OPTIONS AND SPECIAL VERSIONS OF PNEUMATIC CYLINDERS VDMA 24 562 - ISO 6431

SERIES 450 - TYPE: **PES**

P239-GB-R1c

ASCO® JOUCOMATIC

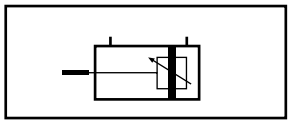
The PES range of pneumatic cylinders - Series 450 as per standards VDMA 24 562 and ISO 6431, are suitable for all compressed air automation applications.

- **Standard range** (for typical applications)
  - PES 32 to 125 mm bore non tie-rod cylinders
  - PES 32 to 200 mm bore tie-rod cylinders with steel or aluminium barrels
  - Cylinders with and without adjustable pneumatic cushioning, designed or not designed to receive magnetic position detectors of the reed switch, magneto-resistive or magneto-inductive types
- **The specialised versions and options** shown in this document can be used to to meet the requirements of specific applications in difficult environments.

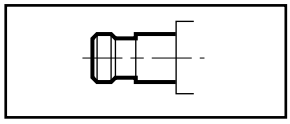
CONTENTS

Other options or specialised versions: see overleaf ➤➤

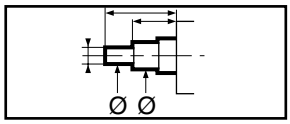
OTHER OPTIONS AND SPECIALISED VERSIONS OF PNEUMATIC CYLINDERS TO VDMA - ISO STANDARDS OF TYPE PES



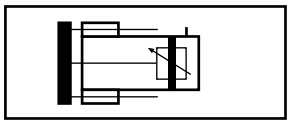
- Extended piston rod



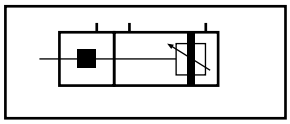
- Eye rod



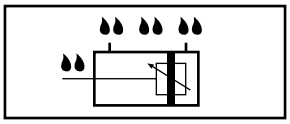
- Special machining of piston rod end



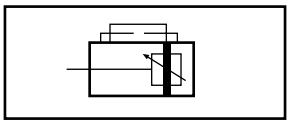
- Cylinder with “U” or “H” guiding unit slide or ball bearings (see P237)



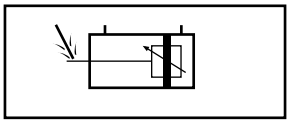
- Piston rod locking on cylinders 40 to 100 mm diameter (see P238)



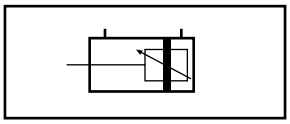
- Stainless steel rod
- Stainless steel barrel
- Stainless steel screws and hardware
- Epoxy resin glass fiber barrel
- Anticorrosive finish on end covers and barrel



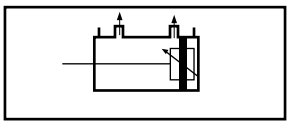
- Mounting of control valve on the cylinder
- With or without flow reducer



- Impact-resistant rod



- Extented cushioning



- Cylinders with pressure outlets on barrel (stainless steel version) for exhaust pressure detection

PES cylinder with U-type slide bearings
(see P237)

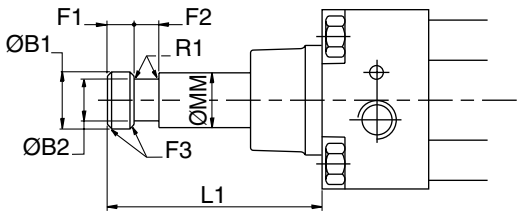
PES cylinder with H-type guide unit with slide or ball bearings
(see P237)

PES cylinder with rod lock locking in absence of air
(see P238)

For all these options and special versions - consult us
For any special cylinder requirements - consult us

EYE ROD

All types of 32 to 200 mm bore PES cylinders can be supplied with eye rod ends.
Dimensions available on request (consult us)



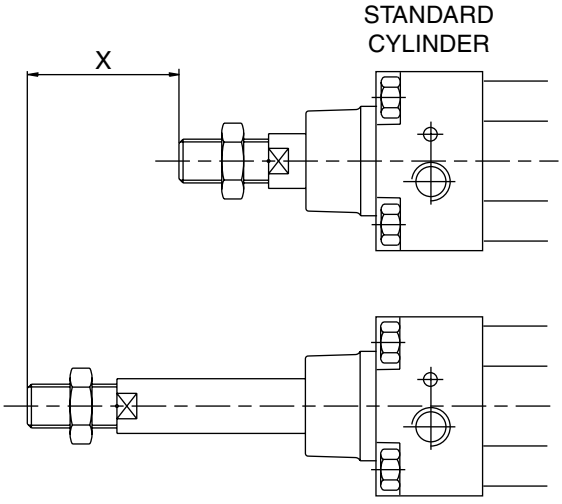
APPLICATION

This eye rod end:
- Facilitates connection,
- Enables stress-free joints to be made,
- Enables **rapid** replacement **without adjustment** of the cylinder with the mechancial part driven.

EXTRA ROD LENGTH

All types of 32 to 200 mm PES cylinders can be supplied with extra rod length as per VDMA 24562.

Extra length “X” provided on request

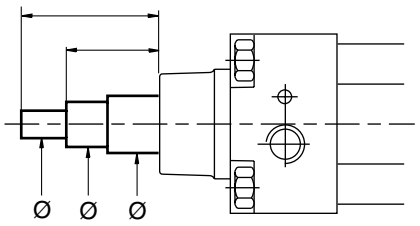


CYLINDER WITH EXTRA LONG ROD
Cylinders shown with rod retracted

SPECIALLY-MACHINED ROD END

All types of 32 to 200 mm bore PES cylinders can be supplied with customised rod ends.

Consult us



PES cylinder with oversized rod: see overleaf

DOUBLE ACTING PNEUMATIC CYLINDER - Ø 63 to 125 mm

Cylinder complies with VDMA 24 562 - ISO 6431 standards

WITH OVERSIZE PISTON RODS

SPECIFICATIONS

PES cylinders with Ø 63 to 125 mm can be fitted with a larger diameter piston rod than standard.

Bore Ø	rod Ø (ØMM)		rod end thread Ø (ØKK)	
	standard	**oversize**	standard	**oversize**
63	20	**25**	M16x1,5	**M20x1,5**
80	25	**30**	M20x1,5	**M27x2**
100	25	**32**	M20x1,5	**M27x2**
125	32	**40**	M27x2	**M36x2**

Fluid : air or neutral gas filtered, lubricated or not
Pressure : 10 bar max.
Temperature : -20°C, +70°C
Cushioning : In this version, pneumatic cushioning is **only at rear**

Oversize rod not possbile for cylinders with:
- Rod boot
- Rod lock
- Anti-rotation piston rod

ORDERING

In your order, indicate

■ Cylinder description:

PES cylinder with non-tie rod barrel or with tie rods and aluminium or steel barrel, cylinder designed or not designed to receive magnetic position sensors

■ Model code plus stroke indication:

Bore Ø (mm)	**PES equipped for detectors** (2) Cylinder with **profiled barrel**	Cylinder **with tie rods** aluminium barrel	**Cylinder non equipped for detectors** Cylinder **with tie rods** steel barrel
63	**450 51 047** (1)...	**450 51 043** (1)...	**450 51 039** (1)...
80	**450 51 048** (1)...	**450 51 044** (1)...	**450 51 040** (1)...
100	**450 51 049** (1)...	**450 51 045** (1)...	**450 51 041** (1)...
125	**450 51 050** (1)...	**450 51 046** (1)...	**450 51 042** (1)...

(1) Indicate the stroke (in mm), preferably choosing standard values (see standard equipment)
(2) **The magnetic position detectors are ordered separately:** UNI model, reed switch or magneto-resistive type (see P295) or BIM model, magneto-inductive type (see P297)

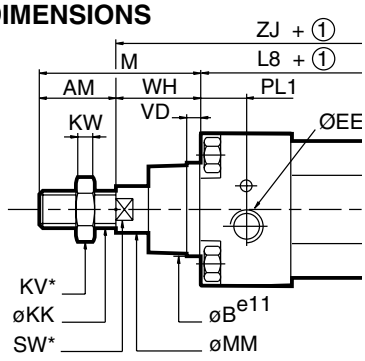
ACCESSORY

■ Rod end clevis code (if applicable):

The following table shows all the clevises and self-aligning eyes that fit oversize rod ends with allowance for the rod end thread diameter difference.

Bore Ø	**CODES** Female rod clevis ISO 8140	Spherical rod end ISO 8139
63	**434 00 019**	**434 00 004**
80	**434 00 020**	**434 00 005**
100	**434 00 020**	**434 00 005**
125	**434 00 021**	**434 00 006**

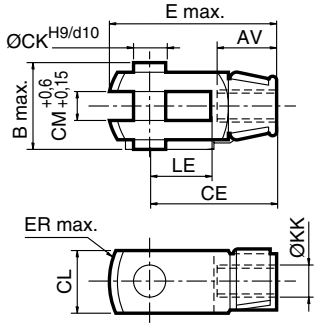
DIMENSIONS



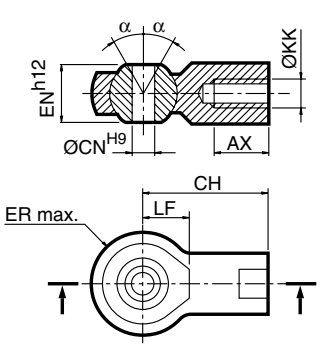
Bore Ø	**DIMENSIONS**													
	AM	**ØB**	**ØEE**	**ØKK**	**KV**	**KW**	**L8**	**M**	**ØMM**	**PL1**	**SW**	**VD**	**WH**	**ZJ**
63	40	45	G3/8	M20x1,5	30	10	121	86	25	26	21	6	46	167
80	54	45	G3/8	M27x2	41	13,5	128	119	30	24	27	6	65	193
100	54	55	G1/2	M27x2	41	13,5	138	119	32	25	27	6	65	203
125	72	60	G1/2	M36x2	55	18	160	152	40	32	36	10	80	240

① : + stroke
❄ : size across flats

FEMALE ROD CLEVIS AP2-ISO 8140



SPHERICAL ROD END AP6-ISO 8139



Bore Ø	**DIMENSIONS**							
	AV	**AX**	**B**	**CE**	**CH**	**ØCK**	**CL**	**CM**
63	33	33	48	80	40	20	40	20
80	51	51	65	110	110	30	55	30
100	51	51	65	110	110	30	55	30
125	56	56	84	144	125	35	70	35

Bore Ø	**DIMENSIONS**							
	ØCN	**E**	**EN**	**ER**	**ØKK**	**LE**	**LF**	α
63	20	112	25	25	M20x1,5	40	26	4°
80	30	155	37	35	M27x2	54	36	4°
100	30	155	37	35	M27x2	54	36	4°
125	35	201	43	40	M36x2	72	41	4°

DOUBLE ACTING PNEUMATIC CYLINDER - Ø 32 to 80 mm

Cylinder complies with VDMA 24 562 - ISO 6431 standards

WITH EPOXY BARREL DESIGNED FOR INDUCTIVE DETECTORS

APPLICATION

Properties of epoxy barrel:
- Being amagnetic, inductive solid state sensors can be used on special models (with steel ring + piston)
- Can be used with lubricated and unlubricated air
- Low weight

SPECIFICATIONS

Fluid : air or neutral gas, filtered, lubricated or not
Pressure : 10 bar max.
Temperature : -20°C, +60°C
Cushioning : pneumatic, adjustable at both ends by means of captive screws

Bore Ø (mm)	**32**	**40**	**50**	**63**	**80**
Max. stroke (mm)	300	400	500	500	700
Maximum tie rod torque load (m.daN)	**0,15**	**0,30**	**0,40**	**0,50**	**0,80**

Recommendation: In view of the low heat dissipation coefficient of an epoxy barrel, this type of cylinder is not suitable for heavy duty cycles.

ORDERING

In your order, indicate

- Description: tie rod PES epoxy barrel cylinder with cushioning, designed for inductive detectors
- The inductive detector cylinder code plus the stroke indication (in mm)

Bore Ø (mm)	**EPOXY BARREL CYLINDER FOR INDUCTIVE DETECTOR ❄**	
	CODE	REFERENCE
32 (2)	**450 51 034** (1) ...	PES 32 LA (1) RDI
40	**450 51 035** (1) ...	PES 40 LA (1) RDI
50	**450 51 036** (1) ...	PES 50 LA (1) RDI
63	**450 51 037** (1) ...	PES 63 LA (1) RDI
80	**450 51 038** (1) ...	PES 80 LA (1) RDI

(1) Indicate the stroke (in mm), preferably choosing standard values (see standard equipment P232). Maximum stroke: see above

❄ These cylinders are designed to receive inductive sensors supplied by others. Supports can be supplied for **square** detectors (consult us)

NOTE: On request, this type of cylinder can be equipped with piston rods, tie rods and threaded fasteners of stainless steel and corrosion-resistant ends.

MOUNTINGS: same as those of standard cylinders (see P242)

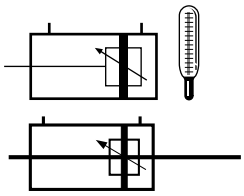
DIMENSIONS: same as those of standard cylinders (see P232)

Series 450
Type: PES-SHT
PES-SHT-T2

Steel
air cylinder (S)

DOUBLE ACTING CYLINDER Ø 32 to 200 mm FOR HIGH TEMPERATURE

Conforming with VDMA-ISO standards
Single and through rod versions
With adjustable pneumatic cushioning



SPECIFICATIONS

FLUID : air or neutral gas filtered, lubricated or dry
PRESSURE : 10 bar max.
TEMPERATURE : 0°C, at + **120°C**
MAX. SPEED : 1 m/s
STANDARDS : **VDMA 24562 - ISO 6431**

CONSTRUCTION

Barrel : steel
Tie rods : stainless steel (Ø 32-100), paint steel (Ø 125-200)
Rod : hard chrome plated steel
Piston : aluminium
Piston seals : fluorelastomer (FPM)
Cushioning seals : fluorelastomer (FPM)
Front and rear ends : aluminium alloy
Bearing : metal self lubricating
Rod nut : galvanized steel
Cushioning : pneumatic, adjustable from both sides with captive screws

CHOICE OF EQUIPMENT

SINGLE ROD CYLINDER

Bore Ø (mm)	CODES (1)	REFERENCES (1)	RECOMMENDED STANDARD STROKE (mm) 25	50	80	100	125	160	200	250	320	400	500	630	700	800	900	1000	Max. stroke capability (mm)	Connection Ø
32	**450 50 980 ...** (1)	PES 32 TA ... (1) SHT	●	●	●	●	●	●	●	●									1000	G 1/8
40	**450 50 981 ...** (1)	PES 40 TA ... (1) SHT	●	●	●	●	●	●	●	●	●	●							1500	G 1/4
50	**450 50 982 ...** (1)	PES 50 TA ... (1) SHT	●	●	●	●	●	●	●	●	●	●	●	●					1800	G 1/4
63	**450 50 983 ...** (1)	PES 63 TA ... (1) SHT	●	●	●	●	●	●	●	●	●	●	●	●					1800	G 3/8
80	**450 50 984 ...** (1)	PES 80 TA ... (1) SHT	●	●	●	●	●	●	●	●	●	●	●	●					2000	G 3/8
100	**450 50 985 ...** (1)	PES 100 TA ... (1) SHT	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	2500	G 1/2
125	**450 50 986 ...** (1)	PES 125 TA ... (1) SHT	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	2500	G 1/2
160	**450 50 987 ...** (1)	PES 160 TA ... (1) SHT	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	2500	G 3/4
200	**450 50 988 ...** (1)	PES 200 TA ... (1) SHT	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	2500	G 3/4

THROUGH ROD CYLINDER

Bore Ø (mm)	CODES (1)	REFERENCES (1)	RECOMMENDED STANDARD STROKE (mm) 25	50	80	100	125	160	200	250	320	400	500	Max. stroke capability (mm)	Connection Ø
32	**450 50 989 ...** (1)	PES 32 TA ... (1) SHT-T2	●	●	●	●	●	●	●	●				300	G 1/8
40	**450 50 990 ...** (1)	PES 40 TA ... (1) SHT-T2	●	●	●	●	●	●	●	●	●	●		400	G 1/4
50	**450 50 991 ...** (1)	PES 50 TA ... (1) SHT-T2	●	●	●	●	●	●	●	●	●	●	●	500	G 1/4
63	**450 50 992 ...** (1)	PES 63 TA ... (1) SHT-T2	●	●	●	●	●	●	●	●	●	●	●	500	G 3/8
80	**450 50 993 ...** (1)	PES 80 TA ... (1) SHT-T2	●	●	●	●	●	●	●	●	●	●	●	600	G 3/8
100	**450 50 994 ...** (1)	PES 100 TA ... (1) SHT-T2	●	●	●	●	●	●	●	●	●	●	●	600	G 1/2
125	**450 50 995 ...** (1)	PES 125 TA ... (1) SHT-T2	●	●	●	●	●	●	●	●	●	●	●	600	G 1/2
160	**450 50 996 ...** (1)	PES 160 TA ... (1) SHT-T2	●	●	●	●	●	●	●	●	●	●	●	600	G 3/4
200	**450 50 997 ...** (1)	PES 200 TA ... (1) SHT-T2	●	●	●	●	●	●	●	●	●	●	●	600	G 3/4

(1) Indicate stroke (in mm) preferably by selecting one of the standard strokes above. Do not exceed maximum possible stroke

MOUNTINGS: same as those of standard cylinders (see P242)

DIMENSIONS: same as those of standard cylinders (see P232)

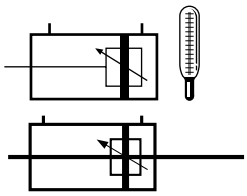
DETECTORS: No position detectors may be used when operating this type of cylinder at high temperature.

Series 450
Type: PES-RHT
PES-RHT-T2

Aluminium
air cylinder (R)

DOUBLE ACTING CYLINDER Ø 32 to 80 mm FOR HIGH TEMPERATURE

Conforming with VDMA-ISO standards
Single and through rod versions
With adjustable pneumatic cushioning



SPECIFICATIONS

FLUID : air or neutral gas filtered, lubricated or dry
PRESSURE : 10 bar max.
TEMPERATURE : 0°C, at + **120°C**
MAX. SPEED : 1 m/s
STANDARDS : **VDMA 24562 - ISO 6431**

CONSTRUCTION

Barrel : hard anodized aluminium alloy
Tie rods : stainless steel
Rod : hard chrome plated steel
Piston : aluminium
Piston seals : fluorelastomer (FPM)
Cushioning sealst : fluorelastomer (FPM)
Front and rear ends : aluminium alloy
Bearing : metal self lubricating
Rod nut : galvanized steel
Cushioning : pneumatic, adjustable from both sides with captive screws

CHOICE OF EQUIPMENT

SINGLE ROD CYLINDER

Bore Ø (mm)	CODES (1)	REFERENCES (1)	RECOMMENDED STANDARD STROKE (mm) 25	50	80	100	125	160	200	250	320	400	500	630	Max. stroke capability (mm)	Connection Ø
32	**450 50 998 ....** (1)	PES 32 TA .... (1) RHT	●	●	●	●	●	●	●	●					1000	G 1/8
40	**450 50 999 ....** (1)	PES 40 TA .... (1) RHT	●	●	●	●	●	●	●	●	●	●			1500	G 1/4
50	**450 51 000 ....** (1)	PES 50 TA .... (1) RHT	●	●	●	●	●	●	●	●	●	●	●	●	1800	G 1/4
63	**450 51 001 ....** (1)	PES 63 TA .... (1) RHT	●	●	●	●	●	●	●	●	●	●	●	●	1800	G 3/8
80	**450 51 002 ....** (1)	PES 80 TA .... (1) RHT	●	●	●	●	●	●	●	●	●	●	●	●	2000	G 3/8

TROUGH ROD CYLINDER

Bore Ø (mm)	CODES (1)	REFERENCES (1)	RECOMMENDED STANDARD STROKE (mm) 25	50	80	100	125	160	200	250	320	400	500	Max. stroke capability (mm)	Connection Ø
32	**450 51 003 ....** (1)	PES 32 TA .... (1) RHT-T2	●	●	●	●	●	●	●	●				300	G 1/8
40	**450 51 004 ....** (1)	PES 40 TA .... (1) RHT-T2	●	●	●	●	●	●	●	●	●	●		400	G 1/4
50	**450 51 005 ....** (1)	PES 50 TA .... (1) RHT-T2	●	●	●	●	●	●	●	●	●	●	●	500	G 1/4
63	**450 51 006 ....** (1)	PES 63 TA .... (1) RHT-T2	●	●	●	●	●	●	●	●	●	●	●	500	G 3/8
80	**450 51 007 ....** (1)	PES 80 TA .... (1) RHT-T2	●	●	●	●	●	●	●	●	●	●	●	600	G 3/8

(1) Indicate stroke (in mm) preferably by selecting one of the standard strokes above. Do not exceed maximum possible stroke

MOUNTINGS: same as those of standard cylinders (see P242)

DIMENSIONS: same as those of standard cylinders (see P232)

DETECTORS: No position detectors may be used when operating this type of cylinder at high temperature.

DOUBLE ACTING PNEUMATIC CYLINDER - Ø 32 to 200 mm

Cylinder complies with VDMA 24 562 - ISO 6431 standards

WITH FPM SEALS FOR AGGRESSIVE ENVIRONMENTS

APPLICATION

PES cylinder equipped with seals (piston rod seal + all internal seals) of FPM for use in aggressive environments, subject to compatibility with standard construction materials (see below). On request, this type of cylinder can be equipped with stainless steel piston rods, tie rods and threaded fasteners and corrosion-resistant ends.

SPECIFICATIONS

Fluid : air or neutral gas filtered, lubricated or not
Pressure : 10 bar
Temperature : 0°C, +70°C
Cushioning : pneumatic, adjustable at both ends by captive screws

CONSTRUCTION

Barrel : hard-anodized aluminium or painted steel
Tie rods : stainless steel (Ø32 to 100 mm)
painted steel (Ø125 to 200 mm)
Piston rod/nut : hard chrome plated steel, nut zinc-plated steel
Front and rear ends : aluminium alloy
Threaded fasteners : zinc-plated steel

ORDERING

In your order, indicate

- Cylinder description: Type **PES FPM seals**, tie rods or profiled barrel, aluminium or steel barrel, single or through rod, cushioned or not cushioned, equipped or non equipped to receive magnetic position detectors.
- Model code plus stroke indication:

Bore Ø (mm)	PES Ø 32 to 125 mm **PROFILED BARREL** CYLINDERS **equipped** for magnetic detectors (2)		PES Ø 32 to 200 mm **TIE-ROD** CYLINDERS		
			equipped for magnetic detectors (2)		**non equipped** for magnetic detectors
	with **single rod**	with **through rod**	with **single rod** aluminium barrel	with **through rod** aluminium barrel	with **single rod** steel barrel
32(3)	**450 52 017** (1)	**450 52 024** (1)	**450 51 081** (1)	**450 51 090** (1)	**450 52 008** (1)
40	**450 52 018** (1)	**450 52 025** (1)	**450 51 082** (1)	**450 51 091** (1)	**450 52 009** (1)
50	**450 52 019** (1)	**450 52 026** (1)	**450 51 083** (1)	**450 51 092** (1)	**450 52 010** (1)
63	**450 52 020** (1)	**450 52 027** (1)	**450 51 084** (1)	**450 51 093** (1)	**450 52 011** (1)
80	**450 52 021** (1)	**450 52 028** (1)	**450 51 085** (1)	**450 51 094** (1)	**450 52 012** (1)
100	**450 52 022** (1)	**450 52 029** (1)	**450 51 086** (1)	**450 51 095** (1)	**450 52 013** (1)
125	**450 52 023** (1)	**450 52 030** (1)	**450 51 087** (1)	**450 51 096** (1)	**450 52 014** (1)
160	-	-	**450 51 088** (1)	**450 51 097** (1)	**450 52 015** (1)
200	-	-	**450 51 089** (1)	**450 51 098** (1)	**450 52 016** (1)

(1) Indicate the stroke (in mm), preferably choosing standard values (see standard equipment: P230-P232)
(2) **The magnetic position detectors are ordered separately:** UNI model, reed switch or magneto-resistive type (see P295)
(3) In the case of use of a BIM magnetic detector on PES series 450 **Ø 32**, it is necessary to add the option code = **995 125**

MOUNTINGS: Fastener codes and quantities (see P242)
DIMENSIONS: same as standard cylinders (see P229-P232)

DOUBLE ACTING PNEUMATIC CYLINDER - Ø 32 to 200 mm

WITH ROD SEAL ONLY OF FPM

APPLICATION

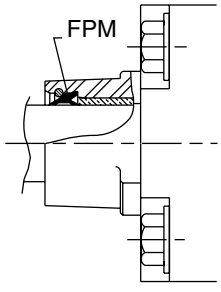
Only the piston rod seal of FPM, affords better corrosion resistance than the standard PUR one, to protect the interior of the seal in the event of use in damp and slightly aggressive environments. On request, this type of cylinder can be equipped with stainless steel piston rods, tie rods and threaded fasteners and corrosion-resistant ends.

ORDERING

In your order, indicate

- Cylinder description: Type **PES with FPM seals**, tie rod or profiled barrel, aluminium or steel barrel, single or through rod, cushioned or not cushioned, equipped or non equipped to receive magnetic position detectors.
- Code of standard cylinder plus stroke indication: 450 .. ...
- FPM rod seal option code:

Bore Ø (mm)	**CODES** with **single rod**	with **through rod**
32	**510 550**	**510 556**
40	**510 551**	**510 557**
50-63	**510 552**	**510 558**
80-100	**510 553**	**510 559**
125	**510 554**	**510 560**
160-200	**510 555**	**510 561**



MOUNTINGS: Fastener codes and quantities (see P242)

DOUBLE ACTING PNEUMATIC CYLINDER - Ø 32 to 200 mm

Cylinder complies with VDMA 24 562 - ISO 6431 standards

WITH PISTON ROD PROTECTION BOOT

APPLICATION

PES cylinder equipped with protective boot of nitrile (NBR)

SPECIFICATIONS

Fluid : air or neutral gas filtered, lubricated or not
Pressure : 10 bar max.
Temperature : -20°C, +70°C
Maximum stroke :

Bore Ø (mm)	Max. stroke (mm) PES **profiled barrel**	PES **tie rods**
32	250	250
40	500	500
50	750	750
63-125	1000	1000
160-200	-	1000

CONSTRUCTION

Nitrile boot (NBR)
Retaining ring of light alloy and acetal resin (POM)
Other parts: same as those of standard PES cylinders

ORDERING

In your order, indicate
CYLINDER:
- Code or part number of standard PES
- Rod boot option code:

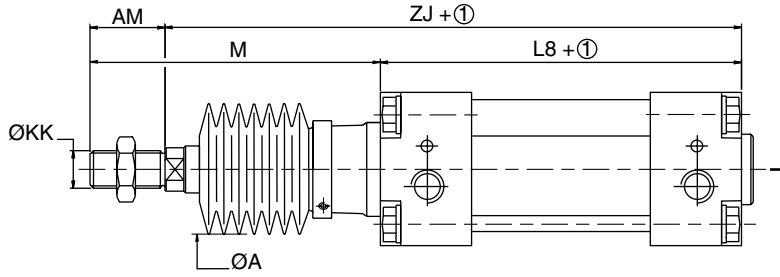
The following versions and mountings do not fit and cannot be adapted for this specialized cylinder:
- Hinge
- Anti-rotation piston rod
- High temperature version
- Rod lock
- Oversize rod

	Bore Ø (mm)	32 (1)	40	50	63	80	100	125	160	200
CODES	Single rod	**911 503**	**911 504**	**911 505**	**911 506**	**911 507**	**911 508**	**911 509**	**911 510**	**911 511**
	Through rod	**911 512**	**911 513**	**911 514**	**911 515**	**911 516**	**911 517**	**911 518**	**911 519**	**911 520**

The magnetic position detectors are ordered separately: UNI model, reed switch or magneto-resistive type (see P295)
(1) In the case of use of a BIM magnetic detector on PES series 450 **Ø 32**, it is necessary to add the option code = **995 125**
MOUNTINGS: Fastener codes and quantities (see P242 and remarks below)
The front flange or top brackets are supplied installed on the cylinder

DIMENSIONS

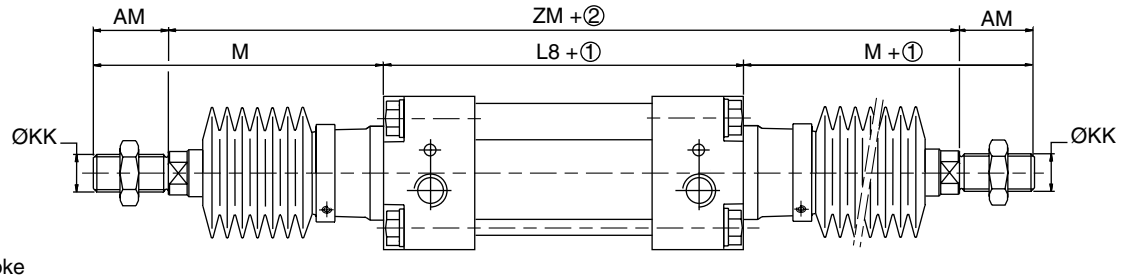
Cylinder single rod



Version with **profiled barrel**
Ø 32 to 125 mm

Version **with tie rods**
Ø 32 to 200 mm

Cylinder with through rod



① : + stroke
② : + 2 x stroke

Bore Ø (mm)	ØA	AM	ØKK	L8	**M** as a function of stroke: (mm) 0-75	76-150	151-250	251-500	501-750	751-1000	**ZJ** as a function of stroke: (mm) 0-75	76-150	151-250	251-500	501-750	751-1000	**ZM** as a function of stroke: (mm) 0-75	76-150	151-250	251-500	501-750	751-1000
32	41	22	M10x1,25	94	81	107	127	-	-	-	153	179	199	-	-	-	212	264	304	-	-	-
40	41	24	M12x1,25	105	138	138	138	218	-	-	219	219	219	299	-	-	333	333	333	493	-	-
50	60	32	M16x1,5	106	153	153	153	233	313	-	227	227	227	307	387	-	348	348	348	508	668	-
63	60	32	M16x1,5	121	153	153	153	233	313	394	242	242	242	322	402	483	363	363	363	523	683	845
80	60	40	M20x1,5	128	170	170	170	250	330	411	258	258	258	338	418	499	388	388	388	548	708	870
100	60	40	M20x1,5	138	160	160	160	220	280	340	258	258	258	318	378	438	378	378	378	498	618	738
125	88	54	M27x2	160	188	188	188	248	308	368	294	294	294	354	414	474	428	428	428	548	668	788
160	88	72	M36x2	180	222	222	222	266	311	386	330	330	330	374	419	494	480	480	480	568	658	808
200	88	72	M36x2	180	237	237	237	281	326	401	345	345	345	389	434	509	510	510	510	598	688	838

DOUBLE ACTING PNEUMATIC CYLINDER - Ø 32 to 200 mm

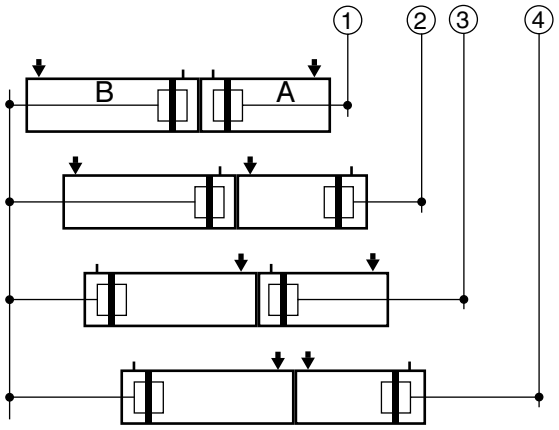
Cylinder complies with VDMA 24 562 - ISO 6431 standards

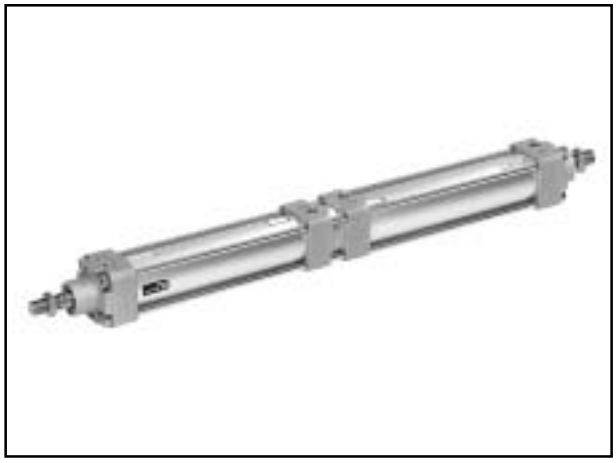
MOUNTED BACK-TO-BACK

APPLICATION

System consisiting of two standard cylinders mounted back-to-back and connected by a support or four tie rods. This arrangement provides:

- three positions if the two cylinders have the same stroke
- four positions if the two cylinders have different strokes





The following mountings do not fit back-to-back cylinders:

- Straight complete trunnion
- complete trunnion with angular clevis bracket
- Rear flange

SPECIFICATIONS

Fluid : air or neutral gas, filtered, lubricated or not
Pressure : 10 bar max.
Temperature : -20°C, +70°C
Max stroke of the two cylinders = 1 metre
Control : see above

ORDERING In your order, indicate:

- Description of system : Set of two PES cylinders with tie rods or profiled barrels mounted **back-to-back**
- Cylinders designated "A" **and** "B" : PES .(1). A/NA .(2). - DM (for profiled barrel version)
  PES .(1). T A .(2). S/R - DM (for tie rod version)
  (1) : Bore
  (2) : stroke of cylinder **(max. total stroke of the two cylinders = 1 metre)**
  A/NA : A = cushioned - NA = not cushioned
  S/R : S = steel barrel - R = aluminium barrel
  DM : cylinder equipped or non equipped for magnetic position detectors
  The features A/NA, DM or not can be combined on both cylinder versions A and B.
- Back-to-back mounting option code :

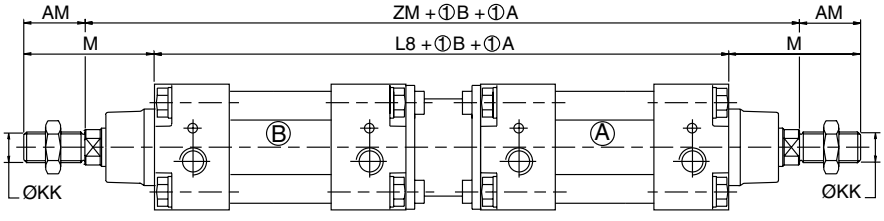
	Bore Ø (mm)	32 (1)	40	50	63	80	100	125	160	200
CODES	Profiled barrel type	**560 620**	**560 621**	**560 622**	**560 623**	**560 624**	**560 625**	**560 626**	**-**	**-**
	Tie rods barrel type	**560 611**	**560 612**	**560 613**	**560 614**	**560 615**	**560 616**	**560 617**	**560 618**	**560 619**

The magnetic position detectors are ordered separately: UNI model, reed switch or magneto-resistive type (see P295)
(1) In the case of use of a BIM magnetic detector on PES series 450 **Ø 32**, it is necessary to add the option code = **995 125**

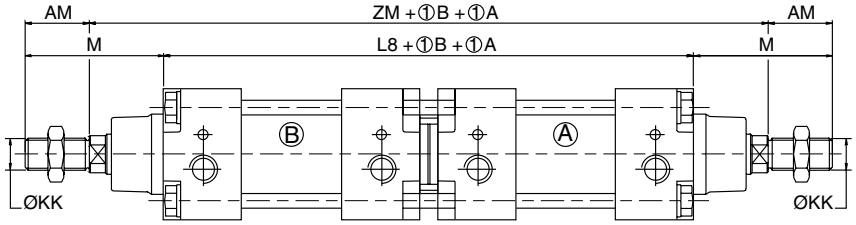
MOUNTINGS: Fastener codes and quantities (see P242 and remarks below)

DIMENSIONS

CYLINDER WITH **PROFILED BARREL** 32 to 125 mm bore



CYLINDER WITH **TIE RODS** 32 to 200 mm bore



Bore Ø (mm)	AM	ØKK	M	Cylinder with profiled barrel L8	Cylinder with profiled barrel ZM	Cylinder with tie rods L8	Cylinder with tie rods ZM
32	22	M10x1,25	48	222	274	197	249
40	24	M12x1,25	54	244	304	219	279
50	32	M16x1,5	69	249	323	221	295
63	32	M16x1,5	69	279	353	251	325
80	40	M20x1,5	86	302	394	265	357
100	40	M20x1,5	91	322	424	285	387
125	54	M27x2	119	375	505	332	462
160	72	M36x2	152	-	-	372	532
200	72	M36x2	167	-	-	372	562

① : + stroke

DOUBLE ACTING PNEUMATIC CYLINDER - Ø 32 to 200 mm

Cylinder complies with VDMA 24 562 - ISO 6431 standards

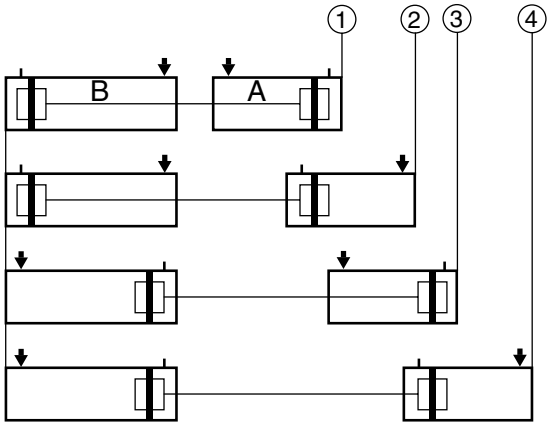
MOUNTED NOSE TO NOSE

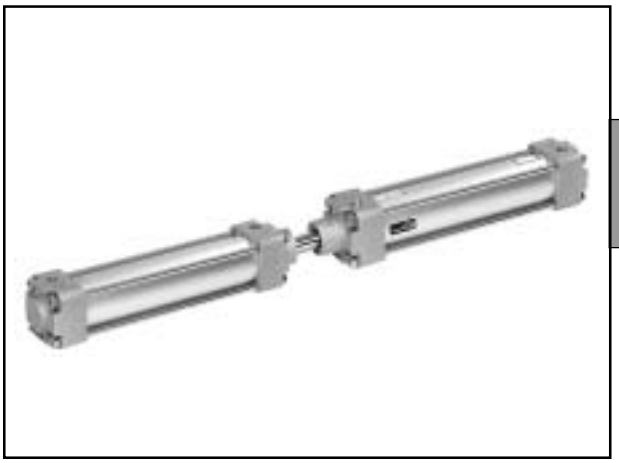
APPLICATION

Set of two cylinders connected by a common piston rod. As in the case of cylinders mounted back-to-back, this affords:

- three positions if the two cylinders have the same stroke
- four positions if the two cylinders have different strokes

The choice between front-to-front and back-to-back mounting is made on the basis of the possiblities of installing and mounting the cylinders





The following mountings do not fit front-to-front cylinders:

- Female rod clevis
- Spherical rod end
- Front flange

SPECIFICATIONS

Fluid : air or neutral gas filtered, lubricated or not
Pressure : 10 bar max.
Temperature : -20°C, +70°C
Max stroke of the two cylinders = 1 metre
Control : see above

ORDERING

In your order, indicate:

- Description of system : Set of two PES cylinders with tie rods or profiled barrels mounted **nose to nose**
- Cylinders designated "A" **and** "B" : PES .(1). A/NA .(2). - DM (for profiled barrel version)
  PES .(1). T A .(2). S/R - DM (for tie rods version)
  (1) : bore
  (2) : stroke of cylinder **(max. total stroke of the two cylinders = 1 metre)**
  A/NA : A = cushioned - NA = not cushioned
  S/R : S = steel barrel - R = aluminium barrel
  DM : cylinder equipped or non equipped for magnetic position detectors
  The features A/NA, DM or not can be combined on both cylinder versions A and B.
- Nose to nose mounting option code :

	Bore Ø (mm)	32 (1)	40	50	63	80	100	125	160	200
CODES	Profiled barrel type	**560 638**	**560 639**	**560 640**	**560 641**	**560 642**	**560 643**	**560 644**	**-**	**-**
	Tie rods barrel type	**560 629**	**560 630**	**560 631**	**560 632**	**560 633**	**560 634**	**560 635**	**560 636**	**560 637**

The magnetic position detectors are ordered separately: UNI model, reed switch or magneto-resistive type (see P295)
(1) In the case of use of a BIM magnetic detector on PES series 450 **Ø 32**, it is necessary to add the option code = **995 125**

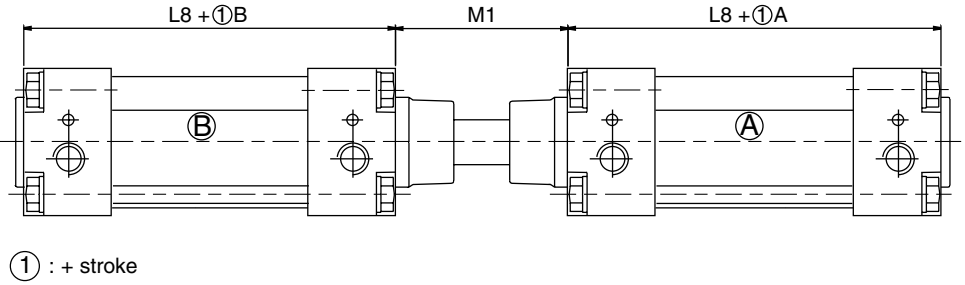
MOUNTINGS: Fastener codes and quantities (see P242 and remarks below)

DIMENSIONS

Bore Ø (mm)	L8	M1❊ min.
32	94	42
40	105	46
50	106	60
63	121	62
80	128	76
100	138	81
125	160	95
160	180	131
200	180	131

Cylinder **with profiled barrel** 32 to 125 mm bore

Version **with tie rods** 32 to 200 mm bore



① : + stroke

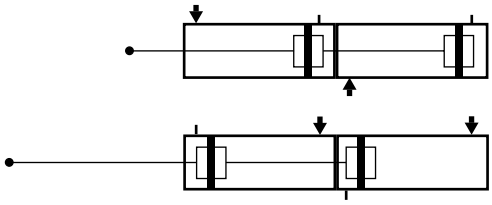
❊ Larger sizes available on request

DOUBLE FORCE TANDEM PNEUMATIC CYLINDER - Ø 32 to 200 mm
LINKED PISTON RODS

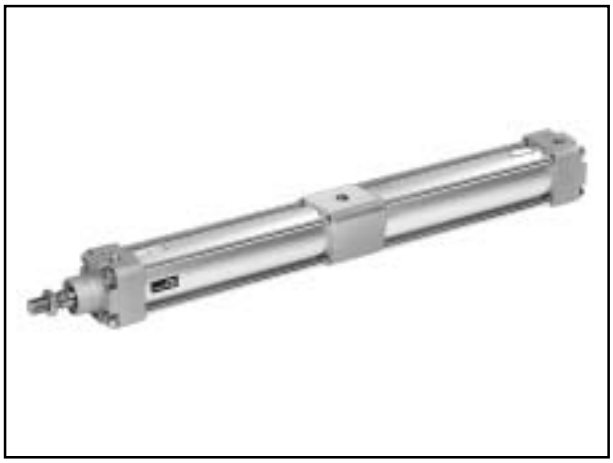
Cylinder complies with VDMA 24 562 - ISO 6431 standards

APPLICATION

Tandem-mounted cylinders with connected rods develop twice the force of a standard cylinder of the same diameter.
This arrangement offers the advantage of providing a given force with a smaller frontal area than a standard cylinder developing the same force.



Note: Operation by a single 5/2 control valve is possible



FORCE DEVELOPED

Bore Ø (mm)	Dynamic force developed (daN) as a function of pressure (bar)									
	2		4		6		8		10	
	●	O	●	O	●	O	●	O	●	O
32	24	22	55	50	85	78	114	104	142	130
40	38	34	83	74	128	116	175	160	222	200
50	60	54	128	116	202	184	274	248	345	310
63	99	92	208	196	324	308	441	422	554	528
80	165	154	348	326	540	510	726	682	907	854

● Force developed on extension of the piston rod
O Force developed in retraction of the piston rod

SPECIFICATIONS

Fluid : air or neutral gas, filtered, lubricated or not
Pressure : 10 bar max.
Temperature : -20°C, +70°C
Cushioning : pneumatic, adjustable at both ends by captive screws
Maximum stroke : see below
Control : see above

ORDERING

In your order, indicate
CYLINDER:

- Cylinder description : PES cylinder of **tandem**, **double force** type, with connected piston rods
- Code for PES with **tie rods** with pneumatic cushioning :

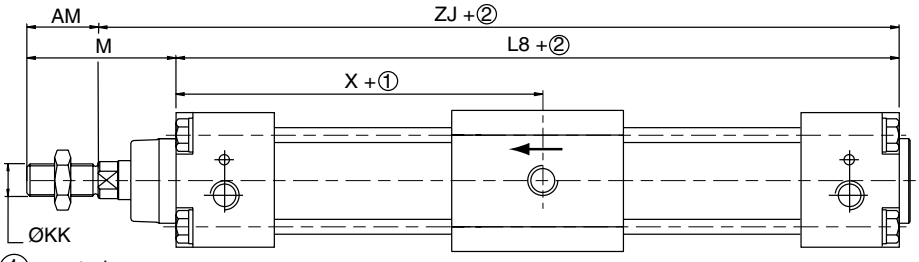
Bore Ø (mm)	CODES		Maximum nominale stroke (mm)
	PES with aluminium barrel (equipped for magnetic detectors) (2)	**PES with steel barrel** (non equipped for detector)	
32 (3)	**450 52 049** (1) ...	**450 52 064** (1) ...	160
40	**450 51 075** (1) ...	**450 52 065** (1) ...	250
50	**450 51 076** (1) ...	**450 52 066** (1) ...	300
63	**450 51 077** (1) ...	**450 52 067** (1) ...	300
80	**450 51 078** (1) ...	**450 52 068** (1) ...	400

100 to 200 mm bore: consult us

(1) Indicate stroke (in mm) - maximum stroke : see above
(2) **The magnetic position detectors are ordered separately:** UNI model, reed switch or magneto-resistive type (see P295)
(3) In the case of use of a BIM magnetic detector on PES series 450 **Ø 32**, it is necessary to add the option code = **995 125**

MOUNTINGS: Fastener codes and quantities (see P242)

DIMENSIONS



Bore Ø (mm)	AM	ØKK	L8	M	ZJ	X
32	22	M10x1,25	180	48	206	92
40	24	M12x1,25	198,5	54	228,5	100,5
50	32	M16x1,5	205	69	242	102,5
63	32	M16x1,5	233	69	270	116,5
80	40	M20x1,5	251,5	86	297,5	125,5

① : + stroke
② : + 2 x stroke

NOTE: The two ports on the intermediate block are at 180°

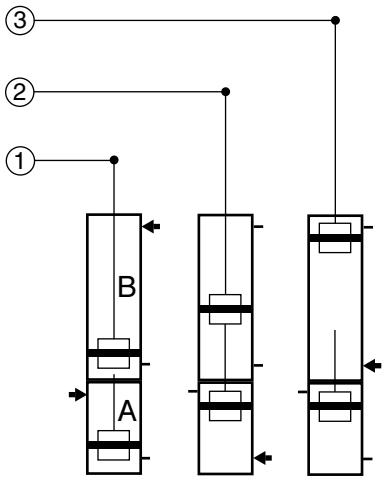
DOUBLE-ACTING PNEUMATIC CYLINDER - Ø 32 to 200 mm

Cylinder complies with VDMA 24 562 - ISO 6431 standards

WITH THREE POSITIONS, RODS **NOT** CONNECTED

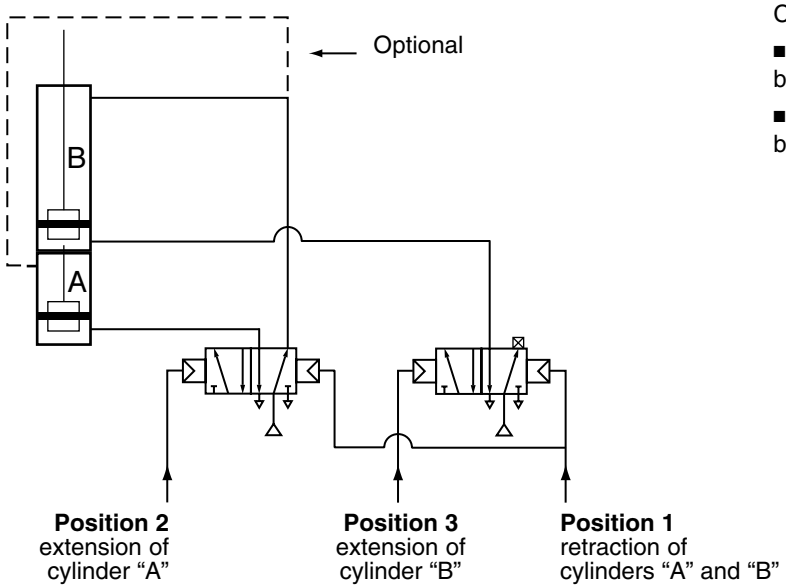
APPLICATION

The three-position cylinder is a monolithic assembly consisting of two PES valve bodies in tandem, generally with different strokes, whose piston rods are **not** connected together



The main applications of three-position cylinders are for pressing and raising loads with two different positions. The following recommendations are made concerning use:

- An opposing force is necessary during extension
- To reach the second position with sufficient accuracy, extension of the rod of cylinder “A” must not be too fast.
- The operating cycle is necessarily as follows: 1⟶ 2 ⟶ 3, then direct return to 1. See pneumatic control diagram below.



SPECIFICATIONS

Fluid : air or neutral gas, filtered, lubricated or not
Pressure : 10 bar max.
Temperature : -20°C, +70°C
Cushioning : pneumatic, adjustable at both ends by captive screws
Maximum stroke :

Bore Ø (mm)	Strokes A + B
32	320
40	500
50-63	600
80-100	800
125-200	1000

Control : see below

■ Determination of stroke of cylinder “A”: Distance between Positions 1 and 2 (in mm)

■ Determination of stroke of cylinder “B”: Distance between Positions 1 and 3 (in mm)

ORDERING

In your order, indicate
CYLINDER:

■ Cylinder description: PES cylinder **with tie rods**, **3 positions**, piston rods **not** connected together

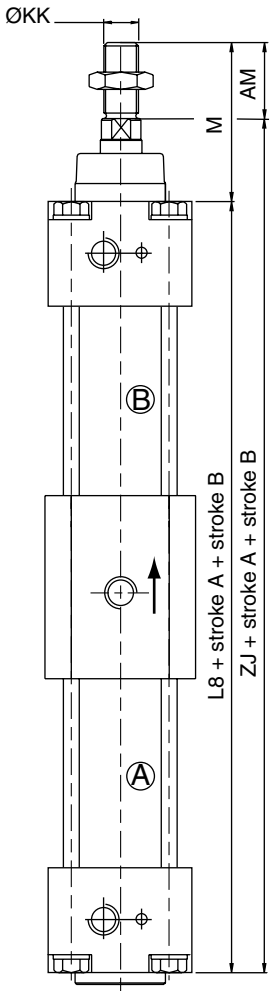
■ Cylinder **A** description: Cylinder “A”, Ø, stroke, cushioned, steel or aluminium barrel cylinder equipped or not equipped for magnetic position detectors (1)

■ Cylinder **B** description: Cylinder “B”, Ø, stroke, cushioned, steel or aluminium barrel cylinder equipped or not equipped for magnetic position detectors (1)

MOUNTINGS: Fastener codes and quantities (see standard equipment - P232)

(1) **The magnetic position detectors are ordered separately:** UNI model, reed switch or magneto-resistive type (see P295)
In the case of use of a BIM magnetic detector on PES series 450 **Ø 32**, it is necessary to add the option code = **995 125**

DIMENSIONS



N.B.: The supply ports to the intermediate block are offset x 180°.

Bore Ø (mm)	AM	ØKK	L8	M	ZJ
32	22	M10x1,25	180	48	206
40	24	M12x1,25	198,5	54	228,5
50	32	M16x1,5	205	69	242
63	32	M16x1,5	233	69	270
80	40	M20x1,5	251,5	86	297,5
100	40	M20x1,5	243	91	294
125	54	M27x2	278	119	343
160	72	M36x2	303	152	383
200	72	M36x2	303	167	398