



**The Timken Company**

4500 Mt Pleasant St. NW

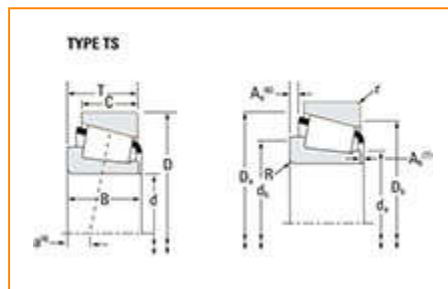
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## Part Number X33021 - Y33021, Tapered Roller Bearings - TS (Tapered Single) Metric

This is the most basic and most widely used type of tapered roller bearing. It consists of two main separable parts: the cone (inner ring) assembly and the cup (outer ring). It is typically mounted in opposing pairs on a shaft.



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### Specifications

|                         |                  |
|-------------------------|------------------|
| Series                  | 33021            |
| Cone Part Number        | X33021           |
| Cup Part Number         | Y33021           |
| Design Unit             | Metric           |
| Bearing Weight          | 3.0 Kg<br>6.5 lb |
| Cage Material           | Stamped Steel    |
| Full Timken Part Number | 33021            |

### Dimensions

105.000 mm

|                               |                         |
|-------------------------------|-------------------------|
| <b>d - Bore</b>               | 103.000 mm<br>4.1339 in |
| <b>D - Cup Outer Diameter</b> | 160.000 mm<br>6.2992 in |
| <b>B - Cone Width</b>         | 43 mm<br>1.6929 in      |
| <b>C - Cup Width</b>          | 34 mm<br>1.3386 in      |
| <b>T - Bearing Width</b>      | 43.000 mm<br>1.6929 in  |

## Abutment and Fillet Dimensions

|  |                      |
|--|----------------------|
| <b>R - Cone Backface "To Clear" Radius<sup>1</sup></b> | 2.540 mm<br>0.1 in   |
| <b>r - Cup Backface "To Clear" Radius<sup>2</sup></b>  | 2.03 mm<br>0.08 in   |
| <b>da - Cone Frontface Backing Diameter</b>            | 113 mm<br>4.45 in    |
| <b>db - Cone Backface Backing Diameter</b>             | 118 mm<br>4.65 in    |
| <b>Da - Cup Frontface Backing Diameter</b>             | 153.16 mm<br>6.03 in |
| <b>Db - Cup Backface Backing Diameter</b>              | 147.07 mm<br>5.79 in |
| <b>Ab - Cage-Cone Frontface Clearance</b>              | 3.8 mm<br>0.15 in    |
| <b>Aa - Cage-Cone Backface Clearance</b>               | 2.5 mm<br>0.1 in     |
| <b>a - Effective Center Location<sup>3</sup></b>       | -12.2 mm<br>-0.48 in |

## Basic Load Ratings

|   |                        |
|---|------------------------|
| <b>C90 - Dynamic Radial Rating (90 million revolutions)<sup>4</sup></b>             | 75400 N<br>17000 lbf   |
| <b>C1 - Dynamic Radial Rating (1 million revolutions)<sup>5</sup></b>               | 291000 N<br>65400 lbf  |
| <b>C0 - Static Radial Rating</b>  | 449000 N<br>101000 lbf |
| <b>C<sub>a90</sub> - Dynamic Thrust Rating (90 million revolutions)<sup>6</sup></b> | 36500 N<br>8200 lbf    |

## Factors

|   |        |
|---|--------|
| <b>K - Factor<sup>7</sup></b>                       | 2.07   |
| <b>e - ISO Factor<sup>8</sup></b>                   | 0.28   |
| <b>Y - ISO Factor<sup>9</sup></b>                   | 2.12   |
| <b>G1 - Heat Generation Factor (Roller-Raceway)</b> | 236.3  |
| <b>G2 - Heat Generation Factor (Rib-Roller End)</b> | 54.8   |
| <b>Cg - Geometry Factor<sup>10</sup></b>            | 0.0975 |

<sup>1</sup> These maximum fillet radii will be cleared by the bearing corners.

<sup>2</sup> These maximum fillet radii will be cleared by the bearing corners.

<sup>3</sup> Negative value indicates effective center inside cone backface.

<sup>4</sup> Based on  $90 \times 10^6$  revolutions  $L_{10}$  life, for The Timken Company life calculation method.  $C_{90}$  and  $C_{a90}$  are radial and thrust values.

<sup>5</sup> Based on  $1 \times 10^6$  revolutions  $L_{10}$  life, for the ISO life calculation method.

<sup>6</sup> Based on  $90 \times 10^6$  revolutions  $L_{10}$  life, for The Timken Company life calculation method.  $C_{90}$  and  $C_{a90}$  are radial and thrust values for a single-row,  $C_{90(2)}$  is the two-row radial value.

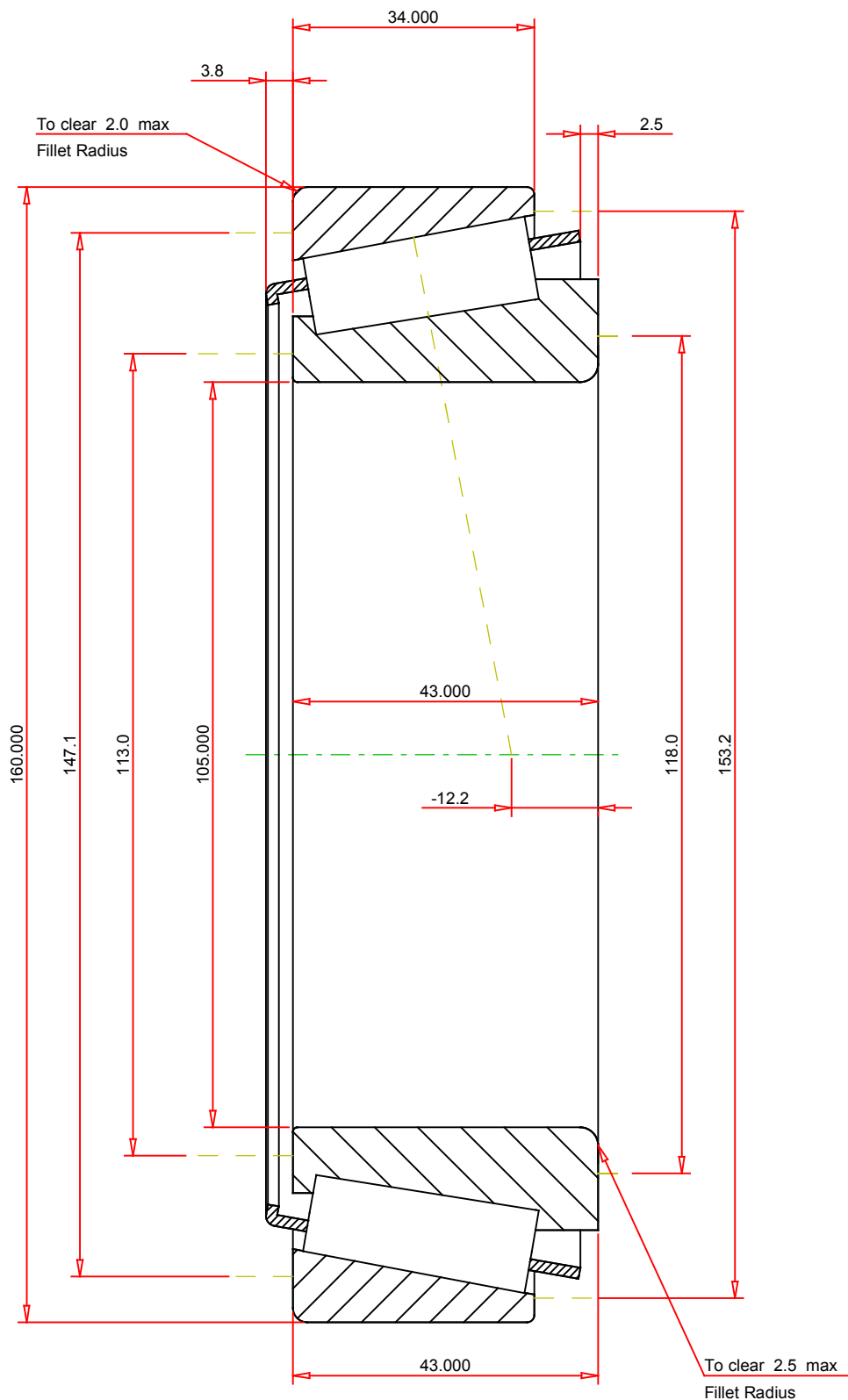
<sup>7</sup> These factors apply for both inch and metric calculations. Consult your Timken representative for instruction on use.

<sup>8</sup> These factors apply for both inch and metric calculations. Consult your Timken representative for

instruction on use.

<sup>9</sup> These factors apply for both inch and metric calculations. Consult your Timken representative for instruction on use.

<sup>10</sup> Geometry constant for Lubrication Life Adjustment Factor  $a_3$ .



## METRIC UNITS

|                           |          |
|---------------------------|----------|
| ISO Factor - e            | 0.28     |
| ISO Factor - Y            | 2.12     |
| Bearing Weight            | 3 kg     |
| Number of Rollers Per Row | 24       |
| Effective Center Location | -12.2 mm |

**TIMKEN®**

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

**X33021 - Y33021**  
Tapered Roller Bearings - TS (Tapered Single)  
Metric

|                              |        |   |
|------------------------------|--------|---|
| K Factor                     | 2.07   |   |
| Dynamic Radial Rating - C90  | 75400  | N |
| Dynamic Thrust Rating - Ca90 | 36500  | N |
| Static Radial Rating - C0    | 449000 | N |
| Dynamic Radial Rating - C1   | 291000 | 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**