

# Double row spherical roller bearings with cylindrical and tapered bore



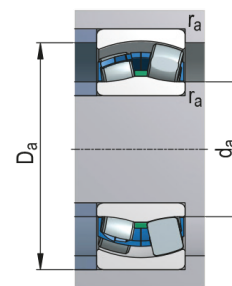
EW33J



W33M



EKW33J



|                                              |  |
|----------------------------------------------|--|
| Bearing Designation with Cylindrical Bore    |  |
| Bearing Designation with Tapered Bore (1:12) |  |

## Dimensions (mm)

|           |  |
|-----------|--|
| d         |  |
| D         |  |
| B         |  |
| $r_s$ min |  |

## Abutment and Fillet Dimensions (mm)

|           |  |
|-----------|--|
| $d_a$ min |  |
| $D_a$ max |  |
| $r_a$ max |  |

## Basic Load Rating (kN)

|       |  |
|-------|--|
| C     |  |
| $C^0$ |  |

## Limiting Speed for Lubrication ( $\text{min}^{-1}$ )

|        |  |
|--------|--|
| Grease |  |
| Oil    |  |

|                 |  |
|-----------------|--|
| Weight [kg]     |  |
| Weight - K [kg] |  |

## Corresponding

|                   |  |
|-------------------|--|
| Adapter Sleeve    |  |
| Withdrawal Sleeve |  |
| Withdrawal Nut    |  |

## Coefficients

|       |  |
|-------|--|
| e     |  |
| $Y_1$ |  |
| $Y_2$ |  |
| $Y_3$ |  |

## Tolerance Class

| Tolerance Class | Inner Ring       |     |                 |     |       |           |          |                |     |           |
|-----------------|------------------|-----|-----------------|-----|-------|-----------|----------|----------------|-----|-----------|
|                 | Cylindrical Bore |     |                 |     |       |           |          |                |     |           |
|                 | $\Delta_{dmp}$   |     | $V_{dp}$        |     |       | $V_{dmp}$ | $K_{ia}$ | $\Delta_{B_s}$ |     | $V_{B_s}$ |
|                 |                  |     | Diameter Series |     |       |           |          |                |     |           |
|                 |                  |     | 7,8,9           | 0,1 | 2,3,4 |           |          |                |     |           |
|                 | max              | min | max             | max | max   | max       | max      | max            | min | max       |
|                 | $\mu m$          |     |                 |     |       |           |          |                |     |           |
| P0              |                  |     |                 |     |       |           |          |                |     |           |
| P6              |                  |     |                 |     |       |           |          |                |     |           |

| Tolerance Class | Inner Ring        |     |                                |     |               |                   |     |                                |     |               |
|-----------------|-------------------|-----|--------------------------------|-----|---------------|-------------------|-----|--------------------------------|-----|---------------|
|                 | Tapered Bore 1:12 |     |                                |     |               | Tapered Bore 1:30 |     |                                |     |               |
|                 | $\Delta_{dmp}$    |     | $\Delta_{d1mp} - \Delta_{dmp}$ |     | $V_{dp}^{1)}$ | $\Delta_{dmp}$    |     | $\Delta_{d1mp} - \Delta_{dmp}$ |     | $V_{dp}^{1)}$ |
|                 |                   |     |                                |     |               |                   |     |                                |     |               |
|                 | max               | min | max                            | min | max           | max               | min | max                            | min | max           |
|                 | $\mu m$           |     |                                |     |               |                   |     |                                |     |               |
| P0 - P6         |                   |     |                                |     |               |                   |     |                                |     |               |

| Tolerance<br>Class | Outer Ring     |     |                 |     |       |                                      |           |                                                                           |                       |
|--------------------|----------------|-----|-----------------|-----|-------|--------------------------------------|-----------|---------------------------------------------------------------------------|-----------------------|
|                    | $\Delta_{Dmp}$ |     | $V_{Dp}$        |     |       |                                      | $V_{Dmp}$ | $K_{ea}$                                                                  | $\Delta_{CS}, V_{CS}$ |
|                    |                |     | Diameter Series |     |       | bearings <sup>2)</sup><br>with seals |           |                                                                           |                       |
|                    |                |     | 7,8,9           | 0,1 | 2,3,4 |                                      |           |                                                                           |                       |
|                    | max            | min | max             | max | max   | max                                  | max       | max                                                                       |                       |
|                    | $\mu m$        |     |                 |     |       |                                      |           |                                                                           |                       |
| P0                 |                |     |                 |     |       |                                      |           | Corresponds to $\Delta_{BS}, V_{BS}$<br>of the same bearing<br>inner ring |                       |
| P6                 |                |     |                 |     |       |                                      |           |                                                                           |                       |

1) Valid in any bore radial plane

2) P0 - Valid only for bearings in diameter series 2, 3 and 4 \* P6 - Valid only for bearings in diameter series 0, 1, 2, 3 and 4

## Radial Clearance - Cylindrical Bore

| C2      |     | normal |     | C3  |     | C4  |     | C5  |     |
|---------|-----|--------|-----|-----|-----|-----|-----|-----|-----|
| min     | max | min    | max | min | max | min | max | min | max |
| $\mu m$ |     |        |     |     |     |     |     |     |     |
| -       | -   | -      | -   | -   | -   | -   | -   |     |     |

## Radial Clearance - Tapered Bore

| C2      |     | normal |     | C3  |     | C4  |     | C5  |     |
|---------|-----|--------|-----|-----|-----|-----|-----|-----|-----|
| min     | max | min    | max | min | max | min | max | min | max |
| $\mu m$ |     |        |     |     |     |     |     |     |     |
| -       | -   | -      | -   | -   | -   | -   | -   | -   | -   |

## Tolerance Symbols and Their Meaning

|                 |                                                                                                                                          |                |                                                                                                         |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------|
| $d$             | nominal bore diameter                                                                                                                    | $H_4$          | rated height of spherical-roller bearing                                                                |
| $d_1$           | nominal diameter of larger theoretical tapered bore diameter                                                                             | $\Delta_{Bs}$  | inner ring single width deviation                                                                       |
| $d_2$           | nominal diameter of the shaft washer of double direction thrust bearings                                                                 | $\Delta_{Cs}$  | outer ring single width deviation                                                                       |
| $\Delta_{ds}$   | deviation of single bore diameter from nominal                                                                                           | $\Delta_{Is}$  | bearing single width deviation (total)                                                                  |
| $\Delta_{dmp}$  | mean cylindrical bore diameter deviation in single radial plane (for tapered bore $\Delta_{dmp}$ is valid for theoretical bore diameter) | $\Delta_{T1s}$ | cone sub-unit effective width deviation                                                                 |
| $\Delta_{d1mp}$ | deviation of mean larger theoretical diameter of tapered bore                                                                            | $\Delta_{T2s}$ | cup sub-unit effective width deviation                                                                  |
| $\Delta_{d2mp}$ | mean shaft washer bore diameter deviation of double direction thrust bearings in single radial plane                                     | $\Delta_{Hs}$  | height deviation of single direction axial bearings from nominal value                                  |
| $V_{dp}$        | single bore diameter variation in single radial plane                                                                                    | $\Delta_{H1s}$ | height deviation of single direction axial ball bearings with sphered housing washer from nominal value |
| $V_{dmp}$       | mean cylindrical bore diameter variation                                                                                                 | $\Delta_{H2s}$ | height deviation of double direction axial bearings from nominal value                                  |
| $V_{d2p}$       | shaft washer bore diameter variation of double direction thrust bearings in single radial plane                                          | $\Delta_{H3s}$ | height deviation of double direction axial ball bearings with sphered housing washer from nominal value |
| $D$             | nominal outside diameter                                                                                                                 | $\Delta_{H4s}$ | height deviation of axial spherical-roller bearing from the rated value                                 |
| $\Delta_{Ds}$   | deviation of single outside diameter from the nominal dimension                                                                          | $C$            | outer ring nominal width                                                                                |
| $\Delta_{Dmp}$  | mean outside cylindrical surface diameter deviation in single plane                                                                      | $V_{Bs}$       | inner ring single width variation                                                                       |
| $V_{Dp}$        | single outside cylindrical surface diameter variation in single radial plane                                                             | $V_{Cs}$       | outer ring single width variation                                                                       |
| $V_{Dmp}$       | mean outside cylindrical surface diameter variation                                                                                      | $K_{ia}$       | radial runout of assembled bearing inner ring                                                           |
| $B$             | inner ring nominal width                                                                                                                 | $K_{ea}$       | radial runout of assembled bearing outer ring                                                           |
| $T$             | total nominal width of tapered roller bearings                                                                                           | $S_{ea}$       | shaft washer raceway axial runout                                                                       |
| $T_1$           | nominal effective width of cup sub-unit                                                                                                  | $S_i$          | housing washer raceway axial runout                                                                     |
| $T_2$           | nominal effective width of cone sub-unit                                                                                                 | $S_e$          | inner ring flat seat face axial runout of assembled bearing                                             |
| $H$             | rated width of unidirectional axial bearing                                                                                              | $S_{ia}$       | outer ring flat seat face axial runout of assembled bearing                                             |
| $H_1$           | rated height of unidirectional ball axial bearing including the body ring                                                                | $S_{ea}$       | flat seat face axial runout                                                                             |
| $H_2$           | rated height of bidirectional axial bearing                                                                                              | $S_d$          | runout of outside cylindrical surface towards outer ring face                                           |
| $H_3$           | rated height of bidirectional axial ball bearing including body rings                                                                    | $S_D$          | runout of supporting face towards seat face for single row tapered roller bearings                      |
|                 |                                                                                                                                          | $S_s$          |                                                                                                         |