PNEUMATIC LINEAR ACTUATOR

SINGLE ACTING series PA

SERVOVALVE spa
Via Quasimodo 27 - 20010 S.STEFANO TICINO (MI)
PHONE: 0039 - 029748461
FAX: 0039 - 0297484646
E-mail: servovalve@servovalve.it

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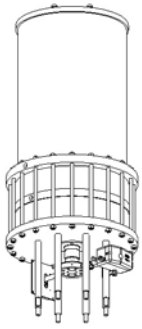
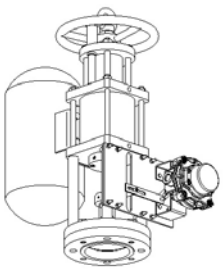
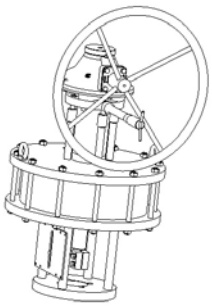
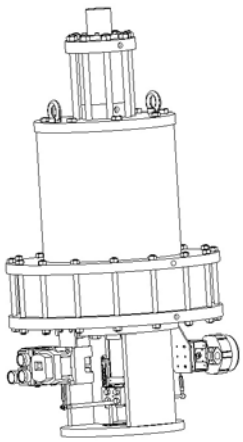





Pneumatic Single Acting Linear Actuator SERIES PA

TECHNICAL DESCRIPTION

Servovalve actuator type PA consists of pneumatic single acting cylinders designed to operate globe or gate or any other valve that might require a linear movement operator, with a fail safe spring action to open.

PA actuator is designed and manufactured so to operate in the heaviest work condition due to his particularly simple and heavy-duty construction and resistance to corrosion phenomenon.

All PA actuator are designed with weather proof construction that assure complete protection for springs and all internal moving parts, minimizing the possibility of internal misalignment and reduces the chance of injury to operating personnel.

Spring cylinder is closed by means of safety stay-bolts that assure to open the cartridge, totally release and remove springs with fully operator safely procedure.
This construction allow actuator disassembling and maintenance on field without special tools and in total security.
Materials selected for safety bolts are suitable to assure low friction in spring compression and avoid any possible seizure.

Springs surfaces are treated and protected from corrosion to ensure long life and constant performances .

PA actuators can be supplied with helicoidal springs (series PA) or belleville springs (series PAT).

Pneumatic cylinders are realised in chromium plated carbon steel (available on request execution with electroless nickel plated cylinder) for corrosion resistance and friction reduction .

A PTFE charged slide guarantees a perfect drive and alignment of the piston under all load conditions allowing gasket seals long life.

Chromium plated carbon steel shaft , dynamic floating seals and PTFE charged bushing allow to reduce the sliding friction and avoid stick-slip effect.

Particular care in material selection and design ensure optimum performances and reduced hysteresis and dead band for accurate and precise automation of linear control valves .

The inner parts are lifetime lubricated, therefore only replacement of dynamic gaskets may become necessary after a long working time.

PA can be equipped with manual emergency override as handwheel or gear reductor or manual hydraulic handpump on request, as well as hydraulic dampers for particular valves or service.

QUALITY ASSURANCE AND CERTIFICATION

Design, manufacture and test procedures of PA linear pneumatic actuators are complying to the highest quality and efficiency standards and are based on Servovalve following awarded standard certifications:
- ♦ EN ISO 9001:2008
- ♦ EN ISO 14001-2004 Environmental Management System
- ♦ BS OHSAS 18001:2007 Occupational Health and Safety Assessment Series

PA linear pneumatic single acting actuators are also designed and certified according to :
- ♦ European Pressure Equipment Directive 97/23/CE (PED)
- ♦ Atex Directive 95/9/CE
- ♦ IEC 61508:2000 for application up to SIL 3 level
- ♦ Gost-R
- ♦ Rostechnadzor

TECHNICAL STANDARD PERFORMANCE

Pressure range
- ♦ air working pressure range : 2 ÷ 10 bar
- ♦ standard design pressure: 10,5 bar
- ♦ air test pressure: 1,5 max working pressure

Higher working pressure range or design pressure available on request

Environmental Temperature Range
- ♦ standard minimum temperature : -20°C
- ♦ standard maximum temperature : +80°C

Available execution for following environmental conditions (refer to actuator code legend options):
Minimum temperature -60°C
Maximum temperature +150°C
For different temperature contact our sales

Medium Supply
- ⬍ instrument air (dry no-lubricated)
- ⬍ sweet natural gas (dry no-lubricated)
- ⬍ nitrogen
- ⬍ execution for low pressure oil available on request
- ⬍ different medium supply on request

Customised execution on request

Servovalve production is highly oriented in designing special execution to satisfy a wide range of customised requirement such as :
- ✸ On-off or modulating execution
- ✸ Execution for offshore or highly aggressive environmental
- ✸ Design of customised coupling yokes to fit any kind of valve topwork
- ✸ Execution with mechanical end stop screws in opening or closing or both directions
- ✸ Fast acting execution for HIPPS or Anti surge application
- ✸ Execution with dampers or special integral quick exhaust valve
- ✸ Subsea design

Please contact our sales department for technical evaluation in case of different customised requirement

Controls

PA actuators can be supplied fully equipped with control component packages to full fill customer requirement and comply to technical specifications for the various industrial control applications for on/off, modulating or ESD service
Controls are designed based on Servovalve technical skill and long experience in valve automation.

SPRING OPEN – AIR CLOSE

LINEAR ACTUATOR CODE MODE

MODEL P C V ☐ 4 2 0 / 2 / ☐ 1 0 2 / 1 1 0 N ☐ 5 5 B P ☐

MEDIUM
- **P** air or gas
- **H** oil or other liquid

SPRING ACTION
- **C** close
- **A** open
- **D** double acting

OPTIONAL DEVICE
- **V** handwheel
- **R** reductor
- **H** hydraulic pump
- **A** damper
- **Z** hydraulic pump and damper
- **X** special execution

BELLEVILLE SPRING
- **T** belleville springs
  (missing for double acting or helicoidal springs)

CYLINDER NOMINAL SIZE

NUMBER OF CYLINDER
- **2** n°2 cylinders
- **3** n°3 cylinders
  (missing for n°1 cylinder)

TYPE OF SPRING
- spring code
  (missing for double acting or belleville springs)

MAX SPRING BENCH

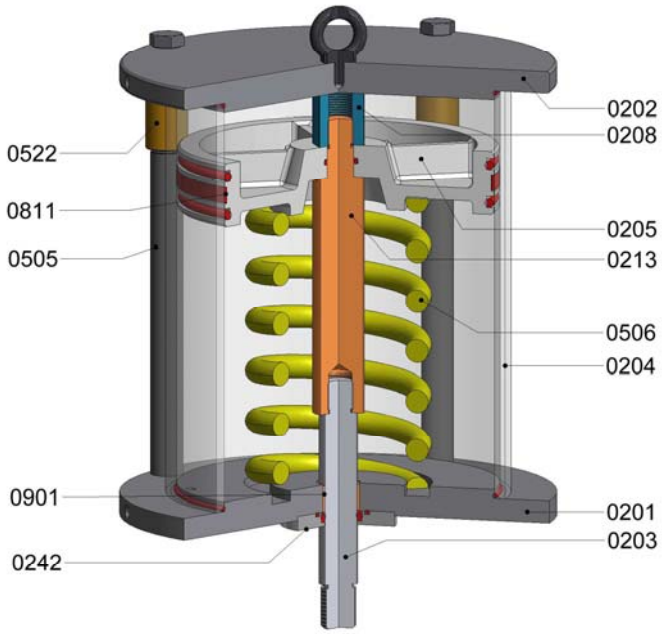
TEMPERATURE RANGE
- **N** -20°/+80°
- **B** -40°/+80°
- **A** -50°/+60°
- **G** -60°/+60°
- **H** -20°/+150°
- **S** special temperature

CYLINDER STROKE

COUPLING
- **B** bracket
- **C** columns
- **U** columns with flange
- **F** flange

CONTROL CIRCUIT
- **P** included
- **N** not included

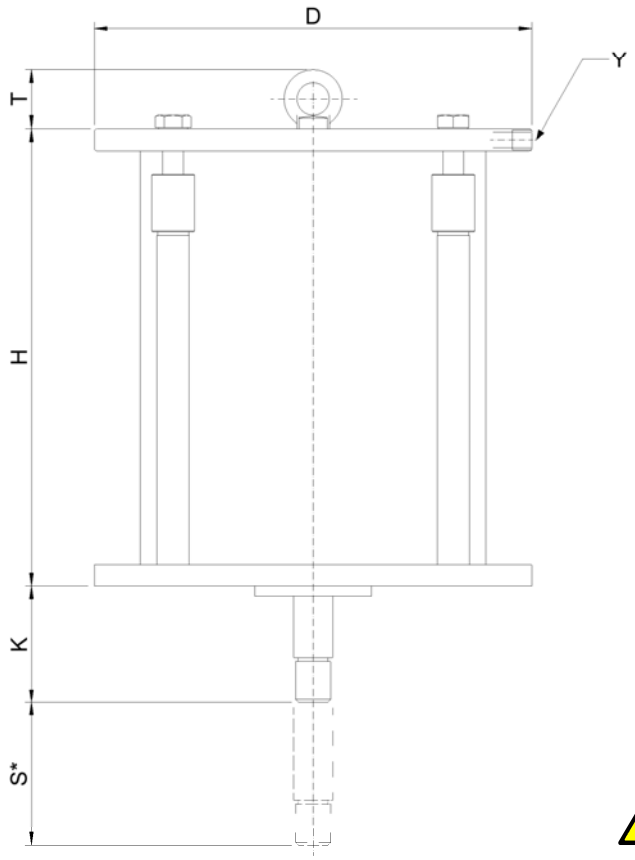
MECHANICAL END TRAVEL STOP
- **O** open position
- **C** closed position
- **D** open and closed position
  (missing for standard execution without mechanical end travel stop)



POS.	DESCRIPTION	MATERIAL
0201	INFERIOR HEAD	P 355 NL2 EN 10028-3
0202	SUPERIOR HEAD	P 355 NL2 EN 10028-3
0203	SHAFT	42CrMo4 EN 10083-3
0204	CYLINDER	E 355 EN 10297-1
0205	PISTON	AlSi6Cu4 EN 1706
0208	RING NUT	E 355 EN 10297-1
0213	STROKE LIMITER	C 40 EN 10083
0242	FILANGE	42CrMo4 EN 10083-3
0505	SAFETY TUBE	E 355 EN 10297-1
0506	SPRING	52SiCrNi5 EN 10089
0522	SAFETY NUT	CB331G EN 1982
0811	PISTON DRIVE	PTFE+GRAPHITE
0901	BUSHING	BRONZE + PTFE

ALL O-RING AND GASKET MATERIAL

AMB. TEMP.	TEMP	O-RING	GASKET
STANDARD	-20 / +80	N.B.R.	POLYURETHANE
LOW TEMP.	-40 / -60	SILICON	SILICON
HIGH TEMP.	+90 / +120	VITON	VITON



OVERALL DIMENSIONS (mm) - STROKE=55mm

TYPE	Ø D	H	K	T	Y
PA 125	■ 150	315	90	-	1/4" NPT
PA 160	■ 180	305	90	-	1/4" NPT
PA 200	■ 220	300	90	-	1/4" NPT
PA 250	340	315	90	45	1/4" NPT

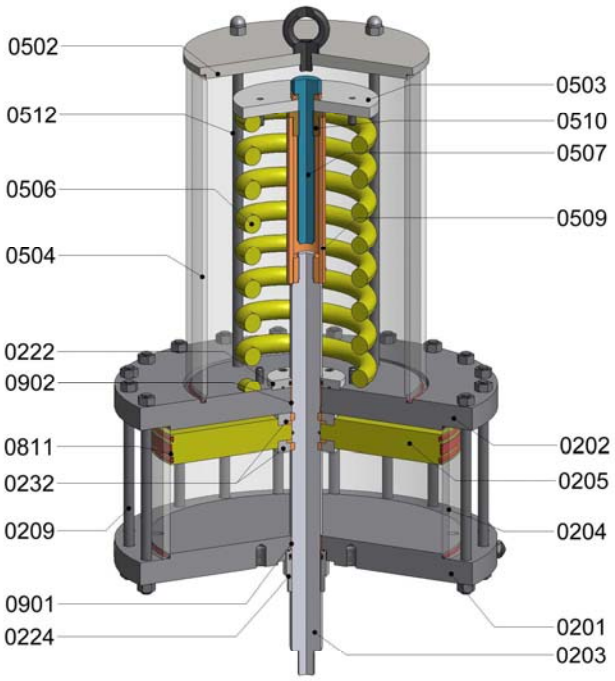
STROKE (S*) = ACTUATOR STROKE (mm)

Y = PNEUMATIC ACTUATOR CONNECTION

OVERALL DIMENSION (mm) - STROKE >55mm

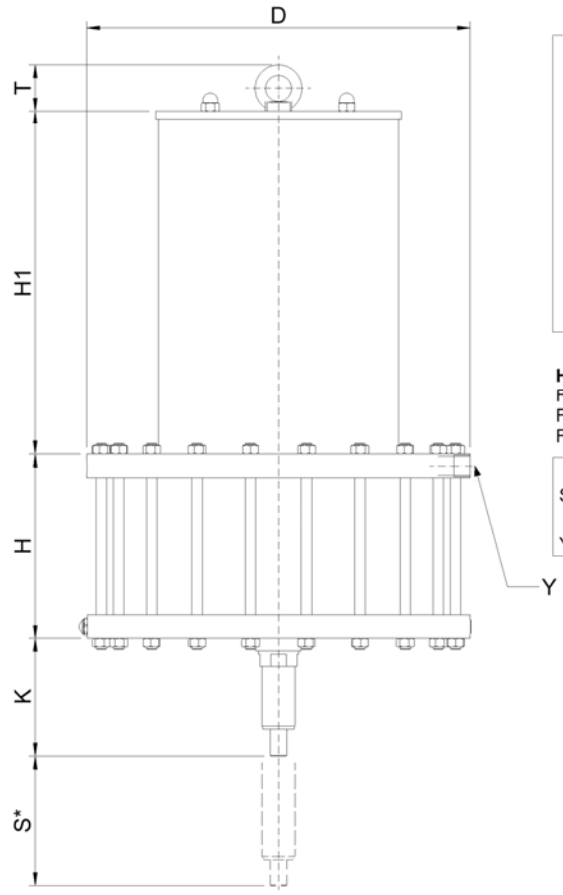
TYPE	Ø D	H	K	T	V
PA 125	■ 150	150+3S*	90	-	1/4" NPT
PA 160	■ 180	140+3S*	90	-	1/4" NPT
PA 200	■ 220	135+3S*	90	-	1/4" NPT
PA 250	340	250+4S	90	45	1/4" NPT

CAUTION: EYE BOLT FOR ACTUATOR LIFTING ONLY



POS.	DESCRIPTION	MATERIAL
0201	INFERIOR HEAD	P 355 NL2 EN 10028-3
0202	SUPERIOR HEAD	P 355 NL2 EN 10028-3
0203	SHAFT	42CrMo4 EN 10083-3
0204	CYLINDER	E 355 EN 10297-1
0205	PISTON	S 355 J2G3 EN 10025-2
0209	STAY BOLT	42CrMo4 EN 10269
0222	FLANGE	C40 EN 10083-2
0224	RING NUT	42CrMo4 EN 10083-3
0232	RING NUT	S 355 J2G3 EN 10025-2
0502	FLANGE	S 355 J2G3 EN 10025-2
0503	SPRIN DISC	S 355 J2G3 EN 10025-2
0504	TUBE	S 355 JR EN 10025-2
0506	SPRING	52SiCrNi5 EN 10089
0507	TIE ROD	42CrMo4 EN 10083-3
0509	TUBE	E 355 EN 10297-1
0510	RING NUT	CB 331G EN 1982
0512	STAY BOLT	42CrMo4 EN 10269
0811	PISTON DRIVE	PTFE+GRAPHITE
0901	BUSHING	BRONZE + PTFE
0902	BUSHING	BRONZE + PTFE

ALL O-RING AND GASKET MATERIAL			
AMB. TEMP.	TEMP	O-RING	GASKET
STANDARD	-20 / +80	N.B.R.	POLYURETHANE
LOW TEMP.	-40 / -60	SILICON	SILICON
HIGH TEMP.	+90 / +120	VITON	VITON



OVERALL DIMENSIONS (mm)						
TYPE	Ø D	H	H1	K	T	Y
PA 300	410	140+S*	see note	110	75	1/2" NPT
PA 360	470	145+S*	see note	110	75	1/2" NPT
PA 420	555	145+S*	see note	110	75	1/2" NPT
PA 500	590	150+S*	see note	120	75	1/2" NPT
PA 520	640	165+S*	see note	120	75	1/2" NPT
PA 600	700	175+S*	see note	120	75	1/2" NPT
PA 620	745	180+S*	see note	120	75	1/2" NPT
PA 700	830	215+S*	see note	140	100	3/4" NPT
PA 800	930	240+S*	see note	140	110	3/4" NPT

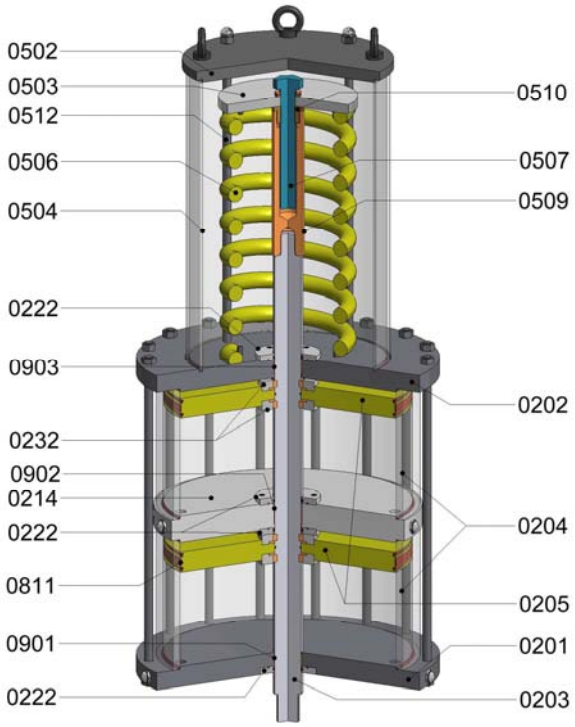
H1 NOTE
FOR TYPE OF SPRING = 1[][] DIMENSION H1 = max. 510 mm.
FOR TYPE OF SPRING = 2[][] DIMENSION H1 = max. 970 mm.
FOR TYPE OF SPRING = 3[][] DIMENSION H1 = max. 1430 mm.

STROKE (S*) = ACTUATOR STROKE (mm)

Y = PNEUMATIC ACTUATOR CONNECTION

CAUTION: EYE BOLT FOR ACTUATOR LIFTING ONLY

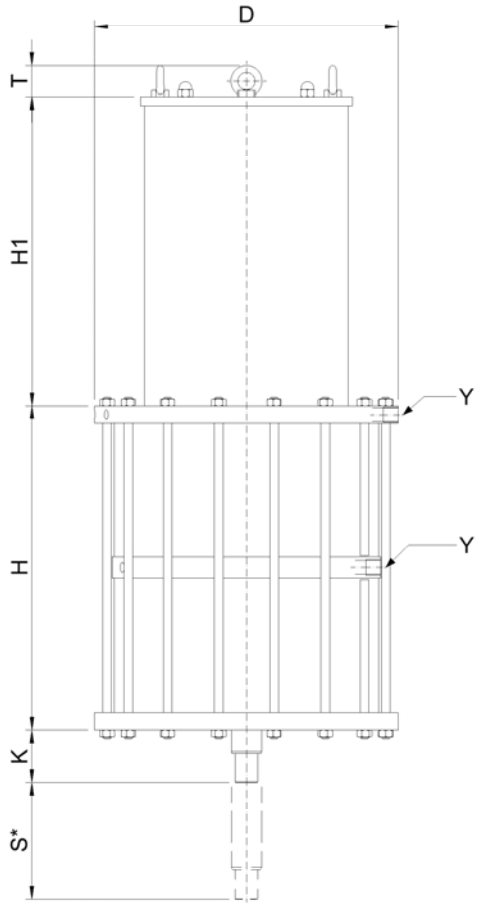
Pneumatic Linear Actuator PA420/2 ÷ 800/2



POS.	DESCRIPTION	MATERIAL
0201	INFERIORE HEAD	P 355 NL2 EN 10028-3
0202	SUPERIOR HEAD	P 355 NL2 EN 10028-3
0203	SHAFT	42CrMo4 EN 10083-3
0204	CYLINDER	E 355 EN 10297-1
0205	PISTON	S 355 J2G3 EN 10025-2
0209	STAY BOLT	42CrMo4 EN 10269
0214	INTERMEDIATE HEAD	P 355 NL2 EN 10028-3
0222	FLANGE	42CrMo4 EN 10083-3
0232	FLANGE	S 355 J2G3 EN 10025-2
0502	FLANGE	S 355 J2G3 EN 10025-2
0503	SPRING DISC	S 355 J2G3 EN 10025-2
0504	TUBE	S 355 JR EN 10025-2
0506	SPRING	52SiCrNi5 EN 10089
0507	STAY BOLT	42CrMo4 EN 10083-3
0509	TUBE SLEEVE	E 355 EN 10297-1
0510	RING NUT	CB 331G EN 1982
0512	STAY BOLT	42CrMo4 EN 10269
0811	PISTON DRIVE	PTFE+GRAPHITE
0901	BUSHING	BRONZE + PTFE
0902	BUSHING	BRONZE + PTFE
0903	BUSHING	BRONZE + PTFE

ALL O-RING AND GASKET MATERIAL

AMB. TEMP.	TEMP	O-RING	GASKET
STANDARD	-20 / +80	N.B.R.	POLYURETHANE
LOW TEMP.	-40 / -60	SILICON	SILICON
HIGH TEMP.	+90 / +120	VITON	VITON



OVERALL DIMENSIONS (mm)

TYPE	Ø D	H	H1	K	T	Y
PA 420/2	560	285+2S*	see note	110	75	1/2" NPT
PA 500/2	595	305+2S*	see note	120	75	1/2" NPT
PA 520/2	645	310+2S*	see note	120	75	1/2" NPT
PA 600/2	710	325+2S*	see note	120	75	1/2" NPT
PA 620/2	745	345+2S*	see note	120	75	1/2" NPT
PA 700/2	840	410+2S*	see note	140	100	3/4" NPT
PA 800/2	940	445+2S*	see note	140	110	3/4" NPT

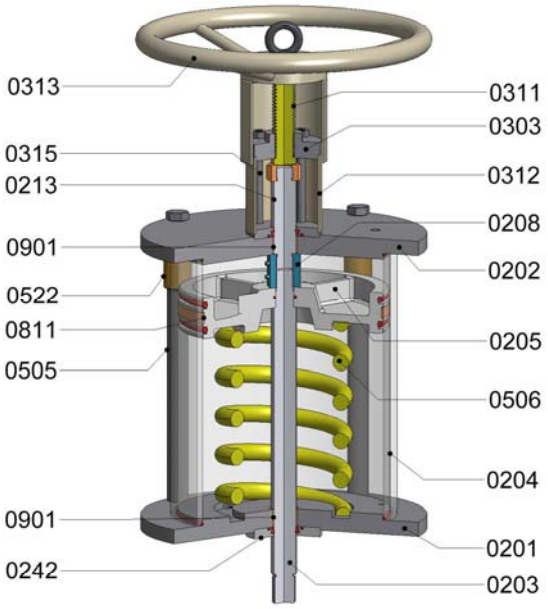
H1 NOTE
FOR TYPE OF SPRING = 1[][] DIMENSION H1 = max. 510 mm.
FOR TYPE OF SPRING = 2[][] DIMENSION H1 = max. 970 mm.
FOR TYPE OF SPRING = 3[][] DIMENSION H1 = max. 1430 mm.

STROKE (S*) = ACTUATOR STROKE (mm)

Y = PNEUMATIC ACTUATOR CONNECTION

CAUTION: EYE BOLT FOR ACTUATOR LIFTING ONLY

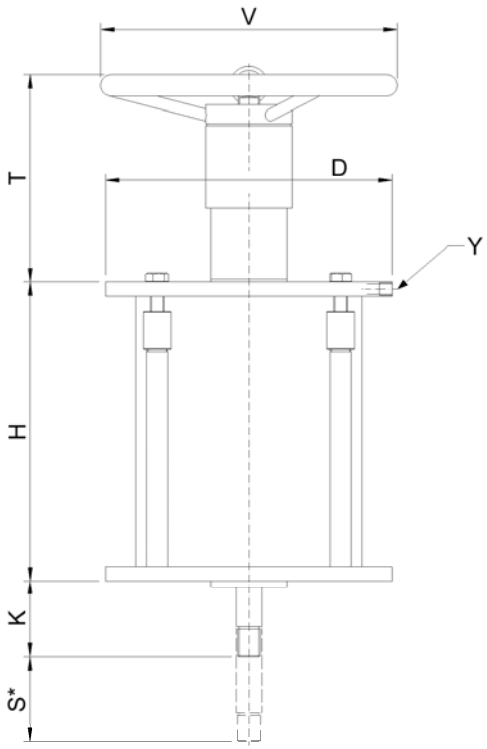
Pneumatic Linear Actuator PAV 125 ÷ 250



POS.	DESCRIPTION	MATERIAL
0201	INFERIOR HEAD	P 355 NL2 EN 10028-3
0202	SUPERIOR HEAD	P 355 NL2 EN 10028-3
0203	SHAFT	42CrMo4 EN 10083-3
0204	CYLINDER	E 355 EN 10297-1
0205	PISTON	AlSi6Cu4 EN 1706
0208	PISTON NUT	S 275 JR EN 10025-2
0213	SHAFT	42CrMo4 EN 10083-3
0242	FLANGE	42CrMo4 EN 10083-3
0302	FLANGE	S 355 J2G3 EN 10025-2
0303	SCREW THREAD FLANGE	EN GJL -250 EN 1561
0311	STEM	X20Cr 13 EN 10088-1
0312	TUBE	S 355 JR EN 10025-2
0313	HANDWHEEL	P 195 TR EN 10216-1
0315	STAY BOLT	42CrMo4 EN 10269
0505	SAFETY TUBE	E 355 EN 10297-1
0506	SPRING	52SiCrNi5 EN 10089
0522	SAFETY NUT	CB331G EN 1982
0811	PISTON DRIVE	PTFE+GRAPHITE
0901	BUSHING	BRONZE + PTFE

ALL O-RING AND GASKET MATERIAL

AMB. TEMP.	TEMP	O-RING	GASKET
STANDARD	-20 / +80	N.B.R.	POLYURETHANE
LOW TEMP.	-40 / -60	SILICON	SILICON
HIGH TEMP.	+90 / +120	VITON	VITON



OVERALL DIMENSIONS (mm) - STROKE=55mm

TYPE	Ø D	H	K	T	Ø V	Y
PAV 125	■ 150	330	90	175+S*	250	¼" NPT
PAV 160	■ 180	330	90	175+S*	250	¼" NPT
PAV 200	■ 220	330	90	175+S*	250	¼" NPT
PAV 250	340	355	90	185+S*	350	¼" NPT

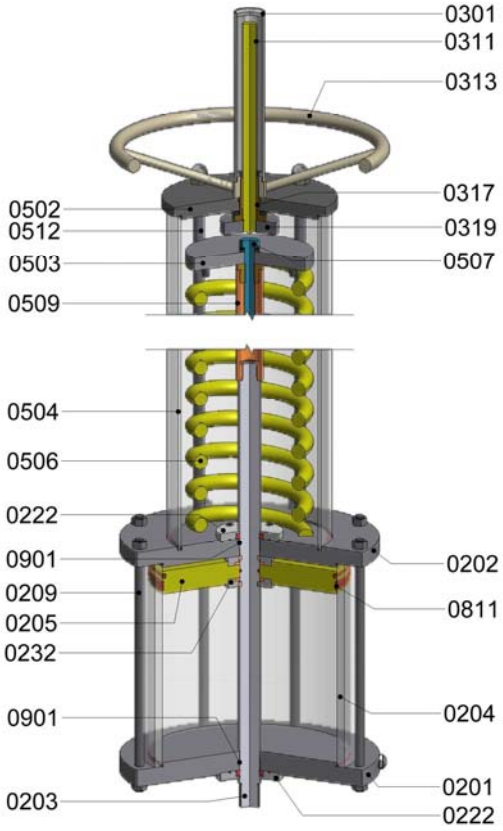
STROKE (S*) = ACTUATOR STROKE (mm)

Y = PNEUMATIC ACTUATOR CONNECTION

OVERALL DIMENSION (mm) - STROKE > 55mm

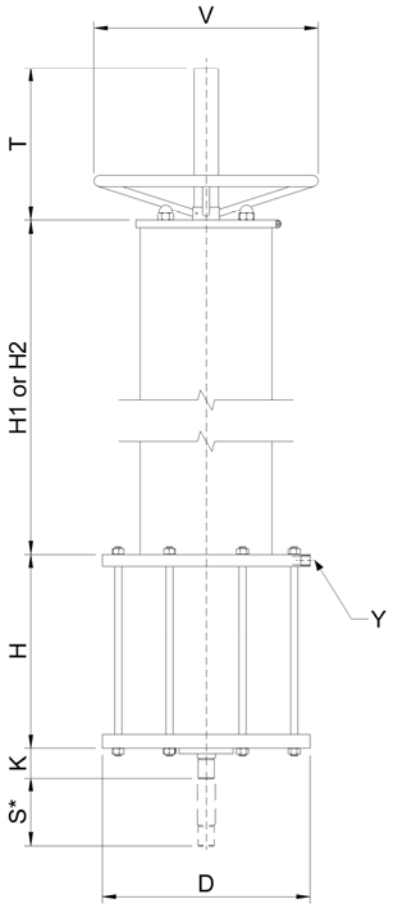
TYPE	Ø D	H	K	T	Ø V	Y
PAV 125	■ 150	150+3S*	90	175+S*	250	¼" NPT
PAV 160	■ 180	140+3S*	90	175+S*	250	¼" NPT
PAV 200	■ 220	135+3S*	90	175+S*	250	¼" NPT
PAV 250	340	250+4S*	90	185+S*	350	¼" NPT

CAUTION: EYE BOLT FOR ACTUATOR LIFTING ONLY



POS.	DESCRIPTION	MATERIAL
0201	INFERIOR HEAD	P 355 NL2 EN 10028-3
0202	SUPERIOR HEAD	P 355 NL2 EN 10028-3
0203	SHAFT	42CrMo4 EN 10083-3
0204	CYLINDER	E 355 EN 10297-1
0205	PISTON	S 355 J2G3 EN 10025-2
0209	STAY BOLT	42CrMo4 EN 10269
0222	FLANGE	42CrMo4 EN 10083-3
0232	RING NUT	S 355 J2G3 EN 10025-2
0301	TUBE	E 355 EN 10297-1
0311	STEM	X20Cr 13 EN 10088-1
0313	HANDWEEL	P 195 TR EN 10216-1
0317	DRIVE NUT	CB 333G EN 1982
0319	ANTIROTATION RING	S 355 J2G3 EN 10025-2
0502	EXTERNAL FLANGE	S 355 J2G3 EN 10025-2
0503	SPRING DISC	S 355 J2G3 EN 10025-2
0504	TUBE	E 355 EN 10297-1
0506	SPRING	52SiCrNi5 EN 10089
0507	SCREW	8.8 EN 20898-1
0509	TUBE SLEEVE	E 355 EN 10297-1
0510	RING	CB 331G EN 1982
0512	STAY BOLT	42CrMo4 EN 10269
0811	PISTON DRIVE	PTFE+GRAPHITE
0901	BUSHING	BRONZE + PTFE

ALL O-RING AND GASKET MATERIAL			
AMB. TEMP.	TEMP	O-RING	GASKET
STANDARD	-20 / +80	N.B.R.	POLYURETHANE
LOW TEMP.	-40 / -60	SILICON	SILICON
HIGH TEMP.	+90 / +120	VITON	VITON



OVERALL DIMENSIONS (mm)								
TYPE	Ø D	H	H1	H2	K	T	Ø V	Y
PAV 250	340	140+S*	140+S*	see note	90	70+S*	350	¼" NPT
PAV 300	410	100+S*	145+S*	see note	110	70+S*	500	½" NPT
PAV 360	470	125+S*	145+S*	see note	110	70+S*	500	½" NPT
PAV 420	555	125+S*	150+S*	see note	110	70+S*	600	½" NPT

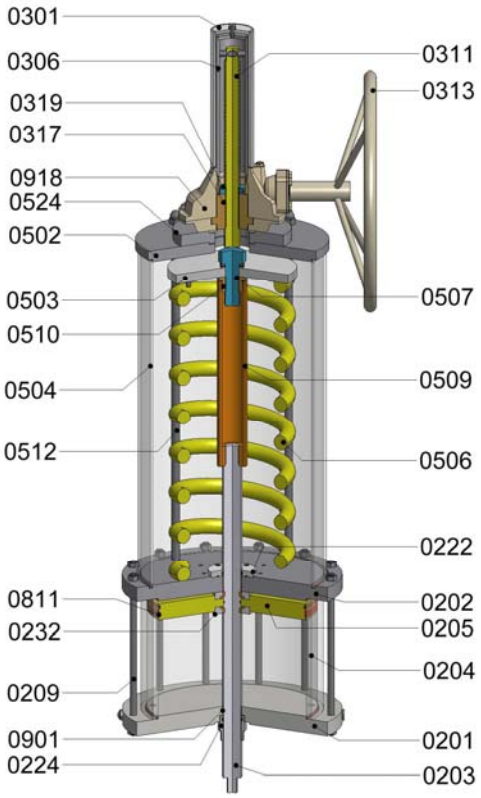
H2 NOTE

FOR TYPE OF SPRING = X[][] DIMENSION H1
FOR TYPE OF SPRING = 1[][] DIMENSION H1 = max. 510 mm.
FOR TYPE OF SPRING = 2[][] DIMENSION H1 = max. 970 mm.
FOR TYPE OF SPRING = 3[][] DIMENSION H1 = max. 1430 mm.

STROKE (S*) = ACTUATOR STROKE (mm)

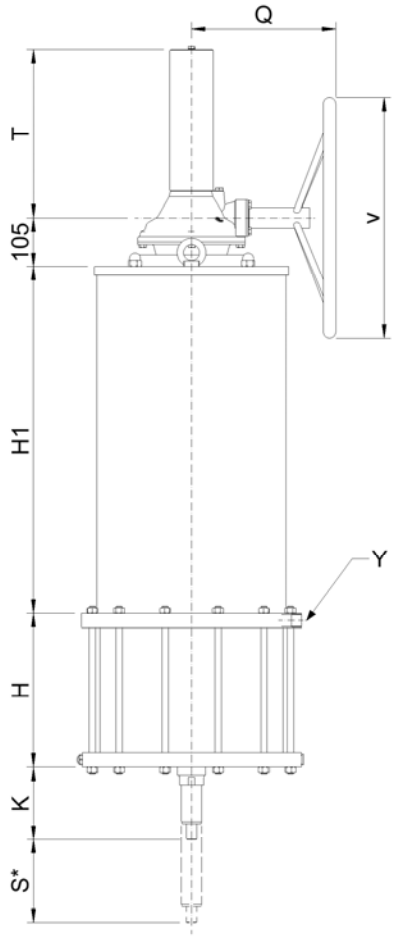
Y = PNEUMATIC ACTUATOR CONNECTION

CAUTION: EYE BOLT FOR ACTUATOR LIFTING ONLY



POS.	DESCRIPTION	MATERIAL
0201	INFERIOR HEAD	P 355 NL2 EN 10028-3
0202	SUPERIOR HEAD	P 355 NL2 EN 10028-3
0203	SHAFT	42CrMo4 EN 10083-3
0204	PNEUMATIC CYLINDER	E 355 EN 10297-1
0205	PYSTON	S 355 J2G3 EN 10025-2
0209	STAY BOLT	42CrMo4 EN 10269
0222	FLANGE	C40 EN 10083-2
0224	RING NUT	42CrMo4 EN 10083-3
0232	FLANGE	S 355 J2G3 EN 10025-2
0301	TUBE	E 355 EN 10297-1
0306	TUBE	E 355 EN 10297-1
0311	STEM	X20Cr 13 EN 10088-1
0313	HANDWHEEL	P 195 TR EN 10216-1
0317	DRIVE NUT	CB 333G EN 1982
0319	RING NUT	42CrMo4 EN 10083-3
0502	FLANGE	S 355 J2G3 EN 10025-2
0503	SPRING DISC	S 355 J2G3 EN 10025-2
0504	TUBE	E 355 EN 10297-1
0506	SPRING	52SiCrNi5 EN 10089
0507	TIE ROD	42CrMo4 EN 10083-3
0509	CANOT	E 355 EN 10297-1
0510	RING NUT	CB 331G EN 1982
0512	STAY BOLT	42CrMo4 EN 10269
0524	FLANGE	S 355 J2G3 EN 10025-2
0811	PISTON DRIVE	PTFE+GRAPHITE
0901	BUSHING	BRONZE + PTFE
0902	BUSHING	BRONZE + PTFE
0903	BUSHING	BRONZE + PTFE

ALL O-RING AND GASKET MATERIAL			
AMB. TEMP.	TEMP	O-RING	GASKET
STANDARD	-20 / +80	N.B.R.	POLYURETHANE
LOW TEMP.	-40 / -60	SILICON	SILICON
HIGH TEMP.	+90 / +120	VITON	VITON



OVERALL DIMENSIONS (mm)								
TYPE	Ø D	H	H1	K	Q	T	Ø V	Y
PAR 420	555	145+S*	see note	110	330	140+S*	600	1/2" NPT
PAR 500	590	150+S*	see note	120	350	140+S*	600	1/2" NPT
PAR 520	640	165+S*	see note	120	350	140+S*	600	1/2" NPT
PAR 600	700	175+S*	see note	120	380	140+S*	800	1/2" NPT
PAR 620	745	180+S*	see note	120	380	140+S*	800	1/2" NPT
PAR 700	830	215+S*	see note	140	400	140+S*	800	3/4" NPT
PAR 800	930	240+S*	see note	140	450	140+S*	800	3/4" NPT

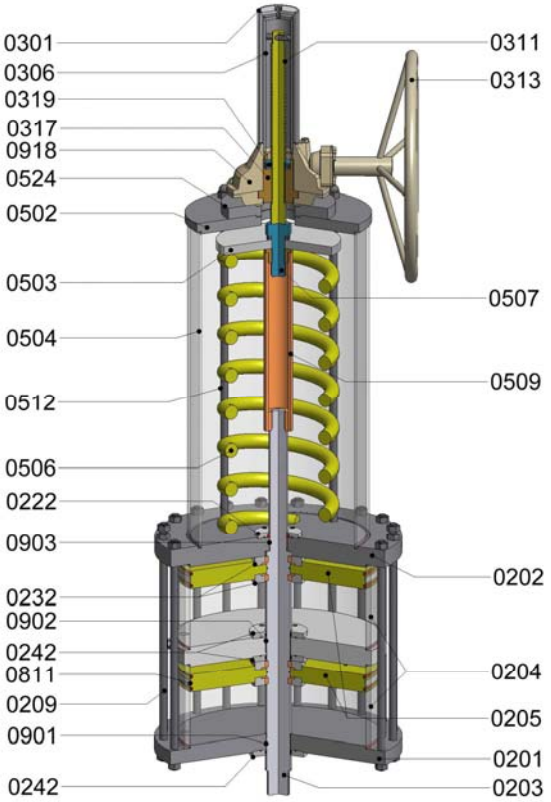
H1 NOTE
FOR TYPE OF SPRING = 1[][] DIMENSION H1 = max. 510 mm.
FOR TYPE OF SPRING = 2[][] DIMENSION H1 = max. 970 mm.
FOR TYPE OF SPRING = 3[][] DIMENSION H1 = max. 1430 mm.

STROKE (S*) = ACTUATOR STROKE (mm)

Y = PNEUMATIC ACTUATOR CONNECTION

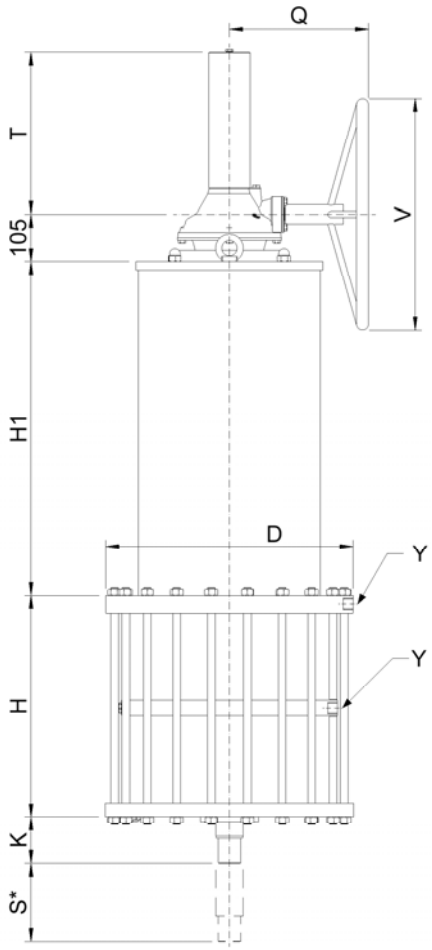
CAUTION: EYE BOLT FOR ACTUATOR LIFTING ONLY

Pneumatic Linear Actuator PAR 420/2 ÷ 800/2



POS.	DESCRIPTION	MATERIAL
0201	INFERIOR HEAD	P 355 NL2 EN 10028-3
0202	SUPERIOR HEAD	P 355 NL2 EN 10028-3
0203	SHAFT	42CrMo4 EN 10083-3
0204	PNEUMATIC CYLINDER	E 355 EN 10297-1
0205	PYSTON	S 355 J2G3 EN 10025-2
0209	STAY BOLT	42CrMo4 EN 10269
0214	INTERMEDIATE HEAD	P 355 NL2 EN 10028-3
0222	FLANGE	C40 EN 10083-2
0232	FLANGE	S 355 J2G3 EN 10025-2
0242	FLANGE	42CrMo4 EN 10083-3
0301	TUBE	E 355 EN 10297-1
0306	TUBE	E 355 EN 10297-1
0311	STEM	X20Cr 13 EN 10088-1
0313	HANDWHEEL	P 195 TR EN 10216-1
0317	DRIVE NUT	CB 333G EN 1982
0319	RING NUT	42CrMo4 EN 10083-3
0502	FLANGE	S 355 J2G3 EN 10025-2
0503	SPRING DISC	S 355 J2G3 EN 10025-2
0504	TUBE	E 355 EN 10297-1
0506	SPRING	52SiCrNi5 EN 10089
0507	TIE ROD	42CrMo4 EN 10083-3
0509	CANOT	E 355 EN 10297-1
0510	RING NUT	CB 331G EN 1982
0512	STAY BOLT	42CrMo4 EN 10269
0524	FLANGE	S 355 J2G3 EN 10025-2
0811	PISTON DRIVE	PTFE+GRAPHITE
0901	BUSHING	BRONZE + PTFE
0902	BUSHING	BRONZE + PTFE
0903	BUSHING	BRONZE + PTFE
0918	REDUCTOR	CAST IRON

ALL O-RING AND GASKET MATERIAL			
AMB. TEMP.	TEMP	O-RING	GASKET
STANDARD	-20 / +80	N.B.R.	POLYURETHANE
LOW TEMP.	-40 / -60	SILICON	SILICON
HIGH TEMP.	+90 / +120	VITON	VITON



OVERALL DIMENSIONS (mm)

TYPE	Ø D	H	H1	K	Q	T	Ø V	Y
PAR 420/2	560	285+2S*	see note	110	330	140+S*	600	1/2" NPT
PAR 500/2	595	305+2S*	see note	120	350	140+S*	600	1/2" NPT
PAR 520/2	645	310+2S*	see note	120	350	140+S*	600	1/2" NPT
PAR 600/2	710	325+2S*	see note	120	380	140+S*	800	1/2" NPT
PAR 620/2	745	345+2S*	see note	120	380	140+S*	800	1/2" NPT
PAR 700/2	840	410+2S*	see note	140	400	140+S*	800	3/4" NPT
PAR 800/2	940	445+2S*	see note	140	450	140+S*	800	3/4" NPT

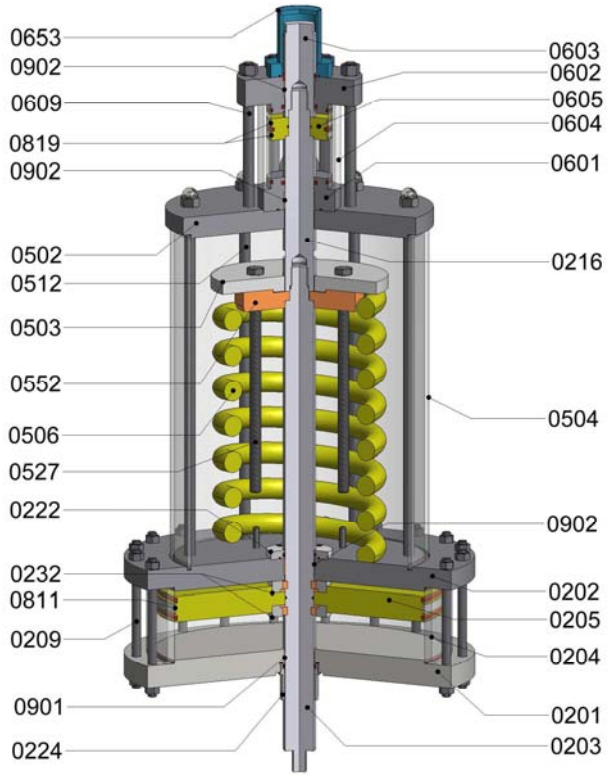
H1 NOTE
FOR TYPE OF SPRING = 1[][] DIMENSION H1 = max. 510 mm.
FOR TYPE OF SPRING = 2[][] DIMENSION H1 = max. 970 mm.
FOR TYPE OF SPRING = 3[][] DIMENSION H1 = max. 1430 mm.

STROKE (S*) = ACTUATOR STROKE (mm)

Y = PNEUMATIC ACTUATOR CONNECTION

CAUTION: EYE BOLT FOR ACTUATOR LIFTING ONLY

Pneumatic Linear Actuator PAA/H/Z 420 ÷ 800

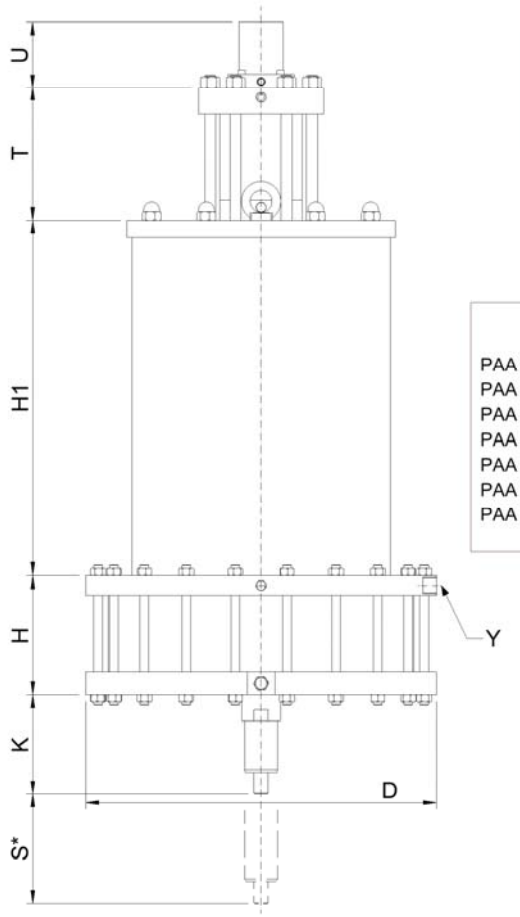


PAA = with damper

PAH = with hydraulic pump

PAZ = with hydraulic pump and damper

POS.	DESCRIPTION	MATERIAL
0201	INFERIOR HEAD	P 355 NL2 EN 10028-3
0202	SUPERIOR HEAD	P 355 NL2 EN 10028-3
0203	SHAFT	42CrMo4 EN 10083-3
0204	CYLINDER	E 355 EN 10297-1
0205	PNEUMATIC PISTON	S 355 J2G3 EN 10025-2
0209	STAY BOLT	42CrMo4 EN 10269
0216	SHAFT	42CrMo4 EN 10083-3
0222	FLANGE	S 355 J2G3 EN 10025-2
0224	RING NUT	42CrMo4 EN 10083-3
0232	FLANGE	S 355 J2G3 EN 10025-2
0233	HALF RING	42CrMo4 EN 10083-3
0236	RING	42CrMo4 EN 10083-3
0502	FLANGE	S 355 J2G3 EN 10025-2
0503	SPRING DISC	S 355 J2G3 EN 10025-2
0504	TUBE	E 355 EN 10297-1
0506	SPRING	52SiCrNi5 EN 10089
0512	STAY BOLT	42CrMo4 EN 10269
0527	SCREW	8.8 EN 20898-1
0534	SAFETY NUT	S 355 J2G3 EN 10025-2
0601	FLANGE	P 355 NL2 EN 10028-3
0602	FLANGE	P 355 NL2 EN 10028-3
0603	SHAFT	42CrMo4 EN 10083-3
0604	HYDRAULIC CYLINDER	E 355 EN 10297-1
0605	HYDRAULIC PISTON	S 355 J2G3 EN 10025-2
0609	STAY BOLT	42CrMo4 EN 10269
0653	CAP	E 355 EN 10297-1
0811	PISTON DRIVE	PTFE+GRAPHITE
0819	PISTON DRIVE	PTFE+GRAPHITE
0901	BUSHING	BRONZE + PTFE
0902	BUSHING	BRONZE + PTFE



ALL O-RING AND GASKET MATERIAL

AMB. TEMP.	TEMP	O-RING	GASKET	DAMPER
STANDARD	-20 / +80	N.B.R.	POLYURETHANE	N.B.R.
LOW TEMP.	-40 / -60	SILICON	SILICON	FLUOROSILICONE
HIGH TEMP.	+90 / +120	VITON	VITON	VITON

OVERALL DIMENSIONS (mm)

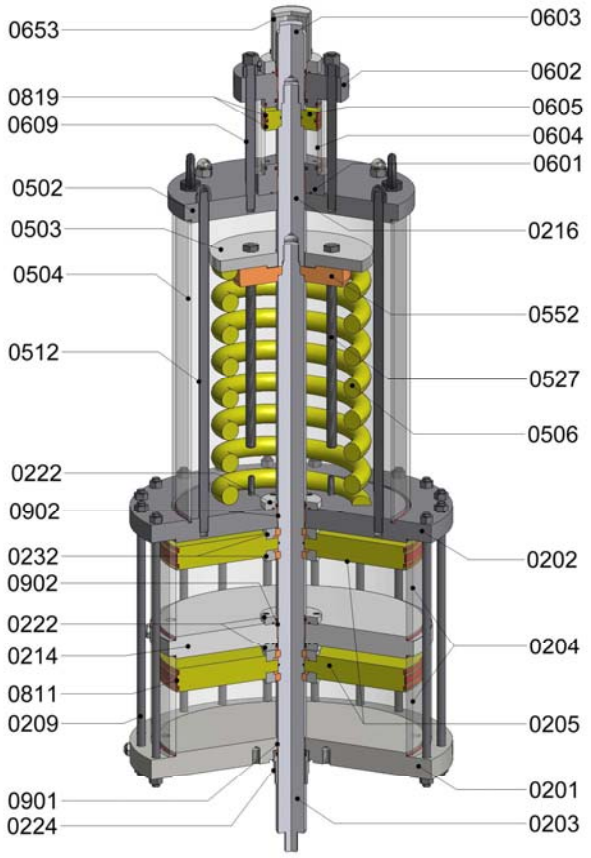
TYPE	Ø D	H	H1	K	T	U	Y
PAA PAH PAZ 420	555	145+S*	170+7S*	110	160+S*	40+S*	1/2" NPT
PAA PAH PAZ 500	590	150+S*	170+7S*	120	160+S*	40+S*	1/2" NPT
PAA PAH PAZ 520	640	165+S*	170+7S*	120	160+S*	40+S*	1/2" NPT
PAA PAH PAZ 600	700	175+S*	170+8S*	120	160+S*	40+S*	1/2" NPT
PAA PAH PAZ 620	745	180+S*	170+8S*	120	160+S*	40+S*	1/2" NPT
PAA PAH PAZ 700	830	215+S*	180+9S*	140	170+S*	40+S*	3/4" NPT
PAA PAH PAZ 800	930	240+S*	180+9S*	140	170+S*	40+S*	3/4" NPT

STROKE (S*) = ACTUATOR STROKE (mm)

Y = PNEUMATIC ACTUATOR CONNECTION

CAUTION: EYE BOLT FOR ACTUATOR LIFTING ONLY

Pneumatic Linear Actuator PAA/H/Z 420/2÷800/2

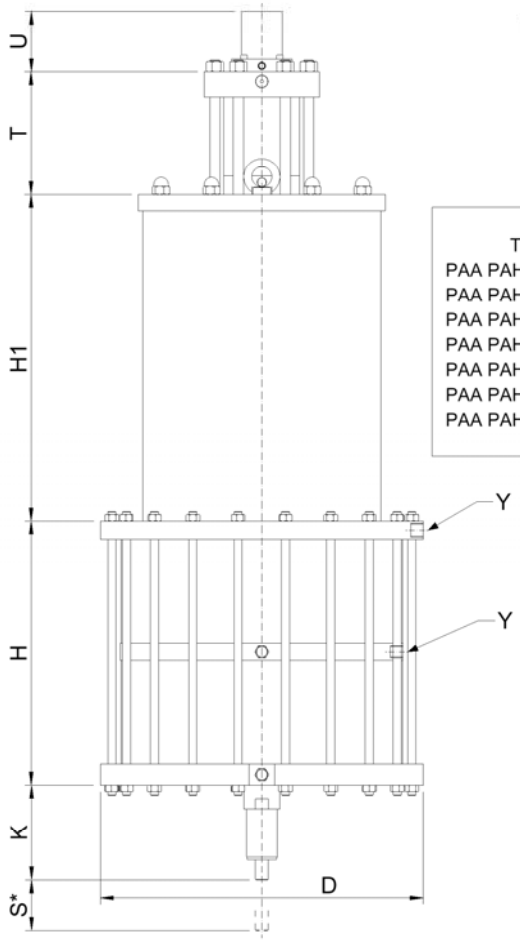


PAA = with damper
PAH = with hydraulic pump
PAZ = with hydraulic pump and damper

POS.	DESCRIPTION	MATERIAL
0201	INFERIOR HEAD	P 355 NL2 EN 10028-3
0202	SUPERIOR HEAD	P 355 NL2 EN 10028-3
0203	SHAFT	42CrMo4 EN 10083-3
0204	PNEUMATIC CYLINDER	E 355 EN 10297-1
0205	PNEUMATIC PISTON	S 355 J2G3 EN 10025-2
0209	STAY BOLT	42CrMo4 EN 10269
0214	INTERMEDIATE HEAD	P 355 NL2 EN 10028-3
0216	SHAFT	42CrMo4 EN 10083-3
0222	FLANGE	C40 EN 10083-2
0224	RING NUT	42CrMo4 EN 10083-3
0232	FLANGE	S 355 J2G3 EN 10025-2
0502	FLANGE	S 355 J2G3 EN 10025-2
0503	SPRING DISC	S 355 J2G3 EN 10025-2
0504	TUBE	E 355 EN 10297-1
0506	SPRING	52SiCrNi5 EN 10089
0512	STAY BOLT	42CrMo4 EN 10269
0527	SCREW	8.8 EN 20898-1
0534	RING NUT	CB 331G EN 1982
0552	SPRING DISC	S 355 J2G3 EN 10025-2
0601	INFERIOR HEAD DUMPER	P 355 NL2 EN 10028-3
0602	SUPERIOR HEAD DUMPER	P 355 NL2 EN 10028-3
0603	SHAFT	42CrMo4 EN 10083-3
0604	HYDRAULIC CYLINDER	E 355 EN 10297-1
0605	HYDRAULIC PISTON	S 355 J2G3 EN 10025-2
0609	STAY BOLT	42CrMo4 EN 10269
0653	CAP	S 355 J2G3 EN 10025-2
0811	PISTON DRIVE	PTFE+GRAPHITE
0819	PISTON DRIVE	PTFE+GRAPHITE
0901	BUSHING	BRONZE + PTFE
0902	BUSHING	BRONZE + PTFE

ALL O-RING AND GASKET MATERIAL

AMB. TEMP.	TEMP	O-RING	GASKET	DAMPER
STANDARD	-20 / +80	N.B.R.	POLYURETHANE	N.B.R.
LOW TEMP.	-40 / -60	SILICON	SILICON	FLUOROSILICONE
HIGH TEMP.	+90 / +120	VITON	VITON	VITON



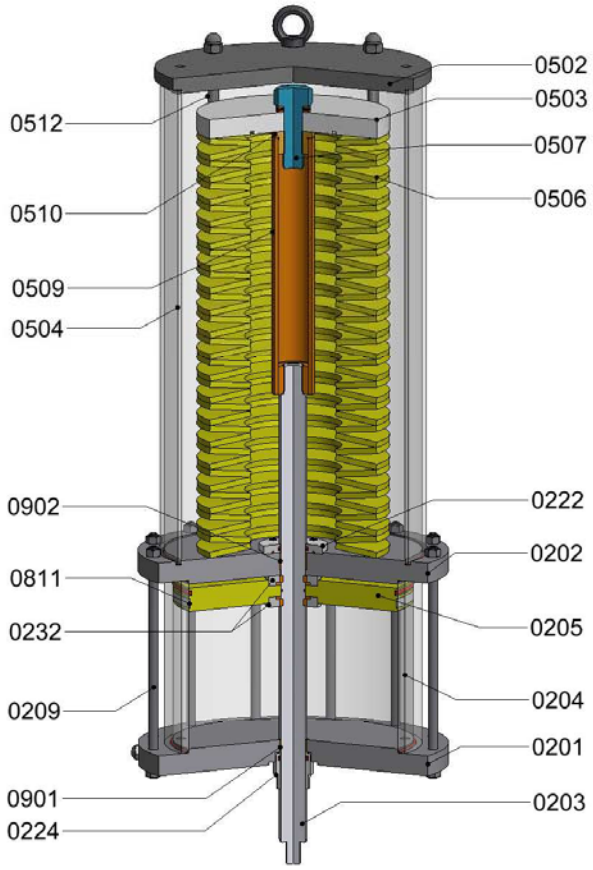
OVERALL DIMENSIONS (mm)

TYPE	Ø D	H	H1	K	T	U	Y
PAA PAH PAZ 420/2	560	285+2S*	170+7S*	110	170+7S*	40+S*	1/2" NPT
PAA PAH PAZ 500/2	595	305+2S*	170+7S*	120	170+7S*	40+S*	1/2" NPT
PAA PAH PAZ 520/2	645	310+2S*	170+7S*	120	170+7S*	40+S*	1/2" NPT
PAA PAH PAZ 600/2	710	325+2S*	170+8S*	120	180+8S*	40+S*	1/2" NPT
PAA PAH PAZ 620/2	755	345+2S*	170+8S*	120	180+8S*	40+S*	1/2" NPT
PAA PAH PAZ 700/2	840	410+2S*	180+9S*	140	190+9S*	40+S*	3/4" NPT
PAA PAH PAZ 800/2	940	445+2S*	180+9S*	140	190+9S*	40+S*	3/4" NPT

STROKE (S*) = ACTUATOR STROKE (mm)

Y = PNEUMATIC ACTUATOR CONNECTION

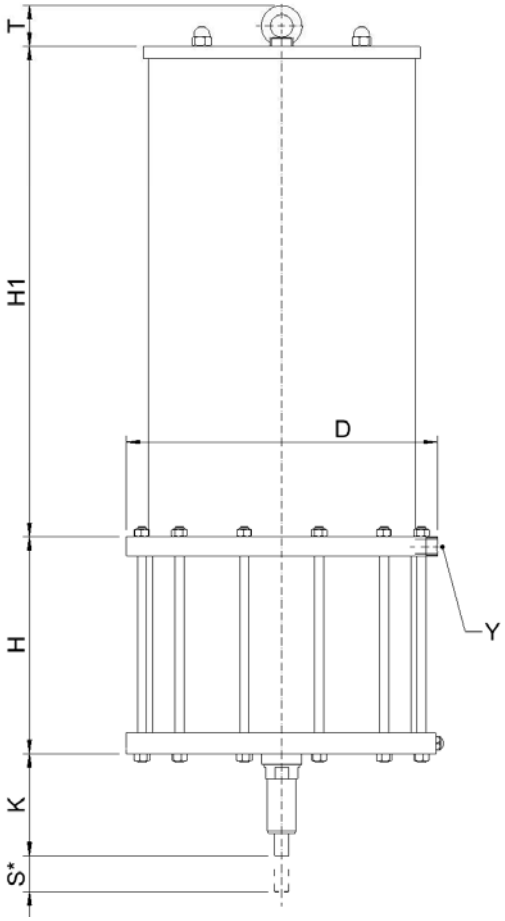
CAUTION: EYE BOLT FOR ACTUATOR LIFTING ONLY



POS.	DESCRIPTION	MATERIAL
0201	INFERIOR HEAD	P 355 NL2 EN 10028-3
0202	SUPERIOR HEAD	P 355 NL2 EN 10028-3
0203	SHAFT	42CrMo4 EN 10083-3
0204	CYLINDER	E 355 EN 10297-1
0205	PISTON	S 355 J2G3 EN 10025-2
0209	STAY BOLT	42CrMo4 EN 10269
0222	FLANGE	C40 EN 10083-2
0224	RING NUT	42CrMo4 EN 10083-3
0232	RING NUT	S 355 J2G3 EN 10025-2
0502	FLANGE	S 355 J2G3 EN 10025-2
0503	SPRIN DISC	S 355 J2G3 EN 10025-2
0504	TUBE	S 355 JR EN 10025-2
0506	SPRING	51CrV4 EN 10089
0507	TIE ROD	42CrMo4 EN 10083-3
0509	TUBE	E 355 EN 10297-1
0510	RING NUT	CB 331G EN 1982
0512	STAY BOLT	42CrMo4 EN 10269
0811	PISTON DRIVE	PTFE+GRAPHITE
0901	BUSHING	BRONZE + PTFE
0902	BUSHING	BRONZE + PTFE

ALL O-RING AND GASKET MATERIAL

AMB. TEMP.	TEMP	O-RING	GASKET
STANDARD	-20 / +80	N.B.R.	POLYURETHANE
LOW TEMP.	-40 / -60	SILICON	SILICON
HIGH TEMP.	+90 / +120	VITON	VITON



OVERALL DIMENSIONS (mm)

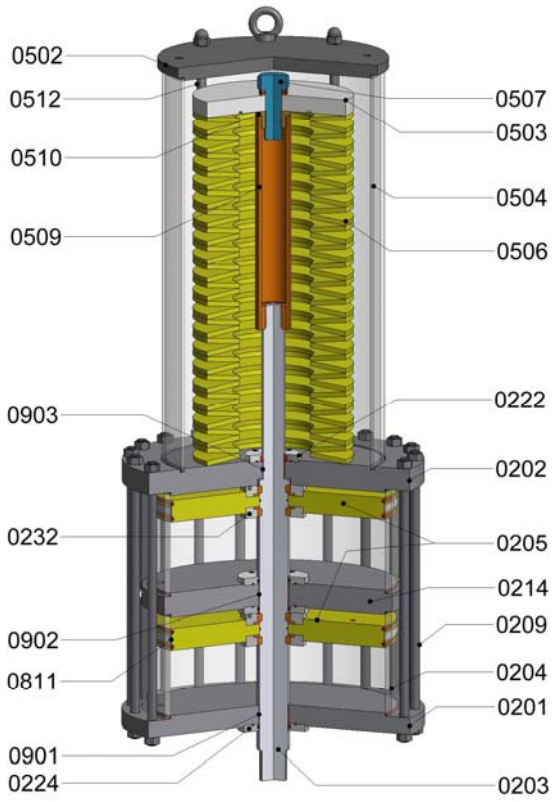
TYPE	Ø D	H	H1	K	T	Y
PAT 300	410	140+S*	105+6S*	110	65	1/2" NPT
PAT 360	470	165+S*	165+6S*	110	65	1/2" NPT
PAT 420	555	165+S*	105+6S*	110	65	1/2" NPT
PAT 500	590	135+S*	105+6S*	120	65	1/2" NPT
PAT 520	640	135+S*	105+7S*	120	65	1/2" NPT
PAT 600	700	145+S*	105+7S*	120	80	1/2" NPT
PAT 620	745	145+S*	105+7S*	120	80	1/2" NPT
PAT 700	830	145+S*	115+8S*	140	80	3/4" NPT
PAT 800	930	180+S*	115+8S*	140	80	3/4" NPT

STROKE (S*) = ACTUATOR STROKE (mm)

Y = PNEUMATIC ACTUATOR CONNECTION

CAUTION: EYE BOLT FOR ACTUATOR LIFTING ONLY

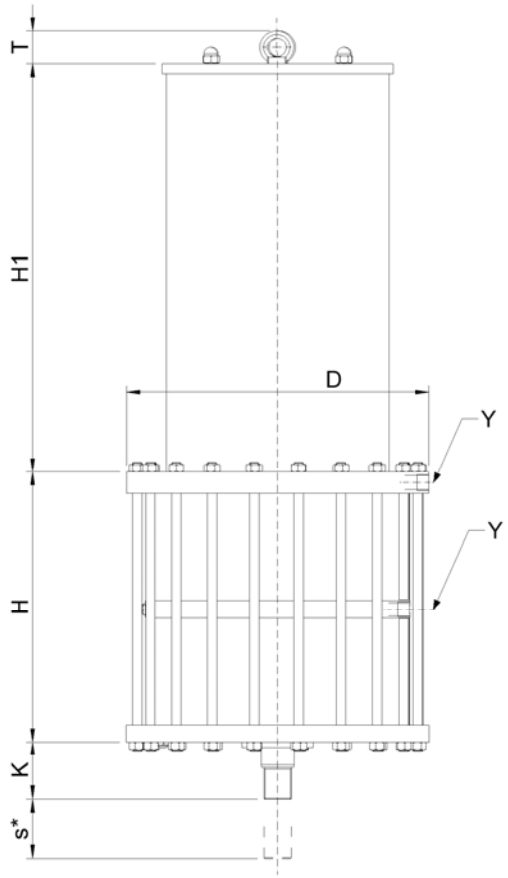
Pneumatic Linear Actuator PAT 420/2 ÷ 800/2



POS.	DESCRIPTION	MATERIAL
0201	INFERIOR HEAD	P 355 NL2 EN 10028-3
0202	SUPERIOR HEAD	P 355 NL2 EN 10028-3
0203	SHAFT	42CrMo4 EN 10083-3
0204	CYLINDER	E 355 EN 10297-1
0205	PISTON	S 355 J2G3 EN 10025-2
0209	STAY BOLT	42CrMo4 EN 10269
0214	INTERMEDIATE HEAD	P 355 NL2 EN 10028-3
0222	FLANGE	C40 EN 10083-2
0224	FLANGE	42CrMo4 EN 10083-3
0232	FLANGE	S 355 J2G3 EN 10025-2
0502	FLANGE	S 355 J2G3 EN 10025-2
0503	SPRING DISC	S 355 J2G3 EN 10025-2
0504	TUBE	S 355 JR EN 10025-2
0506	SPRING	51CrV4 EN 10089
0507	STAY BOLT	42CrMo4 EN 10083-3
0509	TUBE SLEEVE	E 355 EN 10297-1
0510	RING NUT	CB 331G EN 1982
0512	STAY BOLT	42CrMo4 EN 10269
0811	PISTON DRIVE	PTFE+GRAPHITE
0901	BUSHING	BRONZE + PTFE
0902	BUSHING	BRONZE + PTFE
0903	BUSHING	BRONZE + PTFE

ALL O-RING AND GASKET MATERIAL

AMB. TEMP.	TEMP	O-RING	GASKET
STANDARD	-20 / +80	N.B.R.	POLYURETHANE
LOW TEMP.	-40 / -60	SILICON	SILICON
HIGH TEMP.	+90 / +120	VITON	VITON



OVERALL DIMENSIONS (mm)

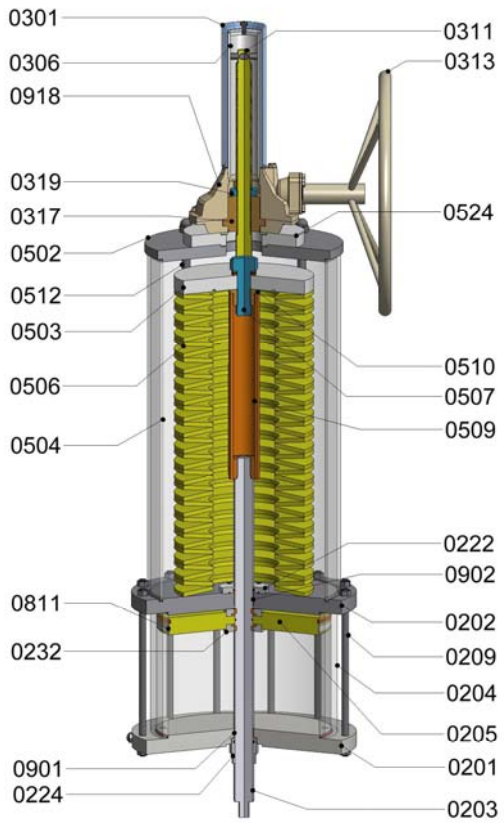
TYPE	Ø D	H	H1	K	T	Y
PAT 420/2	560	260+2S*	105+6S*	110	65	1/2" NPT
PAT 500/2	595	280+2S*	105+6S*	120	65	1/2" NPT
PAT 520/2	645	305+2S*	105+7S*	120	65	1/2" NPT
PAT 600/2	710	320+2S*	105+7S*	120	75	1/2" NPT
PAT 620/2	745	340+2S*	105+7S*	120	75	1/2" NPT
PAT 700/2	840	340+2S*	115+8S*	140	85	3/4" NPT
PAT 800/2	940	420+2S*	115+8S*	140	85	3/4" NPT

STROKE (S*) = ACTUATOR STROKE (mm)

Y = PNEUMATIC ACTUATOR CONNECTION

CAUTION: EYE BOLT FOR ACTUATOR LIFTING ONLY

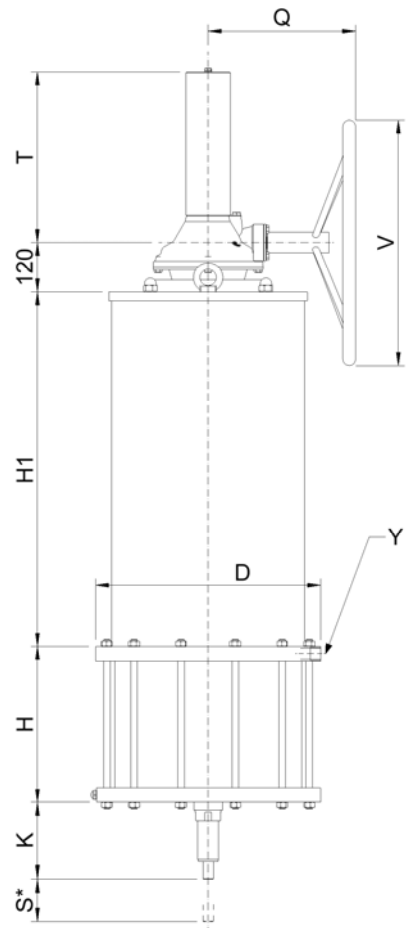
Pneumatic Linear Actuator PART 420 ÷ 800



POS.	DESCRIPTION	MATERIAL
0201	INFERIOR HEAD	P 355 NL2 EN 10028-3
0202	SUPERIOR HEAD	P 355 NL2 EN 10028-3
0203	SHAFT	42CrMo4 EN 10083-3
0204	PNEUMATIC CYLINDER	E 355 EN 10297-1
0205	PYSTON	S 355 J2G3 EN 10025-2
0209	STAY BOLT	42CrMo4 EN 10269
0222	FLANGE	C40 EN 10083-2
0224	RING NUT	42CrMo4 EN 10083-3
0232	FLANGE	S 355 J2G3 EN 10025-2
0301	TUBE	E 355 EN 10297-1
0306	TUBE	E 355 EN 10297-1
0311	STEM	X20Cr 13 EN 10088-1
0313	HANDWHEEL	P 195 TR EN 10216-1
0317	DRIVE NUT	CB 333G EN 1982
0319	RING NUT	42CrMo4 EN 10083-3
0502	FLANGE	S 355 J2G3 EN 10025-2
0503	SPRING DISC	S 355 J2G3 EN 10025-2
0504	TUBE	E 355 EN 10297-1
0506	SPRING	51CrV4 EN 10089
0507	TIE ROD	42CrMo4 EN 10083-3
0509	CANOT	E 355 EN 10297-1
0510	RING NUT	CB 331G EN 1982
0512	STAY BOLT	42CrMo4 EN 10269
0524	FLANGE	S 355 J2G3 EN 10025-2
0811	PISTON DRIVE	PTFE+GRAPHITE
0901	BUSHING	BRONZE + PTFE
0902	BUSHING	BRONZE + PTFE
0903	BUSHING	BRONZE + PTFE
0918	REDUCTOR	CAST IRON

ALL O-RING AND GASKET MATERIAL

AMB. TEMP.	TEMP	O-RING	GASKET
STANDARD	-20 / +80	N.B.R.	POLYURETHANE
LOW TEMP.	-40 / -60	SILICON	SILICON
HIGH TEMP.	+90 / +120	VITON	VITON



OVERALL DIMENSIONS (mm)

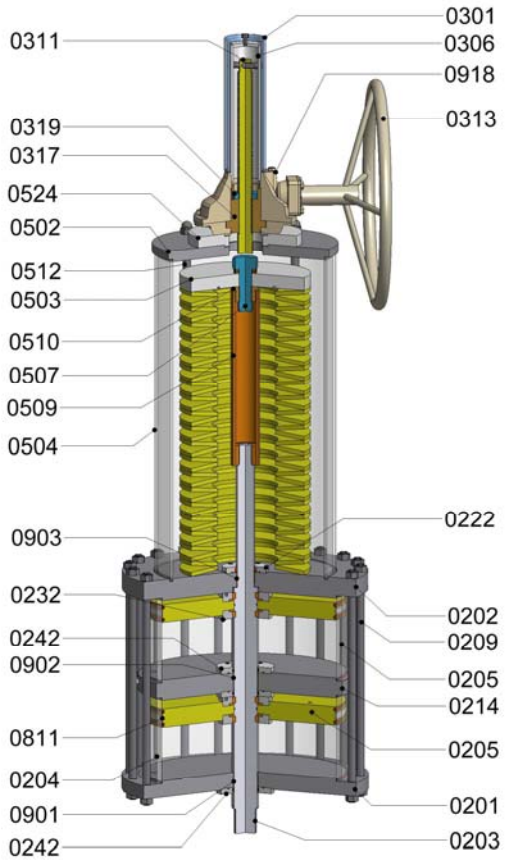
TYPE	Ø D	H	H1	K	Q	T	Ø V	Y
PART 420	555	145+S*	105+6S*	110	330	140+S*	600	1/2" NPT
PART 500	590	150+S*	105+6S*	120	350	140+S*	600	1/2" NPT
PART 520	640	165+S*	105+7S*	120	350	140+S*	600	1/2" NPT
PART 600	700	175+S*	105+7S*	120	380	140+S*	800	1/2" NPT
PART 620	745	180+S*	105+7S*	120	380	140+S*	800	1/2" NPT
PART 700	830	215+S*	115+8S*	140	400	140+S*	800	3/4" NPT
PART 800	930	240+S*	115+8S*	140	450	140+S*	800	3/4" NPT

STROKE (S*) = ACTUATOR STROKE (mm)

Y = PNEUMATIC ACTUATOR CONNECTION

CAUTION: EYE BOLT FOR ACTUATOR LIFTING ONLY

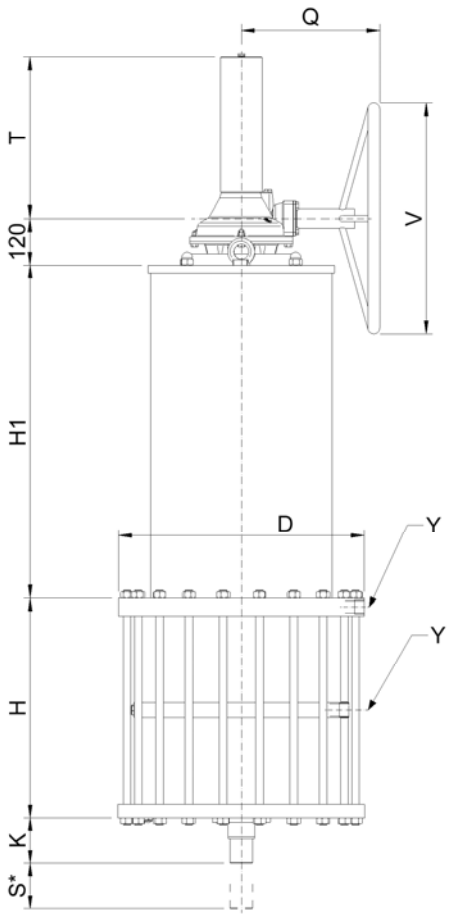
Pneumatic Linear Actuator PART 420/2 ÷ 800/2



POS.	DESCRIPTION	MATERIAL
0201	INFERIOR HEAD	P 355 NL2 EN 10028-3
0202	SUPERIOR HEAD	P 355 NL2 EN 10028-3
0203	SHAFT	42CrMo4 EN 10083-3
0204	PNEUMATIC CYLINDER	E 355 EN 10297-1
0205	PYSTON	S 355 J2G3 EN 10025-2
0209	STAY BOLT	42CrMo4 EN 10269
0214	INTERMEDIATE HEAD	P 355 NL2 EN 10028-3
0222	FLANGE	C40 EN 10083-2
0232	FLANGE	S 355 J2G3 EN 10025-2
0242	FLANGE	42CrMo4 EN 10083-3
0301	TUBE	E 355 EN 10297-1
0306	TUBE	E 355 EN 10297-1
0311	STEM	X20Cr 13 EN 10088-1
0313	HANDWHEEL	P 195 TR EN 10216-1
0317	DRIVE NUT	CB 333G EN 1982
0319	RING NUT	42CrMo4 EN 10083-3
0502	FLANGE	S 355 J2G3 EN 10025-2
0503	SPRING DISC	S 355 J2G3 EN 10025-2
0504	TUBE	E 355 EN 10297-1
0506	SPRING	51CrV4 EN 10089
0507	TIE ROD	42CrMo4 EN 10083-3
0509	CANOT	E 355 EN 10297-1
0510	RING NUT	CB 331G EN 1982
0512	STAY BOLT	42CrMo4 EN 10269
0524	FLANGE	S 355 J2G3 EN 10025-2
0811	PISTON DRIVE	PTFE+GRAPHITE
0901	BUSHING	BRONZE + PTFE
0902	BUSHING	BRONZE + PTFE
0903	BUSHING	BRONZE + PTFE
0918	REDUCTOR	CAST IRON

ALL O-RING AND GASKET MATERIAL

AMB. TEMP.	TEMP	O-RING	GASKET
STANDARD	-20 / +80	N.B.R.	POLYURETHANE
LOW TEMP.	-40 / -60	SILICON	SILICON
HIGH TEMP.	+90 / +120	VITON	VITON



OVERALL DIMENSIONS (mm)

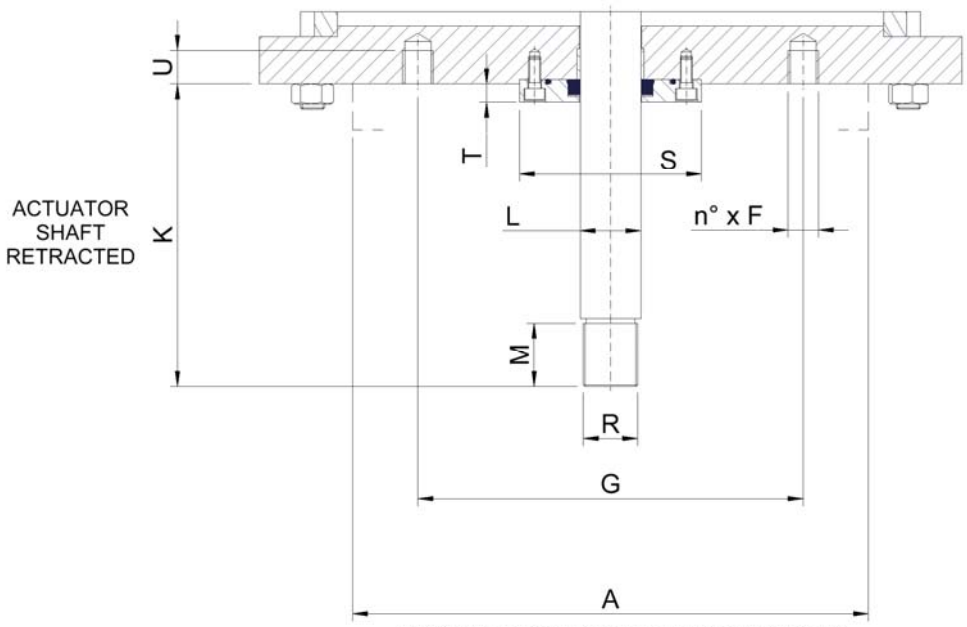
TYPE	Ø D	H	H1	K	Q	T	Ø V	Y
PART 420/2	560	285+2S*	105+6S*	110	330	140+S*	600	1/2" NPT
PART 500/2	595	305+2S*	105+6S*	120	350	140+S*	600	1/2" NPT
PART 520/2	645	310+2S*	105+7S*	120	350	140+S*	600	1/2" NPT
PART 600/2	710	325+2S*	105+7S*	120	380	140+S*	800	1/2" NPT
PART 620/2	745	345+2S*	105+7S*	120	380	140+S*	800	1/2" NPT
PART 700/2	840	410+2S*	115+8S*	140	400	140+S*	800	3/4" NPT
PART 800/2	940	445+2S*	115+8S*	140	450	140+S*	800	3/4" NPT

STROKE (S*) = ACTUATOR STROKE (mm)

Y = PNEUMATIC ACTUATOR CONNECTION

CAUTION: EYE BOLT FOR ACTUATOR LIFTING ONLY

STANDARD ACTUATOR COUPLING FLANGE



CYLINDER TYPE	Ø A	F	Ø G	K	Ø L	M	R	Ø S	T	U
125	-	4 x M 12	125	90	25	25	M 20	90	8	15
160	-	4 x M 16	165	90	25	25	M 20	90	8	15
200	-	4 x M 16	165	90	30	30	M 24	90	8	15
250	210	4 x M 16	165	90	30	35	M 27	90	8	15
300	210	4 x M 20	165	110	40	40	M 32 x 2	120	12	15
360	290	4 x M 20	254	110	40	45	M 36 x 2	120	12	15
420	290	4 x M 20	254	110	50	50	M 42 x 2	120	12	25
500	400	8 x M 20	356	120	50	55	M 48 x 2	120	12	25
520	400	8 x M 20	356	120	60	55	M 48 x 2	120	12	25
600	400	8 x M 20	356	120	60	60	M 52 x 2	120	12	25
620	400	8 x M 20	356	120	60	60	M 52 x 2	120	12	30
700	470	8 x M 30	406	140	70	65	M 58 x 2	150	12	35
800	470	8 x M 30	406	140	80	75	M 68 x 2	150	12	35
420/2	400	8 x M 20	356	110	60	60	M 52 X 2	120	12	25
500/2	400	8 x M 20	356	120	60	65	M 58 x 2	120	12	25
520/2	400	8 x M 20	356	120	70	65	M 58 x 2	150	12	25
600/2	470	8 x M 30	406	120	70	75	M 68 x 2	150	12	25
620/2	470	8 x M 30	406	120	70	75	M 68 x 2	150	12	30
700/2	560	8 x M 36	483	140	80	85	M 78 x 2	150	12	35
800/2	560	8 x M 36	483	140	90	85	M 78 x 2	150	19	35

CUSTOMIZED COUPLING FLANGE OR YOKE ACCORDING
TO CUSTOMER REQUIREMENTS ON REQUEST