

# **MARATHON HLA SERIES**

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



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INTRODUCTION	3
Motor Design	3
Standards and Specifications	3
Operating Parameters	3
PART NUMBER LOGIC	4
PERFORMANCE DATA	4 - 5
DIMENSIONAL DRAWINGS	6- 10
MODIFICATIONS AND VARIATIONS	11

## 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.

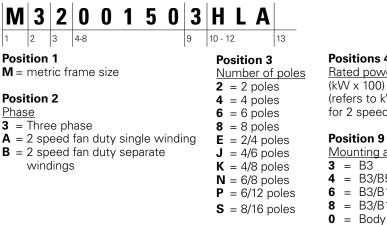
#### Internal connections, voltages and VF drive selection

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:



#### Positions 4 to 8

Rated power output (kW x 100) (refers to kW at high speed for 2 speed motors)

Mounting arrangements

- **3** = B3 **5** = B5 4 = B3/B5**6** = B3/B14A **7** = B14A **8** = B3/B14B **9** = B14B
- **0** = Body mount

Positions 10 to 12 <u>Series</u> **HLA** = HLA series

#### Position 13

- Variation suffix Blank = standard **F** = flying leads  $\mathbf{H} = \mathbf{H}$  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**

				400V 50Hz									380V 50Hz	415V 50Hz		
Moto		kW	Speed	Efficie	ncy %	Power	factor	Cur	rent		Torque		Current	Current	Moment	Weight
frame	e		[r/min]	at % fu	ull load	at % full load		Full	Locked		Locked		Full	Full	of inertia J=¼GD <sup>2</sup>	of foot mount
				<b>100</b> [%]	<b>75</b> [%]	100 [%]	<b>75</b> [%]	load I <sub>N</sub> [A]	rotor I <sub>L</sub> /I <sub>N</sub>	load T <sub>N</sub> [Nm]	rotor T <sub>L</sub> /T <sub>N</sub>	down T <sub>в</sub> /T <sub>№</sub>	load I <sub>N</sub> [A]	load I <sub>N</sub> [A]	[kg m²]	motor [kg]
							300	0 R/MIN	l = 2 POL	ES						
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
905	- 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
					<u>.</u>		150	0 R/MIN	l = 4 POL	ES						
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

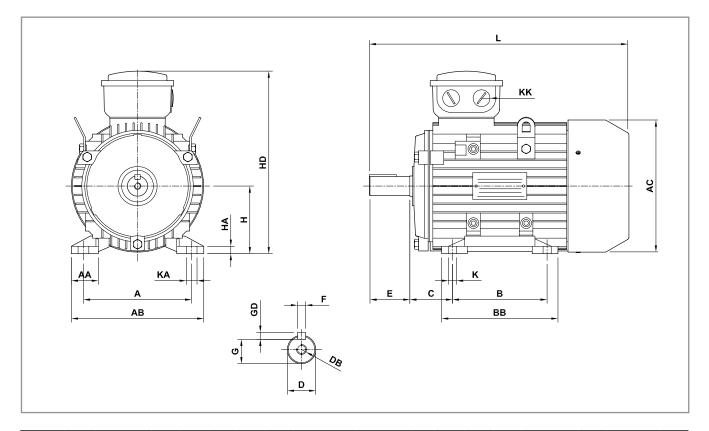
This data is provided for guidance only. For confirmation contact Regal Australia for a test report.

### **PERFORMANCE DATA**

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

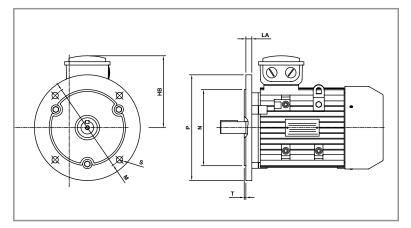
				400V 50Hz									380V 50Hz	415V 50Hz		
Mot		kW	Speed	Efficie	ency %	Powe	r factor	Cu	rrent		Torque		Current	Current		Weight of foot
fram	ie		[r/min]	at % f	ull load	at % f	ull load	Full	Locked	Full	Locked		Full	Full	of inertia J=¼GD <sup>2</sup>	mount
				100 [%]	75 [%]	100 [%]	75 [%]	load I <sub>N</sub> [A]	rotor I <sub>L</sub> /I <sub>N</sub>	load T <sub>N</sub> [Nm]	rotor T <sub>L</sub> /T <sub>N</sub>	down T <sub>B</sub> /T <sub>N</sub>	- I <sub>N</sub> I,	load I <sub>N</sub> [A]	[kg m²]	motor [kg]
							100	0 R/MI	N = 6 POL	.ES						
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	l = 8 POL	ES						
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	А	AA	АВ	AC	В	BB	С	D	DB	E	F	GD	G	н	НА	HD	к	КА	КК	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)

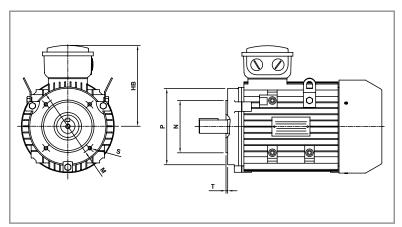


#### Flange mount B5 (IM3001)

Motor	frame	HB	LA	М	N	Р	S	т
80	- 19	137	12	165	130	200	12	3.5
905	- 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)

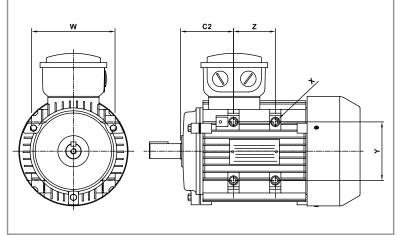
Motor	frame	HB	М	N	Р	S	т
80	- 19	137	100	80	120	M6	3.0
905	- 24	146	115	95	140	M8	3.0
90L	- 24	146	115	95	140	M8	3.0
100L	- 28	164	130	110	160	M8	3.5
112M	- 28	178	130	110	160	M8	3.5
132S	- 38	195	165	130	200	M10	3.5
132M	- 38	195	165	130	200	M10	3.5
160M	- 42	260	215	180	250	M12	4.0
160L	- 42	260	215	180	250	M12	4.0

Face mount B14B (IM3601)

Motor	frame	НВ	М	N	Ρ	S	т
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	availabl	e on rec	quest			
160L	- 42	available on request					

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

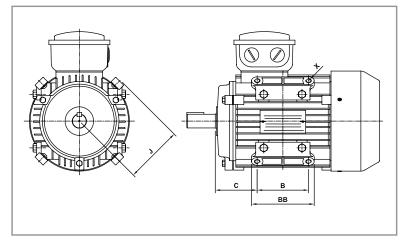
### **MULTI-MOUNT OPTION - HLA**



Motor	frame	C2	w	<b>X</b> <sup>1)</sup>	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

<sup>1</sup>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.

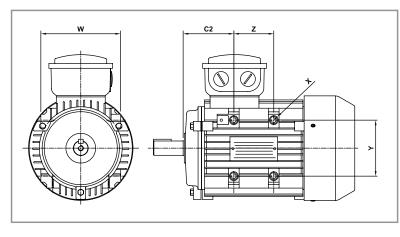
#### PAD MOUNT - HLAP



Multi-n	nount B	0							
Motor	frame	В	BB	С	J	х			
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 multimount motors. This option enables the mounting brackets to be fitted in a radial position relative to the motor shaft.

#### **MULTI-MOUNT OPTION - HLA**

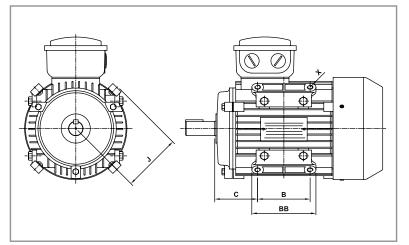


#### Multi-mount B0

Motor	frame	C2	w	<b>X</b> <sup>1)</sup>	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

<sup>1</sup>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

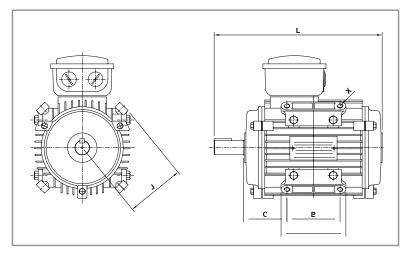


#### Multi-mount B0

Motor	frame	В	BB	С	J	x
80	- 19	90	110	55	102	M12
905	- 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 multimount 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

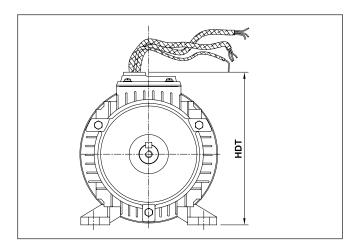
Motor	frame	В	BB	С	J	L	x
80	- 19	90	110	55	102	240	M12
90S	- 24	90	110	61	106	277	M12
90L	- 24	90	110	73.5	106	302	M12
100L	- 28	100	120	83	121	348	M12
112M	- 28	100	120	90	125	382	M12
132S	- 38	102	132	108	158	398	M16
132M	- 38	140	170	108	158	435	M16
160M	- 42	available on request					
160L	- 42	available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

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

### **MODIFICATIONS AND VARIATIONS**

#### **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

#### **HEAD OFFICE**

Regal Beloit Australia Pty LtdABN 61 122 303 08419 Corporate Ave (PO Box 2340)Rowville VIC 3178, AUSTRALIACustomer Service:1300 888 853Fax:+61 3 9237 4050www.regalaustralia.com.au

#### STATE OFFICES VICTORIA

19 Corporate Avenue Rowville VIC 3178 T: 1300 888 853 F: +61 3 9237 4050 **NEW SOUTH WALES** 8 Bushells Place Wetherill Park NSW 2164 T: 1300 888 853 F: +61 2 8781 3131 QUEENSLAND 7 Mahogany Court Willawong QLD 4110 T: 1300 888 853 F: +61 7 3246 3210 CAIRNS (Service • Repairs • Sales) 2/159-161 Newell Street Bungalow QLD 4870 T: 1300 888 853 F: +61 7 4033 5553

#### PRESENT IN

MACKAY SOUTH AUSTRALIA WESTERN AUSTRALIA T: 1300 888 853

#### NEW ZEALAND

Regal Beloit New Zealand Ltd AUCKLAND 18 Jomac Place Avondale T: 0800 676 722 F: +64 9 820 8504

#### PRESENT IN

CHRISTCHURCH ROTORUA T: 0800 676 722

#### MALAYSIA

Torin Industries SND BHD (MALAYSIA) No. 6536A Jalan Bukit Kemuning Batu 6 Seksyen 34 40470 Shah Alam Selangor T: +60 3 5124 6157 F: +60 3 5121 1467 SINGAPORE Regal Beloit South East Asia Pte. Ltd. 12 Tuas Loop 637346 SINGAPORE T: +65 6863 3473 F: +65 6863 3476 **THAILAND** FASCO Motors (Thailand) Limited 29/7-8 Bangkruay-Sainoi Road Bangkrang Muang Nonthaburi District Nonthaburi 11000 THAILAND T: +66 2447 3300 F: +66 2447 3500

#### APPLICATION CONSIDERATIONS

The proper selection and application of motors, motor control and components, including the related area of product safety, is the responsibility of the customer. Operating and performance requirements and potential associated issues will vary appreciably depending upon the use and application of such products and components. The scope of the technical and application information included in this publication is necessarily limited. Unusual operating environments and conditions, lubrication requirements, loading supports, and other factors can materially affect the application and operating environments and components and the customer should carefully review its requirements. Any technical advice or review furnished by Regal Beloit Australia Pty Ltd and its affiliates with respect to the use of products and components is given in good faith and without charge, and Regal assumes no obligation or liability for the advice given, or results obtained, all such advice and review being given and accepted at customer's risk. For a copy of our Standard Terms and Conditions of Sale, Disclaimers of Warranty and Limitation of Liability, please contact Customer Service at 1300 888 853 or visit www.regalaustralia.com.au. These terms and conditions of sale, disclaimers and limitations of liability apply to any person who may buy, acquire or use a Regal Beloit Australia Pty Ltd product referred to herein, including any person who buys from a licensed distributor of these branded products.

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