



**The Timken Company**

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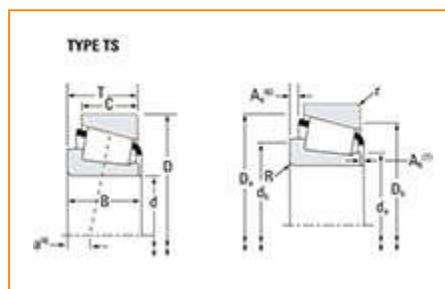
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## Part Number X33020 - Y33020, Tapered Roller Bearings - TS (Tapered Single) Metric

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	33020
Cone Part Number	X33020
Cup Part Number	Y33020
Design Unit	Metric
Bearing Weight	2.4 Kg 5.2 lb
Cage Material	Stamped Steel
Full Timken Part Number	33020

### Dimensions

100 mm

<b>d - Bore</b>	100 mm 3.937 in
<b>D - Cup Outer Diameter</b>	150 mm 5.9055 in
<b>B - Cone Width</b>	39 mm 1.5354 in
<b>C - Cup Width</b>	32.500 mm 1.2795 in
<b>T - Bearing Width</b>	39.000 mm 1.5354 in

### Abutment and Fillet Dimensions

<b>R - Cone Backface "To Clear" Radius<sup>1</sup></b>	2.030 mm 0.080 in
<b>r - Cup Backface "To Clear" Radius<sup>2</sup></b>	1.52 mm 0.06 in
<b>da - Cone Frontface Backing Diameter</b>	107 mm 4.21 in
<b>db - Cone Backface Backing Diameter</b>	111 mm 4.37 in
<b>Da - Cup Frontface Backing Diameter</b>	145.03 mm 5.71 in
<b>Db - Cup Backface Backing Diameter</b>	138.94 mm 5.47 in
<b>Ab - Cage-Cone Frontface Clearance</b>	3 mm 0.12 in
<b>Aa - Cage-Cone Backface Clearance</b>	1.3 mm 0.05 in
<b>a - Effective Center Location<sup>3</sup></b>	-9.4 mm -0.37 in

## Basic Load Ratings

<b>C90 - Dynamic Radial Rating (90 million revolutions)<sup>4</sup></b>	65000 N 14600 lbf
<b>C1 - Dynamic Radial Rating (1 million revolutions)<sup>5</sup></b>	251000 N 56300 lbf
<b>C0 - Static Radial Rating</b>	393000 N 88300 lbf
<b>C<sub>a90</sub> - Dynamic Thrust Rating (90 million revolutions)<sup>6</sup></b>	31900 N 7180 lbf

## Factors

<b>K - Factor<sup>7</sup></b>	2.03
<b>e - ISO Factor<sup>8</sup></b>	0.29
<b>Y - ISO Factor<sup>9</sup></b>	2.09
<b>G1 - Heat Generation Factor (Roller-Raceway)</b>	206.3
<b>G2 - Heat Generation Factor (Rib-Roller End)</b>	65.1
<b>C<sub>g</sub> - Geometry Factor<sup>10</sup></b>	0.0938

<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.

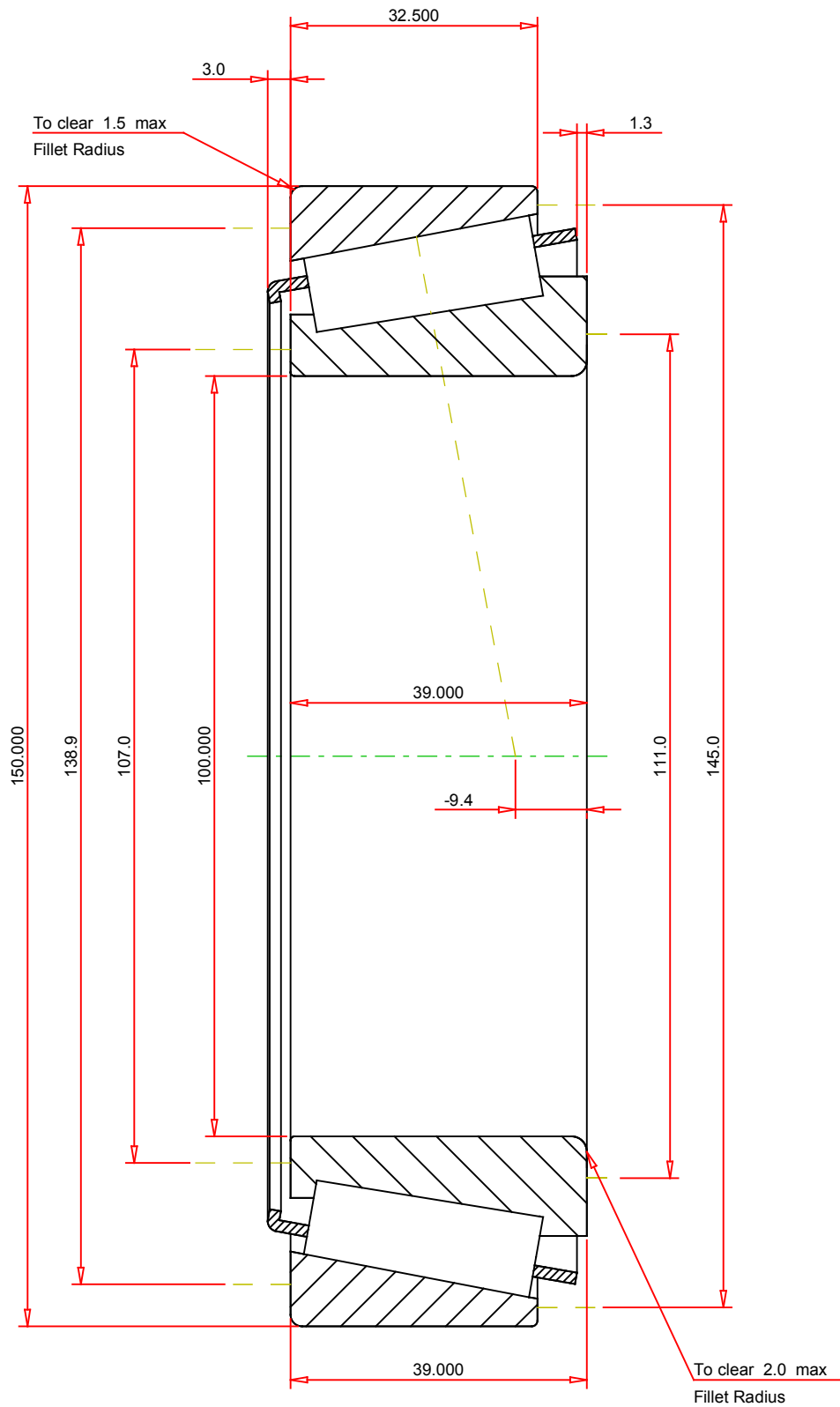
<sup>7</sup> These factors apply for both inch and metric calculations. Consult your Timken representative for instruction on use.

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

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<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	0.29
ISO Factor - Y	2.09
Bearing Weight	2.4 kg
Number of Rollers Per Row	25
Effective Center Location	-9.4 mm

**TIMKEN**®

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

**X33020 - Y33020**  
Tapered Roller Bearings - TS (Tapered Single)  
Metric

K Factor	2.03
Dynamic Radial Rating - C90	65000 N
Dynamic Thrust Rating - Ca90	31900 N
Static Radial Rating - C0	393000 N
Dynamic Radial Rating - C1	251000 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**