

# PRODUCT INFORMATION PACKET

**marathon®**  
Motors

Model No: TCA5P54A3141GACD01

Catalog No: TCA5P54A3141GACD01

5.5 kW General Purpose Low Voltage IEC Motor, 3 phase, 750 RPM, 415 V, 160M Frame, TEFC  
Cast Iron IE3 Efficiency Motors



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**REGAL**

### Nameplate Specifications

|                            |         |                        |                             |
|----------------------------|---------|------------------------|-----------------------------|
| Output HP                  | 7.50 Hp | Output KW              | 5.5 kW                      |
| Frequency                  | 50 Hz   | Voltage                | 415 V                       |
| Current                    | 12.3 A  | Speed                  | 729 rpm                     |
| Service Factor             | 1       | Phase                  | 3                           |
| Efficiency                 | 86.2 %  | Power Factor           | 0.72                        |
| Duty                       | S1      | Insulation Class       | F                           |
| Frame                      | 160M    | Enclosure              | Totally Enclosed Fan Cooled |
| Ambient Temperature        | 50 °C   | Drive End Bearing Size | 6309                        |
| Opp Drive End Bearing Size | 6209    | UL                     | No                          |
| CSA                        | No      | CE                     | Yes                         |
| IP Code                    | 55      |                        |                             |

### Technical Specifications

|                       |               |                       |                |
|-----------------------|---------------|-----------------------|----------------|
| Electrical Type       | Squirrel Cage | Starting Method       | Direct On Line |
| Poles                 | 8             | Rotation              | Bi-Directional |
| Mounting              | V1            | Motor Orientation     | Horizontal     |
| Drive End Bearing     | 2z-C3         | Opp Drive End Bearing | 2z-C3          |
| Frame Material        | Cast Iron     | Shaft Type            | Keyed          |
| Overall Length        | 691 mm        | Frame Length          | 254 mm         |
| Shaft Diameter        | 42 mm         | Shaft Extension       | 110 mm         |
| Assembly/Box Mounting | Top           |                       |                |
| Connection Drawing    | 8442000085    | Outline Drawing       | 0216000554     |

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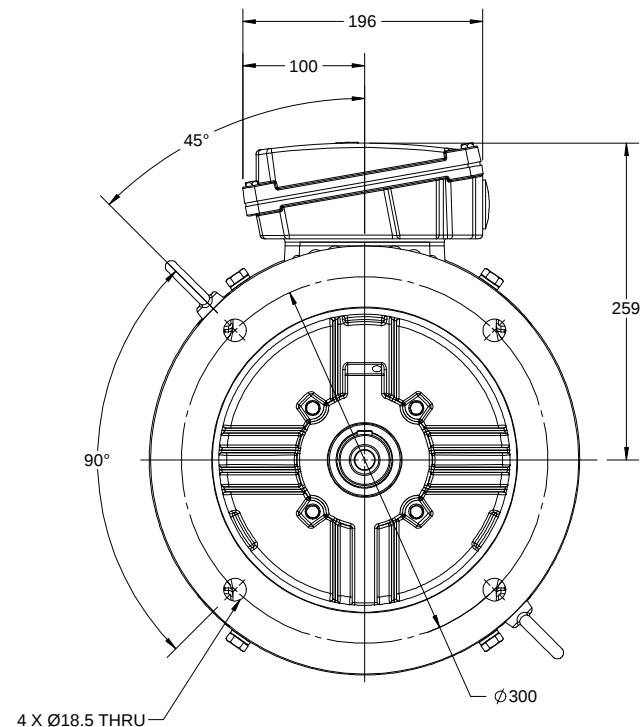
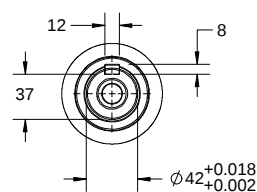
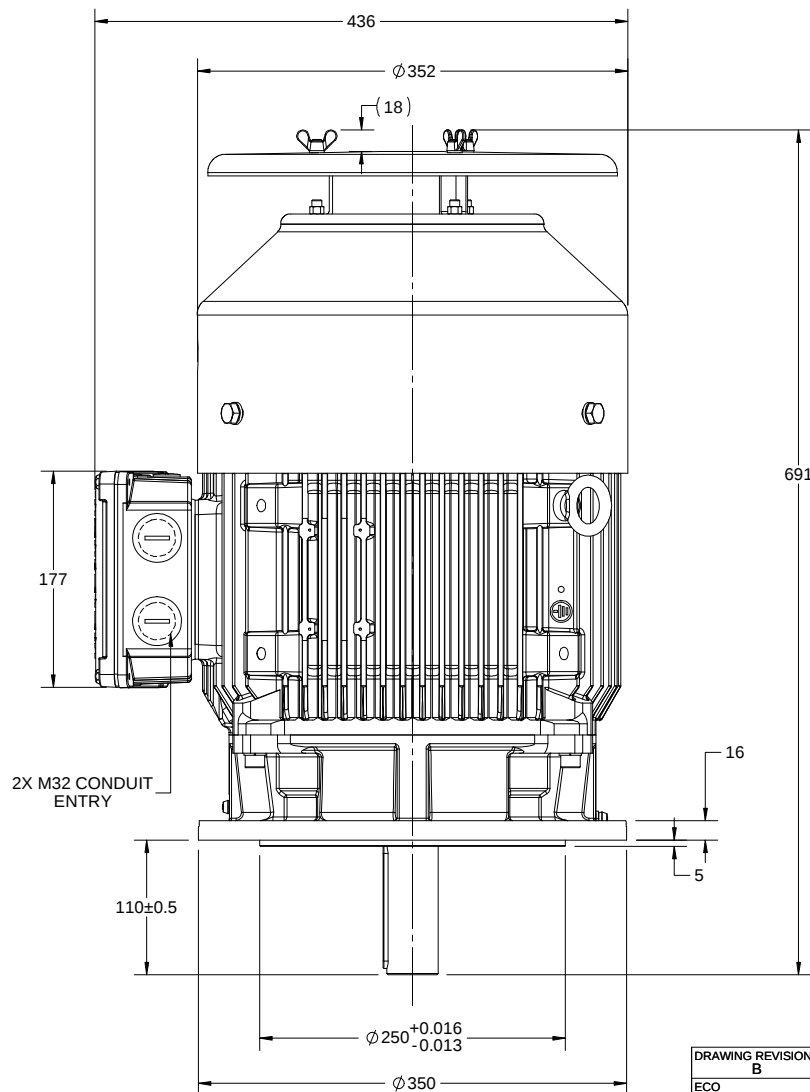
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B

A

A



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------|
| DRAWING REVISION<br>B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | REVISION BY<br>A. KEETHA | DATE<br>03/07/2018 |
| ECO<br>ECO-0147359                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | APPROVED BY<br>JAY       | DATE<br>03/07/2018 |
| ECO DESCRIPTION<br>OUTLINE UPDATED AS PER NEW 3D STRUCTURING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                          |                    |
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|                           |                                                                                                                  |                              |
|---------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------|
| DRAWN BY<br>KCS           |  Regal Beloit America, Inc. |                              |
| DATE<br>26/05/2015        |                                                                                                                  |                              |
| APPROVED BY<br>SBD        | DESCRIPTION<br><b>OUTLINE</b><br>160M FR-V1 MTG. MOTOR TYPE TCA                                                  |                              |
| DATE<br>26/05/2015        |                                                                                                                  |                              |
| REFERENCE                 | MATERIAL                                                                                                         | PROCESS/FINISH               |
| THIRD ANGLE<br>PROJECTION | SIZE<br>B                                                                                                        | DRAWING NUMBER<br>0216000554 |
|                           |                                                                                                                  | SHEET<br>1 OF 1              |

| 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. AT THE END OF YELLOW, WORDS, SYMBOLS, LETTERS ARE BLACK, BORDER IS BLACK.
  2. THE TOLERANCE OF THE LINEAR SIZE OF THE TOLERANCE WITHOUT THE TOLERANCE BY THE TABLE.
  - 3.

**Regal Beloit America, Inc.**

|                                                                                                             |  |                        |                |                                                                                                                  |        |
|-------------------------------------------------------------------------------------------------------------|--|------------------------|----------------|------------------------------------------------------------------------------------------------------------------|--------|
|                             |  | DRAWN BY               |                | SN                                                                                                               |        |
|                                                                                                             |  | DATE                   |                | 16/12/2016                                                                                                       |        |
|                                                                                                             |  | APPROVED BY            |                | SBD                                                                                                              |        |
|                                                                                                             |  | DATE                   |                | 16/12/2016                                                                                                       |        |
|                                                                                                             |  | REFERENCE              |                |                                                                                                                  |        |
|                                                                                                             |  | DESCRIPTION            |                | <br>Regal Beloit America, Inc. |        |
|                                                                                                             |  | CONN DIAGRAM-NAMEPLATE |                |                                                                                                                  |        |
|                                                                                                             |  | MATERIAL               |                | PROCESS/FINISH                                                                                                   |        |
| THIRD ANGLE PROJECTION<br> |  | SIZE                   | DRAWING NUMBER |                                                                                                                  | SHEET  |
| A                                                                                                           |  |                        | 84420000085    |                                                                                                                  | 1 OF 1 |

**Model No.** TCA5P54A3141GACD01

| 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>b</sub> /T <sub>N</sub><br>[pu] |
|----------|---------------|-----------|-----------|-----------|----------|------------|-----------|-------------|------------------|----|-------|-------|---------------|-------|-------|----------------------------------------|----------------------------------------|----------------------------------------|
| 415      | Δ             | 50        | 5.5       | 7.5       | 12.3     | 729        | 73.43     | IE3         | 5/4FL            | FL | 3/4FL | 1/2FL | FL            | 3/4FL | 1/2FL | 5.3                                    | 1.7                                    | 2.3                                    |
|          |               |           |           |           |          |            |           |             |                  |    |       |       |               |       |       |                                        |                                        |                                        |

|                                  |                            |                                           |                                            |
|----------------------------------|----------------------------|-------------------------------------------|--------------------------------------------|
| Motor type                       | TCA                        | Degree of protection                      | IP 55                                      |
| Enclosure                        | TEFC                       | Mounting type                             | IM V1                                      |
| Frame Material                   | Cast Iron                  | Cooling method                            | IC 411                                     |
| Frame size                       | 160M                       | Motor weight - approx.                    | 157 kg                                     |
| Duty                             | S1                         | Gross weight - approx.                    | 177 kg                                     |
| Voltage variation *              | ± 10%                      | Motor inertia                             | 0.1674 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) | 59 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                 | 6309-2Z / 6209-2Z          | Terminal box position                     | TOP                                        |
| Lubrication method               | Greased for life           | Maximum cable size/conduit size           | 1R x 3C x 35mm <sup>2</sup> /2 X M32 x 1.5 |
| Type of grease                   | NA                         | Auxiliary terminal box                    | NA                                         |

I<sub>a</sub>/I<sub>N</sub> - Locked Rotor Current / Rated CurrentT<sub>b</sub>/T<sub>N</sub> - Breakdown Torque / Rated TorqueT<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 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 | -      | -      | -          |

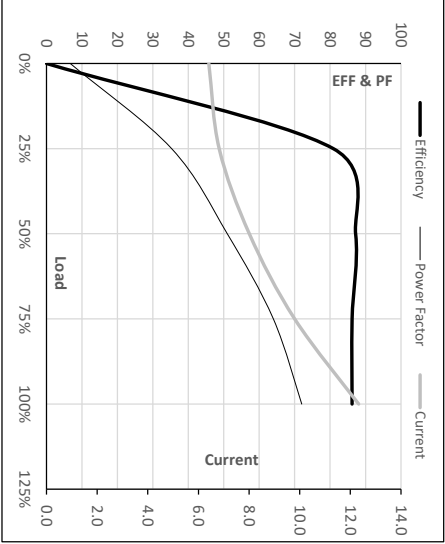
Model No. TCASP54A3141GACD01

| 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>Temp<br>[°C] | Duty | Elevation<br>[m] | Inertia<br>[kg·m <sup>2</sup> ] | Weight<br>[kg] |
|-----------|----------|---------------------|-----------|-----------|-----------|----------|------------|------------|-----------|-------------|---------------------|------|------------------|---------------------------------|----------------|
| TEFC      | 415      | $\Delta$            | 50        | 5.5       | 7.5       | 12.3     | 729        | 7.49       | 73.43     | IE3         | 50                  | S1   | 1000             | 0.1674                          | 157            |

Motor Speed Data

| Load Point   | NL    | 1/4FL | 1/2FL | 3/4FL | FL   | 5/4FL |
|--------------|-------|-------|-------|-------|------|-------|
| Current      | A     | 6.4   | 6.8   | 8.0   | 9.8  | 12.3  |
| Torque       | Nm    | 0.0   | 18.0  | 36.1  | 54.6 | 73.4  |
| Speed        | r/min | 1000  | 745   | 740   | 735  | 729   |
| Efficiency   | %     | 0.0   | 80.9  | 87.2  | 86.2 | 86.2  |
| Power Factor | %     | 6.7   | 35.3  | 51.0  | 64.0 | 72.0  |

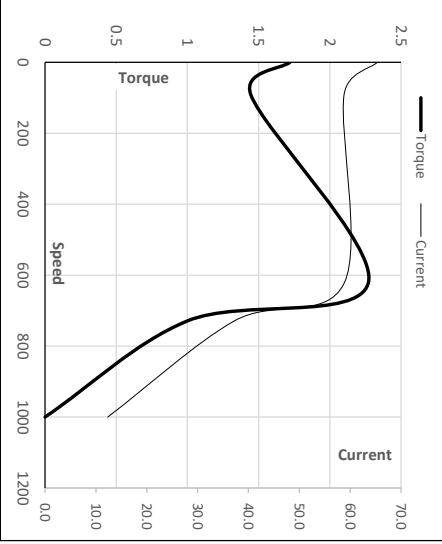
Performance vs Load Chart



Motor Speed Torque Data

| Load Point | LR    | P-Up | BD   | Rated | NL   |      |
|------------|-------|------|------|-------|------|------|
| Speed      | r/min | 0    | 91   | 623   | 729  | 1000 |
| Current    | A     | 65.3 | 58.8 | 37.2  | 12.3 | 6.4  |
| Torque     | pu    | 1.7  | 1.4  | 2.3   | 1    | 0    |

Starting Characteristics Chart



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

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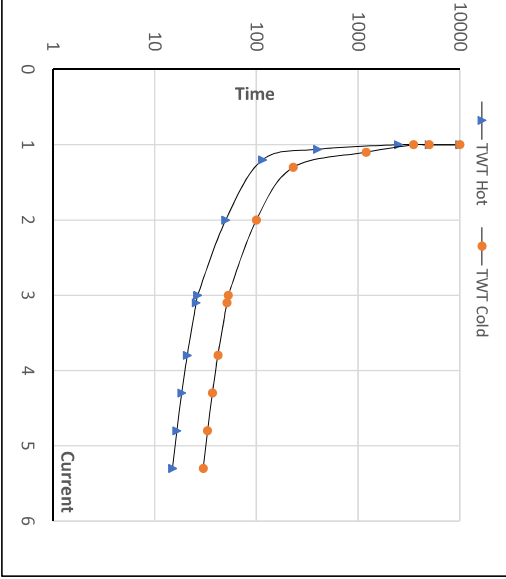
**Model No.** TCASP54A3141GACD01

| 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      | 415      | $\Delta$             | 50        | 5.5       | 7.5       | 12.3     | 729        | 7.48       | 73.43     | IE3         | 50          | S1   | 1000             | 0.1674                          | 157            |

**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             | 40             | 36             | 31 | 30  |
| Current  | pu | 1              | 2              | 3              | 4              | 4.5            | 5  | 5.3 |

**Thermal Characteristics Chart**



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

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