

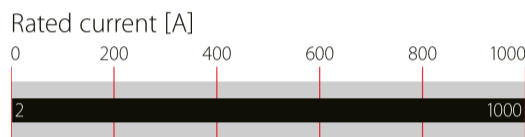
# 3-phase Line Reactor to reduce mains disturbances at 400 V



- 4% 3-phase line reactor for 400 V network
- Reducing harmonics on the mains side
- Reducing commutation notches
- Limiting inrush current
- Reliable and economical solution for mitigating mains disturbances



### Performance indicators



### Approvals & Compliances



(UL recognized up to 640 A)

### Features and Benefits

- Ensure reliability, performance and a long service life of electrical consumers
- Reduction of mains harmonics and commutation notches
- Help to meet international power quality standards
- Protection of motor drive electronics and dc link capacitors against mains transients
- Reduction of inrush and peak currents
- Improvement of conducted LF immunity
- Prevention from nuisance tripping caused by power line voltage spikes
- Improvement of true power factor

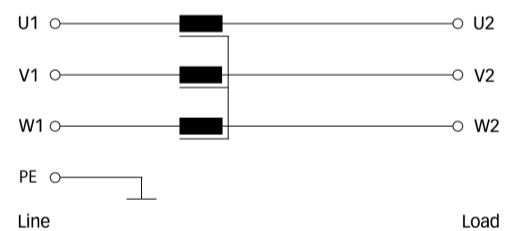
## Technical Specifications

|                                      |   |
|--------------------------------------|---|
| <b>Nominal operating voltage</b>     | 3x 380 to 480 VAC   |
| <b>Rated operating voltage</b>       | 3x 340 to 530 VAC   |
| <b>Rated currents</b>                | 1.76 to 1010 A @ 45°C   |
| <b>Impedance (uk)</b>                | 4% @ 400 V, 50 Hz and rated rms current   |
| <b>Overload capability</b>           | 1.6x rated current for 1 minute, once per hour  |
| <b>Pollution degree</b>              | PD3   |
| <b>High potential test voltage</b>   | P -> P 3030 VAC, 1 s<br>P -> E 3030 VAC, 1 s  |
| <b>Insulation class</b>              | UL electrical insulation system SCH-200(N)  |
| <b>Overvoltage category</b>          | OV III (IEC 60664-1 / UL 61800-5-1)   |
| <b>Protection category</b>           | IP 00   |
| <b>Climatic class</b>                | 40/100/21 (IEC 60068-1)   |
| <b>Cooling</b>                       | Natural cooling AN  |
| <b>Ambient temperature range</b>     | -40°C to +45°C fully operational<br>+45°C to +100°C derated operation*<br>-40°C to +100°C transport and storage |
| <b>Design corresponding to</b>       | UL 61800-5-1, EN 61558-2-20, EN 60076-6   |
| <b>Earthing System</b>               | TN, TT, IT  |
| <b>Flammability corresponding to</b> | UL 94 V-0   |
| <b>Lifetime (calculated)</b>         | 20 years  |

### Typical Applications

- Motor drives and various adjustable speed drive systems, such as:
- HVAC
- Robots
- Machinery
- Process automation equipment

### Typical electrical schematic



\* derating according NEC 310-15(C), I<sub>derated</sub> = I<sub>nominal</sub> \* SQRT((T<sub>max</sub> - T<sub>amb</sub>) / (T<sub>max</sub> - T<sub>nominal</sub>)) = I<sub>nominal</sub> \* SQRT((100°C - T<sub>amb</sub>) / 55°C)

## Reactor Selection Table

| Reactor                | Rated current | Rated Power * | Rated Power** |          | Full load current*** | Inductance value | Typical power losses | Terminal | Weight |       |
|------------------------|---------------|---------------|---------------|----------|----------------------|------------------|----------------------|----------|--------|-------|
|                        | @ 45°C        | @ 400V        | [kW]          | @ 480V   |                      |                  |                      |          | [HP]   | [kg]  |
|                        | [A]           | [kW]          | [kW]          |          | [A]                  | [mH]             | [W]                  |          |        |       |
| RWK 3044-2-88-E0XXX    | 1.76          | 1.1           | 1.1/1.5       | 1.5      | 3                    | 16.7             | 23                   | 88       | 0.49   | 2.1   |
| RWK 3044-3.5-88-E0XXX  | 3.53          | 2.2           | 2.2/3         | 3        | 5.5                  | 8.3              | 32                   | 88       | 0.89   | 2     |
| RWK 3044-6.5-88-E0XXX  | 6.42          | 4             | 4/5.5         | 5        | 10                   | 4.6              | 47                   | 88       | 1.2    | 2.6   |
| RWK 3044-9-88-E0XXX    | 8.82          | 5.5           | 5.5/7.5       | 7.5      | 13                   | 3.3              | 61                   | 88       | 1.7    | 3.7   |
| RWK 3044-12-88-E0XXX   | 12.0          | 7.5           | 7.5/11        | 10       | 16                   | 2.44             | 69                   | 88       | 2.4    | 5.3   |
| RWK 3044-18-89-E0XXX   | 17.6          | 11            | 11/15         | 15       | 24                   | 1.67             | 103                  | 89       | 3.4    | 7.5   |
| RWK 3044-24-89-E0XXX   | 24.1          | 15            | 19            | 25       | 32                   | 1.22             | 106                  | 89       | 4.9    | 10.8  |
| RWK 3044-30-92-E0XXX   | 29.7          | 18.5          | 22            | 30       | 38                   | 0.99             | 124                  | 92       | 5.1    | 11.2  |
| RWK 3044-35-92-E0XXX   | 35.3          | 22            | 30            | 40       | 45                   | 0.83             | 151                  | 92       | 5.4    | 11.9  |
| RWK 3044-48-92-E0XXX   | 48.1          | 30            | 37            | 50       | 60                   | 0.61             | 172                  | 92       | 8.8    | 19.4  |
| RWK 3044-59-92-E0XXX   | 59.3          | 37            | 45            | 60       | 75                   | 0.50             | 206                  | 92       | 10.2   | 22.5  |
| RWK 3044-72-99-E0XXX   | 72.2          | 45            | 55            | 75       | 90                   | 0.41             | 294                  | 99       | 10.3   | 22.7  |
| RWK 3044-88-99-E0XXX   | 88.2          | 55            | 55/75         | 100      | 110                  | 0.33             | 257                  | 99       | 11.4   | 25.1  |
| RWK 3044-120-99-E0XXX  | 120           | 75            | 90            | 125      | 150                  | 0.24             | 324                  | 99       | 13.8   | 30.4  |
| RWK 3044-140-99-E0XXX  | 144           | 90            | 110           | 150      | 180                  | 0.20             | 399                  | 99       | 15.7   | 34.6  |
| RWK 3044-180-99-E0XXX  | 176           | 110           | 132           | 175      | 210                  | 0.17             | 456                  | 99       | 20.0   | 44.1  |
| RWK 3044-210-99-E0XXX  | 212           | 132           | 160           | 200      | 260                  | 0.14             | 553                  | 99       | 24.5   | 54    |
| RWK 3044-260-99-E0XXX  | 257           | 160           | 200           | 250      | 320                  | 0.11             | 593                  | 99       | 27.5   | 60.6  |
| RWK 3044-320-99-E0XXX  | 321           | 200           | 250           | 300-325  | 400                  | 0.092            | 747                  | 99       | 34.5   | 76.1  |
| RWK 3044-400-99-E0XXX  | 401           | 250           | 315           | 400-425  | 530                  | 0.073            | 1055                 | 99       | 45.5   | 100.3 |
| RWK 3044-510-99-E0XXX  | 505           | 315           | 355           | 450-475  | 555                  | 0.058            | 1069                 | 99       | 49.5   | 109.1 |
| RWK 3044-570-99-E0XXX  | 569           | 355           | 400           | 500-525  | 750                  | 0.052            | 1181                 | 99       | 67.5   | 148.8 |
| RWK 3044-640-99-E0XXX  | 642           | 400           | 450           | 600      | 900                  | 0.046            | 1116                 | 99       | 68.5   | 151   |
| RWK 3044-800-99-E0XXX  | 802           | 500           | 550/630       | 700-800  | 935                  | 0.037            | 1280                 | 99       | 103    | 227.1 |
| RWK 3044-1000-99-E0XXX | 1010          | 630           | 750           | 900-1000 | 1120                 | 0.029            | 1167                 | 99       | 110    | 242.5 |

\* Calculated at rated current, 400VAC and cos phi=0.90

\*\* Calculated at rated current, 480VAC and cos phi=0.89

\*\*\* For reference in North America market

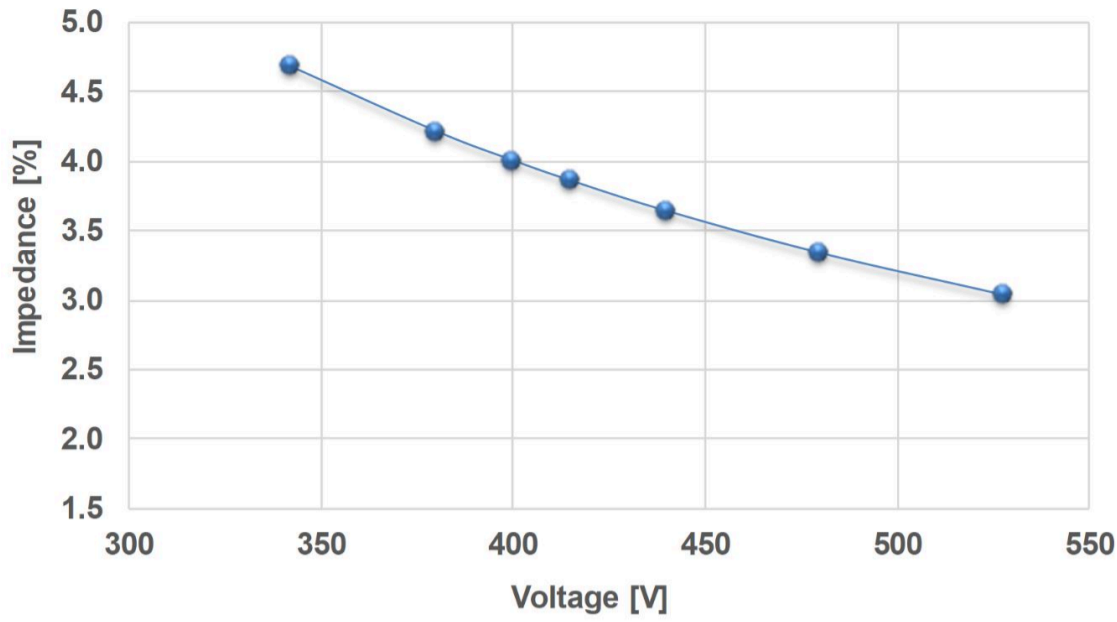
## Terminals

| Type            | -88                      | -89                    | -92 | -99        |
|-----------------|--------------------------|------------------------|-----|------------|
| Ring cable shoe | -                        | -                      | M6  | M8/M10/M12 |
| Fork cable shoe | M3.5<br>width max. 6.4mm | M4<br>width max. 8.0mm | -   | -          |
| Flex wire AWC   | 22-16                    | 16-14                  | -   | -          |
| Rec. torque     | 0.78 Nm                  | 1.76 Nm                | -   | -          |

## Earth Screw

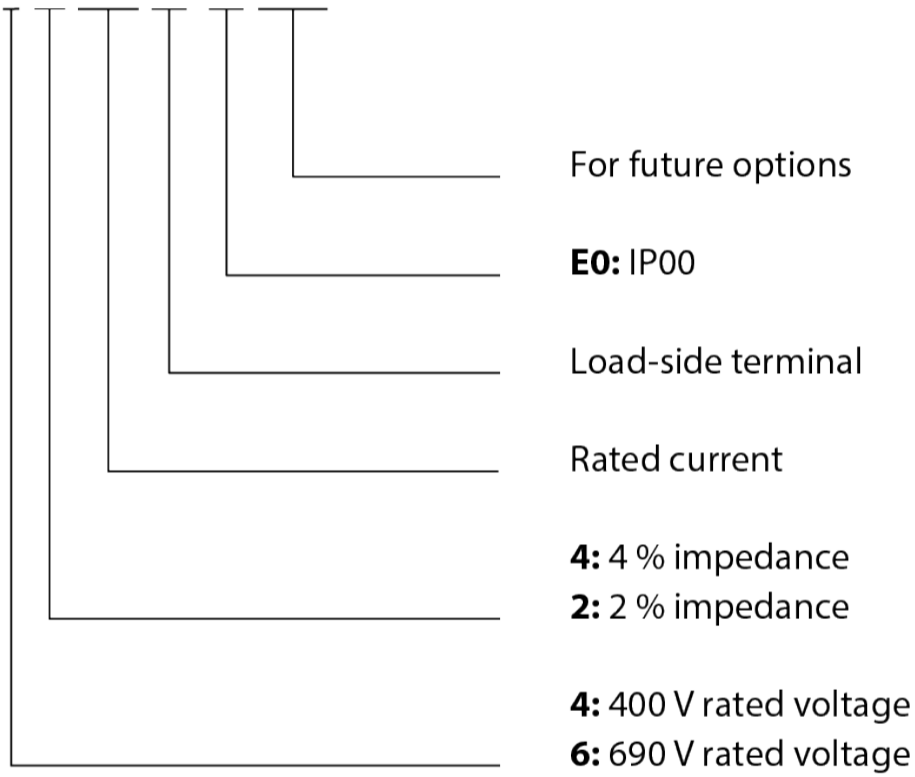
| Type      | Size | Torque   |      |
|-----------|------|----------|------|
|           |      | [Nm]     |      |
|           |      | [lbs-in] |      |
| 2A        | M2.5 | 0.3      | 2.7  |
| 3.5-12A   | M3   | 0.6      | 5.3  |
| 18-35A    | M4   | 1.7      | 15   |
| 48-120A   | M6   | 4        | 35.4 |
| 140-1000A | M8   | 9        | 79.7 |

### RWK 3044 Impedance Vs. Voltage

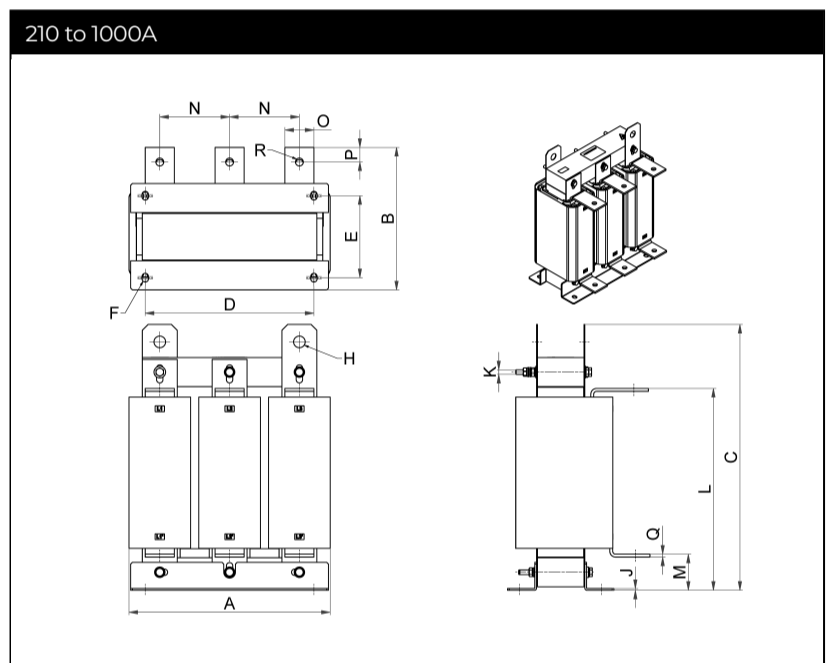
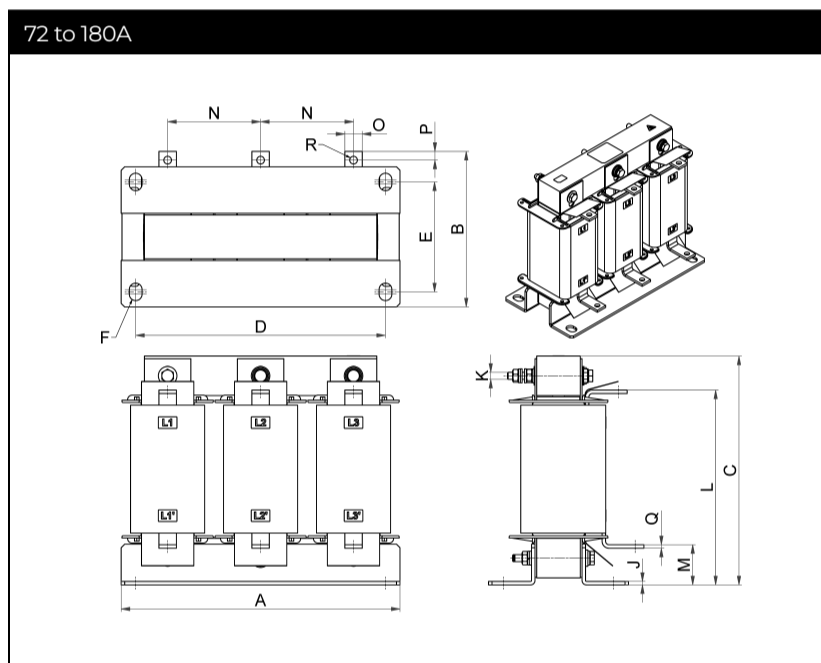
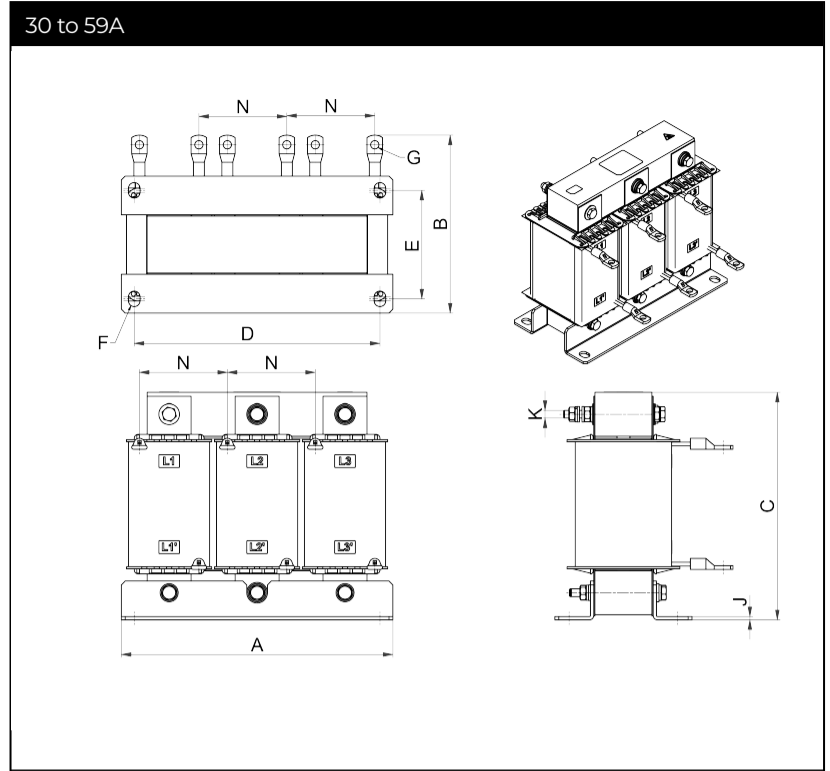
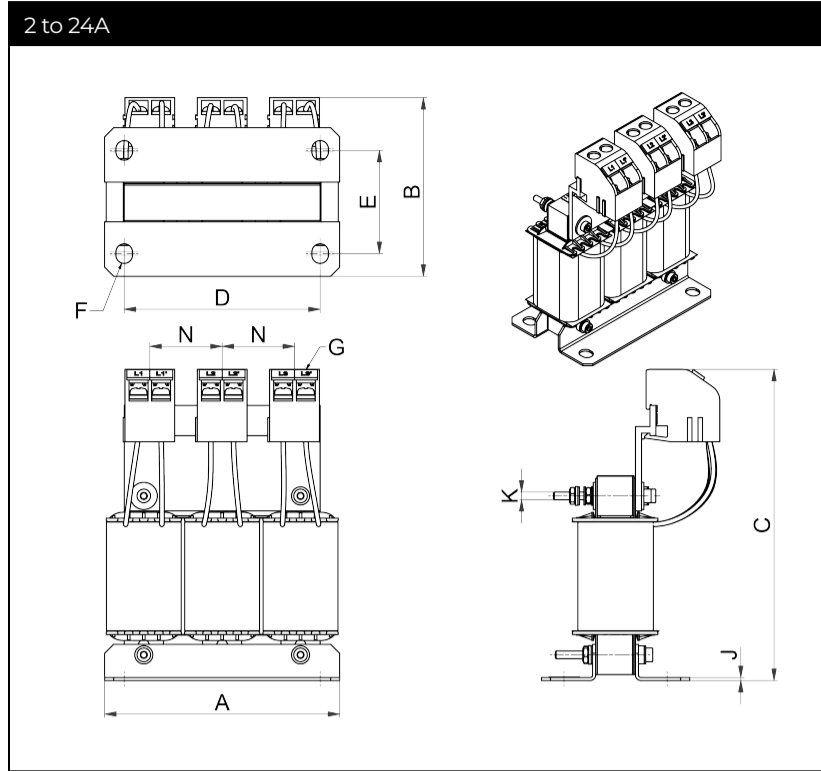


Product selector

#### RWK 30n m-xxx-yy-E0 XXX



**Mechanical Data**



## Dimensions In Mm\*

| RWK 3044 | A     | B±5   | C±3   | D   | E     | F       | G    | H   | J   | K    | L±5   | M±5  | N±5    | O  | P    | Q | R     |
|----------|-------|-------|-------|-----|-------|---------|------|-----|-----|------|-------|------|--------|----|------|---|-------|
| 2        | 78    | 59    | 103.1 | 65  | 34.2  | 6.5x5.5 | -88  |     | 1   | M2.5 |       |      | 24±1   |    |      |   |       |
| 3.5      | 96    | 62.5  | 117.9 | 77  | 37.5  | 6.5x5.5 | -88  |     | 1.5 | M3   |       |      | 31±1   |    |      |   |       |
| 6.5      | 125   | 69    | 136.1 | 110 | 44.8  | 8x5.5   | -88  |     | 2   | M3   |       |      | 41.5±1 |    |      |   |       |
| 9        | 125   | 69    | 136.8 | 110 | 44.8  | 8x5.5   | -88  |     | 2   | M3   |       |      | 41.5±1 |    |      |   |       |
| 12       | 125   | 78.5  | 136.4 | 110 | 54.5  | 8x5.5   | -88  |     | 2   | M3   |       |      | 41.5±1 |    |      |   |       |
| 18       | 155   | 79    | 159.7 | 130 | 56.1  | 12x9    | -89  |     | 2.5 | M4   |       |      | 50±1   |    |      |   |       |
| 24       | 155   | 94    | 159   | 130 | 71    | 12x9    | -89  |     | 2.5 | M4   |       |      | 50±1   |    |      |   |       |
| 30       | 155   | 128   | 132   | 130 | 71    | 12x9    | ø6.4 |     | 2.5 | M4   |       |      | 50±4   |    |      |   |       |
| 35       | 155   | 128   | 132.7 | 130 | 71    | 12x9    | ø6.4 |     | 2.5 | M4   |       |      | 50±4   |    |      |   |       |
| 48       | 190   | 140   | 156.6 | 170 | 77.5  | 12x9    | ø6.4 |     | 2.5 | M6   |       |      | 60±4   |    |      |   |       |
| 59       | 210   | 143   | 176   | 190 | 84    | 12x9    | ø6.4 |     | 2.5 | M6   |       |      | 68±4   |    |      |   |       |
| 72       | 230   | 122.7 | 191   | 210 | 77.5  | 12x9    |      |     | 2.5 | M6   | 163   | 30   | 76±4   | 15 | 7.5  | 3 | ø6.6  |
| 88       | 240   | 133.9 | 196.7 | 215 | 94.5  | 15x11   |      |     | 3   | M6   | 167.5 | 34.5 | 80±4   | 15 | 7.5  | 3 | ø6.6  |
| 120      | 240   | 152.3 | 196.7 | 215 | 104.5 | 15x11   |      |     | 3   | M6   | 168.5 | 34.5 | 80±4   | 20 | 10   | 4 | ø9    |
| 140      | 265   | 148.9 | 217.5 | 240 | 99.7  | 15x11   |      |     | 3   | M8   | 183   | 39   | 88±4   | 20 | 10   | 4 | ø9    |
| 180      | 291   | 171.1 | 235   | 260 | 117.5 | 15x11   |      |     | 3   | M8   | 198.5 | 39.5 | 96±4   | 25 | 12.5 | 4 | ø11   |
| 210      | 290   | 189.4 | 234.2 | 260 | 131   | 15x11   |      | n/a | 3   | M8   | 201.7 | 42.7 | 96     | 25 | 12.5 | 4 | ø11   |
| 260      | 290   | 194.6 | 287.2 | 260 | 136   | 15x11   |      | ø20 | 3   | M8   | 206.2 | 42.2 | 100    | 25 | 12.5 | 4 | ø11   |
| 320      | 340   | 198.9 | 333.5 | 290 | 121   | 15x11   |      | ø20 | 3   | M8   | 237.5 | 52.5 | 112    | 30 | 15   | 5 | ø11   |
| 400      | 360   | 190.4 | 422.2 | 310 | 121   | 15x11   |      | ø20 | 3   | M8   | 297   | 62   | 125    | 30 | 15   | 5 | ø11   |
| 510      | 360   | 203.7 | 422.6 | 310 | 121   | 15x11   |      | ø20 | 3   | M8   | 297   | 62   | 125    | 40 | 20   | 5 | ø13.5 |
| 570      | 346±5 | 244   | 457   | 290 | 141   | 15x11   |      | ø20 | 3   | M8   | 347   | 62   | 120    | 50 | 25   | 5 | ø13.5 |
| 640      | 347±5 | 244.8 | 457   | 290 | 141   | 15x11   |      | ø20 | 3   | M8   | 347   | 62   | 120    | 50 | 25   | 5 | ø13.5 |
| 800      | 365±5 | 296.3 | 474   | 310 | 185   | 15x11   |      | ø20 | 3   | M8   | 373.5 | 55.5 | 130    | 50 | 25   | 8 | ø13.5 |
| 1000     | 376±5 | 309   | 474   | 310 | 185   | 15x11   |      | ø20 | 3   | M8   | 379   | 61   | 130    | 50 | 25   | 8 | ø13.5 |

\* General tolerance: ISO 2768-v

## Dimensions In Inches\*

| RWK 3044 | A         | B±0.2 | C±0.12 | D     | E    | F         | G     | H   | J    | K    | L±0.2 | M±0.2 | N±0.2     | O    | P    | Q    | R     |
|----------|-----------|-------|--------|-------|------|-----------|-------|-----|------|------|-------|-------|-----------|------|------|------|-------|
| 2        | 3.07      | 2.32  | 4.06   | 2.56  | 1.35 | 0.26x0.22 | -3.46 |     | 0.04 | M2.5 |       |       | 0.94±0.04 |      |      |      |       |
| 3.5      | 3.78      | 2.46  | 4.64   | 3.03  | 1.48 | 0.26x0.22 | -3.46 |     | 0.06 | M3   |       |       | 1.22±0.04 |      |      |      |       |
| 6.5      | 4.92      | 2.72  | 5.36   | 4.33  | 4.76 | 0.31x0.22 | -3.46 |     | 0.08 | M3   |       |       | 1.63±0.04 |      |      |      |       |
| 9        | 4.92      | 2.72  | 5.39   | 4.33  | 1.76 | 0.31x0.22 | -3.46 |     | 0.08 | M3   |       |       | 1.63±0.04 |      |      |      |       |
| 12       | 4.92      | 3.09  | 5.37   | 4.33  | 2.15 | 0.31x0.22 | -3.46 |     | 0.08 | M3   |       |       | 1.63±0.04 |      |      |      |       |
| 18       | 6.1       | 3.11  | 6.29   | 5.12  | 2.21 | 0.47x0.35 | -3.5  |     | 0.1  | M4   |       |       | 1.97±0.04 |      |      |      |       |
| 24       | 6.1       | 3.7   | 6.26   | 5.12  | 2.8  | 0.47x0.35 | -3.5  |     | 0.1  | M4   |       |       | 1.97±0.04 |      |      |      |       |
| 30       | 6.1       | 5.04  | 5.2    | 5.12  | 2.8  | 0.47x0.35 | Ø6.4  |     | 0.1  | M4   |       |       | 1.97±0.16 |      |      |      |       |
| 35       | 6.1       | 5.04  | 5.22   | 5.12  | 2.8  | 0.47x0.35 | Ø6.4  |     | 0.1  | M4   |       |       | 1.97±0.16 |      |      |      |       |
| 48       | 7.48      | 5.51  | 6.17   | 6.69  | 3.05 | 0.47x0.35 | Ø6.4  |     | 0.1  | M6   |       |       | 2.36±0.16 |      |      |      |       |
| 59       | 8.27      | 5.63  | 6.93   | 7.48  | 3.31 | 0.47x0.35 | Ø6.4  |     | 0.1  | M6   |       |       | 2.68±0.16 |      |      |      |       |
| 72       | 9.06      | 4.83  | 7.52   | 8.27  | 3.05 | 0.47x0.35 |       |     | 0.1  | M6   | 6.42  | 1.18  | 2.99±0.16 | 0.59 | 0.3  | 0.12 | Ø6.6  |
| 88       | 9.45      | 5.27  | 7.74   | 8.46  | 3.72 | 0.59x0.43 |       |     | 0.12 | M6   | 6.59  | 1.36  | 3.15±0.16 | 0.59 | 0.3  | 0.12 | Ø6.6  |
| 120      | 9.45      | 6     | 7.74   | 8.46  | 4.11 | 0.59x0.43 |       |     | 0.12 | M6   | 6.63  | 1.36  | 1.15±0.16 | 0.79 | 0.39 | 0.16 | Ø9    |
| 140      | 10.43     | 5.86  | 8.56   | 9.45  | 3.93 | 0.59x0.43 |       |     | 0.12 | M8   | 7.2   | 1.54  | 3.46±0.16 | 0.79 | 0.39 | 0.16 | Ø9    |
| 180      | 11.46     | 6.74  | 9.25   | 10.24 | 4.63 | 0.59x0.43 |       |     | 0.12 | M8   | 7.81  | 1.56  | 3.78±0.16 | 0.98 | 0.49 | 0.16 | Ø11   |
| 210      | 11.42     | 7.46  | 9.22   | 10.24 | 5.16 | 0.59x0.43 |       | n/a | 0.12 | M8   | 7.94  | 1.68  | 1.54      | 0.98 | 0.49 | 0.16 | Ø11   |
| 260      | 11.42     | 7.66  | 11.31  | 10.24 | 5.35 | 0.59x0.43 |       | Ø20 | 0.12 | M8   | 8.12  | 1.66  | 1.56      | 0.98 | 0.49 | 0.16 | Ø11   |
| 320      | 13.39     | 7.83  | 13.13  | 11.42 | 4.76 | 0.59x0.43 |       | Ø20 | 0.12 | M8   | 9.35  | 2.07  | 1.68      | 1.18 | 0.59 | 0.2  | Ø11   |
| 400      | 14.17     | 7.5   | 16.62  | 12.2  | 4.76 | 0.59x0.43 |       | Ø20 | 0.12 | M8   | 11.69 | 2.44  | 1.66      | 1.18 | 0.59 | 0.2  | Ø11   |
| 510      | 14.17     | 8.02  | 16.64  | 12.2  | 4.76 | 0.59x0.43 |       | Ø20 | 0.12 | M8   | 11.69 | 2.44  | 2.07      | 1.57 | 0.79 | 0.2  | Ø13.5 |
| 570      | 13.62±0.2 | 9.61  | 17.99  | 11.42 | 5.55 | 0.59x0.43 |       | Ø20 | 0.12 | M8   | 13.66 | 2.44  | 2.44      | 1.97 | 0.98 | 0.2  | Ø13.5 |
| 640      | 13.66±0.2 | 9.64  | 17.99  | 11.42 | 5.55 | 0.59x0.43 |       | Ø20 | 0.12 | M8   | 13.66 | 2.44  | 2.44      | 1.97 | 0.98 | 0.2  | Ø13.5 |
| 800      | 14.37±0.2 | 11.67 | 18.66  | 12.2  | 7.28 | 0.59x0.43 |       | Ø20 | 0.12 | M8   | 14.7  | 2.19  | 2.44      | 1.97 | 0.98 | 0.31 | Ø13.5 |
| 1000     | 14.8±0.2  | 12.17 | 18.66  | 12.2  | 7.28 | 0.59x0.43 |       | Ø20 | 0.12 | M8   | 14.92 | 2.4   | 2.44      | 1.97 | 0.98 | 0.31 | Ø13.5 |

\* General tolerance: ISO 2768-v

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