

# CHAPTER 2

## THREADED BRASS FITTINGS

FOR REFRIGERATION PLANTS THAT USE HCFC, HFC, HC, HFO,  
OR R744 REFRIGERANTS



### APPLICATIONS

The fittings illustrated in this chapter are designed for installation on commercial refrigeration systems and on civil and industrial air conditioning plants that use the following refrigerant fluids:

- HCFC (R22)
- HFC (R134a, R404A, R407C, R410A, or R507)
- HFO and HFO/HFC mixtures (R1234ze, R448A, R449A, R450A, and R452A)
- R744 subcritical and transcritical, limited to components with PS = 120 bar

belonging to Group 2, as defined in Article 13, Chapter 1, Point (b) of Directive 2014/68/EU, with reference to EC Regulation No. 1272/2008.

Furthermore, fittings up to DN 25, they can also be installed on systems that use the following refrigeration fluids:

- HFC (R32)
- HFO (R1234yf)
- HC (R290, R600, or R600a)

belonging to Group 1, as defined in Article 13, Chapter 1, Point (a) of Directive 2014/68/EU, with reference to EC Regulation No. 1272/2008.

For specific applications with refrigerant fluids not listed above, please contact Castel Technical Department.

### OPERATION

The sealing system between the end of a male connection and a union in series 7010, 7020 and 7030 requires a special flaring of the end of copper pipe, the so-called flared connection.

The sealing system between the end of a male connection and a Flare-ODS adapter allows avoiding flaring the end of the copper pipe (national laws of some European countries do not accept this operation) as the end of the copper pipe is brazed into the adapter joint. We wish to remind our customers that perfect seal of the male connector / Flare-ODS adapter can only be ensured using the appropriate tapered gasket, 7580, supplied with the adapter.

The flange joints in series 7630 consist of two brass bushes for brazing to the copper pipes. Once this connection has been made, the joint seal is ensured by the compression of a gasket between the bushes. This compression occurs when the four flange screws are tightened.

### CONSTRUCTION

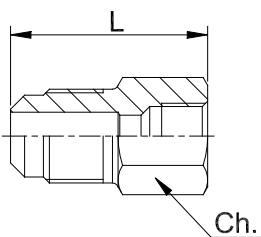
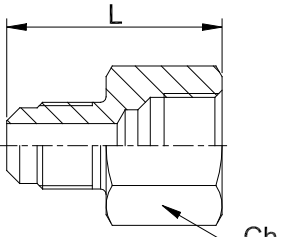
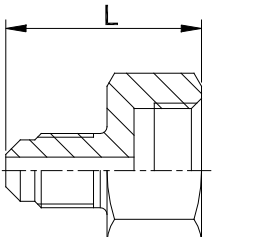
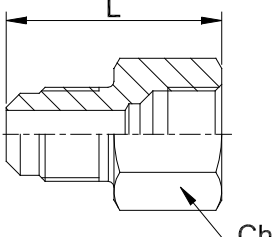
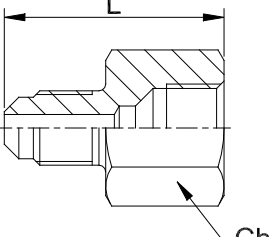
All nuts from series 7010 to series 7050, and all the elbows, T and cross fittings, from series 7210 to series 7410, are manufactured with hot forged brass EN 12420 – CW 617N. All straight fittings, from series 7110 to series 7170, and all plugs, from series 7510 to series 7520, are machined from brass bars EN 12164 – CW 614N.

Caps in series 7560 and tapered gaskets in series 7580 are from copper Cu – ETP UNI 5649.

The main parts of the flanged joints in series 7630 are made with the following materials:

- Hot forged brass EN 12420 – CW 617N for bushes and flanges.
- Aramid fibres for flange gaskets.

**TABLE 5: General characteristics of unions**

|                                                                                     | Catalogue<br>Number | International<br>Reference | Connections |                                  |        |         |         |        | PS<br>[bar] | Dimensions<br>[mm] |    | Weight<br>[g] |
|-------------------------------------------------------------------------------------|---------------------|----------------------------|-------------|----------------------------------|--------|---------|---------|--------|-------------|--------------------|----|---------------|
|                                                                                     |                     |                            | SAE Flare   |                                  | NPT    | GAS     | ODS     |        |             | L                  | Ch |               |
|                                                                                     |                     |                            | m           | f                                |        |         | Ø [in.] | Ø [mm] |             |                    |    |               |
| Male/female reducing unions (reduced female)                                        |                     |                            |             |                                  |        |         |         |        |             |                    |    |               |
|    | 7150/21             | U3-4A                      | 1/4"        | –                                | 1/8" f | –       | –       | –      | 120         | 29                 | 14 | 21            |
|                                                                                     | 7150/32             | UR3-46                     | 3/8"        | 1/4"                             |        |         |         |        |             | 33                 | 17 | 38            |
|                                                                                     | 7150/42             | UR3-48                     | 1/2"        | 1/4"                             |        |         |         |        |             | 35                 | 22 | 75            |
|                                                                                     | 7150/43             | UR3-68                     | 1/2"        | 3/8"                             |        |         |         |        |             | 38                 | 22 | 66            |
|                                                                                     | 7150/54             | UR3-810                    | 5/8"        | 1/2"                             |        |         |         |        |             | 45                 | 25 | 99            |
|                                                                                     | 7150/64             | UR3-812                    | 3/4"        | 1/2"                             |        |         |         |        |             | 46,5               | 27 | 132           |
|                                                                                     | 7150/65             | UR3-1012                   | 3/4"        | 5/8"                             |        |         |         |        |             | 49,5               | 30 | 157           |
| Male/female reducing unions (reduced male)                                          |                     |                            |             |                                  |        |         |         |        |             |                    |    |               |
|    | 7150/X29            | –                          | –           | 1/4"                             | 1/8"   | –       | –       | –      | 120         | 24                 | 17 | 24            |
|                                                                                     | 7150/X27            | –                          | –           | 1/4"                             | 1/4"   |         |         |        |             | 30                 | 17 | 35            |
|                                                                                     | 7150/23             | UR3-64                     | 1/4"        | 3/8"                             |        |         |         |        |             | 33                 | 22 | 49            |
|                                                                                     | 7150/24             | UR3-84                     | 1/4"        | 1/2"                             |        |         |         |        |             | 36                 | 25 | 66            |
|                                                                                     | 7150/34             | UR3-86                     | 3/8"        | 1/2"                             |        |         |         |        |             | 39                 |    | 74            |
|                                                                                     | 7150/45             | UR3-108                    | 1/2"        | 5/8"                             |        |         |         |        |             | 44                 | 30 | 125           |
|                                                                                     | 7150/46             | UR3-128                    | 1/2"        | 3/4"                             |        |         |         |        |             | 45                 | 34 | 142           |
|                                                                                     | 7150/56             | UR3-1210                   | 5/8"        | 3/4"                             |        |         |         |        |             | 49                 | 34 | 157           |
| Cylinder adaptors                                                                   |                     |                            |             |                                  |        |         |         |        |             |                    |    |               |
|   | 7154/2              | –                          | 1/4"        | 20 – 14 left thread, female      |        |         |         |        | 45          | 29                 | 25 | 46            |
|                                                                                     | 7156/2              |                            | 1/4"        | W 21,8 – 14 right thread, female |        |         |         |        |             |                    | 27 | 52            |
| Male/female unions                                                                  |                     |                            |             |                                  |        |         |         |        |             |                    |    |               |
|  | 7160/2              | –                          | 1/4"        | 1/4"                             | –      | –       | –       | –      | 45          | 30,5               | 17 | 31            |
|                                                                                     | 7160/3              |                            | 3/8"        | 3/8"                             |        |         |         |        |             | 36                 | 22 | 57            |
|                                                                                     | 7160/4              |                            | 1/2"        | 1/2"                             |        |         |         |        |             | 41                 | 25 | 84            |
| Unions SAE-Flare to BSP                                                             |                     |                            |             |                                  |        |         |         |        |             |                    |    |               |
|  | 7164/2              | –                          | 1/4"        | –                                | –      | G1/4" f | –       | –      | 45          | 32,5               | 20 | 45            |
|                                                                                     | 7166/2              |                            | –           | 1/4"                             |        | G1/4" m |         |        |             | 32                 | 17 | 25            |

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