LEROY SOMER®

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Permanent Magnet Solutions
Dyneo®

LSRPM - UNIDRIVE SP

Synchronous motors with permanent magnets-drive 0.75 to 400 kW

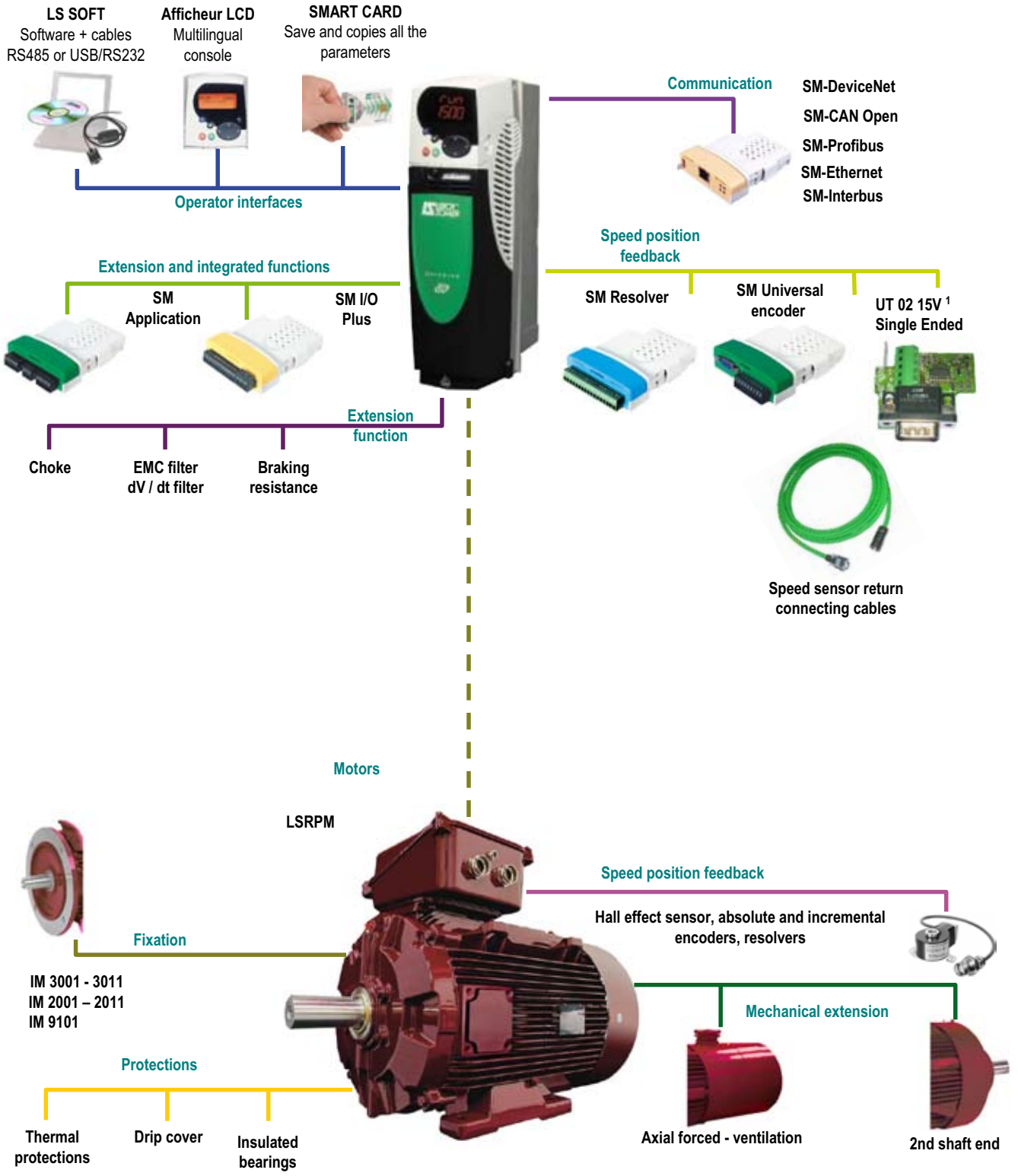
Selection guide

LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

A modular offer



The option characteristics are described in the technical documents for the relevant products.

[1] : *UT02 required to manage the Hall effect sensor.*

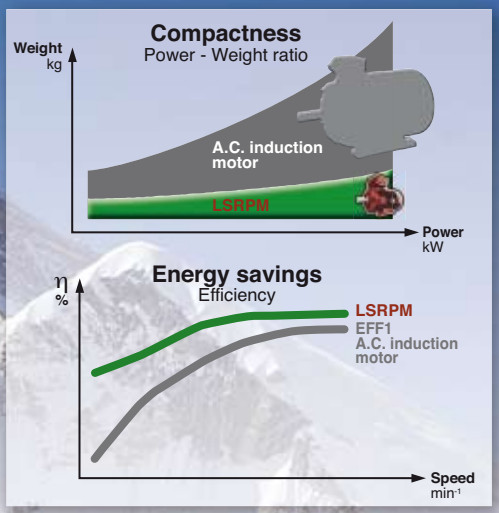
LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

LSRPM: PERMANENT MAGNET ROTOR TECHNOLOGY IN A MECHANICALLY PROVEN IP55 INDUCTION MOTOR

At the peak of efficiency



Characteristics: IP55, IK08, acc. to IEC 60034 - Power rating 0.75 to 400 kW
Torque 1 to 1400 Nm - Speed 1 to 5500 min-1 - Frame size 90 to 315 mm

- **Gain in compactness up to 3 frame sizes**

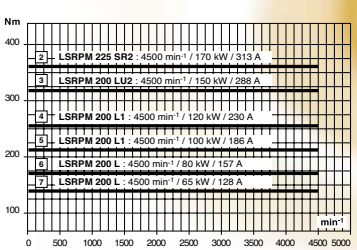
- Reduction in the weight and dimensions of the motor
- Simplification through removal of transmission devices: pulleys, belts, gearboxes …

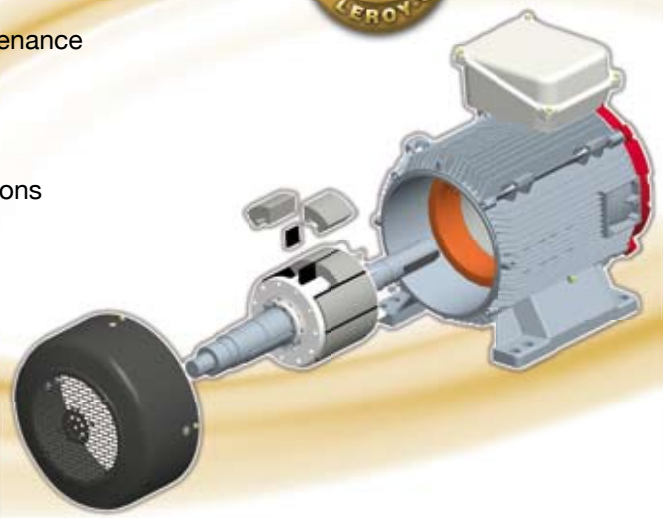
- **Exceptional gains in efficiency over the entire speed range**

- Reduction in energy bills
- Increase in service life and simplification of maintenance

- **Variable speed operation**

- Constant torque over the entire speed range
- Optimized power with centrifugal torque applications





LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

UNIDRIVE SP: A NEW-GENERATION DRIVE WHICH MEETS ALL USER EXPECTATIONS

• Simplicity

- Install and start using your system quickly and easily without any special training

• Performance

- Manipulate, position, synchronize, cut, print…
rapidly, with repeat accuracy, in complete safety

• Flexibility

- Adapt your system to the various production constraints in a responsive yet inexpensive way

• Reduced costs

- Integrate the control system functions relating to the application
- Réduire le nombre de composants et le câblage associé

LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

Introduction

DYNEO® offers innovative, high-performance solutions consisting of synchronous motors with permanent magnets in the rotor circuit and LEROY-SOMER variable speed drives.

Combined with the **UNIDRIVE SP** drive, the innovative **LSRPM** permanent magnet synchronous motor technology is revolutionizing the electric motor by offering solutions adapted to the industrial environment and by providing optimal electrical mechanical thermal performance:

- Extended speed range
- High torque over the entire operating speed range
- Very high efficiency
- Compact design

The LSRPM - UNIDRIVE SP combinations described in this manual are suitable for most applications: ventilation, pumping, compression, materials handling, conveying, centrifuging, extrusion, etc. Appropriate add-ons or options for drives and motors can be included to satisfy the demands of the various processes.

For further information about the products described in this manual, please consult the corresponding technical documentation.

NB: LEROY-SOMER reserves the right to modify the design, technical specifications and dimensions of the products and solutions shown in this document. The descriptions cannot in any way be considered contractual.

LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

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Selection method

Example

A machine requires torque of 200 N.m over a speed range from 800 to 4200 min^{-1} in continuous duty. The maximum torque is 240 N.m.

Step 1: Choice of Motor

a) Select the range according to the speed range

Selection charts

5500 range - 0 to 5500 min^{-1} 2
4500 range - 0 to 4500 min^{-1} 4
3600 range - 0 to 3600 min^{-1} 6

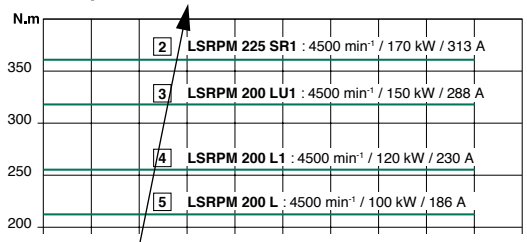
Example: Selection of the 4500 range for operation from 800 to 4200 min^{-1}

b) Select the torque range

(pages 2 to 20)

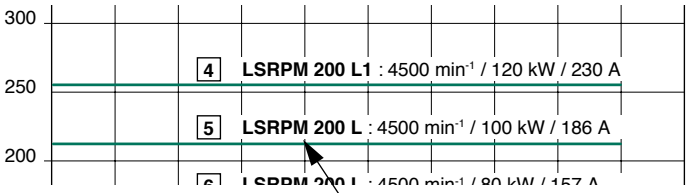
4500 range

Torque from 0 to 360 N.m



Example: Selection of the torque range 0 to 360 N.m for a torque requirement of 200 N.m

c) Select the motor: choose the curve with a torque rating immediately above that required by the application



Example: Selection of curve 5 for an application requirement of 200 N.m.

5 LSRPM 200 L : 4500 min^{-1} / 100 kW / 186 A

- **5** → Motor type
- **LSRPM 200 L** → Rated speed
- **4500 min^{-1}** → Rated output power
- **100 kW / 186 A** → Rated current

Step 2: Choice of drive *(pages 3 to 21)*

4500 range

Motor designation	Drive designation		Available power	Torque rated M_r	Torque maximum M_{max}	Current rated I_r	Current maximum $I_{max\ cont}$	Minimum switching frequency F_r	Total efficiency η_t	Moment of inertia J	Motor weight IM B3	Torque curve no.
	LS	CT	kW	N.m	N.m	A	A	kHz	%	kg.m²	kg	
LSRPM90SL	SP 5,5T	SP 1406	5,9	13,1	14,4	11	12,10	4	91,6	0,0032	14	18
	SP 8T	SP 2401	6,8	15	22,5	12,6	18,90					
LSRPM90L	SP 8T	SP 2401	8,3	17,5	19,3	15,3	16,83	4	92,1	0,0051	17	17
	SP 11T	SP 2402	8,5	18	27,0	15,7	23,55					
LSRPM100L	10,2	SP 11T	SP 2402	10,2	22	27,0	18,8	23,10	4	92,1	0,0066	19	16
		SP 16T	SP 2403	10,2	22	33,0	18,8	28,20					
LSRPM100L	12	SP 11T	SP 2402	11,5	24	26,4	21	23,10	4	92,6	0,0078	24	15
		SP 16T	SP 2403	12	25	37,5	22	33,00					
LSRPM100L	13,7	SP 16T	SP 2403	13,7	29	1,20	25	31,90	4	92,6	0,009	26	14
LSRPM132M	18,6	SP 16T	SP 2403	14,5	30,5	35,8	27,2	31,90	4	92,6	0,0165	40	13
		SP 22T	SP 3401	18,6	39	42,9	35	38,50					
LSRPM132M	23	SP 27T	SP 3402	23	49	53,9	43	47,30	4	92,6	0,0231	44	12
LSRPM132M	27	SP 33T	SP 3403	27	58	70,1	51	61,60	4	93,1	0,0311	49	11
LSRPM160MP	35	SP 33T	SP 3403	27,9	60	69,2	53,4	61,60	4	93,1	0,0418	60	10
		SP 40T	SP 4401	35	75	83,7	67	74,80					
		SP 50T	SP 4402	34	73	109,5	65	97,50					
LSRPM160MP	44	SP 50T	SP 4402	44	93	104,8	81	91,30	4	93,6	0,0514	69	9
		SP 60T	SP 4403	44	93	139,5	81	121,50					
LSRPM160LR	52	SP 50T	SP 4402	44,5	95	104,5	83	91,30	4	93,6	0,0626	79	8
		SP 60T	SP 4403	52	110	129,7	97	114,40					
		SP 75T	SP 5401	52	110	165,0	97	145,50					
LSRPM200L	65	SP 75T	SP 5401	65	138	159	128	151,80	4	93,1	0,13	135	7
		SP 100T	SP 5402	65	138	193	128	192,00					
LSRPM200L	80	SP 75T	SP 5401	70,3	149	161	138	151,80	4	93,5	0,15	145	6
		SP 100T	SP 5402	80	170	194	157	184,80					
		SP 120T	SP 5401	80	170	238	157	235					
LSRPM200L	100	SP 120T	SP 5401	100	212	247	186	226	4	94,3	0,2	165	5
LSRPM200L1	120	SP 120T	SP 5401	106	224	245	202	226	4	94,5	0,22	175	4
		SP 150T	SP 5402	110	233	277	210	260					
		SPMA 1401-2S		120	255	357	230	345					
LSRPM200LU1	150	SPMA 1401-2S		150	318	445	288	432	4	95,1	0,26	190	3
LSRPM200LU1	170	SPMA 1401-2S		170	361	479	313	441	4	95,2	0,32	220	2
		SPMA 1402-2S		170	361	505	313	469					
LSRPM250SE	230	SPMA 1401-2S		222	470	559	400	494	4	95,4	0,76	310	1
		SPMA 1401-3S		230	488	683	415	622					

[1] The drive parameters must comply with the rated current values to ensure thermal control is maintained, as must the maximum current values to avoid the risk of demagnetisation.
[2] In case of a usage with a switching frequency above the minimum switching frequency F_r, please refer to the table on page 23 to determine the current values.
[3] η_t = Motor efficiency X drive efficiency.

a) Select the curve no. in the table

b) Select the drive rating according to the rated and maximum torque required by the application

Example: Selection of drive for an application requiring rated torque of 200 N.m and maximum torque of 240 N.m.

Choice of drive: where Mn = 212 N.m and Mmax = 247 N.m

- **SP** → *Drive type*
- **120T** → *Drive rating*

LSRPM - UNIDRIVE SP

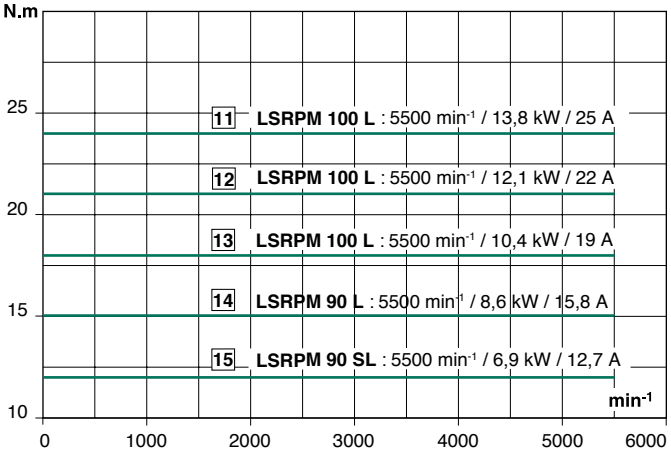
Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

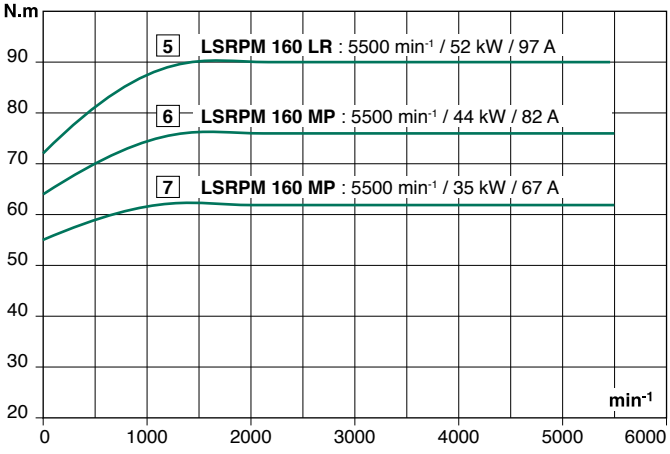
Torque-speed characteristics

5500 range

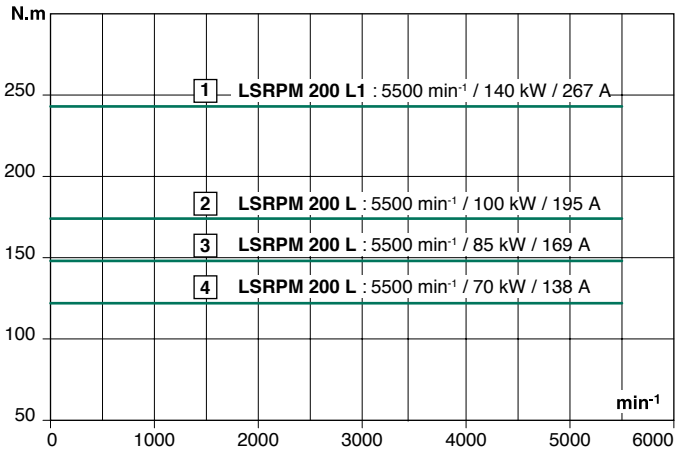
Torque from 0 to 24 N.m



Torque from 24 to 90 N.m



Torque from 90 to 240 N.m



For operation at very low speeds, refer to the technical motor catalogue reference 4122.

LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

Selection charts

5500 range

Power supply upstream from the 400 V drive

Motor		Drive designation		Available power	Torque		Current [1]		Minimum switching frequency [2]	Total [3] efficiency	Moment of inertia	Motor weight	Torque curve no.
Designation	Rated power				rated	maximum	rated	maximum					
					M_n	M_{max}	I_n	$I_{max/\ 60sec}$	F_D	η_T	J	IM B3	
	kW	LS	CT	kW	N.m	N.m	A	A	kHz	%	kg.m²	kg	
LSRPM90SL	6,9	SP 5,5T	SP 1406	6,0	10,4	11,4	11	12,1	6	91,6	0,0032	14	15
		SP 8T	SP 2401	6,9	12	18,0	12,7	19,1					
LSRPM90L	8,6	SP 8T	SP 2401	8,3	14,5	16,0	15,3	16,8	6	92,1	0,0051	17	14
		SP 11T	SP 2402	8,6	15	21,9	15,8	23,1					
LSRPM100L	10,4	SP 11T	SP 2402	10,4	18	21,9	19	23,1	6	92,1	0,0066	19	13
		SP 16T	SP 2403	10,4	18	27,0	19	28,5					
LSRPM100L	12,1	SP 11T	SP 2402	10,7	18,5	21,9	19,5	23,1	6	92,6	0,0078	24	12
		SP 16T	SP 2403	12,1	21	30,5	22	31,9					
LSRPM100L	13,8	SP 16T	SP 2403	12,8	22	30,3	23,2	31,9	6	92,6	0,009	26	11
		SP 22T	SP 3401	13,8	24	36,0	25	37,5					
LSRPM132M	18,6	SP 22T	SP 3401	18,6	32	35,2	35	38,5	6	92,1	0,0165	40	10
LSRPM132M	23	SP 27T	SP 3402	23	40	44,0	43	47,3	6	92,1	0,0231	44	9
LSRPM132M	27	SP 40T	SP 4401	27	47	70,5	52	78,0	6	92,6	0,0311	49	8
LSRPM160MP	35	SP 40T	SP 4401	35	62	69,2	67	74,8	6	92,6	0,0418	60	7
		SP 50T	SP 4402	35	62	84,5	67	91,3					
		SP 60T	SP 4403	35	62	93,0	67	100,5					
LSRPM160MP	44	SP 50T	SP 4402	39,7	69	85,1	74	91,3	6	93,1	0,0514	69	6
		SP 60T	SP 4403	44	76	106,0	82	114,4					
		SP 75T	SP 5401	44	76	114,0	82	123,0					
LSRPM160LR	52	SP 60T	SP 4403	51,0	88	105,9	95,1	114,4	6	93,1	0,0626	79	5
		SP 75T	SP 5401	52	90	135,0	97	145,5					
LSRPM200L	70	SP 75T	SP 5401	60,4	104	128	118	151,8	6	93,3	0,13	135	4
		SP 100T	SP 5402	66	114	153	129	184,8					
		SP 120T	SP 6401	70	122	171	138	207,0					
LSRPM200L	85	SP 120T	SP 6401	83	144	201	164,1	246,0	6	93,7	0,15	145	3
LSRPM200L	100	SPMA 1401-2S		100	174	243	195	292	6	94,0	0,17	150	2
LSRPM200L1	140	SPMA 1401-2S		140	243	340	267	400	6	94,7	0,22	175	1

[1] The drive parameters must comply with the rated current values to ensure thermal control is maintained, as must the maximum current values to avoid the risk of demagnetisation.

[2] In case of a usage with a switching frequency above the minimum switching frequency F_D, please refer to the table on page 23 to determine the current values.

[3] η_T = Motor efficiency X drive efficiency.

LSRPM - UNIDRIVE SP

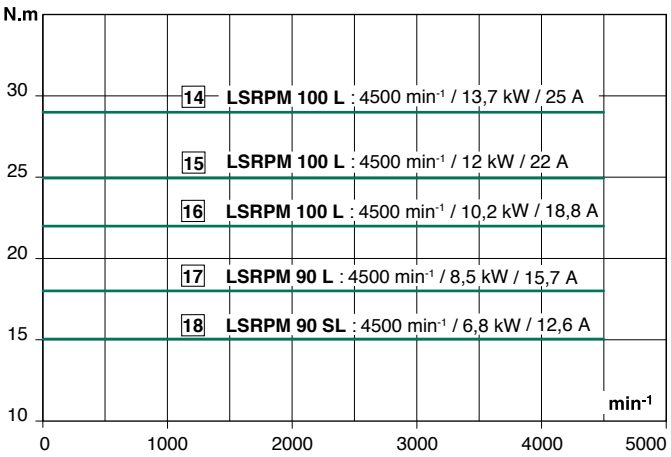
Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

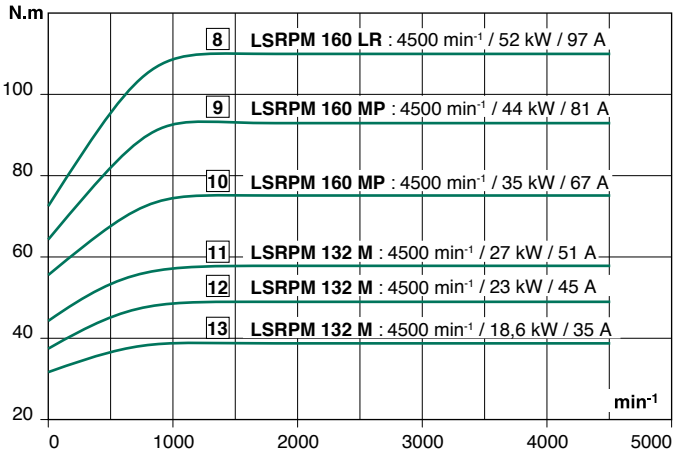
Torque-speed characteristics

4500 range

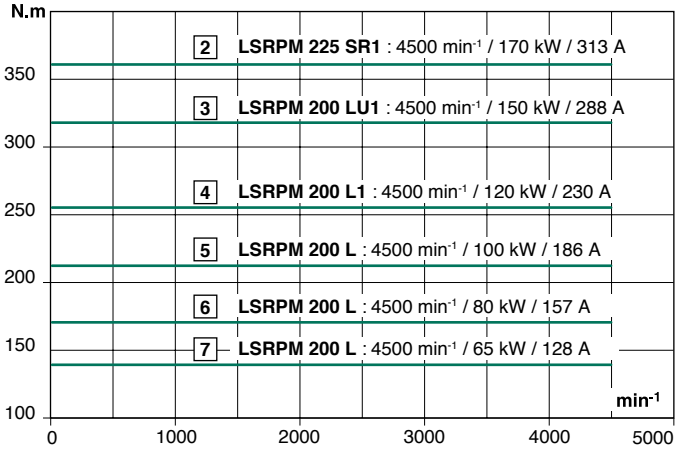
Torque from 0 to 29 N.m



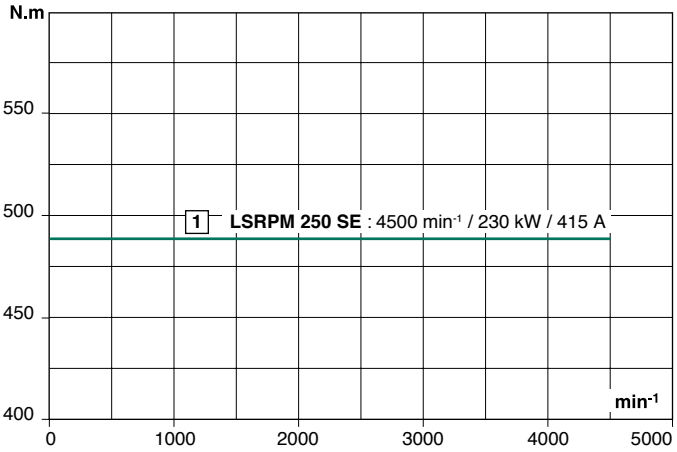
Torque from 29 to 110 N.m



Torque from 110 to 360 N.m



Torque from 360 to 490 N.m



For operation at very low speeds, refer to the technical motor catalogue reference 4122.

LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

Selection charts

4500 range

Power supply upstream from the 400 V drive

Motor		Drive designation		Available power	Torque		Current [1]		Minimum switching frequency [2]	Total [3] efficiency	Moment of inertia	Motor weight	Torque curve no.
Designation	Rated power				rated	maximum	rated	maximum					
					M_n	M_{max}	I_n	$I_{max/\ 60sec}$	F_D	η_T	J	IM B3	
	kW	LS	CT	kW	N.m	N.m	A	A	kHz	%	kg.m²	kg	
LSRPM90SL	6,8	SP 5,5T	SP 1406	5,9	13,1	14,4	11	12,10	4	91,6	0,0032	14	18
		SP 8T	SP 2401	6,8	15	22,5	12,6	18,90					
LSRPM90L	8,5	SP 8T	SP 2401	8,3	17,5	19,3	15,3	16,83	4	92,1	0,0051	17	17
		SP 11T	SP 2402	8,5	18	27,0	15,7	23,55					
LSRPM100L	10,2	SP 11T	SP 2402	10,2	22	27,0	18,8	23,10	4	92,1	0,0066	19	16
		SP 16T	SP 2403	10,2	22	33,0	18,8	28,20					
LSRPM100L	12	SP 11T	SP 2402	11,5	24	26,4	21	23,10	4	92,6	0,0078	24	15
		SP 16T	SP 2403	12	25	37,5	22	33,00					
LSRPM100L	13,7	SP 16T	SP 2403	13,7	29	1,20	25	31,90	4	92,6	0,009	26	14
LSRPM132M	18,6	SP 16T	SP 2403	14,5	30,5	35,8	27,2	31,90	4	92,6	0,0165	40	13
		SP 22T	SP 3401	18,6	39	42,9	35	38,50					
LSRPM132M	23	SP 27T	SP 3402	23	49	53,9	43	47,30	4	92,6	0,0231	44	12
LSRPM132M	27	SP 33T	SP 3403	27	58	70,1	51	61,60	4	93,1	0,0311	49	11
LSRPM160MP	35	SP 33T	SP 3403	27,9	60	69,2	53,4	61,60	4	93,1	0,0418	60	10
		SP 40T	SP 4401	35	75	83,7	67	74,80					
		SP 50T	SP 4402	34	73	109,5	65	97,50					
LSRPM160MP	44	SP 50T	SP 4402	44	93	104,8	81	91,30	4	93,6	0,0514	69	9
		SP 60T	SP 4403	44	93	139,5	81	121,50					
LSRPM160LR	52	SP 50T	SP 4402	44,5	95	104,5	83	91,30	4	93,6	0,0626	79	8
		SP 60T	SP 4403	52	110	129,7	97	114,40					
		SP 75T	SP 5401	52	110	165,0	97	145,50					
LSRPM200L	65	SP 75T	SP 5401	65	138	159	128	151,80	4	93,1	0,13	135	7
		SP 100T	SP 5402	65	138	193	128	192,00					
LSRPM200L	80	SP 75T	SP 5401	70,3	149	161	138	151,80	4	93,8	0,15	145	6
		SP 100T	SP 5402	80	170	194	157	184,80					
		SP 120T	SP 6401	80	170	238	157	235					
LSRPM200L	100	SP 120T	SP 6401	100	212	247	186	226	4	94,3	0,2	165	5
LSRPM200L1	120	SP 120T	SP 6401	106	224	245	202	226	4	94,5	0,22	175	4
		SP 150T	SP 6402	110	233	277	210	260					
		SPMA 1401-2S		120	255	357	230	345					
LSRPM200LU1	150	SPMA 1401-2S		150	318	445	288	432	4	95,1	0,26	190	3
LSRPM225SR1	170	SPMA 1401-2S		170	361	479	313	441	4	95,2	0,32	220	2
		SPMA 1402-2S		170	361	505	313	469					
LSRPM250SE	230	SPMA 1401-2S		222	470	559	400	494	4	95,4	0,76	310	1
		SPMA 1401-3S		230	488	683	415	622					

[1] The drive parameters must comply with the rated current values to ensure thermal control is maintained, as must the maximum current values to avoid the risk of demagnetisation.

[2] In case of a usage with a switching frequency above the minimum switching frequency F_D, please refer to the table on page 23 to determine the current values.

[3] η_T = Motor efficiency X drive efficiency.

LSRPM - UNIDRIVE SP

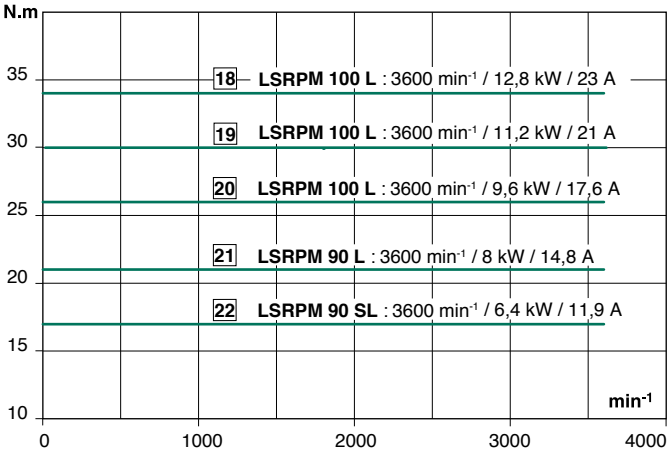
Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

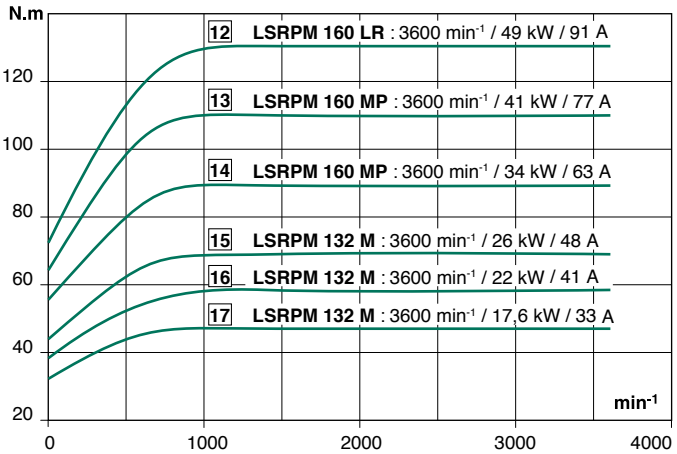
Torque-speed characteristics

3600 range

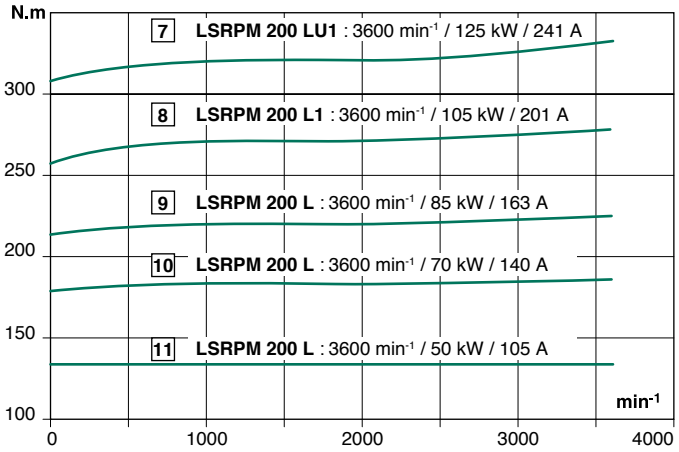
Torque from 0 to 34 N.m



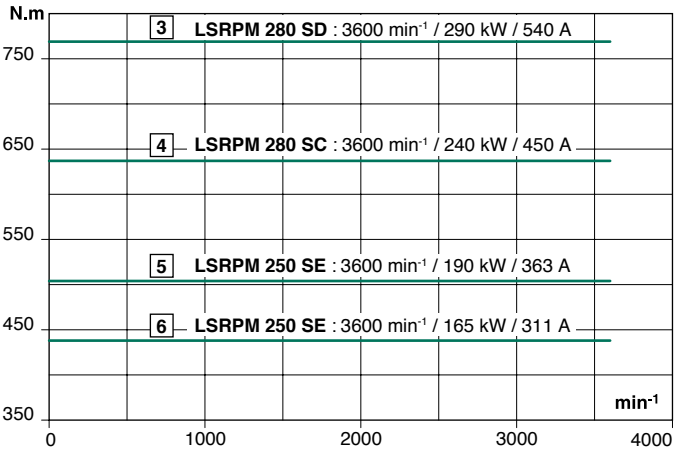
Torque from 34 to 130 N.m



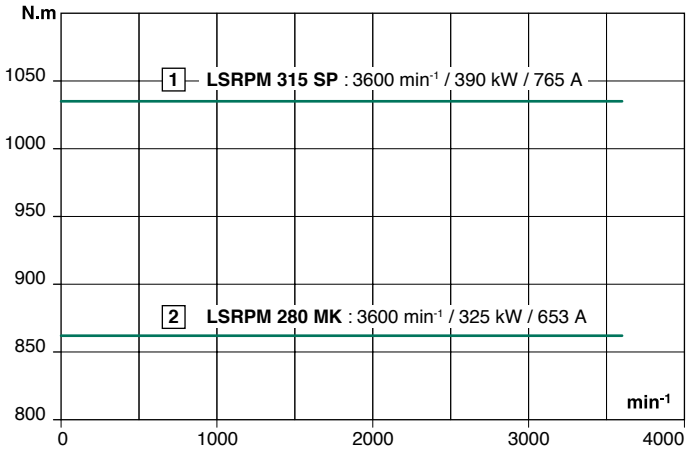
Torque from 130 to 330 N.m



Torque from 330 to 770 N.m



Torque from 770 to 1035 N.m



For operation at very low speeds, refer to the technical motor catalogue reference 4122.

LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

Selection charts

3600 range

Power supply upstream from the 400 V drive

Motor		Drive designation		Available power	Torque		Current [1]		Minimum switching frequency [2]	Total [3] efficiency	Moment of inertia	Motor weight	Torque curve no.
Designation	Rated power				rated	maximum	rated	maximum					
					M_n	M_{max}	I_n	$I_{max/\ 60sec}$	F_D	η_T	J	IM B3	
	kW	LS	CT	kW	N.m	N.m	A	A	kHz	%	kg.m²	kg	
LSRPM90SL	6,4	SP 5,5T	SP 1406	5,9	15,7	17,3	11	12,1	4	91,1	0,0032	14	22
		SP 8T	SP 2401	6,4	17	25,5	11,9	17,9					
LSRPM90L	8	SP 8T	SP 2401	8	21	23,9	14,8	16,8	4	91,6	0,0051	17	21
		SP 11T	SP 2402	8	21	31,5	14,8	22,2					
LSRPM100L	9,6	SP 8T	SP 2401	8,3	22,6	24,9	15,3	16,8	4	92,1	0,0066	19	20
		SP 11T	SP 2402	9,6	26	36,6	17,6	24,8					
		SP 16T	SP 2403	9,6	26	39,0	17,6	26,4					
LSRPM100L	11,2	SP 11T	SP 2402	11,2	30	33,0	21	23,1	4	92,1	0,0078	24	19
		SP 16T	SP 2403	11,2	30	45,0	21	31,5					
LSRPM100L	12,8	SP 16T	SP 2403	12,8	34	51,0	23	34,5	4	92,6	0,009	26	18
LSRPM132M	17,6	SP 16T	SP 2403	14,5	41,3	48,4	27,2	31,9	4	92,6	0,0165	40	17
		SP 22T	SP 3401	17,6	47	68,4	33	48,0					
		SP 27T	SP 3402	17,6	47	70,5	33	49,5					
LSRPM132M	22	SP 22T	SP 3401	18,8	49,5	54,5	35	38,5	4	92,6	0,0231	44	16
		SP 27T	SP 3402	22	58	84,9	41	60,0					
LSRPM132M	26	SP 27T	SP 3402	23,3	61,8	68,0	43	47,3	4	93,1	0,0311	49	15
		SP 33T	SP 3403	26	69	88,6	48	61,6					
		SP 40T	SP 4401	26	69	103,5	48	72,0					
LSRPM160MP	34	SP 33T	SP 3403	28,8	79,1	91,2	53,4	61,6	4	93,1	0,0418	60	14
		SP 40T	SP 4401	34	89	105,7	63	74,8					
		SP 50T	SP 4402	34	89	133,5	63	94,5					
LSRPM160MP	41	SP 40T	SP 4401	36,2	97,1	106,8	68	74,8	4	93,6	0,0514	69	13
		SP 50T	SP 4402	41	110	130,4	77	91,3					
		SP 60T	SP 4403	41	110	165,0	77	115,5					
LSRPM160LR	49	SP 50T	SP 4402	44,7	118,6	130,5	83	91,3	4	93,6	0,0626	79	12
		SP 60T	SP 4403	49	130	163,4	91	114,4					
LSRPM200L	50	SP 60T	SP 4403	50	133	143	104	114,4	4	93,1	0,13	135	11
		SP 75T	SP 5401	50	133	180	105	152,3					
LSRPM200L	70	SP 75T	SP 5401	70	185	199	138	151,8	4	93,9	0,17	150	10
		SP 100T	SP 5402	70	185	250	140	203,0					
LSRPM200L	85	SP 100T	SP 5402	82,4	225	255	158	184,8	4	94,1	0,22	175	9
		SP 120T	SP 6401	85	225	299	163	232					
LSRPM200L1	105	SP 120T	SP 6401	105	279	306	201	226	4	94,8	0,24	180	8
		SP 150T	SP 6402	105	279	343	201	260					
LSRPM200LU1	125	SP 150T	SP 6402	109	290	343	210,4	260	4	94,9	0,26	190	7
		SPMA 1401-2S		125	332	448	241	349					
LSRPM250SE	165	SPMA 1401-2S		125	438	580	311	441	4	95,1	0,57	265	6
LSRPM250SE	190	SPMA 1401-2S		190	504	576	363	430	4	95,5	0,65	285	5
		SPMA 1402-2S		190	504	669	363	516					
LSRPM280SC	240	SPMA 1401-2S		205	544	593	384	429	4	95,5	0,84	330	4
		SPMA 1402-2S		213	566	670	400	494					
		SPMA 1401-3S		240	637	859	450	652					
LSRPM280SD	290	SPMA 1401-3S		290	769	884	540	644	4	95,6	1	380	3
		SPMA 1402-3S		290	769	1002	540	750					
LSRPM280MK	325	SPMA 1402-3S		299	792	1068	600	869	4	95,3	2,1	615	2
		SPMA 1401-4S		325	862	1099	653	884					
LSRPM315SP	390	SPMA 1401-4S		390	1035	1133	765	858	4	95,5	2,36	650	1
		SPMA 1402-4S		390	1035	1271	765	989					
		SPMA 1401-5S		390	1035	1394	765	1106					

[1] The drive parameters must comply with the rated current values to ensure thermal control is maintained, as must the maximum current values to avoid the risk of demagnetisation.

[2] In case of a usage with a switching frequency above the minimum switching frequency F_D, please refer to the table on page 23 to determine the current values.

[3] η_T = Motor efficiency X drive efficiency.

LSRPM - UNIDRIVE SP

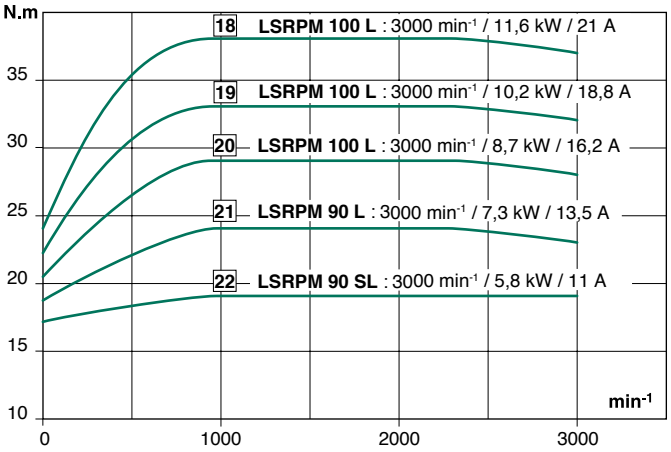
Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

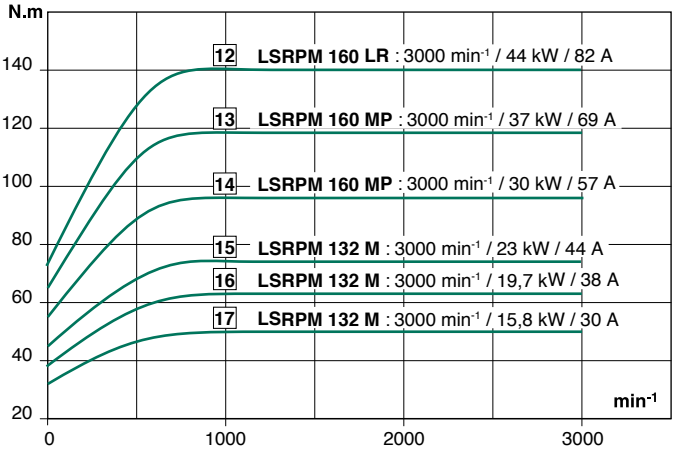
Torque-speed characteristics

3000 range

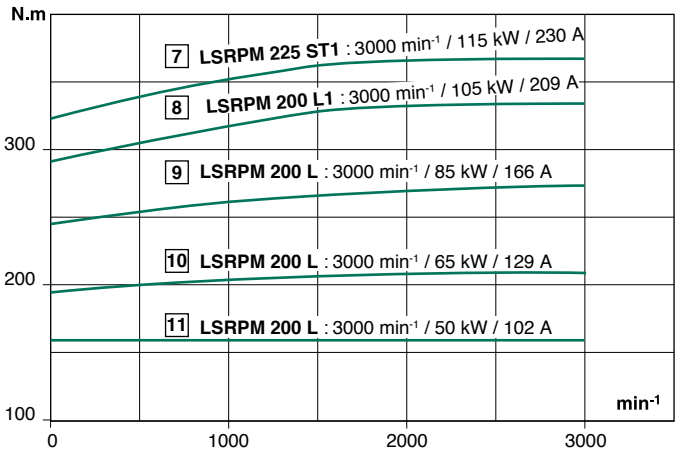
Torque from 0 to 37 N.m



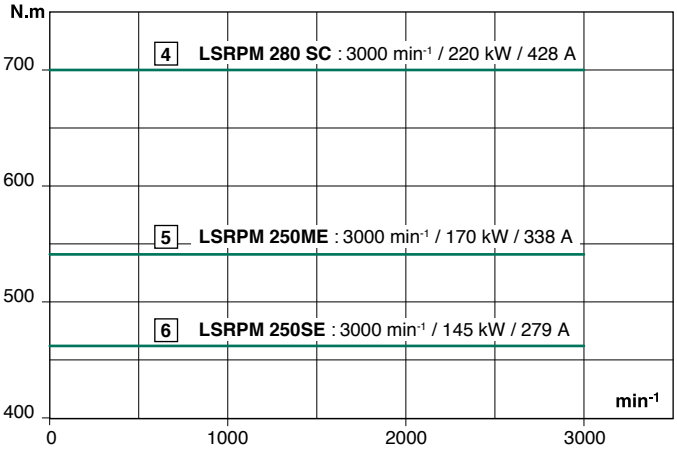
Torque from 37 to 140 N.m



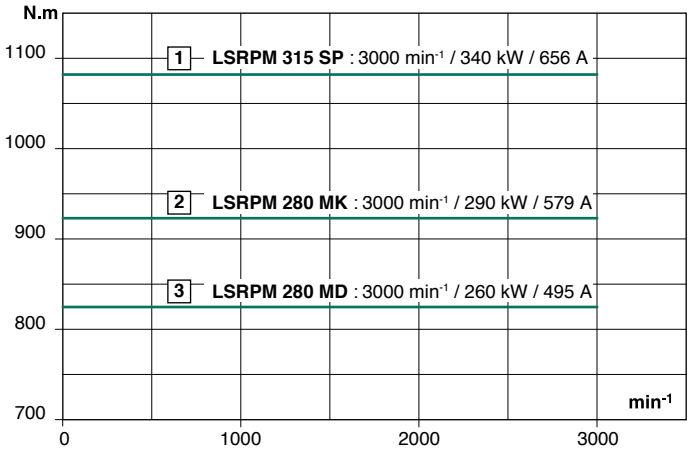
Torque from 140 to 365 N.m



Torque from 365 to 700 N.m



Torque from 700 to 1080 N.m



For operation at very low speeds, refer to the technical motor catalogue reference 4122.

LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

Selection charts

3000 range

Power supply upstream from the 400 V drive

Motor		Drive designation		Available power	Torque		Current [1]		Minimum switching frequency [2]	Total [3] efficiency	Moment of inertia	Motor weight	Torque curve no.
Designation	Rated power				rated	maximum	rated	maximum					
					M_n	M_{max}	I_n	$I_{max/\ 60sec}$	F_D	η_T	J	IM B3	
	kW	LS	CT	kW	N.m	N.m	A	A	kHz	%	kg.m²	kg	
LSRPM90SL	5,8	SP 5,5T	SP 1406	5,8	19	20,9	11	12,1	3	89,7	0,0032	14	22
		SP 8T	SP 2401	5,8	19	28,5	11	16,5					
LSRPM90L	7,3	SP 8T	SP 2401	7,3	23	33,2	13,5	19,5	3	91,1	0,0051	17	21
LSRPM100L	8,7	SP 8T	SP 2401	8,2	26,4	29,1	15,3	16,8	3	91,1	0,0066	19	20
		SP 11T	SP 2402	8,7	28	42,0	16,2	24,3					
LSRPM100L	10,2	SP 11T	SP 2402	10,2	32	39,3	18,8	23,1	3	91,6	0,0078	24	19
		SP 16T	SP 2403	10,2	32	48,0	18,8	28,2					
LSRPM100L	11,6	SP 11T	SP 2402	11,6	37	40,7	21	23,1	3	91,6	0,009	26	18
		SP 16T	SP 2403	11,6	37	55,5	21	31,5					
LSRPM132M	15,8	SP 16T	SP 2403	15,3	48	52,8	29	31,9	3	91,1	0,0165	40	17
		SP 22T	SP 3401	15,8	50	75,0	30	45,0					
LSRPM132M	19,7	SP 22T	SP 3401	18,1	58	63,8	35	38,5	3	91,6	0,0231	44	16
		SP 27T	SP 3402	19,7	63	94,5	38	57,0					
LSRPM132M	23	SP 27T	SP 3402	22,5	72	79,2	43	47,3	3	92,1	0,0311	49	15
		SP 33T	SP 3403	23	74	111,0	44	66,0					
LSRPM160MP	30	SP 33T	SP 3403	29,5	94	103,4	56	61,6	3	92,6	0,0418	60	14
		SP 40T	SP 4401	30	96	144,0	57	85,5					
LSRPM160MP	37	SP 40T	SP 4401	36,5	116	127,6	68	74,8	3	93,1	0,0514	69	13
		SP 50T	SP 4402	37	118	177,0	69	103,5					
LSRPM160LR	44	SP 50T	SP 4402	44	140	155,9	82	91,3	3	93,1	0,0626	79	12
		SP 60T	SP 4403	44	140	210,0	82	123,0					
LSRPM200L	50	SP 60T	SP 4403	50	159	174	102	114,4	3	93,2	0,13	135	11
		SP75T	SP 5401	50	159	215	102	147,9					
LSRPM200L	65	SP 75T	SP 5401	65	207	235	129	151,8	3	93,9	0,17	150	10
		SP 100T	SP 5402	65	207	279	129	187,0					
LSRPM200L	85	SP 100T	SP 5402	85	271	295	166	184,8	3	94,3	0,2200	175	9
		SP 120T	SP 6401	85	271	355	166	232					
LSRPM200L1	105	SP 120T	SP 6401	103,0	327	353	205	226	3	94,7	0,24	180	8
		SP150T	SP 6402	105	334	411	209	271					
LSRPM225ST1	115	SP 150T	SP 6402	115	366	403	230	260	3	94,8	0,26	190	7
		SPMA 1401-2S		115	366	493	230	333					
LSRPM250SE	145	SPMA 1401-2S		145	462	623	279	404	3	95,3	0,57	265	6
LSRPM250ME	170	SPMA 1401-2S		170	541	669	338	441	3	95,4	0,65	285	5
		SPMA 1402-2S		170	541	730	338	490					
LSRPM280SC	220	SPMA 1402-2S		220	700	792	428	500	3	95,6	0,84	330	4
		SPMA 1401-3S		220	700	944	428	620					
LSRPM280MD	260	SPMA 1402-2S		236	751	810	449	494	3	95,6	1	380	3
		SPMA 1401-3S		260	828	1047	495	663					
		SPMA 1402-3S		260	828	1117	495	717					
LSRPM280MK	290	SPMA 1401-3S		290	923	1005	579	645	3	95,5	2,1	615	2
		SPMA 1402-3S		290	923	1165	579	774					
		SPMA 1401-4S		290	923	1245	579	839					
LSRPM315SP	340	SPMA 1402-3S		340	1082	1203	656	750	3	95,6	2,36	650	1
		SPMA 1401-4S		340	1082	1374	656	884					
		SPMA 1402-4S		340	1082	1460	656	951					

[1] The drive parameters must comply with the rated current values to ensure thermal control is maintained, as must the maximum current values to avoid the risk of demagnetisation.

[2] In case of a usage with a switching frequency above the minimum switching frequency F_D, please refer to the table on page 23 to determine the current values.

[3] η_T = Motor efficiency X drive efficiency.

LSRPM - UNIDRIVE SP

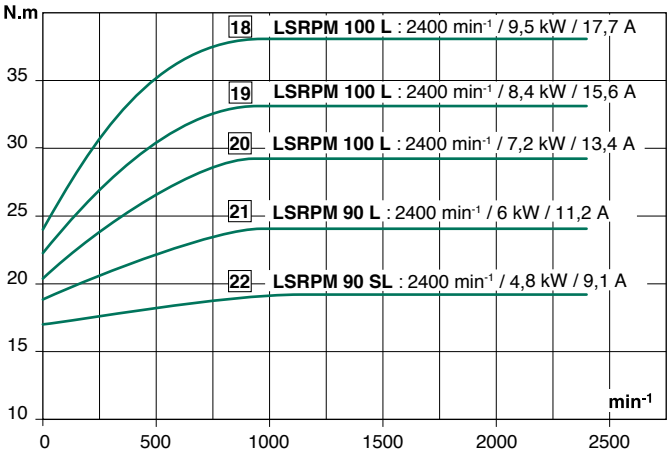
Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

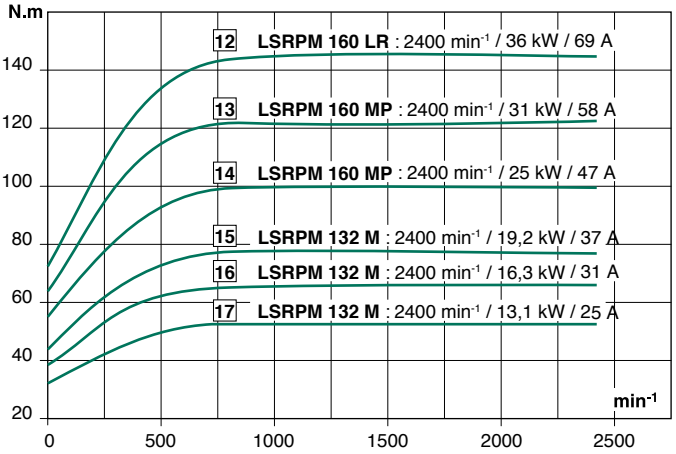
Torque-speed characteristics

2400 range

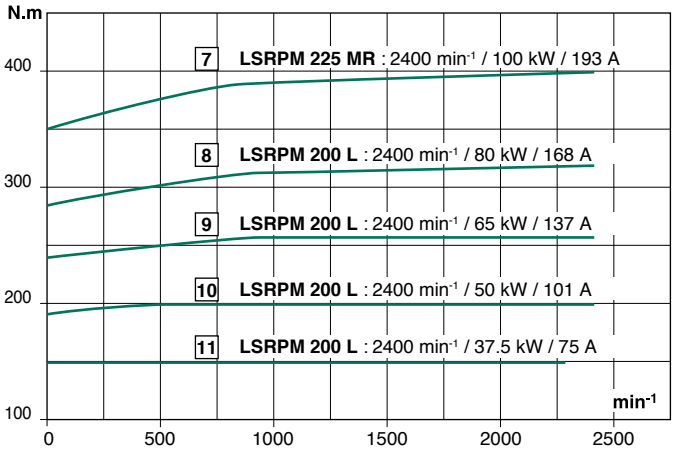
Torque from 0 to 38 N.m



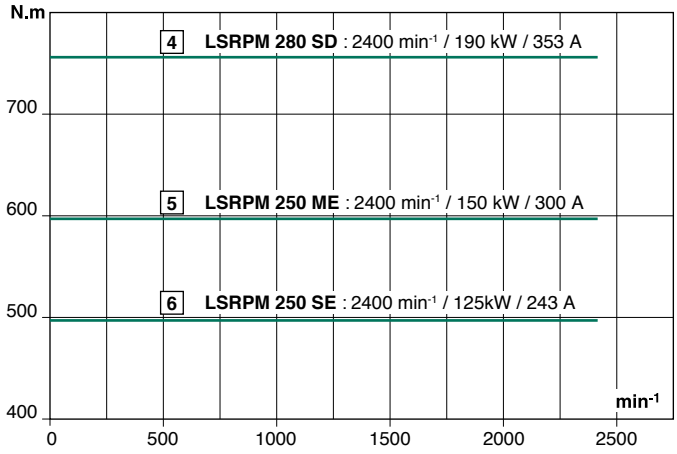
Torque from 38 to 145 N.m



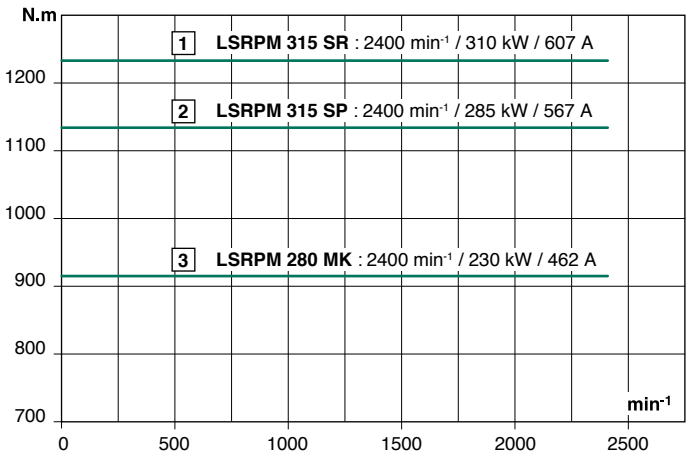
Torque from 145 to 400 N.m



Torque from 400 to 755 N.m



Torque from 755 to 1400 N.m



For operation at very low speeds, refer to the technical motor catalogue reference 4122.

LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

Selection charts

2400 range

Power supply upstream from the 400 V drive

Motor		Drive designation		Available power	Torque		Current [1]		Minimum switching frequency [2]	Total [3] efficiency	Moment of inertia	Motor weight	Torque curve no.
Designation	Rated power				rated	maximum	rated	maximum					
					M_n	M_{max}	I_n	$I_{max/\ 60sec}$	F_D	η_T	J	IM B3	
	kW	LS	CT	kW	N.m	N.m	A	A	kHz	%	kg.m²	kg	
LSRPM90SL	4,8	SP 4,5T	SP 1405	4,6	18,4	20,2	8,8	9,68	3	88,7	0,0032	14	22
		SP 5,5T	SP 1406	4,8	19	28,5	9,1	13,65					
LSRPM90L	6	SP 5,5T	SP 1406	6	24	26,4	11	12,10	3	89,7	0,0051	17	21
		SP 8T	SP 2401	6	24	36,0	11,2	16,80					
LSRPM100L	7,2	SP 8T	SP 2401	7,2	29,0	43,5	13	19,50	3	90,2	0,0066	19	20
LSRPM100L	8,4	SP 8T	SP 2401	8,2	32	35,2	15,3	16,83	3	90,7	0,0078	24	19
		SP 11T	SP 2402	8,4	33	49,5	15,6	23,40					
LSRPM100L	9,5	SP 11T	SP 2402	9,5	38	49,6	17,7	23,10	3	91,1	0,009	26	18
		SP 16T	SP 2403	9,5	38	56,9	17,7	26,50					
LSRPM132M	13,1	SP 11T	SP 2402	11,0	43	47,3	21	23,10	3	90,2	0,0165	40	17
		SP 16T	SP 2403	13,1	52	78,0	25	37,50					
LSRPM132M	16,3	SP 16T	SP 2403	15,2	61	67,1	29	31,9	3	90,7	0,0231	44	16
		SP 22T	SP 3401	16,3	65	97,5	31	46,5					
LSRPM132M	19,2	SP 22T	SP 3401	18,2	71,9	79,1	35	38,5	3	91,6	0,0311	49	15
		SP 27T	SP 3402	19,2	76	114,0	37	55,5					
LSRPM160MP	24,5	SP 27T	SP 3402	22,9	90,6	99,7	43	47,3	3	92,1	0,0418	60	14
		SP 33T	SP 3403	24,5	97	145,5	46	69					
LSRPM160MP	31	SP 33T	SP 3403	29,9	118	129,8	56	61,60	3	92,6	0,0514	69	13
		SP 40T	SP 4401	31,0	122	183,0	58	87,00					
LSRPM160LR	36	SP 40T	SP 4401	35,5	143	157,3	68	74,80	3	92,6	0,0626	79	12
		SP 50T	SP 4402	36	145	217,5	69	103,50					
LSRPM200L	37,5	SP 50T	SP 4402	37,5	149	201	75	108,75	3	93,1	0,13	135	11
LSRPM200L	50	SP 60T	SP 4403	50	199	220	101	114,40	3	93,7	0,17	150	10
		SP 75T	SP 5401	50	199	269	101	146,45					
LSRPM200L	65	SP 75T	SP 5401	65	259	281	137	151,80	3	94,0	0,2	165	9
		SP 100T	SP 5402	65	259	350	137	198,65					
LSRPM200L	80	SP 100T	SP 5402	80	318	343	168	184,8	3	94,4	0,24	180	8
		SP 120T	SP 6401	80	318	412	168	232					
LSRPM225MR	100	SP 120T	SP 6401	100	398	451	193	226	3	94,6	0,3	215	7
		SP 150T	SP 6402	100	398	523	193	271					
LSRPM250SE	125	SP 150T	SP 6402	121	482	520	236	260	3	95,1	0,65	285	6
		SPMA 1401-2S		125	497	670	243	352					
LSRPM250ME	150	SPMA 1401-2S		150	597	806	300	435	3	95,3	0,75	310	5
LSRPM280SD	190	SPMA 1401-2S		190	756	884	353	430	3	95,4	1	380	4
		SPMA 1402-2S		190	756	1019	353	511					
LSRPM280MK	230	SPMA 1402-2S		224	889	959	449	494	3	95,3	1,9	586	3
		SPMA 1401-3S		230	915	1219	462	663					
LSRPM315SP	285	SPMA 1401-3S		285	1134	1263	567	650	3	95,4	2,36	650	2
		SPMA 1402-3S		285	1134	1456	567	774					
LSRPM315SR	310	SPMA 1402-3S		310	1233	1491	607	770	3	95,5	1	705	1
		SPMA 1401-4S		310	1233	1664	607	880					

[1] The drive parameters must comply with the rated current values to ensure thermal control is maintained, as must the maximum current values to avoid the risk of demagnetisation.

[2] In case of a usage with a switching frequency above the minimum switching frequency F_D, please refer to the table on page 23 to determine the current values.

[3] η_T = Motor efficiency X drive efficiency.

LSRPM - UNIDRIVE SP

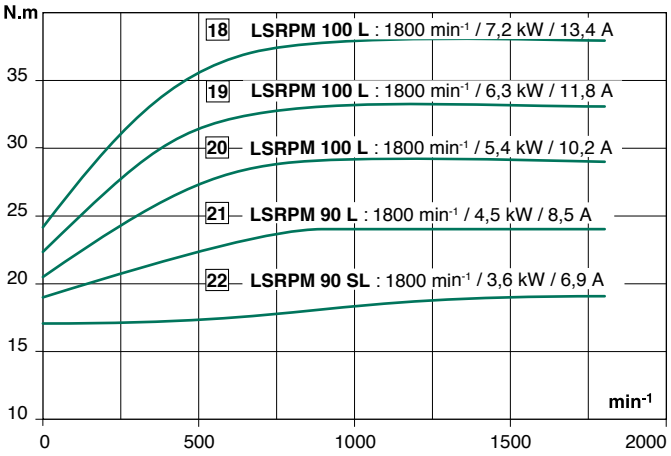
Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

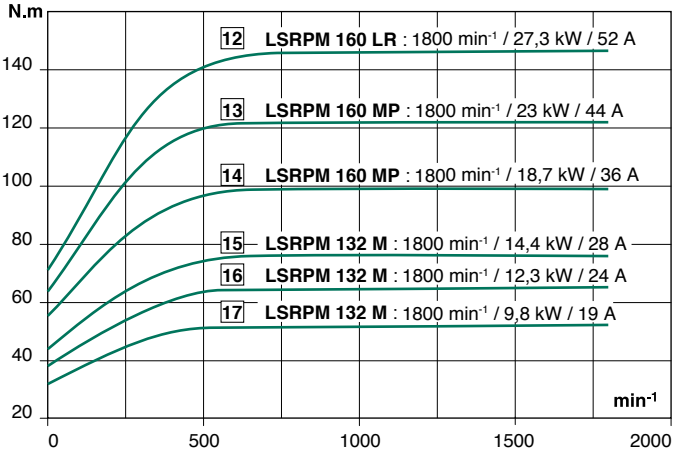
Torque-speed characteristics

1800 range

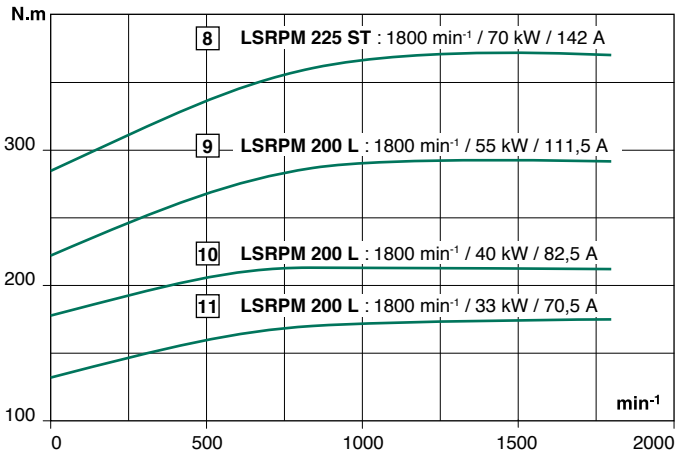
Torque from 0 to 38 N.m



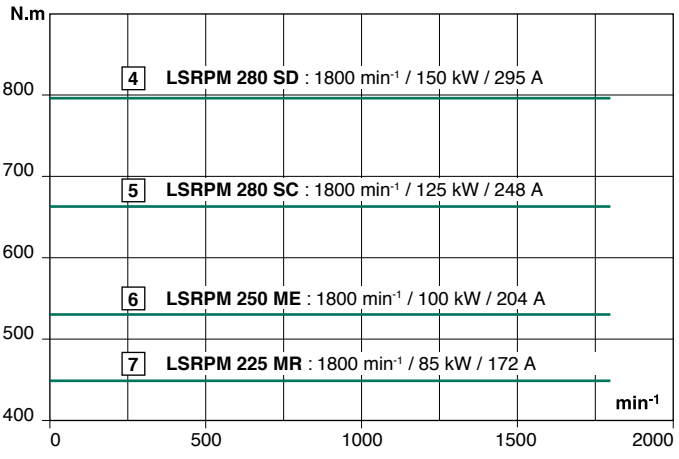
Torque from 38 to 145 N.m



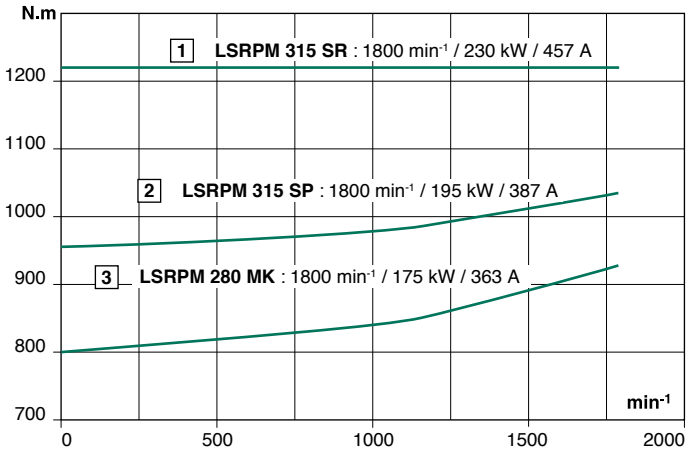
Torque from 145 to 370 N.m



Torque from 370 to 800 N.m



Torque from 800 to 1220 N.m



For operation at very low speeds, refer to the technical motor catalogue reference 4122.

LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

Selection charts

1800 range

Power supply upstream from the 400 V drive

Motor		Drive designation		Available power	Torque		Current [1]		Minimum switching frequency [2]	Total [3] efficiency	Moment of inertia	Motor weight	Torque curve no.
Designation	Rated power				rated	maximum	rated	maximum					
					M_n	M_{max}	I_n	$I_{max/\ 60sec}$	F_D	η_T	J	IM B3	
	kW	LS	CT	kW	N.m	N.m	A	A	kHz	%	kg.m²	kg	
LSRPM90SL	3,6	SP 3,5T	SP 1404	3,6	19	20,9	6,9	7,59	3	87,2	0,0032	14	22
		SP 4,5T	SP 1405	3,6	19	28,5	6,9	10,35					
LSRPM90L	4,5	SP 4,5T	SP 1405	4,5	24	27,3	8,5	9,68	3	88,7	0,0051	17	21
		SP 5,5T	SP 1406	4,5	24	36,0	8,5	12,75					
LSRPM100L	5,4	SP 4,5T	SP 1405	4,7	25	27,5	8,8	9,68	3	89,2	0,0066	19	20
		SP 5,5T	SP 1406	5,4	29,0	34,4	10,2	12,10					
		SP 8T	SP 2401	5,4	29,0	43,5	10,2	15,30					
LSRPM100L	6,3	SP 5,5T	SP 1406	5,9	31	34,1	11	12,10	3	89,7	0,0078	24	19
		SP 8T	SP 2401	6,3	33	49,5	11,8	17,70					
LSRPM100L	7,2	SP 8T	SP 2401	7,2	38	55,3	13,4	19,50	3	90,2	0,009	26	18
LSRPM132M	9,8	SP 8T	SP 2401	7,9	42	46,2	15,3	16,83	3	90,2	0,0165	40	17
		SP 11T	SP 2402	9,8	52	63,2	19	23,10					
		SP 16T	SP 2403	9,8	52	78,0	19	28,50					
LSRPM132M	12,3	SP 11T	SP 2402	10,8	45	49,5	21	23,10	3	90,7	0,0231	44	16
		SP 16T	SP 2403	12,3	65	97,5	24	36,00					
LSRPM132M	14,4	SP 16T	SP 2403	14,4	76	86,6	28	31,9	3	91,1	0,0311	49	15
		SP 22T	SP 3401	14,4	76	114,0	28	42					
LSRPM160MP	18,7	SP 16T	SP 2403	15,0	80	88,0	29	31,90	3	91,6	0,0418	60	14
		SP 22T	SP 3401	18,1	96	105,6	35	38,50					
		SP 27T	SP 3402	18,7	99	148,5	36	54,00					
LSRPM160MP	23	SP 27T	SP 3402	22,5	119	130,9	43	47,30	3	92,1	0,0514	69	13
		SP33T	SP 3403	23,0	122	183,0	44	66,00					
LSRPM160LR	27,3	SP 33T	SP 3403	27,3	145	171,8	52	61,60	3	92,1	0,0626	79	12
		SP 40T	SP 4401	27,3	145	217,5	52	78,00					
LSRPM200L	33	SP 40T	SP 4401	31,8	169	182	68	74,80	3	92,5	0,13	135	11
		SP 50T	SP 4402	33,0	175	236	70,5	102,20					
LSRPM200L	40	SP 50T	SP 4402	40,0	212	230	82,5	91,30	3	93,2	0,17	150	10
		SP 60T	SP 4403	40,0	212	286	82,5	119,60					
LSRPM200L	55	SP 60T	SP 4403	51,3	272	293	104	114,40	3	93,5	0,2	165	9
		SP 75T	SP 5401	55,0	292	394	111,5	161,6					
LSRPM225ST	70	SP 75T	SP 5401	68,0	360	388	138	151,8	3	93,9	0,26	190	8
		SP 100T	SP 5402	70,0	371	501	142	205,9					
LSRPM225-MR	85	SP 100T	SP 5402	83,0	440	474	168	184,80	3	94,1	0,32	220	7
		SP 120T	SP 6401	85,0	451	609	172	249,4					
LSRPM250ME	100	SP 120T	SP 6401	100	531	576	204	226	3	94,4	0,65	285	6
		SP 150T	SP 6402	100	531	667	204	271					
LSRPM280SC	125	SP 150T	SP 6402	119	631	681	236	260	3	94,6	0,84	330	5
		SPMA 1401-2S		125	663	896	248	360					
LSRPM280SD	150	SPMA 1401-2S		150	796	1073	295	427	3	94,7	1	380	4
LSRPM280MK	175	SPMA 1401-2S		175	928	1061	363	430	3	94,4	1,8	563	3
		SPMA 1402-2S		175	928	1232	363	516					
LSRPM315SP	195	SPMA 1402-2S		195	1016	1279	387	516	3	94,5	2,13	615	2
LSRPM315SR	230	SPMA 1402-2S		230	1220	1315	449	494	3	94,8	2,7	715	1
		SPMA 1401-3S		230	1220	1646	450	652					

[1] The drive parameters must comply with the rated current values to ensure thermal control is maintained, as must the maximum current values to avoid the risk of demagnetisation.

[2] In case of a usage with a switching frequency above the minimum switching frequency F_D, please refer to the table on page 23 to determine the current values.

[3] η_T = Motor efficiency X drive efficiency.

LSRPM - UNIDRIVE SP

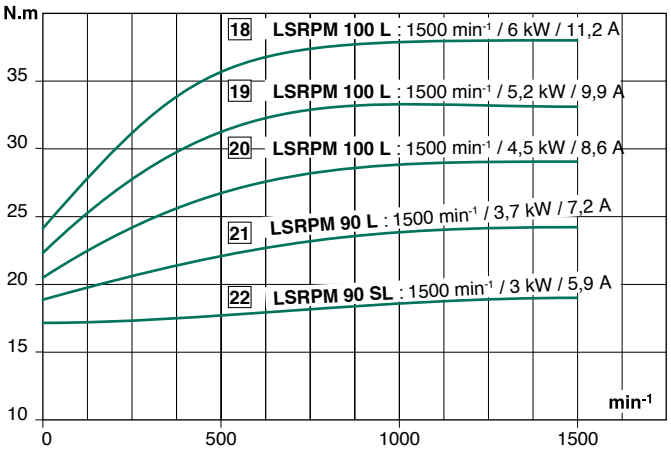
Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

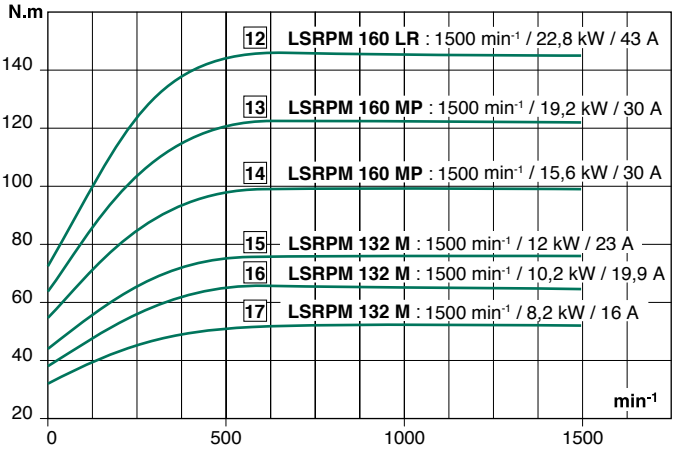
Torque-speed characteristics

1500 range

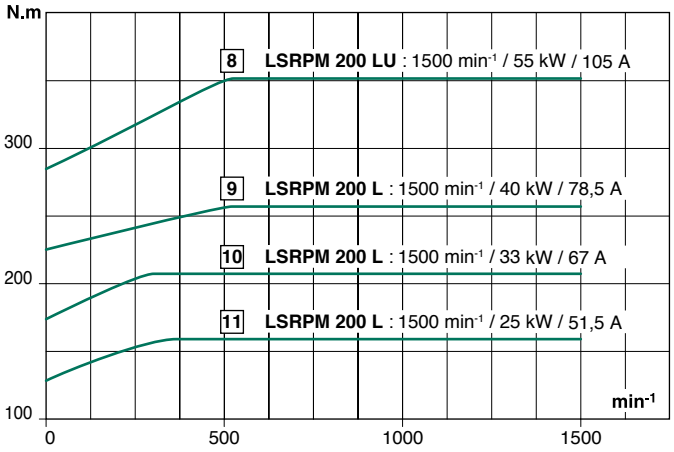
Torque from 0 to 38 N.m



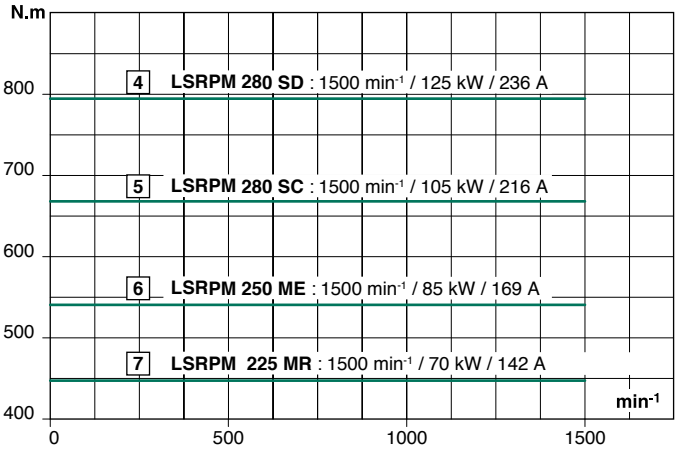
Torque from 38 to 145 N.m



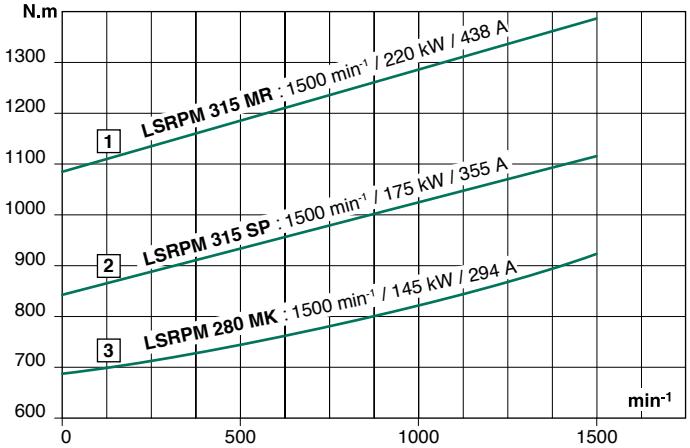
Torque from 145 to 350 N.m



Torque from 350 to 800 N.m



Torque from 800 to 1400 N.m



For operation at very low speeds, refer to the technical motor catalogue reference 4122.

LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

Selection charts

1500 range

Power supply upstream from the 400 V drive

Motor		Drive designation		Available power	Torque		Current [1]		Minimum switching frequency [2]	Total [3] efficiency	Moment of inertia	Motor weight	Torque curve no.
Designation	Rated power				rated	maximum	rated	maximum					
					M_n	M_{max}	I_n	$I_{max/\ 60sec}$	F_D	η_T	J	IM B3	
	kW	LS	CT	kW	N.m	N.m	A	A	kHz	%	kg.m²	kg	
LSRPM90SL	3	SP 2,5T	SP 1403	2,6	16	17,6	5	5,50	3	85,3	0,0032	14	22
		SP 3,5T	SP 1404	3	19	28,5	5,8	8,70					
LSRPM90L	3,7	SP 3,5T	SP 1404	3,5	23	25,3	6,9	7,59	3	87,2	0,0051	17	21
		SP 4,5T	SP 1405	3,7	24	36,0	7,2	10,80					
LSRPM100L	4,5	SP 4,5T	SP 1405	4,5	29	32,6	8,6	9,68	3	88,2	0,0066	19	20
		SP 5,5T	SP 1406	4,5	29	43,5	8,6	12,90					
LSRPM100L	5,2	SP 5,5T	SP 1406	5,2	33	40,3	9,9	12,10	3	89,2	0,0078	24	19
		SP 8T	SP 2401	5,2	33	49,5	9,9	14,85					
LSRPM100L	6	SP 5,5T	SP 1406	6,0	38	41,8	11	12,10	3	89,7	0,009	26	18
		SP 8T	SP 2401	6	38	57,0	11	16,50					
LSRPM132M	8,2	SP 8T	SP 2401	7,8	49,5	54,5	15,3	16,83	3	89,2	0,0165	40	17
		SP 11T	SP 2402	8,2	52	78,0	16	24,00					
LSRPM132M	10,2	SP 11T	SP 2402	10,2	65	75,5	19,9	23,10	3	89,7	0,0231	44	16
		SP 16T	SP 2403	10,2	65	97,5	19,9	29,85					
LSRPM132M	12	SP 11T	SP 2402	11,0	69	75,9	21	23,1	3	90,2	0,0311	49	15
		SP 16T	SP 2403	12	76	114,0	23	34,5					
LSRPM160MP	15,6	SP 16T	SP 2403	15,1	95	104,5	29	31,9	3	90,7	0,0418	60	14
		SP 22T	SP 3401	15,6	99	148,5	30	45,00					
LSRPM160MP	19,2	SP 22T	SP 3401	18,2	115	126,5	35	38,50	3	91,1	0,0514	69	13
		SP 27T	SP 3402	19,2	122	183,0	37	55,50					
LSRPM160LR	22,8	SP 27T	SP 3402	22,8	145	159,5	43	47,30	3	91,7	0,0626	79	12
		SP 33T	SP 3403	22,8	145	217,5	43	64,50					
LSRPM200L	25	SP 33T	SP 3403	25,0	159	183	51,5	61,60	3	92,1	0,13	135	11
		SP 40T	SP 4401	25	159	214	51,5	74,60					
LSRPM200L	33	SP 40T	SP 4401	33,0	210	229	67	74,80	3	92,9	0,17	150	10
		SP 50T	SP 4402	33	210	283	67	97,10					
LSRPM200L	40	SP 50T	SP 4402	40	255	287	78,5	91,30	3	93,3	0,2	165	9
		SP 60T	SP 4403	40	255	344	78,5	113,8					
LSRPM200LU	55	SP 60T	SP 4403	54,5	346	373	104	114,4	3	93,6	0,26	190	8
		SP 75T	SP 5401	55	350	472	105	152					
LSRPM225MR	70	SP 75T	SP 5401	68,0	433	467	138	151,80	3	94	32	220	7
		SP 100T	SP 5402	70	446	602	142	205,9					
LSRPM250ME	85	SP 100T	SP 5402	84,5	537	579	168	184,80	3	94,5	0,65	285	6
		SP 120T	SP 6401	85	541	698	169	232					
LSRPM280SC	105	SP 120T	SP 6401	99,7	634	685	205	226	3	94,6	0,84	330	5
		SP 150T	SP 6402	105	668	774	216	260					
LSRPM280SD	125	SP 150T	SP 6402	125	796	859	236	260	3	94,7	1	380	4
		SPMA 1401-2S		125	796	1074	236	342					
LSRPM280MK	145	SPMA 1401-2S		145	923	1245	294	426	3	94,3	1,8	563	3
LSRPM315SP	175	SPMA 1401-2S		175	1114	1295	355	429	3	94,6	2,13	615	2
		SPMA 1402-2S		175	1114	1505	355	515					
LSRPM315MR	220	SPMA 1402-2S		220	1401	1540	438	494	3	95,0	2,7	715	1
		SPMA 1401-3S		220	1401	1891	438	635					

[1] The drive parameters must comply with the rated current values to ensure thermal control is maintained, as must the maximum current values to avoid the risk of demagnetisation.

[2] In case of a usage with a switching frequency above the minimum switching frequency F_D, please refer to the table on page 23 to determine the current values.

[3] η_T = Motor efficiency X drive efficiency.

LSRPM - UNIDRIVE SP

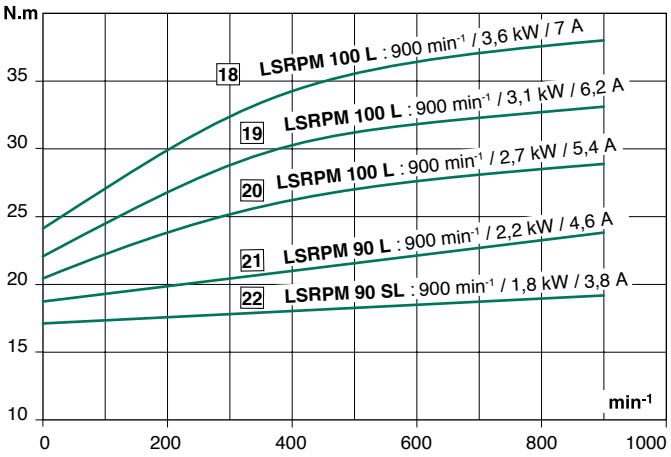
Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

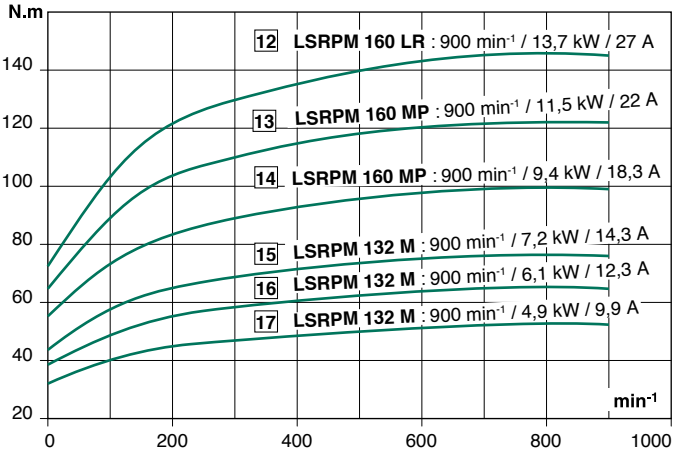
Torque-speed characteristics

900 range

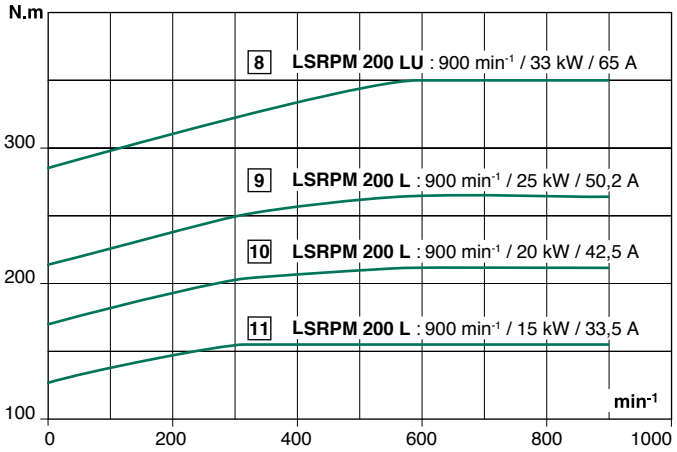
Torque from 0 to 38 N.m



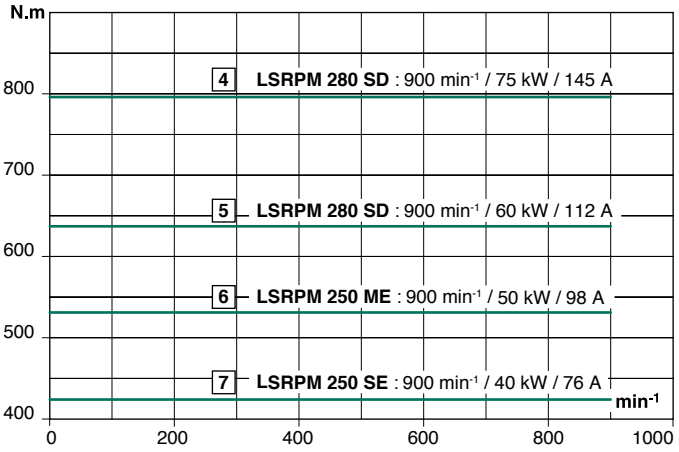
Torque from 38 to 145 N.m



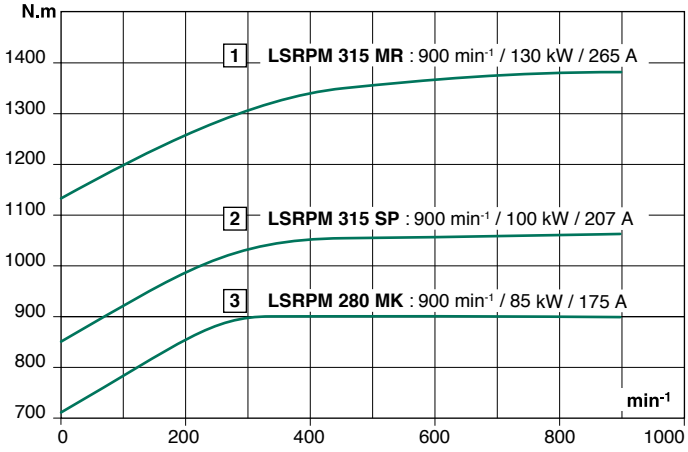
Torque from 145 to 350 N.m



Torque from 350 to 800 N.m



Torque from 800 to 1380 N.m



For operation at very low speeds, refer to the technical motor catalogue reference 4122.

LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

Selection charts

900 range

Power supply upstream from the 400 V drive

Motor		Drive designation		Available power	Torque		Current [1]		Minimum switching frequency [2]	Total [3] efficiency	Moment of inertia	Motor weight	Torque curve no.
Designation	Rated power				rated	maximum	rated	maximum					
					M_n	M_{max}	I_n	$I_{max/\ 60sec}$	F_D	η_T	J	IM B3	
	kW	LS	CT	kW	N.m	N.m	A	A	kHz	%	kg.m²	kg	
LSRPM90SL	1,8	SP 2T	SP 1402	1,8	19	20,9	3,8	4,18	3	80,4	0,0032	14	22
		SP 2,5T	SP 1403	1,8	19	28,5	3,8	5,70					
LSRPM90L	2,2	SP 2,5T	SP 1403	2,2	24	28,7	4,6	5,50	3	82,3	0,0051	17	21
		SP 3,5T	SP 1404	2,2	24	36	4,6	6,90					
LSRPM100L	2,7	SP 2,5T	SP 1403	2,5	26,9	30	5	5,50	3	83,3	0,0066	19	20
		SP 3,5T	SP 1404	2,7	29	44	5,4	8,10					
LSRPM100L	3,1	SP 3,5T	SP 1404	3,1	33	40	6,2	7,59	3	85,3	0,0078	24	19
		SP 4,5T	SP 1405	3,1	33	50	6,2	9,30					
LSRPM100L	3,6	SP 3,5T	SP 1404	3,5	37,5	41	6,9	7,59	3	86,2	0,009	26	18
		SP 4,5T	SP 1405	3,6	38	57	7	10,50					
LSRPM132M	4,9	SP 4,5T	SP 1405	4,4	46	51	8,8	9,68	3	86,2	0,0165	40	17
		SP 5,5T	SP 1406	4,9	52	64	9,9	12,10					
		SP 8T	SP 2401	4,9	52	78	9,9	14,85					
LSRPM132M	6,1	SP 5,5T	SP 1406	5,5	58	64	11	12,10	3	87,2	0,0231	44	16
		SP 8T	SP 2401	6,1	65	98	12,3	18,45					
LSRPM132M	7,2	SP 8T	SP2401	7,2	76	89	14,3	16,83	3	88,2	0,0311	49	15
		SP 11T	SP 2402	7,2	76	114	14,3	21,5					
LSRPM160MP	9,4	SP 8T	SP 2401	7,9	83	91	15,3	16,83	3	89,2	0,0418	60	14
		SP 11T	SP 2402	9,4	99	125	18,3	23,1					
		SP 16T	SP 2403	9,4	99	149	18,3	27,5					
LSRPM160MP	11,5	SP 11T	SP 2402	11,0	116	128	21	23,1	3	89,7	0,0514	69	13
		SP 16T	SP 2403	11,5	122	183	22	33,0					
LSRPM160LR	13,7	SP 16T	SP 2403	13,7	145	171	27	31,9	3	89,7	0,0626	79	12
		SP 22T	SP 3401	13,7	145	218	27	40,5					
LSRPM200L	15	SP 22T	SP 3401	15	159	177	33,5	38,5	3	88,8	0,13	135	11
		SP 27T	SP 3402	15	159	214	33,5	48,5					
LSRPM200L	20	SP 27T	SP 3402	20	212	231	42,5	47,3	3	89,8	0,17	150	10
		SP 33T	SP 3403	20	212	286	42,5	61,6					
LSRPM200L	25	SP 33T	SP 3403	25	265	312	50,2	61,6	3	90,5	0,2	165	9
		SP 40T	SP 4401	25	265	358	50,2	72,8					
LSRPM200LU	33	SP 33T	SP 3403	28,4	302	325	56	61,6	3	91	0,26	190	8
		SP 40T	SP 4401	33	350	391	65	74,8					
		SP 50T	SP 4402	33	350	473	65	94,3					
LSRPM250SE	40	SP 50T	SP 4402	40	424	490	76	91,3	3	93,6	0,54	250	7
		SP 60T	SP 4403	40	424	572	76	110					
LSRPM250ME	50	SP 50T	SP 4402	42,5	450	485	83	91,3	3	93,9	0,65	285	6
		SP 60T	SP 4403	50	531	600	98	114,4					
		SP 75T	SP 5401	50	531	716	98	142					
LSRPM280SD	60	SP 60T	SP 4403	56	591	637	104	114,4	3	94,3	0,9	271	5
		SP 75T	SP 5401	60	637	858	112	162					
LSRPM280SD	75	SP 75T	SP 5401	71	758	816	138	151,8	3	94,4	1	380	4
		SP 100T	SP 5402	75	796	1074	145	210					
LSRPM280MK	85	SP 100T	SP 5402	81,5	866	933	168	184,8	3	94	1,67	540	3
		SP 120T	SP 6401	85	902	1131	175	232					
LSRPM315SP	100	SP 120T	SP 6401	100	1051	1134	205	226	3	94,3	2,09	605	2
		SP 150T	SP 6402	100	1061	1316	207	271					
LSRPM315MR	130	SP 150T	SP 6402	115	1228	1325	236	260	3	94,7	2,6	705	1
		SPMA 1401-2S		130	1379	1827	265	384					

[1] The drive parameters must comply with the rated current values to ensure thermal control is maintained, as must the maximum current values to avoid the risk of demagnetisation.

[2] In case of a usage with a switching frequency above the minimum switching frequency F_D, please refer to the table on page 23 to determine the current values.

[3] η_T = Motor efficiency X drive efficiency.

LSRPM - UNIDRIVE SP

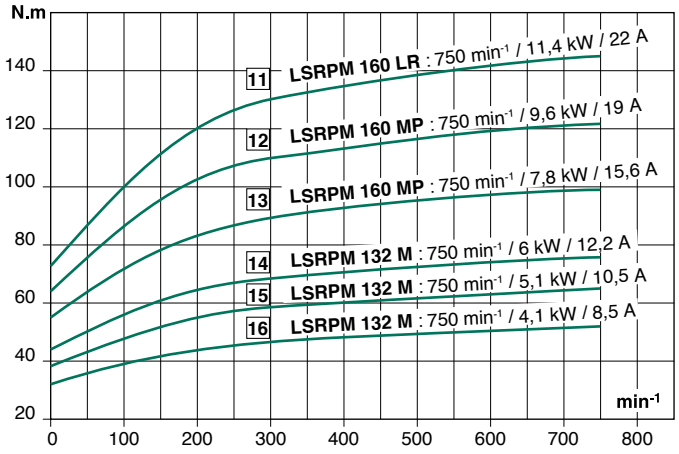
Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

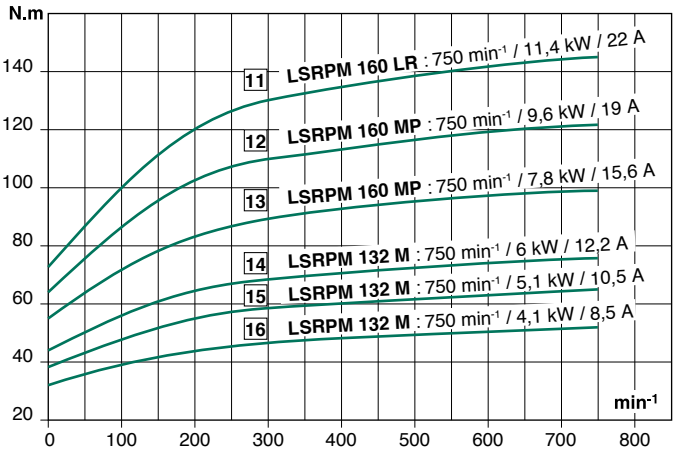
Torque-speed characteristics

750 range

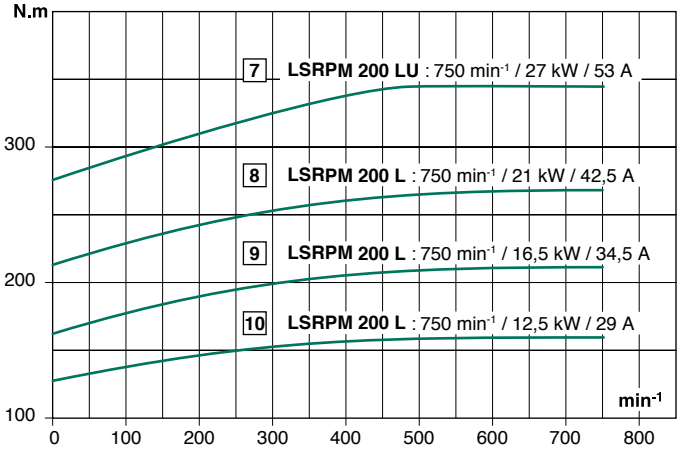
Torque from 0 to 37 N.m



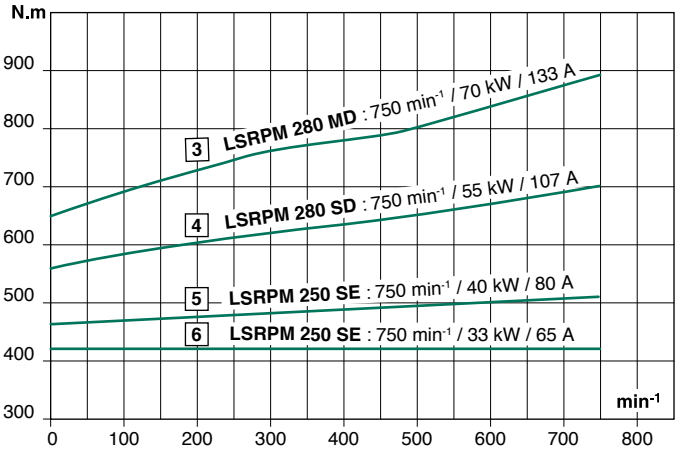
Torque from 37 to 145 N.m



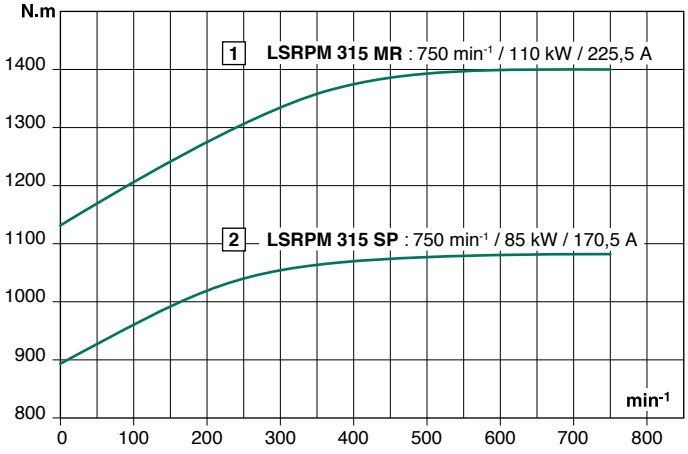
Torque from 145 to 345 N.m



Torque from 345 to 890 N.m



Torque from 890 to 1400 N.m



For operation at very low speeds, refer to the technical motor catalogue reference 4122.

LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

Selection charts

750 range

Power supply upstream from the 400 V drive

Motor		Drive designation		Available power	Torque		Current [1]		Minimum switching frequency [2]	Total [3] efficiency	Moment of inertia	Motor weight	Torque curve no.
Designation	Rated power				rated	maximum	rated	maximum					
					M_n	M_{max}	I_n	$I_{max/\ 60sec}$	F_D	η_T	J	IM B3	
	kW	LS	CT	kW	N.m	N.m	A	A	kHz	%	kg.m²	kg	
LSRPM90SL	1,4	SP 1,5T	SP 1401	1,32	16,8	18,5	2,8	3,08	3	78,4	0,0032	14	21
		SP 2T	SP 1402	1,4	18	27	3	4,50					
LSRPM90L	1,8	SP 2T	SP 1402	1,8	23	26,0	3,7	4,18	3	81,3	0,0051	17	20
		SP 2,5T	SP 1403	1,8	23	35	3,7	5,6					
LSRPM100L	2,1	SP 2,5T	SP 1403	2,12	27	34	4,4	5,5	3	82,3	0,0066	19	19
		SP 3,5T	SP 1404	2,1	27	41	4,4	6,6					
LSRPM100L	2,5	SP 2,5T	SP 1403	2,5	32,0	35	5	5,5	3	83,3	0,0078	24	18
		SP 3,5T	SP 1404	2,5	32	48	5	7,5					
LSRPM100L	2,8	SP 3,5T	SP 1404	2,8	36	54	5,7	8,5	3	84,3	0,009	26	17
LSRPM132M	4,1	SP 3,5T	SP 1404	3,3	42	46	6,9	7,59	3	84,3	0,0165	40	16
		SP 4,5T	SP 1405	4,1	52	59	8,5	9,68					
		SP 5,5T	SP 1406	4,1	52	87	8,5	14,3					
LSRPM132M	5,1	SP 4,5T	SP 1405	4,3	54	59	8,8	9,68	3	85,3	0,0231	44	15
		SP 5,5T	SP 1406	5,1	65	75	10,5	12,1					
		SP 8T	SP 2401	5,1	65	98	10,5	15,8					
LSRPM132M	6	SP 5,5T	SP 1406	5,4	68	75	11	12,1	3	86,2	0,0311	49	14
		SP 8T	SP 2401	6	76	114	12,2	18,3					
LSRPM160MP	7,8	SP 8T	SP 2401	7,6	97	106,7	15,3	16,83	3	87,2	0,0418	60	13
		SP 11T	SP 2402	7,8	99	149	15,6	23					
LSRPM160MP	9,6	SP 11T	SP 2402	9,6	122	148,3	19	23,1	3	88,2	0,0514	69	12
		SP 16T	SP 2403	9,6	122	183	19	28,5					
LSRPM160LR	11,4	SP 11T	SP 2402	10,9	138	152	21	23,1	3	88,7	0,0626	79	11
		SP 16T	SP 2403	11,4	145	218	22	33,0					
LSRPM200L	12,5	SP 16T	SP 2403	12,5	159	171	29	31,9	3	87,7	0,13	135	10
		SP 22T	SP 3401	12,5	159	215	29	42,1					
LSRPM200L	16,5	SP 22T	SP 3401	16,5	210	229	34,5	38,5	3	89	0,17	150	9
		SP 27T	SP 3402	16,5	210	283	34,5	50,0					
LSRPM200L	21	SP 22T	SP 3401	17,3	220	237	35	38,5	3	90	0,2	165	8
		SP 27T	SP 3402	21	267	290	42,5	47,3					
		SP 33T	SP 3403	21	267	360	42,5	61,6					
LSRPM200LU	27	SP 27T	SP 3402	22	279	301	43	47,3	3	90,3	0,26	190	7
		SP 33T	SP 3403	27	344	387	53	61,6					
		SP 40T	SP 4401	27	344	464	53	76,8					
LSRPM250SE	33	SP 33T	SP 3403	28,5	362	390	56	61,6	3	93,2	0,54	250	6
		SP 40T	SP 4401	33	420	469	65	74,8					
		SP 50T	SP 4402	33	420	566	65	94					
LSRPM250SE	40	SP 40T	SP 4401	34	433	467	68	74,8	3	93,6	0,65	285	5
		SP 50T	SP 4402	40	509	565	80	91,3					
		SP 60T	SP 4403	40	509	687	80	116					
LSRPM280SD	55	SP 50T	SP 4402	42,5	543	585	83	91,3	3	94	0,9	271	4
		SP 60T	SP 4403	53,5	680	733	104	114,4					
		SP 75T	SP 5401	55	700	944	107	155					
LSRPM280MD	70	SP 75T	SP 5401	70	891	989	133	151,8	3	94,1	1	380	3
		SP 100T	SP 5402	70	891	1204	133	193					
LSRPM315SP	85	SP 100T	SP 5402	83,5	1066	1149	168	184,8	3	94	2,09	605	2
		SP 120T	SP 6401	85	1082	1460	170,5	247					
LSRPM315MR	110	SP 120T	SP 6401	100	1274	1376	205	226	3	94,4	2,6	705	1
		SP 150T	SP 6402	110	1401	1568	225,5	260					

[1] The drive parameters must comply with the rated current values to ensure thermal control is maintained, as must the maximum current values to avoid the risk of demagnetisation.

[2] In case of a usage with a switching frequency above the minimum switching frequency F_D, please refer to the table on page 23 to determine the current values.

[3] η_T = Motor efficiency X drive efficiency.

LSRPM - UNIDRIVE SP

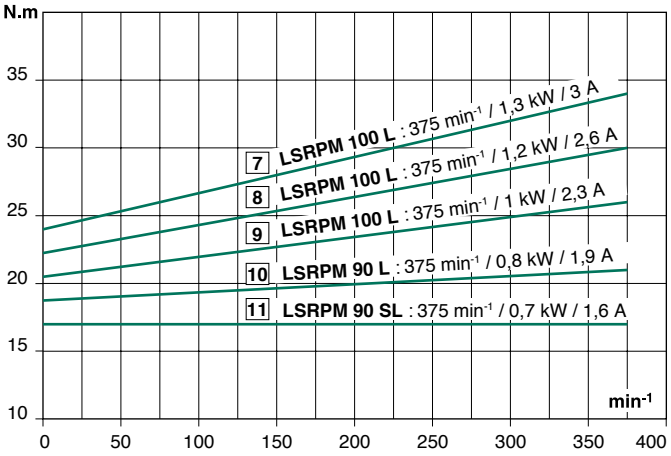
Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

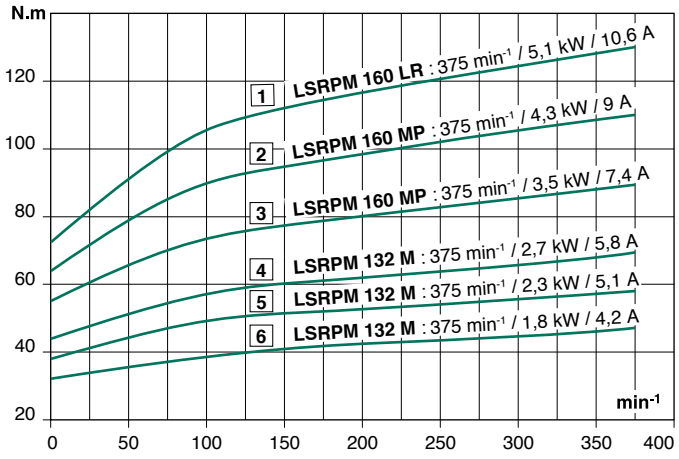
Torque-speed characteristics

375 range

Torque from 0 to 34 N.m



Torque from 34 to 130 N.m



For operation at very low speeds, refer to the technical motor catalogue reference 4122.

LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

Selection charts

375 range

Power supply upstream from the 400 V drive

Motor		Drive designation		Available power	Torque		Current [1]		Minimum switching frequency [2]	Total [3] efficiency	Motor weight	Torque curve no.
Designation	Rated power				rated	maxi-mum	rated	maximum				
					M_n	M_{max}	I_n	$I_{max/\ 60sec}$	F_D	η_T	IM B3	
	kW	LS	CT	kW	N.m	N.m	A	A	kHz	%	kg	
LSRPM90SL	0,7	SP 1,5T	SP 1401	0,7	17	25,5	1,6	2,4	3	68,6	14	21
LSRPM90L	0,8	SP 1,5T	SP 1401	0,8	21	34	1,9	3,08	3	72,5	17	20
LSRPM100L	1,0	SP 1,5T	SP 1401	1,0	26	35	2,3	3,08	3	73,5	19	19
		SP 2T	SP 1402	1,0	26	39	2,3	3,45				
LSRPM100L	1,2	SP 1,5T	SP 1401	1,2	30	36	2,6	3,08	3	75,5	24	18
		SP 2T	SP 1402	1,2	30	45	2,6	3,90				
LSRPM100L	1,3	SP 1,5T	SP 1401	1,25	31,7	35	2,8	3,08	3	76,4	26	17
		SP 2T	SP 1402	1,3	34	51	3	4,50				
LSRPM132M	1,8	SP 2T	SP 1402	1,66	42,5	47	3,8	4,18	3	76,4	40	16
		SP 2,5T	SP 1403	1,8	47	71	4,2	6,30				
LSRPM132M	2,3	SP 2,5T	SP 1403	2,25	56,9	63	5	5,50	3	78,4	44	15
		SP 3,5T	SP 1404	2,3	58	86	5,1	7,60				
LSRPM132M	2,7	SP 3,5T	SP 1404	2,7	69	104	5,8	8,70	3	80,4	49	14
LSRPM160MP	3,5	SP 4,5T	SP 1405	3,5	89	134	7,4	11,1	3	82,3	60	13
LSRPM160MP	4,3	SP 4,5T	SP 1405	4,2	108	118	8,8	9,68	3	83,3	69	12
		SP 5,5T	SP 1406	4,3	110	165	9	13,5				
LSRPM160LR	5,1	SP 5,5T	SP 1406	5,1	130	148	10,6	12,1	3	84,3	79	11

[1] The drive parameters must comply with the rated current values to ensure thermal control is maintained, as must the maximum current values to avoid the risk of demagnetisation.

[2] In case of a usage with a switching frequency above the minimum switching frequency F_D, please refer to the table on page 23 to determine the current values.

[3] η_T = Motor efficiency X drive efficiency.

LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

General drive characteristics

Power supply characteristics

Characteristics	Level
Power supply voltage	3-phase supply: 380V -10% to 480V +10%
Input frequency	48 to 65 Hz
Number of power-ups	20 maximum / hr
Output frequency range	0 to 3000Hz

Environment

Characteristics	Level
Protection	IP20 with cable glands installed
Operating temperature	0C to +40°C, up to 50°C with derating
Altitude	≤ 1000 m without derating > 1000 m: operating temperature derating of 0,6°C per 100 m

Main electrical characteristics

Drive designation		*Accepted current value I_{co}* (A) at switching frequency of					
LS	CT	3 kHz	4 kHz	6 kHz	8 kHz	12 kHz	16 kHz
SP 1,5 T	SP 1401	2,8	2,8				
SP 2 T	SP 1402	3,8	3,8				
SP 2,5 T	SP 1403	5	5				
SP 3,5T	SP 1404	6,9	6,9				5,9
SP 4,5 T	SP 1405	8,8	8,8			7,4	5,7
SP 5,5 T	SP 1406	11	11		10	7,4	5,7
SP 8 T	SP 2401	15,3	15,3			12,7	10,1
SP 11 T	SP 2402	21	21	19,5	16,7	12,7	10
SP 16 T	SP 2403	29	27,2	23,2	20	15	11,8
SP 22 T	SP 3401	35	35		34,5	26,3	21
SP 27 T	SP 3402	43	43		37,9	28,6	22,5
SP 33 T	SP 3403	56	53,4	44,6	37,9	28,6	-
SP 40T	SP 4401	68	68		62	-	
SP 50T	SP 4402	83	83	74	61	-	
SP 60T	SP 4403	104	104	95,1	78,8	-	
SP 75T	SP 5401	138	138	118	97,1	-	
SP 100T	SP 5402	168	158	129	107	-	
SP 120T	SP 6401	205	202	164,1	-		
SP 150T	SP 6402	236	210,4	157,7	-		
SPMA 1401-2S		390	384	312	-		
SPMA 1402-2S		449	400	312	-		
SPMA 1401-3S		585	576	468	-		
SPMA 1402-3S		674	600	468	-		
SPMA 1401-4S		780	768	624	-		
SPMA 1402-4S		899	800	624	-		
SPMA 1401-5S		976	960	780	-		

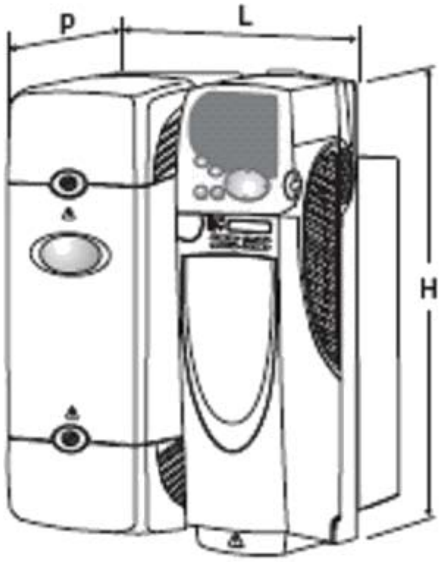
I_{co}: continuous output current.

LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

Drive dimensions and weight



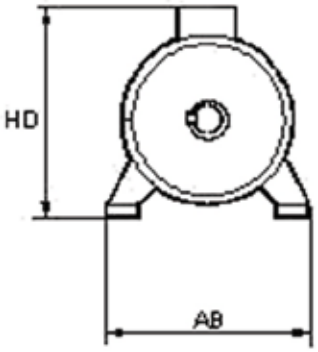
Drive designation	Dimensions (mm)			
	L	H	P	Weight
1.5T to 5.5T	100	368	219	5
8T to 16T	155	368	219	7
22T to 33T	250	368	260	15
40T to 60T	310	510	296	30
75T to 100T	310	820	296	55
120T to 150T	310	1131	296	75
SPMA 1401-2S				
SPMA 1402-2S				
SPMA 1401-3S				
SPMA 1402-3S		Please consult Leroy-Somer		
SPMA 1401-4S				
SPMA 1402-4S				
SPMA 1401-5S				

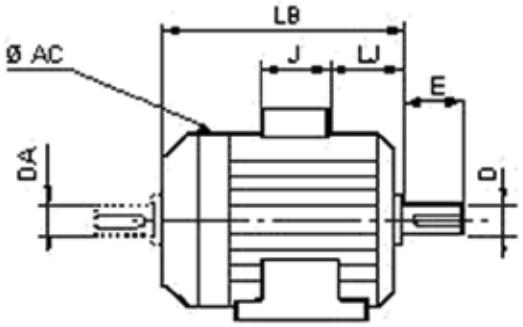
LSRPM - UNIDRIVE SP

Flux vector drive

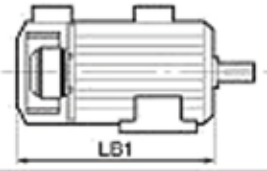
Synchronous motor drive with permanent magnets - Aluminum alloy frame

Motor dimensions

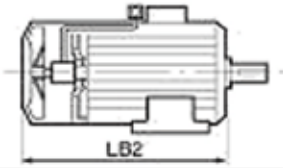




Forced ventilation
B3 and B5



Incremental encoder
B3 and B5



Type	Shaft end dimensions			
	D	E	DA	EA
LSRPM 90SL/L	28j6	60	Please consult Leroy-Somer	
LSRPM 100L	32k6	80		
LSRPM 132M	38k6	80	28j6	60
LSRPM 160MP/LR	48k6	110	38k6	80
LSRPM 200 L//L1/LU/LU1	55m6	110	55m6	110
LSRPM 225 ST/ST1/SR/SR1/MR	60m6	140	60m6	140
LSRPM 250 SE/ME	65m6	140	60m6	140
LSRPM 280 SC/SD	70m6	140	65m6	140
LSRPM 280 MD	75m6	140	65m6	140
LSRPM 280 MK	75m6	140	75m6	140
LSRPM 315 SP/SR	80m6	170	80m6	170
LSRPM 315 MR	85m6	170	80m6	170

Type	Main dimension						
	AB	AC	HD	LB	LB1	LB2	IEC flange
LSRPM 90SL/ L	172	200	245	245	338	328	FF165
LSRPM 100 L	196	200	260	290	380	376	FF215
LSRPM 132 M	250	280	341	385	462	461	FF265
LSRPM 160 MP/LR	294	310	387	468	710	-	FF300
LSRPM 200L	388	390	476	621	802	674	FF350
LSRPM 200 L1	388	390	510	621	802	674	FF350
LSRPM 200 LU	388	390	476	669	847	723	FF350
LSRPM 225 ST	431	390	500	627	808	681	FF400
LSRPM 225 ST1	431	390	535	627	808	681	FF400
LSRPM 225 SR	431	390	501	676	854	730	FF400
LSRPM 225 SR1	431	390	535	676	854	730	FF400
LSRPM 225 MR	431	390	501	676	854	730	FF400
LSRPM 250 SE/ME	470	479	655	810	1012	860	FF500
LSRPM 280 SC	520	479	685	810	1012	860	FF500
LSRPM 280 SD/MD	520	479	685	870	1072	920	FF500
LSRPM 280 MK	520	586	746	921	1075	965	FF500
LSRPM 315 SP	594	586	781	947	1137	991	FF600
LSRPM 315 SR/MR	594	586	781	1017	1251	1061	FF600

Adapting the drive and motor when installing

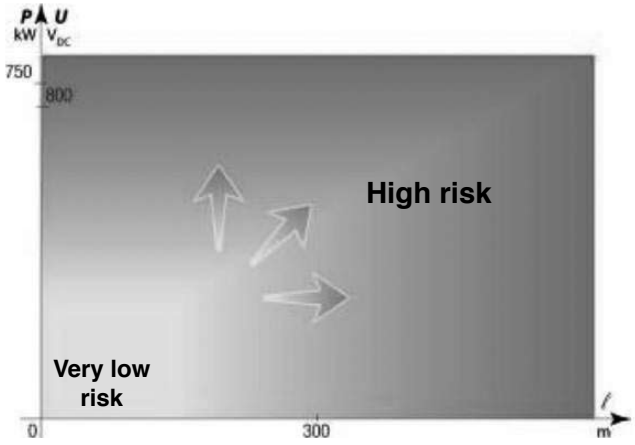
Supplies network and equipment incorporating power electronics may generate disturbance affecting each element: motor, drive and network.
This chapter **Adapting the drive and motor when installing** is a **rough guide** to choosing the eventual options required to suit the use and installation.

General conditions
The selection guide is used:
- To conform the installation conform to the wiring instructions,
- To the following specifications with a standard LSRPM motor
  - Mains imbalance ≤ 2%,
  - Mains voltage 400 to 480 V ± 10 %,
  - Drive switching frequency: indicated in the selection charts,
  - Motor insulation Class F,
  - Voltage peaks generated at the motor terminals blocks ≤ 1500 V,
  - motor d*V* / d*t* < 3500 V/µs.

Special conditions
To satisfy the demands of specific applications and harsher operating conditions, LEROY-SOMER offers additional options (ask for estimate):
- dV / dt filter,
- Reinforced insulation (motor),
- Insulated bearings for motors frame size ≤ 200 mm.

Risk assessment:
- ‘’OI” drive emergency shutdown,
- Damage to the motor insulation,
- Reduced motor bearing life,

*according to the three parameters DC bus voltage **U**, motor cable length **l** and motor power rating **P**.*



NB: In special cases our technicians can conduct an in-depth study of the installation to guarantee that it works correctly (ask for estimate).

Adapting the drive and motor to the installation

Option selection guide

dV /dt filter:

High frequency repetitive peak voltage and resulting circulating current in the cables can cause an «OI» emergency shutdown indicated on the drive.
Use of the filter is recommended in the following cases:
- Application with braking and when the cable length is more than 30 meters.
- In applications where the cable length is more than the maximum value indicated in the chart below (this maximum length depends on the drive rating and the switching frequency F_D).

UNIDRIVE SP rating	Motor	Max. cumulative* length of cables (* : for motors or cables in parallel)			
	Ico (A)	FD 2 & 3 kHz m	FD 3,5 & 4 kHz m	FD 4,5 & 5 kHz m	FD 5,5 & 6 kHz m
1,5 T	2,8				
2 T	3,8				
2,5 T	5				
3,5T	6,9				
4,5 T	8,8				
5,5 T	11				
8 T	15,3				
11 T	21				
16 T	29				
22 T	35				
27 T	43				
33 T	56				
40T	68				
50T	83				
60T	104				
75T	138				
100T	168				
120T	205				
150T	236				
SPMA 1401-2S	390				
SPMA 1402-2S	449				
SPMA 1401-3S	585				
SPMA 1402-3S	674				
SPMA 1401-4S	780				
SPMA 1402-4S	899				
SPMA 1401-5S	976				

to be advised

Reinforced insulation

Voltage peaks generated at the terminals on each pulse in the signal can have a destructive effect on the winding.
These peaks, which are related to the value of the power supply voltage upstream of the drive, can cause the turns of the winding to short-circuit.
For peak values greater than 1500 V, the **SIR** (reinforced winding insulation) option is available over the entire range. The permitted value of the voltage peak at the motor terminals would then be 2000 V.
Use of this option is recommended in the case of an application involving braking and when the cable length is more than 30 meters.

UT 02 15V Modul Single Ended

Can be incorporated on the driver encoder input, and used to manage the motor speed/ position feedback. It manages the Hall effect sensors (as standard for the LSRPM).

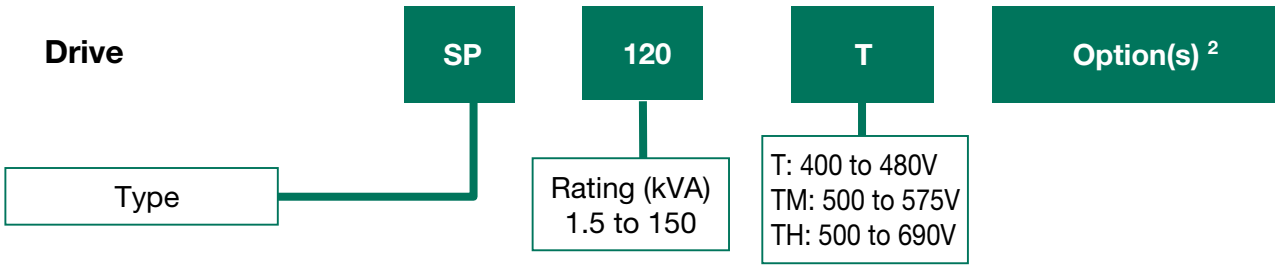
LSRPM - UNIDRIVE SP

Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

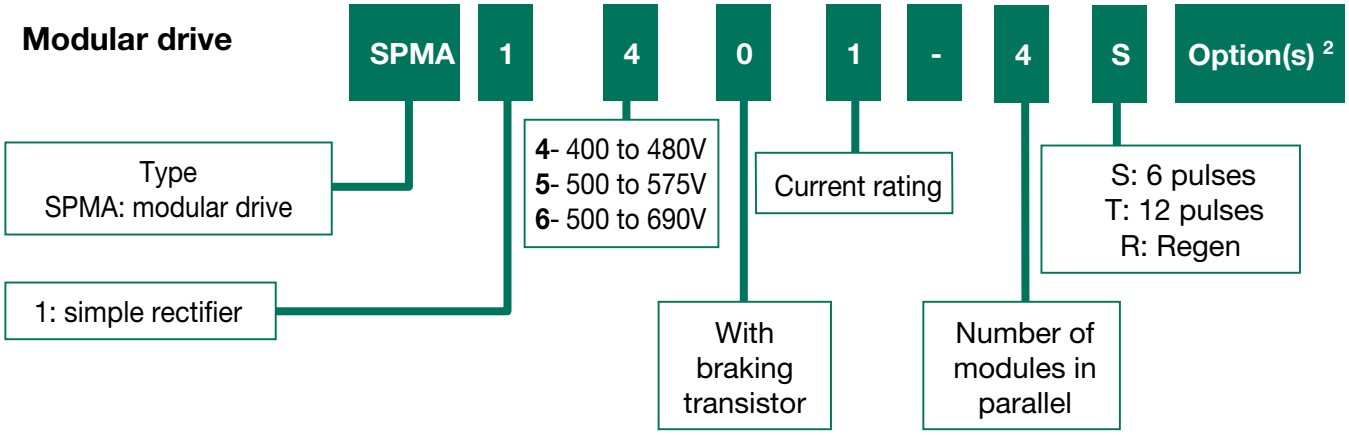
Designation

Drive



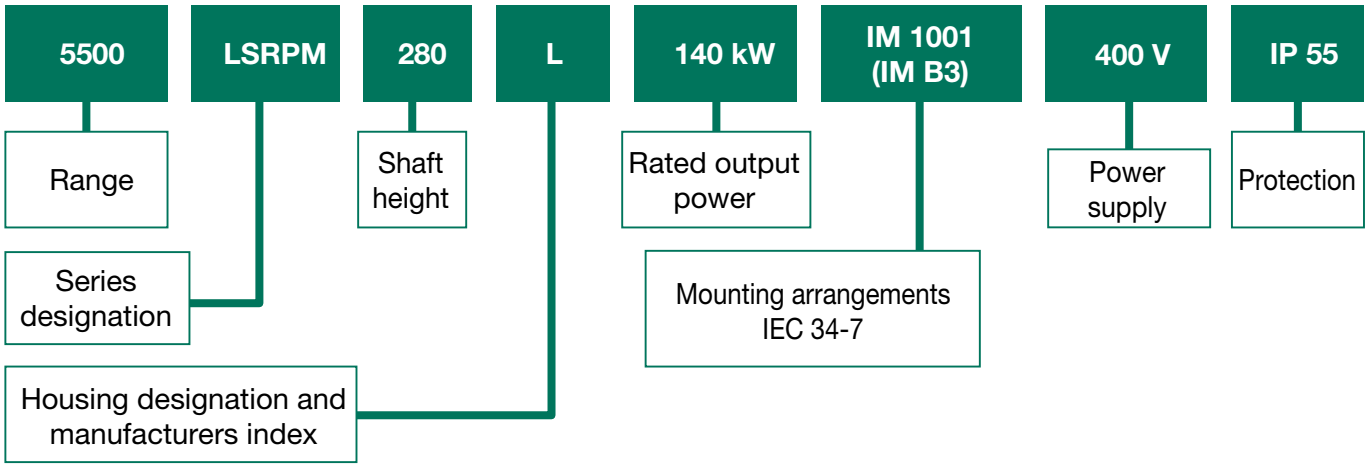
2 described in this document (add UT 02 for the speed return

Modular drive



2 described in this document (add UT 02 for the speed return

Motor



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Flux vector drive

Synchronous motor drive with permanent magnets - Aluminum alloy frame

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