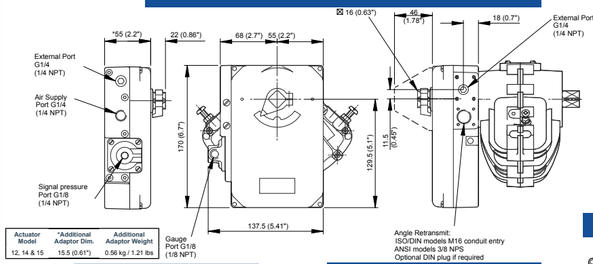
Key Features

- FAST, SMOOTH AND ACCURATE RESPONSE
  From stepless cam drive and proportional spool valve.
- UNIVERSAL APPLICATION
  Mount on any quarter - turn or linear actuator, single or double acting, in any orientation. Adjustable span may be set anywhere within the 100° range.
- HIGH FLOW / GAIN VERSIONS
  93 nl/min (3.3 scfm), 283 nl/min (10 scfm) and 764 nl/min (27 scfm) models are available.
- INTEGRAL OPTIONS – EASILY RETROFITTED MODULES
  – two wire 4–20mA angle retransmit inside enclosure
  – mechanical or inductive position indication switches (for general and hazardous areas) in IP65 box
  – general and hazardous area 4–20mA I/P converter modules (intrinsically safe and NEMA 7 explosion proof options available)
  – high visibility Clear Cone angle monitor on positioner and switch box versions
  – DIN plug for external retransmit connection
  – High Temperature seals for 100°C ambient applications.
- SIMPLE, TIME SAVING FIELD SETUP
  Easy calibration and quick reversal of rotational sense without special tools or additional parts. Fast change of response characteristic cams.
- COMPACT AND ROBUST METAL HOUSING
  Weatherproof sealed and epoxy painted for harsh industrial environments.
- ATEX CATEGORY 1 APPROVAL
  Up to Category 1 approval on most versions, Category 2 approval on some others (Actuators also approved).
- PROVEN FORCE BALANCE SYSTEM
  Employing unique straight - line mechanism – minimising wear, backlash and friction. Positioning is unaffected by supply pressure fluctuations.
- VISUAL POSITION INDICATION
  External pointer / scale or high visibility Clear Cone angle monitor plus internal angle scale for field setup.
- INSTALLATION FLEXIBILITY
  Mount on any actuator using VDI / VDE 3845 NAMUR drive, or Kinetrol male square, with mounting brackets, or direct mount (with integral porting) to Kinetrol actuators.
- VIBRATION AND SHOCK RESISTANT
  Low mass spool and robust mechanism provide 4G / 1OOHz industrial vibration tolerance in any attitude.
- ADAPTATIONS AND ACCESSORIES
  Consult Kinetrol for:
  – split range or customized cams
  – special failure modes eg fail-freeze
  – filters, regulators and gauges
  – mounting kits for rotary / linear drives.

AP Pneumatic Positioner

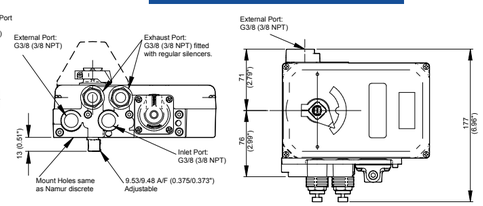
DIMENSIONS

AP Positioner shown direct mounted on a Kinetrol 07 Actuator

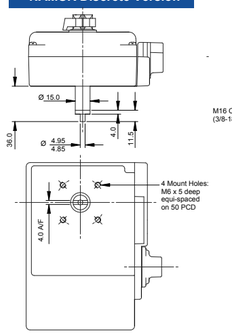


Actuator Model	*Additional Adaptor Dim.	Additional Adaptor Weight
12, 14 & 15	15.5 (0.61")	0.56 kg / 1.21 lbs

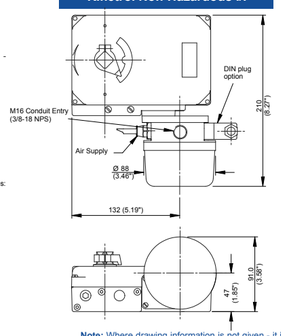
Kinetrol Discrete High Flow Version



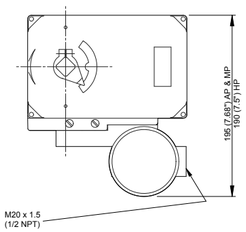
NAMUR Discrete Version

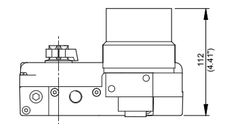


Kinetrol Non-Hazardous I/P

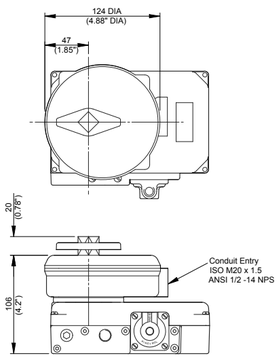


Explosion Proof I/P Version





Switch Box Version



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

SPECIFICATION

Air Supply	Instrument quality (dry, clean, oil free) 3.5 to 7.0 bar, 50 psi to 100 psi standard. Consult Kinetrol for low pressure application.
Signal	3 – 15 psi (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 1.0% of span
Flow rates	AP: 3.3 scfm (93 nl/min) @5.5 bar MP: 10.0 scfm (283 nl/min) @5.5 bar HP: 27.0 scfm (764 nl/min) @5.5 bar
Operating temperature range	-20° to 80°C standard -20° to 100°C High Temperature -40° to 80°C Low Temperature
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 Temperature) – silicone rubber (Low Temperature) Feedback spring – steel
Finish	Epoxy stove enamel
Enclosure rating	IP54
Output torque	Same as double acting or spring return actuator. When controlling fast movement of inertia loads contact Kinetrol.
Vibration tolerance	4G, 100Hz
I/P converter options	Non-hazardous Supply pressure 4 – 5.5 bar (60 – 80 psi)

Hazardous area options

Atex

AP without A/R or switches
– Ex II 1G IIC T4 c (-20°C ≤ Ta ≤ +80°C)

AP with A/R and/or switches
– Ex II 1 G Ex ia IIC T4 Ga (-20°C ≤ Ta ≤+80°C)

I/P intrinsically safe – Ex II 1G Ex ia IIC T4 Ta=-55ºC to +85ºC

I/P flameproof – Ex II 2G Ex d IIB+H2 T6 Ta=-40ºC to +75ºC
– Ex II 2D Ex tD A21 IP65 T85ºC Ta=-40ºC to +75ºC

I/P FM & CSA approved options

FM – Class 1 Division 1 explosion proof groups B, C, D intrinsically safe groups A, B, C, D, E, F, G

CSA – Class 1 Division 1 explosion groups B, C, G

KINETROL
Kinetrol is a registered trade mark

Kinetrol Ltd, Trading Estate, Farnham, Surrey. GU9 9NU, England.
Tel: 01252 733838 Fax: 01252 713042
E-mail: sales@kinetrol.com Web Site: www.kinetrol.com

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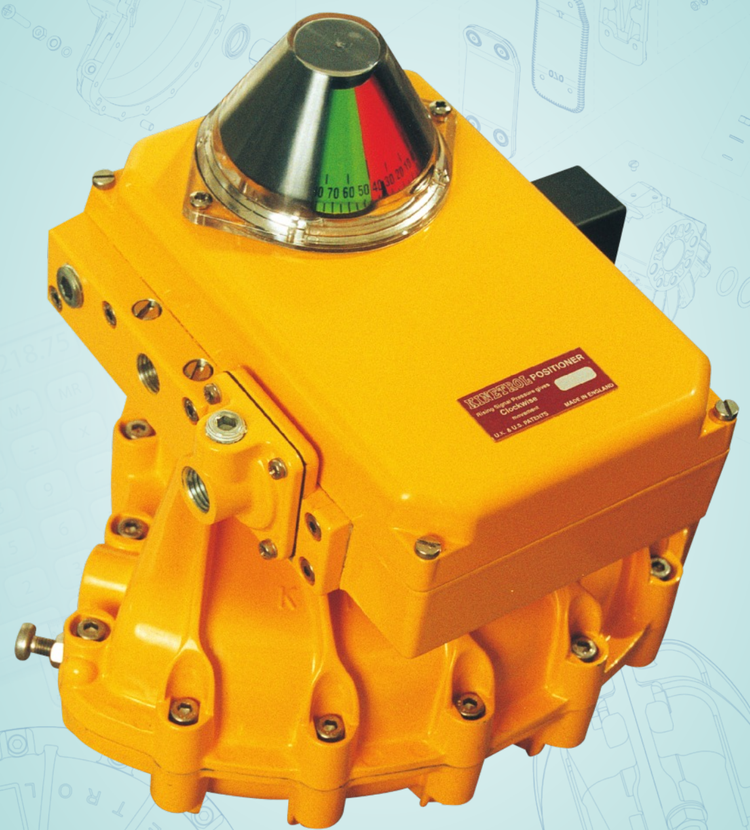
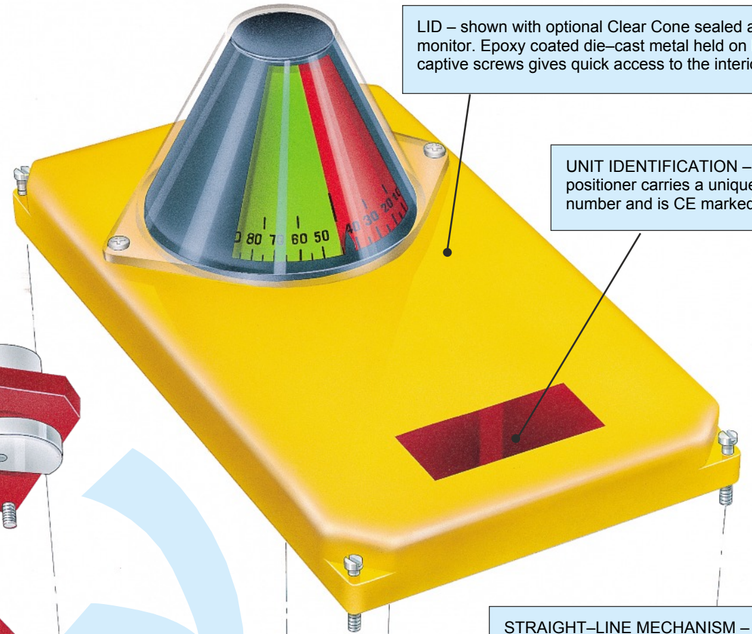


AP Pneumatic Positioner

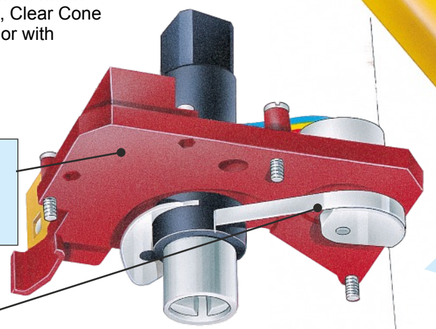
AP Pneumatic Positioner

The AP pneumatic positioner combines the smoothness and accuracy of Kinetrol's proven mechanical positioner technology (using a proportional spool valve driven by a simple, accurate and robust force balance mechanism) with new advances in convenience and simplicity of use, derived from the unique innovative design both of the internal mechanism and of the overall package.
The result is a positioner with unparalleled performance and real industrial robustness, sweet and easy to calibrate and characterize, and adaptable to the whole range of applications with its unbeatable list of options – high flow valves, direct mount or industry standard discrete mount housings, 4-20mA angle retransmit, limit switches, Clear Cone position monitor and I/P convertors (either simple or with various explosion proof options).



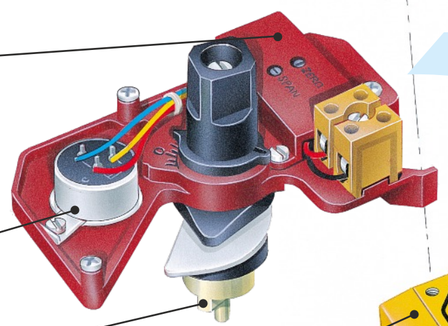
LID – shown with optional Clear Cone sealed angle monitor. Epoxy coated die–cast metal held on by four captive screws gives quick access to the interior.

UNIT IDENTIFICATION – each positioner carries a unique serial number and is CE marked.



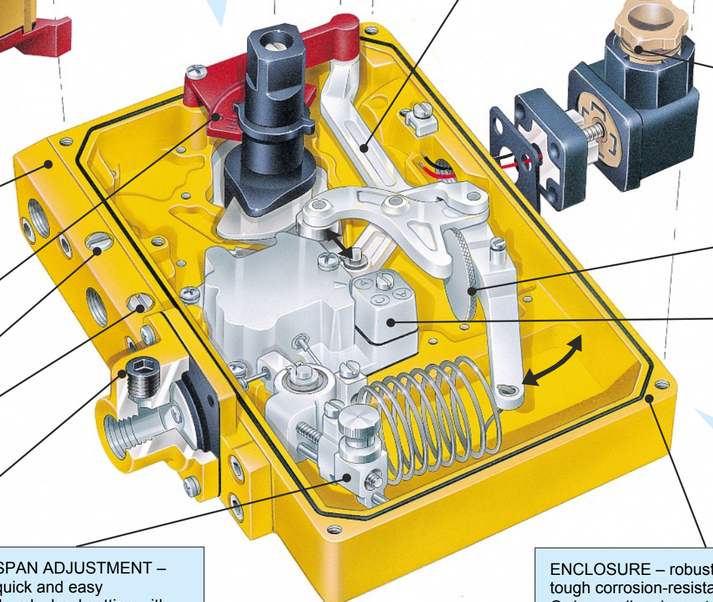
CARRIER PLATE ASSEMBLIES – integrated assemblies carrying the feedback shaft and cam plus angle retransmit drive and pot (when specified). Easily removed for conversion or maintenance.

FEEDBACK POT DRIVE – zero backlash, proven trouble free for life.



OPTIONAL ANGLE RETRANSMIT CIRCUIT – externally powered (8–30v DC) linear 4-20mA feedback, rangeable down to 30° for full 4-20mA span. Easily accessible zero and span adjustment.

RETRANSMIT POT – high quality conductive plastic servo–type with ball bearings. Proven long life and high precision.



STRAIGHT–LINE MECHANISM – unique geometry allows cw/ccw change over by simple cam inversion.

ACTUATOR INTERFACE – options include NAMUR standard (shown), Kinetrol male square or Kinetrol direct mount female square. Quick external conversion allows bracket mounting to any rotary or linear actuator.

INTERCHANGEABLE PORT PLATES – easily convertible for different flow rate options.

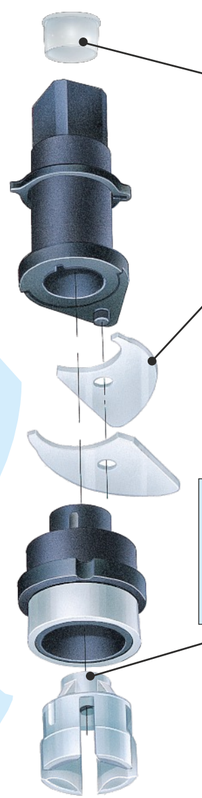
INTERNAL ANGLE SCALE – with adjustable indicator for easy field calibration.

EXHAUST SNUBBER SCREWS – allow travel speed reduction down to 1/3 x full speed, independently in each direction, by screwing in to restrict exhaust air flow.

GAUGE PORT – as standard.

SPAN ADJUSTMENT – quick and easy thumbwheel setting with slotted locking screw.

ENCLOSURE – robust die-cast metal with tough corrosion-resistant epoxy coating and O-ring sealing. Layout gives easy access to all adjustments on removal of lid.



SEALING CAP

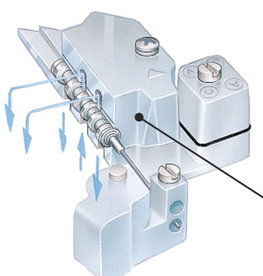
FEEDBACK CAM – quick and easy reversal (for rotational sense handing) or replacement (to change the response characteristic) of the cam is facilitated by a spring loaded retention device.

FEEDBACK SHAFT – innovative collet connection permits quick–fit/release of the actuator interface and eliminates backlash.

3–TERMINAL DIN PLUG – retrofittable option available for 4-20mA angle retransmit. Allows fully external connection with rapid connect/disconnect capability.

ZERO ADJUSTMENT – quick and easy thumbwheel setting with slotted locking screw.

AIRFLOW CHANGEOVER BLOCK – allows selection of direction in which positioner moves (for direct mount models).

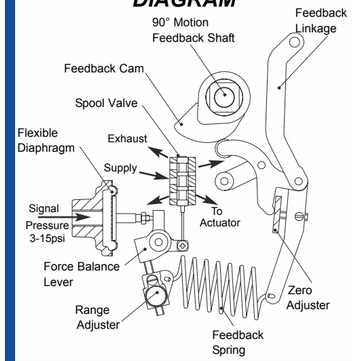


SPOOL VALVE – highly reliable, all metal, 5 port proportional valve controls the air flow. Three versions, with different flowrates, are easily interchangeable.

OPERATING PRINCIPLES

- The AP positioner is designed to drive a rotary or linear actuator to a position set by a 3-15 psi (0.2 - 1.0 bar) signal and hold it there until the signal changes.

SCHEMATIC FUNCTIONAL DIAGRAM



- 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 force on the diaphragm and moves the spool valve to its central 'hold' position.
- The relationship between the input signal and desired position (the 'characteristic') is determined by the cam profile. A linear 3-15 psi (0.2 - 1.0 bar) signal / 0-90° output movement cam is standard. Split range, fast opening, equal percentage or customized characteristic cams are available.

ORDERING CODES