

# PRODUCT INFORMATION PACKET

marathon®  
Motors

Model No: TCM0221A2113GAC011

Catalog No: TCM0221A2113GAC011

TerraMAX® IE3, Mining Duty Motors, 22 kW, 3Ph, 2 Pole, 400/690V, B3, 50Hz, 180M Frame, TEFC



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RegalRexnord

### Nameplate Specifications

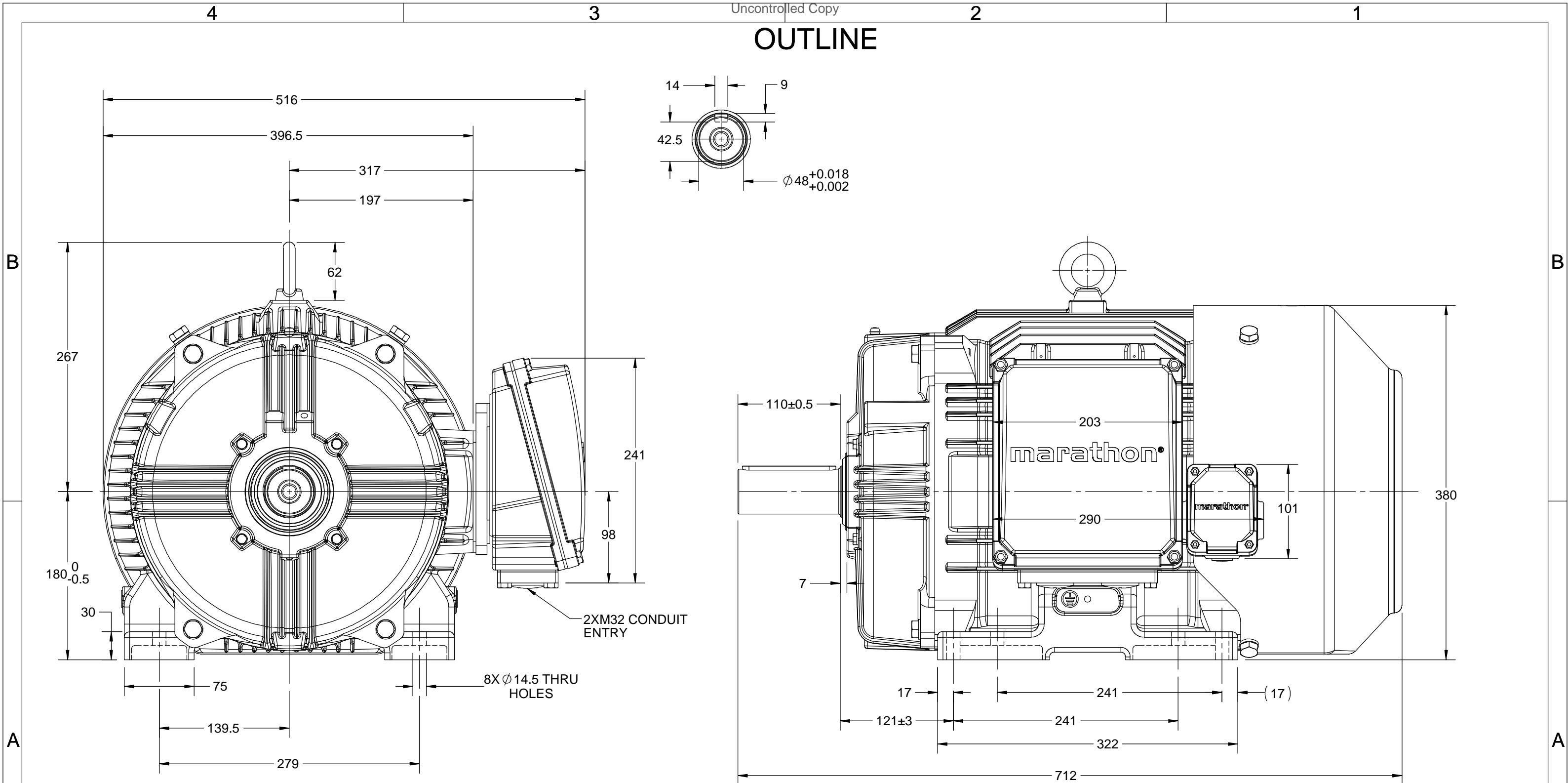
|                        |                      |                            |                                    |
|------------------------|----------------------|----------------------------|------------------------------------|
| Output HP              | <b>30 Hp</b>         | Output KW                  | <b>22.0 kW</b>                     |
| Frequency              | <b>50 Hz</b>         | Voltage                    | <b>400/690 V</b>                   |
| Current                | <b>39.4 A</b>        | Speed                      | <b>2961 rpm</b>                    |
| Service Factor         | <b>1</b>             | Phase                      | <b>3</b>                           |
| Efficiency             | <b>92.7 %</b>        | Power Factor               | <b>0.87</b>                        |
| Duty                   | <b>S1</b>            | Insulation Class           | <b>H</b>                           |
| Frame                  | <b>180M</b>          | Enclosure                  | <b>Totally Enclosed Fan Cooled</b> |
| Thermal Protection     | <b>No Protection</b> | Ambient Temperature        | <b>40 °C</b>                       |
| Drive End Bearing Size | <b>6311</b>          | Opp Drive End Bearing Size | <b>6211</b>                        |
| UL                     | <b>NO</b>            | CSA                        | <b>NO</b>                          |
| CE                     | <b>YES</b>           | IP Code                    | <b>66</b>                          |
| Number of Speeds       | <b>1</b>             | Efficiency Class           | <b>IE3</b>                         |

### Technical Specifications

|                       |                      |                       |                       |
|-----------------------|----------------------|-----------------------|-----------------------|
| Electrical Type       | <b>Squirrel Cage</b> | Starting Method       | <b>Direct On Line</b> |
| Poles                 | <b>2</b>             | Rotation              | <b>Bi-Directional</b> |
| Mounting              | <b>B3</b>            | Motor Orientation     | <b>Horizontal</b>     |
| Drive End Bearing     | <b>C3</b>            | Opp Drive End Bearing | <b>C3</b>             |
| Frame Material        | <b>Cast Iron</b>     | Shaft Type            | <b>Keyed</b>          |
| Overall Length        | <b>712 mm</b>        | Frame Length          | <b>328 mm</b>         |
| Shaft Diameter        | <b>48 mm</b>         | Shaft Extension       | <b>110 mm</b>         |
| Assembly/Box Mounting | <b>RHS</b>           |                       |                       |
| Connection Drawing    | <b>8442000085</b>    | Outline Drawing       | <b>0218000820</b>     |

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# OUTLINE



|   |                      |                    |
|---|----------------------|--------------------|
| DRAWING REVISION<br>B   | REVISION BY<br>BISWA | DATE<br>24/08/2018 |
| ECO<br>ECO-0150058  | APPROVED BY<br>SBD   | DATE<br>24/08/2018 |
| ECO DESCRIPTION<br>MODEL UPDATE DWITH NEW STRUCTURE   |                      |                    |
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|                           |
|---------------------------|
| DRAWN BY<br>LK            |
| DATE<br>15/12/2017        |
| APPROVED BY<br>SBD        |
| DATE<br>15/12/2017        |
| REFERENCE                 |
| THIRD ANGLE<br>PROJECTION |

|  |                              |
|--|------------------------------|
| <b>marathon™<br/>Motors</b>                                      |                              |
| DESCRIPTION<br><b>OUTLINE</b><br>180M FR-B3 MTG. MOTOR TYPE: TCM |                              |
| MATERIAL   | PROCESS/FINISH               |
| SIZE<br>B  | DRAWING NUMBER<br>0218000820 |
| 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> |  <b>Regal Beloit America, Inc.</b> |                  |  |
|                       |  |                  | DESCRIPTION<br><b>CONN DIAGRAM-NAMEPLATE</b> |
|                       | DATE<br><b>16/12/2016</b>  | MATERIAL         |  |
|                       | APPROVED BY<br><b>SBD</b>  | PROCESS/FINISH   |  |
|                       | DATE<br><b>16/12/2016</b>  | SIZE<br><b>A</b> | DRAWING NUMBER<br><b>8442000085</b>          |
| REFERENCE             | THIRD ANGLE PROJECTION              |                  |  |

Model No. TCM0221A2113GAC011

| U<br>(V) | $\Delta$ / Y<br>Conn | f<br>[Hz] | P    |      | I<br>[A] | n<br>[RPM] | T<br>[Nm] | IE<br>Class | % EFF at __ load |      |       |       | PF at __ load |       |       | $I_A/I_N$<br>[pu] | $T_A/T_N$<br>[pu] | $T_K/T_N$<br>[pu] |
|----------|----------------------|-----------|------|------|----------|------------|-----------|-------------|------------------|------|-------|-------|---------------|-------|-------|-------------------|-------------------|-------------------|
|          |                      |           | [kW] | [hp] |          |            |           |             | 5/4FL            | FL   | 3/4FL | 1/2FL | FL            | 3/4FL | 1/2FL |                   |                   |                   |
| 400      | $\Delta$             | 50        | 22   | 30   | 39.4     | 2961       | 72.16     | IE3         | -                | 92.7 | 92.7  | 91.3  | 0.87          | 0.83  | 0.72  | 7.4               | 2.2               | 3.6               |
|          |                      |           |      |      |          |            |           |             |                  |      |       |       |               |       |       |                   |                   |                   |

|                                  |                    |   |  |
|----------------------------------|--------------------|---|--|
| Motor type                       | TCM                | Degree of protection                      | IP 66                                      |
| Enclosure                        | TEFC               | Mounting type                             | IM B3                                      |
| Frame Material                   | Cast Iron          | Cooling method                            | IC 411                                     |
| Frame size                       | 180M               | Motor weight - approx.                    | 209 kg                                     |
| Duty                             | S1                 | Gross weight - approx.                    | 229 kg                                     |
| Voltage variation *              | $\pm 10\%$         | Motor inertia                             | 0.1399 kgm <sup>2</sup>                    |
| Frequency variation *            | $\pm 5\%$          | Load inertia                              | Customer to Provide                        |
| Combined variation *             | 10%                | Vibration level                           | 2.2 mm/s                                   |
| Design                           | N                  | Noise level ( 1meter distance from motor) | 72 dB(A)                                   |
| Service factor                   | 1.15               | No. of starts hot/cold/Equally spread     | 2/3/4                                      |
| Insulation class                 | H                  | 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 2008                                   |
| 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                 | 6311-C3 / 6211-C3  | Terminal box position                     | RHS  |
| Lubrication method               | Greased for life   | Maximum cable size/conduit size           | 1R x 3C x 50mm <sup>2</sup> /2 X M40 x 1.5 |
| Type of grease                   | NA                 | Auxiliary terminal box                    | YES  |

 $I_A/I_N$  - Locked Rotor Current / Rated Current $T_K/T_N$  - Breakdown Torque / Rated Torque $T_A/T_N$  - 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 combine 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 Standards | Europe<br>IEC:60034-30-1 | China<br>- | India<br>- | Aus/Nz<br>AS/NZ 1359:5:2004 | Brazil<br>- | Global IEC<br>IEC:60034-30-1 |
|----------------------|--------------------------|------------|------------|-----------------------------|-------------|------------------------------|
|                      |                          |            |            |                             |             |                              |

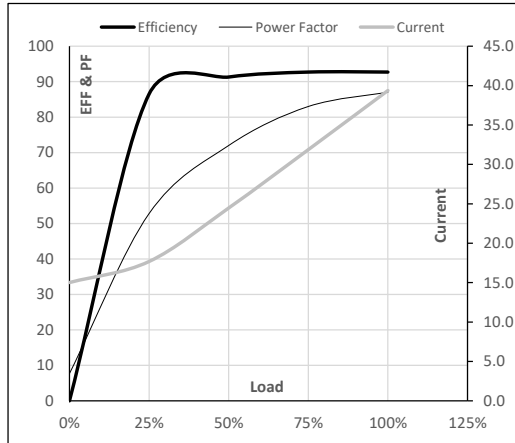
Model No. TCM0221A2113GAC011

| Enclosure | U (V) | Δ / Y Conn | f [Hz] | P [kW] | P [hp] | I [A] | n [RPM] | T [kgm] | T [Nm] | IE Class | Amb [°C] | Duty | Elevation [m] | Inertia [kg-m <sup>2</sup> ] | Weight [kg] |
|-----------|-------|------------|--------|--------|--------|-------|---------|---------|--------|----------|----------|------|---------------|------------------------------|-------------|
| TEFC      | 400   | Δ          | 50     | 22     | 30.0   | 39.4  | 2961    | 7.36    | 72.16  | IE3      | 40       | S1   | 1000          | 0.1399                       | 209         |

**Motor Load Data**

| Load Point   |       | NL   | 1/4FL | 1/2FL | 3/4FL | FL   | 5/4FL |
|--------------|-------|------|-------|-------|-------|------|-------|
| Current      | A     | 15.0 | 17.7  | 24.5  | 31.9  | 39.4 |       |
| Torque       | Nm    | 0.0  | 17.9  | 35.8  | 53.9  | 72.2 |       |
| Speed        | r/min | 3000 | 2990  | 2981  | 2971  | 2961 |       |
| Efficiency   | %     | 0.0  | 86.5  | 91.3  | 92.7  | 92.7 |       |
| Power Factor | %     | 7.7  | 52.8  | 72.0  | 83.0  | 87.0 |       |

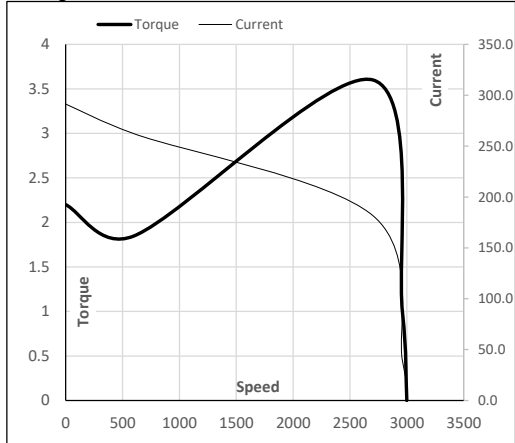
**Performance vs Load Chart**



**Motor Speed Torque Data**

| Load Point |       | LR    | P-Up  | BD    | Rated | NL   |
|------------|-------|-------|-------|-------|-------|------|
| Speed      | r/min | 0     | 600   | 2703  | 2961  | 3000 |
| Current    | A     | 291.4 | 262.2 | 181.6 | 39.4  | 15.0 |
| Torque     | pu    | 2.2   | 1.8   | 3.6   | 1     | 0    |

**Starting Characteristics Chart**



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

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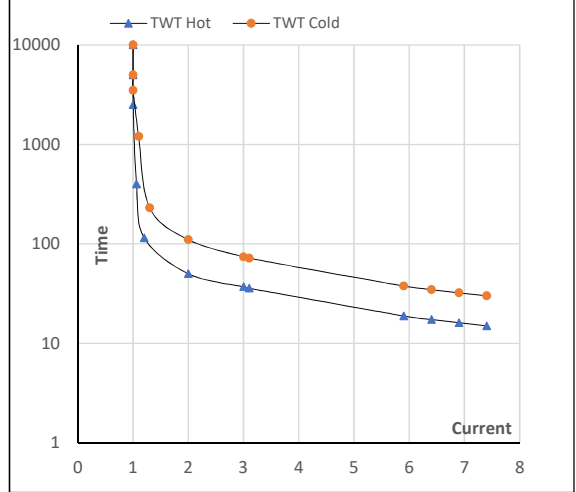
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|           |          |               |           |           |           |          |            |            |           |             |             |      |                  |                                 |                |
|-----------|----------|---------------|-----------|-----------|-----------|----------|------------|------------|-----------|-------------|-------------|------|------------------|---------------------------------|----------------|
| 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        | 22        | 30        | 39.4     | 2961       | 7.36       | 72.16     | IE3         | 40          | S1   | 1000             | 0.1399                          | 209            |

**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 | 50             | 37             | 30             | 25             | 17             | 15  |     |
| TWT Cold | s 10000 | 110            | 74             | 60             | 45             | 39             | 30  |     |
| Current  | pu      | 1              | 2              | 3              | 4              | 5              | 5.5 | 7.4 |

**Thermal Characteristics Chart**



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

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