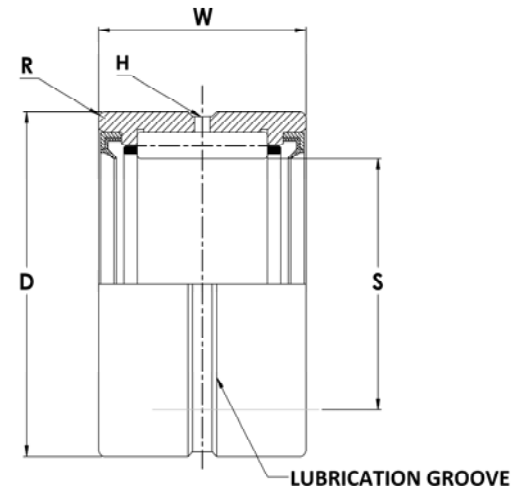


# Machined Type Needle Roller Bearings without inner ring — MR Series

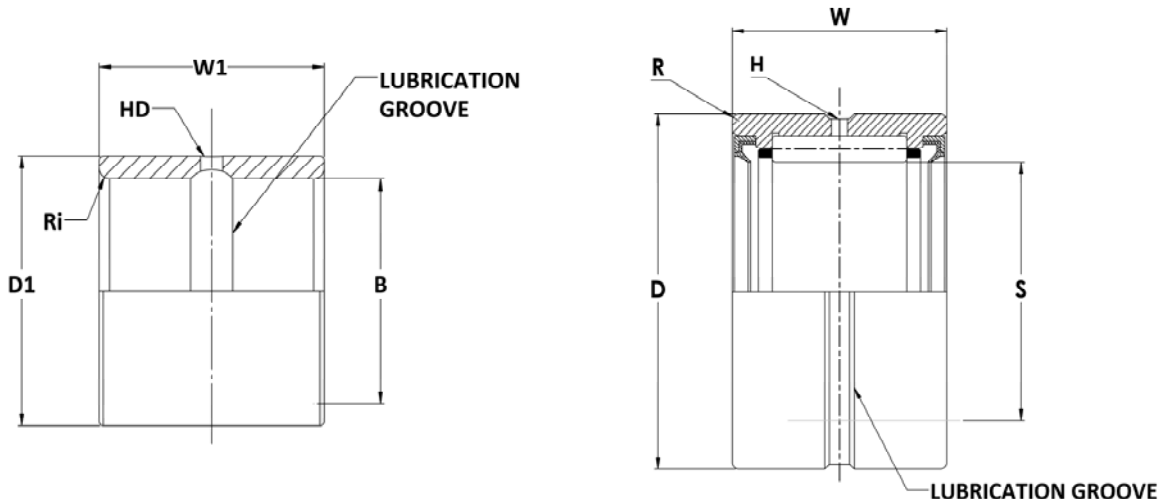


**Type:** Machined Ring with Optional Separable Inner Ring  
**Rolling Elements:** Cage Guided Precision Needles  
 (GCr15 or equivalent)  
**Material:** Bearing Quality Steel; Hardened to HRC 59  
 (GCr15 or equivalent)  
**Seal Type:** Rubber Lip (NBR, RoHS 3.0 Complied)  
**Lubrication:** Unsealed Bearings: Rust Preventative Oil  
 Sealed Bearings: SHELL GADUS S2 or Equivalent



| Part No. | Dimensions (inch) |            |        |            |        |           |                             |                                     | Limiting Speed (Oil) | Basic Dynamic Load Rating (Cr) | Basic Static Load Rating (Cor) | Outer & Roller Assembly Weight |        |        |      |
|----------|-------------------|------------|--------|------------|--------|-----------|-----------------------------|-------------------------------------|----------------------|--------------------------------|--------------------------------|--------------------------------|--------|--------|------|
|          | S                 |            | D      |            | W      |           | H                           | R                                   |                      |                                |                                |                                |        |        |      |
|          | Nom               | Tol.       | Nom    | Tol.       | Nom    | Tol.      | Radial Lub. Hole DIA. (Ref) | Max. Outer Ring Corner Radius (Ref) |                      |                                |                                |                                |        |        |      |
| MR-10-N  | 0.6250            | +0/-0.0005 | 1.1250 | +0/-0.0005 | 0.750  | +0/-0.005 | 0.08                        | 0.025                               | 19,250               | 4,320                          | 4,300                          | 0.12                           |        |        |      |
| MR-10-SS |                   |            |        |            | 1.000  |           |                             |                                     | 6,100                |                                |                                |                                |        |        |      |
| MR-10    |                   |            |        |            | 19,250 |           |                             |                                     | 5,930                |                                |                                |                                | 6,500  | 0.15   |      |
| MR-12-N  | 0.7500            | +0/-0.0005 | 1.2500 | +0/-0.0005 | 0.750  | +0/-0.005 | 0.08                        | 0.04                                | 16,000               | 4,990                          | 5,400                          | 0.14                           |        |        |      |
| MR-12-SS |                   |            |        |            | 1.000  |           |                             |                                     | 5,100                |                                |                                |                                | 4,990  | 5,400  | 0.17 |
| MR-12    |                   |            |        |            | 16,000 |           |                             |                                     | 6,830                |                                |                                |                                | 8,100  | 0.17   |      |
| MR-14-N  | 0.8750            | +0/-0.0005 | 1.3750 | +0/-0.0005 | 0.750  | +0/-0.005 | 0.08                        | 0.04                                | 13,750               | 5,280                          | 6,000                          | 0.16                           |        |        |      |
| MR-14-SS |                   |            |        |            | 1.000  |           |                             |                                     | 4,400                |                                |                                |                                | 5,280  | 6,000  | 0.21 |
| MR-14    |                   |            |        |            | 13,750 |           |                             |                                     | 7,240                |                                |                                |                                | 9,000  | 0.21   |      |
| MR-16-N  | 1.0000            | +0/-0.0005 | 1.5000 | +0/-0.0005 | 0.750  | +0/-0.005 | 0.08                        | 0.04                                | 12,000               | 5,840                          | 7,100                          | 0.20                           |        |        |      |
| MR-16-SS |                   |            |        |            | 1.000  |           |                             |                                     | 3,800                |                                |                                |                                | 5,840  | 7,100  | 0.23 |
| MR-16    |                   |            |        |            | 12,000 |           |                             |                                     | 8,000                |                                |                                |                                | 10,600 | 0.23   |      |
| MR-18-N  | 1.1250            | +0/-0.0005 | 1.6250 | +0/-0.0005 | 1.000  | +0/-0.005 | 0.09                        | 0.04                                | 10,700               | 8,720                          | 12,200                         | 0.24                           |        |        |      |
| MR-18-SS |                   |            |        |            | 1.250  |           |                             |                                     | 3,400                |                                |                                |                                | 8,720  | 12,200 | 0.32 |
| M-18     |                   |            |        |            | 10,700 |           |                             |                                     | 10,900               |                                |                                |                                | 16,300 | 0.32   |      |
| MR-20-N  | 1.2500            | +0/-0.0005 | 1.7500 | +0/-0.0005 | 1.000  | +0/-0.005 | 0.09                        | 0.04                                | 9,600                | 9,010                          | 13,100                         | 0.27                           |        |        |      |
| MR-20-SS |                   |            |        |            | 1.250  |           |                             |                                     | 3,050                |                                |                                |                                | 9,010  | 13,100 | 0.34 |
| MR-20    |                   |            |        |            | 9,600  |           |                             |                                     | 11,300               |                                |                                |                                | 17,500 | 0.34   |      |

# Machined Inner Ring—MI Series



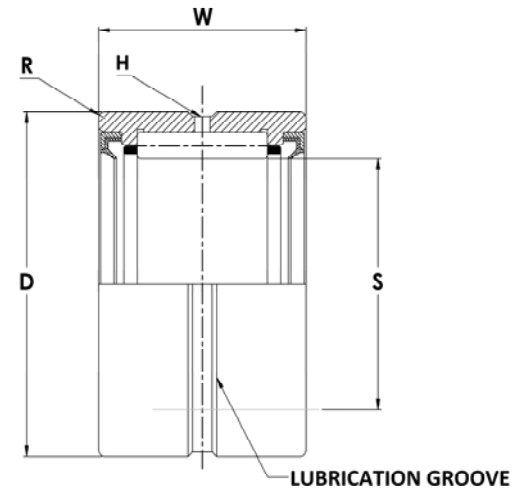
See page 1 for dimensions

| Part No.                |   | Dimensions (inch) |           |                  |           |       |           |                       |                               |  |            |           | Inner Ring Weight |
|-------------------------|---|-------------------|-----------|------------------|-----------|-------|-----------|-----------------------|-------------------------------|--|------------|-----------|-------------------|
|                         |   | B                 |           | D1               |           | W1    |           | HD                    | Ri                            | Recommended Shaft Diameter with Inner Ring |            |           |                   |
| WJB Machined Inner Ring | Mated with Outer Ring and Cage Assembly | Bore Diameter     |           | Outside Diameter |           | Width |           | Radial Lub. Hole DIA. | Max. Inner Ring Corner Radius | Rotating                                   | Stationary | Tol.      | lb                |
|                         |   | Nom               | Tol.      | Nom              | Tol.      | Nom   | Tol.      | (Ref)                 | (Ref)                         |  |            |           |                   |
| MI-6-N                  | MR-10-N                                 | 0.3750            | +0/-.0004 | 0.6245           | +0/-.0004 | 0.760 | +0/-.0005 | 0.08                  | 0.025                         | 0.3755                                     | 0.3747     | +0/-.0005 | 0.05              |
| MI-7-N                  |   | 0.4375            |           | 0.6245           |           | 0.760 |           | 0.08                  |                               | 0.4380                                     | 0.4372     |           | 0.04              |
| MI-6                    | MR-10-SS                                | 0.3750            |           | 0.6245           |           | 1.010 |           | 0.08                  |                               | 0.3755                                     | 0.3747     |           | 0.05              |
|                         | MR-10                                   | 0.3750            |           | 0.6245           |           | 1.010 |           | 0.08                  |                               | 0.3755                                     | 0.3747     |           | 0.05              |
| MI-8-N                  | MR-12-N                                 | 0.5000            | +0/-.0004 | 0.7493           | +0/-.0005 | 0.760 | +0/-.0005 | 0.08                  | 0.040                         | 0.5005                                     | 0.4997     | +0/-.0005 | 0.04              |
| MI-9-N                  |   | 0.5625            |           | 0.7493           |           | 0.760 |           | 0.08                  |                               | 0.5630                                     | 0.5623     |           | 0.04              |
| MI-8                    | MR-12-SS                                | 0.5000            |           | 0.7493           |           | 1.010 |           | 0.08                  |                               | 0.5005                                     | 0.4997     |           | 0.06              |
|                         | MR-12                                   | 0.5000            |           | 0.7493           |           | 1.010 |           | 0.08                  |                               | 0.5005                                     | 0.4997     |           | 0.06              |
| MI-10-N                 | MR-14-N                                 | 0.6250            | +0/-.0004 | 0.8743           | +0/-.0005 | 0.760 | +0/-.0005 | 0.08                  | 0.040                         | 0.6255                                     | 0.6247     | +0/-.0005 | 0.06              |
| MI-11-N                 |   | 0.6875            |           | 0.8743           |           | 0.760 |           | 0.08                  |                               | 0.6880                                     | 0.6872     |           | 0.05              |
| MI-10                   | MR-14-SS                                | 0.6250            |           | 0.8743           |           | 1.010 |           | 0.08                  |                               | 0.6255                                     | 0.6247     |           | 0.08              |
|                         | MR-14                                   | 0.6250            |           | 0.8743           |           | 1.010 |           | 0.08                  |                               | 0.6255                                     | 0.6247     |           | 0.08              |
| MI-12-N                 | MR-16-N                                 | 0.7500            | +0/-.0004 | 0.9993           | +0/-.0005 | 0.760 | +0/-.0005 | 0.08                  | 0.040                         | 0.7505                                     | 0.7497     | +0/-.0005 | 0.07              |
| MI-13-N                 |   | 0.8125            |           | 0.9993           |           | 0.760 |           | 0.08                  |                               | 0.8130                                     | 0.8121     |           | 0.07              |
| MI-12                   | MR-16-SS                                | 0.7500            |           | 0.9993           |           | 1.010 |           | 0.08                  |                               | 0.7505                                     | 0.7497     |           | 0.10              |
| MI-13                   | MR-16                                   | 0.8125            |           | 0.9993           |           | 1.010 |           | 0.08                  |                               | 0.8130                                     | 0.8121     |           | 0.11              |
| MI-14-N                 | MR-18-N                                 | 0.8750            | +0/-.0005 | 1.1240           | +0/-.0005 | 1.010 | +0/-.0005 | 0.09                  | 0.040                         | 0.8755                                     | 0.9746     | +0/-.0005 | 0.11              |
| MI-15-N                 |   | 0.9375            |           | 1.1240           |           | 1.010 |           | 0.09                  |                               | 0.9380                                     | 0.9371     |           | 0.11              |
| MI-14                   | MR-18-SS                                | 0.8750            |           | 1.1240           |           | 1.260 |           | 0.09                  |                               | 0.8755                                     | 0.8746     |           | 0.13              |
| MI-15                   | MR-18                                   | 0.9375            |           | 1.1240           |           | 1.260 |           | 0.09                  |                               | 0.8755                                     | 0.8746     |           | 0.12              |
| MI-16-N                 | MR-20-N                                 | 1.0000            | +0/-.0005 | 1.2490           | +0/-.0006 | 1.010 | +0/-.0005 | 0.09                  | 0.040                         | 1.0005                                     | 0.9996     | +0/-.0005 | 0.13              |
| MI-16                   | MR-20-SS                                | 1.0000            |           | 1.2490           |           | 1.260 |           | 0.09                  |                               | 1.0010                                     | 1.0000     |           | 0.16              |
|                         | MR-20                                   | 1.0000            |           | 1.2490           |           | 1.260 |           | 0.09                  |                               | 1.0010                                     | 1.0000     |           | 0.16              |

# Machined Type Needle Roller Bearings without inner ring — MR Series

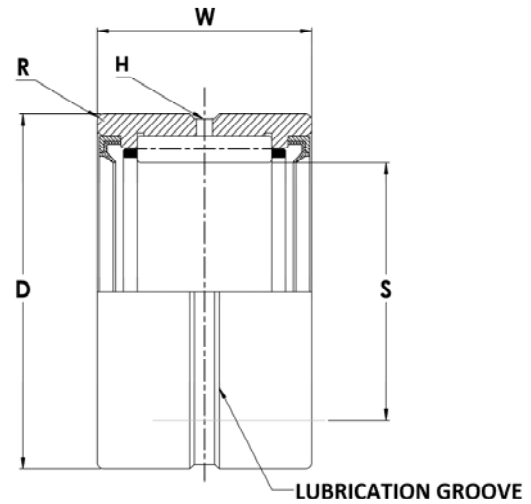
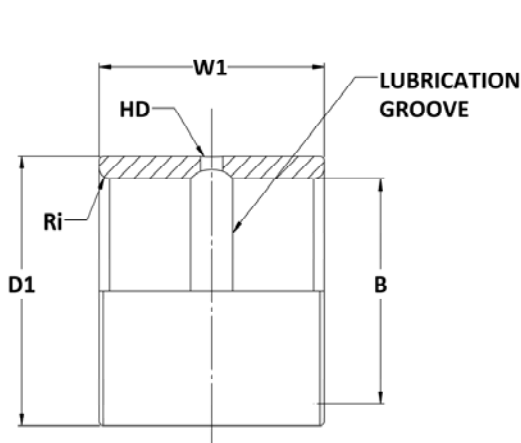


- Type:** Machined Ring with Optional Separable Inner Ring
- Rolling Elements:** Cage Guided Precision Needles  
(GCr15 or equivalent)
- Material:** Bearing Quality Steel; Hardened to HRC 59  
(GCr15 or equivalent)
- Seal Type:** Rubber Lip (NBR, RoHS 3.0 Complied)
- Lubrication:** Unsealed Bearings: Rust Preventative Oil  
Sealed Bearings: SHELL GADUS S2 or Equivalent



| Part No. | Dimensions (inch) |            |        |            |       |           |                       |                               | Limiting Speed (Oil) | Basic Dynamic Load Rating (Cr) | Basic Static Load Rating (Cor) | Outer & Roller Assembly Weight |
|----------|-------------------|------------|--------|------------|-------|-----------|-----------------------|-------------------------------|----------------------|--------------------------------|--------------------------------|--------------------------------|
|          | S                 |            | D      |            | W     |           | H                     | R                             |                      |                                |                                |                                |
|          | Nom               | Tol.       | Nom    | Tol.       | Nom   | Tol.      | Radial Lub. Hole DIA. | Max. Outer Ring Corner Radius |                      |                                |                                |                                |
| MR-22-N  | 1.3750            | +0/-0.0005 | 1.8750 | +0/-0.0006 | 1.000 | +0/-0.005 | 0.09                  | 0.04                          | 8,750                | 9,640                          | 14,700                         | 0.31                           |
| MR-22-SS |                   |            |        |            | 1.250 |           |                       |                               | 2,800                |                                |                                |                                |
| MR-22    |                   |            |        |            | 1.250 |           |                       |                               | 8,750                |                                |                                |                                |
| MR-24-N  | 1.5000            | +0/-0.0005 | 2.0625 | +0/-0.0006 | 1.000 | +0/-0.005 | 0.09                  | 0.06                          | 8,000                | 10,300                         | 15,500                         | 0.41                           |
| MR-24-SS |                   |            |        |            | 1.250 |           |                       |                               | 2,500                |                                |                                |                                |
| MR-24    |                   |            |        |            | 1.250 |           |                       |                               | 8,000                |                                |                                |                                |
| MR-26-N  | 1.6250            | +0/-0.0005 | 2.1875 | +0/-0.0006 | 1.000 | +0/-0.005 | 0.09                  | 0.06                          | 7,400                | 10,600                         | 16,400                         | 0.46                           |
| MR-26-SS |                   |            |        |            | 1.250 |           |                       |                               | 2,350                |                                |                                |                                |
| MR-26    |                   |            |        |            | 1.250 |           |                       |                               | 7,400                |                                |                                |                                |
| MR-28-N  | 1.7500            | +0/-0.0005 | 2.3125 | +0/-0.0006 | 1.000 | +0/-0.005 | 0.09                  | 0.06                          | 6,850                | 11,200                         | 18,100                         | 0.47                           |
| MR-28-SS |                   |            |        |            | 1.250 |           |                       |                               | 2,200                |                                |                                |                                |
| MR-28    |                   |            |        |            | 1.250 |           |                       |                               | 6,850                |                                |                                |                                |
| MR-30-N  | 1.8750            | +0/-0.0005 | 2.4375 | +0/-0.0006 | 1.000 | +0/-0.005 | 0.09                  | 0.06                          | 6,400                | 11,400                         | 19,000                         | 0.53                           |
| MR-30-SS |                   |            |        |            | 1.250 |           |                       |                               | 2,040                |                                |                                |                                |
| MR-30    |                   |            |        |            | 1.250 |           |                       |                               | 6,400                |                                |                                |                                |
| MR-31    | 1.9375            | +0/-0.0005 | 2.5000 | +0/-0.0006 | 1.250 | +0/-0.005 | 0.09                  | 0.06                          | 6,200                | 12,400                         | 22,400                         | 0.60                           |
| MR-32-N  | 2.0000            | +0/-0.0005 | 2.5625 | +0/-0.0006 | 1.000 | +0/-0.005 | 0.09                  | 0.06                          | 6,000                | 12,000                         | 20,700                         | 0.55                           |
| MR-32-SS |                   |            |        |            | 1.250 |           |                       |                               | 1,900                |                                |                                |                                |
| MR-32    |                   |            |        |            | 1.250 |           |                       |                               | 6,000                |                                |                                |                                |

# Machined Inner Ring—MI Series



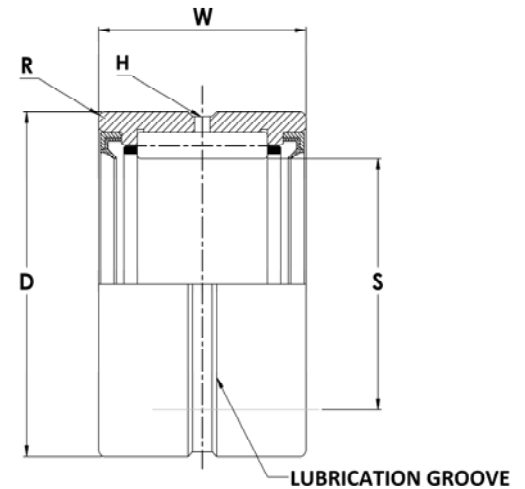
See page 3 and 5 for dimensions

| Part No.                |   | Dimensions (inch) |           |                  |           |        |           |                       |                               |  |            |           | Inner Ring Weight |
|-------------------------|---|-------------------|-----------|------------------|-----------|--------|-----------|-----------------------|-------------------------------|--|------------|-----------|-------------------|
|                         |   | B                 |           | D1               |           | W1     |           | HD                    | Ri                            | Recommended Shaft Diameter with Inner Ring |            |           |                   |
| WJB Machined Inner Ring | Mated with Outer Ring and Cage Assembly | Bore Diameter     |           | Outside Diameter |           | Width  |           | Radial Lub. Hole DIA. | Max. Inner Ring Corner Radius | Rotating                                   | Stationary | Tol.      | lb                |
|                         |   | Nom               | Tol.      | Nom              | Tol.      | Nom    | Tol.      | (Ref)                 | (Ref)                         |  |            |           |                   |
| MI-18-N                 | MR-22-N                                 | 1.1250            |           | 1.3740           |           | 1.010  |           | 0.09                  |                               | 1.1255                                     | 1.1246     |           | 0.14              |
| MI-17                   | MR-22-SS                                | 1.0625            | +0/-.0005 | 1.3740           | +0/-.0006 | 1.260  | +0/-.0005 | 0.09                  | 0.040                         | 1.0630                                     | 1.0621     | +0/-.0005 | 0.16              |
| MI-18                   | MR-22                                   | 1.1250            |           | 1.3740           |           | 1.260  |           | 0.09                  |                               | 1.1255                                     | 1.1246     |           | 0.17              |
| MI-20-N                 | MR-24-N                                 | 1.2500            |           | 1.4990           |           | 1.010  |           | 0.09                  |                               | 1.2505                                     | 1.2496     |           | 0.19              |
| MI-19                   | MR-24-SS                                | 1.2500            | +0/-.0005 | 1.4990           | +0/-.0006 | 1.260  | +0/-.0005 | 0.09                  | 0.060                         | 1.2505                                     | 1.2497     | +0/-.0005 | 0.24              |
| MI-20                   | MR-24                                   | 1.1875            |           | 1.4990           |           | 1.260  |           | 0.09                  |                               | 1.1880                                     | 1.1871     |           | 0.22              |
| MI-21-N                 | MR-26-N                                 | 1.3125            |           | 1.6240           |           | 1.010  |           | 0.09                  |                               | 1.3130                                     | 1.3121     |           | 0.20              |
| MI-21                   | MR-26-SS                                | 1.3125            | +0/-.0005 | 1.6240           | +0/-.0006 | 1.260  | +0/-.0005 | 0.09                  | 0.060                         | 1.3130                                     | 1.3122     | +0/-.0005 | 0.26              |
| MI-22-4S                | MR-26                                   | 1.3750            |           | 1.6240           |           | 1.260  |           | 0.09                  |                               | 1.3755                                     | 1.3746     |           | 0.20              |
| MI-24-N                 | MR-28-N                                 | 1.5000            |           | 1.7490           |           | 1.010  |           | 0.09                  |                               | 1.5005                                     | 1.4996     |           | 0.22              |
| MI-22                   | MR-28-SS<br>MR-28                       | 1.3750            | +0/-.0005 | 1.7490           | +0/-.0006 | 1.260  | +0/-.0005 | 0.09                  | 0.060                         | 1.3755                                     | 1.3746     | +0/-.0005 | 0.26              |
| MI-23                   |   | 1.4375            |           | 1.7490           |           | 0.260  |           | 0.09                  |                               | 1.4380                                     | 1.4371     |           | 0.27              |
| MI-24                   |   | 1.5000            |           | 1.7490           |           | 1.260  |           | 0.09                  |                               | 1.5005                                     | 1.4996     |           | 0.22              |
| MI-25-4S                | MR-30-SS                                | 1.5625            | +0/-.0005 | 1.8740           | +0/-.0006 | 1.2600 | +0/-.0005 | 0.09                  | 0.060                         | 1.5630                                     | 1.5621     | +0/-.0005 | 0.27              |
|                         | MR-30                                   | 1.5625            |           | 1.8740           |           | 1.2600 |           | 0.09                  |                               | 1.5630                                     | 1.5621     |           | 0.27              |
| MI-26-2S                | MR-31                                   | 1.6250            | +0/-.0005 | 1.9360           | +0/-.0007 | 1.260  | +0/-.0005 | 0.09                  | 0.060                         | 1.6255                                     | 1.6246     | +0/-.0005 | 0.30              |
| MI-26-N                 | MR-32-N                                 | 1.6250            | +0/-.0005 | 1.9990           | +0/-.0007 | 1.010  | +0/-.0005 | 0.09                  | 0.060                         | 1.6255                                     | 1.6246     | +0/-.0005 | 0.30              |
| MI-25                   | MR-32-SS<br>MR-32                       | 1.5625            |           | 1.9990           |           | 1.260  |           | 0.09                  |                               | 1.5630                                     | 1.5621     |           | 0.30              |
| MI-26                   |   | 1.6250            | +0/-.0005 | 1.9990           | +0/-.0007 | 1.260  | +0/-.0005 | 0.09                  | 0.060                         | 1.6255                                     | 1.6246     | +0/-.0005 | 0.38              |
| MI-27                   |   | 1.6875            |           | 1.9990           |           | 1.260  |           | 0.09                  |                               | 1.6880                                     | 1.6871     |           | 0.32              |
| MI-28-N                 | MR-36-N                                 | 1.7500            |           | 2.2490           |           | 1.510  |           | 0.13                  |                               | 1.7505                                     | 1.7496     |           | 0.63              |
| MI-28                   | MR-36-SS                                | 1.7500            | +0/-.0005 | 2.2490           | +0/-.0007 | 1.760  | +0/-.0005 | 0.13                  | 0.060                         | 1.7505                                     | 1.7497     | +0/-.0005 | 0.74              |
| MI-30                   | MR-36                                   | 1.8750            |           | 2.2490           |           | 1.760  |           | 0.13                  |                               | 1.8755                                     | 1.8746     |           | 0.85              |

# Machined Type Needle Roller Bearings without inner ring — MR Series

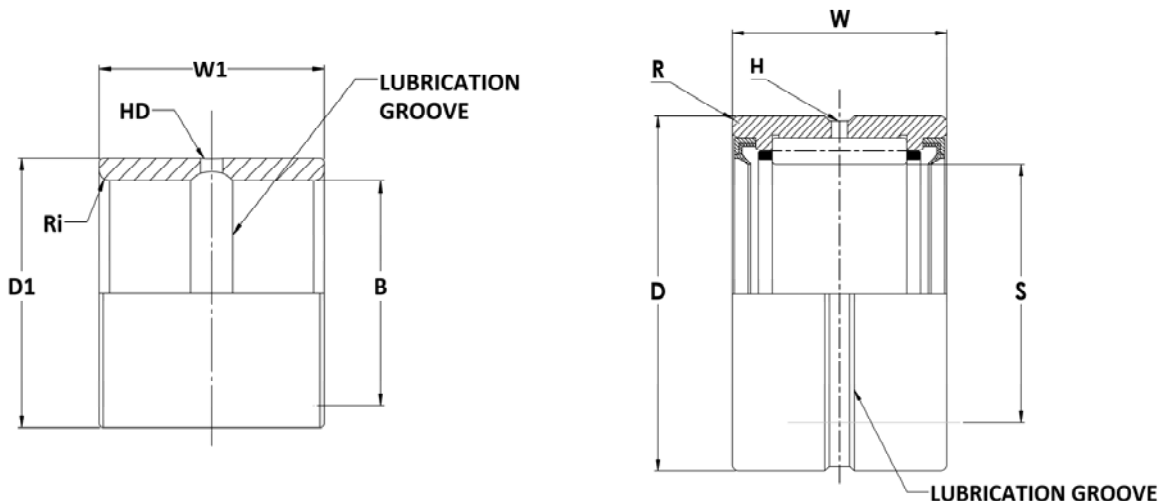


- Type:** Machined Ring with Optional Separable Inner Ring
- Rolling Elements:** Cage Guided Precision Needles  
(GCr15 or equivalent)
- Material:** Bearing Quality Steel; Hardened to HRC 59  
(GCr15 or equivalent)
- Seal Type:** Rubber Lip (NBR, RoHS 3.0 Complied)
- Lubrication:** Unsealed Bearings: Rust Preventative Oil  
Sealed Bearings: SHELL GADUS S2 or Equivalent



| Part No. | Dimensions (inch) |            |        |            |       |           |                             |                                     | Limiting Speed (Oil) | Basic Dynamic Load Rating (Cr) | Basic Static Load Rating (Cor) | Outer & Roller Assembly Weight |
|----------|-------------------|------------|--------|------------|-------|-----------|-----------------------------|-------------------------------------|----------------------|--------------------------------|--------------------------------|--------------------------------|
|          | S                 |            | D      |            | W     |           | H                           | R                                   |                      |                                |                                |                                |
|          | Nom               | Tol.       | Nom    | Tol.       | Nom   | Tol.      | Radial Lub. Hole DIA. (Ref) | Max. Outer Ring Corner Radius (Ref) |                      |                                |                                |                                |
| MR-36-N  | 2.2500            | +0/- .0005 | 3.0000 | +0/- .0006 | 1.500 | +0/- .005 | 0.13                        | 0.06                                | 5,350                | 22,400                         | 39,100                         | 1.13                           |
| MR-36-SS |                   |            |        |            | 1.750 |           |                             |                                     | 1,700                |                                |                                |                                |
| MR-36    |                   |            |        |            | 5,350 |           |                             |                                     |                      |                                |                                |                                |
| MR-40-N  | 2.5000            | +0/- .0005 | 3.2500 | +0/- .0008 | 1.500 | +0/- .005 | 0.13                        | 0.08                                | 4,800                | 23,400                         | 42,900                         | 1.23                           |
| MR-40-SS |                   |            |        |            | 1.750 |           |                             |                                     | 1,530                |                                |                                |                                |
| MR-40    |                   |            |        |            | 4,800 |           |                             |                                     | 27,200               |                                |                                |                                |
| MR-44-N  | 2.7500            | +0/- .0005 | 3.5000 | +0/- .0008 | 1.500 | +0/- .005 | 0.13                        | 0.08                                | 4,370                | 24,500                         | 46,700                         | 1.36                           |
| MR-44-SS |                   |            |        |            | 1.750 |           |                             |                                     | 1,390                |                                |                                |                                |
| MR-44    |                   |            |        |            | 4,370 |           |                             |                                     | 28,400               |                                |                                |                                |
| MR-48-N  | 3.0000            | +0/- .0005 | 3.7500 | +0/- .0008 | 1.500 | +0/- .005 | 0.13                        | 0.08                                | 4,000                | 26,100                         | 52,300                         | 1.53                           |
| MR-48-SS |                   |            |        |            | 1.750 |           |                             |                                     | 1,270                |                                |                                |                                |
| MR-48    |                   |            |        |            | 4,000 |           |                             |                                     | 30,300               |                                |                                |                                |
| MR-52-SS | 3.2500            | +0/- .0005 | 4.2500 | +0/- .0008 | 1.750 | +0/- .005 | 0.19                        | 0.08                                | 1,175                | 25,100                         | 54,300                         | 2.64                           |
| MR-52    |                   |            |        |            |       |           |                             |                                     | 3,700                |                                |                                |                                |
| MR-56-N  | 3.5000            | +0/- .0005 | 4.5000 | +0/- .0008 | 1.750 | +0/- .005 | 0.19                        | 0.08                                | 3,440                | 31,300                         | 71,600                         | 2.88                           |
| MR-56-SS |                   |            |        |            | 2.000 |           |                             |                                     | 1,090                |                                |                                |                                |
| MR-56    |                   |            |        |            | 3,440 |           |                             |                                     | 35,900               |                                |                                |                                |
| MR-60-SS | 3.7500            | +0/- .0005 | 4.7500 | +0/- .0008 | 2.000 | +0/- .005 | 0.19                        | 0.10                                | 1,020                | 31,600                         | 74,700                         | 3.38                           |
| MR-60    |                   |            |        |            |       |           |                             |                                     | 3,200                |                                |                                |                                |

# Machined Inner Ring—MI Series



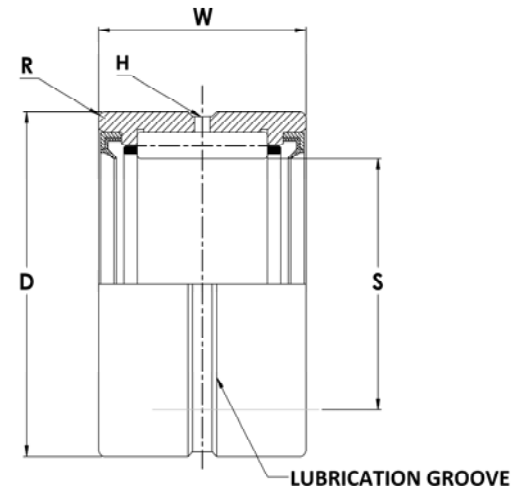
See page 5 and 7 for dimensions

| Part No.                |   | Dimensions (inch) |            |                  |            |        |           |                       |                               |  |            |            | Inner Ring Weight |
|-------------------------|---|-------------------|------------|------------------|------------|--------|-----------|-----------------------|-------------------------------|--|------------|------------|-------------------|
|                         |   | B                 |            | D1               |            | W1     |           | HD                    | Ri                            | Recommended Shaft Diameter with Inner Ring |            |            |                   |
| WJB Machined Inner Ring | Mated with Outer Ring and Cage Assembly | Bore Diameter     |            | Outside Diameter |            | Width  |           | Radial Lub. Hole DIA. | Max. Inner Ring Corner Radius | Rotating                                   | Stationary | Tol.       | lb                |
|                         |   | Nom               | Tol.       | Nom              | Tol.       | Nom    | Tol.      | (Ref)                 | (Ref)                         |  |            |            |                   |
| MI-32-N                 | MR-40-N                                 | 2.0000            | +0/-0.0005 | 2.2490           | +0/-0.0007 | 1.510  | +0/-0.005 | 0.13                  | 0.080                         | 2.0005                                     | 1.9996     | +0/-0.0005 | 0.74              |
| MI-31                   | MR-40-SS<br>MR-40                       | 1.9375            | +0/-0.0005 | 2.2490           | +0/-0.0007 | 1.510  | +0/-0.005 | 0.13                  | 0.080                         | 1.9380                                     | 1.9371     | +0/-0.0005 | 0.97              |
| MI-32                   |   | 2.0000            |            | 2.2490           |            | 1.760  |           | 0.13                  |                               | 2.0005                                     | 1.9996     |            | 0.87              |
| MI-34                   |   | 2.1250            |            | +0/-0.0006       |            | 2.2490 |           | 1.760                 |                               | 0.13                                       | 2.1258     |            | 2.1247            |
| MI-36-N                 | MR-44-N                                 | 2.2500            | +0/-0.0006 | 2.7490           | +0/-0.0007 | 1.510  | +0/-0.005 | 0.13                  | 0.080                         | 2.2508                                     | 2.2497     | +0/-0.0008 | 0.83              |
| MI-35                   | MR-44-SS                                | 2.1875            |            | 2.7490           |            | 1.510  |           | 0.13                  |                               | 2.1883                                     | 2.1872     |            | 1.06              |
| MI-36                   | MR-44                                   | 2.2500            |            | 2.7490           |            | 1.760  |           | 0.13                  |                               | 2.2508                                     | 2.2497     |            | 0.97              |
| MI-40-N                 | MR-48-N                                 | 2.5000            | +0/-0.0006 | 2.9989           | +0/-0.0007 | 1.510  | +0/-0.005 | 0.13                  | 0.080                         | 2.5008                                     | 2.4997     | +0/-0.0008 | 0.92              |
| MI-38                   | MR-48-SS<br>MR-48                       | 2.3750            | +0/-0.0006 | 2.9989           | +0/-0.0007 | 1.760  | +0/-0.005 | 0.13                  | 0.080                         | 2.3758                                     | 2.3747     | +0/-0.0008 | 1.28              |
| MI-39                   |   | 2.4375            |            | 2.9989           |            | 1.510  |           | 0.13                  |                               | 2.4383                                     | 2.4372     |            | 1.05              |
| MI-40                   |   | 2.5000            |            | 2.9989           |            | 1.760  |           | 0.13                  |                               | 2.5008                                     | 2.4997     |            | 1.07              |
| MI-42                   | MR-52-SS<br>MR-52                       | 2.6250            | +0/-0.0006 | 3.2487           | +0/-0.0009 | 1.760  | +0/-0.005 | 0.19                  | 0.080                         | 2.6258                                     | 2.6247     | +0/-0.0008 | 1.12              |
| MI-44                   |   | 2.7500            |            | 3.2487           |            | 1.760  |           | 0.19                  |                               | 2.7508                                     | 2.7497     |            | 1.17              |
| MI-48-N                 | MR-56-N                                 | 3.0000            | +0/-0.0006 | 3.4987           | +0/-0.0009 | 1.7600 | +0/-0.005 | 0.19                  | 0.080                         | 3.0008                                     | 2.9997     | +0/-0.0008 | 1.32              |
| MI-46                   | MR-56-SS<br>MR-56                       | 2.8750            | +0/-0.0006 | 3.4987           | +0/-0.0009 | 2.0100 | +0/-0.005 | 0.19                  | 0.080                         | 2.8758                                     | 2.8747     | +0/-0.0008 | 1.30              |
| MI-47                   |   | 2.9375            |            | 3.4987           |            | 2.0100 |           | 0.19                  |                               | 2.9383                                     | 2.9372     |            | 1.58              |
| MI-48                   |   | 3.0000            |            | 3.4987           |            | 2.0100 |           | 0.19                  |                               | 3.0008                                     | 2.9997     |            | 1.43              |
| MI-50                   | MR-60-SS<br>MR-60                       | 3.1250            | +0/-0.0006 | 3.7487           | +0/-0.0009 | 2.010  | +0/-0.005 | 0.19                  | 0.100                         | 3.1260                                     | 3.1246     | +0/-0.001  | 1.88              |
| MI-52                   |   | 3.2500            |            | 3.7487           |            | 2.010  |           | 0.19                  |                               | 3.2510                                     | 3.2496     |            | 1.52              |
| MI-54                   | MR-64-SS<br>MR-64                       | 3.3750            | +0/-0.0008 | 3.9985           | +0/-0.0009 | 2.010  | +0/-0.005 | 0.19                  | 0.100                         | 3.3760                                     | 3.3746     | +0/-0.001  | 2.04              |
| MI-56                   |   | 3.5000            |            | 3.9985           |            | 2.010  |           | 0.19                  |                               | 3.5010                                     | 3.4996     |            | 1.63              |

# Machined Type Needle Roller Bearings without inner ring — MR Series

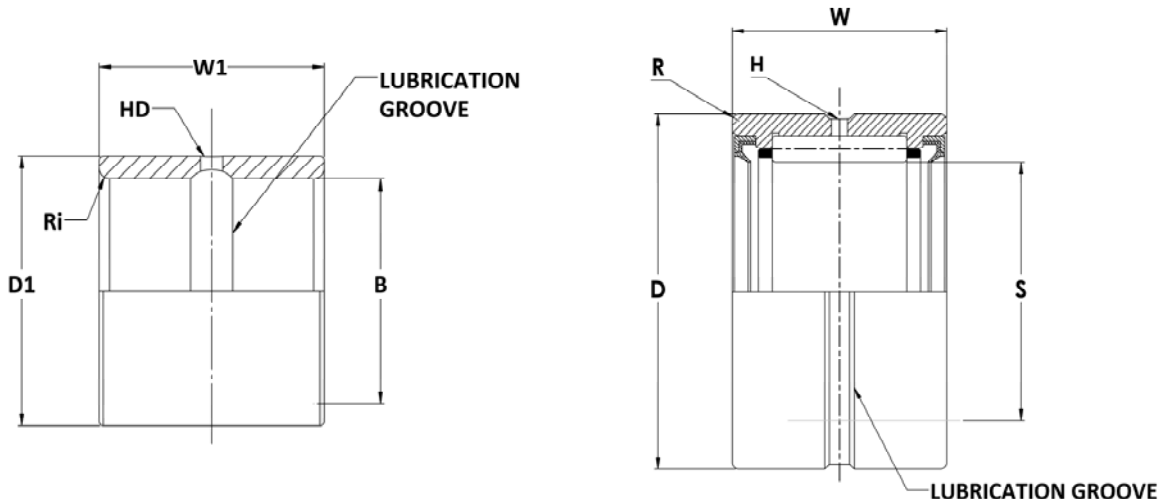


**Type:** Machined Ring with Optional Separable Inner Ring  
**Rolling Elements:** Cage Guided Precision Needles  
 (GCr15 or equivalent)  
**Material:** Bearing Quality Steel; Hardened to HRC 59  
 (GCr15 or equivalent)  
**Seal Type:** Rubber Lip (NBR, RoHS 3.0 Complied)  
**Lubrication:** Unsealed Bearings: Rust Preventative Oil  
 Sealed Bearings: SHELL GADUS S2 or Equivalent



| Part No.                         | Dimensions (inch) |           |                  |           |       |          |                       |                               | Limiting Speed (Oil) | Basic Dynamic Load Rating (Cr) | Basic Static Load Rating (Cor) | Outer & Roller Assembly Weight |
|----------------------------------|-------------------|-----------|------------------|-----------|-------|----------|-----------------------|-------------------------------|----------------------|--------------------------------|--------------------------------|--------------------------------|
|                                  | S                 |           | D                |           | W     |          | H                     | R                             |                      |                                |                                |                                |
| WJB Outer Ring & Roller Assembly | Shaft Diameter    |           | Outside Diameter |           | Width |          | Radial Lub. Hole DIA. | Max. Outer Ring Corner Radius | RPM                  | lb                             | lb                             | lb                             |
|                                  | Nom               | Tol.      | Nom              | Tol.      | Nom   | Tol.     | (Ref)                 | (Ref)                         |                      |                                |                                |                                |
| MR-64-SS                         | 4.0000            | +0/-.0007 | 5.0000           | +0/-.001  | 2.000 | +0/-.005 | 0.19                  | 0.10                          | 950                  | 32,000                         | 80,400                         | 3.56                           |
| MR-64                            |                   |           |                  |           |       |          |                       |                               | 3,000                | 38,000                         | 93,800                         | 3.56                           |
| MR-68-SS                         | 4.2500            | +0/-.0007 | 5.2500           | +0/-.001  | 2.000 | +0/-.005 | 0.19                  | 0.10                          | 900                  | 34,000                         | 86,200                         | 3.74                           |
| MR-68                            |                   |           |                  |           |       |          |                       |                               | 2,820                | 39,500                         | 101,000                        | 3.74                           |
| MR-72                            | 4.5000            | +0/-.0007 | 6.0000           | +0/-.001  | 2.250 | +0/-.005 | 0.19                  | 0.10                          | 2,660                | 60,300                         | 130,000                        | 7.13                           |
| MR-80                            | 5.0000            | +0/-.0007 | 6.5000           | +0/-.001  | 2.250 | +0/-.005 | 0.19                  | 0.10                          | 800                  | 64,600                         | 148,000                        | 7.78                           |
| MR-88-N                          | 5.5000            | +0/-.0007 | 7.0000           | +0/-.001  | 2.500 | +0/-.005 | 0.19                  | 0.10                          | 2,180                | 70,200                         | 169,800                        | 10.40                          |
| MR-88                            |                   |           |                  |           | 3.000 |          |                       |                               | 2,180                | 85,700                         | 222,000                        | 11.82                          |
| MR-96-N                          | 6.0000            | +0/-.001  | 7.5000           | +0/-.0012 | 2.500 | +0/-.005 | 0.25                  | 0.12                          | 2,000                | 71,000                         | 177,000                        | 11.08                          |
| MR-96                            |                   |           |                  |           | 3.000 |          |                       |                               | 2,000                | 86,600                         | 228,000                        | 12.69                          |
| MR-104-N                         | 6.5000            | +0/-.001  | 8.0000           | +0/-.0012 | 2.500 | +0/-.005 | 0.25                  | 0.12                          | 1,850                | 71,700                         | 183,000                        | 11.85                          |
| MR-104                           |                   |           |                  |           | 3.000 |          |                       |                               | 1,850                | 87,500                         | 237,000                        | 13.55                          |
| MR-116                           | 7.2500            | +0/-.001  | 9.1250           | +0/-.0012 | 3.000 | +0/-.005 | 0.25                  | 0.12                          | 1,680                | 95,200                         | 234,000                        | 19.32                          |
| MR-124                           | 7.7500            | +0/-.001  | 9.6250           | +0/-.0012 | 3.000 | +0/-.005 | 0.25                  | 0.12                          | 1,530                | 99,100                         | 252,000                        | 19.80                          |
| MR-132                           | 8.2500            | +0/-.001  | 10.1250          | +0/-.0012 | 3.000 | +0/-.005 | 0.25                  | 0.12                          | 1,460                | 103,000                        | 270,000                        | 21.63                          |
| MR-140                           | 8.7500            | +0/-.001  | 10.6250          | +0/-.0014 | 3.000 | +0/-.005 | 0.25                  | 0.16                          | 1,370                | 104,000                        | 280,000                        | 22.73                          |
| MR-148                           | 9.2500            | +0/-.001  | 11.1250          | +0/-.0014 | 3.000 | +0/-.005 | 0.25                  | 0.16                          | 1,300                | 108,000                        | 292,000                        | 24.90                          |

# Machined Inner Ring—MI Series



See page 7 for dimensions

| Part No.                |   | Dimensions (inch) |            |                  |            |       |           |                       |                               |  |            |            | Inner Ring Weight |
|-------------------------|---|-------------------|------------|------------------|------------|-------|-----------|-----------------------|-------------------------------|--|------------|------------|-------------------|
|                         |   | B                 |            | D1               |            | W1    |           | HD                    | Ri                            | Recommended Shaft Diameter with Inner Ring |            |            |                   |
| WJB Machined Inner Ring | Mated with Outer Ring and Cage Assembly | Bore Diameter     |            | Outside Diameter |            | Width |           | Radial Lub. Hole DIA. | Max. Inner Ring Corner Radius | Rotating                                   | Stationary | Tol.       | lb                |
|                         |   | Nom               | Tol.       | Nom              | Tol.       | Nom   | Tol.      | (Ref)                 | (Ref)                         |  |            |            |                   |
| MI-58                   | MR-68-SS                                | 3.6250            | +0/-0.0008 | 4.2485           | +0/-0.0009 | 2.010 | +0/-0.005 | 0.19                  | 0.100                         | 3.6260                                     | 3.6246     | +0/-0.001  | 1.70              |
| MI-60                   | MR-68                                   | 3.7500            |            | 4.2485           |            | 2.010 |           | 0.19                  |                               | 3.7510                                     | 3.7496     |            | 1.75              |
| MI-62                   | MR-72                                   | 3.8750            | +0/-0.0008 | 4.4985           | +0/-0.0009 | 2.260 | +0/-0.005 | 0.19                  | 0.100                         | 3.8760                                     | 3.8746     | +0/-0.001  | 3.25              |
| MI-64                   | MR-80                                   | 4.0000            | +0/-0.0008 | 4.9985           | +0/-0.001  | 2.260 | +0/-0.005 | 0.19                  | 0.100                         | 4.0010                                     | 3.9996     | +0/-0.001  | 4.38              |
| MI-68                   |   | 4.2500            |            | 4.9985           |            | 2.260 |           | 0.19                  |                               | 4.2510                                     | 4.2496     |            | 5.24              |
| MI-72-N                 | MR-88-N                                 | 4.5000            | +0/-0.0008 | 5.4985           | +0/-0.001  | 2.515 | +0/-0.005 | 0.19                  | 0.100                         | 4.5010                                     | 4.4995     | +0/-0.001  | 5.43              |
| MI-72                   | MR-88                                   | 4.5000            |            | 5.4985           |            | 3.015 |           | 0.19                  |                               | 4.5010                                     | 4.4995     |            | 5.97              |
| MI-80-N                 | MR-96-N                                 | 5.0000            | +0/-0.001  | 5.9983           | +0/-0.001  | 2.515 | +0/-0.005 | 0.25                  | 0.120                         | 5.0010                                     | 4.9995     | +0/-0.001  | 5.97              |
| MI-80                   | MR-96                                   | 5.0000            |            | 5.9983           |            | 3.015 |           | 0.25                  |                               | 5.0010                                     | 4.9995     |            | 7.12              |
| MI-88-N                 | MR-104-N                                | 5.5000            | +0/-0.001  | 6.4983           | +0/-0.001  | 2.515 | +0/-0.005 | 0.25                  | 0.120                         | 5.5010                                     | 5.4995     | +0/-0.001  | 6.30              |
| MI-88                   | MR-104                                  | 5.5000            |            | 6.4983           |            | 3.015 |           | 0.25                  |                               | 5.5010                                     | 5.4995     |            | 7.56              |
| MI-96                   | MR-116                                  | 6.0000            | +0/-0.001  | 7.2481           | +0/-0.0012 | 3.015 | +0/-0.005 | 0.25                  | 0.120                         | 6.0012                                     | 5.9995     | +0/-0.0012 | 11.06             |
| MI-104                  | MR-124                                  | 6.5000            | +0/-0.001  | 7.7481           | +0/-0.0012 | 3.015 | +0/-0.005 | 0.25                  | 0.120                         | 6.5012                                     | 6.4995     | +0/-0.0012 | 11.99             |
| MI-112                  | MR-132                                  | 7.0000            | +0/-0.001  | 8.2481           | +0/-0.0012 | 3.015 | +0/-0.005 | 0.25                  | 0.120                         | 7.0012                                     | 6.9995     | +0/-0.0012 | 12.70             |
| MI-120                  | MR-140                                  | 7.5000            | +0/-0.0012 | 8.7480           | +0/-0.0012 | 3.015 | +0/-0.005 | 0.25                  | 0.160                         | 7.5012                                     | 7.4995     | +0/-0.0012 | 13.60             |
| MI-128                  | MR-148                                  | 8.0000            | +0/-0.0012 | 9.2480           | +0/-0.0012 | 3.015 | +0/-0.005 | 0.25                  | 0.160                         | 8.0012                                     | 7.9995     | +0/-0.0012 | 14.40             |