

Ultra pure PFA tube and weld fittings

Construction

The fitting bodies are made of PFA, the union nuts are made of PFA, PVDF or CPFA. All parts are manufactured in a cleanroom and provide the highest chemical resistance.

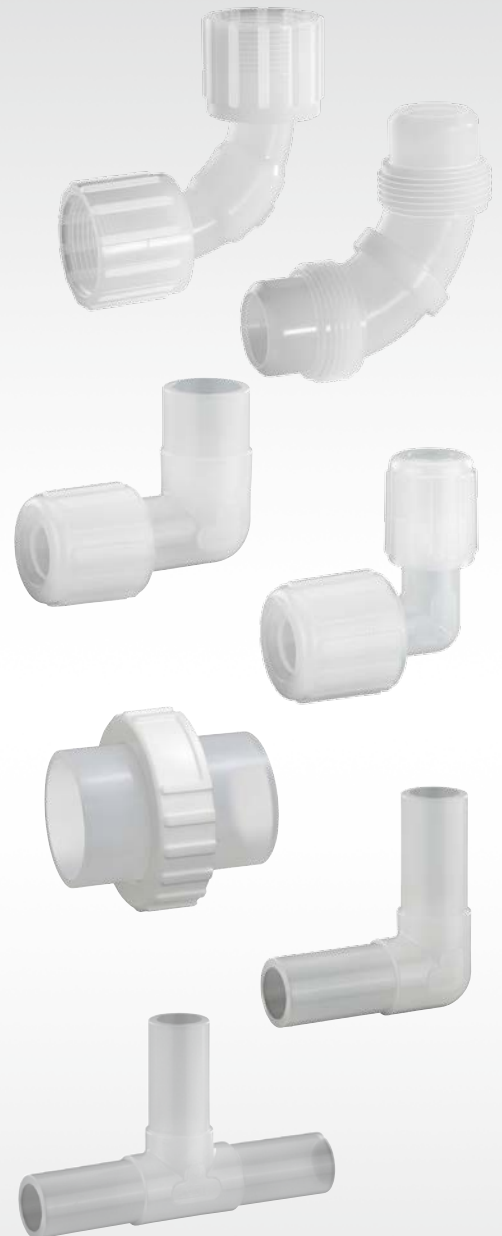
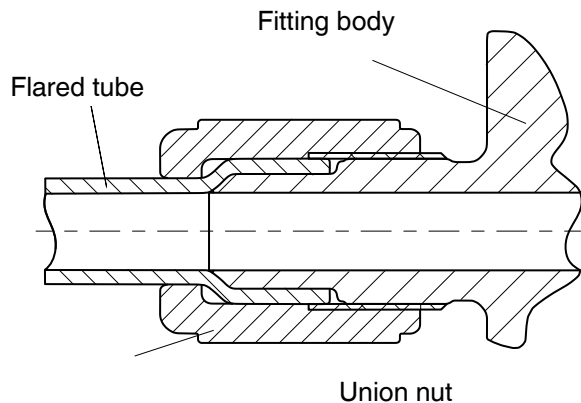
Features

- Tube and weld fittings
- Available sizes 1/4", 3/8", 1/2", 3/4", 1", 1 1/4", 1 1/2" and 2"

Advantage

- For leak free performance with minimum dead space in ultra pure fluid applications
- High reliability, even in high vibration applications
- Simple installation, i. a. as they can be accessed from the side during assembly
- 1000 different versions for the most frequently used connections
- "Space saver" (space-saving connection option) also available

Drawings



Архангельск (8182)63-90-72
Астана (7172)727-132
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89

Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Липецк (4742)52-20-81

Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16

Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13

Сургут (3462)77-98-35
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93

Киргизия (996)312-96-26-47 Казахстан (772)734-952-31 Таджикистан (992)427-82-92-69

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Technical data

Working medium

Corrosive, inert, gaseous and liquid media which have no negative impact on the physical and chemical properties of the fitting material.

Information

Maximum pressure capabilities of the different **FlareStar®** union nuts are listed below. (Tubing ratings are included as a reference).

The ratings are provided as a guide in system design. The component with the lowest maximum pressure rating determines the maximum system pressure rating.

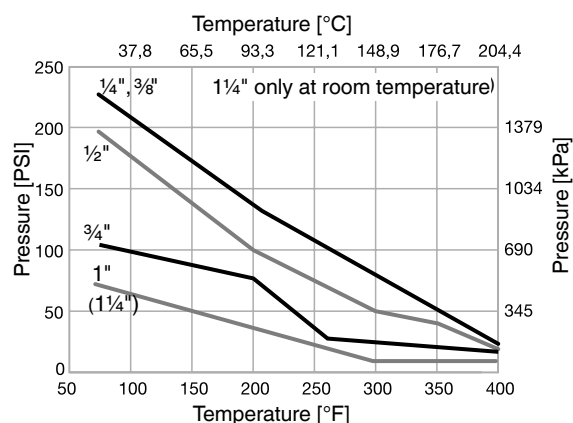
Max. operating pressure [PSI (kPA)]

Size (International code)	Temperature °F (°C)	Union nut			
		Tube PFA	PVDF	PFA	CPFA
1/4" (Code 4)	75 (24)	273 (1882)	225 (1551)	225 (1551)	225 (1551)
	200 (93)	136 (938)	133 (917)	133 (917)	133 (917)
	250 (121)	85 (586)	100 (689)	100 (689)	100 (689)
	300 (150)	61 (421)	75 (517)	75 (517)	75 (517)
	350 (175)	36 (248)	N/R	50 (345)	50 (345)
	400 (200)	N/R	N/R	N/R	15 (103)
3/8" (Code 6)	75 (24)	234 (1613)	225 (1551)	225 (1551)	225 (1551)
	200 (93)	116 (800)	133 (917)	133 (917)	133 (917)
	250 (121)	73 (503)	100 (689)	100 (689)	100 (689)
	300 (150)	52 (359)	75 (517)	75 (517)	75 (517)
	350 (175)	31 (214)	N/R	50 (345)	50 (345)
	400 (200)	N/R	N/R	N/R	15 (103)
1/2" (Code 8)	75 (24)	168 (1158)	190 (1310)	190 (1310)	190 (1310)
	200 (93)	83 (572)	100 (689)	100 (689)	100 (689)
	250 (121)	52 (359)	75 (517)	75 (517)	75 (517)
	300 (150)	37 (255)	50 (345)	50 (345)	50 (345)
	350 (175)	22 (152)	N/R	40 (276)	40 (276)
	400 (200)	N/R	N/R	N/R	15 (103)
3/4" (Code 12)	75 (24)	107 (738)	110 (758)	110 (758)	110 (758)
	200 (93)	53 (365)	76 (524)	76 (524)	76 (524)
	250 (121)	33 (228)	35 (241)	35 (241)	35 (241)
	300 (150)	24 (165)	27 (186)	27 (186)	27 (186)
	350 (175)	14 (96)	N/R	20 (138)	20 (138)
	400 (200)	N/R	N/R	N/R	15 (103)
1" (Code 16)	75 (24)	77 (531)	75 (517)	75 (517)	75 (517)
	200 (93)	38 (262)	40 (276)	40 (276)	40 (276)
	250 (121)	24 (165)	28 (193)	28 (193)	28 (193)
	300 (150)	17 (117)	15 (103)	15 (103)	15 (103)
	350 (175)	10 (69)	N/R	15 (103)	15 (103)
	400 (200)	N/R	N/R	N/R	15 (103)
1 1/4" (Code 20)	75 (24)	80 (552)	80 (552)	On request	On request

N/R = not recommended

Technical data

Pressure vs. temperature diagram

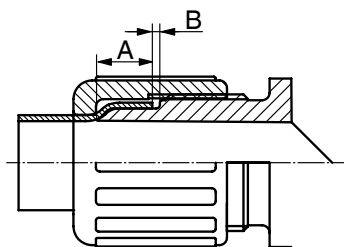


Information

The diagram/measured values are based on water at ambient temperature, standard tube (wall thickness for 1/4" - 0.047", for other sizes 0.062") and PFA components.

Warning:
Ratings are determined using a safety factor of 1.5.

Dimensions (tolerances)



Tolerances

- The **CleanStar**® plastic parts are manufactured to DIN 16901-140.
- Space saver - flare connections may have tolerances of ± 2.5 mm per connection to the total length of fitting.
- The maximum gap (B) between the tubing end and the end of the fitting should be 2 mm to 3.8 mm. Once tube is assembled the maximum gap could be bigger than the original value.
- Tolerances for weld connections are not available due to variances in welding techniques and equipment.

Overlap dimensions and thread sizes of flare connections

Tube size	Thread designation	Standard	A mm (inch)
1/4"	1/2"-20-UNF	ANSI B 1.1	7.0 (0.27")
3/8"	5/8"-20-UN	ANSI B 1.1	10.0 (0.39")
1/2"	3/4"-20-UNEF	ANSI B 1.1	12.0 (0.47")
3/4"	1"-20-UNEF	ANSI B 1.1	14.0 (0.55")
1"	1 7/16"-12-UN	ANSI B 1.1	14.0 (0.55")
1 1/4"	1 3/4"-8-UN	ANSI B 1.1	18.0 (0.71")

Order data

Order example	F	MC	75	12 8	30	HP
F* denotes this is a FlareStar ® fitting	F					
MC* This combination of letters denotes the fitting style (e.g. ("MC" = Male connector, tube to pipe)		MC				
75** Union nut material:			75			
12 8 Connection*** Size (Type)				12 8		
30 Fitting body material:					30	
HP High Purity						HP

* denotes the fitting type: see Contents on pages 2 and 3

** with PVDF nut = code 75 (standard), with PFA nut = code 77, with CPFA nut = code 73

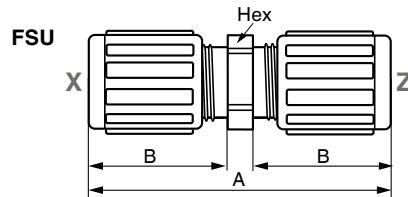
*** Connection: If it is a tube to pipe connector, the first number denotes the tube connection size and the second number denotes the pipe thread size.

Information

For complete order numbers and range overviews refer to the following dimension tables.

FlareStar® Straight fittings

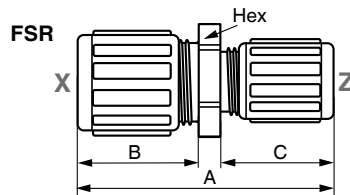
Dimensions mm (inch)



Straight union, flare, PFA

Order no.	Tube outside diameter		Orifice	A	B	Hex
	X	Z				
FSU 75 4 4 30 HP	1/4"	1/4"	3.30 (0.13")	66.8 (2.63")	29.9 (1.17")	11/16"
FSU 75 6 6 30 HP	3/8"	3/8"	6.35 (0.25")	68.5 (2.70")	30.8 (1.22")	13/16"
FSU 75 8 8 30 HP	1/2"	1/2"	9.65 (0.38")	75.8 (2.98")	34.4 (1.35")	15/16"
FSU 75 12 12 30 HP	3/4"	3/4"	16.00 (0.63")	82.8 (3.88")	37.9 (1.49")	1 3/16"
FSU 75 16 16 30 HP	1"	1"	22.10 (0.87")	98.6 (3.88")	45.8 (1.80")	1 7/16"
FSU 75 20 20 30 HP	1 1/4"	1 1/4"	27.80 (1.09")	127.4 (5.02")	-	-
FSU 75 4 Z4 30 HP	1/4"	1/4"S*	3.81 (0.15")	70.10 (2.76")	29.46 (1.16")	11/16"
FSU 75 6 Z6 30 HP	3/8"	3/8"S*	6.35 (0.25")	74.42 (2.93")	32.26 (1.27")	13/16"
FSU 75 8 Z8 30 HP	1/2"	1/2"S*	9.65 (0.38")	77.98 (3.07")	34.54 (1.36")	15/16"
FSU 75 12 Z12 30 HP	3/4"	3/4"S*	16.00 (0.63")	86.61 (3.41")	38.61 (1.52")	1 3/16"
FSU 75 16 Z16 30 HP	1"	1"S*	22.35 (0.88")	102.62 (4.04")	43.94 (1.73")	1 7/16"

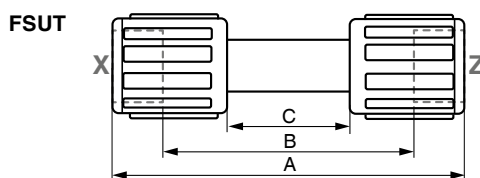
* S = SpaceSaver



Straight reducer union, flare, PFA

Order no.	Tube outside diameter		Orifice	A	B	C	Hex
	X	Z					
FSR 75 6 4 30 HP	3/8"	1/4"	3.30 (0.13")	67.80 (2.67")	30.90 (1.22")	29.90 (1.17")	13/16"
FSR 75 8 4 30 HP	1/2"	1/4"	3.30 (0.13")	71.30 (2.81")	34.40 (1.35")	29.90 (1.17")	15/16"
FSR 75 8 6 30 HP	1/2"	3/8"	6.35 (0.25")	72.30 (2.85")	34.40 (1.35")	30.90 (1.22")	15/16"
FSR 75 12 4 30 HP	3/4"	1/4"	3.30 (0.13")	72.80 (2.87")	36.40 (1.43")	29.40 (1.15")	13/16"
FSR 75 12 6 30 HP	3/4"	3/8"	6.35 (0.25")	75.80 (2.98")	37.90 (1.49")	30.90 (1.22")	13/16"
FSR 75 12 8 30 HP	3/4"	1/2"	9.65 (0.38")	78.80 (3.10")	37.40 (1.47")	34.40 (1.35")	1 3/16"
FSR 75 16 8 30 HP	1"	1/2"	9.65 (0.38")	85.85 (3.38")	43.94 (1.73")	34.54 (1.36")	1 7/16"
FSR 75 16 12 30 HP	1"	3/4"	16.00 (0.63")	90.70 (3.57")	45.80 (1.80")	37.90 (1.49")	1 7/16"
FSR 75 20 16 30 HP	1 1/4"	1"	21.10 (0.87")	114.20 (4.50")	50.00 (1.97")	47.50 (1.87")	

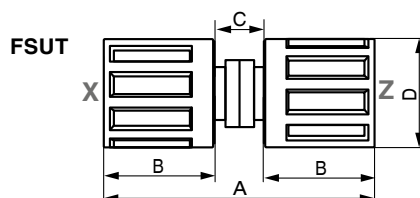
Dimensions mm (inch)



Straight union, space saver, PFA

Order no.	Tube outside diameter	Orifice	A	B	C
Normal length					
FSUT 75 X8 Z8 N 30 HP	1/2"S*	9.65 (0.38")	134.00 (5.28")	114.00 (4.49")	80.00 (3.15")
FSUT 75 X12 Z12 N 30 HP	3/4"S*	16.00 (0.63")	135.80 (5.35")	114.00 (4.49")	75.00 (2.95")
Intermediate length					
FSUT 75 X8 Z8 J 30 HP	1/2"S*	9.65 (0.38")	85.00 (3.35")	65.00 (2.56")	31.00 (1.22")
FSUT 75 X12 Z12 J 30 HP	3/4"S*	16.00 (0.63")	86.80 (3.42")	65.00 (2.56")	26.00 (1.02")
Minimum length					
FSUT 75 X8 Z8 M 30 HP	1/2"S*	9.65 (0.38")	73.00 (2.87")	53.00 (2.09")	19.00 (0.75")
FSUT 75 X12 Z12 M 30 HP	3/4"S*	16.00 (0.63")	74.80 (2.95")	53.00 (2.09")	14.00 (0.55")
FSUT 75 X16 Z16 M 30 HP	1"S*	22.10 (0.87")	106.40 (4.19")	65.00 (2.56")	25.20 (0.99")
FSUT 75 X20 Z20 M 30 HP	1 1/4"S*	27.90 (1.10")	105.00 (4.13")	60.00 (2.36")	10.00 (0.39")

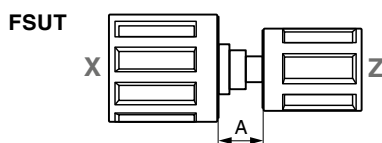
* S = SpaceSaver



Straight union, space saver, PFA

Order no.	Tube outside diameter	Orifice	A	B	C	D
FSUT 75 X4 Z4 30 HP	1/4"S*	3.80 (0.15")	60.96 (2.40")	24.89 (0.98")	11.18 (0.44")	19.81 (0.78")
FSUT 75 X6 Z6 30 HP	3/8"S*	6.40 (0.25")	65.53 (2.58")	26.92 (1.06")	11.68 (0.46")	23.11 (0.91")
FSUT 75 X8 Z8 30 HP	1/2"S*	9.70 (0.38")	68.58 (2.70")	28.19 (1.11")	12.19 (0.48")	26.16 (1.03")
FSUT 75 X12 Z12 30 HP	3/4"S*	16.00 (0.63")	76.78 (3.02")	32.26 (1.27")	12.19 (0.48")	34.29 (1.35")
FSUT 75 X16 Z16 30 HP	1"S*	22.40 (0.88")	86.36 (3.40")	38.35 (1.51")	9.65 (0.38")	46.23 (1.82")

* S = SpaceSaver

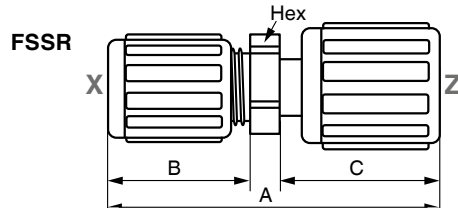


Straight reducer union, space saver, PFA

Order no.	Tube outside diameter	Orifice	A
FSUT 75 X6 Z4 30 HP	3/8"S*	1/4"S*	11.43 (0.45")
FSUT 75 X8 Z4 30 HP	1/2"S*	1/4"S*	10.92 (0.43")
FSUT 75 X8 Z6 30 HP	1/2"S*	3/8"S*	10.41 (0.41")
FSUT 75 X12 Z4 30 HP	3/4"S*	1/4"S*	11.18 (0.44")
FSUT 75 X12 Z6 30 HP	3/4"S*	3/8"S*	10.92 (0.43")
FSUT 75 X12 Z8 30 HP	3/4"S*	1/2"S*	12.95 (0.51")
FSUT 75 X16 Z4 30 HP	1"S*	1/4"S*	10.16 (0.40")
FSUT 75 X16 Z6 30 HP	1"S*	3/8"S*	9.65 (0.38")
FSUT 75 X16 Z8 30 HP	1"S*	1/2"S*	11.43 (0.45")
FSUT 75 X16 Z12 30 HP	1"S*	3/4"S*	9.65 (0.38")

* S = SpaceSaver

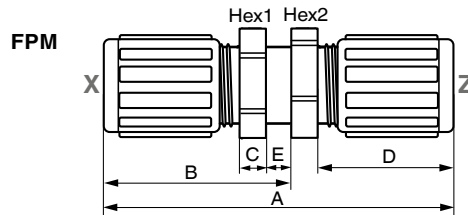
Dimensions mm (inch)



Straight reducer union, flare/space saver, PFA

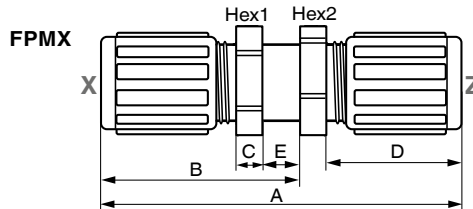
Order no.	Tube outside diameter		Orifice	A	B	C	Hex
	X	Z					
FSSR 75 4 Z6 30 HP	1/4"	3/8" S	3.30 (0.13")	69.80 (2.74")	28.90 (1.13")	33.90 (1.33")	11/16"
FSSR 75 4 Z8 30 HP	1/4"	1/2" S	3.30 (0.13")	71.40 (2.80")	28.90 (1.13")	35.50 (1.39")	11/16"
FSSR 75 4 Z12 30 HP	1/4"	3/4" S	3.30 (0.13")	78.80 (3.10")	28.90 (1.13")	42.90 (1.68")	15/16"
FSSR 75 6 Z4 30 HP	3/8"	1/4" S	3.18 (0.15")	73.15 (2.88")	33.78 (1.33")	-	13/16"
FSSR 75 6 Z 8 30 HP	3/8"	1/2" S	6.35 (0.25")	73.20 (2.88")	30.90 (1.21")	35.30 (1.38")	13/16"
FSSR 75 6 Z12 30 HP	3/8"	3/4" S	6.35 (0.25")	81.90 (3.22")	32.00 (1.25")	42.90 (1.68")	15/16"
FSSR 75 8 Z6 30 HP	1/2"	3/8" S	6.35 (0.25")	76.96 (3.03")	35.05 (1.38")	-	15/16"
FSSR 75 8 Z12 30 HP	1/2"	3/4" S	9.65 (0.38")	83.30 (3.27")	33.40 (1.31")	42.90 (1.68")	15/16"
FSSR 75 12 Z8 30 HP	3/4"	1/2" S	9.65 (0.38")	82.04 (3.23")	36.07 (1.42")	-	1 3/16"
FSSR 75 12 Z16 30 HP	3/4"	1" S	16.00 (0.63")	96.30 (3.79")	37.40 (1.47")	51.90 (2.04")	1 3/16"
FSSR 75 16 Z8 30 HP	1"	1/2" S	9.65 (0.38")	87.38 (3.44")	36.07 (1.42")	-	1 7/16"
FSSR 75 16 Z12 30 HP	1"	3/4" S	16.00 (0.63")	92.96 (3.66")	40.64 (1.60")	-	1 7/16"
FSSR 75 16 Z20 30 HP	1"	1 1/4" S	22.10 (0.87")	111.50 (4.38")	45.00 (1.77")	59.50 (2.34")	1 7/16"

* S = SpaceSaver



Panel mount union, flare, PFA

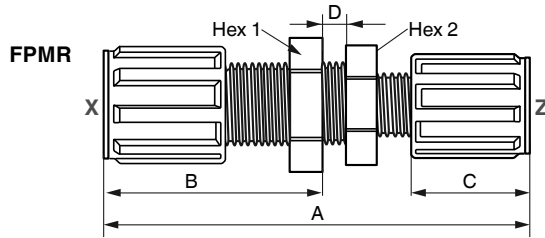
Order no.	Tube outside diameter	Orifice	A	B	C	D	E max.	Hex1	Hex2
FPM 75 4 4 30 HP	1/4"	3.30 (0.13")	80.1 (3.15")	43.2 (1.70")	7.0 (0.28")	29.9 (1.17")	9.3 (0.37")	1 1/16"	1 1/16"
FPM 75 6 6 30 HP	3/8"	6.35 (0.25")	82.4 (3.24")	44.5 (1.75")	7.0 (0.28")	30.9 (1.21")	9.5 (0.37")	15/16"	13/16"
FPM 75 8 8 30 HP	1/2"	9.65 (0.63")	89.3 (3.52")	89.3 (3.52")	7.0 (0.28")	47.9 (1.88")	9.0 (0.35")	1 1/16"	15/16"
FPM 75 12 12 30 HP	3/4"	16.00 (0.63")	98.3 (3.87")	98.3 (3.87")	7.0 (0.28")	52.4 (2.06")	9.5 (0.37")	1 5/16"	1 3/16"
FPM 75 16 16 30 HP	1"	22.10 (0.87")	112.0 (4.41")	112.0 (4.41")	7.0 (0.28")	59.2 (2.33")	9.7 (0.38")	1 3/4"	1 7/16"



Panel mount union, flare (extended version), PFA

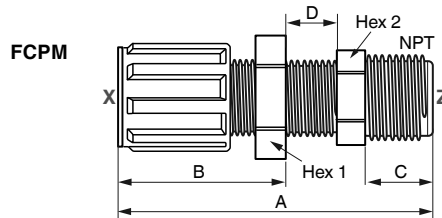
Order no.	O.D. Tube size	Orifice	A	B	C	D	E max.	Hex1	Hex2
FPMX 75 4 4 30 HP	1/4"	3.30 (0.13")	85.8 (3.37")	48.9 (1.92")	7.0 (0.28")	29.9 (1.17")	13.3 (0.52")	1 1/16"	1 1/16"
FPMX 75 6 6 30 HP	3/8"	6.35 (0.25")	87.9 (3.46")	50.0 (1.96")	7.0 (0.28")	30.90 (1.21")	14.8 (0.58")	1 5/16"	1 3/16"
FPMX 75 8 8 30 HP	1/2"	9.69 (0.38")	95.3 (3.75")	53.9 (2.12")	7.0 (0.28")	34.40 (1.35")	14.8 (0.58")	1 1/16"	15/16"
FPMX 75 12 12 30 HP	3/4"	16.00 (0.63")	103.8 (4.08")	57.9 (2.27")	7.0 (0.28")	37.90 (1.49")	15.6 (0.61")	1 5/16"	1 3/16"
FPMX 75 16 16 30 HP	1"	22.10 (0.87")	117.5 (4.62")	64.7 (2.54")	7.0 (0.28")	45.80 (1.80")	14.4 (0.56")	1 3/4"	1 7/16"

Dimensions mm (inch)



Panel mount reducer, flare, PFA

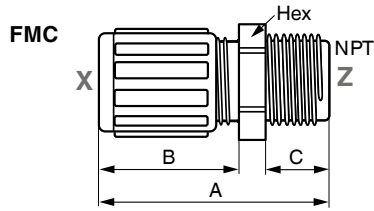
Order no.	Tube outside diameter		Orifice	A	B	C	D	Hex1	Hex2
FPMR 75 6 4 30 HP	3/8"	1/4"	3.8 (0.15")	88.90 (3.50")	51.56 (2.03")	29.97 (1.18")	12.7 (0.50")	15/16"	13/16"
FPMR 75 8 4 30 HP	1/2"	1/4"	3.8 (0.15")	92.20 (3.63")	54.86 (2.16")	29.97 (1.18")	12.7 (0.50")	1 1/16"	15/16"
FPMR 75 8 6 30 HP	1/2"	3/8"	6.4 (0.25")	94.74 (3.73")	54.86 (2.16")	32.51 (1.28")	12.7 (0.50")	1 1/16"	15/16"
FPMR 75 12 6 30 HP	3/4"	3/8"	6.4 (0.25")	97.79 (3.85")	57.91 (2.28")	32.51 (1.28")	12.7 (0.50")	1 5/16"	1 3/16"
FPMR 75 12 8 30 HP	3/4"	1/2"	9.7 (0.38")	101.09 (3.98")	57.91 (2.28")	35.05 (1.38")	12.7 (0.50")	1 5/16"	1 3/16"
FPMR 75 16 12 30 HP	1"	3/4"	16.0 (0.63")	109.47 (4.31")	64.01 (2.52")	38.10 (1.50")	12.7 (0.50")	1 3/4"	1 5/8"



Panel mount adapter, flare/NPT male thread, PFA

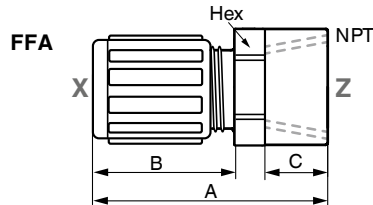
Order no.	Tube outside diameter X	NPT male thread Z	Orifice	A	B	C	D	Hex1	Hex2
FCPM 75 4 2 30 HP	1/4"	1/8"	3.8 (0.15")	71.12 (2.80")	49.78 (1.96")	13.97 (0.55")	12.70 (0.50")	3/4"	11/16"
FCPM 75 4 4 30 HP	1/4"	1/4"	3.8 (0.15")	71.12 (2.80")	49.78 (1.96")	13.97 (0.55")	12.70 (0.50")	3/4"	11/16"
FCPM 75 6 6 30 HP	3/8"	3/8"	6.4 (0.25")	72.90 (2.87")	51.56 (2.03")	13.97 (0.55")	12.70 (0.50")	15/16"	13/16"
FCPM 75 8 4 30 HP	1/2"	1/4"	9.7 (0.38")	75.95 (2.99")	54.86 (2.16")	13.97 (0.55")	12.70 (0.50")	1 1/16"	15/16"
FCPM 75 8 8 30 HP	1/2"	1/2"	9.7 (0.38")	78.99 (3.11")	54.86 (2.16")	16.76 (0.66")	12.70 (0.50")	1 1/16"	15/16"
FCPM 75 12 12 30 HP	3/4"	3/4"	16.0 (0.63")	82.30 (3.24")	57.91 (2.28")	17.02 (0.67")	12.70 (0.50")	1 5/16"	1 3/16"
FCPM 75 16 16 30 HP	1"	1"	22.4 (0.88")	92.96 (3.66")	64.01 (2.52")	21.59 (0.85")	12.70 (0.50")	1 3/4"	1 5/8"

Dimensions mm (inch)



Straight adapter, flare/NPT male thread, PFA

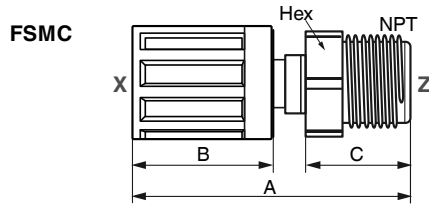
Order no.	Tube outside diameter X	NPT male thread Z	Orifice	A	B	C	Hex
FMC 75 4 2 30 HP	1/4"	1/8"	3.30 (0.13")	50.40 (1.98")	29.40 (1.16")	14.00 (0.55")	5/8"
FMC 75 4 4 30 HP	1/4"	1/4"	3.30 (0.13")	49.90 (1.96")	28.90 (1.14")	14.00 (0.55")	5/8"
FMC 75 4 6 30 HP	1/4"	3/8"	3.81 (0.15")	50.80 (2.00")	29.46 (1.16")	13.97 (0.55")	11/16"
FMC 75 4 8 30 HP	1/4"	1/2"	3.81 (0.15")	53.85 (2.12")	29.46 (1.16")	16.76 (0.66")	13/16"
FMC 75 6 4 30 HP	3/8"	1/4"	6.35 (0.25")	51.80 (2.04")	30.50 (1.20")	14.30 (0.56")	15/16"
FMC 75 6 6 30 HP	3/8"	3/8"	6.35 (0.25")	52.20 (2.06")	30.90 (1.22")	14.30 (0.56")	15/16"
FMC 75 6 8 30 HP	3/8"	1/2"	6.35 (0.25")	54.50 (2.15")	30.90 (1.22")	17.00 (0.66")	15/16"
FMC 75 6 12 30 HP	3/8"	3/4"	6.35 (0.25")	56.39 (2.22")	32.26 (1.27")	16.76 (0.66")	1 3/16"
FMC 75 6 16 30 HP	3/8"	1"	6.35 (0.25")	60.71 (2.39")	32.26 (1.27")	21.59 (0.85")	1 7/16"
FMC 75 8 4 30 HP	1/2"	1/4"	5.84 (0.23")	54.90 (2.16")	33.90 (1.33")	14.00 (0.55")	15/16"
FMC 75 8 6 30 HP	1/2"	3/8"	7.85 (0.31")	55.20 (2.17")	33.40 (1.31")	13.80 (0.54")	15/16"
FMC 75 8 8 30 HP	1/2"	1/2"	9.65 (0.38")	57.90 (2.28")	33.10 (1.31")	16.80 (0.66")	15/16"
FMC 75 8 12 30 HP	1/2"	3/4"	9.65 (0.38")	58.93 (2.32")	34.54 (1.36")	16.76 (0.66")	1 3/16"
FMC 75 8 16 30 HP	1/2"	1"	9.65 (0.38")	63.75 (2.51")	34.54 (1.36")	21.84 (0.86")	1 7/16"
FMC 75 12 6 30 HP	3/4"	3/8"	9.65 (0.38")	60.20 (2.37")	38.61 (1.52")	14.22 (0.56")	15/16"
FMC 75 12 8 30 HP	3/4"	1/2"	10.90 (0.43")	62.50 (2.46")	37.90 (1.49")	17.60 (0.69")	1 3/16"
FMC 75 12 12 30 HP	3/4"	3/4"	15.75 (0.62")	62.50 (2.46")	37.90 (1.49")	17.60 (0.69")	1 3/16"
FMC 75 12 16 30 HP	3/4"	1"	16.00 (0.63")	67.56 (2.66")	38.61 (1.52")	21.59 (0.85")	1 7/16"
FMC 75 16 8 30 HP	1"	1/2"	12.80 (0.51")	68.33 (2.69")	43.94 (1.73")	17.02 (0.67")	1 7/16"
FMC 75 16 12 30 HP	1"	3/4"	15.75 (0.62")	69.00 (2.72")	45.00 (1.77")	17.00 (0.66")	1 7/16"
FMC 75 16 16 30 HP	1"	1"	15.75 (0.62")	74.40 (2.93")	45.80 (1.80")	21.60 (0.85")	1 7/16"
FMC 75 20 16 30 HP	1 1/4"	1"	27.90 (1.09")	89.20 (3.51")	50.20 (1.98")	21.60 (0.85")	



Straight adapter, flare/NPT female thread, PFA

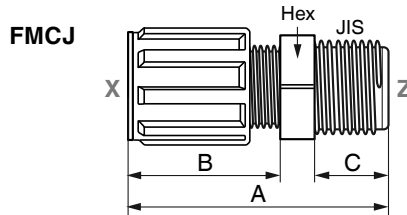
Order no.	Tube outside diameter X	NPT female thread Z	Orifice	A	B	C	Hex
FFA 75 4 4 30 HP	1/4"	1/4"	3.30 (0.13")	51.90 (2.04")	28.90 (1.13")	16.00 (0.63")	3/4"
FFA 75 4 6 30 HP	1/4"	3/8"	3.30 (0.13")	51.90 (2.04")	28.90 (1.13")	16.00 (0.63")	1 5/16"
FFA 75 4 8 30 HP	1/4"	1/2"	3.30 (0.13")	51.90 (2.04")	28.90 (1.13")	16.00 (0.63")	1 3/16"
FFA 75 6 4 30 HP	3/8"	1/4"	6.40 (0.25")	55.00 (2.16")	32.00 (1.26")	16.00 (0.63")	3/4"
FFA 75 6 6 30 HP	3/8"	3/8"	6.40 (0.25")	55.00 (2.16")	32.00 (1.26")	16.00 (0.63")	1 5/16"
FFA 75 6 8 30 HP	3/8"	1/2"	6.40 (0.25")	55.00 (2.16")	32.00 (1.26")	16.00 (0.63")	1"
FFA 75 8 4 30 HP	1/2"	1/4"	9.03 (0.35")	58.40 (2.30")	35.40 (1.39")	16.00 (0.63")	3/4"
FFA 75 8 6 30 HP	1/2"	3/8"	9.55 (0.38")	58.30 (2.30")	35.30 (1.39")	16.00 (0.63")	15/16"
FFA 75 8 8 30 HP	1/2"	1/2"	9.03 (0.35")	58.40 (2.30")	35.40 (1.39")	16.00 (0.63")	1 1/8"
FFA 75 8 12 30 HP	1/2"	3/4"	9.55 (0.38")	59.30 (2.33")	35.30 (1.39")	17.00 (0.66")	1 3/16"
FFA 75 12 8 30 HP	3/4"	1/2"	15.36 (0.60")	61.40 (2.42")	37.40 (1.47")	17.00 (0.66")	1 3/16"
FFA 75 12 12 30 HP	3/4"	3/4"	15.36 (0.60")	61.40 (2.42")	37.40 (1.47")	17.00 (0.66")	1 3/16"
FFA 75 12 16 30 HP	3/4"	1"	16.00 (0.63")	67.56 (2.66")	38.61 (1.52")	21.59 (0.85")	1 5/8"
FFA 75 16 16 30 HP	1"	1"	22.25 (0.86")	73.10 (2.88")	45.60 (1.80")	20.00 (0.79")	1 5/8"

Dimensions mm (inch)



Straight adapter, space saver/NPT male thread, PFA

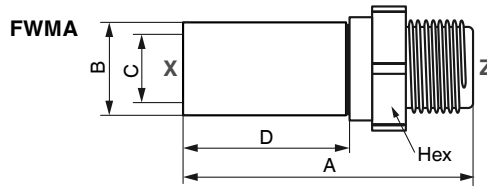
Order no.	Tube outside diameter X	NPT male thread Z	Orifice	A	B	C	Hex
FSMC 75 X4 4 30 HP	1/4"	1/4"	3.80 (0.15")	54.10 (2.13")	32.77 (1.29")	13.97 (0.55")	5/8"
FSMC 75 X4 6 30 HP	1/4"	3/8"	3.80 (0.15")	54.10 (2.13")	32.77 (1.29")	13.97 (0.55")	13/16"
FSMC 75 X6 6 30 HP	3/8"	3/8"	6.40 (0.25")	56.13 (2.21")	34.80 (1.37")	13.97 (0.55")	13/16"
FSMC 75 X8 6 30 HP	1/2"	3/8"	9.70 (0.38")	57.40 (2.26")	36.07 (1.42")	13.97 (0.55")	13/16"
FSMC 75 X8 8 30 HP	1/2"	1/2"	9.70 (0.38")	60.20 (2.37")	36.07 (1.42")	16.76 (0.66")	15/16"
FSMC 75 X12 8 30 HP	3/4"	1/2"	14.00 (0.55")	65.02 (2.56")	40.64 (1.60")	16.76 (0.66")	1 3/16"
FSMC 75 X12 12 30 HP	3/4"	3/4"	16.00 (0.63")	65.28 (2.57")	40.64 (1.60")	17.02 (0.67")	1 3/16"
FSMC 75 X12 16 30 HP	3/4"	1"	16.00 (0.63")	65.28 (2.57")	40.64 (1.60")	17.02 (0.67")	1 3/16"



Straight adapter, flare/JIS male thread, PFA

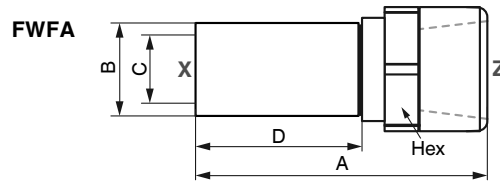
Order no.	Tube outside diameter X	JIS male thread Z	Orifice	A	B	C	Hex
FMCJ 75 4 4 30 HP	1/4"	1/4"	3.80 (0.15")	51.31 (2.02")	29.97 (1.18")	13.97 (0.55")	5/8"
FMCJ 75 4 6 30 HP	1/4"	3/8"	3.80 (0.15")	51.31 (2.02")	29.97 (1.18")	13.97 (0.55")	11/16"
FMCJ 75 4 8 30 HP	1/4"	1/2"	3.80 (0.15")	54.10 (2.13")	29.97 (1.18")	16.76 (0.66")	15/16"
FMCJ 75 6 4 30 HP	3/8"	1/4"	6.40 (0.25")	53.85 (2.12")	32.51 (1.28")	13.97 (0.55")	13/16"
FMCJ 75 6 6 30 HP	3/8"	3/8"	6.40 (0.25")	53.85 (2.12")	32.51 (1.28")	13.97 (0.55")	13/16"
FMCJ 75 6 8 30 HP	3/8"	1/2"	6.40 (0.25")	56.64 (2.23")	32.51 (1.28")	16.76 (0.66")	15/16"
FMCJ 75 8 4 30 HP	1/2"	1/4"	9.70 (0.38")	56.39 (2.22")	35.05 (1.38")	13.97 (0.55")	15/16"
FMCJ 75 8 6 30 HP	1/2"	3/8"	9.70 (0.38")	56.39 (2.22")	35.05 (1.38")	13.97 (0.55")	15/16"
FMCJ 75 8 8 30 HP	1/2"	1/2"	9.70 (0.38")	59.18 (2.33")	35.05 (1.38")	16.76 (0.66")	15/16"
FMCJ 75 8 12 30 HP	1/2"	3/4"	9.70 (0.38")	59.44 (2.34")	35.05 (1.38")	17.02 (0.67")	1 3/16"
FMCJ 75 12 8 30 HP	3/4"	1/2"	14.00 (0.55")	62.23 (2.45")	38.10 (1.50")	16.76 (0.66")	1 3/16"
FMCJ 75 12 12 30 HP	3/4"	3/4"	16.00 (0.63")	62.48 (2.46")	38.10 (1.50")	17.02 (0.67")	1 3/16"
FMCJ 75 12 16 30 HP	3/4"	1"	16.00 (0.63")	67.06 (2.64")	38.10 (1.50")	21.59 (0.85")	1 7/16"
FMCJ 75 16 12 30 HP	1"	3/4"	16.80 (0.66")	68.07 (2.68")	43.69 (1.72")	17.02 (0.67")	1 7/16"
FMCJ 75 16 16 30 HP	1"	1"	22.40 (0.88")	72.64 (2.86")	43.69 (1.72")	21.59 (0.85")	1 7/16"

Dimensions mm (inch)



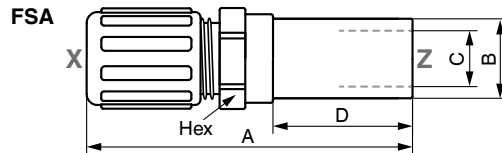
Straight adapter, butt weld spigot/NPT male thread, PFA

Order no.	Pipe X	NPT male thread Z	Orifice	A	B	C	D	Hex
FWMA 4 4 30 HP	1/4"	1/4"	7.1 (0.28")	45.21 (1.78")	13.72 (0.54")	8.89 (0.35")	19.05 (0.75")	5/8"
FWMA 8 6 30 HP	1/2"	3/8"	9.1 (0.36")	65.02 (2.56")	21.34 (0.84")	15.49 (0.61")	37.85 (1.49")	1"
FWMA 8 8 30 HP	1/2"	1/2"	13.0 (0.51")	67.56 (2.66")	21.34 (0.84")	15.49 (0.61")	37.85 (1.49")	1"
FWMA 12 8 30 HP	3/4"	1/2"	13.0 (0.51")	67.56 (2.66")	26.67 (1.05")	20.57 (0.81")	37.85 (1.49")	1 3/16"
FWMA 12 12 30 HP	3/4"	3/4"	16.8 (0.66")	68.07 (2.68")	26.67 (1.05")	20.57 (0.81")	37.85 (1.49")	1 3/16"
FWMA 16 16 30 HP	1"	1"	23.9 (0.94")	72.39 (2.85")	33.53 (1.32")	26.16 (1.03")	37.85 (1.49")	1 7/16"



Straight adapter, butt weld spigot/NPT female thread, PFA

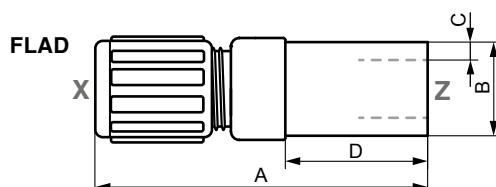
Order no.	Pipe X	NPT female thread Z	Orifice	A	B	C	D	Hex
FWFA 4 4 30 HP	1/4"	1/4"	8.6 (0.34")	47.24 (1.86")	13.72 (0.54")	8.89 (0.35")	19.05 (0.75")	3/4"
FWFA 8 6 30 HP	1/2"	3/8"	9.1 (0.36")	63.25 (2.49")	21.34 (0.84")	8.89 (0.35")	37.85 (1.49")	15/16"
FWFA 8 8 30 HP	1/2"	1/2"	13.0 (0.51")	66.04 (2.60")	21.34 (0.84")	15.49 (0.61")	37.85 (1.49")	1 1/8"
FWFA 12 12 30 HP	3/4"	3/4"	20.1 (0.79")	66.04 (2.60")	26.67 (1.05")	20.57 (0.81")	37.85 (1.49")	1 7/16"
FWFA 16 16 30 HP	1"	1"	25.2 (0.99")	65.28 (2.57")	33.53 (1.32")	26.16 (1.03")	37.85 (1.49")	1 7/8"



Straight adapter, flare/butt weld spigot, PFA

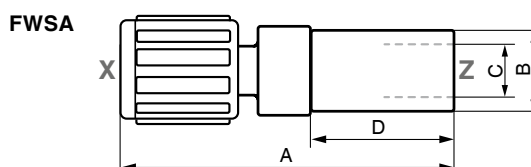
Order no.	Tube outside diameter X	Pipe size Z	Orifice	A	B	C	D	Hex
FSA 75 4 4 30 HP	1/4"	1/4"	3.20 (0.13")	50.70 (2.00")	13.70 (0.54")	9.00 (0.35")	14.00 (0.55")	11/16"
FSA 75 4 8 30 HP	1/4"	1/2"	3.30 (0.13")	81.40 (3.20")	21.30 (0.84")	15.80 (0.62")	38.00 (1.50")	1 5/16"
FSA 75 4 12 30 HP	1/4"	3/4"	3.30 (0.13")	81.40 (3.20")	26.70 (1.05")	20.90 (0.82")	38.00 (1.50")	1 3/16"
FSA 75 6 4 30 HP	3/8"	1/4"	6.38 (0.25")	52.90 (2.08")	13.70 (0.54")	9.00 (0.35")	14.00 (0.55")	13/16"
FSA 75 6 8 30 HP	3/8"	1/2"	6.35 (0.25")	84.50 (3.33")	21.30 (0.84")	15.80 (0.62")	38.00 (1.50")	1 5/16"
FSA 75 6 12 30 HP	3/8"	3/4"	6.35 (0.25")	84.50 (3.33")	26.70 (1.05")	20.90 (0.82")	38.00 (1.50")	1 3/16"
FSA 75 8 8 30 HP	1/2"	1/2"	9.65 (0.38")	85.90 (3.38")	21.30 (0.84")	15.80 (0.62")	38.00 (1.50")	15/16"
FSA 75 8 12 30 HP	1/2"	3/4"	9.55 (0.38")	86.60 (3.41")	26.70 (1.05")	20.50 (0.81")	37.80 (1.49")	1 3/16"
FSA 75 8 16 30 HP	1/2"	1"	9.55 (0.38")	67.30 (2.65")	33.40 (1.31")	26.30 (1.04")	18.50 (0.73")	1 7/16"
FSA 75 8 32 30 HP	1/2"	2"	9.55 (0.38")	98.40 (3.87")	60.30(2.37")	52.10 (2.05")	37.60 (1.48")	-
FSA 75 12 8 30 HP	3/4"	1/2"	16.00 (0.63")	86.90 (3.42")	21.30 (0.84")	15.80 (0.62")	38.00 (1.50")	1 3/16"
FSA 75 12 12 30 HP	3/4"	3/4"	16.00 (0.63")	89.90 (3.54")	26.70 (1.05")	20.90 (0.82")	38.00 (1.50")	1 3/16"
FSA 75 12 16 30 HP	3/4"	1"	15.90 (0.63")	90.10 (3.54")	33.40 (1.31")	26.30 (1.04")	38.00 (1.50")	1 7/16"
FSA 75 16 12 30 HP	1"	3/4"	16.00 (0.63")	97.50 (3.84")	26.70 (1.05")	20.90 (0.82")	38.00 (1.50")	1 7/16"
FSA 75 16 16 30 HP	1"	1"	22.10 (0.87")	97.50 (3.84")	33.40 (1.31")	26.30 (1.04")	38.00 (1.50")	1 7/16"
FSA 75 20 16 30 HP	1 1/4"	1"	25.40 (1.00")	105.20 (4.14")	33.40 (1.31")	26.30 (1.04")	38.00 (1.50")	-

Dimensions mm (inch)



Straight adapter, flare/butt weld spigot, PVDF (max. 120 °C)

Order no.	Tube outside diameter X	Pipe size Z	Orifice	A	B	C	D
FLAD 75 4 20 20 HP	1/4"	20.00 (0.78")	3.30 (0.13")	83.40 (3.28")	20.00 (0.78")	1.90 (0.07")	38.10 (1.50")
FLAD 75 4 25 20 HP	1/4"	25.00 (0.98")	3.30 (0.13")	83.40 (3.28")	25.00 (0.98")	1.90 (0.07")	38.10 (1.50")
FLAD 75 6 20 20 HP	3/8"	20.00 (0.78")	6.35 (0.25")	85.70 (3.37")	20.00 (0.78")	1.90 (0.07")	38.10 (1.50")
FLAD 75 6 25 20 HP	3/8"	25.00 (0.98")	6.35 (0.25")	85.70 (3.37")	25.00 (0.98")	1.90 (0.07")	38.10 (1.50")
FLAD 75 8 20 20 HP	1/2"	20.00 (0.78")	9.65 (0.38")	87.10 (3.42")	20.00 (0.78")	1.90 (0.07")	38.10 (1.50")
FLAD 75 8 25 20 HP	1/2"	25.00 (0.98")	9.65 (0.38")	87.10 (3.42")	25.00 (0.98")	1.90 (0.07")	38.10 (1.50")
FLAD 75 8 32 20 HP	1/2"	32.00 (1.25")	9.65 (0.38")	87.10 (3.42")	32.00 (1.25")	2.4 (0.09")	38.10 (1.50")
FLAD 75 8 40 20 HP	1/2"	40.00 (1.57")	9.65 (0.38")	87.10 (3.42")	40.00 (1.57")	2.4 (0.09")	38.10 (1.50")
FLAD 75 12 20 20 HP	3/4"	20.00 (0.78")	16.00 (0.63")	91.30 (3.59")	20.00 (0.78")	1.90 (0.07")	38.10 (1.50")
FLAD 75 12 25 20 HP	3/4"	25.00 (0.98")	16.00 (0.63")	91.30 (3.59")	25.00 (0.98")	1.90 (0.07")	38.10 (1.50")
FLAD 75 12 32 20 HP	3/4"	32.00 (1.25")	16.00 (0.63")	91.30 (3.59")	32.00 (1.25")	2.4 (0.09")	38.10 (1.50")
FLAD 75 12 40 20 HP	3/4"	40.00 (1.57")	16.00 (0.63")	91.30 (3.59")	40.00 (1.57")	2.4 (0.09")	38.10 (1.50")
FLAD 75 16 25 20 HP	1"	25.00 (0.98")	22.10 (0.87")	95.40 (3.75")	25.00 (0.98")	1.90 (0.07")	38.10 (1.50")
FLAD 75 16 32 20 HP	1"	32.00 (1.25")	22.10 (0.87")	95.40 (3.75")	32.00 (1.25")	2.4 (0.09")	38.10 (1.50")
FLAD 75 16 40 20 HP	1"	40.00 (1.57")	22.10 (0.87")	95.40 (3.75")	40.00 (1.57")	2.4 (0.09")	38.10 (1.50")

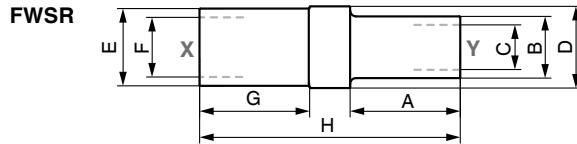


Straight adapter, space saver/butt weld spigot, PFA

Order no.	Tube outside diameter X	Pipe size Z	Orifice	A	B	C	D
FWSA 75 X4 4 30 HP	1/4"S*	1/4"	3.20 (0.13")	59.20 (2.33")	13.70 (0.54")	9.00 (0.35")	12.50 (0.49")
FWSA 75 X6 4 30 HP	3/8"S*	1/4"	6.38 (0.25")	60.90 (2.40")	9.55 (0.38")	6.38 (0.25")	25.00 (0.98")
FWSA 75 X6 8 30 HP	3/8"S*	1/2"	6.38 (0.25")	65.90 (2.60")	21.30 (0.84")	15.40 (0.61")	19.00 (0.75")
FWSA 75 X8 8 30 HP	1/2"S*	1/2"	9.65 (0.38")	87.50 (3.44")	21.30 (0.84")	15.80 (0.62")	38.00 (1.50")
FWSA 75 X8 12 30 HP	1/2"S*	3/4"	9.55 (0.38")	86.60 (3.41")	26.70 (1.05")	20.50 (0.81")	38.10 (1.50")
FWSA 75 X12 8 30 HP	3/4"S*	1/2"	15.40 (0.61")	93.90 (3.70")	21.30 (0.84")	15.40 (0.61")	38.00 (1.50")
FWSA 75 X12 12 30 HP	3/4"S*	3/4"	15.90 (0.63")	93.90 (3.70")	26.70 (1.05")	20.50 (0.81")	38.00 (1.50")
FWSA 75 X12 16 30 HP	3/4"S*	1"	15.90 (0.63")	73.90 (2.91")	33.40 (1.31")	26.30 (1.04")	19.00 (0.75")
FWSA 75 X16 12 30 HP	1"S*	3/4"	20.50 (0.80")	102.90 (4.05")	26.70 (1.05")	20.50 (0.81")	38.00 (1.50")
FWSA 75 X16 16 30 HP	1"S*	1"	22.10 (0.87")	103.90 (4.09")	33.40 (1.31")	26.60 (1.04")	38.00 (1.50")
FWSA 75 X20 16 30 HP	1 1/4"S*	1"	26.30 (1.04")	97.50 (3.84")	26.30 (1.04")	33.40 (1.31")	19.00 (0.75")

* S = SpaceSaver

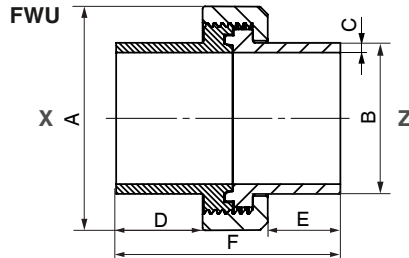
Dimensions mm (inch)



Straight reducer, butt weld spigot, PFA

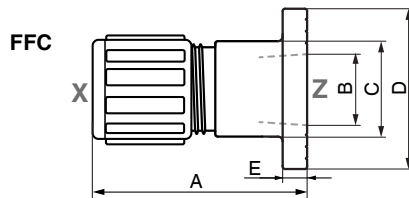
Order no.	Pipe size		Orifice	A	B	C	D
	X	Z					
FWSR 8 4 30 HP	1/2"	1/4"	9.00 (0.35")	14.00 (0.55")	13.70 (0.54")	9.00 (0.35")	24.00 (0.94")
FWSR 12 4 30 HP	3/4"	1/4"	9.00 (0.35")	14.00 (0.55")	13.70 (0.54")	9.00 (0.35")	28.20 (1.11")
FWSR 12 8 30 HP	3/4"	1/2"	15.40 (0.60")	38.00 (1.50")	21.30 (0.84")	15.80 (0.62")	28.60 (1.12")
FWSR 16 4 30 HP	1"	1/4"	9.00 (0.35")	33.00 (1.29")	13.70 (0.54")	9.20 (0.36")	35.60 (1.40")
FWSR 16 8 30 HP	1"	1/2"	15.40 (0.60")	38.00 (1.50")	21.30 (0.84")	15.80 (0.62")	35.60 (1.40")
FWSR 16 12 30 HP	1"	3/4"	20.60 (0.81")	38.00 (1.50")	26.70 (1.05")	20.90 (0.82")	35.60 (1.40")
FWSR 32 8 30 HP	2"	1/2"	15.40 (0.60")	38.00 (1.50")	21.30 (0.84")	15.40 (0.61")	65.00 (2.56")
FWSR 32 12 30 HP	2"	3/4"	20.60 (0.81")	38.10 (1.50")	26.70 (1.05")	20.50 (0.81")	65.00 (2.56")
FWSR 32 16 30 HP	2"	1"	26.30 (1.04")	38.10 (1.50")	33.40 (1.31")	26.30 (1.04")	65.00 (2.56")
FWSR 32 24 30 HP	2"	1 1/2"	40.90 (1.61")	25.97 (1.02")	48.30 (1.90")	40.90 (1.61")	60.30 (2.37")

Order no.	Pipe size		Orifice	E	F	G	H
	X	Z					
FWSR 8 4 30 HP	1/2"	1/4"	9.00 (0.35")	21.30 (0.84")	15.40 (0.61")	38.10 (1.50")	64.80 (2.55")
FWSR 12 4 30 HP	3/4"	1/4"	9.00 (0.35")	26.70 (1.05")	20.50 (0.81")	38.10 (1.50")	64.80 (2.55")
FWSR 12 8 30 HP	3/4"	1/2"	15.40 (0.60")	26.70 (1.05")	20.90 (0.82")	38.00 (1.50")	90.00 (3.54")
FWSR 16 4 30 HP	1"	1/4"	9.00 (0.35")	33.40 (1.31")	26.60 (1.04")	38.00 (1.50")	85.00 (3.34")
FWSR 16 8 30 HP	1"	1/2"	15.40 (0.60")	33.40 (1.31")	26.60 (1.04")	38.00 (1.50")	90.00 (3.54")
FWSR 16 12 30 HP	1"	3/4"	20.60 (0.81")	33.40 (1.31")	26.60 (1.04")	38.00 (1.50")	90.00 (3.54")
FWSR 32 8 30 HP	2"	1/2"	15.40 (0.60")	60.30 (2.37")	52.10 (2.05")	38.00 (1.50")	111.00 (4.37")
FWSR 32 12 30 HP	2"	3/4"	20.60 (0.81")	60.30 (2.37")	52.10 (2.05")	38.10 (1.50")	111.30 (4.38")
FWSR 32 16 30 HP	2"	1"	26.30 (1.04")	60.30 (2.37")	52.10 (2.05")	38.10 (1.50")	111.30 (4.38")
FWSR 32 24 30 HP	2"	1 1/2"	40.90 (1.61")	60.30 (2.37")	52.50 (2.07")	15.47 (0.61")	65.00 (2.56")



O-ring free union, PFA

Order no.	Pipe size	Orifice	A	B	C	D	E	F
FWU 20 32 32 30 HP	2"	52.1 (2.05")	89.5 (3.52")	60.3 (2.37")	3.9 (0.15")	29.0 (1.14")	34.0 (1.34")	89.4 (3.52")
FWU 27 32 32 30 HP	2"	52.1 (2.05")	89.5 (3.52")	60.3 (2.37")	3.9 (0.15")	29.0 (1.14")	34.0 (1.34")	89.4 (3.52")

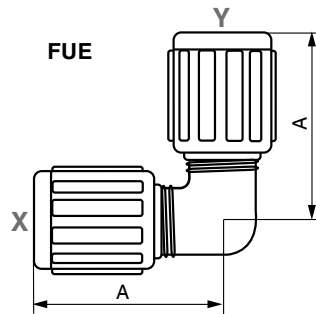


Straight adapter, flare/DIN flange adapter, PTFE

Order no.	Tube outside diameter X	DIN Flange-adapter Z	Orifice	A	B	C	D	E
FFC 75 16 25 26 HP	1"	DN 25	22.10 (0.87")	86.00 (3.39")	28.00 (1.10")	41.00 (1.61")	68.00 (2.67")	10.00 (0.39")
FFC 75 16 40 26 HP	1"	DN 40	22.25 (0.88")	91.10 (3.59")	45.00 (1.77")	61.00 (2.40")	88.00 (3.46")	12.00 (0.47")
FFC 75 16 50 26 HP	1"	DN 50	22.25 (0.88")	102.10 (4.02")	57.00 (2.24")	76.00 (2.99")	102.00 (4.02")	14.00 (0.55")

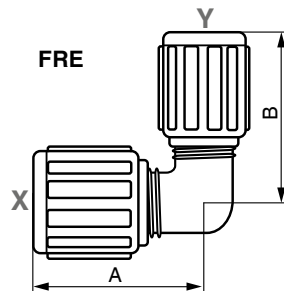
FlareStar® Elbow fittings

Dimensions mm (inch)



Union elbow, flare, PFA

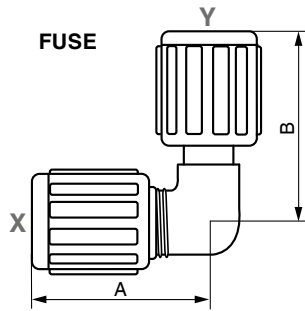
Order no.	Tube outside diameter	Orifice	A
FUE 75 4 4 30 HP	1/4"	3.30 (0.13")	40.30 (1.59")
FUE 75 6 6 30 HP	3/8"	6.35 (0.25")	45.50 (1.75")
FUE 75 8 8 30 HP	1/2"	9.65 (0.38")	46.40 (1.83")
FUE 75 12 12 30 HP	3/4"	16.00 (0.63")	53.20 (2.09")
FUE 75 16 16 30 HP	1"	22.10 (0.87")	68.90 (2.71")
FUE 75 20 20 30 HP	1 1/4"	27.90 (1.09")	86.20 (3.39")



Reducer elbow, flare, PFA

Order no.	Tube outside diameter		Orifice	A	B
	X	Y			
FRE 75 6 4 30 HP	3/8"	1/4"	3.30 (0.13")	40.50 (1.59")	43.90 (1.73")
FRE 75 8 4 30 HP	1/2"	1/4"	3.81 (0.15")	46.74 (1.87")	42.16 (1.66")
FRE 75 8 6 30 HP	1/2"	3/8"	6.35 (0.25")	44.90 (1.77")	45.90 (1.81")
FRE 75 12 6 30 HP	3/4"	3/8"	6.35 (0.25")	56.80 (2.24")	48.70 (1.92")
FRE 75 12 8 30 HP	3/4"	1/2"	9.65 (0.38")	50.90 (2.00")	50.90 (2.00")
FRE 75 16 8 30 HP	1"	1/2"	9.65 (0.38")	68.58 (2.70")	51.56 (2.03")
FRE 75 16 12 30 HP	1"	3/4"	16.00 (0.63")	69.40 (2.73")	62.70 (2.47")
FRE 75 20 16 30 HP	1 1/4"	1"	22.10 (0.87")	85.20 (3.35")	70.00 (2.76")

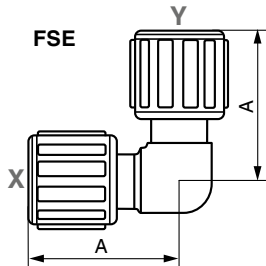
Dimensions mm (inch)



Union elbow, flare/space saver, PFA

Order no.	Tube outside diameter		Orifice	A	B
	X	Y			
FUSE 75 4 Y4 30 HP	1/4"	1/4"S*	3.81 (0.15")	41.91 (1.65")	41.66 (1.64")
FUSE 75 6 Y6 30 HP	3/8"	3/8"S*	6.35 (0.25")	45.50 (1.75")	46.20 (1.82")
FUSE 75 8 Y8 30 HP	1/2"	1/2"S*	9.65 (0.38")	46.90 (1.84")	48.90 (1.93")
FUSE 75 12 Y12 30 HP	3/4"	3/4"S*	16.00 (0.63")	55.90 (2.20")	58.90 (2.32")
FUSE 75 16 Y16 30 HP	1"	1"S*	22.10 (0.87")	69.00 (2.71")	78.30 (3.08")
FUSE 75 20 Y20 30 HP	1 1/4"	1 1/4"S*	27.90 (1.09")	81.20 (3.19")	83.50 (3.29")

* S = SpaceSaver

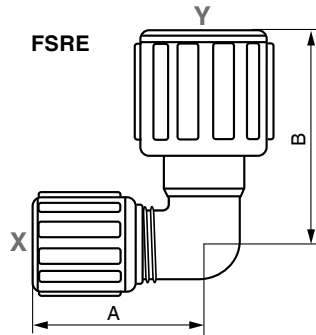


Union elbow, space saver, PFA

Order no.	Tube outside diameter	Orifice	A
FSE 75 X4 Y4 30 HP	1/4"S*	3.30 (0.13")	40.20 (1.58")
FSE 75 X6 Y6 30 HP	3/8"S*	6.35 (0.25")	43.90 (1.73")
FSE 75 X8 Y8 30 HP	1/2"S*	9.65 (0.38")	49.00 (1.93")
FSE 75 X12 Y12 30 HP	3/4"S*	16.00 (0.63")	57.90 (2.28")
FSE 75 X16 Y16 30 HP	1"S*	22.10 (0.87")	69.90 (2.75")
FSE 75 X20 Y20 30 HP	1 1/4"S*	27.90 (1.09")	88.50 (3.48")

* S = SpaceSaver

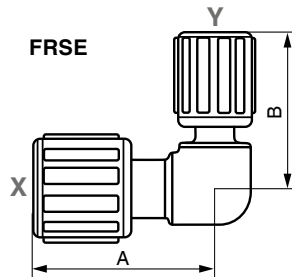
Dimensions mm (inch)



Reducer elbow, flare/space saver, PFA

Order no.	Tube outside diameter		Orifice	A	B
	X	Y			
FSRE 75 4 Y6 30 HP	1/4"	3/8"S*	3.30 (0.13")	40.90 (1.61")	43.90 (1.73")
FSRE 75 4 Y8 30 HP	1/4"	1/2"S*	3.30 (0.13")	40.90 (1.61")	49.00 (1.93")
FSRE 75 6 Y4 30 HP	3/8"	1/4"S*	3.30 (0.13")	44.50 (1.75")	40.20 (1.58")
FSRE 75 6 Y8 30 HP	3/8"	1/2"S*	6.35 (0.25")	44.50 (1.75")	49.00 (1.93")
FSRE 75 6 Y12 30 HP	3/8"	3/4"S*	6.35 (0.25")	44.50 (1.75")	57.90 (2.28")
FSRE 75 8 Y6 30 HP	1/2"	3/8"S*	6.35 (0.25")	45.90 (1.81")	43.90 (1.73")
FSRE 75 8 Y12 30 HP	1/2"	3/4"S*	9.65 (0.38")	45.90 (1.81")	57.90 (2.28")
FSRE 75 8 Y16 30 HP	1/2"	1"S*	9.65 (0.38")	45.90 (1.81")	69.90 (2.75")
FSRE 75 12 Y16 30 HP	3/4"	1"S*	16.00 (0.63")	52.90 (2.08")	69.90 (2.75")
FSRE 75 16 Y12 30 HP	1"	3/4"S*	16.00 (0.63")	61.00 (2.40")	57.90 (2.28")
FSRE 75 16 Y20 30 HP	1"	1 1/4"S*	22.10 (0.87")	70.00 (2.76")	88.50 (3.48")
FSRE 75 20 Y16 30 HP	1 1/4"	1"S*	22.10 (0.87")	70.20 (2.76")	94.90 (3.74")

* S = SpaceSaver

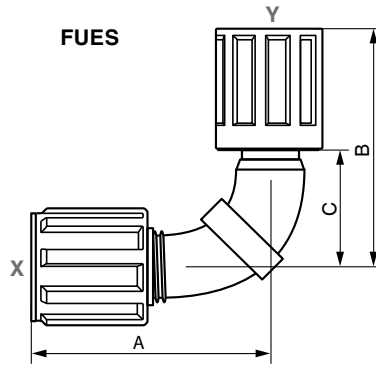


Reducer elbow, space saver

Order no.	Tube outside diameter		Orifice	A	B
	X	Y			
FRSE 75 X6 Y4 30 HP	3/8"S*	1/4"S*	3.20 (0.13")	44.10 (1.74")	42.20 (1.66")
FRSE 75 X8 Y6 30 HP	1/2"S*	3/8"S*	6.38 (0.25")	49.00 (1.93")	47.40 (1.87")
FRSE 75 X12 Y8 30 HP	3/4"S*	1/2"S*	9.65 (0.38")	57.90 (2.27")	50.50 (1.98")
FRSE 75 X16 Y12 30 HP	1"S*	3/4"S*	16.00 (0.63")	69.90 (2.75")	60.90 (2.39")
FRSE 75 X20 Y16 30 HP	1 1/4"S*	1"S*	22.10 (0.87")	88.50 (3.48")	74.90 (2.94")

* S = SpaceSaver

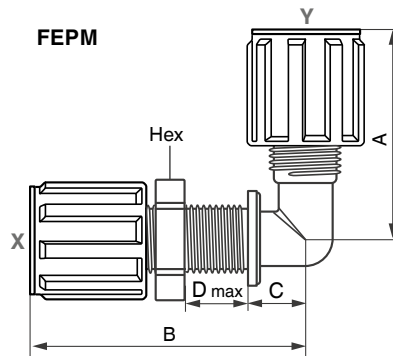
Dimensions mm (inch)



Union elbow sweep, flare and/or space saver, PFA

Order no.	Tube outside diameter		Orifice	A	B	C
FUES 75 4 4 30 HP	1/4"	1/4"	3.80 (0.15")	41.15 (1.62")	41.15 (1.62")	-
FUES 75 6 6 30 HP	3/8"	3/8"	6.40 (0.25")	46.48 (1.83")	46.48 (1.83")	-
FUES 75 8 8 30 HP	1/2"	1/2"	9.70 (0.38")	52.07 (2.05")	52.07 (2.05")	-
FUES 75 12 12 30 HP	3/4"	3/4"	16.00 (0.63")	59.18 (2.33")	59.18 (2.33")	-
FUES 75 16 16 30 HP	1"	1"	22.40 (0.88")	70.61 (2.78")	70.61 (2.78")	-
FUES 75 4 Y4 30 HP	1/4"	1/4"S*	3.80 (0.15")	41.15 (1.62")	45.21 (1.78")	20.07 (0.79")
FUES 75 6 Y6 30 HP	3/8"	3/8"S*	6.40 (0.25")	46.48 (1.83")	50.04 (1.97")	23.62 (0.93")
FUES 75 8 Y8 30 HP	1/2"	1/2"S*	9.70 (0.38")	52.07 (2.05")	54.61 (2.15")	26.67 (1.05")
FUES 75 12 Y12 30 HP	3/4"	3/4"S*	16.00 (0.63")	59.18 (2.33")	65.02 (2.56")	33.27 (1.31")
FUES 75 16 Y16 30 HP	1"	1"S*	22.40 (0.88")	70.61 (2.78")	81.79 (3.22")	43.69 (1.72")
FUES 75 X4 Y4 30 HP	1/4"S*	1/4"S*	3.80 (0.15")	45.21 (1.78")	45.21 (1.78")	20.07 (0.79")
FUES 75 X6 Y6 30 HP	3/8"S*	3/8"S*	6.40 (0.25")	50.04 (1.97")	50.04 (1.97")	23.62 (0.93")
FUES 75 X8 Y8 30 HP	1/2"S*	1/2"S*	9.70 (0.38")	54.61 (2.15")	54.61 (2.15")	26.67 (1.05")
FUES 75 X12 Y12 30 HP	3/4"S*	3/4"S*	16.00 (0.63")	65.02 (2.56")	65.02 (2.56")	33.27 (1.31")
FUES 75 X16 Y16 30 HP	1"S*	1"S*	22.40 (0.88")	81.79 (3.22")	81.79 (3.22")	43.69 (1.72")

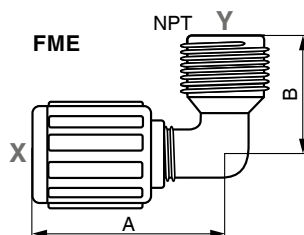
* S = SpaceSaver



Panel mount elbow, flare, PFA

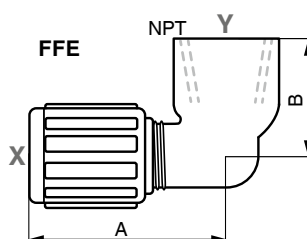
Order no.	Tube outside diameter		Orifice	A	B	C	D	Hex	Min. panel hole ϕ
FEPM 75 4 4 30 HP	1/4"	1/4"	3.80 (0.15")	42.16 (1.66")	46.99 (1.85")	12.95 (0.51")	12.70 (0.50")	3/4"	12.70
FEPM 75 6 6 30 HP	3/8"	3/8"	6.40 (0.25")	44.96 (1.77")	49.78 (1.96")	12.95 (0.51")	12.70 (0.50")	15/16"	15.90
FEPM 75 8 8 30 HP	1/2"	1/2"	9.70 (0.38")	47.75 (1.88")	49.28 (1.94")	16.76 (0.66")	12.70 (0.50")	1 1/16"	19.10
FEPM 75 12 12 30 HP	3/4"	3/4"	16.00 (0.63")	56.13 (2.21")	56.13 (2.21")	21.34 (0.84")	12.70 (0.50")	1 5/16"	25.40

Dimensions mm (inch)



Elbow adapter, flare/NPT male thread, PFA

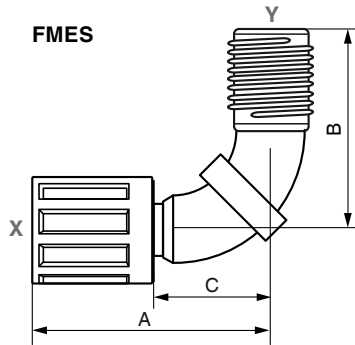
Order no.	Tube outside diameter X	NPT male thread Y	Orifice	A	B
FME 75 4 4 30 HP	1/4"	1/4"	3.30 (0.13")	40.90 (1.61")	28.50 (1.12")
FME 75 4 8 30 HP	1/4"	1/2"	3.81 (0.15")	42.16 (1.66")	29.72 (1.17")
FME 75 6 4 30 HP	3/8"	1/4"	6.00 (0.23")	44.00 (1.73")	28.50 (1.12")
FME 75 6 6 30 HP	3/8"	3/8"	6.35 (0.25")	44.00 (1.73")	28.50 (1.12")
FME 75 6 8 30 HP	3/8"	1/2"	6.35 (0.25")	44.50 (1.75")	31.50 (1.24")
FME 75 6 12 30 HP	3/8"	3/4"	6.35 (0.25")	49.50 (1.95")	36.15 (1.42")
FME 75 8 6 30 HP	1/2"	3/8"	9.65 (0.38")	46.40 (1.83")	28.50 (1.12")
FME 75 8 8 30 HP	1/2"	1/2"	9.65 (0.38")	46.40 (1.83")	31.50 (1.24")
FME 75 8 12 30 HP	1/2"	3/4"	9.65 (0.38")	50.90 (2.00")	36.00 (1.42")
FME 75 12 8 30 HP	3/4"	1/2"	10.80 (0.43")	54.90 (2.16")	36.50 (1.44")
FME 75 12 12 30 HP	3/4"	3/4"	16.00 (0.63")	54.90 (2.16")	35.00 (1.38")
FME 75 12 16 30 HP	3/4"	1"	16.00 (0.63")	56.13 (0.63")	45.72 (1.80")
FME 75 16 12 30 HP	1"	3/4"	16.76 (0.66")	68.58 (2.70")	41.66 (1.64")
FME 75 16 16 30 HP	1"	1"	22.10 (0.87")	69.00 (2.72")	45.70 (1.80")



Female elbow, flare/NPT female thread

Order no.	Tube outside diameter X	NPT female thread Y	Orifice	A	B
FFE 75 4 2 30 HP	1/4"	1/8"	3.80 (0.15")	44.96 (1.77")	20.57 (0.81")
FFE 75 4 4 30 HP	1/4"	1/4"	3.80 (0.15")	44.96 (1.77")	23.88 (0.94")
FFE 75 4 6 30 HP	1/4"	3/8"	3.80 (0.15")	44.96 (1.77")	25.40 (1.00")
FFE 75 4 8 30 HP	1/4"	1/2"	3.80 (0.15")	45.97 (1.81")	31.24 (1.23")
FFE 75 6 4 30 HP	3/8"	1/4"	6.40 (0.25")	48.01 (1.89")	23.88 (0.94")
FFE 75 6 6 30 HP	3/8"	3/8"	6.40 (0.25")	48.01 (1.89")	25.40 (1.00")
FFE 75 6 8 30 HP	3/8"	1/2"	6.40 (0.25")	48.01 (1.89")	31.24 (1.23")
FFE 75 8 4 30 HP	1/2"	1/4"	9.10 (0.36")	50.55 (1.99")	24.38 (0.96")
FFE 75 8 6 30 HP	1/2"	3/8"	9.70 (0.38")	50.55 (1.99")	25.40 (1.00")
FFE 75 8 8 30 HP	1/2"	1/2"	9.56 (0.38")	50.90 (2.00")	31.00 (1.22")
FFE 75 8 12 30 HP	1/2"	3/4"	9.70 (0.38")	51.82 (2.04")	38.86 (1.53")
FFE 75 12 8 30 HP	3/4"	1/2"	13.72 (0.54")	56.39 (2.22")	36.58 (1.44")
FFE 75 12 12 30 HP	3/4"	3/4"	16.00 (0.63")	56.64 (2.23")	38.86 (1.53")
FFE 75 16 16 30 HP	1"	1"	22.40 (0.88")	68.58 (2.70")	40.64 (1.60")

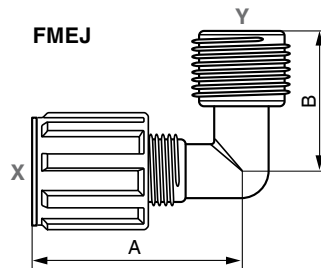
Dimensions mm (inch)



Elbow sweep adapter, flare/NPT male thread, PFA

Order no.	Tube outside diameter X	NPT male thread Y	Orifice	A	B	C
FMES 75 4 4 30 HP	1/4"	1/4"	3.80 (0.15")	41.15 (1.62")	30.48 (1.20")	-
FMES 75 6 6 30 HP	3/8"	3/8"	6.40 (0.25")	46.48 (1.83")	33.53 (1.32")	-
FMES 75 8 8 30 HP	1/2"	1/2"	9.70 (0.38")	52.07 (2.05")	39.37 (1.55")	-
FMES 75 12 12 30 HP	3/4"	3/4"	16.00 (0.63")	59.18 (2.33")	44.70 (1.76")	-
FMES 75 16 16 30 HP	1"	1"	22.40 (0.88")	70.61 (2.78")	57.40 (2.26")	-
FMES 75 X4 4 30 HP	1/4"S*	1/4"	3.80 (0.15")	30.48 (1.20")	45.21 (1.78")	20.07 (0.79")
FMES 75 X6 6 30 HP	3/8"S*	3/8"	6.40 (0.25")	33.53 (1.32")	50.04 (1.97")	23.62 (0.93")
FMES 75 X8 8 30 HP	1/2"S*	1/2"	9.70 (0.38")	39.37 (1.55")	54.61 (2.15")	26.67 (1.05")
FMES 75 X12 12 30 HP	3/4"S*	3/4"	16.00 (0.63")	44.70 (1.76")	65.02 (2.56")	33.27 (1.31")
FMES 75 X16 16 30 HP	1" S	1"	22.40 (0.88")	57.40 (2.26")	81.79 (3.22")	43.69 (1.72")

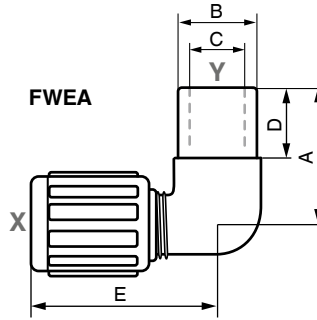
* S = SpaceSaver



Elbow adapter, flare/JIS male thread, PFA

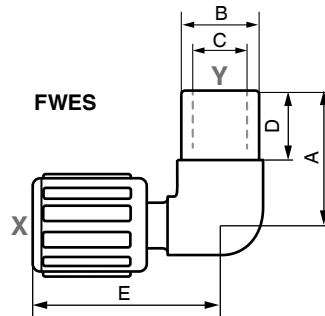
Order no.	Tube outside diameter X	JIS male thread Y	Orifice	A	B
FMEJ 75 4 6 30 HP	1/4"	3/8"	3.80 (0.15")	41.91 (1.65")	27.18 (1.07")
FMEJ 75 6 4 30 HP	3/8"	1/4"	6.40 (0.25")	44.70 (1.76")	27.18 (1.07")
FMEJ 75 6 6 30 HP	3/8"	3/8"	6.40 (0.25")	44.70 (1.76")	27.18 (1.07")
FMEJ 75 6 8 30 HP	3/8"	1/2"	6.40 (0.25")	44.70 (1.76")	29.97 (1.18")
FMEJ 75 8 4 30 HP	1/2"	1/4"	6.40 (0.25")	47.24 (1.86")	27.18 (1.07")
FMEJ 75 8 6 30 HP	1/2"	3/8"	9.70 (0.38")	47.24 (1.86")	27.18 (1.07")
FMEJ 75 8 8 30 HP	1/2"	1/2"	9.70 (0.38")	47.24 (1.86")	29.97 (1.18")
FMEJ 75 8 12 30 HP	1/2"	3/4"	9.70 (0.38")	47.24 (1.86")	34.54 (1.36")
FMEJ 75 12 8 30 HP	3/4"	1/2"	13.50 (0.53")	55.37 (2.18")	34.80 (1.37")
FMEJ 75 12 12 30 HP	3/4"	3/4"	16.00 (0.63")	55.37 (2.18")	34.80 (1.37")
FMEJ 75 12 16 30 HP	3/4"	1"	16.00 (0.63")	55.37 (2.18")	45.72 (1.80")
FMEJ 75 16 12 30 HP	1"	3/4"	16.80 (0.66")	68.58 (2.70")	41.66 (1.64")
FMEJ 75 16 16 30 HP	1"	1"	22.10 (0.87")	68.58 (2.70")	45.72 (1.80")

Dimensions mm (inch)



Elbow adapter, flare/butt weld spigot, PFA

Order no.	Tube outside diameter X	Pipe size Y	Orifice	A	B	C	D	E
FWEA 75 4 4 30 HP	1/4"	1/4"	3.20 (0.13")	27.40 (1.08")	13.70 (0.54")	9.00 (0.35")	14.50 (0.57")	40.70 (1.60")
FWEA 75 4 8 30 HP	1/4"	1/2"	3.20 (0.13")	36.60 (1.44")	21.30 (0.84")	15.40 (0.61")	19.00 (0.75")	44.70 (1.76")
FWEA 75 4 12 30 HP	1/4"	3/4"	3.20 (0.13")	36.60 (1.44")	26.70 (1.05")	20.50 (0.81")	19.00 (0.75")	47.70 (1.88")
FWEA 75 6 8 30 HP	3/8"	1/2"	6.38 (0.25")	36.60 (1.44")	21.30 (0.84")	15.40 (0.61")	19.00 (0.75")	47.90 (1.89")
FWEA 75 6 12 30 HP	3/8"	3/4"	6.38 (0.25")	43.20 (1.70")	26.70 (1.05")	20.50 (0.81")	18.90 (0.75")	55.40 (2.18")
FWEA 75 8 8 30 HP	1/2"	1/2"	9.65 (0.38")	37.00 (1.45")	21.30 (0.84")	15.80 (0.62")	19.00 (0.75")	49.90 (1.96")
FWEA 75 8 12 30 HP	1/2"	3/4"	9.55 (0.38")	36.60 (1.44")	26.70 (1.05")	20.50 (0.81")	19.00 (0.75")	53.30 (2.10")
FWEA 75 8 16 30 HP	1/2"	1"	9.55 (0.38")	43.40 (1.71")	33.40 (1.31")	26.30 (1.04")	19.00 (0.75")	57.90 (2.28")
FWEA 75 12 8 30 HP	3/4"	1/2"	15.70 (0.62")	43.40 (1.71")	21.30 (0.84")	15.60 (0.61")	19.00 (0.75")	55.20 (2.17")
FWEA 75 12 12 30 HP	3/4"	3/4"	16.00 (0.63")	43.00 (1.69")	26.70 (1.05")	20.90 (0.82")	19.00 (0.75")	61.90 (2.43")
FWEA 75 12 16 30 HP	3/4"	1"	15.90 (0.63")	42.80 (1.69")	33.40 (1.31")	26.30 (1.04")	18.70 (0.74")	62.00 (2.44")
FWEA 75 16 12 30 HP	1"	3/4"	15.90 (0.63")	43.40 (1.71")	26.70 (1.05")	20.50 (0.81")	19.00 (0.75")	68.10 (2.68")
FWEA 75 16 16 30 HP	1"	1"	22.10 (0.87")	43.00 (1.69")	33.40 (1.31")	26.60 (1.04")	19.00 (0.75")	67.00 (2.64")

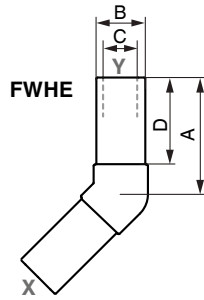


Elbow adapter, space saver/butt weld spigot, PFA

Order no.	Tube outside diameter X	Pipe size Y	Orifice	A	B	C	D	E
FWES 75 X4 4 30 HP	1/4"S*	1/4"	3.20 (0.13")	32.00 (1.26")	13.70 (0.54")	9.00 (0.35")	19.00 (0.75")	41.20 (1.62")
FWES 75 X4 8 30 HP	1/4"S*	1/2"	3.20 (0.13")	32.30 (1.27")	21.30 (0.84")	15.40 (0.61")	19.00 (0.75")	46.20 (1.82")
FWES 75 X6 8 30 HP	3/8"S*	1/2"	6.38 (0.25")	32.00 (1.26")	21.30 (0.84")	15.40 (0.61")	19.00 (0.75")	47.90 (1.89")
FWES 75 X8 8 30 HP	1/2"S*	1/2"	9.65 (0.38")	37.00 (1.45")	21.30 (0.83")	15.80 (0.62")	19.00 (0.75")	53.30 (2.09")
FWES 75 X8 12 30 HP	1/2"S*	3/4"	9.55 (0.38")	36.60 (1.44")	26.70 (1.05")	20.50 (0.81")	19.00 (0.75")	53.00 (2.09")
FWES 75 X12 8 30 HP	3/4"S*	1/2"	15.40 (0.61")	43.20 (1.70")	21.30 (0.84")	15.40 (0.61")	19.00 (0.75")	61.90 (2.44")
FWES 75 X12 12 30 HP	3/4"S*	3/4"	16.00 (0.63")	43.00 (1.69")	26.70 (1.05")	20.90 (0.82")	19.00 (0.75")	63.90 (2.51")
FWES 75 X12 16 30 HP	3/4"S*	1"	15.90 (0.63")	42.80 (1.69")	33.40 (1.31")	26.30 (1.04")	19.00 (0.75")	63.90 (2.52")
FWES 75 X16 12 30 HP	1"S*	3/4"	19.00 (0.75")	50.80 (2.00")	26.70 (1.05")	20.50 (0.81")	19.00 (0.75")	80.00 (3.15")
FWES 75 X16 16 30 HP	1"S*	1"	22.10 (0.87")	43.00 (1.69")	33.40 (1.31")	26.60 (1.04")	19.00 (0.75")	76.90 (3.02")

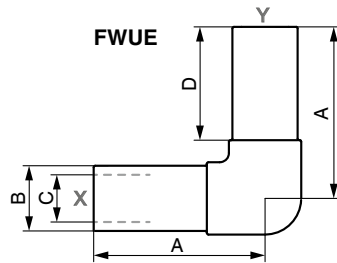
* S = SpaceSaver

Dimensions mm (inch)



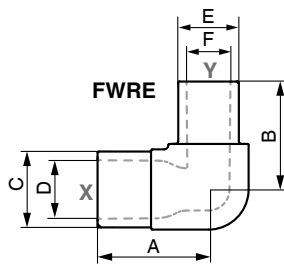
Union elbow, butt weld spigot, PFA

Order no.	Pipe size	Orifice	A	B	C	D
FWHE 4 4 30 HP	1/4"	9.00 (0.35")	24.00 (0.94")	13.70 (0.54")	9.00 (0.35")	14.00 (0.55")
FWHE 8 8 30 HP	1/2"	15.40 (0.60")	51.00 (2.00")	21.30 (0.84")	15.80 (0.62")	38.00 (1.50")
FWHE 12 12 30 HP	3/4"	20.60 (0.81")	51.00 (2.00")	26.70 (1.05")	20.90 (0.82")	38.00 (1.50")
FWHE 16 16 30 HP	1"	26.30 (1.04")	51.00 (2.00")	33.40 (1.31")	26.60 (1.04")	38.00 (1.50")
FWHE 32 32 30 HP	2"	52.10 (2.05")	64.00 (2.51")	60.30 (2.37")	52.10 (2.05")	38.00 (1.50")



Union elbow, butt weld spigot, PFA

Order no.	Pipe size	Orifice	A	B	C	D
FWUE 4 4 30 HP	1/4"	9.00 (0.35")	27.40 (1.08")	13.70 (0.54")	9.00 (0.35")	14.00 (0.55")
FWUE 8 8 30 HP	1/2"	15.40 (0.60")	56.00 (2.20")	21.30 (0.84")	15.80 (0.62")	37.00 (1.45")
FWUE 12 12 30 HP	3/4"	20.60 (0.81")	60.00 (2.30")	26.70 (1.05")	20.90 (0.82")	38.00 (1.50")
FWUE 16 16 30 HP	1"	26.30 (1.04")	62.00 (2.44")	33.40 (1.31")	26.60 (1.04")	38.00 (1.50")
FWUE 32 32 30 HP	2"	52.10 (2.05")	83.80 (3.30")	60.30 (2.37")	52.10 (2.05")	38.10 (1.50")

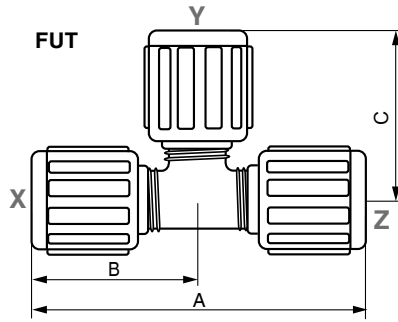


Reducer elbow, butt weld spigot, PFA

Order no.	Pipe size		Orifice	A	B	C	D	E	F
	X	Y							
FWRE 8 4 30 HP	1/2"	1/4"	9.0 (0.35")	38.0 (1.49")	38.0 (1.49")	21.3 (0.84")	15.8 (0.62")	13.7 (0.54")	9.2 (0.36")
FWRE 12 8 30 HP	3/4"	1/2"	15.4 (0.60")	39.0 (1.53")	38.0 (1.49")	26.7 (1.05")	20.9 (0.82")	21.3 (0.84")	15.8 (0.62")
FWRE 16 8 30 HP	1"	1/2"	15.4 (0.60")	43.0 (1.69")	43.0 (1.69")	33.4 (1.31")	26.6 (1.04")	21.3 (0.84")	15.8 (0.62")
FWRE 16 12 30 HP	1"	3/4"	20.6 (0.81")	43.0 (1.69")	43.0 (1.69")	33.4 (1.31")	26.6 (1.04")	26.7 (1.05")	20.9 (0.82")

FlareStar® Union tees and tee reducers

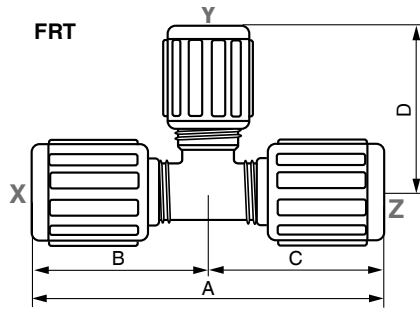
Dimensions mm (inch)



Union tee, flare, PFA

Order no.	Tube outside diameter	Orifice	A	B	C
FUT 75 4 4 4 30 HP	1/4"	3.30 (0.13")	79.80 (3.14")	39.90 (1.57")	40.30 (1.59")
FUT 75 6 6 6 30 HP	3/8"	6.35 (0.25")	89.00 (3.50")	44.50 (1.75")	44.50 (1.75")
FUT 75 8 8 8 30 HP	1/2"	9.65 (0.38")	92.80 (3.65")	46.40 (1.83")	46.40 (1.83")
FUT 75 12 12 12 30 HP	3/4"	16.00 (0.63")	106.40 (4.18")	53.20 (2.09")	53.20 (2.09")
FUT 75 16 16 16 30 HP	1"	22.10 (0.87")	139.00 (5.47")	69.50 (2.74")	69.50 (2.74")
FUT 75 20 20 20 30 HP	1 1/4"	27.90 (1.10")	171.40 (6.75")	85.70 (3.37")	87.20 (3.43")

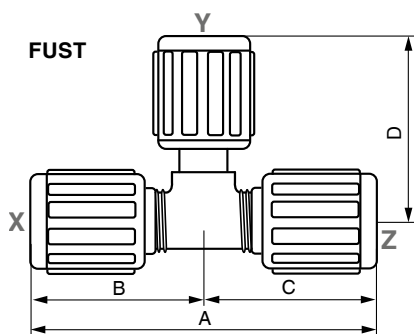
Dimensions mm (inch)



Union reducer tee, flare, PFA

Order no.	Tube outside diameter			Orifice	A	B	C	D
	X	Y	Z					
FRT 75 6 4 4 30 HP	3/8"	1/4"	1/4"	3.81 (0.15")	86.87 (3.42")	44.70 (1.76")	42.16 (1.66")	42.16 (1.66")
FRT 75 6 4 6 30 HP	3/8"	1/4"	3/8"	3.30 (0.13")	87.00 (3.43")	43.50 (1.71")	43.50 (1.71")	40.40 (1.59")
FRT 75 6 6 4 30 HP	3/8"	3/8"	1/4"	3.30 (0.13")	84.70 (3.33")	44.40 (1.74")	40.30 (1.58")	44.40 (1.75")
FRT 75 6 8 6 30 HP	3/8"	1/2"	3/8"	6.35 (0.25")	89.41 (3.52")	44.70 (1.76")	44.70 (1.76")	47.50 (1.87")
FRT 75 6 12 6 30 HP	3/8"	3/4"	3/8"	6.35 (0.25")	93.00 (3.66")	46.50 (1.83")	46.50 (1.83")	49.90 (1.96")
FRT 75 8 4 4 30 HP	1/2"	1/4"	1/4"	3.81 (0.15")	89.66 (3.53")	47.50 (1.87")	42.16 (1.66")	42.16 (1.66")
FRT 75 8 4 8 30 HP	1/2"	1/4"	1/2"	3.30 (0.13")	93.80 (3.69")	46.90 (1.84")	46.90 (1.84")	40.30 (1.59")
FRT 75 8 6 6 30 HP	1/2"	3/8"	3/8"	6.35 (0.25")	90.40 (3.56")	46.40 (1.82")	44.00 (1.73")	44.50 (1.75")
FRT 75 8 6 8 30 HP	1/2"	3/8"	1/2"	6.35 (0.25")	93.80 (3.69")	46.90 (1.84")	46.90 (1.84")	44.50 (1.75")
FRT 75 8 8 4 30 HP	1/2"	1/2"	1/4"	3.81 (0.15")	89.66 (3.53")	47.50 (1.87")	42.16 (1.66")	47.50 (1.87")
FRT 75 8 8 6 30 HP	1/2"	1/2"	3/8"	9.65 (0.38")	92.20 (3.63")	47.50 (1.87")	44.70 (1.76")	47.50 (1.87")
FRT 75 8 12 8 30 HP	1/2"	3/4"	1/2"	9.65 (0.38")	94.49 (3.72")	47.24 (1.86")	47.24 (1.86")	56.39 (2.22")
FRT 75 12 4 12 30 HP	3/4"	1/4"	3/4"	3.30 (0.13")	111.80 (4.40")	55.90 (2.20")	55.90 (2.20")	43.90 (1.73")
FRT 75 12 6 12 30 HP	3/4"	3/8"	3/4"	6.35 (0.25")	112.78 (4.44")	56.39 (2.22")	56.39 (2.22")	44.70 (1.76")
FRT 75 12 8 4 30 HP	3/4"	1/2"	1/4"	3.30 (0.13")	99.80 (3.93")	54.90 (2.16")	44.90 (1.76")	50.90 (2.00")
FRT 75 12 8 8 30 HP	3/4"	1/2"	1/2"	9.65 (0.38")	105.80 (4.17")	54.90 (2.16")	50.00 (1.97")	50.90 (2.00")
FRT 75 12 12 6 30 HP	3/4"	3/4"	3/8"	6.35 (0.25")	101.09 (3.98")	56.39 (2.22")	44.70 (1.76")	56.39 (2.22")
FRT 75 12 12 8 30 HP	3/4"	3/4"	1/2"	9.65 (0.38")	106.80 (4.20")	55.90 (2.20")	50.90 (2.00")	56.10 (2.20")
FRT 75 12 8 12 30 HP	3/4"	1/2"	3/4"	9.65 (0.38")	106.40 (4.18")	53.20 (2.09")	53.20 (2.09")	50.90 (2.00")
FRT 75 12 16 12 30 HP	3/4"	1"	3/4"	16.00 (0.63")	112.78 (4.44")	56.39 (2.22")	56.39 (2.22")	68.58 (2.70")
FRT 75 16 8 16 30 HP	1"	1/2"	1"	9.65 (0.38")	135.00 (5.31")	67.50 (2.65")	67.50 (2.65")	61.40 (2.42")
FRT 75 16 12 16 30 HP	1"	3/4"	1"	16.00 (0.63")	137.80 (5.42")	68.90 (2.71")	68.90 (2.71")	62.40 (2.46")
FRT 75 16 4 16 30 HP	1"	1/4"	1"	3.81 (0.15")	137.16 (5.40")	68.58 (2.70")	68.58 (2.70")	51.31 (2.02")
FRT 75 16 6 16 30 HP	1"	3/8"	1"	6.35 (0.25")	137.16 (5.40")	68.58 (2.70")	68.58 (2.70")	54.10 (2.13")
FRT 75 16 12 12 30 HP	1"	3/4"	3/4"	16.00 (0.63")	124.97 (4.92")	68.58 (2.70")	56.39 (2.22")	56.39 (2.22")
FRT 75 16 16 8 30 HP	1"	1"	1/2"	9.65 (0.38")	124.97 (4.92")	68.58 (2.70")	56.39 (2.22")	68.58 (2.70")
FRT 75 16 16 12 30 HP	1"	1"	3/4"	16.00 (0.63")	124.97 (4.92")	68.58 (2.70")	56.39 (2.22")	68.58 (2.70")
FRT 75 20 16 20 30 HP	1 1/4"	1"	1 1/4"	22.10 (0.87")	171.40 (6.75")	85.70 (3.37")	85.7 (3.37")	70.00 (2.76")

Dimensions mm (inch)

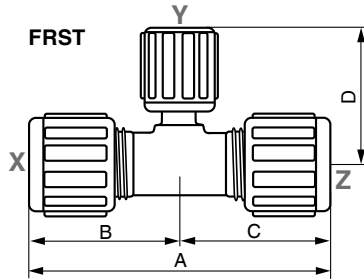


Union tee, flare/space saver, PFA

Order no.	Tube outside diameter			Orifice	A	B	C	D
	X	Y	Z					
FUST 75 4 4 Z4 30 HP	1/4"	1/4"	1/4"S*	3.80 (0.15")	83.57 (3.29")	41.91 (1.65")	41.66 (1.64")	41.91 (1.65")
FUST 75 4 Y4 4 30 HP	1/4"	1/4"S*	1/4"	3.80 (0.15")	83.82 (3.30")	41.91 (1.65")	41.91 (1.65")	41.66 (1.64")
FUST 75 4 Y4 Z4 30 HP	1/4"	1/4"S*	1/4"S*	3.30 (0.13")	84.10 (3.31")	40.90 (1.61")	43.20 (1.70")	43.20 (1.70")
FUST 75 X4 4 Z4 30 HP	1/4"S*	1/4"	1/4"S*	3.80 (0.15")	83.31 (3.28")	41.66 (1.64")	41.66 (1.64")	41.91 (1.65")
FUST 75 X4 Y4 Z4 30 HP	1/4"S*	1/4"S*	1/4"S*	3.30 (0.13")	86.40 (3.40")	43.20 (1.70")	43.20 (1.70")	43.20 (1.70")
FUST 75 6 6 Z6 30 HP	3/8"	3/8"	3/8"S*	6.35 (0.25")	93.40 (3.68")	44.50 (1.75")	48.90 (1.92")	44.50 (1.75")
FUST 75 6 Y6 6 30 HP	3/8"	3/8"S*	3/8"	6.35 (0.25")	89.00 (3.50")	44.50 (1.75")	44.50 (1.75")	43.90 (1.73")
FUST 75 6 Y6 Z6 30 HP	3/8"	3/8"S*	3/8"S*	6.35 (0.25")	88.40 (3.48")	44.45 (1.75")	43.90 (1.72")	43.90 (1.72")
FUST 75 X6 6 Z6 30 HP	3/8"S*	3/8"	3/8"S*	6.35 (0.25")	87.88 (3.46")	43.94 (1.73")	43.94 (1.73")	44.70 (1.76")
FUST 75 X6 Y6 Z6 30 HP	3/8"S*	3/8"S*	3/8"S*	6.35 (0.25")	87.80 (3.46")	43.90 (1.72")	43.90 (1.72")	43.90 (1.72")
FUST 75 8 8 Z8 30 HP	1/2"	1/2"	1/2"S*	9.65 (0.38")	95.90 (3.78")	45.90 (1.80")	50.00 (1.96")	46.40 (1.83")
FUST 75 8 Y8 8 30 HP	1/2"	1/2"S*	1/2"	9.65 (0.38")	93.80 (3.69")	46.90 (1.84")	46.90 (1.84")	48.80 (1.92")
FUST 75 8 Y8 Z8 30 HP	1/2"	1/2"S*	1/2"S*	9.65 (0.38")	94.90 (3.73")	45.50 (1.78")	49.00 (1.92")	49.00 (1.92")
FUST 75 X8 8 Z8 30 HP	1/2"S*	1/2"	1/2"S*	9.65 (0.38")	94.00 (3.70")	47.00 (1.85")	47.00 (1.85")	46.40 (1.83")
FUST 75 X8 Y8 Z8 30 HP	1/2"S*	1/2"S*	1/2"S*	9.65 (0.38")	98.00 (3.85")	49.00 (1.92")	49.00 (1.92")	49.00 (1.92")
FUST 75 12 12 Z12 30 HP	3/4"	3/4"	3/4"S*	16.00 (0.63")	115.30 (4.54")	56.00 (2.20")	59.30 (2.33")	55.90 (2.20")
FUST 75 12 Y12 12 30 HP	3/4"	3/4"S*	3/4"	16.00 (0.63")	111.80 (4.40")	55.90 (2.20")	55.90 (2.20")	59.40 (2.33")
FUST 75 12 Y12 Z12 30 HP	3/4"	3/4"S*	3/4"S*	16.00 (0.63")	110.80 (4.36")	52.90 (2.08")	57.90 (2.27")	57.90 (2.27")
FUST 75 X12 12 Z12 30 HP	3/4"S*	3/4"	3/4"S*	16.00 (0.63")	117.80 (4.64")	58.90 (2.31")	58.90 (2.31")	55.90 (2.20")
FUST 75 X12 Y12 Z12 30 HP	3/4"S*	3/4"S*	3/4"S*	16.00 (0.63")	115.80 (4.55")	57.90 (2.27")	58.90 (2.31")	57.90 (2.27")
FUST 75 16 16 Z16 30 HP	1"	1"	1"S*	22.10 (0.87")	143.40 (5.65")	69.50 (2.74")	73.90 (2.90")	69.50 (2.74")
FUST 75 16 Y16 16 30 HP	1"	1"S*	1"S*	22.10 (0.87")	138.00 (5.43")	69.00 (2.71")	69.00 (2.71")	69.90 (2.75")
FUST 75 16 Y16 Z16 30 HP	1"	1"S*	1"S*	22.10 (0.87")	138.90 (5.47")	69.00 (2.71")	69.90 (2.75")	69.90 (2.75")
FUST 75 X16 16 Z16 30 HP	1"S*	1"	1"S*	22.10 (0.87")	148.80 (5.86")	74.40 (2.92")	74.80 (2.92")	69.50 (2.74")
FUST 75 X16 Y16 Z16 30 HP	1"S*	1"S*	1"S*	22.10 (0.87")	139.80 (5.50")	69.90 (2.75")	69.90 (2.75")	69.90 (2.75")
FUST 75 X20 20 Z20 30 HP	1 1/4"	1 1/4"	1 1/4"S*	27.90 (1.10")	157.48 (6.20")	78.74 (3.10")	78.74 (3.10")	75.18 (2.96")

* S = SpaceSaver

Dimensions mm (inch)

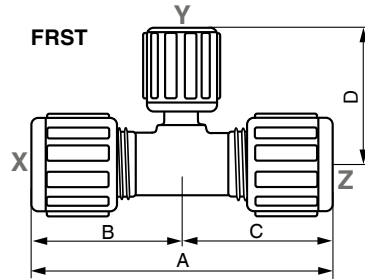


Union reducer tee, flare/space saver, PFA

Order no.	Tube outside diameter			Orifice	A	B	C	D
	X	Y	Z					
FRST 75 4 Y6 4 30 HP	1/4"	3/8"S*	1/4"	3.80 (0.15")	83.82 (3.30")	41.91 (1.65")	41.91 (1.65")	43.94 (1.73")
FRST 75 X4 6 Z4 30 HP	1/4"S*	3/8"	1/4"S*	3.80 (0.15")	83.31 (3.28")	41.66 (1.64")	41.66 (1.64")	44.70 (1.76")
FRST 75 X4 Y6 Z4 30 HP	1/4"S*	3/8"S*	1/4"S*	3.80 (0.15")	83.31 (3.28")	41.66 (1.64")	41.66 (1.64")	43.94 (1.73")
FRST 75 4 8 Z8 30 HP	1/4"	1/2"	1/2"S*	3.80 (0.15")	88.90 (3.50")	41.91 (1.65")	46.99 (1.85")	47.24 (1.86")
FRST 75 6 4 Z6 30 HP	3/8"	1/4"	3/8"S*	3.80 (0.15")	88.65 (3.49")	44.70 (1.76")	43.94 (1.73")	41.91 (1.65")
FRST 75 6 Y4 6 30 HP	3/8"	1/4"S*	3/8"	3.30 (0.13")	89.00 (3.50")	44.50 (1.75")	44.50 (1.75")	43.20 (1.70")
FRST 75 6 Y4 Z6 30 HP	3/8"	1/4"S*	3/8"S*	3.80 (0.15")	88.39 (3.48")	44.45 (1.75")	43.94 (1.73")	41.66 (1.64")
FRST 75 X6 6 Z6 30 HP	3/8"S*	3/8"	3/8"S*	6.40 (0.25")	87.88 (3.46")	43.94 (1.73")	43.94 (1.73")	44.70 (1.76")
FRST 75 X6 Y8 Z4 30 HP	3/8"S*	1/2"S*	1/4"S*	3.80 (0.15")	85.60 (3.37")	43.94 (1.73")	41.66 (1.64")	46.74 (1.84")
FRST 75 6 Y8 6 30 HP	3/8"	1/2"S*	3/8"	3.80 (0.15")	88.90 (3.50")	44.45 (1.75")	44.45 (1.75")	41.66 (1.64")
FRST 75 X6 8 Z6 30 HP	3/8"S*	1/2"	3/8"S*	6.40 (0.25")	87.88 (3.46")	43.94 (1.73")	43.94 (1.73")	47.24 (1.86")
FRST 75 6 12 Z12 30 HP	3/8"	3/4"	3/4"S*	6.40 (0.25")	98.81 (3.89")	44.70 (1.76")	54.10 (2.13")	55.37 (2.18")
FRST 75 8 4 Z8 30 HP	1/2"	1/4"	1/2"S*	3.80 (0.15")	94.23 (3.71")	47.24 (1.86")	46.99 (1.85")	41.91 (1.65")
FRST 75 8 Y4 8 30 HP	1/2"	1/4"S*	1/2"	3.80 (0.15")	94.49 (3.72")	47.24 (1.86")	47.24 (1.86")	41.66 (1.64")
FRST 75 X8 6 Z6 30 HP	1/2"S*	3/8"	3/8"S*	6.40 (0.25")	90.93 (3.58")	46.99 (1.85")	43.94 (1.73")	44.70 (1.76")
FRST 75 8 6 Z8 30 HP	1/2"	3/8"	1/2"S*	6.40 (0.25")	94.23 (3.71")	47.24 (1.86")	46.99 (1.85")	44.70 (1.76")
FRST 75 8 Y6 8 30 HP	1/2"	3/8"S*	1/2"	6.35 (0.25")	91.80 (3.61")	45.90 (1.80")	45.90 (1.80")	43.90 (1.73")
FRST 75 8 Y6 Z8 30 HP	1/2"	3/8"S*	1/2"S*	6.40 (0.25")	94.23 (3.71")	47.24 (1.86")	46.99 (1.85")	43.90 (1.73")
FRST 75 X8 8 Z4 30 HP	1/2"S*	1/2"	1/4"S*	3.80 (0.15")	88.65 (3.49")	46.99 (1.85")	41.66 (1.64")	47.24 (1.86")
FRST 75 X8 Y8 Z4 30 HP	1/2"S*	1/2"S*	1/4"S*	3.80 (0.15")	88.39 (3.48")	46.74 (1.84")	41.66 (1.64")	46.74 (1.84")
FRST 75 8 8 Z6 30 HP	1/2"	1/2"	3/8"S*	6.40 (0.25")	91.19 (3.59")	47.24 (1.86")	43.94 (1.73")	47.24 (1.86")
FRST 75 8 Y12 8 30 HP	1/2"	3/4"S*	1/2"	9.70 (0.38")	94.49 (3.72")	47.24 (1.86")	47.24 (1.86")	54.10 (2.13")
FRST 75 8 Y12 Z12 30 HP	1/2"	3/4"S*	3/4"S*	9.70 (0.38")	101.35 (3.99")	47.24 (1.86")	54.10 (2.13")	54.10 (2.13")
FRST 75 X8 12 Z8 30 HP	1/2"S*	3/4"	1/2"S*	9.70 (0.38")	93.98 (3.70")	46.99 (1.85")	46.99 (1.85")	55.37 (2.18")
FRST 75 X8 Y12 Z8 30 HP	1/2"S*	3/4"S*	1/2"S*	9.70 (0.38")	93.47 (3.68")	46.74 (1.84")	46.74 (1.84")	54.10 (2.13")
FRST 75 12 Y4 12 30 HP	3/4"	1/4"S*	3/4"	3.80 (0.15")	110.74 (4.36")	55.37 (2.18")	55.45 (2.18")	41.66 (1.64")
FRST 75 X12 4 Z12 30 HP	3/4"S*	1/4"	3/4"S*	3.80 (0.15")	108.20 (4.26")	54.10 (2.13")	54.10 (2.13")	41.91 (1.65")
FRST 75 12 6 Z12 30 HP	3/4"	3/8"	3/4"S*	6.40 (0.25")	109.47 (4.31")	55.37 (2.18")	54.10 (2.13")	44.70 (1.76")
FRST 75 12 Y6 12 30 HP	3/4"	3/8"S*	3/4"	6.40 (0.25")	110.74 (4.36")	55.37 (2.18")	55.37 (2.18")	43.94 (1.73")
FRST 75 X12 6 Z12 30 HP	3/4"S*	3/8"	3/4"S*	6.35 (0.38")	115.80 (4.55")	57.90 (2.27")	57.90 (2.27")	48.50 (1.90")
FRST 75 X12 Y6 Z12 30 HP	3/4"S*	3/8"S*	3/4"S*	6.40 (0.25")	108.20 (4.26")	54.10 (2.13")	54.10 (2.13")	43.94 (1.73")
FRST 75 12 Y8 8 30 HP	3/4"	1/2"S*	1/2"	9.70 (0.38")	102.62 (4.04")	55.37 (2.18")	47.24 (1.86")	46.99 (1.85")
FRST 75 12 8 Z12 30 HP	3/4"	1/2"	3/4"S*	9.70 (0.38")	109.47 (4.31")	55.37 (2.18")	54.10 (2.13")	47.24 (1.86")
FRST 75 12 Y8 12 30 HP	3/4"	1/2"S*	3/4"	6.35 (0.25")	111.80 (4.40")	55.90 (2.20")	55.90 (2.20")	49.40 (1.94")
FRST 75 12 Y8 Z12 30 HP	3/4"	1/2"S*	3/4"S*	9.70 (0.38")	109.47 (4.31")	55.37 (2.18")	54.10 (2.13")	46.74 (1.84")
FRST 75 X12 8 Z12 30 HP	3/4"S*	1/2"	3/4"S*	9.70 (0.38")	108.20 (4.26")	54.10 (2.13")	54.10 (2.13")	47.24 (1.86")
FRST 75 X12 Y8 Z12 30 HP	3/4"S*	1/2"S*	3/4"S*	9.70 (0.38")	107.44 (4.23")	54.10 (2.13")	54.10 (2.13")	46.74 (1.84")
FRST 75 12 12 Z8 30 HP	3/4"	3/4"	1/2"S*	9.70 (0.38")	103.12 (4.06")	56.39 (2.22")	46.74 (1.84")	56.39 (2.22")
FRST 75 12 Y12 8 30 HP	3/4"	3/4"S*	1/2"	9.70 (0.38")	102.62 (4.04")	55.37 (2.18")	47.24 (1.86")	54.10 (2.13")
FRST 75 12 Y12 Z8 30 HP	3/4"	3/4"S*	1/2"S*	9.70 (0.38")	102.11 (4.02")	55.37 (2.18")	46.74 (1.84")	54.10 (2.13")
FRST 75 X12 Y12 Z8 30 HP	3/4"S*	3/4"S*	1/2"S*	9.70 (0.38")	100.84 (3.97")	54.10 (2.13")	46.74 (1.84")	54.10 (2.13")
FRST 75 12 Y16 12 30 HP	3/4"	1"S*	3/4"	16.00 (0.63")	110.74 (4.36")	55.37 (2.18")	55.37 (2.18")	70.36 (2.77")

* S = SpaceSaver

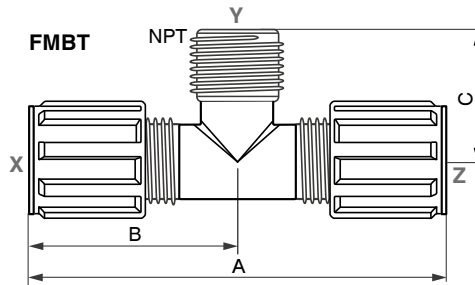
Dimensions mm (inch)



Union reducer tee, flare/space saver, PFA

Order no.	Tube outside diameter			Orifice	A	B	C	D
	X	Y	Z					
FRST 75 16 Y8 16 30 HP	1"	1/2"S*	1"	9.65 (0.38")	138.00 (5.43")	69.00 (2.71")	69.00 (2.71")	53.00 (2.09")
FRST 75 X16 8 Z16 30 HP	1"S*	1/2"	1"S*	9.70 (0.38")	140.72 (5.54")	70.36 (2.77")	70.36 (2.77")	56.39 (2.22")
FRST 75 X16 12 Z16 30 HP	1"S*	3/4"	1"S*	15.90 (0.63")	140.72 (5.54")	70.36 (2.77")	70.36 (2.77")	55.37 (2.18")
FRST 75 16 12 Z16 30 HP	1"	3/4"	1"S*	16.00 (0.63")	138.94 (5.47")	68.58 (2.70")	70.36 (2.77")	55.37 (2.18")
FRST 75 16 Y12 16 30 HP	1"	3/4"S*	1"	16.00 (0.63")	138.00 (5.43")	69.00 (2.71")	69.00 (2.71")	60.90 (2.40")
FRST 75 16 Y12 Z16 30 HP	1"	3/4"S*	1"S*	15.90 (0.63")	138.50 (5.45")	68.60 (2.70")	69.90 (2.75")	60.90 (2.40")
FRST 75 16 Y16 Z12 30 HP	1"	1"S*	3/4"S*	16.00 (0.63")	122.68 (4.83")	68.58 (2.70")	54.10 (2.13")	70.36 (2.77")
FRST 75 20 Y16 Z20 30 HP	1 1/4"	1"S*	1 1/4"S*	22.10 (0.87")	174.20 (6.85")	85.70 (3.37")	88.50 (3.48")	76.90 (3.02")

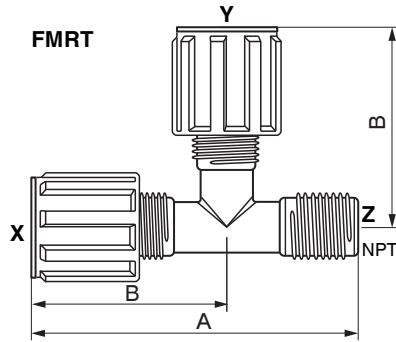
* S = SpaceSaver



Union reducer tee, flare/NPT male thread on Y, PFA

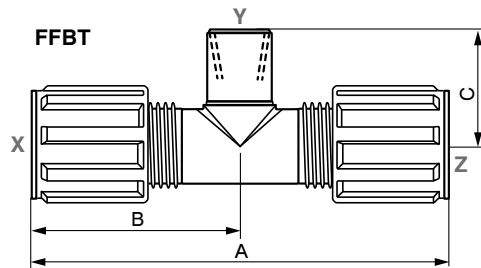
Order no.	Tube outside diameter	NPT thread	Tube outside diameter	Orifice	A	B	C
	X	Y	Z				
FMBT 75 4 2 4 30 HP	1/4"	1/8"	1/4"	3.80 (0.15")	84.33 (3.32")	42.16 (1.66")	27.18 (1.07")
FMBT 75 4 4 4 30 HP	1/4"	1/4"	1/4"	3.80 (0.15")	83.82 (3.30")	41.91 (1.65")	27.18 (1.07")
FMBT 75 4 8 4 30 HP	1/4"	1/2"	1/4"	3.80 (0.15")	83.82 (3.30")	41.91 (1.65")	29.97 (1.18")
FMBT 75 6 4 4 30 HP	3/8"	1/4"	1/4"	3.80 (0.15")	86.36 (3.40")	44.45 (1.75")	27.18 (1.07")
FMBT 75 6 4 6 30 HP	3/8"	1/4"	3/8"	6.40 (0.25")	88.90 (3.50")	44.45 (1.75")	27.18 (1.07")
FMBT 75 6 6 4 30 HP	3/8"	3/8"	1/4"	3.80 (0.15")	86.36 (3.40")	44.45 (1.75")	27.18 (1.07")
FMBT 75 6 6 6 30 HP	3/8"	3/8"	3/8"	6.40 (0.25")	88.65 (3.49")	44.45 (1.75")	29.97 (1.18")
FMBT 75 6 8 6 30 HP	3/8"	1/2"	3/8"	6.40 (0.25")	88.90 (3.50")	44.45 (1.75")	29.97 (1.18")
FMBT 75 8 4 8 30 HP	1/2"	1/4"	1/2"	6.40 (0.25")	93.47 (3.68")	46.74 (1.84")	27.18 (1.07")
FMBT 75 8 6 6 30 HP	1/2"	3/8"	3/8"	6.40 (0.25")	91.19 (3.59")	46.74 (1.84")	27.18 (1.07")
FMBT 75 8 6 8 30 HP	1/2"	3/8"	1/2"	9.70 (0.38")	93.47 (3.68")	46.74 (1.84")	27.18 (1.07")
FMBT 75 8 8 4 30 HP	1/2"	1/2"	1/4"	3.80 (0.15")	97.28 (3.83")	46.74 (1.84")	27.18 (1.07")
FMBT 75 8 8 6 30 HP	1/2"	1/2"	3/8"	6.40 (0.25")	91.19 (3.59")	46.74 (1.84")	29.97 (1.18")
FMBT 75 8 8 8 30 HP	1/2"	1/2"	1/2"	9.70 (0.38")	93.47 (3.68")	46.74 (1.84")	29.97 (1.18")
FMBT 75 8 12 8 30 HP	1/2"	3/4"	1/2"	9.70 (0.38")	93.47 (3.68")	46.74 (1.84")	34.80 (1.37")
FMBT 75 12 4 12 30 HP	3/4"	1/4"	1/4"	6.40 (0.25")	110.74 (4.36")	55.37 (2.18")	32.26 (1.27")
FMBT 75 12 8 12 30 HP	3/4"	1/2"	3/4"	12.50 (0.49")	110.74 (4.36")	55.37 (2.18")	29.97 (1.18")
FMBT 75 12 12 12 30 HP	3/4"	3/4"	3/4"	16.00 (0.63")	110.74 (4.36")	55.37 (2.18")	34.80 (1.37")
FMBT 75 16 4 16 30 HP	1"	1/4"	1"	6.40 (0.25")	137.16 (5.40")	68.58 (2.70")	39.62 (1.56")
FMBT 75 16 16 16 30 HP	1"	1"	1"	22.40 (0.88")	137.16 (5.40")	68.58 (2.70")	45.72 (1.80")

Dimensions mm (inch)



Union reducer tee, flare/NPT male thread on Z, PFA

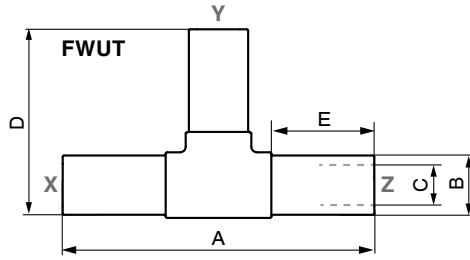
Order no.	Tube outside diameter		NPT thread Z	Orifice	A	B
	X	Y				
FMRT 75 4 4 2 30 HP	1/4"	1/4"	1/8"	3.80 (0.15")	68.83 (2.71")	41.91 (1.65")
FMRT 75 4 4 4 30 HP	1/4"	1/4"	1/4"	3.80 (0.15")	68.83 (2.71")	41.91 (1.65")
FMRT 75 4 4 6 30 HP	1/4"	1/4"	3/8"	3.80 (0.15")	68.83 (2.71")	44.45 (1.75")
FMRT 75 6 6 2 30 HP	3/8"	3/8"	1/8"	4.30 (0.17")	71.88 (2.83")	44.70 (1.76")
FMRT 75 6 6 4 30 HP	3/8"	3/8"	1/4"	6.40 (0.25")	71.88 (2.83")	44.70 (1.76")
FMRT 75 6 6 6 30 HP	3/8"	3/8"	3/8"	6.40 (0.25")	71.12 (2.80")	43.94 (1.73")
FMRT 75 6 6 8 30 HP	3/8"	3/8"	1/2"	6.40 (0.25")	71.88 (2.83")	44.70 (1.76")
FMRT 75 8 8 6 30 HP	1/2"	1/2"	3/8"	9.70 (0.38")	73.91 (2.91")	46.74 (1.84")
FMRT 75 8 8 8 30 HP	1/2"	1/2"	1/2"	9.70 (0.38")	76.71 (3.02")	46.74 (1.84")
FMRT 75 12 12 6 30 HP	3/4"	3/4"	3/8"	9.70 (0.38")	82.55 (3.25")	55.37 (2.18")
FMRT 75 12 12 8 30 HP	3/4"	3/4"	1/2"	12.50 (0.49")	85.34 (3.36")	55.37 (2.18")
FMRT 75 12 12 12 30 HP	3/4"	3/4"	3/4"	16.00 (0.63")	90.17 (3.55")	55.37 (2.18")
FMRT 75 16 16 16 30 HP	1"	1"	1"	22.40 (0.88")	114.30 (4.50")	68.58 (2.70")



Union tee, flare/NPT female thread on Y, PFA

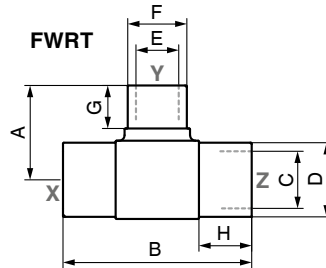
Order no.	Tube outside diameter X	NPT thread Y	Tube outside diameter Z	Orifice	A	B	C
FFBT 75 16 4 16 30 HP	1"	1/4"	1"	6.40 (0.25")	137.16 (5.40")	68.58 (2.70")	36.32 (1.43")
FFBT 75 16 8 16 30 HP	1"	1/2"	1"	12.50 (0.49")	137.16 (5.40")	68.58 (2.70")	35.05 (1.38")

Dimensions mm (inch)



Union tee, butt weld spigot, PFA

Order no.	Pipe size	Orifice	A	B	C	D	E
FWUT 4 4 4 30 HP	1/4"	9.00 (0.35")	54.90 (2.16")	13.70 (0.54")	9.00 (0.35")	34.25 (1.35")	14.00 (0.55")
FWUT 8 8 8 30 HP	1/2"	15.40 (0.60")	112.00 (4.40")	21.30 (0.84")	15.40 (0.60")	56.00 (2.20")	37.00 (1.45")
FWUT 12 12 12 30 HP	3/4"	20.60 (0.81")	116.00 (4.56")	26.70 (1.05")	20.60 (0.81")	58.00 (2.28")	38.00 (1.49")
FWUT 16 16 16 30 HP	1"	26.30 (1.04")	124.00 (4.88")	33.40 (1.31")	26.30 (1.04")	62.00 (2.44")	38.00 (1.49")
FWUT 32 32 32 30 HP	2"	52.10 (2.05")	167.00 (6.60")	60.30 (2.37")	52.10 (2.05")	83.80 (3.30")	38.10 (1.50")



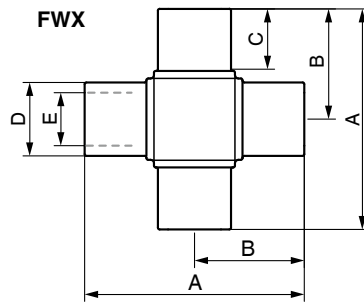
Union reducer tee, butt weld spigot, PFA

Order no.	Pipe size			Orifice	A	B	C	D
	X	Y	Z					
FWRT 8 4 8 30 HP	1/2"	1/4"	1/2"	9.00 (0.35")	37.30 (1.47")	74.70 (2.94")	15.40 (0.61")	21.30 (0.84")
FWRT 8 8 4 30 HP	1/2"	1/2"	1/4"	9.00 (0.35")	31.80 (1.25")	61.00 (2.40")	9.00 (0.35")	13.70 (0.54")
FWRT 12 4 12 30 HP	3/4"	1/4"	3/4"	9.00 (0.35")	34.30 (1.35")	68.60 (2.70")	20.50 (0.81")	26.70 (1.05")
FWRT 12 8 12 30 HP	3/4"	1/2"	3/4"	15.40 (0.60")	34.00 (1.33")	69.00 (2.67")	20.90 (0.82")	26.70 (1.05")
FWRT 12 12 4 30 HP	3/4"	3/4"	1/4"	9.00 (0.35")	34.30 (1.35")	68.60 (2.70")	9.00 (0.35")	13.70 (0.54")
FWRT 12 12 8 30 HP	3/4"	3/4"	1/2"	15.40 (0.61")	34.00 (1.36")	69.00 (2.72")	15.40 (0.61")	21.30 (0.84")
FWRT 16 8 16 30 HP	1"	1/2"	1"	15.40 (0.60")	43.00 (1.69")	86.00 (3.38")	26.30 (1.04")	33.40 (1.31")
FWRT 16 16 8 30 HP	1"	1"	1/2"	15.40 (0.60")	38.00 (1.49")	75.00 (2.95")	15.80 (0.62")	21.30 (0.83")
FWRT 16 12 16 30 HP	1"	3/4"	1"	20.60 (0.81")	43.00 (1.69")	86.00 (3.38")	26.30 (1.04")	33.40 (1.31")
FWRT 16 16 4 30 HP	1"	1"	1/4"	8.90 (0.35")	38.00 (1.50")	76.50 (3.01")	8.90 (0.35")	13.70 (0.54")
FWRT 16 16 12 30 HP	1"	1"	3/4"	20.50 (0.81")	38.00 (1.50")	76.50 (3.01")	20.50 (0.81")	26.70 (1.05")

Order no.	Pipe size			Orifice	E	F	G	H
	X	Y	Z					
FWRT 8 4 8 30 HP	1/2"	1/4"	1/2"	9.00 (0.35")	9.00 (0.35")	13.70 (0.54")	19.00 (0.75")	19.00 (0.75")
FWRT 8 8 4 30 HP	1/2"	1/2"	1/4"	9.00 (0.35")	15.40 (0.61")	21.30 (0.84")	14.20 (0.56")	14.00 (0.55")
FWRT 12 4 12 30 HP	3/4"	1/4"	3/4"	9.00 (0.35")	9.00 (0.35")	13.70 (0.54")	14.00 (0.55")	19.00 (0.75")
FWRT 12 8 12 30 HP	3/4"	1/2"	3/4"	15.40 (0.60")	15.80 (0.62")	21.30 (0.84")	15.50 (0.61")	19.00 (0.75")
FWRT 12 12 4 30 HP	3/4"	3/4"	1/4"	9.00 (0.35")	20.60 (0.81")	26.70 (1.05")	14.00 (0.55")	14.00 (0.55")
FWRT 12 12 8 30 HP	3/4"	3/4"	1/2"	15.40 (0.61")	20.60 (0.81")	26.70 (1.05")	14.00 (0.55")	14.00 (0.55")
FWRT 16 8 16 30 HP	1"	1/2"	1"	15.40 (0.60")	15.80 (0.62")	21.30 (0.84")	19.00 (0.75")	19.00 (0.75")
FWRT 16 16 8 30 HP	1"	1"	1/2"	15.40 (0.60")	26.30 (1.04")	33.40 (1.31")	14.00 (0.55")	14.00 (0.55")
FWRT 16 12 16 30 HP	1"	3/4"	1"	20.60 (0.81")	20.90 (0.82")	26.70 (1.05")	19.00 (0.75")	19.00 (0.75")
FWRT 16 16 4 30 HP	1"	1"	1/4"	8.90 (0.35")	26.30 (1.04")	33.40 (1.31")	14.00 (0.55")	19.00 (0.75")
FWRT 16 16 12 30 HP	1"	1"	3/4"	20.50 (0.81")	26.30 (1.04")	33.40 (1.31")	14.00 (0.55")	14.00 (0.55")

FlareStar® Cross piece

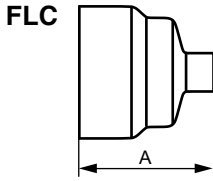
Dimensions mm (inch)



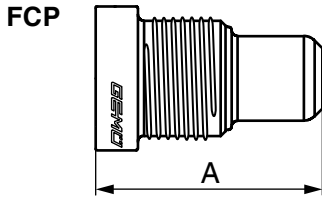
Cross piece, butt weld spigot

Order no.	Pipe size	Orifice	A	B	C	D	E
FWX 8 8 8 30 HP	1/2"	15.4 (0.60")	64.0 (2.51")	32.0 (1.25")	18.0 (0.70")	21.3 (0.84")	15.8 (0.62")
FWX 12 12 12 30 HP	3/4"	20.6 (0.81")	74.0 (2.91")	37.0 (1.45")	19.0 (0.74")	26.7 (1.05")	20.9 (0.82")
FWX 16 16 16 30 HP	1"	26.3 (1.04")	86.0 (3.38")	43.0 (1.69")	19.0 (0.74")	33.4 (1.31")	26.6 (1.04")

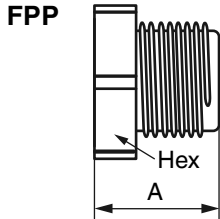
Dimensions mm (inch)



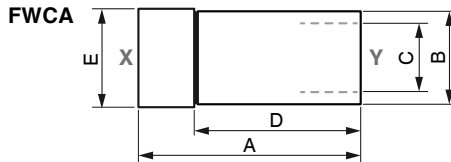
Cap, PFA		
Order no.	Tube outside diameter	A
FLC 4 30 HP	1/4"	16.50 (0.65")
FLC 6 30 HP	3/8"	21.50 (0.85")
FLC 8 30 HP	1/2"	22.60 (0.89")
FLC 12 30 HP	3/4"	23.60 (0.93")
FLC 16 30 HP	1"	32.00 (1.26")
FLC 20 30 HP	1 1/4"	35.00 (1.38")



Plug, PFA			
Order no.	Tube outside diameter	A	Hex
FCP 4 30 HP	1/4"	32.00 (1.26")	11/16"
FCP 6 30 HP	3/8"	34.50 (1.36")	13/16"
FCP 8 30 HP	1/2"	37.50 (1.48")	15/16"
FCP 12 30 HP	3/4"	38.50 (1.52")	1 3/16"
FCP 16 30 HP	1"	46.00 (1.81")	1 7/16"

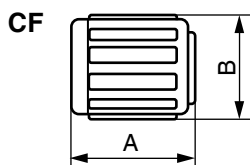


Pipe plug, NPT male thread, PFA			
Order no.	Male thread	A	Hex
FPP 2 30 HP	1/8"	20.32 (0.80")	1/2"
FPP 4 30 HP	1/4"	21.59 (0.85")	5/8"
FPP 6 30 HP	3/8"	21.59 (0.85")	11/16"
FPP 8 30 HP	1/2"	24.38 (0.96")	13/16"
FPP 12 30 HP	3/4"	24.38 (0.96")	1 3/16"
FPP 16 30 HP	1"	28.96 (1.14")	1 7/16"



Cap, PFA						
Order no.	Pipe	A	B	C	D	E
FWCA 4 4 30 HP	1/4"	19.05 (0.75")	13.72 (0.54")	8.58 (0.35")	13.97 (0.55")	15.75 (0.62")
FWCA 8 8 30 HP	1/2"	37.85 (1.49")	21.34 (0.84")	14.95 (0.61")	37.85 (1.49")	22.86 (0.90")
FWCA 12 12 30 HP	3/4"	37.85 (1.49")	26.67 (1.05")	19.85 (0.81")	37.85 (1.49")	28.19 (1.11")
FWCA 16 16 30 HP	1"	37.85 (1.49")	33.53 (1.32")	25.24 (1.03")	37.85 (1.49")	36.32 (1.43")

Dimensions mm (inch)



Union nut

Order no.	Tube outside diameter	DN	A	B
CF 75 4 HP	1/4"	4	27.00 (1.06")	20.50 (0.80")
CF 75 6 HP	3/8"	6	27.50 (1.08")	23.80 (0.93")
CF 75 8 HP	1/2"	10	31.00 (1.22")	27.00 (1.06")
CF 75 12 HP	3/4"	15	32.50 (1.28")	34.50 (1.35")
CF 75 16 HP	1"	20	41.00 (1.61")	46.00 (1.91")
CF 75 20 HP	1 1/4"	25	47.50 (1.87")	57.50 (2.26")

CF STF



Service tool
for tightening FlareStar union nuts

Order no.	Tube outside diameter	DN
CF STF Z 4 6 HP	1/4" - 3/8"	4 - 6
CF STF Z 8 12 HP	1/2" - 3/4"	10 - 15
CF STF Z 1 6 HP	1"	20
CF STF Z 2 0 HP	1 1/4"	25

1098



Flaring mandrel

Order no.	Tube outside diameter	DN
1098 4Z 01	1/4"	4
1098 6Z 01	3/8"	6
1098 8Z 01	1/2"	10
1098 12Z 01	3/4"	15
1098 16Z 01	1"	20
1098 20Z 01	1 1/4"	25

Ultra pure and standard PFA tubes

TubeStar® PFA tubes

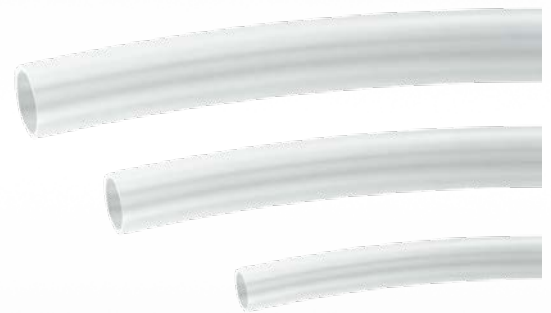
TubeStar is a product range comprising ultra pure and standard PFA tubes. The tubes are particularly suitable for applications with high purity media and other chemicals.

Features

- Tube sizes 1/4", 3/8", 1/2", 3/4", 1", 1 1/4"
- Tube lengths 6 - 400 m
(available as tubing spools and straight tube pieces)

Advantages

- Values of dynamic leach out tests are below the SEMI 57 standard (HP version)
- Excellent chemical and physical properties
- High Purity version, Teflon® PFA 450 HP (DuPont)
- Very good pressure resistance
- High transparency
- Suitable for temperatures up to 170 °C
- Good flexural fatigue strength



Accessory 1098 flaring mandrel



TubeStar®

Technical data

Working medium

Corrosive, inert, gaseous and liquid media which have no negative impact on the physical and chemical properties of the tube material.

Temperature range

Temperature range -70 to 260 °C

Tube types

Tube in HP and standard quality

Other tube types on request

Raw material types

High Purity

Teflon® PFA 450 HP (DuPont)

Standard

Depending on availability PFA M620, Dyneon 6502T or Daikin MP-230

Other raw material types on request.

Packing units

6 m as straight tube pieces

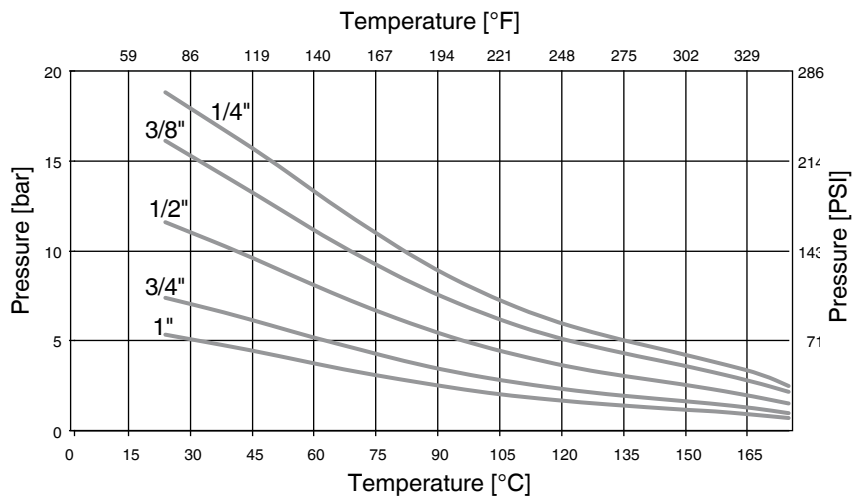
10 - 400 m on spools
(for 200 - 400 m with additional plastic spool)

Customised lengths (metric or inch)
on request

Extraction from PFA tubing acc. to SEMI F 57

Element	Semi 57 Maximum values ($\mu\text{g}/\text{m}^2$)	GEMÜ TubeStar® ($\mu\text{g}/\text{m}^2$)
Ca	30	0.00
CR	1	0.53
Cu	15	0.34
Fe	5	0.17
K	15	0.18
Na	15	0.43
Zn	10	9.25
AL	10	0.36

Pressure vs. temperature diagram



Dimensions / Tolerances [mm]

PFA tube with standard wall thickness									
Size	Inside diameter		Outside diameter		DN	Wall thickness		Bend radius	
Inch	Inch	mm	Inch	mm	Code	Inch	mm	Inch	mm
1/4"	0.156	3.97	0.250	6.35	4	0.047	1.19	1.5	40
3/8"	0.251	6.38	0.375	9.52	6	0.062	1.57	2.0	50
1/2"	0.376	9.55	0.500	12.70	8	0.062	1.57	2.3	60
3/4"	0.626	15.90	0.750	19.05	12	0.062	1.57	9.0	230
1"	0.876	22.25	1.000	25.40	16	0.062	1.57	11.0	280
1 1/4"	1.126	28.61	1.250	31.75	20	0.075	1.90	16.0	400

Tolerances								
Size	Outside diameter		Tolerances		Wall thickness		Bend radius	
Inch	Inch	mm	Inch	mm	Inch	mm	Inch	mm
1/4"	0.250	6.35	± 0.004	± 0.102	0.047	1.19	± 0.004	± 0.102
3/8"	0.375	9.52	± 0.004	± 0.102	0.062	1.57	± 0.004	± 0.102
1/2"	0.500	12.70	± 0.005	± 0.127	0.062	1.57	± 0.005	± 0.127
3/4"	0.750	19.05	± 0.005	± 0.127	0.062	1.57	± 0.005	± 0.127
1"	1.000	25.40	± 0.005	± 0.127	0.062	1.57	± 0.005	± 0.127
1 1/4"	1.250	31.75	± 0.007	± 0.200	0.075	1.90	± 0.007	± 0.200

Order data

Outside diameter		Code
1/4"	(6.35 mm)	4
3/8"	(9.52 mm)	6
1/2"	(12.70 mm)	8
3/4"	(19.05 mm)	12
1"	(25.40 mm)	16
1 1/4"	(31.75 mm)	20

Wall thickness		Code
1.19 mm		047
1.57 mm		062
1.90 mm		075

Material		Code
PFA, perfluoroalkoxy		30

Raw material		Code
PFA M620, Dyneon 6502T or Daikin MP-230		S
450 HP DuPont		U
Information on raw material only for High Purity versions, as various raw materials are possible for standard versions.		

Delivery form		Code
Straight tube pieces (6 m)		S
Reel (10 - 100 m)		C
Spool (200 - 400 m)		R

Tube length		Code
6 m		6M
10 m		10M
20 m		20M
50 m		50M
100 m		100M
200 m		200M
300 m		300M
400 m		400M

High Purity version		Code
High Purity		HP
Standard		HPS

Order example	TU	16	062	30	U	C	50M	HP
Tube type	TU							
Outside diameter (code)		16						
Wall thickness (code)			062					
Material (code)				30				
Raw material (code)					U			
Delivery form (code)						C		
Tube length (code)							50M	
High Purity version (code)								HP

Архангельск (8182)63-90-72
 Астана (7172)727-132
 Астрахань (8512)99-46-04
 Барнаул (3852)73-04-60
 Белгород (4722)40-23-64
 Брянск (4832)59-03-52
 Владивосток (423)249-28-31
 Волгоград (844)278-03-48
 Вологда (8172)26-41-59
 Воронеж (473)204-51-73
 Екатеринбург (343)384-55-89

Иваново (4932)77-34-06
 Ижевск (3412)26-03-58
 Казань (843)206-01-48
 Калининград (4012)72-03-81
 Калуга (4842)92-23-67
 Кемерово (3842)65-04-62
 Киров (8332)68-02-04
 Краснодар (861)203-40-90
 Красноярск (391)204-63-61
 Курск (4712)77-13-04
 Липецк (4742)52-20-81

Магнитогорск (3519)55-03-13
 Москва (495)268-04-70
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