

MAX+ AC Inverter-Duty Motors with Encoder

1000:1 Constant Torque (TENV)

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)



marathon[®]
Motors

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.

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
Y280		1/2	1800	230/460	TENV	56C	56H17T15526A	1.6 / 0.8	25	6
Y281		3/4					56H17T15528A	2.4 / 1.2	35	6
Y282	6.00	1					56H17T15527A	3.0 / 1.5	42	6
Y284	9.00	1-1/2				145TC	145THTR15540AA	4.8 / 2.4	45	6
Y285	2.50	2					145HTN17034AA	6.0 / 3.0	68	13b
Y286A	9.00	3				182TC	182THTY17041AA	8.2 / 4.1	110	13b
Y287A	1.00	5				184TC	184THTY17038AA	13.4 / 6.7	125	13b

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

Certain heavy and oversized items can be shipped only via LTL. Check our web site for current shipping method constraints by part number.

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.marathonmotor.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.

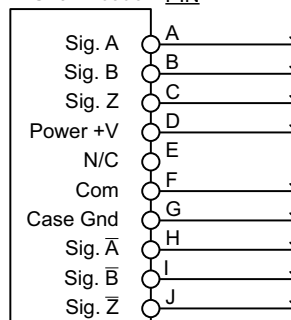
* The encoder cable gland accepts cable diameters from 0.187–0.30 in.

* 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.

Dimensions (units = inches)

Figure 1 – Y280, Y281, Y282

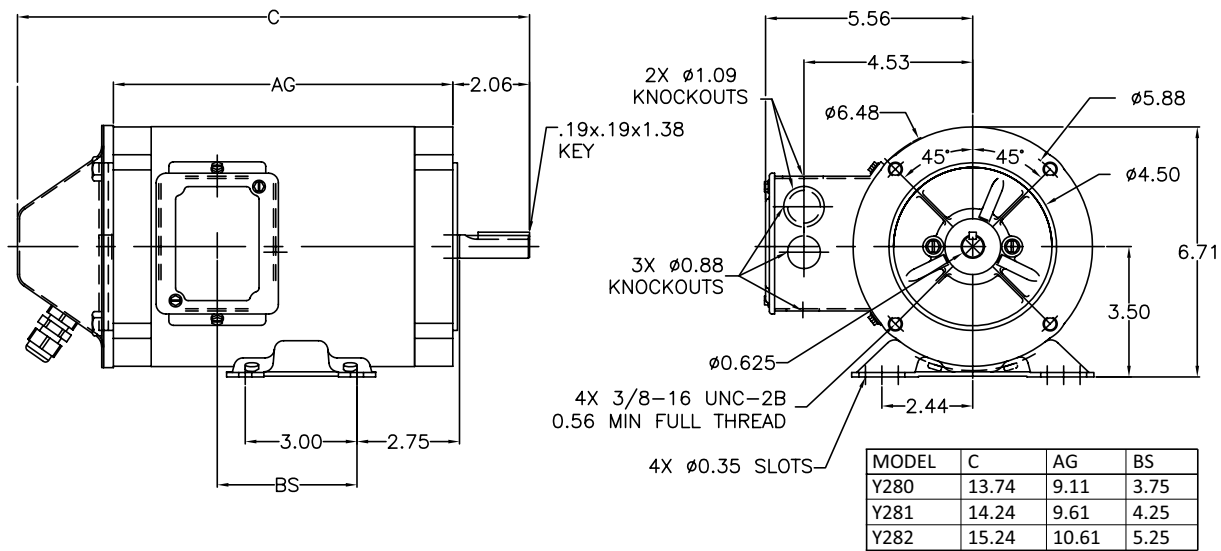
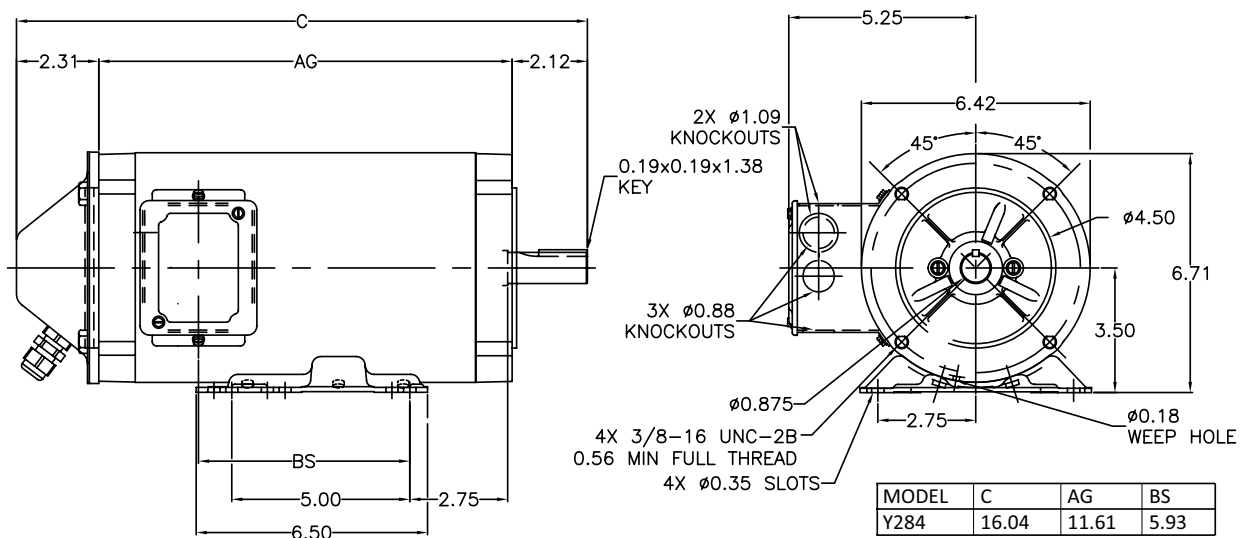


Figure 2 – Y284



Black Max® Vector Duty Motors

Motor Shipping Schedule *

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

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575V Motor Specifications

Part Number	Price	HP	Base RPM	Volts	Enclosure	NEMA Frame	Model No.	F.L. Amps	Weight (lb)	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, CI
Y558A	8.00	3	1800	575	TENV	182TC	182THTY7736	3.3	110	T, AL
Y559A		5	1800	575	TENV	184TC	184THTY7736	5.4	125	T, AL
Y560	0.00	7-1/2	1800	575	TENV	213TC	213THTL7736	8.4	146	T, AL
Y561	8.50	10	1800	575	TENV	215TC	215THTL7736	10.8	159	T, AL
Y562	9.00	15	1800	575	TENV	254TC	254THTL5736	16.0	250	T, AL, I
Y563	5.50	20	1800	575	TENV	256TC	256THTNA7036	20.8	300	T, CI, I

Footnotes:
 6 Bolt-on, removable base for footless mounting option
 13 F1 Mounting Only, cannot modify to F2
 AL Aluminum Frame Construction

Footnotes (continued):
 CI Cast Iron Frame Construction
 I Intermittent duty from 90-120 Hz operation
 S Steel Frame Construction

Footnotes (continued):
 T Thermostat overload

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

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	3.00	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						575V Motors		
Part Number	Price	HP	Part Number	Price	HP	Part Number	Price	HP
Y592-A772	6.50	1/4	Y592-A772	6.50	5	Y592-A772	6.50	2
Y534-A772	8.50	1/2	Y534-A772	8.50	7-1/2	Y534-A772	8.50	3
Y535-A772	8.50	1	Y535-A772	8.50	7-1/2	Y535-A772	8.50	5
Y536-A772	1.00	1	Y536-A772	1.00	10	Y536-A772	1.00	7-1/2
Y537-A772	1.00	1	Y537-A772	1.00	10	Y537-A772	1.00	10
Y538-A772	9.00	1-1/2	Y538-A772	9.00	15	Y538-A772	9.00	15
Y551-A772	1.50	2	Y551-A772	1.50	20	Y551-A772	1.50	20
Y540-A772	5.00	2	Y540-A772	5.00	25	Y540-A772		
Y541A-A772	7.00	3	Y541A-A772	7.00	30			
Y542-A772	8.50	3	Y542-A772	8.50	1/2			
Y543A-A772	0.00	5	Y543A-A772	0.00	1			

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

Motor Accessories		
Part Number	Price	Description *
A774		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		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	1.50	40 (TEFC)	Y574-A774	8.50	75 (TEFC)
Y513-A775	8.00	40 (TEBC)	Y516-A775		75 (TEBC)
Y572-A774	0.50	50 (TEFC)	Y575-A774	0.50	100 (TEFC)
Y514-A775	3.50	50 (TEBC)	Y517-A775	5.00	100 (TEBC)
Y573-A774	3.50	60 (TEFC)			
Y515-A775	5.50	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

