Siłowniki pneumatyczne

SIŁOWNIKI PNEUMATYCZNE

• PODSTAWOWE DANE DO OBLICZANIA SIŁOWNIKÓW PNEUMATYCZNYCH

Obliczanie siły użytecznej

Teoretyczną siłę pchającą lub ciągnącą siłownika dwustronnego działania obliczamy ze wzoru:

$$F = S \cdot p$$

gdzie:

p - ciśnienie powietrza [bar]
S - czynna powierzchnia tłoka tzn. [cm^2]

$$S = \frac{1}{4} \cdot \pi \cdot D^2$$ - do obliczania siły pchającej

$$S = \frac{1}{4} \cdot \pi \cdot (D^2 - d^2)$$ - do obliczania siły ciągnącej

D - średnica tłoka
d - średnica tłoczyska

Rzeczywista siła na tłoczysku siłownika zależy od zmian ciśnienia w czasie napełniania i opróżniania komór siłownika oraz zmian siły tarcia w uszczelnieniach. W praktyce korzystne jest posługiwanie się współczynnikiem η wyrażającym stosunek siły użytecznej F_u do siły teoretycznej F.

$$F_u = \eta \cdot F$$

Zalecane wartości współczynnika η wynoszą:

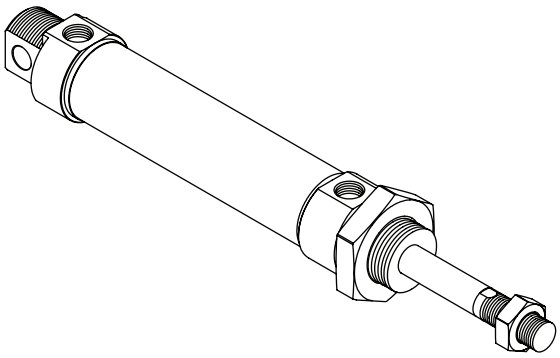
Sposób pracy	Wartość współczynnika η
Ruch powolny, obciążenie działające na końcu skoku	0,8
Ruch szybki, obciążenie działające na końcu skoku lub ruch powolny, obciążenie działające na całym skoku	0,75
Ruch szybki obciążenie działające w przybliżeniu na całym skoku	0,65

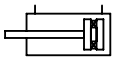
Tabela teoretycznej siły pchającej dla siłowników dwustronnego działania:

Średnica tłoka	Teoretyczna siła pchająca [daN] [kG]							
	Ciśnienie powietrza [MPa]							
	0,3	0,4	0,5	0,6	0,7	0,8	0,9	1,0
12	3,39	4,52	5,65	6,79	7,92	9,05	10,18	11,31
16	6,03	8,04	10,05	12,06	14,07	16,09	18,10	20,11
20	9,42	12,56	15,70	18,85	21,99	25,13	28,27	31,42
25	14,72	19,63	24,54	29,42	34,36	39,27	44,17	49,09
32	24,12	32,17	40,21	48,25	56,29	64,34	72,38	80,42
40	37,7	50,2	62,8	75,4	88	100,5	113	125,7
50	59	78,5	98	117	137	157	176	196
63	93,5	124	155	187	218	249	280	311
80	150	201	251	301	351	402	452	502
100	235	314	392	471	549	628	706	785
125	368	490	613	736	859	981	1104	1227
160	603	804	1005	1206	1407	1608	1810	2011
200	942	1257	1571	1885	2199	2513	2827	3142
250	1473	1963	2454	2945	3436	3927	4418	4909
320	2492	3322	4153	4984	5814	6645	7476	8306

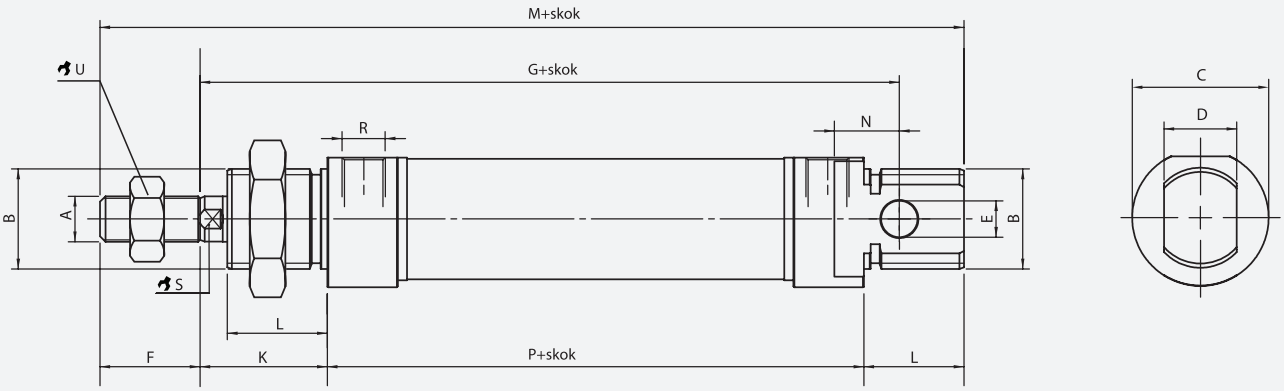
SIŁOWNIKI PNEUMATYCZNE

• SIŁOWNIKI C-M - ISO 6432





Standard	ISO 6432, CETOP RP 52 P
Pokrywy	aluminium
Tuleja	stal nierdzewna
Tłoczysko	stal węglowa
Uszczelnienia	NBR
Temperatura pracy	-20 ~ +80 °C

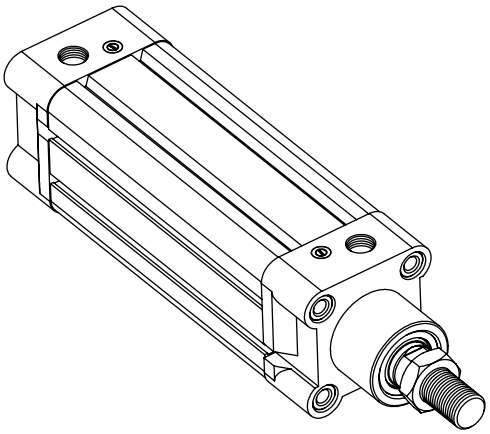


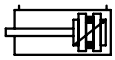
ø	A	B	C	D	E	F	G	K	L	M	N	P	R	S	T	U
8	M4	M12x1.25	ø16	8	ø4	12	64	16	12	86	6	46	M5	-	ø4	7
10	M4	M12x1.25	ø16	8	ø4	12	64	16	12	86	6	46	M5	-	ø4	7
12	M6	M16x1.5	ø19	12	ø6	16	75	22	18	104	9	48	M5	5	ø6	10
16	M6	M16x1.5	ø19	12	ø6	16	82	22	18	109	9	53	M5	5	ø6	10
20	M8	M22x1.5	ø27	16	ø8	20	95	24	20	131	12	67	G1/8"	7	ø8	13
25	M10x1.25	M22x1.5	ø30	16	ø8	22	104	28	22	140	12	68	G1/8"	9	ø10	17

C-M	-	020	-	0100
MODEL		ŚREDNICA TŁOKA		SKOK TŁOKA

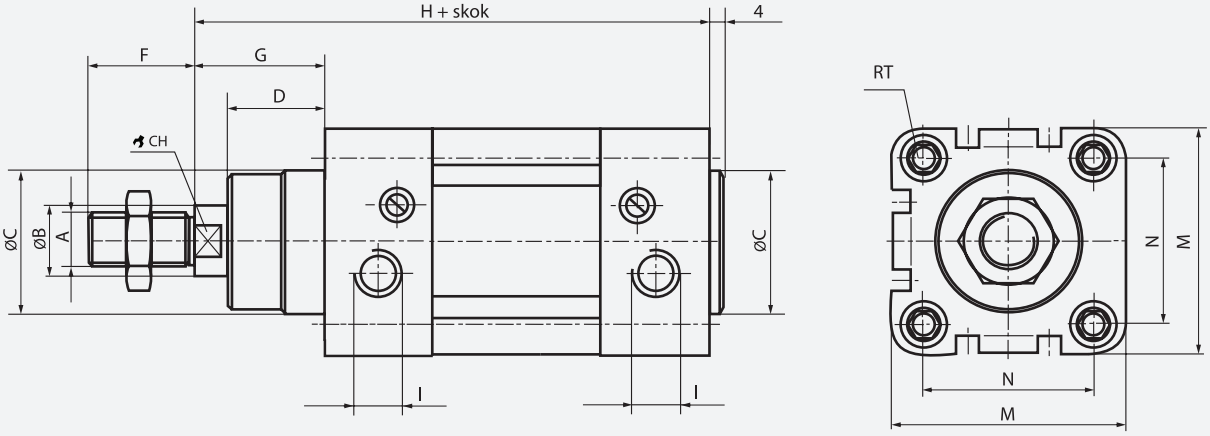
SIŁOWNIKI PNEUMATYCZNE

• SIŁOWNIKI C-P - ISO 15552





Standard	ISO 15552 (ISO 6431)
Pokrywy	aluminium
Profil	aluminium anodyzowane
Tłoczysko	stal węglowa
Uszczelnienia	poliuretan, NBR
Temperatura pracy	-20 ~ +80 °C

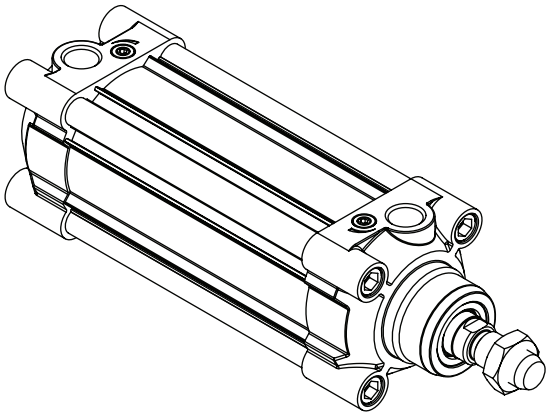


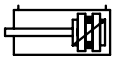
Ø	A	B	C	D1	D2	D3	F	G	H	I	M	N	CH	RT
32	M10×1,25	12	30	16	18	18	22	26	120	G1/8	45 (47[1], 48[2])	32,5	10	M6
40	M12×1,25	16	35	20	20	22	24	30	135	G1/4	55 (53[1], 54[2])	38	13	M6
50	M16×1,5	20 (18[3])	40	25	26,5	25,5	32	37	143	G1/4	65	46,5	14	M8
63	M16×1,5	20	45	25	24	25	32	37	158	G3/8	75 (75,2[2])	56,5	16	M8
80	M20×1,5	25	45	33	33	35	40	46	174	G3/8	95 (94[2])	72	21	M10
100	M20×1,5	25	55	38	35	38	40	51	189	G1/2	115 (111[2])	89	21	M10
125	M27×2	32 (30[3])	60	50	45	46	54	65	225	G1/2	140 (139[2])	110	28 (27[3])	M12
160	M36×2	40	65	60	–	–	72	80	260	G3/4	175	140	36	M16
200	M36×2	40	75	70	–	–	72	95	275	G3/4	220	175	36	M16

C-P	-	032	-	0100
MODEL		ŚREDNICA TŁOKA		SKOK TŁOKA

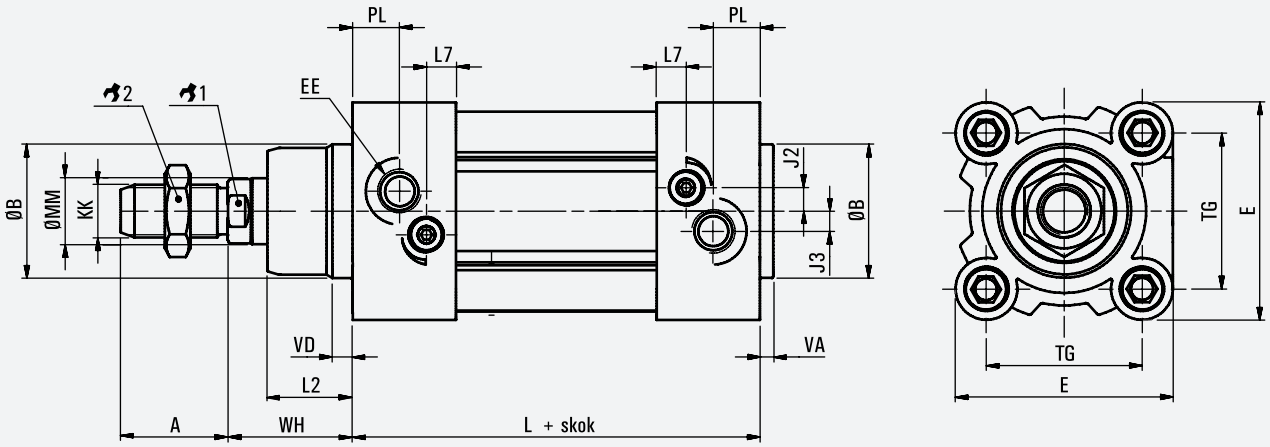
SIŁOWNIKI PNEUMATYCZNE

• SIŁOWNIKI C-H - ISO 15552





Standard	ISO 15552 (ISO 6431)
Pokrywy	aluminium anodyzowane
Profil	aluminium anodyzowane
Tłoczysko	stal węglowa
Uszczelnienia	poliuretan+NBR lub Viton
Temperatura pracy PE+NBR	-20 ~ +80 °C
Temperatura pracy Viton	0 ~ +150 °C

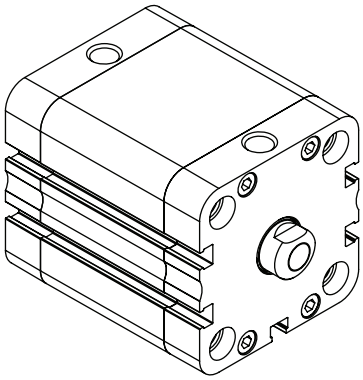


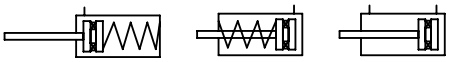
ø	A	B	E	EE	J2	J3	KK	L	L2	L7	ØMM	PL	1	2	TG	VA	VD	WH
32	22	30	47	G1/8"	5.7	5.3	M10x1.25	94	18	7	12	13	10	17	32.5	4	5	26
40	24	35	54.5	G1/4"	7.3	5	M12x1.25	105	22	9.2	16	14	13	19	38	4	5	30
50	32	40	65	G1/4"	7	6	M16x1.5	106	25.5	9	20	14	17	24	46.5	4	6	37
63	32	45	75	G3/8"	8	7.5	M16x1.5	121	26	8	20	16	17	24	56.5	4	6	37
80	40	45	93	G3/8"	8	7	M20x1.5	128	32	10.5	25	16	22	30	75	4	7	46
100	40	55	110	G1/2"	12	7	M20x1.5	138	37	10	25	18	22	30	89	4	7	51
125	54	60	134	G1/2"	10	7	M27x2	160	46	11	32	18	27	41	110	6	10	65

C-H	-	032	-	0100
MODEL		ŚREDNICA TŁOKA		SKOK TŁOKA

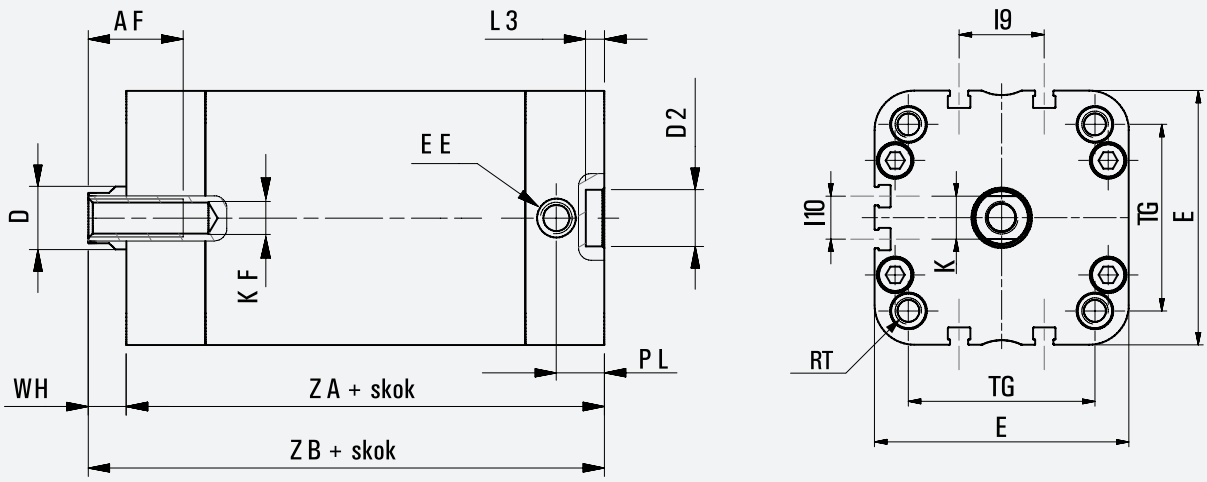
SIŁOWNIKI PNEUMATYCZNE

• SIŁOWNIKI KOMPAKTOWE C-D - ISO 21287





Standard	ISO 21287
Pokrywy	aluminium
Profil	aluminium anodyzowane
Sprężyna	stal
Tłoczysko	stal nierdzewna
Uszczelnienia	poliuretan + NBR
Temperatura pracy	-20 ~ +80 °C

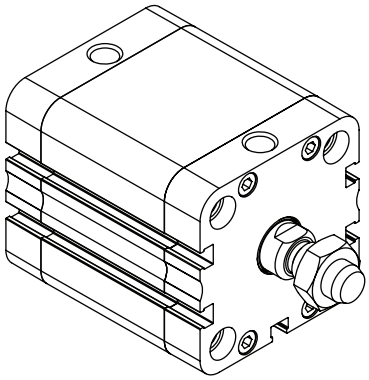


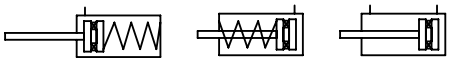
ø	AF	ø D	ø D2	E	EE	RT	I9	I10	K	KF	L3	PL	TG	WH	ZA	ZB
20	15	10	9	36	M5	M5	-	-	8	M6	3	7.5	22	6.5	37	43.5
25	15	10	9	40	M5	M5	-	-	8	M6	3	7.5	26	6	39	45
32	15	12	9	49	G1/8"	M6	10.8	-	10	M8	3	7.5	32.5	6.5	44	50.5
40	15	12	9	54.5	G1/8"	M6	12.8	-	10	M8	3	8	38	7	45	52
50	17	16	12	65.5	G1/8"	M8	21	-	13	M10	4	8	46.5	8	45	53
63	17	16	12	77	G1/8"	M8	25.8	13	13	M10	4	7.5	56.5	8	49	57
80	20	20	12	95.5	G1/8"	M10	30	18	17	M12	4	8	72	9	54	63
100	22	25	12	113.5	G1/8"	M10	50	35	22	M12	4	10.5	89	10	67	77

C-D	-	032	-	0050
MODEL		ŚREDNICA TŁOKA		SKOK TŁOKA

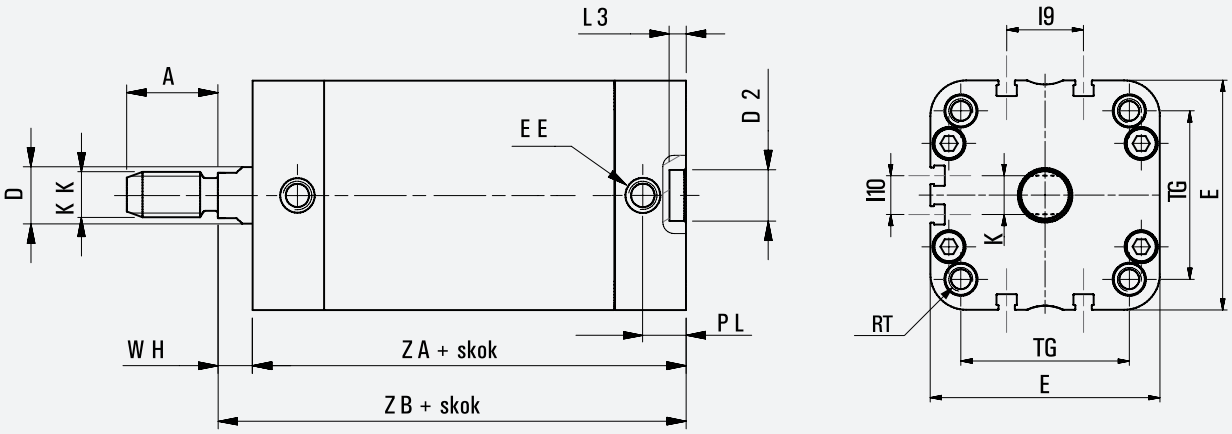
SIŁOWNIKI PNEUMATYCZNE

• SIŁOWNIKI KOMPAKTOWE C-D...M - ISO 21287





Standard	ISO 21287
Pokrywy	aluminium
Profil	aluminium anodyzowane
Sprężyna	stal
Tłoczysko	stal nierdzewna
Uszczelnienia	poliuretan + NBR
Temperatura pracy	-20 ~ +80 °C

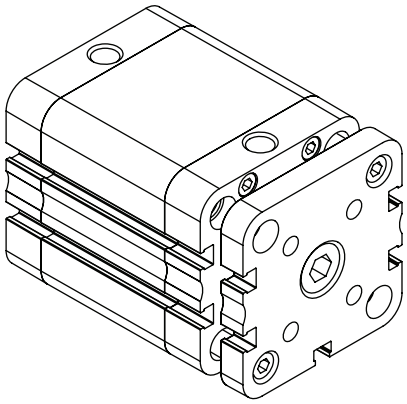


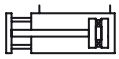
ø	A	ø D	ø D2	E	EE	RT	I9	I10	K	KK	L3	PL	TG	WH	ZA	ZB
20	16	10	9	36	M5	M5	-	-	8	M8	3	7.5	22	6.5	37	43.5
25	16	10	9	40	M5	M5	-	-	8	M8	3	7.5	26	6	39	45
32	19	12	9	49	G1/8"	M6	10.8	-	10	M10x1.25	3	7.5	32.5	6.5	44	50.5
40	19	12	9	54.5	G1/8"	M6	12.8	-	10	M10x1.25	3	8	38	7	45	52
50	22	16	12	65.5	G1/8"	M8	21	-	13	M12x1.25	4	8	46.5	8	45	53
63	22	16	12	77	G1/8"	M8	25.8	13	13	M12x1.25	4	7.5	56.5	8	49	57
80	28	20	12	95.5	G1/8"	M10	30	18	17	M16x1.5	4	8	72	9	54	63
100	28	25	12	113.5	G1/8"	M10	50	35	22	M16x1.5	4	10.5	89	10	67	77

C-D	-	032	-	0050	M
MODEL		ŚREDNICA TŁOKA		SKOK TŁOKA	

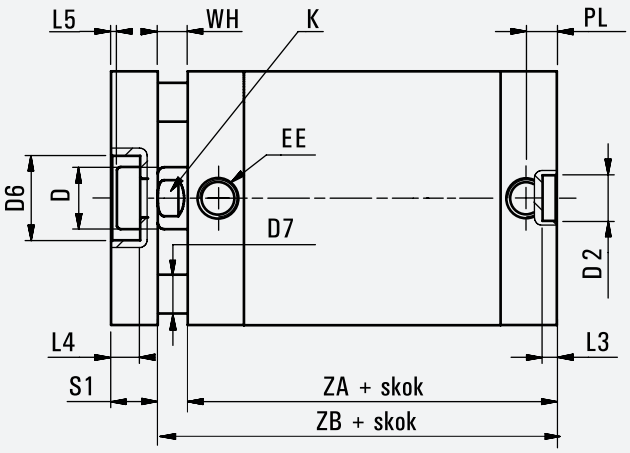
SIŁOWNIKI PNEUMATYCZNE

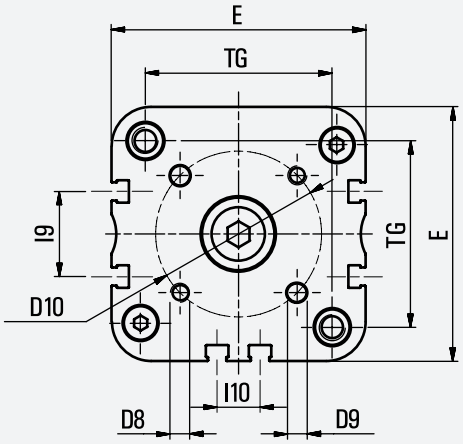
• SIŁOWNIKI KOMPAKTOWE C-D...A - ISO 21287





Standard	ISO 21287
Pokrywy	aluminium
Profil	aluminium anodyzowane
Tłoczysko	stal nierdzewna
Uszczelnienia	poliuretan + NBR
Temperatura pracy	-20 ~ +80 °C

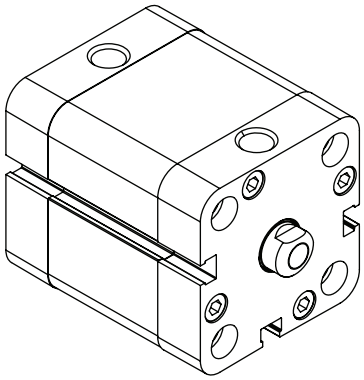


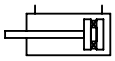


ø	øD	øD2	øD5	øD6	øD7	øD9	øD10	E	EE	I9	I10	K	LA	L3	L4	L5	PL	RT	S1	TG	WH	ZA	ZB
20	10	9	7.5	11	5	4	17	36	M5	-	-	8	4.5	3	5	1	7.5	M5	8	22	6.5	37	43.5
25	10	9	7.5	14	6	5	22	40	M5	-	-	8	4.5	3	5	1	7.5	M5	8	26	6	39	45
32	12	9	9	17	6	5	28	49	G1/8	10.8	-	10	5	3	6.5	1.5	7.5	M6	10	32.5	6.5	44	50.5
40	12	9	9	17	8	5	33	54.5	G1/8	12.8	-	10	5	3	6.5	1.5	8	M6	10	38	7	45	52
50	16	12	10.5	22	10	6	42	65.5	G1/8	21	-	13	5	4	7.5	1.5	8	M8	12	46.5	8	45	53
63	16	12	10.5	22	10	6	50	77	G1/8	25.8	13	13	5	4	7.5	1.5	7.5	M8	12	56.5	8	49	57
80	20	12	13.5	28	14	8	65	95.5	G1/8	30	18	17	3	4	9	2	8	M10	14	72	9	54	63
100	25	12	13.5	28	14	10	80	113.5	G1/8	50	35	22	3	4	10	3	10.5	M10	14	89	10	67	77

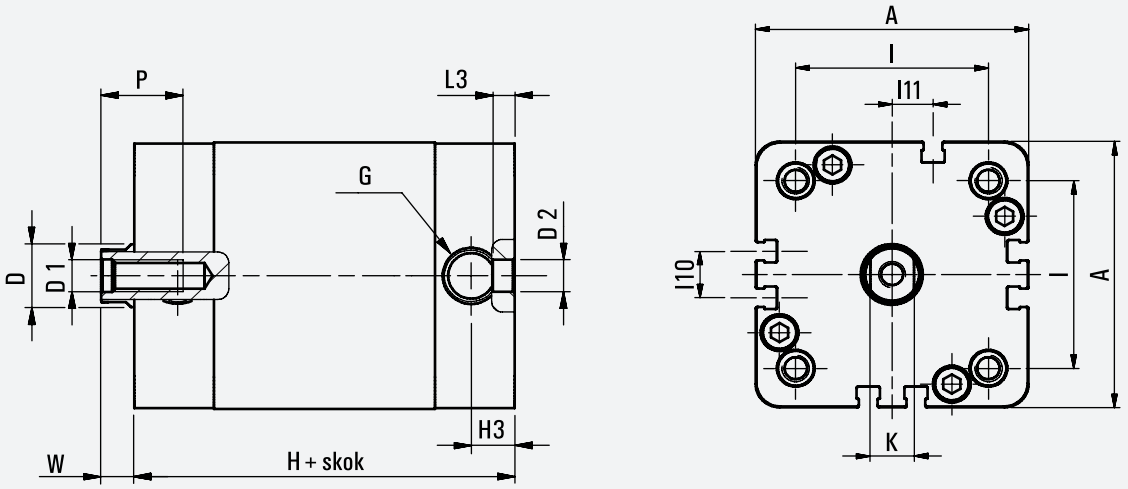
C-D	-	032	-	0050	A
MODEL		ŚREDNICA TŁOKA		SKOK TŁOKA	

• SIŁOWNIKI C-U - UNITOP





Standard	UNITOP
Pokrywy	aluminium
Profil	aluminium anodyzowane
Tłoczysko	stal nierdzewna
Uszczelnienia	poliuretan
Temperatura pracy	-20 ~ +60 °C

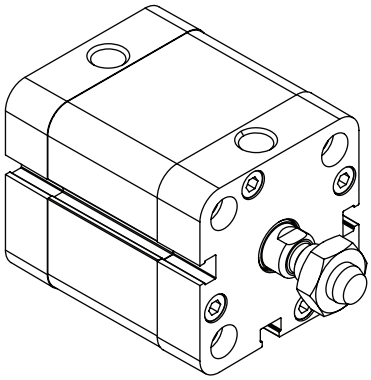


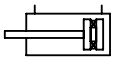
ø	A	øD	øD1	øD2	G	H	H3	I	I10	I11	K	L3	P	W
20	36	10	M5	6	M5	38	8	22	-	-	8	4	12	4.5
25	40	10	M5	6	M5	39.5	8	26	-	-	8	4	12	5.5
32	50	12	M6	6	G1/8	44.5	8	32	-	5	10	4	15	6
40	58	12	M6	6	G1/8	45.5	8	42	-	3	10	4	15	6.5
50	67	16	M8	6	G1/8	45.5	8	50	12.5	10.5	13	4	17	7.5
63	80	16	M8	8	G1/8	50	8	62	14	12	13	4	17	7.5
80	100	20	M10	8	G1/8	56	8.5	82	18	12	17	4	17	8
100	124	25	M12	8	G1/4	66.5	10.5	103	35	17.5	22	4	22	10

C-U	-	020	-	0100
MODEL		ŚREDNICA TŁOKA		SKOK TŁOKA

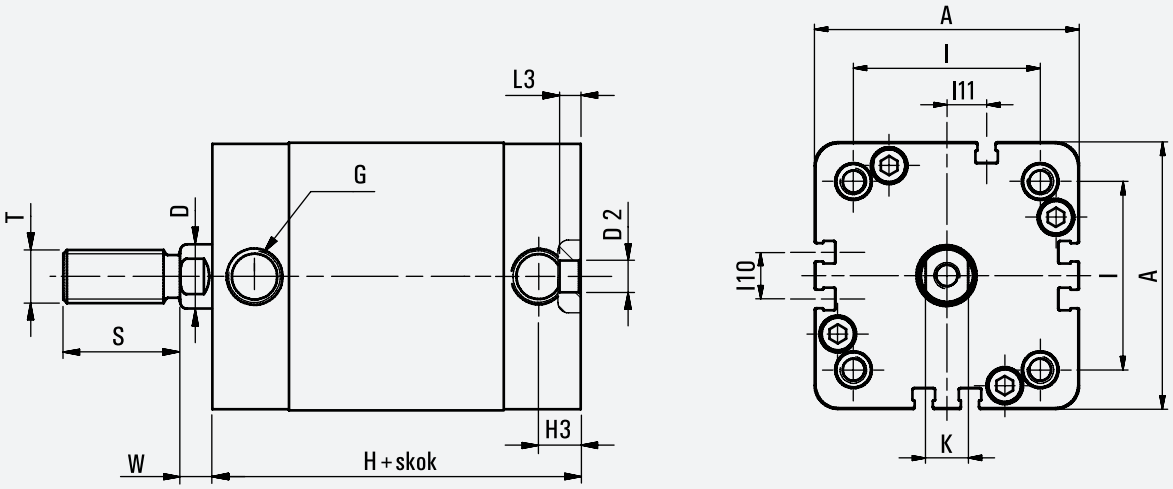
SIŁOWNIKI PNEUMATYCZNE

• SIŁOWNIKI C-U...M - UNITOP





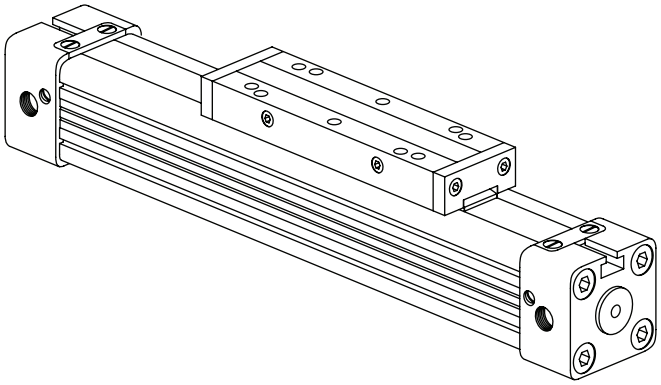
Standard	UNITOP
Pokrywy	aluminium
Profil	aluminium anodyzowane
Tłoczysko	stal nierdzewna
Uszczelnienia	poliuretan
Temperatura pracy	-20 ~ +60 °C



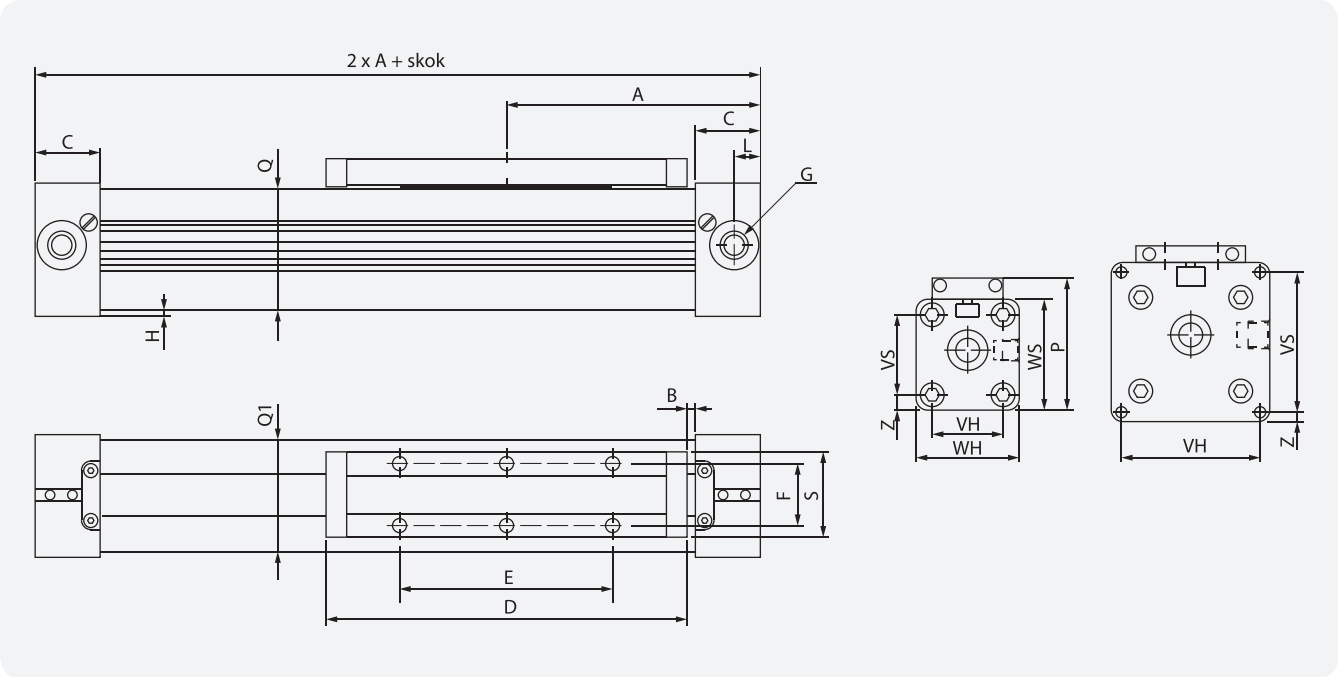
ø	A	øD	øD2	G	H	H3	I	I10	I11	K	L3	S	T	W
20	36	10	6	M5	38	8	22	-	-	8	4	22	M10X1.25	4.5
25	40	10	6	M5	39.5	8	26	-	-	8	4	22	M10x1.25	5.5
32	50	12	6	G1/8	44.5	8	32	-	5	10	4	22	M10x1.25	6
40	58	12	6	G1/8	45.5	8	42	-	3	10	4	22	M10x1.25	6.5
50	67	16	6	G1/8	45.5	8	50	12.5	10.5	13	4	24	M12x1.25	7.5
63	80	16	8	G1/8	50	8	62	14	12	13	4	24	M12x1.25	7.5
80	100	20	8	G1/8	56	8.5	82	18	12	17	4	32	M16x1.5	8
100	124	25	8	G1/4	66.5	10.5	103	35	17.5	22	4	40	M20x1.5	10

C-U	-	020	-	0100	M
MODEL		ŚREDNICA TŁOKA		SKOK TŁOKA	

• SIŁOWNIKI LINIOWE (BEZTŁOCZYSKOWE) C-BT



Pokrywy	aluminium anodyzowane
Profil	aluminium anodyzowane
Uszczelnienia	NBR (standard) Viton (opcjonalnie) - V = 1m/s
Taśma ślizgowa	stal nierdzewna
Wyhamowanie	pneumatyczne z regulacją mikrometryczną
Temperatura otoczenia	-15 ~ +80 °C
Temperatura medium	0 ~ +40 °C
Smarowanie	nie wymagane
Medium	filtrowane sprężone powietrze
Ciśnienie robocze	0.5 ~ 8 bar

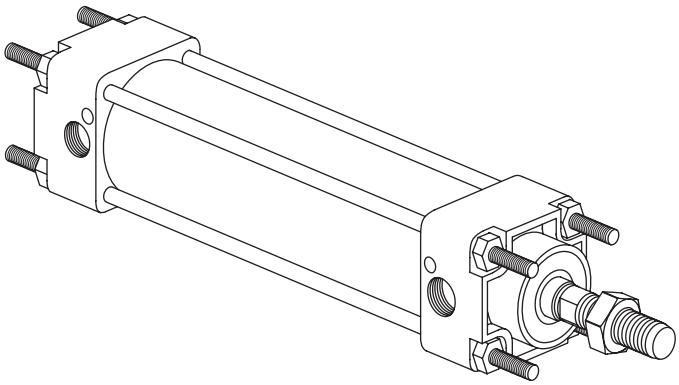


ø	A	B	C	D	E	G	H	J	P	Q x Q1	S	U	VS	VH	WS	WH	Z
16mm	65	15.5	15	69	36	M5	12	5.5	36.5	24 x 24	22	16.5	18	18	27	27	4.5
25mm	100	21.5	23	111	65	G 1/8	18.5	8.5	52.6	36 x 36	33	24	27	27	40	40	6.5
32mm	125	21.0	27	152	90	G 1/4	22	7.5	66.5	48 x 52	36	27	40	36	56	52	8.0
40mm	150	44.0	30	152	90	G 1/4	24	10.0	80.0	58 x 58	36.4	27	56	54	69	72	9.0
50mm	175	42.0	33	201	110	G 1/4	27	9.0	88.0	77 x 76	56	27	70	70	80	80	4.0
63mm	215	48.5	50	233	155	G 3/8	42.5	14	123.0	102 x 102	50	36	78	78	106	106	15.5

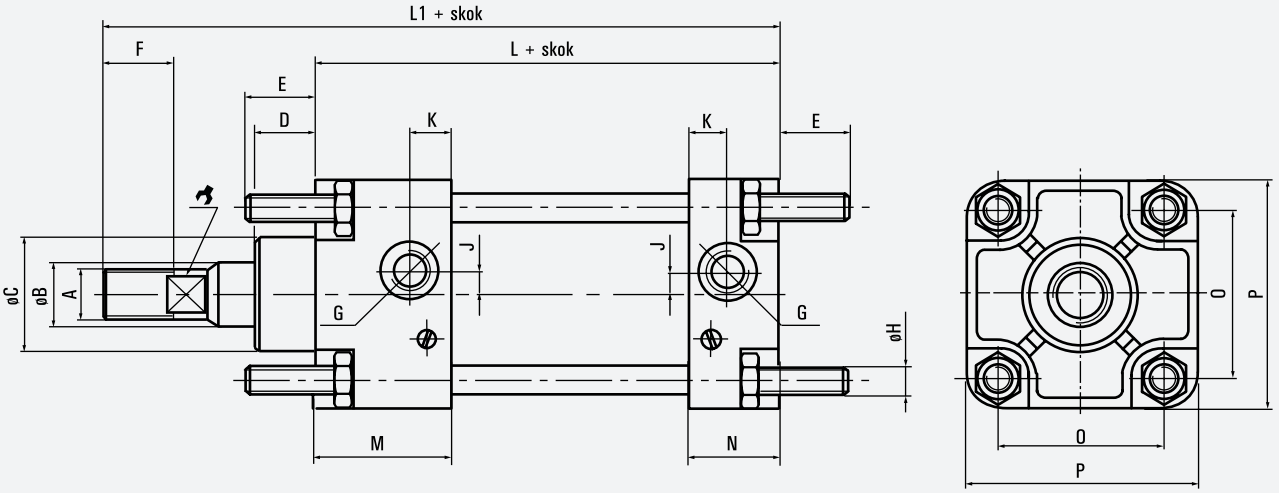
C-BT	-	032	-	0100
MODEL		ŚREDNICA TŁOKA		SKOK TŁOKA

SIŁOWNIKI PNEUMATYCZNE

• SIŁOWNIKI C-CN - CNOMO



Pokrywy	aluminium anodyzowane
Tuleja	aluminium anodyzowane
Tłoczysko	stal węglowa chromowana
Uszczelnienie tłoka	poliuretan PU
Uszczelnienie tłoczyska	NBR
Standard	AFNOR NF E 49-001
Wyhamowanie	pneumatyczne z regulacją
Temperatura pracy	-20 ~ +80 °C
Smarowanie	nie wymagane
Medium	filtrowane sprężone powietrze
Ciśnienie robocze	1 ~ 10 bar

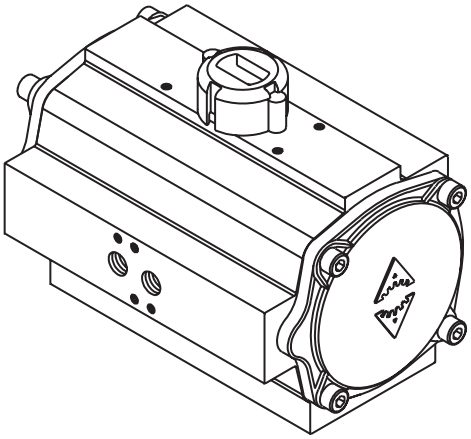


ø	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	
32mm	M10×1.5	12	25	15	17	20	G1/8"	M6	-	9	80	22	17	33	45	8
40mm	M16×1.5	18	32	15	17	32	G1/4"	M6	5	12	110	40	23	40	52	13
50mm	M16×1.5	18	32	15	12	32	G1/4"	M8	2	12	110	37	23	49	65	13
63mm	M20×1.5	22	45	20	12	40	G3/8"	M8	6	13	125	43	27	59	75	17
80mm	M20×1.5	22	45	20	18	40	G3/8"	M10	6	13	125	37	27	75	95	17
100mm	M27×2	32	55	20	18	45	G1/2"	M10	6	16	145	51	32	90	115	22
125mm	M27×2	32	55	20	34	45	G1/2"	M12	6	16	145	51	32	110	140	22
160mm	M36×2	40	65	25	42	72	G3/4"	M16	10	20	180	57	43	140	180	32
200mm	M36×2	40	65	25	42	72	G3/4"	M16	10	20	180	57	43	175	220	32

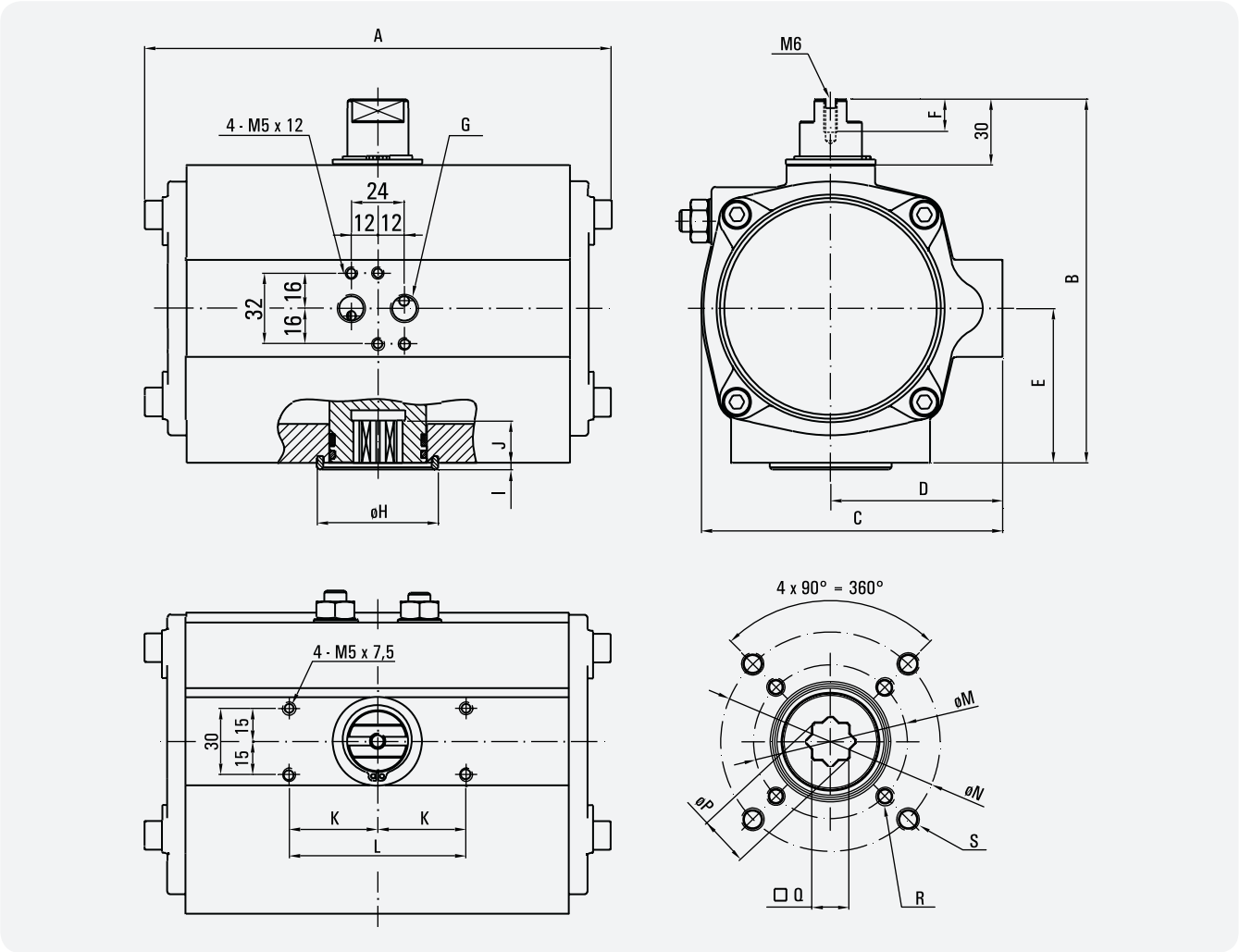
C-CN	-	032	-	0050
MODEL		ŚREDNICA TŁOKA		SKOK TŁOKA

SIŁOWNIKI PNEUMATYCZNE

• SIŁOWNIKI OBROTOWE DWUSTRONNEGO DZIAŁANIA ADA



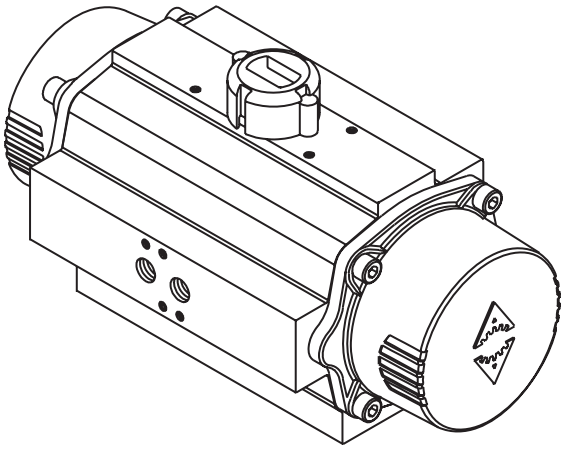
Pokrywy	aluminium powlekane
Obudowa	aluminium anodyzowane
Tłok	aluminium
Wałek zębaty	stal węglowa niklowana
Uszczelnienia	NBR
Standard	ISO 5211
Zasilanie	przewodowe lub NAMUR
Temperatura pracy	-30 ~ +100 °C
Medium	filtrowane sprężone powietrze
Ciśnienie robocze	max 8 bar (ADA10 - max 10 bar)



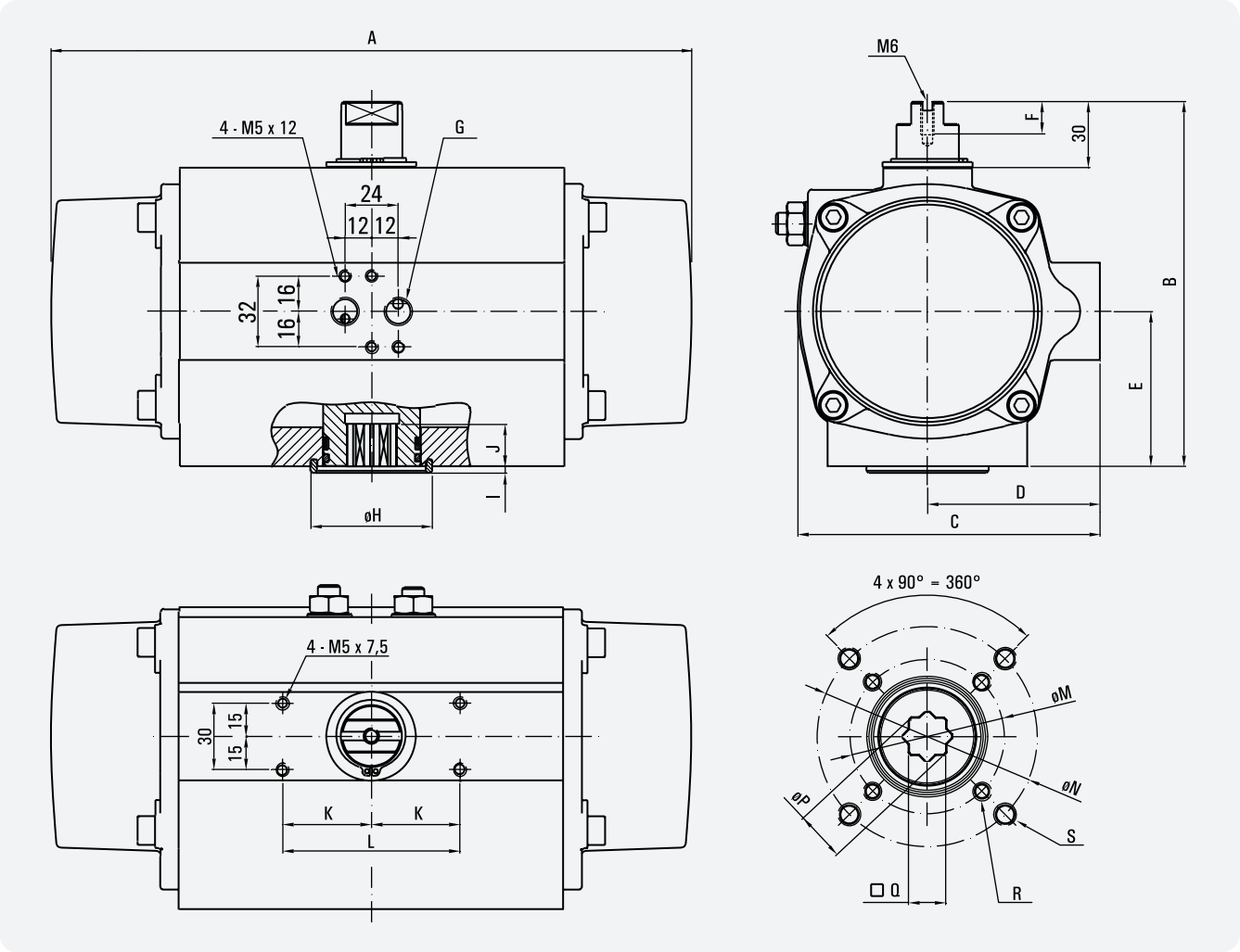
MODEL	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q	R	S	max Nm	ISO 5211
ADA 10	100	76	56	33	23	9	G 1/8"	-	-	10	25	50	36	-	12,1	9	M5x8	-	16	F03
ADA 20	145	96	76	48	34	9	G 1/4"	35	3	12	40	80	42	-	18,1	14	M5x10	-	26	F03, F04, F05
ADA40	158	115	91	56	45	9	G 1/4"	35	3	12	40	80	42	-	18,1	14	M5x10	-	54	F04, F05
ADA80	177	137	111	66	55	12	G 1/4"	55	3	19	40	80	50	70	22,5	17	M6x10	M8x16	103	F05, F07
ADA130	196	147	122	71	60	12	G 1/4"	55	3	22	40	80	50	70	22,5	17	M6x10	M8x16	157	F05, F07
ADA 200	225	165	135,5	78	70	12	G 1/4"	55	3	23	40	80	70	102	22,5	17	M8x16	M10x16	234	F07, F10
ADA 300	273	182	152,5	86	80	12	G 1/4"	70	3	24	40	80	70	102	28,5	22	M8x16	M10x16	388	F07, F10
ADA 500	304	199	173	96	85	12	G 1/4"	70	3	32	40	80	102	-	28,5	22	M10x16	-	577	F10
ADA 850	372	221	191,5	106	96	12	G 1/4"	85	3	39	40	80	102	125	36,5	27	M10x17	M12x20	957	F10, F12

SIŁOWNIKI PNEUMATYCZNE

• SIŁOWNIKI OBROTOWE JEDNOSTRONNEGO DZIAŁANIA ASR



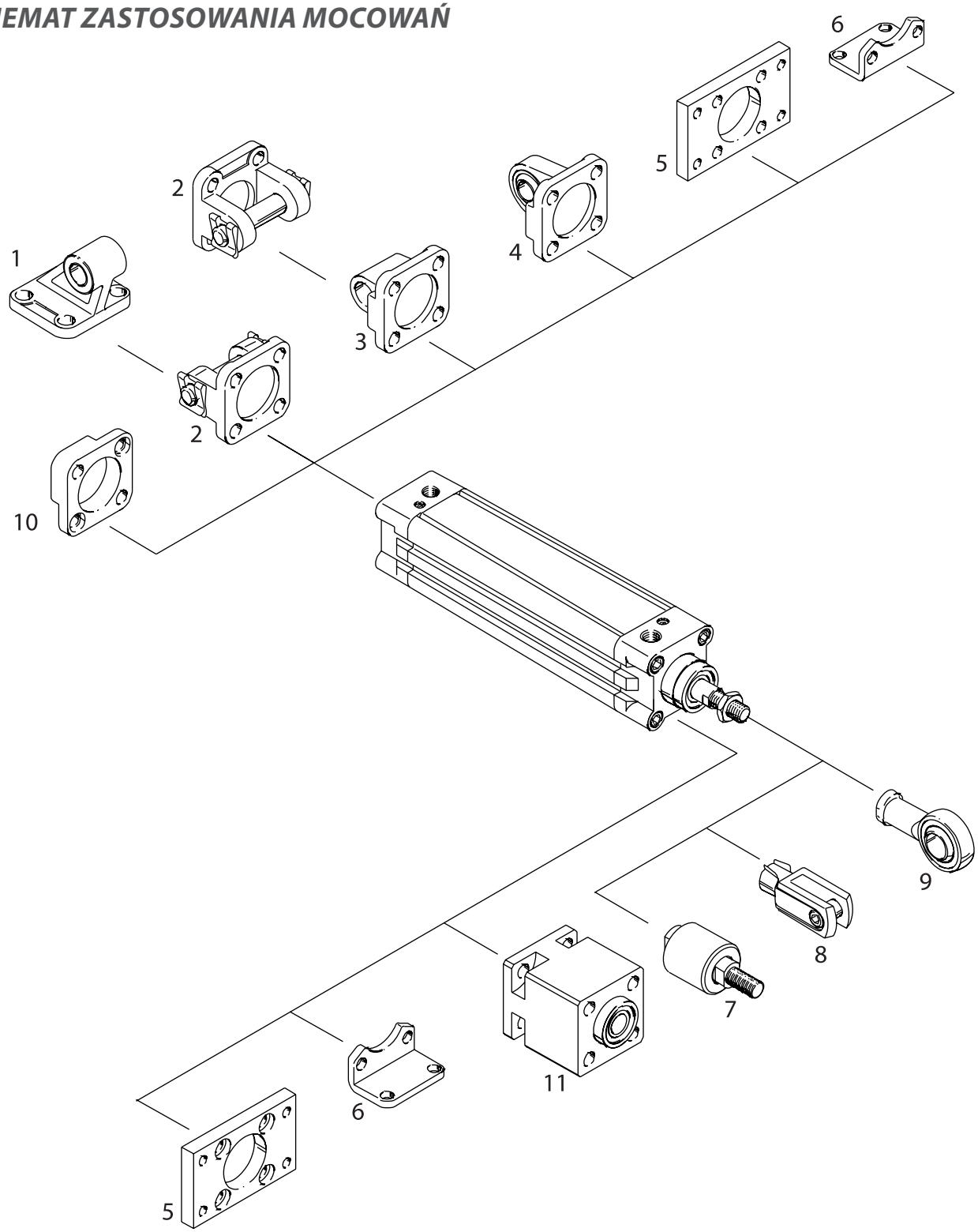
Pokrywy	aluminium powlekane
Obudowa	aluminium anodyzowane
Tłok	aluminium
Wałek zębaty	stal węglowa niklowana
Sprężyny	DIN 2076 -D-5.6
Uszczelnienia	NBR
Standard	ISO 5211
Zasilanie	przewodowe lub NAMUR
Temperatura pracy	-30 ~ +100 °C
Medium	filtrowane sprężone powietrze
Ciśnienie robocze	max 8 bar



MODEL	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q	R	S	max Nm	ISO 5211
ASR 20	163	96	76	48	34	9	G 1/4"	35	3	12	40	80	42	-	18.1	14	M5x10	-	26	F03, F04, F05
ASR 40	195	115	91	56	45	9	G 1/4"	35	3	12	40	80	42	-	18.1	14	M5x10	-	54	F04, F05
ASR80	217	137	111	66	55	12	G 1/4"	55	3	19	40	80	50	70	22,5	17	M6x10	M8x16	103	F05, F07
ASR130	258	147	122	71	60	12	G 1/4"	55	3	22	40	80	50	70	22,5	17	M6x10	M8x16	157	F05, F07
ASR 200	299	165	135,5	78	70	12	G 1/4"	55	3	23	40	80	70	102	22,5	17	M8x16	M10x16	234	F07, F10
ASR 300	349	182	152,5	86	80	12	G 1/4"	70	3	24	40	80	70	102	28,5	22	M8x16	M10x16	388	F07, F10
ASR 500	397	199	173	96	85	12	G 1/4"	70	3	32	40	80	102	-	28,5	22	M10x16	-	577	F10
ASR 850	473	221	191,5	106	96	12	G 1/4"	85	3	39	40	80	102	125	36,5	27	M10x17	M12x20	957	F10, F12

MOCOWANIA I AKCESORIA

• SCHEMAT ZASTOSOWANIA MOCOWAŃ



MOCOWANIA:

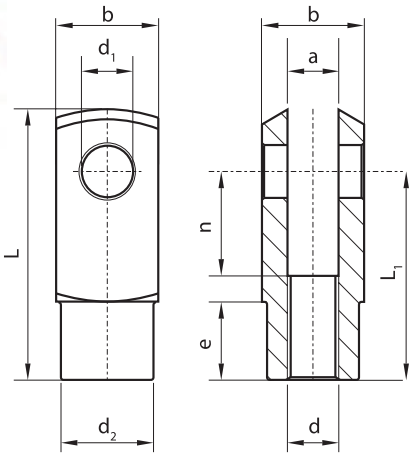
1. MOCOWANIA WAHLIWE C-F-SA
2. ZACZEPY WIDEŁKOWE C-C-SF
3. UCHWYTY WIDEŁKOWE C-C-CFM
4. MOCOWANIA SFERYCZNE C-CU
5. MOCOWANIA KOŁNIERZOWE C-A-OFB
6. MOCOWANIA NA ŁAPACH C-B-FM
10. KOŁNIERZE POŚREDNIE C-TD
11. BLOKADY TŁOCZYSKA C-BH

GŁOWICE:

7. SPRZĘGŁA ELASTYCZNE C-G
8. GŁOWICE WIDEŁKOWE C-E-RC
9. GŁOWICE SFERYCZNE PRZEGUBOWE C-D

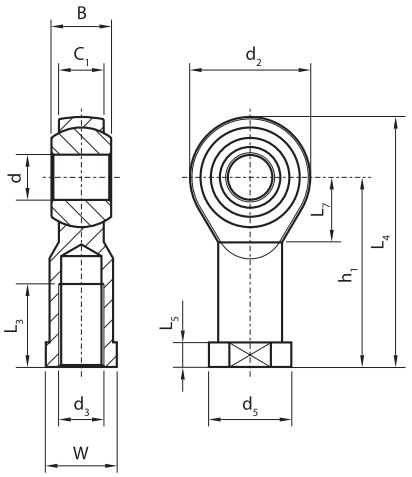
MOCOWANIA I AKCESORIA

• GŁOWICE WIDEŁKOWE C-E-RC



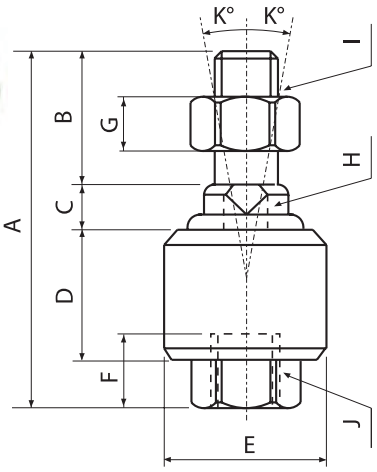
MODEL	SIŁOWNIK Ø	d	a	b	d1	d2	e	L	L1	n
C-E-RC-010	8 - 10	M4x0.7	4	8	ø4	ø8	6	21	16	8
C-E-RC-016	12 - 16	M6x1	6	12	ø6	ø10	9	31	24	12
C-E-RC-020	20	M8x1.25	8	16	ø8	ø14	12	42	32	16
C-E-RC-032	25 - 32	M10x1.25	10	20	ø10	ø18	15	52	40	20
C-E-RC-040	40	M12x1.25	12	24	ø12	ø20	18	62	48	24
C-E-RC-063	50 - 63	M16x1.5	16	32	ø16	ø26	24	83	64	32
C-E-RC-100	80-100	M20x1.5	20	40	ø20	ø34	30	105	80	40
C-E-RC-125	125	M27x2	30	55	ø30	ø48	38	148	110	54
C-E-RC-200	160-200	M36x2	35	70	ø35	ø60	40	188	144	72

• GŁOWICE SFERYCZNE PRZEGUBOWE C-D



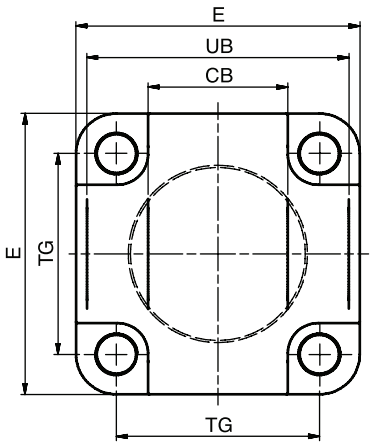
MODEL	SIŁOWNIK Ø	d3	d	B	C1	d2	d5	h1	L3	L4	L5	L7	W
C-D-010	8 - 10	M4x0.7	ø5	8	6	18	ø11	27	10	36	4	10	9
C-D-016	12 - 16	M6x1	ø6	9	6.75	20	ø13	30	12	40	5	11	11
C-D-020	20	M8x1.25	ø8	12	9	24	ø16	36	16	48	5	13	14
C-D-032	25 - 32	M10x1.25	ø10	14	10.5	28	ø19	43	20	57	6.5	15	17
C-D-040	40	M12x1.25	ø12	16	12	32	ø22	50	22	66	6.5	17	19
C-D-063	50 - 63	M16x1.5	ø16	21	15	42	ø27	64	28	85	8	23	22
C-D-080	80-100	M20x1.5	ø20	25	18	50	ø34	77	33	102	10	27	30
C-D-125	125	M27x2	ø30	37	25	70	ø50	110	51	145	15	36	41
C-D-160	160-200	M36x2	ø35	43	28	80	ø58	125	56	165	17	41	50

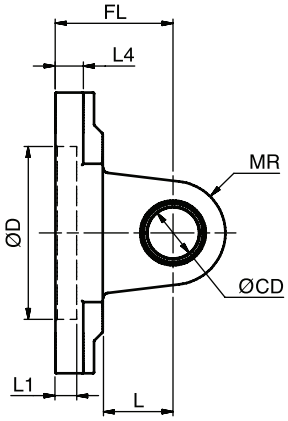
• SPRZĘGŁA ELASTYCZNE C-G



MODEL	SIŁOWNIK Ø	A	B	C	D	E	F	G	H	I	K°
C-G-032	32	58	22	7	21	26	11.5	7	10	M10x1.25	12
C-G-040	40	58	22	8	21	28	11.5	8	12	M12x1.25	12
C-G-050	50	90	27	10	41	44.5	20	10	17	M16x1.5	7
C-G-063	63	90	27	10	41	44.5	20	10	17	M16x1.5	7
C-G-080	80	102	29	13	46	53	24	13	22	M20x1.5	10
C-G-100	100	102	29	13	46	53	24	13	22	M20x1.5	10
C-G-125	125	147	54	13	64	62	39	14	30	M27x2	9
C-G-160	160	251	72	22	115	80	80	18	36	M36x2	4
C-G-200	200	251	72	22	115	80	80	18	36	M36x2	4

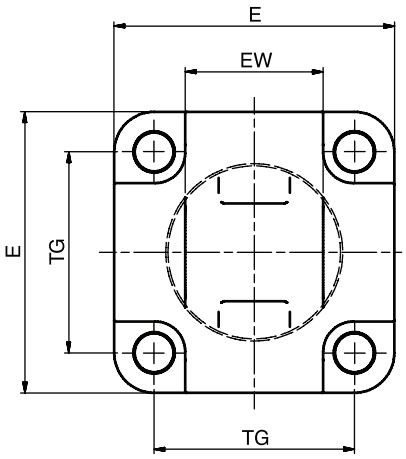
• ZACZEPY WIDEŁKOWE C-C-SF

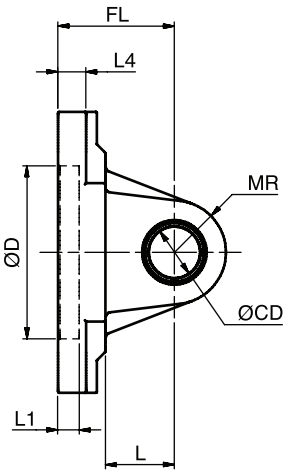




MODEL	SIŁOWNIK Ø	CB	E	FL	L1	L4	L	MR	ØCD	ØD	TG	UB
C-C-SF-032	32	26	45	22	5	5.5	13	10	10	30	32.5	45
C-C-SF-040	40	28	52	25	5	5.5	16	12	12	35	38	52
C-C-SF-050	50	32	65	27	5	6.5	16	12	12	40	46.5	60
C-C-SF-063	63	40	75	32	5	6.5	21	16	16	45	56.5	70
C-C-SF-080	80	50	93	36	5	10	22	16	16	45	72	90
C-C-SF-100	100	60	110	41	5	10	27	20	20	55	89	110
C-C-SF-125	125	70	134	50	7	10	30	25	25	60	110	130
C-C-SF-160	160	90	180	55	7	10	35	25	30	65	140	170
C-C-SF-200	200	90	220	60	7	11	35	25	30	75	175	170

• UCHWYTY WIDEŁKOWE C-C-CFM

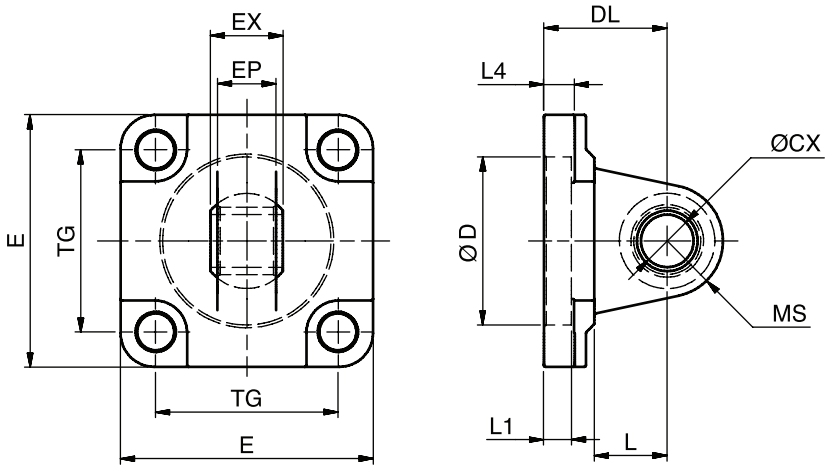




MODEL	SIŁOWNIK Ø	EW	E	FL	L1	L4	L	MR	ØCD	ØD	TG
C-C-CFM-032	32	26	45	22	5	5.5	13	10	10	30	32.5
C-C-CFM-040	40	28	52	25	5	5.5	16	12	12	35	38
C-C-CFM-050	50	32	65	27	5	6.5	16	12	12	40	46.5
C-C-CFM-063	63	40	75	32	5	6.5	21	16	16	45	56.5
C-C-CFM-080	80	50	93	36	5	10	22	16	16	45	72
C-C-CFM-100	100	60	110	41	5	10	27	20	20	55	89
C-C-CFM-125	125	70	134	50	7	10	30	25	25	60	110
C-C-CFM-160	160	90	180	55	7	10	35	25	30	65	140
C-C-CFM-200	200	90	220	60	7	11	35	25	30	75	175

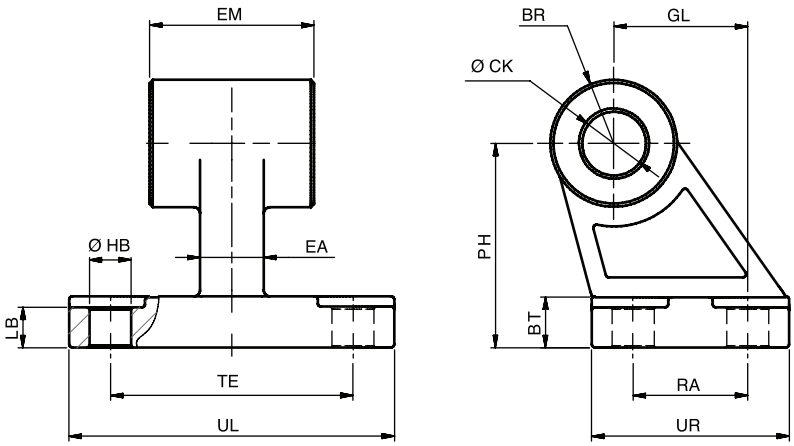
MOCOWANIA I AKCESORIA

• MOCOWANIA SFERYCZNE C-CU



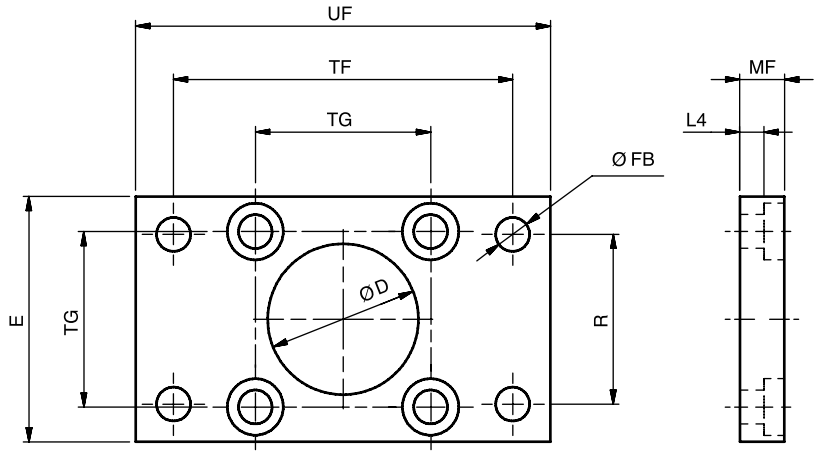
MODEL	SIŁOWNIK Ø	DL	EP	EX	E	L1	L4	L	MS	ØCX	ØD	TG
C-CU-032	32	22	10.5	14	45	7	5.5	12	16	10	30	32.5
C-CU-040	40	25	12	16	52	7	5.5	15	18	12	35	38
C-CU-050	50	27	15	21	65	7	6.5	15	21	16	40	46.5
C-CU-063	63	32	15	21	75	7	6.5	20	23	16	45	56.5
C-CU-080	80	36	18	25	95	9	10	20	28	20	45	72
C-CU-100	100	41	18	25	115	9	10	25	30	20	55	89
C-CU-125	125	50	25	37	140	9	10	30	40	30	60	110
C-CU-160	160	55	30	43	195	7	10	35	44	35	65	140
C-CU-200	200	60	30	43	238	7	11	35	47	35	75	175

• MOCOWANIA WAHLIWE C-F-SA



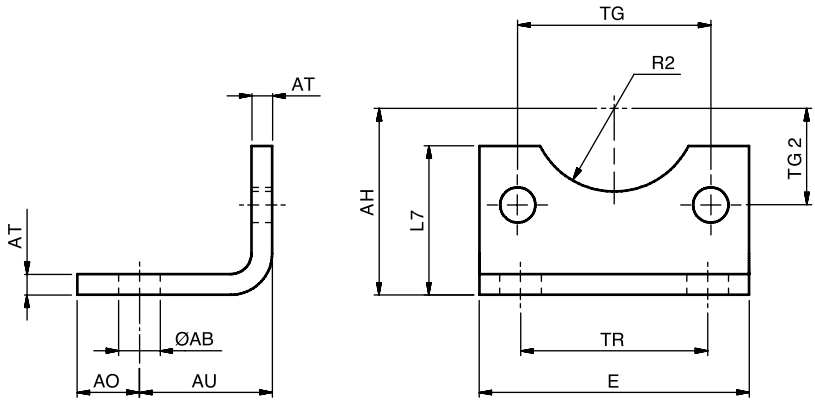
MODEL	SIŁOWNIK Ø	BR	BT	ØCK	EA	EM	GL	LB	ØHB	PH	RA	TE	UL	UR
C-F-SA-032	32	10	8	10	10	26	21	6.4	6.6	32	18	38	51	31
C-F-SA-040	40	11	10	12	15	28	24	8.4	6.6	36	22	41	54	35
C-F-SA-050	50	13	12	12	16	32	33	10.4	9	45	30	50	65	45
C-F-SA-063	63	15	14	16	16	40	37	12.4	9	50	35	52	67	50
C-F-SA-080	80	15	14	16	20	50	47	11.5	11	63	40	66	86	60
C-F-SA-100	100	19	17	20	20	60	55	14.5	11	71	50	76	96	70
C-F-SA-125	125	22.5	20	25	30	70	70	16.8	14	90	60	94	124	90
C-F-SA-160	160	31.5	25	30	36	90	97	21	14	115	88	118	156	126
C-F-SA-200	200	31.5	30	30	40	90	105	26	18	135	90	122	162	130

• MOCOWANIA KOŁNIERZOWE C-A-OFB



MODEL	SIŁOWNIK Ø	E	L4	MF	ØD	ØFB	R	TF	TG	UF
C-A-OFB-032	32	45	5	10	30	7	32	64	32.5	80
C-A-OFB-040	40	52	5	10	35	9	36	72	38	90
C-A-OFB-050	50	65	6.5	12	40	9	45	90	46.5	110
C-A-OFB-063	63	75	6.5	12	45	9	50	100	56.5	120
C-A-OFB-080	80	95	9	16	45	12	63	126	72	150
C-A-OFB-100	100	115	9	16	55	14	75	150	89	170
C-A-OFB-125	125	140	10.5	20	60	16	90	180	110	205
C-A-OFB-160	160	180	9.5	20	65	18	115	230	140	260
C-A-OFB-200	200	220	12.5	25	75	22	135	270	175	300

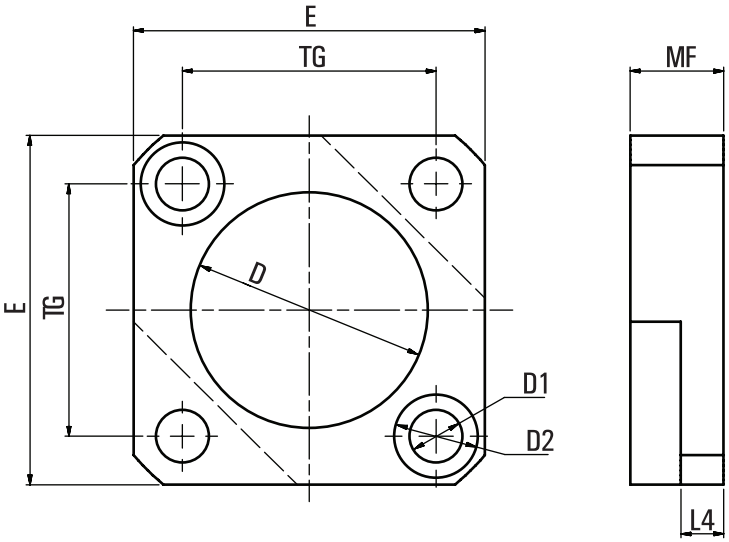
• MOCOWANIA NA ŁAPACH C-B-FM



MODEL	SIŁOWNIK Ø	AH	AO	AT	AU	E	L7	ØAB	R2	TG2	TG	TR
C-B-FM-032	32	32	11	4	24	45	30	7	15	16.25	32.5	32
C-B-FM-040	40	36	8	4	28	52	30	10	17.5	19	38	36
C-B-FM-050	50	45	15	5	32	65	36	10	20	23.25	46.5	45
C-B-FM-063	63	50	13	5	32	75	35	10	22.5	28.25	56.5	50
C-B-FM-080	80	63	14	6	41	95	47	12	22.5	36	72	63
C-B-FM-100	100	71	16	6	41	115	53	14.5	27.5	44.5	89	75
C-B-FM-125	125	90	25	8	45	140	70	16.5	30	55	110	90
C-B-FM-160	160	115	15	10	60	180	100	18.5	32.5	70	140	115
C-B-FM-200	200	135	30	12	70	220	109	24	37.5	87.5	175	135

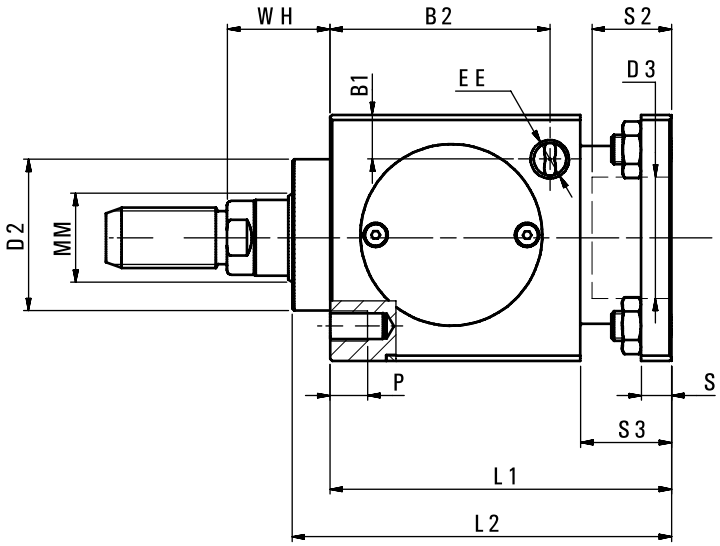
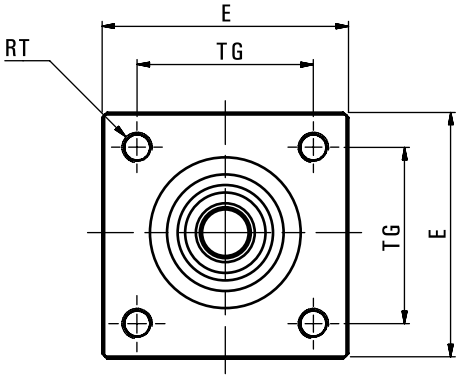
MOCOWANIA I AKCESORIA

• KOŁNIERZE POŚREDNIE C-TD



MODEL	SIŁOWNIK Ø	D	D1	D2	E	L4	MF	TG
C-TD-032	32	30	6.5	10.6	45	5.5	12	32.5
C-TD-040	40	35	6.5	10.6	50	5.5	12	38
C-TD-050	50	41	8.5	13.5	65	7.5	16	46.5
C-TD-063	63	45	8.5	13.5	75	7.5	16	56.5
C-TD-080	80	45	10.5	16.5	90	9	20	72
C-TD-100	100	55	10.5	16.5	105	10.5	20	89
C-TD-125	125	60	12.5	18.5	130	15	30	110
C-TD-160	160	65	16.5	24.5	180	12.5	25	140
C-TD-200	200	75	16.5	24.5	215	12.5	25	175

• BLOKADY TŁOCZYSKA C-BH



MODEL	Ø	B1	B2	D2	D3	E	EE	L1	L2	M	P	RT	S	S2	S3	TG	WH
C-BH-032	32	9	33.5	30	30.5	47	G1/8	60	67.5	12	8	M6	6	19.5	20	32.5	26
C-BH-040	40	9	42.5	35	35.5	54	G1/8	70	80	16	8	M6	6	22.5	20	38	30
C-BH-050	50	12.5	58	40.5	40.5	65	G1/8	90	100	20	12	M8	8	29	24	46.5	37
C-BH-063	63	17.5	59	45.5	45.5	75	G1/8	90	100	20	12	M8	8	29	24	56.5	37
C-BH-080	80	17.5	69	45.5	45.5	95	G1/4	110	120	25	16	M10	12	37	32	72	46
C-BH-100	100	20	69	55.5	55.5	114	G1/4	110	120	25	16	M10	12	39	32	89	51
C-BH-125	125	19	84.5	60.5	60.5	138	G1/4	140	156	32	20	M12	20	51.5	45	110	65