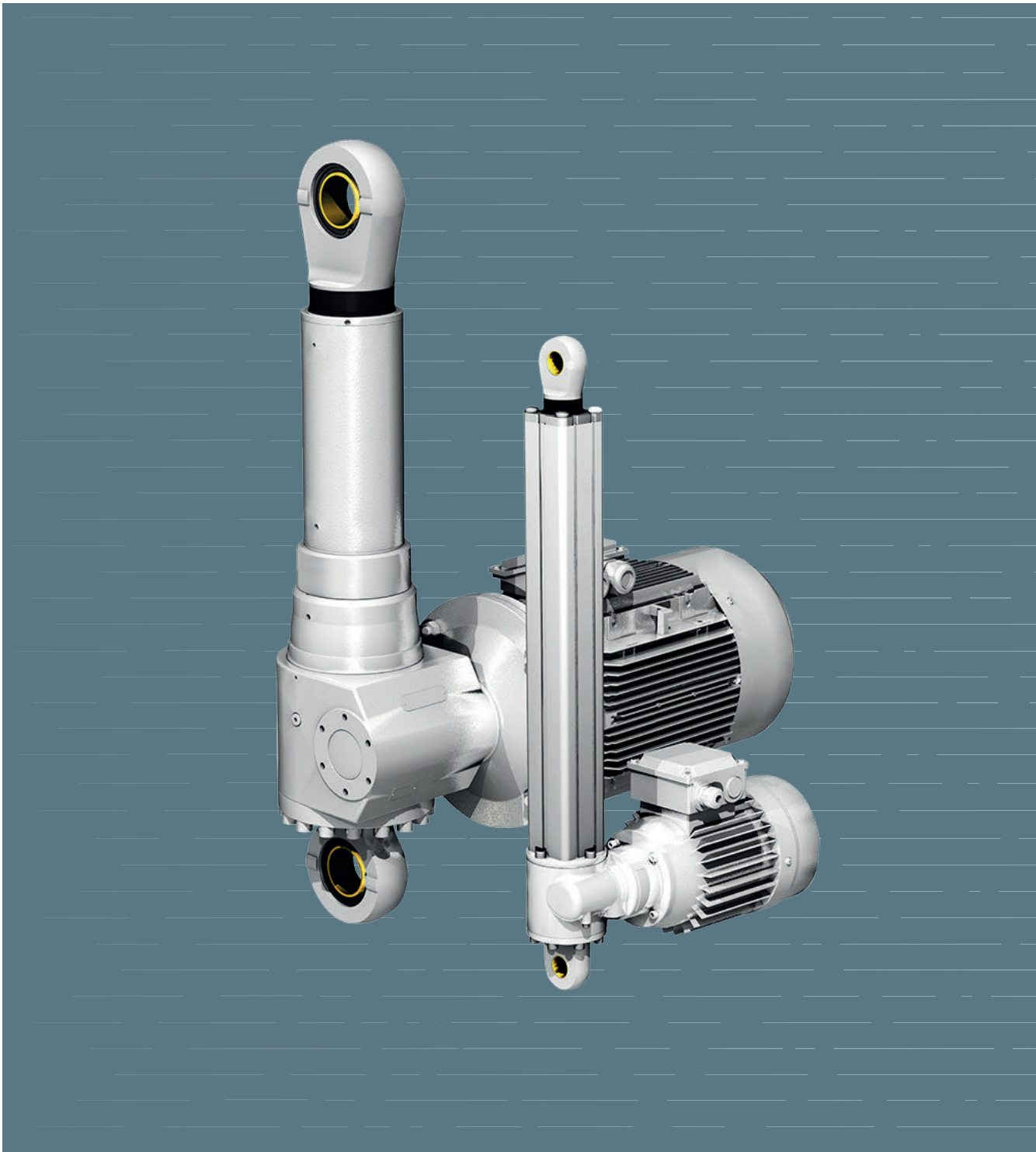
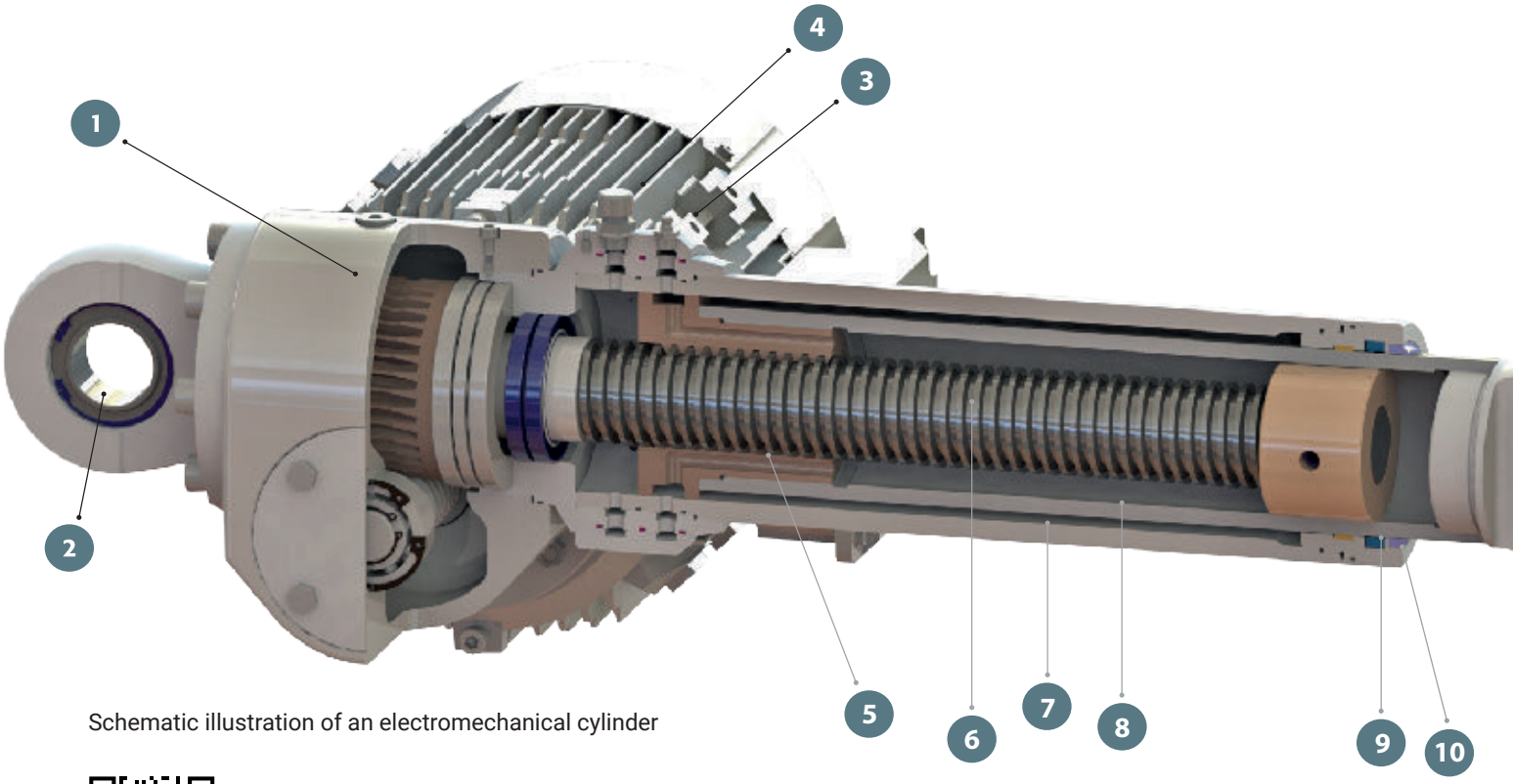
SWEDRIVE

CUSTOMIZED MOTION – SUSTAINABLE POWER

Electromechanical cylinders





Schematic illustration of an electromechanical cylinder

User manual for electromechanical cylinders

Almost zero environmental impact

Swedrive´s electromechanical cylinders offer an excellent alternative to pneumatic and hydraulic cylinders for creating linear motion.

Electromechanical cylinders are taking over the market

Our unique range of cylinders is the result of many years of experience in developing gear drives and mechanical jacks.

Today, our cylinders can be found in the defence industry, pulp and paper industry, materials handling, shipbuilding, medical applications, and other areas where total reliability in harsh environments is a key requirement.

Their low environmental impact alone supports the choice to switch from traditional pneumatic and hydraulic systems. But there are many other arguments in their favour:

- Minimal environmental impact; ideal in locations where avioding oil spills is of high priority
- Low noise level
- Energy is only used during motion
- Minimal rebound, easy to secure against unwanted movement during static loading
- Precise positioning and repeatability
- Easy to control desired stroke length and actuation time
- Speed is independent of load and direction of force
- Fast and easy installation
- Ability to operate multiple cylinders in parallel with the aid of mechanically or electrically operated shafts
- Fully enclosed design enables use in a variety of difficult environments
- Minimal servicing requirements

1 Worm gear drive
2 Spherical bearing
3 Grease nipple
4 Bleed nipple
5 Travelling nut
6 Trapezoidal spindle
7 Cylinder tube
8 Piston
9 Seal
10 Wiper

General information:

Because our electromechanical cylinders are intended as an alternative to hydraulic cylinders we want to point out an important difference in order to avoid problems and failures.
Our cylinders must NOT be driven against fixed or uncontrolled stops, as these units generate significantly higher forces in such a situation than the nominal forces given in this catalogue. If more precise positioning is required we recommend that the unit is driven by an inverter to be able to adjust and lower the speed to avoid uncontrolled extention. Electromechanical cylinders as a whole cannot tolerate transverse forces.
For information on installation and maintenance, see the operating instructions on our website **www.swedrive.com** under Documents, Electromechanical cylinders.

Standard configurations from catalogue

- Trapezoidal spindle
- Spherical bearings on all sizes
- Steel cylinder tube except for MCT20 and MCT40, which instead use an aluminium extrusion
- Piston treated with Corr-I-Dur
- Grease nipple on MCT75–MCT250; grease port on MCT20 and MCT40
- Surface treatment: Swedrive paint system SD001, RAL 9005 (Black), aluminium extrusion on MCT20 and MCT40 is anodized and requires no further surface treatment
- Not rotation locked
- Designed for ambient temperature range -20°C/+40°C
- Fan-cooled IP55 class 3-phase motor for 230/400 V +/-10%, 50 Hz up to 3 kW, and 400/690 V +/-10%, 50 Hz from 4 kW upwards.
- All sizes are CE marked in compliance with EU Machinery Directive 2006/42/EC
- The data given in this catalogue are guideline values and based on operation in an industrial environment and at an ambient temperature of 20°C

Non-standard configurations

In addition to standard configurations we can offer custom features such as:

Surface treatment:

- Various surface treatments, for example to meet corrosion classes C4 and C5
- Custom colours

Environment:

- Cylinders for ATEX or corrosive environments, see info on page 16
- Ambient temperatures outside the range -20°C/+40°C

Special adaptations:

- Custom cylinders with alternative gear ratios and/or ball/roller spindles to meet requirements for power, speed and ED beyond those specified in the catalogue
- Custom eyes/mountings
- Double-ended drive shaft
- Complete assemblies comprising multiple cylinders with transfer shafts and bevel gears, see example on page 16
- Rotation lock for MCT20 och MCT40

Motors:

- Alternative voltages and frequencies
- Higher protection class
- Specific efficiency classes
- Standby heater
- Thermistors
- Brake
- Encoder
- Tropical insulation
- Specific approvals, such as UL
- DC motors
- EX specification

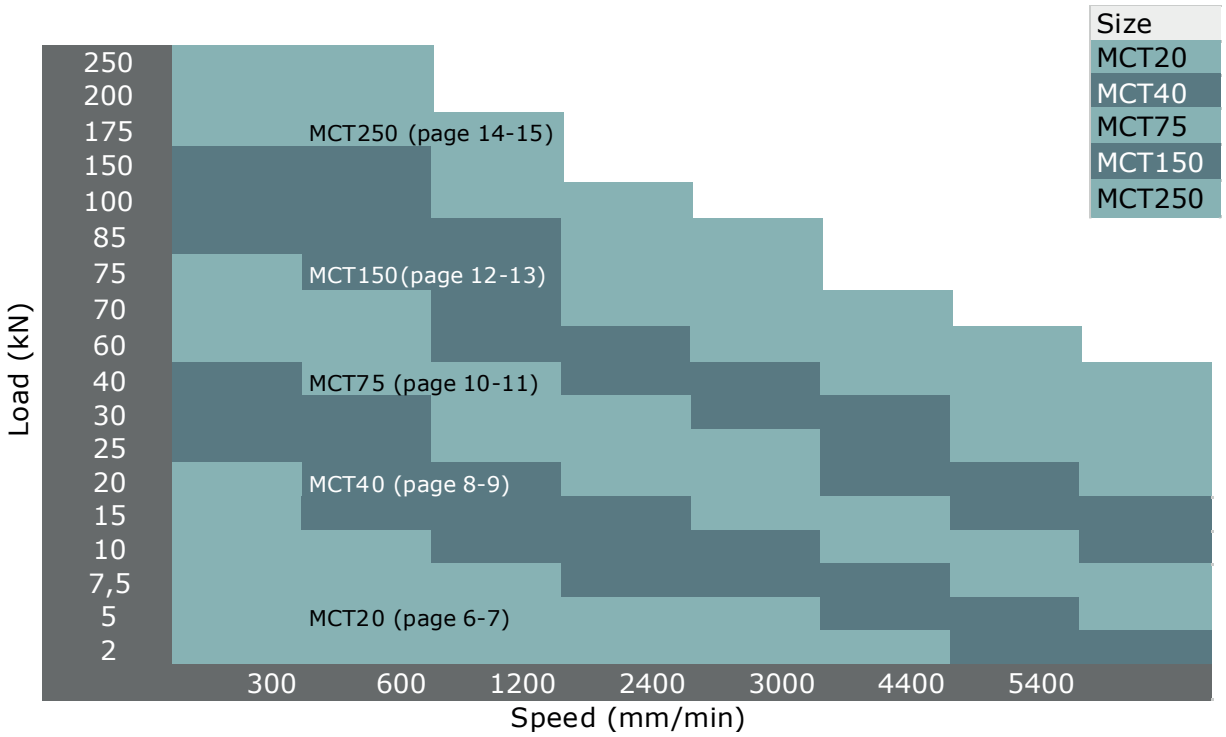
Selection of cylinder size

Our electromechanical cylinders are available in 5 standard sizes and together cover a range of forces ≤250 kN and speeds ≤6000 mm/min.

MCT 20 MCT 40 MCT75 MCT150 MCT250

Storlek	MCT 20	MCT 40	MCT 75	MCT 150	MCT 250
Last (kN)	≤20	≤40	≤75	≤150	≤250
Motor (kW)	0,55-1,1	1,1-1,5	1,1-4,0	2,2-7,5	5,5-15,0

Chart indicating which cylinder size is likely to be suitable for a required load and speed.



Options

Limit sensor

To enable accurate positioning, cylinders can be equipped with T-slot cylinder sensors.

MCT20-MCT40: Sensors are mounted in the slot of the cylinder.

MCT75-MCT250: These must be fitted with an external sensor cylinder with a slot in which the sensors can be mounted. NOTE! This must be specified at the time of ordering; it cannot be retrofitted!

The following sensors are available as standard in PNP specification for a supply voltage of 10–30 VDC; (supply class 2 according to cULus).

MK5101

Output type:	Normally open
Connection:	Cable 0.3 m, male connector 1 x M8, snap screw

MK5119

Output type:	Normally closed
Connection:	Cable 0.3 m, male connector 1 x M8, snap screw

MK5110

Output type:	Normally open
Connection:	Cable 2 m, 3 x 0.14 mm²

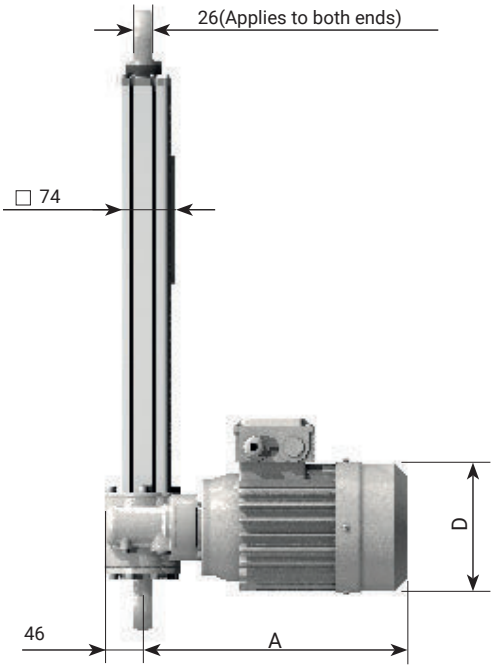
MK5118

Output type:	Normally closed
Connection:	Cable 2 m, 3 x 0.14 mm²

MK5101 and MK5119 can be combined with connecting cables of various lengths.

Electromechanical cylinder MCT20

Up to 20kN, Stroke 100–1000mm, Speed 636–4380mm/min



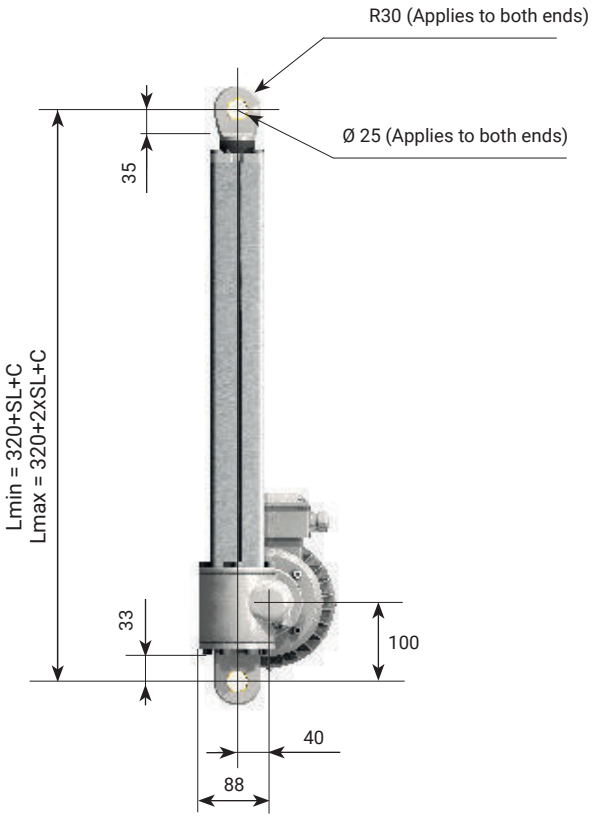
Motor dimensions (mm)

Motor	A (standard)	A (brake motor)	D
80A	320	385	Ø160
80B	320	385	Ø160
80C	320	385	Ø160

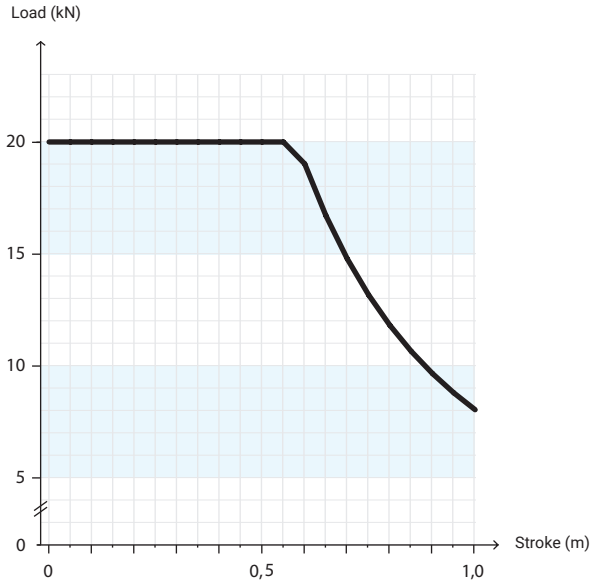
ELECTROMECHANICAL CYLINDER MCT20 TR30x6

rpm	Motor/Power	Gear ratio:	7,67:1	11,5:1	23:1	30:1
1400	80B-4 0,75kW	Last (kN)	10	14		
		V (mm/min)	1100	730		
		ED(%)	11	11		
	80C-4 1,1kW	Last (kN)	15	22		
		V (mm/min)	1100	730		
		ED(%)	7	8		
2800	80A-2 0,75kW	Last (kN)	4,8	7	12	16
		V (mm/min)	2200	1460	730	636
		ED(%)	11	11	13	14
	80B-2 1,1kW	Last (kN)	7,5	11	19	
		V (mm/min)	2200	1460	730	
		ED(%)	7	8	9	

ED = max. run time per hour



MAX. COMPRESSIVE FORCE TO AVOID BUCKLING



For compressive loads or horizontal mounting with a stroke of over 400 mm the overall length increases according to the following formula: C = 0.25xSL-98 where SL = Stroke

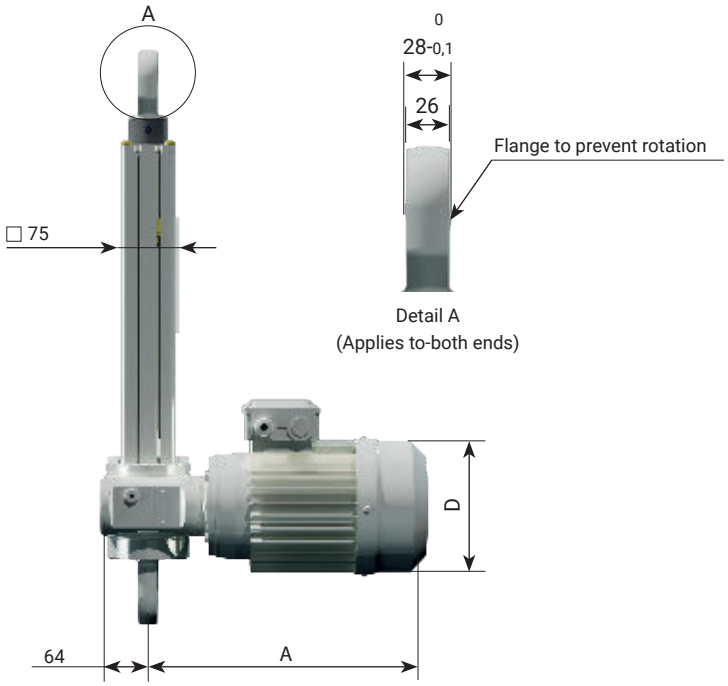
ELECTROMECHANICAL CYLINDER MCT20 TR30x12

rpm	Motor/Power	Gear ratio:	7,67:1	11,5:1	23:1	30:1
1400	80B-4 0,75kW	Last (kN)	7,5	10	19	
		V (mm/min)	2190	1460	730	
		ED(%)	14	15	17	
	80C-4 1,1kW	Last (kN)	11	16		
		V (mm/min)	2190	1460		
		ED(%)	10	10		
2800	80A-2 0,75kW	Last (kN)	3,5	5,1	9,3	11
		V (mm/min)	4380	2920	1460	1120
		ED(%)	14	15	17	19
	80B-2 1,1kW	Last (kN)	5,5	8	14	18
		V (mm/min)	4380	2920	1460	1120
		ED(%)	10	10	12	13

ED = max. run time per hour

Electromechanical cylinder MCT40

Up to 40kN, Stroke 100–1000mm, Speed 246–5340mm/min



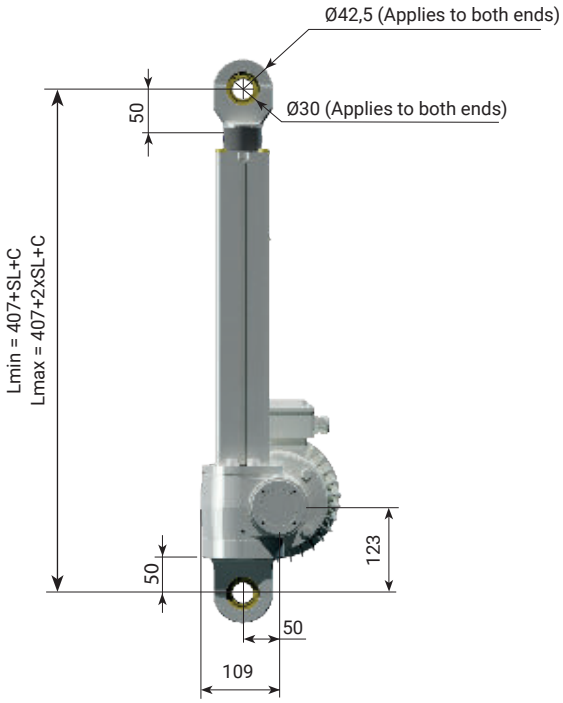
Motor dimensions (mm)

Motor	A(standard)	A(brake motor)	D
90A	355	400	180
90B	380	425	180

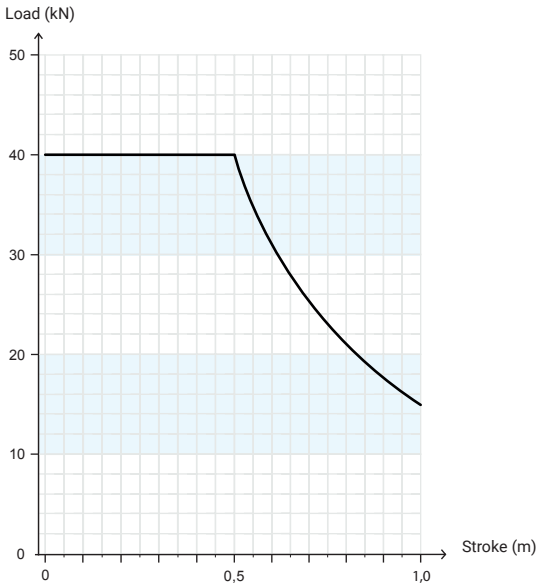
ELECTROMECHANICAL CYLINDER MCT40 TR40x7

rpm	Motor/Power	Gear ratio:	7,33:1	15,5:1	21:1	31:1	40:1
1400	90A-4 1,1 kW	Last (kN)	11	23	29	40	40
		V (mm/min)	1338	630	468	318	246
		ED(%)	9	10	11	13	12
	90B-4 1,5 kW	Last (kN)	14	32	40		
		V (mm/min)	1338	630	468		
		ED(%)	7	7	8		
2800	90A-2 1,5 kW	Last (kN)	7,5	16	20	28	36
		V (mm/min)	2670	1260	936	636	492
		ED(%)	7	7	8	9	9

ED = max. run time per hour



MAX. COMPRESSIVE FORCE TO AVOID BUCKLING



For compressive loads or horizontal mounting with a stroke of over 368 mm the overall length increases according to the following formula: C = 0.25xSL-92 where SL = Stroke

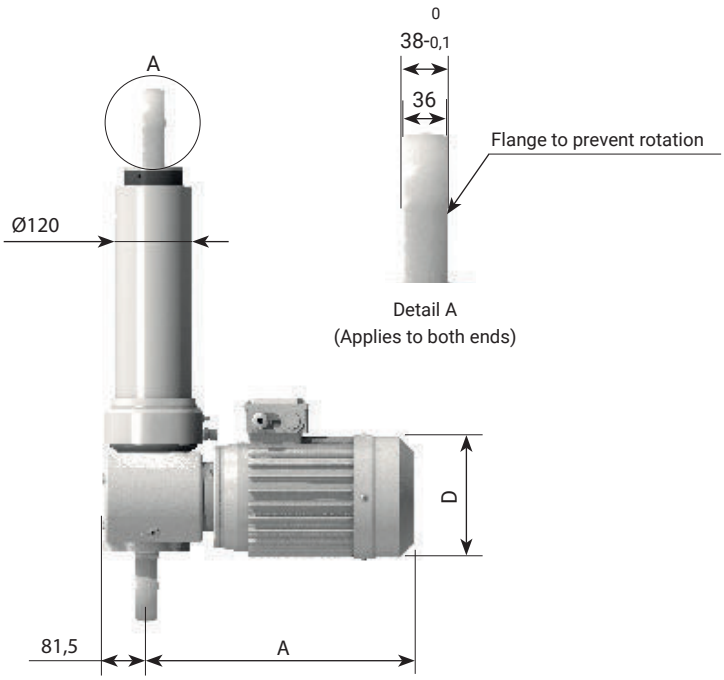
ELECTROMECHANICAL CYLINDER MCT40 TR40x14

rpm	Motor/Power	Gear ratio:	7,33:1	15,5:1	21:1	31:1	40:1
1400	90A-4 1,1kW	Last (kN)	8,7	17	22	31	38
		V (mm/min)	2670	1266	936	630	492
		ED	12	13	14	17	16
	90B-4 1,5kW	Last (kN)	12	24	30	40	40
		V (mm/min)	2670	1266	936	630	492
		ED	9	9	10	12	12
2800	90A-4 1,5kW	Last (kN)	5,9	12	15	21	27
		V (mm/min)	5340	2532	1872	1260	984
		ED	9	9	10	12	12

ED = max. run time per hour

Electromechanical cylinder MCT75

Up to 75kN, Stroke 100–2300mm, Speed 249–4800mm/min



Motor dimensions (mm)

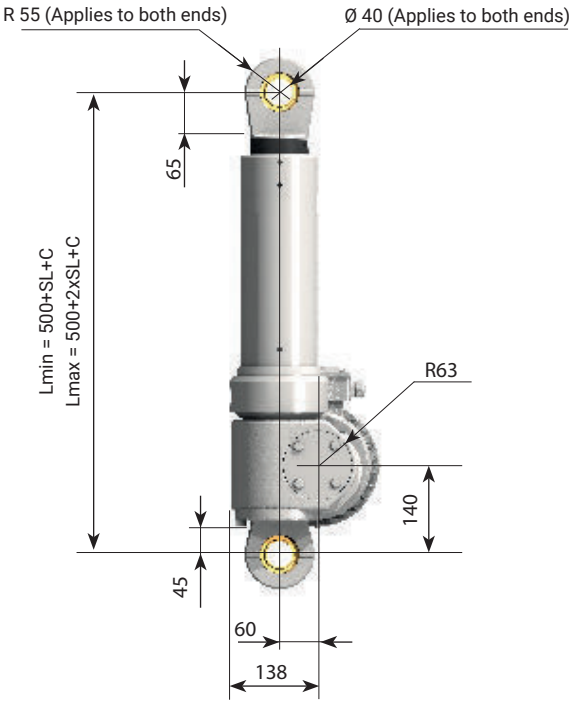
Motor	A(standard)	A(brake motor)	D
90A	370	470	Ø180
100A	425	480	Ø200
100B	425	500	Ø200
112A	450	510	Ø224

ELECTROMECHANICAL CYLINDER MCT75 TR50x8

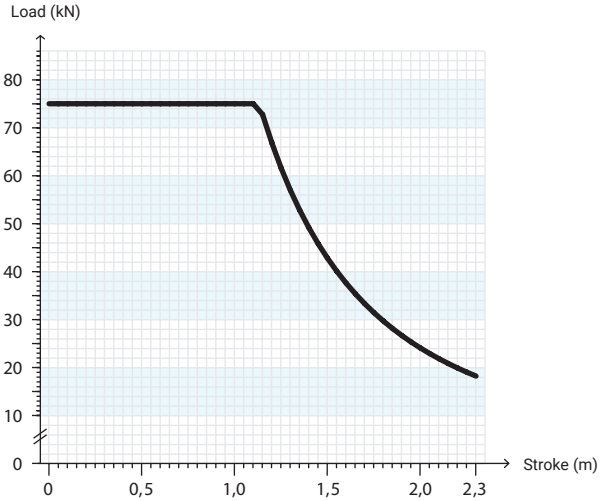
rpm	Motor/Power	Gear ratio:	9,33:1	23:1	28:1	35:1	45:1
1400	90A-4* 1,1kW	Last (kN)	11	24	29	34	46
		V (mm/min)	1200	487	400	320	249
		ED(%)	19	22	22	23	24
	100A-4 2,2kW	Last (kN)	24	48	60	73	75
		V (mm/min)	1200	487	400	320	249
		ED(%)	9	11	11	12	12
	100B-4 3,0kW	Last (kN)	33	70	75	75	
		V (mm/min)	1200	487	400	320	
		ED(%)	7	8	8	9	
	112A-4 4,0kW	Last (kN)	45	75			
		V (mm/min)	1200	487			
		ED(%)	5	6			
2800	90B-2* 2,2kW	Last (kN)	12	24	31	37	46
		V (mm/min)	2400	974	800	640	498
		ED(%)	9	11	11	12	12
	100B-2 3,0kW	Last (kN)	16	36	43	52	64
		V (mm/min)	2400	974	800	640	498
		ED(%)	7	8	8	9	9
	112A-2 4,0kW	Last (kN)	22	49	58	71	75
		V (mm/min)	2400	974	800	640	498
		ED(%)	5	6	6	6	7

ED = max. run time per hour

* = Terminal cover rotated



MAX. COMPRESSIVE FORCE TO AVOID BUCKLING



For compressive loads or horizontal mounting with a stroke of over 520 mm the overall length increases according to the following formula: C = 0.25xSL-130 where SL = Stroke

ELECTROMECHANICAL CYLINDER MCT75 TR50x16

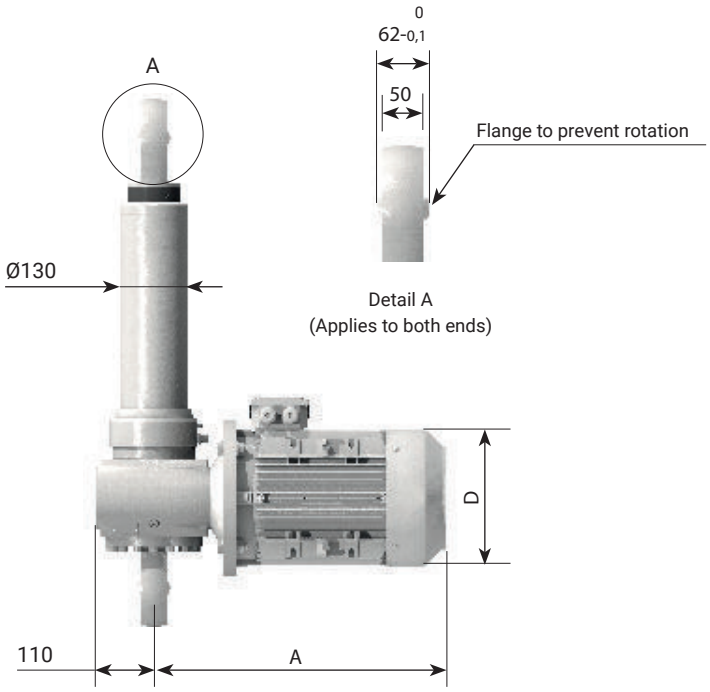
rpm	Motor/Power	Gear ratio:	9,33:1	23:1	28:1	35:1	45:1
1400	90A-4* 1,1kW	Last (kN)	9,0	18	22	26	32
		V (mm/min)	2400	974	800	640	498
		ED(%)	24	27	28	30	31
	100A-4 2,2kW	Last (kN)	17	39	46	56	60
		V (mm/min)	2400	974	800	640	498
		ED(%)	12	14	14	15	15
	100B-4 3,0kW	Last (kN)	25	54	60	60	
		V (mm/min)	2400	974	800	640	
		ED(%)	9	10	10	11	
	112A-4 4,0kW	Last (kN)	34	60			
		V (mm/min)	2400	974			
		ED(%)	7	8			
2800	90B-2 2,2kW	Last (kN)	9,2	20	23	28	35
		V (mm/min)	4800	1948	1600	1280	996
		ED(%)	12	14	14	15	15
	100B-2 3,0kW	Last (kN)	12	28	33	40	49
		V (mm/min)	4800	1948	1600	1280	996
		ED(%)	9	10	10	11	11
	112A-2 4,0kW	Last (kN)	17	37	45	54	60
		V (mm/min)	4800	1948	1600	1280	996
		ED(%)	7	8	8	8	9

ED = max. run time per hour

* = Terminal cover rotated

Electromechanical cylinder MCT150

Up to 150kN, Stroke 100–2300mm, Speed 228–4584mm/min



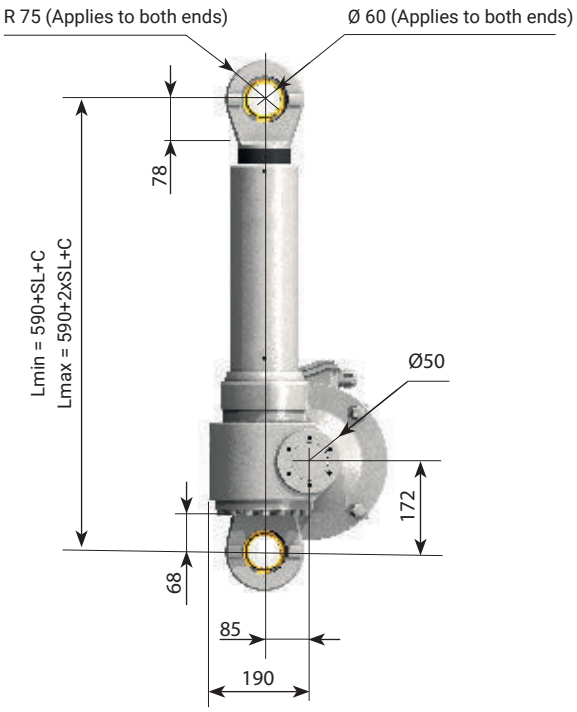
Motor dimensions (mm)

Motor	A(standard)	A(brake motor)	D
100A	465	520	Ø200
112A	490	550	Ø224
132A	525	625	Ø264
132B	565	650	Ø264

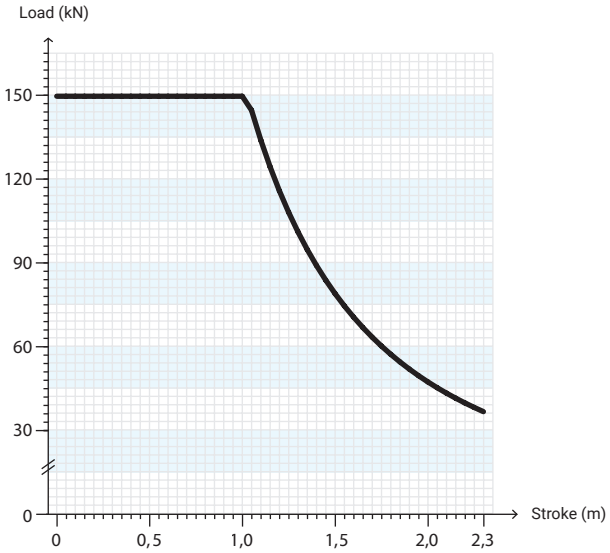
ELECTROMECHANICAL CYLINDER MCT150 TR60x9

rpm	Motor/Power	Gear ratio:	11:1	19:1	22,5:1	38:1	55:1
1400	100A-4 2,2kW	Last (kN)	24	40	47	71	96
		V (mm/min)	1146	666	558	330	228
		ED(%)	27	29	29	33	36
	112A-4 4,0kW	Last (kN)	45	74	86	131	150
		V (mm/min)	1146	666	558	330	228
		ED(%)	15	16	16	18	20
	132A-4 5,5kW	Last (kN)	63	104	121	150	
		V (mm/min)	1146	666	558	330	
		ED(%)	11	12	12	13	
	132B-4 7,5kW	Last (kN)	81	142	150		
		V (mm/min)	1146	666	558		
		ED(%)	8	9	9		
2800	112A-2 4,0kW	Last (kN)	22	37	44	68	93
		V (mm/min)	2292	1332	1116	660	456
		ED(%)	15	16	16	18	20
	132A-2 5,5kW	Last (kN)	31	52	61	95	131
		V (mm/min)	2292	1332	1116	660	456
		ED(%)	11	12	12	13	14
	132B-2 7,5kW	Last (kN)	43	72	85	131	150
		V (mm/min)	2292	1332	1116	660	456
		ED(%)	8	9	9	10	10

ED = max. run time per hour



MAX. COMPRESSIVE FORCE TO AVOID BUCKLING



For compressive loads or horizontal mounting with a stroke of over 520 mm the overall length increases according to the following formula: C = 0.25xSL-130 where SL = Stroke

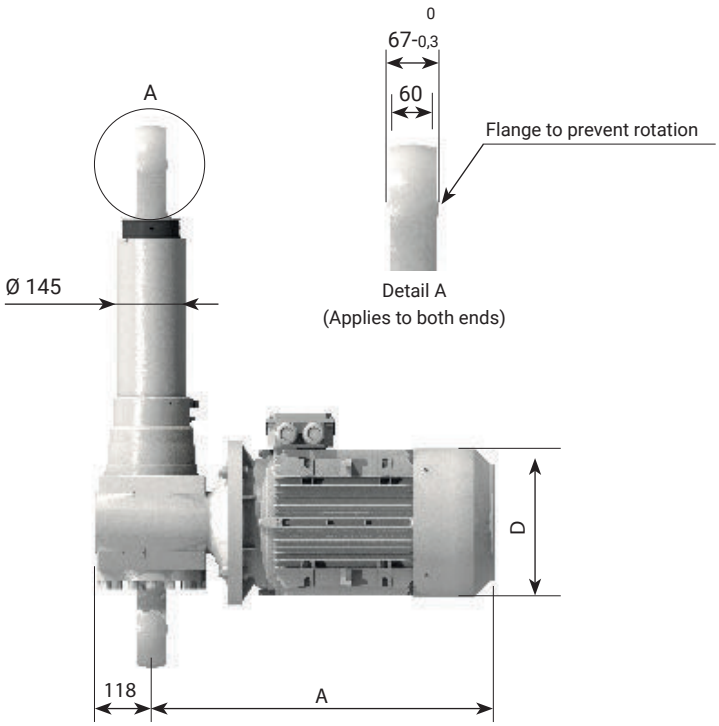
ELECTROMECHANICAL CYLINDER MCT150 TR60x18

rpm	Motor/Power	Gear ratio:	11:1	19:1	22,5:1	38:1	55:1
1400	100A-4 2,2kW	Last (kN)	19	31	36	55	74
		V (mm/min)	2292	1332	1116	660	456
		ED(%)	34	37	37	42	45
	112A-4 4,0kW	Last (kN)	35	58	68	103	120
		V (mm/min)	2292	1332	1116	660	456
		ED(%)	19	20	20	23	25
	132A-4 5,5kW	Last (kN)	49	80	94	120	
		V (mm/min)	2292	1332	1116	660	
		ED(%)	14	15	15	17	
	132B-4 7,5kW	Last (kN)	67	110	120		
		V (mm/min)	2292	1332	1116		
		ED(%)	10	11	11		
2800	112A-2 4,0kW	Last (kN)	17	29	34	53	73
		V (mm/min)	4584	2664	2232	1320	912
		ED(%)	19	20	20	23	25
	132A-2 5,5kW	Last (kN)	24	41	48	74	101
		V (mm/min)	4584	2664	2232	1320	912
		ED(%)	14	15	15	17	18
	132B-2 7,5kW	Last (kN)	34	56	66	102	120
		V (mm/min)	4584	2664	2232	1320	912
		ED(%)	10	11	11	12	13

ED = max. run time per hour

Electromechanical cylinder MCT250

Up to 250kN, Stroke 100–2300mm, Speed 241–6054mm/min



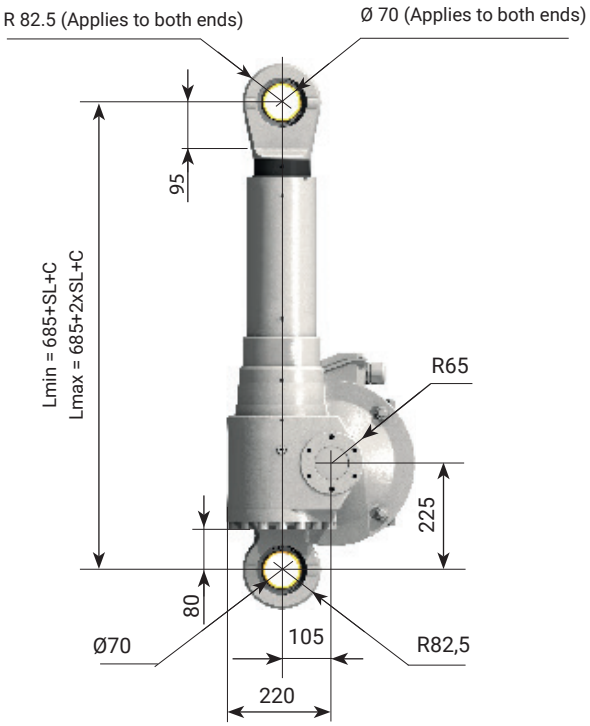
Motor dimensions (mm)

Motor	A(standard)	A(brake motor)	D
132A	530	585	Ø264
132B	570	650	Ø264
160A	675	770	Ø320
160B	720	770	Ø320

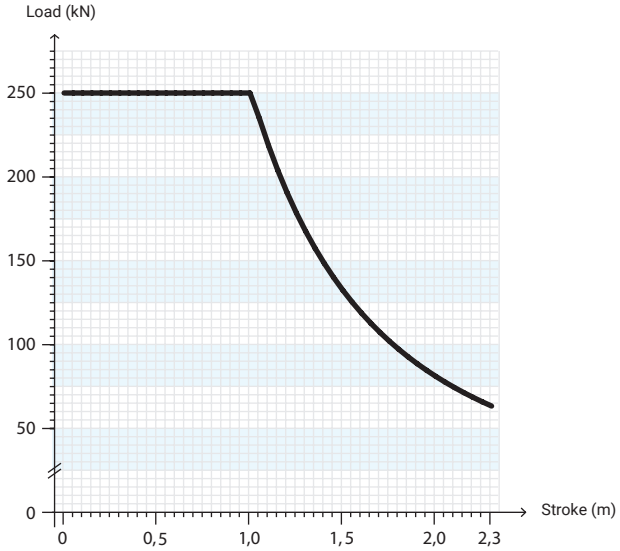
ELECTROMECHANICAL CYLINDER MCT250 TR80x10

rpm	Motor/Power	Gear ratio:	9,25:1	24,5:1	29:1	49:1	58:1
1400	132A-4 5,5kW	Last (kN)	42	104	121	184	212
		V (mm/min)	1514	571	483	286	241
		ED(%)	23	25	25	28	29
	132B-4 7,5kW	Last (kN)	58	142	166	250	250
		V (mm/min)	1514	571	483	286	241
		ED(%)	17	18	18	21	21
	160A-4 11,0kW	Last (kN)	86	210	245		
		V (mm/min)	1514	571	483		
		ED(%)	11	12	12		
	160B-4 15,0kW	Last (kN)	117	250	250		
		V (mm/min)	1514	571	483		
		ED(%)	8	9	9		
2800	132A-2 5,5kW	Last (kN)	21	52	61	95	110
		V (mm/min)	3028	1143	966	571	483
		ED(%)	23	25	25	28	29
	132B-2 7,5kW	Last (kN)	29	72	85	131	152
		V (mm/min)	3028	1143	966	571	483
		ED(%)	17	18	18	21	21
	160A-2 11,0kW	Last (kN)	43	107	126	195	226
		V (mm/min)	3028	1143	966	571	483
		ED(%)	11	12	12	14	15
	160B-2 15,0kW	Last (kN)	59	148	173	250	250
		V (mm/min)	3028	1143	966	571	483
		ED(%)	8	9	9	10	11

ED = max. run time per hour



MAX. COMPRESSIVE FORCE TO AVOID BUCKLING



For compressive loads or horizontal mounting with a stroke of over 688 mm the overall length increases according to the following formula: C = 0.25xSL-172 where SL = Stroke

ELECTROMECHANICAL CYLINDER MCT250 TR80x20

rpm	Motor/Power	Gear ratio:	9,25:1	24,5:1	29:1	49:1	58:1
1400	132A-4 5,5kW	Last (kN)	34	83	97	147	170
		V (mm/min)	3027	1143	966	571	483
		ED(%)	28	30	30	35	36
	132B-4 7,5kW	Last (kN)	46	114	133	200	200
		V (mm/min)	3027	1143	966	571	483
		ED(%)	20	22	22	25	26
	160A-4 11,0kW	Last (kN)	69	169	197		
		V (mm/min)	3027	1143	966		
		ED(%)	14	15	15		
	160B-4 15,0kW	Last (kN)	94	200			
		V (mm/min)	3027	1143			
		ED(%)	10	11			
2800	132A-2 5,5kW	Last (kN)	17	42	49	76	88
		V (mm/min)	6054	2286	1931	1143	966
		ED(%)	28	30	30	35	36
	132B-2 7,5kW	Last (kN)	23	58	68	105	122
		V (mm/min)	6054	2286	1931	1143	966
		ED(%)	20	22	22	25	26
	160A-2 11,0kW	Last (kN)	34	86	101	156	181
		V (mm/min)	6054	2286	1931	1143	966
		ED(%)	14	15	15	17	18
	160B-2 15,0kW	Last (kN)	47	118	138	200	200
		V (mm/min)	6054	2286	1931	1143	966
		ED(%)	10	11	11	13	13

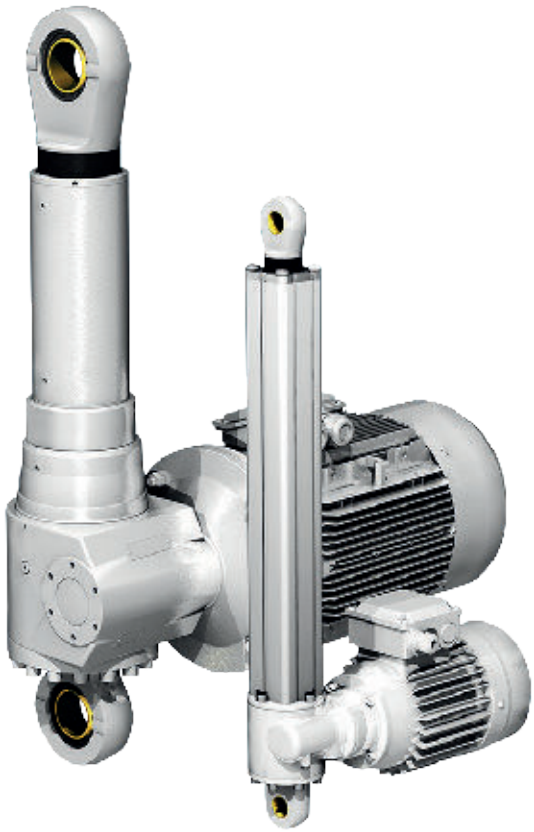
ED = max. run time per hour

Electromechanical cylinders for harch enviroments

ATEX

Electrical and mechanical equipment for use in an explosive environment in Europe must comply with ATEX Directive 2014/34/EU. This directive applies to equipment and protection systems intended for use in potentially explosive atmospheres, components intended for use in such products, and safety and regulatory devices intended for use outside such risk areas but which are essential for or contribute to the safety of EX products in the risk area.

We can offer ATEX-rated cylinders on request for various zones and levels.

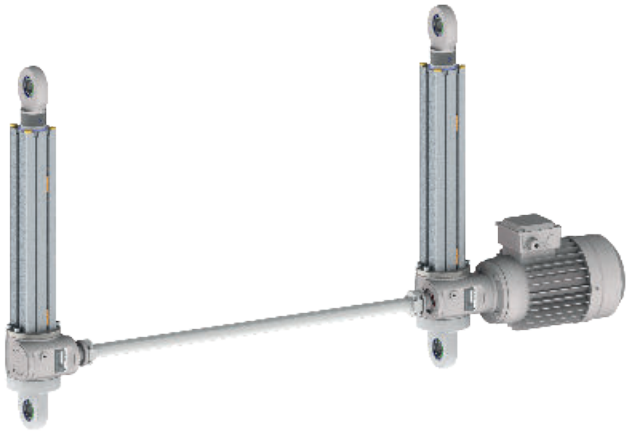


Corrosive environments

For use in corrosive environments in which our standard cylinders are unsuitable, we offer our range of WE cylinders. Our WE cylinders have stainless steel pistons and spherical bearings, and other components are carefully selected to withstand corrosive environments. These units are given surface treatments that meet the customer's specific corrosion class requirements or the customer's own specifications.

Contact us for more information about these cylinders.

Configuration example



Two MCT40 units driven by a single motor. Contact us for more information about possible configurations.

Build your electromechanical cylinders

Please provide the following information if you have an enquiry or wish to place an order for a standard cylinder from the catalogue:

Cylinder size:	e.g. MCT75 TR50x8
Direction of force:	Push/Pull
Gear ratio and Motor size:	e.g. 23:1 and 112A-4 4.0 kW
or	
Load (kN) and Speed (mm/min):	e.g. 75 kN and 487 mm/min
Stroke (mm):	NOTE! For push applications, remember to check buckling strength
Installation orientation:	Vertical/Horizontal (+/-45° from horizontal plane)
With or without limit sensor:	Yes/No
If limit sensor is required, which type and how many:	e.g. MK5101, 2 pcs

The standard cylinder configuration is as follows:

Motor position	**Right (seen from below)** or left (not applicable to MCT20)
Location of grease nipple/grease port	**Facing motor** or rotated through 90° intervals
Terminal cover location	**Facing top eye** or rotated through 90° intervals
Eye orientation	**Parallel with motor flange** or rotated through 90°

For non-standard requirements and configurations please specify these separately. The Configurator on our website **www.swedrive.com** lets you build and download a model of your desired cylinder.

Standard configuration (in bold type above) of our electromechanical cylinders

Swedrive AB manufactures high-quality electromechanical cylinders, worm gear drives, screw jacks and custom solutions for industry. Swedrive is part of Dacke Industri AB. Swedrive AB manufactures high-quality

www.swedrive.com

Use the QR code or visit our website to learn more about the company and to download our catalogues of standard products.

About Swedrive

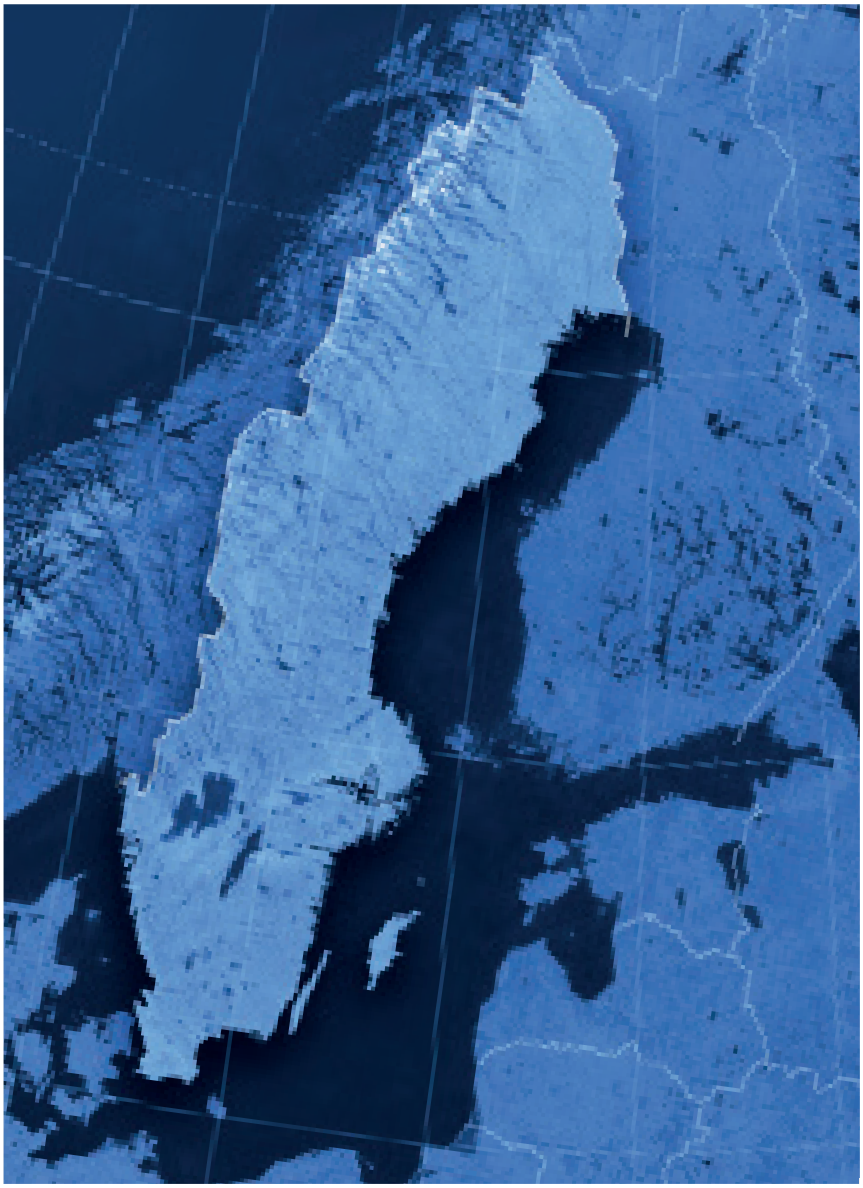
Swedrive is one of Scandinavia's leading manufacturers of high-quality worm gear drives, screw jacks, electromechanical cylinders and custom solutions for industry.

Quality, speed and flexibility

The hallmark of all our products is their high quality combined with our company's active technical development, which enables us to offer customers energy-efficient, cost-optimized products. Our modular base range and flexible production system also allow us to quickly configure and customize products to suit individual requirements. As a result we always deliver the best solution.

Close collaboration lowers total costs

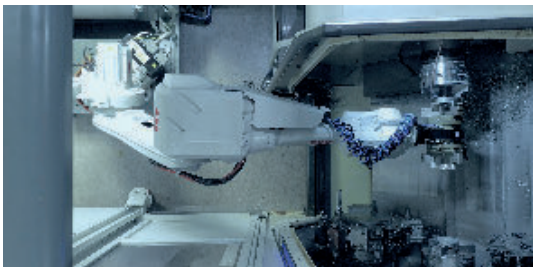
By combining our experience in designing and manufacturing gear drives with the customer's know-how we can create a product that is optimized for its purpose, and thus build long-term partnerships. This also ensures that the total cost of your solution is significantly lower than if you simply choose standard components. This means that you get a product that is optimized for technical performance, energy efficiency, overall dimensions, ease of service and environmental requirements.



Segments

Medtech

Pulp & Paper



General industry

Food & Beverage

Lifts & Cranes

Defence

Marine

SWEDRIVE

CUSTOMIZED MOTION – SUSTAINABLE POWER

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