

FLS



Atmospheres containing explosive dust totally enclosed three-phase asynchronous motors

CATEGORY 3
ZONE 22
Non conductive dust

General information



Three-phase TEFV induction motors, FLS series with cast iron housing, conforming to IEC 34, 72, EN 50281 power 0.18 to 750 kW, frame size 80 to 450 mm.

- Single speed: 2, 4, 6 and 8 poles: 230/400 V or 400 V Δ , 50 Hz.
- Two-speed: (on request) for general or centrifugal applications 2/4, 4/6 and 6/8 poles 400 V Y or Δ .

IP 55 protection
suitable for the harshest environments.

Motors for variable speed operation

- fitted with thermal probes (obligatory),
- on consultation (to be selected).

Finish: cast iron housing

Assembled using protected fixing accessories. Paint finish **RAL 6000 (green)**.

Shaft end and flange protected against atmospheric corrosion.

Individual anti-shock packaging.

Mains supply

- Standard construction in accordance with IEC 38:

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

- 400 V Δ +10% -10% at 50 Hz.

A

Description of the FLS cast iron three-phase motors - zone 22



II 3DT 125 °C

Component	Materials	Remarks
Housing with cooling fins	Cast iron	- with integral feet, or without feet • 4, 6 or 8 fixing holes for foot mounted housings • lifting rings for frame sizes ≥ 100 - earth terminal on foot or fin
Stator	Insulated low carbon magnetic steel laminations Insulated electroplated copper	- low carbon content guarantees long term lamination pack stability - assembled slots - semi-enclosed slots - insulation system class F
Rotor	Insulated low carbon magnetic steel laminations Aluminium (A5L) or copper	- inclined cage bars - rotor cage pressure die cast in aluminium (or alloy for special applications) or soldered in copper - shrink-fitted to shaft, or keyed for soldered rotors - rotor balanced dynamically class A - 1/2 key
Shaft	Steel	- for frame size ≤ 132: • shaft end fitted with screw and washer • captive drive key with rounded ends - for frame size ≥ 160: • tapped hole • open keyway
End shields	Cast iron	
Bearings and lubrication		- set ball bearings C3 - type ZZ "greased for life" up to frame size 132 - semi-protected or open type from frame size 160, regreasable - NDE bearings preloaded up to 315 S, preloaded at DE from frame size 315 M upwards
Labyrinth seals Lipseals	Plastic, or steel, or synthetic rubber	- labyrinth seal at drive end for foot mounted motors, frame size ≤ 132 - lipseal at drive end for foot and flange mounted or flange-mounted motors, frame size ≤ 132 - lipseal at non drive end for all motors ≤ 132 - lipseal at drive end and non drive end for frame sizes 160 to 225 MT inclusive - labyrinth seal at drive end and non drive end for frame sizes ≥ 355 LK - decompression grooves for frame size 225 M to 355 LD
Fan	Composite material or metal	- 2 directions of rotation: straight blades
Fan cover	Pressed steel	- fitted, on request, with a drip cover for operation in vertical position, shaft end facing down
Terminal box	Cast iron body for all frame sizes Cover in pressed steel for frame sizes 80 to 132; cast iron for larger frame sizes	- IP 55 - fitted with a terminal block with 6 terminals up to 355 LD, 6 or 12 terminals thereafter - terminal box supplied fitted with plastic cable glands up to 132 - sizes 160 to 450 cable gland baseplate without drilled holes (optional horn or cable gland) - 1 earth terminal in each terminal box
Paint		- system II - resistance to saline mist: 250 h (according to NFX 41002)

FLS

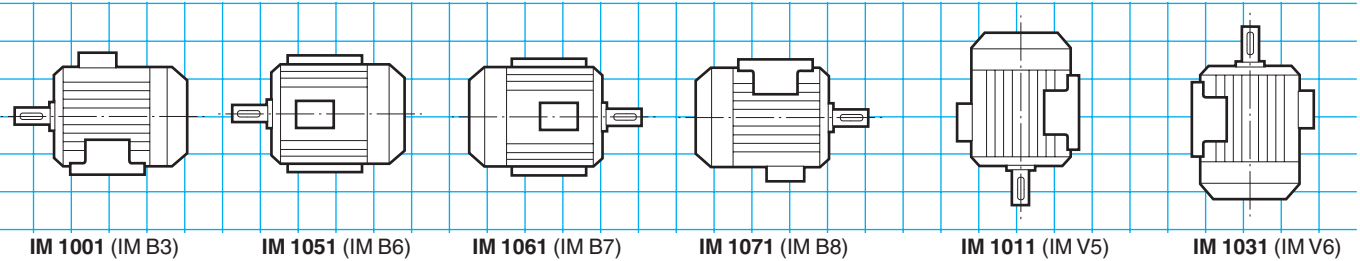


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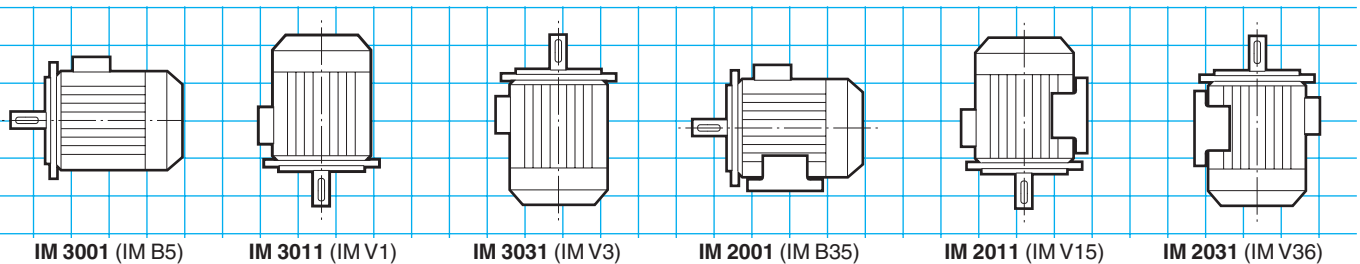
Mounting positions

Foot mounted motors



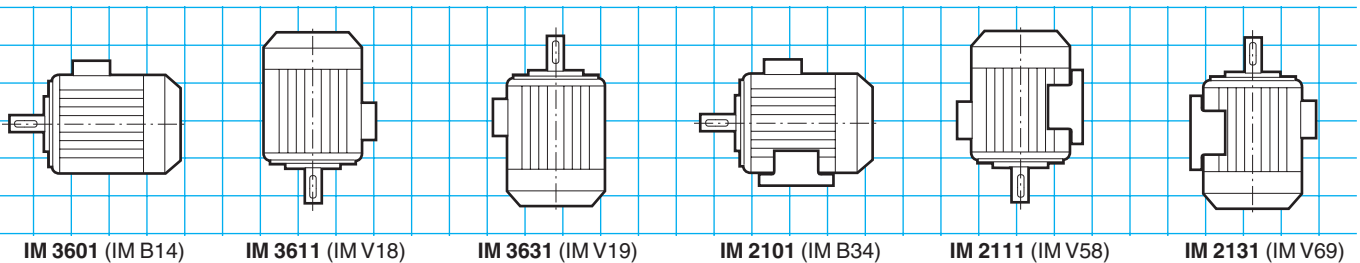
(FF) plain hole flange mounted motors

- Possible position IM 3001 (IM B5) up to 225 frame size inclusive

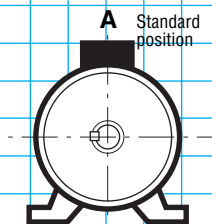


(FT) tapped hole flange mounted motors

- Possible position up to 132 frame size inclusive

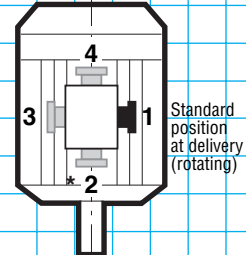


Position of the terminal box in relation to the motor shaft end



A: standard

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



1: standard

* Position 2 not recommended and not feasible
on plain hole flange standard motor (FF)



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Adaptation possibilities

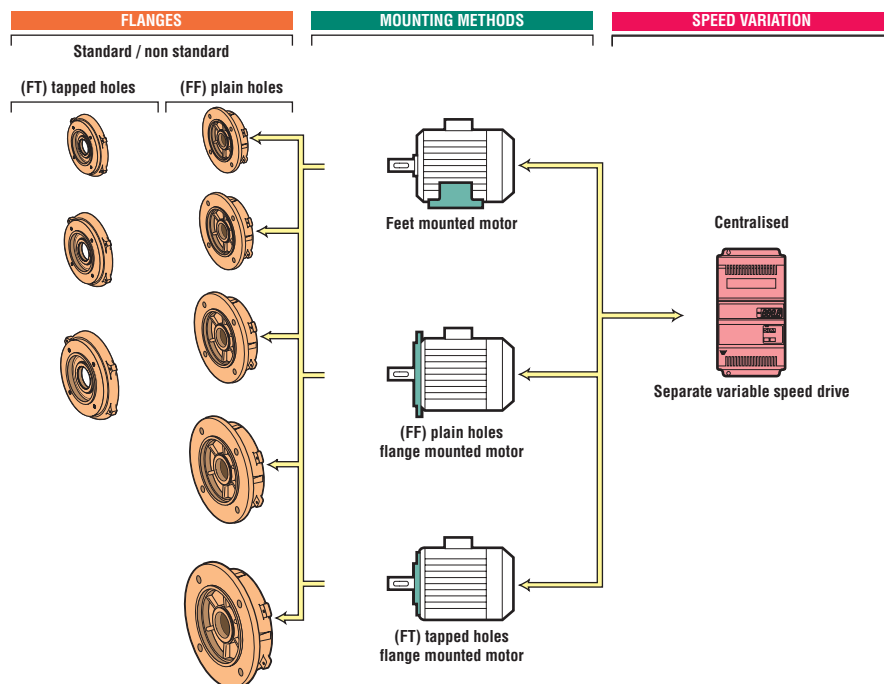
Leroy-Somer offers, for use with the FLS totally enclosed three-phase asynchronous motors, many options which meet the needs of highly diverse applications. They are described below and in the chapters relating to gearboxes and to speed variation.

For other variants or any special application, consult the technical specialists at Leroy-Somer.

The FLS motors may be associated to:

- gearboxes
- electronic variable speed drive (1)

(1) Conforming to the regulations of use as indicated by the standard IEC 34-17.



Designation / Codification

ATEX II 3D T 125°C	4P 1500 min⁻¹	FLS	315	M	132 kW	IM 1001 (IM B3)	400 VΔ	50 Hz	IP 55
Specific application	Speed polarity	Motor type	IEC 60072-1 frame size	Housing designation and builder index	Rated power	IEC 60034-7 mounting position	Power supply voltage	Power supply frequency	IEC 60034-5 protection

Codification example:

FLS three-phase asynchronous motor 1500 min⁻¹, 132 kW IM 1001 (IM B3), 400 V Δ - ATEX zone 22

Designation

Code

4P FLS 315 M 132 kW

IM 1001 (IM B3) 400 V Δ - Zone 22 **ZA2 13 413**

The table above is an example.

It allows the creation of the designation for the required product.

This designation corresponds to a product code.

The product codes that are present in the selection grids can be used directly.

They simplify the ordering process.

The codification table is incorporated in the price list with the designations list.

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Selection

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IP 55 - 50 Hz - Class F - Δ T 80 K - 230 V Δ / 400 V Y - S1
II - 3D - T 125 °C

2
poles
3000 min⁻¹

	Rated power	Rated speed	Rated torque	Rated current	Power factor			Efficiency IEC 60034-2; 1996			Starting current/ Rated current	Starting torque/ Rated torque	Maximum torque/ Rated torque	Moment of inertia	Weight	Noise
	P _N	N _N	M _N	I _N (400V)	Cos Phi			η			Id / In	Md/Mn	M _m /M _N	J	IM B3	LP
Type	kW	min-1	Nm	A	4/4	3/4	2/4	4/4	3/4	2/4				kg.m2	kg	db(A)
FLS 80 L	0.75	2840	2.52	1.6	0.86	0.84	0.76	76	76	73	5.9	2.4	2.2	0.001	15	61
FLS 80 L	1.1	2837	3.7	2.4	0.84	0.77	0.65	79.5	78.5	76.6	5.6	2.7	2.4	0.001	18	61
FLS 90 S	1.5	2870	4.99	3.3	0.81	0.75	0.64	82	81	79	7.3	3.0	3.1	0.001	21	64
FLS 90 L	2.2	2862	7.34	4.3	0.88	0.82	0.71	84.5	84.2	82.5	8.1	3.8	3.6	0.002	26	64
FLS 100 LK	3	2925	9.79	5.5	0.91	0.89	0.85	86	84	83	8.4	2.5	3.1	0.007	42	66
FLS 112 M	4	2940	13	7.5	0.89	0.87	0.81	86.5	86	84	8.7	3.0	3.5	0.008	48	69
FLS 132 S	5.5	2940	17.9	10.6	0.86	0.84	0.79	87	85.5	84	7.6	2.4	3.0	0.017	67	72
FLS 132 S	7.5	2950	24.3	14.1	0.87	0.85	0.81	88	88	87	8.9	2.7	3.5	0.024	70	72
FLS 160 MA	11	2948	35.8	20	0.90	0.88	0.82	88.9	88.8	87.2	8.4	2.8	2.4	0.037	97	74
FLS 160 MB	15	2940	48.8	27	0.90	0.88	0.82	90.1	90	88.4	8.1	2.8	2.3	0.043	108	74
FLS 160 L	18.5	2939	60.1	33	0.90	0.88	0.82	90.8	90.6	89	7.7	2.6	2.2	0.057	126	74
FLS 180 MR	22	2941	71.5	40	0.87	0.87	0.80	90.5	90.3	88.4	8.6	3.5	2.6	0.065	135	75
FLS 200 LA	30	2950	97.1	52	0.90	0.91	0.89	91.5	91.4	90	7.7	2.5	2.0	0.13	245	75
FLS 200 LB*	37	2954	119	63	0.90	0.89	0.84	93.4	93.3	92.3	8.1	2.9	2.3	0.16	265	75
FLS 225 MT*	45	2950	145	77	0.90	0.89	0.85	93.7	93.6	92.7	7.8	2.7	2.2	0.19	290	76
FLS 250 M*	55	2966	177	94	0.89	0.87	0.81	94.6	94.6	93.7	8.0	2.5	2.3	0.44	405	77
FLS 280 S*	75	2965	242	127	0.90	0.89	0.81	94.6	94.1	92.6	8.4	2.7	2.3	0.47	505	77
FLS 280 M*	90	2961	290	147	0.92	0.91	0.88	95.1	95.1	94.5	7.7	2.6	2.4	0.53	560	77
FLS 315 ST	110	2974	353	178	0.93	0.91	0.86	95.8	95.6	94.8	8.8	2.8	3.0	1.08	850	77
FLS 315 M	132	2962	426	221	0.90	0.89	0.87	95.4	95.4	94.7	6.9	1.8	2.1	1.71	1000	84
FLS 315 LA	160	2969	515	272	0.89	0.87	0.85	95.4	94.9	92.8	7.4	2.0	2.3	1.71	1050	84
FLS 315 LB	200	2967	644	342	0.88	0.86	0.80	95.3	95.1	93.8	7.9	2.3	2.2	1.99	1150	84
FLS 355 LA	250	2978	802	419	0.89	0.87	0.85	95.7	95.4	94.5	7.4	2.1	2.3	3.39	1400	84
FLS 355 LB	275	2980	881	464	0.89	0.90	0.86	96.2	96	95	8.4	2.3	2.9	3.39	1500	84
FLS 355 LB*	315	2976	1011	526	0.90	0.89	0.89	95.5	95.2	95.2	7.2	1.8	2.1	3.39	1500	84
FLS 355 LC	330	2980	1058	560	0.88	0.86	0.81	96.6	96.3	95.4	7.9	1.9	2.6	3.39	1915	84
FLS 355 LC	355	2979	1138	591	0.90	0.88	0.83	95.8	95.5	95.5	8.5	2.3	2.4	4.03	1915	84
FLS 355 LD*	400	2977	1283	669	0.89	0.87	0.82	95.9	95.6	95.6	7.3	2.0	2.1	4.03	1915	84

• Temperature rise class F

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Selection

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IP 55 - 50 Hz - Class F - Δ T 80 K - 230 V Δ / 400 V Y - S1
II - 3D - T 125 °C

2
poles
3000 min⁻¹

A

Type	Rated power at 50 Hz P _N kW	IM 1001 (IM B3)		IM 3001 (IM B5)		IM 2001 (IM B35)		IM 3601 (IM B14)	
		Code	Qty	Code	Qty	Code	Qty	Code	Qty
FLS 80 L	0.75	ZA2 75 119	3	ZA2 75 121	3	ZA2 75 1C1	2	ZA2 75 123	2
FLS 80 L	1.1	ZA2 11 219	3	ZA2 11 221	3	ZA2 11 2C1	2	ZA2 11 223	2
FLS 90 S	1.5	ZA2 15 218	3	ZA2 15 221	3	ZA2 15 2C1	2	ZA2 15 223	2
FLS 90 L	2.2	ZA2 22 207	3	ZA2 22 209	3	ZA2 22 2A9	2	ZA2 22 211	2
FLS 100 LK	3	ZA2 30 207	3	ZA2 30 209	3	ZA2 30 2A9	2	ZA2 30 211	2
FLS 112 M	4	ZA2 40 207	2	ZA2 40 209	2	ZA2 40 2A9	2	ZA2 40 211	2
FLS 132 S	5.5	ZA2 55 213	2	ZA2 55 215	2	ZA2 55 2B5	2	ZA2 55 247	2
FLS 132 S	7.5	ZA2 75 207	2	ZA2 75 209	2	ZA2 75 2A9	1	ZA2 75 211	2
FLS 160 MA	11	ZA2 11 313	1	ZA2 11 315	1	ZA2 11 3B5	1		
FLS 160 MB	15	ZA2 15 313	1	ZA2 15 315	1	ZA2 15 3B5	1		
FLS 160 L	18.5	ZA2 18 313	1	ZA2 18 315	1	ZA2 18 3B5	1		
FLS 180 MR	22	ZA2 22 313	1	ZA2 22 315	1	ZA2 22 3B5	1		
FLS 200 LA	30	ZA2 30 313	1	ZA2 30 315	1	ZA2 30 3B5	1		
FLS 200 LB	37	ZA2 37 313	1	ZA2 37 315	1	ZA2 37 3B5	1		
FLS 225 MT	45	ZA2 45 313	1			ZA2 45 3B5	1		
FLS 250 M	55	ZA2 55 313	1			ZA2 55 3B5	1		
FLS 280 S	75	ZA2 75 313	1			ZA2 75 3B5	1		
FLS 280 M	90	ZA2 90 313	1			ZA2 90 3B5	1		
FLS 315 ST	110	ZA2 11 413	1			ZA2 11 4B5	1		
FLS 315 M	132	ZA2 13 413	1			ZA2 13 4B5	1		

Selection example:

Speed:	3000 min ⁻¹ - 2 poles
Power:	2.2 kW
Mounting and position:	IM 3001 (IM B5)
Mains supply voltage:	230/400 V
Application:	ATEX zone 22

Designation :

2P FLS 90 L 2.2 kW IM 3001 (IM B5)
230/400 V

Code: ZA2 22 209

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IP 55 - 50 Hz - Class F - Δ T 80 K - 230 V Δ / 400 V Y - S1
II - 3D - T 125 °C

4
poles
1500 min⁻¹

	Rated power	Rated speed	Rated torque	Rated current	Power factor			Efficiency IEC 60034-2; 1996			Starting current/ Rated current	Starting torque/ Rated torque	Maximum torque/ Rated torque	Moment of inertia	Weight	Noise
	P _N	N _N	M _N	I _{N (400V)}	Cos Phi			η			Id / In	Md/Mn	M _M /M _N	J	IM B3	LP
Type	kW	min-1	Nm	A	4/4	3/4	2/4	4/4	3/4	2/4				kg.m2	kg	db(A)
FLS 80 L	0.55	1410	3.72	1.6	0.74	0.69	0.56	69.2	69.4	65	4.4	2.1	2.3	0.001	15	44
FLS 80 L	0.75	1425	5.03	2	0.75	0.70	0.58	72.5	73	70	5.7	3.0	2.8	0.002	17	44
FLS 90 S	1.1	1429	7.35	2.5	0.83	0.77	0.68	78	78.4	76	4.9	1.6	2.0	0.003	19	50
FLS 90 L	1.5	1428	10	3.3	0.82	0.74	0.62	79.5	79.4	77	5.3	1.8	2.3	0.003	21	50
FLS 90 L	1.8	1438	12	4	0.82	0.75	0.63	80.1	80.8	79	5.9	2.2	3.3	0.004	23	50
FLS 100 LK	2.2	1457	14.4	4.6	0.83	0.78	0.67	83.8	83.7	82.2	6.3	2.0	2.5	0.008	41	52
FLS 100 LK	3	1454	19.7	6.2	0.82	0.76	0.64	84.7	84.9	83.4	6.5	2.1	2.6	0.009	44	52
FLS 112 M	4	1462	26.1	8.4	0.81	0.74	0.62	85.1	94.4	82.2	7.4	2.6	3.1	0.012	48	52
FLS 132 S	5.5	1467	35.8	10.9	0.84	0.78	0.66	87	87.1	86	8.0	2.8	3.8	0.015	65	59
FLS 132 M	7.5	1450	49.4	14.3	0.87	0.82	0.75	87	87.2	85.5	7.3	1.9	2.9	0.019	70	59
FLS 132 M	9	1449	59.3	16.8	0.88	0.80	0.72	87.7	87.6	86.5	7.6	2.9	3.0	0.023	75	59
FLS 160 M	11	1464	72.2	21.4	0.83	0.79	0.68	88.9	88.9	87.3	7.8	2.6	3.3	0.06	103	65
FLS 160 L	15	1467	98.4	29.6	0.82	0.75	0.64	89.5	89.3	87.5	7.9	2.6	3.2	0.079	120	65
FLS 180 MR	18.5	1461	121	35.5	0.83	0.78	0.67	90.6	90.9	89.7	8.8	3.3	2.7	0.095	135	64
FLS 180 L	22	1466	143	41	0.86	0.82	0.72	91.8	92	91.1	7.0	3.0	3.0	0.137	184	64
FLS 200 L	30	1471	195	55	0.85	0.80	0.70	91.8	91.1	89.7	2.8	2.8	2.3	0.24	260	66
FLS 225 ST*	37	1476	239	69	0.82	0.76	0.64	93.6	93.9	93.4	7.2	3.2	3.3	0.28	290	66
FLS 225 M*	45	1483	290	78	0.87	0.83	0.74	94.5	94.5	93.9	7.1	2.6	2.9	0.7	388	68
FLS 250 M*	55	1479	355	102	0.82	0.80	0.71	94.2	94	93.6	6.6	2.4	2.0	0.7	395	68
FLS 280 S*	75	1483	483	137	0.82	0.79	0.66	94.9	95	94.3	7.8	3.0	3.0	0.815	475	68
FLS 280 M*	90	1478	582	161	0.85	0.81	0.72	95	94.5	93.9	7.5	2.9	2.5	1.015	565	68
FLS 315 ST	110	1482	709	203	0.83	0.79	0.71	94.5	96.5	96.7	7.3	2.9	2.7	1.83	850	70
FLS 315 M	132	1489	847	249	0.81	0.75	0.65	94.5	93.8	92.1	8.5	3.2	2.7	2.91	1000	73
FLS 315 LA	160	1489	1032	298	0.81	0.76	0.64	95.5	95.3	94.3	8.4	2.5	3.2	3.4	1050	73
FLS 315 LB*	200	1486	1284	376	0.80	0.74	0.66	95.4	95.2	94.7	8.2	2.3	3.5	3.4	1150	73
FLS 355 LA*	250	1490	1606	427	0.88	0.85	0.78	95.6	95.3	94.3	8.2	1.9	3.2	6.2	1510	80
FLS 355 LB*	300	1490	1924	509	0.88	0.87	0.81	95.8	95.6	94.9	7.4	1.8	2.9	6.2	1550	80
FLS 355 LC	315	1491	2019	596	0.81	0.75	0.63	95.5	95	93.6	9.7	2.2	3.7	6.5	1800	80
FLS 355 LC*	355	1491	2277	655	0.82	0.76	0.65	95.4	94.9	93.4	8.9	2.0	3.3	6.5	1800	80
FLS 355 LD*	400	1491	2565	700	0.86	0.84	0.77	96	95.7	95	7.0	2.1	2.3	7.4	1930	80
FLS 400 LB	400	1491	2562	691	0.87	0.85	0.78	96.6	96.3	95.4	8.0	2.0	2.6	11.7	2350	82
FLS 355 LKB	450	1489	2884	769	0.88	0.86	0.81	96	95.8	94.9	6.8	1.7	2.3	11.7	2320	82
FLS 400 LB	450	1489	2884	769	0.88	0.86	0.81	96	95.8	94.9	6.8	1.7	2.3	11.7	2350	87
FLS 355 LKB	500	1489	3205	870	0.87	0.85	0.79	95.7	95.4	94.2	6.4	1.8	2.1	11.7	2320	82
FLS 400 LVB	500	1489	3205	870	0.87	0.85	0.79	95.7	95.4	94.2	1.7	1.8	2.1	11.7	2350	87
FLS 450 LA	500	1493	3200	853	0.88	0.88	0.77	96.2	95.3	94.5	7.3	1.7	2.6	21	3100	82
FLS 450 LVA	550	1492	3523	961	0.88	0.88	0.82	96.4	96.3	95.3	6.5	1.6	2.3	21	3100	85
FLS 450 LB	630	1491	4030	1089	0.87	0.85	0.78	96.4	96.2	95.2	7.4	1.7	2.4	24	3450	82
FLS 450 LVB	675	1491	4323	1161	0.87	0.85	0.78	96.5	96.2	95.2	6.9	1.6	2.2	24	3450	85

• Temperature rise class F

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IP 55 - 50 Hz - Class F - Δ T 80 K - 230 V Δ / 400 V Y - S1
II - 3D - T 125 °C

4
poles
1500 min⁻¹

A

Type	Rated power at 50 Hz P _N kW	IM 1001 (IM B3)		IM 3001 (IM B5)		IM 2001 (IM B35)		IM 3601 (IM B14)	
		Code	Qty	Code	Qty	Code	Qty	Code	Qty
FLS 80 L	0.55	ZA4 55 119	3	ZA4 55 121	3	ZA4 55 1C1	2	ZA4 55 123	2
FLS 80 L	0.75	ZA4 75 125	3	ZA4 75 127	3	ZA4 75 1C7	2	ZA4 75 129	2
FLS 90 S	1.1	ZA4 11 225	3	ZA4 11 227	3	ZA4 11 2C7	2	ZA4 11 229	2
FLS 90 L	1.5	ZA4 15 213	3	ZA4 15 215	3	ZA4 15 2B5	2	ZA4 15 217	2
FLS 90 L	1.8	ZA4 18 213	3	ZA4 18 215	3	ZA4 18 2B5	2	ZA4 18 217	2
FLS 100 LK	2.2	ZA4 22 213	3	ZA4 22 215	3	ZA4 22 2B5	2	ZA4 22 217	2
FLS 100 LK	3	ZA4 30 213	3	ZA4 30 215	3	ZA4 30 2B5	2	ZA4 30 217	2
FLS 112 M	4	ZA4 40 207	2	ZA4 40 209	2	ZA4 40 2A9	2	ZA4 40 211	2
FLS 132 S	5.5	ZA4 55 213	2	ZA4 55 215	2	ZA4 55 2B5	2	ZA4 55 217	2
FLS 132 M	7.5	ZA4 75 225	2	ZA4 75 227	2	ZA4 75 2C7	2	ZA4 75 229	2
FLS 160 M	11	ZA4 11 325	1	ZA4 11 327	1	ZA4 11 3C7	1		
FLS 160 L	15	ZA4 15 325	1	ZA4 15 327	1	ZA4 15 3C7	1		
FLS 180 MR	18.5	ZA4 18 325	1	ZA4 18 327	1	ZA4 18 3C7	1		
FLS 180 L	22	ZA4 22 325	1	ZA4 22 327	1	ZA4 22 3C7	1		
FLS 200 L	30	ZA4 30 325	1	ZA4 30 327	1	ZA4 30 3C7	1		
FLS 225 ST	37	ZA4 37 325	1			ZA4 37 3C7	1		
FLS 225 M	45	ZA4 45 325	1			ZA4 45 3C7	1		
FLS 250 M	55	ZA4 55 325	1			ZA4 55 3C7	1		
FLS 280 S	75	ZA4 75 325	1			ZA4 75 3C7	1		
FLS 280 M	90	ZA4 90 325	1			ZA4 90 3C7	1		
FLS 315 ST	110	ZA4 11 425	1			ZA4 11 4C7	1		
FLS 315 M	132	ZA4 13 419	1			ZA4 13 4C1	1		
FLS 315 LA	160	ZA4 16 419	1			ZA4 16 4C1	1		
FLS 315 LB	200	ZA4 20 419	1			ZA4 20 4C1	1		
FLS 355 LA	250		-						

Selection example:

Speed:	1500 min ⁻¹ - 4 poles
Power:	55 kW
Mounting and position:	IM 1001 (IM B3)
Mains supply voltage:	230/400 V
Application:	ATEX zone 22

Designation:

4P FLS 250 M 55 kW IM 1001 (IM B3)
230/400 V

Code: ZA4 55 325

FLS



Atmospheres containing explosive dust totally enclosed three-phase asynchronous motors

CATEGORY 3
ZONE 22
Non conductive dust

Selection

IP 55 - 50 Hz - Class F - Δ T 80 K - 400 V Δ - S1
II - 3D - T 125 °C

2
poles
3000 min⁻¹

	Rated power	Rated speed	Rated torque	Rated current	Power factor	Efficiency IEC 60034-2; 1996	Starting current/ Rated current	Starting torque/ Rated torque	Maximum torque/ Rated torque	Moment of inertia	Weight	Noise
Type	P _N kW	N _N min ⁻¹	M _N Nm	I _{N (400V)} A	Cos Phi 4/4 3/4 2/4	η 4/4 3/4 2/4	Id / In	Md/Mn	M _m /M _N	J kg.m ²	IM B3 kg	LP db(A)
FLS 80 L	0.75	2840	2.52	1.6	0.86 0.84 0.76	76 76 73	5.9	2.4	2.2	0.001	15	61
FLS 80 L	1.1	2837	3.7	2.4	0.84 0.77 0.65	79.5 78.5 76.6	5.6	2.7	2.4	0.001	18	61
FLS 90 S	1.5	2870	4.99	3.3	0.81 0.75 0.64	82 81 79	7.3	3.0	3.1	0.001	21	64
FLS 90 L	2.2	2862	7.34	4.3	0.88 0.82 0.71	84.5 84.2 82.5	8.1	3.8	3.6	0.002	26	64
FLS 100 LK	3	2925	9.79	5.5	0.91 0.89 0.85	86 84 83	8.4	2.5	3.1	0.007	42	66
FLS 112 M	4	2940	13	7.5	0.89 0.87 0.81	86.5 86 84	8.7	3.0	3.5	0.008	48	69
FLS 132 S	5.5	2940	17.9	10.6	0.86 0.84 0.79	87 85.5 84	7.6	2.4	3.0	0.017	67	72
FLS 132 S	7.5	2950	24.3	14.1	0.87 0.85 0.81	88 88 87	8.9	2.7	3.5	0.024	70	72
FLS 160 MA	11	2948	35.8	20	0.90 0.88 0.82	88.9 88.8 87.2	8.4	2.8	2.4	0.037	97	74
FLS 160 MB	15	2940	48.8	27	0.90 0.88 0.82	90.1 90 88.4	8.1	2.8	2.3	0.043	108	74
FLS 160 L	18.5	2939	60.1	33	0.90 0.88 0.82	90.8 90.6 89	7.7	2.6	2.2	0.057	126	74
FLS 180 MR	22	2941	71.5	40	0.87 0.87 0.80	90.5 90.3 88.4	8.6	3.5	2.6	0.065	135	75
FLS 200 LA	30	2950	97.1	52	0.90 0.91 0.89	91.5 91.4 90	7.7	2.5	2.0	0.13	245	75
FLS 200 LB*	37	2954	119	63	0.90 0.89 0.84	93.4 93.3 92.3	8.1	2.9	2.3	0.16	265	75
FLS 225 MT*	45	2950	145	77	0.90 0.89 0.85	93.7 93.6 92.7	7.8	2.7	2.2	0.19	290	76
FLS 250 M*	55	2966	177	94	0.89 0.87 0.81	94.6 94.6 93.7	8.0	2.5	2.3	0.44	405	77
FLS 280 S*	75	2965	242	127	0.90 0.89 0.81	94.6 94.1 92.6	8.4	2.7	2.3	0.47	505	77
FLS 280 M*	90	2961	290	147	0.92 0.91 0.88	95.1 95.1 94.5	7.7	2.6	2.4	0.53	560	77
FLS 315 ST	110	2974	353	178	0.93 0.91 0.86	95.8 95.6 94.8	8.8	2.8	3.0	1.08	850	77
FLS 315 M	132	2962	426	221	0.90 0.89 0.87	95.4 95.4 94.7	6.9	1.8	2.1	1.71	1000	84
FLS 315 LA	160	2969	515	272	0.89 0.87 0.85	95.4 94.9 92.8	7.4	2.0	2.3	1.71	1050	84
FLS 315 LB	200	2967	644	342	0.88 0.86 0.80	95.3 95.1 93.8	7.9	2.3	2.2	1.99	1150	84
FLS 355 LA	250	2978	802	419	0.89 0.87 0.85	95.7 95.4 94.5	7.4	2.1	2.3	3.39	1400	84
FLS 355 LB	275	2980	881	464	0.89 0.90 0.86	96.2 96 95	8.4	2.3	2.9	3.39	1500	84
FLS 355 LB*	315	2976	1011	526	0.90 0.89 0.89	95.5 95.2 95.2	7.2	1.8	2.1	3.39	1500	84
FLS 355 LC	330	2980	1058	560	0.88 0.86 0.81	96.6 96.3 95.4	7.9	1.9	2.6	3.39	1915	84
FLS 355 LC	355	2979	1138	591	0.90 0.88 0.83	95.8 95.5 95.5	8.5	2.3	2.4	4.03	1915	84
FLS 355 LD*	400	2977	1283	669	0.89 0.87 0.82	95.9 95.6 95.6	7.3	2.0	2.1	4.03	1915	84

• Temperature rise class F

FLS



Atmospheres containing explosive dust totally enclosed three-phase asynchronous motors

Selection

CATEGORY 3
ZONE 22
Non conductive dust

IP 55 - 50 Hz - Class F - ΔT 80 K - 400 V Δ - S1
II - 3D - T 125 °C

2
poles
3000 min⁻¹

A

Type	Rated power at 50 Hz	IM 1001 (IM B3)		IM 3001 (IM B5)		IM 2001 (IM B35)		IM 3601 (IM B14)	
	P _N kW	Code	Qty	Code	Qty	Code	Qty	Code	Qty
FLS 100 LK	3	ZA2 30 208	3	ZA2 30 210	3	ZA2 30 2B0	2	ZA2 30 212	2
FLS 112 M	4	ZA2 40 208	2	ZA2 40 210	2	ZA2 40 2B0	2	ZA2 40 212	2
FLS 132 S	5.5	ZA2 55 214	2	ZA2 55 216	2	ZA2 55 2B6	2	ZA2 55 248	2
FLS 132 S	7.5	ZA2 75 208	2	ZA2 75 210	2	ZA2 75 2B0	2	ZA2 75 212	2
FLS 160 MA	11	ZA2 11 314	1	ZA2 11 316	1	ZA2 11 3B6	1		
FLS 160 MB	15	ZA2 15 314	1	ZA2 15 316	1	ZA2 15 3B6	1		
FLS 160 L	18.5	ZA2 18 314	1	ZA2 18 316	1	ZA2 18 3B6	1		
FLS 180 MR	22	ZA2 22 314	1	ZA2 22 316	1	ZA2 22 3B6	1		
FLS 200 LA	30	ZA2 30 314	1	ZA2 30 316	1	ZA2 30 3A6	1		
FLS 200 LB	37	ZA2 37 314	1	ZA2 37 316	1	ZA2 37 3A6	1		
FLS 225 MT	45	ZA2 45 314	1			ZA2 45 3B6	1		
FLS 250 M	55	ZA2 55 314	1			ZA2 55 3B6	1		
FLS 280 S	75	ZA2 75 314	1			ZA2 75 3B6	1		
FLS 280 M	90	ZA2 90 314	1			ZA2 90 3B6	1		
FLS 315 ST	110	ZA2 11 414	1			ZA2 11 4B6	1		
FLS 315 M	132	ZA2 13 414	1			ZA2 13 4B6	1		

Selection example:

Speed:	3000 min ⁻¹ - 2 poles
Power:	30 kW
Mounting and position:	IM 2001 (IM B35)
Mains supply voltage:	400 V
Application:	ATEX zone 22

Designation:

2P FLS 200 LA 30 kW IM 2001 (IM B35)
400 V

Code: ZA2 30 3A6

FLS



Atmospheres containing explosive dust totally enclosed three-phase asynchronous motors

CATEGORY 3
ZONE 22
Non conductive dust

Selection

IP 55 - 50 Hz - Class F - Δ T 80 K - 400 V Δ - S1
II - 3D - T 125 °C

4
poles
1500 min⁻¹

	Rated power	Rated speed	Rated torque	Rated current	Power factor			Efficiency IEC 60034-2; 1996			Starting current/ Rated current	Starting torque/ Rated torque	Maximum torque/ Rated torque	Moment of inertia	Weight	Noise
	P _N	N _N	M _N	I _{N (400V)}	Cos Phi			η			Id / In	Md/Mn	M _M /M _N	J	IM B3	LP
Type	kW	min-1	Nm	A	4/4	3/4	2/4	4/4	3/4	2/4				kg.m2	kg	db(A)
FLS 80 L	0.55	1410	3.72	1.6	0.74	0.69	0.56	69.2	69.4	65	4.4	2.1	2.3	0.001	15	44
FLS 80 L	0.75	1425	5.03	2	0.75	0.70	0.58	72.5	73	70	5.7	3.0	2.8	0.002	17	44
FLS 90 S	1.1	1429	7.35	2.5	0.83	0.77	0.68	78	78.4	76	4.9	1.6	2.0	0.003	19	50
FLS 90 L	1.5	1428	10	3.3	0.82	0.74	0.62	79.5	79.4	77	5.3	1.8	2.3	0.003	21	50
FLS 90 L	1.8	1438	12	4	0.82	0.75	0.63	80.1	80.8	79	5.9	2.2	3.3	0.004	23	50
FLS 100 LK	2.2	1457	14.4	4.6	0.83	0.78	0.67	83.8	83.7	82.2	6.3	2.0	2.5	0.008	41	52
FLS 100 LK	3	1454	19.7	6.2	0.82	0.76	0.64	84.7	84.9	83.4	6.5	2.1	2.6	0.009	44	52
FLS 112 M	4	1462	26.1	8.4	0.81	0.74	0.62	85.1	94.4	82.2	7.4	2.6	3.1	0.012	48	52
FLS 132 S	5.5	1467	35.8	10.9	0.84	0.78	0.66	87	87.1	86	8.0	2.8	3.8	0.015	65	59
FLS 132 M	7.5	1450	49.4	14.3	0.87	0.82	0.75	87	87.2	85.5	7.3	1.9	2.9	0.019	70	59
FLS 132 M	9	1449	59.3	16.8	0.88	0.80	0.72	87.7	87.6	86.5	7.6	2.9	3.0	0.023	75	59
FLS 160 M	11	1464	72.2	21.4	0.83	0.79	0.68	88.9	88.9	87.3	7.8	2.6	3.3	0.06	103	65
FLS 160 L	15	1467	98.4	29.6	0.82	0.75	0.64	89.5	89.3	87.5	7.9	2.6	3.2	0.079	120	65
FLS 180 MR	18.5	1461	121	35.5	0.83	0.78	0.67	90.6	90.9	89.7	8.8	3.3	2.7	0.095	135	64
FLS 180 L	22	1466	143	41	0.86	0.82	0.72	91.8	92	91.1	7.0	3.0	3.0	0.137	184	64
FLS 200 L	30	1471	195	55	0.85	0.80	0.70	91.8	91.1	89.7	2.8	2.8	2.3	0.24	260	66
FLS 225 ST*	37	1476	239	69	0.82	0.76	0.64	93.6	93.9	93.4	7.2	3.2	3.3	0.28	290	66
FLS 225 M*	45	1483	290	78	0.87	0.83	0.74	94.5	94.5	93.9	7.1	2.6	2.9	0.7	388	68
FLS 250 M*	55	1479	355	102	0.82	0.80	0.71	94.2	94	93.6	6.6	2.4	2.0	0.7	395	68
FLS 280 S*	75	1483	483	137	0.82	0.79	0.66	94.9	95	94.3	7.8	3.0	3.0	0.815	475	68
FLS 280 M*	90	1478	582	161	0.85	0.81	0.72	95	94.5	93.9	7.5	2.9	2.5	1.015	565	68
FLS 315 ST	110	1482	709	203	0.83	0.79	0.71	94.5	96.5	96.7	7.3	2.9	2.7	1.83	850	70
FLS 315 M	132	1489	847	249	0.81	0.75	0.65	94.5	93.8	92.1	8.5	3.2	2.7	2.91	1000	73
FLS 315 LA	160	1489	1032	298	0.81	0.76	0.64	95.5	95.3	94.3	8.4	2.5	3.2	3.4	1050	73
FLS 315 LB*	200	1486	1284	376	0.80	0.74	0.66	95.4	95.2	94.7	8.2	2.3	3.5	3.4	1150	73
FLS 355 LA*	250	1490	1606	427	0.88	0.85	0.78	95.6	95.3	94.3	8.2	1.9	3.2	6.2	1510	80
FLS 355 LB*	300	1490	1924	509	0.88	0.87	0.81	95.8	95.6	94.9	7.4	1.8	2.9	6.2	1550	80
FLS 355 LC	315	1491	2019	596	0.81	0.75	0.63	95.5	95	93.6	9.7	2.2	3.7	6.5	1800	80
FLS 355 LC*	355	1491	2277	655	0.82	0.76	0.65	95.4	94.9	93.4	8.9	2.0	3.3	6.5	1800	80
FLS 355 LD*	400	1491	2565	700	0.86	0.84	0.77	96	95.7	95	7.0	2.1	2.3	7.4	1930	80
FLS 400 LB	400	1491	2562	691	0.87	0.85	0.78	96.6	96.3	95.4	8.0	2.0	2.6	11.7	2350	82
FLS 355 LKB	450	1489	2884	769	0.88	0.86	0.81	96	95.8	94.9	6.8	1.7	2.3	11.7	2320	82
FLS 400 LB	450	1489	2884	769	0.88	0.86	0.81	96	95.8	94.9	6.8	1.7	2.3	11.7	2350	87
FLS 355 LKB	500	1489	3205	870	0.87	0.85	0.79	95.7	95.4	94.2	6.4	1.8	2.1	11.7	2320	82
FLS 400 LVB	500	1489	3205	870	0.87	0.85	0.79	95.7	95.4	94.2	1.7	1.8	2.1	11.7	2350	87
FLS 450 LA	500	1493	3200	853	0.88	0.88	0.77	96.2	95.3	94.5	7.3	1.7	2.6	21	3100	82
FLS 450 LVA	550	1492	3523	961	0.88	0.88	0.82	96.4	96.3	95.3	6.5	1.6	2.3	21	3100	85
FLS 450 LB	630	1491	4030	1089	0.87	0.85	0.78	96.4	96.2	95.2	7.4	1.7	2.4	24	3450	82
FLS 450 LVB	675	1491	4323	1161	0.87	0.85	0.78	96.5	96.2	95.2	6.9	1.6	2.2	24	3450	85

• Temperature rise class F

FLS



Atmospheres containing explosive dust totally enclosed three-phase asynchronous motors

Selection

CATEGORY 3
ZONE 22
Non conductive dust

IP 55 - 50 Hz - Class F - ΔT 80 K - 400 V Δ - S1
II - 3D - T 125 °C

4
poles
1500 min⁻¹

A

Type	Rated power at 50 Hz P _N kW	IM 1001 (IM B3)		IM 3001 (IM B5)		IM 2001 (IM B35)		IM 3601 (IM B14)	
		Code	Qty	Code	Qty	Code	Qty	Code	Qty
FLS 100 LK	3	ZA4 30 214	3	ZA4 30 216	3	ZA4 30 2B6	2	ZA4 30 218	2
FLS 112 M	4	ZA4 40 208	3	ZA4 40 210	3	ZA4 40 2B0	2	ZA4 40 212	2
FLS 132 S	5.5	ZA4 55 214	2	ZA4 55 216	2	ZA4 55 2B6	2	ZA4 55 218	2
FLS 132 M	7.5	ZA4 75 226	2	ZA4 75 228	2	ZA4 75 2C8	2	ZA4 75 230	2
FLS 160 M	11	ZA4 11 326	1	ZA4 11 328	1	ZA4 11 3C8	1		
FLS 160 L	15	ZA4 15 326	1	ZA4 15 328	1	ZA4 15 3C8	1		
FLS 180 MR	18.5	ZA4 18 326	1	ZA4 18 328	1	ZA4 18 3C8	1		
FLS 180 L	22	ZA4 22 326	1	ZA4 22 328	1	ZA4 22 3C8	1		
FLS 200 L	30	ZA4 30 326	1	ZA4 30 328	1	ZA4 30 3C8	1		
FLS 225 ST	37	ZA4 37 326	1			ZA4 37 3C8	1		
FLS 225 M	45	ZA4 45 326	1			ZA4 45 3C8	1		
FLS 250 M	55	ZA4 55 326	1			ZA4 55 3C8	1		
FLS 280 S	75	ZA4 75 326	1			ZA4 75 3C8	1		
FLS 280 M	90	ZA4 90 326	1			ZA4 90 3C8	1		
FLS 315 ST	110	ZA4 11 426	1			ZA4 11 4C8	1		
FLS 315 M	132	ZA4 13 420	1			ZA4 13 4C2	1		
FLS 315 LA	160	ZA4 16 412	1			ZA4 16 4C2	1		
FLS 315 LB	200	ZA4 20 412	1			ZA4 20 4C2	1		
FLS 355 LA	250	ZA4 25 410	1				-		
FLS 355 LB	300	ZA4 30 100	1				-		

Selection example:

Speed:	1500 min ⁻¹ - 4 poles
Power:	4 kW
Mounting and position:	IM 1001 (IM B3)
Mains supply voltage:	400 V
Application:	ATEX zone 22

Designation:

4P FLS 112 M 4 kW IM 1001 (IM B3)
400 V

Code: ZA4 40 208

FLS



Atmospheres containing explosive dust totally enclosed three-phase asynchronous motors

CATEGORY 3
ZONE 22
Non conductive dust

Selection

IP 55 - 50 Hz - Class F - Δ T 80 K - 230 V Δ / 400 V Y or 400 V Δ - S1
II - 3D - T 125 °C

6
poles
1000 min⁻¹

	Rated power	Rated speed	Rated torque	Rated current	Power factor			Efficiency IEC 60034-2; 1996			Starting current/ Rated current	Starting torque/ Rated torque	Maximum torque/ Rated torque	Moment of inertia	Weight	Noise
Type	P _N kW	N _N min-1	M _N Nm	I _N (400V) A	Cos Phi			η			Id / In	Md/Mn	M _M /M _N	J kg.m2	IM B3 kg	LP db(A)
FLS 80 L	0.25	950	2.51	0.8	0.74	0.68	0.55	60.3	58.0	54.0	3.6	2.0	1.9	0.002	14	40
FLS 80 L	0.37	940	3.76	1.2	0.74	0.68	0.55	61.0	59.0	55.0	3.8	1.9	2.1	0.003	15	40
FLS 80 L	0.55	955	5.5	1.8	0.67	0.59	0.46	65.0	64.0	60.0	4.4	2.5	2.6	0.004	16	40
FLS 90 S	0.75	940	7.62	2.1	0.80	0.75	0.65	65.2	64.0	60.0	3.5	2.0	2.2	0.004	21	45
FLS 90 L	1.1	940	11.2	2.7	0.81	0.76	0.66	73.5	73.0	70.0	4.8	1.8	2.2	0.005	23	45
FLS 100 LK	1.5	955	15	3.5	0.78	0.72	0.61	78.3	78.0	76.0	6.3	2.2	2.8	0.013	41	48
FLS 112 M	2.2	960	21.9	5.2	0.77	0.71	0.59	80.0	80.0	79.0	5.5	2.3	2.4	0.015	45	48
FLS 132 S	3	953	30.1	6.9	0.76	0.74	0.63	81.9	81.0	80.0	5.3	2.2	2.4	0.038	71	55
FLS 132 M	4	970	39.4	9	0.78	0.72	0.61	82.1	82.0	81.0	6.7	2.8	2.7	0.052	76	55
FLS 132 MU	5.5	970	54.1	12.2	0.79	0.74	0.63	82.1	82.0	81.0	7.1	3.2	2.7	0.060	88	55
FLS 160 M	7.5	968	74	16	0.79	0.72	0.59	85.0	84.6	82.0	4.3	1.5	2.3	0.085	100	56
FLS 160 L	11	966	109	23	0.80	0.74	0.63	85.4	85.4	83.4	5.0	1.5	2.3	0.12	128	56
FLS 180 L	15	975	147	30	0.81	0.78	0.69	88.5	88.7	87.8	6.8	2.1	3.1	0.2	170	63
FLS 200 LA	18.5	975	181	36	0.83	0.77	0.68	90.1	90.2	89.0	7.0	2.2	2.4	0.29	240	65
FLS 200 LB	22	973	216	44	0.81	0.74	0.65	90.7	89.6	88.3	6.7	2.5	1.7	0.31	260	65
FLS 225 M	30	984	293	59	0.80	0.74	0.62	92.9	92.9	91.7	1.5	2.5	2.6	0.94	392	66
FLS 250 M	37	983	362	73	0.79	0.74	0.62	92.7	92.8	91.6	7.0	2.4	2.5	0.94	394	66
FLS 280 S	45	979	443	87	0.81	0.76	0.67	92.4	92.8	92.1	6.2	2.3	2.1	1.13	455	66
FLS 280 M	55	983	538	105	0.81	0.75	0.64	93.1	93.0	92.1	7.3	2.5	2.6	1.26	532	66
FLS 315 ST	75	987	726	133	0.86	0.85	0.79	94.5	94.7	94.2	6.3	2.4	2.3	1.8	850	76
FLS 315 M	90	987	871	161	0.85	0.80	0.73	95.1	95.0	94.6	6.6	1.8	2.7	2.6	1000	76
FLS 315 LA	110	983	1069	199	0.85	0.83	0.73	94.0	94.2	93.4	5.9	1.6	2.5	2.6	1050	76
FLS 315 LB	132	988	1276	241	0.83	0.77	0.67	95.4	95.3	94.6	7.3	2.0	3.4	3.5	1125	76
FLS 315 LB	150	992	1453	292	0.78	0.73	0.60	95.2	94.9	93.7	7.8	1.8	3.0	3.5	1125	76
FLS 355 LA	185	987	1790	345	0.81	0.77	0.65	95.6	95.5	94.9	7.2	2.0	3.6	5.4	1415	78
FLS 355 LB	220	988	2126	413	0.81	0.76	0.66	95.1	94.8	93.8	7.2	2.0	2.6	6.3	1535	78
FLS 355 LD	250	993	2404	437	0.82	0.79	0.72	96.1	96.0	95.3	7.2	1.8	2.3	8.6	1935	78
FLS 355 LD	300	992	2888	552	0.82	0.79	0.71	95.7	95.6	94.7	6.1	1.6	2.1	8.6	1935	78
FLS 355 LKB	350	993	3362	628	0.84	0.81	0.74	95.8	95.7	94.9	6.5	1.9	2.2	17	2350	78
FLS 400 LB	350	993	3362	628	0.84	0.81	0.74	95.8	95.7	94.9	6.5	1.9	2.2	17	2350	78
FLS 450 LA	400	996	3835	745	0.81	0.76	0.66	95.7	95.1	93.7	7.9	2.0	2.8	33	3230	80
FLS 400 LKB	500	996	4794	952	0.79	0.74	0.63	96.0	95.5	94.2	8.0	2.1	2.5	35	3350	80
FLS 450 LB	500	996	4794	952	0.79	0.74	0.63	96.0	95.5	94.2	8.0	2.1	2.5	35	3400	80
FLS 450 LB	550	994	5273	1034	0.80	0.74	0.63	96.0	95.5	94.2	7.4	1.9	2.3	35	3400	80

FLS



Atmospheres containing explosive dust totally enclosed three-phase asynchronous motors

Selection

CATEGORY 3
ZONE 22
Non conductive dust

IP 55 - 50 Hz - Class F - Δ T 80 K - 230 V Δ / 400 V Y or 400 V Δ - S1
II - 3D - T 125 °C

6
poles
1000 min⁻¹

A

Type	Rated power at 50 Hz P _N kW	IM 1001 (IM B3)		IM 3001 (IM B5)	
		Code	Qty	Code	Qty
FLS 80 L	0.25		-		-
FLS 80 L	0.37		-		-
FLS 80 L	0.55		-		-
FLS 90 S	0.75		-		-
FLS 90 L	1.1		-		-
FLS 100 LK	1.5		-		-
FLS 112 M	2.2		-		-
FLS 132 S	3		-		-
FLS 132 M	4		-		-
FLS 132 MR	5.5		-		-
FLS 160 M	7.5		-		-
FLS 160 L	11		-		-
FLS 180 L	15		-		-
FLS 200 LA	18.5		-		-
FLS 200 LB	22		-		-
FLS 225 M	30		-		-
FLS 250 M	37		-		-
FLS 280 S	45		-		-
FLS 280 M	55		-		-
FLS 315 ST	75		-		-
FLS 315 M	90		-		-

FLS



Atmospheres containing explosive dust totally enclosed three-phase asynchronous motors

CATEGORY 3
ZONE 22
Non conductive dust

Selection

IP 55 - 50 Hz - Class F - Δ T 80 K - 230 V Δ / 400 V Y or 400 V Δ - S1
II - 3D - T 125 °C

8
poles
750 min⁻¹

	Rated power	Rated speed	Rated torque	Rated current	Power factor			Efficiency IEC 60034-2; 1996			Starting current/ Rated current	Starting torque/ Rated torque	Maximum torque/ Rated torque	Moment of inertia	Weight	Noise
Type	P _N kW	N _N min ⁻¹	M _N Nm	I _{N (400V)} A	Cos Phi			η			I _d / I _n	M _d /M _n	M _m /M _n	J kg.m ²	IM B3 kg	LP db(A)
					4/4	3/4	2/4	4/4	3/4	2/4						
FLS 80 L	0.18	710	2.42	0.8	0.64	0.58	0.46	52.3	51	45	3.0	1.7	1.7	0.003	14	40
FLS 80 L	0.25	720	3.32	1.1	0.6	0.55	0.44	54.5	54	46	3.2	2.0	2.4	0.004	16	40
FLS 90 S	0.37	685	5.16	1.2	0.71	0.57	0.45	64	63	59	3.5	1.6	1.6	0.004	21	45
FLS 90 L	0.55	695	7.56	1.7	0.72	0.59	0.46	63	58	54	3.3	1.8	1.8	0.005	23	45
FLS 100 LK	0.75	720	9.95	2.3	0.68	0.6	0.47	70.9	70	66	4.1	1.9	1.9	0.009	41	48
FLS 100 LK	1.1	720	14.6	3.8	0.62	0.56	0.44	68	66	60	4.1	1.8	2.4	0.012	43	48
FLS 112 M	1.5	725	19.8	4.8	0.63	0.57	0.45	72.5	72	68	4.0	2.1	2.2	0.015	45	49
FLS 132 S	2.2	715	29.4	7.2	0.6	0.55	0.44	74	74	72	3.2	1.4	1.8	0.025	71	54
FLS 132 M	3	705	40.6	9.1	0.63	0.57	0.46	76	76	73	3.1	1.3	1.9	0.033	81	54
FLS 160 MA	4	710	53.8	11.3	0.63	0.56	0.44	81.5	82	80.1	3.8	1.4	1.7	0.062	105	56
FLS 160 MB	5.5	710	74	15	0.65	0.58	0.46	82	82.5	80.6	3.8	1.4	1.7	0.071	111	56
FLS 160 L	7.5	715	100	20	0.65	0.58	0.46	83	93.5	81.6	3.8	1.5	1.8	0.086	128	56
FLS 180 L	11	724	145	27	0.7	0.63	0.51	85.1	84.9	82.4	3.9	1.4	1.7	0.21	175	62
FLS 200 L	15	729	197	34	0.72	0.66	0.53	88.1	88	86.2	5.0	1.8	2.6	0.32	265	62
FLS 225 ST	18.5	727	243	41	0.73	0.67	0.54	89	88.9	87.1	5.0	1.6	2.3	0.38	285	65
FLS 225 M	22	732	287	48	0.72	0.68	0.58	92.1	92.6	91.7	5.9	1.8	2.5	0.83	388	65
FLS 250 M	30	729	393	61	0.78	0.74	0.64	91.2	91.7	90.8	6.2	1.8	2.5	0.83	393	65
FLS 280 S	37	723	489	75	0.78	0.74	0.64	92	92.1	91	4.5	1.3	1.8	1.4	472	65
FLS 280 M	45	730	589	102	0.7	0.66	0.55	91.7	91.8	90.7	6.0	2.3	3.2	1.75	563	65
FLS 315 ST	55	738	712	102	0.83	0.8	0.71	94.2	94.5	94	7.4	2.1	3.0	2.7	850	75
FLS 315 M	75	743	964	147	0.78	0.76	0.68	94.8	95	94.3	7.4	2.0	2.2	3.1	1000	78
FLS 315 LA	90	742	1158	177	0.78	0.76	0.68	94.7	94.9	94.2	6.7	1.9	2.1	4.2	1030	78
FLS 315 LB	110	742	1416	222	0.76	0.74	0.66	94.8	95	94.3	7.2	2.0	2.2	5.1	1125	78
FLS 355 LA	132	741	1701	258	0.78	0.75	0.68	95.3	95.2	94.2	6.7	2.0	2.2	5.5	1415	78
FLS 355 LB	160	741	2062	312	0.78	0.75	0.68	95.3	95.2	94.2	6.9	2.0	2.2	6	1535	78
FLS 355 LD	200	741	2577	364	0.84	0.81	0.74	95	94.9	93.9	6.7	1.6	1.7	6.5	1935	78
FLS 355 LKA	250	743	3213	464	0.82	0.77	0.67	95.3	95.1	94.2	6.8	1.6	2.2	18.5	2170	78
FLS 400 LA	250	743	3213	464	0.82	0.77	0.67	95.3	95.1	94.2	6.8	1.6	2.2	18.5	2200	78
FLS 355 LKB	300	741	3866	552	0.83	0.78	0.68	95	94.8	94	6.0	1.1	1.5	21.6	2370	78
FLS 400 LB	300	741	3866	552	0.83	0.78	0.68	95	94.8	94	6.0	1.1	1.5	21.6	2400	78
FLS 400 LKA	350	746	4480	652	0.81	0.78	0.69	96.2	95.9	95	6.2	1.7	1.4	40	3100	78
FLS 450 LA	350	746	4480	652	0.81	0.78	0.69	96.2	95.9	95	6.2	1.7	1.4	40	3150	78
FLS 400 LKB	400	746	5120	737	0.82	0.79	0.71	96.1	95.8	94.9	6.7	1.9	1.6	47	3420	78
FLS 450 LB	400	746	5120	737	0.82	0.79	0.71	96.1	95.8	94.9	6.7	1.9	1.6	47	3470	78

FLS



Atmospheres containing explosive dust totally enclosed three-phase asynchronous motors

Selection

CATEGORY 3
ZONE 22
Non conductive dust

IP 55 - 50 Hz - Class F - Δ T 80 K - 230 V Δ / 400 V Y or 400 V Δ - S1
II - 3D - T 125 °C

8
poles
750 min⁻¹



A

Type	Rated power at 50 Hz P _N kW	IM 1001 (IM B3)		IM 3001 (IM B5)	
		Code	Qty	Code	Qty
FLS 80 L	0.18		-		-
FLS 80 L	0.25		-		-
FLS 90 S	0.37		-		-
FLS 90 L	0.55		-		-
FLS 100 LK	0.75		-		-
FLS 100 LK	1.1		-		-
FLS 112 M	1.5		-		-
FLS 132 S	2.2		-		-
FLS 132 M	3		-		-
FLS 160 MA	4		-		-
FLS 160 MB	5.5		-		-
FLS 160 L	7.5		-		-
FLS 180 L	11		-		-
FLS 200 L	15		-		-
FLS 225 ST	18.5		-		-
FLS 225 M	22		-		-
FLS 250 M	30		-		-
FLS 280 S	37		-		-
FLS 280 M	45		-		-
FLS 315 ST	55		-		-
FLS 315 M	75		-		-

FLS



Atmospheres containing explosive dust totally enclosed three-phase asynchronous motors

CATEGORY 3
ZONE 22
Non conductive dust

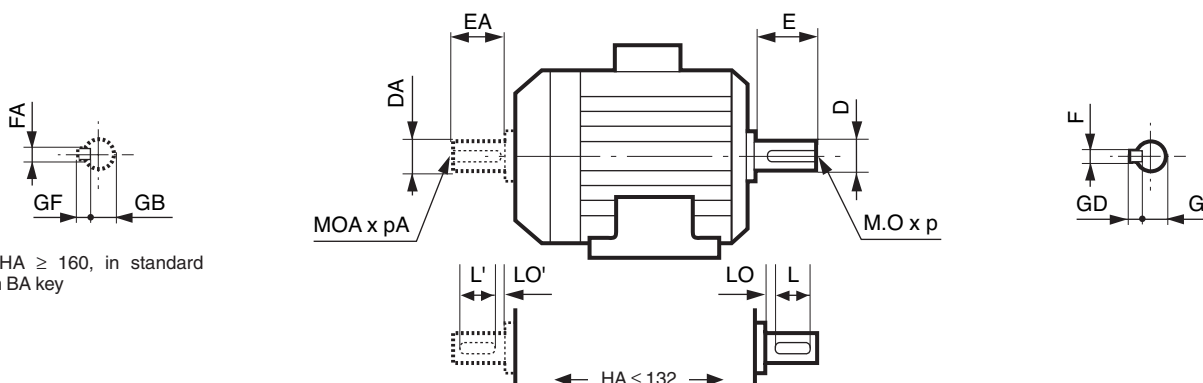
Dimensions

Dimensions of the FLS totally enclosed three-phase asynchronous motors - IP 55

Cage rotor

Dimensions in millimetres

– shaft end



Main shaft end

Type	4, 6 and 8 poles									2 poles								
	F	GD	D	G	E	O	p	L	LO	F	GD	D	G	E	O	p	L	LO
FLS 80 L	6	6	19j6	15.5	40	6	16	30	6	6	6	19j6	15.5	40	6	16	30	6
FLS 90 S/L	8	7	24j6	20	50	8	19	40	6	8	7	24j6	20	50	8	19	40	6
FLS 100 LK	8	7	28j6	24	60	10	22	50	6	8	7	28j6	24	60	10	22	50	6
FLS 112 M/MR	8	7	28j6	24	60	10	22	50	6	8	7	28j6	24	60	10	22	50	6
FLS 132 S/M/MR	10	8	38k6	33	80	12	28	63	10	10	8	38k6	33	80	12	28	63	10
FLS 160 M/L	12	8	42k6	37	110	16	36	-	-	12	8	42k6	37	110	16	36	-	-
FLS 180 MR/L	14	9	48k6	42.5	110	16	36	-	-	14	9	48k6	42.5	110	16	36	-	-
FLS 200 L	16	10	55m6	49	110	20	42	-	-	16	10	55m6	49	110	20	42	-	-
FLS 225 ST/MT/M	18	11	60m6	53	140	20	42	-	-	16	10	55m6	49	110	20	42	-	-
FLS 250 M	18	11	65m6	58	140	20	42	-	-	18	11	60m6	53	140	20	42	-	-
FLS 280 S/M	20	12	75m6	67.5	140	20	42	-	-	18	11	65m6	58	140	20	42	-	-
FLS 315 ST	22	14	80m6	71	170	20	42	-	-	18	11	65m6	58	140	20	42	-	-
FLS 315 M	22	14	80m6	71	170	20	42	-	-	18	11	65m6	58	140	20	42	-	-
FLS 315 L	25	14	90m6	81	170	24	50	-	-	20	12	70m6	62.5	140	20	42	-	-
FLS 355 L/LK	28	16	100m6	90	210	24	50	-	-	22	14	80m6	71	170	20	42	-	-
FLS 400 L/LK/LV	28	16	110m6	100	210	24	50	-	-	-	-	-	-	-	-	-	-	-
FLS 450 L/LV	32	18	120m6	109	210	24	50	-	-	-	-	-	-	-	-	-	-	-

Secondary shaft end

Type	4, 6 and 8 poles									2 poles								
	FA	GF	DA	GB	EA	OA	pA	L'	LO'	FA	GF	DA	GB	EA	OA	pA	L'	LO'
FLS 80 L	5	5	14j6	11	30	5	15	25	3.5	5	5	14j6	11	30	5	15	25	3.5
FLS 90 S/L	6	6	19j6	15.5	40	6	16	30	6	6	6	19j6	15.5	40	6	16	30	6
FLS 100 LK	8	7	24j6	20	50	8	19	40	6	8	7	24j6	20	50	8	19	40	6
FLS 112 M/MR	8	7	24j6	20	50	8	19	40	6	8	7	24j6	20	50	8	19	40	6
FLS 132 S/M/MR	8	7	28j6	24	60	10	22	50	6	8	7	28j6	24	60	10	22	50	6
FLS 160 M/L	12	8	42k6	37	110	16	36	-	-	12	8	42k6	37	110	16	36	-	-
FLS 180 MR/L	14	9	48k6	42.5	110	16	36	-	-	14	9	48k6	42.5	110	16	36	-	-
FLS 200 L	16	10	55m6	49	110	20	42	-	-	16	10	55m6	49	110	20	42	-	-
FLS 225 ST/MT/M	18	11	60m6	53	140	20	42	-	-	16	10	55m6	49	110	20	42	-	-
FLS 250 M	18	11	60m6	53	140	20	42	-	-	18	11	60m6	53	140	20	42	-	-
FLS 280 S/M	20	12	60m6	53	140	20	42	-	-	18	11	60m6	53	140	20	42	-	-
FLS 315 ST	22	14	80m6	71	170	20	42	-	-	18	11	65m6	58	140	20	42	-	-
FLS 315 M	22	14	80m6	71	170	20	42	-	-	18	11	65m6	58	140	20	42	-	-
FLS 315 L	25	14	90m6	81	170	24	50	-	-	20	12	70m6	62.5	140	20	42	-	-
FLS 355 L/LK	28	16	100m6	90	210	24	50	-	-	22	14	80m6	71	170	20	42	-	-
FLS 400 L/LK/LV	28	16	110m6	110	210	24	50	-	-	-	-	-	-	-	-	-	-	-
FLS 450 L/LV	32	18	120m6	109	210	24	50	-	-	-	-	-	-	-	-	-	-	-

FLS



Atmospheres containing explosive dust totally enclosed three-phase asynchronous motors

CATEGORY 3
ZONE 22
Non conductive dust

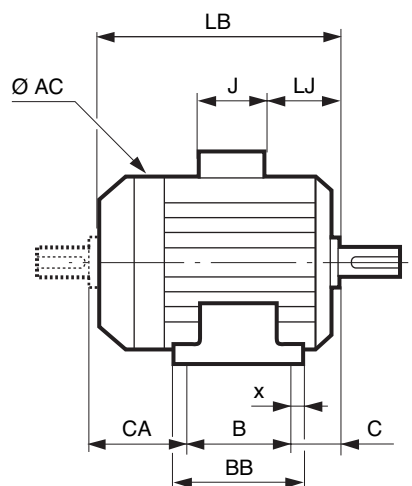
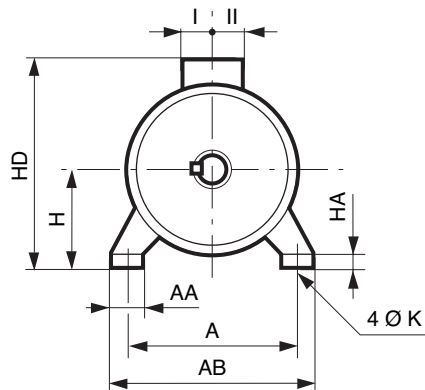
Dimensions

Dimensions of the FLS totally enclosed three-phase asynchronous motors - IP 55

Cage rotor

Dimensions in millimetres

– foot mounted



Type	Main dimensions																		
	A	AB	B	BB	C	x	AA	K	HA	H	AC	HD	LB	LB1 ¹	LJ	J	I	II	CA
FLS 80 L	125	157	100	130	50	20	32	9	10	80	160	222	214	178	33	114	57	57	68
FLS 90 S	140	172	100	160	56	22	34	9	11	90	185	247	243	204	28	114	57	57	93
FLS 90 L	140	172	125	160	56	22	34	9	11	90	185	247	243	204	28	114	57	57	68
FLS 100 LK	160	200	140	174	63	22	42	12	12	100	226	276	323	276	55	114	57	57	125
FLS 112 M	190	230	140	174	70	22	45	12	12	112	226	288	323	276	55	114	57	57	119
FLS 132 S	216	255	140	223	89	31	58	12	15	132	264	323	387	328	46	114	57	57	164
FLS 132 M	216	255	178	223	89	31	58	12	15	132	264	323	387	328	46	114	57	57	126
FLS 132 MU	216	255	178	223	89	31	58	12	15	132	264	323	410	352	46	114	57	57	149
FLS 160 M	254	294	210	294	108	20	65	14	20	160	310	385	495	435	50	160	80	80	182
FLS 160 L	254	294	254	294	108	20	65	14	20	160	310	385	495	435	50	160	80	80	138
FLS 180 MR	279	324	241	295	121	25	80	14	25	180	310	405	515	450	50	160	80	80	158
FLS 180 L	279	330	279	335	121	28	70	14	28	180	350	468	555	480	55	220	128	128	160
FLS 200 L	318	374	305	361	133	28	80	18	44	200	394	515	681	595	65	220	128	128	248
FLS 225 ST	356	420	286	367	149	28	100	18	35	225	394	540	681	595	65	220	128	128	251
FLS 225 MT	356	420	311	367	149	28	100	18	35	225	394	540	681	595	65	220	128	128	226
FLS 225 M	356	426	311	375	149	32	80	18	27	225	540	656	780	630	70	352	173	210	326
FLS 250 M	406	476	349	413	168	32	80	22	27	250	540	681	780	630	70	352	173	210	269
FLS 280 S	457	527	368	432	190	32	80	22	27	280	540	711	860	710	70	352	173	210	302
FLS 280 M	457	527	419	483	190	32	80	22	27	280	540	711	960	810	70	352	173	210	357
FLS 315 ST	508	598	406	547	216	45	90	27	45	315	556	761	1068	910	68	352	173	210	452
FLS 315 M	508	600	457	598	216	45	100	27	45	315	624	835	1203	1030	70	452	217	269	536
FLS 315 L	508	600	508	598	216	45	100	27	45	315	632	835	1203	1030	70	452	217	269	485
FLS 355 LA/LB	610	710	630	710	254	40	110	27	35	355	700	910	1305	1118	61	452	217	269	427
FLS 355 LC/LD	610	710	630	710	254	40	110	27	35	355	700	910	1430	1242	61	452	217	269	552
FLS 355 LK	610	750	630	815	254	40	128	27	45	355	787	1117	1687	1430	52	700	224	396	813
FLS 400 L/LV	686	800	710	815	280	65	128	35	45	400	787	1162	1687	1430	52	700	224	396	707
FLS 400 LKA/LKB	686	824	800	950	280	59	140	35	45	400	877	1210	1835	1550	68	700	224	396	765
FLS 450 L/LV	750	890	800	950	315	94	140	35	45	450	877	1260	1835	1550	68	700	224	396	730

1. LB1: non ventilated motor.

FLS



Atmospheres containing explosive dust totally enclosed three-phase asynchronous motors

CATEGORY 3
ZONE 22
Non conductive dust

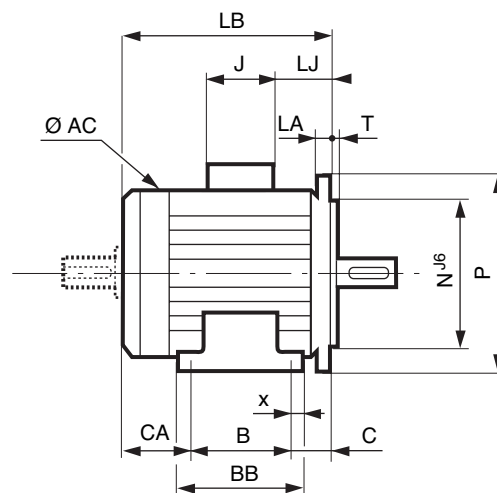
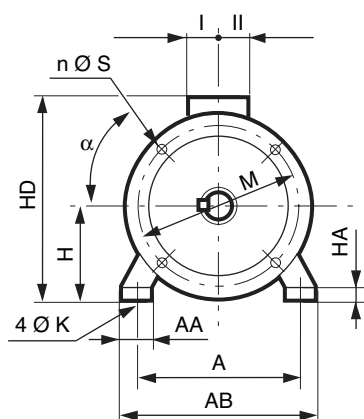
Dimensions

Dimensions of the FLS totally enclosed three-phase asynchronous motors - IP 55

Cage rotor

Dimensions in millimetres

– (FF) foot and plain hole flange mounted



Type	Main dimensions																		Sym.
	A	AB	B	BB	C	x	AA	K	HA	H	AC	HD	LB	LB1'	LJ	J	I	II	
FLS 80 L	125	157	100	130	50	20	32	9	10	80	160	222	214	178	33	114	57	57	FF 165
FLS 90 S	140	172	100	160	76	22	34	9	11	90	185	247	263	224	48	114	57	57	FF 165
FLS 90 L	140	172	125	160	76	22	34	9	11	90	185	247	263	224	48	114	57	57	FF 165
FLS 100 LK	160	200	140	174	63	22	42	12	12	100	226	276	323	276	55	114	57	57	FF 215
FLS 112 M	190	230	140	174	70	22	45	12	12	112	226	288	323	276	55	114	57	57	FF 215
FLS 132 S	216	255	140	223	89	31	58	12	15	132	264	323	387	328	46	114	57	57	FF 265
FLS 132 M	216	255	178	223	89	31	58	12	15	132	264	323	387	328	46	114	57	57	FF 265
FLS 132 MU	216	255	178	223	89	31	58	12	15	132	264	323	410	352	46	114	57	57	FF 265
FLS 160 M	254	294	210	294	108	20	65	14	20	160	310	385	495	435	50	160	80	80	FF 300
FLS 160 L	254	294	254	294	108	20	65	14	20	160	310	385	495	435	50	160	80	80	FF 300
FLS 180 MR	279	324	241	295	121	25	80	14	25	180	310	405	515	450	50	160	80	80	FF 300
FLS 180 L	279	330	279	335	121	28	70	14	28	180	350	468	555	480	55	220	128	128	FF 300
FLS 200 L	318	374	305	361	133	28	80	18	44	200	394	515	681	595	65	220	128	128	FF 350
FLS 225 ST	356	420	286	367	149	28	100	18	35	225	394	540	681	595	65	220	128	128	FF 400
FLS 225 MT	356	420	311	367	149	28	100	18	35	225	394	540	681	595	65	220	128	128	FF 400
FLS 225 M	356	426	311	375	149	32	80	18	27	225	540	656	780	630	70	352	173	210	FF 400
FLS 250 M	406	476	349	413	168	32	80	22	27	250	540	681	780	630	70	352	173	210	FF 500
FLS 280 S	457	527	368	432	190	32	80	22	27	280	540	711	860	710	70	352	173	210	FF 500
FLS 280 M	457	527	419	483	190	32	80	22	27	280	540	711	960	810	70	352	173	210	FF 500
FLS 315 ST	508	598	406	547	216	45	90	27	45	315	556	761	1068	910	68	352	173	210	FF 600
FLS 315 M	508	600	457	598	216	45	100	27	45	315	624	835	1203	1030	70	452	217	269	FF 600
FLS 315 L	508	600	508	598	216	45	100	27	45	315	632	835	1203	1030	70	452	217	269	FF 600
FLS 355 LA/LB	610	710	630	710	254	40	110	27	35	355	700	910	1305	1118	61	452	217	269	FF 740
FLS 355 LC/LD	610	710	630	710	254	40	110	27	35	355	700	910	1430	1242	61	452	217	269	FF 740
FLS 355 LK	610	750	630	815	254	40	128	27	45	355	787	1117	1687	1430	52	700	224	396	FF 740
FLS 400 L/LV	686	800	710	815	280	65	128	35	45	400	787	1162	1687	1430	52	700	224	396	FF 940
FLS 400 LKA/LKB	686	824	800	950	280	59	140	35	45	400	877	1210	1835	1550	68	700	224	396	FF 940
FLS 450 LA	750	890	800	950	315	94	140	35	45	450	877	1260	1835	1550	68	700	224	396	FF 1080

1. LB1: non ventilated motor.

CA dimension and shaft end dimensions identical to those of foot mounted motors.



FLS

Atmospheres containing explosive dust

totally enclosed three-phase asynchronous motors

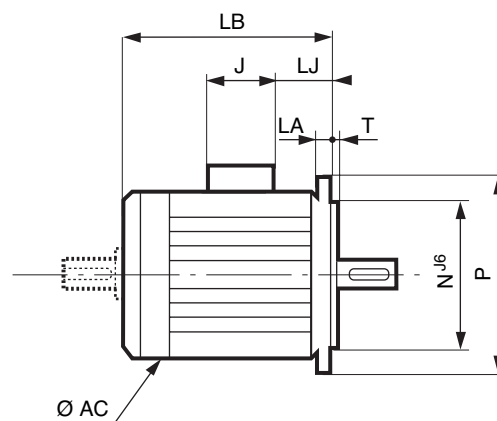
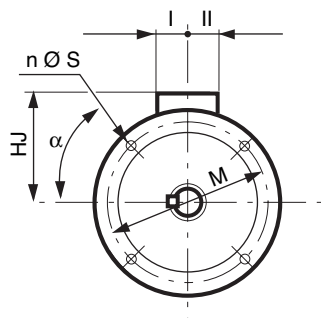
CATEGORY 3
ZONE 22
Non conductive dust

Dimensions

Dimensions of the FLS totally enclosed three-phase asynchronous motors - IP 55
Cage rotor

Dimensions in millimetres

– (FF) plain hole flange mounted



IEC symbol	Flange dimensions						
	M	N	P	T	n	S	LA
FF 165	165	130	200	3.5	4	12	10
FF 165	165	130	200	3.5	4	12	10
FF 165	165	130	200	3.5	4	12	10
FF 215	215	180	250	4	4	15	12
FF 215	215	180	250	4	4	15	12
FF 265	265	230	300	4	4	14.5	14
FF 265	265	230	300	4	4	14.5	14
FF 265	265	230	300	4	4	14.5	14
FF 300	300	250	350	5	4	18.5	15
FF 300	300	250	350	5	4	18.5	15
FF 300	300	250	350	5	4	18.5	15
FF 300	300	250	350	5	4	18.5	15
FF 350	350	300	400	5	4	18	15
FF 400	400	350	450	5	8	18	16
FF 400	400	350	450	5	8	18	16
FF 400	400	350	450	5	8	18	16
FF 500	500	450	550	5	8	18	18
FF 500	500	450	550	5	8	18	18
FF 500	500	450	550	5	8	18	18
FF 600	600	550	660	6	8	22	25
FF 600	600	550	660	6	8	22	25
FF 600	600	550	660	6	8	22	25
FF 740	740	680	800	6	8	22	25
FF 740	740	680	800	6	8	22	25
FF 740	740	680	800	6	8	22	25
FF 940	940	880	1000	6	8	28	28
FF 940	940	880	1000	6	8	28	28
FF 1080	1080	1000	1150	6	8	28	30

1. LB1: non ventilated motor.
FF flange mounted motors, in position IM 3001 (IM B5), are only available up to frame size 225.

Type	Main dimensions							
	AC	LB	LB1'	HJ	LJ	J	I	II
FLS 80 L	160	214	178	142	33	114	57	57
FLS 90 S	185	263	224	153	48	114	57	57
FLS 90 L	185	263	224	153	48	114	57	57
FLS 100 LK	226	323	276	176	55	114	57	57
FLS 112 M	226	323	276	176	55	114	57	57
FLS 132 S	264	387	328	195	46	114	57	57
FLS 132 M	264	387	328	195	46	114	57	57
FLS 132 MU	264	410	352	195	46	114	57	57
FLS 160 M	310	495	435	225	50	160	80	80
FLS 160 L	310	495	435	225	50	160	80	80
FLS 180 MR	310	515	450	225	50	160	80	80
FLS 180 L	350	555	480	280	55	220	128	128
FLS 200 L	394	681	595	315	65	220	128	128
FLS 225 ST	394	681	595	315	65	220	128	128
FLS 225 MT	394	681	595	315	65	220	128	128
FLS 225 M	540	780	630	431	70	352	173	210
FLS 250 M	540	780	630	431	70	352	173	210
FLS 280 S	540	860	710	431	70	352	173	210
FLS 280 M	540	960	810	431	70	352	173	210
FLS 315 ST	556	1068	910	446	68	352	173	210
FLS 315 M	624	1203	1030	520	70	452	217	269
FLS 315 L	632	1203	1030	520	70	452	217	269
FLS 355 LA/LB	700	1305	1118	555	61	452	217	269
FLS 355 LC/LD	700	1305	1242	555	61	452	217	269
FLS 355 LK	787	1687	1430	762	52	700	224	396
FLS 400 L/LV	787	1687	1430	762	52	700	224	396
FLS 400 LKA/LKB	877	1835	1550	810	68	700	224	396
FLS 450 L/LV	877	1835	1550	810	68	700	224	396

FLS



Atmospheres containing explosive dust totally enclosed three-phase asynchronous motors

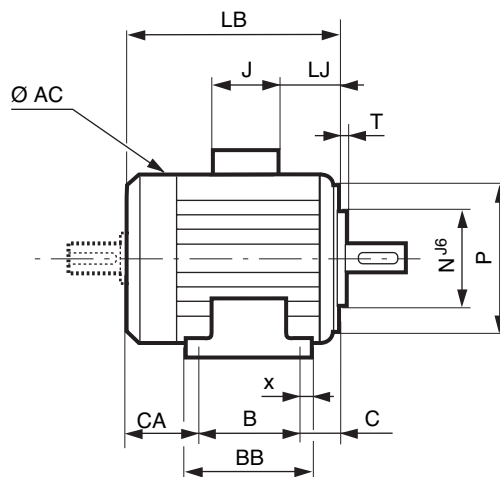
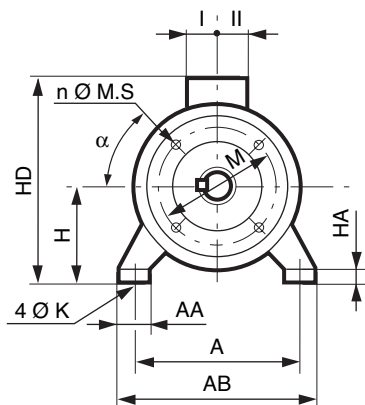
CATEGORY 3
ZONE 22
Non conductive dust

Dimensions

Dimensions of the FLS totally enclosed three-phase asynchronous motors - IP 55
Cage rotor

Dimensions in millimetres

– (FT) foot and tapped hole flange mounted



Type	Main dimensions																		Sym.
	A	AB	B	BB	C	x	AA	K	HA	H	AC	HD	LB	LJ	J	I	II	CA	
FLS 80 L	125	157	100	130	50	20	32	9	10	80	160	222	214	33	114	57	57	68	FT 100
FLS 90 S	140	172	100	160	56	22	34	10	11	90	185	247	243	28	114	57	57	93	FT 115
FLS 90 L	140	172	125	160	56	22	34	10	11	90	185	247	243	28	114	57	57	68	FT 115
FLS 100 LK	160	200	140	174	63	22	42	12	12	100	226	276	323	55	114	57	57	125	FT 130
FLS 112 M	190	230	140	174	70	22	45	12	12	112	226	288	323	55	114	57	57	119	FT 130
FLS 112 MR	190	230	140	174	70	22	45	12	12	112	226	288	345	28	114	57	57	142	FT 130
FLS 132 M	216	255	178	223	89	31	58	12	15	132	264	323	387	46	114	57	57	126	FT 215
FLS 132 MR	216	255	178	223	89	31	58	12	15	132	264	323	387	46	114	57	57	126	FT 215

CA dimension and shaft end dimensions identical to those of foot mounted motors.



FLS

Atmospheres containing explosive dust

totally enclosed three-phase asynchronous motors

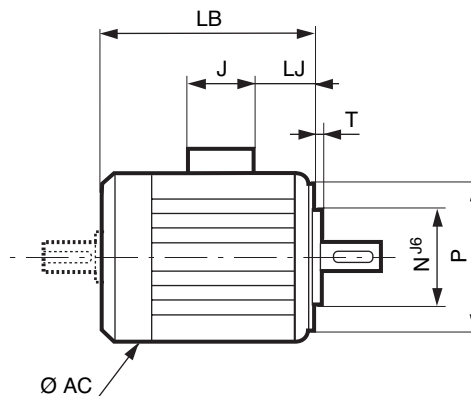
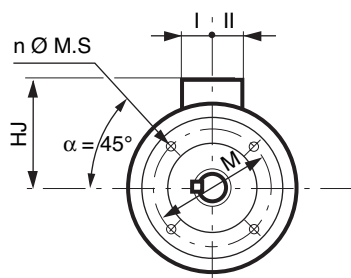
CATEGORY 3
ZONE 22
Non conductive dust

Dimensions

Dimensions of the FLS totally enclosed three-phase asynchronous motors - IP 55
Cage rotor

Dimensions in millimetres

– (FT) tapped hole flange mounted



IEC symbol	Flange dimensions					
	M	N	P	T	n	MS
FT 100	100	80	120	3	4	M6
FT 115	115	95	140	3	4	M8
FT 115	115	95	140	3	4	M8
FT 130	130	110	160	3.5	4	M8
FT 130	130	110	160	3.5	4	M8
FT 130	130	110	160	3.5	4	M8
FT 215	215	180	250	4	4	M12
FT 215	215	180	250	4	4	M12
FT 215	215	180	250	4	4	M12

Type	Main dimensions						
	AC	LB	HJ	LJ	J	I	II
FLS 80 L	160	214	142	33	114	57	57
FLS 90 L	185	243	157	28	114	57	57
FLS 90 S	185	243	157	28	114	57	57
FLS 100 LK	226	323	176	55	114	57	57
FLS 112 M	226	323	176	55	114	57	57
FLS 112 MR	226	345	176	28	114	57	57
FLS 132 M	264	387	191	46	114	57	57
FLS 132 MR	264	387	191	46	114	57	57
FLS 132 S	264	387	191	46	114	57	57

