

marathon®
Motors

1000:1 Constant Torque (TENV)



Motor Shipping Schedule *

Same or one day * Up to 7 days Up to 10 days

Color indicates shipping lead time in business days. Check stock status online.

* Certain heavy and oversized items can be shipped only via LTL.

Check our website for current shipping method constraints by part number.

MAX+ AC Inverter-Duty Motors with Encoder

Features

- Integrated Dynapar HS20 1024 ppr encoder
- Optimized for operation with IGBT inverter
- Constant Torque operation from 0 to base speed on Vector Drive
- Constant Horsepower operation up to twice base RPM
- Class F insulation with CR200 corona resistant magnet wire
- Continuous duty at 40°C ambient
- C-Face with rigid base, except C-Face with removable rigid base as noted
- Service Factor: 1.0
- Ball bearings
- F1 mounting (except as noted)
- UL Recognized, CSA Certified, and CE Mark
- Three year warranty (through Marathon Electric)

Applications

- Replaces 90 volt and 180 volt PMDC motors (when used with AC variable frequency drives)
- Typical uses include: machine tools, conveyors, packaging machines, batching machines, printing equipment, pumps and fans.

Prices & Specifications

Motor Specifications – MAX+ (with encoder)

Part Number *	Price	HP	Base RPM	Volts	Encl.	NEMA Frame	Model No.	F.L Amps	Weight (lb) *	Footnotes	Drawing Links	
Y280	\$1,166.00	1/2	1800	230/460	TENV	56C	56H17T15526A	1.6 / 0.8	25	6	PDF	
Y281	\$1,220.00	3/4					56H17T15528A	2.4 / 1.2	35	6	PDF	
Y282	\$1,291.00	1					56H17T15527A	3.0 / 1.5	42	6	PDF	
Y284	\$1,537.00	1-1/2				145TC	145THTR15540AA	4.8 / 2.4	45	6	PDF	
Y285	\$2,063.00	2					145THTN17034AA	6.0 / 3.0	68	13b	PDF	
Y286A	\$2,082.00	3					182TC	182THTY17041AA	8.2 / 4.1	110	13b	PDF
Y287A	\$2,831.00	5					184TC	184THTY17038AA	13.4 / 6.7	125	13b	PDF

* Refer to the Motor Shipping Schedule table for shipping information.

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Footnotes: 6 = Bolt-on, removable base for footless mounting option 13b = Field reversible from F1 to F2 mounting

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on 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.

MAX+ Motors Shaft-Mounted Encoder*

A Dynapar Model HS20 shaft-mounted encoder is supplied with the MAX+ motor. The 5/8-in hollow-shaft encoder requires a 5–26 VDC power source, provides a count of 1024 pulses per revolution (PPR), differential line driver output, and includes 10 screw-terminal wiring connections.

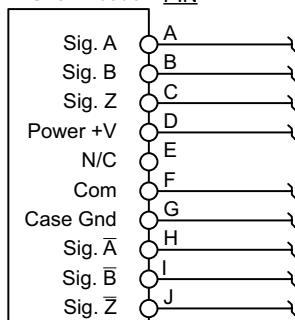
* The encoder cable gland accepts cable diameters from 0.187–0.30 in.

* There is no manufacturer's published tightening torque for the encoder screw terminals.

* If connecting the motor to a GS3 DURApulse AC drive, a [GS3-FB](#) Feedback Card is required for the drive.

Encoder Wiring Connections

Dynapar HS20 Encoder PIN



Connections to equipment determined by customer.

Wire size: minimum 24 AWG shielded cable

MAX+ AC Inverter-Duty Motors with Encoder

Performance Data

Performance Data (460 Volt) – MAX+													
Part Number	HP	NEMA Design	F.L. RPM	Min. RPM	F.L. AMPS @460V	N.L. AMPS @460V	F.L. Torque (lb·ft)	B.D. Torque (lb·ft)	Max. CHP RPM*	Max. Safe RPM	F.L. Effic.	F.L. Power Factor	Rotor Inertia (lb·ft ²)
Y280	1/2	A	1725	0	0.8	0.5	1.5	5.8	3510	5400	80.0	72.0	0.06
Y281	3/4	A	1725		1.2	0.8	2.3	10.2	3450		82.5	73.5	0.09
Y282	1	A	1725		1.5	1.0	3.0	15.0	3505		84.0	75.0	0.11
Y284	1-1/2	B	1755		2.4	1.6	4.5	29.0	3500		85.5	69.0	0.14
Y285	2	B	1750		3.0	1.7	6.0	28.5	3525		85.5	78.0	0.13
Y286A	3	B	1755		4.1	2.3	9.0	49.3	3510		87.5	78.5	0.42
Y287A	5	B	1760		6.7	3.2	14.9	61.5	3520		89.5	79.0	0.52

* Maximum Constant HP RPM is for direct coupled loads.

Black Max® Vector Duty Motors

Motor Shipping Schedule *

Same or one day * Up to 7 days Up to 10 days

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Motor with Shaft-Mounted Encoder*

A Dynapar Model HS35 shaft-mounted encoder can be supplied pre-installed on the motors 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.

* If connecting the motor to a GS3 DURApulse AC drive, a [GS3-FB Feedback Card](#) is required for the drive.

Motor Accessories

Part Number	Price	Description *
A772	\$1,176.00	Encoder kit, replacement, for Black Max encoder motors. Dynapar HS35 encoder, 5–26 VDC input, Line Driver output, 1024 pulses per revolution, 5/8-in bore.

* Replacement/spare encoder kit for Black Max Yxxx-A772 motors; can also be field installed on Black Max Yxxx motors without encoders.

Motor with Pre-installed Shaft-Mounted Encoder

230/460V Motors					
Part Number	Price	HP	Part Number	Price	HP
Y592-A772	\$1,605.00	1/4	Y544-A772	Retired	5
Y534-A772	\$1,833.00	1/2	Y545-A772	\$3,445.00	7 1/2
Y535-A772	\$1,936.00	1	Y546-A772	Retired	7 1/2
Y536-A772	\$1,953.00	1	Y547-A772	\$3,889.00	10
Y538-A772	\$2,189.00	1 1/2	Y548-A772	Retired	10
Y551-A772	\$2,395.00	2	Y549-A772	\$4,399.00	15
Y540-A772	Retired	2			
Y541A-A772	\$2,686.00	3			
Y542-A772	Retired	3			
Y543A-A772	\$2,911.00	5			

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on 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.

Blue Max[®] 2000 Vector Duty Motors

Blower Motor Performance Data (for TEBC Blower Cooled Motors)										
Blower Fits Motor Type				Blower Motor Characteristics						
Part Number	Model No.	NEMA Frame	Encl.	HP (60/50Hz)	RPM (60/50Hz)	Volts	Hz	F.L. Amps	Sound Pressure	Watts
Y513	324THFPA8038	324TC	TEBC	1 / 0.75	1735 / 1460	230/460 – 190/380	60 / 50	3.0 / 1.5	40	850
Y513-A775										850
Y514	326THFPA8038	326TC								851
Y514-A775										852
Y515	364THFS8046	364TC						3.7 / 1.85	68	853
Y515-A775										854
Y516	365THFS8046	365TC								855
Y516-A775										856
Y517	405THFS8046	405TC								857
Y517-A775										858

Encoder shaft-mounted to motor*

A Dynapar Model HS35/HSD38 shaft-mounted encoder can be supplied pre-installed on the selected motor, either TEFC or TEBC type, as shown in the 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 connector. A mating connector is supplied with TEFC (totally enclosed fan cooled) motor encoders; the customer is responsible for supplying the wiring cable and determining the connections to the equipment being used in the application. The encoder adds 1 inch to the TEFC motor's "C" dimension as shown in the dimensional diagram.

The TEBC (totally enclosed blower cooled) motor encoders have the mating connector pre-wired, installed and ending in a pigtail located inside a conduit box mounted on the motor. (See Figure 2 under the motor dimensional information on the next page.) The customer is responsible for determining the connections to the equipment being used in their application.

* If connecting the motor to a DURApulse AC drive, a **GS3-FB Feedback Card** is required for the drive.

** When used with a **GS3-FB** equipped DURApulse AC drive, the **GS3-FB** will supply power to the encoder.

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Motor Accessories		
Part Number	Price	Description *
A774	\$1,149.00	Encoder kit, replacement, for Blue Max TEFC encoder motors. Dynapar HS35 encoder, 5–26 VDC input, Line Driver output, 1024 pulses per revolution, 1-in bore.
A775	\$1,149.00	Encoder kit, replacement, for Blue Max TEBC encoder motors. Dynapar HSD38 encoder, 5–26 VDC input, Line Driver output, 1024 pulses per revolution, 1-in bore.

* Replacement/spare encoder kit for Blue Max Y5xx-A774 and Y5xx-A775 motors; can also be field installed on Blue Max Y5xx motors; select appropriate encoder kit per motor fan type (TEFC or TEBC).

Motor with Pre-installed Shaft-Mounted Encoder					
Part Number	Price	HP	Part Number	Price	HP
Y571-A774	Retired	40 (TEFC)	Y574-A774	Retired	75 (TEFC)
Y513-A775	Retired	40 (TEBC)	Y516-A775	Retired	75 (TEBC)
Y572-A774	Retired	50 (TEFC)	Y575-A774	Retired	100 (TEFC)
Y514-A775	Retired	50 (TEBC)	Y517-A775	Retired	100 (TEBC)
Y573-A774	Retired	60 (TEFC)			
Y515-A775	Retired	60 (TEBC)			

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Encoder Connector Pinout

Note: A mating connector is supplied loose for the customer's wiring on encoder equipped TEFC motors and a mating connector pre-wired to a cable and pigtailed in a conduit box on encoder equipped TEBC motors.

Prewired cables TRDA-25CBL-VWD-xx (10, 20, & 30 ft) and replacement MS connectors

TRDA-25CON-VWD are available from AutomationDirect.

Dynapar HS35/HSD38 Encoder

PIN TRDA-25CBL-VWD-xx Cable Wire Color for HS35 Encoders

(HSD38 colors may be different)

