# FITTINGS FOR REFRIGERANTING SYSTEMS

## FROM QUALITY OUR NATURAL DEVELOPMENT

Achieved the goal of fifty years working in the industry of Refrigeration and Air Conditioning, Castel Quality Range of Products is well known and highly appreciated all over the world. Quality is the main issue of our Company and it has a special priority, in every step, all along the production cycle. UNI EN ISO 9001:2008, issued by ICIM, certifies the Quality System of the Factory. Moreover Castel Products count a number of certifications in conformity with EEC Directives and with European and American Quality Approval.
We produce on high tech machinery and updated automatic production lines, operating in conformity with the safety and environment standards currently enforced.
Castel offers to the Refrigeration and Air Conditioning Market and to the Manufacturers fully tested products suitable with HCFC and HFC Refrigerants currently used in the Refrigeration & Air Conditioning Industry.

July 2011

**INDICE**



**EXTERNAL LEAKAGE**

All the products illustrated in this Handbook are submitted, one by one, to tightness tests besides to functional tests. Allowable external leakage, measurable during the test, agrees to the definition given in Par. 9.4 of EN 12284 : 2003 Standard:

*"During the test, no bubbles shall form over a period of at least one minute when the specimen is immersed in water with low surface tension, ...".*

**PRESSURE CONTAINMENT**

All the products illustrated in this Handbook, if submitted to hydrostatic test, guarantee a pressure strength at least equal to 1,43 x PS in compliance with the Directive 97/23/EC.
All the products illustrated in this Handbook, if submitted to burst test, guarantee a pressure strength at least equal to 3 x PS according to EN 378-2 : 2008 Standard. A great number of products illustrated in this Handbook can guarantee an higher pressure strength, equal to 5 x PS according the UL Standard 207: 2009.

**WEIGHTS**

The weights of the items listed in this Handbook include packaging.

**GUARANTEE**

All Castel products are covered by a 12 – months warranty. This warranty covers all products or parts thereof that turn out to be defective within the warranty period. In this case, at his own expenses, the customer shall return the defective item with a detailed description of the claimed defects. The warranty doesn't apply if the defect of Castel products are due to mistakes either by customer or by third parties such wrong installations, use contrary to Castel indications, tampering. In case of defects of its own products, Castel will only replace the defective goods and will not refund damages of any kind.
The technical data shown on this catalogue are indicative. Castel reserves the right to modify the same at any time without any previous notice.

## APPLICATIONS

All the fittings, shown in this chapter, are excluded from the scope of Directive 97/23/EC, as specified in the Guidelines 1/8 and 1/9, because they are piping components.
They are designed for installation on commercial refrigerating systems and on civil and industrial conditioning plants, which use refrigerant fluids proper to the Group II (as defined in Article 9, Section 2.2 of Directive 97/23/EC and referred to in Directive 67/548/EEC).

## OPERATION

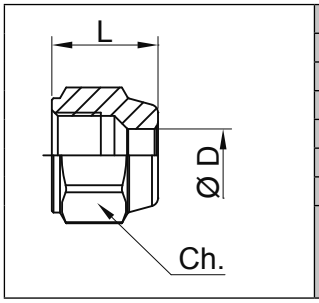
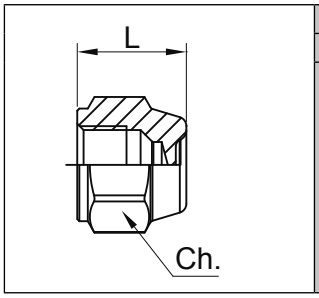
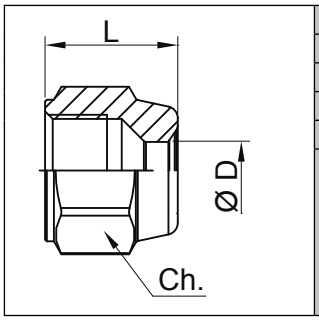
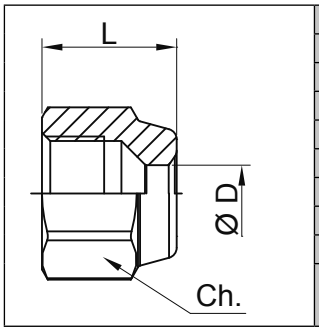
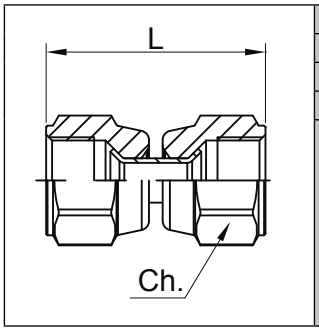
The sealing system between the end of a male connection and a nut series 7010 , 7020 and 7030 requires a special flaring of the end of copper tube, the so-called flared connection.
The sealing system between the end of a male connection and a Flare-ODS adapter allows avoiding the flaring process on copper tube end (national laws of some European countries don't accept this operation) because the tube end is brazed into the solder connection of the adapter. We wish to remember to our customers that they may assure no leakage of the male connection/adapter system only interposing the copper gasket 7580, supplied with the same adapter.
Flange joints 7630 consist of two brass bushes for brazing to the copper tubes. When the four flange screws are tightened, a gasket, put between the two bushes, assures the seal of flanged joints.

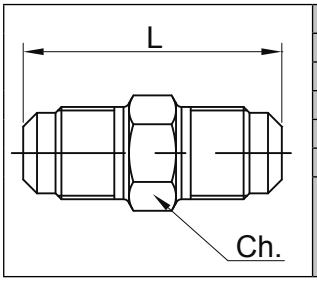
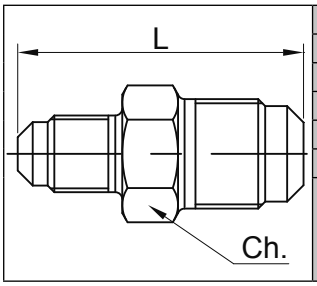
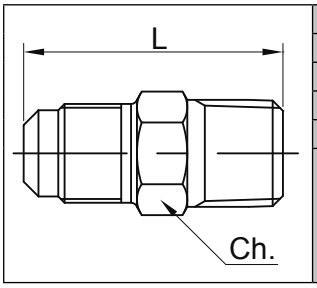
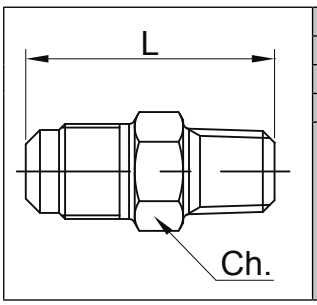
## CONSTRUCTION

All nuts, from series 7010 to series 7050, and all the elbows, TEE and cross fittings, from series 7210 to series 7410, are manufactured with hot forged brass EN 12420 – CW 617N.
All straight fittings, from series 7110 to series 7170, and all the plug, from series 7510 to series 7520, are machined by brass bar EN 12164 – CW 614N.
Seal caps series 7560 and gaskets series 7580 are made with copper Cu – ETP UNI 5649.
The main parts of the flanges joints are made with the following materials:

- Hot forged brass EN 12420 – CW 617N for bushes and flanges
- Aramidic fibers for seal gasket of the flanges

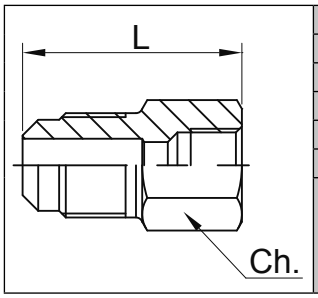
**TABLE 1: General Characteristics**

| | Catalogue Number | International Reference | SAE Flare | Copper pipe | | PS [bar] | Dimensions [mm] | | | Wrench torque min / max [Nm] | Weight [g] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ø [in.] | Ø [mm] | | Ø D | L | Ch | | |
| SAE-FLARE NUTS (INCH TUBING) | | | | | | | | | | | |
|  | 7010/22 | NS4–4 | 1/4” | 1/4” | 6 | 45 | 6.5 | 15.5 | 17 | 11 / 14 | 19 |
| | 7010/33 | NS4–6 | 3/8” | 3/8” | – | | 9.7 | 19.5 | 22 | 20 / 25 | 38 |
| | 7010/44 | NS4–8 | 1/2” | 1/2” | – | | 13 | 22.5 | 25 | 34 / 47 | 49 |
| | 7010/55 | NS4–10 | 5/8” | 5/8” | 16 | | 16.2 | 25 | 28 | 54 / 75 | 64 |
| | 7010/66 | NS4–12 | 3/4” | 3/4” | – | | 19.4 | 29.5 | 33 | 68 / 71 | 97 |
| | 7010/77 | NS4–14 | 7/8” | 7/8” | 22 | | 22.5 | 36.5 | 41 | 90 /120 | 186 |
| | 7010/88 | NS4–16 | 1” | 1” | – | | 25.6 | | | 120 / 150 | 153 |
| SAE-FLARE CAP NUTS | | | | | | | | | | | |
|  | 7020/20 | N5–4 CAP NUT | 1/4” | cieco | cieco | 45 | – | 15 | 16 | 8,5 / 11,5 | 16 |
| | 7020/X02 | N5–5 CAP NUT | 5/16” | | | | | | | | 14 |
| SAE-FLARE REDUCING NUTS (INCH TUBING) | | | | | | | | | | | |
|  | 7020/32 | NRS4–64 | 3/8” | 1/4” | 6 | 45 | 6.5 | 19.5 | 22 | 20 / 25 | 38 |
| | 7020/43 | NRS4–86 | 1/2” | 3/8” | – | | 9.7 | 22.5 | 25 | 34 / 47 | 53 |
| | 7020/54 | NRS4–108 | 5/8” | 1/2” | – | | 13 | 25 | 28 | 54 / 75 | 69 |
| | 7020/65 | NRS4–1210 | 3/4” | 5/8” | 16 | | 16.2 | 29.5 | 33 | 68 / 71 | 104 |
| | 7020/87 | NRS4–1614 | 1” | 7/8” | 22 | | 22.5 | 36.5 | 41 | 120 / 150 | 160 |
| SAE-FLARE NUTS (METRIC TUBING) | | | | | | | | | | | |
|  | 7030/3M8 | – | 3/8” | – | 8 | 45 | 8.3 | 19.5 | 22 | 20 / 25 | 37 |
| | 7030/3M10 | | | | 10 | | 10.3 | | | | 36 |
| | 7030/4M10 | | 1/2” | | 10 | | 10.3 | 22.5 | 25 | 34 / 47 | 53 |
| | 7030/4M12 | | | | 12 | | 12.3 | | | | 50 |
| | 7030/4M14 | | | | 14 | | 14.3 | | | | 47 |
| | 7030/5M12 | | 5/8” | | 12 | | 12.3 | 25 | 28 | 54 / 75 | 70 |
| | 7030/5M14 | | | | 14 | | 14.3 | | | | 68 |
| | 7030/6M14 | | 3/4” | | 14 | | 14.3 | 29.5 | 33 | 68 / 71 | 106 |
| | 7030/6M18 | | | | 18 | | 18.3 | | | | 98 |
| SAE-FLARE TWIN NUTS | | | | | | | | | | | |
|  | 7050/2 | US4–4 | 1/4” | – | – | 45 | – | 32 | 17 | 11 / 14 | 39 |
| | 7050/3 | US4–6 | 3/8” | | | | | 40 | 22 | 20 / 25 | 78 |
| | 7050/4 | US4–8 | 1/2” | | | | | 46 | 25 | 34 / 47 | 105 |
| | 7050/5 | US4–10 | 5/8” | | | | | 51 | 28 | 54 / 75 | 140 |

| TABLE 2: General Characteristics | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Catalogue Number | International Reference | Connections | | PS [bar] | Dimensions [mm] | | Weight [g] |
| | | | SAE Flare | NPT | | L | Ch | |
| SAE-FLARE UNIONS | | | | | | | | |
|  | 7110/2 | U2–4 | 1/4” | – | 45 | 38 | 12 | 23 |
| | 7110/3 | U2–6 | 3/8” | | | 44 | 17 | 46 |
| | 7110/4 | U2–8 | 1/2” | | | 50 | 20 | 73 |
| | 7110/5 | U2–10 | 5/8” | | | 58 | 23 | 113 |
| | 7110/6 | U2–12 | 3/4” | | | 63 | 27 | 164 |
| | 7110/8 | U2–16 | 1” | | | 72 | 36 | 304 |
| REDUCING SAE-FLARE UNIONS | | | | | | | | |
|  | 7120/23 | UR2–64 | 1/4” x 3/8” | – | 45 | 42 | 17 | 38 |
| | 7120/24 | UR2–84 | 1/4” x 1/2” | | | 45 | 20 | 58 |
| | 7120/34 | UR2–86 | 3/8” x 1/2” | | | 48 | | 66 |
| | 7120/35 | UR2–106 | 3/8” x 5/8” | | | 52 | 23 | 89 |
| | 7120/45 | UR2–108 | 1/2” x 5/8” | | | 54 | 23 | 98 |
| | 7120/56 | UR2–1210 | 5/8” x 3/4” | | | 61.5 | 27 | 170 |
| SAE FLARE / NPT UNIONS | | | | | | | | |
|  | 7130/2 | U1–4B | 1/4” | 1/4” | 45 | 38.1 | 14 | 32 |
| | 7130/3 | U1–6C | 3/8” | 3/8” | | 41.2 | 17 | 48 |
| | 7130/4 | U1–8D | 1/2” | 1/2” | | 49.8 | 22 | 92 |
| | 7130/6 | U1–12F | 3/4” | 3/4” | | 57.6 | 27 | 152 |
| | 7130/8 | U1–16H | 1” | 1” | | 68 | 36 | 277 |
| SAE FLARE / NPT REDUCING UNIONS | | | | | | | | |
|  | 7140/21 | U1–4A | 1/4” | 1/8” | 45 | 32.9 | 12 | 20 |
| | 7140/32 | U1–6B | 3/8” | 1/4” | | 41.1 | 17 | 39 |
| | 7140/43 | U1–8C | 1/2” | 3/8” | | 45.2 | 20 | 64 |
| | 7140/54 | U1–10D | 5/8” | 1/2” | | 53.8 | 23 | 102 |

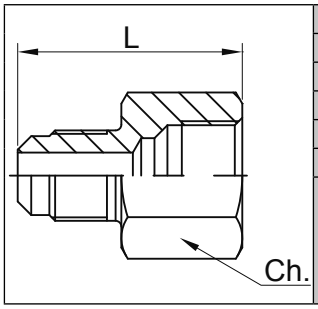
## TABLE 3: General Characteristics

MALE/FEMALE REDUCING UNIONS (REDUCED FEMALE)



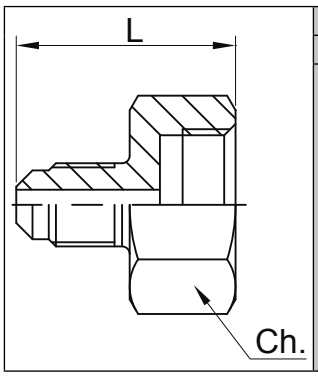

| Catalogue Number | International Reference | Connections: SAE Flare m | Connections: SAE Flare f | Connections: NPT | Connections: GAS | Connections: ODS Ø [in.] | Connections: ODS Ø [mm] | PS [bar] | Dimensions [mm]: L | Dimensions [mm]: Ch | Weight [g] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7150/21 | U3–4A | 1/4” | – | 1/8” f | – | – | – | 45 | 29 | 14 | 21 |
| 7150/32 | UR3–46 | 3/8” | 1/4” | – | – | – | – | 45 | 33 | 17 | 38 |
| 7150/43 | UR3–68 | 1/2” | 3/8” | – | – | – | – | 45 | 38 | 22 | 66 |
| 7150/54 | UR3–810 | 5/8” | 1/2” | – | – | – | – | 45 | 45 | 25 | 99 |
| 7150/64 | UR3–812 | 3/4” | 1/2” | – | – | – | – | 45 | 46.5 | 27 | 132 |
| 7150/65 | UR3–1012 | 3/4” | 5/8” | – | – | – | – | 45 | 49.5 | 30 | 157 |

MALE/FEMALE REDUCING UNIONS (REDUCED MALE)



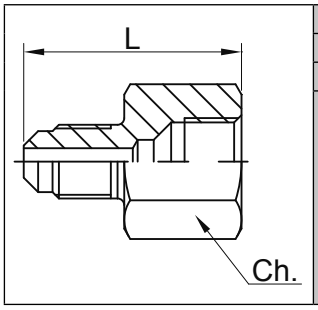

| Catalogue Number | International Reference | Connections: SAE Flare m | Connections: SAE Flare f | Connections: NPT | Connections: GAS | Connections: ODS Ø [in.] | Connections: ODS Ø [mm] | PS [bar] | Dimensions [mm]: L | Dimensions [mm]: Ch | Weight [g] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7150/23 | UR3–64 | 1/4” | 3/8” | – | – | – | – | 45 | 33 | 22 | 49 |
| 7150/24 | UR3–84 | 1/4” | 1/2” | – | – | – | – | 45 | 36 | 25 | 66 |
| 7150/34 | UR3–86 | 3/8” | 1/2” | – | – | – | – | 45 | 39 | 25 | 74 |
| 7150/45 | UR3–108 | 1/2” | 5/8” | – | – | – | – | 45 | 44 | 30 | 127 |
| 7150/46 | UR3–128 | 1/2” | 3/4” | – | – | – | – | 45 | 45 | 34 | 140 |
| 7150/56 | UR3–1210 | 5/8” | 3/4” | – | – | – | – | 45 | 49 | 34 | 150 |

CYLINDER ADAPTORS



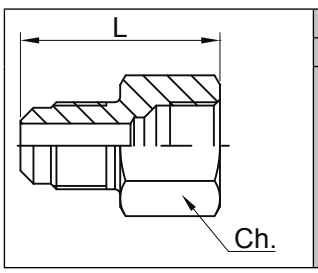

| Catalogue Number | International Reference | Connections: SAE Flare m | Connections: SAE Flare f | Connections: NPT | Connections: GAS | Connections: ODS Ø [in.] | Connections: ODS Ø [mm] | PS [bar] | Dimensions [mm]: L | Dimensions [mm]: Ch | Weight [g] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7154/2 | – | 1/4” | 20 – 14 filetti sx. femmina | | | | | 45 | 29 | 25 | 46 |
| 7156/2 | – | 1/4” | W 21,8 – 14 filetti dx. femmina | | | | | 45 | 29 | 27 | 52 |

MALE/FEMALE UNIONS




| Catalogue Number | International Reference | Connections: SAE Flare m | Connections: SAE Flare f | Connections: NPT | Connections: GAS | Connections: ODS Ø [in.] | Connections: ODS Ø [mm] | PS [bar] | Dimensions [mm]: L | Dimensions [mm]: Ch | Weight [g] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7160/2 | – | 1/4” | 1/4” | – | – | – | – | 45 | 30.5 | 17 | 31 |
| 7160/3 | – | 3/8” | 3/8” | – | – | – | – | 45 | 36 | 22 | 57 |
| 7160/4 | – | 1/2” | 1/2” | – | – | – | – | 45 | 41 | 25 | 84 |

UNIONS SAE-FLARE TO BSP




| Catalogue Number | International Reference | Connections: SAE Flare m | Connections: SAE Flare f | Connections: NPT | Connections: GAS | Connections: ODS Ø [in.] | Connections: ODS Ø [mm] | PS [bar] | Dimensions [mm]: L | Dimensions [mm]: Ch | Weight [g] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7164/2 | – | 1/4” | – | – | G1/4” f | – | – | 45 | 32.5 | 20 | 45 |
| 7166/2 | – | – | 1/4” | – | G1/4” m | – | – | 45 | 32 | 17 | 25 |

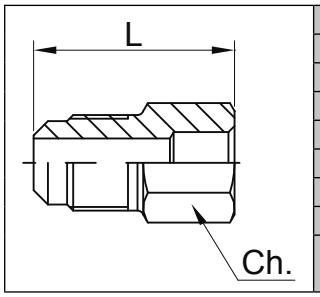
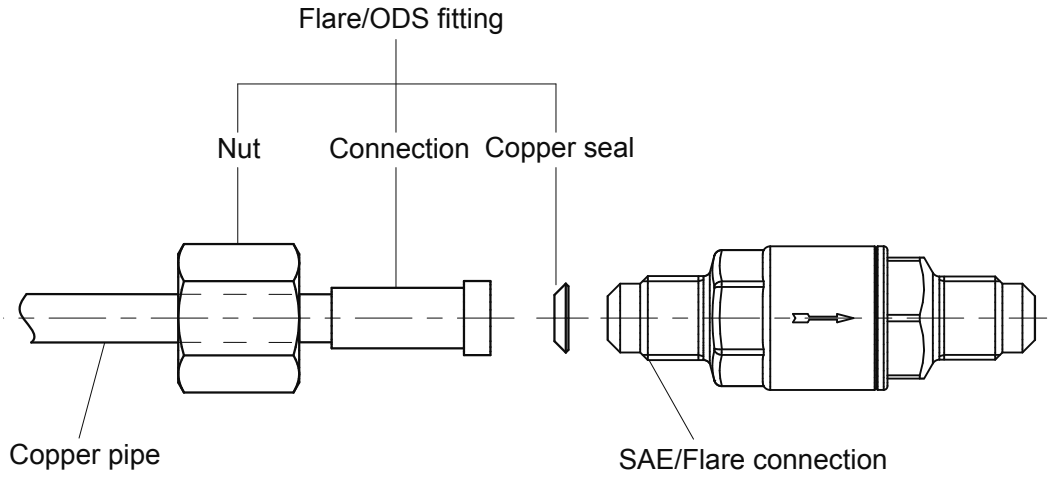
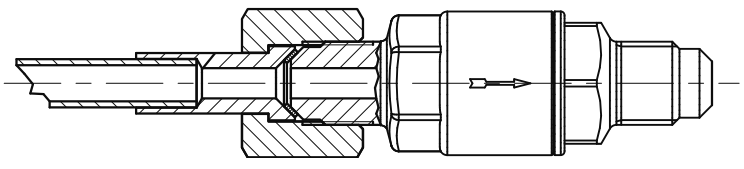
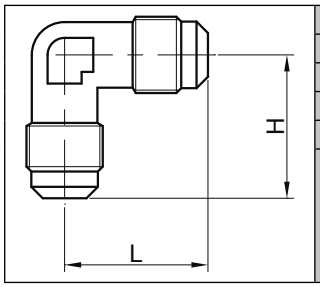
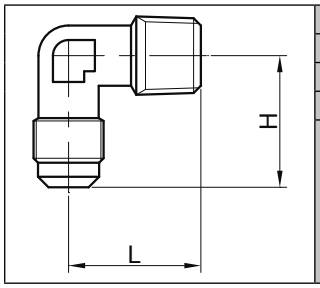
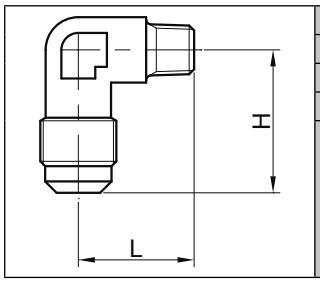
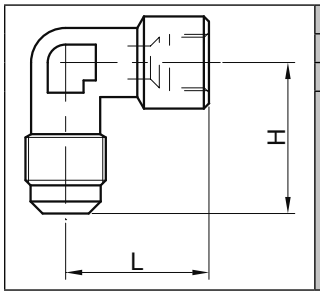
| TABLE 3: General Characteristics | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Catalogue Number | International Reference | Connections | | | | | | PS [bar] | Dimensions [mm] | | Weight [g] |
| | | | SAE Flare | | NPT | GAS | ODS | | | | | |
| | | | m | f | | | Ø [in.] | Ø [mm] | | L | Ch | |
| MALE SAE-FLARE/SOLDER UNIONS | | | | | | | | | | | | |
|  | 7170/22 | US3–44 | 1/4" | – | – | – | 1/4" | – | 45 | 26.5 | 12 | 17 |
| | 7170/2M8 | – | | | | | – | 8 | | | | |
| | 7170/33 | US3–66 | 3/8" | | | | 3/8" | – | | 33 | 17 | 39 |
| | 7170/3M10 | – | | | | | – | 10 | | | | |
| | 7170/44 | US3–88 | 1/2" | | | | 1/2" | – | | 35 | 20 | 55 |
| | 7170/4M12 | – | | | | | – | 12 | | | | |
| | 7170/55 | US3–1010 | 5/8" | | | | 5/8" | 16 | | 42 | 23 | 82 |
| | 7170/6M18 | – | 3/4" | | | | – | 18 | | 45.5 | 27 | 123 |

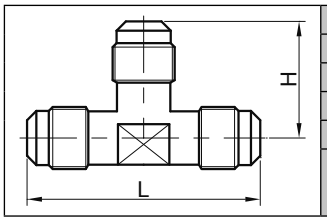
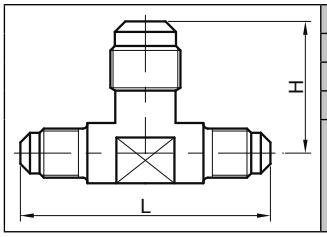
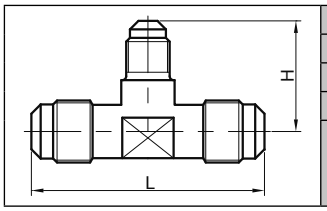
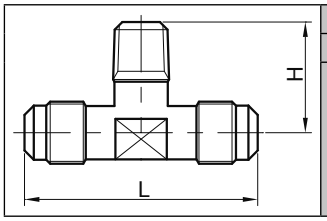
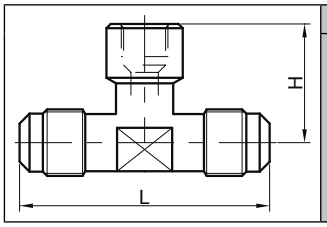
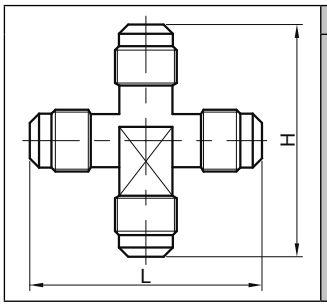
**TABLE 4: General Characteristics**

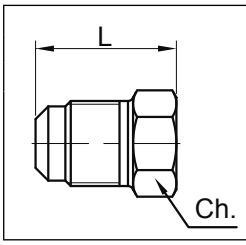
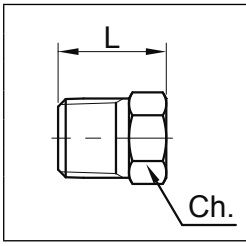
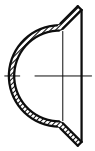
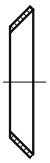
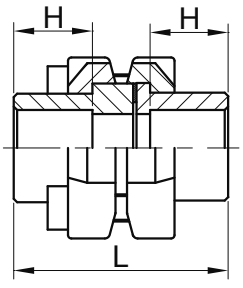
| | Item Position | Catalogue Number | Connections | | | PS [bar] | Dimensions [mm] | | | | | Wrench torque min / max [Nm] | Weight [g] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SAE Flare | ODS | | | | | | | | | |
| | | | | Ø [in.] | Ø [mm] | | L1 | L2 | L3 | L4 | Ch | | |
| FLARE / ODS ADAPTERS | | | | | | | | | | | | | |
| POS.1 | 1 | 9900/X58 | | | | | – | – | 16 | 12.5 | 17 | 11 / 14 | |
| | 2 | 9900/X62 | 1/4” | 1/4” | – | | 21 | 3.5 | – | – | – | – | 67 |
| | 3 | 7580/2 | | | | | – | | | | | | |
| | 1 | 9900/X58 | | | | | – | – | 16 | 12.5 | 17 | 11 / 14 | |
| | 2 | 9900/X70 | 1/4” | – | 6 | | 21 | 3.5 | – | – | – | – | 83 |
| | 3 | 7580/2 | | | | | – | | | | | | |
| | 1 | 9900/X59 | | | | | – | – | 18.5 | 14.7 | 22 | 20 / 25 | |
| | 2 | 9900/X63 | 3/8” | 3/8” | – | | 23.5 | 4 | – | – | – | – | 114 |
| | 3 | 7580/3 | | | | | – | | | | | | |
| | 1 | 9900/X59 | | | | | – | – | 18.5 | 14.7 | 22 | 20 / 25 | |
| | 2 | 9900/X71 | 3/8” | – | 10 | | 23.5 | 4 | – | – | – | – | 130 |
| POS.2 | 3 | 7580/3 | | | | | – | | | | | | |
| | 1 | 9900/X60 | | | | | – | – | 21 | 17 | 27 | 34 / 47 | |
| | 2 | 9900/X64 | 1/2” | 1/2” | – | 45 | 26 | 4.5 | – | – | – | – | 207 |
| | 3 | 7580/4 | | | | | – | | | | | | |
| | 1 | 9900/X60 | | | | | – | – | 21 | 17 | 27 | 34 / 47 | |
| | 2 | 9900/X72 | 1/2” | – | 12 | | 26 | 4.5 | – | – | – | – | 226 |
| | 3 | 7580/4 | | | | | – | | | | | | |
| | 1 | 9900/X61 | | | | | – | – | 22.5 | 18 | 30 | 54 / 75 | |
| | 2 | 9900/X65 | 5/8” | 5/8” | 16 | | 27.5 | 5 | – | – | – | – | 271 |
| | 3 | 7580/5 | | | | | – | | | | | | |
| | 1 | 9900/X68 | | | | | – | – | 25 | 20 | 36 | 68 / 71 | |
| | 2 | 9900/X69 | 3/4” | 3/4” | – | | 30 | 5 | – | – | – | – | 404 |
| POS.3 | 3 | 7580/6 | | | | | – | | | | | | |
| | 1 | 9900/X68 | | | | | – | – | 25 | 20 | 36 | 68 / 71 | |
| | 2 | 9900/X77 | 3/4” | – | 18 | | 30 | 5 | – | – | – | – | 455 |
| | 3 | 7580/6 | | | | | – | | | | | | |



| TABLE 4: General Characteristics | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Catalogue Number | International Reference | Connections | | | PS [bar] | Dimensions [mm] | | Weight [g] |
| | | | SAE Flare | | NPT | | H | L | |
| | | | m | f | | | | | |
| SAE-FLARE ELBOWS | | | | | | | | | |
|  | 7210/2 | E2–4 | 1/4” | – | – | 45 | 24.5 | 24.5 | 26 |
| | 7210/3 | E2–6 | 3/8” | | | | 29.5 | 29.5 | 49 |
| | 7210/4 | E2–8 | 1/2” | | | | 32.5 | 32.5 | 83 |
| | 7210/5 | E2–10 | 5/8” | | | | 36 | 36 | 116 |
| | 7210/6 | E2–12 | 3/4” | | | | 42.5 | 42.5 | 192 |
| SAE-FLARE / NPT ELBOWS | | | | | | | | | |
|  | 7220/2 | E1–4B | 1/4” | – | 1/4” | 45 | 26 | 24 | 33 |
| | 7220/3 | E1–6C | 3/8” | | 3/8” | | 29.5 | 28.5 | 54 |
| | 7220/4 | E1–8D | 1/2” | | 1/2” | | 32.5 | 32 | 91 |
| | 7220/6 | E1–12F | 3/4” | | 3/4” | | 42.5 | 39.5 | 183 |
| SAE-FLARE / REDUCED NPT ELBOWS | | | | | | | | | |
|  | 7230/21 | E1–4A | 1/4” | – | 1/8” | 45 | 24.5 | 23.5 | 25 |
| | 7230/32 | E1–6B | 3/8” | | 1/4” | | 29.5 | 29.5 | 46 |
| | 7230/43 | E1–8C | 1/2” | | 3/8” | | 32.5 | 31 | 75 |
| | 7230/54 | E1–10D | 5/8” | | 1/2” | | 36 | 35 | 114 |
| MALE/FEMALE SAE-FLARE ELBOWS | | | | | | | | | |
|  | 7240/2 | – | 1/4” | 1/4” | – | 45 | 28.5 | 28 | 56 |
| | 7240/3 | | 3/8” | 3/8” | | | 32 | 31 | 84 |
| | 7240/4 | | 1/2” | 1/2” | | | 39.5 | 38 | 198 |

| TABLE 5: General Characteristics | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Catalogue Number | International Reference | Connections | | | | | PS [bar] | Dimensions [mm] | | Weight [g] |
| | | | SAE Flare | | | | NPT (3) | | H | L | |
| | | | (1) | (2) | (3) | (4) | | | | | |
| SAE-FLARE TEE | | | | | | | | | | | |
|  | 7310/2 | T2–4 | 1/4” | 1/4” | 1/4” | – | – | 45 | 23.5 | 47 | 32 |
| | 7310/3 | T2–6 | 3/8” | 3/8” | 3/8” | | | | 29 | 58 | 69 |
| | 7310/4 | T2–8 | 1/2” | 1/2” | 1/2” | | | | 31.5 | 63 | 97 |
| | 7310/5 | T2–10 | 5/8” | 5/8” | 5/8” | | | | 36 | 72 | 153 |
| | 7310/6 | T2–12 | 3/4” | 3/4” | 3/4” | | | | 41.5 | 83 | 235 |
| SAE-FLARE REDUCING TEE ( REDUCED SIDE CONNECTIONS) | | | | | | | | | | | |
|  | 7320/223 | TR2–46 | 1/4” | 1/4” | 3/8” | – | – | 45 | 29 | 56 | 77 |
| | 7320/334 | TR2–68 | 3/8” | 3/8” | 1/2” | | | | 32.5 | 63 | 95 |
| | 7320/445 | TR2–810 | 1/2” | 1/2” | 5/8” | | | | 38 | 72 | 153 |
| | 7320/556 | TR2–1012 | 5/8” | 5/8” | 3/4” | | | | 41.5 | 83 | 228 |
| SAE-FLARE REDUCING TEE ( REDUCED CENTRAL CONNECTION) | | | | | | | | | | | |
|  | 7320/332 | TR2–64 | 3/8” | 3/8” | 1/4” | – | – | 45 | 28 | 58 | 77 |
| | 7320/443 | TR2–86 | 1/2” | 1/2” | 3/8” | | | | 32.5 | 63 | 101 |
| | 7320/554 | TR2–108 | 5/8” | 5/8” | 1/2” | | | | 38 | 72 | 158 |
| | 7320/665 | TR2–1210 | 3/4” | 3/4” | 5/8” | | | | 41.5 | 83 | 220 |
| SAE-FLARE / NPT TEE ( TAPER CENTRAL CONNECTION) | | | | | | | | | | | |
|  | 7330/221 | T1–4A | 1/4” | 1/4” | – | – | 1/8” | 45 | 21 | 47 | 56 |
| | 7330/222 | T1–4B | 1/4” | 1/4” | | | 1/4” | | 24 | 51 | 198 |
| MALE/FEMALE SAE-FLARE TEE (FEMALE CENTRAL CONNECTION) | | | | | | | | | | | |
|  | 7340/222 | T6–4 | 1/4” | 1/4” | 1/4” | – | – | 45 | 27.5 | 56 | 78 |
| SAE-FLARE CROSS | | | | | | | | | | | |
|  | 7410/2 | C1–4 | 1/4” | 1/4” | 1/4” | 1/4” | – | 45 | 52 | 52 | 55 |

| TABLE 7: General Characteristics | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Catalogue Number | International Reference | Connections | | | | PS [bar] | Dimensions [mm] | | | Wrench torque [Nm] | Weight [g] |
| | | | SAE Flare | NPT | ODS | | | H | L | CH | | |
| | | | | | Ø [in.] | Ø [mm] | | | | | | |
| SAE-FLARE PLUGS | | | | | | | | | | | | |
|  | 7510/2 | P2–4 | 1/4" | – | – | – | 45 | – | 23 | 12 | 11 / 14 | 19 |
| | 7510/3 | P2–6 | 3/8" | | | | | | 26 | 17 | 20 / 25 | 40 |
| | 7510/4 | P2–8 | 1/2" | | | | | | 30 | 20 | 34 / 47 | 67 |
| NPT PLUGS | | | | | | | | | | | | |
|  | 7520/1 | 121–B–02 | – | 1/8" | – | – | 45 | – | 15.9 | 12 | 10 / 13 | 12 |
| | 7520/2 | 121–B–04 | | 1/4" | | | | | 23.1 | 14 | 15 / 20 | 27 |
| | 7520/3 | 121–B–06 | | 3/8" | | | | | 23.2 | 17 | 17 / 22 | 43 |
| | 7520/4 | 121–B–08 | | 1/2" | | | | | 29.8 | 22 | 25 / 35 | 87 |
| | 7520/6 | 121–B–12 | | 3/4" | | | | | 32.1 | 27 | 30 / 40 | 149 |
| | 7520/8 | 121–B–16 | | 1" | | | | | 39 | 34 | 60 / 80 | 279 |
| COPPER SEAL CAPS | | | | | | | | | | | | |
|  | 7560/2 | B1–4 | 1/4" | – | – | – | 45 | – | – | – | – | 0.5 |
| | 7560/3 | B1–6 | 3/8" | | | | | | | | | 1 |
| | 7560/4 | B1–8 | 1/2" | | | | | | | | | 1.5 |
| | 7560/5 | B1–10 | 5/8" | | | | | | | | | 2 |
| | 7560/6 | B1–12 | 3/4" | | | | | | | | | 4 |
| | 7560/7 | B1–14 | 7/8" | | | | | | | | | 10 |
| COPPER GASKETS | | | | | | | | | | | | |
|  | 7580/2 | B2–4 | 1/4" | – | – | – | 45 | – | – | – | – | 0.5 |
| | 7580/3 | B2–6 | 3/8" | | | | | | | | | 0.5 |
| | 7580/4 | B2–8 | 1/2" | | | | | | | | | 1 |
| | 7580/5 | B2–10 | 5/8" | | | | | | | | | 1.5 |
| | 7580/6 | B2–12 | 3/4" | | | | | | | | | 3 |
| FLANGE JOINTS | | | | | | | | | | | | |
|  | 7630/7 | – | – | – | 7/8" | – | 45 | 22 | 63 | – | 20 / 24 | 315 |
| | 7630/9 | | | | 1.1/8" | – | | 23 | | | | 490 |
| | 7630/11 | | | | 1.3/8" | 35 | | | | | 42 / 50 | 1045 |
| | 7630/13 | | | | 1.5/8" | – | | 24 | 67 | | | 1340 |
| | 7630/M42 | | | | – | 42 | | | | | | |
| | 7630/17 | | | | 2.1/8" | 54 | | 25 | 71 | | 68 / 80 | 1940 |

# VIBRATION ABSORBER


## APPLICATIONS

The vibration absorbers are designed for installation on commercial refrigerating systems and on civil and industrial air conditioning plants. The function of this item is to avoid the transmission of compressor's vibrations to the refrigerating system pipes, reducing the risk of damage and the noise level. The vibration absorbers can also compensate small thermal expansion of the piping.
The vibration absorbers are classified "Pressure vessels" according Article 1, Section 2.1.4 of the Directive 97/23/EC and are subject to Article 3, Section 1.3 of the same Directive.
They are designed for installation systems, which use the following refrigerant fluids: R22 , R134a , R404A , R407C , R410A ; R507 proper to the Group II (as defined in Article 9, Section 2.2 of Directive 97/23/EC and referred to in Directive 67/548/EEC). For specific applications with refrigerant fluids not listed above, always proper to the Group II, please contact Castel Technical Department.

## CONSTRUCTION MATERIALS

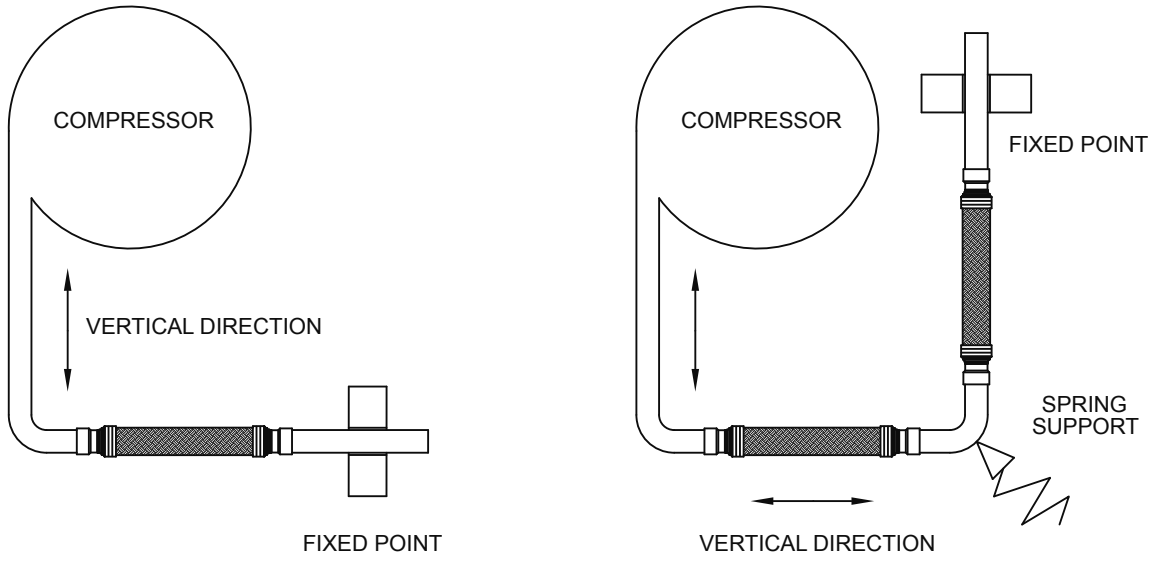
All welding between various parts, including the copper/stainless steel connections are TIG welded (figure 1). This solution makes the Castel Vibration Absorbers particularly resistant to the overheating during brazing to the tubing. The main parts of Castel Vibration Absorbers are manufactured with the following materials:
- Copper tube EN 12735-1 – Cu-DHP for copper end
- Stainless steel EN 10088-1 – 1.4305/1.4301 for fitting
- Stainless steel EN 10028-7 – 1.4541/1.4404 for corrugated flexible
- Stainless steel EN 10028-7 – 1.4301 for net holder
- Stainless steel EN 10088-3 – 1.4301for wire "braid"

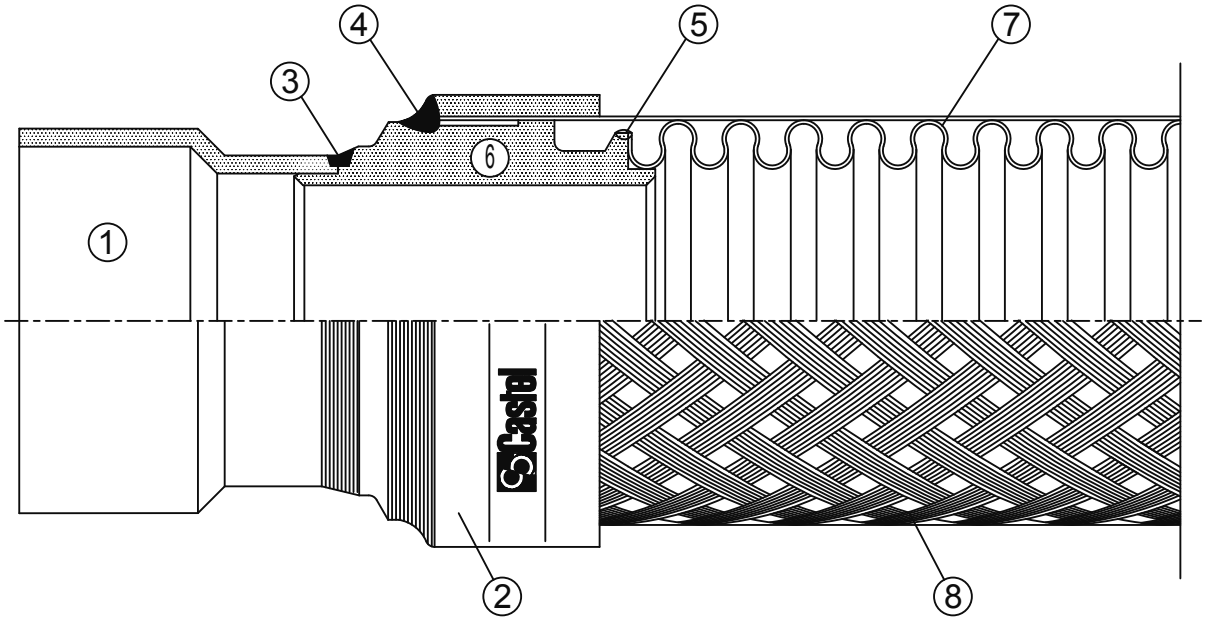
## INSTALLATION

A vibration absorbers can be installed both on suction and discharge lines of a refrigerating system, as close as possible to the compressor. The vibration absorbers are not designed to compensate possible piping misalignment.
Vibration absorbers should be installed perpendicularly to the direction of vibrations. When vibrations exist on two planes, two vibrations absorbers should be used, as shown on fig 2 and 3. For the maximum absorption of vibrations, the refrigerant line should be anchored at the end of the vibration absorber, as shown on fig 2 and 3.
Castel vibration absorbers can be installed vertically too, because they are designed to avoid the retention of condensing water in the wavy zone near to the connections. So there are no problems to install them with temperatures lower then 0ºC.
Vibration absorbers are not designed to absorb axial or torsion stress.

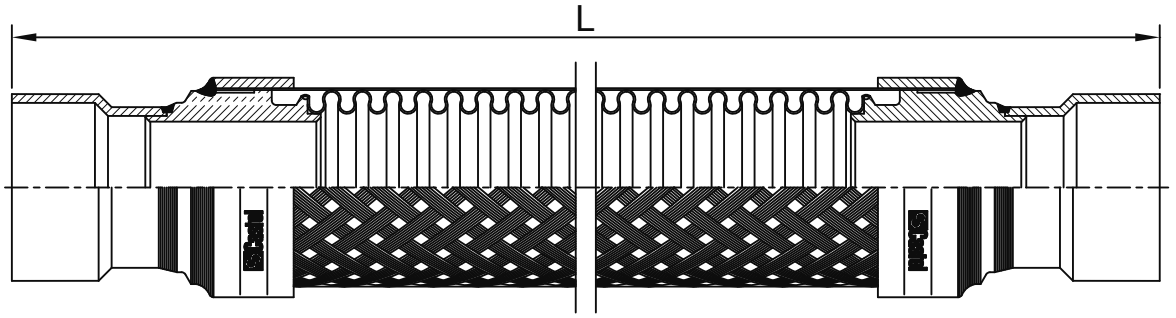
Care should be taken to allow sufficient space for the vibration to avoid static compression or tension, after brazing on place.
High speed of the refrigerant fluid can produce vibration and noise phenomena. In this case it's advisable to install a larger size of Vibration Absorber.
The connection of the vibration absorbers to the piping is normally performed by a brazing process. The specific design and construction of vibration absorbers allows welding without particular protections to prevent overheating.

**WARNING! Ensure a gap corresponding to the 2% of the total length of the vibration absorber device to compensate for possible thermal expansion.**




1 - Copperconnection
2 - Netholder
3 - Copper endswelding
4 - Wire braidwelding
5 - Corrugated flexible welding
6 - Fitting
7 - Corrugated flexible
8 - Stainless steel wire braid




| Catalogue Nr. | Connections | | Length | Working pressure (PS), depending on temperature [bar] | | | | | Risk Category according to PED |
|---|---|---|---|---|---|---|---|---|---|
| | ODS | | | | | | | | |
| | [mm] | [inch] | [mm] | -40 / +50 °C | + 80 °C | +100 °C | + 120 °C | +140 °C | |
| 7690/3 | - | 3/8 | 230 | 45 | 40.5 | 37.5 | 36 | 35 | Art. 3.3 |
| 7690/M10 | 10 | - | | | | | | | |
| 7690/M12 | 12 | - | | | | | | | |
| 7690/4 | - | 1/2 | | | | | | | |
| 7690/M15 | 15 | - | 255 | | | | | | |
| 7690/5 | 16 | 5/8 | | | | | | | |
| 7690/M18 | 18 | - | | | | | | | |
| 7690/6 | - | 3/4 | | | | | | | |
| 7690/7 | 22 | 7/8 | 290 | | | | | | |
| 7690/M28 | 28 | - | 330 | | | | | | |
| 7690/9 | - | 1.1/8 | | | | | | | |
| 7690/11 | 35 | 1.3/8 | 375 | | | | | | |
| 7690/13 | - | 1.5/8 | 430 | | | | | | I |
| 7690/M42 | 42 | - | | | | | | | |
| 7690/17 | 54 | 2.1/8 | 510 | 40 | 36 | 33 | 32 | 31 | |
| 7690/M64 | 64 | - | 690 | 35 | 31.5 | 29 | 28 | 27 | |
| 7690/21 | 67 | 2.5/8 | | | | | | | |
| 7690/24 | 76 | 3 | | | | | | | |
| 7690/25 | 80 | 3.1/8 | 710 | 25 | 22.5 | 21 | 20 | 19.5 | |
| 7690/28 | 89 | 3.1/2 | | | | | | | |
| 7690/34 | 108 | 4.1/4 | | | | | | | |

## APPLICATIONS

All the access fittings and valve cores, shown in this chapter, are excluded from the scope of Directive 97/23/EC, as specified in the Guidelines 1/8 and 1/9, because they are piping components.
They are designed for installation on commercial refrigerating systems and on civil and industrial conditioning plants, which use the following refrigerant fluids: R22 , R134a , R404A , R407C , R410A ; R507 proper to the Group II (as defined in Article 9, Section 2.2 of Directive 97/23/EC and referred to in Directive 67/548/EEC). For specific applications with refrigerant fluids not listed above, always proper to the Group II, please contact Castel Technical Department.
The access fittings allow creating a loading or draining point rapidly and with a minimum expense.
After completion of the loading or draining operations, the cap with gasket (code 8392/A or code 8391/A) prevents any leakage.
For particular customer's requirements, the 7020/20 flare blind nut may replace the 8392/A cap.
This solution requires to screw the nut with a torque wrench at 8,5÷11,5 Nm.
For system using R410A refrigerant, Castel has developed three specific access fittings with 5/16" SAE-Flare connection (codes 8350/X09 , 8351/X05 and 8351/X07) that have to be used with the following parts:

- valve core, code 8395/A1
- flare blind nut, code 7020/X02

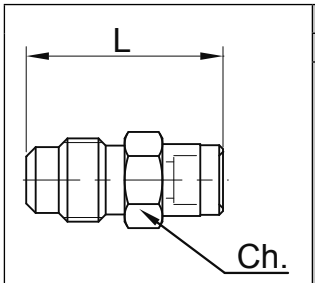
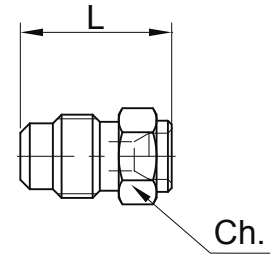
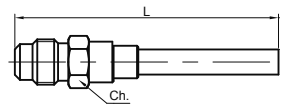
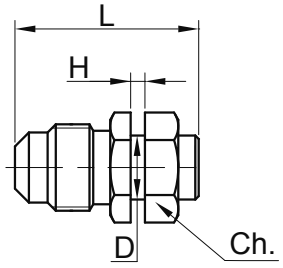
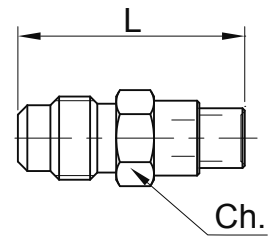
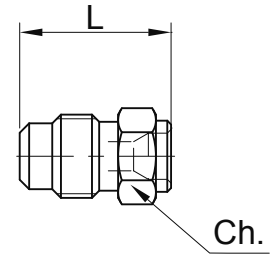
Also this solution requires to screw the nut with a torque wrench at 8,5÷11,5 Nm.

## OPERATION

The valve consists of a body that can have different shapes and sizes, according to the different requirements of the customers. Inside the valve, the valve core seat is manufactured according to the ARI STANDARD 720:1997.
When the internal valve core has been inserted through the fitting, by the mounting tool (code 8390/A), the fluid flows just acting on the valve needle.

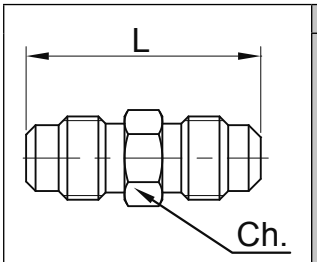
## CONSTRUCTION

The straight fittings are machined by hexagonal brass bar EN 12164 – CW 614N.
The TEE and cross fittings are manufactured with hot forged brass EN 12420 – CW 617N.
The cap 8391/A is molded by nylon.
The caps 8392/A and 8392/B are machined by hexagonal brass bar EN 12164 – CW 614N.

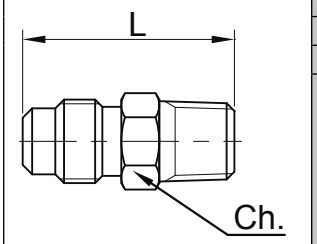
| Drawing | Part number | Connections | | | | | | | | PS [bar] | Dimensions [mm] | | | | Weight [g] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SAE Flare | | | NPT | ODS | | IDS | | | L | Ch | D | H | |
| | | Valve core | m | f | | Ø [in.] | Ø [mm] | Ø [in.] | Ø [mm] | | | | | | |
| STRAIGHT ACCESS FITTINGS | | | | | | | | | | | | | | | |
|  | 8350/22 | 1/4” | – | – | – | 1/4” | – | 3/8” | – | 45 | 26 | 11 | – | – | 12 |
| | 8350/X10 | 1/4” | – | – | – | 1/4” | – | – | 10 | | 26 | 11 | – | – | 12 |
|  | 8350/X01 | 1/4” | – | – | – | – | 6 | – | – | 45 | 20 | 11 | – | – | 10 |
|  | 8350/X03 | 1/4” | – | – | – | – | – | – | 6 | 45 | 90 | 11 | – | – | 23 |
| | 8350/X06 | 1/4” | – | – | – | – | – | 1/4” | – | | 126 | 11 | – | – | 28 |
| | 8350/X07 | 1/4” | – | – | – | – | – | 1/4” | – | | 326 | 11 | – | – | 58 |
| | 8350/X12 | 1/4” | – | – | – | – | – | – | 6 | | 180 | 11 | – | – | |
|  | 8350/X09 | 5/16” | – | – | – | 1/4” | – | – | – | 45 | 27 | 14 | 9.4 | 2.1 | 19 |
|  | 8351/2 | 1/4” | – | – | – | – | 6 | – | 8 - 10 | 45 | 30 | 11 | – | – | 13 |
| | 8351/X04 | 1/4” | – | – | – | – | – | – | 6 | | 26 | 11 | – | – | 11 |
| | 8351/X05 | 5/16” | – | – | – | – | – | 3/8” | 7 | | 27 | 14 | – | – | 18 |
| | 8351/X07 | 5/16” | – | – | – | – | – | 3/8” | 6 | | 27 | 14 | – | – | 19 |
|  | 8351/X01 | 1/4” | – | – | – | – | 1/8” | – | 6 | 45 | 36 | 11 | – | – | 13 |
| | 8351/X02 | 1/4” | – | – | – | – | 5 | 1/4”<br>5/16”<br>3/8” | – | | 26 | 11 | – | – | 11 |
| | 8351/X06 | 1/4” | – | – | – | – | – | – | 6<br>8<br>10 | | 28 | 11 | – | – | 13 |

| Drawing | Part number | Connections | | | | | | | | PS [bar] | Dimensions [mm] | | | | Weight [g] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SAE Flare | | | NPT | ODS | | IDS | | | L | Ch | D | H | |
| | | Valve core | m | f | | Ø [in.] | Ø [mm] | Ø [in.] | Ø [mm] | | | | | | |

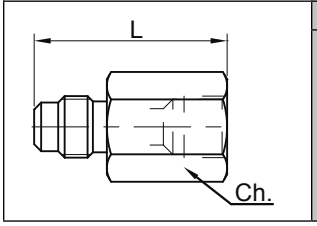
STRAIGHT ACCESS FITTINGS




| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8352/22 | 1/4” | 1/4” | – | – | – | – | – | – | 45 | 31 | 11 | – | – | 15 |



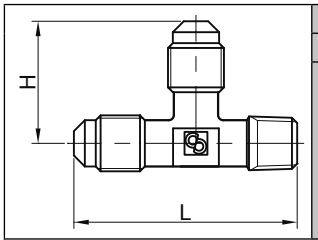
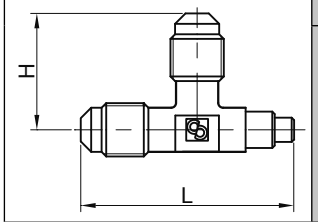
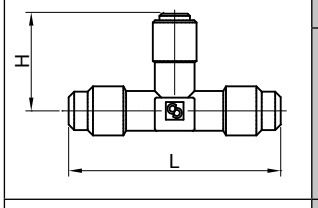
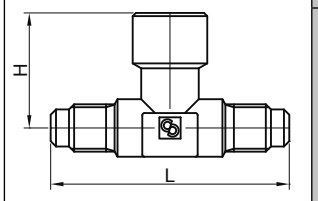

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8354/21 | 1/4” | – | – | 1/8” | – | – | – | – | 45 | 28 | 11 | – | – | 13 |
| 8354/22 | 1/4” | – | – | 1/4” | – | – | – | – | | 33 | 14 | – | – | 25 |
| 8354/23 | 1/4” | – | – | 3/8” | – | – | – | – | | 38 | 17 | – | – | 41 |



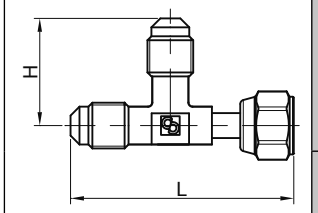

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8362/22 | 1/4” | – | 1/4” | – | – | – | – | – | 45 | 35 | 17 | – | – | 42 |

| Drawing | Part number | Connections | | | | | PS [bar] | Dimensions [mm] | | | Wrench torque min / max [Nm] | Weight [g] | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SAE Flare | | NPT | IDS | | | L | Ch | H | | | |
| | | m | f | | Ø [in.] | Ø [mm] | | | | | | | |

TEE ACCESS FITTINGS

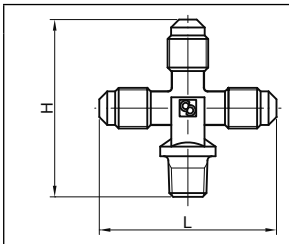
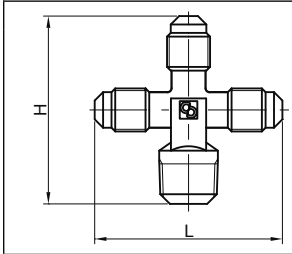
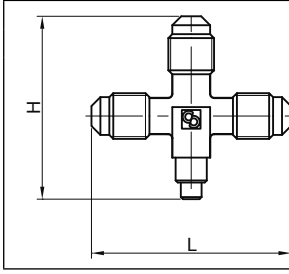
| Drawing | Part number | Connections | | | | | PS [bar] | Dimensions [mm] | | | Wrench torque min / max [Nm] | Weight [g] | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SAE Flare | | NPT | IDS | | | L | Ch | H | | | |
| | | m | f | | Ø [in.] | Ø [mm] | | | | | | | |
|  | 8380/122 | 1/4” | – | 1/8” | – | – | 45 | 45 | – | 24 | – | 28 | The valve core may be installed on each of the two 1/4” SAE Flare male connections |
| | 8380/222 | 1/4” | – | 1/4” | – | – | | 49.5 | – | 25.5 | – | 44 | |
|  | 8380/X01 | 1/4” | – | – | – | 6 | 45 | 43 | – | 24 | – | 28 | |
|  | 8380/X02 | 1/4” | – | – | – | 7 | 45 | 48 | – | 22 | – | 31 | |
|  | 8380/X09 | 1/4” | 1/4” | – | – | – | 45 | 56 | – | 27 | – | 72 | |

TEE ACCESS FITTINGS WITH SWIVEL NUTS

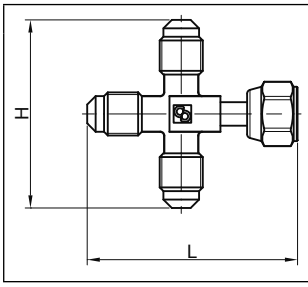
| Drawing | Part number | Connections | | | | | PS [bar] | Dimensions [mm] | | | Wrench torque min / max [Nm] | Weight [g] | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SAE Flare | | NPT | IDS | | | L | Ch | H | | | |
| | | m | f | | Ø [in.] | Ø [mm] | | | | | | | |
|  | 8380/X06 | 1/4” | 1/4” | – | – | – | 45 | 50 | – | 24 | 11/14 | 47 | With valve-core opening device on female connection. The valve core may be installed on each of the two 1/4" SAE Flare connections |
| | 8380/X08 | 1/4” | 1/4” | – | – | – | 45 | 49 | 17 | 24 | 11/14 | 49 | The valve core may be installed on each of the two 1/4" SAE Flare male connections |

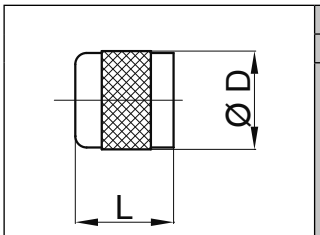
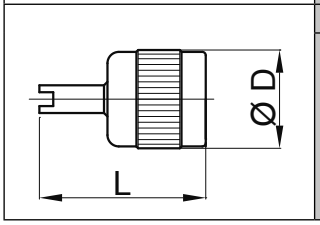
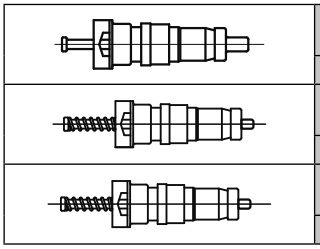
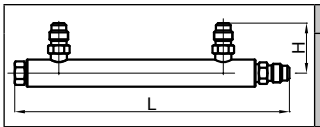
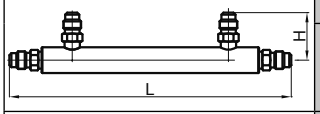
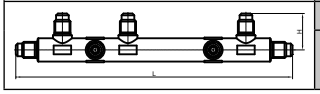
| Drawing | Part number | Connections | | | | | PS [bar] | Dimensions [mm] | | | Wrench torque min / max [Nm] | Weight [g] | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SAE Flare | | NPT | IDS | | | L | Ch | H | | | |
| | | m | f | | Ø [in.] | Ø [mm] | | | | | | | |

CROSS ACCESS FITTINGS

| Drawing | Part number | Connections | | | | | PS [bar] | Dimensions [mm] | | | Wrench torque min / max [Nm] | Weight [g] | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | 8382/1222 | 1/4” | – | 1/8” | – | – | 45 | 48 | – | 50 | – | 46 | The valve core may be installed on each of the three 1/4” SAE Flare male connections |
|  | 8382/X02 | 1/4” | – | 1/4” | – | – | 45 | 48 | – | 50 | – | 49 | |
|  | 8382/X01 | 1/4” | – | – | – | 7-10 | 45 | 48 | – | 47 | – | 42 | |
| | 8382/X03 | 1/4” | – | – | – | 6 | | 48 | – | 44 | – | 38 | |

CROSS ACCESS FITTINGS WITH SWIVEL NUT

| Drawing | Part number | Connections | | | | | PS [bar] | Dimensions [mm] | | | Wrench torque min / max [Nm] | Weight [g] | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | 8382/X04 | 1/4” | 1/4” | – | – | – | 45 | 50 | 17 | 46 | 11/14 | 35 | With valve-core opening device on female connection. The valve core may be installed on each of the three 1/4”” SAE Flare connections |

| Drawing | Part number | Connections | | Static Pressure [bar] | Working Pressure [bar] | PS [bar] | TS [°C] | | Dimensions [mm] | | | Wrench torque min / max [Nm] | Weight [g] | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SAE Flare | | | | | | | L | D | H | | | |
| | | m | f | | | | min | max | | | | | | |
| CORE REMOVER (FOR ALL TYPES) | | | | | | | | | | | | | | |
|  | 8390/A | - | - | - | - | - | - | - | 75 | - | - | - | 28 | |
| CAPS WITH GASKET | | | | | | | | | | | | | | |
|  | 8391/A | - | 1/4" | - | - | 35 | - | - | 14 | 14 | - | - | 1 | |
| | 8392/A | - | 1/4" | - | - | 45 | - | - | 13 | 13 | - | - | 7 | |
|  | 8392/B (1) | - | 1/4" | - | - | 45 | - | - | 22 | 13 | - | - | 7 | |
| SPARE VALVE CORES | | | | | | | | | | | | | | |
|  | 8394/B (2) | - | - | 40 | 28 | - | -30 | +90 | - | - | - | 0,30/0,35 Nm | - | |
| | 8395/A1 (3) | - | - | 140 | 60 | - | -40 | +100 | - | - | - | 0,4/0,5 Nm | - | |
| | 8395/A2 (3),(4) | - | - | 140 | 60 | - | -35 | +150 | - | - | - | 0,4/0,5 Nm | - | |
| MANIFOLDS WITH ACCESS FITTINGS | | | | | | | | | | | | | | |
|  | 9900/X87 | 1/4" | - | - | - | 45 | - | - | 162 | - | 30 | - | 36 | N° 3 access fittings |
|  | 9900/X47 | 1/4" | - | - | - | 45 | - | - | 175 | - | 30 | - | 21 | N° 4 access fittings |
|  | 9900/X81 | 1/4" | - | - | - | 45 | - | - | 190 | - | 25 | - | 320 | N° 7 access fittings |

**Note:**
**(1) The key needs to remove the valve core**
**(2) Inside spring**
**(3) Outside spring**
**(4) No use with R22**