

FCPL asynchronous brake motors FLS FCPL

General information



GENERAL USE : U.G.

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

Separate supply to the motor and the 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.

Max number of starts/hr

- for continuous duty : 6.
- for a duty factor : S4 40 % (obligatory DP rotor)
 - from 160 to 180 = 180 starts
 - from 200 to 280 = 150 starts
 - high repetitive 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

- Brake
 - 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 bearing.
 - Roller bearing.
 - 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 the following supplies :
 - 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.

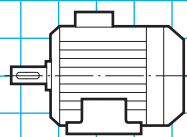
Description of the FLS FCPL aluminium three phase brake motors

Component	Materials	Remarks
Finned housing	Cast iron	- with cast feet or without feet <ul style="list-style-type: none"> • 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 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 with tie rods.
Brake housing	Cast iron	- bolted on to the flange and protected by sheet steel cover
Bearings		- ball bearings C3 type 2RS from 160 to 180 - regreasable bearings from frame size 200 upwards - locked front bearing and preloaded rear bearing
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 Metal from 250 to 280 - 4 poles	- 2 directions of rotation : straight blades
Terminal box	Metal	- 1 terminal box for the motor - 1 terminal box for the brake - located on top of the motor, sealed, provided with cable glands, or on the brake housing
Painting		- System Ia RAL 6000 (green)

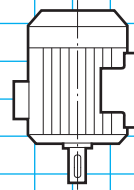
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Mounting positions

Foot mounted motor

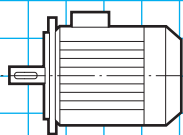


IM 1001 (IM B3)

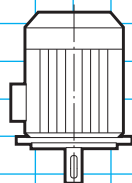


IM 1011 (IM V5)

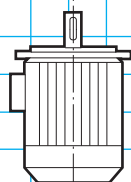
(FF) plain hole flange mounted motor



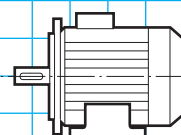
IM 3001 (IM B5)



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.

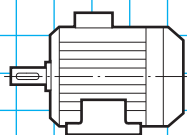
V1 - V5 mounting : consult the factory if 2 disks brake.

V3 mounting : impossible if 1 disk brake.

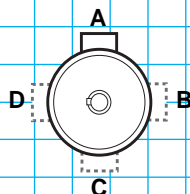
(FT) tapped hole flange mounted motor

- Only for frame size 160 mm. Consult us.

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

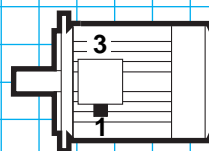


Foot mounted motor
A : only possibility



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)

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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.

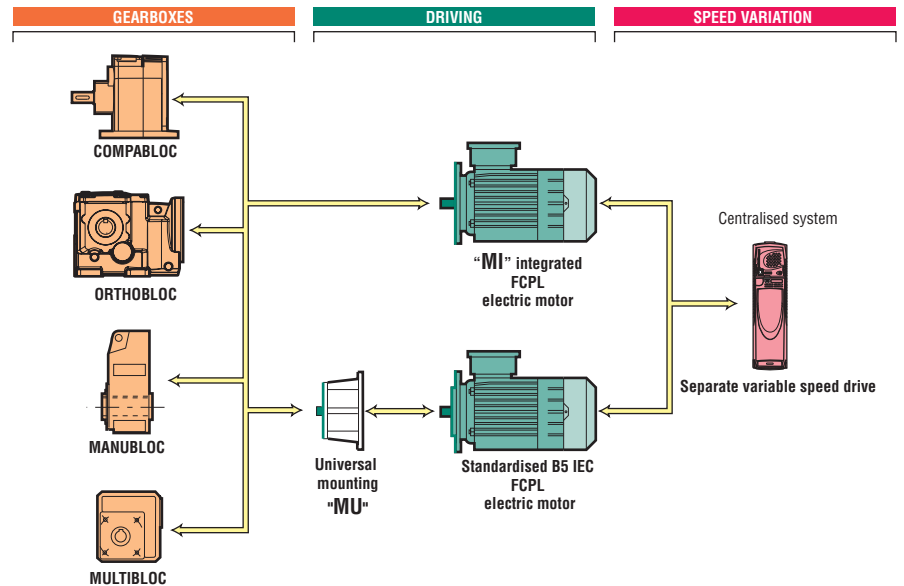
For other variants or any specific adaptation, consult the technical specialists at Leroy-Somer who will be pleased to advise you.

FLS FCPL brake motors may be integrally mounted (fitted motor), or with universal mounting (IEC standardised motor) with the following gearboxes :

- Compabloc
- Orthobloc
- Manubloc
- Multibloc

FLS 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 ⁻¹	FLS	225	M	FCPL	S4	300 N.m	30 kW	IM 1001 (IM B3)	230 / 400 V	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 FLS 225 M FCPL S4 300 N.m 30 kW
IM 1001 (IM B3), 230/400 V - A

Designation 4P FLS 225 M FCPL S4 30 kW B3 230/400 V	Code -
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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 FLS FCPL

Selection

4
poles
1500 min⁻¹

- FLS 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
FLS 160 M	FCPL 40 - 108	11	1455	21	0.86	88.5	7.8	2.6	72.2	0.074	80	140
FLS 160 L	FCPL 54 - 211	15	1455	28	0.86	89.5	7.8	2.6	98.5	0.100	110	160
FLS 180 MR	FCPL 54 - 313	18.5	1465	35	0.86	90	7.8	2.6	121	0.117	130	180
FLS 180 LU	FCPL 54 - 215	22	1465	40.5	0.86	91.4	7.4	2.6	143	0.161	150	220
FLS 200 L	FCPL 54 - 222 ¹	30	1471	56	0.85	91.9	6.5	2.5	195	0.261	220	330
FLS 225 ST	FCPL 60 - 126	37	1476	70	0.82	93.5	7	2.5	240	0.336	220	205
FLS 225 M	FCPL 60 - 230 ¹	45	1483	79	0.87	94.5	7	2.4	290	0.733	300	360
FLS 250 M	FCPL 60 - 239	55	1479	101	0.84	94.5	6.5	2.5	355	0.733	390	460
FLS 280 S	FCPL 60 - 152	75	1483	137	0.84	94.9	7.7	2.9	484	0.986	520	560
FLS 280 M	FCPL 60 - 260 ¹	90	1478	162	0.85	95	7.6	3	581	1.213	590	660
FLS 315		Above, consult us										

1. Requires a CDF brake mains supply card

6
poles
1000 min⁻¹

- FLS 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
FLS 160 M	FCPL 40 - 108	7.5	965	15.8	0.80	86	5	1.5	74	0.100	80	140
FLS 160 L	FCPL 54 - 211	11	965	22.7	0.81	87	5	1.5	109	0.140	110	170
FLS 180 L	FCPL 54 - 215 ¹	15	975	29.6	0.82	89.5	7.1	2.1	147	0.222	150	210
FLS 200 L	FCPL 54 - 318	18.5	975	36	0.83	90.7	7	2.2	181	0.308	180	290
FLS 200 L	FCPL 54 - 222	22	973	43	0.81	91.5	7	2.2	215	0.359	220	330
FLS 225 M	FCPL 60 - 230 ¹	30	977	59	0.80	92	6	2	293	0.991	300	470
FLS 250 M	FCPL 60 - 239	37	977	72	0.80	92.5	6.2	2.2	362	0.991	390	480
FLS 280 S	FCPL 60 - 152	45	971	84	0.84	93	6	1.9	440	1.228	520	550
FLS 280 M	FCPL 60 - 260 ¹	55	977	109	0.79	93	6.9	2.8	538	1.477	590	630
FLS 315		Above, consult us										

1. Requires a CDF brake mains supply card

8
poles
750 min⁻¹

- FLS 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
FLS 160 M	FCPL 40 - 106	4	710	11.3	0.63	81.5	3.8	1.6	54	0.078	65	140
FLS 160 M	FCPL 40 - 108	5.5	710	14.9	0.65	82	3.7	1.7	74	0.089	80	140
FLS 160 L	FCPL 54 - 211	7.5	715	19.5	0.65	83	3.7	1.8	100	0.111	110	170
FLS 180 L	FCPL 54 - 215	11	724	26.6	0.70	85.1	3.9	1.4	147	0.237	150	210
FLS 200 L	FCPL 54 - 220 ¹	15	730	34	0.72	88.1	5	1.8	196	0.368	210	330
FLS 225 ST	FCPL 60 - 126	18.5	730	41	0.73	89	5	1.6	242	0.448	260	370
FLS 225 M	FCPL 60 - 230 ¹	22	730	48	0.72	92.1	5.9	1.6	288	1.172	300	470
FLS 250 M	FCPL 60 - 239	30	730	61	0.78	92	6.2	1.75	392	1.221	390	480
FLS 280 S	FCPL 60 - 152	37	726	74.4	0.78	91.7	4.5	1.6	487	-	520	570
FLS 280 M	FCPL 60 - 260 ¹	45	726	102	0.7	94.2	6	1.65	592	-	590	660
FLS 315		Above, consult us										

1. Requires a CDF brake mains supply card

FCPL asynchronous brake motors FLS FCPL

Selection

- FLS 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

4
poles
1500 min⁻¹

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
FLS 160 M	FCPL 40 - 108	11	80		-		-
FLS 160 L	FCPL 54 - 211	15	110		-		-
FLS 180 MR	FCPL 54 - 313	18.5	130		-		-
FLS 180 LU	FCPL 54 - 215	22	150		-		-
FLS 200 L	FCPL 54 - 222 ¹	30	220		-		-
FLS 225 ST	FCPL 60 - 126	37	260		-		-
FLS 225 M	FCPL 60 - 230 ¹	45	300		-		-
FLS 250 M	FCPL 60 - 239	55	390		-		-
FLS 280 S	FCPL 60 - 152	75	520		-		-
FLS 280 M	FCPL 60 - 260 ¹	90	590		-		-

FLS 315 Above, consult us

1. Requires a CDF brake mains supply card

- FLS 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

6
poles
1000 min⁻¹

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
FLS 160 M	FCPL 40 - 108	7.5	80		-		-
FLS 160 L	FCPL 54 - 211	11	110		-		-
FLS 180 L	FCPL 54 - 215 ¹	15	150		-		-
FLS 200 L	FCPL 54 - 318	18.5	180		-		-
FLS 200 L	FCPL 54 - 222	22	220		-		-
FLS 225 M	FCPL 60 - 230 ¹	30	300		-		-
FLS 250 M	FCPL 60 - 239	37	390		-		-
FLS 280 S	FCPL 60 - 152	45	520		-		-
FLS 280 M	FCPL 60 - 260 ¹	55	590		-		-

FLS 315 Above, consult us

1. Requires a CDF brake mains supply card

- FLS 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

8
poles
750 min⁻¹

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
FLS 160 M	FCPL 40 - 106	4	65		-		-
FLS 160 M	FCPL 40 - 108	5.5	80		-		-
FLS 160 L	FCPL 54 - 211	7.5	110		-		-
FLS 180 L	FCPL 54 - 215	11	150		-		-
FLS 200 L	FCPL 54 - 220 ¹	15	220		-		-
FLS 225 ST	FCPL 60 - 126	18.5	260		-		-
FLS 225 M	FCPL 60 - 230 ¹	22	300		-		-
FLS 250 M	FCPL 60 - 239	30	390		-		-
FLS 280 S	FCPL 60 - 152	37	520		-		-
FLS 280 M	FCPL 60 - 260 ¹	45	590		-		-

FLS 315 Above, consult us

1. Requires a CDF brake mains supply card

Selection example :

Speed :	750 min ⁻¹ - 8 poles
Power :	22 kW
Brake torque :	300 N.m
Use :	U.G. general use
Mounting and position :	IM 1001 (IM B3)
Mains supply voltage :	230/400 V

Designation :

**8P FLS 225 M 22 kW IM 1001 (IM B3)
230/400 V U.G. FCPL 300 N.m**

Code : -

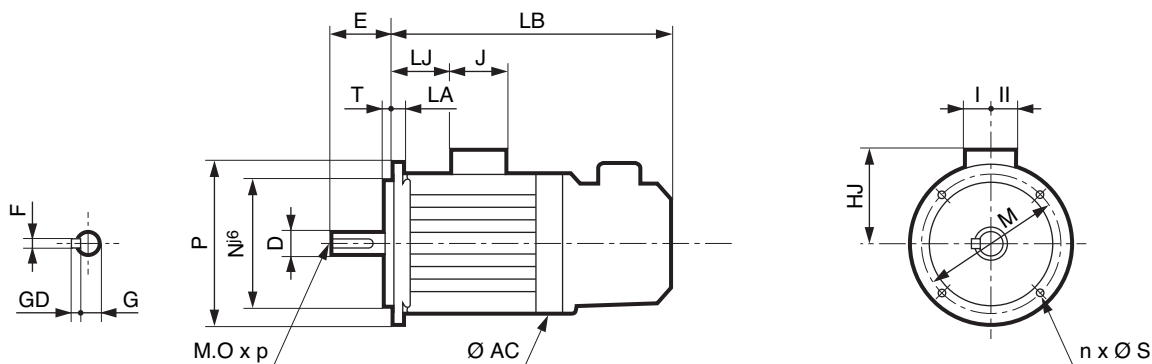
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Dimensions

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 motor								
Type	LB	AC	HJ	LJ	J	I	II	Symb.
FLS 160 M	668	345	225	50	160	80	80	FF 300
FLS 160 L	668	345	225	50	160	80	80	FF 300
FLS 180 MR	683	345	225	50	160	80	80	FF 300
FLS 180 L	752	384	280	55	220	128	128	FF 300
FLS 200 L	835	410	315	65	220	128	128	FF 350
FLS 225 ST	924	410	315	65	220	128	128	FF 400
FLS 225 M	1078	481	431	70	352	173	210	FF 400
FLS 250 M	1158	481	431	70	352	173	210	FF 500
FLS 280 S	1158	505	431	70	352	173	210	FF 500
FLS 280 M	1258	505	431	70	352	173	210	FF 500

Flange								
Type	Symb.	M	N	P	T	n	S	LA
FLS 160/180	FF 300	300	250	350	5	4	18	15
FLS 200	FF 350	350	300	400	5	4	18	15
FLS 225	FF 400	400	350	450	5	8	18	16
FLS 250	FF 500	500	450	550	5	8	18	18
FLS 280	FF 500	500	450	550	5	8	18	22

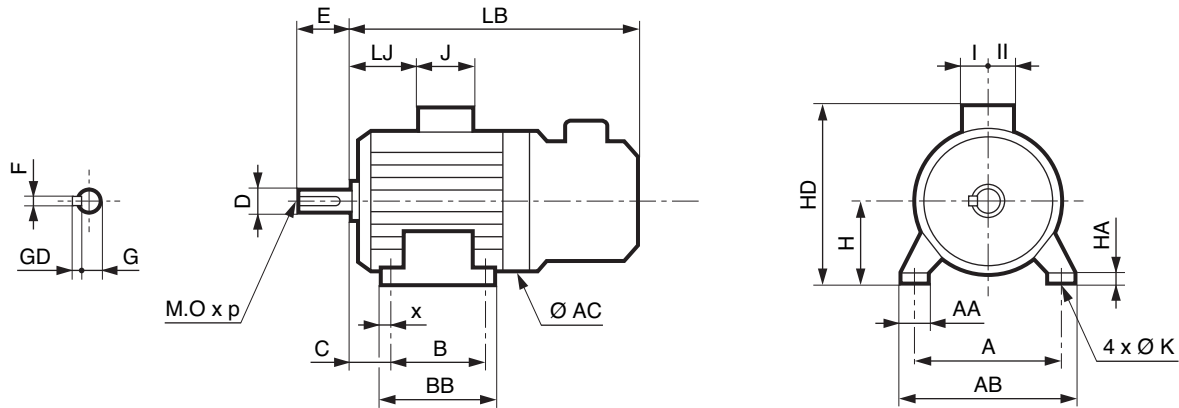
FCPL asynchronous brake motors FLS FCPL

Dimensions

Dimensions of the FCPL poles 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
FLS 160 M	254	294	210	294	108	20	65	14	24	160	345	385	668	50	160	80	80
FLS 160 L	254	294	254	294	108	20	65	14	24	160	345	385	668	50	160	80	80
FLS 180 MR	279	324	241	295	121	25	80	14	28	180	345	405	683	50	160	80	80
FLS 180 L	279	330	279	335	121	25	68	14	40	180	384	460	752	55	220	128	128
FLS 200 L	318	374	305	361	133	28	80	18	50	200	410	515	835	65	220	128	128
FLS 225 ST	356	420	286	367	149	28	100	18	35	225	410	540	924	65	220	128	128
FLS 225 M	356	426	311	375	149	32	80	18	27	225	481	656	1078	70	352	173	210
FLS 250 M	406	476	349	413	168	32	80	22	27	250	481	681	1158	70	352	173	210
FLS 280 S	457	527	368	432	190	32	80	22	27	280	505	711	1158	70	352	173	210
FLS 280 M	457	527	419	483	190	32	80	22	27	280	505	711	1258	70	352	173	210

Output shaft

Type	F	GD	D	G	E	O	p
FLS 160 M	12	8	42 k6	37	110	16	36
FLS 160 L	12	8	42 k6	37	110	16	36
FLS 180 MR	14	9	48 k6	42.5	110	16	36
FLS 180 L	14	9	48 k6	42.5	110	16	36
FLS 200 L	16	10	55 m6	49	110	20	42
FLS 225 ST	18	11	60 m6	53	140	20	42
FLS 225 M	18	11	60 m6	53	140	20	42
FLS 250 M	18	11	65 m6	58	140	20	42
FLS 280 S	20	12	75 m6	67.5	140	20	42
FLS 280 M	20	12	75 m6	67.5	140	20	42

