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Performance Standards and Specifications

Hose	SAE J517	SAE Other	DOT FMVSS 106	USCG MTH (1)	ISO	DNV (2)	EN	MSHA (3)	German Lloyd	ABS	UL-21 LPG	BV	Other
AX		J1942		H				X					
BXX		J1942		H				X					
F42													
JK	100R2AT				ISO 1436-1 Type 2SN		EN 853 Type 2 SN	X					1J100, NFPA 1936
MX	100R1AT	J1942		H				X					
P35	100R13	J1942		HF	ISO 3862-1 Type R13	X	EN 853 Type R13	X		X		X	
SS23CG											X		CAN/CGA-8.1-M86 Type III, ECE 110 Class 1
SS25UL											X		AGA - AS/NZS 1869D
201	100R5	J1402 All	All										
206	100R5	J1402 All	All										
213		J1402 AI	AI										
221FR (4)		J1527 R3, J1942, USCG A1		H, HF	ISO 7840			X	X	X			ABYC
244		J2064 Type B											
266		J1402 All	All										
285		J2064 Type C											
293		J1402 AI	AI										
301LT		J1942		HF		X				X			
302	100R2AT	J1942		HF	ISO 1436-1 Type 2SN	X	EN 853 Type 2 SN			X		X	
304													
351ST	100R19							X					
351TC	100R19							X					
422	100R1AT	J1942		HF	ISO 1436-1 Type 1SN	X	EN 853 Type 1SN			X			
424													
426	100R1AT	J1942		HF				X		X			
431		J1942		H				X					
436		J1942		HF				X		X			
451ST	100R17							X					
451TC	100R17	J1942		HF				X		X			
471ST					ISO 11237-1 Type 2SC		EN857 Type 2SC	X					
471TC		J1942		HF	ISO 11237-1 Type 2SC	X	EN857 Type 2SC	X		X		X	
472LT							EN857 Type 2SC						
472TC		J1942		HF	ISO 11237-1 Type 2SC	X	EN857 Type 2SC	X		X			
482ST	100R1AT				ISO 1436-1 Type 1SN		EN853 Type 1SN	X					

KEY TO UNDERSTANDING AGENCY APPROVALS FOR BUILDING HOSE ASSEMBLIES

ABS Approved assemblies can be manufactured at any location with Parker's permission. No restrictions.
 DNV Approved assemblies can only be manufactured in a Parker approved location that demonstrates a quality system and management program is in place and must be audited by DNV. Each location must be granted a "license" issued by Parker HPD for building hose assemblies. Three exist today; Davenport Iowa, Grimsby Canada, and Yangsan Korea.

BV Approved assemblies can only be produced in a BV approved location that demonstrates a quality system and management program is in place. Each location must have an initial audit performed by BV before the "license" can be issued. Additionally, ongoing audits setup by BV will be required at each approved location. Davenport Iowa is our only approved assembler.

UL "Listed" CSA/CGA Assemblies must be made at Davenport Iowa
 Assemblies must be made at Davenport Iowa

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Continued from previous page

Hose	SAE J517	SAE Other	DOT FMVSS 106	USCG MTH (1)	ISO	DNV (2)	EN	MSHA (3)	German Lloyd	ABS	UL-21 LPG	BV
482TC	100R1AT	J1942		H	ISO 1436-1 Type 1SN		EN853 Type 1SN	X				
611HT	100R6						EN854	X				
701		J1942		H, HF	ISO 3862-1 Type 4SP		EN856- Type 4SP			X		
711		J1942		HF		X		X		X		
721	100R12				ISO 3862-1 Type R12		EN856- Type R12	X				
721ST	100R12				ISO 3862		EN856	X				
721TC	100R12	J1942		HF	ISO 3862-1 Type R12	X	EN856- Type R12	X		X		
722LT	100R12				ISO 3862-1 Type R12		EN856- Type R12					
722TC		J1942		HF		X		X		X		
731		J1942		HF		X	EN856- Type 4SH			X		
761								X				
772LT												
772ST	100R12				ISO 3862-1 Type R12		EN856- Type R12	X				
772TC	100R12	J1942		HF	ISO 3862-1 Type R12	X	EN856- Type R12	X		X		
774												
781	100R13	J1942		HF	ISO 3862-1 Type R13	X	EN856- Type R13	X		X		
782ST	100R13				ISO 3862-1 Type R13		EN856- Type R13	X				
782TC	100R13	J1942		HF	ISO 3862-1 Type R13	X	EN856- Type R13	X		X		X
787TC		J1754, J1942		HF	ISO18752-DC	X		X		X		
791TC	100R15	J1942		HF	ISO 3862-1 Type R15	X		X		X		
792ST	100R15				ISO 3862-1 Type R15			X				
792TC	100R15	J1942		HF	ISO 3862-1 Type R15	X		X		X		
797TC		J1754, J1942		HF	ISO18752-DC	X		X		X		
801								X				
804												
811HT with 81		J1942		HF								
821												
821FR												
836								X				
881		J1942		H, HF				X				

Notes:

(1) U.S.C.G./MTH (Marine Technical & Hazardous Materials Branch) hoses, hose assemblies and appropriate fittings meet 46CFR56.60-25(c) for use on commercial vessels. Hoses and hose assemblies meet the requirements of SAE J1942. Hose fittings meet the requirements of SAE J1475.

F = Fuel and lube systems.

H = Hydraulic Systems.

*Some hoses are accepted for different pressures for F and H. Also, not all sizes are accepted for all applications. See HPD approval bulletin #APR-004 or consult the Parker Hose Products Division, Technical Services Department, for details. The Canadian Coast Guard accepts all hoses accepted by the U.S. Coast Guard.

(2) Det Norske Veritas (DnV) approvals are with permanent (crimp) type fittings only. See HPD Approval Bulletin #APR-006 or consult the Parker Hose Products Division, Technical Services Department, for details.

(3) Hose with MSHA (Mine Safety and Health Administration) approved flame resistant cover will be marked accordingly on the layline.

(4) 221FR is type accepted by Lloyd's Register. It meets the requirements of the American Boat and Yacht council. 221FR is certified to meet the EC Directive 94/25/EC in accordance with ISO 7840.

For questions on standards and specifications please contact the Hose Products' Technical Services Department at (440) 943-5700.

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Standards and Specifications

JIS - Adapters

JIS B8363 Code	Parker Part Number	Mates with End Configuration
A1	F3T4	FU
A2	F3P4	GU
A3	F63P4	UT
E1	C3T4	FU
E2	C3P4	GU
E3	V3T4	FU
E4	V3P4	GU

Note: See website at www.Parker/tfd.com, Catalog 4300 or call (614) 279-7070 for additional information.

JIS - Hose Fittings

JIS B8363 Code	Parker End Configuration Code	Fitting Series 43	Fitting Series 70	Fitting Series 71	Fitting Series 73	Fitting Series 78	Fitting Series 79
R	UT	X		X			
F	FU	X		X			
C	GU	X	X	X	X	X	
MF	MU	X		X			
S	15	X	X	X	X	X	
4S	17	X	X	X	X	X	
9S	19	X	X	X	X	X	
H	6A		X	X	X	X	X
4H	6F			X	X	X	X
9H	6N		X	X	X	X	X

Note: Parker Hose Standards are listed on page E-14 and E-15

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Assembly Methods

JIC 37° and SAE 45° Flare

Parker's recommended assembly method for JIC 37° flare and SAE 45° flare is the Flats From Wrench Resistance (FFWR) method. This includes steel as well as other materials.

The torque values assigned by size are for reference only, and are only applicable to Parker system components using the FFWR method with trivalent chromate passivation on zinc plating of carbon steel components without lubrication.

Dash Size	Flats From Wrench Resistance (FFWR)	Swivel Nut Torque	
		Newton Meters (Ref)	Pound Feet (Ref)
-4	2	18	13
-5	2	23	17
-6	1-1/2	30	22
-8	1-1/2	57	42
-10	1-1/2	81	60
-12	1-1/4	114	84
-16	1	160	118
-20	1	228	168
-24	1	265	195
-32	1	360	265

Seal-Lok®

Parker's recommended assembly method for Seal-Lok® connections is the torque method.

Dash Size	Swivel Nut Torque		Flats From Wrench Resistance (FFWR)
	Newton Meters (+10% / -0)	Pound Feet (+10% / -0)	
-4	25	18	1/2 - 3/4
-6	40	30	1/2 - 3/4
-8	55	40	1/2 - 3/4
-10	80	60	1/2 - 3/4
-12	115	85	1/3 - 1/2
-16	150	110	1/3 - 1/2
-20	205	150	1/3 - 1/2
-24	315	230	1/3 - 1/2
-32	-	-	-

Note: The assembly torques listed are higher than the test torques published in SAE J1453.

Torque Conversion Equivalents

Torque Conversion Equivalents		
Pound Inch - Pound Foot - Newton Meter		
Pound Foot x 12	=	Pound Inch
Pound Foot x 1.356	=	Newton Meter
Newton Meter x 8.850	=	Pound Inch
Newton Meter x 0.737	=	Pound Foot
Pound Inch x .083	=	Pound Foot
Pound Inch x 0.113	=	Newton Meter

The torque values for other materials are as follows:

- Brass fittings and adapters - 65% of the torque value for steel.
- Stainless steel, and Monel - Use 5% higher than listed for steel. Threads to be lubricated for these materials.
- Dissimilar metals - use torque value designated for the lower of the two metals.
- All fittings are dry except as noted above.

The Flats From Wrench Resistance (FFWR) and torque values listed above are consistent with the values recommended by Parker Tube Fittings Division (614) 279-7070 or www.parker.com/tfd.

Identifying Fitting Types

A

In general fittings can be identified by their visual appearance, their sealing surface/sealing type or by their thread type/form. Viewing the following pages, the visual identification will be self explanatory. The sealing mechanism and the method of thread identification, however, needs further explanation

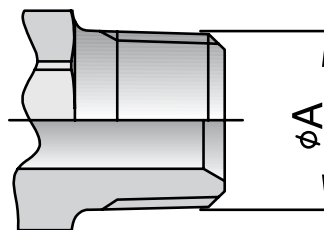
Determining Sealing Mechanisms:

- Thread interface
- O-ring
- Matching angle or metal-to-metal joint
- Mated angle with O-ring

B

Thread Interface

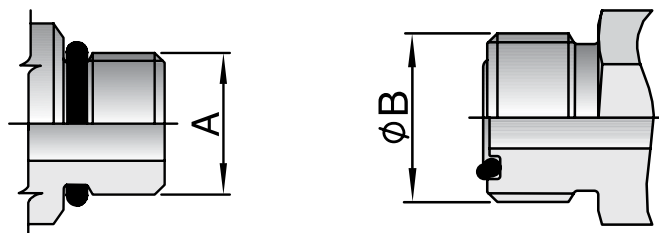
The sealing is assured by the flattening of the edges of the threads when the male is screwed into the female fitting. Typically the front of the male fittings is narrower than the back of the fittings – often referred to as tapered threads.



C

O-ring

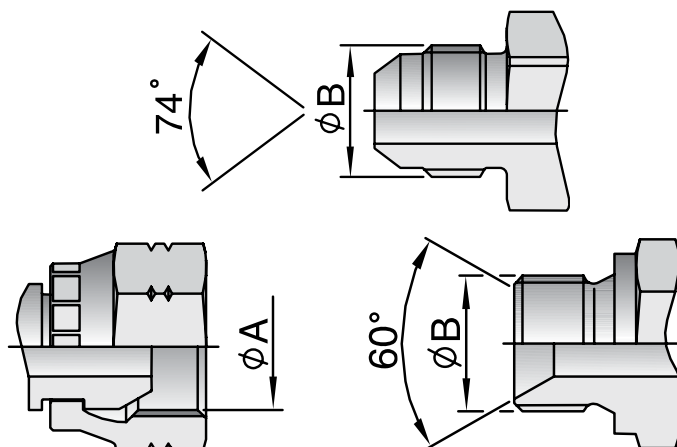
The O-ring on the male is compressed against the corresponding female and assures the seal. This type of sealing mechanism should be the preferred choice for high-pressure applications.



D

Matching Angle or Metal-to-Metal Joint

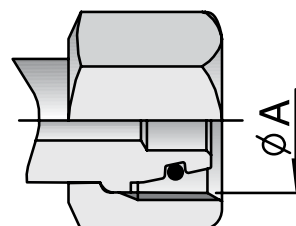
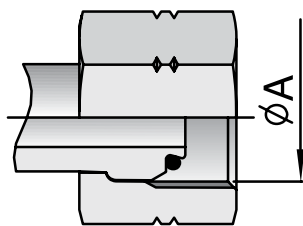
Sealing takes place where the two angled faces of the male and corresponding female meet and are wedged into one another by the tightening of the threaded nut. The sealing surfaces can either be convex or concave (seat) on the male or in the head of the pipe of the female as shown.



E

Matching Angle with O-ring

These fittings combine the functionality of both the matching angle seal with the O-ring. The O-ring is in the angled sealing surface of the fitting so that when the threaded male and female are screwed together the sealing surfaces wedge together and at the same time deform the O-ring between them.



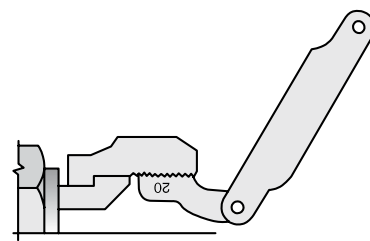
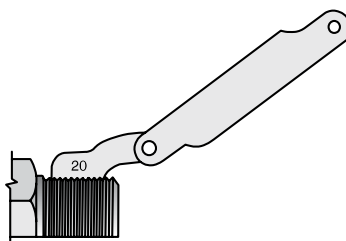
Determining the Thread Type

In general of the threads of various fittings look similar and hinder the easy identification of the thread. To assure the correct identification, the threads must be measured and compared to the tables listed in the following section.

Thread Gauge

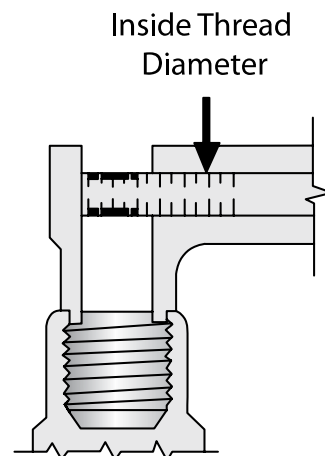
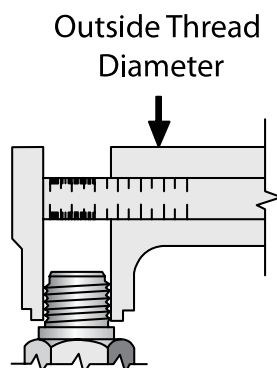
Using a thread gauge, the number of threads per inch can be determined.

Holding the gauge and coupling threads in front of a lighted background helps to obtain an accurate measurement.



Caliper Measure

A vernier caliper should be used to measure the thread diameter of the largest point. (Outside diameter (O.D.) of male threads – Inside Diameter (I.D.) of female threads.)



German DIN Hose Fittings

Often referred to as metric fittings, these fittings seal using the angled sealing surfaces (metal-to-metal) or the combination of metal-to-metal with O-rings.

They are available in very light (LL), light (L) or heavy series (S).

The sealing face angles are either 24° with or without O-rings, or 24°/60° universal cones.

Identification is made by measuring the thread size and also the tube outside diameter.

DIN Very Light Series (LL)

The male 60° cone will mate with the female 60° cone only.

The male has a 60° sealing angle (seat) and straight metric thread. The female has a 60° seat and straight metric thread.

Standard

DIN 20078 Part 3 ¹⁾

Parker end configurations

C0

DIN Light (L) and Heavy Series (S) without O-ring

The male 24° cone will mate with the female universal 24° or 60° cone only.

The male has a 60° sealing angle (seat) and straight metric threads. The female has a 24° and 60° universal seat and straight metric threads.

Standard

DIN 20078 Part 2 ¹⁾

(previously known as DIN 20078 A, D & E)

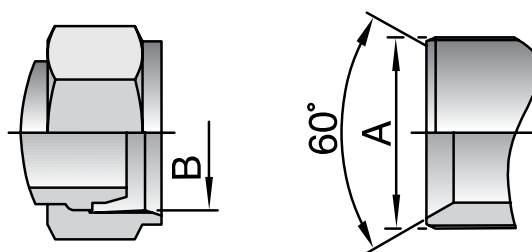
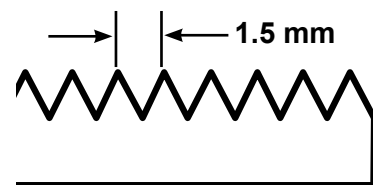
Parker end configurations

light series

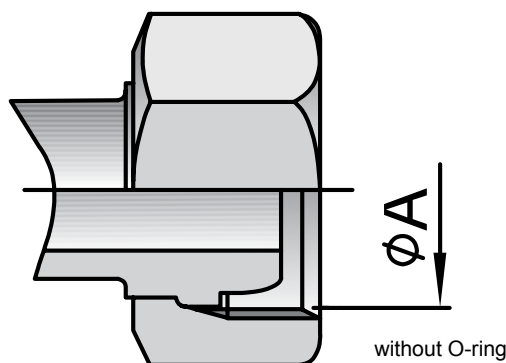
C3, C4, C5, C6

(Often also referred to as “Ball nose cones”)

Defined by the outside diameter and the pitch (distance between 2 crests of the thread) example: M22x1.5 - pitch of 1.5mm.



Tube O.D. (DN)	Thread metric	ØA (mm)	ØB (mm)
20	M30x1.5	30.00	28.50
25	M38x1.5	38.00	36.50
32	M45x1.5	45.00	43.50
40	M52x1.5	52.00	50.50
50	M65x2	65.00	63.00

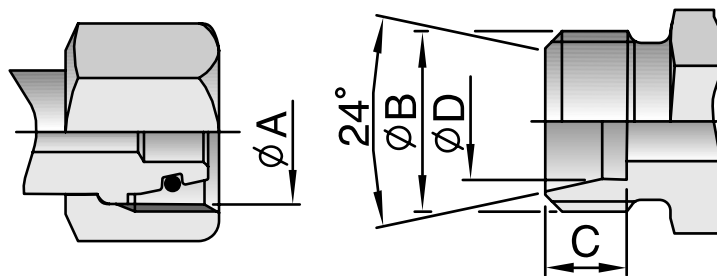


¹⁾ obsolete standard, no exact replacement

DIN 24° Light (L) and Heavy Series (S) with O-ring

The male has a 24° sealing angle cone seat with straight metric threads.

The female has a 24° convex cone with O-ring and a swivel straight metric threaded nut.



with O-ring

Standard

ISO 12151-2 / ISO 8434-1 & ISO 8434-4

(Previously

DIN 20 078 Part 4, 5, 8, 9)

Parker end configurations
light series

CA, CE, CF, D0

Parker end configurations
heavy series

C9, 0C, 1C, D2

Tube O.D. (mm)	Spec.	Thread metric	ØA (mm)	ØB (mm)	C (mm)	ØD (mm)
6.00	6L	M12X1.5	10.50	12.00	7.00	6.20
6.00	6S	M14X1.5	12.50	14.00	7.00	6.20
8.00	8L	M14x1.5	12.50	14.00	7.00	8.20
8.00	8S	M16x1.5	14.50	16.00	7.00	8.20
10.00	10L	M16x1.5	14.50	16.00	7.00	10.20
10.00	10S	M18x1.5	16.50	18.00	7.50	10.20
12.00	12L	M18x1.5	16.50	18.00	7.00	12.20
12.00	12S	M20x1.5	18.50	20.00	7.50	12.20
14.00	14S	M22x1.5	20.50	22.00	8.00	14.20
15.00	15L	M22x1.5	20.50	22.00	7.00	15.20
16.00	16S	M24x1.5	22.50	24.00	8.50	16.20
18.00	18L	M26x1.5	24.50	26.00	7.50	18.20
20.00	20S	M30x2	27.90	30.00	10.50	20.20
22.00	22L	M30x2	27.90	30.00	7.50	22.20
25.00	25S	M36x2	33.90	36.00	12.00	25.20
28.00	28L	M36x2	33.90	36.00	7.50	28.20
30.00	30S	M42x2	39.90	42.00	13.50	30.20
35.00	35L	M45x2	42.90	45.00	10.50	35.30
38.00	38S	M52x2	49.90	52.00	16.00	38.30
42.00	42L	M52x2	49.90	52.00	11.00	42.30

British Standard Pipe (BSP)

Also referred to as Whitworth threads, the BSP thread type fittings seal use metal-to-metal angled surfaces or a combination of metal-to-metal and an O-ring.

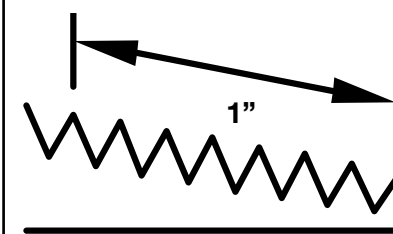
The angle of the sealing surfaces is 60° for both forms.

There are two popular thread forms:

British Standard Pipe Parallel (BSPP) and

British Standard Pipe Tapered (BSPT).

Identification is made by measuring the outside diameter of the thread and the number of threads per inch (25.4 mm)



BSPP BS5200

Parker end configurations

92, B1, B2, B4, D9

BSPP

metal-to-metal with O-ring

Standard

ISO 12151-6

Some Parker end configurations may be non-standard parts.

BSPT

fittings seal through the thread interface mechanism. Care should be taken not to confuse the BSPT fitting with the NPTF male fitting. BSPT has a 55° thread angle. NPTF has 60° thread angle.

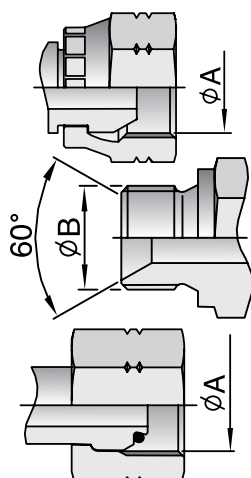
Parker end configuration

91

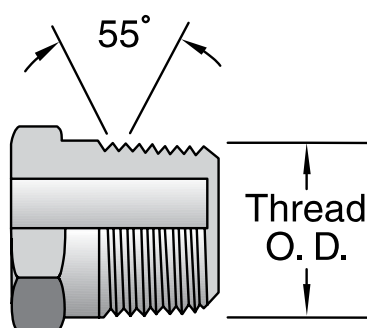
BSP Flat Seal

These fittings have BSP parallel threads but the sealing surface is flat. The seal is made when the composite seal is compressed against the female flat face.

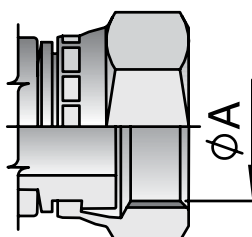
Some Parker end configurations may be non-standard parts.



Tube I.D./O.D. (mm)	Size	Thread BSP	ØA (mm)	ØB (mm)
6/10	-2	1/8x28	8.60	9.70
8/13	-4	1/4x19	11.50	13.20
12/17	-6	3/8x19	14.90	16.70
15/21	-8	1/2x14	18.60	20.90
18/23	-10	5/8x14	20.60	22.90
20/27	-12	3/4x14	24.10	26.40
26/34	-16	1x11	30.30	33.20
33/42	-20	1-1/4x11	38.90	41.90
40/49	-24	1-1/2x11	44.90	47.80
50/60	-32	2x11	56.70	59.60



Tube I.D./O.D. (mm)	Size	Thread BSP	ØA (mm)
5/10	-2	1/8x28	9.73
8/13	-4	1/4x19	13.16
12/17	-6	3/8x19	16.66
15/21	-8	1/2x14	20.96
20/27	-12	3/4x14	26.44
26/34	-16	1x11	33.25
33/42	-20	1-1/4x11	41.91
40/49	-24	1-1/2x11	47.80
50/60	-32	2x11	59.61



Tube I.D./O.D. (mm)	Size	Thread BSP	ØA (mm)
6/10	-2	1/8x28	8.6
8/13	-4	1/4x19	11.5
12/17	-6	3/8x19	14.9
15/21	-8	1/2x14	18.6
18/23	-10	5/8x14	20.6
20/27	-12	3/4x14	24.1
26/34	-16	1x11	30.3

French Gas fittings

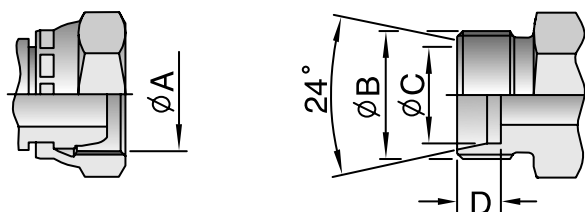
Typical to the French market the French Gas fittings have a 24° sealing surfaces seat with metric straight threads. Although similar to German DIN fittings the threads differ in some sizes as the French Gas fittings have fine threads in all sizes whereas the German DIN fittings use standard threads in the larger sizes.

French Metric 24° Cone Gas Fittings

The sealing mechanism is metal-to-metal.

The fittings are not specified in any international standard.

Some Parker end configurations may be non-standard parts.



Tube O.D. (mm)	Spec.	Thread metric	ØA (mm)	ØB (mm)	ØC (mm)	D (mm)
6.00	6N	M12x1	11.00	12.00	6.20	9.00
8.00	8N	M14x1.5	12.50	14.00	8.15	9.00
10.00	10N	M16x1.5	14.50	16.00	10.20	9.00
12.00	12N	M18x1.5	16.50	18.00	12.15	9.00
13.25	13G	M20x1.5	18.50	20.00	13.50	9.00
14.00	14N	M20x1.5	18.50	20.00	14.15	9.00
15.00	15N	M22x1.5	20.50	22.00	15.15	9.00
16.00	16N	M24x1.5	22.50	24.00	16.15	9.00
16.75	17G	M24x1.5	22.50	24.00	17.00	9.00
18.00	18N	M27x1.5	25.50	27.00	18.15	9.00
20.00	20N	M27x1.5	25.50	27.00	20.15	9.00
21.25	21G	M30x1.5	28.50	30.00	21.50	9.00
22.00	22N	M30x1.5	28.50	30.00	22.15	9.00
25.00	25N	M33x1.5	31.50	33.00	25.15	9.00
26.75	27G	M36x1.5	34.50	36.00	27.00	9.00
28.00	28N	M36x1.5	34.50	36.00	28.25	9.00
30.00	30N	M39x1.5	37.50	39.00	30.25	9.00
32.00	32N	M42x1.5	40.50	42.00	32.25	9.00
33.25	34G	M45x1.5	43.50	45.00	33.80	9.00
35.00	35N	M45x1.5	43.50	45.00	35.25	9.00
38.00	38N	M48x1.5	46.50	48.00	38.25	9.00
40.00	40N	M52x1.5	50.50	52.00	40.35	9.00
42.25	42G	M52x1.5	50.50	52.00	42.55	9.00
48.25	49G	M58x2	55.90	58.00	49.00	11.00

North American Thread Types

This type of fitting uses the thread interface to seal and as such has a tapered thread that deforms and forms the seal.

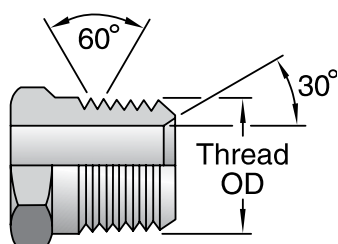
They have 30° sealing angle surfaces, forming a 60° inverted (concave) seat. The fittings are most frequently seen on machines of US origin.

Dryseal American Standard Taper Pipe Thread (NPTF)

The NPTF male will mate with the NPTF, NPSF, or NPSM females. Care should be taken not to confuse the NPTF fitting with the BSPT male fitting. NPTF fittings have a 60° thread angle. BSPT has a 55° thread angle. Standard

SAE J516

Parker end configuration
01



ØA dimension is measured on the 4th pitch of the thread

Size	Thread NPTF	ØA (mm)	ØB (mm)
-2	1/8x27	10.24	8.73
-4	1/4x18	13.61	11.90
-6	3/8x18	17.05	15.90
-8	1/2x14	21.22	19.05
-12	3/4x14	26.56	24.60
-16	1x11.5	33.22	30.95
-20	1-1/4x11.5	41.98	39.69
-24	1-1/2x11.5	48.05	45.24
-32	2x11.5	60.09	57.15

SAE JIC 37°

Commonly referred to as JIC fittings, these metal-to-metal sealing type fittings have a 37° flare (sealing surface angle) and straight United National Fine Threads (UNF).

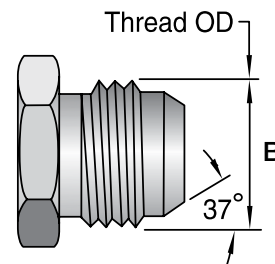
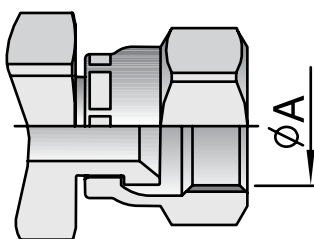
The original design specification for the fittings comes from the Society of Automotive Engineers (SAE) and these fittings are the most common American fitting types in Europe.

Standard

ISO 12151-5, ISO8434-2 and SAE J516

Parker JIC hose fittings are fully compatible with Parker Triple-Lok Tube Fittings and adapters.

Parker end configurations
03, 06/68, 37/3V, 39/3W, 41/3Y, L9



Tube O.D. (inch)	Tube O.D. (mm)	Thread UNF	Size	ØA (mm)	ØB (mm)
3/16		3/8x24	-3	8.60	9.50
1/4	6	7/16x20	-4	10.00	11.10
5/16	8	1/2x20	-5	11.60	12.70
3/8	10	9/16x18	-6	13.00	14.30
1/2	12	3/4x16	-8	17.60	19.10
5/8	14-15-16	7/8x14	-10	20.50	22.20
3/4	18-20	1-1/16x12	-12	24.60	27.00
7/8	22	1-3/16x12	-14	28.30	30.10
1	25	1-5/16x12	-16	31.30	33.30
1-1/4	30-32	1-5/8x12	-20	39.20	41.30
1-1/2	38	1-7/8x12	-24	45.60	47.60
2		2-1/2x12	x32	61.50	63.50

SAE 45° Flare

The angle of the flare is commonly used as a name when referring to these metal-to-metal sealing fittings. The female fittings have a 90° concave inverted seat, created by the 45° angle sealing surfaces.

The SAE 45° flare male will mate with an SAE 45° flare female only or a dual seat JIC 37°/SAE45°.

Standard

SAE J516

Parker end configurations

04, 08/68, 77/3V, 79/3W, 81/3Y

SAE O-ring (Boss Type)

This male fitting has straight threads, a sealing face and an O-ring. It is compatible only with female boss type fittings generally found in the ports of machines. Sealing is achieved through the O-ring of the male and through the sealing face of the female.

Parker end configuration

05

O-ring Face Seal (ORFS)

ORFS fittings are becoming the most popular international fitting type used on global OEM machines due to their high level of sealing and their good vibration resistance. The fittings use the O-ring compression mechanism to seal.

The female fittings have flat faces and straight threaded UNF swivel nuts.

The male fittings have the O-ring in a groove in the flat face.

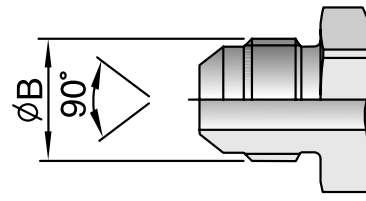
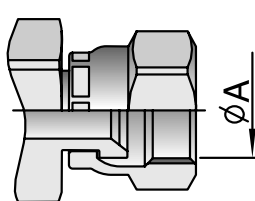
Seen as a major advantage, these fittings offer the possibility to build the hose assemblies into fixed distances/spaces, without having to move back other system components due the flat faces of the male and female fittings – the hose assembly can be slotted in.

Standard

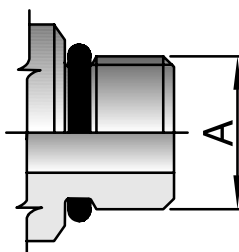
ISO 12151-1, ISO8434-3 and SAE J516

Parker end configurations

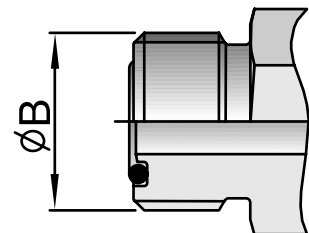
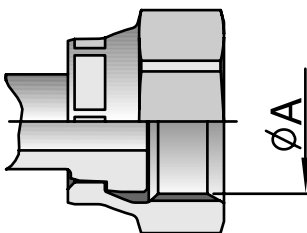
JC, JM/J0, JS, JU, J1, J3, J5, J7, J9



Tube O.D. (inch)	Size	Thread UNF	ØA (mm)	ØB (mm)
1/4	x4	7/16x20	9.90	11.10
5/16	-5	1/2x20	11.50	12.70
3/8	-6	5/8x18	14.30	15.90
1/2	-8	3/4x16	17.50	19.10
5/8	-10	7/8x14	20.60	22.20
3/4	-12	1-1/16x14	25.00	27.00



Thread UNF	Size	ØA (mm)
5/16x24	-2	7.93
3/8x24	-3	9.52
7/16x20	-4	11.11
1/2x20	-5	12.70
9/16x18	-6	14.28
3/4x16	-8	19.10
7/8x14	-10	22.22
1-1/16x12	-12	27.00
1-3/16x12	-14	30.10
1-5/16x12	-16	33.30
1-5/8x12	-20	41.30
1-7/8x12	-24	47.60
2-1/2x12	-32	63.50



Tube O.D. (inch)	Tube O.D. (mm)	Thread UNF	Size	ØA (mm)	ØB (mm)
1/4	6	9/16x18	-4	13.00	14.20
3/8	10	11/16x16	-6	15.90	17.50
1/2	12	13/16x16	-8	19.10	20.60
5/8	16	1x14	-10	23.80	25.40
3/4	20	1-3/16x12	-12	28.20	30.10
1	25	1-7/16x12	-16	34.15	36.50
1-1/4	32	1-11/16x12	-20	40.50	42.90
1-1/2	38	2x12	-24	48.80	50.80

Flange Fittings

Code 61 and Code 62

The 4-bolt split flange (or full flange) fitting is used worldwide for connecting high-pressure hoses typically to pumps, motors and cylinders, where the hose assemblies are subjected to large pressure loadings. The sealing mechanism is through compression of the O-ring in the face of the flange head against the surface of the port/connection.

The flange fittings are generally separated into two pressure classes referred to as 3000 psi (SFL) or 6000 psi (SFS).

ISO 12151-3 refers to the flange fittings as code 61 for the 3000 psi and code 62 for the 6000 psi. In addition to these flanges, customer-specific Komatsu® and CATERPILLAR® flanges can also be found in the market.

Parker end configurations

Code 61 (3000 psi)

15, 16, 17, 19, P5, P7, P9

5000 psi (Code 61 dimensions)

4A, 4F, 4N

Code 62 (6000 psi)

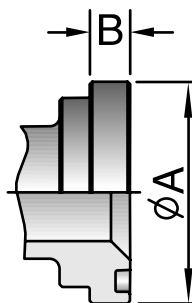
6A, 6F, 6N, PA, PF, PN, 89

Caterpillar flange

XA, XF, XG, XN

Although not in the SAE or the ISO standard the size -10 (5/8) flange head is gaining popularity. This flange is often found on Komatsu equipment or hydrostatic drives in agricultural machines.

- Standard Code 61 for 3000 to 5000 psi max., depending on size
- High Pressure Code 62 for 6000 psi max. regardless of size



Flange (inch)	Size	Code 61 MPa / psi	Code 62 MPa / psi
1/2	-8	34.5 / 5000	41.3 / 6000
3/4	-12	34.5 / 5000	41.3 / 6000
1	-16	34.5 / 5000	41.3 / 6000
1-1/4	-20	27.5 / 4000	41.3 / 6000
1-1/2	-24	20.7 / 3000	41.3 / 6000
2	-32	20.7 / 3000	41.3 / 6000

Note: 5000 psi in size -20/-24/-32 with 4A, 4F and 4N fittings and 50H flange halves.

Code 61 – SAE – 3000 psi

Flange (inch)	Size	ØA (mm)	B (mm)	O-Ring
1/2	-8	30.18	6.73	18.64x3.53
3/4	-12	38.10	6.73	24.99x3.53
1	-16	44.45	8.00	32.92x3.53
1-1/4	-20	50.80	8.00	37.69x3.53
1-1/2	-24	60.33	8.00	47.22x3.53
2	-32	71.42	9.53	56.74x3.53
2-1/2	-40	84.12	9.53	69.44x3.53
3	-48	101.60	9.53	85.32x3.53

Code 62 – SAE – 6000 psi

Flange (inch)	Size	ØA (mm)	B (mm)	O-Ring
1/2	-8	31.75	7.75	18.64x3.53
3/4	-12	41.28	8.76	24.99x3.53
1	-16	47.63	9.53	32.92x3.53
1-1/4	-20	53.98	10.29	37.69x3.53
1-1/2	-24	63.50	12.57	47.22x3.53
2	-32	79.38	12.57	56.74x3.53

CATERPILLAR®

Flange (inch)	Size	ØA (mm)	B (mm)	O-Ring
3/4	-12	41.28	14.22	25.40x5.00
1	-16	47.63	14.22	31.90x5.00
1-1/4	-20	53.98	14.22	38.20x5.00
1-1/2	-24	63.50	14.22	44.70x5.00

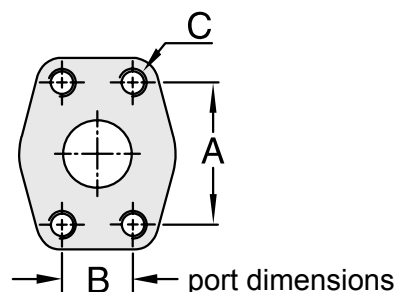
Komatsu®

Flange (inch)	Size	ØA (mm)	B (mm)	O-Ring
5/8	-10	34.25	6.00	21.7x3.5

4-Bolt Split Flange

A 4-bolt split flange is used to attach the flange fittings to their ports.

- Standard Code 61 for 3000 to 5000 psi max., depending on size
- High Pressure Code 62 for 6000 psi max., regardless of size



Code 61 – SAE – 3000 psi

Flange (inch)	Size	A (mm)	B (mm)	C	
				(inch)	(metr.)
1/2	-8	38.1	17.5	5/16x18	M8x1.25
3/4	-12	47.6	22.3	3/8x16	M10x1.5
1	-16	52.4	26.2	3/8x16	M10x1.5
1-1/4	-20	58.7	30.2	7/16x14	M10x1.5
1-1/2	-24	69.9	35.7	1/2x13	M12x1.75
2	-32	77.8	42.8	1/2x13	M12x1.75*

Code 62 – SAE – 6000 psi

Flange (inch)	Size	A (mm)	B (mm)	C	
				(inch)	(metr.)
1/2	-8	40.5	18.2	5/16x18	M8x1.25
3/4	-12	50.8	23.8	3/8x16	M10x1.5
1	-16	57.2	27.8	7/16x14	M12x1.75
1-1/4	-20	66.7	31.8	1/2x13	M12x1.75*
1-1/2	-24	79.4	36.5	5/8x11	M16x2
2	-32	96.8	44.4	3/4x10	M20x2.5

*M14x2 still used in the market but no longer in accordance with ISO 6162

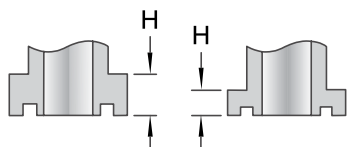
Replacing Caterpillar® 6000 PSI Flange Fittings with SAE Code 62 Flange Fittings and Parker “Caterpillar®” Style Flange Fittings

Caterpillar® has a proprietary 6000 PSI hydraulic flange fitting for use on their equipment. This fitting is similar to the SAE Code 62 hydraulic flange (SAE J518). Flange diameters and bolt hole spacing are the same. The Caterpillar® flange head is thicker (.560” in all sizes) and the configuration and location of the O-ring groove is different, requiring the use of a special O-ring.

The Caterpillar® 6000 PSI flange fitting can be replaced with a Parker “Caterpillar®” style flange fitting

such as the 1XA78 using the existing Caterpillar® flange halves and bolts. In this case the XARG O-ring would be used. The fitting could also be replaced with a standard Code 62 flange fitting such as the 16A78. In this case use HFH flange halves or the HFHFHK kit with the standard SAE O-ring (711510).

Do not use the Caterpillar® 6000 PSI split flange halves on SAE Code 62 flange fittings or SAE Code 62 flange halves on Caterpillar® 6000 PSI flange fittings.



Size		H (in)	
		Caterpillar®	SAE Code 62
3/4	(-12)	.560	.345
1	(-16)	.560	.375
1-1/4	(-20)	.560	.405
1-1/2	(-24)	.560	.495

Procedure	P-ring P/N	Flange Half P/N	Flange Kit P/N
When replacing Caterpillar® 6000 PSI Flange Fittings with Parker “Caterpillar®” Style” Fittings:	XARG-Size	Use existing flange halves and bolts	Use existing flange halves and bolts
When replacing Caterpillar® 6000 PSI Flange Fittings with SAE Code 62 Flange Fittings:	711510*	HFH-Size	HFHFHK-Size

Japanese fittings

The Japanese Industrial Standard (JIS) is seen on most Japanese equipment and uses a 30° sealing angle seat and either British Standard Pipe Parallel or metric threads.

Care must be taken not to confuse the JIS fittings with BSP or JIC fittings.

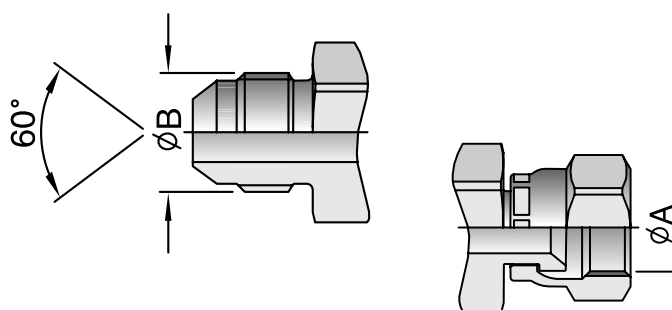
Japanese fittings - JIS

The sealing mechanism of the fittings is the 30° metal-to-metal angled surfaces

Parker end configurations

MU, XU (Metric)

FU (BSP)



JIS 30° metric

Symbol	Thread metric	ØA (mm)	ØB (mm)
MU-6	M14x1.5	12.50	14.00
MU-9	M18x1.5	16.50	18.00
MU-12	M22x1.5	20.50	22.00
MU-15	M27x2	25.00	27.00
MU-19	M27x2	25.00	27.00
MU-25	M33x2	31.00	33.00
MU-32	M42x2	40.00	42.00
MU-38	M50x2	48.00	50.00
MU-50	M60x2	58.00	60.00









JIS 30° BSP









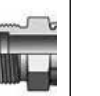
Symbol	Thread BSP	ØA (mm)	ØB (mm)
GUI-3	1/8x28	8.60	9.70
GUI-5/-6	1/4x19	11.50	13.20
GUI-8/-9	3/8x19	14.90	16.70
GUI-12	1/2x14	18.60	20.90
GUI-15/-19	3/4x14	24.10	26.40
GUI-25	1x11	30.30	33.20
GUI-32	1-1/4x11	38.90	41.90
GUI-38	1-1/2x11	44.90	47.80
GUI-50	2x11	56.70	59.60

A

Application

Thread Guide

								
size	NPTF Pipe Thread Size	SAE (JIC) 37 Flare Thread Size	SAE 45 Flare Thread Size	O-Ring Style Straight Thread Size	SAE Inverted Flare Thread Size	PTT 30 Flare Thread Size	SAE Flare-less Thread Size	Seal-Lok Thread
2	1/8 - 27	5/16 - 24	5/16 - 24	5/16 - 24	-	-	5/16 - 24	-
3	-	3/8 - 24	3/8 - 24	3/8 - 24	-	-	3/8 - 24	-
4	1/4 - 18	7/16 - 20	7/16 - 20	7/16 - 20	7/16 - 24	-	7/16 - 20	9/16 - 18
5	-	1/2 - 20	1/2 - 20	1/2 - 20	1/2 - 20	-	1/2 - 20	-
6	3/8 - 18	9/16 - 18	5/8 - 18	9/16 - 18	5/8 - 18	-	9/16 - 18	11/16 - 16
8	1/2 - 14	3/4 - 16	3/4 - 16	3/4 - 16	3/4 - 18	-	3/4 - 16	13/16 - 16
10	-	7/8 - 14	7/8 - 14	7/8 - 14	7/8 - 18	-	7/8 - 14	1 - 14
12	3/4 - 14	1 1/16 - 12	1 1/16 - 14	1 1/16 - 12	-	-	1 1/16 - 12	1 3/16 - 12
14	-	1 3/16 - 12	-	1 3/16 - 12	-	-	1 3/16 - 12	-
16	1 - 11 1/2	1 5/16 - 12	-	1 5/16 - 12	-	1 5/16 - 14	1 5/16 - 12	1 7/16 - 12
20	1 1/4 - 11 1/2	1 5/8 - 12	-	1 5/8 - 12	-	1 5/8 - 14	1 5/8 - 12	1 11/16 - 12
24	1 1/2 - 11 1/2	1 7/8 - 12	-	1 7/8 - 12	-	1 7/8 - 14	1 7/8 - 12	2 - 12
32	2 - 11 1/2	2 1/2 - 12	-	2 1/2 - 12	-	2 1/2 - 12	2 1/2 - 12	-

									
Fitting Size	DIN "L" Swivel Female Thread Size	DIN "S" Swivel Female Thread Size	DIN "L" Male Stud Thread Size	DIN "S" Male Stud Thread Size	Male BSPP Thread Size	BSP Swivel Female Thread Size	French Swivel Female Gaz Series	French Swivel Female Metric Series	French Male Stud Metric Series
4	-	-	-	-	1/4x19	1/4x19	--	-	-
6	M12x1,5	M14x1,5	M12x1,5	M14x1,5	3/8x19	3/8x19	-	-	M12x1
8	M14x1,5	M16x1,5	M14x1,5	M16x1,5	1/2x14	1/2x14	-	-	M14x1,5
10	M16x1,5	M18x1,5	M16x1,5	M18x1,5	5/8x14	5/8x14	-	-	M16x1,5
12	M18x1,5	M20x1,5	M18x1,5	M20x1,5	3/4x14	3/4x14	-	-	M18x1,5
-	-	-	-	-	-	-	M20x1,5	-	-
14	-	M22x1,5	-	M22x1,5	-	-	-	-	M20x1,5
15	M22x1,5	-	M22x1,5	-	-	-	-	-	M22x1,5
16	-	M24x1,5	-	M24x1,5	1x11	1x 11	-	-	M24x1,5
-	-	-	-	-	-	-	M24x1,5	-	-
18	M26x1,5	-	M26x1,5	-	-	-	-	-	M27x1,5
20	-	M30x2	-	M30x2	1 1/4x11	1 1/4x11	-	-	M27x1,5
-	-	-	-	-	-	-	M30x 1,5	-	-
22	M30x2	-	M30x2	-	-	-	-	-	M30x1,5
25	-	M36x2	-	M36x2	1 1/2x11	1 1/2x11	-	-	M33x1,5
-	-	-	-	-	-	-	M36x1,5	-	-
28	M36x2	-	M36x2	-	-	-	-	-	M36x1,5
30	-	M42x2	-	M42x2	2x11	2x11	-	-	M39x1,5
33	-	-	-	-	-	-	M45x1,5	-	-