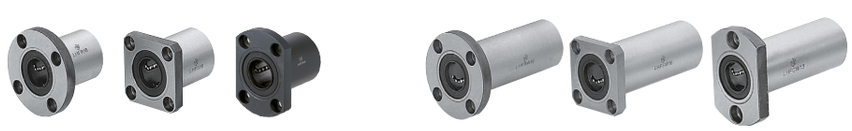
# Linear Bushings

Linear Bushings



| Product Name | Flanged, Single | Flanged, Double |
|---|---|---|
| Page | 305 | 306 |

| Flanged, Single, Pilot | Flanged, Double, Pilot | Center Flanged Double |
|---|---|---|
| 307 | 308 | 309 |

| Flanged, Medium | Flanged, Long |
|---|---|
| 311, 312 | 313, 314 |

| Straight, Single/Double | Straight, Short/Medium | Straight, Compact |
|---|---|---|
| 315, 316 | 317 | 318 |

| Wide Block Type | Linear Bushings with Dowel Holes, Wide Blocks | Shaft-sliding Linear Bushing Housing Units |
|---|---|---|
| 319, 320 | 325 | 324 |

| Tall Block Type | Linear Bushings with Dowel Holes, Tall Blocks | Tall Blocks - Compact |
|---|---|---|
| 321~323 | 326 | 321, 322 |

| Linear Bushings with Clamp Lever, Wide Blocks | Linear Bushings with Clamp Lever, Tall Blocks | Linear Bushings with Clamp Lever, Flanged |
|---|---|---|
| 328 | 327 | 329 |

| Linear Bushings with Lubrication Unit MX - Straight | Linear Bushings with Lubrication Unit MX, Flanged | Linear Bushings with Lubrication Unit MX, Flanged, Pilot | Linear Bushings with Lubrication Unit MX, Center Flanged |
|---|---|---|---|
| 332 | 332 | 334 | 333 |

| Linear Bushings with Lubrication Unit MX, Wide Blocks | Linear Bushings with Lubrication Unit MX, Tall Blocks | Linear Ball Bushings |
|---|---|---|
| 335 | 335 | 336 |

| Height-adjusting Spacers for Flanged Bushings | Fixing Plates | Spacers | Height Adjustable Linear Bushings |
|---|---|---|---|
| 330 | 330 | 330 | 309 |

## Recommended by our product specialist

## MISUMI's Flanged/Housing Unit Series

■ Flanged Type

■ Housing Units
Tall Block Type

### Benefits

① **Reduced manufacturing steps**

Substantially reduces linear bushing assembly steps.

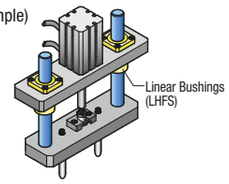
② **Wide variety**

Many configuration variations are provided to match the design needs.

③ **Low price**

Offers the products at affordable prices due to the continuous cost reduction.

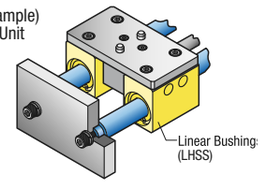
(App. Example)
Flanged




[Vertical motion unit with a cylinder as the motion source]

Adoption of Flanged Type enables easy mounting by merely screw mounting the flange.

(App. Example)
Housing Unit




[Linear motion mechanism with linear shafts and housing]

Adoption of Housing Units reduces linear bushing assembly steps.

# Linear Bushing Products Overview

## Quality

**Manufacturing at the Suruga Production Platform, which has a outstanding machining technology.**

***The company offers safe and stable products through its quality assurance system.***


- Company Name SURUGA Production Platform Corporation
- HQ 505 Nanatsu Shinya, Shimizu-ku, Shizuoka-shi, Shizuoka-ken ZIP424-8566
- Founded May 8th, 1964

The Suruga Production Platform of the Misumi Group has expanded its business with "Precision Machining Technology" which requires micron-level accuracies. Besides the Press Die Components including the punches and dies which account for the top share within the domestic market, the company also manufactures optical related equipment and FA related equipment. With a focus on global expansion, the company has established offices in Vietnam, United States, South Korea, Thailand and Poland.

### Thorough quality assurance system by performing total inspection

| I.D. dim. Inspection | O.D. dim. Inspection | Ball Bearing Inspection | Slide Motion Inspection |
|---|---|---|---|
|  |  |  |  |

## Line-up

### Industry Standard — Industry standard variety are fully lined-up.

| Shape / Length | Flanged | | | Straight | Housing Unit | |
|---|---|---|---|---|---|---|
| | Standard | Pilot | Center | Standard | Wide Blocks | Tall Blocks |
| Single |  |  | - |  |  |  |
| Double |  |  |  |  |  |  |
| Long |  |  | - | - | - | - |

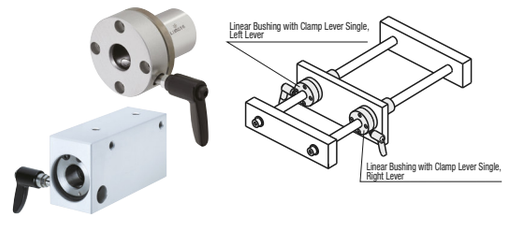
### MISUMI Originals — Convenience not seen with others.

#### ■Lubrication Unit MX Series····· Maintenance Free

Lubrication dispensed by the Lubrication Unit MX.

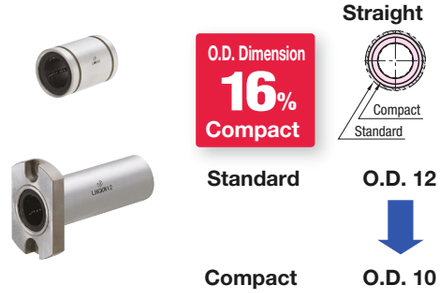

#### ■With Clamps····· Position Adjustments

The linear shaft is clamped by the internal nut as the lever is rotated.




#### ■Compact Series····· Space Saving

More compact O.D. than the standard.




#### ■Shaft-sliding Linear Bushing Housing Units····· Height Adjustments

Mounting surface to shaft center height selectable

**Reduce component counts and assembly steps**

- Height adjustment spacer not needed, reduce component counts!
- Spacer installation step is eliminated!

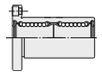
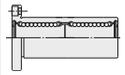
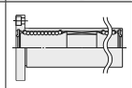
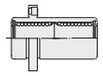
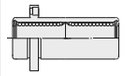
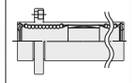
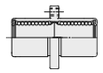
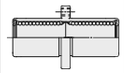
**Reduce costs**

- Spacer costs eliminated!
- Low price archived by extruded material!

# Linear Bushings - Overview

## ■Flanged

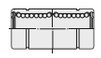
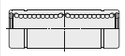
**Features:** Easy to assemble with bolt-on flanges.

| Type | | Diagram | | | | | Page |
|---|---|---|---|---|---|---|---|
| | | Short | Single | Medium | Double | Long | |
| Standard Flange |  | - |  Compact MX-equipped |  |  Compact MX-equipped |  | P.305, 306, 311, 312, 313, 314 |
| Pilot Flange |  | - |  MX-equipped |  |  MX-equipped |  | P.307, 308, 311, 312, 313, 314 |
| Center Flange |  | - | - |  |  MX-equipped | - | P.309, 312 |

Compact : Compact smaller than the Standard is available.
MX-equipped : Long Term Maintenance Free Lubrication Unit MX Type is also provided.

## ■Straight

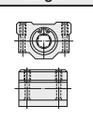
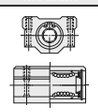
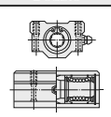
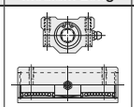
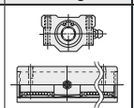
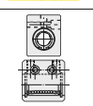
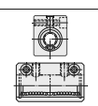
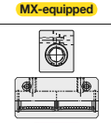
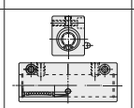
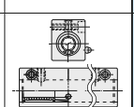
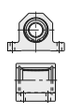
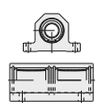
**Features:** The most popular Linear Bushing style.

| Type | | Diagram | | | | | Page |
|---|---|---|---|---|---|---|---|
| | | Short | Single | Medium | Double | Long | |
| Straight |  |  |  Compact MX-equipped |  |  Compact MX-equipped | - | P.315~318 |

Compact : Compact smaller than the Standard is available.
MX-equipped : Long Term Maintenance Free Lubrication Unit MX Type is also provided.

## ■Housing Unit Type

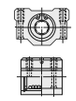
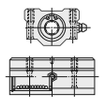
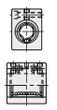
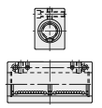
**Features:** A linear bushing is housed in an aluminum body. Contributes to parts count and manufacturing step reductions.

| Type | | Diagram | | | | | Page |
|---|---|---|---|---|---|---|---|
| | | Single | Medium | Double | Medium Long | Long | |
| Wide Blocks |  |  MX-equipped |  |  MX-equipped |  |  | P.319, 320 |
| Tall Blocks |  |  Compact MX-equipped |  |  Compact MX-equipped |  |  | P.321~323 |
| Shaft-sliding Type |  |  | - |  | - | - | P.324 |

Compact : Compact smaller than the Standard is available.
MX-equipped : Long Term Maintenance Free Lubrication Unit MX Type is also provided.

## ■Linear Bushing Housing Units with Dowel Holes

**Features:** The dowel holes can be used to locate the housings, reducing machining steps.

| Type | | Diagram | | | | | Page |
|---|---|---|---|---|---|---|---|
| | | Single | Medium | Double | Medium Long | Long | |
| Wide Blocks |  |  | - |  | - | - | P.325 |
| Tall Blocks |  |  | - |  | - | - | P.326 |

## ■Linear Bushings with Clamp Lever

**Features:** The clamp enables positioning freely, and reduces component counts and machining steps.

| Type | | Diagram | | | | | Page |
|---|---|---|---|---|---|---|---|
| | | Single | Medium | Double | Medium Long | Long | |
| Wide Blocks |  |  | - |  | - | - | P.328 |
| Tall Blocks |  |  | - |  | - | - | P.327 |
| Standard Flange |  |  | - |  | - | - | P.329 |

## ■Linear Ball Bushings

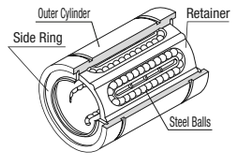
**Features:** Motion mechanism utilizing rolling balls, capable of linear and rotary motion.

| Type | | Diagram | | | | | Page |
|---|---|---|---|---|---|---|---|
| | | Single | Medium | Double | Medium Long | Long | |
| Linear Ball Bushings Straight |  |  | - |  | - | - | P.336 |
| Linear Ball Bushings Standard Flange |  |  | - |  | - | - | P.336 |

# Linear Bushings

## Cautions on Selection and Usage / Various Greases

### Structure of Linear Bushings

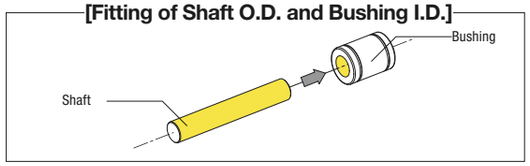



- Linear Bushings are used in combination with Linear Shafts, and it is the linear motion mechanism utilizing rolling steel balls for unlimited linear motion.
- Linear bushings imparts unlimited stroke linear motion on shafts by steel balls recirculating within the raceway grooves formed by the outer cylinder and retainer.
- Can obtain linear motion with lower friction and high accuracy compared to slide bearings, and used for many applications such as transfer equipment and semiconductor manufacturing systems.

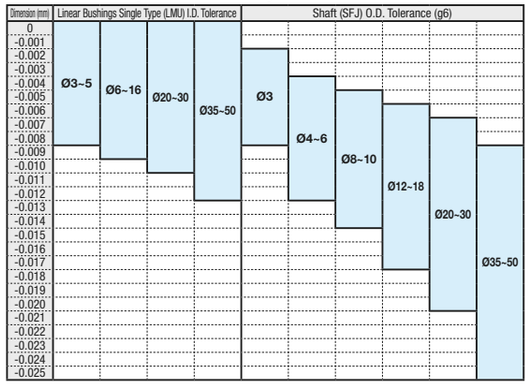
### Cautions on Selection and Usage

#### Fitting Design

**[Fitting of Shaft O.D. and Bushing I.D.]**

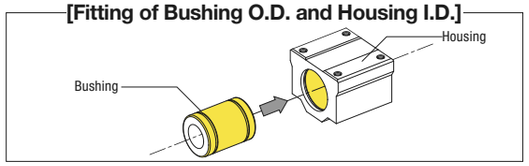



Reference: Tolerance range of I.D. of linear bushings and O.D. of shafts made by MISUMI




**For MISUMI linear bushings, use in combination with MISUMI shafts (hardened with g6 tolerance) is recommended.**

**[Fitting of Bushing O.D. and Housing I.D.]**




Reference: Tolerance range of O.D. of linear bushings and diameter of housing made by MISUMI

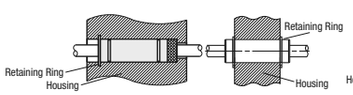
| I.D. dr | Product O.D. (D) | Product O.D. (D) Tolerance | Customer's design Housing Dia. | Customer's design Housing Dia. Tolerance H7 |
|---|---|---|---|---|
| 3 | 7 | 0 - 0.009 | 7 | +0.015 0 |
| 4 | 8 | | 8 | |
| 5 | 10 | | 10 | |
| 6 | 12 | 0 - 0.011 | 12 | +0.018 0 |
| 8 | 15 | | 15 | |
| 10 | 19 | 0 - 0.013 | 19 | +0.021 0 |
| 12 | 21 | | 21 | |
| 13 | 23 | | 23 | |
| 16 | 28 | | 28 | |
| 20 | 32 | 0 - 0.016 | 32 | +0.025 0 |
| 25 | 40 | | 40 | |
| 30 | 45 | | 45 | |
| 35 | 52 | 0 - 0.019 | 52 | +0.030 0 |
| 40 | 60 | | 60 | |
| 50 | 80 | | 80 | |

**For MISUMI Linear Bushings, mounting Housing of H7 tolerance is recommended. Bushing and Housing will be clearance fit.**

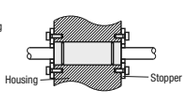
#### Selection / Assembly

①Use Retaining Ring (Snap Ring), Stoppers, etc., when mounting Linear Bushings and Housing.

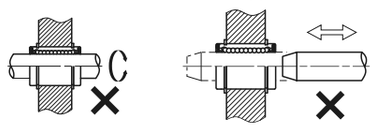
■ Mounting with Retaining Ring



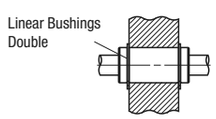

■ Mounting with Stoppers



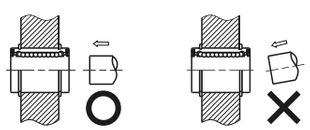

②Linear Bushings are not suitable for rotating motion and uses that need repetitive insertion and extraction from shafts.Forced use may prove to be the cause of damage.



③If large moment load (offset load) is to be applied, Short/Single Type Linear Bushings are not suitable. Use of Double Type or Multiple Linear Bushings is recommended.




④When assembling with linear shafts, forcing the shaft into the bushing with angular misalignment may cause the ball retainers to deform and balls to fall out. Be sure to align the centers and insert the shaft gently.



#### Lubrication and Maintenance

**• At the time of delivery**

Other than the MX Lubrication Units, MISUMI Linear Bushings are applied with Anti-rust Oil harmless to the bearing lubrication greases. After de-greasing the Antirust Oil, application of grease is recommended.
L, G, and H Grease filled types are also available. The MX Lubrication Units are filled with lithium soap-based grease.

**• Maintenance**

Before usage, apply grease to the ball rows within the Linear bushings, then periodically apply grease during the use. The grease has an effect of reducing friction by forming a layer between the balls and shaft rolling surfaces, preventing seizures. Grease loss and deterioration will cause shorter life of linear guides.

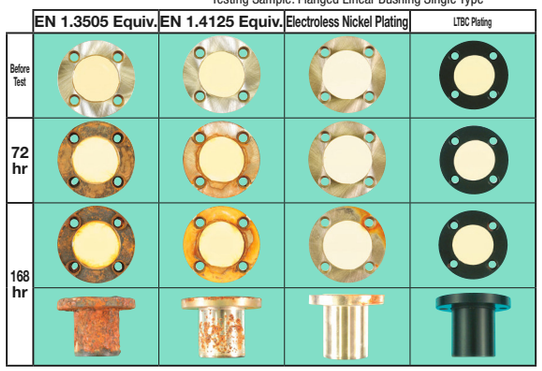
Recommended Grease: Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu).
Recommended Greasing Interval: Normally 6 months
* Every 3 month when travel distance is extensive, or every 1000km.

#### Antirust Performance

**(Ref. Data)**

Antirust Performance Comparison Test

Salt water spray testing method conforms to JIS H8502.
Testing Sample: Flanged Linear Bushing Single Type




■Linear Bushing Models Applicable to LTBC Plating

| Straight | Applicable I.D. | Page |
|---|---|---|
| Single LMUR | Ø3~Ø30 | P.315,316 |
| Double LMUWR | Ø5~Ø30 | |

| Flanged Type | Applicable I.D. | Page |
|---|---|---|
| Single LHF□R | Ø6~Ø30 | P.305 |
| Double LHF□WR | | P.306 |

* For details, refer to each page.

#### LTBC Plating

Linear Bushings: LMUR12
Linear Shafts : RSFJ12

- LTBC Plating on linear bushings is 5μm of fluoropolymer layer chemically deposited as a black film, and it has a long-lasting rust prevention effect.
- Additionally, the coating is resistant to cracking from extreme and repeated bending.
- Low temperature black chrome plated shafts are suitable for places where rusting or reflection of light is undesirable.

(Note) No surface treatment is applied to I.D. surface of low temperature black chrome plated linear bushings.
* Photograph shows the condition of Linear Bushing after Sliding Test
(Sliding Test Conditions)
50km sliding test was conducted with a 412N load on the linear bushing.
No performance degradation after the test.

#### Grease Service

Service to apply greases shown below at the time of shipping.

| Type | Product Name | Main Features |
|---|---|---|
| L Type | ET–100K (Made by Kyodo Yushi) | Superior heat resistance and oxidation stability. Also high adhesion and cohesion with limited splash or leakage. |
| G Type | LG2 (Made by NSK Ltd.) | Suitable for clean environment due to low particle generation grease. Also good anti-rusting characteristics. |
| H Type | FGL(Lubriplate®) | Suitable for food, beverage and pharmaceutical industries. (NSF H-1 Reg. NO.043534) |

■Products with Filled Grease Options

| Applicable Products | Shaft Dia. dr | Unit Price (Price for Grease Filling Service) Shaft Dia. dr ≤10 | 12≤ Shaft Dia. dr ≤30 | 35≤ Shaft Dia. dr |
|---|---|---|---|---|
| P.305~P.335 Linear Bushing Related (?)Products below are excluded. ・Linear bushings without seals ・Linear Ball Bushings P.336 | 3~50 | | | |

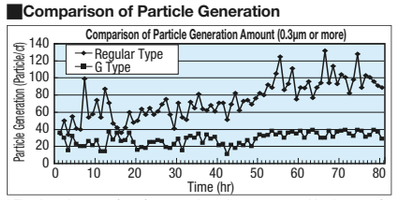
Ordering Example — Part Number
- LMU12L (L Type Greased)
- LMU12G (G Type Greased)
- LMU12H (H Type Greased)

(?)To place an order, add L, G, or H after Part Number of Regular Type.

■Grease Performance

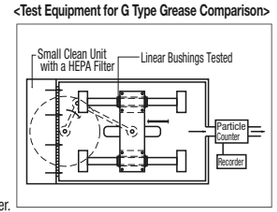
| | Item | Conditions | Unit | Measurement Method | L Type | G Type | H Type |
|---|---|---|---|---|---|---|---|
| Grease Performance | Thickener | - | - | - | Aromatic Diurea | Lithium Type | Aluminum Complex Soap |
| | Base Oil | - | - | - | Ether Synthetic Oil | Mineral Oil + Synthetic Hydrocarbon Oil | USP White Oil |
| | Base Oil Kinetic Viscosity | 40°C | mm²/s | JIS K2220 5.19 | 103 | 30 | 105 |
| | | 100°C | | | 12.8 | - | 11.5 |
| | Miscible Consistency | - | - | JIS K2220 5.3 | 280 | 207 | 310 |
| | Dropping Point | - | °C | JIS K2220 5.4 | <260 | 200 | 238 |
| | Evaporation Amount | 99°Cx22hr | wt% | - | 0.15% | 1.40% | 0.27%(ASTMD-972) |
| | Oil Separation | 100°Cx24hr | wt% | JIS K2220 514 | 1.2% | 0.8% | 2.1%(ASTMD-1742) |
| | Operating Temp. | In Air | °C | - | -40~200 | -10~80 | -12~170 |

■Comparison of Particle Generation




* The data above are for reference only, and not guaranteed by the manufacturer.

<Test Equipment for G Type Grease Comparison>




<Testing Condition>

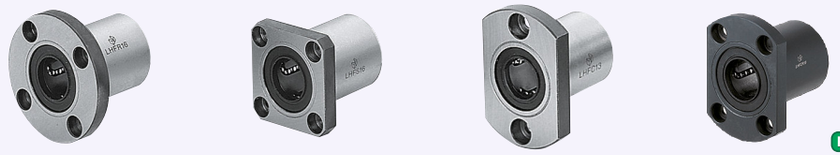
| | |
|---|---|
| Linear Bushing Used | LHFS16 (Regular Type)<br>LHFS16G (G Type) |
| Liner Motion Speed | 20m/min |
| Stroke | 100mm |
| Environment | Inside Clean Booth (Class100) |
| Temperature | 22.5°C±2°C |
| Humidity | 50wt% |
| Particle Counter | Made by Rion Co. Ltd. KC03A1 |

# Flanged Linear Bushings
## Single, Opposite Counterbored Hole

= For customers using industry standard products =
The part enclosed in the red frame is as per industry standard specifications (Outer cylinder EN 1.3505 Equiv. equivalent, Retainer resin).
Consider these specifications while selecting the product.

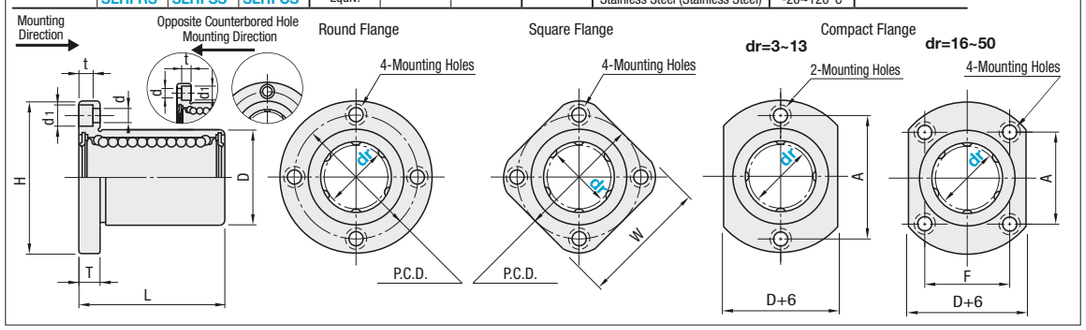
**Features:** Easy to assemble with bolt-on flanges.

**Industry Standard**



RoHS

| Counterbored Holes | Type: Round Flange | Type: Square Flange | Type: Compact Flange | Outer Cylinder: M Material | Outer Cylinder: H Hardness | Outer Cylinder: S Surface Treatment | Balls: M Material | Retainer: M Material | Ambient Operating Temp. | A Accessory |
|---|---|---|---|---|---|---|---|---|---|---|
| Opposite Counterbored | LHZR | LHZS | LHZC | EN 1.3505 Equiv. | 58HRC~ | - | EN 1.3505 Equiv. | Plastic (Duracon M90 Equiv.) | -20~ 80°C | Seal M Material Nitrile Rubber (-20~120°C) |
| Standard | LHFR-N No Seal | LHFS-N No Seal | LHFC-N No Seal | | | | | | | |
| | LHFR | LHFS | LHFC | | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| | LHFRF | LHFSF | LHFCF | | | Low Temperature Black Chrome Plating | EN 1.4125 Equiv. | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| | LHFRR | LHFSR | LHFCR | | | Electroless Nickel Plating | | Stainless Steel (Stainless Steel) | -20~110°C | |
| | LHFRM | LHFSM | LHFCM | | | | | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| | LHFRMF | LHFSMF | LHFCMF | | | | | Stainless Steel (Stainless Steel) | -20~120°C | |
| | SLHFR | SLHFS | SLHFC | EN 1.4125 Equiv. | 56HRC~ | - | | | | |
| | SLHFRS | SLHFSS | SLHFCS | | | | | | | |




| dr | D Tolerance | L Tolerance | H | T | d | d1 | t | P.C.D. | W | F | A | Eccentricity | Rows of Balls | Perpendicularity | Basic Load Rating C (Dynamic) N | Basic Load Rating Co (Static) N | Mass (g) Round Flange | Mass (g) Square Flange | Mass (g) Compact Flange |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 0 -0.008 | ±0.3 | 19 | 3.5 | 2.5 | 4.5 | 2.1 | 13 | 15 | - | 13 | 0.008 | 4 | 0.008 | 69 | 105 | 7 | 5.1 | 6 |
| 4 | | | 20 | | | | | 14 | 16 | - | 14 | | | | 88 | 127 | 8 | 6.2 | 7 |
| 5 | | | 25 | | | | | 17 | 20 | - | 17 | | | | 167 | 206 | 17 | 13 | 14 |
| 6 | 0 -0.009 | | 28 | 5 | 3.5 | 6 | 3.1 | 20 | 22 | - | 20 | 0.012 | | 0.012 | 206 | 265 | 24 | 18 | 21 |
| 8 | | | 32 | | | | | 24 | 25 | - | 24 | | | | 265 | 380 | 37 | 29 | 33 |
| 10 | | | 40 | | | | | 29 | 30 | - | 29 | | | | 372 | 549 | 72 | 52 | 64 |
| 12 | | | 42 | 6 | 4.5 | 7.5 | 4.1 | 32 | 32 | - | 32 | | | | 412 | 598 | 76 | 57 | 68 |
| 13 | | | 43 | | | | | 33 | 34 | - | 33 | | | | 510 | 784 | 88 | 72 | 81 |
| 16 | | | 48 | | | | | 38 | 37 | 22 | 31 | | | | 775 | 1180 | 120 | 104 | 112 |
| 20 | 0 -0.010 | | 54 | 8 | 5.5 | 9 | 5.1 | 43 | 42 | 24 | 36 | | 5 | | 882 | 1370 | 180 | 145 | 167 |
| 25 | | | 62 | | | | | 51 | 50 | 32 | 40 | 0.015 | 6 | 0.015 | 980 | 1570 | 340 | 300 | 325 |
| 30 | | | 64 | | | | | 60 | 58 | 35 | 49 | | | | 1570 | 2740 | 470 | 375 | 388 |
| 35 | 0 -0.012 | | 70 | 10 | 6.6 | 11 | 6.1 | 67 | 64 | 38 | 55 | | | | 1670 | 3140 | 650 | 560 | 575 |
| 40 | | | 80 | | | | | 78 | 75 | 45 | 64 | 0.020 | | 0.020 | 2160 | 4020 | 1060 | 880 | 913 |
| 50 | | | 100 | 13 | 9 | 14 | 8.1 | 98 | 92 | 56 | 80 | | | | 3820 | 7940 | 2200 | 2000 | 2037 |

For Precautions for Use, see P.303. Select Height-adjusting Spacers for Flanged Bushings from P.330.
No seal for dr=3 and 4, LHFR-N, LHFS-N and LHFC-N. Reversed counterbored type can be bolted from the reverse side.

kgf=Nx0.101972

| dr | Unit Price: Round Flange LHZR | LHFR-N | LHFR | LHFRF | LHFRR | LHFRM | LHFRMF | SLHFR | SLHFRS | Square Flange LHZS | LHFS-N | LHFS | LHFSF | LHFSR | LHFSM | LHFSMF | SLHFS | SLHFSS | Compact Flange LHZC | LHFC-N | LHFC | LHFCF | LHFCR | LHFCM | LHFCMF | SLHFC | SLHFCS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | - | - | | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | | | - | - | - | | - |
| 4 | - | - | | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | | | - | - | - | | - |
| 5 | - | - | | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | | | - | - | - | | - |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 35 | - | - | | - | - | | - | - | - | - | - | | - | - | | - | - | - | - | - | | - | - | - | - | - | - |
| 40 | - | - | | - | - | | - | - | - | - | - | | - | - | | - | - | - | - | - | | - | - | - | - | - | - |
| 50 | - | - | | - | - | | - | - | - | - | - | | - | - | | - | - | - | - | - | | - | - | - | - | - | - |

Ordering Example

Part Number

LHFC8
LHFC-N10 (No Seal)
LHFCR8 (LTBC Plating)
LHFCR10L (L Type Greased)

For Features of LTBC Plating, see P.304. Alternative grease types available. Alternative grease types available.
For Days to Ship, Price and Performance, see P.304 .

# Flanged Linear Bushings
## Double, Opposite Counterbored Hole

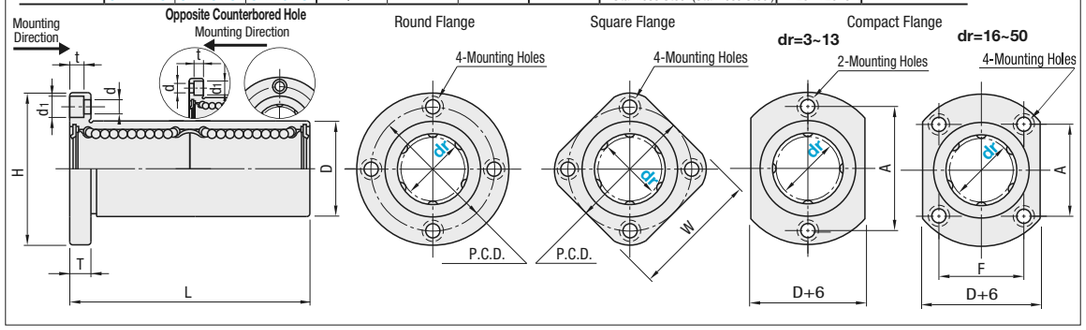
= For customers using industry standard products =
The part enclosed in the red frame is as per industry standard specifications (Outer cylinder EN 1.3505 Equiv. equivalent, Retainer resin).
Consider these specifications while selecting the product.

**Features:** Easy to assemble with bolt-on flanges.

**Industry Standard**

RoHS

| Counterbored Holes | Type: Round Flange | Type: Square Flange | Type: Compact Flange | Outer Cylinder: M Material | Outer Cylinder: H Hardness | Outer Cylinder: S Surface Treatment | Balls: M Material | Retainer: M Material | Ambient Operating Temp. | A Accessory |
|---|---|---|---|---|---|---|---|---|---|---|
| Opposite Counterbored Hole | LHZRW | LHZSW | LHZCW | EN 1.3505 Equiv. | 58HRC~ | - | EN 1.3505 Equiv. | Plastic (Duracon M90 Equiv.) | -20~ 80°C | Seal M Material Nitrile Rubber (-20~120°C) |
| Standard Type | LHFRW-N No Seal | LHFSW-N No Seal | LHFCW-N No Seal | | | | | | | |
| | LHFRW | LHFSW | LHFCW | | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| | LHFRWF | LHFSWF | LHFCWF | | | Low Temperature Black Chrome Plating | EN 1.4125 Equiv. | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| | LHFRWR | LHFSWR | LHFCWR | | | Electroless Nickel Plating | | Stainless Steel (Stainless Steel) | -20~110°C | |
| | LHFRWM | LHFSWM | LHFCWM | | | | | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| | LHFRWMF | LHFSWMF | LHFCWMF | | | | | Stainless Steel (Stainless Steel) | -20~120°C | |
| | SLHFRW | SLHFSW | SLHFCW | EN 1.4125 Equiv. | 56HRC~ | - | | | | |
| | SLHFRWS | SLHFSWS | SLHFCWS | | | | | | | |




| dr | D Tolerance | L Tolerance | H | T | d | d1 | t | P.C.D. | W | F | A | Eccentricity | Rows of Balls | Perpendicularity | Basic Load Rating C (Dynamic) N | Basic Load Rating Co (Static) N | Allowable Static Moment (N · m) | Mass (g) Round Flange | Mass (g) Square Flange | Mass (g) Compact Flange |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 0 -0.010 | ±0.3 | 19 | 3.5 | 2.5 | 4.5 | 2.1 | 13 | 15 | - | 13 | 0.010 | 4 | 0.010 | 138 | 210 | 0.51 | 8.7 | 7 | 7.7 |
| 4 | | | 23 | | | | | 14 | 16 | - | 14 | | | | 176 | 254 | 0.63 | 11 | 9 | 10 |
| 5 | | | 28 | | | | | 17 | 20 | - | 17 | | | | 263 | 412 | 1.38 | 24 | 20 | 21 |
| 6 | | | 35 | 5 | 3.5 | 6 | 3.1 | 20 | 22 | - | 20 | 0.015 | | 0.015 | 324 | 529 | 2.18 | 31 | 25 | 28 |
| 8 | | | 45 | | | | | 24 | 25 | - | 24 | | | | 431 | 784 | 4.31 | 51 | 43 | 47 |
| 10 | | | 55 | | | | | 29 | 30 | - | 29 | | | | 588 | 1100 | 7.24 | 98 | 78 | 90 |
| 12 | | | 57 | 6 | 4.5 | 7.5 | 4.1 | 32 | 32 | - | 32 | | | | 657 | 1200 | 10.9 | 110 | 90 | 102 |
| 13 | | | 61 | | | | | 33 | 34 | - | 33 | | | | 813 | 1570 | 11.6 | 130 | 108 | 123 |
| 16 | | | 70 | | | | | 38 | 37 | 22 | 31 | | | | 1230 | 2350 | 19.7 | 190 | 165 | 182 |
| 20 | 0 -0.012 | | 80 | 8 | 5.5 | 9 | 5.1 | 54 | 42 | 24 | 36 | 0.020 | 5 | 0.020 | 1400 | 2740 | 26.8 | 260 | 225 | 247 |
| 25 | | | 112 | | | | | 62 | 50 | 32 | 40 | | 6 | | 1560 | 3140 | 43.4 | 540 | 500 | 525 |
| 30 | | | 123 | | | | | 74 | 58 | 35 | 49 | | | | 2490 | 5490 | 82.8 | 680 | 590 | 645 |
| 35 | 0 -0.015 | | 135 | 10 | 6.6 | 11 | 6.1 | 82 | 64 | 38 | 55 | | | | 2650 | 6270 | 110 | 1020 | 930 | 945 |
| 40 | | | 151 | | | | | 96 | 75 | 45 | 64 | 0.025 | | 0.025 | 3430 | 8040 | 147 | 1570 | 1380 | 1423 |
| 50 | | | 192 | 13 | 9 | 14 | 8.1 | 116 | 92 | 56 | 80 | | | | 6080 | 15900 | 397 | 3600 | 3400 | 3437 |

For Precautions for Use, see P.303. Select Height-adjusting Spacers for Flanged Bushings from P.330.
No seal for dr=3 • 4, LHFRW-N • LHFSW-N • LHFCW-N. Reversed counterbored type can be bolted from the reverse side.

kgf=Nx0.101972

| dr | Unit Price: Round Flange LHZRW | LHFRW-N | LHFRW | LHFRWF | LHFRWR | LHFRWM | LHFRWMF | SLHFRW | SLHFRWS | Square Flange LHZSW | LHFSW-N | LHFSW | LHFSWF | LHFSWR | LHFSWM | LHFSWMF | SLHFSW | SLHFSWS | Compact Flange LHZCW | LHFCW-N | LHFCW | LHFCWF | LHFCWR | LHFCWM | LHFCWMF | SLHFCW | SLHFCWS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | - | - | | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | | - | - | - | - | - | - |
| 4 | - | - | | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | | - | - | - | - | - | - |
| 5 | - | - | | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | | - | - | - | - | - | - |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 35 | - | - | | - | - | | - | - | - | - | - | | - | - | | - | - | - | - | - | | - | - | - | - | - | - |
| 40 | - | - | | - | - | | - | - | - | - | - | | - | - | | - | - | - | - | - | | - | - | - | - | - | - |
| 50 | - | - | | - | - | | - | - | - | - | - | | - | - | | - | - | - | - | - | | - | - | - | - | - | - |

Ordering Example

Part Number

LHFCW12
LHFCW-N12 (No Seal)
LHFCWR10 (LTBC Plating)
LHFCWR10L (L Type Greased)

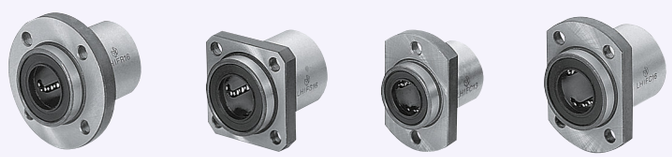
For Features of LTBC Plating, see P.304. Alternative grease types available.
For Days to Ship, Price and Performance, see P.304.

# Flanged Linear Bushings
## Single, Pilot

= For customers using industry standard products =
The part enclosed in the red frame is as per industry standard specifications (Outer cylinder EN 1.3505 Equiv. equivalent, Retainer resin).
Consider these specifications while selecting the product.

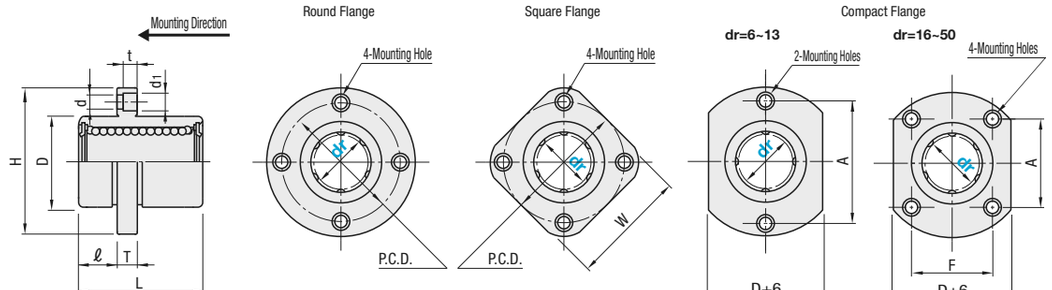
**Features:** Easy to assemble with bolt-on flanges. The linear bushing does not protrude out on the front side for good space utilization.

**Industry Standard**



RoHS

| Type | | | Outer Cylinder | | | Balls | Retainer | Ambient Operating Temp. | A Accessory |
|---|---|---|---|---|---|---|---|---|---|
| Round Flange | Square Flange | Compact Flange | M Material | H Hardness | S Surface Treatment | M Material | M Material | | |
| LHIFR | LHIFS | LHIFC | EN 1.3505 Equiv. | 58HRC~ | - | EN 1.3505 Equiv. | Plastic (Duracon M90 Equiv.) | -20~ 80°C | Seal M Material Nitrile Rubber (-20~120°C) |
| LHIFRF | LHIFSF | LHIFCF | | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| LHIFRM | LHIFSM | LHIFCM | | | Electroless Nickel Plating | EN 1.4125 Equiv. | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| LHIFRMF | LHIFSMF | LHIFCMF | | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| SLHIFR | SLHIFS | SLHIFC | EN 1.4125 Equiv. | 56HRC~ | - | | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| SLHIFRS | SLHIFSS | SLHIFCS | | | | | Stainless Steel (Stainless Steel) | -20~120°C | |




| dr | Tolerance | D | D Tolerance: No Surface Treatment | D Tolerance: Surface Treatment | L | L Tolerance | ℓ | H | T | d | d1 | t | P.C.D. | W | F | A | Eccentricity | Rows of Balls | * Perpendicularity | Basic Load Rating: C (Dynamic) N | Basic Load Rating: Co (Static) N | Mass (g): Round Flange | Mass (g): Square Flange | Mass (g): Compact Flange |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 0 -0.009 | 12 | 0 -0.013 | 0 -0.018 | 19 | ±0.3 | 5 | 28 | 5 | 3.5 | 6 | 3.1 | 20 | 22 | - | 20 | 0.012 | 4 | 0.012 | 206 | 265 | 24 | 18 | 21 |
| 8 | | 15 | | | 24 | | | 32 | | | | | 24 | 25 | - | 24 | | | | 265 | 380 | 37 | 29 | 33 |
| 10 | | 19 | 0 -0.016 | 0 -0.021 | 29 | | 6 | 40 | 6 | 4.5 | 7.5 | 4.1 | 29 | 30 | - | 29 | | | | 372 | 549 | 72 | 52 | 64 |
| 12 | | 21 | | | 30 | | | 42 | | | | | 32 | 32 | - | 32 | | | | 412 | 598 | 76 | 57 | 68 |
| 13 | | 23 | | | 32 | | | 43 | | | | | 33 | 34 | - | 33 | | | | 510 | 784 | 88 | 72 | 81 |
| 16 | | 28 | | | 37 | | | 48 | | | | | 38 | 37 | 22 | 31 | | | | 775 | 1180 | 120 | 104 | 112 |
| 20 | 0 -0.010 | 32 | 0 -0.019 | 0 -0.025 | 42 | | 8 | 54 | 8 | 5.5 | 9 | 5.1 | 43 | 42 | 24 | 36 | 0.015 | 5 | 0.015 | 882 | 1370 | 180 | 145 | 167 |
| 25 | | 40 | | | 59 | | | 62 | | | | | 51 | 50 | 32 | 40 | | 6 | | 980 | 1570 | 340 | 300 | 325 |
| 30 | | 45 | | | 64 | | 10 | 74 | 10 | 6.6 | 11 | 6.1 | 60 | 58 | 35 | 49 | | | | 1570 | 2740 | 470 | 375 | 388 |
| 35 | 0 -0.012 | 52 | 0 -0.022 | 0 -0.030 | 70 | | | 82 | | | | | 67 | 64 | 38 | 55 | 0.020 | | 0.020 | 1670 | 3140 | 650 | 560 | 575 |
| 40 | | 60 | | | 80 | | 13 | 96 | 13 | 9 | 14 | 8.1 | 78 | 75 | 45 | 64 | | | | 2160 | 4020 | 1060 | 880 | 913 |
| 50 | | 80 | | | 100 | | | 116 | | | | | 98 | 92 | 56 | 80 | | | | 3820 | 7940 | 2200 | 2000 | 2037 |

For Precautions for Use, see P.303.
Select Height-adjusting Spacers for Flanged Bushings from P.330.

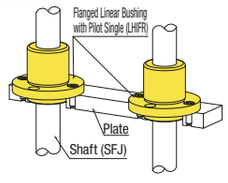
* Perpendicularity of D to flange mounting surface kgf=Nx0.101972

| dr | Unit Price: Round Flange | | | | | | Square Flange | | | | | | Compact Flange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LHIFR | LHIFRF | LHIFRM | LHIFRMF | SLHIFR | SLHIFRS | LHIFS | LHIFSF | LHIFSM | LHIFSMF | SLHIFS | SLHIFSS | LHIFC | LHIFCF | LHIFCM | LHIFCMF | SLHIFC | SLHIFCS |
| 6 | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | |
| 35 | | - | | - | - | - | | - | | - | - | - | | - | | - | - | - |
| 40 | | - | | - | - | - | | - | | - | - | - | | - | | - | - | - |
| 50 | | - | | - | - | - | | - | | - | - | - | | - | | - | - | - |

Ordering Example — Part Number: LHIFR20
- LHIFR20L (L Type Greased)
- LHIFR20G (G Type Greased)
- LHIFR20H (H Type Greased)

Alternative grease types vavailable.
For Days to Ship, Price and Performance, see P.304.

Example

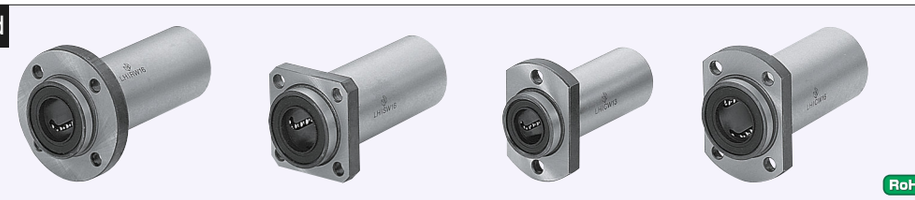



# Flanged Linear Bushings
## Double, Pilot

= For customers using industry standard products =
The part enclosed in the red frame is as per industry standard specifications (Outer cylinder EN 1.3505 Equiv. equivalent, Retainer resin).
Consider these specifications while selecting the product.

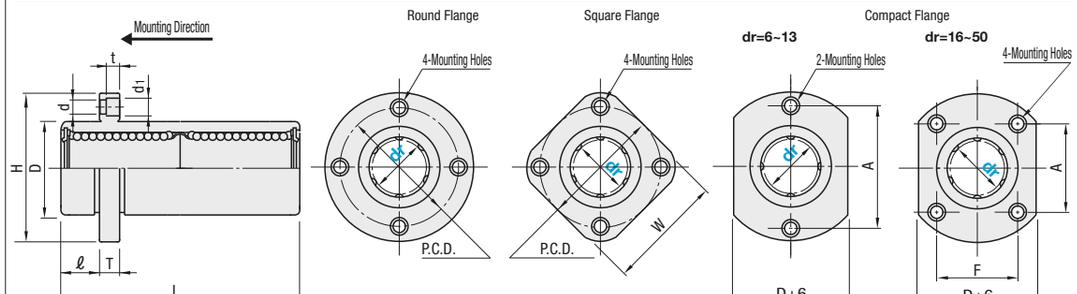
**Features:** Easy to assemble with bolt-on flanges. The linear bushing does not protrude out on the front side for good space utilization.

**Industry Standard**



RoHS

| Type | | | Outer Cylinder | | | Balls | Retainer | Ambient Operating Temp. | A Accessory |
|---|---|---|---|---|---|---|---|---|---|
| Round Flange | Square Flange | Compact Flange | M Material | H Hardness | S Surface Treatment | M Material | M Material | | |
| LHIRW | LHISW | LHICW | EN 1.3505 Equiv. | 58HRC~ | - | EN 1.3505 Equiv. | Plastic (Duracon M90 Equiv.) | -20~ 80°C | Seal M Material Nitrile Rubber (-20~120°C) |
| LHIRWF | LHISWF | LHICWF | | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| LHIRWM | LHISWM | LHICWM | | | Electroless Nickel Plating | EN 1.4125 Equiv. | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| LHIRWMF | LHISWMF | LHICWMF | | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| SLHIRW | SLHISW | SLHICW | EN 1.4125 Equiv. | 56HRC~ | - | | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| SLHIRWS | SLHISWS | SLHICWS | | | | | Stainless Steel (Stainless Steel) | -20~120°C | |




| dr | Tolerance | D | D Tolerance: No Surface Treatment | D Tolerance: Surface Treatment | L | L Tolerance | ℓ | H | T | d | d1 | t | P.C.D. | W | F | A | Eccentricity | Rows of Balls | * Perpendicularity | Basic Load Rating: C (Dynamic) N | Basic Load Rating: Co (Static) N | Allowable Static Moment (N·m) | Mass (g): Round Flange | Mass (g): Square Flange | Mass (g): Compact Flange |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 0 -0.010 | 12 | 0 -0.013 | 0 -0.018 | 35 | ±0.3 | 5 | 28 | 5 | 3.5 | 6 | 3.1 | 20 | 22 | - | 20 | 0.015 | 4 | 0.015 | 324 | 529 | 2.18 | 31 | 25 | 28 |
| 8 | | 15 | | | 45 | | | 32 | | | | | 24 | 25 | - | 24 | | | | 431 | 784 | 4.31 | 51 | 43 | 47 |
| 10 | | 19 | 0 -0.016 | 0 -0.021 | 55 | | 6 | 40 | 6 | 4.5 | 7.5 | 4.1 | 29 | 30 | - | 29 | | | | 588 | 1100 | 7.24 | 98 | 78 | 90 |
| 12 | | 21 | | | 57 | | | 42 | | | | | 32 | 32 | - | 32 | | | | 657 | 1200 | 10.9 | 110 | 90 | 102 |
| 13 | | 23 | | | 61 | | | 43 | | | | | 33 | 34 | - | 33 | | | | 813 | 1570 | 11.6 | 130 | 108 | 123 |
| 16 | | 28 | | | 70 | | | 48 | | | | | 38 | 37 | 22 | 31 | | | | 1230 | 2350 | 19.7 | 190 | 165 | 182 |
| 20 | 0 -0.012 | 32 | 0 -0.019 | 0 -0.025 | 80 | | 8 | 54 | 8 | 5.5 | 9 | 5.1 | 43 | 42 | 24 | 36 | 0.020 | 5 | 0.020 | 1400 | 2740 | 26.8 | 260 | 225 | 247 |
| 25 | | 40 | | | 112 | | | 62 | | | | | 51 | 50 | 32 | 40 | | 6 | | 1560 | 3140 | 43.4 | 540 | 500 | 525 |
| 30 | | 45 | | | 123 | | 10 | 74 | 10 | 6.6 | 11 | 6.1 | 60 | 58 | 35 | 49 | | | | 2490 | 5490 | 82.8 | 680 | 590 | 645 |
| 35 | 0 -0.015 | 52 | 0 -0.022 | 0 -0.030 | 135 | | | 82 | | | | | 67 | 64 | 38 | 55 | 0.025 | | 0.025 | 2650 | 6270 | 110 | 1020 | 930 | 945 |
| 40 | | 60 | | | 151 | | 13 | 96 | 13 | 9 | 14 | 8.1 | 78 | 75 | 45 | 64 | | | | 3430 | 8040 | 147 | 1570 | 1380 | 1423 |
| 50 | | 80 | | | 192 | | | 116 | | | | | 98 | 92 | 56 | 80 | | | | 6080 | 15900 | 397 | 3600 | 3400 | 3437 |

For Precautions for Use, see P.303.
Select Height-adjusting Spacers for Flanged Bushings from P.330.

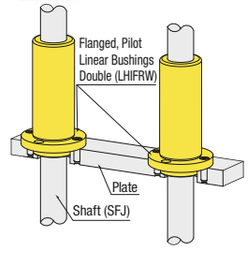
* Perpendicularity of D to flange mounting surface kgf=Nx0.101972

| dr | Unit Price: Round Flange | | | | | | Square Flange | | | | | | Compact Flange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LHIRW | LHIRWF | LHIRWM | LHIRWMF | SLHIRW | SLHIRWS | LHISW | LHISWF | LHISWM | LHISWMF | SLHISW | SLHISWS | LHICW | LHICWF | LHICWM | LHICWMF | SLHICW | SLHICWS |
| 6 | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | |
| 35 | | - | | - | - | - | | - | | - | - | - | | - | | - | - | - |
| 40 | | - | | - | - | - | | - | | - | - | - | | - | | - | - | - |
| 50 | | - | | - | - | - | | - | | - | - | - | | - | | - | - | - |

Ordering Example — Part Number: LHIRW8
- LHIRW8L (L Type Greased)
- LHIRW8G (G Type Greased)
- LHIRW8H (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, see P.304.

Example



# Flanged Linear Bushing
## Center Flanged Double

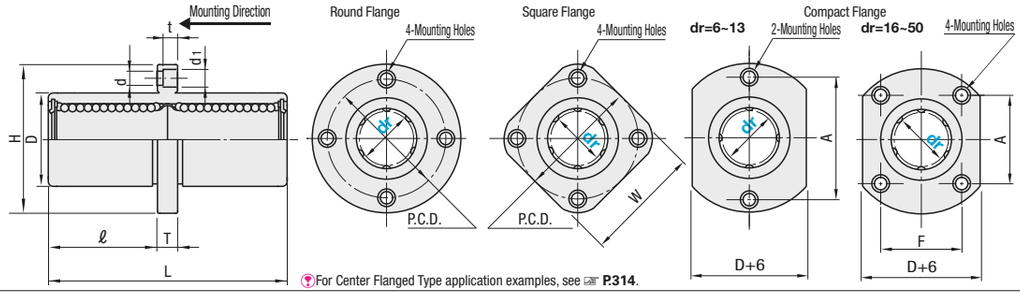
= For customers using industry standard products =
The part enclosed in the red frame is as per industry standard specifications (Outer cylinder EN 1.3505 Equiv. equivalent, Retainer resin).
Consider these specifications while selecting the product.

**Features:** Easy to assemble with bolt-on flanges. A load can be placed near the center of the bushing, evenly distributing the load and space.

### Industry Standard

RoHS

| Type | | | Outer Cylinder | | | Balls | Retainer | Ambient Operating Temp. | Accessory |
|---|---|---|---|---|---|---|---|---|---|
| Round Flange | Square Flange | Compact Flange | M Material | H Hardness | S Surface Treatment | M Material | M Material | | |
| LHMRW | LHMSW | LHMCW | EN 1.3505 Equiv. | 58HRC~ | - | EN 1.3505 Equiv. | Plastic (Duracon M90 Equiv.) | -20~ 80°C | Seal M Material Nitrile Rubber (-20~120°C) |
| LHMRWF | LHMSWF | LHMCWF | | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| LHMRWM | LHMSWM | LHMCWM | | | Electroless Nickel Plating | EN 1.4125 Equiv. | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| LHMRWMF | LHMSWMF | LHMCWMF | | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| SLHMRW | SLHMSW | SLHMCW | EN 1.4125 Equiv. | 56HRC~ | - | | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| SLHMRWS | SLHMSWS | SLHMCWS | | | | | Stainless Steel (Stainless Steel) | -20~120°C | |




For Center Flanged Type application examples, see P.314.

| dr | Tolerance | D Tolerance: No Surface Treatment | D Tolerance: Surface Treatment | L | Tolerance | ℓ | H | T | d | d1 | t | P.C.D. | W | F | A | Eccentricity | Balls Rows | * Perpendicularity | Basic Load Rating: C (Dynamic) N | Co (Static) N | Allowable Static Moment (N·m) | Mass (g): Round Flange | Square Flange | Compact Flange |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 0 -0.010 | 12 | 0 -0.013 | 0 -0.018 | 35 | 15 | 28 | 5 | 3.5 | 6 | 3.1 | 20 | 22 | - | 20 | 0.015 | 4 | 0.015 | 324 | 529 | 2.18 | 31 | 25 | 28 |
| 8 | | 15 | | | 45 | 20 | 32 | | | | | 24 | 25 | - | 24 | | | | 431 | 784 | 4.31 | 51 | 43 | 47 |
| 10 | | 19 | 0 -0.016 | 0 -0.021 | 55 | 24.5 | 40 | 6 | 4.5 | 7.5 | 4.1 | 29 | 30 | - | 29 | | | | 588 | 1100 | 7.24 | 98 | 78 | 90 |
| 12 | | 21 | | | 57 | 25.5 | 42 | | | | | 32 | 32 | - | 32 | | | | 657 | 1200 | 10.9 | 110 | 90 | 102 |
| 13 | | 23 | | | 61 | 27.5 | 43 | | | | | 33 | 34 | - | 33 | | | | 813 | 1570 | 11.6 | 130 | 108 | 123 |
| 16 | | 28 | | | 70 | 32 | 48 | | | | | 38 | 37 | 22 | 31 | | | | 1230 | 2350 | 19.7 | 190 | 165 | 182 |
| 20 | 0 -0.012 | 32 | 0 -0.019 | 0 -0.025 | 80 | 36 | 54 | 8 | 5.5 | 9 | 5.1 | 43 | 42 | 24 | 36 | 0.020 | 5 | 0.020 | 1400 | 2740 | 26.8 | 260 | 225 | 247 |
| 25 | | 40 | | | 112 | 52 | 62 | | | | | 51 | 50 | 32 | 40 | | 6 | | 1560 | 3140 | 43.4 | 540 | 500 | 525 |
| 30 | | 45 | | | 123 | 56.5 | 74 | 10 | 6.6 | 11 | 6.1 | 60 | 58 | 35 | 49 | | | | 2490 | 5490 | 82.8 | 680 | 590 | 645 |
| 35 | 0 -0.014 | 52 | 0 -0.022 | 0 -0.030 | 135 | 62.5 | 82 | | | | | 67 | 64 | 38 | 55 | 0.025 | | 0.025 | 2650 | 6270 | 110 | 1020 | 930 | 945 |
| 40 | | 60 | | | 151 | 69 | 96 | 13 | 9 | 14 | 8.1 | 78 | 75 | 45 | 64 | | | | 3430 | 8040 | 147 | 1570 | 1380 | 1423 |
| 50 | | 80 | | | 192 | 89.5 | 116 | | | | | 98 | 92 | 56 | 80 | | | | 6080 | 15900 | 397 | 3600 | 3400 | 3437 |

For Precautions for Use, see P.303.
Select Height-adjusting Spacers for Flanged Bushings from P.330.

* Perpendicularity of D part to flange mounting surface kgf=Nx0.101972

| dr | Unit Price: Round Flange | | | | | | Square Flange | | | | | | Compact Flange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LHMRW | LHMRWF | LHMRWM | LHMRWMF | SLHMRW | SLHMRWS | LHMSW | LHMSWF | LHMSWM | LHMSWMF | SLHMSW | SLHMSWS | LHMCW | LHMCWF | LHMCWM | LHMCWMF | SLHMCW | SLHMCWS |
| 6 | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | |
| 35 | | - | | - | - | - | | - | | - | - | - | | - | | - | - | - |
| 40 | | - | | - | - | - | | - | | - | - | - | | - | | - | - | - |
| 50 | | - | | - | - | - | | - | | - | - | - | | - | | - | - | - |

Ordering Example — Part Number: LHMCW25
LHMCW25L (L Type Greased)
LHMCW25G (G Type Greased)
LHMCW25H (H Type Greased)
Alternative grease types available.
For Days to Ship, Price and Performance, see P.304.

Example: Combination of these app. examples can be selected on our website. Selection Procedure Details P.87

# Flanged Compact Type
## Single / Double

= For customers selecting MISUMI original specifications =
The part enclosed in the red frame is as per standard specifications (Outer cylinder EN 1.3505 Equiv. equivalent, Retainer resin).
Consider these specifications while selecting the product.

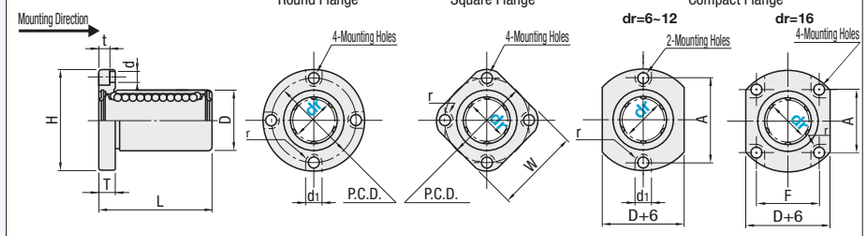
**Features:** 4 to 5mm smaller in flange diameter (H Dimension) and 2mm smaller in O.D. (D dimension) than Standard. (Standard and Compact Comparison P.318)

### MISUMI Original

■Single

RoHS

| Type | | | Outer Cylinder | | | Balls | Retainer | Ambient Operating Temp. | Accessory |
|---|---|---|---|---|---|---|---|---|---|
| Round Flange | Square Flange | Compact Flange | M Material | H Hardness | S Surface Treatment | M Material | M Material | | |
| LHRK | LHSK | LHCK | EN 1.3505 Equiv. | 58HRC~ | - | EN 1.3505 Equiv. | Plastic (Duracon M90 Equiv.) | -20~80°C | Seal M Material Nitrile Rubber (-20~120°C) |




| dr | Tolerance | D Tolerance: No Surface Treatment | D Tolerance: Surface Treatment | L | Tolerance | H | T | d | d1 | t | r | P.C.D. | W | F | A | Eccentricity | Balls Rows | * Perpendicularity | Basic Load Rating: C (Dynamic) N | Co (Static) N | Mass (g): Round Flange | Square Flange | Compact Flange |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 0 -0.009 | 10 | 0 -0.011 | 0 -0.015 | 19 | 25 | 5 | 3.5 | 6 | 3.1 | 3 | 19 | 20 | - | 19 | 0.012 | 6 | 0.012 | 131 | 155 | 18 | 14 | 15 |
| 8 | | 13 | 0 | 0 | 24 | 28 | | | | | | 22 | 23 | - | 22 | | | | 235 | 277 | 27 | 22 | 24 |
| 10 | | 17 | -0.013 | -0.018 | 29 | 35 | | | | | | 27 | 27 | - | 27 | | | | 368 | 433 | 52 | 41 | 46 |
| 12 | | 19 | 0 | 0 | 30 | 38 | 6 | 4.5 | 7.5 | 4.1 | 3.75 | 30 | 29 | - | 30 | | | | 381 | 449 | 64 | 50 | 55 |
| 16 | | 26 | -0.016 | -0.021 | 37 | 44 | | | | | | 36 | 34 | 24 | 27 | | | | 608 | 716 | 96 | 77 | 83 |

For Precautions for Use, see P.303.

* Perpendicularity of D part to flange mounting surface kgf=Nx0.101972

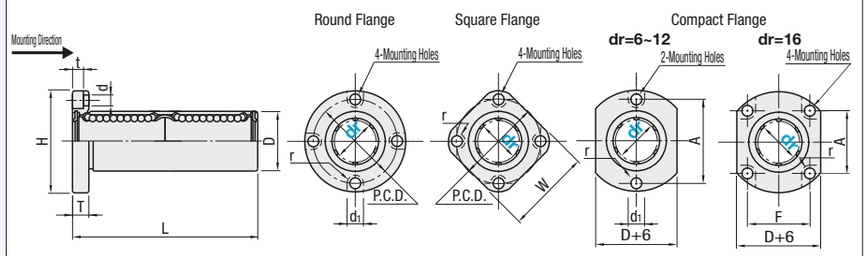
**Features:** 4 to 5mm smaller in flange diameter (H Dimension) and 2mm smaller in O.D. (D dimension) than Standard. (Standard and Compact Comparison P.318)

### MISUMI Original

■Double

RoHS

| Type | | | Outer Cylinder | | | Balls | Retainer | Ambient Operating Temp. | Accessory |
|---|---|---|---|---|---|---|---|---|---|
| Round Flange | Square Flange | Compact Flange | M Material | H Hardness | S Surface Treatment | M Material | M Material | | |
| LHRKW | LHSKW | LHCKW | EN 1.3505 Equiv. | 58HRC~ | - | EN 1.3505 Equiv. | Plastic (Duracon M90 Equiv.) | -20~80°C | Seal M Material Nitrile Rubber (-20~120°C) |




| dr | Tolerance | D Tolerance: No Surface Treatment | D Tolerance: Surface Treatment | L | Tolerance | H | T | d | d1 | t | r | P.C.D. | W | F | A | Eccentricity | Balls Rows | * Perpendicularity | Basic Load Rating: C (Dynamic) N | Co (Static) N | Allowable Static Moment (N·m) | Mass (g): Round Flange | Square Flange | Compact Flange |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 0 -0.01 | 10 | 0 -0.011 | 0 -0.015 | 35 | 25 | 5 | 3.5 | 6 | 3.1 | 3 | 19 | 20 | - | 19 | 0.015 | 6 | 0.015 | 206 | 309 | 2.46 | 24 | 20 | 21 |
| 8 | | 13 | 0 | 0 | 45 | 28 | | | | | | 22 | 23 | - | 22 | | | | 383 | 555 | 5.76 | 38 | 34 | 35 |
| 10 | | 17 | -0.013 | -0.018 | 55 | 35 | | | | | | 27 | 27 | - | 27 | | | | 585 | 867 | 10.99 | 79 | 68 | 73 |
| 12 | | 19 | 0 | 0 | 57 | 38 | 6 | 4.5 | 7.5 | 4.1 | 3.75 | 30 | 29 | - | 30 | | | | 608 | 899 | 11.85 | 95 | 82 | 87 |
| 16 | | 26 | -0.016 | -0.021 | 70 | 44 | | | | | | 36 | 34 | 24 | 27 | | | | 965 | 1431 | 23.48 | 154 | 135 | 141 |

For Precautions for Use, see P.303.

* Perpendicularity of D part to flange mounting surface kgf=Nx0.101972

Ordering Example — Part Number: LHRK12
LHRK12L (L Type Greased)
LHRK12G (G Type Greased)
LHRK12H (H Type Greased)
Alternative grease types available.
For Days to Ship, Price and Performance, see P.304.

| dr | Unit Price: Single | | | Double | | |
|---|---|---|---|---|---|---|
| | Round Flange | Square Flange | Compact Flange | Round Flange | Square Flange | Compact Flange |
| | LHRK | LHSK | LHCK | LHRKW | LHSKW | LHCKW |
| 6 | | | | | | |
| 8 | | | | | | |
| 10 | | | | | | |
| 12 | | | | | | |
| 16 | | | | | | |

# Flanged Linear Bushings
## Medium Type

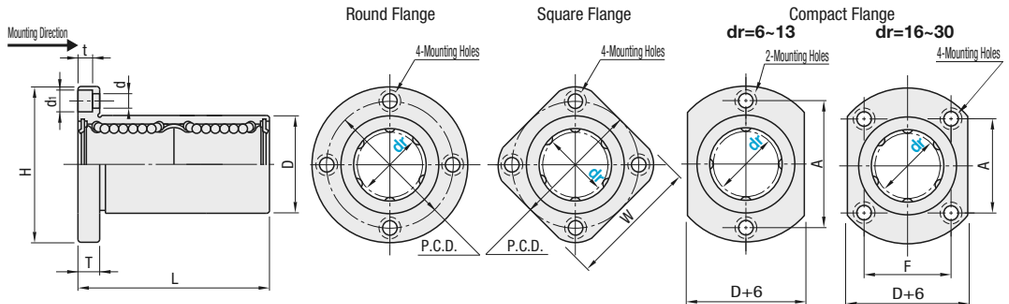
= For customers selecting MISUMI original specifications =
The part enclosed in the red frame is as per standard specifications (Outer cylinder EN 1.3505 Equiv. equivalent, Retainer resin).
Consider these specifications while selecting the product.

**Features:** Easy to assemble with bolt-on flanges.

### MISUMI Original


RoHS

| Type | | | Outer Cylinder | | | Balls | Retainer | Ambient Operating Temp. | Accessory |
|---|---|---|---|---|---|---|---|---|---|
| Round Flange | Square Flange | Compact Flange | M Material | H Hardness | S Surface Treatment | M Material | M Material | | |
| LHFRD | LHFSD | LHFCD | EN 1.3505 Equiv. | 58HRC~ | - | EN 1.3505 Equiv. | Plastic (Duracon M90 Equiv.) | -20~80°C | Seal M Material Nitrile Rubber |
| LHFRDM | LHFSDM | LHFCDM | | | Electroless Nickel Plating | EN 1.4125 Equiv. | | | |




Body length is approximately 1.5 times of single type, and allowable moment is approximately 4.3 times. (See Allowable Load Comparison)

| Part Number Type | dr | Tolerance | D | Tolerance | L | Tolerance | H | T | d | d1 | t | P.C.D. | W | F | A | Eccentricity (Max.) | Rows of Balls | * Perpendicularity | Basic Load Rating C (Dynamic) N | Co (Static) N | Allowable Static Moment (N・m) | Mass (g) Round Flange | Square Flange | Compact Flange |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LHFRD LHFSD LHFCD | 6 | 0 -0.010 | 12 | 0 -0.013 | 29 | ±0.3 | 28 | 5 | 3.5 | 6 | 3.1 | 20 | 22 | - | 20 | 0.015 | 4 | 0.015 | 226 | 310 | 1.42 | 27 | 21 | 24 |
| | 8 | | 15 | | 37 | | 32 | | | | | 24 | 25 | - | 24 | | | | 310 | 452 | 2.12 | 47 | 39 | 43 |
| | 10 | | 19 | | | | 40 | | | | | 29 | 30 | - | 29 | | | | 508 | 718 | 4.37 | 85 | 65 | 77 |
| | 12 | | 21 | 0 -0.016 | 47 | | 42 | 6 | 4.5 | 7.5 | 4.1 | 32 | 32 | - | 32 | | | | 634 | 814 | 6.2 | 89 | 69 | 81 |
| | 13 | | 23 | | | | 43 | | | | | 33 | 34 | - | 33 | | | | 640 | 826 | 6.2 | 109 | 87 | 102 |
| LHFRDM LHFSDM LHFCDM | 16 | | 28 | | | | 48 | | | | | 38 | 37 | 22 | 31 | | | | 1164 | 1448 | 13.1 | 157 | 132 | 149 |
| | 20 | 0 -0.012 | 32 | 0 -0.019 | 65 | | 54 | 8 | 5.5 | 9 | 5.1 | 43 | 42 | 24 | 36 | 0.02 | 5 | 0.02 | 1554 | 2068 | 18.3 | 232 | 197 | 219 |
| | 25 | | 40 | | 83 | | 62 | | | | | 51 | 50 | 32 | 40 | | 6 | | 1725 | 3068 | 25.3 | 479 | 440 | 450 |
| | 30 | | 45 | | 90 | | 74 | 10 | 6.6 | 11 | 6.1 | 60 | 58 | 35 | 49 | | | | 2440 | 3974 | 42.7 | 559 | 481 | 492 |

For Precautions for Use, see ☞ **P.303**. Select Height-adjusting Spacers for Flanged Bushings from ☞ **P.330**.

* Perpendicularity of D to flange mounting surface kgf=Nx0.101972

| dr | Round Flange | | Square Flange | | Compact Flange | |
|---|---|---|---|---|---|---|
| | LHFRD | LHFRDM | LHFSD | LHFSDM | LHFCD | LHFCDM |
| 6 | | | | | | |
| 8 | | | | | | |
| 10 | | | | | | |
| 12 | | | | | | |
| 13 | | | | | | |
| 16 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |

**Allowable Load Comparison**

| Type | Basic Dynamic Load Rating | Basic Static Load Rating | Allowable Static Moment |
|---|---|---|---|
| Short | 0.7 | 0.6 | Approx. 0.6 |
| Single | 1 | 1 | 1 |
| Medium | 1.4 | 1.3 | Approx. 4.3 |
| Double | 1.6 | 2 | Approx. 6 |
| Medium Long | 1.6 | 1.6 | Approx. 10 |
| Long | 1.6 | 2 | Approx. 21 |

* "1" represents Single Type for comparison.

Ordering Example — Part Number
LHFSD8
LHFRD10
LHFSDM12L (L Type Greased)
Alternative grease types available.
For Days to Ship, Price and Performance, see ☞ **P.304**.

# Flanged Linear Bushings
## Medium, Pilot / Medium, Center Flanged

= For customers selecting MISUMI original specifications =
The products on this page are of standard specifications (Outer cylinder EN 1.3505 Equiv. equivalent, Retainer resin).
Consider these specifications while selecting the product.

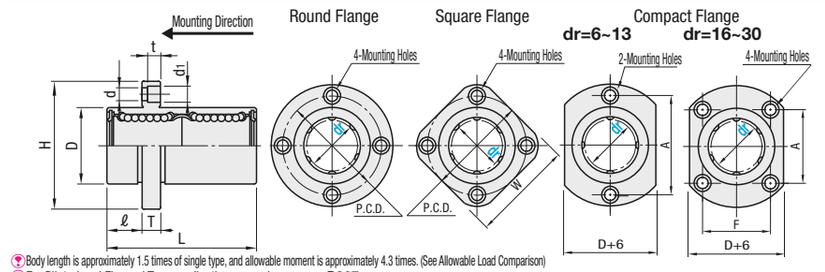
**Features:** Easy to assemble with bolt-on flanges. The linear bushing does not protrude out on the front side for good space utilization.

### MISUMI Original

**Medium, Pilot**

RoHS

| Type | | | Outer Cylinder | | | Balls | Retainer | Ambient Operating Temp. | Accessory |
|---|---|---|---|---|---|---|---|---|---|
| Round Flange | Square Flange | Compact Flange | M Material | H Hardness | S Surface Treatment | M Material | M Material | | |
| LHIRD | LHISD | LHICD | EN 1.3505 Equiv. | 58HRC~ | - | EN 1.3505 Equiv. | Plastic (Duracon M90 Equiv.) | -20~80°C | Seal M Material Nitrile Rubber (-20~120°C) |




Body length is approximately 1.5 times of single type, and allowable moment is approximately 4.3 times. (See Allowable Load Comparison)
For Piloted and Flanged Type application examples, see ☞ **P.307**.

| Part Number Type | dr | Tolerance | D | Tolerance | L | Tolerance | ℓ | H | T | d | d1 | t | P.C.D. | W | F | A | Eccentricity | Rows of Balls | * Perpendicularity | Basic Load Rating C (Dynamic) N | Co (Static) N | Allowable Static Moment (N・m) | Mass (g) Round Flange | Square Flange | Compact Flange |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LHIRD LHISD LHICD | 6 | 0 -0.010 | 12 | 0 -0.013 | 29 | ±0.3 | 5 | 28 | 5 | 3.5 | 6 | 3.1 | 20 | 22 | - | 20 | 0.015 | 4 | 0.015 | 226 | 310 | 1.42 | 27 | 21 | 24 |
| | 8 | | 15 | | 37 | | | 32 | | | | | 24 | 25 | - | 24 | | | | 310 | 452 | 2.12 | 47 | 39 | 43 |
| | 10 | | 19 | | | | 6 | 40 | 6 | 4.5 | 7.5 | 4.1 | 29 | 30 | - | 29 | | | | 508 | 718 | 4.37 | 85 | 65 | 77 |
| | 12 | | 21 | 0 -0.016 | 47 | | | 42 | | | | | 32 | 32 | - | 32 | | | | 634 | 814 | 6.2 | 89 | 69 | 81 |
| | 13 | | 23 | | | | | 43 | | | | | 33 | 34 | - | 33 | | | | 640 | 826 | 6.2 | 109 | 87 | 102 |
| | 16 | | 28 | | | | | 48 | | | | | 38 | 37 | 22 | 31 | | | | 1164 | 1448 | 13.1 | 157 | 132 | 149 |
| | 20 | 0 -0.012 | 32 | 0 -0.019 | 65 | | 8 | 54 | 8 | 5.5 | 9 | 5.1 | 43 | 42 | 24 | 36 | 0.02 | 5 | 0.02 | 1554 | 2068 | 18.3 | 232 | 197 | 219 |
| | 25 | | 40 | | 83 | | | 62 | | | | | 51 | 50 | 32 | 40 | | 6 | | 1725 | 3068 | 25.3 | 481 | 442 | 452 |
| | 30 | | 45 | | 90 | | 10 | 74 | 10 | 6.6 | 11 | 6.1 | 60 | 58 | 35 | 49 | | | | 2440 | 3974 | 42.7 | 560 | 482 | 494 |

For Precautions for Use, see ☞ **P.303**. Select Height-adjusting Spacers for Flanged Bushings from ☞ **P.330**.

* Perpendicularity of D to flange mounting surface kgf=Nx0.101972

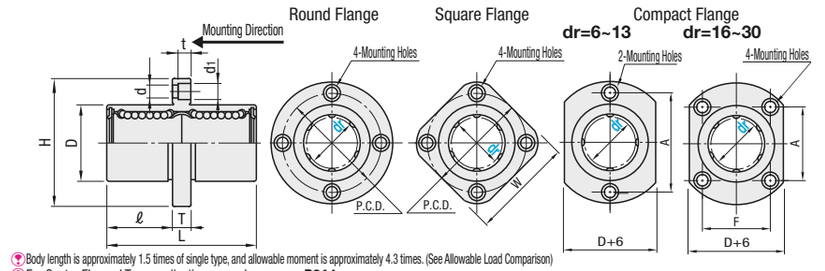
**Features:** Easy to assemble with bolt-on flanges. A load can be placed near the center of the bushing, evenly distributing the load and space.

### MISUMI Original

**Medium, Center Flanged**

RoHS

| Type | | | Outer Cylinder | | | Balls | Retainer | Ambient Operating Temp. | Accessory |
|---|---|---|---|---|---|---|---|---|---|
| Round Flange | Square Flange | Compact Flange | M Material | H Hardness | S Surface Treatment | M Material | M Material | | |
| LHMRD | LHMSD | LHMCD | EN 1.3505 Equiv. | 58HRC~ | - | EN 1.3505 Equiv. | Plastic (Duracon M90 Equiv.) | -20~80°C | Seal M Material Nitrile Rubber (-20~120°C) |




Body length is approximately 1.5 times of single type, and allowable moment is approximately 4.3 times. (See Allowable Load Comparison)
For Center Flanged Type application examples, see ☞ **P.314**.

| Part Number Type | dr | Tolerance | D | Tolerance | L | Tolerance | ℓ | H | T | d | d1 | t | P.C.D. | W | F | A | Eccentricity | Rows of Balls | * Perpendicularity | Basic Load Rating C (Dynamic) N | Co (Static) N | Allowable Static Moment (N・m) | Mass (g) Round Flange | Square Flange | Compact Flange |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LHMRD LHMSD LHMCD | 6 | 0 -0.010 | 12 | 0 -0.013 | 29 | ±0.3 | 12 | 28 | 5 | 3.5 | 6 | 3.1 | 20 | 22 | - | 20 | 0.015 | 4 | 0.015 | 226 | 310 | 1.42 | 27 | 21 | 24 |
| | 8 | | 15 | | 37 | | 16 | 32 | | | | | 24 | 25 | - | 24 | | | | 310 | 452 | 2.12 | 47 | 39 | 43 |
| | 10 | | 19 | | | | | 40 | | | | | 29 | 30 | - | 29 | | | | 508 | 718 | 4.37 | 85 | 65 | 77 |
| | 12 | | 21 | 0 -0.016 | 47 | | 20.5 | 42 | 6 | 4.5 | 7.5 | 4.1 | 32 | 32 | - | 32 | | | | 634 | 814 | 6.2 | 89 | 69 | 81 |
| | 13 | | 23 | | | | | 43 | | | | | 33 | 34 | - | 33 | | | | 640 | 826 | 6.2 | 109 | 87 | 102 |
| | 16 | | 28 | | 56 | | 25 | 48 | | | | | 38 | 37 | 22 | 31 | | | | 1164 | 1448 | 13.1 | 157 | 132 | 149 |
| | 20 | 0 -0.012 | 32 | 0 -0.019 | 65 | | 28.5 | 54 | 8 | 5.5 | 9 | 5.1 | 43 | 42 | 24 | 36 | 0.02 | 5 | 0.02 | 1554 | 2068 | 18.3 | 232 | 197 | 219 |
| | 25 | | 40 | | 83 | | 37.5 | 62 | | | | | 51 | 50 | 32 | 40 | | 6 | | 1725 | 3068 | 25.3 | 481 | 442 | 452 |
| | 30 | | 45 | | 90 | | 40 | 74 | 10 | 6.6 | 11 | 6.1 | 60 | 58 | 35 | 49 | | | | 2440 | 3974 | 42.7 | 560 | 482 | 494 |

For Precautions for Use, see ☞ **P.303**. Select Height-adjusting Spacers for Flanged Bushings from ☞ **P.330**.

* Perpendicularity of D to flange mounting surface kgf=Nx0.101972

| dr | Unit Price | | | | | |
|---|---|---|---|---|---|---|
| | Medium, Pilot | | | Medium, Center Flanged | | |
| | Round Flange | Square Flange | Compact Flange | Round Flange | Square Flange | Compact Flange |
| | LHIRD | LHISD | LHICD | LHMRD | LHMSD | LHMCD |
| 6 | | | | | | |
| 8 | | | | | | |
| 10 | | | | | | |
| 12 | | | | | | |
| 13 | | | | | | |
| 16 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |

**Allowable Load Comparison**

| Type | Basic Dynamic Load Rating | Basic Static Load Rating | Allowable Static Moment |
|---|---|---|---|
| Short | 0.7 | 0.6 | Approx. 0.6 |
| Single | 1 | 1 | 1 |
| Medium | 1.4 | 1.3 | Approx. 4.3 |
| Double | 1.6 | 2 | Approx. 6 |
| Medium Long | 1.6 | 1.6 | Approx. 10 |
| Long | 1.6 | 2 | Approx. 21 |

* "1" represents Single Type for comparison.

Ordering Example — Part Number
LHIRD12
LHMCD16
LHIRD12L (L Type Greased)
LHMCD16G (G Type Greased)
LHMSD20H (H Type Greased)
Alternative grease types available.
For Days to Ship, Price and Performance, see ☞ **P.304**.

# Flanged Linear Bushings
## Long / Long, Pilot

= For customers using industry standard products =
The part enclosed in the red frame is as per industry standard specifications (Outer cylinder EN 1.3505 Equiv. equivalent, Retainer resin).
Consider these specifications while selecting the product.

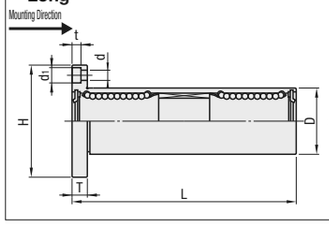
■**Features:** Easy to assemble with bolt-on flanges. The linear bushing does not protrude out on the front side for good space utilization.

### Industry Standard

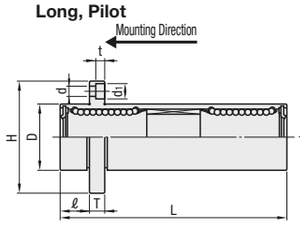
RoHS

| Type | | | Outer Cylinder, Balls | | Outer Cylinder | Retainer | Ambient Operating Temp. | Accessory |
|---|---|---|---|---|---|---|---|---|
| Round Flange | Square Flange | Compact Flange | M Material | H Hardness | S Surface Treatment | M Material | | |
| LHKRNL | LHKSNL | LHKCNL | EN 1.3505 Equiv. | 58HRC~ | - | Plastic (Duracon M90 Equiv.) | -20~ 80°C | Seal M Material Nitrile Rubber (-20~120°C) |
| LHKRNLF | LHKSNLF | - | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| LHKRL | LHKSL | LHKCL | | | Electroless Nickel Plating | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| LHKRLF | LHKSLF | - | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| SLHKRLFS | SLHKSLFS | - | EN 1.4125 Equiv. | 56HRC~ | - | Stainless Steel (Stainless Steel) | -20~120°C | |
| LHKIRNL | LHKISNL | LHKICNL | EN 1.3505 Equiv. | 58HRC~ | - | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| LHKIRNLF | LHKISNLF | - | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| LHKIRL | LHKISL | LHKICL | | | Electroless Nickel Plating | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| LHKIRLF | LHKISLF | - | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| SLHKIRLFS | SLHKISLFS | - | EN 1.4125 Equiv. | 56HRC~ | - | Stainless Steel (Stainless Steel) | -20~120°C | |

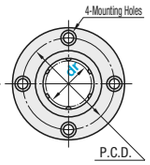
**Long**



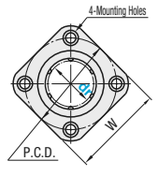

**Long, Pilot**



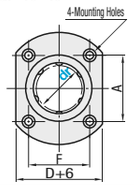

Round Flange




Square Flange




Compact Flange
**dr=16~40**




| dr | Tolerance | D Tolerance: No Surface Treatment | D Tolerance: Surface Treatment | L | Tolerance | ℓ | H | T | d | d1 | t | P.C.D. | W | F | A | Eccentricity | Rows of Balls | * Perpendicularity | Basic Load Rating: C (Dynamic) N | Basic Load Rating: Co (Static) N | Allowable Static Moment (N・m) | Mass (g): Round Flange | Mass (g): Square Flange | Mass (g): Compact Flange |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 0 -0.012 | 15 | 0 -0.013 | 49 | ±0.3 | 5 | 32 | 5 | 3.5 | 6 | 3.1 | 24 | 25 | - | - | 0.020 | 4 | 0.020 | 324 | 529 | 8.2 | 66 | 58 | - |
| 8 | | 19 | 0 -0.016 | 68 | | 6 | 40 | 6 | 4.5 | 7.5 | 4.1 | 29 | 30 | - | - | | | | 431 | 784 | 16.0 | 135 | 117 | - |
| 10 | | 23 | | 82 | | | 43 | | | | | 33 | 34 | - | - | | | | 588 | 1100 | 27.0 | 205 | 189 | - |
| 12 | 0 -0.015 | 26 | | 86 | | | 46 | | | | | 36 | 35 | - | - | | | | 657 | 1200 | 40.1 | 248 | 228 | - |
| 13 | | 28 | | 92 | | | 48 | | | | | 38 | 37 | - | - | | | | 813 | 1570 | 42.9 | 308 | 286 | - |
| 16 | | 32 | 0 -0.019 | 105 | | 8 | 54 | 8 | 5.5 | 9 | 5.1 | 43 | 42 | 24 | 36 | 0.025 | 5 | 0.025 | 1230 | 2350 | 73.5 | 412 | 376 | 386 |
| 20 | 0 -0.018 | 40 | | 120 | | | 62 | | | | | 51 | 50 | 32 | 40 | | | | 1400 | 2740 | 98.0 | 752 | 714 | 724 |
| 25 | | 45 | | 167 | | 10 | 74 | 10 | 6.6 | 11 | 6.1 | 60 | 58 | 35 | 49 | | 6 | | 1560 | 3140 | 157 | 1244 | 1163 | 1178 |
| 30 | | 52 | 0 -0.022 | 184 | | | 82 | | | | | 67 | 64 | 38 | 55 | | | | 2490 | 5490 | 297 | 1636 | 1543 | 1567 |
| 35 | 0 -0.021 | 60 | - | 200 | | 13 | 96 | 13 | 9 | 14 | 8.1 | 78 | 75 | 45 | 64 | 0.030 | | 0.030 | 2650 | 6270 | 373 | 2580 | 2400 | 2433 |
| 40 | | 65 | | 230 | | | 101 | | | | | 83 | 80 | 48 | 68 | | | | 3430 | 8040 | 553 | 2950 | 2510 | 2798 |

For Precautions for Use, see P.303
Mounting holes of long type are on the opposite direction. For Piloted and Flanged Type application examples, see P.307.

* Perpendicularity of D part to flange mounting surface kgf=Nx0.101972

| Part Number: Type | dr | Unit Price Long: Round Flange | | | | | Square Flange | | | | | Compact Flange | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LHKRNL | LHKRL | LHKRNLF | LHKRLF | SLHKRLFS | LHKSNL | LHKSL | LHKSNLF | LHKSLF | SLHKSLFS | LHKCNL | LHKCL |
| (EN 1.3505 Equiv.) (EN 1.4125 Equiv.) | 6 | | | | | | | | | | | - | - |
| (Round Flange) LHKRNL SLHKRLFS | 8 | | | | | | | | | | | - | - |
| LHKRNLF | 10 | | | | | | | | | | | - | - |
| LHKRL | 12 | | | | | | | | | | | - | - |
| LHKRLF | 13 | | | | | | | | | | | - | - |
| (Square Flange) LHKSNL SLHKSLFS | 16 | | | | | | | | | | | | |
| LHKSNLF | 20 | | | | | | | | | | | | |
| LHKSL | 25 | | | | | | | | | | | | |
| LHKSLF | 30 | | | | | | | | | | | | |
| (Compact Flange) LHKCNL | 35 | - | | - | - | - | - | | - | - | - | - | |
| LHKCL | 40 | - | | - | - | - | - | | - | - | - | - | |

| Part Number: Type | dr | Unit Price Long with Pilot: Round Flange | | | | | Square Flange | | | | | Compact Flange | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LHKIRNL | LHKIRL | LHKIRNLF | LHKIRLF | SLHKIRLFS | LHKISNL | LHKISL | LHKISNLF | LHKISLF | SLHKISLFS | LHKICNL | LHKICL |
| (EN 1.3505 Equiv.) (EN 1.4125 Equiv.) | 6 | | | | | | | | | | | - | - |
| (Round Flange) LHKIRNL SLHKIRLFS | 8 | | | | | | | | | | | - | - |
| LHKIRNLF | 10 | | | | | | | | | | | - | - |
| LHKIRL | 12 | | | | | | | | | | | - | - |
| LHKIRLF | 13 | | | | | | | | | | | - | - |
| (Square Flange) LHKISNL SLHKISLFS | 16 | | | | | | | | | | | | |
| LHKISNLF | 20 | | | | | | | | | | | | |
| LHKISL | 25 | | | | | | | | | | | | |
| LHKISLF | 30 | | | | | | | | | | | | |
| (Compact Flange) LHKICNL | 35 | - | | - | - | - | - | | - | - | - | - | |
| LHKICL | 40 | - | | - | - | - | - | | - | - | - | - | |

Ordering Example — Part Number
LHKRL8
LHKRL8L (L Type Greased)
LHKRL8G (G Type Greased)
LHKRL8H (H Type Greased)
Alternative grease types available.
For Days to Ship, Price and Performance, see P.304.

# Flanged Linear Bushings
## Long / Long, Pilot

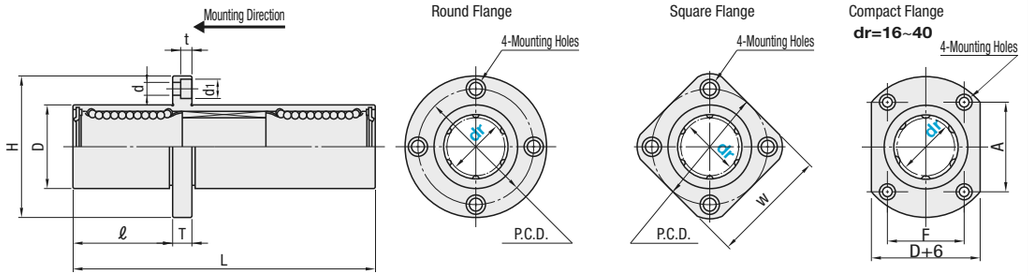
= For customers selecting MISUMI original specifications =
The part enclosed in the red frame is as per standard specifications (Outer cylinder EN 1.3505 Equiv. equivalent, Retainer resin).
Consider these specifications while selecting the product.

■**Features:** Easy to assemble with bolt-on flanges. A load can be placed near the center of the bushing, evenly distributing the load and space.

### MISUMI Original

RoHS

| Type | | | Outer Cylinder, Balls | | Outer Cylinder | Retainer | Ambient Operating Temp. | Accessory |
|---|---|---|---|---|---|---|---|---|
| Round Flange | Square Flange | Compact Flange | M Material | H Hardness | S Surface Treatment | M Material | | |
| LHKMRNL | LHKMSNL | LHKMCNL | EN 1.3505 Equiv. | 58HRC~ | - | Plastic (Duracon M90 Equiv.) | -20~ 80°C | Seal M Material Nitrile Rubber (-20~120°C) |
| LHKMRNLF | LHKMSNLF | - | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| LHKMRL | LHKMSL | LHKMCL | | | Electroless Nickel Plating | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| LHKMRLF | LHKMSLF | - | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| SLHKMRLFS | SLHKMSLFS | - | EN 1.4125 Equiv. | 56HRC~ | - | Stainless Steel (Stainless Steel) | -20~120°C | |




| dr | Tolerance | D Tolerance: No Surface Treatment | D Tolerance: Surface Treatment | L | Tolerance | ℓ | H | T | d | d1 | t | P.C.D. | W | F | A | Eccentricity | Rows of Balls | * Perpendicularity | Basic Load Rating: C (Dynamic) N | Basic Load Rating: Co (Static) N | Allowable Static Moment (N・m) | Mass (g): Round Flange | Mass (g): Square Flange | Mass (g): Compact Flange |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 0 -0.012 | 15 | 0 -0.013 | 49 | ±0.3 | 17 | 32 | 5 | 3.5 | 6 | 3.1 | 24 | 25 | - | - | 0.020 | 4 | 0.020 | 324 | 529 | 8.2 | 66 | 58 | - |
| 8 | | 19 | 0 -0.016 | 68 | | 22 | 40 | 6 | 4.5 | 7.5 | 4.1 | 29 | 30 | - | - | | | | 431 | 784 | 16.0 | 135 | 117 | - |
| 10 | | 23 | | 82 | | 27 | 43 | | | | | 33 | 34 | - | - | | | | 588 | 1100 | 27.0 | 205 | 189 | - |
| 12 | 0 -0.015 | 26 | | 86 | | 28 | 46 | | | | | 36 | 35 | - | - | | | | 657 | 1200 | 40.1 | 248 | 228 | - |
| 13 | | 28 | | 92 | | 30 | 48 | | | | | 38 | 37 | - | - | | | | 813 | 1570 | 42.9 | 308 | 286 | - |
| 16 | | 32 | 0 -0.019 | 105 | | 35 | 54 | 8 | 5.5 | 9 | 5.1 | 43 | 42 | 24 | 36 | 0.025 | 5 | 0.025 | 1230 | 2350 | 73.5 | 412 | 376 | 386 |
| 20 | 0 -0.018 | 40 | | 120 | | 40 | 62 | | | | | 51 | 50 | 32 | 40 | | | | 1400 | 2740 | 98.0 | 752 | 714 | 724 |
| 25 | | 45 | | 167 | | 55 | 74 | 10 | 6.6 | 11 | 6.1 | 60 | 58 | 35 | 49 | | 6 | | 1560 | 3140 | 157 | 1244 | 1163 | 1178 |
| 30 | | 52 | 0 -0.022 | 184 | | 61 | 82 | | | | | 67 | 64 | 38 | 55 | | | | 2490 | 5490 | 297 | 1636 | 1543 | 1567 |
| 35 | 0 -0.021 | 60 | - | 200 | | 67 | 96 | 13 | 9 | 14 | 8.1 | 78 | 75 | 45 | 64 | 0.030 | | 0.030 | 2650 | 6270 | 373 | 2580 | 2400 | 2433 |
| 40 | | 65 | | 230 | | 77 | 101 | | | | | 83 | 80 | 48 | 68 | | | | 3430 | 8040 | 553 | 2950 | 2510 | 2728 |

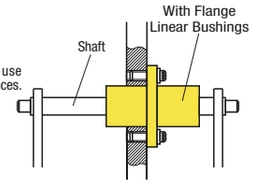
For Precautions for Use, see P.303.

* Perpendicularity of D part to flange mounting surface kgf=Nx0.101972

| Part Number: Type | dr | Unit Price: Round Flange | | | | | Square Flange | | | | | Compact Flange | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LHKMRNL | LHKMRL | LHKMRNLF | LHKMRLF | SLHKMRLFS | LHKMSNL | LHKMSL | LHKMSNLF | LHKMSLF | SLHKMSLFS | LHKMCNL | LHKMCL |
| (EN 1.3505 Equiv.) (EN 1.4125 Equiv.) | 6 | | | | | - | | | | | | - | - |
| (Round Flange) LHKMRNL SLHKMRLFS | 8 | | | | | | | | | | | - | - |
| LHKMRNLF | 10 | | | | | | | | | | | - | - |
| LHKMRL | 12 | | | | | | | | | | | - | - |
| LHKMRLF | 13 | | | | | | | | | | | - | - |
| (Square Flange) LHKMSNL SLHKMSLFS | 16 | | | | | | | | | | | | |
| LHKMSNLF | 20 | | | | | | | | | | | | |
| LHKMSL | 25 | | | | | | | | | | | | |
| LHKMSLF | 30 | | | | | | | | | | | | |
| (Compact Flange) LHKMCNL | 35 | - | | - | - | - | - | | - | - | - | - | |
| LHKMCL | 40 | - | | - | - | - | - | | - | - | - | - | |

Ordering Example — Part Number
LHKMSLF6
LHKMSLF6L (L Type Greased)
LHKMSLF6G (G Type Greased)
LHKMSLF6H (H Type Greased)
Alternative grease types available.
For Days to Ship, Price and Performance, see P.304.

Example
For long stroke applications, use longer bushings for less clearances.



# Linear Bushings
## Single

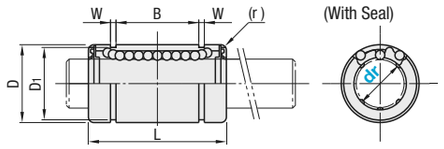
= For customers using industry standard products =
The part enclosed in the red frame is as per industry standard specifications (Outer cylinder EN 1.3505 Equiv. equivalent, Retainer resin).
Consider these specifications while selecting the product.

**Features:** The most popular Linear Bushing style.

**Industry Standard**


RoHS

| Type | Outer Cylinder Material | Hardness | Surface Treatment | Balls Material | Retainer Material | Ambient Operating Temp. | Accessory |
|---|---|---|---|---|---|---|---|
| LMU-N | EN 1.3505 Equiv. | 58HRC~ | - | EN 1.3505 Equiv. | Plastic (Duracon M90 Equiv.) | -20~ 80°C | Seal Material Nitrile Rubber (-20~120°C) |
| LMU | | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| LMUF-N | | | | | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| LMUF | | | Low Temperature Black Chrome Plating | EN 1.4125 Equiv. | | | |
| LMUR | | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| LMUM | | | Electroless Nickel Plating | | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| LMUMF | | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| SLMU | EN 1.4125 Equiv. | 56HRC~ | - | | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| SLMUS | | | | | Stainless Steel (Stainless Steel) | -20~120°C | |




| Part Number Type | dr | Tolerance | D Tolerance | No Surface Treatment | Surface Treatment | L | Tolerance | B | Tolerance | W | D1 | (r) | Eccentricity (Max.) | Rows of Balls | Basic Load Rating C (Dynamic) N | Co (Static) N | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LMU-N (No Seal) | 3 | 0 -0.008 | 7 | 0 -0.009 | 0 -0.015 | 10 | 0 -0.12 | - | - | - | - | 0.3 | 0.008 | 4 | 69 | 105 | 1.4 |
| | 4 | | 8 | | | 12 | | | | - | - | | | | 88 | 127 | 2.0 |
| LMU | 5 | | 10 | | | 15 | | 8 | 0 -0.4 | 1.1 | 9.6 | 0.4 | | | 167 | 206 | 4.0 |
| LMUF-N (No Seal) | 6 | 0 -0.009 | 12 | 0 -0.011 | 0 -0.018 | 19 | 0 -0.2 | 11.3 | | | 11.5 | | 0.012 | | 206 | 265 | 8.5 |
| | 8 | | 15 | | | 24 | | 15.3 | | | 14.3 | | | | 265 | 380 | 17 |
| LMUF | 10 | | 19 | 0 -0.013 | 0 -0.021 | 29 | | 19.4 | | 1.3 | 18 | | | | 372 | 549 | 31 |
| LMUR | 12 | | 21 | | | 30 | | 20.4 | | | 20 | 0.8 | | | 412 | 598 | 41 |
| LMUM | 13 | | 23 | | | 32 | | | | | 22 | | | | 510 | 784 | 46 |
| LMUMF | 16 | | 28 | | | 37 | | 23.3 | | 1.6 | 27 | | | | 775 | 1180 | 73 |
| SLMU | 20 | 0 -0.010 | 32 | 0 -0.016 | 0 -0.025 | 42 | | 27.3 | | | 30.5 | | 0.015 | 5 | 882 | 1370 | 98 |
| SLMUS | 25 | | 40 | | | 59 | 0 -0.3 | 37.3 | 0 -0.5 | 1.85 | 38 | 1.5 | | 6 | 980 | 1570 | 236 |
| | 30 | | 45 | | | 64 | | 40.8 | | | 43 | | | | 1570 | 2740 | 262 |
| LMU | 35 | 0 -0.012 | 52 | 0 -0.019 | 0 -0.030 | 70 | | 45.3 | | 2.1 | 49 | | 0.020 | | 1670 | 3140 | 425 |
| LMUM | 40 | | 60 | | | 80 | | 56.3 | | | 57 | | | | 2160 | 4020 | 654 |
| | 50 | | 80 | | | 100 | | 68.8 | | 2.6 | 76.5 | | | | 3820 | 7940 | 1700 |

kgf=Nx0.101972

For Precautions for Use, see P.303.
For LMU-N and LMUF-N, dr=3/4.
Products with dr=3, 4 are without seal. No-Seal Type has lower sliding resistance (0.4~1.2N). Separate dust-proofing measures are necessary to keep the dust entering into sliding parts.
For LTBC Plating, see P.304.
Spacers and Stoppers for linear bushings can be selected from P.330.

| dr | Unit Price LMU-N | LMU | LMUF-N | LMUF | LMUR | LMUM | LMUMF | SLMU | SLMUS |
|---|---|---|---|---|---|---|---|---|---|
| 3 | - | | - | | | | | | |
| 4 | - | | - | | | | | | |
| 5 | | | | | | | | | |
| 6 | | | | | | | | | |
| 8 | | | | | | | | | |
| 10 | | | | | | | | | |
| 12 | | | | | | | | | |
| 13 | | | | | | | | | |
| 16 | | | | | | | | | |
| 20 | | | | | | | | | |
| 25 | | | | | | | | | |
| 30 | | | | | | | | | |
| 35 | - | | - | - | - | | - | - | - |
| 40 | - | | - | - | - | | - | - | - |
| 50 | - | | - | - | - | | - | - | - |

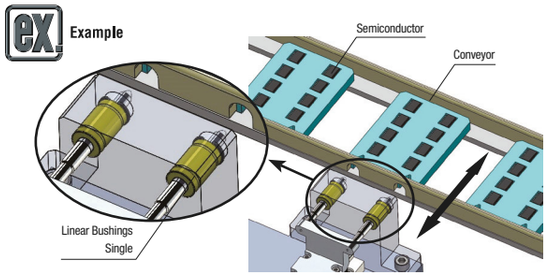
**Ordering Example**

**Part Number**

LMU20
LMU-N20 (No Seal)
LMUR20 (LTBC Plating)
LMUR20L (L Type Greased)
LMUR20G (G Type Greased)
LMUR20H (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, see P.304.

**Example**




▲Semiconductor conveyor tray locating mechanism

# Linear Bushings
## Double

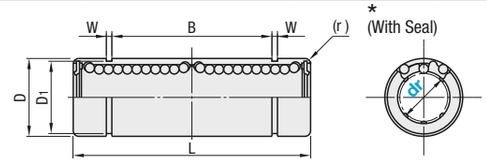
= For customers using industry standard products =
The part enclosed in the red frame is as per industry standard specifications (Outer cylinder EN 1.3505 Equiv. equivalent, Retainer resin).
Consider these specifications while selecting the product.

**Features:** Most common specification in Linear Bushings. Use Double Type in case moment load is to be applied.

**Industry Standard**


RoHS

| Type | Outer Cylinder M Material | H Hardness | S Surface Treatment | Balls M Material | Retainer M Material | Ambient Operating Temp. | A Accessory |
|---|---|---|---|---|---|---|---|
| LMUW-N | EN 1.3505 Equiv. | 58HRC~ | - | EN 1.3505 Equiv. | Plastic (Duracon M90 Equiv.) | -20~ 80°C | * Seal M Material Nitrile Rubber (-20~120°C) |
| LMUW | | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| LMUWF | | | Low Temperature Black Chrome Plating | EN 1.4125 Equiv. | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| LMUWR | | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| LMUWM | | | Electroless Nickel Plating | | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| LMUWMF | | | | | Stainless Steel (Stainless Steel) | -20~110°C | |
| SLMUW | EN 1.4125 Equiv. | 56HRC~ | - | | Plastic (Duracon M90 Equiv.) | -20~ 80°C | |
| SLMUWS | | | | | Stainless Steel (Stainless Steel) | -20~120°C | |




| Part Number Type | dr | Tolerance | D Tolerance | No Surface Treatment | Surface Treatment | L | Tolerance | B | Tolerance | W | D1 | (r) | Eccentricity (Max.) | Rows of Balls | Basic Load Rating C (Dynamic) N | Co (Static) N | Allowable Static Moment (N・m) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LMUW-N (No Seal) | 3 | 0 -0.010 | 7 | 0 -0.011 | 0 -0.015 | 19 | 0 -0.3 | - | - | - | - | 0.3 | 0.010 | 4 | 138 | 210 | 0.51 | 3.2 |
| | 4 | | 8 | | | 23 | | - | | - | - | | | | 176 | 254 | 0.63 | 4.8 |
| LMUW | 5 | | 10 | | | 28 | | 18.2 | 0 -0.5 | 1.1 | 9.6 | 0.4 | | | 263 | 412 | 1.38 | 11 |
| LMUWF | 6 | | 12 | 0 -0.013 | 0 -0.018 | 35 | | 24.8 | | | 11.5 | | 0.015 | | 324 | 529 | 2.18 | 16 |
| LMUWR | 8 | | 15 | | | 45 | | 32.8 | | | 14.3 | | | | 431 | 784 | 4.31 | 31 |
| LMUWM | 10 | | 19 | 0 -0.016 | 0 -0.021 | 55 | | 41.4 | | 1.3 | 18 | | | | 588 | 1100 | 7.24 | 62 |
| LMUWMF | 12 | | 21 | | | 57 | | 43.4 | | | 20 | 0.8 | | | 657 | 1200 | 10.9 | 80 |
| SLMUW | 13 | | 23 | | | 61 | | | | | 22 | | | | 813 | 1570 | 11.6 | 90 |
| SLMUWS | 16 | | 28 | | | 70 | | 49.8 | | 1.6 | 27 | | | | 1230 | 2350 | 19.7 | 145 |
| | 20 | 0 -0.012 | 32 | 0 -0.019 | 0 -0.025 | 80 | | 57.8 | 0 -0.6 | | 30.5 | | 0.020 | 5 | 1400 | 2740 | 26.8 | 180 |
| | 25 | | 40 | | | 112 | 0 -0.4 | 78.3 | | 1.85 | 38 | 1.5 | | 6 | 1560 | 3140 | 43.4 | 440 |
| | 30 | | 45 | | | 123 | | 85.3 | | | 43 | | | | 2490 | 5490 | 82.8 | 480 |
| LMUW | 35 | 0 -0.015 | 52 | 0 -0.022 | 0 -0.030 | 135 | | 94.8 | | 2.1 | 49 | | 0.025 | | 2650 | 6270 | 110 | 795 |
| LMUWM | 40 | | 60 | | | 151 | | 116.8 | | | 57 | | | | 3430 | 8040 | 147 | 1170 |
| | 50 | | 80 | | | 192 | | 142.8 | | 2.6 | 76.5 | | | | 6080 | 15900 | 397 | 3100 |

kgf=Nx0.101972

For Precautions for Use, see P.303.
dr=3, 4 are not available for LMUW-N and LMUWR
Products with dr=3, 4 are without seal. No-Seal Type has lower sliding resistance (0.4~1.2N). Separate dust-proofing measures are necessary to keep the dust entering into sliding parts.
For LTBC Plating, see P.304.
Spacers and Stoppers for linear bushings can be selected from P.330.

| dr | Unit Price LMUW-N | LMUW | LMUWF | LMUWR | LMUWM | LMUWMF | SLMWU | SLMUWS |
|---|---|---|---|---|---|---|---|---|
| 3 | - | | | - | | | | |
| 4 | - | | | - | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 8 | | | | | | | | |
| 10 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 16 | | | | | | | | |
| 20 | | | | | | | | |
| 25 | | | | | | | | |
| 30 | | | | | | | | |
| 35 | - | | - | - | | - | - | - |
| 40 | - | | - | - | | - | - | - |
| 50 | - | | - | - | | - | - | - |

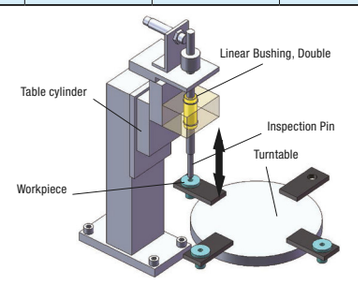
**Ordering Example**

**Part Number**

LMUW20
LMUW-N20 (No Seal)
LMUWR20 (LTBC Plating)
LMUWR20L (L Type Greased)
LMUWR20G (G Type Greased)
LMUWR20H (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, see P.304.

**Example**




▲Inspection instrument to confirm the precision of work piece hole

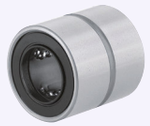
# Linear Bushings
## Short, Medium

= For customers selecting MISUMI original specifications =
The part enclosed in the red frame is as per standard specifications (Outer cylinder EN 1.3505 Equiv. equivalent, Retainer resin). Consider these specifications while selecting the product.

**Features:** Shorter length (L dim.) compared to Single Type enables length space savings.

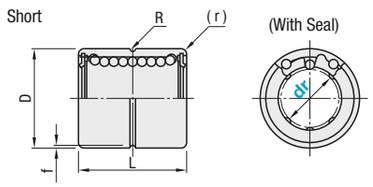
**MISUMI Original**

**Short**



RoHS

| Type | Outer Cylinder | | | Balls | Retainer | Ambient Operating Temp. | Accessory |
|---|---|---|---|---|---|---|---|
| Short | M Material | H Hardness | S Surface Treatment | M Material | M Material | | |
| LMUT | EN 1.3505 Equiv. | 58HRC~ | - | EN 1.3505 Equiv. | Plastic (Duracon M90 Equiv.) | -20~80°C | Seal M Material: Nitrile Rubber (-20~120°C) |
| SLMUT | EN 1.4125 Equiv. | 56HRC~ | | EN 1.4125 Equiv. | | | |




**Features of Short Type**
- The housing can be made more compact.
- The L dimensions are made to match MISUMI's standard plates.

**Short**

| Part Number Type | dr | Tolerance | D | Tolerance | L | Tolerance | R | f | (r) | Eccentricity (Max.) | Rows of Balls | Basic Load Rating C (Dynamic) N | Basic Load Rating Co (Static) N | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LMUT SLMUT | 6 | 0 -0.009 | 12 | 0 -0.011 | 16 | 0 -0.2 | 1 | 0.3 | 0.4 | 0.012 | 4 | 113 | 155 | 6.6 |
| | 8 | | 15 | | 20 | | | | | | | 155 | 226 | 14.7 |
| | 10 | | 19 | | | | 1.2 | 0.4 | | | | 254 | 359 | 26.1 |
| | 12 | | 21 | 0 -0.013 | 25 | | | | 0.8 | | | 317 | 407 | 28.6 |
| | 13 | | 23 | | | | | | | | | 320 | 413 | 36.3 |
| | 16 | | 28 | | 30 | | 1.5 | 0.5 | | | | 582 | 724 | 60.0 |
| | 20 | 0 -0.010 | 32 | 0 -0.016 | 35 | | | | | 0.015 | 5 | 777 | 1034 | 81.6 |

For Precautions for Use, see P.303
Short guiding section not suitable for which large moment loads apply.

kgf=Nx0.101972

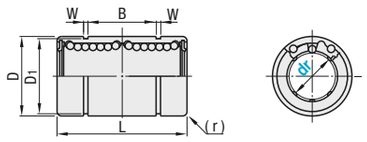
**Features**: Body length is approximately 1.5 times of single type, and allowable moment is approximately 4.3 times. Suitable for applications where there is no enough space for double type.

**MISUMI Original**

**Medium**

RoHS

| Type | Outer Cylinder | | | Balls | Retainer | Ambient Operating Temp. | Accessory |
|---|---|---|---|---|---|---|---|
| Straight | M Material | H Hardness | S Surface Treatment | M Material | M Material | | |
| LMUD | EN 1.3505 Equiv. | 58HRC~ | - | EN 1.3505 Equiv. | Plastic (Duracon M90 Equiv.) | -20~80°C | Seal M Material Nitrile Rubber |
| LMUDM | | | Electroless Nickel Plating | EN 1.4125 Equiv. | | | |




Body length is approximately 1.5 times of single type, and allowable moment is approximately 4.3 times. (See Allowable Load Comparison)

**Medium**

| Part Number Type | dr | Tolerance | D Tolerance No Surface Treatment | D Tolerance Surface Treatment | L | Tolerance | B | Tolerance | W | D1 | (r) | Eccentricity (Max.) | Rows of Balls | Basic Load Rating C (Dynamic) N | Basic Load Rating Co (Static) N | Allowable Static Moment (N · m) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LMUD LMUDM | 6 | 0 -0.010 | 12 | 0 -0.013 | 29 | 0 -0.3 | 20 | 0 -0.5 | 1.1 | 11.5 | 0.4 | 0.015 | 4 | 226 | 310 | 1.42 | 12 |
| | 8 | | 15 | -0.018 | 37 | | 25 | | | 14.3 | | | | 310 | 452 | 2.12 | 27 |
| | 10 | | 19 | 0 -0.021 | 47 | | 30 | | 1.3 | 18 | 0.8 | | | 508 | 718 | 4.37 | 49 |
| | 12 | | 21 | | | | | | | 20 | | | | 634 | 814 | 6.2 | 54 |
| | 13 | | 23 | -0.016 | | | | | | 22 | | | | 640 | 826 | 6.2 | 69 |
| | 16 | | 28 | | 56 | | 35 | | 1.6 | 27 | | | | 1164 | 1448 | 13.1 | 112 |
| | 20 | 0 -0.012 | 32 | 0 -0.025 | 65 | | 40 | 0 -0.6 | | 30.5 | | 0.02 | 5 | 1554 | 2068 | 18.3 | 152 |
| | 25 | | 40 | -0.019 | 83 | | 55 | | 1.85 | 38 | 2.0 | | 6 | 1725 | 3068 | 25.3 | 332 |
| | 30 | | 45 | | 90 | | 71.3 | | | 42.5 | | | | 2440 | 3974 | 42.7 | 422 |

For Precautions for Use, see P.303

kgf=Nx0.101972

| dr | Unit Price Short LMUT | Unit Price Short SLMUT | Unit Price Medium LMUD | Unit Price Medium LMUDM |
|---|---|---|---|---|
| 6 | | | | |
| 8 | | | | |
| 10 | | | | |
| 12 | | | | |
| 13 | | | | |
| 16 | | | | |
| 20 | | | | |
| 25 | - | - | | |
| 30 | - | - | | |

**Part Number**

LMUT8
LMUD10
LMUDM12L (L Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, see P.304

# Linear Bushings - Compact
## Single / Double

= For customers selecting MISUMI original specifications =
The products on this page are of standard specifications (Outer cylinder EN 1.3505 Equiv. equivalent, Retainer resin). Consider these specifications while selecting the product.

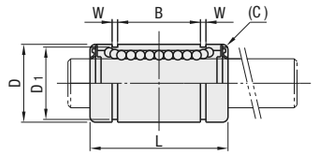
**Features:** 2mm smaller in O.D. (D dimension) than Standard.

**MISUMI Original**

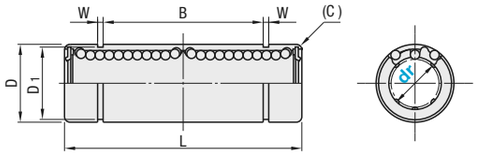
RoHS

| Type Single | Type Double | Outer Cylinder M Material | Outer Cylinder H Hardness | Balls M Material | Retainer M Material | Ambient Operating Temp. | Accessory |
|---|---|---|---|---|---|---|---|
| LMK | LMKW | EN 1.3505 Equiv. | 58HRC~ | EN 1.3505 Equiv. | Plastic (Duracon M90 Equiv.) | -20~80°C | Seal M Material Nitrile Rubber (-20~120°C) |

Single




Double




**Single**

| Part Number Type | dr | Tolerance | D | Tolerance | L | Tolerance | B | Tolerance | W | D1 | (C) | Eccentricity (Max.) | Rows of Balls | Basic Load Rating C (Dynamic) N | Basic Load Rating Co (Static) N | Mass (g) | Unit Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LMK | 6 | 0 - 0.009 | 10 | 0 -0.009 | 19 | 0 - 0.2 | 11.3 | 0 - 0.4 | 1.15 | 9.6 | 0.1 | 0.012 | 6 | 131 | 155 | 6 | |
| | 8 | | 13 | 0 - 0.011 | 24 | | 15.3 | | | 12.4 | 0.2 | | | 235 | 277 | 12 | |
| | 10 | | 17 | | 29 | | 19.4 | | | 16.2 | | | | 368 | 433 | 26 | |
| | 12 | | 19 | 0 - 0.013 | 30 | | 20.4 | | 1.35 | 18 | | | | 381 | 449 | 32 | |
| | 16 | | 26 | | 37 | | 23.3 | | | 24.9 | 0.3 | | | 608 | 716 | 58 | |

**Double**

| Part Number Type | dr | Tolerance | D | Tolerance | L | Tolerance | B | Tolerance | W | D1 | (C) | Eccentricity (Max.) | Rows of Balls | Basic Load Rating C (Dynamic) N | Basic Load Rating Co (Static) N | Allowable Static Moment (N-m) | Mass (g) | Unit Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LMKW | 6 | 0 - 0.010 | 10 | 0 -0.009 | 35 | 0 - 0.3 | 24.8 | 0 - 0.5 | 1.15 | 9.6 | 0.1 | 0.015 | 6 | 206 | 309 | 2.46 | 12 | |
| | 8 | | 13 | 0 - 0.011 | 45 | | 32.8 | | | 12.4 | 0.2 | | | 383 | 555 | 5.76 | 24 | |
| | 10 | | 17 | | 55 | | 41.4 | | | 16.2 | | | | 585 | 867 | 10.99 | 52 | |
| | 12 | | 19 | 0 - 0.013 | 57 | | 43.4 | | 1.35 | 18 | | | | 608 | 899 | 11.85 | 64 | |
| | 16 | | 26 | | 70 | | 49.8 | | | 24.9 | 0.3 | | | 965 | 1431 | 23.48 | 116 | |

For Precautions for Use, see P.303

kgf=Nx0.101972

**Ordering Example**

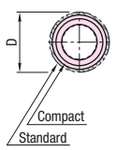
**Part Number**

LMK12
LMKW12
LMK12L (L Type Greased)
LMK12G (G Type Greased)
LMK12H (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, see P.304

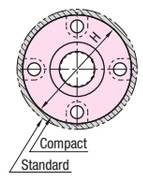
## Dimension comparison of Compact and Standard (When dr=6)

**Straight**



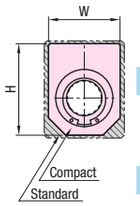

Standard O.D. 12
O.D. Dimension 16% Compact
Compact O.D. 10

**Flanged(P.305~314)**




Standard Flange Dia. 28
Flange Dia. 11% Compact
Compact Flange Dia. 25

**Housing Unit Type(P.321, 322)**




Standard H 22
Housing Height 10% Compact
Compact H 20

**Standard and Compact Comparison**

| dr | Straight / Flanged O.D. (D) Compact | Standard | Difference | Flanged Flange Dia. (H) Compact | Standard | Difference | Housing Unit Width (W) Compact | Standard | Difference | Housing Unit Height (H) Compact | Standard | Difference | Rows of Balls Compact | Standard |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 10 | 12 | -2 | 25 | 28 | -3 | 14 | 16 | -2 | 20 | 22 | -2 | 6 | 4 |
| 8 | 13 | 15 | -2 | 28 | 32 | -4 | 17 | 20 | -3 | 24 | 26 | -2 | 6 | 4 |
| 10 | 17 | 19 | -2 | 35 | 40 | -5 | 23 | 26 | -3 | 30 | 32 | -2 | 6 | 4 |
| 12 | 19 | 21 | -2 | 38 | 42 | -4 | 25 | 28 | -3 | 32 | 34 | -2 | 6 | 4 |
| 16 | 26 | 28 | -2 | 44 | 48 | -4 | 33 | 36 | -3 | 43 | 49 | -6 | 6 | 4 |