

FCPL asynchronous brake motors

LS FCPL

General information



GENERAL USE : U.G.

Enclosed three-phase asynchronous brake motors, series LS with failsafe continuous current (dc) brake, according to IEC 60034, 60072, EN50281.

Separate mains supply to the motor and brake. Voltage 180.

• Single speed : power 4 to 132 kW, frame size from 160 to 315, 4, 6, 8 poles; 230/400 V, 50 Hz or 400 V Δ.

Maximum number of starts/hr

- for a continuous duty : 6.
- for duty factor : S4 40 % (obligatory DP rotor)
 - from 160 to 180 = 180 starts.
 - from 200 to 225 = 150 starts.
- high repetitive number of starts : consult the factory
- higher frame size : consult the factory

• Two speed : 4/8, 4/12, 4/16 or other consult the factory.

Protection

- IP 55 protection for the motor
- IP 44 protection for the brake

Options

- Brakes
 - Brake voltage (20 V, 100 V, 200 V or other).
 - Release lever.
 - Brake release indicator.
 - Brake lining wear indicator.
 - Adaption for an encoder, a tachometric dynamo or an alternator.
 - Second shaft end for crank handle.

- Special position of the brake terminal box on request.

- Electronic boost card to reduce response time .

- IP 55 to IP 56 protection.

• Motor

- Construction suitable for Y / Δ starting.

- PTO,PTF,PTC thermal protection.

- Anti-condensation heaters.

- Regreasable bearings (except for LS 160 MP and LR).

- Roller bearings (except for LS 160 MP and LR).

- Forced ventilation.

- IP 55 to IP 56 protection.

Finish

Aluminium housing.

Routine test, no load test, dielectric test, control of the resistance and direction of rotation .

Grinding and traceability of the brake disk.

Brake motor supply

• Standard according to IEC 60038 :

- 230/400 V +10% -10% at 50 Hz.

Standard construction suitable for the following supply :

- 220/380 V +5% -5% and

- 240/415 V +5% -5% at 50 Hz.

The 400 V supply is supplied to the motor through a rectifier S0 7 or an electronic boost card .

Description of the LS FCPL aluminium three-phase brake motors

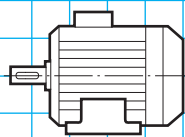
Component	Materials	Remarks
Finned housing	Aluminium alloy	- with cast or bolt-on feet, or without feet - pressure die-cast for frame sizes < = 180 - gravity cast for frame size = 200 • 4 or 6 mounting holes for the foot housing • lifting rings - earth terminal on feet or fin
Stator	Insulated low carbon magnetic steel laminations Enamelled electrolytic copper	- the low carbon content guarantees long term stability of the characteristics - fitted into a heat expanded housing to provide mechanical rigidity - semi-enclosed slots - insulation system class F
Rotor	Insulated low carbon magnetic steel laminations	- inclined slots. - squirrel cage pressure die cast in aluminium (or alloy for special applications) or mixed with copper - mounted on shaft by heat shrinking - dynamically balanced rotor class N - 1/2 key
Shaft	Steel	- tapped centre hole - open keyway
End shields	Cast iron	- front and rear, assembled with tie rods
Brake housing	Cast iron	- bolted to the flange and protected by sheet steel cover
Bearings		- ball bearings C3 type 2RS from 160 to 225 MR - regreasable bearings from 225 MK to 280 frame size - front bearing locked and rear bearing preloaded
Labyrinth seals Lipseals	Technopolymer or steel Synthetic rubber	- front lipseals or jet deflector for all flange motors - lipseals, jet deflector or labyrinth seals for foot motors
Fan	Composite material or aluminium alloy	- 2 directions of rotation : straight blades
Terminal box	Metal	- 1 terminal box for the motor - 1 terminal box for the brake - sealed, provided with cable glands, located on top of the motor or on the brake housing
Painting		- System Ia RAL 6000 (green)

FCPL asynchronous brake motors

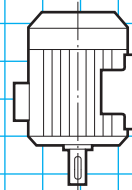
LS FCPL

Mounting positions

Foot mounted motor

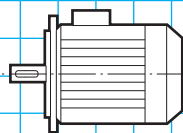


IM 1001 (IM B3)

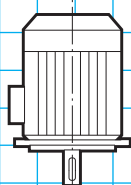


IM 1011 (IM V5)

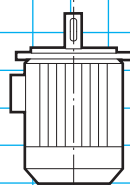
(FF) plain hole flange mounted motor



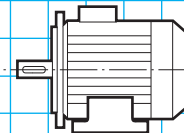
IM 3001 (IM B5)



IM 3011 (IM V1)



IM 3031 (IM V3)



IM 2001 (IM B35)

In consideration of the weight of certain motors, B5 mounting must be confirmed by the factory.

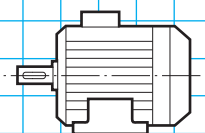
V1 - V5 mounting : consult the factory if 2 disk brake.

V3 mounting : impossible if 2 disk brake.

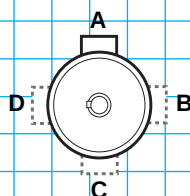
(FT) tapped hole flange mounted motor

- Only for frame size 160 mm. Consult us.

Positions of the terminal box in relation to the motor shaft end

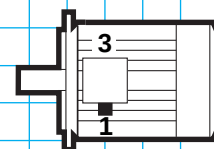


Foot mounted motor
A : only possibility



Flange mounted motor
A : standard

Positions of the cable gland in relation to the motor shaft end



LS 160 to 225 : 1 : standard
(3 : only option)

FCPL asynchronous brake motors

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Adaptation possibilities

Leroy-Somer offers, for use with their brake motors, many options which meet the needs of highly diverse applications. They are described below and in the sections relating to gearboxes fixed speed motors, and to motorised variable speed drives.

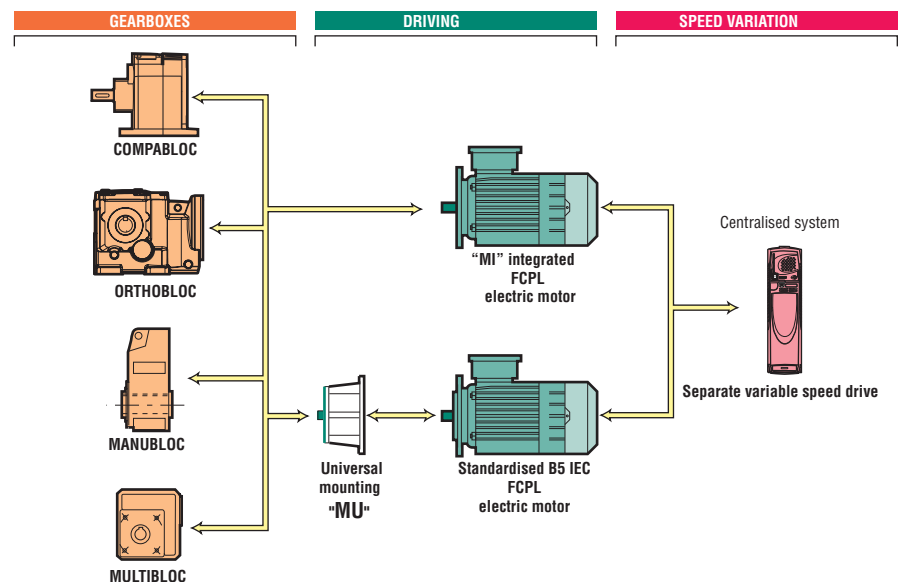
For other variants or any specific adaptation, consult the technical specialists at Leroy-Somer who will be pleased to advise.

☞ **LS FCPL brake motors can be integrally mounted (fitted motor), or with universal mounting (IEC standardised motor) with the following gearboxes :**

- Compabloc
- Orthobloc
- Manubloc
- Multibloc

☞ **LS FCPL brake motors may be controlled by variable speed drives :**

- Centralised system with separate variable speed drive (open loop vector variable speed drive technology or universal variable speed drive).



Designation / Codification

4 P 1500 min⁻¹	LS	180	MT	FCPL	S1	130 N.m	18.5 kW	IM 1001 (IM B5)	400 VΔ	A
Speed polarity	Motor type	Motor frame size	Manuf. index (motor)	Brake type	Operation duty	Brake torque	Motor power	Mounting position	Supply voltage	T Box position

☞ **Codification example :**
4P LS 180 MT FCPL S1 130 N.m 30 kW
IM 1001 (IM B5), 230/400 V - A

Designation
4P LS 180 MT FCPL S1 18.5 kW
B5 230/400 V

Code
FP418111

All the products in this catalogue have a code.
The coding table is incorporated in the price list together with the list of designations.
Each brake motor product is classified first in order of power and then in order of speed.

FCPL asynchronous brake motors

LS FCPL

Selection

4 poles
1500 min⁻¹

- LS FCPL motor - IP 55 - 50 Hz - Class F - 230 V Δ / 400 V Y - Aluminium rotor, U.G. general use
- IP 44 brake - Separate mains supply

Motor type	Brake type	Rated power at 50 Hz P_N kW	Rated speed N_N min ⁻¹	Rated current $I_N(400V)$ A	Power factor $\cos \varphi$ 100 %	Efficiency η 100 %	Starting current / Rated current I_D / I_N	Starting torque / Rated torque M_D / M_N	Rated torque M_N N.m	Moment of inertia J kg.m ²	Brake torque $M_f \pm 20\%$ N.m	Weight IM B3 kg
LS 160 MP	FCPL 40 - 108	11	1456	21.1	0.85	88.4	7.7	2.9	72	0.050	80	100
LS 160 LR	FCPL 40 - 110	15	1456	28.8	0.84	89.4	8.3	2.9	99	0.058	105	105
LS 180 MT	FCPL 54 - 313	18.5	1456	35.4	0.84	90.3	7.4	2.9	121	0.104	130	140
LS 180 LR	FCPL 54 - 215	22	1456	41.7	0.84	90.7	7.4	3.2	144	0.117	150	150
LS 200 LT	FCPL 54 - 222 ¹	30	1460	56.3	0.84	91.5	6.6	2.7	196	0.187	220	210
LS 225 ST	FCPL 60 - 126	37	1470	68.7	0.84	92.5	6.5	2.6	239	0.306	260	280
LS 225 MR	FCPL 60 - 230 ¹	45	1470	83.3	0.84	92.8	6.5	2.8	292	0.365	300	305
LS 250 ME	FCPL 60 - 239	55	1478	100.1	0.84	93.6	7	2.7	355	0.749	390	400
LS 280 SC	FCPL 60 - 152	75	1478	137	0.84	94.2	7.2	2.8	485	1.084	520	470
LS 280 MD	FCPL 60 - 260 ¹	90	1478	164	0.84	94.4	7.6	3	581	1.274	590	540

LS 315

Above, consult us

1. Requires a CDF brake mains supply card

6 poles
1000 min⁻¹

- LS FCPL motor - IP 55 - 50 Hz - Class F - 230 V Δ / 400 V Y - Aluminium rotor, U.G. general use
- IP 44 brake - Separate mains supply

Motor type	Brake type	Rated power at 50 Hz P_N kW	Rated speed N_N min ⁻¹	Rated current $I_N(400V)$ A	Power factor $\cos \varphi$ 100 %	Efficiency η 100 %	Starting current / Rated current I_D / I_N	Starting torque / Rated torque M_D / M_N	Rated torque M_N N.m	Moment of inertia J kg.m ²	Brake torque $M_f \pm 20\%$ N.m	Weight IM B3 kg
LS 160 M	FCPL 40 - 108	7.5	967	16.1	0.79	85.2	4.7	1.5	74	0.100	80	120
LS 160 L	FCPL 54 - 211	11	967	23.3	0.79	86.3	4.6	1.6	109	0.140	110	140
LS 180 L	FCPL 54 - 215	15	972	30.1	0.81	88.7	6.8	2.3	147	0.232	150	180
LS 200 LT	FCPL 54 - 318	18.5	970	37	0.81	89	6.4	2.4	182	0.281	180	205
LS 200 L	FCPL 54 - 222 ¹	22	972	43.6	0.81	89.9	6	2	216	0.366	220	235
LS 225 MR	FCPL 60 - 230 ¹	30	968	59.5	0.81	89.9	6	2.2	296	0.475	300	310
LS 250 ME	FCPL 60 - 239	37	978	71.1	0.81	92.7	6.2	2.3	361	0.994	390	385
LS 280 SC	FCPL 60 - 152	45	978	86.5	0.81	92.7	6.2	2.3	439	1.268	520	430
LS 280 MC	FCPL 60 - 260 ¹	55	978	106	0.81	92.6	6	2.4	537	1.463	590	480

LS 315

Above, consult us

1. Requires a CDF brake mains supply card

8 poles
750 min⁻¹

- LS FCPL - IP 55 motor - 50 Hz - Class F - 230 V Δ / 400 V Y - Aluminium rotor, U.G. general use
- IP 44 brake - Separate mains supply

Motor type	Brake type	Rated power at 50 Hz P_N kW	Rated speed N_N min ⁻¹	Rated current $I_N(400V)$ A	Power factor $\cos \varphi$ 100 %	Efficiency η 100 %	Starting current / Rated current I_D / I_N	Starting torque / Rated torque M_D / M_N	Rated torque M_N N.m	Moment of inertia J kg.m ²	Brake torque $M_f \pm 20\%$ N.m	Weight IM B3 kg
LS 160 M	FCPL 40 - 106	4	715	11.1	0.65	80	3.2	1.9	53	0.078	65	110
LS 160 M	FCPL 40 - 108	5.5	715	14.8	0.65	82.4	3.5	1.9	74	0.082	80	120
LS 160 L	FCPL 54 - 211	7.5	715	19.7	0.67	82.1	3.4	1.9	102	0.111	110	140
LS 180 L	FCPL 54 - 215	11	720	25.6	0.72	86	3.8	1.4	145	0.247	150	185
LS 200 L	FCPL 54 - 222 ¹	15	725	32.9	0.75	87.7	4.4	1.6	198	0.327	220	255
LS 225 ST	FCPL 60 - 126	18.5	725	42.4	0.72	87.5	4.2	1.6	244	0.421	260	300
LS 225 MR	FCPL 60 - 230 ¹	22	725	51.9	0.70	87.4	4.4	1.9	288	0.489	300	330
LS 250 ME	FCPL 60 - 239	30	730	60.3	0.79	90.9	5.8	1.9	392	0.994	390	420
LS 280 SC	FCPL 60 - 152	37	730	74.3	0.79	91	5.6	1.8	484	1.268	520	450
LS 280 MD	FCPL 60 - 260 ¹	45	728	91.4	0.78	91.1	5.4	1.8	590	1.463	590	520

LS 315

Above, consult us

1. Requires a CDF brake mains supply card

FCPL asynchronous brake motors

LS FCPL

Selection



LS FCPL motor - IP 55 - 50 Hz - Class F - 230 V Δ / 400 V Y - Aluminium rotor, U.G. general use
• IP 44 brake - Separate mains supply

Motor type	Brake type	Rated power at 50 Hz	Brake torque	IM 1001 (IM B3)		IM 3001 (IM B5)	
		P_N kW	$M_f \pm 20\%$ N.m	Code	Qty	Code	Qty
LS 160 MP	FCPL 40 - 108	11	80		-		-
LS 160 LR	FCPL 40 - 110	15	105		-		-
LS 180 MT	FCPL 54 - 313	18.5	130		-		-
LS 180 LR	FCPL 54 - 215	22	150		-		-
LS 200 LT	FCPL 54 - 222 ¹	30	220		-		-
LS 225 ST	FCPL 60 - 126	37	260		-		-
LS 225 MR	FCPL 60 - 230 ¹	45	300		-		-
LS 250 ME	FCPL 60 - 239	55	390		-		-
LS 280 SC	FCPL 60 - 152	75	520		-		-
LS 280 MD	FCPL 60 - 260 ¹	90	590		-		-

LS 315

Above, consult us

1. Requires a CDF brake mains supply card



LS FCPL motor - IP 55 - 50 Hz - Class F - 230 V Δ / 400 V Y - Aluminium rotor, U.G. general use
• IP 44 brake - Separate mains supply

Motor type	Brake type	Rated power at 50 Hz	Brake torque	IM 1001 (IM B3)		IM 3001 (IM B5)	
		P_N kW	$M_f \pm 20\%$ N.m	Code	Qty	Code	Qty
LS 160 M	FCPL 40 - 108	7.5	80		-		-
LS 160 L	FCPL 54 - 211	11	110		-		-
LS 180 L	FCPL 54 - 215	15	150		-		-
LS 200 LT	FCPL 54 - 318	18.5	180		-		-
LS 200 L	FCPL 54 - 222 ¹	22	220		-		-
LS 225 MR	FCPL 60 - 230 ¹	30	300		-		-
LS 250 ME	FCPL 60 - 239	37	390		-		-
LS 280 SC	FCPL 60 - 152	45	520		-		-
LS 280 MC	FCPL 60 - 260 ¹	55	590		-		-

LS 315

Above, consult us

1. Requires a CDF brake mains supply card



LS FCPL motor - IP 55 - 50 Hz - Class F - 230 V Δ / 400 V Y - Aluminium rotor, U.G. general use
• IP 44 brake - Separate mains supply

Motor type	Brake type	Rated power at 50 Hz	Brake torque	IM 1001 (IM B3)		IM 3001 (IM B5)	
		P_N kW	$M_f \pm 20\%$ N.m	Code	Qty	Code	Qty
LS 160 M	FCPL 40 - 106	4	65		-		-
LS 160 M	FCPL 40 - 108	5.5	80		-		-
LS 160 L	FCPL 54 - 211	7.5	110		-		-
LS 180 L	FCPL 54 - 215	11	150		-		-
LS 200 L	FCPL 54 - 222 ¹	15	220		-		-
LS 225 ST	FCPL 60 - 126	18.5	260		-		-
LS 225 MR	FCPL 60 - 230 ¹	22	300		-		-
LS 250 ME	FCPL 60 - 239	30	390		-		-
LS 280 SC	FCPL 60 - 152	37	520		-		-
LS 280 MD	FCPL 60 - 260 ¹	45	590		-		-

LS 315

Above, consult us

1. Requires a CDF brake mains supply card

Selection example :

Speed :	750 min ⁻¹ - 8 poles
Power :	15 kW
Brake torque:	220 N.m
Use :	U.G. general use
Mounting and position :	IM 1001 (IM B3)
Mains supply voltage :	230/400 V

Designation :

8P LS 200 L 15 kW IM 1001 (IM B3)
230/400 V U.G. FCPL 220 N.m

Code : -

FCPL asynchronous brake motors

LS FCPL

Selection

4 poles
1500 min⁻¹

- LS FCPL motor - IP 55 - 50 Hz - Class F - 230 V Δ / 400 V Y - Aluminium rotor, U.G. general use
- IP 44 brake - Separate mains supply

Motor type	Brake type	Rated power at 50 Hz P_N kW	Rated speed N_N min ⁻¹	Rated current $I_N(400V)$ A	Power factor $\cos \varphi$ 100 %	Efficiency η 100 %	Starting current / Rated current I_D / I_N	Starting torque / Rated torque M_D / M_N	Rated torque M_N N.m	Moment of inertia J kg.m ²	Brake torque $M_f \pm 20\%$ N.m	Weight IM B3 kg
LS 160 MP	FCPL 40 - 108	11	1456	21.1	0.85	88.4	7.7	2.9	72	0.050	105	100
LS 160 LR	FCPL 40 - 110	15	1456	28.8	0.84	89.4	8.3	2.9	99	0.058	125	105
LS 180 MT	FCPL 54 - 313	18.5	1456	35.4	0.84	90.3	7.4	2.9	121	0.104	180	140
LS 180 LR	FCPL 54 - 215	22	1456	41.7	0.84	90.7	7.4	3.2	144	0.117	180	150
LS 200 LT	FCPL 54 - 222 ¹	30	1460	56.3	0.84	91.5	6.6	2.7	196	0.187	200	240
LS 225 ST	FCPL 60 - 126	37	1470	68.7	0.84	92.5	6.5	2.6	239	0.306	260	290
LS 225 MR	FCPL 60 - 230 ¹	45	1470	83.3	0.84	92.8	6.5	2.8	292	0.365	300	320
LS 250 ME	FCPL 60 - 239	55	1478	100.1	0.84	93.6	7	2.7	355	0.749	400	400
LS 280 SC	FCPL 60 - 152	75	1478	137	0.84	94.2	7.2	2.8	485	1.084	800	550
LS 280 MD	FCPL 60 - 260 ¹	90	1478	164	0.84	94.4	7.6	3	581	1.274	600	620
LS 315		Above, consult us										

¹ Requires a CDF brake mains supply card

FCPL asynchronous brake motors

LS FCPL

Selection



LS FCPL motor - IP 55 - 50 Hz - Class F - 230 V Δ / 400 V Y - Aluminium rotor, U.G. general use
• IP 44 brake - Separate mains supply

Motor type	Brake type	Rated power at 50 Hz	Brake torque	IM 1001 (IM B3)		IM 3001 (IM B5)	
		P_N kW	$M_f \pm 20\%$ N.m	Code	Qty	Code	Qty
LS 160 MP	FCPL 40 - 108	11	105	FP4 11 104	1	FP4 11 105	1
LS 160 LR	FCPL 40 - 110	15	125	FP4 15 107	1	FP4 15 108	1
LS 180 MT	FCPL 54 - 313	18.5	180	FP4 18 110	1	FP4 18 111	1
LS 180 LR	FCPL 54 - 215	22	180	FP4 22 113	1	FP4 22 114	1
LS 200 LT	FCPL 54 - 222 ¹	30	200		-		-
LS 225 ST	FCPL 60 - 126	37	260		-		-
LS 225 MR	FCPL 60 - 230 ¹	45	300		-		-
LS 250 ME	FCPL 60 - 239	55	400		-		-
LS 280 SC	FCPL 60 - 152	75	520		-		-
LS 280 MD	FCPL 60 - 260 ¹	90	600		-		-

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Above, consult us

1.Requires a CDF brake mains supply card

Selection example :

Speed :	1500 min ⁻¹ - 4 poles
Power :	22 kW
Brake torque :	180 N.m
Use :	U.G. general use
Mounting and position :	IM 1001 (IM B3)
Mains supply voltage :	400 V

Designation :

4P LS 180 LR 22 kW IM 1001 (IM B3)
230/400 V U.G. FCPL 180 N.m

Code : FP4 22 113

FCPL asynchronous brake motors

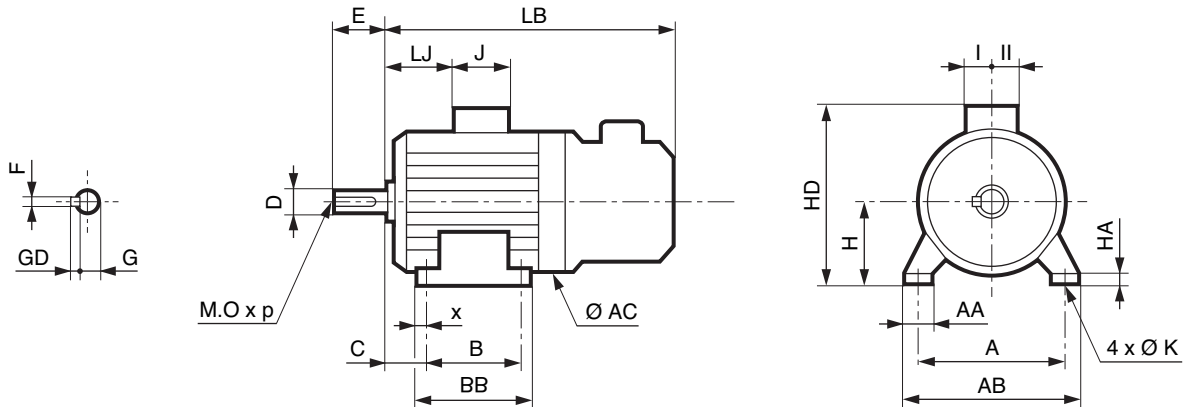
LS FCPL

Dimensions

Dimensions of the FCPL asynchronous brake motors - 4, 6, 8 poles
IP 55 motor protection, IP 44 brake protection

Dimensions in millimetres

– foot mounted



Aynchronous brake motor																	
Type	A	AB	B	BB	C	X	AA	K	HA	H	AC	HD	LB	LJ	J	I	II
LS 160 MP	254	294	210	294	108	20	64	14.5	25	160	264	360	603	55	160	55	55
LS 160 LR	254	294	254	294	108	20	64	14.5	25	160	264	360	603	55	160	55	55
LS 160 M	254	294	210	294	108	20	60	14.5	25	160	345	395	668	44	134	92	63
LS 180 MT	279	324	241	316	121	20	79	14.5	28	180	345	415	668	44	134	92	63
LS 180 LR	279	324	279	316	121	20	79	14.5	28	180	345	415	683	44	134	92	63
LS 180 L	279	339	279	329	121	25	86	14.5	25	180	384	435	752	54	205	100	95
LS 200 LT	318	378	305	365	133	30	108	18.5	32	200	384	455	785	60	205	100	95
LS 200 L	318	388	305	375	133	35	103	18.5	36	200	410	475	827 ¹	68	205	100	95
LS 225 ST	356	431	286	386	149	50	127	18.5	36	225	410	500	880	74	205	100	95
LS 225 MR	356	431	311	386	149	50	127	18.5	36	225	410	500	922	74	205	100	95
LS 250 SE	406	470	311	420	168	35	90	24	36	250	481	654	1180	68	292	148	180
LS 250 ME	406	470	349	420	168	35	90	24	36	250	481	654	1180	68	292	148	180
LS 280 SC/SD	457	520	368	478	190	35	90	24	35	280	505	684	1180	68	292	148	180
LS 280 MC/MD	457	520	419	478	190	35	90	24	35	280	505	684	1180	68	292	148	180

1. Dimension for the FCPL 60-230. For the FCPL 60-239 : LB = 905.

Output shaft							
Type	F	GD	D	G	E	O	p
LS 160 MP/LR/ML	12	8	42 k6	37	110	16	36
LS 180 MT/LR/L	14	9	48 k6	42.5	110	16	36
LS 200 LT/L	16	10	55 m6	49	110	20	42
LS 225 ST/MR	18	11	60 m6	53	140	20	42
LS 250 SE/ME	18	11	65 m6	58	140	20	42
LS 280 SC/MC/SD/MD	20	12	75 m6	67.5	140	20	42

FCPL asynchronous brake motors

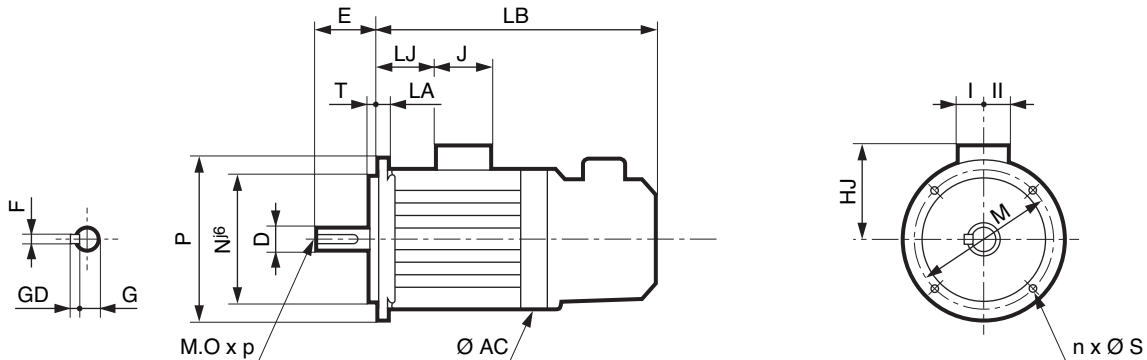
LS FCPL

Dimensions

Dimensions of the FCPL asynchronous brake motor - 4, 6, 8 poles
IP 55 motor protection, IP 44 brake protection

Dimensions in millimetres

– (FF) plain hole flange mounted



Asynchronous brake motor								
Type	LB	AC	HJ	LJ	J	I	II	Symb.
LS 160 MP	603	264	200	55	160	55	55	FF 300
LS 160 LR	603	264	200	55	160	55	55	FF 300
LS 160 M	668	345	235	44	134	92	63	FF 300
LS 180 MT	668	345	235	44	134	92	63	FF 300
LS 180 LR	683	345	235	44	134	92	63	FF 300
LS 180 L	752	384	255	54	205	100	95	FF 300
LS 200 LT	785	384	255	60	205	100	95	FF 350
LS 200 L	827 ¹	410	275	68	205	100	95	FF 350
LS 225 ST	880	410	275	74	205	100	95	FF 400
LS 225 MR	922	410	275	74	205	100	95	FF 400
LS 250 SE	1180	481	404	68	292	148	180	FF 500
LS 250 ME	1180	481	404	68	292	148	180	FF 500
LS 280 SC/MD	1180	505	404	68	292	148	180	FF 500
LS 280 MC/MD	1180	505	404	68	292	148	180	FF 500

1. Dimension for the FCPL 60-230. For the FCPL 60-239 : LB = 905.

Flange								
Type	Symb.	M	N	P	T	n	S	LA
LS 160/180	FF 300	300	250	350	5	4	18.5	14
LS 200	FF 350	350	300	400	5	4	18.5	15
LS 225	FF 400	400	350	450	5	8	18.5	16
LS 250/280	FF 500	500	450	550	5	8	18.5	18

