

# FCPL asynchronous brake motors LS FCPL

## General information



### LIFTING USE : U.L.

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

Separate to the motor and the brake.

Voltage 180 V.

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

Maximum number of starts/hr

- for acontinuous duty : 6.

- for a duty factor : S4 40 %(obligatory

DP rotor)

- from 160 to 180 = 180 starts

- from 200 to 225 = 150 starts

- high repetitive starts

• 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, of 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 the 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

Cast iron 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 mains supply

• Standard according to IEC 60038 :

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

Standard construction suitable for :

- 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.

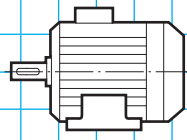
## Description of the LS FCPL aluminium three-phase brake motor

Component	Materials	Remarks
Finned housing	Aluminium alloy	- with bolt-on or cast feet or without feet - pressure die-cast for frame sizes ≤ 180 - gravity cast for frame sizes = 200 • 4 or 6 mounting holes for the foot housing • lifting rings - earth terminal on feet or blade
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 in copper - mounted on shaft by heat shrinking - dynamically balanced rotor class N - 1/2 key
Shaft	Steel	- tapped centre hole - open key
End shields	Cast iron	- front and rear assembled by 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	- 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)

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## Mounting positions

### Foot mounted motor

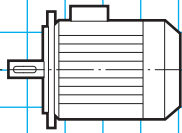


IM 1001 (IM B3)

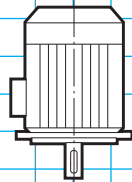


IM 1011 (IM V5)

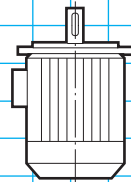
### (FF) plain hole flange mounted motor



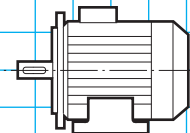
IM 3001 (IM B5)



IM 3011 (IM V1)



IM 3031 (IM V3)



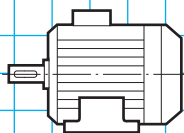
IM 2001 (IM B35)

*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.*

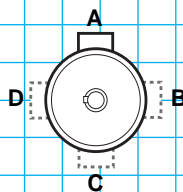
### (FT) tapped hole flange mounted motor

• For frame size 160 mm. Consult us.

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

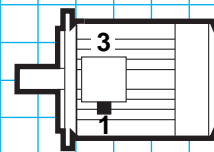


Foot mounted motor  
A : only possibility



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 LS FCPL

## 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.

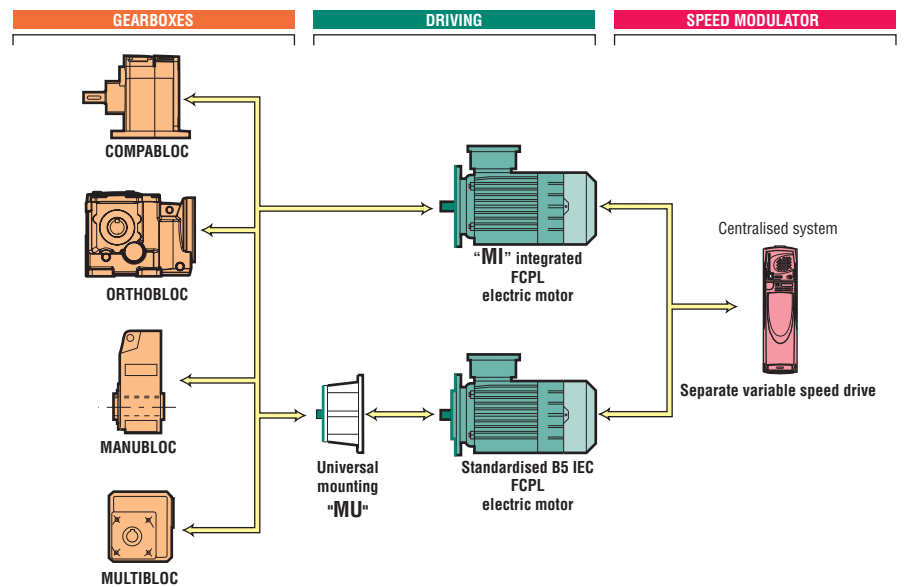
For other variants or any specific adaptation, consult the technical specialists at Leroy-Somer who will be pleased to advise you.

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

- Compabloc
- Orthobloc
- Manubloc
- Multibloc

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

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



## Designation / Codification

6 P 1000 min <sup>-1</sup>	LS	250	ME	FCPL	S1	590 N.m	37 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 :**  
6P LS 250 ME FCPL S1 590 N.m 37 kW  
IM 1001 (IM B3), 400 V Δ - A

<b>Designation</b>	<b>Code</b>
6P LS 250 ME 37 kW IM 1001 (IM B3) 400 V U.L. FCPL 590 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

## LS FCPL

### Selection

**4**  
poles  
1500 min<sup>-1</sup>

- LS FCPL motor - IP 55 - 50 Hz - Class F - 230 V  $\Delta$  / 400 V Y - Aluminium rotor, U.L. lifting use
- IP 44 brake- Separate mains supply

Motor type	Brake type	Rated power at 50 Hz	Rated speed	Rated current	Power factor	Efficiency	Starting current / Rated current	Starting torque/ Rated torque	Rated torque	Moment of inertia	Brake torque	Weight
		$P_N$ kW	$N_N$ min <sup>-1</sup>	$I_N(400V)$ A	$\cos \varphi$ 100 %	$\eta$ 100 %	$I_D / I_N$	$M_D / M_N$	$M_N$ N.m	$J$ kg.m <sup>2</sup>	$M_f \pm 20\%$ N.m	IM B3 kg
LS 160 MP	FCPL 40 - 112	11	1456	21.1	0.85	88.4	7.7	2.9	72	0.050	125	100
LS 160 LR	FCPL 40 - 112	15	1456	28.8	0.84	89.4	8.3	2.9	99	0.058	125	105
LS 180 MT	FCPL 54 - 318	18.5	1456	35.4	0.84	90.3	7.4	2.9	121	0.104	180	140
LS 180 LR	FCPL 54 - 222 <sup>1</sup>	22	1456	41.7	0.84	90.7	7.4	3.2	144	0.117	220	150
LS 200 LT	FCPL 60 - 230	30	1460	56.3	0.84	91.5	6.6	2.7	196	0.187	300	240
LS 225 ST	FCPL 60 - 239	37	1470	68.7	0.84	92.5	6.5	2.6	239	0.306	390	290
LS 225 MR	FCPL 60 - 152	45	1470	83.3	0.84	92.8	6.5	2.8	292	0.365	520	320
LS 250 ME	FCPL 60 - 260 <sup>1</sup>	55	1478	100.1	0.84	93.6	7	2.7	355	0.749	590	400
LS 280 SC	FCPL 88 - 180 <sup>1</sup>	75	1478	137	0.84	94.2	7.2	2.8	485	1.084	800	550
LS 280 MD	FCPL 88 - 195 <sup>1</sup>	90	1478	164	0.84	94.4	7.6	3	581	1.274	950	620

LS 315

Above, consult us

<sup>1</sup>. Requires a CDF brake mains supply card

**6**  
poles  
1000 min<sup>-1</sup>

- LS FCPL motor - IP 55 - 50 Hz - Class F - 230 V  $\Delta$  / 400 V Y - Aluminium rotor, U.L. lifting use
- IP 44 brake- Separate mains supply

Motor type	Brake type	Rated power at 50 Hz	Rated speed	Rated current	Power factor	Efficiency	Starting current / Rated current	Starting torque/ Rated torque	Rated torque	Moment of inertia	Brake torque	Weight
		$P_N$ kW	$N_N$ min <sup>-1</sup>	$I_N(400V)$ A	$\cos \varphi$ 100 %	$\eta$ 100 %	$I_D / I_N$	$M_D / M_N$	$M_N$ N.m	$J$ kg.m <sup>2</sup>	$M_f \pm 20\%$ N.m	IM B3 kg
LS 160 M	FCPL 40 - 112	7.5	967	16.1	0.79	85.2	4.7	1.5	74	0.100	125	120
LS 160 L	FCPL 54 - 318	11	967	23.3	0.79	86.3	4.6	1.6	109	0.140	180	140
LS 180 L	FCPL 60 - 126	15	972	30.1	0.81	88.7	6.8	2.3	147	0.232	260	200
LS 200 LT	FCPL 60 - 230 <sup>1</sup>	18.5	970	37	0.81	89	6.4	2.4	182	0.281	300	240
LS 200 L	FCPL 60 - 239	22	972	43.6	0.81	89.9	6	2	216	0.366	390	280
LS 225 MR	FCPL 60 - 152	30	968	59.5	0.81	89.9	6	2.2	296	0.475	520	320
LS 250 ME	FCPL 60 - 260 <sup>1</sup>	37	978	71.1	0.81	92.7	6.2	2.3	361	0.994	590	385
LS 280 SC	FCPL 88 - 180 <sup>1</sup>	45	978	86.5	0.81	92.7	6.2	2.3	439	1.268	800	510
LS 280 MC	FCPL 88 - 195 <sup>1</sup>	55	978	106	0.81	92.6	6	2.4	537	1.463	950	650

LS 315

Above, consult us

<sup>1</sup>. Requires fa CDF brake mains supply card

**8**  
poles  
750 min<sup>-1</sup>

- LS FCPL motor - IP 55 - 50 Hz - Class F - 230 V  $\Delta$  / 400 V Y - Aluminium rotor, U.L. lifting use
- IP 44 brake- Separate mains supply

Motor type	Brake type	Rated power at 50 Hz	Rated speed	Rated current	Power factor	Efficiency	Starting current / Rated current	Starting torque/ Rated torque	Rated torque	Moment of inertia	Brake torque	Weight
		$P_N$ kW	$N_N$ min <sup>-1</sup>	$I_N(400V)$ A	$\cos \varphi$ 100 %	$\eta$ 100 %	$I_D / I_N$	$M_D / M_N$	$M_N$ N.m	$J$ kg.m <sup>2</sup>	$M_f \pm 20\%$ N.m	IM B3 kg
LS 160 M	FCPL 40 - 109	4	715	11.1	0.65	80	3.2	1.9	53	0.078	95	110
LS 160 M	FCPL 40 - 112	5.5	715	14.8	0.65	82.4	3.5	1.9	74	0.082	125	120
LS 160 L	FCPL 54 - 215	7.5	715	19.7	0.67	82.1	3.4	1.9	102	0.111	150	140
LS 180 L	FCPL 60 - 126	11	720	25.6	0.72	86	3.8	1.4	145	0.247	260	210
LS 200 L	FCPL 60 - 230 <sup>1</sup>	15	725	32.9	0.75	87.7	4.4	1.6	198	0.327	300	260
LS 225 ST	FCPL 60 - 239	18.5	725	42.4	0.72	87.5	4.2	1.6	244	0.421	390	300
LS 225 MR	FCPL 60 - 152	22	725	51.9	0.70	87.4	4.4	1.9	288	0.489	520	330
LS 250 ME	FCPL 60 - 260 <sup>1</sup>	30	730	60.3	0.79	90.9	5.8	1.9	392	0.994	590	410
LS 280 SC	FCPL 88 - 180 <sup>1</sup>	37	730	74.3	0.79	91	5.6	1.8	484	1.268	800	540
LS 280 MD	FCPL 88 - 195 <sup>1</sup>	45	728	91.4	0.78	91.1	5.4	1.8	590	1.463	950	600

LS 315

Above, consult us

<sup>1</sup>. Requires a CDF brake mains supply card

# FCPL asynchronous brake motors LS FCPL

## Selection

**4**  
poles  
1500 min<sup>-1</sup>

- LS FCPL motor - IP 55 - 50 Hz - Class F - 230 V  $\Delta$  / 400 V Y - Aluminium rotor, U.L. lifting use
- IP 44 brake- Separate mains supply

Motor type	Brake type	Rated power at 50 Hz $P_N$ kW	Brake torque $M_f \pm 20\%$ N.m	IM 1001 (IM B3)		IM 3001 (IM B5)	
				Code	Qty	Code	Qty
LS 160 MP	FCPL 40 - 112	11	125		-		-
LS 160 LR	FCPL 40 - 112	15	125		-		-
LS 160 L	FCPL 54 - 215	15	150		-		-
LS 180 MT	FCPL 54 - 318	18.5	180		-		-
LS 180 LR	FCPL 54 - 222 <sup>1</sup>	22	220		-		-
LS 200 LT	FCPL 60 - 230	30	300		-		-
LS 225 ST	FCPL 60 - 239	37	390		-		-
LS 225 MR	FCPL 60 - 152	45	520		-		-
LS 250 ME	FCPL 60 - 260 <sup>1</sup>	55	590		-		-
LS 280 SC	FCPL 88 - 180 <sup>1</sup>	75	800		-		-
LS 280 MD	FCPL 88 - 195 <sup>1</sup>	90	950		-		-

LS 315

Above, consult us

<sup>1</sup>Requires a CDF brake mains supply card

**6**  
poles  
1000 min<sup>-1</sup>

- LS FCPL motor - IP 55 - 50 Hz - Class F - 230 V  $\Delta$  / 400 V Y - Aluminium rotor, U.L. lifting use
- IP 44 brake- Separate mains supply

Motor type	Brake type	Rated power at 50 Hz $P_N$ kW	Brake torque $M_f \pm 20\%$ N.m	IM 1001 (IM B3)		IM 3001 (IM B5)	
				Code	Qty	Code	Qty
LS 160 M	FCPL 40 - 112	7.5	125		-		-
LS 160 L	FCPL 54 - 318	11	180		-		-
LS 180 L	FCPL 60 - 126	15	260		-		-
LS 200 LT	FCPL 60 - 230 <sup>1</sup>	18.5	300		-		-
LS 200 L	FCPL 60 - 239	22	390		-		-
LS 225 MR	FCPL 60 - 152	30	520		-		-
LS 250 ME	FCPL 60 - 260 <sup>1</sup>	37	590		-		-
LS 280 SC	FCPL 88 - 180 <sup>1</sup>	45	800		-		-
LS 280 MC	FCPL 88 - 195 <sup>1</sup>	55	950		-		-

LS 315

Above, consult us

<sup>1</sup> Requires a CDF brake mains supply card

**8**  
poles  
750 min<sup>-1</sup>

- LS FCPL motor - IP 55 - 50 Hz - Class F - 230 V  $\Delta$  / 400 V Y - Aluminium rotor, U.L. lifting use
- IP 44 brake- Separate mains supply

Motor type	Brake type	Rated power at 50 Hz $P_N$ kW	Brake torque $M_f \pm 20\%$ N.m	IM 1001 (IM B3)		IM 3001 (IM B5)	
				Code	Qty	Code	Qty
LS 160 M	FCPL 40 - 109	4	95		-		-
LS 160 M	FCPL 40 - 112	5.5	125		-		-
LS 160 L	FCPL 54 - 215	7.5	150		-		-
LS 180 L	FCPL 60 - 126	11	260		-		-
LS 200 L	FCPL 60 - 230 <sup>1</sup>	15	300		-		-
LS 225 ST	FCPL 60 - 239	18.5	390		-		-
LS 225 MR	FCPL 60 - 152	22	520		-		-
LS 250 ME	FCPL 60 - 260 <sup>1</sup>	30	590		-		-
LS 280 SC	FCPL 88 - 180 <sup>1</sup>	37	800		-		-
LS 280 MD	FCPL 88 - 195 <sup>1</sup>	45	950		-		-

LS 315

Above, consult us

<sup>1</sup>Requires a CDF brake mains supply card

### Selection example :

Speed :	1000 min <sup>-1</sup> - 6 poles
Power :	37 kW
Brake torque :	590 N.m
Use :	U.L. lifting use
Mounting and position :	IM 1001 (IM B3)
Mains supply voltage :	230/400 V

### Designation :

**6P LS 250 ME 37 kW IM 1001 (IM B3)  
230/400 V U.L. FCPL 590 N.m**

Code : -

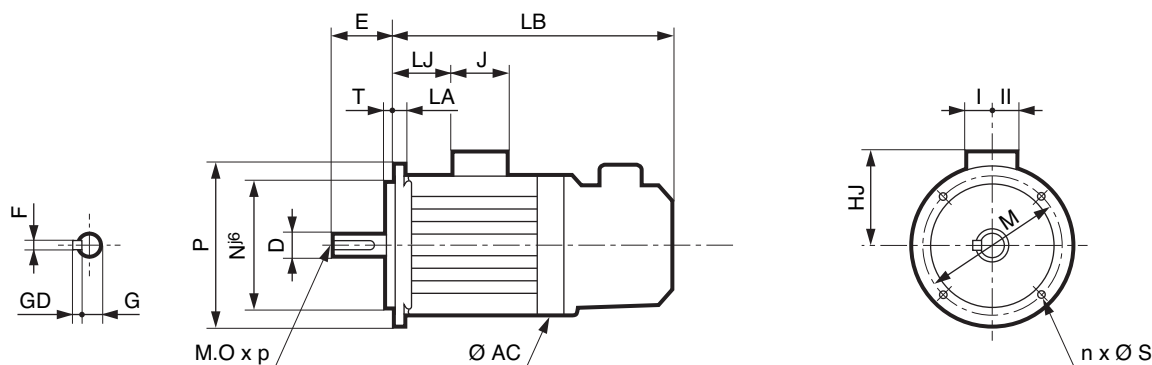
# FCPL asynchronous brake motors LS FCPL

## Dimensions

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

Dimensions in millimetres

- (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 160 L	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	795	384	255	54	205	100	95	FF 300
LS 200 LT	828	384	255	60	205	100	95	FF 350
LS 200 L	874 <sup>1</sup>	410	275	68	205	100	95	FF 350
LS 225 ST	911	410	275	74	205	100	95	FF 400
LS 225 MR	953	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	1246	505	404	68	292	148	180	FF 500
LS 280 MC/MD	1246	505	404	68	292	148	180	FF 500

<sup>1</sup>. 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

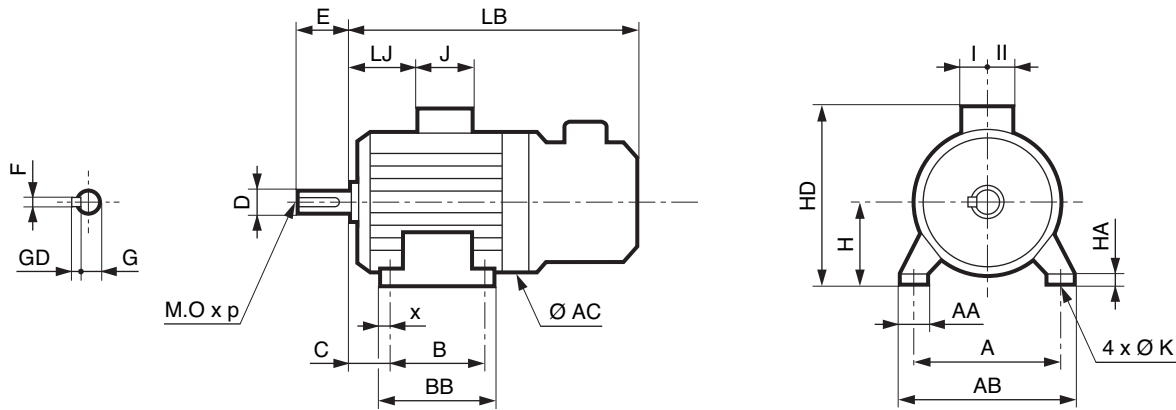
# FCPL asynchronous brake motors LS FCPL

## 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 160 L	254	294	254	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	795	54	205	100	95
LS 200 LT	318	378	305	365	133	30	108	18.5	32	200	384	455	828	60	205	100	95
LS 200 L	318	388	305	375	133	35	103	18.5	36	200	410	475	874 <sup>1</sup>	68	205	100	95
LS 225 ST	356	431	286	386	149	50	127	18.5	36	225	410	500	911	74	205	100	95
LS 225 MR	356	431	311	386	149	50	127	18.5	36	225	410	500	953	74	205	100	95
LS 250 SE	406	470	311	420	168	35	90	24	36	250	481	654	1 180	68	292	148	180
LS 250 ME	406	470	349	420	168	35	90	24	36	250	481	654	1 180	68	292	148	180
LS 280 SC/SD	457	520	368	478	190	35	90	24	35	280	505	684	1 246	68	292	148	180
LS 280 MC/MD	457	520	419	478	190	35	90	24	35	280	505	684	1 246	68	292	148	180

<sup>1</sup>. 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/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

