


**The Timken Company**

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**Part Number 22309EMW33, Spherical Roller Bearings - Brass Cage**

Spherical bearings are designed to manage high radial loads even when misalignment, poor lubrication, contamination, extreme speeds or critical application stresses are present.




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**Specifications**

|                        |            |
|------------------------|------------|
| <b>Design Unit</b>     | Metric     |
| <b>d - Bore</b>        | 45 mm      |
| <b>Cage Type</b>       | EM         |
| <b>Cage Material</b>   | Brass      |
| <b>Superseded Part</b> | 22309YMW33 |

**Dimensions**

|  |                    |
|--|--------------------|
| <b>D - Outer Diameter</b>  | 100 mm<br>3.937 in |
|  <b>d - Inner Ring Width</b> | 36 mm<br>1.4173 in |

|                             |                    |
|-----------------------------|--------------------|
| <b>B - Outer Ring Width</b> | 36 mm<br>1.4173 in |
|-----------------------------|--------------------|

## Abutment and Fillet Dimensions

|   |                    |
|---|--------------------|
| <b>R - Inner Ring "To Clear" Radius<sup>1</sup></b> | 1.5 mm<br>0.060 in |
|---|--------------------|

|   |                   |
|---|-------------------|
| <b>r - Outer Ring "To Clear" Radius<sup>2</sup></b> | 1.5 mm<br>0.06 in |
|---|-------------------|

|   |                       |
|---|-----------------------|
| <b>da - Inner Ring Backing Diameter</b> | 58.000 mm<br>2.300 in |
|---|-----------------------|

|   |                       |
|---|-----------------------|
| <b>Da - Outer Ring Backing Diameter</b> | 90.000 mm<br>3.500 in |
|---|-----------------------|

## Basic Load Ratings

|                                  |                       |
|----------------------------------|-----------------------|
| <b>C0 - Static Radial Rating</b> | 180000 N<br>40500 lbf |
|----------------------------------|-----------------------|

|   |                       |
|---|-----------------------|
| <b>C1(2) - Dynamic Radial Rating (Two-Rows)</b> | 169000 N<br>37900 lbf |
|---|-----------------------|

## Factors

|                                   |      |
|-----------------------------------|------|
| <b>e - ISO Factor<sup>3</sup></b> | 0.36 |
|-----------------------------------|------|

|                                    |      |
|------------------------------------|------|
| <b>Y0 - ISO Factor<sup>4</sup></b> | 1.86 |
|------------------------------------|------|

|                                    |     |
|------------------------------------|-----|
| <b>Y1 - ISO Factor<sup>5</sup></b> | 1.9 |
|------------------------------------|-----|

|                                    |      |
|------------------------------------|------|
| <b>Y2 - ISO Factor<sup>6</sup></b> | 2.83 |
|------------------------------------|------|

|  |          |
|--|----------|
| <b>Reference Thermal Speed Rating (Grease)</b> | 5100 rpm |
|--|----------|

|   |          |
|---|----------|
| <b>Reference Thermal Speed Rating (Oil)<sup>7</sup></b> | 6100 rpm |
|---|----------|

|   |       |
|---|-------|
| <b>Cg - Geometry Factor<sup>8</sup></b> | 0.049 |
|---|-------|

<sup>1</sup> Maximum housing fillet radius that bearing corners will clear.

<sup>2</sup> Maximum shaft fillet radius that bearing corners will clear.

<sup>3</sup> These factors apply for both inch and metric calculations. Consult your Timken representative for instruction on use.

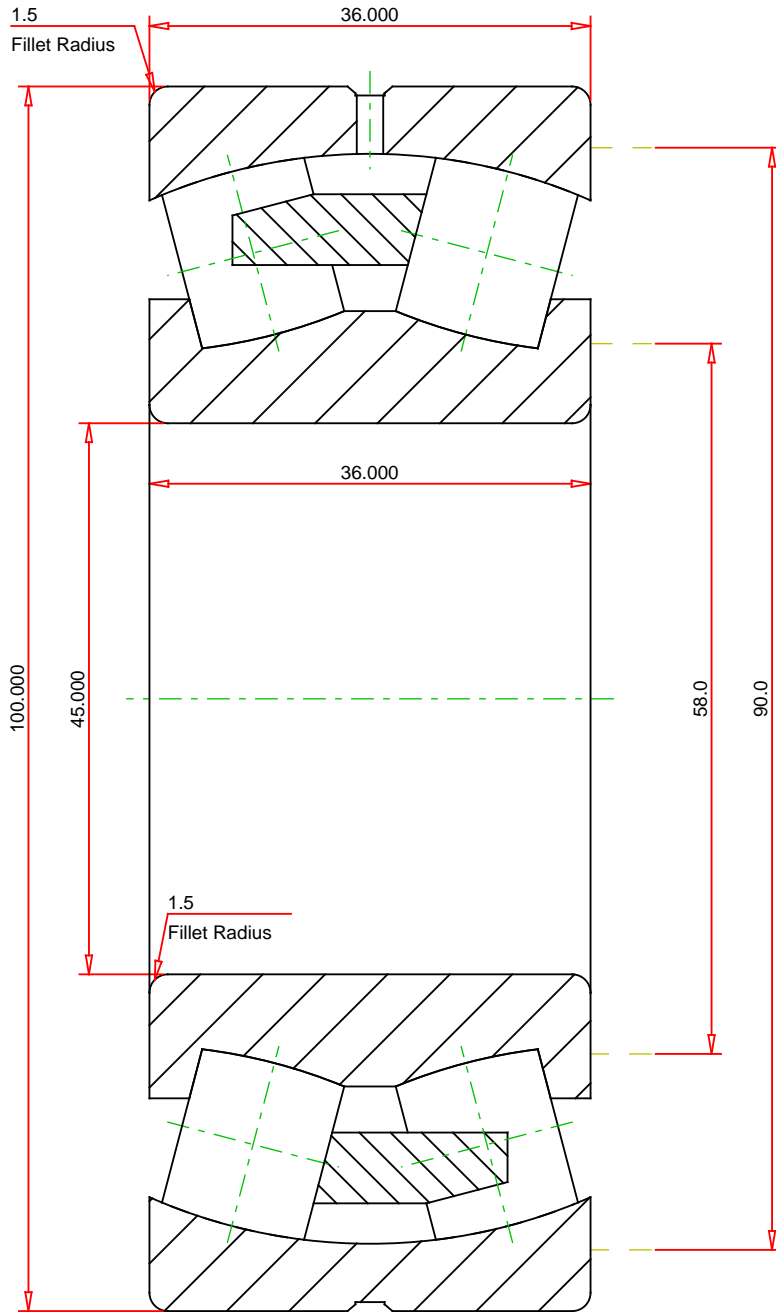
<sup>4</sup> These factors apply for both inch and metric calculations. See engineering

<sup>5</sup> These factors apply for both inch and metric calculations. Consult your Timken representative for instruction on use.

<sup>6</sup> These factors apply for both inch and metric calculations. Consult your Timken representative for instruction on use.

<sup>7</sup> See thermal speed ratings in the engineering section.

<sup>8</sup> Geometry constant for Lubrication Life Adjustment Factor a3l.



METRIC UNITS

|                           |        |
|---------------------------|--------|
| Number of Rollers Per Row | 14     |
| ISO Factor e              | 0.36   |
| ISO Factor Y0             | 1.86   |
| ISO Factor Y1             | 1.90   |
| ISO Factor Y2             | 2.83   |
| Bearing Weight            | 1.4 kg |
| Cage Type                 | EM     |
| Cage Material             | Brass  |

**TIMKEN**®

**22309EMW33**  
SRB ASSEMBLY

**THE TIMKEN COMPANY**  
NORTH CANTON, OHIO USA

|                                  |        |   |
|----------------------------------|--------|---|
| Dynamic Radial Rating (Two Rows) | 169000 | N |
| Static Radial Rating             | 180000 | N |

Every reasonable effort has been made to ensure the accuracy of the information contained in this writing, but no liability is accepted for errors, omissions or for any other reason.

**FOR DISCUSSION ONLY**