

Cast Iron Frame Motors For Zone 21 Top Premium Efficiency Exceeds EFF1

Standard Features:

- Three-phase, multivoltage, IP66, TEFC
- Output: 4 up to 315kW
- Frames: 112 up to 315M/L
- Voltage: 220-240/380-415V (up to 100L)
380-415/660V (from 112M and up)
- Class "F" insulation ($\Delta T=80K$)
- Continuous duty: S1
- Design N
- Ambient temperature: 40°C, at 1000 m.a.s.l.
- Squirrel cage rotor/Aluminium die cast
- Oil Seal (frames 63 up to 80)
- W3Seal (frames 90S up to 355M/L)
- Anti-condensation drain holes
- Temperature Classification: Zone 21-maximum guaranteed external surface temperature T125°C temperature limitation because of the presence of dust clouds (for material with ignition temperature above 125°C) and presence of dust layers (up to 5mm)
- Regreasing nipples from frame 225S/M and above
- Metric thread cable entries in terminal box
- Thermistors (1 per phase) 140°C
- Suitable for Inverter Duty applications
- Color: RAL 6021

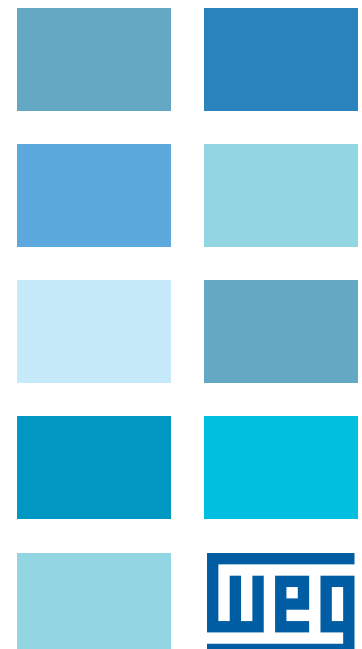
Options Available:

- Degree of Protection: IP65
 - Bearing seals:
 - Oil seal (frames 90S up to 355M/L)
 - Thermal protection:
 - Thermostats
 - RTD-PT 100
 - Space heaters
 - Design H
 - Class "H" insulation
 - Roller bearings for frame 160M and above
- More options available, on request*

Typical Applications:

These motors are designed to operate in areas that can release flammable dust or in atmospheres where explosions can occur due to a mixture of air and dust:

- Sugar refining plants
- Breweries
- Cement plants
- Textiles, pharmaceutical, chemical and agricultural process industries
- Other several duty applications



Features and Benefits

Terminal Box

Made of cast iron made with plenty of internal space. The terminal box can be rotated in 90° intervals, having one or two threaded holes to connect the power supply cables. Power supply connection components are certified, then reducing short-circuit inside the terminal box. Designed in such a way that the energized components remain at a minimum safe distance from grounded components parts. In order to allow end users safety, the motors are designed with grounding lug inside and outside of the terminal box, with the inside grounding lugs duly connected from the factory. * Available as top or side mounted.

Bearings

WEG motors are fitted with the highest quality bearings selected from the best manufacturers in the world and designed to ensure long life of the motor even under heavy operating conditions.

Fan Cover

Made of steel plate for frames 112 up to 132M and of cast iron for frames 160M and above. It offers a superior mechanical rigidity, corrosion-resistance and extended lifetime.

Fan

WEG has designed the fan and fan cover having in mind the lowest noise level. The efficient cooling ensures low motor temperature rise. This minimizes winding losses, thus increasing motor efficiency. The W21 line is supplied with anti-static polypropylene fans from 112 up to 315S/M frames. Alternatively, cast iron or aluminium fans can be supplied on request for all frames.

Frame

WEG motors are made of FC-200 high-grade cast iron. The frames are provided with fins aiming at improving the heat dissipation and adequately spaced to minimize air blockage due to build up of dirt. Motor designed to ensure that surface temperature is lower than ignition temperature of the gas that is present in the environment. Mechanical components are designed to withstand an explosion inside the motor without causing any risk to outside areas since there is no flame propagation through flame path. The motors can be mounted in any position, horizontal and vertical, withstanding the maximum axial and radial thrusts.

Winding

The wire is enameled with class H. Supplied with patented WISE (WEG Insulation System Evolution), which allows three times longer motor lifetime designed to work in environments with excess of moisture and suitable for VFD application. The winding is designed to obtain the smallest Joule losses and temperature rise.

Rotor

High-pressure die casting aluminium rotor dynamically balanced reducing vibration. Advantages of aluminium rotors include lower inertia, higher starting torque and higher mechanical stiffness, among others. The steel laminations are thermally and chemically treated to improve efficiency and minimize mechanical stress.

Shaft

WEG uses SAE/AISI 1040/415 steel as standard, which provides high mechanical strength, preventing bending under load and minimizes fatigue which extends lifetime. Specially designed to withstand torques caused during motor acceleration and deceleration. It's size is larger than the standard motor and, upon special design, motor can have second shaft end.

Stator

The stator is built with highest quality of steel lamination and it is thermally and chemically treated to reduce electrical losses and operating temperature. Guarantees high efficiency and extended motor lifetime.

Nameplate

Stainless steel nameplate ensuring a permanent record of all motor data.

Endshields

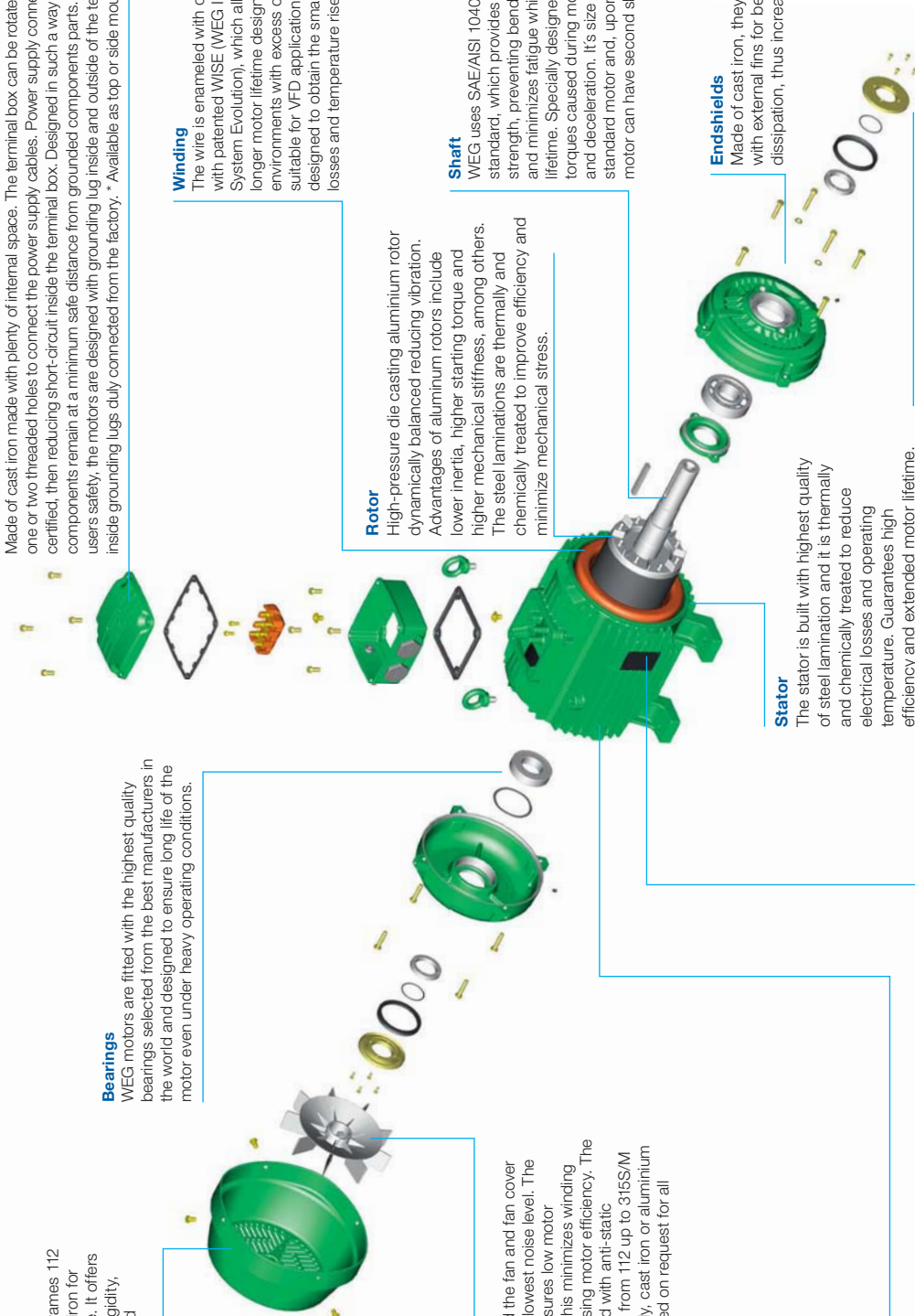
Made of cast iron, they are provided with external fins for better temperature dissipation, thus increasing bearing life.

Seals

WEG Explosion Proof Motors are fitted with either Lip seal or Labyrinth Tachonite as standard (see standard features list) to provide the best possible protection.

W3Seal

Exclusive WEG sealing system (tachonite + v-ring + o-ring) guarantee maximum protection against the ingress of solid and liquid contaminating



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Output		IEC Frame	Full load torque C _n (Nm)	Locked rotor current I _r /I _n	Locked rotor torque T _r /T _n	Break-down torque T _b /T _n	Inertia J kgm ²	Allowable locked rotor time Hot/Cold (s)	Weight (kg)	Sound dB (A)	Rated speed (rpm)	400 V						Full load current I _n (A)
												% of full load						
												Efficiency η			Power Factor (Cos φ)			
												50	75	100	50	75	100	
II Pole - 3000 rpm																		
4	5.5	112M	8.5	13.32	2.6	3.1	0.00842	21/46	46	64	2900	88.7	89.8	89.8	0.61	0.79	0.85	7.56
5.5	7.5	132S	8.5	17.92	2.5	3	0.02056	19/42	62	67	2940	90.1	91.2	91.3	0.7	0.8	0.85	10.2
7.5	10	132S	8.5	23.89	2.7	3.1	0.02804	8/18	75	67	2940	89	91.3	91.6	0.72	0.83	0.87	13.6
9.2	12.5	132M	8.5	29.97	2.4	2.9	0.0243	8/18	60	67	2930	91.1	92.1	92.3	0.65	0.78	0.85	16.9
11	15	160M	8.6	35.72	2.3	3	0.05295	12/26	110	70	2950	91.7	93	93	0.65	0.78	0.83	20.6
15	20	160M	8.3	47.7	2.4	2.9	0.05883	11/24	115	70	2945	92.2	93.3	93.3	0.71	0.81	0.84	27.6
18.5	25	160L	9	59.63	2.3	2.7	0.06766	11/24	136	70	2945	92.9	93.8	93.8	0.67	0.79	0.85	33.5
22	30	180M	8.6	71.31	2.8	2.7	0.15082	9/20	180	70	2955	93.2	94.3	94.1	0.75	0.83	0.87	38.8
30	40	200L	7.6	95.08	2.7	2.4	0.2063	35/77	245	74	2955	92.6	93.9	94.2	0.75	0.83	0.86	53.5
37	50	200L	8.4	118.65	2.6	2.6	0.22424	16/35	260	74	2960	93.3	94.2	94.7	0.76	0.84	0.87	64.8
45	60	225S/M	8.5	142.14	2.4	2.9	0.52021	20/44	410	82	2965	94.5	95.4	95.4	0.82	0.88	0.9	75.6
55	75	250S/M	8.5	177.97	2.3	3	0.55609	18/40	470	82	2960	94.7	95.5	95.3	0.85	0.89	0.91	91.5
75	100	280S/M	7	236.1	1.6	2.6	1.27083	36/79	700	83	2975	95.2	96.1	96	0.83	0.88	0.89	127
90	125	280S/M	8	295.12	2.2	2.8	1.41204	42/92	780	83	2975	94.3	95.6	96	0.82	0.88	0.9	150
110	150	315S/M	8	354.15	1.8	2.6	1.50617	25/55	830	83	2975	95.2	96.4	96.4	0.76	0.84	0.88	187
132	175	315S/M	7.8	413.17	1.9	2.6	1.74151	30/66	900	83	2975	95.5	96.6	96.6	0.79	0.87	0.89	222
160	220	315S/M	8.2	519.42	1.9	2.6	2.11806	30/66	990	83	2975	95.5	96.6	96.6	0.79	0.86	0.89	269
IV Pole - 1500 rpm																		
4	5.5	112M	26.73	6.6	2	2.6	0.01875	8/18	49	56	1445	87.4	89.9	89.9	0.66	0.77	0.83	7.73
5.5	7.5	132S	35.96	8.5	2.4	3.1	0.05427	12/26	65	56	1465	88.5	90.1	90.7	0.69	0.79	0.85	10.3
7.5	10	132M	47.95	8	2.5	3	0.0659	7/15	85	56	1465	89	91.1	91.7	0.71	0.81	0.85	13.9
11	15	160M	71.67	7.5	2.8	3	0.1104	12/26	135	67	1470	91.1	92.3	92.6	0.62	0.73	0.8	21.4
15	20	160L	95.89	6.3	2	2.4	0.13048	11/24	130	67	1465	91.1	92.4	92.9	0.65	0.76	0.82	28.4
18.5	25	180M	119.46	8.3	2.7	2.8	0.17939	12/26	175	64	1470	92.1	93.2	93.6	0.7	0.81	0.85	33.6
22	30	180L	142.86	8.6	2.8	2.9	0.24666	11/24	225	64	1475	92.9	94	94.3	0.68	0.78	0.84	40.1
30	40	200L	189.84	7.3	2.7	2.9	0.38611	19/42	280	69	1480	94	94.7	94.5	0.65	0.76	0.82	55.9
37	50	225S/M	238.1	7.2	2.2	2.7	0.69987	14/31	380	70	1475	93.6	94.7	94.9	0.77	0.85	0.88	63.9
45	60	225S/M	284.76	7.5	2.3	2.8	0.83984	17/37	400	70	1480	93.9	94.7	94.8	0.78	0.86	0.89	77
55	75	250S/M	357.15	8	2.4	2.8	1.15478	9/20	470	70	1475	93.9	94.9	95.2	0.75	0.83	0.87	95.8
75	100	280S/M	472.99	7.4	2.2	2.4	2.16799	21/46	660	70	1485	94.5	95.5	95.8	0.77	0.85	0.87	130
90	125	280S/M	591.24	8.1	2.4	2.6	2.81036	22/48	800	70	1485	95	95.7	96	0.78	0.85	0.88	154
110	150	315S/M	709.49	8	2.4	2.6	3.21184	29/64	860	72	1485	95	95.8	96.3	0.75	0.84	0.87	190
132	175	315S/M	827.74	8.3	2.5	2.6	3.77391	34/75	1000	72	1485	95.6	96.3	96.4	0.76	0.85	0.87	227
160	220	315S/M	1040.59	8.2	2.4	2.7	3.77391	18/40	1000	72	1485	95.7	96.3	96.5	0.75	0.84	0.87	275
250	340	355M/L	1602.78	8.3	2.3	2.6	8.38871	8/18	1380	79	1490	95.8	96.6	96.8	0.78	0.85	0.88	424
300	400	355M/L	1885.63	8.3	2.2	2.2	10.25287	17/37	1750	79	1490	95.7	96.6	96.9	0.78	0.85	0.89	502
315	430	355M/L	2027.05	6.7	2.1	2.7	11.18495	33/73	1770	79	1490	96	96.4	96.7	0.8	0.86	0.89	528

Notes:

*Class "F" insulation with ΔT105K

Standard voltage, connection and frequency: 220-240V Δ 50Hz

380-415V Y 50Hz

380-415V Δ 50Hz

660-690V Y 50Hz

The values shown are subject to change without prior notice. To obtain guaranteed values please access our website.

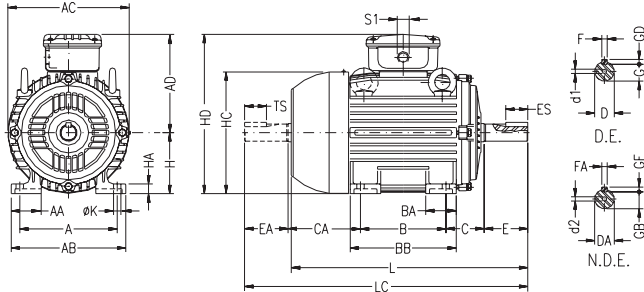
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Output		380 V								415 V							
		Rated speed (rpm)	% of full load						Full load current I _n (A)	Rated speed (rpm)	% of full load						
			Efficiency η			Power Factor (Cos φ)					Efficiency η			Power Factor (Cos φ)			
kW	HP	50	75	100	50	75	100	50	75	100	50	75	100	50	75	100	Full load current I _n (A)
II Pole - 3000 rpm																	
4	5.5	2885	88.2	89.4	89.6	0.65	0.83	0.88	7.71	2910	88.2	89.6	89.7	0.58	0.75	0.83	7.47
5.5	7.5	2930	90.3	91.3	91.2	0.72	0.82	0.87	10.5	2950	89.8	91.2	91.3	0.66	0.77	0.83	10.1
7.5	10	2930	89	91.3	91.5	0.76	0.84	0.88	14.2	2945	89	91.3	91.6	0.7	0.8	0.85	13.4
9.2	12.5	2920	91	92	92.2	0.7	0.81	0.87	17.4	2940	91	92	92.2	0.63	0.74	0.83	16.7
11	15	2945	91.6	92.8	92.8	0.72	0.82	0.85	21.2	2955	91.6	93	93.1	0.61	0.74	0.81	20.3
15	20	2940	92.2	93.1	93.1	0.74	0.82	0.85	28.8	2950	92.1	93.2	93.3	0.68	0.8	0.83	26.9
18.5	25	2940	92.9	93.7	93.7	0.7	0.81	0.86	34.9	2950	92.8	93.8	93.8	0.63	0.77	0.84	32.7
22	30	2950	93.3	94.3	94.1	0.78	0.85	0.88	40.4	2955	93	94.2	94	0.72	0.81	0.86	37.9
30	40	2950	92.5	93.9	94.2	0.76	0.84	0.87	55.6	2960	92.6	93.9	94.2	0.74	0.82	0.85	52.1
37	50	2955	93.5	94.3	94.3	0.81	0.86	0.88	67.7	2960	93	94	94.4	0.73	0.82	0.86	63.4
45	60	2960	94.6	95.4	95.3	0.84	0.89	0.91	78.8	2970	94.4	95.4	95.4	0.8	0.87	0.89	73.7
55	75	2955	94.3	95.2	95.1	0.86	0.9	0.92	95.5	2960	94.6	95.5	95.4	0.83	0.88	0.9	89.1
75	100	2970	95	95.9	95.9	0.84	0.89	0.9	132	2975	95.2	96.2	96.1	0.8	0.86	0.88	123
90	125	2975	94.3	95.6	96	0.84	0.89	0.9	158	2980	94.3	95.6	96	0.8	0.87	0.89	147
110	150	2970	95.2	96.4	96.4	0.78	0.85	0.89	195	2975	95	96.3	96.3	0.72	0.82	0.87	183
132	175	2970	95.5	96.6	96.6	0.81	0.88	0.89	233	2975	95.3	96.5	96.5	0.75	0.86	0.88	216
160	220	2970	95.5	96.4	96.5	0.81	0.87	0.9	280	2975	95.3	96.5	96.6	0.77	0.85	0.88	262
IV Pole - 1500 rpm																	
4	5.5	1440	87.5	88.7	88.9	0.7	0.8	0.85	8.043	1450	87.3	89.9	89.9	0.62	0.74	0.81	7.64
5.5	7.5	1460	89	90	90.5	0.72	0.81	0.86	10.7	1470	88	89.9	90.6	0.65	0.77	0.83	10.2
7.5	10	1460	89.5	91	91.5	0.73	0.82	0.86	14.5	1470	88	91	91.7	0.68	0.8	0.84	13.5
11	15	1465	91	92.2	92.5	0.64	0.75	0.82	22	1475	91	92.2	92.6	0.6	0.7	0.78	21.2
15	20	1460	91.2	92.3	92.8	0.7	0.79	0.84	29.2	1470	91	92.3	92.8	0.6	0.73	0.8	28.1
18.5	25	1465	92	93.2	93.5	0.73	0.84	0.87	34.6	1475	92	93.2	93.6	0.65	0.78	0.84	32.7
22	30	1470	93	94	94.3	0.7	0.8	0.85	41.7	1475	92.5	93.9	94.3	0.66	0.76	0.83	39.1
30	40	1475	94.1	94.6	94.4	0.69	0.79	0.84	57.5	1480	93.8	94.5	94.5	0.6	0.73	0.8	55.2
37	50	1475	93.5	94.7	94.9	0.78	0.86	0.89	66.6	1480	93.3	94.6	94.8	0.76	0.84	0.87	62.4
45	60	1475	94	94.8	94.5	0.79	0.87	0.9	80.4	1480	93.8	94.7	94.8	0.76	0.85	0.88	75
55	75	1475	94	94.8	95.2	0.76	0.84	0.88	100	1480	93.8	94.8	95.1	0.73	0.82	0.86	93.6
75	100	1480	94.6	95.5	95.8	0.79	0.86	0.88	135	1485	94.3	95.5	95.7	0.75	0.84	0.86	127
90	125	1485	95	95.6	95.9	0.8	0.86	0.89	160	1485	95	95.7	96	0.75	0.84	0.87	150
110	150	1480	95	95.8	96.2	0.76	0.85	0.88	197	1485	94.8	95.7	96.2	0.73	0.83	0.86	185
132	175	1480	95.5	96.3	96.3	0.78	0.86	0.88	237	1485	95.5	96.2	96.4	0.73	0.84	0.86	222
160	220	1480	95.8	96.3	96.5	0.77	0.85	0.88	286	1485	95.5	96.2	96.5	0.7	0.83	0.85	271
250	340	1490	96	96.6	96.8	0.8	0.86	0.89	441	1490	95.5	96.5	96.8	0.75	0.84	0.87	413
300	400	1490	95.8	96.6	96.9	0.8	0.86	0.9	523	1490	95.5	96.6	96.8	0.75	0.84	0.88	490
315	430	1490	96.2	96.5	96.6	0.83	0.87	0.89	557	1490	95.6	96.3	96.7	0.77	0.84	0.88	515

Cast Iron Frame Motors For Zone 21

Mechanical Data



IEC FRAME	A	AA	AB	AC	AD	B	BA	BB	C	CA	SHAFT DIMENSIONS														H	HA	HC	HD	K	L	LC	S1	d1	d2	BEARINGS	
											D	E	ES	F	G	GD	DA	EA	TS	FA	GB	GF	D.E.	N.D.E.												
63	100	21	116	125	119	80	22	95	40	78	11j6	23	14	4	8.5	4	9j6	20	12	3	7.2	3	63	8	124	182	7	216	241		EM4	EM3	6201-ZZ			
71	112	30	132	141	127	90	38	113.5	45	88	14j6	30	18	5	11	5	11j6	23	14	4	8.5	4	71	12	139	198		248	276	2xM20x1.5	DM5	EM4	6203-ZZ	6202-ZZ		
80	125	35	149	159	136	100	40	125.5	50	93	19j6	40	28	6	15.5	6	14j6	30	18		11		80	13	157	216		276	313		DM6	DM4	6204-ZZ	6203-ZZ		
90S	140	38	164	179	155	125	42	131	56	104	24j6	50	36	8	20	7	16j6	40	28	5	13	5	90	15	177	245	10	304	350	2xM25x1.5	DM8	DM6	6205-ZZ	6204-ZZ		
90L								329																				375								
100L	160	49	188	199	165	140	50	173	63	118	28j6	60	45		24		22j6	50	36		6	18.5	6	100	16	198	265		376	431		DM10	DM8	6206-ZZ	6205-ZZ	
112M	190	48	220	222	184	140	50	177	70	128	28j6	60	45		24		24j6					20	112	18.5	235	296		393	448				6307-ZZ	6206-ZZ		
132S	216	51	248	270	212	155	55	187	89	150	38k6	80	63	10	33		28j6	60	45		8	24	7	132	20	274	344		452	519	2xM32x1.5	DM12	DM10	6308-ZZ	6207-ZZ	
132M	254	64	308	312	255	210	65	225	108	174	42k6	110	80	14	37	8	42k6			12	37	8	160	22	317	415	14.5	490	557	2xM40x1.5	DM16			6309-C3	6209-Z-C3	
160M								598																				712								
160L	254	64	308	312	255	254	65	298	108	174	42k6	110	80	14	37	8	42k6			12	37	8	160	22	317	415		642	756				6311-C3	6211-Z-C3		
180M	279	80	350	358	275	241	75	294	121	200	48k6	110	80	14	42.5	9	48k6			14	42.5	9	180	28	360	455		664	782				6312-C3	6212-Z-C3		
180L	279	80	350	358	275	241	75	294	121	200	48k6	110	80	14	42.5	9	48k6			14	42.5	9	180	28	360	455		664	782				6312-C3	6212-Z-C3		
200M	318	82	385	396	300	267	85	332	133	222	55m6	160	100	16	49	10	55m6*			100	16	49	10	225	34	466	598		729	842	2xM50x1.5			6312-C3	6212-Z-C3	
200L	318	82	385	396	300	267	85	332	133	222	55m6	160	100	16	49	10	55m6*			100	16	49	10	225	34	466	598		767	880				6312-C3	6212-Z-C3	
225S/M	356	80	436			286	105	391	149	280	55m6*	140	125	18	53		60m6			53			250	42	491	623		817	935				6314-C3	6314-C3		
225M	356	80	436			286	105	391	149	280	55m6*	140	125	18	53		60m6			53			250	42	491	623		847	995				6314-C3	6314-C3		
250S/M	406		506			312	138	449	168	312	60m6*	140	125	18	53		60m6*			53			250	42	491	623		847	995				6314-C3	6314-C3		
250M	406		506			312	138	449	168	312	60m6*	140	125	18	53		60m6*			53			250	42	491	623		847	995				6314-C3	6314-C3		
280S/M	457		557			350	142	510	190	350	65m6*	140	125	18	58		60m6			58			280	52	578	748		1036	1188				6316-C3	6316-C3		
280M	457		557			350	142	510	190	350	65m6*	140	125	18	58		60m6*			58			280	52	578	748		1036	1188				6316-C3	6316-C3		
315S/M	120	628				376	152	558		376	65m6*	170	160	22	71	14	65m6*			58			315	52	613	812		1126	1274	2xM63x1.5			6319-C3	6316-C3		
315M	120	628				376	152	558		376	65m6*	170	160	22	71	14	65m6*			58			315	52	613	812		1156	1308				6319-C3	6316-C3		
315B	182	630	698	595	630	162	830		216	75m6*	140	125	20	67.5	12		60m6*	140	125	18	53	11	47.5	664	865	28	1432	-			M20	-	6316-C3	6314-C3		
315L	182	630	698	595	630	162	830		216	75m6*	140	125	20	67.5	12		60m6*	140	125	18	53	11	47.5	664	865	28	1502	-			M24	-	6322-C3	6319-C3		
355M/L	610	140	750	816	685	560	200	760	254	458	75m6*	140	125	20	67.5	12	60m6*	140	125	18	53	11	355	50	725	1040		1396	1561			M20	M20	6316-C3	6314-C3	
355L	610	140	750	816	685	560	200	760	254	458	75m6*	140	125	20	67.5	12	60m6*	140	125	18	53	11	355	50	725	1040		1466	1661			M24	M20	6322-C3	6319-C3	

- All the dimensions are given in millimeters
- Certified threaded plugs for EEx e motor line
- The values shown are subject to change without prior notice
- * Shaft dimensions for II pole motors, only for direct coupling
- ** For frame 100L, 3 kW, 4 poles, Premium Efficiency motors, the L dimension is 420mm and LC dimension is 475mm.

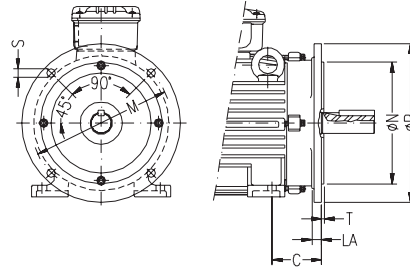
* This data apply to EEx d - Cast Iron Motors for Zone 21 – Improved Efficiency - EFF2, Premium Efficiency – EFF1, Top Premium Efficiency – Exceeds EFF1

Cast Iron Frame Motors For Zone 21

Mechanical Data

“FF” Flange

IEC FRAME	“FF” FLANGE									N° OF HOLES
	FLANGE	C	LA	M	N	P	T	S	α	
63	FF-115	40	9	115	95	140	3	10	45°	4
71	FF-130	45		130	110	160				
80	FF-165	50	10	165	130	200	3.5	12		
90S/L		56								
100L	FF-215	63	11	215	180	250	4	15		
112M		70								
132S/M	FF-265	89	12	265	230	300	5	19		
160M/L	FF-300	108								
180M/L		121								
200M/L	FF-350	133	18	350	300	400	5	19		
225S/M	FF-400	149		400	350	450				
250S/M	FF-500	168	18	500	450	550	6	24	22°30'	8
280S/M		190								
315S/M	FF-600	216	22	600	550	660	6	24		
315B										
355M/L	FF-740	254	740	680	800					



“C” Din Flange

IEC FRAME	“C” DIN FLANGE							N° OF HOLES
	FLANGE	C	M	N	P	S	T	
63	C-90	40	75	60	90	M5	2.5	4
71	C-105	45	85	70	105	M6		
80	C-120	50	100	80	120	M8	3	
90S/L	C-140	56	115	95	140			
100L	C-160	63	130	110	160	M8	3.5	
112M		70						
132S/M	C-200	89	165	130	200	M10		

