Eaton Winner®
Large Quantity Carbon Steel Adapter Program

Europe, Middle East
and South Africa

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Eaton Winner
Carbon Steel Adapter Program

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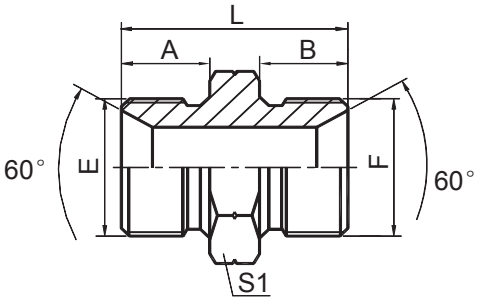
BSP Thread 60° Cone Fittings

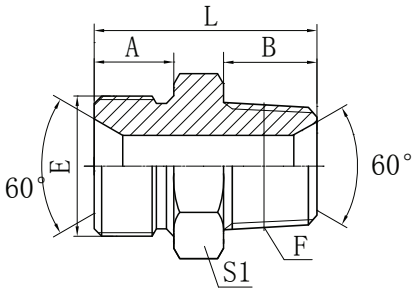


1B

BSP Male Double

Use For 60° Cone Seat or Bonded Seal

Part No.	Thread E	F	Dimensions A	B	L	S1
1B-02Z	G1/8"X28	G1/8"X28	10	10	26	14
1B-02-04Z	G1/8"X28	G1/4"X19	10	12	28	19
1B-02-06Z	G1/8"X28	G3/8"X19	10	13.5	31.5	22
1B-04Z	G1/4"X19	G1/4"X19	12	12	30	19
1B-04-06Z	G1/4"X19	G3/8"X19	12	13.5	33.5	22
1B-04-08Z	G1/4"X19	G1/2"X14	12	16	38	27
1B-06Z	G3/8"X19	G3/8"X19	13.5	13.5	35	22
1B-06-08Z	G3/8"X19	G1/2"X14	13.5	16	39.5	27
1B-06-12Z	G3/8"X19	G3/4"X14	13.5	18.5	43	32
1B-08Z	G1/2"X14	G1/2"X14	16	16	42	27
1B-08-12Z	G1/2"X14	G3/4"X14	16	18.5	45.5	32
1B-10Z	G5/8"X14	G5/8"X14	17.5	17.5	45	30
1B-10-12Z	G5/8"X14	G3/4"X14	17.5	18.5	47	32
1B-12Z	G3/4"X14	G3/4"X14	18.5	18.5	48	32
1B-12-16Z	G3/4"X14	G1"X11	18.5	20.5	52.5	41
1B-12-20Z	G3/4"X14	G1-1/4"X11	18.5	20.5	55	50
1B-16Z	G1"X11	G1"X11	20.5	20.5	54	41
1B-16-20Z	G1"X11	G1-1/4"X11	20.5	20.5	58	50
1B-20Z	G1-1/4"X11	G1-1/4"X11	20.5	20.5	58	50
1B-20-24Z	G1-1/4"X11	G1-1/2"X11	20.5	23	60.5	55
1B-24Z	G1-1/2"X11	G1-1/2"X11	23	23	63	55
1B-24-32Z	G1-1/2"X11	G2"X11	23	25.5	66.5	70
1B-32Z	G2"X11	G2"X11	25.5	25.5	68	70



1BN

45° BSP Male 60° Seat

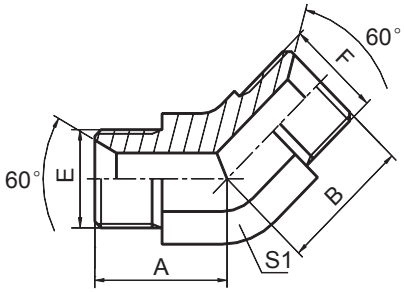
Part No.	Thread E	F	Dimensions A	B	L	S1
1BN-08-06Z	G1/2"X14	Z3/8"X18	16	16	42	27
1BN-12Z	G3/4"X14	Z3/4"X14	18.5	19.5	49	32
1BN-12-08Z	G3/4"X14	Z1/2"X14	18.5	19.5	49	32
1BN-12-16Z	G3/4"X14	Z1"X11.5	18.5	25.5	55	36
1BN-16Z	G1"X11	Z1"X11.5	20.5	25.5	59	41
1BN-16-12Z	G1"X11	Z3/4"X14	20.5	19.5	53	41
1BN-20Z	G1 1/4"X11	Z1 1/4"X11.5	20.5	26.5	62	50
1BN-32Z	G2"X11	Z2"X11.5	25.5	27.5	70	70

BSP Thread 60° Cone Fittings

A

1B4

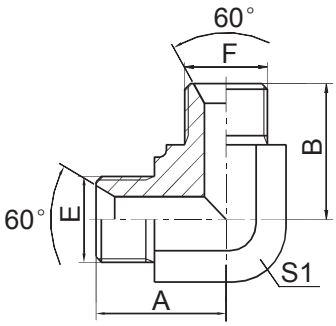
45° BSP Male 60° Seat



Part No.	Thread E	F	Dimensions A	B	S1
1B4-16Z	G1"X11	G1"X11	35	35	33
1B4-20Z	G1-1/4"X11	G1-1/4"X11	38.5	38.5	41
1B4-24Z	G1-1/2"X11	G1-1/2"X11	44	44	48

1B9

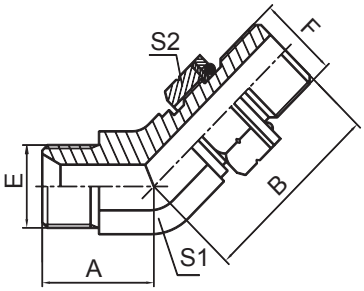
90° Elbow BSP Male 60° Seat



Part No.	Thread E	F	Dimensions A	B	S1
1B9-24Z	G1-1/2"X11	G1-1/2"X11	57.5	57.5	48
1B9-32Z	G2"X11	G2"X11	68	68	63

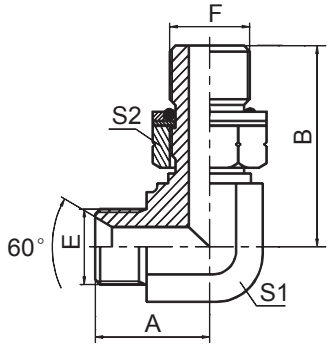
1BG4-OG

45° Elbow BSP Male
60° Seat / BSP Male O-Ring



Part No.	Thread E	F	O-Ring	Dimensions A	B	S1	S2
1BG4-08OGZ	G1/2"X14	G1/2"X14	O115	27	36	22	27
1BG4-12OGZ	G3/4"X14	G3/4"X14	O119	32	42	27	32

BSP Thread 60° Cone Fittings

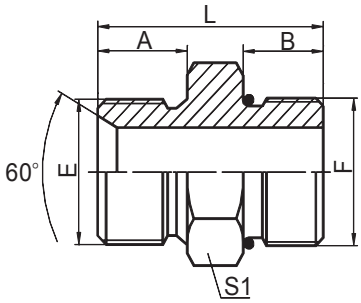


1BG9-OG

90° Elbow BSP Male
60° Seat/BSP Male O-Ring

Part No.	Thread E	F	O-Ring	Dimensions A	B	S1	S2
1BG9-04OGZ	G1/4"X19	G1/4"X19	O111	25	31.5	14	19
1BG9-06OGZ	G3/8"X19	G3/8"X19	O113	28	36.8	16	22
1BG9-06-08OGZ	G3/8"X19	G1/2"X14	O115	31	43.2	22	27
1BG9-08OGZ	G1/2"X14	G1/2"X14	O115	34.5	43.2	22	27
1BG9-08-12OGZ	G1/2"X14	G3/4"X14	O119	40	49.3	27	32
1BG9-12OGZ	G3/4"X14	G3/4"X14	O119	40	49.3	27	32
1BG9-16OGZ	G1"X11	G1"X11	O217	46	53	33	41

Note: F end is connected with DIN 3852 port

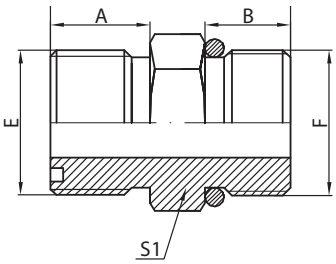


1BO

BSP Male Double

Use For 60° Cone Seat or Bonded Seal/
Sae O-Ring Boss L-Series Iso 11926-3

Part No.	Thread E	F	O-Ring	Dimensions A	B	L	S1
1BO-06Z	G3/8"X19	9/16"X18	O906	13.5	9.9	33.5	22
1BO-06-08Z	G3/8"X19	3/4"X16	O908	13.5	11.1	32.5	22
1BO-08Z	G1/2"X14	3/4"X16	O908	16	11.1	37	27
1BO-08-12Z	G1/2"X14	1-1/16"X12	O912	16	15.1	42	32
1BO-12Z	G3/4"X14	1-1/16"X12	O912	18.5	15.1	44.5	32
1BO-16Z	G1"X11	1-5/16"X12	O916	20.5	15.1	48	41



1FG

ORFS Male O-Ring/
BSP Male O-Ring

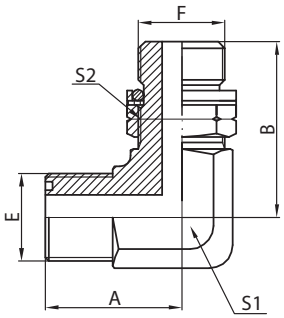
Part No.	Thread E	F	O-Ring E	F	Dimensions A	B	L	S1
1FG-08Z	13/16"X16	G1/2"X14	O014	O115	13	14	37	27

BSP Thread 60° Cone Fittings

A

1FG9-OG

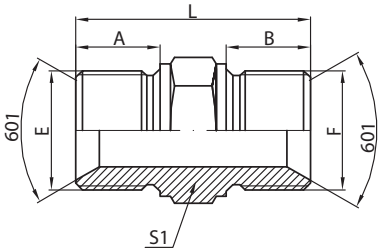
90° ORFS Male O-Ring/
BSP Male O-Ring



Part No.	Thread E	F	O-Ring E	F	Dimensions A	B	S1	S2
1FG9-12OGZ	1-3/16"X12	G3/4"X14	O018	O119	40.3	52	30	32

1M

Metric Male Double For 60°
Cone Seat Bonded Seal

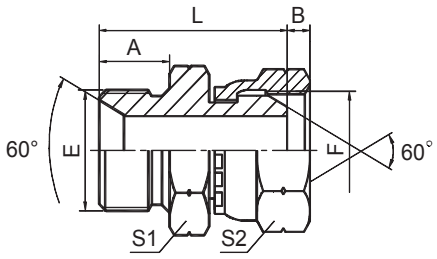


Part No.	Thread E	F	Dimensions A	B	L	S1
1M-14Z	M14X1.5	M14X1.5	11	11	30	19
1M-16Z	M16X1.5	M16X1.5	12	12	32	22
1M-22Z	M22X1.5	M22X1.5	14	14	38	27

2B

BSP Male Double

Use For 60° Cone Seat or
Bonded Seal / BSP Female 60° Cone



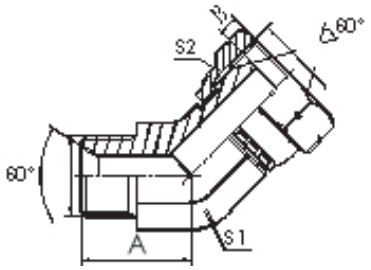
Part No.	Thread E	F	O-Ring F	Dimensions A	B	S1	S2
2B-04Z	G1/4"X19	G1/4"X19	12	5.5	29	19	19
2B-06Z	G3/8"X19	G3/8"X19	13.5	6.3	34	22	22
2B-06-08Z	G3/8"X19	G1/2"X14	13.5	7.5	35.5	22	27
2B-08Z	G1/2"X14	G1/2"X14	16	7.5	40	27	27
2B-08-12Z	G1/2"X14	G3/4"X14	16	10.9	41	27	32
2B-12Z	G3/4"X14	G3/4"X14	18.5	10.9	44.5	32	32
2B-12-16Z	G3/4"X14	G1"X11	18.5	11.7	46	32	41
2B-16Z	G1"X11	G1"X11	20.5	11.7	50	41	41
2B-20Z	G1-1/4"X11	G1-1/4"X11	20.5	11	55	50	50
2B-32Z	G2"X11	G2"X11	25.5	16	63.5	70	70

BSP Thread 60° Cone Fittings

A

2B4

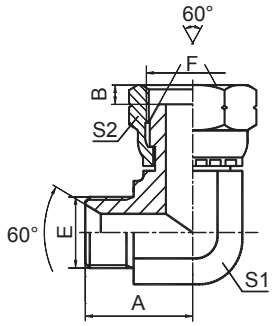
45° Elbow Bsp Male 60° Seat / BSP Female 60° Cone



Part No.	Thread E	F	Dimensions A	B	S1	S2
2B4-04Z	G1/4"X19	G1/4"X19	20.3	5.5	14	19
2B4-06Z	G3/8"X19	G3/8"X19	22	6.3	16	22
2B4-08Z	G1/2"X14	G1/2"X14	27	7.5	22	27
2B4-12Z	G3/4"X14	G3/4"X14	31	10.9	27	32
2B4-16Z	G1"X11	G1"X11	35	11.7	33	41
2B4-20Z	G1-1/4"X11	G1-1/4"X11	38.5	11	41	50
2B4-24Z	G1-1/2"X11	G1-1/2"X11	44	13	48	55
2B4-32Z	G2"X11	G2"X11	51	16	63	70

2B9

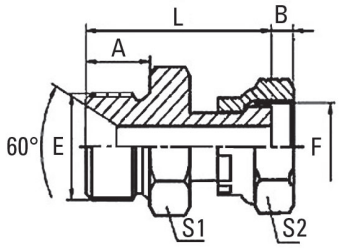
90° Elbow BSP Male
60° Seat / BSP Female 60° Cone



Part No.	Thread E	F	Dimensions A	B	S1	S2
2B9-02Z	G1/8"X28	G1/8"X28	19.8	5.5	11	14
2B9-04Z	G1/4"X19	G1/4"X19	24.5	5.5	14	19
2B9-06Z	G3/8"X19	G3/8"X19	27.5	6.3	16	22
2B9-08Z	G1/2"X14	G1/2"X14	34.5	7.5	22	27
2B9-12Z	G3/4"X14	G3/4"X14	40	10.9	27	32
2B9-16Z	G1"X11	G1"X11	46	11.7	33	41
2B9-20Z	G1-1/4"X11	G1-1/4"X11	50.5	11	41	50
2B9-24Z	G1-1/2"X11	G1-1/2"X11	57.5	13	48	55
2B9-32Z	G2"X11	G2"X11	72.5	16	63	70

2BF

BSP Male 60 Seat/ORFS Female



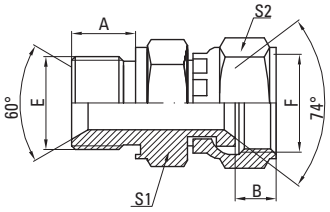
Part No.	Thread E	F	Dimensions A	B	L	S1	S2
2BF-08Z	G1/2"X14	13/16"X16	16	11	46.5	27	27
2BF-12Z	G3/4"X14	1.3/16"X12	18.5	15	55.5	32	36
2BF-16Z	G1"X11	1.7/16"X12	20.5	15	60.5	41	41
2BF-24Z	G1.1/2"X11	2"X12	23	14.8	69.5	55	60

BSP Thread 60° Cone Fittings

A

2BJ-WD

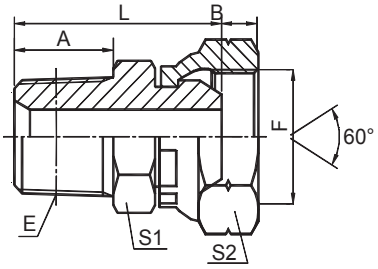
BSP Male Captive Seal/JIC
Female 74°Seat



Part No.	Thread E	F	Dimensions A	B	S1	S2
2BJ-02-04WDZ	G1/8"X28	U7/16"X20	10	8.5	14	17
2BJ-04-06WDZ	G1/4"X19	U9/16"X18	12	10	19	19
2BJ-04-08WDZ	G1/4"X19	U3/4"X16	12	11	19	24
2BJ-04WDZ	G1/4"X19	U7/16"X20	12	8.5	19	17
2BJ-06-08WDZ	G3/8"X19	U3/4"X16	13.5	11	22	24
2BJ-06WDZ	G3/8"X19	U9/16"X18	13.5	10	22	19
2BJ-08-10WDZ	G1/2"X14	U7/8"X14	16	11	27	27
2BJ-08WDZ	G1/2"X14	U3/4"X16	16	11	27	24
2BJ-12WDZ	G3/4"X14	U1-1/16"X12	18.5	13.5	32	32
2BJ-16WDZ	G1"X11	U1-5/16"X12	20.5	14.5	41	41
2BJ-20WDZ	G1-1/4"X11	U1-5/8"X12	20.5	15.5	50	50
2BJ-24WDZ	G1-1/2"X11	U1-7/8"X12	23	18.5	55	55

2NB

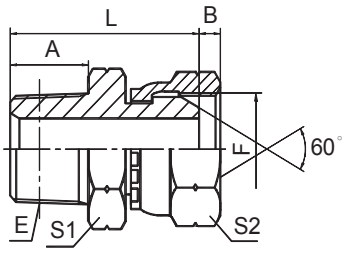
NPT Male / BSP Female 60° Cone



Part No.	Thread E	F	Dimensions A	B	L	S1	S2
2NB-08Z	Z1/2"X14	G1/2"X14	19.5	7.5	41	22	27

2TB-SP

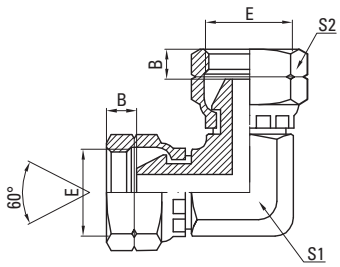
BSPT Male / BSP Female 60° Cone



Part No.	Thread E	F	Dimensions A	B	L	S1	S2
2TB-06SPZ	R3/8"X19	G3/8"X19	15	6.3	33	19	22

3B9

90° BSP Female 60° Cone

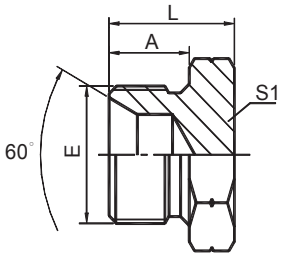


Part No.	Thread E	Dimensions B	S1	S2
3B9-08Z	G1/2"X14	8	19	27

4B

BSP Male Double

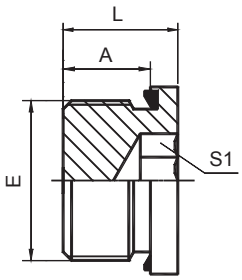
Use For 60° Cone Seat Or Bonded Seal Plug



Part No.	Thread E	Dimensions A	L	S1
4B-02Z	G1/8"X28	10	16	14
4B-04Z	G1/4"X19	12	18	19
4B-06Z	G3/8"X19	13.5	21.5	22
4B-08Z	G1/2"X14	16	26	27
4B-12Z	G3/4"X14	18.5	29.5	32
4B-16Z	G1"X11	20.5	34	41
4B-20Z	G1-1/4"X11	20.5	37.5	50
4B-32Z	G2"X11	25.5	43.5	70

4BN-WD

BSP Male Captive Seal Hollow Hex Plug



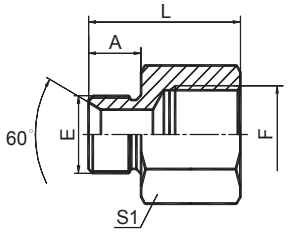
Part No.	Thread E	Captive E	Dimensions A	L	S1
4BN-02WDZ	G1/8"X28	WD-B02	8	12.2	5
4BN-04WDZ	G1/4"X19	WD-B04	12	17.2	6
4BN-06WDZ	G3/8"X19	WD-B06	12	17.2	8
4BN-08WDZ	G1/2"X14	WD-B08	14	19.2	10
4BN-12WDZ	G3/4"X14	WD-B12	16	21.2	12
4BN-16WDZ	G1"X11	WD-B16	16	22.8	17

A

5B

BSP Male Double

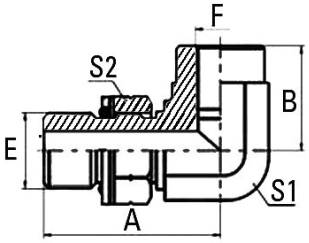
Use For 60° Cone Seat or Bonded Seal / BSP Female ISO 1179



Part No.	Thread E	F	Dimensions A	L	S1
5B-04Z	G1/4"X19	G1/4"X19	12	33	19
5B-04-06Z	G1/4"X19	G3/8"X19	12	36	22
5B-06-04Z	G3/8"X19	G1/4"X19	13.5	33.5	22
5B-06Z	G3/8"X19	G3/8"X19	13.5	37.5	22
5B-06-08Z	G3/8"X19	G1/2"X14	13.5	42.5	27
5B-08-06Z	G1/2"X14	G3/8"X19	16	38	27
5B-08Z	G1/2"X14	G1/2"X14	16	45	27
5B-12-08Z	G3/4"X14	G1/2"X14	18.5	44.5	32
5B-16-12Z	G1"X11	G3/4"X14	20.5	47.5	41
5B-16Z	G1"X11	G1"X11	20.5	55.5	41
5B-32-24Z	G2"X11	G1-1/2"X11	26	59.5	70

5GB9-OG

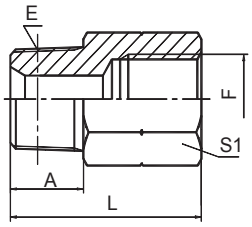
90 BSP Male O-Ring/BSP Female



Part No.	Thread E	F	O-Ring	Dimension A	B	S1	S2
5GB9-08OGZ	G1/2"X14	G1/2"X14	17.12X2.62	46.5	31	27	27
5GB9-12OGZ	G3/4"X14	G3/4"X14	23.47X2.62	53	37	33	32

5TB-SP

BSPT Male / BSP Female

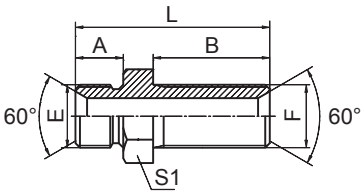


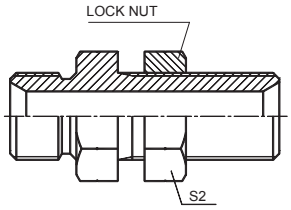
Part No.	Thread E	F	Dimensions A	L	S1
5TB-02-04SPZ	R1/8"X28	G1/4"X19	10	31.5	19

BSP Thread 60° Cone Fittings

6B

BSP Male 60° Seat Bulkhead

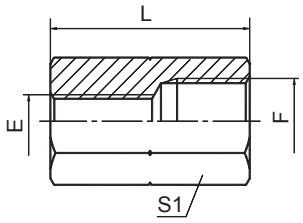




Part No.	Thread E	F	Dimensions A	B	L	S1	S2
6B-04LNZ	G1/4"X19	G1/4"X19	12	35	53	19	19
6B-06LNZ	G3/8"X19	G3/8"X19	13.5	35	56.5	22	22
6B-08LNZ	G1/2"X14	G1/2"X14	16	39	65	27	27
6B-10LNZ	G5/8"X14	G5/8"X14	17.5	40	67.5	30	30
6B-12LNZ	G3/4"X14	G3/4"X14	18.5	42	71.5	32	32
6B-16LNZ	G1"X11	G1"X11	20.5	50	84	41	41
6B-20LNZ	G1-1/4"X11	G1-1/4"X11	20.5	52	89.5	50	50
6B-24LNZ	G1-1/2"X11	G1-1/2"X11	23	55	93	55	55

7B

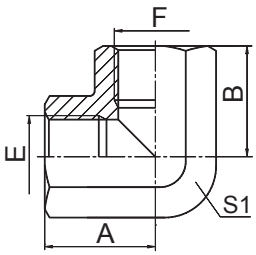
BSP Female ISO 1179



Part No.	Thread E	F	Dimensions L	S1
7B-02Z	G1/8"X28	G1/8"X28	22	14
7B-02-04Z	G1/8"X28	G1/4"X19	24	19
7B-04Z	G1/4"X19	G1/4"X19	24	19
7B-04-06Z	G1/4"X19	G3/8"X19	29	22
7B-06Z	G3/8"X19	G3/8"X19	26	22
7B-06-08Z	G3/8"X19	G1/2"X14	33	27
7B-08Z	G1/2"X14	G1/2"X14	32	27
7B-12Z	G3/4"X14	G3/4"X14	36	32
7B-12-16Z	G3/4"X14	G1"X11	43	41
7B-16Z	G1"X11	G1"X11	40	41
7B-16-20Z	G1"X11	G1-1/4"X11	46	50
7B-20Z	G1-1/4"X11	G1-1/4"X11	44	50
7B-32Z	G2"X11	G2"X11	54	70

7B9-PK

90° BSP Female ISO 1179

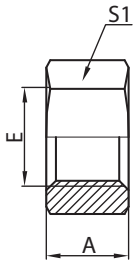


Part Number	Thread E	F	Dimensions A	B	S1
7B9-06PKZ	G3/8"X19	G3/8"X19	26	26	24
7B9-08PKZ	G1/2"X14	G1/2"X14	31	31	27
7B9-16PKZ	G1"X11	G1"X11	42	42	41
7B9-20PKZ	G1-1/4"X11	G1-1/4"X11	48	48	50
7B9-24PKZ	G1-1/2"X11	G1-1/2"X11	53	53	60

A

8B

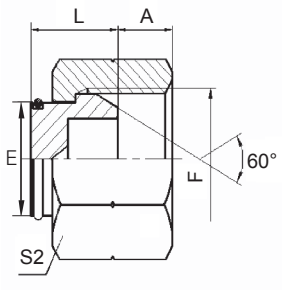
BSP Lock Nut



Part No.	Thread E	Dimensions A	S1
8B-08Z	G1/2"X14	9	27

9B

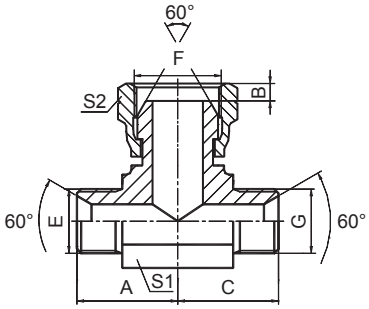
BSP Female 60° Cone Plug



Part No.	Thread E	Dimensions A	L	S2
9B-04Z	G1/4"X19	5.5	13.5	19
9B-06Z	G3/8"X19	6.3	14.5	22
9B-08Z	G1/2"X14	7.5	16	27
9B-12Z	G3/4"X14	10.9	17.5	32
9B-16Z	G1"X11	11.7	19	41
9B-32Z	G2"X11	16	26.5	70

BB

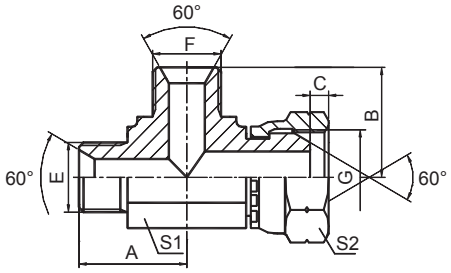
BSP Male 60° Seat / BSP Female 60° Cone Branch Tee



Part No.	Thread E	F	G	Dimensions A	B	C	S1	S2
BB-04Z	G1/4"X19	G1/4"X19	G1/4"X19	24.5	5.5	24.5	14	19
BB-06Z	G3/8"X19	G3/8"X19	G3/8"X19	27.5	6.3	27.5	16	22
BB-12Z	G3/4"X14	G3/4"X14	G3/4"X14	40	10.9	40	27	32
BB-16Z	G1"X11	G1"X11	G1"X11	46	11.7	46	33	41

CB

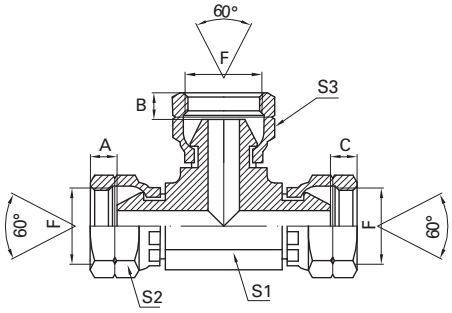
BSP Male 60° Seat /
BSP Female 60° Cone Run Tee



Part No.	Thread E	F	G	Dimensions A	B	C	S1	S2
CB-04Z	G1/4"X19	G1/4"X19	G1/4"X19	25	25	5.5	14	19
CB-06Z	G3/8"X19	G3/8"X19	G3/8"X19	27.5	27.5	6.3	16	22
CB-08Z	G1/2"X14	G1/2"X14	G1/2"X14	34.5	34.5	7.5	22	27
CB-16Z	G1"X11	G1"X11	G1"X11	46	46	11.7	33	41
CB-32Z	G2"X11	G2"X11	G2"X11	72.5	72.5	16	63	70

DB

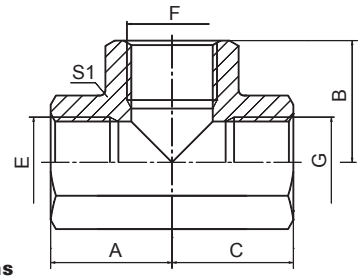
BSP Female 60°Cone Tee



Part No.	F	Dimensions A,B,C	S1	S2,S3
DB-06Z	G3/8"X19	6.3	14	22
DB-32Z	G2"X11	16	63	70

GB-PK

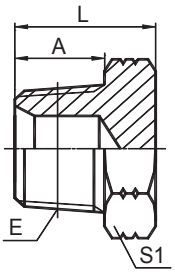
BSP Female



Part No.	Thread E	F	G	Dimensions A	B	C	S1
GB-04PKZ	G1/4"X19	G1/4"X19	G1/4"X19	22.5	22.5	22.5	19
GB-06PKZ	G3/8"X19	G3/8"X19	G3/8"X19	26	26	26	24
GB-08PKZ	G1/2"X14	G1/2"X14	G1/2"X14	31	31	31	27
GB-12PKZ	G3/4"X14	G3/4"X14	G3/4"X14	34	34	34	33
GB-16PKZ	G1"X11	G1"X11	G1"X11	42	42	42	41
GB-20PKZ	G1-1/4"X11	G1-1/4"X11	G1-1/4"X11	48	48	48	50
GB-24PKZ	G1-1/2"X11	G1-1/2"X11	G1-1/2"X11	53	53	53	60
GB-32PKZ	G2"X11	G2"X11	G2"X11	62	62	62	70

4T-SP

BSPT Male Plug

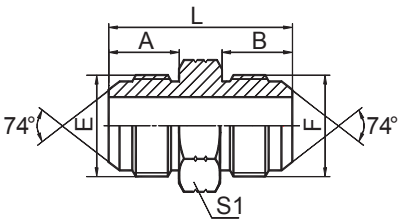


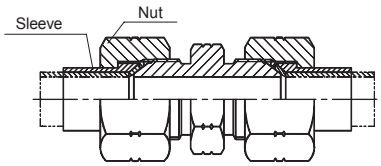
Part No.	Thread E	Dimensions A	L	S1
4T-08SPZ	R1/2"X14	20	27	22
4T-12SPZ	R3/4"X14	20	29	27

JIC 74° (37°) Cone Flared Tube Fittings

1J

JIC Male 74° (37°) Cone



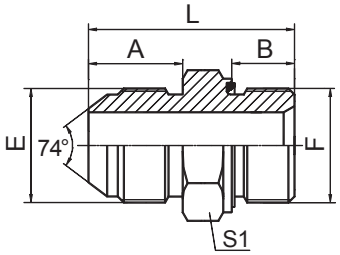


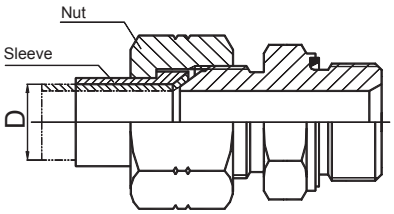
Part No.	Thread E	F	Dimensions A	B	L	S1
1J-04Z	7/16"X20	7/16"X20	14.0	14.0	35	12
1J-06Z	9/16"X18	9/16"X18	14.1	14.1	36	17
1J-06-08Z	9/16"X18	3/4"X16	14.1	16.7	38.5	22
1J-08Z	3/4"X16	3/4"X16	16.7	16.7	41	22
1J-08-12Z	3/4"X16	1-1/16"X12	16.7	21.9	49.8	30
1J-10Z	7/8"X14	7/8"X14	19.3	19.3	48	24
1J-12Z	1-1/16"X12	1-1/16"X12	21.9	21.9	55	30
1J-16Z	1-5/16"X12	1-5/16"X12	23.1	23.1	57	36
1J-20Z	1-5/8"X12	1-5/8"X12	24.3	24.3	62	46
1J-32Z	2-1/2"X12	2-1/2"X12	33.9	33.9	86.5	65

C

1JB-WD

JIC Male 74° Cone / BSP Male Captive Seal





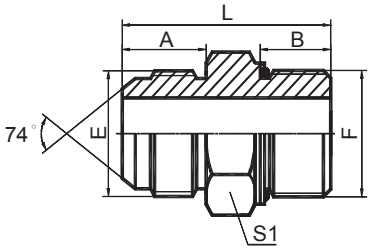
Part No.	Thread E	F	Captive F	Dimensions A	B	L	S1
1JB-04-02WDZ	7/16"X20	G1/8"X28	WD-B02	14	8	29.5	14
1JB-04WDZ	7/16"X20	G1/4"X19	WD-B04	14	12	34	19
1JB-04-06WDZ	7/16"X20	G3/8"X19	WD-B06	14	12	34.5	22
1JB-04-08WDZ	7/16"X20	G1/2"X14	WD-B08	14	14	41	27
1JB-05-04WDZ	1/2"X20	G1/4"X19	WD-B04	14	12	34	19
1JB-06-02WDZ	9/16"X18	G1/8"X28	WD-B02	14.1	8	29.5	17
1JB-06-04WDZ	9/16"X18	G1/4"X19	WD-B04	14.1	12	34	19
1JB-06WDZ	9/16"X18	G3/8"X19	WD-B06	14.1	12	34.5	22
1JB-06-08WDZ	9/16"X18	G1/2"X14	WD-B08	14.1	14	41	27
1JB-08-04WDZ	3/4"X16	G1/4"X19	WD-B04	16.7	12	37	22
1JB-08-06WDZ	3/4"X16	G3/8"X19	WD-B06	16.7	12	37.5	22
1JB-08WDZ	3/4"X16	G1/2"X14	WD-B08	16.7	14	43.5	27
1JB-10-08WDZ	7/8"X14	G1/2"X14	WD-B08	19.3	14	46.5	27
1JB-10-12WDZ	7/8"X14	G3/4"X14	WD-B12	19.3	16	47.5	32
1JB-12-08WDZ	1-1/16"X12	G1/2"X14	WD-B08	21.9	14	48.5	30
1JB-12WDZ	1-1/16"X12	G3/4"X14	WD-B12	21.9	16	50	32
1JB-12-16WDZ	1-1/16"X12	G1"X11	WD-B16	21.9	18	56	41
1JB-16-12WDZ	1-5/16"X12	G3/4"X14	WD-B12	23.1	16	53	36
1JB-16WDZ	1-5/16"X12	G1"X11	WD-B16	23.1	18	57	41
1JB-16-20WDZ	1-5/16"X12	G1-1/4"X11	WD-B20	23.1	20	61	50
1JB-20-16WDZ	1-5/8"X12	G1"X11	WD-B16	24.3	18	58	46
1JB-20WDZ	1-5/8"X12	G1-1/4"X11	WD-B20	24.3	20	62	50
1JB-20-24WDZ	1-5/8"X12	G1-1/2"X11	WD-B24	24.3	22	64	55
1JB-24-20WDZ	1-7/8"X12	G1-1/4"X11	WD-B20	27.5	20	65.5	50
1JB-24WDZ	1-7/8"X12	G1-1/2"X11	WD-B24	27.5	22	67.5	55

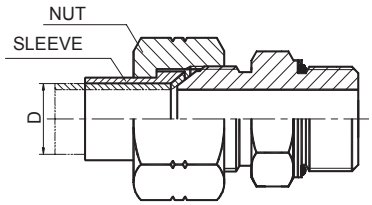
Note: Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.

C

1JG

JIC Male 74° Cone / BSP Male O-Ring



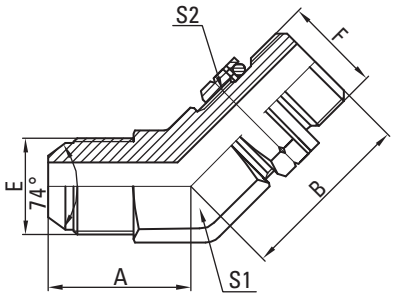


Part No.	Thread E	F	Captive F	Dimensions A	B	L	S1
1JG-04-02Z	7/16"X20	G1/8"X28	O011	14	9.5	29.5	14
1JG-04Z	7/16"X20	G1/4"X19	O111	14	10	32.5	19
1JG-04-06Z	7/16"X20	G3/8"X19	O113	14	11.5	34	24
1JG-05-04Z	1/2"X20	G1/4"X19	O111	14	10	33	19
1JG-06-04Z	9/16"X18	G1/4"X19	O111	14.1	11	31.5	19
1JG-06Z	9/16"X18	G3/8"X19	O113	14.1	11.5	34	24
1JG-06-08Z	9/16"X18	G1/2"X14	O115	14.1	14	37.5	27
1JG-08-04Z	3/4"X16	G1/4"X19	O111	16.7	11	35.5	22
1JG-08-06Z	3/4"X16	G3/8"X19	O113	16.7	11.5	37	24
1JG-08Z	3/4"X16	G1/2"X14	O115	16.7	14	40.5	27
1JG-08-12Z	3/4"X16	G3/4"X14	O119	16.7	15.5	43	36
1JG-10-06Z	7/8"X14	G3/8"X19	O113	19.3	11.5	39.5	24
1JG-10-08Z	7/8"X14	G1/2"X14	O115	19.3	14	43	27
1JG-10-12Z	7/8"X14	G3/4"X14	O119	19.3	15.5	47	36
1JG-12-08Z	1-1/16"X12	G1/2"X14	O115	22	14	47.5	30
1JG-12Z	1-1/16"X12	G3/4"X14	O119	22	15.5	49.5	36
1JG-12-16Z	1-1/16"X12	G1"X11	O217	22	18	52.5	41
1JG-16Z	1-5/16"X12	G1"X11	O217	23	18	55	41
1JG-16-20Z	1-5/16"X12	G1-1/4"X11	O222	23	20	59.5	50
1JG-24-16Z	1-7/8"X12	G1"X11	O217	27.5	18	62	50
1JG-24-20Z	1-7/8"X12	G1-1/4"X11	O222	27.5	20	65.5	50
1JG-24Z	1-7/8"X12	G1-1/2"X11	O224	27.5	21.5	64	60

Note: Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.

1JG4

45°JIC Male 74° Cone/ BSP Male O-Ring

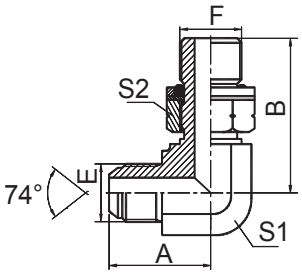


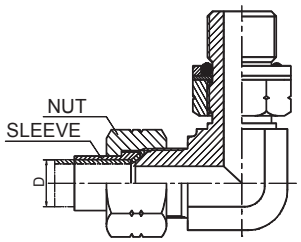
Part No.	Thread E	F	O-Ring F	Dimensions A	B	S1	S2
1JG4-06OGZ	9/16"X18	G3/8"X19	O113	23	32	19	22

JIC 74° (37°) Cone Flared Tube Fittings

1JG9-OG

90° Elbow JIC Male
74° Cone / BSP Male O-Ring





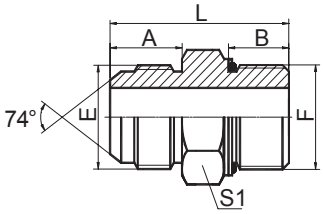
Part No.	Thread E	F	O-Ring F	Dimensions A	B	S1	S2
1JG9-04-06OGZ	7/16"X20	G3/8"X19	O113	27.5	36.8	16	22
1JG9-06-08OGZ	9/16"X18	G1/2"X14	O115	32.5	43.2	22	27
1JG9-12-08OGZ	1-1/16"X12	G1/2"X14	O115	44.2	46.5	27	27
1JG9-12-16OGZ	1-1/16"X12	G1"X11	O217	48	53	33	41
1JG9-16OGZ	1-5/16"X12	G1"X11	O217	49	53	33	41
1JG9-16-20OGZ	1-5/16"X12	G1-1/4"X11	O222	53.8	58	41	50
1JG9-20OGZ	1-5/8"X12	G1-1/4"X11	O222	55.5	58	41	50

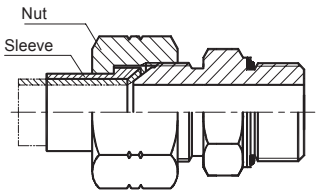
Note: 1. Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube,the nut NB200 and sleeve NB300 is suitable for inch tube.
2. F end is connected with DIN 3852 port.

C

1JH

JIC Male 74° (37°) Cone/Metric Male
Adjustable Stud End L-Series ISO 6149-3



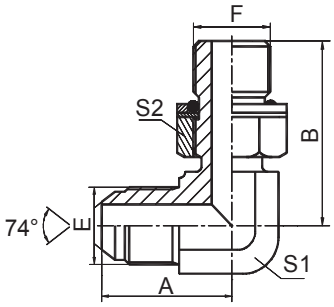


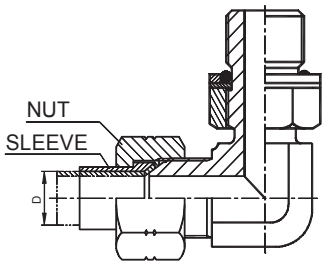
Part No.	Thread E	F	O-Ring F	Dimensions A	B	L	S1
1JH-04-10Z	7/16"X20	M10X1	O08.1X1.6	14	8.5	30	14

Note: 1. Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.
2. F end is fit for ISO 9974-1 port or ISO 6149-1 port when useless of retaining ring.

1JH9-OG

90° Elbow JIC Male 74° (37°) Cone / Metric
Male Adjustable Stud End L-Series ISO 6149-3





Part No.	Thread E	F	O-Ring F	Dimensions A	B	S1	S2
1JH9-08-18OGZ	3/4"X16	M18X1.5	O15.3X2.4	33	37	19	24

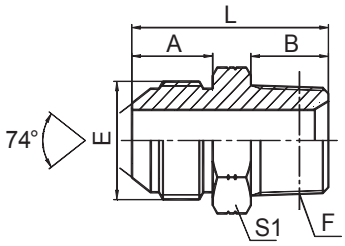
Note: 1. Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.
2. F end is fit for ISO 9974-1 port or ISO 6149-1 port when useless of retaining ring.

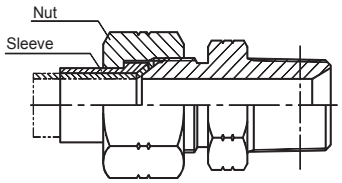
JIC 74° (37°) Cone Flared Tube Fittings

C

1JN

JIC Male 74° (37°) Cone / NPT Male



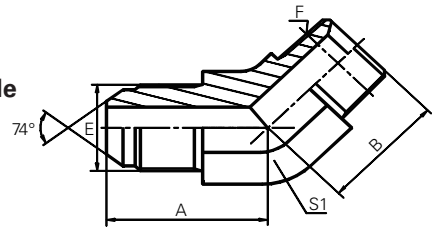


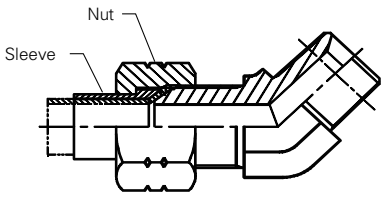
Part No.	Thread E	F	Dimensions A	B	L	S1
1JN-04-02Z	7/16"X20	1/8"X27	14.0	10.5	30.5	12
1JN-04Z	7/16"X20	1/4"X18	14.0	14.7	36.2	17
1JN-04-06Z	7/16"X20	3/8"X18	14.0	16.0	36.0	19
1JN-06-04Z	9/16"X18	1/4"X18	14.1	15.0	36.3	17
1JN-06Z	9/16"X18	3/8"X18	14.1	16.0	36.0	19
1JN-08-06Z	3/4"X16	3/8"X18	16.7	16.0	40.0	22
1JN-08Z	3/4"X16	1/2"X14	16.7	19.5	44.0	24
1JN-10-08Z	7/8"X14	1/2"X14	19.3	19.5	48.0	24
1JN-10-12Z	7/8"X14	3/4"X14	19.3	19.5	49.0	30
1JN-12-08Z	1-1/16"X12	1/2"X14	21.9	19.5	52.3	30
1JN-12Z	1-1/16"X12	3/4"X14	21.9	19.5	52.3	30
1JN-12-16Z	1-1/16"X12	1"X11.5	21.9	25.5	57.2	36
1JN-16Z	1-5/16"X12	1"X11.5	23.1	25.5	58.5	36
1JN-16-20Z	1-5/16"X12	1-1/4"X11.5	23.1	26.5	61.0	46
1JN-20-16Z	1-5/8"X12	1"X11.5	24.3	25.5	63.0	46
1JN-20Z	1-5/8"X12	1-1/4"X11.5	24.3	26.5	62.2	46
1JN-20-24Z	1-5/8"X12	1-1/2"X11.5	24.3	27.5	64.9	50
1JN-24Z	1-7/8"X12	1-1/2"X11.5	27.5	27.5	68.0	50
1JN-32Z	2-1/2"X12	2"X11.5	33.9	27.5	78.5	65

Note: Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.

1JN4

45° JIC Male 74° (37°) Cone / NPT Male





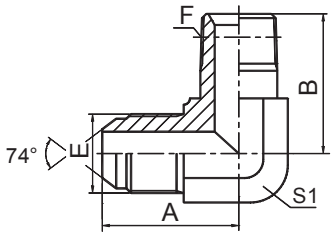
Part No.	Thread E	F	Dimensions A	B	S1
1JN4-04-02Z	7/16" X20	1/8" X27	21.5	17	11
1JN4-04Z	7/16" X20	1/4" X18	22.3	21	14
1JN4-06-04Z	9/16" X18	1/4" X18	22.8	21	14
1JN4-06Z	9/16" X18	3/8" X18	24.0	24	16
1JN4-08-06Z	3/8"X16	3/8" X18	26.8	24	19
1JN4-10-08Z	7/8" X14	1/2" X14	31.0	29.5	22
1JN4-16Z	1-5/16" X12	1" X11.5	38.5	39	33
1JN4-24Z	1-7/8" X12	1-1/2" X11.5	49.0	45	48

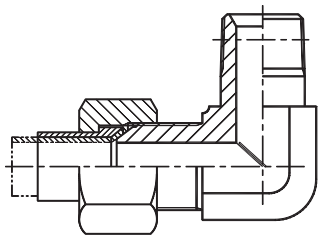
Note: Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.

JIC 74° (37°) Cone Flared Tube Fittings

1JN9-L

90° JIC Male 74° (37°) Cone / Long NPT Male





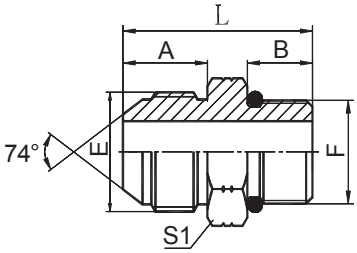
Part No.	Thread E	F	Dimensions A	B	S1
1JN9-04-02LZ	7/16"X20	1/8"X27	24.5	30	11

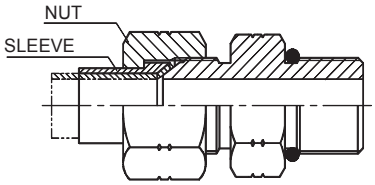
Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.

C

1JO

JIC Male 74° (37°) Cone / O-Ring Boss L-Series ISO 11926-3



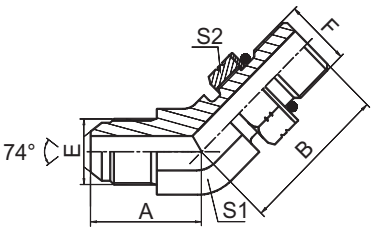


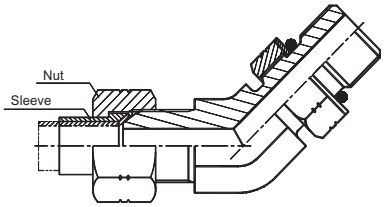
Part No.	Thread E	F	O-Ring F	Dimensions A	B	L	S1
1JO-06Z	9/16"X18	9/16"X18	O906	14.1	10.0	33.0	17
1JO-06-04Z	9/16"X18	7/16"X20	O904	14.1	9.1	32.2	17
1JO-06-08Z	9/16"X18	3/4"X16	O908	14.1	11.1	35.0	22
1JO-08Z	3/4"X16	3/4"X16	O908	16.7	11.1	37.5	22
1JO-08-06Z	3/4"X16	9/16"X18	O906	16.7	9.93	37.0	22
1JO-08-10Z	3/4"X16	7/8"X14	O910	16.7	12.7	40.0	27
1JO-10Z	7/8"X14	7/8"X14	O910	19.3	12.7	42.5	27
1JO-12Z	1-1/16"X12	1-1/16"X12	O912	21.9	15.1	50.0	32
1JO-12-08Z	1-1/16"X12	3/4"X16	O908	21.9	11.1	49.2	30
1JO-12-10Z	1-1/16"X12	7/8"X14	O910	21.9	12.70	50.8	30
1JO-12-16Z	1-1/16"X12	1-5/16"X12	O916	21.9	15.09	48.0	38
1JO-20Z	1-5/8"X12	1-5/8"X12	O920	24.3	15.09	54.5	50
1JO-20-24Z	1-5/8"X12	1-7/8"X12	O924	24.3	15.1	56.8	55
1JO-24Z	1-7/8"X12	1-7/8"X12	O924	27.5	15.1	60.0	55

Note: Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.

1JO4-OG

45° Elbow JIC Male 74° (37°) Cone / SAE O-Ring Boss L-Series ISO 11926-3





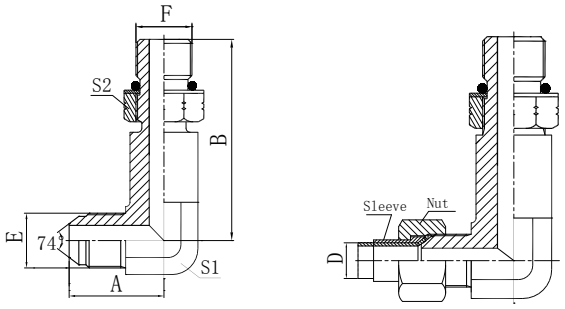
Part No.	Thread E	F	O-Ring F	Dimensions A	B	S1	S2
1JO4-06OGZ	9/16"X18	9/16"X18	O906	23.5	28.0	14	19
1JO4-12OGZ	1-1/16"X12	1-1/16"X12	O912	34	43.5	27	32
1JO4-20OGZ	1-5/8"X12	1-5/8"X12	O920	42	48.5	41	50

Note: 1. Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.
2. F end is connected with ISO 11926-1 port.

JIC 74° (37°) Cone Flared Tube Fittings

1JO9-OG/L

90°JIC Male 74° (37°) Cone / Long SAE O-Ring Boss L-Series ISO 11926-3



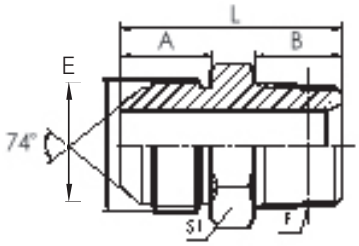
Part No.	Thread E	F	O-Ring F	Dimensions A	B	S1	S2
1JO9-08OGLZ	3/4"X16	3/4"X16	O908	32.5	63.5	19	24

C

Note: 1. Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.
2. F end is connected with ISO 11926-1 port.

1JT-SP

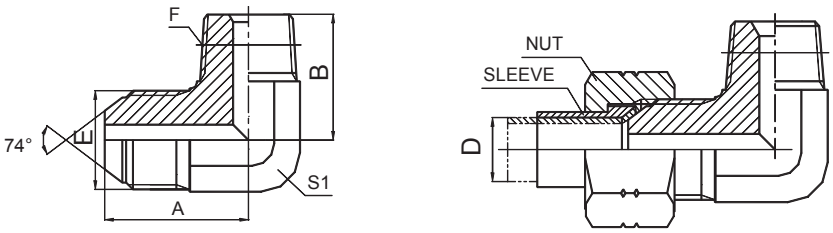
BSPT/JIC Male Carbon Steel Hydraulic Hose End Transition Joint



Part No.	Thread E	F	Dimensions A	B	L	S1
1JT-04SPZ	7/16"X20	R1/4"X19	14	14.5	34.5	14
1JT-08SPZ	3/4"X16	R1/2"X14	16.7	20	44.5	22
1JT-12SPZ	1-1/16"X12	R3/4"X14	21.9	20	51	30
1JT-16SPZ	1-5/16"X12	R1"X11	23.1	25.5	59	36
1JT-20SPZ	1-5/8"X12	R1-1/4"X11	24.3	26.5	63	46
1JT-24SPZ	1-7/8"X12	R1-1/2"X11	27.5	26.5	69	50
1JT-32SPZ	2-1/2"X12	R2"X11	33.9	30	80	65

1JT9-SP

JIC Male 74° Cone / BSP Male O-Ring



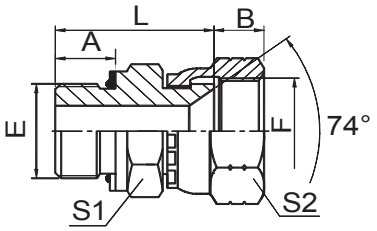
Part No.	Thread E	F	Dimensions A	B	S1
1JT9-04-06SPZ	7/16"X20	R3/8"X19	27.5	28	16
1JT9-06-04SPZ	9/16"X18	R1/4"X19	26.9	25.5	14

Note: Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.

JIC 74° (37°) Cone Flared Tube Fittings

2GJ

BSP Male O-Ring / JIC Female 74° Seat

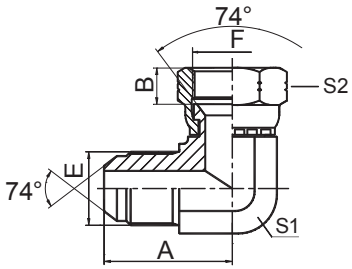


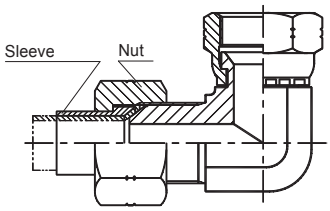
Part No.	Thread E	F	O-Ring E	Dimensions A	B	L	S1	S2
2GJ-04Z	G1/4"X19	7/16"X20	10.77X2.62	10	9	26.5	19	15
2GJ-04-05Z	G1/4"X19	1/2"X20	10.77X2.62	11	9	27	19	17
2GJ-04-06Z	G1/4"X19	9/16"X18	10.77X2.62	11	10.5	27	19	19
2GJ-06Z	G3/8"X19	9/16"X18	13.94X2.62	11.5	10.5	29.5	24	19
2GJ-06-08Z	G3/8"X19	3/4"X16	13.94X2.62	11.5	10.5	31.5	24	24
2GJ-08Z	G1/2"X14	3/4"X16	17.12X2.62	14	10.5	36	27	24
2GJ-08-10Z	G1/2"X14	7/8"X14	17.12X2.62	14	12	36.5	27	27
2GJ-12Z	G3/4"X14	1-1/16"X12	23.47X2.62	15.5	15	39	36	32
2GJ-12-16Z	G3/4"X14	1-5/16"X12	23.47X2.62	15.5	16	39	36	41
2GJ-16Z	G1"X11	1-5/16"X12	29.74X3.53	18	16	45	41	41

C

2J9

90° Elbow JIC Male 74° (37°) Cone / JIC Female 74° (37°) Seat



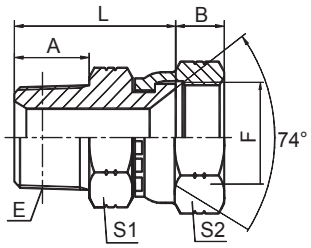


Part No.	Thread E	F	Dimensions A	B	S1	S2
2J9-04Z	7/16"X20	7/16"X20	24.5	9	11	15
2J9-06Z	9/16"X18	9/16"X18	26.9	10.5	14	19
2J9-08Z	3/4"X16	3/4"X16	32.0	11	19	24
2J9-12Z	1-1/16"X12	1-1/16"X12	44.2	15	27	32
2J9-16Z	1-5/16"X12	1-5/16"X12	48.8	16	33	41
2J9-20Z	1-5/8"X12	1-5/8"X12	55.5	17	41	50

Note: Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.

2NJ

NPT Male / JIC Female 74° (37°) Seat

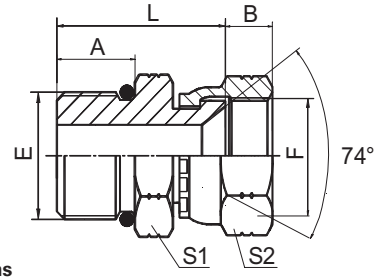


Part No.	Thread E	F	Dimensions A	B	L	S1	S2
2NJ-04-06Z	1/4"X18	9/16"X18	15.0	10.5	29.5	17	19

JIC 74° (37°) Cone Flared Tube Fittings

2OJ

SAE O-Ring Boss / JIC Female
74° (37°) Seat

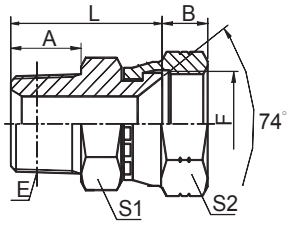


Part No.	Thread E	F	O-Ring E	Dimensions A	B	L	S1	S2
20J-06Z	9/16"X18	9/16"X18	0906	9.9	10.5	24.5	17	19

C

2TJ-SP

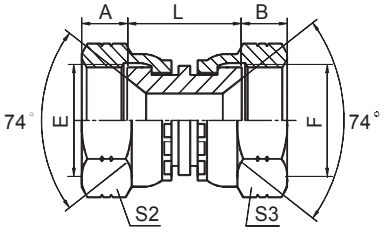
90° Elbow BSPT Male / BSP Female
60° Cone



Part No.	Thread E	F	Dimensions A	B	L	S1	S2
2TJ-12SPZ	R3/4"X14	1-1/16"X12	19	15	41.5	30	32

3J

JIC Female 74° Seat

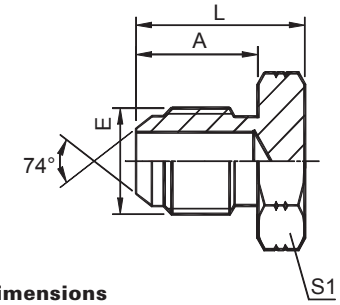


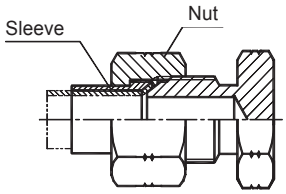
Part No.	Thread E	F	Dimensions A	B	L	S2	S3
3J-10Z	7/8"X14	7/8"X14	13	13	27	27	27
3J-12Z	1-1/16"X12	1-1/16"X12	15	15	29	32	32

JIC 74° (37°) Cone Flared Tube Fittings

4J

JIC Male 74° (37°) Cone Plug





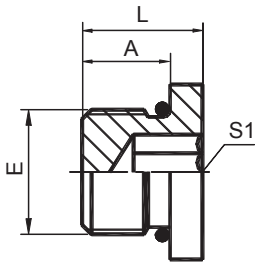
Part No.	Thread E	Dimensions A	L	S1
4J-04Z	7/16"X20	14.0	20	12
4J-06Z	9/16"X18	14.1	20	17
4J-08Z	3/4"X16	16.7	24	22
4J-10Z	7/8"X14	19.3	27.5	24
4J-12Z	1-1/16"X12	21.9	32	30
4J-16Z	1-5/16"X12	23.1	34	36
4J-20Z	1-5/8"X12	24.3	37	46
4J-24Z	1-7/8"X12	27.5	42	50

Note: Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.

C

4ON

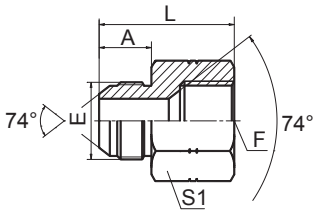
SAE O-Ring Boss Hollow Hex Plug

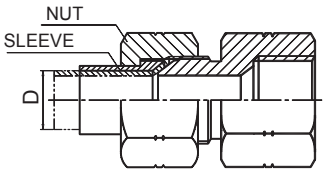


Part No.	Thread E	O-Ring E	Dimensions A	L	S1
4ON-06	9/16"X18	11.89X1.98	9.9	12.2	6
4ON-08	3/4"X16	16.36X2.21	11.1	14.3	8

5J

JIC Male 74° Cone / JIC Female 74° Seat





Part No.	Thread E	F	Dimensions A	L	S1
5J-08-10Z	3/4"X16	7/8"X14	16.7	36.2	30
5J-10-12Z	7/8"X14	1-1/16"X12	19.3	45.1	32

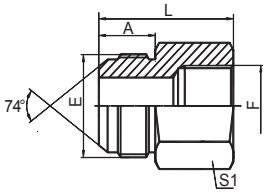
Note: Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.

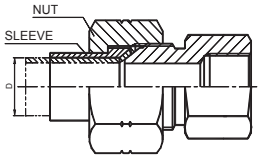
JIC 74° (37°) Cone Flared Tube Fittings

C

5JB

JIC Male 74° Cone / BSP Female



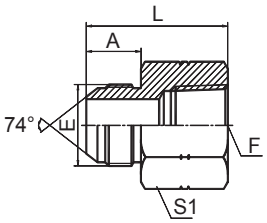


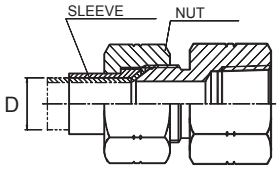
Part No.	Thread E	F	Dimensions A	L	S1
5JB-06Z	9/16"X18	G3/8"X19	14.1	35	22
5JB-06-04Z	9/16"X18	G1/4"X19	14.1	34	19
5JB-08Z	3/4"X16	G1/2"X14	16.7	44	30
5JB-08-06Z	3/4"X16	G3/8"X19	16.7	40	22
5JB-10-08Z	7/8"X14	G1/2"X14	19.3	45	27
5JB-12Z	1-1/16"X12	G3/4"X14	21.9	50	36
5JB-12-08Z	1-1/16"X12	G1/2"X14	21.9	48	30
5JB-24Z	1-7/8"X12	G1-1/2"X11	27.5	62	55

Note: Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.

5JN

JIC Male 74° Cone / NPT Female



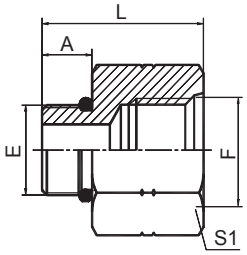


Part No.	Thread E	F	Dimensions A	L	S1
5JN-04-02Z	7/16"X20	Z1/8"X27	14	30	17
5JN-04Z	7/16"X20	Z1/4"X18	14	35.5	19
5JN-06-04Z	9/16"X18	Z1/4"X18	14.1	35.6	19
5JN-08Z	3/4"X16	Z1/2"X14	16.7	45.6	30
5JN-12-08Z	1-1/16"X12	Z1/2"X14	21.9	52.1	30
5JN-12Z	1-1/16"X12	Z3/4"X14	21.9	52.3	36

Note: Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.

5O

SAE O-Ring Boss L-Series
ISO 11926-3 / SAE Female ISO 11926-1

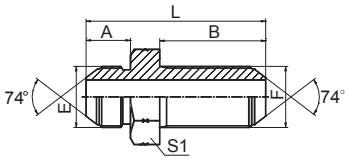


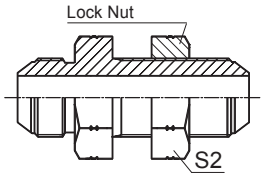
Part No.	Thread E	F	O-Ring E	Dimensions A	B	S1
5O-12-06Z	1-1/16"X12	9/16"X18	O912	15.09	26.0	32
5O-16-08Z	1-5/16"X12	3/4"X16	O916	15.09	26.0	38
5O-16-12Z	1-5/16"X12	1-1/16"X12	O916	15.1	43.5	38
5O-20-16Z	1-5/8"X12	1-5/16"X12	O920	15.1	42.0	50

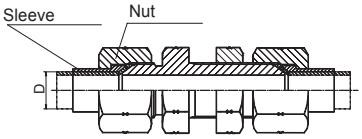
JIC 74° (37°) Cone Flared Tube Fittings

6J-LN

JIC Male 74° Cone Bulkhead







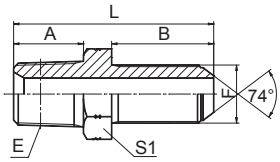
Part No.	Thread E	F	Dimensions A	B	L	S1	S2
6J-04LNZ	7/16"X20	7/16"X20	14.0	32.5	52.5	17	17
6J-06LNZ	9/16"X18	9/16"X18	14.1	32.5	54.5	22	22
6J-08LNZ	3/4"X16	3/4"X16	16.7	36.5	61.5	24	24
6J-10LNZ	7/8"X14	7/8"X14	19.3	40.0	69.5	30	30
6J-12LNZ	1-1/16"X12	1-1/16"X12	21.9	44.5	78.5	36	36
6J-16LNZ	1-5/16"X12	1-5/16"X12	23.1	44.5	79.8	41	41
6J-20LNZ	1-5/8"X12	1-5/8"X12	24.3	45.7	84.9	50	50
6J-24LNZ	1-7/8"X12	1-7/8"X12	27.5	46.0	89.5	55	55

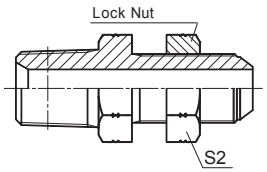
Note: In case if you are interested to order the adapter with lock nut,please insert suffix "LN" after our part no. _ for example 6J-12LN .
Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube,the nut NB200 and sleeve NB300 is suitable for inch tube.

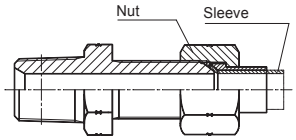
C

6NJ-LN

NPT Male / JIC Male 74° Cone Bulkhead



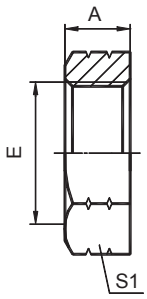




Part No.	Thread E	F	Dimensions A	B	L	S1	S2
6NJ-16LNZ	Z1"X11.5	1-5/16"X12	25.5	44.5	83	41	41

8J

JIC Lock Nut

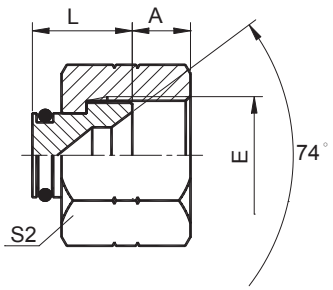


Part No.	Thread E	Dimensions A	S1
8J-10Z	7/8"X14	9	30
8J-12Z	1-1/16"X12	10.5	36

JIC 74° (37°) Cone Flared Tube Fittings

9J

JIC Female 74° Seat Plug

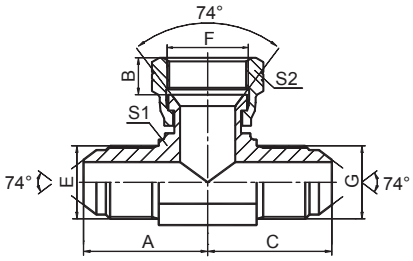


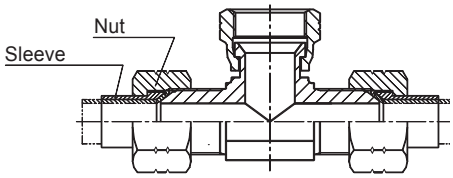
Part No.	Thread E	Dimensions A	L	S2
9J-04Z	7/16"X20	9	10.5	15
9J-06Z	9/16"X18	10.5	11	19
9J-10Z	7/8"X14	13	13.5	27
9J-12Z	1-1/16"X12	15	15	32
9J-16Z	1-5/16"X12	16	15.5	41
9J-20Z	1-5/8"X12	17	18.5	50

C

BJ

JIC Male / JIC Female / JIC Male



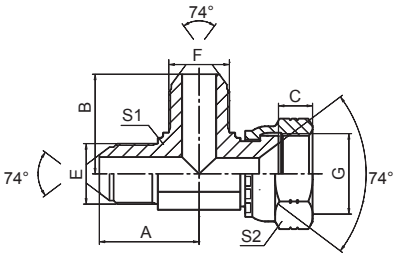


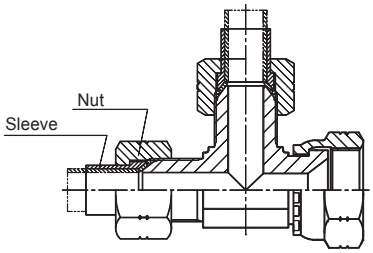
Part No.	Thread E	F	G	Dimensions A	B	C	S1	S2
BJ-06Z	9/16"X18	9/16"X18	9/16"X18	26.9	10.5	26.9	14	19
BJ-08Z	3/4"X16	3/4"X16	3/4"X16	32.0	11	32.0	19	24
BJ-20Z	1-5/8"X12	1-5/8"X12	1-5/8"X12	56.0	17	56.0	41	50

Note: Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.

CJ

JIC Male / JIC Male / JIC Female

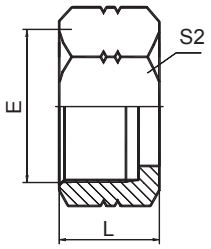




Part No.	Thread E	F	G	Dimensions A	B	C	S1	S2
CJ-06Z	9/16"X18	9/16"X18	9/16"X18	26.9	26.9	10.5	14	19
CJ-12Z	1-1/16"X12	1-1/16"X12	1-1/16"X12	44.2	44.2	15	27	32
CJ-20Z	1-5/8"X12	1-5/8"X12	1-5/8"X12	55.5	55.5	17	41	50

Note: Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube, the nut NB200 and sleeve NB300 is suitable for inch tube.

JIC 74° (37°) Cone Flared Tube Fittings



NB200

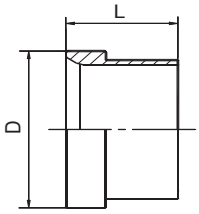
JIC Triple Lock Nut

Part No.	Thread E	Tube O.D. & Sleeve in.	Inch Sleeve	mm	Metric Sleeve	Dimensions L	S2
NB200-04Z	7/16"X20	1/4"	NB300-04Z	6	NB500-6Z	15.8	14
NB200-06Z	9/16"X18	3/8"	NB300-06Z	10	NB500-10Z	18.5	19
NB200-08Z	3/4"X16	1/2"	NB300-08Z	12	NB500-12Z	21.6	24
NB200-10Z	7/8"X14	5/8"	NB300-10Z	16	NB500-16Z	24.9	27
NB200-16Z	1-5/16"X12	1"	NB300-16Z	25	NB500-25Z	28.7	38
NB200-20Z	1-5/8"X12	1-1/4"	NB300-20Z	32	NB500-32Z	31.2	50
NB200-24Z	1-7/8"X12	1-1/2"	NB300-24Z	38	NB500-38Z	36.1	60

C

NB300

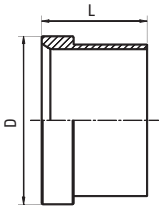
JIC Inch Sleeve



Part No.	Thread	Tube O.D.	Dimensions D	L
NB300-08Z	3/4"X16	1/2"	17.32	14.2

NB500

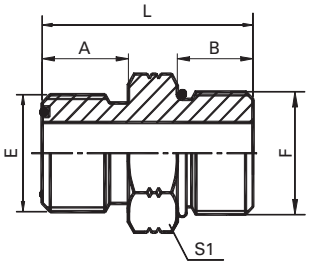
JIC Metric Sleeve



Part No.	Thread	Tube O.D. mm	Dimensions D	L
NB500-06Z	7/16″X20	6	9.7	10.4
NB500-12Z	3/4″X16	12	17.3	14.2
NB500-16Z	7/8″X14	16	20.2	16.8

1FO

ORFS Male O-Ring /
SAE O-Ring Boss S-Series ISO 11926-2



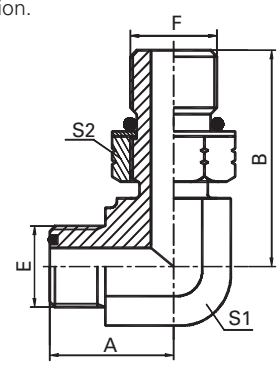
Part No.	Thread E	F	O-Ring E	F	Dimensions A	B	L	S1
1FO-16Z	1-7/16"X12	1-5/16"X12	O021	O916	17.5	18.5	50.3	38
1FO-24Z	2"X12	1-7/8"X12	O029	O924	17.5	18.5	54.1	55

Note: F end is connected with ISO 11926-1 port. ORFS fittings utilize a machined half dovetailed groove for seal retention.

D

1FO9-OG

90° Elbow ORFS Male O-Ring / SAE
O-Ring Boss S-Series ISO 11926-2

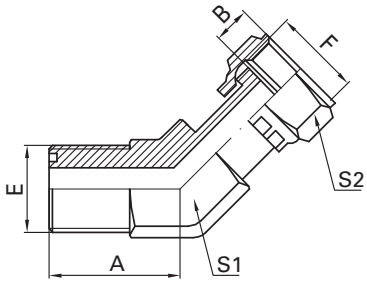


Part No.	Thread E	F	O-Ring E	F	Dimensions A	B	S1	S2
1FO9-16OGZ	1-7/16"X12	1-5/16"X12	O021	O916	44.5	59.0	36	41

Note: F end is connected with ISO 11926-1 port. ORFS fittings utilize a machined half dovetailed groove for seal retention.

2F4

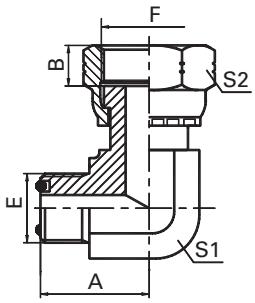
45°ORFS Male O-Ring / ORFS Female



Part No.	Thread E	F	O-Ring E	Dimensions A	B	S1	S2
2F4-08Z	13/16"X16	13/16"X16	O014	24	11	22	27
2F4-12Z	1-3/16"X12	1-3/16"X12	O018	30.7	15	30	36
2F4-16Z	1-7/16"X12	1-7/16"X12	O021	33	15	36	41

2F9

90° Elbow ORFS Male
O-Ring / ORFS Female



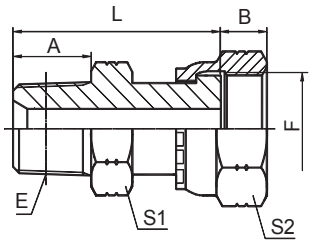
Part No.	Thread E	F	O-Ring E	Dimensions A	B	S1	S2
2F9-06Z	11/16"X16	11/16"X16	O012	27.5	10	19	22
2F9-08Z	13/16"X16	13/16"X16	O014	31.0	11	22	27
2F9-16Z	1-7/16"X12	1-7/16"X12	O021	44.5	15	36	41

Note: ORFS fittings utilize a machined half dovetailed groove for seal retention.

ORFS Adapters

2NF

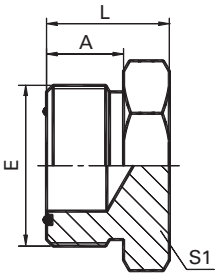
NPT Male / ORFS Female



Part No.	Thread E	F	Dimensions A	B	L	S1	S2
2NF-16-20Z	Z1"X11.5	1-11/16"X12	25.5	15	70	41	50

4F

ORFS Male O-Ring Plug

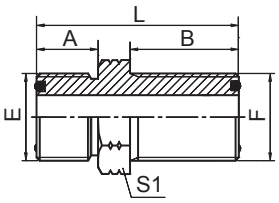


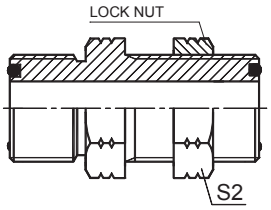
Part No.	Thread E	O-Ring E	Dimensions A	L	S1
4F-10Z	1"X14	O016	15.5	25.9	27

Note: ORFS fittings utilize a machined half dovetailed groove for seal retention.

6F

ORFS Male O-Ring Bulkhead



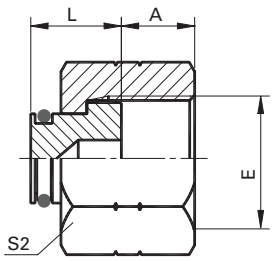


Part No.	Thread E	F	O-Ring E	F	Dimensions A	B	L	S1	S2
6F-08LNZ	13/16"X16	13/16"X16	O014	O014	12.8	36.5	58.3	30	30
6F-10LNZ	1"X14	1"X14	O016	O016	15.5	40.6	66.6	36	36

Note: In case if you are interested to order the adapter with lock nut,please insert suffix "LN" after our part no.,for example 6F-16LN, The lock nut no. is 8F.

9F

ORFS Female Flat Plug



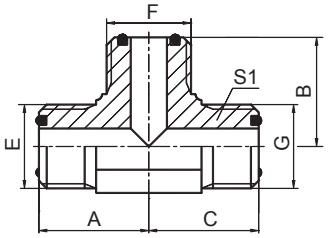
Part No.	Thread E	Dimensions A	L	S2
9F-06GMZ	11/16"X16	10	13	22
9F-08GMZ	13/16"X16	11	14	27
9F-10GMZ	1"X14	13.5	16	30
9F-12GMZ	1-3/16"X12	15	15	36
9F-16GMZ	1-7/16"X12	15	18	41
9F-20GMZ	1-11/16"X12	15	19	50

Note: ORFS fittings utilize a machined half dovetailed groove for seal retention.

D

AF

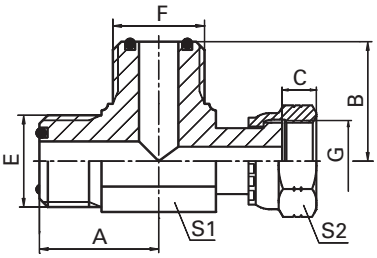
ORFS Male O-Ring Tee



Part No.	Thread E	F	G	O-Ring E	F	G	Dimensions A	B	C	S1
AF-08Z	13/16"X16	13/16"X16	13/16"X16	O014	O014	O014	31	31	31	22
AF-16Z	1-7/16"X12	1-7/16"X12	1-7/16"X12	O021	O021	O021	44.5	44.5	44.5	36

CF

ORFS Male O-Ring / ORFS Female Run Tee

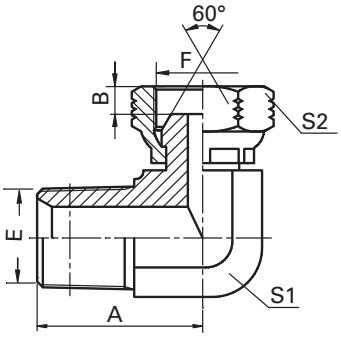


Part No.	Thread E	F	G	O-Ring E	F	Dimensions A	B	C	S1	S2
CF-04Z	9/16"X18	9/16"X18	9/16"X18	O011	O011	23.0	23.0	8.5	14	19
CF-06Z	11/16"X16	11/16"X16	11/16"X16	O012	O012	27.5	27.5	10	19	22
CF-08Z	13/16"X16	13/16"X16	13/16"X16	O014	O014	31.0	31.0	11	22	27
CF-12Z	1-3/16"X12	1-3/16"X12	1-3/16"X12	O018	O018	40.3	40.3	15	30	36
CF-16Z	1-7/16"X12	1-7/16"X12	1-7/16"X12	O021	O021	44.5	44.5	15	36	41

Note: ORFS fittings utilize a machined half dovetailed groove for seal retention.

2NU9

90° Elbow NPT Male / NPSM Female
60° (30°) Cone

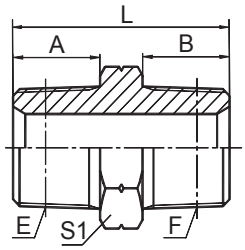


Part No.	Thread E	F	Dimensions A	B	S1	S2
2NU9-04Z	1/4"X18	1/4"X18	25.5	4.6	14	19
2NU9-06Z	3/8"X18	3/8"X18	31.0	6.0	19	22

NPT Thread Fittings

1N

NPT Male

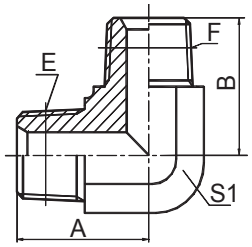


Part No.	Thread E	F	Dimensions A	B	L	S1
1N-04Z	Z1/4"X18	Z1/4"X18	15	15	35	17
1N-08-12Z	Z1/2"X14	Z3/4"X14	19.5	19.5	49	27
1N-12Z	Z3/4"X14	Z3/4"X14	19.5	19.5	49	27
1N-12-16Z	Z3/4"X14	Z1"X11.5	19.5	25.5	55	36
1N-16Z	Z1"X11.5	Z1"X11.5	25.5	25.5	61	36
1N-16-20Z	Z1"X11.5	Z1-1/4"X11.5	25.5	26.5	64	46
1N-20Z	Z1-1/4"X11.5	Z1-1/4"X11.5	26.5	26.5	65	46

F

1N9

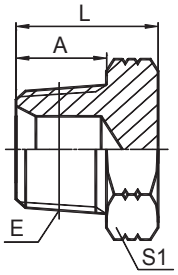
90° Elbow NPT Male



Part No.	Thread E	F	Dimensions A	B	S1
1N9-06Z	3/8"X18	3/8"X18	31.0	31.0	19
1N9-08Z	1/2"X14	1/2"X14	37.3	37.3	22

4N

NPT Male Plug

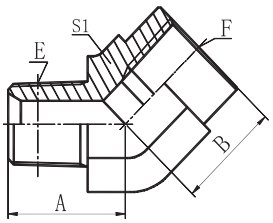


Part No.	Thread E	Dimensions A	L	S1
4N-04Z	Z1/4"X18	15	20	17
4N-06Z	Z3/8"X18	16	21	19
4N-08Z	Z1/2"X14	19.5	27	22
4N-12Z	Z3/4"X14	19.5	29.5	27
4N-16Z	Z1"X11.5	25.5	36.5	36
4N-32Z	Z2"X11.5	27.5	43.5	65

NPT Thread Fittings

5N4

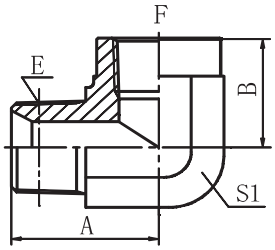
45° NPT Male / NPT Female



Part No.	Thread E	F	Dimensions A	B	S1
5N4-08Z	1/2"X14	1/2"X14	31.7	28.0	30

5N9

90° NPT Male / NPT Female

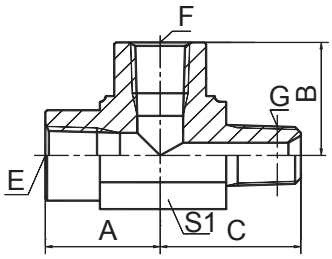


Part No.	Thread E	F	Dimensions A	B	S1
5N9-02Z	1/8"X27	1/8"X27	24.5	17.8	16
5N9-04Z	1/4"X18	1/4"X18	28.0	22.4	19
5N9-06Z	3/8"X18	3/8"X18	33.5	25.0	24
5N9-08-06Z	1/2"X14	1/2"X14	37.5	25.0	24
5N9-08Z	1/2"X14	1/2"X14	41.2	31.2	30
5N9-12Z	3/4"X14	3/4"X14	45.2	34.5	33
5N9-16Z	1"X11.5	1"X11.5	54.5	41.1	41

F

HN

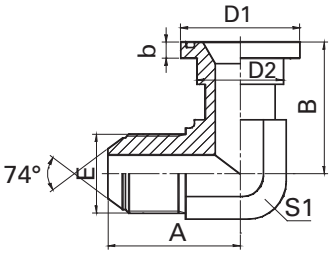
NPT Female / NPT Male Run Tee

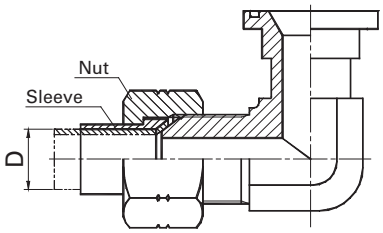


Part No.	Thread E	F	G	Dimensions A	B	C	S1
HN-04Z	1/4"X18	1/4"X18	1/4"X18	25	25	28.5	19
HN-06Z	3/8"X18	3/8"X18	3/8"X18	27	27	33.5	24
HN-12Z	3/4"X14	3/4"X14	3/4"X14	37	37	45.2	33

1JFL9

90° Elbow JIC Male 74° (37°) Cone / L-Series Flange ISO 6162-1





Part No.	Thread E	Flange	O-Ring	Dimensions A	B	b	D1	D2	S1
1JFL9-16Z	1-5/16"X12	1"	O219	49	60.2	8	44.4	38	33
1JFL9-24Z	1-7/8"X12	1-1/2″	O225	62.5	79.3	8	60.3	50	48
1JFL9-24-32Z	1-7/8"X12	2"	O228	74.5	108	9.53	71.4	62	63

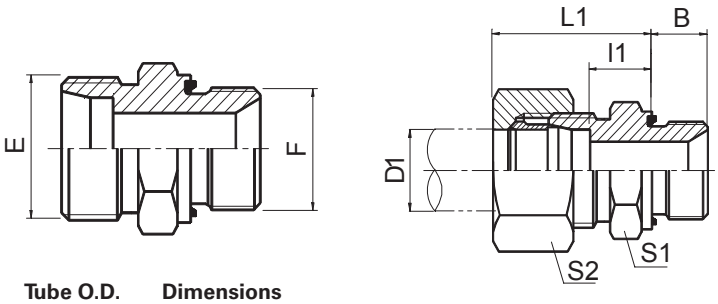
Note: Nut and sleeve should be ordered separately. The nut NB200 and sleeve NB500 is suitable for metric tube,the nut NB200 and sleeve NB300 is suitable for inch tube.

G

DIN Bite Type Tube Fittings

1CB-WD, 1DB-WD

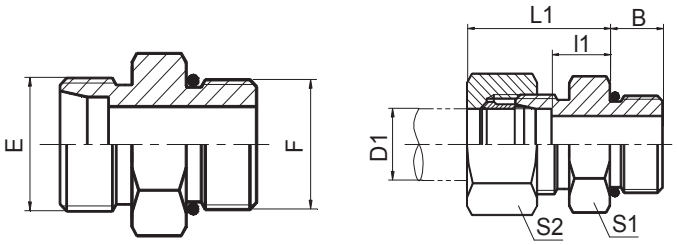
BSP Thread With Captive Seal



Part No.	Thread E	F	Tube O.D. D1	Dimensions B	I1	L1	S1	S2
1CB-18-06WDZ	M18X1.5	G3/8"X19	12	12	12.5	26.0	22	22
1CB-22-08WDZ	M22X1.5	G1/2"X14	15	14	15	29.0	27	27
1CB-26-08WDZ	M26X1.5	G1/2"X14	18	14	14.5	31.0	27	32

1CO

UN, UNF Thread Stud Ends with O-Ring Sealing

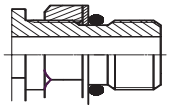


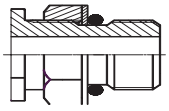
Part No.	Thread E	F	Tube O.D. D1	Dimensions B	I1	L1	S1	S2
1CO-18-08Z	M18X1.5	3/4"X16	12	11	10.5	28	22	22

Note: To order the adapter in complete set with cutting ring and nut, it is necessary to insert suffix "RN" after our part no. For example 1DB-20-08WDRN.

H

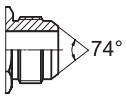
Technical Information
Working Pressure

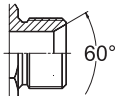




Thread	Metric Male O-Ring S-Series	Metric Male O-Ring Adjustable Stud End S-Series	Metric Male O-Ring L-Series	Metric Male O-Ring Adjustable Stud End L-Series	Metric Male Captive Seal L-Series	Metric Male Captive Seal S-Series
M8X1	63	40	40	31.5	-	-
M10X1	63	40	40	31.5	25	-
M12X1.5	63	40	40	31.5	25	63
M14X1.5	63	40	40	31.5	25	63
M16X1.5	63	40	31.5	25	25	63
M18X1.5	63	40	31.5	25	25	63
M20X1.5	-	-	-	-	-	63
M22X1.5	-	-	-	-	16	40
M22X1.5	63	40	31.5	25	-	-
M26X1.5	-	-	-	-	16	-
M27X2	40	40	20	16	-	40
M30X2	40	40	20	16	-	-
M33X2	-	-	-	-	10	40
M33X2	40	31.5	20	16	-	-
M42X2	25	25	20	16	-	-
M42X2	-	-	-	-	10	25
M48X2	25	20	20	16	10	25
M60X2	25	16	16	10	-	-

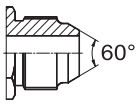
Pressure Unit MPa





Thread	Metric Male 74° (37°) Cone	Metric Male O-Ring	Metric Male 60° (30°) Cone Seat
M10X1	35	-	-
M10X1	35	-	-
M12X1.25	-	63	-
M12X1.5	35	-	-
M14X1.5	35	63	34.5
M16X1.5	25	63	-
M18X1.5	25	63	34.5
M22X1.5	20	63	34.5
M24X1.5	20	-	-
M27X1.5	20	40	-
M27X2	-	-	27.5
M30X2	20	-	-
M30X1.5	-	40	-
M33X2	16	-	20.5
M36X2	16	-	-
M36X2	-	40	-
M39X2	12.5	-	-
M39X2	-	25	-
M42X2	12.5	-	17
M42X2	-	25	-
M45X2	10	-	-
M45X2	-	25	-
M52X2	-	25	-
M60X2	-	25	-
M64X2	-	25	-

Pressure Unit MPa



Thread	JIS Metric Male 60° (30°) Cone
M12X1.5	34.5
M14X1.5	34.5
M16X1.5	34.5
M18X1.5	34.5
M20X1.5	34.5
M22X1.5	34.5
M24X1.5	27.5
M27X1.5	27.5
M30X1.5	20.5
M33X1.5	20.5
M36X1.5	17
M42X1.5	17

Pressure Unit MPa

Conversion Factors	
MPa to PSI	= MPa X 145.038
MPa to Bar	= MPa X 10

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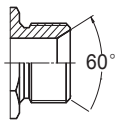
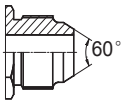
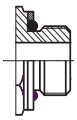
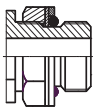
Technical Information
Working Pressure

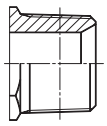




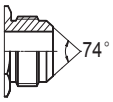
Thread	BSP Male 60° Cone Seat	JIS GAS Male 60° Cone	BSP Male O-Ring	BSP Male O-Ring Adjustable Stud End
G1/8"X28	34.5	34.5	40	31.5
G1/4"X19	34.5	34.5	40	31.5
G3/8"X19	34.5	34.5	31.5	25
G1/2"X14	34.5	34.5	31.5	25
G3/4"X14	27.5	27.5	20	16
G1"X11	20.5	20.5	20	16
G1-1/4"X11	17.0	17.0	20	16
G1-1/2"X11	10.5	10.5	20	16
G2"X11	10.5	10.5	16	10

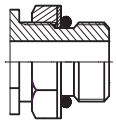
Pressure Unit MPa

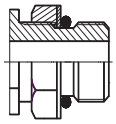


Thread	BSPT Male
R-1/8"X28	34.5
R1/4"X19	34.5
R3/8"X19	34.5
R1/2"X14	34.5
R3/4"X14	27.5
R1"X11	20.5
R1-1/4"X11	17.0
R1-1/2"X11	10.5
R2"X11	10.5

Pressure Unit MPa







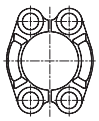
Thread	JIC 74° (37°) Cone	SAE Male O-Ring S-Series	SAE Male O-Ring Adjustable Stud End S-Series	SAE Male O-Ring L-Series	Metric Male O-Ring Adjustable Stud End L-Series
5/16"X24	34.5	—	—	31.5	31.5
3/8"X24	34.5	63	40	31.5	31.5
7/16"X20	34.5	63	40	31.5	31.5
1/2"X20	34.5	63	40	31.5	31.5
9/16"X18	34.5	63	40	31.5	25.0
3/4"X16	31	63	40	31.5	25.0
7/8"X14	24	63	40	25.0	20.0
1-1/16"X12	24	40	40	25.0	20.0
1-3/16"X12	21	40	40	20.0	16.0
1-5/16"X12	21	40	31.5	20.0	16.0
1-5/8"X12	17	25	25	16.0	12.5
1-7/8"X12	14	25	20	16.0	12.5
2-1/2"X12	10.5	—	—	12.5	10.0

Pressure Unit MPa

Thread	NPT Male
1/8"X27	34.5
1/4"X18	27.5
3/8"X18	21.0
1/2"X14	21.0
3/4"X14	17.0
1"X11.5	14.0
1-1/2"X11.5	8.0
1-1/2"X11.5	7.0

Pressure Unit MPa

Thread	ORFS Male O-Ring
9/16"X18	63
11/16"X16	63
13/16"X16	63
1"X14	40
1-3/16"X12	40
1-7/16"X12	40
1-11/16"X12	25
2"X12	25



SAE Flange Size	Mid-Strength Bolt L-Series	High-Strength Bolt L-Series	Mid-Strength Bolt S-Series	High-Strength Bolt S-Series
1/2"	35	35	35	40
3/4″	35	35	35	40
1″	25	31.5	35	40
1-1/4″	20	25	35	40
1-1/2″	20	20	35	40
2″	16	16	35	40

Pressure Unit MPa

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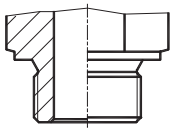
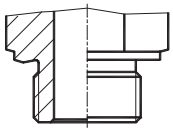
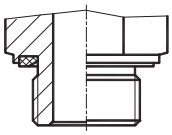
ISO 9974-1 Metric Thread Port and Mating Stud End



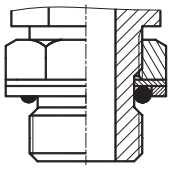
Type A



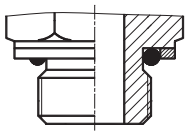
ISO 9974-3 Type B



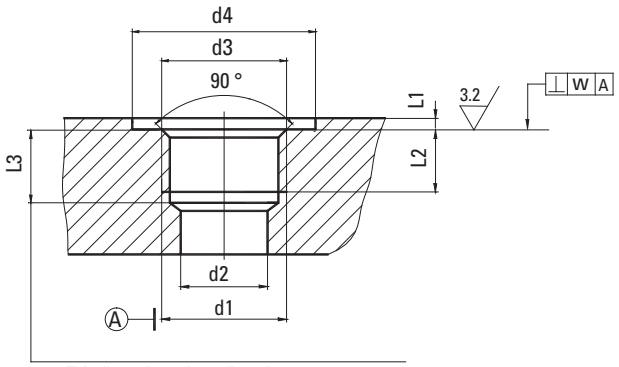
ISO 9974-2 Type E



O-Ring Seal



O-Ring Seal



This dimension only applies when tap drill cannot pass through entire boss

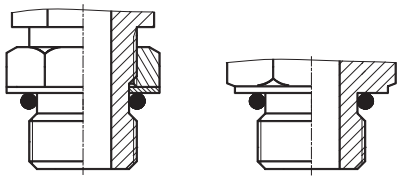
ISO 9974-1 Port

Port Dimensions mm

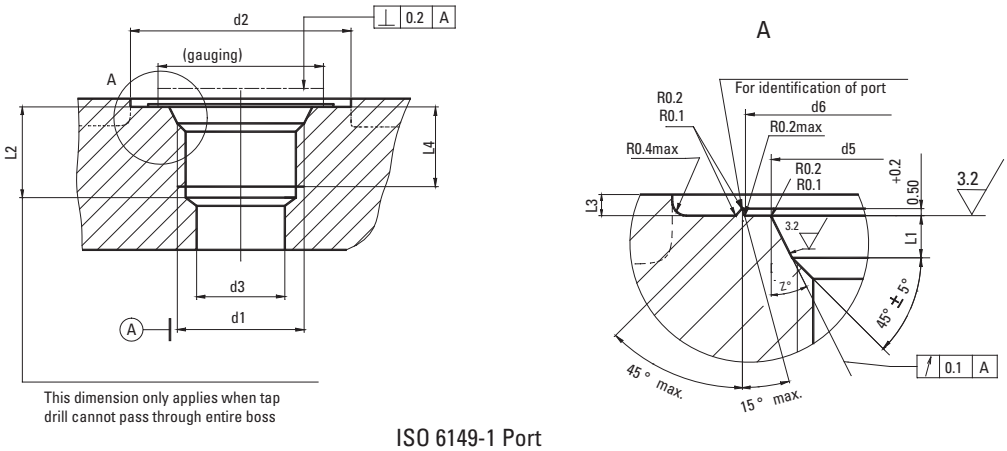
Thread d1	d2 ref.	d3 nom.	d3 tol.	d4 min.	L1 min.	L2 min.	L3 min.	w
M8X1	3	8	0, +0.2	13	1.0	8	10	0.1
M10X1	4.5	10	0, +0.2	15	1.0	8	10	0.1
M12X1.5	6	12	0, +0.2	18	1.5	12	15	0.1
M14X1.5	7	14	0, +0.2	20	1.5	12	15	0.1
M16X1.5	9	16	0, +0.2	23	1.5	12	15	0.1
M18X1.5	11	18	0, +0.2	25	2.0	12	15	0.1
M20X1.5	10	20	0, +0.2	27	2.0	14	17	0.1
M22X1.5	14	22	0, +0.2	28	2.5	14	17	0.1
M26X1.5	18	26	0, +0.2	33	2.5	16	19	0.2
M27X2	16	27	0, +0.2	33	2.5	16	20	0.2
M33X2	23	33	0, +0.3	41	2.5	18	22	0.2
M42X2	30	42	0, +0.3	51	2.5	20	24	0.2
M48X2	36	48	0, +0.3	56	2.5	22	36	0.2

Technical Information
Port Type and Dimensions
ISO 9974-1 Metric Thread Port

ISO 6149-1 Metric Thread Port and Mating Stud End



ISO 6149-3 stud end



ISO 6149-1 Port

Port Dimensions mm

Thread d1	d2 min. 1)	d2 min 2)	d3 ref.	d4	d5 +0.1 0	d6 +0.5 0	L1 +0.4 0	L2 min.	L3 max.	L4 min.	Z° ± 1°	O-Ring
M8X1	17	14	3	12.5	9.1	14	1.6	11.5	1	10	12	6.1X1.6
M10X1	20	16	4.5	14.5	11.1	16	1.6	11.5	1	10	12	8.1X1.6
M12X1.5	23	19	6	17.5	13.8	19	2.4	14	1.5	11.5	15	9.3X2.2
M14X1.5	25	21	7.5	19.5	15.8	21	2.4	14	1.5	11.5	15	11.3X2.2
M16X1.5	28	24	9	22.5	17.8	24	2.4	15.5	1.5	13	15	13.3X2.2
M18X1.5	30	26	11	24.5	19.8	26	2.4	17	2	14.5	15	15.3X2.2
M20X1.5	32	27	—	25.5	21.8	27	2.4	—	2	14.5	15	17.3X2.2
M22X1.5	34	29	14	27.5	23.8	29	2.4	18	2	15.5	15	19.3X2.2
M27X2	40	34	18	32.5	29.4	34	3.1	22	2	19	15	23.6X2.9
M33X2	49	43	23	41.5	35.4	43	3.1	22	2.5	19	15	29.6X2.9
M42X2	60	52	30	50.5	44.4	52	3.1	22.5	2.5	19.5	15	38.6X2.9
M48X2	66	57	36	55.5	50.4	57	3.1	25	2.5	22	15	44.6X2.9
M60X2	76	67	44	65.5	62.4	67	3.1	27.5	2.5	24.5	15	56.6X2.9

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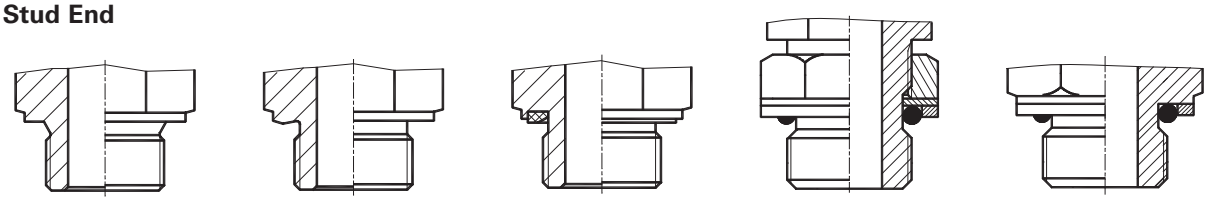
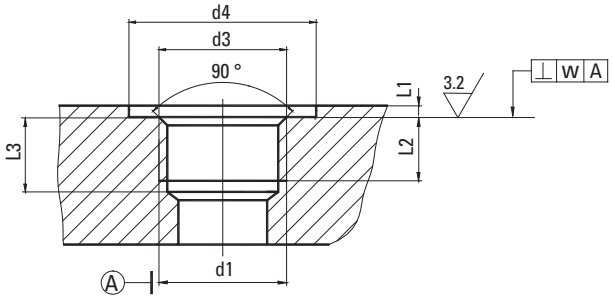
DIN 3852 BSP Thread Port and Mating Stud End



DIN 3852 Type A | DIN 3852 Type B | DIN 3852 Type E | O-Ring Seal | O-Ring Seal



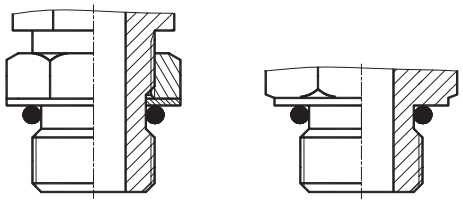
DIN 3852 Port

Port Dimensions mm

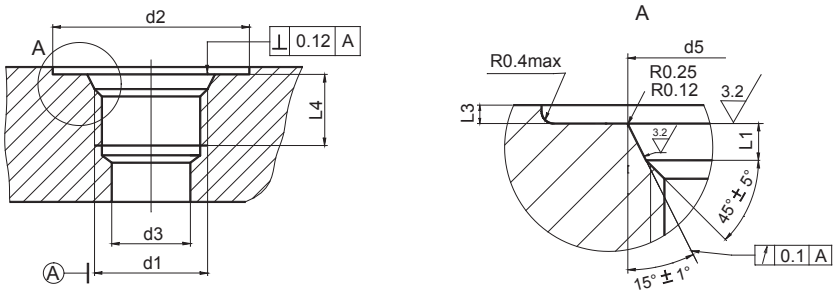
Thread d1		d3	d4 +0.4 0 Type B, E	d4 +0.4 0 Others	L1 max.	L2 min.	L3 min.	w
G1/8X28	9.8	0,+0.2	15	19	1.0	8	13	0.1
G1/4X19	13.2	0,+0.2	19	25	1.5	12	18.5	0.1
G3/8X19	16.7	0,+0.2	23	28	2.0	12	18.5	0.1
G1/2X14	21.0	0,+0.2	27	34	2.5	14	22	0.1
G3/4X14	26.5	0,+0.2	33	42	2.5	16	24	0.2
G1X11	33.3	0,+0.3	40	47	2.5	18	27	0.2
G1-1/4X11	42.0	0,+0.3	50	58	2.5	20	29	0.2
G1-1/2X11	47.9	0,+0.3	56	65	2.5	22	31	0.2
G2X11	59.7	0,+0.3	69	76	3.0	24	33	0.2

Technical Information
Port Type and Dimensions
BS 5380 BSP Thread Port

BS 5380 BSP Thread Port and Mating Stud End



BS 5380 stud end



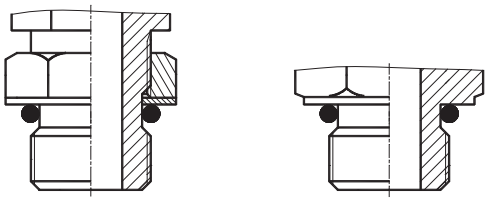
BS 5380 Port

Port Dimensions mm

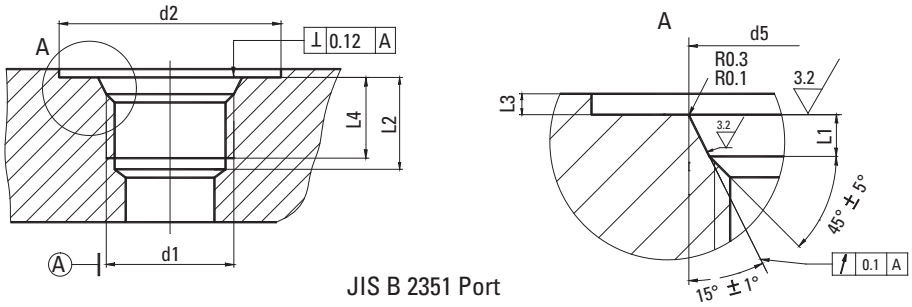
Thread d1	d2 min.	d3 max.	d5 +0.12 0	L1 +0.4 0	L3 max.	L4 min.	O-Ring
G-1/8X28	15	14	11.24	1.3	0.6	10.5	8.1X1.6
G1/4X19	19	18	14.16	1.2	0.6	11.0	10.1X1.6
G3/8X19	23	22	18.86	1.9	0.6	12.5	13.6X2.4
G1/2X14	27	26	22.40	1.9	0.8	15.0	17.6X2.4
G5/8X14	31	30	26.00	2.4	0.8	16.3	19.5X3.0
G3/4X14	33	32	28.92	2.4	1.1	16.3	22.5X3.0
G1X11	40	39	35.50	2.4	1.1	19.1	29.5X3.0
G1-1/4X11	50	49	43.56	2.4	1.1	21.4	36.5X3.0
G1-1/2X11	56	55	49.42	2.4	1.1	22.5	42.5X3.0
G2X11	69	68	61.42	2.4	1.1	25.7	54.5X3.0

Technical Information
Port Type and Dimensions
JIS B 2351 BSP Thread Port

JIS B 2351 BSP Thread Port and Mating Stud End



JIS B 2351 stud end



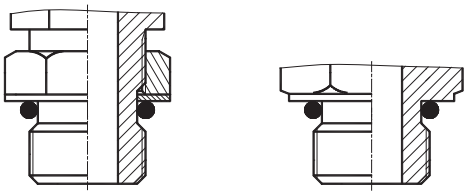
JIS B 2351 Port

Port Dimensions mm

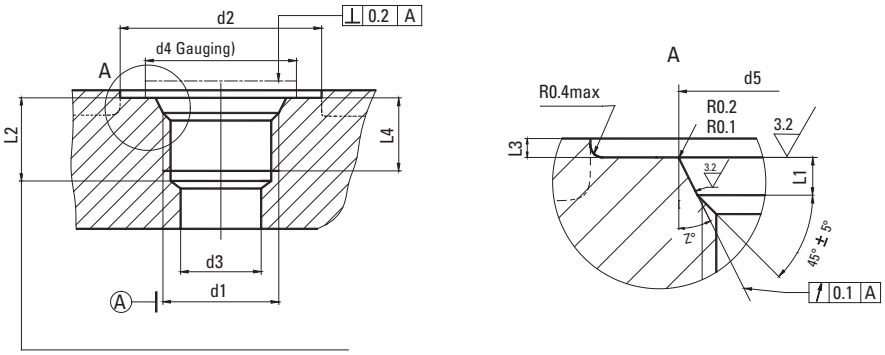
Thread d1	d2 ± 0.3	d5 + 0.1 0	L1 + 0.4 0	L2 min.	L3 max.	L4 min.	O-Ring
G1/8X28	18	11.6	2.0	15	1.0	10	7.8X1.9
G1/4X19	24	15.6	2.5	18	1.5	12	10.8X2.4
G3/8X19	28	18.6	2.5	18	2.0	12	13.8X2.4
G1/2X14	34	22.6	2.5	24	2.5	16	17.8X2.4
G3/4X14	45	29.8	3.5	25	2.5	17	22.1X3.5
G1X11	51	35.8	3.5	30	2.5	21	28.7X3.5
G1-1/4X11	62	44.8	3.5	30	2.5	21.4	37.7X3.5
G1-1/2X11	68	50.8	3.5	30	2.5	21.4	43.7X3.5

Technical Information
Port Type and Dimensions
ISO 11926-1 SAE Thread Port

ISO 11926-1 SAE Thread Port and Mating Stud End



ISO 11926-2 ISO 11926-3 SAE thread stud end

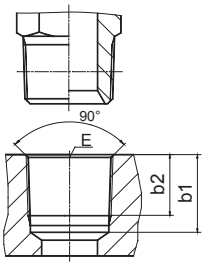


This dimension only applies when tap drill cannot pass through entire boss

Port Dimensions mm

Thread d1	d2 min.	d3 ref.	d4 min.	d5 ±0.05	L1 +0.4 0	L2 min.	L3 max.	L4 min.	Z° ±1°	O-Ring
5/16"X24	17	2.5	11	9.15	1.9	12	1.6	10	12	6.07X1.63
3/8"X24	19	3.5	13	10.75	2.4	12	1.6	10	12	7.65X1.63
7/16"X20	21	4.5	15	12.45	2.4	14	1.6	11.5	12	8.92X1.83
1/2"X20	23	6.0	16	14.05	2.5	14	1.6	11.5	12	10.52X1.83
9/16"X18	25	7.5	18	15.70	2.5	15.5	2.4	12.7	15	11.89X1.98
3/4"X16	30	10	22	20.65	2.5	17.5	2.4	14.3	15	16.36X2.21
7/8"X14	34	12.5	26	24.0	3.3	20	2.4	16.7	15	19.18X2.46
1-1/16"X12	41	16	32	29.2	3.3	23	2.4	19	15	23.47X2.95
1-3/16"X12	45	18	35	32.4	3.3	23	2.4	19	15	26.62X2.95
1-5/16"X12	49	21	38	35.55	3.3	23	3.2	19	15	29.74X2.95
1-5/8"X12	58	27	48	43.55	3.3	23	3.2	19	15	37.46X3.00
1-7/8"X12	65	33	54	49.9	3.3	23	3.2	19	15	43.69X3.00
2-1/2"X12	88	45	70	65.75	3.3	23	3.2	19	15	59.36X3.00

Taper Thread Port

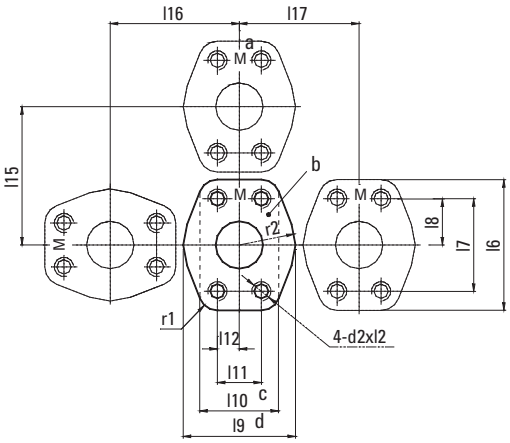


Taper Thread Port

	Thread E	b2 min.	b2 min.
BSPT Thread	R1/8x28	9.5	7.5
	R1/4x19	13.5	11.0
	R3/8x19	14.0	11.5
	R1/2x14	17.5	15.0
	R3/4x14	19.0	16.5
	R1x11	22.5	19.5
	R1-1/4x11	24.8	21.5
	R1-1/2x11	24.8	21.5
	R2x11	29.5	26.0
NPT Thread	1/8x27	10.0	7.8
	1/4x18	14.0	11.8
	3/8x18	14.0	11.8
	1/2x14	18.0	15.5
	3/4x14	18.5	16.0
	1x11.5	22.5	19.5
	1-1/4x11.5	24.0	20.5
	1-1/2x11.5	24.0	20.5
	2x11.5	25.0	21.5

Technical Information
Port Type and Dimensions
ISO 6162 Flange Port

ISO 6162 Flange Port



a Metric Thread Port Mark

b Port Roughness Ra 3.2

c Flange Washer Min. Width

d Recommended Flange Washer Width

ISO 6162-1 Flange Port Dimensions (3.5MPa-35MPa)

Flange Size		d2	l2 min.	l6 max.	l6 min.	l7 ± 0.25	l8 ± 0.25	l9 ± 0.8	l10 min.	l11 ± 0.25	l12 ± 0.25	l15 min.	l16 min.	l17 min.	r1 ± 0.4	r2 ± 0.8
-08	1/2"	M8	14	54.9	53.1	38.1	19.05	46	33	17.5	8.75	56	52	49	8	23
-12	3/4"	M10	18	65.8	64.3	47.6	23.8	52	41	22.3	11.15	68	61	55	9	26
-16	1"	M10	18	70.6	69.1	52.4	26.2	59	48	26.2	13.1	72	67	61	9	29
-20	1-1/4"	M10	22	80.3	78.5	58.7	29.35	73	54	30.2	15.1	82	78	75	10	37
-24	1-1/2"	M12	22	94.5	93.0	69.9	34.95	83	64	35.7	17.85	96	90	85	12	41
-32	2"	M12	22	103.1	100.1	77.8	38.9	97	76	42.9	21.45	104	102	99	12	49

ISO 6162-1 Flange Port Dimensions (35MPa-40MPa)

Flange Size		d2	l2 min.	l6 max.	l6 min.	l7 ± 0.25	l8 ± 0.25	l9 ± 0.8	l10 min.	l11 ± 0.25	l12 ± 0.25	l15 min.	l16 min.	l17 min.	r1 ± 0.4	r2 ± 0.8
-08	1/2"	M8	16	57.2	55.6	40.5	20.25	48	38	18.2	9.1	59	56	53	8	24
-12	3/4"	M10	18	72.1	70.6	50.8	25.4	60	48	23.8	11.9	75	70	66	10	30
-16	1"	M12	23	81.8	80.3	57.2	28.6	70	54	27.8	13.9	84	80	75	12	35
-20	1-1/4"	M12	20	96.0	94.5	66.6	33.3	78	60	31.8	15.9	99	90	83	14	39
-24	1-1/2"	M16	27	114.3	111.3	79.3	39.65	95	70	36.5	18.25	116	108	101	17	48
-32	2"	M20	35	134.9	131.8	96.8	48.4	114	86	44.5	22.25	137	128	120	18	57

O-Ring Face Seal Fittings Instructions

The fitting has two types. The first type consists of a body, an O-Ring, a nut and the weld tube. The weld tube is brazed with the system steel tube, see Fig.1. The second type consists of a body, an O-Ring, a nut and a sleeve. As shown in Fig.2, the tube is flanged to 90°. When used as Fig.1, the quality of weld is very important.

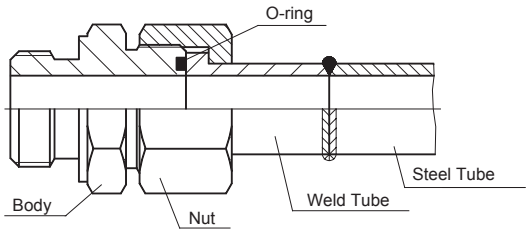


Fig.1

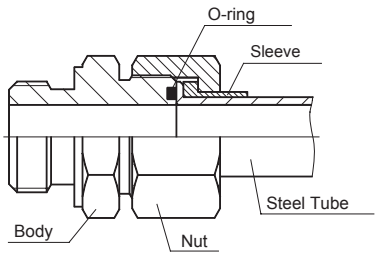


Fig. 2

O-Ring face seal fittings are suit for high pressure system. If the hardness of O-Ring is N90, the sealing will better, and be good for preventing leakage.

The O-Ring face seal fitting has two connected thread: metric thread and ORFS thread.

As shown in Fig.3, Fig.4 and Fig.5, the O-Ring seal groove has three types. The advantage of type Fig.3. It is very convenience for installation, when put the groove adown O-Ring could be held in the groove and not drop; The O-Ring could not enter the hydraulic system when the pressure is negative. The type Fig.4 has only the later advantage of the type Fig.3. The type Fig.5 has no above advantage.

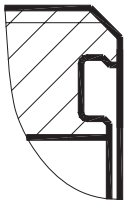


Fig.3

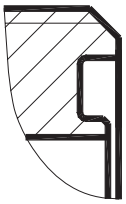


Fig.4

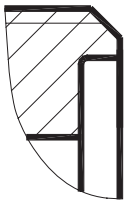
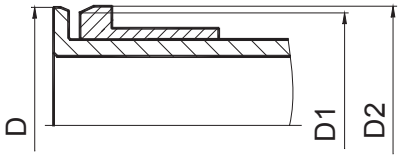


Fig.5

For metric thread O-Ring groove JB standard is type Fig.5, but we suggest that the type Fig.3 should be chosen and make a annotation when order. For ORFS O-Ring groove, we produce as type Fig.3 only.

O-Ring Face Seal Assembly

1. As shown in Fig.1, the tube end is cut squarely (within +/- 1°) before assembled, deburr the O.D. and I.D. of the tube, remove all oil and oxide, weld after put the nut. As shown in Fig.2, the tube is flanged to 90° with special equipment after cut, diameter D should fall between diameter D1 and D2, see Fig.6.



2. The fitting body should be installed O-Ring first.
3. As shown in Fig.1 or Fig.2, place tube assembly against the fitting body so that the flat face of the weld tube (or flanged steel tube) comes in full contact with the O-Ring. Tighten the nut onto the fitting body by hand, then tighten it to the recommended torque with a torque wrench. If torque wrenches are not available, tighten i1/4 to 1/2 turn with general wrench.

Re-Assembly

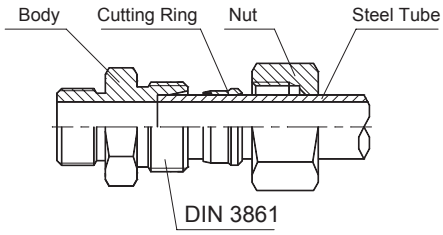
Because the sealing surfaces are flat and perpendicular to the installation force, the O-Ring may be distorted during assembly. The O-Ring should be inspected at each disassembly and replaced when necessary.

Leakage Reasons

1. The O-Ring is installed in the face seal groove improperly.
2. The O-Ring is damaged.
3. The sealing surface, the weld tube or the flange are not flat, or have another fault affecting sealing.
4. The flange is too large or too small that the O-Ring can't be compressed.
5. The O-Ring material is not suit for working temperature.
6. The O-Ring hardness is not enough.
7. The connected nut is loosen.

Bite Type Tube Fittings Assembly Instructions

Bite type fitting consists of three parts: body, cutting ring and nut. When tightening nut, cutting ring is driven forward on the tube then bites the tube with the edge of cutting ring, this is how sealing is achieved and results in internal ridge inside the tube. See Fig-7. The tube connection side of fitting is manufactured in accordance with standard: DIN 3861. In general, body and nuts' surface is plated zinc. Bite type fitting can be used in system with Max 63MPa. The connection tube OD is Max 42mm.



Cutting Ring Bite the Tube

Assembly

1. Cut the tube at right angle and de-burr inside and outside of tube end. Minimum straight length of tube from the starting point of tube bend to the tube end may be 3 times height of the nut.
2. Set a nut and cutting ring on the tube. Make sure the cutting ring and the nut are facing the fitting.
3. Lubricate the pre-assembly fitting body threads and cutting ring. Insert tube end into fitting body until it is firmly seated on bottom (fitting shoulder) and hand-tighten the nut.
4. Tighten nut until ferrule grips tube which is felt by a noticeable increase in torque (increase in force).
5. Tighten nut 1/2 of a turn after increase in force.
6. Disassembly the pre-assembly fitting body .Check penetration of cutting edge.A visible ring of material should fill the space in front of the profile ring end face. Profile ring may turn on tube,but should not be capable of axial displacement.
7. Lubricate the fitting body to be subsequently installed.Tighten nut until a noticeable increase in force is required. Tighten nut by 1/2 of a turn beyond this point for final assembly.

I

Reassembly

Fitting can be used many times. To ensure this, parts must be clean and free of defects.

1. Insert the tube into fitting body until cutting ring seats firmly in the fitting and hand-tighten the nut.
2. Tighten the nut with a wrench by holding the fitting body with a backup wrench until a sharp rise in torque is felt. Further tighten the nut 1/4 to 1/2 turn.

Checking up the bite condition

All bite type fitting must be disassembled prior to service to check up if small ridge inside the tube is completely formed around front edge of cutting ring. Otherwise tighten slightly more to have it. Cutting ring may rotate on the tube that doesn't mean wrong installation. The cutting ring shall be refitted once the nut is retightened.

Leakage reason

1. When the tube is not fully bottomed.
2. When the nut is not tightened enough.
3. When the tube is of scratches or oval.
4. When the tube is extremely hard.

Flared Tube Fittings Instructions

As shown in Fig.8, the fitting consists of three pieces: the body, sleeve and nut. The tube end is flared at a 37° angle and held between the fitting nose and the sleeve with the nut, providing a metal to metal seal between the fitting nose and the tube flare. The advantage of sleeve is reducing vibration and fatigue of tube, the steel tube will not turn when tighten the nut.

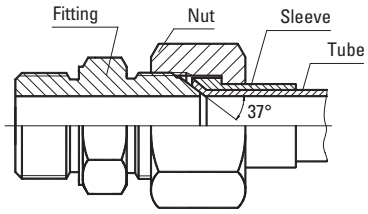


Fig.8

- The flared tube fitting has two connected thread: metric thread and JIC thread.
- It is easy to assemble without weld. It is especially suited for low and medium pressure systems. As metal to metal seal, it allows wide operating temperature range.

Flared Tube Fittings Assembly Instructions

1. Cut tube reasonably square (within +/- 1°), deburr the I.D. and O.D. of the tube, remove the dirt. Set a nut and sleeve on the tube, the tube is flared with special equipment, diameter D should fall between diameter D1 and D2, see Fig. 9.

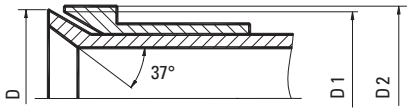


Fig.9

2. Over half of the leakage with flared fittings is caused by improper flaring or installation. When assembled, the axis of the tube, the tube flare and the fitting nose should be concentric.
3. Screw the nut onto the fitting body by hand and tighten it to the recommended torque with a torque wrench. If torque wrenches are not available, tighten 1 to 2 turns with general wrench. In general, the small fitting is tighten about 1 turn and the large fitting is tighten about 2 turns.

Reassembly

Fitting can be used many times. To ensure this, parts must be clean and free of defects. no tube cracked.

Leakage reason

1. When assembled, the axis of the tube, the tube flare and the fitting nose are not concentric, force the tube to the station.
2. The tighten force is too large or too small.
3. The tube flare is cracked.
4. The fitting body or the tube flare is collapsed.
5. The connected nut is loosen.
6. The sealing surface is damaged for longer torque or reassembly time after time.
7. The tube flare is too large or too small, so the seal between the fitting nose and the tube flare is not effective.

Taper Thread Fittings Instructions

The connected thread has three types: NPT, NPTF and BSPT.

- NPT, BSPT threads should be assembled with sealant. NPTF is metal to metal seal, but use sealant also. Sealants are available in various forms such as Teflon tape, paste and anaerobic glue etc..
- Teflon tape, paste etc., if applied improperly, they will pollute the oil of the hydraulic system, even jam the system.
- The seal of the small thread is better than the large. In general the seal of less than 3/4" are good.
- The connect will compact when the taper thread for straight fitting, if for elbow or tee or cross fittings, the assemble angle is difficult to control, so suggest that the adjustable stud end fittings should be used, for example ISO 6149, ISO 11926 etc.

Assembly Instructions

Assembly

1. Inspect port and connectors to ensure that threads on both are free of dirt, burrs and excessive nicks.
2. Apply sealant to male pipe threads. With any sealant, the first and second threads should be uncovered to avoid system contamination. If Teflon tape is used it should be wrapped 1.1/2 to 2 turns in clockwise direction when viewed from the pipe thread end.
3. First tighten the fitting with hand, then tighten with a wrench 1.1/2 to 3 turns. In general, the small fitting is tighten about 2.5 turns and the large fitting is tighten about 2 turns.

Reassembly

The taper thread fitting can be reassembled. When reassembled, check if sealant has worn thin.

Leakage reason

1. There is no sealant used or sealant has worn thin.
2. Threads are galled.
3. Fitting screws in too far into the port.
4. Threads are severely nicked.
5. Threads are loosen.

Routing of Tube Lines

Routing of tube lines should pay attention to the following:

The length of tube should be short and tube O.D. should be suitable, the energy will loss if the velocity is too large.

The tube connection should avoid strain, it is good that have a bending part. See Fig. 1.

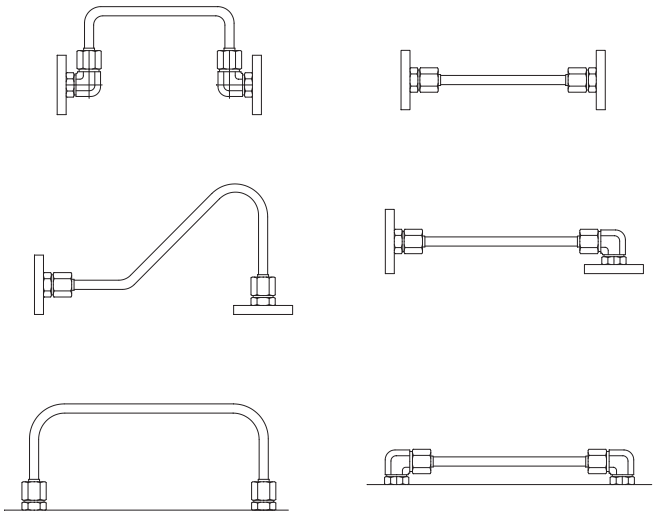


Fig.1

The tube bending radius is large as possible. The min. bending radius is about 2.5 times of the O.D. The tube end should be straight and the spacing is above 2 times of the tube nut. See Fig. 2.

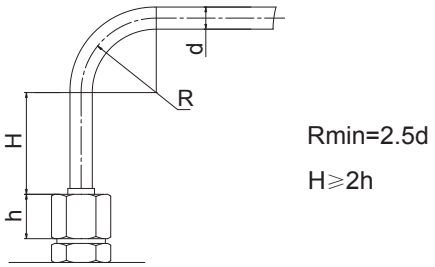


Fig.2

Fatigue failure due to mechanical vibration accounts for the majority of tube line failures. When the tube line is longer, we can use tube clamps to support the system. Proper clamping of the tube can reduce system noise. Recommended tube clamp spacing as shown in Fig.3 and table 1.

Get around obstructions without using excessive amount of 90° bends. Pressure drop due to one 90° bend is greater than that due to two 45° bends. Fig.4.

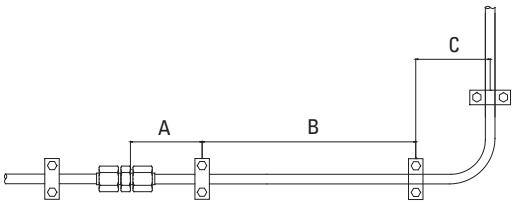


Fig.3

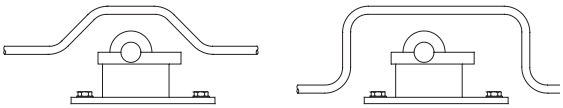


Fig.4

Tube O.D.	Clamp Spacing	A	B	C
		(mm)	(mm)	(mm)
6-12.7		50	900	100
15.9-22.2		100	1200	200
25.4		100	1500	200
31.8-38.1		150	2100	300
48.3		150	2700	300

Table 1

Keep tube lines away from components that require regular maintenance. Fig. 5.

Fig.5

Have a neat appearance and allow for easy trouble-shooting, maintenance and repair. Fig.6.

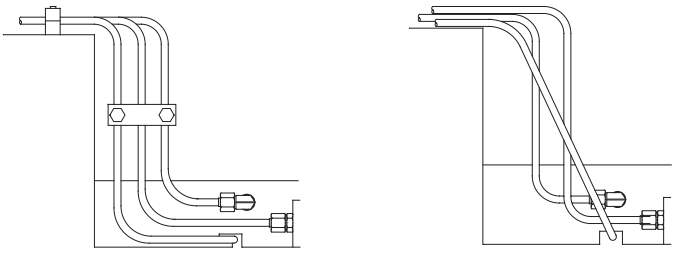


Fig.6

Technical Information
Recommended Thread Torque

Metric Thread

Thread	Nut Torque
M12x1.5	10-20
M14x1.5	20-35
M16x1.5	25-40
M18x1.5	30-45
M20x1.5	35-50
M22x1.5	40-70
M24x1.5	40-70
M26x1.5	60-100
M30x2.0	80-120
M36x2.0	100-150
M42x2.0	150-220
M45x2.0	180-250
M52X2.0	200-300

BSP Thread

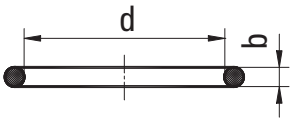
Thread	Nut Torque
G1/8"x28	11-12
G1/4"x19	25-28
G3/8"x19	41-48
G1/2"x14	72-82
G5/8"X14	96-110
G3/4"X14	124-137
G1"x11	151-165
G1-1/4"x11	192-206
G1-1/2"x11	261-275
G2"x11	343-357

JIC Thread

Thread	Nut Torque
7/16"x20	15-16
1/2"x20	19-21
9/16"x18	24-28
3/4"x16	49-53
7/8"x14	77-85
1-1/16"x12	107-119
1-3/16"x12	127-140
1-5/16"x12	147-154
1-5/8"x12	172-181
1-7/8"x12	215-226
2-1/2"x12	332-350

ORFS Thread

Thread	Nut Torque
9/16"x18	14-16
11/16"x16	24-27
13/16"x16	43-47
1"x14	60-68
1-3/16"x12	90-95
1-7/16"x12	125-135
1-11/16"x12	170-190
2"x12	200-225



O-Ring

For ORFS Male O-Ring

Part No.	Thread	d	b
O011	9/16"x18UNF	7.65	1.78
O012	11/16"x16UN	9.25	1.78
O014	13/16"x16UN	12.42	1.78
O016	1"x14UNSf	15.6	1.78
O018	1-3/16"x12UN	18.77	1.78
O021	1-7/16"x12UN	23.52	1.78
O025	1-11/16"x12UN	29.87	1.78
O029	2"x12UN	37.82	1.78

For SAE Flange O-Ring

Part No.	Flange Size	d	b
O214	3/4"	24.99	3.53
O219	1"	32.92	3.53
O222	1-1/4"	37.69	3.53
O225	1-1/2"	47.22	3.53
O228	2"	56.74	3.53

For BSP Male O-Ring

Part No.	Thread	d	b
O011	G1/8"X28	7.65	1.78

I

For SAE Male O-Ring

Part No.	Thread	d	b
O904	7/16"x20UNF	8.92	1.83
O906	9/16"x18UNF	11.89	1.98
O908	3/4"x16UNF	16.36	2.21
O910	7/8"x14UNF	19.18	2.46
O912	1-1/16"x12UN	23.47	2.95
O916	1-5/16"x12UN	29.74	2.95
O920	1-5/8"x12UN	37.46	3.00
O924	1-7/8"x12UN	43.69	3.00
O932	2-1/2"x12UN	59.36	3.00

For Metric Male Adjustable Stud End O-Ring

Part No.	Thread	d	b
008.1X1.6	M10X1	8.1	1.6

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