



VHS MOTORS

BROCHURE



MARATHON®

100 years ago, before “Marathon” became a proud flagship brand in the Regal family, a predecessor company named “Marathon Electric” began manufacturing motors under four principles:

- Serving customers according to their needs
- Produce the most efficient and long-lasting motors
- Commit to new technology and research
- Expand and diversify into new markets

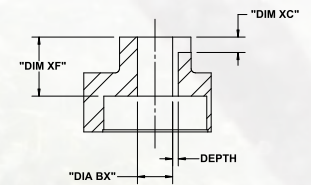
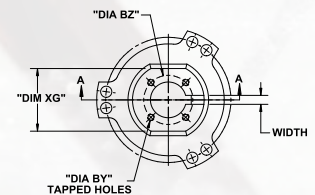
Marathon VHS motors continue this legacy by delivering a reliable, customizable solution for our valued customers. The standard stock product is designed to deliver a wide range of features through quick modifications to meet our customers’ needs in very short lead-times. The VHS motor line complements a Marathon product portfolio dedicated to water systems which include motors for Jet-Pumps, Close Coupled Pumps, Fire Pumps, Severe Duty, IEEE841, Flame and Explosion Proof and, General Purpose.

RATINGS

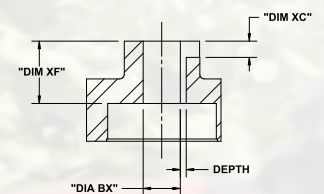
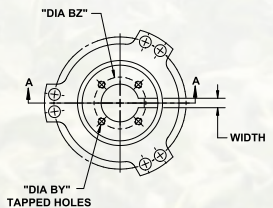
HP	RPM	Voltage	Frame	Catalog#	Part#	Nom. Eff.	FL. Amps	Wt.	CD Dim (in)	BD Dim (in)	Max Down Thrust Load (lbs)
7.5	3600	230/460	213TP	V106A	213VTDC6001	88.5	11.8	195 lbs	20.25	10	1900
	1800	230/460	213TP	V107A	213VTDC6026	91	9.2	222 lbs	20.25	10	2300
10	3600	230/460	213TP	V109A	213VTDC6002	89.5	12.4	205 lbs	20.25	10	1900
	1800	230/460	215TP	V110A	215VTDC6026	91.7	12.3	215 lbs	20.25	10	2300
15	3600	230/460	215TP	V112A	215VTDC6001	90.2	23.2	220 lbs	20.25	10	1800
	1800	230/460	254TP	V113A	254VTDC6026	93	17.9	300 lbs	23.38	10	3300
20	3600	230/460	254TP	V115A	254VTDC6001	91	23.0	335 lbs	23.38	12	2600
	1800	230/460	256TP	V116A	256VTDC6026	93	24.7	385 lbs	23.38	12	3200
25	3600	230/460	256TP	V118A	256VTDC6001	91.7	28.9	385 lbs	23.38	12	2600
	1800	230/460	284TP	V119A	284VTDC6026	93.6	30.8	780 lbs	24.75	12	3200
30	3600	230/460	284TP	V121A	284VTDC6001	91.7	34.5	455 lbs	24.75	12	2600
	1800	230/460	286TP	V005A	286VTDC6026	94.5	36.2	570 lbs	24.75	12	3200
40	3600	230/460	286TP	V124A	286VTDC6001	92.4	45.3	770 lbs	24.75	16	2500
	1800	230/460	324TP	V006A	324VTDC6026	94.1	48.3	511 lbs	28.22	16	5700
50	3600	230/460	324TP	V127A	324VTDC6001	93	57.3	765 lbs	28.22	16	4500
	1800	230/460	326TP	V128A	326VTDC6026	94.5	59.5	780 lbs	28.22	16	5700
60	3600	230/460	326TP	V130A	326VTDC6001	93.6	68.2	790 lbs	28.22	16	4500
	1800	230/460	364TP	V008A	364VTDC6026	95	74.3	1055 lbs	31.16	16	5600
75	3600	230/460	364TP	V133A	364VTDC6001	93.6	85.0	1040 lbs	31.16	16	4500
	1800	230/460	365TP	V009A	365VTDC6026	95.4	91.2	1183 lbs	31.16	16	5500
100	3600	230/460	365TP	V136A	365VTDC6001	93.6	119.7	1180 lbs	31.16	16	4500
	1800	230/460	404TP	V010A	404VTDC6026	95.4	115.1	1628 lbs	36.94	16	7300
125	1800	460	405TP	V140A	405VTDC6026	95.4	142.3	1750 lbs	36.94	16	7100
150	1800	460	444TP	V143A	444VTDC6026	95.8	166.5	2100 lbs	44.8	16	11800
200	1800	460	445TP	V153A	445VTDC6026	95.8	239.2	2240 lbs	44.8	16	11600
250	1800	460	447TP	V148A	447VTDC6026	95.8	284.1	2700 lbs	49.78	20	11300
300	1800	460	449TP	V149A	449VTDC6026	95.8	333.6	3170 lbs	49.78	20	13800

COUPLINGS

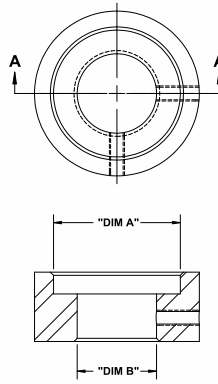
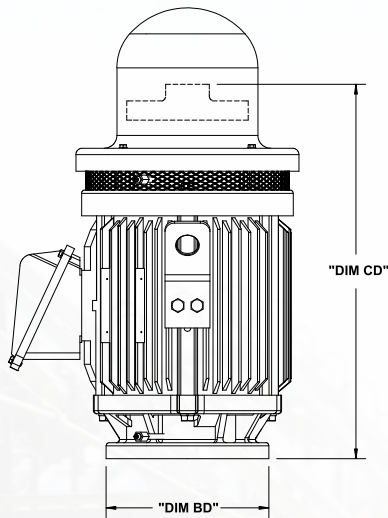
Frame	Coupling Kits	Fig No.	BX	KEYWAY		BY	BZ	XC	XF	XG
				Width	Depth					
210TP	A1500	1	0.751	-	-	-	-	-	-	-
	A1501	1	1.001	0.250	0.140	10-32UNF	1.375	0.430	1.650	1.750
250TP	A1500	1	0.751	-	-	-	-	-	-	-
	A1501	1	1.001	0.250	0.140	10-32UNF	1.375	0.430	1.650	1.750
	A1505	1	1.188	0.250	0.140	1/4-20UNC	1.750	0.430	1.650	1.750
280TP	A1511	1	1.251	0.250	0.140	1/4-20UNC	1.750	0.430	1.650	1.750
	A1500	1	0.751	-	-	-	-	-	-	-
	A1502	1	1.001	0.250	0.140	10-32UNF	1.375	0.430	1.850	1.750
	A1506	1	1.188	0.250	0.140	1/4-20UNC	1.750	0.430	1.850	1.750
320TP 360TP	A1512	1	1.251	0.250	0.140	1/4-20UNC	1.750	0.430	1.850	1.750
	A1503	2	1.001	-	-	-	-	-	-	-
	A1504	2	1.001	0.250	0.140	10-32UNF	1.375	0.320	1.610	-
	A1507	2	1.188	0.250	0.140	1/4-20UNC	1.750	0.320	1.610	-
	A1513	2	1.251	0.250	0.140	1/4-20UNC	1.750	0.320	1.610	-
	A1514	2	1.251	0.375	0.164	1/4-20UNC	1.750	0.320	1.610	-
	A1516	2	1.438	0.375	0.167	1/4-20UNC	2.120	0.320	1.610	-
400TP	A1518	2	1.501	0.375	0.168	1/4-20UNC	2.120	0.320	1.610	-
	A1503	2	1.001	-	-	-	-	-	-	-
	A1508	2	1.188	0.250	0.140	1/4-20UNC	1.750	0.630	2.430	-
	A1515	2	1.251	0.375	0.140	1/4-20UNC	1.750	0.630	2.430	-
	A1517	2	1.438	0.375	0.140	1/4-20UNC	2.120	0.630	2.430	-
	A1519	2	1.501	0.375	0.140	1/4-20UNC	2.120	0.630	2.430	-
440TP	A1523	2	1.688	0.375	0.203	1/4-20UNC	2.500	0.630	2.430	-
	A1526	2	1.751	0.375	0.203	1/4-20UNC	2.500	0.630	2.430	-
	A1509	2	1.188	-	-	-	-	-	-	-
	A1510	2	1.188	0.250	0.116	1/4-20UNC	1.750	0.630	2.220	-
	A1520	2	1.501	0.375	0.168	1/4-20UNC	2.120	0.630	2.220	-
	A1524	2	1.688	0.375	0.171	1/4-20UNC	2.500	0.630	2.220	-
447TP 449TP	A1527	2	1.751	0.375	0.171	1/4-20UNC	2.500	0.630	2.220	-
	A1528	2	1.938	0.500	0.222	1/4-20UNC	2.500	0.630	2.220	-
	A1521	2	1.501	-	-	-	-	-	-	-
	A1522	2	1.501	0.375	0.168	1/4-20UNC	2.125	0.547	2.200	-
	A1525	2	1.688	0.375	0.171	1/4-20UNC	2.500	0.547	2.200	-
	A1529	2	1.938	0.500	0.222	1/4-20UNC	2.500	0.673	2.200	-
	A1530	2	2.188	0.500	0.226	3/8-16UNC	3.250	0.673	2.200	-
	A1531	2	2.251	0.500	0.226	3/8-16UNC	3.250	0.673	2.200	-



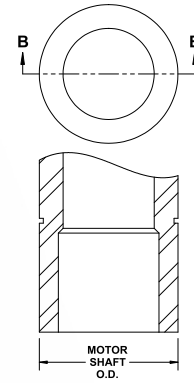
COUPLING KIT
FIGURE 1
SECTION A-A



COUPLING KIT
FIGURE 2
SECTION A-A



STABILIZER BUSHING SECTION A-A



HOLLOW SHAFT SECTION B-B

STEADY BUSHINGS

Frame Size	BX Dimension	Stabilizer Bushing Kits No.	"A" Dimension		Motor Shaft OD		
			Upper/Lower Limit	Nominal	Tolerance	Nominal	Tolerance
210TP/250TP	1.00	A1545	1.003/1.001	1.76	0.001	1.76	-0.0005
	0.937	A1544	0.940/0.938				
	0.875	A1542	0.878/0.876				
	0.750	A1540	0.753/0.751				
250TP	1.25	A1557	1.253/1.251	2.165	0.001	2.165	-0.0005
	1.187	A1552	1.190/1.188				
280TP	1.25	A1558	1.253/1.251	2.362	0.001	2.362	-0.0005
	1.187	A1553	1.190/1.188				
	1.00	A1546	1.003/1.001				
	0.875	A1543	0.878/0.876				
320TP	0.750	A1541	0.753/0.751	2.559	0.001	2.559	-0.0005
	1.50	A1562	1.502/1.501				
	1.437	A1562	1.439/1.438				
	1.25	A1559	1.252/1.251				
	1.187	A1554	1.189/1.188				
360TP	1.126	A1550	1.127/1.126	2.638	0.001	2.638	-0.0005
	1.00	A1547	1.002/1.001				
	1.50	A1563	1.502/1.501				
	1.437	A1563	1.439/1.438				
	1.25	A1560	1.252/1.251				
400TP/440TP	1.187	A1555	1.189/1.188	3.425	0.001	3.425	-0.0005
	1.126	A1551	1.127/1.126				
	1.00	A1548	1.002/1.001				
	1.75	A1568	1.752/1.751				
	1.687	A1566	1.689/1.688				
	1.50	A1564	1.502/1.501				
447TP/449TP	1.437	A1564	1.439/1.438	3.425	0.001	3.425	-0.0005
	1.25	A1561	1.252/1.251				
	1.187	A1556	1.189/1.188				
	1.00	A1549	1.002/1.001				
	2.5	A1578	2.502/2.501				
	2.437	A1577	2.439/2.438				
	2.375	A1576	2.377/2.376				
	2.25	A1575	2.252/2.251				
	2.187	A1574	2.189/2.188				
	2.125	A1573	2.127/2.126				
	2.062	A1572	2.064/2.063				
	2	A1571	2.002/2.001				
	1.937	A1570	1.939/1.938				
1.75	A1569	1.752/1.751					
1.687	A1567	1.689/1.688					
1.50	A1565	1.502/1.501					
1.437	A1565	1.439/1.438					

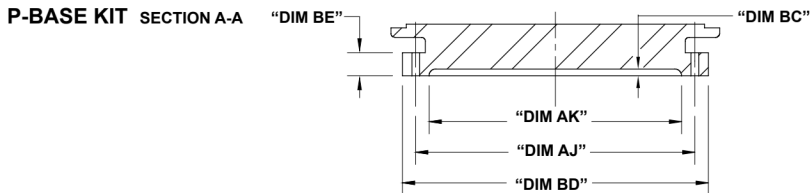
PRODUCT SPECIFICATION

FEATURE	STANDARD
GENERAL	
Motor type	Three Phase Induction Motors
Enclosure	Water Protected Type 1
Power output	7.5HP up to 300HP
Speeds	2 Pole (3600RPM) up to 100HP and 4 Pole (1800RPM) through 300HP
Design standard	NEMA® MG1
Regulatory markings	UL C-US; CE Mark
ELECTRICAL CHARACTERISTICS	
Frequency	60/50 (50 Hz @ next lower HP, 1.15 SF)
Standard voltage rating 60Hz	230/460v through 405 frame, 460v 440 frame and larger.
Standard voltage rating 50Hz	190/380V next lower hp for baseline 230/460v 60Hz motor 380V next lower hp for baseline 460v 60Hz motor
Service factor	1.15SF capability @ 60Hz and 50Hz and in all voltage.
Lead configuration	12 leads Y-start/D-run for 230/460v 213-405 frame (PWS on 230v) 6 lead PWS/Y-start/D-run for 460v in 444 frame and larger
Lead terminations	Loose leads, ring terminals
Lead length	6"
Efficiency	NEMA Premium® @ 60Hz, full load
NEMA design	Design B
Full load maximum temperature rise	80°C rise at 1.0 load
Service factor	1.15SF capability @ 60Hz and 50Hz and in all voltage
Duty cycle	Continuous
Ambient operating temperature rating	-20 to 40°C max
Protection devices	None (see options)
Altitude rating	0-3300 feet (0-1000 meters)
Inverter capability	3:1VT with non-reverse ratchet
Continuous over-speed capability	60Hz base speed
Winding space heaters	Standard feature
Winding temperature sensors	None (see options)
MECHANICAL CHARACTERISTICS	
Frame sizes	210TP through 449TP
Frame construction	Cast iron
Mounting	Vertical round, P-Base
P-base material	Cast iron
Canopy material	Steel
Conduit box material	Cast iron
Conduit box compartment volume	Meet or exceed NEC NFPA70; (same as NEMA MG-1 & UL1004-1)
Conduit box hole (customer entry)	NPT

FEATURE	STANDARD
MECHANICAL CHARACTERISTICS	
IP Code	IP23
Gaskets	Gasket between frame and C-box base
Conduit box mounting/ assembly	4 bolt, diagonally split
Conduit box rotation	Ability to rotate conduit box in 90 deg increments or accessibility of incoming power from 12:00, 3:00, 6:00 or 9:00 positions
Grounding provision	Inside C-Box
Insulation class	Class F
Insulation type	Inverter capable
Upper bearing (thrust bearing)	Angular contact back to back up to frame size 405 Angular contact tandem for frame sizes 444 and larger
Lower bearing	Single row ball bearing
Downthrust	See maximum down thrust values, based on bearing life 8760 hrs, on table 1
Upthrust	Maximum 30% of down-thrust capability
Insulated bearing	No (See options)
Upper bearing lubrication	Exxon® Polyrex® EM grease for motors 280 frame and smaller. 320 frame and larger uses oil for upper bearing (ISO R32 recommended) and Exxon Polyrex EM grease for lower bearing
Lower bearing lubrication	Exxon Polyrex EM grease
Re-greasing provisions	Plugged holes
Grease and oil drain type and location	Lubrication holes in each bracket, holes are plugged
Moisture drain type and location	Moisture drain hole in P-base and left open.
Bearing current mitigation	None (see options)
Shaft seal / slinger	V-ring rubber shaft seal
Nameplate material	Stainless steel
Nameplate printing method	Stamped, metal embossed or laser etched.
Hardware - main	Unified thread standard (inches)
Lifting provisions	Vertical, minimum 5.0 NEMA safety factor
Vibration limits	Per NEMA (0.15 in/s maximum velocity)
Sound limits	per NEMA MG-1
MODIFICATION CAPABILITIES	
P-Base flanges	Alternative sizes available as modification
Steady bushings kits	Available
Coupling kits	Available
Ground Ring	Available as a modification
Temperature sensors	Available as a modification
Coupling locking options	Rigid coupling (no NRR) available as a modification

P BASES

FRAME NO.	KIT PART#	AK	BD	BC	BE	AJ
213/5	A1580	8.250-8.253	10	0.22	0.75	9.125
	A1581	8.250-8.253	12	0.22	0.75	9.125
254/6	A1582	8.250-8.253	10	0.22	0.98	9.125
	A1583	8.250-8.253	12	0.22	0.98	9.125
	A1584	8.250-8.253	16.5	0.22	0.98	9.125
284/6	A1582	8.250-8.253	10	0.22	0.98	9.125
	A1583	8.250-8.253	12	0.22	0.98	9.125
	A1585	13.500-13.505	16.5	0.22	0.98	14.75
324/6	A1586	8.250-8.253	12	0.28	0.98	9.125
	A1587	13.500-13.505	16.5	0.28	0.98	14.75
364/5	A1586	8.250-8.253	12	0.28	0.98	9.125
	A1587	13.500-13.505	16.5	0.28	0.98	14.75
404/5	A1587	13.500-13.505	16.5	0.28	0.98	14.75
	A1588	13.500-13.505	20	0.28	0.98	14.75
444/5	A1589	13.500-13.505	16.5	0.28	1.16	14.75
	A1590	13.500-13.505	20	0.28	1.16	14.75
	A1591	13.500-13.505	24	0.28	1.16	14.75
447/9	A1589	13.500-13.505	16.5	0.28	1.16	14.75
	A1590	13.500-13.505	20	0.28	1.16	14.75
	A1591	13.500-13.505	24	0.28	1.16	14.75



marathon[®]
Motors

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APPLICATION CONSIDERATIONS

The proper selection and application of power transmission products 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 results of the products and components and the customer should carefully review its requirements. Any technical advice or review furnished by Regal Beloit America, Inc. and/or its affiliates ("Regal") 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, please visit <http://www.regalbeloit.com> (please see link at bottom of page to "Standard Terms and Conditions of Sale"). These terms and conditions of sale, disclaimers and limitations of liability apply to any person who may buy, acquire or use a Regal product referred to herein, including any person who buys from a licensed distributor of these branded products.

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