

Resato

HIGH PRESSURE TECHNOLOGY

HIGH PRESSURE FITTINGS, ADAPTERS AND TUBING



**HIGH-PRESSURE FITTINGS, ADAPTERS AND TUBING
UP TO 14,000 BAR / 200,000 PSI**

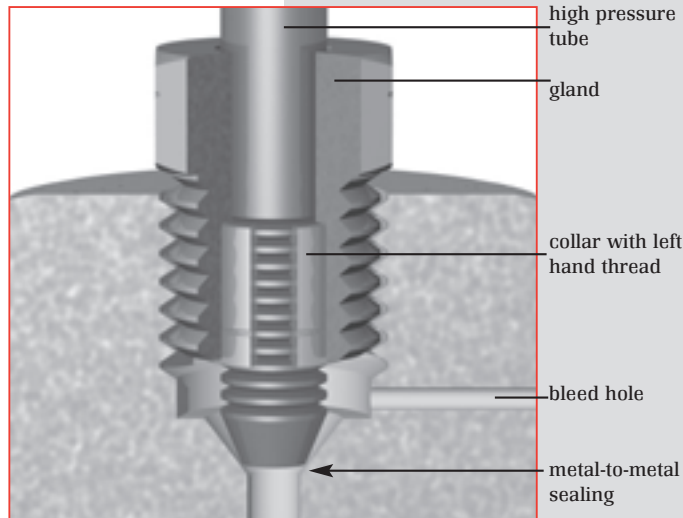
**DESIGNED FOR USE IN SYSTEMS THAT HANDLE
FLUIDS AND GASES AT EXTREME PRESSURES AND
TEMPERATURES**

**SUITABLE FOR USE WITH OTHER RESATO COMPONENTS (VALVES,
PUMPS AND BOOSTERS)**

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High pressure connection



High-pressure connections have an elastic metal-to-metal sealing. A complete connection consists of four parts: a high-pressure tube, a collar, a gland and a female opening.

The 58° conical sealing surface of the male tube fits the 60° female conical seat in the body. A bleed hole prevents pressure build-up behind the gland in case of a leak.

Complete range of fittings and adapters

Resato offers a complete range of fittings and adapters for high-pressure applications, specially designed to match the performance of our valves and tubing. We can supply fittings and adapters for virtually any configuration of systems designed for handling fluids and gases at extreme pressures and temperatures.

We have in stock a wide range of **standard** fitting and adapter types (refer to tables on the following

pages); do not hesitate to contact us if you need fittings and adapters of a different design.

All fittings and adapters are marked with Resato logo, ordering code, material specification, pressure rating for which they can be used and material batch number (refers to DIN 3.1.B material certificate). The ordering codes for fittings and adapters contain information on connection type, O.D. size, body type and pressure rating.

Ordering code system

Connection types

The first number of the code (F or M) for fittings and adapters indicates the high-pressure connection type. A 'U' is added for UNF connection type (FU or MU). The 1, 2 or 3 after the first part of the code indicate the O.D. size of tubing that can be connected.

Code	Connection
F1	M16 x 1.5 Female (for 6 mm and 1/4" O.D. tubing)
FU1	9/16" - 18 UNF Female (for 6 mm and 1/4" O.D. tubing)
M1	M16 x 1.5 Male (for 6 mm and 1/4" O.D. tubing)
MU1	9/16" - 18 UNF Male (for 6 mm and 1/4" O.D. tubing)
F2	M20 x 1.5 Female (for 10 mm and 3/8" O.D. tubing)
FU2	3/4" - 16 UNF Female (for 10 mm and 3/8" O.D. tubing)
M2	M20 x 1.5 Male (for 10 mm and 3/8" O.D. tubing)
MU2	3/4" - 16 UNF Male (for 10 mm and 3/8" O.D. tubing)
F3	M30 x 2 Female (for 14 mm and 9/16" O.D. tubing)
FU3	1 1/8" - 12 UNF Female (for 14 mm and 9/16" O.D. tubing)
M3	M30 x 2 Male (for 14 mm and 9/16" O.D. tubing)
MU3	1 1/8" - 12 UNF Male (for 14 mm and 9/16" O.D. tubing)

Fitting types

For fittings the second item of the code indicates the type of the fitting

Code	Type	Code	Type
1	= Union	10	= Gland
2	= Elbow	11	= Collar
3	= Tee	12	= Gland plug
4	= Cross	13	= Plug
6	= Double Cross	14	= Cap

Adapter types

For adapters the second item is a three-letter code to identify size and type of the pipe-thread.

First letter	Second letter	Third letter
A = 1/4"	F = Female	S = BSP (straight)
B = 3/8"	M = Male	T = NPT (tapered)
C = 1/2"		H = Male BSP for hose swivel connections
		G = Gauge conn.

Fitting and adapter pressure ratings

The last part of the ordering code indicates the pressure rating for which the fitting or adapter can be used.

Code

07	=	700 bar	/	10,000 psi
10	=	1000 bar	/	15,000 psi
16	=	1600 bar	/	23,000 psi
21	=	2100 bar	/	30,000 psi
42	=	4200 bar	/	60,000 psi
70	=	7000 bar	/	100,000 psi
100	=	10,000 bar	/	150,000 psi
140	=	14,000 bar	/	200,000 psi

Pressure ratings are based on room temperature. For temperatures lower than -20°C or higher than 80°C consult Resato.

The codes are to be used for ordering of standard fittings and adapters. Refer to the tables on the following pages for complete ordering codes.

Nace MR-01-75

On request most fittings and adapters are available to NACE MR-01-75 for sour gas service. In this case a 'SG' will be added to the ordering code.

Materials

For pressures up to 7000 bar (100,000 psi) fitting and adapter bodies are made of cold drawn stainless steel, type DIN 1.4404 (316L); for higher pressures bodies are made of specially treated stainless steel 17-4PH.

The glands are made of stainless steel, type DIN 1.4104 (430F).

The collar is made of stainless steel, type DIN 1.4122.

Ordering a Resato fitting or adapter

The ordering codes used in the tables on the following pages specify the connection size, body type and pressure range for which a fitting or adapter is designed. Look up the type of fitting or adapter you need and state the code for the fitting or adapter in your order.

Send your orders to:

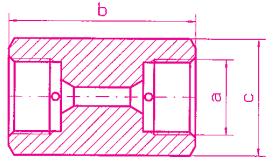
Resato International B.V.
P.O. Box 30
9300 AA RODEN
The Netherlands

Phone: (+31) 50 - 501 6877
Fax: (+31) 50 - 501 2402
Email: info@resato.nl
Internet: <http://www.resato.nl>

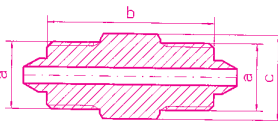
HIGH PRESSURE FITTINGS

Connections M16x1.5 and 9/16"-18 UNF
For tubing size 6 mm or 1/4" (O.D.)

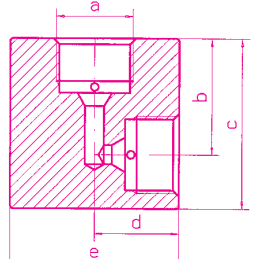
Union (Female)

	M16x1.5 (a)	9/16"-18 UNF (a)	Pressure rating	Orifice	b	c	d	e	f*
	Ordering code	Ordering code	bar/psi	mm	mm	mm	mm	mm	mm
F1-1-42	FU1-1-42		4200 / 60,000	2.2	45	Hex. 22	-	-	-
F1-1-70	FU1-1-70		7000 / 100,000	2.2	45	Hex. 22	-	-	-
F1-1-100	FU1-1-100		10,000 / 150,000	1.6	45	Hex. 22	-	-	-
F1-1-140	FU1-1-140		14,000 / 200,000	1.0	45	Hex. 22	-	-	-

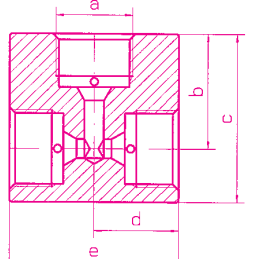
Union (Male)

	M16x1.5 (a)	9/16"-18 UNF (a)	Pressure rating	Orifice	b	c	d	e	f*
	Ordering code	Ordering code	bar/psi	mm	mm	mm	mm	mm	mm
M1-1-42	MU1-1-42		4200 / 60,000	2.2	45	Hex.17	-	-	-
M1-1-70	MU1-1-70		7000 / 100,000	2.2	45	Hex.17	-	-	-
M1-1-100	M1-1-100		10,000 / 150,000	1.6	45	Hex.22	-	-	-

Elbow

	M16x1.5 (a)	9/16"-18 UNF (a)	Pressure rating	Orifice	b	c	d	e	f*
	Ordering code	Ordering code	bar/psi	mm	mm	mm	mm	mm	mm
F1-2-42	FU1-2-42		4200 / 60,000	2.2	25	36	18	36	22
F1-2-70	FU1-2-70		7000 / 100,000	2.2	25	36	18	36	22
F1-2-100	FU1-2-100		10,000 / 150,000	1.6	25	36	18	36	22
F1-2-140	FU1-2-140		14,000 / 200,000	1.0	25	36	18	36	22

Tee

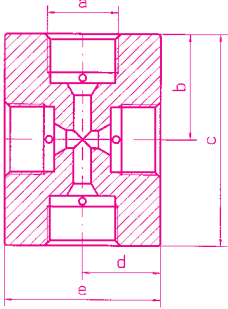
	M16x1.5 (a)	9/16"-18 UNF (a)	Pressure rating	Orifice	b	c	d	e	f*
	Ordering code	Ordering code	bar/psi	mm	mm	mm	mm	mm	mm
F1-3-42	FU1-3-42		4200 / 60,000	2.2	25	36	18	36	22
F1-3-70	FU1-3-70		7000 / 100,000	2.2	25	36	18	36	22
F1-3-100	FU1-3-100		10,000 / 150,000	1.6	25	36	18	36	22
F1-3-140	FU1-3-140		14,000 / 200,000	1.0	25	36	18	36	22

* f=body thickness

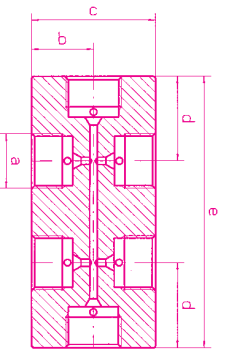
HIGH PRESSURE FITTINGS

Connections M16x1.5 and 9/16"-18 UNF
For tubing size 6 mm or 1/4" (O.D.)

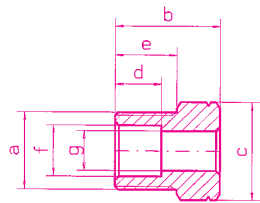
Cross

	M16x1.5 (a) Ordering code	9/16" -18 UNF (a) Ordering code	Pressure rating bar/psi	Orifice mm	b mm	c mm	d mm	e mm	f* mm
	F1-4-42	FU1-4-42	4200 / 60,000	2.2	25	50	18	36	22
	F1-4-70	FU1-4-70	7000 / 100,000	2.2	25	50	18	36	22
	F1-4-100	FU1-4-100	10,000 / 150,000	1.6	25	50	18	36	22

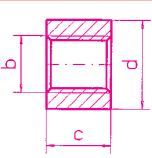
Double cross

	M16x1.5 (a) Ordering code	9/16" -18 UNF (a) Ordering code	Pressure rating bar/psi	Orifice mm	b mm	c mm	d mm	e mm	f* mm
	F1-6-42	FU1-6-42	4200 / 60,000	2.2	18	36	25	80	22
	F1-6-70	FU1-6-70	7000 / 100,000	2.2	18	36	25	80	22

Gland

	M16x1.5 (a) Ordering code	9/16" -18 UNF (a) Ordering code	b mm	c mm	d mm	e mm	f mm	g mm
	M1-10	MU1-10	24	Hex.17	9	13	9.2	6.6

Collar

	M6x1-LH (b) Ordering code	1/4" -28 UNF-LH (b) Ordering code	For gland	c mm	d mm	e mm	f mm	g mm
	M1-11	MU1-11	M1-10 MU1-10	9	9	-	-	-

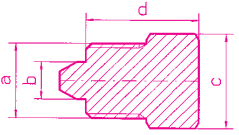
* f=body thickness

HIGH PRESSURE FITTINGS

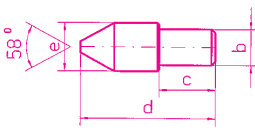
Connections M16x1.5 and 9/16"-18 UNF

For tubing size 6 mm or 1/4" (O.D.)

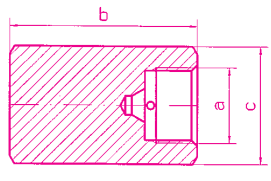
Gland plug

	M16x1.5 (a) Ordering code	9/16"-18 UNF (a) Ordering code	Pressure rating bar/psi	b mm	c mm	d mm	e mm	f mm	g mm
	M1-12-42	MU1-12-42	4200 / 60,000	6	Hex.17	24	-	-	-
	M1-12-70	MU1-12-70	7000 / 100,000	6	Hex.17	24	-	-	-

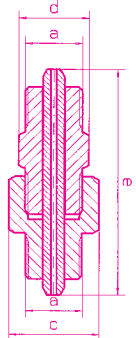
Plug

	Ordering code	For gland	Pressure rating bar/psi	b mm	c mm	d mm	e mm	f mm	g mm
	M1-13-100	M1-10 MU1-10	10,000 / 150,000	6	15	30	9	-	-

Cap

	M16x1.5 (a) Ordering code	9/16"-18 UNF (a) Ordering code	Pressure rating bar/psi	b mm	c mm	d mm	e mm	f* mm
	F1-14-42	FU1-14-42	4200 / 60,000	45	Hex.22	-	-	-
	F1-14-70	FU1-14-70	7000 / 100,000	45	Hex.22	-	-	-
	F1-14-100	FU1-14-100	10,000 / 150,000	45	Hex.22	-	-	-

Short connection

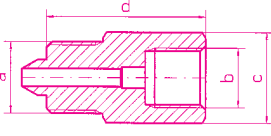
	M16x1.5 (a) Ordering code	9/16"-18 UNF (a) Ordering code	Pressure rating bar/psi	Orifice mm	b mm	c mm	d mm	e mm
	M1-SC-42	MU1-SC-42	4200 / 60,000	2.2	-	Hex.22	Hex.17	64
	M1-SC-70	MU1-SC-70	7000 / 60,000	2.2	-	Hex.22	Hex.17	64
	M1-SC-100	MU1-SC-100	10,000 / 150,000	1.6	-	Hex.22	Hex.17	64
	M1-SC-140	MU1-SC-140	14,000 / 200,000	1.6	-	Hex.22	Hex.17	64

* f=body thickness

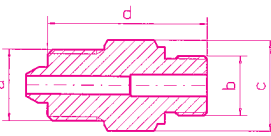
HIGH PRESSURE ADAPTERS

Connections M16x1.5 and 9/16"-18 UNF Male to:
For tubing size 6 mm or 1/4" (O.D.)

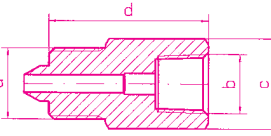
BSP - Female

	connection (b)	M16x1.5 (a) Ordering code	9/16"-18 UNF (a) Ordering code	Pressure rating bar/psi	Orifice mm	c mm	d mm
	1/4" BSP	M1-AFS-16	MU1-AFS-16	1600 /23,000	2.2	Hex.22	45
3/8" BSP	M1-BFS-10	MU1-BFS-10	1000 /15,000	2.2	Hex.22	45	
1/2" BSP	M1-CFS-07	MU1-CFS-07	700 /10,000	2.2	Hex.27	50	

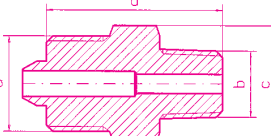
BSP - Male

	connection (b)	M16x1.5 (a) Ordering code	9/16"-18 UNF (a) Ordering code	Pressure rating bar/psi	Orifice mm	c mm	d mm
	1/4" BSP	M1-AMS-16	MU1-AMS-16	1600 /23,000	2.2	Hex.22	45
3/8" BSP	M1-BMS-10	MU1-BMS-10	1000 /15,000	2.2	Hex.22	45	
1/2" BSP	M1-CMS-07	MU1-CMS-07	700 /10,000	2.2	Hex.27	50	

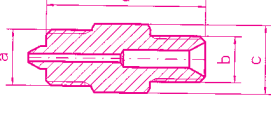
NPT - Female

	connection (b)	M16x1.5 (a) Ordering code	9/16"-18 UNF (a) Ordering code	Pressure rating bar/psi	Orifice mm	c mm	d mm
	1/4" NPT	M1-AFT-16	MU1-AFT-16	1600 /23,000	2.2	Hex.22	45
3/8" NPT	M1-BFT-10	MU1-BFT-10	1000 /15,000	2.2	Hex.22	45	
1/2" NPT	M1-CFT-07	MU1-CFT-07	700 /10,000	2.2	Hex.27	50	

NPT - Male

	connection (b)	M16x1.5 (a) Ordering code	9/16"-18 UNF (a) Ordering code	Pressure rating bar/psi	Orifice mm	c mm	d mm
	1/4" NPT	M1-AMT-16	MU1-AMT-16	1600 /23,000	2.2	Hex.17	45
3/8" NPT	M1-BMT-10	MU1-BMT-10	1000 /15,000	2.2	Hex.22	45	
1/2" NPT	M1-CMT-07	MU1-CMT-07	700 /10,000	2.2	Hex.27	50	

Hose connector

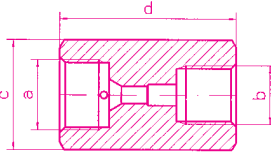
	connection (b)	M16x1.5 (a) Ordering code	9/16"-18 UNF (a) Ordering code	Pressure rating bar/psi	Orifice mm	c mm	d mm
	1/4" BSP	M1-AMH-18	MU1-AMH-18	1800 / 26,000	2.2	Hex.17	45

All adapters can be delivered as bulkhead adapters.
In this case a 'B' has to be added to the ordering code.
For example: **M1-BMS-10-B**. For dimensions please consult Resato.

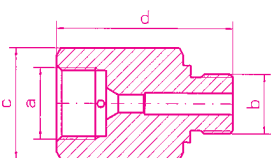
HIGH PRESSURE ADAPTERS

Connections M16x1.5 and 9/16"-18 UNF Female to:
For tubing size 6 mm or 1/4" (O.D.)

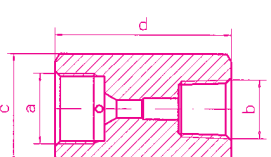
BSP - Female

	connection (b)	M 16x1.5 (a)	9/16"-18 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" BSP	F1-AFS-16	FU1-AFS-16	1600 / 23,000	2.2	Hex.22	45
	3/8" BSP	F1-BFS-10	FU1-BFS-10	1000 / 15,000	2.2	Hex.22	45
1/2" BSP	F1-CFS-07	FU1-CFS-07	700 / 10,000	2.2	Hex.27	50	

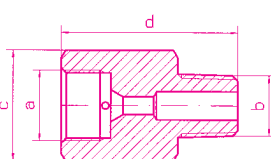
BSP - Male

	connection (b)	M16x1.5 (a)	9/16"-18 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" BSP	F1-AMS-16	FU1-AMS-16	1600 / 23,000	2.2	Hex.22	45
	3/8" BSP	F1-BMS-10	FU1-BMS-10	1000 / 15,000	2.2	Hex.22	45
1/2" BSP	F1-CMS-07	FU1-CMS-07	700 / 10,000	2.2	Hex.27	50	

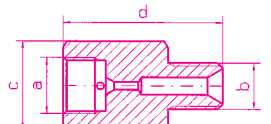
NPT - Female

	connection (b)	M16x1.5 (a)	9/16"-18 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" NPT	F1-AFT-16	FU1-AFT-16	1600 / 23,000	2.2	Hex.22	45
	3/8" NPT	F1-BFT-10	FU1-BFT-10	1000 / 15,000	2.2	Hex.22	45
1/2" NPT	F1-CFT-07	FU1-CFT-07	700 / 10,000	2.2	Hex.27	50	

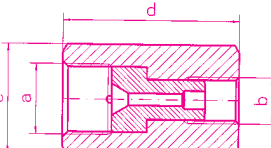
NPT - Male

	connection (b)	M16x1.5 (a)	9/16"-18 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" NPT	F1-AMT-16	FU1-AMT-16	1600 / 23,000	2.2	Hex.22	45
	3/8" NPT	F1-BMT-10	FU1-BMT-10	1000 / 15,000	2.2	Hex.22	45
1/2" NPT	F1-CMT-07	FU1-CMT-07	700 / 10,000	2.2	Hex.27	50	

Hose connector

	connection (b)	M16x1.5 (a)	9/16"-18 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" BSP	F1-AMH-18	FU1-AMH-18	1800 / 26,000	2.2	Hex.22	45

Gauge connection

	connection (b)	M16x1.5 (a)	9/16"-18 UNF (a)	Pressure rating	Orifice	c	d	e
		Ordering code	Ordering code	bar/psi	mm	mm	mm	mm
	1/4" BSP	F1-AFG-42	FU1-AFG-42	4200 / 60,000	2.2	Hex.22	45	-
1/2" BSP	F1-CFG-42	FU1-CFG-42	4200 / 60,000	2.2	Hex.27	50	-	

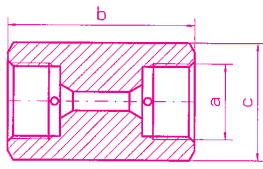
All adapters can be delivered as bulkhead adapters.
In this case a 'B' has to be added to the ordering code.
For example: **F1-BMS-10-B**. For dimensions please consult Resato.

HIGH PRESSURE FITTINGS

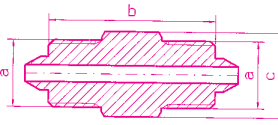
Connections M20x1.5 and 3/4"-16 UNF

For tubing size 10 mm or 3/8" (O.D.)

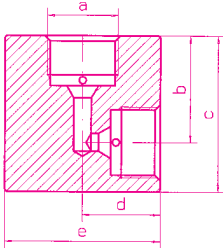
Union (Female)

	M20x1.5 (a)	3/4"-16 UNF (a)	Pressure rating bar/psi	Orifice mm	b mm	c mm	d mm	e mm	f* mm
	Ordering code	Ordering code							
F2-1-21	FU2-1-21	FU2-1-21	2100 / 30,000	5.0	50	Hex.27	-	-	-
F2-1-42	FU2-1-42	FU2-1-42	4200 / 60,000	3.5	50	Hex.27	-	-	-
F2-1-70	FU2-1-70	FU2-1-70	7000 / 100,000	2.2	50	Hex.27	-	-	-

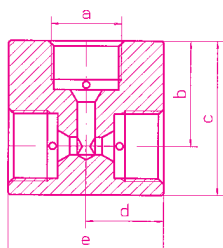
Union (Male)

	M20x1.5 (a)	3/4"-16 UNF (a)	Pressure rating bar/psi	Orifice mm	b mm	c mm	d mm	e mm	f* mm
	Ordering code	Ordering code							
M2-1-21	MU2-1-21	MU2-1-21	2100 / 30,000	5.0	45	Hex.22	-	-	-
M2-1-42	MU2-1-42	MU2-1-42	4200 / 60,000	3.5	45	Hex.22	-	-	-
M2-1-70	MU2-1-70	MU2-1-70	7000 / 100,000	2.2	45	Hex.22	-	-	-

Elbow

	M20x1.5 (a)	3/4"-16 UNF (a)	Pressure rating bar/psi	Orifice mm	b mm	c mm	d mm	e mm	f* mm
	Ordering code	Ordering code							
F2-2-21	FU2-2-21	FU2-2-21	2100 / 30,000	5.0	30	44	22	44	26
F2-2-42	FU2-2-42	FU2-2-42	4200 / 60,000	3.5	30	44	22	44	26
F2-2-70	FU2-2-70	FU2-2-70	7000 / 100,000	2.2	30	44	22	44	26

Tee

	M20x1.5 (a)	3/4"-16 UNF (a)	Pressure rating bar/psi	Orifice mm	b mm	c mm	d mm	e mm	f* mm
	Ordering code	Ordering code							
F2-3-21	FU2-3-21	FU2-3-21	2100 / 30,000	5.0	30	44	22	44	26
F2-3-42	FU2-3-42	FU2-3-42	4200 / 60,000	3.5	30	44	22	44	26
F2-3-70	FU2-3-70	FU2-3-70	7000 / 100,000	2.2	30	44	22	44	26

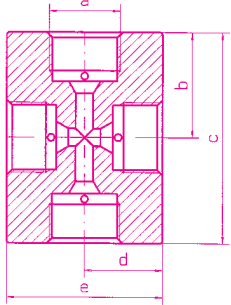
* f=body thickness

HIGH PRESSURE FITTINGS

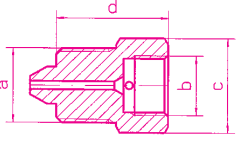
Connections M20x1.5 and 3/4"-16 UNF

For tubing size 10 mm or 3/8" (O.D.)

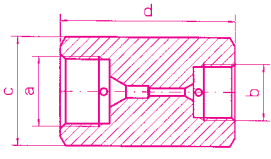
Cross

	M20x1.5 (a)	3/4"-16 UNF (a)	Pressure rating bar/psi	Orifice mm	b mm	c mm	d mm	e mm	f* mm
	Ordering code	Ordering code							
	F2-4-21	FU2-4-21	2100 / 30,000	5.0	30	76	22	44	26
	F2-4-42	FU2-4-42	4200 / 60,000	3.5	30	76	22	44	26
	F2-4-70	FU2-4-70	7000 / 100,000	2.2	30	76	22	44	26

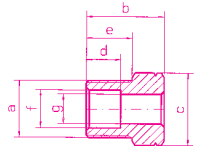
Reducer gland

	M20x1.5 (a)	3/4"-16 UNF (a)	Connection (b)	Pressure rating bar/psi	Orifice mm	c mm	d mm	e mm
	Ordering code	Ordering code						
	M2-F1-42	MU2-F1-42	M16x1.5	4200 / 60,000	2.2	Hex.22	30	-
	M2-F1-70	MU2-F1-70	M16x1.5	7000 / 100,000	2.2	Hex.22	30	-
	M2-FU1-42	MU2-FU1-42	9/16"-18 UNF	4200 / 60,000	2.2	Hex.22	30	-
	M2-FU1-70	MU2-FU1-70	9/16"-18 UNF	7000 / 100,000	2.2	Hex.22	30	-

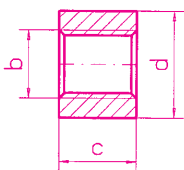
Reducer bushing

	M20x1.5 (a)	3/4"-16 UNF (a)	Connection (b)	Pressure rating bar/psi	Orifice mm	c mm	d mm	e mm
	Ordering code	Ordering code						
	F2-F1-42	FU2-F1-42	M16x1.5	4200 / 60,000	2.2	Hex.27	50	-
	F2-F1-70	FU2-F1-70	M16x1.5	7000 / 100,000	2.2	Hex.27	50	-
	F2-FU1-42	FU2-FU1-42	9/16"-18 UNF	4200 / 60,000	2.2	Hex.27	50	-
	F2-FU1-70	FU2-FU1-70	9/16"-18 UNF	7000 / 100,000	2.2	Hex.27	50	-

Gland

	M20x1.5 (a)	3/4"-16 UNF (a)	b mm	c mm	d mm	e mm	f mm	g mm
	Ordering code	Ordering code						
	M2-10	MU2-10	27	Hex.22	12	16	13.2	10.3

Collar

	M10x1-LH (b)	3/8"-28 UNF-LH	For gland	c mm	d mm	e mm	f mm	g mm
	Ordering code	Ordering code						
	M2-11	MU2-11	M2-10 MU2-10	12.5	13	-	-	-

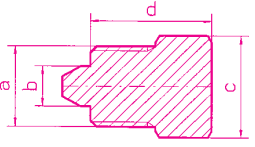
* f=body thickness

HIGH PRESSURE FITTINGS

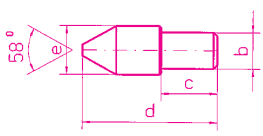
Connections M20x1.5 and 3/4"-16 UNF

For tubing size 10 mm or 3/8" (O.D.)

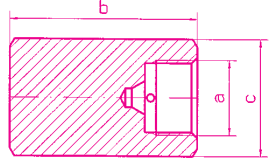
Gland plug

	M20x1.5 (a) Ordering code	3/4"-16 UNF (a) Ordering code	Pressure rating bar/psi	b mm	c mm	d mm	e mm	f mm
	M2-12-42	MU2-12-42	4200 / 60,000	10	Hex.22	27	-	-
	M2-12-70	MU2-12-70	7000 / 100,000	10	Hex.22	27	-	-

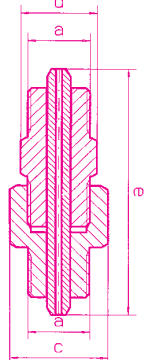
Plug

	Ordering code	For gland	Pressure rating bar/psi	b mm	c mm	d mm	e mm	f mm
	M2-13-70	M2-10 MU2-10	7000 / 100,000	9.7	15	36	13	-

Cap

	M20x1.5 (a) Ordering code	3/4"-16 UNF (a) Ordering code	Pressure rating bar/psi	b mm	c mm	d mm	e mm
	F2-14-42	FU2-14-42	4200 / 60,000	50	Hex.27	-	-
	F2-14-70	FU2-14-70	7000 / 100,000	50	Hex.27	-	-

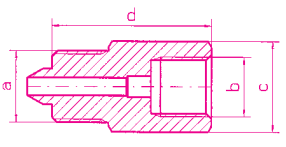
Short connection

	M20x1.5 (a) Ordering code	3/4"-16 UNF (a) Ordering code	Pressure rating bar/psi	Orifice mm	b mm	c mm	d mm	e mm
	M2-SC-21	MU2-SC-21	2100 / 30,000	5	-	Hex.27	Hex.22	81
	M2-SC-42	MU2-SC-42	4200 / 60,000	3.5	-	Hex.27	Hex.22	81

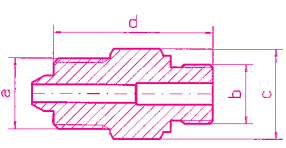
HIGH PRESSURE ADAPTERS

Connections M20x1.5 and 3/4"-16 UNF male to:
For tubing size 10 mm or 3/8" (O.D.)

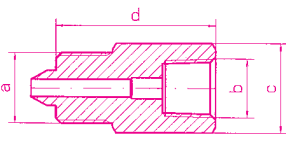
BSP - Female

	connection (b)	M 20x1.5 (a)	3/4"-16 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" BSP	M2-AFS-16	MU2-AFS-16	1600 / 23,000	5.0	Hex.22	45
	3/8" BSP	M2-BFS-10	MU2-BFS-10	1000 / 15,000	5.0	Hex.22	45
	1/2" BSP	M2-CFS-07	MU2-CFS-07	700 / 10,000	5.0	Hex.27	50

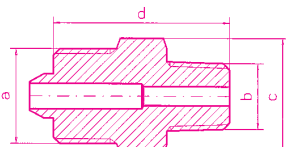
BSP - Male

	connection (b)	M20x1.5 (a)	3/4"-16 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" BSP	M2-AMS-16	MU2-AMS-16	1600 / 23,000	5.0	Hex.22	45
	3/8" BSP	M2-BMS-10	MU2-BMS-10	1000 / 15,000	5.0	Hex.22	45
	1/2" BSP	M2-CMS-07	MU2-CMS-07	700 / 10,000	5.0	Hex.27	50

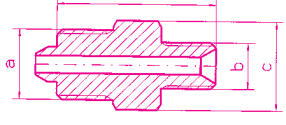
NPT - Female

	connection (b)	M20x1.5 (a)	3/4"-16 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" NPT	M2-AFT-16	MU2-AFT-16	1600 / 23,000	5.0	Hex.22	45
	3/8" NPT	M2-BFT-10	MU2-BFT-10	1000 / 15,000	5.0	Hex.22	45
	1/2" NPT	M2-CFT-07	MU2-CFT-07	700 / 10,000	5.0	Hex.27	50

NPT - Male

	connection (b)	M20x1.5 (a)	3/4"-16 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" NPT	M2-AMT-16	MU2-AMT-16	1600 / 23,000	5.0	Hex.22	45
	3/8" NPT	M2-BMT-10	MU2-BMT-10	1000 / 15,000	5.0	Hex.22	45
	1/2" NPT	M2-CMT-07	MU2-CMT-07	700 / 10,000	5.0	Hex.27	50

Hose connector

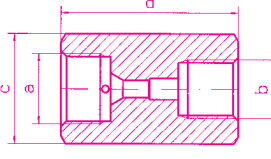
	connection (b)	M20x1.5 (a)	3/4"-16 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" BSP	M2-AMH-18	MU2-AMH-18	1800 / 26,000	5.0	Hex.22	45

All adapters can be delivered as bulkhead adapters.
In this case a 'B' has to be added to the ordering code.
For example: **M2-BMS-10-B**. For dimensions please consult Resato.

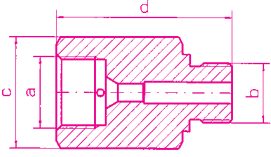
HIGH PRESSURE ADAPTERS

Connections M20x1.5 and 3/4"-16 UNF Female to:
For tubing size 10 mm or 3/8" (O.D.)

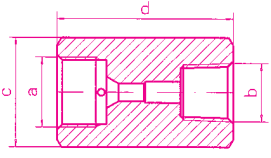
BSP - Female

	connection (b)	M 20x1.5 (a)	3/4"-16 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" BSP	F2-AFS-16	FU2-AFS-16	1600 / 23,000	5.0	Hex.27	50
	3/8" BSP	F2-BFS-10	FU2-BFS-10	1000 / 15,000	5.0	Hex.27	50
1/2" BSP	F2-CFS-07	FU2-CFS-07	700 / 10,000	5.0	Hex.27	50	

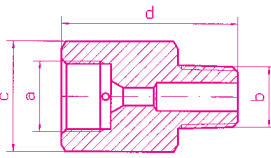
BSP - Male

	connection (b)	M20x1.5 (a)	3/4"-16 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" BSP	F2-AMS-16	FU2-AMS-16	1600 / 23,000	5.0	Hex.27	50
	3/8" BSP	F2-BMS-10	FU2-BMS-10	1000 / 15,000	5.0	Hex.27	50
1/2" BSP	F2-CMS-07	FU2-CMS-07	700 / 10,000	5.0	Hex.27	50	

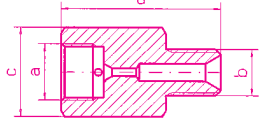
NPT - Female

	connection (b)	M20x1.5 (a)	3/4"-16 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" NPT	F2-AFT-16	FU2-AFT-16	1600 / 23,000	5.0	Hex.27	50
	3/8" NPT	F2-BFT-10	FU2-BFT-10	1000 / 15,000	5.0	Hex.27	50
1/2" NPT	F2-CFT-07	FU2-CFT-07	700 / 10,000	5.0	Hex.27	50	

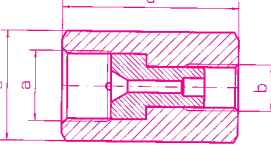
NPT - Male

	connection (b)	M20x1.5 (a)	3/4"-16 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" NPT	F2-AMT-16	FU2-AMT-16	1600 / 23,000	5.0	Hex.27	50
	3/8" NPT	F2-BMT-10	FU2-BMT-10	1000 / 15,000	5.0	Hex.27	50
1/2" NPT	F2-CMT-07	FU2-CMT-07	700 / 10,000	5.0	Hex.27	50	

Hose connector

	connection (b)	M20x1.5 (a)	3/4"-16 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" BSP	F2-AMH-18	FU2-AMH-18	1800 / 26,000	5.0	Hex.27	50

Gauge connection

	Connection (b)	M20x1.5 (a)	3/4"-16 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" BSP	F2-AFG-42	FU2-AFG-42	4200 / 60,000	3.5	Hex.27	50
1/2" BSP	F2-CFG-42	FU2-CFG-42	4200 / 60,000	3.5	Hex.27	50	

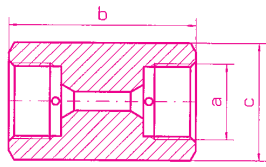
All adapters can be delivered as bulkhead adapters.
In this case a 'B' has to be added to the ordering code.
For example: **F2-BMS-10-B**. For dimensions please consult Resato.

HIGH PRESSURE FITTINGS

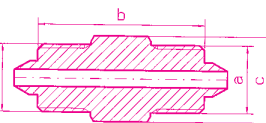
Connections M30x2 and 1 1/8"-12 UNF

For tubing size 14 mm or 9/16" (O.D.)

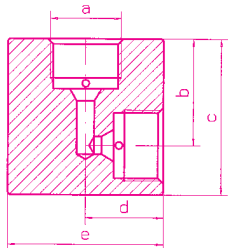
Union (Female)

	M30x2 (a)	1 1/8"-12 UNF (a)	Pressure rating bar/psi	Orifice mm	b mm	c mm	d mm	e mm	f* mm
	Ordering code	Ordering code							
F3-1-21	FU3-1-21	FU3-1-21	2100 / 30,000	8.0	56	Hex. 36	-	-	-
F3-1-42	FU3-1-42	FU3-1-42	4200 / 60,000	5.0	56	Hex. 36	-	-	-

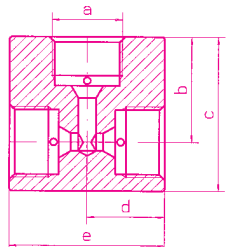
Union (Male)

	M30x2 (a)	1 1/8"-12 UNF (a)	Pressure rating bar/psi	Orifice mm	b mm	c mm	d mm	e mm	f* mm
	Ordering code	Ordering code							
M3-1-21	MU3-1-21	MU3-1-21	2100 / 30,000	8.0	56	Hex.32	-	-	-
M3-1-42	MU3-1-42	MU3-1-42	4200 / 60,000	5.0	56	Hex.32	-	-	-

Elbow

	M30x2 (a)	1 1/8"-12 UNF (a)	Pressure rating bar/psi	Orifice mm	b mm	c mm	d mm	e mm	f* mm
	Ordering code	Ordering code							
F3-2-21	FU3-2-21	FU3-2-21	2100 / 30,000	8.0	38	58	32	64	36
F3-2-42	FU3-2-42	FU3-2-42	4200 / 60,000	5.0	38	58	32	64	36

Tee

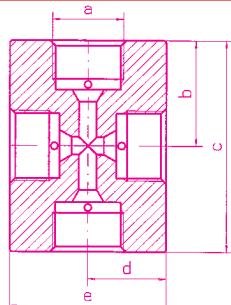
	M30x2 (a)	1 1/8"-12 UNF (a)	Pressure rating bar/psi	Orifice mm	b mm	c mm	d mm	e mm	f* mm
	Ordering code	Ordering code							
F3-3-21	FU3-3-21	FU3-3-21	2100 / 30,000	8.0	38	58	32	64	36
F3-3-42	FU3-3-42	FU3-3-42	4200 / 60,000	5.0	38	58	32	64	36

* f=body thickness

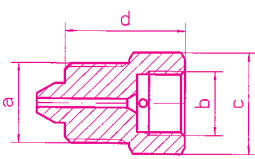
HIGH PRESSURE FITTINGS

Connections M30x2 and 1 1/8"-12 UNF
For tubing size 14 mm or 9/16" (O.D.)

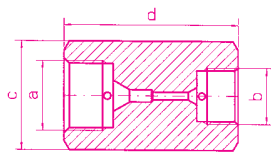
Cross

	M30x2 (a)	1 1/8" -12 UNF (a)	Pressure rating	Orifice	b	c	d	e	f*
	Ordering code	Ordering code	bar/psi	mm	mm	mm	mm	mm	mm
	F3-4-21	FU3-4-21	2100 / 30,000	8.0	38	76	32	64	36
	F3-4-42	FU3-4-42	4200 / 60,000	5.0	38	76	32	64	36

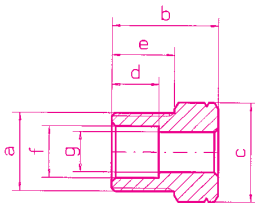
Reducer gland

	M30x2 (a)	1 1/8"-12 UNF (a)	Connection(b)	Pressure rating	Orifice	c	d	e
	Ordering code	ordering code		bar/psi	mm	mm	mm	mm
	M3-F1-42	MU3-F1-42	M16x1.5	4200 / 60,000	2.2	Hex.32	32	-
	M3-F2-21	MU3-F2-21	M20x1.5	2100 / 30,000	5	Hex.32	32	-
	M3-F2-42	MU3-F2-42	M20x1.5	4200 / 60,000	3.5	Hex.32	32	-
	M3-FU1-42	MU3-FU1-42	9/16"-18 UNF	4200 / 60,000	2.2	Hex.32	32	-
	M3-FU2-21	MU3-FU2-21	3/4"-16 UNF	2100 / 30,000	5	Hex.32	32	-
	M3-FU2-42	MU3-FU2-42	3/4"-16 UNF	4200 / 60,000	3.5	Hex.32	32	-

Reducer bushing

	M30x2 (a)	1 1/8"-12 UNF (a)	Connection (b)	Pressure rating	Orifice	c	d	e
	Ordering code	ordering code		bar/psi	mm	mm	mm	mm
	F3-F1-42	FU3-F1-42	M16x1.5	4200 / 60,000	2.2	Hex.36	56	-
	F3-F2-21	FU3-F2-21	M20x1.5	2100 / 30,000	5	Hex.36	56	-
	F3-F2-42	FU3-F2-42	M20x1.5	4200 / 60,000	3.5	Hex.36	56	-
	F3-FU1-42	FU3-FU1-42	9/16"-18 UNF	4200 / 60,000	2.2	Hex.36	56	-
	F3-FU2-21	FU3-FU2-21	3/4"-16 UNF	2100 / 30,000	5	Hex.36	56	-
	F3-FU2-42	FU3-FU2-42	3/4"-16 UNF	4200 / 60,000	3.5	Hex.36	56	-

Gland

	M30x2 (a)	1 1/8"-12 UNF (a)	b	c	d	e	f	g
	Ordering code	Ordering code	mm	mm	mm	mm	mm	mm
	M3-10	MU3-10	32	Hex.32	15	20	22.2	14.6

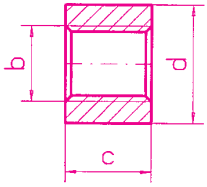
* f=body thickness

HIGH PRESSURE FITTINGS

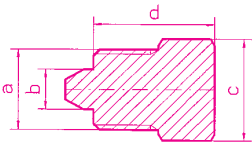
Connections M30x2 and 1 1/8"-12 UNF

For tubing size 14 mm or 9/16" (O.D.)

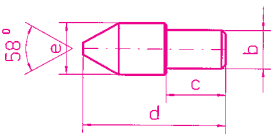
Collar

	M14x1.5-LH (b) Ordering code	9/16"-18 UNF-LH Ordering code	For gland	c mm	d mm	e mm	f mm	g mm	
	M3-11	MU3-11	M3-10 MU3-10	16	22	-	-	-	

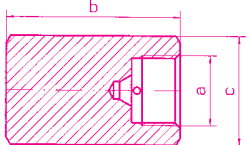
Gland plug

	M 30x2 (a) Ordering code	1 1/8"-12 UNF (a) Ordering code	pressure rating bar/psi	b mm	c mm	d mm	e mm	f mm	g mm
	M3-12-42	MU3-12-42	4200 / 60,000	14	Hex.32	32	-	-	-

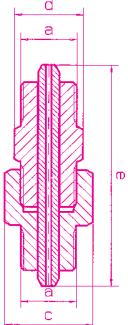
Plug

	Ordering code	for gland	pressure rating bar/psi	b mm	c mm	d mm	e mm	f mm	g mm
	M3-13-42	M3-10 MU3-10	4200 / 60,000	14	17	41	22	-	-

Cap

	M 30x2 (a) Ordering code	1 1/8"-12 UNF (a) Ordering code	Pressure rating bar/psi	b mm	c mm	d mm	e mm	f* mm
	F3-14-42	FU3-14-42	4200 / 60,000	56	Hex.36	-	-	

Short connection

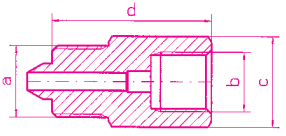
	M 30x2 (a) Ordering code	1 1/8"-12 UNF (a) Ordering code	Pressure rating bar/psi	Orifice mm	b mm	c mm	d mm	e mm
	M3-SC-21	MU3-SC-21	2100 / 30,000	8	-	Hex.36	Hex.32	112
	M3-SC-42	MU3-SC-42	4200 / 60,000	5	-	Hex.36	Hex.32	118

* f=body thickness

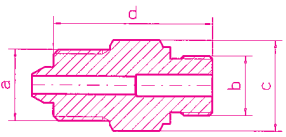
HIGH PRESSURE ADAPTERS

Connections M30x2 and 1 1/8"-12 UNF male to:
For tubing size 14 mm or 9/16" (O.D.)

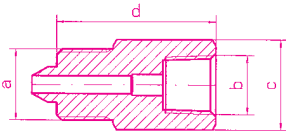
BSP - Female

	connection (b)	M30x2 (a) Ordering code	1 1/8"-12 UNF (a) Ordering code	Pressure rating bar/psi	Orifice mm	c mm	d mm
	1/4" BSP	M3-AFS-16	MU3-AFS-16	1600 / 23,000	5.0	Hex.32	56
3/8" BSP	M3-BFS-10	MU3-BFS-10	1000 / 15,000	6.0	Hex.32	56	
1/2" BSP	M3-CFS-07	MU3-CFS-07	700 / 10,000	8.0	Hex.32	56	

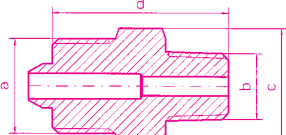
BSP - Male

	connection (b)	M30x2 (a) Ordering code	1 1/8"-12 UNF (a) Ordering code	Pressure rating bar/psi	Orifice mm	c mm	d mm
	1/4" BSP	M3-AMS-16	MU3-AMS-16	1600 / 23,000	5.0	Hex.32	56
3/8" BSP	M3-BMS-10	MU3-BMS-10	1000 / 15,000	6.0	Hex.32	56	
1/2" BSP	M3-CMS-07	MU3-CMS-07	700 / 10,000	8.0	Hex.32	56	

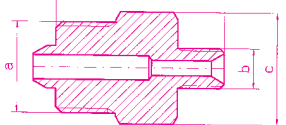
NPT - Female

	connection (b)	M30x2 (a) Ordering code	1 1/8"-12 UNF (a) Ordering code	Pressure rating bar/psi	Orifice mm	c mm	d mm
	1/4" NPT	M3-AFT-16	MU3-AFT-16	1600 / 23,000	5.0	Hex.32	56
3/8" NPT	M3-BFT-10	MU3-BFT-10	1000 / 15,000	6.0	Hex.32	56	
1/2" NPT	M3-CFT-07	MU3-CFT-07	700 / 10,000	8.0	Hex.32	56	

NPT - Male

	connection (b)	M30x2 (a) Ordering code	1 1/8"-12 UNF (a) Ordering code	Pressure rating bar/psi	Orifice mm	c mm	d mm
	1/4" NPT	M3-AMT-16	MU3-AMT-16	1600 / 23,000	5.0	Hex.32	56
3/8" NPT	M3-BMT-10	MU3-BMT-10	1000 / 15,000	6.0	Hex.32	56	
1/2" NPT	M3-CMT-07	MU3-CMT-07	700 / 10,000	8.0	Hex.32	56	

Hose connector

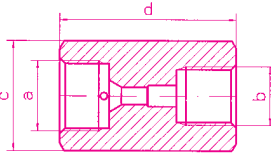
	connection (b)	M30x2 (a) Ordering code	1 1/8"-12 UNF (a) Ordering code	Pressure rating bar/psi	Orifice mm	c mm	d mm
	1/4" BSP	M3-AMH-18	MU3-AMH-18	1800/26,000	5.0	Hex.32	56

All adapters can be delivered as bulkhead adapters.
In this case a 'B' has to be added to the ordering code.
For example: **F3-BMS-10-B**. For dimensions please consult Resato.

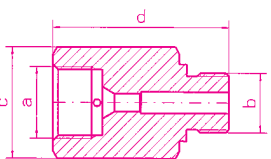
HIGH PRESSURE ADAPTERS

Connections M30x2 and 1 1/8"-12 UNF Female to:
For tubing size 14 mm or 9/16" (O.D.)

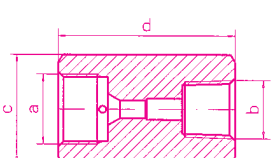
BSP - Female

	connection (b)	M30x2 (a)	1 1/8"-12 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" BSP	F3-AFS-16	FU3-AFS-16	1600 / 23,000	5.0	Hex.36	56
	3/8" BSP	F3-BFS-10	FU3-BFS-10	1000 / 15,000	6.0	Hex.36	56
1/2" BSP	F3-CFS-07	FU3-CFS-07	700 / 10,000	8.0	Hex.36	56	

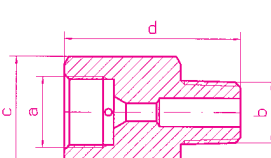
BSP - Male

	connection (b)	M30x2 (a)	1 1/8"-12 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" BSP	F3-AMS-16	FU3-AMS-16	1600 / 23,000	5.0	Hex.36	56
	3/8" BSP	F3-BMS-10	FU3-BMS-10	1000 / 15,000	6.0	Hex.36	56
1/2" BSP	F3-CMS-07	FU3-CMS-07	700 / 10,000	8.0	Hex.36	56	

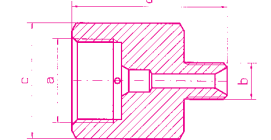
NPT - Female

	connection (b)	M30x2 (a)	1 1/8"-12 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" NPT	F3-AFT-16	FU3-AFT-16	1600 / 23,000	5.0	Hex.36	56
	3/8" NPT	F3-BFT-10	FU3-BFT-10	1000 / 15,000	6.0	Hex.36	56
1/2" NPT	F3-CFT-07	FU3-CFT-07	700 / 10,000	8.0	Hex.36	56	

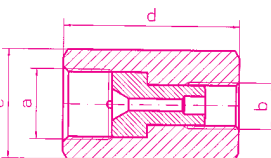
NPT - Male

	connection (b)	M30x2 (a)	1 1/8"-12 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" NPT	F3-AMT-16	FU3-AMT-16	1600 / 23,000	5.0	Hex.36	56
	3/8" NPT	F3-BMT-10	FU3-BMT-10	1000 / 15,000	6.0	Hex.36	56
1/2" NPT	F3-CMT-07	FU3-CMT-07	700 / 10,000	8.0	Hex.36	56	

Hose connector

	connection (b)	M30x2 (a)	1 1/8"-12 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" BSP	F3-AMH-18	FU3-AMH-18	1800 / 26,000	5.0	Hex.36	56

Gauge connection

	Connection (b)	M30x2 (a)	1 1/8"-12 UNF (a)	Pressure rating	Orifice	c	d
		Ordering code	Ordering code	bar/psi	mm	mm	mm
	1/4" BSP	F3-AFG-42	FU3-AFG-42	4200 / 60,000	5	Hex.36	56
	1/2" BSP	F3-CFG-42	FU3-CFG-42	4200 / 60,000	5	Hex.36	56

All adapters can be delivered as bulkhead adapters.
In this case a 'B' has to be added to the ordering code.
For example: **F3-BMS-10-B**. For dimensions please consult Resato.



HIGH PRESSURE TECHNOLOGY

HIGH PRESSURE TUBING



THE RESATO PRODUCT RANGE INCLUDES COLD DRAWN STAINLESS STEEL TUBING CORRELATED TO MATCH THE EXCELLENT PERFORMANCE STANDARDS OF RESATO HIGH PRESSURE VALVES AND FITTINGS

OUR HIGH PRESSURE TUBING IS MANUFACTURED SPECIALLY FOR HIGH PRESSURE APPLICATIONS REQUIRING BOTH STRENGTH AND CORROSION RESISTANCE

High pressure tubing

Special features of Resato tubing are:

- high yield strength
- good fatigue properties
- high quality surface finish of the internal tubing to ensure good flow and pressure characteristics.

Inspection and testing

The high pressure tubing is subjected to stringent inspection and testing procedures to ensure high quality and close dimensional tolerances. Hydrostatic testing is performed on selected samples. On request Resato will perform 100% hydrostatic testing.

Millimeter O.D. tubing

Tubing type	Working pressure bar / psi	Tubing size		Material Stainless steel type
		mm O.D.	mm I.D.	
T1-60/22-42	4200 / 60,000	6	2.2	1.4401
T1-60/22-70	7000 / 100,000	6	2.2	HP160*
T2-100/50-21	2100 / 30,000	10	5	1.4401
T2-100/36-42	4200 / 60,000	10	3.6	1.4401
T3-140/80-21	2100 / 30,000	14	8	1.4401
T3-140/50-42	4200 / 60,000	14	5	1.4401

* In accordance with ASTM F 1586-95.

Bending radius

To maintain material specification integrity it is recommended that the MINIMUM-bending radius is at least 5 times the outer diameter of the tubing

Ready-made nipples.

For rapid system setup tubing can be delivered complete with nipple ends (i.e. pre-cut, coned and threaded to size and length).

Materials

The standard material for Resato high pressure tubing is stainless steel DIN 1.4401 and HP160 (in accordance with ASTM F 1586-95).

Tubing is available in random lengths of 4 to 6 metres.

Other material types are available on request.

Heavy-duty cycling service

For heavy-duty cycling service Resato can supply auto frettaged tubing.

Please contact Resato for further specifications.

Inch O.D. tubing

Tubing type	Working pressure bar / psi	Tubing size		Material Stainless steel type
		inch O.D.	mm I.D.	
T1-64/24-42	4200 / 60,000	1/4	2.4	1.4401
T1-64/16-100	10,000 / 150,000	1/4	1.6	HP160*
T1-64/10-140	14,000 / 200,000	1/4	1	HP160*
T2-95/32-42	4200 / 60,000	3/8	3.2	1.4401
T2-95/32-70	7000 / 100,000	3/8	3.2	HP160*
T2-95/16-120	12,000 / 170,000	3/8	1.6	HP160*
T3-143/80-21	2100 / 30,000	9/16	8	1.4401
T3-143/50-42	4200 / 60,000	9/16	5	1.4401
T3-143/80-42	4200 / 60,000	9/16	8	HP160*

How to order tubing

State length and tubing type code.

Example: 6 metres - T1-64/24-42

How to order ready-made nipples

Add length in mm of the tube to the tubing type code.

Example: T1-60/22-42/200.

This means tubing type coned, threaded with metric thread M6x1 and 200 mm in length.

Examples of Resato high-pressure components

- Fittings
- General-purpose valves
- Check valves
- Swivels
- Hoses
- Tubing
- Pressure transducers
- Rupture-disc safety devices
- Quick connectors

Examples of Resato high-pressure equipment and systems

- Air-driven pumps and gas boosters
- Hydraulically-driven pumps and gas boosters
- Pulse-test systems
- Autofrettage systems
- Test equipment for hoses, (safety) valves, fittings etc.
- Portable pressure-test systems
- Autoclaves
- Custom-made test equipment
- Water-jet cutting systems
- Computer-controlled high-pressure test equipment

Company profile Resato

Founded in 1985, Resato International B.V. is wholly specialized in the design and manufacture of high-pressure components and systems for pressures of up to 14,000 bar (200,000 psi). At our modern manufacturing plant in Roden, The Netherlands, we have our own engineering and R&D departments as well as sophisticated production facilities. These enable us to furnish precisely the right component or system a client may need.

Resato International BV

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