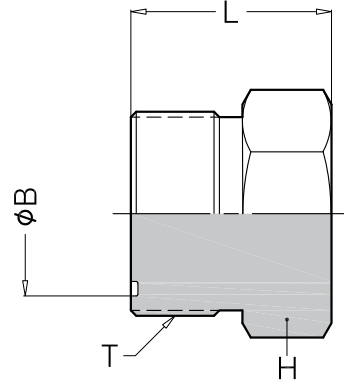
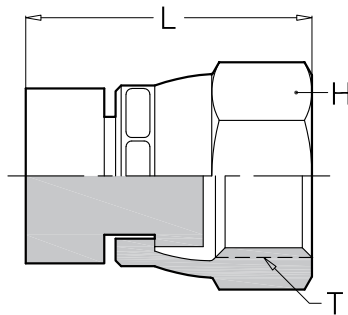


PLUG
JP



| Part No | T(UNF) | B | H | L |
|---------|---------|-------|----|------|
| JP 09J | 9/16 | 11 | 17 | 16.5 |
| JP 11J | 11/16 | 12.8 | 19 | 19 |
| JP 13J | 13/16 | 15.97 | 22 | 22 |
| JP 16J | 1" | 19.2 | 27 | 26 |
| JP 19J | 1 3/16 | 22.37 | 32 | 27.5 |
| JP 23J | 1 7/16 | 27.1 | 41 | 28 |
| JP 27J | 1 11/16 | 33.45 | 46 | 28 |
| JP 32J | 2" | 41.37 | 55 | 31.5 |

PLUG
QP



| Part No. | T (UNF) | H | L |
|----------|---------|----|----|
| QP 09J | 9/16 | 19 | 23 |
| QP 11J | 11/16 | 22 | 28 |
| QP 13J | 13/16 | 24 | 31 |
| QP 16J | 1 | 30 | 36 |
| QP 19J | 1 3/16 | 35 | 39 |
| QP 23J | 1 7/16 | 41 | 43 |
| QP 27J | 1 11/16 | 50 | 44 |
| QP 32J | 2 | 60 | 48 |



TUBE FITTING (DIN 2353, JIS)



Based Standard DIN 3851 SEKWANG HI-TECH. DIN fittings have been improved to comply with current standard requirements.

INFORMATION

General

Based Standard DIN 3851 SEKWANG HI-TECH. DIN fittings have been improved to comply with current standard requirements. They conform to installation standard DIN 2353 and all of their constituent parts are interchangeable with competitor products provided they comply to the basic standard requirements as applicable.

Our production facilities have many years of experience in the manufacture of precision products which in conjunction with stringent quality control from the starting material up to the finished component determines the quality of SEKWANG HI-TECH fittings.

Fitting materials

SEKWANG HI-TECH fittings are machined from drawn steel bar or steel forgings. Materials according to DIN 3859(technical specifications for tube fittings).

Nuts are either cold or hot pressed.

Fittings made of stainless steel.

X6CrNiMoTi17122 to DIN 17440, material No.1.4571, is also available for supply.

Caution!

The use of steel is permissible up to 120°C max. For any temperature higher than 120°C, use material 1.4571.

Pressure and temperature load Capability

Pressure specification are based on, given in our catalogue relate to steel fittings with a static load at a temperature up to 120°C and refer to

- Nominal pressure(PN) acc. to DIN 2401. The rated pressure has a safety factor of 4(DIN 3859)
- permissible working pressure (PB) of the operating pressure acc. to DIN 2401. The security factor for PB is 2,5 of 1,5 respectively.

Pressure Ranges

| Series | Steel | | 1.4571 (SS316) | |
|--------|-------|----------|----------------|----------|
| | Size | Pressure | Size | Pressure |
| LL | 4-12 | 100 bar | 4-8 | 100 bar |
| | 6-15 | 250 bar | 6-15 | 250 bar |
| L | 18-22 | 160 bar | 18-22 | 160 bar |
| | 28-42 | 100 bar | 28-42 | 100 bar |
| S | 6-14 | 630 bar | 6-14 | 630 bar |
| | 16-25 | 400 bar | 16-25 | 400 bar |
| | 30-38 | 250 bar | 30-38 | 250 bar |

Caution! For certain type of fittings the nominal pressure differ from those shown above, in which case the ratings indicated for the individual types should be observed!

Allowable working temperatures (TB)

A) For fittings materials

| Material | Temperature |
|-----------------|----------------------------------|
| Steel | - 40°C up to +120°C (DIN 3859) |
| Brass | - 60°C up to +175°C |
| Stainless Steel | - 60°C up to + 400°C (DIN 17440) |

Please refer to the information given in the section "Reduction of Pressure"

B) For seal-materials

| Material | Temperature |
|-------------------|---------------------|
| NBR(e.g.Perbunan) | - 35°C up to +100°C |
| FPM(e.g.Viton) | - 25°C up to +200°C |
| PTFE(e.g.Teflon) | - 60°C up to +240°C |

Caution!

If different fitting and sealing material are used, the lowest temperature as indicated for each material is applicable!

Pressure reduction with temperature

The following reduction of pressure compared with the catalogue specification for higher temperatures.

| Materials of fittings | Temperature range | Reduction of pressure |
|-----------------------|---------------------|-----------------------|
| Steel | - 40°C up to +120°C | - |
| Brass | - 60°C up to +175°C | 30% |
| 1.4571 | - 60°C up to +20°C | - |
| 1.4571 | - 60°C up to +50°C | 4% |
| 1.4571 | + 100°C | 11% |
| 1.4571 | + 200°C | 20% |
| 1.4571 | + 300°C | 29% |
| 1.4571 | + 400°C | 33% |

For different material of tubes and fittings. The tubes must be tested separately concerning the allowed temperature range and the necessary reduction of pressure.

Surface protection

All range fittings are zinc chromate plated.

All weldable fittings are phosphated.

Nikel-plated on request for carbon steel.

Fluids

SEKWANG HI-TECH DIN fittings are designed for the use of commercial hydraulic oils.

If special fluids please contact our application engineers.

Odering Information

Example 1. Tube to Tube Connection

HT - 12 S - S316
① ②③ ⑥

Example 3. Tube to Tube Port

HEW - 16 S - S316
① ②③ ⑥

Example 5. Banjo Fitting

HWH - 16 S - 04G - S316
① ②③ ④ ⑥

Example 2. Tube to Thread Connection

HMC - 10 L - 02G ED - S316
① ②③ ④⑤ ⑥

Example 4. Tube Port to Female Port

HMGE - 16 S - 04G ED - STEL
① ②③ ④⑤ ⑥

Example 6. Male / Female Adapter

MFAE - 04G - 04G - STEL
① ④ ⑥

- ① Name of Fitting : "Refer to Index"
- ② Tube O.D : See Tube O.D Designator
- ③ Series : See Series Designator
- ④ Thread Connection : See Thread Designator
- ⑤ Elastomer Seal : ED-Ring(Refer to seal materials)
- ⑥ Material : See Material Designator

Tube O.D Designator

| Tube O.D | 4mm | 6mm | 8mm | | 38mm | 42mm |
|------------|-----|-----|-----|-------|------|------|
| Identifier | 04 | 06 | 08 | | 38 | 42 |

Series Designator

| Series | Very Light | Light | Heavy |
|------------|------------|-------|-------|
| Identifier | LL | L | S |

Thread Designator(Pipe Thread)

| Name Size | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1 1/4" | 1 1/2" |
|------------------------------------|------|------|------|------|------|-----|--------|--------|
| ANSI / ASME B1.20.1 NPT | 02N | 04N | 06N | 08N | 12N | 16N | 20N | 24N |
| DIN-ISO228(DIN 259) BSP / Parallel | 02G | 04G | 06G | 08G | 12G | 16G | 20G | 24G |
| DIN-2999 BSP Tapered | 02R | 04R | 06R | 08R | 12R | 16R | 20R | 24R |

Thread Designator(Unified)

| Metric Size | M8X1.0 | M10X1.0 | M12X1.5 | M14X1.5 | | M27X2.0 | M33X2.0 | M42X2.0 | M48X2.0 |
|--------------------|--------|---------|---------|---------|-------|---------|---------|---------|---------|
| DIN 158 Taper(Keg) | M8K | M10K | M12K | M14K | | | | | |
| DIN-13 Parallel | M8 | M10 | M12 | M12 | | M27 | M33 | M42 | M48 |

Material Designator

| Size | 7/16-20UNF | 9/16-18UNF | 3/4-16UNF | 7/8-14UNF | 1 1/16-12UN | 1 5/16-12UN | 1 5/8-12UN |
|------------|------------|------------|-----------|-----------|-------------|-------------|------------|
| Identifier | 07U | 09U | 12U | 14U | 17U | 21U | 26U |

Material Designator

| Material | Carbon Steel (DIN 3859) | Stainless Steel | | Brass |
|------------|-------------------------|------------------|--------------------|-------|
| | | DIN 17440/1.4571 | ASTM A479 TYPE 316 | |
| Identifier | STEL | 4571 | S316/316L | BRAS |

INFORMATION

Tubing guide

• Seamless precision steel tube St 37.4

We recommend the use of seamless precision steel tubes with dimensions to DIN 2391, Part 1, Material St 37.4 to DIN 1630, type NBK. The following tube wall thickness are suitable for use :

| Tube O.D (D) | Tolerance | Wall* Thickness(t) | Weight | Design Pressure DIN 2413 | |
|--------------|-----------|--------------------|--------|--------------------------|-----|
| | | | | I | III |
| 4 | | 0.5 | 0.047 | 313 | 274 |
| 4 | ±0.08 | 0.75 | 0.060 | 409 | 391 |
| 4 | | 1 | 0.074 | 522 | 500 |
| 6 | | ●0.75 | 0.103 | 333 | 289 |
| 6 | ±0.08 | 1 | 0.123 | 389 | 372 |
| 6 | | 1.5 | 0.166 | 549 | 526 |
| 6 | | 2 | 0.197 | 692 | 662 |
| 6 | | 2.25 | 0.208 | 757 | 725 |
| 8 | | 1 | 0.173 | 333 | 288 |
| 8 | | ±0.08 | 1.5 | 0.240 | 431 |
| 8 | 2 | | 0.296 | 549 | 526 |
| 8 | 2.5 | | 0.339 | 658 | 630 |
| 10 | ±0.08 | 1 | 0.222 | 282 | 248 |
| 10 | | 1.5 | 0.314 | 373 | 357 |
| 10 | | 2 | 0.395 | 478 | 458 |
| 10 | | 2.5 | 0.462 | 576 | 551 |
| 10 | | 3 | 0.518 | 666 | 638 |
| 12 | | ●1 | 0.271 | 235 | 209 |
| 12 | ±0.08 | 1.5 | 0.389 | 353 | 303 |
| 12 | | 2 | 0.493 | 409 | 391 |
| 12 | | 2.5 | 0.586 | 495 | 474 |
| 12 | | 3 | 0.606 | 576 | 551 |
| 12 | | 3.5 | 0.734 | 651 | 624 |
| 15 | ±0.08 | ●1 | 0.345 | 188 | 171 |
| 15 | | 1.5 | 0.499 | 282 | 248 |
| 15 | | 2 | 0.641 | 336 | 321 |
| 15 | | 2.5 | 0.771 | 409 | 391 |
| 15 | | 3 | 0.888 | 478 | 458 |
| 16 | ±0.08 | ●1 | 0.370 | 176 | 160 |
| 16 | | 1.5 | 0.536 | 264 | 234 |
| 16 | | 2 | 0.691 | 353 | 303 |
| 16 | | 2.5 | 0.832 | 386 | 370 |
| 16 | | 3 | 0.962 | 452 | 433 |
| 18 | ±0.08 | ●1 | 0.419 | 157 | 143 |
| 18 | | 1.5 | 0.610 | 235 | 209 |
| 18 | | 2 | 0.789 | 313 | 273 |
| 18 | | 2.5 | 0.956 | 348 | 333 |
| 18 | | 3 | 1.110 | 409 | 391 |

| Tube O.D (D) | Tolerance | Wall* Thickness(t) | Weight | Design Pressure DIN 2413 | |
|--------------|-----------|--------------------|--------|--------------------------|-----|
| | | | | I | III |
| 20 | ±0.08 | ●1.5 | 0.684 | 212 | 191 |
| 20 | | 2 | 0.888 | 282 | 249 |
| 20 | | 2.5 | 1.08 | 353 | 303 |
| 20 | | 3 | 1.26 | 373 | 357 |
| 20 | | 3.5 | 1.424 | 426 | 408 |
| 20 | | 4 | 1.578 | 478 | 458 |
| 22 | ±0.08 | ●1 | 0.518 | 128 | 118 |
| 22 | | 1.5 | 0.758 | 192 | 174 |
| 22 | | 2 | 0.986 | 256 | 227 |
| 22 | | 2.5 | 1.202 | 320 | 278 |
| 22 | | 3 | 1.406 | 343 | 328 |
| 25 | | ±0.08 | 2 | 1.134 | 226 |
| 25 | 2.5 | | 1.387 | 282 | 248 |
| 25 | 3 | | 1.628 | 338 | 292 |
| 25 | 4 | | 2.072 | 394 | 378 |
| 25 | 4.5 | | 2.275 | 437 | 418 |
| 25 | 5 | | 2.466 | 478 | 458 |
| 28 | ±0.08 | 1.5 | 0.980 | 151 | 139 |
| 28 | | 2 | 1.282 | 201 | 181 |
| 28 | | 2.5 | 1.572 | 252 | 223 |
| 28 | | 3 | 1.850 | 302 | 264 |
| 28 | | 4 | 2.368 | 357 | 342 |
| 28 | | 5 | 2.836 | 434 | 415 |
| 30 | ±0.08 | ●2 | 1.381 | 188 | 171 |
| 30 | | 2.5 | 1.695 | 235 | 210 |
| 30 | | 3 | 2.00 | 282 | 248 |
| 30 | | 4 | 2.57 | 336 | 321 |
| 30 | | 5 | 3.08 | 409 | 391 |
| 35 | ±0.15 | 2 | 1.63 | 161 | 147 |
| 35 | | 2.5 | 2.00 | 201 | 181 |
| 35 | | 3 | 2.37 | 242 | 215 |
| 35 | | 4 | 3.06 | 322 | 280 |
| 35 | | 5 | 3.69 | 357 | 342 |
| 35 | | 6 | 4.29 | 419 | 401 |
| 38 | ±0.15 | ●2.5 | 2.189 | 186 | 168 |
| 38 | | 3 | 2.589 | 223 | 200 |
| 38 | | 4 | 3.35 | 297 | 260 |
| 38 | | 5 | 4.07 | 332 | 318 |
| 38 | | 6 | 4.74 | 390 | 373 |
| 38 | | 7 | 5.35 | 446 | 427 |
| 42 | ±0.2 | ●2 | 1.973 | 134 | 124 |
| 42 | | 3 | 2.89 | 201 | 181 |
| 42 | | 4 | 3.75 | 269 | 237 |

• Reinforce tube inserts are recommended where thin walled tubes are subject to severe strains.
* Permissible variation in wall thickness (DIN 2391)

• Calculation Pressure :

- Calculated pressure to DIN 2413 part I for primarily static load conditions.

- Yield point (K) : 235 N/mm² (to DIN 1630)

- Safety factor (s) : 1.5

- Allowance factor (c) $P = \frac{20 \cdot K \cdot t \cdot c}{S \cdot D}$ (bar)

- Calculation Pressure to DIN 2413 part III for dynamic load conditions

- Yield point (K) : 225 N/mm² (DIN 2413 4.2.8)

- Safety factor (s) : 1.5

$P = \frac{20 \cdot K \cdot t \cdot c}{S \cdot (D+t \cdot c)}$ (bar)

Factor for consideration of wall thickness divergence for static and dynamic stress

| Tube Range | 4mm / 5mm | 6mm / 8mm | Larger |
|------------|-----------|-----------|--------|
| Factor(c) | 0.8 | 0.85 | 0.9 |

• Note : For a diameter ratio of O.D / I.D > 1.35, calculation made to DIM 2413 part III and based on a pulsation fatigue limit of 235 N /mm²
• Temperature range : - 40°C to +120°C without reduction in pressure.

Seamless precision stainless steel 1.4571

• Stainless steel tubes (e.g. 1.4571), code X6CrNiMoTi 17122, must be cold-drawn and seamless, heat-treated without formation of scales, type m to DIN 17458, provide tolerance to DIN 2391, Part 1. The following tube wall thickness are suitable for use :

| Tube O.D (D) | Tolerance | Wall* Thickness(t) | Weight | Design Pressure DIN 2413 | |
|--------------|-----------|--------------------|--------|--------------------------|-----|
| | | | | I | III |
| 4 | ±0.08 | 0.75 | 0.061 | 391 | 376 |
| 4 | | 1 | 0.075 | 500 | 480 |
| 6 | | 1 | 0.125 | 372 | 357 |
| 6 | ±0.08 | 1.5 | 0.168 | 526 | 505 |
| 6 | | 2 | 0.200 | 662 | 637 |
| 6 | | 2.25 | 0.211 | 725 | 696 |
| 8 | ±0.08 | 1 | 0.175 | 347 | 277 |
| 8 | | 1.5 | 0.244 | 412 | 396 |
| 8 | | 2 | 0.300 | 526 | 505 |
| 8 | | 2.5 | 0.344 | 630 | 604 |
| 10 | ±0.08 | 1 | 0.225 | 294 | 238 |
| 10 | | 1.5 | 0.319 | 357 | 343 |
| 10 | | 2 | 0.401 | 458 | 439 |
| 10 | | 2.5 | 0.469 | 551 | 529 |
| 10 | | 3 | 0.525 | 638 | 612 |
| 12 | | ●1 | 0.275 | 245 | 201 |
| 12 | ±0.08 | 1.5 | 0.394 | 368 | 291 |
| 12 | | 2 | 0.501 | 391 | 376 |
| 12 | | 2.5 | 0.594 | 474 | 544 |
| 12 | | 3 | 0.615 | 551 | 529 |
| 12 | | 3.5 | 0.744 | 624 | 599 |
| 15 | ±0.08 | 1.5 | 0.507 | 294 | 238 |
| 15 | | 2 | 0.651 | 321 | 309 |
| 15 | | 2.5 | 0.782 | 391 | 376 |
| 15 | | 3 | 0.901 | 458 | 439 |
| 16 | | ±0.08 | 2 | 0.701 | 368 |
| 16 | 2.5 | | 0.845 | 370 | 355 |
| 16 | 3 | | 0.977 | 433 | 416 |
| 18 | ±0.08 | ●1.5 | 0.620 | 245 | 201 |
| 18 | | 2 | 0.801 | 327 | 262 |
| 18 | | 2.5 | 0.967 | 333 | 320 |
| 18 | | 3 | 1.126 | 391 | 376 |

• Reinforce tube inserts are recommended where thin-walled tubes are subject to severe strains.
* Permissible variation in wall thickness (DIN 2391)

• Calculation Pressure :

- Calculated Pressures to DIN 2413 part I for Primarily static load conditions

- Yield point (K) : 245 N/mm² (to DIN 17458)

- Safety factor (s) : 1.5

- Allowance factor (c) $P = \frac{20 \cdot K \cdot t \cdot c}{S \cdot D}$ (bar)

- Calculated pressure to DIN 2413 part III for dynamic load conditions

- Yield point (K) : 216 N/mm² (assumed value)

- Safety factor (s) : 1.5

$P = \frac{20 \cdot K \cdot t \cdot c}{S \cdot (D+t \cdot c)}$ (bar)

Factor for consideration of wall thickness divergence for static and dynamic stress

| Tube Range | 4mm / 5mm | 6mm / 8mm | Larger |
|------------|-----------|-----------|--------|
| Factor(c) | 0.8 | 0.85 | 0.9 |

• Note : For a diameter ratio of O.D / I.D > 1.35, calculation made to DIN 2413 part III and based on a pulsating fatigue limit of 225 N /mm²
• Temperature range : - 60°C to +400°C Reduction in pressure for higher temperatures (See page 1)

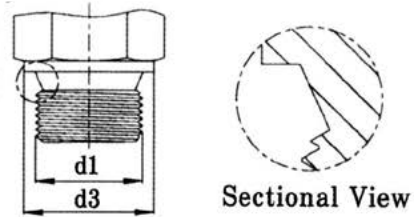
INFORMATION

Stud Ends & Tapped Hole Forms for tube Fittings

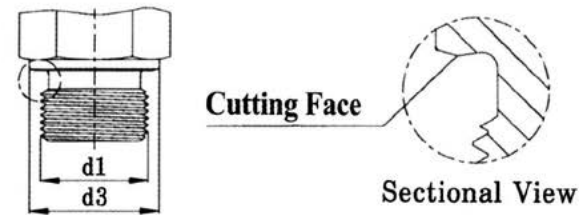
• This standard specifies dimensions for stud ends and tapped holes with metric fine pitch thread and pipe thread for use with compression fittings, valves and screw plugs, general outlay for types.

Forms of Stud Ends

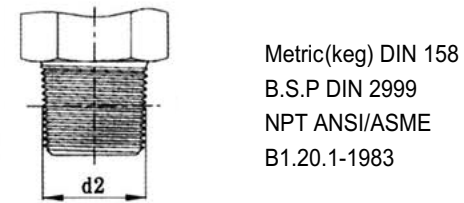
-Form A (DIN 3852 Part 1+2)with sealing by washer



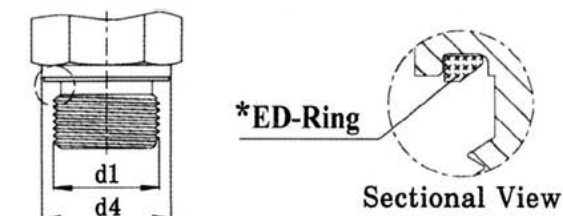
-Form B (DIN 3852 Part 1+2) with sealing by compression against face



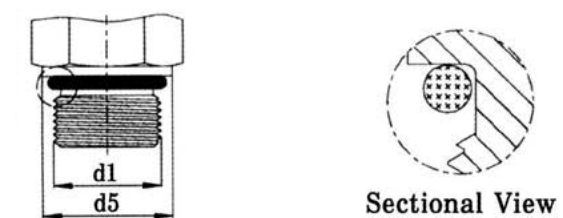
-Form C (DIN 3852 Part 1+2) with sealing in tapered thread



-Form E (DIN 3852 Part 11) with sealing by DIN 3852 ring seals (*ED-Ring)



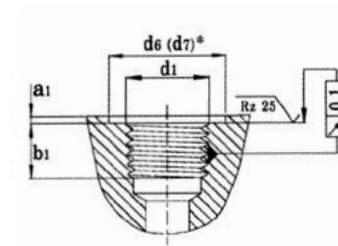
-Form F (DIN 3852 Part 3) with sealing by *O-Ring



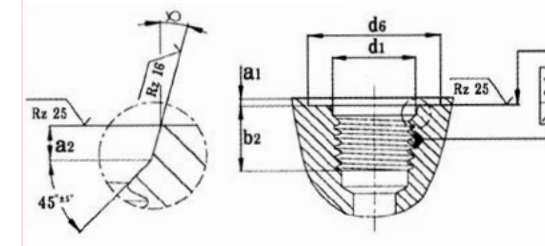
| Thread size for | | d3 | d4 ^{0.2} | d5 ^{±0.2} |
|----------------------------------|------------------------|----|-------------------|--------------------|
| Form A,B and E,F stud ends d1 | Form C stud ends d2 | | | |
| M8X 1.0 | M8X 1.0 Keg. | - | - | 10.9 |
| M10X1.0 | M10X1.0 Keg. | 14 | 13.9 | 12.9 |
| M12X1.5 | M12X1.5 Keg. | 17 | 16.9 | 16.9 |
| M14X1.5 | M14X1.5 Keg. | 19 | 18.9 | 18.9 |
| M16X1.5 | M16X1.5 Keg. | 21 | 20.9 | 20.9 |
| M18X1.5 | M18X1.5 Keg. | 23 | 22.9 | 22.9 |
| M20X1.5 | M20X1.5 Keg. | 25 | 24.9 | 24.9 |
| M22X1.5 | M22X1.5 Keg. | 27 | 26.9 | 26.9 |
| M26X1.5 | - | 31 | 30.9 | 30.9 |
| M27X2.0 | - | 32 | 31.9 | 31.9 |
| M33X2.0 | - | 39 | 37.9 | 37.9 |
| M42X2.0 | - | 49 | 47.9 | 47.9 |
| M48X2.0 | - | 55 | 54.9 | 54.9 |
| G 1/8 | 1/8 NPT | 14 | 13.9 | - |
| G 1/4 | 1/4 NPT | 18 | 18.9 | - |
| G 3/8 | 3/8 NPT | 22 | 21.9 | - |
| G 1/2 | 1/2 NPT | 26 | 26.9 | - |
| G 3/4 | 3/4 NPT | 32 | 31.9 | - |
| G 1 | 1 NPT | 39 | 39.9 | - |
| G 1 1/4 | 1 1/4 NPT | 49 | 49.9 | - |
| G 1 1/2 | 1 1/2 NPT | 55 | 54.9 | - |
| 7/16-20UNF | R 1/8 | - | - | 14.4 |
| 9/16-18UNF | R 1/4 | - | - | 17.6 |
| 3/4-160UNF | R 3/8 | - | - | 22.3 |
| 7/8-14UNF | R 1/2 | - | - | 25.5 |
| 1 1/16-12UNF | R 3/4 | - | - | 31.9 |
| 1 5/16-12UNF | R 1 | - | - | 38.2 |
| 1 5/8-12UNF | R 1 1/4 | - | - | 47.7 |
| - | R 1 1/2 | - | - | - |

Forms of Tapped Holes

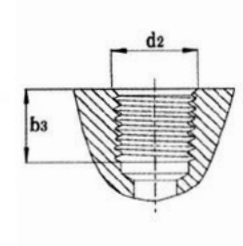
Form X (DIN 3852 Part 1+2) for parallel Stud Ends. (Form A,B)
*d7 is for Stud Ends Form E



Form W (DIN 3852 Part 3) for Stud Ends with O-Ring. (Form F)



Form Z (DIN 3852 Part 1+2) for tapered thread Stud Ends.



| Thread size for | | d6 min | d7 | d7 max | d2 ^{±0.4} | b1 min | b2 min | b3 min | α _{±1'} |
|-----------------------------|---------------------------|--------|----|--------|--------------------|--------|--------|--------|------------------|
| Form X,W Tapped Holes d1 | Form Z Tapped Holes d2 | | | | | | | | |
| M8 X 1.0 | M8 X 1.0 keg. | 13 | - | 1.0 | 1.6 | - | 10.0 | 5.5 | 12 |
| M10X1.0 | M10X1.0 keg. | 15 | 15 | 1.0 | 1.6 | 8 | 10.0 | 5.5 | 12 |
| M12X1.5 | M12X1.5 keg. | 18 | 18 | 1.5 | 2.4 | 12 | 11.5 | 8.5 | 12 |
| M14X1.5 | M14X1.5 keg. | 20 | 20 | 1.5 | 2.4 | 12 | 11.5 | 8.5 | 15 |
| M16X1.5 | M16X1.5 keg. | 22 | 23 | 1.5 | 2.4 | 12 | 13.0 | 8.5 | 15 |
| M18X1.5 | M18X1.5 keg. | 24 | 25 | 2.0 | 2.4 | 12 | 14.5 | 8.5 | 15 |
| M20X1.5 | M20X1.5 keg. | 26 | 27 | 2.0 | 2.4 | 14 | 14.0 | 10.5 | 15 |
| M22X1.5 | M22X1.5 keg. | 28 | 28 | 2.5 | 2.4 | 14 | 15.5 | 10.5 | 15 |
| M26X1.5 | - | 32 | 33 | 2.5 | 3.1 | 16 | 16.0 | - | 15 |
| M27X2.0 | - | 33 | 33 | 2.5 | 3.1 | 16 | 19.0 | - | 15 |
| M33X2.0 | - | 40 | 41 | 2.5 | 3.1 | 18 | 19.0 | - | 15 |
| M42X2.0 | - | 50 | 51 | 2.5 | 3.1 | 20 | 19.5 | - | 15 |
| M48X2.0 | - | 56 | 56 | 2.5 | 3.1 | 22 | 22.0 | - | 15 |
| G 1/8 | 1/8 NPT | 15 | 15 | 1.0 | - | 8 | - | 6.9 | - |
| G 1/4 | 1/4 NPT | 19 | 20 | 1.5 | - | 12 | - | 10.0 | - |
| G 3/8 | 3/8 NPT | 23 | 23 | 2.0 | - | 12 | - | 10.3 | - |
| G 1/2 | 1/2 NPT | 27 | 28 | 2.5 | - | 14 | - | 13.6 | - |
| G 3/4 | 3/4 NPT | 33 | 33 | 2.5 | - | 16 | - | 14.1 | - |
| G 1 | 1 NPT | 40 | 41 | 2.5 | - | 18 | - | 16.8 | - |
| G 1 1/4 | 1 1/4 NPT | 50 | 51 | 2.5 | - | 20 | - | 17.3 | - |
| G 1 1/2 | 1 1/2 NPT | 56 | 56 | 2.5 | - | 22 | - | 17.3 | - |
| 7/16-20UNF | R 1/8 | 21 | - | 1.6 | 2.4 | - | 11.5 | 5.5 | 12 |
| 9/16-18UNF | R 1/4 | 25 | - | 1.6 | 2.5 | - | 12.7 | 8.5 | 12 |
| 3/4-16UNF | R 3/8 | 30 | - | 2.4 | 2.5 | - | 14.3 | 8.5 | 15 |
| 7/8-140UNF | R 1/2 | 34 | - | 2.4 | 2.5 | - | 16.7 | 10.5 | 15 |
| 1 1/16-12UN | R 3/4 | 41 | - | 2.4 | 3.3 | - | 19.0 | 13.0 | 15 |
| 1 5/16-12UN | R 1 | 49 | - | 3.2 | 3.3 | - | 19.0 | 16.0 | 15 |
| 1 5/8-12UN | R11/4 | 58 | - | 3.2 | 3.3 | - | 19.0 | 17.0 | 15 |
| - | R11/2 | - | - | - | - | - | - | 17.0 | - |

*ED-Ring & O-Ring Seals made of NBR Standard(-20°C to 90°C) Available made of Viton Upon Request(-20°C to 200°C)

INFORMATION

Tightening Torques for Studs

- Recommend tightening torques MA
The table below shows Nm value for studs with metal seal, form B, DIN 3852 or with captive sealing (ED-Ring) to avoid leakings.
- Sealing of taper thread
Taper threads are not self-sealing. To achieve a leakproof seals, an additional sealant is necessary.
A well-established sealing-medium is a PTFE-tape (e.g.Teflon)
- Note :
The quoted figures relate to fitting out of steel(galvanized) and to counter parts face of steel.
For the Male / Female adapters (HFAD / HF AE), there apply the tightening torques for series "S"

| Series | Tube O.D | Pipe Thread | MA(Nm) | Metric Thread ISO | MA(Nm) |
|--------|----------|-------------|--------|-------------------|--------|
| L | 6 | G 1/8A | 25 | M10X1 | 25 |
| | 8 | G 1/4A | 50 | M12X1.5 | 30 |
| | 10 | G 1/4A | 50 | M14X1.5 | 50 |
| | 12 | G 3/8A | 80 | M16X1.5 | 80 |
| | 15 | G 1/2A | 160 | M18X1.5 | 90 |
| | 18 | G 1/2A | 105 | M22X1.5 | 160 |
| | 22 | G 3/4A | 220 | M26X1.5 | 285 |
| | 18 | G 1A | 370 | M33X2.0 | 425 |
| | 35 | G 1 1/4A | 600 | M42X2.0 | 600 |
| | 42 | G 1 1/2A | 800 | M48X2.0 | 800 |
| S | 6 | G 1/4A | 60 | M12X1.5 | 35 |
| | 8 | G 1/4A | 60 | M14X1.5 | 60 |
| | 10 | G 3/8A | 110 | M16X1.5 | 95 |
| | 12 | G 3/8A | 110 | M18X1.5 | 120 |
| | 14 | G 1/2A | 170 | M20X1.5 | 170 |
| | 16 | G 1/2A | 140 | M22X1.5 | 190 |
| | 20 | G 3/4A | 320 | M27X2.0 | 320 |
| | 25 | G 1A | 380 | M33X2.0 | 500 |
| | 30 | G 1 1/4A | 600 | M42X2.0 | 600 |
| | 38 | G 1 1/2A | 800 | M48X2.0 | 800 |

Assembly Instruction


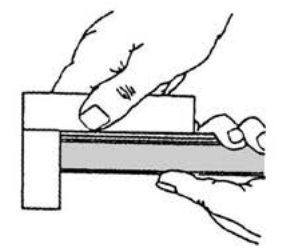
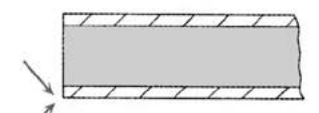
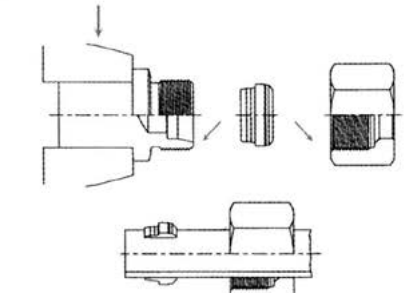
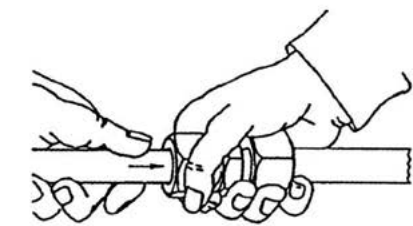
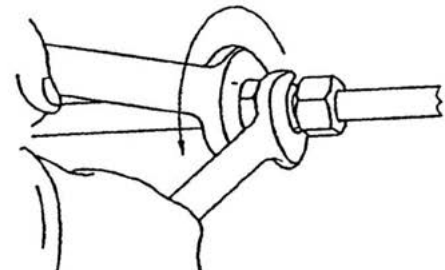
This assembly Instruction applicable to DIN 2353 fittings shows suitable make-up of fittings into seamless pipe in accordance with DIN 3859.

- The design including form A and B for DIN 3861
- Introducing how to install steel pipe of DIN 2391 part 1 and part 2.

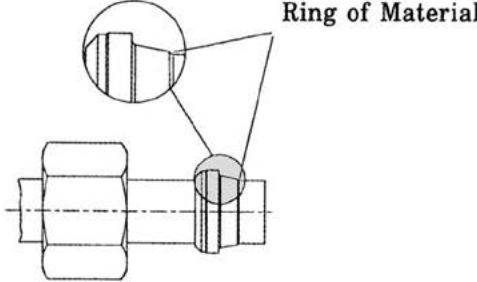
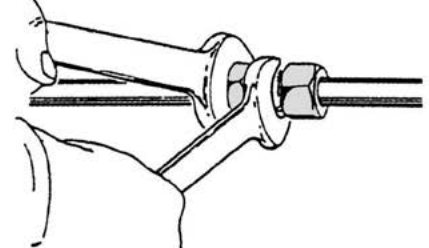
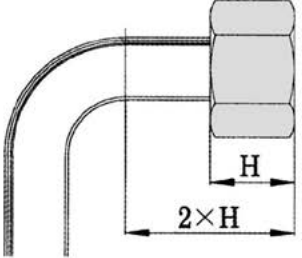
3 Methods might be employed for assembling -

- Assembly by direct fitting body.
- Assembly by using pre-assembly tool.
- Assembly of standpipe & cone fitting with O-ring

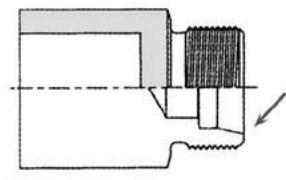
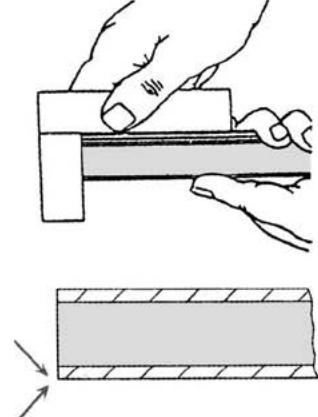
Assembly of cutting ring fittings in direct fitting body

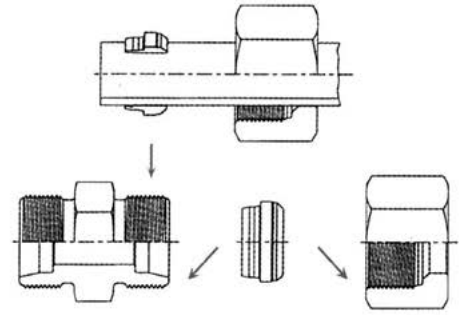
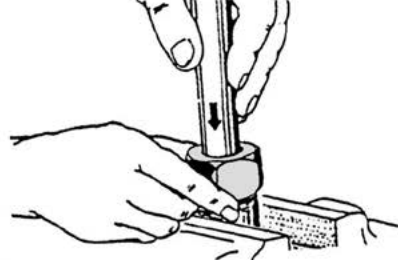
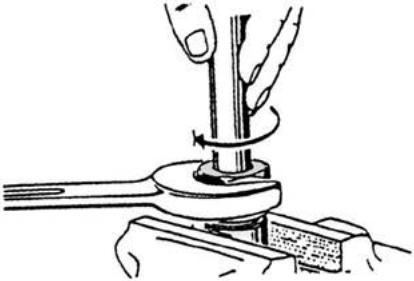
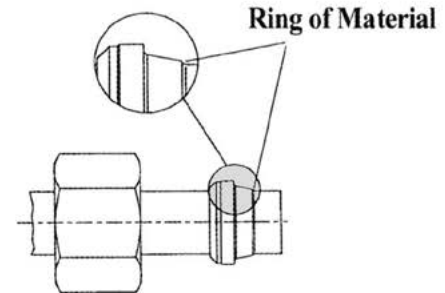
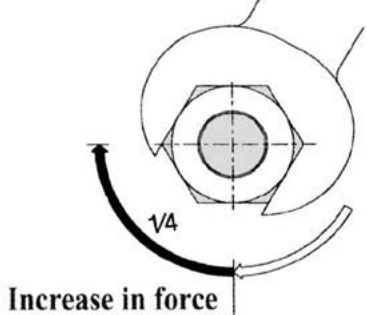
| | |
|--|---|
| <p>1.0 Saw the tube at right angle. An angular offset 1/2° in relation to the tube axis is permissible.</p> <p>1.1 After clean, lightly deburr tube ends at the inside and outside edge.</p> <p>1.2 Don't use a tube cutter because this cause formation of considerable burrs and an angular cut. Use sawing machine or device instead.</p>  |   |
| <p>2.0 Lubricate thread and inside of fitting body also cutting ring and thread of nut. Don't use grease.</p> <p>2.1 Place nut and cutting ring in tube as shown. Ensure cutting ring and nut are facing the right way.</p> |  |
| <p>3.0 Press tube into fitting body, up to tube abutment, then hand-tighten the nut.</p> |  |
| <p>4.0 make sure the nut is in hand tight position, then the 1 1/2 turns with wrench by holding fitting body with a second wrench.(Never turn fitting body,hold body and turn nut)</p> <p>Caution! Any deviating number of tightening turns reduces the nominal pressure and the service life of the fitting and may cause leakages or slipping of the tube.</p> |  |

Assembly Instruction

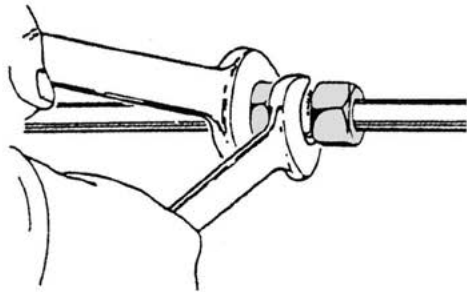
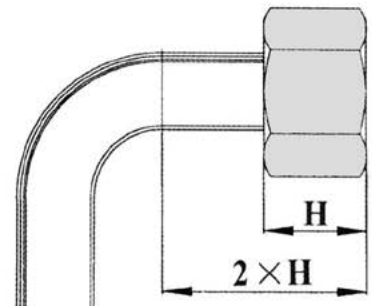
| | |
|---|---|
| <p>5.0 Check penetration of cutting edge. A visible ring of material should fill the space in front of the cutting ring and face. Cutting ring may turn on tube, but should not be capable of axial displacement.</p> |  |
| <p>6.0 Each time the fitting is disassembled, the nut must be retightened firmly using the same torque as required for final assembly.</p> |  |
| <p>7.0 Minimum length of straight tube and for tube bends, up to start of the bending radius must be at twice (2 X H) the nut length (H)</p> |  |

Assembly of cutting ring fittings in pre-assembly tool

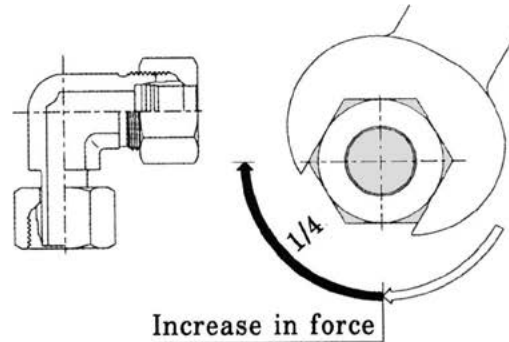
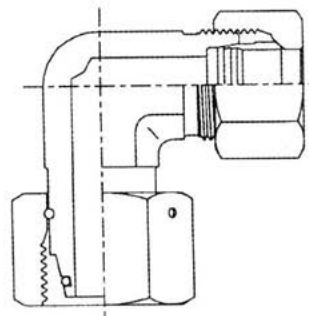
| | |
|---|--|
| <p>1.0 In order to ensure positive assembly HMIC DIN fitting should always be pre-assembly in on oiled pre-assembly tool. For direct assembly, torque-controlled assembly or mechanical pre-assembly, which are also possible. Please refer to separate assembly instructions.</p> |  |
| <p>2.0 Saw the tube at right angle. An angular offset 1/2° in relation to the tube axis is permissible. 2.1 After clean, lightly sebur tube ends at the inside and outside edge. 2.2 Don't use a tube cutter because this would cause formation of considerable burrs and an angular cut. Use sawing machine or device instead.</p> |  |

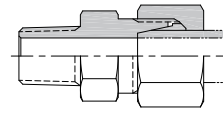
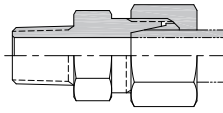
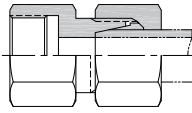
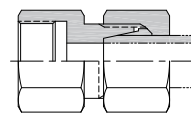
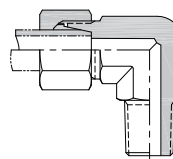
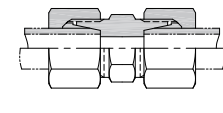
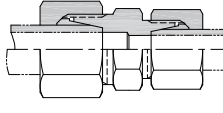
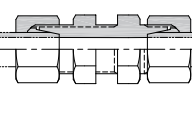
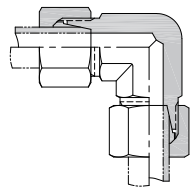
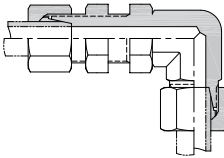
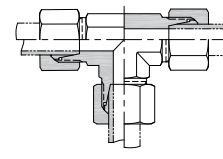
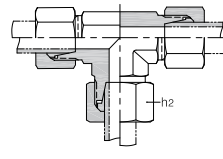
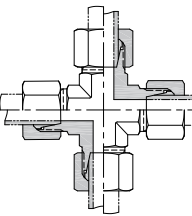
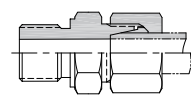
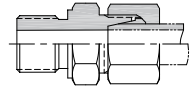
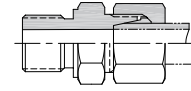
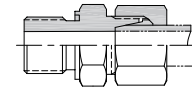
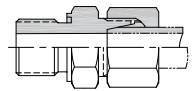
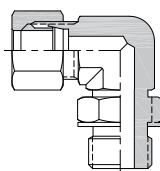
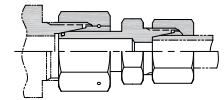
| | |
|---|---|
| <p>3.0 Lubricate thread and inside of fittings body also ring and thread of nut. Don't use grease. 3.1 Place nut and cutting ring on tube as shown. Ensure cutting ring and nut are facing the right way.</p> |  |
| <p>4.0 Press tube into fitting body, up to tube abutment, then hand-tighten the nut.</p> |  |
| <p>5.0 Make sure the nut is hand tight position, then the 1 1/4 turns with wrench by holding fitting body with a second wrench (Never turn fitting body, hold body and turn nut)</p> <p>Caution ! Application of deviating numbers of tightening turns reduce the nominal pressure rating and the life of the fitting which cause leakage or slipping of the tube.</p> |  |
| <p>6.0 Check penetration of cutting edge. A visible ring of material should fill the space in front of the cutting ring and face. Cutting ring may turn on tube but should not be capable of axial displacement.</p> |  |
| <p>7.0 Tighten nut until a noticeable increase in force is required. Beyond this point, tighten the nut by 1/4 turn with wrench for final assembly. Hold fitting body by means of a wrench. 7.1 With unfavorable mounting conditions and great tube dimensions, final assembly must be completed in via with the fitting body.</p> <p>Caution! Any deviating number of tightening turns reduces the nominal pressure and the service life of the fitting and may cause leakages or slipping off the fitting.</p> |  |

Assembly Instruction

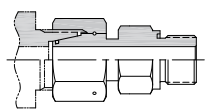
| | |
|---|--|
| <p>8.0 Each time the fitting is disassembled, the nut must retightened firmly using the same torque as required for final assembly.</p> |  |
| <p>9.0 Minimum length of straight tube and for tube bends, up to start of the bending radius must be at least twice(2XH)the nut length(H)</p> |  |

Assembly Instruction for standpipe & cone fitting with O-Ring

| | |
|--|--|
| <p>1.0 Standpipes are generally supplied with pre-assembled cutting ring. Tighten the nut 1/4 turn with wrench beyond the point of a noticeable increase in force. Hold fitting body firmly by means of wrench.</p> <p>1.1 With unfavorable mounting conditions and great tube dimensions, final assembly must be completed in a vice with the fitting body to be subsequently installed.</p> <p>Caution! Any deviating number of tightening turns reduces the nominal pressure and the service life of the fitting and may cause leakages or slipping off the fitting.</p> |  |
| <p>2.0 Oil O-Ring Tighten nut 1/4 of a turn beyond the point of a noticeable increase in force. Hold fitting body firmly by means of wrench.</p> <p>2.1 With unfavorable mounting conditions and great tube dimensions, final assembly must be completed in a vice with the fitting body to be subsequently installed.</p> <p>Caution! Any deviating number of tightening turns reduces the nominal pressure and the service life of the fitting and may cause leakages or slipping off the fitting.</p> |  |

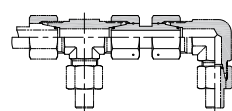
| | | | | |
|--|--|--|--|--|
| <p>HMC-R</p>  <p>P.198</p> | <p>HMC-N</p>  <p>P.199</p> | <p>HFC-G</p>  <p>P.200</p> | <p>HFC-M</p>  <p>P.201</p> | <p>HLM-R/M</p>  <p>P.202</p> |
| <p>HU</p>  <p>P.203</p> | <p>HUR</p>  <p>P.204</p> | <p>HBU</p>  <p>P.205</p> | <p>HL</p>  <p>P.206</p> | <p>HBL</p>  <p>P.207</p> |
| <p>HT</p>  <p>P.208</p> | <p>HTR</p>  <p>P.209-210</p> | <p>HC</p>  <p>P.211</p> | <p>HOM-G</p>  <p>P.212-213</p> | <p>HOM-U</p>  <p>P.214</p> |
| <p>HOM-M</p>  <p>P.215</p> | <p>HOM-GED</p>  <p>P.216</p> | <p>HOM-MED</p>  <p>P.217</p> | <p>HOLM</p>  <p>P.218</p> | <p>HRED</p>  <p>P.219</p> |

HEGE-G/M



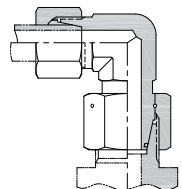
P.220-221

HUE



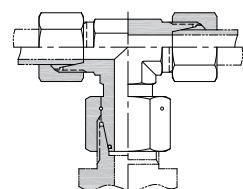
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HEW



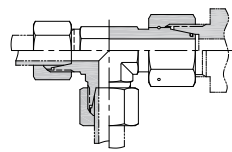
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HET



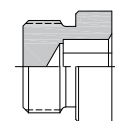
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HEL



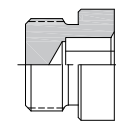
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HVSTI-GED/MED



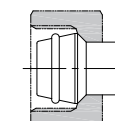
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HVSTI



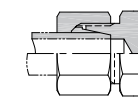
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HVKA



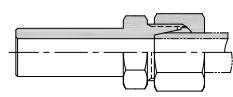
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HCA



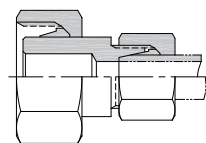
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HR



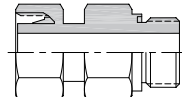
P.226

HKOR



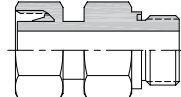
P.227-228

HA-GED



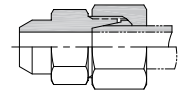
P.229

HA-MED



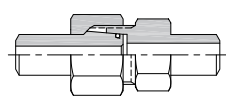
P.230

HAS



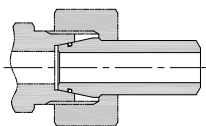
P.231

HASK



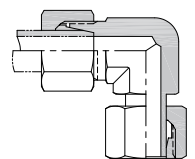
P.231

HAK



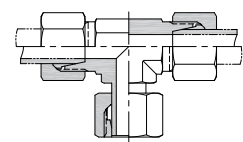
P.232

HLA



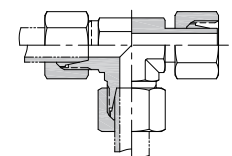
P.233

HBTA



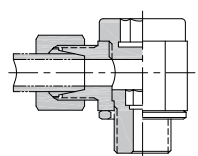
P.234

HRTA



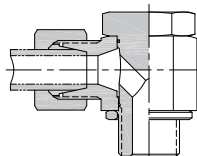
P.235

HSWVE-G/M



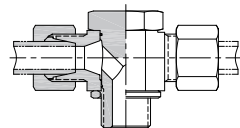
P.236-237

HWH-G/M



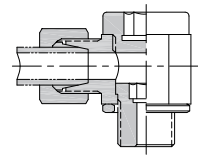
P.238-239

HTH-G/M



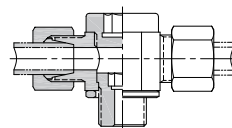
P.240-241

HSVW-G/M



P.242

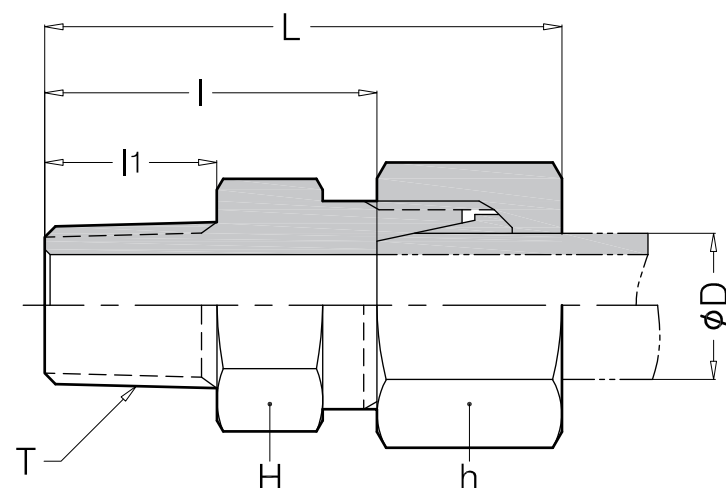
HSVT-G/M



P.243-244

MALE CONNECTOR (BSP TAPERED)

HMC-R

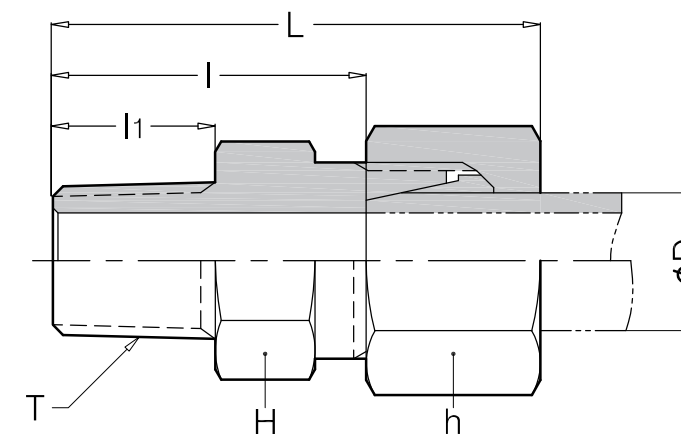


| Series | Part No. | Tube O.D. | H | h | L | l | l ₁ | T (BSPT) |
|----------------------------|--------------|-----------|----|----|----|------|----------------|-------------|
| | | D | | | | | | |
| LL very light PN 100 | HMC 04LL-02R | 4 | 12 | 10 | 26 | 16 | 8 | 1/8 |
| | HMC 06LL-02R | 6 | 12 | 12 | 26 | 14.5 | 8 | 1/8 |
| | HMC 08LL-02R | 8 | 12 | 14 | 28 | 16.5 | 8 | 1/8 |
| | HMC 08LL-04R | 8 | 14 | 14 | 32 | 20.5 | 12 | 1/4 |
| | HMC 10LL-04R | 10 | 14 | 17 | 32 | 20.5 | 12 | 1/4 |
| | HMC 12LL-04R | 12 | 17 | 19 | 32 | 20 | 12 | 1/4 |
| | HMC 12LL-06R | 12 | 17 | 19 | 32 | 20 | 12 | 3/8 |
| L light PN 250 | HMC 06L -02R | 6 | 12 | 14 | 30 | 15 | 8 | 1/8 |
| | HMC 08L -04R | 8 | 17 | 17 | 35 | 20 | 12 | 1/4 |
| | HMC 10L -04R | 10 | 17 | 19 | 36 | 21 | 12 | 1/4 |
| | HMC 12L -04R | 12 | 19 | 22 | 37 | 22 | 12 | 1/4 |
| | HMC 12L -06R | 12 | 19 | 22 | 37 | 22 | 12 | 3/8 |
| | HMC 12L -08R | 12 | 24 | 22 | 39 | 24 | 14 | 1/2 |
| | HMC 15L -06R | 15 | 24 | 27 | 38 | 23 | 12 | 3/8 |
| PN 160 | HMC 15L -08R | 15 | 24 | 27 | 40 | 25 | 14 | 1/2 |
| | HMC 18L -08R | 18 | 27 | 32 | 41 | 25.5 | 14 | 1/2 |
| PN 160 | HMC 22L -12R | 22 | 32 | 36 | 46 | 29.5 | 16 | 3/4 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

MALE CONNECTOR (NPT THREAD)

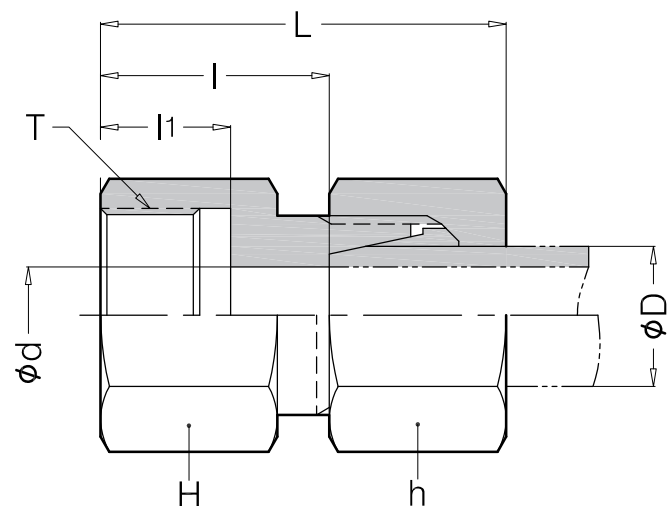
HMC-N



| Series | Part No. | Tube O.D. | H | h | L | l | l ₁ | T (NPT) |
|----------------------------|--------------|-----------|----|----|----|------|----------------|------------|
| | | D | | | | | | |
| LL very light PN 100 | HMC 04LL-02N | 4 | 12 | 10 | 28 | 18.5 | 9.9 | 1/8 |
| | HMC 06LL-02N | 6 | 12 | 12 | 28 | 16.5 | 9.9 | 1/8 |
| | HMC 08LL-02N | 8 | 12 | 14 | 30 | 18.5 | 9.9 | 1/8 |
| L light PN 250 | HMC 06L -02N | 6 | 12 | 14 | 32 | 17 | 9.9 | 1/8 |
| | HMC 06L -04N | 6 | 17 | 14 | 38 | 23 | 14.2 | 1/4 |
| | HMC 08L -04N | 8 | 17 | 17 | 38 | 23 | 14.2 | 1/4 |
| | HMC 10L -04N | 10 | 17 | 19 | 39 | 24 | 14.2 | 1/4 |
| | HMC 10L -06N | 10 | 19 | 19 | 40 | 25 | 14.2 | 3/8 |
| | HMC 12L -04N | 12 | 19 | 22 | 40 | 25 | 14.2 | 1/4 |
| | HMC 12L -06N | 12 | 19 | 22 | 40 | 25 | 14.2 | 3/8 |
| | HMC 12L -08N | 12 | 22 | 22 | 45 | 30 | 19.1 | 1/2 |
| PN 160 | HMC 15L -08N | 15 | 24 | 27 | 46 | 31 | 19.1 | 1/2 |
| | HMC 18L -08N | 18 | 27 | 32 | 48 | 31.5 | 19.1 | 1/2 |
| PN 100 | HMC 22L -12N | 22 | 32 | 36 | 50 | 33.5 | 19.1 | 3/4 |
| | HMC 28L -16N | 28 | 41 | 41 | 56 | 39.5 | 23.9 | 1 |
| PN 100 | HMC 35L -20N | 35 | 46 | 50 | 62 | 40.5 | 23.9 | 1 1/4 |
| | HMC 42L -24N | 42 | 55 | 60 | 65 | 42 | 25.4 | 1 1/2 |
| S Heavy PN 630 | HMC 06S -04N | 6 | 17 | 17 | 43 | 28 | 14.2 | 1/4 |
| | HMC 08S -04N | 8 | 17 | 19 | 43 | 28 | 14.2 | 1/4 |
| | HMC 10S -04N | 10 | 19 | 22 | 44 | 27.5 | 14.2 | 1/4 |
| | HMC 10S -06N | 10 | 19 | 22 | 44 | 27.5 | 14.2 | 3/8 |
| | HMC 12S -04N | 12 | 22 | 24 | 46 | 29.5 | 14.2 | 1/4 |
| | HMC 12S -06N | 12 | 22 | 24 | 46 | 29.5 | 14.2 | 3/8 |
| | HMC 12S -08N | 12 | 22 | 24 | 51 | 34.5 | 19.1 | 1/2 |
| PN 400 | HMC 14S -08N | 14 | 24 | 27 | 54 | 36 | 19.1 | 1/2 |
| | HMC 16S -08N | 16 | 27 | 30 | 54 | 35.5 | 19.1 | 1/2 |
| | HMC 20S -12N | 20 | 32 | 36 | 59 | 37.5 | 19.1 | 3/4 |
| PN 250 | HMC 25S -16N | 25 | 41 | 46 | 69 | 45 | 23.9 | 1 |
| | HMC 30S -20N | 30 | 46 | 50 | 73 | 46.5 | 23.9 | 1 1/4 |
| PN 250 | HMC 38S -24N | 38 | 55 | 60 | 80 | 49 | 25.4 | 1 1/2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

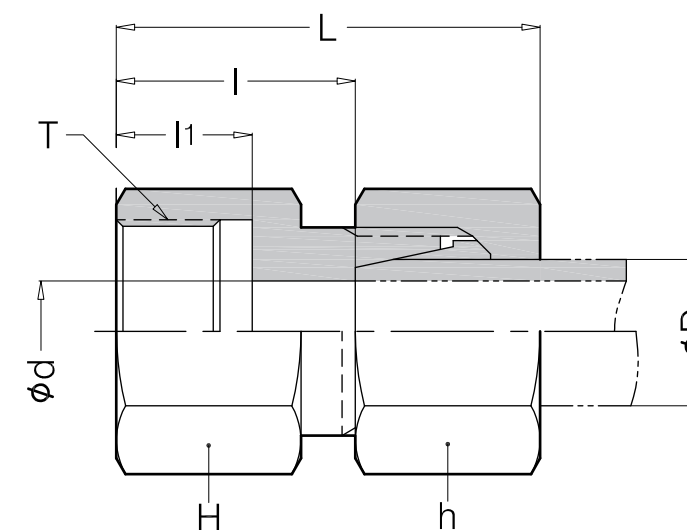
FEMALE CONNECTOR (BSP PARALLELED) HFC-G



| Series | Part No. | Tube O.D. D | d | H | h | L | l | l ₁ | T (BSPP) |
|----------------------|-------------|----------------|----|----|----|----|------|----------------|-------------|
| L Light PN 250 | HFC 06L-02G | 6 | 4 | 14 | 14 | 34 | 19 | 12 | 1/8 |
| | HFC 08L-04G | 8 | 6 | 19 | 17 | 39 | 24 | 17 | 1/4 |
| | HFC 08L-06G | 8 | 6 | 24 | 17 | 40 | 25 | 17 | 3/8 |
| | HFC 08L-08G | 8 | 6 | 27 | 17 | 44 | 29 | 20 | 1/2 |
| | HFC 10L-04G | 10 | 8 | 19 | 19 | 40 | 25 | 17 | 1/4 |
| | HFC 10L-06G | 10 | 8 | 24 | 19 | 41 | 26 | 17 | 3/8 |
| | HFC 10L-08G | 10 | 8 | 27 | 19 | 45 | 30 | 20 | 1/2 |
| | HFC 12L-06G | 12 | 10 | 24 | 22 | 41 | 26 | 17 | 3/8 |
| | HFC 12L-08G | 12 | 10 | 27 | 22 | 45 | 30 | 20 | 1/2 |
| | HFC 15L-08G | 15 | 12 | 27 | 27 | 46 | 31 | 20 | 1/2 |
| PN 160 | HFC 18L-08G | 18 | 15 | 27 | 32 | 47 | 30.5 | 20 | 1/2 |
| | HFC 22L-12G | 22 | 19 | 36 | 36 | 52 | 35.5 | 22 | 3/4 |
| PN 100 | HFC 28L-16G | 28 | 24 | 41 | 41 | 55 | 38 | 24.5 | 1 |
| | HFC 35L-20G | 35 | 30 | 55 | 50 | 63 | 41 | 26.5 | 1 1/4 |
| PN 400 | HFC 42L-24G | 42 | 36 | 60 | 60 | 65 | 42.5 | 28.5 | 1 1/2 |
| | HFC 06S-04G | 6 | 4 | 19 | 17 | 41 | 26 | 17 | 1/4 |
| S Heavy PN 630 | HFC 08S-04G | 8 | 5 | 19 | 19 | 41 | 26 | 17 | 1/4 |
| | HFC 10S-06G | 10 | 7 | 24 | 22 | 43 | 26.5 | 17 | 3/8 |
| | HFC 12S-06G | 12 | 8 | 24 | 24 | 43 | 26.5 | 17 | 3/8 |
| | HFC 14S-08G | 14 | 10 | 30 | 27 | 50 | 32 | 20 | 1/2 |
| | HFC 16S-08G | 16 | 12 | 30 | 30 | 50 | 31.5 | 20 | 1/2 |
| PN 250 | HFC 20S-12G | 20 | 16 | 36 | 36 | 56 | 34.5 | 22 | 3/4 |
| | HFC 25S-16G | 25 | 20 | 41 | 46 | 62 | 37.5 | 24.5 | 1 |
| PN 250 | HFC 30S-20G | 30 | 25 | 55 | 50 | 69 | 42 | 26.5 | 1 1/4 |
| | HFC 38S-24G | 28 | 32 | 60 | 60 | 74 | 43.5 | 28.5 | 1 1/2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

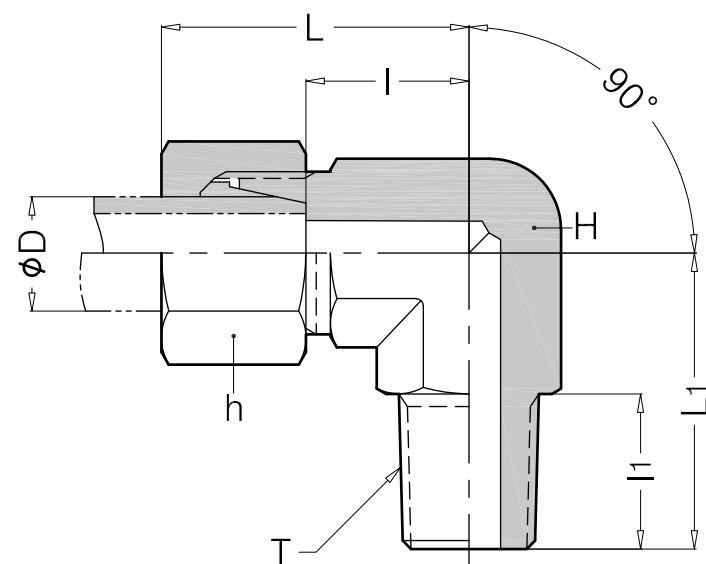
FEMALE CONNECTOR (METRIC PARALLELED) HFC-M



| Series | Part No. | Tube O.D. | d | H | h | L | l | l ₁ | T (Metric) |
|----------------------|-------------|-----------|----|----|----|----|------|----------------|---------------|
| L Light PN 250 | HFC 06L-M10 | 6 | 4 | 14 | 14 | 34 | 19.5 | 12.5 | M 10X1 |
| | HFC 08L-M12 | 8 | 6 | 17 | 17 | 39 | 24 | 17 | M 12X1.5 |
| | HFC 10L-M14 | 10 | 8 | 19 | 19 | 40 | 25 | 17 | M 14X1.5 |
| | HFC 12L-M16 | 12 | 10 | 22 | 22 | 41 | 26 | 17 | M 16X1.5 |
| | HFC 15L-M18 | 15 | 12 | 27 | 24 | 43 | 28 | 17 | M 18X1.5 |
| PN 160 | HFC 18L-M22 | 18 | 15 | 32 | 30 | 46 | 29.5 | 19 | M 22X1.5 |
| | HFC 22L-M26 | 22 | 19 | 36 | 32 | 51 | 34.5 | 21 | M 26X1.5 |
| PN 100 | HFC 28L-M33 | 28 | 24 | 41 | 41 | 54 | 37.5 | 24 | M 33X2 |
| | HFC 35L-M42 | 35 | 30 | 50 | 55 | 62 | 40.5 | 26 | M 42X2 |
| | HFC 42L-M48 | 42 | 36 | 60 | 60 | 65 | 42 | 28 | M 48X2 |
| S Heavy PN 630 | HFC 06S-M12 | 6 | 4 | 17 | 17 | 41 | 26 | 17 | M 12X1.5 |
| | HFC 08S-M14 | 8 | 5 | 19 | 19 | 41 | 26 | 17 | M 14X1.5 |
| | HFC 10S-M16 | 10 | 7 | 22 | 22 | 43 | 26.5 | 17 | M 16X1.5 |
| | HFC 12S-M18 | 12 | 8 | 24 | 24 | 44 | 27.5 | 17 | M 18X1.5 |
| | HFC 14S-M20 | 14 | 10 | 27 | 27 | 49 | 31 | 19 | M 20X1.5 |
| PN 400 | HFC 16S-M22 | 16 | 12 | 30 | 30 | 49 | 30.5 | 19 | M 22X1.5 |
| | HFC 20S-M27 | 20 | 16 | 36 | 36 | 56 | 34.5 | 22 | M 27X2 |
| | HFC 25S-M33 | 25 | 20 | 46 | 41 | 61 | 37 | 24 | M 33X2 |
| PN 250 | HFC 30S-M42 | 30 | 25 | 50 | 55 | 68 | 41.5 | 26 | M 42X2 |
| | HFC 38S-M48 | 38 | 32 | 60 | 60 | 74 | 43 | 28 | M 48X2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

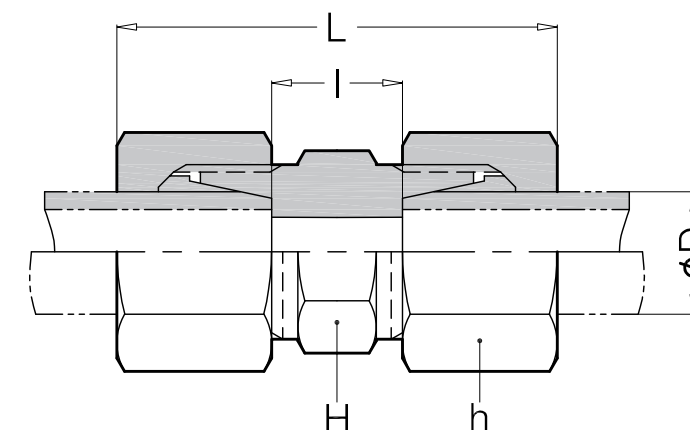
MALE ELBOW (BSP TAPERED/METRIC TAPERED) HLM-R/M



| Series | Part No. | | Tube O.D. D | H | h | L | L ₁ | I | T Metric Taper | I | I ₁ | T (BSPT) |
|----------------------|--------------|---------------|----------------|----|----|----|----------------|------|-------------------|----|----------------|-------------|
| | | | | | | | | | | | | |
| | HLM 06LL-02R | HLM 06LL-M10K | 6 | 9 | 12 | 21 | 17 | 9.5 | M10X1Keg | 8 | 10 | 1/8 |
| | HLM 08LL-02R | HLM 08LL-M10K | 8 | 12 | 14 | 23 | 20 | 11.5 | M10X1Keg | 8 | 10 | 1/8 |
| | HLM 10LL-04R | - | 10 | 14 | 17 | 24 | 23 | 12.5 | - | - | 14 | 1/4 |
| | HLM 12LL-04R | - | 12 | 17 | 19 | 25 | 23 | 13 | - | - | 14 | 1/4 |
| L light PN 250 | HLM 06L -02R | HLM 06L -M10K | 6 | 12 | 14 | 27 | 20 | 12 | M10X1.5Keg | 8 | 10 | 1/8 |
| | HLM 08L -04R | HLM 08L -M12K | 8 | 12 | 17 | 29 | 26 | 14 | M12X1.5Keg | 12 | 14 | 1/4 |
| | HLM 10L -04R | HLM 10L -M14K | 10 | 14 | 19 | 30 | 27 | 15 | M14X1.5Keg | 12 | 14 | 1/4 |
| | HLM 12L -06R | HLM 12L -M16K | 12 | 17 | 22 | 32 | 28 | 17 | M16X1.5Keg | 14 | 15 | 3/8 |
| | HLM 15L -08R | HLM 15L -M18K | 15 | 19 | 27 | 36 | 34 | 21 | M18X1.5Keg | 14 | 19 | 1/2 |
| PN 100 | HLM 18L -08R | HLM 18L -M22K | 18 | 24 | 32 | 40 | 36 | 23.5 | M22X1.5Keg | 17 | 19 | 1/2 |
| | HLM 06S -04R | HLM 06S -M12K | 6 | 12 | 17 | 31 | 26 | 16 | M12X1.5Keg | 12 | 14 | 1/4 |
| S Heavy PN 400 | HLM 08S -04R | HLM 08S -M14K | 8 | 14 | 19 | 32 | 27 | 17 | M14X1.5Keg | 12 | 14 | 1/4 |
| | HLM 10S -06R | HLM 10S -M16K | 10 | 17 | 22 | 34 | 28 | 17.5 | M16X1.5Keg | 12 | 15 | 3/8 |
| | HLM 12S -06R | HLM 12S -M18K | 12 | 17 | 24 | 38 | 28 | 21.5 | M18X1.5Keg | 12 | 15 | 3/8 |
| | HLM 14S -08R | HLM 14S -M20K | 14 | 19 | 27 | 40 | 32 | 22 | M20X1.5Keg | 14 | 19 | 1/2 |
| PN 250 | HLM 16S -08R | HLM 16S -M22K | 16 | 24 | 30 | 43 | 32 | 24.5 | M22X1.5Keg | 17 | 19 | 1/2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

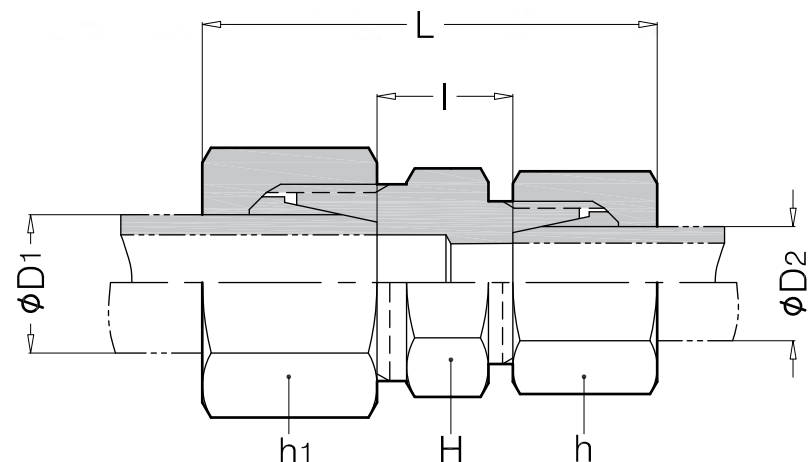
STRAIGHT UNION HU



| Series | Part No. | Tube O.D. D | H | h | L | I |
|----------------------|----------|----------------|----|----|----|----|
| | | | | | | |
| | HU-06LL | 6 | 12 | 12 | 32 | 9 |
| | HU-08LL | 8 | 12 | 14 | 35 | 12 |
| | HU-10LL | 10 | 14 | 17 | 35 | 12 |
| | HU-12LL | 12 | 17 | 19 | 35 | 11 |
| L Light PN 250 | HU-06L | 6 | 12 | 14 | 39 | 10 |
| | HU-08L | 8 | 14 | 17 | 40 | 11 |
| | HU-10L | 10 | 17 | 19 | 42 | 13 |
| | HU-12L | 12 | 19 | 22 | 43 | 14 |
| | HU-15L | 15 | 24 | 27 | 46 | 16 |
| PN 160 | HU-18L | 18 | 27 | 32 | 48 | 16 |
| | HU-22L | 22 | 32 | 36 | 52 | 20 |
| PN 100 | HU-28L | 28 | 41 | 41 | 54 | 21 |
| | HU-35L | 35 | 46 | 50 | 63 | 20 |
| | HU-42L | 42 | 55 | 60 | 66 | 21 |
| S Heavy PN 630 | HU-06S | 6 | 14 | 17 | 45 | 16 |
| | HU-08S | 8 | 17 | 19 | 47 | 18 |
| | HU-10S | 10 | 19 | 22 | 49 | 17 |
| | HU-12S | 12 | 22 | 24 | 51 | 19 |
| | HU-14S | 14 | 24 | 27 | 57 | 22 |
| | HU-16S | 16 | 27 | 30 | 57 | 21 |
| PN 400 | HU-20S | 20 | 32 | 36 | 66 | 23 |
| | HU-25S | 25 | 41 | 46 | 74 | 26 |
| PN 250 | HU-30S | 30 | 46 | 50 | 80 | 27 |
| | HU-38S | 38 | 55 | 60 | 90 | 29 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

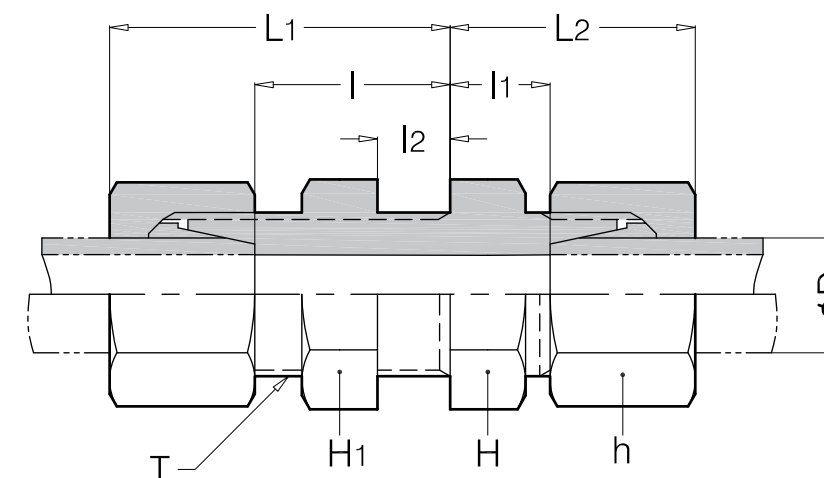
REDUCING UNION HUR



| Series | Part No. | Tube O.D. | | H | h ₁ | h | L | I |
|----------------------|-------------|----------------|----------------|----|----------------|----|----|------|
| | | D ₁ | D ₂ | | | | | |
| L light PN 250 | HUR 08L-06L | 8 | 6 | 14 | 17 | 14 | 40 | 11 |
| | HUR 10L-06L | 10 | 6 | 17 | 19 | 14 | 41 | 12 |
| | HUR 10L-08L | 10 | 8 | 17 | 19 | 17 | 41 | 12 |
| | HUR 12L-06L | 12 | 6 | 19 | 22 | 14 | 42 | 13 |
| | HUR 12L-08L | 12 | 8 | 19 | 22 | 17 | 42 | 13 |
| | HUR 12L-10L | 12 | 10 | 19 | 22 | 19 | 43 | 14 |
| | HUR 15L-10L | 15 | 10 | 24 | 27 | 19 | 45 | 15 |
| | HUR 15L-12L | 15 | 12 | 24 | 27 | 22 | 45 | 15 |
| PN 160 | HUR 18L-10L | 18 | 10 | 27 | 32 | 19 | 46 | 15.5 |
| | HUR 18L-12L | 18 | 12 | 27 | 32 | 22 | 46 | 15.5 |
| | HUR 18L-15L | 18 | 15 | 27 | 32 | 27 | 48 | 16.5 |
| | HUR 22L-12L | 22 | 12 | 32 | 36 | 22 | 48 | 17.5 |
| | HUR 22L-15L | 22 | 15 | 32 | 36 | 27 | 50 | 18.5 |
| PN 100 | HUR 22L-18L | 22 | 18 | 32 | 36 | 32 | 50 | 18 |
| | HUR 28L-18L | 28 | 18 | 41 | 41 | 32 | 52 | 19 |
| | HUR 28L-22L | 28 | 22 | 41 | 41 | 36 | 54 | 21 |
| | HUR 35L-22L | 35 | 22 | 46 | 50 | 36 | 59 | 21 |
| S Heavy PN 630 | HUR 35L-28L | 35 | 28 | 46 | 50 | 41 | 59 | 21 |
| | HUR 08S-06S | 8 | 6 | 17 | 19 | 17 | 47 | 18 |
| | HUR 10S-06S | 10 | 6 | 19 | 22 | 17 | 48 | 17.5 |
| | HUR 10S-08S | 10 | 8 | 19 | 22 | 19 | 48 | 17.5 |
| | HUR 12S-06S | 12 | 6 | 22 | 24 | 17 | 50 | 19.5 |
| | HUR 12S-08S | 12 | 8 | 22 | 24 | 19 | 50 | 19.5 |
| | HUR 12S-10S | 12 | 10 | 22 | 24 | 22 | 51 | 19 |
| | HUR 14S-10S | 14 | 10 | 24 | 27 | 22 | 54 | 20.5 |
| | HUR 14S-12S | 14 | 12 | 24 | 27 | 24 | 54 | 20.5 |
| | HUR 16S-12S | 16 | 12 | 27 | 30 | 24 | 54 | 20 |
| PN 400 | HUR 16S-14S | 16 | 14 | 27 | 30 | 27 | 57 | 21.5 |
| | HUR 20S-10S | 20 | 10 | 32 | 36 | 22 | 60 | 22 |
| | HUR 20S-12S | 20 | 12 | 32 | 36 | 24 | 60 | 22 |
| | HUR 20S-16S | 20 | 16 | 32 | 36 | 30 | 63 | 23 |
| | HUR 25S-16S | 25 | 16 | 41 | 46 | 30 | 68 | 25 |
| | HUR 25S-20S | 25 | 20 | 41 | 46 | 36 | 71 | 25.5 |
| | HUR 30S-20S | 30 | 20 | 46 | 50 | 36 | 74 | 26 |
| PN 250 | HUR 30S-25S | 30 | 25 | 46 | 50 | 46 | 77 | 26.5 |
| | HUR 38S-30S | 38 | 30 | 55 | 60 | 50 | 87 | 29.5 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

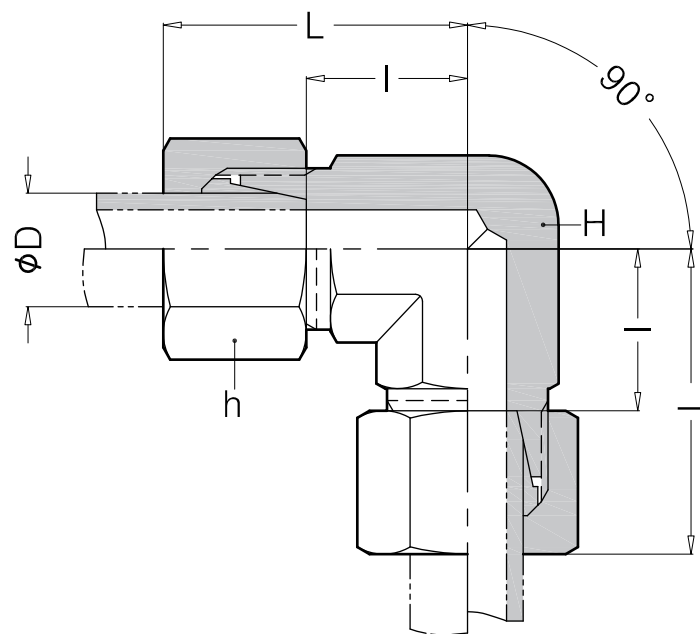
BULKHEAD UNION HBU



| Series | Part No. | Tube O.D. D | H | h | H ₁ | L ₁ | L ₂ | I | I ₁ | T |
|----------------------|----------|----------------|----|----|----------------|----------------|----------------|------|----------------|----------|
| | | | | | | | | | | |
| HBU-08L | 8 | 19 | 17 | 19 | 42 | 23 | 27 | 8 | M 14X1.5 | |
| HBU-10L | 10 | 22 | 19 | 22 | 43 | 25 | 28 | 10 | M 16X1.5 | |
| HBU-12L | 12 | 24 | 22 | 24 | 44 | 25 | 29 | 10 | M 18X1.5 | |
| HBU-15L | 15 | 27 | 27 | 30 | 46 | 27 | 31 | 12 | M 22X1.5 | |
| PN 160 | HBU-18L | 18 | 32 | 32 | 36 | 49 | 30 | 32.5 | 13.5 | M 26X1.5 |
| | HBU-22L | 22 | 36 | 36 | 41 | 51 | 33 | 34.5 | 16.5 | M 30X2 |
| PN 100 | HBU-28L | 28 | 41 | 41 | 46 | 52 | 35 | 35.5 | 18.5 | M 36X2 |
| | HBU-35L | 35 | 50 | 50 | 55 | 58 | 40 | 36.5 | 18.5 | M 45X2 |
| | HBU-42L | 42 | 60 | 60 | 65 | 59 | 42 | 36 | 19 | M 52X2 |
| S Heavy PN 630 | HBU-06S | 6 | 19 | 17 | 19 | 44 | 27 | 29 | 12 | M 14X1.5 |
| | HBU-08S | 8 | 22 | 19 | 22 | 44 | 28 | 29 | 13 | M 16X1.5 |
| | HBU-10S | 10 | 24 | 22 | 24 | 46 | 31 | 29.5 | 14.5 | M 18X1.5 |
| | HBU-12S | 12 | 27 | 24 | 27 | 47 | 31 | 30.5 | 14.5 | M 20X1.5 |
| | HBU-14S | 14 | 30 | 27 | 30 | 50 | 35 | 32 | 17 | M 22X1.5 |
| PN 400 | HBU-16S | 16 | 32 | 30 | 32 | 50 | 35 | 31.5 | 16.5 | M 24X1.5 |
| | HBU-20S | 20 | 41 | 36 | 41 | 55 | 39 | 33.5 | 17.5 | M 30X2 |
| | HBU-25S | 25 | 46 | 46 | 46 | 59 | 44 | 35 | 20 | M 36X2 |
| PN 250 | HBU-30S | 30 | 50 | 50 | 50 | 64 | 48 | 37.5 | 21.5 | M 42X2 |
| | HBU-38S | 38 | 65 | 60 | 65 | 68 | 53 | 37 | 22 | M 52X2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

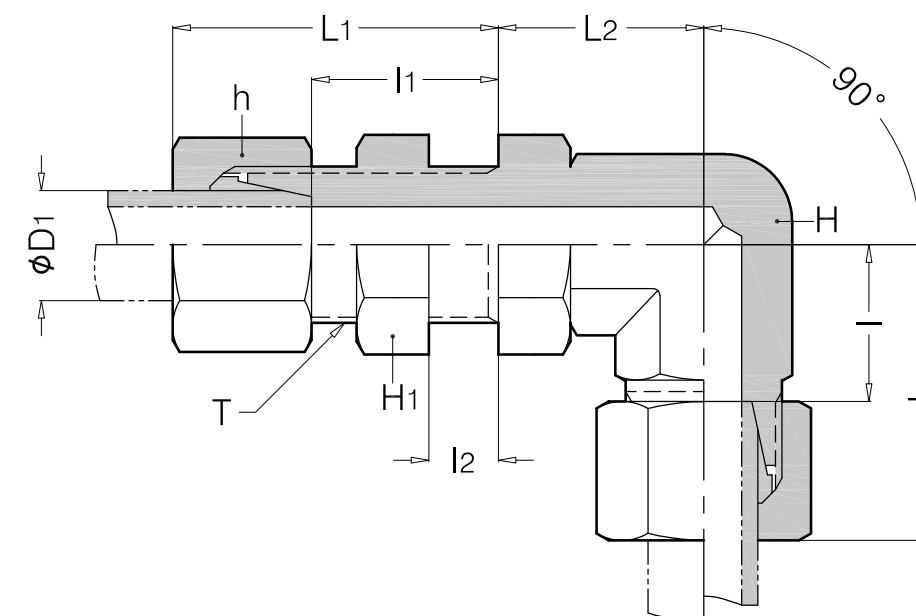
UNION ELBOW HL



| Series | Part No. | Tube O.D. | H | h | L | I |
|----------------------------|----------|-----------|----|----|----|------|
| | | D | | | | |
| LL Very light PN 100 | HL-04LL | 4 | 9 | 10 | 21 | 11 |
| | HL-06LL | 6 | 9 | 12 | 21 | 9.5 |
| | HL-08LL | 8 | 12 | 14 | 23 | 11.5 |
| | HL-10LL | 10 | 14 | 17 | 24 | 12.5 |
| | HL-12LL | 12 | 17 | 19 | 25 | 13 |
| L Light PN 250 | HL-06L | 6 | 12 | 14 | 27 | 12 |
| | HL-08L | 8 | 12 | 17 | 29 | 14 |
| | HL-10L | 10 | 14 | 19 | 30 | 15 |
| | HL-12L | 12 | 17 | 22 | 32 | 17 |
| | HL-15L | 15 | 19 | 27 | 36 | 21 |
| PN 160 | HL-18L | 18 | 24 | 32 | 40 | 23.5 |
| | HL-22L | 22 | 27 | 36 | 44 | 27.5 |
| PN 250 | HL-28L | 28 | 36 | 41 | 47 | 30.5 |
| | HL-35L | 35 | 41 | 50 | 56 | 34.5 |
| | HL-42L | 42 | 50 | 60 | 63 | 40 |
| S Heavy PN 630 | HL-06S | 6 | 12 | 17 | 31 | 16 |
| | HL-08S | 8 | 14 | 19 | 32 | 17 |
| | HL-10S | 10 | 17 | 22 | 34 | 17.5 |
| | HL-12S | 12 | 17 | 24 | 38 | 21.5 |
| | HL-14S | 14 | 19 | 27 | 40 | 22 |
| PN 400 | HL-16S | 16 | 24 | 30 | 43 | 24.5 |
| | HL-20S | 20 | 27 | 36 | 48 | 26.5 |
| | HL-25S | 25 | 36 | 46 | 54 | 30 |
| PN 250 | HL-30S | 30 | 41 | 50 | 62 | 35.5 |
| | HL-38S | 38 | 50 | 60 | 72 | 41 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

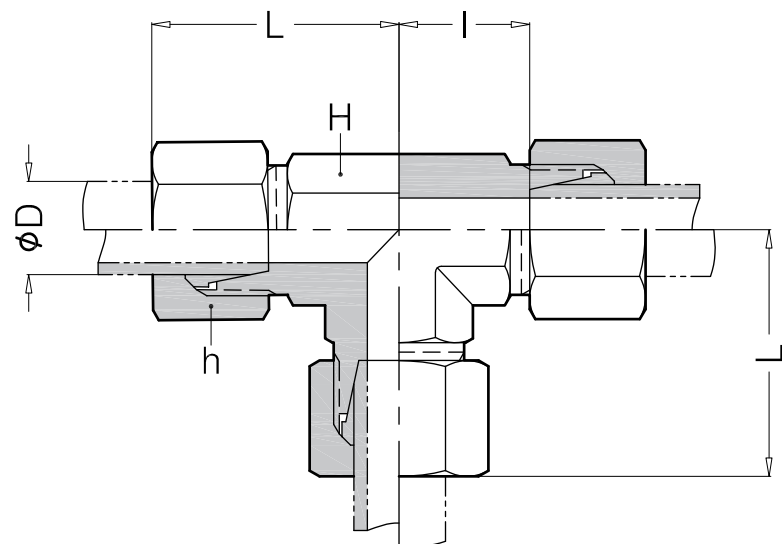
BULKHEAD UNION ELBOW HBL



| Series | Part No. | Tube O.D. | H | h | H ₁ | L | L ₁ | L ₂ | I | I ₁ | T (Metric) |
|----------------------|----------|-----------|----|----|----------------|----|----------------|----------------|------|----------------|---------------|
| | | D | | | | | | | | | |
| L light PN 250 | HBL-06L | 6 | 12 | 14 | 17 | 27 | 42 | 14 | 12 | 27 | M 12X1.5 |
| | HBL-08L | 8 | 12 | 17 | 19 | 29 | 42 | 17 | 14 | 27 | M 14X1.5 |
| | HBL-10L | 10 | 14 | 19 | 22 | 30 | 43 | 18 | 15 | 28 | M 16X1.5 |
| | HBL-12L | 12 | 17 | 22 | 24 | 32 | 44 | 20 | 17 | 29 | M 18X1.5 |
| | HBL-15L | 15 | 19 | 27 | 30 | 36 | 46 | 23 | 21 | 31 | M 22X1.5 |
| PN 160 | HBL-18L | 18 | 24 | 32 | 36 | 40 | 49 | 24 | 23.5 | 32.5 | M 26X1.5 |
| | HBL-22L | 22 | 27 | 36 | 41 | 44 | 51 | 30 | 27.5 | 34.5 | M 30X2 |
| PN 100 | HBL-28L | 28 | 36 | 41 | 46 | 47 | 52 | 34 | 30.5 | 35.5 | M 36X2 |
| | HBL-35L | 35 | 41 | 50 | 55 | 56 | 58 | 39 | 34.5 | 36.5 | M 45X2 |
| | HBL-42L | 42 | 50 | 60 | 65 | 63 | 59 | 43 | 40 | 36 | M 52X2 |
| S heavy PN 630 | HBL-06S | 6 | 12 | 17 | 19 | 31 | 44 | 17 | 46 | 29 | M 14X1.5 |
| | HBL-08S | 8 | 14 | 19 | 22 | 32 | 44 | 18 | 17 | 29 | M 16X1.5 |
| | HBL-10S | 10 | 17 | 22 | 24 | 34 | 46 | 20 | 17.5 | 29.5 | M 18X1.5 |
| | HBL-12S | 12 | 17 | 24 | 27 | 38 | 47 | 21 | 21.5 | 30.5 | M 20X1.5 |
| | HBL-14S | 14 | 19 | 27 | 30 | 40 | 50 | 23 | 22 | 32 | M 22X1.5 |
| PN 400 | HBL-16S | 16 | 24 | 30 | 32 | 43 | 50 | 24 | 24.5 | 31.5 | M 24X1.5 |
| | HBL-20S | 20 | 27 | 36 | 41 | 48 | 55 | 30 | 26.5 | 33.5 | M 30X2 |
| | HBL-25S | 25 | 36 | 46 | 46 | 54 | 59 | 34 | 30 | 35 | M 36X2 |
| PN 250 | HBL-30S | 30 | 41 | 50 | 50 | 62 | 64 | 39 | 35.5 | 37.5 | M 42X2 |
| | HBL-38S | 38 | 50 | 60 | 65 | 72 | 68 | 43 | 41 | 37 | M 52X2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

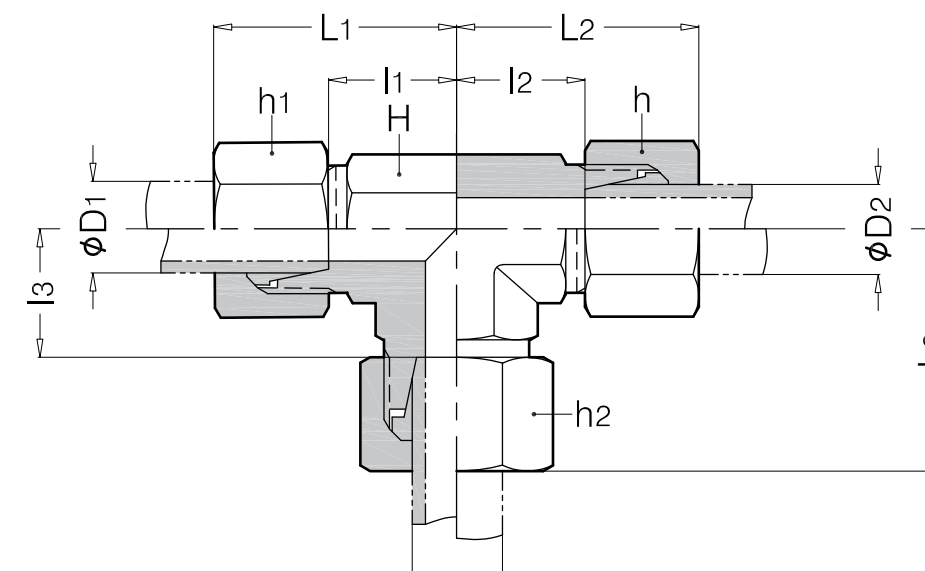
UNION TEE HT



| Series | Part No. | Tube O.D. | H | h | L | I |
|----------------------------|----------|-----------|----|----|----|------|
| | | D | | | | |
| LL Very light PN 100 | HT-04LL | 4 | 9 | 10 | 21 | 11 |
| | HT-06LL | 6 | 9 | 12 | 21 | 9.5 |
| | HT-08LL | 8 | 12 | 14 | 23 | 11.5 |
| | HT-10LL | 10 | 14 | 17 | 24 | 12.5 |
| | HT-12LL | 12 | 14 | 19 | 27 | 15 |
| L Light PN 250 | HT-06L | 6 | 12 | 14 | 27 | 12 |
| | HT-08L | 8 | 12 | 17 | 29 | 14 |
| | HT-10L | 10 | 14 | 19 | 30 | 15 |
| | HT-12L | 12 | 17 | 22 | 32 | 17 |
| | HC-15L | 15 | 19 | 27 | 36 | 21 |
| PN 160 | HT-18L | 18 | 24 | 32 | 40 | 23.5 |
| | HT-22L | 22 | 27 | 36 | 44 | 27.5 |
| PN 100 | HT-28L | 28 | 36 | 41 | 47 | 30.5 |
| | HT-35L | 35 | 41 | 50 | 56 | 34.5 |
| | HT-42L | 42 | 50 | 60 | 63 | 40 |
| S Heavy PN 630 | HT-06S | 6 | 12 | 17 | 31 | 16 |
| | HT-08S | 8 | 14 | 19 | 32 | 17 |
| | HT-10S | 10 | 17 | 22 | 34 | 17.5 |
| | HT-12S | 12 | 17 | 24 | 38 | 21.5 |
| | HT-14S | 14 | 19 | 27 | 40 | 22 |
| PN 400 | HT-16S | 16 | 24 | 30 | 43 | 24.5 |
| | HT-20S | 20 | 27 | 36 | 48 | 26.5 |
| | HT-25S | 25 | 36 | 46 | 54 | 30 |
| PN 250 | HT-30S | 30 | 41 | 50 | 62 | 35.5 |
| | HT-38S | 38 | 50 | 60 | 72 | 41 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

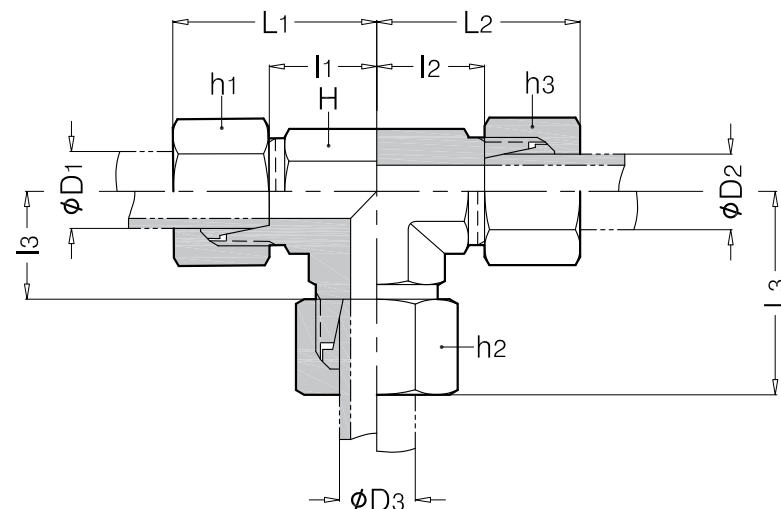
REDUCING UNION HTR



| Series | Part No. | Tube O.D. | | | H | h | h1 | h2 | L1 | L2 | L3 | I1 | I2 | I3 |
|-------------------|-----------------|-----------|----|----|----|----|----|----|----|----|----|------|------|------|
| | | D1 | D2 | D3 | | | | | | | | | | |
| L light PN 316 | HTR 06L-06L-08L | 6 | 6 | 8 | 14 | 14 | 14 | 17 | 29 | 29 | 29 | 14 | 14 | 14 |
| | HTR 08L-08L-06L | 8 | 8 | 6 | 14 | 17 | 17 | 14 | 29 | 29 | 29 | 14 | 14 | 14 |
| PN 250 | HTR 06L-06L-10L | 6 | 6 | 10 | 14 | 14 | 14 | 19 | 30 | 30 | 30 | 15 | 15 | 15 |
| | HTR 08L-08L-10L | 8 | 8 | 10 | 14 | 17 | 17 | 19 | 30 | 30 | 30 | 15 | 15 | 15 |
| | HTR 10L-10L-06L | 10 | 10 | 6 | 14 | 19 | 19 | 14 | 30 | 30 | 30 | 15 | 15 | 15 |
| | HTR 10L-10L-08L | 10 | 10 | 8 | 14 | 19 | 19 | 17 | 30 | 30 | 30 | 15 | 15 | 15 |
| | HTR 10L-06L-10L | 10 | 6 | 10 | 14 | 19 | 14 | 19 | 30 | 30 | 30 | 15 | 15 | 15 |
| PN 250 | HTR 08L-08L-12L | 8 | 8 | 12 | 17 | 17 | 17 | 22 | 32 | 32 | 32 | 17 | 17 | 17 |
| | HTR 12L-12L-06L | 12 | 12 | 6 | 17 | 22 | 22 | 14 | 32 | 32 | 32 | 17 | 17 | 17 |
| | HTR 12L-08L-08L | 12 | 8 | 8 | 17 | 22 | 17 | 17 | 32 | 32 | 32 | 17 | 17 | 17 |
| | HTR 12L-12L-08L | 12 | 12 | 8 | 17 | 22 | 22 | 17 | 32 | 32 | 32 | 17 | 17 | 17 |
| | HTR 12L-10L-10L | 12 | 10 | 10 | 17 | 22 | 19 | 19 | 32 | 32 | 32 | 17 | 17 | 17 |
| | HTR 12L-12L-10L | 12 | 12 | 10 | 17 | 22 | 22 | 19 | 32 | 32 | 32 | 17 | 17 | 17 |
| | HTR 12L-10L-12L | 12 | 10 | 12 | 17 | 22 | 19 | 22 | 32 | 32 | 32 | 17 | 17 | 17 |
| | HTR 10L-10L-15L | 10 | 10 | 15 | 19 | 19 | 19 | 27 | 36 | 36 | 36 | 21 | 21 | 21 |
| PN 250 | HTR 12L-12L-15L | 12 | 12 | 15 | 19 | 22 | 22 | 27 | 36 | 36 | 36 | 21 | 21 | 21 |
| | HTR 15L-15L-06L | 15 | 15 | 6 | 19 | 27 | 27 | 14 | 36 | 36 | 36 | 21 | 21 | 21 |
| | HTR 15L-15L-10L | 15 | 15 | 10 | 19 | 27 | 27 | 19 | 36 | 36 | 36 | 21 | 21 | 21 |
| | HTR 15L-12L-12L | 15 | 12 | 12 | 19 | 27 | 22 | 22 | 36 | 36 | 36 | 21 | 21 | 21 |
| | HTR 15L-15L-12L | 15 | 15 | 12 | 19 | 27 | 27 | 22 | 36 | 36 | 36 | 21 | 21 | 21 |
| PN 160 | HTR 15L-12L-15L | 15 | 12 | 15 | 19 | 27 | 22 | 27 | 36 | 36 | 36 | 21 | 21 | 21 |
| | HTR 12L-12L-18L | 12 | 12 | 18 | 24 | 22 | 22 | 32 | 39 | 39 | 40 | 24 | 24 | 23.5 |
| | HTR 18L-10L-10L | 18 | 10 | 10 | 24 | 32 | 19 | 19 | 40 | 40 | 39 | 23.5 | 24 | 24 |
| | HTR 18L-18L-10L | 18 | 18 | 10 | 24 | 32 | 32 | 19 | 40 | 40 | 39 | 23.5 | 23.5 | 24 |
| | HTR 18L-18L-12L | 18 | 18 | 12 | 24 | 32 | 32 | 22 | 40 | 40 | 39 | 23.5 | 23.5 | 24 |
| | HTR 18L-18L-15L | 18 | 18 | 15 | 24 | 32 | 32 | 27 | 40 | 40 | 39 | 23.5 | 23.5 | 24 |
| | HTR 18L-10L-18L | 18 | 10 | 18 | 24 | 32 | 19 | 32 | 40 | 39 | 40 | 23.5 | 2 | 23.5 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

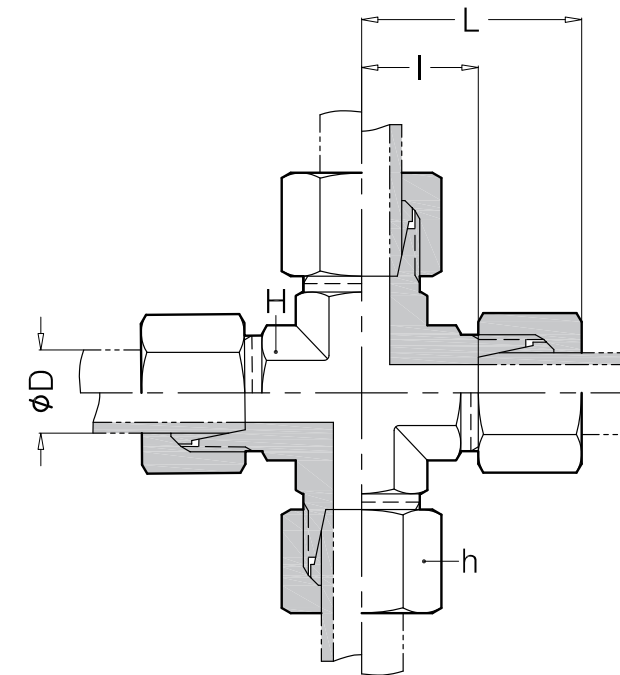
REDUCING UNION HTR



| Series | Part No. | Tube O.D. | | | H | h1 | h2 | h3 | L1 | L2 | L3 | I1 | I2 | I3 |
|-------------|-----------------|-----------|----|----|----|----|----|----|----|----|----|------|------|------|
| | | D1 | D2 | D3 | | | | | | | | | | |
| PN 160 | HTR 22L-22L-10L | 22 | 22 | 10 | 27 | 36 | 36 | 19 | 44 | 44 | 43 | 27.5 | 27.5 | 28 |
| | HTR 22L-22L-12L | 22 | 22 | 12 | 27 | 36 | 36 | 22 | 44 | 44 | 43 | 27.5 | 27.5 | 28 |
| | HTR 22L-15L-15L | 22 | 15 | 15 | 27 | 36 | 27 | 27 | 44 | 43 | 43 | 27.5 | 28 | 28 |
| | HTR 22L-22L-15L | 22 | 22 | 15 | 27 | 36 | 36 | 27 | 44 | 44 | 43 | 27.5 | 27.5 | 28 |
| | HTR 22L-18L-18L | 22 | 18 | 18 | 27 | 36 | 32 | 32 | 44 | 44 | 44 | 27.5 | 27.5 | 27.5 |
| | HTR 22L-22L-18L | 22 | 22 | 18 | 27 | 36 | 36 | 32 | 44 | 44 | 44 | 27.5 | 27.5 | 27.5 |
| PN 100 | HTR 28L-28L-10L | 28 | 28 | 10 | 36 | 41 | 41 | 19 | 47 | 44 | 46 | 30.5 | 30.5 | 31 |
| | HTR 28L-28L-12L | 28 | 28 | 12 | 36 | 41 | 41 | 22 | 47 | 47 | 46 | 30.5 | 30.5 | 31 |
| | HTR 28L-28L-15L | 28 | 28 | 15 | 36 | 41 | 41 | 27 | 47 | 47 | 46 | 30.5 | 30.5 | 31 |
| | HTR 28L-28L-18L | 28 | 28 | 18 | 36 | 41 | 41 | 32 | 47 | 47 | 47 | 30.5 | 30.5 | 30.5 |
| | HTR 28L-22L-22L | 28 | 22 | 22 | 36 | 41 | 36 | 36 | 47 | 47 | 47 | 30.5 | 30.5 | 30.5 |
| | HTR 28L-28L-22L | 28 | 28 | 22 | 36 | 41 | 41 | 36 | 47 | 47 | 47 | 30.5 | 30.5 | 30.5 |
| S PN 630 | HTR 10S-10S-06S | 10 | 10 | 6 | 17 | 22 | 22 | 17 | 34 | 34 | 33 | 17.5 | 17.5 | 18 |
| | HTR 12S-08S-08S | 12 | 8 | 8 | 17 | 24 | 19 | 19 | 38 | 37 | 37 | 21.5 | 22 | 22 |
| | HTR 12S-12S-08S | 12 | 12 | 8 | 17 | 24 | 24 | 19 | 38 | 38 | 37 | 21.5 | 21.5 | 22 |
| | HTR 12S-12S-10S | 12 | 12 | 10 | 17 | 24 | 24 | 22 | 38 | 38 | 38 | 21.5 | 21.5 | 21.5 |
| PN 400 | HTR 12S-12S-16S | 12 | 12 | 16 | 24 | 24 | 24 | 30 | 42 | 42 | 43 | 25.5 | 25.5 | 24.5 |
| | HTR 16S-16S-06S | 16 | 16 | 6 | 24 | 30 | 30 | 17 | 43 | 43 | 41 | 24.5 | 24.5 | 26 |
| | HTR 16S-16S-08S | 16 | 16 | 8 | 24 | 30 | 30 | 19 | 43 | 43 | 41 | 24.5 | 24.5 | 26 |
| | HTR 16S-16S-10S | 16 | 16 | 10 | 24 | 30 | 30 | 22 | 43 | 43 | 42 | 24.5 | 24.5 | 25.5 |
| | HTR 16S-16S-12S | 16 | 16 | 12 | 24 | 30 | 30 | 24 | 43 | 43 | 42 | 24.5 | 24.5 | 25.5 |
| PN 400 | HTR 16S-16S-20S | 16 | 16 | 20 | 27 | 30 | 30 | 36 | 47 | 47 | 48 | 28.5 | 28.5 | 26.5 |
| | HTR 20S-20S-10S | 20 | 20 | 10 | 27 | 36 | 36 | 22 | 48 | 48 | 46 | 26.5 | 26.5 | 29.5 |
| | HTR 20S-20S-12S | 20 | 20 | 12 | 27 | 36 | 36 | 24 | 48 | 48 | 46 | 26.5 | 26.5 | 29.5 |
| | HTR 20S-20S-16S | 20 | 20 | 16 | 27 | 36 | 36 | 30 | 48 | 48 | 47 | 26.5 | 26.5 | 28.5 |
| PN 400 | HTR 20S-20S-25S | 20 | 20 | 25 | 36 | 36 | 36 | 46 | 53 | 53 | 54 | 31.5 | 31.5 | 30 |
| | HTR 25S-25S-16S | 25 | 25 | 16 | 36 | 46 | 46 | 30 | 54 | 54 | 52 | 30 | 30 | 33.5 |
| | HTR 25S-25S-20S | 25 | 25 | 20 | 36 | 46 | 46 | 36 | 54 | 54 | 53 | 30 | 30 | 31.5 |
| PN 250 | HTR 25S-25S-30S | 25 | 25 | 30 | 41 | 46 | 46 | 50 | 61 | 61 | 62 | 37 | 37 | 35.5 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

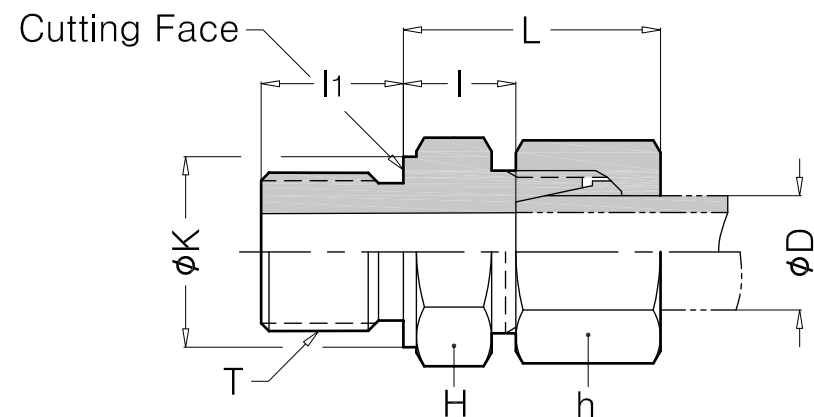
UNION CROSS HC



| Series | Part No. | Tube O.D. | H | h | L | I |
|----------------------------|----------|-----------|----|----|----|------|
| | | D | | | | |
| LL Very light PN 100 | HC-04LL | 4 | 9 | 10 | 21 | 11 |
| | HC-06LL | 6 | 9 | 12 | 21 | 9.5 |
| | HC-08LL | 8 | 12 | 14 | 23 | 11.5 |
| | HC-10LL | 10 | 14 | 17 | 24 | 12.5 |
| L Light PN 250 | HC-12LL | 12 | 14 | 19 | 27 | 15 |
| | HC-06L | 6 | 12 | 14 | 27 | 12 |
| | HC-08L | 8 | 12 | 17 | 29 | 14 |
| | HC-10L | 10 | 14 | 19 | 30 | 15 |
| | HC-12L | 12 | 17 | 22 | 32 | 17 |
| PN 160 | HC-15L | 15 | 19 | 27 | 36 | 21 |
| | HC-18L | 18 | 24 | 32 | 40 | 23.5 |
| PN 100 | HC-22L | 22 | 27 | 36 | 44 | 27.5 |
| | HC-28L | 28 | 36 | 41 | 47 | 30.5 |
| S Heavy PN 630 | HC-35L | 35 | 41 | 50 | 56 | 34.5 |
| | HC-42L | 42 | 50 | 60 | 63 | 40 |
| | HC-06S | 6 | 12 | 17 | 31 | 16 |
| | HC-08S | 8 | 14 | 19 | 32 | 17 |
| PN 400 | HC-10S | 10 | 17 | 22 | 34 | 17.5 |
| | HC-12S | 12 | 17 | 24 | 38 | 21.5 |
| | HC-14S | 14 | 19 | 27 | 40 | 22 |
| | HC-16S | 16 | 24 | 30 | 43 | 24.5 |
| PN 400 | HC-20S | 20 | 27 | 36 | 48 | 26.5 |
| | HC-25S | 25 | 36 | 46 | 54 | 30 |
| PN 250 | HC-30S | 30 | 41 | 50 | 62 | 35.5 |
| | HC-38S | 38 | 50 | 60 | 72 | 41 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

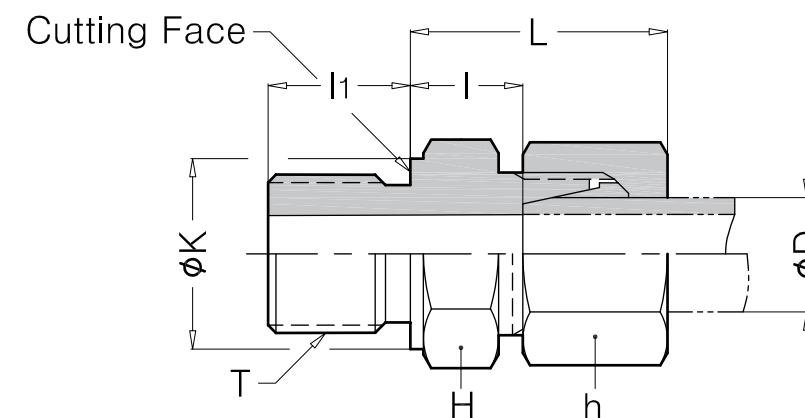
MALE CONNECTOR (BSP PARALLEL)
HOM-G



| Series | Part No. | Tube O.D. | H | h | K | L | l | l ₁ | T (BSPP) |
|----------------------|--------------|-----------|----|----|----|------|------|----------------|-------------|
| | | D | | | | | | | |
| L light PN 250 | HOM 06L -02G | 6 | 14 | 14 | 14 | 23 | 8.5 | 8 | 1/8 |
| | HOM 06L -04G | 6 | 19 | 14 | 18 | 25 | 10 | 12 | 1/4 |
| | HOM 06L -06G | 6 | 22 | 14 | 22 | 26 | 11.5 | 12 | 3/8 |
| | HOM 06L -08G | 6 | 27 | 14 | 26 | 27 | 12 | 14 | 1/2 |
| | HOM 08L -02G | 8 | 14 | 17 | 14 | 23 | 8.5 | 8 | 1/8 |
| | HOM 08L -04G | 8 | 19 | 17 | 18 | 25 | 10 | 12 | 1/4 |
| | HOM 08L -06G | 8 | 22 | 17 | 22 | 26 | 11.5 | 12 | 3/8 |
| | HOM 08L -08G | 8 | 27 | 17 | 26 | 27 | 12 | 14 | 1/2 |
| | HOM 10L -04G | 10 | 19 | 19 | 18 | 26 | 11 | 12 | 1/4 |
| | HOM 10L -06G | 10 | 22 | 19 | 22 | 27 | 12.5 | 12 | 3/8 |
| | HOM 10L -08G | 10 | 27 | 19 | 26 | 28 | 13 | 14 | 1/2 |
| | HOM 12L -04G | 12 | 19 | 22 | 18 | 27 | 12 | 12 | 1/4 |
| | HOM 12L -06G | 12 | 22 | 22 | 22 | 27 | 12.5 | 12 | 3/8 |
| | HOM 12L -08G | 12 | 27 | 22 | 26 | 28 | 13 | 14 | 1/2 |
| | HOM 12L -12G | 12 | 32 | 22 | 32 | 29 | 14 | 16 | 3/4 |
| HOM 15L -06G | 15 | 24 | 27 | 22 | 29 | 13.5 | 12 | 3/8 | |
| HOM 15L -08G | 15 | 27 | 27 | 26 | 29 | 14 | 14 | 1/2 | |
| HOM 15L -12G | 15 | 32 | 27 | 32 | 30 | 15 | 16 | 3/4 | |
| PN 160 | HOM 18L -06G | 18 | 27 | 32 | 22 | 29.5 | 14 | 12 | 3/8 |
| | HOM 18L -08G | 18 | 27 | 32 | 26 | 31 | 14.5 | 14 | 1/2 |
| | HOM 18L -12G | 18 | 32 | 32 | 32 | 30 | 14.5 | 16 | 3/4 |
| L light PN 100 | HOM 22L -08G | 22 | 32 | 36 | 26 | 33 | 16.5 | 14 | 1/2 |
| | HOM 22L -12G | 22 | 32 | 36 | 32 | 33 | 16.5 | 16 | 3/4 |
| | HOM 28L -12G | 28 | 41 | 41 | 32 | 34 | 17.5 | 16 | 3/4 |
| | HOM 28L -16G | 28 | 41 | 41 | 39 | 34 | 17.5 | 18 | 1 |
| | HOM 35L -16G | 35 | 46 | 50 | 39 | 39 | 17.5 | 18 | 1 |
| HOM 35L -20G | 35 | 50 | 50 | 49 | 39 | 17.5 | 20 | 1 1/4 | |
| HOM 42L -24G | 42 | 55 | 60 | 55 | 42 | 19 | 22 | 1 1/2 | |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

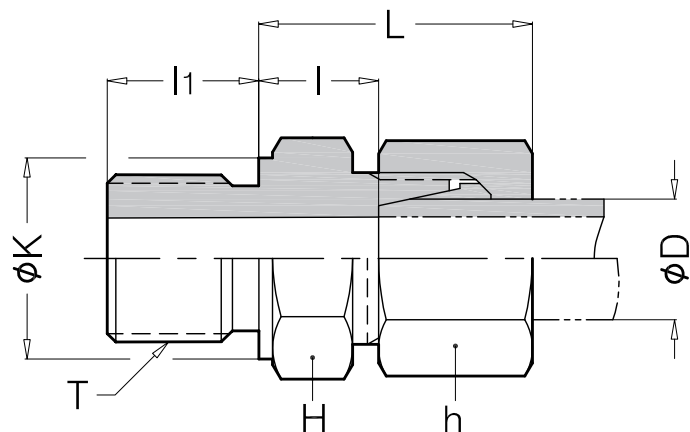
MALE CONNECTOR (BSP PARALLEL)
HOM-G



| Series | Part No. | Tube O.D. | H | h | K | L | l | l ₁ | T (BSPP) |
|----------------------|-------------|-----------|----|----|----|----|------|----------------|-------------|
| | | D | | | | | | | |
| S Heavy PN 630 | HOM 06S-04G | 6 | 19 | 17 | 18 | 28 | 13 | 12 | 1/4 |
| | HOM 06S-08G | 6 | 27 | 17 | 26 | 33 | 18 | 14 | 1/2 |
| | HOM 08S-04G | 8 | 19 | 19 | 18 | 30 | 15 | 12 | 1/4 |
| | HOM 08S-06G | 8 | 22 | 19 | 22 | 30 | 15.5 | 12 | 3/8 |
| | HOM 10S-04G | 10 | 19 | 22 | 18 | 31 | 14.5 | 12 | 1/4 |
| | HOM 10S-06G | 10 | 22 | 22 | 22 | 31 | 15 | 12 | 3/8 |
| | HOM 10S-08G | 10 | 27 | 22 | 26 | 34 | 17.5 | 14 | 1/2 |
| | HOM 12S-04G | 12 | 22 | 24 | 18 | 33 | 16.5 | 12 | 1/4 |
| | HOM 12S-06G | 12 | 22 | 24 | 22 | 33 | 17 | 12 | 3/8 |
| | HOM 12S-08G | 12 | 27 | 24 | 26 | 34 | 17.5 | 14 | 1/2 |
| | HOM 14S-06G | 14 | 24 | 27 | 22 | 36 | 18.5 | 12 | 3/8 |
| | HOM 14S-08G | 14 | 27 | 27 | 26 | 37 | 19 | 14 | 1/2 |
| PN 400 | HOM 16S-06G | 16 | 27 | 30 | 22 | 36 | 18 | 12 | 3/8 |
| | HOM 16S-08G | 16 | 27 | 30 | 26 | 37 | 18.5 | 14 | 1/2 |
| | HOM 16S-12G | 16 | 32 | 30 | 32 | 39 | 20.5 | 16 | 3/4 |
| | HOM 20S-08G | 20 | 32 | 36 | 26 | 42 | 20.5 | 14 | 1/2 |
| | HOM 20S-12G | 20 | 32 | 36 | 32 | 42 | 20.5 | 16 | 3/4 |
| | HOM 25S-12G | 25 | 41 | 46 | 32 | 47 | 23 | 16 | 3/4 |
| PN 250 | HOM 25S-16G | 25 | 41 | 46 | 39 | 47 | 23 | 18 | 1 |
| | HOM 30S-16G | 30 | 46 | 50 | 39 | 50 | 23.5 | 18 | 1 |
| | HOM 30S-20G | 30 | 50 | 50 | 49 | 50 | 23.5 | 20 | 1 1/4 |
| | HOM 38S-20G | 38 | 55 | 60 | 49 | 57 | 26 | 20 | 1 1/4 |
| HOM 38S-24G | 38 | 55 | 60 | 55 | 57 | 26 | 22 | 1 1/2 | |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

MALE CONNECTOR (UNIFIED) WITH *O-RING **HOM-U**

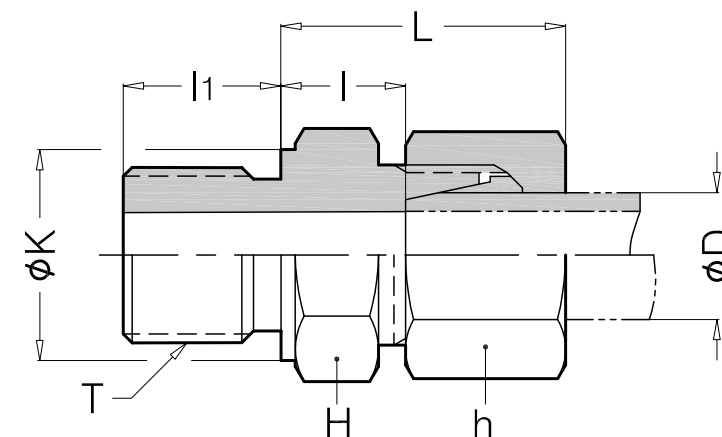


for Unified

| Series | Part No. | Tube O.D. D | H | h | K | L | l ₁ | l | T (Unified) |
|----------------------|-------------|----------------|----|----|------|------|----------------|------|----------------|
| L light PN 250 | HOM 08L-07U | 8 | 17 | 17 | 14.4 | 25 | 9 | 10 | 7/16 UNF-2A |
| | HOM 10L-07U | 10 | 17 | 19 | 14.4 | 26 | 10 | 11 | 7/16 UNF-2A |
| | HOM 12L-09U | 12 | 19 | 22 | 17.6 | 26 | 10 | 11 | 9/16 UNF-2A |
| | HOM 12L-12U | 12 | 24 | 22 | 22.3 | 28 | 11 | 13 | 3/4 UNF-2A |
| | HOM 12L-14U | 12 | 27 | 22 | 25.5 | 29 | 12.7 | 14.3 | 7/8 UNF-2A |
| | HOM 15L-12U | 15 | 24 | 27 | 22.3 | 29 | 11 | 14 | 3/4 UNF-2A |
| | HOM 15L-14U | 15 | 27 | 27 | 25.5 | 30 | 12.7 | 15.3 | 7/8 UNF-2A |
| PN 160 | HOM 18L-12U | 18 | 27 | 32 | 22.3 | 31 | 11 | 14.5 | 3/4 UNF-2A |
| | HOM 18L-14U | 18 | 27 | 32 | 25.5 | 31 | 12.7 | 14.8 | 7/8 UNF-2A |
| | HOM 22L-14U | 22 | 32 | 36 | 25.5 | 33 | 12.7 | 16.8 | 7/8 UNF-2A |
| | HOM 22L-17U | 22 | 32 | 36 | 31.9 | 33 | 15 | 16.5 | 1 1/16 UN-2A |
| PN 100 | HOM 22L-21U | 22 | 41 | 36 | 38.2 | 34 | 15 | 17.5 | 1 5/16 UN-2A |
| | HOM 28L-17U | 28 | 41 | 41 | 31.9 | 34 | 15 | 17.5 | 1 1/16 UN-2A |
| | HOM 28L-21U | 28 | 41 | 41 | 38.2 | 34 | 15 | 17.5 | 1 5/16 UN-2A |
| | HOM 35L-21U | 35 | 46 | 50 | 38.2 | 39 | 15 | 17.5 | 1 5/16 UN-2A |
| | HOM 35L-26U | 35 | 50 | 50 | 47.7 | 39 | 15 | 17.5 | 1 5/8 UN-2A |
| S heavy PN 630 | HOM 42L-26U | 42 | 55 | 60 | 47.7 | 42 | 15 | 19 | 1 5/8 UN-2A |
| | HOM 08S-07U | 8 | 17 | 19 | 16 | 30 | 9 | 15 | 7/16 UNF-2A |
| | HOM 10S-09U | 10 | 19 | 22 | 17.6 | 31 | 10 | 14.5 | 9/16 UNF-2A |
| PN 400 | HOM 12S-09U | 12 | 22 | 24 | 17.6 | 31 | 10 | 14.5 | 9/16 UNF-2A |
| | HOM 12S-12U | 12 | 24 | 24 | 22.3 | 34 | 11 | 17.5 | 3/4 UNF-2A |
| | HOM 16S-12U | 16 | 24 | 30 | 22.3 | 34 | 11 | 15.5 | 3/4 UNF-2A |
| | HOM 16S-14U | 16 | 27 | 30 | 25.5 | 37 | 12.7 | 18.8 | 7/8 UNF-2A |
| | HOM 20S-12U | 20 | 32 | 36 | 22.3 | 42 | 11 | 20.5 | 3/4 UNF-2A |
| | HOM 20S-14U | 20 | 32 | 36 | 25.5 | 42 | 12.7 | 20.8 | 7/8 UNF-2A |
| | HOM 20S-17U | 20 | 32 | 36 | 31.9 | 42 | 15 | 20.5 | 1 1/16 UN-2A |
| | HOM 25S-17U | 25 | 36 | 46 | 31.9 | 47 | 15 | 23 | 1 1/16 UN-2A |
| | HOM 25S-21U | 25 | 41 | 46 | 38.2 | 47 | 15 | 23 | 1 5/16 UN-2A |
| | PN 250 | HOM 30S-21U | 30 | 46 | 50 | 38.2 | 50 | 15 | 23.5 |
| HOM 30S-26U | | 30 | 50 | 50 | 47.7 | 50 | 15 | 23.5 | 1 5/8 UN-2A |
| HOM 38S-26U | | 38 | 55 | 60 | 47.7 | 57 | 15 | 26 | 1 5/8 UN-2A |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.
*O-Ring of NBR(e.g.Perbunan)Standard, of FPM(e.g. Viton) on request (See Page 16)

MALE CONNECTOR (METRIC PARALLELED) WITH *O-RING **HOM-M**

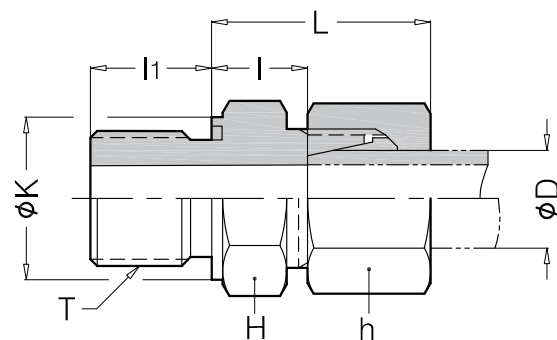


for Metric Paralled

| Series | Part No. | Tube O.D. D | H | h | K | L | l ₁ | l | T (Metric) |
|----------------------|-------------|----------------|----|----|----|----|----------------|------|---------------|
| L light PN 250 | HOM 06L-M10 | 6 | 14 | 14 | - | 23 | 10 | 8.5 | M 10X1 |
| | HOM 08L-M12 | 8 | 17 | 17 | - | 25 | 11.5 | 10 | M 12X1.5 |
| | HOM 10L-M14 | 10 | 19 | 19 | - | 26 | 11.5 | 11 | M 14X1.5 |
| | HOM 12L-M16 | 12 | 22 | 22 | - | 27 | 13 | 12 | M 16X1.5 |
| | HOM 15L-M18 | 15 | 24 | 27 | - | 29 | 14.5 | 13.5 | M 18X1.5 |
| PN 160 | HOM 18L-M22 | 18 | 27 | 32 | - | 30 | 15.5 | 14 | M 22X1.5 |
| | HOM 22L-M26 | 22 | 32 | 36 | - | 32 | 16 | 16 | M 26X1.5 |
| PN 100 | HOM 28L-M33 | 28 | 41 | 41 | 38 | 34 | 19 | 17.5 | M 33X2 |
| | HOM 35L-M42 | 35 | 50 | 50 | 48 | 39 | 19.5 | 17.5 | M 42X2 |
| S heavy PN 630 | HOM 06S-M12 | 6 | 17 | 17 | - | 27 | 11.5 | 12 | M 12X1.5 |
| | HOM 08S-M14 | 8 | 19 | 19 | - | 27 | 11.5 | 12 | M 14X1.5 |
| | HOM 10S-M16 | 10 | 22 | 22 | - | 29 | 13 | 12.5 | M 16X1.5 |
| | HOM 12S-M18 | 12 | 24 | 24 | - | 29 | 14.5 | 13 | M 18X1.5 |
| PN 400 | HOM 16S-M22 | 16 | 27 | 30 | - | 33 | 15.5 | 15 | M 22X1.5 |
| | HOM 20S-M27 | 20 | 32 | 36 | - | 37 | 19 | 15 | M 27X2 |
| | HOM 25S-M33 | 25 | 41 | 46 | 38 | 41 | 19 | 17 | M 33X2 |
| PN 250 | HOM 30S-M42 | 30 | 50 | 50 | 48 | 45 | 19.5 | 18.5 | M 42X2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.
*O-Ring of NBR(e.g.Perbunan)Standard, of FPM(e.g. Viton) on request (See Page 16)

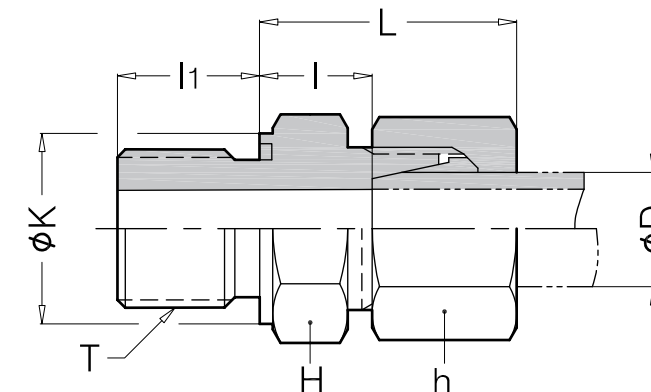
MALE CONNECTOR (BSP PARALLEL) WITH *ED-RING HOM-GED



| Series | Part No. | Tube O.D. | H | h | K | L | l | l ₁ | T (BSPP) |
|----------------------|---------------|-----------|----|----|----|----|------|----------------|-------------|
| | | D | | | | | | | |
| L light PN 250 | HOM 06L-02GED | 6 | 14 | 14 | 14 | 23 | 8.5 | 8 | 1/8 |
| | HOM 06L-04GED | 6 | 19 | 14 | 19 | 25 | 10 | 12 | 1/4 |
| | HOM 08L-02GED | 8 | 14 | 17 | 14 | 24 | 9.5 | 8 | 1/8 |
| | HOM 08L-04GED | 8 | 19 | 17 | 19 | 25 | 10 | 12 | 1/4 |
| | HOM 08L-06GED | 8 | 22 | 17 | 22 | 26 | 11.5 | 12 | 3/8 |
| | HOM 10L-04GED | 10 | 19 | 19 | 19 | 26 | 11 | 12 | 1/4 |
| | HOM 10L-06GED | 10 | 22 | 19 | 22 | 27 | 12.5 | 12 | 3/8 |
| | HOM 10L-08GED | 10 | 27 | 19 | 27 | 28 | 13 | 14 | 1/2 |
| | HOM 12L-04GED | 12 | 19 | 22 | 19 | 27 | 12 | 12 | 1/4 |
| | HOM 12L-06GED | 12 | 22 | 22 | 22 | 27 | 12.5 | 12 | 3/8 |
| | HOM 12L-08GED | 12 | 27 | 22 | 27 | 28 | 13 | 14 | 1/2 |
| | HOM 15L-06GED | 15 | 24 | 27 | 22 | 29 | 13.5 | 12 | 3/8 |
| HOM 15L-08GED | 15 | 27 | 27 | 27 | 29 | 14 | 14 | 1/2 | |
| PN 160 | HOM 18L-08GED | 18 | 27 | 32 | 27 | 31 | 14.5 | 14 | 1/2 |
| | HOM 18L-12GED | 18 | 32 | 32 | 32 | 31 | 14.5 | 16 | 3/4 |
| | HOM 22L-12GED | 22 | 32 | 36 | 32 | 33 | 16.5 | 16 | 3/4 |
| PN 100 | HOM 28L-16GED | 28 | 41 | 41 | 40 | 34 | 17.5 | 18 | 1 |
| | HOM 35L-20GED | 35 | 50 | 50 | 50 | 39 | 17.5 | 20 | 1 1/4 |
| | HOM 42L-24GED | 42 | 55 | 60 | 55 | 42 | 19 | 22 | 1 1/2 |
| S Heavy PN 630 | HOM 06S-04GED | 6 | 19 | 17 | 19 | 28 | 13 | 12 | 1/4 |
| | HOM 08S-04GED | 8 | 19 | 19 | 19 | 30 | 15 | 12 | 1/4 |
| | HOM 08S-06GED | 8 | 22 | 19 | 22 | 30 | 15.5 | 12 | 3/8 |
| | HOM 10S-04GED | 10 | 19 | 22 | 19 | 31 | 14.5 | 12 | 1/4 |
| | HOM 10S-06GED | 10 | 22 | 22 | 22 | 31 | 15 | 12 | 3/8 |
| | HOM 10S-08GED | 10 | 27 | 22 | 27 | 34 | 17.5 | 14 | 1/2 |
| | HOM 12S-04GED | 12 | 22 | 24 | 19 | 33 | 16.5 | 12 | 1/4 |
| | HOM 12S-06GED | 12 | 22 | 24 | 22 | 33 | 17 | 12 | 3/8 |
| | HOM 12S-08GED | 12 | 27 | 24 | 32 | 34 | 17.5 | 14 | 1/2 |
| | HOM 14S-08GED | 14 | 27 | 27 | 27 | 37 | 19 | 14 | 1/2 |
| PN 400 | HOM 16S-06GED | 16 | 27 | 30 | 22 | 36 | 18 | 12 | 3/8 |
| | HOM 16S-08GED | 16 | 27 | 30 | 27 | 37 | 18.5 | 14 | 1/2 |
| | HOM 16S-12GED | 16 | 32 | 30 | 27 | 39 | 20.5 | 16 | 3/4 |
| | HOM 20S-12GED | 20 | 32 | 36 | 32 | 42 | 20.5 | 16 | 3/4 |
| | HOM 25S-08GED | 25 | 41 | 46 | 27 | 47 | 23 | 14 | 1/2 |
| | HOM 25S-12GED | 25 | 41 | 46 | 32 | 47 | 23 | 16 | 3/4 |
| PN 250 | HOM 25S-16GED | 25 | 41 | 46 | 40 | 47 | 23 | 18 | 1 |
| | HOM 30S-20GED | 30 | 50 | 50 | 50 | 50 | 23.5 | 20 | 1 1/4 |
| | HOM 38S-24GED | 38 | 55 | 60 | 55 | 57 | 26 | 22 | 1 1/2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.
* ED-Ring of NBR(e.g. Perbunan) standard, of FPM(e.g. Viton) on request (see page 16)

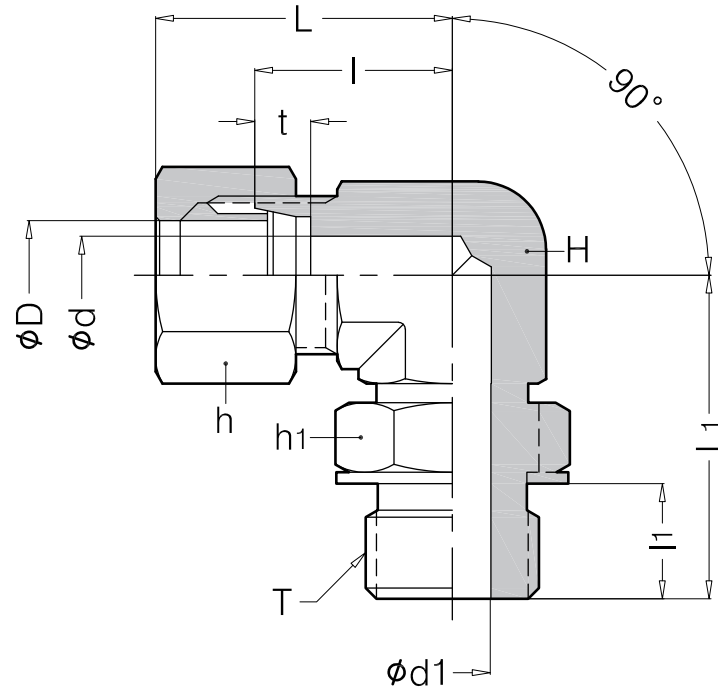
MALE CONNECTOR (METRIC PARALLEL) WITH *ED-RING HOM-MED



| Series | Part No. | Tube O.D. | H | h | K | L | l | l ₁ | T (Metric) | |
|----------------------|---------------|---------------|----|----|----|----|------|----------------|---------------|----------|
| | | D | | | | | | | | |
| L Light PN 250 | HOM 06L-M10ED | 6 | 14 | 14 | 14 | 23 | 8.5 | 8 | M 10X1 | |
| | HOM 08L-M12ED | 8 | 17 | 17 | 17 | 25 | 10 | 12 | M 12X1.5 | |
| | HOM 10L-M14ED | 10 | 19 | 19 | 19 | 26 | 11 | 12 | M 14X1.5 | |
| | HOM 12L-M16ED | 12 | 22 | 22 | 22 | 27 | 12.5 | 12 | M 16X1.5 | |
| | HOM 12L-M18ED | 12 | 24 | 22 | 24 | 27 | 12.5 | 12 | M 18X1.5 | |
| | HOM 12L-M22ED | 12 | 27 | 22 | 27 | 29 | 14 | 14 | M 22X1.5 | |
| | HOM 15L-M18ED | 15 | 24 | 27 | 24 | 29 | 13.5 | 12 | M 18X1.5 | |
| | HOM 15L-M22ED | 15 | 27 | 27 | 27 | 30 | 15 | 14 | M 22X1.5 | |
| | PN 160 | HOM 18L-M22ED | 18 | 27 | 27 | 27 | 31 | 14.5 | 14 | M 22X1.5 |
| | | HOM 22L-M26ED | 22 | 32 | 36 | 32 | 33 | 16.5 | 16 | M 26X1.5 |
| | PN 100 | HOM 28L-M33ED | 28 | 41 | 41 | 40 | 34 | 17.5 | 18 | M 33X2 |
| | | HOM 35L-M42ED | 35 | 50 | 50 | 50 | 39 | 17.5 | 20 | M 42X2 |
| HOM 42L-M48ED | | 42 | 55 | 60 | 55 | 42 | 19 | 22 | M 48X2 | |
| S Heavy PN 630 | HOM 06S-M12ED | 6 | 17 | 17 | 17 | 28 | 13 | 12 | M 12X1.5 | |
| | HOM 08S-M14ED | 8 | 19 | 19 | 19 | 30 | 15 | 12 | M 14X1.5 | |
| | HOM 10S-M16ED | 10 | 22 | 22 | 22 | 31 | 15 | 12 | M 16X1.5 | |
| | HOM 12S-M18ED | 12 | 24 | 24 | 24 | 33 | 17 | 12 | M 18X1.5 | |
| PN 400 | HOM 14S-M20ED | 14 | 27 | 27 | 26 | 37 | 19 | 14 | M 20X1.5 | |
| | HOM 16S-M22ED | 16 | 27 | 30 | 27 | 37 | 18.5 | 14 | M 22X1.5 | |
| | HOM 20S-M27ED | 20 | 32 | 36 | 32 | 42 | 20.5 | 16 | M 27X2 | |
| PN 250 | HOM 25S-M33ED | 25 | 41 | 46 | 40 | 47 | 23 | 18 | M 33X2 | |
| | HOM 30S-M42ED | 30 | 50 | 50 | 50 | 50 | 23.5 | 20 | M 42X2 | |
| | HOM 38S-M48ED | 38 | 55 | 60 | 55 | 57 | 26 | 22 | M 48X2 | |

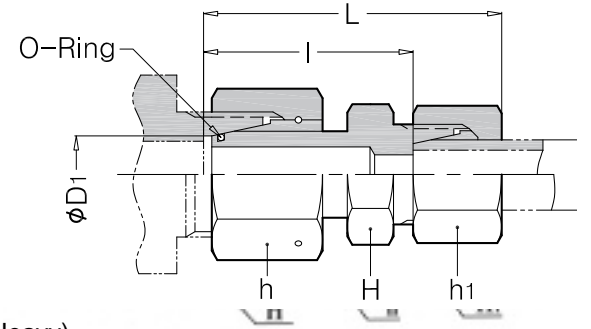
Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.
* ED-Ring of NBR(e.g. Perbunan) standard, of FPM(e.g. Viton) on request (see page 16)

O-SEAL MALE ELBOW HOLM



| Serie | Part No. | Tube O.D. D | T (BSPP) | Width across flat | | | I | I ₁ | L | L ₁ |
|----------------------|--------------|----------------|-------------|-------------------|----|----------------|----|----------------|------|----------------|
| | | | | H | h | h ₁ | | | | |
| L Light PN 250 | HOLM 06L-02G | 6 | 1/8 | 14 | 14 | 17 | 20 | 10 | 30.5 | 30 |
| | HOLM 08L-04G | 8 | 1/4 | 14 | 17 | 19 | 23 | 12 | 33.5 | 34 |
| | HOLM 10L-04G | 10 | 1/4 | 19 | 19 | 22 | 23 | 12 | 34.5 | 35 |
| | HOLM 12L-06G | 12 | 3/8 | 19 | 22 | 24 | 24 | 12 | 35.5 | 36 |
| | HOLM 15L-08G | 15 | 1/2 | 24 | 27 | 30 | 29 | 16 | 41.5 | 46 |
| PN 160 | HOLM 18L-08G | 18 | 1/2 | 27 | 32 | 36 | 32 | 16 | 44.5 | 46 |
| | HOLM 22L-12G | 22 | 3/4 | 32 | 36 | 41 | 34 | 17 | 46.5 | 52 |
| PN 100 | HOLM 28L-16G | 28 | 1 | 41 | 41 | 46 | 44 | 21 | 55.0 | 62 |
| | HOLM 35L-20G | 35 | 1 1/4 | 41 | 50 | 55 | 46 | 21 | 63.5 | 57 |
| | HOLM 42L-24G | 42 | 1 1/2 | 50 | 60 | 65 | 50 | 21 | 69.5 | 73 |
| S Heavy PN 630 | HOLM 06S-04G | 6 | 1/4 | 14 | 17 | 19 | 20 | 12 | 33.5 | 34 |
| | HOLM 08S-04G | 8 | 1/4 | 14 | 19 | 22 | 23 | 12 | 33.5 | 34 |
| | HOLM 10S-06G | 10 | 3/8 | 19 | 22 | 24 | 23 | 12 | 35.5 | 36 |
| | HOLM 12S-06G | 12 | 3/8 | 19 | 24 | 27 | 24 | 12 | 41.5 | 40 |
| PN 400 | HOLM 12S-08G | 12 | 1/2 | 24 | 24 | 27 | 24 | 16 | 41.5 | 46 |
| | HOLM 16S-08G | 16 | 1/2 | 27 | 30 | 32 | 32 | 16 | 44.5 | 46 |
| | HOLM 16S-12G | 16 | 3/4 | 32 | 30 | 32 | 32 | 17 | 45.5 | 52 |
| PN 250 | HOLM 20S-12G | 20 | 3/4 | 32 | 36 | 41 | 34 | 17 | 49.5 | 60 |
| | HOLM 25S-16G | 25 | 1 | 41 | 46 | 46 | 36 | 21 | 55.5 | 66 |
| | HOLM 30S-20G | 30 | 1 1/4 | 41 | 50 | 50 | 44 | 21 | 60.5 | 66 |
| | HOLM 38S-24G | 38 | 1 1/2 | 50 | 60 | 65 | 50 | 21 | 69.5 | 73 |

SWIVEL REDUCING ADAPTER WITH CONE HRED



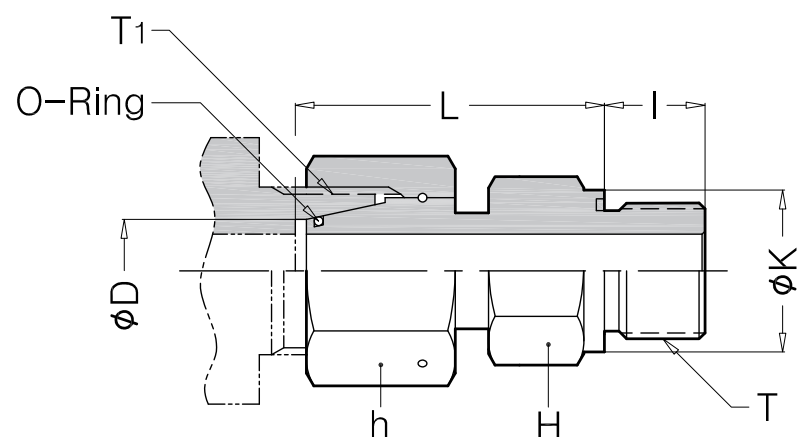
Series L(Light)

Series S(Heavy)

| Series | Part No. | Tube O.D. | | H | h | h ₁ | L | I | Series | Part No. | Tube O.D. | | H | h | h ₁ | L | I | |
|--------------|--------------|----------------|----------------|------|----|----------------|------|--------------|--------|--------------|----------------|----------------|----|------|----------------|------|------|------|
| | | D ₁ | D ₂ | | | | | | | | D ₁ | D ₂ | | | | | | |
| PN 250 | HRED 08L-06L | 8 | 6 | 14 | 17 | 14 | 39 | 24.5 | PN 630 | HRED 08S-06S | 8 | 6 | 17 | 19 | 17 | 44 | 28 | |
| | HRED 10L-06L | 10 | 6 | 17 | 19 | 14 | 39.5 | 24.5 | | HRED 10S-06S | 10 | 6 | 17 | 22 | 17 | 44 | 29.5 | |
| | HRED 10L-08L | | 8 | | | 17 | 39.5 | 24.5 | | HRED 10S-08S | | 8 | | | 19 | 44 | 29.5 | |
| | HRED 12L-06L | 12 | 6 | 17 | 22 | 14 | 40 | 25 | | PN 630 | HRED 12S-06S | 12 | 6 | 19 | 24 | 17 | 45 | 30 |
| | HRED 12L-08L | | 8 | | | 17 | 40 | 25 | | | HRED 12S-08S | | 8 | | | 19 | 45 | 30 |
| | HRED 12L-10L | | 10 | | | 19 | 41 | 26 | | | HRED 12S-10S | | 10 | | | 22 | 46 | 29.5 |
| | HRED 15L-06L | 15 | 6 | 22 | 27 | 14 | 42 | 27.5 | | PN 630 | HRED 14S-06S | 14 | 6 | 22 | 27 | 17 | 47.5 | 33 |
| | HRED 15L-08L | | 8 | | | 17 | 42 | 27.5 | | | HRED 14S-08S | | 8 | | | 19 | 47.5 | 33 |
| | HRED 15L-10L | | 10 | | | 19 | 43 | 28.5 | | | HRED 14S-10S | | 10 | | | 22 | 48.5 | 32.5 |
| | HRED 15L-12L | | 12 | | | 22 | 43 | 28.5 | | | HRED 14S-12S | | 12 | | | 24 | 48.5 | 32.5 |
| PN 160 | HRED 18L-06L | 18 | 6 | 25 | 32 | 14 | 43 | 28 | PN 400 | HRED 16S-06S | 16 | 6 | 24 | 30 | 17 | 50.0 | 35 | |
| | HRED 18L-08L | | 8 | | | 17 | 43 | 28 | | HRED 16S-08S | | 8 | | | 19 | 50 | 35 | |
| | HRED 18L-10L | | 10 | | | 19 | 44.5 | 29.5 | | HRED 16S-10S | | 10 | | | 22 | 51 | 34.5 | |
| | HRED 18L-12L | | 12 | | | 22 | 44.5 | 29.5 | | HRED 16S-12S | | 12 | | | 24 | 51 | 34.5 | |
| | HRED 18L-15L | | 15 | | | 27 | 45.5 | 30.5 | | HRED 16S-14S | | 14 | | | 27 | 54 | 36 | |
| | HRED 22L-06L | 22 | 6 | 28.5 | 36 | 14 | 47 | 32 | | PN 400 | HRED 20S-06S | 20 | 6 | 28.5 | 36 | 17 | 54 | 39 |
| | HRED 22L-08L | | 8 | | | 17 | 47 | 32 | | | HRED 20S-08S | | 8 | | | 19 | 54 | 39 |
| | HRED 22L-10L | | 10 | | | 19 | 48 | 33 | | | HRED 20S-10S | | 10 | | | 22 | 55 | 38.5 |
| | HRED 22L-12L | | 12 | | | 22 | 48 | 33 | | | HRED 20S-12S | | 12 | | | 24 | 55 | 38.5 |
| | HRED 22L-15L | | 15 | | | 27 | 49 | 34 | | | HRED 20S-14S | | 14 | | | 27 | 58 | 40 |
| HRED 22L-18L | | 18 | | | 32 | 50 | 33.5 | HRED 20S-16S | | | 16 | | | 30 | 58 | 39.5 | | |
| PN 100 | HRED 28L-06L | 28 | 6 | 36 | 41 | 14 | 49 | 34 | PN 400 | HRED 25S-06S | 25 | 6 | 36 | 46 | 17 | 58 | 43.5 | |
| | HRED 28L-08L | | 8 | | | 17 | 49 | 34 | | HRED 25S-08S | | 8 | | | 19 | 58 | 43.5 | |
| | HRED 28L-10L | | 10 | | | 19 | 50 | 35 | | HRED 25S-10S | | 10 | | | 22 | 59 | 43 | |
| | HRED 28L-12L | | 12 | | | 22 | 50 | 35 | | HRED 25S-12S | | 12 | | | 24 | 59 | 43 | |
| | HRED 28L-15L | | 15 | | | 27 | 51 | 36 | | HRED 25S-14S | | 14 | | | 27 | 62 | 44.5 | |
| | HRED 28L-18L | | 18 | | | 32 | 52 | 35.5 | | HRED 25S-16S | | 16 | | | 30 | 62 | 44 | |
| | HRED 28L-22L | | 22 | | | 36 | 54 | 37.5 | | HRED 25S-20S | | 20 | | | 36 | 66 | 44 | |
| | HRED 35L-06L | 35 | 6 | 46 | 50 | 14 | 55 | 40 | | PN 250 | HRED 30S-06S | 30 | 6 | 41 | 50 | 17 | 66 | 51 |
| HRED 35L-08L | | 8 | | | 17 | 55 | 40 | HRED 30S-08S | | | 8 | | | 19 | 66 | 51 | | |
| HRED 35L-10L | | 10 | | | 19 | 56 | 41 | HRED 30S-10S | | | 10 | | | 22 | 67 | 50.5 | | |
| HRED 35L-12L | | 12 | | | 22 | 56 | 41 | HRED 30S-12S | | | 12 | | | 24 | 67 | 50.5 | | |
| HRED 35L-15L | | 15 | | | 27 | 57 | 42 | HRED 30S-14S | | | 14 | | | 27 | 70 | 52 | | |
| HRED 35L-18L | | 18 | | | 32 | 58 | 41.5 | HRED 30S-16S | | | 16 | | | 30 | 70 | 51.5 | | |
| HRED 35L-22L | | 22 | | | 36 | 60 | 43.5 | HRED 30S-20S | | | 20 | | | 36 | 73 | 51.5 | | |
| HRED 35L-28L | | 28 | | | 41 | 60 | 43.5 | HRED 30S-25S | | | 25 | | | 46 | 76 | 52 | | |
| PN 100 | HRED 42L-06L | 42 | 6 | 50 | 60 | 14 | 55 | 40.5 | PN 250 | HRED 38S-06S | 38 | 6 | 50 | 60 | 17 | 70.5 | 56 | |
| | HRED 42L-08L | | 8 | | | 17 | 55 | 40.5 | | HRED 38S-08S | | 18 | | | 19 | 70.5 | 56 | |
| | HRED 42L-10L | | 10 | | | 19 | 56 | 41.5 | | HRED 38S-10S | | 10 | | | 22 | 71.5 | 55.5 | |
| | HRED 42L-12L | | 12 | | | 22 | 56 | 41.5 | | HRED 38S-12S | | 12 | | | 24 | 71.5 | 55.5 | |
| | HRED 42L-15L | | 15 | | | 27 | 58 | 42.5 | | HRED 38S-14S | | 14 | | | 27 | 74.5 | 57 | |
| | HRED 42L-18L | | 18 | | | 32 | 58 | 42 | | HRED 38S-16S | | 16 | | | 30 | 74.5 | 56.5 | |
| | HRED 42L-22L | | 22 | | | 36 | 60 | 44 | | HRED 38S-20S | | 20 | | | 36 | 78.5 | 56.5 | |
| | HRED 42L-28L | | 28 | | | 41 | 61 | 44 | | HRED 38S-25S | | 25 | | | 46 | 81.5 | 57 | |
| | HRED 42L-35L | | 35 | | | 50 | 65 | 43 | | HRED 38S-30S | | 30 | | | 50 | 85.5 | 58.5 | |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change. Please observe final assembly instruction on page 22. * O-Ring of NBR(e.g.perbunan) standard, FRM(e.g.viton) on request (see page 16)

SWIVEL ADAPTER (BSP PARALLED) WITH CONE AND *ED-RING HEGE-G



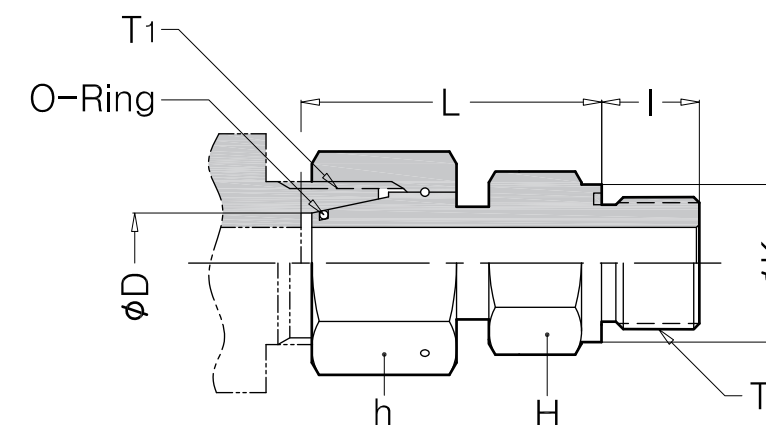
for BSP Paralled

| Series | Part No. | Tube O.D. D | H | h | K | L | I | T (BSPP) | T ₁ (Metric) |
|----------------------|--------------|----------------|----|----|----|------|----|-------------|----------------------------|
| L Light PN 250 | HEGE 06L-02G | 6 | 14 | 14 | 14 | 24.5 | 8 | 1/8 | M 12X1.5 |
| | HEGE 08L-04G | 8 | 19 | 17 | 19 | 29.5 | 12 | 1/4 | M 14X1.5 |
| | HEGE 10L-04G | 10 | 19 | 19 | 19 | 27.5 | 12 | 1/4 | M 16X1.5 |
| | HEGE 12L-06G | 12 | 22 | 22 | 22 | 34 | 12 | 3/8 | M 18X1.5 |
| | HEGE 15L-08G | 15 | 27 | 27 | 27 | 32 | 14 | 1/2 | M 22X1.5 |
| PN 160 | HEGE 18L-08G | 18 | 27 | 32 | 27 | 31.5 | 14 | 1/2 | M 26X1.5 |
| | HEGE 22L-12G | 22 | 32 | 36 | 32 | 32.5 | 16 | 3/4 | M 30X2 |
| PN 100 | HEGE 28L-16G | 28 | 41 | 41 | 40 | 35 | 18 | 1 | M 36X2 |
| | HEGE 35L-20G | 35 | 50 | 50 | 50 | 42.5 | 20 | 1 1/4 | M 45X2 |
| | HEGE 42L-24G | 42 | 55 | 60 | 55 | 46.5 | 22 | 1 1/2 | M 52X2 |
| S Heavy PN 630 | HEGE 06S-04G | 6 | 19 | 17 | 19 | 27 | 12 | 1/4 | M 14X1.5 |
| | HEGE 08S-04G | 8 | 19 | 19 | 19 | 29.5 | 12 | 1/4 | M 16X1.5 |
| | HEGE 10S-06G | 10 | 22 | 22 | 22 | 32 | 12 | 3/8 | M 18X1.5 |
| | HEGE 12S-06G | 12 | 22 | 24 | 22 | 34 | 12 | 3/8 | M 20X1.5 |
| | HEGE 14S-08G | 14 | 27 | 27 | 27 | 36.5 | 14 | 1/2 | M 22X1.5 |
| PN 400 | HEGE 16S-08G | 16 | 27 | 30 | 27 | 37 | 14 | 1/2 | M 24X1.5 |
| | HEGE 20S-12G | 20 | 32 | 36 | 32 | 43 | 16 | 3/4 | M 30X2 |
| | HEGE 25S-16G | 25 | 41 | 46 | 40 | 48 | 18 | 1 | M 36X2 |
| PN 250 | HEGE 30S-20G | 30 | 50 | 50 | 50 | 51 | 20 | 1 1/4 | M 42X2 |
| | HEGE 38S-24G | 38 | 55 | 60 | 55 | 60 | 22 | 1 1/2 | M 52X2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.
Please observe final assembly instruction on page 22.

*ED-Ring of NBR(e.g.perbunan) standard, FRM(e.g.viton) on request (see page 16)

SWIVEL ADAPTER (METRIC PARALLED) WITH CONE AND *ED-RING HEGE-M



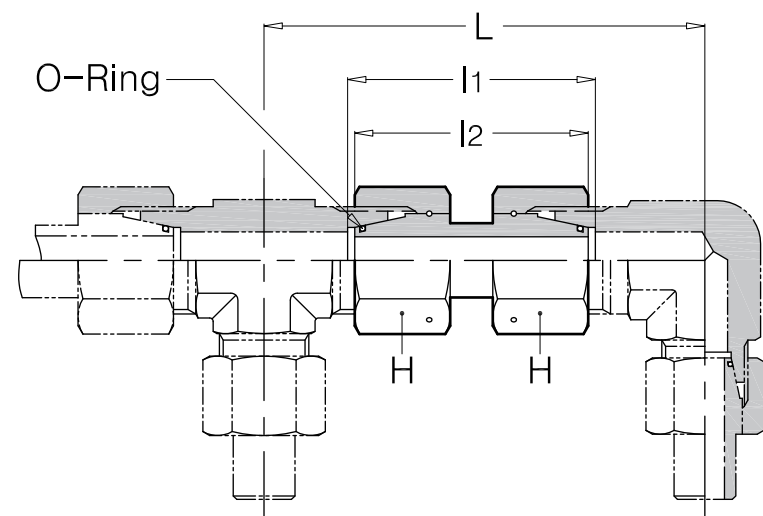
for Metric Paralled

| Series | Part No. | Tube O.D. D | H | h | K | L | I | T (Metric) | T ₁ (Metric) |
|----------------------|--------------|----------------|----|----|----|------|----|---------------|----------------------------|
| L Light PN 250 | HEGE 06L-M10 | 6 | 14 | 14 | 14 | 24.5 | 8 | M 10X1 | M 12X1.5 |
| | HEGE 08L-M12 | 8 | 19 | 17 | 17 | 26.5 | 12 | M 12X1.5 | M 14X1.5 |
| | HEGE 10L-M14 | 10 | 19 | 19 | 19 | 27.5 | 12 | M 14X1.5 | M 16X1.5 |
| | HEGE 12L-M16 | 12 | 22 | 22 | 22 | 30.5 | 12 | M 16X1.5 | M 18X1.5 |
| | HEGE 15L-M18 | 15 | 24 | 27 | 24 | 31.5 | 12 | M 18X1.5 | M 22X1.5 |
| PN 160 | HEGE 18L-M22 | 18 | 27 | 32 | 27 | 31.5 | 14 | M 22X1.5 | M 26X1.5 |
| | HEGE 22L-M26 | 22 | 32 | 36 | 32 | 32.5 | 16 | M 26X1.5 | M 30X2 |
| PN 100 | HEGE 28L-M33 | 28 | 41 | 41 | 40 | 35 | 18 | M 33X2 | M 36X2 |
| | HEGE 35L-M42 | 35 | 50 | 50 | 50 | 42.5 | 20 | M 42X2 | M 45X2 |
| | HEGE 42L-M48 | 42 | 55 | 60 | 55 | 46.5 | 22 | M 48X2 | M 52X2 |
| S Heavy PN 630 | HEGE 06S-M12 | 6 | 17 | 17 | 17 | 27 | 12 | M 12X1.5 | M 14X1.5 |
| | HEGE 08S-M14 | 8 | 19 | 19 | 19 | 29.5 | 12 | M 14X1.5 | M 16X1.5 |
| | HEGE 10S-M16 | 10 | 22 | 22 | 22 | 32 | 12 | M 16X1.5 | M 18X1.5 |
| | HEGE 12S-M18 | 12 | 24 | 24 | 24 | 34 | 12 | M 18X1.5 | M 20X1.5 |
| | HEGE 14S-M20 | 14 | 27 | 27 | 26 | 36.5 | 14 | M 20X1.5 | M 22X1.5 |
| PN 400 | HEGE 16S-M22 | 16 | 27 | 30 | 27 | 37 | 14 | M 22X1.5 | M 24X1.5 |
| | HEGE 20S-M27 | 20 | 32 | 36 | 32 | 43 | 16 | M 27X2 | M 30X2 |
| | HEGE 25S-M33 | 25 | 41 | 46 | 40 | 48 | 18 | M 33X2 | M 36X2 |
| PN 250 | HEGE 30S-M42 | 30 | 50 | 50 | 50 | 51 | 20 | M 42X2 | M 42X2 |
| | HEGE 38S-M48 | 38 | 55 | 60 | 55 | 60 | 22 | M 48X2 | M 52X2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.
Please observe final assembly instruction on page 22.

* O-Ring of NBR(e.g.perbunan) standard, FRM(e.g.viton) on request (see page 16)

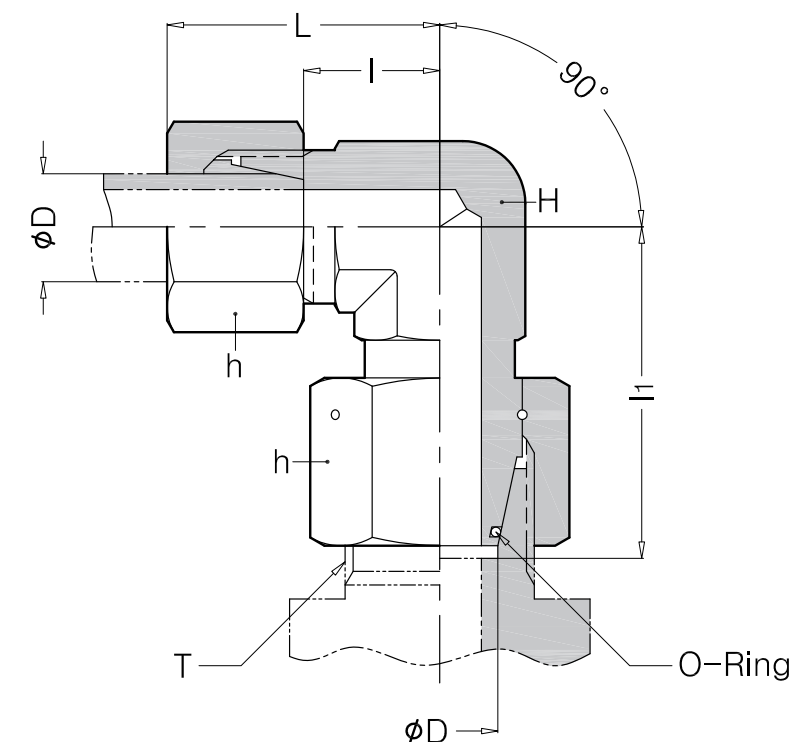
SWIVEL UNION WITH CONE HUE



| Series | Part No. | Tube O.D. D | H | L | l ₁ | l ₂ |
|----------------------|----------------------|----------------|----|------|----------------|----------------|
| L Light PN 500 | HUE-06L | 6 | 14 | 64 | 36 | 34 |
| | HUE-08L | 8 | 17 | 64 | 36 | 34 |
| | HUE-10L | 10 | 19 | 67 | 37 | 36 |
| | HUE-12L | 12 | 22 | 71 | 37 | 36 |
| PN 400 | HUE-15L | 15 | 27 | 82 | 40 | 39 |
| | HUE-18L | 18 | 32 | 89.5 | 42.5 | 40.5 |
| | HUE-22L | 22 | 36 | 102 | 47 | 45 |
| PN 250 | HUE-28L | 28 | 41 | 110 | 49 | 47 |
| | HUE-35L | 35 | 50 | 127 | 58 | 53 |
| | HUE-42L | 42 | 60 | 139 | 59 | 53 |
| | S Heavy PN 800 | HUE-06S | 6 | 17 | 71 | 39 |
| HUE-08S | | 8 | 19 | 73 | 39 | 37 |
| HUE-10S | | 10 | 22 | 78 | 43 | 41 |
| HUE-12S | | 12 | 24 | 87 | 44 | 43 |
| PN 630 | HUE-14S | 14 | 27 | 92 | 48 | 45 |
| | HUE-16S | 16 | 30 | 99 | 50 | 46 |
| | HUE-20S | 20 | 36 | 113 | 60 | 55 |
| PN 400 | HUE-25S | 25 | 46 | 126 | 66 | 58 |
| | HUE-30S | 30 | 50 | 144 | 73 | 62 |
| | HUE-38S | 38 | 60 | 165 | 83 | 67 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.
Please observe final assembly instruction on page 22. * O-Ring of NBR(e.g.perbunan) standard, FRM(e.g.viton) on request (see page 16)

SWIVEL ADJUSTABLE ELBOW WITH CONE HEW

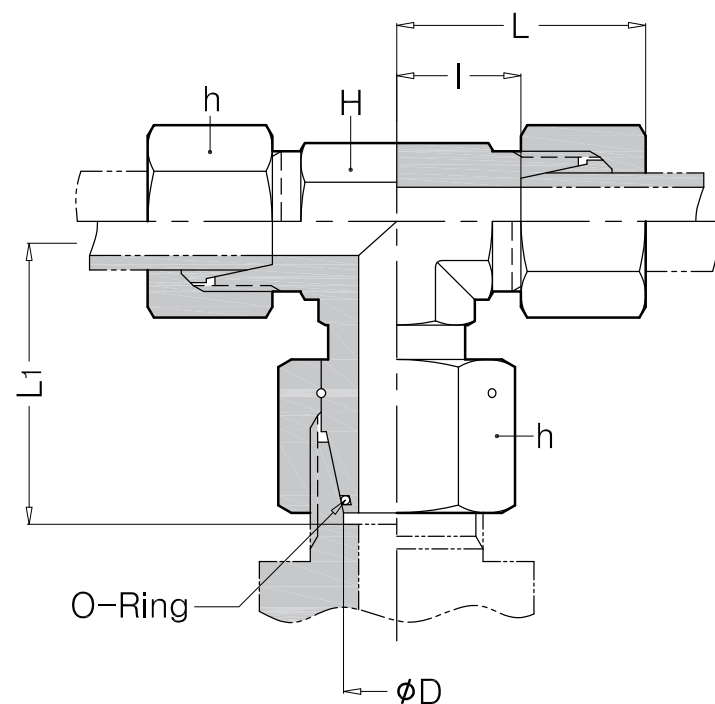


| Series | Part No. | Tube O.D. | H | h | L | l | l ₁ | T (Metric) |
|----------------------|----------|-----------|----|----|----|------|----------------|---------------|
| | | D | | | | | | |
| L Light PN 250 | HEW-06L | 6 | 12 | 14 | 27 | 12 | 26 | M 12X1.5 |
| | HEW-08L | 8 | 12 | 17 | 29 | 14 | 27.5 | M 14X1.5 |
| | HEW-10L | 10 | 14 | 19 | 30 | 15 | 29 | M 16X1.5 |
| | HEW-12L | 12 | 17 | 22 | 32 | 17 | 29.5 | M 18X1.5 |
| | HEW-15L | 15 | 19 | 27 | 36 | 21 | 32.5 | M 22X1.5 |
| PN 160 | HEW-18L | 18 | 24 | 32 | 40 | 23.5 | 35.5 | M 26X1.5 |
| | HEW-22L | 22 | 27 | 36 | 44 | 27.5 | 38.5 | M 30X2 |
| PN 100 | HEW-28L | 28 | 36 | 41 | 47 | 30.5 | 41.5 | M 36X2 |
| | HEW-35L | 35 | 41 | 50 | 56 | 34.5 | 51 | M 45X2 |
| | HEW-42L | 42 | 50 | 60 | 63 | 40 | 56 | M 52X2 |
| S Heavy PN 630 | HEW-06S | 6 | 12 | 17 | 31 | 16 | 27 | M 14X1.5 |
| | HEW-08S | 8 | 14 | 19 | 32 | 17 | 27.5 | M 16X1.5 |
| | HEW-10S | 10 | 17 | 22 | 34 | 17.5 | 30 | M 18X1.5 |
| | HEW-12S | 12 | 17 | 24 | 38 | 21.5 | 31 | M 20X1.5 |
| | HEW-14S | 14 | 19 | 27 | 40 | 22 | 35 | M 22X1.5 |
| PN 400 | HEW-16S | 16 | 24 | 30 | 43 | 24.5 | 36.5 | M 24X1.5 |
| | HEW-20S | 20 | 27 | 36 | 48 | 26.5 | 44.5 | M 30X2 |
| | HEW-25S | 25 | 36 | 46 | 54 | 30 | 50 | M 36X2 |
| PN 250 | HEW-30S | 30 | 41 | 50 | 62 | 35.5 | 55 | M 42X2 |
| | HEW-38S | 38 | 50 | 60 | 72 | 41 | 63 | M 52X2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.
Please observe final assembly instruction on page 22.

*O-Ring of NBR(e.g.Perbunan)Standard, of FPM(e.g. Viton) on request (See Page 16)

SWIVEL ADJUSTABLE BRANCH TEE WITH CONE HET

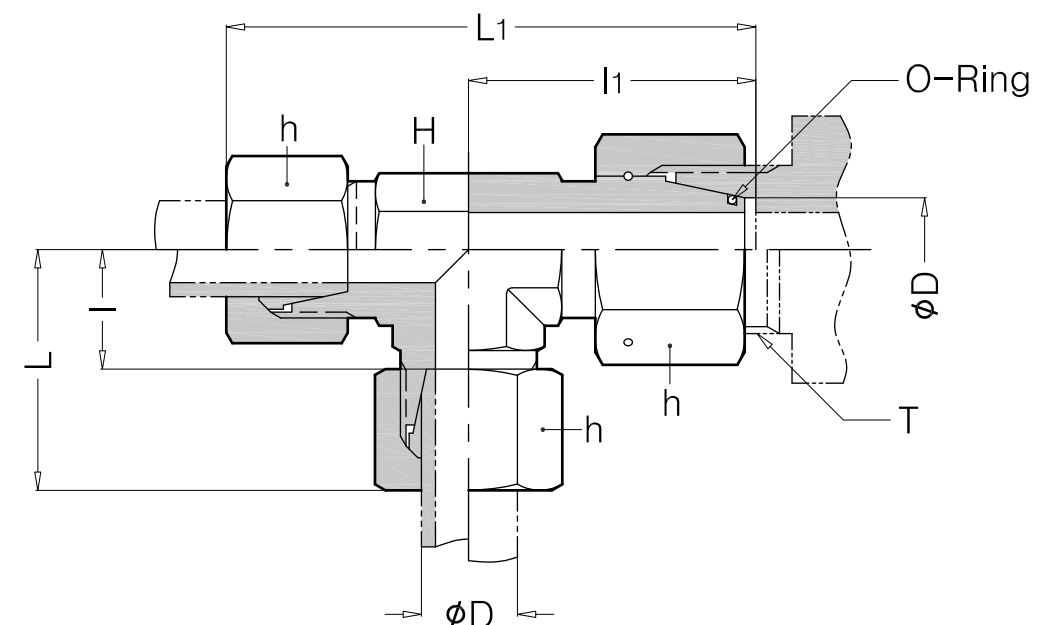


| Series | Part No. | Tube O.D. | H | h | L | l ₁ | l | T (Metric) |
|----------------------|----------|-----------|----|----|----|----------------|------|---------------|
| | | D | | | | | | |
| L Light PN 250 | HET-06L | 6 | 12 | 14 | 27 | 26 | 12 | M 12X1.5 |
| | HET-08L | 8 | 12 | 17 | 29 | 27.5 | 14 | M 14X1.5 |
| | HET-10L | 10 | 14 | 19 | 30 | 29 | 15 | M 16X1.5 |
| | HET-12L | 12 | 17 | 22 | 32 | 29.5 | 17 | M 18X1.5 |
| | HET-15L | 15 | 19 | 27 | 36 | 32.5 | 21 | M 22X1.5 |
| PN 160 | HET-18L | 18 | 24 | 32 | 40 | 35.5 | 23.5 | M 26X1.5 |
| | HET-22L | 22 | 27 | 36 | 44 | 38.5 | 27.5 | M 30X2 |
| PN 100 | HET-28L | 28 | 36 | 41 | 47 | 41.5 | 30.5 | M 36X2 |
| | HET-35L | 35 | 41 | 50 | 56 | 51 | 34.5 | M 45X2 |
| PN 100 | HET-42L | 42 | 50 | 60 | 63 | 56 | 40 | M 52X2 |
| | HET-06S | 6 | 12 | 17 | 31 | 27 | 16 | M 14X1.5 |
| S Heavy PN 630 | HET-08S | 8 | 14 | 19 | 32 | 27.5 | 17 | M 16X1.5 |
| | HET-10S | 10 | 17 | 22 | 34 | 30 | 17.5 | M 18X1.5 |
| | HET-12S | 12 | 17 | 24 | 38 | 31 | 21.5 | M 20X1.5 |
| | HET-14S | 14 | 19 | 27 | 40 | 35 | 22 | M 22X1.5 |
| | HET-16S | 16 | 24 | 30 | 43 | 36.5 | 24.5 | M 24X1.5 |
| PN 400 | HET-20S | 20 | 27 | 36 | 48 | 44.5 | 26.5 | M 30X2 |
| | HET-25S | 25 | 36 | 46 | 54 | 50 | 30 | M 36X2 |
| PN 250 | HET-30S | 30 | 41 | 50 | 62 | 55 | 35.5 | M 42X2 |
| | HET-38S | 38 | 50 | 60 | 72 | 63 | 41 | M 52X2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.
Please observe final assembly instruction on page 22.

*O-Ring of NBR(e.g.Perbunan)Standard, of FPM(e.g. Viton) on request (See Page 16)

SWIVEL ADJUSTABLE RUN TEE WITH CONE HEL

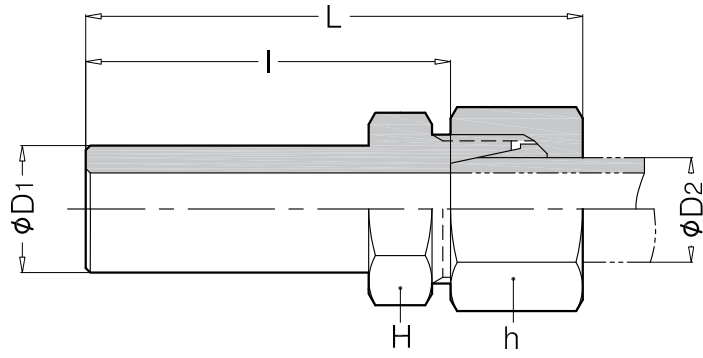


| Series | Part No. | Tube O.D. | H | h | L | L ₁ | l | l ₁ | T (Metric) |
|----------------------|----------|-----------|----|----|----|----------------|------|----------------|---------------|
| | | D | | | | | | | |
| L Light PN 250 | HEL-06L | 6 | 12 | 14 | 27 | 53 | 12 | 26 | M 12X1.5 |
| | HEL-08L | 8 | 12 | 17 | 29 | 56 | 14 | 27.5 | M 14X1.5 |
| | HEL-10L | 10 | 14 | 19 | 30 | 59 | 15 | 29 | M 16X1.5 |
| | HEL-12L | 12 | 17 | 22 | 32 | 61 | 17 | 29.5 | M 18X1.5 |
| | HEL-15L | 15 | 19 | 27 | 36 | 69 | 21 | 32.5 | M 22X1.5 |
| PN 160 | HEL-18L | 18 | 24 | 32 | 40 | 75 | 23.5 | 35.5 | M 26X1.5 |
| | HEL-22L | 22 | 27 | 36 | 44 | 82 | 27.5 | 38.5 | M 30X2 |
| PN 100 | HEL-28L | 28 | 36 | 41 | 47 | 89 | 30.5 | 41.5 | M 36X2 |
| | HEL-35L | 35 | 41 | 50 | 56 | 107 | 34.5 | 51 | M 45X2 |
| PN 100 | HEL-42L | 42 | 50 | 60 | 63 | 119 | 40 | 56 | M 52X2 |
| | HEL-06S | 6 | 12 | 17 | 31 | 58 | 16 | 27 | M 14X1.5 |
| S Heavy PN 630 | HEL-08S | 8 | 14 | 19 | 32 | 59 | 17 | 27.5 | M 16X1.5 |
| | HEL-10S | 10 | 17 | 22 | 34 | 64 | 17.5 | 30 | M 18X1.5 |
| | HEL-12S | 12 | 17 | 24 | 38 | 69 | 21.5 | 31 | M 20X1.5 |
| | HEL-14S | 14 | 19 | 27 | 40 | 75 | 22 | 35 | M 22X1.5 |
| | HEL-16S | 16 | 24 | 30 | 43 | 79 | 24.5 | 36.5 | M 24X1.5 |
| PN 400 | HEL-20S | 20 | 27 | 36 | 48 | 93 | 26.5 | 44.5 | M 30X2 |
| | HEL-25S | 25 | 36 | 46 | 54 | 104 | 30 | 50 | M 36X2 |
| PN 250 | HEL-30S | 30 | 41 | 50 | 62 | 117 | 35.5 | 55 | M 42X2 |
| | HEL-38S | 38 | 50 | 60 | 72 | 135 | 41 | 63 | M 52X2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.
Please observe final assembly instruction on page 22.

*O-Ring of NBR(e.g.Perbunan)Standard, of FPM(e.g. Viton) on request (See Page 16)

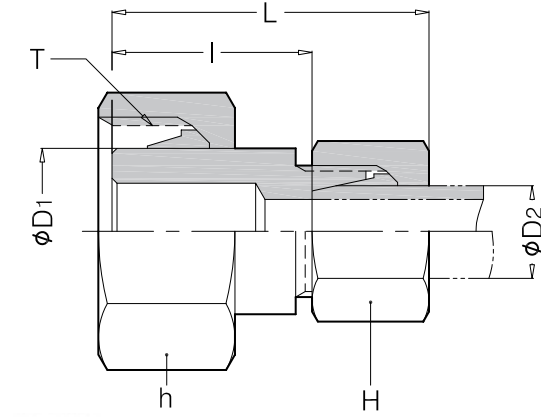
REDUCER
HR



| Series L(Light) | | | | | | | | Series S(Heavy) | | | | | | | |
|--------------------|-----------|----------------|----------------|----|----|------|-----------|--------------------|-----------|----------------|----------------|----|------|------|------|
| Series | Part No. | Tube O.D. | | H | h | L | I | Series | Part No. | Tube O.D. | | H | h | L | I |
| | | D ₁ | D ₂ | | | | | | | D ₁ | D ₂ | | | | |
| L Series PN 250 | HR08L-06L | 8 | 6 | 12 | 14 | 40 | 25.5 | S Series PN 630 | HR08S-06S | 8 | 6 | 14 | 17 | 43 | 28 |
| | HR10L-06L | 10 | 6 | 12 | 14 | 42 | 27.5 | | HR10S-06S | 10 | 6 | 14 | 17 | 45 | 30.5 |
| | HR10L-08L | | 8 | 14 | 17 | 43 | 27.5 | | HR10S-08S | | 8 | 17 | 19 | 45 | 30.5 |
| | HR12L-06L | 12 | 6 | 14 | 14 | 42 | 27.5 | | HR12S-06S | 12 | 6 | 14 | 17 | 47 | 32.5 |
| | HR12L-08L | | 8 | 14 | 17 | 43 | 27.5 | | HR12S-08S | | 8 | 17 | 19 | 47 | 32.5 |
| | HR12L-10L | | 10 | 17 | 19 | 44 | 28.5 | | HR12S-10S | | 10 | 19 | 22 | 48 | 32 |
| | HR15L-06L | 15 | 6 | 19 | 14 | 44 | 29 | | HR14S-06S | 14 | 6 | 17 | 17 | 51 | 36.5 |
| | HR15L-08L | | 8 | 19 | 17 | 44 | 29 | | HR14S-08S | | 8 | 17 | 19 | 51 | 36.5 |
| | HR15L-10L | | 10 | 19 | 19 | 45 | 30 | | HR14S-10S | | 10 | 19 | 22 | 52 | 36 |
| HR15L-12L | | 12 | 19 | 22 | 45 | 30 | HR14S-12S | | 12 | 22 | 24 | 52 | 36 | | |
| PN 160 | HR18L-06L | 18 | 6 | 19 | 14 | 46 | 31 | PN 400 | HR16S-06S | 16 | 6 | 17 | 17 | 53 | 38.5 |
| | HR18L-08L | | 8 | 19 | 17 | 46 | 31 | | HR16S-08S | | 8 | 17 | 19 | 53 | 38.5 |
| | HR18L-10L | | 10 | 19 | 19 | 47 | 32 | | HR16S-10S | | 10 | 19 | 22 | 54 | 38 |
| | HR18L-12L | | 12 | 19 | 22 | 47 | 32 | | HR16S-12S | | 12 | 22 | 24 | 55 | 38.5 |
| HR18L-15L | | 15 | 22 | 27 | 49 | 33 | HR16S-14S | | 14 | 22 | 27 | 57 | 39.5 | | |
| PN 160 | HR22L-06L | 22 | 6 | 24 | 14 | 48 | 33 | PN 400 | HR20S-06S | 20 | 6 | 22 | 17 | 58 | 43 |
| | HR22L-08L | | 8 | 24 | 17 | 48 | 33 | | HR20S-08S | | 8 | 22 | 19 | 58 | 43 |
| | HR22L-10L | | 10 | 24 | 19 | 49 | 34 | | HR20S-10S | | 10 | 22 | 22 | 59 | 42.5 |
| | HR22L-12L | | 12 | 24 | 22 | 49 | 34 | | HR20S-12S | | 12 | 22 | 24 | 59 | 42.5 |
| | HR22L-15L | | 15 | 24 | 27 | 50 | 35 | | HR20S-14S | | 14 | 22 | 27 | 62 | 44 |
| | HR22L-18L | | 18 | 27 | 32 | 51 | 34.5 | | HR20S-16S | | 16 | 24 | 30 | 62 | 43.5 |
| PN 100 | HR28L-06L | 28 | 6 | 30 | 14 | 48 | 33 | PN 250 | HR25S-06S | 25 | 6 | 27 | 17 | 62 | 47.5 |
| | HR28L-08L | | 8 | 30 | 17 | 48 | 33 | | HR25S-08S | | 8 | 27 | 19 | 62 | 47.5 |
| | HR28L-10L | | 10 | 30 | 19 | 49 | 34 | | HR25S-10S | | 10 | 27 | 22 | 63 | 47 |
| | HR28L-12L | | 12 | 30 | 22 | 49 | 34 | | HR25S-12S | | 12 | 27 | 24 | 63 | 47 |
| | HR28L-15L | | 15 | 30 | 27 | 50 | 35 | | HR25S-14S | | 14 | 27 | 27 | 66 | 48.5 |
| | HR28L-18L | | 18 | 30 | 32 | 51 | 36 | | HR25S-16S | | 16 | 27 | 30 | 66 | 48 |
| | HR28L-22L | | 22 | 32 | 36 | 53 | 36.5 | | HR25S-20S | | 20 | 30 | 36 | 70 | 48 |
| | HR35L-06L | 35 | 6 | 36 | 14 | 53 | 38.5 | | HR30S-06S | 30 | 6 | 32 | 17 | 67 | 52 |
| HR35L-08L | | 8 | 36 | 17 | 53 | 38.5 | HR30S-08S | | 8 | 32 | 19 | 67 | 52 | | |
| HR35L-10L | | 10 | 36 | 19 | 55 | 39.5 | HR30S-10S | | 10 | 32 | 22 | 68 | 51.5 | | |
| HR35L-12L | | 12 | 36 | 22 | 55 | 39.5 | HR30S-12S | | 12 | 32 | 24 | 68 | 51.5 | | |
| HR35L-15L | | 15 | 36 | 27 | 56 | 40.5 | HR30S-14S | | 14 | 32 | 27 | 71 | 53 | | |
| HR35L-18L | | 18 | 36 | 32 | 56 | 40 | HR30S-16S | | 16 | 32 | 30 | 71 | 52.5 | | |
| HR35L-22L | | 22 | 36 | 36 | 58 | 42 | HR30S-20S | | 20 | 32 | 36 | 74 | 52.5 | | |
| HR35L-28L | | | 36 | 41 | 59 | 42 | HR30S-25S | | 25 | 36 | 46 | 77 | 53 | | |
| HR42L-06L | 42 | 6 | 46 | 14 | 56 | 41 | PN 250 | HR38S-06S | 38 | 6 | 41 | 17 | 72 | 57 | |
| HR42L-08L | | 8 | 46 | 17 | 56 | 41 | | HR38S-08S | | 18 | 41 | 19 | 72 | 57 | |
| HR42L-10L | | 10 | 46 | 19 | 58 | 42 | | HR38S-10S | | 10 | 41 | 22 | 73 | 56.5 | |
| HR42L-12L | | 12 | 46 | 22 | 58 | 42 | | HR38S-12S | | 12 | 41 | 24 | 73 | 56.5 | |
| HR42L-15L | | 15 | 46 | 27 | 60 | 43 | | HR38S-14S | | 14 | 41 | 27 | 76 | 58 | |
| HR42L-18L | | 18 | 46 | 32 | 60 | 42.5 | | HR38S-16S | | 16 | 41 | 30 | 76 | 57.5 | |
| HR42L-22L | | 22 | 46 | 36 | 62 | 44.5 | | HR38S-20S | | 20 | 41 | 36 | 79 | 57.5 | |
| HR42L-28L | | | 46 | 41 | 64 | 44.5 | | HR38S-25S | | 25 | 41 | 46 | 82 | 58 | |
| HR42L-35L | | 35 | 46 | 50 | 67 | 43.5 | | HR38S-30S | | 30 | 46 | 50 | 89 | 58.5 | |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

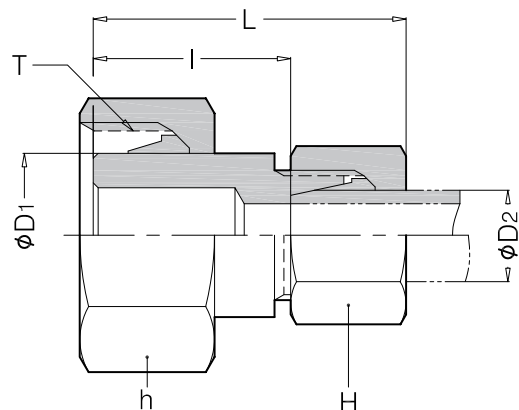
STANDPIPE REDUCER
HKOR



| Series L(Light) | | Tube O.D. | | h | H | L | I | T (Metric) |
|-----------------|--------------|----------------|----------------|----|----|----|------|---------------|
| Series | Part No. | D ₁ | D ₂ | | | | | |
| PN 250 | HKOR 08L-06L | 8 | 6 | 17 | 14 | 38 | 23.5 | M 14X1.5 |
| PN 250 | HKOR 10L-06L | 10 | 6 | 19 | 14 | 38 | 23.5 | M 16X1.5 |
| | HKOR 10L-08L | | 8 | | 17 | | | |
| PN 250 | HKOR 12L-06L | 12 | 6 | 22 | 14 | 38 | 23.5 | M 18X1.5 |
| | HKOR 12L-08L | | 8 | | 17 | 38 | 23.5 | |
| PN 250 | HKOR 12L-10L | | 10 | | 19 | 39 | 24.5 | |
| | HKOR 15L-06L | 15 | 6 | 27 | 14 | 38 | 23.5 | M 22X1.5 |
| | HKOR 15L-08L | | 8 | | 17 | 38 | 23.5 | |
| | HKOR 15L-10L | | 10 | | 19 | 39 | 24.5 | |
| PN 160 | HKOR 15L-12L | | 12 | | 22 | 39 | 24.5 | |
| | HKOR 18L-06L | 18 | 6 | 32 | 14 | 39 | 24.5 | M 26X1.5 |
| | HKOR 18L-08L | | 8 | | 17 | 39 | 24.5 | |
| PN 160 | HKOR 18L-10L | | 10 | | 19 | 40 | 25.5 | |
| | HKOR 18L-12L | | 12 | | 22 | 40 | 25.5 | |
| | HKOR 18L-15L | | 15 | | 27 | 42 | 26.5 | |
| | HKOR 22L-06L | 22 | 6 | 36 | 14 | 40 | 25.5 | M 30X2 |
| | HKOR 22L-08L | | 8 | | 17 | 40 | 25.5 | |
| | HKOR 22L-10L | | 10 | | 19 | 41 | 26.5 | |
| PN 100 | HKOR 22L-12L | | 12 | | 22 | 41 | 26.5 | |
| | HKOR 22L-15L | | 15 | | 27 | 43 | 27.5 | |
| | HKOR 22L-18L | | 18 | | 32 | 43 | 27 | |
| | HKOR 28L-06L | 28 | 6 | 41 | 14 | 41 | 26.5 | M 36X2 |
| | HKOR 28L-08L | | 8 | | 17 | 41 | 26.5 | |
| | HKOR 28L-10L | | 10 | | 19 | 42 | 27.5 | |
| | HKOR 28L-12L | | 12 | | 22 | 42 | 27.5 | |
| | HKOR 28L-15L | | 15 | | 27 | 44 | 28.5 | |
| PN 100 | HKOR 28L-18L | | 18 | | 32 | 44 | 28 | |
| | HKOR 28L-22L | | 22 | | 36 | 46 | 30 | |
| | HKOR 35L-06L | 35 | 6 | 50 | 14 | 46 | 31.5 | M 45X2 |
| | HKOR 35L-08L | | 8 | | 17 | 46 | 31.5 | |
| | HKOR 35L-10L | | 10 | | 19 | 47 | 32.5 | |
| | HKOR 35L-12L | | 12 | | 22 | 47 | 32.5 | |
| | HKOR 35L-15L | | 15 | | 27 | 49 | 33.5 | |
| | HKOR 35L-18L | | 18 | | 32 | 49 | 33 | |
| | HKOR 35L-22L | | 22 | | 36 | 51 | 35 | |
| | HKOR 35L-28L | | 18 | | 41 | 52 | 35 | |
| PN 100 | HKOR 42L-10L | 42 | 10 | 60 | 19 | 48 | 33.5 | M 52X2 |
| | HKOR 42L-12L | | 12 | | 22 | 48 | 33.5 | |
| | HKOR 42L-15L | | 15 | | 27 | 50 | 34.5 | |
| | HKOR 42L-18L | | 18 | | 32 | 50 | 34 | |
| | HKOR 42L-22L | | 22 | | 36 | 52 | 36 | |
| | HKOR 42L-28L | | 28 | | 41 | 53 | 36 | |
| | HKOR 42L-35L | | 35 | | 50 | 57 | 35 | |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change. Please observe final assembly instruction on page 22.

STANDPIPE REDUCER HKOR

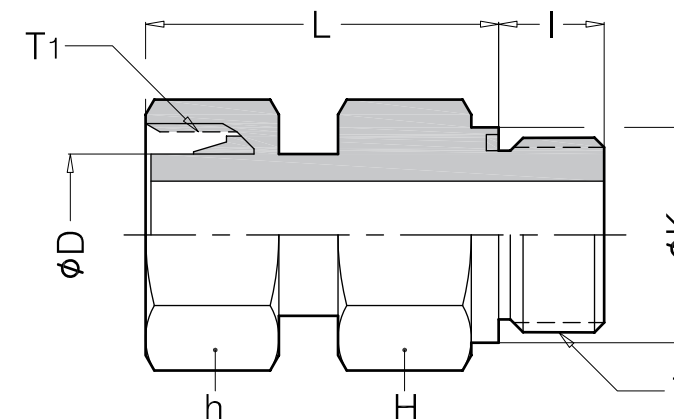


Series S(Heavy)

| Series | Part No. | Tube O.D. | | h | H | L | I | T (Metric) |
|--------|--------------|----------------|----------------|----|----|----|------|---------------|
| | | D ₁ | D ₂ | | | | | |
| PN 630 | HKOR 08S-06S | 8 | 6 | 19 | 17 | 40 | 25 | M 16X1.5 |
| PN 630 | HKOR 10S-06S | 10 | 6 | 22 | 17 | 41 | 26 | M 18X1.5 |
| | HKOR 10S-08S | | 8 | | 19 | 41 | 26 | |
| PN 630 | HKOR 12S-06S | 12 | 6 | 24 | 17 | 42 | 27 | M 20X1.5 |
| | HKOR 12S-08S | | 8 | | 19 | 42 | 27 | |
| | HKOR 12S-10S | | 10 | | 22 | 43 | 26.5 | |
| PN 630 | HKOR 14S-06S | 14 | 6 | 27 | 17 | 44 | 29 | M 22X1.5 |
| | HKOR 14S-08S | | 8 | | 19 | 44 | 29 | |
| | HKOR 14S-10S | | 10 | | 22 | 45 | 28.5 | |
| | HKOR 14S-12S | | 12 | | 24 | 45 | 28.5 | |
| PN 400 | HKOR 16S-06S | 16 | 6 | 30 | 17 | 44 | 29 | M 24X1.5 |
| | HKOR 16S-08S | | 8 | | 19 | 44 | 29 | |
| | HKOR 16S-10S | | 10 | | 22 | 45 | 28.5 | |
| | HKOR 16S-12S | | 12 | | 24 | 45 | 28.5 | |
| | HKOR 16S-14S | | 14 | | 27 | 48 | 30 | |
| PN 400 | HKOR 20S-06S | 20 | 6 | 36 | 17 | 49 | 34 | M 30X2 |
| | HKOR 20S-08S | | 8 | | 19 | 49 | 34 | |
| | HKOR 20S-10S | | 10 | | 22 | 50 | 33.5 | |
| | HKOR 20S-12S | | 12 | | 24 | 50 | 33.5 | |
| | HKOR 20S-14S | | 14 | | 27 | 53 | 35 | |
| | HKOR 20S-16S | | 16 | | 30 | 53 | 34.5 | |
| PN 400 | HKOR 25S-06S | 25 | 6 | 46 | 17 | 52 | 37 | M 36X2 |
| | HKOR 25S-08S | | 8 | | 19 | 52 | 37 | |
| | HKOR 25S-10S | | 10 | | 22 | 53 | 36.5 | |
| | HKOR 25S-12S | | 12 | | 24 | 53 | 36.5 | |
| | HKOR 25S-14S | | 14 | | 27 | 55 | 37 | |
| | HKOR 25S-16S | | 16 | | 30 | 55 | 36.5 | |
| PN 400 | HKOR 25S-20S | | 20 | | 36 | 59 | 37.5 | |
| | HKOR 30S-06S | 30 | 6 | 50 | 17 | 54 | 39 | M 42X2 |
| | HKOR 30S-08S | | 8 | | 19 | 54 | 39 | |
| | HKOR 30S-10S | | 10 | | 22 | 55 | 38.5 | |
| | HKOR 30S-12S | | 12 | | 24 | 55 | 38.5 | |
| | HKOR 30S-14S | | 14 | | 27 | 58 | 40 | |
| PN 250 | HKOR 30S-16S | | 16 | | 30 | 58 | 39.5 | |
| | HKOR 30S-20S | | 20 | | 36 | 61 | 39.5 | |
| | HKOR 30S-25S | | 25 | | 46 | 64 | 40 | |
| | HKOR 38S-06S | 38 | 6 | 60 | 17 | 58 | 43 | M 52X2 |
| | HKOR 38S-08S | | 8 | | 19 | 58 | 43 | |
| | HKOR 38S-10S | | 10 | | 22 | 59 | 42.5 | |
| PN 250 | HKOR 38S-12S | | 12 | | 24 | 59 | 42.5 | |
| | HKOR 38S-14S | | 14 | | 27 | 62 | 44 | |
| | HKOR 38S-16S | | 16 | | 30 | 62 | 43.5 | |
| | HKOR 38S-20S | | 20 | | 36 | 65 | 43.5 | |
| | HKOR 38S-25S | | 25 | | 46 | 68 | 44 | |
| | HKOR 38S-30S | | 30 | | 50 | 71 | 44.5 | |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.
Pre-setted nut and cutting ring for connection. Please observe final assembly instruction on page 22.

ADAPTER (BSP PARALLED) WITH *ED-RING HA-GED

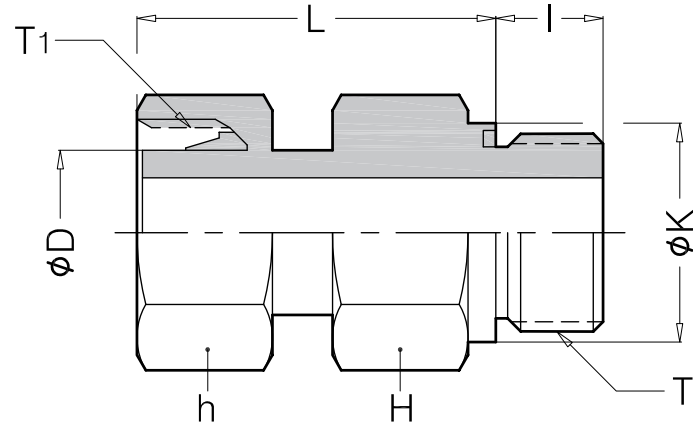


for BSP Parallel

| Series | Part No. | Tube O.D. D | H | h | K | L | I | T (BSP) | T ₁ (Metric) |
|----------------------|--------------|----------------|----|----|----|------|----|------------|----------------------------|
| L Light PN 250 | HA 06L-02GED | 6 | 14 | 14 | 14 | 24.5 | 8 | 1/8 | M 12X1.5 |
| | HA 08L-04GED | 8 | 19 | 17 | 19 | 29.5 | 12 | 1/4 | M 14X1.5 |
| | HA 10L-04GED | 10 | 19 | 19 | 19 | 27.5 | 12 | 1/4 | M 16X1.5 |
| | HA 12L-06GED | 12 | 22 | 22 | 22 | 34 | 12 | 3/8 | M 18X1.5 |
| | HA 15L-08GED | 15 | 27 | 27 | 27 | 32 | 14 | 1/2 | M 22X1.5 |
| PN 160 | HA 18L-08GED | 18 | 27 | 32 | 27 | 31.5 | 14 | 1/2 | M 26X1.5 |
| | HA 22L-12GED | 22 | 32 | 36 | 32 | 32.5 | 16 | 3/4 | M 30X2 |
| PN 100 | HA 28L-16GED | 28 | 41 | 41 | 40 | 35 | 18 | 1 | M 36X2 |
| | HA 35L-20GED | 35 | 50 | 50 | 50 | 42.5 | 20 | 1 1/4 | M 45X2 |
| | HA 42L-24GED | 42 | 55 | 60 | 55 | 46.5 | 22 | 1 1/2 | M 52X2 |
| S Heavy PN 630 | HA 06S-04GED | 6 | 19 | 17 | 19 | 27 | 12 | 1/4 | M 14X1.5 |
| | HA 08S-04GED | 8 | 19 | 19 | 19 | 29.5 | 12 | 1/4 | M 16X1.5 |
| | HA 10S-06GED | 10 | 22 | 22 | 22 | 32 | 12 | 3/8 | M 18X1.5 |
| | HA 12S-06GED | 12 | 22 | 24 | 22 | 34 | 12 | 3/8 | M 20X1.5 |
| | HA 12S-08GED | 12 | 27 | 24 | 27 | 34.5 | 14 | 1/2 | M 20X1.5 |
| | HA 14S-08GED | 14 | 27 | 27 | 27 | 36.5 | 14 | 1/2 | M 22X1.5 |
| PN 400 | HA 16S-08GED | 16 | 27 | 30 | 27 | 37 | 14 | 1/2 | M 24X1.5 |
| | HA 16S-12GED | 16 | 32 | 30 | 32 | 39 | 16 | 3/4 | M 24X1.5 |
| | HA 20S-12GED | 20 | 32 | 36 | 32 | 43 | 16 | 3/4 | M 30X2 |
| | HA 25S-16GED | 25 | 41 | 46 | 40 | 48 | 18 | 1 | M 36X2 |
| | HA 30S-20GED | 30 | 50 | 50 | 50 | 51 | 20 | 1 1/4 | M 42X2 |
| PN 250 | HA 38S-24GED | 38 | 55 | 60 | 55 | 60 | 22 | 1 1/2 | M 52X2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.
Pre-setted nut and cutting ring for connection. Please observe final assembly instruction on page 22.
*ED-Ring of NBR(e.g.perbunan) standard, FRM(e.g.viton) on request (see page 16)

ADAPTER (METRIC PARALLELED) WITH *ED-RING HA-MED

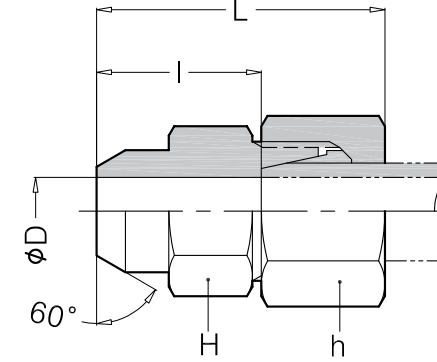


for Metric Paralled

| Series | Part No. | Tube O.D. | H | h | K | L | I | T (Metric) | T ₁ (Metric) |
|----------------------|--------------|-----------|----|----|----|------|----|---------------|----------------------------|
| | | D | | | | | | | |
| L Light PN 250 | HA 06L-M10ED | 6 | 14 | 14 | 14 | 24.5 | 8 | M 10X1 | M 12X1.5 |
| | HA 08L-M12ED | 8 | 19 | 17 | 17 | 26.5 | 12 | M 12X1.5 | M 14X1.5 |
| | HA 10L-M14ED | 10 | 19 | 19 | 19 | 27.5 | 12 | M 14X1.5 | M 16X1.5 |
| | HA 12L-M16ED | 12 | 22 | 22 | 22 | 30.5 | 12 | M 16X1.5 | M 18X1.5 |
| | HA 15L-M18ED | 15 | 27 | 27 | 24 | 31.5 | 14 | M 18X1.5 | M 22X1.5 |
| PN 160 | HA 18L-M22ED | 18 | 27 | 32 | 27 | 31.5 | 14 | M 22X1.5 | M 26X1.5 |
| | HA 22L-M26ED | 22 | 32 | 36 | 32 | 32.5 | 16 | M 26X1.5 | M 30X2 |
| | HA 28L-M33ED | 28 | 41 | 41 | 40 | 35 | 18 | M 33X2 | M 36X2 |
| PN 100 | HA 35L-M42ED | 35 | 50 | 50 | 50 | 42.5 | 20 | M 42X2 | M 45X2 |
| | HA 42L-M48ED | 42 | 55 | 60 | 55 | 46.5 | 22 | M 48X2 | M 52X2 |
| | HA 06S-M12ED | 6 | 19 | 17 | 17 | 27 | 12 | M 12X1.5 | M 14X1.5 |
| S Heavy PN 630 | HA 08S-M14ED | 8 | 22 | 19 | 19 | 29.5 | 12 | M 14X1.5 | M 16X1.5 |
| | HA 10S-M16ED | 10 | 22 | 22 | 22 | 32 | 12 | M 16X1.5 | M 18X1.5 |
| | HA 12S-M18ED | 12 | 27 | 24 | 24 | 34 | 12 | M 18X1.5 | M 20X1.5 |
| | HA 14S-M20ED | 14 | 27 | 27 | 27 | 36.5 | 14 | M 20X1.5 | M 22X1.5 |
| | HA 16S-M22ED | 16 | 32 | 30 | 27 | 37 | 14 | M 22X1.5 | M 24X1.5 |
| PN 400 | HA 20S-M27ED | 20 | 32 | 36 | 32 | 43 | 16 | M 27X2 | M 30X2 |
| | HA 25S-M33ED | 25 | 41 | 46 | 40 | 48 | 18 | M 33X2 | M 36X2 |
| | HA 30S-M42ED | 30 | 50 | 50 | 50 | 51 | 20 | M 42X2 | M 42X2 |
| PN 250 | HA 38S-M48ED | 38 | 55 | 60 | 55 | 60 | 22 | M 48X2 | M 52X2 |

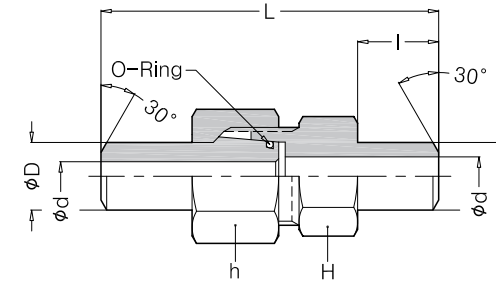
Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.
Pre-set nut and cutting ring for connection. Please observe final assembly instruction on page 22.
*ED-Ring of NBR(e.g.perbunan) standard, FRM(e.g.viton) on request (see page 16)

WELDING CONNECTOR HAS



| Series | Part No. | Tube.O.D. | D | h | H | L | I |
|----------------------|----------|-----------|----|----|----|----|------|
| | | D | | | | | |
| L Light PN 250 | HAS-06L | 6 | 10 | 14 | 12 | 29 | 14 |
| | HAS-08L | 8 | 12 | 17 | 14 | 31 | 16 |
| | HAS-10L | 10 | 14 | 19 | 17 | 33 | 18 |
| | HAS-12L | 12 | 16 | 22 | 19 | 33 | 18 |
| | HAS-15L | 15 | 19 | 27 | 22 | 37 | 22 |
| PN 160 | HAS-18L | 18 | 22 | 32 | 27 | 40 | 23.5 |
| | HAS-22L | 22 | 27 | 36 | 32 | 45 | 28.5 |
| PN 100 | HAS-28L | 28 | 32 | 41 | 41 | 47 | 30.5 |
| | HAS-35L | 35 | 40 | 50 | 46 | 54 | 32.5 |
| | HAS-42L | 42 | 46 | 60 | 55 | 58 | 35 |
| S Heavy PN 630 | HAS-06S | 6 | 11 | 17 | 14 | 34 | 19 |
| | HAS-08S | 8 | 13 | 19 | 17 | 36 | 21 |
| | HAS-10S | 10 | 15 | 22 | 19 | 39 | 22.5 |
| | HAS-12S | 12 | 17 | 24 | 22 | 41 | 24.5 |
| | HAS-14S | 14 | 19 | 27 | 24 | 45 | 27 |
| PN 400 | HAS-16S | 16 | 21 | 30 | 27 | 45 | 26.5 |
| | HAS-20S | 20 | 26 | 36 | 32 | 51 | 29.5 |
| | HAS-25S | 25 | 31 | 46 | 41 | 56 | 32 |
| | HAS-30S | 30 | 36 | 50 | 46 | 62 | 35.5 |
| PN 250 | HAS-38S | 38 | 44 | 60 | 55 | 69 | 38 |

WELDING CONNECTOR WITH HAK HASK

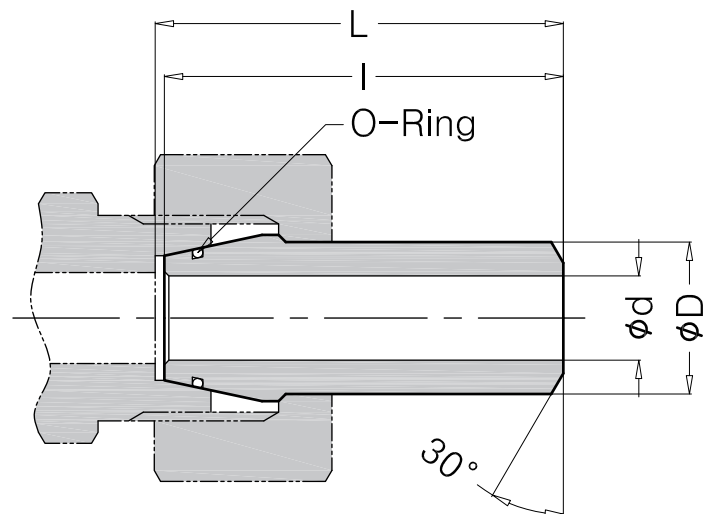


| Series S Max. Pressure | Part No. | Tube O.D. | d | h | H | L | ℓ |
|---------------------------|-------------|-----------|----|----|----|------|------|
| | | D | | | | | |
| PB 248 | HASK 10X1.0 | 10 | 8 | 22 | 19 | 58 | 10 |
| | HASK 10X1.5 | | 7 | | | | |
| | HASK 10X2.0 | | 6 | | | | |
| PB 303 | HASK 12X1.5 | 12 | 9 | 24 | 22 | 65 | 15 |
| | HASK 12X2.0 | | 8 | | | | |
| | HASK 12X2.5 | | 7 | | | | |
| | HASK 16X1.5 | 16 | 13 | 30 | 27 | 74.5 | 16.5 |
| PB 303 | HASK 16X2.0 | | 12 | | | | |
| | HASK 16X2.5 | | 11 | | | | |
| | HASK 16X3.0 | | 10 | | | | |
| PB 249 | HASK 20X2.0 | 20 | 16 | 36 | 32 | 84 | 19 |
| | HASK 20X2.5 | | 15 | | | | |
| | HASK 20X3.0 | | 14 | | | | |
| PB 458 | HASK 20X4.0 | | 12 | | | | |
| | HASK 25X3.0 | 25 | 19 | 46 | 41 | 94.5 | 19.5 |
| PB 378 | HASK 25X4.0 | | 17 | | | | |
| | HASK 25X5.0 | | 15 | | | | |
| PB 248 | HASK 30X3.0 | 30 | 24 | 50 | 46 | 102 | 23 |
| | HASK 30X4.0 | | 22 | | | | |
| | HASK 30X5.0 | | 20 | | | | |
| PB 460 | HASK 30X6.0 | | 18 | | | | |
| | HASK 38X4.0 | 38 | 30 | 60 | 55 | 111 | 23 |
| PB 260 | HASK 38X5.0 | | 28 | | | | |
| | HASK 38X6.0 | | 26 | | | | |
| PB 318 | HASK 38X7.0 | | 24 | | | | |
| | HASK 38X7.0 | | 24 | | | | |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.
* O-Ring of NBR(e.g.perbunan) standard, FRM(e.g.viton) on request (see page 16)

WELDING NIPPLE WITH *O-RING

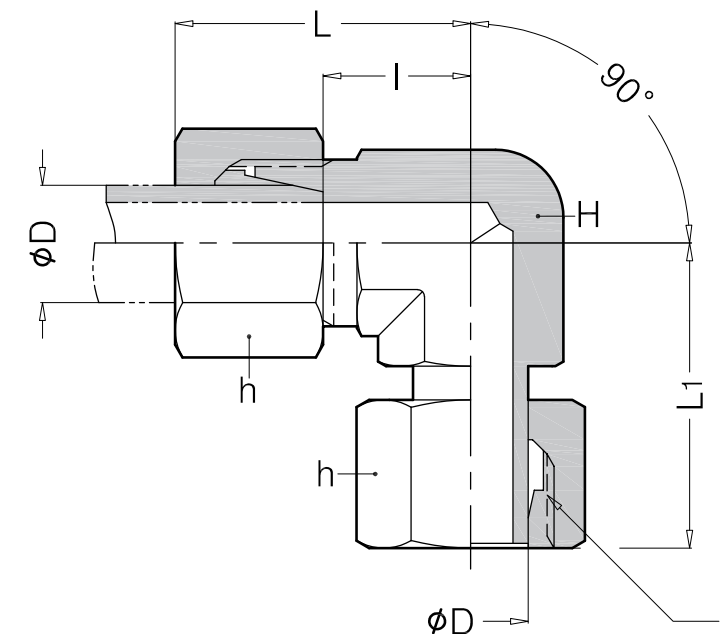
HAK



| Pressure Rating | Part No. | Tube O.D. | d | L | l | |
|-----------------|----------|------------|------------|----|------|----------|
| | | | | | | Fittings |
| PN 630 | PB 248 | HAK 10X1.0 | 10 | 8 | 35.5 | 33 |
| | PB 357 | HAK 10X1.5 | | 7 | | |
| | PB 458 | HAK 10X2.0 | | 6 | | |
| PN 630 | PB 303 | HAK 12X1.5 | 12 | 9 | 35.5 | 33 |
| | PB 391 | HAK 12X2.0 | | 8 | | |
| | PB 474 | HAK 12X2.5 | | 7 | | |
| PN 400 | PB 234 | HAK 16X1.5 | 16 | 13 | 42.5 | 39 |
| | PB 303 | HAK 16X2.0 | | 12 | | |
| | PB 370 | HAK 16X2.5 | | 11 | | |
| | PB 433 | HAK 16X3.0 | | 10 | | |
| PN 400 | PB 249 | HAK 20X2.0 | 20 | 16 | 47.5 | 43.5 |
| | PB 303 | HAK 20X2.5 | | 15 | | |
| | PB 357 | HAK 20X3.0 | | 14 | | |
| | PB 458 | HAK 20X4.0 | | 12 | | |
| PN 400 | PB 292 | HAK 25X3.0 | 25 | 19 | 55 | 49.5 |
| | PB 378 | HAK 25X4.0 | | 17 | | |
| | PB 458 | HAK 25X5.0 | | 15 | | |
| | PN 250 | PB 248 | HAK 30X3.0 | 30 | 24 | 58.5 |
| PB 321 | | HAK 30X4.0 | | 22 | | |
| PB 391 | | HAK 30X5.0 | | 20 | | |
| PB 460 | | HAK 30X6.0 | | 18 | | |
| PN 250 | | PB 260 | HAK 38X4.0 | 38 | 30 | 66 |
| | PB 318 | HAK 38X5.0 | | 28 | | |
| | PB 373 | HAK 38X6.0 | | 26 | | |
| | PB 427 | HAK 38X7.0 | | 24 | | |

ADJUSTABLE ELBOW WITH STANDPIPE

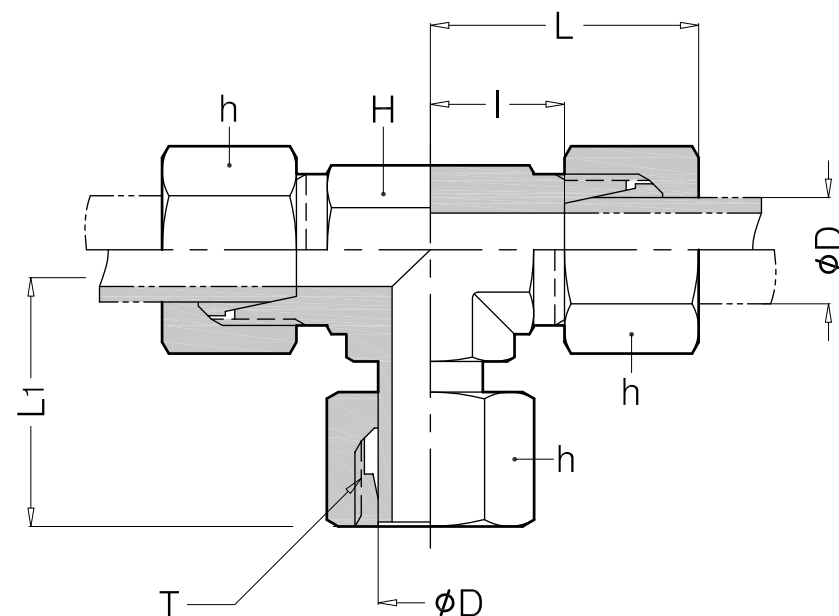
HLA



| Series | Part No. | Tube O.D. | H | h | L | L ₁ | l | T |
|----------------------|----------|-----------|----|----|----|----------------|------|----------|
| | | | | | | | | |
| L Light PN 250 | HLA-06L | 6 | 12 | 14 | 27 | 26 | 12 | M 12X1.5 |
| | HLA-08L | 8 | 12 | 17 | 29 | 27.5 | 14 | M 14X1.5 |
| | HLA-10L | 10 | 14 | 19 | 30 | 29 | 15 | M 16X1.5 |
| | HLA-12L | 12 | 17 | 22 | 32 | 29.5 | 17 | M 18X1.5 |
| | HLA-15L | 15 | 19 | 27 | 36 | 32.5 | 21 | M 22X1.5 |
| PN 160 | HLA-18L | 18 | 24 | 32 | 40 | 35.5 | 23.5 | M 26X1.5 |
| | HLA-22L | 22 | 27 | 36 | 44 | 38.5 | 27.5 | M 30X2 |
| PN 100 | HLA-28L | 28 | 36 | 41 | 47 | 41.5 | 30.5 | M 36X2 |
| | HLA-35L | 35 | 41 | 50 | 56 | 51 | 34.5 | M 45X2 |
| | HLA-42L | 42 | 50 | 60 | 63 | 56 | 40 | M 52X2 |
| S Heavy PN 630 | HLA-06S | 6 | 12 | 17 | 31 | 27 | 16 | M 14X1.5 |
| | HLA-08S | 8 | 14 | 19 | 32 | 27.5 | 17 | M 16X1.5 |
| | HLA-10S | 10 | 17 | 22 | 34 | 30 | 17.5 | M 18X1.5 |
| | HLA-12S | 12 | 17 | 24 | 38 | 31 | 21.5 | M 20X1.5 |
| | HLA-14S | 14 | 19 | 27 | 40 | 35 | 22 | M 22X1.5 |
| PN 400 | HLA-16S | 16 | 24 | 30 | 43 | 36.5 | 24.5 | M 24X1.5 |
| | HLA-20S | 20 | 27 | 36 | 48 | 44.5 | 26.5 | M 30X2 |
| | HLA-25S | 25 | 36 | 46 | 54 | 50 | 30 | M 36X2 |
| PN 250 | HLA-30S | 30 | 41 | 50 | 62 | 55 | 35.5 | M 42X2 |
| | HLA-38S | 38 | 50 | 60 | 72 | 63 | 41 | M 52X2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change. Pre-setted nut and cutting ring for connection. Please observe final assembly instruction on page 22.

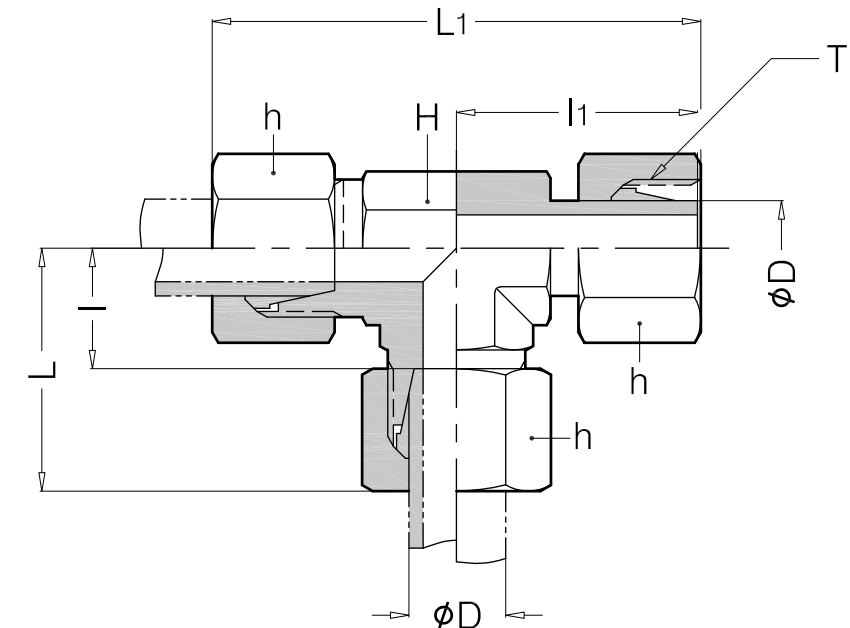
ADJUSTABLE BRANCH TEE WITH STANDPIPE HBTA



| Series | Part No. | Tube O.D. D | H | h | L | L ₁ | I | T (Metric) |
|----------------------|----------|----------------|----|----|----|----------------|------|---------------|
| L Light PN 250 | HBTA-06L | 6 | 12 | 14 | 27 | 26 | 12 | M 12X1.5 |
| | HBTA-08L | 8 | 12 | 17 | 29 | 27.5 | 14 | M 14X1.5 |
| | HBTA-10L | 10 | 14 | 19 | 30 | 29 | 15 | M 16X1.5 |
| | HBTA-12L | 12 | 17 | 22 | 32 | 29.5 | 17 | M 18X1.5 |
| | HBTA-15L | 15 | 19 | 27 | 36 | 32.5 | 21 | M 22X1.5 |
| PN 160 | HBTA-18L | 18 | 24 | 32 | 40 | 35.5 | 23.5 | M 26X1.5 |
| | HBTA-22L | 22 | 27 | 36 | 44 | 38.5 | 27.5 | M 30X2 |
| PN 100 | HBTA-28L | 28 | 36 | 41 | 47 | 41.5 | 30.5 | M 36X2 |
| | HBTA-35L | 35 | 41 | 50 | 56 | 51 | 34.5 | M 45X2 |
| | HBTA-42L | 42 | 50 | 60 | 63 | 56 | 40 | M 52X2 |
| S Heavy PN 630 | HBTA-06S | 6 | 12 | 17 | 31 | 27 | 16 | M 14X1.5 |
| | HBTA-08S | 8 | 14 | 19 | 32 | 27.5 | 17 | M 16X1.5 |
| | HBTA-10S | 10 | 17 | 22 | 34 | 30 | 17.5 | M 18X1.5 |
| | HBTA-12S | 12 | 17 | 24 | 38 | 31 | 21.5 | M 20X1.5 |
| | HBTA-14S | 14 | 19 | 27 | 40 | 35 | 22 | M 22X1.5 |
| PN 400 | HBTA-16S | 16 | 24 | 30 | 43 | 36.5 | 24.5 | M 24X1.5 |
| | HBTA-20S | 20 | 27 | 36 | 48 | 44.5 | 26.5 | M 30X2 |
| | HBTA-25S | 25 | 36 | 46 | 54 | 50 | 30 | M 36X2 |
| PN 250 | HBTA-30S | 30 | 41 | 50 | 62 | 55 | 35.5 | M 42X2 |
| | HBTA-38S | 38 | 50 | 60 | 72 | 63 | 41 | M 52X2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.
Pre-setted nut and cutting ring for connection. Please observe final assembly instruction on page 22.

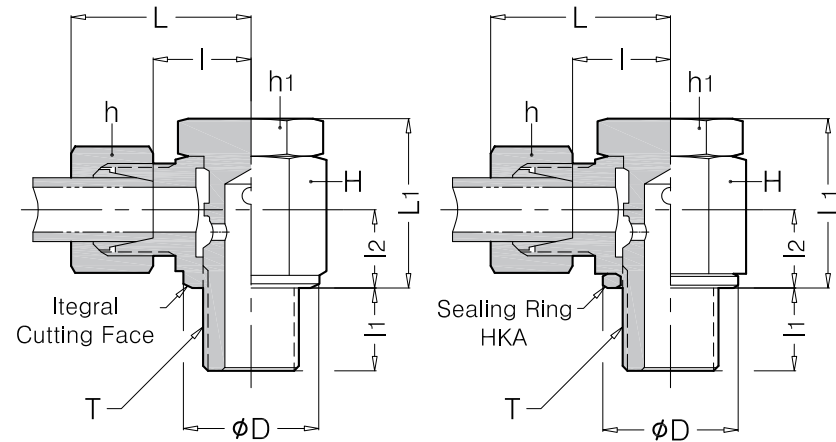
ADJUSTABLE RUN TEE WITH STANDPIPE HRTA



| Series | Part No. | Tube O.D. D | H | h | L | L ₁ | I | I ₁ | T (Metric) |
|----------------------|----------|----------------|----|----|----|----------------|------|----------------|---------------|
| L Light PN 250 | HRTA-06L | 6 | 12 | 14 | 27 | 53 | 12 | 26 | M 12X1.5 |
| | HRTA-08L | 8 | 12 | 17 | 29 | 56 | 14 | 27.5 | M 14X1.5 |
| | HRTA-10L | 10 | 14 | 19 | 30 | 59 | 15 | 29 | M 16X1.5 |
| | HRTA-12L | 12 | 17 | 22 | 32 | 62 | 17 | 29.5 | M 18X1.5 |
| | HRTA-15L | 15 | 19 | 27 | 36 | 69 | 21 | 32.5 | M 22X1.5 |
| PN 160 | HRTA-18L | 18 | 24 | 32 | 40 | 75 | 23.5 | 35.5 | M 26X1.5 |
| | HRTA-22L | 22 | 27 | 36 | 44 | 83 | 27.5 | 38.5 | M 30X2 |
| PN 100 | HRTA-28L | 28 | 36 | 41 | 47 | 91 | 30.5 | 41.5 | M 36X2 |
| | HRTA-35L | 35 | 41 | 50 | 56 | 111 | 34.5 | 51 | M 45X2 |
| | HRTA-42L | 42 | 50 | 60 | 63 | 123 | 40 | 56 | M 52X2 |
| S Heavy PN 630 | HRTA-06S | 6 | 12 | 17 | 31 | 58 | 16 | 27 | M 14X1.5 |
| | HRTA-08S | 8 | 14 | 19 | 32 | 61 | 17 | 27.5 | M 16X1.5 |
| | HRTA-10S | 10 | 17 | 22 | 34 | 66 | 17.5 | 30 | M 18X1.5 |
| | HRTA-12S | 12 | 17 | 24 | 38 | 71 | 21.5 | 31 | M 20X1.5 |
| | HRTA-14S | 14 | 19 | 27 | 40 | 75 | 22 | 35 | M 22X1.5 |
| PN 400 | HRTA-16S | 16 | 24 | 30 | 43 | 79 | 24.5 | 36.5 | M 24X1.5 |
| | HRTA-20S | 20 | 27 | 36 | 48 | 93 | 26.5 | 44.5 | M 30X2 |
| | HRTA-25S | 25 | 36 | 46 | 54 | 105 | 30 | 50 | M 36X2 |
| PN 250 | HRTA-30S | 30 | 41 | 50 | 62 | 119 | 35.5 | 55 | M 42X2 |
| | HRTA-38S | 38 | 50 | 60 | 72 | 138 | 41 | 63 | M 52X2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.
Pre-setted nut and cutting ring for connection. Please observe final assembly instruction on page 22.

BANJO FITTINGS (BSP PARALLEL/METRIC PARALLEL) WITH HKA-RING HSWVE-G/M



for BSP Paralled

| Series | Part No. | Tube O.D. D | D | H | h ₁ | h | L | L ₁ | l | l ₁ | l ₂ | T (BSPP) | MA* |
|----------------------|---------------|----------------|------|----|----------------|----|----|----------------|------|----------------|----------------|-------------|-----|
| L light PN 250 | HSWVE 06L-02G | 6 | 14.5 | 14 | 14 | 14 | 25 | 21 | 10.5 | 6 | 10 | 1/8 | 20 |
| | HSWVE 08L-04G | 8 | 18.5 | 19 | 17 | 19 | 28 | 27 | 13 | 9 | 13 | 1/4 | 45 |
| | HSWVE 10L-04G | 10 | 18.5 | 19 | 19 | 19 | 29 | 27 | 14 | 9 | 13 | 1/4 | 45 |
| | HSWVE 12L-06G | 12 | 22.5 | 22 | 22 | 22 | 30 | 32 | 15.5 | 9 | 15 | 3/8 | 70 |
| | HSWVE 15L-08G | 15 | 26.5 | 27 | 27 | 27 | 34 | 37.5 | 19 | 11 | 18 | 1/2 | 100 |
| PN 160 | HSWVE 18L-08G | 18 | 26 | 30 | 32 | 27 | 37 | 44 | 20.5 | 11 | 21.5 | 1/2 | 100 |
| | HSWVE 22L-12G | 22 | 32 | 36 | 36 | 32 | 42 | 49 | 25.5 | 13 | 24 | 3/4 | 140 |
| S heavy PN 630 | HSWVE 06S-04G | 6 | 18.5 | 19 | 17 | 19 | 30 | 27 | 15 | 9 | 13 | 1/4 | 45 |
| | HSWVE 08S-04G | 8 | 18.5 | 19 | 19 | 19 | 30 | 27 | 15 | 9 | 13 | 1/4 | 45 |
| | HSWVE 10S-06G | 10 | 22.5 | 22 | 22 | 22 | 32 | 32 | 16 | 9 | 15 | 3/8 | 70 |
| | HSWVE 12S-06G | 12 | 22.5 | 24 | 24 | 24 | 33 | 37 | 17 | 9 | 18 | 3/8 | 70 |
| PN 400 | HSWVE 14S-08G | 14 | 26.5 | 27 | 27 | 27 | 38 | 37 | 20 | 11 | 18 | 1/2 | 100 |
| | HSWVE 16S-08G | 16 | 26 | 30 | 30 | 27 | 40 | 44 | 21.5 | 11 | 21.5 | 1/2 | 100 |
| | HSWVE 20S-12G | 20 | 32 | 36 | 36 | 32 | 46 | 49 | 24.5 | 13 | 24 | 3/4 | 140 |

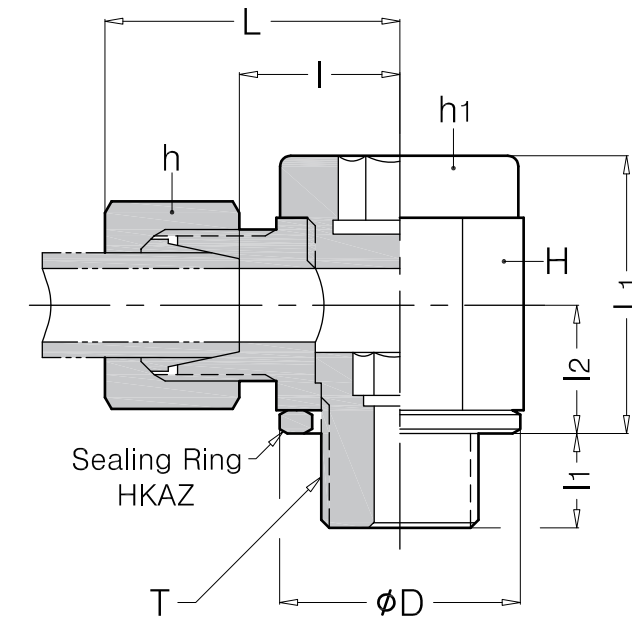
for Metric Paralled

| Series | Part No. | Tube O.D. D | D | H | h ₁ | h | L | L ₁ | l | l ₁ | l ₂ | T (Metric) | MA* |
|----------------------|---------------|----------------|------|----|----------------|----|----|----------------|------|----------------|----------------|---------------|-----|
| L light PN 250 | HSWVE 06L-M10 | 6 | 14.5 | 14 | 14 | 14 | 25 | 21.5 | 10.5 | 6 | 10 | M 10X1 | 25 |
| | HSWVE 08L-M12 | 8 | 17.5 | 17 | 17 | 17 | 27 | 25 | 12 | 9 | 12 | M 12X1.5 | 40 |
| | HSWVE 10L-M14 | 10 | 19.5 | 19 | 19 | 19 | 29 | 27 | 14 | 9 | 13 | M 14X1.5 | 55 |
| | HSWVE 12L-M16 | 12 | 21.5 | 22 | 22 | 22 | 30 | 32 | 15.5 | 9 | 15 | M 16X1.5 | 65 |
| | HSWVE 15L-M18 | 15 | 23.5 | 24 | 24 | 27 | 33 | 37.5 | 17.5 | 9 | 18 | M 18X1.5 | 90 |
| PN 160 | HSWVE 18L-M22 | 18 | 27 | 30 | 27 | 32 | 37 | 44 | 20.5 | 11 | 21.5 | M 22X1.5 | 130 |
| | HSWVE 22L-M26 | 22 | 31 | 36 | 32 | 36 | 42 | 49 | 25.5 | 13 | 24 | M 26X1.5 | 140 |
| S heavy PN 630 | HSWVE 06S-M12 | 6 | 17.5 | 17 | 17 | 17 | 29 | 25 | 14 | 9 | 12 | M 12X1.5 | 40 |
| | HSWVE 08S-M14 | 8 | 19.5 | 19 | 19 | 19 | 30 | 27 | 15 | 9 | 13 | M 14X1.5 | 55 |
| | HSWVE 10S-M16 | 10 | 21.5 | 22 | 22 | 22 | 32 | 32 | 16 | 9 | 15 | M 16X1.5 | 65 |
| | HSWVE 12S-M18 | 12 | 23.5 | 24 | 24 | 24 | 33 | 37 | 17 | 9 | 18 | M 18X1.5 | 90 |
| PN 400 | HSWVE 14S-M20 | 14 | 25.5 | 27 | 27 | 27 | 38 | 37 | 20 | 11 | 18 | M 20X1.5 | 120 |
| | HSWVE 16S-M22 | 16 | 27 | 30 | 27 | 30 | 40 | 44 | 21.5 | 11 | 21.5 | M 22X1.5 | 130 |
| | HSWVE 20S-M27 | 20 | 32 | 36 | 32 | 36 | 46 | 49 | 24.5 | 13 | 24 | M 27X2 | 150 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

*MA = Recommended tightening torques (in Nm) for male G and M

THROTTLEFREE BANJO FITTINGS (METRIC PARALLEL) WITH HKAZ-RING HSWVE-G/M

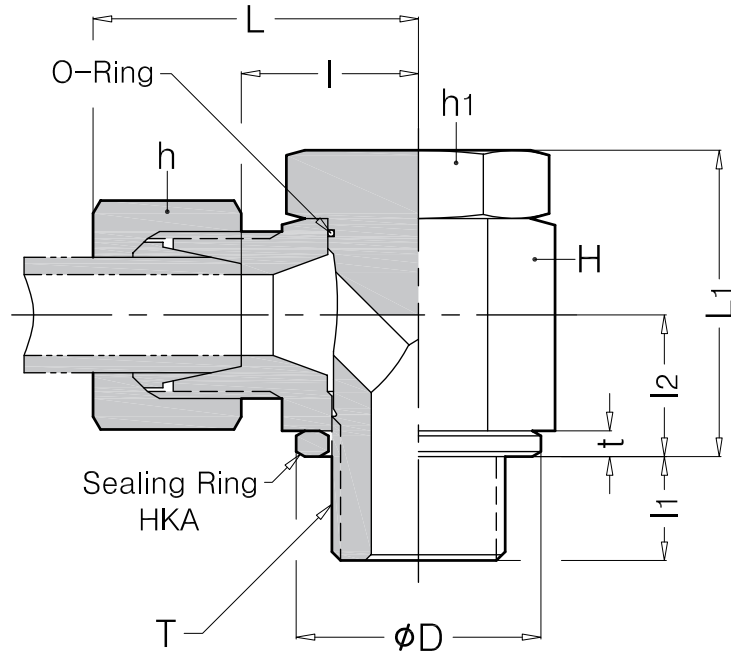


for Metric Paralled

| Series | Part No. | Tube O.D. D | D | H | h ₁ | h | L | L ₁ | l | l ₁ | l ₂ | T (Metric) |
|----------------------|--------------|----------------|----|----|----------------|----|----|----------------|------|----------------|----------------|---------------|
| L light PN 250 | HSVW 06L-M10 | 6 | 14 | 19 | 6 | 14 | 27 | 24 | 12.5 | 8 | 12 | M 10X1 |
| | HSVW 08L-M12 | 8 | 17 | 22 | 6 | 17 | 29 | 30 | 14.5 | 12 | 15 | M 12X1.5 |
| | HSVW 10L-M14 | 10 | 19 | 22 | 8 | 19 | 30 | 30 | 15.5 | 12 | 16 | M 14X1.5 |
| | HSVW 12L-M16 | 12 | 21 | 27 | 10 | 22 | 33 | 37 | 18 | 12 | 18 | M 16X1.5 |
| | HSVW 15L-M18 | 15 | 23 | 30 | 12 | 27 | 36 | 40 | 21 | 12 | 20 | M 18X1.5 |
| PN 160 | HSVW 18L-M22 | 18 | 27 | 36 | 14 | 32 | 38 | 46 | 21.5 | 14 | 23 | M 22X1.5 |
| | HSVW 22L-M26 | 22 | 31 | 41 | 17 | 36 | 42 | 51 | 26 | 16 | 25 | M 26X1.5 |
| PN 100 | HSVW 28L-M33 | 28 | 39 | 50 | 22 | 41 | 48 | 64 | 31.5 | 18 | 32 | M 33X2 |
| | HSVW 35L-M42 | 35 | 49 | 60 | 27 | 50 | 57 | 76 | 35.5 | 20 | 37 | M 42X2 |
| S heavy PN 630 | HSVW 42L-M48 | 42 | 55 | 65 | 32 | 60 | 63 | 85 | 40 | 22 | 42 | M 48X2 |
| | HSVW 06S-M12 | 6 | 17 | 22 | 6 | 17 | 31 | 30 | 16.5 | 12 | 15 | M 12X1.5 |
| | HSVW 08S-M14 | 8 | 19 | 22 | 8 | 19 | 31 | 30 | 16.5 | 12 | 16 | M 14X1.5 |
| | HSVW 10S-M16 | 10 | 21 | 27 | 10 | 22 | 35 | 37 | 18.5 | 12 | 18 | M 16X1.5 |
| PN 400 | HSVW 12S-M18 | 12 | 23 | 30 | 12 | 24 | 37 | 41 | 20.5 | 12 | 20 | M 18X1.5 |
| | HSVW 14S-M20 | 14 | 25 | 32 | 12 | 27 | 41 | 42 | 23 | 14 | 21 | M 20X1.5 |
| | HSVW 16S-M22 | 16 | 27 | 36 | 14 | 30 | 41 | 46 | 22.5 | 14 | 23 | M 22X1.5 |
| | HSVW 20S-M27 | 20 | 32 | 46 | 17 | 36 | 49 | 58 | 27.5 | 16 | 28 | M 27X2 |
| PN 250 | HSVW 25S-M33 | 25 | 39 | 50 | 22 | 46 | 55 | 64 | 31 | 18 | 32 | M 33X2 |
| | HSVW 30S-M42 | 30 | 49 | 60 | 27 | 50 | 63 | 76 | 36.5 | 20 | 37 | M 42X2 |
| | HSVW 38S-M48 | 38 | 55 | 70 | 32 | 60 | 72 | 85 | 41 | 22 | 42 | M 48X2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

HIGH PRESSURE BANJO FITTINGS (METRIC PARALLED) WITH HKA-RING HWH-G/M



for Metric Parallel

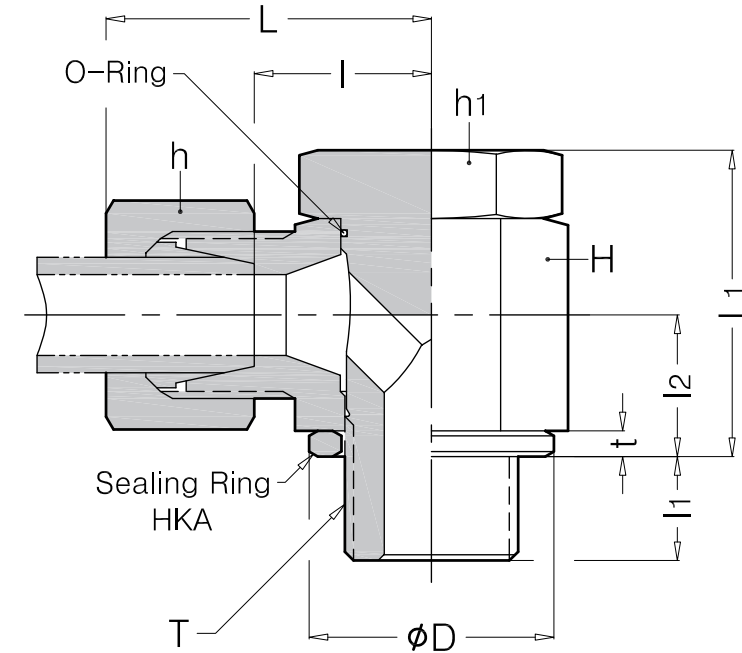
| Series | Part No. | Tube O.D. D | D | H | h ₁ | h | L | L ₁ | I | l ₁ | l ₂ | T | T (Metric) | MA* |
|----------------------|-------------|----------------|----|----|----------------|----|----|----------------|------|----------------|----------------|-----|---------------|-----|
| L light PN 250 | HWH 06L-M10 | 6 | 14 | 17 | 17 | 14 | 27 | 24 | 12 | 8 | 10.5 | 2.5 | M 10X1 | 25 |
| | HWH 08L-M12 | 8 | 17 | 22 | 19 | 17 | 29 | 30 | 14.5 | 12 | 14 | 3.0 | M 12X1.5 | 50 |
| | HWH 10L-M14 | 10 | 19 | 22 | 19 | 19 | 30 | 30 | 15.5 | 12 | 14 | 3.0 | M 14X1.5 | 60 |
| | HWH 12L-M16 | 12 | 21 | 27 | 24 | 22 | 33 | 36 | 18 | 12 | 16.5 | 3.0 | M 16X1.5 | 90 |
| | HWH 15L-M18 | 15 | 23 | 30 | 27 | 27 | 36 | 39.5 | 20.5 | 12 | 18.5 | 3.0 | M 18X1.5 | 110 |
| PN 160 | HWH 18L-M22 | 18 | 27 | 32 | 30 | 32 | 37 | 45 | 21 | 14 | 21.5 | 4.5 | M 22X1.5 | 150 |
| | HWH 22L-M26 | 22 | 31 | 41 | 36 | 36 | 44 | 53 | 27.5 | 16 | 24 | 3.5 | M 26X1.5 | 350 |
| PN 100 | HWH 28L-M33 | 28 | 39 | 50 | 46 | 41 | 49 | 66 | 32 | 18 | 30.5 | 3.5 | M 33X2 | 400 |
| | HWH 35L-M42 | 35 | 49 | 60 | 55 | 50 | 58 | 76 | 36 | 20 | 35.5 | 3.5 | M 42X2 | 600 |
| | HWH 42L-M48 | 42 | 55 | 70 | 60 | 60 | 63 | 87 | 40.5 | 22 | 40.5 | 3.5 | M 48X2 | 800 |
| S heavy PN 630 | HWH 06S-M12 | 6 | 17 | 22 | 19 | 17 | 31 | 30 | 16.5 | 12 | 14 | 3.0 | M 12X1.5 | 50 |
| | HWH 08S-M14 | 8 | 19 | 22 | 19 | 19 | 31 | 30 | 16.5 | 12 | 14 | 3.0 | M 14X1.5 | 60 |
| | HWH 10S-M16 | 10 | 21 | 27 | 24 | 22 | 35 | 36 | 18.5 | 12 | 16.5 | 3.0 | M 16X1.5 | 90 |
| | HWH 12S-M18 | 12 | 23 | 30 | 27 | 24 | 36 | 39.5 | 20 | 12 | 18.5 | 3.0 | M 18X1.5 | 110 |
| PN 400 | HWH 16S-M22 | 16 | 27 | 32 | 30 | 30 | 40 | 45 | 22 | 14 | 21.5 | 4.5 | M 22X1.5 | 150 |
| | HWH 20S-M27 | 20 | 32 | 41 | 36 | 36 | 48 | 53 | 26.5 | 16 | 24 | 3.5 | M 27X2 | 350 |
| | HWH 25S-M33 | 25 | 39 | 50 | 46 | 46 | 56 | 66 | 31.5 | 18 | 30.5 | 3.5 | M 33X2 | 400 |
| PN 250 | HWH 30S-M42 | 30 | 49 | 60 | 55 | 50 | 64 | 76 | 37 | 20 | 35.5 | 3.5 | M 42X2 | 600 |
| | HWH 38S-M48 | 38 | 55 | 70 | 60 | 60 | 72 | 87 | 41.5 | 22 | 40.5 | 3.5 | M 48X2 | 800 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

* O-Ring of NBR(e.g.perbunan) standard, FRM(e.g.viton) on request (see page 16)

* MA = Recommended tightening torques (in Nm) for male G and M

HIGH PRESSURE BANJO FITTINGS (BSP PARALLED) WITH HKA-RING HWH-G/M



for BSP Parallel

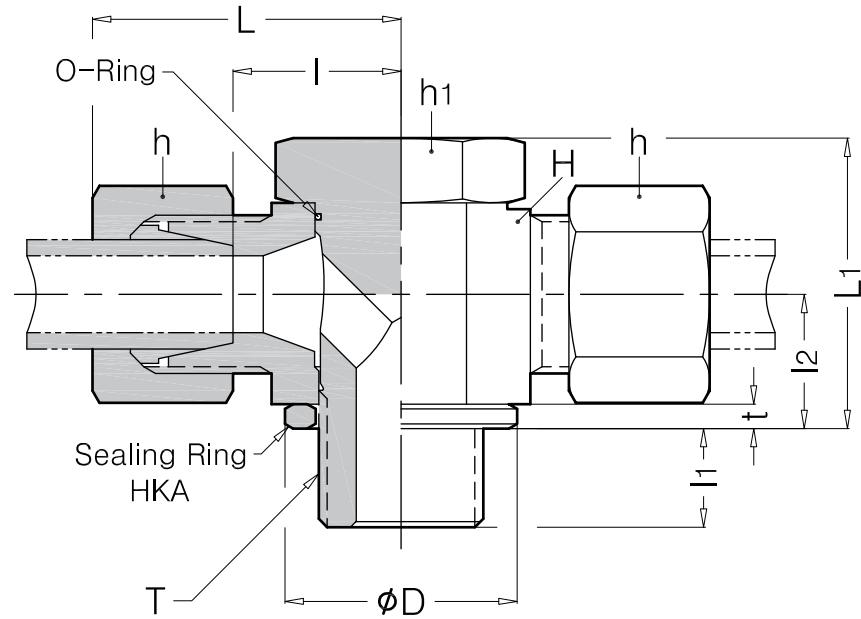
| Series | Part No. | Tube O.D. D | D | H | h ₁ | h | L | L ₁ | I | l ₁ | l ₂ | T | T (BSPP) | MA* |
|----------------------|-------------|----------------|----|----|----------------|----|----|----------------|------|----------------|----------------|-----|-------------|-----|
| L light PN 250 | HWH 06L-02G | 6 | 14 | 17 | 14 | 17 | 27 | 24 | 12 | 8 | 10.5 | 2.5 | 1/8 | 20 |
| | HWH 08L-04G | 8 | 18 | 19 | 17 | 22 | 29 | 30 | 14.5 | 12 | 14 | 3.0 | 1/4 | 50 |
| | HWH 10L-04G | 10 | 18 | 19 | 19 | 22 | 30 | 30 | 15.5 | 12 | 14 | 3.0 | 1/4 | 50 |
| | HWH 12L-06G | 12 | 22 | 24 | 22 | 27 | 33 | 36 | 18 | 12 | 16.5 | 3.0 | 3/8 | 75 |
| | HWH 15L-08G | 15 | 26 | 30 | 27 | 32 | 37 | 45 | 21.5 | 14 | 21.5 | 4.5 | 1/2 | 130 |
| PN 160 | HWH 18L-08G | 18 | 26 | 30 | 32 | 32 | 37 | 45 | 21 | 14 | 21.5 | 4.5 | 1/2 | 130 |
| | HWH 22L-12G | 22 | 32 | 36 | 36 | 41 | 44 | 53 | 27.5 | 16 | 24 | 3.5 | 3/4 | 250 |
| PN 100 | HWH 28L-16G | 28 | 39 | 46 | 41 | 50 | 49 | 66 | 32 | 18 | 30.5 | 3.5 | 1 | 350 |
| | HWH 35L-20G | 35 | 49 | 55 | 50 | 60 | 58 | 76 | 36 | 20 | 35.5 | 3.5 | 1 1/4 | 600 |
| | HWH 42L-24G | 42 | 55 | 60 | 60 | 70 | 63 | 87 | 40.5 | 22 | 40.5 | 3.5 | 1 1/2 | 800 |
| S heavy PN 630 | HWH 06S-04G | 6 | 18 | 19 | 17 | 22 | 31 | 30 | 16.5 | 12 | 14 | 3.0 | 1/4 | 50 |
| | HWH 08S-04G | 8 | 18 | 19 | 19 | 22 | 31 | 30 | 16.5 | 12 | 14 | 3.0 | 1/4 | 50 |
| | HWH 10S-06G | 10 | 22 | 24 | 22 | 27 | 35 | 36 | 18.5 | 12 | 16.5 | 3.0 | 3/8 | 75 |
| | HWH 12S-06G | 12 | 22 | 24 | 24 | 27 | 35 | 36 | 18.5 | 12 | 16.5 | 3.0 | 3/8 | 75 |
| PN 400 | HWH 16S-08G | 16 | 26 | 30 | 30 | 32 | 40 | 45 | 22 | 14 | 21.5 | 4.5 | 1/2 | 130 |
| | HWH 20S-12G | 20 | 32 | 36 | 36 | 41 | 48 | 53 | 26.5 | 16 | 24 | 3.5 | 3/4 | 250 |
| | HWH 25S-16G | 25 | 39 | 46 | 46 | 50 | 56 | 66 | 31.5 | 18 | 30.5 | 3.5 | 1 | 350 |
| PN 250 | HWH 30S-20G | 30 | 49 | 55 | 50 | 60 | 64 | 76 | 37 | 20 | 34.5 | 3.5 | 1 1/4 | 600 |
| | HWH 38S-24G | 38 | 55 | 60 | 60 | 70 | 72 | 87 | 41.5 | 22 | 40.5 | 3.5 | 1 1/2 | 800 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

* O-Ring of NBR(e.g.perbunan) standard, FRM(e.g.viton) on request (see page 16)

* MA = Recommended tightening torques (in Nm) for male G and M

HIGH PRESSURE BANJO TEE (BSP PARALLED)
HTH-G/M



for BSP Paralled

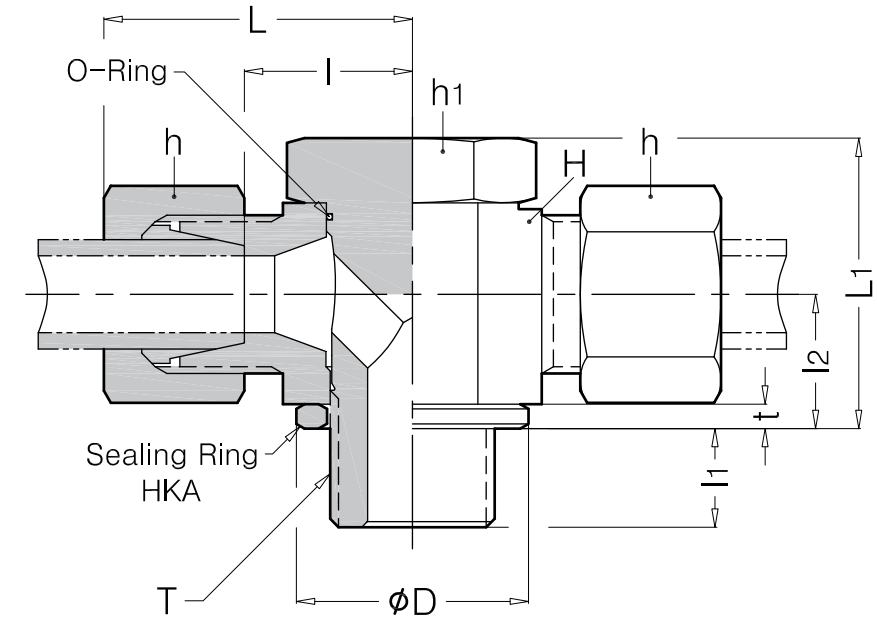
| Series | Part No. | Tube O.D. | D | H | h ₁ | h | L | L ₁ | I | I ₁ | I ₂ | T | T (BSPP) | MA* |
|----------------------|-------------|-----------|----|----|----------------|----|----|----------------|------|----------------|----------------|-----|-------------|-----|
| | | D | | | | | | | | | | | | |
| L light PN 250 | HTH 06L-02G | 6 | 14 | 17 | 17 | 14 | 27 | 24 | 12 | 8 | 10.5 | 2.5 | 1/8 | 20 |
| | HTH 08L-04G | 8 | 18 | 22 | 19 | 17 | 29 | 30 | 14.5 | 12 | 14 | 3.0 | 1/4 | 50 |
| | HTH 10L-04G | 10 | 18 | 22 | 19 | 19 | 30 | 30 | 15.5 | 12 | 14 | 3.0 | 1/4 | 50 |
| | HTH 12L-06G | 12 | 22 | 27 | 24 | 22 | 33 | 36 | 18 | 12 | 16.5 | 3.0 | 3/8 | 75 |
| | HTH 15L-08G | 15 | 26 | 32 | 30 | 27 | 37 | 45 | 21.5 | 14 | 21.5 | 4.5 | 1/2 | 130 |
| PN 160 | HTH 18L-08G | 18 | 26 | 32 | 30 | 32 | 37 | 45 | 21 | 14 | 21.5 | 4.5 | 1/2 | 130 |
| | HTH 22L-12G | 22 | 32 | 41 | 36 | 36 | 44 | 53 | 27.5 | 16 | 24 | 3.5 | 3/4 | 250 |
| PN 100 | HTH 28L-16G | 28 | 39 | 50 | 46 | 41 | 49 | 66 | 32 | 18 | 30.5 | 3.5 | 1 | 350 |
| | HTH 35L-20G | 35 | 49 | 60 | 55 | 50 | 58 | 76 | 36 | 20 | 35.5 | 3.5 | 1 1/4 | 600 |
| | HTH 42L-24G | 42 | 55 | 70 | 60 | 60 | 63 | 87 | 40.5 | 22 | 40.5 | 3.5 | 1 1/2 | 800 |
| S heavy PN 630 | HTH 06S-04G | 6 | 18 | 22 | 19 | 17 | 31 | 30 | 16.5 | 12 | 14 | 3.0 | 1/4 | 50 |
| | HTH 08S-04G | 8 | 18 | 22 | 19 | 19 | 31 | 30 | 16.5 | 12 | 14 | 3.0 | 1/4 | 50 |
| | HTH 10S-06G | 10 | 22 | 27 | 24 | 22 | 35 | 36 | 18.5 | 12 | 16.5 | 3.0 | 3/8 | 75 |
| | HTH 12S-06G | 12 | 22 | 27 | 24 | 24 | 35 | 36 | 18.5 | 12 | 16.5 | 3.0 | 3/8 | 75 |
| PN 400 | HTH 16S-08G | 16 | 26 | 32 | 30 | 30 | 40 | 45 | 22 | 14 | 21.5 | 4.5 | 1/2 | 130 |
| | HTH 20S-12G | 20 | 32 | 41 | 36 | 36 | 48 | 53 | 26.5 | 16 | 24 | 3.5 | 3/4 | 250 |
| | HTH 25S-16G | 25 | 39 | 50 | 46 | 46 | 56 | 66 | 31.5 | 18 | 30.5 | 3.5 | 1 | 350 |
| PN 250 | HTH 30S-20G | 30 | 49 | 60 | 55 | 50 | 64 | 76 | 37 | 20 | 35.5 | 3.5 | 1 1/4 | 600 |
| | HTH 38S-24G | 38 | 55 | 70 | 60 | 60 | 72 | 87 | 41.5 | 22 | 40.5 | 3.5 | 1 1/2 | 800 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

* O-Ring of NBR(e.g.perbunan) standard, FRM(e.g.viton) on request (see page 16)

* MA = Recommended tightening torques (in Nm) for male G and M

HIGH PRESSURE BANJO TEE (METRIC PARALLED)
HTH-G/M



for Metric Paralled

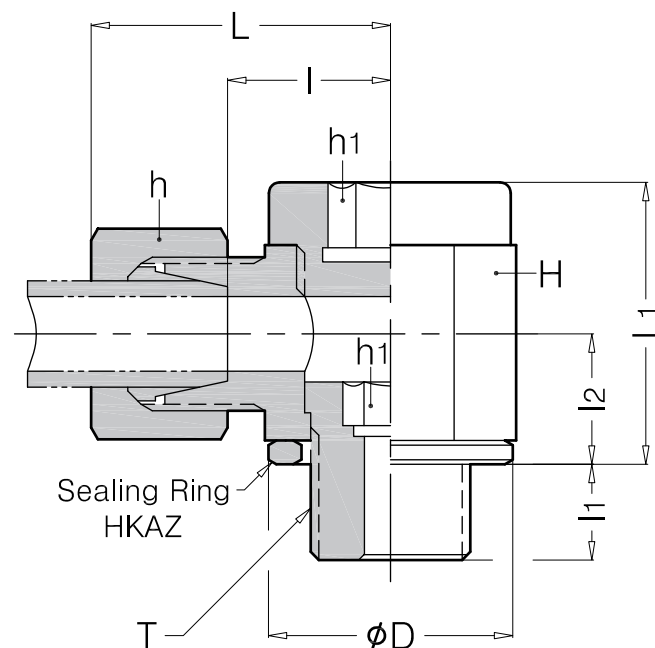
| Series | Part No. | Tube O.D. | D | H | h ₁ | h | L | L ₁ | I | I ₁ | I ₂ | T | T (Metric) | MA* |
|----------------------|-------------|-----------|----|----|----------------|----|----|----------------|------|----------------|----------------|-----|---------------|-----|
| | | D | | | | | | | | | | | | |
| L light PN 250 | HTH 06L-M10 | 6 | 14 | 17 | 17 | 14 | 27 | 24 | 12 | 8 | 10.5 | 2.5 | M 10X1 | 25 |
| | HTH 08L-M12 | 8 | 17 | 22 | 19 | 17 | 29 | 30 | 14.5 | 12 | 14 | 3.0 | M 12X1.5 | 50 |
| | HTH 10L-M14 | 10 | 19 | 22 | 19 | 19 | 30 | 30 | 15.5 | 12 | 14 | 3.0 | M 14X1.5 | 60 |
| | HTH 12L-M16 | 12 | 21 | 27 | 24 | 22 | 33 | 36 | 18 | 12 | 16.5 | 3.0 | M 16X1.5 | 90 |
| | HTH 15L-M18 | 15 | 23 | 30 | 27 | 27 | 36 | 39.5 | 20.5 | 12 | 18.5 | 3.0 | M 18X1.5 | 110 |
| PN 160 | HTH 18L-M22 | 18 | 27 | 32 | 30 | 32 | 37 | 45 | 21 | 14 | 21.5 | 4.5 | M 22X1.5 | 150 |
| | HTH 22L-M26 | 22 | 31 | 41 | 36 | 36 | 44 | 53 | 27.5 | 16 | 24 | 3.5 | M 26X1.5 | 350 |
| PN 100 | HTH 28L-M33 | 28 | 39 | 50 | 46 | 41 | 49 | 66 | 32 | 18 | 30.5 | 3.5 | M 33X2 | 400 |
| | HTH 35L-M42 | 35 | 49 | 60 | 55 | 50 | 58 | 76 | 36 | 20 | 35.5 | 3.5 | M 42X2 | 600 |
| | HTH 42L-M48 | 42 | 55 | 70 | 60 | 60 | 63 | 87 | 40.5 | 22 | 40.5 | 3.5 | M 48X2 | 800 |
| S heavy PN 630 | HTH 06S-M12 | 6 | 17 | 22 | 19 | 17 | 31 | 30 | 16.5 | 12 | 14 | 3.0 | M 12X1.5 | 50 |
| | HTH 08S-M14 | 8 | 19 | 22 | 19 | 19 | 31 | 30 | 16.5 | 12 | 14 | 3.0 | M 14X1.5 | 60 |
| | HTH 10S-M16 | 10 | 21 | 27 | 24 | 22 | 35 | 36 | 18.5 | 12 | 16.5 | 3.0 | M 16X1.5 | 90 |
| | HTH 12S-M18 | 12 | 23 | 30 | 27 | 24 | 36 | 39.5 | 20 | 12 | 18.5 | 3.0 | M 18X1.5 | 110 |
| PN 400 | HTH 16S-M22 | 16 | 27 | 32 | 30 | 30 | 40 | 45 | 22 | 14 | 21.5 | 4.5 | M 22X1.5 | 150 |
| | HTH 20S-M27 | 20 | 32 | 41 | 36 | 36 | 48 | 53 | 26.5 | 16 | 24 | 3.5 | M 27X2 | 350 |
| | HTH 25S-M33 | 25 | 39 | 50 | 46 | 46 | 56 | 66 | 31.5 | 18 | 30.5 | 3.5 | M 33X2 | 400 |
| PN 250 | HTH 30S-M42 | 30 | 49 | 60 | 55 | 50 | 64 | 76 | 37 | 20 | 35.5 | 3.5 | M 42X2 | 600 |
| | HTH 38S-M48 | 38 | 55 | 70 | 60 | 60 | 72 | 87 | 41.5 | 22 | 40.5 | 3.5 | M 48X2 | 800 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

* O-Ring of NBR(e.g.perbunan) standard, FRM(e.g.viton) on request (see page 16)

* MA = Recommended tightening torques (in Nm) for male G and M

THROTTLEFREE BANJO FITTINGS(BSP PARALLED) WITH HKAZ-RING HSVW-G/M

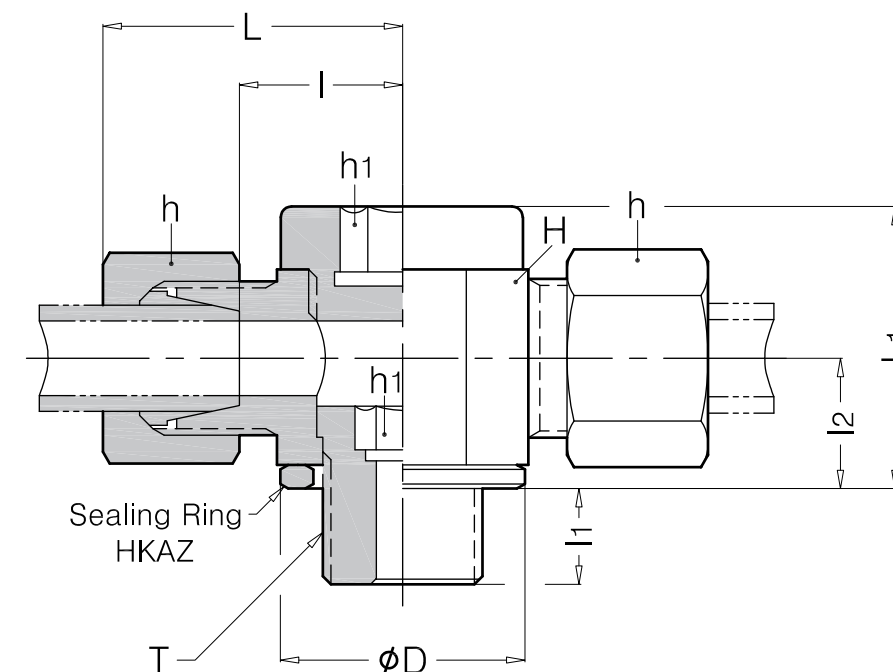


for BSP Paralled

| Series | Part No. | Tube O.D. D | D | H | h ₁ | h | L | L ₁ | l | l ₁ | l ₂ | T (BSPP) |
|----------------------|--------------|----------------|----|----|----------------|----|----|----------------|-------|----------------|----------------|-------------|
| L light PN 250 | HSVW 06L-02G | 6 | 14 | 19 | 6 | 14 | 27 | 24 | 12.5 | 8 | 12 | 1/8 |
| | HSVW 08L-04G | 8 | 18 | 22 | 8 | 17 | 29 | 30 | 14.5 | 12 | 16 | 1/4 |
| | HSVW 10L-04G | 10 | 18 | 22 | 8 | 19 | 30 | 30 | 15.5 | 12 | 16 | 1/4 |
| | HSVW 12L-06G | 12 | 22 | 27 | 10 | 22 | 33 | 37 | 18 | 12 | 18 | 3/8 |
| | HSVW 15L-08G | 15 | 26 | 32 | 12 | 27 | 37 | 42 | 22 | 14 | 21 | 1/2 |
| PN 160 | HSVW 18L-08G | 18 | 26 | 36 | 12 | 32 | 38 | 46 | 21.5 | 14 | 23 | 1/2 |
| | HSVW 22L-12G | 22 | 32 | 46 | 17 | 36 | 45 | 58 | 28.5 | 16 | 28 | 3/4 |
| PN 100 | HSVW 28L-16G | 28 | 39 | 50 | 22 | 41 | 48 | 64 | 31.5 | 18 | 32 | 1 |
| | HSVW 35L-20G | 35 | 49 | 60 | 27 | 50 | 57 | 76 | 35.58 | 20 | 37 | 1 1/4 |
| | HSVW 42L-24G | 42 | 55 | 65 | 32 | 60 | 63 | 85 | 40 | 22 | 42 | 1 1/2 |
| S heavy PN 650 | HSVW 06S-04G | 6 | 18 | 22 | 8 | 17 | 31 | 30 | 16.5 | 12 | 16 | 1/4 |
| | HSVW 08S-04G | 8 | 18 | 22 | 8 | 19 | 31 | 30 | 16.5 | 12 | 16 | 1/4 |
| | HSVW 10S-06G | 10 | 22 | 27 | 10 | 22 | 35 | 37 | 18.5 | 12 | 18 | 3/8 |
| | HSVW 12S-06G | 12 | 22 | 27 | 10 | 24 | 35 | 37 | 18.5 | 12 | 18 | 3/8 |
| | HSVW 14S-08G | 14 | 26 | 32 | 12 | 27 | 41 | 42 | 23 | 14 | 21 | 1/2 |
| PN 400 | HSVW 16S-08G | 16 | 26 | 36 | 12 | 30 | 41 | 46 | 22.5 | 14 | 23 | 1/2 |
| | HSVW 20S-12G | 20 | 32 | 46 | 17 | 36 | 49 | 58 | 27.5 | 16 | 28 | 3/4 |
| | HSVW 25S-16G | 25 | 39 | 50 | 22 | 46 | 55 | 64 | 31 | 18 | 32 | 1 |
| PN 250 | HSVW 30S-20G | 30 | 49 | 60 | 27 | 50 | 63 | 76 | 36.5 | 20 | 37 | 1 1/4 |
| | HSVW 38S-24G | 38 | 55 | 70 | 32 | 60 | 72 | 85 | 41 | 22 | 42 | 1 1/2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

THROTTLEFREE BANJO FITTINGS(BSP PARALLED) WITH HKAZ-RING HSVT-G/M

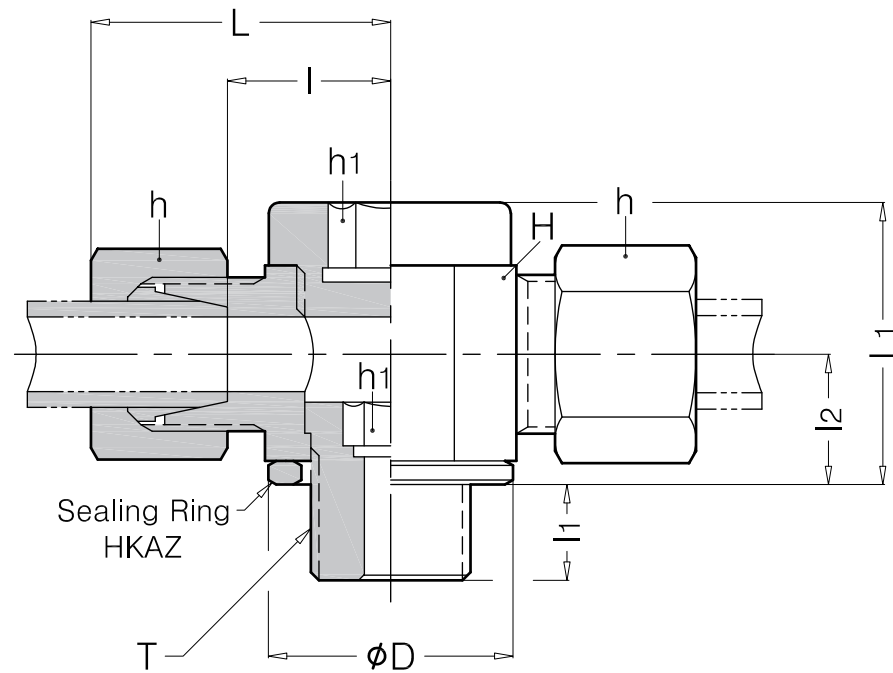


for BSP Paralled

| Series | Part No. | Tube O.D. D | D | H | h ₁ | h | L | L ₁ | l | l ₁ | l ₂ | T (BSPP) |
|----------------------|--------------|----------------|----|----|----------------|----|----|----------------|------|----------------|----------------|-------------|
| L light PN 250 | HSVT 06L-02G | 6 | 14 | 18 | 6 | 14 | 27 | 24 | 12 | 8 | 12 | 1/8 |
| | HSVT 08L-04G | 8 | 18 | 22 | 8 | 17 | 29 | 30 | 14 | 12 | 15 | 1/4 |
| | HSVT 10L-04G | 10 | 18 | 22 | 8 | 19 | 30 | 30 | 15 | 12 | 15 | 1/4 |
| | HSVT 12L-06G | 12 | 22 | 27 | 10 | 22 | 32 | 36 | 17.5 | 12 | 18 | 3/8 |
| | HSVT 15L-08G | 15 | 26 | 30 | 12 | 27 | 35 | 40 | 20 | 14 | 20 | 1/2 |
| PN 160 | HSVT 18L-08G | 18 | 26 | 30 | 12 | 32 | 36 | 40 | 19.5 | 14 | 20 | 1/2 |
| | HSVT 22L-12G | 22 | 32 | 41 | 17 | 36 | 43 | 52 | 27 | 16 | 25 | 3/4 |
| PN 100 | HSVT 28L-16G | 28 | 39 | 46 | 22 | 41 | 46 | 58 | 29.5 | 18 | 29 | 1 |
| | HSVT 35L-20G | 35 | 49 | 55 | 27 | 50 | 55 | 69 | 33 | 20 | 34 | 1 1/4 |
| | HSVT 42L-24G | 42 | 55 | 65 | 32 | 60 | 63 | 84 | 40 | 22 | 41 | 1 1/2 |
| S heavy PN 630 | HSVT 06S-04G | 6 | 18 | 22 | 8 | 17 | 31 | 30 | 16 | 12 | 15 | 1/4 |
| | HSVT 08S-04G | 8 | 18 | 22 | 8 | 19 | 31 | 30 | 16 | 12 | 15 | 1/4 |
| | HSVT 10S-06G | 10 | 22 | 27 | 10 | 22 | 34 | 36 | 18 | 12 | 18 | 3/8 |
| | HSVT 12S-06G | 12 | 22 | 27 | 10 | 24 | 34 | 36 | 18 | 12 | 18 | 3/8 |
| | HSVT 14S-08G | 14 | 26 | 32 | 12 | 27 | 40 | 42 | 22 | 14 | 21 | 1/2 |
| PN 400 | HSVT 16S-08G | 16 | 26 | 32 | 12 | 30 | 40 | 42 | 21.5 | 14 | 21 | 1/2 |
| | HSVT 20S-12G | 20 | 32 | 46 | 17 | 36 | 50 | 57 | 28.5 | 16 | 28 | 3/4 |
| | HSVT 25S-16G | 25 | 39 | 50 | 22 | 46 | 55 | 62 | 31 | 18 | 31 | 1 |
| PN 250 | HSVT 30S-20G | 30 | 49 | 60 | 27 | 50 | 63 | 74 | 36.5 | 20 | 36 | 1 1/4 |
| | HSVT 38S-24G | 38 | 55 | 70 | 32 | 60 | 72 | 84 | 41 | 22 | 41 | 1 1/2 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

THROTTLEFREE BANJO TEE(METRIC PARALLELED) WITH HKAZ-RING
HSVT-G/M

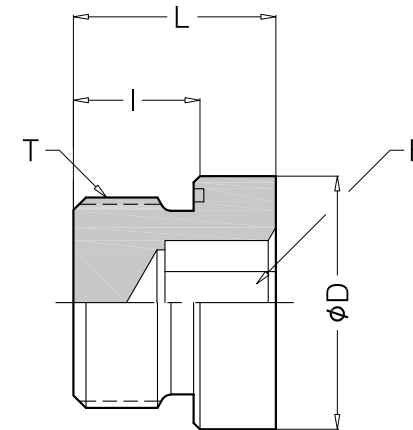


for Metric Paralled

| Series | Part No. | Tube O.D. | | D | H | h ₁ | h | L | L ₁ | I | I ₁ | I ₂ | T (Metric) |
|----------------------|--------------|-----------|----|----|----|----------------|----|----|----------------|----|----------------|----------------|---------------|
| | | D | D | | | | | | | | | | |
| L light PN 250 | HSVT 06L-M10 | 6 | 14 | 18 | 6 | 14 | 27 | 24 | 12 | 8 | 12 | M 10X1 | |
| | HSVT 08L-M12 | 8 | 17 | 20 | 6 | 17 | 28 | 27 | 13 | 12 | 14 | M 12X1.5 | |
| | HSVT 10L-M14 | 10 | 19 | 22 | 8 | 19 | 30 | 30 | 15 | 12 | 15 | M 14X1.5 | |
| | HSVT 12L-M16 | 12 | 21 | 27 | 10 | 22 | 32 | 36 | 17.5 | 12 | 18 | M 16X1.5 | |
| | HSVT 15L-M18 | 15 | 23 | 30 | 12 | 27 | 35 | 39 | 20 | 12 | 19 | M 18X1.5 | |
| PN 160 | HSVT 18L-M22 | 18 | 27 | 32 | 14 | 32 | 37 | 41 | 20.5 | 14 | 20 | M 22X1.5 | |
| | HSVT 22L-M26 | 22 | 31 | 36 | 17 | 36 | 41 | 46 | 24.5 | 16 | 22 | M 26X1.5 | |
| PN 100 | HSVT 28L-M33 | 28 | 39 | 46 | 22 | 41 | 46 | 58 | 29.5 | 18 | 29 | M 33X2 | |
| | HSVT 35L-M42 | 35 | 49 | 55 | 27 | 50 | 55 | 69 | 33 | 20 | 33 | M 42X2 | |
| S heavy PN 630 | HSVT 42L-M48 | 42 | 55 | 65 | 32 | 60 | 63 | 84 | 40 | 22 | 41 | M 48X2 | |
| | HSVT 06S-M12 | 6 | 17 | 20 | 6 | 17 | 30 | 27 | 15 | 12 | 14 | M 12X1.5 | |
| | HSVT 08S-M14 | 8 | 19 | 22 | 8 | 19 | 31 | 30 | 16 | 12 | 15 | M 14X1.5 | |
| | HSVT 10S-M16 | 10 | 21 | 27 | 10 | 22 | 34 | 36 | 18 | 12 | 18 | M 16X1.5 | |
| | HSVT 12S-M18 | 12 | 23 | 30 | 12 | 24 | 36 | 39 | 19.5 | 12 | 19 | M 18X1.5 | |
| PN 400 | HSVT 14S-M20 | 14 | 25 | 32 | 12 | 27 | 40 | 41 | 22 | 14 | 20 | M 20X1.5 | |
| | HSVT 16S-M22 | 16 | 27 | 36 | 14 | 30 | 42 | 45 | 23.5 | 14 | 22 | M 22X1.5 | |
| | HSVT 20S-M27 | 20 | 32 | 46 | 17 | 36 | 50 | 58 | 28.5 | 16 | 28 | M 27X2 | |
| | HSVT 25S-M33 | 25 | 39 | 50 | 22 | 46 | 55 | 62 | 31 | 18 | 31 | M 33X2 | |
| PN 250 | HSVT 30S-M42 | 30 | 49 | 60 | 27 | 50 | 63 | 74 | 36.5 | 20 | 36 | M 42X2 | |
| | HSVT 38S-M48 | 38 | 55 | 70 | 32 | 60 | 72 | 84 | 41 | 22 | 41 | M 48X2 | |

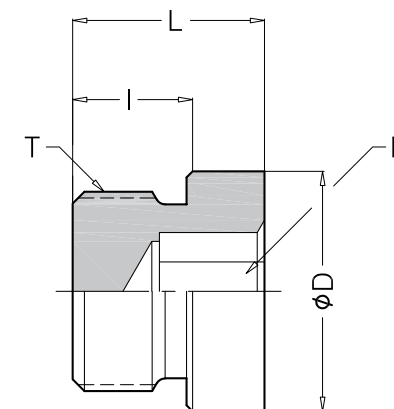
Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

BLANKING PLUGS FOR PORT WITH *ED-RING
HVSTI-GED/MED



| PN | Part No.(M) | Part No.(G) | T (Metric) | T (BSP) | D | H | L | I |
|--------|-------------|-------------|---------------|------------|------|----|------|----|
| PN 630 | HVSTI-M10ED | HVSTI-02GED | M 10X1 | 1/8 | 14 | 5 | 12 | 8 |
| | HVSTI-M12ED | - | M 12X1.5 | - | 17 | 6 | 17 | 12 |
| | HVSTI-M14ED | HVSTI-04GED | M 14X1.5 | 1/4 | 19 | 6 | 17 | 12 |
| | HVSTI-M16ED | HVSTI-06GED | M 16X1.5 | 3/8 | 22 | 8 | 17 | 12 |
| | HVSTI-M18ED | - | M 18X1.5 | - | 23.9 | 8 | 17 | 12 |
| | HVSTI-M20ED | - | M 20X1.5 | - | 25.9 | 10 | 19 | 14 |
| | HVSTI-M22ED | HVSTI-08GED | M 22X1.5 | 1/2 | 27 | 10 | 19 | 14 |
| PN 400 | HVSTI-M26ED | - | M 26X1.5 | - | 31.9 | 12 | 21 | 16 |
| | HVSTI-M27ED | HVSTI-12GED | M 27X2 | 3/4 | 32 | 12 | 21 | 16 |
| | HVSTI-M33ED | HVSTI-16GED | M 33X2 | 1 | 39.9 | 17 | 22.5 | 16 |
| PN 250 | HVSTI-M42ED | HVSTI-20GED | M 42X2 | 1 1/4 | 49.9 | 22 | 22.5 | 16 |
| | HVSTI-M48ED | HVSTI-24GED | M 48X2 | 1 1/2 | 55 | 24 | 22.5 | 16 |

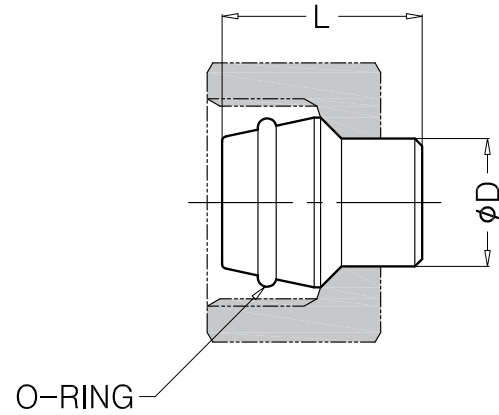
BLANKING PLUGS WITH *O-RING (ACCORD. TO ISO 6149-3/DIN 3585)
HVSTI



| PN | Part No. | T (Metric) | D | H | L | I |
|--------|-----------|---------------|----|----|------|------|
| PN 630 | HVSTI-M10 | M 10X1 | 13 | 5 | 14 | 10 |
| | HVSTI-M12 | M 12X1.5 | 17 | 6 | 16.5 | 11.5 |
| | HVSTI-M14 | M 14X1.5 | 19 | 6 | 16.5 | 11.5 |
| PN 400 | HVSTI-M16 | M 16X1.5 | 21 | 6 | 18 | 13 |
| | HVSTI-M18 | M 18X1.5 | 23 | 8 | 19.5 | 14.5 |
| | HVSTI-M22 | M 22X1.5 | 27 | 10 | 20.5 | 15.5 |
| PN 250 | HVSTI-M26 | M 26X1.5 | 31 | 12 | 21 | 16 |
| | HVSTI-M27 | M 27X2 | 32 | 12 | 24 | 19 |
| | HVSTI-M33 | M 33X2 | 38 | 17 | 25.5 | 19 |
| | HVSTI-M42 | M 42X2 | 48 | 22 | 26 | 19.5 |

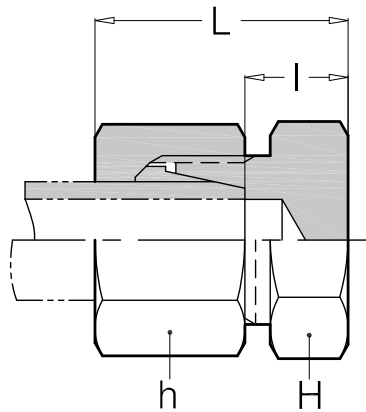
All dimensions are in millimeters, for reference only subject to change.
*ED-Ring and O-Ring of NBR(e.g.perbunan) standard, FRM(e.g.viton) on request (see page 16)

BLANKING PLUG WITH *O-RING HVKA



| Series | Part No. | Tube O.D. | |
|----------------------|------------|-----------|------|
| | | D | L |
| L Light PN 250 | HVKA-06L/S | 6 | 18.5 |
| | HVKA-08L/S | 8 | 18.5 |
| | HVKA-10L/S | 10 | 20 |
| | HVKA-12L/S | 12 | 20.5 |
| | HVKA-15L | 15 | 20.5 |
| PN 160 | HVKA-18L | 18 | 22.5 |
| | HVKA-22L | 22 | 25 |
| PN 100 | HVKA-28L | 28 | 25.5 |
| | HVKA-35L | 35 | 30 |
| | HVKA-42L | 42 | 30 |
| S Heavy PN 630 | HVKA-14S | 14 | 22.5 |
| PN 400 | HVKA-16S | 16 | 23.5 |
| | HVKA-20S | 20 | 28.5 |
| | HVKA-25S | 25 | 29 |
| PN 250 | HVKA-30S | 30 | 30.5 |
| | HVKA-38S | 38 | 33 |

TUBE CAP HCA



| Series | Part No. | Tube O.D. | | | | |
|----------------------|----------|-----------|----|----|----|------|
| | | D | h | H | L | I |
| L Light PN 250 | HCA-06L | 6 | 14 | 12 | 22 | 7 |
| | HCA-08L | 8 | 17 | 14 | 23 | 8 |
| | HCA-10L | 10 | 19 | 17 | 24 | 9 |
| | HCA-12L | 12 | 22 | 19 | 25 | 10 |
| | HCA-15L | 15 | 27 | 24 | 26 | 11 |
| PN 160 | HCA-18L | 18 | 32 | 27 | 28 | 11.5 |
| | HCA-22L | 22 | 36 | 32 | 30 | 13.5 |
| PN 100 | HCA-28L | 28 | 41 | 41 | 31 | 14.5 |
| | HCA-35L | 35 | 50 | 46 | 36 | 14.5 |
| | HCA-42L | 42 | 60 | 55 | 39 | 16 |
| S Heavy PN 630 | HCA-06S | 6 | 17 | 14 | 26 | 11 |
| | HCA-08S | 8 | 19 | 17 | 28 | 13 |
| | HCA-10S | 10 | 22 | 19 | 29 | 12.5 |
| | HCA-12S | 12 | 24 | 22 | 31 | 14.5 |
| | HCA-14S | 14 | 27 | 24 | 34 | 16 |
| PN 400 | HCA-16S | 16 | 30 | 27 | 34 | 15.5 |
| | HCA-20S | 20 | 36 | 32 | 39 | 17.5 |
| | HCA-25S | 25 | 46 | 41 | 44 | 20 |
| PN 250 | HCA-30S | 30 | 50 | 46 | 47 | 20.5 |
| | HCA-38S | 38 | 60 | 55 | 54 | 23 |

Dimensions given approximate length with tightened nut. All dimensions are in millimeters, for reference only subject to change.

*O-Ring of NBR(e.g.Perbunan)Standard, of FPM(e.g. Viton) on request (See Page 16)



VALVE

These Hydraulic Valves are designed to meet working pressure up to 500 Bar and Sekwang normally uses Carbon steel. Also, we are flexible to change the thread type as customer's requirement.

The total system design must be taken into consideration to ensure optimal performance and safety.

