



**MADE IN ITALY**



**STRONG CONNECTIONS**

**DATACHABLE**

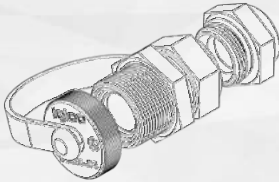
**UNDER PRESSURE**

Igloo Hulk connections are designed to allow a rapid connection-disconnection of the lines in refrigeration and air conditioning systems without losing refrigerant.

Igloo Hulk connections are made of corrosion-free brass with overmolded HNBR seals, for an incomparable reliability.

# PART NUMBER SELECTION

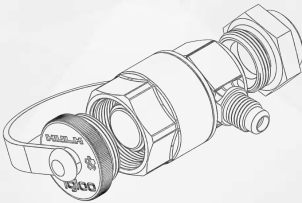
**Igloo Hulk, Male Connection**  
with jam nut for  
bulkhead installation



*Brazing adapter and dust protection cap are included.*

Part number	Brazing connection		Orifice DN (mm)	Thread size	PED 2014/68/EU
	mm	inch			
HMB-M6	O.D. 6mm	-	13	1"-20 UNEF	Risk Category Art.4 Par.3
HMB-4	-	O.D. 1/4"	13	1"-20 UNEF	
HMB-5	O.D. 8mm	O.D. 5/16"	13	1"-20 UNEF	
HMB-6	-	O.D. 3/8"	13	1"-20 UNEF	
HMB-M10	O.D. 10mm	-	13	1"-20 UNEF	
HMB-M12	O.D. 12mm	-	13	1"-20 UNEF	
HMB-8	-	O.D. 1/2"	13	1"-20 UNEF	
HMB-M15	O.D. 15mm	-	13	1"-20 UNEF	
HMB-10	O.D. 16mm	O.D. 5/8"	13	1"-20 UNEF	Temperature range -40 +130°C
HMB-M18	O.D. 18mm	-	19	1.7/16"-16 UN	
HMB-12	O.D. 19mm	O.D. 3/4"	19	1.7/16"-16 UN	
HMB-14	O.D. 22mm	O.D. 7/8"	19	1.7/16"-16 UN	
HMB-M28	O.D. 28mm	-	25	1.3/4"-16 UN	
HMB-18	-	O.D. 1.1/8"	25	1.3/4"-16 UN	

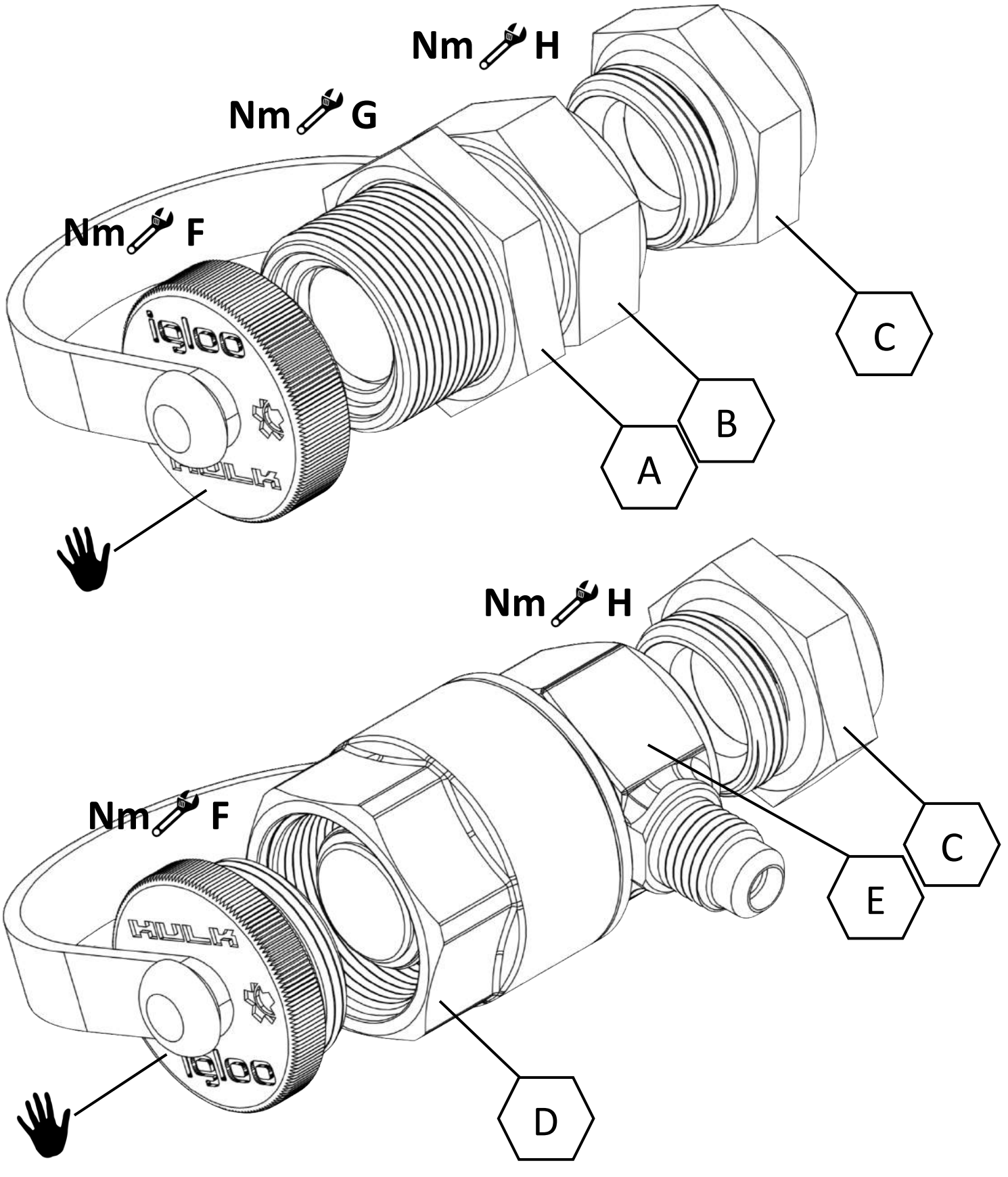
**Igloo Hulk, Female Connection**  
with integrated access port




*Brazing adapter and dust protection plug are included.*

Part number	Brazing connection		Orifice DN (mm)	Thread size	PED 2014/68/EU Risk Category
	mm	inch			
HFB-M6	O.D. 6mm	-	13	1"-20 UNEF	Risk Category Art.4 Par.3
HFB-4	-	O.D. 1/4"	13	1"-20 UNEF	
HFB-5	O.D. 8mm	O.D. 5/16"	13	1"-20 UNEF	
HFB-6	-	O.D. 3/8"	13	1"-20 UNEF	
HFB-M10	O.D. 10mm	-	13	1"-20 UNEF	
HFB-M12	O.D. 12mm	-	13	1"-20 UNEF	
HFB-8	-	O.D. 1/2"	13	1"-20 UNEF	
HFB-M15	O.D. 15mm	-	13	1"-20 UNEF	
HFB-10	O.D. 16mm	O.D. 5/8"	13	1"-20 UNEF	Temperature range -40 +130°C
HFB-M18	O.D. 18mm	-	19	1.7/16"-16 UN	
HFB-12	O.D. 19mm	O.D. 3/4"	19	1.7/16"-16 UN	
HFB-14	O.D. 22mm	O.D. 7/8"	19	1.7/16"-16 UN	
HFB-M28	O.D. 28mm	-	25	1.3/4"-16 UN	
HFB-18	-	O.D. 1.1/8"	25	1.3/4"-16 UN	

- ✓ Automatic pressure-retaining when opened under-pressure  
Shut-off by a built-in flat check-valve
- ✓ Connection under residual pressure  
Disconnection under pressure
- ✓ Interchangeability: worldwide market
- ✓ Female connection with integrated access port
- ✓ Corrosion free construction: fully made of brass
- ✓ Overmolded HNBR seals suitable for HFC, HFO, HC refrigerants  
i.e. R134a, R32, R404A, R407C, R410A, R507, R430A, R513A, R1234yf, R1234ze, R448A, R449A, R450A, R452A, R290, R600, R600a.



 = Caps are hand assembled. No need to use a wrench with torque control.

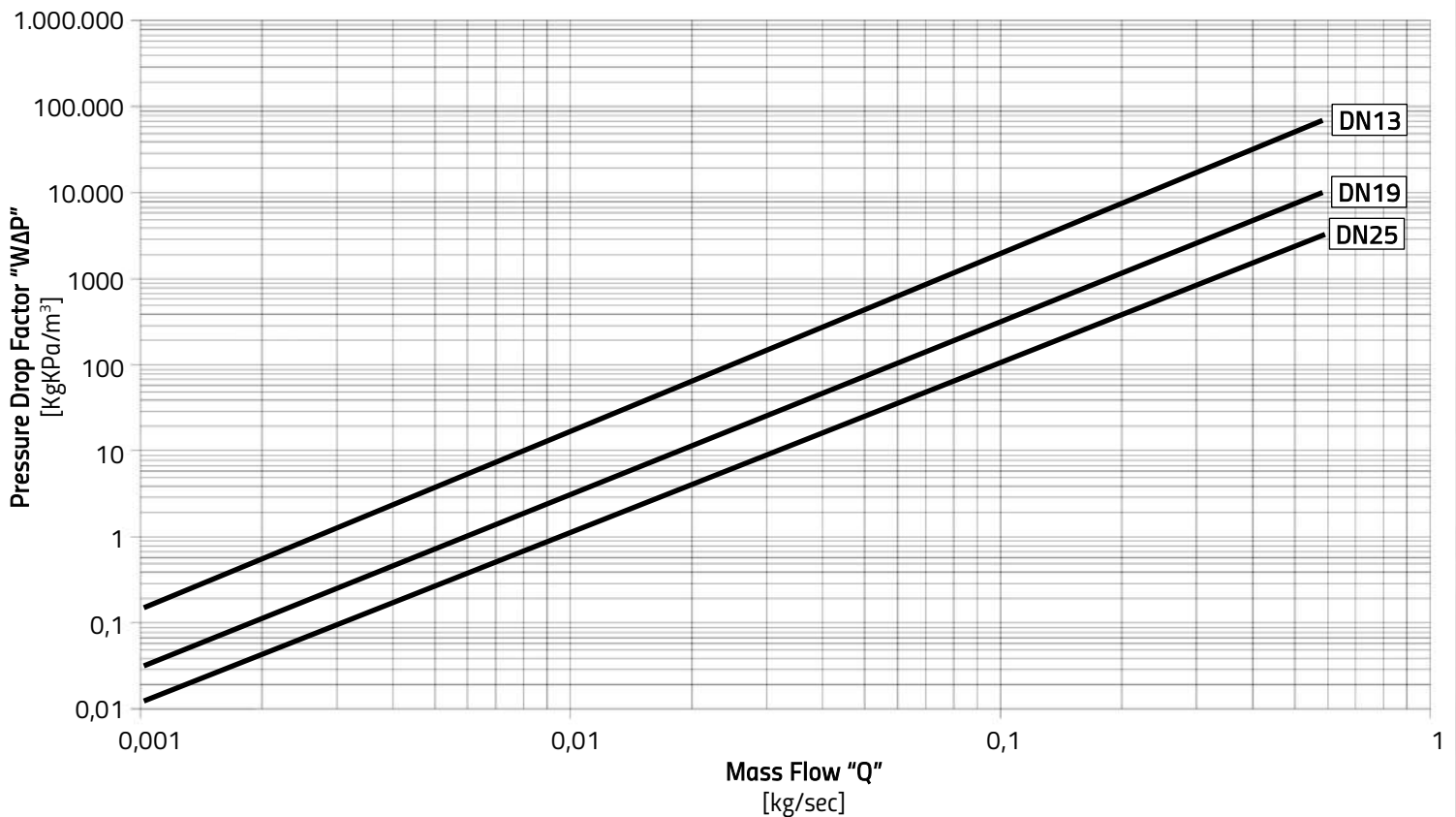


# WRENCH SIZE and ASSEMBLY TORQUE



Part number	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [Nm]	G [Nm]	H [Nm]
HMB-M6 HFB-M6	30	27	27	30	27	45 – 50	75 – 80	40 – 45
HMB-4 HFB-4	30	27	27	30	27	45 – 50	75 – 80	40 – 45
HMB-5 HFB-5	30	27	27	30	27	45 – 50	75 – 80	40 – 45
HMB-6 HFB-6	30	27	27	30	27	45 – 50	75 – 80	40 – 45
HMB-M10 HFB-M10	30	27	27	30	27	45 – 50	75 – 80	40 – 45
HMB-M12 HFB-M12	30	27	27	30	27	45 – 50	75 – 80	40 – 45
HMB-8 HFB-8	30	27	27	30	27	45 – 50	75 – 80	40 – 45
HMB-M15 HFB-M15	30	27	27	30	27	45 – 50	75 – 80	40 – 45
HMB-10 HFB-10	30	27	27	30	27	45 – 50	75 – 80	40 – 45
HMB-M18 HFB-M18	41	41	36	41	36	60 – 65	95 – 100	70 – 80
HMB-12 HFB-12	41	41	36	41	36	60 – 65	95 – 100	70 – 80
HMB-14 HFB-14	41	41	36	41	36	60 – 65	95 – 100	70 – 80
HMB-M28 HFB-M28	50	50	46	50	46	90 – 95	135 – 140	90 – 100
HMB-18 HFB-18	50	50	46	50	46	90 – 95	135 – 140	90 – 100

## FLOW RATE CHART





# FLOW RATE CALCULATION

## PROCEDURE FOR BOTH LIQUID AND SATURATED VAPOUR CONDITIONS:

Tests have been run according to ANSI/ ASHRAE Standard 78-1985 (RA 2003). The chart above shows for each connection size with full port brazing adaptor (DN is the orifice size indicated in the part number selection tables) the pressure drop factor  $W\Delta P$  related to massive air flow rate  $Q$ . The chart allows to calculate the flow rate (kg/s) occurring at specified pressure drop (kPa) and viceversa, starting from the known specific weight of the refrigerant in fixed conditions. The table below shows the specific weight of the most common refrigerant gases at different temperatures in both liquid and saturated vapour conditions.

**EXAMPLE:** You need to calculate a R407C flow rate at 20 °C in saturated vapour status causing a pressure drop of 20 kPa through a connection Igloo Hulk HMB-10/HFB-10. From the table you read that the specific weight in such conditions is 35,81 kg/m<sup>3</sup>, then you multiply it by the pressure drop and you obtain an "WΔP" equal to 716,2 kgkPa/m<sup>3</sup>. The connection used has an orifice size DN13 (this value is indicated in the part number selection tables) and - using the chart below - you can find that the massive flowrate "Q" corresponding to the obtained "WΔP" is roughly 0,060 kg/sec (or 60 g/sec).

Temperature [°C]	Specific weight [kg/m <sup>3</sup> ]							
	R134a		R404A		R407C		R410A	
	Liquid	Saturated vapour	Liquid	Saturated vapour	Liquid	Saturated vapour	Liquid	Saturated vapour
-50	1438	3,08	1443	1,65	1399	2,32	1340	4,52
-45	1424	3,97	1428	2,15	1385	2,99	1325	5,61
-40	1409	4,86	1414	2,77	1370	3,82	1310	6,90
-35	1395	6,11	1400	3,53	1354	4,82	1294	8,43
-30	1380	7,36	1385	4,44	1339	6,01	1279	10,22
-25	1365	9,06	1371	5,52	1323	7,43	1262	12,31
-20	1349	10,77	1356	6,80	1307	9,10	1245	14,73
-15	1333	13,03	1341	8,31	1290	11,06	1228	17,54
-10	1317	15,30	1325	10,08	1273	13,32	1210	20,78
-5	1301	18,25	1309	12,12	1256	15,94	1191	24,51
0	1284	21,21	1293	14,49	1238	18,94	1172	28,79
+5	1267	25,01	1277	17,20	1219	22,38	1152	33,69
+10	1250	28,81	1260	20,32	1200	26,29	1131	39,31
+15	1232	33,63	1243	23,87	1181	30,75	1109	45,75
+20	1213	38,46	1225	27,91	1160	35,81	1086	53,14
+25	1193	44,56	1206	32,50	1139	41,56	1061	61,64
+30	1173	50,65	1187	37,71	1117	48,10	1036	71,44
+35	1152	58,35	1167	43,61	1094	55,56	1008	82,79
+40	1131	66,05	1146	50,31	1070	64,09	978	96,06
+45	1108	75,87	1125	57,91	1044	73,89	945	111,72
+50	1084	85,68	1102	66,55	1017	85,26	909	130,50



# ASSEMBLY INSTRUCTIONS

## GENERAL ADVICE FOR BETTER DURABILITY OF THE PRODUCT:

- Liberally lubricate all the mating surfaces of internal check valves, fittings, threads, rubber seals and the o-ring using a compatible refrigeration oil.
- Richly lubricated Igloo Hulk Connections have proven to last more and be softer to connect-disconnect even after operating in the most demanding environmental conditions.

## BRAZING OF TUBE ADAPTOR:

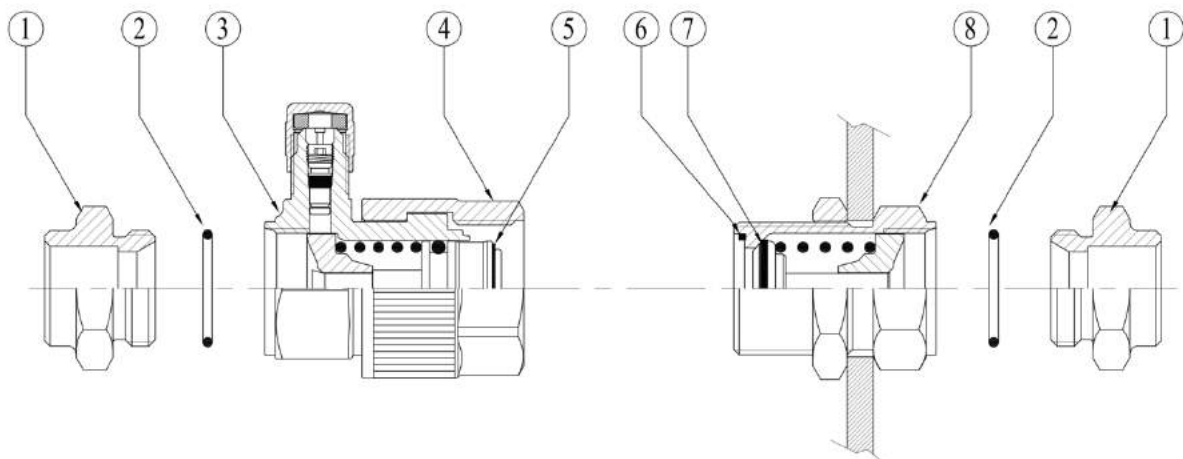
- Braze the copper tube in the brass adaptor "1".
- Install the o-ring seal "2" on the adaptor "1" making certain the o-ring is not twisted or damaged.
- Thread the connection body "3" (female) and "8" (male) on the adaptor "1" and tighten the connection body on the adaptor to the suitable torque (see table above, torque "H").

## BULKHEAD INSTALLATION:

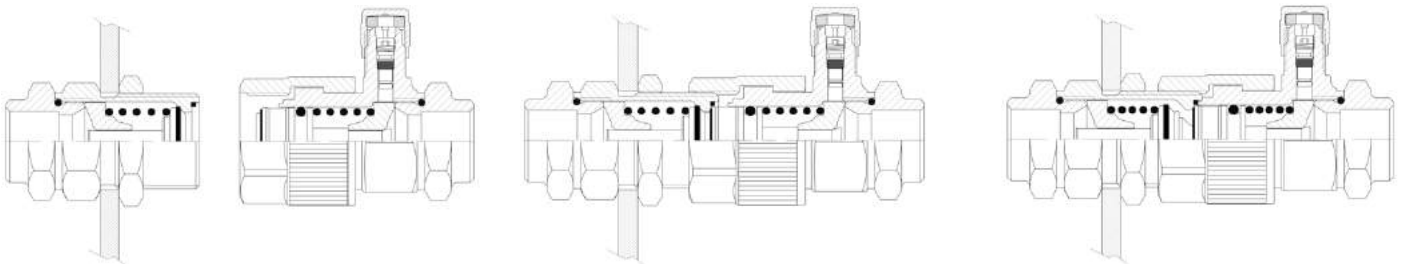
- Insert the male connection "8" through the installation hole.
- Tighten the jam nut to the proper torque (see table above, torque "G").

## MALE-TO-FEMALE BODY CONNECTION:

- Engage the female swivel nut "4" on the male connection "8" and screw it by hand.
- Tighten the swivel nut "4" to the suitable torque using a dynamometric wrench (see above table, torque "F").
- During connection make certain the male connection "8" don't rotate. To prevent this, always use a second wrench.



## WORKING PRINCIPLE:



### Disconnected

Valves "5" and "7" are closed.  
No fluid loss.  
No air inclusion.  
Leakage rate lower than 1 g/year.  
Mandatory use of caps during transport.

### Partially connected

Female swivel nut "4" is engaged on the male connection "8".  
Internal valves "5" and "7" are still closed.  
Thanks to the flat HNBR seal "6" overmolded on the male connection "8" any fluid loss is prevented.

### Fully connected

Female swivel nut "4" is tightened at the correct torque.  
Valves "5" and "7" are fully open.  
No fluid loss.  
No air inclusion.  
Leakage rate lower than 1 g/year.