

PLS

Open Drip Proof three-phase asynchronous motors

General information



Open Drip Proof three-phase asynchronous motors, series PLS, according to IEC 60034, 60066, 60072 power 7,5 kW to 900 kW, frame size 160 to 400 mm, 2, 4, 6 and 8 poles; 230/400 V or 400 V Δ , 50 Hz.

Protection

Standard version IP 23 providing excellent motor cooling through internal ventilation.

Main supply

- Standard in accordance with IEC 60038:
 - 230/400 V Δ +10% -10% at 50 Hz.
- Standard construction suitable for the following mains supplies:
- 220/380 V or 380 V Δ +5% -5% at 50 Hz,
 - 230/400 V or 400 V Δ +10% -10% at 50 Hz,
 - 240/415 V or 415 V Δ +5% -5% at 50 Hz,
 - 265/460 V or 460 V Δ +5% -5% at 60 Hz.
- Construction suitable the Y/ Δ starting.

Description of the PLS three-phase motors

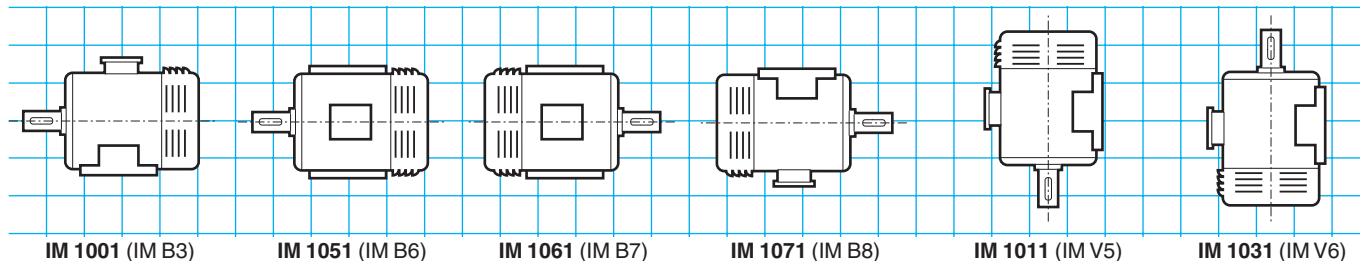
Component	Materials	Remarks
Housing	Aluminium or steel alloy	- with cast foot, or without foot - gravity or low pressure casting, frame size ≤ 250 • steel for frame sizes ≥ 280 • 4 or 6 mounting holes in the foot casing • lifting rings
Stator	Insulated low carbon magnetic steel laminations Electrolytic copper	- the low carbon content guarantees long term stability of the characteristics - assembled lamination pack - semi-enclosed slots - insulation system class F
Rotor	Insulated low carbon magnetic steel laminations Aluminium or copper	- inclined slots - rotor cage pressure die cast, in aluminium for frame size ≤ 315, soldered for frame size ≥ 355 - rotor cage shrink-fitted to shaft for frame size ≤ 315, keyed for frame sizes ≥ 355 - dynamically balanced rotor, class A - 1/2 key
Shaft	Steel	
End shields	Cast iron or steel	
Bearings and lubrication		Standard mounting: - ball bearings set C3 - sealed and lubricated for life 160 L, 180 M and L - semi-protected or open types starting from 180 LG - regreasable from frame size 225 - rear preloaded bearings
Labyrinth seals Lipseals	Technopolymer or steel Synthetic rubber	- front lipseal for all flange motors - lipseal or labyrinth seals for foot mounted motor
Fan	Composite material aluminium alloy or steel	- bi-directional fan in 2 poles ($P \leq 250$ kW), 4, 6 and 8 poles - unidirectional fan (specify direction of rotation when ordering) in 2 poles, for power ≥ 280 kW
Fan cover	Sheet steel	- on request, fitted with a drip cover for operation in vertical position, shaft facing down
Terminal box	Composite material aluminium alloy or steel	- can be turned in 4 directions for frame sizes ≤ 225, opposite to the feet position - a 6 steel stud terminal board as standard - terminal box delivered fitted with brass cable glands for frame size ≤ 315 L, for motors 315 MG and above, terminal box fitted with cable gland support plate drilled and removable, without cable gland - 1 earth terminal in all terminal boxes

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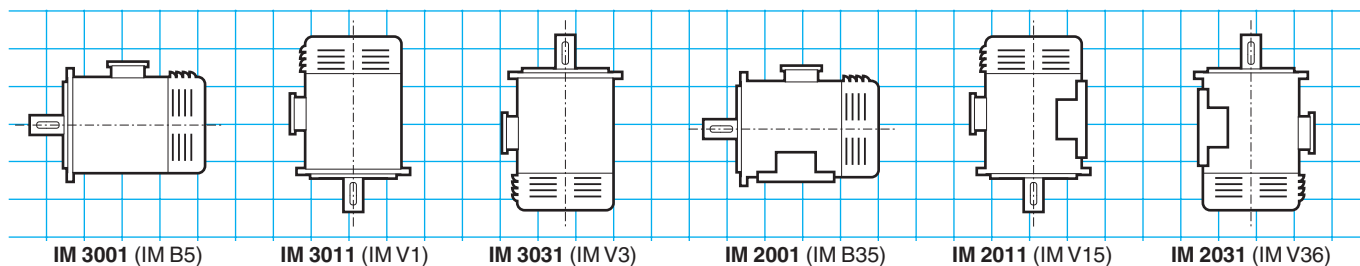
Mounting positions

Foot mounted motors

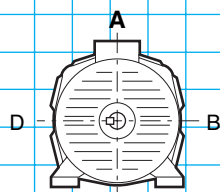


(FF) flange mounted motors with plain holes

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

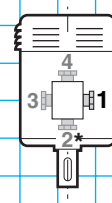


Positions of the terminal box in relation to the motor shaft end



A : standard

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



1 : standard

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

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Adaptation possibilities

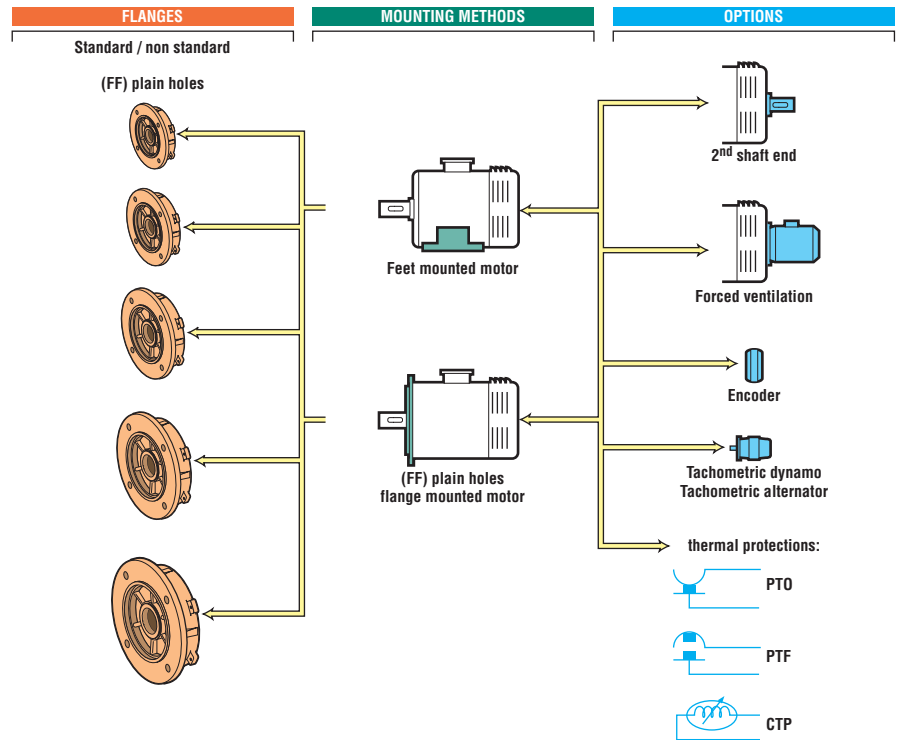
Leroy-Somer offers, for use with the PLS open drip proof three-phase asynchronous motors, many options which meet the needs of highly diverse applications. They are described below and in the chapters relating to gearboxes and to speed variation. For other variants or any specific adaptation, consult the technical specialists at Leroy-Somer.

The PLS may be associated to:

- gearboxes
- electronic variable speed drive

The options:

- encoder
- tachometric alternator
- tachometric dynamo
- forced ventilation
- thermal protection
- cables output
- roller bearings
- merchant navy paint finish type III
- multi-speed motor winding
- second shaft end
- non standard flanges



Designation / Codification

4P 1500 min ⁻¹	PLS	180	L	30 kW	IM 1001 (IM B3)	230 / 400 V	50 Hz	IP 23
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:

PLS open motor, 1500 min⁻¹, 30 kW IM 1001 (IM B3), 230/400 V

Designation	Code
4P PLS 180 L 30 kW IM 1001 (IM B3) 230/400 V	MA4 30 313

Codification example:

Addition of a PTO thermal protection

Designation	Code
+ PTO	MATP 1011

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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Open Drip Proof three-phase asynchronous motors

Selection

IP 23 - 50 Hz - Class F - Δ T 80 K - 230 V Δ / 400 V Y - S1

2
poles
3000 min⁻¹

	Rated power *	Rated speed	Rated moment	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	η 4/4	Id / In	Md/Mn	M _M /Mn	J kg.m ²	IM B3 kg	LP db(A)
PLS 160 L	18.5	2934	60.2	35.1	0.85	89.5	6.7	2.6	2.9	0.037	80	76
PLS 160 L	22	2936	71.6	42	0.84	90	7.2	2.7	3.0	0.041	86	76
PLS 180 M	30	2936	97.6	57.2	0.84	90.1	7.5	2.6	3.3	0.054	102	78
PLS 180 L	37	2940	120	67.2	0.87	91.4	7.3	2.8	3.1	0.081	123	78
PLS 200 M	45	2950	146	83.1	0.85	92	7.3	2.2	3.0	0.102	170	79
PLS 200 LP	55	2950	178	96.9	0.88	93.1	7.7	2.8	3.2	0.14	185	79
PLS 225 MR	75	2945	243	134	0.87	92.9	7.6	2.8	3.1	0.17	240	79
PLS 250 SP	90	2960	290	163	0.85	93.8	7.4	2.4	3.1	0.4	325	79
PLS 250 MP	110	2960	355	196	0.86	94.2	7.7	2.5	3.3	0.44	350	79
PLS 280 MC	132	2958	426	232	0.87	94.6	7.8	2.5	3.5	0.48	455	79
PLS 315 S	160	2974	514	276	0.88	95	8.2	2.7	3.4	1.25	645	85
PLS 315 M	200	2974	642	341	0.89	95.2	8.3	2.8	3.4	1.42	705	85
PLS 315 L	250	2974	803	421	0.9	95.3	8.2	2.9	3.4	1.68	790	85
PLS 315 LD	280	2972	900	466	0.91	95.4	8.0	2.8	3.1	1.97	900	87
PLS 315 LD	315	2972	1012	529	0.9	95.5	8.3	3.1	3.4	1.97	910	87
PLS 315 LG	355	2965	1143	617	0.87	95.5	6.5	1.7	2.0	2.8	1030	89
PLS 315 LG	400	2965	1288	695	0.87	95.5	7.0	1.9	2.0	3.1	1120	89
PLS 315 VLG	450	2975	1444	778	0.87	96	7.0	1.9	2.1	3.5	1200	89
PLS 355 LA	500	2978	1602	761	0.87	96	5.7	1.3	2.2	6.3	1700	90
PLS 355 LB	710	2978	2277	1207	0.88	96.5	8.4	1.6	2.2	8	2050	90

* Possibility of powers higher than 710 kW, consult us.

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Open Drip Proof three-phase asynchronous motors

Selection

2
poles
3000 min⁻¹

IP 23 - 50 Hz - Class F - ΔT 80 K - 230 V Δ / 400 V Y - S1

A

Type	Rated power at 50 Hz	IM 1001 (IM B3)		IM 3001 (IM B5)		IM 2001 (IM B35)	
	P_N kW	Code	Qty	Code	Qty	Code	Qty
PLS 160 L	18.5	MA2 18 307	1	MA2 18 309	1	MA2 18 3A9	1
PLS 160 L	22	MA2 22 307	1	MA2 22 309	1	MA2 22 3A9	1
PLS 180 M	30	MA2 30 307	1		-	MA2 30 3A9	1
PLS 180 L	37	MA2 37 307	1		-	MA2 37 3A9	1
PLS 200 M	45	MA2 45 307	1		-	MA2 45 3A9	1
PLS 200 LP	55	MA2 55 307	1		-	MA2 55 3A9	1
PLS 225 MR	75	MA2 75 307	1		-	MA2 75 3A9	1
PLS 250 SP	90		-				-
PLS 250 MP	110		-				-
PLS 280 MC	132		-				-
PLS 315 S	160		-				-
PLS 315 M	200		-				-
PLS 315 L	250		-				-
PLS 315 LD	280		-				-
PLS 315 MG	280		-				-
PLS 315 LD	315		-				-
PLS 315 MG	315		-				-
PLS 315 LG	355		-				-
PLS 315 LG	400		-				-
PLS 315 VLG	450		-				-
PLS 355 LA	500		-				-
PLS 355 LB	710		-				-

Selection example:

Speed:	3000 min ⁻¹ - 2 poles
Power:	55 kW
Mounting and position:	IM 2001 (IM B35)
Mains supply voltage:	230/400 V

Designation:

2P PLS 200 LP 55 kW IM 2001 (IM B35)
230/400 V

Code: MA2 55 3A9

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Open Drip Proof three-phase asynchronous motors

Selection

4
poles
1500 min⁻¹

IP 23 - 50 Hz - Class F - ΔT 80 K - 230 V Δ / 400 V Y - S1

	Rated power *	Rated speed	Rated moment	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	η 4/4	Id / In	Md/Mn	M _M /Mn	J kg.m ²	IM B3 kg	LP db(A)
PLS 160 L	15	1450	98.8	30.2	0.83	86.4	5.9	2.0	2.6	0.049	80	67
PLS 160 L	18.5	1445	122	36.9	0.83	87.2	6.0	2.1	2.7	0.063	88	67
PLS 180 M	22	1450	145	43.5	0.83	88	6.4	2.3	2.8	0.074	98	69
PLS 180 L	30	1450	198	57.1	0.85	89.2	5.7	2.4	2.5	0.123	128	69
PLS 200 M	37	1445	245	71.4	0.84	89	5.4	2.3	2.4	0.15	165	72
PLS 200 LP	45	1465	293	84.7	0.84	91.3	6.1	2.5	2.5	0.22	190	72
PLS 225 MR	55	1465	359	101	0.86	91.5	5.9	2.2	2.3	0.36	240	74
PLS 250 SP	75	1475	486	143	0.82	92.6	6.2	2.4	2.5	0.65	335	75
PLS 250 MP	90	1475	583	167	0.84	92.8	6.5	2.5	2.6	0.75	360	75
PLS 280 SC	110	1472	714	207	0.82	93.4	5.7	2.2	2.5	0.87	460	75
PLS 280 MD	132	1470	858	245	0.83	93.7	6.2	2.4	2.6	1.07	520	75
PLS 315 S	160	1468	1041	291	0.85	93.5	6.1	2.1	2.7	2.07	635	84
PLS 315 M	200	1468	1301	363	0.85	93.6	6.3	2.2	2.8	2.48	720	84
PLS 315 L	250	1470	1624	452	0.85	94	7.3	2.6	2.9	2.96	820	84
PLS 315 LD	280	1472	1816	504	0.85	94.3	7.2	2.6	2.8	3.45	935	84
PLS 315 MG	315	1475	2039	573	0.84	94.5	5.5	1.6	2.0	4.6	940	86
PLS 315 LG	355	1477	2295	645	0.84	94.5	5.5	1.8	2.0	5.3	1030	86
PLS 315 LG	400	1477	2586	724	0.84	95	6.0	1.7	2.1	5.9	1130	86
PLS 315 VLG	450	1480	2904	804	0.85	95	6.0	1.7	2.1	6.3	1280	86
PLS 315 VLGU •	500	1479	3228	889	0.85	95.5	6.0	1.6	2.1	6.8	1350	86
PLS 355 LA	550	1487	3532	973	0.85	96	6.8	1.6	2.2	10.5	1900	90
PLS 355 LB	685	1488	4396	1211	0.85	96	7.0	1.6	2.2	12	2150	90
PLS 400 LA	720	1491	4611	1267	0.85	96.5	7.5	1.7	2.2	21.6	2600	91
PLS 400 LB	900	1491	5764	1584	0.85	96.5	7.0	1.7	2.2	27	3050	91

* Possibility of powers higher than 900 kW, consult us.

• Temperature rise class F

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Selection



IP 23 - 50 Hz - Class F - Δ T 80 K - 230 V Δ / 400 V Y - S1

A

	Rated power at 50 Hz	IM 1001 (IM B3)		IM 3001 (IM B5)		IM 2001 (IM B35)	
Type	P_N kW	Code	Qty	Code	Qty	Code	Qty
PLS 160 L	15	MA4 15 313	1	MA4 15 315	1	MA4 15 3J5	1
PLS 160 L	18.5	MA4 18 313	1		-	MA4 18 3J5	1
PLS 180 M	22	MA4 22 313	1		-	MA4 22 3J5	1
PLS 180 L	30	MA4 30 313	1		-	MA4 30 3J5	1
PLS 200 M	37	MA4 37 313	1		-	MA4 37 3J5	1
PLS 200 LP	45	MA4 45 313	1		-	MA4 44 3J5	1
PLS 225 MR	55	MA4 55 313	1		-	MA4 55 3J5	1
PLS 250 SP	75	MA4 75 313	1		-	MA4 75 3J5	1
PLS 250 MP	90		-				-
PLS 280 SC	110		-				-
PLS 280 MD	132		-				-
PLS 315 S	160		-				-
PLS 315 M	200		-				-
PLS 315 L	250		-				-
PLS 315 LD	280		-				-
PLS 315 MG	315		-				-
PLS 315 LG	355		-				-
PLS 315 LG	400		-				-
PLS 315 VLG	450		-				-
PLS 315 VLGU	500		-				-
PLS 355 LA	550		-				-
PLS 355 LB	685		-				-
PLS 400 LA	720		-				-
PLS 400 LB	900		-				-

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Open Drip Proof three-phase asynchronous motors

Selection

2
poles
3000 min⁻¹

IP 23 - 50 Hz - Class F - Δ T 80 K - 400 V Δ - S1

	Rated power *	Rated speed	Rated moment	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	η 4/4	Id / In	Md/Mn	M _M /Mn	J kg.m ²	IM B3 kg	LP db(A)
PLS 160 L	18.5	2934	60.2	35.1	0.85	89.5	6.7	2.6	2.9	0.037	80	76
PLS 160 L	22	2936	71.6	42	0.84	90	7.2	2.7	3.0	0.041	86	76
PLS 180 M	30	2936	97.6	57.2	0.84	90.1	7.5	2.6	3.3	0.054	102	78
PLS 180 L	37	2940	120	67.2	0.87	91.4	7.3	2.8	3.1	0.081	123	78
PLS 200 M	45	2950	146	83.1	0.85	92	7.3	2.2	3.0	0.102	170	79
PLS 200 LP	55	2950	178	96.9	0.88	93.1	7.7	2.8	3.2	0.14	185	79
PLS 225 MR	75	2945	243	134	0.87	92.9	7.6	2.8	3.1	0.17	240	79
PLS 250 SP	90	2960	290	163	0.85	93.8	7.4	2.4	3.1	0.4	325	79
PLS 250 MP	110	2960	355	196	0.86	94.2	7.7	2.5	3.3	0.44	350	79
PLS 280 MC	132	2958	426	232	0.87	94.6	7.8	2.5	3.5	0.48	455	79
PLS 315 S	160	2974	514	276	0.88	95	8.2	2.7	3.4	1.25	645	85
PLS 315 M	200	2974	642	341	0.89	95.2	8.3	2.8	3.4	1.42	705	85
PLS 315 L	250	2974	803	421	0.9	95.3	8.2	2.9	3.4	1.68	790	85
PLS 315 LD	280	2972	900	466	0.91	95.4	8.0	2.8	3.1	1.97	900	87
PLS 315 LD	315	2972	1012	529	0.9	95.5	8.3	3.1	3.4	1.97	910	87
PLS 315 LG	355	2965	1143	617	0.87	95.5	6.5	1.7	2.0	2.8	1030	89
PLS 315 LG	400	2965	1288	695	0.87	95.5	7.0	1.9	2.0	3.1	1120	89
PLS 315 VLG	450	2975	1444	778	0.87	96	7.0	1.9	2.1	3.5	1200	89
PLS 355 LA	500	2978	1602	761	0.87	96	5.7	1.3	2.2	6.3	1700	90
PLS 355 LB	710	2978	2277	1207	0.88	96.5	8.4	1.6	2.2	8	2050	90

* Possibility of powers higher than 710 kW, consult us.

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Selection

2
poles
3000 min⁻¹

IP 23 - 50 Hz - Class F - ΔT 80 K - 400 V Δ - S1

A

Type	Rated power at 50 Hz	IM 1001 (IM B3)		IM 3001 (IM B5)		IM 2001 (IM B35)	
	P_N kW	Code	Qty	Code	Qty	Code	Qty
PLS 160 L	18.5	MA2 18 308	1	MA2 18 310	1	MA2 18 3B0	2
PLS 160 L	22	MA2 22 308	1	MA2 22 310	1	MA2 22 3B0	2
PLS 180 M	30	MA2 30 308	3		-	MA2 30 3B0	2
PLS 180 L	37	MA2 37 308	3		-	MA2 37 3B0	2
PLS 200 M	45	MA2 45 308	2		-	MA2 45 3B0	2
PLS 200 LP	55	MA2 55 308	2		-	MA2 55 3B0	2
PLS 225 MR	75	MA2 75 308	2		-	MA2 75 3B0	2
PLS 250 SP	90	MA2 90 308	2			MA0 00 229	2
PLS 250 MP	110	MA2 11 408	2			MA2 11 480	2
PLS 280 MC	132	MA2 13 408	2			MA2 13 480	2
PLS 315 S	160	MA2 16 408	2			MA2 16 480	2
PLS 315 M	200	MA2 20 402	2			1596176	2
PLS 315 L	250	MA2 25 402	2			4062362	2
PLS 315 LD	280	MA2 28 402	1			4446573	1
PLS 315 LD	315	MA2 31 503	1				-
PLS 315 MG	315	MA2 31 402	1				-
PLS 315 LG	355	MA2 35 402	1				-
PLS 315 LG	400	MA2 04 502	1				-
PLS 315 VLG	450		-				-
PLS 355 LA	500		-				-
PLS 355 LB	710		-				-

Selection example:

Speed:	3000 min ⁻¹ - 2 poles
Power:	55 kW
Mounting and position:	IM 2001 (IM B35)
Mains supply voltage:	400 V

Designation:

2P PLS 200 LP 55 kW IM 2001 (IM B35)
400 V

Code: MA2 55 3B0

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Selection

4
poles
1500 min⁻¹

IP 23 - 50 Hz - Class F - Δ T 80 K - 400 V Δ - S1

	Rated power *	Rated speed	Rated moment	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	η 4/4	Id / In	Md/Mn	M _M /Mn	J kg.m ²	IM B3 kg	LP db(A)
PLS 160 L	15	1450	98.8	30.2	0.83	86.4	5.9	2.0	2.6	0.049	80	67
PLS 160 L	18.5	1445	122	36.9	0.83	87.2	6.0	2.1	2.7	0.063	88	67
PLS 180 M	22	1450	145	43.5	0.83	88	6.4	2.3	2.8	0.074	98	69
PLS 180 L	30	1450	198	57.1	0.85	89.2	5.7	2.4	2.5	0.123	128	69
PLS 200 M	37	1445	245	71.4	0.84	89	5.4	2.3	2.4	0.15	165	72
PLS 200 LP	45	1465	293	84.7	0.84	91.3	6.1	2.5	2.5	0.22	190	72
PLS 225 MR	55	1465	359	101	0.86	91.5	5.9	2.2	2.3	0.36	240	74
PLS 250 SP	75	1475	486	143	0.82	92.6	6.2	2.4	2.5	0.65	335	75
PLS 250 MP	90	1475	583	167	0.84	92.8	6.5	2.5	2.6	0.75	360	75
PLS 280 SC	110	1472	714	207	0.82	93.4	5.7	2.2	2.5	0.87	460	75
PLS 280 MD	132	1470	858	245	0.83	93.7	6.2	2.4	2.6	1.07	520	75
PLS 315 S	160	1468	1041	291	0.85	93.5	6.1	2.1	2.7	2.07	635	84
PLS 315 M	200	1468	1301	363	0.85	93.6	6.3	2.2	2.8	2.48	720	84
PLS 315 L	250	1470	1624	452	0.85	94	7.3	2.6	2.9	2.96	820	84
PLS 315 LD	280	1472	1816	504	0.85	94.3	7.2	2.6	2.8	3.45	935	84
PLS 315 MG	315	1475	2039	573	0.84	94.5	5.5	1.6	2.0	4.6	940	86
PLS 315 LG	355	1477	2295	645	0.84	94.5	5.5	1.8	2.0	5.3	1030	86
PLS 315 LG	400	1477	2586	724	0.84	95	6.0	1.7	2.1	5.9	1130	86
PLS 315 VLG	450	1480	2904	804	0.85	95	6.0	1.7	2.1	6.3	1280	86
PLS 315 VLGU •	500	1479	3228	889	0.85	95.5	6.0	1.6	2.1	6.8	1350	86
PLS 355 LA	550	1487	3532	973	0.85	96	6.8	1.6	2.2	10.5	1900	90
PLS 355 LB	685	1488	4396	1211	0.85	96	7.0	1.6	2.2	12	2150	90
PLS 400 LA	720	1491	4611	1267	0.85	96.5	7.5	1.7	2.2	21.6	2600	91
PLS 400 LB	900	1491	5764	1584	0.85	96.5	7.0	1.7	2.2	27	3050	91

* Possibility of powers higher than 900 kW, consult us.

• Temperature rise class F

PLS

Open Drip Proof three-phase asynchronous motors

Selection



IP 23 - 50 Hz - Class F - Δ T 80 K - 400 V Δ - S1

A

Type	Rated power at 50 Hz	IM 1001 (IM B3)		IM 3001 (IM B5)		IM 2001 (IM B35)	
	P_N kW	Code	Qty	Code	Qty	Code	Qty
PLS 160 L	15	MA4 15 314	1	MA4 15 316	1	MA4 15 3J6	2
PLS 160 L	18.5	MA4 18 314	1		-	MA4 18 3J6	1
PLS 180 M	22	MA4 22 314	2		-	MA4 22 3J6	2
PLS 180 L	30	MA4 30 314	2		-	MA4 30 3J6	2
PLS 200 M	37	MA4 37 314	2		-	MA4 37 3J6	2
PLS 200 LP	45	MA4 45 314	2		-	MA4 44 3J6	2
PLS 225 MR	55	MA4 55 314	2		-	MA4 55 3J6	2
PLS 250 SP	75	MA4 75 314	3		-	MA4 75 3J6	3
PLS 250 MP	90	MA4 90 314	3		-	MA4 90 3J6	3
PLS 280 SC	110	MA4 11 414	2		-	MA4 114 J6	2
PLS 280 MD	132	MA4 13 408	2		-	MA4 134 J6	2
PLS 315 S	160	MA4 16 402	2		-	MA4 164 J6	2
PLS 315 M	200	MA4 20 402	1		-	MA4 204 J6	1
PLS 315 L	250	MA4 25 408	1		-	MA4 254 J6	1
PLS 315 LD	280	MA4 28 509	1		-	MA4 285 J6	1
PLS 315 MG	315	MA4 31 408	1		-		-
PLS 315 LG	355	4249822	1		-		-
PLS 315 LG	400	MA4 04 508	1		-		-
PLS 315 VLG	450		-		-		-
PLS 315 VLGU	500		-		-		-
PLS 355 LA	550		-		-		-
PLS 355 LB	685		-		-		-
PLS 400 LA	720		-		-		-
PLS 400 LB	900		-		-		-

Selection example:

Speed:	1500 min ⁻¹ - 4 poles
Power:	15 kW
Mounting and position:	IM 2001 (IM B35)
Mains supply voltage:	400 V

Designation:

4P PLS 160 L 15 kW IM 2001 (IM B35)
400 V

Code : MA4 15 3J6

PLS

Open Drip Proof three-phase asynchronous motors

Selection



IP 23 - 50 Hz - Class F - Δ T 80 K - 230 V Δ / 400 V Y or 400 V Δ - S1

	Rated power *	Rated speed	Rated moment	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	η 4/4	Id / In	Md/Mn	M _u /Mn	J kg.m ²	IM B3 kg	LP db(A)
PLS 160 MG	7.5	970	73.8	17.1	0.75	84.5	5.0	1.7	2.3	0.085	81	66
PLS 160 L	11	960	109	22.6	0.8	87.9	5.2	1.8	2.1	0.116	102	66
PLS 180 M	15	960	149	30.4	0.81	88	5.2	2.1	2.2	0.17	114	66
PLS 180 LG	18.5	960	184	37.3	0.82	87.2	5.2	2.0	2.3	0.193	144	66
PLS 200 M	22	980	214	45.3	0.79	88.8	6.5	2.2	2.9	0.27	169	67
PLS 200 L	30	968	296	60.4	0.8	89.6	5.5	2.0	2.5	0.32	230	67
PLS 225 MR	37	966	366	74.3	0.8	89.9	5.8	2.2	2.6	0.39	240	67
PLS 250 SP	45	976	440	91.7	0.77	92	6.0	2.2	2.6	0.82	310	68
PLS 250 MP	55	976	538	112	0.77	92	5.9	2.2	2.6	0.88	325	68
PLS 280 SC	75	974	735	152	0.77	92.2	5.9	2.2	2.6	1.16	465	68
PLS 280 MD	90	978	879	173	0.81	92.8	5.2	2.1	2.4	1.44	525	68
PLS 315 SU	110	978	1074	208	0.82	93.1	6.0	2.1	2.5	3.36	645	76
PLS 315 MU	132	982	1284	251	0.81	93.9	5.1	2.1	2.3	3.54	750	76
PLS 315 L	160	982	1556	303	0.81	94.1	5.2	2.2	2.4	4.16	840	76
PLS 315 LD	180	982	1750	341	0.81	94.2	5.1	2.2	2.4	4.43	910	76
PLS 315 LD	200	982	1945	390	0.79	93.8	4.9	2.2	2.4	4.43	910	76
PLS 315 MG	220	980	2144	422	0.8	94	6.6	2.0	2.2	7.3	1030	77
PLS 315 LG	250	980	2436	477	0.8	94.5	6.6	2.0	2.2	8	1100	77
PLS 315 VLG	280	980	2728	525	0.81	95	6.7	2.1	2.1	9.6	1330	77
PLS 315 VLGU	315	985	3054	591	0.81	95	6.9	2.1	2.1	10.8	1430	77
PLS 355 LA	370	990	3569	687	0.81	96	7.2	1.3	2.1	15	1940	82
PLS 355 LB	450	990	4341	835	0.81	96	7.2	1.3	2.1	18	2210	82
PLS 400 LA	500	990	4823	917	0.82	96	7.4	1.4	2.1	29	2720	82
PLS 400 LB	600	990	5788	1100	0.82	96	7.8	1.4	2.2	35	3100	82

* Possibility of powers higher than 600 kW, consult us.



IP 23 - 50 Hz - Class F - Δ T 80 K - 230 V Δ / 400 V Y or 400 V Δ - S1

	Rated power *	Rated speed	Rated moment	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
Type	P _N kW	N _N min ⁻¹	M _N Nm	I _N (400V) A	Cos Phi 4/4	η 4/4	Id / In	Md/Mn	M _u /Mn	J kg.m ²	IM B3 kg
PLS 315 MG	132	735	1715	275	0.75	92.5	4.7	1.6	1.7	6.7	940
PLS 315 LG	160	735	2079	333	0.75	92.5	5	1.6	1.7	8	1090
PLS 315 LG	180	735	2338	373	0.75	93	5.2	1.6	1.8	8.9	1230
PLS 315 VLG	200	735	2598	414	0.75	93	5.2	1.6	1.8	10	1330
PLS 355 LA	285	740	3678	532	0.81	95.5	7.7	1.3	2.1	18.3	1940
PLS 355 LB	330	740	4258	617	0.81	95.5	7.6	1.3	2.2	19	2210
PLS 400 LA	375	740	4839	691	0.82	95.5	7.1	1.25	2.1	39	2720
PLS 400 LB	450	740	5807	830	0.82	95.5	7.1	1.25	2	47	3100

* Possibility of powers higher than 450 kW, consult us.

PLS

Open Drip Proof three-phase asynchronous motors

Selection

6
poles
1000 min⁻¹

IP 23 - 50 Hz - Class F - Δ T 80 K - 230 V Δ / 400 V Y or 400 V Δ - S1

A

Type	Rated power at 50 Hz	IM 1001 (IM B3)		IM 3001 (IM B5)		IM 2001 (IM B35)	
	P _N kW	Code	Qty	Code	Qty	Code	Qty
PLS 160 MG	7.5		-		-		-
PLS 160 L	11		-		-		-
PLS 180 M	15		-		-		-
PLS 180 LG	18.5		-		-		-
PLS 200 M	22		-		-		-
PLS 200 L	30		-		-		-
PLS 225 MR	37		-		-		-
PLS 250 SP	45		-		-		-
PLS 250 MP	55		-		-		-
PLS 280 SC	75		-		-		-
PLS 280 MD	90		-		-		-
PLS 315 SU	110		-		-		-
PLS 315 MU	132		-		-		-
PLS 315 L	160		-		-		-
PLS 315 LD	180		-		-		-
PLS 315 LD	200		-		-		-
PLS 315 MG	220		-		-		-
PLS 315 LG	250		-		-		-
PLS 315 VLG	280		-		-		-
PLS 315 VLGU	315		-		-		-
PLS 355 LA	370		-		-		-
PLS 355 LB	450		-		-		-
PLS 400 LA	500		-		-		-
PLS 400 LB	600		-		-		-

8
poles
750 min⁻¹

IP 23 - 50 Hz - Class F - Δ T 80 K - 230 V Δ / 400 V Y or 400 V Δ - S1

Type	Rated power at 50 Hz	IM 1001 (IM B3)		IM 2001 (IM B35)	
	P _N kW	Code	Qty	Code	Qty
PLS 315 MG	132		-		-
PLS 315 LG	160		-		-
PLS 315 LG	180		-		-
PLS 315 VLG	200		-		-
PLS 355 LA	285		-		-
PLS 355 LB	330		-		-
PLS 400 LA	375		-		-
PLS 400 LB	450		-		-

PLS

Open Drip Proof three-phase asynchronous motors

Options

Selection table of options for PLS open drip proof, three-phase asynchronous motors - IP 23
Cage rotor

2
poles
3000 min⁻¹

4
poles
1500 min⁻¹

Type	Anti-condensation heaters Code	Roller bearings Code
PLS 160 - 2 poles	MARE 1019	
PLS 160 - 4 poles	MARE1019	MAPT 1011
PLS 180	MAPT 1011	MAPT 1011
PLS 200	MAPT 1011	MAPT 1011
PLS 225	MAPT 1011	MAPT 1011
PLS 250	MAPT 1011	MAPT 1011
PLS 280	MAPT 1011	MAPT 1011
PLS 315 S/M/L/LD	MAPT 1011	MAPT 1011
PLS 315 MG/LG/LD	MAPT 1011	
PLS 355		
PLS 400		

Type	PTO Thermal protections opening (n/c)  Code	PTF Thermal protections closing (n/o)  Code	CTP Positive temperature coefficient thermistors probes  Code	Cable output ¹ Code
PLS 160	MAPT 1011	MAPTF 101	MACTP 101	MASPC 109
PLS 180	MAPT 1011	MAPTF 101	MACTP 101	MASPC 109
PLS 200	MAPT 1011	MAPTF 101	MACTP 101	MASPC 110
PLS 225	MAPT 1011	MAPTF 101	MACTP 101	MASPC 111
PLS 250	MAPT 1011	MAPTF 101	MACTP 101	MASPC 112
PLS 280	MAPT 1011	MAPTF 101	MACTP 101	MASPC 113
PLS 315	MAPT 1011	MAPTF 101	MACTP 101	MASPC 116
PLS 355				
PLS 400				

1. Cable length: 1 metre. Number of conductors: 6 + 1 (section according to the mains supply voltage and powers).

Use guide:

- STEP 1: Select the required basic motor according to the selection grids of the previous pages.
- STEP 2: Select the required additional option or options and add them to the basic designation.

Codification example:

PLS open motor 30 kW 1500 min⁻¹ B3 foot, 400 V with anti-condensation heaters.

Designation **Code**
 4P PLS 180 L 30kW IM B3 400V → MA4 30 314
 ↓ +
 Anti-condensation heaters → MARE 1023

PLS

Open Drip Proof three-phase asynchronous motors

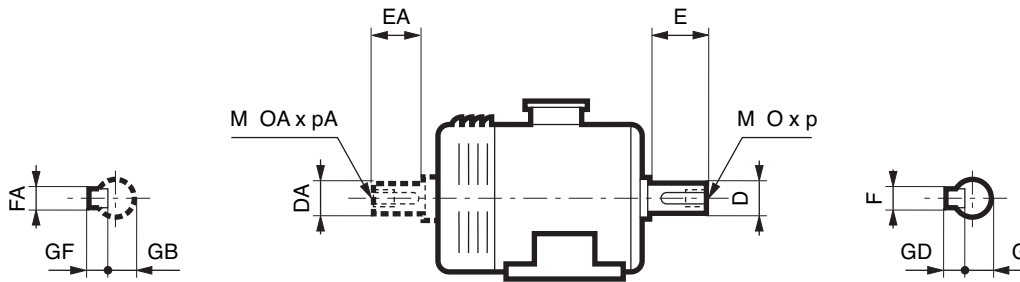
Dimensions

Dimensions of the PLS open drip proof, three-phase asynchronous motors - IP 23

Cage rotor

Dimensions in millimetres

- shaft end



Type	Main shaft end											
	4, 6 and 8 poles							2 poles and 2/4 poles				
	F	GD	D	G	E	O	p	F	GD	D	G	E
PLS 160 MG/L	14	9	48 k6	42.5	110	16	36	14	9	48 k6	42.5	110
PLS 180 M/L	16	10	55 m6	49	110	20	42	16	10	55 m6	49	110
PLS 180 LG	16	10	55 m6	49	110	20	42	16	10	55 m6	49	110
PLS 200 M/LP	18	11	60 m6	53	140	20	42	18	11	60 m6	53	140
PLS 200 L	18	11	60 m6	53	140	20	42	18	11	60 m6	53	140
PLS 225 MR/MU	18	11	65 m6	58	140	20	42	18	11	60 m6	53	140
PLS 250 SP/MP	20	12	75 m6	67.5	140	20	42	18	11	65 m6	58	140
PLS 280 SC/MC/MD	22	14	80 m6	71	170	20	42	18	11	65 m6	58	140
PLS 315 S/SU/M/MU/L	25	14	90 m6	81	170	24	50	20	12	70 m6	62.5	140
PLS 315 LD	28	16	100 m6	90	210	24	50	22	14	80 m6	71	170
PLS 315 MG/LG/VLG/VLGU	28	16	100 m6	90	210	24	50	22	14	80 m6	71	170
PLS 355 L	28	16	110 m6	100	210	24	50	22	14	80 m6	71	170
PLS 400 L	32	18	120 m6	109	210	24	50	-	-	-	-	-

Type	Secondary shaft end											
	4, 6 and 8 poles							2 poles and 2/4 poles				
	FA	GF	DA	GB	EA	OA	pA	FA	GF	DA	GB	EA
PLS 160 MG/L	14	9	48 k6	42.5	110	16	36	14	9	48 k6	42.5	110
PLS 180 M/L	14	9	48 k6	42.5	110	16	36	14	9	48 k6	42.5	110
PLS 180 LG	16	10	55 m6	49	110	20	42	16	10	55 m6	49	110
PLS 200 M/LP	16	10	55 m6	49	110	20	42	16	10	55 m6	49	110
PLS 200 L	18	11	60 m6	53	140	20	42	18	11	60 m6	53	140
PLS 225 MR/MU	18	11	65 m6	58	140	20	42	18	11	60 m6	53	140
PLS 250 SP/MP	18	11	65 m6	58	140	20	42	18	11	65 m6	58	140
PLS 280 SC/MC/MD	18	11	65 m6	58	140	20	42	18	11	65 m6	58	140
PLS 315 S/SU/M/MU/L	20	12	75 m6	67.5	140	20	42	20	12	70 m6	62.5	140
PLS 315 LD	20	12	75 m6	67.5	140	20	42	20	12	70 m6	62.5	140
PLS 315 MG/LG/VLG/VLGU	22	14	80 m6	71	170	20	42	22	14	80 m6	71	170
PLS 355 L	28	16	110 m6	100	210	24	50	22	14	80 m6	71	170
PLS 400 L	32	18	120 m6	109	210	24	50	-	-	-	-	-

PLS

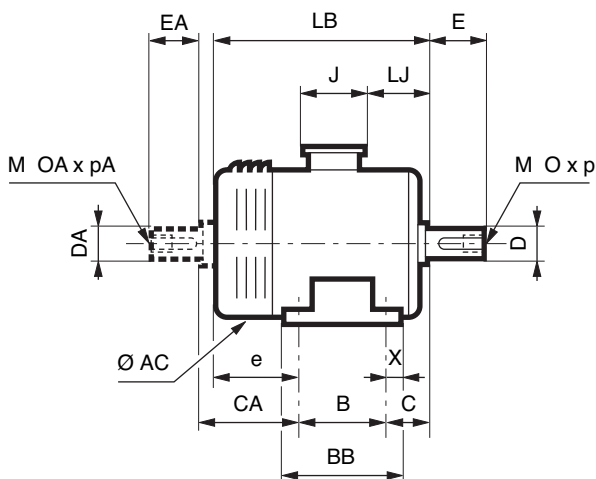
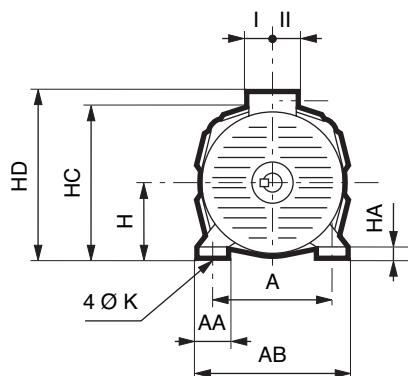
Open Drip Proof three-phase asynchronous motors

Dimensions

Dimensions of the PLS open drip proof, three-phase asynchronous motors - IP 23 Cage rotor

Dimensions in millimetres

– foot mounted



Type	Main dimensions																	
	A	AB	B	BB	C	x	AA	K	HA	H	AC	HD	LB	LJ	J	I	II	CA
PLS 160 MG	254	294	210	298	108	22	44	14	24	160	343	407	498	118	205	100	95	187
PLS 160 L	254	294	254	298	108	22	44	14	24	160	343	407	498	118	205	100	95	143
PLS 180 M	279	324	241	319	121	20	68	14	30	180	343	427	498	118	205	100	95	143
PLS 180 L	279	324	279	319	121	20	68	14	30	180	343	427	523	118	205	100	95	130
PLS 180 LG	279	344	279	323	121	22	60	14	30	180	387	450	580	168	205	100	95	190
PLS 200 M	318	378	267	347	133	20	60	19	30	200	387	470	630	168	205	100	95	240
PLS 200 LP	318	378	305	347	133	20	60	19	30	200	387	470	630	168	205	100	95	202
PLS 200 L	318	378	305	345	133	20	60	19	32	200	437	520	653	198	217	103	145	227
PLS 225 MR	356	416	311	351	149	20	60	19	32	225	437	545	708	198	217	103	145	260
PLS 250 SP	406	470	311	400	168	26	94	24	40	250	490	643	779	158	292	148	180	310
PLS 250 MP	406	470	349	400	168	26	94	24	40	250	490	643	779	158	292	148	180	272
PLS 280 SC	457	517	368	467	190	24	60	24	26	280	490	684	824	209	292	148	180	276
PLS 280 MC	457	517	419	467	190	24	60	24	26	280	490	684	824	209	292	148	180	225
PLS 280 MD	457	517	419	467	190	24	60	24	26	280	490	684	904	209	292	148	180	305
PLS 315 S	508	608	406	486	216	40	100	28	26	315	600	776	880	305	292	148	180	271
PLS 315 SU	508	608	406	486	216	40	100	28	26	315	600	776	940	305	292	148	180	331
PLS 315 M	508	608	457	537	216	40	100	28	26	315	600	776	940	305	292	148	180	280
PLS 315 MU	508	608	457	537	216	40	100	28	26	315	600	776	1025	305	292	148	180	365
PLS 315 L	508	608	508	588	216	40	100	28	26	315	600	776	1025	305	292	148	180	314
PLS 315 LD	508	608	508	588	216	40	100	28	26	315	600	865	1085	241	420	180	235	374
PLS 315 MG	508	608	457	537	216	40	100	27	26	315	660	890	1051	248	428	205	195	393
PLS 315 LG	508	608	508	588	216	40	100	27	26	315	660	890	1131	248	428	205	195	422
PLS 315 VLG	508	608	560	640	216	40	100	27	26	315	660	890	1191	248	428	205	195	430
PLS 315 VLGU	508	608	560	640	216	40	100	27	26	315	660	890	1261	248	428	205	195	500
PLS 355 L	610	710	630	710	254	30	100	27	26	355	705	1078	1470	130	700	224	396	596
PLS 400 L	686	806	710	800	280	45	80	35	26	400	795	1173	1755	177	700	224	396	775

PLS

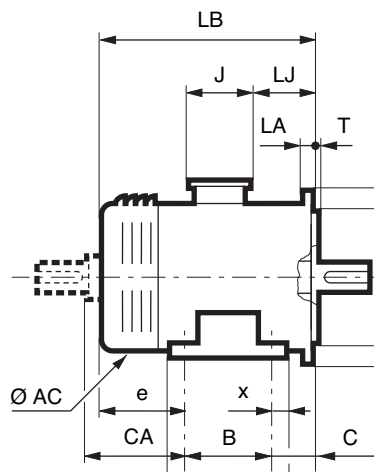
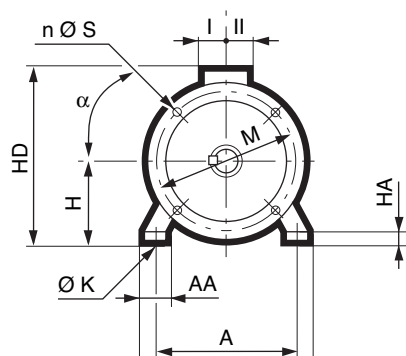
Open Drip Proof three-phase asynchronous motors

Dimensions

Dimensions of the PLS open drip proof, three-phase asynchronous motors - IP 23 Cage rotor

Dimensions in millimetres

– (FF) foot and plain hole flange mounted



Type	Main dimensions																		
	A	AB	B	BB	C	x	AA	K	HA	e	H	AC	HD	LB	LJ	J	I	II	Sym.
PLS 160 MG	254	294	210	298	108	22	44	14	24	180	160	343	407	498	118	205	100	95	FF 350
PLS 160 L	254	294	254	298	108	22	44	14	24	136	160	343	407	498	118	205	100	95	FF 350
PLS 180 M	279	324	241	319	121	20	68	14	30	136	180	343	427	498	118	205	100	95	FF 350
PLS 180 L	279	324	279	319	121	20	68	14	30	123	180	343	427	523	118	205	100	95	FF 350
PLS 180 LG	279	344	279	323	121	22	60	14	30	180	180	387	450	580	168	205	100	95	FF 350
PLS 200 M	318	378	267	347	133	20	60	19	30	230	200	387	470	630	168	205	100	95	FF 400
PLS 200 LP	318	378	305	347	133	20	60	19	30	192	200	387	470	630	168	205	100	95	FF 400
PLS 200 L	318	378	305	345	133	20	60	19	32	215	200	437	520	653	198	217	103	145	FF 400
PLS 225 MR	356	416	311	351	149	20	60	19	32	248	225	437	545	708	198	217	103	145	FF 500
PLS 250 SP	406	470	311	400	168	26	94	24	40	300	250	490	643	779	158	292	148	180	FF 600
PLS 250 MP	406	470	349	400	168	26	94	24	40	262	250	490	643	779	158	292	148	180	FF 600
PLS 280 SC	457	517	368	467	190	24	60	24	26	266	280	490	684	824	209	292	148	180	FF 600
PLS 280 MC	457	517	419	467	190	24	60	24	26	215	280	490	684	824	209	292	148	180	FF 600
PLS 280 MD	457	517	419	467	190	24	60	24	26	295	280	490	684	904	209	292	148	180	FF 600
PLS 315 S	508	608	406	486	216	40	100	28	26	258	315	600	776	880	305	292	148	180	FF 740
PLS 315 SU	508	608	406	486	216	40	100	28	26	318	315	600	776	940	305	292	148	180	FF 740
PLS 315 M	508	608	457	537	216	40	100	28	26	267	315	600	776	940	305	292	148	180	FF 740
PLS 315 MU	508	608	457	537	216	40	100	28	26	352	315	600	776	1025	305	292	148	180	FF 740
PLS 315 L	508	608	508	588	216	40	100	28	26	301	315	600	776	1025	305	292	148	180	FF 740
PLS 315 LD	508	608	508	588	216	40	100	28	26	361	315	600	865	1085	241	420	180	235	FF 740
PLS 315 MG	508	608	457	537	216	40	100	27	26	378	315	660	890	1051	248	428	205	195	FF 740
PLS 315 LG	508	608	508	588	216	40	100	27	26	407	315	660	890	1131	248	428	205	195	FF 740
PLS 315 VLG	508	608	560	640	216	40	100	27	26	415	315	660	890	1191	248	428	205	195	FF 740
PLS 315 VLGU	508	608	560	640	216	40	100	27	26	185	315	660	890	1261	248	428	205	195	FF 740
PLS 355 L	610	710	630	710	254	30	100	27	26		355	705	1078	1470	130	700	224	396	FF 940
PLS 400 L	686	806	710	800	280	45	100	35	26		400	795	1173	1755	177	700	224	396	FF 940

For frame size ≥ 250 mm IM B5 (IM 3001), consult us.

CA dimension and shaft ends dimensions identical to those of the foot mounted motors (pages A10.14 and A10.15).

PLS

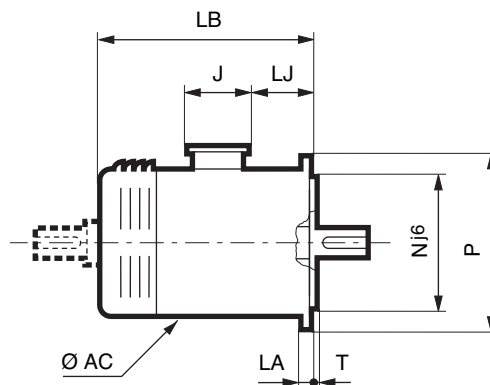
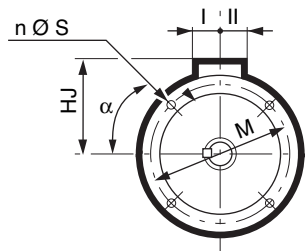
Open Drip Proof three-phase asynchronous motors

Dimensions

Dimensions of the PLS open drip proof, three-phase asynchronous motors - IP 23 Cage rotor

Dimensions in millimetres

- (FF) flange mounted with plain holes



IEC symbol	Flange dimensions							
	M	N	P	T	n	α	S	LA
FF 350	350	300	400	5	4	45°	19	15
FF 350	350	300	400	5	4	45°	19	15
FF 350	350	300	400	5	4	45°	19	15
FF 350	350	300	400	5	4	45°	19	15
FF 350	350	300	400	5	4	45°	19	15
FF 400	400	350	450	5	8	22°30'	19	16
FF 400	400	350	450	5	8	22°30'	19	16
FF 400	400	350	450	5	8	22°30'	19	16
FF 500	500	450	550	5	8	22°30'	19	18
FF 600	600	550	660	6	8	22°30'	24	22
FF 600	600	550	660	6	8	22°30'	24	22
FF 600	600	550	660	6	8	22°30'	24	22
FF 600	600	550	660	6	8	22°30'	24	22
FF 740	740	680	800	6	8	22°30'	24	25
FF 740	740	680	800	6	8	22°30'	24	25
FF 740	740	680	800	6	8	22°30'	24	25
FF 740	740	680	800	6	8	22°30'	24	25
FF 740	740	680	800	6	8	22°30'	24	25
FF 740	740	680	800	6	8	22°30'	24	25
FF 740	740	680	800	6	8	22°30'	24	25
FF 740	740	680	800	6	8	22°30'	24	25
FF 740	740	680	800	6	8	22°30'	24	25
FF 940	940	880	1000	6	8	22°30'	28	28
FF 940	940	880	1000	6	8	22°30'	28	28
FF 940	940	880	1000	6	8	22°30'	28	28
FF 940	940	880	1000	6	8	22°30'	28	28

Type	Main dimensions						
	AC	LB	HJ	LJ	J	I	II
PLS 160 L	343	498	247	118	205	100	95
PLS 160 MG	343	498	247	118	205	100	95
PLS 180 L	343	523	247	118	205	100	95
PLS 180 LG	387	580	270	168	205	100	95
PLS 180 M	343	498	247	118	205	100	95
PLS 200 L	437	653	320	198	217	103	145
PLS 200 LP	387	630	270	168	205	100	95
PLS 200 M	387	630	270	168	205	100	95
PLS 225 MR	437	708	320	198	217	103	145
PLS 250 MP	490	779	393	158	292	148	180
PLS 250 SP	490	779	393	158	292	148	180
PLS 280 MC	490	824	404	209	292	148	180
PLS 280 MD	490	904	404	209	292	148	180
PLS 280 SC	490	824	404	209	292	148	180
PLS 315 L	600	1025	461	305	292	148	180
PLS 315 LD	600	1085	550	241	420	180	235
PLS 315 LG	660	1131	575	248	428	205	195
PLS 315 M	600	940	461	305	292	148	180
PLS 315 MG	660	1051	575	248	428	205	195
PLS 315 MU	600	1025	461	305	292	148	180
PLS 315 S	600	880	461	305	292	148	180
PLS 315 SU	600	940	461	305	292	148	180
PLS 315 VLG	660	1191	575	248	428	205	195
PLS 315 VLGU	660	1261	575	248	428	205	195
PLS 355 LA	705	1470	755	130	625	205	355
PLS 355 LB	705	1470	755	130	625	205	355
PLS 400 LA	795	1755	795	230	625	205	355
PLS 400 LB	795	1755	795	230	625	205	355

For frame size ≥ 250 mm IM B5 (IM 3001), consult us.

Shaft ends dimensions identical to those of the foot mounted motors (page A10.14).