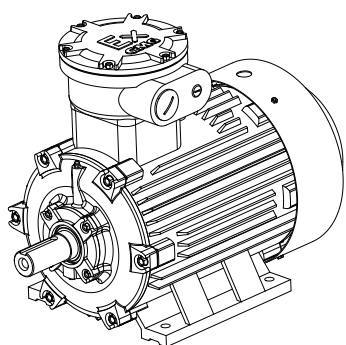


CMG

SOLUTIONS, not just products

Edition 1 Issue 1



HPD series motors

Zone 1 Ex d Cast Iron



SOLUTIONS, not just products

Specialists in Electric Motors, AC Drives & Soft Starters

At CMG we offer customised packages to the most demanding industrial markets. Our success is built on a strong commitment to our customers' needs and a willingness to find the best solution possible. We have been in business since 1948 so you can be confident our experience and knowledge is second to none.

Over the past 62 years, CMG Pty Ltd has enjoyed a solid reputation as a quality supplier for electric motors, variable speed drives and soft starters.

CMG's commitment to quality products is supported by our ISO 9001 and NATA laboratory accreditations.

Our electric motor range now covers low voltage motors up to 1400kW, medium voltage up to 2.5MW and high voltage up to 13MW.

Additionally, we can supply variable speed drives up to 5MW and soft starters up to 1MW.

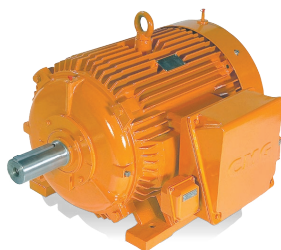
Our company has extensive experience in providing tailored solutions for even the most difficult of applications.

From design concept through to technical evaluation of your specific requirements, our dedicated team is with you every step of the way.

In April 2010, CMG and its group of companies joined the Regal Beloit Corporation (RBC). RBC is an international manufacturer of electrical and mechanical motor control components with head quarters in Beloit, Wisconsin. RBC's strength is in its market diversity as it serves an expansive array of markets from heavy industry to high technology.

***"We convert power into motion to help
the world run more efficiently."***

REGAL BELOIT
BUSINESS PURPOSE



» Electric Motors



» AC Drives



» Soft Starters

HPD Zone 1, Group I & IIB, T4 Class, Ex d motors

Sizes 80 to 315, 0.55 to 200 kW, three phase

CMG's HPD range of Ex d 'flameproof' motors are certified for use in Zone 1 hazardous locations. These motors are designed to contain any sparks within the motor without igniting external vapours. They incorporate features such as a robust cast iron construction and special terminal box to meet the stringent certification requirements.

The complete HPD range covers sizes 80 to 315, three phase 2, 4, 6 & 8 pole, with foot and flange mounting options

Certification

The HPD range is specially designed and certified to IEC 60079.1 for use in a Zone 1, Group I & IIB, T4 class temperature, Ex d area. IEC certification number is IECEX TSA 10.0007X. ATEX certification number is Sira 0ATEX1001X.

Standards and specifications

The main dimensions and rated outputs of the HPD series generally conform to Australian Standard AS/NZS1359 (CENELEC kW-frame size allocation table) and International Standards IEC 60034 and IEC 60072.

Operating parameters

HPD series motors are designed with the following parameters:

- Continuous duty (S1)
- Three phase 415 Volts, 50 Hz power supply
- Ambient temperatures up to 40°C
- Installation at altitudes up to 1000 metres
- Motors may be suitable for other operating parameters, enquire with CMG

Performance data is based on these parameters and may need adjustment for different conditions.

Motors can be manufactured for any supply between 100 and 1100 Volts and frequencies 40 Hz, 50 Hz or 60 Hz.

F class insulation, T4 surface temperature

HPD series motors have F class insulation and B class temperature rise. This design feature assures cool running of the motor. Certified Ex d T4 class motors have a maximum allowable surface temperature of 135°C. (T5) surface temperature class (maximum 100°C) is available on request (refer certificate, motor output will need to be derated).

Degree of protection

Level of enclosure protection for the HPD series is IP66.

Paint finish

Motors are painted with a high quality enamel finish. The standard colour is Carmine Red (RAL 3002), with other colours available on request.

MEPS compliance

The HPD range of motors exceed MEPS2 efficiency requirements as per AS/NZS 1359.5:2004 that corresponds to the IE2 (high efficiency) of the international standard IEC 60034-30.

Bearings

Bearings fitted are deep groove ball type and are the same size both ends on frames 80 to 280. 315 Frame motors have a deep groove ball type bearing on the Non Drive end, with a deep groove ball bearing on the drive end for 2 Pole motors, and a cylindrical roller bearing for 4, 6, and 8 Pole motors. Frames 80 to 180 have sealed for life bearings. Frames 200 to 315 have open bearings that are capable of being replenished via grease nipples

Motor frame	Bearing Size (DE / NDE)
80	6204ZZ / 6204ZZ
90	6205ZZ / 6205ZZ
100	6206ZZ / 6206ZZ
112	6306ZZ / 6306ZZ
132	6308ZZ / 6308ZZ
160	6309ZZ / 6309ZZ
180	6310ZZ / 6310ZZ
200	6312 / 6312
225	6313 / 6313
250	6314 / 6314
280 - 2	6314 / 6314
280 - 4, 6, 8	6317 / 6317
315 - 2	6316 / 6316
315 - 4, 6, 8	NU318 / 6316

Terminal box

The terminal box of the HPD series is amply sized to allow for termination of cables and has dual conduit entry designed to accept flameproof glands. Motors, as standard, have two entries.

Thermistors

HPD motors are fitted, as standard, with one set of (3) 145°C PTC thermistors and are terminated within the main terminal box.

Internal connections

Frame sizes 80 to 112 have three terminals suitable for DOL starting. Frame sizes 132 to 315 have six terminals suitable for DOL or Star/Delta starting.

VVVF drive selection

HPD Ex d hazardous location motors require thermistors when used in conjunction with VVVF drive to ensure the temperature rise remains below the certified T4 level. Ex d/VVVF drive packages are available including a force ventilation option on frames 200 and above. Please contact your nearest CMG office for details of requirements.

Product code specification

When placing an order the motor product code should be specified. The product code of the motor is composed in accordance with the following example:

M	3	2	0	0	1	5	0	3	HPD	/	4	0	5
1	2	3	4-8					9	10 - 12		13-16		

Position 1

M = metric frame size

Position 2

Phase

3 = three phase single speed motor

Position 3

Number of poles

2 = 2 poles 4 = 4 poles
6 = 6 poles 8 = 8 poles

Positions 4 to 8

Rated power output
(kW x 100)

Position 9

Mounting arrangement

3 = B3 4 = B3/B5
5 = B5

Positions 10 to 12

Series

HPD = CMG HPD series motors

Positions 13 to 16

Supply power

Blank = 415V 50Hz
/385 = 380V 50Hz
/405 = 400V 50Hz

Performance data

HPD series, Three phase, 415 V 50 Hz

IP66, F class insulation , T4 class surface temperature

415V 50Hz										380V 50Hz	400V 50Hz		
kW	Frame	Speed [r/min]	Efficiency [%]	Power Factor Cos φ	Current Full Load I_N [A]	Current Locked Rotor I_L/I_N	Torque Full Load T_N [Nm]	Torque Locked Rotor T_L/T_N	Torque Break down T_B/T_N	Current Full Load I_N [A]	Current Full Load I_N [A]	Moment of Inertia $J=1/4GD^2$ [kg-m ²]	Weight of foot mount motor [kg]
3000 r/min = 2 Poles													
0.75	80A	2885	81.8	0.85	1.5	7	2.5	2.7	3.2	1.6	1.6	0.000	34
1.1	80B	2885	83.4	0.84	2.2	7.8	3.6	2.7	3.3	2.3	2.2	0.000	37
1.5	90S	2890	86.3	0.88	2.8	8.3	5	2.7	3	3.1	2.9	0.000	42
2.2	90L	2880	87.1	0.87	4.1	7.8	7.3	2.8	2.9	4.5	4.3	0.000	46
3	100L	2905	89.9	0.87	5.3	7.5	9.9	2.1	3.3	5.7	5.5	0.001	60
4	112M	2920	87.6	0.88	7.3	9	13.1	2.6	3.6	8	7.6	0.001	73
5.5	132SA	2930	92.5	0.90	9.1	8.7	17.9	1.9	3.5	9.9	9.4	0.003	100
7.5	132SB	2920	91.5	0.90	12.7	7.7	24.5	1.7	3	13.7	13.1	0.003	100
11	160MA	2945	91.7	0.90	18.5	6.6	35.7	1.7	2.8	19.9	19	0.054	150
15	160MB	2945	93.6	0.90	24.6	7.4	48.6	1.8	2.7	26.8	25.4	0.056	170
18.5	160L	2940	91.9	0.92	30.5	7.5	60.1	2.7	2.9	33.3	31.6	0.066	190
22	180M	2945	93.0	0.90	36.5	5.6	71.3	2.4	2.7	39.5	37.6	0.094	221
30	200LA	2950	92.9	0.90	50	8	97.1	2.4	3	55	52	0.167	290
37	200LB	2955	93.3	0.91	61	7.8	119.6	2.7	2.9	67	63	0.174	300
45	225M	2975	93.7	0.94	72	8	144.5	2.7	3.1	79	75	0.30	400
55	250M	2975	94.3	0.89	91	7.2	176.6	2.2	2.8	99	94	0.38	458
75	280S	2985	95.0	0.91	122	7.1	239.9	3.0	3.1	133	127	0.79	676
90	280M	2972	95.3	0.90	146	6.8	289.2	3.0	3.2	159	151	0.93	758
110	315S	2985	95.8	0.90	177	7.4	351.9	2	3.4	191	182.2	1.4	1187
132	315M	2984	95.4	0.91	210	7	422.5	1.7	3.5	227.3	216.5	1.55	1294
160	315LA	2979	95.6	0.92	253	6.0	512.9	1.9	2.7	276	262	1.73	1351
185	315LB	2979	95.8	0.90	298	7.5	593.1	2.1	2.9	325	309	1.77	1414
200	315LC	2980	95.9	0.93	312	6.3	640.9	2	3	341	324	1.81	1460

¹⁾ 380V 50Hz and 400V 50Hz columns denote full load currents for motors **specifically** designed to run at these voltages

Performance data

HPD series, Three phase, 415 V 50 Hz
IP66, F class insulation , T4 class surface temperature

415V 50Hz										380V 50Hz	400V 50Hz		
kW	Frame	Speed [r/min]	Efficiency [%]	Power Factor Cos φ	Current Full Load I_N [A]	Current Locked Rotor I_L/I_N	Torque Full Load T_N [Nm]	Torque Locked Rotor T_L/T_N	Torque Break down T_B/T_N	Current Full Load I_N [A]	Current Full Load I_N [A]	Moment of Inertia $J=1/4GD^2$ [kg-m ²]	Weight of foot mount motor [kg]
1500 r/min = 4 Poles													
0.55	80A	1440	81.0	0.71	1.4	8.4	3.6	2.7	3	1.5	1.5	0.000	27
0.75	80B	1445	83.1	0.72	1.8	7.4	5	3.3	3.4	2	1.9	0.000	30
1.1	90S	1440	85.7	0.77	2.4	7.7	7.3	3.3	3.2	2.6	2.5	0.001	39
1.5	90L	1440	85.8	0.76	3.2	7.9	9.9	3.5	3.2	3.5	3.3	0.001	44
2.2	100L	1455	86.9	0.84	4.3	8.4	14.4	3.7	4.9	4.7	4.5	0.001	52
3	100L	1455	87.6	0.84	5.7	8.5	19.7	2.7	3.3	6.2	5.9	0.001	65
4	112M	1450	88.4	0.84	7.5	8.1	26.3	2.5	3.5	7.9	7.6	0.002	74
5.5	132S	1460	90.1	0.85	10	8.1	36	1.9	3.1	10.7	10.3	0.003	90
7.5	132M	1465	91.0	0.83	13.8	8.7	48.9	1.8	3.3	15.1	14.3	0.007	98
11	160M	1470	91.8	0.85	19.6	7.1	71.5	2.3	2.6	21.4	20.3	0.089	155
15	160L	1471	93.2	0.84	26.7	8.2	97.4	2	3	28.5	27.4	0.103	179
18.5	180M	1475	92.6	0.89	31.1	7.7	119.8	2.3	3	33.5	32	0.16	215
22	180L	1470	93.0	0.88	37.3	7.1	142.9	2	2.8	40.4	38.4	0.18	225
30	200L	1475	94.1	0.88	50.5	8.8	194.2	2.7	3.4	54.2	51.7	0.31	310
37	225S	1485	94.6	0.90	61	8.1	237.9	2.4	2.9	67	63	0.53	392
45	225M	1480	94.4	0.89	74.4	7.5	290.4	1.7	2.7	80.5	76.7	0.58	418
55	250M	1480	95.1	0.89	89.7	7.2	354.9	1.6	2.5	97.6	92.8	0.79	575
75	280S	1485	95.3	0.90	121	6.7	482.3	1.6	2.8	131	124.9	1.6	687
90	280M	1485	95.5	0.90	144.5	7	578.8	1.8	2.9	157	149.3	1.89	755
110	315S	1484	95.3	0.86	188	6.6	707.9	2	2.5	205	195	2.73	1043
132	315M	1485	96.3	0.88	217	7.4	848.9	2.1	3	235	223.9	3.04	1165
160	315LA	1485	96.5	0.88	261	7.6	1029	1.7	3.1	282.2	270.1	3.43	1362
185	315LB	1487	96.2	0.90	298	7.8	1188.1	2.4	2.5	325	309	3.52	1536
200	315LC	1490	96.9	0.89	323	7.9	1281.9	2.5	3.2	353.8	334.2	3.62	1594

¹⁾ 380V 50Hz and 400V 50Hz columns denote full load currents for motors **specifically** designed to run at these voltages

Performance data

HPD series, Three phase, 415 V 50 Hz

IP66, F class insulation , T4 class surface temperature

415V 50Hz										380V 50Hz	400V 50Hz		
kW	Frame	Speed [r/min]	Efficiency [%]	Power Factor Cos φ	Current Full Load I_N [A]	Current Locked Rotor I_L/I_N	Torque Full Load T_N [Nm]	Torque Locked Rotor T_L/T_N	Torque Break down T_B/T_N	Current Full Load I_N [A]	Current Full Load I_N [A]	Moment of Inertia $J=1/4GD^2$ [kg-m ²]	Weight of foot mount motor [kg]
1000 r/min = 6 Poles													
0.37	80A	930	69.3	0.71	1.1	3.9	3.8	1.8	2.4	1.2	1.1	0.000	24
0.55	80B	930	72.3	0.70	1.6	4.2	5.6	2.1	2.7	1.7	1.7	0.001	25
0.75	90S	950	79.1	0.70	1.9	5.3	7.5	2.2	2.7	2.1	2	0.001	34
1.1	90L	950	80.6	0.70	2.7	5.1	11.1	2.3	2.7	2.9	2.8	0.001	39
1.5	100L	970	85.0	0.73	3.4	6.3	14.8	2.1	3.1	3.5	3.4	0.002	59
2.2	112M	960	84.0	0.73	5	6.4	21.9	2.4	2.9	5.5	5.2	0.035	64
3	132S	970	86.0	0.78	6.2	7.3	29.5	2.5	2.9	6.5	6.3	0.007	92
4	132MA	970	86.9	0.79	8.2	6.7	39.4	2.3	2.6	9	8.5	0.009	107
5.5	132MB	970	87.8	0.79	11	7	54.1	2	2.6	12	11.4	0.046	118
7.5	160M	975	89.4	0.78	15	6.3	73.5	2.5	2.8	16.4	15.6	0.11	143
11	160L	975	90.9	0.78	21.6	6.8	107.7	2	2.7	22.8	22	0.13	165
15	180L	975	90.7	0.85	27	7.5	146.9	2.4	2.6	29.5	28	0.25	216
18.5	200LA	983	92.3	0.84	33.3	7.4	179.7	2.2	2.7	35.6	34.2	0.31	276
22	200LB	975	91.8	0.84	39.5	6.8	215.5	2.4	2.6	43.1	41	0.41	297
30	225M	985	92.8	0.84	54	7	290.9	2.4	3	59	56	0.67	393
37	250M	985	93.0	0.88	63	6.5	358.7	2.1	2.6	69	65	0.94	467
45	280S	990	93.9	0.90	75	7	434.1	2.2	2.6	82	78	1.15	646
55	280M	994	94.8	0.90	90	6.6	528.4	2.4	2.7	98	83	1.82	775
75	315S	992	94.9	0.90	123	6.6	722	2.8	3	134	128	2.33	1070
90	315M	991	94.9	0.87	153	6.6	867.3	2.2	2.6	186	158	4.57	1133
110	315LA	991	95.5	0.86	186	6.1	1060	2.1	3.4	202	192	4.83	1207
132	315LB	990	95.4	0.87	222	6.1	1273.3	2	2.4	242	230	5.32	1233

¹⁾ 380V 50Hz and 400V 50Hz columns denote full load currents for motors **specifically** designed to run at these voltages

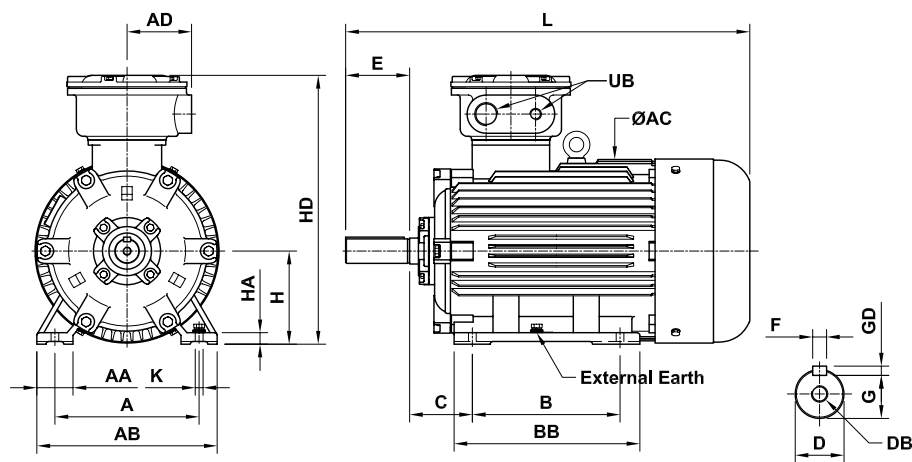
Performance data

HPD series, Three phase, 415 V 50 Hz
IP66, F class insulation , T4 class surface temperature

415V 50Hz										380V 50Hz	400V 50Hz		
kW	Frame	Speed [r/min]	Efficiency [%]	Power Factor Cos φ	Current Full Load I_N [A]	Current Locked Rotor I_L/I_N	Torque Full Load T_N [Nm]	Torque Locked Rotor T_L/T_N	Torque Break down T_B/T_N	Current Full Load I_N [A]	Current Full Load I_N [A]	Moment of Inertia $J=1/4GD^2$ [kg-m²]	Weight of foot mount motor [kg]
750 r/min = 8 Poles													
2.2	132S	705	80.9	0.73	5.2	5.5	29.8	2.1	2.1	5.7	5.4	0.031	78
3	132M	705	82.7	0.73	6.9	5.5	40.6	2.1	2.1	7.5	7.2	0.04	94
4	160M	720	84.2	0.77	8.6	5.5	53.1	2.2	2.6	9.4	8.9	0.085	129
5.5	160M	720	85.8	0.78	11.4	5.6	73	2.3	2.6	12.5	11.8	0.1	136
7.5	160L	720	87.2	0.76	15.7	5.8	99.5	2.6	2.8	17.1	16.3	0.18	143
11	180L	730	88.8	0.78	22.1	6.2	143.9	2.3	2.7	24.1	22.9	0.24	210
15	200L	730	90.0	0.78	29.7	5.3	196.2	2.1	2.4	32.4	30.8	0.37	316
18.5	225S	735	90.7	0.77	36.9	5.8	240.4	2.3	2.5	40.3	38.3	0.6	379
22	225M	735	91.2	0.77	43.6	5.9	285.9	2.3	2.6	47.6	45.2	0.69	421
30	250M	740	92.1	0.79	57.4	5.7	387.2	2	2.4	63	60	0.96	606
37	280S	740	92.7	0.80	69.4	5.3	477.5	1.9	2.2	76	72	1.82	685
45	280M	745	93.2	0.82	81.9	5.8	576.8	2.1	2.4	89	85	2.14	715
55	315S	743	94.0	0.80	103	6.5	706.9	2.7	3	112	107	4.6	1054
75	315M	740	94.4	0.82	135	4.9	967.9	1.5	2	147	140	5.32	1159
90	315L	740	94.7	0.83	159	4.9	1161.5	1.5	2	174	165	5.95	1296
110	315L	740	95.2	0.83	194	5.1	1419.6	1.6	2.1	212	201	6.7	1338

Dimensional drawings

Foot mount B3 (IM1001)



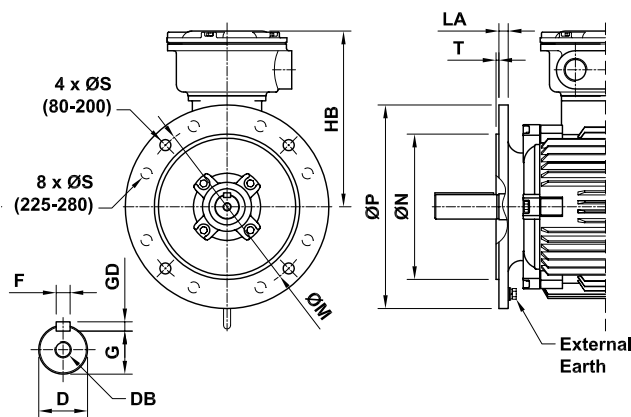
HPD Foot mount B3 (IM1001)

Motor Frame		A	AA	AB	AC	AD	B	BB	C	D	DB	E	F	GD	G	H	HA	HD	K	UB	L
80	19	125	34	160	175	120	100	126	50	19	M6	40	6	6	15.5	80	10	305	10	1 x M25, 1 x M20	350
90S	24	140	36	180	185	120	100	126	56	24	M8	50	8	7	20	90	14	335	10	1 x M25, 1 x M20	397
90L	24	140	36	180	185	120	125	151	56	24	M8	50	8	7	20	90	14	335	10	1 x M25, 1 x M20	427
100L	28	160	40	200	225	120	140	170	63	28	M10	60	8	7	24	100	15	365	12	1 x M25, 1 x M20	450
112M	28	190	50	240	230	120	140	180	70	28	M10	60	8	7	24	112	16	375	12	1 x M25, 1 x M20	466
132S	38	216	60	280	270	135	140	210	89	38	M12	80	10	8	33	132	18	435	12	1 x M40, 1 x M20	505
132M	38	216	60	280	270	135	178	238	89	38	M12	80	10	8	33	132	18	435	12	1 x M40, 1 x M20	545
160M	42	254	70	330	320	135	210	265	108	42	M16	110	12	8	37	160	20	500	15	1 x M40, 1 x M20	645
160L	42	254	70	330	320	135	254	310	108	42	M16	110	12	8	37	160	20	500	15	1 x M40, 1 x M20	685
180M	48	279	70	355	360	135	241	321	121	48	M16	110	14	9	42.5	180	22	535	15	1 x M40, 1 x M20	730
180L	48	279	70	355	360	135	279	359	121	48	M16	110	14	9	42.5	180	22	535	15	1 x M40, 1 x M20	750
200L	55	318	70	388	400	160	305	366	133	55	M20	110	16	10	49	200	25	595	19	1 x M50, 1 x M20	785
225S	60	356	75	431	450	160	286	368	149	60	M20	140	18	11	53	225	28	635	19	1 x M50, 1 x M20	845
225M*	55*	356	75	431	450	160	311	393	149	55	M20	110	16	10	49	225	28	635	19	1 x M50, 1 x M20	840
225M	60	356	75	431	450	160	311	393	149	60	M20	140	18	11	53	225	28	635	19	1 x M50, 1 x M20	870
250M*	60*	406	80	486	500	190	349	425	168	60	M20	140	18	11	53	250	30	710	24	1 x M63, 1 x M20	924
250M	65	406	80	486	500	190	349	425	168	65	M20	140	18	11	58	250	30	710	24	1 x M63, 1 x M20	924
280S*	65*	457	85	545	560	190	368	448	190	65	M20	140	18	11	58	280	35	770	24	1 x M63, 1 x M20	965
280S	75	457	85	545	560	190	368	448	190	75	M20	140	20	12	67.5	280	35	770	24	1 x M63, 1 x M20	985
280M*	65*	457	85	545	560	190	419	499	190	65	M20	140	18	11	58	280	35	770	24	1 x M63, 1 x M20	1010
280M	75	457	85	545	560	190	419	499	190	75	M20	140	20	12	67.5	280	35	770	24	1 x M63, 1 x M20	1030
315S*	65*	508	114	622	700	250	406	510	216	65	M20	140	18	11	58	315	40	1030	28	1 x M63, 1 x M20	1208
315S	80	508	114	622	700	250	406	510	216	80	M20	170	22	14	71	315	40	1030	28	1 x M63, 1 x M20	1238
315M*	65*	508	114	622	700	250	457	562	216	65	M20	140	18	11	58	315	40	1030	28	1 x M63, 1 x M20	1258
315M	80	508	114	622	700	250	457	562	216	80	M20	170	22	14	71	315	40	1030	28	1 x M63, 1 x M20	1288
315L*	65*	508	114	622	700	250	508	612	216	65	M20	140	18	11	58	315	40	1030	28	1 x M63, 1 x M20	1348
315L	80	508	114	622	700	250	508	612	216	80	M20	170	22	14	71	315	40	1030	28	1 x M63, 1 x M20	1378

* 2 pole motors only.

Dimensional drawings

Flange mount B5 (IM3001)



HPD Flange mount B5 (IM3001)

Motor Frame		HB	LA	M	N	P	S	T
80	19	225	12	165	130	200	12	3.5
90S	24	245	12	165	130	200	12	3.5
90L	24	245	12	165	130	200	12	3.5
100L	28	265	14	215	180	250	15	4
112M	28	263	14	215	180	250	15	4
132S	38	303	14	265	230	300	15	4
132M	38	303	14	265	230	300	15	4
160M	42	340	16	300	250	350	19	5
160L	42	340	16	300	250	350	19	5
180M	48	355	18	300	250	350	19	5
180L	48	355	18	300	250	350	19	5
200L	55	395	18	350	300	400	19	5
225S	60	410	20	400	350	450	19	5
225M*	55*	410	20	400	350	450	19	5
225M	60	410	20	400	350	450	19	5
250M*	60*	460	22	500	450	550	19	5
250M	65	460	22	500	450	550	19	5
280S*	65*	490	22	500	450	550	19	5
280S	75	490	22	500	450	550	19	5
280M*	65*	490	22	500	450	550	19	5
280M	75	490	22	500	450	550	19	5
315S*	65*	715	25	600	550	660	24	6
315S	80	715	25	600	550	660	24	6
315M*	65*	715	25	600	550	660	24	6
315M	80	715	25	600	550	660	24	6
315L*	65*	715	25	600	550	660	24	6
315L	80	715	25	600	550	660	24	6

* 2 pole motors only.

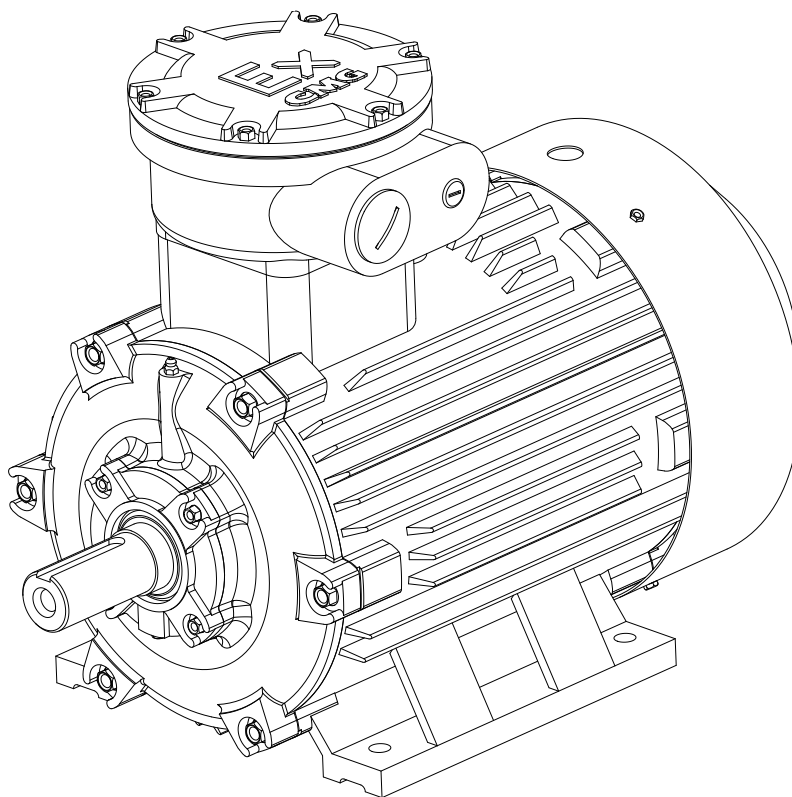
HPD Modification options

The HPD series can be modified to incorporate one or more of the following options, please contact your nearest CMG branch for more details.

- Socket head cap screws, Grades 8.8, 10.9 or 12.9 to replace all external bolts and/or screws.
- Stainless steel external fasteners in Grades 304 or 316 for frame size 132 and above.
- Anti-condensation heater terminated in the main terminal box.
- Stainless steel shafts.
- Alternative shaft diameters and/or shaft length.
- Double shaft extensions.
- Alternative conduit entry dimensions.
- Alternative bearing arrangements (ball, roller, angular contact or four point contact types).
- Force ventilation for frame size 200 and above.
- Low noise fan and cowl in steel or cowl only in stainless steel.

- Rain canopy for vertical mount (V1) in steel or stainless steel.
- Coal shields in either steel or stainless steel for frame size 160 and above.
- T5 temperature class with motor de-rated to 75% of standard output kW, fitted with 100°C PTC thermistors fitted. (Suitability to be confirmed by test).
- Class H winding insulation.
- Non standard paint colour in Alkyd Enamel.
- Two pack epoxy paint finish.

Please note: The HPD series has allowance in the main terminal box for only two auxiliary terminal posts, combinations of thermistors and heaters terminated in the main box is not possible.



Installation and maintenance

CMG HPD series motors are designed and manufactured to be robust and reliable for minimal maintenance. The following items should be taken into consideration to ensure trouble free installation and reliable running throughout the motors' life.

Inspection

- On receipt of the motor check the following:
- rating plate details and enclosure are as ordered
 - shaft turns freely
 - motor was not damaged during transport
 - If the winding is meggered to earth, ensure that the thermal protectors are not inadvertently damaged. (The thermistor leads should be shorted together whilst meggering takes place)

Storage

When the motor is not for immediate use store in a clean, dry location, free from vibration. (Bearings are susceptible to damage from vibration.)

Installation

The following items should be considered when installing to ensure motor reliability:

Surroundings

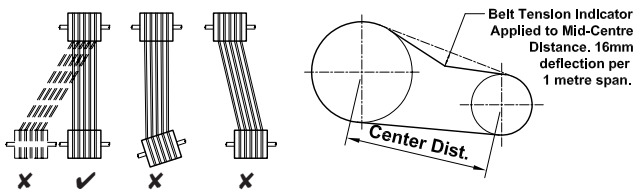
Ensure that the motor is properly protected against ingress of oil, water or dust if construction work is in progress around the motor.

Pulleys and couplings

- Pulleys and couplings should be machined to H7 limits. Both shaft and bore should be cleaned and lubricated. If the fit is still too tight the pulley or coupling should be heated up in air or oil to approximately 93°C.
- Shock methods must not be used in removing pulleys and couplings. Proper wheel or pulley removers should be used to prevent shaft and bearing damage.
- Pulleys and couplings should be balanced before the keyway is cut to eliminate vibration caused by lack of balancing. (Rotor and shaft assemblies have been finely balanced during manufacture, and drive end shafts balanced with a half key.)
- When slide rails are used in conjunction with pulley drives the adjusting screw ends should be positioned between the motor and load at drive shaft end and the other diagonally opposite. This helps speedy and accurate belt aligning, tensioning and replacement.

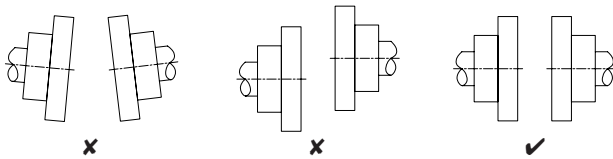
Belt Drives

The belt manufacturer's recommendations for installation, alignment and tensioning must be strictly adhered to when fitting belt drives.



Direct Coupling

Care must be taken in checking alignment of driving and driven shafts. The motor and driven equipment must be in alignment from all aspects. Misalignment of pulleys will lead to premature bearing failure.



Running current check

Check the running current of the motor on no load and full load.

Current

Check periodically that the current drawn is balanced and is the same as at the time of installation.

Cable Terminations

Cable terminations should have all incoming supply leads compressed between two nuts.

Insulation testing

When checking for insulation resistance (IR) the test voltage must not be applied across the thermal protection device. The correct procedure is to short the entire protector leads together and apply the test voltage between the shorted leads and earth and/or phases. 'Meggering' across the terminals of the thermal protection device, when not shorted, is likely to cause irreparable damage, and must not be carried out.

Special Requirements

- For Group I applications the motor should be installed in accordance with AS/NZS4871.1:2010.
- Any unused cable entries to the terminal box must be blanked off with an appropriately certified conduit stop (temporary plastic stops must be discarded.)
- For any motor operated from a VVVF drive the thermal protection devices must be connected into the motor control circuit so as to disconnect the supply in order to prevent the T4 temperature class from being exceeded.
- Repairs/maintenance involving the dismantling of the motor must be carried out in service facilities recognized for that purpose and only accredited and competent personnel should carry out or supervise maintenance procedures.