

Linear actuators

Precisely on track
for success



Linear actuators by Columbus McKinnon – Pfaff-silberblau

Precisely positioned: long-lived linear actuators for quality and safety.

High-quality, universal uses and low maintenance effort: these attributes have characterized electromechanical linear drives by Columbus McKinnon for generations. Our actuator models have turned out to be indispensable links for production, goods flow and transport in many different industries. ELA is designed for compressive and tensile stress and has as diverse uses as the HLA high-performance linear drive. The electromechanical screw ram (ALS) is used in engineering. The offer is supplemented by the lifting column PHOENIX in a variable construction kit system. Each of these applications permits reliable production systems and production workflows that become better, safer and more efficient.

Our customers value this quality as well as the bandwidth of our linear actuators from the traditional brand Pfaff-silberblau. We offer the right configuration for any challenge according to customer demands. Use of the drives in multi-screw lifting systems is implemented along with special equipment. The performance of the linear actuators is always convincing: it covers all load ranges from 0.55 – 100 kN at speeds between 5.5 – 250 mm/s. Linear drives by Columbus McKinnon always work quickly and position with perfect precision and low noise emissions.

No matter which configuration is desired: our customer profits by always-diverse complete solutions that contain maximum product quality, consulting and best service.



ELA
Electromechanical
linear actuator

PHOENIX
Telescopic lifting column

ALS
Electromechanical
screw ram

ALSR

HLA
High-performance
linear actuator

To be able to offer you the best a tailor-made solution, please download the suitable product questionnaire at <https://www.cmco.com/en-de/our-brands/pfaff-silberblau/download/questionnaires/> and send us back the completed form via email to sales.kissing@cmco.com.

Service: We offer professional support on site on request.

Linear actuators

Table of Contents

Linear actuators	
	Page
ELA Electromechanical linear actuator	
▪ Design features	4
▪ Selection tables	5
▪ Technical drawings	6
▪ Dimensions ELA 10.1, 20.1, 30.1, 40.1	7
▪ Duty cycle diagrams	10
▪ Options / Order code	12
ALS/R Electromechanical screw ram	
▪ Design features	14
▪ Selection table	15
▪ Performance data tables ALS/R 10, 25, 50, 100	16
▪ Technical drawings / Dimensions ALS/R 10, 25, 50, 100	18
▪ Diagrams	22
▪ Order code	23
HLA High-performance linear actuator	
▪ Design features	24
▪ Selection table	25
▪ Performance data tables HLA 10, 25, 50, 100	26
▪ Technical drawings	28
▪ Dimensions HLA 10, 25, 50, 100	29
▪ Diagrams / Order code	30
PHOENIX Telescopic lifting column	
▪ Design features	32
▪ Mounting positions / Schematic diagrams	33
▪ Selection table / Flow chart	34
▪ Performance data tables PH34, PH45, PH56, PH36, PH46 / Diagrams	36
▪ Technical drawings / Dimensions PH34, PH45, PH56, PH36, PH46 / Accessories	42
▪ Order code / Catalog overview	46



ELA

Electromechanical linear actuator

Design features



Tr screw



Ball screw (Ku)

- **4 sizes with max. dynamic axial loads from**
 ELA 10.1: 2.0 kN
 ELA 20.1: 3.5 kN
 ELA 30.1: 6.0 kN
 ELA 40.1: 10.0 kN
- **Standard stroke lengths:**
 ELA 10.1: 100/200/300/400 mm
 ELA 20.1: 200/400/600 mm
 ELA 30.1: 200/400/600/800 mm
 ELA 40.1: 200/400/600/800 mm
- **Three-phase motor AC** (standard) with IEC-flange B14
- **Optional direct-current motor or alternating-current motor**
- **Optional with brake**
- **Self-locking** trapezoidal screws
- **Worm gear** with different reductions
- **Service life lubrication** under normal operating conditions from high-quality grease and encapsulated design
- **Comprehensive accessories range**
- **Possible usage according to directive 2014/34/EU (ATEX)**



ELA

Selection tables

Selection table ELA with trapezoidal screw

Size	Three-phase motor				Single-phase motor				D.C. motor			
	10.1	20.1	30.1	40.1	10.1	20.1	30.1	40.1	10.1	20.1	30.1	40.1
Max. axial force F_{stat} [N]	2500	4500	8000	13000	2500	4500	8000	13000	2500	4500	8000	13000
Screw	12x3	16x4	22x5	22x5	12x3	16x4	22x5	22x5	12x3	16x4	22x5	22x5
Approx. weight [kg]	6	10	15	20	6	10	15	20	6	10	15	20
Ratio H	4:1	4:1	2.78:1	6.75:1	4:1	4:1	2.78:1	6.75:1	4:1	4:1	2.78:1	6.75:1
Max. tensile/compressive force F_{dyn} [N]	550	1250	1500	5000	550	1200	1100	3500	700	1200	1100	3500
Lifting speed v [mm/s]	35	46.6	84	34.5	35	46.6	84	34.5	35	46.6	84	34.5
Motor power P [W]	90	120	250*	550	90	120	250*	550	70	150	300*	500
Ratio V	6.5:1	6.5:1	5:1	10:1	6.5:1	6.5:1	5:1	10:1	6.5:1	6.5:1	5:1	10:1
Max. tensile/compressive force F_{dyn} [N]	900	1650	3500	6500	900	1600	2500	5300	1100	1600	2500	5300
Lifting speed v [mm/s]	22	31	46.6	23.3	22	31	46.6	23.3	22	31	46.6	23.3
Motor power P [W]	90	120	250	550	90	120	250	550	70	150	300	500
Ratio N	15:1	15:1	10:1	20:1	15:1	15:1	10:1	20:1	15:1	15:1	10:1	20:1
Max. tensile/compressive force F_{dyn} [N]	1600	2750	6000	10000	1600	2300	4500	8500	1350	2300	4500	8500
Lifting speed v [mm/s]	9	13	23.3	11.5	9	13	23.3	11.5	10	13	23.3	11.5
Motor power P [W]	90	120	250	550	90	120	250	550	70	150	300	500
Ratio L	25:1	25:1	20:1	25:1	25:1	25:1	20:1	25:1	25:1	25:1	20:1	25:1
Max. tensile/compressive force F_{dyn} [N]	2000	3500	6000	10000	2000	3500	6000	10000	2000	3500	6000	10000
Lifting speed v [mm/s]	5.5	7.5	11.7	9	5.5	7.5	11.7	9	5.5	7.5	11.7	9
Motor power P [W]	90	120	250	550	90	120	250	550	70	150	300	500

Selection table ELA with ball screw (Ku)

Size	Three-phase motor				Single-phase motor				D.C. motor			
	10.1	20.1	30.1	40.1	10.1	20.1	30.1	40.1	10.1	20.1	30.1	40.1
Max. axial force F_{stat} [N]	2500	4500	8000	13000	2500	4500	8000	13000	2500	4500	8000	13000
Screw	12x5	16x5	20x5	25x6	12x5	16x5	20x5	25x6	12x5	16x5	20x5	25x6
Approx. weight [kg]	6	10	15	20	6	10	15	20	6	10	15	20
Ratio H	4:1	4:1	2.78:1	6.75:1	4:1	4:1	2.78:1	6.75:1	4:1	4:1	2.78:1	6.75:1
Max. tensile/compressive force F_{dyn} [N]	600	1350	3000	6550	700	1250	2200	5500	750	1250	2200	5500
Lifting speed v [mm/s]	59	58	84	42	59	58	84	42	59	58	84	42
Motor power P [W]	90*	120*	250*	550*	90*	120*	250*	550*	70*	150*	300*	500*
Ratio V	6.5:1	6.5:1	5:1	10:1	6.5:1	6.5:1	5:1	10:1	6.5:1	6.5:1	5:1	10:1
Max. tensile/compressive force F_{dyn} [N]	950	2150	5800	8500	1000	2000	4200	7500	1150	2000	4200	7500
Lifting speed v [mm/s]	36	37	47	28	36	37	47	28	38	37	47	28
Motor power P [W]	90*	120*	250*	550*	90*	120*	250*	550*	70*	150*	300*	500*
Ratio N	15:1	15:1	10:1	20:1	15:1	15:1	10:1	20:1	15:1	15:1	10:1	20:1
Max. tensile/compressive force F_{dyn} [N]	1900	3500	6000	13000	2000	3500	4500	13000	1500	3500	4500	13000
Lifting speed v [mm/s]	16	15.6	23.3	14	16	15.6	23.3	14	15	15.6	23.3	14
Motor power P [W]	90*	120*	250*	550*	90*	120*	250*	550*	70*	150*	300*	500*
Ratio L	25:1	25:1	20:1	25:1	25:1	25:1	20:1	25:1	25:1	25:1	20:1	25:1
Max. tensile/compressive force F_{dyn} [N]	2500	3500	6000	13000	2500	3500	6000	13000	2500	3500	6000	13000
Lifting speed v [mm/s]	9	9	11.7	11	9	9	11.7	11	9	9	11.7	11
Motor power P [W]	90*	120*	250*	550*	90*	120*	250*	550*	70*	150*	300*	500*

*Brake motor

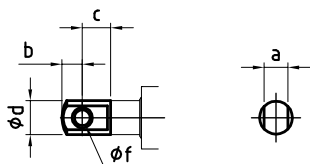


ELA 10.1, 20.1, 30.1, 40.1

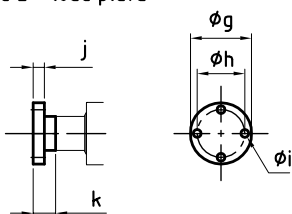
Technical drawings

Technical drawings

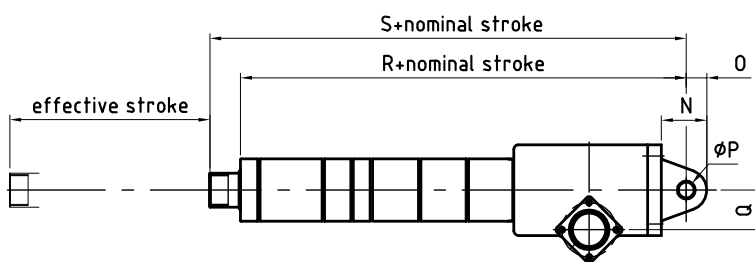
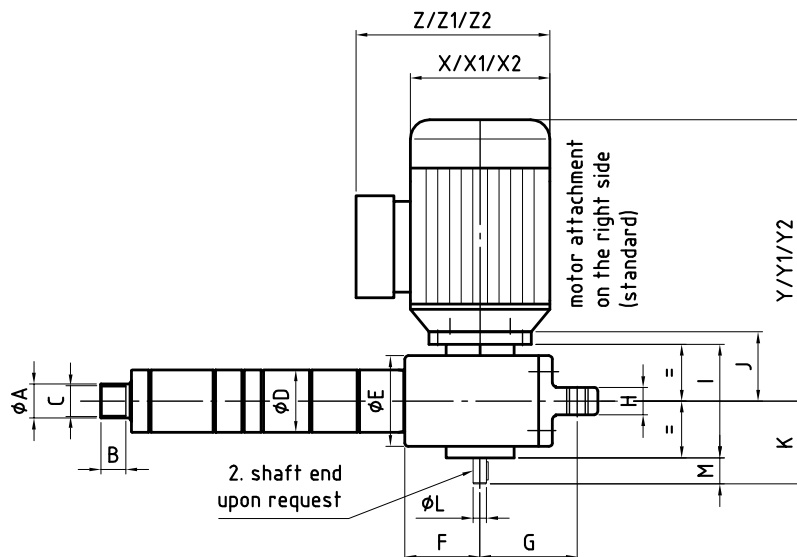
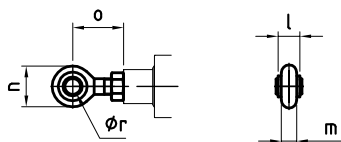
head 1 - clevis



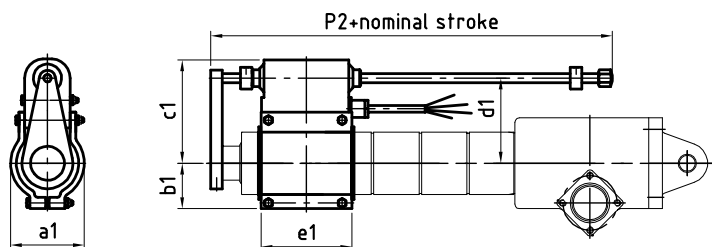
head 2 - load plate



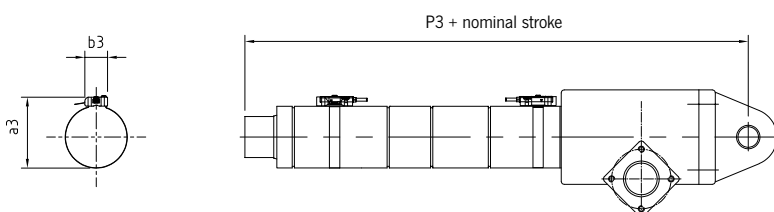
head 3 - rod end



el.-mech. limit switch



magnet. limit switch



CAD & go



ELA 10.1, 20.1, 30.1, 40.1

Dimensions

Dimensions ELA									
Size	ELA 10.1		ELA 20.1		ELA 30.1		ELA 40.1		
	Tr 12x3	Ku 12x5*	Tr 16x4	Ku 16x5*	Tr 22x5	Ku 20x5*	Tr 22x5	Ku 25x6*	
Without head (with female thread)									
Ø A	25		30		30		40		
B	12		22		22		27		
C	M 22x1.5		M 27x1.5		M 27x1.5		M 35x1.5		
Ø D / Ø E	36 / 54		55 / 65		55 / 80		60 / 92		
F	55.5		61		66		78		
G	54.5		69		86		104		
H	15		17		24		25		
I	62		90		100		114		
J	-		57		61		72		
K	-		67.5		73		89.5		
Ø L	-		9 k6		12 g6		14 k6		
M	-		18.5		23		30		
N	30.5		37		40		60		
O	12.5		17		18		28		
Ø P H7	10		12		14		20		
Q	25		25		35		40		
R	146		171		193		244		
S	169	184	190	211	220	230	275	285	
Three-phase motor 400 VAC AC 3Ph, IP 55*									
X	110		110		126		145		
Y	195	-	225	-	255	-	295	-	
Y (brake)	220		285		315		350		
Z	165		165		172		191		
Single-phase motor 230 V AC 2Ph, IP 54*									
X1	110		115		126		140		
Y1	195	-	220	-	242	-	315	-	
Y1 (brake)	220		260		301		350		
Z1	165		165		172		191		
D.C. motor 24 VDC, IP 54*									
X2	60		85		85		85		
Y2	165	-	225	-	290	-	395	-	
Y2 (brake)	210		270		331		435		
Z2	80		121		121		121		
Head type 1 – Clevis									
a / b / c	15 / 15 / 34		17 / 18 / 25		24 / 18 / 25		25 / 25 / 30		
Ø d / Ø f H7	25 / 10		30 / 12		30 / 14		40 / 20		
Head type 2 – Load plate									
Ø g / Ø h / Ø i	55 / 40 / 5.5		54 / 42 / 7		54 / 42 / 7		80 / 60 / 9		
j / k	8 / 27		10 / 20		10 / 20		12 / 22		
Head type 3 – Rod end**									
l / m / n / o	14 / 10.5 / 28 / 31		16 / 12 / 32 / 40		19 / 13.5 / 36 / 45		25 / 18 / 50 / 53		
Ø r H7	10		12		14		20		
Stroke limitation									
Stroke limitation mechanical limit switch									
P2	154		154		154		154		
a1 / b 1 / c1 / d1 / e1	50 / 30 / 78 / 62 / 75		65 / 40 / 91 / 75 / 80		65 / 40 / 91 / 75 / 80		70 / 45 / 91 / 75 / 75		
Stroke limitation magnetic limit switch***									
P3	193	211	209	216	231	245	295	290	
a3 / b3	45 / 22		64 / 22		64 / 22		82 / 22		

* Ball screw only available with brake motor

** ELA 10.1 – Rod end not in connection with mechanical stroke limitation available, ELA 20.1/30.1/40.1 – Rod end only available with anti-turn device

*** ELA 40.1 – Ball screw in combination with anti-turn device and magnetic limit switches (reed contacts) not available.

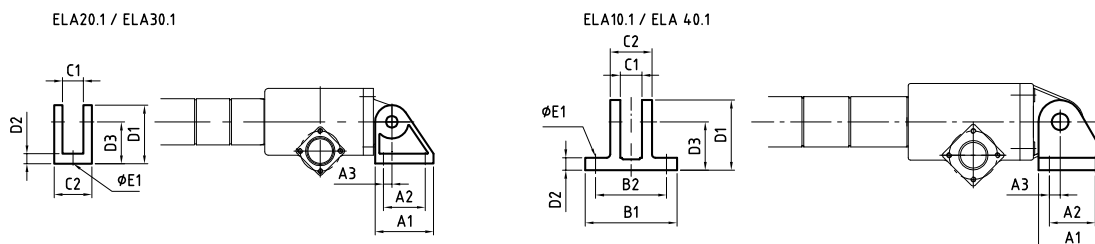


ELA 10.1, 20.1, 30.1, 40.1

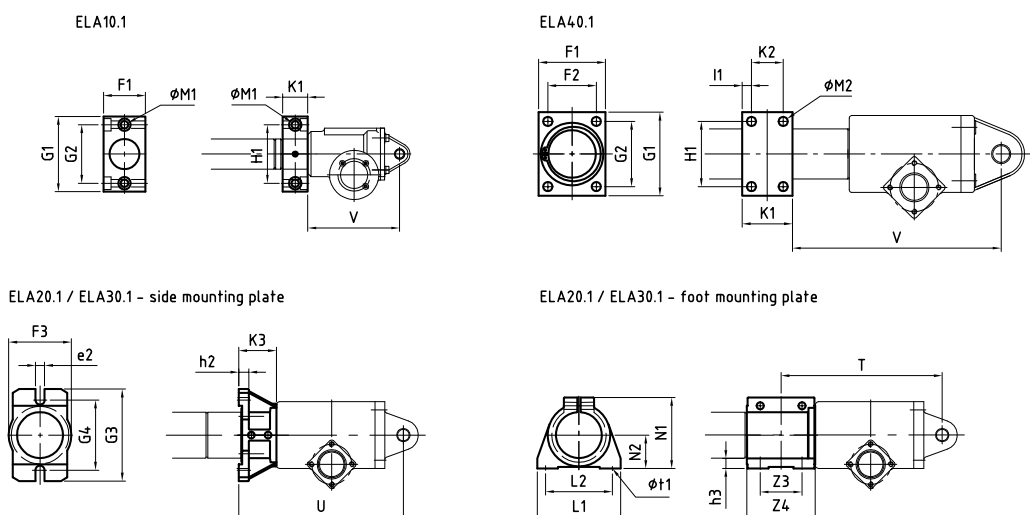
Technical drawings

Technical drawings ELA options

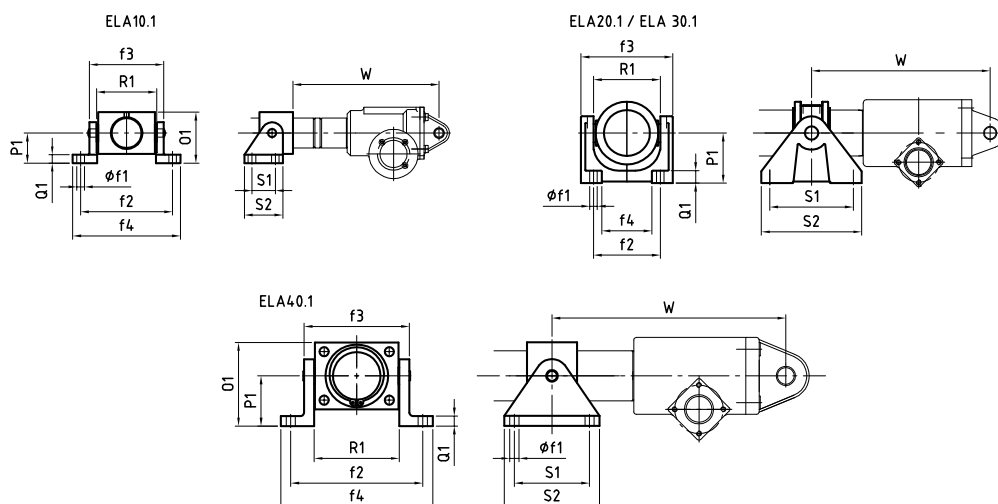
pillow block



side mounting plate / foot mounting plate



swivel device



CAD & go



ELA 10.1, 20.1, 30.1, 40.1

Dimensions

Dimensions ELA options

Size Dimensions [mm]	ELA 10.1		ELA 20.1		ELA 30.1		ELA 40.1	
	without / with mech. limit stop	with magnetic limit switch-off	without / with mech. limit stop	with magnetic limit switch-off	without / with mech. limit stop	with magnetic limit switch-off	without / with mech. limit stop	with magnetic limit switch-off
Pillow block								
A1 / A2 / A3	46 / 28 / 4		70 / 50 / 10		70 / 50 / 10		81 / 55 / 13	
B1 / B2	73 / 54		- / -		- / -		110 / 85	
C1 / C2	16 / 33		25 / 45		25 / 45		26 / 50	
D1 / D2 / D3	49 / 10 / 36		70 / 12 / 50		70 / 12 / 50		84 / 15 / 58	
Ø E1	9		11		11		11	
Side mounting plate / foot mounting plate (combination) ELA 10.1; ELA 40.1* / **								
F1 / F2	50 / -		- / -		- / -		80 / 58	
G1 / G2	90 / 70		- / -		- / -		100 / 78	
H1 / I1	70 / -		- / -		- / -		78 / 11	
K1 / K2	30 / -		- / -		- / -		60 / 38	
Ø M1 for ISO 4762 / Ø M2	9 / -		- / -		- / -		- / 11	
V	110 / -		-		-		250 / -	
Side mounting plate ELA 20.1; ELA 30.1								
e2 / F3	- / -		11 / 75		11 / 75		- / -	
G3 / G4	- / -		110 / 84		110 / 84		- / -	
h2 / K3	- / -		12 / 45		12 / 45		- / -	
U	-		175 / 259		197 / 281		-	
Foot mounting plate ELA 20.1; ELA 30.1								
h3	-		12		12		-	
L1 / L2	- / -		100 / 80		100 / 80		- / -	
N1 / N2	- / -		85 / 40		85 / 40		- / -	
Z3 / Z4	- / -		82 / 50		82 / 50		- / -	
Ø t1	-		8.3		8.3		-	
T	-		171 / -		193 / -		-	
Swivel device								
O1 / P1 / Q1 / R1	61 / 36 / 10 / 72		- / 60 / 15 / 80		- / 60 / 15 / 80		100 / 60 / 12 / 102	
S1 / S2	28 / 46		100 / 120		100 / 120		90 / 114	
Ø f1	9		9		9		11	
f2 / f3 / f4	110 / 89 / 129		80 / 110 / 60		80 / 110 / 60		158 / 126 / 182	
W	110 / 175		192 / 277		214 / 299		280 / 280	

Technical features

Size Dimensions [mm]	ELA 10.1		ELA 20.1		ELA 30.1		ELA 40.1	
	Tr 12x3	Ku 12x5	Tr 16x4	Ku 16x5	Tr 22x5	Ku 20x5	Tr 22x5	Ku 25x6
Electromechanical limit switch – effective stroke								
100	100	85	-	-	-	-	-	-
200	200	185	200	185	200	190	200	190
300	300	285	-	-	-	-	-	-
400	400	385	400	385	400	390	400	390
600	-	-	600	585	600	590	600	590
800	-	-	-	-	800	790	800	790
Magnetic limit switch (reed contact) – effective stroke								
100	73	55	-	-	-	-	-	-
200	173	155	185	175	185	165	180	185
300	273	255	-	-	-	-	-	-
400	373	355	385	375	385	365	380	385
600	-	-	585	575	585	565	580	585
800	-	-	-	-	785	765	780	785

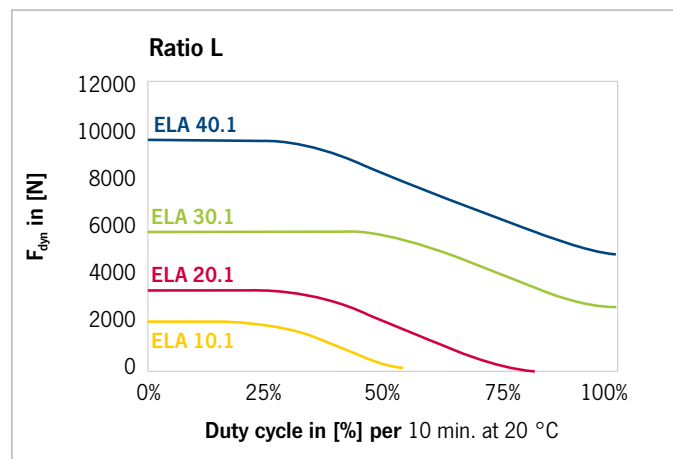
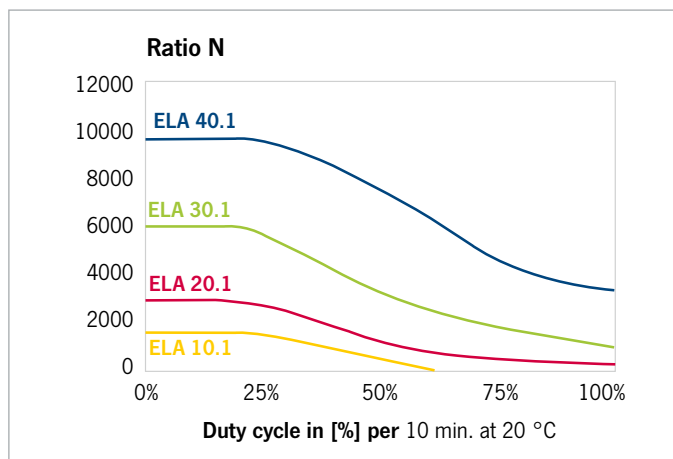
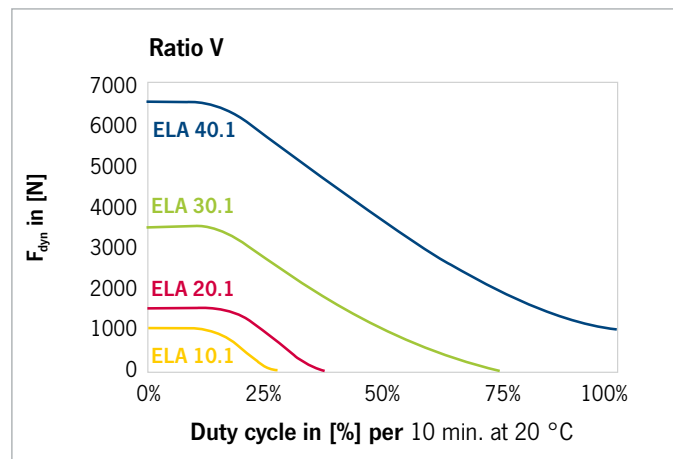
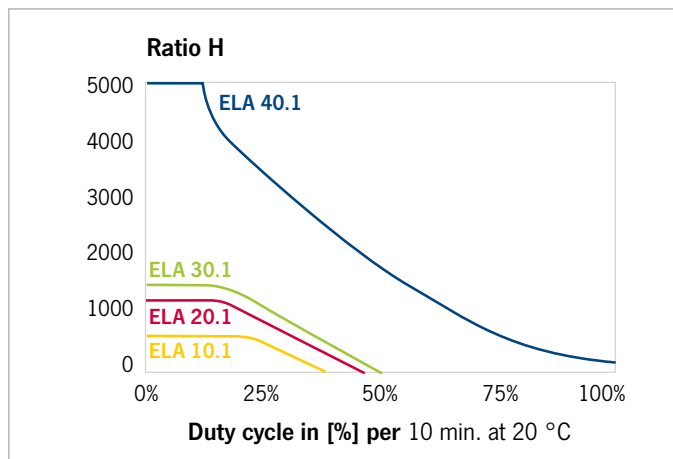
* ELA 10.1 - A combination of reed contact and swivel device only available for stroke 200 and above.

** A combination of reed contacts with foot mounting plate is not possible.

ELA

Duty cycle diagrams

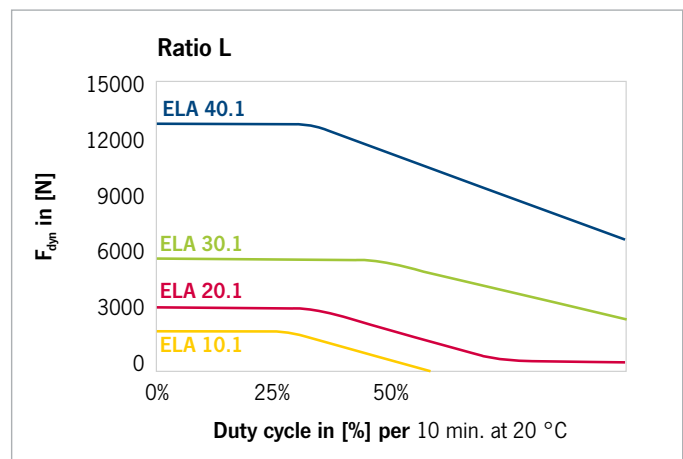
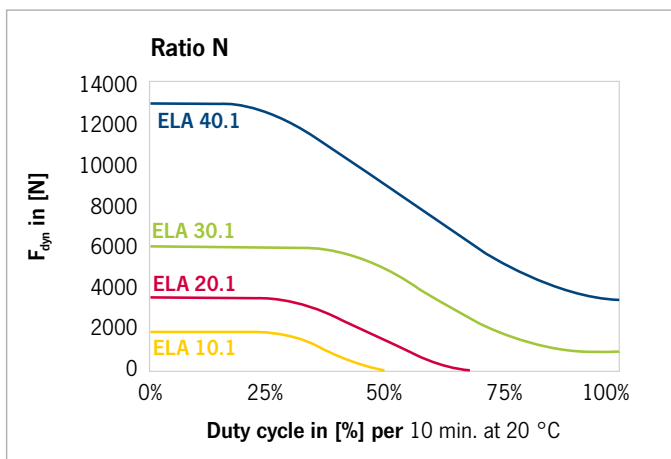
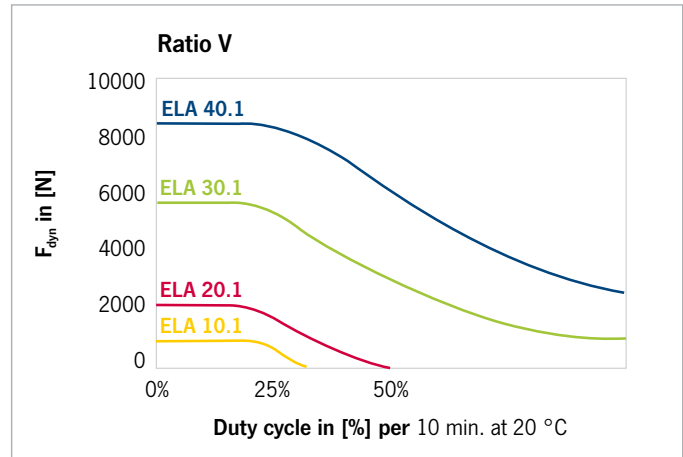
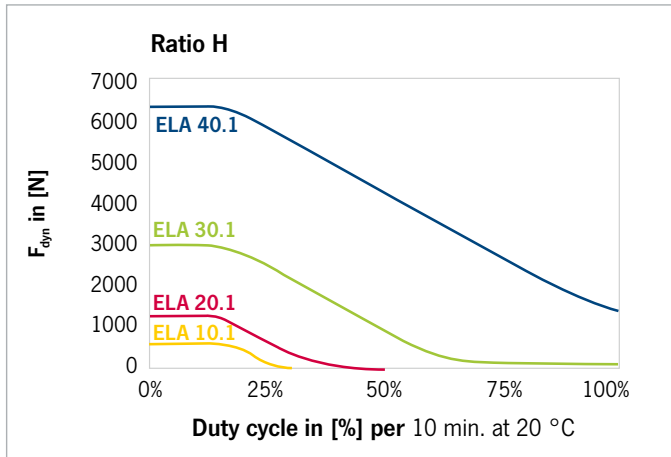
Duty cycle diagrams, ELA with trapezoidal screw and three-phase motor



ELA

Duty cycle diagrams

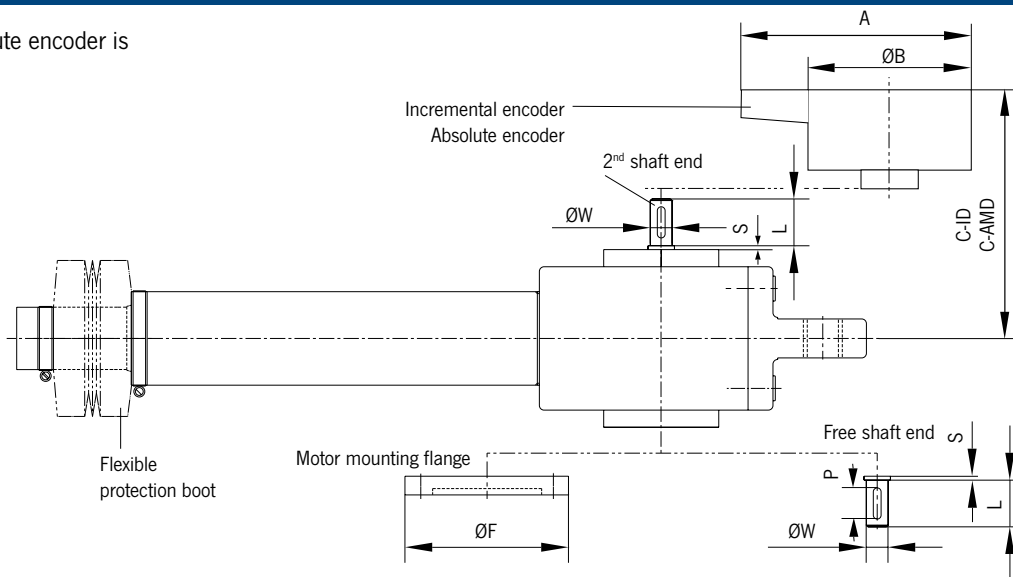
Duty cycle diagrams, ELA with ball screw (Ku) and three-phase motor



ELA Options

Options: incremental encoder / absolute encoder / motor mounting flange / free or 2nd shaft end (not possible for ELA 10.1)

The incremental encoder or absolute encoder is mounted on the 2nd shaft end.



Dimensions 1

ELA size Dim. [mm]	IEC motor flange / ØF	ØW	S	L	P
20.1	56 B14 / Ø80	9	4	18.5	14
30.1	63 B14 / Ø90	12	-	23	16
40.1	71 B14 / Ø105	14	2.5	30	20

Feather key groove in accordance with DIN 6885/1

Dimensions 2

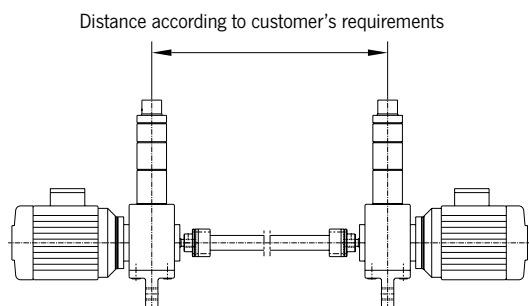
ELA size Dim. [mm]	A	ØB	C-AMD	CID
20.1	approx. 155	approx. 65	approx. 165	approx. 115
30.1	approx. 155	approx. 65	approx. 170	approx. 120
40.1	approx. 155	approx. 65	approx. 175	approx. 125

Dimension A with mating plug or high-strength cable gland

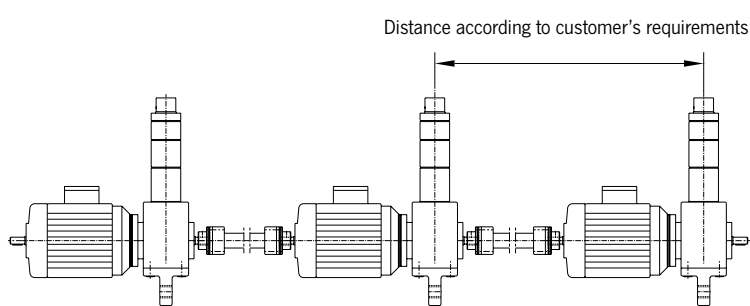
Technical data

Incremental encoder		Absolute multi-turn encoder (preprogrammed)	
Type	ID	Type	AMD
Pulses per rotation	10 or 20	Total resolution (encoder capacity)	max. 25 Bit
Supply voltage	11...27 VDC	Number of steps/revolutions	256 (max. 13 Bit)
Power rating (without load)	< 4 Watt	Number of revolutions	4096 (max. 12 Bit)
Output	5 V or 11-27 V	Supply voltage	11...27 VDC
Incremental signal	A/B/0	Power rating (without load)	< 3 Watt
Operating temperature	0 °C to 60 °C	Operating temperature	0 °C to 60 °C
Protection rating	IP 65	Protection rating	IP 65
Type of connection	Radial plug (12-pole, crimpable, included in delivery, recommendation CY PUR 3x2x0.14 + 2x0.5)		

Option: Mechanical synchronization option (not possible for ELA 10.1)



Synchronous due to connecting shaft, motor mounting shaft left or right side 2nd shaft end on ELA



Synchronous due to connecting shaft, 2nd shaft end on motor and ELA

ELA

Order code

E
L
A
-
1
.
1
-
2
-
3
-
4
-
5
-
6
-
7
-
8
-
9
-
10
-
... Options

No.	Explanation	
1	ELA Type	10 / 20 / 30 / 40
2	Screw	Tr = (Standard) / Ku (ball screw)
3	Ratio	H / V / N / L
4	Nominal stroke	Stroke (mm)
5	Motor	1 = DS-400VAC 2 = DS-400VAC+Brake 3 = WS-230VAC 4 = WS-230VAC+Brake 5 = GS-24VDC 6 = GS-24VDC+Brake 0 = none (except of ELA 10.1)
6	Motor attachment side	0 = Right side (standard) 1 = Left side
7	Head	1 = Clevis 2 = Load plate 3 = Rod end 0 = none
8	Anti-turn device	0 = yes 1 = no
9	Accessories 1	0 = none 1 = Electromech. limit switch 2 = Magnetic limit switch (reed contact)
10	Accessories 2	0 = none 1 = 1 Pillow block 2 = 2 Pillow blocks 3 = Side mounting plate 4 = Foot mounting plate 5 = Swivel device
	Other options (as specified): = X For example:	<ul style="list-style-type: none"> ▪ 2nd shaft end on ELA ▪ Free shaft end (without motor) ▪ Flexible protection boot ▪ Shaft encoder ▪ Special motor..... ▪ Control unit H1TM or H1WTM

Standard duty cycle [ED] 20% at 10 min.



ALS/R

Electromechanical screw ram

Design features



Tr screw



Ball screw (Ku)

- **4 different sizes**

with max. dynamic axial loads from

ALS 10: 12.5 kN

ALS 25: 25 kN

ALS 50: 50 kN

ALS 100: 100 kN

- **Standard stroke lengths ALSR:**

ALS 10: 100/200/300/400 mm

ALS 25: 100/200/300/400/500 mm

ALS 50: 200/400/600/800/1000 mm

ALS 100: 300/600/900/1200/1500 mm

- Self-locking trapezoidal screw
- Attachment options for any flange connection capable gear motor in solid or hollow shaft design
- Long-term lubrication by high-quality grease and encapsulated design
- Special screw diameter and pitches possible
- Comprehensive accessories range

- **Possible usage according to directive 2014/34/EU (ATEX)**



ALS/R

Selection table

Selection table ALS/R															
Size	Trapezoidal screw						Ball screw (Ku)								
	10	25	50	100	10	25	50	100	10	25	50	100	10	25	100
Max. tensile / compressive force [kN]	12.5	25	50	100	12.5	25	50	100	12.5	25	50	100	12.5	25	100
Screw	Tr24x5*	Tr30x6*	Tr40x7*	Tr50x8	Tr70x12*	Tr80x14	Ku25x5	Ku25x10	Ku32x10	Ku32x20	Ku40x10	Ku40x20	Ku63x10	Ku63x20	
Lift per revolution [mm]	5	6	7	8	12	14	5	10	10	20	10	20	10	20	
Max. drive power at 20% duty cycle [kW]	0.75	1.1	1.5	2.2	4	5.5	Service life calculation (see performance table)								
Max. drive power at 10% duty cycle [kW]	1.1	1.5	2	3	5.5	7.5									
Overall efficiency [%]	34.9	33.9	31.0	29.2	30.6	31.0	78.0	75.0							
Basic weight [kg]	4.5	10	25	25	35	35	4.5	10	25	35	4.5	10	25	35	
Extra weight of ALS per 100 mm stroke [kg]	0.35	0.5	0.8	1.2	2.5	3	0.4	0.5	1	2.5	0.4	0.5	1	2.5	
Extra weight of ALSR per 100 mm stroke [kg]	1.3	2.2	4	4.5	9	9.5	1.3	2.2	4.2	9	1.3	2.2	4.2	9	

*Standard screw sizes are as follow: Tr 24x5 / Tr 30x6 / Tr 40x7 / Tr 70x12

Selection guide for electromechanical screw rams ALS

- Preselection of the size in relation to the maximum permissible tensile/compressive forces using the selection
- With a compressive load, check screw size by means of the buckling diagram
- Determining the size based on the performance tables below with consideration of the lifting capacity and the desired lifting speed and duty cycle



ALS/R

Performance data tables ALS 10/25

Performance table ALS 10 – ALS/R 10 with Tr 24x5

Speed n	Lifting speed		12.5 kN		10 kN		8 kN		6 kN		4 kN		2 kN		1 kN	
	Tr24x5		Tr24x5		Tr24x5		Tr24x5		Tr24x5		Tr24x5		Tr24x5		Tr24x5	
			28.5 Nm		22.8 Nm		18.3 Nm		13.7 Nm		9.1 Nm		4.6 Nm		2.3 Nm	
[1/min]	[m/min]		P [kW]													
750	3.75		2.2		1.8		1.4		1.1		0.7		0.4		0.2	
500	2.5		1.5		1.2		1.0		0.7		0.5		0.2		0.1	
250	1.25		0.7		0.6		0.5		0.4		0.2		0.1		0.1	
100	0.5		0.3		0.2		0.2		0.1		0.1		0.1		0.1	
50	0.25		0.1		0.1		0.1		0.1		0.1		0.1		0.1	

Performance table ALS 10 – ALS/R 10 with Ku 25x5 / Ku 25x10

Speed n	Lifting speed		12.5 kN		10 kN		8 kN		6 kN		4 kN		2 kN		1 kN	
	Ku 25x5	Ku 25x10	Ku25x5	Ku25x10	Ku25x5	Ku25x10	Ku25x5	Ku25x10	Ku25x5	Ku25x10	Ku25x5	Ku25x10	Ku25x5	Ku25x10	Ku25x5	Ku25x10
			12.8 Nm	25.5 Nm	10.2 Nm	20.4 Nm	8.2 Nm	16.3 Nm	6.1 Nm	12.2 Nm	4.1 Nm	8.2 Nm	2.0 Nm	4.1 Nm	1.0 Nm	2.0 Nm
[1/min]	[m/min]		P [kW]													
750	3.75	7.5	1.0	2.0	0.8	1.6	0.6	1.3	0.5	1.0	0.3	0.6	0.2	0.3	0.1	0.2
500	2.5	5	0.7	1.3	0.5	1.1	0.4	0.9	0.3	0.6	0.2	0.4	0.1	0.2	0.1	0.1
250	1.25	2.5	0.3	0.7	0.3	0.5	0.2	0.4	0.2	0.3	0.1	0.2	0.1	0.1	0.1	0.1
100	0.5	1	0.1	0.3	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50	0.25	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Performance table ALS 25 – ALS/R 25 with Tr 30x6

Speed n	Lifting speed		25 kN		20 kN		16 kN		12 kN		8 kN		4 kN		1 kN	
	Tr30x6		Tr30x6		Tr30x6		Tr30x6		Tr30x6		Tr30x6		Tr30x6		Tr30x6	
			70 Nm		56 Nm		45 Nm		34 Nm		23 Nm		11 Nm		3 Nm	
[1/min]	[m/min]		P [kW]													
700	4.2		5.2		4.1		3.3		2.5		1.7		0.8		0.2	
500	3		3.7		2.9		2.4		1.8		1.2		0.6		0.1	
300	1.8		2.2		1.8		1.4		1.1		0.7		0.4		0.1	
100	0.6		0.7		0.6		0.5		0.4		0.2		0.1		0.1	
50	0.3		0.4		0.3		0.2		0.2		0.1		0.1		0.1	

Performance table ALS 25 – ALS/R 25 with Ku 32x10 / Ku 32x20

Speed n	Lifting speed		25 kN		20 kN		16 kN		12 kN		8 kN		4 kN		1 kN	
	Ku32x10	Ku32x20	Ku32x10	Ku32x20	Ku32x10	Ku32x20	Ku32x10	Ku32x20	Ku32x10	Ku32x20	Ku32x10	Ku32x20	Ku32x10	Ku32x20	Ku32x10	Ku32x20
			53 Nm	106 Nm	42 Nm	85 Nm	34 Nm	68 Nm	25 Nm	51 Nm	17 Nm	34 Nm	8 Nm	17 Nm	2 Nm	4 Nm
[1/min]	[m/min]		P [kW]													
700	7	14	3.9	7.8	3.1	6.2	2.5	5.0	1.9	3.7	1.2	2.5	0.6	1.2	0.2	0.3
500	5	10	2.8	5.6	2.2	4.4	1.8	3.6	1.3	2.7	0.9	1.8	0.4	0.9	0.1	0.2
300	3	6	1.7	3.3	1.3	2.7	1.1	2.1	0.8	1.6	0.5	1.1	0.3	0.5	0.1	0.1
100	1	2	0.6	1.1	0.4	0.9	0.4	0.7	0.3	0.5	0.2	0.4	0.1	0.2	0.1	0.1
50	0.5	1	0.3	0.6	0.2	0.4	0.2	0.4	0.1	0.3	0.1	0.2	0.1	0.1	0.1	0.1

All performance data refer to the dynamic lifting force and a duty cycle of 20% / h or of 30% / 10 min. at 20 ° C ambient temperature.

ALS – ALS/R with Tr: the screw/nut system is overheated in fields highlighted in grey.
ALS – ALS/R with Ku: the service life falls below 500 hours in the fields highlighted in grey.

ALS – ALS/R with Tr: only static (dynamic not allowed)

ALS/R

Performance data tables ALS 50/100

Performance table ALS 50 – ALS/R 50 with Tr 40x7 / Tr 50x8

Speed n	Lifting speed		50 kN		40 kN		30 kN		25 kN		20 kN		10 kN		5 kN	
	Tr40x7	Tr50x8	Tr40x7	Tr50x8	Tr40x7	Tr50x8	Tr40x7	Tr50x8	Tr40x7	Tr50x8	Tr40x7	Tr50x8	Tr40x7	Tr50x8	Tr40x7	Tr50x8
			180 Nm	218 Nm	144 Nm	175 Nm	108 Nm	131 Nm	90 Nm	109 Nm	72 Nm	87 Nm	36 Nm	44 Nm	18 Nm	22 Nm
[1/min]	[m/min]		P [kW]													
500	3.5	4	9.4	11.4	7.5	9.1	5.6	6.9	4.7	5.7	3.8	4.6	1.9	2.3	0.9	1.1
400	2.8	3.2	7.5	9.1	6.0	7.3	4.5	5.5	3.8	4.6	3.0	3.7	1.5	1.8	0.8	0.9
300	2.1	2.4	5.6	6.9	4.5	5.5	3.4	4.1	2.8	3.4	2.3	2.7	1.1	1.4	0.6	0.7
100	0.7	0.8	1.9	2.3	1.5	1.8	1.1	1.4	0.9	1.1	0.8	0.9	0.4	0.5	0.2	0.2
50	0.35	0.4	0.9	1.1	0.8	0.9	0.6	0.7	0.5	0.6	0.4	0.5	0.2	0.2	0.1	0.1

Performance table ALS 50 – ALS/R 50 with Ku 40x10 / Ku 40x20

Speed n	Lifting speed		50 kN		40 kN		30 kN		25 kN		20 kN		10 kN		5 kN	
	Ku40x10	Ku40x20	Ku40x10	Ku40x20	Ku40x10	Ku40x20	Ku40x10	Ku40x20	Ku40x10	Ku40x20	Ku40x10	Ku40x20	Ku40x10	Ku40x20	Ku40x10	Ku40x20
			106 Nm	212 Nm	85 Nm	170 Nm	64 Nm	127 Nm	53 Nm	106 Nm	42 Nm	85 Nm	21 Nm	42 Nm	11 Nm	21 Nm
[1/min]	[m/min]		P [kW]													
500	5	10	5.6	11.1	4.4	8.9	3.3	6.7	2.8	5.6	2.2	4.4	1.1	2.2	0.6	1.1
400	4	8	4.4	8.9	3.6	7.1	2.7	5.3	2.2	4.4	1.8	3.6	0.9	1.8	0.4	0.9
300	3	6	3.3	6.7	2.7	5.3	2.0	4.0	1.7	3.3	1.3	2.7	0.7	1.3	0.3	0.7
100	1	2	1.1	2.2	0.9	1.8	0.7	1.3	0.6	1.1	0.4	0.9	0.2	0.4	0.1	0.2
50	0.5	1	0.6	1.1	0.4	0.9	0.3	0.7	0.3	0.6	0.2	0.4	0.1	0.2	0.1	0.1

Performance table ALS 100 – ALS/R 100 with Tr 70x12 / Tr 80x14

Speed n	Lifting speed		100 kN		80 kN		60 kN		50 kN		40 kN		20 kN		10 kN	
	Tr70x12	Tr80x14	Tr70x12	Tr80x14	Tr70x12	Tr80x14	Tr70x12	Tr80x14	Tr70x12	Tr80x14	Tr70x12	Tr80x14	Tr70x12	Tr80x14	Tr70x12	Tr80x14
			624 Nm	718 Nm	499 Nm	574 Nm	375 Nm	431 Nm	312 Nm	359 Nm	250 Nm	287 Nm	125 Nm	144 Nm	62 Nm	72 Nm
[1/min]	[m/min]		P [kW]													
375	4.5	5.25	24.5	28.2	19.6	22.6	14.7	16.9	12.3	14.1	9.8	11.3	4.9	5.6	2.5	2.8
200	2.4	2.8	13.1	15.0	10.5	12.0	7.8	9.0	6.5	7.5	5.2	6.0	2.6	3.0	1.3	1.5
125	1.5	1.75	8.2	9.4	6.5	7.5	4.9	5.6	4.1	4.7	3.3	3.8	1.6	1.9	0.8	0.9
75	0.9	1.05	4.9	5.6	3.9	4.5	2.9	3.4	2.5	2.8	2.0	2.3	1.0	1.1	0.5	0.6
25	0.3	0.35	1.6	1.9	1.3	1.5	1.0	1.1	0.8	0.9	0.7	0.8	0.3	0.4	0.2	0.2

Performance table ALS 100 – ALS/R 100 with Ku 63x10 / Ku 63x20

Speed n	Lifting speed		100 kN		80 kN		60 kN		50 kN		40 kN		20 kN		10 kN	
	Ku63x10	Ku63x20	Ku63x10	Ku63x20	Ku63x10	Ku63x20	Ku63x10	Ku63x20	Ku63x10	Ku63x20	Ku63x10	Ku63x20	Ku63x10	Ku63x20	Ku63x10	Ku63x20
			212 Nm	424 Nm	170 Nm	340 Nm	127 Nm	255 Nm	106 Nm	212 Nm	85 Nm	170 Nm	42 Nm	85 Nm	21 Nm	42 Nm
[1/min]	[m/min]		P [kW]													
375	3.75	7.5	8.3	16.7	6.7	13.3	5.0	10.0	4.2	8.3	3.3	6.7	1.7	3.3	0.8	1.7
200	2	4	4.4	8.9	3.6	7.1	2.7	5.3	2.2	4.4	1.8	3.6	0.9	1.8	0.4	0.9
125	1.25	2.5	2.8	5.6	2.2	4.4	1.7	3.3	1.4	2.8	1.1	2.2	0.6	1.1	0.3	0.6
75	0.75	1.5	1.7	3.3	1.3	2.7	1.0	2.0	0.8	1.7	0.7	1.3	0.3	0.7	0.2	0.3
25	0.25	0.5	0.6	1.1	0.4	0.9	0.3	0.7	0.3	0.6	0.2	0.4	0.1	0.2	0.1	0.1

All performance data refer to the dynamic lifting force and a duty cycle of 20% / h or of 30% / 10 min. at 20 ° C ambient temperature.

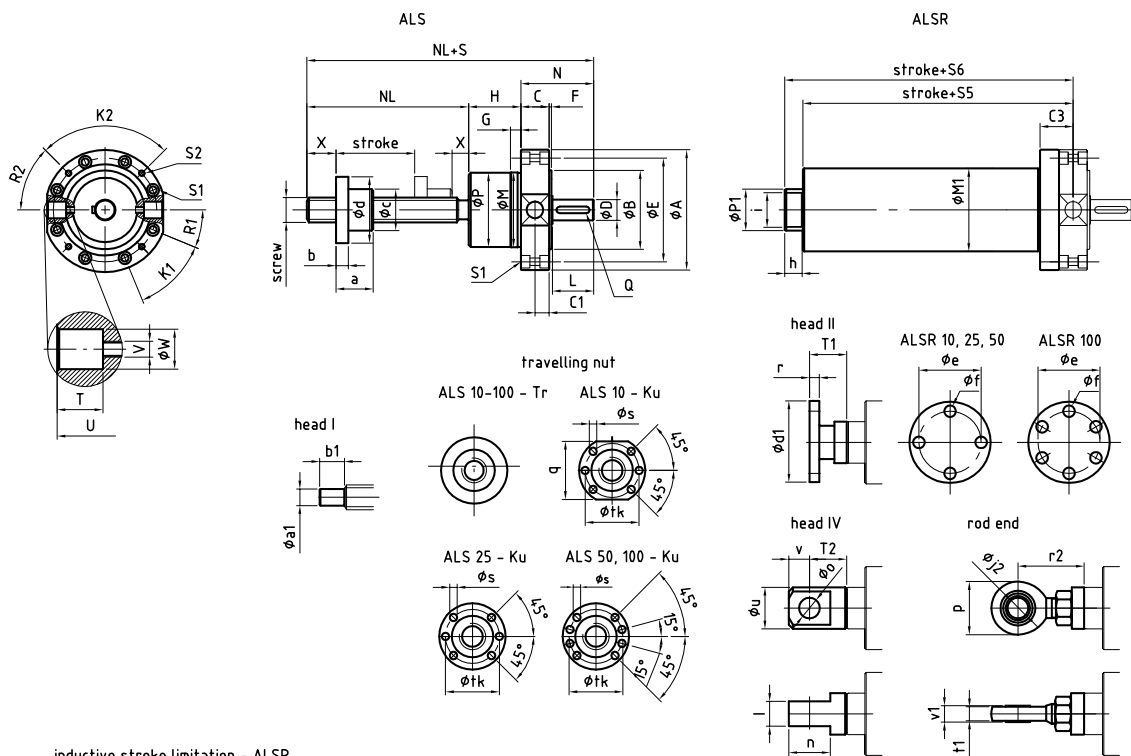
ALS – ALS/R with Tr: the screw/nut system is overheated in fields highlighted in grey.
 ALS – ALS/R with Ku: the service life falls below 500 hours in the fields highlighted in grey.

ALS – ALS/R with Tr: only static (dynamic not allowed)

ALS/R

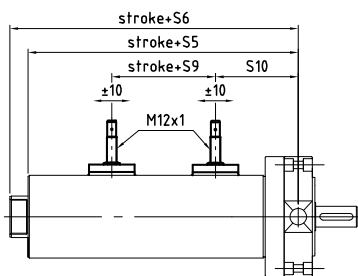
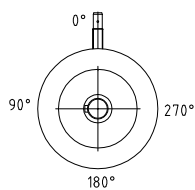
Technical drawings

Technical drawings

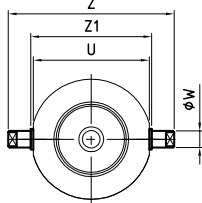


inductive stroke limitation - ALSR

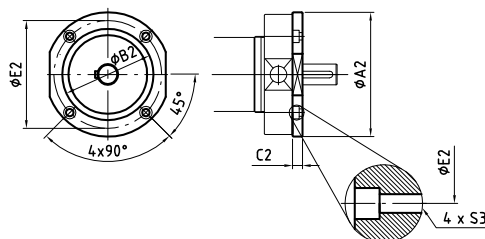
position of the inductive stroke limitation



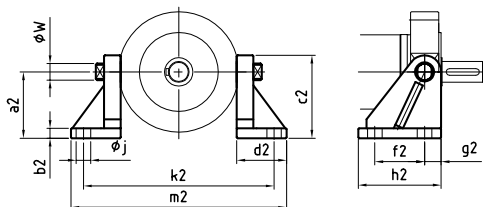
trunnion pins



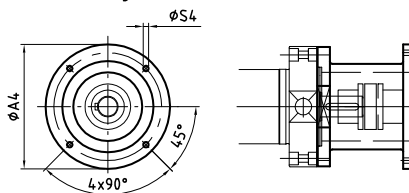
IEC flange



pillow blocks



IEC bell housing



CAD & go



ALS/R

Dimensions

ALS/R Dimensions														
Size Dim. [mm]	ALS 10 - ALS/R 10			ALS 25 - ALS/R 25			ALS 50 - ALS/R 50				ALS 100 - ALS/R 100			
	Tr screw	Ball screw (Ku)		Tr screw	Ball screw (Ku)		Tr screw		Ball screw (Ku)		Tr screw		Ball screw (Ku)	
	Tr 24x5*	Ku 25x5	Ku 25x10	Tr 30x6*	Ku 32x10	Ku 32x20	Tr 40x7*	Tr 50x8	Ku 40x10	Ku 40x20	Tr 70x12*	Tr 80x14	Ku 63x10	Ku 63x20
Ø A	100			145			175				250			
Ø B j6	60			95			110				180			
C	24			34			38				52			
C 1	12			17			19				26			
C 3	30			40			47				61			
Ø D j6	16			25			30				40			
Ø E ± 0.2	82			125			155				215			
F	2			3			4				5			
G	16			13			15				26			
H	56			63			85				111			
h	20			40			62				54			
i	M 33x2			M 42x2			M 60x2				M 95x3			
K 1	8 x 45 °			8 x 45 °			6 x 60 °				8 x 45 °			
K 2	4 x 90 °			4 x 90 °			6 x 60 °				4 x 90 °			
L	40			50			60				90			
Ø M f7	60			90			115				150			
Ø M 1	70			100			130				170			
N	68			88			106				150			
NL	Stroke + 85	Stroke + 91	Stroke + 96	Stroke + 85	Stroke + 130	Stroke + 170	Stroke + 120		Stroke + 176	Stroke + 191	Stroke + 205		Stroke + 216	Stroke + 250
Ø P	59.5			89.5			114				149			
Ø P 1	40			50			70				110			
Q - DIN 6885A	5 x 5 x 20			8 x 7 x 40			8 x 7 x 50				12 x 8 x 80			
R 1	22.5 °			22.5 °			30 °				22.5 °			
R 2	45 °			45 °			15 °				45 °			
S	124			151			191				261			
S 1 for DIN 6912/8.8	8x Ø12x8 / Ø6.6 for M6			8x Ø15x11 / Ø9 for M8			6x Ø15x11 / Ø9 for M8				6x Ø24x16 / Ø13.5 for M12			
S 2	4 x M6			4 x M8			6 x M8				6 x M12			
S 5	225			276			336				486			
S 6	245			298			374				514			
T	10			23			25				42			
U	90 -0.3			140 -0.3			170 -0.3				240 -0.4			
V	M6			M8			M10				M12x1			
Ø W H7	16			20			25				35			
X	20			20	40	60	30		50	70	40		50	70

*Standard



ALS/R

Dimensions

ALS/R Dimensions														
Size Dim. [mm]	ALS 10 - ALS/R 10			ALS 25 - ALS/R 25			ALS 50 - ALS/R 50				ALS 100 - ALS/R 100			
	Tr screw	Ball screw (Ku)		Tr screw	Ball screw (Ku)		Tr screw		Ball screw (Ku)		Tr screw		Ball screw (Ku)	
	Tr 24x5*	Ku 25x5	Ku 25x10	Tr 30x6*	Ku 32x10	Ku 32x20	Tr 40x7*	Tr 50x8	Ku 40x10	Ku 40x20	Tr 70x12*	Tr 80x14	Ku 63x10	Ku 63x20
Travelling nut														
a	45	51	56	45	50		60		76	51	125		116	110
b	10			15	12		18		14		30		20	
Ø c	35 h9	40 g6		50 h9	50 g6		70 h9		63 g6		120 h9		95 g6	
Ø d	50	62		80			87		93		155		135	
q	-	48		-	-		-		-		-		-	
Ø s	-	6.6		-	9		-		9		-		13.5	
Ø tk	-	51		-	65		-		78		-		115	
Head type I														
Ø a1 j6	15			20			30				50			
b1	24			30			50				60			
Head type II														
T 1	37			45			65				55			
Ø d1	72			98			122				182			
Ø e	50			75			85				135			
Ø f	9			14			17				26			
r	10			12			18				25			
Head type IV														
T 2	40			45			65				90			
l-0.2	25			30			40				75			
n	40			50			70				120			
Ø o H7	20			25			35				60			
Ø u	40			50			65				110			
v	20			25			35				60			
Rod end														
p	46			64			82				135			
Ø j2	17 - 0.010			25 - 0.010			35 - 0.012				60 - 0.015			
r2	60			80			125				158			
v1	14			20			25				44			
t1	11			17			21				38			
Inductive stroke limitation														
S 9	25			55			73				170			
S 10	88			100			124				171			
Trunnion pins														
Z	136			200			250				330			
Z1	96			146			176				250			

*Standard

ALS/R

Dimensions

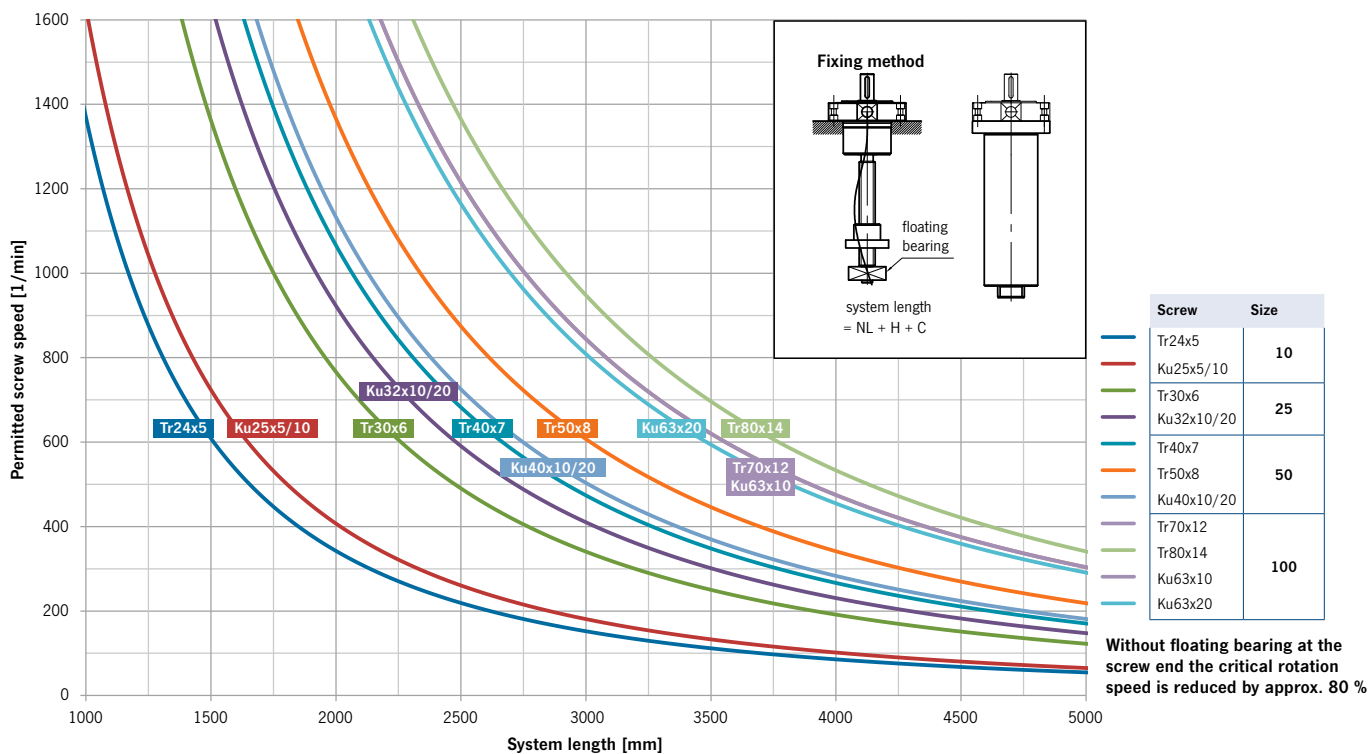
ALS/R Dimensions															
Size Dim. [mm]	ALS 10 - ALS/R 10			ALS 25 - ALS/R 25			ALS 50 - ALS/R 50				ALS 100 - ALS/R 100				
	Tr screw		Ball screw (Ku)	Tr screw		Ball screw (Ku)		Tr screw		Ball screw (Ku)		Tr screw		Ball screw (Ku)	
	Tr	Ku	Ku	Tr	Ku	Ku	Tr	Tr	Ku	Ku	Tr	Tr	Ku	Ku	
	24x5*	25x5	25x10	30x6*	32x10	32x20	40x7*	50x8	40x10	40x20	70x12*	80x14	63x10	63x20	
Pillow blocks															
a2	60			80			100				140				
b2	9			12			20				25				
c2	75			100			125				170				
d2	45			60			75				100				
f2	45			60			95				130				
g2	15			20			25				30				
h2	75			100			140				200				
Ø j	13			17.5			22				26				
k2	150			230			270				370				
m2	180			260			320				440				
IEC flange															
Ø A 2	120			150			175				250				
Ø B 2	80 H7			110 H7			110 H7				180 H8				
C 2	20			12			17				25				
Ø E 2 ±0.2	100			130			130				215				
S 3 for DIN 6912/8.8	Ø12x6 / Ø6.6 for M6			Ø15x8 / Ø9 for M8			Ø15x11 / Ø9 for M8				Ø24x6 / Ø13.5 for M8				
IEC bell housing															
Ø A 4	Dimensions according to offer or customer request														
Ø S 4	Dimensions according to offer or customer request														

*Standard

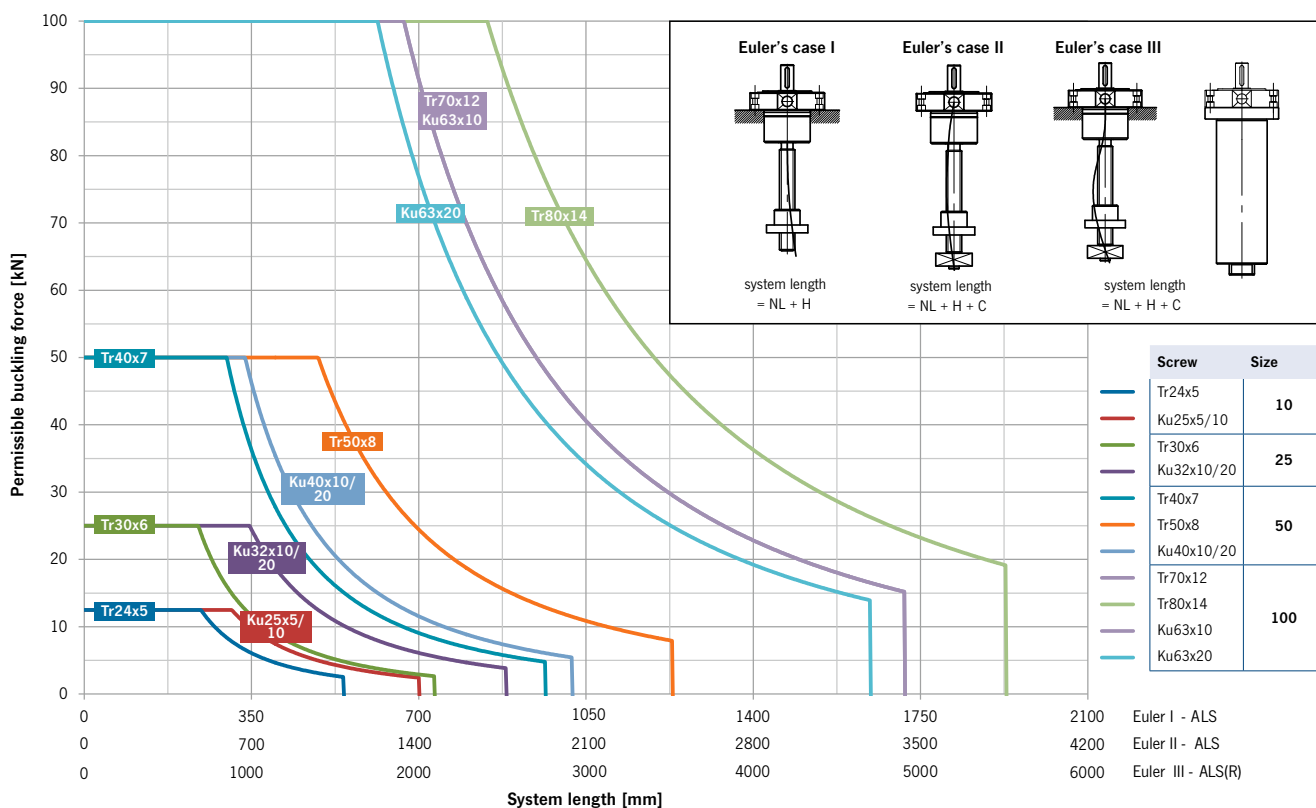


ALS/R Diagrams

Critical screw speed ALS/R



Buckling ALS/R



HLA

High-performance linear actuator

Design features



Tr screw



Ball screw (Ku)

- **4 sizes**

with maximum dynamic axial loads from

HLA 10: 12.5 kN

HLA 25: 25 kN

HLA 50: 50 kN

HLA 100: 100 kN

- **Standard stroke lengths:**

HLA 10: 100/200/300/400 mm

HLA 25: 100/200/300/400/500 mm

HLA 50: 200/400/600/800/1000 mm

HLA 100: 300/600/900/1200/1500 mm

- Self-locking trapezoidal screw
- Possible use in multi-screw lifting systems
- Several single drives can be synchronized
- Attachment options for any flange connection capable gear motor
- Optional short safety nut possible
- Low-maintenance from high-quality grease and encapsulated design
- Comprehensive accessories range
- Possible usage according to directive 2014/34/EU (ATEX)



HLA

Selection table

Selection table HLA													
Size	10			25			50			100			
Max. tensile/compressive force [kN]	10			25			50			100			
Screw	Tr 24x5	Ku 25x5	Ku 25x10	Tr 30x6	Ku 32x10	Ku 32x20	Tr 50x8	Ku 40x10	Ku 40x20	Tr 80x14	Ku 63x10	Ku 63x20	
Ratio N	5:1			6:1			7:1			8:1			
Lift per revolution for ratio N [mm/U]	1	1	2	1	1.67	3.33	1.14	1.43	2.86	1.75	1.25	2.5	
Ratio L	20:1			24:1			28:1			32:1			
Lift per revolution for ratio L [mm/U]	0.25	0.25	0.5	0.25	0.42	0.83	0.29	0.36	0.71	0.44	0.31	0.63	
Max. drive capacity at 20 °C ambient temperature and 20 % duty cycle/h [kW]	0.9			1.5			2.3			3.6			
Max. drive capacity at 20 °C ambient temperature and 10 % duty cycle/h [kW]	1.5			2.6			4.0			6.3			
Screw torque at max. lifting power [Nm]	19.4	8.7	16.7	60	42	82	186	86	165	616	179	338	
Max. permissible torque on the input shaft [Nm]	29.4			48.7			168			398			
Material gearbox housing	ALSi12			GGG50			GGG50			GGG50			
Basic weight [kg]	on request			25			45			101			
Extra weight per 100 mm stroke [kg]	on request			2.2			4.5			9.6			

Selection guide for high-performance linear actuator HLA

- Preselection of the size in relation to the maximum permissible tensile/compressive forces using the selection
- With a compressive load, check screw size by means of the buckling diagram
- Determining the size based on the performance tables with consideration of the lifting capacity and the desired lifting speed and duty cycle



HLA

Performance tables

Performance table HLA 10											
Tr 24x5											
Speed n	Lifting speed	10 kN		8 kN		6 kN		4 kN		2 kN	
		Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
[1/min]	[m/min]										
3000	3	5.1	1.6	4.1	1.3	3.1	1.0	2.0	0.6	1.0	0.3
1500	1.5	5.3	0.8	4.2	0.7	3.2	0.5	2.1	0.3	1.1	0.2
1000	1	5.4	0.6	4.3	0.5	3.2	0.3	2.2	0.2	1.1	0.1
750	0.75	5.5	0.4	4.4	0.3	3.3	0.3	2.2	0.2	1.1	0.1
500	0.5	5.6	0.3	4.5	0.2	3.4	0.2	2.2	0.1	1.1	0.1
300	0.3	5.8	0.2	4.6	0.1	3.5	0.1	2.3	0.1	1.2	0.1
100	0.1	6.0	0.1	4.8	0.1	3.6	0.1	2.4	0.1	1.2	0.1
Ratio N (5:1)											
3000	0.75	1.7	0.5	1.3	0.4	1.0	0.3	0.7	0.2	0.3	0.1
1500	0.38	1.8	0.3	1.4	0.2	1.1	0.2	0.7	0.1	0.4	0.1
1000	0.25	1.9	0.2	1.5	0.2	1.1	0.1	0.8	0.1	0.4	0.1
750	0.19	2.0	0.2	1.6	0.1	1.2	0.1	0.8	0.1	0.4	0.1
500	0.13	2.1	0.1	1.7	0.1	1.3	0.1	0.8	0.1	0.4	0.1
300	0.08	2.2	0.1	1.8	0.1	1.3	0.1	0.9	0.1	0.4	0.1
100	0.03	2.4	0.1	1.9	0.1	1.4	0.1	1.0	0.1	0.5	0.1
Ratio L (20:1)											
3000	0.75	0.8	0.2	0.6	0.2	0.5	0.1	0.3	0.1	0.2	0.1
1500	0.38	0.8	0.1	0.6	0.1	0.5	0.1	0.3	0.1	0.2	0.1
1000	0.25	0.9	0.1	0.7	0.1	0.5	0.1	0.3	0.1	0.2	0.1
750	0.19	0.9	0.1	0.7	0.1	0.5	0.1	0.4	0.1	0.2	0.1
500	0.13	0.9	0.1	0.8	0.1	0.6	0.1	0.4	0.1	0.2	0.1
300	0.08	1.0	0.1	0.8	0.1	0.6	0.1	0.4	0.1	0.2	0.1
100	0.03	1.1	0.1	0.9	0.1	0.6	0.1	0.4	0.1	0.2	0.1
Ratio N (5:1)											
3000	3	2.3	0.7	1.8	0.6	1.4	0.4	0.9	0.3	0.5	0.1
1500	1.5	2.4	0.4	1.9	0.3	1.4	0.2	0.9	0.1	0.5	0.1
1000	1	2.4	0.3	1.9	0.2	1.5	0.2	1.0	0.1	0.5	0.1
750	0.75	2.5	0.2	2.0	0.2	1.5	0.1	1.0	0.1	0.5	0.1
500	0.5	2.5	0.1	2.0	0.1	1.5	0.1	1.0	0.1	0.5	0.1
300	0.3	2.6	0.1	2.1	0.1	1.6	0.1	1.0	0.1	0.5	0.1
100	0.1	2.7	0.1	2.1	0.1	1.6	0.1	1.1	0.1	0.5	0.1
Ratio L (20:1)											
3000	0.75	0.8	0.2	0.6	0.2	0.5	0.1	0.3	0.1	0.2	0.1
1500	0.38	0.8	0.1	0.6	0.1	0.5	0.1	0.3	0.1	0.2	0.1
1000	0.25	0.9	0.1	0.7	0.1	0.5	0.1	0.3	0.1	0.2	0.1
750	0.19	0.9	0.1	0.7	0.1	0.5	0.1	0.4	0.1	0.2	0.1
500	0.13	0.9	0.1	0.8	0.1	0.6	0.1	0.4	0.1	0.2	0.1
300	0.08	1.0	0.1	0.8	0.1	0.6	0.1	0.4	0.1	0.2	0.1
100	0.03	1.1	0.1	0.9	0.1	0.6	0.1	0.4	0.1	0.2	0.1
Ratio N (5:1)											
3000	6	4.4	1.4	3.5	1.1	2.6	0.8	1.8	0.6	0.9	0.3
1500	3	4.5	0.7	3.6	0.6	2.7	0.4	1.8	0.3	0.9	0.1
1000	2	4.6	0.5	3.7	0.4	2.8	0.3	1.9	0.2	0.9	0.1
750	1.5	4.7	0.4	3.8	0.3	2.8	0.2	1.9	0.1	0.9	0.1
500	1	4.8	0.3	3.9	0.2	2.9	0.2	1.9	0.1	1.0	0.1
300	0.6	4.9	0.2	4.0	0.1	3.0	0.1	2.0	0.1	1.0	0.1
100	0.2	5.1	0.1	4.1	0.1	3.1	0.1	2.1	0.1	1.0	0.1
Ratio L (20:1)											
3000	1.5	1.4	0.5	1.1	0.4	0.9	0.3	0.6	0.2	0.3	0.1
1500	0.75	1.5	0.2	1.2	0.2	0.9	0.1	0.6	0.1	0.3	0.1
1000	0.5	1.6	0.2	1.3	0.1	1.0	0.1	0.7	0.1	0.3	0.1
750	0.38	1.7	0.1	1.4	0.1	1.0	0.1	0.7	0.1	0.3	0.1
500	0.25	1.8	0.1	1.4	0.1	1.1	0.1	0.7	0.1	0.4	0.1
300	0.15	1.9	0.1	1.5	0.1	1.1	0.1	0.8	0.1	0.4	0.1
100	0.05	2.1	0.1	1.6	0.1	1.2	0.1	0.8	0.1	0.4	0.1

Performance table HLA 25											
Tr 30x6											
Speed n	Lifting speed	25 kN		20 kN		15 kN		10 kN		5 kN	
		Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
[1/min]	[m/min]										
3000	3	12.8	4.0	10.3	3.2	7.7	2.4	5.1	1.6	2.6	0.8
1500	1.5	13.2	2.1	10.5	1.7	7.9	1.2	5.3	0.8	2.6	0.4
1000	1	13.4	1.4	10.7	1.1	8.0	0.8	5.4	0.6	2.7	0.3
750	0.75	13.7	1.1	10.9	0.9	8.2	0.6	5.5	0.4	2.7	0.2
500	0.5	14.0	0.7	11.2	0.6	8.4	0.4	5.6	0.3	2.8	0.1
300	0.3	14.5	0.5	11.6	0.4	8.7	0.3	5.8	0.2	2.9	0.1
100	0.1	15.3	0.2	12.2	0.1	9.2	0.1	6.1	0.1	3.1	0.1
Ratio N (6:1)											
3000	0.75	4.1	1.3	3.3	1.0	2.4	0.8	1.6	0.5	0.8	0.3
1500	0.38	4.4	0.7	3.5	0.5	2.6	0.4	1.7	0.3	0.9	0.1
1000	0.25	4.6	0.5	3.7	0.4	2.8	0.3	1.8	0.2	0.9	0.1
750	0.19	4.8	0.4	3.9	0.3	2.9	0.2	1.9	0.2	1.0	0.1
500	0.13	5.1	0.3	4.1	0.2	3.1	0.2	2.1	0.1	1.0	0.1
300	0.08	5.5	0.2	4.4	0.1	3.3	0.1	2.2	0.1	1.1	0.1
100	0.03	6.2	0.1	5.0	0.1	3.7	0.1	2.5	0.1	1.2	0.1
Ratio L (24:1)											
3000	0.75	2.9	0.9	2.3	0.7	1.7	0.5	1.1	0.4	0.6	0.2
1500	0.63	3.1	0.5	2.5	0.4	1.8	0.3	1.2	0.2	0.6	0.1
1000	0.42	3.3	0.3	2.6	0.3	2.0	0.2	1.3	0.1	0.7	0.1
750	0.31	3.4	0.3	2.7	0.2	2.0	0.2	1.4	0.1	0.7	0.1
500	0.21	3.6	0.2	2.9	0.2	2.2	0.1	1.5	0.1	0.7	0.1
300	0.13	3.9	0.1	3.1	0.1	2.3	0.1	1.6	0.1	0.8	0.1
100	0.04	4.4	0.1	3.5	0.1	2.6	0.1	1.8	0.1	0.9	0.1
Ratio N (6:1)											
3000	5	9.1	2.8	7.2	2.3	5.4	1.7	3.6	1.1	1.8	0.6
1500	2.5	9.3	1.5	7.4	1.2	5.6	0.9	3.7	0.6	1.9	0.3
1000	1.67	9.5	1.0	7.6	0.8	5.7	0.6	3.8	0.4	1.9	0.2
750	1.25	9.7	0.8	7.7	0.6	5.8	0.5	3.9	0.3	1.9	0.2
500	0.83	9.9	0.5	7.9	0.4	5.9	0.3	4.0	0.2	2.0	0.1
300	0.5	10.2	0.3	8.2	0.3	6.1	0.2	4.1	0.1	2.0	0.1
100	0.17	10.8	0.1	8.6	0.1	6.5	0.1	4.3	0.1	2.2	0.1
Ratio L (24:1)											
3000	1.25	2.9	0.9	2.3	0.7	1.7	0.5	1.1	0.4	0.6	0.2
1500	0.63	3.1	0.5	2.5	0.4	1.8	0.3	1.2	0.2	0.6	0.1
1000	0.42	3.3	0.3	2.6	0.3	2.0	0.2	1.3	0.1	0.7	0.1
750	0.31	3.4	0.3	2.7	0.2	2.0	0.2	1.4	0.1	0.7	0.1
500	0.21	3.6	0.2	2.9	0.2	2.2	0.1	1.5	0.1	0.7	0.1
300	0.13	3.9	0.1	3.1	0.1	2.3	0.1	1.6	0.1	0.8	0.1
100	0.04	4.4	0.1	3.5	0.1	2.6	0.1	1.8	0.1	0.9	0.1
Ratio N (6:1)											
3000	10	17.6	5.5	14.1	4.4	10.6	3.3	7.0	2.2	3.5	1.1
1500	5	18.1	2.8	14.4	2.3	10.8	1.7	7.2	1.1	3.6	0.6
1000	3.33	18.4	1.9	14.7	1.5	11.0	1.2	7.4	0.8	3.7	0.4
750	2.5	18.8	1.5	15.0	1.2	11.3	0.9	7.5	0.6	3.8	0.3
500	1.67	19.3	1.0	15.4	0.8	11.6	0.6	7.7	0.4	3.9	0.2
300	1	19.9	0.6	15.9	0.5	11.9	0.4	8.0	0.3	4.0	0.1
100	0.33	21.0	0.2	16.8	0.2	12.6	0.1	8.4	0.1	4.2	0.1
Ratio L (24:1)											
3000	2.5	5.6	1.8	4.5	1.4	3.3	1.1	2.2	0.7	1.1	0.4
1500	1.25	6.0	0.9	4.8	0.8	3.6	0.6	2.4	0.4	1.2	0.2
1000	0.83	6.3	0.7	5.1	0.5	3.8	0.4	2.5	0.3	1.3	0.1
750	0.63	6.6	0.5	5.3	0.4	4.0	0.3	2.6	0.2	1.3	0.1
500	0.42	7.1	0.4	5.7	0.3	4.2	0.2	2.8	0.1	1.4	0.1
300	0.25	7.6	0.2	6.1	0.2	4.6	0.1	3.0	0.1	1.5	0.1
100	0.08	8.5	0.1	6.8	0.1						

HLA

Performance tables

Performance table HLA 50

		Tr 50x8									
Speed n	Lifting speed	50 kN		40 kN		30 kN		20 kN		10 kN	
		Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
[1/min]	[m/min]										
3000	3.43	33.7	10.6	27.0	8.5	20.2	6.4	13.5	4.2	6.7	2.1
1500	1.71	34.6	5.4	27.7	4.3	20.7	3.3	13.8	2.2	6.9	1.1
1000	1.14	35.4	3.7	28.3	3.0	21.2	2.2	14.1	1.5	7.1	0.7
750	0.86	36.0	2.8	28.8	2.3	21.6	1.7	14.4	1.1	7.2	0.6
500	0.57	37.1	1.9	29.7	1.6	22.3	1.2	14.8	0.8	7.4	0.4
300	0.34	38.7	1.2	30.9	1.0	23.2	0.7	15.5	0.5	7.7	0.2
100	0.11	41.7	0.4	33.3	0.3	25.0	0.3	16.7	0.2	8.3	0.1
Ratio N (7:1)											
3000	0.86	11.0	3.5	8.8	2.8	6.6	2.1	4.4	1.4	2.2	0.7
1500	0.43	11.6	1.8	9.3	1.5	6.9	1.1	4.6	0.7	2.3	0.4
1000	0.29	12.3	1.3	9.8	1.0	7.4	0.8	4.9	0.5	2.5	0.3
750	0.21	12.9	1.0	10.3	0.8	7.8	0.6	5.2	0.4	2.6	0.2
500	0.14	13.9	0.7	11.1	0.6	8.4	0.4	5.6	0.3	2.8	0.1
300	0.09	15.3	0.5	12.2	0.4	9.2	0.3	6.1	0.2	3.1	0.1
100	0.03	17.8	0.2	14.2	0.1	10.7	0.1	7.1	0.1	3.6	0.1
Ratio L (28:1)											
3000	0.86	11.0	3.5	8.8	2.8	6.6	2.1	4.4	1.4	2.2	0.7
1500	0.43	11.6	1.8	9.3	1.5	6.9	1.1	4.6	0.7	2.3	0.4
1000	0.29	12.3	1.3	9.8	1.0	7.4	0.8	4.9	0.5	2.5	0.3
750	0.21	12.9	1.0	10.3	0.8	7.8	0.6	5.2	0.4	2.6	0.2
500	0.14	13.9	0.7	11.1	0.6	8.4	0.4	5.6	0.3	2.8	0.1
300	0.09	15.3	0.5	12.2	0.4	9.2	0.3	6.1	0.2	3.1	0.1
100	0.03	17.8	0.2	14.2	0.1	10.7	0.1	7.1	0.1	3.6	0.1

Performance table HLA 100

		Tr 80x14									
Speed n	Lifting speed	100 kN		80 kN		60 kN		40 kN		20 kN	
		Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
[1/min]	[m/min]										
3000	5.25	95.9	30.1	76.7	24.1	57.5	18.1	38.4	12.1	19.2	6.0
1500	2.63	97.8	15.4	78.2	12.3	58.7	9.2	39.1	6.1	19.6	3.1
1000	1.75	99.9	10.5	79.9	8.4	59.9	6.3	39.9	4.2	20.0	2.1
750	1.31	101.6	8.0	81.3	6.4	61.0	4.8	40.7	3.2	20.3	1.6
500	0.88	104.8	5.5	83.8	4.4	62.9	3.3	41.9	2.2	21.0	1.1
300	0.53	109.5	3.4	87.6	2.8	65.7	2.1	43.8	1.4	21.9	0.7
100	0.18	120.1	1.3	96.1	1.0	72.0	0.8	48.0	0.5	24.0	0.3
Ratio N (8:1)											
3000	1.31	30.5	9.6	24.4	7.7	18.3	5.8	12.2	3.8	6.1	1.9
1500	0.66	32.3	5.1	25.8	4.1	19.4	3.0	12.9	2.0	6.5	1.0
1000	0.44	34.1	3.6	27.3	2.9	20.5	2.1	13.7	1.4	6.8	0.7
750	0.33	35.7	2.8	28.5	2.2	21.4	1.7	14.3	1.1	7.1	0.6
500	0.22	38.7	2.0	30.9	1.6	23.2	1.2	15.5	0.8	7.7	0.4
300	0.13	43.0	1.4	34.4	1.1	25.8	0.8	17.2	0.5	8.6	0.3
100	0.04	52.2	0.5	41.8	0.4	31.3	0.3	20.9	0.2	10.4	0.1
Ratio L (32:1)											
3000	1.31	30.5	9.6	24.4	7.7	18.3	5.8	12.2	3.8	6.1	1.9
1500	0.66	32.3	5.1	25.8	4.1	19.4	3.0	12.9	2.0	6.5	1.0
1000	0.44	34.1	3.6	27.3	2.9	20.5	2.1	13.7	1.4	6.8	0.7
750	0.33	35.7	2.8	28.5	2.2	21.4	1.7	14.3	1.1	7.1	0.6
500	0.22	38.7	2.0	30.9	1.6	23.2	1.2	15.5	0.8	7.7	0.4
300	0.13	43.0	1.4	34.4	1.1	25.8	0.8	17.2	0.5	8.6	0.3
100	0.04	52.2	0.5	41.8	0.4	31.3	0.3	20.9	0.2	10.4	0.1

Ku 40x10

		Ku 40x10									
Speed n	Lifting speed	50 kN		40 kN		30 kN		20 kN		10 kN	
		Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
[1/min]	[m/min]										
3000	4.29	15.6	4.9	12.5	3.9	9.3	2.9	6.2	2.0	3.1	1.0
1500	2.14	16.0	2.5	12.8	2.0	9.6	1.5	6.4	1.0	3.2	0.5
1000	1.43	16.3	1.7	13.1	1.4	9.8	1.0	6.5	0.7	3.3	0.3
750	1.07	16.6	1.3	13.3	1.0	10.0	0.8	6.6	0.5	3.3	0.3
500	0.71	17.1	0.9	13.7	0.7	10.3	0.5	6.9	0.4	3.4	0.2
300	0.43	17.9	0.6	14.3	0.4	10.7	0.3	7.1	0.2	3.6	0.1
100	0.14	19.3	0.2	15.4	0.2	11.6	0.1	7.7	0.1	3.9	0.1
Ratio N (7:1)											
3000	1.07	5.1	1.6	4.1	1.3	3.1	1.0	2.0	0.6	1.0	0.3
1500	0.54	5.4	0.8	4.3	0.7	3.2	0.5	2.1	0.3	1.1	0.2
1000	0.36	5.7	0.6	4.5	0.5	3.4	0.4	2.3	0.2	1.1	0.1
750	0.27	6.0	0.5	4.8	0.4	3.6	0.3	2.4	0.2	1.2	0.1
500	0.18	6.4	0.3	5.1	0.3	3.9	0.2	2.6	0.1	1.3	0.1
300	0.11	7.1	0.2	5.6	0.2	4.2	0.1	2.8	0.1	1.4	0.1
100	0.04	8.2	0.1	6.6	0.1	4.9	0.1	3.3	0.1	1.6	0.1
Ratio L (28:1)											
3000	1.07	5.1	1.6	4.1	1.3	3.1	1.0	2.0	0.6	1.0	0.3
1500	0.54	5.4	0.8	4.3	0.7	3.2	0.5	2.1	0.3	1.1	0.2
1000	0.36	5.7	0.6	4.5	0.5	3.4	0.4	2.3	0.2	1.1	0.1
750	0.27	6.0	0.5	4.8	0.4	3.6	0.3	2.4	0.2	1.2	0.1
500	0.18	6.4	0.3	5.1	0.3	3.9	0.2	2.6	0.1	1.3	0.1
300	0.11	7.1	0.2	5.6	0.2	4.2	0.1	2.8	0.1	1.4	0.1
100	0.04	8.2	0.1	6.6	0.1	4.9	0.1	3.3	0.1	1.6	0.1

Ku 63x10

		Ku 63x10									
Speed n	Lifting speed	100 kN		80 kN		60 kN		40 kN		20 kN	
		Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
[1/min]	[m/min]										
3000	3.75	28.0	8.8	22.4	7.0	16.8	5.3	11.2	3.5	5.6	1.8
1500	1.88	28.6	4.5	22.9	3.6	17.1	2.7	11.4	1.8	5.7	0.9
1000	1.25	29.2	3.1	23.4	2.4	17.5	1.8	11.7	1.2	5.8	0.6
750	0.94	29.7	2.3	23.8	1.9	17.8	1.4	11.9	0.9	5.9	0.5
500	0.63	30.6	1.6	24.5	1.3	18.4	1.0	12.3	0.6	6.1	0.3
300	0.38	32.0	1.0	25.6	0.8	19.2	0.6	12.8	0.4	6.4	0.2
100	0.13	35.1	0.4	28.1	0.3	21.1	0.2	14.0	0.1	7.0	0.1
Ratio N (8:1)											
3000	0.94	8.9	2.8	7.1	2.2	5.4	1.7	3.6	1.1	1.8	0.6
1500	0.47	9.4	1.5	7.6	1.2	5.7	0.9	3.8	0.6	1.9	0.3
1000	0.31	10.0	1.0	8.0	0.8	6.0	0.6	4.0	0.4	2.0	0.2
750	0.23	10.4	0.8	8.3	0.7	6.3	0.5	4.2	0.3	2.1	0.2
500	0.16	11.3	0.6	9.0	0.5	6.8	0.4	4.5	0.2	2.3	0.1
300	0.09	12.6	0.4	10.1	0.3	7.5	0.2	5.0	0.2	2.5	0.1
100	0.03	15.3	0.2	12.2	0.1	9.2	0.1	6.1	0.1	3.1	0.1
Ratio L (32:1)											
3000	0.94	8.9	2.8	7.1	2.2	5.4	1.7	3.6	1.1	1.8	0.6
1500	0.47	9.4	1.5	7.6	1.2	5.7	0.9	3.8	0.6	1.9	0.3
1000	0.31	10.0	1.0	8.0	0.8	6.0	0.6	4.0	0.4	2.0	0.2
750	0.23	10.4	0.8	8.3	0.7	6.3	0.5	4.2	0.3	2.1	0.2
500	0.16	11.3	0.6	9.0	0.5	6.8	0.4	4.5	0.2	2.3	0.1
300	0.09	12.6	0.4	10.1	0.3	7.5	0.2	5.0	0.2	2.5	0.1
100	0.03	15.3	0.2	12.2	0.1	9.2	0.1	6.1	0.1	3.1	0.1

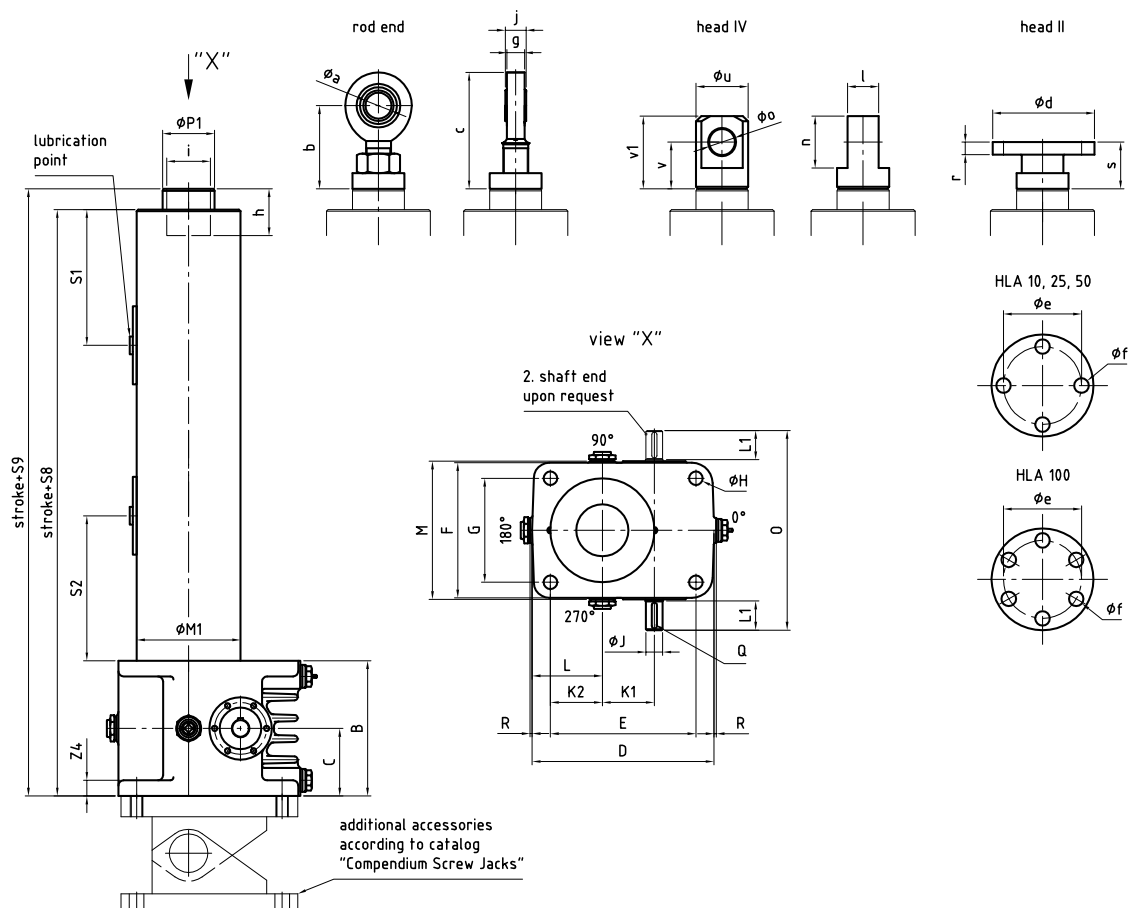
Ku 40x20

		Ku 40x20									
Speed n	Lifting speed	50 kN		40 kN		30 kN		20 kN		10 kN	
		Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
[1/min]	[m/min]										
3000	8.57	30.0	9.4	24.0	7.6	18.0	5.7	12.0	3.8	6.0	1.9
1500	4.29	30.8	4.8	24.7	3.9	18.5	2.9	12.3	1.9	6.2	1.0
1000	2.86	31.5	3.3	25.2	2.6	18.9	2.0	12.6	1.3	6.3	0.7
750	2.14	32.1	2.5	25.7	2.0	19.2	1.5	12.8	1.0	6.4	0.5
500	1.43	33.1	1.7	26.5	1.4	19.8	1.0	13.2	0.7	6.6	0.3
300	0.86	34.5	1.1	27.6	0.9	20.7	0.6	13.8	0.4	6.9	0.2
100											

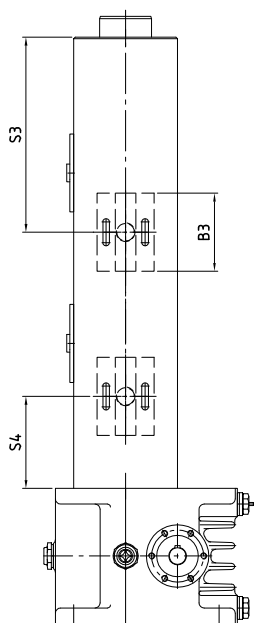
HLA

Technical drawings

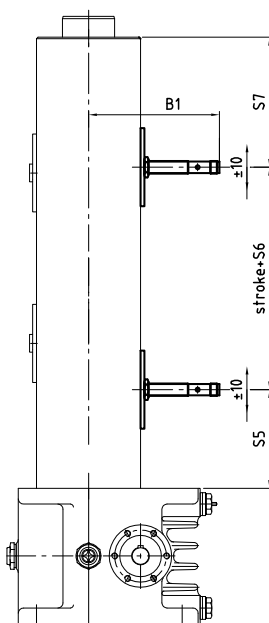
Technical drawings



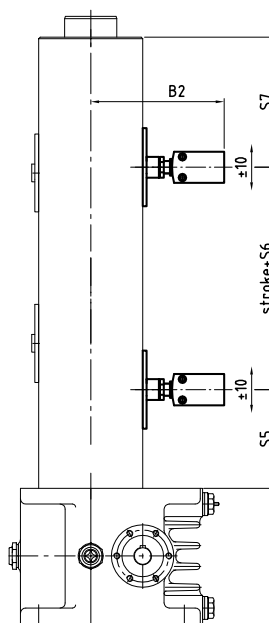
wear control
(in combination with safety nut only)



inductive limit switch M12x1
option Vi



mechanical limit switch M12x1
option Vm



CAD & go



HLA

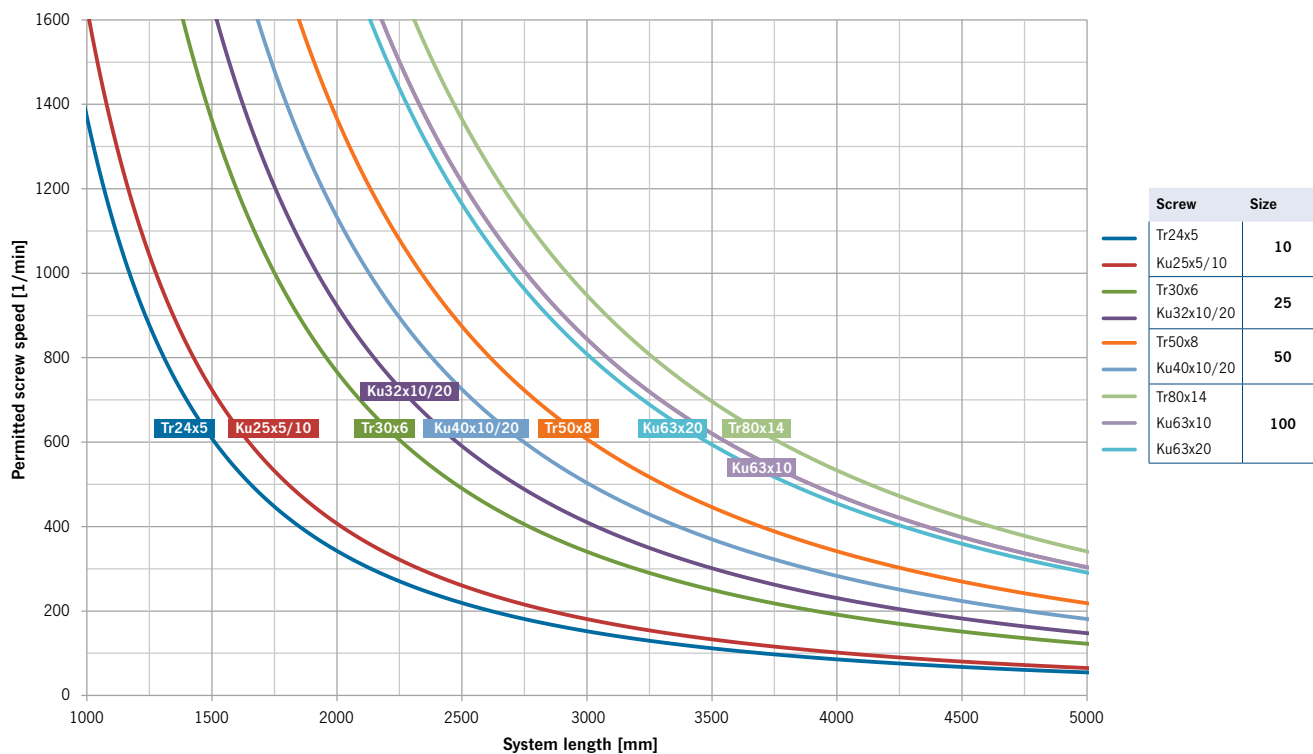
Dimensions

Dimensions HLA				
Size	HLA 10	HLA 25	HLA 50	HLA 100
Dimensions [mm]				
B	105	130	160	200
C	52.5	65	80	100
D	138	175	235	275
E	110	140	190	220
F	105	130	160	200
G	80	100	120	150
Ø H	9	13	17	21
h	20	45	63	54
i	M 33 x 2	M 42 x 2	M 60 x 2	M 95 x 3
Ø J k6	14	16	24	32
K 1	36	50	63	80
K 2	40	50	70	75
L	54	67.5	92.5	102.5
L 1	18	28	36	58
M	100	133	163	204
Ø M 1	70	100	130	170
O	140	192	238	322
Ø P 1	40	50	70	110
Q - DIN 6885 A	5 x 5 x 16	5 x 5 x 25	8 x 7 x 32	10 x 8 x 50
R	2	2	2	2
S 1 (Lubrication)	100	130.5	161.5	206
S 2 (Lubrication)	125	139.5	158.5	274
S 8	330	400	480	680
S 9	350	420	500	700
Z 4	12	15	20	25
Rod end				
Ø a H7	17	25	35	60
b	60	80	125	160
c	83	112	166	227.5
g	10.6	17	21	38
j	14	20	25	44
Head type IV				
l-0.2	25	30	40	75
n	40	50	70	120
Ø o H7	20	25	35	60
Ø u	40	50	65	110
v	40	45	65	90
v 1	60	70	100	150
Head type II				
Ø d / Ø e / Ø f	72 / 50 / 9	98 / 75 / 14	122 / 85 / 17	182 / 135 / 26
r / s	10 / 37	12 / 45	18 / 65	25 / 62
Wear control				
B 3	75	75	75	75
S 3 / S 4	142 / 83	187.5 / 88.5	232.5 / 87	322.5 / 157.5
Limit switch inductive/mechanical				
B 1 ± 1.5	111	126	138.5	156
B 2 ± 1.5	112	128	141	158.5
S 5 / S 6 / S 7	87.5 / 25 / 112.5	95 / 50 / 125	92 / 70 / 158	162.5 / 165 / 152.5

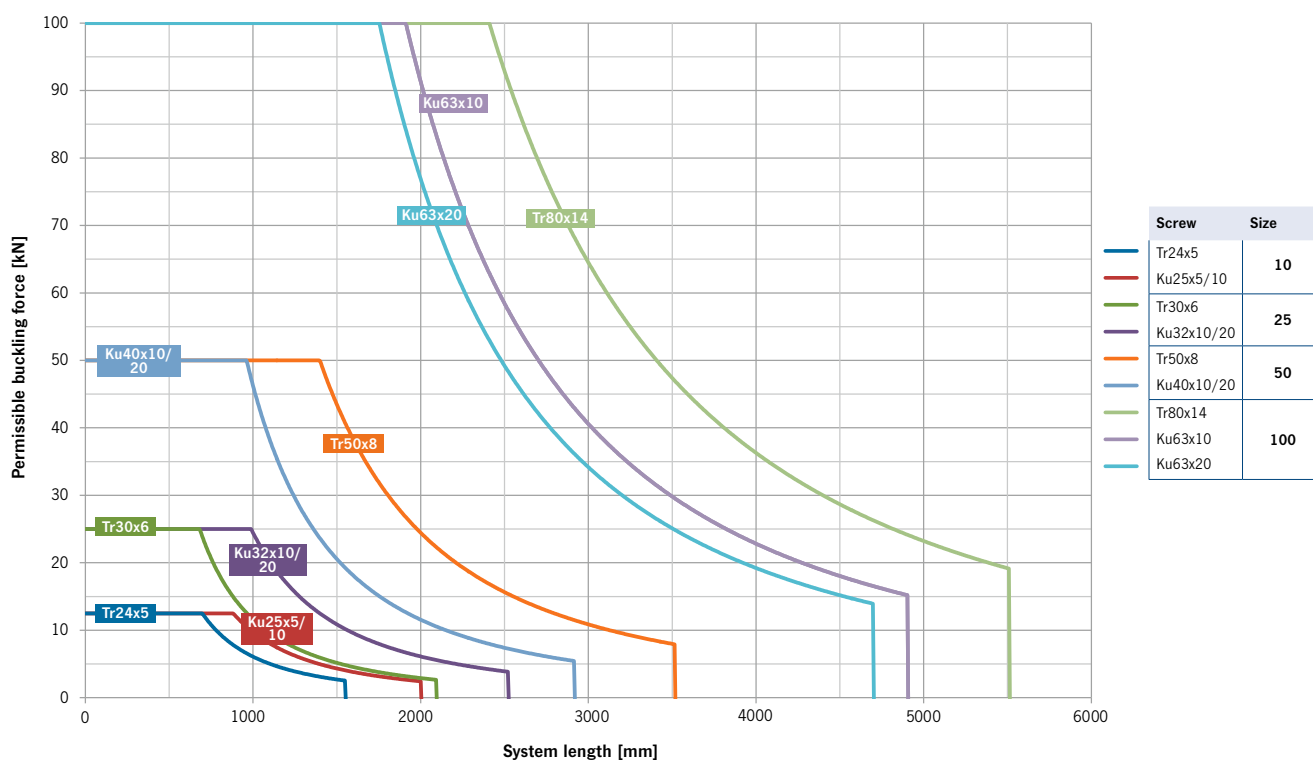


HLA Diagrams

Critical screw speed HLA

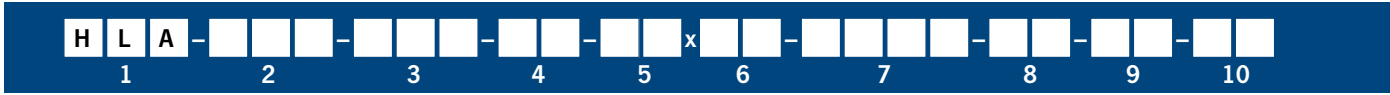


Buckling HLA



HLA

Order code



No.	Explanation	
1	Series	HLA
2	Size	10 / 25 / 50 / 100
3	Mounting position	M1A / M1B / M2A / M2B / M3B / M4A M4B / M3A / M5A / M5B / M6A / M6B
4	Screw	Tr = Trapezoidal screw Ku = Ball screw (Ku)
5	Screw diameter in mm	
6	Pitch in mm	
7	Stroke length in mm	
8	Head	GK = Rod end II = Head plate IV = Clevis
9	Shaft drive	01 = Both sides 02 = Left side 03 = Right side
10	Accessories	01 = Mechanical limit switch 02 = Swivel plate 03 = Inductive limit switch 04 = Anti-turn device



PHOENIX

Telescopic lifting column

Design features

Functions

- Absorbing high compressive and tensile forces up to 25 kN
- Integrated linear guide
- Closed and low-maintenance design
- Eccentric load application permitted
- Self-locking on standstill (with single-stage trapezoidal thread)*
- Duty cycle of 20%/h or 15%/10 min

Basic equipment

- Short safety nut (for trapezoidal and AGS threads)
- End position limit
 - Inductive limit switches (single-stage lifting columns)
 - Gear limit switches (multi-stage lifting columns)

Options

- Shaft encoder
- Special head or foot plate
- Direct attachment of IEC motors
- Ball screws (single-stage columns)
- Multi-start screws
- Specific models also in special design with a safety nut that can be deactivated electrically
- Special customer wishes

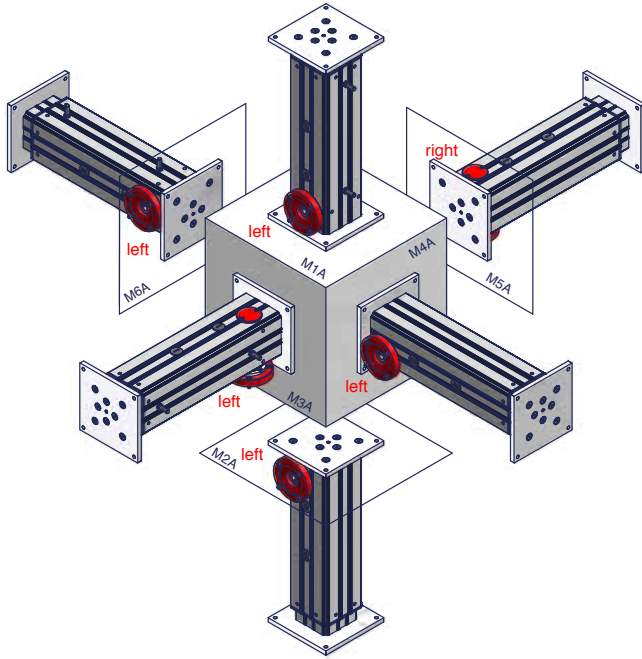


*Vibrations, sliding conditions can influence self-locking.
We also recommend use of a brake motor.

PHOENIX

Mounting positions and schematic diagrams

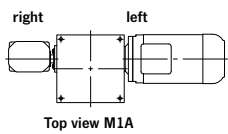
Mounting positions



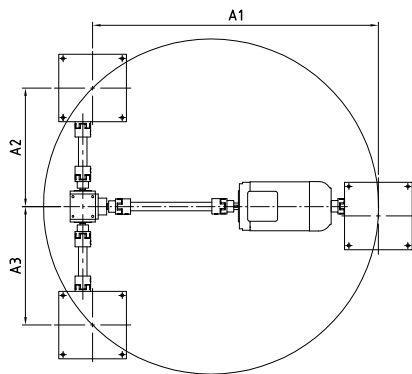
Schematic diagram

Lifting column, mechanically synchronized

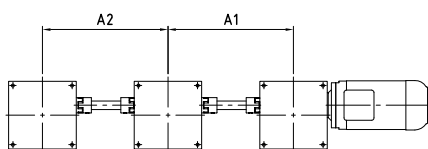
Schematic view 1.1



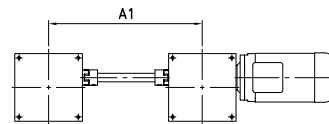
Schematic view 3.1



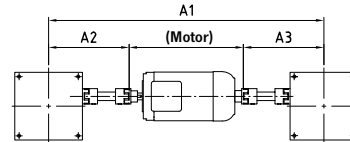
Schematic view 3.2



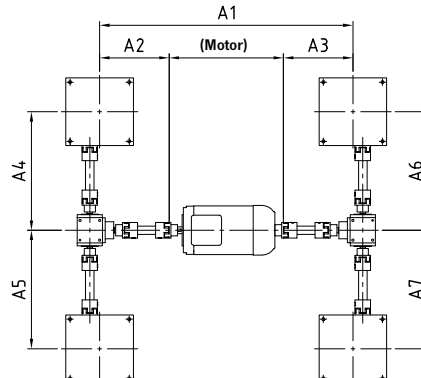
Schematic view 2.1











Schematic view 2.2



Schematic view 4.1



-  Lifting column
-  Connecting shaft
-  Coupling
-  Standard motor
-  Pillow block
-  Bevel gear box
-  IEC flange
-  Gear limit switch

PHOENIX

Selection table

Selection table PHOENIX						
Series	Single-stage				Multi-stage	
	PH34 M1	PH45 M2	PH56 M3	PH56 G15	PH46 M3	PH 36 M3
Gearbox type	M	M	M	G	M	M
Number of levels	single-stage	single-stage	single-stage	single-stage	two-stage	three-stage
F _{dyn} [kN]	5	10	25	15	10	8
F _{stat} [kN]	5	10	25	15	25	25
Standard screw	T24x5	T30x6	T36x6	T30x6	A30x32	A30x32
Ball screw (Ku)	K20x20	K25x25	K40x40	K32x20	-	-
Ratio N	4	4	6	2	6	6
Ratio L	16	16	24	3	24	24
Max. power 20 % at ambient temperature 20 °C [kW]	0.2	0.3	0.5	1	0.5	0.5
Max. power 10 % at ambient temperature 20 °C [kW]	0.42	0.6	1.1	1.3	1.1	1.1
Overall efficiency N	0.29	0.28	0.24	See diagram efficiency, page 41	0.43	0.38
Overall efficiency L	0.22	0.2	0.17		0.3	0.27
Max. torque on the input shaft [Nm]	3.4	7.1	18	50/19*	18	18
Max. speed [1/min]	1500	1500	1500	3000	1500	1500
Weight empty [kg]	14	18	26	30	31	35
Weight per 100 mm stroke [kg]	2.6	3.4	4	3.6	3	2.8

* Ratio N/L

Gearbox

M: Worm gear

High ratio possible

Low noise

High load capacity

Economical

G: Bevel gear

Permanently resilient

Multiple drives can be implemented

Good efficiency

Low wear

Nearly unchanged twist play

Screw types

T: Trapezoidal screw (Tr)

Self-locking*

Economical

K: Ball screw (Ku)

High efficiency

A: AGS screw (AGS)

Special thread for use in multi-stage screw jacks element



Tr screw



Ball screw (Ku)



AGS screw

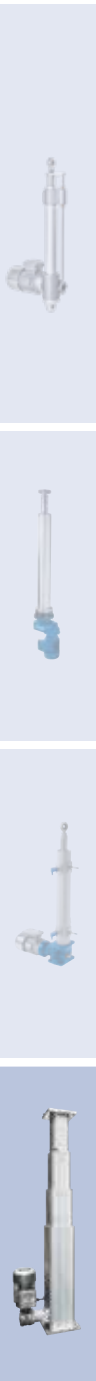
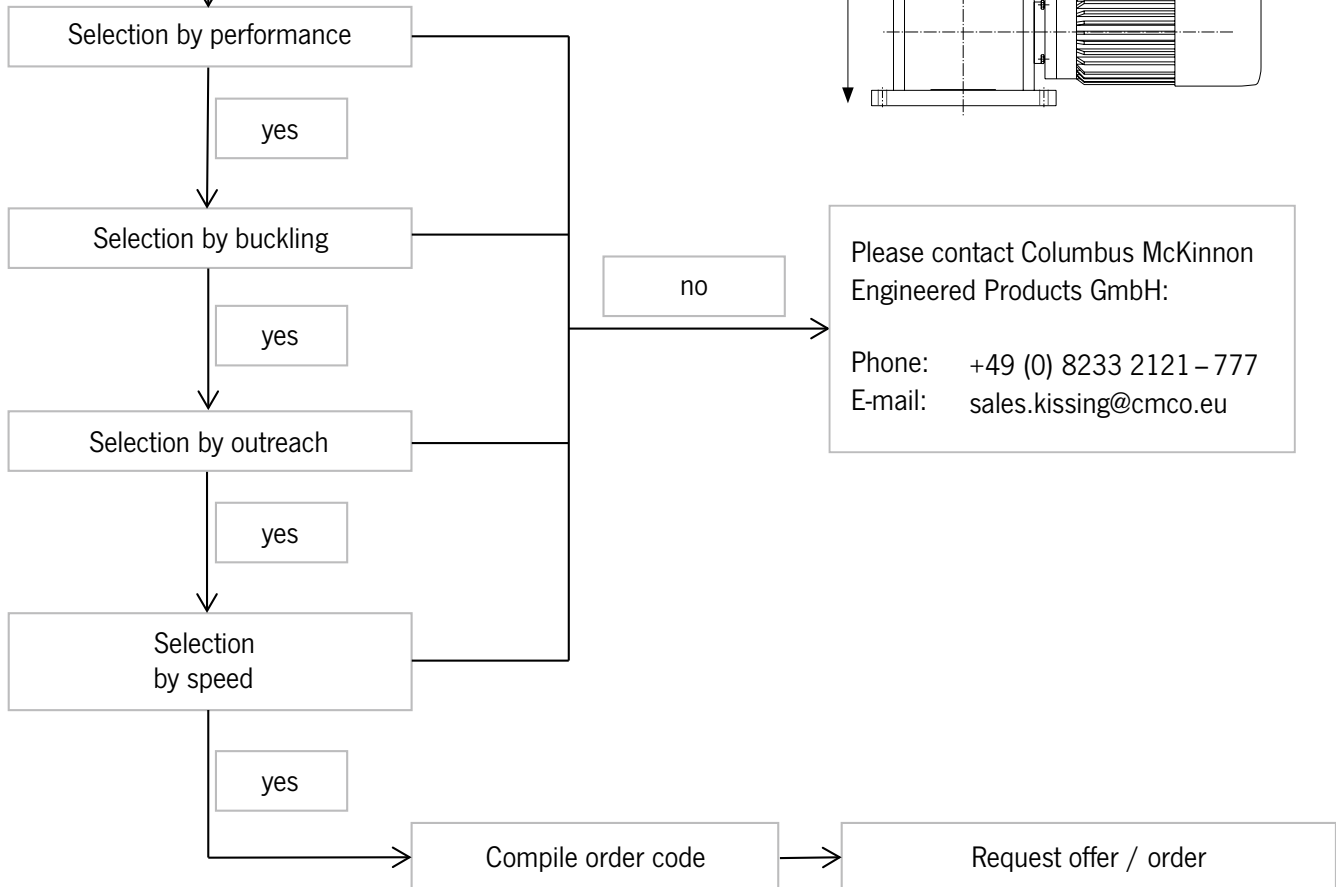
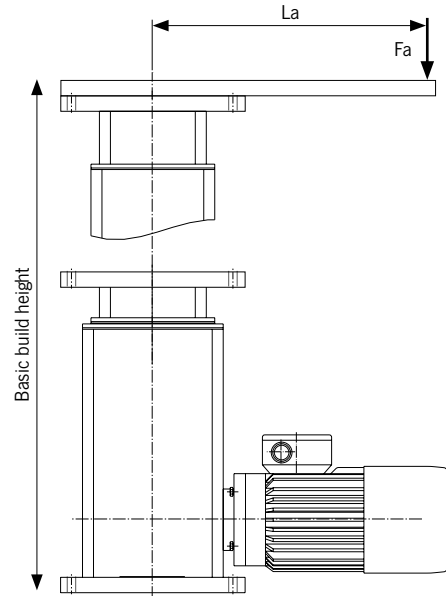
PHOENIX

Flow chart

Flow chart

Specified values:

- F_{dyn} : Lifting load [kN]
- F_{stat} : Static load [kN]
- v : Desired speed [m/min]
- ED: Duty cycle [%]
- GBH: Basic build height [mm]
(height in the retracted condition)
- La : Outreach [mm]
(Distance of the load center of gravity from the middle of the column)



PHOENIX

Performance tables SINGLE-STAGE – trapezoidal screw

Performance table PHOENIX PH34 M1, Tr 24x5

Speed n	Lifting speed		5 kN		4 kN		3 kN		2.5 kN		2 kN		1.5 kN		1 kN	
	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L
			4 Nm	1 Nm	3 Nm	1 Nm	2 Nm	1 Nm	2 Nm	1 Nm	2 Nm	1 Nm	1 Nm	1 Nm	1 Nm	0 Nm
[1/min]	[m/min]		P [kW]													
1500	1.88	0.47	0.6	0.2	0.5	0.2	0.4	0.1	0.3	0.1	0.3	0.1	0.2	0.1	0.2	0.1
1000	1.25	0.31	0.4	0.1	0.3	0.1	0.3	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1
750	0.94	0.23	0.3	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
600	0.75	0.19	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
500	0.63	0.16	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
300	0.38	0.09	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
100	0.13	0.03	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50	0.06	0.02	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Performance table PHOENIX PH45 M2, Tr 30x6

Speed n	Lifting speed		10 kN		8 kN		6 kN		4 kN		3 kN		2 kN		1 kN	
	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L
			9 Nm	3 Nm	7 Nm	3 Nm	6 Nm	2 Nm	4 Nm	1 Nm	3 Nm	1 Nm	2 Nm	1 Nm	1 Nm	1 Nm
[1/min]	[m/min]		P [kW]													
1500	2.25	0.56	1.4	0.5	1.1	0.4	0.9	0.3	0.6	0.2	0.5	0.2	0.3	0.1	0.2	0.1
1000	1.5	0.38	0.9	0.3	0.8	0.3	0.6	0.2	0.4	0.1	0.3	0.1	0.2	0.1	0.1	0.1
750	1.13	0.28	0.7	0.2	0.6	0.2	0.4	0.1	0.3	0.1	0.2	0.1	0.2	0.1	0.1	0.1
600	0.9	0.23	0.6	0.2	0.5	0.2	0.3	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1
500	0.75	0.19	0.5	0.2	0.4	0.1	0.3	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1
300	0.45	0.11	0.3	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
100	0.15	0.04	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50	0.08	0.02	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Performance table PHOENIX PH56 M3, Tr 36x6

Speed n	Lifting speed		25 kN		20 kN		15 kN		10 kN		5 kN		2.5 kN		1 kN	
	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L
			17 Nm	6 Nm	13 Nm	5 Nm	10 Nm	4 Nm	7 Nm	3 Nm	4 Nm	1 Nm	2 Nm	1 Nm	1 Nm	0 Nm
[1/min]	[m/min]		P [kW]													
1500	1.5	0.38	2.6	0.9	2.1	0.8	1.6	0.6	1.1	0.4	0.6	0.2	0.3	0.1	0.2	0.1
1000	1	0.25	1.7	0.6	1.4	0.5	1.1	0.4	0.7	0.3	0.4	0.1	0.2	0.1	0.1	0.1
750	0.75	0.19	1.3	0.5	1.1	0.4	0.8	0.3	0.5	0.2	0.3	0.1	0.2	0.1	0.1	0.1
600	0.6	0.15	1	0.4	0.8	0.3	0.6	0.2	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.1
500	0.5	0.13	0.9	0.3	0.7	0.3	0.5	0.2	0.4	0.1	0.2	0.1	0.1	0.1	0.1	0.1
300	0.3	0.08	0.5	0.2	0.4	0.2	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
100	0.1	0.03	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50	0.05	0.01	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Performance table PHOENIX PH56 G15, Tr 30x6

Speed n	Lifting speed		15 kN		12.5 kN		10 kN		7.5 kN		5 kN		2.5 kN		1 kN	
	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L
			20 Nm	13 Nm	16 Nm	11 Nm	13 Nm	9 Nm	10 Nm	7 Nm	7 Nm	5 Nm	4 Nm	3 Nm	2 Nm	1 Nm
[1/min]	[m/min]		P [kW]													
3000	9	6	6.6	4.6	5.6	3.9	4.6	3.2	3.6	2.6	2.6	1.9	1.7	1.3	1.1	0.9
2250	6.75	4.5	5	3.4	4.2	2.9	3.5	2.4	2.7	1.9	2	1.4	1.2	0.9	0.8	0.7
1500	4.5	3	3.3	2.3	2.8	1.9	2.3	1.6	1.8	1.3	1.3	1	0.8	0.6	0.5	0.4
1000	3	2	2.2	1.5	1.9	1.3	1.5	1.1	1.2	0.9	0.9	0.6	0.6	0.4	0.4	0.3
750	2.25	1.5	1.7	1.1	1.4	1	1.2	0.8	0.9	0.6	0.7	0.5	0.4	0.3	0.3	0.2
500	1.5	1	1.1	0.8	0.9	0.6	0.8	0.5	0.6	0.4	0.4	0.3	0.3	0.2	0.2	0.1
300	0.9	0.6	0.7	0.5	0.6	0.4	0.5	0.3	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1
100	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Max. duty cycle at 20 °C ambient temperature: Operating mode S3 20% – 60 min. Operating mode S3 10% – 60 min. static only (dynamic not allowed)

PHOENIX

Performance tables MULTI-STAGE – AGS screw

Performance table PHOENIX PH46 M3, AGS32

Speed n	Lifting speed		10 kN		8 kN		6 kN		4 kN		3 kN		2 kN		1 kN	
	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L
			21 Nm	8 Nm	17 Nm	6 Nm	13 Nm	5 Nm	9 Nm	3 Nm	7 Nm	3 Nm	5 Nm	2 Nm	3 Nm	1 Nm
[1/min]	[m/min]		P [kW]													
1500	8	2	3.3	1.2	2.6	0.9	2	0.7	1.4	0.5	1.1	0.4	0.8	0.3	0.5	0.2
1000	5.33	1.33	2.2	0.8	1.8	0.6	1.3	0.5	0.9	0.3	0.7	0.3	0.5	0.2	0.3	0.1
750	4	1	1.6	0.6	1.3	0.5	1	0.4	0.7	0.3	0.5	0.2	0.4	0.1	0.2	0.1
600	3.2	0.8	1.3	0.5	1.1	0.4	0.8	0.3	0.6	0.2	0.4	0.2	0.3	0.1	0.2	0.1
500	2.67	0.67	1.1	0.4	0.9	0.3	0.7	0.2	0.5	0.2	0.4	0.1	0.3	0.1	0.2	0.1
300	1.6	0.4	0.7	0.2	0.5	0.2	0.4	0.1	0.3	0.1	0.2	0.1	0.2	0.1	0.1	0.1
100	0.53	0.13	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50	0.27	0.07	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Performance table PHOENIX PH36 M3, AGS32

Speed n	Lifting speed		8 kN		7 kN		6 kN		5 kN		4 kN		2 kN		1 kN	
	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L
			19 Nm	7 Nm	17 Nm	6 Nm	15 Nm	5 Nm	12 Nm	4 Nm	10 Nm	4 Nm	6 Nm	2 Nm	3 Nm	1 Nm
[1/min]	[m/min]		P [kW]													
1500	8	2	3	1.1	2.6	0.9	2.3	0.8	1.9	0.7	1.6	0.6	0.9	0.3	0.5	0.2
1000	5.33	1.33	2	0.7	1.7	0.6	1.5	0.5	1.3	0.5	1	0.4	0.6	0.2	0.3	0.1
750	4	1	1.5	0.5	1.3	0.5	1.1	0.4	1	0.3	0.8	0.3	0.4	0.2	0.3	0.1
600	3.2	0.8	1.2	0.4	1	0.4	0.9	0.3	0.8	0.3	0.6	0.2	0.3	0.1	0.2	0.1
500	2.67	0.67	1	0.4	0.9	0.3	0.8	0.3	0.6	0.2	0.5	0.2	0.3	0.1	0.2	0.1
300	1.6	0.4	0.6	0.2	0.5	0.2	0.5	0.2	0.4	0.1	0.3	0.1	0.2	0.1	0.1	0.1
100	0.53	0.13	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50	0.27	0.07	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Max. duty cycle at 20 °C ambient temperature: Operating mode S3 20% – 60 min. Operating mode S3 10% – 60 min. static only (dynamic not allowed)

PHOENIX

Performance tables SINGLE-STAGE – ball screw (Ku)

Performance table PHOENIX PH34 M1, Ku20x20

Speed n	Lifting speed		5 kN		4 kN		3 kN		2.5 kN		2 kN		1.5 kN		1 kN	
	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L
			7 Nm	2 Nm	6 Nm	2 Nm	5 Nm	2 Nm	4 Nm	1 Nm	3 Nm	1 Nm	3 Nm	1 Nm	2 Nm	1 Nm
[1/min]	[m/min]		P [kW]													
1500	7.5	1.88	1.1	0.4	0.9	0.3	0.7	0.2	0.6	0.2	0.5	0.2	0.4	0.1	0.3	0.1
1000	5	1.25	0.8	0.2	0.6	0.2	0.5	0.2	0.4	0.1	0.3	0.1	0.3	0.1	0.2	0.1
750	3.75	0.94	0.6	0.2	0.5	0.2	0.4	0.1	0.3	0.1	0.3	0.1	0.2	0.1	0.2	0.1
600	3	0.75	0.5	0.1	0.4	0.1	0.3	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1
500	2.5	0.63	0.4	0.1	0.3	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1
300	1.5	0.38	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
100	0.5	0.13	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50	0.25	0.06	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Performance table PHOENIX PH45 M2, Ku25x25

Speed n	Lifting speed		10 kN		8 kN		6 kN		4 kN		3 kN		2 kN		1 kN	
	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L
			18 Nm	6 Nm	14 Nm	5 Nm	11 Nm	4 Nm	8 Nm	3 Nm	6 Nm	2 Nm	4 Nm	2 Nm	3 Nm	1 Nm
[1/min]	[m/min]		P [kW]													
1500	9.38	2.34	2.8	0.9	2.2	0.8	1.7	0.6	1.2	0.4	0.9	0.3	0.7	0.2	0.4	0.1
1000	6.25	1.56	1.8	0.6	1.5	0.5	1.1	0.4	0.8	0.3	0.6	0.2	0.4	0.2	0.3	0.1
750	4.69	1.17	1.4	0.5	1.1	0.4	0.9	0.3	0.6	0.2	0.5	0.2	0.3	0.1	0.2	0.1
600	3.75	0.94	1.1	0.4	0.9	0.3	0.7	0.2	0.5	0.2	0.4	0.1	0.3	0.1	0.2	0.1
500	3.13	0.78	0.9	0.3	0.7	0.3	0.6	0.2	0.4	0.1	0.3	0.1	0.2	0.1	0.1	0.1
300	1.88	0.47	0.6	0.2	0.4	0.2	0.3	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1
100	0.63	0.16	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50	0.31	0.08	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Performance table PHOENIX PH56 M3, Ku40x40

Speed n	Lifting speed		25 kN		20 kN		15 kN		10 kN		5 kN		2.5 kN		1 kN	
	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L
			46 Nm	17 Nm	37 Nm	13 Nm	28 Nm	10 Nm	19 Nm	7 Nm	10 Nm	4 Nm	6 Nm	2 Nm	3 Nm	1 Nm
[1/min]	[m/min]		P [kW]													
1500	10	2.5	7.2	2.6	5.8	2.1	4.4	1.6	3	1.1	1.6	0.6	0.9	0.3	0.4	0.2
1000	6.67	1.67	4.8	1.7	3.9	1.4	2.9	1.1	2	0.7	1	0.4	0.6	0.2	0.3	0.1
750	5	1.25	3.6	1.3	2.9	1	2.2	0.8	1.5	0.5	0.8	0.3	0.4	0.2	0.2	0.1
600	4	1	2.9	1	2.3	0.8	1.8	0.6	1.2	0.4	0.6	0.2	0.3	0.1	0.2	0.1
500	3.33	0.83	2.4	0.9	1.9	0.7	1.5	0.5	1	0.4	0.5	0.2	0.3	0.1	0.1	0.1
300	2	0.5	1.4	0.5	1.2	0.4	0.9	0.3	0.6	0.2	0.3	0.1	0.2	0.1	0.1	0.1
100	0.67	0.17	0.5	0.2	0.4	0.1	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50	0.33	0.08	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

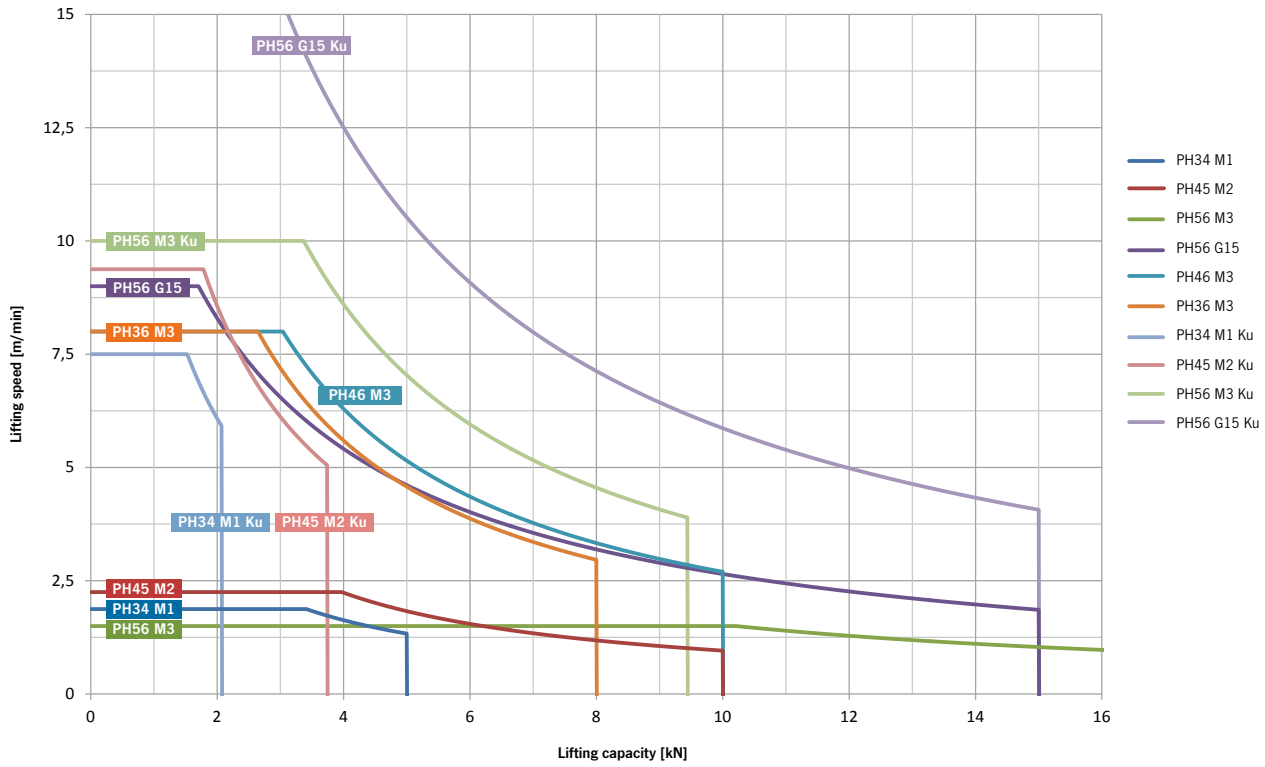
Performance table PHOENIX PH56 G15, Ku32x20

Speed n	Lifting speed		15 kN		12.5 kN		10 kN		7.5 kN		5 kN		2.5 kN		1 kN	
	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L
			31 Nm	20 Nm	26 Nm	17 Nm	21 Nm	14 Nm	16 Nm	11 Nm	11 Nm	7 Nm	6 Nm	4 Nm	3 Nm	2 Nm
[1/min]	[m/min]		P [kW]													
2250		15		5.2		4.4		3.6		2.8		2.1		1.3		0.8
1500	15	10	5	3.4	4.3	2.9	3.5	2.4	2.7	1.9	1.9	1.4	1.2	0.9	0.7	0.5
1000	10	6.67	3.4	2.3	2.8	1.9	2.3	1.6	1.8	1.3	1.3	0.9	0.8	0.6	0.5	0.4
750	7.5	5	2.5	1.7	2.1	1.5	1.7	1.2	1.4	0.9	1	0.7	0.6	0.4	0.4	0.3
500	5	3.33	1.7	1.1	1.4	1	1.2	0.8	0.9	0.6	0.6	0.5	0.4	0.3	0.2	0.2
300	3	2	1	0.7	0.9	0.6	0.7	0.5	0.5	0.4	0.4	0.3	0.2	0.2	0.1	0.1
100	1	0.67	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1

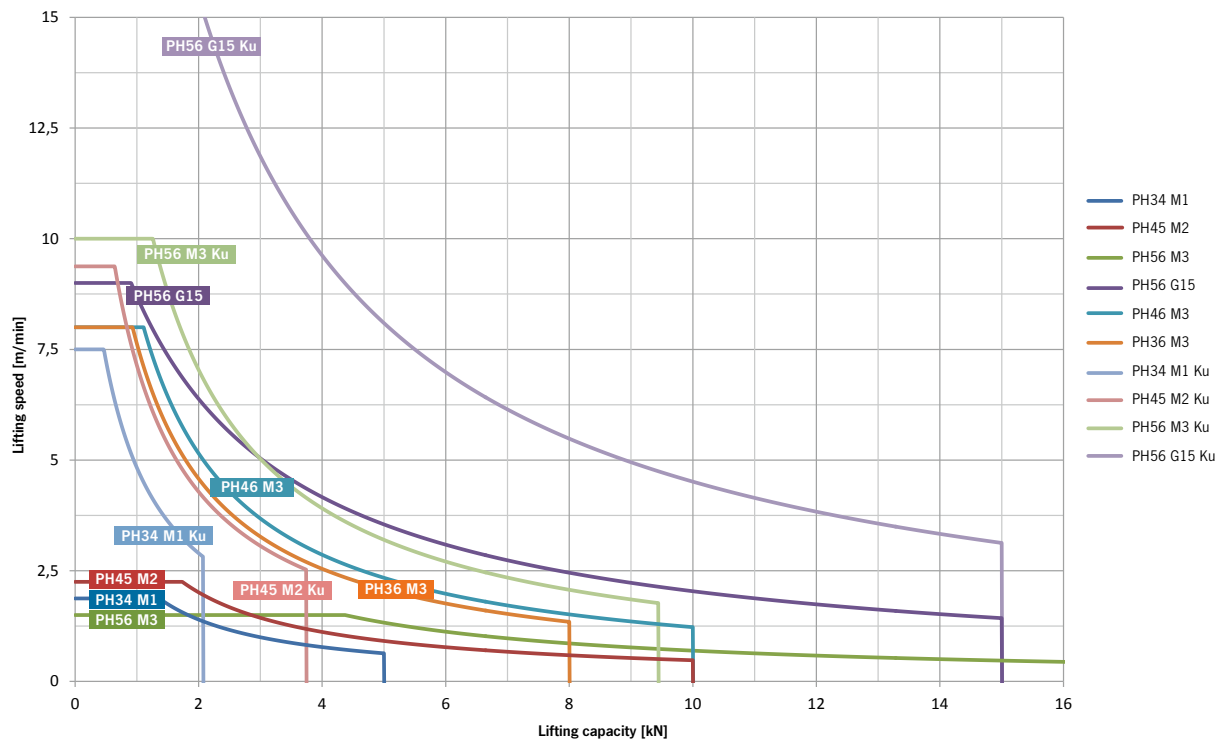
Max. duty cycle at 20 °C ambient temperature: Operating mode S3 20% – 60 min. Operating mode S3 10% – 60 min. static only (dynamic not allowed)

PHOENIX Diagrams

Performance diagram – duty cycle 10%

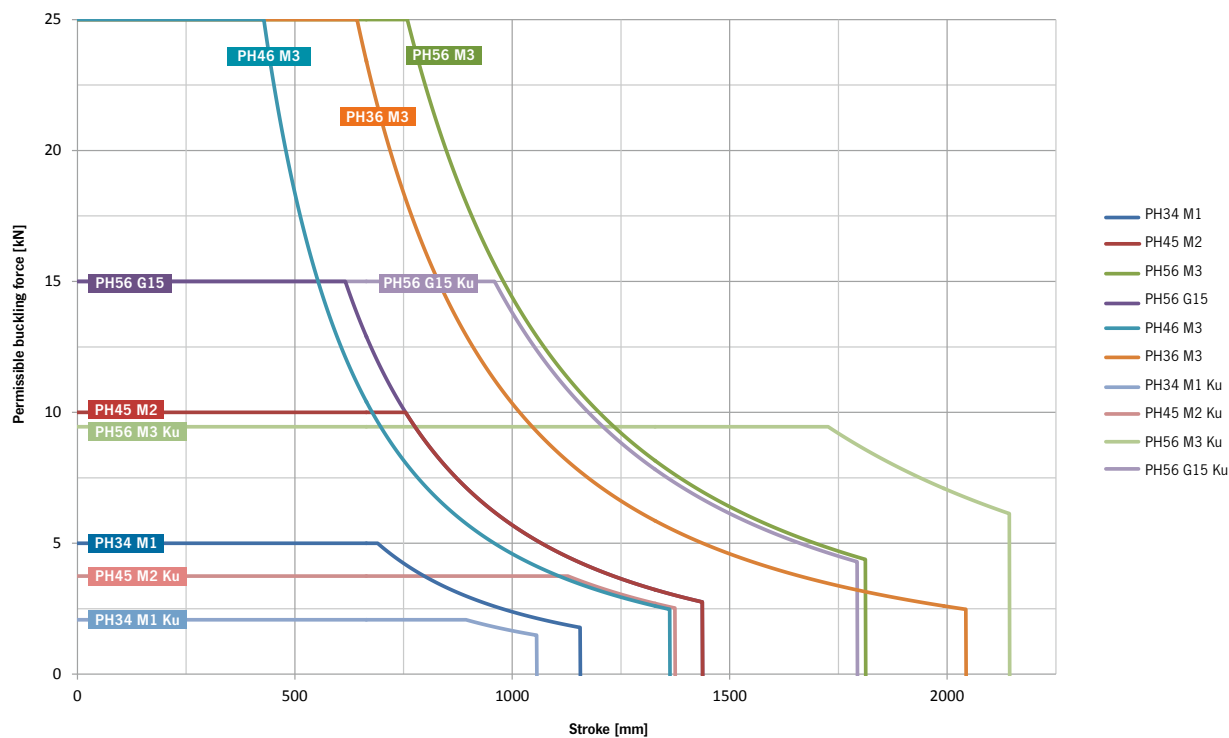


Performance diagram - duty cycle 20%

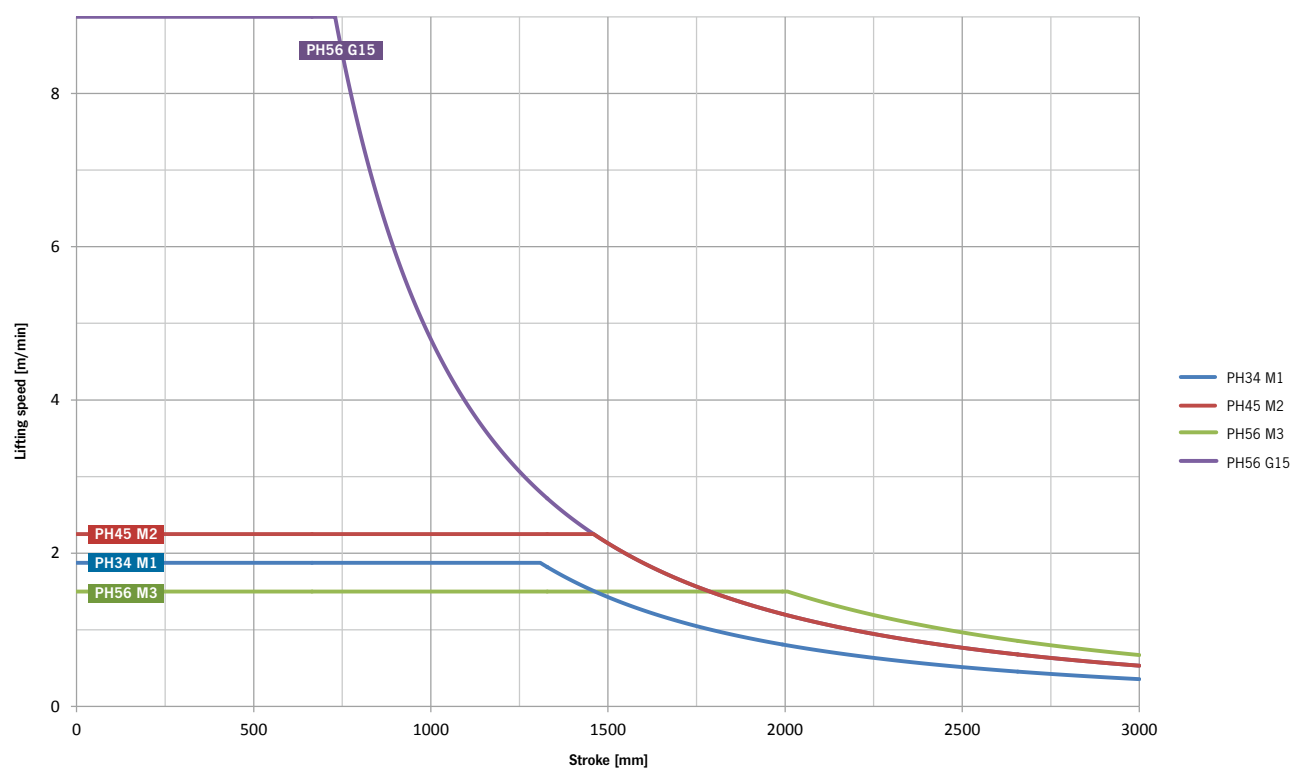


PHOENIX Diagrams

PHOENIX Buckling

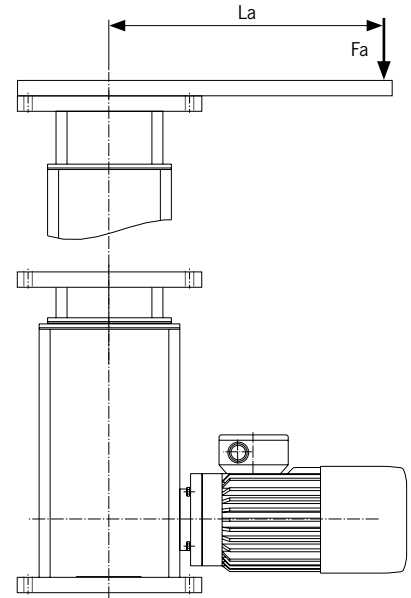
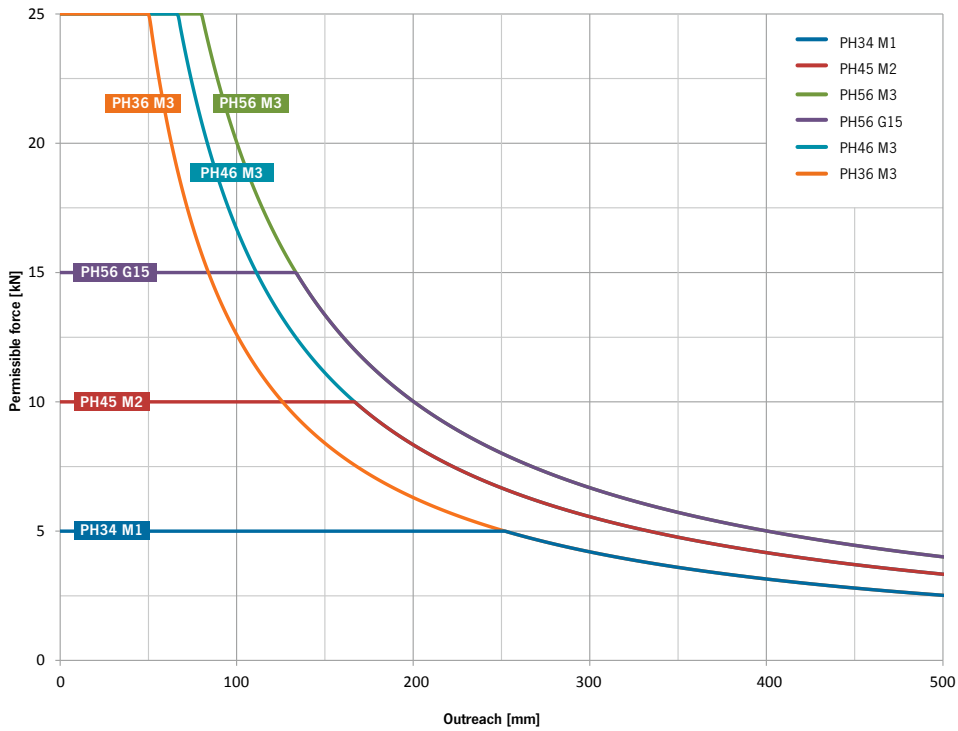


Critical speed (trapezoidal screw)

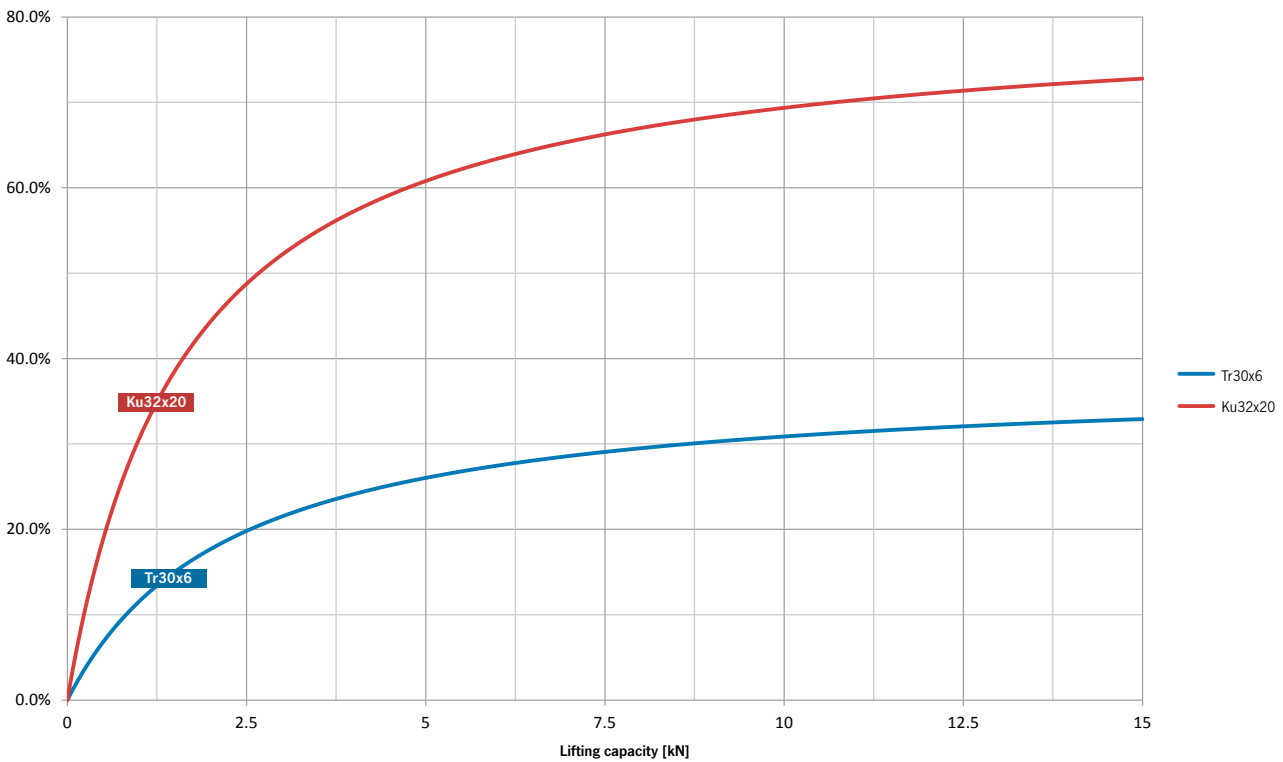


PHOENIX Diagrams

PHOENIX Off-center load



Efficiency G15

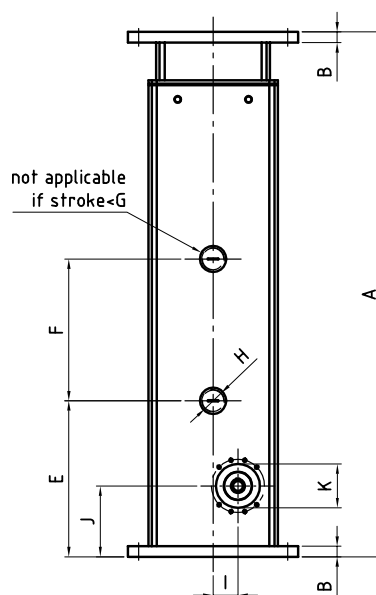
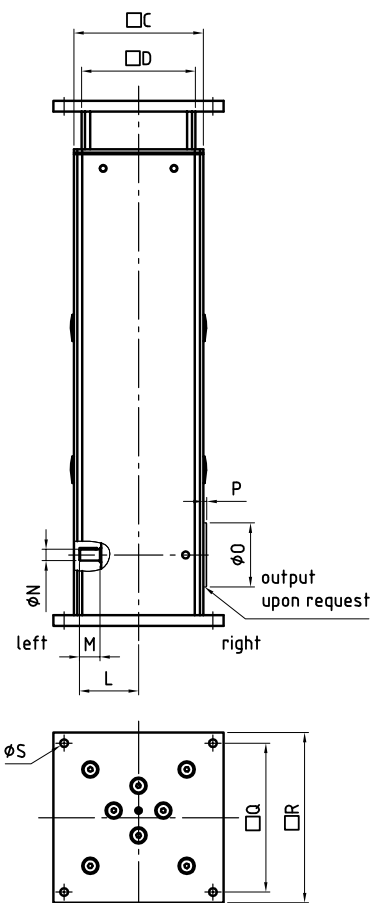


PHOENIX

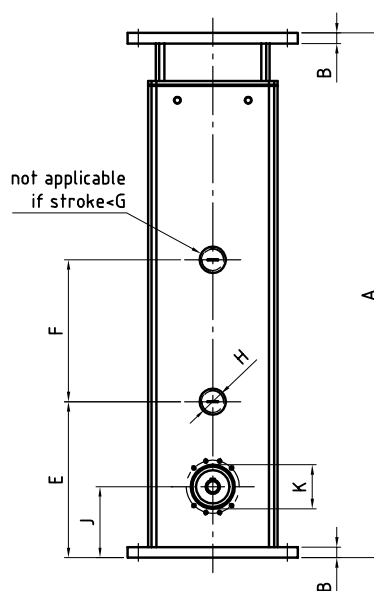
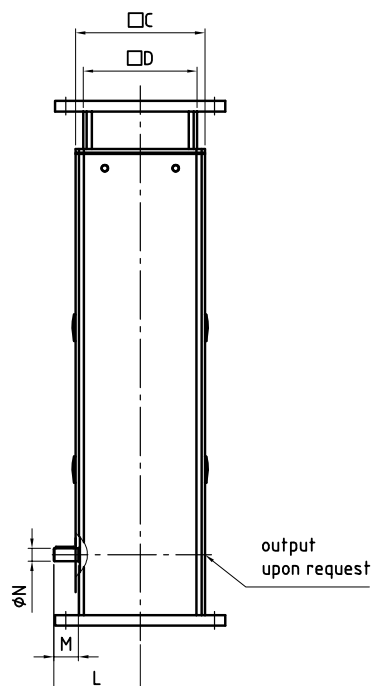
Technical drawings

Technical drawings

with gear type M



with gear type G



CAD & go



PHOENIX

Dimensions

Dimensions PHOENIX						
Size Dimensions [mm]	Single-stage				Multi-stage	
	PH34 M1	PH45 M2	PH56 M3	PH56 G15	PH46 M3	PH 36 M3
A	260 + stroke + VL	300 + stroke + VL	340 + stroke + VL	369 + stroke + VL	375 + 1/2 stroke + VL	360 + 1/3 stroke + VL
B	15	15	15	15	15	15
□C	138.6	160.6	182.6	182.6	182.6	182.6
□D	116.6	138.6	160.6	160.6	138.6	116.6
E	170	195	220	249	220	199
F	1/2 stroke	1/2 stroke	1/2 stroke	1/2 stroke	-	-
G	300	350	400	400	-	-
H	M32x1.5	M32x1.5	M32x1.5	M32x1.5	M32x1.5	M32x1.5
I	15	22	35	-	35	45
J	80	90	100	100	100	90
Ø K H8	52	52	62	68	62	62
L	60	70	83.5	122	83.5	83.5
M	22.5	25.5	29	35	29	29
Ø N	10 k6	14 k6	16 k6	12j6 (i=2)* 18j6 (i=3)*	16 k6	16 k6
Ø O	75	75	90	-	90	90
P	5	5	5	-	5	5
□Q ±0.3	210	210	210	210	210	210
□R	240	240	240	240	240	240
Ø S	11	11	11	11	11	11

* i = Ratio

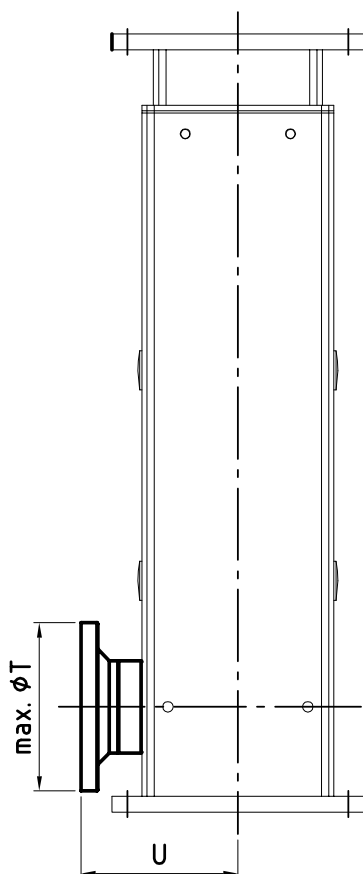


PHOENIX

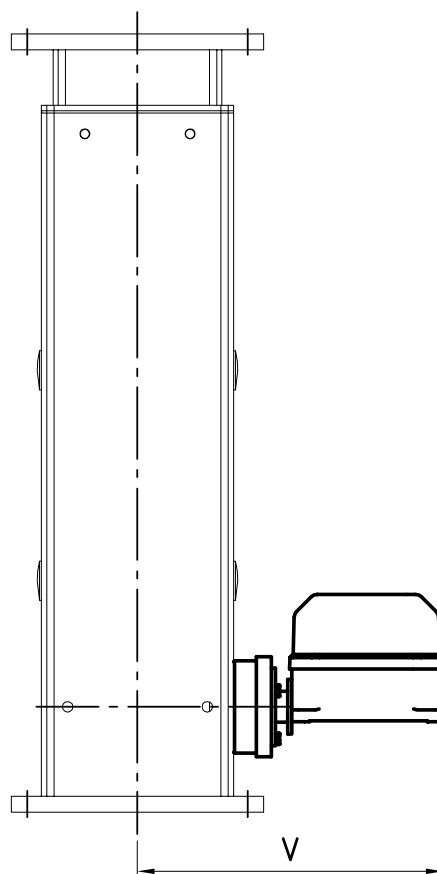
Technical drawings

Technical drawings

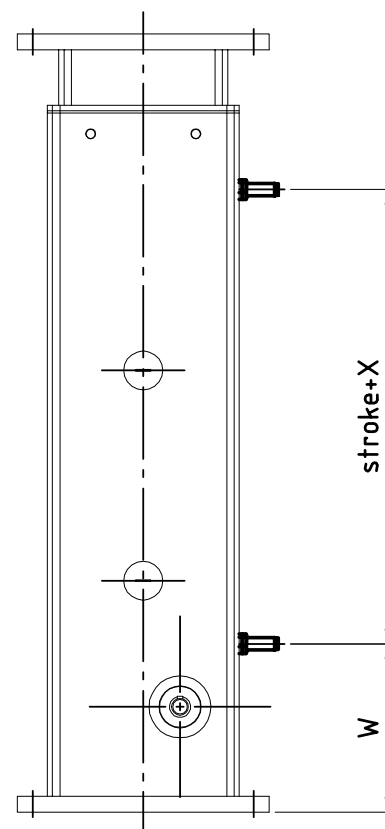
Motor mounting flange



Gear limit switch



Inductive limit switch



CAD & go



PHOENIX

Dimensions and accessories

Dimensions PHOENIX

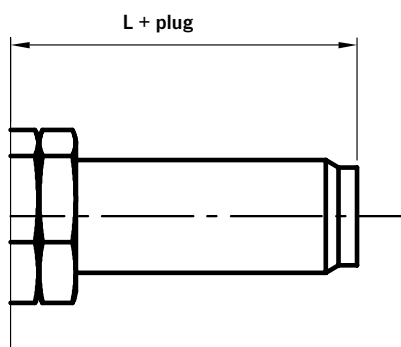
Size	Single-stage				Multi-stage	
Dimensions [mm]	PH34 M1	PH45 M2	PH56 M3	PH56 G15	PH46 M3	PH 36 M3
Accessories						
Motor mounting flange						
Ø T	120	140	160	160	160	140
U	Dimensions according to offer or customer request					
Gear limit switch						
V	269	277	291	329	291	291
Inductive limit switch						
W	125	145	165	194	-	-
X	22	22	22	22	-	-

Accessories

Inductive limit switch (only single-stage column)

	Standard
Supply voltage	10-30V DC*
Connection	M12
	4 pins
	Three-core
Attachment	M12x1
Output	NC
Switching current	≤ 200 mA
Length	41 mm

*AC optionally selectable, and with control from Columbus McKinnon Engineered Products GmbH



Gear limit switch



- Necessary for multi-stage lifting columns
- Optional for single-stage lifting columns
- Mounting on output shaft end
- Up to 8 switching points

Hand drive



Columbus McKinnon Catalog overview

Catalog overview

Not enough power to move your load? Then solutions from Columbus McKinnon Engineered Products GmbH can help you. They move, lift and position a wide variety of goods absolutely reliably, safely and efficiently.

Experience pays off here. For over 150 years, Pfaff-silberblau brand products have been developed further and adapted continuously to current market and customer requirements. You too will find the right products in our catalogues.

Lifting technology:

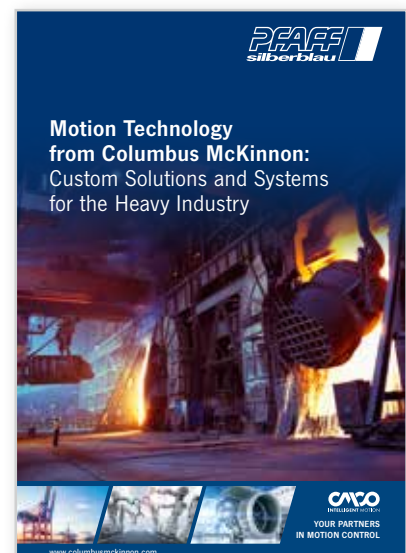
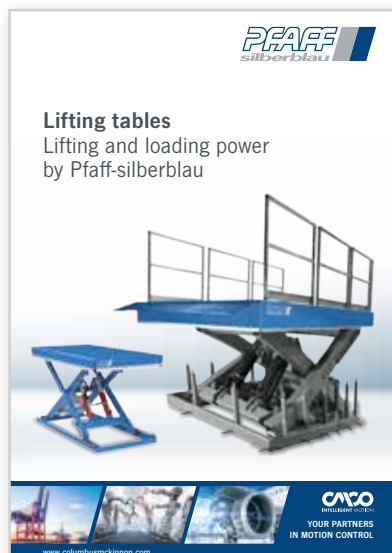
The manual and electrical wire rope winches are virtually predestined for work in industry and the event sector. Lifting tables are used in many industrial sectors, support production as well as logistics and enable ergonomic working.

Motion technology:

The motion technology products are characterised by versatility. With them, the right technical solution can be found for every application.



All brochures from Pfaff-silberblau under this QR code.





Technical changes reserved. No warranty for print errors or mistakes. Valid as of 08/2023. Reprint and any reproduction, even in excerpts, only with written consent of Columbus McKinnon Engineered Products GmbH, Kissing.



by COLUMBUS McKINNON

www.cmco.com

COLUMBUS McKINNON
Engineered Products GmbH

Am Silberpark 2-8
86438 Kissing
Germany

Phone: +49 8233 2121 4500
Fax: +49 8233 2121 4555
sales.kissing@cmco.eu
www.cmco.com

