



# Heavy Duty Pipe Fittings and Flanges

**John D. Dunlop Limited**  
(Brassfounders and Engineers)

# JOHN D. DUNLOP LTD

(Brassfounders & Engineers)

**John D. Dunlop Ltd (Brassfounders & Engineers)** is a privately owned company established in 1979. We are a Ministry of Defence approved company specialising in the manufacture of **Gunmetal Pipe Fittings**. Our range includes **Marine Heavy Duty Pipe Fittings (MHDPF)**, which incorporate silver brazing rings, and **Pipe Flanges**.

All our Gunmetal Components are manufactured in our modern foundry and machine shop in Irvine and our business is based on exceptionally high levels of quality, service and reliability.

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For use with tubes to BS 2871 : Part 2 : 1972, Table 3. All threads are BSP Parallel.

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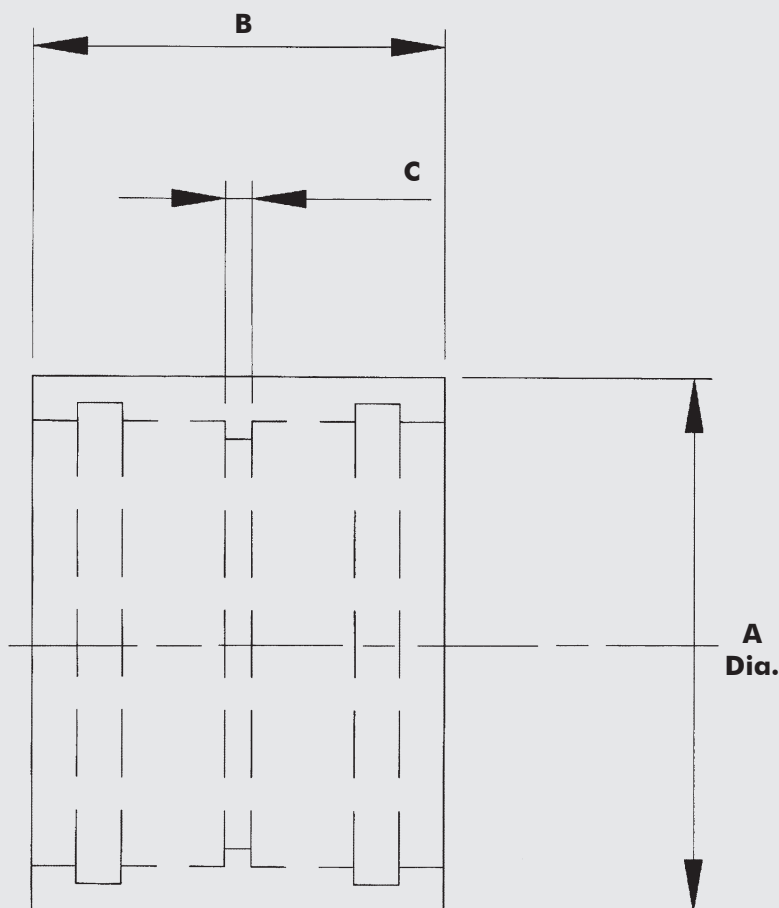
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## STRAIGHT COUPLING

(Capillary x Capillary)

**1 MHDPF**



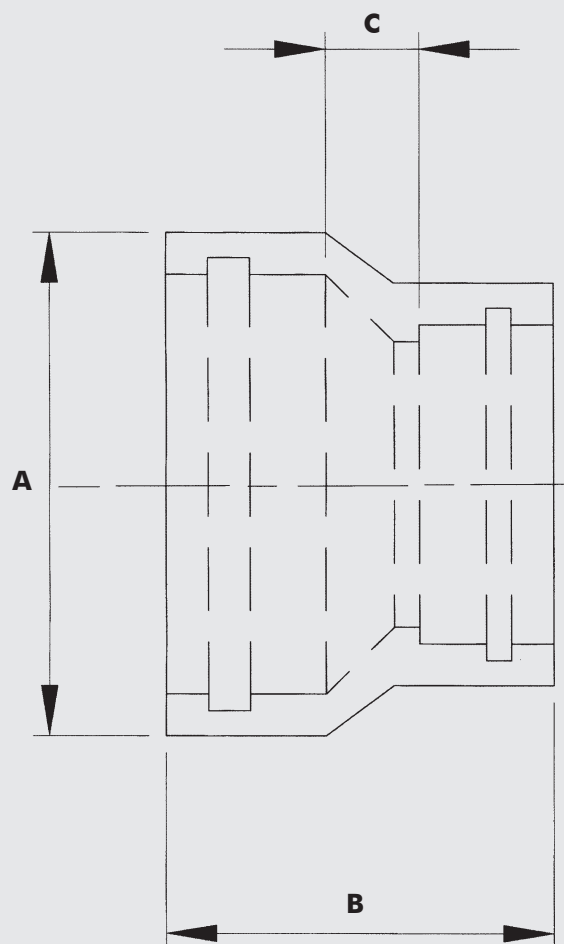
TUBE OD (mm)	'A' (mm)	'B' (mm)	'C' (mm)	APPROX WEIGHT (gms)
6	10	16	1.5	5
8	12	16	1.5	10
12	16	18	1.5	15
16	20	20	1.5	20
20	24	21	1.5	25
25	30	23	1.5	40
30	35	25	1.5	55
38	44	29	1.5	90
44.5	51	32	2.0	135
57	67	38	2.0	310

## REDUCING COUPLING

(Capillary x Capillary)

### 1R MHDPF

Note:  
Ends can be  
reduced with a  
6 MHDPF  
reducer.



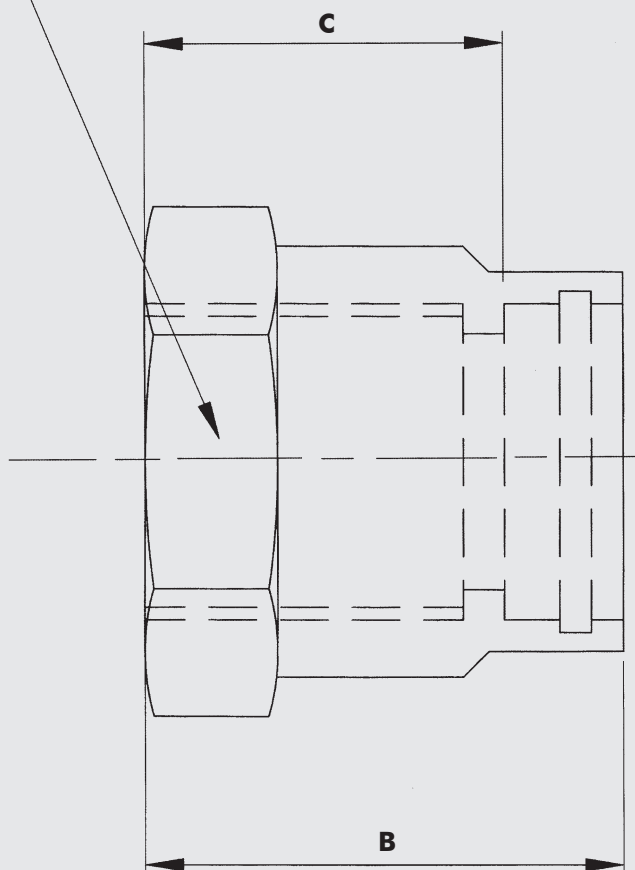
TUBE OD (mm)	'A' (mm)	'B' (mm)	'C' (mm)	APPROX WEIGHT (gms)
8 x 6	12	18	3.00	5
12 x 8	16	19	3.00	15
16 x 8	20	20	4.00	15
16 x 12	20	20	3.25	20
20 x 16	24	22	2.75	25
25 x 16	30	24	4.75	40
25 x 20	30	24	3.75	40
30 x 16	35	26	5.25	55
30 x 20	35	26	4.75	55
38 x 25	44	30	5.50	100
38 x 30	44	30	4.50	90
44.5 x 30	51	36	9.00	165
57 x 38	66	40	7.25	260
57 x 44.5	66	40	6.00	255

## STRAIGHT FEMALE CONNECTOR

(BSP female thread x Capillary)

**2 MHDPF**

A a/f hex

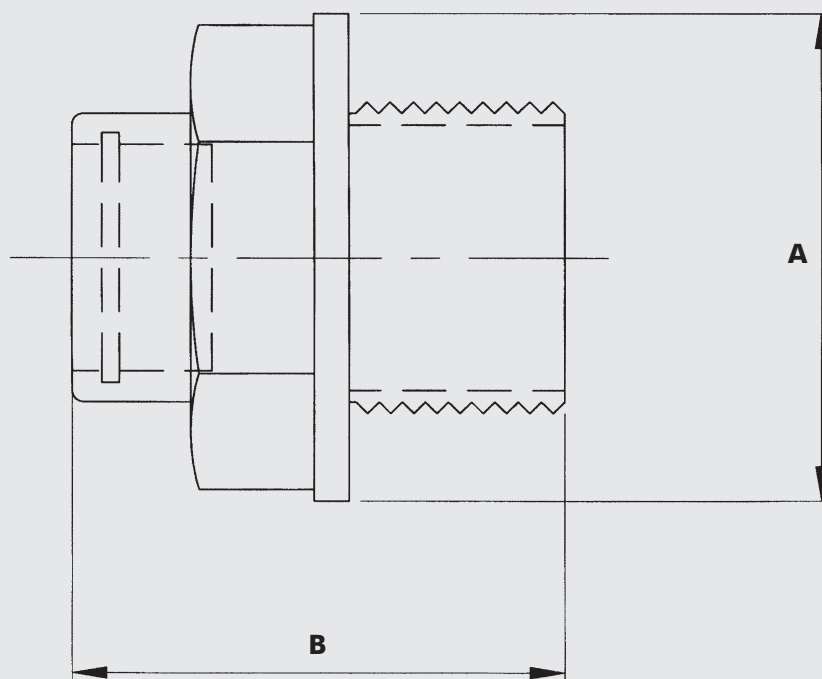


SIZE (BSP x mm)	'A' (mm)	'B' (mm)	'C' (mm)	APPROX WEIGHT (gms)
1/4" x 8	19	25	16	30
3/8" x 12	22	26	18	65
1/2" x 16	27	32	20	70
3/4" x 20	32	33	23	85
1" x 25	41	38	28	145
1.1/4" x 30	46	43	30	210

## STRAIGHT MALE CONNECTOR

(Capillary x BSP male thread)

**3 MHDPF**



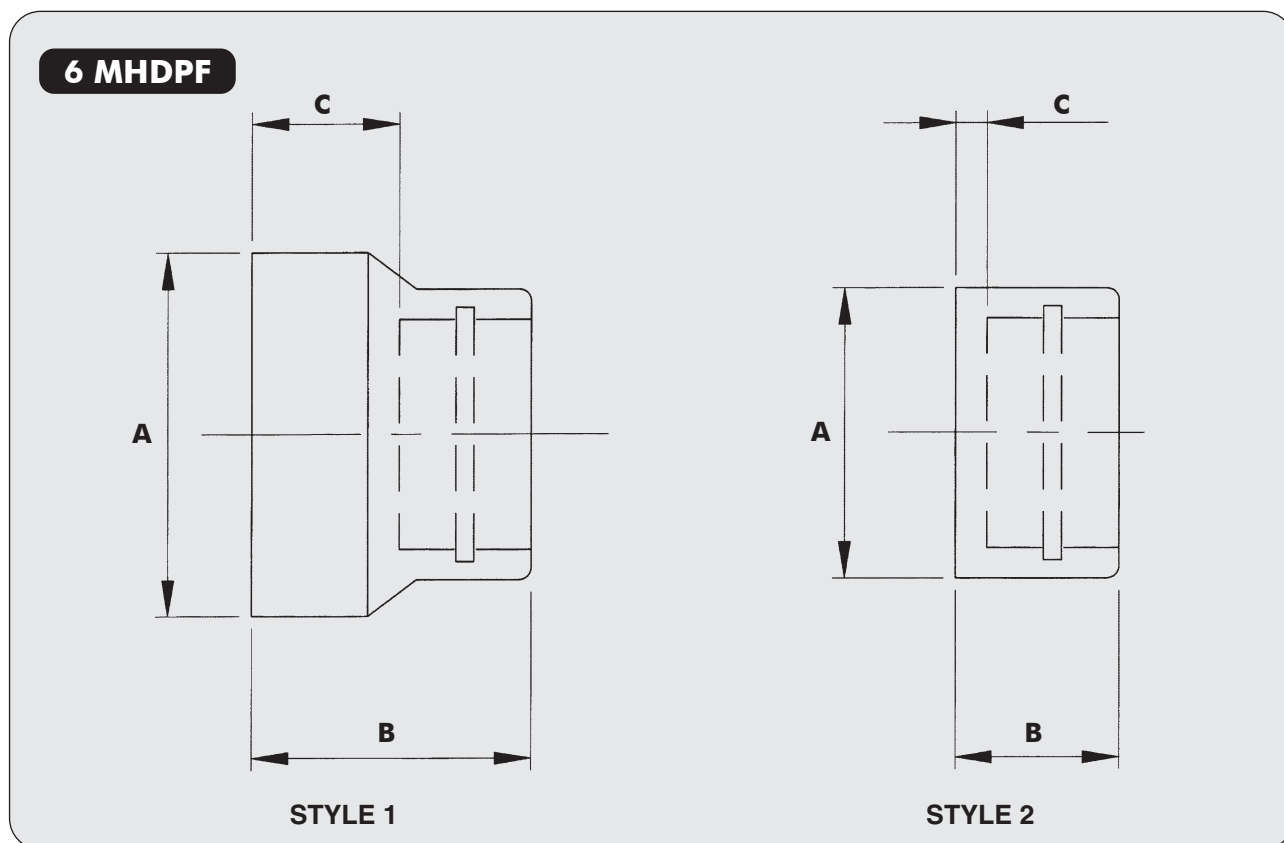
SIZE (mm x BSP)	'A' (mm)	'B' (mm)	APPROX WEIGHT (gms)
8 x 1/4"	18	23	25
12 x 3/8"	22	25	35
16 x 1/2"	28	26	40
20 x 3/4"	35	30	65
25 x 1"	42	36	125
30 x 1.1/4"	50	40	175
38 x 1.1/2"	56	44	230
44.5 x 1.1/2"	65	46	315

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## REDUCER

(Large end for insertion into fitting x Capillary)



TUBE OD (mm)	'A' (mm)	'B' (mm)	'C' (mm)	STYLE	APPROX WEIGHT (gms)
8 x 6	8	18	11	1	5
12 x 8	12	10	3	2	5
16 x 8	16	17	10	1	10
16 x 12	16	12	3	2	10
20 x 16	20	13	3	2	15
25 x 16	25	13	3	2	30
25 x 20	25	13	3	2	20
30 x 16	30	21	11	1	45
30 x 20	30	22	12	1	45
30 x 25	30	14	3	2	30
38 x 16	38	27	17	1	80
38 x 20	38	28	18	1	75
38 x 25	38	28	18	1	75
38 x 30	38	16	3	2	60
44.5 x 16	44.5	34	23	1	125
44.5 x 30	44.5	32	20	1	115
44.5 x 38	44.5	18	4	2	75
57 x 30	57	34	24	1	240
57 x 38	57	34	20	1	230
57 x 44.5	57	20	5	2	175

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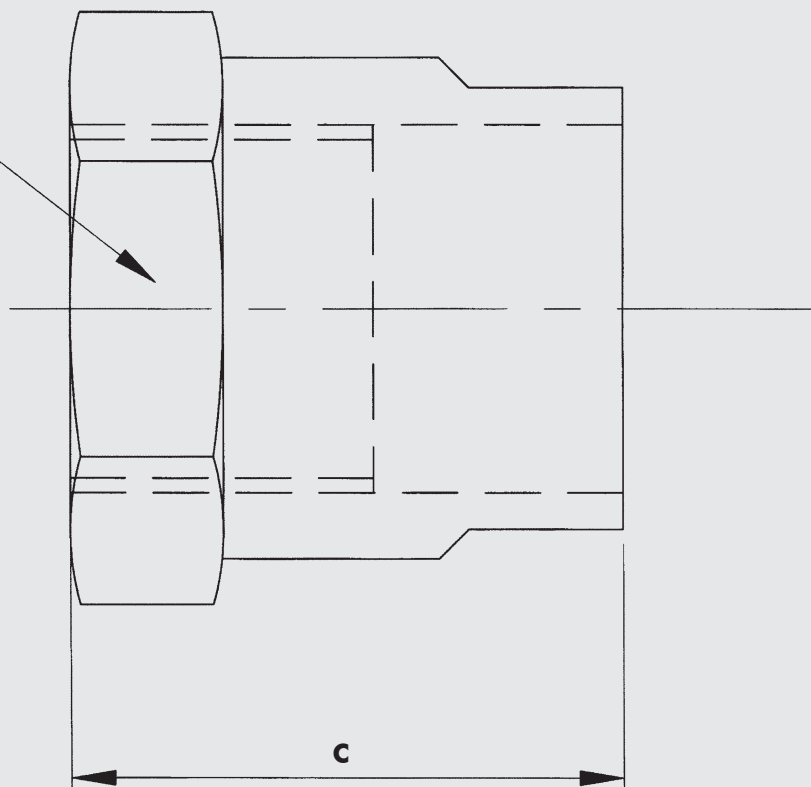
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## ADAPTOR

(BSP female thread x Male end for insertion into fitting)

**7 MHDPF**

A a/f hex



**SIZE**  
(BSP x mm)

1/2" x 16  
3/4" x 20

**'A'**  
(mm)

27  
32

**'C'**  
(mm)

35  
37

**APPROX**  
**WEIGHT (gms)**

70  
90

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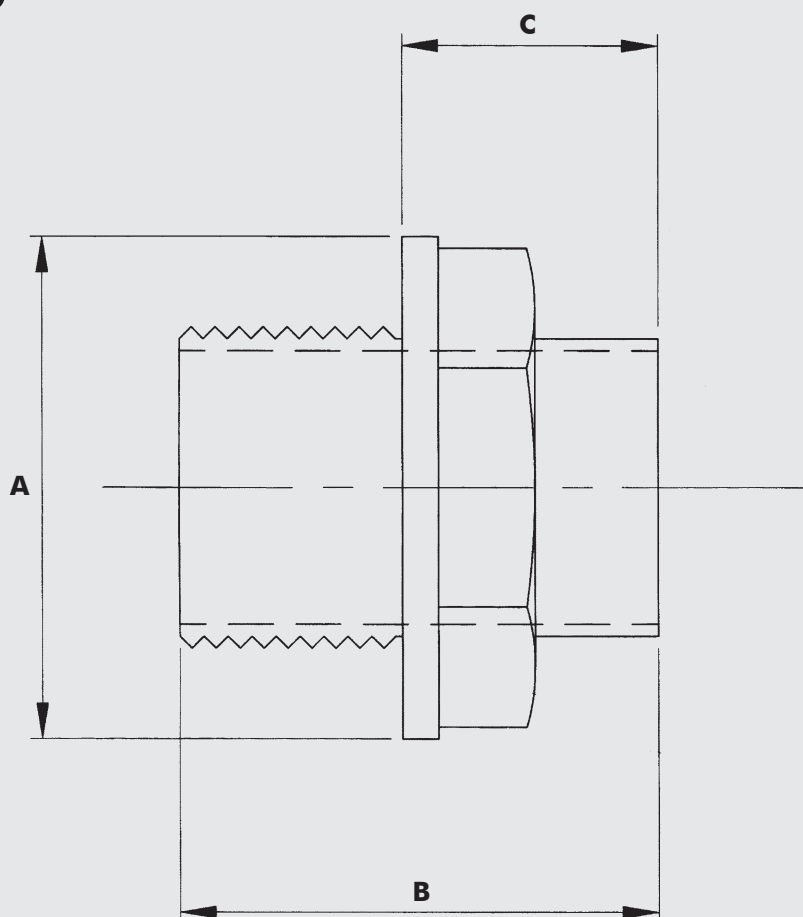
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## ADAPTOR

(BSP male thread x Male end for insertion into fitting)

**8 MHDPF**



<b>SIZE</b> (BSP x mm)	<b>'A'</b> (mm)	<b>'B'</b> (mm)	<b>'C'</b> (mm)	<b>APPROX</b> <b>WEIGHT (gms)</b>
1/2" x 16	28	34	23	60
3/4" x 20	37	38	27	70
1" x 25	42	43	29	135
1.1/4" x 30	51	44	30	190

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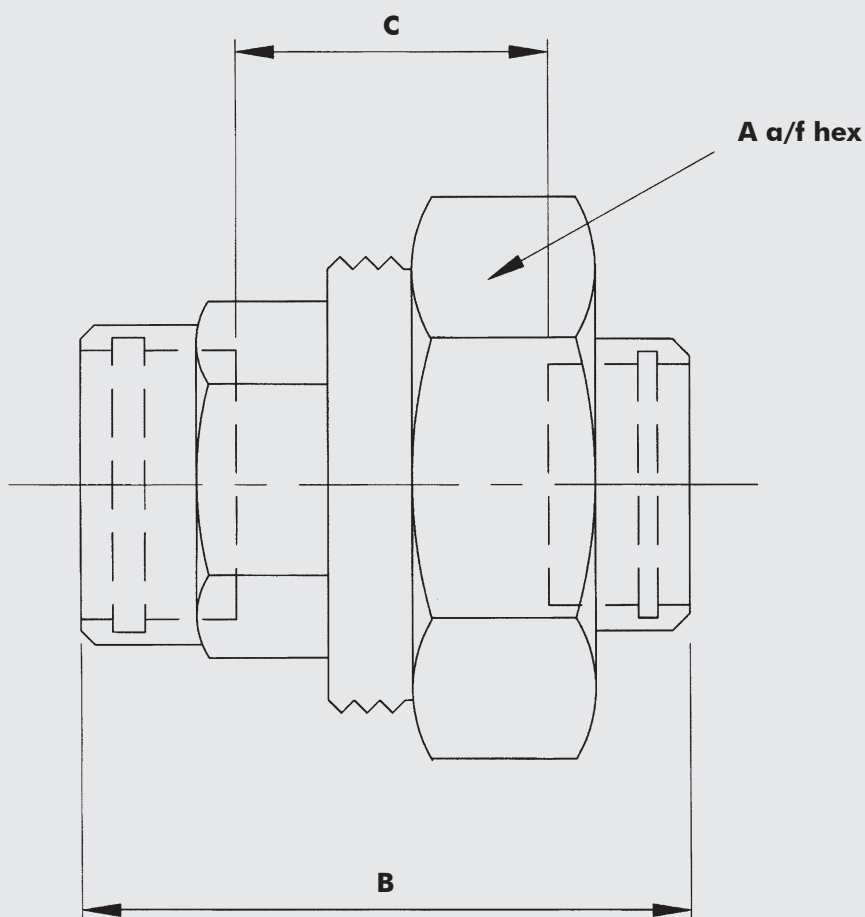
## UNION CONNECTOR

(Capillary x Capillary, round nose to cone joint)

### 11 MHDPF

3 Piece Fitting  
All parts may be  
purchased  
separately.

Note:  
Ends can be  
reduced with a  
6 MHDPF  
reducer.



TUBE OD (mm)	'A' (mm)	'B' (mm)	'C' (mm)	APPROX WEIGHT (gms)
6	19	38	23	50
8	22	37	22	60
12	27	42	26	105
16	32	42	24	135
20	41	50	32	270
25	48	52	32	345
30	48	54	30	340
38	60	58	30	555
44.5	66	66	34	695
57	85	72	35	1250

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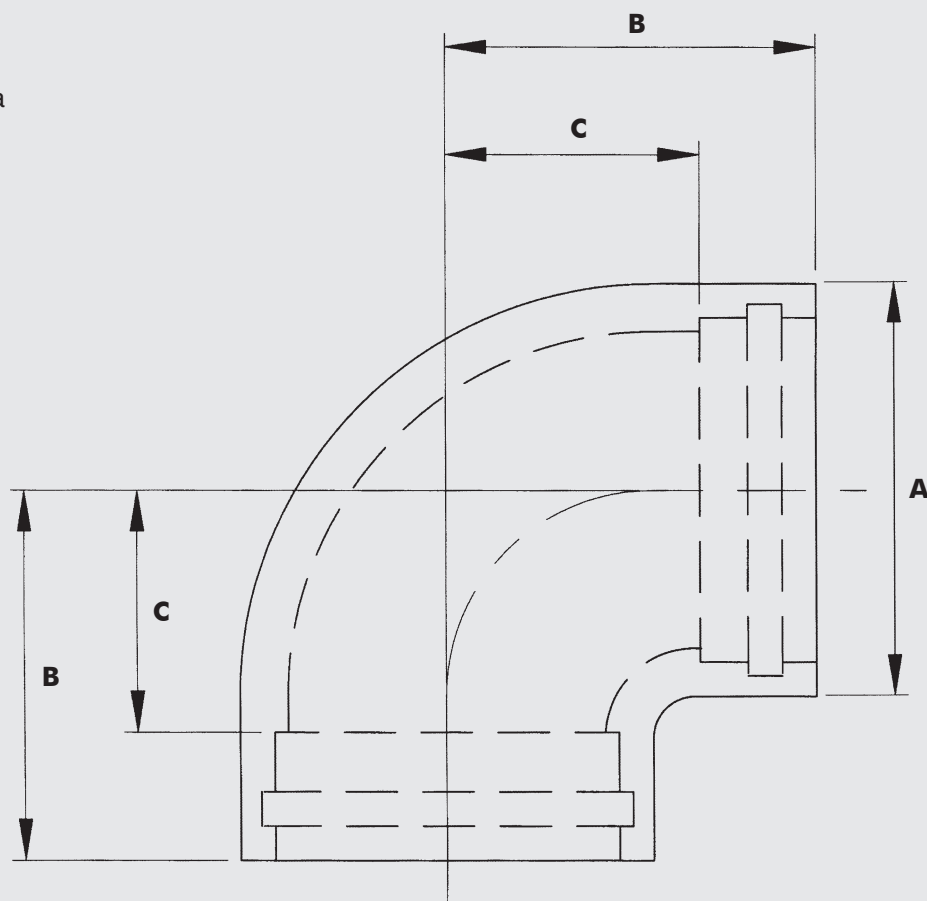
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## ELBOW

(Capillary x Capillary)

### 12 MHDPF

Note:  
Ends can be reduced with a 6 MHDPF reducer.



TUBE OD (mm)	'A' (mm)	'B' (mm)	'C' (mm)	APPROX WEIGHT (gms)
6	10	15	8	20
8	12	14	7	25
12	16	18	10	30
16	20	21	11	45
20	25	24	14	70
25	30	28	17	105
30	36	33	22	205
38	45	38	24	320
44.5	52	43	28	440
57	67	54	36	870

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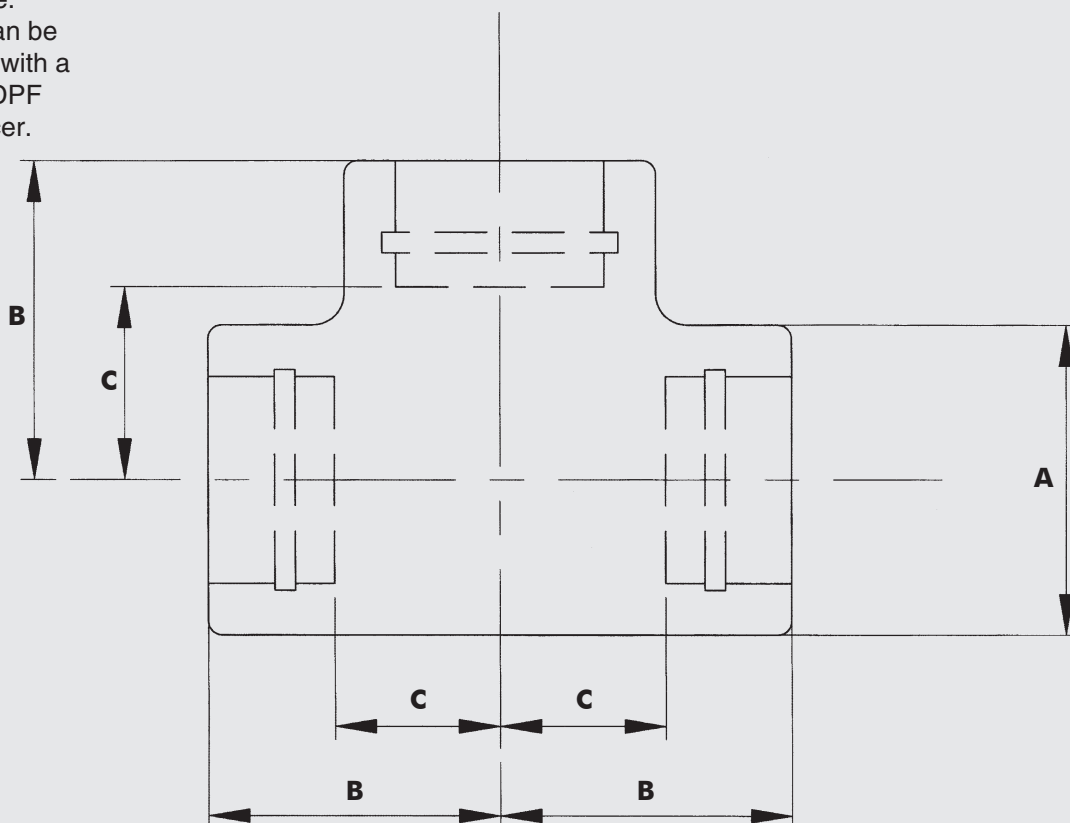
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## TEE

(Capillary all ends)

### 24 MHDPF

Note:  
Ends can be  
reduced with a  
6 MHDPF  
reducer.



TUBE OD (mm)	'A' (mm)	'B' (mm)	'C' (mm)	APPROX WEIGHT (gms)
6	10	13	5	15
8	12	15	8	20
12	16	18	10	40
16	20	21	11	65
20	25	24	14	90
25	30	29	18	145
30	36	34	23	220
38	45	39	25	415
44.5	52	43	28	550
57	67	55	37	1170

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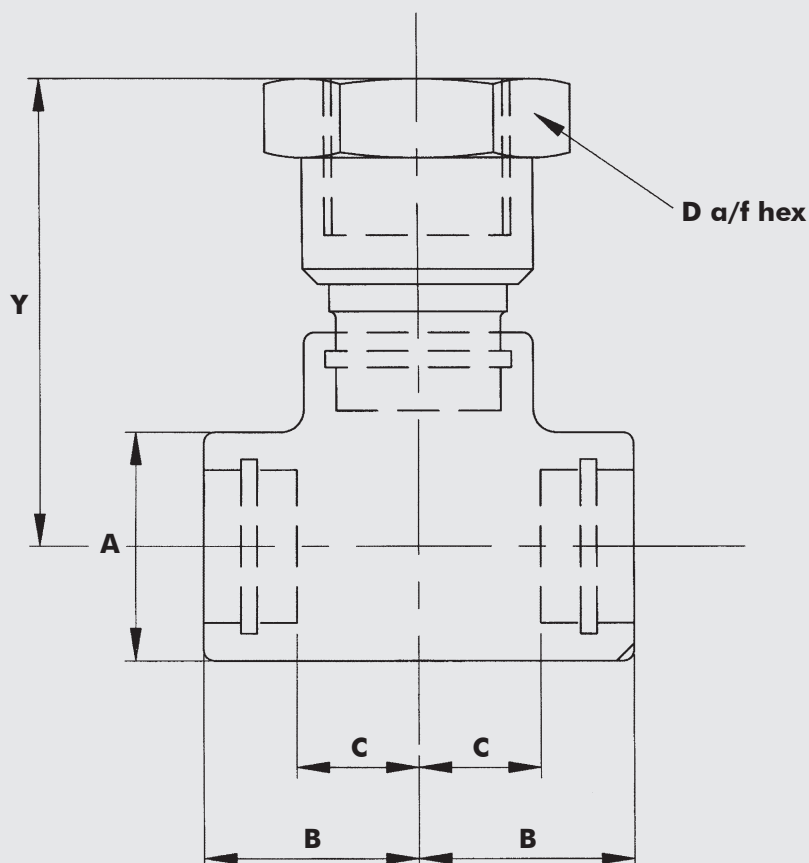
## TEE

(Capillary ends x BSP female branch)

### 30 MHDPF

2 piece fitting.

Both parts may be purchased separately as 7 MHDPF and 24 MHDPF.



SIZE (mm x BSP)	'A' (mm)	'B' (mm)	'C' (mm)	'D' (mm)	'Y' (mm)	APPROX WEIGHT (gms)
16 x 16 x 1/2"	20	21	11	27	46	130
20 x 20 x 3/4"	25	24	14	32	50	190

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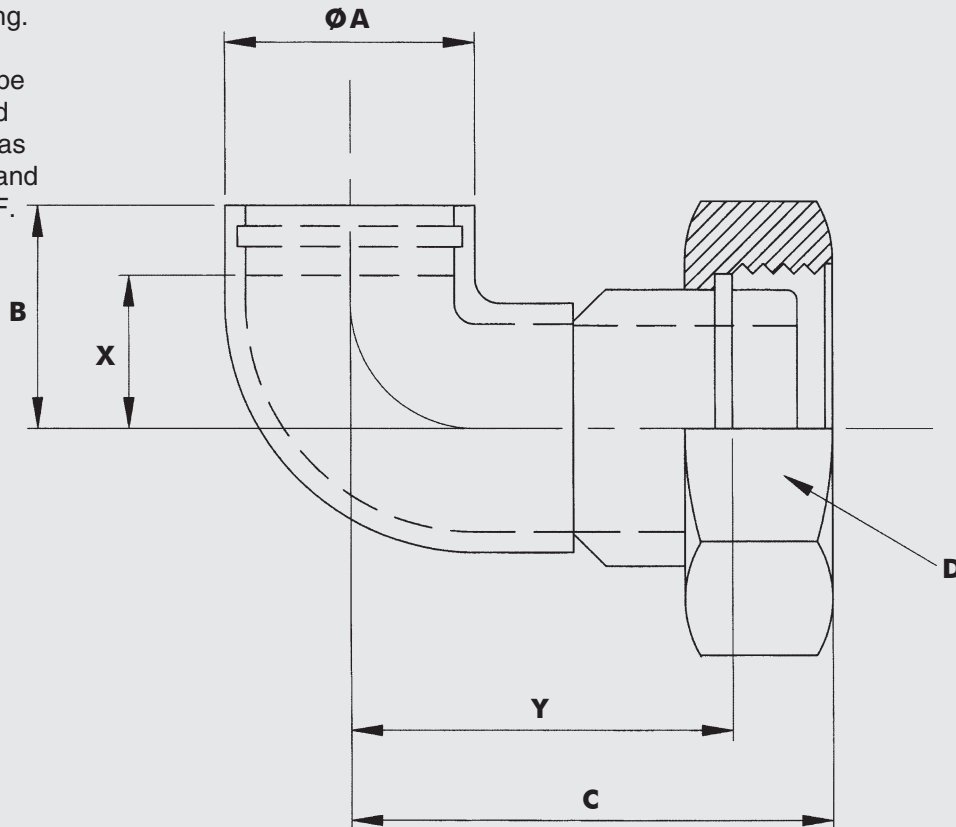
## BENT UNION ADAPTOR

(Capillary x BSP female nut, round nose joint)

### 64 MHDPF

3 piece fitting.

Parts may be purchased separately as 12 MHDPF and 75 MHDPF.



SIZE (mm x BSP female)	'A' (mm)	'B' (mm)	'C' (mm)	'D' (mm)	'X' (mm)	'Y' (mm)	APPROX WEIGHT (gms)
8 x 3/8"	12	14	37	22	7	30	65
12 x 1/2"	16	18	42	27	10	34	100
16 x 3/4"	20	21	49	32	11	39	135
20 x 1"	25	24	56	41	14	46	245
25 x 1.1/4"	30	28	63	48	17	52	380
30 x 1.1/4"	36	33	68	48	22	57	480
38 x 1.3/4"	45	38	74	60	24	60	750

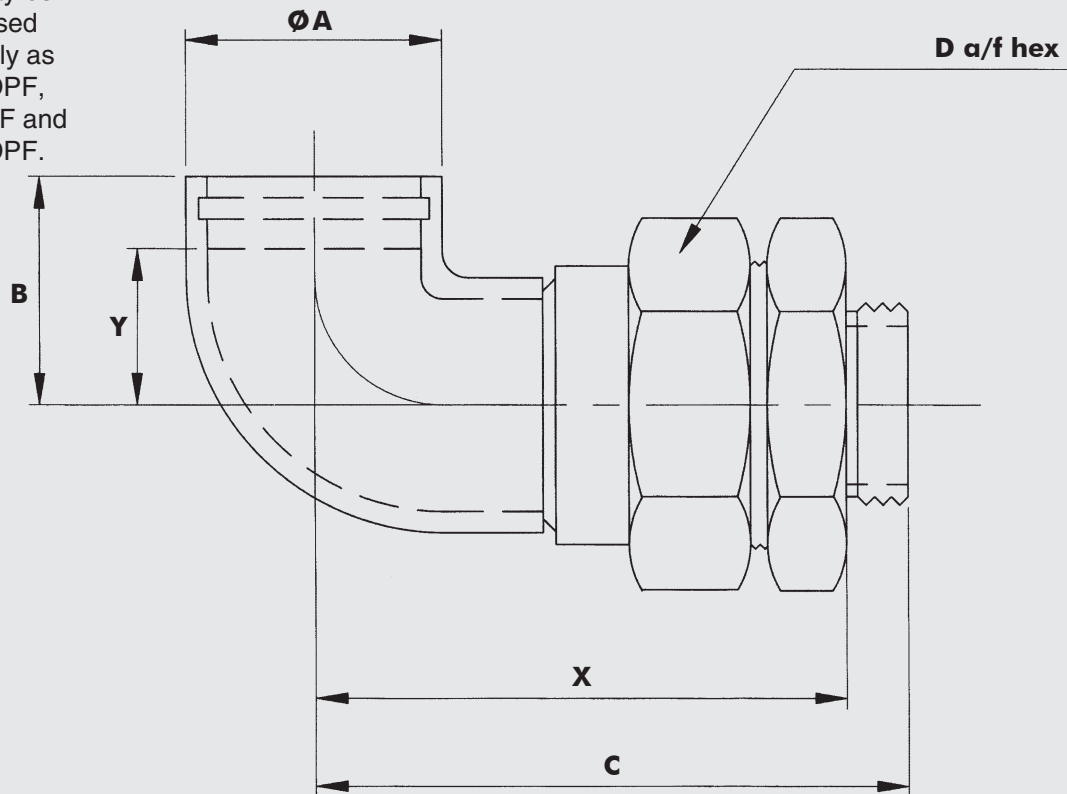
## BENT MALE UNION CONNECTOR

(Capillary x BSP male thread, round nose to cone joint)

### 65 MHDPF

4 piece fitting.

Parts may be purchased separately as 12 MHDPF, 75 MHDPF and 70 MHDPF.



SIZE (mm x BSP)	'A' (mm)	'B' (mm)	'C' (mm)	'D' (mm)	'Y' (mm)	'X' (mm)	APPROX WEIGHT (gms)
8 x 1/4"	12	14	54	22	7	46	90
12 x 3/8"	16	18	63	27	10	53	150
16 x 1/2"	20	21	73	32	11	63	205
20 x 3/4"	25	24	84	41	14	73	390
25 x 1"	30	28	94	48	17	81	655
30 x 1.1/4"	36	33	98	48	22	85	760
38 x 1.1/2"	45	38	113	60	24	95	1155

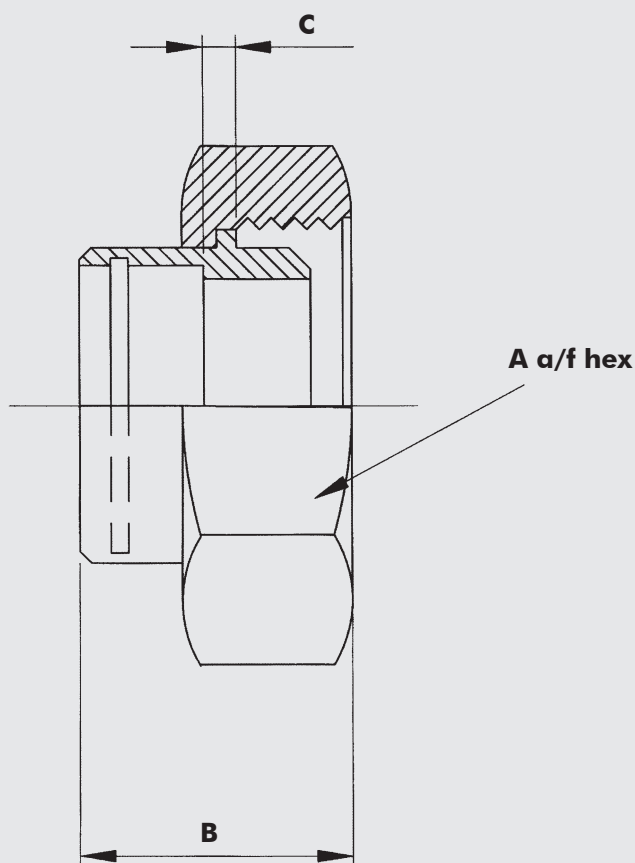
## STRAIGHT UNION ADAPTOR

(Capillary x BSP female nut, round nose joint)

### 68 MHDPF

Note:  
Capillary end  
can be reduced  
with a  
6 MHDPF  
reducer.

Both parts may  
be purchased  
separately.



SIZE (mm x BSP)	'A' (mm)	'B' (mm)	'C' (mm)	APPROX WEIGHT (gms)
6 x 1/4"	19	18	2.5	30
8 x 3/8"	22	20	4	35
12 x 1/2"	27	22	5	65
16 x 3/4"	32	23	5	80
20 x 1"	41	27	6	165
25 x 1.1/4"	48	29	7	205
30 x 1.1/4"	48	29	7	200
38 x 1.3/4"	60	34	7	330
44.5 x 2"	66	34	8	390
57 x 2.1/2"	85	39	8	730

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## STRAIGHT MALE UNION CONNECTOR

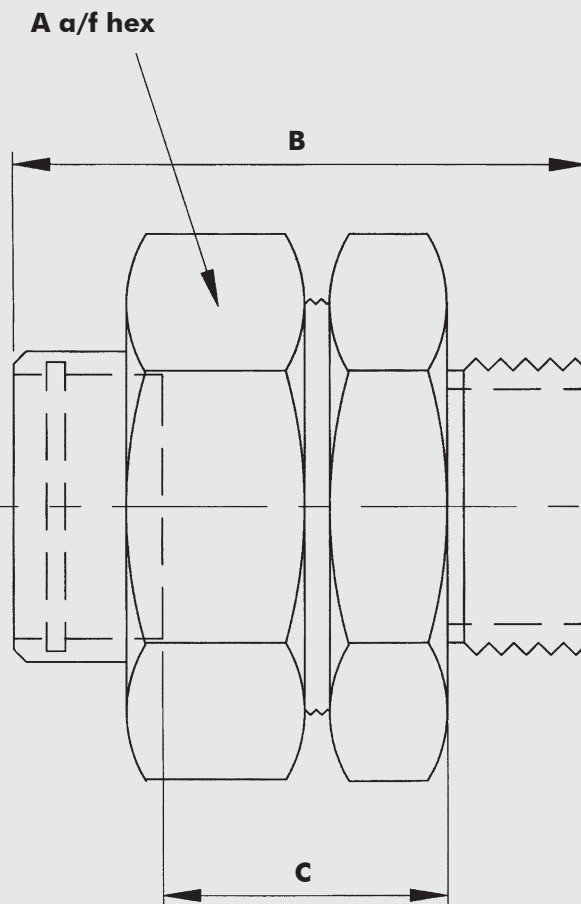
(Capillary x BSP male thread, round nose to cone joint)

### 69 MHDPF

3 piece fitting.

Note:  
Capillary end  
can be reduced  
with a  
6 MHDPF  
reducer.

Parts may be  
purchased  
separately as  
68 MHDPF and  
70 MHDPF.



SIZE (mm x BSP)	'A' (mm)	'B' (mm)	'C' (mm)	APPROX WEIGHT (gms)
6 x 1/8"	19	34	20	50
8 x 1/4"	22	40	24	65
12 x 3/8"	27	45	28	115
16 x 1/2"	32	47	28	160
20 x 3/4"	41	57	36	320
25 x 1"	48	63	37	470
30 x 1.1/4"	48	63	37	465
38 x 1.1/4"	60	66	37	595
38 x 1.1/2"	60	73	42	715
38 x 1.3/4"	60	73	42	810
44.5 x 1.1/2"	66	76	44	980
57 x 2"	85	82	46	1375

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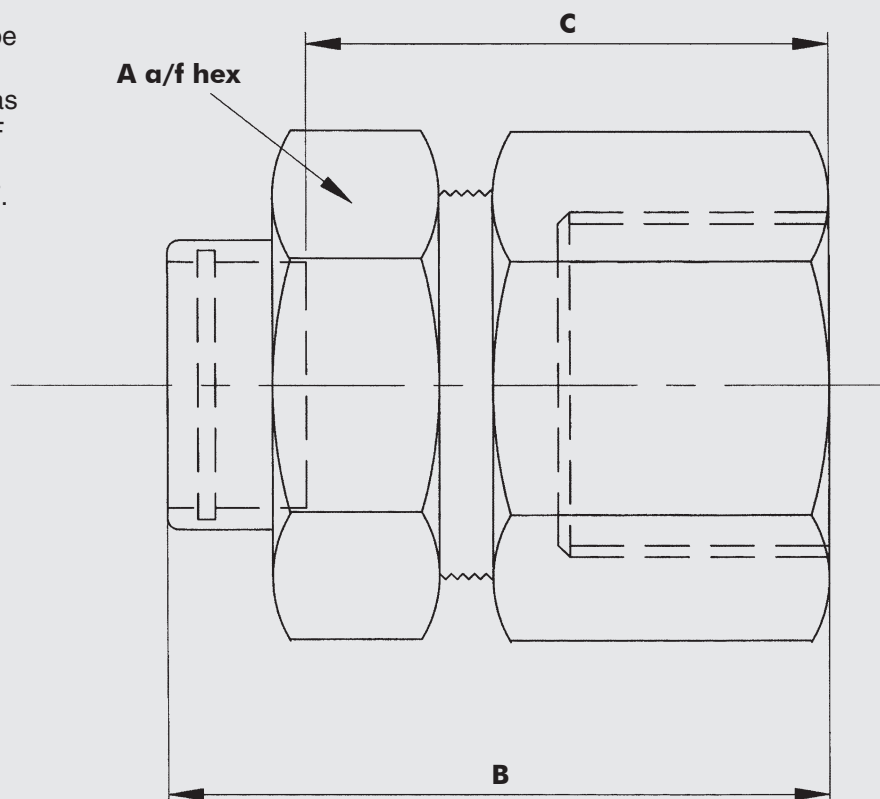
## STRAIGHT FEMALE UNION CONNECTOR

(Capillary x BSP female. Round nose to cone joint)

### 69F MHDPF

3 piece fitting.

Parts may be purchased separately as 68 MHDPF and 72 MHDPF.

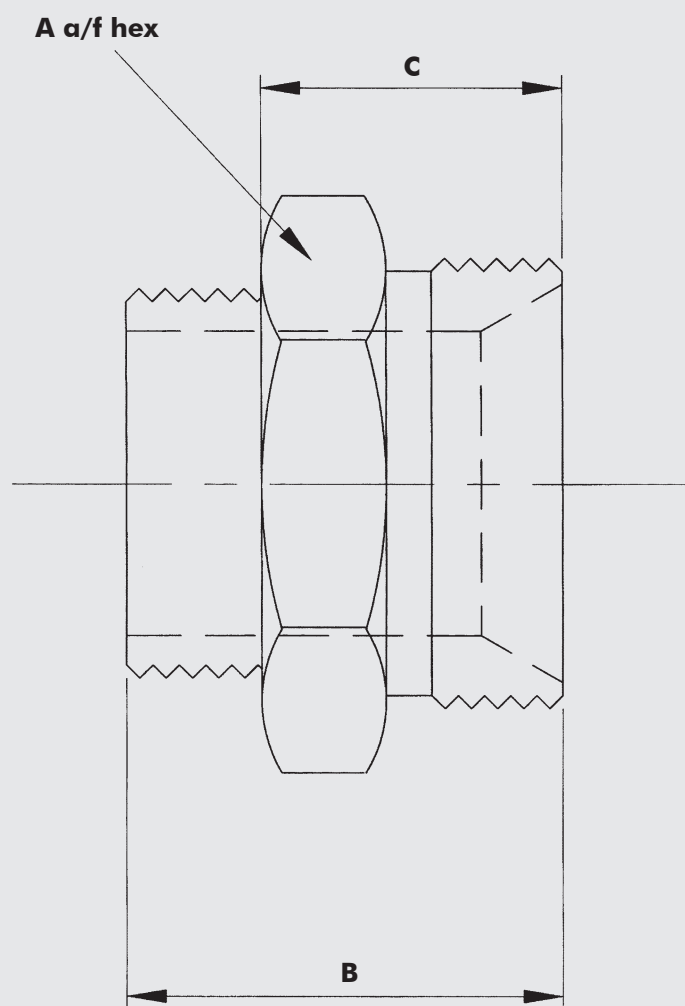


SIZE (mm x BSP female)	'A' (mm)	'B' (mm)	'C' (mm)	APPROX WEIGHT (gms)
8 x 1/4"	22	41	33	65
12 x 3/8"	27	45	36	125
16 x 1/2"	32	51	42	175

## MALE CONNECTING NIPPLE

(BSP male x BSP male with 60° cone joint)

**70 MHDPF**



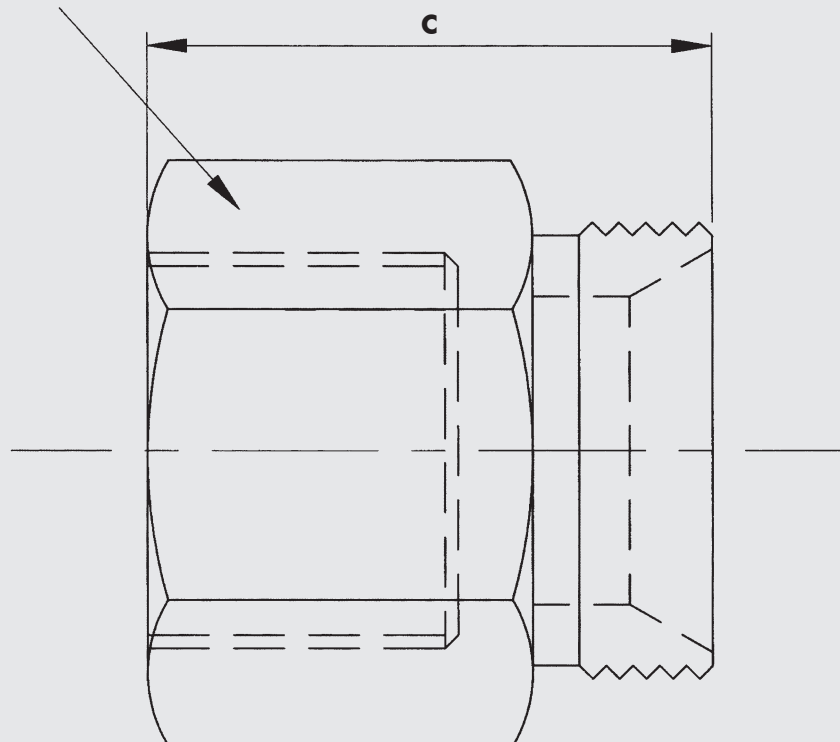
SIZE (BSP male x BSP male joint)	'A' (mm)	'B' (mm)	'C' (mm)	APPROX WEIGHT (gms)
1/8" x 1/4"	17	23	15	15
1/4" x 3/8"	19	24	15	30
3/8" x 1/2"	22	29	19	50
1/2" x 3/4"	27	30	20	75
3/4" x 1"	36	37	26	155
1" x 1.1/4"	46	40	27	270
1.1/4" x 1.1/4"	46	42	27	265
1.1/4" x 1.3/4"	46	42	27	260
1.1/2" x 1.3/4"	55	49	31	405
1.3/4" x 1.3/4"	55	49	31	485
1.1/2" x 2"	60	52	34	585
2" x 2.1/2"	69	53	34	640

## FEMALE CONNECTING NIPPLE

(BSP female x BSP male with 60° cone joint)

**72 MHDPF**

A a/f hex



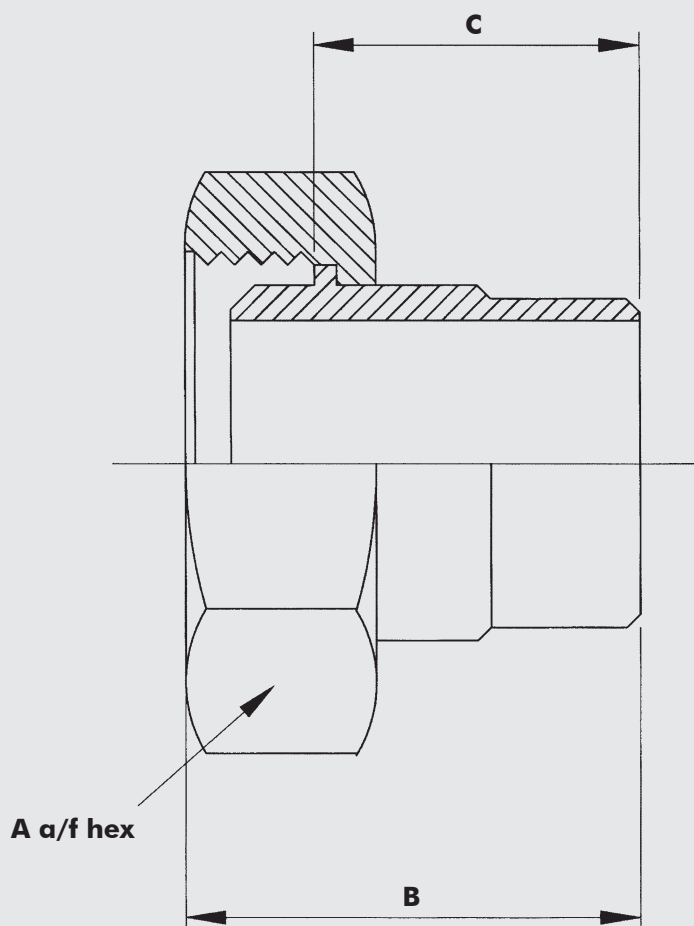
SIZE (BSP female x BSP male)	'A' (mm)	'C' (mm)	APPROX WEIGHT (gms)
1/4" x 3/8"	17	25	30
3/8" x 1/2"	22	28	50
1/2" x 3/4"	28	33	95

## NUT AND LINING

(Male lining, for insertion into fitting, complete with BSP F nut. Round nose joint)

### 75 MHDPF

Both parts may be purchased separately.

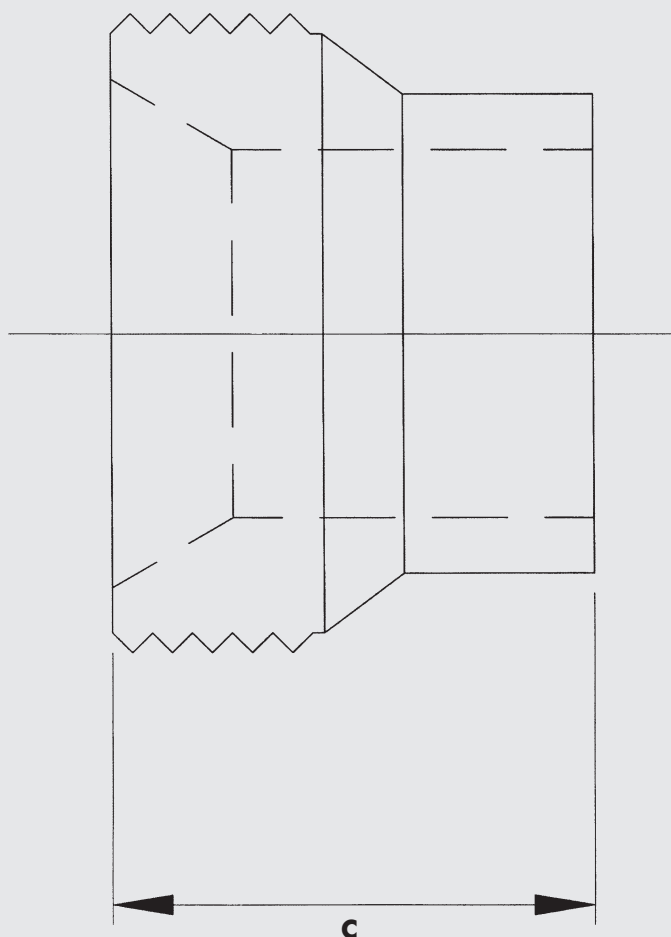


SIZE (BSP female x mm)	'A' (mm)	'B' (mm)	'C' (mm)	APPROX WEIGHT (gms)
3/8" x 8	22	30	22	40
1/2" x 12	27	32	22	70
3/4" x 16	32	38	30	90
1" x 20	41	42	32	175
1.1/4" x 25	48	46	35	275
1.1/4" x 30	48	46	35	275
1.3/4" x 38	60	50	38	430

## UNION ADAPTOR

(BSP male, 60° cone joint x Male end for insertion into fitting)

**77 MHDPF**



**SIZE**  
(BSP x mm)

1/2" x 12  
3/4" x 16  
1" x 20  
1.1/4" x 25  
1.1/4" x 30

**'C'**  
(mm)

22  
22  
27  
28  
28

**APPROX**  
**WEIGHT (gms)**

25  
35  
70  
100  
100

## STRAIGHT UNION CONNECTOR

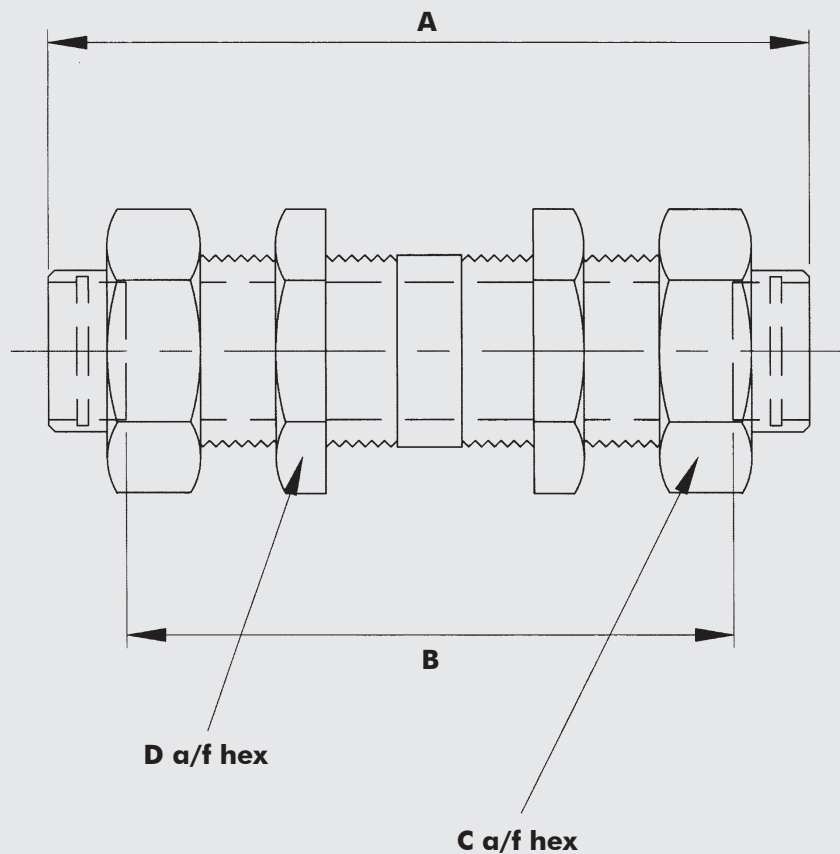
(Capillary x Capillary)

### 150 MHDPF

Round nose to cone joints.  
Suitable for 25mm deck thickness.

Consisting of 1 x BSP Male Body, 2 x 68 MHDPF and 2 x BSP Female Locknuts.

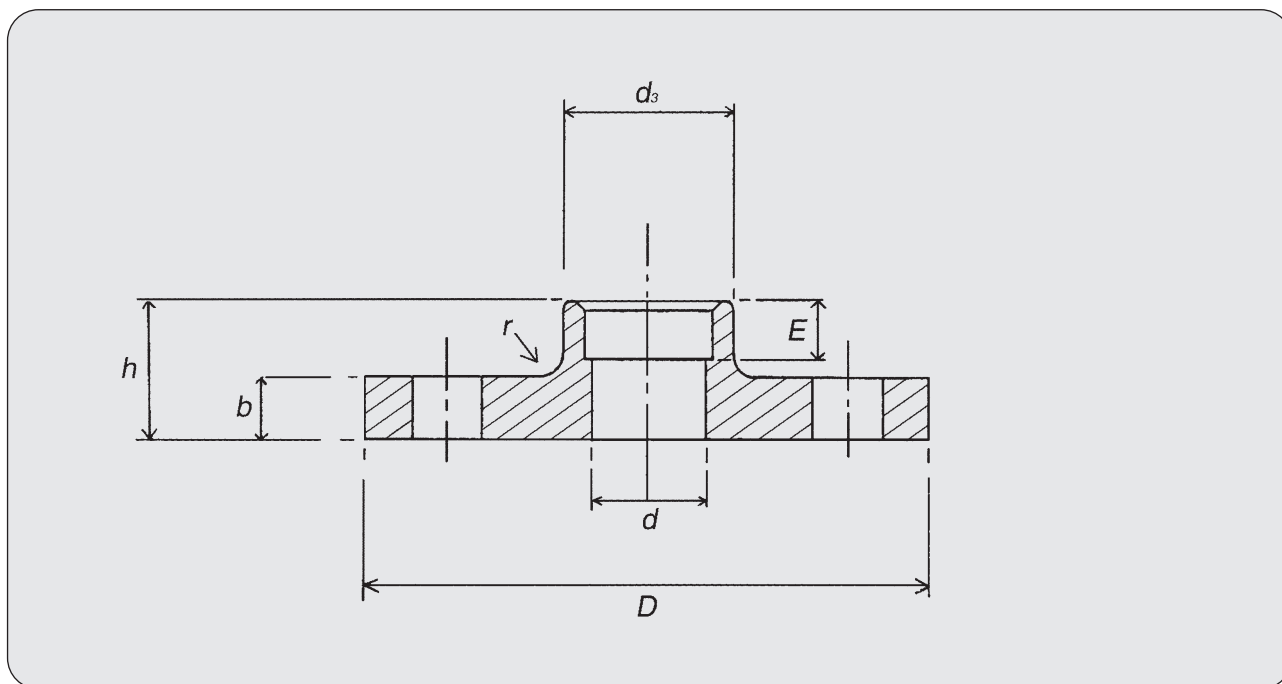
All parts may be purchased separately.



SIZE (mm x BSP)	'A' (mm)	'B' (mm)	'C' (mm)	'D' (mm)	APPROX WEIGHT (gms)
12 x 1/2"	110	93	27	36	435
16 x 3/4"	112	93	32	41	580
20 x 1"	117	98	41	50	955
25 x 1.1/4"	125	103	48	60	1410
30 x 1.1/4"	125	101	48	60	1260
38 x 1.3/4"	132	102	60	72	1900
44.5 x 2"	134	102	66	79	2215
57 x 2.1/2"	144	108	85	94	3480

## GUNMETAL COUNTERBORE FLANGES

Based on BS 4504, Part 2, Tables 25/22, up to 50mm nominal bore,  
and 16/22 for sizes 65mm nominal bore and above.



### MATERIAL: GUNMETAL NES 830, PART 1 (LG4)

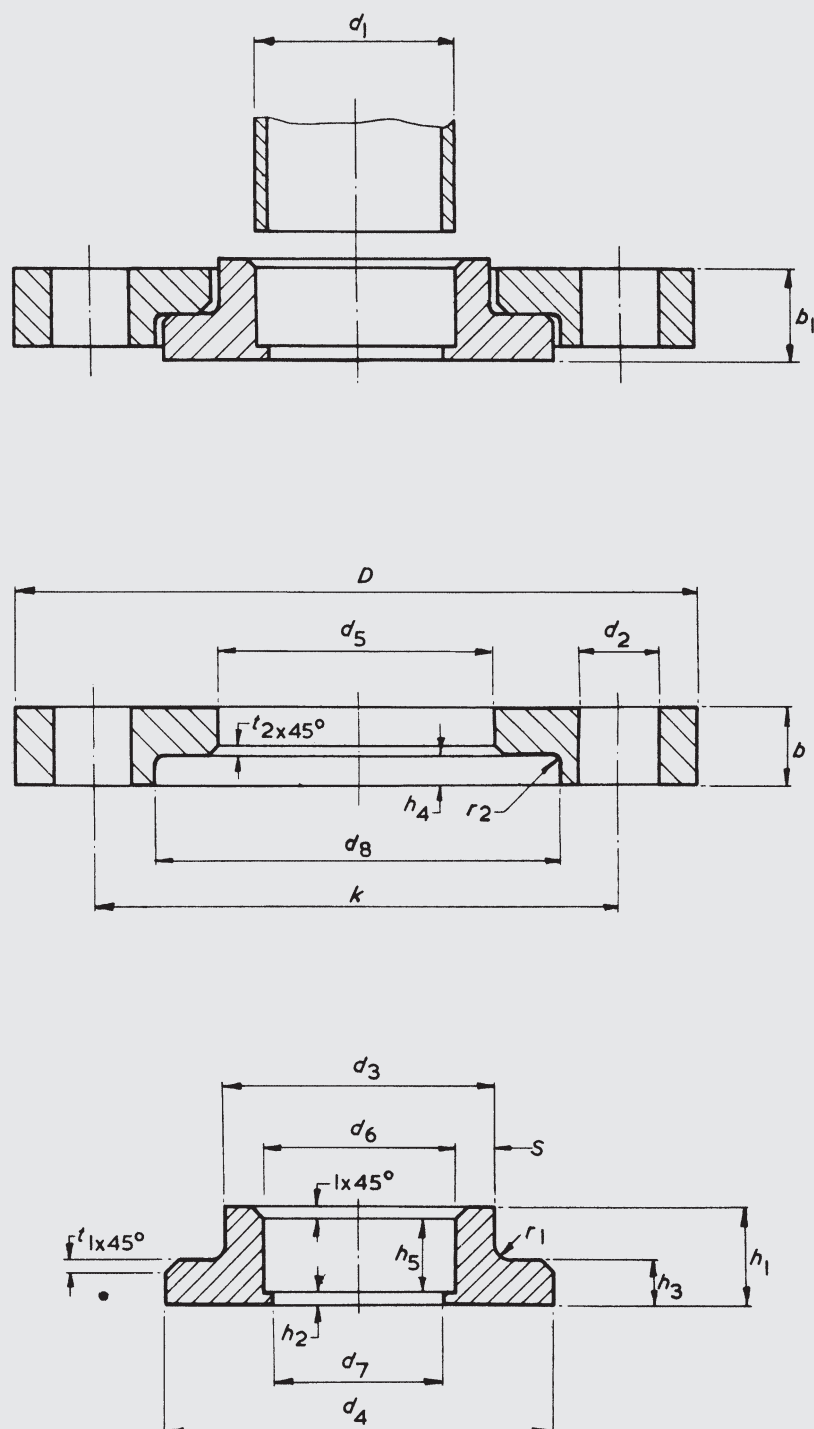
Nom Size	P pe O'D	FLANGE							BOLT HOLES			Bolt Size	NS Cat No 0241/
		d	D ±0.13	b min	E	h	d <sub>s</sub>	r	No	Dia	PCD		
10	16	14.0	90	10	11	20	21	4	4	13	60	M12	533-7635
15	20	18.0	95	10	11	20	26	4	4	13	65	M12	533-7636
20	25	22.0	105	10	11	24	31	4	4	13	75	M12	533-7637
25	30	27.0	115	10	11	24	36	4	4	13	85	M12	533-7638
32	38	35.0	140	10	12	26	45	6	4	17	100	M16	533-7639
40	44.5	41.5	150	11	12	26	51	6	4	17	110	M16	533-7640
50	57	54.2	165	13	12	28	67	6	4	17	125	M16	533-7641
65	76.1	72.2	185	20	16	32	103	6	4	17	145	M16	533-7642
80	88.9	84.1	200	20	16	34	114	8	8	17	160	M16	533-7643
100	108	103.1	220	20	16	40	134	8	8	17	180	M16	533-7644
125	133	128.4	250	22	18	44	164	8	8	17	210	M16	533-7645
150	159	154.4	285	22	20	44	183	10	8	21	240	M20	533-7646
175	193.7	188.4	315	24	22	44	213	10	8	21	270	M20	533-2369
200	219.1	213.1	340	26	24	46	238	10	12	21	295	M20	533-7647
250	267	261.2	405	28	25	48	287	12	12	25	355	M24	533-7648

**Note:** Flanges are machined all over. Flanges can also be bored to suit BS 2871, Part 1, tube sizes.

## COMPOSITE FLANGES

To BS 4504, Part 2, 1974, Table 16/23

Gunmetal Brazing Collars and Mild Steel Plate Backing Flanges



## COMPOSITE FLANGES

To BS 4504, Part 2, 1974, Table 16/23

### Dimensions

#### MILD STEEL PLATE BACKING FLANGE

Nom Size	D	b	b <sub>1</sub>	d <sub>8</sub>	Tol.	d <sub>5</sub>	Tol.	h <sub>4</sub>	r <sub>2</sub>	t <sub>2</sub>	Bolting	Drilling		
												No.	d <sub>2</sub>	k
10	90	14	16	41.3	+0.25 0	23	+0.5 0	3	1	1	M12	4	14	60
15	95	14	16	46.3		28		3	1	1	M12	4	14	65
20	105	14	16	56.3		33		3	1	1	M12	4	14	75
25	115	16	18	65.3		38		3	1	1	M12	4	14	85
32	140	16	18	76.3		47		3	1	1	M16	4	18	100
40	150	16	19	84.5	+0.4 0	53	+0.5 0	3	1	1	M16	4	18	110
50	165	16	19	99.5		69		3	1	1	M16	4	18	125
65	185	16	19	118.5		89		3	1	1	M16	4	18	145
80	200	18	21	132.5		106		4	1	1	M16	8	18	160
100	220	18	21	156.5		125		4	1	1	M16	8	18	180
125	250	18	21	185	+0.5 0	150.5	+1 0	6	2	2	M16	8	18	210
150	285	18	21	212		177.5		6	2	2	M20	8	22	240
175	315	20	23	243		212.5		7	2	2	M20	8	22	270
200	340	20	23	267		237.5		7	2	2	M20	12	22	295
250	405	24	27	320		287.5		8	2	2	M24	12	26	355

#### GUNMETAL BRAZING COLLARS

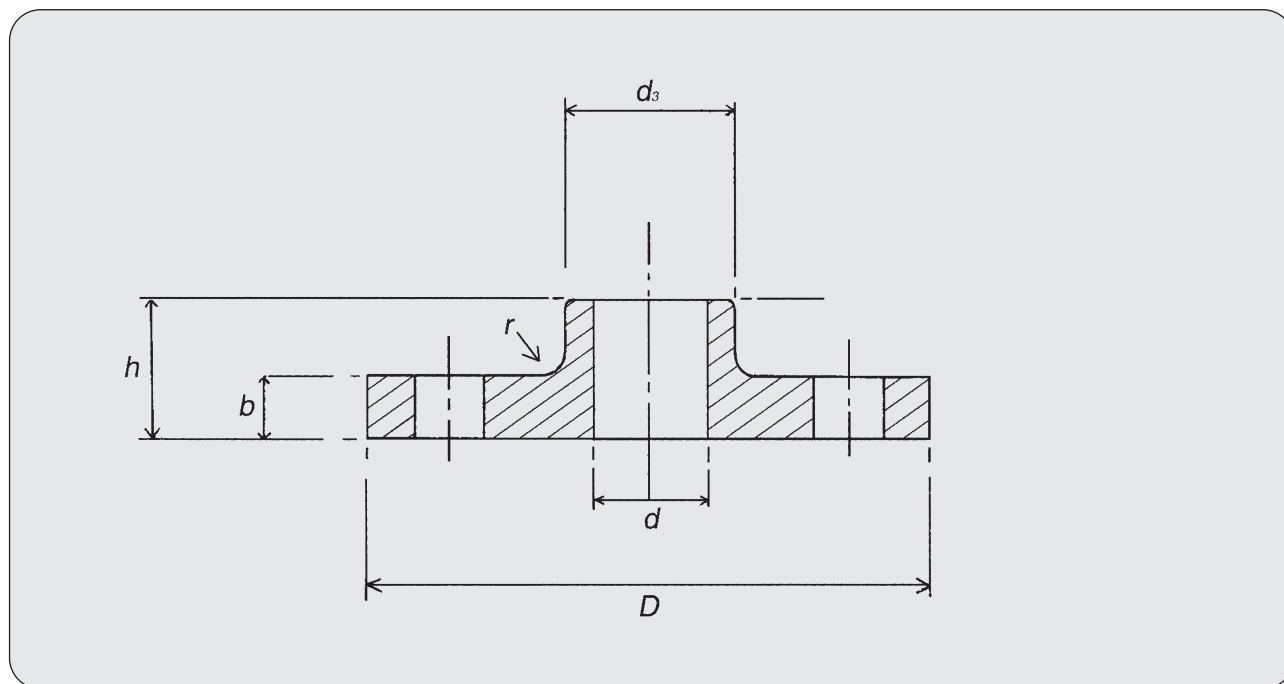
Nom. Size	Pipe o.d. d <sub>1</sub>	d <sub>6</sub>	Tol.	d <sub>4</sub>	Tol.	d <sub>3</sub>	Tol.	d <sub>7</sub>	h <sub>1</sub> min.	h <sub>2</sub> min.	h <sub>3</sub> min.	h <sub>5</sub> min.	s nom.	r <sub>1</sub>	t <sub>1</sub>
10	16	16.07	+0.05 0	41	0	21	-0.5	14	16	1.5	5	9	2.5	1	1
15	20	20.08		46		26		18	16	1.5	5	9	2.5	1	1
20	25	25.08		56		31		22	16	1.5	5	9	2.5	1	1
25	30	30.08		65		36		27	18	1.5	5	11	3	1	1
32	38	38.10		76		45		35	18	1.5	5	11	3	1	1
40	44.5	44.60	+0.05 0	84	-0.25	51	-0.5	41.5	19	1.5	5	12	3	1	1
50	57	57.23		99		67		54	19	1.5	6	12	5	1	1
65	76.1	76.33		118		87		72	19	1.5	6	12	5	1	1
80	88.9	89.18		132		104		84	21	2	7	13	7	1	1
100	108	108.38		156		123		103	21	2	7	13	7	1	1
125	133	133.63	+0.1 0	184	0	148	-1	128	21	2	9	13	7	2	2
150	159	159.63		211		175		154	21	2	9	13	7.5	2	2
175	193.7	194.63		242		210		187.5	23	3	10	14	7.5	2	2
200	219.1	220.03		266		235		213	23	3	10	14	7.5	2	2
250	267	268.13		319		285		261	27	3	11	17	8	2	2

**Note:** The Gunmetal brazing collars can be supplied in material grades NES 830, Part 1 (LG4) or BS 1400 LG2. The collars can also be bored to suit BS 2871, Part 1, tube sizes.

The backing flanges can be supplied in standard mild steel plate or certified material of the customer's choice. Backing flanges can be supplied painted green or in a shot blast condition.

## GUNMETAL THRO' BORE FLANGES

Based on BS 4504, Part 2, Tables 25/22, up to 50mm nominal bore,  
and 16/22 for sizes 65mm nominal bore and above.



### MATERIAL: GUNMETAL NES 830, PART 1 (LG4)

Nom Size	P pe O'D	FLANGE					BOLT HOLES			Bolt Size	NS Cat No 0241/533
		D	b min	h min	$d_s$	r	No	Dia	PCD		
10	16	90	10	20	21	4	4	14	60	M12	7550
15	20	95	10	20	26	4	4	14	65	M12	7551
20	25	105	10	24	31	4	4	14	75	M12	7552
25	30	115	10	24	36	4	4	14	85	M12	7553
32	38	140	10	26	45	6	4	18	100	M16	7554
40	44.5	150	11	26	51	6	4	18	110	M16	7555
50	57	165	13	28	67	6	4	18	125	M16	7556
65	76.1	185	20	32	103	6	4	18	145	M16	7542
80	88.9	200	20	34	114	8	8	18	160	M16	7543
100	108	220	20	40	134	8	8	18	180	M16	7544
125	133	250	22	44	164	8	8	18	210	M16	7545
150	159	285	22	44	183	10	8	22	240	M20	7546
175	193.7	315	24	44	213	10	8	22	270	M20	7547
200	219.1	340	26	46	238	10	12	22	295	M20	7548
250	267	405	28	48	287	12	12	26	355	M24	7549

**Note:** Flanges are machined all over. Flanges can also be bored to suit BS 2871, Part 1, tube sizes.

## Other Products

We are always pleased to look at customers own drawings and specifications for **Gunmetal Components**.

The following list gives an indication of other products we manufacture.

- **Gunmetal Slip-on, Blank and Screwed Flanges to all British and International Standards**
- **Composite Flanges to all British and International Standards**
- **Gunmetal Stop-ends up to 219.1mm**
- **Gunmetal Hose Fittings**
- **Gunmetal Copper x Male Iron Adaptors up to 4" BSPT**
- **Gunmetal Hex Nipples up to 4" BSPT**
- **Gunmetal Bushes**

**Non-standard Gunmetal and Composite Flanges  
can be manufactured to order**

***WE KEEP STOCKS OF ALL OUR PRODUCTS***

## Gunmetal Material Specification

Marine Heavy Duty Pipe Fittings are manufactured in NES.830 Part 1, which is the Ministry of Defence equivalent of the Standard BS 1400 LG4 Material. The chemical composition and mechanical properties are as follows:

### CHEMICAL COMPOSITION

PER CENT BY WEIGHT		
Element	Not Less Than	Not More Than
Tin	6.0	8.0*
Zinc	1.5	3.0
Lead	2.5	3.50
Nickel	-	2.0*
Copper	REMAINDER	REMAINDER
Impurities		Not More Than
Iron	-	0.20
Aluminium	-	0.01
Silicon	-	0.02
Bismuth	-	0.05
Arsenic	-	0.15
Antimony	-	0.25
Iron & Arsenic and Antimony	-	0.40
TOTAL	-	0.70

\* Tin + ½ Nickel content must not be less than 7% and not greater than 8%

### MECHANICAL PROPERTIES

Tensile Strength (UTS)	0.2% Proof Stress (0.2% PS)	Elongation on 5.65 $\sqrt{S_0}$ Gauge Length
N/mm <sup>2</sup>	N/mm <sup>2</sup>	Per Cent
Min 250	Min 130	Min 16

## Silver Brazing Rings

Marine Heavy Duty Pipe Fittings incorporate AG14 Grade silver brazing rings, where applicable. The **Nominal Composition** (%) is as follows:

Ag	Cu	Zn	Sn	Melting Range (°C)
55	21	22	2	630-660

# JOHN D. DUNLOP LTD

## (Brassfounders & Engineers)

### Dimensions & Weights

Whilst every effort is made to ensure the accuracy of **all information** within this brochure, dimensions, weights and all other descriptive matter are for **guidance only**, based on our experience of the products, and are not binding on the company in any way. John D. Dunlop Ltd (Brassfounders & Engineers) have a policy of continuous improvement and reserve the right to change any information in this brochure without notice. Illustrations within this brochure are not to scale.

There are numerous applications for Marine Heavy Duty Pipe Fittings and it is the responsibility of the purchaser to ensure the suitability of our products for any particular system that is effected by temperature, pressure, movement or any other relevant circumstances.

Where dimensions, or any other detail concerning our MHDPF range are crucial to an application, we will be pleased to offer our opinion in writing, before accepting an order. We will also be pleased to supply returnable product samples for inspection by the purchaser. There is no charge for this service.

### Receipt of Goods/Handling

On receipt of goods, fittings must be handled with care, especially components that rely on round nose to cone joints. In the unlikely event that any fitting does not meet with the purchasers total approval, we **must** be informed **before** the component is worked on in any manner.

### Installation

Only experienced personnel should install Marine Heavy Duty Pipe Fittings. Suitable silver brazing fluxes must be used along with suitable jointing materials when, for example, round nose to cone joints are made. The incorporated silver brazing rings in the fittings will, under normal conditions, eliminate the need for any end feeding. Under no circumstances should any fitting be quenched in water as this will lead to micro cracking.

### Operating Temperatures and Pressures

Marine Heavy Duty Pipe Fittings are designed to operate within the following limits of temperature and pressure. (All bar ratings are derived from the lbf/in<sup>2</sup> rating and are taken to the nearest downwards value).

#### MHDPF (Subject to Lloyds requirements)

##### FOR METAL TEMPERATURES NOT EXCEEDING

50°C (122°F) bar (lbf/in <sup>2</sup> )	75°C (167°F) bar (lbf/in <sup>2</sup> )	100°C (212°F) bar (lbf/in <sup>2</sup> )	125°C (257°F) bar (lbf/in <sup>2</sup> )	150°C (302°F) bar (lbf/in <sup>2</sup> )	175°C (347°F) bar (lbf/in <sup>2</sup> )	200°C (392°F) bar (lbf/in <sup>2</sup> )
48 (700)	47 (695)	46 (680)	45 (660)	43 (630)	29 (430)	17 (250)

#### MHDPF (Not Subject to Lloyds requirements)

##### FOR METAL TEMPERATURES NOT EXCEEDING

SIZE (mm)	Up to 100°C (212°F) bar (lbf/in <sup>2</sup> )	Up to 177°C (350°F) bar (lbf/in <sup>2</sup> )	Up to 200°C (392°F) bar (lbf/in <sup>2</sup> )
6	180-(2610)	150-(2175)	61-(885)
8	157-(2275)	125-(1815)	51-(740)
12	130-(1885)	98-(1420)	39-(565)
16	113-(1635)	84-(1220)	33-(480)
20	102-(1475)	75-(1085)	30-(435)
25	92-(1335)	68-(985)	27-(400)
30	86-(1245)	63-(910)	25-(360)
38	79-(1145)	58-(840)	23-(335)
44.5	75-(1085)	55-(800)	22-(320)
57	70-(1015)	52-(755)	20-(290)

Maximum Test Pressure one and a half times Working Pressure.



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