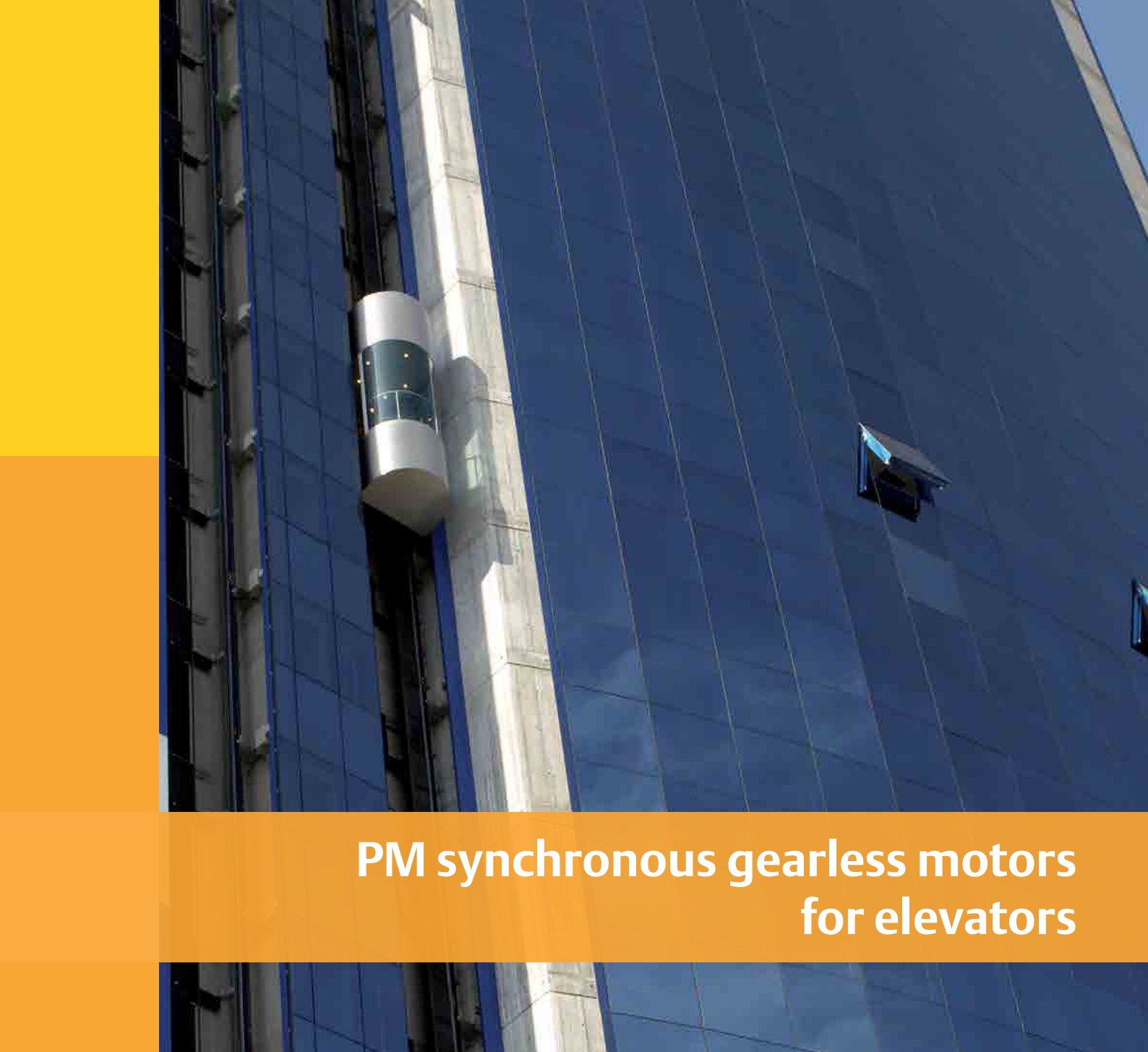




PM synchronous gearless motors for elevators

E, XA and Z ranges



Leroy-Somer[™]



EMERSON[™]
Industrial Automation

Introduction

For the best part of a century, Leroy-Somer has been present wherever people have needed to produce energy, or transmit and control movement. With more than 40 years' expertise in the design and industrialization of drives for lifts, Leroy-Somer offers its customers the technical support necessary during the machine design phases and offers reliable, innovative and high-performance solutions.

An international group

With the strength of its 10,000 employees behind it, the company has set up an international network of 470 expertise and service centers capable of providing sales and technical support 24 hours a day, 7 days a week, throughout the world.

To develop its presence on booming markets, support the growth of its lift installation customers and guarantee them a high-performance service, Leroy-Somer is establishing industrial sites all over the world.

The team of experts dedicated to the lifts market can meet the demands of large international groups, as well as those of companies with more local dimensions.

New installations

The new Gearless motors in Leroy-Somer's XARange are high-performance solutions for machine room less applications. These motors can cope with requirements up to 2500 kg and 3 m/s with a 2:1 roping arrangement. The "cigar" type design of these ultra-compact lightweight machines makes them easy to install in the lift well. The high-efficiency motors with low temperature rise ensure minimal vibration and excellent ride performance. They also offer the option of choosing between 2 sheave diameters in order to optimize the size of the selected machine.

Modernization

Leroy-Somer has a complete range of Z Gearless drives suitable for modernization projects. These drives

can take shaft loads of up to 22 Tons, and can be used on applications up to 5000 kg and 5 m/s with a 2:1 roping arrangement. Leroy-Somer also offers technical support during the design phase, proposing solutions adapted to suit the existing installation, while complying with the requirements of the safety standards. Leroy-Somer thus offers a complete customized solution thanks to mechanical options such as deflection sheaves with chassis or secure electronic systems for emergency operations.

Global solution

An expert in specifying rotating machines, Leroy-Somer offers new gearless drives with its Z and XA ranges. In combination with UNIDRIVE SP drives and their software dedicated to lift applications, Leroy-Somer provides a technical sales package which takes account of all the customers' data and requirements: customized advice and guaranteed performance.

Summary

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General information

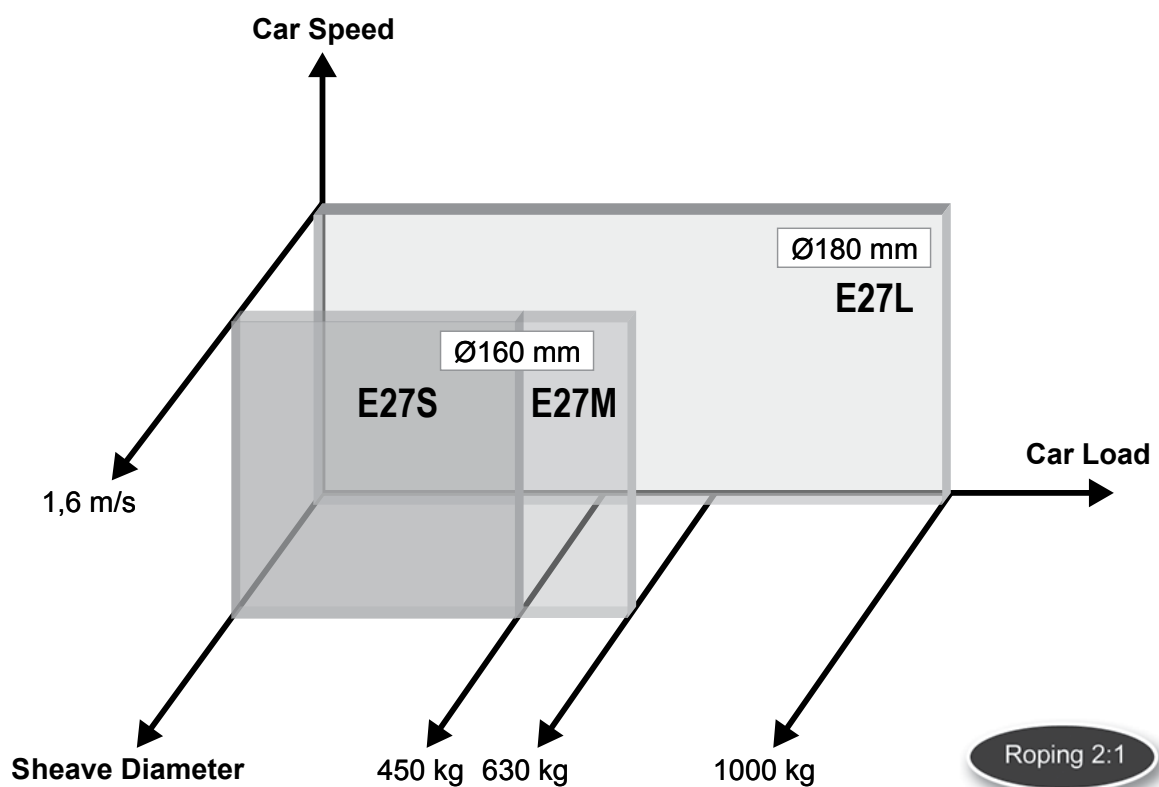


Motor features

- Gearless Permanent Magnet motors
- Central shave
- Brakes independent from the motor
- Connecting box protecting the encoder
- Fast connectors for power, brakes and thermal sensor
- Smooth and silent operations
- Up to 2,5T static load
- Reduced Maintenance
- Hardened grooves
- Absolute encoder

Applications

- Machine Room Less
- New Installations



General



- Protection: IP 20
- Insulation Class F
- Noise level: Less than 55 dB (A) at 1 m
- Sheave standard hardness: 50 HRC
- Thermal protection: PTC thermistor
- Flexible pads included in standard

In compliance with:

- 95/16/CE Elevator guideline
- EN81.1 European Standard, including A3

Technical characteristics

Type	E27 S	E27 M	E27 L
Sheave diameter (mm)	160	160	180
Sheave usable width (mm)	87	87	113
Shaft Load (kg)	1500	1500	2500
Number of poles	24	24	24
Max. speed (min ⁻¹)	400	400	400
Nominal torque (Nm)	125	175	305
Maximum torque (Nm)	190	260	445
Number of brakes	2	2	2
Max.braking torque per brake (Nm)	140	225	290
Motor weight (kg)	93	106	167
Rotor inertia (kg.m ²)	0,11	0,15	0,26

Selection

Roping 2:1

Travel: 30 m – Counterweight ratio: 50% - Voltage: 400 V – Single Wrap – No rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Number of ropes Ø 6.5mm	Torque (Nm)	I nominal (A)	I acceleration (A)	Power (kW)	Max Cabin Weight (kg)	Suggested E200/E300
E27 S	450	1,0	7	125	7,6	13,3	3,2	900	E200/300 034 00078A
E27 M	630	1,0	8	175	9,5	16,6	4,4	950	E200/300 034 00100A
E27 L	1000	1,0	10	300	16,5	28,8	6,8	1600	E200/300 044 00172A

Brakes

Fail safe axial brakes – TUV listed

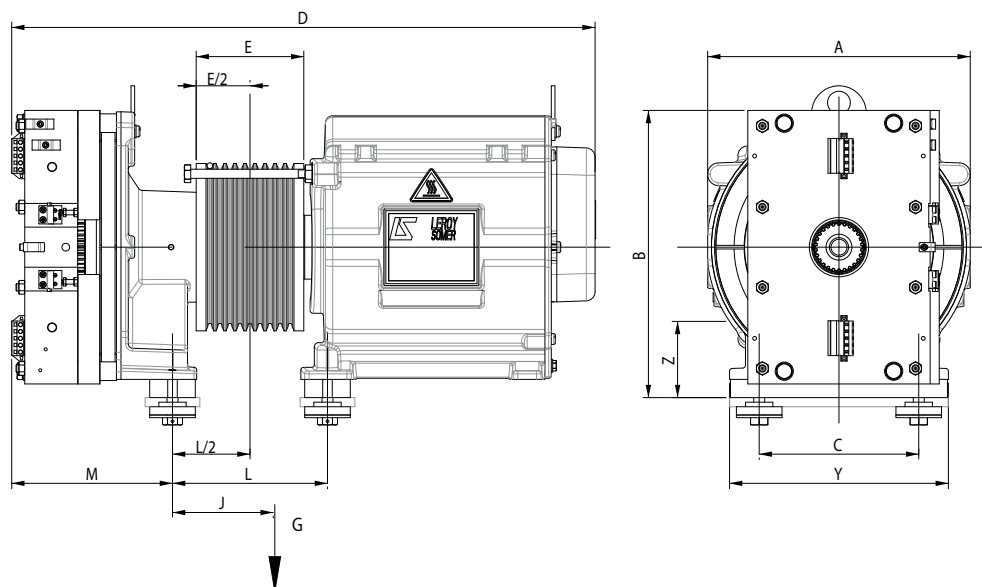
	E27 S	E27 M	E27 L
Torque	140 Nm	225 Nm	290 Nm
Pick up Voltage / Coil		207 VDC	
Holding Voltage / Coil		104 VDC	
Pick up Power / Coil	194 W	220 W	324 W
Holding Power / Coil	48,5 W	55 W	82 W

Encoder: ECN 1313 Absolute encoder

Operating cycle: S5 – 40% – 180 starts per hour.

The current values are an indication but may vary due to specific operating parameters.
For more precise calculations, you will need to contact Leroy-Somer.

Dimensions



Main dimensions (mm)

Motor	A	B	C	D	E	J	L	M	Y	Z	Weight (kg)
E 27 S	288	309	175	506	92	136	150	129	240	83	93
E 27 M	288	309	175	509	92	141	150	132	240	83	106
E 27 L	288	315	175	640	118	151	170	176	240	83	167

General information

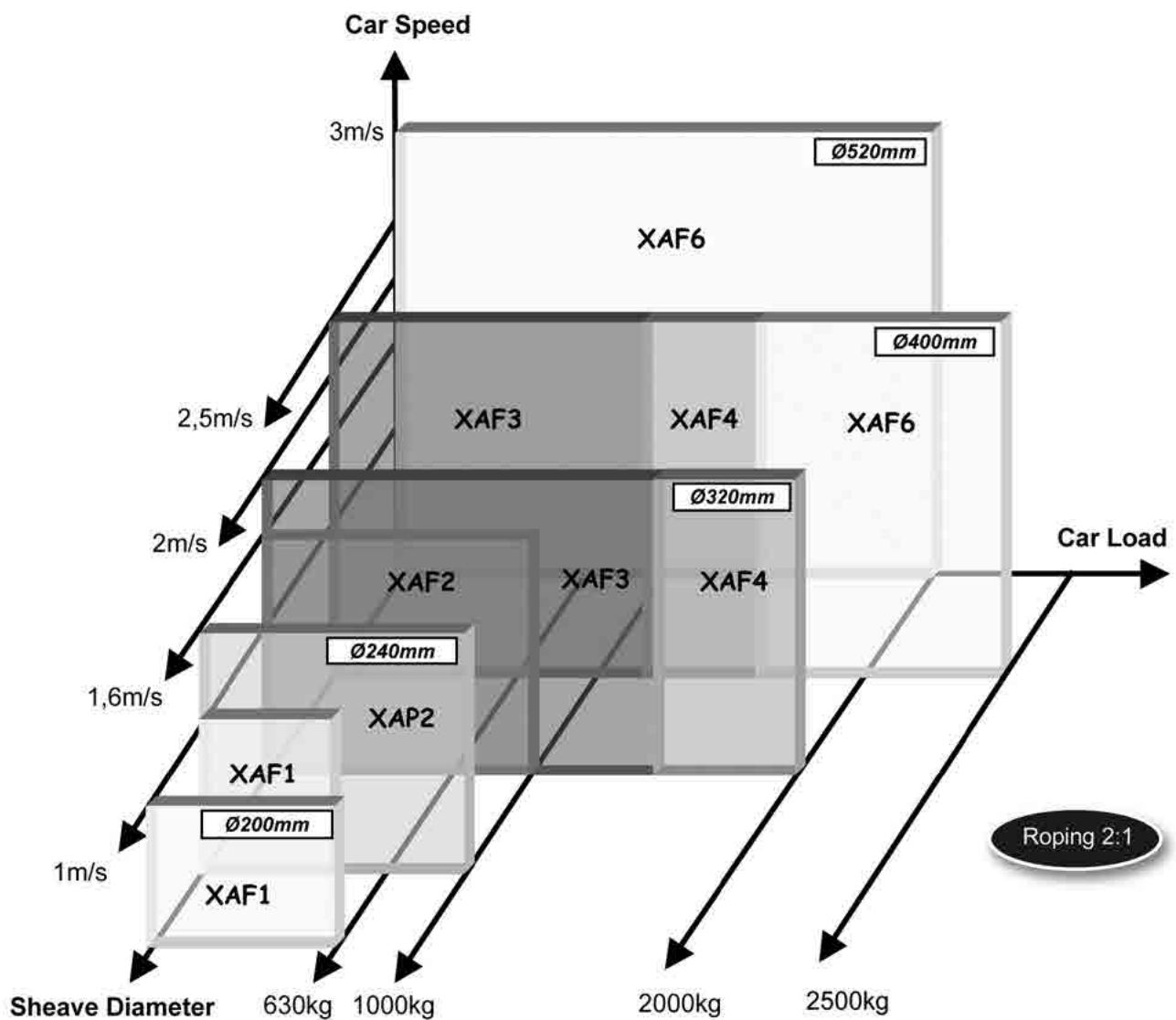


Motor features

- Gearless Permanent Magnet motors
- Smooth and silent operations
- Up to 6T static load
- Reduced Maintenance
- Hardened grooves
- Absolute encoder

Applications

- Machine Room Less
- Modernization
- New Installations



General



- Protection: IP 20
- Insulation Class F
- Noise level: Less than 55 dB (A) at 1 m
- Sheave standard hardness: 50 HRC
- Thermal protection: PTC thermistor (option)

In compliance with:

- 95/16/CE Elevator guideline
- EN81.1 European Standard, including A3

Technical characteristics

	XAF1 S		XAF1 M			
Sheave diameter (mm)	160	200	160	200	240	200
Sheave usable width (mm)	83	74	86	86	78	86
Shaft Load (kg)	900		1400			
Number of poles			16			
Max. Speed (min ⁻¹)			255			
Nominal torque (Nm)	115		180		225	
Maximum torque (Nm)	180		340		360	
Max. Number of brakes			2			
Max. Braking torque per brake (Nm)	225		225		280	
Motor weight (kg)	73	74	94	96	101	99
Machine Inertia (kg.m²)	0.0487	0.0652	0.0745	0.099	0.1345	0.1014

Selection

Roping 2:1

Travel: 30 m – Counterweight ratio: 50% - Voltage: 400 V – Single Wrap – No rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Sheave Diameter	Ropes Number & Diameter	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
XAF1 S	320	1	160 mm	4 x Ø6.5 mm	90	6	9	2.2	500	1405
		1	200 mm	4 x Ø6.5 mm	115	6	9	2.2		1405
XAF1 M	480	1	160 mm	6 x Ø6.5 mm	120	10	15	3.2	800	2401
		1	200 mm	7 x Ø6.5 mm	150	10	15	3.2		2401
		1	240 mm	6 x Ø6.5 mm 5 x Ø6.0 mm	180	10	15	3.2		2401
		1	200 mm	7 x Ø6.5 mm	200	13	19	4.2		2401

Brakes

Fail safe axial brakes – TUV listed

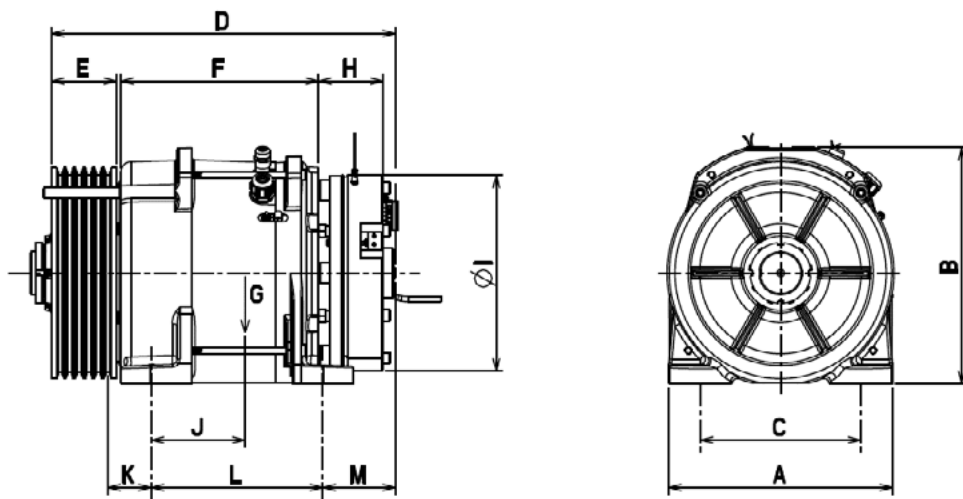
	XAF1	
Torque	225 Nm	280 Nm
Pick up Voltage / Coil	205 VDC	
Holding Voltage / Coil	103 VDC	
Pick up Power / Coil	220 W	235 W
Holding Power / Coil	55 W	59 W

Encoder: ECN 413 Absolute encoder

Operating cycle: S5 – 40% – 180 starts per hour.

The current values are an indication but may vary due to specific operating parameters.
For more precise calculations, you will need to contact Leroy-Somer.

Dimensions



Type	Main dimensions (mm)											
	End shield dimensions		C	D	E	F	H	I	J	K	L	M
	A	B										
XAF1 S 160 mm				340	56	180			72	56.5	154	
XAF1 S 200 mm		264		326	53				70	45		
XAF1 M 160 mm				435	80		75	226	81	83.5		
XAF1 M 200 mm Brake 225 Nm				421	86				78	63.5		
XAF1 M 240 mm Brake 280 Nm Sheave 6x6.5 mm	258		185	397	75					50		84
		272				228					198	
XAF1 M 240 mm Brake 280 Nm Sheave 5x6 mm				388	66		78	246	84	49		
XAF1 M 200 mm Brake 280 Nm				421	86					63.5		

General tolerances: ± 10 mm

Appearance and dimensions subject to modification. If you require exact dimensions, ask for a certified drawing when you place your order.

General



- Protection: IP 20
- Insulation Class F
- Noise level: Less than 55 dB (A) at 1 m
- Sheave standard hardness: 50 HRC
- Thermal protection: PTC thermistor

In compliance with:

- 95/16/CE elevator guideline
- EN81.1 European Standard, including A3

Technical characteristics

	XAP2 M	XAP2 L
Sheave diameter (mm)	240	
Sheave usable width (mm)	86	108
Shaft Load (kg)	2200	
Number of poles	16	
Max. Speed (min ⁻¹)	255	
Nominal torque (Nm)	270	415
Maximum torque (Nm)	415	615
Max. Number of brakes	2	
Max. Braking torque per brake (Nm)	300	500
Motor weight (kg)	125	187
Machine Inertia (kg.m ²)	0.19	0.26

Selection

Roping 2:1

Travel: 30 m - Counterweight ratio: 50% - Voltage: 400 V - Single Wrap - No rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Number of ropes Ø6 mm or Ø6.5 mm		Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
XAP2 M	630	0.63	7	6	264	9	13	2.8	900	1406
		1				12	18	4.4		2401
		1.6				18	27	7.0		2403
XAP2 L	800	0.63	9	8	330	9	14	3.5	1200	1406
		1				13	19	5.5		2401
		1.6				20	29	8.8		2403
	1000	0.63	10	9	407	11	17	4.3	1300	2401
		1				17	25	6.8		2403
		1.6				26	38	10.9		2404

Roping 1:1

Travel: 30 m - Counterweight ratio: 50% - Voltage: 400 V - Single Wrap - No rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Number of ropes Ø6 mm or Ø6.5 mm		Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
XAP2 M	300	0.63	7	6	263	5	8	1.4	450	1404
		1				8	11	2.2		1406
		1.6				10	15	3.5		2401
XAP2 L	375	0.63	9	8	348	6	9	1.8	600	1405
		1				9	12	2.9		1406
		1.6				12	18	4.6		2401
		2				14	20	5.8		2402
	450	0.63	10	9	415	8	12	2.2	700	1406
		1				10	15	3.5		2401
		1.6				15	21	5.5		2402
		2				17	25	6.9		2403

Operating cycle: S5 - 40% - 180 starts per hour.

The current values are an indication but may vary due to specific operating parameters.
For more precise calculations, you will need to contact Leroy-Somer.

Brakes

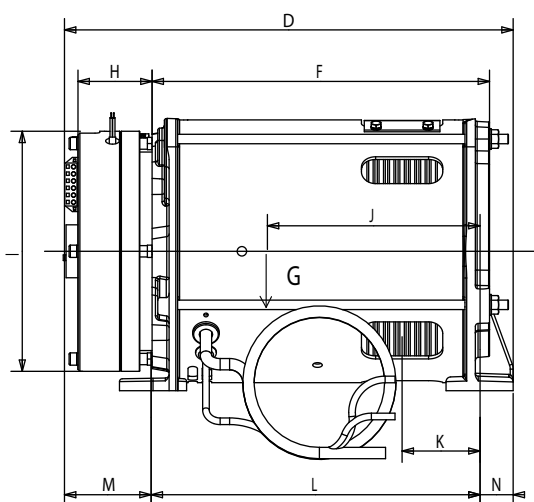
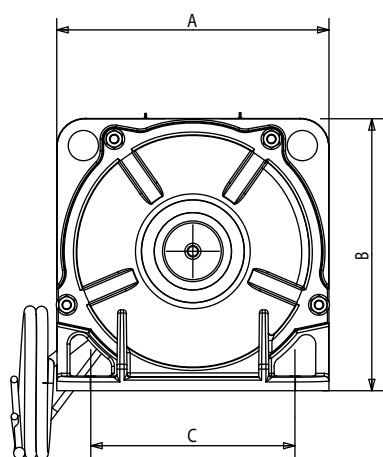
Fail safe axial brakes – TUV listed

	XAP2 M		XAP2 L	
Pick up Voltage / Coil	104 VDC	207 VDC	104 VDC	207 VDC
Holding Voltage / Coil	52 VDC	104 VDC	52 VDC	104 VDC
Pick up Power / Coil	270 W		186 W	
Holding Power / Coil	52 W		47 W	

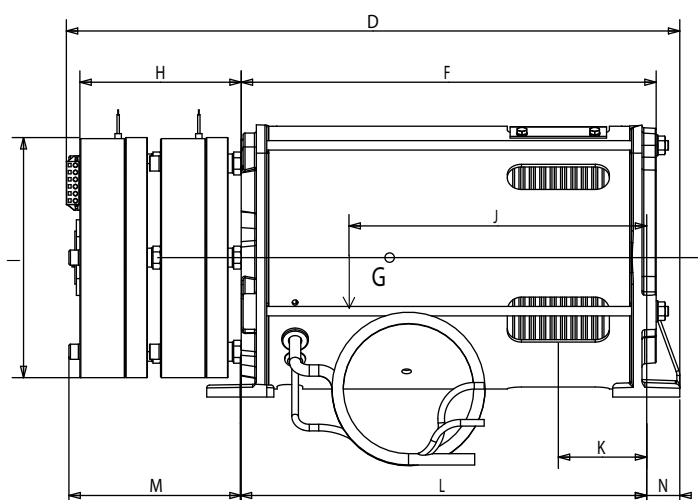
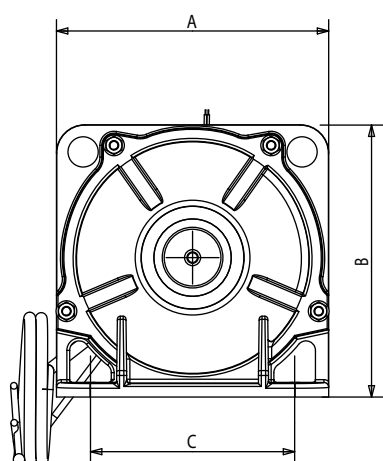
Encoder: ECN 413 Absolute encoder

Dimensions

XAP2 M



XAP2 L



Type	Main dimensions (mm)											
	A	B	C	D	F	H	I	J	K	L	M	N
XAP2 M	288	288	216	483	357	78.4	254	225	82.5	348	101	35
XAP2 L				646	439	170.6	254	315	93.5	430	181	35

General tolerances: ± 10 mm

Appearance and dimensions subject to modification. If you require exact dimensions, ask for a certified drawing when you place your order.

General



- Protection: IP 20
- Insulation Class F
- Noise level: Less than 55 dB (A) at 1 m
- Sheave standard hardness: 50 HRC
- Thermal protection: PTC thermistor

In compliance with:

- 95/16/CE elevator guideline
- EN81.1 European Standard, including A3

Technical characteristics

	XAF2 S			XAF2 M		XAF2 L
Sheave diameter (mm)	200	240	320	240	320	320
Sheave usable width (mm)	128	128	108	128	108	108
Shaft Load (kg)				2250		
Number of poles				16		
Max. Speed (min ⁻¹)				255		
Nominal torque (Nm)	270			415		570
Maximum torque (Nm)	415			615		885
Max. Number of brakes				2		
Max. Braking torque per brake (Nm)	300			500		600
Motor weight (kg)	140	142	145	198	202	230
Machine Inertia (kg.m²)	0.229	0.278	0.463	0.327	0.507	0.531

Selection

Roping 2:1

Travel: 30 m - Counterweight ratio: 50% - Voltage: 400 V - Single Wrap - No rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Sheave Diameter	Ropes Number & Diameter	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
XAF2 S	450	1	320 mm	4 x Ø8 mm	259	9	13	3.2	600	1406
		1.6				13	19	5.2		2401
	630	1	240 mm	7 x Ø6.5 mm	264	12	17	4.4	800	2401
		1.6				18	26	7.0		2403
	800	1	200 mm	8 x Ø6.5 mm	275	10	15	4.4	1000	2401
		1.6				14	20	5.5		2402
XAF2 M	630	1	320 mm	5 x Ø8 mm	344	11	16	4.3	800	2401
		1.6				17	25	6.9		2403
	1000	1	240 mm	9 x Ø6.5 mm	407	17	25	6.8	1300	2403
		1.6				26	38	10.9		2404
XAF2 L	1000	1	320 mm	7 x Ø8 mm	558	19	29	7.0	1300	2403
		1.6				29	51	11.2		3401

Operating cycle: S5 – 40% – 180 starts per hour.

The current values are an indication but may vary due to specific operating parameters.
For more precise calculations, you will need to contact Leroy-Somer.

Selection

Roping 1:1

Travel: 30 m - Counterweight ratio: 50% - Voltage: 400 V - Single Wrap - No rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Sheave Diameter	Ropes Number & Diameter	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
XAF2 S	230	1	320 mm	3 x Ø 8 mm	256	6	9	1.6	400	1404
		1.6				8	12	2.6		1405
	320	1	240 mm	7 x Ø 6.5 mm	277	8	12	2.3	500	1406
		1.6				11	16	3.7		2401
		1	200 mm		7	10	2.3	1405		
		1.6			9	13	3.7	1406		
XAF2 M	320	1	320 mm	4 x Ø 8 mm	372	8	11	2.3	500	1406
		1.6				11	15	3.7		2401
	480	1	240 mm	9 x Ø 6.5 mm	438	12	17	3.7	600	2401
		1.6				17	24	5.8		2403
XAF2 L	480	1	320 mm	6 x Ø 8 mm	585	12	17	3.7	600	2401
		1.6				17	24	5.9		2403

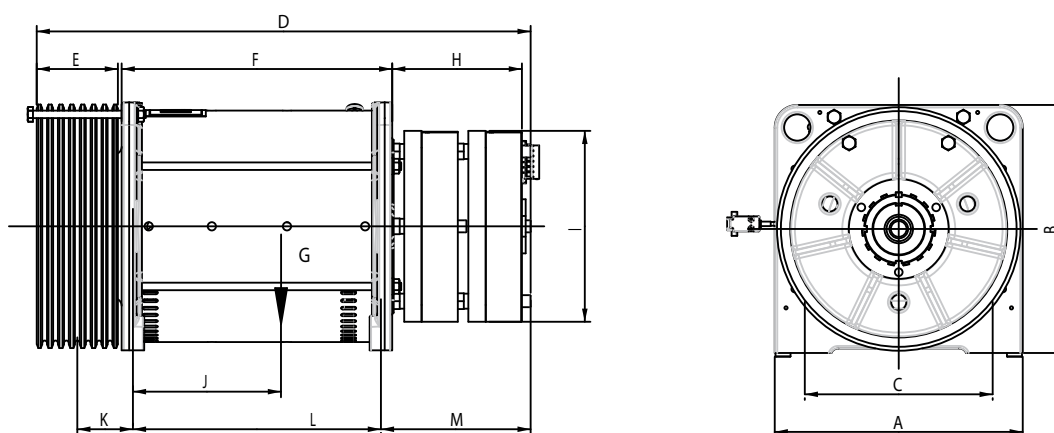
Brakes

Fail safe axial brakes – TUV listed

	XAF2 S		XAF2 M & L	
Pick up Voltage / Coil	104 VDC	207 VDC	104 VDC	207 VDC
Holding Voltage / Coil	52 VDC	104 VDC	52 VDC	104 VDC
Pick up Power / Coil	270 W		186 W	
Holding Power / Coil	52 W		47 W	

Encoder: ECN 413 Absolute encoder

Dimensions



Type	Main dimensions (mm)											
	End shield dimensions		C	D	E	F	H	I	J	K	L	M
	A	B										
XAF2 S 200 mm				536	128				124	104		
XAF2 S 240 mm				531		282	78			99	250	118
XAF2 S 320 mm	288	288	250	497	108			254	121	74		
XAF2 M 240 mm				684	128	342			204	99	310	
XAF2 M 320 mm				649			171		193	74		211
XAF2 L 320 mm	330	330		669	108	362			197	74	330	

General tolerances: ± 10 mm

Appearance and dimensions subject to modification. If you require exact dimensions, ask for a certified drawing when you place your order.

General



- Protection: IP 20
- Insulation Class F
- Noise level: Less than 55 dB (A) at 1 m
- Sheave standard hardness: 50 HRC
- Thermal protection: PTC thermistor

In compliance with:

- 95/16/CE elevator guideline
- EN81.1 European Standard, including A3

Technical characteristics

	XAF3	
Sheave diameter (mm)	320	400
Sheave usable width (mm)	118	137
Shaft Load (kg)	3000	
Number of poles	16	
Max. Speed (min ⁻¹)	240	
Nominal torque (Nm)	750	
Maximum torque (Nm)	1500	
Max. Number of brakes	2	
Max. Braking torque per brake (Nm)	800	
Motor weight (kg)	352	371
Machine Inertia (kg.m ²)	1.02	1.68

Selection

Roping 2:1

Travel: 30 m - Counterweight ratio: 50% - Voltage: 400 V - Single Wrap - No rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Sheave Diameter	Ropes Number & Diameter	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
XAF3	800	1	400 mm	5 x Ø10 mm	571	12	18	5.7	1200	2401
		1.6				18	27	9.1		2403
		2				22	35	11.4		2403
		2.5				28	46	14.3		2404
	1000	1	400 mm	6 x Ø10 mm	711	16	24	7.1	1400	2402
		1.6				24	36	11.4		2403
		2				30	46	14.2		3401
	1150	1	400 mm	7 x Ø10 mm	821	20	31	8.0	1500	2403
	1250	1	320 mm	8 x Ø8 mm	667	18	26	8.3	1600	2403
		1.6				27	40	13.3		2404
		2				34	50	16.7		3402
	1500	1	320 mm	8 x Ø8 mm	782	22	33	10.1	1800	2403

Operating cycle: S5 – 40% – 180 starts per hour.

The current values are an indication but may vary due to specific operating parameters.
For more precise calculations, you will need to contact Leroy-Somer.

Selection

Roping 1:1

Travel: 30 m - Counterweight ratio: 50% - Voltage: 400 V - Single Wrap - No rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Sheave Diameter	Ropes Number & Diameter	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Undrive SP
XAF3	500	1	400 mm	4 x Ø10 mm	652	8	12	3.3	700	1406
		1.6				12	18	5.2		2401
		2				14	22	6.9		2402
		2.5				18	30	8.2		2403
	630	1	320 mm	7 x Ø8 mm	651	10	14	4.1	800	2401
		1.6				14	21	6.5		2402
		2				17	27	8.1		2403
		2.5				21	34	10.8		2403
	800	1	400 mm	5 x Ø10 mm	826	12	17	4.1	900	2401
		1	320 mm	8 x Ø8 mm	820	14	19	5.1		2402

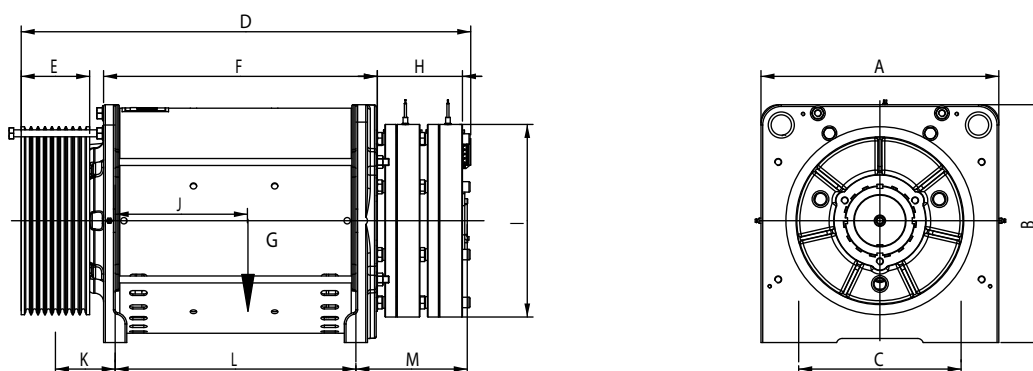
Brakes

Fail safe axial brakes – TUV listed

	XAF3	
Pick up Voltage / Coil	104 VDC	207 VDC
Holding Voltage / Coil	52 VDC	104 VDC
Pick up Power / Coil	270 W	
Holding Power / Coil	52 W	

Encoder: ECN 413 Absolute encoder

Dimensions



Type	Main dimensions (mm)											
	End shield dimensions		C	D	E	F	H	I	J	K	L	M
	A	B										
XAF3 320 mm	410	410	280	703,5	118	377	184,6	269	189	94	320	230.5
XAF3 400 mm				713,5	137				174			

General tolerances: ± 10 mm

Appearance and dimensions subject to modification. If you require exact dimensions, ask for a certified drawing when you place your order.

General



- Protection: IP 20
- Insulation Class F
- Noise level: Less than 55 dB (A) at 1 m
- Sheave standard hardness: 50 HRC
- Thermal protection: PTC thermistor

In compliance with:

- 95/16/CE elevator guideline
- EN81.1 European Standard, including A3

Technical characteristics

	XAF4	
Sheave diameter (mm)	320	400
Sheave usable width (mm)	191	191
Shaft Load (kg)	4900	
Number of poles	16	
Max. Speed (min ⁻¹)	240	
Nominal torque (Nm)	1135	
Maximum torque (Nm)	2000	
Max. Number of brakes	2	
Max. Braking torque per brake (Nm)	1200	
Motor weight (kg)	450	460
Machine Inertia (kg.m ²)	1.6	2.2

Selection

Roping 2:1

Travel: 30 m - Counterweight ratio: 50% - Voltage: 400 V - Single Wrap - No rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Sheave Diameter	Ropes Number & Diameter	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
XAF4	1250	1	400 mm	5 x Ø10 mm	831	17	31	8.3	1700	2403
		1.6				26	39	13.3		2404
		2				32	50	16.6		3401
		2.5				39	64	20.8		3402
	1600	1	320 mm	9 x Ø8 mm	841	21	31	10.5	2000	2403
		1.6				32	48	16.8		3402
		2				40	62	21		3403
		1	400 mm	7 x Ø10 mm	1081	24	40	10.8		2403
	2000	1.6				36	53	17.3		3402
		1	320 mm	10 x Ø8 mm	1038	28	40	13	2300	2404
		1.6				42	62	20.8		3403

Operating cycle: S5 – 40% – 180 starts per hour.

The current values are an indication but may vary due to specific operating parameters.
For more precise calculations, you will need to contact Leroy-Somer.

Selection

Roping 1:1

Travel: 30 m - Counterweight ratio: 50% - Voltage: 400 V - Single Wrap - No rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Sheave Diameter	Ropes Number & Diameter	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
XAF4	630	1	400 mm	7 x Ø10 mm	991	12	17	5.0	1000	2401
		1.6				18	25	7.9		2403
		2				21	38	9.9		2403
		2.5				26	41	12.4		2404
	800	1	320 mm	9 x Ø8 mm	944	13	19	5.9	1100	2402
		1.6				20	34	9.4		2403
		2				24	36	11.8		2403
		2.5				30	46	14.7		3401
		1	400 mm	7 x Ø10 mm	1213	16	23	6.1		2402
		1.6				23	33	9.7		2403
		2				28	43	12.1		2404
		2.5				32	47	14.6		3402
	1000	1	320 mm	10 x Ø8 mm	1167	18	25	7.3	1200	2403
		1.6				27	41	11.7		2404
		2				32	47	14.6		3402

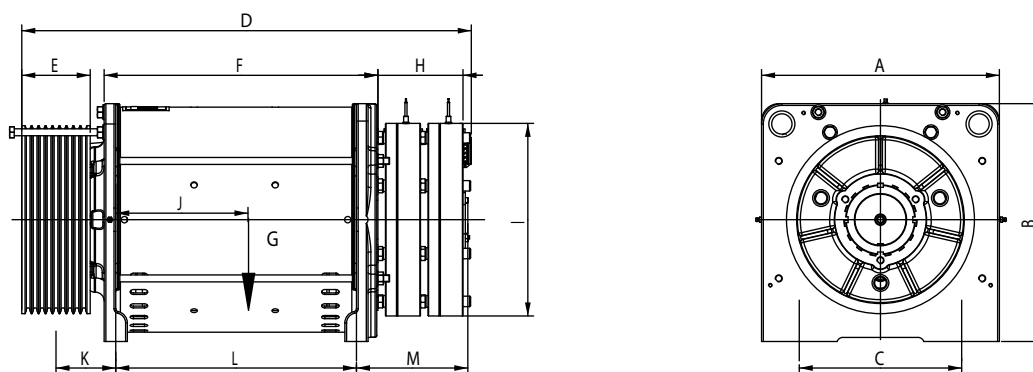
Brakes

Fail safe axial brakes – TUV listed

	XAF4	
Pick up Voltage / Coil	104 VDC	207 VDC
Holding Voltage / Coil	52 VDC	104 VDC
Pick up Power / Coil	270 W	
Holding Power / Coil	52 W	

Encoder: ECN 413 Absolute encoder

Dimensions



Type	Main dimensions (mm)											
	End shield dimensions		C	D	E	F	H	I	J	K	L	M
	A	B										
XAF4 320 mm	410	410	280	827	191	472	146,6	332	213,2	120	415	197
XAF4 400 mm									206			

General tolerances: ± 10 mm

Appearance and dimensions subject to modification. If you require exact dimensions, ask for a certified drawing when you place your order.

General



- Protection: IP 20
- Insulation Class F
- Noise level: Less than 55 dB (A) at 1 m
- Sheave standard hardness: 50 HRC
- Thermal protection: PTC thermistor

In compliance with:

- 95/16/CE elevator guideline
- EN81.1 European Standard, including A3

Technical characteristics

	XAF6	
Sheave diameter (mm)	400	520
Sheave usable width (mm)	191	191
Shaft Load (kg)	6000	
Number of poles	16	
Max. Speed (min ⁻¹)	240	
Nominal torque (Nm)	1600	
Maximum torque (Nm)	2600	
Max. Number of brakes	2	
Max. Braking torque per brake (Nm)	1700	
Motor weight (kg)	570	596
Machine Inertia (kg.m ²)	2.6	4.6

Selection

Roping 2:1

Travel: 30 m - Counterweight ratio: 50% - Voltage: 400 V - Single Wrap - No rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Sheave Diameter	Ropes Number & Diameter	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
XAF6	1600	1	520 mm	5 x Ø13 mm	1450	25	39	11.2	2200	2404
		1.6				40	61	17.9		3402
		2				51	82	22.3		4401
		2.5				65	111	27.9		4402
	2000	1	400 mm	9 x Ø10 mm	1360	29	43	13.6	2600	3401
		1.6				46	68	21.8		3403
		2				57	88	27.2		4403
		2.5				73	118	34		4402
	2500	1	520 mm	5 x Ø13 mm	1751	34	52	13.5	3200	3402
		1.6				54	82	21.5		4401
		2				80	123	33.4		4403
	2500	1	400 mm	10 x Ø10 mm	1672	40	58	16.7		3402
		1.6				62	92	26.8		4402
		2				80	123	33.4		4403

Operating cycle: S5 – 40% – 180 starts per hour.

The current values are an indication but may vary due to specific operating parameters.
For more precise calculations, you will need to contact Leroy-Somer.

Selection

Roping 1:1

Travel: 30 m - Counterweight ratio: 50% - Voltage: 400 V - Single Wrap - No rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Sheave Diameter	Ropes Number & Diameter	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
XAF6	800	1	520 mm	5 x Ø13 mm	1437	13	19	5.5	1200	2401
		1.6				20	29	8.8		2403
		2				25	38	11.1		2404
		2.5				31	51	13.8		3401
	1000	1	400 mm	9 x Ø10 mm	1349	15	22	6.7	1400	2402
		1.6				23	34	10.8		2403
		2				29	44	13.5		2404
		2.5				37	59	16.9		3402
		1	520 mm	5 x Ø13 mm	1737	17	25	6.7		2403
		1.6				26	39	10.7		2404
		2				33	48	13.4		3402
		2.5				41	60	16.7		3403
	1250	1	400 mm	10 x Ø10 mm	1662	20	29	8.3	1600	2403
		1.6				31	45	13.3		3401
		2				40	60	16.6		3402
		2.5				51	80	20.8		4401

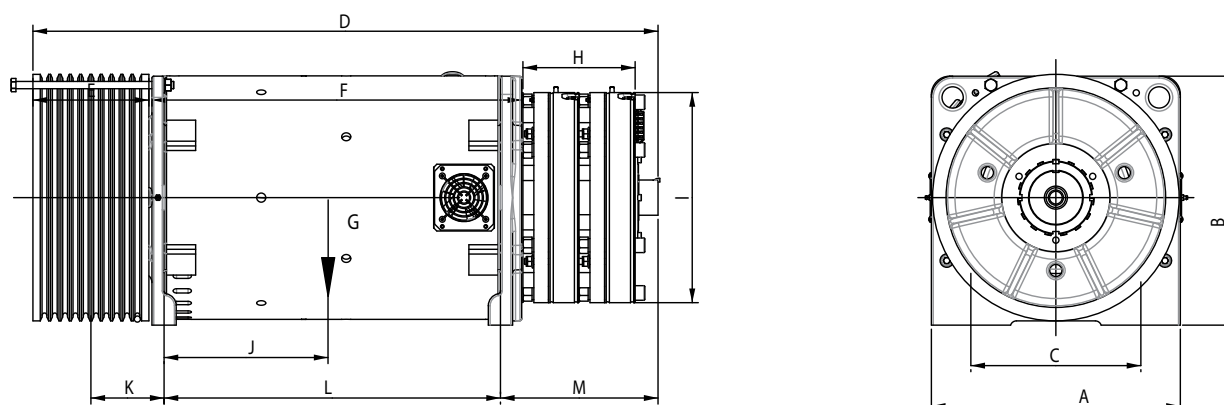
Brakes

Fail safe axial brakes – TUV listed

	XAF6	
Pick up Voltage / Coil	104 VDC	207 VDC
Holding Voltage / Coil	52 VDC	104 VDC
Pick up Power / Coil	480 W	
Holding Power / Coil	120 W	

Encoder: ECN 413 Absolute encoder

Dimensions



Type	Main dimensions (mm)											
	End shield dimensions		C	D	E	F	H	I	J	K	L	M
	A	B										
XAF6 400 mm	410	410	280	1030	191	609	185	346	281	120.5	554	260
XAF6 520 mm									265			

General tolerances: ± 10 mm

Appearance and dimensions subject to modification. If you require exact dimensions, ask for a certified drawing when you place your order.

General information

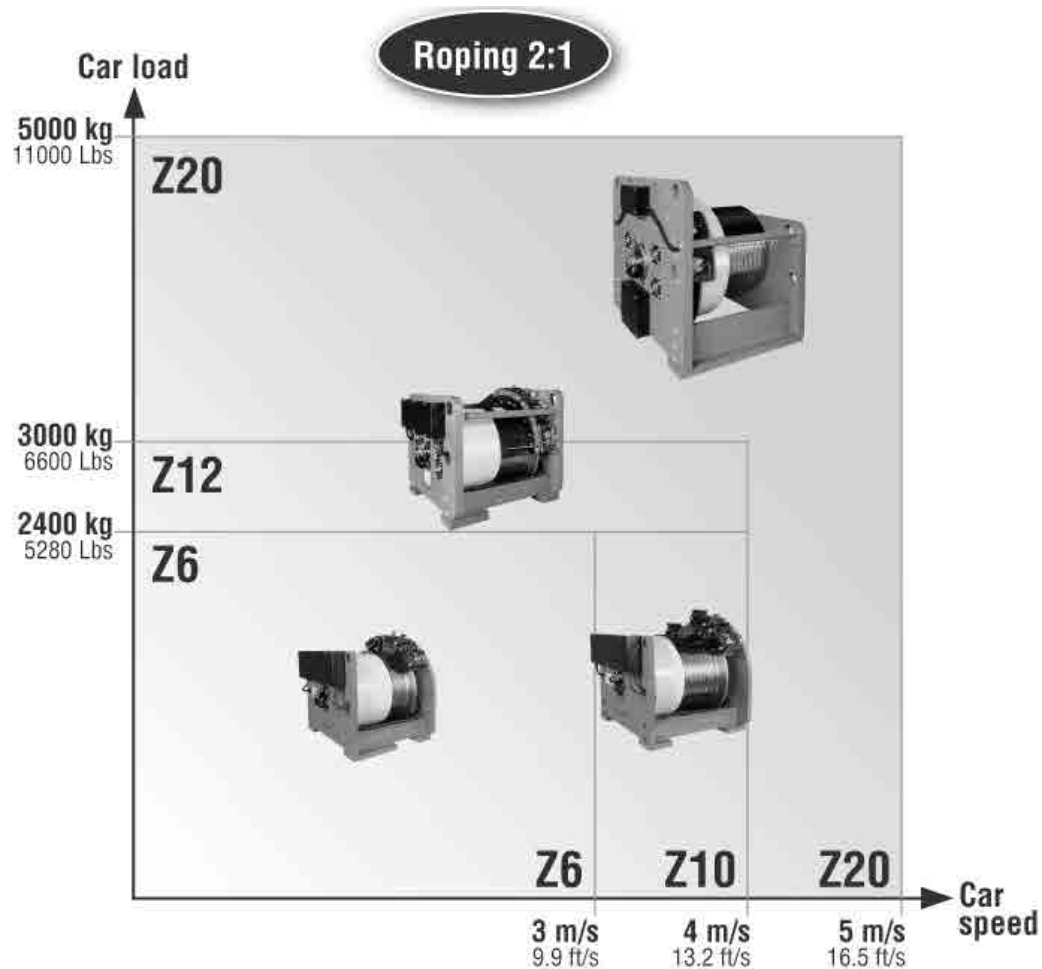


Motor features

- Gearless Permanent Magnet motors
- External Rotor
- Smooth and silent operations
- Absolute encoder
- Up to 22T static load
- Double wrapping available
- Bedplate with deflection sheave
- CSA listed

Applications

- Modernization
- New Installations
- High rise buildings and Hospitals



General



- Protection: IP 20
- Insulation Class H
- Noise level: Less than 55 dB (A) at 1 m
- Sheave standard hardness: 220 to 260 Hb
- Thermal protection: PTC thermistor

In compliance with:

- 95/16/CE Elevator guideline
- EN81.1 European Elevator Standard
- ASME A17.1 North American Elevator Safety code

Technical characteristics

	Z6 S	Z6 M	Z6 L
Sheave diameter (mm)		530	
Sheave usable width (mm)		140	
Shaft Load (kg)		6000	
Number of poles		32	
Max. Speed (min ⁻¹)		290	
Nominal torque (Nm)	1200	1600	1900
Maximum torque (Nm)	2200	2850	3600
Max. Number of brakes		4	
Max. Braking torque per brake (Nm)		1050	
Motor weight (kg)	710	780	850
Machine Inertia (kg.m ²)	9.4	10.7	11.9

Selection

Roping 2:1

Travel: 30 m – Counterweight ratio: 50% - Voltage: 400 V – Single Wrap – No rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Sheave Diameter	Ropes Number & Diameter	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
Z6 S	1250	1	530 mm	4 x Ø13 mm	1172	22	41	8.8	2500	3402
		1.6				33	62	14.1		4401
		2				41	86	17.7		4402
		3				58	122	26.5		5401
		4				77	162	35.4		5402
Z6 M	1600	1	530 mm	5 x Ø13 mm	1494	28	51	11.3	3000	3403
		1.6				42	77	18.0		4402
		2				52	106	22.5		4403
		3				74	151	33.8		5402
		4				98	199	45.0		6401
Z6 L	2000	1	530 mm	6 x Ø13 mm	1853	35	60	14.0	3000	4401
		1.6				52	90	22.3		4402
		2				65	124	27.9		5401
		3				91	173	41.9		5402
		4				122	232	55.9		6402

Operating cycle: S5 – 40% – 180 starts per hour.

The current values are an indication but may vary due to specific operating parameters. For more precise calculations, you will need to contact Leroy-Somer.

For speeds higher than 180 rpm (2.5 m/s in roping 2:1), the motor will be equipped with forced ventilations.

For speeds lower than 126 rpm (1.8 m/s in roping 2:1), the maximum nominal torque is increased by 10% when forced ventilations are used.

Selection

Roping 1:1

Travel: 30 m – Counterweight ratio: 50% - Voltage: 400 V – Single Wrapping

Motor	Cabin Load (kg)	Speed (m/s)	Sheave Diameter	Number of ropes	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
Z6 S	630	1	530 mm	4 x Ø13 mm	1181	11	19	4.5	1000	2402
		1.6				18	30	7.2		2403
		2				22	41	8.9		3402
		3				31	58	13.4		3403
		4				41	77	17.8		4402
Z6 M	800	1	530 mm	5 x Ø13 mm	1495	14	24	5.6	1500	2403
		1.6				23	40	9.1		3402
		2				28	54	11.3		3403
		3				39	75	16.9		4402
		4				52	100	22.5		4403
Z6 L	1000	1	530 mm	6 x Ø13 mm	1854	18	30	7.0	1500	2403
		1.6				28	46	11.3		3403
		2				35	64	14.0		4401
		3				49	89	21.0		4402
		4				65	118	28.0		5401

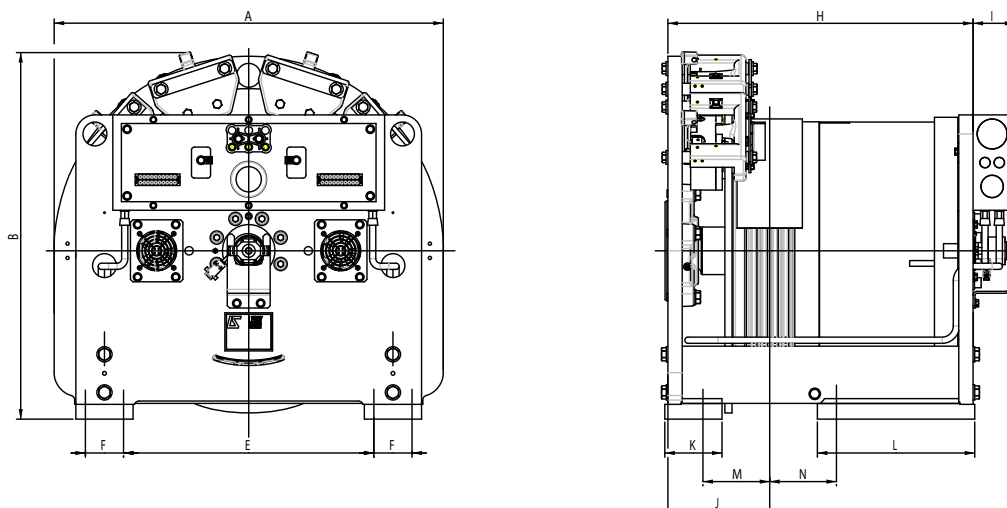
Brakes

Fail safe axial brakes – TUV listed

	Z6
Pick up Voltage / Coil	103VDC
Holding Voltage / Coil	52VDC
Pick up Power / Coil	150W
Holding Power / Coil	33W

Encoder: ECN 413 Absolute encoder

Dimensions



Type	Main dimensions (mm)										
	A	B	E	F	H	I	J	K	L	M	N
Z6 S					540				230		
Z6 M	816	798	525	80	590	88.5	213.5	120	280	140	140
Z6 L					640				330		

General tolerances: ± 10 mm

Appearance and dimensions subject to modification. If you require exact dimensions, ask for a certified drawing when you place your order.

General



- Protection: IP 20
- Insulation Class H
- Noise level: Less than 55dB (A) at 1 m
- Sheave standard hardness: 220 to 260 Hb
- Thermal protection: PTC thermistor

In compliance with:

- 95/16/CE Elevator guideline
- EN81.1 European Elevator Standard
- ASME A17.1 North American Elevator Safety code

Technical characteristics

	Z10 S	Z10 M	Z10 L
Sheave diameter (mm)		530	
Sheave usable width (mm)		245	
Shaft Load (kg)		10000	
Number of poles		32	
Max. Speed (min ⁻¹)		290	
Nominal torque (Nm)	1200	1600	1900
Maximum torque (Nm)	2200	2850	3600
Max. Number of brakes		4	
Max. Braking torque per brake (Nm)		1050	
Motor weight (kg)	810	880	950
Machine Inertia (kg.m ²)	13	16	20

Selection

Roping 2:1

Travel: 60 m – Counterweight ratio: 50% - Voltage: 400 V – Double Wrapping – 100% rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Sheave Diameter	Ropes Number & Diameter	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
Z10 S	1500	1	530 mm	4 x Ø13 mm	1119	25	47	8.4	2500	2404
		1.6				38	71	13.5		3403
		2				47	88	16.9		4401
		3				69	128	25.3		4403
		4				91	169	33.8		5402
Z10 M	2000	1	530 mm	4 x Ø13 mm	1501	28	49	11.3	3000	2404
		1.6				42	73	18.0		3403
		2				51	90	22.7		4401
		3				74	130	34.0		4403
		4				98	171	45.3		5402
Z10 L	2500	1	530 mm	4 x Ø13 mm	1883	33	54	14.2	3000	3402
		1.6				50	81	22.7		4401
		2				61	100	28.4		4402
		3				89	146	42.6		5401
		4				117	192	56.9		5402

Operating cycle: S5 – 40% – 180 starts per hour.

The current values are an indication but may vary due to specific operating parameters. For more precise calculations, you will need to contact Leroy-Somer.

For speeds higher than 180 rpm (2.5 m/s in roping 2:1), the motor will be equipped with forced ventilations.

For speeds lower than 150 rpm (2 m/s in roping 2:1), the maximum nominal torque is increased by 10% when forced ventilations are used.

Selection

Roping 1:1

Travel: 60 m – Counterweight ratio: 50% - Voltage: 400 V – Double Wrapping – 100% rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Sheave Diameter	Number of ropes	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
Z10 S	800	1	530 mm	4 x Ø13 mm	1167	15	26	4.4	1300	2402
		1.6				21	36	7.0		2403
		2				26	44	8.8		2404
		3				37	63	13.2		3402
		4				48	82	17.6		4401
Z10 M	1000	1	530 mm	4 x Ø13 mm	1473	16	27	5.6	1500	2402
		1.6				28	36	8.9		2403
		2				26	43	11.1		2403
		3				37	61	16.7		3402
		4				48	79	22.2		4401
Z10 L	1250	1	530 mm	4 x Ø13 mm	1855	18	29	7.0	1500	2403
		1.6				26	40	11.2		2404
		2				31	49	14.0		3401
		3				45	70	21.0		4401
		4				58	91	28.0		4401

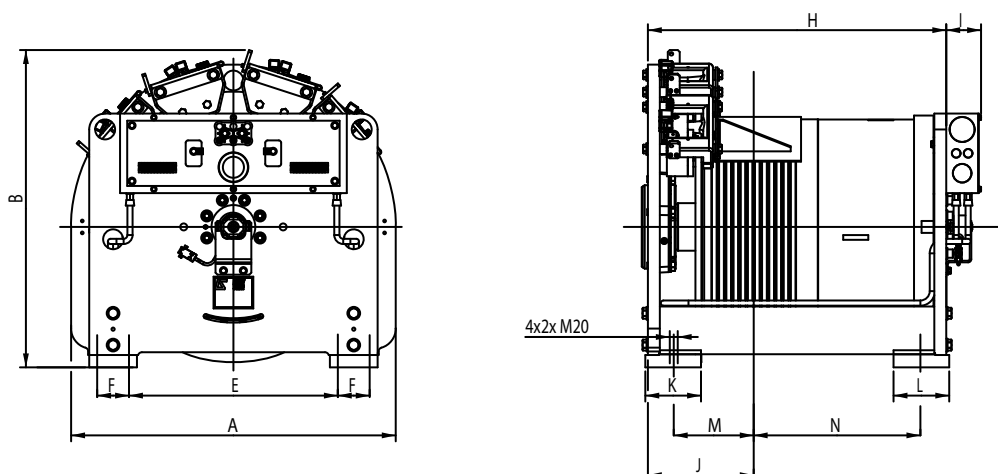
Brakes

Fail safe axial brakes – TUV listed

	Z10
Pick up Voltage / Coil	103 VDC
Holding Voltage / Coil	52 VDC
Pick up Power / Coil	150 W
Holding Power / Coil	33 W

Encoder: ECN 413 Absolute encoder

Dimensions



Type	Main dimensions (mm)										
	A	B	E	F	H	I	J	K	L	M	N
Z10 S					649						319
Z10 M	816	798	525	80	699	87.5	266	140	140	201	369
Z10 L					749						419

General tolerances: ± 10 mm

Appearance and dimensions subject to modification. If you require exact dimensions, ask for a certified drawing when you place your order.

PM synchronous gearless motors for elevators Z12

General



- Protection: IP 20
- Insulation Class H
- Noise level: Less than 55dB (A) at 1 m
- Sheave standard hardness: 220 to 260 Hb
- Thermal protection: PTC thermistor

- In compliance with:
- 95/16/CE Elevator guideline
 - EN81.1 European Elevator Standard
 - ASME A17.1 North American Elevator Safety code

Technical characteristics

	Z12 M	Z12 L	Z12 VL
Sheave diameter (mm)		530	
Sheave usable width (mm)		245	
Shaft Load (kg)		12000	
Number of poles		32	
Max. Speed (min ⁻¹)		290	
Nominal torque (Nm)	1600	1900	2200
Maximum torque (Nm)	2850	3600	4400
Max. Number of brakes		6	
Max. Braking torque per brake (Nm)		1050	
Motor weight (kg)	1080	1140	1200
Machine Inertia (kg.m ²)	18	23	28

Selection

Roping 2:1

Travel: 60 m – Counterweight ratio: 50% - Voltage: 400 V – Double Wrapping – 100% rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Sheave Diameter	Ropes Number & Diameter	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
Z12 M	2000	1.6	530 mm	4 x Ø13 mm	1565	44	82	18.9	3000	4402
		2				55	102	23.6		4403
		2.5				68	133	29.5		5401
		3				77	151	35.4		5402
		4				103	202	47.2		6401
Z12 L	2200	1.6	530 mm	4 x Ø13 mm	1758	49	90	21.2	3300	4402
		2				61	112	26.5		4403
		2.5				77	149	33.1		5401
		3				87	169	39.8		5402
		4				116	225	53		6402
Z12 VL	2500	1.6	530 mm	5 x Ø13 mm	2018	56	100	24.3	3300	4403
		2				70	125	30.4		5401
		2.5				88	165	38		5402
		3				100	188	45.6		6401
		4				133	250	60.9		6402

Operating cycle: S5 – 40% – 180 starts per hour.

The current values are an indication but may vary due to specific operating parameters. For more precise calculations, you will need to contact Leroy-Somer.

For speeds higher than 180 rpm (2.5 m/s in roping 2:1), the motor will be equipped with forced ventilations.

For speeds lower than 150 rpm (2 m/s in roping 2:1), the maximum nominal torque is increased by 10% when forced ventilations are used.

Selection

Roping 1:1

Travel: 60 m – Counterweight ratio: 50% - Voltage: 400 V – Double Wrapping – 100% rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Sheave Diameter	Number of ropes	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
Z12 M	1000	2	530 mm	4 x Ø13 mm	1556	29	56	11.7	1500	3403
		2.5				34	66	14.7		4401
		3				41	79	17.6		4402
		4				54	104	23.5		4403
		5				68	132	29.3		5401
Z12 L	1250	2	530 mm	4 x Ø13 mm	1875	35	64	14.3	1500	4401
		2.5				42	72	17.9		4401
		3				50	92	21.4		4403
		4				66	121	28.6		5401
		5				83	153	35.7		5402
Z12 VL	1350	2	530 mm	5 x Ø13 mm	2116	40	74	16	1700	4401
		2.5				46	85	19.9		4402
		3				56	103	23.9		4403
		4				74	136	31.9		5401
		5				92	169	39.9		5402

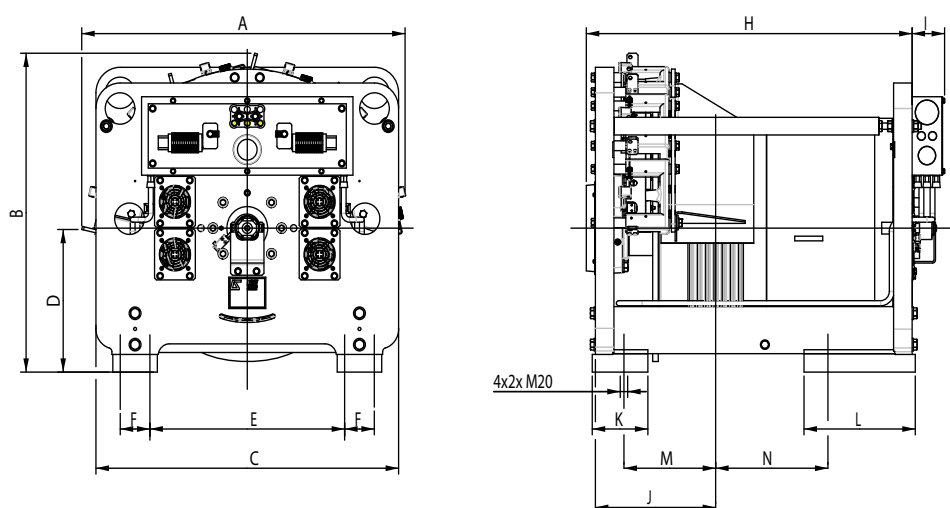
Brakes

Fail safe axial brakes – TUV listed

	Z12
Pick up Voltage / Coil	103 VDC
Holding Voltage / Coil	52 VDC
Pick up Power / Coil	150 W
Holding Power / Coil	33 W

Encoder: ECN 413 Absolute encoder

Dimensions



Type	Main dimensions (mm)													
	A	B	C	D	E	F	H	I	J	K	L	M	N	
Z12 M							778				200			
Z12 L	854	813	816	367	525	80	828	87.5	302	150	250	225	325	
Z12 VL							878				300			

General tolerances: ± 10 mm

Appearance and dimensions subject to modification. If you require exact dimensions, ask for a certified drawing when you place your order.

General



- Protection: IP 20
- Insulation Class H
- Noise level: Less than 55dB (A) at 1 m
- Sheave standard hardness: 220 to 260 Hb
- Thermal protection: PTC thermistor

In compliance with:

- 95/16/CE Elevator guideline
- EN81.1 European Elevator Standard
- ASME A17.1 North American Elevator Safety code

Technical characteristics

	Z20 M	Z20 L	Z20 VL
Sheave diameter (mm)		640	
Sheave usable width (mm)		305	
Shaft Load (kg)		22000	
Number of poles		32	
Max. Speed (min ⁻¹)		300	
Nominal torque (Nm)	2970	3960	4950
Maximum torque (Nm)	5345	7130	8910
Max. Number of brakes		8	
Max. Braking torque per brake (Nm)		1660	
Motor weight (kg)	2200	2300	2400
Machine Inertia (kg.m ²)	62	68	76

Selection

Roping 2:1

Travel: 60 m – Counterweight ratio: 50% - Voltage: 400 V – Double Wrapping – 100% rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Sheave Diameter	Ropes Number & Diameter	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
Z20 M	3000	1	640 mm	5 x Ø16 mm	2736	42	83	17.1	4500	4401
		2				79	156	34.2		5401
		3				111	221	51.3		5402
		4				148	295	68.4		SPMD1402
		5				185	368	85.5		SPMD1404
Z20 L	4000	1	640 mm	6 x Ø16 mm	3659	56	108	22.9	6000	4402
		2				105	204	45.7		5402
		3				149	288	68.6		6401
		4				199	385	91.5		2 x SPMD1401
		5				248	481	114.3		2 x SPMD1401
Z20 VL	5000	1	640 mm	7 x Ø16 mm	4582	70	130	28.6	6500	4403
		2				132	245	57.3		5402
		3				186	346	85.9		SPMD1403
		4				249	461	114.6		2 x SPMD1401
		5				310	576	143.2		2 x SPMD1402

Operating cycle: S5 – 40% – 180 starts per hour.

The current values are an indication but may vary due to specific operating parameters. For more precise calculations, you will need to contact Leroy-Somer.

For speeds higher than 180 rpm (3 m/s in roping 2:1), the motor will be equipped with forced ventilations.

For speeds lower than 150 rpm (2.5 m/s in roping 2:1), the maximum nominal torque is increased by 10% when forced ventilations are used.

Selection

Roping 1:1

Travel: 60 m – Counterweight ratio: 50% - Voltage: 400 V – Double Wrapping – 100% rope compensation

Motor	Cabin Load (kg)	Speed (m/s)	Sheave Diameter	Number of ropes	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (kg)	Suggested Unidrive SP
Z20 M	1500	1	640 mm	5 x Ø16 mm	2702	21	41	8.4	3000	2403
		2				41	81	16.9		4401
		3				58	114	25.3		4403
		4				78	153	33.8		5402
		5				97	191	42.2		6401
Z20 L	2000	1	640 mm	6 x Ø16 mm	3625	28	52	11.3	3500	3401
		2				56	104	22.7		4401
		3				78	146	34		5401
		4				104	195	45.3		5402
		5				130	243	56.6		6401
Z20 VL	2500	1	640 mm	7 x Ø16 mm	4548	35	61	14.2	3500	3402
		2				70	123	28.4		4403
		3				98	173	42.6		5402
		4				131	230	56.9		5402
		5				164	288	71.1		SPMD1402

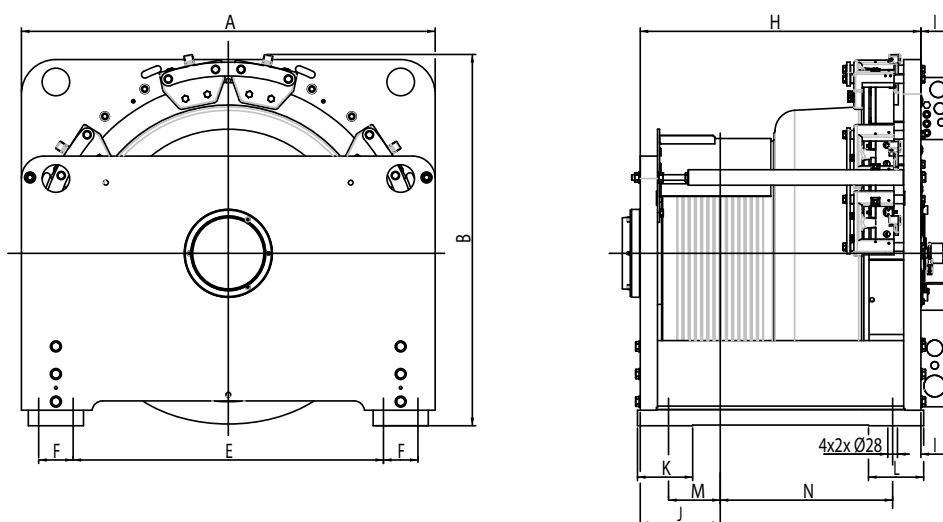
Brakes

Fail safe axial brakes – TUV listed

	Z20
Pick up Voltage / Coil	103 VDC
Holding Voltage / Coil	52 VDC
Pick up Power / Coil	150 W
Holding Power / Coil	33 W

Encoder: ECN 413 Absolute encoder

Dimensions

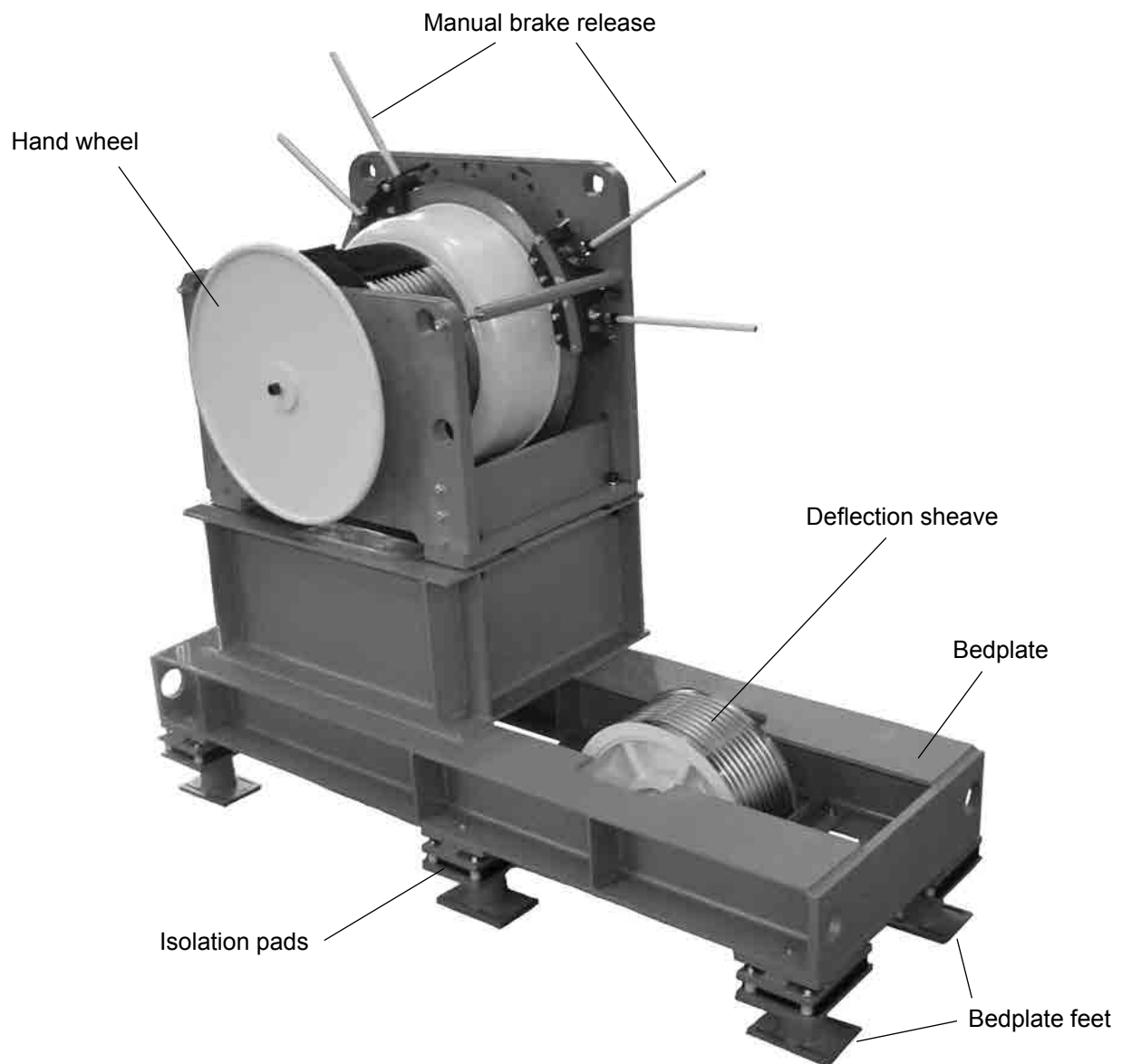


Type	Main dimensions (mm)										
	A	B	E	F	H	I	J	K	L	M	N
Z20 M											
Z20 L	1200	1077	900	100	814	87.5	232	160	160	150	500
Z20 VL											

General tolerances: ± 10 mm

Appearance and dimensions subject to modification. If you require exact dimensions, ask for a certified drawing when you place your order.

Mechanical options



Bedplate: customised design to match installation requirements.

Isolation pads: designed to reduce the vibrations transmitted to the system.

Manual brake release: brake release levers are supplied to allow releasing of the brakes in emergency conditions.

Hand wheel: in the event of a balanced load condition assists movement of the cabin in emergency conditions.

Bedplate feet: to raise the height of the bedplate to allow the secondary/divertor pulley to be installed within the machine room.

Encoder

E range

Heidenhain – ECN 1313

8192 positions (13 bits)

2048 periods/revolution

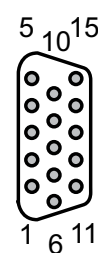
Absolute position value : Endat 2.2

Voltage supply : +5 VDC

IP 40

CONNECTOR		TYPE OF ENCODER
HD15 PIN		ECN 413
1		Cos
2		CosRef
3		Sin
4		SinRef
5		Data
6		Data \
7		-
8		-
9		-
10		-
11		Clock _{out}
12		Clock _{out} \
13		+ 5V
14		0V
15		-

Male
connector
HD15



XA and Z range

Heidenhain – ECN 413

8192 positions (13 bits)

1 Vpp, 2048 periods/revolution

Absolute position value : Endat 2.1

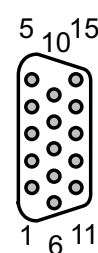
Voltage supply : +5 VDC

IP 64

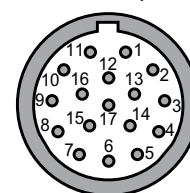


CONNECTOR		TYPE OF ENCODER
HD15 PIN	M23 17 P	ECN 413
1	15	Cos
2	16	CosRef
3	12	Sin
4	13	SinRef
5	14	Data
6	17	Data \
7		-
8		-
9		-
10		-
11	8	Clock _{out}
12	9	Clock _{out} \
13	1 & 7	+ 5V
14	4 & 10	0V
15	11	-

Male
connector
HD15



Male
connector
M23 17p



Notes

Leroy-Somer™

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