

**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       |                     |
|-----------------------|------------|-------|----------|---------|-------|------------|----------------|----------------|---------------|-----------|---------------------|---------------------|
| <a href="#">Y280</a>  | \$1,208.00 | 1/2   | 1800     | 230/460 | TENV  | 56C        | 56H17T15526A   | 1.6 / 0.8      | 25            | 6         | <a href="#">PDF</a> |                     |
| <a href="#">Y281</a>  | \$1,264.00 | 3/4   |          |         |       |            | 56H17T15528A   | 2.4 / 1.2      | 35            | 6         | <a href="#">PDF</a> |                     |
| <a href="#">Y282</a>  | \$1,338.00 | 1     |          |         |       |            | 56H17T15527A   | 3.0 / 1.5      | 42            | 6         | <a href="#">PDF</a> |                     |
| <a href="#">Y284</a>  | \$1,593.00 | 1-1/2 |          |         |       | 145TC      | 145THTR15540AA | 4.8 / 2.4      | 45            | 6         | <a href="#">PDF</a> |                     |
| <a href="#">Y285</a>  | \$2,138.00 | 2     |          |         |       |            | 145THTN17034AA | 6.0 / 3.0      | 68            | 13b       | <a href="#">PDF</a> |                     |
| <a href="#">Y286A</a> | \$2,082.00 | 3     |          |         |       |            | 182TC          | 182THTY17041AA | 8.2 / 4.1     | 110       | 13b                 | <a href="#">PDF</a> |
| <a href="#">Y287A</a> | \$2,831.00 | 5     |          |         |       |            | 184TC          | 184THTY17038AA | 13.4 / 6.7    | 125       | 13b                 | <a href="#">PDF</a> |

\* 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

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## 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.

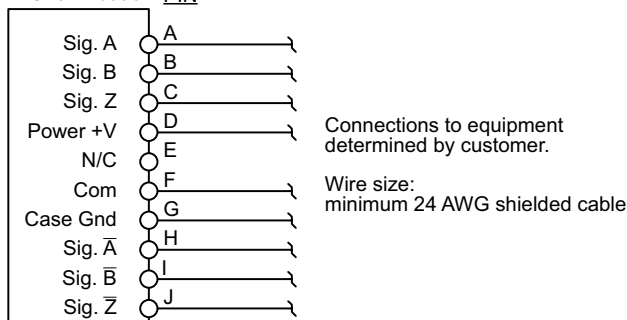
\* The encoder cable gland accepts cable diameters from 0.187–0.30 in.

\* 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



# 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 <sup>2</sup> ) |
| <a href="#">Y280</a>               | 1/2   | A           | 1725     | 0        | 0.8             | 0.5             | 1.5                 | 5.8                 | 3510          | 5400          | 80.0        | 72.0              | 0.06                                |
| <a href="#">Y281</a>               | 3/4   | A           | 1725     |          | 1.2             | 0.8             | 2.3                 | 10.2                | 3450          |               | 82.5        | 73.5              | 0.09                                |
| <a href="#">Y282</a>               | 1     | A           | 1725     |          | 1.5             | 1.0             | 3.0                 | 15.0                | 3505          |               | 84.0        | 75.0              | 0.11                                |
| <a href="#">Y284</a>               | 1-1/2 | B           | 1755     |          | 2.4             | 1.6             | 4.5                 | 29.0                | 3500          |               | 85.5        | 69.0              | 0.14                                |
| <a href="#">Y285</a>               | 2     | B           | 1750     |          | 3.0             | 1.7             | 6.0                 | 28.5                | 3525          |               | 85.5        | 78.0              | 0.13                                |
| <a href="#">Y286A</a>              | 3     | B           | 1755     |          | 4.1             | 2.3             | 9.0                 | 49.3                | 3510          |               | 87.5        | 78.5              | 0.42                                |
| <a href="#">Y287A</a>              | 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 *                                                                                                                                              |
|----------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">A772</a> | \$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    |
| <a href="#">Y592-A772</a>  | \$1,605.00 | 1/4   | <a href="#">Y544-A772</a> | Retired    | 5     |
| <a href="#">Y534-A772</a>  | \$1,833.00 | 1/2   | <a href="#">Y545-A772</a> | \$3,445.00 | 7 1/2 |
| <a href="#">Y535-A772</a>  | \$1,936.00 | 1     | <a href="#">Y546-A772</a> | Retired    | 7 1/2 |
| <a href="#">Y536-A772</a>  | \$1,953.00 | 1     | <a href="#">Y547-A772</a> | \$3,889.00 | 10    |
| <a href="#">Y538-A772</a>  | \$2,189.00 | 1 1/2 | <a href="#">Y548-A772</a> | Retired    | 10    |
| <a href="#">Y551-A772</a>  | \$2,395.00 | 2     | <a href="#">Y549-A772</a> | \$4,399.00 | 15    |
| <a href="#">Y540-A772</a>  | Retired    | 2     |                           |            |       |
| <a href="#">Y541A-A772</a> | \$2,686.00 | 3     |                           |            |       |
| <a href="#">Y542-A772</a>  | Retired    | 3     |                           |            |       |
| <a href="#">Y543A-A772</a> | \$2,911.00 | 5     |                           |            |       |

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# Blue Max<sup>®</sup> 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.

## Motor Shipping Schedule \*

Same or one day \*

Up to 7 days

Up to 10 days

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| Motor Accessories |          |                                                                                                                                                               |
|-------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Part Number       | Price    | Description *                                                                                                                                                 |
| <b>A774</b>       | \$849.00 | 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.  |
| <b>A775</b>       | \$849.00 | 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         |
| <b>Y571-A774</b>                               | Retired | 40 (TEFC) | <b>Y574-A774</b> | Retired | 75 (TEFC)  |
| <b>Y513-A775</b>                               | Retired | 40 (TEBC) | <b>Y516-A775</b> | Retired | 75 (TEBC)  |
| <b>Y572-A774</b>                               | Retired | 50 (TEFC) | <b>Y575-A774</b> | Retired | 100 (TEFC) |
| <b>Y514-A775</b>                               | Retired | 50 (TEBC) | <b>Y517-A775</b> | Retired | 100 (TEBC) |
| <b>Y573-A774</b>                               | Retired | 60 (TEFC) |                  |         |            |
| <b>Y515-A775</b>                               | 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)

