PNEUMATIC ACTUATORS

Product Index

B

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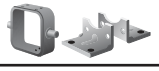
	C-slot for series 441 cylinders	MR		494	P291-7

All leaflets are available on: **www.asconumatics.eu**

standards	model: single acting: Rod in at rest	model: single acting: Rod out at rest	model: double acting: Non-cushioned	model: double acting: Elastic cushioning	model: double acting: Adjust. pneumatic cushioning	construction: Cylindrical	construction: Food industry	construction: Anti-corrosive	construction: Tie rods	construction: Profiled barrel	construction: Through-rod	construction: Rotation-proof	Ø (mm): min.	Ø (mm): max.	standard stroke: min.	standard stroke: max.	Equipped for position detection [1]	spare parts kit no.	ATEX	type	illustration	Series	page
Panel cylinders																							
	●		●			●							6	16	5	15		-	-	E		429	P210
Short-stroke cylinders																							
										●			8	100	4	100	●			-		441	P215
																		●					P215-8
Round cylinders																							
ISO 6432						●							12	25	5	400 900	●	-		-		435	P220
													8	25	5								
						●		●					12	25	5	400 900	●	-		-			
ISO 6431						●							32	63	5	50 1000	●	-		-		438	P225
Compact cylinders according to ISO 21287 standard																							
										●			ISO 21287										P200-8
ISO 21287										●			20	100	5	400	●			-		449	P226
																		●					P226-4
	Mountings									●			20	100						-		434 439 493	P235
Cylinders according to ISO 15552 standard																							
						●	●			●			ISO 15552									453 454 450	P200-7
										●			32	100	25	1000	●					453	P229-2
																		●					P229-4
							●			●			32	100	25	1000	●			-		454	P229-5
																		●					P229-7
									●				32	250	25	1000	●					450	P229-9
ISO 15552																		●					P229-11
	Options and specialised versions:					... Low friction /.../ Tandem / 3 positions / ...																453 454 450	P229-13 (15..36)
						... "U" and "H" guiding units / ...																	
						... Static rod-locking device / ...																	
						... Dynamic rod-locking device / ...																	
						... Oversize piston rod / Rod bellow...																	
	Mountings									●			20	100				tt		-		493	P235

[1] Magnetic position detectors, see following pages.

standards	model: single acting: Rod in at rest	model: single acting: Rod out at rest	model: double acting: Non-cushioned	model: double acting: Elastic cushioning	model: double acting: Adjust. pneumatic cushioning	construction: Cylindrical	construction: Food industry	construction: Anti-corrosive	construction: Tie rods	construction: Profiled barrel	construction: Through-rod	construction: Rotation-proof	Ø (mm) min.	Ø (mm) max.	standard stroke min.	standard stroke max.	Equipped for position detection (1)	spare parts kit no.	ATEX	type	illustration	Series	page
Cylinders according to ISO 6431/CETOP standards																							
ISO6431 CETOP					●				●					250	50	1000	●	●	-	PIS		436	P243
Cylinders according to CNOMO - AFNOR																							
CNOMO AFNOR NF E 49001					●				●				25	200	5	2000	●	●	-	PCN		437	P245 P245-3
Anti-corrosive cylinders																							
ISO 6432				●		●		●			●		12	25	5	400 900	●	-	-	-		435	P220
ISO 6431					●	●		●			●		32	80	25	800 1000	●	-	-	-		431	P255
ISO 15552					●			●	●		●		32	125	25	500	●			E-F G-H		S	P227

(1) Magnetic position detectors, see following pages.

B

standards	model: double acting: Non-cushioned	model: double acting: Elastic cushioning	model: double acting: Adjust. pneumatic cushioning	model: guide: Without	model: guide: Ball bearings	model: guide: Plain bearings	model: guide: Cross rollers	model: construction: Round cylinder	model: construction: Profiled barrel	model: construction: Rotation-proof	model: construction: Rodless	model: construction: Rotatable	Ø (mm): min.	Ø (mm): max.	standard stroke: min.	standard stroke: max.	Equipped for position detection (1)	type	illustration	Series	page
Rodless cylinders																					
		●	●	●		●	●				●		6	80			●		Quick Selection Chart		P259-1
Rodless cylinders with magnetic couplings																					
				●							●		6	40	50	2000	●	STN		445	P260-3
						●					●		6	40	50	1500	●	STG		445	P260-9
Rodless band cylinders																					
				●							●		16	80	5	6000	●	STBN		448	P267-4
						●					●		25	63	100	3800	●	STB		446	P265-2
						●					●		16	80	5	5500	●	STB		448	P267-9
							●				●		25	50	5	3750	●	STBB		448	P267-19
																		STBN-STB-STBB	Position detectors for cylinder series 448	881	P267-31
Actuators with linear guides																					
					●	●			●				16	63	10	100	●	CGT		CGT	P272-2
					●	●			●				16	32	10	160	●	P2L-P2B		447	P275-4
Rotatable cylinders (90°-180°)																					
												●	12	20	-	-	● (1)	R (2 positions)		429	P285-1
												●	16	22	-	-	● (1)	RS (2, 3 and 4 positions)		429	P285-3

(1) Magnetic position detectors, see following pages.

model		adaptation on cylinder type					illustration	Series	page
Reed-switch type - 2 wires	Magneto-resistive - 3 wires (MR)	round cylinders Series 435 - 438	compact profiled barrel Series 441 - 449 - 453 - 454	tie-rods Series 450 - 437 (PCN)	profiled barrel C-slot for series 441 cylinders	Profiled barrel - dovetail grooves, with linear guides, types P2L, P2B			
Position detectors - for T-slot grooves									
●								494	P291-1
	●							494	P291-3
●	●	 or	-			integrated	mounting kits	494	P291-5
Position detectors - for C-slot grooves									
	●	-	-	-				494	P291-7

DEFINITION OF THE DIAMETER OF A CYLINDER

• THE DYNAMIC EFFORT DEVELOPED BY A CYLINDER

F = Pressure x piston area x efficiency

The efficiency of a cylinder depends on the diameter of the cylinder, on the pressure and on its mechanical construction. The graph and chart page 6 show the dynamic effort developed by a cylinder at the piston rod, at various supply pressures.

Example: calculate a cylinder to lift a load of 130 daN with a pressure of 7 bar (gauge pressure).

$$\text{theoretical dynamic effort} = \frac{\text{actual load}}{\text{load factor}} = \frac{130}{0{,}75} = 175 \text{ daN}$$

The graph below shows the cross over point between the dynamic effort and the supply pressure. The cylinder diameter required will be that where the curve passes this point or the cylinder giving a force immediately above that required.

In the example above: 175 daN is between Ø 50 and Ø 63. The cylinder recommended is the Ø 63 mm wich will develop a force of 200 daN at 7 bar and the actual load factor is:

$$\frac{130 \text{ daN}}{200 \text{ daN}} \times 100 = 65\ \%$$

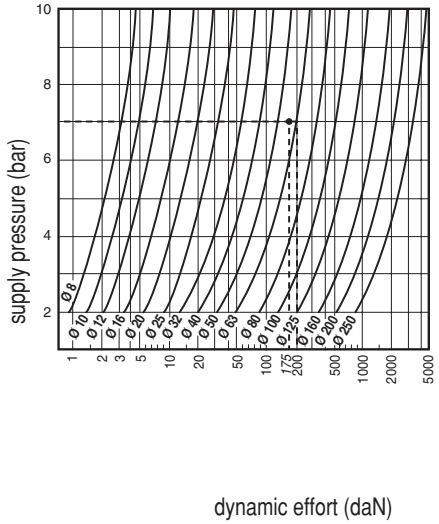
• LOAD FACTOR

This is the relationship expressed as a percentage between the actual load being moved by the cylinder and the dynamic effort available at the end of the piston rod.

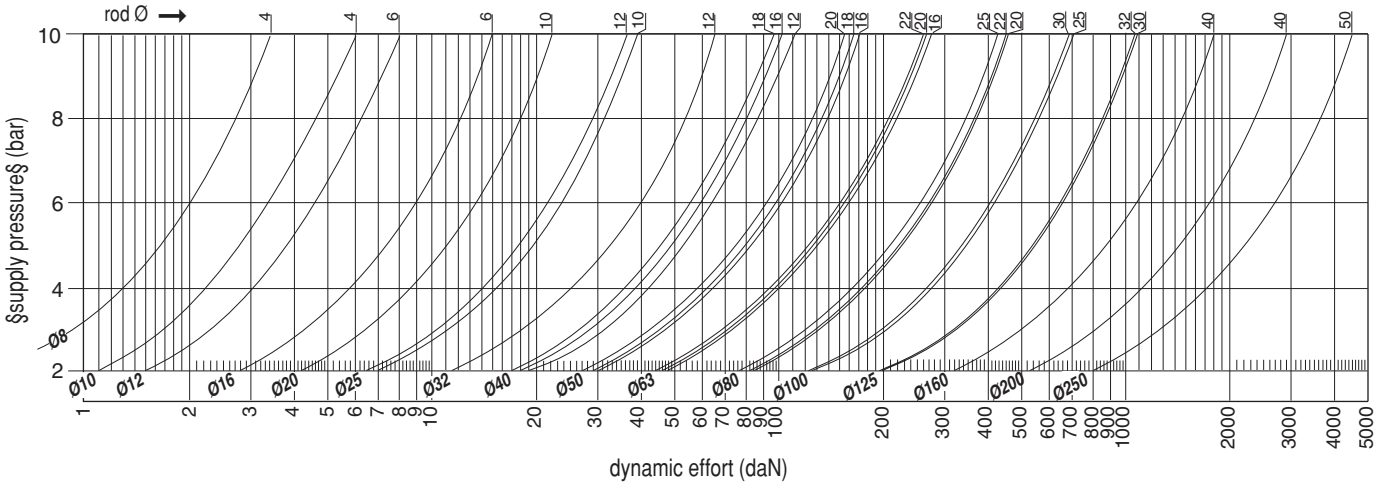
$$\text{load factor (\%)} = \frac{\text{actual load}}{\text{dynamic effort}} \times 100$$

For an optimum installation of a cylinder, we recommend a cylinder with a load factor inferior to or equal to 75%.

EFFORTS DEVELOPED AT THE END OF THE ROD (ROD OUT)



EFFORTS DEVELOPED AT THE END OF THE ROD (ROD RETURNED)

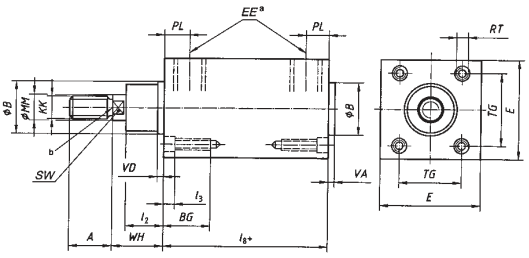
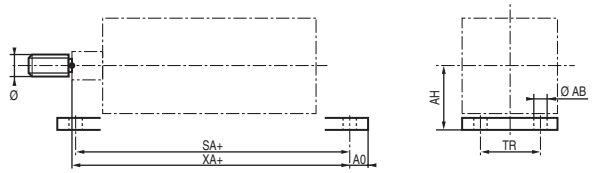
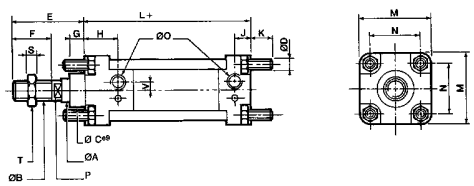


EFFORTS DEVELOPED BY A CYLINDER (daN)

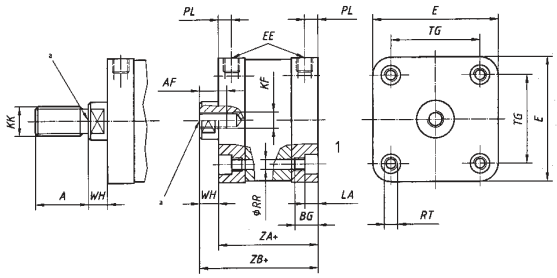
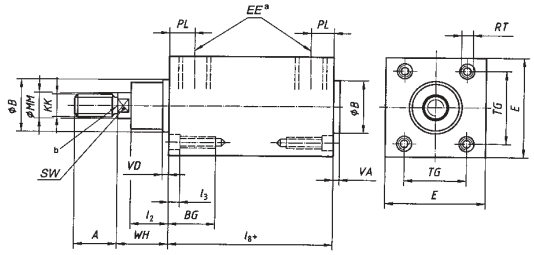
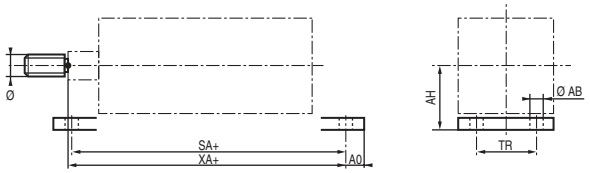
cylinder Ø (mm)	rod Ø (mm)	Series: 435 - 438	Series: 435 - 431 (Anti-corrosive)	Series: 449	Series: 453 - 454 - 453	Series: 437 (PCN)	Series: 436 (PIS)	piston cross-section area (cm²) ●	piston cross-section area (cm²) ○	dynamic effort developed (daN) at various supply pressures (bar) 2 ●	2 ○	4 ●	4 ○	6 ●	6 ○	8 ●	8 ○	10 ●	10 ○
8	4	x						0,5	0,4	1,0	0,5	1,5	1,5	2,5	2,0	3,5	2,5	4,5	3,5
10	4	x						0,8	0,6	1,5	1,0	2,5	2,5	4,0	3,5	5,5	4,5	7,5	6,0
12	6	x	x					1,1	0,8	2,0	1,5	4,0	3,0	6,0	4,5	8,5	6,0	10,5	8,0
16	6	x	x					2,0	1,7	3,5	3,0	7,5	6,0	10,0	9,0	15,0	12,0	19,0	15,0
20	10	x	x	x				3,1	2,3	5,5	4,0	12,0	9,0	16,0	13,5	23,0	18,0	30,0	22,0
25	10	x	x	x				4,9	4,1	8,5	7,0	18,0	15,0	27,0	24,0	38,0	31,0	48,0	39,0
	12					x			3,8		6,5		14,0		22,0		29,0		36,0
32	12	x	x	x	x	x		8,0	6,9	13,0	11,5	30,0	25,0	46,0	40,0	62,0	52,0	77,0	66,0
40	12			x				12,6	11,5	21,0	19,0	46,0	42,0	70,0	64,0	95,0	87,0	122,0	111,5
	16		x		x				10,6		18,0		39,0		59,0		80,0		102,5
	18	x				x			10,0		17,0		36,5		56,0		75,5		97,0
50	16			x				19,6	17,6	33,0	30,0	70,0	64,0	110,0	100,5	150,0	134,0	190,0	170,5
	18	x				x			17,0		29,0		62,0		97,0		130,0		165,0
	20		x		x				16,5		27,0		58,0		92,0		124,0		155,0
63	16			x				31,2	29,1	53,0	47,5	110,0	101,5	170,0	159,5	230,0	218,5	290,0	273,5
	20		x		x				28,1		46,0		98,0		154,0		211,0		264,0
	22	x				x			27,4		44,0		97,0		150,0		200,0		260,0
80	20			x				50,3	47,2	88,0	82,0	185,0	172,5	285,0	266,0	385,0	365,5	480,0	457,0
	22					x			46,5		81,0		170,0		262,0		360,0		450,0
	25		x		x				45,4		77,0		163,0		255,0		341,0		427,0
100	25			x	x			78,5	73,6	135,0	126,5	290,0	272,0	440,0	412,5	600,0	562,5	750,0	703,0
	30					x			71,5		123,0		264,0		401,0		546,5		683,0
125	30					x		123,0	115,7	210,0	198,0	460,0	433,0	700,0	658,5	925,0	870,0	1150,0	1082,0
	32				x				115,0		196,5		430,0		654,5		865,0		1075,0
160	40				x	x		201,0	188,0	350,0	320,0	750,0	700,0	1150,0	1100,0	1550,0	1500,0	1900,0	1800,0
200	40				x	x		314,0	302,0	550,0	530,0	1150,0	1100,0	1800,0	1700,0	2400,0	2300,0	3000,0	2900,0
250	50						x	491,0	471,0	825,0	800,0	1800,0	1700,0	2800,0	2750,0	3700,0	3600,0	4800,0	4500,0

● Efforts developed with rod out (bottom side) ○ Efforts developed with rod returned (rod side)

Note: Cylinders with double crossbar develop identical efforts in both working directions. Their values are the ones defined here-above for efforts developed with rod returned.

standard of cylinders Ø 32 to 320 mm	INTERCHANGEABILITY within the standard	INTERCHANGEABILITY between standards
ISO 15552 (year: 2004) This new international standard cancels and replaces ISO 6431. It defines the outer dimensions of a bare cylinder and equipped with its mountings.  ***Series 453-454-450:*** in accordance with the international standards	Full interchangeability between the manufacturers is achieved at every level: • bare cylinder • each mounting • complete unit1	For full interchangeability with ISO 15552, ISO 6431 cylinder must be equipped with its mountings,and reciprocally.
AFNOR NF ISO 15552 (june 2004) - DIN ISO 15552 These standards fully include the international standard ISO 15552. The NF ISO 15552 is completed with a definition of the rod diameters MM and cancels and replaces standard NFE 49003 parts 1 to 3. ***Series 453-454-450:*** in accordance with the international standards		
ISO 6431 cylinders (year: 1983) This international standard defined a cylinder unit equipped with its mountings without specifying the bare cylinder alone. It is cancelled and replaced by above standard ISO 15552.  ***Series 453-454-450:*** in accordance with the international standards	Interchangeability between manufacturers is achieved by replacing both the cylinder and its mountings.	
AFNOR NFE 49003 - VDMA 24562 cylinders (year: 1992) These standards first define the outer dimensions of a bare cylinder and then its mountings; the cylinder with its mountings installed then corresponds to a cylinder unit according to above standard ISO 6431	Full interchangeability between the manufacturers is achieved at every level: • bare cylinder • each mounting • complete unit1	A cylinder to AFNOR NFE 49003 - either bare or equipped with its mountings - is interchangeable with a cylinder to AFNOR NF ISO 15552 and vice versa.
CNOMO 06.07.02/AFNOR NFE 49001 cylinders (year: 1968) The French standards define first all the external dimensions of a bare cylinder then the mountings.  ***Series 437 (PCN):*** complies with the French standards.	Full interchangeability between the manufacturers is achieved at every level: • bare cylinder • each mounting • complete unit1	No interchangeability can be achieved between CNOMO/NFE 49001 cylinder (bare or equipped) and AFNOR NFE 49003 cylinder or ISO 6431 cylinder, and reciprocally.

Note: ISO 6432 and AFNOR NFE 49030 standards apply only to mini-cylinders Ø 8 to 25 mm.

standards of cylinders	INTERCHANGEABILITY within the standard	INTERCHANGEABILITY between standards
ISO 21287 Ø 20 to 100 mm		
This new international standard defines the outer dimensions of a compact bare cylinder and equipped with its mountings. The center-to-center mounting distances of dia. 32 to 100 mm cylinders are identical to those of standard ISO 15552.  ***Series 449 cylinders complies with the international standard***	Full interchangeability between the manufacturers is achieved at every level: • bare cylinder • each mounting • complete unit1	32 to 100 mm dia. cylinders can be equipped with all mountings to ISO 15552.
ISO 15552 Ø 32 to 320 mm		
This new international standard cancels and replaces ISO 6431. It defines the outer dimensions of a bare cylinder and equipped with its mountings.  ***Series 453-454-450 cylinders complies with the international standard***	Full interchangeability between the manufacturers is achieved at every level: • bare cylinder • each mounting • complete unit1	
ISO 15552		For full interchangeability with ISO 15552, ISO 6431 cylinder must be equipped with its mountings, and reciprocally.
These standards fully include the international standard ISO 15552. The NF ISO 15552 is completed with a definition of the rod diameters MM and cancels and replaces standard NFE 49003 parts 1 to 3. ***Series 453-450 cylinders complies with the international standard***		
ISO 6431 (1983)		
This international standard defined a cylinder unit equipped with its mountings without specifying the bare cylinder alone. It is cancelled and replaced by above standard ISO 15552.  ***Series 438 cylinders complies with the international standards***	Interchangeability between manufacturers is achieved by replacing both the cylinder and its mountings.	