Kinetrol EL Electropneumatic Positioner

ATEX Up to Category 1

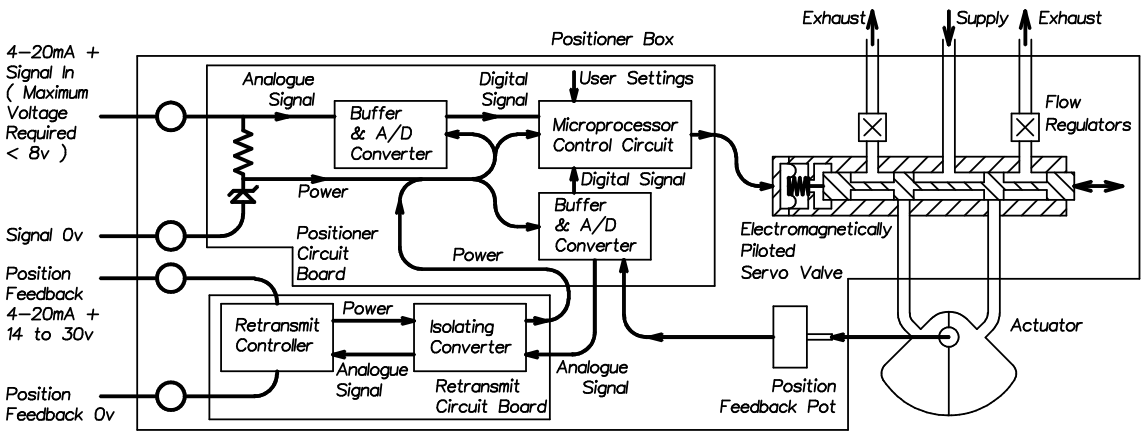
Operation

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

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

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

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



Simplified Functional Diagram of EL Positioner

Kinetrol EL Electropneumatic Positioner

Application

The EL positioner can be directly mounted on standard Kinetrol actuator models 05 to 15, both double acting and spring return, giving an assembly with no external piping, wiring or mechanical connections and the best backlash free control. Mount kits are available for models 16,18, 21, 30 and 60 actuators.

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

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

Travel Times

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

Model	05	07	08	09	10	12	14	15
Deg/Sec	129	65	38	33	22	15	6	4.3

*Externally piped from EL positioner to actuator

Model	7*	8*	9*	10*	12*	14*
Deg/Sec	76	46	38	28	18	8.6
Model	**15***	**16***	**18***	**21***	**30***	**60***
Deg/Sec	4.3	4.1	2	1	0.7	0.3

Specification

Air Supply	instrument quality (dry, clean, oil free Class 6.4.4 ISO 8573-1:2010), 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°C to +70°C (-4°F to +158°F)
Adjustments	low & high points (define range), proportional gain, velocity proportional setpoint advance (damping)
Weight	2.95 kg / 6.5 lb
Materials	case and cover - zinc alloy spool and liner - stainless steel
Finish	epoxy thermoset powder
Enclosure Rating	IP65/NEMA 4X IP67/NEMA 6 ***

*** With exhaust manifold fitted & exhaust ported to dry area. Monitor & exhaust manifold required to achieve IP67/NEMA 6

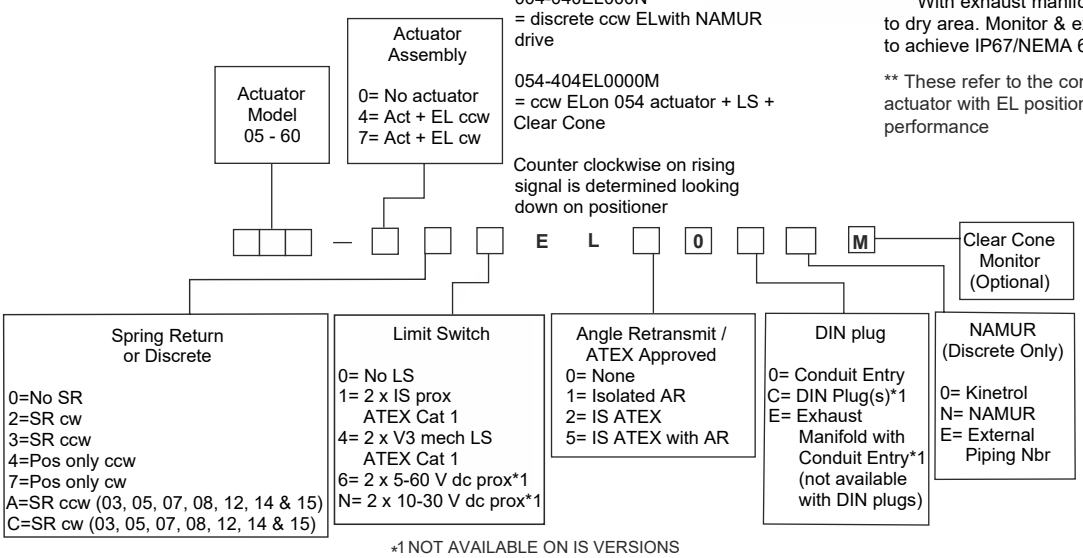
** These refer to the combination of Kinetrol actuator with EL positioner - not just the positioner performance

Ordering Codes

Examples:
004-040EL000N
= discrete ccw ELwith NAMUR drive

054-404EL0000M
= ccw ELon 054 actuator + LS + Clear Cone

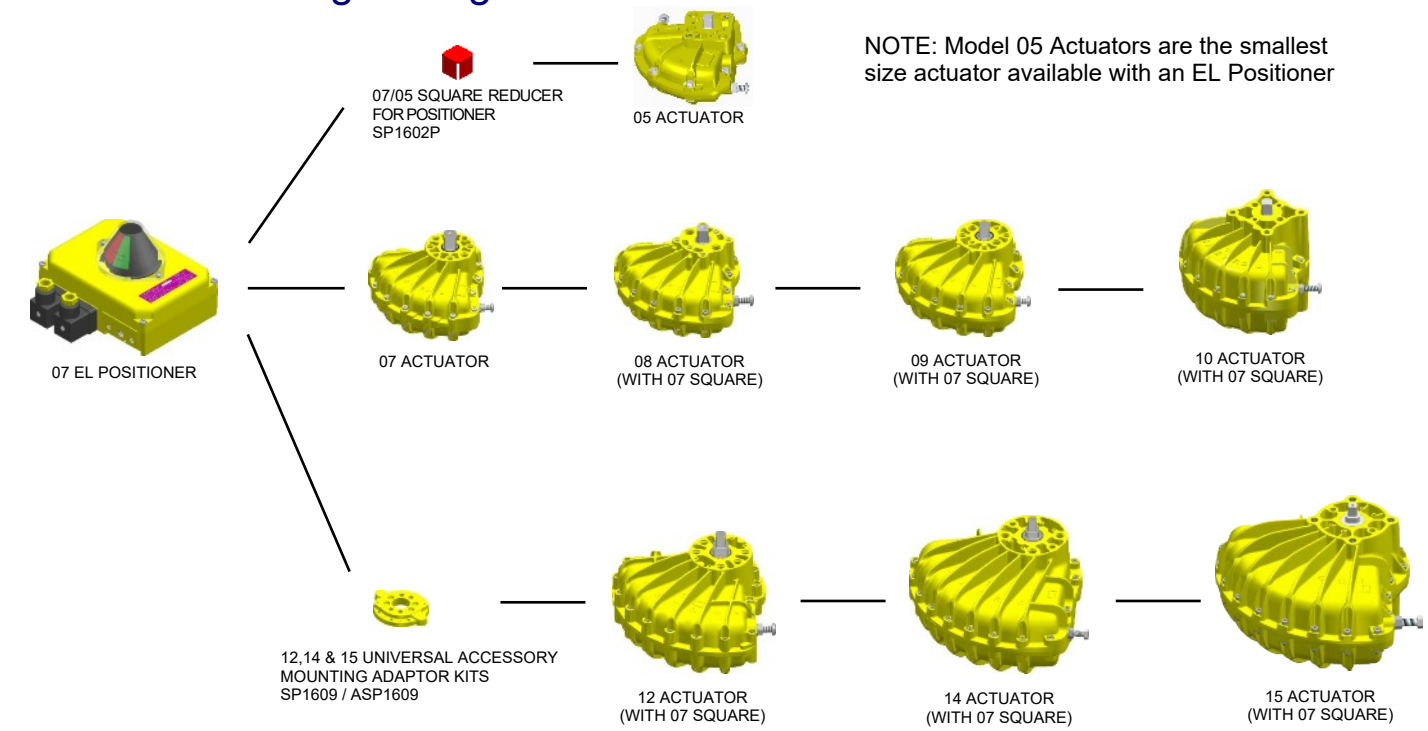
Counter clockwise on rising signal is determined looking down on positioner



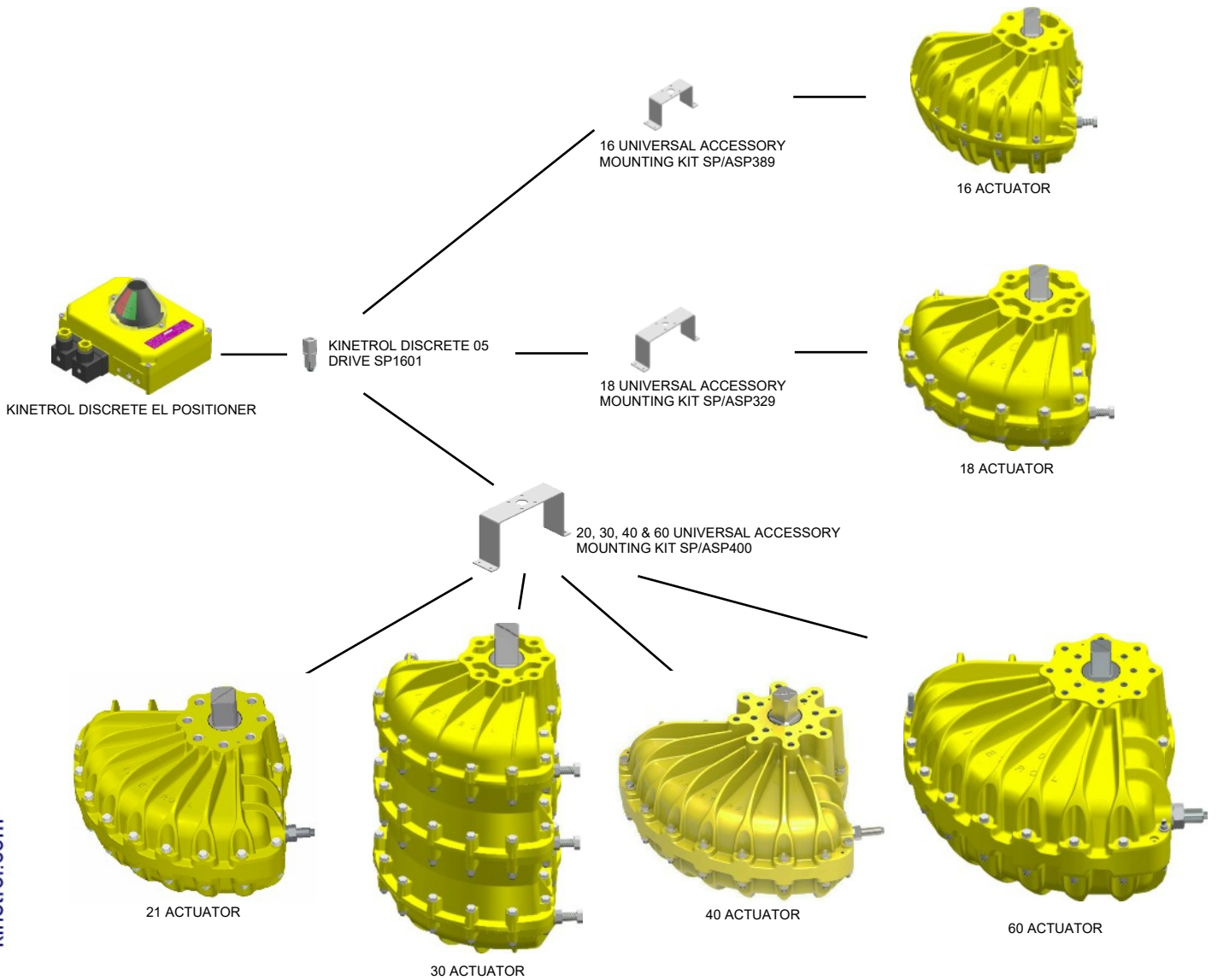
*1 NOT AVAILABLE ON IS VERSIONS

Kinetrol EL Electropneumatic Positioner

Modular Mounting Arrangement

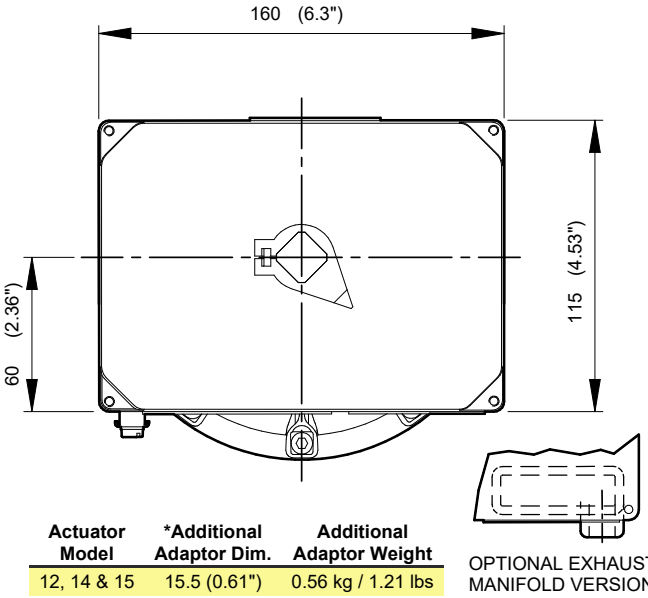


NOTE: Model 05 Actuators are the smallest size actuator available with an EL Positioner



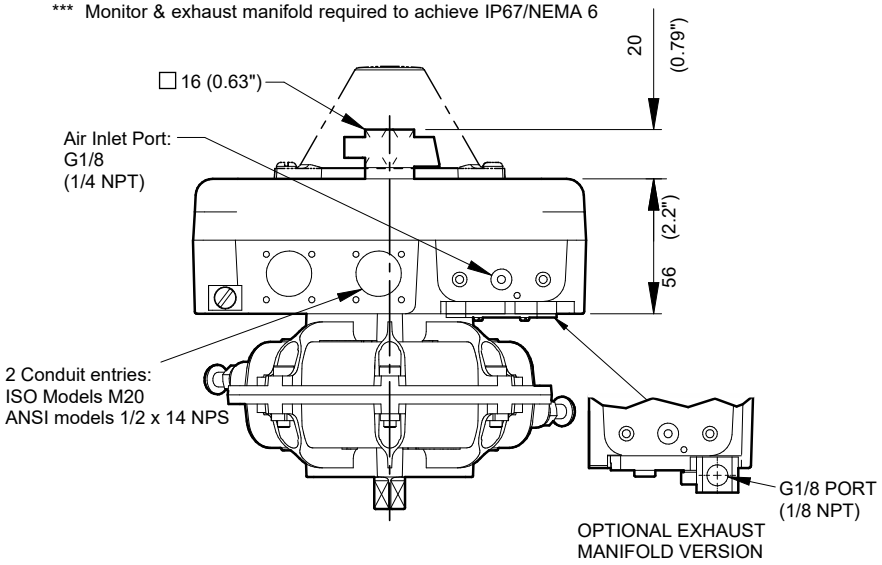
Kinetrol EL Electropneumatic Positioner

EL Positioner Dimensions



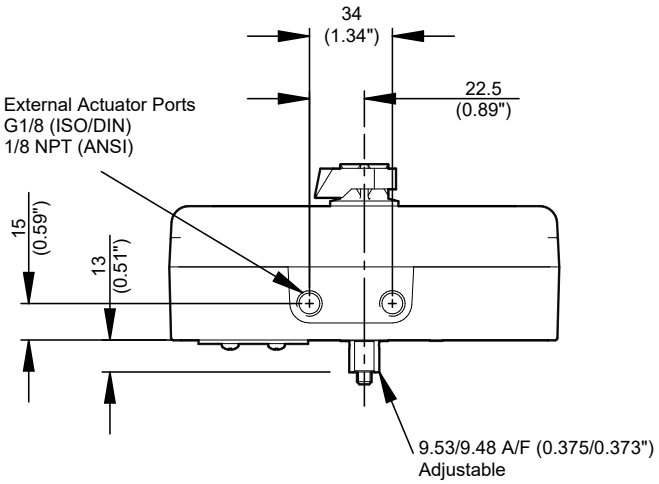
Actuator Model	*Additional Adaptor Dim.	Additional Adaptor Weight
12, 14 & 15	15.5 (0.61")	0.56 kg / 1.21 lbs

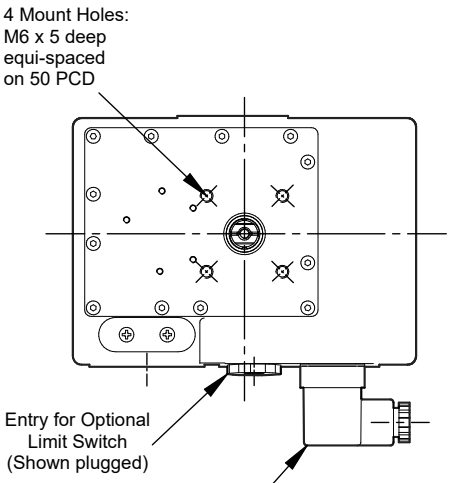
*** Monitor & exhaust manifold required to achieve IP67/NEMA 6



EL Positioner
shown direct mounted on a
Kinetrol 05 actuator

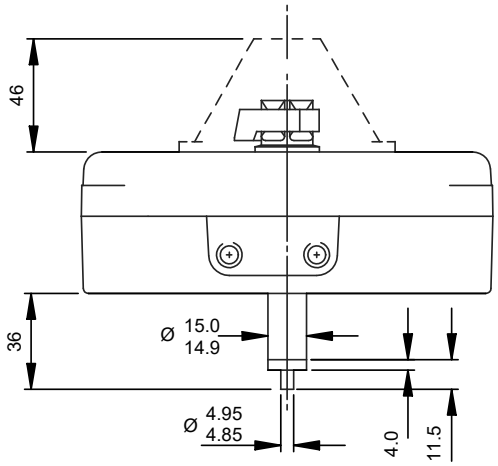
Kinetrol Discrete Version

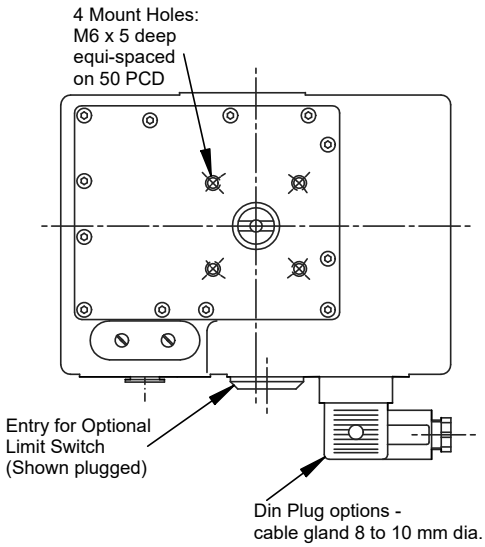




Din Plug options - shown 90v out of true position ISO/DIN models cable gland (8 to 10 mm dia) ANSI models ½ NPT cable entry (for use with flexible conduit).

Namur Discrete Version





Din Plug options -
cable gland 8 to 10 mm dia.

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