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Hydraulic Cylinder

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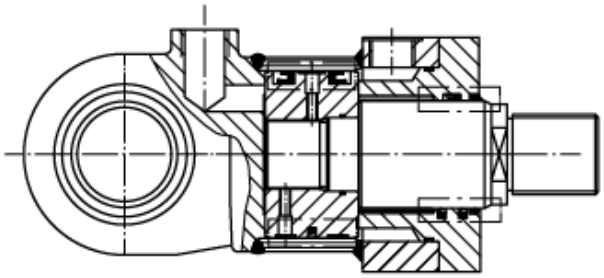
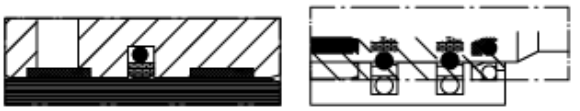
CONVERTIBLE DOUBLE-ACTING CYLINDER FOR HEAVY-DUTY APPLICATIONS

Max. operating pressure 25 MPa
Nominal diameter of cylinder 40 to 320 mm
Seals:
- U-ring U and N
- Glide ring L and LV
- LU sealing (glide ring + U-ring)

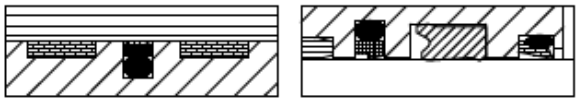


U, N

L, LV



LU



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NTS6 Hydraulic cylinder

- Cylinder measurement is based on standard industrial dimensions.
- Cylinders are fabricated from normal steel or alternatively some or all raw materials are acid proof type.
- The cylinder barrel is welded using high-quality raw materials and a special welded joint designed to ensure maximum resistance to dynamic stresses.
- The housing is fixed with screws for easy maintenance.

SEALING ALTERNATIVES

(a) U-ring seals (NTS6U, NTS6N)

•Excellent sealing performance
•U-seals are made from polyurethane, which has unusually high wear resistance. Availability of these seals is good.
•N-seals are made from reinforced nitrile rubber. It has lower wear resistance than polyurethane, but is suitable for special application for ex. in cases where water can unintentionally end up in the system. Availability quite limited.
•The grooves are not similar between these two types!
•Technical data:

- withstand pressure up to 400 bar
- temperature range U: 30...+100°C
  N: 20...+100°C
- sliding speed up to 0.5 m/sec

(b) Glide ring (NTS6L, NTS6LV)

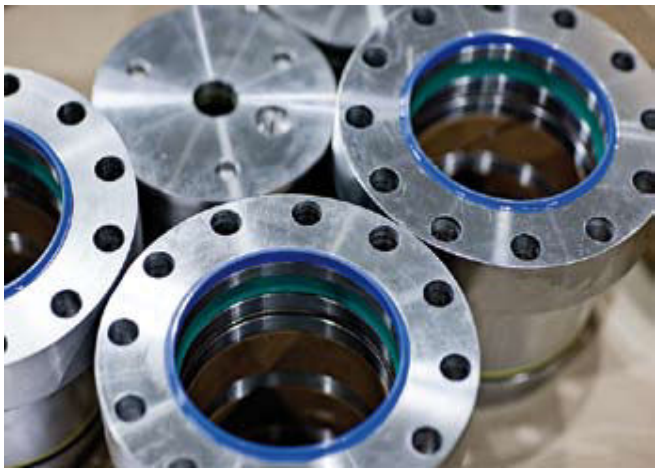
•Sealing rings are made from modified teflon filled with bronze
•The material of the O-rings is nitrile rubber with L-seals and fluorocarbon rubber with LV-seals
•Grooves are similar between these types
•LV-type withstands high temperatures and is chemically very firm
•Both have extremely low friction without stick-slip phenomena
•Use with high pressure peaks
•Technical data:

- withstand pressure peaks up to 600–800 bar
- temperature L: -30...+100°C
  LV: -15...+200°C
- sliding speed up to 15 m/sec

(c) LU sealing (glide ring + U-ring)

• Low friction force
•Very dry piston rod
•For demanding industrial use
•Piston seal: glide ring material PTFE teflon
•Rod seals: glide ring material PTFE teflon and AU polyurethane U-ring
•Technical data:

- withstand pressure up to 400 bar
- temperature range -30…+100 °C
- sliding speed 0.5m/sec



REMARKS

•End cushioning usually increases the basic length.
•Protective bellows increase the basic length of the cylinder (see page 9).
•Drain connection combined with U, N and LU-seals increase the basic length of the cylinder by 20mm.
•With long strokes ensure that safety factor against buckling is adequate. If a distance ring is needed, add the length of the ring into the basic length.

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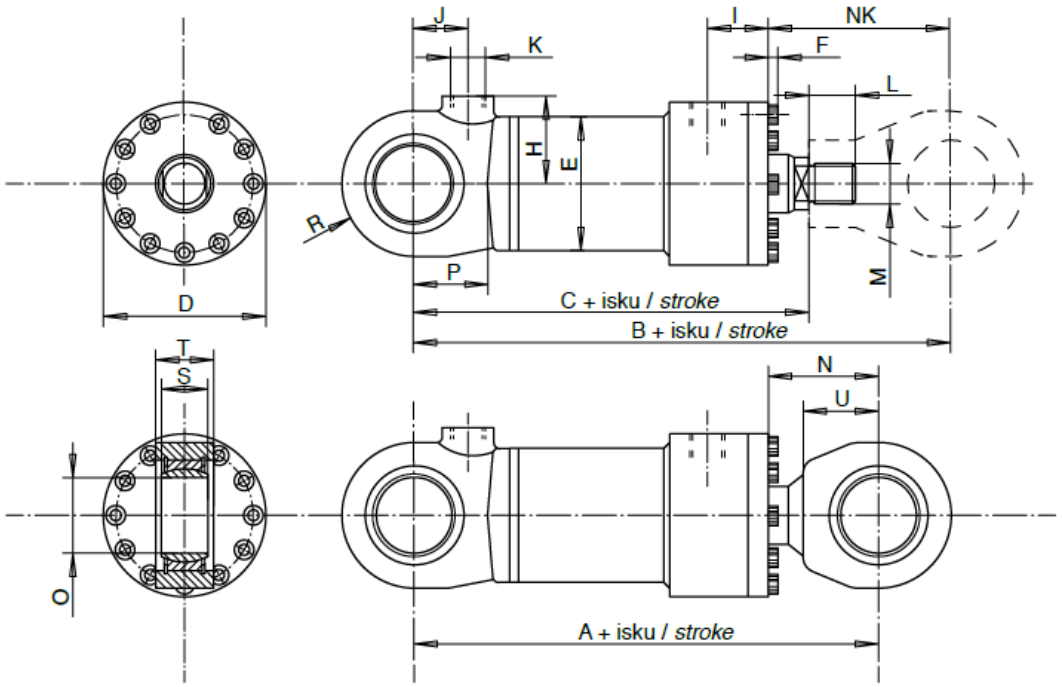
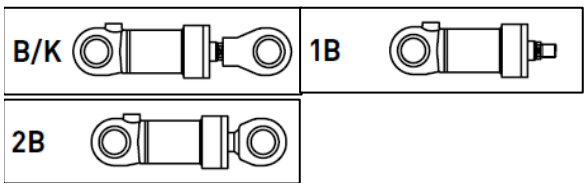


(1) Rated length without end cushionings.
(2) Rated length with cushionings at both ends.

NS	40	50		63		80		100		125		160		200		250	320
d	25	25	30	30	40	40	50	50	65	65	80	90	110	110	140	140	180
A [1]	203	209		238		277		328		384		459		555		731	855
A [2]	–	274		313		362		418		494		569		690		876	1035
B [1]	223	233		266		306		370		451		554		660		877	1025
B [2]	–	298		341		391		460		561		664		795		1022	1205
C [1]	173	166		182		206		248		286		354		405		562	635
C [2]	–	231		257		291		338		396		464		540		707	815
D	75	80		106		120		150		175		212		267		324	406
E	50	60		75		95		115		140		185		225		292	366
F	6	6		8		10		12		12		16		20		24	24
H	39	45		58		65		77		93		110		125		162	200
I	40	40		45		46		55		62		66		66		81	110
J	27	27		30		40		48		60		70		78		125	190
K	R 3/8	R 3/8		R 1/2		R 3/4		R 1		R 1		R 1 1/4		R 1 1/2		R 1 1/2	R 1 1/2
L	17	28		34		40		50		68		75		90		110	145
M	M16x1.5	M22x1.5		M27x2		M36x3		M45x3		M60x4		M68x4		M85x4		M105x4	M130x4
N	48	59		70		85		96		119		141		211		224	280
NK	68	83		98		114		138		186		236		316		370	450
O	25 H7	30 H7		35 H7		45 H7		60 H7		70 H7		80 H7		110 H7		140 H7	180 H7
P	35	40		44		54		64		79		100		105		175	205
S	20	22		25		32		44		49		55		70		90	105
T	25	28		30		40		50		60		60		76		100	115
U	35	40		50		60		70		80		115		140		175	200
R	30	35		40		50		65		75		95		126		145	195



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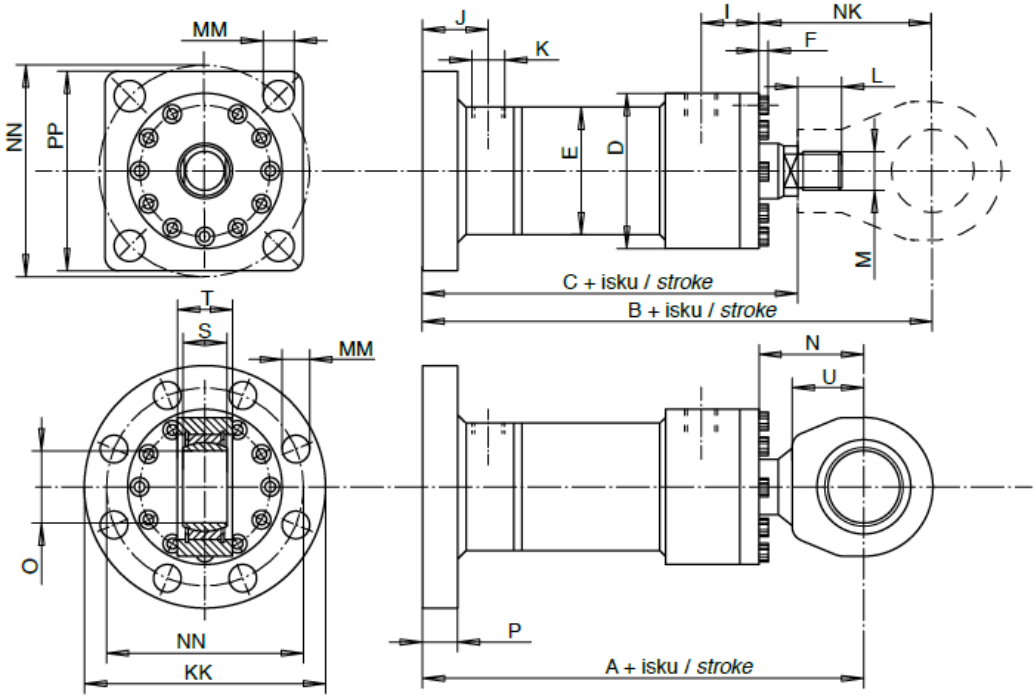
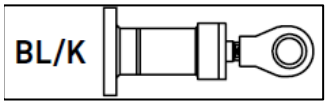
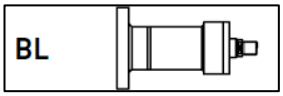
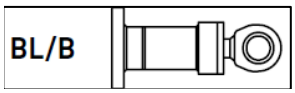


(1) Rated length without end cushionings.
(2) Rated length with cushionings at both ends.

NS	40	50	63	80	100	125	160	200	250	320
d	25	25 30	30 40	40 50	50 65	65 80	90 110	110 140	140	180
A [1]	200	227	252	294	341	381	463	545	641	750
A [2]	–	262	297	339	386	441	523	620	716	845
B [1]	220	251	280	323	383	448	558	650	787	920
B [2]	–	286	325	368	428	508	618	725	862	1015
C [1]	170	184	196	223	261	283	358	395	472	530
C [2]	–	219	241	268	306	343	418	470	547	625
D	75	80	106	120	150	175	212	267	324	406
E	50	60	75	95	115	140	185	225	292	366
F	6	6	8	10	12	12	16	20	24	24
I	40	40	45	46	55	62	66	66	81	110
J	31	40	44	55	60	60	75	85	100	110
K	R 3/8	R 3/8	R 1/2	R 3/4	R 1	R 1	R 1 1/4	R 1 1/2	R 1 1/2	R 1 1/2
L	17	28	34	40	50	68	75	90	110	145
M	M16x1.5	M22x1.5	M27x2	M36x3	M45x3	M60x4	M68x4	M85x4	M105x4	M130x4
N	48	59	70	85	96	119	141	211	224	280
NK	68	83	98	114	138	186	236	316	370	450
O	25 H7	30 H7	35 H7	45 H7	60 H7	70 H7	80 H7	110 H7	140 H7	180 H7
P	15	16	18	24	28	28	33	38	43	58
S	20	22	25	32	44	49	55	70	90	105
T	25	28	30	40	50	60	60	76	100	115
U	35	40	50	60	70	80	115	140	175	200
R	30	35	40	50	65	75	95	126	145	195
MM	4 kpl D11	4 kpl D11	4 kpl D14	4 kpl D18	4 kpl D20	4 kpl D24	8 kpl D22	10 kpl D24	12 kpl D26	13 kpl D33
NN	100	110	140	170	190	230	280	340	400	520
PP	93	105	132	160	175	212	–	–	–	–
KK	–	–	–	–	–	–	326	390	450	585







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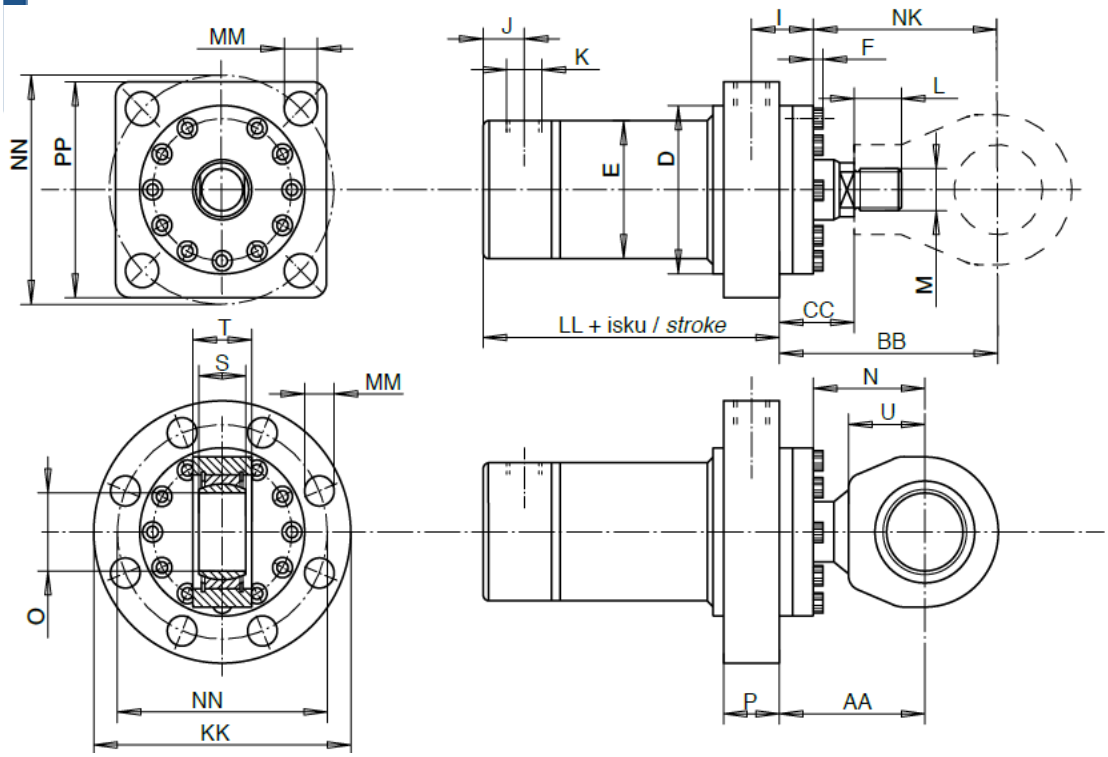
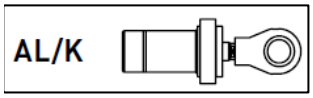
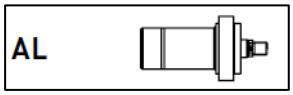
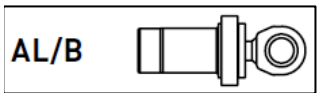


(1) Rated length without end cushioning or with rear cushioning.
(2) Rated length with front cushioning or cushionings at both ends.

NS	40	50		63		80		100		125		160		200		250	320
d	25	25	30	30	40	40	50	50	65	65	80	90	110	110	140	140	180
AA	70	85		97		109		124		152		179		238		267	340
BB	90	109		120		138		166		218		274		353		413	510
CC	40	42		41		38		44		53		74		98		98	120
D	75	80		106		120		150		175		212		267		324	406
E	50	60		75		95		115		140		185		225		292	366
F	6	6		8		10		12		12		16		20		24	24
LL [1]	115	126		133		161		189		198		251		259		329	352
LL [2]	–	161		178		206		234		258		311		334		404	445
I	40	40		45		46		55		62		66		66		81	110
J	15	20		24		28		30		30		38		45		50	50
K	R 3/8	R 3/8		R 1/2		R 3/4		R 1		R 1		R 1 1/4		R 1 1/2		R 1 1/2	R 1 1/2
L	17	28		34		40		50		68		75		90		110	145
M	M16x1.5	M22x1.5		M27x2		M36x3		M45x3		M60x4		M68x4		M85x4		M105x4	M130x4
N	48	59		70		85		96		119		141		211		224	280
NK	68	83		98		114		138		186		236		316		370	450
O	25 H7	30 H7		35 H7		45 H7		60 H7		70 H7		80 H7		110 H7		140 H7	180 H7
P	30	29		33		41		52		55		55		70		75	85
S	20	22		25		32		44		49		55		70		90	105
T	25	28		30		40		50		60		60		76		100	115
U	35	40		50		60		70		80		115		140		175	200
R	30	35		40		50		65		75		95		126		145	195
MM	4 kpl D11	4 kpl D11		4 kpl D14		4 kpl D18		4 kpl D20		4 kpl D24		8 kpl D22		10 kpl D24		12 kpl D26	13 kpl D33
NN	100	110		140		170		190		230		280		340		400	520
PP	93	105		132		160		175		212		–		–		–	–
KK	–	–		–		–		–		–		326		390		450	585







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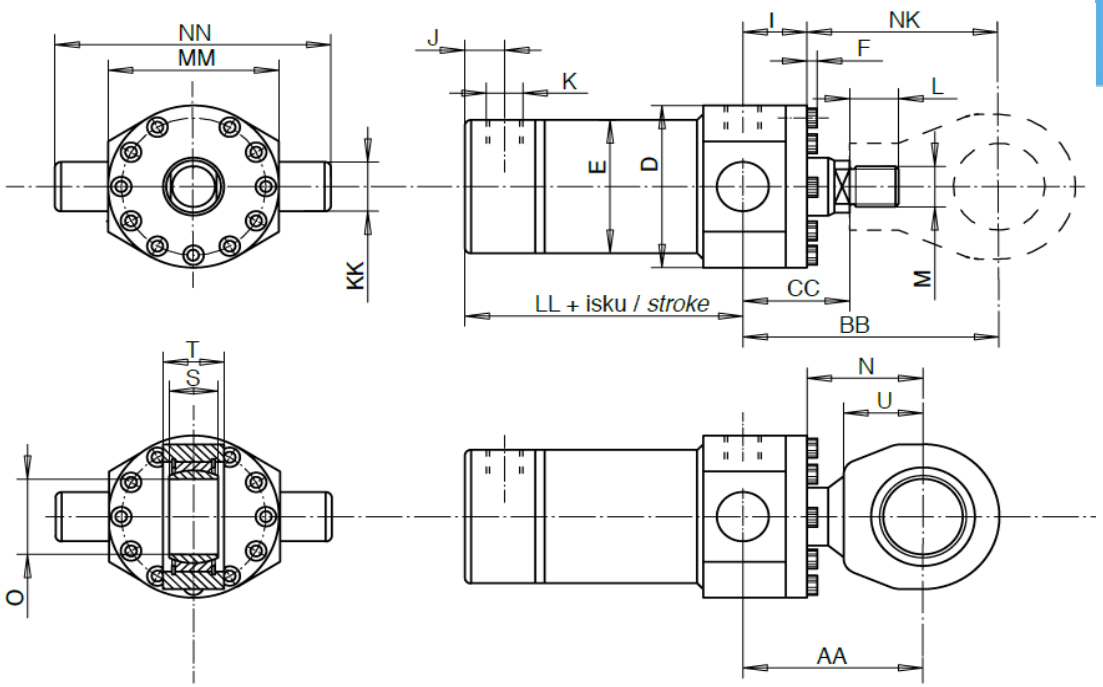
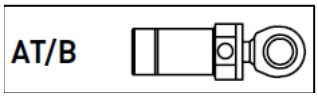


(1) Rated length without end cushioning or with rear cushioning.
(2) Rated length with front cushioning or cushionings at both ends.

NS	40	50		63		80		100		125		160		200		250	320
d	25	25	30	30	40	40	50	50	65	65	80	90	110	110	140	140	180
AA	83	95		113		128		148		180		211		278		314	394
BB	103	119		141		157		190		247		306		393		460	564
CC	52	52		57		57		68		82		106		138		145	174
D	75	80		106		120		150		175		212		267		324	406
E	50	60		75		95		115		140		185		225		292	366
F	6	6		8		10		12		12		16		20		24	24
LL [1]	102	116		117		142		165		173		236		229		294	298
LL [2]	–	151		162		187		211		233		296		304		369	393
I	40	40		45		46		55		62		66		66		81	110
J	15	20		24		28		30		30		38		45		50	50
K	R 3/8	R 3/8		R 1/2		R 3/4		R 1		R 1		R 1 1/4		R 1 1/2		R 1 1/2	R 1 1/2
L	17	28		34		40		50		68		75		90		110	145
M	M16x1.5	M22x1.5		M27x2		M36x3		M45x3		M60x4		M68x4		M85x4		M105x4	M130x4
N	48	59		70		85		96		119		141		211		224	280
NK	68	83		98		114		138		186		236		316		370	450
O	25 H7	30 H7		35 H7		45 H7		60 H7		70 H7		80 H7		110 H7		140 H7	180 H7
S	20	22		25		32		44		49		55		70		90	105
T	25	28		30		40		50		60		60		76		100	115
U	35	40		50		60		70		80		115		140		175	200
R	30	35		40		50		65		75		95		126		145	195
KK	25 e8	30 e8		30 e8		45 e8		50 e8		60 e8		75 e8		90 e8		105 e8	140 e8
MM	75	80		110		125		156		185		230		280		340	420
NN	125	140		167		190		242		285		350		420		520	640



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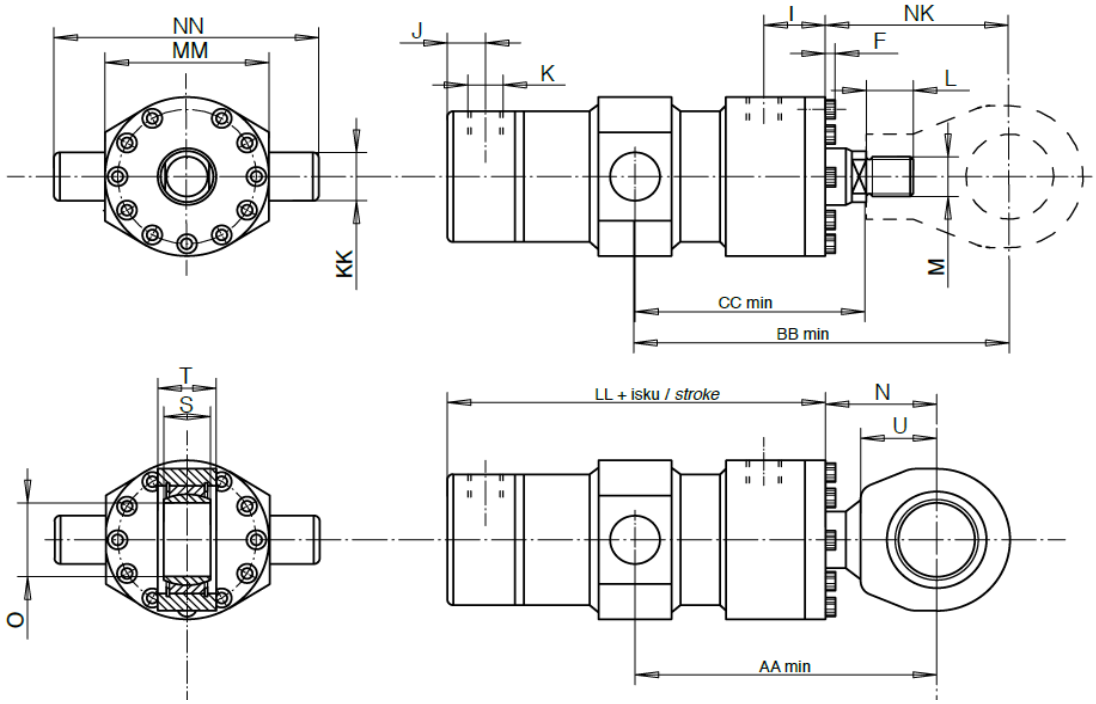
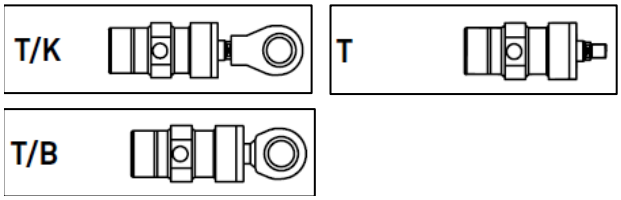
NTS6 Hydraulic cylinder



(1) Rated length without end cushioning or with rear cushioning.
(2) Rated length with front cushioning or cushionings at both ends.

NS	40	50		63		80		100		125		160		200		250	320
d	25	25	30	30	40	40	50	50	65	65	80	90	110	110	140	140	180
AA	128	139		155		194		206		236		274		366		409	480
BB	148	163		183		209		248		303		369		471		555	650
CC	98	96		99		109		126		138		169		216		240	260
D	75	80		106		120		150		175		212		267		324	406
E	50	60		75		95		115		140		185		225		292	366
F	6	6		8		10		12		12		16		20		24	24
LL [1]	137	152		160		185		217		234		289		296		374	412
LL [2]	–	187		205		230		262		294		349		371		449	507
I	40	40		45		46		55		62		66		66		81	110
J	15	20		24		28		30		30		38		45		50	50
K	R 3/8	R 3/8		R 1/2		R 3/4		R 1		R 1		R 1 1/4		R 1 1/2		R 1 1/2	R 1 1/2
L	17	28		34		40		50		68		75		90		110	145
M	M16x1.5	M22x1.5		M27x2		M36x3		M45x3		M60x4		M68x4		M85x4		M105x4	M130x4
N	48	59		70		85		96		119		141		211		224	280
NK	68	83		98		114		138		186		236		316		370	450
O	25 H7	30 H7		35 H7		45 H7		60 H7		70 H7		80 H7		110 H7		140 H7	180 H7
S	20	22		25		32		44		49		55		70		90	105
T	25	28		30		40		50		60		60		76		100	115
U	35	40		50		60		70		80		115		140		175	200
R	30	35		40		50		65		75		95		126		145	195
KK	25 e8	30 e8		30 e8		45 e8		50 e8		60 e8		75 e8		90 e8		105 e8	140 e8
MM	75	80		110		125		156		185		230		280		340	420
NN	125	140		167		190		242		285		350		420		520	640



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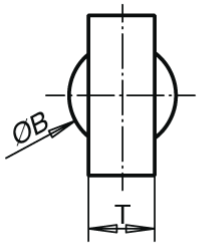
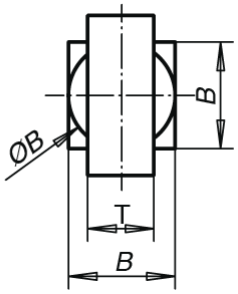
NTS6 Hydraulic cylinder

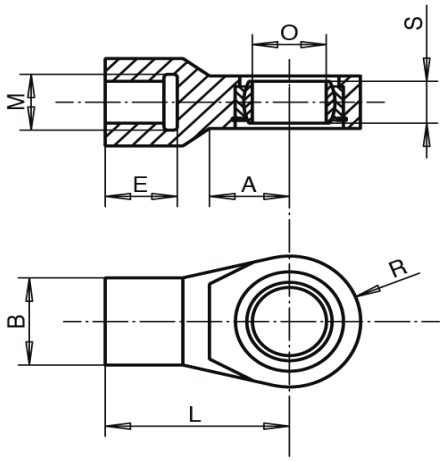
Threaded lug with ball joint.

Sizes 40–125 and acid proof.



Sizes 160–320 BxB or ØB

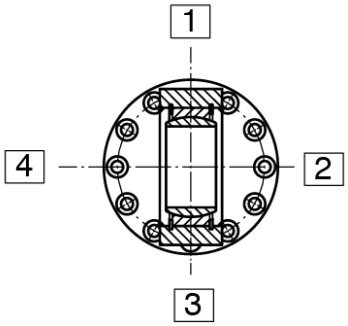


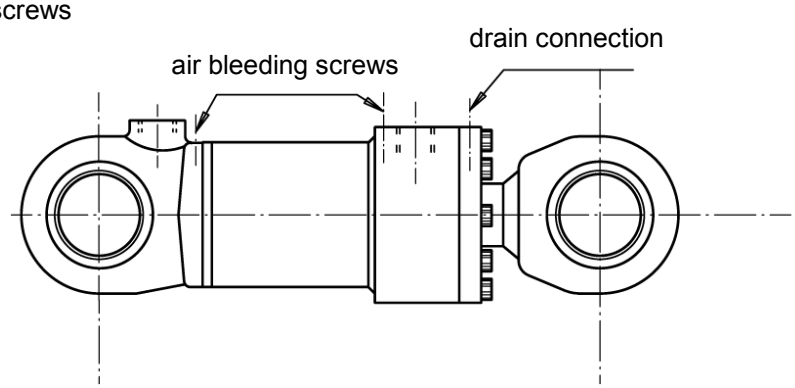


NS	40	50	63	80	100	125	160	200	250	320
M	M16x1.5	M22x1.5	M27x2	M36x3	M45x3	M60x4	M68x4	M85x4	M105x4	M130x4
E	19	30	36	42	51	70	80	95	115	150
O	25 H7	30 H7	35 H7	45 H7	60 H7	70 H7	80 H7	110 H7	140 H7	180 H7
L	50	67	84	100	122	165	200	255	315	390
A	28	36	42	53	66	81	98	127	162	196
S	20	22	25	32	44	49	55	70	90	105
T	25	28	30	39	50	60	60	76	100	115
B	25	35	45	52	63	91	106	138	170	200
R	30	35	40	50	65	75	95	126	145	195

DIRECTIONAL CODES

Directional codes for connections, air bleeding screws and drain connections.

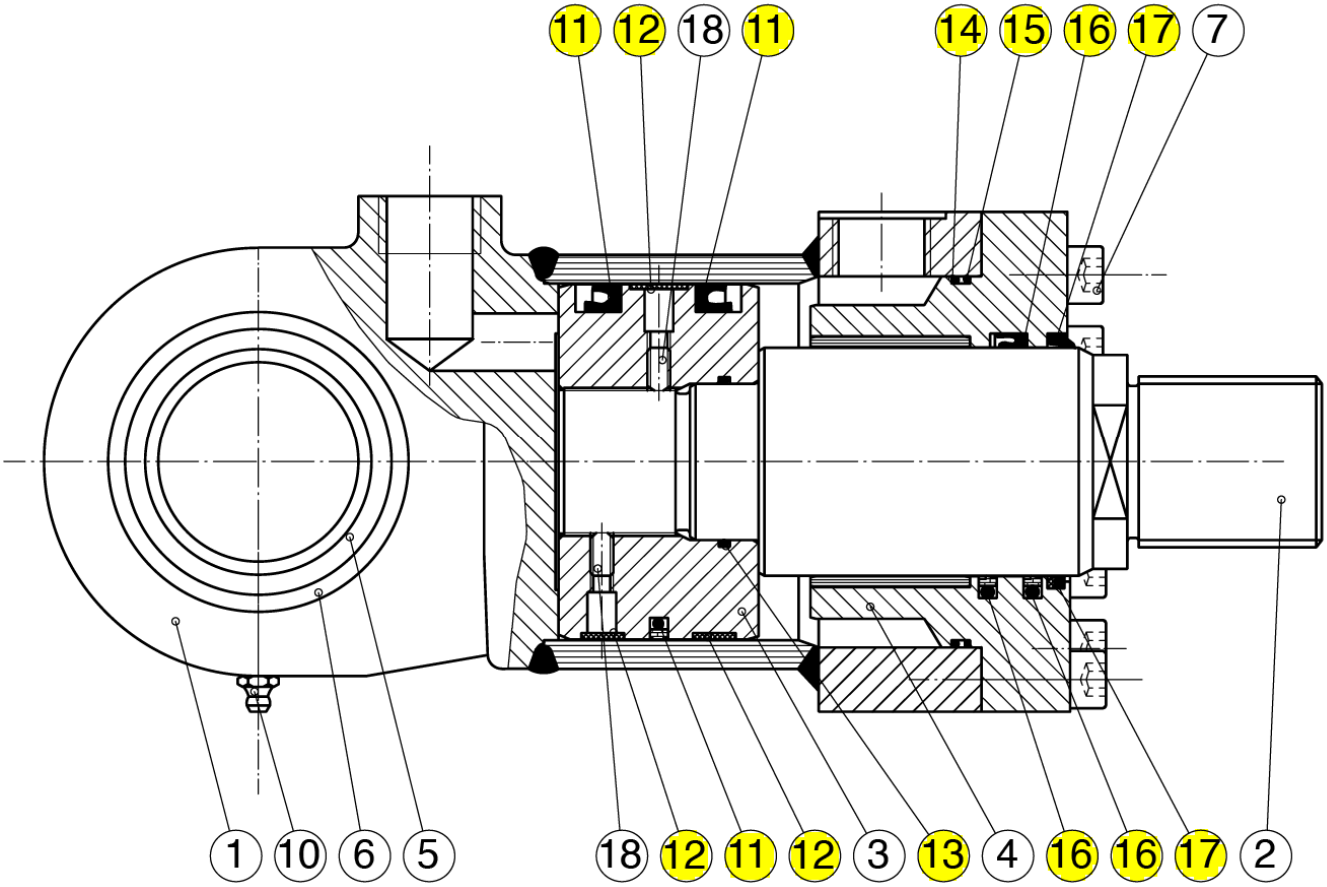




Note: When using the 1B, 2B, B/K mounting, rear end connection is only possible in directions 1 and 3.

When using the AT, AT/B, AT/K mounting, front endconnection is only possible in directions 1 and 3.

Spare Part Drawing
NTS6 Hydraulic cylinder



1 Cylinder barrel
2 Piston rod
3 Piston
4 Housing
5 Ball joint
6 Snap ring
7 Screw
10 Grease nipple
18 Lock screw

SEAL KIT
11 Piston seal
12 Piston guide
13 O ring
14 O ring
15 Back-up ring
16 Rod seal
17 Wiper

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NTS6 Hydraulic cylinder

- Cylinders with protective bellows need suitable extra length in rod.
- In the table you will find accurate rod extension with determined range of stroke.
- Threaded lug demanded (/K).

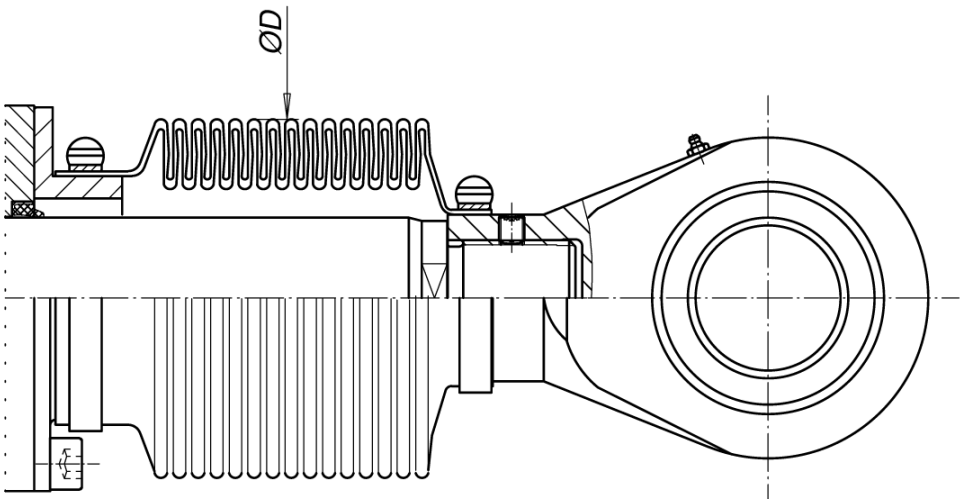
	Cylinder dia	Rod extension	Stroke	ØD
FASTENING CASE 1	50/25, 30	50 100 150	0–215 mm 215–425 mm 425–635 mm	60 60 60
	63/30, 40	40 80 120	0–200 mm 200–400 mm 400–600 mm	90 90 90
	80/40, 50	40 80 140	0–200 mm 0–440 mm 0–745 mm	90 98 110
	100/50	80	0–440 mm	98

FASTENING CASE 2	100/65	50 110	0–470 mm 470–940 mm	125 125
	125/65, 80	50 100 150	0–220 mm 220–450 mm 450–680 mm	130 130 130
	160/90, 110	50 100	0–220 mm 450–920 mm	168 168
	200/110	50 100	0–430 mm 430–900 mm	185 185
	200/140	50 100	0–370 mm 370–780 mm	220 220
	250/140	50 100	0–370 mm 370–780 mm	220 220

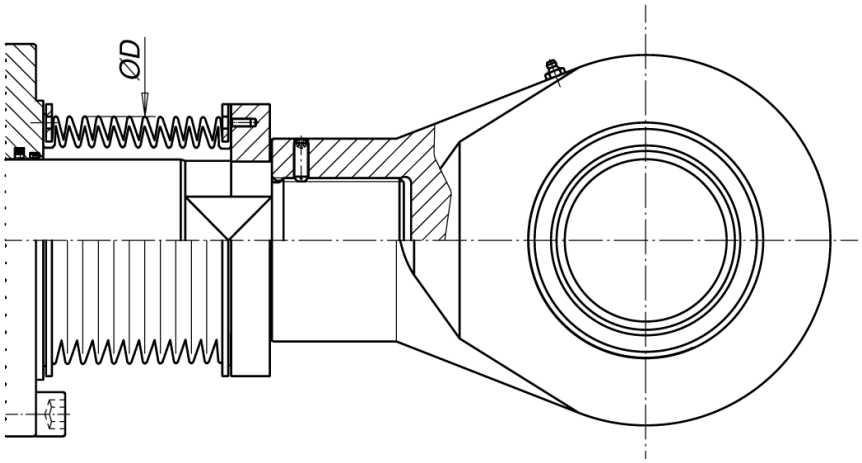
MAINTREX

NTS6 Hydraulic cylinder

Fastening of the protective bellows, case 1.
To the cylinders: 50, 63, 80 and 100/50.



Fastening of the protective bellows, case 2.
To the cylinders: 100/65, 125, 160, 200 and 250.



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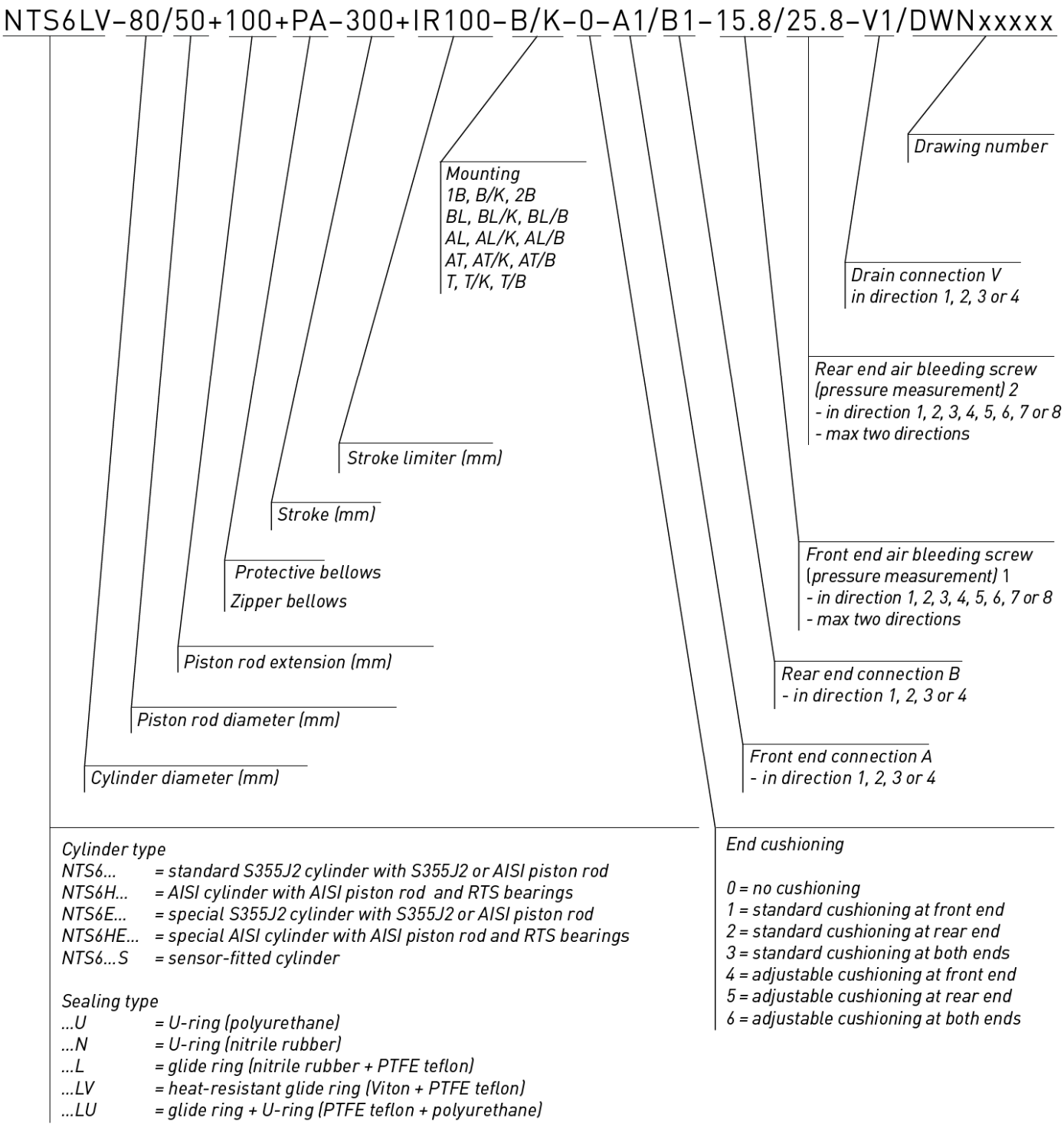
NTS6 Hydraulic cylinder

Order example

Hyd.cyl. NTS6LV–80/50+100+PA–300+IR100–B/K–0–A1/B1–15.8/25.8–V1



MAINTREX Industrial Cylinders

MAINTREX's standard double-acting industrial cylinders include the following series:

Type	Pressure rating	Nominal Cylinder dia.
HA 1	25 MPa	25–320 mm
NTS4	21 MPa	40–80 mm
NTS6	25 MPa	32–320 mm
NTS7 (ISO)	25 MPa	32–320 mm
NH2	21 MPa	25–500 mm

Telescopic cylinders

- Single-acting (NH1T)
- Double-acting (NH2T)
- Differential

Pushing and pulling forces of cylinders in kilonewton.
You have to subtract friction forces.

Cylinder		40	50		63		80		100		125		160		200		250	320	
Rod		25	25	30	30	40	40	50	50	65	65	80	90	110	110	140	140	180	
25 MPa	Push	31.4	49.1		77.9		125.7		196.3		306.8		502.7		785.4		1227.2	2010.6	kN
	Pull	19.1	36.8	31.4	60.3	46.5	94.2	76.6	147.3	113.4	223.8	181.1	343.6	265.1	547.8	400.6	842.3	1374.4	kN
21 MPa	Push	26.4	41.2		65.5		105.6		164.9		257.7		422.2		659.7		1030.8	1688.9	kN
	Pull	16.1	30.9	26.4	50.6	39.1	79.2	64.3	123.7	95.2	188.0	152.2	288.6	222.7	460.2	336.5	707.6	1154.5	kN
17,5 MPa	Push	22.0	34.4		54.6		88.0		137.4		214.8		351.9		549.8		859.0	1407.4	kN
	Pull	13.4	25.8	22.0	42.2	32.6	66.0	53.6	103.1	79.4	156.7	126.8	240.5	185.6	383.5	280.4	589.6	962.1	kN
14 MPa	Push	17.6	27.5		43.6		70.4		110.0		171.8		281.5		439.8		687.2	1125.9	kN
	Pull	10.7	20.6	17.6	33.7	26.0	52.8	42.9	82.5	63.5	125.3	101.4	192.4	148.4	306.8	224.3	471.7	769.7	kN
10 MPa	Push	12.6	19.6		31.2		50.3		78.5		122.7		201.1		314.2		490.9	804.2	kN
	Pull	7.7	14.7	12.6	24.1	18.6	37.7	30.6	58.9	45.4	89.5	72.5	137.4	106.0	219.1	160.2	336.9	549.8	kN
7 MPa	Push	8.8	13.7		21.8		35.2		55.0		85.9		140.7		219.9		343.6	563.0	kN
	Pull	5.4	10.3	8.8	16.9	13.0	26.4	21.4	41.2	31.7	62.7	50.7	96.2	74.2	153.4	112.2	235.9	384.8	kN

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Hydraulic Cylinder

Contact us

MAINTREX
Hämeenpuisto 27B 2A
33210 Tampere
Finland
sales@maintrex.com
+358 400 286 308

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