

5105-ISO

HIGH-CAPACITY STANDARD REFERENCE FORCE TRANSDUCERS IN TENSION AND COMPRESSION

Standard reference force transducers specially designed according to the ISO 376 standard (classes 1, 0,5 and 00).



Model 5105



Features

- o Wide range of capacities (up to 50 MN)
- o Complete range of load accessories
- o Tension and / or compression (universal)
- o Protection class: IP65
- o Material: alloy steel (stainless steel available on request)
- o Cable length: see drawing table - CL (other lengths available on request)

Most popular options



Application(s)

SENSY's load cells 5105-ISO are perfectly designed for the following applications:

- Calibration of testing machines according to ISO 7500.

Note: this standard reference force transducer covers the calibration of standard force measurement instruments used for static verification of uniaxial testing machines.

Capacities

5105-ISO: 200 - 300 - 500 kN
(0.75) - 1.5 - 2 - 3 - 5 - 7.5 - 10 - 15 - 20 - 30 - (40) - (50) MN

| Specifications | 1 | 05 | 00 | |
|--|----------------|----------------|----------------|-------------|
| Relative reversibility error | <± 0.3 | <± 0.15 | <± 0.07 | % M.V.** |
| Relative repeatability error with rotation | <± 0.2 | <± 0.1 | <± 0.05 | % M.V.** |
| Relative repeatability error without rotation | <± 0.1 | <± 0.05 | <± 0.025 | % M.V.** |
| Stabilization time after power excitation supply | 200...600 | 200...600 | 200...600 | s |
| Creep error over 30 min. | <± 0.1 | <± 0.05 | <± 0.025 | % F.S.* |
| Zero shift after loading | <± 0.05 | <± 0.025 | <± 0.012 | % F.S.* |
| Reference temperature | 20 | 20 | 20 | °C |
| Compensated temperature range | -10...+45 | -10...+45 | -10...+45 | °C |
| Service temperature range | -25...+70 | -25...+70 | -25...+70 | °C |
| Storage temperature range | -50...+85 | -50...+85 | -50...+85 | °C |
| Temperature coefficient of the sensitivity | <± 0.035 | <± 0.035 | <± 0.015 | % F.S./10°C |
| Temperature coefficient of zero signal | <± 0.03 | <± 0.03 | <± 0.023 | % F.S./10°C |
| Zero balance | ± 0.02 | ± 0.02 | ± 0.02 | mVV |
| Nominal sensitivity | 1.5 | 1.5 | 1.5 | mVV |
| Input resistance | 350 or 700 ± 2 | 350 or 700 ± 2 | 350 or 700 ± 2 | ohm(s) |
| Output resistance | 350 or 700 ± 2 | 350 or 700 ± 2 | 350 or 700 ± 2 | ohm(s) |
| Insulation resistance (50 V) | > 5000 | > 5000 | > 5000 | Mohm(s) |
| Reference excitation voltage | 10 | 10 | 10 | VDC |
| Permissible nominal range of excitation voltage | 3...12 | 3...12 | 3...12 | VDC |
| Safe load limit | 110 | 110 | 110 | % F.S.* |
| Breaking load | >300 | >300 | >300 | % F.S.* |

* : Full Scale of the force transducer.

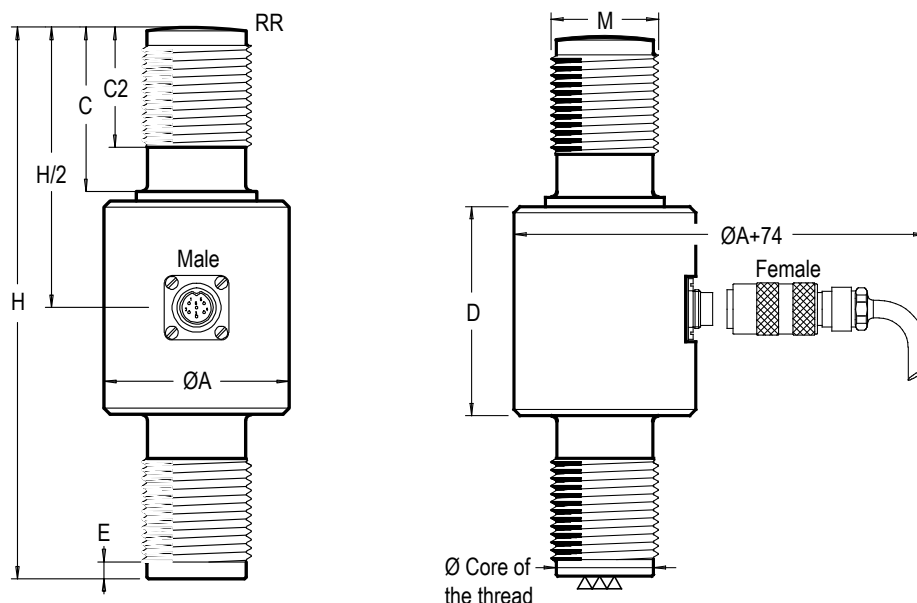
** : M.V. is the measured value. The mentioned values are only valid if M.V. >= 10 % of full scale.

Specifications subject to change without notice.



ISO 9001 certified

5105-ISO > STANDARD DIMENSIONS



| Ref. Item* | Capacities | Ø A | C | C2 | D | E | H | RR | CL (m) | M | H1 | H2 | Max. Deflexion | Weight (kg) |
|------------|---------------|---|-----|-----|-----|----------|------|------|--------|-----------------|-----|-----|----------------|-------------|
| 510x-ISO-C | 200 kN | 75 | 49 | 44 | 87 | 4 | 190 | 350 | 6 | M45x3 | 398 | 510 | 0.14-0.16 | 3.65 |
| 510x-ISO-D | 300 - 750 kN | 88.5 | 69 | 59 | 119 | 5 | 265 | 400 | 6 | M64x4 | 560 | 740 | 0.19-0.25 | 9.8 |
| 510x-ISO-E | 0.75 - 1.5 MN | 111 | 95 | 80 | 145 | 5 | 340 | 400 | 6 | M90x4 | / | / | 0.30-0.42 | 21 |
| 510x-ISO-F | 2 MN | 150 | 128 | 120 | 165 | 7 | 430 | 600 | 6 | M110x4 | / | / | 0.35-0.65 | 33 |
| 510x-ISO-G | 2 - 3 MN | 150 | 128 | 120 | 165 | 7 | 430 | 600 | 6 | M125x4 | / | / | 0.35-0.65 | 38 |
| 510x-ISO-H | 5 MN | 180 | 162 | 158 | 180 | 8 | 520 | 800 | 6 | M160x6 | / | / | 0.73 | 87 |
| 510x-ISO-I | 7.5 - 10 MN | 220 | 205 | 175 | 200 | 10 | 590 | 1000 | 6 | M200x6 | / | / | 0.83 | 151 |
| 510x-ISO-J | 10 MN | 270 | 279 | 254 | 237 | 25.4x30° | 795 | 1000 | 6 | Stub Acme 9"-1" | / | / | 1.23 | 270 |
| 510x-ISO-K | 15 MN | 280 | 250 | 230 | 230 | 10 | 710 | 1200 | 12 | M250x6 | / | / | 1 | 280 |
| 510x-ISO-L | 20 MN | 360 | 380 | 340 | 320 | 36x30° | 1080 | 1500 | 12 | TR 330x24 | / | / | 1.7 | 700 |
| 510x-ISO-M | 30 MN | 450 | 460 | 460 | 540 | 36x30° | 1460 | 2000 | 12 | TR 400x24 | / | / | 2.26 | 1420 |
| - | 40 - 50 MN | According to customer's design specification. | | | | | | | | | | | | |

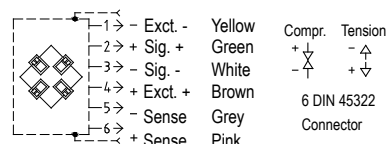
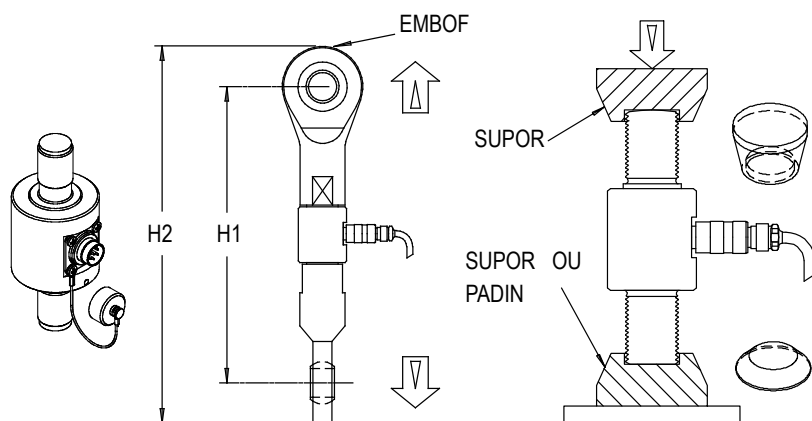
*x=Material: 5100-ISO - stainless steel; 5105-ISO - nickel-plated steel

→ Other capacities and dimensions available on request

Dimensions in mm

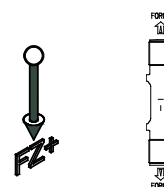
Accessories

Wiring

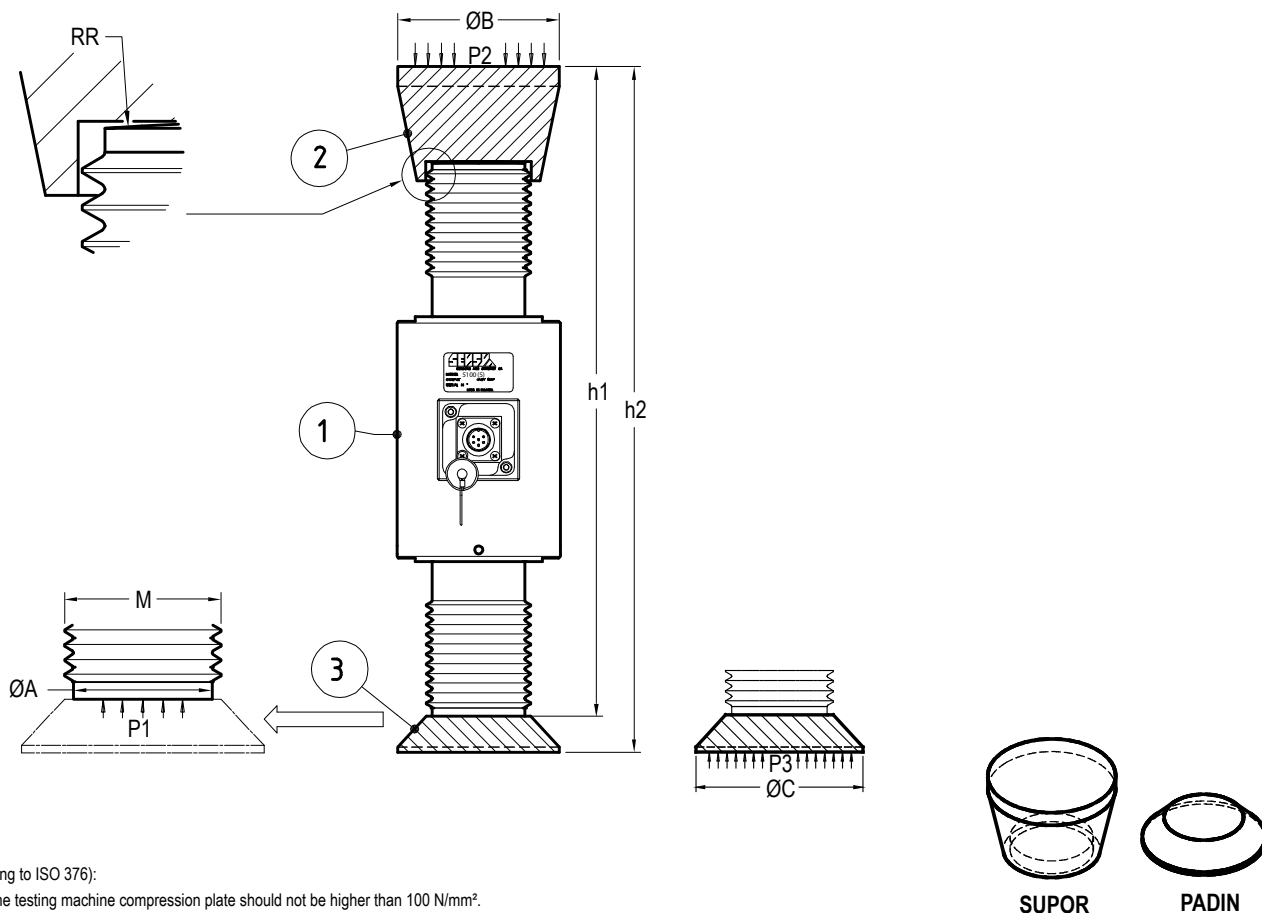


Standard: Cable screen not connected to the transducer

Load direction



5105-ISO > CHOICE OF LOADING PADS



Principles (according to ISO 376):

The pressure on the testing machine compression plate should not be higher than 100 N/mm².

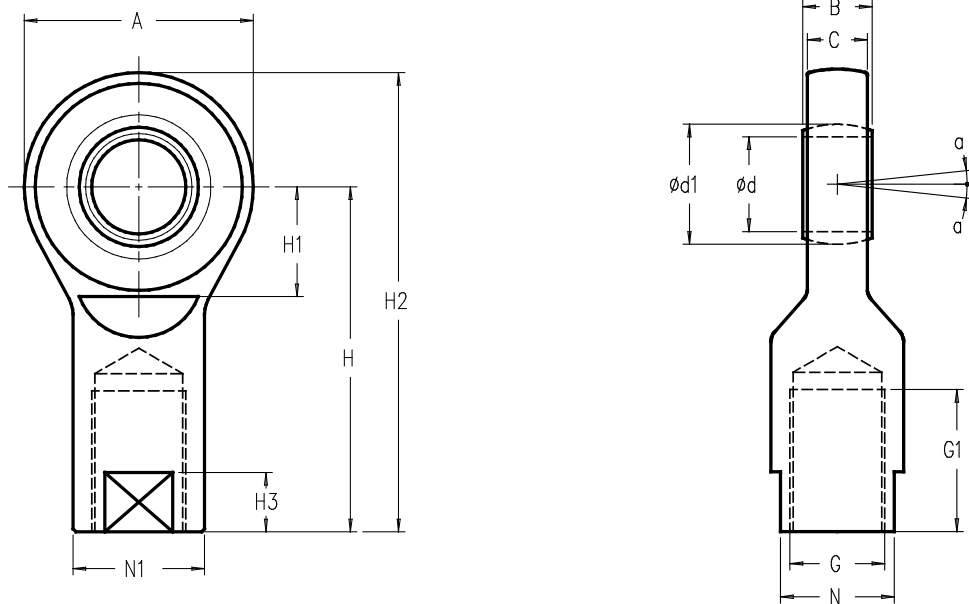
If necessary intermediate plates "PADIN"(3) should be chosen and installed.

| Ref. Item | Capacities ① | M | ØA | Section ØA mm ² | Pressure P1 N/mm ² | ØB | Section ØB mm ² | Pressure P2 N/mm ² | ØC | Section ØC mm ² | Pressure P3 N/mm ² | h1 | h2 | Total Weight (kg) | ACCESSORIES | |
|------------|-----------------|----------|------|----------------------------------|-------------------------------------|-----|----------------------------------|-------------------------------------|-----|----------------------------------|-------------------------------------|------|------|-------------------------|---|------------|
| | | | | | | | | | | | | | | | SUPOR ② | PADIN ③ |
| 510x-ISO-C | 200 kN | 45x3 | 41.8 | 1372 | 146 | 79 | 4902 | 41 | 79 | 4902 | 41 | 231 | 252 | 5.9 | SUPOR-45 | PADIN-45 |
| 510x-ISO-D | 300 kN | 64x4 | 59.7 | 2799 | 107 | 99 | 7698 | 39 | 99 | 7698 | 39 | 312 | 334 | 14 | SUPOR-64 | PADIN-64 |
| 510x-ISO-D | 500 kN | 64x4 | 59.7 | 2799 | 179 | 99 | 7698 | 65 | 99 | 7698 | 65 | 312 | 334 | 14 | SUPOR-64 | PADIN-64 |
| 510x-ISO-D | 0.75 MN | 64x4 | 59.7 | 2799 | 268 | 99 | 7698 | 97 | 99 | 7698 | 97 | 387 | 409 | 25 | SUPOR-64 | PADIN-64 |
| 510x-ISO-E | 0.75 MN | 90x4 | 85.7 | 5768 | 130 | 129 | 13070 | 57 | 129 | 13070 | 57 | 402 | 427 | 30 | SUPOR-90 | PADIN-100A |
| 510x-ISO-E | 1 MN | 90x4 | 85.7 | 5768 | 173 | 129 | 13070 | 77 | 129 | 13070 | 77 | 402 | 427 | 30 | SUPOR-90 | PADIN-100A |
| 510x-ISO-E | 1.5 MN | 90x4 | 85.7 | 5768 | 260 | 129 | 13070 | 115 | 129 | 13070 | 115 | 402 | 427 | 30 | SUPOR-90 | PADIN-100A |
| 510x-ISO-F | 2 MN | 110x4 | 105 | 8775 | 228 | 195 | 29865 | 67 | 195 | 29865 | 67 | 520 | 571 | 46 | SUPOR-110 | PADIN-110E |
| 510x-ISO-F | 3 MN | 110x4 | 105 | 8775 | 341 | 195 | 29865 | 101 | 195 | 29865 | 101 | 520 | 571 | 46 | SUPOR-110 | PADIN-110E |
| 510x-ISO-G | 2 MN | 125x4 | 121 | 11442 | 175 | 158 | 19607 | 102 | 158 | 19607 | 102 | 505 | 530 | 53 | SUPOR-125A | PADIN-125A |
| 510x-ISO-G | 3 MN | 125x4 | 121 | 11442 | 262 | 195 | 29865 | 101 | 195 | 29865 | 101 | 520 | 565 | 66 | SUPOR-125B | PADIN-125B |
| 510x-ISO-H | 5 MN | 160x6 | 154 | 18506 | 270 | 248 | 48305 | 104 | 248 | 48305 | 104 | 646 | 706 | 105 | SUPOR-160 | PADIN-160 |
| 510x-ISO-I | 7.5 MN | 200x6 | 194 | 29407 | 255 | 308 | 74506 | 101 | 308 | 74506 | 101 | 745 | 812 | 257 | SUPOR-200A | PADIN-200A |
| 510x-ISO-I | 10 MN | 200x6 | 194 | 29407 | 340 | 353 | 97868 | 102 | 353 | 97868 | 102 | 770 | 860 | 307 | SUPOR-200B | PADIN-200B |
| 510x-ISO-J | 10 MN | Acme 9" | 199 | 31187 | 321 | 353 | 97868 | 102 | 353 | 97868 | 102 | 972 | 1052 | 438 | SUPOR-230 | PADIN-230 |
| 510x-ISO-K | 15 MN | 250x6 | 244 | 46568 | 322 | 438 | 150674 | 100 | 438 | 150674 | 100 | 930 | 1010 | 559 | SUPOR-250A | PADIN-250 |
| 510x-ISO-L | 20 MN | TR330x24 | 288 | 65339 | 306 | 503 | 198713 | 102 | 503 | 198713 | 102 | 1332 | 1447 | 1171 | SUPOR-330A | PADIN-330A |
| 510x-ISO-M | 30 MN | TR400x24 | 358 | 100902 | 297 | 594 | 277117 | 109 | 594 | 277117 | 109 | 1757 | 1877 | 2216 | SUPOR-400A | PADIN-400A |
| | 40 - 50 MN | | | | | | | | | | | | | | According to customer's design specifications | |

→ Other capacities and dimensions available on request

Dimensions in mm

EMBOF > STANDARD DIMENSIONS



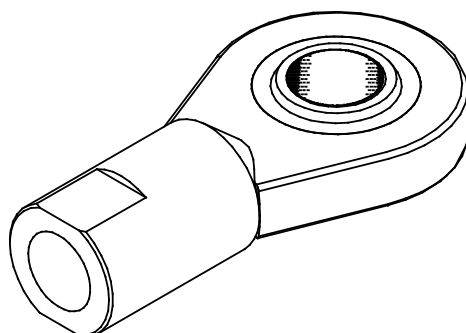
| Ref. Item* | Dimension G | Capacities (N) | | Ød | A | B | C | H | a (degree) | Ød1 | G1 | H1 | H2 | H3 | N | N1 | Weight (kg) |
|------------------|-------------|----------------|--------|----|-----|----|-----|-----|------------|------|----|------|-------|----|-----|----|-------------|
| | | Dynamic | Static | | | | | | | | | | | | | | |
| EMBOF-M6-BA | M6 | 3600 | 9000 | 6 | 21 | 6 | 4.3 | 30 | 13 | 10 | 11 | 10.5 | 40.5 | 8 | 9 | 11 | 0.017 |
| EMBOF-M8-BA | M8 | 5850 | 14600 | 8 | 24 | 8 | 6 | 36 | 15 | 13 | 15 | 12 | 48 | 10 | 11 | 13 | 0.034 |
| EMBOF-M10-BA | M10 | 8560 | 21600 | 10 | 29 | 9 | 7 | 43 | 12 | 16 | 15 | 14 | 57.5 | 11 | 14 | 16 | 0.060 |
| EMBOF-M12-BA | M12 | 11400 | 28500 | 12 | 34 | 10 | 8 | 50 | 10 | 18 | 18 | 17.5 | 67 | 12 | 17 | 19 | 0.095 |
| EMBOF-M16-BA | M16 | 22400 | 52000 | 17 | 46 | 14 | 11 | 67 | 10 | 25 | 24 | 23 | 90 | 15 | 22 | 25 | 0.23 |
| EMBOF-M24x2-BA | M24x2 | 51000 | 102000 | 25 | 64 | 20 | 17 | 94 | 7 | 35.5 | 36 | 32 | 126 | 18 | 30 | 35 | 0.62 |
| EMBOF-M30x2-BA | M30x2 | 65500 | 134000 | 30 | 73 | 22 | 19 | 110 | 6 | 40.7 | 45 | 35 | 146.5 | 19 | 36 | 42 | 0.97 |
| EMBOF-M36x3-PTFE | M36x3 | 112000 | 143000 | 35 | 82 | 25 | 21 | 125 | 6 | 47 | 60 | 42 | 166 | 15 | 50 | 47 | 1.4 |
| EMBOF-M45x3-PTFE | M45x3 | 220000 | 280000 | 50 | 112 | 35 | 30 | 160 | 6 | 66 | 68 | 60 | 216 | 20 | 65 | 62 | 3.55 |
| EMBOF-M56x4-PTFE | M56x4 | 440000 | 630000 | 70 | 160 | 49 | 42 | 200 | 6 | 92 | 80 | 84 | 280 | 20 | 85 | 80 | 8.3 |
| EMBOF-M64x4-PTFE | M64x4 | 570000 | 780000 | 80 | 180 | 55 | 47 | 230 | 6 | 105 | 85 | 100 | 320 | 25 | 100 | 95 | 13 |

* Material: BA - bronze auto-lubricated; PTFE - polytetrafluoroethylene

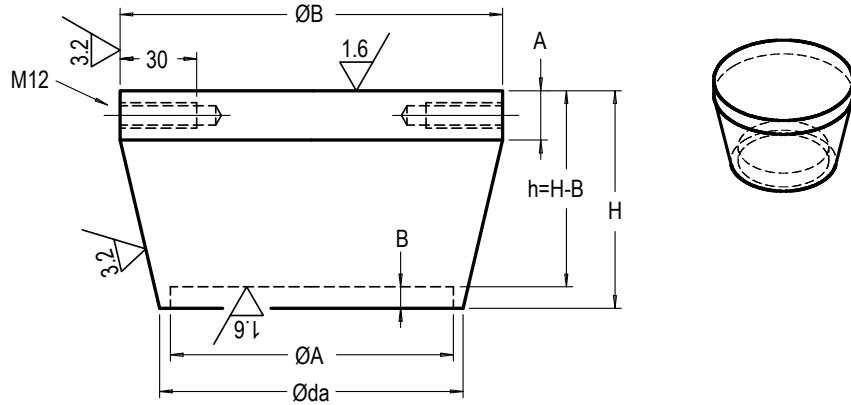
→ Other capacities and dimensions available on request

Dimensions in mm

Other view



↳ SUPOR > STANDARD DIMENSIONS

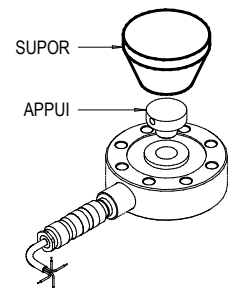
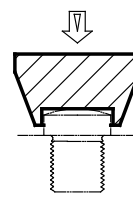
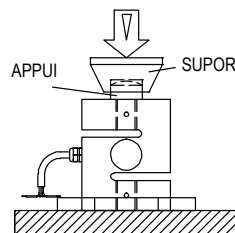
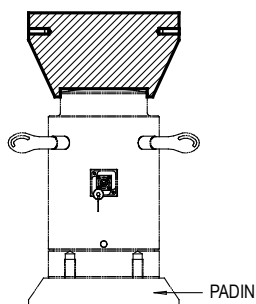
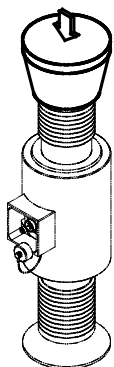


| Ref. Item | Types | ØA | ØB | Øda | A | B | H | h | M12 L=30 (degree) | Weight (kg) |
|------------|-------|-----|-----|------|------|----|-------|-------|-------------------|-------------|
| SUPOR-12 | 12 | 12 | 34 | 20 | 7 | 4 | 23 | 19 | NO | 0.12 |
| SUPOR-20 | 20 | 20 | 49 | 30 | 8 | 5 | 31 | 26 | NO | 0.33 |
| SUPOR-24 | 24 | 24 | 59 | 35 | 9 | 6 | 36 | 30 | NO | 0.55 |
| SUPOR-30 | 30 | 30 | 64 | 40 | 9 | 6 | 41 | 35 | NO | 0.74 |
| SUPOR-36 | 36 | 36 | 69 | 46 | 10 | 7 | 46 | 39 | NO | 0.98 |
| SUPOR-45 | 45 | 45 | 79 | 56 | 11 | 12 | 53 | 41 | NO | 1.5 |
| SUPOR-56 | 56 | 56 | 79 | 66 | 12 | 8 | 48 | 40 | NO | 1.5 |
| SUPOR-64 | 64 | 64 | 99 | 75 | 12 | 17 | 64 | 47 | NO | 2.8 |
| SUPOR-64E | 64E | 64 | 114 | 75 | 12 | 17 | 75 | 58 | NO | 4.14 |
| SUPOR-69 | 69 | 69 | 79 | 75 | 12 | 12 | 52 | 40 | NO | 1.6 |
| SUPOR-90 | 90 | 90 | 129 | 100 | 15 | 17 | 79 | 62 | NO | 6 |
| SUPOR-90B | 90B | 90 | 164 | 100 | 15 | 17 | 109 | 92 | NO | 12.2 |
| SUPOR-110 | 110 | 110 | 195 | 135 | 20 | 19 | 109 | 90 | 2x to 180 | 18.7 |
| SUPOR-125A | 125A | 125 | 158 | 135 | 20 | 19 | 94 | 75 | 2x to 180 | 11.3 |
| SUPOR-125B | 125B | 125 | 195 | 135 | 20 | 19 | 109 | 90 | 2x to 180 | 18.3 |
| SUPOR-160 | 160 | 160 | 248 | ±170 | 30 | 20 | 146 | 126 | 2x to 180 | 40 |
| SUPOR-200A | 200A | 200 | 308 | ±210 | 30 | 20 | 175 | 155 | 2x to 180 | 73 |
| SUPOR-200B | 200B | 200 | 353 | ±210 | 30 | 20 | 200 | 180 | 4x to 90 | 103 |
| SUPOR-230 | 230 | 230 | 353 | ±270 | 50 | 35 | 211.5 | 176.5 | 4x to 90 | 125 |
| SUPOR-250A | 250A | 250 | 438 | ±290 | 40 | 30 | 250 | 220 | 6x to 60 | 209 |
| SUPOR-250B | 250B | 250 | 503 | ±290 | 40 | 30 | 285 | 255 | 6x to 60 | 294 |
| SUPOR-300A | 300A | 300 | 594 | ±340 | 50 | 40 | 337 | 297 | 6x to 60 | 481 |
| SUPOR-330A | 330A | 330 | 503 | ±370 | 50 | 50 | 301.5 | 251.5 | 6x to 60 | 341 |
| SUPOR-360A | 360A | 360 | 694 | ±401 | 100 | 50 | 397 | 347 | 6x M24 / 360 | 818 |
| SUPOR-400A | 400A | 400 | 594 | ±440 | 50 | 55 | 352 | 297 | 6x to 60 | 555 |
| SUPOR-430A | 430A | 430 | 795 | ±470 | ±100 | 50 | 448 | 398 | 6x M30 / 360 | 1209 |

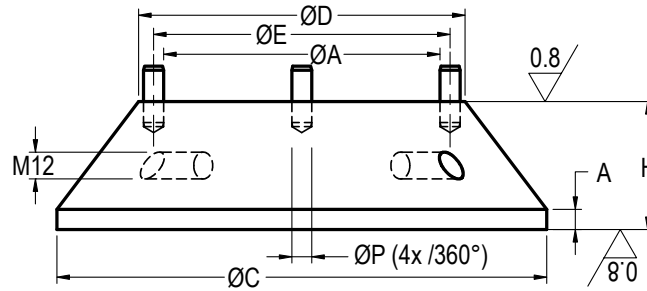
→ Other capacities and dimensions available on request

Dimensions in mm

Other views



↳ PADIN > STANDARD DIMENSIONS



| Ref. Item | Types | ØA | ØC | ØD | ØE | ØP | A | H | M12 | Weight (kg) |
|-------------|-------|-----|-----|-----|-----|----|----|-----|---------------|-------------|
| PADIN-24 | 24 | 25 | 59 | 36 | 29 | 4 | 3 | 22 | / | 0.34 |
| PADIN-30 | 30 | 31 | 64 | 40 | 35 | 4 | 3 | 22 | / | 0.4 |
| PADIN-42 | 42 | 43 | 74 | 52 | 47 | 4 | 3 | 20 | / | 0.53 |
| PADIN-45 | 45 | 46 | 79 | 56 | 50 | 4 | 3 | 21 | / | 0.64 |
| PADIN-64 | 64 | 65 | 99 | 75 | 69 | 4 | 3 | 22 | / | 1.1 |
| PADIN-64E | 64E | 65 | 129 | 75 | 69 | 4 | 4 | 25 | / | 1.8 |
| PADIN-100A | 100A | 91 | 129 | 110 | 95 | 4 | 4 | 25 | / | 2.3 |
| PADIN-100B | 100B | 100 | 129 | 110 | 104 | 4 | 4 | 25 | / | 2.3 |
| PADIN-110E | 110E | 111 | 195 | 130 | 119 | 8 | 8 | 51 | 2x/360° | 9.4 |
| PADIN-125AA | 125AA | 120 | 158 | 144 | 128 | 8 | 6 | 25 | / | 3.7 |
| PADIN-125AB | 125AB | 126 | 158 | 144 | 134 | 8 | 6 | 25 | / | 3.7 |
| PADIN-125B | 125B | 126 | 195 | 150 | 134 | 8 | 8 | 45 | 2x/360° | 9 |
| PADIN-160 | 160 | 162 | 248 | 180 | 170 | 8 | 11 | 60 | 2x/360° | 18.6 |
| PADIN-200A | 200A | 202 | 308 | 235 | 214 | 12 | 12 | 67 | 2x/360° | 32.9 |
| PADIN-200B | 200B | 202 | 353 | 235 | 214 | 12 | 12 | 90 | 4x/360° | 52.5 |
| PADIN-210 | 210 | 207 | 248 | 225 | 215 | 8 | 6 | 30 | 2x/360° | 11 |
| PADIN-230 | 230 | 232 | 353 | 262 | 244 | 12 | 8 | 80 | 2x/360° | 50 |
| PADIN-250 | 250 | 252 | 438 | 280 | 264 | 12 | 10 | 80 | 4x/360° | 69.75 |
| PADIN-300 | 300 | 296 | 353 | 325 | 308 | 12 | 6 | 35 | 2x/360° | 25.8 |
| PADIN-330 | 330 | 333 | 438 | 370 | 349 | 16 | 8 | 60 | 4x/360° | 62 |
| PADIN-330A | 330A | 333 | 503 | 370 | 349 | 16 | 8 | 115 | 4x/360° | 140 |
| PADIN-365 | 365 | 367 | 503 | 400 | 379 | 12 | 8 | 80 | 4x/360° | 105 |
| PADIN-400A | 400A | 403 | 594 | 448 | 423 | 20 | 8 | 120 | 4x/360° | 205 |
| PADIN-445 | 445 | 448 | 594 | 485 | 464 | 16 | 8 | 85 | 4x/360° | 156 |
| PADIN-495 | 495 | 501 | 694 | 548 | 521 | 20 | 8 | 110 | 4x/360° | 266 |
| PADIN-540 | 540 | 546 | 795 | 613 | 576 | 30 | 8 | 130 | 4x M16 / 360° | 405 |

→ Other capacities and dimensions available on request

Dimensions in mm

Other views

