



EMERSON[™]
Industrial Automation



4602 en - 2011.02 / b



XA and Z Ranges

PM synchronous gearless motors for elevators

Technical catalogue

XA & Z ranges

PM synchronous gearless motors for elevators

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

XA range	3
XAF1	4
XAP2	6
XAF2	8
XAF3	10
XAF4	12
XAF6	14
XAF4 NA range	17
XAF4M NA	18
XAF4L NA	20
Z range	23
Z6	24
Z10	26
Z12	28
Z20	30
Mechanical options	32
Encoders	33

Leroy-Somer reserves the right to modify the characteristics of its products at any time in order to incorporate the latest technological developments. The information contained in this document may therefore be changed without prior notice.

XA range PM synchronous gearless motors for elevators

General information

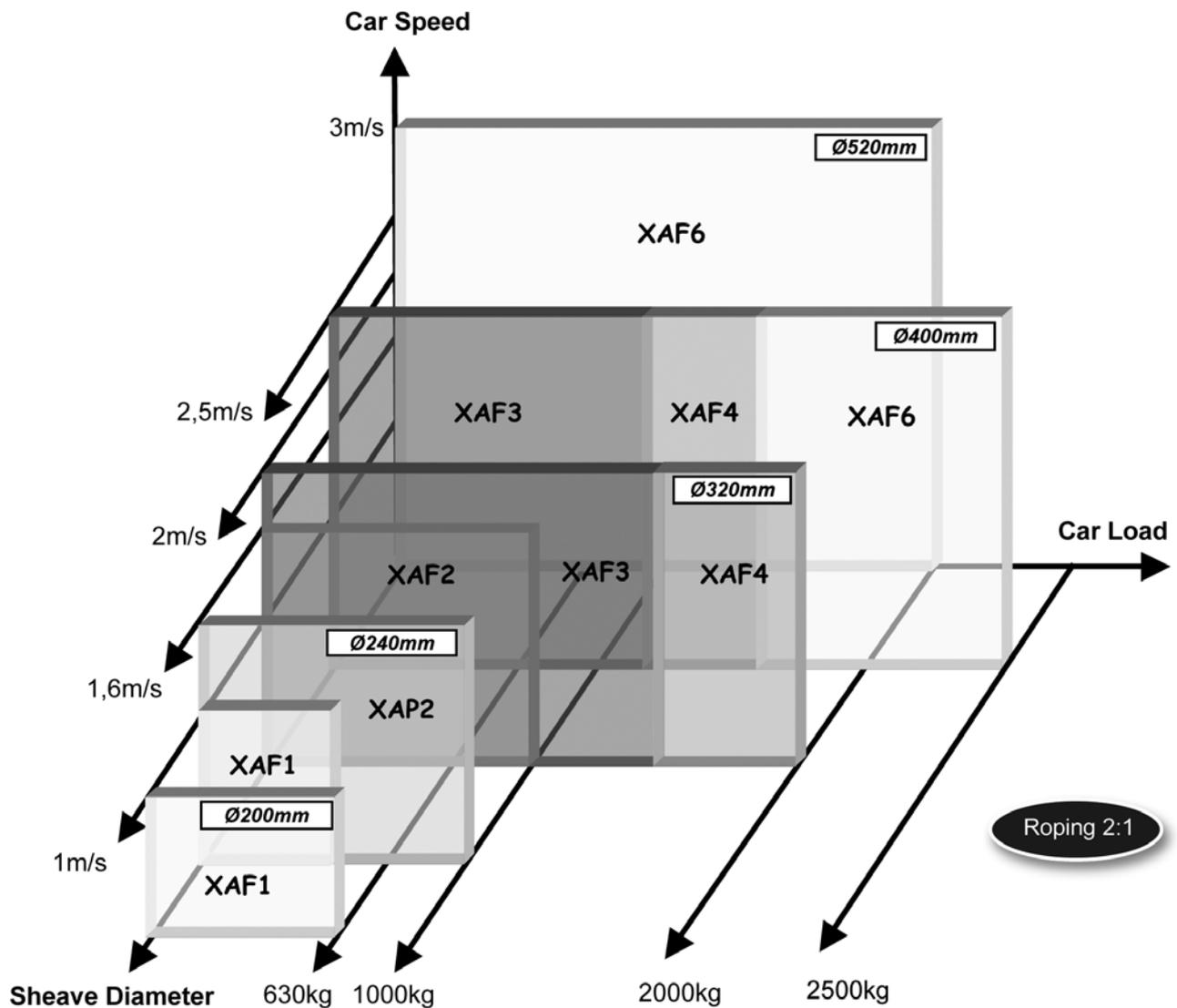


Motor features

- 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



XAF1

PM synchronous gearless motors for elevators

General



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

- In compliance with:
- 95/16/CE Elevator guideline
 - EN81.1 European Standard

Technical characteristics

	XAF1 S		XAF1 M			
	160	200	160	200	240	200
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.m ²)	0.0487	0.0652	0.0745	0.099	0.1345	0.1014

Selection

Roping 2:1

Travel : 30m – Counterweight ratio : 50% - Voltage : 400V – 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	160mm	4 x Ø6.5mm	90	6	9	2.2	500	1405
		1	200mm	4 x Ø6.5mm	115	6	9	2.2		1405
XAF1 M	480	1	160mm	6 x Ø6.5mm	120	9	14	3.0	800	2401
		1	200mm	7 x Ø6.5mm	150	9	14	3.0		2401
	1	240mm	6 x Ø6.5mm 5 x Ø6.0mm	180	9	14	3.0	1406		
	630	1	200mm	7 x Ø6.5mm	200	11	17	3.9		800

Brakes

Fail safe axial brakes – TUV listed

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

Encoder: ECN 413 Absolute encoder

Option: 4096 points incremental encoder ERN 426

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

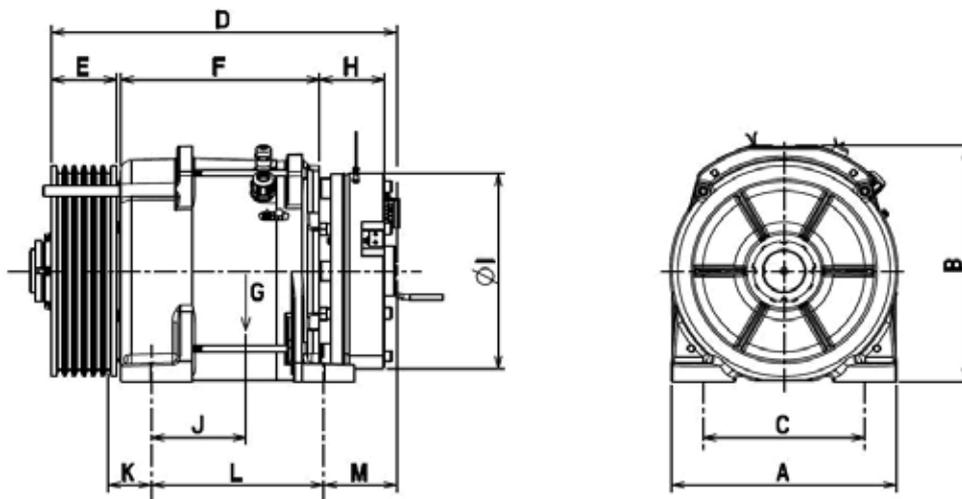
The current values are an indication but may vary due to specific operating parameters. For more precise calculations, you will need to contact Leroy-Somer.

XAF1

PM synchronous gearless motors for elevators

Dimensions

XAF1



Type	Main dimensions (mm)											
	End shield dimensions			D	E	F	H	I	J	K	L	M
	A	B	C									
XAF1 S 160 mm		264		340	56	180			72	56.5	154	
XAF1 S 200 mm				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
XAF1 M 240 mm Brake 280 Nm Sheave 5x6 mm		272				228					198	
XAF1 M 200 mm Brake 280 Nm				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.

XAP2

PM synchronous gearless motors for elevators

General



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

- In compliance with:
- 95/16/CE elevator guideline
 - EN81.1 European Standard

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)	325	500
Motor weight (kg)	125	187
Machine Inertia (kg.m ²)	0.19	0.26

Selection

Roping 2:1

Travel : 30m - Counterweight ratio : 50% - Voltage : 400V - 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
XAP2 L	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 : 30m - Counterweight ratio : 50% - Voltage : 400V - 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
XAP2 L	450	2	10	9	415	14	20	5.8	700	2402
		0.63				8	12	2.2		1406
		1				10	15	3.5		2401
XAP2 L	450	1.6	10	9	415	15	21	5.5	700	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.

XAP2

PM synchronous gearless motors for elevators

Brakes

Fail safe axial brakes – TUV listed

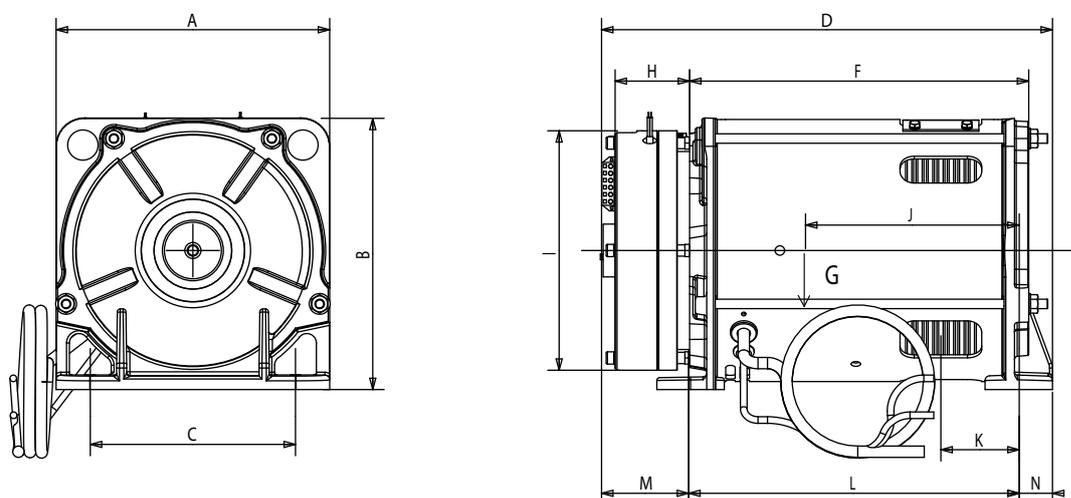
	XAP2 M		XAP2 L	
Pick up Voltage / Coil	104VDC	207VDC	104VDC	207VDC
Holding Voltage / Coil	52VDC	104VDC	52VDC	104VDC
Pick up Power / Coil	270W		186W	
Holding Power / Coil	52W		47W	

Encoder: ECN 413 Absolute encoder

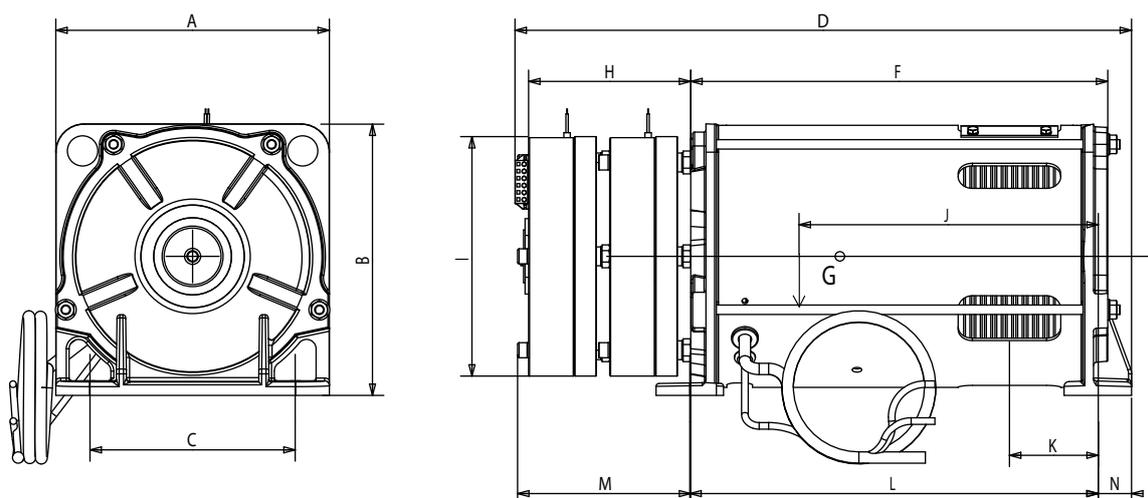
Option: 4096 points incremental encoder ERN 426

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.

XAF2

PM synchronous gearless motors for elevators

General



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

- In compliance with:
- 95/16/CE elevator guideline
 - EN81.1 European Standard

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.m ²)	0.229	0.278	0.463	0.327	0.507	0.531

Selection

Roping 2:1

Travel : 30m - Counterweight ratio : 50% - Voltage : 400V - 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	320mm	4 x Ø8mm	259	9	13	3.2	600	1406
		1.6				13	19	5.2		2401
	630	1	240mm	7 x Ø6.5mm	264	12	17	4.4	800	2401
		1.6				18	26	7.0		2403
XAF2 M	800	1	200mm	8 x Ø6.5mm	275	10	15	4.4	1000	2401
		1.6				14	20	5.5		2402
XAF2 M	630	1	320mm	5 x Ø8mm	344	11	16	4.3	800	2401
		1.6				17	25	6.9		2403
	1000	1	240mm	9 x Ø6.5mm	407	17	25	6.8	1300	2403
1.6	26	38				10.9	2404			
XAF2 L	1000	1	320mm	7 x Ø8mm	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.

XAF2

PM synchronous gearless motors for elevators

Roping 1:1

Travel : 30m - Counterweight ratio : 50% - Voltage : 400V - 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	320mm	3 x Ø8mm	256	6	9	1.6	400	1404
		1.6				8	12	1405		
		1				8	12	1406		
	320	1	240mm	7 x Ø6.5mm	277	11	16	3.7	500	2401
		1.6				7	10	2.3	1405	
		1				9	13	3.7	1406	
XAF2 M	320	1	320mm	4 x Ø8mm	372	8	11	2.3	500	1406
		1.6				11	15	3.7		2401
		1				12	17	3.7		2401
	480	1	240mm	9 x Ø6.5mm	438	17	24	5.8	600	2403
		1.6				12	17	3.7	2401	
		1				17	24	5.8	2403	
XAF2 L	480	1	320mm	6 x Ø8mm	585	12	17	3.7	600	2401
		1.6				17	24	5.9		2403

Brakes

Fail safe axial brakes – TUV listed

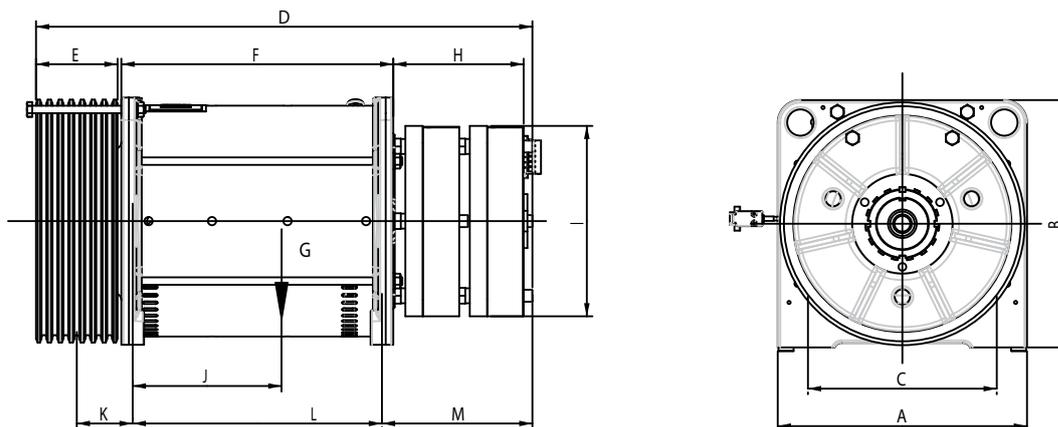
	XAF2 S		XAF2 M & L	
Pick up Voltage / Coil	104VDC	207VDC	104VDC	207VDC
Holding Voltage / Coil	52VDC	104VDC	52VDC	104VDC
Pick up Power / Coil	270W		186W	
Holding Power / Coil	52W		47W	

Encoder: ECN 413 Absolute encoder

Option : 4096 points incremental encoder ERN 426

Dimensions

XAF2



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

XAF3

PM synchronous gearless motors for elevators

General



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

- In compliance with:
- 95/16/CE elevator guideline
 - EN81.1 European Standard

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 : 30m - Counterweight ratio : 50% - Voltage : 400V - 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	400mm	5 x Ø10mm	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	400mm	6 x Ø10mm	711	16	24	7.1	1400	2402
		1.6				24	36	11.4		2403
	1150	2	400mm	7 x Ø10mm	821	30	46	14.2	1500	3401
		1				20	31	8.0		2403
	1250	1	320mm	8 x Ø8mm	667	18	26	8.3	1600	2403
		1.6				27	40	13.3		2404
		2				34	50	16.7		3402
	1500	1	320mm	8 x Ø8mm	782	22	33	20.2	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.

XAF3

PM synchronous gearless motors for elevators

Roping 1:1

Travel : 30m - Counterweight ratio : 50% - Voltage : 400V - 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	500	1	400mm	4 x Ø10mm	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	320mm	7 x Ø8mm	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	400mm	5 x Ø10mm	826	12	17	4.1	900	2401
		1	320mm	8 x Ø8mm	820	14	19	5.1		2402

Brakes

Fail safe axial brakes – TUV listed

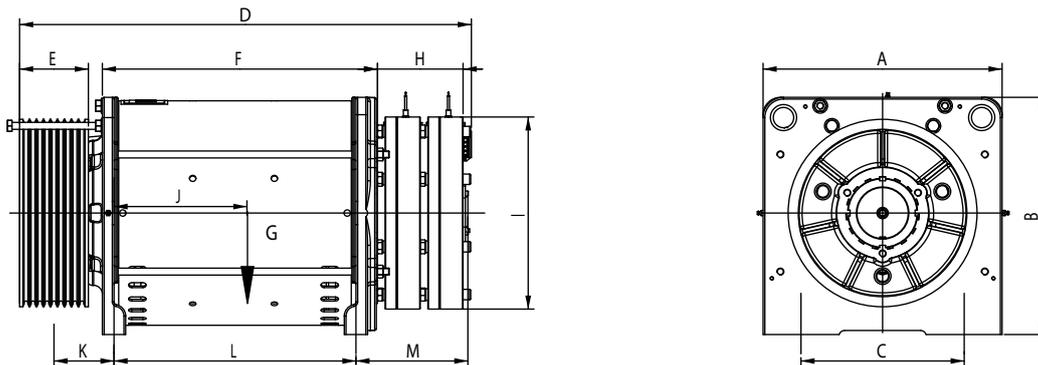
	XAF3	
Pick up Voltage / Coil	104VDC	207VDC
Holding Voltage / Coil	52VDC	104VDC
Pick up Power / Coil	270W	
Holding Power / Coil	52W	

Encoder: ECN 413 Absolute encoder

Option: 4096 points incremental encoder ERN 426

Dimensions

XAF3



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.

XAF4

PM synchronous gearless motors for elevators

General



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

- In compliance with:
- 95/16/CE elevator guideline
 - EN81.1 European Standard

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 : 30m - Counterweight ratio : 50% - Voltage : 400V - 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	400mm	5 x Ø10mm	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	320mm	9 x Ø8mm	841	21	31	10,5	2000	2403
		1.6				32	48	16,8		3402
		2				40	62	21		3403
		1				24	40	10,8		2403
	2000	1.6	400mm	7 x Ø10mm	1081	36	53	17,3	2300	3402
		1				28	40	13		2404
		1.6				42	62	20,8		3403
		1				28	40	13		2404

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.

XAF4

PM synchronous gearless motors for elevators

Roping 1:1

Travel : 30m - Counterweight ratio : 50% - Voltage : 400V - 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	400mm	7 x Ø10mm	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	320mm	9 x Ø8mm	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
	1000	1	400mm	7 x Ø10mm	1213	16	23	6.1	1200	2402
		1.6				23	33	9.7		2403
		2				28	43	12.1		2404
		2.5				32	47	14.6		3402

Brakes

Fail safe axial brakes – TUV listed

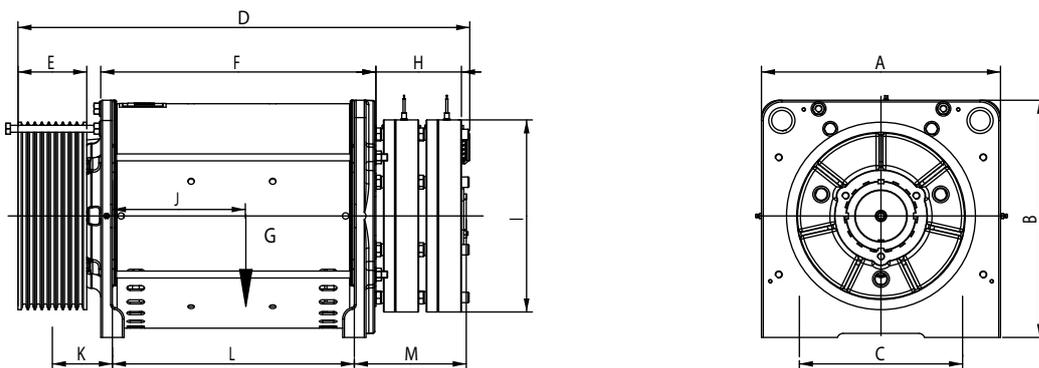
	XAF4	
Pick up Voltage / Coil	104VDC	207VDC
Holding Voltage / Coil	52VDC	104VDC
Pick up Power / Coil	270W	
Holding Power / Coil	52W	

Encoder: ECN 413 Absolute encoder

Option: 4096 points incremental encoder ERN 426

Dimensions

XAF4



Type	Main dimensions (mm)											
	End shield dimensions		C	D	E	F	H	I	J	K	L	M
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.

XAF6

PM synchronous gearless motors for elevators

General



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

- In compliance with:
- 95/16/CE elevator guideline
 - EN81.1 European Standard

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)	2.4	4.6

Selection

Roping 2:1

Travel : 30m - Counterweight ratio : 50% - Voltage : 400V - 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	520mm	5 x Ø13mm	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	400mm	9 x Ø10mm	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	520mm	5 x Ø13mm	1751	34	52	13,5	3200	3402
		1.6				54	82	21,5		4401
		1	400mm	10 x Ø10mm	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.

XAF6

PM synchronous gearless motors for elevators

Roping 1:1

Travel : 30m - Counterweight ratio : 50% - Voltage : 400V - 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	520mm	5 x Ø13mm	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	400mm	9 x Ø10mm	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		
	1250	1000	1	520mm	5 x Ø13mm	1737	17	25	6.7	1600	2403	
			1.6				26	39	10.7		2404	
			2				33	48	13.4		3402	
			2.5				41	60	16.7		3403	
		1250	1250	1	400mm	10 x Ø10mm	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

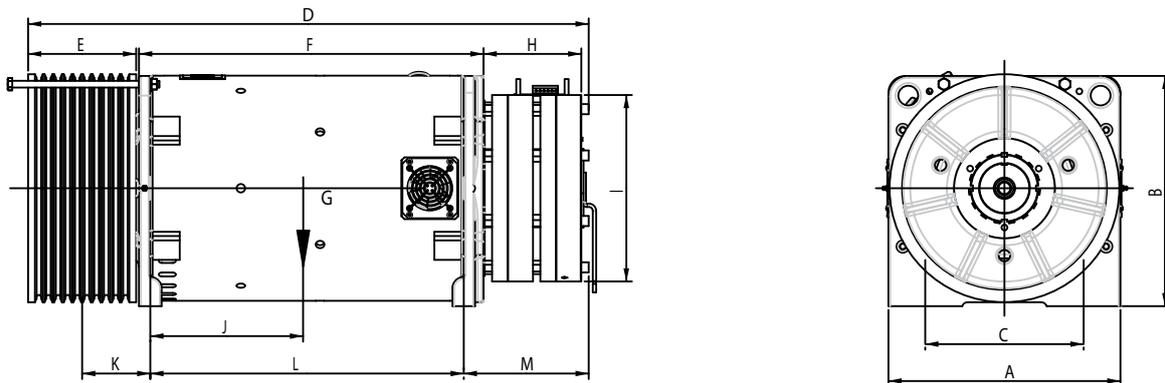
	XAF6	
Pick up Voltage / Coil	104VDC	207VDC
Holding Voltage / Coil	52VDC	104VDC
Pick up Power / Coil	480W	
Holding Power / Coil	120W	

Encoder: ECN 413 Absolute encoder

Option: 4096 points incremental encoder ERN 426

Dimensions

XAF6



Type	Main dimensions (mm)											
	End shield dimensions		C	D	E	F	H	I	J	K	L	M
XAF6 400 mm	A	B	280	940	191	611	170.7	332	270	120	554	221
XAF6 520 mm	410	410	280	940	191	611	170.7	332	256	120	554	221

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.

XAF4 NA range PM synchronous gearless motors for elevators

General information

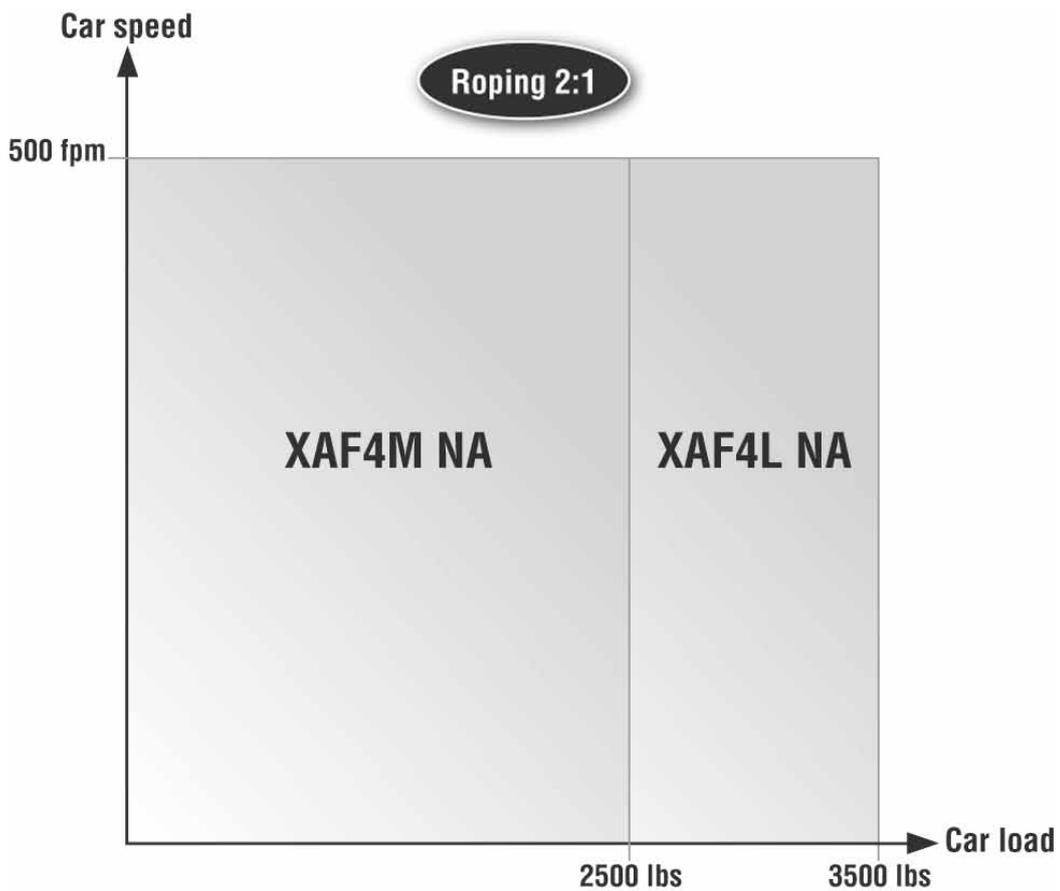


Motor features

- Gearless Permanent Magnet motors
- Smooth and silent operations
- Up to 4.4T static load
- Reduced Maintenance
- Hardened grooves
- Absolute encoder
- ASME A17.1 / CSA B44 compliance
- CSA listed

Applications

- Machine Room Less
- Modernization
- New Installations



XAF4M NA

PM synchronous gearless motors for elevators

General



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

In compliance with:
- ASME A17.1 / CSA B44

Technical characteristics

	XAF4M NA
Sheave diameter (mm)	400
Sheave usable width (mm)	126
Shaft Load (lbs)	9700
Number of poles	16
Max. Speed (min ⁻¹)	240
Nominal torque (Nm)	750
Maximum torque (Nm)	1500
Number of service brakes	1
Max. Braking torque per service brakes (Nm)	1000
Number of emergency brakes	2
Max. Braking torque per emergency brake (Nm)	875
Motor weight (lbs)	992
Machine Inertia (kg.m ²)	0.71

Selection

Roping 2:1

Travel : 80ft – Counterweight ratio : 50% - Voltage : 400V – Single Wrap – No rope compensation

Motor	Cabin Load (lbs)	Speed (fpm)	Ropes Number & Diameter	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (lbs)	Suggested Unidrive SP
XAF4M NA	1500	125	5 x Ø10mm	500	6	8	4.2	2200	1405
		200			10	16	6.7		2401
		350			17	29	11.7		2403
		500			24	43	16.2		3402
	2100	125	5 x Ø10mm	653	8	11	5.5	3000	1406
		200			13	21	8.7		2402
		350			23	39	15.6		3402
		500			31	55	21.6		3403
	2500	125	6 x Ø10mm	767	10	15	6.4	5100	2401
		200			15	26	10.2		2403
		350			27	50	18.5		3403
		500			37	72	25.7		4401

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.

XAF4M NA

PM synchronous gearless motors for elevators

Roping 1:1

Travel : 80ft - Counterweight ratio : 50% - Voltage : 400V - Single Wrap - No rope compensation

Motor	Cabin Load (lbs)	Speed (fpm)	Ropes Number & Diameter	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (lbs)	Suggested Unidrive SP
XAF4M NA	800	125	5 x Ø10mm	517	4	6	2.1	1500	1404
		200			5	8	3.5		1405
		350			9	16	6.3		2401
		500			13	24	8.5		2403
	1000	125	5 x Ø10mm	625	4	6	2.7	1800	1404
		200			6	10	4.2		1406
		350			11	19	7.5		2402
		500			15	27	10.5		2403
	1200	125	6 x Ø10mm	745	5	7	2.3	2000	1404
		200			8	13	5		2401
		350			13	22	9		2403
		500			18	32	12.5		3401

Brakes

Fail safe axial brakes – TUV listed

	Service (1 coil)	Emergency (2 coils in series)
Pick up Voltage	207VDC	207VDC
Holding Voltage	104VDC	104VDC
Pick up Power	240W	300W
Holding Power	60W	66W

Optional brake supply – CDF9 card:

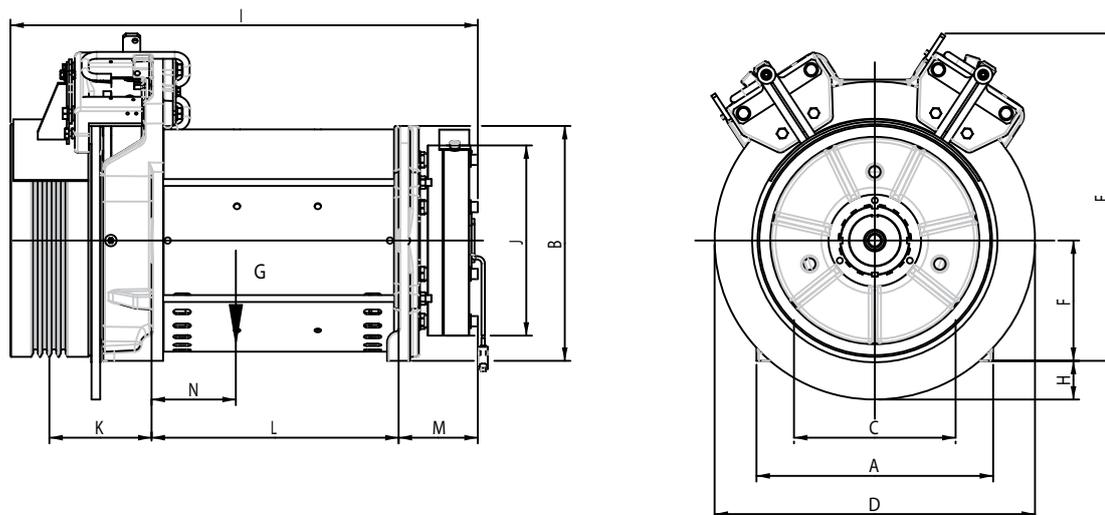
207VDC & 104VDC supplied from a 230VAC network

Encoder: ECN 413 Absolute encoder

Option: 4096 points incremental encoder ERN 426

Dimensions

XAF4M NA



Type	Main dimensions (mm)													
	A	B	C	D	E	F	H	I	J	K	L	M	N	
XAF4M NA	410	410	280	555	571	210	70	703	332	177	333	125	98	

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.

XAF4L NA

PM synchronous gearless motors for elevators

General



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

In compliance with:
- ASME A17.1 / CSA B44

Technical characteristics

	XAF4L NA
Sheave diameter (mm)	400
Sheave usable width (mm)	126
Shaft Load (lbs)	9700
Number of poles	16
Max. Speed (min ⁻¹)	240
Nominal torque (Nm)	1150
Maximum torque (Nm)	2000
Number of service brakes	1
Max. Braking torque per service brakes (Nm)	1500
Number of emergency brakes	2
Max. Braking torque per emergency brake (Nm)	875
Motor weight (lbs)	1135
Machine Inertia (kg.m ²)	0.93

Selection

Roping 2:1

Travel : 80ft – Counterweight ratio : 50% - Voltage : 400V – Single Wrap – No rope compensation

Motor	Cabin Load (lbs)	Speed (fpm)	Ropes Number & Diameter	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (lbs)	Suggested Unidrive SP
XAF4L NA	2800	125	7 x Ø10mm	880	11	19	7.6	4000	2403
		200			20	37	12.0		3401
		350			33	62	20.0		4401
		500			46	86	28.5		4402
	3000	125	7 x Ø10mm	936	12	21	8.1	4500	2402
		200			21	39	12.8		3402
		350			35	66	21.2		4401
		500			49	92	30.3		4403
	3500	125	8 x Ø10mm	1029	14	24	9.4	5000	2403
		200			23	43	14.1		3402
		350			40	74	24.7		4402
		500			57	106	35.3		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.

XAF4L NA

PM synchronous gearless motors for elevators

Roping 1:1

Travel : 80ft - Counterweight ratio : 50% - Voltage : 400V - Single Wrap - No rope compensation

Motor	Cabin Load (lbs)	Speed (fpm)	Ropes Number & Diameter	Torque (Nm)	I Nominal (A)	I Acceleration (A)	Power (kW)	Max. Cabin weight (lbs)	Suggested Unidrive SP
XAF4L NA	1300	125	7 x Ø10mm	773	5	9	3.3	2500	1405
		200			8	15	5.3		2401
		350			13	24	8.8		2403
		500			21	42	12.5		3402
	1500	125	7 x Ø10mm	890	6	11	3.8	2500	1406
		200			9	16	6.2		2401
		350			15	27	10.2		2404
		500			24	46	14.4		3403
	1800	125	8 x Ø10mm	1040	7	12	4.4	3000	1406
		200			11	19	7.2		2402
		350			17	31	11.9		3401
		500			28	54	16.9		3403

Brakes

Fail safe axial brakes – TUV listed

	Service (1 coil)	Emergency (2 coils in series)
Pick up Voltage	207VDC	207VDC
Holding Voltage	104VDC	104VDC
Pick up Power	240W	300W
Holding Power	60W	66W

Optional brake supply – CDF9 card:

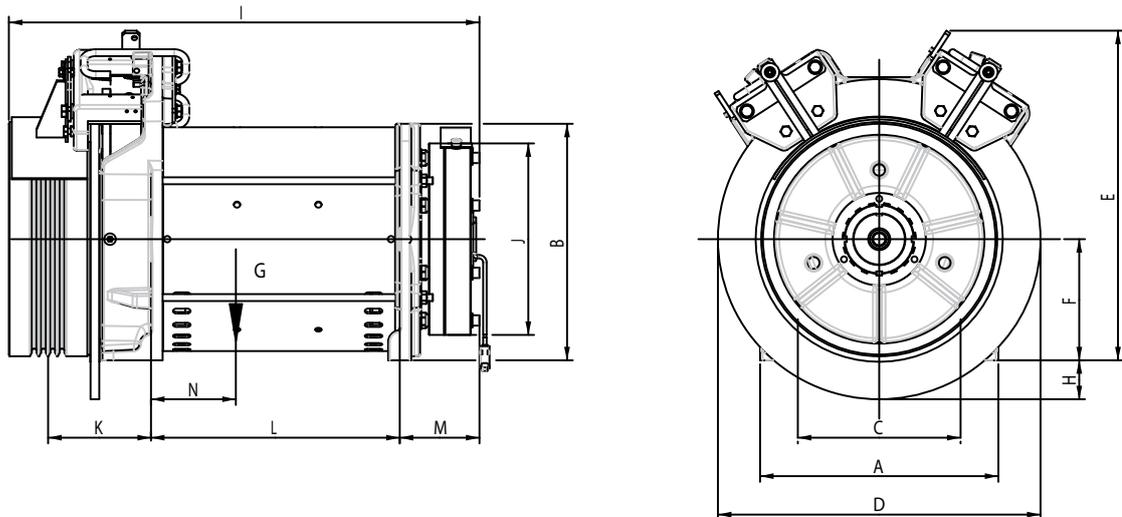
207VDC & 104VDC supplied from a 230VAC network

Encoder: ECN 413 Absolute encoder

Option: 4096 points incremental encoder ERN 426

Dimensions

XAF4L NA



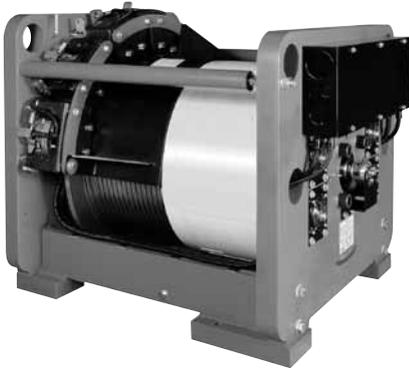
Type	Main dimensions (mm)													
	A	B	C	D	E	F	H	I	J	K	L	M	N	
XAF4L NA	410	410	280	555	571	210	70	810	332	177	428	137	146	

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.

Z range PM synchronous gearless motors for elevators

General information

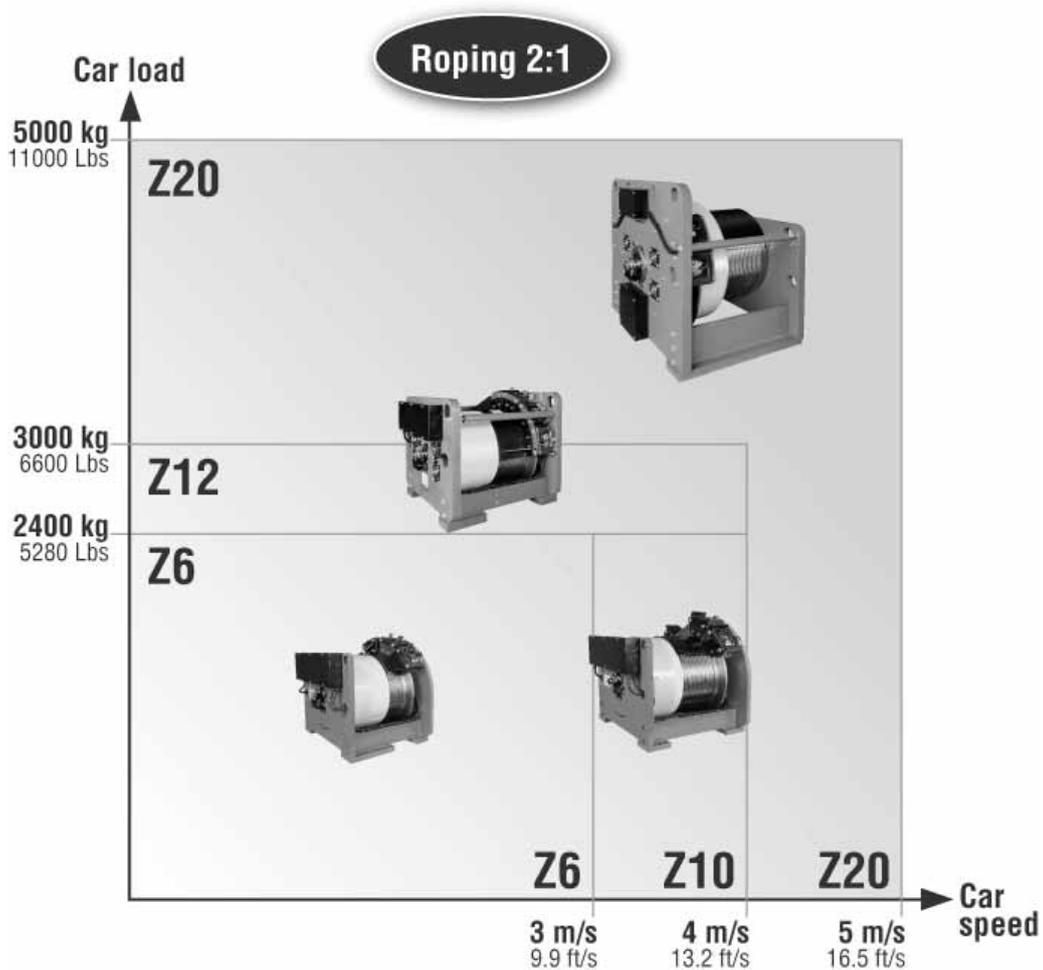


Motor features

- 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



Z6

PM synchronous gearless motors for elevators

General



- Protection: IP 20
- Insulation Class F
- Noise level: Less than 55dB (A) at 1m
- Sheave standard hardness: 220 to 260Hb
- 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)		1100	
Motor weight (kg)	710	780	850
Machine Inertia (kg.m ²)	9.4	10.7	11.9

Selection

Roping 2:1

Travel : 30m – Counterweight ratio : 50% - Voltage : 400V – 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	530mm	4 x Ø13mm	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	530mm	5 x Ø13mm	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	530mm	6 x Ø13mm	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 180rpm (2,5m/s in roping 2:1), the motor will be equipped with forced ventilations.

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

Z6

PM synchronous gearless motors for elevators

Roping 1:1

Travel : 30m – Counterweight ratio : 50% - Voltage : 400V – 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	530mm	4 x Ø13mm	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	530mm	5 x Ø13mm	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	530mm	6 x Ø13mm	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

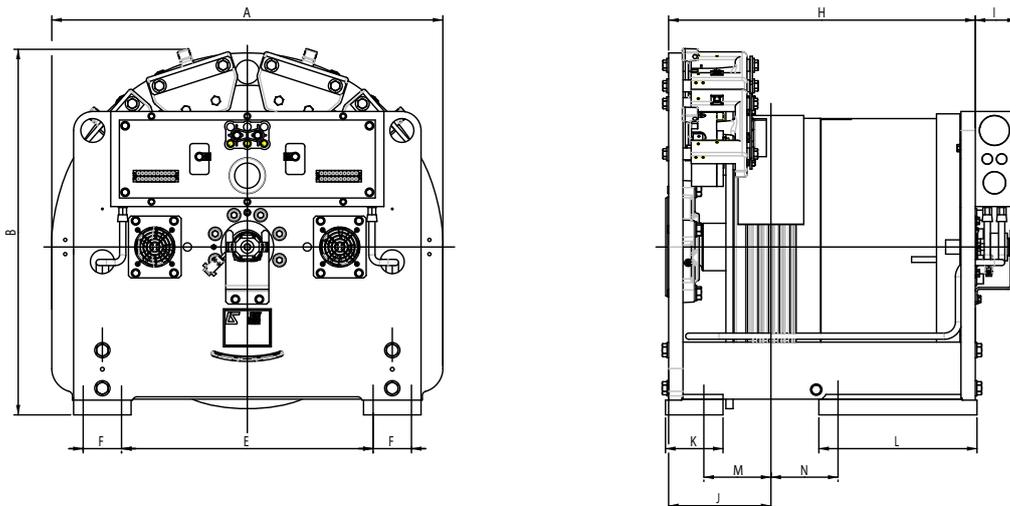
	Z6
Pick up Voltage / Coil	103VDC
Holding Voltage / Coil	52VDC
Pick up Power / Coil	150W
Holding Power / Coil	33W

Encoder: ECN 413 Absolute encoder

Option: 4096 points incremental encoder ERN 423

Dimensions

Z6



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.

Z10

PM synchronous gearless motors for elevators

General



- Protection: IP 20
- Insulation Class F
- Noise level: Less than 55dB (A) at 1m
- Sheave standard hardness: 220 to 260Hb
- 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)		1100	
Motor weight (kg)	810	880	950
Machine Inertia (kg.m ²)	13	16	20

Selection

Roping 2:1

Travel : 60m – Counterweight ratio : 50% - Voltage : 400V – 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	530mm	4 x Ø13mm	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	530mm	4 x Ø13mm	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	530mm	4 x Ø13mm	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 180rpm (2,5m/s in roping 2:1), the motor will be equipped with forced ventilations.

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

Z10

PM synchronous gearless motors for elevators

Roping 1:1

Travel : 60m – Counterweight ratio : 50% - Voltage : 400V – 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	530mm	4 x Ø13mm	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	530mm	4 x Ø13mm	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	530mm	4 x Ø13mm	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

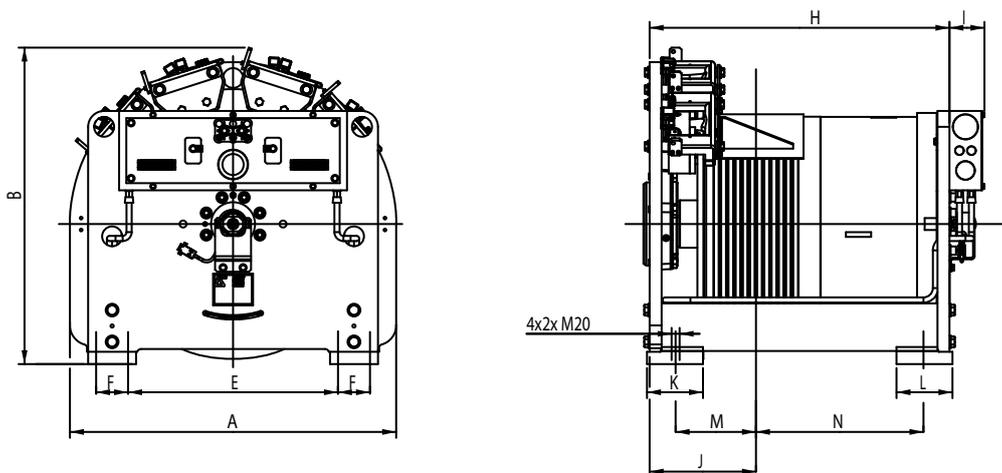
	Z10
Pick up Voltage / Coil	103VDC
Holding Voltage / Coil	52VDC
Pick up Power / Coil	150W
Holding Power / Coil	33W

Encoder: ECN 413 Absolute encoder

Option: 4096 points incremental encoder ERN 423

Dimensions

Z10



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.

Z12

PM synchronous gearless motors for elevators

General



- Protection: IP 20
- Insulation Class F
- Noise level: Less than 55dB (A) at 1m
- Sheave standard hardness: 220 to 260Hb
- 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)		1100	
Motor weight (kg)	1080	1140	1200
Machine Inertia (kg.m ²)	18	23	28

Selection

Roping 2:1

Travel : 60m – Counterweight ratio : 50% - Voltage : 400V – 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	530mm	4 x Ø13mm	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	530mm	4 x Ø13mm	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	530mm	5 x Ø13mm	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 180rpm (2,5m/s in roping 2:1), the motor will be equipped with forced ventilations.

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

Z12

PM synchronous gearless motors for elevators

Roping 1:1

Travel : 60m – Counterweight ratio : 50% - Voltage : 400V – 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	530mm	4 x Ø13mm	1556	29	56	11,7	1500	3403
		2,5				34	66	4401		
		3				41	79	4402		
		4				54	104	4403		
		5				68	132	5401		
Z12 L	1250	2	530mm	4 x Ø13mm	1875	35	64	14,3	1500	4401
		2,5				42	72	4401		
		3				50	92	4403		
		4				66	121	5401		
		5				83	153	5402		
Z12 VL	1350	2	530mm	5 x Ø13mm	2116	40	74	16	1700	4401
		2,5				46	85	4402		
		3				56	103	4403		
		4				74	136	5401		
		5				92	169	5402		

Brakes

Fail safe axial brakes – TUV listed

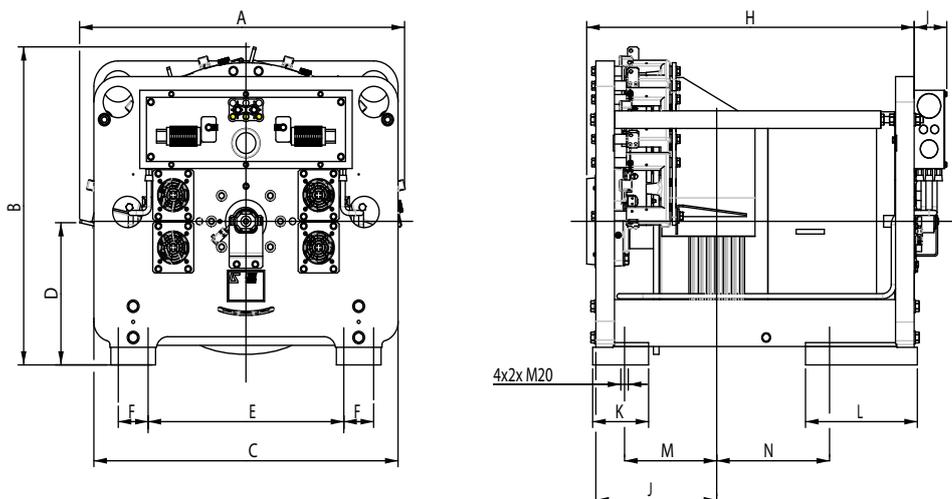
	Z12
Pick up Voltage / Coil	103VDC
Holding Voltage / Coil	52VDC
Pick up Power / Coil	150W
Holding Power / Coil	33W

Encoder: ECN 413 Absolute encoder

Option: 4096 points incremental encoder ERN 423

Dimensions

Z12



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			

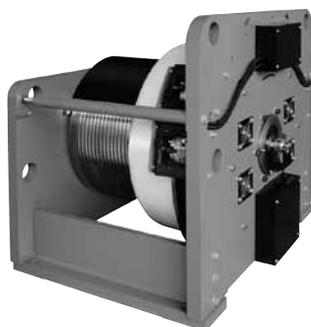
General tolerances: ± 10 mm

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

Z20

PM synchronous gearless motors for elevators

General



- Protection: IP 20
- Insulation Class F
- Noise level: Less than 55dB (A) at 1m
- Sheave standard hardness: 220 to 260Hb
- 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 : 60m – Counterweight ratio : 50% - Voltage : 400V – 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	640mm	5 x Ø16mm	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	640mm	6 x Ø16mm	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	640mm	7 x Ø16mm	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 180rpm (3m/s in roping 2:1), the motor will be equipped with forced ventilations.

For speeds lower than 150rpm (2,5m/s in roping 2:1), the maximum nominal torque is increased by 10% when forced ventilations are used.

Z20

PM synchronous gearless motors for elevators

Roping 1:1

Travel : 60m – Counterweight ratio : 50% - Voltage : 400V – 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	640mm	5 x Ø16mm	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	640mm	6 x Ø16mm	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	640mm	7 x Ø16mm	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

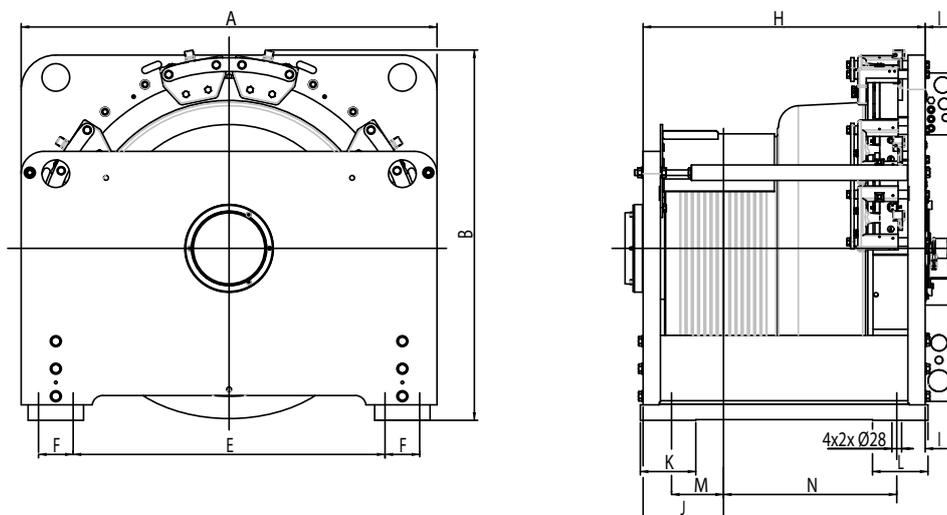
	Z20
Pick up Voltage / Coil	103VDC
Holding Voltage / Coil	52VDC
Pick up Power / Coil	150W
Holding Power / Coil	33W

Encoder: ECN 413 Absolute encoder

Option: 4096 points incremental encoder ERN 423

Dimensions

Z20



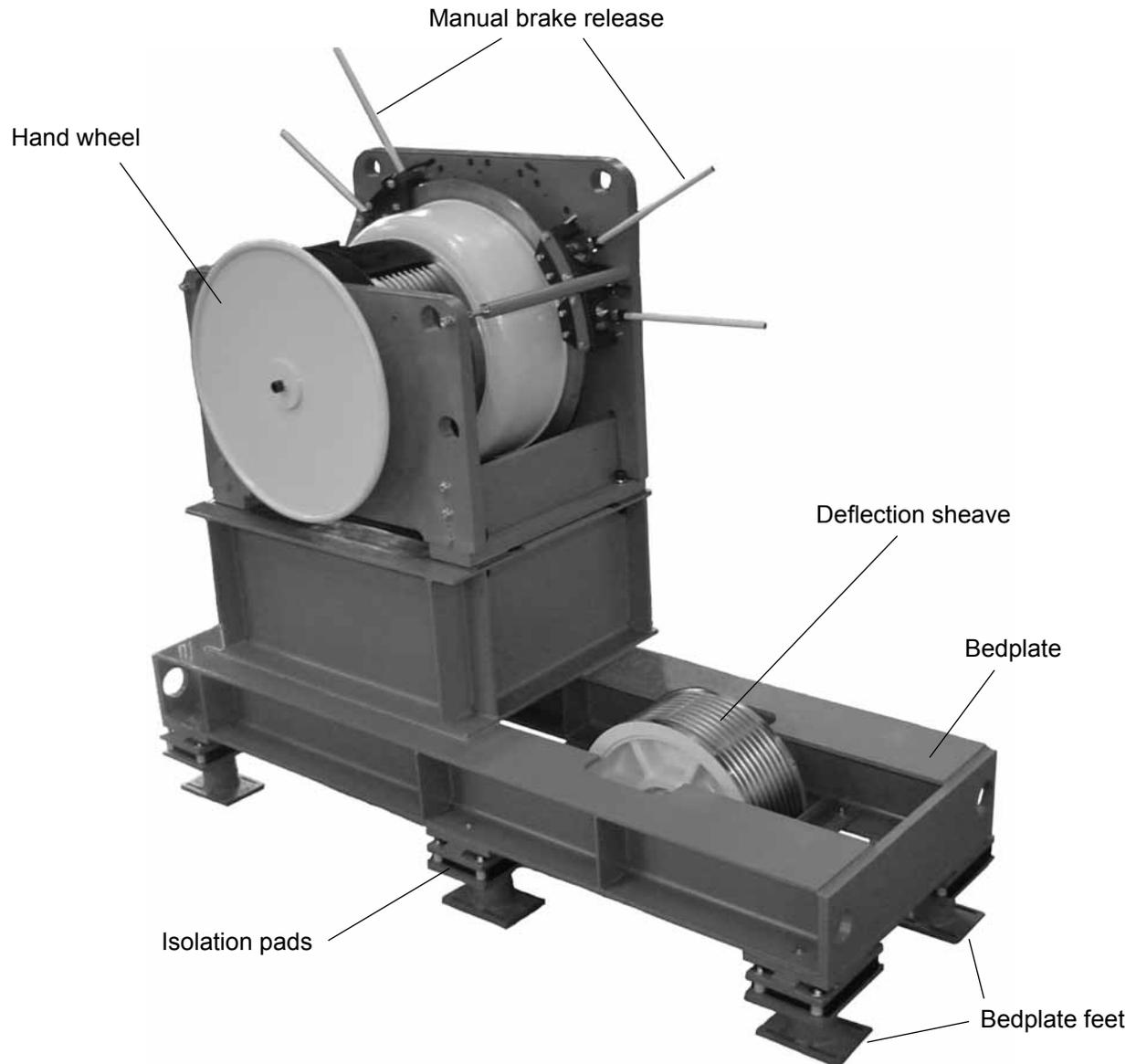
Type	Main dimensions (mm)											
	A	B	E	F	H	I	J	K	L	M	N	
Z20 M												
Z20 L	1200	1077	900	100	814	87,5	232	160	160	150	500	
Z20 VL												

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.

Z range PM synchronous gearless motors for elevators

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.

XA & Z ranges

PM synchronous gearless motors for elevators

Encoders

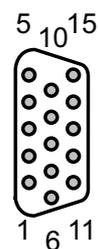


Heidenhain – ECN 413
 8192 positions (13 bits)
 1Vpp, 2048 periods/revolution
 Absolute position value : Endat 2.1
 Voltage supply : +5VDC
 IP 64

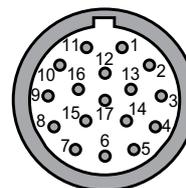
Heidenhain – ERN 426
 4096 positions
 Incremental encoder
 IP 64

CONNECTOR		TYPE OF ENCODER	
HD15 PIN	M23 17 P	ECN 413	ERN 426
1	15	Cos	A
2	16	CosRef	A/
3	12	Sin	B
4	13	SinRef	B/
5	14	Data	Z
6	17	Data \	Z/
7		-	U
8		-	U/
9		-	V
10		-	V/
11	8	Clock _{out}	W
12	9	Clock _{out} \	W/
13	1 & 7	+ 5V	+ 5V
14	4 & 10	0V	0V
15	11	-	-

Male
connector
HD15



Male
connector
M23 17p



I - SPHERE OF APPLICATION

These General Conditions of Sale (GCS) apply to the sale of all products, components, software and provision of services (referred to as «Materials») offered or supplied by the Vendor to the Customer. They also apply to all quotations or offers made by the Vendor, and form an integral part of any order. «Vendor» means any company controlled directly or indirectly by LEROY-SOMER. In addition, the order is also subject to the Inter Trades Union General Conditions of Sale for France for the F.I.E.E.C. (Federation of Electrical, Electronic and Communication Industries), latest edition, in that they do not conflict with the GCS.

Acceptance of the Vendor's offers and quotations, or any order, implies unqualified acceptance of these GCS and excludes any stipulations to the contrary appearing on all other documents, especially on the Customer's purchase orders and his General Conditions of Purchase. A dispensation from Paragraph 1 above applies to sales concerning foundry parts, which are subject to the General Contractual Conditions of European Foundries, latest edition.

Materials and services sold under these GCS may under no circumstances be intended for applications in the nuclear field, these sales expressly being the subject of special technical specifications and contracts which the Vendor reserves the right to refuse.

II - ORDERS

All orders, including those taken by the Vendor's agents and representatives, by whatever mode of transmission, become valid only after they have been accepted in writing by the Vendor or work on the order has begun.

The Vendor reserves the right to modify the characteristics of his Materials without prior notice. However, the Customer may still specify particular characteristics required for a contract. In the absence of such an express specification, the Customer will not be able to refuse delivery of the new modified Material.

The Vendor will not accept responsibility for an incorrect choice of Material if this incorrect choice results from incomplete and/or erroneous conditions of use, or these have not been conveyed to the Vendor by the Customer.

Unless otherwise specified, offers and quotations submitted by the Vendor are valid for only thirty days from the date of issue. When the Material has to satisfy standards, particular regulations and/or be inspected by standards or inspection organisations, the price request must be accompanied by a full specification, with which the Vendor must agree. This is mentioned in the quotation or offer. All test and inspection fees are the Customer's responsibility.

III - PRICES

Prices are shown exclusive of tax, and may be revised without prior warning.

Prices are either firm for the duration specified on the quotation, or subject to revision according to a formula accompanying the tender which, according to the regulations, covers a change in the raw materials, products, miscellaneous services and salaries.

All related costs, such as customs clearance and special inspections etc., will be added on.

IV - DELIVERY

Sales are governed by the INCOTERMS published by the International Chamber of Commerce («I.C.C. INCOTERMS»), latest edition.

The Material is dispatched in accordance with the conditions indicated on the order acknowledgement, sent by the Vendor in response to any order for Material.

Unless otherwise specified, prices refer to Material made available in the Vendor's factories, and include standard packaging.

Unless otherwise specified, Materials are always transported at the purchaser's risk. Without exception, it is up to the purchaser to raise with the transporter, in the legal form and time limits, any claim concerning the state or the number of packages received and also to send the Vendor a copy of this declaration. Failure to comply with this procedure will relieve the Vendor of all responsibility. In any case, the Vendor's responsibility cannot exceed the amount received from his insurers.

If the arrangements for dispatch are modified by the Customer after acceptance of the order, the Vendor reserves the right to invoice any additional costs arising from such changes.

Unless stipulated in the contract or due to a legal obligation to the contrary, packages cannot be returned.

Should the delivery of the Material be delayed, for a reason not attributable to the Vendor, Material stored on his premises will be insured at the sole risk of the Customer with a charge for storage costs at a rate of 1% (one per cent) of the total amount of the order, per week or part thereof (irrespective of percentage) as from the availability date as indicated in the contract. After thirty days from this date, the Vendor will be able, as he wishes, either to dispose of the Material and/or arrange a new delivery date for the said Materials with the Customer, or to invoice the Customer in full in accordance with the delivery schedule and amount specified in the contract. In all instances, all deposits received remain the property of the Vendor by way of indemnity, without prejudice to other actions that the Vendor may institute.

V - DELIVERY DATES

The Vendor is bound only by the delivery dates stated on his order acknowledgement. These dates are counted from the date of the order acknowledgement sent by the Vendor, subject to compliance with the provisions indicated on the order acknowledgement, notably receipt of the deposit for the order, notification of the establishment of an irrevocable letter of credit, conforming to all the Vendor's requirements (especially as regards the amount, currency, validity, licence, etc.) and acceptance of the various terms of payment as regards setting up any guarantees which may be required, etc.

Late delivery does not automatically entitle the Customer to damages and interest and/or penalties.

Unless otherwise specified, the Vendor reserves the right to make partial deliveries.

Delivery dates are suspended automatically and without legal formality, for any breach of obligations by the Customer.

VI - TESTS - APPROVAL

Materials manufactured by the Vendor are inspected and tested prior to dispatch from the factory. Customers may attend these tests: they simply have to state the wish to do so when the order is placed.

Specific tests and acceptance tests requested by the Customer, whether conducted on the Customer's premises, in the Vendor's factories, on site, or by inspection organisations, must be noted on the order and are to be paid for by the Customer.

Prototypes of Materials specially developed or adapted for a Customer must be approved by the Customer before any delivery of production Materials in order to make sure they are compatible with the other constituent parts of his equipment, and that they are suitable for the Customer's intended use of them. This approval will also enable the Customer to make sure that the Materials comply with the technical specification. To that end, the Customer and the Vendor will sign two copies of a Product Approval Form, one copy to be kept by each.

In the event of the Customer requiring delivery without having previously approved the Materials, these will then be delivered as they are and still considered as prototypes; the Customer will then assume sole responsibility for using them or supplying them to his own Customers. However, the Vendor may also decide not to deliver the Materials until they have been previously approved by the Customer.

VII - TERMS OF PAYMENT

All sales are deemed to be undertaken and payable at the Vendor's registered office, without exception, whatever the method of payment,

the place of conclusion of the contract and delivery.

When the Customer is based in France, invoices are payable on receipt in cash, by banker's draft or by Letter of Exchange, within 30 (thirty) days of the end of the month following the invoice date.

Any payment made in advance of the fixed payment date will lead to a discount of 0.2% (zero point two per cent) per month of the amount concerned from the invoice.

Except as otherwise provided, when the Customer is based outside France, invoices are payable upon issue of the dispatch documents in cash, or by irrevocable letter of credit confirmed by a major French bank, all charges paid by the Customer.

Payments mean making funds available in the Vendor's bank account and must be made in the currency of the invoice.

Under French Law 2008-776 of 04/08/2008, non-payment of an invoice by its due date will invoke, after no result from a formal notice, a flat-rate penalty at the date the debt is due, applied to the amount inclusive of tax of the sums due if the invoice is liable to VAT (Value Added Tax), and suspension of orders in progress. This penalty is equal to the rate applied by the European Central Bank to its most recent refinancing operation plus 10 percentage points.

Should steps have to be taken to recover the said amount, a surcharge of 15% (fifteen per cent) of the sum demanded will be payable, with a minimum of €500 excl. tax (five hundred euros excluding tax). Any tax due will be charged to the Customer.

Moreover, with the proviso of complying with any legal measures in force, in the event of non-payment (total or partial) of an invoice or any amount due, whatever the method of payment envisaged, the Customer will be liable immediately for the whole of the outstanding amount owed to the Vendor (including his subsidiaries, sister or parent companies, whether in France or overseas) for all deliveries or services, whatever their initial due date.

Notwithstanding any particular settlement conditions arranged between the parties, the Vendor reserves the right to demand, as wished, in the event of deterioration of the Customer's credit, payment incident or compulsory administration of the Customer:

- payment in cash, before the Materials leave the factory, for all orders in progress
- payment of a deposit for the order
- additional or different payment guarantees

VIII - COMPENSATION CLAUSE

Unless prohibited by law, the Vendor and the Customer expressly agree between one another the balance of compensation between their debts and dues arising from their commercial relationship, even if the conditions defined in law for legal compensation are not all satisfied.

In applying this clause, Vendor means any company in the LEROY-SOMER group.

IX - TRANSFER OF RISKS / RESERVATION OF TITLE

Transfer of risks occurs upon the handing over of the Material, according to the delivery conditions agreed at the time of ordering.

Transfer to the Customer of ownership of the Material sold occurs upon payment of the whole principal sum, including accessories. In the event of an action to establish title to the delivered Material, deposits paid will remain the property of the Vendor by way of indemnities.

The provision of a document creating an obligation to pay (letter of exchange or similar) does not constitute payment in full.

For as long as the price has not been paid in full, the Customer is obliged to inform the Vendor, within twenty-four hours, of the seizure, requisition or confiscation of Materials to the benefit of a third party, and to take all protective measures to inform the Vendor and comply with the Vendor's right of title in the event of intervention by creditors.

X - CONFIDENTIALITY

Each party undertakes to maintain confidentiality of information of a technical, commercial, financial or other nature, received from the other party, orally, in writing, or by any other communication method during negotiations and/or execution of any order.

This confidentiality obligation will apply throughout the period of execution of the order and for 5 (five) years after its completion or cancellation, whatever the reason for this.

XI - INDUSTRIAL AND INTELLECTUAL PROPERTY

Results, whether patentable or not, data, studies, information or software obtained by the Vendor during execution of any order are the exclusive property of the Vendor.

Apart from instructions for use, servicing and maintenance, reports and documents of any type delivered to Customers remain the exclusive property of the Vendor and must be returned to the Vendor on request, even when part of the design fees have been charged to them, and they may not be communicated to third parties or used without the prior written agreement of the Vendor.

XII - CANCELLATION / TERMINATION OF THE SALE

The Vendor reserves the right to cancel or terminate immediately, as wished, as of right and without legal formalities, the sale of his Material in the event of non-payment of any part of the price by the settlement date, or in the event of any breach of any of the contractual obligations to be met by the Customer. Deposits and financial obligations already paid will remain the Vendor's property by way of indemnities, without prejudice to his right to claim damages and interest. In the event of cancellation of the sale, the Material must be returned to the Vendor immediately, irrespective of its location, at the Customer's expense and risk, subject to a penalty of 10% (ten per cent) of its value per week late.

XIII - GUARANTEE

The Vendor guarantees the Materials against any operational defect, arising from a material or manufacturing defect, for twelve months starting from the date on which they are made available, unless any other legal measure effected at a later date might apply, according to the conditions defined below.

The guarantee will only apply insofar as the Materials have been stored, used and serviced in accordance with the Vendor's instructions and documentation. It cannot be invoked when the fault results from:

- failure to monitor, maintain or store the goods correctly
- normal wear and tear of the Material
- intervention on or modification to the Material without the Vendor's prior authorisation in writing
- abnormal use or use not conforming to the intended purpose of the Material
- defective installation at the Customer's premises and/or the end user's premises
- non-communication, by the Customer, of the intended purpose or the conditions of use of the Material
- failure to use original manufacturer spare parts
- in the event of Force Majeure or any event beyond the control of the Vendor

In all cases, the guarantee is limited to the replacement or repair of parts or Materials acknowledged as defective by the Vendor's technical departments. If the repair is assigned to a third party, it should be carried out only after acceptance by the Vendor of the estimate for repair.

No Material should be returned without the Vendor's prior authorisation in writing.

Material to be repaired should be sent prepaid, to the address indicated by the Vendor. If the Material has not been repaired under guarantee,

the cost of returning it will be invoiced to the Customer or the end purchaser.

This guarantee applies to the Vendor's Material made accessible and therefore does not cover the cost of removal and reinstallation of the said Material in the unit in which it is integrated.

Repair, modification or replacement of parts or Materials during the guarantee period will not have the effect of extending the length of the guarantee.

The provisions of this article constitute the only obligation on the part of the Vendor concerning the guarantee for the Materials supplied.

XIV - LIABILITY

The Vendor's liability is strictly limited to the obligations stipulated in these General Conditions of Sale and those expressly agreed to by the Vendor. All penalties and payments specified therein are deemed to be all-inclusive damages and interest, in full discharge and exclusive of any other sanction or compensation.

With the exclusion of serious fault on the Vendor's part and compensation for bodily injury, the Vendor's liability will be limited, all causes combined, to a maximum sum of the contractual amount excluding tax of the supply or service giving rise to the compensation. Under no circumstances will the Vendor be liable to pay for intangible and/or indirect damages which the Customer might claim; he therefore cannot be held liable in particular for production, operating and other consequential losses or more generally any indemnifiable losses other than physical or material.

The Customer guarantees renunciation of recourse of his insurers or third parties in a contractual situation with him, against the Vendor or his insurers, over and above the limits and for the exclusions laid down above.

XV - SPARE PARTS AND ACCESSORIES

Spare parts and accessories are provided on request insofar as they are available. Related costs (carriage and any other costs) are always added to the invoice.

The Vendor reserves the right to demand a minimum quantity or invoice amount per order.

XVI - WASTE MANAGEMENT

The Material covered by the sale does not fall within the scope of European Directive 2002/96/EC (WEEE) of 27 January 2003, and all resulting laws and decrees of the Member States of the EU, relating to the composition of electrical and electronic equipment and the disposal of waste originating from this equipment.

In accordance with Article L 541-2 of the Environmental Code, it is the responsibility of the possessor of the waste to dispose of it, or have it disposed of, at his expense.

XVII - FORCE MAJEURE

Apart from the Customer's obligation to pay the sums due to the Vendor under the order, the Customer and the Vendor cannot be held responsible for the total or partial non-fulfilment of their contractual obligations if this non-fulfilment results from the occurrence of a force majeure situation. The following in particular are considered to be force majeure situations: production delays or disruptions resulting wholly or partially from war (declared or not), an act of terrorism or strikes, riots, accidents, fires, floods, natural disasters, transport delay, shortage of components or materials, or a governmental decision or act (including an export ban or revocation of an export licence).

If one of the parties is delayed or prevented in the fulfilment of his obligations because of the present Article for more than 180 consecutive days, each party may then cancel, automatically and without legal formality, the non-executed part of the order by written notification to the other party, without his liability being sought. However, the Customer will be obliged to pay the agreed price relating to the Materials already delivered at the cancellation date.

XVIII - BAN ON ILLICIT PAYMENTS

The Customer is forbidden any initiative which would expose the Vendor, or any related company, to a risk of sanctions by virtue of the legislation of a State banning illicit payments, in particular bribes and gifts of an obviously unreasonable amount, to the employees of an Administration or public body, to political parties or their members, to those standing for an elective post, or to employees of customers or suppliers.

XIX - CONFORMITY OF SALES WITH INTERNATIONAL LEGISLATION

The Customer agrees that the applicable legislation as regards import and export control, that is to say, that applicable in France, the European Union, the United States of America, in the country where the Customer is based, if this country does not come under the legislation mentioned previously, and in the countries from which the Materials may be delivered, as well as the provisions contained in the licences and permits relating thereto, of general or dispensatory scope (referred to as «conformity of sales with international regulations»), apply to the acceptance and use by the Customer of the Materials and their technology. Under no circumstances must the Customer use, transfer, dispose of, export or re-export the Materials and/or their technology in violation of the provisions on conformity of sales with international regulations.

The Vendor will be under no obligation to deliver the Materials until the licences or permits necessary under the conformity of sales to international regulations have been obtained.

If, for any reason whatsoever, the said licences or permits were refused or withdrawn, or in the event of amendment of the international regulations applicable to the conformity of sales which would prevent the Vendor from fulfilling his contractual obligations or which, according to the Vendor, would expose his liability or that of his related companies, by virtue of the international regulations relating to the conformity of sales, the Vendor would then be released from his contractual obligations without his liability being invoked.

XX - PARTIAL INVALIDITY

Any clause and/or provision of these General Conditions deemed and/or which has become null and void does not render the contract null and void, only the actual clause and/or provision concerned.

XXI - DISPUTES

THIS CONTRACT IS SUBJECT TO FRENCH LAW.

IN THE ABSENCE OF AMICABLE AGREEMENT BETWEEN THE PARTIES, AND NOTWITHSTANDING ANY CLAUSE TO THE CONTRARY, ANY DISPUTE RELATING TO THE INTERPRETATION AND/OR EXECUTION OF AN ORDER MUST BE RESOLVED BY THE COMPETENT COURTS OF ANGOULEME (FRANCE), EVEN IN THE CASE OF INTRODUCTION OF THIRD PARTIES OR MULTIPLE DEFENDANTS. HOWEVER, THE VENDOR RESERVES THE EXCLUSIVE RIGHT TO BRING ANY DISPUTE INVOLVING THE CUSTOMER BEFORE THE COURTS IN THE LOCATION OF THE VENDOR'S REGISTERED OFFICE OR THOSE WITHIN WHOSE JURISDICTION THE LOCATION OF THE CUSTOMER'S REGISTERED OFFICE FALLS.



WORLD LEADER IN INDUSTRIAL DRIVE SYSTEMS AND ALTERNATORS

**ELECTRIC MOTORS - GEARBOXES - ELECTRONICS
ALTERNATORS - ASYNCHRONOUS GENERATORS - DC MACHINES**



**39 PRODUCTION UNITS
470 SALES & SERVICE CENTRES WORLDWIDE**

MOTEURS LEROY-SOMER - Boulevard Marcellin Leroy - 16015 ANGOULEME Cedex - FRANCE
Tél. (33) 05 45 64 45 64 - Fax (33) 05 45 64 45 04

www.leroy-somer.com

International network

www.leroy-somer.com

ALGERIA
LEROY-SOMER International Division

AUSTRALIA
LEROY-SOMER PTY LTD

AUSTRIA
LEROY-SOMER ELEKTROMOTOREN

BELGIUM
LEROY-SOMER BELGIUM

BRAZIL
LEROY-SOMER DIVISION
EMERSON ELECTRIC DO BRASIL Ltda.

CANADA
LEROY-SOMER / EMC

CHINA
LEROY-SOMER Division

CROATIA
Emerson Network Power Ltd

CZECH REPUBLIC
M.L.S. HOLICE S.R.O.

DENMARK
LEROY-SOMER DENMARK A/S

EGYPT
MOTEURS LEROY-SOMER

FRANCE
MOTEURS LEROY-SOMER

GERMANY
LEROY-SOMER Marbaise GmbH

GREECE
LEROY-SOMER Ltd

HUNGARY
LEROY-SOMER I.M.I.

INDIA
LEROY-SOMER C/O EMERSON ELECTRIC CO.

ITALIA
LEROY-SOMER SPA

JAPAN
LEROY-SOMER DIVISION
EMERSON Japan Ltd.

KOREA
EMERSON ELECTRIC KOREA

MOROCCO
CARREFOUR INDUSTRIEL ET TECHNOLOGIQUE

NETHERLANDS
LEROY-SOMER NEDERLAND B.V

POLAND
FZN MARBAISE LS

ROMANIA
LEROY-SOMER REPRESENTATIVE OFFICE

RUSSIA
LEROY-SOMER DIVISION

SAUDI ARABIA
ABUNAYYAN TRADING CORPORATION

SINGAPORE
LEROY-SOMER SOUTHEAST ASIA Pte Ltd

SOUTH AFRICA
LEROY-SOMER PTY LTD

SPAIN
LEROY-SOMER IBERICA S.A.

SWEDEN
LEROY-SOMER NORDEN AB

SWITZERLAND
LEROY-SOMER SA

TAIWAN
LEROY-SOMER LIAISON OFFICE

THAILAND
LEROY-SOMER THAILAND

TUNISIA
ULYSSE SPARE PARTS

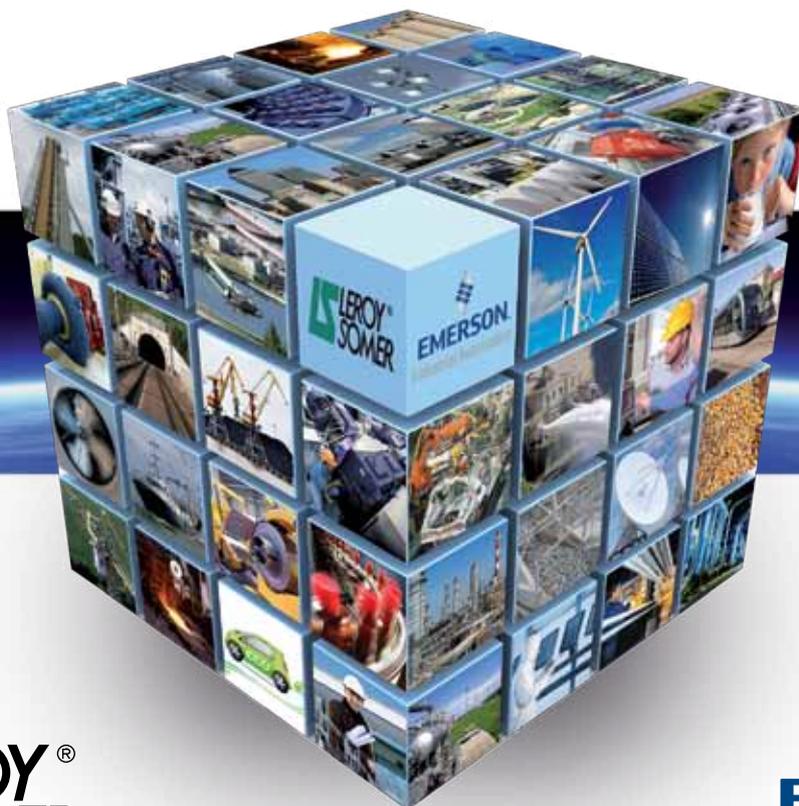
TURKEY
ELEKTROMEKANIK SISTEMLER

U.A.E.
LEROY-SOMER DIVISION
EMERSON FZE

UNITED KINGDOM
LEROY-SOMER LTD

USA
LEROY-SOMER POWER AND DRIVES

VENEZUELA
LEROY SOMER C/O EMERSON ELECTRIC CA



**LEROY
SOMER**

EMERSON
Industrial Automation

Leroy-Somer reserves the right to modify the characteristics of its products at any time in order to incorporate the latest technological developments.
The information contained in this document may therefore be changed without prior notice.

338 567 258 RCS ANGOULÊME - S.A. au capital de 62 779 000 €