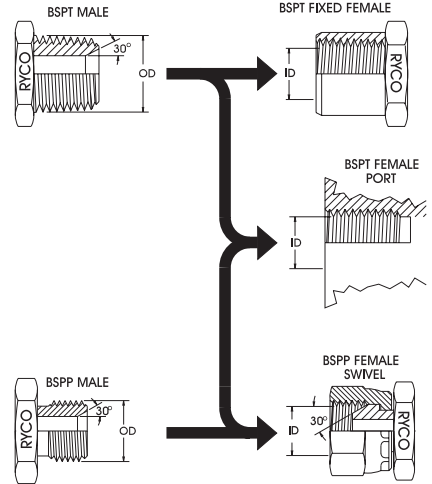


BSPT & BSPP THREADS

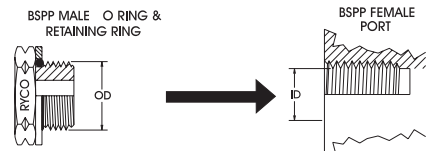
BSP is BRITISH STANDARD PIPE
BSPT is BRITISH STANDARD PIPE TAPER
BSPP is BRITISH STANDARD PIPE PARALLEL

BSPT male threads seal against threads of fixed BSPT or BSPP female.
 Contact is made on the flanks of the threads.

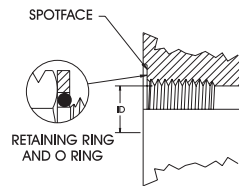


BSPT male and BSPP male with conical 30° seat seal against matching conical 30° seat of BSPP female swivel.

BSPP O ring male seals against flat external surface of BSPP female port.



Surface irregularities will require a spot face to ensure effective sealing. Elbows and tees have lock nut to allow orientation of fitting.



BSPP male and BSPP female flat face swivel require a suitable soft washer to seal.
 For low working pressure.



BSPT & BSPP Threads Dimensions

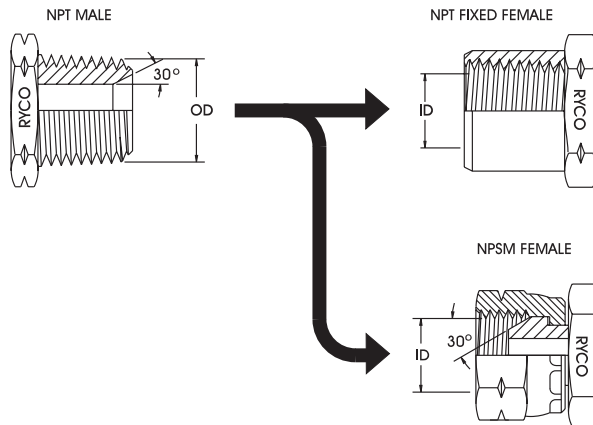
BSPT & BSPP SIZE – PITCH	DASH SIZE	BSPT MALE THREAD OD		BSPP MALE THREAD OD		BSPT FEMALE THREAD ID		BSPP FEMALE THREAD ID	
		mm	ins	mm	ins	mm	ins	mm	ins
1/8 - 28	-02	9,5	0,37	9,6	0,38	8,4	0,33	8,6	0,34
1/4 - 19	-04	12,8	0,50	13,0	0,51	11,2	0,44	11,9	0,47
3/8 - 19	-06	16,3	0,64	16,5	0,65	14,7	0,59	15,2	0,60
1/2 - 14	-08	20,4	0,80	20,8	0,82	18,3	0,72	19,1	0,75
5/8 - 14	-10	22,5	0,89	22,8	0,90	20,6	0,81	20,8	0,82
3/4 - 14	-12	25,9	1,02	26,3	1,04	23,9	0,94	24,6	0,97
1 - 11	-16	32,6	1,28	33,1	1,30	29,7	1,17	30,7	1,21
1.1/4 - 11	-20	41,1	1,62	41,8	1,64	38,6	1,52	39,4	1,55
1.1/2 - 11	-24	47,0	1,85	47,7	1,88	44,5	1,75	45,5	1,79
2 - 11	-32	58,6	2,31	59,5	2,34	56,4	2,22	57,4	2,26
2.1/2 - 11	-40	74,1	2,92	75,1	2,95	71,9	2,83	72,6	2,86
3 - 11	-48	86,6	3,41	87,9	3,46	84,6	3,33	85,4	3,36

Thread size refers to the nominal bore of the pipe. Subtract approx. 1/4" (6mm) from thread diameter measurement for nominal pipe size. Pitch is Threads Per Inch (TPI). "Gas" "R" & "G" also refer to BSP. "Male Iron (Pipe)" may be BSP or NPT.

NPT & NPS THREADS

- NPT** is NATIONAL PIPE TAPER (AMERICAN)
- NPS** is NATIONAL PIPE STRAIGHT (PARALLEL)
- NPTF** is NATIONAL PIPE TAPER FOR FUEL
- NPSM** is NATIONAL PIPE SEAL MECHANICAL

National Pipe threads are similar in function to BSP threads but are not generally interchangeable. NPTF threads (also known as Dryseal) are an improvement to NPT. Controlled truncation of threads mean the metal to metal thread seal is at root and crest of threads. All RYCO threads are NPTF.



NPT Threads

NPT THREAD SIZE – PITCH	DASH SIZE	MALE THREAD MINOR OD		FEMALE THREAD ID	
		mm	ins	mm	ins
1/8 - 27	-02	9,9	0,39	8,4	0,33
1/4 - 18	-04	13,2	0,52	11,2	0,44
3/8 - 18	-06	16,6	0,65	14,7	0,58
1/2 - 14	-08	20,6	0,81	17,8	0,70
3/4 - 14	-12	26,0	1,02	23,4	0,92
1 - 11.1/2	-16	32,5	1,28	29,5	1,16
1.1/4 - 11.1/2	-20	41,2	1,62	38,1	1,50
1.1/2 - 11.1/2	-24	47,3	1,86	43,9	1,73
2 - 11.1/2	-32	59,3	2,33	56,4	2,22
2.1/2 - 8	-40	71,5	2,82	69,1	2,72
3 - 8	-48	87,3	3,44	84,8	3,34

NPS Threads

NPS THREAD SIZE	DASH SIZE	FEMALE THREAD ID	
		mm	ins
1/8 - 27	-02	8,6	0,34
1/4 - 18	-04	11,9	0,47
3/4 - 18	-06	15,0	0,59
1/2 - 14	-08	19,1	0,75
3/4 - 14	-12	24,6	0,97
1 - 11.1/2	-16	30,5	1,20
1.1/4 - 11.1/2	-20	39,4	1,55
1.1/2 - 11.1/2	-24	45,5	1,79
2 - 11.1/2	-32	57,4	2,26
2.1/2 - 8	-40	68,8	2,71
3 - 8	-48	84,6	3,33

Thread size refers to the nominal bore of the pipe.
 Subtract approx. 1/4" (6mm) from thread measurement for nominal pipe size.
 Pitch is threads per inch.

JIC 37° FLARE & UN O RING THREADS

JIC is JOINT INDUSTRIES COUNCIL

UN is UNIFIED NATIONAL

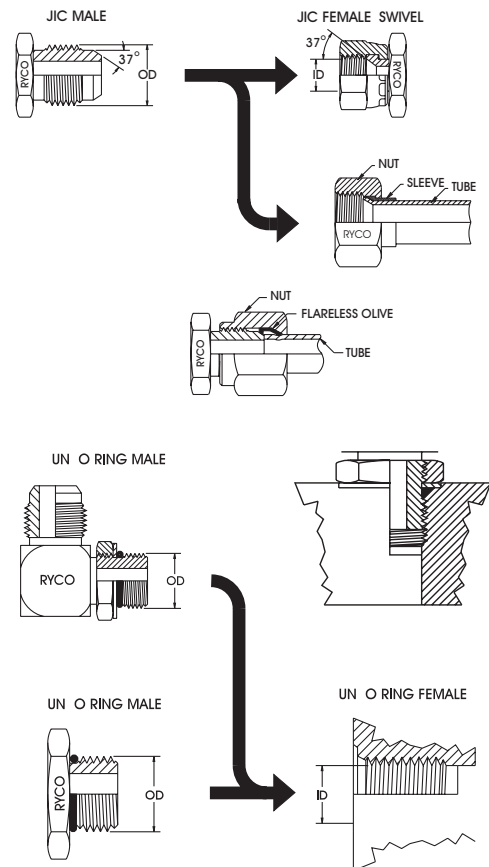
JIC & UN O Ring thread forms are the same but method of sealing differs.

JIC male has 37° flare which seals against 37° seat in female.

Male can also seal against 37° flared tubing with JIC nut and sleeve.

Male can also be used with J-Lok Female Nut and Flareless Olive on imperial OD tubing.

UN O ring seals with O ring compressed between hex boss of UN male and 12°/15° tapered bore of UN female port. For elbows and tees, back up washer and lock nut allow orientation of fitting to required direction.



JIC & UN O Ring Threads

MALE THREAD OD & PITCH	DASH SIZE	MALE THREAD OD		FEMALE THREAD ID		TUBE OD
ins - TPI		mm	ins	mm	ins	ins
5/16 - 24 UNF	-05	7,9	0,31	6,9	0,27	1/8
3/8 - 24 UNF	-06	9,5	0,38	8,5	0,33	3/16
7/16 - 20 UNF	-07	11,1	0,44	9,9	0,39	1/4
1/2 - 20 UNF	-08	12,7	0,50	11,4	0,45	5/16
9/16 - 18 UNF	-09	14,3	0,56	13,0	0,51	3/8
3/4 - 16 UNF	-12	19,1	0,75	17,5	0,69	1/2
7/8 - 14 UNF	-14	22,2	0,88	20,3	0,80	5/8
1.1/16 - 12 UN	-17	27,0	1,06	24,9	0,98	3/4
1.3/16 - 12 UN	-19	30,2	1,19	28,2	1,11	7/8
1.5/16 - 12 UN	-21	33,3	1,31	31,2	1,23	1
1.5/8 - 12 UN	-26	41,3	1,63	39,1	1,54	1.1/4
1.7/8 - 12 UN	-30	47,6	1,88	45,5	1,79	1.1/2
2.1/2 - 12 UN	-40	63,5	2,50	61,5	2,42	2

Thread size is actual measurement of male thread and pitch is threads per inch.

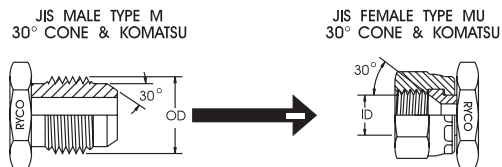
JIS THREADS

JIS is JAPANESE INDUSTRIAL STANDARD

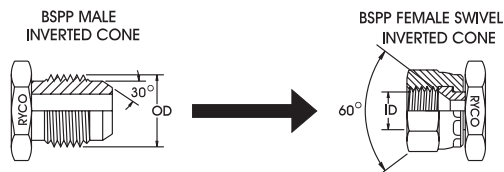
There are three popular coupling styles in Japan.

1. Threads commonly used on Komatsu equipment 30° cone have metric thread form.

MALE THREAD OD & PITCH	DASH SIZE	FEMALE THREAD ID
mm		mm
M14 x 1,5	-1415	12,5
M18 x 1,5	-1815	16,5
M22 x 1,5	-2215	20,5
M24 x 1,5	-2415	22,5
M30 x 1,5	-3015	28,5
M33 x 1,5	-3315	31,5
M36 x 1,5	-3615	34,5
M42 x 1,5	-4215	40,5



2. Most other Japanese equipment use couplings with a 60° concave (inverted) seat and British Standard Pipe Parallel threads. They are not interchangeable with BSPP conical seat couplings, since the flare is not inverted.



Refer to BSPP section for dimensions of threads.

3. The Japanese tapered pipe thread connector is identical to and interchangeable with the BSPT (tapered) connector. The Japanese male thread does not have a 30° Flare, and will not mate with the BSPP female swivel with conical seat.



The threads conform to JIS B 0203, which are the same as BSPT threads.

The seal on the Japanese tapered pipe thread connector is made on the threads.

Note Re: Komatsu Style Flange Fitting

The Komatsu style Flange fitting is nearly identical to and fully interchangeable with the SAE Code 61 flange fitting.* In all sizes the O ring dimensions are different. When replacing a Komatsu style flange with an SAE style flange, an SAE style O ring must always be used.

*5/8" is a JIS Standard and is not in the SAE Standards.

METRIC DIN THREADS

DIN is DEUTSCHE INDUSTRIE NORMEN
(German Industrial Standard)

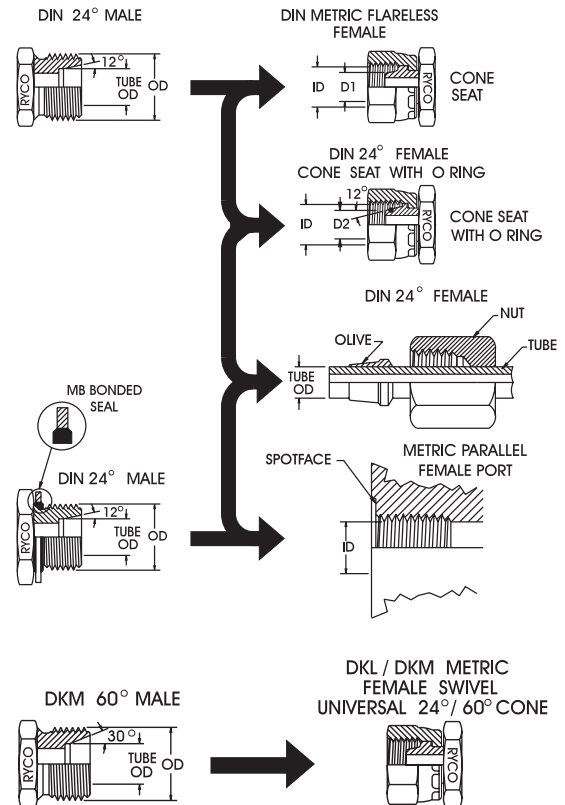
- DKL is DICHT KEGEL LEICHT (Metric Light Series 24° Cone)
- DKS is DICHT KEGEL SCHWER (Metric Heavy Series 24° Cone)
- DKOL is DICHT KEGEL O RING LEICHT (Metric Light O Ring Series 24° Cone)
- DKOS is DICHT KEGEL O RING SCHWER (Metric Heavy O Ring Series 24° Cone)
- DKM is DICHT KEGEL METRIC (Metric 60° Cone)

DIN systems consist of a common male thread with 24° cone seat which can seal with:
Cone Seated Female Swivel;
Female Swivel with Cone Seat and O ring;
Tube, Nut and Compression Olive;
or into metric threaded port with bonded washer seal.

The most common series are DKS/DKOS Heavy Series and DKL/DKOL Light Series. These use the same thread sizes and pitch but have a different sized tube recess at bottom of 24° cone.

Same thread sizes of DKS and DKL series should not be interchanged as the tube recess sizes and sealing cone diameters are not the same.

RYCO DKL Female Swivels up to M26 size have universal 24°/60° cone and will interchange with DKM series, which has 60° cone.



DKS, Heavy Series, DKOS, Heavy Series, Metric-Tube, Nut and Olive,

MALE THREAD OD & PITCH	DASH SIZE	TUBE OD	FEM. THRD ID	D1 DIA.	D2 DIA.
mm		mm	mm	mm	ins
M14 x 1,5	-1415	6	12,5	7,5	-
M16 x 1,5	-1615	8	14,5	9,5	8,2
M18 x 1,5	-1815	10	16,5	12,0	10,3
M20 x 1,5	-2015	12	18,5	14,0	12,3
M22 x 1,5	-2215	14	20,5	16,0	13,8
M24 x 1,5	-2415	16	22,5	18,0	15,8
M30 x 2,0	-3020	20	28,0	22,5	19,8
M36 x 2,0	-3620	25	34,0	27,5	24,8
M42 x 2,0	-4220	30	40,0	32,5	29,9
M52 x 2,0	-5220	38	50,0	40,5	37,9

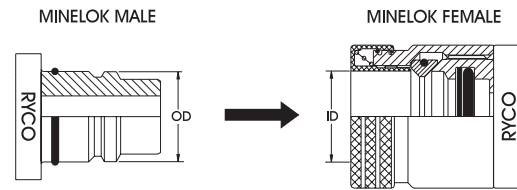
DKL, Light Series, DKOL, Light Series, Metric-Tube, Nut and Olive,

MALE THREAD OD & PITCH	DASH SIZE	TUBE OD	FEM. THRD ID	D1 DIA.
mm		mm	mm	mm
*M12 x 1,5	-1215	6	10,5	7,5
*M14 x 1,5	-1415	8	12,5	9,5
*M16 x 1,5	-1615	10	14,5	11,5
*M18 x 1,5	-1815	12	16,5	14,0
*M22 x 1,5	-2215	15	20,5	17,0
*M26 x 1,5	-2615	18	24,5	20,0
*M30 x 2,0	-3020	22	28,0	24,0
*M36 x 2,0	-3620	28	34,0	30,0
*M45 x 2,0	-4520	35	43,0	37,5
*M52 x 2,0	-5220	42	50,0	44,5

*These DKL Light Series Female Connections are the same as DKM Female.

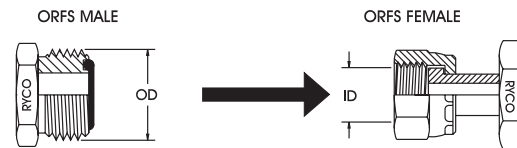
MINELOK

NOMINAL BORE SIZE		M & F NOMINAL OD & ID	
DIN	INCH	DASH	mm
25	1	-25	32
32	1.1/4	-32	38
40	1.1/2	-40	44
50	2	-50	57



ORFS THREADS

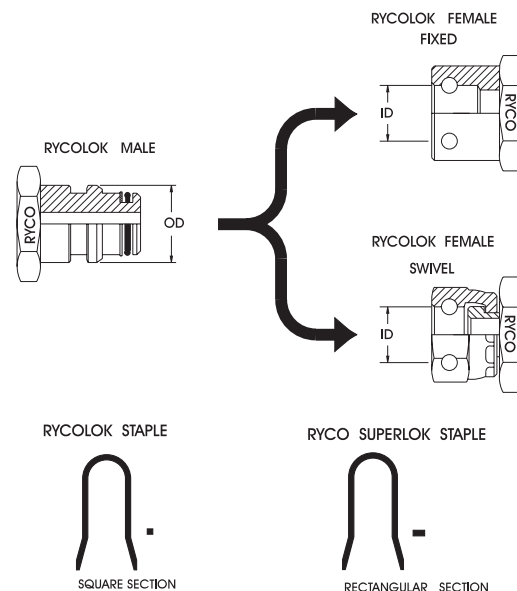
MALE THREAD OD & PITCH	DASH SIZE	FEMALE THREAD ID		TUBE OD
ins - TPI		mm	ins	ins
9/16 - 18UNF	-09	12,9	.51	1/4
11/16 - 16UN	-11	16,0	.63	3/8
13/16 - 16UN	-13	19,1	.75	1/2
1 - 14UNS	-16	23,6	.93	5/8
1.3/16 - 12UN	-19	28,2	1.11	3/4
1.7/16 - 12UN	-23	34,3	1.35	1
1.11/16 - 12UN	-27	40,6	1.60	1.1/4
2 - 12UN	-32	48,8	1.92	2



ORFS system consists of ORFS Male with O Ring in Face, and Flat Seated ORFS Female Swivel Nut. The Swivel Nut can be slipped back to help installation in tight situations. The prominent position of the O Ring on the Male fitting makes it easy to inspect the condition of the O Ring.

RYCOLOK/RYCO SUPERLOK

NOMINAL BORE SIZE			RYCOLOK M & F NOMINAL OD & ID	RYCO SUPERLOK M & F NOMINAL OD & ID
DIN	INS.	DASH	mm	mm
6	1/4	-04	15	
10	3/8	-06	20	
13	1/2	-08	24	
16	5/8	-10	26	
20	3/4	-12	29	29
25	1	-16	39	39
32	1.1/4	-20	46	46
40	1.1/2	-24	55	55
50	2	-32	64	64



SAE THREADS

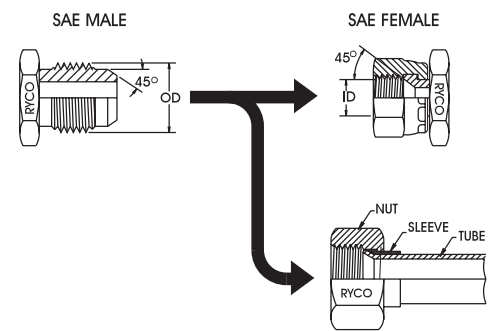
SAE is SOCIETY OF AUTOMOTIVE ENGINEERS

SAE male has 45° flare which seals against 45° seat in female. Male can also seal against 45° flared tubing with nut and sleeve.

7/16 - 20, 1/2 - 20, 3/4 - 16 & 7/8 - 14 are the same thread form as JIC 37° flare. Some fittings in these sizes have both JIC 37° & SAE 45° seats.

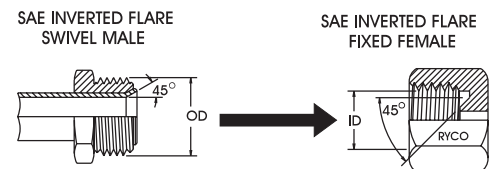
SAE 45° FLARE

MALE THREAD OD & PITCH	DASH SIZE	MALE THREAD OD		FEMALE THREAD ID		TUBE OD
ins - TPI		mm	ins	mm	ins	ins
5/16 - 24	-05	7,9	0,31	6,8	0,27	1/8
3/8 - 24	-06	9,5	0,38	8,4	0,33	3/16
7/16 - 20	-07	11,1	0,44	9,9	0,39	1/4
1/2 - 20	-08	12,7	0,50	11,4	0,44	5/16
5/8 - 18	-10	15,9	0,63	14,2	0,56	3/8
3/4 - 16	-12	19,1	0,75	17,5	0,69	1/2
7/8 - 14	-14	22,2	0,88	20,6	0,81	5/8
1.1/16 - 14	-17	27,0	1,06	24,9	0,98	3/4



SAE 45° INVERTED FLARE

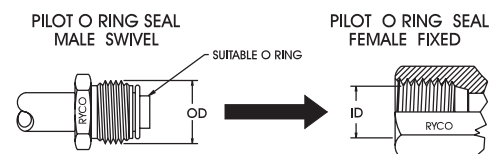
MALE THREAD OD & PITCH	DASH SIZE	MALE THREAD OD		FEMALE THREAD ID		TUBE OD
ins - TPI		mm	ins	mm	ins	ins
7/16 - 24	-07	11,1	0,44	9,9	0,39	1/4
1/2 - 20	-08	12,7	0,50	11,4	0,45	5/16
5/8 - 18	-10	15,9	0,63	14,2	0,56	3/8
11/16 - 18	-11	17,5	0,69	16,0	0,63	7/16



SAE PILOT O RING SEALS

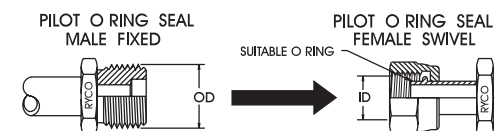
PILOT MALE SWIVEL

MALE THREAD OD & PITCH	DASH SIZE	MALE THREAD OD		FEMALE THREAD ID		TUBE OD
ins - TPI		mm	ins	mm	ins	Dash
5/8 - 18	-10	15,9	0,63	14,2	0,56	- 6
3/4 - 18	-12	19,0	0,75	17,8	0,70	- 8
7/8 - 18	-14	22,2	0,88	20,6	0,81	- 10



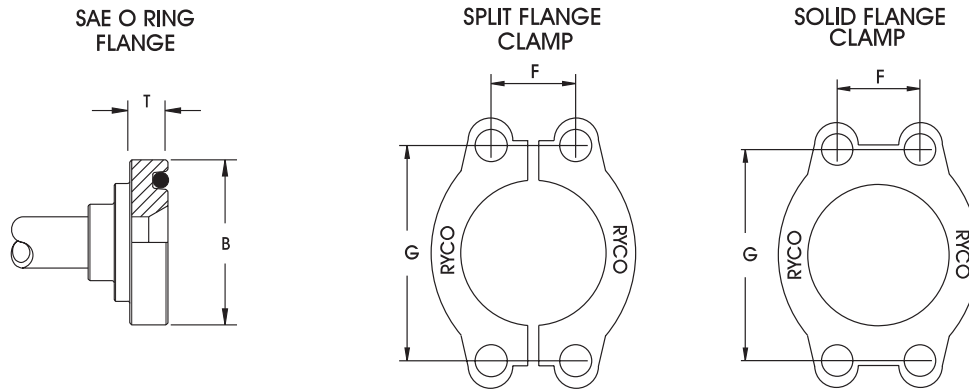
PILOT FEMALE SWIVEL

MALE THREAD OD & PITCH	DASH SIZE	MALE THREAD OD		FEMALE THREAD ID		TUBE OD
ins - TPI		mm	ins	mm	ins	Dash
5/8 - 18	-10	15,9	0,63	14,2	0,56	- 6
3/4 - 16	-12	19,0	0,75	17,5	0,69	- 8
7/8 - 14	-14	22,2	0,88	20,6	0,81	- 10



TECHNICAL

SAE FLANGES



NOM. FLANGE SIZE	DASH SIZE	BØ	T	F	G	PORT THREAD & BOLT LENGTH			
inch		mm	mm	mm	mm	PORT UNC	BOLT LENGTH ins	PORT METRIC	BOLT LENGTH mm
CODE 61									
1/2	-08	30,2	6,7	17,5	38,1	5/16 - 18	1.1/4	M8 x 1,25	35
*5/8	-10	34,0	6,7	19,8	42,9	5/16 - 18		M8 x 1,25	
3/4	-12	38,1	6,7	22,2	47,6	3/8 - 16	1.1/4	M10 x 1,5	35
1	-16	44,5	8,0	26,2	52,4	3/8 - 16	1.1/4	M10 x 1,5	35
1.1/4	-20	50,8	8,0	30,2	58,7	7/16 - 14	1.1/2	M10 x 1,5	40
1.1/2	-24	60,3	8,0	35,7	69,8	1/2 - 13	1.1/2	M12 x 1,75	45
2	-32	71,4	9,5	42,9	77,8	1/2 - 13	1.1/2	M12 x 1,75	45
2.1/2	-40	84,1	9,5	50,8	88,9	1/2 - 13	1.3/4	M12 x 1,75	45
3	-48	101,6	9,5	61,9	106,4	5/8 - 11	1.3/4	M16 x 2,0	45
CODE 62									
1/2	-08	31,7	7,7	18,2	40,5	5/16 - 18	1.1/4	M8 x 1,25	35
3/4	-12	41,3	8,8	23,8	50,8	3/8 - 16	1.1/2	M10 x 1,5	40
1	-16	47,6	9,6	27,8	57,2	7/16 - 14	1.3/4	M12 x 1,75	45
1.1/4	-20	54,0	10,3	31,8	66,7	1/2 - 13	1.3/4	M14 x 2,0	45
1.1/2	-24	63,5	12,6	36,5	79,4	5/8 - 11	2.1/4	M16 x 2,0	60
2	-32	79,4	12,6	44,5	96,8	3/4 - 10	2.3/4	M20 x 2,5	70
RYCO CODE 62C									
3/4	-12	41,3	14,2	23,8	50,8	3/8 - 16	1.3/4	M10 x 1,5	45
1	-16	47,6	14,2	27,8	57,2	7/16 - 14	1.3/4	M12 x 1,75	45
1.1/4	-20	54,0	14,2	31,8	66,7	1/2 - 13	2	M14 x 2,0	50
1.1/2	-24	63,5	14,2	36,5	79,4	5/8 - 11	2.1/2	M16 x 2,0	60

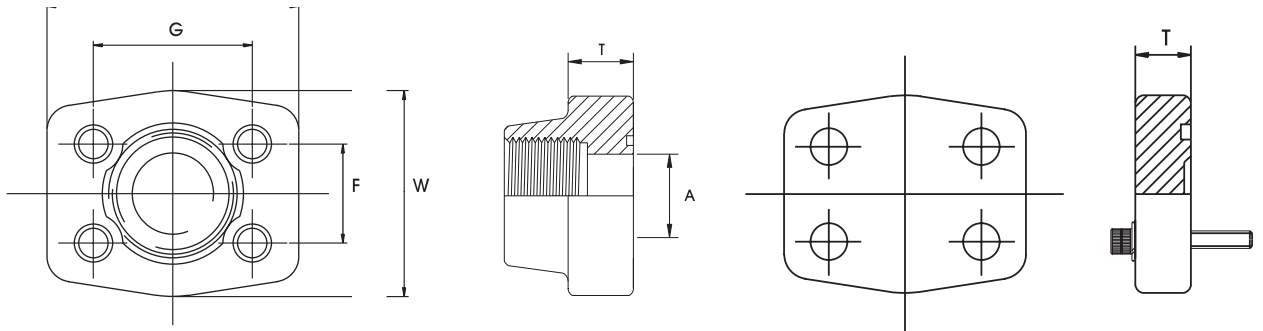
*5/8 is a JIS standard and is used by Komatsu.

RYCO Code 62C fittings conform to the flange OD and bolt hole patterns of SAE Code 62 but require special flange clamp halves.

The RYCO Code 62C flange heads are thicker than SAE Code 62 and measure T = 14,2mm in all sizes.

RYCO Code 62C flanges have similar dimensions to the Caterpillar XT-5 range of flanges.

SAE FLANGE BLOCKS



NOM. FLANGE SIZE	DASH SIZE	L	W	F	G	A	T EXCEPT BLIND FLANGES	T BLIND FLANGES S967/S968	SOCKET HEAD CAP SCREW
inch		mm	mm	mm	mm	mm	mm	mm	UNC x ins
CODE 61									
1/2	-08	56	48	17,5	38,1	13	16	16	5/16 - 18 x 1.1/4
3/4	-12	65	50	22,2	47,6	19	18	16	3/8 - 16 x 1.1/2
1	-16	70	60	26,2	52,4	25	18	19	3/8 - 16 x 1.1/2
1.1/4	-20	79	68	30,2	58,7	32	21	18	7/16 - 14 x 1.3/4
1.1/2	-24	93	78	35,7	69,8	38	25	20	1/2 - 13 x 1.3/4
2	-32	102	90	42,9	77,8	51	25	20	1/2 - 13 x 1.3/4
CODE 62									
3/4	-12	71	60	23,8	50,8	19	21	19	3/8 - 16 x 1.1/2
1	-16	81	70	27,8	57,2	25	25	24	7/16 - 14 x 1.3/4
1.1/4	-20	95	78	31,8	66,7	32	27	27	1/2 - 13 x 1.3/4
1.1/2	-24	112	94	36,5	79,4	38	30	30	5/8 - 11 x 2
2	-32	134	114	44,5	96,8	51	37	28	3/4 - 10 x 2.1/2