FCPL asynchronous brake motors
LS FCPL

General information

TRANSLATION USE : U.T.
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.
Honing 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 motor

Component	Materials	Remarks
Finned housing	Auminium 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 bysheet 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
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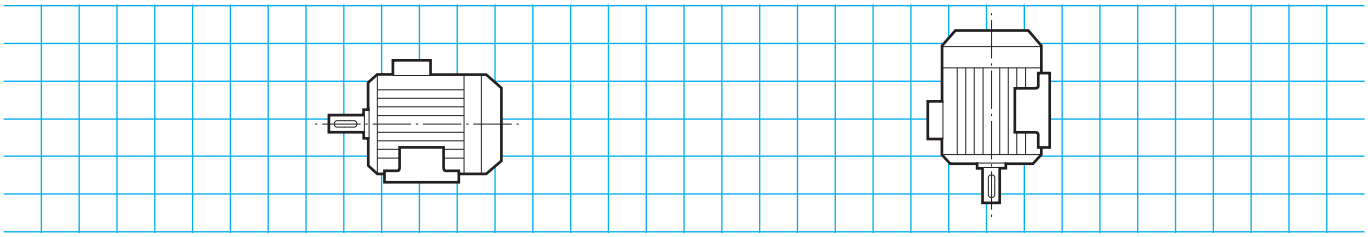
Mounting positions

Foot mounted motor

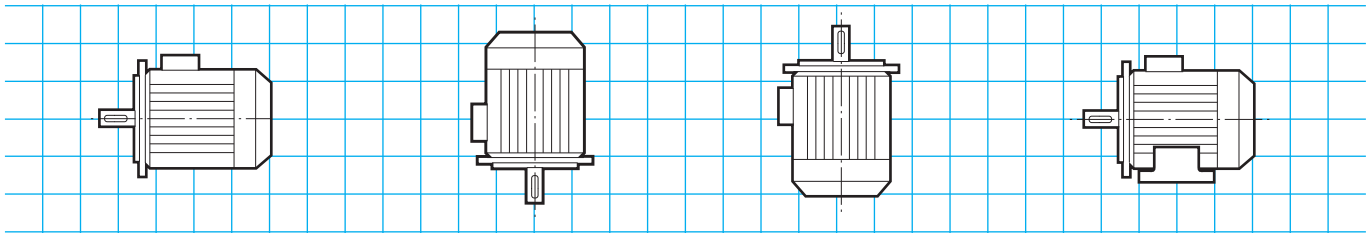


IM 1001 (IM B3)

IM 1011 (IM V5)

C

(FF) plain hole flange mounted motor



IM 3001 (IM B5)

IM 3011 (IM V1)

IM 3031 (IM V3)

IM 2001 (IM B35)

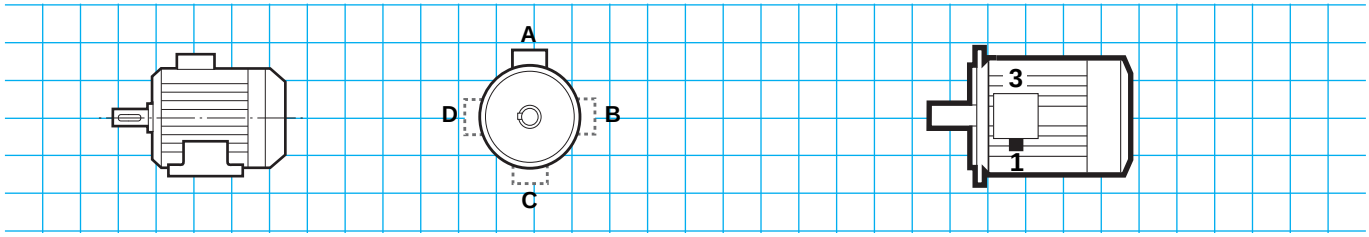
In consideration of the weight of certain motors, B5 mounting must be confirmed by the factory.
V1 - V5 mounting : consult the factory if 2 disk brake.
V3 mounting : impossible if 2 disk brake.

(FT) tapped hole flange mounted motor

• For frame size 160 mm. Consult us.

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

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



Foot mounted motor
A : only possibility

Flange mounted motor
A : standard

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

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Adaptation possibilities

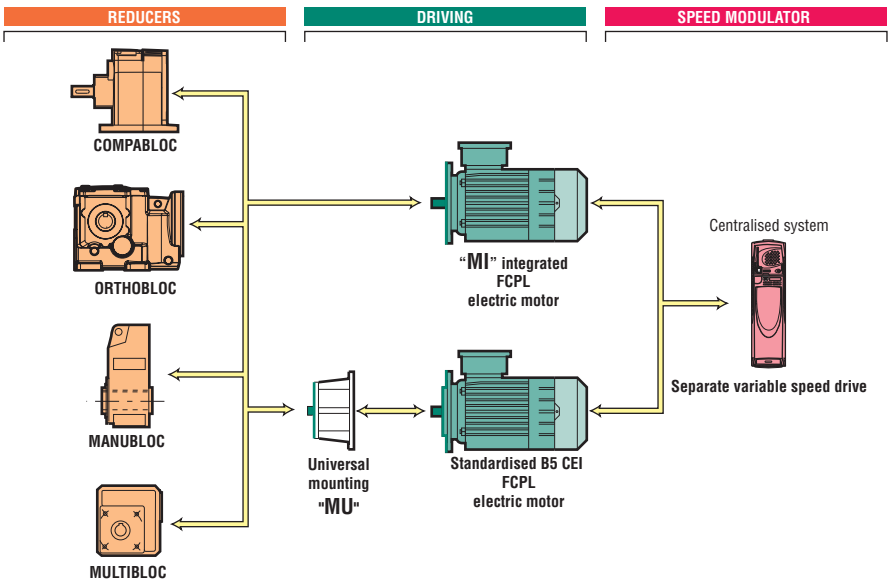
Leroy-Somer offers, for use with their brake motors, many options which meet the needs of highly diverse applications. They are described below and in the sections relating to gearboxes fixed speed motors, and to the variable speed section for motorised variable speed drives.
For other variants or any specific adaptation, consult the technical specialists at Leroy-Somer who will be pleased to advise you.

☞ ***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 speed variable speed drive :***

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



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Designation / Codification

4 P 1500 min^{-1}	LS	180	MT	FCPL	S1	130 N.m	18.5 kW	IM 1001 (IM B3)	400 V Δ	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 18.5 kW
IM 1001 (IM B3), 230/400 V - A

Designation	Code
4P LS 180 MT 18.5 kW IM 1001 (IM B3) 230/400 V U.T. FCPL 130 N.m	-

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
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Selection

4 poles 1500 min^{-1}

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

4 poles 1500 min⁻¹

Motor type	Brake type	Rated power at 50 Hz P_N kW	Brake torque M_f ± 20 % N.m	IM 1001 (IM B3) Code	IM 1001 (IM B3) Qty	IM 3001 (IM B5) Code	IM 3001 (IM B5) 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.T. translation use
• IP 44 brake - Separate mains supply

6 poles 1000 min⁻¹

Motor type	Brake type	Rated power at 50 Hz P_N kW	Brake torque M_f ± 20 % N.m	IM 1001 (IM B3) Code	IM 1001 (IM B3) Qty	IM 3001 (IM B5) Code	IM 3001 (IM B5) 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.T. translation use
• IP 44 brake - Separate mains supply

8 poles 750 min⁻¹

Motor type	Brake type	Rated power at 50 Hz P_N kW	Brake torque M_f ± 20 % N.m	IM 1001 (IM B3) Code	IM 1001 (IM B3) Qty	IM 3001 (IM B5) Code	IM 3001 (IM B5) 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.T. translation use
Mounting and position :	IM 3001 (IM B5)
Mains supply voltage :	230/400 V

Designation :
8P LS 200 L 15 kW IM 3001 (IM B5) 230/400 V U.T. 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 - 400 V Δ - Aluminium rotor, U.T. translation use**
- **IP 44 rotor - 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 ± 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

FCPL asynchronous brake motors
LS FCPL

Selection

4 poles 1500 min^{-1}

- **LS FCPL motor - IP 55 - 50 Hz - Class F - 400 V Δ - Aluminium rotor, U.T. translation use**
- **IP 44 rotor - Separate mains supply**

Motor type	Brake type	Rated power at 50 Hz P_N kW	Brake torque M_f ± 20 % N.m	IM 1001 (IM B3) Code	IM 1001 (IM B3) Qty	IM 3001 (IM B5) Code	IM 3001 (IM B5) 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

C

Selection example :

Speed :	1500 min^{-1} - 4 poles
Power :	11 kW
Brake torque :	105 N.m
Use :	U.T. translation use.
Mounting and position :	IM 1001 (IM B3)
Mains supply voltage :	400 V

Designation :
4P LS 160 MP 11 kW IM 1001 (IM B3)
400 V U.T. FCPL 105 N.m

Code : -

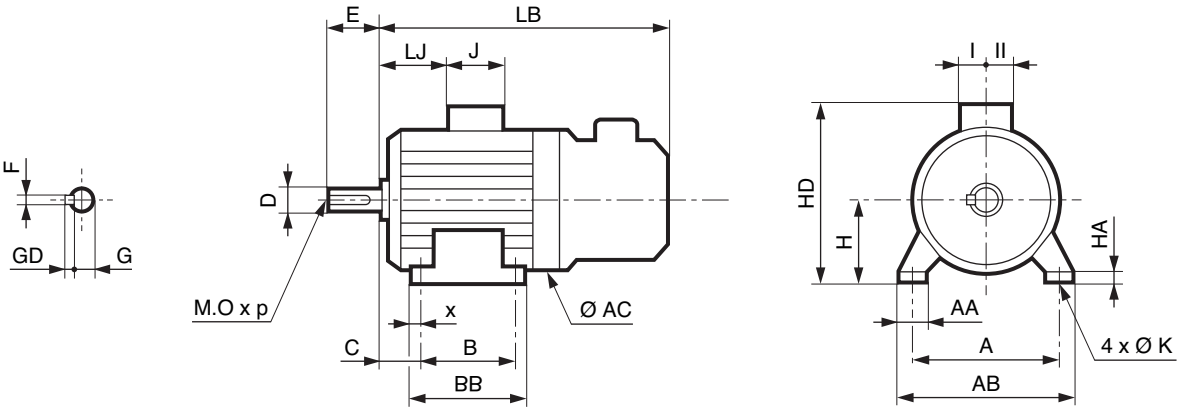
FCPL asynchronous brake motors
LS FCPL

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



	Asynchronous 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	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

	Output shaft						
Type	F	GD	D	G	E	O	p
LS 160 MP/LR/M/L	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

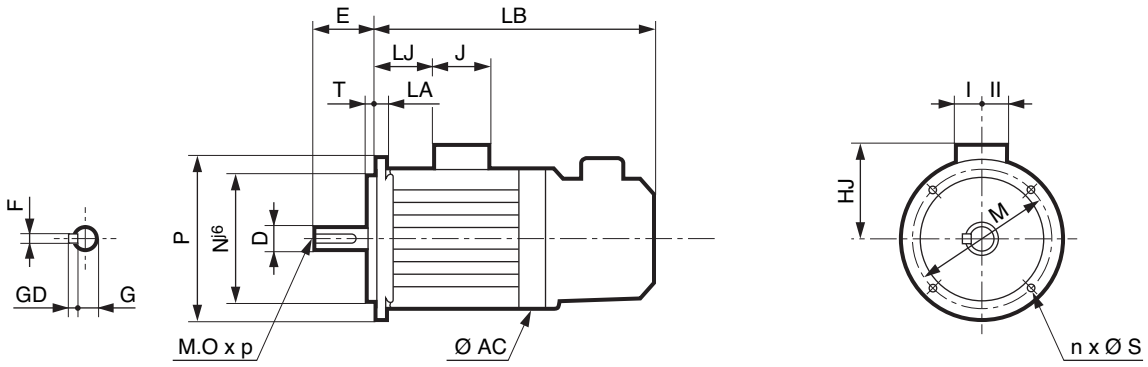
FCPL asynchronous brake motors
LS FCPL

Dimensions

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

Dimensions in millimetres

- (FF) plain hole flange mounted



	Asynchronous brake motors							
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	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

	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