



MARATHON HLA SERIES

HLA CAST ALUMINIUM MULTI-MOUNT THREE PHASE MOTORS
SIZES 80 - 160, 0.75 - 18.5KW

REGAL[®]

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INTRODUCTION

Regal Australia's HLA series motors are an ideal example of Regal Australia's enhanced performance motors.

MOTOR DESIGN

Building on the proven performance of the popular SLA series, Regal Australia has developed the HLA series to meet the demands of more efficient electric motors. Incorporating all of the mechanical features of the SLA series the HLA series complies with the new Australian standard for minimum efficiency (MEPS2).

STANDARDS AND SPECIFICATIONS

The main dimensions and rated outputs of the HLA series generally conform to Australian Standard AS1359 and International Standards IEC 60034 and IEC 60072.

Multi-mount feature

The standard HLA motor is supplied with the terminal box top mounted, and has detachable feet. The unique multi-mount design allows the motor feet to be removed and the motor mounted from any of the 16 mounting pads. This feature means that for axial flow fans, there is no need for a motor mount in the fan case, which enables quicker assembly times, lower cost, and less restriction to air flow.

Alternatively the feet may be relocated to either side, for a wall mounted motor or side mounted terminal box.

OPERATING PARAMETERS

Standard HLA series motors are designed with the following parameters:

- Continuous duty (S1)
- Three phase 380-415V, 50Hz power supply
- Ambient temperatures up to 40°C
- Installation at altitudes up to 1000 metres

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

F class insulation, B class temperature rise

HLA series motors have F class insulation and B class temperature rise which gives them good service factor capabilities.

Degree of protection

Standard level of enclosure protection for the HLA series is IP55, with increased ratings available on request.

Pump application

A locked drive end bearing is standard on all HLA flange mounted motors from 90 to 160 frame. This makes it perfect for pump applications where minimal axial shaft movement is critical to provide tight tolerances for impellers. On request Regal Australia can provide a locked bearing option for smaller frame sizes and foot mounted motors.

Air movement application

Low weight design and the standard drilled and tapped hole in the shaft makes the HLA series ideally suited for all air movement applications.

Paint finish

Motors are painted with a high quality enamel finish. The standard colour is pastel blue (RAL5024), with other colours available on request.

MEPS2 compliance

The HLA range of motors exceed MEPS2 efficiency requirements as per AS/NZS 1359.5:2004 Table B2, that corresponds to the IE2 (high efficiency) of the international standard IEC 60034-30.

Bearings

Bearings fitted are a deep groove ball type with double seals and are the same size for both ends.

Motor frame	Bearing Size
80	6204-2RS
90S/L	6205-2RS
100L	6206-2RS
112M	6206-2RS
132S/M	6208-2RS
160M/L	6309-2RS

Terminal box

AThe terminal box of the HLA series is separate from the body of the motor allowing it to be rotated providing ease of connection to supply.

Internal connections, voltages and VF drive selection

Standard terminal connections for motors 3kW and below is 230V Delta / 400V Star. These motors are suitable for operation with 230V three phase Variable Frequency Drives or 400V DOL starting.

Standard terminal connections for motors 4kW and above is 400V Delta / 690V Star. These motors are suitable for operation with 400V three phase Variable Frequency Drives, 400V Star/Delta or 400V DOL starting.

PART NUMBER LOGIC

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	H	L	A
1	2	3	4-8		9	10-12		13			

Position 1

M = metric frame size

Position 2

Phase

3 = Three phase

A = 2 speed fan duty single winding

B = 2 speed fan duty separate windings

Position 3

Number of poles

2 = 2 poles

4 = 4 poles

6 = 6 poles

8 = 8 poles

E = 2/4 poles

J = 4/6 poles

K = 4/8 poles

N = 6/8 poles

P = 6/12 poles

S = 8/16 poles

Positions 4 to 8

Rated power output

(kW x 100)

(refers to kW at high speed

for 2 speed motors)

Position 9

Mounting arrangements

3 = B3

4 = B3/B5 **5** = B5

6 = B3/B14A **7** = B14A

8 = B3/B14B **9** = B14B

0 = Body mount

Positions 10 to 12

Series

HLA = HLA series

Position 13

Variation suffix

Blank = standard

F = flying leads

H = H class insulation

P = pad mount (fitted pads)

R = airstream rated

PERFORMANCE DATA

HLA SERIES, THREE PHASE, 380-415V 50HZ IP55, F CLASS INSULATION , B CLASS TEMPERATURE RISE

Motor frame	kW	Speed [r/min]	400V 50Hz						380V 50Hz	415V 50Hz	Moment of inertia J=1/4GD ² [kg m ²]	Weight of foot mount motor [kg]				
			Efficiency %		Power factor		Current		Torque				Current	Current		
			at % full load		at % full load		Full load I _N [A]	Locked rotor I _L /I _N	Full load T _N [Nm]	Locked rotor T _L /T _N			Break down T _B /T _N	Full load I _N [A]	Full load I _N [A]	
3000 R/MIN = 2 POLES																
80A	- 19	0.75	2850	83.4	84.2	0.86	0.81	1.50	7.0	2.5	3.1	3.4	1.57	1.47	0.00085	12
80B	- 19	1.1	2835	84.4	85.9	0.87	0.83	2.2	7.3	3.7	3.0	3.3	2.3	2.1	0.00099	13
90S	- 24	1.5	2860	86.4	87.0	0.86	0.81	2.9	8.4	5.0	3.9	4.0	3.0	2.9	0.0014	15
90L	- 24	2.2	2860	86.5	87.3	0.85	0.80	4.3	8.7	7.4	4.1	4.2	4.4	4.2	0.0016	16
100L	- 28	3	2890	86.7	87.0	0.87	0.82	5.7	9.0	9.9	3.0	3.4	6.0	5.5	0.0035	27
112M	- 28	4	2915	89.6	90.1	0.90	0.86	7.1	9.2	13.1	3.0	3.6	7.4	7.0	0.0062	33
132SA	- 38	5.5	2925	90.2	90.5	0.89	0.85	9.9	8.0	18.0	2.3	3.2	10.3	9.7	0.013	45
132SB	- 38	7.5	2920	90.6	91.1	0.89	0.87	13.3	7.9	24.5	2.3	2.9	13.9	13.0	0.015	50
160MA	- 42	11	2950	92.0	91.9	0.88	0.83	19.5	8.0	35.6	2.3	3.2	20.3	19.1	0.045	73
160MB	- 42	15	2945	92.4	92.2	0.88	0.86	26.4	7.8	48.6	2.1	2.9	27.4	25.9	0.051	82
160L	- 42	18.5	2935	92.2	92.3	0.89	0.86	32.5	7.6	60.2	2.1	2.7	34.0	31.7	0.057	84
1500 R/MIN = 4 POLES																
80B	- 19	0.75	1410	82.2	82.5	0.72	0.63	1.85	7.5	5.1	2.3	2.6	1.90	1.80	0.0023	14
90S	- 24	1.1	1425	84.0	84.6	0.74	0.66	2.6	6.2	7.4	2.9	3.0	2.6	2.5	0.0026	17
90L	- 24	1.5	1430	86.2	86.9	0.75	0.68	3.4	7.0	10.0	3.1	3.4	3.4	3.3	0.0029	18
100LA	- 28	2.2	1455	86.5	86.1	0.78	0.71	4.7	8.3	14.4	3.1	3.5	4.8	4.7	0.0058	24
100LB	- 28	3	1455	87.4	87.4	0.79	0.74	6.2	8.0	19.7	2.7	3.0	6.5	6.0	0.0071	29
112M	- 28	4	1455	88.9	89.2	0.79	0.74	8.2	7.3	26.3	2.6	3.1	8.4	8.1	0.011	31
132S	- 38	5.5	1460	90.2	90.6	0.83	0.80	10.6	7.1	36.0	2.0	2.7	11.0	10.4	0.023	53
132M	- 38	7.5	1455	90.5	91.0	0.84	0.80	14.3	7.4	49.2	2.3	2.8	14.9	14.0	0.032	63
160M	- 42	11	1470	91.0	90.9	0.84	0.79	20.7	7.4	71.5	2.1	3.2	21.3	20.6	0.079	80
160L	- 42	15	1465	91.8	91.9	0.85	0.81	27.6	7.5	97.8	2.0	3.1	28.4	27.2	0.096	94

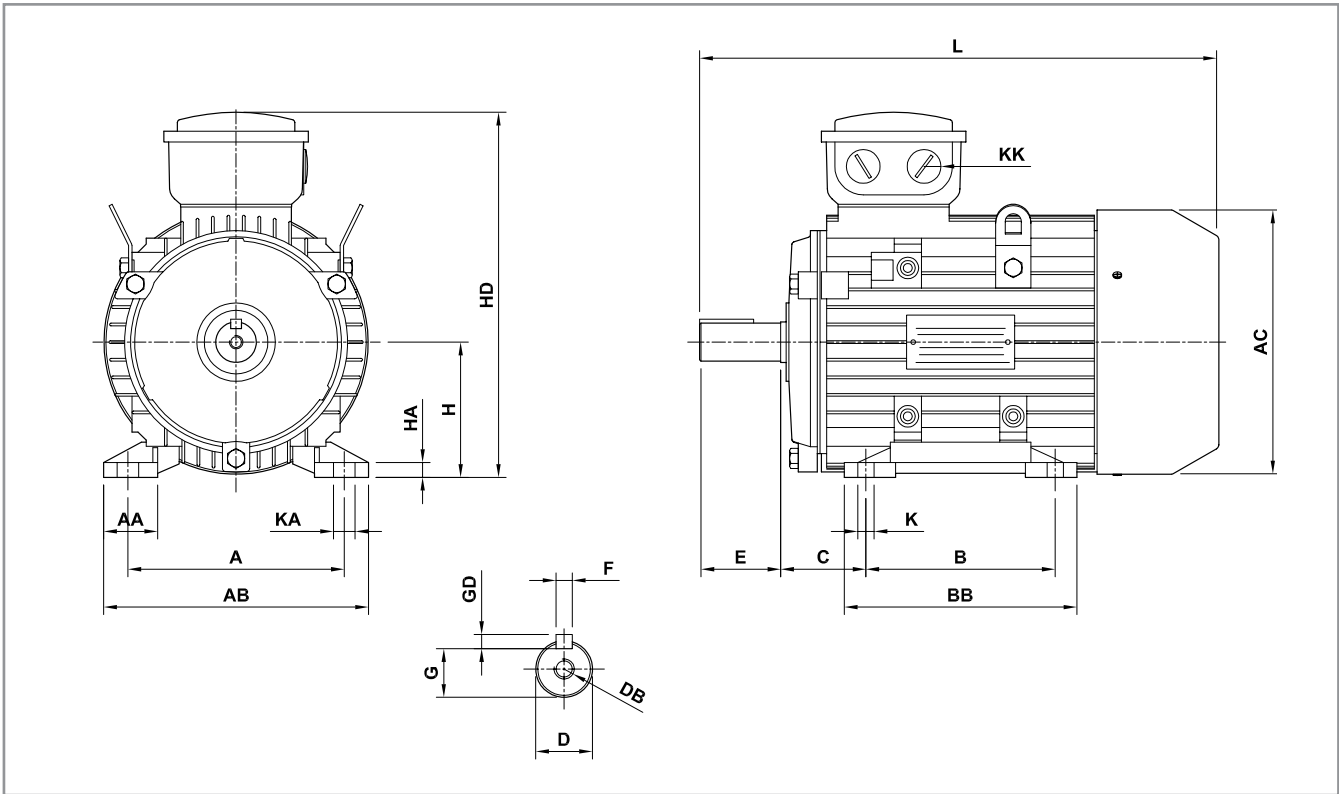
This data is provided for guidance only. For confirmation contact Regal Australia for a test report.

PERFORMANCE DATA

HLA SERIES, THREE PHASE 380-415V 50HZ IP55, F CLASS INSULATION , B CLASS TEMPERATURE RISE

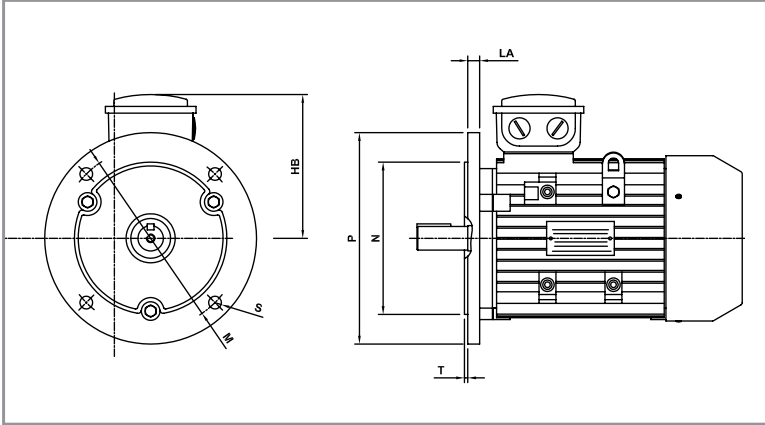
Motor frame	kW	Speed [r/min]	400V 50Hz										380V 50Hz	415V 50Hz	Moment of inertia $J=\frac{1}{4}GD^2$ [kg m ²]	Weight of foot mount motor [kg]
			Efficiency %		Power factor		Current		Torque			Current	Current			
			at % full load		at % full load		Full load I_N [A]	Locked rotor I_L/I_N	Full load T_N [Nm]	Locked rotor T_L/T_N	Break down T_B/T_N	Full load	Full load			
			100 [%]	75 [%]	100 [%]	75 [%]						I_N [A]	I_N [A]			
1000 R/MIN = 6 POLES																
90S	-24	0.75	940	77.7	77.7	0.70	0.60	2.0	5.5	7.6	2.2	2.7	2.0	1.80	0.0034	17
90L	-24	1.1	950	79.9	79.9	0.71	0.64	2.8	6.2	11.1	2.3	2.7	2.8	2.6	0.0041	18
100L	-28	1.5	955	81.9	82.3	0.74	0.66	3.6	6.0	15.0	2.4	2.9	3.7	3.6	0.0079	26
112M	-28	2.2	960	84.9	85.6	0.72	0.66	5.2	5.7	21.9	2.1	2.6	5.3	5.2	0.0158	32
132S	-38	3	965	86.3	87.1	0.76	0.70	6.6	5.9	29.7	1.8	2.2	6.8	6.5	0.035	50
132MA	-38	4	965	87.2	88.1	0.75	0.69	8.8	6.4	39.6	2.0	2.7	9.0	8.8	0.041	51
132MB	-38	5.5	965	87.9	88.6	0.77	0.71	11.8	6.6	54.4	2.0	2.7	12.2	11.7	0.051	62
160M	-42	7.5	975	89.2	89.5	0.79	0.76	15.4	6.4	73.5	2.1	2.9	15.7	15.3	0.098	86
160L	-42	11	975	89.9	89.7	0.78	0.71	22.7	6.9	108	2.3	3.3	23.0	22.8	0.131	94
750 R/MIN = 8 POLES																
100LA	-28	0.75	715	77.2	76.4	0.66	0.57	2.1	5.7	10.0	2.2	2.3	2.2	2.0	0.011	26
100LB	-28	1.1	715	78.6	78.8	0.69	0.61	2.9	5.6	14.7	2.1	2.2	3.0	3.0	0.013	29
112M	-28	1.5	710	80.8	80.5	0.63	0.53	4.2	4.7	20.2	2.4	2.7	4.3	4.1	0.026	30
132S	-38	2.2	720	84.9	84.9	0.73	0.64	5.1	5.6	29.2	2.2	2.9	5.3	5.1	0.035	50
132M	-38	3	715	85.6	85.5	0.73	0.65	7.0	5.8	40.1	2.7	3.1	7.1	6.9	0.045	63
160MA	-42	4	720	86.0	85.8	0.72	0.65	9.4	5.7	53.1	2.0	2.9	9.5	9.4	0.078	72
160MB	-42	5.5	720	86.6	87.3	0.72	0.63	12.8	6.0	73.0	2.4	3.0	13.0	13.0	0.095	82
160L	-42	7.5	720	87.6	88.2	0.75	0.69	16.4	6.3	99.5	2.5	2.9	16.7	16.1	0.135	94

FOOT MOUNT B3 (IM1001)



Motor frame	A	AA	AB	AC	B	BB	C	D	DB	E	F	GD	G	H	HA	HD	K	KA	KK	L	
80	-19	125	35	157	164	100	125	50	19	M6	40	6	6	15.5	80	9	217	10	14	1xM20	289
90S	-24	140	37	173	180	100	125	56	24	M8	50	8	7	20	90	10	236	10	14	2xM20	321
90L	-24	140	37	173	180	125	150	56	24	M8	50	8	7	20	90	10	236	10	14	2xM20	347
100L	-28	160	40	197	203	140	172	63	28	M10	60	8	7	24	100	12	264	12	16	2xM20	400
112M	-28	190	41	227	221	140	180	70	28	M10	60	8	7	24	112	12	290	12	16	2xM25	448
132S	-38	216	51	262	260	140	186	89	38	M12	80	10	8	33	132	15	327	12	16	2xM25	478
132M	-38	216	51	262	260	178	224	89	38	M12	80	10	8	33	132	15	327	12	16	2xM25	518
160M	-42	254	55	304	314	210	260	108	42	M16	110	12	8	37	160	18	420	15	18	2xM32	605
160L	-42	254	55	304	314	254	304	108	42	M16	110	12	8	37	160	18	420	15	18	2xM32	650

LARGE FLANGE MOUNT B5 (IM3001)

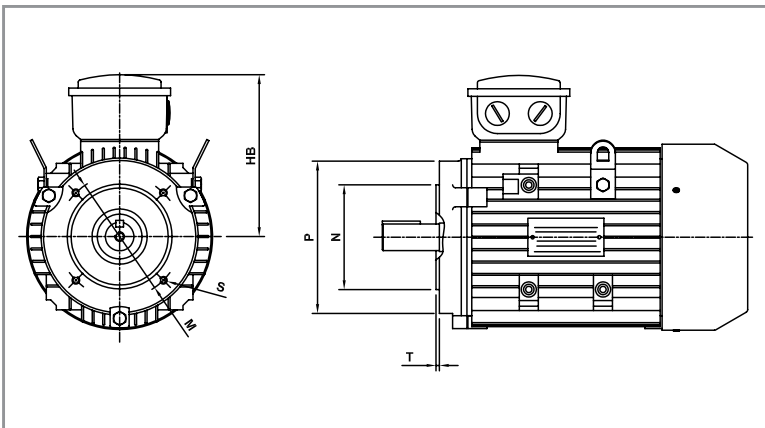


Flange mount B5 (IM3001)

Motor frame	HB	LA	M	N	P	S	T	
80	- 19	137	12	165	130	200	12	3.5
90S	- 24	146	12	165	130	200	12	3.5
90L	- 24	146	12	165	130	200	12	3.5
100L	- 28	164	14	215	180	250	15	4.0
112M	- 28	178	14	215	180	250	15	4.0
132S	- 38	195	14	265	230	300	15	4.0
132M	- 38	195	14	265	230	300	15	4.0
160M	- 42	260	15	300	250	350	19	5.0
160L	- 42	260	15	300	250	350	19	5.0

For further dimensional data, see foot mount data (page 6).

SMALL FLANGE (FACE) B14 (IM3601)



Face mount B14A (IM3601)

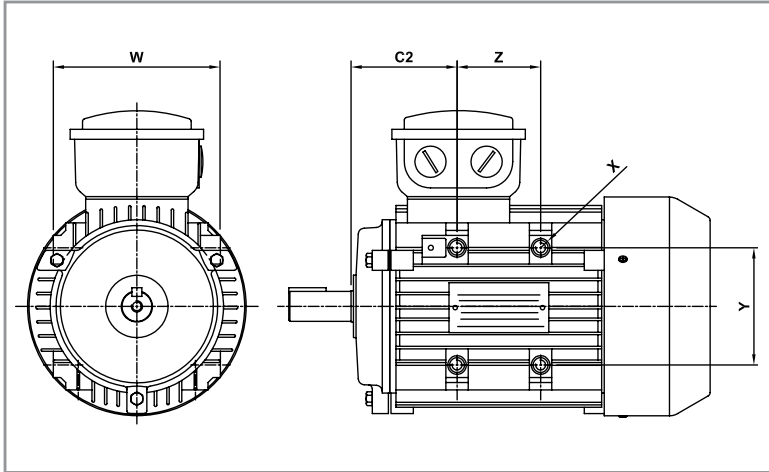
Motor frame	HB	M	N	P	S	T	
80	- 19	137	100	80	120	M6	3.0
90S	- 24	146	115	95	140	M8	3.0
90L	- 24	146	115	95	140	M8	3.0
100L	- 28	164	130	110	160	M8	3.5
112M	- 28	178	130	110	160	M8	3.5
132S	- 38	195	165	130	200	M10	3.5
132M	- 38	195	165	130	200	M10	3.5
160M	- 42	260	215	180	250	M12	4.0
160L	- 42	260	215	180	250	M12	4.0

Face mount B14B (IM3601)

Motor frame	HB	M	N	P	S	T		
80	- 19	137	130	110	160	M8	3.5	
90S	- 24	146	130	110	160	M8	3.5	
90L	- 24	146	130	110	160	M8	3.5	
100L	- 28	164	165	130	200	M10	3.5	
112M	- 28	178	165	130	200	M10	3.5	
132S	- 38	195	215	180	250	M12	4.0	
132M	- 38	195	215	180	250	M12	4.0	
160M	- 42	available on request						
160L	- 42	available on request						

For further dimensional data, see foot mount data (page 6).

MULTI-MOUNT OPTION - HLA

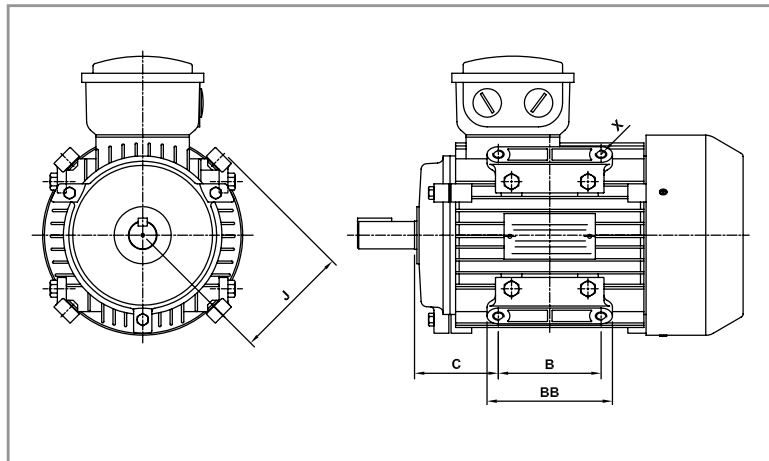


Multi-mount B0

Motor frame	C2	W	X ¹⁾	Y	Z	
80	- 19	79	126	M8	96	42
90S	- 24	85	143	M8	102	42
90L	- 24	85	143	M8	102	67
100L	- 28	94	164	M8	120	78
112M	- 28	104	170	M10	120	72
132S	- 38	123	206	M10	154	72
132M	- 38	123	206	M10	154	110
160M	- 42	153	250	M12	190	120
160L	- 42	153	250	M12	190	164

¹⁾16 multi-mount mounting pads, 12 tapped or have a provision for tapping. The standard multi-mount offers mounting holes that are vertical or horizontal only.

PAD MOUNT - HLAP

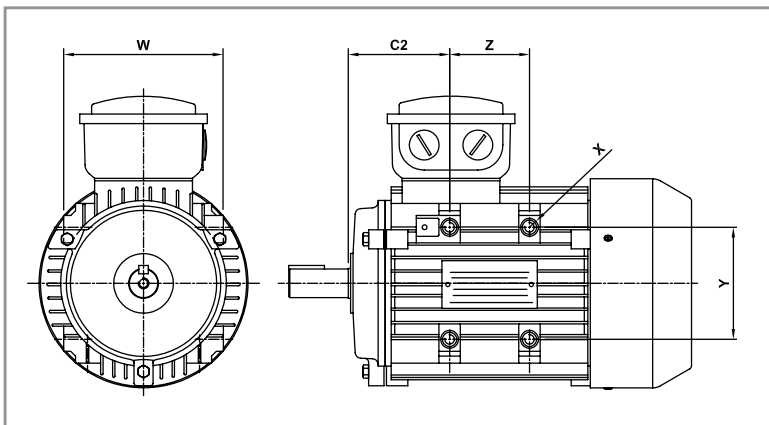


Multi-mount B0

Motor frame	B	BB	C	J	X	
80	- 19	90	110	55	102	M12
90S	- 24	90	110	61	106	M12
90L	- 24	90	110	73.5	106	M12
100L	- 28	100	120	83	121	M12
112M	- 28	100	120	90	125	M12
132S	- 38	102	132	108	158	M16
132M	- 38	140	170	108	158	M16
160M	- 42	available on request				
160L	- 42	available on request				

Pad mount motors are supplied by fitting 4 pads to the multi-mount motors. This option enables the mounting brackets to be fitted in a radial position relative to the motor shaft.

MULTI-MOUNT OPTION - HLA



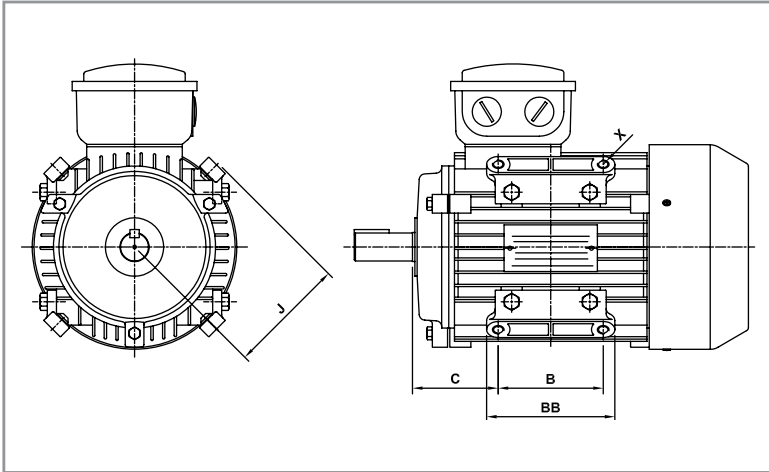
Multi-mount B0

Motor frame	C2	W	X ¹⁾	Y	Z	
80	- 19	79	126	M8	96	42
90S	- 24	85	143	M8	102	42
90L	- 24	85	143	M8	102	67
100L	- 28	94	164	M8	120	78
112M	- 28	104	170	M10	120	72
132S	- 38	123	206	M10	154	72
132M	- 38	123	206	M10	154	110
160M	- 42	153	250	M12	190	120
160L	- 42	153	250	M12	190	164

¹⁾16 multi-mount mounting pads, 12 tapped or have a provision for tapping. The standard multi-mount offers mounting holes that are vertical or horizontal only.

DIMENSIONAL DRAWINGS

PAD MOUNT - HLAP

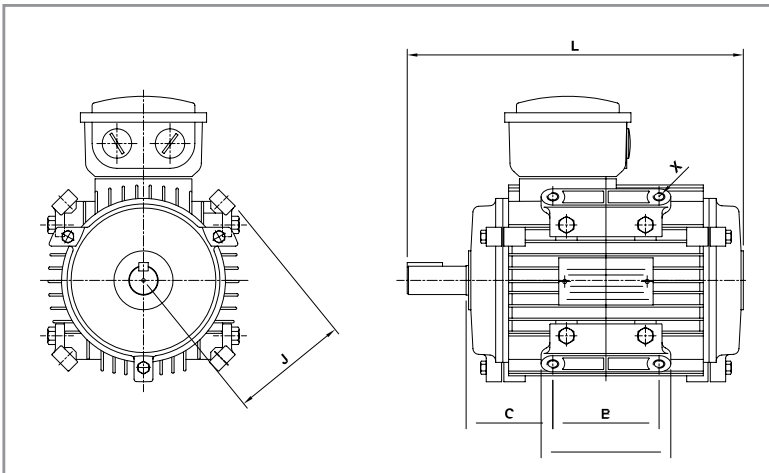


Multi-mount B0

Motor frame	B	BB	C	J	X
80	- 19	90	110	55	102 M12
90S	- 24	90	110	61	106 M12
90L	- 24	90	110	73.5	106 M12
100L	- 28	100	120	83	121 M12
112M	- 28	100	120	90	125 M12
132S	- 38	102	132	108	158 M16
132M	- 38	140	170	108	158 M16
160M	- 42	available on request			
160L	- 42	available on request			

Pad mount motors are supplied by fitting 4 pads to the multi-mount motors. This option enables the mounting brackets to be fitted in a radial position relative to the motor shaft.

AIRSTREAM RATED PAD MOUNT - HLAPR



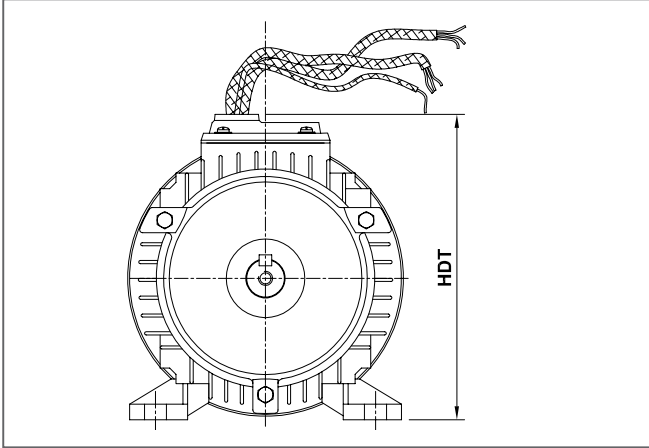
Airstream rated PAD mount B0

Motor frame	B	BB	C	J	L	X
80	- 19	90	110	55	102	240 M12
90S	- 24	90	110	61	106	277 M12
90L	- 24	90	110	73.5	106	302 M12
100L	- 28	100	120	83	121	348 M12
112M	- 28	100	120	90	125	382 M12
132S	- 38	102	132	108	158	398 M16
132M	- 38	140	170	108	158	435 M16
160M	- 42	available on request				
160L	- 42	available on request				

Pad mount motors are supplied by fitting 4 pads to the multi-mount motors. This option enables the mounting brackets to be fitted in a radial position relative to the motor shaft.

Terminal box

HLA motors come standard with a terminal box. Alternatively the terminal box can be replaced with a single conduit entry blanking plate and extended leads, including an earth.



Motor frame	Conduit Size	HDT
80	M20 x 1.5	192
90S/L	M20 x 1.5	203
100L	M20 x 1.5	234
112M	M25 x 1.5	244
132S/M	M25 x 1.5	291
160M/L	available on request	

For either terminal box or blanking plate configuration feet can be relocated to provide wiring to the left or right side, or completely removed to enable mounting from the multi-mount pads.

Bearings

Regal Australia can address applications where bearings need special consideration, including:

- Alternative bearing types
- Low/high temperature bearing grease

Shafts

Standard HLA motors come with a single output shaft to standard dimensions. The following alternatives are available:

- Double shaft extension
- Special shaft extension
- Stainless steel shaft material

Endshields

Standard HLA endshields are all aluminium. For frames 90 to 160 they are fitted with steel inserts for the bearings. Cast iron or special endshields for customer applications can be manufactured to specification.

Slide rails

Regal Australia stock slide rails to suit frame sizes from 80 to 160L. Rail sets are manufactured from cast iron and provided with mounting bolts and nuts between motor and rail.

Environmental considerations

Where environmental factors need special consideration Regal Australia can provide the following modifications:

- Winding temperature monitors and thermistors
- Anti-condensation heaters
- Separately powered cooling blowers
- Tropic proofing
- Special paint finish
- Higher IP ratings: IP56, IP65, and IP66
- High ambient temperature motors – HLAH with H class insulation

Special performance

Regal Australia is able to provide HLA motors with special windings. These include:

- 10, 12 and 16 pole single speed windings
- Two, three and four speed windings
- Windings for alternative operating voltages and frequencies
- Windings designed for increased outputs and short time ratings