

# VRB-SERIES Inline shaft

## VRB-115 – 1-Stage Specifications

| Frame Size                                | 115                  |      |             |        |        |        |        |        |        |        |
|---|----------------------|------|-------------|--------|--------|--------|--------|--------|--------|--------|
| Stage                                     | 1-Stage              |      |             |        |        |        |        |        |        |        |
| Ratio                                     | Unit                 | Note | 3           | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
| Nominal Output Torque                     | [Nm]                 | *1   | 120         | 120    | 180    | 180    | 180    | 180    | 120    | 120    |
| Maximum Acceleration Torque               | [Nm]                 | *2   | 225         | 330    | 330    | 330    | 330    | 330    | 225    | 225    |
| Emergency Stop Torque                     | [Nm]                 | *3   | 500         | 625    | 625    | 625    | 625    | 625    | 500    | 500    |
| Nominal Input Speed                       | [rpm]                | *4   | 3000        |        |        |        |        |        |        |        |
| Maximum Input Speed                       | [rpm]                | *5   | 6000        |        |        |        |        |        |        |        |
| No Load Running Torque                    | [Nm]                 | *6   | 1.30        |        |        |        |        |        |        |        |
| Permitted Radial Load                     | [N]                  | *7   | 1300        | 1500   | 1600   | 1700   | 1800   | 1900   | 1900   | 2000   |
| Permitted Axial Load                      | [N]                  | *8   | 1500        | 1700   | 1900   | 2000   | 2100   | 2300   | 2400   | 2500   |
| Maximum Radial Load                       | [N]                  | *9   | 4300        |        |        |        |        |        |        |        |
| Maximum Axial Load                        | [N]                  | *10  | 3900        |        |        |        |        |        |        |        |
| Moment of Inertia ( $\leq \emptyset 14$ ) | [kgcm <sup>2</sup> ] | --   | --          | --     | --     | --     | --     | --     | --     | --     |
| Moment of Inertia ( $\leq \emptyset 19$ ) | [kgcm <sup>2</sup> ] | --   | 3.300       | 2.000  | 1.600  | 1.300  | 1.100  | 1.000  | 0.980  | 0.950  |
| Moment of Inertia ( $\leq \emptyset 28$ ) | [kgcm <sup>2</sup> ] | --   | 5.300       | 4.100  | 3.600  | 3.300  | 3.200  | 3.100  | 3.000  | 3.000  |
| Moment of Inertia ( $\leq \emptyset 38$ ) | [kgcm <sup>2</sup> ] | --   | 13.000      | 12.000 | 11.000 | 11.000 | 11.000 | 11.000 | 11.000 | 11.000 |
| Efficiency                                | [%]                  | *11  | 95          |        |        |        |        |        |        |        |
| Torsional Rigidity                        | [Nm/arc-min]         | *12  | 31          |        |        |        |        |        |        |        |
| Maximum Torsional Backlash                | [arc-min]            | --   | $\leq 3$    |        |        |        |        |        |        |        |
| Noise Level                               | [dB]                 | *13  | 71          |        |        |        |        |        |        |        |
| Protection Class                          | --                   | *14  | IP54 (IP65) |        |        |        |        |        |        |        |
| Ambient Temperature                       | [°C]                 | --   | 0-40        |        |        |        |        |        |        |        |
| Permitted Housing Temperature             | [°C]                 | --   | 90          |        |        |        |        |        |        |        |
| Weight                                    | [kg]                 | *15  | 8           |        |        |        |        |        |        |        |

## VRB-115 – 2-Stage Specifications

| Frame Size                                | 115                  |      |             |       |       |       |       |       |       |       |
|---|----------------------|------|-------------|-------|-------|-------|-------|-------|-------|-------|
| Stage                                     | 2-Stage              |      |             |       |       |       |       |       |       |       |
| Ratio                                     | Unit                 | Note | 15          | 16    | 20    | 25    | 28    | 30    | 35    | 40    |
| Nominal Output Torque                     | [Nm]                 | *1   | 120         | 180   | 180   | 180   | 180   | 120   | 180   | 180   |
| Maximum Acceleration Torque               | [Nm]                 | *2   | 225         | 330   | 330   | 330   | 330   | 225   | 330   | 330   |
| Emergency Stop Torque                     | [Nm]                 | *3   | 500         | 625   | 625   | 625   | 625   | 500   | 625   | 625   |
| Nominal Input Speed                       | [rpm]                | *4   | 3000        |       |       |       |       |       |       |       |
| Maximum Input Speed                       | [rpm]                | *5   | 6000        |       |       |       |       |       |       |       |
| No Load Running Torque                    | [Nm]                 | *6   | 0.42        |       |       |       |       |       |       |       |
| Permitted Radial Load                     | [N]                  | *7   | 2300        | 2300  | 2500  | 2700  | 2800  | 2900  | 3000  | 3200  |
| Permitted Axial Load                      | [N]                  | *8   | 3000        | 3100  | 3400  | 3700  | 3900  | 3900  | 3900  | 3900  |
| Maximum Radial Load                       | [N]                  | *9   | 4300        |       |       |       |       |       |       |       |
| Maximum Axial Load                        | [N]                  | *10  | 3900        |       |       |       |       |       |       |       |
| Moment of Inertia ( $\leq \emptyset 14$ ) | [kgcm <sup>2</sup> ] | --   | 0.430       | 0.480 | 0.400 | 0.380 | 0.440 | 0.290 | 0.370 | 0.280 |
| Moment of Inertia ( $\leq \emptyset 19$ ) | [kgcm <sup>2</sup> ] | --   | 0.860       | 0.920 | 0.830 | 0.820 | 0.880 | 0.740 | 0.810 | 0.730 |
| Moment of Inertia ( $\leq \emptyset 28$ ) | [kgcm <sup>2</sup> ] | --   | 2.800       | 2.900 | 2.800 | 2.800 | 2.800 | 2.700 | 2.700 | 2.700 |
| Moment of Inertia ( $\leq \emptyset 38$ ) | [kgcm <sup>2</sup> ] | --   | --          | --    | --    | --    | --    | --    | --    | --    |
| Efficiency                                | [%]                  | *11  | 90          |       |       |       |       |       |       |       |
| Torsional Rigidity                        | [Nm/arc-min]         | *12  | 31          |       |       |       |       |       |       |       |
| Maximum Torsional Backlash                | [arc-min]            | --   | $\leq 3$    |       |       |       |       |       |       |       |
| Noise Level                               | [dB]                 | *13  | 71          |       |       |       |       |       |       |       |
| Protection Class                          | --                   | *14  | IP54 (IP65) |       |       |       |       |       |       |       |
| Ambient Temperature                       | [°C]                 | --   | 0-40        |       |       |       |       |       |       |       |
| Permitted Housing Temperature             | [°C]                 | --   | 90          |       |       |       |       |       |       |       |
| Weight                                    | [kg]                 | *15  | 8.9         |       |       |       |       |       |       |       |

## VRB-115 – 2-Stage Specifications

| Frame Size                                  | 115                  |      |             |       |       |       |       |       |       |  |  |
|---|----------------------|------|-------------|-------|-------|-------|-------|-------|-------|--|--|
| Stage                                       | 2-Stage              |      |             |       |       |       |       |       |       |  |  |
| Ratio                                       | Unit                 | Note | 45          | 50    | 60    | 70    | 80    | 90    | 100   |  |  |
| Nominal Output Torque                       | [Nm]                 | *1   | 120         | 180   | 180   | 180   | 180   | 120   | 120   |  |  |
| Maximum Acceleration Torque                 | [Nm]                 | *2   | 225         | 330   | 330   | 330   | 330   | 225   | 225   |  |  |
| Emergency Stop Torque                       | [Nm]                 | *3   | 500         | 625   | 625   | 625   | 625   | 500   | 500   |  |  |
| Nominal Input Speed                         | [rpm]                | *4   | 3000        |       |       |       |       |       |       |  |  |
| Maximum Input Speed                         | [rpm]                | *5   | 6000        |       |       |       |       |       |       |  |  |
| No Load Running Torque                      | [Nm]                 | *6   | 0.42        |       |       |       |       |       |       |  |  |
| Permitted Radial Load                       | [N]                  | *7   | 3300        | 3400  | 3600  | 3800  | 4000  | 4200  | 4300  |  |  |
| Permitted Axial Load                        | [N]                  | *8   | 3900        | 3900  | 3900  | 3900  | 3900  | 3900  | 3900  |  |  |
| Maximum Radial Load                         | [N]                  | *9   | 4300        |       |       |       |       |       |       |  |  |
| Maximum Axial Load                          | [N]                  | *10  | 3900        |       |       |       |       |       |       |  |  |
| Moment of Inertia ( $\leq \varnothing 14$ ) | [kgcm <sup>2</sup> ] | --   | 0.370       | 0.280 | 0.280 | 0.280 | 0.280 | 0.270 | 0.270 |  |  |
| Moment of Inertia ( $\leq \varnothing 19$ ) | [kgcm <sup>2</sup> ] | --   | 0.800       | 0.730 | 0.730 | 0.730 | 0.730 | 0.730 | 0.730 |  |  |
| Moment of Inertia ( $\leq \varnothing 28$ ) | [kgcm <sup>2</sup> ] | --   | 2.700       | 2.700 | 2.700 | 2.700 | 2.700 | 2.700 | 2.700 |  |  |
| Moment of Inertia ( $\leq \varnothing 38$ ) | [kgcm <sup>2</sup> ] | --   | --          | --    | --    | --    | --    | --    | --    |  |  |
| Efficiency                                  | [%]                  | *11  | 90          |       |       |       |       |       |       |  |  |
| Torsional Rigidity                          | [Nm/arc-min]         | *12  | 31          |       |       |       |       |       |       |  |  |
| Maximum Torsional Backlash                  | [arc-min]            | --   | $\leq 3$    |       |       |       |       |       |       |  |  |
| Noise Level                                 | [dB]                 | *13  | 71          |       |       |       |       |       |       |  |  |
| Protection Class                            | --                   | *14  | IP54 (IP65) |       |       |       |       |       |       |  |  |
| Ambient Temperature                         | [°C]                 | --   | 0-40        |       |       |       |       |       |       |  |  |
| Permitted Housing Temperature               | [°C]                 | --   | 90          |       |       |       |       |       |       |  |  |
| Weight                                      | [kg]                 | *15  | 8.9         |       |       |       |       |       |       |  |  |

- \*1) At nominal input speed, service life is 20,000 hours
- \*2) The maximum torque when starting or stopping operation
- \*3) The maximum torque allowed under a stress situation (Permitted 1,000 times during service life)
- \*4) The average input speed
- \*5) The maximum intermittent input speed
- \*6) This is the torque at no load applied on the input shaft. The input speed is 3,000 rpm for VRB 115
- \*7) At this load and nominal input speed, service life will be 20,000 hours. (The radial load applied to the output side bearing)
- \*8) At this load and nominal input speed, service life will be 20,000 hours. (The axial load applied to the output shaft center)
- \*9) The maximum radial load that the reducer can accept
- \*10) The maximum axial load that the reducer can accept
- \*11) The efficiency at the nominal torque rating
- \*12) This does not include the lost motion
- \*13) Contact NIDEC-SHIMPO for the testing conditions and environment
- \*14) IP65 (wash-down) is available as an option. Contact NIDEC-SHIMPO for more details and our food grade options
- \*15) The weight may vary slightly between models