

*Realized maximum noise reduction that could not be obtained from existing reducers*

**Realized noise reduction by 10% or more compared to existing products**

(According to our survey)

65dB (A)

60dB (A)



\* The helical gear, as shown in the above figure, is tilted to the shaft of the engaging gear (contrary to parallel for existing gears). It makes engagement of a gear smoother compared to previous parallel gears, realizing noise reduction.

※ All of helical gears are being adopted in type number (A/B/C/D/E).

Previous product    **New product**    Representative type no. (VRSF-S9B-100)

## High precision type of 0.05° (3 min) or less of backlash, low-backlash 0.08° (5 min) into series

This reducer is characterized by a high-precision servo motor with a merit of precision positioning

## Smooth rotation with little shaking

This reducer is characterized by a high-precision servo motor with a merit of precision positioning.

## The difference is 22mm (for D type): Compact (small size) design according to designer's demand

Compact size of 98mm (120mm for the same model of a rival company)  
This is compact design coping with a servo motor of compact and light-weight design.

## Offers high-quality products in excellent assembling conditions

Products are assembled in clean room.  
This assembling condition guarantees high-quality products.

## Maintenance free & free jointing

No need for replacement by using long-life high grade grease as lubricant. In addition, it is seal-filled and thus the jointing and attaching position is free changeable.

## Complete measure against a lubricant leak

Out-and-out measures against a leak, e.g. impregnation of a case, air-leak test, etc.

## IP65-compatible (option)

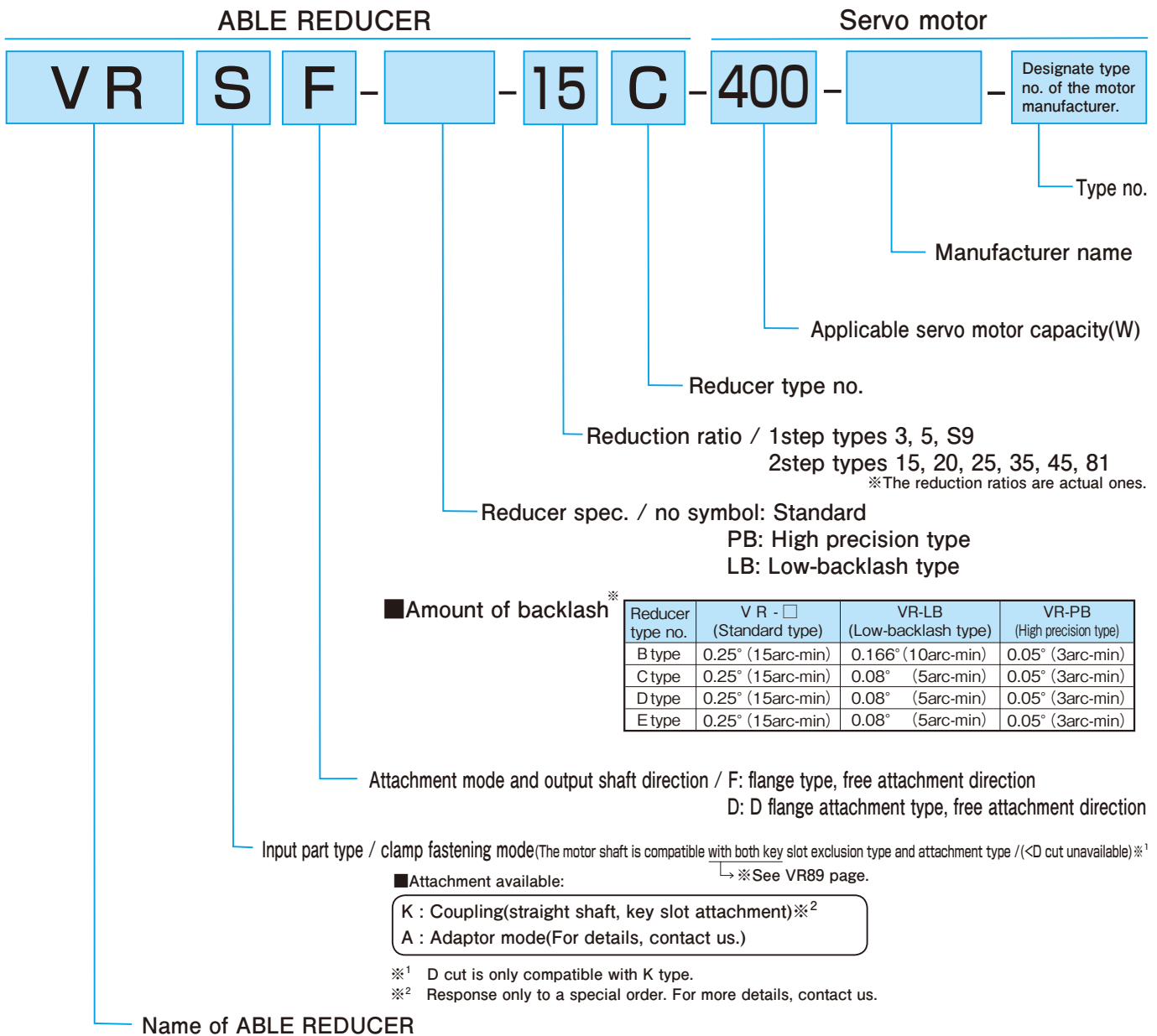
Reducer performance is fully exercised even in various conditions with waterproof function. (※ optional)

## Combinable to compact servo motors of each supplier

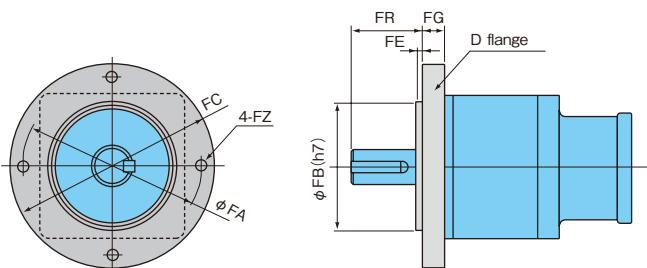
Attachable to servo motors of the following makers:

- PANASONIC ● FANUC ● NIKKI DENKO ● YASKAWA ELECTRIC ● SHIMPONIA TECHNOLOGY
- MIKI FULLEY ● MITSUBISHI ELECTRIC ● TOSHIBA MACHINE ● HITACHI INDUSTRIAL EQUIPMENT SYSTEMS
- OMRON ● SANYO DENKI ● DELTA ● ALLEN-BRADLEY
- KEYENCE ● TAMAGAWA SEIKI ● FUJI ELECTRIC SYSTEMS ● SANMEI ● NIDEC SANKYO

## Model &amp; type symbol

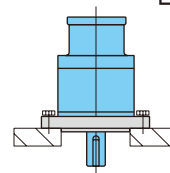


## ■Dimensional drawing of D flange attachment type



(Unit: mm)

| Type no. | FG | FR   | FE | FB | FC  | FA  | FZ  |
|----------|----|------|----|----|-----|-----|-----|
| B        | 8  | 24   | 3  | 50 | 75  | 65  | 6   |
| C        | 12 | 33.5 | 3  | 72 | 110 | 95  | 7   |
| D        | 13 | 48   | 5  | 90 | 134 | 115 | 8.8 |



※In case of attachment as mentioned in the above figure, designate D flange(separate selling) attachment. Also, the D flange may be attached later.

## ■Processing of output shaft tab (option)

B type : M5×10    C type : M6×12(or M8×16)    D type : M8×16(or M6×12)    E type : M10×20

## Reduction ratio &amp; type no.

## ■ When input speed is 3000rpm

| Reduction ratio<br>Motor cap.(W) | 1step reduction |     |     | 2step reduction |      |      |      |      |      |
|----------------------------------|-----------------|-----|-----|-----------------|------|------|------|------|------|
|                                  | 1/3             | 1/5 | 1/9 | 1/15            | 1/20 | 1/25 | 1/35 | 1/45 | 1/81 |
| 50W                              | B               |     |     | B               |      |      | D    |      |      |
| 100W                             |                 |     |     |                 |      |      |      |      |      |
| 200W                             | C               |     |     | C               |      |      | D    |      |      |
| 400W                             |                 |     |     |                 |      |      |      |      |      |
| 750W                             | D               |     |     | D               |      |      | E    |      |      |
| 1000W                            |                 |     |     |                 |      |      |      |      |      |
| 1500W                            | E               |     |     | E               |      |      | -    |      |      |
| 2000W                            |                 |     |     |                 |      |      |      |      |      |
| 2500W                            | E               |     |     | -               |      |      | -    |      |      |
| 3000W                            |                 |     |     |                 |      |      |      |      |      |
| 3500W                            | -               |     |     | -               |      |      | -    |      |      |
| 4000W                            |                 |     |     |                 |      |      |      |      |      |
| 4500W                            | -               |     |     | -               |      |      | -    |      |      |
| 5000W                            |                 |     |     |                 |      |      |      |      |      |

Note 1) All corresponding to the gear

## ■ When input speed is 2000rpm

| Reduction ratio<br>Motor cap.(W) | 1step reduction |     |     | 2step reduction |      |      |      |      |      |
|----------------------------------|-----------------|-----|-----|-----------------|------|------|------|------|------|
|                                  | 1/3             | 1/5 | 1/9 | 1/15            | 1/20 | 1/25 | 1/35 | 1/45 | 1/81 |
| 50W                              | B               |     |     | B               |      |      | C    |      |      |
| 100W                             |                 |     |     |                 |      |      |      |      |      |
| 200W                             | C               |     |     | C               |      |      | D    |      |      |
| 400W                             |                 |     |     |                 |      |      |      |      |      |
| 750W                             | D               |     |     | D               |      |      | -    |      |      |
| 1000W                            |                 |     |     |                 |      |      |      |      |      |
| 1500W                            | E               |     |     | E               |      |      | -    |      |      |
| 2000W                            |                 |     |     |                 |      |      |      |      |      |
| 2500W                            | -               |     |     | -               |      |      | -    |      |      |
| 3000W                            |                 |     |     |                 |      |      |      |      |      |
| 3500W                            | -               |     |     | -               |      |      | -    |      |      |

Note 1) All corresponding to the gear

※Torque is limited to the following types:

B type : 1/5 reduction (100W)

C type : 1/81 reduction (50W)

D type : 1/3 reduction (1500W) · 1/45 reduction (200W) · 1/81 reduction (100W)

E type : 1/3 reduction (3500W) · 1/25 reduction (250W)

## ■ About lubricant

- Lubrication: Grease
- Replacement: Not available

The same specification applies to all of standard type, LB(low backlash), and PB(high precision type).

| Reduction ratio | Type   |                 |          |            | Output shaft speed<br>(rpm) | Standard output torque<br>(N · m) | Instantaneous max. output torque<br>(N · m) | Permissible radial load<br>(N) | Permissible thrust load<br>(N) | Internal moment of inertia of input shaft conversion<br>( $\times 10^{-4}$ kg · m <sup>2</sup> ) | Permissible output torque<br>(N · m) | Instantaneous max. permissible output torque<br>(N · m) |
|-----------------|--------|-----------------|----------|------------|-----------------------------|-----------------------------------|---------------------------------------------|--------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|
|                 | Model  | Reduction ratio | Type no. | Motor cap. |                             |                                   |                                             |                                |                                |                                                                                                  |                                      |                                                         |
| 1/3             | VR □ F | -3              | B        | -50        | 1000                        | 0.255                             | 0.784                                       | 392                            | 196                            | 0.0575                                                                                           | 3.43                                 | 10.3                                                    |
|                 | VR □ F | -3              | B        | -100       | 1000                        | 0.715                             | 2.06                                        | 392                            | 196                            | 0.0575                                                                                           | 3.43                                 | 10.3                                                    |
|                 | VR □ F | -3              | B        | -200       | 1000                        | 1.47                              | 4.51                                        | 392                            | 196                            | 0.135                                                                                            | 3.43                                 | 10.3                                                    |
|                 | VR □ F | -3              | B        | -400       | 1000                        | 3.43                              | 10.3                                        | 392                            | 196                            | 0.145                                                                                            | 3.43                                 | 10.3                                                    |
|                 | VR □ F | -3              | C        | -750       | 1000                        | 6.37                              | 19.3                                        | 784                            | 392                            | 0.913                                                                                            | 6.86                                 | 20.6                                                    |
|                 | VR □ F | -3              | D        | -1000      | 1000                        | 7.55                              | 22.8                                        | 882                            | 441                            | 2.43                                                                                             | 18.3                                 | 54.9                                                    |
|                 | VR □ F | -3              | D        | -1500      | 1000                        | 12.3                              | 37.1                                        | 882                            | 441                            | 2.43                                                                                             | 18.3                                 | 54.9                                                    |
|                 | VR □ F | -3              | D        | -2000      | 1000                        | 17.2                              | 51.5                                        | 882                            | 441                            | 2.43                                                                                             | 18.3                                 | 54.9                                                    |
|                 | VR □ F | -3              | E        | -2500      | 1000                        | 19.0                              | 57.2                                        | 1370                           | 686                            | 5.55                                                                                             | 44.1                                 | 132                                                     |
|                 | VR □ F | -3              | E        | -3000      | 1000                        | 23.7                              | 71.2                                        | 1370                           | 686                            | 5.50                                                                                             | 44.1                                 | 132                                                     |
|                 | VR □ F | -3              | E        | -3500      | 1000                        | 28.3                              | 85.2                                        | 1370                           | 686                            | 5.50                                                                                             | 44.1                                 | 132                                                     |
|                 | VR □ F | -3              | E        | -4000      | 1000                        | 33.1                              | 99.0                                        | 1370                           | 686                            | 5.78                                                                                             | 44.1                                 | 132                                                     |
| 1/5             | VR □ F | -5              | B        | -50        | 600                         | 0.510                             | 1.47                                        | 490                            | 245                            | 0.0400                                                                                           | 1.57                                 | 4.70                                                    |
|                 | VR □ F | -5              | B        | -100       | 600                         | 1.18                              | 3.72                                        | 490                            | 245                            | 0.0400                                                                                           | 1.57                                 | 4.70                                                    |
|                 | VR □ F | -5              | B        | -200       | 600                         | 2.65                              | 8.04                                        | 490                            | 245                            | 0.118                                                                                            | 2.84                                 | 8.53                                                    |
|                 | VR □ F | -5              | C        | -400       | 600                         | 5.39                              | 16.2                                        | 980                            | 490                            | 0.363                                                                                            | 6.57                                 | 19.7                                                    |
|                 | VR □ F | -5              | C        | -750       | 600                         | 10.7                              | 32.1                                        | 980                            | 490                            | 0.713                                                                                            | 11.5                                 | 34.3                                                    |
|                 | VR □ F | -5              | D        | -1000      | 600                         | 13.4                              | 40.5                                        | 1080                           | 539                            | 1.85                                                                                             | 23.5                                 | 70.6                                                    |
|                 | VR □ F | -5              | D        | -1500      | 600                         | 21.5                              | 64.4                                        | 1080                           | 539                            | 1.85                                                                                             | 23.5                                 | 70.6                                                    |
|                 | VR □ F | -5              | E        | -2000      | 600                         | 23.8                              | 71.5                                        | 1670                           | 833                            | 3.50                                                                                             | 56.8                                 | 171                                                     |
|                 | VR □ F | -5              | E        | -2500      | 600                         | 31.8                              | 95.5                                        | 1670                           | 833                            | 3.50                                                                                             | 56.8                                 | 171                                                     |
|                 | VR □ F | -5              | E        | -3000      | 600                         | 39.6                              | 119                                         | 1670                           | 833                            | 3.48                                                                                             | 56.8                                 | 171                                                     |
|                 | VR □ F | -5              | E        | -3500      | 600                         | 47.2                              | 141                                         | 1670                           | 833                            | 3.48                                                                                             | 56.8                                 | 171                                                     |
|                 | VR □ F | -5              | E        | -4000      | 600                         | 55.3                              | 166                                         | 1670                           | 833                            | 3.75                                                                                             | 56.8                                 | 171                                                     |
| 1/9             | VR □ F | -S9             | B        | -50        | 333                         | 0.921                             | 2.74                                        | 588                            | 294                            | 0.0350                                                                                           | 2.35                                 | 7.25                                                    |
|                 | VR □ F | -S9             | B        | -100       | 333                         | 2.25                              | 6.86                                        | 588                            | 294                            | 0.0350                                                                                           | 2.35                                 | 7.25                                                    |
|                 | VR □ F | -S9             | C        | -200       | 333                         | 3.72                              | 11.3                                        | 1180                           | 588                            | 0.275                                                                                            | 9.70                                 | 29.2                                                    |
|                 | VR □ F | -S9             | C        | -400       | 333                         | 9.51                              | 28.5                                        | 1180                           | 588                            | 0.275                                                                                            | 9.70                                 | 29.2                                                    |
|                 | VR □ F | -S9             | D        | -750       | 333                         | 18.2                              | 54.7                                        | 1470                           | 735                            | 0.650                                                                                            | 18.2                                 | 54.7                                                    |
|                 | VR □ F | -S9             | E        | -1000      | 333                         | 20.0                              | 60.1                                        | 1960                           | 980                            | 2.81                                                                                             | 73.5                                 | 221                                                     |
|                 | VR □ F | -S9             | E        | -1500      | 333                         | 34.3                              | 103                                         | 1960                           | 980                            | 2.81                                                                                             | 73.5                                 | 221                                                     |
|                 | VR □ F | -S9             | E        | -2000      | 333                         | 48.6                              | 146                                         | 1960                           | 980                            | 2.81                                                                                             | 73.5                                 | 221                                                     |
|                 | VR □ F | -S9             | E        | -2500      | 333                         | 60.8                              | 182                                         | 1960                           | 980                            | 2.81                                                                                             | 73.5                                 | 221                                                     |
| 1/15            | VR □ F | -15             | B        | -50        | 200                         | 1.67                              | 5.00                                        | 784                            | 392                            | 0.0350                                                                                           | 4.02                                 | 12.2                                                    |
|                 | VR □ F | -15             | B        | -100       | 200                         | 3.72                              | 11.4                                        | 784                            | 392                            | 0.0350                                                                                           | 4.02                                 | 12.2                                                    |
|                 | VR □ F | -15             | C        | -200       | 200                         | 6.27                              | 18.8                                        | 1470                           | 735                            | 0.300                                                                                            | 16.2                                 | 48.6                                                    |
|                 | VR □ F | -15             | C        | -400       | 200                         | 15.8                              | 47.5                                        | 1470                           | 735                            | 0.300                                                                                            | 16.2                                 | 48.6                                                    |
|                 | VR □ F | -15             | D        | -750       | 200                         | 30.4                              | 91.2                                        | 1760                           | 882                            | 0.700                                                                                            | 30.4                                 | 91.2                                                    |
|                 | VR □ F | -15             | E        | -1000      | 200                         | 33.3                              | 100                                         | 2350                           | 1180                           | 2.80                                                                                             | 91.4                                 | 274                                                     |
|                 | VR □ F | -15             | E        | -1500      | 200                         | 57.2                              | 172                                         | 2350                           | 1180                           | 2.80                                                                                             | 91.4                                 | 274                                                     |
| 1/20            | VR □ F | -20             | B        | -50        | 150                         | 2.21                              | 6.63                                        | 804                            | 402                            | 0.0340                                                                                           | 5.00                                 | 15.0                                                    |
|                 | VR □ F | -20             | B        | -100       | 150                         | 5.00                              | 15.0                                        | 804                            | 402                            | 0.0340                                                                                           | 5.00                                 | 15.0                                                    |
|                 | VR □ F | -20             | C        | -200       | 150                         | 8.69                              | 26.1                                        | 1570                           | 785                            | 0.294                                                                                            | 21.1                                 | 63.3                                                    |
|                 | VR □ F | -20             | C        | -400       | 150                         | 21.1                              | 63.3                                        | 1570                           | 785                            | 0.294                                                                                            | 21.1                                 | 63.3                                                    |
|                 | VR □ F | -20             | D        | -750       | 150                         | 40.6                              | 122                                         | 1910                           | 955                            | 0.690                                                                                            | 40.6                                 | 122                                                     |
|                 | VR □ F | -20             | E        | -1000      | 150                         | 44.5                              | 134                                         | 2500                           | 1250                           | 2.72                                                                                             | 78.4                                 | 235                                                     |
| 1/25            | VR □ F | -25             | B        | -50        | 120                         | 2.74                              | 8.33                                        | 882                            | 441                            | 0.0325                                                                                           | 4.02                                 | 12.2                                                    |
|                 | VR □ F | -25             | B        | -100       | 120                         | 6.27                              | 19.0                                        | 882                            | 441                            | 0.0325                                                                                           | 6.27                                 | 19.0                                                    |
|                 | VR □ F | -25             | C        | -200       | 120                         | 11.1                              | 33.3                                        | 1670                           | 833                            | 0.288                                                                                            | 21.7                                 | 64.9                                                    |
|                 | VR □ F | -25             | C        | -400       | 120                         | 26.4                              | 79.2                                        | 1670                           | 833                            | 0.288                                                                                            | 26.4                                 | 79.2                                                    |
|                 | VR □ F | -25             | D        | -750       | 120                         | 50.7                              | 152                                         | 2060                           | 1030                           | 0.680                                                                                            | 50.7                                 | 152                                                     |
| 1/35            | VR □ F | -25             | E        | -1000      | 120                         | 55.7                              | 167                                         | 2650                           | 1320                           | 2.71                                                                                             | 65.4                                 | 196                                                     |
|                 | VR □ F | -35             | B        | -50        | 85                          | 3.84                              | 11.5                                        | 882                            | 441                            | 0.0300                                                                                           | 3.84                                 | 11.5                                                    |
|                 | VR □ F | -35             | C        | -100       | 85                          | 7.24                              | 21.7                                        | 1670                           | 833                            | 0.0650                                                                                           | 13.9                                 | 41.7                                                    |
|                 | VR □ F | -35             | C        | -200       | 85                          | 15.5                              | 46.6                                        | 1670                           | 833                            | 0.262                                                                                            | 15.5                                 | 46.6                                                    |
|                 | VR □ F | -35             | D        | -400       | 85                          | 37.0                              | 111                                         | 2060                           | 1030                           | 0.269                                                                                            | 37.0                                 | 111                                                     |
| 1/45            | VR □ F | -35             | E        | -750       | 85                          | 71.0                              | 213                                         | 3430                           | 1715                           | 0.473                                                                                            | 71.0                                 | 213                                                     |
|                 | VR □ F | -45             | C        | -50        | 66                          | 3.86                              | 11.6                                        | 1670                           | 833                            | 0.0285                                                                                           | 9.50                                 | 28.6                                                    |
|                 | VR □ F | -45             | C        | -100       | 66                          | 9.31                              | 28.0                                        | 1670                           | 833                            | 0.0285                                                                                           | 9.50                                 | 28.6                                                    |
|                 | VR □ F | -45             | D        | -200       | 66                          | 21.1                              | 63.5                                        | 2060                           | 1030                           | 0.0256                                                                                           | 28.3                                 | 85.2                                                    |
|                 | VR □ F | -45             | E        | -400       | 66                          | 47.5                              | 142.5                                       | 3520                           | 1760                           | 0.245                                                                                            | 57.0                                 | 171                                                     |
| 1/81            | VR □ F | -45             | E        | -750       | 66                          | 91.3                              | 274                                         | 3520                           | 1760                           | 1.77                                                                                             | 91.3                                 | 274                                                     |
|                 | VR □ F | -81             | C        | -50        | 37                          | 7.02                              | 20.8                                        | 1670                           | 833                            | 0.0270                                                                                           | 9.70                                 | 29.2                                                    |
|                 | VR □ F | -81             | D        | -100       | 37                          | 14.0                              | 42.0                                        | 2060                           | 1030                           | 0.0300                                                                                           | 17.8                                 | 53.5                                                    |
|                 | VR □ F | -81             | E        | -200       | 37                          | 36.1                              | 108.3                                       | 3530                           | 1765                           | 0.240                                                                                            | 43.3                                 | 129.9                                                   |

Note 1) The moment of inertia of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

Note 2) The max. input speed is 5000rpm. Usually set to 3000rpm or less.

Note 3) The permissible radial load is indicated on the center of the output shaft.

Note 4) All numerical values are within the range corresponding to the gear.

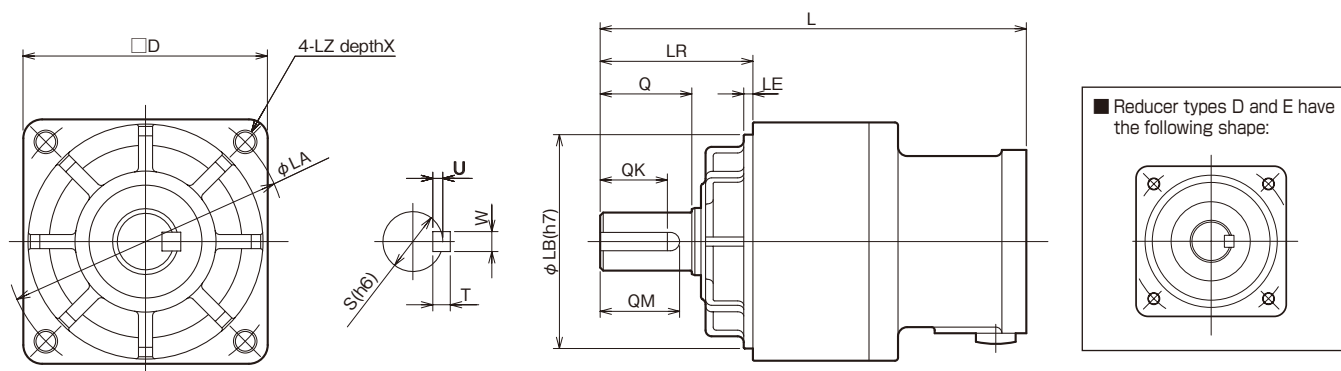
The same specification applies to all of standard type, LB(low backlash), and PB(high precision type).

| Reduction ratio | Type   |                 |          |            | Output shaft speed<br>(rpm) | Standard output torque<br>(N · m) | Instantaneous max. output torque<br>(N · m) | Permissible radial load<br>(N) | Permissible thrust load<br>(N) | Internal moment of inertia of input shaft conversion<br>( $\times 10^{-4}$ kg·m <sup>2</sup> ) | Permissible output torque<br>(N · m) | Instantaneous max. permissible output torque<br>(N · m) |
|-----------------|--------|-----------------|----------|------------|-----------------------------|-----------------------------------|---------------------------------------------|--------------------------------|--------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|
|                 | Model  | Reduction ratio | Type no. | Motor cap. |                             |                                   |                                             |                                |                                |                                                                                                |                                      |                                                         |
| 1/3             | VR □ F | -3              | B        | -50        | 666                         | 0.477                             | 1.43                                        | 450                            | 225                            | 0.0575                                                                                         | 3.43                                 | 10.3                                                    |
|                 | VR □ F | -3              | B        | -100       | 666                         | 1.05                              | 3.15                                        | 450                            | 225                            | 0.135                                                                                          | 3.43                                 | 10.3                                                    |
|                 | VR □ F | -3              | B        | -200       | 666                         | 2.48                              | 7.45                                        | 450                            | 225                            | 0.145                                                                                          | 3.43                                 | 10.3                                                    |
|                 | VR □ F | -3              | C        | -400       | 666                         | 5.01                              | 15.0                                        | 900                            | 450                            | 0.913                                                                                          | 6.86                                 | 20.6                                                    |
|                 | VR □ F | -3              | D        | -750       | 666                         | 8.73                              | 26.2                                        | 1010                           | 505                            | 2.43                                                                                           | 18.3                                 | 54.9                                                    |
|                 | VR □ F | -3              | D        | -1000      | 666                         | 12.3                              | 37.1                                        | 1010                           | 505                            | 2.43                                                                                           | 18.3                                 | 54.9                                                    |
|                 | VR □ F | -3              | D        | -1500      | 666                         | 18.3                              | 54.9                                        | 1010                           | 505                            | 2.43                                                                                           | 18.3                                 | 54.9                                                    |
|                 | VR □ F | -3              | E        | -2000      | 666                         | 23.7                              | 71.2                                        | 1570                           | 785                            | 5.50                                                                                           | 44.1                                 | 132                                                     |
|                 | VR □ F | -3              | E        | -2500      | 666                         | 30.8                              | 92.5                                        | 1570                           | 785                            | 5.50                                                                                           | 44.1                                 | 132                                                     |
| 1/5             | VR □ F | -3              | E        | -3000      | 666                         | 37.7                              | 113                                         | 1570                           | 785                            | 5.50                                                                                           | 44.1                                 | 132                                                     |
|                 | VR □ F | -3              | E        | -3500      | 666                         | 44.1                              | 132                                         | 1570                           | 785                            | 5.78                                                                                           | 44.1                                 | 132                                                     |
|                 | VR □ F | -5              | B        | -50        | 400                         | 0.795                             | 2.39                                        | 560                            | 280                            | 0.0400                                                                                         | 1.57                                 | 4.70                                                    |
|                 | VR □ F | -5              | B        | -100       | 400                         | 1.57                              | 4.70                                        | 560                            | 280                            | 0.118                                                                                          | 1.57                                 | 4.70                                                    |
|                 | VR □ F | -5              | C        | -200       | 400                         | 3.82                              | 11.5                                        | 1120                           | 560                            | 0.363                                                                                          | 6.57                                 | 19.7                                                    |
|                 | VR □ F | -5              | C        | -400       | 400                         | 8.35                              | 25.1                                        | 1120                           | 560                            | 0.713                                                                                          | 11.5                                 | 34.3                                                    |
|                 | VR □ F | -5              | D        | -750       | 400                         | 15.5                              | 46.5                                        | 1230                           | 615                            | 1.85                                                                                           | 23.5                                 | 70.6                                                    |
|                 | VR □ F | -5              | D        | -1000      | 400                         | 21.5                              | 64.4                                        | 1230                           | 615                            | 1.85                                                                                           | 23.5                                 | 70.6                                                    |
|                 | VR □ F | -5              | E        | -1500      | 400                         | 27.8                              | 83.5                                        | 1900                           | 950                            | 3.50                                                                                           | 56.8                                 | 171                                                     |
| 1/9             | VR □ F | -5              | E        | -2000      | 400                         | 39.6                              | 119                                         | 1900                           | 950                            | 3.48                                                                                           | 56.8                                 | 171                                                     |
|                 | VR □ F | -5              | E        | -2500      | 400                         | 51.4                              | 154                                         | 1900                           | 950                            | 3.75                                                                                           | 56.8                                 | 171                                                     |
|                 | VR □ F | -S9             | B        | -50        | 222                         | 1.57                              | 4.72                                        | 670                            | 335                            | 0.0350                                                                                         | 2.35                                 | 7.25                                                    |
|                 | VR □ F | -S9             | C        | -100       | 222                         | 2.35                              | 7.04                                        | 1340                           | 670                            | 0.275                                                                                          | 9.70                                 | 29.2                                                    |
|                 | VR □ F | -S9             | C        | -200       | 222                         | 6.64                              | 19.9                                        | 1340                           | 670                            | 0.275                                                                                          | 9.70                                 | 29.2                                                    |
|                 | VR □ F | -S9             | D        | -400       | 222                         | 14.0                              | 41.9                                        | 1680                           | 840                            | 0.650                                                                                          | 18.2                                 | 54.7                                                    |
|                 | VR □ F | -S9             | E        | -750       | 222                         | 23.6                              | 70.9                                        | 2240                           | 1120                           | 2.81                                                                                           | 73.5                                 | 221                                                     |
|                 | VR □ F | -S9             | E        | -1000      | 222                         | 34.3                              | 103                                         | 2240                           | 1120                           | 2.81                                                                                           | 73.5                                 | 221                                                     |
|                 | VR □ F | -S9             | E        | -1500      | 222                         | 53.7                              | 161                                         | 2240                           | 1120                           | 2.81                                                                                           | 73.5                                 | 221                                                     |
| 1/15            | VR □ F | -S9             | E        | -2000      | 222                         | 73.0                              | 219                                         | 2240                           | 1120                           | 2.77                                                                                           | 73.5                                 | 221                                                     |
|                 | VR □ F | -15             | B        | -50        | 133                         | 2.62                              | 7.87                                        | 882                            | 441                            | 0.0350                                                                                         | 4.02                                 | 12.2                                                    |
|                 | VR □ F | -15             | C        | -100       | 133                         | 3.91                              | 11.7                                        | 1670                           | 833                            | 0.300                                                                                          | 16.2                                 | 48.6                                                    |
|                 | VR □ F | -15             | C        | -200       | 133                         | 11.1                              | 33.2                                        | 1670                           | 833                            | 0.300                                                                                          | 16.2                                 | 48.6                                                    |
|                 | VR □ F | -15             | D        | -400       | 133                         | 23.3                              | 69.8                                        | 2020                           | 1010                           | 0.700                                                                                          | 30.4                                 | 91.2                                                    |
|                 | VR □ F | -15             | E        | -750       | 133                         | 39.4                              | 118                                         | 2650                           | 1320                           | 2.80                                                                                           | 91.4                                 | 274                                                     |
|                 | VR □ F | -15             | E        | -1000      | 133                         | 57.2                              | 172                                         | 2650                           | 1320                           | 2.80                                                                                           | 91.4                                 | 274                                                     |
| 1/20            | VR □ F | -15             | E        | -1500      | 133                         | 91.3                              | 274                                         | 2650                           | 1320                           | 2.80                                                                                           | 91.4                                 | 274                                                     |
|                 | VR □ F | -20             | B        | -50        | 100                         | 3.50                              | 10.5                                        | 910                            | 455                            | 0.0340                                                                                         | 5.00                                 | 15.0                                                    |
|                 | VR □ F | -20             | C        | -100       | 100                         | 5.73                              | 17.2                                        | 1790                           | 895                            | 0.294                                                                                          | 21.1                                 | 63.3                                                    |
|                 | VR □ F | -20             | C        | -200       | 100                         | 14.8                              | 44.4                                        | 1790                           | 895                            | 0.294                                                                                          | 21.1                                 | 63.3                                                    |
|                 | VR □ F | -20             | D        | -400       | 100                         | 31.0                              | 93.1                                        | 2180                           | 1090                           | 0.690                                                                                          | 40.6                                 | 122                                                     |
|                 | VR □ F | -20             | E        | -750       | 100                         | 52.4                              | 157                                         | 2650                           | 1320                           | 2.72                                                                                           | 78.4                                 | 235                                                     |
| 1/25            | VR □ F | -25             | B        | -50        | 80.0                        | 4.37                              | 13.1                                        | 882                            | 441                            | 0.0325                                                                                         | 6.27                                 | 19.0                                                    |
|                 | VR □ F | -25             | C        | -100       | 80.0                        | 7.16                              | 21.5                                        | 1670                           | 833                            | 0.288                                                                                          | 21.7                                 | 64.9                                                    |
|                 | VR □ F | -25             | C        | -200       | 80.0                        | 18.5                              | 55.4                                        | 1670                           | 833                            | 0.288                                                                                          | 21.7                                 | 64.9                                                    |
|                 | VR □ F | -25             | D        | -400       | 80.0                        | 38.8                              | 116                                         | 2060                           | 1030                           | 0.680                                                                                          | 50.7                                 | 152                                                     |
|                 | VR □ F | -25             | E        | -750       | 80.0                        | 65.4                              | 196                                         | 2650                           | 1320                           | 2.71                                                                                           | 65.4                                 | 196                                                     |
| 1/35            | VR □ F | -35             | C        | -50        | 57                          | 4.43                              | 13.3                                        | 1900                           | 950                            | 0.262                                                                                          | 15.5                                 | 46.6                                                    |
|                 | VR □ F | -35             | C        | -100       | 57                          | 12.7                              | 38.1                                        | 1900                           | 950                            | 0.262                                                                                          | 15.5                                 | 46.6                                                    |
|                 | VR □ F | -35             | D        | -200       | 57                          | 22.0                              | 66.0                                        | 2340                           | 1170                           | 0.269                                                                                          | 37.0                                 | 111                                                     |
| 1/45            | VR □ F | -45             | C        | -50        | 44.4                        | 5.80                              | 17.4                                        | 1670                           | 833                            | 0.0285                                                                                         | 9.50                                 | 28.6                                                    |
|                 | VR □ F | -45             | D        | -100       | 44.4                        | 14.0                              | 42.1                                        | 2060                           | 1030                           | 0.0285                                                                                         | 28.3                                 | 85.2                                                    |
|                 | VR □ F | -45             | D        | -200       | 44.4                        | 28.3                              | 85.2                                        | 2060                           | 1030                           | 0.0285                                                                                         | 28.3                                 | 85.2                                                    |
| 1/81            | VR □ F | -81             | C        | -50        | 24.6                        | 9.70                              | 29.2                                        | 1670                           | 833                            | 0.0270                                                                                         | 9.70                                 | 29.2                                                    |
|                 | VR □ F | -81             | D        | -100       | 24.6                        | 17.8                              | 53.5                                        | 2060                           | 1030                           | 0.0300                                                                                         | 17.8                                 | 53.5                                                    |

Note 1) The moment of inertia of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

Note 2) The max. input speed is 5000rpm. Usually set to 3000rpm or less.

Note 3) All numerical values are within the range corresponding to the gear.



Able Reducer coaxial type dimensional table

(Unit: mm)

| Type  |                 |          |            | Total length L      |                            |                               | Output shaft |    |    |    |    |       |   | Flange |     |    |     |     |    |
|-------|-----------------|----------|------------|---------------------|----------------------------|-------------------------------|--------------|----|----|----|----|-------|---|--------|-----|----|-----|-----|----|
| Model | Reduction ratio | Type no. | Motor cap. | Panasonic-made MSMA | Yaskawa-made SGMASH SGMASH | Mitsubishi-made HC-KFS HC-RFS | LR           | S  | Q  | QM | QK | W×U   | T | D      | LB  | LE | LA  | LZ  | X  |
| VRSF  | 3・5・S9          | B        | 50         |                     | 99.5                       |                               | 32           | 12 | 20 | 18 | 16 | 4×2.5 | 4 | 52     | 50  | 3  | 60  | M5  | 12 |
| VRSF  | 15・20・25・35     | B        | 50         |                     | 110                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 3・5・S9          | B        | 100        |                     | 99.5                       |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 15・20・25        | B        | 100        |                     | 110                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 3・5             | B        | 200        |                     | 104.5                      |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 3               | B        | 400        |                     | 104.5                      |                               | 50           | 19 | 30 | 26 | 22 | 6×3.5 | 6 | 78     | 70  | 3  | 90  | M6  | 20 |
| VRSF  | 45・81           | C        | 50         |                     | 142                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 35              | C        | 100        |                     | 150                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 45              | C        | 100        |                     | 142                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | S9              | C        | 200        |                     | 139.5                      |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 15・20・25・35     | C        | 200        |                     | 150                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 5・S9            | C        | 400        |                     | 139.5                      |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 15・20・25        | C        | 400        |                     | 150                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 3・5             | C        | 750        |                     | 143.5                      |                               | 61           | 24 | 40 | 35 | 30 | 8×4   | 7 | 98     | 90  | 5  | 115 | M8  | 20 |
| VRSF  | 81              | D        | 100        |                     | 158                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 45              | D        | 200        |                     | 165                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 35              | D        | 400        |                     | 165                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | S9              | D        | 750        |                     | 158.5                      |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 15・20・25        | D        | 750        |                     | 171                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 3・5             | D        | 1000       |                     | 177                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 3・5             | D        | 1500       |                     | 177                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 3               | D        | 2000       |                     | 177                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 81              | E        | 200        |                     | 210                        |                               | 75           | 32 | 55 | 52 | 45 | 10×5  | 8 | 125    | 110 | 5  | 135 | M10 | 20 |
| VRSF  | 45              | E        | 400        |                     | 210                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 35              | E        | 750        |                     | 235                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 45              | E        | 750        |                     | 235                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | S9              | E        | 1000       |                     | 215                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 15・25           | E        | 1000       |                     | 235                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | S9              | E        | 1500       |                     | 215                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 15              | E        | 1500       |                     | 235                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 5・S9            | E        | 2000       |                     | 215                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 15              | E        | 2000       |                     | 235                        |                               |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 3・5・S9          | E        | 2500       | 215                 | —                          | —                             |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 3・5・S9          | E        | 3000       | 215                 | 225                        | —                             |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 3・5             | E        | 3500       | 215                 | —                          | 225                           |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 3・5             | E        | 4000       | 225                 | —                          | —                             |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 3               | E        | 4500       | 225                 | —                          | —                             |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 3               | E        | 5000       | 225                 | 225                        | —                             |              |    |    |    |    |       |   |        |     |    |     |     |    |

Note 1) If a motor beyond the standard models (motor matching series) is attached, contact us. (How to measure dimensions of the motor-attached flange may be changed in some cases.)

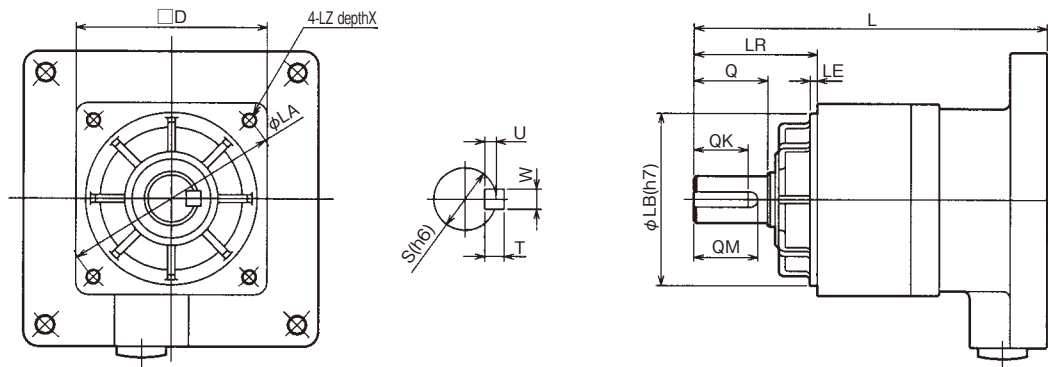
Note 2) Rotation of the output shaft is in the same direction as that of motor input.

Note 3) All numerical values are within the range corresponding to the gear.

# Dimensional Drawing & Table

## <Flat type-matched VRSF series>

Coaxial Shaft  
**VR** series



### Yaskawa-made (SGMPS3000rpm) (SGMP, SGMPH3000rpm)

(Unit: mm)

| Type  |                   |          |            | Total length | Output shaft |    |    |    |    |       |   | Flange |     |    |     |     |    |
|-------|-------------------|----------|------------|--------------|--------------|----|----|----|----|-------|---|--------|-----|----|-----|-----|----|
| Model | Reduction ratio   | Type no. | Motor cap. | L            | LR           | S  | Q  | QM | QK | W×U   | T | D      | LB  | LE | LA  | LZ  | X  |
| VRSF  | 3 · 5 · S9        | B        | 100        | 104.5        | 32           | 12 | 20 | 18 | 16 | 4×2.5 | 4 | 52     | 50  | 3  | 60  | M5  | 12 |
| VRSF  | 15 · 20 · 25      | B        | 100        | 110          |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 3 · 5             | B        | 200        | 104.5        |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 3                 | B        | 400        | 104.5        |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 35                | C        | 100        | 150          | 50           | 19 | 30 | 26 | 22 | 6×3.5 | 6 | 78     | 70  | 3  | 90  | M6  | 20 |
| VRSF  | 45                | C        | 100        | 142          |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | S9                | C        | 200        | 139.5        |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 15 · 20 · 25 · 35 | C        | 200        | 150          |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 5 · S9            | C        | 400        | 139.5        |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 15 · 20 · 25      | C        | 400        | 150          |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 3 · 5             | C        | 750        | 143.5        | 61           | 24 | 40 | 35 | 30 | 8×4   | 7 | 98     | 90  | 5  | 115 | M8  | 20 |
| VRSF  | 81                | D        | 100        | 158          |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 45                | D        | 200        | 165          |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 35                | D        | 400        | 165          |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | S9                | D        | 750        | 158.5        |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 15 · 20 · 25      | D        | 750        | 171          |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 3 · 5             | D        | 1500       | 177          | 75           | 32 | 55 | 52 | 45 | 10×5  | 8 | 125    | 110 | 5  | 135 | M10 | 20 |
| VRSF  | 81                | E        | 200        | 210          |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 45                | E        | 400        | 210          |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 35                | E        | 750        | 230          |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 45                | E        | 750        | 235          |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | S9                | E        | 1500       | 215          |              |    |    |    |    |       |   |        |     |    |     |     |    |
| VRSF  | 15                | E        | 1500       | 235          |              |    |    |    |    |       |   |        |     |    |     |     |    |

### Mitsubishi Electric-made (HC-SFS2000rpm) (HF-SP2000rpm)

(Unit: mm)

| Type  |                 |          |            | Total length | Output shaft |    |    |    |    |      |   | Flange |     |    |     |     |    |
|-------|-----------------|----------|------------|--------------|--------------|----|----|----|----|------|---|--------|-----|----|-----|-----|----|
| Model | Reduction ratio | Type no. | Motor cap. | L            | LR           | S  | Q  | QM | QK | W×U  | T | D      | LB  | LE | LA  | LZ  | X  |
| VRSF  | 3 · 5           | D        | 500        | 177          | 61           | 24 | 40 | 35 | 30 | 8×4  | 7 | 98     | 90  | 5  | 115 | M8  | 20 |
| VRSF  | S9              | D        | 500        | 178.5        |              |    |    |    |    |      |   |        |     |    |     |     |    |
| VRSF  | 15 · 20 · 25    | D        | 500        | 191          |              |    |    |    |    |      |   |        |     |    |     |     |    |
| VRSF  | 3 · 5           | D        | 1000       | 177          |              |    |    |    |    |      |   |        |     |    |     |     |    |
| VRSF  | 3               | D        | 1500       | 177          | 75           | 32 | 55 | 52 | 45 | 10×5 | 8 | 125    | 110 | 5  | 135 | M10 | 20 |
| VRSF  | 35              | E        | 500        | 230          |              |    |    |    |    |      |   |        |     |    |     |     |    |
| VRSF  | 45              | E        | 500        | 235          |              |    |    |    |    |      |   |        |     |    |     |     |    |
| VRSF  | S9              | E        | 1000       | 215          |              |    |    |    |    |      |   |        |     |    |     |     |    |
| VRSF  | 15              | E        | 1000       | 235          |              |    |    |    |    |      |   |        |     |    |     |     |    |
| VRSF  | 5 · S9          | E        | 1500       | 215          |              |    |    |    |    |      |   |        |     |    |     |     |    |
| VRSF  | 15              | E        | 1500       | 235          |              |    |    |    |    |      |   |        |     |    |     |     |    |
| VRSF  | 3 · 5 · S9      | E        | 2000       | 245          |              |    |    |    |    |      |   |        |     |    |     |     |    |
| VRSF  | 3               | E        | 3500       | 245          |              |    |    |    |    |      |   |        |     |    |     |     |    |

Note 1) Rotation of the output shaft is in the same direction as that of motor input.

Note 2) All numerical values are within the range corresponding to the gear.

## ■ Performance Table 50W

If input speed is 3000rpm:

| Rated input motor cap. | Reduction ratio | Type  |                 |          |            | Output shaft speed<br>(rpm) | Standard output torque<br>(N · m) | Instantaneous max. output torque<br>(N · m) | Permissible radial load<br>(N) | Permissible thrust load<br>(N) | Internal moment of inertia of input shaft conversion<br>(10 <sup>-4</sup> × kg · m <sup>2</sup> ) | Permissible output torque<br>(N · m) | Instantaneous max. permissible output torque<br>(N · m) |
|------------------------|-----------------|-------|-----------------|----------|------------|-----------------------------|-----------------------------------|---------------------------------------------|--------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|
|                        |                 | Model | Reduction ratio | Type no. | Motor cap. |                             |                                   |                                             |                                |                                |                                                                                                   |                                      |                                                         |
| 50W                    | 1/3             | VRSF  | 3               | B        | 50         | 1000                        | 0.255                             | 0.784                                       | 392                            | 196                            | 0.0575                                                                                            | 3.43                                 | 10.3                                                    |
|                        | 1/5             | VRSF  | 5               | B        | 50         | 600                         | 0.510                             | 1.47                                        | 490                            | 245                            | 0.0400                                                                                            | 1.57                                 | 4.70                                                    |
|                        | 1/9             | VRSF  | S9              | B        | 50         | 333                         | 0.921                             | 2.74                                        | 588                            | 294                            | 0.0350                                                                                            | 2.35                                 | 7.25                                                    |
|                        | 1/15            | VRSF  | 15              | B        | 50         | 200                         | 1.67                              | 5.00                                        | 784                            | 392                            | 0.0350                                                                                            | 4.02                                 | 12.2                                                    |
|                        | 1/20            | VRSF  | 20              | B        | 50         | 150                         | 2.21                              | 6.63                                        | 804                            | 402                            | 0.0340                                                                                            | 5.00                                 | 15.0                                                    |
|                        | 1/25            | VRSF  | 25              | B        | 50         | 120                         | 2.74                              | 8.33                                        | 882                            | 441                            | 0.0325                                                                                            | 4.02                                 | 12.2                                                    |
|                        | 1/35            | VRSF  | 35              | B        | 50         | 85                          | 3.84                              | 11.5                                        | 882                            | 441                            | 0.0300                                                                                            | 3.84                                 | 11.5                                                    |
|                        | 1/45            | VRSF  | 45              | C        | 50         | 66                          | 3.86                              | 11.6                                        | 1670                           | 833                            | 0.0285                                                                                            | 9.50                                 | 28.6                                                    |
|                        | 1/81            | VRSF  | 81              | C        | 50         | 37                          | 7.02                              | 20.8                                        | 1670                           | 833                            | 0.0270                                                                                            | 9.70                                 | 29.2                                                    |

Note 1) In case of attachment to a motor beyond the standard models (motor matching series), contact us. (How to measure dimensions of the flange may be changed in some cases.)

Note 2) The moment of inertia of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

Note 3) The max. input speed is 5000rpm, and usually set to 3000rpm or less.

Note 4) The permissible radial load is indicated on the center of the output shaft.

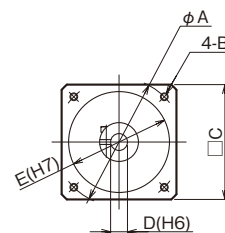
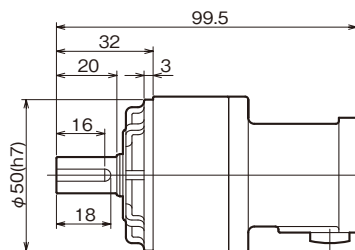
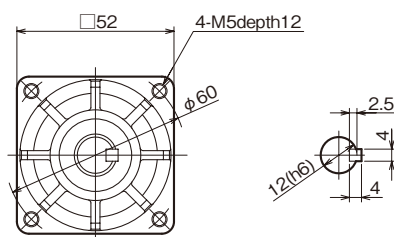
Note 5) All numerical values are within the range corresponding to the gear.

Note 6) For motor attachment procedure, see VR38 page.

Note 7) Rotation of the output shaft is in the same direction as that of motor input.

## VRSF-3B · 5B · S9B-50

■ Rough weight 0.55kg ■ CAD data no. &lt;VSB1A5□1&gt;



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of TYPE1~3, see VR31 page.

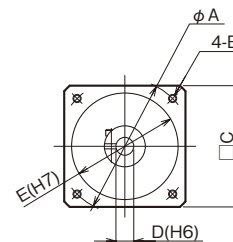
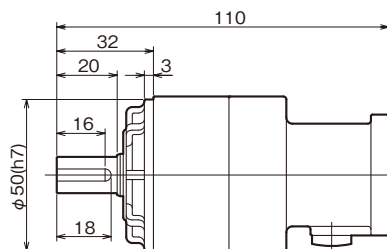
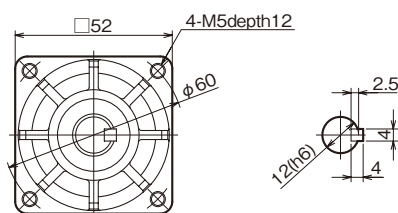
■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D | E  |
|------------|----|----|----|---|----|
| TYPE1      | 45 | M3 | 38 | 8 | 30 |
| TYPE2      | 46 | M4 | 40 | 6 | 30 |
| TYPE3      | 46 | M4 | 40 | 8 | 30 |

※CAD data can be downloaded in the homepage.

## VRSF-15B · 20B · 25B · 35B-50

■ Rough weight 0.7kg ■ CAD data no. &lt;VSB2A5□1&gt;



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of TYPE1~3, see VR31 page.

■ Detailed flange dimensions table (Unit mm)

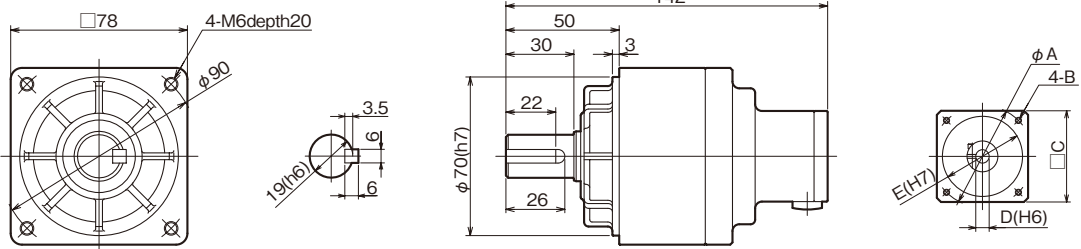
| Motor type | A  | B  | C  | D | E  |
|------------|----|----|----|---|----|
| TYPE1      | 45 | M3 | 38 | 8 | 30 |
| TYPE2      | 46 | M4 | 40 | 6 | 30 |
| TYPE3      | 46 | M4 | 40 | 8 | 30 |

※CAD data can be downloaded in the homepage.

VRSF-45C · 81C-50

■ Rough weight 1.7kg ■ CAD data no.<VSC2A5□1>

P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of  
TYPE1~3, see  
VR31 page.



■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D | E  |
|------------|----|----|----|---|----|
| TYPE1      | 45 | M3 | 38 | 8 | 30 |
| TYPE2      | 46 | M4 | 40 | 6 | 30 |
| TYPE3      | 46 | M4 | 40 | 8 | 30 |

※CAD data can be downloaded in the homepage.

# Performance Table 100W

If input speed is 3000rpm:

| Rated input motor cap. | Reduction ratio | Type  |                 |          |            | Output shaft speed<br>(rpm) | Standard output torque<br>(N · m) | Instantaneous max. output torque<br>(N · m) | Permissible radial load<br>(N) | Permissible thrust load<br>(N) | Internal moment of inertia of input shaft conversion<br>(10 <sup>-4</sup> × kg · m <sup>2</sup> ) | Permissible output torque<br>(N · m) | Instantaneous max. permissible output torque<br>(N · m) |
|------------------------|-----------------|-------|-----------------|----------|------------|-----------------------------|-----------------------------------|---------------------------------------------|--------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|
|                        |                 | Model | Reduction ratio | Type no. | Motor cap. |                             |                                   |                                             |                                |                                |                                                                                                   |                                      |                                                         |
| 100W                   | 1/3             | VRSF  | 3               | B        | 100        | 1000                        | 0.715                             | 2.06                                        | 392                            | 196                            | 0.0575                                                                                            | 3.43                                 | 10.3                                                    |
|                        | 1/5             | VRSF  | 5               | B        | 100        | 600                         | 1.18                              | 3.72                                        | 490                            | 245                            | 0.0400                                                                                            | 1.57                                 | 4.70                                                    |
|                        | 1/9             | VRSF  | S9              | B        | 100        | 333                         | 2.25                              | 6.86                                        | 588                            | 294                            | 0.0350                                                                                            | 2.35                                 | 7.25                                                    |
|                        | 1/15            | VRSF  | 15              | B        | 100        | 200                         | 3.72                              | 11.4                                        | 784                            | 392                            | 0.0350                                                                                            | 4.02                                 | 12.2                                                    |
|                        | 1/20            | VRSF  | 20              | B        | 100        | 150                         | 5.00                              | 15.0                                        | 804                            | 402                            | 0.0340                                                                                            | 5.00                                 | 15.0                                                    |
|                        | 1/25            | VRSF  | 25              | B        | 100        | 120                         | 6.27                              | 19.0                                        | 882                            | 441                            | 0.0325                                                                                            | 6.27                                 | 19.0                                                    |
|                        | 1/35            | VRSF  | 35              | C        | 100        | 85                          | 7.24                              | 21.7                                        | 1670                           | 833                            | 0.0650                                                                                            | 13.9                                 | 41.7                                                    |
|                        | 1/45            | VRSF  | 45              | C        | 100        | 66                          | 9.31                              | 28.0                                        | 1670                           | 833                            | 0.0285                                                                                            | 9.50                                 | 28.6                                                    |
|                        | 1/81            | VRSF  | 81              | D        | 100        | 37                          | 14.0                              | 42.0                                        | 2060                           | 1030                           | 0.0300                                                                                            | 17.8                                 | 53.5                                                    |

Note 1) In case of attachment to a motor beyond the standard models (motor matching series), contact us. (How to measure dimensions of the flange may be changed in some cases.)

Note 2) The moment of inertia of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

Note 3) The max. input speed is 5000rpm, and usually set to 3000rpm or less.

Note 4) The permissible radial load is indicated on the center of the output shaft.

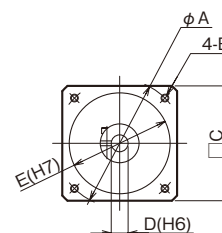
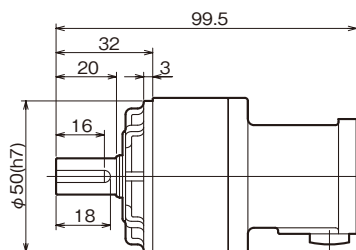
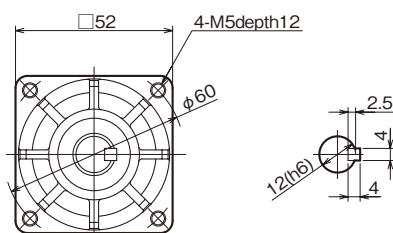
Note 5) All numerical values are within the range corresponding to the gear.

Note 6) For motor attachment procedure, see VR38 page.

Note 7) Rotation of the output shaft is in the same direction as that of motor input.

## VRSF-3B · 5B · S9B-100

■ Rough weight 0.55kg ■ CAD data no. <VSB101□1>



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of TYPE1~3, see VR31 page.

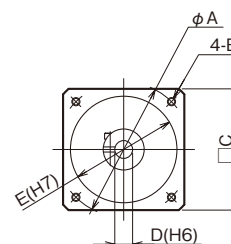
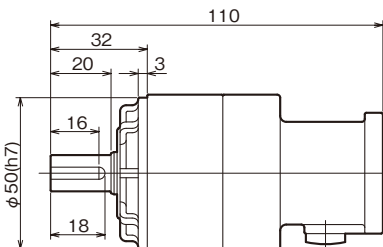
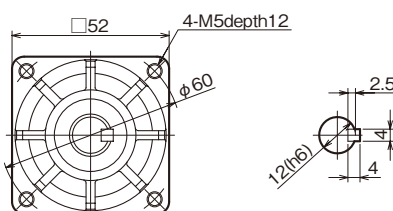
■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D | E  |
|------------|----|----|----|---|----|
| TYPE1      | 45 | M3 | 38 | 8 | 30 |
| TYPE2      | 46 | M4 | 40 | 8 | 30 |
| TYPE3      | 46 | M4 | 40 | 8 | 30 |

※CAD data can be downloaded in the homepage.

## VRSF-15B · 20B · 25B-100

■ Rough weight 0.7kg ■ CAD data no. <VSB201□1>



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of TYPE1~3, see VR31 page.

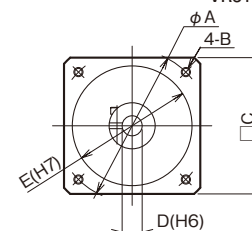
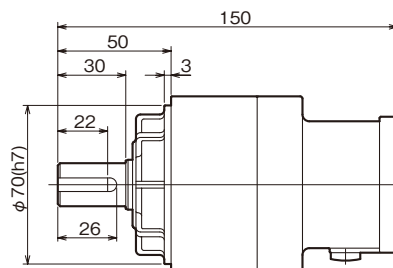
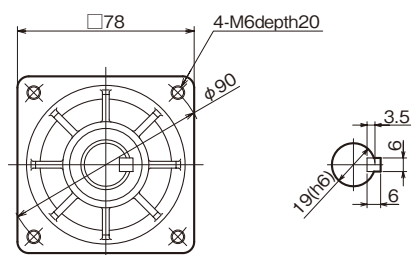
■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D | E  |
|------------|----|----|----|---|----|
| TYPE1      | 45 | M3 | 38 | 8 | 30 |
| TYPE2      | 46 | M4 | 40 | 8 | 30 |
| TYPE3      | 46 | M4 | 40 | 8 | 30 |

※CAD data can be downloaded in the homepage.

### VRSF-35C-100

■ Rough weight 2.0kg ■ CAD data no.<VSC201□1S>



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of  
TYPE1~3, see  
VR31 page.

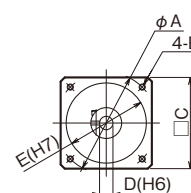
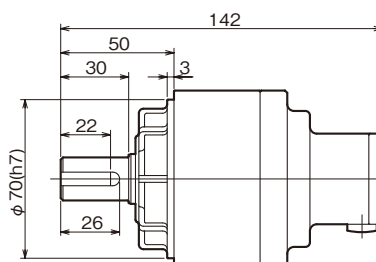
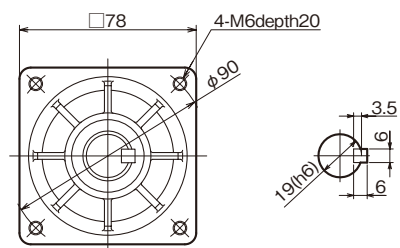
■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D | E  |
|------------|----|----|----|---|----|
| TYPE1      | 45 | M3 | 38 | 8 | 30 |
| TYPE2      | 46 | M4 | 40 | 8 | 30 |
| TYPE3      | 46 | M4 | 40 | 8 | 30 |

※CAD data can be downloaded in the homepage.

### VRSF-45C-100

■ Rough weight 1.7kg ■ CAD data no.<VSC201□1>



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of  
TYPE1~3, see  
VR31 page.

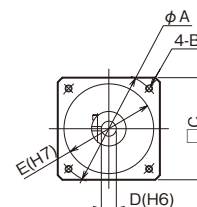
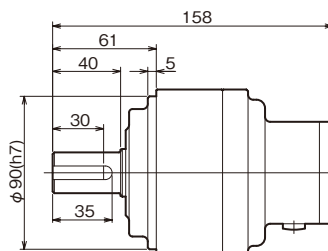
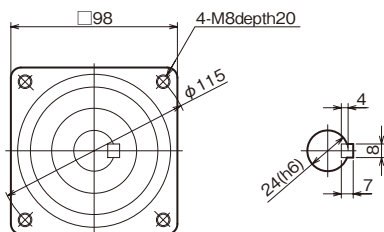
■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D | E  |
|------------|----|----|----|---|----|
| TYPE1      | 45 | M3 | 38 | 8 | 30 |
| TYPE2      | 46 | M4 | 40 | 8 | 30 |
| TYPE3      | 46 | M4 | 40 | 8 | 30 |

※CAD data can be downloaded in the homepage.

### VRSF-81D-100

■ Rough weight 3.0kg ■ CAD data no.<VSD201□1>



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of  
TYPE1~3, see  
VR31 page.

■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D | E  |
|------------|----|----|----|---|----|
| TYPE1      | 45 | M3 | 38 | 8 | 30 |
| TYPE2      | 46 | M4 | 40 | 8 | 30 |
| TYPE3      | 46 | M4 | 40 | 8 | 30 |

※CAD data can be downloaded in the homepage.

## Performance Table 200W

If input speed is 3000rpm:

| Rated input motor cap. | Reduction ratio | Type  |                 |          |            | Output shaft speed<br>(rpm) | Standard output torque<br>(N · m) | Instantaneous max. output torque<br>(N · m) | Permissible radial load<br>(N) | Permissible thrust load<br>(N) | Internal moment of inertia of input shaft conversion<br>(10 <sup>-4</sup> × kg · m <sup>2</sup> ) | Permissible output torque<br>(N · m) | Instantaneous max. permissible output torque<br>(N · m) |
|------------------------|-----------------|-------|-----------------|----------|------------|-----------------------------|-----------------------------------|---------------------------------------------|--------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|
|                        |                 | Model | Reduction ratio | Type no. | Motor cap. |                             |                                   |                                             |                                |                                |                                                                                                   |                                      |                                                         |
| 200W                   | 1/3             | VRSF  | 3               | B        | 200        | 1000                        | 1.47                              | 4.51                                        | 392                            | 196                            | 0.135                                                                                             | 3.43                                 | 10.3                                                    |
|                        | 1/5             | VRSF  | 5               | B        | 200        | 600                         | 2.65                              | 8.04                                        | 490                            | 245                            | 0.118                                                                                             | 2.84                                 | 8.53                                                    |
|                        | 1/9             | VRSF  | S9              | C        | 200        | 333                         | 3.72                              | 11.3                                        | 1180                           | 588                            | 0.275                                                                                             | 9.70                                 | 29.2                                                    |
|                        | 1/15            | VRSF  | 15              | C        | 200        | 200                         | 6.27                              | 18.8                                        | 1470                           | 735                            | 0.300                                                                                             | 16.2                                 | 48.6                                                    |
|                        | 1/20            | VRSF  | 20              | C        | 200        | 150                         | 8.69                              | 26.1                                        | 1570                           | 785                            | 0.294                                                                                             | 21.1                                 | 63.3                                                    |
|                        | 1/25            | VRSF  | 25              | C        | 200        | 120                         | 11.1                              | 33.3                                        | 1670                           | 833                            | 0.288                                                                                             | 21.7                                 | 64.9                                                    |
|                        | 1/35            | VRSF  | 35              | C        | 200        | 85                          | 15.5                              | 46.6                                        | 1670                           | 833                            | 0.262                                                                                             | 15.5                                 | 46.6                                                    |
|                        | 1/45            | VRSF  | 45              | D        | 200        | 66                          | 21.1                              | 63.5                                        | 2060                           | 1030                           | 0.0256                                                                                            | 28.3                                 | 85.2                                                    |
|                        | 1/81            | VRSF  | 81              | E        | 200        | 37                          | 36.1                              | 108.3                                       | 3530                           | 1765                           | 0.240                                                                                             | 43.3                                 | 129.9                                                   |

Note 1) In case of attachment to a motor beyond the standard models (motor matching series), contact us. (How to measure dimensions of the flange may be changed in some cases.)

Note 2) The moment of inertia of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

Note 3) The max. input speed is 5000rpm, and usually set to 3000rpm or less.

Note 4) The permissible radial load is indicated on the center of the output shaft.

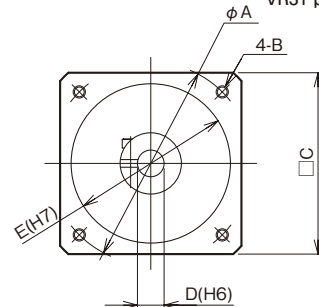
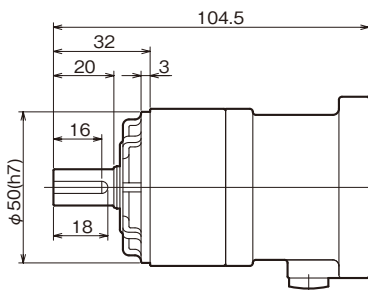
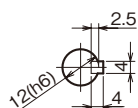
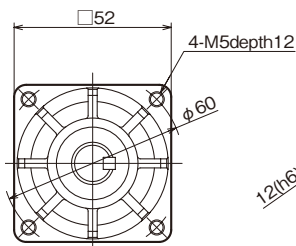
Note 5) All numerical values are within the range corresponding to the gear.

Note 6) For motor attachment procedure, see VR38 page.

Note 7) Rotation of the output shaft is in the same direction as that of motor input.

### VRSF-3B · 5B-200

■ Rough weight 0.72kg ■ CAD data no. <VSB102□1>



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of TYPE1~3, see VR31 page.

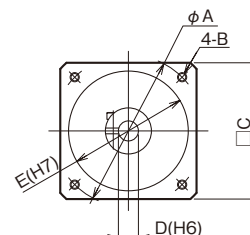
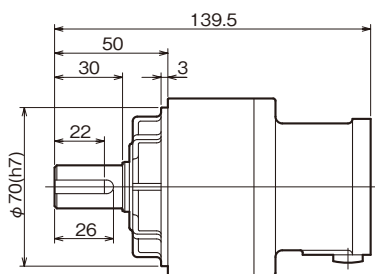
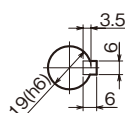
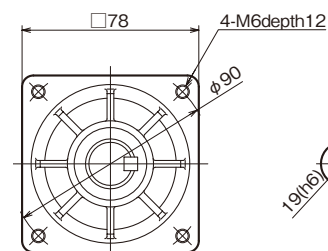
■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D  | E  |
|------------|----|----|----|----|----|
| TYPE1      | 70 | M4 | 60 | 11 | 50 |
| TYPE2      | 70 | M5 | 60 | 14 | 50 |
| TYPE3      | 70 | M5 | 60 | 14 | 50 |

※CAD data can be downloaded in the homepage.

### VRSF-S9C-200

■ Rough weight 1.7kg ■ CAD data no. <VSC102□1>



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of TYPE1~3, see VR31 page.

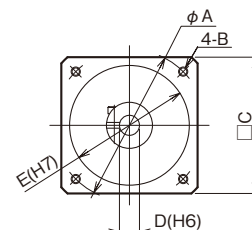
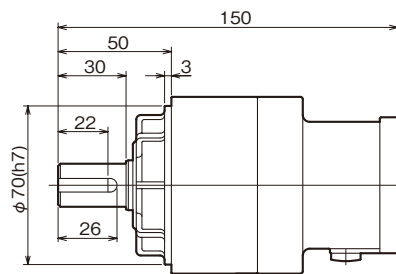
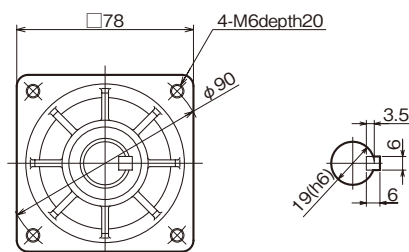
■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D  | E  |
|------------|----|----|----|----|----|
| TYPE1      | 70 | M4 | 60 | 11 | 50 |
| TYPE2      | 70 | M5 | 60 | 14 | 50 |
| TYPE3      | 70 | M5 | 60 | 14 | 50 |

※CAD data can be downloaded in the homepage.

### VRSF-15C · 20C · 25C · 35C-200

■ Rough weight 2.1kg ■ CAD data no.<VSC202□1>



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of  
TYPE1~3, see  
VR31 page.

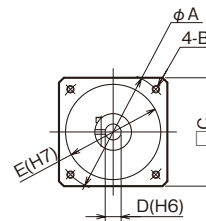
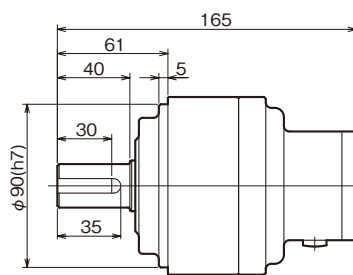
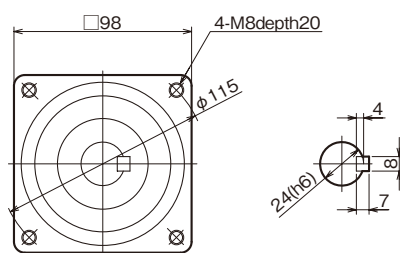
■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D  | E  |
|------------|----|----|----|----|----|
| TYPE1      | 70 | M4 | 60 | 11 | 50 |
| TYPE2      | 70 | M5 | 60 | 14 | 50 |
| TYPE3      | 70 | M5 | 60 | 14 | 50 |

※CAD data can be downloaded in the homepage.

### VRSF-45D-200

■ Rough weight 3.2kg ■ CAD data no.<VSD202□1>



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of  
TYPE1~3, see  
VR31 page.

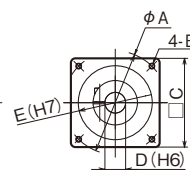
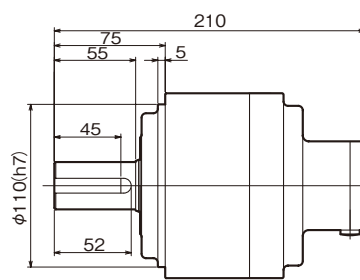
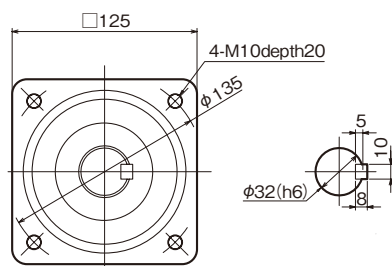
■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D  | E  |
|------------|----|----|----|----|----|
| TYPE1      | 70 | M4 | 60 | 11 | 50 |
| TYPE2      | 70 | M5 | 60 | 14 | 50 |
| TYPE3      | 70 | M5 | 60 | 14 | 50 |

※CAD data can be downloaded in the homepage.

### VRSF-81E-200

■ Rough weight 7.2kg ■ CAD data no.<VSE202□1>



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of  
TYPE1~3, see  
VR31 page.

■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D  | E  |
|------------|----|----|----|----|----|
| TYPE1      | 70 | M4 | 60 | 11 | 50 |
| TYPE2      | 70 | M5 | 60 | 14 | 50 |
| TYPE3      | 70 | M5 | 60 | 14 | 50 |

※CAD data can be downloaded in the homepage.

## ■ Performance Table 400W

If input speed is 3000rpm:

| Rated input motor cap. | Reduction ratio | Type  |                 |          |            | Output shaft speed<br>(rpm) | Standard output torque<br>(N · m) | Instantaneous max. output torque<br>(N · m) | Permissible radial load<br>(N) | Permissible thrust load<br>(N) | Internal moment of inertia of input shaft conversion<br>(10 <sup>-4</sup> × kg · m <sup>2</sup> ) | Permissible output torque<br>(N · m) | Instantaneous max. permissible output torque<br>(N · m) |
|------------------------|-----------------|-------|-----------------|----------|------------|-----------------------------|-----------------------------------|---------------------------------------------|--------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|
|                        |                 | Model | Reduction ratio | Type no. | Motor cap. |                             |                                   |                                             |                                |                                |                                                                                                   |                                      |                                                         |
| 400W                   | 1/3             | VRSF  | 3               | B        | 400        | 1000                        | 3.43                              | 10.3                                        | 392                            | 196                            | 0.145                                                                                             | 3.43                                 | 10.3                                                    |
|                        | 1/5             | VRSF  | 5               | C        | 400        | 600                         | 5.39                              | 16.2                                        | 980                            | 490                            | 0.363                                                                                             | 6.57                                 | 19.7                                                    |
|                        | 1/9             | VRSF  | S9              | C        | 400        | 333                         | 9.51                              | 28.5                                        | 1180                           | 588                            | 0.275                                                                                             | 9.70                                 | 29.2                                                    |
|                        | 1/15            | VRSF  | 15              | C        | 400        | 200                         | 15.8                              | 47.5                                        | 1470                           | 735                            | 0.300                                                                                             | 16.2                                 | 48.6                                                    |
|                        | 1/20            | VRSF  | 20              | C        | 400        | 150                         | 21.1                              | 63.3                                        | 1570                           | 785                            | 0.294                                                                                             | 21.1                                 | 63.3                                                    |
|                        | 1/25            | VRSF  | 25              | C        | 400        | 120                         | 26.4                              | 79.2                                        | 1670                           | 833                            | 0.288                                                                                             | 26.4                                 | 79.2                                                    |
|                        | 1/35            | VRSF  | 35              | D        | 400        | 85                          | 37.0                              | 111                                         | 2060                           | 1030                           | 0.269                                                                                             | 37.0                                 | 111                                                     |
|                        | 1/45            | VRSF  | 45              | E        | 400        | 66                          | 47.5                              | 142.5                                       | 3520                           | 1760                           | 0.245                                                                                             | 57                                   | 171                                                     |

Note 1) In case of attachment to a motor beyond the standard models (motor matching series), contact us. (How to measure dimensions of the flange may be changed in some cases.)

Note 2) The moment of inertia of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

Note 3) The max. input speed is 5000rpm, and usually set to 3000rpm or less.

Note 4) The permissible radial load is indicated on the center of the output shaft.

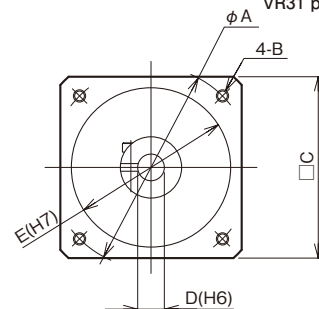
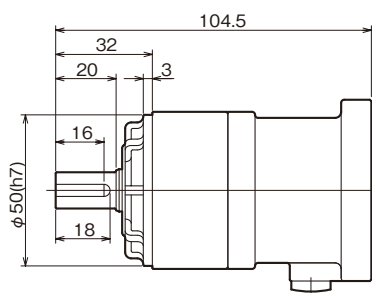
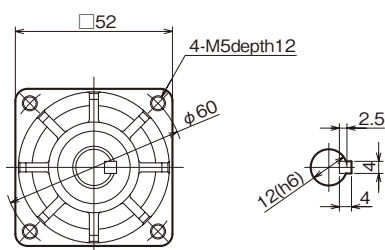
Note 5) All numerical values are within the range corresponding to the gear.

Note 6) For motor attachment procedure, see VR38 page.

Note 7) Rotation of the output shaft is in the same direction as that of motor input.

## VRSF-3B-400

■ Rough weight 0.71kg ■ CAD data no. &lt;VSB104□1&gt;



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of TYPE1~3, see VR31 page.

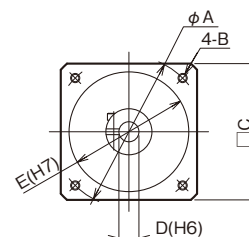
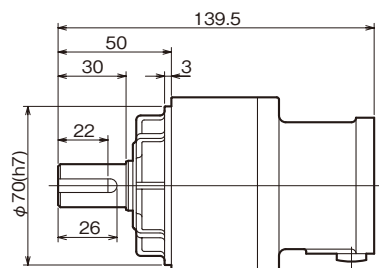
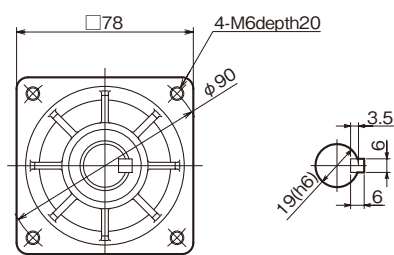
■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D  | E  |
|------------|----|----|----|----|----|
| TYPE1      | 70 | M4 | 60 | 14 | 50 |
| TYPE2      | 70 | M5 | 60 | 14 | 50 |
| TYPE3      | 70 | M5 | 60 | 14 | 50 |

※CAD data can be downloaded in the homepage.

## VRSF-5C · S9C-400

■ Rough weight 1.7kg ■ CAD data no. &lt;VSC104□1&gt;



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of TYPE1~3, see VR31 page.

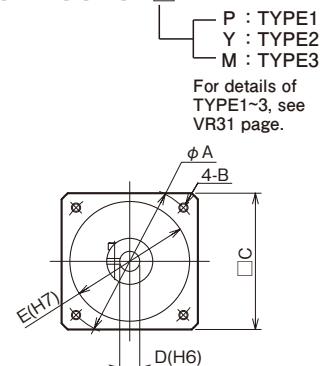
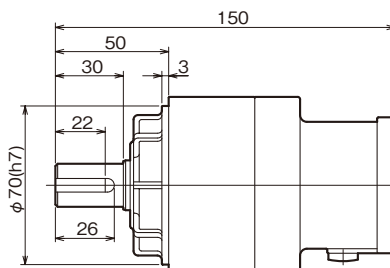
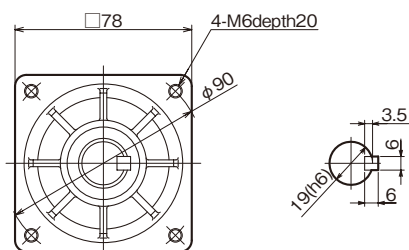
■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D  | E  |
|------------|----|----|----|----|----|
| TYPE1      | 70 | M4 | 60 | 14 | 50 |
| TYPE2      | 70 | M5 | 60 | 14 | 50 |
| TYPE3      | 70 | M5 | 60 | 14 | 50 |

※CAD data can be downloaded in the homepage.

### VRSF-15C · 20C · 25C-400

■ Rough weight 2.1kg ■ CAD data no.<VSC204□1>



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of  
TYPE1~3, see  
VR31 page.

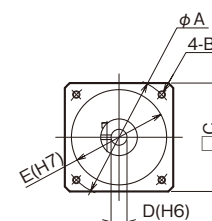
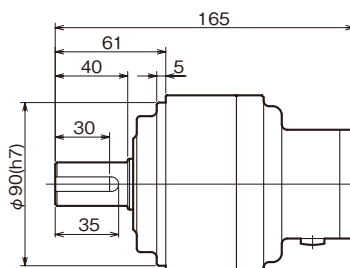
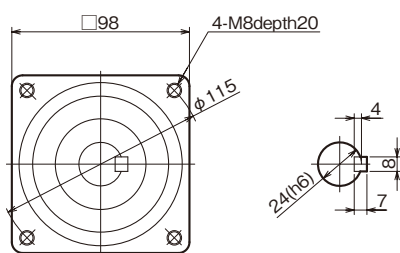
■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D  | E  |
|------------|----|----|----|----|----|
| TYPE1      | 70 | M4 | 60 | 14 | 50 |
| TYPE2      | 70 | M5 | 60 | 14 | 50 |
| TYPE3      | 70 | M5 | 60 | 14 | 50 |

※CAD data can be downloaded in the homepage.

### VRSF-35D-400

■ Rough weight 3.2kg ■ CAD data no.<VSD204□1>



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of  
TYPE1~3, see  
VR31 page.

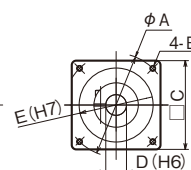
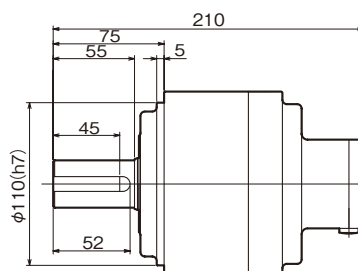
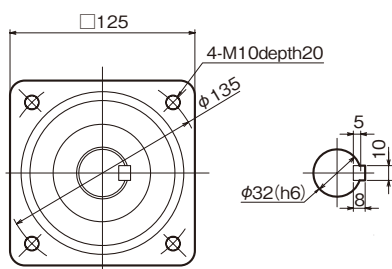
■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D  | E  |
|------------|----|----|----|----|----|
| TYPE1      | 70 | M4 | 60 | 14 | 50 |
| TYPE2      | 70 | M5 | 60 | 14 | 50 |
| TYPE3      | 70 | M5 | 60 | 14 | 50 |

※CAD data can be downloaded in the homepage.

### VRSF-45E-400

■ Rough weight 7.2kg ■ CAD data no.<VSE204□1>



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of  
TYPE1~3, see  
VR31 page.

■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D  | E  |
|------------|----|----|----|----|----|
| TYPE1      | 70 | M4 | 60 | 14 | 50 |
| TYPE2      | 70 | M5 | 60 | 14 | 50 |
| TYPE3      | 70 | M5 | 60 | 14 | 50 |

※CAD data can be downloaded in the homepage.

## ■ Performance Table 750W

If input speed is 3000rpm:

| Rated input motor cap. | Reduction ratio | Type  |                 |          |            | Output shaft speed<br>(rpm) | Standard output torque<br>(N · m) | Instantaneous max. output torque<br>(N · m) | Permissible radial load<br>(N) | Permissible thrust load<br>(N) | Internal moment of inertia of input shaft conversion<br>(10 <sup>-4</sup> × kg · m <sup>2</sup> ) | Permissible output torque<br>(N · m) | Instantaneous max. permissible output torque<br>(N · m) |
|------------------------|-----------------|-------|-----------------|----------|------------|-----------------------------|-----------------------------------|---------------------------------------------|--------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|
|                        |                 | Model | Reduction ratio | Type no. | Motor cap. |                             |                                   |                                             |                                |                                |                                                                                                   |                                      |                                                         |
| 750W                   | 1/3             | VRSF  | 3               | C        | 750        | 1000                        | 6.37                              | 19.3                                        | 784                            | 392                            | 0.913                                                                                             | 6.86                                 | 20.6                                                    |
|                        | 1/5             | VRSF  | 5               | C        | 750        | 600                         | 10.7                              | 32.1                                        | 980                            | 490                            | 0.713                                                                                             | 11.5                                 | 34.3                                                    |
|                        | 1/9             | VRSF  | S9              | D        | 750        | 333                         | 18.2                              | 54.7                                        | 1470                           | 735                            | 0.650                                                                                             | 18.2                                 | 54.7                                                    |
|                        | 1/15            | VRSF  | 15              | D        | 750        | 200                         | 30.4                              | 91.2                                        | 1760                           | 882                            | 0.700                                                                                             | 30.4                                 | 91.2                                                    |
|                        | 1/20            | VRSF  | 20              | D        | 750        | 150                         | 40.6                              | 122                                         | 1910                           | 955                            | 0.690                                                                                             | 40.6                                 | 122                                                     |
|                        | 1/25            | VRSF  | 25              | D        | 750        | 120                         | 50.7                              | 152                                         | 2060                           | 1030                           | 0.680                                                                                             | 50.7                                 | 152                                                     |
|                        | 1/35            | VRSF  | 35              | E        | 750        | 85                          | 71.0                              | 213                                         | 3430                           | 1715                           | 0.473                                                                                             | 71.0                                 | 213                                                     |
|                        | 1/45            | VRSF  | 45              | E        | 750        | 66                          | 91.3                              | 274                                         | 3520                           | 1760                           | 1.77                                                                                              | 91.3                                 | 274                                                     |

Note 1) In case of attachment to a motor beyond the standard models (motor matching series), contact us. (How to measure dimensions of the flange may be changed in some cases.)

Note 2) The moment of inertia of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

Note 3) The max. input speed is 5000rpm, and usually set to 3000rpm or less.

Note 4) The permissible radial load is indicated on the center of the output shaft.

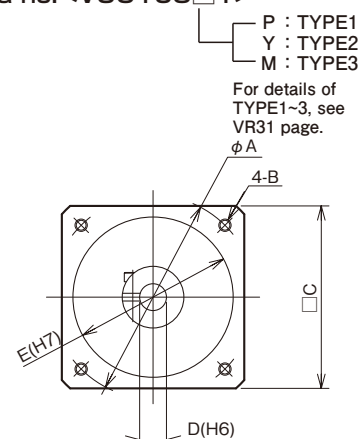
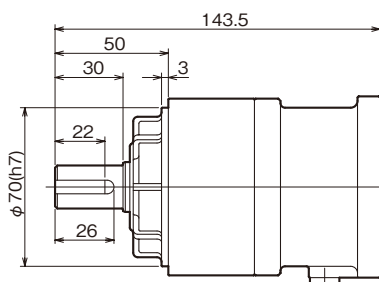
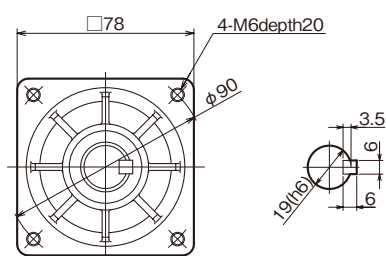
Note 5) All numerical values are within the range corresponding to the gear.

Note 6) For motor attachment procedure, see VR38 page.

Note 7) Rotation of the output shaft is in the same direction as that of motor input.

## VRSF-3C · 5C-750

■ Rough weight 2.1kg ■ CAD data no. &lt;VSC108□1&gt;



P : TYPE1  
Y : TYPE2  
M : TYPE3

For details of TYPE1~3, see VR31 page.

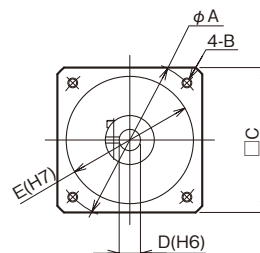
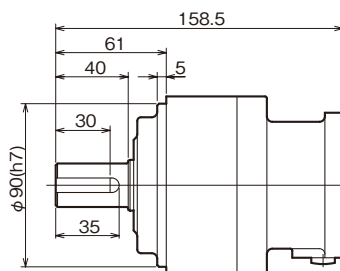
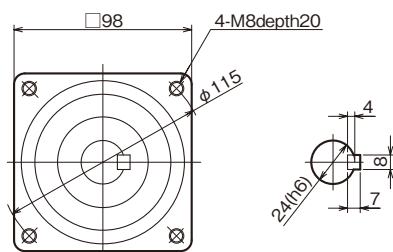
■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D  | E  |
|------------|----|----|----|----|----|
| TYPE1      | 90 | M5 | 80 | 19 | 70 |
| TYPE2      | 90 | M6 | 80 | 16 | 70 |
| TYPE3      | 90 | M6 | 80 | 19 | 70 |

※CAD data can be downloaded in the homepage.

## VRSF-S9D-750

■ Rough weight 3.4kg ■ CAD data no. &lt;VSD108□1&gt;



P : TYPE1  
Y : TYPE2  
M : TYPE3

For details of TYPE1~3, see VR31 page.

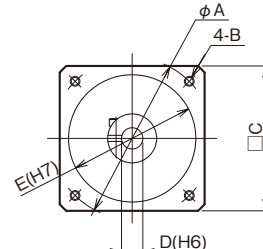
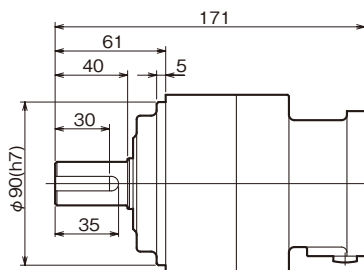
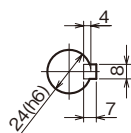
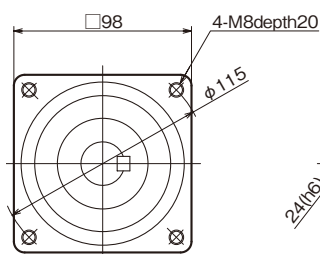
■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D  | E  |
|------------|----|----|----|----|----|
| TYPE1      | 90 | M5 | 80 | 19 | 70 |
| TYPE2      | 90 | M6 | 80 | 16 | 70 |
| TYPE3      | 90 | M6 | 80 | 19 | 70 |

※CAD data can be downloaded in the homepage.

### VRSF-15D · 20D · 25D-750

■ Rough weight 3.8kg ■ CAD data no.<VSD208□1>



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of  
TYPE1~3, see  
VR31 page.

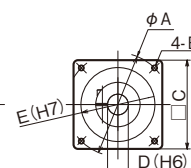
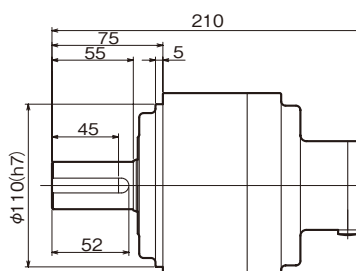
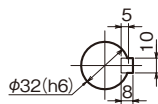
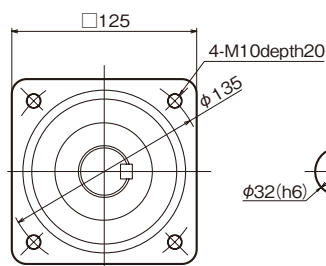
■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D  | E  |
|------------|----|----|----|----|----|
| TYPE1      | 90 | M5 | 80 | 19 | 70 |
| TYPE2      | 90 | M6 | 80 | 16 | 70 |
| TYPE3      | 90 | M6 | 80 | 19 | 70 |

※CAD data can be downloaded in the homepage.

### VRSF-35E-750

■ Rough weight 7.2kg ■ CAD data no.<VSE208□1>



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of  
TYPE1~3, see  
VR31 page.

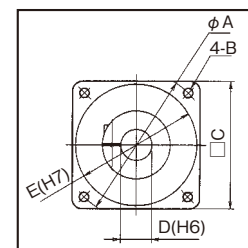
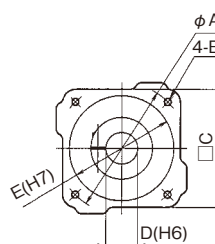
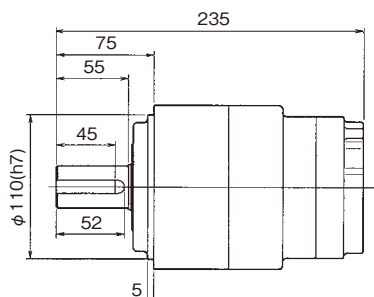
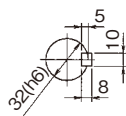
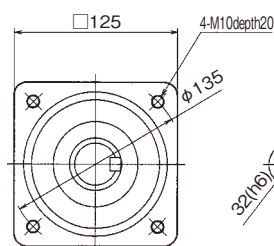
■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D  | E  |
|------------|----|----|----|----|----|
| TYPE1      | 90 | M5 | 80 | 19 | 70 |
| TYPE2      | 90 | M6 | 80 | 16 | 70 |
| TYPE3      | 90 | M6 | 80 | 19 | 70 |

※CAD data can be downloaded in the homepage.

### VRSF-45E-750

■ Rough weight 12.0kg ■ CAD data no.<VSE208□1S>



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of  
TYPE1~3, see  
VR31 page.

※ TYPE2 and 3 have the form as  
shown in the above figure.

■ Detailed flange dimensions table (Unit mm)

| Motor type | A  | B  | C  | D  | E  |
|------------|----|----|----|----|----|
| TYPE1      | 90 | M5 | 80 | 19 | 70 |
| TYPE2      | 90 | M6 | 80 | 16 | 70 |
| TYPE3      | 90 | M6 | 80 | 19 | 70 |

※CAD data can be downloaded in the homepage.

## ■ Performance Table 1000W

If input speed is 3000rpm:

| Rated input motor cap. | Reduction ratio | Type  |                 |          |            | Output shaft speed<br>(rpm) | Standard output torque<br>(N · m) | Instantaneous max. output torque<br>(N · m) | Permissible radial load<br>(N) | Permissible thrust load<br>(N) | Internal moment of inertia of input shaft conversion<br>(10 <sup>-4</sup> × kg · m <sup>2</sup> ) | Permissible output torque<br>(N · m) | Instantaneous max. permissible output torque<br>(N · m) |
|------------------------|-----------------|-------|-----------------|----------|------------|-----------------------------|-----------------------------------|---------------------------------------------|--------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|
|                        |                 | Model | Reduction ratio | Type no. | Motor cap. |                             |                                   |                                             |                                |                                |                                                                                                   |                                      |                                                         |
| 1000W                  | 1/3             | VRSF  | 3               | D        | 1000       | 1000                        | 7.55                              | 22.8                                        | 882                            | 441                            | 2.43                                                                                              | 18.3                                 | 54.9                                                    |
|                        | 1/5             | VRSF  | 5               | D        | 1000       | 600                         | 13.4                              | 40.5                                        | 1080                           | 539                            | 1.85                                                                                              | 23.5                                 | 70.6                                                    |
|                        | 1/9             | VRSF  | S9              | E        | 1000       | 333                         | 20.0                              | 60.1                                        | 1960                           | 980                            | 2.81                                                                                              | 73.5                                 | 221                                                     |
|                        | 1/15            | VRSF  | 15              | E        | 1000       | 200                         | 33.3                              | 100                                         | 2350                           | 1180                           | 1.95                                                                                              | 91.4                                 | 274                                                     |
|                        | 1/25            | VRSF  | 25              | E        | 1000       | 120                         | 55.7                              | 167                                         | 2650                           | 1320                           | 1.88                                                                                              | 65.4                                 | 196                                                     |

Note 1) In case of attachment to a motor beyond the standard models (motor matching series), contact us. (How to measure dimensions of the flange may be changed in some cases.)

Note 2) The moment of inertia of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

Note 3) The max. input speed is 5000rpm, and usually set to 3000rpm or less.

Note 4) The permissible radial load is indicated on the center of the output shaft.

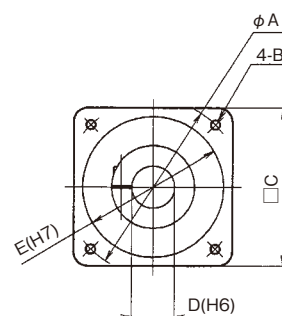
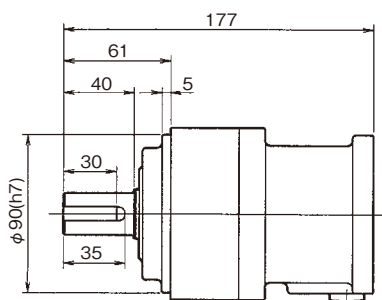
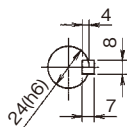
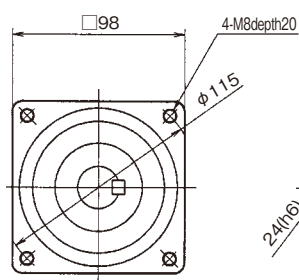
Note 5) All numerical values are within the range corresponding to the gear.

Note 6) For motor attachment procedure, see VR38 page.

Note 7) Rotation of the output shaft is in the same direction as that of motor input.

## VRSF-3D · 5D-1000

■ Rough weight 3.9kg ■ CAD data no. &lt;VSD110□1&gt;



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of TYPE1~3, see VR32 page.

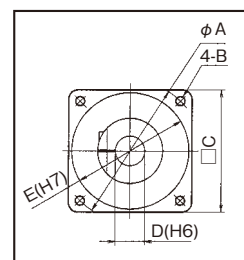
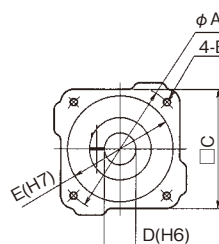
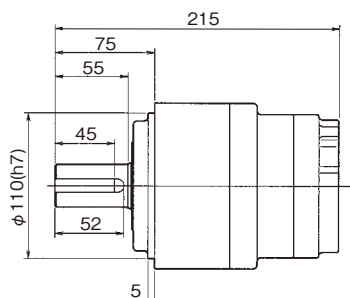
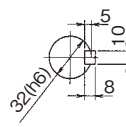
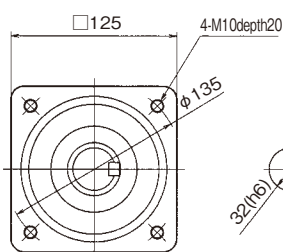
■ Detailed flange dimensions table (Unit mm)

| Motor type | A   | B  | C   | D  | E  |
|------------|-----|----|-----|----|----|
| TYPE1      | 100 | M6 | 90  | 19 | 80 |
| TYPE2      | 115 | M6 | 100 | 24 | 95 |
| TYPE3      | 115 | M8 | 100 | 24 | 95 |

※CAD data can be downloaded in the homepage.

## VRSF-S9E-1000

■ Rough weight 11kg ■ CAD data no. &lt;VSE110□1&gt;



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of TYPE1~3, see VR32 page.

※ TYPE2 and 3 have the form as shown in the above figure.

■ Detailed flange dimensions table (Unit mm)

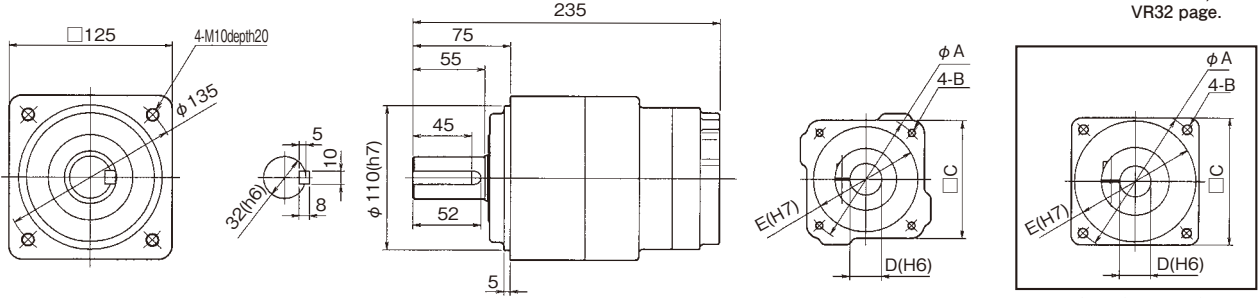
| Motor type | A   | B  | C   | D  | E  |
|------------|-----|----|-----|----|----|
| TYPE1      | 100 | M6 | 90  | 19 | 80 |
| TYPE2      | 115 | M6 | 100 | 24 | 95 |
| TYPE3      | 115 | M8 | 100 | 24 | 95 |

※CAD data can be downloaded in the homepage.

VRSF-15E・25E-1000

■ Rough weight 12kg ■ CAD data no.<VSE210□1>

P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of  
TYPE1~3, see  
VR32 page.



※ TYPE2 and 3 have the form as  
shown in the above figure.

■ Detailed flange dimensions table (Unit mm)

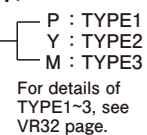
| Motor type | A   | B  | C   | D  | E  |
|------------|-----|----|-----|----|----|
| TYPE1      | 100 | M6 | 90  | 19 | 80 |
| TYPE2      | 115 | M6 | 100 | 24 | 95 |
| TYPE3      | 115 | M8 | 100 | 24 | 95 |

※CAD data can be downloaded in the homepage.

If input speed is 3000rpm:

Note 7) Rotation of the output shaft is in the same direction EF as that of motor input.

■ Rough weight 12.5kg ■ CAD data no.<VSE215□1>



■ Detailed flange dimensions table (Unit mm)

| Motor type | A   | B  | C   | D  | E  |
|------------|-----|----|-----|----|----|
| TYPE1      | 115 | M8 | 100 | 19 | 95 |
| TYPE2      | 115 | M6 | 100 | 24 | 95 |
| TYPE3      | 115 | M8 | 100 | 24 | 95 |

※CAD data can be downloaded in the homepage.

## ■ Performance Table 2000W

If input speed is 3000rpm:

| Rated input motor cap. | Reduction ratio | Type  |                 |          |            | Output shaft speed<br>(rpm) | Standard output torque<br>(N · m) | Instantaneous max. output torque<br>(N · m) | Permissible radial load<br>(N) | Permissible thrust load<br>(N) | Internal moment of inertia of input shaft conversion<br>(10 <sup>-4</sup> × kg · m <sup>2</sup> ) | Permissible output torque<br>(N · m) | Instantaneous max. permissible output torque<br>(N · m) |
|------------------------|-----------------|-------|-----------------|----------|------------|-----------------------------|-----------------------------------|---------------------------------------------|--------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|
|                        |                 | Model | Reduction ratio | Type no. | Motor cap. |                             |                                   |                                             |                                |                                |                                                                                                   |                                      |                                                         |
| 2000W                  | 1/3             | VRSF  | 3               | D        | 2000       | 1000                        | 17.2                              | 51.5                                        | 882                            | 441                            | 2.43                                                                                              | 18.3                                 | 54.9                                                    |
|                        | 1/5             | VRSF  | 5               | E        | 2000       | 600                         | 23.8                              | 71.5                                        | 1670                           | 833                            | 3.50                                                                                              | 56.8                                 | 171                                                     |
|                        | 1/9             | VRSF  | S9              | E        | 2000       | 333                         | 48.6                              | 146                                         | 1960                           | 980                            | 2.81                                                                                              | 73.5                                 | 221                                                     |
|                        | 1/15            | VRSF  | 15              | E        | 2000       | 200                         | 81.0                              | 243                                         | 2350                           | 1180                           | 2.80                                                                                              | 91.4                                 | 274                                                     |

Note 1) In case of attachment to a motor beyond the standard models (motor matching series), contact us. (How to measure dimensions of the flange may be changed in some cases.)

Note 2) The moment of inertia of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

Note 3) The max. input speed is 5000rpm, and usually set to 3000rpm or less.

Note 4) The permissible radial load is indicated on the center of the output shaft.

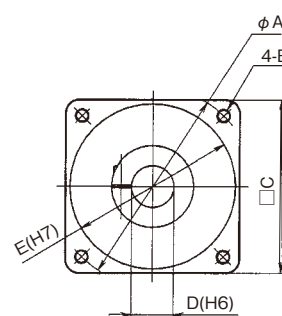
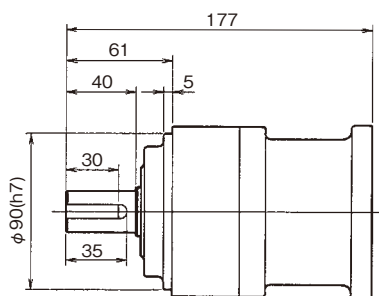
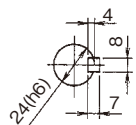
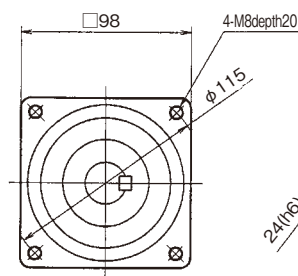
Note 5) All numerical values are within the range corresponding to the gear.

Note 6) For motor attachment procedure, see VR38 page.

Note 7) Rotation of the output shaft is in the same direction EF as that of motor input.

## VRSF-3D-2000

■ Rough weight 3.9kg ■ CAD data no. &lt;VSD120□1&gt;



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of TYPE1~3, see VR32 page.

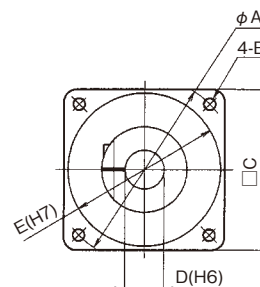
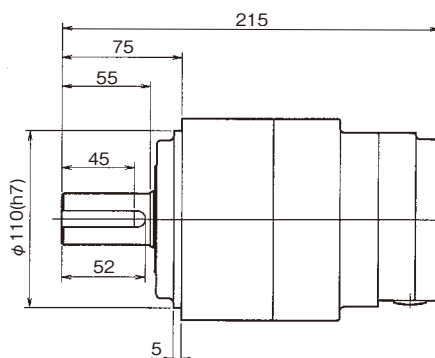
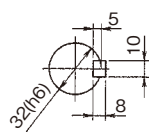
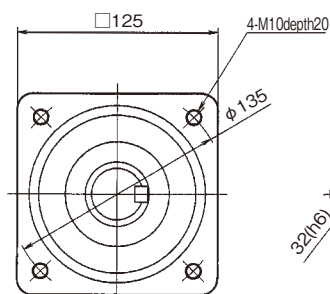
■ Detailed flange dimensions table (Unit mm)

| Motor type | A   | B  | C   | D  | E  |
|------------|-----|----|-----|----|----|
| TYPE1      | 115 | M8 | 100 | 19 | 95 |
| TYPE2      | 115 | M6 | 100 | 24 | 95 |
| TYPE3      | 115 | M8 | 100 | 24 | 95 |

※CAD data can be downloaded in the homepage.

## VRSF-5E · S9E-2000

■ Rough weight 11.5kg ■ CAD data no. &lt;VSE120□1&gt;



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of TYPE1~3, see VR32 page.

■ Detailed flange dimensions table (Unit mm)

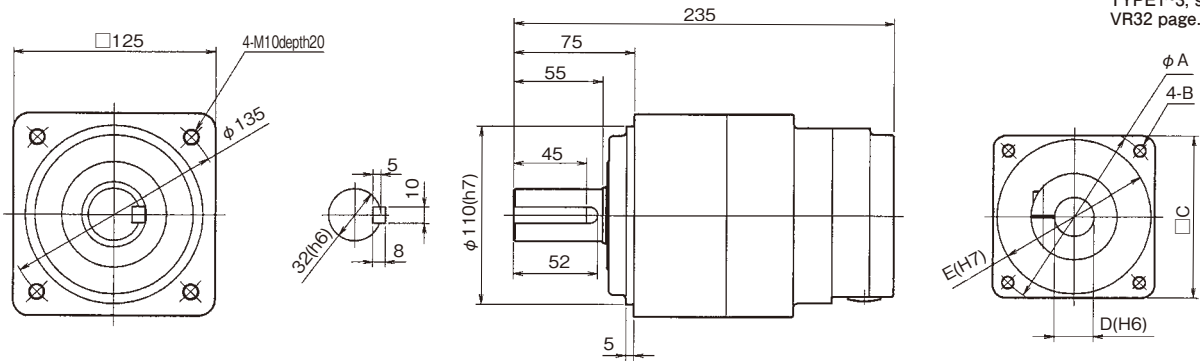
| Motor type | A   | B  | C   | D  | E  |
|------------|-----|----|-----|----|----|
| TYPE1      | 115 | M8 | 100 | 19 | 95 |
| TYPE2      | 115 | M6 | 100 | 24 | 95 |
| TYPE3      | 115 | M8 | 100 | 24 | 95 |

※CAD data can be downloaded in the homepage.

VRSF-15E-2000

■ Rough weight 12.5kg ■ CAD data no.<VSE22□1>

P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of  
TYPE1~3, see  
VR32 page.



■ Detailed flange dimensions table (Unit mm)

| Motor type | A   | B  | C   | D  | E  |
|------------|-----|----|-----|----|----|
| TYPE1      | 115 | M8 | 100 | 19 | 95 |
| TYPE2      | 115 | M6 | 100 | 24 | 95 |
| TYPE3      | 115 | M8 | 100 | 24 | 95 |

※CAD data can be downloaded in the homepage.

## ■ Performance Table 2500W

If input speed is 3000rpm:

| Rated input motor cap. | Reduction ratio | Type  |                 |          |            | Output shaft speed<br>(rpm) | Standard output torque<br>(N · m) | Instantaneous max. output torque<br>(N · m) | Permissible radial load<br>(N) | Permissible thrust load<br>(N) | Internal moment of inertia of input shaft conversion<br>(10 <sup>-4</sup> × kg · m <sup>2</sup> ) | Permissible output torque<br>(N · m) | Instantaneous max. permissible output torque<br>(N · m) |
|------------------------|-----------------|-------|-----------------|----------|------------|-----------------------------|-----------------------------------|---------------------------------------------|--------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|
|                        |                 | Model | Reduction ratio | Type no. | Motor cap. |                             |                                   |                                             |                                |                                |                                                                                                   |                                      |                                                         |
| 2500W                  | 1/3             | VRSF  | 3               | E        | 2500       | 1000                        | 19.0                              | 57.2                                        | 1370                           | 686                            | 5.55                                                                                              | 44.1                                 | 132                                                     |
|                        | 1/5             | VRSF  | 5               | E        | 2500       | 600                         | 31.8                              | 95.5                                        | 1670                           | 833                            | 3.50                                                                                              | 56.8                                 | 171                                                     |
|                        | 1/9             | VRSF  | S9              | E        | 2500       | 333                         | 60.8                              | 182                                         | 1960                           | 980                            | 2.81                                                                                              | 73.5                                 | 221                                                     |

Note 1) In case of attachment to a motor beyond the standard models (motor matching series), contact us. (How to measure dimensions of the flange may be changed in some cases.)

Note 2) The moment of inertia of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

Note 3) The max. input speed is 5000rpm, and usually set to 3000rpm or less.

Note 4) The permissible radial load is indicated on the center of the output shaft.

Note 5) All numerical values are within the range corresponding to the gear.

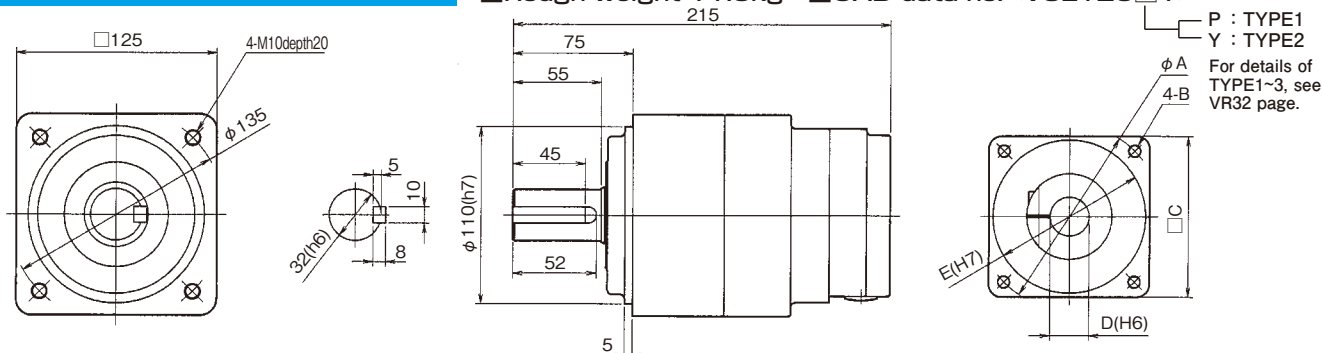
Note 6) For motor attachment procedure, see VR38 page.

Note 7) Rotation of the output shaft is in the same direction as that of motor input.

## VRSF-3E · 5E · S9E-2500

■ Rough weight 11.5kg

■ CAD data no. &lt;VSE125□1&gt;



■ Detailed flange dimensions table (Unit mm)

| Motor type | A   | B  | C   | D  | E  |
|------------|-----|----|-----|----|----|
| TYPE1      | 115 | M8 | 100 | 19 | 95 |
| TYPE2      | 115 | M6 | 100 | 24 | 95 |
| TYPE3      | —   | —  | —   | —  | —  |

※CAD data can be downloaded in the homepage.

## ■ Performance Table 3000W

If input speed is 3000rpm:

| Rated input motor cap. | Reduction ratio | Type  |                 |          |            | Output shaft speed<br>(rpm) | Standard output torque<br>(N · m) | Instantaneous max. output torque<br>(N · m) | Permissible radial load<br>(N) | Permissible thrust load<br>(N) | Internal moment of inertia of input shaft conversion<br>(10 <sup>-4</sup> × kg · m <sup>2</sup> ) | Permissible output torque<br>(N · m) | Instantaneous max. permissible output torque<br>(N · m) |
|------------------------|-----------------|-------|-----------------|----------|------------|-----------------------------|-----------------------------------|---------------------------------------------|--------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|
|                        |                 | Model | Reduction ratio | Type no. | Motor cap. |                             |                                   |                                             |                                |                                |                                                                                                   |                                      |                                                         |
| 3000W                  | 1/3             | VRSF  | 3               | E        | 3000       | 1000                        | 23.7                              | 71.2                                        | 1370                           | 686                            | 5.50                                                                                              | 44.1                                 | 132                                                     |
|                        | 1/5             | VRSF  | 5               | E        | 3000       | 600                         | 39.6                              | 119                                         | 1670                           | 833                            | 3.48                                                                                              | 56.8                                 | 171                                                     |
|                        | 1/9             | VRSF  | S9              | E        | 3000       | 333                         | 73.0                              | 219                                         | 1960                           | 980                            | 2.77                                                                                              | 73.5                                 | 221                                                     |

Note 1) In case of attachment to a motor beyond the standard models (motor matching series), contact us. (How to measure dimensions of the flange may be changed in some cases.)

Note 2) The moment of inertia of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

Note 3) The max. input speed is 5000rpm, and usually set to 3000rpm or less.

Note 4) The permissible radial load is indicated on the center of the output shaft.

Note 5) All numerical values are within the range corresponding to the gear.

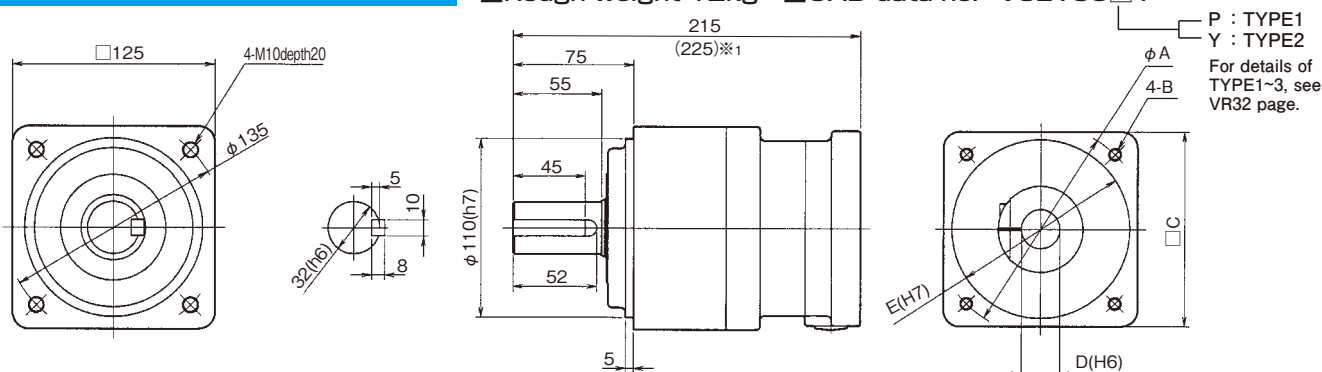
Note 6) For motor attachment procedure, see VR38 page.

Note 7) Rotation of the output shaft is in the same direction as that of motor input.

## VRSF-3E · 5E · S9E-3000

■ Rough weight 12kg

■ CAD data no. &lt;VSE130□1&gt;



※1 TYPE2 has the numerical value indicated in ( ).

■ Detailed flange dimensions table (Unit mm)

| Motor type | A   | B  | C   | D  | E   |
|------------|-----|----|-----|----|-----|
| TYPE1      | 130 | M8 | 120 | 22 | 110 |
| TYPE2      | 145 | M8 | 130 | 28 | 110 |
| TYPE3      | —   | —  | —   | —  | —   |

※CAD data can be downloaded in the homepage.

# Dimensional Drawing <3500 · 4000W> Performance Table <If input speed is 3000rpm>

Coaxial Shaft  
**VR** series

## ■ Performance Table 3500W

If input speed is 3000rpm:

| Rated input motor cap. | Reduction ratio | Type  |                 |          |            | Output shaft speed<br>(rpm) | Standard output torque<br>(N · m) | Instantaneous max. output torque<br>(N · m) | Permissible radial load<br>(N) | Permissible thrust load<br>(N) | Internal moment of inertia of input shaft conversion<br>(10 <sup>-4</sup> × kg · m <sup>2</sup> ) | Permissible output torque<br>(N · m) | Instantaneous max. permissible output torque<br>(N · m) |
|------------------------|-----------------|-------|-----------------|----------|------------|-----------------------------|-----------------------------------|---------------------------------------------|--------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|
|                        |                 | Model | Reduction ratio | Type no. | Motor cap. |                             |                                   |                                             |                                |                                |                                                                                                   |                                      |                                                         |
| 3500W                  | 1/3             | VRSF  | 3               | E        | 3500       | 1000                        | 28.3                              | 85.2                                        | 1370                           | 686                            | 5.55                                                                                              | 44.1                                 | 132                                                     |
|                        | 1/5             | VRSF  | 5               | E        | 3500       | 600                         | 47.2                              | 141                                         | 1670                           | 833                            | 3.48                                                                                              | 56.8                                 | 171                                                     |

Note 1) In case of attachment to a motor beyond the standard models(motor matching series), contact us.(How to measure dimensions of the flange may be changed in some cases.)

Note 2) The moment of inertia of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

Note 3) The max. input speed is 5000rpm, and usually set to 3000rpm or less.

Note 4) The permissible radial load is indicated on the center of the output shaft.

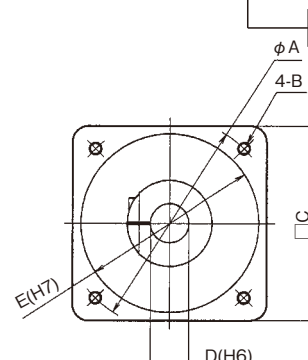
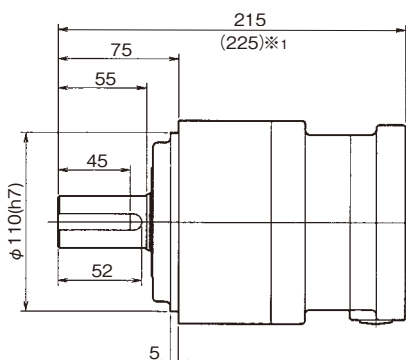
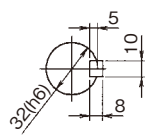
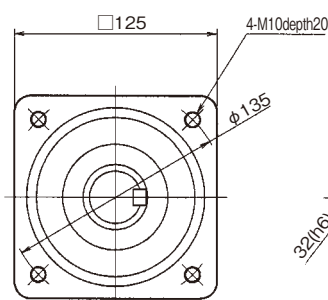
Note 5) All numerical values are within the range corresponding to the gear.

Note 6) For motor attachment procedure, see VR38 page.

Note 7) Rotation of the output shaft is in the same direction as that of motor input.

## VRSF-3E · 5E-3500

■ Rough weight 12kg ■ CAD data no.<VSE135□1>



P : TYPE1  
Y : TYPE2  
M : TYPE3  
For details of TYPE1~3, see VR32 page.

\*1 TYPE2 has the numerical value indicated in ( ).

■ Detailed flange dimensions table (Unit mm)

| Motor type | A   | B  | C   | D  | E   |
|------------|-----|----|-----|----|-----|
| TYPE1      | 130 | M8 | 120 | 22 | 110 |
| TYPE2      | —   | —  | —   | —  | —   |
| TYPE3      | 145 | M8 | 130 | 28 | 110 |

※CAD data can be downloaded in the homepage.

## ■ Performance Table 4000W

If input speed is 3000rpm:

| Rated input motor cap. | Reduction ratio | Type  |                 |          |            | Output shaft speed<br>(rpm) | Standard output torque<br>(N · m) | Instantaneous max. output torque<br>(N · m) | Permissible radial load<br>(N) | Permissible thrust load<br>(N) | Internal moment of inertia of input shaft conversion<br>(10 <sup>-4</sup> × kg · m <sup>2</sup> ) | Permissible output torque<br>(N · m) | Instantaneous max. permissible output torque<br>(N · m) |
|------------------------|-----------------|-------|-----------------|----------|------------|-----------------------------|-----------------------------------|---------------------------------------------|--------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|
|                        |                 | Model | Reduction ratio | Type no. | Motor cap. |                             |                                   |                                             |                                |                                |                                                                                                   |                                      |                                                         |
| 4000W                  | 1/3             | VRSF  | 3               | E        | 4000       | 1000                        | 33.1                              | 99.0                                        | 1370                           | 686                            | 5.78                                                                                              | 44.1                                 | 132                                                     |
|                        | 1/5             | VRSF  | 5               | E        | 4000       | 600                         | 55.3                              | 166                                         | 1670                           | 833                            | 3.75                                                                                              | 56.8                                 | 171                                                     |

Note 1) In case of attachment to a motor beyond the standard models(motor matching series), contact us.(How to measure dimensions of the flange may be changed in some cases.)

Note 2) The moment of inertia of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

Note 3) The max. input speed is 5000rpm, and usually set to 3000rpm or less.

Note 4) The permissible radial load is indicated on the center of the output shaft.

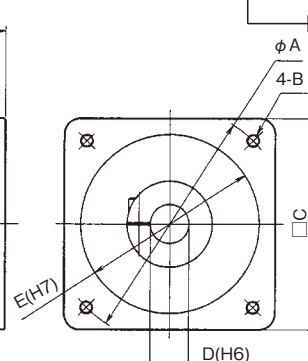
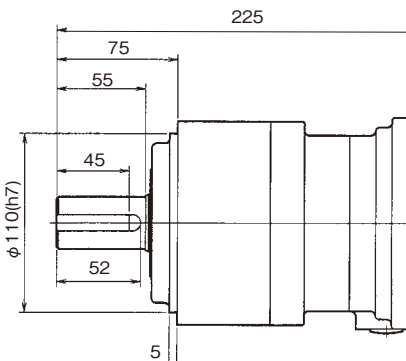
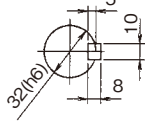
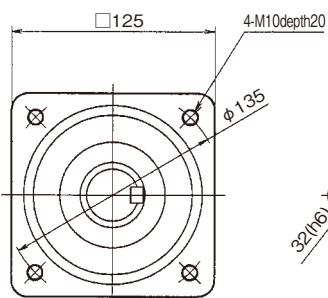
Note 5) All numerical values are within the range corresponding to the gear.

Note 6) For motor attachment procedure, see VR38 page.

Note 7) Rotation of the output shaft is in the same direction as that of motor input.

## VRSF-3E · 5E-4000

■ Rough weight 13kg ■ CAD data no.<VSE140□1>



P : TYPE1  
Y : TYPE2  
For details of TYPE1~3, see VR32 page.

■ Detailed flange dimensions table (Unit mm)

| Motor type | A   | B  | C   | D  | E   |
|------------|-----|----|-----|----|-----|
| TYPE1      | 145 | M8 | 130 | 24 | 110 |
| TYPE2      | 145 | M8 | 130 | 28 | 110 |
| TYPE3      | —   | —  | —   | —  | —   |

※CAD data can be downloaded in the homepage.

## ■ Performance Table 4500W

If input speed is 3000rpm:

| Rated input motor cap. | Reduction ratio | Type  |                 |          |            | Output shaft speed<br>(rpm) | Standard output torque<br>(N · m) | Instantaneous max. output torque<br>(N · m) | Permissible radial load<br>(N) | Permissible thrust load<br>(N) | Internal moment of inertia of input shaft conversion<br>(10 <sup>-4</sup> × kg · m <sup>2</sup> ) | Permissible output torque<br>(N · m) | Instantaneous max. permissible output torque<br>(N · m) |
|------------------------|-----------------|-------|-----------------|----------|------------|-----------------------------|-----------------------------------|---------------------------------------------|--------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|
|                        |                 | Model | Reduction ratio | Type no. | Motor cap. |                             |                                   |                                             |                                |                                |                                                                                                   |                                      |                                                         |
| 4500W                  | 1/3             | VRSF  | 3               | E        | 4500       | 1000                        | 37.7                              | 113                                         | 1370                           | 686                            | 5.78                                                                                              | 44.1                                 | 132                                                     |

Note 1) In case of attachment to a motor beyond the standard models (motor matching series), contact us. (How to measure dimensions of the flange may be changed in some cases.)

Note 2) The moment of inertia of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

Note 3) The max. input speed is 5000rpm, and usually set to 3000rpm or less.

Note 4) The permissible radial load is indicated on the center of the output shaft.

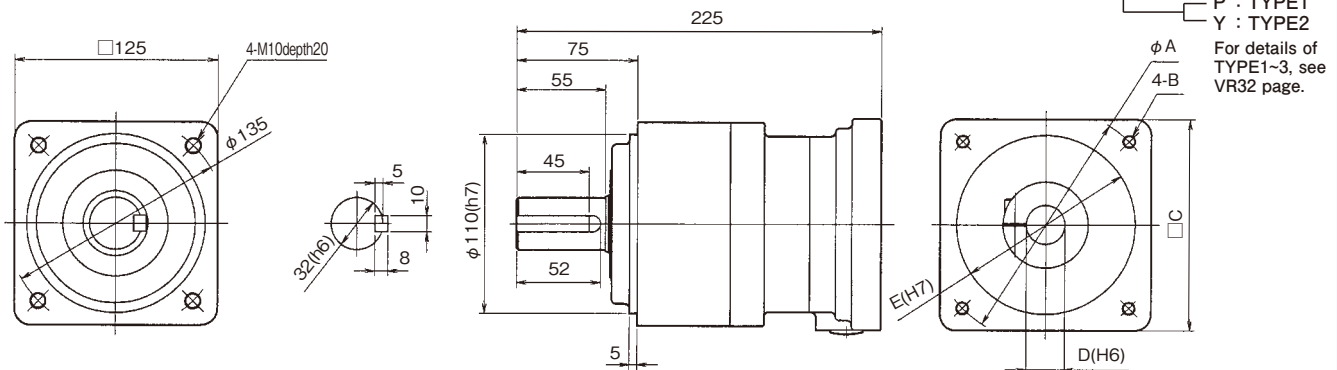
Note 5) All numerical values are within the range corresponding to the gear.

Note 6) For motor attachment procedure, see VR38 page.

Note 7) Rotation of the output shaft is in the same direction as that of motor input.

## VRSF-3E-4500

■ Rough weight 13kg ■ CAD data no. &lt;VSE145□1&gt;



■ Detailed flange dimensions table (Unit mm)

| Motor type | A   | B  | C   | D  | E   |
|------------|-----|----|-----|----|-----|
| TYPE1      | 145 | M8 | 130 | 24 | 110 |
| TYPE2      | —   | —  | —   | —  | —   |
| TYPE3      | —   | —  | —   | —  | —   |

※CAD data can be downloaded in the homepage.

## ■ Performance Table 5000W

If input speed is 3000rpm:

| Rated input motor cap. | Reduction ratio | Type  |                 |          |            | Output shaft speed<br>(rpm) | Standard output torque<br>(N · m) | Instantaneous max. output torque<br>(N · m) | Permissible radial load<br>(N) | Permissible thrust load<br>(N) | Internal moment of inertia of input shaft conversion<br>(10 <sup>-4</sup> × kg · m <sup>2</sup> ) | Permissible output torque<br>(N · m) | Instantaneous max. permissible output torque<br>(N · m) |
|------------------------|-----------------|-------|-----------------|----------|------------|-----------------------------|-----------------------------------|---------------------------------------------|--------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|
|                        |                 | Model | Reduction ratio | Type no. | Motor cap. |                             |                                   |                                             |                                |                                |                                                                                                   |                                      |                                                         |
| 5000W                  | 1/3             | VRSF  | 3               | E        | 5000       | 1000                        | 42.9                              | 128                                         | 1370                           | 686                            | 5.78                                                                                              | 44.1                                 | 132                                                     |

Note 1) In case of attachment to a motor beyond the standard models (motor matching series), contact us. (How to measure dimensions of the flange may be changed in some cases.)

Note 2) The moment of inertia of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

Note 3) The max. input speed is 5000rpm, and usually set to 3000rpm or less.

Note 4) The permissible radial load is indicated on the center of the output shaft.

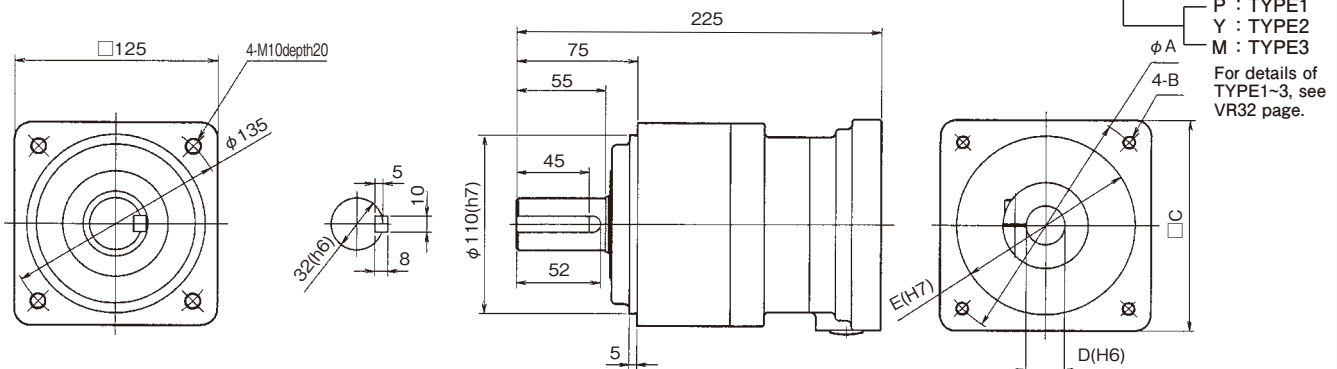
Note 5) All numerical values are within the range corresponding to the gear.

Note 6) For motor attachment procedure, see VR38 page.

Note 7) Rotation of the output shaft is in the same direction as that of motor input.

## VRSF-3E-5000

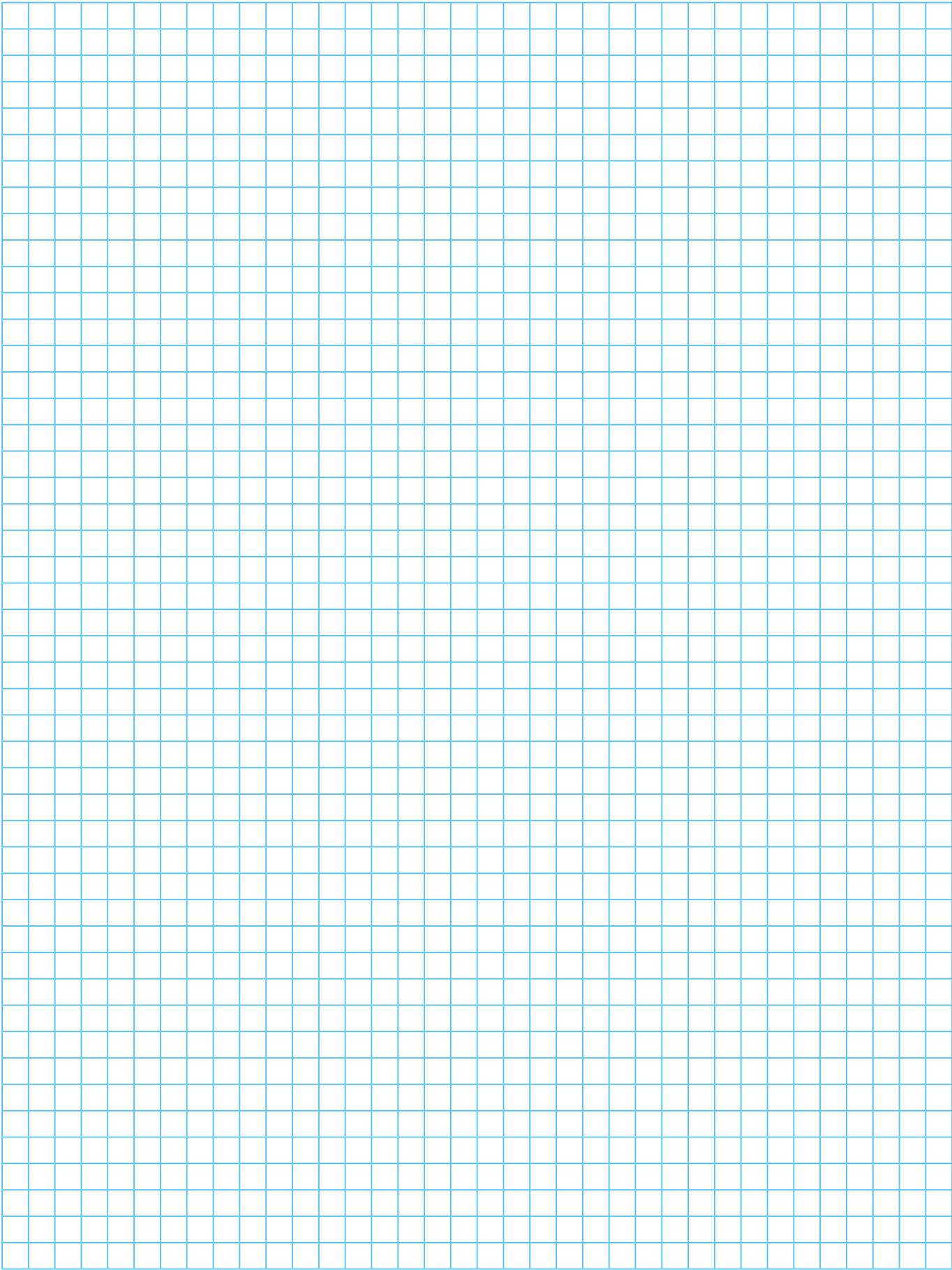
■ Rough weight 13kg ■ CAD data no. &lt;VSE150□1&gt;



■ Detailed flange dimensions table (Unit mm)

| Motor type | A   | B  | C   | D  | E   |
|------------|-----|----|-----|----|-----|
| TYPE1      | 145 | M8 | 130 | 24 | 110 |
| TYPE2      | 145 | M8 | 130 | 28 | 110 |
| TYPE3      | 145 | M8 | 130 | 28 | 110 |

※CAD data can be downloaded in the homepage.



## ■ If input speed is 3000rpm

| Motor manufacturer                   | Motor series | Motor capacity(W) |                 |       |      |                 |
|--------------------------------------|--------------|-------------------|-----------------|-------|------|-----------------|
|                                      |              | 50W               | 100W            | 200W  | 400W | 750W            |
| Panasonic                            | MSME         | TYPE1             |                 |       |      |                 |
|                                      | MSMD         | TYPE1             |                 |       |      |                 |
|                                      | MSMA         | TYPE1             |                 |       |      |                 |
|                                      | MUMA         | Out of standard   | Out of standard | TYPE1 |      | No subject      |
|                                      | MBMK         | TYPE1             | Out of standard | TYPE1 |      |                 |
| Yaskawa Electric                     | SGMJV        | TYPE3             |                 |       |      |                 |
|                                      | SGMAV        | TYPE3             |                 |       |      |                 |
|                                      | SGMAS        | TYPE2             |                 |       |      |                 |
|                                      | SJME         | No subject        | TYPE2           |       |      |                 |
|                                      | SGMAH        | TYPE2             |                 |       |      |                 |
| Mitsubishi Electric                  | HF-KP        | TYPE3             |                 |       |      |                 |
|                                      | HF-MP        | TYPE3             |                 |       |      |                 |
|                                      | HF-KN        | TYPE3             |                 |       |      |                 |
|                                      | HC-PQ        | TYPE3             |                 |       |      | No subject      |
|                                      | HC-KQ        | TYPE3             |                 |       |      | No subject      |
|                                      | HC-KFS       | TYPE3             |                 |       |      |                 |
|                                      | HC-MFS       | TYPE3             |                 |       |      |                 |
| Omron                                | R88M-K       | TYPE1             |                 |       |      |                 |
|                                      | R88M-G       | TYPE3             |                 | TYPE1 |      |                 |
|                                      | R88M-W       | TYPE2             |                 |       |      |                 |
|                                      | R7M-A        | TYPE2             |                 |       |      |                 |
|                                      | R7M-Z        | No subject        | TYPE2           |       |      |                 |
|                                      | R88M-U       | TYPE2             |                 |       |      |                 |
| Fuji Electric Systems                | GYS※         | TYPE2             |                 |       |      |                 |
| Sanyo denki                          | P30B         | TYPE3             |                 |       |      | TYPE2           |
|                                      | Q1           | TYPE3             |                 |       |      | Out of standard |
| Keyence                              | SV           | TYPE3             |                 |       |      |                 |
|                                      | MV           | TYPE3             |                 |       |      | Out of standard |
| Toshiba Machine                      | VLBSV-Z※     | Out of standard   |                 | TYPE3 |      |                 |
|                                      | VLBSV-ZA※    | Out of standard   |                 | TYPE3 |      |                 |
|                                      | VLBST        | Out of standard   |                 | TYPE3 |      | Out of standard |
| Tamagawa Seiki                       | TBL-i ※      | TYPE3             |                 |       |      | No subject      |
|                                      | TBL-i II ※   | TYPE3             |                 |       |      | Out of standard |
| Nikki denso                          | NA80※        | TYPE3             |                 |       |      | Out of standard |
|                                      | NA70 ※       | TYPE3             |                 |       |      | No subject      |
|                                      | NA50         | TYPE1             |                 |       |      |                 |
| Sanmei                               | TS※          | TYPE3             |                 |       |      | Out of standard |
|                                      | SS※          | TYPE3             |                 |       |      | Out of standard |
| Hitachi Industrial Equipment Systems | ADMA         | TYPE3             |                 |       |      | Out of standard |
| Miki Pulley                          | SA3          | TYPE1             |                 |       |      |                 |

Note 1) If an oil-seal is not present and the size is different, attachment of the oil-seal may correspond to a special order, in some cases.

Note 2) If the motor shaft is of D-cut and taper type, it corresponds to a special order.

Note 3) Note that thrust power arising out of instantaneous max. output torque by the combination of motor capacity(motor of the motor series table ※) and reduction ratio may exceed permissible thrust power of the servo motor. See the thrust load table on VR46 page.)

Note 4) Out-of-standard may correspond to a special order in some cases. For details, contact us.

Note 5)

VR reducers can attach to all brands of servo motors, including the following. Please contact our nearest sales branch or distributor.

Shimponia Technology Ltd.

NIDEC Sankyo

Allen-Bradley

Delta

etc.

# Motor Matching Table

<If input speed is 3000rpm>

Coaxial shaft  
**VR** series

## ■ If input speed is 3000rpm

| Motor manufacturer    | Motor series | Motor capacity(W) |       |       |            |       |            |            |            |       |
|-----------------------|--------------|-------------------|-------|-------|------------|-------|------------|------------|------------|-------|
|                       |              | 1000W             | 1500W | 2000W | 2500W      | 3000W | 3500W      | 4000W      | 4500W      | 5000W |
| Panasonic             | MSME         | Out of standard   | TYPE1 |       | No subject | TYPE1 | No subject | TYPE1      | No subject | TYPE1 |
|                       | MSMA         | TYPE1             |       |       | No subject | TYPE1 | No subject | TYPE1      | No subject | TYPE1 |
| Yaskawa Electric      | SGMSV        | TYPE2             |       |       |            |       | No subject | TYPE2      | No subject | TYPE2 |
|                       | SGMSS        | TYPE2             |       |       |            |       | No subject | TYPE2      | No subject | TYPE2 |
|                       | SGMSH        | TYPE2             |       |       | No subject | TYPE2 | No subject | TYPE2      | No subject | TYPE2 |
| Mitsubishi Electric   | HC-RP        | TYPE3             |       |       | No subject |       | TYPE3      | No subject |            | TYPE3 |
|                       | HC-RFS       | TYPE3             |       |       | No subject |       | TYPE3      | No subject |            | TYPE3 |
| Omron                 | R88M-K       | Out of standard   | TYPE1 |       | No subject | TYPE1 | No subject | TYPE1      | No subject | TYPE1 |
|                       | R88M-G       | TYPE1             |       |       |            |       | No subject | TYPE1      | No subject | TYPE1 |
|                       | R88M-W       | TYPE2             |       |       | No subject | TYPE2 | No subject | TYPE2      | No subject | TYPE2 |
|                       | R88M-U       | TYPE2             |       |       | No subject | TYPE2 | No subject | TYPE2      | No subject | TYPE2 |
| Fuji Electric Systems | GYS          | TYPE3             |       |       | No subject | TYPE2 | No subject | TYPE2      | No subject | TYPE2 |

VR  
ABLE REDUCER  
EF  
CORNET REDUCER FOR SERVO MOTOR

## Standard compatibility with the following motor series

| Motor manufacturer    | Motor series | Motor capacity(W)                    |
|-----------------------|--------------|--------------------------------------|
| Mitsubishi Electric   | HF-SP        | 500W · 1000W · 1500W · 2000W · 3500W |
|                       | HC-SFS ※     |                                      |
| Yaskawa Electric      | SGMPS        | 100W · 200W · 400W · 750W · 1500W    |
|                       | SGMPH        |                                      |
| Panasonic             | MQMA         | 100W · 200W · 400W                   |
| Omron                 | R88M-WP      | 100W · 200W · 400W · 750W · 1500W    |
|                       | R7M-AP       | 100W · 200W · 400W · 750W            |
| Fuji Electric Systems | GYC          | 100W · 200W · 400W                   |
| Fanuc                 | $\beta$ is ※ | 200W · 400W · 500W · 750W · 1200W    |

Note 1) If an oil-seal is not present and the size is different, attachment of the oil-seal may correspond to a special order, in some cases.

Note 2) If the motor shaft is of D-cut and taper type, it corresponds to a special order.

Note 3) Out-of-standard may correspond to a special order in some cases. For details, contact us.

Note 4) The motor in the above-mentioned motor series※ may correspond to both specifications of 3000rpm and 2000rpm in standards. For details, contact us.

VR reducers can attach to all brands of servo motors, including the following. Please contact our nearest sales branch or distributor.

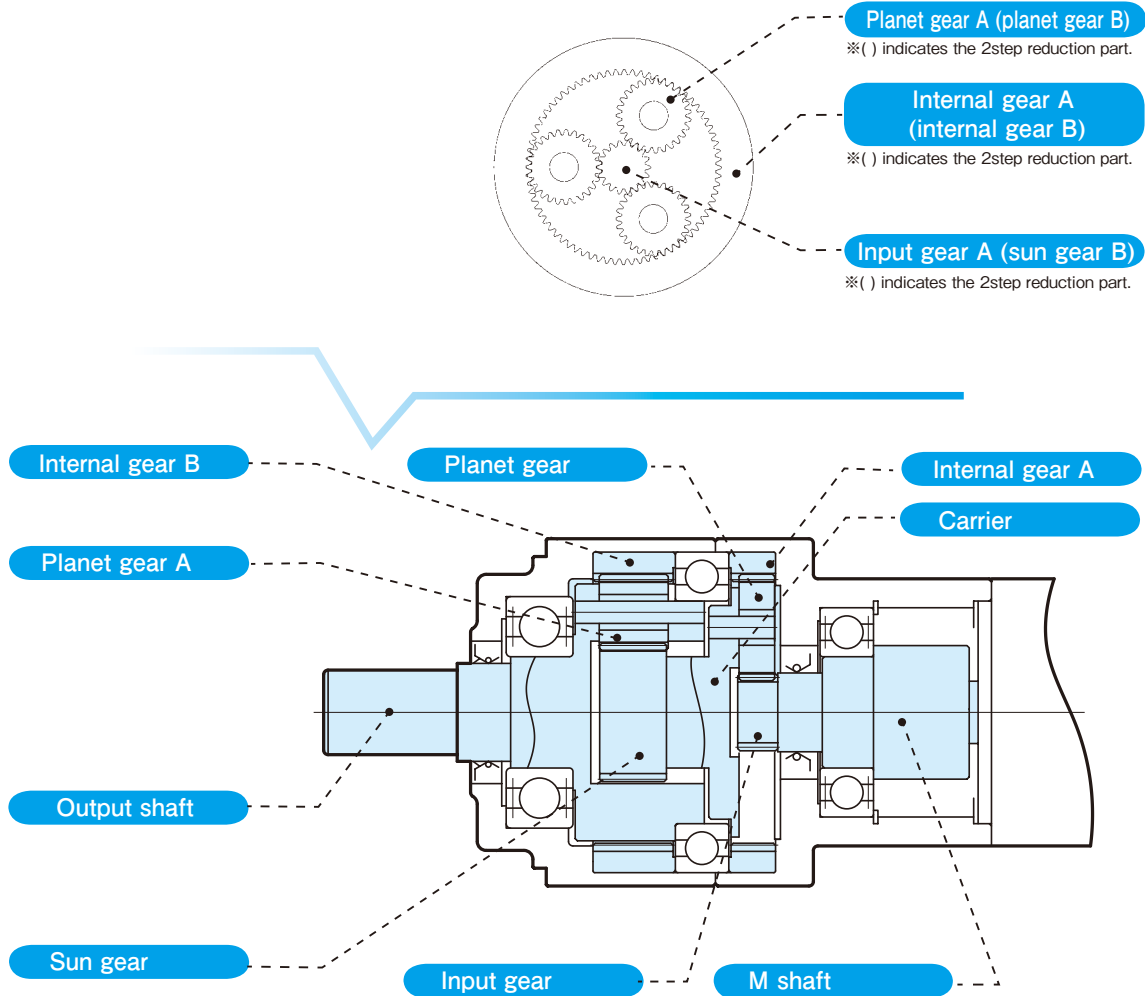
Shimponia Technology Ltd.

NIDEC Sankyo

Allen-Bradley

Delta

etc.



### 1 step reduction part

Motor~input gear~planet gear A~carrier

Rotation from the motor is delivered by the input gear attached to the M shaft. The input gear makes the planet gear A contacting the internal gear A go in gear. This transmits orbital motion to the planet gear A and rotates the 2step sun gear through the carrier.

The rotating direction is same as input rotation.

### 2step reduction part

Carrier~sun gear~planet gear B~output shaft

Rotation of the carrier is delivered by the sun gear attached to the carrier. This transmission delivers orbital motion to the planet gear B through a motion going in gear with the planet gear B contacting the internal gear B. The output shaft is rotated by this orbital movement.

The rotating direction is same as input rotation.

The above mention is explanation for the 2step reducer.  
The 1step reducer runs only under the operating mechanism of the 2step reduction part.

## Selection of type no.

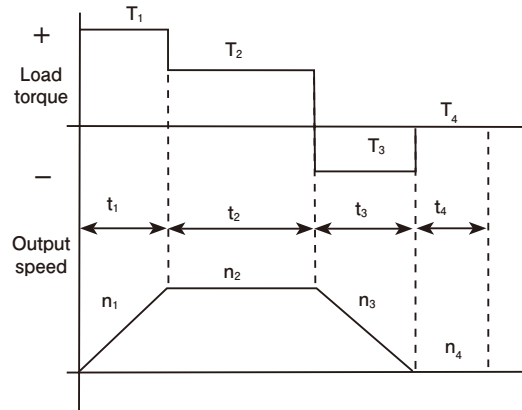
For ABLE REDUCER, once motor capacity and reduction ratio are fixed, reducer type may be simply selected according to the 'Reduction ratio & type no. table'. However, in case that combination out of the standard is made or detailed calculation is necessary, select applicable reducer type according to the equations as suggested below:

### Checkup of load torque pattern

Check the load torque pattern to be given to the reducer.

#### Description of symbols

$T_1 \sim T_n$  (N · m) : Load torque  
 $t_1 \sim t_n$  (N · m) : Time  
 $n_1 \sim n_n$  (N · m) : Output speed (mean rpm upon acceleration & reduction)  
 $n_{OUT}$  : Max. output speed (rpm)  $\geq n_1 \sim n_n$   
 $n_{IN}$  : Max. input speed (rpm)  $\geq n_1 \times R \sim n_n \times R$   
 $R$  : Reduction ratio



### Type selection procedure

Select the type according to the following procedure:

- 1** Calculate mean load torque given to the output shaft from the load torque pattern.

Mean load torque :  $T_a$  (N · m)

$$T_a = \sqrt[3]{\frac{n_1 t_1 |T_1|^3 + n_2 t_2 |T_2|^3 + \dots + n_n t_n |T_n|^3}{n_1 t_1 + n_2 t_2 + \dots + n_n t_n}}$$

Calculate mean output speed from the load torque pattern.

Output speed :  $n_{aOUT}$  (rpm)

$$n_{aOUT} = \frac{n_1 t_1 + n_2 t_2 + \dots + n_n t_n}{t_1 + t_2 + \dots + t_n}$$

OK

- 2** Provisionally select the type to meet the following equation.

$$T_a \leq \text{Permissible output torque}$$

(For permissible output torque of each type, see the performance table.)

OK

- 3** Decide reduction ratio ( $R$ ) from max. output speed ( $n_{OUT}$ ) and max. input speed ( $n_{IN}$ ).

$$\frac{n_{IN}}{n_{OUT}} \geq R$$

( $n_{IN}$  is limited by motors, etc.)

Calculate max. input speed from max. output speed ( $n_{OUT}$ ) and reduction ratio ( $R$ ).

$$n_{IN} = n_{OUT} R$$

OK

- 4** Calculate mean input speed  $n_{aIN}$  from mean output speed  $n_{aOUT}$  and reduction ratio ( $R$ ).

$$n_{aIN} = n_{aOUT} R \leq 3,000 (\text{rpm})$$

OK

- 5** Ensure that max. input speed is less than the fixed max. input speed.

$$n_{IN} \leq 5,000 (\text{rpm})$$

OK

- 6** Ensure that  $T_1$  and  $T_3$  are within the numerical values of max. instant time permissible output torque in the performance table.

OK

### Decision of type

※If there are values that do not fit within the maximum, examine it again as a stronger type, or reduce the specifications, e.g. load torque or speed.

## Examples of type selection

**1**

[Operating pattern]  
 At operation :  $T_1=90(\text{Nm})$   $t_1=0.5(\text{sec})$   $n_1=90(\text{rpm})$   
 At normal operation :  $T_2=35(\text{Nm})$   $t_2=5(\text{sec})$   $n_2=180(\text{rpm})$   
 At reduction :  $T_3=70(\text{Nm})$   $t_3=1(\text{sec})$   $n_3=90(\text{rpm})$   
 At stop :  $T_4=0(\text{Nm})$   $t_4=10(\text{sec})$   $n_4=0(\text{rpm})$

[Max. number of rotations]  
 Max. output speed :  $n_{\text{OUT}}=180(\text{rpm})$   
 Max. input speed :  $n_{\text{IN}}=5000(\text{rpm})$  (limited by the motor)

OK

**2**

Calculate mean load torque given to the output shaft from the load torque pattern. Mean load torque :  $T_a(\text{N} \cdot \text{m})$

$$T_a = \sqrt{\frac{3 \left[ 90 \times 0.5 \times |90|^3 + 180 \times 5 \times |35|^3 + 90 \times 1 \times |-70|^3 + 0 \right]}{90 \times 0.5 + 180 \times 5 + 90 \times 1 + 0}}$$

$$= 46.2 (\text{N} \cdot \text{m})$$

Calculate mean output speed from the load torque pattern.  
 Mean output speed :  $n_{\text{aOUT}}(\text{rpm})$

$$n_{\text{aOUT}} = \frac{90 \times 0.5 + 180 \times 5 + 90 \times 1 + 0}{0.5 + 5 + 1 + 10} = 62.7 (\text{rpm})$$

OK

**3**

Provisionally select the type.  
 $46.2 \leq 50.7 (\text{Nm})$   
 (Select 25D-750 from the performance table)

OK

**4**

Decide reduction ratio(R) from max. output speed( $n_{\text{OUT}}$ ) and max. input speed( $n_{\text{IN}}$ ).

$$\frac{5000}{180} = 27.8 \geq 25$$

Calculate max. input speed ( $n_{\text{IN}}$ ) from max. output speed( $n_{\text{OUT}}$ ) and reduction ratio(R).

$$n_{\text{IN}} = 180 \times 25 = 4,500(\text{rpm})$$

OK

**5**

Calculate mean input speed  $n_{\text{aIN}}$  from mean output speed  $n_{\text{aOUT}}$  VR and reduction ratio(R).

$$n_{\text{aIN}} = 62.7 \times 25 = 1567.5 \leq 3,000 (\text{rpm})$$

OK

**6**

Ensure that max. input speed is less than the fixed max. input speed.

$$n_{\text{IN}} = 4,500 \leq 5,000 (\text{rpm})$$

OK

**7**

Ensure that  $T_1$  and  $T_3$  are within the numerical values of max. instant time permissible output torque in the performance table.

$$T_1 = 90 \leq 152 (\text{Nm})$$

$$T_3 = 70 \leq 152 (\text{Nm})$$

OK



## Thrust load (to motor)

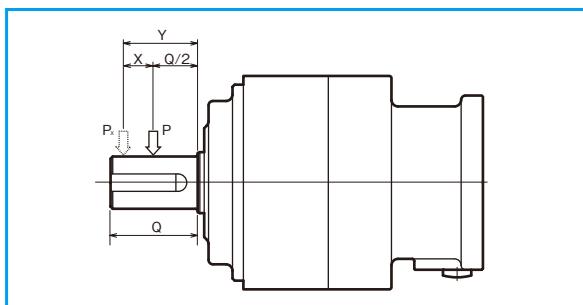
Thrust force acts in a shaft direction for units equipped with a helical gear. However, our ABLE REDUCER is designed to mitigate thrust force and thus does not influence a servo motor irrespective of backlash standard type, LB type, and PB type. For other motor series, see permissible thrust of each motor manufacturer.

| Rated input motor capacity(W) | Type  |          |                | ABLE REDUCER thrust force | Instantaneous time permissible thrust load of servo motor(N) |                               |                                  |
|-------------------------------|-------|----------|----------------|---------------------------|--------------------------------------------------------------|-------------------------------|----------------------------------|
|                               | Model | Type no. | Motor capacity |                           | PANASONIC MSMA series                                        | YASKAWA ELECTRIC SGMAH series | mitsubishi electric HC-MF series |
| 50W                           | VRSF  | 3 B      | 50             | 7                         | 58                                                           | 54                            | 59                               |
|                               | VRSF  | 5 B      | 50             | 15                        |                                                              |                               |                                  |
|                               | VRSF  | S9 B     | 50             | 29                        |                                                              |                               |                                  |
|                               | VRSF  | 15 B     | 50             | 15                        |                                                              |                               |                                  |
|                               | VRSF  | 20 B     | 50             | 15                        |                                                              |                               |                                  |
|                               | VRSF  | 25 B     | 50             | 15                        |                                                              |                               |                                  |
|                               | VRSF  | 35 B     | 50             | 22                        |                                                              |                               |                                  |
|                               | VRSF  | 45 C     | 50             | 29                        |                                                              |                               |                                  |
| 100W                          | VRSF  | 81 C     | 50             | 29                        | 58                                                           | 54                            | 59                               |
|                               | VRSF  | 3 B      | 100            | 15                        |                                                              |                               |                                  |
|                               | VRSF  | 5 B      | 100            | 29                        |                                                              |                               |                                  |
|                               | VRSF  | S9 B     | 100            | 46                        |                                                              |                               |                                  |
|                               | VRSF  | 15 B     | 100            | 29                        |                                                              |                               |                                  |
|                               | VRSF  | 20 B     | 100            | 29                        |                                                              |                               |                                  |
|                               | VRSF  | 25 B     | 100            | 29                        |                                                              |                               |                                  |
|                               | VRSF  | 35 C     | 100            | 16                        |                                                              |                               |                                  |
| 200W                          | VRSF  | 45 C     | 100            | 46                        | 98                                                           | 74                            | 98                               |
|                               | VRSF  | 81 D     | 100            | 46                        |                                                              |                               |                                  |
|                               | VRSF  | 3 B      | 200            | 22                        |                                                              |                               |                                  |
|                               | VRSF  | 5 B      | 200            | 44                        |                                                              |                               |                                  |
|                               | VRSF  | S9 C     | 200            | 43                        |                                                              |                               |                                  |
|                               | VRSF  | 15 C     | 200            | 21                        |                                                              |                               |                                  |
|                               | VRSF  | 20 C     | 200            | 21                        |                                                              |                               |                                  |
|                               | VRSF  | 25 C     | 200            | 21                        |                                                              |                               |                                  |
| 400W                          | VRSF  | 35 C     | 200            | 32                        | 98                                                           | 74                            | 98                               |
|                               | VRSF  | 45 D     | 200            | 43                        |                                                              |                               |                                  |
|                               | VRSF  | 81 E     | 200            | 17                        |                                                              |                               |                                  |
|                               | VRSF  | 3 B      | 400            | 44                        |                                                              |                               |                                  |
|                               | VRSF  | 5 C      | 400            | 43                        |                                                              |                               |                                  |
|                               | VRSF  | S9 C     | 400            | 64                        |                                                              |                               |                                  |
|                               | VRSF  | 15 C     | 400            | 43                        |                                                              |                               |                                  |
|                               | VRSF  | 20 C     | 400            | 43                        |                                                              |                               |                                  |
| 750W                          | VRSF  | 25 C     | 400            | 43                        | 147                                                          | 147                           | 147                              |
|                               | VRSF  | 35 D     | 400            | 26                        |                                                              |                               |                                  |
|                               | VRSF  | 45 E     | 400            | 34                        |                                                              |                               |                                  |
|                               | VRSF  | 3 C      | 750            | 20                        |                                                              |                               |                                  |
|                               | VRSF  | 5 C      | 750            | 40                        |                                                              |                               |                                  |
|                               | VRSF  | S9 D     | 750            | 64                        |                                                              |                               |                                  |
|                               | VRSF  | 15 D     | 750            | 32                        |                                                              |                               |                                  |
|                               | VRSF  | 20 D     | 750            | 32                        |                                                              |                               |                                  |
|                               | VRSF  | 25 D     | 750            | 32                        |                                                              |                               |                                  |
|                               | VRSF  | 35 E     | 750            | 48                        |                                                              |                               |                                  |

Note 1) Thrust force : Numerical value upon max. instantaneous output torque

## Permissible radial load (to reducer)

### Coaxial shaft radial



If radial load is out of the center of the output shaft, calculate using the following equations and positive numbers:

$$P_x = \{K / (K + X)\} \times P$$

$$X = Y - Q/2$$

P : Permissible radial load(N)

Q : Positive number

K : Positive number

X : Load point displacement distance(mm)

Y : Load point(mm)

P<sub>x</sub> : Permissible shaft load(N)

| Type no. | Positive number:Q | Positive number:K |
|----------|-------------------|-------------------|
| B        | 20                | 46                |
| C        | 30                | 70                |
| D        | 40                | 79.5              |
| E        | 55                | 104               |

## Comparison of noise values



■ The measuring conditions in an internal survey are as mentioned below:

※ Reducer input speed : 3000rpm ※ Measurement spot : 50cm distant from the product ※ Noise value : Typical values chosen for noise values

※ Load : Reducer load rating ※ Reducer fixation : The reducer is fixed onto the L-type attachment plate so that it cannot move.

## Jointing

### 1. Insertion into motor

If a customer personally assembles the servo motor and reducer please use the following tip. The reducer flange to which the servo motor is attached has different dimensions based on the motor specified. Therefore, assembly may be impossible for any other motor. Make sure the correct motor is specified before ordering the reducer.

#### [VRSF spec. in case of assembling a motor without key]

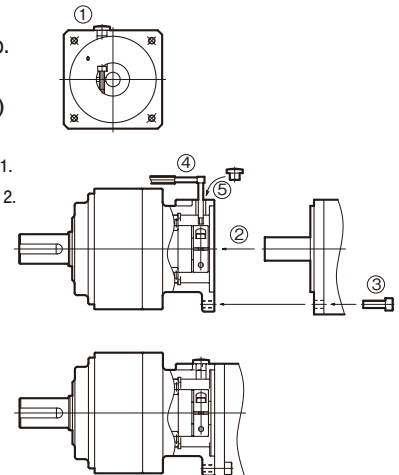
- Take off the rubber cap, turn the input shaft, and match the head of the bolt to the hole of the rubber cap. Make sure that the set bolt is loosened.
- Gradually put the motor shaft into the input shaft (Ensure that it is smoothly put in without jam.) Be careful not to be inserted with the motor tilted.
- Attach the motor to the reducer and fasten the bolt with designated fastening torque. See Table 1.
- Fasten the set bolt of the input shaft with designated fastening torque using torque wrench, etc. See Table 2.
- Attach a rubber cap. It is the end of assembling.

■ Table 1

| Motor combination bolt | Fastening torque |          |
|------------------------|------------------|----------|
|                        | N · m            | kgf · cm |
| M3                     | 1.0              | 10       |
| M4                     | 2.9              | 30       |
| M5                     | 5.9              | 60       |
| M6                     | 9.8              | 100      |
| M8                     | 19.6             | 200      |
| M10                    | 39.2             | 400      |
| M12                    | 68.6             | 700      |
| M16                    | 162              | 1650     |

■ Table 2

| Motor combination bolt | Fastening torque |          |
|------------------------|------------------|----------|
|                        | N · m            | kgf · cm |
| M3                     | 1.5              | 15       |
| M4                     | 3.5              | 36       |
| M5                     | 7.1              | 72       |
| M6                     | 12               | 122      |
| M8                     | 30               | 306      |



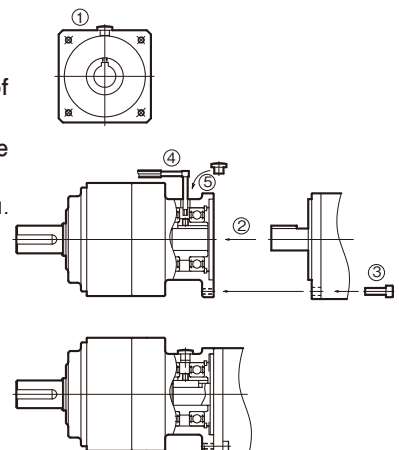
If the key of a key-attached motor is removed, motor assembling without the above-mentioned key may be followed. There is no risk of dislocation.

#### [VRSF spec. in case of assembling a motor with key]

- Take off the rubber cap, turn the input shaft, and match the head of the bolt to the hole of the rubber cap.
- Coat carbon formation inhibitors(molybdenum dioxide etc.) onto the motor shaft, match the key to the key slot, and gradually
- Combine the motor with the reducer and fasten with the designated fastening bolt. See Table 1.
- For set bolt of the input shaft, fasten using torque wrench with the designated fastening torque with the key firmly pressed. See Table 3.
- Attach a rubber cap. The is the end.

■ Table 3

| Motor combination bolt | Fastening torque |          |
|------------------------|------------------|----------|
|                        | N · m            | kgf · cm |
| M4                     | 2.0              | 20       |
| M5                     | 4.3              | 44       |
| M6                     | 7.3              | 74       |
| M8                     | 16.8             | 171      |



### 2. Jointing with reducer

In case of jointing a reducer with the device, make sure that the combining side is plane without inconsistency, and fasten the bolt with designated fastening torque with torque wrench. See Table 4.

■ Table 4

| Reducer combination bolt |     | Fastening torque |          |
|--------------------------|-----|------------------|----------|
|                          |     | N · m            | kgf · cm |
| B type                   | M5  | 5.8              | 60       |
| C type                   | M6  | 9.8              | 100      |
| D type                   | M8  | 19.6             | 200      |
| E type                   | M10 | 39.2             | 400      |

### 3. Connection to the output shaft

- When attaching a coupling, free, etc. onto the output shaft, make sure that excessive thrust load not be given to the output shaft.
- In case of strongly hitting the shaft with a hammer, the shaft inlet or the inside of the reducer may be damaged, therefore it shall be prohibited.
- If the shaft or key of a coupling to be attached is large, it may cause carbonization, so be careful when assembling.
- For assembling of a coupling, fix the key with a set bolt.
- When connecting the shaft, ensure that the connecting shaft fully goes out.

