

# PRODUCT INFORMATION PACKET

Model No: TCA0903A3113GACD01

Catalog No: TCA0903A3113GACD01

90.0 kW General Purpose Low Voltage IEC Motor, 3 phase, 1000 RPM, 415 V, 315M Frame, TEFC  
Cast Iron IE3 Efficiency Motors





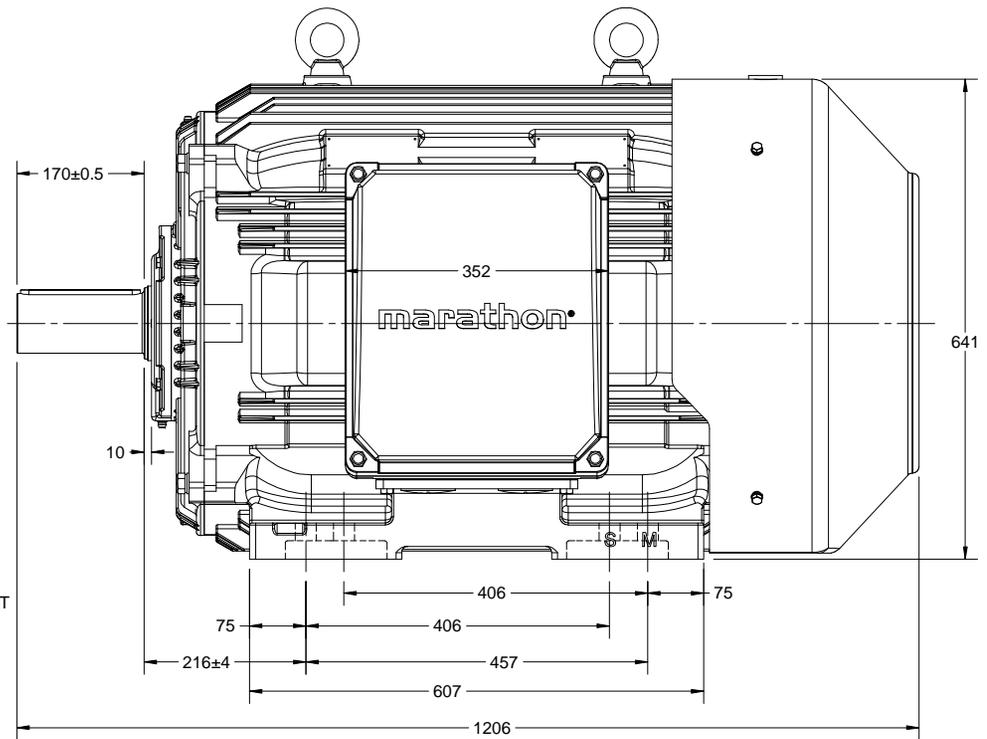
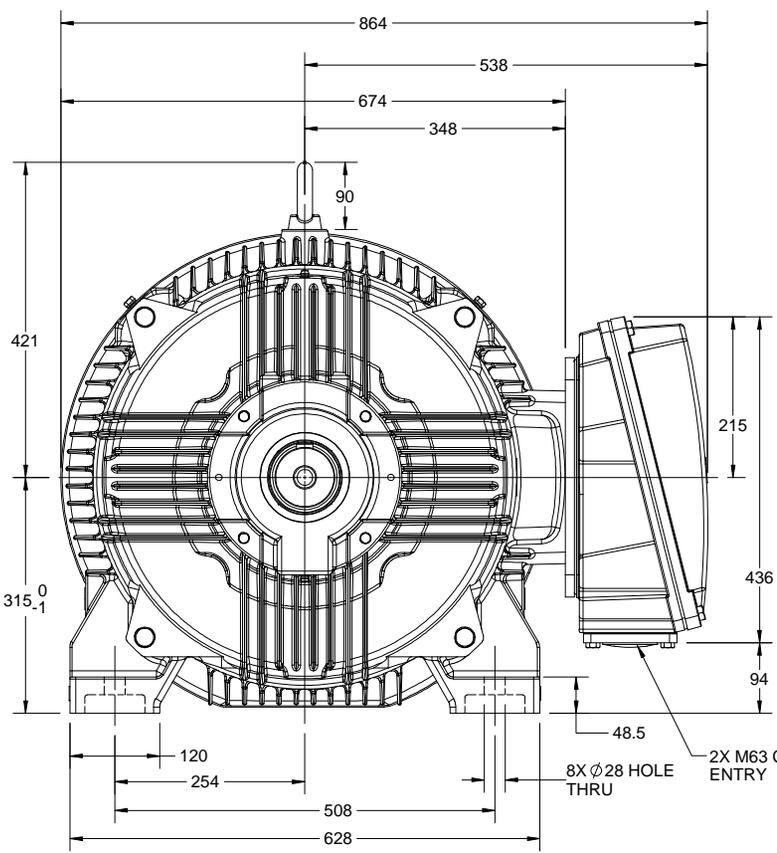
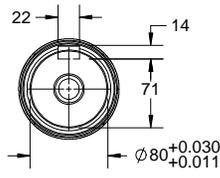
### Nameplate Specifications

|                            |         |                        |                             |
|----------------------------|---------|------------------------|-----------------------------|
| Output HP                  | 120 Hp  | Output KW              | 90.0 kW                     |
| Frequency                  | 50 Hz   | Voltage                | 415 V                       |
| Current                    | 162.9 A | Speed                  | 990 rpm                     |
| Service Factor             | 1       | Phase                  | 3                           |
| Efficiency                 | 94.9 %  | Power Factor           | 0.81                        |
| Duty                       | S1      | Insulation Class       | F                           |
| Frame                      | 315M    | Enclosure              | Totally Enclosed Fan Cooled |
| Ambient Temperature        | 50 °C   | Drive End Bearing Size | 6319                        |
| Opp Drive End Bearing Size | 6319    | UL                     | No                          |
| CSA                        | No      | CE                     | Yes                         |
| IP Code                    | 55      |                        |                             |

### Technical Specifications

|                       |               |                       |                |
|-----------------------|---------------|-----------------------|----------------|
| Electrical Type       | Squirrel Cage | Starting Method       | Direct On Line |
| Poles                 | 6             | Rotation              | Bi-Directional |
| Mounting              | B3            | Motor Orientation     | Horizontal     |
| Drive End Bearing     | C3            | Opp Drive End Bearing | C3             |
| Frame Material        | Cast Iron     | Shaft Type            | Keyed          |
| Overall Length        | 1206 mm       | Frame Length          | 729 mm         |
| Shaft Diameter        | 80 mm         | Shaft Extension       | 170 mm         |
| Assembly/Box Mounting | R Side        |                       |                |
| Connection Drawing    | 8442000085    | Outline Drawing       | 0231501362     |

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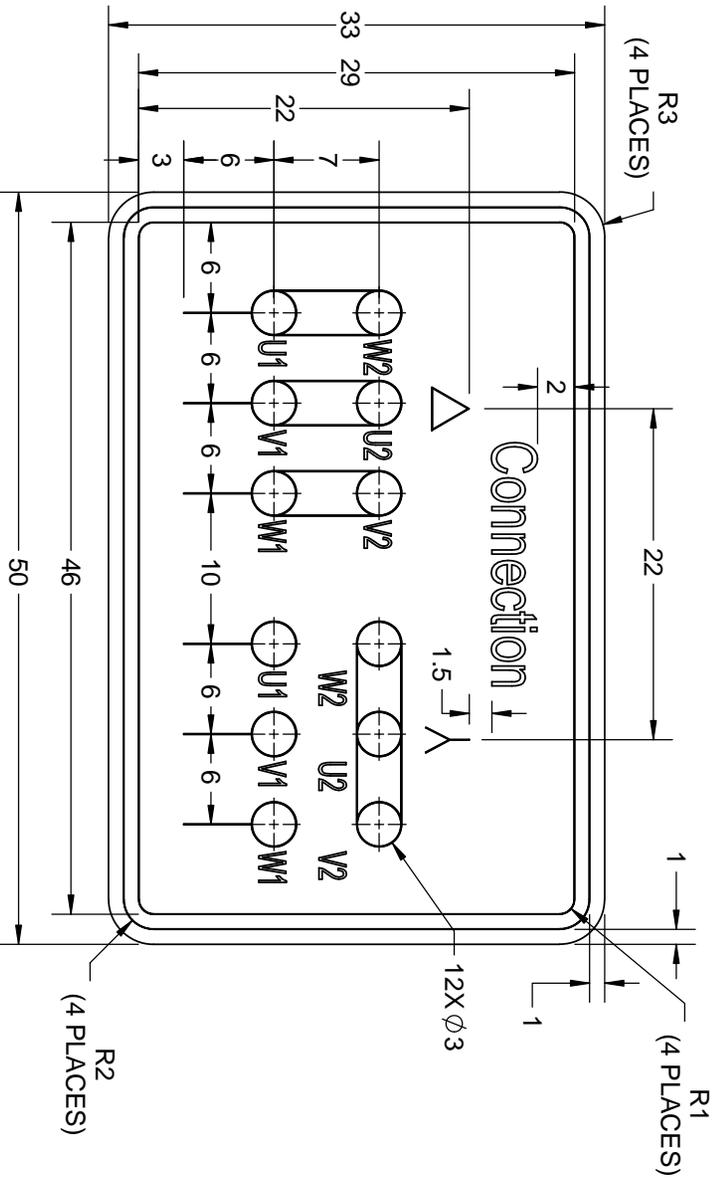
|   |                    |                    |
|---|--------------------|--------------------|
| DRAWING REVISION<br>B   | REVISION BY<br>VS  | DATE<br>11/07/2018 |
| ECO<br>ECO-0148344  | APPROVED BY<br>SBD | DATE<br>11/07/2018 |
| ECO DESCRIPTION<br>MODEL UPDATED  |                    |                    |
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|                        |                                     |
|------------------------|-------------------------------------|
| DRAWN BY<br>SKM        |                                     |
| DATE<br>08/11/2017     |                                     |
| APPROVED BY<br>JAY     | DESCRIPTION<br>OUTLINE              |
| DATE<br>08/11/2017     | 315S/M 4P-8P B3 MTG. TCA/QCA-RHS TB |
| REFERENCE              | MATERIAL                            |
| THIRD ANGLE PROJECTION | PROCESS/FINISH                      |
| SIZE<br>B              | DRAWING NUMBER<br>0231501362        |
|                        | SHEET<br>1 OF 1                     |

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

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

Model No. TCA0903A3113GACD01

| U<br>(V) | Δ / Y<br>Conn | f<br>(Hz) | P    |      | I     |      | n<br>[RPM] | T<br>[Nm] | IE<br>Class | % EFF at __ load |      |       |       | PF at __ load |       |       | I <sub>L</sub> /I <sub>N</sub><br>[pu] | T <sub>M</sub> /T <sub>N</sub><br>[pu] | T <sub>L</sub> /T <sub>N</sub><br>[pu] |
|----------|---------------|-----------|------|------|-------|------|------------|-----------|-------------|------------------|------|-------|-------|---------------|-------|-------|--|--|--|
|          |               |           | [kW] | [hp] | [A]   | [hp] |            |           |             | 5/4FL            | FL   | 3/4FL | 1/2FL | FL            | 3/4FL | 1/2FL |  |  |  |
| 415      | Δ             | 50        | 90   | 120  | 162.9 | 990  | 863.45     |           | IE3         | -                | 94.9 | 94.9  | 94.6  | 0.81          | 0.77  | 0.67  | 5.3                                    | 1.7                                    | 2.2                                    |

|                                  |                                   |   |   |
|----------------------------------|-----------------------------------|---|---|
| Motor type                       | TCA                               | Degree of protection                      | IP 55                                       |
| Enclosure                        | TEFC                              | Mounting type                             | IM B3                                       |
| Frame Material                   | Cast Iron                         | Cooling method                            | IC 411                                      |
| Frame size                       | 315M                              | Motor weight - approx.                    | 886 kg                                      |
| Duty                             | S1                                | Gross weight - approx.                    | 931 kg                                      |
| Voltage variation *              | ± 10%                             | Motor inertia                             | 3.9282 kgm <sup>2</sup>                     |
| Frequency variation *            | ± 5%                              | Load inertia                              | Customer to Provide                         |
| Combined variation *             | 10%                               | Vibration level                           | 2.8 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 +50 °C                     | Type of coupling                          | Direct                                      |
| Temperature rise (by resistance) | 70 [ 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                             | -   |
| Rotor type                       | Aluminum Die cast                 | Accessory - 2                             | -   |
| Bearing type                     | Anti-friction ball bearing        | Accessory - 3                             | -   |
| DE / NDE bearing                 | 6319 C3 / 6319 C3                 | Terminal box position                     | RHS   |
| Lubrication method               | Regreasable                       | Maximum cable size/conduit size           | 1R x 3C x 240mm <sup>2</sup> /2 x M63 x 1.5 |
| Type of grease                   | Shell Gadus S5 V100 or Equivalent | Auxiliary terminal box                    | NA  |

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

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

T<sub>L</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 combine variation are as per IEC60034-1

Technical data are subject to change. There may be discrepancies between calculated and name plate values.

| Efficiency Standards | Europe | China | India           | Aus/Nz | Brazil | Global IEC |
|----------------------|--------|-------|-----------------|--------|--------|------------|
|                      | -      | -     | IS 12615 : 2018 | -      | -      | -          |

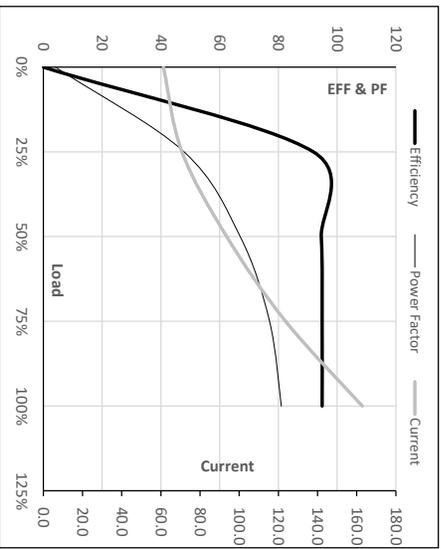
Model No. TCA0903A3113GACD01

| Enclosure | U [V] | $\Delta$ /Y | f [Hz] | P [kW] | P [hp] | I [A] | n [RPM] | T [kgm] | T [Nm] | IE Class | Amb Temp [°C] | Duty | Elevation [m] | Inertia [kg·m <sup>2</sup> ] | Weight [kg] |
|-----------|-------|-------------|--------|--------|--------|-------|---------|---------|--------|----------|---------------|------|---------------|------------------------------|-------------|
| TFC       | 415   | $\Delta$    | 50     | 90     | 120    | 162.9 | 990     | 88.05   | 863.45 | IE3      | 50            | S1   | 1000          | 3.9282                       | 886         |

**Motor Load Data**

| Load Point   | NL    | 1/4FL | 1/2FL | 3/4FL | FL    | 5/4FL |
|--------------|-------|-------|-------|-------|-------|-------|
| Current      | A     | 61.3  | 70.8  | 93.6  | 123.7 | 162.9 |
| Torque       | Nm    | 0.0   | 214.2 | 429.4 | 645.8 | 863.5 |
| Speed        | r/min | 1000  | 998   | 995   | 993   | 990   |
| Efficiency   | %     | 0.0   | 91.9  | 94.6  | 94.9  | 94.9  |
| Power Factor | %     | 4.1   | 47.9  | 67.0  | 77.0  | 81.0  |

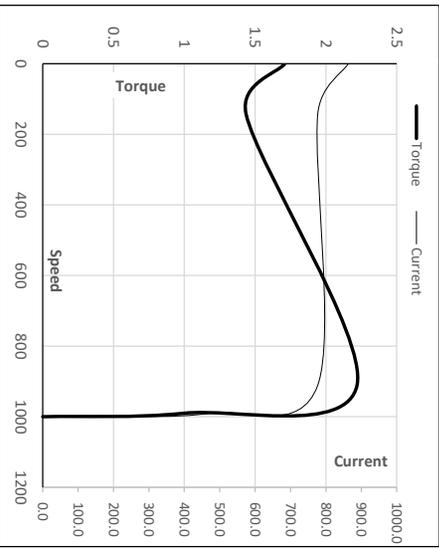
**Performance vs Load Chart**



**Motor Speed Torque Data**

| Load Point | LR    | P-Up  | BD    | Rated | NL    |      |
|------------|-------|-------|-------|-------|-------|------|
| Speed      | r/min | 0     | 143   | 911   | 990   | 1000 |
| Current    | A     | 863.3 | 777.0 | 473.2 | 162.9 | 61.3 |
| Torque     | pu    | 1.7   | 1.4   | 2.2   | 1     | 0    |

**Starting Characteristics Chart**



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

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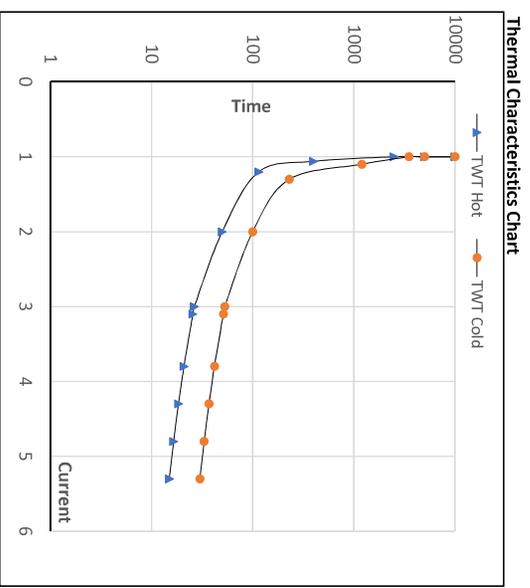


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|           |     |     |    |      |      |       |       |       |        |       |      |      |           |                      |        |
|-----------|-----|-----|----|------|------|-------|-------|-------|--------|-------|------|------|-----------|----------------------|--------|
| Enclosure | U   | Δ/Y | f  | P    | P    | I     | n     | T     | T      | IE    | Amb  | Duty | Elevation | Inertia              | Weight |
| (V)       | 415 | Δ   | 50 | [kW] | [hp] | [A]   | [rpm] | [kgm] | [Nm]   | Class | [°C] | S1   | [m]       | [kg·m <sup>2</sup> ] | [kg]   |
| TEFC      |     |     |    | 90   | 120  | 162.9 | 990   | 87.99 | 863.45 | IE3   | 50   | S1   | 1000      | 3.9282               | 886    |

**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             | 27             | 20             | 18             | 16 | 15  |
| TWT Cold | s  | 10000          | 100            | 53             | 41             | 36             | 32 | 30  |
| Current  | pu | 1              | 2              | 3              | 4              | 4.5            | 5  | 5.3 |



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

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