

V-BAND CLAMPS/COUPLINGS

Standard Items

Ready to Deliver!

Clampco stocks several standard V-Band Clamps/Couplings. These parts are the most popular sizes and are frequently installed on diesel engines, turbochargers, and heavy-duty exhaust systems.

All of our standard V-Band Clamps/Couplings have 300 series stainless steel bands and retainers and come with a standard T-bolt latch. See the following catalog pages on V-Band Clamps/Couplings for more detailed product specifications and dimensions.



V-BAND CLAMPS/COUPLINGS

ENGLISH (inches)			
DESCRIPTION CODE	PART NUMBER	FLANGE APEX	FLANGE O.D.
V0135100M-0320-S2	995CS-0320	0.296	3.106
V0138108N-0382-S2	99800-0382	0.255	3.695
V0135200M-0388-S2	99502-0388	0.443	3.755
V0135200M-0425-S2	99502-0425	0.443	4.125
V0138108N-0450-S2	99800-0450	0.255	4.375
V0138108N-0481-S2	99800-0481	0.255	4.685
V0135100M-0525-S2	99506-0525	0.296	5.156
V0135200M-0588-S2	99502-0588	0.443	5.755
V0139115M-0592-S2	99915-0592	0.340	5.795

METRIC (millimeters)	
FLANGE APEX	FLANGE O.D.
7.52	78.89
6.48	93.85
11.13	95.38
11.13	104.78
6.48	111.13
6.48	119.00
7.52	130.96
11.13	146.18
8.64	147.19



V-BAND CLAMPS/COUPLINGS

Made-to-Order

Clampco V-Band Couplings, also known as V-Band Clamps or V-Clamps, join flanges with V-shaped profiles. A V-Band Coupling operates by exerting a wedging load, which squeezes the flanges together. The V-Band Couplings can be designed to work with or without gaskets and O-rings. The material gauge, latch style, and number of retainer segments all vary depending on the requirements for each application.



V-Band Couplings eliminate the need for cumbersome bolted flange designs and costly welded flange designs. Because V-Band Couplings can be easily assembled and disassembled, they are often used on equipment that requires frequent service or maintenance. Typical V-Band applications include pumps, engines, exhaust systems, filters, and food and chemical processing equipment.

How to Determine Your V-Band Clamp/Coupling Description Code

Clampco's description code contains 7 segments, each representing a different part of the clamp/coupling.

Below is a sample description code:

V01-3-52-00-N-0588-S2

It's easy to create your made-to-order V-Band Clamp/Coupling description code, just follow these 7 easy steps:

1. Determine Latch & Band or Strap Style Code

V01-3-52-00-N-0588-S2

2. Determine Number of Retainer Segments

V01-3-52-00-N-0588-S2

3. Determine Retainer Series Code

V01-3-52-00-N-0588-S2

4. Determine Product Design Code

V01-3-52-00-N-0588-S2

5. Determine Bolt Code

V01-3-52-00-N-0588-S2

6. Determine Retainer Inside Diameter Code

V01-3-52-00-N-0588-S2

7. Determine Nut, Knob, or T-Handle Code

V01-3-52-00-N-0588-S2

CLAMPKO LATCH STYLES



T-BOLT LATCH

The Clampco T-bolt latch is used for permanent or semi-permanent applications and/or safety on pressurized systems. The T-bolt latch is our most economical latch.



QUICK RELEASE LATCH

The Clampco quick release latch is used for ease of disassembly and is required where the ability to replace bolts is desired.



SADDLE QUICK RELEASE LATCH

The saddle quick release latch is also used for ease of disassembly and where the ability to replace bolts is desired. It is not recommended for diameters larger than 10 in. [254 mm] due to trunnion/band interference.



LIGHT-DUTY OVER CENTER LATCH

The light-duty over center latch is used on applications that require frequent assembly or disassembly. No tools are required for opening and closing the clamp after initial installation. This latch style is ideal for light-duty applications on small diameters and requires a 3/16 in. diameter T-bolt.



MEDIUM-DUTY OVER CENTER LATCH

The medium-duty over center latch is well suited for heavier applications and on larger diameters. No tools are required for opening and closing the clamp after initial installation. It is available with either a 1/4 in. or 5/16 in. diameter T-bolt.



HEAVY-DUTY OVER CENTER LATCH

The heavy-duty over center latch is well suited for heavy-duty applications and large diameters. It is available with 3/8 in. diameter T-bolt.

SPECIFICATIONS



1. DETERMINE LATCH & BAND OR STRAP STYLE CODE

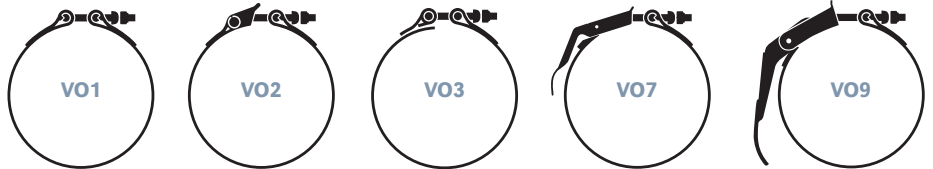
V01-3-52-00-N-0588-S2 (Sample Description Code)

Clampco offers several latch styles and latch combinations for your convenience. Choose the code that corresponds with the best design for your application.

FULL BANDS: SINGLE LATCH

Full Band Styles are recommended where greater strength is required.

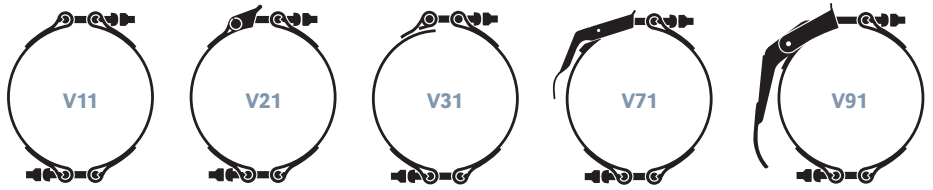
CODE	LATCH STYLE
V01	T-Bolt
V02	Quick Release
V03	Saddle Quick Release
V07	Light-Duty Over Center
V09	Medium-Duty Over Center



FULL BANDS: MULTIPLE LATCHES

Full Band Styles are recommended where greater strength is required.

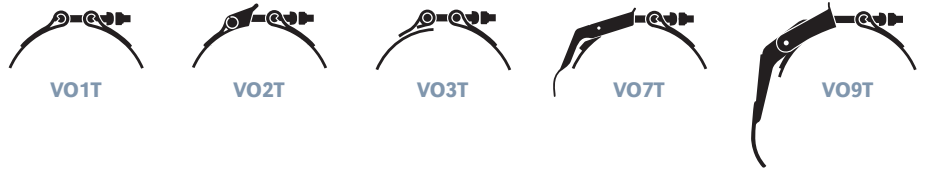
CODE	LATCH STYLE
V11	Two T-Bolts
V21	Quick Release and T-Bolt
V31	Saddle Quick Release and T-Bolt
V71	Light-Duty Over Center and T-Bolt
V91	Medium-Duty Over Center and T-Bolt



STRAP BANDS: SINGLE LATCH

Strap Band Styles are more economical for diameters 8-10 in. [203-254 mm] and larger.

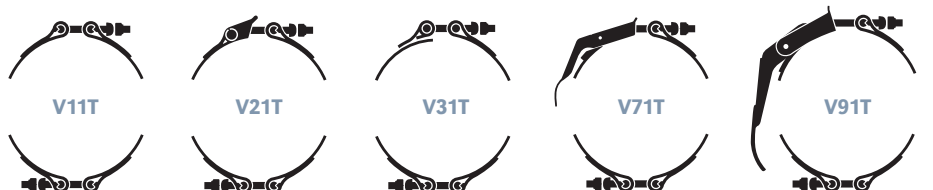
CODE	LATCH STYLE
V01T	T-Bolt
V02T	Quick Release
V03T	Saddle Quick Release
V07T	Light-Duty Over Center
V09T	Medium-Duty Over Center



STRAP BANDS: MULTIPLE LATCHES

Strap Band Styles are more economical for diameters 8-10 in. [203-254 mm] and larger.



CODE	LATCH STYLE
V11T	Two T-Bolts
V21T	Quick Release and T-Bolt
V31T	Saddle Quick Release and T-Bolt
V71T	Light-Duty Over Center and T-Bolt
V91T	Medium-Duty Over Center and T-Bolt





2. DETERMINE NUMBER OF RETAINER SEGMENTS

V01-3-52-00-N-0588-S2 (Sample Description Code)

Clampco offers one, two, three, and four-segment V-Band Couplings.

NUMBER OF SEGMENTS	LATCH DESCRIPTION
1	 <p>One-segment retainers are available for large couplings (approximately 12 in. [304.8 mm] and larger). One-segment retainers are difficult to install due to their inherent stiffness. Therefore, they should be used on permanent applications. One-segment retainers can only be used with latch & band styles V01, V02, V03, V07, V09, V01T, V02T, V03T, V07T, and V09T.</p>
2	 <p>Two-segment retainers are also generally used for V-Band Couplings 8-10 in. [203-254 mm] and larger. However, they provide increased installation and removal flexibility. Two-segment retainers are primarily recommended for double latch clamps but can be used with single latch clamps. Please note: Two-segment retainers CANNOT be used with latch & band styles V01T, V02T, V03T, V07T and V09T</p>

NUMBER OF SEGMENTS	LATCH DESCRIPTION
3	 <p>Three-segment retainers are used for all coupling diameters, especially those 8-10 in. [203-254 mm] and smaller. Three-segment retainers provide even greater ease of assembly and disassembly and offer the best balance between functionality and economy. Three-segment retainers can only be used with latch & band styles V01, V02, V03, V07 and V09.</p>
4	 <p>Four-segment retainers are only recommended for exceptionally large couplings where two or three segments are not adequate. Four-segment retainers can only be used with latch & band styles V01, V02, V03, V07, V09, V11, V21, V31, V71 and V91.</p>

V-BAND CLAMPS/COUPLINGS

Made-to-Order



3. DETERMINE RETAINER SERIES CODE

V01-3-**52**-00-N-058-S2 (Sample Description Code)

Clampco is currently tooled for over 20 standard retainer shapes. These retainer shapes mate with the most common industrial flange profiles. To arrive at the proper retainer series for your application, please consider the following factors: the design and dimensions of the mating flanges; operating pressure and temperature; whether or not gaskets or O-rings will be used; and what the system will carry (fluid, dry bulk solids, air, etc.).



RETAINER THICKNESS OF .031 in. [.787 mm]

ENGLISH (inches)			METRIC (millimeters)		
COUPLING DIAMETER	PRESSURE IN PSI		COUPLING DIAMETER	PRESSURE IN MPa	
	FULL BAND	STRAP BAND		FULL BAND	STRAP BAND
2	500	380	51	3.45	2.62
4	250	180	102	1.72	1.24
6	140	95	152	.96	.65
8	80	65	203	.55	.45
10	60	50	254	.41	.34
12	45	38	305	.31	.26
14	38	32	355	.26	.22
16	32	28	406	.22	.19
18	28	25	457	.19	.17
20	25	23	508	.17	.16

WARNING: The pressure ratings shown are the maximum pressures that will not cause yielding of any component. The ratings are for V-Band Clamps/Couplings with the following: 301 annealed retainers with 40 degree included angles; 301/302/304 1/4 hard or 1/2 hard bands; and operating at ambient temperatures of 70 degrees F. See page 36 to calculate pressure ratings for different materials and temperatures. **Do not use pressure ratings for over center latch styles or for any other latch styles that are tightened by hand. Vessel pressure must be released before coupling is opened.**

RETAINER THICKNESS OF .040 in. [1.02 mm]

ENGLISH (inches)			METRIC (millimeters)		
COUPLING DIAMETER	PRESSURE IN PSI		COUPLING DIAMETER	PRESSURE IN MPa	
	FULL BAND	STRAP BAND		FULL BAND	STRAP BAND
2	1500	620	51	10.34	4.27
4	450	300	102	3.10	2.07
6	240	180	152	1.65	1.24
8	150	120	203	1.03	.83
10	110	80	254	.76	.55
12	80	60	305	.55	.41
14	65	50	355	.45	.34
16	55	40	406	.38	.28
18	50	35	457	.34	.24
20	45	30	508	.31	.21

RETAINER THICKNESS OF .070 in. [1.78 mm]

ENGLISH (inches)			METRIC (millimeters)		
COUPLING DIAMETER	PRESSURE IN PSI		COUPLING DIAMETER	PRESSURE IN MPa	
	FULL BAND	STRAP BAND		FULL BAND	STRAP BAND
2	3150	1250	51	21.72	8.62
4	1100	650	102	7.58	4.48
6	600	400	152	4.14	2.76
8	350	280	203	2.41	1.93
10	250	210	254	1.72	1.45
12	200	160	305	1.38	1.10
14	170	120	355	1.17	.83
16	150	100	406	1.03	.69
18	120	90	457	.83	.62
20	100	70	508	.69	.48

RETAINER THICKNESS OF .050 in. [1.27 mm]

ENGLISH (inches)			METRIC (millimeters)		
COUPLING DIAMETER	PRESSURE IN PSI		COUPLING DIAMETER	PRESSURE IN MPa	
	FULL BAND	STRAP BAND		FULL BAND	STRAP BAND
2	2000	700	51	13.79	4.83
4	650	320	102	4.48	2.21
6	350	200	152	2.41	1.38
8	210	140	203	1.45	.96
10	150	100	254	1.03	.69
12	120	80	305	.83	.55
14	90	65	355	.62	.45
16	80	60	406	.55	.41
18	70	52	457	.48	.36
20	65	46	508	.45	.32

RETAINER THICKNESS OF .080 in. [2.03 mm]

ENGLISH (inches)			METRIC (millimeters)		
COUPLING DIAMETER	PRESSURE IN PSI		COUPLING DIAMETER	PRESSURE IN MPa	
	FULL BAND	STRAP BAND		FULL BAND	STRAP BAND
2	4000	1600	51	27.58	11.03
4	1500	780	102	10.34	5.38
6	750	500	152	5.17	3.45
8	500	340	203	3.45	2.34
10	360	260	254	2.48	1.79
12	280	200	305	1.93	1.38
14	210	160	355	1.45	1.10
16	180	140	406	1.24	.96
18	150	120	457	1.03	.83
20	130	100	508	.90	.69

RETAINER THICKNESS OF .062 in. [1.57 mm]

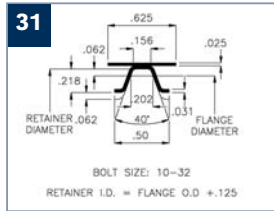
ENGLISH (inches)			METRIC (millimeters)		
COUPLING DIAMETER	PRESSURE IN PSI		COUPLING DIAMETER	PRESSURE IN MPa	
	FULL BAND	STRAP BAND		FULL BAND	STRAP BAND
2	2500	1000	51	17.24	6.89
4	800	550	102	5.52	3.79
6	480	350	152	3.31	2.41
8	300	250	203	2.07	1.72
10	240	180	254	1.65	1.24
12	180	150	305	1.24	1.03
14	160	120	355	1.10	.83
16	130	90	406	.90	.62
18	110	78	457	.76	.54
20	100	68	508	.69	.47

RETAINER THICKNESS OF .090 in. [2.29 mm]

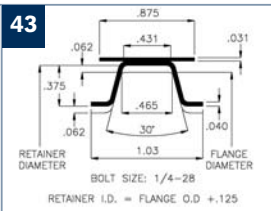
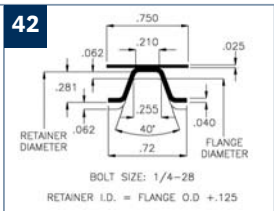
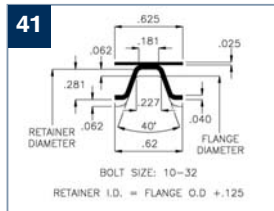
ENGLISH (inches)			METRIC (millimeters)		
COUPLING DIAMETER	PRESSURE IN PSI		COUPLING DIAMETER	PRESSURE IN MPa	
	FULL BAND	STRAP BAND		FULL BAND	STRAP BAND
2	5500	3800	51	37.92	26.20
4	2000	1500	102	13.79	10.34
6	1200	800	152	8.27	5.52
8	780	550	203	5.38	3.79
10	580	400	254	3.99	2.76
12	440	310	305	3.03	2.14
14	350	260	355	2.41	1.79
16	290	210	406	1.99	1.45
18	250	180	457	1.72	1.24
20	200	150	508	1.38	1.03



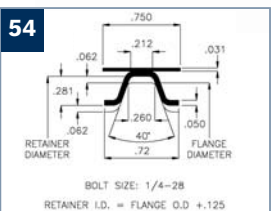
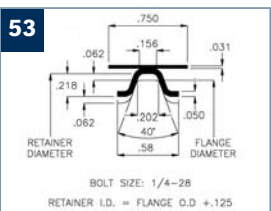
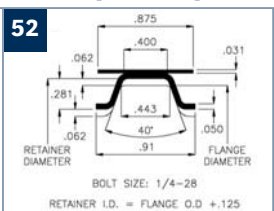
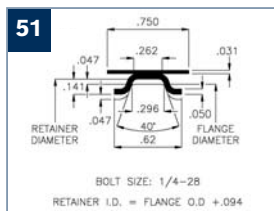
RETAINER THICKNESS OF .031 in. [.787 mm]



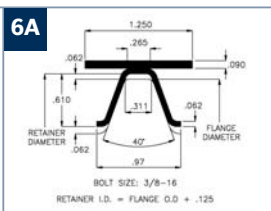
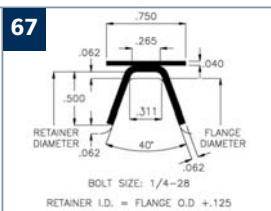
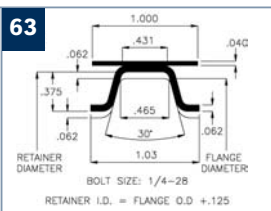
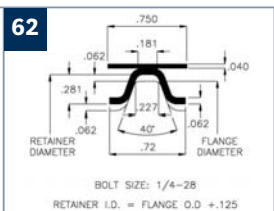
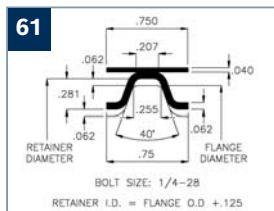
RETAINER THICKNESS OF .040 in. [1.02 mm]



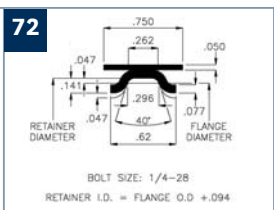
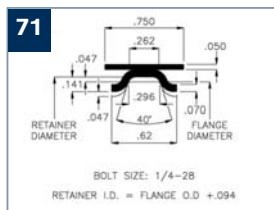
RETAINER THICKNESS OF .050 in. [1.27 mm]



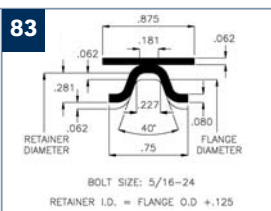
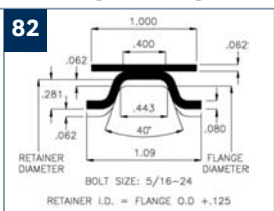
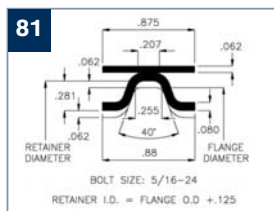
RETAINER THICKNESS OF .062 in. [1.57 mm]



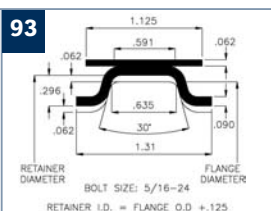
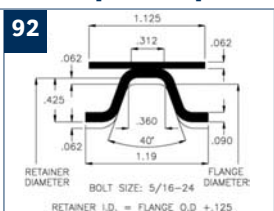
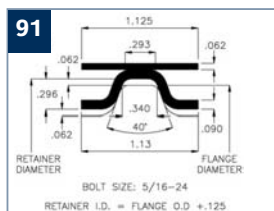
RETAINER THICKNESS OF .070 in. [1.78 mm]



RETAINER THICKNESS OF .080 in. [2.03 mm]



RETAINER THICKNESS OF .090 in. [2.29 mm]



DESIGN CONSIDERATIONS

Application Loads

See the V-Band Clamp/Coupling load formulas on page 36 for applications involving bending moments and/or axial loads in addition to pressure loads.

Safety Factor

Choose the thinnest material for the application that still meets the performance requirements, including your appropriate safety factor and material and temperature corrections.

Retainer Series

Retainer series are available in 301/302/304 annealed stainless steel. Other materials are available upon request.

Select a retainer series with a wide enough apex (inside width at the top of the retainer) for flanges that are to be used with a flat or O-ring type gasket.

Select a retainer series with enough opening (at the bottom of the retainer) so that the retainers can grab (or catch) the free state flanges sufficiently to prepare the joint for tightening.

Retainer series profile dimensions are in inches; 1 in. = 25.4 mm

V-BAND CLAMPS/COUPLINGS

Made-to-Order



4. DETERMINE PRODUCT DESIGN CODE

V01-3-52-**00**-N-0588-S2 (Sample Description Code)

The standard design code is "00" for all V-Band Couplings. A unique design code is assigned to custom parts. Custom parts include variations such as different band and retainer materials, non-standard hardware, special retainer profiles, custom markings, and more. Parts with different over center latch designs, along with their corresponding safety features, are also custom items and will receive a special design code. (See pages 30-34 for more information regarding custom options.)

Clampco will assign the design code that represents your custom part upon receipt of an order.



5. DETERMINE BOLT CODE

V01-3-52-00-**N**-0588-S2 (Sample Description Code)

Clampco offers the following bolts as standard options. Other bolt materials and thread sizes are available upon request. Some bolts may be bent for small diameter applications.

CODE	BOLT DESCRIPTION	THREAD SIZE
C	4037 Alloy Heat Treated to 125,000 - 145,000 psi, Zinc Plated	10-32
		1/4-28
		M6 X 1
		5/16-24
		3/8-16
N	18-8 Stainless Steel (302 or 305)	10-32
		1/4-20
		1/4-28
		5/16-18
		5/16-24
M	431, 420 or 410 Stainless Steel Heat Treated to 140,000 to 160,000 psi	10-32
		1/4-28
		5/16-24
A	A286 Stainless Steel, 130,000 psi minimum	10-32
		1/4-28
W	316 Stainless Steel	1/4-28
		M6 X 1
		M8 X 1.25

Bolt Performance and Torque Chart

SIZE	BOLT MATERIAL	MAXIMUM RECOMMENDED TORQUE IN.-LBS. [NEWTON-METERS]	ULTIMATE TENSILE STRENGTH LBS. [KILOGRAMS]
10-32	300 Series Stainless Steel	50 [5.7]	1815 [823]
10-32	Type 420 or 431 Stainless Steel	65 [7.3]	2390 [1084]
10-32	Type A286 Stainless Steel	65 [7.3]	2390 [1084]
10-32	Plated Alloy Steel	65 [7.3]	2390 [1084]
1/4-20	300 Series Stainless Steel	75 [8.5]	3322 [1508]
1/4-28	300 Series Stainless Steel	75 [8.5]	3322 [1508]
M6 X 1	300 Series Stainless Steel	75 [8.5]	3322 [1508]
1/4-28	Type 420 or 431 Stainless Steel	90 [10.2]	4370 [1983]
1/4-28	Type A286 Stainless Steel	90 [10.2]	4370 [1983]
1/4-28	Plated Alloy Steel	90 [10.2]	4370 [1983]
M6 X 1	Plated Alloy Steel	90 [10.2]	4370 [1983]
5/16-18	300 Series Stainless Steel	180 [20.3]	5320 [2414]
5/16-24	300 Series Stainless Steel	180 [20.3]	5320 [2414]
M8 X 1.25	300 Series Stainless Steel	180 [20.3]	5320 [2414]
5/16-24	Type 420 or 431 Stainless Steel	240 [27.1]	7000 [3177]
5/16-24	Type A286 Stainless Steel	240 [27.1]	7000 [3177]
5/16-24	Plated Alloy Steel	240 [27.1]	7000 [3177]
3/8-16	300 Series Stainless Steel	390 [44.1]	7100 [3221]
3/8-16	Plated Alloy Steel	480 [54.2]	9350 [4241]
1/2-13	Plated Alloy Steel	550 [62.1]	17200 [7802]

300 series stainless steel bolt strength based on 95,000 psi minimum tensile strength. Type 420-431 stainless steel bolt strength based on 125,000 psi minimum tensile strength. Type A286 stainless steel bolt strength based on 125,000 psi minimum tensile strength. Plated alloy steel bolt strength based on 125,000 psi minimum tensile strength. Torque coupling or band to a level where joints are properly closed. Maximum torque levels are not required for proper joint function.



6. DETERMINE RETAINER INSIDE DIAMETER CODE

V01-3-52-00-N-**0588**-S2 (Sample Description Code)

The retainer inside diameter (I.D.) must be specified in .01 in. increments. It is determined by adding the flange outside diameter (O.D.) plus the recommended air gap for the retainer series. The last 2 digits of the code are represented as a two place decimal number without the decimal point.

For Example:

You have a flange with an O.D. of 5.750 in. designed for use with a 52 series retainer. See 52 series chart to determine what should be added to flange O.D. to get retainer I.D.

1. ADD FLANGE O.D. AND RECOMMENDED AIR GAP FROM CHART TO GET RETAINER SERIES I.D.

$$5.750 \text{ in.} + .125 \text{ in.} = 5.875 \text{ in.}$$

2. ROUND TO NEAREST TWO PLACE DECIMAL: 5.88

3. DROP THE DECIMAL POINT TO ARRIVE AT YOUR CODE: 588

When starting with a metric unit, convert millimeters to inches rounded to two decimal places, and then drop the decimal point.

For Example:

$$60 \text{ mm} = (60 \text{ mm}/25.4) = 2.36 \text{ in.} = 236$$











Remember...The V-Band I.D. is always larger than the flange O.D.



7. DETERMINE NUT, KNOB, OR T-HANDLE CODE

V01-3-52-00-N-0588-**S2** (Sample Description Code)

Clampco provides the following nuts, knobs, and T-handles as standard options. Choose the nut, knob, or T-handle that is best suited to your application, or contact our sales department with your special request.

CODE	NUT DESCRIPTION	TEMP RATING	SELF-LOCKING
S	 Steel, self-locking, nylon insert, Cadmium or Zinc Plated	250° F [120° C]	Yes
S1	 All metal, Steel, self-locking, collar or short beam design, Cadmium or Zinc Plated	550° F [290° C]	Yes
S2	 All metal, 18-8 Stainless Steel*, self-locking, collar or short beam design, Silver Plated	800° F [425° C]	Yes
S3	 All metal, 347 Stainless Steel*, self-locking, collar or short beam design, Silver Plated	1200° F [650° C]	Yes
S4	 18-8 Stainless Steel, self-locking, nylon insert, Silver Plated	250° F [120° C]	Yes
S6	 All metal, 347 Stainless Steel, self-locking, long beam design, Silver Plated	1200° F [650° C]	Yes
S14	 316 Stainless Steel, self-locking, nylon insert, Silver Plated	250° F [120° C]	Yes
H	 Stainless Steel Hex Nut, Silver Plated	800° F [425° C]	No
H6	 Steel Hex Nut, Zinc Plated	--	No
H8	 Brass Hex Nut	--	No

CODE	KNOB AND T-HANDLE DESCRIPTION
K	 Knob for hand tightening, plastic with Brass insert, 1 in. long [25.4 mm]
K1	 Knob for hand tightening, plastic with Brass insert, 1.75 in. long [44.5 mm]
T	 T-Handle for hand tightening, Steel, Cadmium or Zinc Plated, 3 in. long [76.2 mm]



See pages 32 and 33 for additional knob and T-handle information.

* We reserve the right to substitute with A286 stainless steel and/or other equivalent locknuts unless otherwise specified.

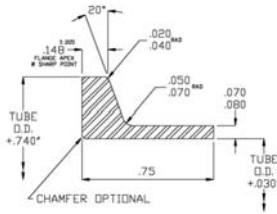
FLANGES

Machined Flanges for use without Gaskets

A Good Fit

Clampco offers flanges along with V-Band Couplings. Flanges are either machined from stainless steel or formed from stainless steel sheet metal. Clampco will ensure that flanges and couplings are the perfect match and will, when possible, recommend flange profiles that correspond with current retainer tooling profiles. If you have questions regarding your application or would like Clampco to provide a V-Band Coupling and Flange assembly, please contact our sales department.

See page 35 for additional information on how to determine the proper dimensions for your V-band coupling application.

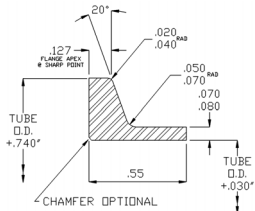


F1021 SERIES

303, 304, or 305 Stainless Steel
For use with Clampco Retainer Series 51 and 71

ENGLISH (inches)

PART NUMBER	TUBE SIZE OUTSIDE DIAMETER	FLANGE INSIDE DIAMETER	FLANGE OUTSIDE DIAMETER
F1021M0150	1.50	1.53	2.24
F1021M0175	1.75	1.78	2.49
F1021M0200	2.00	2.03	2.74
F1021M0225	2.25	2.28	2.99
F1021M0250	2.50	2.53	3.24
F1021M0275	2.75	2.78	3.49
F1021M0300	3.00	3.03	3.74
F1021M0325	3.25	3.28	3.99
F1021M0350	3.50	3.53	4.24
F1021M0375	3.75	3.78	4.49
F1021M0400	4.00	4.03	4.74
F1021M0450	4.50	4.53	5.24
F1021M0500	5.00	5.03	5.74
F1021M0550	5.50	5.53	6.24
F1021M0600	6.00	6.03	6.74

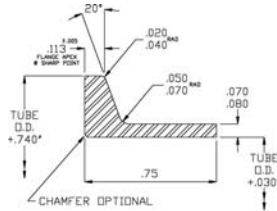


F1019 SERIES

303, 304, or 305 Stainless Steel
For use with Clampco Retainer Series 42, 54, 61, and 81

ENGLISH (inches)

PART NUMBER	TUBE SIZE OUTSIDE DIAMETER	FLANGE INSIDE DIAMETER	FLANGE OUTSIDE DIAMETER
F1019M0150	1.50	1.53	2.24
F1019M0175	1.75	1.78	2.49
F1019M0200	2.00	2.03	2.74
F1019M0225	2.25	2.28	2.99
F1019M0250	2.50	2.53	3.24
F1019M0275	2.75	2.78	3.49
F1019M0300	3.00	3.03	3.74
F1019M0325	3.25	3.28	3.99
F1019M0350	3.50	3.53	4.24
F1019M0375	3.75	3.78	4.49
F1019M0400	4.00	4.03	4.74
F1019M0450	4.50	4.53	5.24
F1019M0500	5.00	5.03	5.74
F1019M0550	5.50	5.53	6.24
F1019M0600	6.00	6.03	6.74

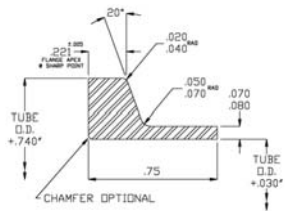


F1022 SERIES

303, 304, or 305 Stainless Steel
For use with Clampco Retainer Series 41, 62, and 83

ENGLISH (inches)

PART NUMBER	TUBE SIZE OUTSIDE DIAMETER	FLANGE INSIDE DIAMETER	FLANGE OUTSIDE DIAMETER
F1022M0150	1.50	1.53	2.24
F1022M0175	1.75	1.78	2.49
F1022M0200	2.00	2.03	2.74
F1022M0225	2.25	2.28	2.99
F1022M0250	2.50	2.53	3.24
F1022M0275	2.75	2.78	3.49
F1022M0300	3.00	3.03	3.74
F1022M0325	3.25	3.28	3.99
F1022M0350	3.50	3.53	4.24
F1022M0375	3.75	3.78	4.49
F1022M0400	4.00	4.03	4.74
F1022M0450	4.50	4.53	5.24
F1022M0500	5.00	5.03	5.74
F1022M0550	5.50	5.53	6.24
F1022M0600	6.00	6.03	6.74

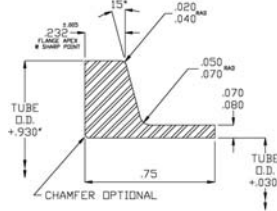


F1020 SERIES

303, 304, or 305 Stainless Steel
For use with Clampco Retainer Series 52 and 82

ENGLISH (inches)

PART NUMBER	TUBE SIZE OUTSIDE DIAMETER	FLANGE INSIDE DIAMETER	FLANGE OUTSIDE DIAMETER
F1020M0150	1.50	1.53	2.24
F1020M0175	1.75	1.78	2.49
F1020M0200	2.00	2.03	2.74
F1020M0225	2.25	2.28	2.99
F1020M0250	2.50	2.53	3.24
F1020M0275	2.75	2.78	3.49
F1020M0300	3.00	3.03	3.74
F1020M0325	3.25	3.28	3.99
F1020M0350	3.50	3.53	4.24
F1020M0375	3.75	3.78	4.49
F1020M0400	4.00	4.03	4.74
F1020M0450	4.50	4.53	5.24
F1020M0500	5.00	5.03	5.74
F1020M0550	5.50	5.53	6.24
F1020M0600	6.00	6.03	6.74



F1023 SERIES

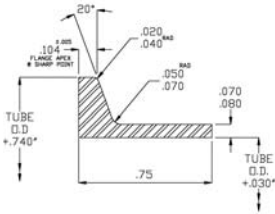
303, 304, or 305 Stainless Steel
For use with Clampco Retainer Series 43 and 63

ENGLISH (inches)

PART NUMBER	TUBE SIZE OUTSIDE DIAMETER	FLANGE INSIDE DIAMETER	FLANGE OUTSIDE DIAMETER
F1023M0150	1.50	1.53	2.43
F1023M0175	1.75	1.78	2.68
F1023M0200	2.00	2.03	2.93
F1023M0225	2.25	2.28	3.18
F1023M0250	2.50	2.53	3.43
F1023M0275	2.75	2.78	3.68
F1023M0300	3.00	3.03	3.93
F1023M0325	3.25	3.28	4.18
F1023M0350	3.50	3.53	4.43
F1023M0375	3.75	3.78	4.68
F1023M0400	4.00	4.03	4.93
F1023M0450	4.50	4.53	5.43
F1023M0500	5.00	5.03	5.93
F1023M0550	5.50	5.53	6.43
F1023M0600	6.00	6.03	6.93

FLANGES

Machined Flanges for use with Flat Gaskets



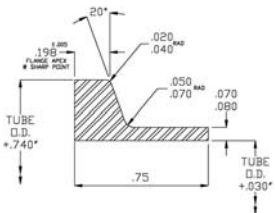
F1024 SERIES

303, 304, or 305 Stainless Steel
For use with Clampco Retainer Series 42, 54, 61, and 81

ENGLISH (inches)			
PART NUMBER	TUBE SIZE OUTSIDE DIAMETER	FLANGE INSIDE DIAMETER	FLANGE OUTSIDE DIAMETER
F1024M0150	1.50	1.53	2.24
F1024M0175	1.75	1.78	2.49
F1024M0200	2.00	2.03	2.74
F1024M0225	2.25	2.28	2.99
F1024M0250	2.50	2.53	3.24
F1024M0275	2.75	2.78	3.49
F1024M0300	3.00	3.03	3.74
F1024M0325	3.25	3.28	3.99
F1024M0350	3.50	3.53	4.24
F1024M0375	3.75	3.78	4.49
F1024M0400	4.00	4.03	4.74
F1024M0450	4.50	4.53	5.24
F1024M0500	5.00	5.03	5.74
F1024M0550	5.50	5.53	6.24
F1024M0600	6.00	6.03	6.74



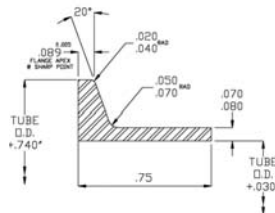
NOTE: Gasketed flat face flanges are recommended for high temperature applications. The gasket must compress to .047 in. minimum for proper coupling function.



F1025 SERIES

303, 304, or 305 Stainless Steel
For use with Clampco Retainer Series 52 and 82

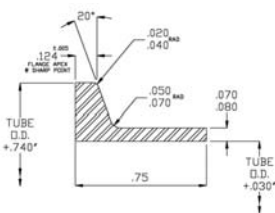
ENGLISH (inches)			
PART NUMBER	TUBE SIZE OUTSIDE DIAMETER	FLANGE INSIDE DIAMETER	FLANGE OUTSIDE DIAMETER
F1025M0150	1.50	1.53	2.24
F1025M0175	1.75	1.78	2.49
F1025M0200	2.00	2.03	2.74
F1025M0225	2.25	2.28	2.99
F1025M0250	2.50	2.53	3.24
F1025M0275	2.75	2.78	3.49
F1025M0300	3.00	3.03	3.74
F1025M0325	3.25	3.28	3.99
F1025M0350	3.50	3.53	4.24
F1025M0375	3.75	3.78	4.49
F1025M0400	4.00	4.03	4.74
F1025M0450	4.50	4.53	5.24
F1025M0500	5.00	5.03	5.74
F1025M0550	5.50	5.53	6.24
F1025M0600	6.00	6.03	6.74



F1027 SERIES

303, 304, or 305 Stainless Steel
For use with Clampco Retainer Series 41, 62, and 83. May also be paired with a F1038S Formed Sheet Metal Flange (see page 27) for use with Clampco Retainer Series 41, 62, and 83.

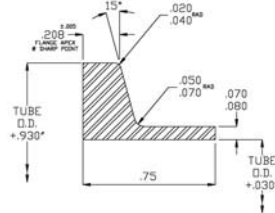
ENGLISH (inches)			
PART NUMBER	TUBE SIZE OUTSIDE DIAMETER	FLANGE INSIDE DIAMETER	FLANGE OUTSIDE DIAMETER
F1027M0150	1.50	1.53	2.24
F1027M0175	1.75	1.78	2.49
F1027M0200	2.00	2.03	2.74
F1027M0225	2.25	2.28	2.99
F1027M0250	2.50	2.53	3.24
F1027M0275	2.75	2.78	3.49
F1027M0300	3.00	3.03	3.74
F1027M0325	3.25	3.28	3.99
F1027M0350	3.50	3.53	4.24
F1027M0375	3.75	3.78	4.49
F1027M0400	4.00	4.03	4.74
F1027M0450	4.50	4.53	5.24
F1027M0500	5.00	5.03	5.74
F1027M0550	5.50	5.53	6.24
F1027M0600	6.00	6.03	6.74



F1026 SERIES

303, 304, or 305 Stainless Steel
For use with Clampco Retainer Series 51 and 71. May also be paired with a F1034S Formed Sheet Metal Flange (see page 27) for use with Clampco Retainer Series 91.

ENGLISH (inches)			
PART NUMBER	TUBE SIZE OUTSIDE DIAMETER	FLANGE INSIDE DIAMETER	FLANGE OUTSIDE DIAMETER
F1026M0150	1.50	1.53	2.24
F1026M0175	1.75	1.78	2.49
F1026M0200	2.00	2.03	2.74
F1026M0225	2.25	2.28	2.99
F1026M0250	2.50	2.53	3.24
F1026M0275	2.75	2.78	3.49
F1026M0300	3.00	3.03	3.74
F1026M0325	3.25	3.28	3.99
F1026M0350	3.50	3.53	4.24
F1026M0375	3.75	3.78	4.49
F1026M0400	4.00	4.03	4.74
F1026M0450	4.50	4.53	5.24
F1026M0500	5.00	5.03	5.74
F1026M0550	5.50	5.53	6.24
F1026M0600	6.00	6.03	6.74



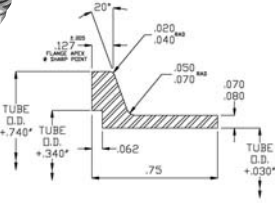
F1028 SERIES

303, 304, or 305 Stainless Steel
For use with Clampco Retainer Series 43 and 63

ENGLISH (inches)			
PART NUMBER	TUBE SIZE OUTSIDE DIAMETER	FLANGE INSIDE DIAMETER	FLANGE OUTSIDE DIAMETER
F1028M0150	1.50	1.53	2.43
F1028M0175	1.75	1.78	2.68
F1028M0200	2.00	2.03	2.93
F1028M0225	2.25	2.28	3.18
F1028M0250	2.50	2.53	3.43
F1028M0275	2.75	2.78	3.68
F1028M0300	3.00	3.03	3.93
F1028M0325	3.25	3.28	4.18
F1028M0350	3.50	3.53	4.43
F1028M0375	3.75	3.78	4.68
F1028M0400	4.00	4.03	4.93
F1028M0450	4.50	4.53	5.43
F1028M0500	5.00	5.03	5.93
F1028M0550	5.50	5.53	6.43
F1028M0600	6.00	6.03	6.93

FLANGES

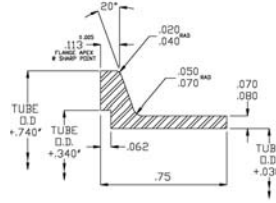
Machined Flanges for use with O-Ring Gaskets



F1029 SERIES

303, 304, or 305 Stainless Steel
For use with Clampco Retainer Series
42, 54, 61, and 81

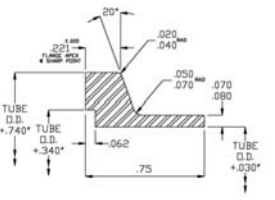
ENGLISH (inches)			
PART NUMBER	TUBE SIZE OUTSIDE DIAMETER	FLANGE INSIDE DIAMETER	FLANGE OUTSIDE DIAMETER
F1029M0150	1.50	1.53	2.24
F1029M0175	1.75	1.78	2.49
F1029M0200	2.00	2.03	2.74
F1029M0225	2.25	2.28	2.99
F1029M0250	2.50	2.53	3.24
F1029M0275	2.75	2.78	3.49
F1029M0300	3.00	3.03	3.74
F1029M0325	3.25	3.28	3.99
F1029M0350	3.50	3.53	4.24
F1029M0375	3.75	3.78	4.49
F1029M0400	4.00	4.03	4.74
F1029M0450	4.50	4.53	5.24
F1029M0500	5.00	5.03	5.74
F1029M0550	5.50	5.53	6.24
F1029M0600	6.00	6.03	6.74



F1032 SERIES

303, 304, or 305 Stainless Steel
For use with Clampco Retainer Series
41, 62, and 83

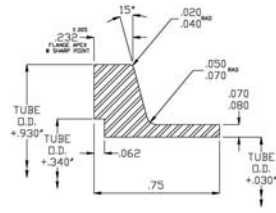
ENGLISH (inches)			
PART NUMBER	TUBE SIZE OUTSIDE DIAMETER	FLANGE INSIDE DIAMETER	FLANGE OUTSIDE DIAMETER
F1032M0150	1.50	1.53	2.24
F1032M0175	1.75	1.78	2.49
F1032M0200	2.00	2.03	2.74
F1032M0225	2.25	2.28	2.99
F1032M0250	2.50	2.53	3.24
F1032M0275	2.75	2.78	3.49
F1032M0300	3.00	3.03	3.74
F1032M0325	3.25	3.28	3.99
F1032M0350	3.50	3.53	4.24
F1032M0375	3.75	3.78	4.49
F1032M0400	4.00	4.03	4.74
F1032M0450	4.50	4.53	5.24
F1032M0500	5.00	5.03	5.74
F1032M0550	5.50	5.53	6.24
F1032M0600	6.00	6.03	6.74



F1030 SERIES

303, 304, or 305 Stainless Steel
For use with Clampco Retainer Series
52 and 82

ENGLISH (inches)			
PART NUMBER	TUBE SIZE OUTSIDE DIAMETER	FLANGE INSIDE DIAMETER	FLANGE OUTSIDE DIAMETER
F1030M0150	1.50	1.53	2.24
F1030M0175	1.75	1.78	2.49
F1030M0200	2.00	2.03	2.74
F1030M0225	2.25	2.28	2.99
F1030M0250	2.50	2.53	3.24
F1030M0275	2.75	2.78	3.49
F1030M0300	3.00	3.03	3.74
F1030M0325	3.25	3.28	3.99
F1030M0350	3.50	3.53	4.24
F1030M0375	3.75	3.78	4.49
F1030M0400	4.00	4.03	4.74
F1030M0450	4.50	4.53	5.24
F1030M0500	5.00	5.03	5.74
F1030M0550	5.50	5.53	6.24
F1030M0600	6.00	6.03	6.74

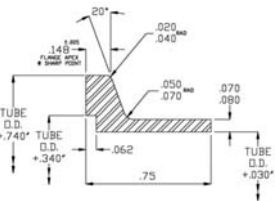


F1033 SERIES

303, 304, or 305 Stainless Steel
For use with Clampco Retainer Series
43 and 63

ENGLISH (inches)			
PART NUMBER	TUBE SIZE OUTSIDE DIAMETER	FLANGE INSIDE DIAMETER	FLANGE OUTSIDE DIAMETER
F1033M0150	1.50	1.53	2.43
F1033M0175	1.75	1.78	2.68
F1033M0200	2.00	2.03	2.93
F1033M0225	2.25	2.28	3.18
F1033M0250	2.50	2.53	3.43
F1033M0275	2.75	2.78	3.68
F1033M0300	3.00	3.03	3.93
F1033M0325	3.25	3.28	4.18
F1033M0350	3.50	3.53	4.43
F1033M0375	3.75	3.78	4.68
F1033M0400	4.00	4.03	4.93
F1033M0450	4.50	4.53	5.43
F1033M0500	5.00	5.03	5.93
F1033M0550	5.50	5.53	6.43
F1033M0600	6.00	6.03	6.93

NOTE: O-ring sealed flanges are for low temperature and structural applications. O-ring groove dimensions to be specified by customer.



F1031 SERIES

303, 304, or 305 Stainless Steel
For use with Clampco Retainer Series
51 and 71

ENGLISH (inches)			
PART NUMBER	TUBE SIZE OUTSIDE DIAMETER	FLANGE INSIDE DIAMETER	FLANGE OUTSIDE DIAMETER
F1031M0150	1.50	1.53	2.24
F1031M0175	1.75	1.78	2.49
F1031M0200	2.00	2.03	2.74
F1031M0225	2.25	2.28	2.99
F1031M0250	2.50	2.53	3.24
F1031M0275	2.75	2.78	3.49
F1031M0300	3.00	3.03	3.74
F1031M0325	3.25	3.28	3.99
F1031M0350	3.50	3.53	4.24
F1031M0375	3.75	3.78	4.49
F1031M0400	4.00	4.03	4.74
F1031M0450	4.50	4.53	5.24
F1031M0500	5.00	5.03	5.74
F1031M0550	5.50	5.53	6.24
F1031M0600	6.00	6.03	6.74

CLAMPACO

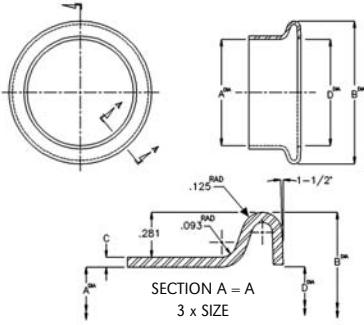


Custom Order

Clampco can work with your custom requirements for a leak-proof connection. Our team will help you design a clamp that can withstand corrosive environments, severe vibration, high temperatures, and pressure changes. Contact Clampco for a reliable solution.

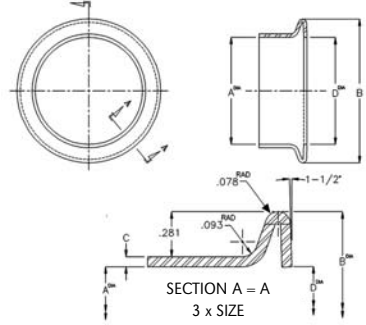
FLANGES

Formed Sheet Metal Flanges



Thickness = .062 in.
F1034S SERIES

301, 302, or 304 Stainless Steel
For use with Clampco Retainer Series 52 and 82
For use with Clampco Retainer Series 91, pair with a F1026 Machined Flange (see page 25)



Thickness = .062 in.
F1038S SERIES

301, 302, or 304 Stainless Steel
For use with Clampco Retainer Series 42, 54, 61, and 81
For use with Clampco Retainer Series 41, 62, and 83, pair with a F1027 Machined Flange (see page 25)

ENGLISH (inches)						
PART NUMBER	TUBE SIZE OUTSIDE DIA	(A) FLANGE INSIDE DIA	(B) FLANGE DIAMETER	(C) MIN THICKNESS	(D) OPENING DIAMETER	COUPLING DIAMETER
F1034S150	1.50	1.510	2.196	.062	1.590	2.32
F1034S175	1.75	1.760	2.446	.062	1.840	2.57
F1034S200	2.00	2.010	2.696	.062	2.090	2.82
F1034S225	2.25	2.260	2.946	.062	2.340	3.07
F1034S250	2.50	2.510	3.196	.062	2.590	3.32
F1034S275	2.75	2.760	3.446	.062	2.840	3.57
F1034S300	3.00	3.010	3.696	.062	3.090	3.82
F1034S325	3.25	3.260	3.946	.062	3.340	4.07
F1034S350	3.50	3.510	4.196	.062	3.590	4.32
F1034S375	3.75	3.760	4.446	.062	3.840	4.57
F1034S400	4.00	4.010	4.696	.062	4.090	4.82
F1034S450	4.50	4.510	5.196	.062	4.590	5.32
F1034S500	5.00	5.010	5.696	.062	5.090	5.82
F1034S550	5.50	5.510	6.196	.062	5.590	6.32
F1034S600	6.00	6.010	6.696	.062	6.090	6.82

ENGLISH (inches)						
PART NUMBER	TUBE SIZE OUTSIDE DIA	(A) FLANGE INSIDE DIA	(B) FLANGE DIAMETER	(C) MIN THICKNESS	(D) OPENING DIAMETER	COUPLING DIAMETER
F1038S150	1.50	1.510	2.196	.062	1.590	2.32
F1038S175	1.75	1.760	2.446	.062	1.840	2.57
F1038S200	2.00	2.010	2.696	.062	2.090	2.82
F1038S225	2.25	2.260	2.946	.062	2.340	3.07
F1038S250	2.50	2.510	3.196	.062	2.590	3.32
F1038S275	2.75	2.760	3.446	.062	2.840	3.57
F1038S300	3.00	3.010	3.696	.062	3.090	3.82
F1038S325	3.25	3.260	3.946	.062	3.340	4.07
F1038S350	3.50	3.510	4.196	.062	3.590	4.32
F1038S375	3.75	3.760	4.446	.062	3.840	4.57
F1038S400	4.00	4.010	4.696	.062	4.090	4.82
F1038S450	4.50	4.510	5.196	.062	4.590	5.32
F1038S500	5.00	5.010	5.696	.062	5.090	5.82
F1038S550	5.50	5.510	6.196	.062	5.590	6.32
F1038S600	6.00	6.010	6.696	.062	6.090	6.82

Popular Flange Configurations

Clampco Flanges can be used in several combinations. Talk to a Clampco sales engineer to determine the size, style, and retainer series number that is best for you.



TWO FORMED SHEET METAL FLANGES



TWO FLAT FACE SHEET METAL FLANGES



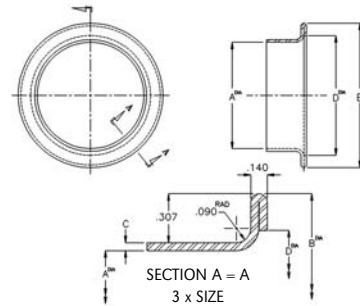
ONE FORMED SHEET METAL AND ONE MACHINED FLANGE



TWO MACHINED FLANGES WITH OR WITHOUT FLAT GASKET



TWO MACHINED FLANGES WITH O-RING GROOVE



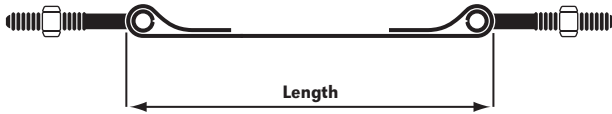
Thickness = .050 in.
F1039S SERIES

301, 302, or 304 Stainless Steel
For use with Clampco Retainer Series 42, 54, 61, and 81

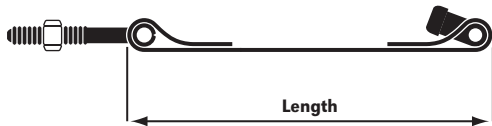
ENGLISH (inches)						
PART NUMBER	TUBE SIZE OUTSIDE DIA	(A) FLANGE INSIDE DIA	(B) FLANGE DIAMETER	(C) MIN THICKNESS	(D) OPENING DIAMETER	COUPLING DIAMETER
F1039S100	1.00	1.010	1.724	.050	1.260	1.81
F1039S125	1.25	1.260	1.974	.050	1.510	2.06
F1039S150	1.50	1.510	2.224	.050	1.760	2.31
F1039S175	1.75	1.760	2.474	.050	2.010	2.56
F1039S200	2.00	2.010	2.724	.050	2.260	2.81
F1039S225	2.25	2.260	2.974	.050	2.510	3.06
F1039S250	2.50	2.510	3.224	.050	2.760	3.31
F1039S275	2.75	2.760	3.474	.050	3.010	3.56
F1039S300	3.00	3.010	3.724	.050	3.260	3.81
F1039S325	3.25	3.260	3.974	.050	3.510	4.06
F1039S350	3.50	3.510	4.224	.050	3.760	4.31
F1039S375	3.75	3.760	4.474	.050	4.010	4.56
F1039S400	4.00	4.010	4.724	.050	4.260	4.81
F1039S450	4.50	4.510	5.224	.050	4.760	5.31
F1039S500	5.00	5.010	5.724	.050	5.260	5.81
F1039S550	5.50	5.510	6.224	.050	5.760	6.31
F1039S600	6.00	6.010	6.724	.050	6.260	6.81



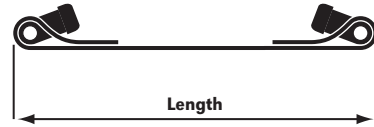
CLAMPCO STRAPS



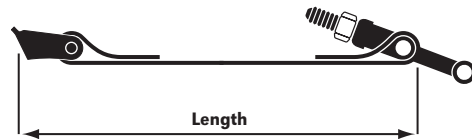
DOUBLE T-BOLT



T-BOLT AND TRUNNION

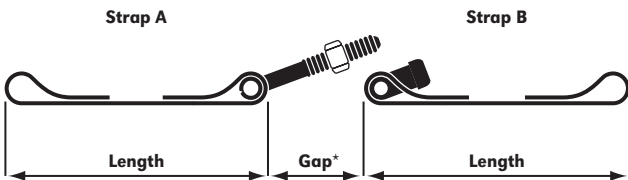


DOUBLE TRUNNION

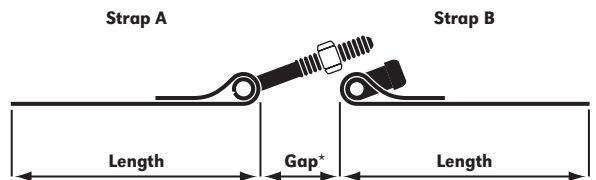


QUICK RELEASE AND T-BOLT

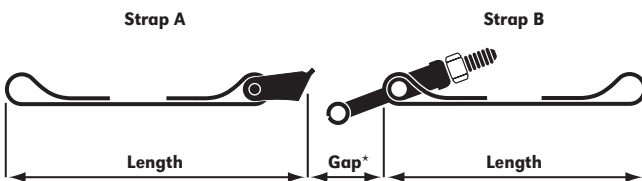
CLAMPCO STRAP ASSEMBLIES



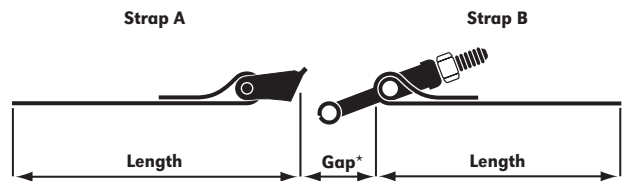
T-BOLT/TRUNNION LATCH WITH EMPTY LOOPS



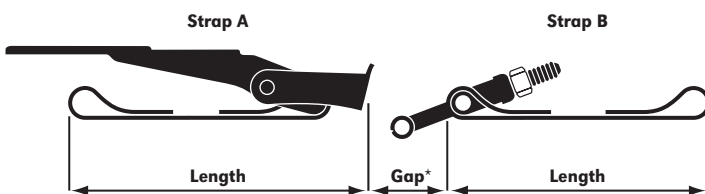
T-BOLT/TRUNNION LATCH WITH FLAT ENDS



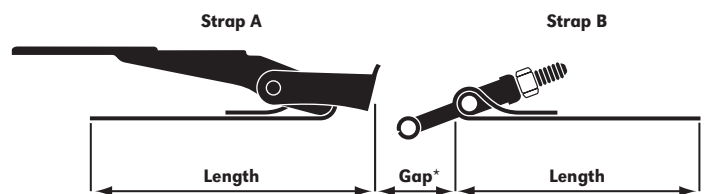
QUICK RELEASE/T-BOLT LATCH WITH EMPTY LOOPS



QUICK RELEASE/T-BOLT LATCH WITH FLAT ENDS



OVER CENTER/T-BOLT LATCH WITH EMPTY LOOPS



OVER CENTER/T-BOLT LATCH WITH FLAT ENDS

*Gap dimensions vary depending upon the type and size of hardware required for each application.

CLAMPCO CUSTOM DESIGN PRODUCTS



We Customize Clamps to Meet Your Specific Needs

Clampco offers a wide variety of custom design features to suit your specific application. The clamps pictured on these pages show just some of the available options.

- A. Clamp with welded lugs to hold a heat shield around the clamp.
- B. Clamp with mounting bracket for attaching assembly to other structures.
- C. Lug clamp for attaching clamp to other structures. Customers can specify any number of sliding lugs.
- D. Clamp with rolled edge liner to prevent hose damage.
- E. Saddle latch clamp with visible indicator on bolt to prevent over-tightening.
- F. Clamp with sliding clips for attaching clamp to other structures. Customers may specify any number of clips.
- G. Roll formed lighting ring clamp with simple spring closure. Lighting rings are used to hold lenses to light housings.
- H. Strap assembly with rubber pads to protect the object being held in place.
- I. Quick release clamp with long knob to prevent interference with clamp band. Knob allows operation of clamp without tools.
- J. Clamp with heat shrink cover to protect the object being clamped.

K. V-Band Coupling with an over center latch handle and a safety clip to prevent accidental opening.

L. Extra wide V-Band Coupling for holding filter housings together. V-Band also has a special long nut to provide easier wrenching.

M. Heavy duty V-Band Coupling with a long, non-standard, fabricated T-bolt.

N. One piece stamped V-Band Coupling with replaceable hex head bolt. A low cost option for high-volume production runs.

O. V-Band retainer inserts without legs. This design offers material cost savings.

P. V-Band Coupling with a non-standard quick release latch and knob.

Q. One piece stamped V-Band Coupling with standard T-bolt latch. After tooling expenses are paid, this economy design offers significant cost savings on high volume production runs.

R. V-Band Coupling with a light-duty over center latch handle. The handle can be secured with a safety pin, which passes through the hole in the yoke.

S. V-Band Coupling with a medium-duty over center latch handle and a safety clip to prevent accidental opening of the clamp.

T. Hinged V-Band Coupling offers excellent installation flexibility.

U. V-Band Coupling with quick release latch provides quick and easy access to joints.



LATCHES, FASTENERS & HANDLES

Custom Options



Latches

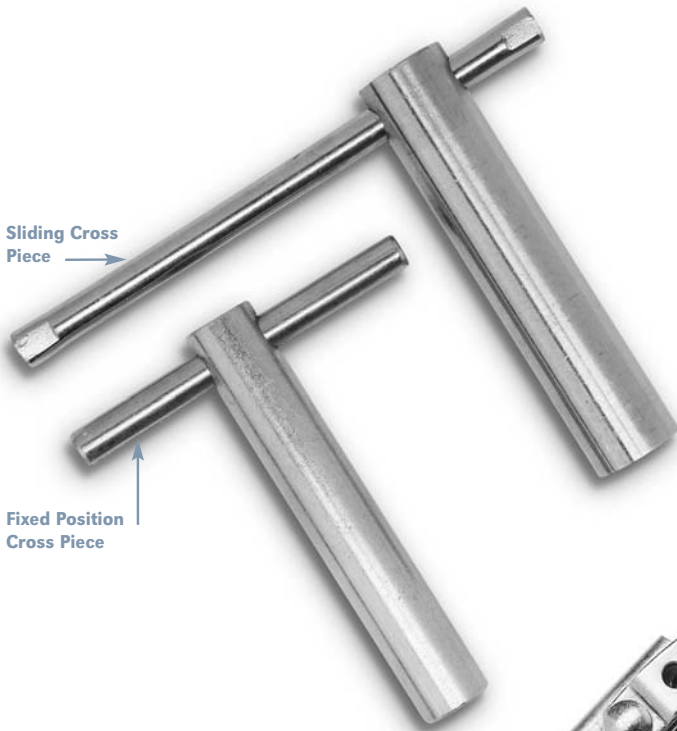
Several latch designs are available for light-duty applications. The latches pictured at left show just some of the custom options. For example, latch designs can include metric hardware, socket head cap screws, special square nuts, and more. Contact Clampco to discuss your custom latch requirements.

Knobs

Clampco offers different knobs for custom requirements. The knobs shown at right are specified when operators need to open and close clamps by hand. The plastic knobs are recommended for light-duty applications and should not be exposed to high temperatures. They are commonly requested for applications on water filtration canisters and other applications where frequent maintenance is required.

The knurled knob is 300 series stainless steel and is a high-quality option for sanitary applications. The knurled knob is a popular choice for clamp applications on food and chemical processing and transportation equipment.





Handles

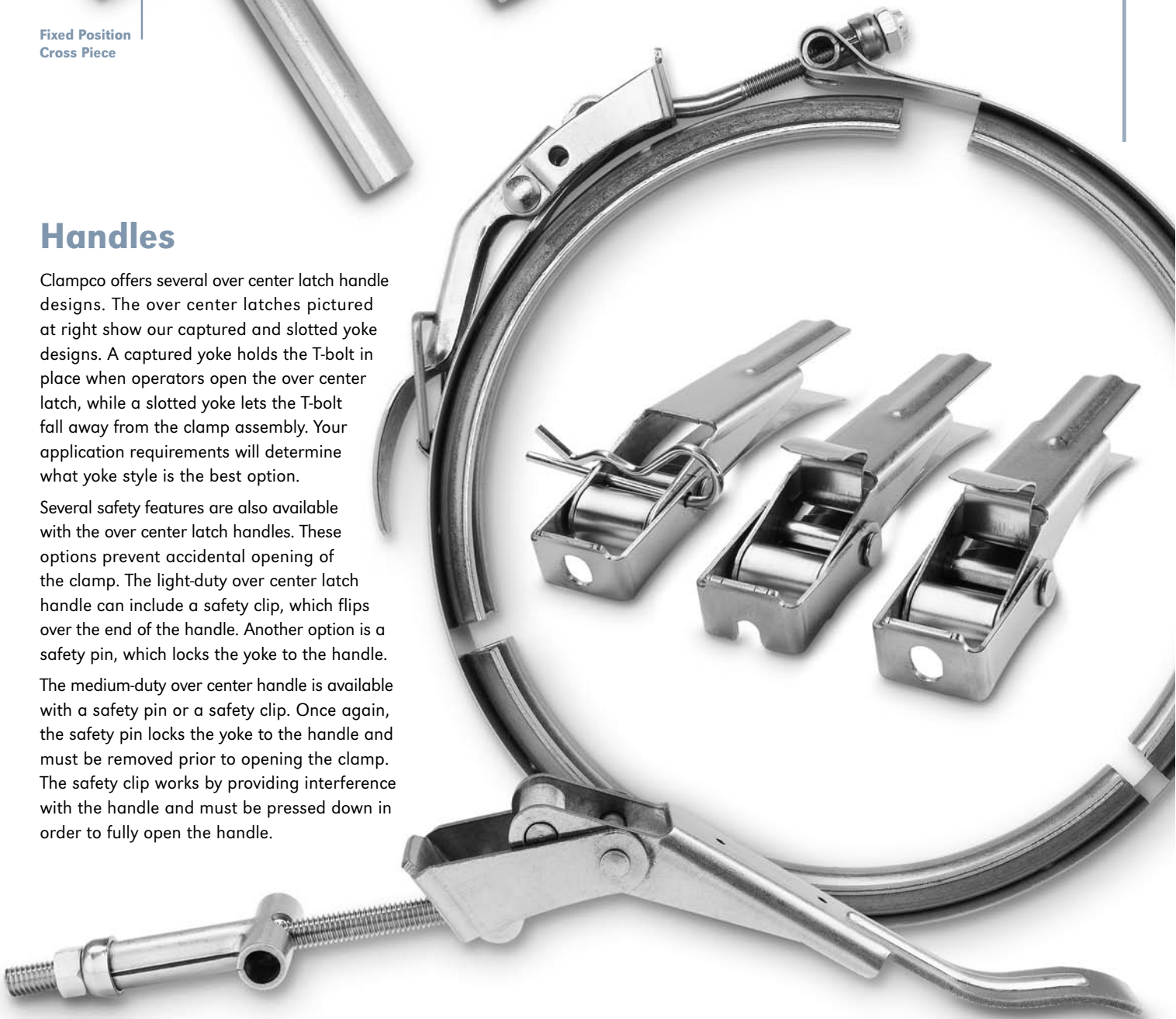
Clampco offers several over center latch handle designs. The over center latches pictured at right show our captured and slotted yoke designs. A captured yoke holds the T-bolt in place when operators open the over center latch, while a slotted yoke lets the T-bolt fall away from the clamp assembly. Your application requirements will determine what yoke style is the best option.

Several safety features are also available with the over center latch handles. These options prevent accidental opening of the clamp. The light-duty over center latch handle can include a safety clip, which flips over the end of the handle. Another option is a safety pin, which locks the yoke to the handle.

The medium-duty over center handle is available with a safety pin or a safety clip. Once again, the safety pin locks the yoke to the handle and must be removed prior to opening the clamp. The safety clip works by providing interference with the handle and must be pressed down in order to fully open the handle.

T-Handles

A Clampco T-handle is another custom option for clamp applications that require hand tightening. T-handles come standard in 3 in. lengths and are steel cadmium or zinc plated. Stainless steel designs are also available. T-handles are commonly specified for clamp applications on pool filters and telecommunications equipment.

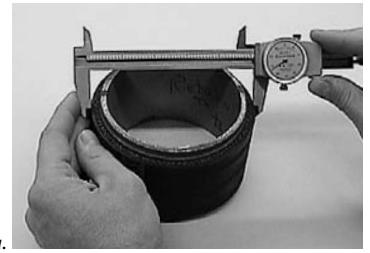


How to determine NOMINAL SIZE FOR YOUR HOSE CLAMP APPLICATION

METHOD ONE

Using Dial Calipers

Use dial calipers to measure the outside diameter (O.D.) of the hose and fitting application with the hose assembled on the pipe or tube fitting as shown in illustration 1a. Use this measurement to specify the nominal clamp size.



1a.

OR

Using Tape Rule

Use a narrow tape rule to measure the circumference of the hose and fitting application with the hose assembled on the pipe or tube fitting as shown in illustration 1b. Denote this as circumference, (C).



1b.

Use the formula: **Nominal Application Diameter, ND = C ÷ 3.1416**

OR

Using "Pi" Tape Rule

Use a "pi" tape rule to measure the O.D. of the hose and fitting application with the hose assembled on the pipe or tube fitting as shown in illustration 1c. Use this measurement to specify the nominal clamp size.



1c.

METHOD TWO

1. Use dial calipers to measure the O.D. of the pipe or tube fitting as shown in illustration 1d. This diameter may also be measured with a narrow tape rule or "pi" tape rule as shown in illustrations 1b and 1c. Denote this dimension as diameter, (d).
2. Use dial calipers to measure the material thickness of the hose as shown in illustration 1e. Denote the thickness dimension as thickness, (t).



1d.

Use the formula: **Nominal Application Diameter, ND = d + (2 x t)**



1e.

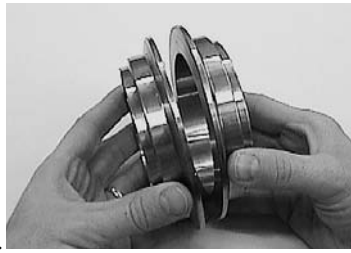
How to determine PROPER DIMENSIONS FOR YOUR V-BAND COUPLING APPLICATION

OUTSIDE FLANGE DIAMETER

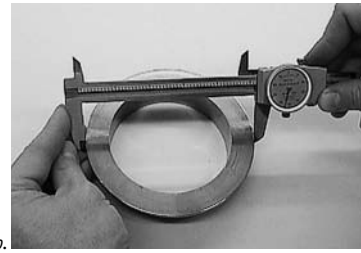
Using Dial Calipers

Use dial calipers to measure the largest or “outside” diameter of your flange as shown in illustration 1b. (or use a “pi” tape rule as shown in illustration 1c.) Denote this outside flange diameter as “fd”.

1a.



1b.



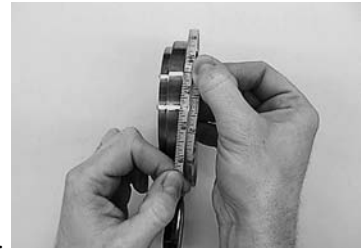
OR

Using Tape Rule

Use a narrow tape rule to determine the flange circumference (C) as shown in 1c.

Use the formula: **Flange Diameter = $C \div 3.1416$**

1c.



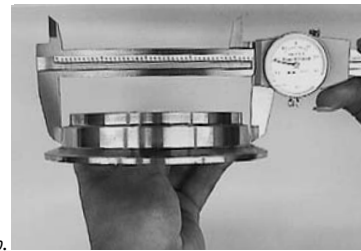
FLANGE BASE DIAMETER

Use dial calipers to measure the “base” diameter of your flange as shown in illustrations 2a and 2b. This dimension can also be measured with a narrow tape rule or with a “pi” tape rule as shown in illustration 1c. Denote this base diameter as “bd”.

2a.



2b.



FLANGE HEIGHT CALCULATION

To determine the height of your flange, you can use the previously measured outside flange diameter “fd”, and the flange base diameter “bd”.

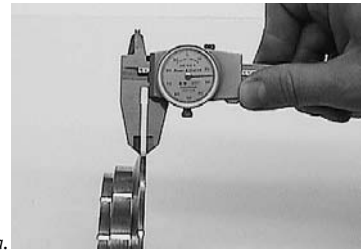
Use the formula: **Flange Height, fh = $(fd - bd) \div 2$**

FLANGE APEX

This dimension is best determined by measurement with an optical comparator or from the actual design print of the flange. However, it can be measured with great care using dial calipers as shown in illustration 4a. Denote this flange apex as “a”.

*Remember that O-rings and gaskets will change your final width dimensions.

4a.



FLANGE BASE WIDTH

This dimension is best determined by measurement with an optical comparator or from the actual design print of the flange. However, it can be measured with care using dial calipers as shown in illustration 5a. Denote this base width as “w”.

*Remember that O-rings and gaskets will change your final width dimensions.

5a.



FLANGE ANGLE

This dimension is best determined by measurement with an optical comparator or from the actual design print of the flange. However, it can be determined by using the previously measured flange apex “a”, flange base width “w”, and flange height “fh”.

Use the formula: **Flange Angle = $TAN^{-1} [(w - a) \div fh]$**

ENGINEERING DATA & SPECIFICATIONS

V-BAND CLAMP/COUPLING LOAD FORMULAS

V-Band Couplings must be designed to provide an axial preload that exceeds the total in-service loads. These loads include: internal pressure; bending moments; and axial tension. For economy, the V-Band Coupling should be designed based on the minimum strength required for the application loading. See the formulas below to determine your application loads or contact a Clampco sales engineer for assistance.

SYMBOLS

L_p = Load Intensity due to Pressure, lbs./in. of circumference

L_b = Load Intensity due to Bending Moment, lbs./in. of circumference

L_a = Load Intensity due to Axial Tension, lbs./in. of circumference

L = Total Load Intensity, lbs. / in. of circumference

D = Flange O.D., in.

P = Internal Pressure, psi

M = Bending Moment, in.-lbs.

A = Axial Tension, lbs.

Step 1

Determine the Load Intensity due to Internal Pressure, L_p .

$$L_p = \frac{P \times D}{4}$$

Step 2

Determine the Load Intensity due to Bending Moment, L_b .

$$L_b = \frac{4 \times M}{\pi \times D^2}$$

Step 3

Determine the Load Intensity due to Axial Tension, L_a .

$$L_a = \frac{A}{\pi \times D}$$

Step 4

Determine the Total Load Intensity by adding the results of Steps 1, 2, and 3.

$$L = L_p + L_b + L_a$$

Example

A V-Band Coupling meeting the following:
Flange O.D., $D = 5.00$ in.

Internal Pressure, $P = 200$ psi

Bending Moment, $M = 1000$ in.-lbs.

Axial Tension Load, $A = 1200$ lbs.

$$L_p = \frac{200 (5.00)}{4} = 250 \text{ lbs. / in.}$$

$$L_b = \frac{4 (1000)}{3.14 (5.00)^2} = 51 \text{ lbs. / in.}$$

$$L_a = \frac{1200}{3.14 (5.00)} = 76 \text{ lbs. / in.}$$

$$L = 250 + 51 + 76 = 377 \text{ lbs. / in.}$$

Step 5

Use the formula below to convert the total load intensity to an equivalent operating pressure:

$$P = \frac{4 \times L \times D}{\pi} = \frac{4 (377)}{5.00} = 302 \text{ psi}^*$$

*Please note:

Equivalent operating pressure does not include a Factor of Safety.

MATERIALS AND TEMPERATURES

For different materials and temperatures, the pressure chart data must be corrected using the following table:

FAHRENHEIT						CELSIUS				
RETAINER MATERIAL	70°F	200°F	400°F	600°F	800°F	21°C	93°C	204°C	315°C	427°C
301 Annealed	1.00	.88	.75	.68	.60	1.00	.88	.75	.68	.60
316	.50	.47	.44	.42	.39	.50	.47	.44	.42	.39
Carbon Steel	.50	.46	.43	.37	—	.50	.46	.43	.37	—

BAND STRENGTH

Minimum Yield Strength for 300 Series Stainless Steel 1/2 Hard Temper in lbs. [kilograms]

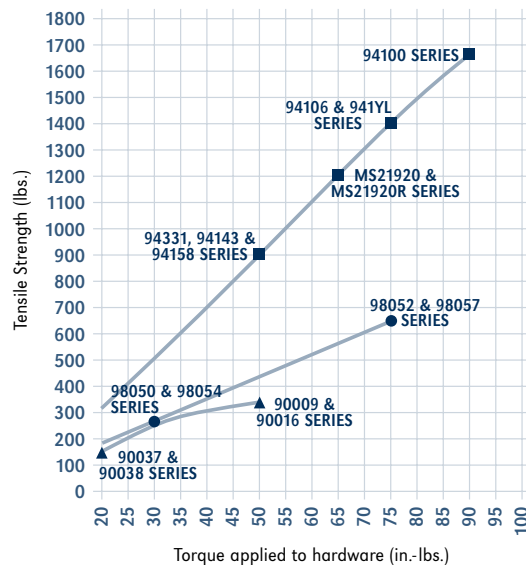
MATERIAL THICKNESS IN INCHES [MILLIMETERS]	BAND WIDTH IN INCHES [MILLIMETERS]								
	.500 [12.70]	.625 [15.88]	.750 [19.05]	.875 [22.22]	1.000 [25.40]	1.125 [28.57]	1.250 [31.75]	1.375 [34.92]	1.500 [38.10]
.020 [.51]	1100 [499]	1375 [624]	1650 [748]	1925 [873]	2200 [998]	2475 [1123]	2750 [1247]	3025 [1372]	3300 [1497]
.025 [.64]	1375 [624]	1719 [780]	2063 [936]	2406 [1091]	2750 [1247]	3094 [1403]	3438 [1559]	3782 [1714]	4125 [1870]
.031 [.79]	1705 [773]	2131 [967]	2558 [1160]	2984 [1353]	3410 [1547]	3836 [1740]	4263 [1934]	4689 [2128]	5115 [2322]
.040 [1.02]	2200 [998]	2750 [1247]	3300 [1497]	3850 [1746]	4400 [1996]	4950 [2245]	5500 [2495]	6050 [2744]	6600 [2994]
.050 [1.27]	2750 [1247]	3438 [1559]	4125 [1871]	4813 [2183]	5500 [2495]	6188 [2807]	6875 [3119]	7563 [3431]	8250 [3743]
.062 [1.57]	3410 [1546]	4263 [1934]	5115 [2320]	5968 [2707]	6820 [3094]	7673 [3480]	8525 [3867]	9378 [4254]	10230 [4641]

MATERIAL SPECIFICATIONS

Common materials used to manufacture Clampco clamps.

CORROSION RESISTANT MATERIAL	COMMERCIAL DESIGNATION	PROCUREMENT SPECIFICATION
STEEL SHEET & STRIP	TYPE 301 ANNEALED TYPE 301 1/4 HARD TYPE 301 1/2 HARD	AMS 5901 AMS 5517 AMS 5518
STEEL SHEET & STRIP	TYPE 302 ANNEALED TYPE 302 1/4 HARD TYPE 302 1/2 HARD	AMS 5516 AMS 5903 AMS 5904
STEEL SHEET & STRIP	TYPE 304L ANNEALED TYPE 304 ANNEALED TYPE 304 1/4 HARD TYPE 304 1/2 HARD	AMS 5511 AMS 5513 AMS 5910 AMS 5911
STEEL SHEET & STRIP	TYPE 316 ANNEALED TYPE 316 1/4 HARD TYPE 316L ANNEALED TYPE 316 1/2 HARD	AMS 5524 AMS 5907 AMS 5507 ASTM-A-666
STEEL SHEET & STRIP	TYPE 321 ANNEALED	AMS 5510
STEEL BARS & FORGINGS	TYPE 410	AMS 5504
STEEL BARS & FORGINGS	TYPE 431	AMS 5628
STEEL BARS & FORGINGS	TYPE A286	AMS 5732 AMS 5735 AMS 5737
STEEL SHEET & STRIP	TYPE A286 ANNEALED	ASM 5525
STEEL SHEET & STRIP	C276 HASTELLOY	ASTM-B-575
STEEL SHEET & STRIP	6061-T6 ALUMINUM	AMS 4027
STEEL SHEET & STRIP	INCONEL 718	AMS 5596

PERFORMANCE COMPARISON BAND TENSION VS. APPLIED TORQUE



■ T-BOLT BAND CLAMPS

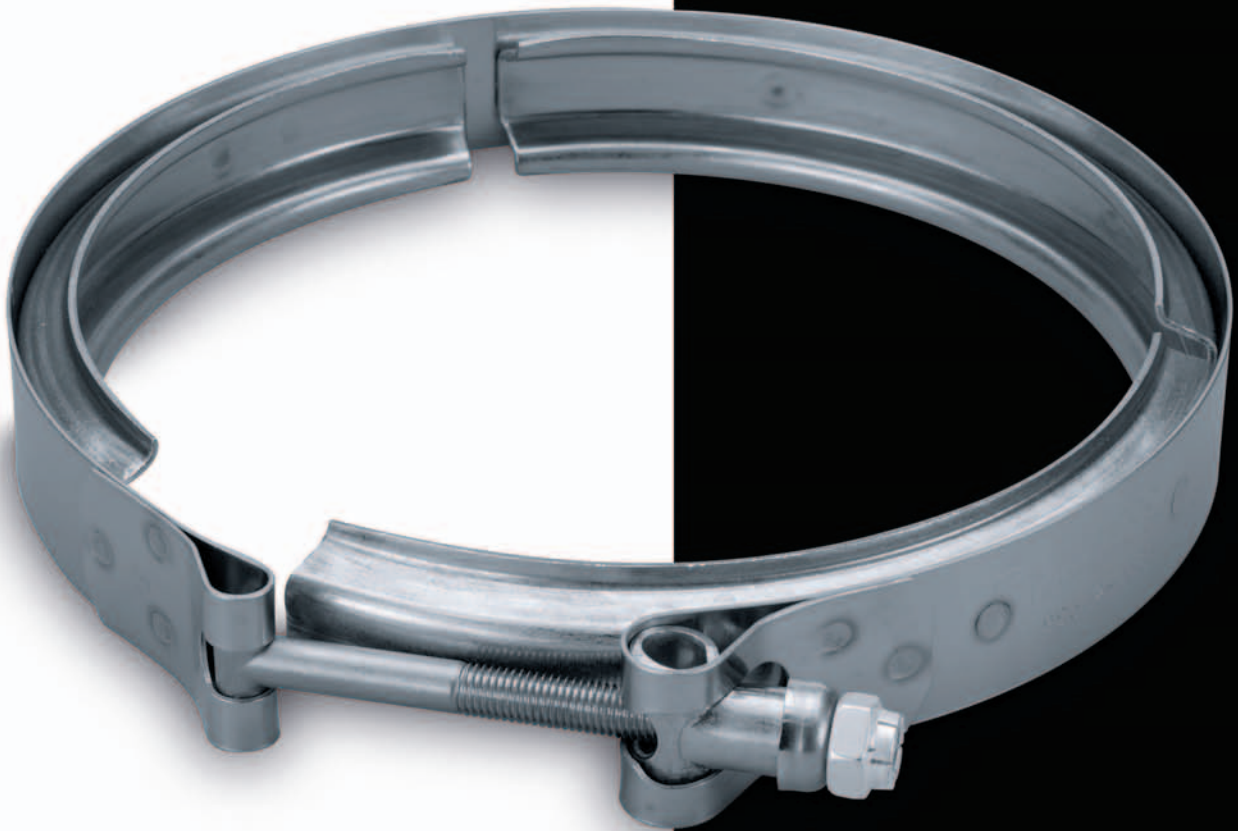
- High performance
- Safe and effective
- Good for light, medium, and heavy-duty applications

● BARREL HARDWARE CLAMPS

- Low profile design
- Good for light and medium-duty applications

▲ WORM DRIVE CLAMPS

- Economical
- Easy-to-use
- Good for light-duty applications



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Web Clampco.com

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