12	14	15	16	18	20
Deg/Sec	76	46	38	28	18	8.6	4.3	4.1	2	1

Ordering Codes



*1 NOT AVAILABLE ON IS VERSIONS

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 55
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

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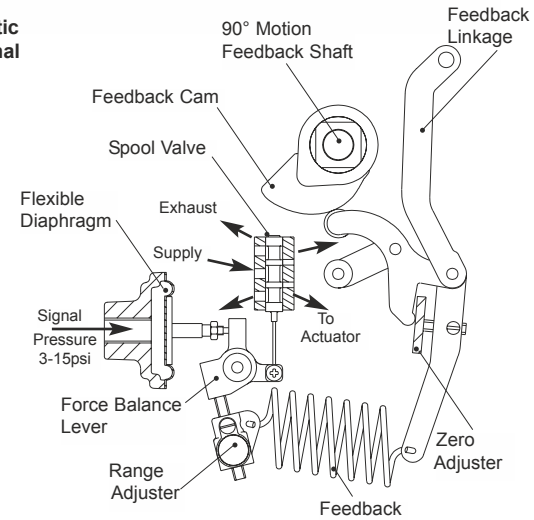


Operation

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**

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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 and 30.
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

Air Supply	instrument quality (dry, clean, oil free) 3.5 to 7 bar, (50 psi to 100 psi) standard. Consult Kinetrol for low pressure application
Signal	3-15psi (0.2-1.0 bar) standard. Consult Kinetrol for split range, 6-30 psi etc.
Control Response	0-90° linear output standard. Consult Kinetrol for other characteristic cam options
Sensitivity	better than 0.7% of span*
Hysteresis	better than 0.7% of span*
Deviation from linearity	less than 1% of span*
Flowrates @ 5.5 bar	AP: 3.3 scfm (93nl/min) MP: 10.0 scfm (283nl/min) HP: 27.0 scfm (764nl/min)
Operating Temperature Range	-20° to +80°C Standard -20° to +100°C High Temp -40° to +80°C Low Temp
Weight	2.8 kg/6.2 lb
Materials	• case and cover - zinc alloy • spool and liner - stainless steel • diaphragm: - reinforced polyurethane (standard) - fluorocarbon rubber (high temp) - silicone rubber (low temp) • feedback spring - steel
Dimensions	see page 54
Finish	epoxy stove enamel
Enclosure Rating	IP54
Output Torque	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 19

Travel Times

Maximum velocity (no load) at 80psi 5.5 bar

Model	05	07	08	09	10	12	12*
Deg/Sec	180	90	53	45	33	25	32

Model	14	14*	15	15*	16*	18*	20*
Deg/Sec	10.6	13.8	6.0	7.5	22.5	11.3	5.6

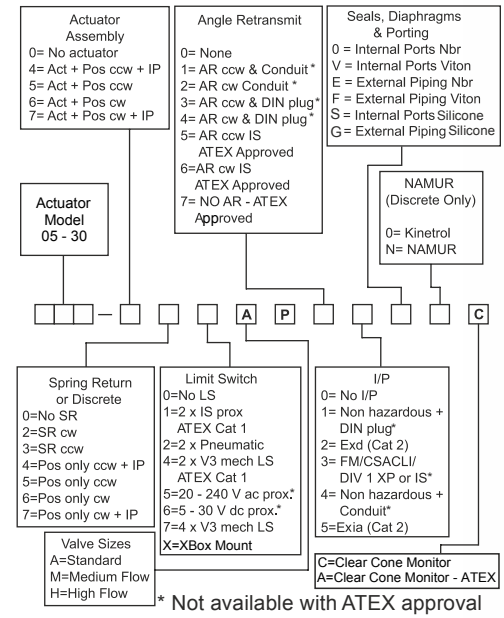
*Externally piped

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 15 only

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

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The optional Kinetrol I/P Controller is mounted in place of the standard diaphragm housing on the side of the positioner case. The 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

Electrical Control Signal	4-20mA
Coil Impedance	20 ohms typical
Cable Entry	16mm conduit or gland (mini DIN plug, IP 65 with Pg9 cable gland, 6-8mm dia optional)
Air Supply	80 psi/5.5 bar nominal
Air Entry	$G^1/_8$ (fitted with 6mm pipe dia. push in connector
Weight	1.2 kg
Dimensions	see page 54
Linearity	1.5%*
Hysteresis	less than 1%*
Sensitivity/Deadband	less than 1%*
Supply Pressure Influence	0.2% per psi between 80 and 60 psi
Quiescent Air Consumption	3.5 l/min free air max
Working Temperature Range	-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.

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 IG Ex ia IIC T4 Ta= -55°C to 85°C

For FM Approved version - contact Kinetrol

Specification - Hazardous Area

Electrical Control Signal	4-20mA
Input Resistance	260 ohms at 24°C
Cable Entry	Exd - M20 x 1.5 conduit entry FM/CSA - $^1/_2$ NPT conduit entry
Air Supply	50-100 psi/3.5 to 7 bar
Air Entry	Exd (AP & MP) $G^1/_4$ ($^1/_4$ NPT) (HP) $G^3/_8$ ($^3/_8$ NPT)
Working Temperature	-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)

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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 also available - contact Kinetrol for details.

For dimensions see pages 53, 54, 55 & 56.

Solenoid Valves

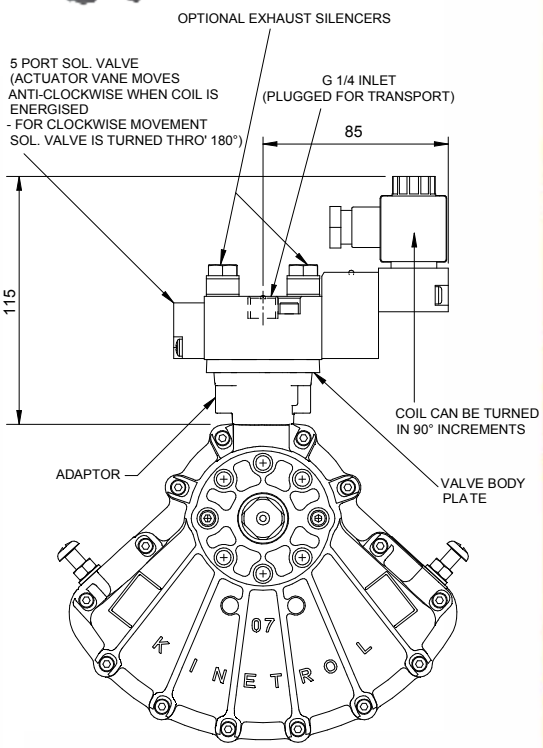
As an option Kinetrol actuator sizes 03 to 15 can be supplied with integral solenoid valves with NAMUR interface. Air is ported through the actuator body via an adaptor so no external tubing is necessary.

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



Specification

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

ATEX & VERSIONS AVAILABLE

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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 24vDC, 115vAC or 230vAC, 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.

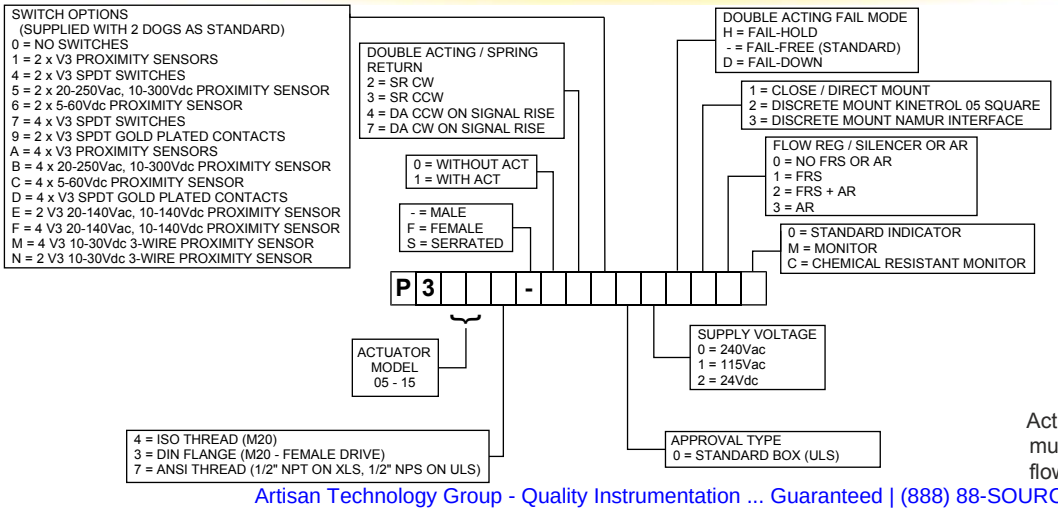
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- Robust modulating actuator control - tolerant of standard quality air supplies (instrument quality air is not necessary) via industrial solenoid valves.
- Three position rotary control using only three electrical inputs plus air supply, for filling 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 full range of Kinetrol ¼ turn 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 23).
- All new positioner circuit – runs on 24vDC, 115vAC or 230vAC 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

Compatible Actuator Sizes	models 05 to 15
Supply Voltages	230 V Ac ± 10%,50 or 60 Hz 115 V Ac ± 10%, 50 or 60 Hz 24 V Dc ± 10%
Power Consumption	positioner 1.5W max. solenoids 5 VA max. per solenoid.
Operating Temperature Range	-5 to +50°C (limited by solenoid valve specification) explosion proof option see page 23
Operating Pressure	30 to 100 psi 2.0 to 7.0 Bar
Selectable External Inputs	4-20mA - impedance 250 ohm. Potentiometer - minimum resistance 10K ohm.
Positioner Performance	linearity - better than 1% of range deadband - 0.1 to 3% of range repeatability - better than 1% of range
Optional 2-wire Angle Transducer	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
Dimensions	see page 56

Ordering Codes



Actuator size 05 must be fitted with flow regulators

For more information see KF-633

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Explosion Proof P3 On/Off Positioner



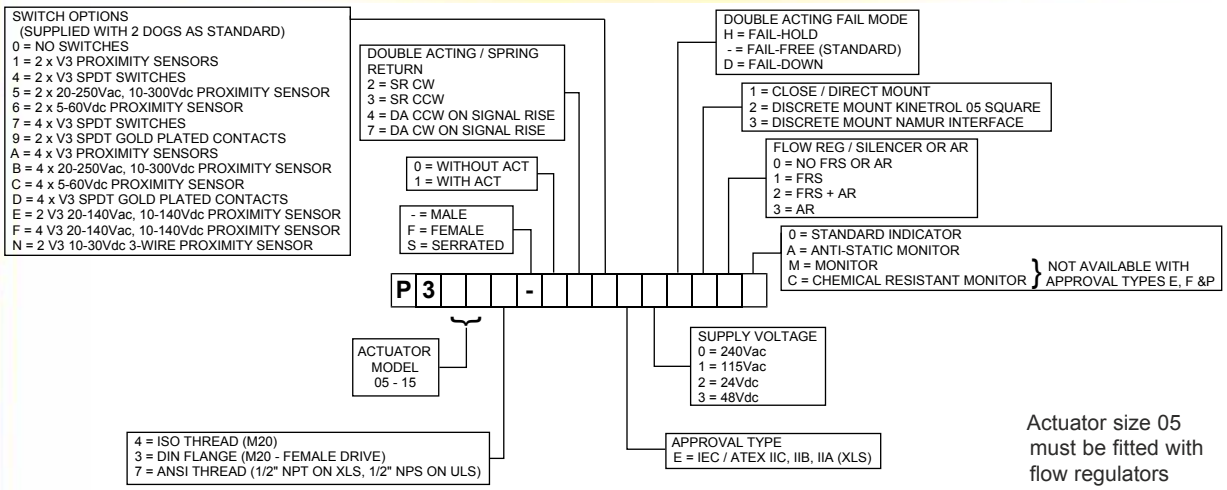
The explosion proof P3 on/off positioner offers a robust three position rotary control device with a fast, smooth, accurate response in a compact corrosion resistant, aluminium housing.

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	240 V Ac, 115 V Ac 48 V Dc, 24 V 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 56

Ordering Codes



Actuator size 05 must be fitted with flow regulators

ATEX CATEGORY 2 APPROVED

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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 *Start	—	Finish	Torque - lbf ins Based on 80 psi *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

For dimensions see page 57

ATEX Ex CATEGORY 2 APPROVED

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- **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.

ATEX CATEGORY 2 APPROVED

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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

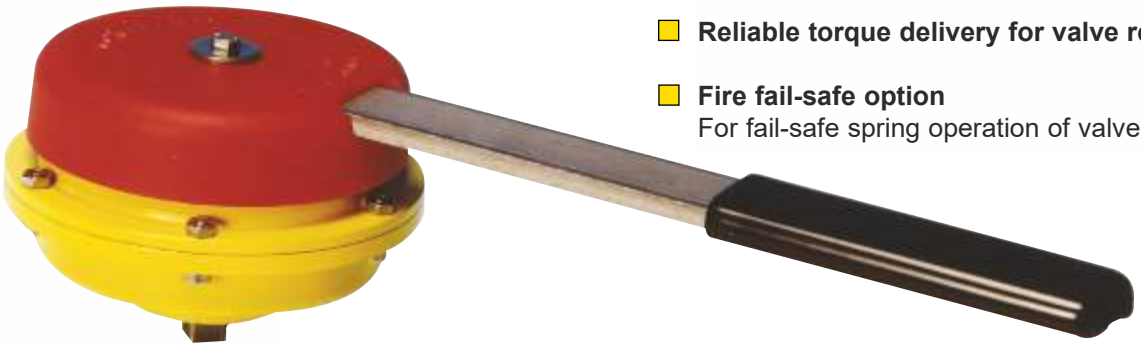
Actuator Model	Position of air OR spring stroke	50	60	70	80
		Pressure Setting (psi)			
02-1201	Start	10.3	12.2	14.1	16.0
	Finish	4.6	6.8	9.5	12.5
03-1201	Start	29.6	33.4	37.2	43.7
	Finish	8.7	13.7	19.0	24.7
05-1201	Start	44	51	61	70
	Finish	28	38	49	59
07-1201	Start	103	126	146	171
	Finish	67	92	116	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 57

ATEX CATEGORY 2 APPROVED

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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 reseat**
- **Fire fail-safe option**
  For fail-safe spring operation of valves in the event of a fire.
- **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.

Fire fail-safe spring units are available in Kinetrol sizes 05, 07, 09 and 12 (maximum torque to 260Nm/2300 lbf ins) - contact Kinetrol for details.

Specification

Spring Case	
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
Fire fail-safe fusible link	Solder type (UL approved)

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

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 8 for details.

Ordering Codes

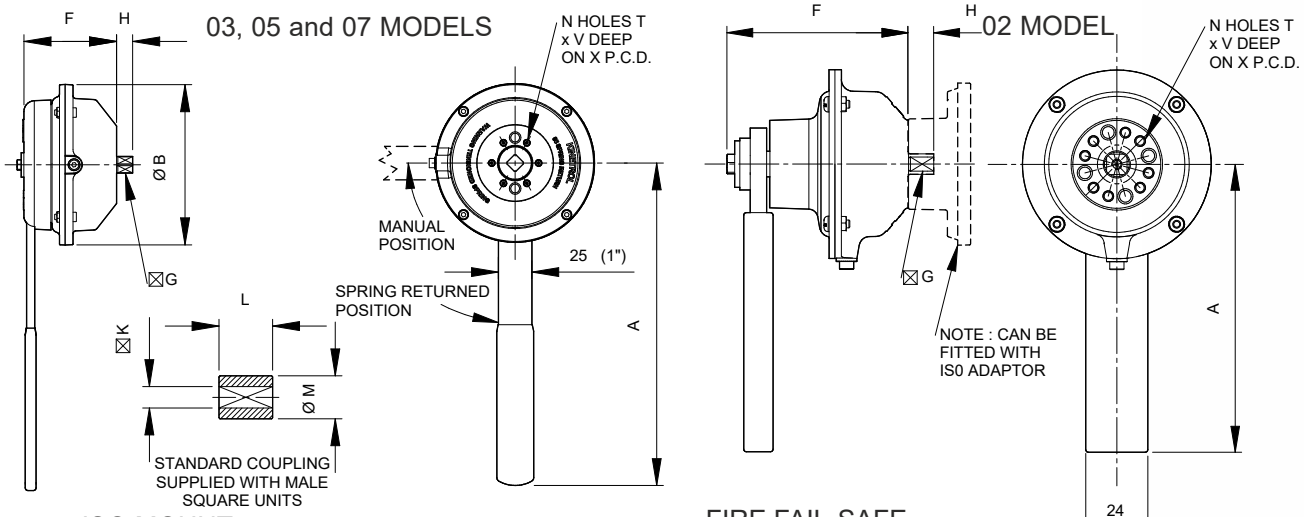
To order a manual fail-safe spring unit or fire fail-safe spring unit, quote model number, direction of spring (as per technical data on page 6) followed by product type code:

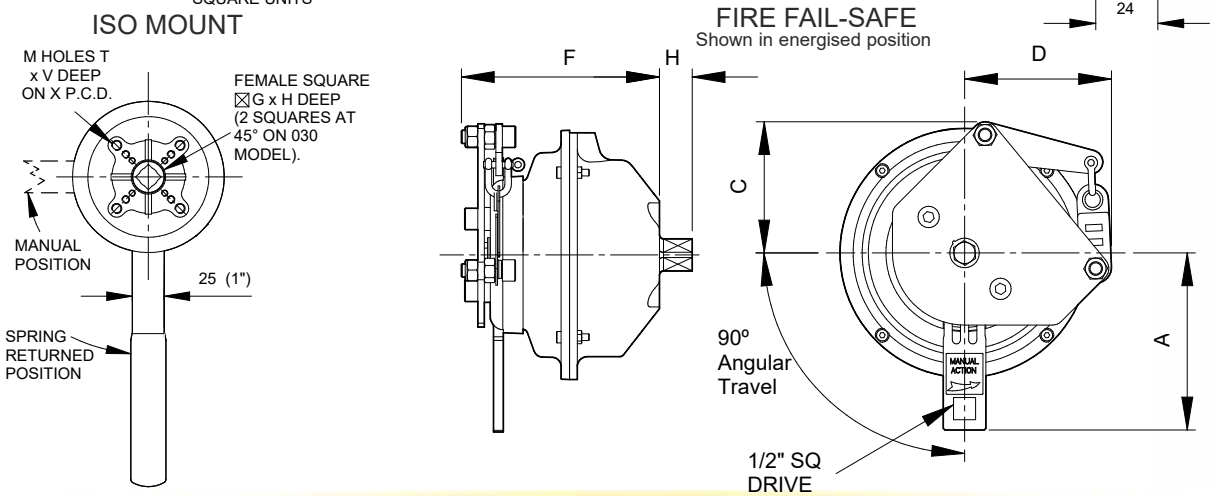
Type Codes:	-1006	Manual spring unit (e.g. 054-020-1006)
	-1016	Atex manual spring unit
	-0074	Fire fail-safe spring unit 74°C (e.g. 054-020-0074)
	-0100	Fire fail-safe spring unit 100°C
	-1074	Atex fire fail-safe spring unit 74°C
	-1100	Atex fire fail-safe spring unit 100°C

For reduced torque versions contact Kinetrol.

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Dimensions/Torques

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	Torque Reduction Thro' Stroke Nm
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	-	-	62	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
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	3.5
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	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	-	-	62	14.0	16.0	-	-	-	4	M5/M6/M8	10/12/13	36/50/70	24.0	3.5
053S020-1006	238	118	-	-	62	*	*	-	-	-	4	M5/M6/M8	10/12/13	36/50/70	24.0	3.5
053F020-1006/F4	238	118	-	-	62	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 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 lbs.ins	Torque Reduction Thro' Stroke lbs.ins
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	-	-	2.44	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	5/16-18	0.625	2.00	400	51.00
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	31.00
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	6	5/16-18	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	-	-	2.44	0.55	0.63	-	-	-	4	10-24 / ¼ / 5/16	0.39/0.47/0.51	1.42/1.97/2.76	212	30.98
057S020-1006	9.37	4.64	-	-	2.44	*	*	-	-	-	4	10-24 / ¼ / 5/16	0.39/0.47/0.51	1.42/1.97/2.76	212	30.98
057F020-1006/F4	9.37	4.64	-	-	2.44	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 / 5/16	0.39/0.51	1.97/2.76	400	51.00
077S020-1006	14.17	5.98	-	-	4.06	*	*	-	-	-	4	¼ / 5/16	0.39/0.51	1.97/2.76	400	51.00

* Refer to TD141 for details on sensors and inserts

† Minimum

Weights – Metric

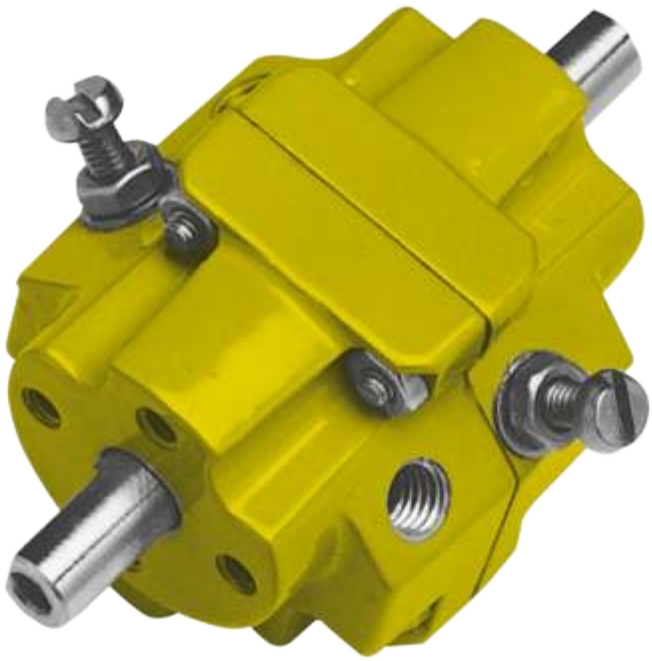
Manual fail-safe
02 Models – 0.50 kg
03 Models – 1.87 kg
05 Models – 1.87 kg
07 Models
(Non-Atex) – 4.21 kg
(Atex) – 5.17 kg
Fire fail-safe
05 Models – 2.70 kg
07 Models – 4.30 kg

Weights – English

Manual fail-safe
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
Fire fail-safe
05 Models – 5.95 lb
07 Models – 9.48 lb

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Specification

Output Torque

8.0 lbf ins/0.9 Nm
at 100 psi/7 bar

Angle of Travel (adjustable)

80° - 100°
(restricted travel versions available)

Displaced Volume

0.15 in^3/2.4 cm^3

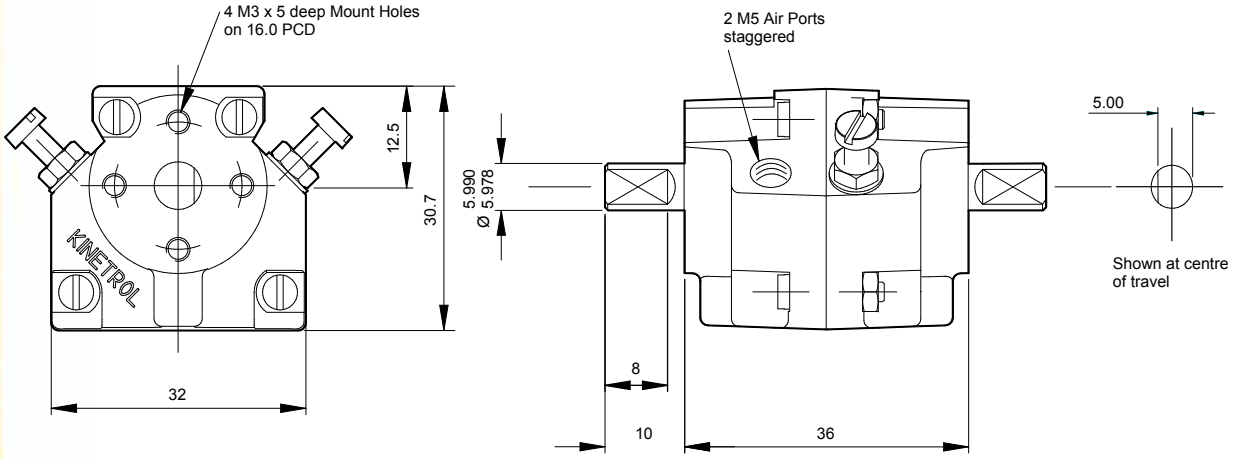
Finish

Epoxy stove enamel

Weight

0.26 lb/0.12 kg

For further information see General Specification on page 50.



MODEL: 0M0-100

Options

- **Code identification see page 62**
- **Torque outputs see page 58**
- **English dimensions see page 49**

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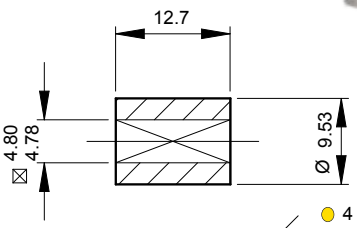
014-100

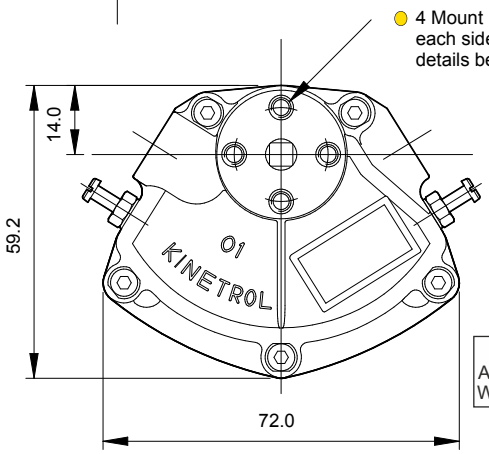


014P100

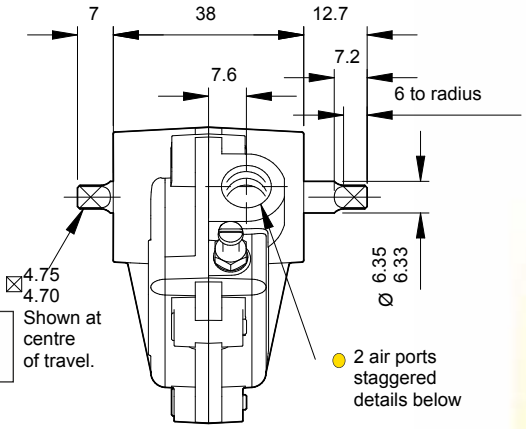


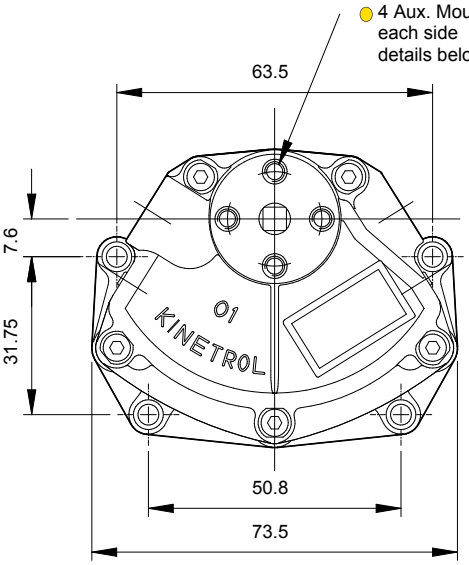
Standard Coupling
(supplied with both actuator types
weight 0.2 oz/0.005 kg)



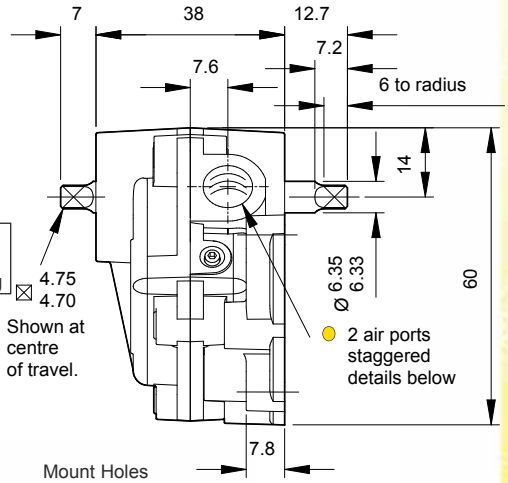


ACTUATOR 014-100
Angle of travel: 78° - 100°
Weight 0.62 lb/0.28 kg





ACTUATOR 014P100
Angle of travel: 90°
Weight 0.77 lb/0.34 kg



Air Port/Mount Hole Details

Model	Air Ports	Mount Holes
014-100	$G^1/_8$	4 x M4 x 6 deep on 19.0 PCD
017-100	$^1/_8$ NPT	4 x 8-32 UNC x 0.25" deep on 0.75" PCD
014P100	$G^1/_8$	4 x Ø4.1 (M4 clearance)

Options

- **Conversion kit between two types. SP870**
- **Fail safe spring return units - clockwise or counter clockwise see pages 5/6 (springs mounted above the actuator)**
- **Code identification see page 62**
- **Torque outputs see pages 58-60**
- **See page 49 for English dimensions and TD121 page 4 for dimensions of spring options**

Specification

Output Torque

58 lbf ins/6.7 Nm
at 100 psi/7 bar

Angle of Travel

See Drawings
(restricted travel
versions available)

Displaced Volume

1.00 in^3/16.5 cm^3

Finish

Epoxy stove enamel

Weight

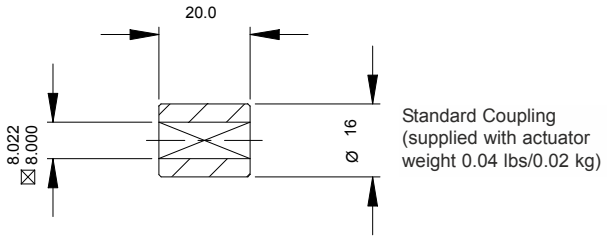
See Drawings

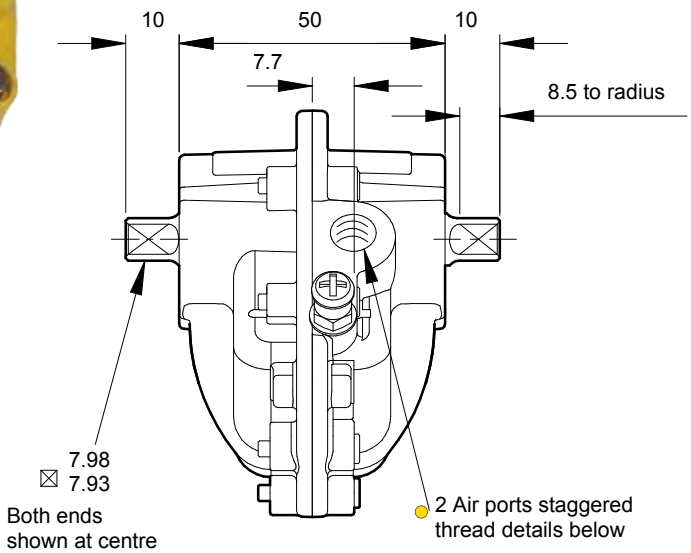
For further information
see General Specification
on page 50.

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Specification

Output Torque

106 lbf ins/12.1 Nm
at 100 psi/7 bar

Angle of Travel (adjustable)

80° - 100°
(restricted travel
versions available)

Displaced Volume

1.89 in^3/31 cm^3

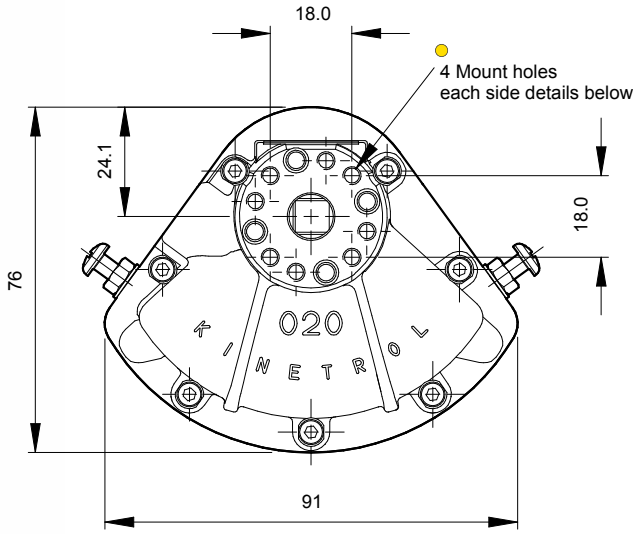
Finish

Epoxy stove enamel

Weight

0.97 lb/0.44 kg
(excluding coupling)

For further information
see General Specification
on page 50.



Air Port/Mount Hole Details

Model	Air Ports	Mount Holes
024-100	$G^1/_8$	4 x M4 x 8 deep on 25.5 PCD
027-100	$^1/_8$ NPT	4 x 8-32 UNC x 0.32" deep on 1.00" PCD

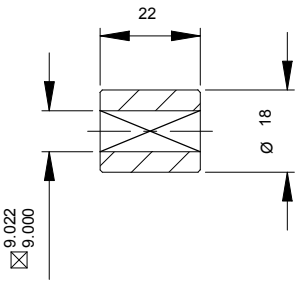
Visual Red Indicator supplied as standard - see page 3

Options

- **Fail safe spring return units - clockwise or counter clockwise see pages 5/6**
- **180° model see pages 25/26**
- **Female drive and mounting details to DIN 3337 and ISO 5211**
- **Code identification see page 62**
- **Torque outputs see pages 58-60**
- **See pages 49-52 for English dimensions and dimensions of spring options**
- **ISO adaptor see page 8**

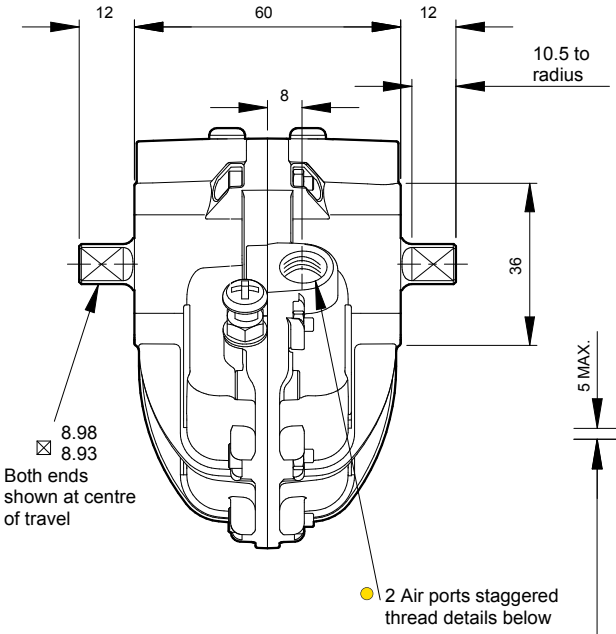
ATEX CATEGORY 1 APPROVED

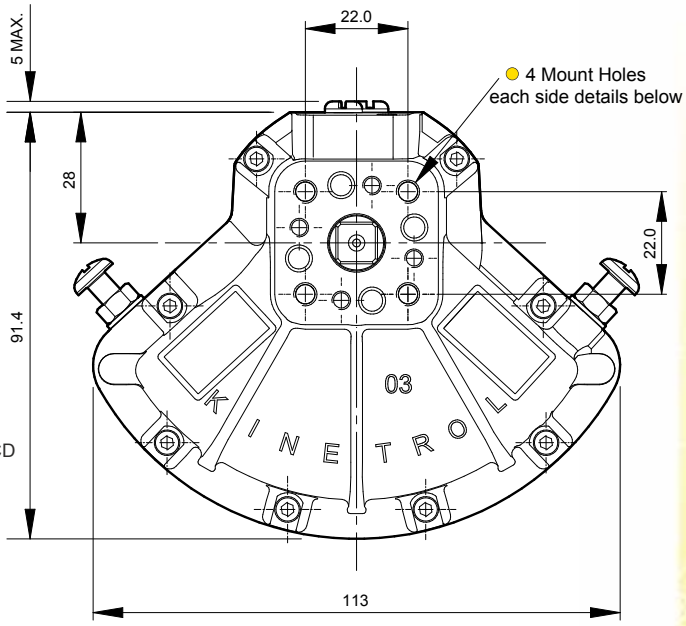
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Standard Coupling
(supplied with actuator
weight 0.07 lbs/0.03 kg)







Air Port/Mount Hole Details

Model	Air Ports	Mount Holes
034-100	$G^1/_8$	4 x M5 x 10 deep on 31.1 PCD
037-100	$^1/_8$ NPT	4 x 10-24 UNC x 0.39" deep on 1.225" PCD

Visual Red Indicator supplied as standard - see page 3

Specification

Output Torque

220 lbf ins/25 Nm
at 100 psi/7 bar

Angle of Travel (adjustable)

80° - 100°
(restricted travel
versions available)

Displaced Volume

3.66 in³/60 cm³

Finish

Epoxy stove enamel

Weight

1.53 lb/0.70 kg
(excluding coupling)

For further information see General Specification on page 50.

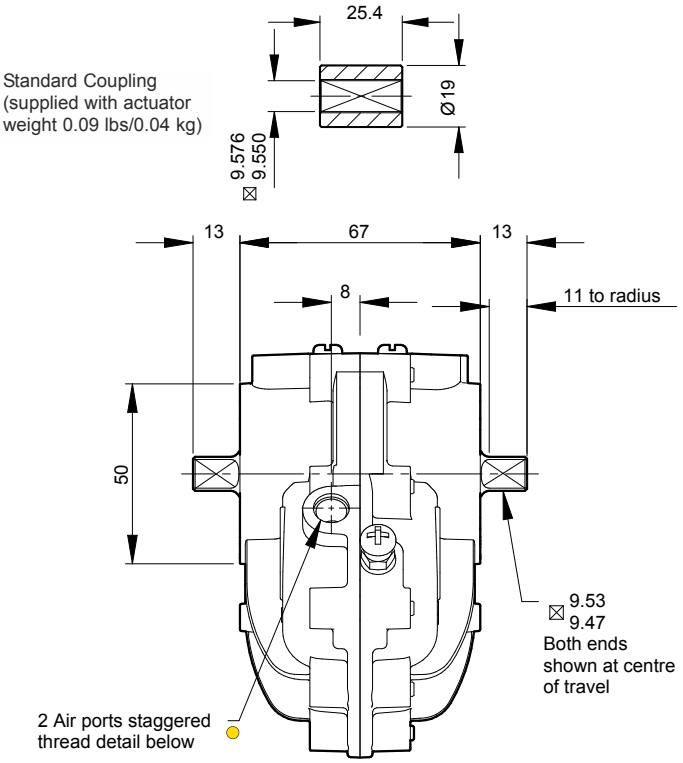
Options

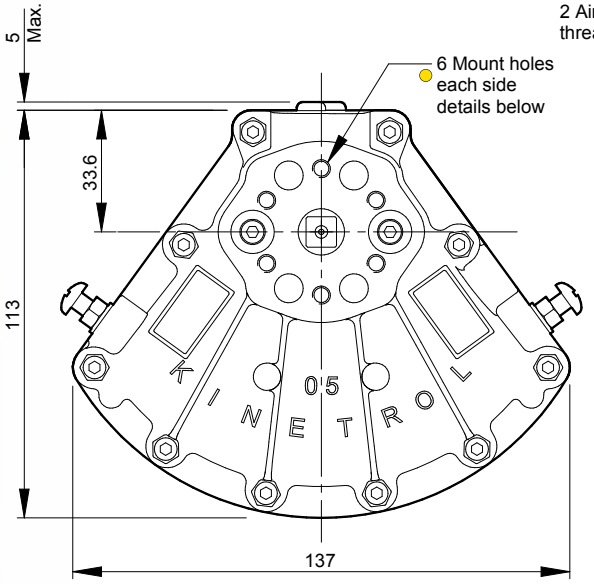
- **Fail safe spring return units - clockwise or counter clockwise see pages 5-7**
- **Limit switch boxes for open/close indication - various switches for hazardous areas see pages 9-12**
- **Integral solenoid valve see page 20**
- **Clear Cone position monitor see page 20**
- **180° model see pages 25/26**
- **Female drive and mounting details to DIN 3337 and ISO 5211**
- **ISO adaptor see page 8**
- **Code identification see page 62**
- **Torque outputs see pages 58-60**
- **See pages 49-52 for English dimensions and dimensions of spring options**
- **High temperature/Low temperature options see page 50**

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Air Port/Mount Hole Details

Model	Air Ports	Mount Holes
054-100	$G^1/_8$	6 x M5 x 10 deep on 34.9 PCD
057-100	$^1/_8$ NPT	6 x 10-24 UNC x 0.39" deep on 1.375" PCD

Visual Red Indicator supplied as standard - see page 3

Specification

Output Torque

440 lbf ins/50 Nm
at 100 psi/7 bar

Angle of Travel (adjustable)

84° - 100°
(restricted travel versions available)

Displaced Volume

6.9 in³/113 cm³

Finish

Epoxy stove enamel

Weight

2.73 lb/1.24 kg
(excluding coupling)

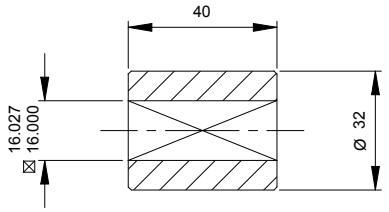
For further information see General Specification on page 50.

ATEX CATEGORY 1 APPROVED

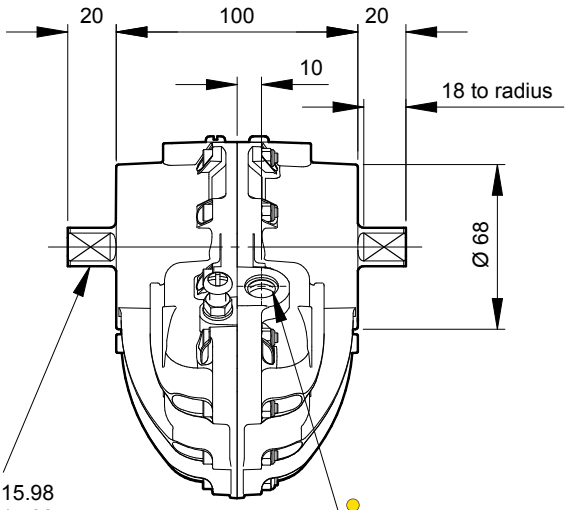
Options

- **Fail safe spring return units - clockwise or counter clockwise see pages 5-7**
- **Limit switch boxes for open/close indication - various switches for hazardous areas see pages 9-12**
- **Integral solenoid valve see page 20**
- **AP pneumatic positioner - full range of options see pages 17/18**
- **EL electropneumatic positioner - full range of options see pages 15/16**
- **P3 on/off positioner- full range of options including hazardous area see pages 21-23**
- **Clear Cone position monitor see page 20**
- **180° model see pages 25/26**
- **Female drive and mounting details to DIN 3337 and ISO 5211 see page 50**
- **ISO adaptor see page 8**
- **Spring to centre see page 24**
- **Geared manual override see page 46**
- **Code identification see page 62**
- **Torque outputs see pages 58-60**
- **See pages 49-52 for English dimensions and dimensions of spring options**
- **High temperature / Low temperature options see page 50**

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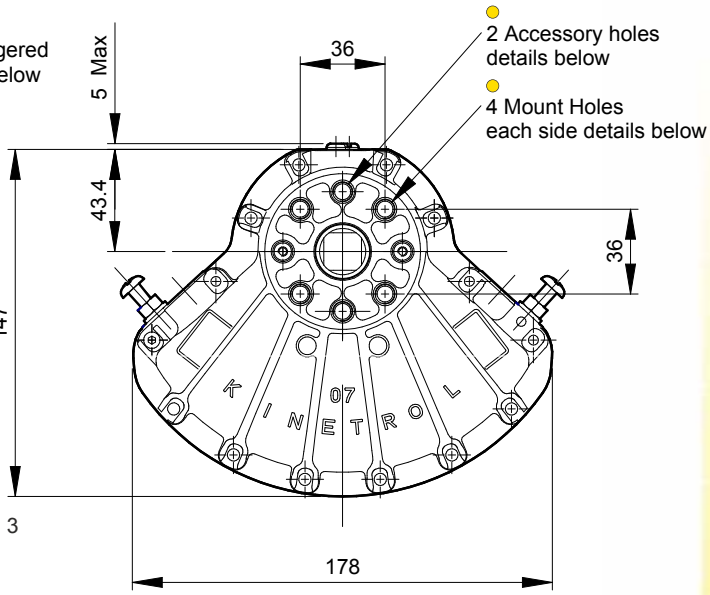
Standard Coupling
(supplied with actuator
weight 0.37 lbs/0.17 kg)





☒ 15.98
15.93
Both ends
Shown at centre
of travel

● 2 Air ports staggered
thread details below



● Air Port/Mount Hole Details

Model	Air Ports	Mount Holes & Accessory Mount Holes
074-100	$G^1/_4$	4 x M8 x 16 deep on 50.9 PCD
		2 x M8 x 16 deep on 50.8 PCD
077-100	$^1/_4$ NPT	4 x $^5/_{16}$ -18 UNC x 0.63" deep on 2.00" PCD
		2 x $^5/_{16}$ -18 UNC x 0.63" deep on 2.00" PCD

Visual Red Indicator supplied as standard - see page 3

Options

- **Fail safe spring return units - clockwise or counter clockwise see pages 5-7**
- **Limit switch boxes for open/close indication - various switches for hazardous areas see pages 9-12**
- **Integral solenoid valve see page 20**
- **AP pneumatic positioner - full range of options see pages 17/18**
- **EL electropneumatic positioner - full range of options see pages 15/16**
- **P3 on/off positioner full range of options including hazardous area see pages 21-23**
- **Clear Cone position monitor see page 20**
- **180° model see pages 25/26**
- **Female drive and mounting details to DIN 3337 and ISO 5211 see page 50**
- **ISO adaptor see page 8**
- **G⅜ or ⅜ NPT air port option available - contact Kinetrol**
- **Spring to centre see page 24**
- **Geared manual override see page 46**
- **Code identification see page 62**
- **Torque outputs see pages 58-60**
- **See pages 49-52 for English dimensions and dimensions of spring options**
- **High temperature / Low temperature options see page 50**

Specification

Output Torque

1080 lbf ins/124 Nm
at 100 psi/7 bar

Angle of Travel (adjustable)

80° - 100°
(restricted travel
versions available)

Displaced Volume

18.3 in³/300 cm³

Finish

Epoxy stove enamel

Weight

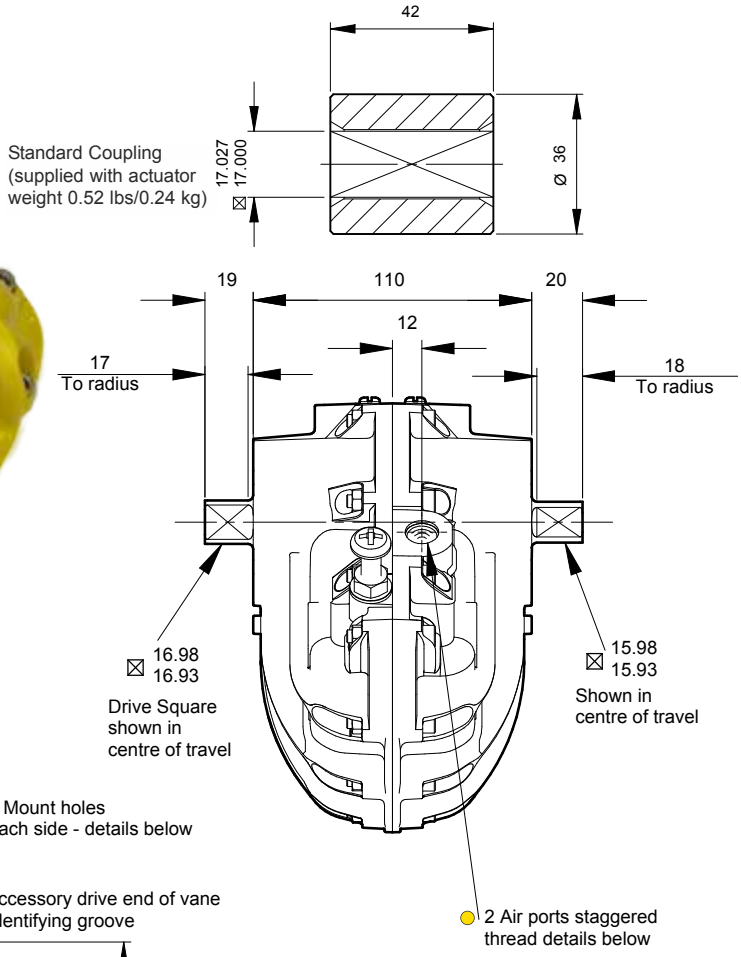
6.91 lb/3.13 kg
(excluding coupling)

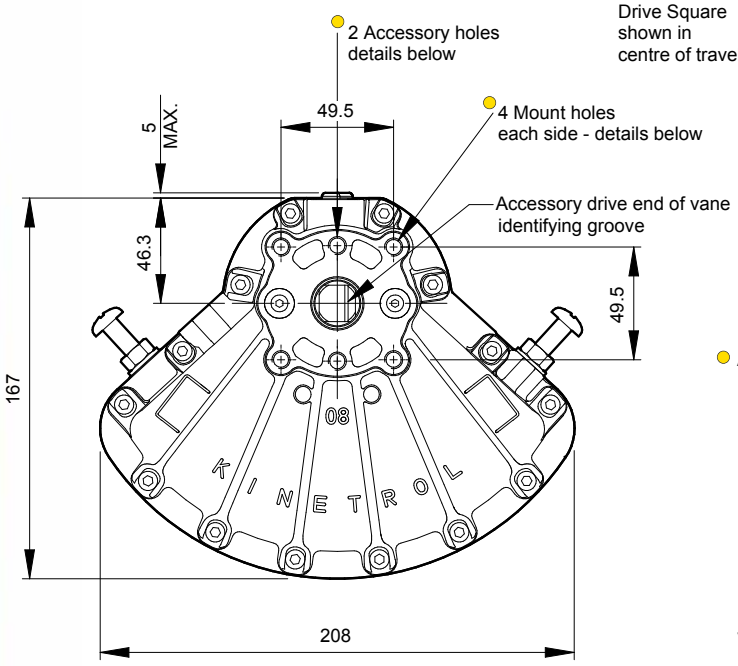
For further information
see General
Specification on
page 50.

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Air Port/Mount Hole Details

Model	Air Ports	Mount Holes & Accessory Mount Holes
084-100	G 1/4	4 x M8 x 16 deep on 70.0 PCD 2 x M8 x 16 deep on 50.8 PCD
087-100	1/4 NPT	4 x 5/16 -18 UNC x 0.63" deep on 2.76" PCD 2 x 5/16 -18 UNC x 0.63" deep on 2.00" PCD

Visual Red Indicator supplied as standard - see page 3

Specification

Output Torque

1740 lbf ins/199 Nm
at 100 psi/7 bar

Angle of Travel (adjustable)

80° - 100°
(restricted travel versions available)

Displaced Volume

29.6 in^3/485 cm^3

Finish

Epoxy stove enamel

Weight

5.60 lb/2.54 kg
(excluding coupling)

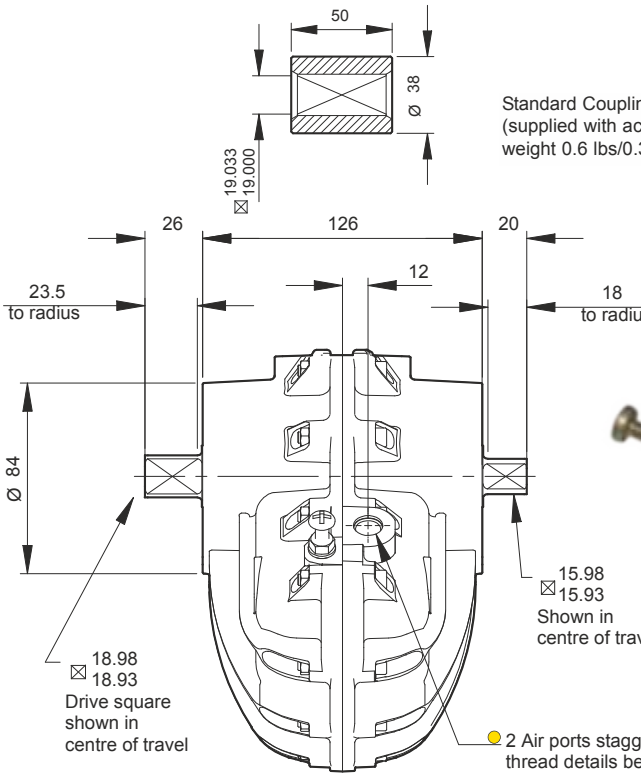
For further information see General Specification on page 50.

Options

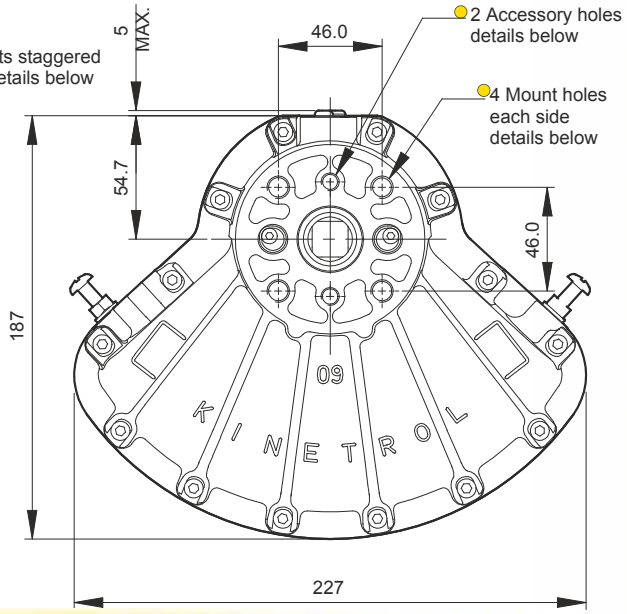
- ☐ **Fail safe spring return units - clockwise or counter clockwise see pages 5-7**
- ☐ **Limit switch boxes for open/close indication - various switches for hazardous areas see pages 9-12**
- ☐ **Integral solenoid valve see page 20**
- ☐ **AP pneumatic positioner - full range of options see pages 17/18**
- ☐ **EL electropneumatic positioner - full range of options see pages 15/16**
- ☐ **P3 on/off positioner - full range of options Including hazardous area see pages 21-23**
- ☐ **Clear Cone position monitor see page 20**
- ☐ **Female drive and mounting details to DIN 3337 and ISO 5211 see page 50**
- ☐ **ISO adaptor see page 8**
- ☐ **G⅜ or ⅜ NPT air port option available - contact Kinetrol**
- ☐ **Geared manual override see page 46**
- ☐ **Code identification see page 62**
- ☐ **Torque outputs see pages 58-60**
- ☐ **See pages 49-52 for English dimensions and dimensions of spring options**
- ☐ **High temperature / Low temperature options see page 50**

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Air Port/Mount Hole Details

Model	Air Ports	Mount Holes & Accessory Mount Holes
094-100	G1/4	4 x M10 x 20 deep on 65.0 PCD 2 x M8 x 16 deep on 50.8 PCD
097-100	1/4 NPT	4 x 3/8 - 16 UNC x 0.79" deep on 2.56" PCD 2 x 3/8 - 16 UNC x 0.79" deep on 2.56" PCD

Visual Red Indicator supplied as standard - see page 3

Options

- **Fail safe spring return units - clockwise or counter clockwise see pages 5-7**
- **Limit switch boxes for open/close indication - various switches for hazardous areas see pages 9-12**
- **Integral solenoid valve see page 20**
- **AP pneumatic positioner - full range of options see pages 17/18**
- **EL electropneumatic positioner - full range of options see pages 15/16**
- **P3 on/off positioner full range of options including hazardous area see pages 21-23**
- **Clear Cone position monitor see page 20**
- **180° model see pages 25/26**
- **Female drive and mounting details to DIN 3337 and ISO 5211 see page 50**
- **ISO adaptor see page 8**
- **G⅜ or ⅜ NPT air port option available - contact Kinetrol**
- **Spring to centre see page 24**
- **Geared manual override see page 46**
- **Code identification see page 62**
- **Torque outputs see pages 58-60**
- **See pages 49-52 for English dimensions and dimensions of spring options**
- **High temperature / Low temperature options see page 50**

Specification

Output Torque

2280 lbf ins/261 Nm
at 100 psi/7 bar

Angle of Travel (adjustable)

80° - 100°
(restricted travel versions available)

Displaced Volume

39.3 in³/644 cm³

Finish

Epoxy stove enamel

Weight

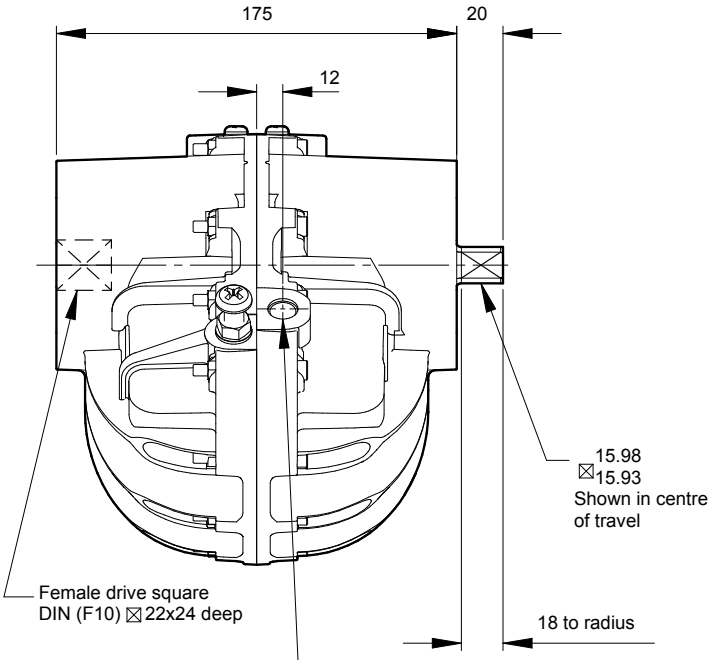
8.52 lb/3.86 kg
(excluding coupling)

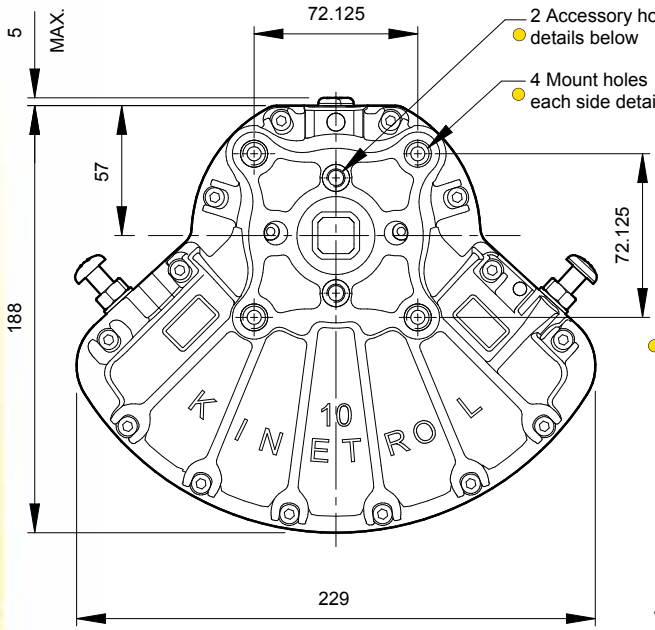
For further information see General Specification on page 50.

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Air Port/Mount Hole Details

Model	Air Ports	Mount Holes & Accessory Mount Holes
103-100	G 1/4	4 x M10 x 16 deep on 102.0 PCD 2 x M8 x 16 deep on 50.8 PCD
107-100	1/4 NPT	4 x 3/8 - 16 UNC x 0.63" deep on 4.02" PCD 2 x 3/8 - 16 UNC x 0.63" deep on 2.00" PCD

Visual Red Indicator supplied as standard - see page 3

Specification

Output Torque

3625 lbf ins/416 Nm
at 100 psi/7 bar

Angle of Travel (adjustable)

78° - 100°
(restricted travel versions available)

Displaced Volume

62.5 in^3/1025 cm^3

Finish

Epoxy stove enamel

Weight

11.9 lb/5.4 kg
(no coupling)

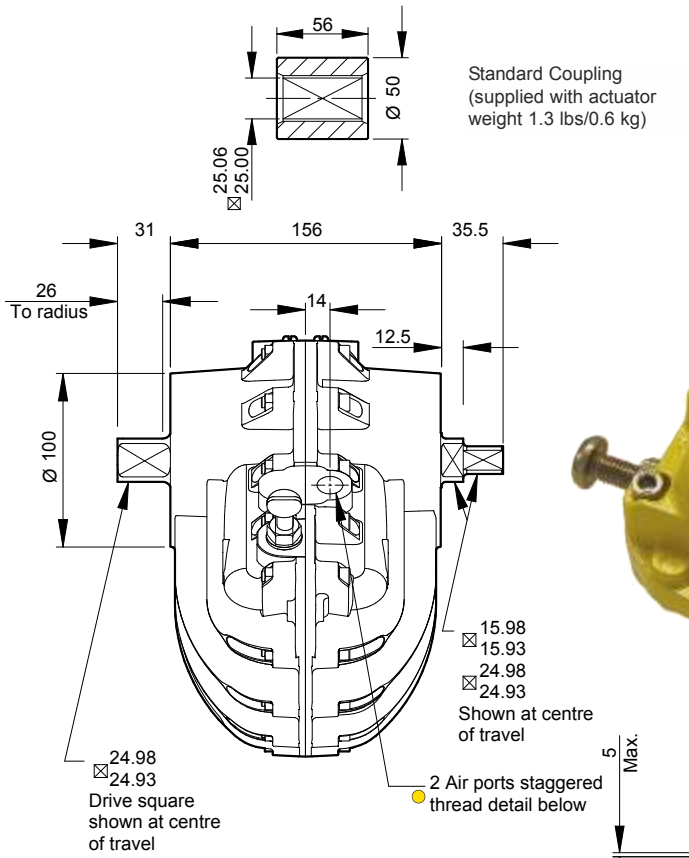
For further information see General Specification on page 50.

Options

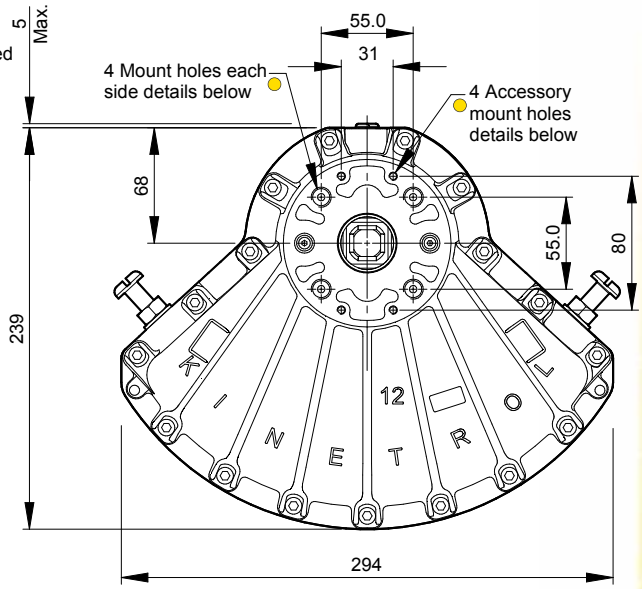
- ☐ **Fail safe spring return units - clockwise or counter clockwise see pages 5-7**
- ☐ **Limit switch boxes for open/close indication - various switches for hazardous areas see pages 9-12**
- ☐ **Integral solenoid valve see page 20**
- ☐ **AP pneumatic positioner - full range of options see pages 17/18**
- ☐ **EL electropneumatic positioner - full range of options see pages 15/16**
- ☐ **P3 on/off positioner- full range of options including hazardous area see pages 21-23**
- ☐ **Clear Cone position monitor see page 20**
- ☐ **Geared manual override see page 46**
- ☐ **Code identification see page 62**
- ☐ **Torque outputs see pages 58-60**
- ☐ **See pages 49-52 for English dimensions and dimensions of spring options**
- ☐ **High temperature / Low temperature options see page 50**

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Air Port/Mount Hole Details

Model	Air Ports	Mount Holes & Accessory Mount Holes
124-100	$G^3/_8$	4 x M12 x 24 deep on 77.8 PCD 4 x M5 x 10 deep
127-100	$^3/_8$ NPT	4 x $^1/_2$ - 13 UNC x 0.94" deep on 3.06" PCD 4 x 10-24 x 3/8" deep

Visual Red Indicator supplied as standard - see page 3

Options

- **Fail safe spring return units - clockwise or counter clockwise see pages 5-7**
- **Limit switch boxes for open/close indication - various switches for hazardous areas see pages 9-12**
- **Integral solenoid valve see page 20**
- **AP pneumatic positioner - full range of options see pages 17/18**
- **EL electropneumatic positioner - full range of options see pages 15/16**
- **P3 on/off positioner - full range of options including hazardous area see pages 21-23**
- **180° model see page 25/26**
- **Female drive and mounting details to DIN 3337 and ISO 5211 see page 50**
- **Spring to centre see page 24**
- **Geared manual override see page 46**
- **Code identification see page 62**
- **Torque outputs see pages 58-60**
- **See pages 49-52 for English dimensions and dimensions of spring options**
- **Accessory mount plate for positioners, switch boxes and clear cone monitor. See TD149.**
- **High Temperature / Low temperature options see page 50**

Specification

Output Torque

5000 lbf ins/575 Nm
at 100 psi/7 bar

Angle of Travel (adjustable)

80° - 102°
(restricted travel
versions available)

Displaced Volume

86 in^3/1410 cm^3

Finish

Epoxy stove enamel

Weight

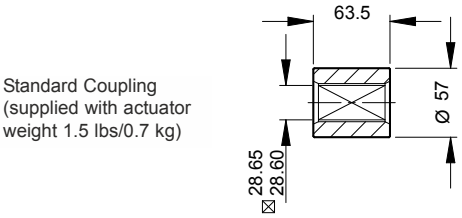
14.8 lb/6.7 kg
(excluding coupling)

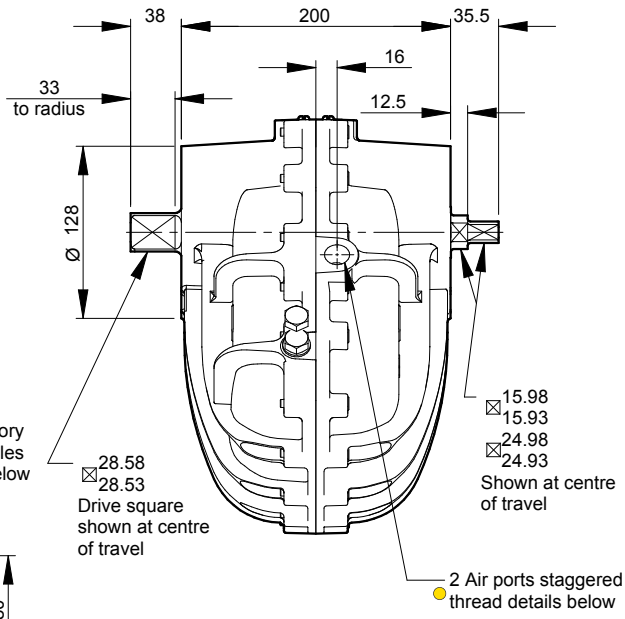
For further information see General Specification on page 50.

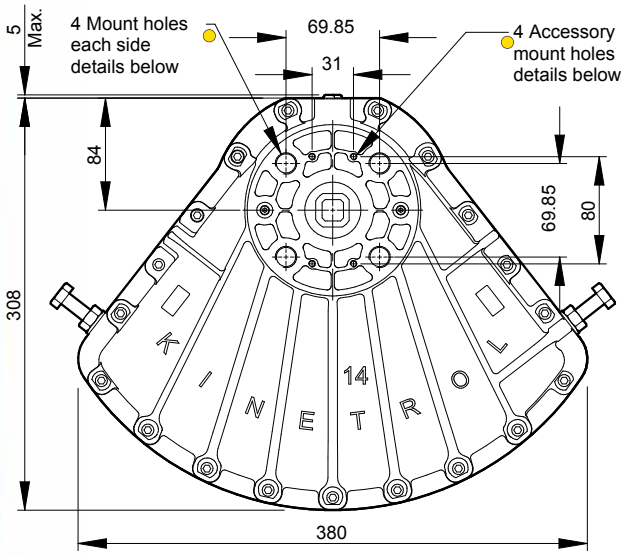
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Air Port/Mount Hole Details

Model	Air Ports	Mount Holes & Accessory Mount Holes
144-100	$G^1/_2$	4 x M16 x 28.5 deep on 98.8 PCD 4 x M5 x 10 deep
147-100	$^1/_2$ NPT	4 x $^5/_8$ - 11 UNC x 1.12" deep on 3.89" PCD 4 x 10-24 x 3/8" deep

Visual Red Indicator supplied as standard - see page 3

Specification

Output Torque

12000 lbf ins/1375 Nm at 100 psi/7 bar

Angle of Travel (adjustable)

80° - 100° (restricted travel versions available)

Displaced Volume

201 in³/3294 cm³

Finish

Epoxy stove enamel

Weight

29.5 lb/13.4 kg (excluding coupling)

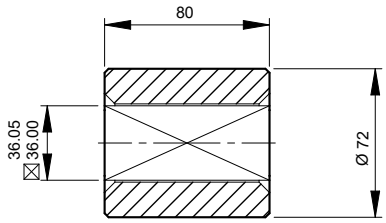
For further information see General Specification on page 50.

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Options

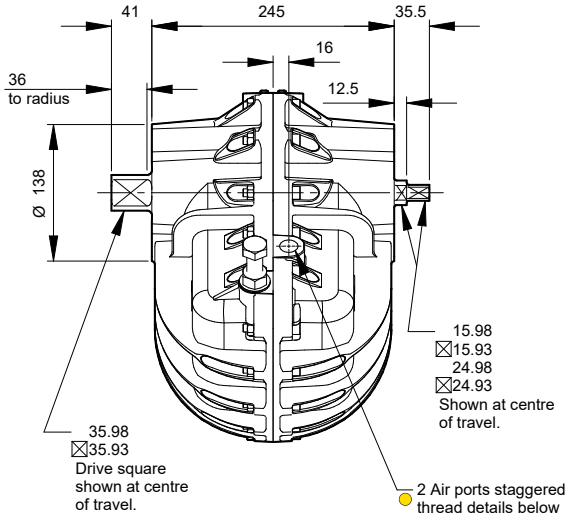
- ☐ **Fail safe spring return units - clockwise or counter clockwise see pages 5-7**
- ☐ **Limit switch boxes for open/close indication - various switches for hazardous areas see pages 9-12**
- ☐ **Integral solenoid valve see page 20**
- ☐ **AP pneumatic positioner - full range of options see pages 17/18**
- ☐ **EL electropneumatic positioner - full range of options see pages 15/16**
- ☐ **P3 on/off positioner - full range of options including hazardous area see pages 21-23**
- ☐ **180° model see page 25/26**
- ☐ **Female drive and mounting details to DIN 3337 and ISO 5211 see page 50**
- ☐ **Spring to centre see page 24**
- ☐ **Geared manual override see page 46**
- ☐ **Code identification see page 62**
- ☐ **Torque outputs see pages 58-60**
- ☐ **See pages 49-52 for English dimensions and dimensions of spring options**
- ☐ **Accessory mount plate for positioners, switch boxes and clear cone monitor. See TD149.**
- ☐ **High Temperature / Low temperature options see page 50**

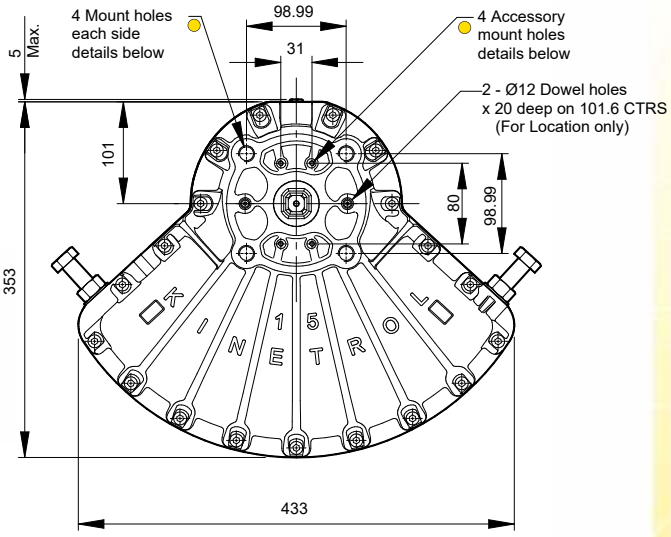
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Standard Coupling
(supplied with actuator
weight 3.7 lbs/1.7 kg)







Air Port/Mount Hole Details

Model	Air Ports	Mount Holes & Accessory Mount Holes
154-100	$G^1/_2$	4 x M16 x 28.5 deep on 140.0 PCD 4 x M5 x 10 deep
157-100	$^1/_2$ NPT	4 x $^5/_8$ - 11 UNC x 1.12" deep on 5.51" PCD 4 x 10-24 x $^3/_8$" deep

Visual Red Indicator supplied as standard - see page 3

Specification

Output Torque

20337 lbf ins/2337 Nm
at 100 psi/7 bar

Angle of Travel (adjustable)

80° - 100°
(restricted travel
versions available)

Displaced Volume

361 in³/5920 cm³

Finish

Epoxy stove enamel

Weight

46.2 lb/21.0 kg
(excluding coupling)

For further information
see General
Specification on
page 50.

Options

- **Fail safe spring return units - clockwise or counter clockwise see pages 5-7**
- **Limit switch boxes for open/close indication - various switches for hazardous areas see pages 9-12**
- **Integral solenoid valve see page 20**
- **AP pneumatic positioner - full range of options see pages 17/18**
- **EL electropneumatic positioner - full range of options see pages 15/16**
- **P3 on/off positioner - full range of options including hazardous area see pages 21-23**
- **Code identification see page 62**
- **Torque outputs see pages 58-60**
- **See pages 49-52 for English dimensions and dimensions of spring options**
- **Accessory mount plate for positioners, switch boxes and clear cone monitor. See TD149.**
- **High temperature / low temperature options see page 50**

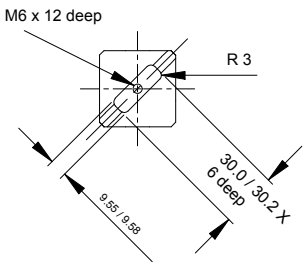
ATEX CATEGORY 2 APPROVED

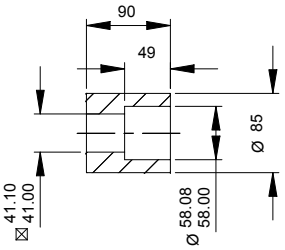
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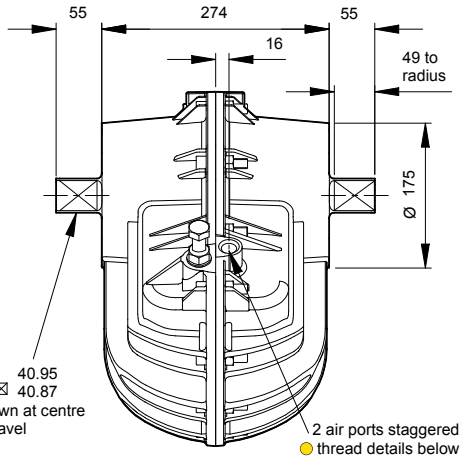


Standard Coupling
(supplied with actuator
weight 5.3 lbs/2.4 kg)

Vane Slot detail both ends







Specification

Output Torque

27000 lbf ins/3100 Nm
at 100 psi/7 bar

Angle of Travel (adjustable)

80° - 100°
(restricted travel
versions available)

Displaced Volume

465 in³/7630 cm³

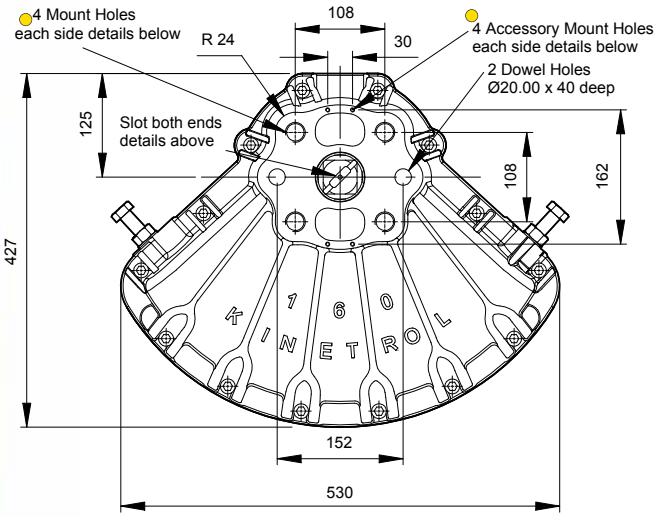
Finish

Epoxy stove enamel

Weight

82.5 lb/37.4 kg
(excluding coupling)

For further information
see General Specification
on page 50.



Air Port/Mount Hole Details

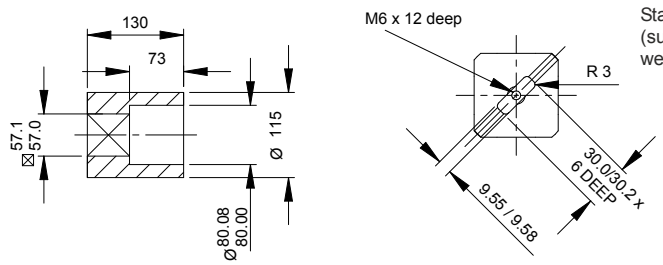
Model	Air Ports	Mount Holes & Accessory Mount Holes
164-100	G 1/2	4 x M24 x 38 deep on 152.7 PCD 4 x M5 x 8 deep
167-100	1/2 NPT	4 x 7/8 - 9 UNC x 1.50" deep on 6.012" PCD 4 x 10-24 UNC x 0.31" deep

Options

- **Fail safe spring return units - clockwise or counter clockwise see pages 5-7**
- **Limit switch boxes for open/close indication - various switches for hazardous areas see pages 9-12**
- **AP pneumatic positioner - full range of options see pages 17/18**
- **EL electropneumatic positioner - full range of options see pages 15/16**
- **180° model see page 25/26**
- **Female drive and mounting details to DIN 3337 and ISO 5211 see page 50**
- **Spring to centre see page 24**
- **Geared manual override see page 46**
- **Code identification see page 62**
- **Torque outputs see pages 58-60**
- **See pages 49-52 for English dimensions and dimensions of spring options**
- **High Temperature / Low temperature options see page 50**

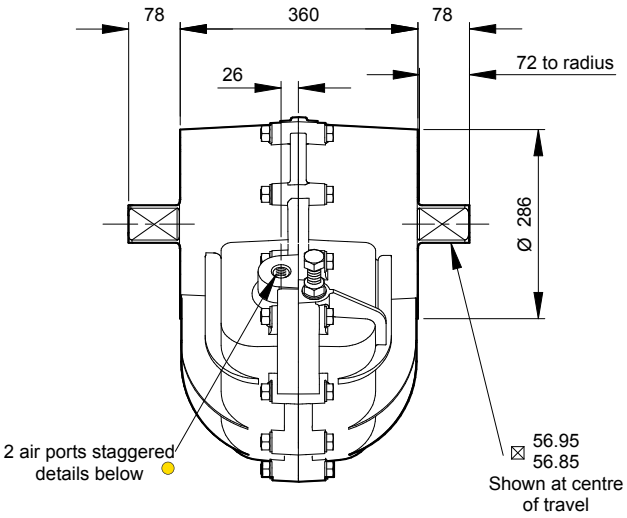
ATEX CATEGORY 2 APPROVED

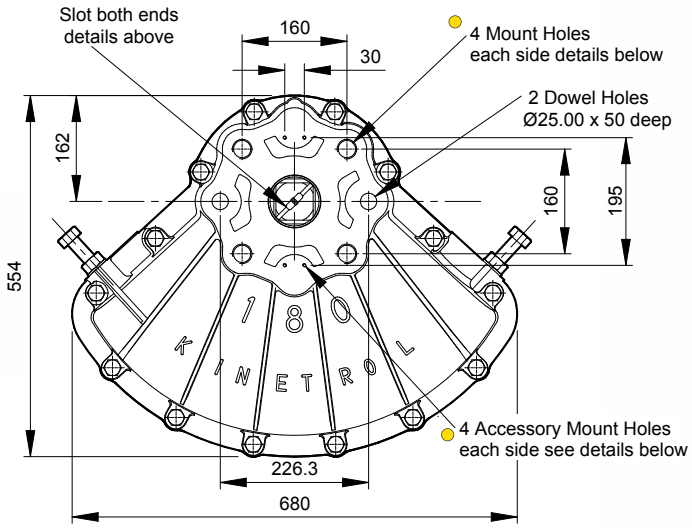
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Standard Coupling
(supplied with actuator
weight 13.3 lbs/6 kg)







Air Port/Mount Hole Details

Model	Air Ports	Mount Holes & Accessory Mount Holes
184-100	$G^3/_4$	4 x M30 x 50 deep on 226.3 PCD 4 x M5 x 8 deep
187-100	$^3/_4$ NPT	4 x $1^1/_8$ - 7 UNC x 2.00" deep on 8.91" PCD 4 x 10-24 UNC x 0.31" deep

Options

- **Fail safe spring return units - clockwise or counter clockwise see pages 5-7**
- **Limit switch boxes for open/close indication - various switches for hazardous areas see pages 9-12**
- **AP pneumatic positioner - full range of options see pages 17/18**
- **EL electropneumatic positioner - full range of options see pages 15/16**
- **Female drive and mounting details to DIN 3337 and ISO 5211 see page 50**
- **Spring to centre see page 24**
- **Code identification see page 62**
- **Torque outputs see pages 58-60**
- **See pages 49-52 for English dimensions and dimensions of spring options**
- **High Temperature / Low temperature options see page 50**

Specification

Output Torque

60000 lbf ins/6900 Nm
at 100 psi/7 bar

Angle of Travel (adjustable)

80° - 100°
(restricted travel
versions available)

Displaced Volume

1048 in^3/17170 cm^3

Finish

Epoxy stove enamel

Weight

194 lb/88 kg
(excluding coupling)

For further information
see General Specification
on page 50

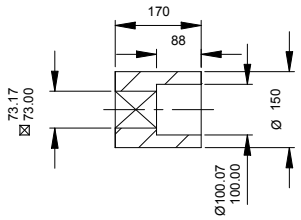
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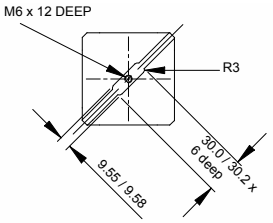
Model 20

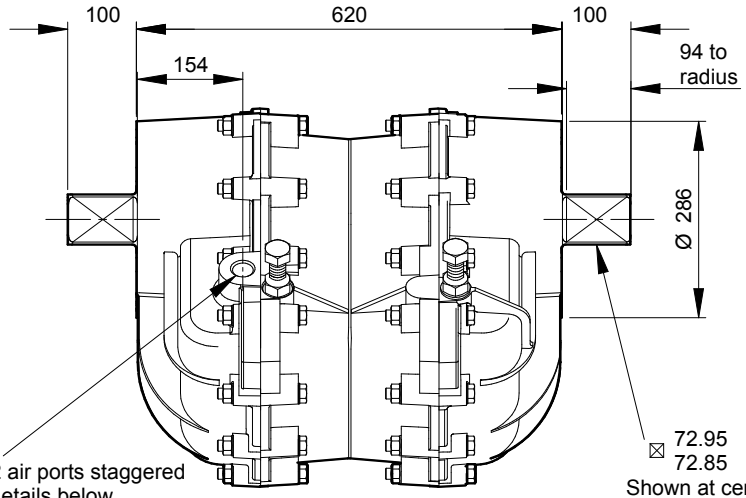


Standard Coupling
(supplied with actuator
weight 34 lbs/15.4 kg)



Vane Slot detail both ends





Specification

Output Torque

112000 lbf ins/12760 Nm
at 100 psi/7 bar

Angle of Travel (adjustable)

80° - 100°
(restricted travel
versions available)

Displaced Volume

2034 in³/33350 cm³

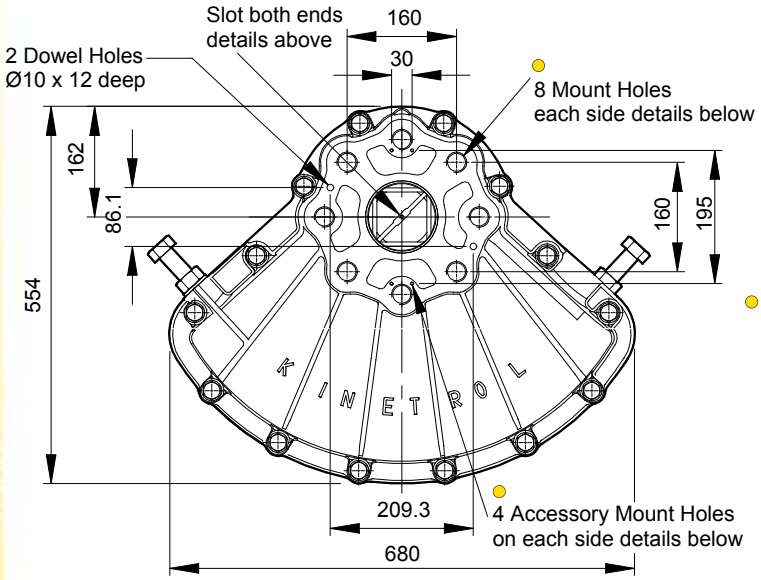
Finish

Epoxy stove enamel

Weight

440 lb/199.6 kg
(excluding coupling)

For further information
see General Specification
on page 50.



Air Port/Mount Hole Details

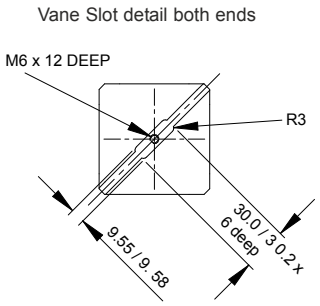
Model	Air Ports	Mount Holes & Accessory Mount Holes
204-100	G1	8 x M30 x 50 deep on 226.3 PCD 4 x M5 x 8 deep
207-100	1 NPT	8 x $1^{1}/_{8}$ - 7 UNC x 2.00" deep on 8.91" PCD 4 x 10-24 UNC x 0.31" deep

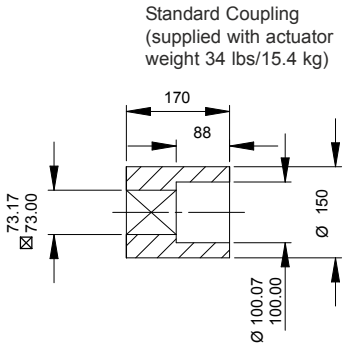
Options

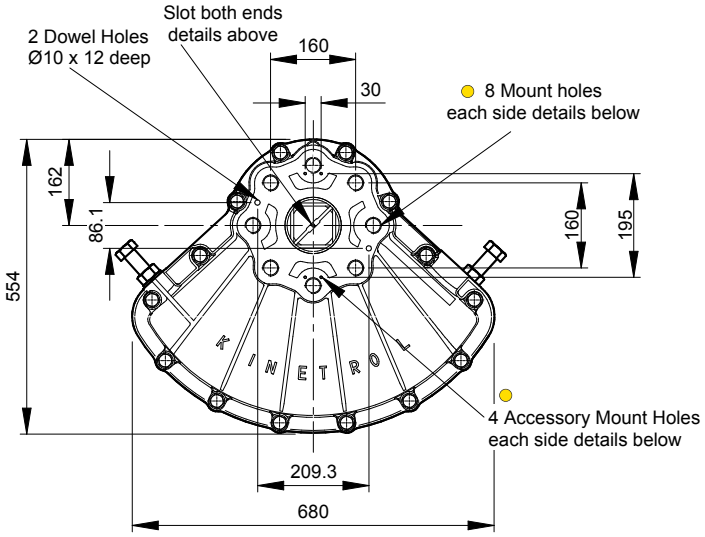
- **Fail safe spring return units - clockwise or counter clockwise see pages 5-7**
- **Limit switch boxes for open/close indication - various switches for hazardous areas see pages 9-12**
- **AP pneumatic positioner - full range of options see pages 17/18**
- **EL electropneumatic positioner - full range of options see pages 15/16**
- **Female drive and mounting details to DIN 3337 and ISO 5211 see page 50**
- **Code identification see page 62**
- **Torque outputs see pages 58-60**
- **See pages 49-52 for English dimensions and dimensions of spring options**
- **High Temperature / Low temperature options see page 50**

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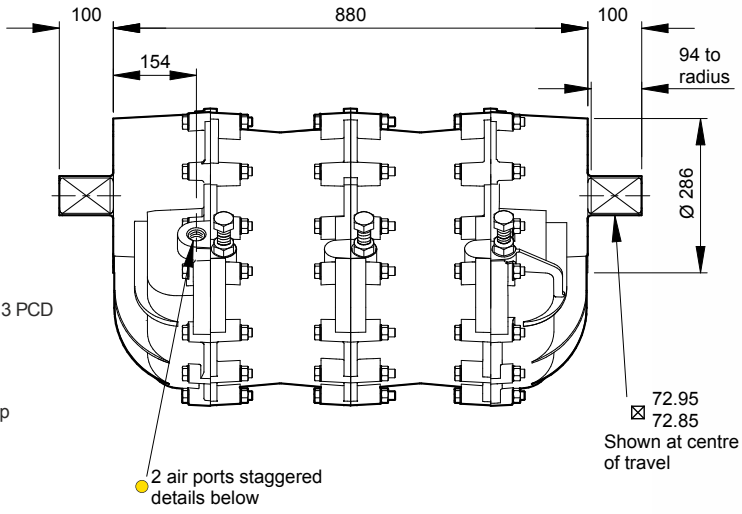
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Air Ports/Mount Hole Details

Model	Air Ports	Mount Holes & Accessory Mount Holes
304-100	G1	8 x M30 x 50 deep on 226.3 PCD 4 x M5 x 8 deep
307-100	1 NPT	8 x $1^{1}/_{8}$ - 7 UNC x 2.00" deep on 8.91" PCD 4 x 10-24 UNC x 0.31" deep

Specification

Output Torque

168000 lbf ins/19140 Nm at 100 psi/7 bar

Angle of Travel (adjustable)

80° - 100° (restricted travel versions available)

Displaced Volume

3050 in³/50025 cm³

Finish

Epoxy stove enamel

Weight

601.91 lb/273 kg (excluding coupling)

For further information see General Specification on page 50.

Options

- **Fail safe spring return units - clockwise or counter clockwise see pages 5-7**
- **Limit switch boxes for open/close indication - various switches for hazardous areas see pages 9-12**
- **AP pneumatic positioner - full range of options see pages 17/18**
- **EL electropneumatic positioner - full range of options see pages 15/16**
- **Code identification see page 62**
- **Torque outputs see pages 58-60**
- **See pages 49-52 for English dimensions and dimensions of spring options**
- **High Temperature / Low temperature options see page 50**

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Kinetrol's Blueline Food Grade Finish Product

Kinetrol's Blueline coating solution for food production applications meet 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® BLUELINE

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 8).

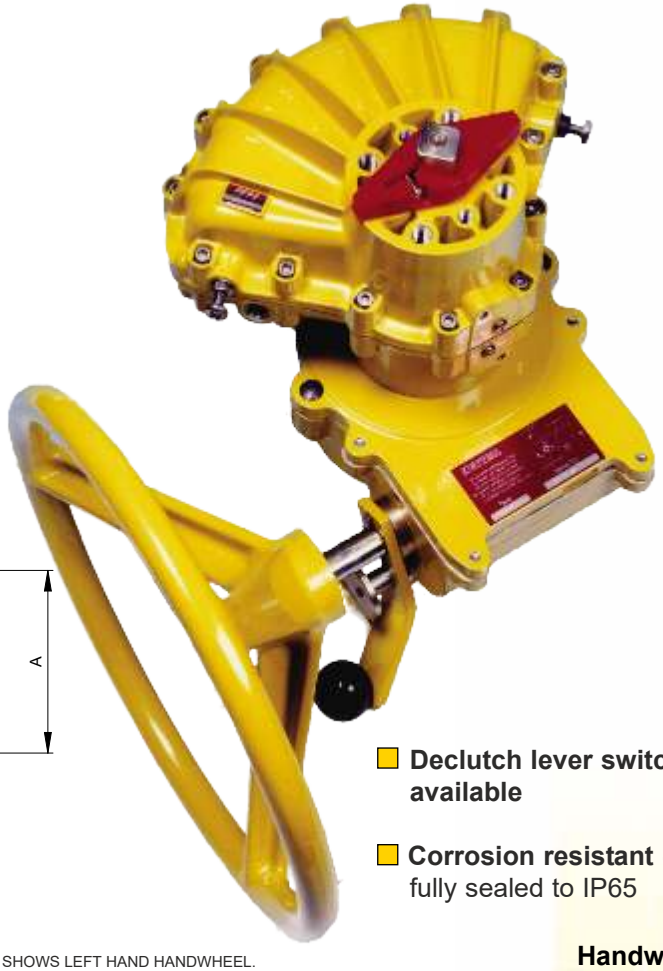
Kinetrol's direct mounting limit switch boxes, positioners and other control modules eliminate the cost of interfacing hardware resulting in compact assemblies. Our larger actuators, models 16 and above also offer a drive slot and insert option which is designed to interface with ancillary drives which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

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

For more information on either of the above please contact Kinetrol.

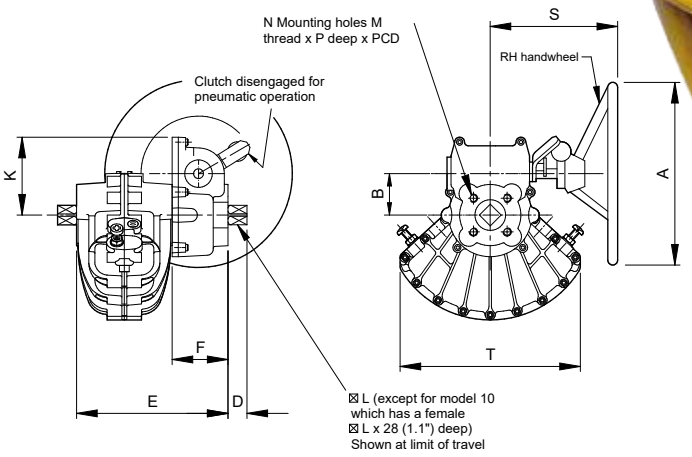
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Kinetrol declutchable geared overrides are available for models 05 to 20 (excluding model 15), rated for the same torques as the actuators and fitted between the actuator and the load. The standard unit is supplied with the right hand handwheel option (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).



- **Declutch lever switch available**
- **Corrosion resistant -** fully sealed to IP65

Dimensions



DRAWING SHOWS RIGHT HAND HANDWHEEL.

PHOTO SHOWS LEFT 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	5⁄16	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	5⁄16	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	3⁄8	4	0.79	2.560	8.66	8.94	26.6
10	11.81	2.67	-	10.51	3.62	5.0	0.866	3⁄8	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	5⁄8	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)

Handwheel Orientation

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

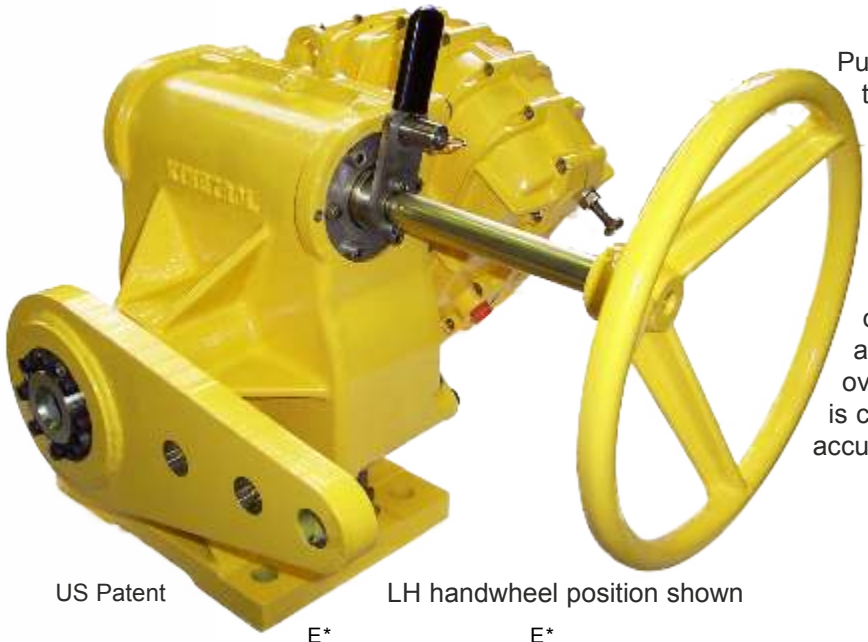
Models 16 - 20
Standard - Left Hand only

Working Temperature Range

-20°C to +80°C

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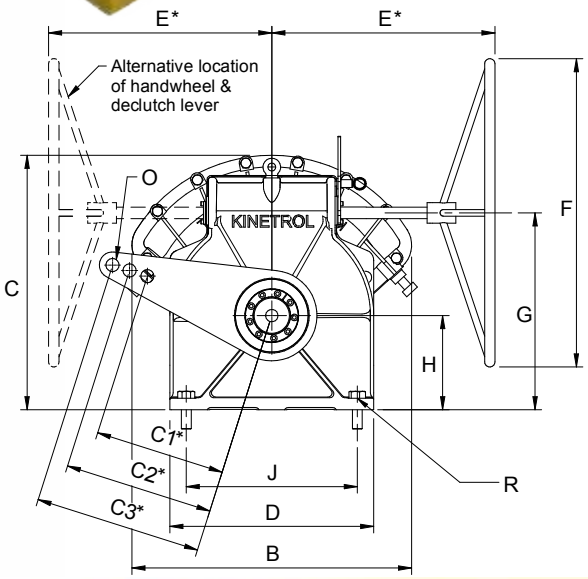


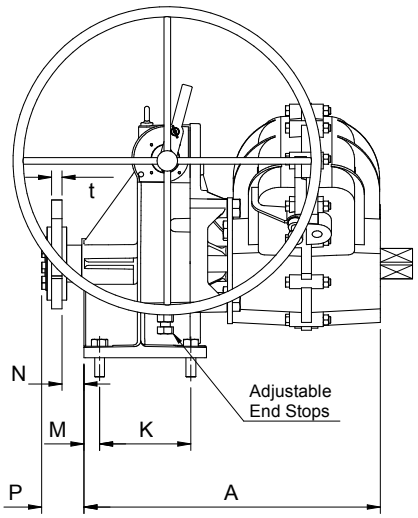
US Patent

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**

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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**



Ordering Codes

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

WHERE APPLICABLE:
S = STANDARD
Y = NO COST OPTION
E = EXTRA COST OPTION
(blank) = NOT AVAILABLE

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

V = HIGH TEMP
= STD

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

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

[ ][ ][ ] – D [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

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"

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

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

LEVER HOLE PATTERN

No.	DISTANCE FROM CENTRE C1	C2	C3	AVAILABLE ON MODELS: 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	

* Not available with ATEX approval

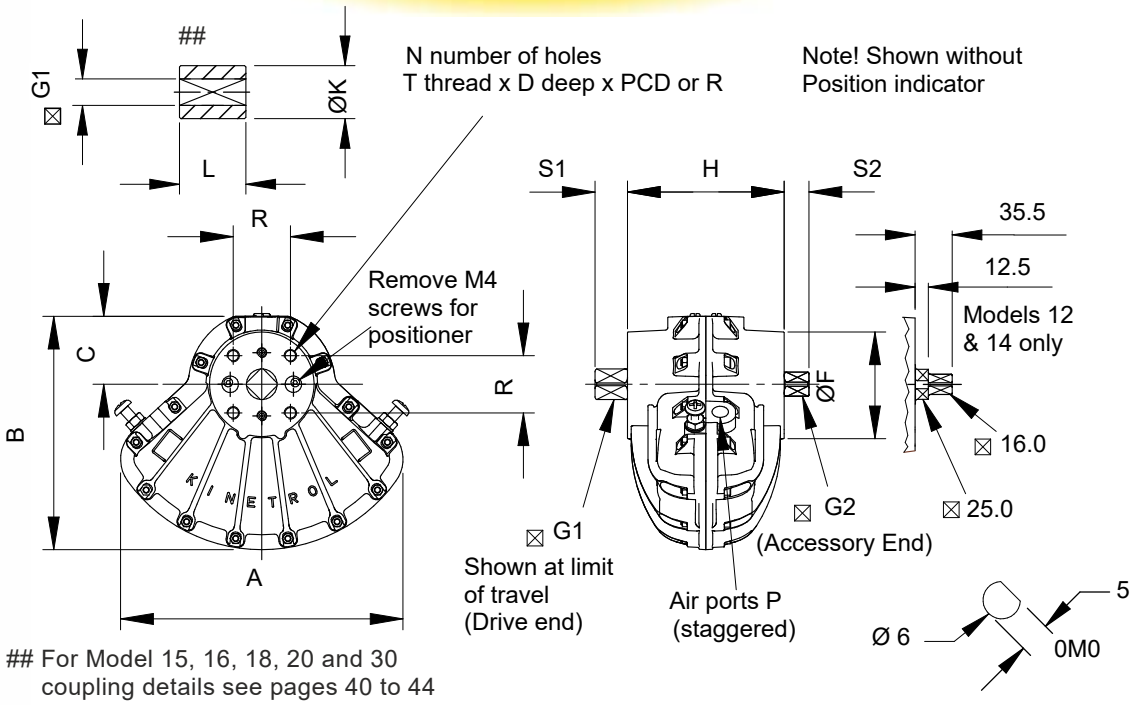
For more information see KF-535

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For torque outputs see pages 58-60

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Standard Actuator



For Model 15, 16, 18, 20 and 30 coupling details see pages 40 to 44

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	32.0	30.7	12.5	SEE ABOVE		36.0	22.0	10.0	10.0	4	M3	5.0	-	16.0**	M5	-	-	0.12
014	72.0	59.2	14.0	4.8	4.8	38.0	26.0	12.7*	7.0	4	M4	6.0	-	19.0**	G⅛	9.5	12.7	0.29
014P	73.5	60.0	14.0	4.8	4.8	38.0	26.0	12.7*	7.0	4	Ø4.2	UNIQUE MOUNTING CRS.			G⅛	9.5	12.7	0.35
024	91.0	76.0	24.1	8.0	8.0	50.0	29.0	10.0	10.0	4	M4	8.0	18.0	25.5	G⅛	16.0	20.0	0.46
034	113.0	91.4	28.0	9.0	9.0	60.0	33.6	12.0	12.0	4	M5	10.0	22.0	31.1	G⅛	18.0	22.0	0.73
054	137.0	113.0	33.6	9.5	9.5	67.0	45.0	13.0	13.0	6	M5	10.0	-	34.9	G⅛	19.0	25.4	1.28
074	178.0	146.0	43.4	16.0	16.0	100.0	64.0	20.0	20.0	4	M8	16.0	36.0	50.9	G¼	32.0	40.0	3.30
084	208.0	167.0	46.3	17.0	16.0	110.0	65.0	19.0	20.0	4	M8	16.0	49.5	70.0	G¼	36.0	42.0	2.78
094	227.0	187.0	54.7	19.0	16.0	126.0	84.0	26.0	20.0	4	M10	20.0	46.0	65.0	G¼	38.0	50.0	4.16
124	294.0	239.0	68.0	25.0	16.0	156.0	100.0	31.0	35.5	4	M12	24.0	55.0	77.8	G⅜	50.0	56.0	7.50
144	380.0	308.0	84.0	28.6	16.0	200.0	128.0	38.0	35.5	4	M16	28.5	69.9	98.8	G½	57.0	63.5	14.10
154	433.0	353.0	101.0	36.0	16.0	245.0	170.0	41.0	35.5	4	M16	28.5	99.0	140.0	G½	70.0	80.0	22.40
164	530.0	427.0	125.0	41.0	41.0	274.0	175.0	55.0	55.0	4	M24	38.0	108.0	152.7	G½	85.0	90.0	39.77
184	680.0	554.0	162.0	57.0	57.0	360.0	286.0	78.0	78.0	4	M30	50.0	160.0	226.3	G¾	115.0	130.0	94.00
204	680.0	554.0	162.0	73.0	73.0	620.0	286.0	100.0	100.0	8	M30	50.0	160.0	226.3	G1	150.0	170.0	211.00
304	680.0	554.0	162.0	73.0	73.0	880.0	286.0	100.0	100.0	8	M30	50.0	160.0	226.3	G1	150.0	170.0	288.40

* INCLUDES PLAIN SHAFT Ø6.35 x 8 LONG

** HOLES ON CENTRE LINES

† All weights include coupling - except 103

Actuator English Units

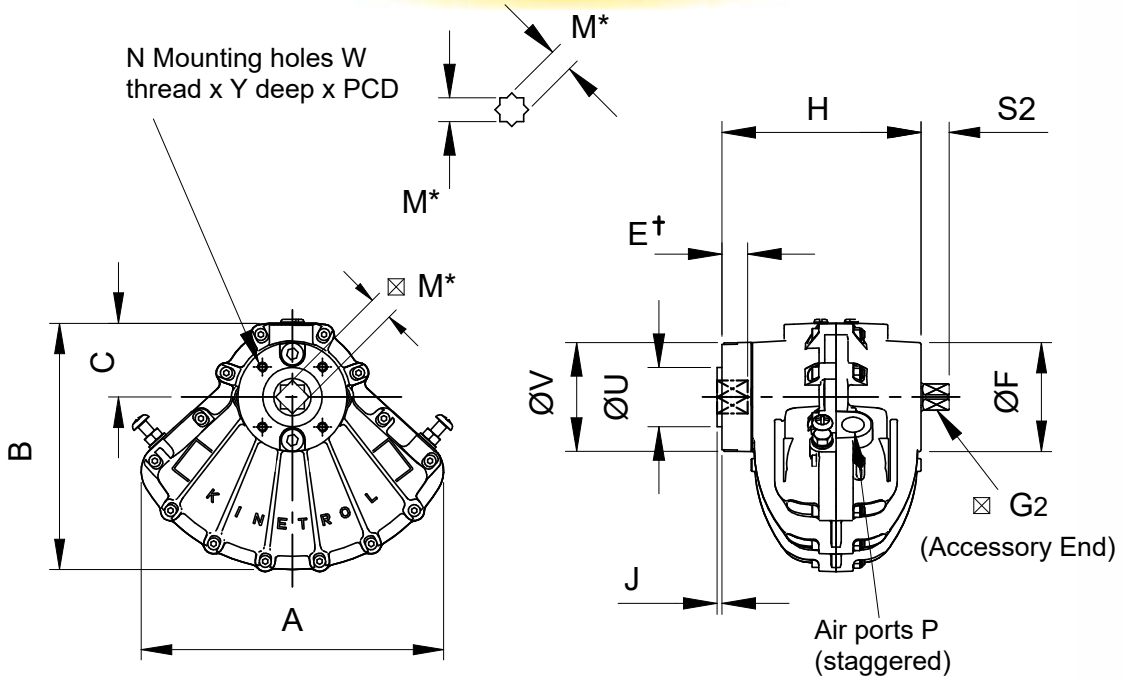
Actuator Model	A inch	B inch	C inch	G1 inch	G2 inch	H inch	ØF inch	S1 inch	S2 inch	N No.	T UNC	D inch	R inch	PCD inch	P NPT	ØK inch	L inch	Wt lb †
0M0	1.26	1.21	0.49	SEE ABOVE		1.42	0.87	0.39	0.39	4	M3	0.20	0.390	0.630	M5	-	-	0.26
017	2.83	2.33	0.55	0.187	0.19	1.50	1.02	0.50*	0.28	4	8-32	0.24	-	0.750	⅛	0.37	0.50	0.63
017P	2.89	2.36	0.55	0.187	0.19	1.50	1.02	0.50*	0.39	4	Ø0.17	UNIQUE MOUNTING CRS.			⅛	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	⅛	0.63	0.79	1.01
037	4.45	3.60	1.10	0.354	0.35	2.36	1.32	0.47	0.51	4	10-24	0.39	0.866	1.225	⅛	0.71	0.87	1.61
057	5.39	4.41	1.32	0.375	0.37	2.64	1.77	0.51	0.51	6	10-24	0.39	-	1.375	⅛	0.75	1.00	2.82
077	7.01	5.75	1.71	0.630	0.63	3.94	2.52	0.79	0.79	4	5/16-18	0.63	1.417	2.000	¼	1.26	1.57	7.26
087	8.21	6.57	1.82	0.669	0.63	4.33	2.56	0.75	0.79	4	5/16-18	0.63	1.949	2.756	¼	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	⅜-16	0.79	1.811	2.560	¼	1.50	1.97	9.15
107 #	9.00	7.40	2.20	0.866	0.63	6.89	-	0.94	0.79	4	⅜-16	0.63	2.839	4.016	¼	-	-	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	⅜	1.97	2.20	16.50
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	49.30
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	1⅛-7	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	1⅛-7	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	1⅛-7	1.97	6.300	8.910	1	5.91	6.69	634.50

FEMALE DRIVE

† All weights include coupling - except 107

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ISO/DIN Options



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	Y(Min) mm	J mm	E † mm	P Port	G2 mm	S2 mm
023	91.0	76.0	24.1	66.0	29.0	F03	9	46	25	36	4	M5	8	2	10	G⅛	8.0	10.0
033	113.0	91.4	28.0	74.0	33.6	F03	9	46	25	36	4	M5	8	2	10	G⅛	9.0	12.0
053	137.0	113.0	33.6	81.0	45.0	F04	11	54	30	42	4	M5	8	2	12	G⅛	9.5	13.0
073	178.0	146.0	43.4	117.0	64.0	F05	14	64	35	50	4	M6	10	3	16	G¼	16.0	20.0
083	208.0	167.0	46.3	133.0	65.0	F07	17	70	55	70	4	M8	16	3	19	G¼	16.0	20.0
093	227.0	187.0	54.7	146.0	84.0	F07	17	85	55	70	4	M8	13	3	19	G¼	16.0	20.0
103	229.0	188.0	57.0	175.0	-	F10	22	-	-	102	4	M10	16	-	24	G¼	16.0	20.0
123	294.0	239.0	68.0	180.5	100.0	F10	22	125	70	102	4	M10	16	3	24	G⅜	16.0	35.5
143	380.0	308.0	84.0	226.5	127.0	F12	27	150	85	125	4	M12	20	3	29	G½	16.0	35.5
163	530.0	427.0	125.0	380.0	175.0	F16	46	203	130	165	4	M20	32	4	48	G½	41.0	55.0
183	680.0	554.0	162.0	501.0	286.0	F25	55	300	200	254	8	M16	24	4	57	G¾	57.0	78.0
203	680.0	554.0	162.0	800.0	286.0	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

Actuator General Specification

Casing: Models 0M0, 01, 02, 03, 05 & 07 Pressure die cast ZL16 zinc alloy.
Models 08, 09, 10, 12, 14, 15, 16, 18, 20 & 30 Die cast or sand cast aluminium alloy.

Vane & output shaft: Models 0M0, 01, 02, 03 and 05 stainless steel. Models 07 to 30 SG iron, zinc plated.

Shaft bushes: PTFE coated bronze.

Seals: Moulded polyurethane. High and low temperature seals also available - contact Kinetrol.

Seal expanders: Stainless spring steel.

Couplings: Weldable mild steel, zinc plated.

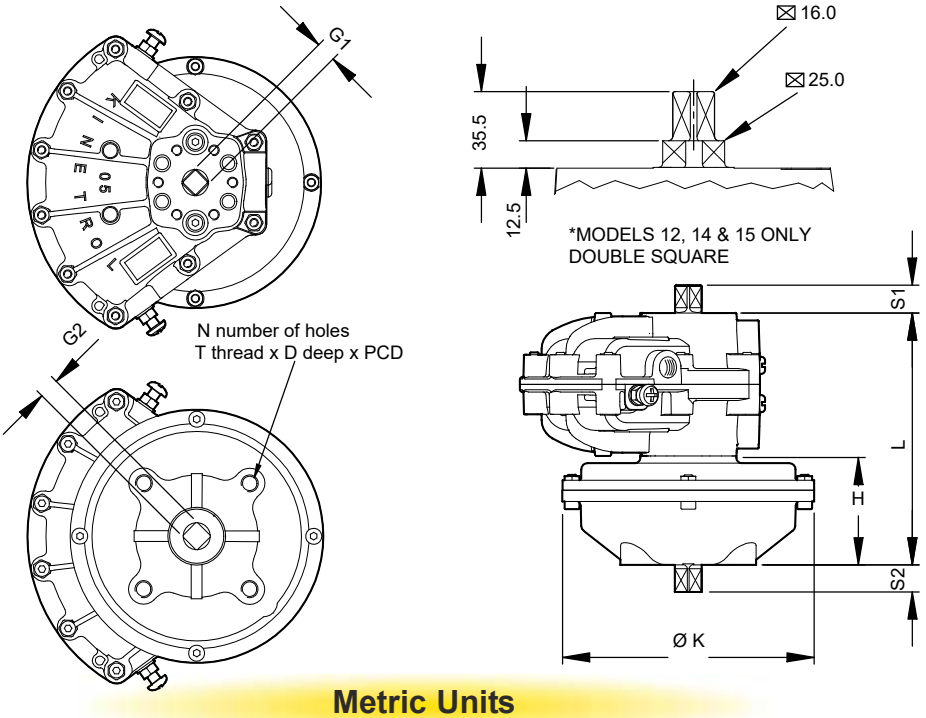
Working temperature range: -40°C (-40°F) to +80°C (176°F).
High temperature option: -20°C (-4°F) to +100°C (212°F).
Low temperature option: -54°C (-65.2°F) to +60°C (140°F) include option “W” at end of actuator coding.
*Contact Kinetrol for Atex Approval rating.

Maximum recommended working pressure: 100 psi (7 bar)

Maximum overload pressure: 150 psi (10 bar)

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Male Spring Return Actuator Dimensions



Metric Units

Actuator** Model	L mm	H mm	ØK mm	☒G1 mm	☒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	107	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	6.04
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	293	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

† All weights include coupling - except 103

English Units

Actuator** Model	L inch	H inch	ØK inch	☒G1 inch	☒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	13.32
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	11.54	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

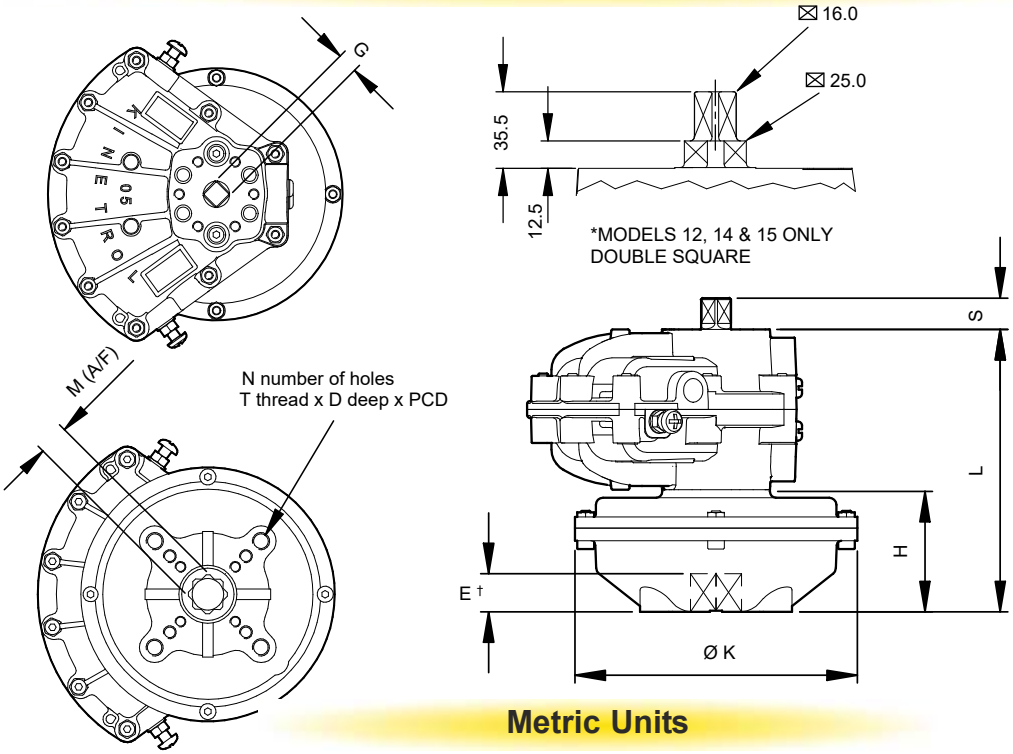
† All weights include coupling - except 107

ATEX UP TO CATEGORY 1 APPROVED

** Clockwise (120) and counterclockwise (130) units have identical dimensions

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ISO Flange Female 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	107	11	12	9.0	12	4	M5/M6	8/10	36/50
033F180	F04	103	43	107	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	293	136	258	22	35.5	16.0*	25	4	M10	16	102
123F180	F12	293	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	11.54	5.35	10.16	0.866	1.40	0.630*	0.98	4	3/8	0.63	4.02
127F180	F12	11.54	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

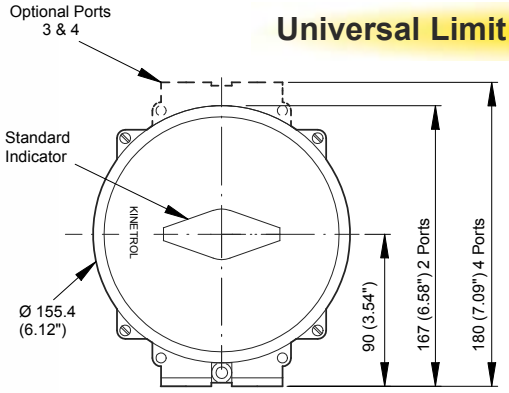


** Clockwise (120 or 180) and counterclockwise (130 or 190) units have identical dimensions

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

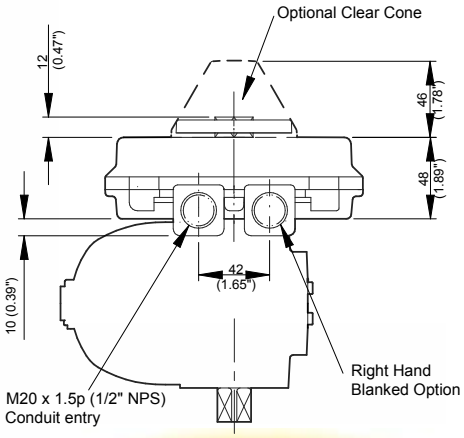
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Universal Limit Switch Box Dimensions

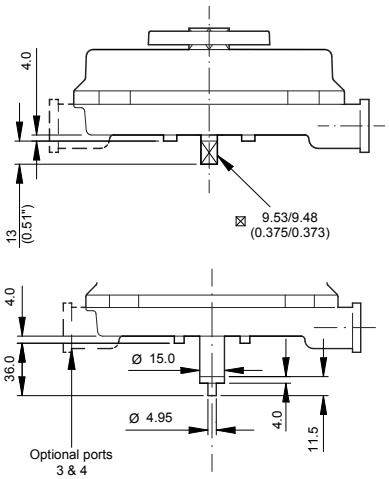


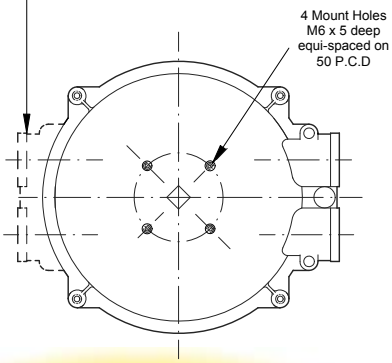
Standard Orientation Of Unit

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



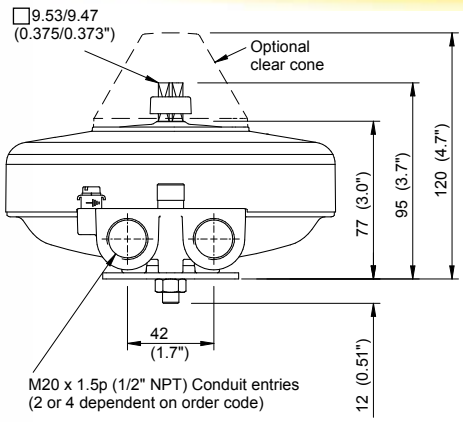
Direct Mount Option

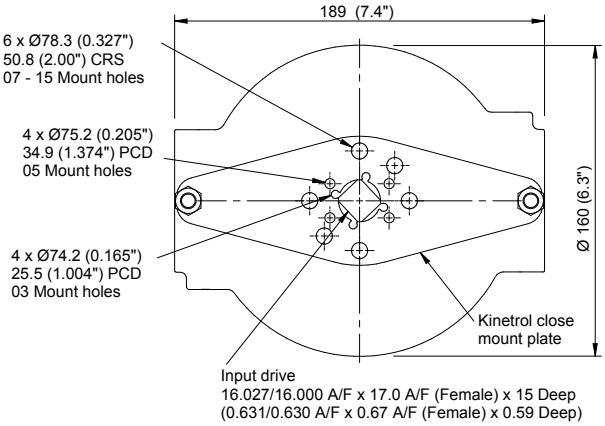




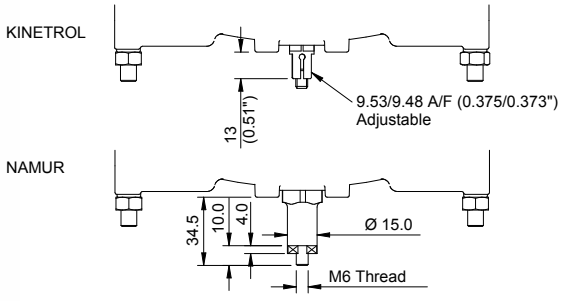
Kinetrol & Namur Discrete Mount Option

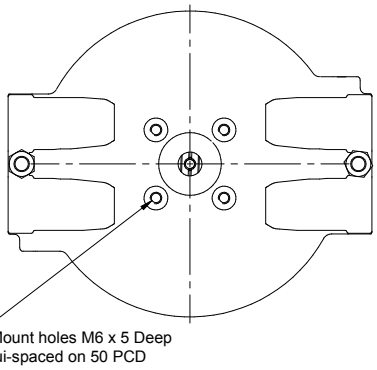
Explosion Proof Limit Switch Box Dimensions





Kinetrol Close Mount Option

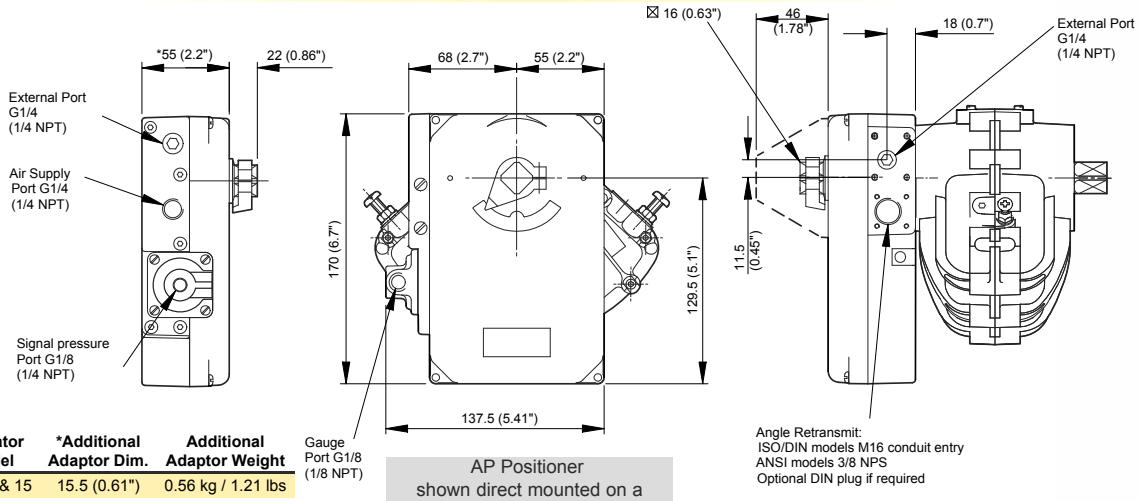




Discrete Mount Option

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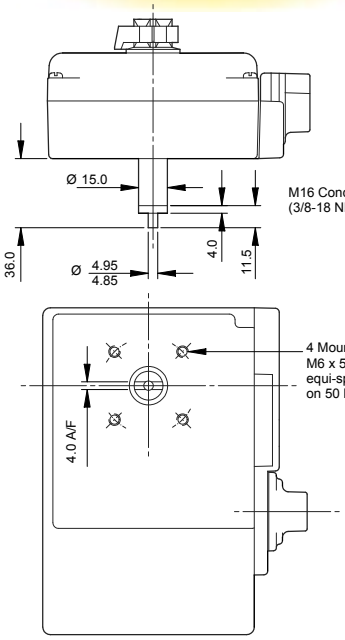
AP Positioner Dimensions



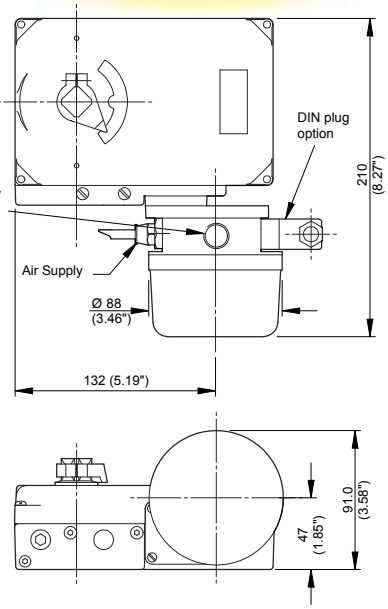
Actuator Model	*Additional Adaptor Dim.	Additional Adaptor Weight
12, 14 & 15	15.5 (0.61")	0.56 kg / 1.21 lbs

AP Positioner shown direct mounted on a Kinetrol 07 Actuator

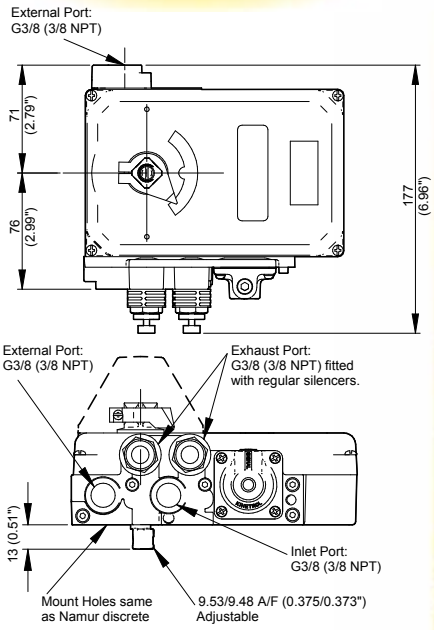
Namur Discrete Version



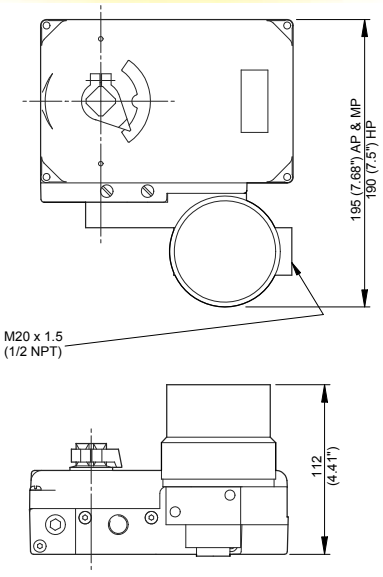
Non-Hazardous I/P Version



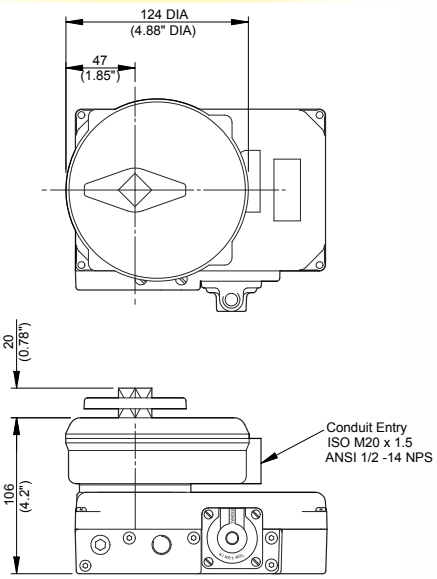
Kinetrol Discrete/ High Flow Version



Explosion Proof I/P Version



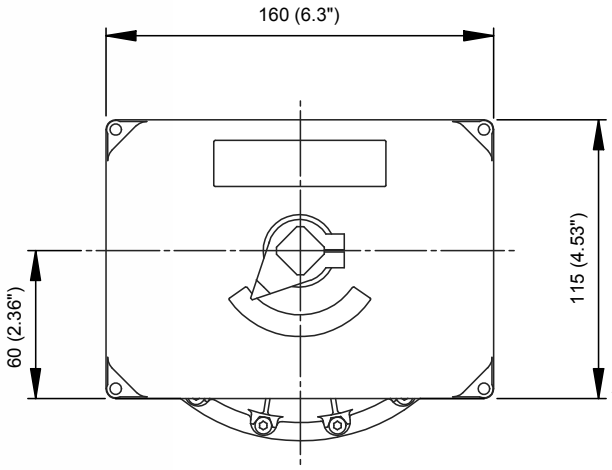
Switch Box Version

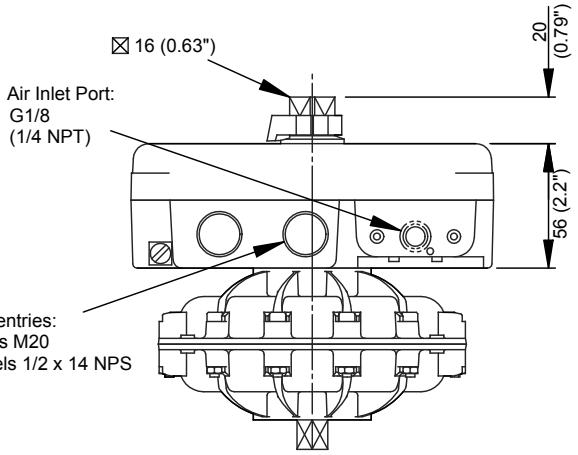


Where drawing information is not given - it is the same as the direct mount version

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EL Positioner Dimensions

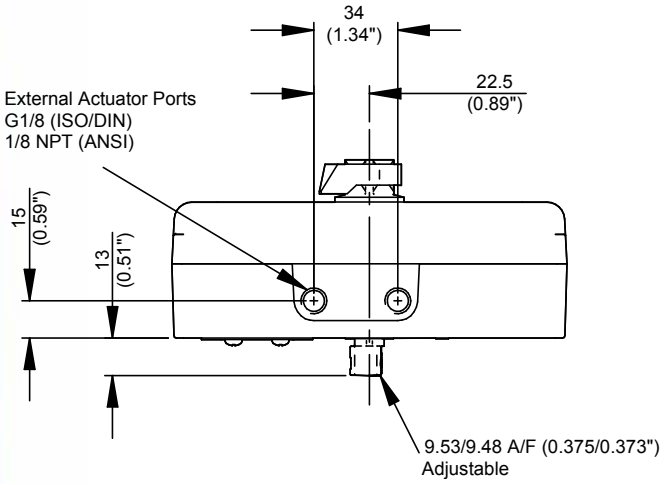


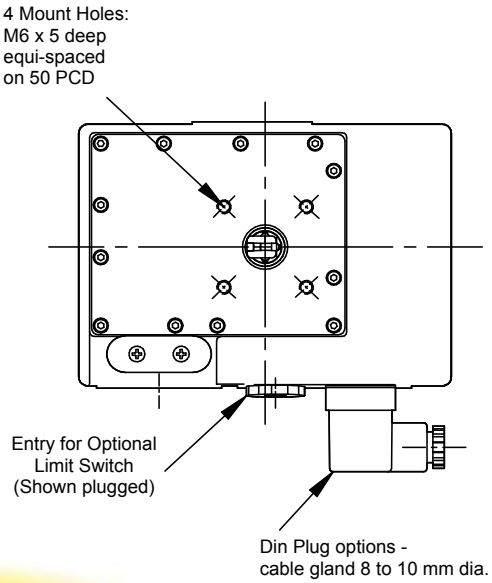


Actuator Model	*Additional Adaptor Dim.	Additional Adaptor Weight
12, 14 & 15	15.5 (0.61")	0.56 kg / 1.21 lbs

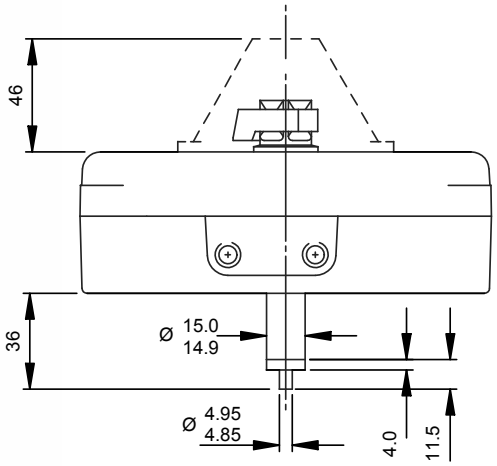
EL Positioner shown direct mounted on a Kinetrol 05 actuator

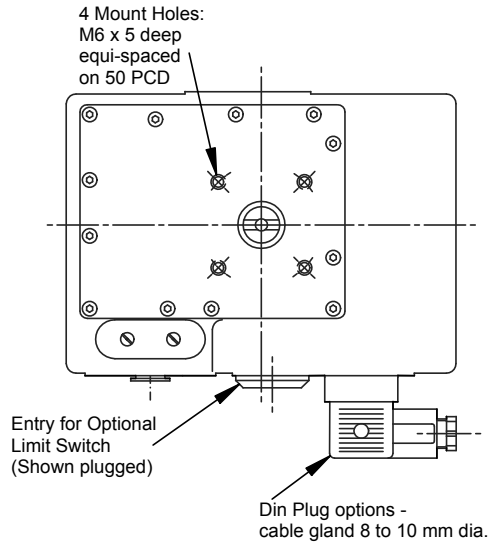
Kinetrol Discrete Version





Namur Discrete Version



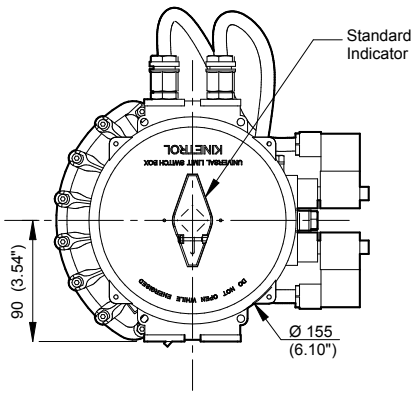


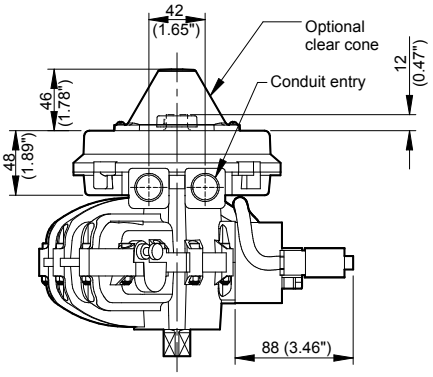
Where drawing information is not given - it is the same for both versions

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P3 On/Off Pneumatic Positioner Dimensions

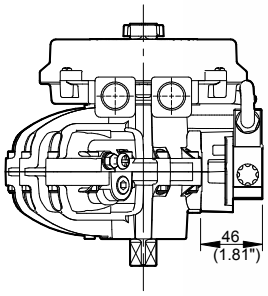
Fail free / Fail down / Spring return units





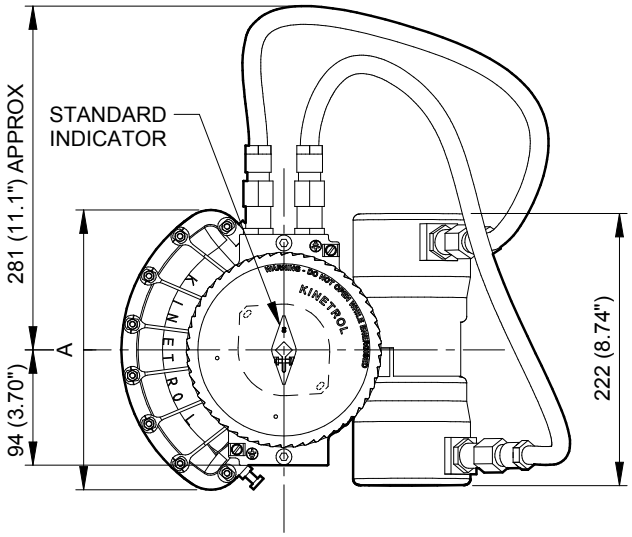
G 1/8 (1/8" NPT) PORT POSITION ON BLOCK DEPENDS ON ORDER SPECIFICATION

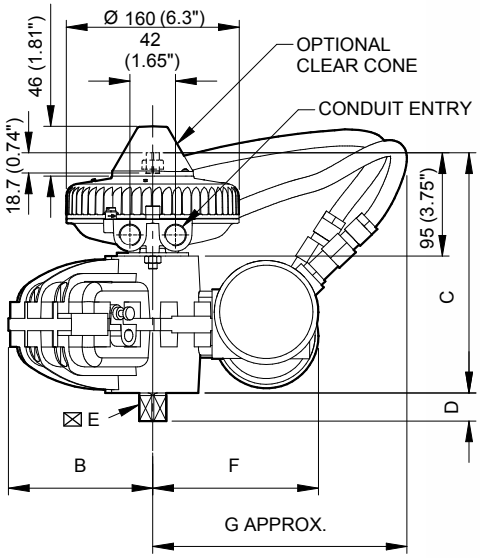
Fail hold unit



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

Explosion Proof P3 On/Off Positioner Dimensions



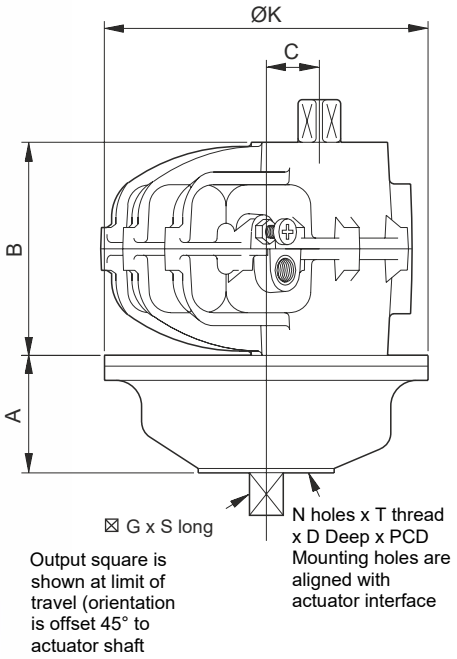


Model	A	B	C	D	⊠E	F	G
05	137.0 (5.39")	78.4 (3.09")	162 (6.4")	13.0 (0.51")	9.5 (0.375")	133 (5.2")	214 (8.4")
07	178.0 (7.01")	102.6 (4.04")	195 (7.7")	20.0 (0.79")	16.0 (0.630")	142 (5.6")	223 (8.8")
08	208.0 (8.19")	120.7 (4.75")	205 (8.1")	19.0 (0.75")	17.0 (0.669")	145 (5.7")	226 (8.9")
09	227.0 (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

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180 Degree Actuator Dimensions



Dimensions/Metric Units

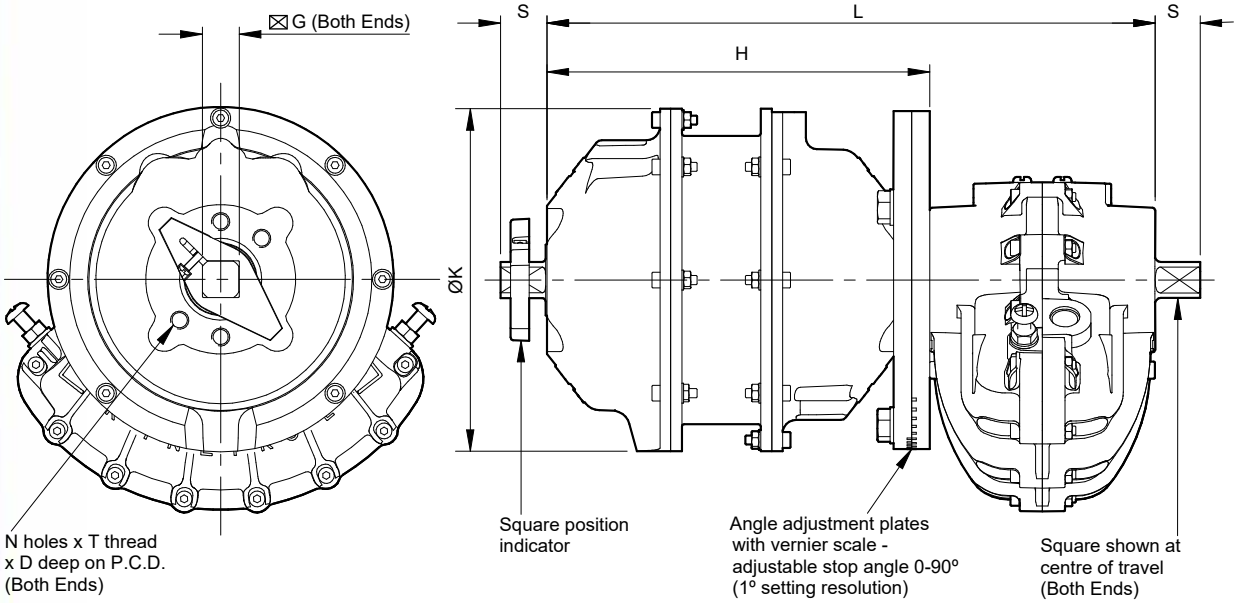
Actuator Model	A mm	B mm	C mm	K mm	G mm	S mm	N	T ISO	D mm	PCD mm	W kg
02 - 1001	32	50	12.5	73	8.0	10.0	4	M4	8.0	25.5	1.1
03 - 1001	36	60	20	108	9.0	12.0	4	M5	10.0	31.1	2
05 - 1001	42	67	20	119	9.5	13.0	6	M5	8.0	34.9	2.5
07 - 1001	59	100	25	152	16.0	20.0	4	M8	16.0	50.9	5.9
09 - 1001	70	126	35	200	19.0	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	13.01
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	7/8-9	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	11.5
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

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Double Acting Torque Outputs - Metric Units Nm

Actuator Model	Pressure (bar) 1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0
0M0-100	0.1	0.2	0.25	0.35	0.4	0.5	0.55	0.6	0.7	0.75	0.85	0.9
01-100	1.1	1.6	2.1	2.6	3.0	3.5	4.0	4.5	5.1	5.6	6.1	6.7
02-100	1.8	2.7	3.6	4.6	5.5	6.4	7.3	8.2	9.2	10.2	11.1	12.1
03-100	3.9	5.8	7.6	9.6	11.5	13.4	15.4	17.4	19.3	21.3	23.2	25.3
05-100	9.0	12.5	16.5	20.0	24.0	27.5	31.5	35.0	39.0	43.0	46.5	50.5
07-100	22.0	30.5	39.5	48.5	57.5	66.5	76.0	85.5	95.0	105.0	114.0	124.0
08-100	38.7	53.2	67.7	82.3	96.8	111.4	125.9	140.5	155.0	169.0	184.1	198.7
09-100	46	64	83	102	121	140	159	179	199	220	241	261
10-100	80	111	141	172	202	232	263	294	325	355	385	416
12-100	103	147	190	232	275	319	360	403	446	490	532	575
14-100	265	360	460	560	660	760	870	975	1080	1180	1280	1375
15-100	435	605	769	937	1109	1287	1457	1632	1808	1982	2153	2337
16-100	640	860	1090	1310	1530	1750	1980	2200	2420	2650	2870	3100
18-100	1250	1750	2250	2750	3250	3750	4300	4850	5400	5950	6400	6900
20-100	2480	3440	4400	5310	6290	7230	8160	9090	10020	10960	11890	12760
30-100	3720	5160	6600	7695	9435	10845	12240	13635	15030	16440	17835	19140

Double Acting Torque Outputs - English Units lbf ins

Actuator Model	Pressure (psi) 20	30	40	50	60	70	80	90	100
0M0-100	1	2	3	3.5	4.5	5	6	7	8
01-100	9	15	21	26	32	39	45	51	58
02-100	14	25	36	48	59	70	82	93	105
03-100	29	53	77	101	124	148	173	196	220
05-100	70	116	160	205	250	300	346	393	440
07-100	175	280	390	500	610	730	850	960	1080
08-100	311	488	666	826	1012	1208	1367	1563	1740
09-100	360	590	820	1050	1280	1530	1780	2020	2280
10-100	640	1020	1390	1760	2130	2500	2880	3250	3625
12-100	830	1350	1870	2400	2900	3440	3970	4480	5000
14-100	2150	3350	4550	5800	7000	8300	9600	10800	12000
15-100	3558	5602	7593	9700	11753	13895	15991	18125	20337
16-100	5200	7900	10600	13400	16100	18800	21600	24300	27000
18-100	10000	16100	22200	28300	34500	41300	48000	54500	60000
20-100	20000	32000	43000	54500	66000	78000	89000	100500	112000
30-100	30000	48000	64500	81750	99000	117000	133500	150750	168000

For spring return torques see pages 59/60

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Spring Return Torque Outputs - Metric Units Nm

Actuator Model	Position of air OR spring return stroke	Pressure (bar) 1.7	2.0	2.4	2.8	3.1	3.5	3.8	4.1	4.5	4.8	5.2	5.5
01-120	Start						1.5		1.7		1.9		2.3
	Finish						0.9		1.1		1.5		1.8
02-120	Start						3.0	3.4	3.6	3.8	4.2	4.4	4.7
	Finish						1.4	1.7	2.0	2.4	2.8	3.3	3.7
03-120-5600	Start	2.8	3.4	4.1	4.8	5.3	5.7						
	Finish	2.1	2.8	3.5	4.2	4.8	5.1	*5.1*	*5.1*	*5.1*	*5.1*	*5.1*	*5.1*
03-120	Start						6.3	6.9	7.5	8.1	8.9	9.5	10.3
	Finish						4.1	4.7	5.5	6.4	7.2	7.8	8.7
05-120	Start						13.0	14.1	15.3	16.4	18.1	19.2	20.9
	Finish						8.5	9.6	11.3	13.0	14.7	15.8	17.5
07-120-4000	Start	9.0	11.9	15.3	18.6	22.0							
	Finish	5.1	8.5	11.9	15.3	18.0	*18.0*	*18.0*	*18.0*	*18.0*	*18.0*	*18.0*	*18.0*
07-120	Start						30.5	33.9	37.3	40.7	43.5	46.9	50.8
	Finish						19.8	23.7	27.1	30.5	34.4	38.4	42.4
08-120	Start						52.7	57.2	61.7	67.2	72.7	77.0	81.3
	Finish						36.8	41.3	45.8	51.4	56.9	61.2	65.5
09-120-4200	Start	26.0	31.6	37.3	44.1	50.8							
	Finish	14.7	21.5	28.2	35.0	41.8	*41.8*	*41.8*	*41.8*	*41.8*	*41.8*	*41.8*	*41.8*
09-120	Start						61.0	67.8	74.6	81.9	89.3	96.6	104.0
	Finish						50.3	56.5	63.8	71.2	79.1	86.4	93.8
10-120-5800	Start	56.0	65.0	77.0	89.0	97.0	108.0						
	Finish	41.8	52.0	64.0	77.2	86.9	100.0	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*
10-120	Start						107.0	115.5	124.0	136.0	145.0	155.9	164.0
	Finish						78.0	90.0	102.0	114.6	124.0	134.9	143.0
12-120-4300	Start	54.0	68.9	83.6									
	Finish	42.9	57.6	72.3	*72.3*	*72.3*	*72.3*	*72.3*	*72.3*	*72.3*	*72.3*	*72.3*	*72.3*
12-120-4400	Start			89.3	103.0	117.0	132.0	147.0	161.0	176.0	191.0		
	Finish			66.1	80.2	94.9	110.0	124.0	139.0	154.0	168.0	168.0	168.0
12-120	Start						145.0	160.0	176.0	191.0	206.0	221.0	238.0
	Finish						111.0	127.0	142.0	158.0	174.0	189.0	204.0
14-120-4900	Start	192.0	220.0	249.0	288.0	322.0	356.0	390.0	424.0	469.0	497.0	529.0	529.0
	Finish	119.0	158.0	186.0	220.0	254.0	288.0	322.0	356.0	390.0	418.0	447.0	447.0
14-120	Start						374.0	408.0	442.0	479.0	517.0	554.0	588.0
	Finish						249.0	290.0	330.0	367.0	406.0	443.0	478.0
14-120-5000	Start	172.0	208.0	237.0									
	Finish	140.0	174.0	198.0	*198.0*	*198.0*	*198.0*	*198.0*	*198.0*	*198.0*	*198.0*	*198.0*	*198.0*
15-120	Start						614.0	680.0	752.0	801.0	848.0	914.0	962.0
	Finish						392.0	392.0	522.0	590.0	656.0	723.0	790.0
16-120-6100	Start	359.0	428.0	497.0									
	Finish	245.0	333.0	421.0	*421.0*	*421.0*	*421.0*	*421.0*	*421.0*	*421.0*	*421.0*	*421.0*	*421.0*
16-120-6000	Start			514.0	583.0	652.0	722.0						
	Finish			404.0	492.0	580.0	668.0	*668.0*	*668.0*	*668.0*	*668.0*	*668.0*	*668.0*
16-120	Start						864.0	939.0	1004.0	1097.0	1165.0	1256.0	1321.0
	Finish						576.0	660.0	742.0	832.0	906.0	1002.0	1081.0
18-120-7000	Start	807.0	970.0	1182.0	1260.0								
	Finish	484.0	736.0	967.0	1040.0	*1040.0*	*1040.0*	*1040.0*	*1040.0*	*1040.0*	*1040.0*	*1040.0*	*1040.0*
18-120	Start				1457.0	1637.0	1875.0	2053.0	2206.0	2426.0	2585.0	2800.0	2954.0
	Finish				874.0	1036.0	1250.0	1441.0	1630.0	1840.0	2011.0	2234.0	2417.0
20-120-8000	Start	1621.0	1940.0	2325.0	2692.0								
	Finish	1025.0	1362.0	1763.0	2203.0	*2203.0*	*2203.0*	*2203.0*	*2203.0*	*2203.0*	*2203.0*	*2203.0*	*2203.0*
20-120-7300	Start				2788.0	3072.0	3471.0	3739.0	4023.0				
	Finish				1958.0	2271.0	2632.0	2983.0	3291.0	*3291.0*	*3291.0*	*3291.0*	*3291.0*
20-120	Start								4121.0	4514.0	4798.0	5181.0	5456.0
	Finish								3046.0	3423.0	3732.0	4133.0	4464.0
30-120-7600	Start	2433.0	2878.0	3466.0	4038.0								
	Finish	1622.0	2127.0	2696.0	3304.0	*3304.0*	*3304.0*	*3304.0*	*3304.0*	*3304.0*	*3304.0*	*3304.0*	*3304.0*
30-120-8300	Start				4112.0	4554.0	5113.0						
	Finish				3118.0	3542.0	*4183.0*	*4183.0*	*4183.0*	*4183.0*	*4183.0*	*4183.0*	*4183.0*
30-120-7800	Start						5237.0	5676.0	6072.0	6648.0			
	Finish						3871.0	4304.0	4844.0	5440.0	*5440.0*	*5440.0*	*5440.0*
30-120	Start									6771.0	7179.0	7772.0	8184.0
	Finish									5134.0	5598.0	6200.0	6696.0

Torque outputs identical for counter-clockwise models. *Italic* figures apply to spring end torque only - air end torque will be greater.

For double acting torques see page 58

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Spring Return Torque Outputs - English Units lbf ins

Actuator Model	Position of air OR spring return stroke	Pressure (psi) 25	30	35	40	45	50	55	60	65	70	75	80
01-120	Start						13		15		17		20
	Finish						8		10		13		16
02-120	Start						27	30	32	34	37	39	42
	Finish						12	15	18	21	25	29	33
03-120-5600	Start	25	30	36	42	47	50						
	Finish	19	25	31	37	42	45	*45*	*45*	*45*	*45*	*45*	*45*
03-120	Start						56	61	66	71	79	84	91
	Finish						37	41	49	56	64	69	77
05-120	Start						115	125	135	145	160	170	185
	Finish						75	85	100	115	130	140	155
07-120-4000	Start	80	105	135	165	195							
	Finish	45	75	105	135	160	*160*	*160*	*160*	*160*	*160*	*160*	*160*
07-120	Start						270	300	330	360	385	415	450
	Finish						175	210	240	270	305	340	375
08-120	Start						466	506	546	595	644	682	720
	Finish						326	366	406	455	504	542	580
09-120-4200	Start	230	280	330	390	450							
	Finish	130	190	250	310	370	*370*	*370*	*370*	*370*	*370*	*370*	*370*
09-120	Start						540	600	660	725	790	855	925
	Finish						445	500	565	630	700	765	830
10-120-5800	Start	500	587	683	760	886	953						
	Finish	366	472	568	645	780	847	*847*	*847*	*847*	*847*	*847*	*847*
10-120	Start						950	1025	1100	1190	1280	1365	1450
	Finish						690	795	900	1000	1100	1185	1270
12-120-4300	Start	480	610	740									
	Finish	380	510	640	*640*	*640*	*640*	*640*	*640*	*640*	*640*	*640*	*640*
12-120-4400	Start			790	910	1040	1170	1300	1430	1560	1690		
	Finish			585	710	840	970	1100	1230	1360	1490	1490	1490
12-120	Start						1280	1415	1555	1690	1825	1960	2110
	Finish						985	1125	1260	1400	1540	1670	1810
14-120-4900	Start	1700	1950	2200	2550	2850	3150	3450	3750	4150	4400	4680	4680
	Finish	1050	1400	1650	1950	2250	2550	2850	3150	3450	3700	3960	3960
14-120	Start						3310	3610	3915	4240	4580	4900	5200
	Finish						2205	2570	2920	3250	3595	3920	4230
14-120-5000	Start	1520	1840	2100									
	Finish	1240	1540	1750	*1750*	*1750*	*1750*	*1750*	*1750*	*1750*	*1750*	*1750*	*1750*
15-120	Start						5434	6018	6656	7089	7505	8090	8514
	Finish						3469	4098	4620	5222	5806	6399	6992
16-120-6100	Start	3178	3790	4401									
	Finish	2172	2950	3729	*3729*	*3729*	*3729*	*3729*	*3729*	*3729*	*3729*	*3729*	*3729*
16-120-6000	Start			4551	5163	5774	6386						
	Finish			3579	4357	5136	5914	*5914*	*5914*	*5914*	*5914*	*5914*	*5914*
16-120	Start						7646	8310	8885	9708	10310	11116	11691
	Finish						5098	5841	6567	7363	8018	8868	9567
18-120-7000	Start	7142	8585	10461	11151								
	Finish	4283	6514	8558	9204	*9204*	*9204*	*9204*	*9204*	*9204*	*9204*	*9204*	*9204*
18-120	Start				12894	14487	16594	18169	19523	21470	22877	24780	26143
	Finish				7735	9169	11063	12753	14426	16284	17797	19771	21390
20-120-8000	Start	14346	17169	20576	23824								
	Finish	9071	12054	15603	19497	*19497*	*19497*	*19497*	*19497*	*19497*	*19497*	*19497*	*19497*
20-120-7300	Start				24674	27187	30718	33090	35604				
	Finish				17328	20098	23293	26400	29125	*29125*	*29125*	*29125*	*29125*
20-120	Start								36471	39949	42462	45852	48286
	Finish								26957	30294	33028	36577	39506
30-120-7600	Start	16797	25470	30674	35736								
	Finish	9394	18824	23860	29240	*29240*	*29240*	*29240*	*29240*	*29240*	*29240*	*29240*	*29240*
30-120-8300	Start				36391	40303	45250						
	Finish				27594	31347	*37020*	*37020*	*37020*	*37020*	*37020*	*37020*	*37020*
30-120-7800	Start						46347	50233	53737	58835			
	Finish						34258	38090	42869	48144	*48144*	*48144*	*48144*
30-120	Start									59923	63693	68782	72428
	Finish									45436	49542	54870	59260

Torque outputs identical for counter-clockwise models. *Italic* figures apply to spring end torque only - air end torque will be greater.

For double acting torques see page 58



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:

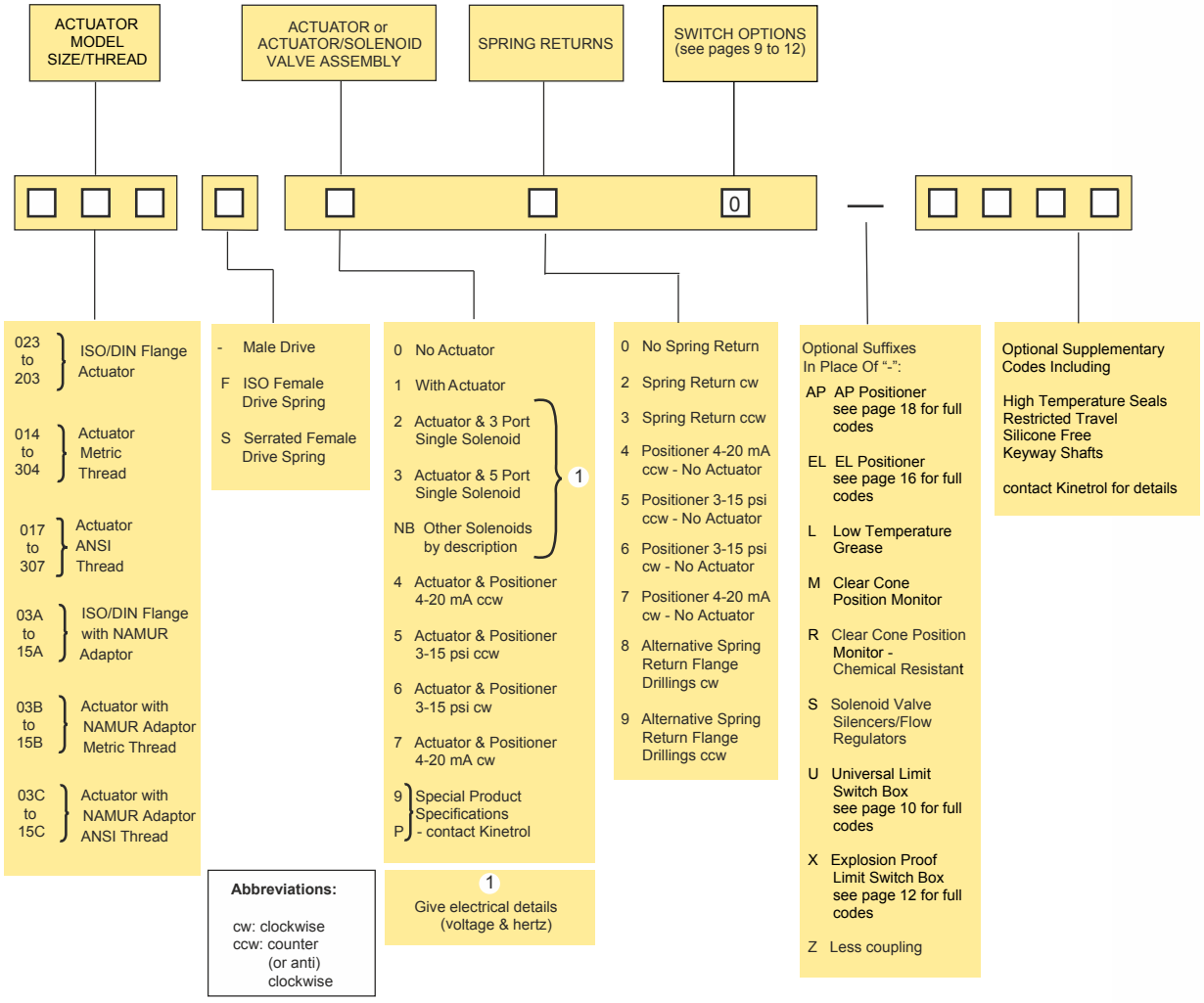
- tension on wire/paper/film/textile handling equipment
- the rate of descent of curtains, shutters, etc.
- oscillations of pendulums, gimbals, etc.
- jerk on camera & simulator systems
- vibration on transfer machinery.

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



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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 25
Damper Drive ordering codes - see page 48
Female Drive Spring Unit ordering codes - see page 7
Geared Manual Override ordering codes - see page 46
ISO Adaptor ordering codes - see page 8
Low Pressure Air Application ordering codes - see page 6
Manual & Fire Fail-Safe Unit ordering codes - see page 27
P3 On/Off Positioner ordering codes - see page 22
Spring to Centre ordering codes - see page 24

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