

MONARCH - Alloy



Low Voltage 3-Phase Induction Motors | Range 0.09kW to 18.5kW



AUSTRALIA & NEW ZEALAND

TOTALLY ENCLOSED FAN-COOLED ALLOY FRAME SERIES

General Information

MONARCH Alloy - Three Phase Induction Motors are a range of high quality, Totally Enclosed Fan Cooled (TEFC), Squirrel Cage Induction motors, designed, manufactured and tested to the latest International and Australian Standards.

- Motors 4 kW and larger are 380~415 [380 - 415] Volt 50 Hz DELTA connected.
- Motors can be manufactured for other supply systems on a factory made to order basis or by local rewind / wind.

Electrical Design and Standards

Altitude

- Designed for operation at an altitude up to 1000 metres above sea level (please refer to TECO sales offices for higher altitudes).

Ambient

- Motors are designed to operate in ambient conditions of -20°C to +40°C as standard. Operation in adverse ambient conditions should be referred to TECO.

Direction of Rotation

- Standard rotation is clockwise when viewed from the drive end with the terminal marking corresponding to incoming line markings.

Duty Rating

- All motors have a maximum continuous duty rating of S1 to AS60034.1. Other duty ratings are available on request.

Electric Supply

- Stock motors are designed for operation on a 380~415 Volt 3 phase 50 Hz supply and are also suitable for a 440~480 Volt 3 Phase 60 Hz supply.
- Motors 3 kW and below are 380 - 415 Volt 50 Hz STAR connected and may also be reconnected to 240 Volt 3 phase 50 Hz DELTA configuration for use with single phase input Variable Speed Drives.

MEPS (Minimum Efficiency Performance Standard) Performance

- All motors, 0.75kW and larger meet or exceed the Minimum Efficiency level requirements of the Australian / New Zealand Standard "AS/NZS1359.5-2004" where applicable.

Performance

- Motors are designed to meet the performance requirements of Design N as per AS60034.12, normal torque for Direct On Line starting.
- Motors are also suitable for other means of starting, depending on load characteristics, please refer to TECO.

Standards

- Motors are designed, manufactured and tested in accordance with AS1359, AS60034, IEC60072 with Quality Assurance to ISO9001.

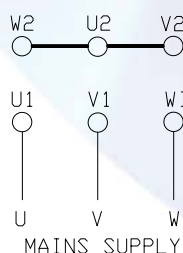
Stator and Windings

- High grade insulated cold rolled electro magnetic steel laminations.
- Standard insulation is Class F insulation (155°C). Windings are designed with a temperature rise of Class B (80°C) for long motor life and thermal reserve for abnormal conditions.

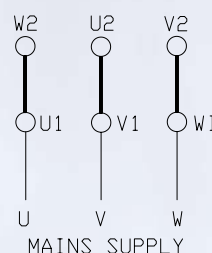
Winding Protection

- Motors frame size D160 and larger are fitted with PTC thermistor protection (P140) within the windings (one per phase) with the leads terminated in the main terminal box.

STAR CONNECTION



DELTA CONNECTION



Star / Delta Connection Diagram

Testing

- In addition to a full program of tests during manufacture each motor is subjected to routine tests to AS60034.1 prior to despatch.

Variable Speed Drive (VSD) suitability

- Motors are suitable for VSD duty, subject to torque and speed limitations depending on the load characteristics and correct installation of motor and drive.

Mechanical Design and Standards

Balance

- All rotors are dynamically balanced with a half key to Class N or better, in accordance with AS1359.114.

Bearing and Lubrication System

- Motors have a Ball / Ball bearing combination and are fitted with greased for life sealed bearings.
- Shaft Oil seals are provided at each end on all motors to exclude the ingress of dust and water.

Cooling System

- Cooling is Totally Enclosed Fan Cooled (TEFC), with integrally cast cooling fins into the frame and is fitted with an external cooling fan (IC411) to AS60034.6.

- The cooling fans are bi-directional and low noise as standard.

Finish

- All castings are mechanically cleaned and degreased with aluminium components being primed externally.
- Two finish coats of matt acrylic resin in finish colour Black is applied providing a good quality corrosion protected surface.

Hardware

- All hardware is electro zinc plated for better corrosion resistance.
- Stainless steel hardware can be offered as an alternative, please contact TECO for the surcharge to provide this feature.

Mounting

Motors are available in the following mountings -

- Foot mounted
- Foot and Flange mounted
- Flange mounted
- Foot and C Face mounted (B34A)
- C Face mounted (B14A)
- Pad Mounted (D71 - D160)



Monarch Alloy Foot and Flange mount

Motor Construction

Frame size	Frame	Drive end endshield	Non drive end endshield	C face or D flange mount endshield
D56 ~ D90	Aluminium alloy	Aluminium alloy	Cast Iron	Aluminium alloy
D100 ~ D160	Aluminium alloy	Cast Iron	Cast Iron	Aluminium alloy

- Castings are machined to close tolerances for accurate alignment and minimum vibration.
- External cooling fan is polypropylene.
- Fan cover is pressed steel.
- Multi-mount frame construction, to enable the terminal box to be located in any position by repositioning the cast alloy motor feet, which are bolted to the frame.

Rating Plate

- An anodised Aluminium rating plate containing all details as specified in AS60034.1 including bearing sizes is fitted to all motors.

Rotor Assembly

- High grade insulated cold rolled electro magnetic steel laminations.
- Rotor cage is pressure die cast high conductivity aluminium with waffer blades and balance supports integrally cast onto the rotor endrings.
- The rotor is a press fit to the carbon steel shaft.

Terminal Box

- Terminal box as standard is top mounted on motor frame with all metal to metal joints provided with neoprene gaskets, this can be rotated to provide right hand or left hand side terminal box position.
- Base – Lid surfaces are machined and fitted with one-piece neoprene gasket.
- Terminal box can be rotated in 90° steps through 360° for alternate cable entry orientations.

Popular Options Available

Some available options in this range are as follows:

- Airstream rated IC418
- Anti-condensation heaters
- Brake Motors (refer pages 8-10)
- Cooling Tower application
- Double / non standard shaft extensions
- Encoder / Tacho
- Force cooling IC416
- IP56, IP65 & IP66 enclosure
- Multi-speed motors
- Special paint systems / colours
- Stainless steel fasteners
- Others on request



Monarch Alloy Foot and C Face mount

TYPICAL PERFORMANCE DATA

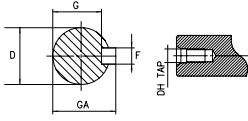
MONARCH - Alloy FRAME TEFC THREE PHASE SQUIRREL CAGE INDUCTION MOTORS
 FRAME SIZES 56 - 160L (415V 50Hz)

OUTPUT KW	FULL LOAD RPM	FRAME NO.	EFFICIENCY			POWER FACTOR			CURRENT		TORQUE				INERTIA ROTOR J = GD ² /4 kg-m ²	NOISE LEVEL dB(A)	WEIGHT foot-mount KGS
			FULL LOAD (%)	3/4 LOAD (%)	1/2 LOAD (%)	FULL LOAD (%)	3/4 LOAD (%)	1/2 LOAD (%)	FULL LOAD (A)	LOCKED ROTOR (%)	FULL LOAD N.m	LOCKED ROTOR %FLT	PULL UP %FLT	BREAK-DOWN %FLT			
0.09	2740	56	62.0	59.4	54.4	68.0	59.0	46.3	0.30	350	0.314	320	260	310	0.000170	70	3.2
	1350	56	58.0	54.5	50.0	61.0	55.0	43.7	0.35	320	0.637	290	280	280	0.000496	65	3.3
0.12	2740	56	67.0	63.3	59.7	71.0	64.2	50.6	0.35	490	0.418	350	330	370	0.000219	70	3.8
	1370	63	60.0	55.8	50.0	63.0	53.6	42.5	0.44	370	0.836	235	310	310	0.000537	65	4.3
0.18	2740	63	69.0	68.5	66.1	75.0	71.3	56.6	0.53	370	0.627	225	210	250	0.000250	70	4.1
	1370	63	64.0	59.0	52.6	66.0	48.6	37.8	0.62	380	1.25	280	290	280	0.001	65	4.7
	920	71	59.0	55.0	46.0	54.4	45.6	36.6	0.78	320	1.87	250	220	380	0.00151	61	6.5
0.25	2740	63	72.0	71.5	69.9	78.0	73.6	59.0	0.62	320	0.871	270	270	350	0.000312	70	4.8
	1370	71	67.0	65.5	64.0	68.0	62.1	48.2	0.76	280	1.74	225	200	220	0.001	65	5.8
	910	71	65.0	63.4	56.3	60.0	49.6	38.5	0.89	330	2.62	260	250	245	0.00186	61	7
0.37	2740	71	73.5	70.7	66.1	80.0	69.8	56.4	0.91	445	1.29	335	280	240	0.001	75	6.1
	1370	71	69.5	66.9	62.1	72.0	61.4	48.3	1.07	380	2.60	245	2.05	230	0.001	70	7
	930	80	70.0	69.3	64.0	65.5	55.1	42.5	1.12	370	3.80	225	215	255	0.00381	63	9.4
0.55	2780	71	75.5	73.0	70.8	82.0	70.0	56.8	1.29	570	1.89	345	340	325	0.001	75	7.2
	1390	80	73.5	75.2	72.6	73.0	62.6	47.7	1.49	435	3.86	245	215	240	0.002	70	9.5
	930	80	71.0	70.5	66.1	67.1	56.5	43.0	1.61	400	5.65	240	230	265	0.00411	65	10.4
0.75	2960	80	80.5	80.2	77.6	77.3	68.5	55.8	1.68	516	2.50	477	464	491	0.001	71	11.5
	1447	80	82.2	81.4	77.8	62.4	52.7	40.1	2.03	604	4.98	366	369	414	0.004	67	13.5
	930	90S	77.7	77.5	74.0	57.0	46.0	37.0	2.02	495	7.51	225	221	288	0.004	67	19
1.1	2818	80	81.3	82.2	80.8	81.0	73.6	63.8	2.32	731	3.73	470	389	393	0.002	71	13
	1433	90S	83.8	83.4	80.7	70.8	61.0	46.8	2.58	709	7.33	460	405	452	0.006	67	17.5
	930	90L	79.9	79.3	75.3	58.0	47.0	37.0	3.08	511	11.03	241	185	254	0.005	65	21
1.5	2873	90S	84.1	83.8	82.3	79.8	71.5	57.8	3.11	845	4.99	475	424	449	0.003	75	16
	1447	90L	85.0	83.8	80.1	64.0	53.8	40.6	3.84	779	9.90	517	463	520	0.008	67	20.5
	950	100L	81.5	81.7	79.5	74.0	66.0	52.0	3.46	590	14.91	260	224	310	0.007	67	29
2.2	2888	90L	85.6	85.5	84.0	79.4	71.1	57.6	4.50	962	7.28	486	422	485	0.003	75	19
	1468	100L	86.4	84.4	79.7	61.9	52.4	40.0	5.72	863	14.3	404	303	528	0.017	70	29.5
	960	112M	83.4	82.9	80.1	66.0	59.0	46.0	5.56	599	21.9	294	266	346	0.014	67	35
3	2891	100L	86.7	86.3	83.9	83.6	77.8	65.8	5.75	982	9.91	477	401	482	0.008	79	28
	1456	100L	87.4	87.0	85.6	76.3	68.1	54.0	6.26	794	19.7	794	203	403	0.026	70	33.2
	960	132S	84.9	86.6	86.2	77.0	70.0	56.0	6.44	616	29.8	210	180	275	0.024	71	49
4	2937	112M	87.6	86.6	83.7	80.9	74.3	61.7	7.86	1,022	13.0	391	337	462	0.013	79	36.5
	1460	112M	88.3	87.5	84.6	71.1	61.5	47.5	8.85	897	26.2	399	318	484	0.030	74	40.5
	970	132M	86.1	86.8	85.9	77.0	70.0	56.0	8.28	764	39.4	280	169	325	0.031	71	60
5.5	2951	132S	88.5	87.7	85.4	84.3	81.0	66.5	10.25	1,130	17.8	385	294	540	0.021	83	51
	1466	132S	89.2	88.9	87.0	75.7	67.3	53.4	11.34	810	35.8	262	244	405	0.051	78	51
	965	132M	87.4	88.6	86.1	74.0	67.0	54.0	12.04	713	54.3	231	155	302	0.040	71	62
7.5	2953	132S	89.5	88.7	86.4	85.5	80.0	68.7	13.63	1,148	24.3	374	224	550	0.028	83	56
	1466	132M	90.0	90.1	88.3	75.3	66.4	52.4	15.33	750	48.8	279	218	425	0.064	78	60.5
	970	160M	88.5	88.2	83.3	77.0	70.0	57.0	15.65	640	73.8	260	195	335	0.103	75	92
11	2950	160M	90.6	90.6	89.0	89.0	86.0	80.0	19.00	787	35.6	223	120	356	0.045	79	91
	1475	160M	91.0	90.6	88.8	77.0	70.0	57.0	21.89	921	71.2	370	302	508	0.082	78	93
	975	160M	89.8	89.7	87.8	71.0	63.0	49.0	24.20	695	107.7	316	230	399	0.115	75	109
15	2945	160M	91.3	91.1	89.7	89.0	87.0	83.0	25.60	743	48.6	212	120	326	0.049	87	102
	1470	160L	91.8	92.1	91.5	85.0	83.0	75.0	27.10	710	97.6	223	140	248	0.096	82	110
18.5	2940	160L	91.8	91.9	90.2	84.3	81.0	66.5	31.21	919	60.1	320	110	335	0.052	87	112

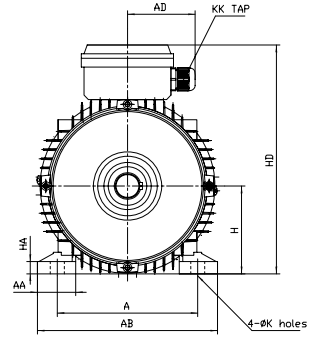
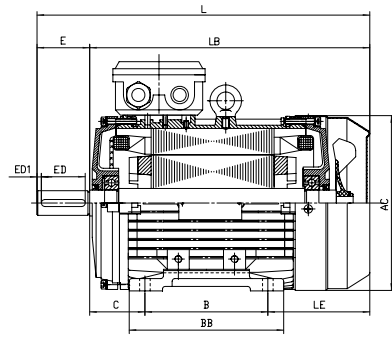
- Notes:**
1. Data Subject to AS tolerances, refer to page 11.
 2. Efficiency Test Method to AS/NZS 1359.5 Test Method B.
 3. dB(A) Mean Sound Pressure Level on no load at 1 metre.
 4. Data subject to change without notice.
 5. Eight pole motor data, where motors are available, on request.

OUTLINE DIMENSIONS SHEET

FOOT MOUNT



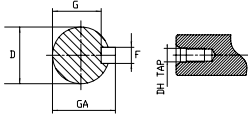
SHAFT DETAIL



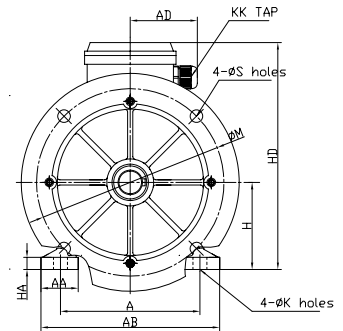
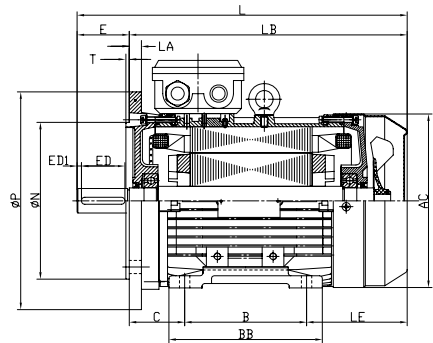
OUTPUT (kW)			FRAME SIZE	DIMENSIONS (MM)													
2P	4P	6P		A	AA	AB	AC	AD	B	BB	C	H	HA	HD	K	KK	
—	0.09	—	56	90	20	110	115	70	71	89	36	56	6.5	155	5.8	M18X1.5	
0.18/0.25	0.18	—	63	100	28	130	125	76	80	103	40	63	7	165	7	M20X1.5	
0.37	0.37	0.18/0.25	71	112	28	145	142	76	90	103	45	71	10	185	7	M20X1.5	
0.75/1.1	0.55/0.75	0.37/0.55	80	125	35	162	160	82	100	130	50	80	10	215	10	M20X1.5	
1.5	1.1	0.75	90S	140	35	176	178	82	100	155	56	90	12	235	10	M20X1.5	
2.2	1.5	1.1	90L	140	35	176	178	82	125	155	56	90	12	235	10	M20X1.5	
3	2.2/3	1.5	100L	160	50	205	204	82	140	176	63	100	14	255	10	M20X1.5	
4	4	2.2	112M	190	55	220	224	96	140	180	70	112	14	287	12	M25X1.5	
5.5/7.5	5.5	3	132S	216	58	255	260	96	140	214	89	132	16	325	12	M25X1.5	
—	7.5	4/5.5	132M	216	58	255	260	96	178	224	89	132	16	325	12	M25X1.5	
11/15	11	7.5	160M	210	65	295	315	118	210	294	108	160	16	395	15	M32X1.5	
18.5	15	11	160L	254	65	295	315	118	254	294	108	160	16	395	15	M32X1.5	

FRAME SIZE	SHAFT EXTENSION										BEARINGS		
	L	LB	LE	D	E	ED	ED1	F	G	GA	DH	DE	NDE
56	197	177	70	9	20	15	2.5	3	7.2	10.2	M3	6201ZZ	6201ZZ
63	222	199	79	11	23	18	2.5	4	8.5	12.5	M4	6202ZZ	6202ZZ
71	262	232	97	14	30	20	5	5	11	16	M5	6202ZZ	6202ZZ
80	320	280	130	19	40	25	7.5	6	15.5	21.5	M6	6204ZZ	6204ZZ
90S	370	320	164	24	50	40	4	8	20	27	M8	6205ZZ	6205ZZ
90L	390	340	159	24	50	40	4	8	20	27	M8	6205ZZ	6205ZZ
100L	400	340	137	28	60	50	5	8	24	31	M10	6206ZZ	6206ZZ
112M	440	380	170	28	60	50	5	8	24	31	M10	6306ZZ	6306ZZ
132S	490	410	181	38	80	65	10	10	33	41	M12	6308ZZ	6308ZZ
132M	510	430	163	38	80	65	10	10	33	41	M12	6308ZZ	6308ZZ
160M	640	530	212	42	110	90	10	12	37	45	M16	6309ZZ	6309ZZ
160L	640	530	168	42	110	90	10	12	37	45	M16	6309ZZ	6309ZZ

FOOT AND FLANGE MOUNT



SHAFT DETAIL



OUTPUT (kW)			FRAME SIZE	DIMENSIONS (MM)																
2P	4P	6P		A	AA	AB	AC	AD	B	BB	C	H	HA	HD	K	KK	L	LA	LB	LE
—	0.09	—	56	90	20	110	115	70	71	89	36	56	6.5	155	5.8	M18X1.5	197	8	177	70
0.18/0.25	0.18	—	63	100	28	130	125	76	80	103	40	63	7	165	7	M20X1.5	222	9	199	79
0.37	0.37	0.18/0.25	71	112	28	145	142	76	90	103	45	71	10	185	7	M20X1.5	262	9	232	97
0.75/1.1	0.55/0.75	0.37/0.55	80	125	35	162	160	82	100	130	50	80	10	215	10	M20X1.5	320	10	280	130
1.5	1.1	0.75	90S	140	35	176	178	82	100	155	56	90	12	235	10	M20X1.5	370	12	320	164
2.2	1.5	1.1	90L	140	35	176	178	82	125	155	56	90	12	235	10	M20X1.5	390	12	340	159
3	2.2/3	1.5	100L	160	50	205	204	82	140	176	63	100	14	255	10	M20X1.5	400	14	340	137
4	4	2.2	112M	190	55	220	224	96	140	180	70	112	14	287	12	M25X1.5	440	14	380	170
5.5/7.5	5.5	3	132S	216	58	255	260	96	140	214	89	132	16	325	12	M25X1.5	490	14	410	181
—	7.5	4/5.5	132M	216	58	255	260	96	178	224	89	132	16	325	12	M25X1.5	510	14	430	163
11/15	11	7.5	160M	210	65	295	315	118	210	294	108	160	16	395	15	M32X1.5	640	15	530	212
18.5	15	11	160L	254	65	295	315	118	254	294	108	160	16	395	15	M32X1.5	640	15	530	168

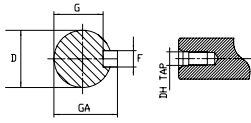
FRAME SIZE	FLANGE					SHAFT EXTENSION										BEARINGS		
	M	N	P	S	T	D	E	ED	ED1	F	G	GA	DH	DE	NDE			
56	98	80	120	7	3	9	20	15	2.5	3	7.2	10.2	M3	6201ZZ	6201ZZ			
63	115	95	140	10	3.5	11	23	18	2.5	4	8.5	12.5	M4	6202ZZ	6202ZZ			
71	130	110	160	10	3.5	14	30	20	5	5	11	16	M5	6202ZZ	6202ZZ			
80	165	130	200	12	3.5	19	40	25	7.5	6	15.5	21.5	M6	6204ZZ	6204ZZ			
90S	165	130	200	12	3.5	24	50	40	4	8	20	27	M8	6205ZZ	6205ZZ			
90L	165	130	200	12	3.5	24	50	40	4	8	20	27	M8	6205ZZ	6205ZZ			
100L	215	180	250	14.5	4	28	60	50	5	8	24	31	M10	6206ZZ	6206ZZ			
112M	215	180	250	14.5	4	28	60	50	5	8	24	31	M10	6306ZZ	6306ZZ			
132S	265	230	300	14.5	4	38	80	65	10	10	33	41	M12	6308ZZ	6308ZZ			
132M	265	230	300	14.5	4	38	80	65	10	10	33	41	M12	6308ZZ	6308ZZ			
160M	300	250	350	18.5	5	42	110	90	10	12	37	45	M16	6309ZZ	6309ZZ			
160L	300	250	350	18.5	5	42	110	90	10	12	37	45	M16	6309ZZ	6309ZZ			

- Notes:
1. Dimensional data subject to change without notice.
 2. Lifting facilities provided on motors frame size D112 and larger.
 3. For tolerances see page 11.
 4. Flange only dimensions identical to relevant dimensions here for foot & flange.

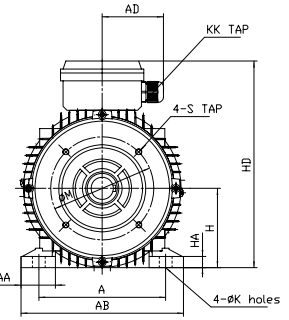
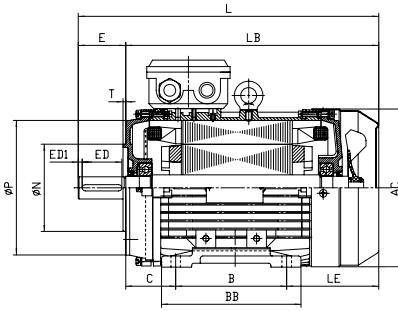
OUTLINE DIMENSIONS SHEET

MONARCH - Alloy

FOOT AND C FACE MOUNT



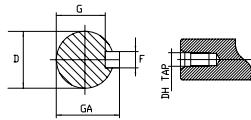
SHAFT DETAIL



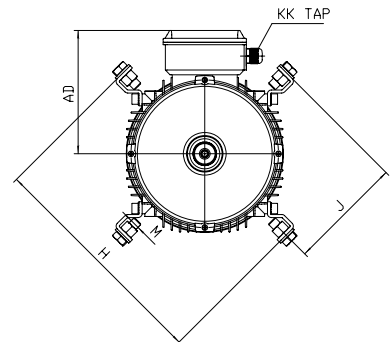
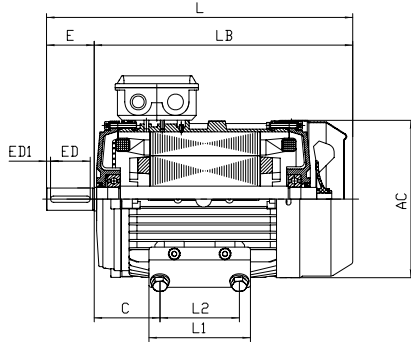
OUTPUT (KW)			FRAME SIZE	DIMENSIONS (MM)															
2P	4P	6P		A	AA	AB	AC	AD	B	BB	C	H	HA	HD	K	KK	L	LB	LE
—	0.09	—	56	90	20	110	115	70	71	89	36	56	6.5	155	5.8	M18X1.5	197	177	70
0.18/0.25	0.18	—	63	100	28	130	125	76	80	103	40	63	7	165	7	M20X1.5	222	199	79
0.37	0.37	0.18/0.25	71	112	28	145	142	76	90	103	45	71	10	185	7	M20X1.5	262	232	97
0.75/1.1	0.55/0.75	0.37/0.55	80	125	35	162	160	82	100	130	50	80	10	215	10	M20X1.5	320	280	130
1.5	1.1	0.75	90S	140	35	176	178	82	100	155	56	90	12	235	10	M20X1.5	370	320	164
2.2	1.5	1.1	90L	140	35	176	178	82	125	155	56	90	12	235	10	M20X1.5	390	340	159
3	2.2/3	1.5	100L	160	50	205	204	82	140	176	63	100	14	255	10	M20X1.5	400	340	137
4	4	2.2	112M	190	55	220	224	96	140	180	70	112	14	287	12	M25X1.5	440	380	170
5.5/7.5	5.5	3	132S	216	58	255	260	96	140	214	89	132	16	325	12	M25X1.5	490	410	181
—	7.5	4/5.5	132M	216	58	255	260	96	178	224	89	132	16	325	12	M25X1.5	510	430	163
11/15	11	7.5	160M	210	65	295	315	118	210	294	108	160	16	395	15	M32X1.5	640	530	212
18.5	15	11	160L	254	65	295	315	118	254	294	108	160	16	395	15	M32X1.5	640	530	168

FRAME SIZE	C FACE					SHAFT EXTENSION							BEARINGS		
	M	N	P	S	T	D	E	ED	ED1	F	G	GA	DH	DE	NDE
56	65	50	80	M5	2.5	9	20	15	2.5	3	7.2	10.2	M3	6201ZZ	6201ZZ
63	75	60	90	M5	2.5	11	23	18	2.5	4	8.5	12.5	M4	6202ZZ	6202ZZ
71	85	70	105	M6	2.5	14	30	20	5	5	11	16	M5	6202ZZ	6202ZZ
80	100	80	120	M6	3	19	40	25	7.5	6	15.5	21.5	M6	6204ZZ	6204ZZ
90S	115	95	140	M8	3	24	50	40	4	8	20	27	M8	6205ZZ	6205ZZ
90L	115	95	140	M8	3	24	50	40	4	8	20	27	M8	6205ZZ	6205ZZ
100L	130	110	160	M8	3.5	28	60	50	5	8	24	31	M10	6206ZZ	6206ZZ
112M	130	110	160	M8	3.5	28	60	50	5	8	24	31	M10	6306ZZ	6306ZZ
132S	165	130	200	M10	4	38	80	65	10	10	33	41	M12	6308ZZ	6308ZZ
132M	165	130	200	M10	4	38	80	65	10	10	33	41	M12	6308ZZ	6308ZZ
160M	—	—	—	—	—	42	110	90	10	12	37	45	M16	6309ZZ	6309ZZ
160L	—	—	—	—	—	42	110	90	10	12	37	45	M16	6309ZZ	6309ZZ

PAD MOUNT



SHAFT DETAIL



OUTPUT (kW)			FRAME SIZE	DIMENSIONS (MM)										
2P	4P	6P		AC	AD	L2	C	KK	L	LB	L1	J	H	M
0.37	0.37	0.18/0.25	71	142	76	90	45	M20X1.5	262	232	115	100	200	M12
0.75/1.1	0.55/0.75	0.37/0.55	80	160	82	90	55	M20X1.5	320	280	115	110	220	M12
1.5	1.1	0.75	90S	178	82	90	—	M20X1.5	370	320	115	110	220	M12
2.2	1.5	1.1	90L	178	82	90	—	M20X1.5	390	340	115	110	220	M12
3	2.2	—	100L	204	82	100	83	M20X1.5	400	340	128	125	250	M12
—	3	—	100L2-4	204	82	100	83	M20X1.5	400	340	128	145	290	M12
—	—	1.5	100L-6	204	82	100	83	M20X1.5	400	340	128	145	290	M12
4	4	2.2	112M	224	96	100	90	M25X1.5	440	380	125	135	270	M12
5.5/7.5	5.5	3	132S	260	96	140	—	M25X1.5	490	410	170	165	330	M16
—	7.5	4/5.5	132M	260	96	140	—	M25X1.5	510	430	170	165	330	M16
11/15	11	7.5	160M	315	118	200	135	M32X1.5	640	530	240	195	390	M20
18.5	15	11	160L	315	118	200	135	M32X1.5	640	530	240	195	390	M20

FRAME SIZE	SHAFT EXTENSION							BEARINGS		
	D	E	ED	ED1	F	G	GA	DH	DE	NDE
71	14	30	20	5	5	11	16	M5	6202ZZ	6202ZZ
80	19	40	25	7.5	6	15.5	21.5	M6	6204ZZ	6204ZZ
90S	24	50	40	4	8	20	27	M8	6205ZZ	6205ZZ
90L	24	50	40	4	8	20	27	M8	6205ZZ	6205ZZ
100L	28	60	50	5	8	24	31	M10	6206ZZ	6206ZZ
112M	28	60	50	5	8	24	31	M10	6306ZZ	6306ZZ
132S	38	80	65	10	10	33	41	M12	6308ZZ	6308ZZ
132M	38	80	65	10	10	33	41	M12	6308ZZ	6308ZZ
160M	42	110	90	10	12	37	45	M16	6309ZZ	6309ZZ
160L	42	110	90	10	12	37	45	M16	6309ZZ	6309ZZ

- Notes:
1. Dimensional data subject to change without notice.
 2. Lifting facilities provided on motors frame size D112 and larger.
 3. For tolerances see page 11.

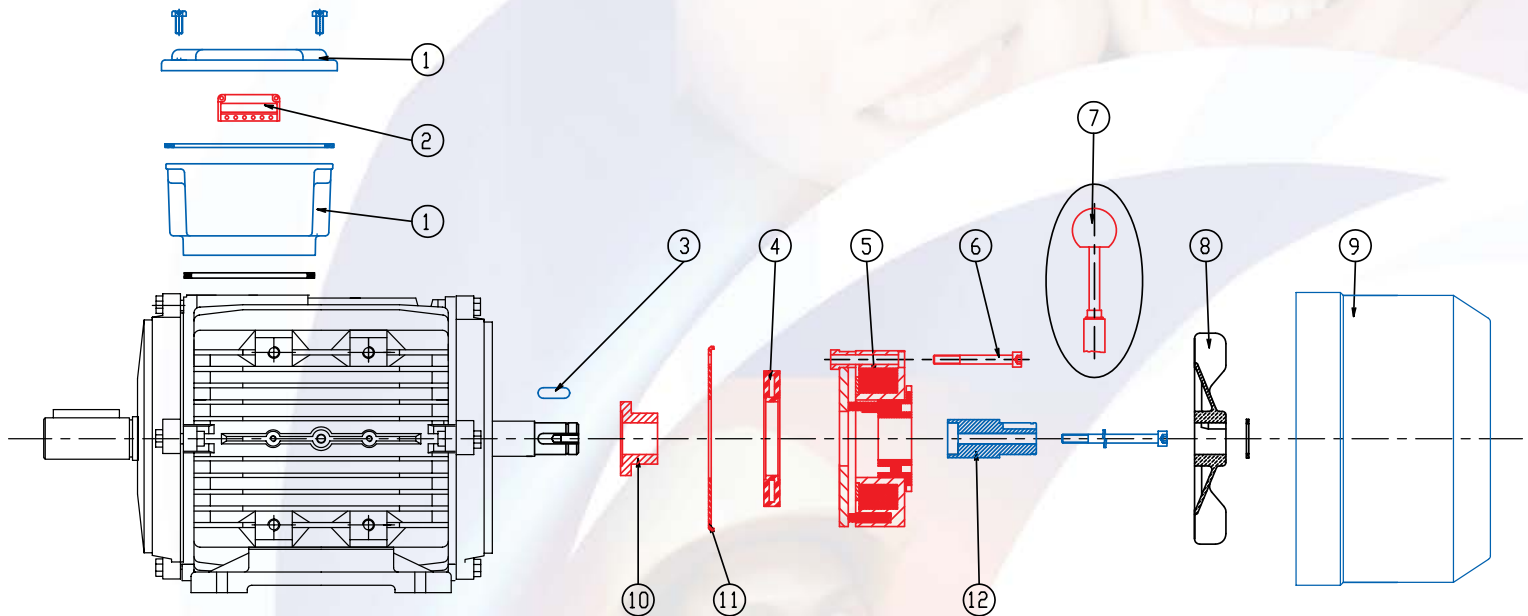
4. C Face only dimensions identical to relevant dimensions here for foot & C Face.

Brake Motors

The standard 3-Phase **MONARCH Alloy** motor, frame sizes D63 to D132 are “brake kit friendly”, whereby a “TECO Brake Kit and DC Disc Brake” can be rapidly fitted to motor with no additional machining of the motor endshield or motor shaft.

Frames D160 are ready for brake fitting, however, some in-house machining is required for fitting the Mounting Flange (not shown, in place of Friction Plate).

Brake Kit – major components



1. Oversized Terminal Box	7. Hand Release (Optional)
2. AC Rectifier	8. External Fan
3. Shaft / Brake Hub Key	9. Extended Fan Cover
4. Friction Disc	10. Brake Hub
5. Magnet Housing	11. Friction Plate Brakes # 08-16 (Flange on #19)
6. Mounting Screws	12. Shaft Adaptor

Brake Features

- Spring pressure, asbestos free single-disc, for direct current supply.
- Electromagnetically operated with the spring pressure generating the braking torque when the DC current is off (DC current on, braking torque off / DC current off, braking torque on).
- Adjustable braking torque.
- An AC rectifier produces the DC current to the brake coil when the motor is energised.
- Standard brake coil rated voltages available: 24, 102*, 178*, 205 VDC (* stocked by TECO Australia)
- Protection class IP55 under motor fan cover.
- Insulated to class F, CE marked.
- Brakes can be matched to the individual applications.

Brake Options

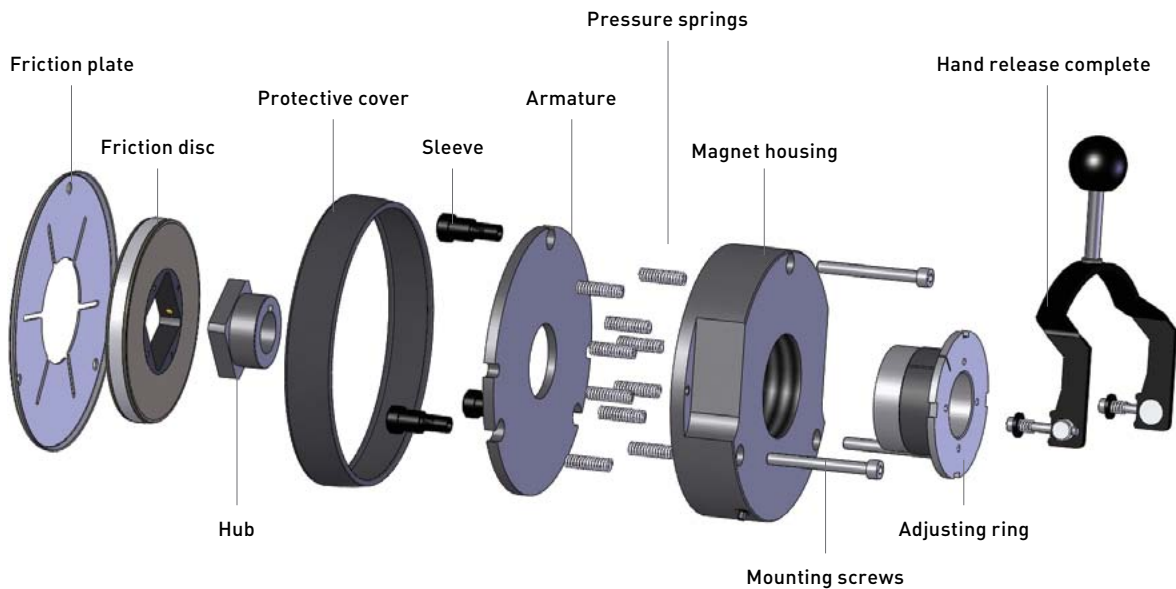
- Hand release - neutralises the brake effect of the springs when the motor is de-energised.
- Protection rating to IP56 or IP65.
- Fast Acting rectifiers (initial over excitation DC current on, brake off), for frequency starting applications.
- Non standard brake coil rated voltages.



Monarch - Alloy Brake Motor



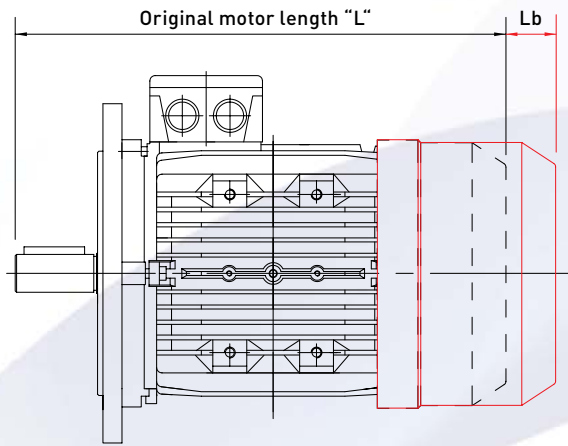
DC Disc Brake complete



Brake Size	Braking Torque Range (Nm)	Maximum Torque (Nm)	Maximum Speed (RPM)	Rated Power (Watts)	Response time (DC current)		Weight (kg)	Suit Frame Size	Additional motor length Lb (mm)
					Off* (ms)	On (ms)			
08	1 – 5	6	7200	23.5	18	30	0.61	D63	70
08	1 – 5	6	7200	23.5	18	30	0.61	D71	60
10	4 – 10	12	3500	26	20	95	1.3	D80	50
11	8 – 20	23	3500	30	20	80	2.8	D90S/L	75
13	16 – 32	40	3500	40	45	90	3.7	D100L	75
14	30 – 60	65	3500	53	85	85	5.7	D112M	80
16	40 – 80	100	3500	55	90	190	8.4	D132S/M	90
19	80–150	170	3000	80	130	270	13.1	D160M/L	150

Alternative brake sizes available on request.

- Notes:**
1. * above "response time [DC current off] depicts "Fast Response Switching" utilising auxiliary contact "K1", please refer page 10.
 2. For "Normal Switching" Bridge rectifier terminals S1 – S2, auxiliary contact K1 is not required.
 3. Connection to motor terminals, please refer to TECO for details.
 4. If motor is fed by Variable Speed Drive a separate supply and controls are necessary for correct brake operation.

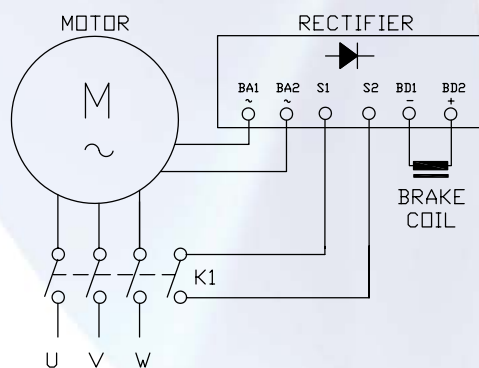


Frame Size	Motor kW	Motor Full Load Torque (Nm)	Brake Size	Brake Rated Torque Range (Maximum Torque)	
				Nm	% motor FLT
D63	0.18	1.25	08	1 – 5 (6)	80 – 400 (480)
D71	0.37	2.6	08	1 – 5 (6)	38 – 192 (230)
D80	0.75	5.0	10	4 – 10 (12)	80 – 200 (240)
D90S	1.1	7.3	11	8 – 20 (23)	100 – 274 (315)
D90L	1.5	9.9	11	8 – 20 (23)	81 – 202 (232)
D100L	3	19.7	13	16 – 32 (40)	81 – 162 (203)
D112M	4	26.2	14	30 – 60 (65)	115 – 229 (248)
D132S	5.5	35.8	16	40 – 80 (100)	112 – 223 (279)
D132M	7.5	48.8	16	40 – 80 (100)	82 – 164 (205)
D160M	11	72.0	19	80 – 150 (170)	111 – 208 (236)
D160L	15	98.1	19	80 – 150 (170)	82 – 153 (173)

Rectifier and Connection Diagrams

- Single phase rectifiers with internal suppressor are utilised and include screw terminals for connections.
- Rectifiers are either Half Wave or Full Wave (Bridge), depending on the brake coil voltage and AC supply voltage and mounted in an oversized primary terminal box D63-D132 (standard box D160).

Connection Diagrams



Rectifier

DIMENSIONAL TOLERANCES TO AS1359.10

SHAFT HEIGHT

Dimension "H"

FRAME SIZE	TOLERANCE	TOLERANCE (MM)
56 to 160	IEC60072-1	+0 -0.5

SHAFT

Dimension "D"

D	TOLERANCE	TOLERANCE (MM)
9	j6	+0.007 -0.002
11 to 18	j6	+0.008 -0.003
19 to 28	j6	+0.009 -0.004
32 to 48	k6	+0.018 +0.002

FLANGE

Dimension "N"

N	TOLERANCE	TOLERANCE (MM)
80	h8	+0 -0.046
95 & 110	h8	+0 -0.054
130 & 180	h8	+0 -0.063
230 to 250	h8	+0 -0.072

C FACE

Dimension "N"

N	TOLERANCE	TOLERANCE (MM)
50	h8	+0 -0.039
60 to 80	h8	+0 -0.046
95 & 110	h8	+0 -0.054
130	h8	+0 -0.063

ELECTROMECHANICAL TOLERANCES TO AS60034.1

QUANTITY	TOLERANCE
Efficiency machines $P \leq 50$ kW	-15% (1 - η)
Power factor (Cos ϕ)	-1/6 (1-cos ϕ) min. 0.02, max. 0.07
Slip machines $P < 1$ kW	$\pm 30\%$ of guaranteed slip
Slip machines $P \geq 1$ kW	$\pm 20\%$ of guaranteed slip
Starting torque	-15%, +25% of guaranteed torque
Starting current	+20% of guaranteed torque
Pull-up torque	-15% of guaranteed torque
Break down torque	-10% of guaranteed torque >1.5 full load torque



Monarch Alloy
Pad mount

Motors



Drives



Controls

Some other products available from TECO Australia, Electric Motor Division -
Brake Motors, Crane Motors, Cooling Tower Motors, Eddy Current Motors, Hazardous Area Motors, High Efficiency Motors, High Voltage Motors, Induction Generators, Invicta Vibrator Motors, Mill use Induction Motors, Multi-speed Motors, Slip Ring Motors, Smoke Spill Motors, Synchronous Motors, Single Phase Motors, Special Application Motors, Vertical Hollow Shaft Motors, Variable Speed Drives, AC-DC Motor Controls



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