



Cross Roller Table

THK General Catalog

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Features of the Cross Roller Table

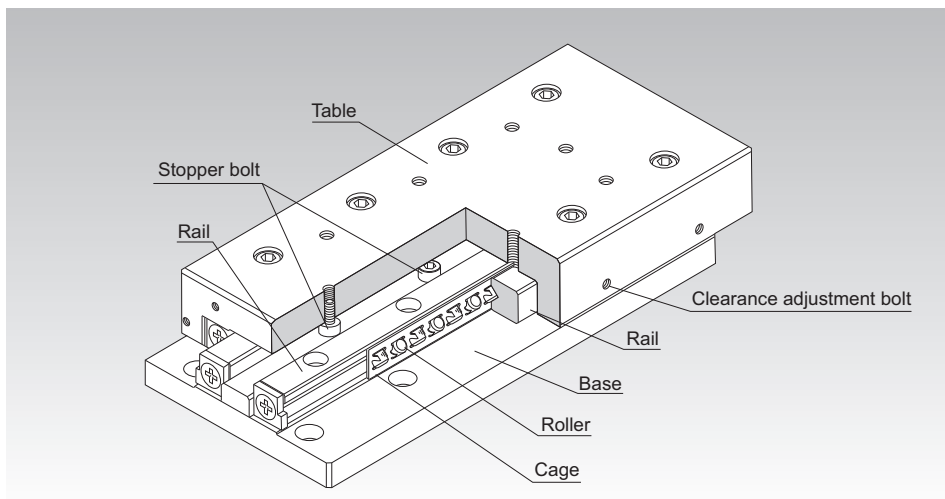


Fig.1 Structure of the Cross Roller Table

Structure and Features

The Cross Roller Table is a compact, highly rigid finite linear guide unit that has the Cross Roller Guide(s) between the precision-machined table and base.

There are two types of the Cross Roller Table: model VRU, and a miniature type model VRT. The Cross Roller Table is used in extensive applications such as OA equipment and peripherals, measuring instruments and printed circuit board drilling machines.

Features

Features of the Cross Roller Table

[Easy Installation]

Since the Cross Roller Guide(s) is installed between the precision-machined table and base, a highly accurate linear guide mechanism is achieved simply by mounting the product with bolts.

[Large Permissible Load]

Since rollers with large rated loads are installed in short pitches, the cross roller guide is capable of bearing a heavy load, achieving a highly rigid linear guide mechanism and gaining a long service life.

[Diversified Usage]

Since the rollers are orthogonally arranged one after another, the guide system is capable of evenly receiving loads in the four directions applied on the table. (See Fig.2.)

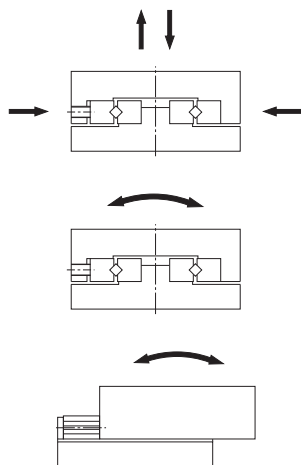
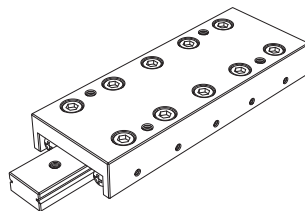


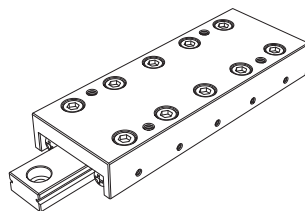
Fig.2 Load Directions

[Highly Corrosion Resistant]

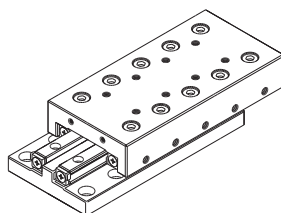
The base and the table of models VRT-M and VRT-AM use stainless steel. Their rails, rollers, roller cages and screws are also made of stainless steel. As a result, these guide systems have significantly high corrosion resistance. The base and the table of model VRU-M are made of aluminum.



Model VRT



Model VRT-A



Model VRU

Rated Load and Nominal Life

[Rated Loads in All Directions]

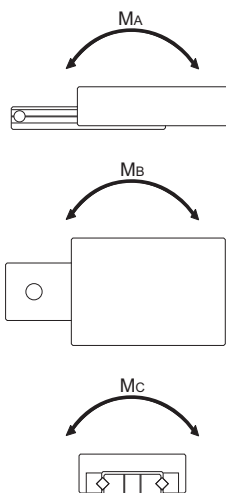
The rated loads of models VRT, VRT-A and VRU are equal in four directions (radial, reverse radial and lateral directions), and their values are expressed as C and C₀ in the corresponding specification tables.

[Static Safety Factor f_s]

The Cross Roller Table may receive an unexpected external force while it is stationary or operative due to the generation of an inertia caused by vibrations and impact or start and stop. It is necessary to consider a static safety factor against such a working load.

$$f_s = \frac{C_0}{P_c} \quad \text{or} \quad f_s = \frac{M_0}{M}$$

| | | |
|----------------|-----------------------------|---|
| f _s | : Static safety factor | |
| C ₀ | : Basic static load rating | (kN) |
| M ₀ | : Static permissible moment | (M _A , M _B and M _C) |
| P _c | : Calculated load | (kN) |
| M | : Calculated moment | (kN) |



● Reference value of static safety factor

The static safety factors indicated in Table1 are the lower limits of reference values in the respective conditions.

Table1 Reference Values of Static Safety Factor (f_s)

| Machine using the LM system | Load conditions | Lower limit of f _s |
|------------------------------|-----------------------------|-------------------------------|
| General industrial machinery | Without vibration or impact | 1 to 1.3 |
| | With vibration or impact | 2 to 3 |

[Nominal Life]

The nominal life of the Cross Roller Table is obtained using the following equation.

$$L = \left(\frac{f_r}{f_w} \cdot \frac{C}{P_c} \right)^{\frac{10}{3}} \times 100$$

- L : Nominal life (km)
 (The total number of revolutions that 90% of a group of identical VRT, VRT-A or VRU units independently operating under the same conditions can achieve without showing flaking)
- C : Basic dynamic load rating (kN)
- P_c : Calculated radial load (kN)
- f_r : Temperature factor
 (see Fig.1 on **A8-6**)
- f_w : Load factor (see Table2 on **A8-6**)

[Calculating the Service Life Time]

When the nominal life (L) has been obtained, if the stroke length and the number of reciprocations per minute are constant, the service life time is obtained using the following equation.

$$L_h = \frac{L \times 10^6}{2 \times \ell_s \times n_1 \times 60}$$

- L_h : Service life time (h)
- ℓ_s : Stroke length (mm)
- n₁ : Number of reciprocations per minute (min⁻¹)

● f_t : Temperature Factor

If the temperature of the environment surrounding the operating model VRT, VRT-A or VRU exceeds 100°C, take into account the adverse effect of the high temperature and multiply the basic load ratings by the temperature factor indicated in Fig.1.

Note) If the environment temperature exceeds 100°C, contact THK.

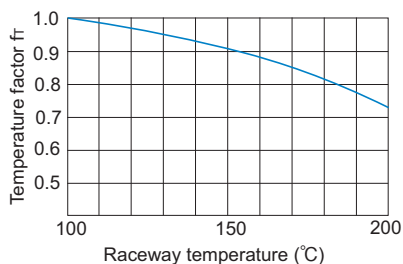


Fig.1 Temperature Factor (f_t)

● f_w : Load Factor

In general, reciprocating machines tend to involve vibrations or impact during operation. It is extremely difficult to accurately determine vibrations generated during high-speed operation and impact during frequent start and stop. Therefore, when the actual load applied on model VRT, VRT-A or VRU cannot be obtained, or when speed and vibrations have a significant influence, divide the basic load rating (C or C_0), by the corresponding load factor in Table2 of empirically obtained data.

Table2 Load Factor (f_w)

| Vibrations/impact | Speed (V) | f_w |
|-------------------|-------------------------------------|------------|
| Faint | Very low $V \leq 0.25\text{m/s}$ | 1 to 1.2 |
| Weak | Slow $0.25 < V \leq 1\text{m/s}$ | 1.2 to 1.5 |

Accuracy Standards

For Cross Roller Table models VRT, VRT-A, and VRU, the dimensional tolerances in height (M) and width (W) and the running accuracy of surfaces C and D are indicated in the corresponding specification tables.

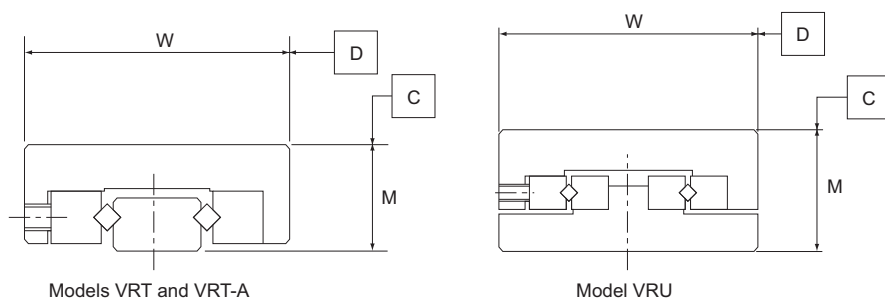


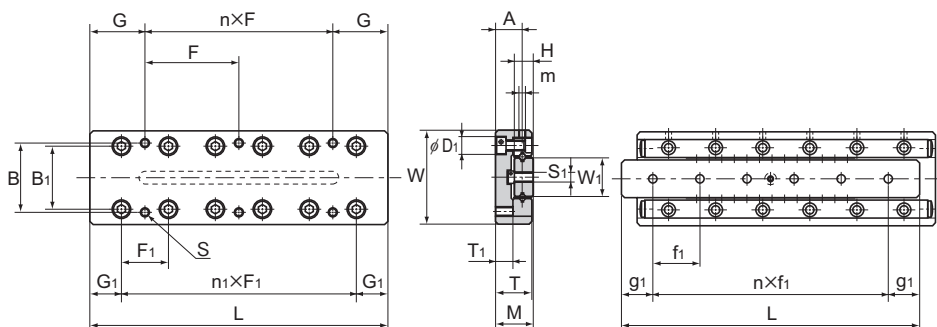
Fig.2 Accuracy Standards

Point of Selection

Accuracy Standards

Cross Roller Table

Model VRT Miniature Type (Tapped Base Type)

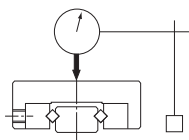
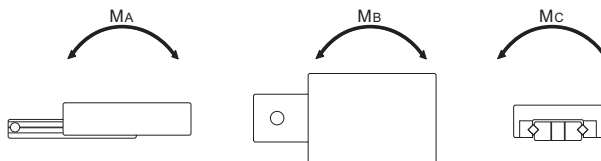
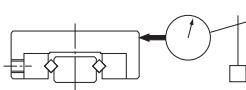


| Model No. | Main dimensions | | | | | Table surface dimensions | | | | | | | |
|-----------|-----------------|------------------------|-------------------------|------------|----------|-----------------------------|--------------|------|------|------------------|-------|-------|-------|
| | Maximum stroke | Width W ± 0.1 | Height M ± 0.1 | Length L | Mass g | Table mounting tap position | | | | $n_1 \times F_1$ | B_1 | D_1 | G_1 |
| | | | | | | B | $n \times F$ | G | S | | | | |
| VRT 1025 | 12 | 20 | 8 | 25 | 23 | 14 | 1×18 | 3.5 | M2.6 | 1×10 | 12.4 | 4.1 | 7.5 |
| VRT 1035 | 18 | | | 35 | 32 | | 1×28 | 3.5 | | 2×10 | | | |
| VRT 1045 | 25 | | | 45 | 42 | | 1×20 | 12.5 | | 3×10 | | | |
| VRT 1055 | 32 | | | 55 | 52 | | 1×30 | 12.5 | | 4×10 | | | |
| VRT 1065 | 40 | | | 65 | 62 | | 2×20 | 12.5 | | 5×10 | | | |
| VRT 1075 | 45 | | | 75 | 72 | | 1×30 | 22.5 | | 6×10 | | | |
| VRT 1085 | 50 | 30 | 12 | 85 | 82 | 22 | 2×30 | 12.5 | M3 | 7×10 | 20 | 6 | 10 |
| VRT 2035 | 18 | | | 35 | 78 | | 1×28 | 3.5 | | 1×15 | | | |
| VRT 2050 | 30 | | | 50 | 113 | | 1×43 | 3.5 | | 2×15 | | | |
| VRT 2065 | 40 | | | 65 | 147 | | 1×30 | 17.5 | | 3×15 | | | |
| VRT 2080 | 50 | | | 80 | 184 | | 1×45 | 17.5 | | 4×15 | | | |
| VRT 2095 | 60 | | | 95 | 220 | | 2×30 | 17.5 | | 5×15 | | | |
| VRT 2110 | 70 | 40 | 16 | 110 | 257 | 30 | 1×45 | 32.5 | M4 | 6×15 | 28.4 | 7.5 | 15 |
| VRT 2125 | 80 | | | 125 | 290 | | 2×45 | 17.5 | | 7×15 | | | |
| VRT 3055 | 30 | | | 55 | 229 | | 1×40 | 7.5 | | 1×25 | | | |
| VRT 3080 | 45 | | | 80 | 336 | | 1×65 | 7.5 | | 2×25 | | | |
| VRT 3105 | 60 | | | 105 | 442 | | 1×50 | 27.5 | | 3×25 | | | |
| VRT 3130 | 75 | | | 130 | 551 | | 1×75 | 27.5 | | 4×25 | | | |
| VRT 3155 | 90 | 155 | 657 | 2×50 | 27.5 | 5×25 | | | | | | | |
| VRT 3180 | 105 | 180 | 766 | 1×75 | 52.5 | 6×25 | | | | | | | |
| VRT 3205 | 130 | 205 | 871 | 2×75 | 27.5 | 7×25 | | | | | | | |

Note) All stainless steel type with high corrosion resistance is also available.

(Example) VRT 2035 M

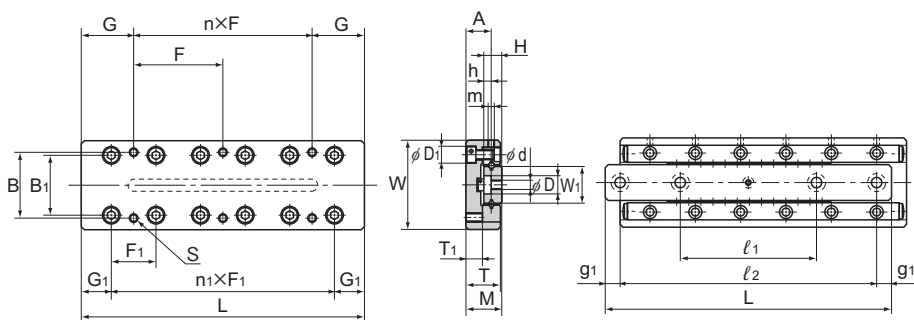
Symbol for stainless steel type

Accuracy: ΔC Accuracy: ΔD 

Unit: mm

| Side surface dimensions | | | | | | Base surface dimensions Mounting hole position | | | | Basic load rating | | Static permissible moment | | | Accuracy μm | | | |
|-------------------------|----------------|----|----------------|------|----|---|------------------|----------------|------------------|-------------------|----------------------|---------------------------|-----------------------|-----------------------|------------------------|------------|---|---|
| T | T ₁ | H | W ₁ | A | m | S ₁ | n×f ₁ | g ₁ | No. of rollers Z | C kN | C ₀ kN | M _A N-m | M _B N-m | M _C N-m | ΔC | ΔD | | |
| 7.5 | 3.5 | 4 | 6.7 | 5.5 | M2 | M2.6 | 2×7.5 | 5 | 5 | 0.46 | 0.61 | 1.52 | 1.25 | 2.29 | 2 | 4 | | |
| | | | | | | | 2×10 | | 7 | 0.63 | 0.92 | 2.62 | 2.32 | 3.44 | | | | |
| | | | | | | | 3×10 | | 10 | 0.95 | 1.53 | 4.14 | 4.53 | 5.73 | | | | |
| | | | | | | | 4×10 | 7.5 | 12 | 1.09 | 1.83 | 5.92 | 6.41 | 6.87 | | | | |
| | | | | | | | 5×10 | | 14 | 1.23 | 2.14 | 8.08 | 8.62 | 8.02 | | | | |
| | | | | | | | 6×10 | | 18 | 1.50 | 2.75 | 13.3 | 14.0 | 10.3 | | | | |
| | | | | | | | 7×10 | | 20 | 1.63 | 3.05 | 16.4 | 17.2 | 11.5 | | | | |
| 1×20 | 10 | 5 | 0.84 | 1.09 | | 4.32 | 3.55 | 7.06 | | | | | | | | | | |
| 2×15 | | 7 | 1.16 | 1.63 | | 7.45 | 6.59 | 10.6 | | | | | | | | | | |
| 3×15 | | 9 | 1.46 | 2.17 | | 11.8 | 10.5 | 14.1 | | | | | | | | | | |
| 4×15 | | 12 | 2.01 | 3.26 | | 16.8 | 18.2 | 21.2 | | | | | | | | | | |
| 5×15 | | 14 | 2.26 | 3.80 | | 23.0 | 24.5 | 24.7 | | | | | | | | | | |
| 6×15 | | 17 | 2.51 | 4.34 | | 37.9 | 35.7 | 28.2 | | | | | | | | | | |
| 7×15 | | 19 | 2.76 | 4.89 | | 46.7 | 44.3 | 31.8 | | | | | | | | | | |
| 11.5 | 5.5 | 6 | 12.2 | 8.5 | M2 | M3 | 1×35 | 10 | 6 | 2.71 | 3.67 | 12.2 | 13.9 | 31.9 | 2 | 4 | | |
| | | | | | | | 2×25 | | 10 | 4.06 | 6.11 | 33.1 | 36.2 | 53.1 | | | | |
| | | | | | | | 3×25 | | 13 | 4.68 | 7.33 | 64.6 | 59.8 | 63.8 | | | | |
| | | | | | | | 4×25 | | 17 | 5.87 | 9.77 | 107 | 100 | 85 | | | | |
| | | | | | | | 5×25 | | 20 | 6.98 | 12.2 | 131 | 138 | 106 | | | | |
| | | | | | | | 6×25 | | 24 | 8.05 | 14.7 | 189 | 196 | 128 | | | | |
| | | | | | | | 7×25 | | 26 | 8.57 | 15.9 | 222 | 230 | 138 | | | | |
| 15.5 | 7.5 | 8 | 16 | 11.5 | | M2 | M4 | 1×35 | 15 | 6 | 2.71 | 3.67 | 12.2 | 13.9 | | 31.9 | 3 | 6 |
| | | | | | | | | 2×25 | | 10 | 4.06 | 6.11 | 33.1 | 36.2 | | 53.1 | | |
| | | | | | | | | 3×25 | | 13 | 4.68 | 7.33 | 64.6 | 59.8 | | 63.8 | | |
| | | | | | | | | 4×25 | | 17 | 5.87 | 9.77 | 107 | 100 | | 85 | | |
| | | | | | | | | 5×25 | | 20 | 6.98 | 12.2 | 131 | 138 | | 106 | | |
| | | | | | | | | 6×25 | | 24 | 8.05 | 14.7 | 189 | 196 | | 128 | | |
| | | | | | | | | 7×25 | | 26 | 8.57 | 15.9 | 222 | 230 | | 138 | | |

Model VRT-A Miniature Type (Counter Bore Hole Base Type)

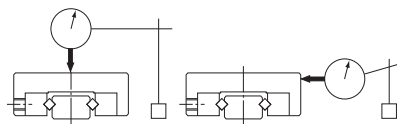
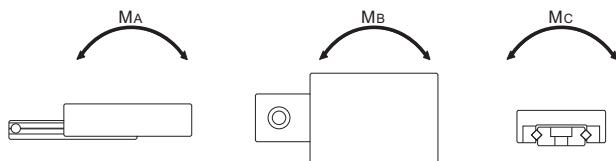


| Model No. | Main dimensions | | | | | Table surface dimensions | | | | | | | |
|-----------|-----------------|--------------------|---------------------|-------------|-----------|-----------------------------|--------|------|------|---------------------------------|----------------|----------------|----------------|
| | Maximum stroke | Width W ±0.1 | Height M ±0.1 | Length L | Mass g | Table mounting tap position | | | | n ₁ × F ₁ | B ₁ | D ₁ | G ₁ |
| | | | | | | B | n × F | G | S | | | | |
| VRT 1025A | 12 | 20 | 8 | 25 | 23 | 14 | 1 × 18 | 3.5 | M2.6 | 1 × 10 | 12.4 | 4.1 | 7.5 |
| VRT 1035A | 18 | | | 35 | 32 | | 1 × 28 | 3.5 | | 2 × 10 | | | |
| VRT 1045A | 25 | | | 45 | 42 | | 1 × 20 | 12.5 | | 3 × 10 | | | |
| VRT 1055A | 32 | | | 55 | 52 | | 1 × 30 | 12.5 | | 4 × 10 | | | |
| VRT 1065A | 40 | | | 65 | 62 | | 2 × 20 | 12.5 | | 5 × 10 | | | |
| VRT 1075A | 45 | | | 75 | 72 | | 1 × 30 | 22.5 | | 6 × 10 | | | |
| VRT 1085A | 50 | | | 85 | 82 | | 2 × 30 | 12.5 | | 7 × 10 | | | |
| VRT 2035A | 18 | 30 | 12 | 35 | 78 | 22 | 1 × 28 | 3.5 | M3 | 1 × 15 | 20 | 6 | 10 |
| VRT 2050A | 30 | | | 50 | 113 | | 1 × 43 | 3.5 | | 2 × 15 | | | |
| VRT 2065A | 40 | | | 65 | 147 | | 1 × 30 | 17.5 | | 3 × 15 | | | |
| VRT 2080A | 50 | | | 80 | 181 | | 1 × 45 | 17.5 | | 4 × 15 | | | |
| VRT 2095A | 60 | | | 95 | 217 | | 2 × 30 | 17.5 | | 5 × 15 | | | |
| VRT 2110A | 70 | | | 110 | 254 | | 1 × 45 | 32.5 | | 6 × 15 | | | |
| VRT 2125A | 80 | | | 125 | 287 | | 2 × 45 | 17.5 | | 7 × 15 | | | |
| VRT 3055A | 30 | 40 | 16 | 55 | 226 | 30 | 1 × 40 | 7.5 | M4 | 1 × 25 | 28.4 | 7.5 | 15 |
| VRT 3080A | 45 | | | 80 | 333 | | 1 × 65 | 7.5 | | 2 × 25 | | | |
| VRT 3105A | 60 | | | 105 | 439 | | 1 × 50 | 27.5 | | 3 × 25 | | | |
| VRT 3130A | 75 | | | 130 | 548 | | 1 × 75 | 27.5 | | 4 × 25 | | | |
| VRT 3155A | 90 | | | 155 | 652 | | 2 × 50 | 27.5 | | 5 × 25 | | | |
| VRT 3180A | 105 | | | 180 | 761 | | 1 × 75 | 52.5 | | 6 × 25 | | | |
| VRT 3205A | 130 | | | 205 | 866 | | 2 × 75 | 27.5 | | 7 × 25 | | | |

Note) All stainless steel type with high corrosion resistance is also available.

(Example) VRT 2035A M

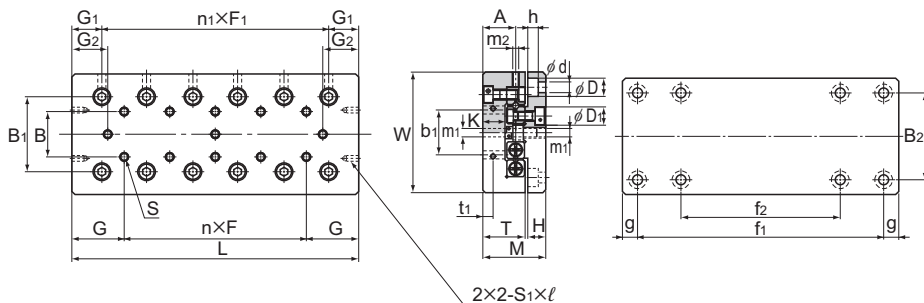
Symbol for stainless steel type

Accuracy: ΔC Accuracy: ΔD 

Unit: mm

| Side surface dimensions | | | | | | Base surface dimensions Mounting hole position | | | | | Basic load rating | | Static permissible moment | | | Accuracy μm | |
|-------------------------|----------------|---|----------------|------|-------------|---|----------------|----------------|----------------|---------------------|-------------------|----------------------|---------------------------|-----------------------|-----------------------|------------------------|----|
| T | T ₁ | H | W ₁ | A | m | d×D×h | ℓ ₁ | ℓ ₂ | g ₁ | No. of rollers Z | C kN | C ₀ kN | M _A N-m | M _B N-m | M _C N-m | ΔC | ΔD |
| 7.5 | 3.5 | 4 | 6.7 | 5.5 | M2 | 2.5×4.1×2.2 | — | 18 | 3.5 | 5 | 0.46 | 0.61 | 1.52 | 1.25 | 2.29 | 2 | 4 |
| | | | | | | | — | 25 | 5 | 7 | 0.63 | 0.92 | 2.62 | 2.32 | 3.44 | | |
| | | | | | | | 25 | 38 | 3.5 | 10 | 0.95 | 1.53 | 4.14 | 4.53 | 5.73 | | |
| | | | | | | | 29 | 48 | 3.5 | 12 | 1.09 | 1.83 | 5.92 | 6.41 | 6.87 | | |
| | | | | | | | 31 | 55 | 5 | 14 | 1.23 | 2.14 | 8.08 | 8.62 | 8.02 | | |
| | | | | | | | 35 | 65 | 5 | 18 | 1.50 | 2.75 | 13.3 | 14.0 | 10.3 | | |
| | | | | | | | 40 | 75 | 5 | 20 | 1.63 | 3.05 | 16.4 | 17.2 | 11.5 | | |
| 11.5 | 5.5 | 6 | 12.2 | 8.5 | | 3.5×6×3.2 | — | 25 | 5 | 5 | 0.84 | 1.09 | 4.32 | 3.55 | 7.06 | 2 | 4 |
| | | | | | | | — | 35 | 7.5 | 7 | 1.16 | 1.63 | 7.45 | 6.59 | 10.6 | | |
| | | | | | | | 33 | 55 | 5 | 9 | 1.46 | 2.17 | 11.8 | 10.5 | 14.1 | | |
| | | | | | | | 40 | 70 | 5 | 12 | 2.01 | 3.26 | 16.8 | 18.2 | 21.2 | | |
| | | | | | | | 45 | 85 | 5 | 14 | 2.26 | 3.80 | 23.0 | 24.5 | 24.7 | | |
| | | | | | | | 50 | 95 | 7.5 | 17 | 2.51 | 4.34 | 37.9 | 35.7 | 28.2 | | |
| | | | | | | | 55 | 110 | 7.5 | 19 | 2.76 | 4.89 | 46.7 | 44.3 | 31.8 | | |
| 15.5 | 7.5 | 8 | 16 | 11.5 | 4.5×7.5×4.2 | — | 40 | 7.5 | 6 | 2.71 | 3.67 | 12.2 | 13.9 | 31.9 | 3 | 6 | |
| | | | | | | 43 | 68 | 6 | 10 | 4.06 | 6.11 | 33.1 | 36.2 | 53.1 | | | |
| | | | | | | 55 | 90 | | 13 | 4.68 | 7.33 | 64.6 | 59.8 | 63.8 | | | |
| | | | | | | 65 | 115 | | 17 | 5.87 | 9.77 | 107 | 100 | 85 | | | |
| | | | | | | 95 | 140 | 7.5 | 20 | 6.98 | 12.2 | 131 | 138 | 106 | | | |
| | | | | | | 85 | 165 | | 24 | 8.05 | 14.7 | 189 | 196 | 128 | | | |
| | | | | | | 90 | 190 | | 26 | 8.57 | 15.9 | 222 | 230 | 138 | | | |

Model VRU



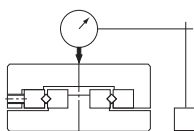
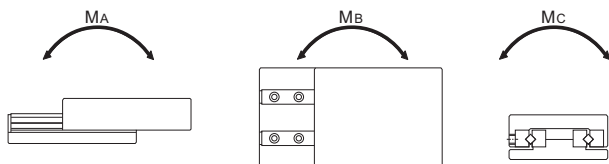
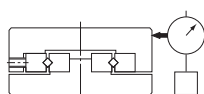
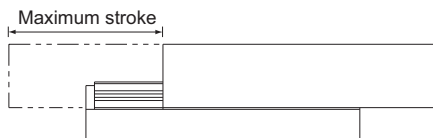
| Model No. | Main dimensions | | | | | Table surface dimensions | | | | | | | | | | |
|-----------|-----------------|------------------------------|----------------------------|---------------|------------------------------|-----------------------------|--------------|------|----|------------------------------------|------------------|-------|-------|-------|-------|-------------------|
| | Maximum stroke | Width W -0.2 -0.4 | Height M ± 0.1 | Length L | Mass ^(Note) kg | Table mounting tap position | | | | Side surface mounting tap position | | | | | | |
| | | | | | | B | $n \times F$ | G | S | B_1 | $n_1 \times F_1$ | G_1 | G_2 | b_1 | t_1 | $S_1 \times \ell$ |
| VRU 1025 | 12 | 30 | 17 | 25 | 0.08(0.04) | — | 10 | 12.5 | M2 | 18.4 | 1 × 10 | 7.5 | 2.5 | 12 | 2.5 | M2 × 4 |
| VRU 1035 | 18 | | | 1 × 10 | 4.5 | | | | | | | | | | | |
| VRU 1045 | 25 | | | 2 × 10 | 6 | | | | | | | | | | | |
| VRU 1055 | 32 | | | 3 × 10 | 8.5 | | | | | | | | | | | |
| VRU 1065 | 40 | | | 4 × 10 | 11 | | | | | | | | | | | |
| VRU 1075 | 45 | | | 5 × 10 | 13.5 | | | | | | | | | | | |
| VRU 1085 | 50 | | | 6 × 10 | — | | | | | | | | | | | |
| VRU 2035 | 18 | 40 | 21 | 35 | 0.2(0.09) | — | 15 | 17.5 | M3 | 25 | 1 × 15 | 10 | 3 | 16 | 3.4 | |
| VRU 2050 | 30 | | | 1 × 15 | 4.5 | | | | | | | | | | | |
| VRU 2065 | 40 | | | 2 × 15 | 7 | | | | | | | | | | | |
| VRU 2080 | 50 | | | 3 × 15 | 9.5 | | | | | | | | | | | |
| VRU 2095 | 60 | | | 4 × 15 | 12 | | | | | | | | | | | |
| VRU 2110 | 70 | | | 5 × 15 | 14.5 | | | | | | | | | | | |
| VRU 2125 | 80 | | | 6 × 15 | 17 | | | | | | | | | | | |

Note) Stainless steel type with high corrosion resistance is also available.

The value in the parentheses represents the mass of a stainless steel type.

(Example) VRU 2035 M

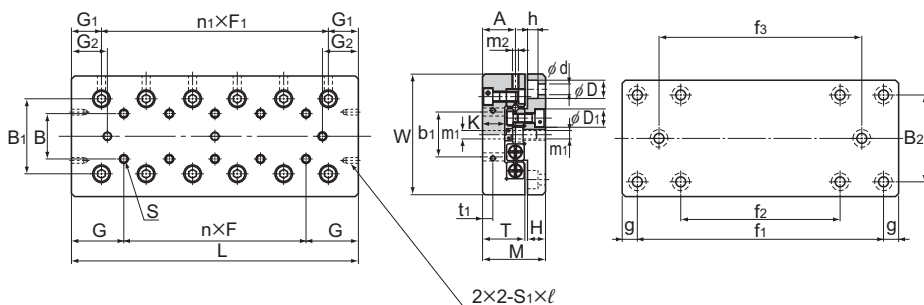
Symbol for stainless steel type
(table base: aluminum)

Accuracy: ΔC Accuracy: ΔD 

Unit: mm

| | | | | | | | | | | Base surface dimensions Mounting hole position | | | | Basic load rating | | Static permissible moment | | | Accuracy μm | |
|----|-----|-----|--------------|----------------|----------------|----|----------------|----------------|----------------|---|-----|---------------------|---------|----------------------|-----------------------|---------------------------|-----------------------|------------|------------------------|---|
| T | H | K | d×D×h | D ₁ | m ₁ | A | m ₂ | B ₂ | f ₁ | f ₂ | g | No. of rollers Z | C kN | C ₀ kN | M _A N-m | M _B N-m | M _C N-m | ΔC | ΔD | |
| 11 | 5.5 | 6.5 | 2.55×4.1×2.5 | 4.1 | M2 | 9 | M2 | 22 | 18 | — | 3.5 | 5 | 0.46 | 0.61 | 1.52 | 1.25 | 4.12 | 2 | 4 | |
| | | | | | | | | | 28 | — | | 7 | 0.63 | 0.92 | 2.62 | 2.32 | 6.18 | | | |
| | | | | | | | | | 38 | — | | 10 | 0.95 | 1.53 | 4.14 | 4.53 | 10.3 | | | |
| | | | | | | | | | 48 | 28 | | 12 | 1.09 | 1.83 | 5.92 | 6.41 | 12.4 | | | |
| | | | | | | | | | 58 | 38 | | 14 | 1.23 | 2.14 | 8.08 | 8.62 | 14.4 | 5 | | |
| | | | | | | | | | 68 | 48 | | 18 | 1.50 | 2.75 | 13.3 | 14.0 | 18.6 | | | |
| | | | | | | | | | 78 | 58 | | 20 | 1.63 | 3.05 | 16.4 | 17.2 | 20.6 | | | |
| 14 | 6.5 | 7.5 | 3.5×6×3.5 | 6 | M3 | 11 | M3 | 30 | 25 | — | 5 | 5 | 0.84 | 1.09 | 4.32 | 3.55 | 9.77 | 2 | 4 | |
| | | | | | | | | | 40 | — | | 7 | 1.16 | 1.63 | 7.45 | 6.59 | 14.7 | | | |
| | | | | | | | | | 55 | — | | 9 | 1.46 | 2.17 | 11.8 | 10.6 | 19.5 | | | |
| | | | | | | | | | 70 | 40 | | 12 | 2.01 | 3.26 | 16.9 | 18.2 | 29.3 | 5 | | |
| | | | | | | | | | 85 | 55 | | 14 | 2.26 | 3.80 | 23 | 24.5 | 34.2 | | | |
| | | | | | | | | | 100 | 70 | | 17 | 2.51 | 4.34 | 37.9 | 35.7 | 39.1 | | | |
| | | | | | | | | | 115 | 85 | | 19 | 2.76 | 4.89 | 46.7 | 44.3 | 44.0 | | 3 | 6 |

Model VRU



$2 \times 2 - S_1 \times \ell$

| Model No. | Main dimensions | | | | | Table surface dimensions | | | | | | | | | | | |
|-----------|-----------------|----------------------|-----------------------|---------------|------------------------------|-----------------------------|---------------|------|----|------------------------------------|------------------|-------|---------------|-------|-------|-------------------|------|
| | Maximum stroke | Width W ± 0.1 | Height M ± 0.1 | Length L | Mass ^(Note) kg | Table mounting tap position | | | | Side surface mounting tap position | | | | | | | |
| | | | | | | B | $n \times F$ | G | S | B_1 | $n_1 \times F_1$ | G_1 | G_2 | b_1 | t_1 | $S_1 \times \ell$ | |
| VRU 3055 | 30 | 60 | 28 | 55 | 0.57(0.3) | 25 | 1×25 | 27.5 | M4 | 39 | 1×25 | 15 | 5.5 | 40 | 5.5 | M3×6 | |
| VRU 3080 | 45 | | | 80 | 0.8(0.4) | | | | | | | | 2×25 | | | | 10.5 |
| VRU 3105 | 60 | | | 105 | 1.03(0.6) | | | | | | | | 3×25 | | | | 15.5 |
| VRU 3130 | 75 | | | 130 | 1.26(0.7) | | | | | | | | 4×25 | | | | 20.5 |
| VRU 3155 | 90 | | | 155 | 1.49(0.9) | | | | | | | | 5×25 | | | | 25.5 |
| VRU 3180 | 105 | | | 180 | 1.72(1) | | | | | | | | 6×25 | | | | 30.5 |
| VRU 3205 | 130 | 205 | 1.95(1.1) | 7×25 | 30.5 | | | | | | | | | | | | |
| VRU 4085 | 50 | 80 | 35 | 85 | 1.5(0.8) | 40 | 1×40 | 42.5 | M5 | 53 | 1×40 | 22.5 | 10.5 | 55 | 6.5 | | |
| VRU 4125 | 75 | | | 125 | 2.3(1.2) | | | | | | | | 2×40 | | | | 18 |
| VRU 4165 | 105 | | | 165 | 3.1(1.5) | | | | | | | | 3×40 | | | | 23 |
| VRU 4205 | 135 | | | 205 | 3.8(1.9) | | | | | | | | 4×40 | | | | 30.5 |
| VRU 4245 | 155 | | | 245 | 4.6(2.2) | | | | | | | | 5×40 | | | | 38 |
| VRU 4285 | 185 | | | 285 | 5.3(2.6) | | | | | | | | 6×40 | | | 43 | |

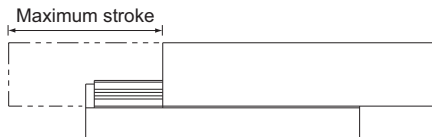
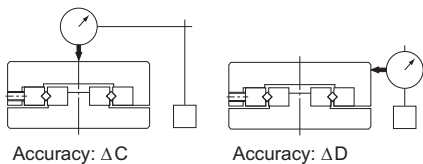
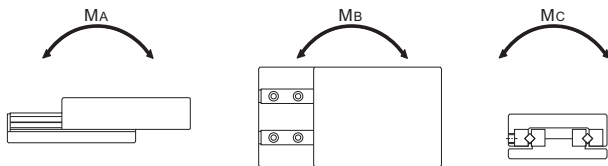
Note) Stainless steel type with high corrosion resistance is also available.

The value in the parentheses represents the mass of a stainless steel type.

(Example) VRU 3080 M

└ Symbol for stainless steel type

(table base: aluminum)

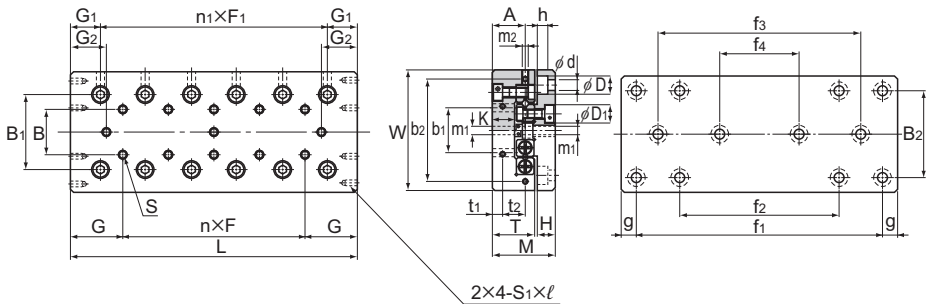


Unit: mm

| | | | | | | | | | | Base surface dimensions | | | | | Basic load rating | | Static permissible moment | | | Accuracy | | | | | | | | | | |
|------|-----|----|-----------|----------------|----------------|------|----------------|----------------|----------------|-------------------------|----------------|-----|-----------|------|---------------------|---------|---------------------------|-----------------------|-----------------------|-----------------------|-----|------|------|------|------|------|------|------|---|---|
| | | | | | | | | | | Mounting hole position | | | | | No. of rollers Z | C kN | C ₀ kN | M _A N-m | M _B N-m | M _C N-m | ΔC | ΔD | | | | | | | | |
| T | H | K | d×D×h | D ₁ | m ₁ | A | m ₂ | B ₂ | f ₁ | f ₂ | f ₃ | g | | | | | | | | | | | | | | | | | | |
| 18.5 | 9 | 10 | 4.5×7.5×5 | 7.5 | M4 | 14.5 | M4 | 40 | 35 | — | — | 10 | 6 | 2.71 | 3.67 | 12.2 | 13.9 | 51.3 | 2 | 5 | | | | | | | | | | |
| | | | | | | | | | 60 | — | — | | 10 | 4.06 | 6.11 | 33.1 | 36.2 | 85.5 | | | | | | | | | | | | |
| | | | | | | | | | 85 | — | — | | 13 | 4.68 | 7.33 | 64.6 | 59.8 | 103 | 3 | 6 | | | | | | | | | | |
| | | | | | | | | | 110 | — | — | | 17 | 5.87 | 9.77 | 107 | 100 | 137 | | | | | | | | | | | | |
| | | | | | | | | | 135 | — | 85 | | 20 | 6.98 | 12.2 | 131 | 138 | 171 | | | | | | | | | | | | |
| | | | | | | | | | 160 | — | 110 | | 24 | 8.05 | 14.7 | 189 | 196 | 205 | | | | | | | | | | | | |
| | | | | | | | | | 24 | 10.5 | 12.5 | | 5.5×9.5×6 | 9.5 | M4 | 18.5 | M4 | 60 | 185 | 85 | 135 | 22.5 | 26 | 8.57 | 15.9 | 222 | 230 | 222 | 2 | 5 |
| | | | | | | | | | | | | | | | | | | | 65 | — | — | | 10 | 7 | 5.90 | 8.11 | 64.9 | 57.4 | | |
| 80 | — | — | 11 | 8.82 | 13.5 | 147 | 134 | 270 | | | | 3 | | | | | | | 6 | | | | | | | | | | | |
| 120 | — | — | 14 | 11.5 | 18.9 | 200 | 214 | 378 | | | | | | | | | | | | | | | | | | | | | | |
| 160 | 80 | — | 18 | 14.0 | 24.3 | 330 | 347 | 486 | | | | | | | | | | | | | | | | | | | | | | |
| 200 | 120 | — | 22 | 16.3 | 29.7 | 492 | 513 | 594 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | 240 | | | | 160 | | | | | | | — | | 26 | | 18.6 | 35.1 | 687 | 711 | 703 | | | |

Cross Roller Table

Model VRU



| Model No. | Main dimensions | | | | | Table surface dimensions | | | | | | | | | | | | |
|-------------|-----------------|-----------------|------------------|----------|------------------------------|-----------------------------|-------|-----|----|------------------------------------|---------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|--------------------|
| | Maximum stroke | Width W ±0.1 | Height M ±0.1 | Length L | Mass ^(Note) kg | Table mounting tap position | | | | Side surface mounting tap position | | | | | | | | |
| | | | | | | B | n x F | G | S | B ₁ | n ₁ x F ₁ | G ₁ | G ₂ | b ₁ | b ₂ | t ₁ | t ₂ | S ₁ x ℓ |
| VRU 6110 | 60 | 100 | 45 | 110 | 3.2(1.7) | 50 | — | 55 | M6 | 63 | 1 x 50 | 30 | 16 | 60 | 92 | 8 | 15 | M4 x 8 |
| VRU 6160 | 95 | | | 160 | 4.6(2.5) | | | | | | 2 x 50 | | 23.5 | | | | | |
| VRU 6210 | 130 | | | 210 | 6(3.2) | | | | | | 3 x 50 | | 31 | | | | | |
| VRU 6260 | 165 | | | 260 | 7.4(4) | | | | | | 4 x 50 | | 38.5 | | | | | |
| VRU 6310 | 200 | | | 310 | 8.7(4.8) | | | | | | 5 x 50 | | 46 | | | | | |
| VRU 6360 | 235 | | | 360 | 10.1(5.6) | | | | | | 6 x 50 | | 53.5 | | | | | |
| VRU 6410 | 265 | 410 | 11.5(6.4) | 7 x 50 | 63.5 | | | | | | | | | | | | | |
| VRU 9210 | 130 | 145 | 60 | 210 | 12(7.1) | 85 | — | 105 | M8 | 96 | 1 x 100 | 55 | 27 | 90 | 135 | 11 | 20 | |
| VRU 9310 | 180 | | | 310 | 17.6(7.9) | | | | | | 2 x 100 | | 52 | | | | | |
| VRU 9410 | 350 | | | 410 | 23.2(—) | | | | | | 3 x 100 | | 17 | | | | | |
| VRU 9510 | 450 | | | 510 | 28.8(—) | | | | | | 4 x 100 | | | | | | | |
| VRU 9610 | 550 | | | 610 | 34.4(—) | | | | | | 5 x 100 | | 17 | | | | | |
| VRU 9710 | 650 | | | 710 | 40(—) | | | | | | 6 x 100 | | | | | | | |
| VRU 9810 | 750 | | | 810 | 45.6(—) | | | | | | 7 x 100 | | | | | | | |
| * VRU 9910 | 850 | | | 910 | 51.2(—) | | | | | | 8 x 100 | | | | | | | |
| * VRU 91010 | 950 | | | 1010 | 56.8(—) | | | | | | 8 x 100 | | | | | | | |

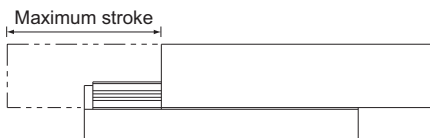
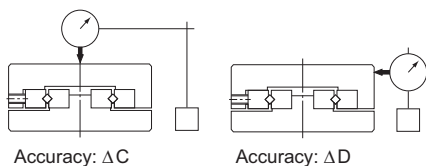
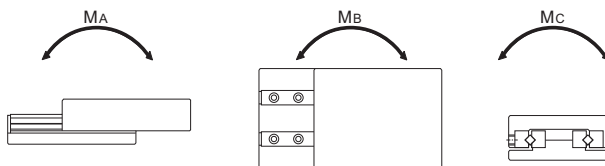
Note) Stainless steel type with high corrosion resistance is also available.

The value in the parentheses represents the mass of a stainless steel type.

Models VRU9910 and VRU91010 are build to order.

(Example) VRU 6310 M

Symbol for stainless steel type
(table base: aluminum)



Unit: mm

| | | | | | | | | | | Base surface dimensions Mounting hole position | | | | | Basic load rating | | Static permissible moment | | | Accuracy μm | | | |
|-----|-----|-----|--------|----------------|----------------|------|----------------|-------|-------|---|----------------|----------------|----------------|----------------|-------------------|---------------------|---------------------------|----------------------|-----------------------|-----------------------|-----------------------|----|----|
| | | | | | | | | | | B ₂ | f ₁ | f ₂ | f ₃ | f ₄ | g | No. of rollers Z | C kN | C ₀ kN | M _A N-m | M _B N-m | M _C N-m | ΔC | ΔD |
| T | H | K | d×D×h | D ₁ | m ₁ | A | m ₂ | | | | | | | | | | | | | | | | |
| 31 | 13 | 15 | 7×11×7 | 11 | M5 | 23.5 | M5 | 60 | 90 | — | — | — | 10 | 6 | 16.4 | 22.7 | 150 | 172 | 510 | 3 | 6 | | |
| | | | | | | | | | 140 | — | — | — | | 9 | 20.5 | 30.2 | 410 | 367 | 680 | 3 | 6 | | |
| | | | | | | | | | 190 | — | 90 | — | | 13 | 28.2 | 45.3 | 800 | 740 | 1020 | 3 | 7 | | |
| | | | | | | | | | 240 | — | 140 | — | | 16 | 35.3 | 60.5 | 1040 | 1100 | 1360 | 3 | 7 | | |
| | | | | | | | | | 290 | — | 190 | — | | 19 | 38.8 | 68.0 | 1630 | 1540 | 1530 | 4 | 8 | | |
| | | | | | | | | | 340 | 140 | 240 | — | | 22 | 45.3 | 83.1 | 1970 | 2050 | 1870 | 4 | 8 | | |
| | | | | | | | | | 390 | 190 | 290 | — | | 26 | 51.6 | 98.3 | 2750 | 2840 | 2210 | 4 | 8 | | |
| | | | | | | | | | 43 | 16 | 21 | 9×14×9 | | 14 | M8 | 32 | M6 | 90 | 100 | — | — | — | 55 |
| 200 | — | — | — | 14 | 81.1 | 133 | 2810 | 2990 | 4780 | | | | 3 | | | | | | 7 | | | | |
| 300 | — | 100 | — | 15 | 81.1 | 133 | 3660 | 3420 | 4780 | | | | 4 | | | | | | 8 | | | | |
| 400 | — | 200 | — | 19 | 98.7 | 171 | 5710 | 5410 | 6140 | | | | 4 | | | | | | 8 | | | | |
| 500 | 100 | 300 | — | 22 | 115 | 208 | 6910 | 7200 | 7500 | | | | 4 | | | | | | 9 | | | | |
| 600 | 200 | 400 | — | 26 | 131 | 246 | 9640 | 9980 | 8870 | | | | 4 | | | | | | 9 | | | | |
| 700 | 300 | 500 | 100 | 29 | 139 | 265 | 12800 | 12400 | 9550 | | | | 5 | | | | | | 10 | | | | |
| 800 | 400 | 600 | 200 | 33 | 155 | 303 | 16500 | 15900 | 10900 | | | | 5 | | | | | | 10 | | | | |
| 900 | 500 | 700 | 300 | 37 | 169 | 341 | 20500 | 20000 | 12300 | 5 | 10 | | | | | | | | | | | | |

Cross Roller Table

Model Number Coding

Model number configurations differ depending on the model features. Refer to the corresponding sample model number configuration.

[Miniature type cross roller tables]

- Models VRT and VRT-A

VRT2035 M

Model No.

Symbol for stainless steel type

[Cross Roller Table]

- Model VRU

VRU2035 M

Model No.

Symbol for stainless steel type
(table base: aluminum)

Precautions on Use

Cross Roller Table

[Handling]

- (1) Do not disassemble the parts. This will result in loss of functionality.
- (2) Take care not to drop or strike the Cross Roller Table. Doing so may cause injury or damage. Giving an impact to it could also cause damage to its function even if the product looks intact.
- (3) When handling the product, wear protective gloves, safety shoes, etc., as necessary to ensure safety.

[Precautions on Use]

- (1) Prevent foreign material, such as cutting chips or coolant, from entering the product. Failure to do so may cause damage.
- (2) If foreign material such as cutting chips adheres to the product, replenish the lubricant after cleaning the product.
- (3) Do not use the product at temperature of 100°C or higher.
- (4) Do not use the internal stopper, a mechanism that prevents the table from being removed, as a stopper. This may damage the stopper due to impact.
- (5) Micro-strokes tend to obstruct oil film to form on the raceway in contact with the rolling element, and may lead to fretting corrosion. Take consideration using grease offering excellent fretting prevention. THK also recommends periodically executing a full stroke with the unit to ensure that the raceway and balls are coated with lubricant.
- (6) Do not use undue force when fitting parts (pin, key, etc.) to the product. This may generate permanent deformation on the raceway, leading to loss of functionality.
- (7) Insufficient rigidity or accuracy of mounting members causes the bearing load to concentrate on one point and the bearing performance will drop significantly. Accordingly, give sufficient consideration to the rigidity/accuracy of the housing and base and strength of the fixing bolts.

[Lubrication]

- (1) For lubrication of the Cross Roller Table, use lithium-soap group grease or oil when it is necessary as with ordinary bearings.
- (2) Thoroughly wipe off anti-rust oil and feed lubricant before using the product.
- (3) When lubricating the product, apply grease directly on the raceway and stroke the product several times to let the grease spread inside.
- (4) Do not mix different lubricants. Mixing greases using the same type of thickening agent may still cause adverse interaction between the two greases if they use different additives, etc.
- (5) When using the product in locations exposed to constant vibrations or in special environments such as clean rooms, vacuum and low/high temperature, use the grease appropriate for the specification/environment.
- (6) The consistency of grease changes according to the temperature. Take note that the slide resistance of the Cross Roller Table also changes as the consistency of grease changes.
- (7) After lubrication, the slide resistance of the Cross Roller Table may increase due to the agitation resistance of grease. Be sure to perform a break-in to let the grease spread fully, before operating the machine.
- (8) Excess grease may scatter immediately after lubrication, so wipe off scattered grease as necessary.

- (9) The properties of grease deteriorate and its lubrication performance drops over time, so grease must be checked and added properly according to the use frequency of the machine.
- (10) The greasing interval varies depending on the use condition and service environment. Set the final lubrication interval/amount based on the actual machine.

[Displacement of Cage]

The movements of the cage that holds the rollers are highly precise, but the cage can be displaced due to drive vibration, inertial force, or impact.

Please consult THK before using this product under any of the following conditions.

- In a vertical position
- With a pneumatic cylinder drive
- With a cam drive
- With a high-speed crank drive
- With a heavy moment load
- In a configuration where the external stopper butts up against the table

[Storage]

When storing the Cross Roller Table, enclose it in a package designated by THK and store it in a room in a horizontal orientation while avoiding high temperature, low temperature and high humidity.

[Disposal]

Dispose of the product properly as industrial waste.



Cross Roller Table

THK General Catalog

B Support Book

| | |
|---|------|
| Features | B8-2 |
| Features of the Cross Roller Table | B8-2 |
| • Structure and Features | B8-2 |
| Point of Selection | B8-4 |
| Rated Load and Nominal Life | B8-4 |
| Model No. | B8-7 |
| • Model Number Coding | B8-7 |
| Precautions on Use | B8-8 |

A Product Descriptions (Separate)

| | |
|---|-------|
| Features | A8-2 |
| Features of the Cross Roller Table | A8-2 |
| • Structure and Features | A8-2 |
| Point of Selection | A8-4 |
| Rated Load and Nominal Life | A8-4 |
| Accuracy Standards | A8-6 |
| Dimensional Drawing, Dimensional Table | |
| Model VRT Miniature Type (Tapped Base Type) .. | A8-8 |
| Model VRT-A Miniature Type (Counter Bore Hole Base Type) .. | A8-10 |
| Model VRU | A8-12 |
| Model No. | A8-18 |
| • Model Number Coding | A8-18 |
| Precautions on Use | A8-19 |

Features of the Cross Roller Table

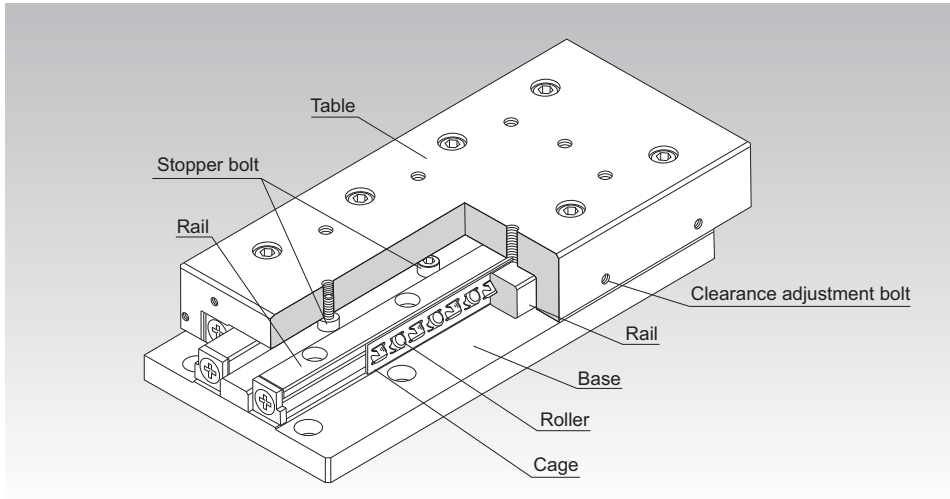


Fig.1 Structure of the Cross Roller Table

Structure and Features

The Cross Roller Table is a compact, highly rigid finite linear guide unit that has the Cross Roller Guide(s) between the precision-machined table and base.

There are two types of the Cross Roller Table: model VRU, and a miniature type model VRT. The Cross Roller Table is used in extensive applications such as OA equipment and peripherals, measuring instruments and printed circuit board drilling machines.

Features

Features of the Cross Roller Table

[Easy Installation]

Since the Cross Roller Guide(s) is installed between the precision-machined table and base, a highly accurate linear guide mechanism is achieved simply by mounting the product with bolts.

[Large Permissible Load]

Since rollers with large rated loads are installed in short pitches, the cross roller guide is capable of bearing a heavy load, achieving a highly rigid linear guide mechanism and gaining a long service life.

[Diversified Usage]

Since the rollers are orthogonally arranged one after another, the guide system is capable of evenly receiving loads in the four directions applied on the table. (See Fig.2.)

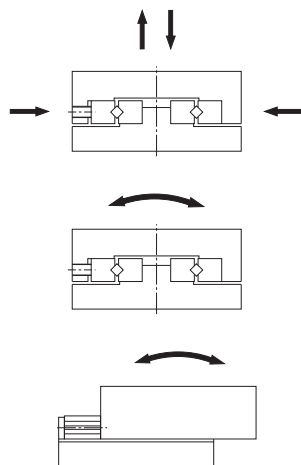
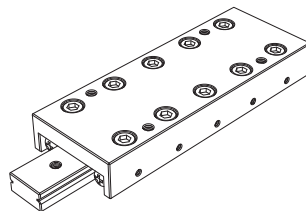


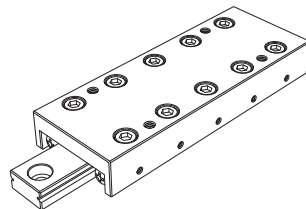
Fig.2 Load Directions

[Highly Corrosion Resistant]

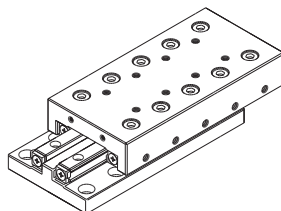
The base and the table of models VRT-M and VRT-AM use stainless steel. Their rails, rollers, roller cages and screws are also made of stainless steel. As a result, these guide systems have significantly high corrosion resistance. The base and the table of model VRU-M are made of aluminum.



Model VRT



Model VRT-A



Model VRU

Rated Load and Nominal Life

[Rated Loads in All Directions]

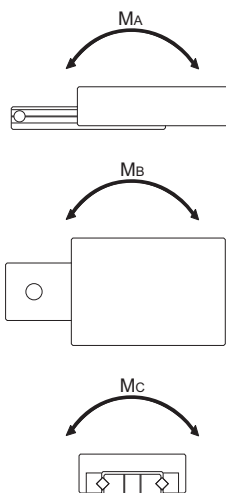
The rated loads of models VRT, VRT-A and VRU are equal in four directions (radial, reverse radial and lateral directions), and their values are expressed as C and C₀ in the corresponding specification tables.

[Static Safety Factor f_s]

The Cross Roller Table may receive an unexpected external force while it is stationary or operative due to the generation of an inertia caused by vibrations and impact or start and stop. It is necessary to consider a static safety factor against such a working load.

$$f_s = \frac{C_0}{P_c} \quad \text{or} \quad f_s = \frac{M_0}{M}$$

| | | |
|----------------|-----------------------------|---|
| f _s | : Static safety factor | |
| C ₀ | : Basic static load rating | (kN) |
| M ₀ | : Static permissible moment | (M _A , M _B and M _C) |
| P _c | : Calculated load | (kN) |
| M | : Calculated moment | (kN) |



● Reference value of static safety factor

The static safety factors indicated in Table1 are the lower limits of reference values in the respective conditions.

Table1 Reference Values of Static Safety Factor (f_s)

| Machine using the LM system | Load conditions | Lower limit of f _s |
|------------------------------|-----------------------------|-------------------------------|
| General industrial machinery | Without vibration or impact | 1 to 1.3 |
| | With vibration or impact | 2 to 3 |

[Nominal Life]

The nominal life of the Cross Roller Table is obtained using the following equation.

$$L = \left(\frac{f_r}{f_w} \cdot \frac{C}{P_c} \right)^{\frac{10}{3}} \times 100$$

- L : Nominal life (km)
 (The total number of revolutions that 90% of a group of identical VRT, VRT-A or VRU units independently operating under the same conditions can achieve without showing flaking)
- C : Basic dynamic load rating (kN)
- P_c : Calculated radial load (kN)
- f_r : Temperature factor
 (see Fig.1 on **B8-6**)
- f_w : Load factor (see Table2 on **B8-6**)

[Calculating the Service Life Time]

When the nominal life (L) has been obtained, if the stroke length and the number of reciprocations per minute are constant, the service life time is obtained using the following equation.

$$L_h = \frac{L \times 10^6}{2 \times \ell_s \times n_1 \times 60}$$

- L_h : Service life time (h)
- ℓ_s : Stroke length (mm)
- n₁ : Number of reciprocations per minute (min⁻¹)

● f_t : Temperature Factor

If the temperature of the environment surrounding the operating model VRT, VRT-A or VRU exceeds 100°C, take into account the adverse effect of the high temperature and multiply the basic load ratings by the temperature factor indicated in Fig.1.

Note) If the environment temperature exceeds 100°C, contact THK.

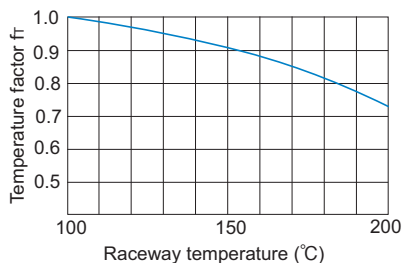


Fig.1 Temperature Factor (f_t)

● f_w : Load Factor

In general, reciprocating machines tend to involve vibrations or impact during operation. It is extremely difficult to accurately determine vibrations generated during high-speed operation and impact during frequent start and stop. Therefore, when the actual load applied on model VRT, VRT-A or VRU cannot be obtained, or when speed and vibrations have a significant influence, divide the basic load rating (C or C_0), by the corresponding load factor in Table2 of empirically obtained data.

Table2 Load Factor (f_w)

| Vibrations/ impact | Speed (V) | f_w |
|-----------------------|-------------------------------------|------------|
| Faint | Very low $V \leq 0.25\text{m/s}$ | 1 to 1.2 |
| Weak | Slow $0.25 < V \leq 1\text{m/s}$ | 1.2 to 1.5 |

Model Number Coding

Model number configurations differ depending on the model features. Refer to the corresponding sample model number configuration.

[Miniature type cross roller tables]

- Models VRT and VRT-A

VRT2035 M

Model No.

Symbol for stainless steel type

[Cross Roller Table]

- Model VRU

VRU2035 M

Model No.

Symbol for stainless steel type
(table base: aluminum)

Precautions on Use

Cross Roller Table

[Handling]

- (1) Do not disassemble the parts. This will result in loss of functionality.
- (2) Take care not to drop or strike the Cross Roller Table. Doing so may cause injury or damage. Giving an impact to it could also cause damage to its function even if the product looks intact.
- (3) When handling the product, wear protective gloves, safety shoes, etc., as necessary to ensure safety.

[Precautions on Use]

- (1) Prevent foreign material, such as cutting chips or coolant, from entering the product. Failure to do so may cause damage.
- (2) If foreign material such as cutting chips adheres to the product, replenish the lubricant after cleaning the product.
- (3) Do not use the product at temperature of 100°C or higher.
- (4) Do not use the internal stopper, a mechanism that prevents the table from being removed, as a stopper. This may damage the stopper due to impact.
- (5) Micro-strokes tend to obstruct oil film to form on the raceway in contact with the rolling element, and may lead to fretting corrosion. Take consideration using grease offering excellent fretting prevention. THK also recommends periodically executing a full stroke with the unit to ensure that the raceway and balls are coated with lubricant.
- (6) Do not use undue force when fitting parts (pin, key, etc.) to the product. This may generate permanent deformation on the raceway, leading to loss of functionality.
- (7) Insufficient rigidity or accuracy of mounting members causes the bearing load to concentrate on one point and the bearing performance will drop significantly. Accordingly, give sufficient consideration to the rigidity/accuracy of the housing and base and strength of the fixing bolts.

[Lubrication]

- (1) For lubrication of the Cross Roller Table, use lithium-soap group grease or oil when it is necessary as with ordinary bearings.
- (2) Thoroughly wipe off anti-rust oil and feed lubricant before using the product.
- (3) When lubricating the product, apply grease directly on the raceway and stroke the product several times to let the grease spread inside.
- (4) Do not mix different lubricants. Mixing greases using the same type of thickening agent may still cause adverse interaction between the two greases if they use different additives, etc.
- (5) When using the product in locations exposed to constant vibrations or in special environments such as clean rooms, vacuum and low/high temperature, use the grease appropriate for the specification/environment.
- (6) The consistency of grease changes according to the temperature. Take note that the slide resistance of the Cross Roller Table also changes as the consistency of grease changes.
- (7) After lubrication, the slide resistance of the Cross Roller Table may increase due to the agitation resistance of grease. Be sure to perform a break-in to let the grease spread fully, before operating the machine.
- (8) Excess grease may scatter immediately after lubrication, so wipe off scattered grease as necessary.

Precautions on Use

- (9) The properties of grease deteriorate and its lubrication performance drops over time, so grease must be checked and added properly according to the use frequency of the machine.
- (10) The greasing interval varies depending on the use condition and service environment. Set the final lubrication interval/amount based on the actual machine.

[Displacement of Cage]

The movements of the cage that holds the rollers are highly precise, but the cage can be displaced due to drive vibration, inertial force, or impact.

Please consult THK before using this product under any of the following conditions.

- In a vertical position
- With a pneumatic cylinder drive
- With a cam drive
- With a high-speed crank drive
- With a heavy moment load
- In a configuration where the external stopper butts up against the table

[Storage]

When storing the Cross Roller Table, enclose it in a package designated by THK and store it in a room in a horizontal orientation while avoiding high temperature, low temperature and high humidity.

[Disposal]

Dispose of the product properly as industrial waste.

