

# Black Max<sup>®</sup> Vector Duty Motors

\*\*\*\* 230/460V and 575V Motors Available \*\*\*\*

## Features



- Class F MAX GUARD<sup>®</sup> insulation system
- Constant torque operation from 0 to base speed on vector drive
- Constant horsepower operation to twice base RPM
- Continuous duty at 40° C ambient
- Optimized for operation with IGBT inverter (NEMA Design A)
- Class F N/C thermostats (one per phase)
- Utilizes double shielded ball bearings
- Exxon Polyrex<sup>®</sup> EM bearing grease
- Dual Mounting (C-Face with rigid base and C-Face with removable rigid base, as noted)
- F1 standard conduit box location, field reversible to F2 (except as noted)
- Available with optional encoder installed on opposite drive end
- UL recognized and CSA certified
- Three year warranty



## Applications

- Designed for inverter or vector applications where up to a 1000:1 constant torque speed range is required.
- Typical uses include: material handling, machine tools, conveyors, crane and hoist, metal processing, test stands, pumps, compressors, textile processing, and other industrial machinery installed in dusty or dirty environments.

### Motor Shipping Schedule

Same day	7 days	10 days
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Color indicates shipping lead time in business days.

### 230/460V Motor Specifications

Part Number	Price	HP	Base RPM	Volts	Enclosure	NEMA Frame	Model No.	F.L. Amps	Weight Lbs.	Footnotes
Y592	<--->	1/4	1800	230/460	TENV	56C	56H17T2001	1.2 / 0.6	19	T, S, 13
Y534	<-->	1/2	1800	230/460	TENV	56C	56H17T5301	1.6 / 0.8	28	T, S, 6, 13
Y535	<--->	1	1800	230/460	TENV	56C	56H17T5302	3.0 / 1.5	41	T, S, 6, 13
Y536	<--->	1	1800	230/460	TENV	143TC	143THTR5326	3.0 / 1.5	43	T, S, 6, 13
Y537	<--->	1	1200	230/460	TENV	145TC	145THTR5376	3.8 / 1.9	49	T, S, 6, 13
Y538	<-->	1-1/2	1800	230/460	TENV	145TC	145THTR5326	4.8 / 2.4	50	T, S, 6, 13
Y551	<--->	2	1800	230/460	TENV	145TC	145THTN6046	6.0 / 3.0	72	T
Y540	<--->	2	1200	230/460	TENV	184TC	184THTL7776	6.6 / 3.3	88	T, AL
Y541	<-->	3	1800	230/460	TENV	182TC	182THTL7726	8.4 / 4.2	96	T, AL
Y542	<--->	3	1200	230/460	TENV	213TC	213THTL7776	9.4 / 4.7	118	T, AL
Y543	<--->	5	1800	230/460	TENV	184TC	184THTL7726	14.0 / 7.0	98	T, AL
Y544	<--->	5	1200	230/460	TENV	215TC	215THTL7776	15.4 / 7.7	138	T, AL
Y545	<--->	7-1/2	1800	230/460	TENV	213TC	213THTL7726	21.0 / 10.5	146	T, AL
Y546	<--->	7-1/2	1200	230/460	TENV	254TC	254THTL5776	22.0 / 11.0	209	T, AL
Y547	<--->	10	1800	230/460	TENV	215TC	215THTL7726	27.0 / 13.5	159	T, AL
Y548	<--->	10	1200	230/460	TENV	256TC	256THTL5776	28 / 14	203	T, AL
Y549	<--->	15	1800	230/460	TENV	254TC	254THTL5726	40 / 20	250	T, AL, I
Y552	<--->	20	1800	230/460	TENV	256TC	256THTNA7026	52 / 26	300	T, I
Y553	<--->	25	1800	230/460	TENV	284TC	284THTNA7026	62 / 31	495	T, I
Y393	<--->	30	1800	230/460	TENV	286TC	286THTNA7026	74 / 37	575	T, I

#### Footnotes:

T Thermostat overload  
 S Steel Frame Construction  
 6 Bolt-on, removable base for footless mounting option

#### Footnotes (continued):

13 F1 Mounting Only, cannot modify to F2  
 AL Aluminum Frame Construction  
 I Intermittent duty from 90-120 Hz operation

**Note: Please review the AutomationDirect Terms & Conditions for this product. Warranty service can be arranged through numerous Marathon Electric service centers. See list of service centers on our Web site at [www.automationdirect.com](http://www.automationdirect.com).**

# Black Max<sup>®</sup> Vector Duty Motors

Motor Shipping Schedule		
Same day	7 days	10 days
Color indicates shipping lead time in business days.		

575V Motor Specifications										
Part Number	Price	HP	Base RPM	Volts	Enclosure	NEMA Frame	Model No.	F.L. Amps	Weight Lbs.	Footnotes
Y555	<--->	1/2	1800	575	TENV	56C	56H17T5311	0.64	28	T, S, 6, 13
Y556	<--->	1	1800	575	TENV	56C	56H17T5312	1.2	41	T, S, 6, 13
Y557	<--->	2	1800	575	TENV	145TC	145THTN6060	2.4	72	T
Y558	<--->	3	1800	575	TENV	182TC	182THTL7736	3.4	96	T, AL
Y559	<--->	5	1800	575	TENV	184TC	184THTL7736	5.6	98	T, AL
Y560	<--->	7-1/2	1800	575	TENV	213TC	213THTL7736	8.4	146	T, AL
Y561	<--->	10	1800	575	TENV	215TC	215THTL7736	10.8	159	T, AL
Y562	<--->	15	1800	575	TENV	254TC	254THTL5736	16.0	250	T, AL, I
Y563	<--->	20	1800	575	TENV	256TC	256THTNA7036	20.8	300	T, I
Y567	<--->	25	1800	575	TENV	284TC	284THTNA7036	24.8	495	T, I
Y394	<--->	30	1800	575	TENV	286TC	286THTNA7036	29.6	575	T, I

**Footnotes:**

T Thermostat overload  
 S Steel Frame Construction  
 6 Bolt-on, removable base for footless mounting option

**Footnotes (continued):**

13 F1 Mounting Only, cannot modify to F2  
 AL Aluminum Frame Construction  
 I Intermittent duty from 90-120 Hz operation

## Motor with Shaft Mounted Encoder:

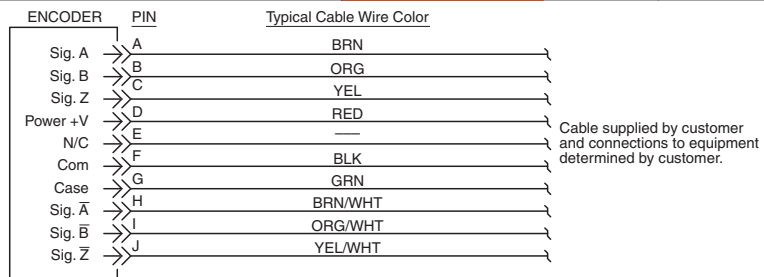
A Dynapar Model HS35 shaft mounted encoder can be supplied with the motor as shown in the price table below. The encoder requires a 5-26 VDC power source, provides a count of 1024 pulses per revolution (PPR), differential line driver output and includes a 10-pin mating connector.

Motor Shipping Schedule		
Same day	7 days	10 days
Color indicates shipping lead time in business days.		

Motor with Shaft Mounted Encoder								
230/460V Motors					575V Motors			
Part Number	Price	HP	Part Number	Price	HP	Part Number	Price	HP
Y592-A772	<--->	1/4	Y543-A772	<--->	5	Y555-A772	<--->	1/2
Y534-A772	<--->	1/2	Y544-A772	<--->	5	Y556-A772	<--->	1
Y535-A772	<--->	1	Y545-A772	<--->	7-1/2	Y557-A772	<--->	2
Y536-A772	<--->	1	Y546-A772	<--->	7-1/2	Y558-A772	<--->	3
Y537-A772	<--->	1	Y547-A772	<--->	10	Y559-A772	<--->	5
Y538-A772	<--->	1-1/2	Y548-A772	<--->	10	Y560-A772	<--->	7-1/2
Y551-A772	<--->	2	Y549-A772	<--->	15	Y561-A772	<--->	10
Y540-A772	<--->	2	Y552-A772	<--->	20	Y562-A772	<--->	15
Y541-A772	<--->	3	Y553-A772	<--->	25	Y563-A772	<--->	20
Y542-A772	<--->	3	Y393-A772	<--->	30	Y567-A772	<--->	25
						Y394-A772	<--->	30

## Encoder connector pinout:

Note: A mating connector is supplied with the encoder.



# Black Max<sup>®</sup> Vector Duty Motors

Motor Performance Data (460 Volt) *																
Part Number	HP	F.L. rpm	F.L. Amps 460 V	N.L. Amps 460 V	F.L. Torque (lb-ft)	B.D. Torque (lb-ft)	Max. C hp rpm *	Max. Safe rpm	F.L. Effic. (%)	F.L. Power Factor	Rotor Inertia (lb-ft <sup>2</sup> )	Ohms/Ph - Equiv. Wye Circuit (460 VAC) (at rated operating temp. in 40° C ambient)				
												R1	R2	X1	X2	XM
Y592	1/4	1755	0.6	0.45	0.75	4.5	3540	5400	70.0	58.0	0.045	26.300	23.000	30.240	14.700	572.000
Y534	1/2	1735	0.8	0.52	1.5	5.8	3510	5400	80.0	72.0	0.056	22.307	17.028	24.123	18.163	532.976
Y535	1	1750	1.5	1.0	3.0	15.0	3505	5400	84.0	75.0	0.110	8.378	5.623	10.707	9.912	278.036
Y536	1	1750	1.5	1.0	3.0	15.0	3505	5400	84.0	75.0	0.110	8.378	5.623	10.707	9.912	278.036
Y537	1	1145	1.9	1.3	4.5	16.0	2260	5400	80.0	62.5	0.140	10.302	8.372	13.793	15.325	193.835
Y538	1-1/2	1755	2.4	1.6	4.5	29.0	3518	5400	85.5	69.0	0.140	4.257	3.538	5.998	5.884	161.009
Y551	2	1750	3.0	1.7	6.0	28.5	3525	5400	85.5	78.0	0.130	3.834	2.897	5.950	5.637	154.800
Y540	2	1160	3.3	2.1	9.0	34.0	2315	5400	82.5	67.5	0.380	3.948	3.436	7.725	12.113	116.900
Y541	3	1755	4.2	2.2	9.0	48.0	3515	4200	85.5	80.0	0.420	2.356	1.731	4.266	4.304	123.930
Y542	3	1158	4.7	3.0	13.6	49.0	2300	4200	82.5	72.5	0.600	2.469	2.318	6.508	4.125	83.910
Y543	5	1765	7.0	4.2	14.8	70.0	3555	4200	89.5	74.5	0.550	1.242	0.947	2.534	4.236	64.128
Y544	5	1165	7.7	4.8	22.5	87.0	2320	4200	84.0	71.0	0.900	1.130	1.250	3.709	2.573	51.972
Y545	7-1/2	1765	10.5	5.5	22.3	95.5	3525	4200	90.2	76.0	0.850	0.699	0.567	1.765	2.260	38.178
Y546	7-1/2	1170	11.0	6.0	34.0	118.0	2325	4200	87.5	73.0	1.200	0.510	0.680	2.846	3.247	42.714
Y547	10	1774	13.5	7.4	29.5	125.0	3540	4200	90.2	76.0	1.300	0.369	0.334	1.423	2.281	34.932
Y548	10	1160	14	7.0	45.5	135.0	2320	4200	89.5	75.5	1.500	0.534	0.693	2.258	2.323	30.530
Y549	15	1765	20	11.0	45.0	170.0	3550	3600	92.4	76.0	1.600	0.134	0.316	1.047	1.569	22.151
Y552	20	1768	26	13.5	59.5	290.0	3560	3600	93.6	80.0	3.100	0.234	0.213	0.746	0.689	18.204
Y553	25	1770	31	14.0	74.2	330.0	3530	3600	93.6	75.0	4.400	0.143	0.160	0.724	0.678	13.965
Y393	30	1772	37	23.5	89.0	375.0	3560	3600	94.5	74.0	5.500	0.113	0.123	0.543	0.557	11.200

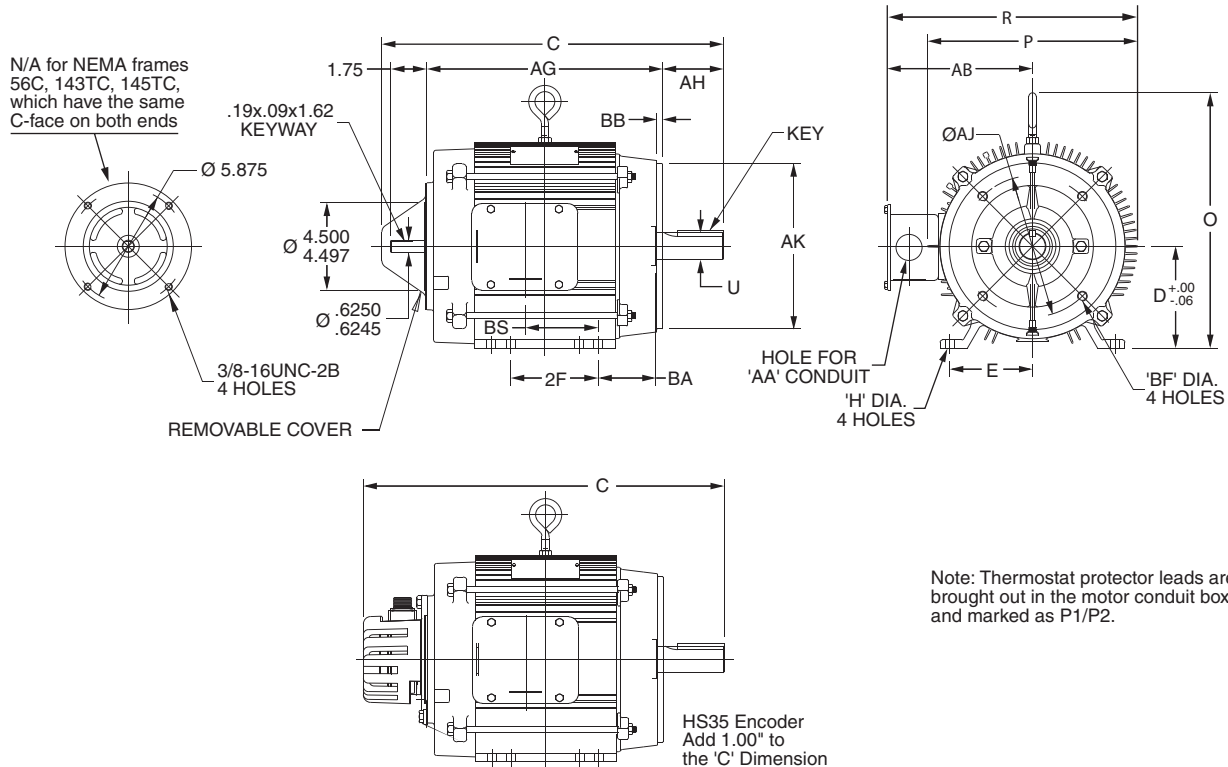
\* Maximum Constant hp rpm is for direct coupled loads.

Motor Performance Data (575 Volt) *																
Part Number	HP	F.L. rpm	F.L. Amps 575 V	N.L. Amps 575 V	F.L. Torque (lb-ft)	B.D. Torque (lb-ft)	Max. C hp rpm *	Max. Safe rpm	F.L. Effic. (%)	F.L. Power Factor	Rotor Inertia (lb-ft <sup>2</sup> )	Ohms/Ph - Equiv. Wye Circuit (575 VAC) (at rated operating temp. in 40° C ambient)				
												R1	R2	X1	X2	XM
Y555	1/2	1735	0.8	0.8	1.52	5.8	3510	5400	80.0	72	0.056	22.307	17.028	24.123	18.163	532.976
Y556	1	1750	1.6	0.8	3.0	15.0	3505	5400	84.0	75	0.11	8.378	5.623	10.707	9.912	278.036
Y557	2	1750	2.4	1.6	6.0	28.5	3525	5400	85.5	78	0.13	3.834	2.897	5.950	5.637	154.780
Y558	3	1755	3.2	1.6	9.0	48.0	3515	4200	85.5	80	0.42	2.356	1.731	4.266	4.304	123.926
Y559	5	1765	5.6	3.2	14.9	70.0	3555	4200	89.5	74.5	0.52	1.242	1.134	2.268	3.969	64.071
Y560	7-1/2	1765	8.0	4.8	22.3	95.5	3525	4200	90.2	76	0.9	0.699	0.567	1.765	2.260	38.178
Y561	10	1774	11.2	5.6	29.6	125.0	3540	4200	90.2	76	1.3	0.284	0.284	1.420	2.272	34.932
Y562	15	1765	16.0	8.8	44.6	170.0	3550	3600	92.4	76	1.6	0.314	0.316	1.047	1.569	22.151
Y563	20	1770	20.8	11.2	59.5	290.0	3560	3600	93.6	77	3.5	0.220	0.192	0.675	0.684	18.204
Y567	25	1770	24.8	11.2	74.2	330.0	3530	3600	93.6	80	4.4	0.143	0.160	0.724	0.678	13.965
Y394	30	1772	29.6	14.4	88.9	375.0	3560	3600	94.5	80	5.3	0.113	0.123	0.543	0.557	11.186

\* Maximum Constant hp rpm is for direct coupled loads.

# Black Max<sup>®</sup> Vector Duty Motors

## Motor Dimensions



Note: Thermostat protector leads are brought out in the motor conduit box and marked as P1/P2.

Motor Dimensions [Inches]																																								
Part #		HP	NEMA Frame	Frame Construct	C	D	E	2F	H	O	P	R	U	AA	AB	AH	AJ	AK Max	BA	BF	BS	Key																		
230/460V	575V																																							
Y592	-	1/4	56C	Rolled Steel	11.88	3.50	3.00	.34	6.35	5.69	7.21	.625	None	4.37	2.06	5.875	4.500	2.75	3/8-16	4.93	.19x.19x1.38	2.84																		
Y534	Y555	1/2			13.48																	3.75																		
Y535	Y556	1			14.98																	5.25																		
Y536	-	1			15.04																	4.00	.35	6.71	6.42	8.46	5.25	2.12	5.93											
Y537	-	1			16.04																	2.75	5.00	8.46	.875	5.25	2.12	5.93												
Y538	-	1-1/2	145TC	Cast Iron	14.68	3.50	5.00	.37	7.45	7.98	11.03	.875	7.04	7.25	8.500	4.50	2.62	3/8-16	4.93	.19x.19x1.38	3.81																			
Y551	Y557	2																			5.00	3.81																		
Y540	-	2	184TC	Aluminum	16.94	4.50	3.75	5.50	.44	11.22	9.74	12.07	1.125	1.09	7.19	2.62	7.25	8.500	3.50	1/2-13	5.55	.31x.31x2.38	2.75																	
Y541	Y558	3	182TC		17.39																		4.50	2.98																
Y542	-	3	213TC		19.04																		5.22	4.25	.47	12.47	10.75	12.78	1.375	1.34	7.39	3.12	4.25	4.05						
Y543	Y559	5	184TC		18.94																		4.50	3.75	5.50	.44	11.22	9.74	12.07	1.125	1.09	7.19	2.62	3.50	3.75	.25x.25x1.75				
Y544	-	5	215TC		20.54																		5.22	4.25	7.00	.47	12.47	10.75	12.78	1.375	1.34	7.39	3.12	7.25	8.500	4.25	1/2-13	5.55	.31x.31x2.38	3.81
Y545	Y560	7-1/2	213TC		20.54																																			5.50
Y546	-	7-1/2	254TC		25.37																		6.22	5.00	8.25	.56	13.46	10.75	13.75	1.625	1.75 & 2.0	8.38	3.75	7.25	8.500	4.25	1/2-13	8.85	.38x.38x2.88	
Y547	Y561	10	215TC		23.04																		5.22	4.25	7.00	.47	12.47	10.75	12.78	1.375	1.34	7.39	3.12	7.25	8.500	4.25	1/2-13	8.05	.31x.31x2.38	
Y548	-	10	256TC		26.87																		6.22	5.00	10.00	.56	13.46	N/A	13.54	1.625	1.75 & 2.0	8.17	3.75	7.25	8.500	4.75	3/8-16	5.50	.50x.50x3.25	3.81
Y549	Y562	15	254TC		26.87																																			8.25
Y552	Y563	20	256TC	27.13	7.00	5.50	11.00	.56	16.49	14.32	17.84	1.625	1.25	10.68	4.38	9.0	10.500	4.75	3/8-16	5.50	.50x.50x3.25	3.81																		
Y553	Y567	25	284TC	27.08																		9.50	3.81																	
Y393	Y394	30	286TC	28.58																		11.00	3.81																	

Note: Dimensions are for reference only. For complete dimensional information, refer to Marathon Electric at [www.marathonelectric.com](http://www.marathonelectric.com).