

# PRODUCT INFORMATION PACKET

**marathon®**  
Motors

Model No: QCA0453A1121GAA001

Catalog No: QCA0453A1121GAA001

TerraMAX® Cast Iron Motor, 60 HP, 3 Ph, 50 Hz, 400 V, 1000 RPM, 280S Frame, TEFC



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**RegalRexnord**

### Nameplate Specifications

|                        |               |                            |                             |
|------------------------|---------------|----------------------------|-----------------------------|
| Output HP              | 60 Hp         | Output KW                  | 45.0 kW                     |
| Frequency              | 50 Hz         | Voltage                    | 400 V                       |
| Current                | 84.5 A        | Speed                      | 991 rpm                     |
| Service Factor         | 1             | Phase                      | 3                           |
| Efficiency             | 94.8 %        | Power Factor               | 0.82                        |
| Duty                   | S1            | Insulation Class           | F                           |
| Frame                  | 280S          | Enclosure                  | Totally Enclosed Fan Cooled |
| Thermal Protection     | No Protection | Ambient Temperature        | 40 °C                       |
| Drive End Bearing Size | 6317          | Opp Drive End Bearing Size | 6317                        |
| UL                     | No            | CSA                        | No                          |
| CE                     | Yes           | IP Code                    | 55                          |
| Number of Speeds       | 1             | Efficiency Class           | IE4                         |

### Technical Specifications

|                       |               |                       |                |
|-----------------------|---------------|-----------------------|----------------|
| Electrical Type       | Squirrel Cage | Starting Method       | Direct On Line |
| Poles                 | 6             | Rotation              | Bi-Directional |
| Mounting              | B5            | Motor Orientation     | Horizontal     |
| Drive End Bearing     | C3            | Opp Drive End Bearing | C3             |
| Frame Material        | Cast Iron     | Shaft Type            | Keyed          |
| Overall Length        | 1060 mm       | Frame Length          | 549 mm         |
| Shaft Diameter        | 75 mm         | Shaft Extension       | 140 mm         |
| Assembly/Box Mounting | Top           |                       |                |
| Connection Drawing    | 8442000085    | Outline Drawing       | 0228000659     |

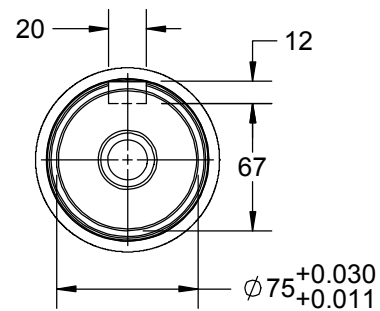
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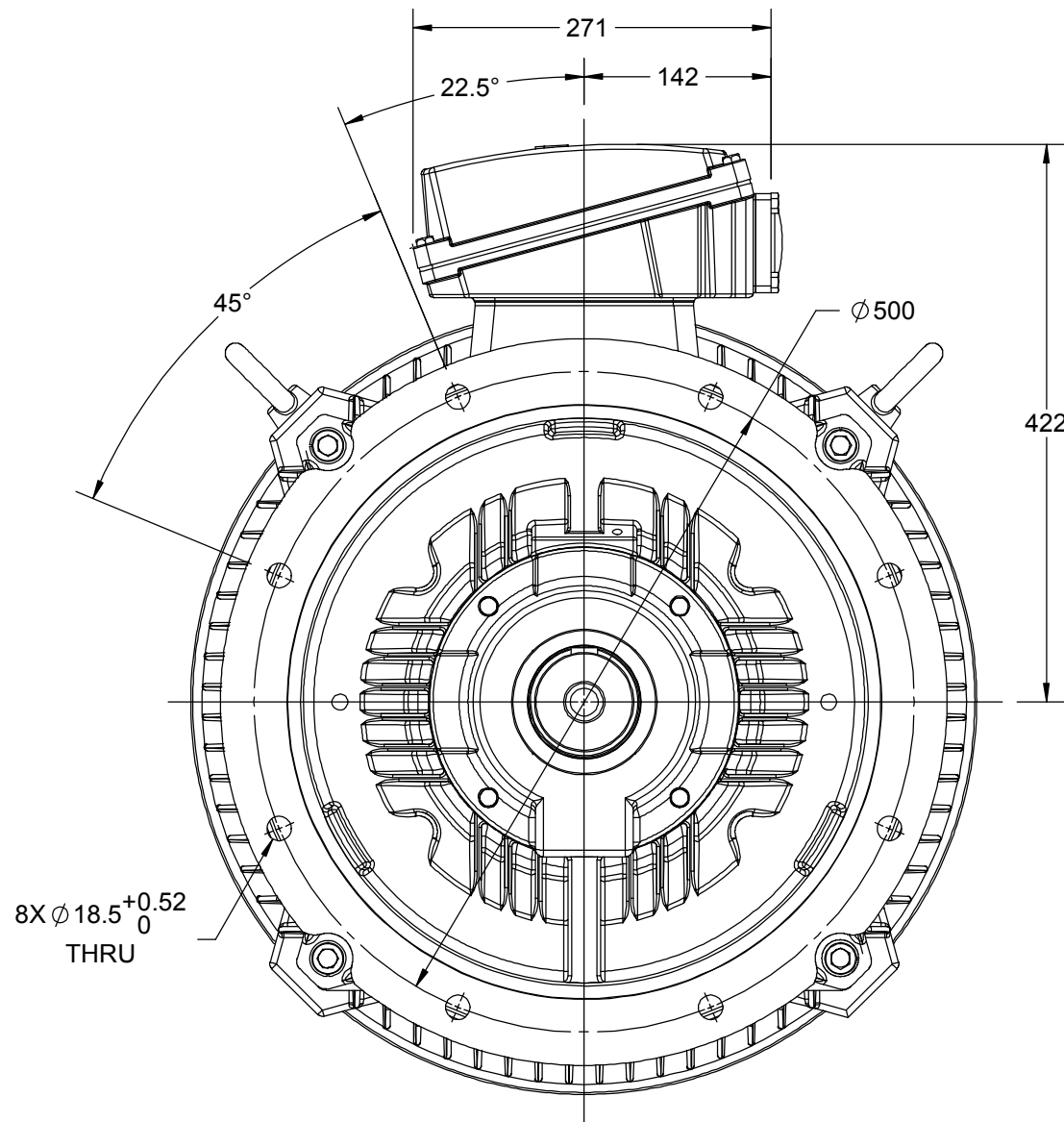
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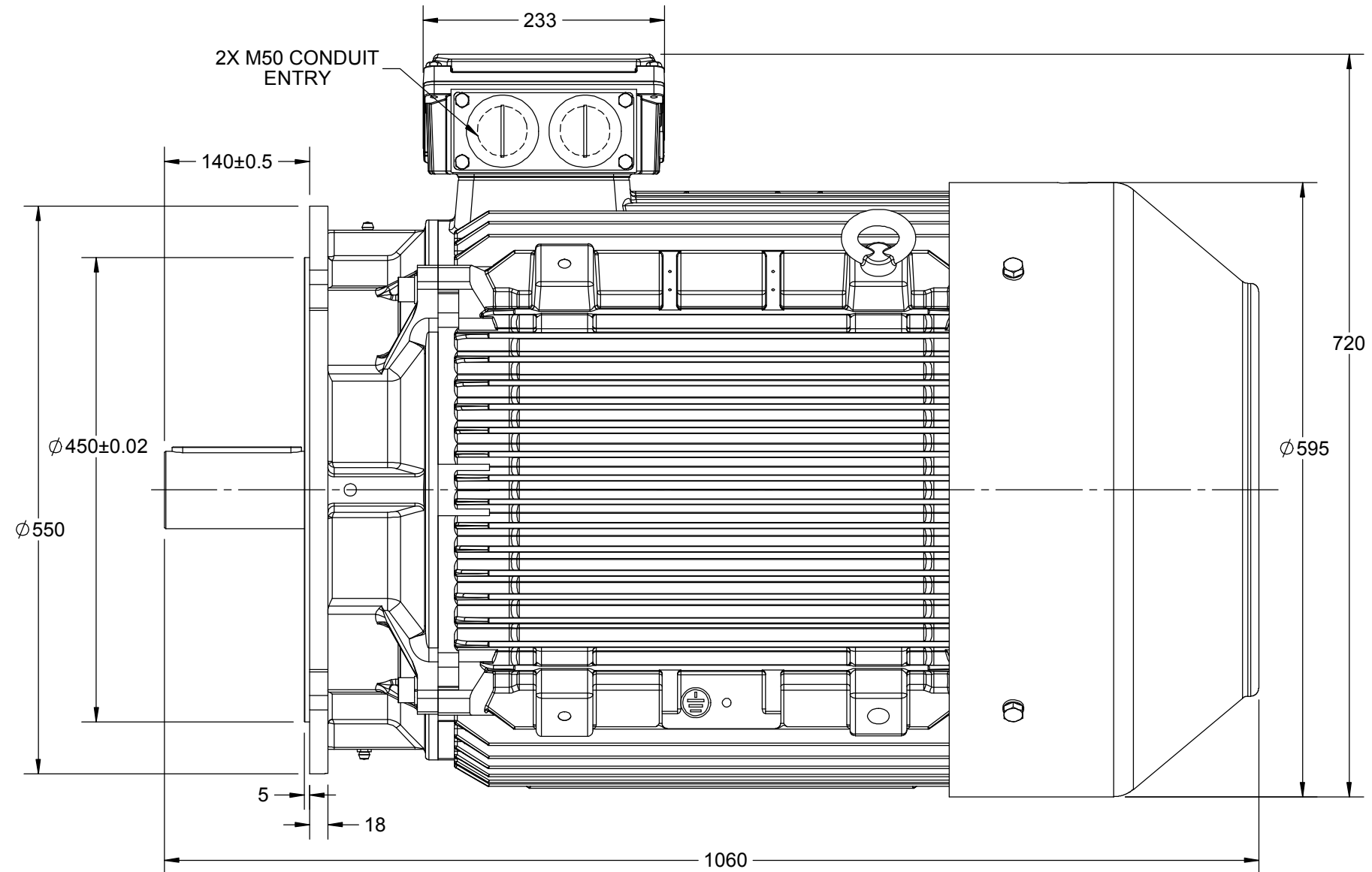
B

B



A

A



|  |  |                   |  |                    |  |           |                    |                              |  |                 |  |  |
|--|--|-------------------|--|--------------------|--|-----------|--------------------|------------------------------|--|-----------------|--|--|
| DRAWING REVISION<br>C  |  | REVISION BY<br>LK |  | DATE<br>23/04/2019 |  |           | DRAWN BY<br>MR     |                              |  |                 |  |  |
| ECO<br>ECO-0165600   |  | APPROVED BY<br>SR |  | DATE<br>23/04/2019 |  |           | DATE<br>17/04/2015 |                              |  |                 |  |  |
| ECO DESCRIPTION<br>UPDATED MODEL AS PER NEW 3D STRUCTURE<br><br>COPYRIGHT REGAL BELOIT AMERICA, INC. ALL RIGHTS RESERVED.<br>PROPRIETARY AND CONFIDENTIAL INFORMATION - THIS DOCUMENT IS THE PROPERTY OF<br>REGAL BELOIT AMERICA, INC. ("OWNER") AND CONTAINS OWNER'S PROPRIETARY<br>INFORMATION. ANY PERSON, CORPORATION OR OTHER FIRM RECEIVING IT IS DEEMED,<br>BY RECEIVING IT, TO AGREE THAT IT, AND/OR ANY PART OF IT, SHALL NOT BE DISCLOSED<br>TO ANY PERSON, CORPORATION OR OTHER ENTITY, DUPLICATED, AND/OR USED, EXCEPT<br>AS EXPRESSLY APPROVED IN WRITING IN ADVANCE BY OWNER. THIS DOCUMENT SHALL<br>BE RETURNED TO OWNER UPON REQUEST. IT MAY BE SUBJECT TO CERTAIN<br>RESTRICTIONS UNDER APPLICABLE EXPORT CONTROL LAWS AND REGULATIONS. |  |                   |  |                    |  |           | APPROVED BY<br>SBD |                              | DESCRIPTION<br><br>OUTLINE<br><br>280-S FR-B5 MTG. MOTOR TYPE: TCA |                 |  |  |
|  |  |                   |  |                    |  |           | DATE<br>17/04/2015 |                              |  |                 |  |  |
| REFERENCE  |  |                   |  | MATERIAL           |  |           | PROCESS/FINISH     |                              |  |                 |  |  |
| THIRD ANGLE<br>PROJECTION  |  |                   |  |                    |  | SIZE<br>B |                    | DRAWING NUMBER<br>0228000659 |  | SHEET<br>1 OF 1 |  |  |

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|   |                           |                           |
|---|---------------------------|---------------------------|
| DRAWING REVISION<br><b>A</b>                  | REVISION BY<br><b>SN</b>  | DATE<br><b>13/01/2017</b> |
| ECO<br><b>ECO-0116390</b>                     | APPROVED BY<br><b>SBD</b> | DATE<br><b>13/01/2017</b> |
| ECO DESCRIPTION<br><b>NEW DRAWING RELEASE</b> |                           |                           |

| GEOMETRIC TOLERANCE |         |      |
|---------------------|---------|------|
| LINEAR DIM          | >0~6    | ±0.1 |
|                     | >6~30   | ±0.2 |
|                     | >30~120 | ±0.3 |



# NOTES:

1. PRESSURE-SENSITIVE ADHESIVE COATED PAPER ON THE BACK OF SELF-ADHESIVE.
2. AT THE END OF YELLOW, WORDS, SYMBOLS, LETTERS ARE BLACK, BORDER IS BLACK.
3. THE TOLERANCE OF THE LINEAR SIZE OF THE TOLERANCE WITHOUT THE TOLERANCE BY THE TABLE.

8WD.442.2017

|  |                           |  |  |                                     |                        |
|--|---------------------------|--|--|-------------------------------------|------------------------|
|  | DRAWN BY<br><b>SN</b>     |  | Regal Beloit America, Inc.                   |                                     |                        |
|  | DATE<br><b>16/12/2016</b> |  |  |                                     |                        |
|  | APPROVED BY<br><b>SBD</b> |  | DESCRIPTION<br><b>CONN DIAGRAM-NAMEPLATE</b> |                                     |                        |
|  | DATE<br><b>16/12/2016</b> |  |  |                                     |                        |
|  | REFERENCE                 |  | MATERIAL                                     |                                     | PROCESS/FINISH         |
|  | THIRD ANGLE PROJECTION    |  | SIZE<br><b>A</b>                             | DRAWING NUMBER<br><b>8442000085</b> | SHEET<br><b>1 OF 1</b> |

**Model No.** QCA0453A1121GAA001

| U<br>(V) | Δ / Y<br>Conn | f<br>[Hz] | P<br>[kW] | P<br>[hp] | I<br>[A] | n<br>[RPM] | T<br>[Nm] | IE<br>Class | % EFF at __ load |      |       |       | PF at __ load |       |       | I <sub>A</sub> /I <sub>N</sub><br>[pu] | T <sub>A</sub> /T <sub>N</sub><br>[pu] | T <sub>K</sub> /T <sub>N</sub><br>[pu] |
|----------|---------------|-----------|-----------|-----------|----------|------------|-----------|-------------|------------------|------|-------|-------|---------------|-------|-------|--|--|--|
|          |               |           |           |           |          |            |           |             | 5/4FL            | FL   | 3/4FL | 1/2FL | FL            | 3/4FL | 1/2FL |  |  |  |
| 400      | Δ             | 50        | 45        | 60        | 84.5     | 991        | 431.31    | IE4         | -                | 94.8 | 94.8  | 93.3  | 0.82          | 0.76  | 0.64  | 7.1                                    | 2.3                                    | 3.0                                    |
|          |               |           |           |           |          |            |           |             |                  |      |       |       |               |       |       |  |  |  |

|                                  |                             |   |  |
|----------------------------------|-----------------------------|---|--|
| Motor type                       | QCA                         | Degree of protection                      | IP 55                                      |
| Enclosure                        | TEFC                        | Mounting type                             | IM B5                                      |
| Frame Material                   | Cast Iron                   | Cooling method                            | IC 411                                     |
| Frame size                       | 280S                        | Motor weight - approx.                    | 694 kg                                     |
| Duty                             | S1                          | Gross weight - approx.                    | 729 kg                                     |
| Voltage variation *              | ± 10%                       | Motor inertia                             | 2.7750 kgm <sup>2</sup>                    |
| Frequency variation *            | ± 5%                        | Load inertia                              | Customer to Provide                        |
| Combined variation *             | 10%                         | Vibration level                           | 2.2 mm/s                                   |
| Design                           | N                           | Noise level ( 1meter distance from motor) | 66 dB(A)                                   |
| Service factor                   | 1.0                         | No. of starts hot/cold/Equally spread     | 2/3/4                                      |
| Insulation class                 | F                           | Starting method                           | DOL  |
| Ambient temperature              | -20 to +40 °C               | Type of coupling                          | Direct                                     |
| Temperature rise (by resistance) | 80 [ Class B ] K            | LR withstand time (hot/cold)              | 15/30 s                                    |
| Altitude above sea level         | 1000 meter                  | Direction of rotation                     | Bi-directional                             |
| Hazardous area classification    | NA                          | Standard rotation                         | Clockwise form DE                          |
| Zone classification              | NA                          | Paint shade                               | RAL 5014                                   |
| Gas group                        | NA                          | Accessories                               |  |
| Temperature class                | NA                          | Accessory - 1                             | PTC 150°C                                  |
| Rotor type                       | Aluminum Die cast           | Accessory - 2                             | -  |
| Bearing type                     | Anti-friction ball          | Accessory - 3                             | -  |
| DE / NDE bearing                 | 6317 C3 / 6317 C3           | Terminal box position                     | TOP  |
| Lubrication method               | Regreasable                 | Maximum cable size/conduit size           | 1R x 3C x 95mm <sup>2</sup> /2 x M50 x 1.5 |
| Type of grease                   | CHEVRON SRI-2 or Equivalent | Auxiliary terminal box                    | NA   |

I<sub>A</sub>/I<sub>N</sub> - Locked Rotor Current / Rated Current

T<sub>K</sub>/T<sub>N</sub> - Breakdown Torque / Rated Torque

T<sub>A</sub>/T<sub>N</sub> - Locked Rotor Torque / Rated Torque

**NOTE**

All performance values at rated voltage and frequency.

All performance parameters are subjected to standard tolerance as per IEC 60034-1

\* Voltage, Frequency and combined variation are as per IEC60034-1

Technical data are subject to change. There may be slight variations between calculated values in this datasheet and the motor nameplate figures.

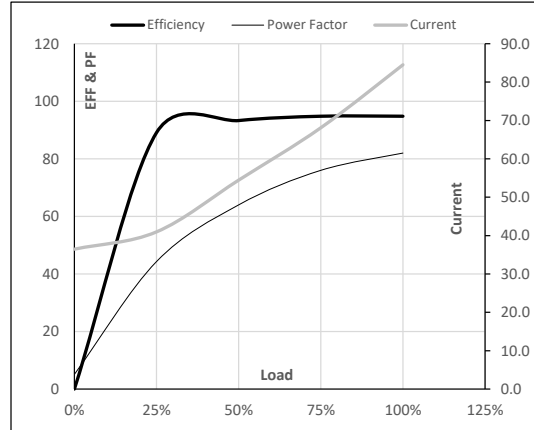
| Efficiency | Europe         | China | India | Aus/Nz            | Brazil | Global IEC     |
|------------|----------------|-------|-------|-------------------|--------|----------------|
| Standards  | IEC 60034-30-1 | -     | -     | AS/NZ 1359:5:2004 | -      | IEC 60034-30-1 |

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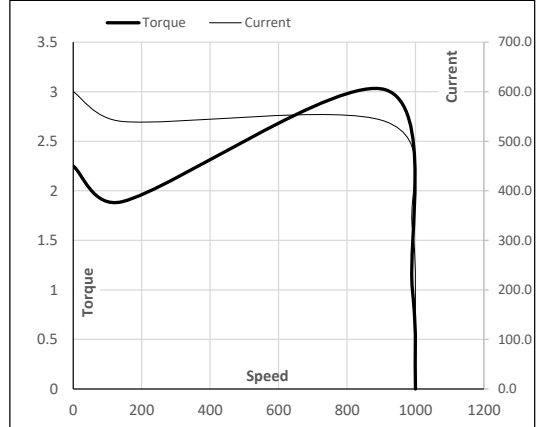
| Enclosure | U<br>(V) | Δ / Y<br>Conn | f<br>(Hz) | P<br>[kW] | P<br>[hp] | I<br>[A] | n<br>[RPM] | T<br>[kgm] | T<br>[Nm] | IE<br>Class | Amb<br>[°C] | Duty | Elevation<br>[m] | Inertia<br>[kg-m <sup>2</sup> ] | Weight<br>[kg] |
|-----------|----------|---------------|-----------|-----------|-----------|----------|------------|------------|-----------|-------------|-------------|------|------------------|---------------------------------|----------------|
| TEFC      | 400      | Δ             | 50        | 45        | 60        | 84.5     | 991        | 43.98      | 431.31    | IE4         | 40          | S1   | 1000             | 2.7750                          | 694            |

**Motor Load Data**

| Load Point   |       | NL   | 1/4FL | 1/2FL | 3/4FL | FL    | 5/4FL |
|--------------|-------|------|-------|-------|-------|-------|-------|
| Current      | A     | 36.5 | 41.0  | 54.5  | 68.1  | 84.5  |       |
| Torque       | Nm    | 0.0  | 107.1 | 214.6 | 322.7 | 431.3 |       |
| Speed        | r/min | 1000 | 998   | 996   | 993   | 991   |       |
| Efficiency   | %     | 0.0  | 89.1  | 93.3  | 94.8  | 94.8  |       |
| Power Factor | %     | 5.1  | 44.3  | 64.0  | 76.0  | 82.0  |       |

**Performance vs Load Chart**

**Motor Speed Torque Data**

| Load Point |       | LR    | P-Up  | BD    | Rated | NL   |
|------------|-------|-------|-------|-------|-------|------|
| Speed      | r/min | 0     | 143   | 912   | 991   | 1000 |
| Current    | A     | 600.0 | 540.0 | 324.7 | 84.5  | 36.5 |
| Torque     | pu    | 2.3   | 1.9   | 3.0   | 1     | 0    |

**Starting Characteristics Chart**

**NOTE** Refer data sheet for applicable standard and tolerances on performance parameters

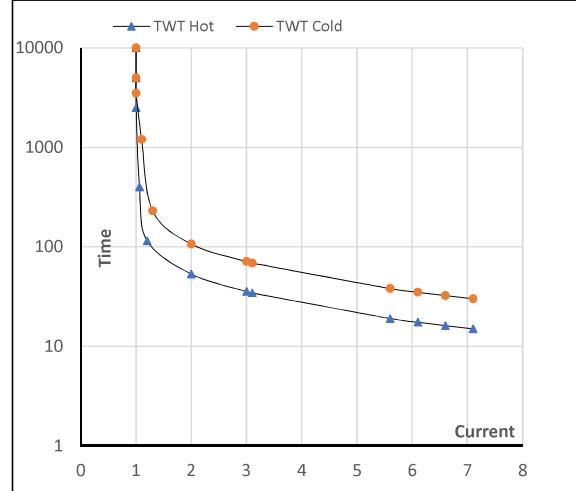
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| Enclosure | U<br>(V) | $\Delta$ / Y<br>Conn | f<br>[Hz] | P<br>[kW] | P<br>[hp] | I<br>[A] | n<br>[rpm] | T<br>[kgm] | T<br>[Nm] | IE<br>Class | Amb<br>[°C] | Duty | Elevation<br>[m] | Inertia<br>[kg-m <sup>2</sup> ] | Weight<br>[kg] |
|-----------|----------|----------------------|-----------|-----------|-----------|----------|------------|------------|-----------|-------------|-------------|------|------------------|---------------------------------|----------------|
| TEFC      | 400      | $\Delta$             | 50        | 45        | 60        | 84.5     | 991        | 43.98      | 431.31    | IE4         | 40          | S1   | 1000             | 2.7750                          | 694            |

**Motor Speed Torque Data**

| Load     | FL      | I <sub>1</sub> | I <sub>2</sub> | I <sub>3</sub> | I <sub>4</sub> | I <sub>5</sub> | LR  |
|----------|---------|----------------|----------------|----------------|----------------|----------------|-----|
| TWT Hot  | s 10000 | 53             | 36             | 30             | 25             | 20             | 15  |
| TWT Cold | s 10000 | 107            | 71             | 60             | 45             | 40             | 30  |
| Current  | pu      | 1              | 2              | 4              | 5              | 5.5            | 7.1 |

**Thermal Characteristics Chart**

**NOTE** Refer data sheet for applicable standard and tolerances on performance parameters

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