Key Features

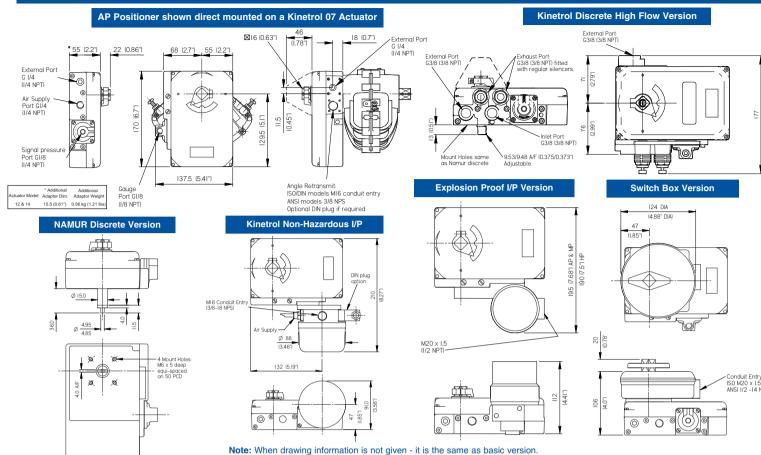
- FAST, SMOOTH AND ACCURATE RESPONSE From stepless cam drive and proportional spool valve.
- UNIVERSAL APPLICATION Mount on any quarter - turn or linear actuator, single or double acting, in any orientation. Adjustable span may be set anywhere within the 100° range.
- HIGH FLOW / GAIN VERSIONS 93 nl/min (3.3 scfm), 283 nl/min (10 scfm) and 764 nl/min(27 scfm) models are
- INTEGRAL OPTIONS EASILY RETROFITTED MODULES - two wire 4-20mA angle retransmit inside
 - 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 Weatherproof sealed and epoxy painted for harsh industrial environments.
- ATEX CATEGORY 1 APPROVAL Upto 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 flutuations.
- 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 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



SPECIFICATION

Air Supply instrument quality (dry, clean, oil free) 3.5 to 7.0 bar, 50psi to 100psi standard consult

Kinetrol for low pressure application

Signal 3 - 15psi (0.2 - 1.0 bar) standard consult

Kinetrol for split range, 6-30psi etc

Control Response 0 – 90° linear output standard consult Kinetrol for other characteristic cam options

better than 0.7% of span

Sensitivity Hysteresis better than 0.7% of span **Deviation from linearity** less than 1.0% of span

AP: 3.3 scfm (93 nl/min) @5.5 bar **Flowrates** MP: 10.0 scfm (283 nl/min) @5.5 bar

HP: 27.0 scfm (764 nl/min) @5.5 bar

-20° to 80°C standard Operating temperature -20° to 100°C High Temperature range

Hazardous area use:

-40° to 50°C Low Temperature

Weight 2.8 kg / 6.2 lb

> Without A/R switches ATEX Cat 1 mechanical approval

1G T4

With A/R switches ATEX Cat 1 1G EExia IIC T4

case and cover - zinc allov spool and liner - stainless steel diaphragm - polyester reinforcedpolyurethane or High Temperature or silicone rubber for Low Temperature feedback spring - steel

Finish epoxy stove enamel

IP54 **Enclosure rating**

Output torque

same as double acting or spring return actuator when controlling fast movement of inertia loads consult Kinetrol

Vibration tolerance 4G, 100Hz

I/P converter options Non - hazardous

Supply pressure 4 - 5.5 bar (60 - 80 psi)

ATEX EEx d IIC T4/T5/T6 EEX ia IIC T4/T5/T6

Class I Division 1 explosion proof Groups B,C,D

intrinsically safe Groups A,B,C,D,E.F,G

CSA Class I Division 1

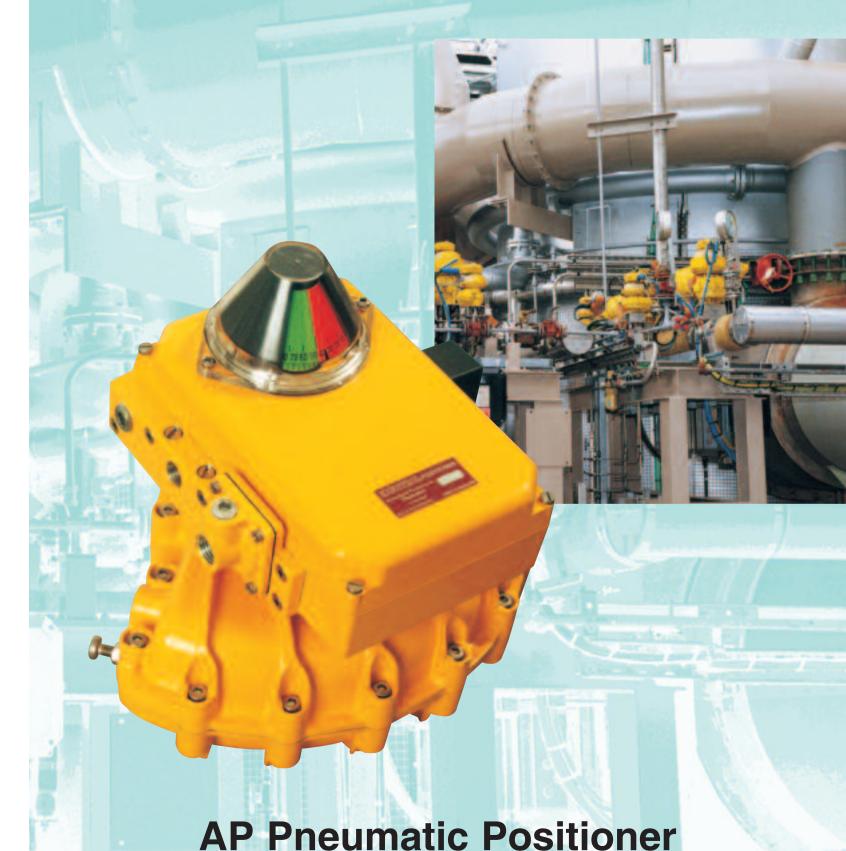
explosion proof Groups B,C,G intrinsically safe Groups A,B,C,D



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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AP Pneumatic Positioner

The AP pneumatic positioner combines the smoothness and accuracy of Kinetrol's proven mechanical postioner 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).

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, rangable 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.

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 flowrate 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.

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

LID - shown with optional Clear Cone sealed angle monitor. Epoxy coated die-cast metal held on by four

captive screws gives guick access to the interior.

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

ENCLOSURE - robust die-cast metal with

tough corrosion-resistant epoxy coating and

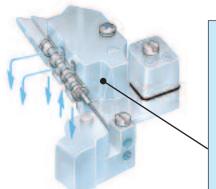
O-ring sealing. Layout gives easy access to

all adjustments on removal of lid.

3-TERMINAL DIN PLUG - retrofitable 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 interchangable

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.

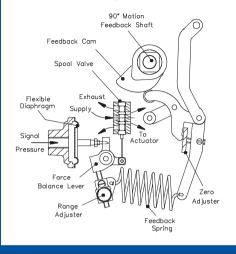
FEEDBACK SHAFT innovative collet connection permits quickfit/release of the actuator interface and eliminates backlash.

feedback spring. This moves the spool from the other side. The feedback shaft

> **ORDERING CODES** & Porting
>
> = Internal Ports Nbr
>
> = Internal Ports Viton
>
> = External Piping Nbr 1= AR ccw & Conduit 2= AR ccw & Conduit
> 2= AR cw Conduit *
> 3= AR ccw & DIN plug*
> 4= AR cw & DIN plug* ATEX Approve NAMUR Actuator Model See Actuator codes) =No LS =2 x IS prox ATEX Cat 1 DIN plug* ?= EExd (Cat 2) 3=2 x FEx e || T6 =Pos only ccw + IF 3=2 x EEx e II 16 4=2 x V3 mech LS ATEX Cat 1 5=20 - 240 V ac prox 6=5 - 30 V dc prox.* 7=4 x V3 mech LS =Pos only ccv Conduit* 5=EEXia (Cat 2) Valve Sizes A=Standard M=Medium Flow H=High Flow Not available with ATEX approval LINESS SPECIFICALLY REQUESTED OTHERWISE ecommended spring unit for model 14 actuator is 4900 type.
> his should be coded 12 49AP or 13 49AP instead of the
> sual 12 AP or 13 AP. The same applies to other specially



SCHEMATIC FUNCTIONAL **DIAGRAM**



- When a signal pressure is applied to the diaphragm it moves the force balance lever clockwise against the tension of the valve, supplying air pressure to one side of the actuator while exhausting trapped air 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.