

Order code LTi synchronous motors LSx

Example LSH-074-1-30-560

Article designation →	LSX	-	074	-	1	-	30	-	560	/	Options (if available)
LTi synchronous motor series T or H	T H										
Edge measurement of motor in mm (not the flange measurement)			050 074 097 127 158 190 220								
Overall length					2 3 4 5						
Rated speed (x100)							30 45				
Controller d.c. link voltage (VDC)									24 48 320 560		
Ordering options (will be joined)											T0 B 1R G3 G6.1M G12.1S G12.2S T1 P 3R G5 G6.1S G12.1M G12.2M T4 X 5R G6.2M G6.2S K S4

Definition Standard	Motor shaft smooth (no feather key) Resolver 1 pole pair IP64 acc. to DIN 40050 except the flange IP54 acc. to DIN VDE0530-5 or EN60034-5 (rotating machines) Resolver plug straight outgoing Power plug straight outgoing Double basic insulation (winding and PTC)
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Options:	T0 (Thermal protection: thermostatic switch (e.g. Klixon))
	T1 (DIN-PTC double basic insulated) is specified as standard!
	T4 (Thermal protection: KTY84-130)
	B Holding brake 24 VDC
	P Feather key acc. to DIN 6885 sheet 1
	X Customized design (e.g. special flange / shaft / housing, encoder, etc.)
	K Cable 1 m open ends (standard LST-037)
	S4 angled / rotatable plugs
	1R Resolver 1 pole pair
	V Degree of protection IP65 without radial seal
	W Degree of protection IP65 with radial seal (approx. 10mm longer)

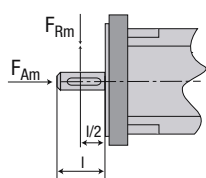


Note:

Texts in pink represent motors or options, which are marked as preferred type (reduced delivery time).

Permissible axial and transverse force

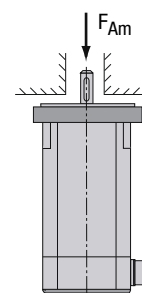
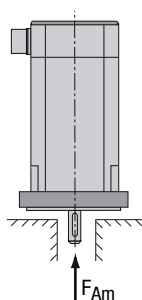
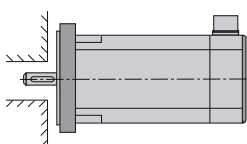
Sizes	Radial force F_{Rm} [N] at speed n [rpm]					Axial force F_{Am} [N] at speed n [rpm]					F_G [N]
	1000	2000	3000	4500	6000	1000	2000	3000	4500	6000	
LST-037	230	185	160	140	130	44	35	31	27	24	2
LST-037/B	130	100	90	77	70	24	19	17	15	13	2
LSH-050	310	250	220	190	170	60	50	42	36	32	2
LST-050	325	260	225	195	175	62	50	43	37	34	2
LSH-074	480	380	330	290	260	90	70	63	55	50	6
LST-074	535	425	370	325	295	100	80	70	60	55	6
LSH-097	850	680	600	520	470	160	130	115	100	90	15
LST-097	920	730	640	560	510	175	140	120	105	95	18
LSH-127	970	770	670	590	530	185	145	125	110	100	34
LST-127	1000	790	690	600	550	190	150	130	115	105	34
LST-158	1020	810	710	620	560	195	155	135	120	110	60
LST-190	1950	1550	1350	1170	1070	370	290	260	225	200	100
LST-220	2500	1950	1700	1490	1350	470	370	320	280	260	200



The table specifies the max. permissible transverse force (radial force F_{Rm}) at the point of application $l/2$ and the max. permissible axial force F_{Am} for a life of 20,000 h. A transverse force not acting on the centre of the shaft end can be simply converted to the changed lever ratios.

Either the permissible radial force or the axial force may be applied to the motor shaft!

Technical data design

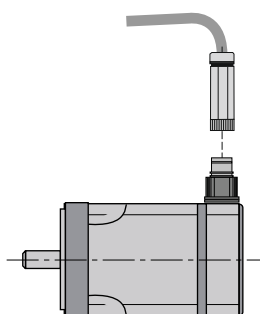


Design	B5	V1	V3
Shaft	free shaft end	free shaft end bottom	free shaft end top
Mounting	Flange mounting Access from housing side	Flange mounting bottom Access from housing side	Flange mounting top Access from housing side



Note: With vertical installation (V1) the permissible axial forces (F_{Am}) do apply. With vertical installation pointing up (V3) the permissible axial forces are reduced by the force caused by the weight of the rotor (F_G).

Overview LST servo motors



Type	U _{DC}	Page
LST-037	320 V	3 - 4
LST-050	320 V	3 - 8
LST-074	320 V	3 - 12
	560 V	3 - 16
LST-097	320 V	3 - 20
	560 V	3 - 24
LST-127	560 V	3 - 28
LST-158	560 V	3 - 32
LST-190	560 V	3 - 36
LST220	560 V	3 - 40

LST-motor - the versatile solution

Equipped with conventional winding technology, the LST-motor unites all advantages of a 6-pole synchronous servo motor.

- Excellent suitability for speeds up to 9000 rpm, special windings available on request.
- High overload capability even at standstill, due to the excellent heat distribution in the stator pack.
- Increased moment of inertia of rotor for torque adaptation.

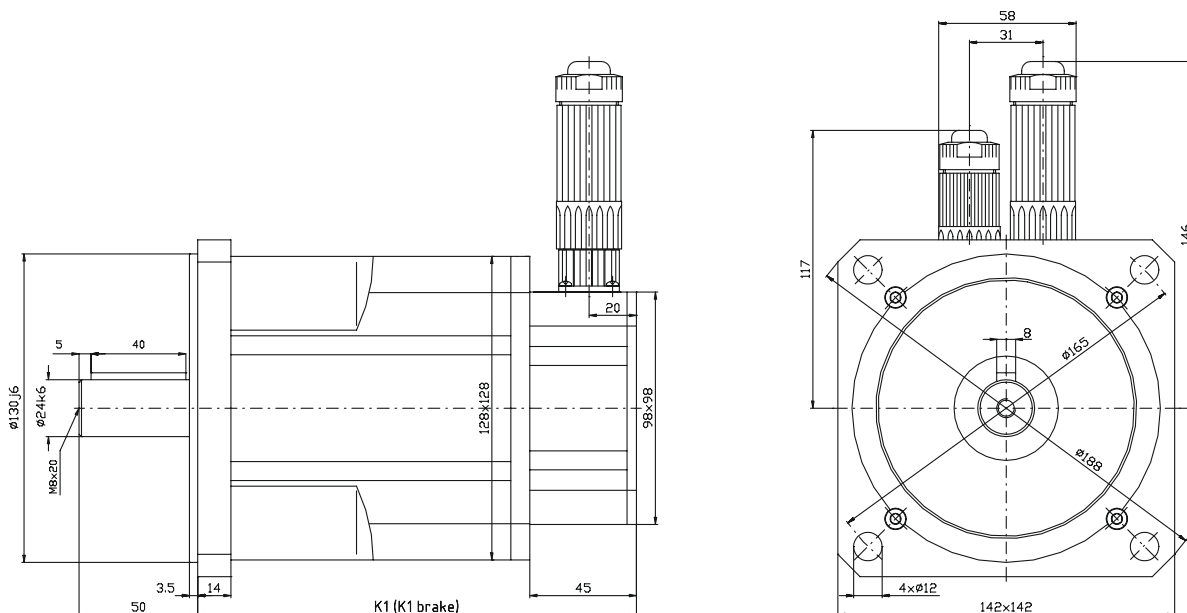
Technical data	Stall torque	Rated torque	Rated AC current	Rated AC current	Rated speed
Motor	M_0 [Nm]	M_N [Nm]	at 560 V I_N [A]	at 320 V I_N [A]	n_N [rpm]
LST-037-1	0.10	0.09	-	0.56	6000
LST-037-2	0.20	0.18	-	0.92	6000
LST-037-3	0.30	0.27	-	0.89	6000
LST-050-1	0.20	0.19	-	0.60	4500
LST-050-2	0.40	0.36	-	0.88	4500
LST-050-3	0.60	0.55	-	1.18	4500
LST-050-4	0.80	0.72	-	1.47	4500
LST-050-5	0.95	0.85	-	1.71	4500
LST-074-1	0.65	0.60	0.64	1.04	3000
LST-074-2	1.30	1.15	0.95	1.58	3000
LST-074-3	1.90	1.60	1.26	2.20	3000
LST-074-4	2.50	2.20	1.62	2.70	3000
LST-074-5	3.00	2.50	1.82	3.00	3000
LST-097-1	2.60	2.30	1.85	3.00	3000
LST-097-2	3.90	3.30	2.60	4.30	3000
LST-097-3	5.30	4.60	3.80	5.90	3000
LST-097-4	7.50	6.40	4.40	8.10	3000
LST-097-5	9.50	8.50	6.20	10.5	3000
LST-127-1	6.60	5.70	4.00	-	3000
LST-127-2	10.5	8.80	6.30	-	3000
LST-127-3	13.5	11.0	9.50	-	3000
LST-127-4	17.0	14.5	10.0	-	3000
LST-127-5	22.0	17.0	13.0	-	3000
LST-158-1	13.5	13.0	8.20	-	3000
LST-158-2	19.0	17.0	10.6	-	3000
LST-158-3	22.0	19.0	12.3	-	3000
LST-158-4	29.0	24.0	14.7	-	3000
LST-158-5	35.0	26.0	18.2	-	3000
LST-190-1	27.0	21.0	13.5	-	3000
LST-190-2	32.0	23.0	15.0	-	3000
LST-190-3	40.0	26.0	17.9	-	3000
LST-220-1	40.0	30.0	17.8	-	3000
LST-220-2	68.0	50.0	31.1	-	3000
LST-220-3	93.0	60.0	43.6	-	3000
LST-220-4	115.0	50.0	29.3	-	3000

Motor type LST-127 ($U_{ZK} = 560 \text{ V}$)



Motor length [mm]	K (with resolver)	K (with optical encoder G3, G5, G12.x)	K (with optical encoder G6.x)	Additional length with design LSX-xxx-...,B (brake)
LST-127-1-30-560	185	205	188	43
LST-127-2-30-560	219	239	222	43
LST-127-3-30-560	236	256	239	43
LST-127-4-30-560	270	290	273	43
LST-127-5-30-560	304	324	307	43

Dimensional sketch



Technical data	Symbol	LST-127-1-30-560	LST-127-2-30-560	LST-127-3-30-560	LST-127-4-30-560	LST-127-5-30-560
Rated speed	n_n	3000 rpm	3000 rpm	3000 rpm	3000 rpm	3000 rpm
Rated frequency	f_n	150 Hz	150 Hz	150 Hz	150 Hz	150 Hz
DC link voltage (controller)	U_{dc}	560 V	560 V	560 V	560 V	560 V
Nominal AC voltage	U_n	330 V	330 V	330 V	330 V	330 V
Rated torque	M_n	5.7 Nm	8.8 Nm	11.0 Nm	14.0 Nm	17.0 Nm
Rated AC current	I_n	4.0 A	6.3 A	9.5 A	10.0 A	13.0 A
Power	P	1.79 kW	2.76 kW	3.45 kW	4.55 kW	5.33 kW
Stall torque	M_0	6.6 Nm	10.5 Nm	13.5 Nm	17.0 Nm	22.0 Nm
Stall AC current	I_0	4.5 A	7.3 A	11.2 A	11.4 A	16.4 A
Peak torque	M_{max}	19.8 Nm	32 Nm	41 Nm	51 Nm	66 Nm
Peak current	I_{max}	23 A	36 A	56 A	47 A	82 A
Maximum speed	n_{max}	9000 rpm	9000 rpm	9000 rpm	9000 rpm	9000 rpm
EMF constant	K_E	88.0 V/1000	87.0 V/1000	73.0 V/1000	90.0 V/1000	81.0 V/1000
Torque constant	K_T	1.46 Nm/A	1.44 Nm/A	1.21 Nm/A	1.49 Nm/A	1.34 Nm/A
Winding resistance (two phases)	R_{2ph}	4.20 Ω	1.70 Ω	0.95 Ω	0.95 Ω	0.54 Ω
Winding inductance (two phases)	L_{2ph}	27.8 mH	15.2 mH	9.0 mH	10.0 mH	5.9 mH
No load speed	n_0	3750 rpm	3790 rpm	4520 rpm	3670 rpm	4070 rpm
Electric time constant	T_{el}	6.7 ms	8.9 ms	9.5 ms	10.5 ms	10.9 ms
Thermal time constant	T_{th}	45 min.	50 min.	55 min.	60 min.	75 min.
Moment of inertia of rotor	J	0.0004 kgm ²	0.00062 kgm ²	0.00075 kgm ²	0.00095 kgm ²	0.00117 kgm ²
Mass	m	7.5 kg	10.0 kg	11.2 kg	13.7 kg	16.2 kg
Brake (optional)						
Nominal AC voltage	U_N	24 V \pm 10 %				
Rated AC current at 20 °C to release	I_N	1.0 A				
permissible maximum speed	n_{max}	10,000 rpm				
permissible friction energy	WR	1.29 x 10 ⁶ Ws				
Moment of inertia	J_B	0.000166 kgm ²				
Mass	m	0.9 kg				
Braking torque	M_H	18.0 Nm				

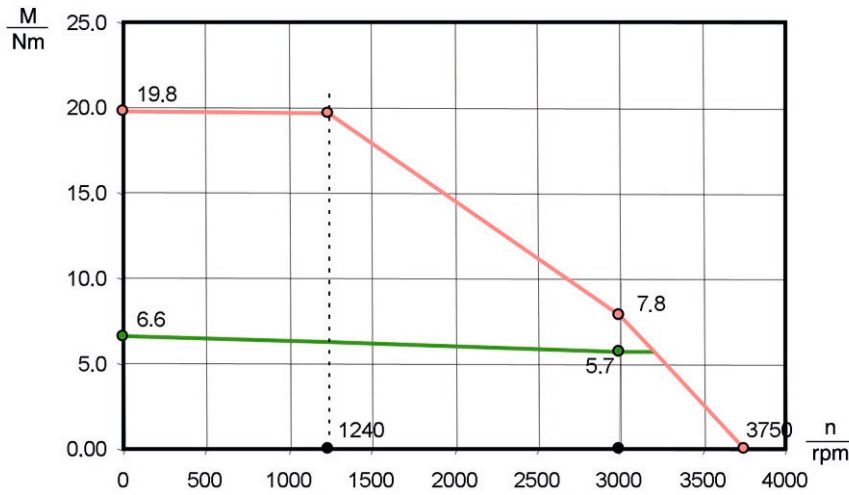
Motor type LST-127 ($U_{ZK} = 560 \text{ V}$)

Explanation on characteristics:

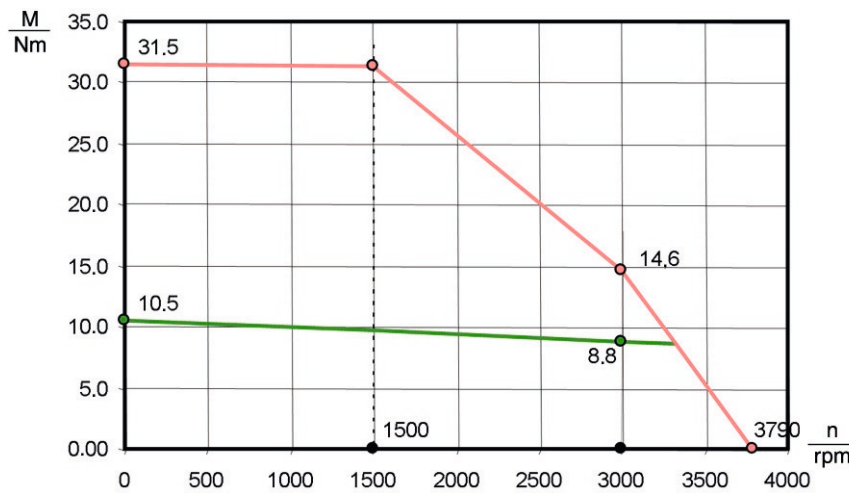
The upper characteristic (M_{max}) describes the short-term max. possible torque at the corresponding speed (important with dynamic processes).

The lower characteristic (M_{nenn}) shows the thermally permissible continuous torque.

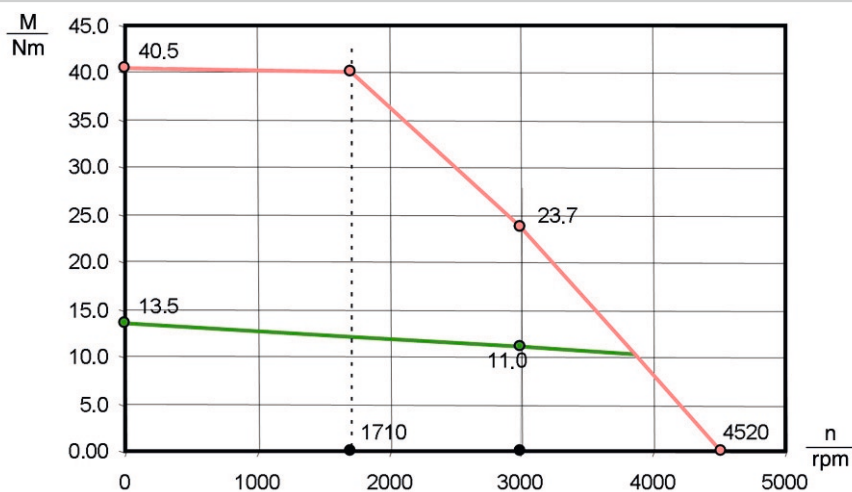
LST-127-1-30-560



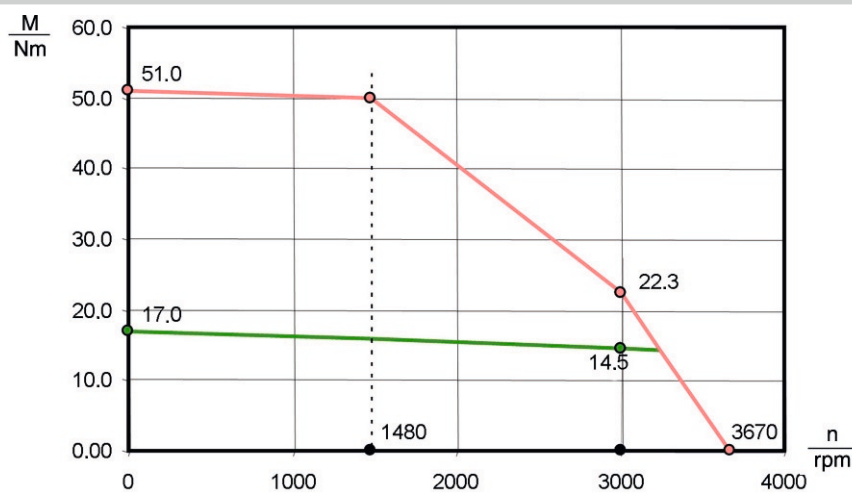
LST-127-2-30-560



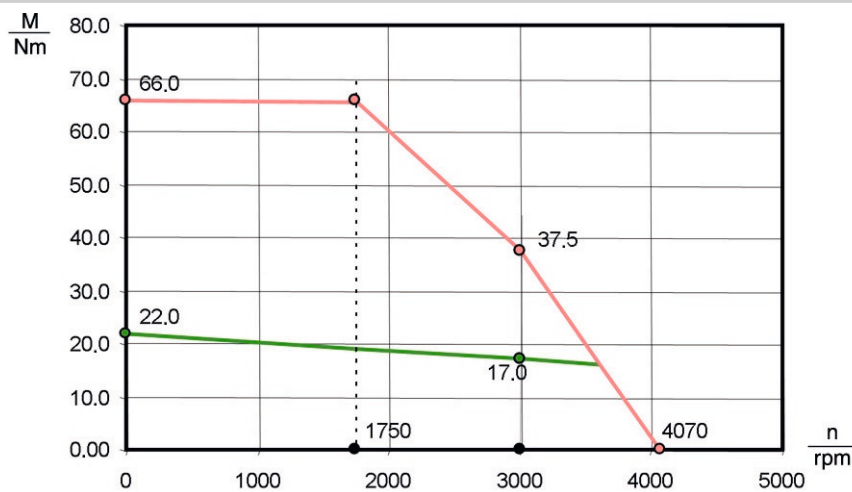
LST-127-3-30-560



LST-127-4-30-560



LST-127-5-30-560

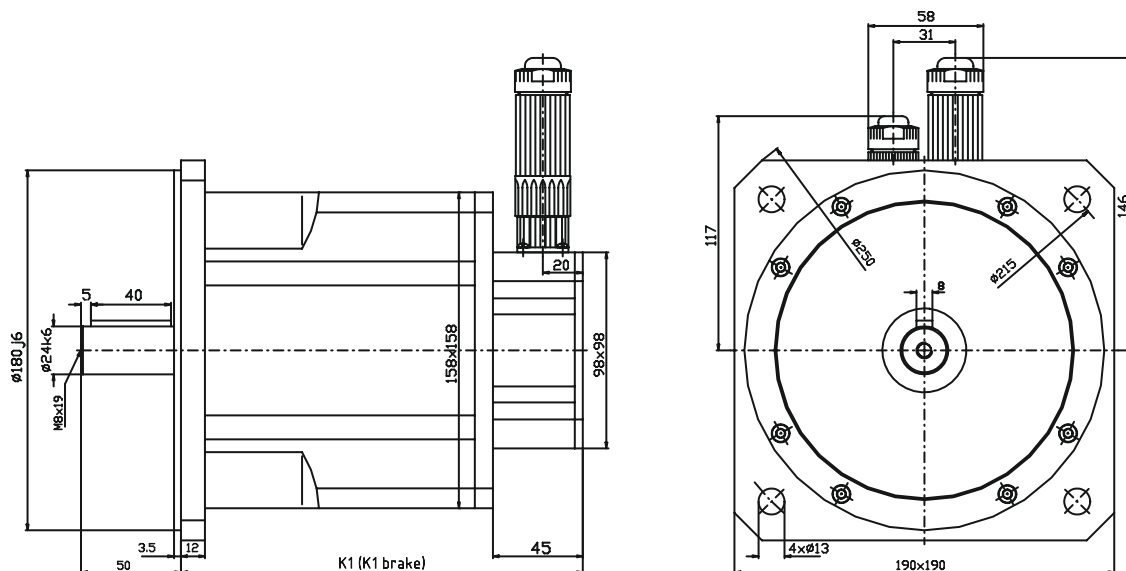


Motor type LST-158 ($U_{ZK} = 560\text{ V}$)



Motor length [mm]	K (with resolver)	K (with optical encoder G3, G5, G12.x)	K (with optical encoder G6.x)	Additional length with design LSX-xxx-...,B (brake)
LST-158-1-30-560	201	221	204	53
LST-158-2-30-560	235	255	238	53
LST-158-3-30-560	252	272	255	53
LST-158-4-30-560	310	330	313	53
LST-158-5-30-560	395	415	398	53

Dimensional sketch



Technical data	Symbol	LST-158-1-30-560	LST-158-2-30-560	LST-158-3-30-560	LST-158-4-30-560	LST-158-5-30-560
Rated speed	n_n	3000 rpm	3000 rpm	3000 rpm	3000 rpm	3000 rpm
Rated frequency	f_n	150 Hz	150 Hz	150 Hz	150 Hz	150 Hz
DC link voltage (controller)	U_{dc}	560 V	560 V	560 V	560 V	560 V
Nominal AC voltage	U_n	330 V	330 V	330 V	330 V	330 V
Rated torque	M_n	13.0 Nm	17.0 Nm	19.0 Nm	24.0 Nm	26.0 Nm
Rated AC current	I_n	8.2 A	10.6 A	13.1 A	14.7 A	18.2 A
Power	P	4.0 kW	5.33 kW	6.0 kW	7.53 kW	8.16 kW
Stall torque	M_0	13.5 Nm	19.0 Nm	22.0 Nm	29.0 Nm	35.0 Nm
Stall AC current	I_0	8.2 A	11.5 A	14.6 A	17.2 A	23.5 A
Peak torque	M_{max}	47 Nm	67 Nm	77 Nm	102 Nm	105 Nm
Peak current	I_{max}	40 A	56 A	72 A	84 A	99 A
Maximum speed	n_{max}	6000 rpm	6000 rpm	6000 rpm	6000 rpm	6000 rpm
EMF constant	K_E	100.0 V/1000	100.0 V/1000	91.0 V/1000	102.0 V/1000	90.0 V/1000
Torque constant	K_T	1.65 Nm/A	1.65 Nm/A	1.51 Nm/A	1.69 Nm/A	1.49 Nm/A
Winding resistance (two phases)	R_{2ph}	1.10 Ω	0.61 Ω	0.41 Ω	0.31 Ω	0.16 Ω
Winding inductance (two phases)	L_{2ph}	13.5 mH	9.0 mH	6.4 mH	5.6 mH	3.2 mH
No load speed	n_0	3500 rpm	3500 rpm	3500 rpm	3500 rpm	3500 rpm
Electric time constant	T_{el}	12.3 ms	14.8 ms	15.6ms	18.1 ms	19.9 ms
Thermal time constant	T_{th}	45 min.	53 min.	60 min.	70 min.	80 min.
Moment of inertia of rotor	J	0.00131 kgm ²	0.00187 kgm ²	0.0022 kgm ²	0.0033 kgm ²	0.0046 kgm ²
Mass	m	13.9 kg	18.2 kg	20.3 kg	26.7 kg	35.2 kg
Brake (optional)						
Nominal AC voltage	U_N	24 V \pm 10 %				
Rated AC current at 20 °C to release	I_N	1.1 A				
permissible maximum speed	n_{max}	10,000 rpm				
permissible friction energy	WR	2.90 x 10 ⁶ Ws				
Moment of inertia	J_B	0.000556 kgm ²				
Mass	m	1.6 kg				
Braking torque	M_H	36.0 Nm				

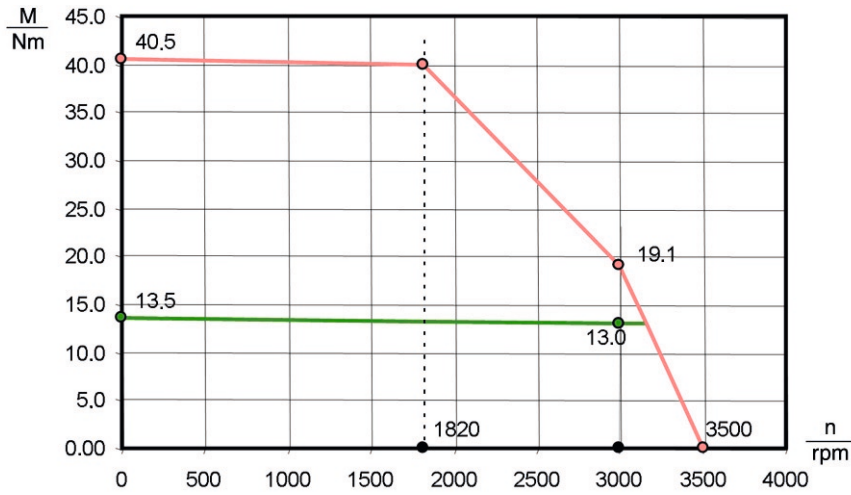
Motor type LST-158 ($U_{ZK} = 560 \text{ V}$)

Explanation on characteristics:

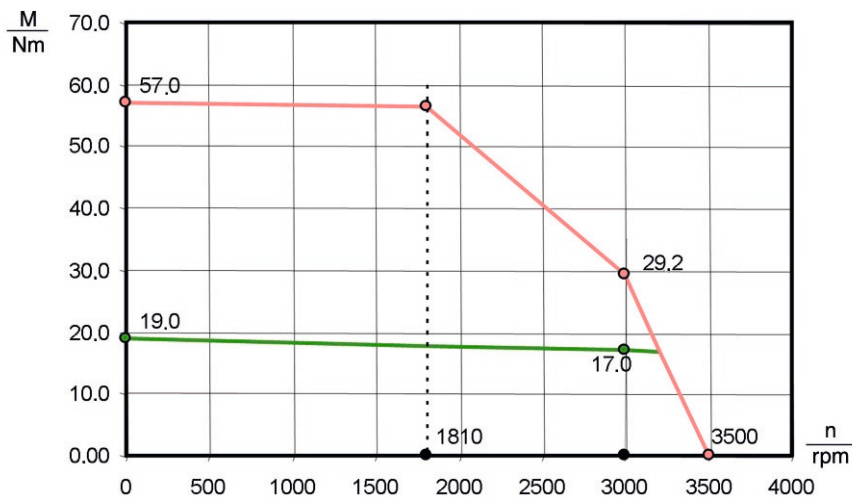
The upper characteristic (M_{max}) describes the short-term max. possible torque at the corresponding speed (important with dynamic processes).

The lower characteristic (M_{nenn}) shows the thermally permissible continuous torque.

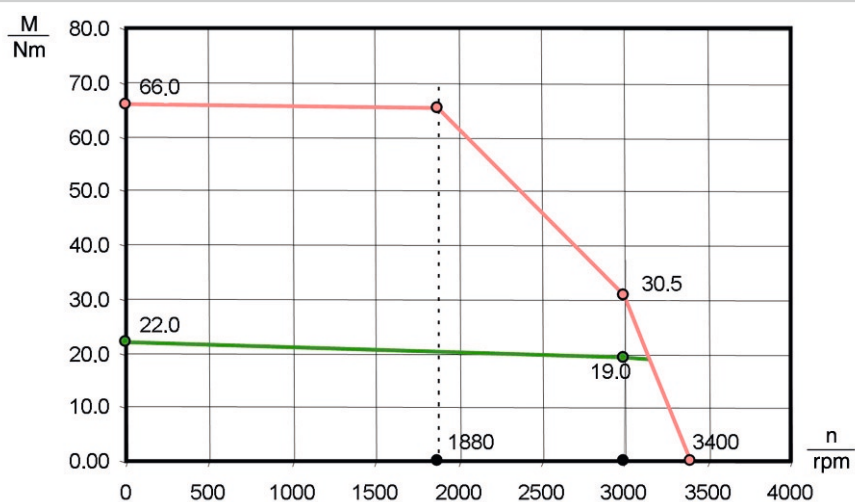
LST-158-1-30-560



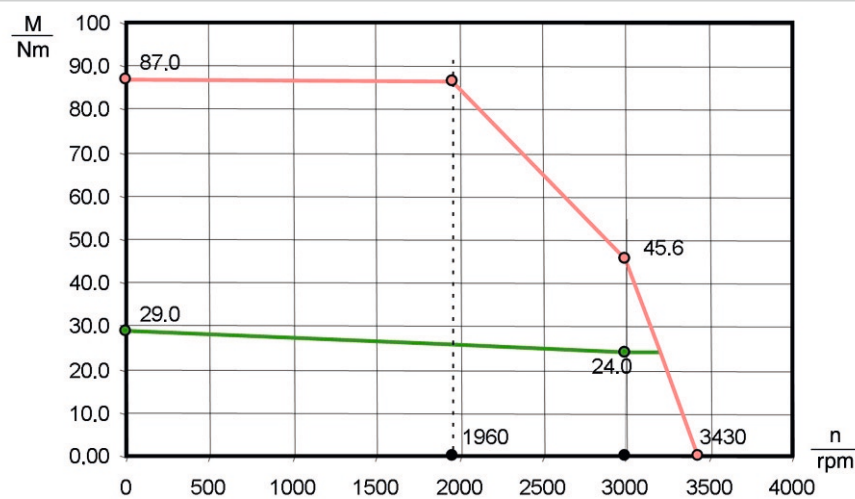
LST-158-2-30-560



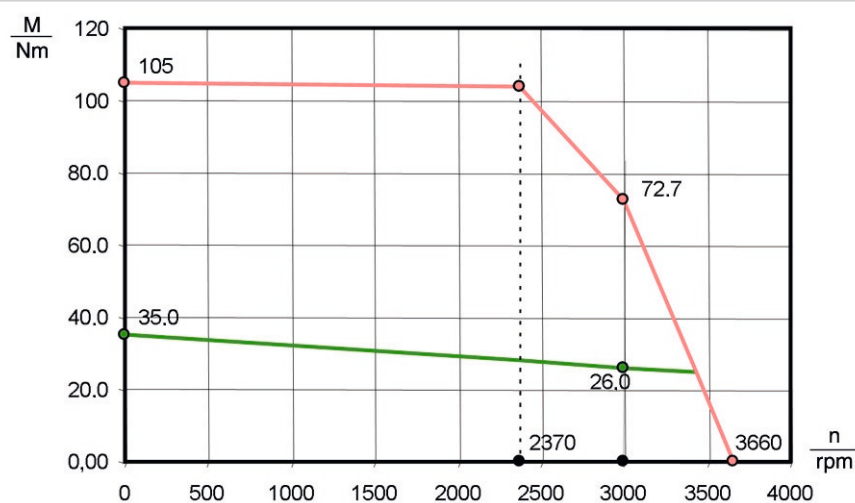
LST-158-3-30-560



LST-158-4-30-560



LST-158-5-30-560

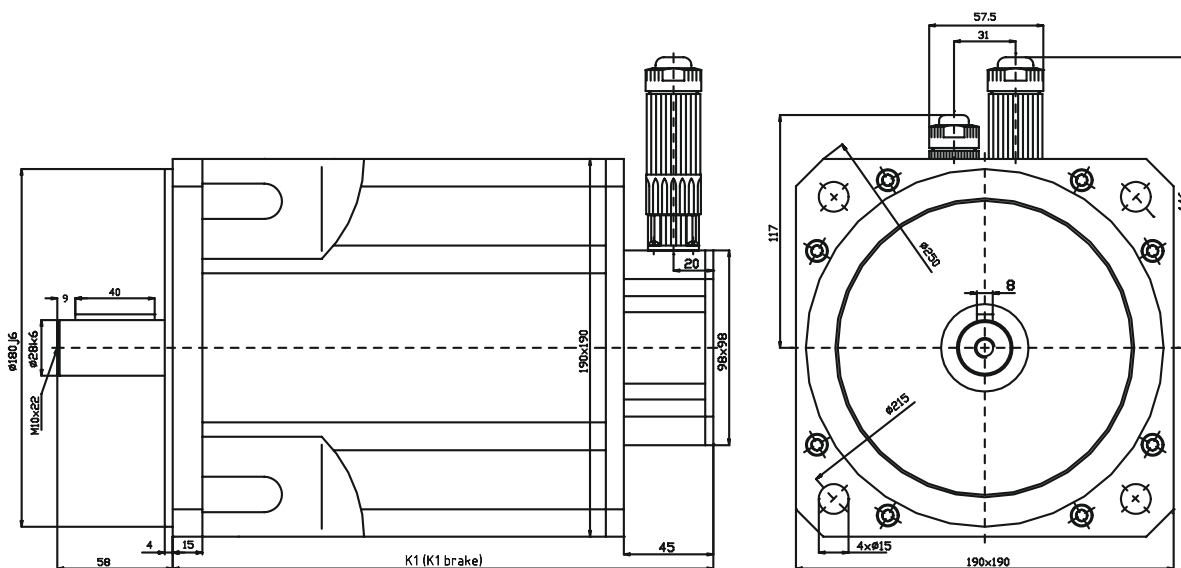


Motor type LST-190 ($U_{ZK} = 560 \text{ V}$)



Motor length [mm]	K (with resolver)	K (with optical encoder G3, G5, G12.x)	K (with optical encoder G6.x)	Additional length with design LSX-xxx-...,B (brake)
LST-190-1-30-560	242	262	245	54
LST-190-2-30-560	257	277	260	54
LST-190-3-30-560	287	307	290	54

Dimensional sketch



Technical data	Symbol	LST-190-1-30-560	LST-190-2-30-560	LST-190-3-30-560
Rated speed	n_n	3000 rpm	3000 rpm	3000 rpm
Rated frequency	f_N	150 Hz	150 Hz	150 Hz
DC link voltage (controller)	U_{dc}	560 V	560 V	560 V
Nominal AC voltage	U_n	330 V	330 V	330 V
Rated torque	M_n	21.0 Nm	23.0 Nm	26.0 Nm
Rated AC current	I_n	13.5 A	15.0 A	17.9 A
Power	P	6.6 kW	7.22 kW	8.16 kW
Stall torque	M_0	27.0 Nm	32.0 Nm	40.0 Nm
Stall AC current	I_0	16.0 A	19.0 A	24.7 A
Peak torque	M_{max}	81 Nm	96 Nm	120 Nm
Peak current	I_{max}	62 A	74 A	96 A
Maximum speed	n_{max}	6000 rpm	6000 rpm	6000 rpm
EMF constant	K_E	102.0 V/1000	102.0 V/1000	98.0 V/1000
Torque constant	K_T	1.69 Nm/A	1.69 Nm/A	1.62 Nm/A
Winding resistance (two phases)	R_{2ph}	0.43 Ω	0.35 Ω	0.23 Ω
Winding inductance (two phases)	L_{2ph}	4.4 mH	3.8 mH	2.7 mH
No load speed	n_0	3230 rpm	3230 rpm	3360 rpm
Electric time constant	T_{el}	10.2 ms	10.9 ms	11.7 ms
Thermal time constant	T_{th}	60 min.	67 min.	67 min.
Moment of inertia of rotor	J	0.0036 kgm ²	0.0039 kgm ²	0.0046 kgm ²
Mass	m	23.5 kg	26.0 kg	31.5 kg
Brake (optional)				
Nominal AC voltage	U_N	24 V \pm 10 %		
Rated AC current at 20 °C to release	I_N	1.1 A		
permissible maximum speed	n_{max}	10,000 rpm		
permissible friction energy	WR	2.9 10 ⁶ Ws		
Moment of inertia	J_B	0.00062 kgm ²		
Mass	m	3.2 kg		
Braking torque	M_H	36 Nm		

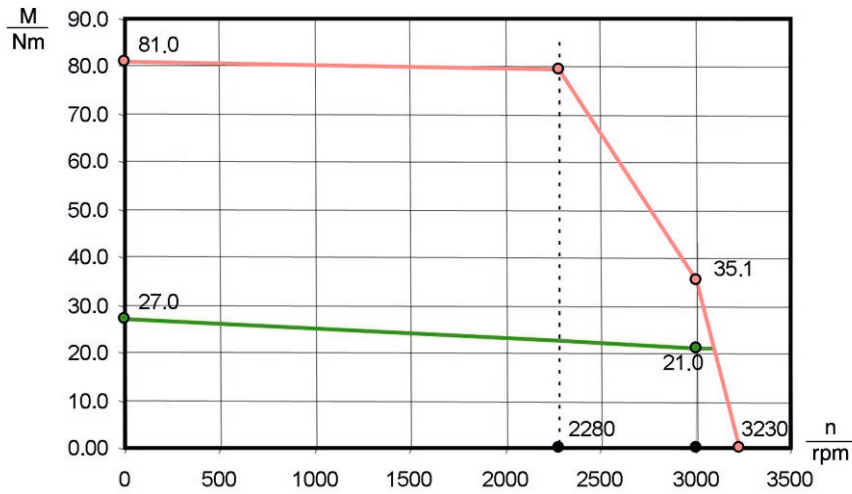
Motor type LST-190 ($U_{ZK} = 560 \text{ V}$)

Explanation on characteristics:

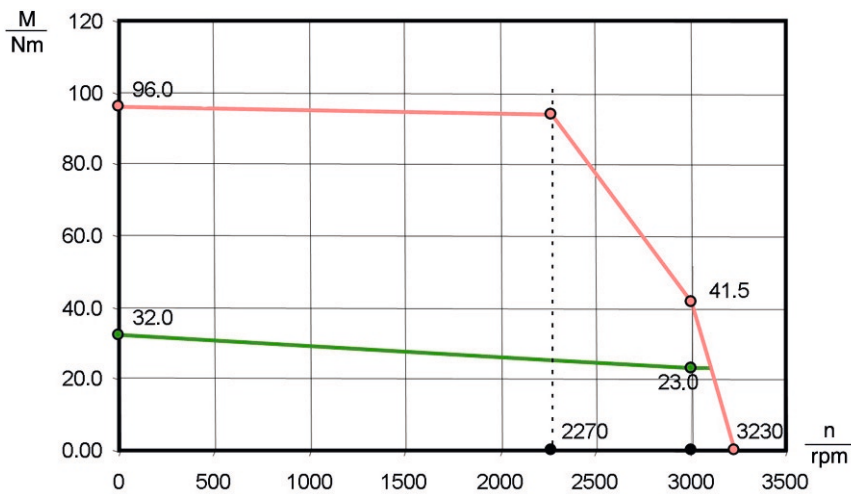
The upper characteristic (M_{max}) describes the short-term max. possible torque at the corresponding speed (important with dynamic processes).

The lower characteristic (M_{nenn}) shows the thermally permissible continuous torque.

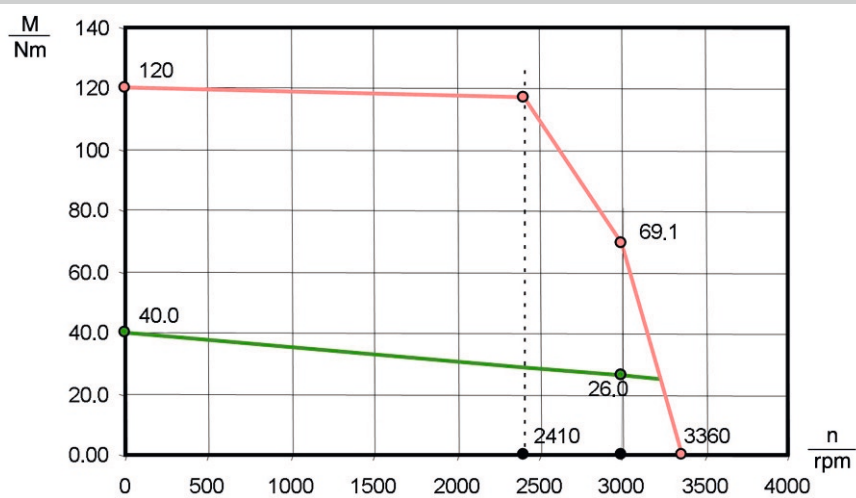
LST-190-1-30-560



LST-190-2-30-560



LST-190-3-30-560



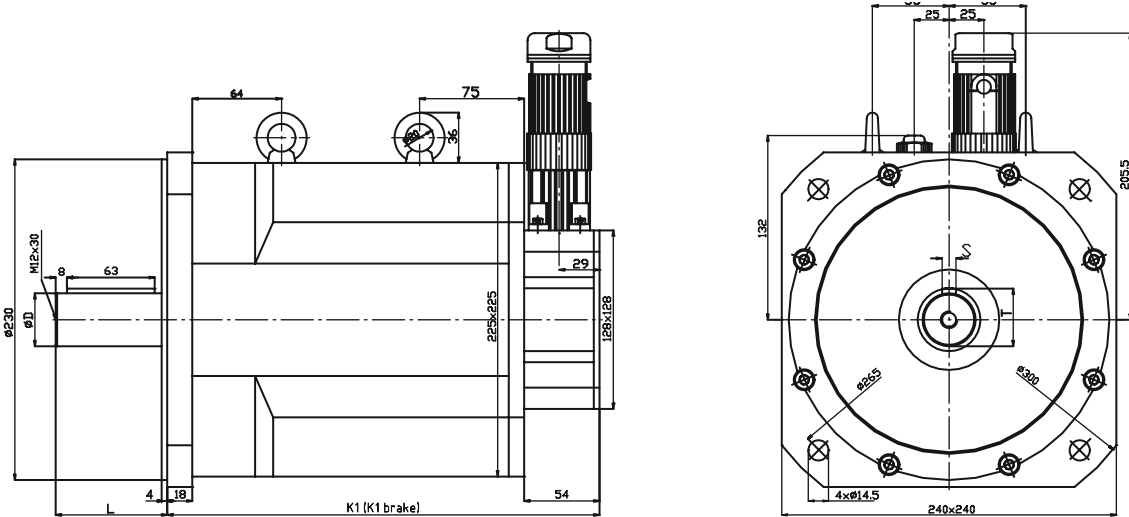
Motor type LST-220 ($U_{ZK} = 560 \text{ V}$)



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Motor length [mm]	K (with resolver)	K (with optical encoder G3, G5, G12.x)	K (with optical encoder G6.x)	Additional length with design LSX-xxx-...,B (brake)
LST-220-1-30-560	310	322	312	69
LST-220-2-30-560	378	390	380	69
LST-220-3-30-560	446	458	448	69
LST-220-4-30-560	514	526	516	69

Dimensional sketch



Type	Ø D	L	S	T
LST-220-1-30-560	38	80	10	41.3
LST-220-2-30-560	38	80	10	41.3
LST-220-3-30-560	42	110	12	45.1
LST-220-4-30-560	42	110	12	45.1

Technical data	Symbol	LST-220-1-30-560	LST-220-2-30-560	LST-220-3-30-560	LST-220-4-30-560
Rated speed	n_n	3000 rpm	3000 rpm	3000 rpm	3000 rpm
Rated frequency	f_N	150 Hz	150 Hz	150 Hz	150 Hz
DC link voltage (controller)	U_{dc}	560 V	560 V	560 V	560 V
Nominal AC voltage	U_n	355 V	330 V	350 V	350 V
Rated torque	M_n	30 Nm	50 Nm	60 Nm	50 Nm
Rated AC current	I_n	17.8 A	31.1 A	34.9 A	29.3 A
Power	P	9.42 kW	15.7 kW	18.84 kW	15.7 kW
Stall torque	M_0	40 Nm	68 Nm	93 Nm	115 Nm
Stall AC current	I_0	21.8 A	39.9 A	53 A	63 A
Peak torque	M_{max}	120 Nm	204 Nm	279 Nm	345 Nm
Peak current	I_{max}	85 A	156 A	207 A	247 A
Maximum speed	n_{max}	3600 rpm	3600 rpm	3600 rpm	3600 rpm
EMF constant	K_E	111.0 V/1000	103.0 V/1000	106 V/1000	110.0 V/1000
Torque constant	K_T	1.84 Nm/A	1.7 Nm/A	1.75 Nm/A	1.82 Nm/A
Winding resistance (two phases)	R_{2ph}	0.25 Ω	0.10 Ω	0.06 Ω	0.05 Ω
Winding inductance (two phases)	L_{2ph}	5.7 mH	2.5 mH	1.88 mH	1.5 mH
No load speed	n_0	3190 rpm	3200 rpm	3300 rpm	3180 rpm
Electric time constant	T_{el}	23 ms	25 ms	31 ms	30 ms
Thermal time constant	T_{th}	47 min.	65 min.	79 min.	90 min.
Moment of inertia of rotor	J	0.0076 kgm ²	0.0114 kgm ²	0.0153 kgm ²	0.0190 kgm ²
Mass	m	41 kg	56 kg	73 kg	89 kg
Brake (optional)					
Nominal AC voltage	U_N	24 V \pm 10 %			
Rated AC current at 20 °C to release	I_N	2.1 A			
permissible maximum speed	n_{max}	10,000 rpm			
permissible friction energy	WR	13 x 10 ⁶ Ws			
Moment of inertia	J_B	0.0056 kgm ²			
Mass	m	9.5 kg			
Braking torque	M_H	145 Nm			

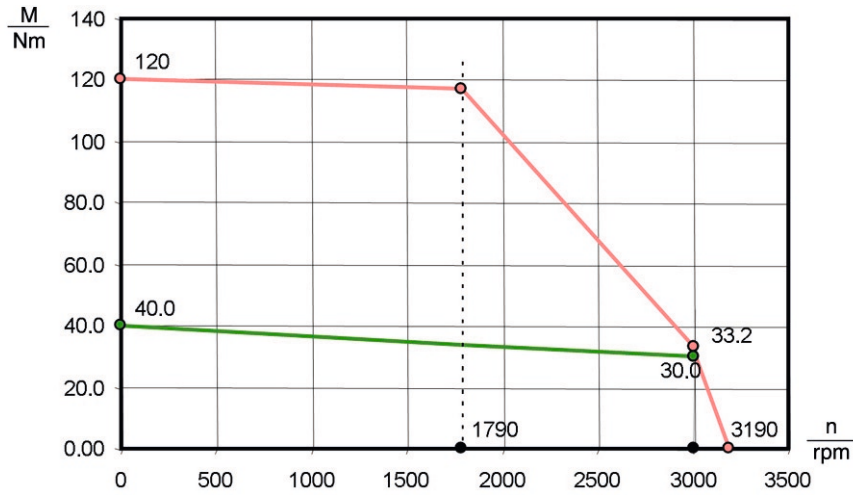
Motor type LST-220 ($U_{ZK} = 560 \text{ V}$)

Explanation on characteristics:

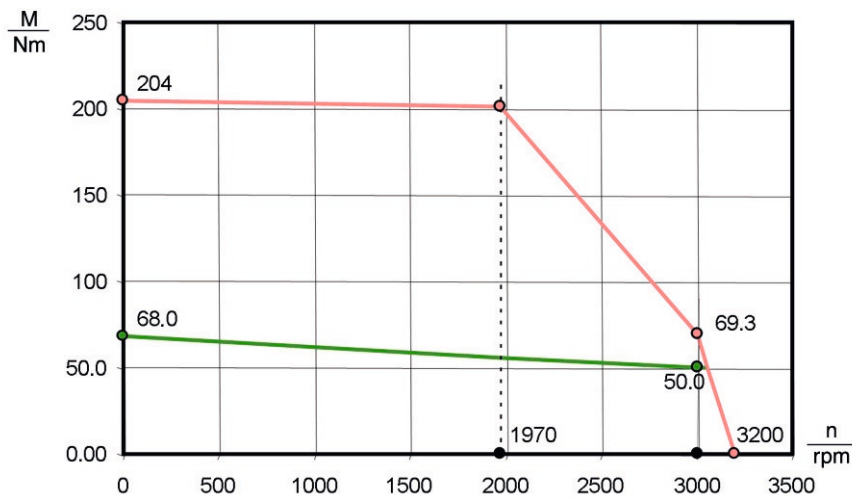
The upper characteristic (M_{max}) describes the short-term max. possible torque at the corresponding speed (important with dynamic processes).

The lower characteristic (M_{nenn}) shows the thermally permissible continuous torque.

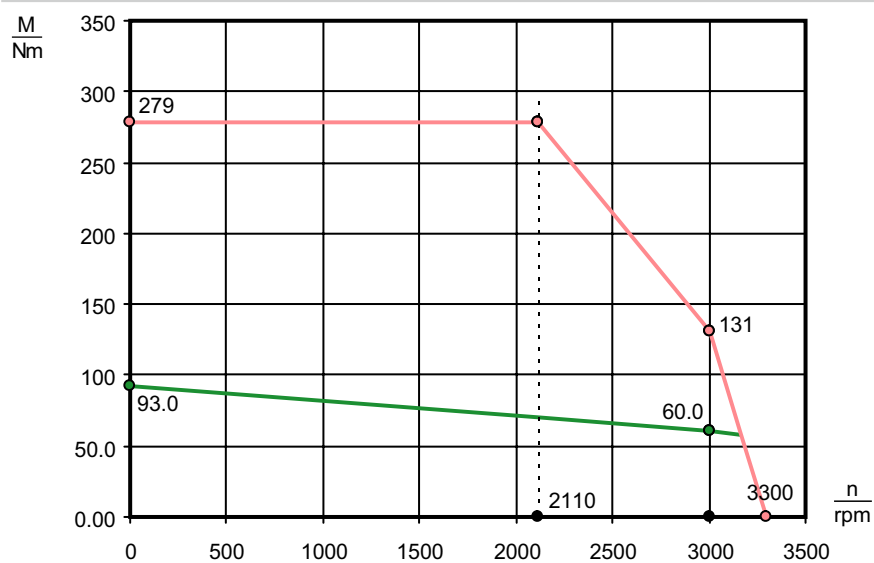
LST-220-1-30-560



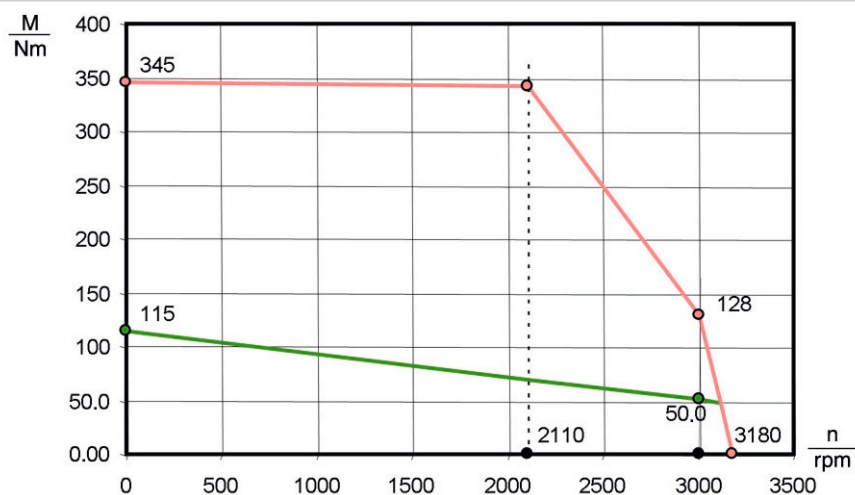
LST-220-2-30-560



LST-220-3-30-560



LST-220-4-30-560



Encoders for servo motors

Overview of encoder types

Ordering option	Encoder designations		compatible with				Encoder properties		System properties		
	Description	sin/cos periods/revolution	LST 037	LSx-050	LSH-074 to LSH-127	LST 074 to LST-220	typical absolute accuracy Encoder (data sheet of encoder manufacturer)	typical repeat accuracy of encoder (data sheet of encoder manufacturer)	ServoOne position resolution for positioning of speed control	c-line position resolution for positioning control	c-line position resolution for speed control
1R	Resolver 1 pole pair	1	X	X	X	X	+/-10'	+/- 1'	14 bit +/-1'	14 bit +/-1'	14 bit +/-1'
3R	Resolver 3 pole pair	3	X	X		X	+/-5'	+/- 1'	3x14 bit +/- 0.3'	3x14 bit +/- 0.3'	3x14 bit +/- 0.3'
5R	Resolver 5 pole pair	5			X		+/-5'	+/- 1'	5x14bit +/- 0.2'	5x14bit +/- 0.2'	5x14bit +/- 0.2'
G3	Multi-turn absolute encoder EQN 1325 SSI	2048			X	X	+/- 20"	+/- 6"	25bit +/- 0.04"	16 bit (CDD)	25bit +/- 0.04"
G5	Single-turn absolute encoder ECN 1313 SSI	2048			X	X	+/- 20"	+/- 6"	25bit +/- 0.04"	16 bit (CDD)	25bit +/- 0.04"
G6.1S ¹⁾	Single-turn absolute encoder SRS 50	1024			X	X	+/-45"	+/- 7"	24bit +/- 0.08"	16 bit (CDD)	24bit +/- 0.08"
G6.1M ¹⁾	Multi-turn absolute encoder SRM 50	1024			X	X	+/-45"	+/- 7"	24bit +/- 0.08"	16 bit (CDD)	24bit +/- 0.08"
G6.2S ¹⁾	Single-turn absolute encoder SKS 36	128		X	X	X	+/- 80"	+/- 40"	21bit +/- 0.6"	16 bit (CDD)	21bit +/- 0.6"
G6.2M ¹⁾	Multi-turn absolute encoder SKM 36	128		X	X	X	+/- 80"	+/- 40"	21bit +/- 0.6"	16 bit (CDD)	21bit +/- 0.6"
G12.1S ¹⁾	Single-turn absolute encoder ECN 1313 Endat 2.1	2048			X	X	+/- 20"	+/- 6"	25bit +/- 0.04"	16 bit (CDD)	25bit +/- 0.04"
G12.1M ¹⁾	Multi-turn absolute encoder EQN 1325 Endat 2.1	2048			X	X	+/- 20"	+/- 6"	25bit +/- 0.04"	16 bit (CDD)	25bit +/- 0.04"
G12.2S ¹⁾	Single-turn absolute encoder ECN 1113 Endat 2.1	512			X	X	+/-60"	+/- 25"	23bit +/-0.16"	16 bit (CDD)	23bit +/-0.16"
G12.2M ¹⁾	Multi-turn absolute encoder EQN 1125 Endat 2.1	512			X	X	+/-60"	+/- 25"	23bit +/-0.16"	16 bit (CDD)	23bit +/-0.16"

¹⁾ not usable with CDE3000 and CDF3000

Appendix

Holding brake



The backlash-free permanent-field single-area holding brake works in accordance with the stall AC current principle, i.e. the brake needs to be energized for releasing.

On all LSx-motors the holding brake is mounted directly behind the flange (side A) to provide an optimal holding torque.

The holding brake is generally switched on and off during standstill. When using the holding brake as an emergency stop brake you must pay attention to the maximum permissible friction energy (WR).

LSH servo motors with holding brake are identified by their type plate.

Example: LSH-074-1-30-560/T1,B,1R

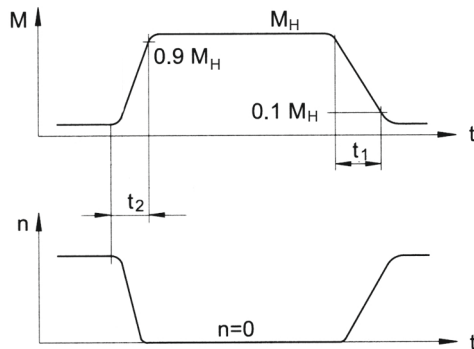


Note: When operating the brake as emergency stop brake the braking torque may be considerably lower than the holding torque.

Response times of holding brakes

Switching by DC-side:

Takes place between rectifier and coil, very short overtravel is thereby achieved. For all drives requiring exact braking, also for hoisting gear in particular, DC-side switching of the brake is strictly required (break time $t_2 =$).



M	Braking torque	t	Time
M_H	Holding torque of spring operated brake	t_1	Make time
N	Rotary speed	t_2	Break time

Technical data holding brake

Size	t_1 [ms]	t_2 [ms]	M_H [Nm]	I_N [A] at 24 V	U_N [V]	n_{max} [min ⁻¹]	m [kg]	W_R [10 ⁶ Ws]	J_B [kgcm ²]
LST-037	6	10	0.4	0.33	24 V ± 10 %	10,000	0.075	0.20	0.013
LSx-050	6	25	2.0	0.46		10,000	0.15	0.41	0.07
LSx-074	7	35	4.5	0.5		10,000	0.3	0.58	0.18
LSx-097	7	40	9.0	0.75		10,000	0.82	0.89	0.54
LSx-127	10	50	18.0	1.0		10,000	1.8	1.29	1.66
LST-158	22	90	36	1.1		10,000	2.85	2.90	5.56
LST-190	22	90	36	1.1		8,000	3.25	2.9	6.2
LST-220	65	105	145	2.1		8,000	9.5	13	56

M_H Holding torque (break-away torque)	m Mass (weight)
I_N Excitation current at 20 °C for releasing	W_R Permissible friction energy up to 0.1 mm abrasion (for emergency stop)
U_N DC voltage for releasing	J_B Moment of inertia of holding brake
n_{max} Maximum speed (unbraked)	



Note: The above specified data m and J_B are pure brake data, without accounting for the required addition mass of the motor shaft.

LTi | DRIVES

LTi DRIVES GmbH

Gewerbestraße 5-9
35633 Lahnau
GERMANY
Fon +49 (0) 6441/ 96 6-0

Heinrich-Hertz-Straße 18
59423 Unna
GERMANY
Fon +49 (0) 2303/ 77 9-0

www.lt-i.com
info@lt-i.com

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MOTOR TECHNOLOGY LTD
MOTEC HOUSE, CHADKIRK BUSINESS PARK,
STOCKPORT, CHESHIRE SK6 3NE
ENGLAND

TEL: +44 (0)161 217 7100
FAX: +44 (0)161 217 7101
eMAIL: [info @ controlinmotion.com](mailto:info@controlinmotion.com)
WEB: www.controlinmotion.com

motor
technology
[control in motion.com](http://controlinmotion.com)