



**FABRYKA MASZYN  
BUDOWLANÝCH  
"BUMAR" Sp. z o.o.**

# **HYDRAULIC CYLINDER CATALOG**



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# FABRYKA MASZYN BUDOWLANYCH "BUMAR" Sp. z o.o.

## Short historic overview

*The establishment of our under the name FMB „BUMAR“ operating corporation goes back to 1955. Its first business field was the repair of agricultural machines, however already in 1958 a foundry emerged in the framework on the company. In 1977 the production of hydraulic cylinders first begun.*

## Production range

General production profile:

- **hydraulic cylinders**
- **aluminum castings**

We are also offering **various services** in our business field.

## Hydraulic cylinders

Our **hydraulic cylinders** find their application in self-propelled cranes, hydraulic presses, excavators, winches, hoists etc. We are specialized in hydraulic cylinders of the following diameters:

- **80, 100, 110, 120, 127, 160, 170, 180 mm stroke up to 9000 mm,**
- **200, 220, 320 and 400 mm stroke up to 4000 mm.**

However, we offer to produce hydraulic cylinders with **other diameters** than mentioned above in order to guarantee customer satisfaction.

We are able to produce **every hydraulic cylinder** of two-sided operations, telescopes as well as plungers. Our hydraulic cylinders proved to function without fault even under a nominal pressure of **40 MPa**.

For our hydraulic cylinders we exclusively use pluggings of renowned companies, such as: **MERKEL, SHAMBAN, HALLITE**.

We also make **diverse clamping parts** for hydraulic cylinders.

**Highest Quality** is one of our standards since our hydraulic cylinders are a produced on machines by renowned European makers. To name a few: **GILDEMEISTER, MAHO, WEDALCO**.



## Aluminum Castings

Our foundry started its production in **1958**. But it was in 1973 that we first started the production of aluminum castings. **Our specialization is the production of highly complicated castings.**

Aluminum **casting production** range:

<b>Aluminum castings</b>	<b>type of mold</b>	<b>casting weight</b>
gravity casting	metal	up to 20 kg
	sand	up to 100 kg
pressure die casting	metal	up to 3 kg

One of our services is the testing of castings:

- **spectroanalysis of alloy's chemical constitution**
- **resistance**
- **hardness**
- **micro-cracks**

## Services

Services offered by us are bound to our production profile:

- **repair-works on hydraulic cylinders**
- **machining properties, for example**
  - shaft turning/rolling with a diameter up to 300 mm and a length of up to 10 000 mm
  - inner diameter boring up to 180 mm and a length of up to 10 000 mm  
as well as from 180 mm to 400 mm and length up to 10 000 mm
  - rubbing down of shafts with a diameter up to 280 mm and a length of up to 10 000 mm
- **manufacturing of appliances ( incl. hydraulic devices )**
- **designing**
- **planing of casting processes/procedures**
- **tooling a machine tools**
- **manufacturing of casting instrumentation**
- **welding on elements out of aluminum alloy in an argon shield**

Our Sales Dept. will be glad to provide more information and answer questions.



# HYDRAULIC CYLINDER CH [ ]

Cylinder type: Double-sided action cylinders with one-sided piston rod.

CH hydraulic cylinders are characterized with very stiff and simple construction. These advantages will lengthen and cause reliable work in heavy conditions – especially in building machines.

Piston rod's surface is covered with hard chromium plate. This plate will guarantee resistance to external conditions. We can produce these cylinders with the end piston move dumping during piston rod move out. These kinds of cylinders should be manufactured in relation to inlet holes positions. Our drawings present the normal manufacturing. The hole position

## CATALOGUE CARD SUBJECTS

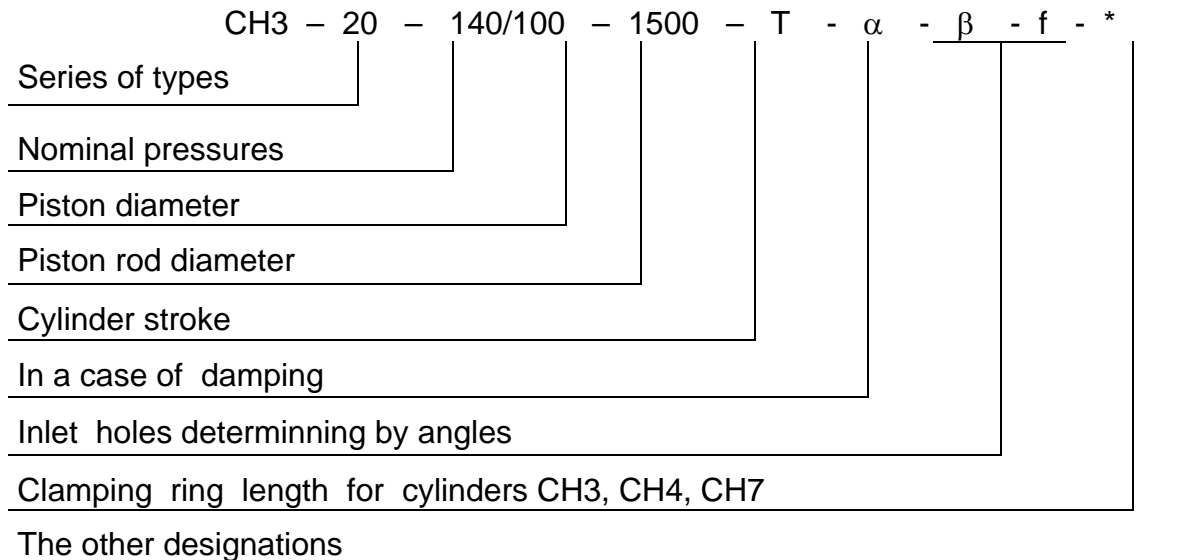
Catalogue card includes the following cylinder's kinds in relation to fastenning and feed.

## TECHNOLIGIC PARAMETERS

- nominal pressure - 16 MPa
- max. piston move - 0,5 m/s
- work range temperature - 253 ÷ 353 K
- working liquid viscosity range - 9 ÷ 300 cSt
- working liquid cleanness requirements - 9 Kl. acc. to NAS 1638

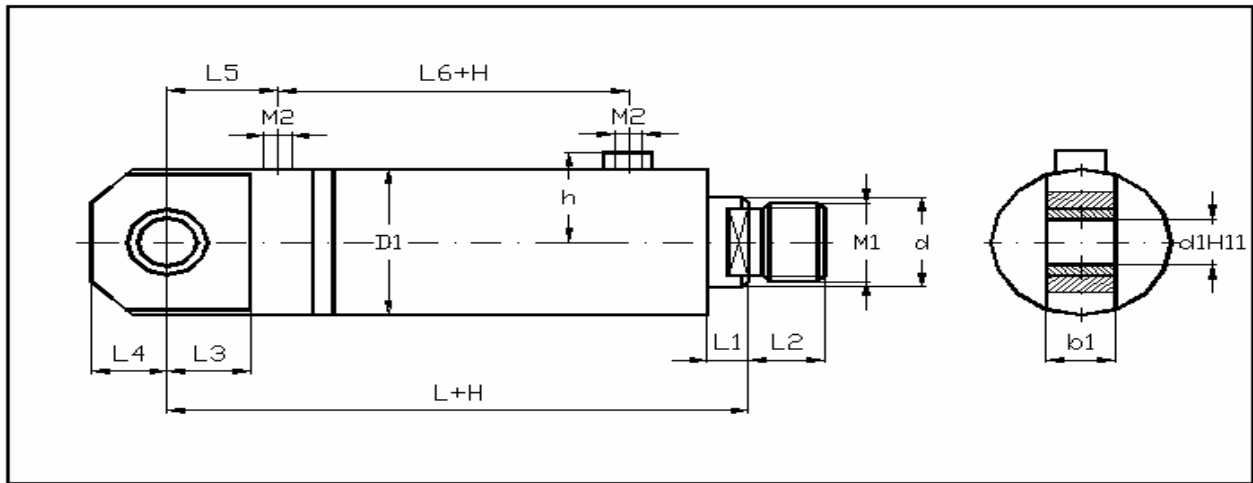
There's possibility to manufacture these cylinders with working pressures 16, 20, 25 MPa.

## DESIGNATION





## HYDRAULIC CYLINDER CH 1



**H** – cylinder stroke (up to 9000 mm, for diameter matched\* - up to 4000 mm)

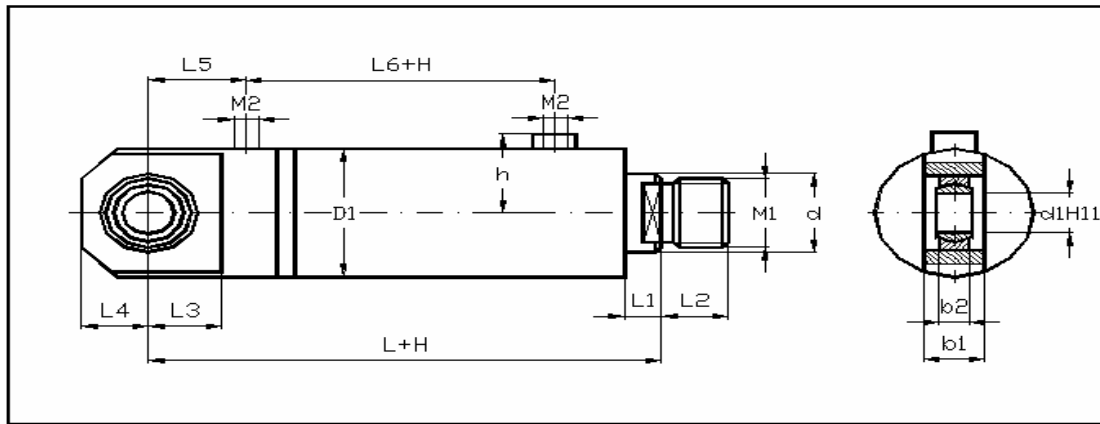
**M<sub>2</sub>** – thread seat acc. to PN-ISO 6149-1

Cylinder diameter D	80	100	110	120	125	127	140	160	180	200*	250*	280*	320*	400*
Piston rod diameter d	50	63	70	70	80	80	90	100	110	125	160	180	200	250
	56	70	80	80	90	90	100	110	125	140	180	200	220	280
L	275	322	337	387	385	385	400	420	500	540	630	690	760	880
L <sub>1</sub>	20	20	20	20	20	20	20	20	25	25	30	30	35	35
L <sub>2</sub>	50	55	60	60	65	65	70	80	80	100	135	150	170	190
L <sub>3</sub>	53	60	65	65	70	70	75	85	100	110	140	165	200	230
L <sub>4</sub>	55	65	70	70	80	80	85	97	105	120	150	175	210	240
L <sub>5</sub>	79	90	95	95	100	100	105	120	135	145	180	215	255	290
L <sub>6</sub>	94	127	127	167	150	150	150	156	196	206	211	225	240	260
D <sub>1</sub>	100	125	133	146	159	159	168	194	210	240	294	323	390	457
d <sub>1</sub> H11	50	60	60	70	70	70	80	80	90	100	110	120	140	160
b <sub>1</sub>	50	60	60	65	65	65	79	70	80	80	100	120	140	160
h	67	81,5	85,5	92	98,5	98,5	103	122	130	145	172	189	225	258
M <sub>1</sub>	M45x2	M52x2	M58x2	M58x2	M64x2	M64x2	M68x2	M80x2	M80x2	M100x2	M130x3	M140x3	M160x3	M180x3
M <sub>2</sub>	M20x1,5	M27x2	M27x2	M27x2	M27x2	M27x2	M27x2	M33x2	M33x2	M33x2	M33x2	M42x2	M48x2	M48x2



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## HYDRAULIC CYLINDER CH 2



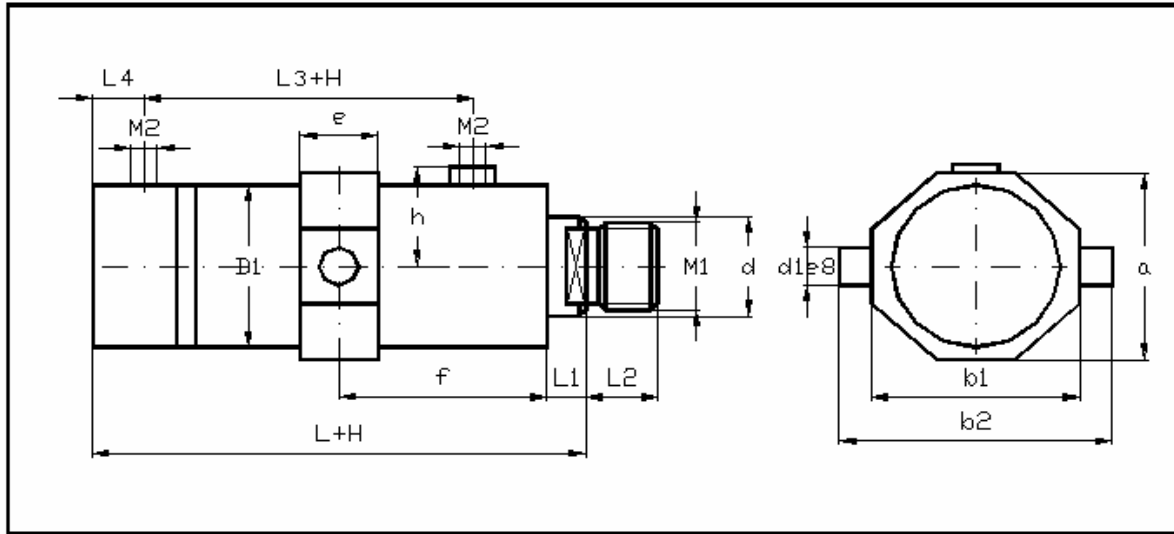
**H** – cylinder stroke ( up to 9000 mm, for diameter matched \* - up to 4000 mm)  
**M<sub>2</sub>** – thread seat acc. to PN-ISO 6149-1

Cylinder diameter D	80	100	110	120	125	127	140	160	180	200 *	250 *	280 *	320 *	400 *
Piston rod diameter d	50	63	70	70	80	80	90	100	110	125	160	180	200	250
	56	70	80	80	90	90	100	110	125	140	180	200	220	280
L	275	322	337	387	385	385	400	420	500	540	630	690	760	880
L <sub>1</sub>	20	20	20	20	20	20	20	20	25	25	30	30	35	35
L <sub>2</sub>	50	55	60	60	65	65	70	80	80	100	135	150	170	190
L <sub>3</sub>	53	60	65	65	70	70	75	85	100	110	140	165	200	230
L <sub>4</sub>	55	65	70	70	80	80	85	97	105	120	150	175	210	240
L <sub>5</sub>	79	90	95	95	100	100	105	120	135	145	180	215	255	290
L <sub>6</sub>	94	127	127	167	150	150	150	156	196	206	211	225	240	260
D <sub>1</sub>	100	125	133	146	159	159	168	194	210	240	294	323	390	457
d <sub>1</sub> H11	50	60	60	70	70	70	80	80	90	100	110	120	140	160
b <sub>1</sub>	50	60	60	65	65	65	79	70	80	80	100	120	140	160
b <sub>2</sub>	40	50	50	60	60	60	65	65	60	70	70	85	90	105
h	67	81,5	85,5	92	98,5	98,5	103	122	130	145	172	189	225	258
M <sub>1</sub>	M45x2	M52x2	M58x2	M58x2	M64x2	M64x2	M68x2	M80x2	M80x2	M100x2	M130x3	M140x3	M160x3	M180x3
M <sub>2</sub>	M20x1,5	M27x2	M27x2	M27x2	M27x2	M27x2	M27x2	M33x2	M33x2	M33x2	M33x2	M42x2	M48x2	M48x2



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## HYDRAULIC CYLINDER CH 3



**H** – cylinder stroke ( up to 9000 mm, for diameter matched \* - up to 4000 mm)  
**M<sub>2</sub>** – thread seat acc. to PN-ISO 6149-1

Cylinder diameter D	80	100	110	120	125	127	140	160	180	200*	250*	280*	320*	400*
Piston rod diameter d	50	63	70	70	80	80	90	100	110	125	160	180	200	250
	56	70	80	80	90	90	100	110	125	140	180	200	220	280
L	230	262	272	322	315	315	325	335	400	430	490	525	560	650
L <sub>1</sub>	20	20	20	20	20	20	20	20	25	25	30	30	35	35
L <sub>2</sub>	50	55	60	60	65	65	70	80	80	100	135	150	170	190
L <sub>3</sub>	102	127	127	167	150	150	150	156	196	206	211	225	240	260
L <sub>4</sub>	26	30	30	30	30	30	30	35	35	35	40	50	55	60
D <sub>1</sub>	100	125	133	146	159	159	168	194	210	240	294	323	390	457
d <sub>1e8</sub>	40	50	60	60	60	60	70	80	90	100	110	140	160	180
b <sub>1</sub>	130	160	170	180	200	200	210	250	260	290	360	400	460	540
b <sub>2</sub>	180	210	230	240	260	260	290	350	360	410	480	560	660	780
a	130	160	170	180	200	200	210	250	260	290	360	400	460	540
h	67	81,5	85,5	92	98,5	98,5	103	122	130	145	172	189	225	258
e	60	70	80	80	80	80	90	100	110	130	140	170	200	220
f <sub>min</sub>	145	165	180	190	200	200	215	230	250	280	340	375	400	475
M <sub>1</sub>	M45 x2	M52 x2	M58 x2	M58 x2	M64 x2	M64 x2	M68 x2	M80 x2	M80 x2	M100 x2	M130 x3	M140 x3	M160 x3	M180 x3
M <sub>2</sub>	M20 x1,5	M27 x2	M27 x2	M27 x2	M27 x2	M27 x2	M27 x2	M33 x2	M33 x2	M33 x2	M33 x2	M42 x2	M48 x2	M48 x2

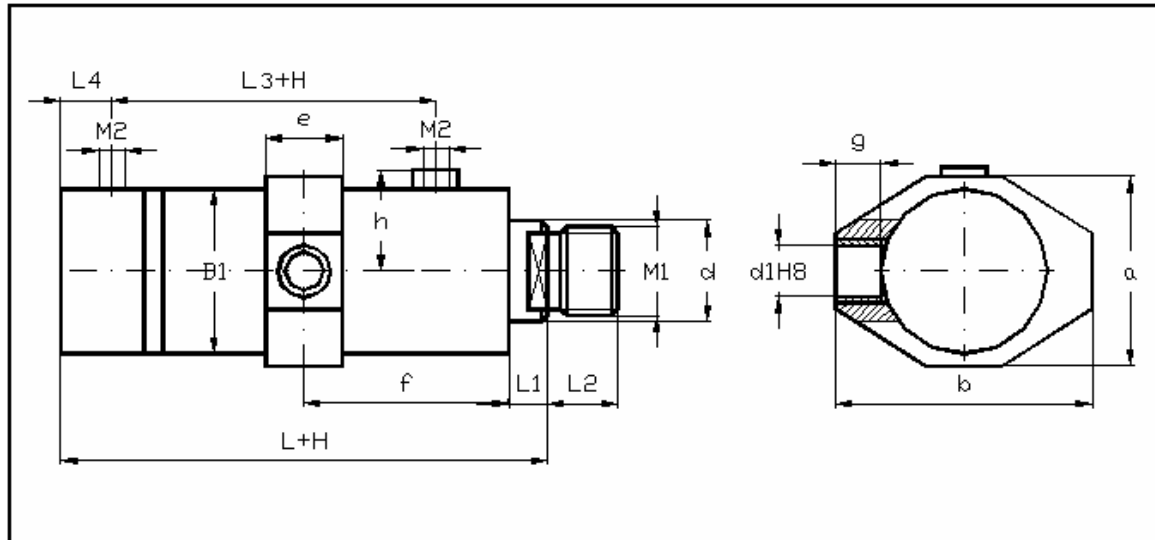




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## HYDRAULIC CYLINDER

### CH 4



**H** – cylinder stroke ( up to 9000 mm, for diameter matched \* - up to 4000 mm)

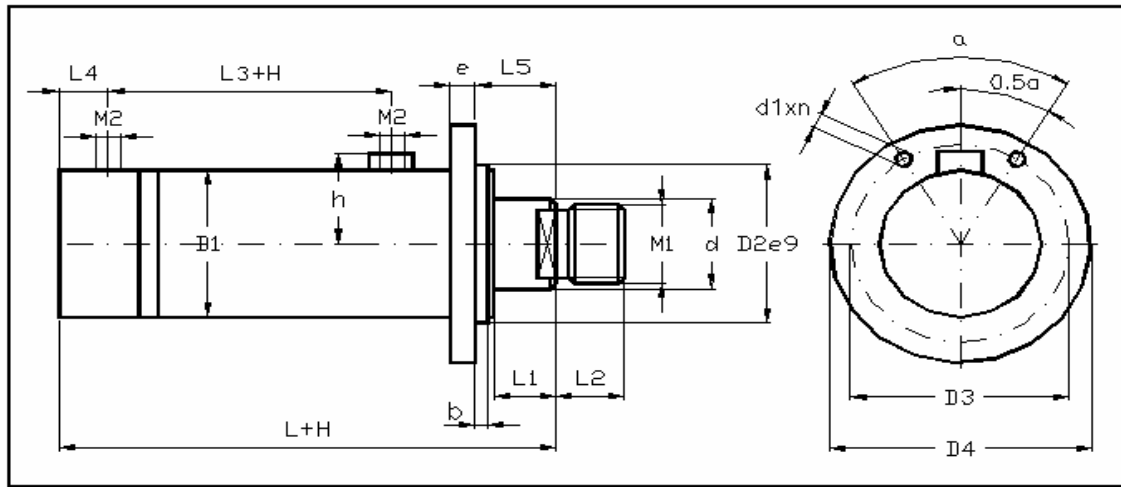
**M<sub>2</sub>** – thread seat acc. to PN-ISO 6149-1

Cylinder diameter <b>D</b>	80	100	110	120	125	127	140	160	180	200*	250*	280*	320*	400*
Piston rod diameter <b>d</b>	50	63	70	70	80	80	90	100	110	125	160	180	200	250
	56	70	80	80	90	90	100	110	125	140	180	200	220	280
L	230	262	272	322	315	315	325	335	400	430	490	525	560	650
L <sub>1</sub>	20	20	20	20	20	20	20	20	25	25	30	30	35	35
L <sub>2</sub>	50	55	60	60	65	65	70	80	80	100	135	150	170	190
L <sub>3</sub>	102	127	127	167	150	150	150	156	196	206	211	225	240	260
L <sub>4</sub>	26	30	30	30	30	30	30	35	35	35	40	50	55	60
D <sub>1</sub>	100	125	133	146	159	159	168	194	210	240	294	323	390	457
d <sub>1H8</sub>	40	50	60	60	60	60	70	80	90	100	110	140	160	180
a	130	160	170	180	200	200	210	250	260	290	360	400	460	540
b	150	175	195	206	220	220	240	280	290	340	400	470	550	660
g	25	25	30	30	30	30	35	40	40	50	50	70	80	100
h	67	81,5	85,5	92	98,5	98,5	103	122	130	145	172	189	225	258
e	90	100	105	110	120	120	140	150	160	180	240	250	280	300
f <sub>min</sub>	160	180	195	205	220	220	230	255	275	305	390	415	440	515
M <sub>1</sub>	M4 5x2	M5 2x2	M5 8x2	M5 8x2	M6 4x2	M6 4x2	M6 8x2	M8 0x2	M8 0x2	M1 00x 2	M1 30x 3	M1 40x 3	M1 60x 3	M1 80x 3
M <sub>2</sub>	M20 x1,5	M27 x2	M27 x2	M27 x2	M27 x2	M27 x2	M27 x2	M33 x2	M33 x2	M33 x2	M33 x2	M42 x2	M48 x2	M48 x2



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## HYDRAULIC CYLINDER CH5



**H** – cylinder stroke ( up to 9000 mm, for diameter matched \* - up to 4000 mm)  
**M<sub>2</sub>** – thread seat acc. to PN-ISO 6149-1

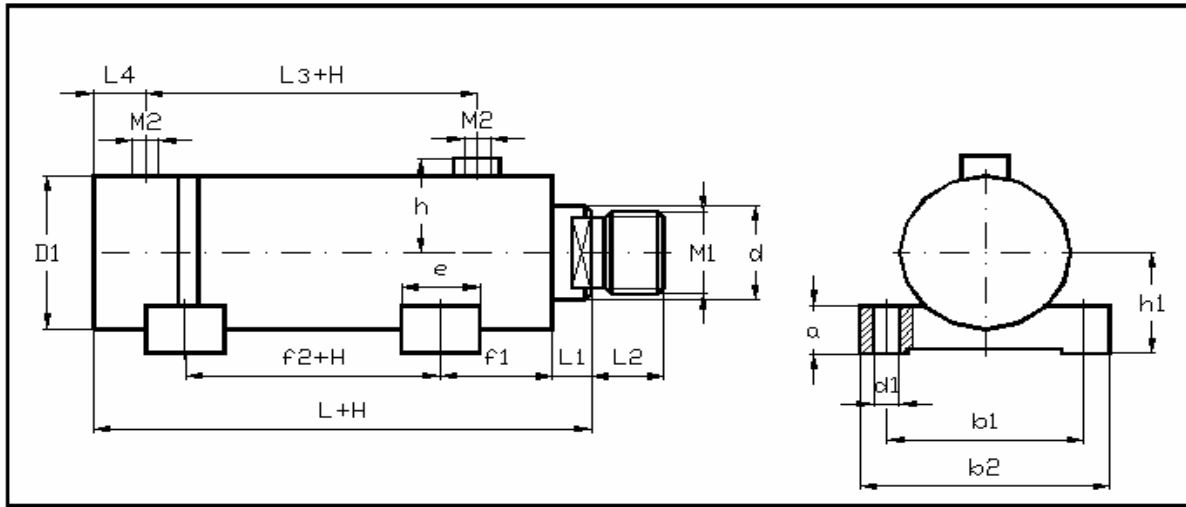
Cylinder diameter <b>D</b>	80	100	110	120	125	127	140	160	180	200*	250*	280*	320*	400*
Piston rod diameter <b>d</b>	50	63	70	70	80	80	90	100	110	125	160	180	200	250
	56	70	80	80	90	90	100	110	125	140	180	200	220	280
<b>L</b>	230	262	272	322	315	315	325	335	400	430	490	525	560	650
<b>L<sub>1</sub></b>	20	20	20	20	20	20	20	20	25	25	30	30	35	35
<b>L<sub>2</sub></b>	50	55	60	60	65	65	70	80	80	100	135	150	170	190
<b>L<sub>3</sub></b>	102	127	127	167	150	150	150	156	196	206	211	225	240	260
<b>L<sub>4</sub></b>	26	30	30	30	30	30	30	35	35	35	40	50	55	60
<b>L<sub>5</sub></b>	35	35	35	35	35	35	40	40	45	45	50	55	60	60
<b>D<sub>1</sub></b>	100	125	133	146	159	159	168	194	210	240	294	323	390	457
<b>D<sub>2e9</sub></b>	115	142	150	165	165	165	185	210	230	255	324	345	410	480
<b>D<sub>3</sub></b>	155	190	200	220	220	220	240	275	295	330	410	450	520	660
<b>D<sub>4</sub></b>	188	223	240	262	262	262	288	328	348	388	480	530	610	750
<b>d<sub>1</sub></b>	20	22	22	26	26	26	30	33	33	36	42	45	45	51
<b>b</b>	5	5	5	5	5	5	8	8	8	8	8	10	10	10
<b>e</b>	34	36	36	38	38	38	42	46	50	55	70	80	90	105
<b>h</b>	67	81,5	85,5	92	98,5	98,5	103	122	130	145	172	189	225	258
<b>α</b>	60	60	60	60	45	45	45	45	30	30	30	30	22,5	22,5
<b>n</b>	6	6	6	6	8	8	8	8	12	12	12	12	16	16
<b>M<sub>1</sub></b>	M4 5x2	M5 2x2	M5 8x2	M5 8x2	M6 4x2	M6 4x2	M6 8x2	M8 0x2	M8 0x2	M1 00x 2	M1 30x 3	M1 40x 3	M1 60x 3	M1 80x 3
<b>M<sub>2</sub></b>	M20 x1,5	M27 x2	M27 x2	M27 x2	M27 x2	M27 x2	M27 x2	M33 x2	M33 x2	M33 x2	M33 x2	M42 x2	M48 x2	M48 x2



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## HYDRAULIC CYLINDER

### CH 6



H – cylinder stroke ( up to 9000 mm, for diameter matched \* - up to 4000 mm)

M<sub>2</sub> – thread seat acc. to PN-ISO 6149-1

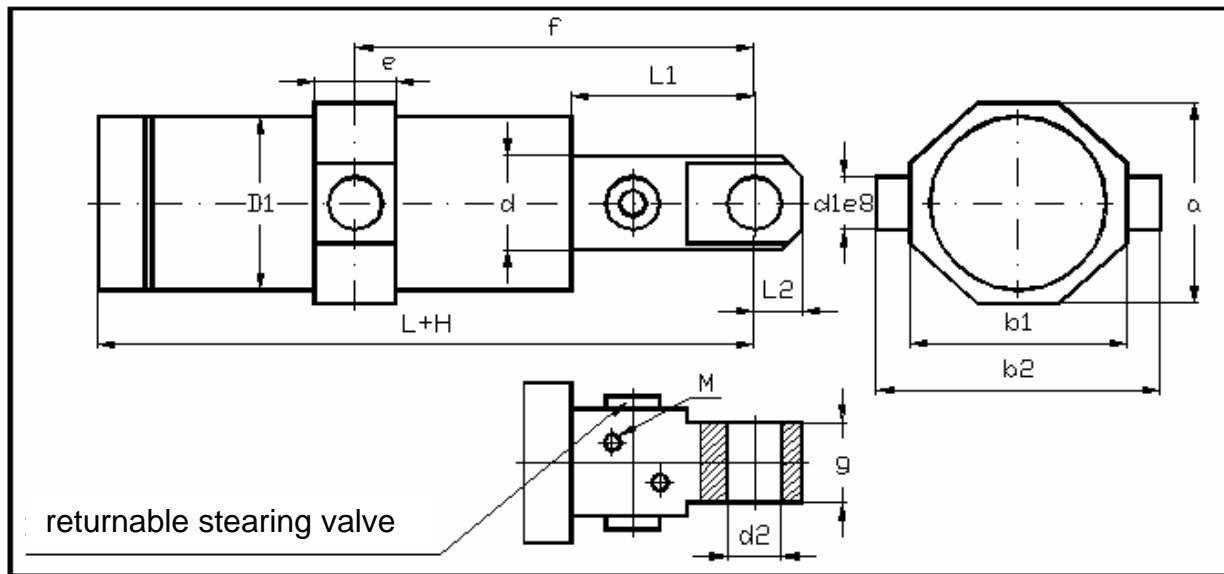
Cylinder diameter D	80	100	110	120	125	127	140	160	180	200*	250*	280*	320*	400*
Piston rod diameter d	50	63	70	70	80	80	90	100	110	125	160	180	200	250
	56	70	80	80	90	90	100	110	125	140	180	200	220	280
L	230	262	272	322	315	315	325	335	400	430	490	525	560	650
L <sub>1</sub>	20	20	20	20	20	20	20	20	25	25	30	30	35	35
L <sub>2</sub>	50	55	60	60	65	65	70	80	80	100	135	150	170	190
L <sub>3</sub>	102	127	127	167	150	150	150	156	196	206	211	225	240	260
L <sub>4</sub>	26	30	30	30	30	30	30	35	35	35	40	50	55	60
D <sub>1</sub>	100	125	133	146	159	159	168	194	210	240	294	323	390	457
b <sub>1</sub>	140	180	200	210	220	220	240	280	320	360	420	480	540	610
b <sub>2</sub>	190	250	270	290	300	300	320	380	430	480	560	640	720	810
h	67	81,5	85,5	92	98,5	98,5	103	122	130	145	172	189	225	258
h <sub>1</sub>	70	80	90	100	110	110	115	130	140	160	190	210	255	300
d <sub>1</sub>	25	31	37	40	40	40	43	50	58	60	78	87	98	119
a	35	45	50	55	60	60	65	70	75	80	90	100	120	140
e	50	60	70	75	80	80	90	100	110	120	140	160	180	200
f <sub>1</sub>	65	70	70	80	80	80	80	80	90	100	110	120	150	170
f <sub>2</sub>	60	70	80	100	100	100	120	140	160	160	180	200	200	200
M <sub>1</sub>	M45 x2	M52 x2	M58 x2	M58 x2	M64 x2	M64 x2	M68 x2	M80 x2	M80 x2	M10 0x2	M13 0x3	M14 0x3	M16 0x3	M18 0x3
M <sub>2</sub>	M2 0x1,5	M2 7x2	M2 7x2	M2 7x2	M2 7x2	M2 7x2	M2 7x2	M3 3x2	M3 3x2	M3 3x2	M3 3x2	M4 2x2	M4 8x2	M4 8x2



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## HYDRAULIC CYLINDER

### CH 7



**H** – cylinder stroke ( up to 9000 mm, for diameter matched \* - up to 4000 mm)

**M<sub>2</sub>** – thread seat acc. to PN-ISO 6149-1

Cylinder diameter <b>D</b>	<b>125</b>	<b>127</b>	<b>140</b>	<b>160</b>	<b>180</b>	<b>200*</b>	<b>250*</b>
Piston rod diameter <b>d</b>	<b>100</b>	<b>101,6</b>	<b>120</b>	<b>140</b>	<b>160</b>	<b>180</b>	<b>200</b>
<b>L</b>	830	830	830	865	800	880	880
<b>L<sub>1</sub></b>	275	275	275	280	235	300	300
<b>L<sub>2</sub></b>	75	75	75	75	80	120	140
<b>D<sub>1</sub></b>	159	159	160	190	219	240	294
<b>d<sub>1e8</sub></b>	100	100	100	100	100	100	110
<b>d<sub>2</sub></b>	60	60	90	90	100	110	120
<b>g</b>	76	76	90	100	90	120	140
<b>b<sub>1</sub></b>	195	195	210	216	240	290	360
<b>b<sub>2</sub></b>	265	265	290	260	320	410	480
<b>a</b>	194	194	210	220	260	290	360
<b>e</b>	120	120	120	140	110	130	140
<b>f<sub>min</sub></b>	360	360	360	380	320	400	400
<b>M</b>	M27x2	M27x2	M27x2	M27x2	M33x2	M33x2	M33x2



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# TELESCOPIC HYDRAULIC CYLINDERS CHT [ ]

## CATALOGUE CARD SUBJECTS

- CHT1 – one-sided action
- CHT2 – double-sided action
- CHT3 – double-sided action with uniform piston rod feed

## TECHNICAL PARAMETERS

- nominal pressure
  - for CHT1 type cylinders - 4 MPa
  - for CHT2 type cylinders
    - under a piston (move out) - 16 MPa
    - over a piston (move in) - 12 MPa
  - for CHT3 type cylinders
    - under a piston (move out) - 25 MPa
    - over a piston (move in) - 30 MPa
- max. piston move - 0,5 m/s
- work range temperature - 253 ÷ 353 K
- working liquid viscosity range - 9 ÷ 300 cSt
- working liquid cleanness requirements - 9 Kl. acc. NAS 1638

## DESIGNATION

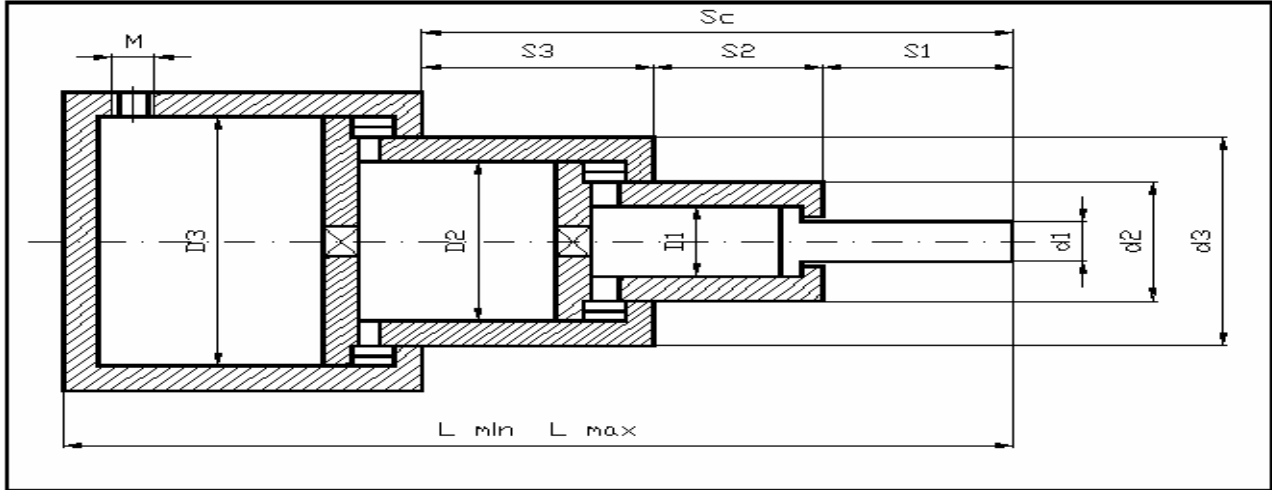
	CHT2 – 16/12 – 2 – 180/140 – 160/120 – 5715/5715 – 11430
Series of types	
Pressure Move out/Move in	
Quantity of stages	
Inner cylinder diameter	
Outer piston rod diameter	
Piston's stroke for each stage	
Total stroke	

There's possibility to manufacture telescopic cylinders with other strokes and working pressures.



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# TELESCOPIC CYLINDER ONE-SIDED ACTION C H T 1

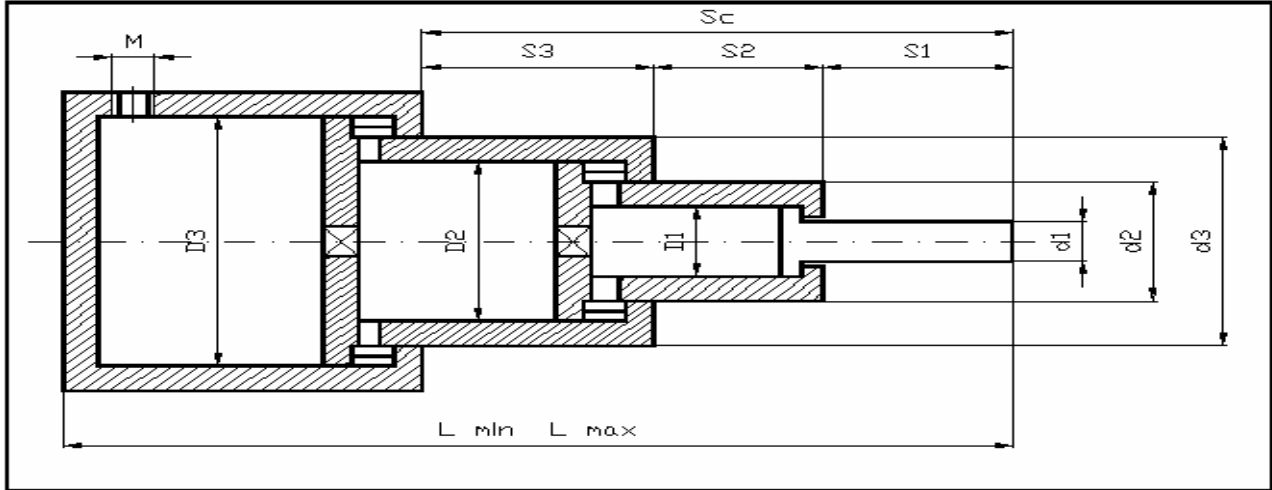


Inner cylinder sleeve diameter of each stages			Outer piston rod diameter of each stages			Stage's strokes			Total stroke	$L_{min}$	M
$D_1$	$D_2$	$D_3$	$d_1$	$d_2$	$d_3$	$S_1$	$S_2$	$S_3$	$S_c$	$L_{max}$	
85	120	185	70	100	140	2177	2408	2365	6950	3135	M48x2
						3150	3480	3420	10050	10085	
						3346	3726	3845	10750	4191	
						3540	3915	3845	11300	14241	
										4431	
85	120	185	70	100	140	2490	2930	3030	8450	4615	
						4070	4505	4425	13000	15915	
										5494	
85	120		70	100		3940	4360		8300	13944	
85	120		70	100		2890	2770		5660	4930	
						3116	3494		6610	13230	
										3615	
100	150		90	120		4140	4140		8280	9275	
						3545	3545		7090	4116	
										10725	
										4796	
										13076	
										4217	
										11307	



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## TELESCOPIC CYLINDER DOUBLE-SIDED ACTION C H T 2



Feed – by piston rod with returnable shearing valves.

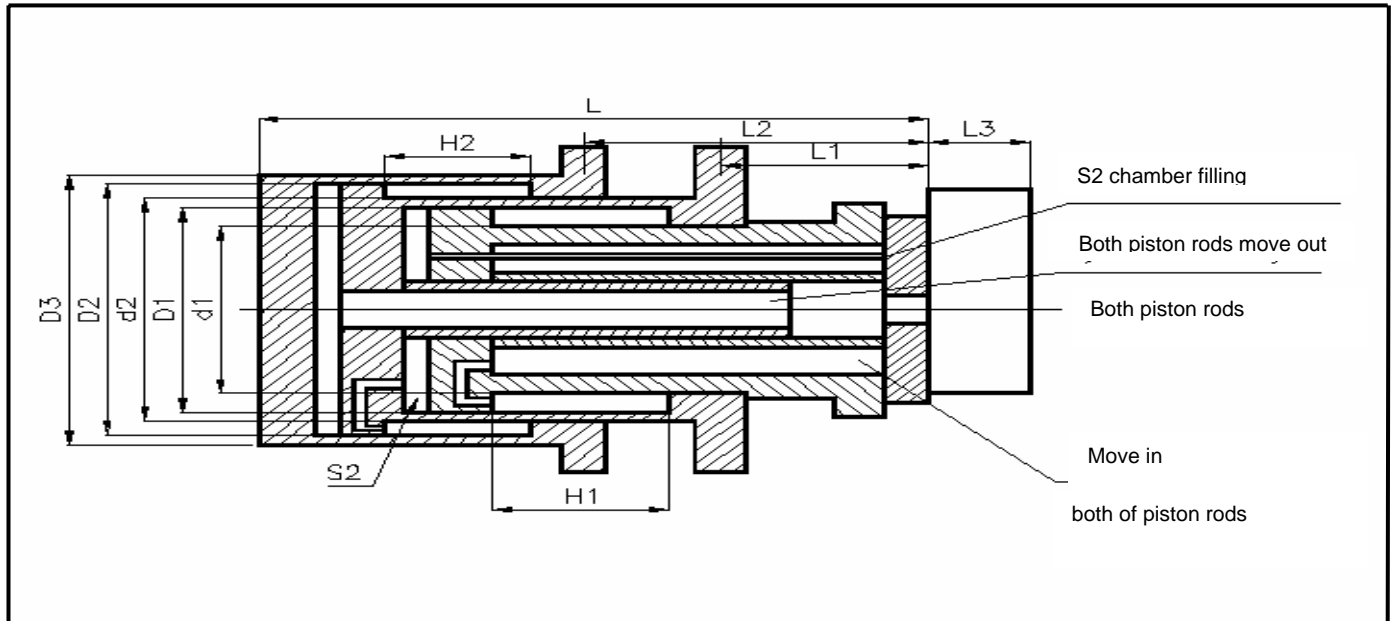
Fastenning – clamping ring with pivot  
piston rod end with bolt

Inner cylinder sleeve diameter of each stages		Outer piston rod diameter of each stages		Stage's strokes		Total stroke	$L_{min}$
							$L_{max}$
$D_1$	$D_2$	$d_1$	$d_2$	$S_1$	$S_2$	$S_C$	
127	160	115	145	5715	5715	11430	6809
							18239
140	180	120	160	5715	5715	11430	6809
							18239
140	180	120	160	7520	7520	15040	8755
							23795
140	180	120	160	8020	8020	16040	9255
							25295



# TELESCOPIC CYLINDERS

## CHT 3



**H – Cylinder stroke ( $H_1 + H_2$ )**  
**M – Thread seat acc. to DIN 3852**

Cylinder diameter $D_1 / D_2$	110 / 165,3	
$D_3$	183	
$d_1$	95	
$d_2$	127	
$L_1$	199	
$L_2$	376	
$L_3$	71	
$L$	7686	
$H$	14123	
$H_1$	7123	
$H_2$	7000	





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# HYDRAULIC CYLINDER WITH TWO-SIDED PISTON ROD CHDT [ ]

## CATALOGUE CARD SUBJECTS

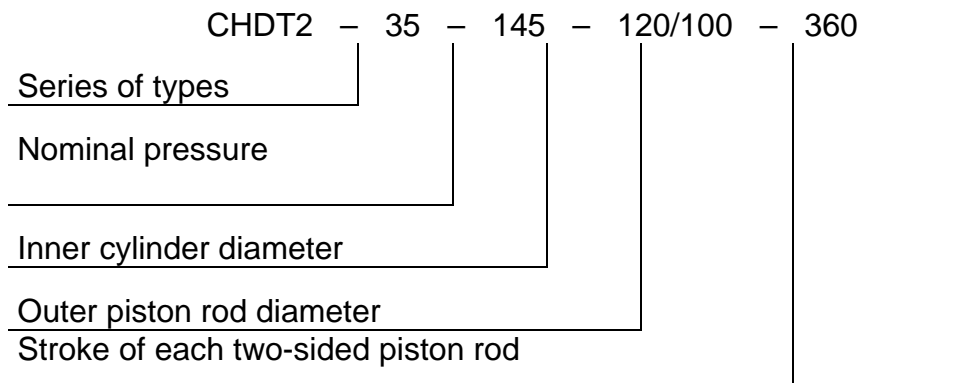
Catalogue card include the following cylinder's types

CHDT1 - fastenning with lugs

## TECHNICAL PARAMETERS

- nominal pressure  
for CHDT1 type cylinders - 20 MPa
- max. piston move - 0,5 m/s
- work range temperature - 253 ÷ 353 K
- working liquid viscosity range - 9 ÷ 300 cSt
- working liquid cleanness requirements - 9 Kl. acc. NAS 1638

## DESIGNATION

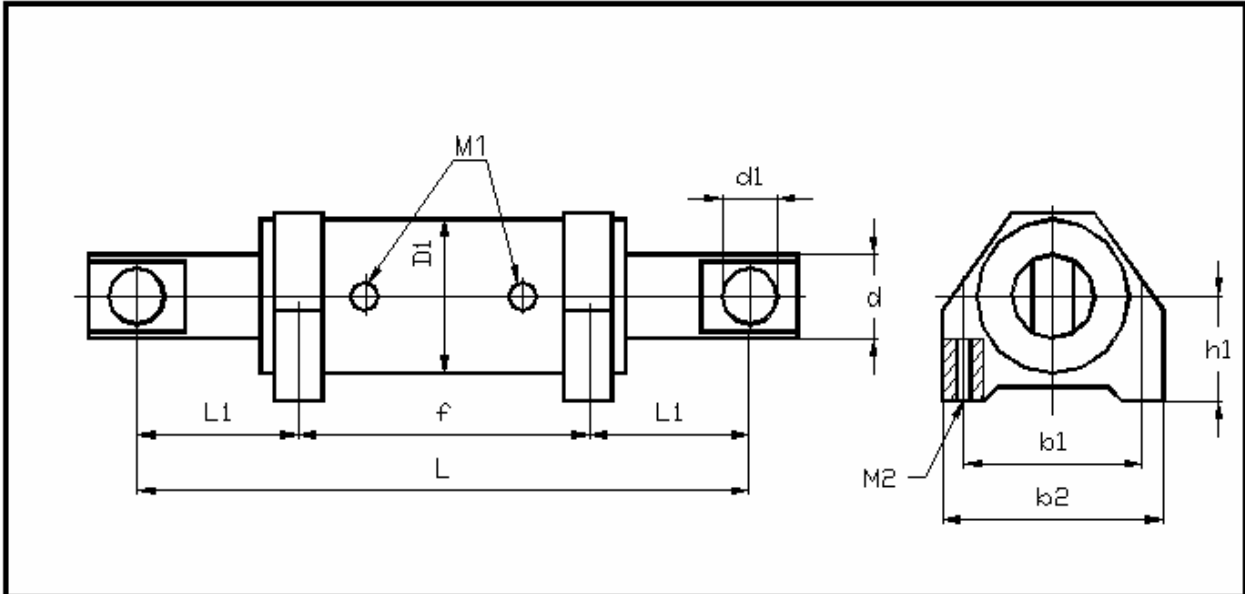


There's possibility to manufacture telescopic cylinders with other strokes and working pressures.



FABRYKA MASZYN BUDOWLANYCH "BUMAR" Sp. z o.o.

# HYDRAULIC CYLINDER WITH TWO-SIDED PISTON ROD CHDT1



H – cylinder stroke  
M<sub>1</sub> – thread seat acc. to DIN 3852

Cylinder diameter D	140	175	175	200
Piston rod diameter d	100	125	125	140
H	2x210	2x175	2x195	2x195
L	1440	1725	1725	1727
L <sub>1</sub>	379	442,5	442,5	442,5
D <sub>1</sub>	160	200	200	245
d <sub>1</sub>	40	60	60	70
b <sub>1</sub>	210	280	280	280
b <sub>2</sub>	260	340	340	340
f	682	840	840	840
h <sub>1</sub>	93	105	105	105
M <sub>1</sub>	G ¾"	G ¾"	G ¾"	G ¾"
M <sub>2</sub>	M24x2	M27x2	M27x2	M27x2



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# PLUNGER HYDRAULIC CYLINDERS CHN [ ]

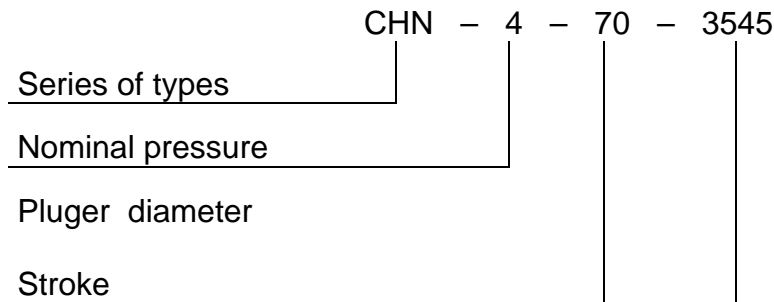
## CATALOGUE CARD SUBJECTS

CHN – plunger hydraulic cylinders one-sided action

## TECHNOLIGIC PARAMETERS

- nominal pressure - 4 MPa
- max. piston move - 0,5 m/s
- work range temperature - 253 ÷ 353 K
- working liquid viscosity range - 9 ÷ 300 cSt
- working liquid cleanness requirements - 9 Kl. acc. NAS 1638

## DESIGNATION

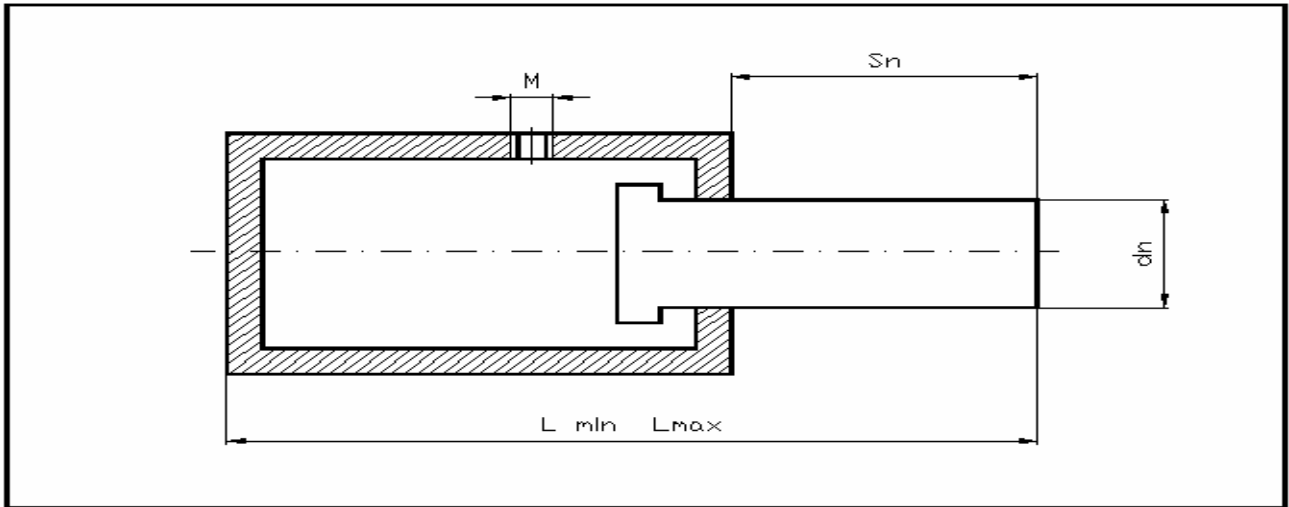


There's possibility to manufacture telescopic cylinders with other strokes and working pressures.



FABRYKA MASZYN BUDOWLANYCH "BUMAR" Sp. z o.o.

# PLUNGER HYDRAULIC CYLINDER CHN



**M – thread seat acc. to PN-ISO 6149-1**

Plunger diameter $d_n$	Stroke $S_n$	$L_{min}$	M
		$L_{max}$	
50	2650	3055	M22x1,5
		5705	
	3850	4154	
		8004	
	3895	4199	
		8094	
70	3545	3811	M42x2
		7356	
100	3665	3920	M48x2
		7585	
	3730	3985	
		7715	
	3755	4010	
		7765	
	4190	4445	
		8635	
	4230	4485	
		8715	
	5545	5800	
		11345	
6955	7210		
	14165		
7030	7285		
	14315		
120	5190	5814	M48x2
		11004	
	6835	7459	
		14294	
	7055	7632	
		14687	



## Forces related to cylinder's diameters and pressures

Cylinder diameter $D$	Pushing surface $S_1$	Piston rod diameter $d$	Pulling surface $S_2$	Pushing force $F_1$			Pulling force $F_2$		
				16 MPa	20 MPa	25 MPa	16 MPa	20 MPa	25 MPa
mm	mm <sup>2</sup>	mm	mm <sup>2</sup>	kN	kN	kN	kN	kN	kN
80	5027	50	3063	80	101	126	49	61	77
		56	2564				41	51	64
100	7854	63	4737	126	157	196	76	95	118
		70	4006				64	80	100
110	9503	70	5655	152	190	238	90	113	141
		80	4477				72	90	112
120	11310	70	7464	181	226	283	119	149	187
		80	6283				101	126	157
125	12272	80	7245	196	245	307	116	145	181
		90	5910				95	118	148
127	12668	80	7641	203	253	317	122	153	191
		90	6306				101	126	158
140	15394	90	9032	246	308	358	145	181	226
		100	7540				121	151	188
160	20106	100	12252	322	402	503	196	245	306
		110	10603				170	212	265
180	25447	110	15944	407	509	636	255	319	399
		125	13175				211	264	329
200	31416	125	19144	503	628	785	306	383	479
		140	16022				256	320	401
250	49087	160	28981	785	982	1227	464	580	725
		180	23640				378	473	591
280	61575	180	36128	985	1232	1539	578	723	903
		200	30159				483	603	754
320	80425	200	49009	1287	1608	2011	784	980	1225
		220	42412				679	848	1060
400	125664	250	76576	2011	2513	3142	1225	1532	1914
		280	64088				1025	1292	1602

