# Industrial Clamp Products

- Versatile
- Strong
- Dependable





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## **Eaton Industrial Clamp Products...A Total Commitment**

Eaton's commitment to you is found in many aspects of our business. Our company's design, engineering and manufacturing capabilities are available to assist in providing a clamp to meet your exact specifications.

Beginning with Eaton's strong customer service response program, orders and inventories are computerized so that your needs are met quickly.

Our skilled draftsmen and engineers work together to perfect the details involved in the design of each clamp. A state-of-the-art CAD system is utilized in the development of clamp products.

An initial step in the manufacturing process is the roll forming of V-Retainer sections. Spot-welding on a V-Band coupling is then completed.

Throughout the manufacturing process, various inspections, including statistical process control, are performed on all clamp products to ensure quality.

Eaton's clamp manufacturing plant in Eastanolee (Toccoa), Georgia is just one Eaton location that offers the customer worldwide availability of our clamp products.





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• Have an Eaton part number and need more information? Use the part number to page index in this listing to get the exact page of the full product description.

# Part Number to Page Index

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#### What are V-Band Couplings? Where can they be used?

V-Band Couplings are supplied in different configurations and latch styles to join tubing, piping, containers, filters, separators, regulators and other enclosures.

The V-shaped retainer shown in the cross-section view at the right is the portion of the coupling that wedges the flanges together. The strength of the coupling is in part determined by the retainer thickness, shape and material.

#### How it looks

Since there is a direct relationship between coupling design and cost, a prudent way to control costs is to insure that you select only that retainer cross-section and overall design that meets your application.



#### **The Principle**

As torque is applied to the nut of the coupling, an inward radial force is created in the retainer. This force wedges the flanges together. The flange and foot clearance must be maintained to prevent the retainer from bottoming out on the flanges before the necessary loading has been reached.

- Optimal strength is created by converting radial clamping force into axial sealing force.
- By use of a tension band and a means of tightening the band, the retainer is brought to bear directly upon the component flanges.
- The retainer exerts an axial force on the flanges with an 8.6 to 1 mechanical advantage as the band is tensioned.

#### How it works

 The retainer, unlike bolted flanges, applies a uniform closing force around the circumference of the flanges during and after tightening.



#### The Advantages of V-Band Couplings

- V-Band Couplings are simple solutions to the problem of replacing bolt flanges.
- Reduces assembly cost, saving in time and ease of accessibility.
- Ideal for applications requiring frequent access for cleaning, inspection or replacement of internal components.
- Many advantages over bolted flanges; smaller envelope dimensions; weight savings; improved appearance; cost reduction and ease of assembly.
- May be supplied in a wide range of sizes, shapes, materials and metal thicknesses.
- Choice of T-Bolt, quick coupler, or saddle latch is available (see page 8).
- Some styles of Eaton couplings include an integral band which covers the full circumference of the V-Band Coupling. This band provides additional strength by absorbing all circumferential or hoop load.

 As there is a direct relationship between design and cost in this coupling, care should be taken to select the correct retainer section and overall design to meet the strength required, as well as control cost.

| Section Index  | Page  |
|--|---|
| Adjustable Over Center Latch<br>Coupling and Latch Styles<br>General Purpose<br>How to Order, General Purpose<br>Light Duty<br>Non-Adjustable Over Center Latch<br>Selection Guide<br>Selection Procedure<br>Servicemaster | 22-24<br>8<br>12 - 17<br>8<br>20<br>21<br>9<br>10-11<br>18-19 |
|  |   |

To order any of the V-Band Couplings shown on pages 12 – 17, you must use complete part number.



#### **Considerations in Choosing Latch Styles**

- Three segment couplings provide the optimum balance in ease of assembly, disassembly and economics.
- Multiple latches are recommended for diameters of 8 in. (203.2 mm) and greater.
- Quick Coupler Latch or Quick Release Saddle Latch should be used where frequent opening is needed.
- T-Bolt Latch should be used for semi-permanent closures and for additional safety on pressure vessels.

**CAUTION:** SYSTEM PRESSURE MUST BE RELEASED BEFORE UNFASTENING COUPLING.

To give the user greater design flexibility in the selection of V-Band Couplings, many different configurations are illustrated. Care should be taken in coupling selection to avoid over-designing. The correct retainer section in the most economical material to meet the strength and environmental condition required for the application should be specified. 316 Stainless Steel (J material code) is recommended for saltwater, chemicals, and other corrosive environments.

In the section covering General Purpose Couplings (pages 12 through 17), it should be noted that some of the styles include a band on top of the retainer (see cross-section view at right) that covers the full circumference of the V-Band Coupling. The band provides additional coupling strength by absorbing all of the circumferential or hoop load. Some of the styles do not include the band, and these, of course, are not as strong but may be more economical.

It should also be noted that some of the coupling styles use one retainer segment, while others utilize two or three. The segmented sections provide added flexibility. The more segments in a coupling, the greater the ease of assembly and disassembly.

A choice is provided between T-Bolt, Quick Coupler or Saddle Latches. The T-Bolt Latch is usually specified where a permanent or semi-permanent closure is required. The Saddle or Quick Coupler Latch is usually specified where frequent opening or closing is needed and on single retainer segment couplings for ease of assembly.

Multiple Latch Style V-Band Couplings are usually specified for couplings of diameters eight inches or larger.

A V-Band Coupling should be selected on the basis of strength required for the particular application. The cost of the coupling increases in relation to the strength required; therefore, the coupling selected should be no stronger than necessary to provide the most economical coupling for the application.

The strength of the coupling is determined primarily by the retainer thickness and shape. Use of different materials also affects the strength. The retainer (shown on this page) is the V-shaped portion of the coupling that wedges the flanges together.



Coupling burst pressure conditions are shown in the detailed performance charts instead of operating pressures since the safety factor over operating conditions might vary with each application.

# CAUTION: SYSTEM PRESSURE MUST BE RELEASED BEFORE UNFASTENING COUPLING.

In the selection of V-Band Couplings, the following should be used as a guide to insure performance:

- 1. The coupling nominal diameter is equal to flange O.D. + .12 in. (3.05 mm).
- **2.** The nominal flange apex width is .046 in. (1.2 mm) greater than the coupling apex width for a 40° included angle retainer.



#### **Flange Selection**

Eaton customers may provide their own flanges by rolling or forming the flange as an integral part of the equipment, or Eaton flanges (pages 25 through 29) may be used with Marman V-Band Couplings.

# For Use Over Your Flanges

In selecting a V-Band Coupling for use over your flanges the following steps should be taken.

1. Determine the following requirements: system burst pressure, operating temperatures and flange dimension for closed position.

COUPLING and FLANGE CROSS-SECTION

2. Determine nominal diameter of coupling: Nominal Diameter= Flange O.D. + **.12 in.** (3.0 mm). This **.12 in.** (3.0 mm) allows for **.06 in.** (1.5 mm) clearance between flange O.D. and coupling nominal diameter.



- 3. Determine proper retainer cross-section. Referring to retainer cross-sections, pages 12 to 17, pick a retainer which fits your flange apex and height. If flange dimensions shown in catalog do not meet your flange apex and height dimensions, consult Eaton, or if possible, change your flanges to meet dimension shown in catalog.
- 4. Determine coupling burst pressure rating. Using nominal diameter determine burst pressure from the appropriate graph similar to that shown in the next column. Note, the red curve is for coupling styles 1, 5 and 7. The black is for all other coupling styles.

| Material               | + <b>70° F</b><br>+ 21.1 °C | + <b>200 °F</b><br>+ 93.3° C | + <b>400°F</b><br>+204.4°C | + <b>600°F</b><br>+315.6°C | + <b>800°F</b><br>+ 426.7°C |
|------------------------|-----------------------------|------------------------------|----------------------------|----------------------------|-----------------------------|
| 301 Stainless<br>Steel | 1.00                        | .88                          | .75                        | .68                        | .60                         |
| 316 Stainless<br>Steel | .50                         | .47                          | .44                        | .42                        | .39                         |

5. Correct for temperature and material changes. Material selection should be based on strength requirements and environmental conditions. If an elevated temperature is required, or if a material other than 301 stainless steel is to be used, multiply the coupling burst pressure rating by correction factor specified in the chart below.



# CAUTION: SYSTEM PRESSURE MUST BE RELEASED BEFORE UNFASTENING COUPLING.

- 6. Compare coupling burst pressure rating to required system burst pressure.
  - (a) If required system burst pressure is less than the rated coupling burst pressure, the coupling will do the job.
  - (b) If required burst pressure is higher than coupling burst pressure rating another retainer cross-section must be used. Use the same cross-section of thicker material or with full outer band.
- 7. Pick coupling and latch style and then determine part number from page 8. Note: Refer to Section 4 (Engineering Data) for further information on V-Band Coupling selection when bending or axial loads are involved.

#### Example:

1. Requirements: Required burst pressure = **200 psig** (13.78 bar).

Flange Dimensions: Flange apex (closed position) = **.255 in.** (6.5 mm) Flange angle = 20° (40° included) Flange O.D. = **6.75 in.** (171.5 mm) Operating temperature = **+70°F** (21.1° C) Coupling Material: Stainless Steel

- 2. Determine Nominal Diameter
  Nom. Dia. = Flange O.D. + .12 in. (3.0 mm)
  = 6.75 in. (171.5 mm) + .12 in. (3.0 mm)
  = 6.87 in. (174.5 mm)
- Determine retainer cross-section: Refer to pages 12 to 17. (Proceed from Retainer #1 thru the remaining retainers until a retainer fits the .255 in. (6.5 mm) flange apex and .281 in. (7.1mm) flange height dimension requirements. Retainer #5 meets these requirements. (See below).

# Retainer 2 Min. Nom. Dia.: 2.00 in (50.8 mm)



**.040 in.** (1.02 mm) on dia. under **4.00 in.** (101.6 mm)

4. Using nominal diameter, determine coupling burst pressure rating (use chart in next column).

Coupling burst pressure = **210 psig** (14.47 bar) for style 2, 3, 4 and 8.



 Correct for temperature and material changes. Determine correction factor from table below. The corrected coupling burst pressure rating = coupling burst pressure rating X correction factor. Corrected coupling burst pressure for +70°F (21.1° C), 301 stainless steel = 210 psig (14.47 bar) X 1 = 210 psig (14.47 bar).

| Material               | + <b>70° F</b><br>+ 21.1 °C | + <b>200 °F</b><br>+ 93.3° C | + <b>400°F</b><br>+204.4°C | + <b>600°F</b><br>+315.6°C | + <b>800°F</b><br>+ 426.7°C |
|------------------------|-----------------------------|------------------------------|----------------------------|----------------------------|-----------------------------|
| 301 Stainless<br>Steel | 1.00                        | .88                          | .75                        | .68                        | .60                         |
| 316 Stainless<br>Steel | .50                         | .47                          | .44                        | .42                        | .39                         |

 Compare the corrected coupling burst pressure rating to required system burst pressure.
 Coupling burst pressure rating = **210 psig** (14.47 bar) (Corrected for Material and Temperature). Required system burst pressure = **200 psig** (13.78 bar). The coupling is capable of withstanding the required burst pressure and the retainer cross-section is good.

7. Pick coupling and latch style part number per page 8.

How to Order -- See pg 8

## **V-Retainer Cross Sections**



Retainer Thickness: .032 in. (.81 mm)

## Retainer 2



Retainer Thickness: .040 in. (1.02 mm)

## **Retainer 3**



Retainer Thickness: .080 in. (2.01mm)

| Cou-<br>pling<br>Style | Basic<br>Part<br>Number | Bolt<br>Size | Min.<br>Nom.<br>Dia. | Band<br>Width &<br>Thickness     |
|------------------------|-------------------------|--------------|----------------------|----------------------------------|
|                        |                         |              |                      |                                  |
| 1                      | MV82751                 | 10-24        | <b>4.00</b><br>101.6 | <b>.62 X .025</b><br>15.8 X.64   |
| 2                      | MV82652                 | 10-24        | <b>1.75</b><br>44.5  | <b>.62 X .025</b><br>15.8 X.64   |
| 3                      | MV82653                 | 10-24        | <b>1.75</b><br>44.5  | <b>.62 X .025</b><br>15.8 X.64   |
| 4                      | MV82734                 | 10-24        | <b>4.50</b><br>114.3 | . <b>62 X .025</b><br>15.8 X.64  |
| 5                      | MV82795                 | 10-24        | <b>6.00</b><br>152.4 | . <b>62 X .025</b><br>15.8 X.64  |
| 7                      | MV87017                 | 10-24        | <b>4.50</b><br>114.3 | . <b>62 X .025</b><br>15.8 X.64  |
| 8                      | MV88018                 | 10-24        | <b>1.75</b><br>44.5  | . <b>62 X .025</b><br>15.8 X.64  |
| 1                      | MV83571                 | 1⁄4 — 20     | <b>6.00</b><br>152.4 | . <b>75 X .032</b><br>19.1 X .81 |
| 2                      | MV83522                 | 1⁄4 — 20     | <b>2.00</b><br>50.8  | <b>.75 X .032</b><br>19.1 X .81  |
| 3                      | MV83523                 | 1⁄4 — 20     | <b>3.00</b><br>76.2  | . <b>75 X .032</b><br>19.1 X .81 |
| 4                      | MV83564                 | 1⁄4 — 20     | <b>5.00</b><br>127.0 | <b>.75 X .032</b><br>19.1 X .81  |
| 5                      | MV83595                 | 1⁄4 — 20     | <b>6.00</b><br>152.4 | <b>.75 X .032</b><br>19.1 X .81  |
| 7                      | MV87097                 | 1⁄4 — 20     | <b>6.00</b><br>152.4 | <b>.75 X .032</b><br>19.1 X .81  |
| 8                      | MV88098                 | 1⁄4 - 20     | <b>2.00</b><br>50.8  | . <b>75 X .032</b><br>19.1 X .81 |

Dimensions: inches in boldface

mm in lightface

2 MV83152 1⁄4 - 20 3.00 .88 X .063 76.2 22.4 X 1.60 3 MV83153 1/4 - 20 3.00 .88 X .063 76.2 22.4 X 1.60 4 MV83194 6.00 .88 X .063 1/4 - 20 152.4 22.4 X 1.60 7 MV87107 6.00 .88 X .063  $\frac{1}{4} - 20$ 152.4 22.4 X 1.60 8 3.00 .88 X .063 MV88108 1⁄4 - 20 76.2 22.4 X 1.60

13.78 6.89 5.51 4.13 2.76 BURST .38 69 2 8 10 12 14 NOMINAL DIAMETERS (INCHES)



Coupling Burst Pressure Rating at + 70°F (+21.1 °C) Material: 301 stainless steel Coupling burst pressures are shown in the performance charts instead of operating pressures since the safety factor over operating conditions might vary with each application. Coupling burst pressure ratings are based on static internal pressure. See Table 2 on page 45 for correction factors to use for other materials and elevated temperatures. For sizes other than those listed, consult factory.

CAUTION: SYSTEM PRESSURE MUST BE RELEASED BEFORE UNFASTENING COUPLING.





How to Order -- See pg 8

.062

(1.6)

.062

(1.6)

.062

(1.6)

.062

(1.6)

.062

(1.6)

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.062

(1.6)

Dimensions: inches in boldface

mm in lightface



Coupling Burst Pressure Rating at + 70°F (+21.1 °C) Material: 301 stainless steel Coupling burst pressures are shown in the performance charts instead of operating pressures since the safety factor over operating conditions might vary with each application. Coupling burst pressure ratings are based on static internal pressure. See Table 2 on page 45 for correction factors to use for other materials and elevated tempera-tures. For sizes other than those listed,

CAUTION: SYSTEM PRESSURE MUST BE RELEASED BEFORE UNFASTENING

Coupling styles 1,5, and 7 All other coupling styles Coupling styles 1, 5, and 7 All other coupling styles NOMINAL DIAMETERS (mm) 203.2 152.4 304.8 254.0 137.80 E 68.90 55.12 41.34 27.56 13.78 6.89 5.51 4.13 2.76 BURST

> 12 14

1.38

.69



#### All other coupling styles NOMINAL DIAMETERS (mm) 203.2 551.20 413.40 275.60 137 80 68.90 55.12 41.34 27 56 13.78 BURST 6.89 5.51 4.13 2.76 1.38 .69 NOMINAL DIAMETERS (INCHES)

How to Order -- See pg 8

#### Dimensions: inches in boldface

mm in lightface



Retainer Thickness: .080 in. (2.03 mm) .090 in. (2.29 mm) with C or Z material

## Retainer 8



Retainer Thickness: .050 in. (1.27 mm

## **Retainer 9**



|   | Coupling<br>Style | Basic Part<br>Number | Bolt<br>Size          | Min.<br>Nom.<br>Dia. | Band<br>Width &<br>Thickness      |
|---|-------------------|----------------------|-----------------------|----------------------|-----------------------------------|
|   | 3                 | MV85653              | <sup>5</sup> /16 - 18 | <b>3.34</b><br>84.8  | <b>.88 x .063</b><br>22 4 X 1 60  |
|   | 4                 | MV84764              | <sup>5</sup> /16 – 18 | <b>6.00</b><br>152.4 | <b>.88 x .063</b><br>22.4 X 1.60  |
|   | 5                 | MV84735              | <sup>5</sup> /16 – 18 | <b>8.00</b><br>203.2 | <b>.88 x .063</b>                 |
|   | 6                 | MV85856              | <sup>5</sup> /16 – 18 | 6.00<br>152.4        | <b>.88 x .063</b>                 |
|   |                   | N//02704             | 1/ 00                 | 4.00                 | .75 X .032                        |
|   | 1                 | MV83731              | 1⁄4 — 20              | 101.6                | 19.1 X .81                        |
|   | 2                 | MV83682              | 1⁄4 — 20              | 44.5                 | 19.1 X .81                        |
|   | 3                 | MV85633              | 1⁄4 — 20              | <b>3.00</b><br>76.2  | <b>.75 X .032</b><br>19.1 X .81   |
|   | 4                 | MV83724              | 1⁄4 — 20              | <b>5.00</b><br>127.0 | <b>.75 X .032</b><br>19.1 X .81   |
|   | 6                 | MV85836              | 1⁄4 — 20              | <b>6.00</b><br>152.4 | <b>.75 X .032</b><br>19.1 X .81   |
|   | 7                 | MV87147              | 1⁄4 — 20              | <b>6.00</b><br>152.4 | <b>.75 X .040</b><br>19.1 X 1.02  |
| ) | 8                 | MV88148              | 1⁄4 - 20              | <b>1.75</b><br>44.5  | . <b>75 X .040</b><br>19.1 X 1.02 |
|   | 1                 | MV84091              | 1⁄4 — 20              | <b>4.00</b><br>101.6 | <b>.75 X .032</b><br>19.1 X .81   |
|   | 2                 | MV84042              | 1⁄4 — 20              | <b>1.75</b><br>44.5  | . <b>75 X .032</b><br>19.1 X .81  |
|   | <b>b</b>          | NAV/04042            | 1/ 20                 | 3.00                 | .75 X .032                        |

MV84043

MV84034

MV87157

MV88158

1⁄4 - 20

1⁄4 – 20

1⁄4 – 20

1⁄4 – 20

76.2

5.00

127.0

4.50

114.3

1.75

44.5

19.1 X .81

19.1 X .81

19.1 X .81

19.1 X .81

.75 X .032

.75 X .032

.75 X .032

3

4

7

8

Coupling Burst Pressure Rating at + 70°F (+21.1 °C) Material: 301 stainless steel

Coupling burst pressures are shown in the performance charts instead of operating pressures since the safety factor over operating conditions might vary with each application. Coupling burst pressure ratings are based on static internal pressure. See Table 2 on page 45 for correction factors to use for other materials and elevated temperatures. For sizes other than those listed, consult factory

CAUTION: SYSTEM PRESSURE MUST BE RELEASED BEFORE UNFASTENING COUPLING.

Coupling styles 1,5, and 7 All other coupling styles







Retainer Thickness: .050 in. (1.6 mm)

How to Order -- See pg 8

### Dimensions: inches in boldface

mm in lightface

## **Retainer 10**



Retainer Thickness: .090 in. (2.29 mm) .090 in. (2.29 mm) with C or Z material

## Retainer 11



Retainer Thickness: .090 in. (2.29 mm)

## Retainer 12



Retainer Thickness: .050 in. (1.27 mm)

8

MV88178

1/4 - 20

44.5

19.1 X 1.02

| 5                 |                         |                       |                      |                                   |
|-------------------|-------------------------|-----------------------|----------------------|-----------------------------------|
| Coupling<br>Style | Basic<br>Part<br>Number | Bolt<br>Size          | Min.<br>Nom.<br>Dia. | Band<br>Width &<br>Thickness      |
|                   |                         |                       |                      |                                   |
| 2                 | MV86082                 | <sup>5</sup> /16 – 18 | <b>3.50</b><br>88.9  | <b>.88 x .063</b><br>22.4 X 1.60  |
| 3                 | MV86083                 | 5/16-18               | <b>3.50</b><br>88.9  | <b>.88 x .063</b><br>22.4 X 1.60  |
| 4                 | MV86104                 | <sup>5</sup> /16 - 18 | <b>6.00</b><br>152.4 | <b>.88 x .063</b><br>22.4 X 1.60  |
| 5                 | MV86115                 | 5/16 - 18             | <b>8.00</b><br>203.2 | <b>.88 x .063</b><br>22.4 X 1.60  |
| 2                 | MV86162                 | <sup>5</sup> /16 - 18 | <b>6.00</b><br>152.4 | <b>.88 X .063</b><br>22.4 X 1.60  |
| 3                 | MV86163                 | <sup>5</sup> /16 - 18 | <b>6.00</b><br>152.4 | <b>.88 X .063</b><br>22.4 X 1.60  |
| 4                 | MV86184                 | <sup>5</sup> /16 – 18 | <b>6.00</b><br>152.4 | <b>.88 X .063</b><br>22.4 X 1.60  |
| 5                 | MV86195                 | 5/16 - 18             | <b>8.00</b><br>203.2 | <b>.88 X .063</b><br>22.4 X 1.60  |
| 1                 | MV84301                 | 1⁄4 — 20              | <b>6.50</b><br>165.1 | <b>.75 X .040</b><br>19.1 X 1.02  |
| 2                 | MV84252                 | 1⁄4 — 20              | <b>1.75</b><br>44.5  | . <b>75 X .040</b><br>19.1 X 1.02 |
| 3                 | MV85623                 | 1⁄4 — 20              | <b>3.00</b><br>76.2  | . <b>75 X .040</b><br>19.1 X 1.02 |
| 4                 | MV84324                 | 1⁄4 — 20              | <b>5.00</b><br>127.0 | . <b>75 X .040</b><br>19.1 X 1.02 |
| 6                 | MV85826                 | 1⁄4 — 20              | <b>6.50</b><br>165.1 | <b>.75 X .040</b><br>19.1 X 1.02  |
| 7                 | MV87177                 | 1⁄4 — 20              | <b>8.00</b><br>203.2 | . <b>75 X .040</b><br>19.1 X 1.02 |
| 0                 | N/V/00170               | 1/ 20                 | 1.75                 | .75 X .040                        |

Coupling Burst Pressure Rating at +70°F (+21.1 °C) Material: 301 stainless steel Coupling burst pressures are shown in the performance charts instead of operating pressures since the safety factor over operating conditions might vary with each application. Coupling burst pressure ratings are based on static internal pressure. See Table 2 on page 45 for correction factors to use for other materials and elevated temperatures. For sizes other than those listed, consult factory

CAUTION: SYSTEM PRESSURE MUST BE RELEASED BEFORE UNFASTENING COUPLING.











EATON Aerospace TF100-14D October 2013

How to Order -- See pg 8

#### Dimensions: inches in boldface

mm in lightface

| V-Retainer Cross Sections                             | Coupling<br>Style | Basic Part<br>Number | Bolt<br>Size          | Min.<br>Nom.<br>Dia. | Band<br>Width &<br>Thickness     |
|---|-------------------|----------------------|-----------------------|----------------------|----------------------------------|
| Retainer 17   |                   |                      |                       |                      |                                  |
|   | 2                 | MV86242              | <sup>5</sup> /16 - 18 | <b>3.50</b><br>88.9  | <b>.88 x .063</b><br>22.4 X 1.60 |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 3                 | MV86243              | <sup>5</sup> /16 - 18 | <b>3.50</b><br>88.9  | <b>.88 x .063</b><br>22.4 X 1.60 |
|   | 4                 | MV86264              | <sup>5</sup> /16 - 18 | <b>6.00</b><br>152.4 | <b>.88 x .063</b><br>22.4 X 1.60 |
|   | 5                 | MV86275              | <sup>5</sup> /16 - 18 | <b>8.00</b><br>203.2 | <b>.88 x .063</b><br>22.4 X 1.60 |
| .062<br>(1.6) 30° Flange O.D. + .12<br>(3.0)          | 6                 | MV86276              | <sup>5</sup> /16 — 18 | <b>6.50</b><br>165.1 | <b>.88 x .063</b><br>22.4 X 1.60 |
| Retainer Thickness: <b>.090 in.</b> (2.39 mm)         |                   |                      |                       |                      |                                  |
|   |                   |                      |                       |                      |                                  |
| Retainer 18   | 2                 | M//06202             | a/a 10                | 8.00                 | 1.25 X .063                      |
| 1.75  | ۷                 |                      | 3/8 - 10              | 203.2                | 31.8 X 1.60                      |
| .062 (44.5)   | 3                 | MV86283              | 3/8-18                | 203.2                | 31.8 X 1.60                      |
| (4.0) (4.0)   |                   | 1                    |                       | 1 40 00              |                                  |

Coupling Burst Pressure Rating at +70°F (+21.1 °C) Material: 301 stainless steel Coupling burst pressures are shown Coupling burst pressures are shown in the performance charts instead of operating pressures since the safety factor over operating conditions might vary with each application. Coupling burst pressure ratings are based on static internal pressure. See Table 2 on page 45 for correction factors to use for other materials and elevated tempera-tures. For sizes other than those listed, consult factory. consult factory

CAUTION: SYSTEM PRESSURE MUST BE RELEASED BEFORE UNFASTENING COUPLING.

Coupling styles 1,5, and 7 All other coupling styles



## Reta



Retainer Thickness: .125 in. (3.18 mm)

| 2 | MV86282 | 3/8-18   | <b>8.00</b><br>203.2  | <b>1.25 X .063</b><br>31.8 X 1.60 |
|---|---------|----------|-----------------------|-----------------------------------|
| 3 | MV86283 | 3/8-18   | <b>8.00</b><br>203.2  | <b>1.25 X .063</b><br>31.8 X 1.60 |
| 4 | MV86304 | 3/8-18   | <b>10.00</b><br>254.0 | <b>1.25 X .063</b><br>31.8 X 1.60 |
| 5 | MV86315 | 3/8-18   | <b>10.00</b><br>254.0 | <b>1.25 X .063</b><br>31.8 X 1.60 |
| 6 | MV86316 | 3/8 – 18 | <b>10.00</b><br>254.0 | <b>1.25 X .063</b><br>31.8 X 1.60 |



#### Servicemaster<sup>™</sup> Couplings and Flanges

The Servicemaster is a gasketless connection for pneumatic and exhaust lines, tank cover assemblies, etc. The coupling installs quickly and easily with only one bolt to tighten. Because it is gasketless, the Servicemaster flanges are not recommended for use in closed compartments or areas where leakage could be hazardous to personnel.

#### CAUTION: SYSTEM PRESSURE MUST BE RELEASED BEFORE UNFASTENING COUPLING.

Coupling Burst Pressure Ratings at +70°F (+21.1° C)

Coupling burst pressures are shown in the performance charts instead of operating pressures since the safety factor over operating conditions might vary with each application. Coupling burst pressure ratings are based on static internal pressure.



Servicemaster Coupling and Flanges







#### Dimensions: inches in boldface

mm in lightface

| Tube O.D.            | Servicemaster Flange Part<br>number | 55000-Servicemaster<br>Coupling* Part Number | Coupling Nominal Diamter |
|----------------------|-------------------------------------|--|--------------------------|
| <b>1.00</b><br>25.4  | MFF61196-100X                       | 55000-100X                                   | <b>1.79</b><br>45.5      |
| <b>1.25</b><br>31.8  | MFF61196-125X                       | 55000-125X                                   | <b>2.04</b><br>51.8      |
| <b>1.5</b><br>38.1   | MFF61196-150X                       | 55000-150X                                   | <b>2.29</b><br>58.2      |
| <b>1.75</b><br>44.5  | MFF61196-175X                       | 55000-175X                                   | <b>2.54</b><br>64.5      |
| <b>2.00</b><br>50.8  | MFF61196-200X                       | 55000-200X                                   | <b>2.81</b><br>71.4      |
| <b>2.25</b><br>57.2  | MFF61196-225X                       | 55000-225X                                   | <b>3.06</b><br>77.7      |
| <b>2.5</b><br>63.5   | MFF61196-250X                       | 55000-250X                                   | <b>3.34</b><br>84.8      |
| <b>2.75</b><br>69.9  | MFF61196-275X                       | 55000-275X                                   | <b>3.59</b><br>91.2      |
| <b>3.00</b><br>76.2  | MFF61196-300X                       | 55000-300X                                   | <b>3.84</b><br>97.5      |
| <b>3.50</b><br>88.9  | MFF61196-350X                       | 55000-350X                                   | <b>4.34</b><br>110.2     |
| <b>4.00</b><br>101.6 | MFF61196-400X                       | 55000-400X                                   | <b>4.84</b><br>122.9     |
| <b>4.50</b><br>114.3 | MFF61196-450X                       | 55000-450X                                   | <b>5.34</b><br>135.6     |
| <b>5.00</b><br>1.27  | MFF61196-500X                       | 55000-55000-500X                             | <b>5.84</b><br>148.3     |
| <b>5.50</b><br>139.7 | MFF61196-550X                       | 55000-550X                                   | <b>6.34</b><br>161.0     |
| <b>6.00</b><br>152.4 | MFF61196-600X                       | 55000-600X                                   | <b>6.84</b><br>173.7     |

#### **Servicemaster Flange and Couplings**

### **Example of Part Number for Ordering**



S= 321 Stainless Steel

\*For tube O.D. less than **2.25 in.** (57.2) bolt size is  $\frac{1}{-20}$ For tube O.D. **2.25 in.** (57.2 mm) and over bolt size is  $\frac{5}{16}$ -18

| Servicemaster Coupling  | <u>55000</u> - <u>000</u> X |
|---|-----------------------------|
| Basic Part No   |                             |
| Tube O.D. Tabulated   |                             |
| Material Code   |                             |
| <b>Material Code</b><br>C = Carbon Steel<br>S = 321 Stainless Steel |                             |

Z = Plated Carbon Steel

# Basic Part Number MVT80009

### Use to connect filter units, hydraulic accumulators, and for household appliance components



Latch Style A Not available in Nom. Dia. less than **4.50 in.** (114.3 mm).



Latch Style B Two retainer segments for Nom. Dia. less than **4.50 in.** (114.3 mm).

Coupling Burst Pressure Rating at +70°F (+21.1 °C) Material: 301 stainless steel Coupling burst pressures are shown in the performance charts instead of operating pressures since the safety factor over operating conditions might vary with each application. Coupling burst pressure ratings are based on static internal pressure. See Table 2 on page 45 for correction factors to use for other materials and elevated temperatures. For sizes other than those listed, consult factory

#### CAUTION: SYSTEM PRESSURE MUST BE RELEASED BEFORE UNFASTENING COUPLING.

Coupling styles 1,5, and 7
 All other coupling styles



| Example of Part Number for Ordering             | MV80009 A 4 S 500 |
|---|-------------------|
| Basic Part No                                   |                   |
| Latch Style A or B                              |                   |
| Retainer No                                     |                   |
| Material Code                                   |                   |
| <b>Material Code</b><br>S = 301 Stainless Steel |                   |
| Nom. Dia. (100 = 1 inch)                        |                   |

# **V-Retainer Cross Sections**



# Basic Part Number MVT89019B

Min. Nom. Dia.: **2.81 in.** (71.4 mm) Max Nom. Dia.: **5.50 in** (139.7 mm)

### MVT89099B

Min. Nom Dia: **5.50 in.** (139.7 mm) Max. Num. Dia.: **24.00 in.** (609.6 mm)



With quick opening over center latches, these couplings can be used wherever applications require frequent assembly and disassembly. A safety device is furnished on these couplings to prevent inadvertent opening of the over center latch while the system is pressurized.



## Adjustable Over Center Latch

### Basic Part Number MV89079



Min. Nom. Dia.:**2.81 in.** (71.4 mm) Except Retainer No. 6 which is **3.25 in.** (82.6 mm) Max. Nom. Dia.: **50.00 in.** (1270.00 mm)

#### Example of Part Number for Ordering

# Basic Part No.\_\_\_\_\_

#### Material Code\_

S= 301 Stainless Steel Band and Retainer, 316 Stainless Steel T-Bolt

#### Nom. Dia. (100 = 1 inch)\_

#### Nut Code:\_

- C = Plated Steel Hex Nut
- F = Plated Steel Fiber Insert Hex Locknut
- T = Stainless Steel Hex Nut
- V = Stainless Steel All Metal Hex Locknut

Coupling Burst Pressures at **+70°F** (21.1° C) Material: 301 stainless steel

Coupling burst pressures are shown in the performance charts instead of operating pressures since the safety factor over operating conditions might vary with each application. Coupling burst pressure ratings are based on static internal pressure. See Table 2 on page 45 for correction factors to use for elevated temperatures. For sizes other than those listed, consult factory.

# CAUTION: SYSTEM PRESSURE MUST BE RELEASED BEFORE UNFASTENING COUPLING.





#### V-Retainer Cross Sections





Retainer 3







Retainer Thickness: .040 in. (1.02 mm)



Retainer Thickness: .032 in. (.81 mm) for Retainer 4 Retainer Thickness: .050 in.(1.27 mm) for Retainer 7



MV89079B-4 S 1000 V

# Adjustable Over Center Latch

Material: 301 stainless steel Coupling burst pressures are shown in the performance charts instead of operating

pressures since the safety factor over operating conditions might vary with each application. Coupling burst pressures are based on static internal pressure. CAUTION: SYSTEM PRESSURE MUST BE RELEASED BEFORE UNFASTENING

137.80

41.34 27.56

13.78

5.89 5.51 4.13 2.76

### **Basic Part Number MVT89029**



Style A 6.50 in. (165.1 mm) Style B 5.50 in. (139.7 mm) Max. Nom. Dia.: 50.00 in. (1270.00 mm)



MVT89029 A 4 S 1000 V

COUPLING.



**V-Retainer Cross Sections** 

NOMINAL DIAMETERS (INCHES)

Coupling Burst Pressures at +70°F (21.1°C)

Retainer 2



Retainer 3

.062

(1.6)

**.062** (1.6)

Retainer 4



Band Width and Thickness .88 x .032 (22.40 x .81) for S material

Basic Part No.

**Example of Part Number for Ordering** 

Coupling Style (A or B) \_\_\_\_

Retainer No.

**Material Code** 

Nom. Dia. (100 = 1 inch) \_

Nut Code \_

#### **Material Code**

S = 301 Stainless Steel Band and Retainer, 316 Stainless Steel T-Bolt

#### Nut Code:

- C = Plated Steel Hex Nut
- F = Plated Steel Fiber Insert Hex Locknut
- T = Stainless Steel Hex Nut
- V = Stainless Steel All Metal Hex Locknut

# Adjustable Over Center Latch

## **Basic Part Number MVT89039**



Coupling Burst Pressure Rating at +70°F (+21.1° C)

Material: 301 stainless steel Coupling burst pressures are shown in the performance charts instead of operating pressures since the safety factor over operating conditions might vary with each application. Coupling burst pressures are based on static internal pressure.

See Table 2 on page 45 for correction factors to use for other materials and elevat-ed temperatures. For sizes other than those listed, consult factory.

#### CAUTION: SYSTEM PRESSURE MUST BE RELEASED BEFORE UNFASTENING COUPLING.

See page 23 for example of part number for ordering. For other retainers than those listed, contact Aeroquip.

Reduce chart values by 20% for Coupling Style "A."





Style "A" Min. Nom. Dia.: 8.50 in. (215.9 mm) Style "B" Min. Nom. Dia.: 5.50 in (139.7 mm) Max Nom. Dia.: 50.00 in (1270.0 mm)

#### V-Retainer Cross Sections





Retainer Thickness: .050 in. (1.27 mm)





Retainer Thickness: .080 in. (2.03 mm)



Retainer Thickness: .090 in. (2.29 mm) Available in Style B only.

Band Width and Thickness: .88 x .050 (22.40 x 1.27) for S material

| Section Index   | Page                 |
|---|----------------------|
| Machined Flanges<br>Schedule 40 Pipe<br>Flange Selection Chart<br>Selection Guide | 28<br>29<br>27<br>26 |
| edul  | 29                   |

# Flange Selection Guide

- 1. Determine the following requirements: system burst pressure, operating temperature, environmental condition, pipe or tube O.D., type of gasket required (O-ring, flat gasket, metal to metal, etc.) and flange material.
- 2. Select style of flanges which fits the application.
- 3. Determine the flange burst pressure rating, using tube diameter (tube or pipe O.D.) and graph relating to specific style of flange being considered.
- Correct for temperature and material changes. If an elevated temperature is required, or if a different material other than 301 stainless steel is to be used, multiply the flange burst pressure rating by the correction factor found in Table 1 below.
- 5. Compare flange burst pressure rating to system burst pressure required.

a) If required system burst pressure is less than the rated flange burst pressure, the flange will do the job.
b) If required system burst pressure is higher than rated flange burst pressure, consider another flange style.
Required system burst pressure must be less than the rated flange burst pressure.

- 6. Determine part number.
- 7. Determine proper coupling for use over flange. a) Refer to Flange Selection Chart, page 27.
  - b) Find flange styles at top of chart.
  - c) Select coupling style to fit application. Right of chart.

d) Reference coupling or retainer number and page number.
e) Referring to proper page and retainer number, compare required system burst pressure to rated coupling system burst pressure as stipulated under Coupling Selection Procedure, pages 9-11.

#### Example:

1

Requirements: System burst pressure = **170 psig** Operating temperature = **70°F** Tube O.D. = **15 in**. Type of gasket required: O-ring 321 stainless steel material is required.

#### Table 1. Flange material and temperature correction chart

- 2. Select style of flange.
- 3. Flange burst pressure rating, referring to machined flange burst pressure graph on page 28 for the 56401 using **Tube**

**Dia.**, flange burst pressure = **180 psig.** 

4. Correct for temperature and material: (determine correction factor from Table 1 on page 45.)

Corrected burst pressure rating = flange burst pressure rat ing from graph X correction factor.

Corrected burst pressure rating = 180 psig x 1 = 180 psig.



5. Compare flange burst pressure rating with required burst pressure:

Flange burst pressure rating = 180 psig Required system burst pressure rating = 170 psig The flange is capable of withstanding the required burst pressure.

- 6. P/N 56401-1500S
- 7. To determine the proper coupling for use over flanges refer to Flange Selection Chart, page 27.

| Material                     | <b>+70°F</b><br>(+21.1°C) | <b>+200°F</b><br>(+93.3°C) | <b>+400°F</b><br>(+204.4°C) | <b>+600°F</b><br>(+315.6°C) | <b>+800°F</b><br>(+426.7°C) |
|------------------------------|---------------------------|----------------------------|-----------------------------|-----------------------------|-----------------------------|
| 300 Series (Stainless Steel) | 1.00                      | .88                        | .75                         | .68                         | .60                         |
| Carbon Steel                 | .67                       | .63                        | .59                         | .51                         | -                           |
| Aluminum                     | .50                       | .45                        | .26                         | -                           | -                           |

This chart may be used to determine the correct flange to mate with V-Band Couplings shown in Section 1. If there is no flange shown in this catalog that is suitable for a specific application, contact Eaton for further information. When ordering flanges with diameters larger than those shown in this catalog, contact Eaton.

| Service-<br>master<br>MFF61196 | Machine<br>Flange | d     | Schedule 40<br>Pipe Flange |         | Tube<br>Flange |         | Coupling<br>Part No. or<br>Retainer No. | Page<br>No. | Coupling<br>Style                      |
|--------------------------------|-------------------|-------|----------------------------|---------|----------------|---------|---|-------------|--|
|                                | 56400             | 56401 | MFM5700                    | MFM5701 | MFM5702        | MFM5703 |   |             |  |
| Х                              | Х                 | Х     | Х                          | Х       | Х              | Х       | 5, 6                                    | 13          | General Purpose                        |
| Х                              | Х                 | Х     | Х                          | Х       | Х              | Х       | 7, 8                                    | 14          |  |
| Х                              |                   |       |                            |         |                |         | 55000                                   | 18          | Servicemaster                          |
| X                              | X                 | X     | X                          | X       | X              | ×       | 2                                       | 21          | Non-Adjustable<br>Over Center<br>Latch |
| Х                              | Х                 | Х     | Х                          | Х       | Х              | Х       | 1, 2                                    | 23, 24      | Adjustable Over                        |
|                                |                   |       |                            |         |                |         | 6                                       | 24          | Center Latch                           |
| Х                              | Х                 | Х     | Х                          | Х       | Х              | Х       | 1, 2                                    | 23, 24      |  |
|                                |                   |       |                            |         |                | Х       | 4                                       | 23          |  |
| Х                              | Х                 | Х     | Х                          | Х       | Х              | Х       | 1, 6                                    | 24          | 1                                      |
|                                |                   |       |                            |         |                |         | 2, 3                                    | 23, 24      | 1                                      |

X Denotes that flange mates with coupling or retainer indicated

# Basic Part Number 56400

Min. Tube O.D.: **1.00 in.** (25.4 mm) Max. Tube O.D.: **24.00 in.** (609.6 mm)

#### Gasket 20 Compressed .75 to .047 (1.19) 19.1).70 .105 ± .005 (2.67)-(.080)1.78 (2.03)Σ Ц .25 Tube O.D. (6.4).50 Flange O.D. = (12.7)Tube O.D. + .72 (18.3)

## **Gasketed Flat Faced Flanges**

For High Temperature Applications

The flat gasket may be of mineral filled rubber or metal, or a combination of these materials. The gasket must compress to a **.047**) minimum thickness for proper coupling assembly.

Recommended for pneumatic applications where some leakage is tolerable. Tube is used as a pilot for flange alignment and gasket support. Gaskets not supplied by Eaton.

# **O-Ring Sealed Flanges**

The O-Ring gasket used may be of any rubber compound depending on the application. For larger sizes, standard O-Rings of the next smaller size than the flange cavity diameter may be purchased from your local source and stretched into position during assembly. The cavity area of the flanges has been designed to permit this. O-Rings not supplied by Eaton.



56400-900 S





#### Material Code

56401

Min. Tube O.D.: 1.00 in. (25.4 mm)

Max. Tube O.D.: 18.00 in. (457.2 mm)

A = Aluminum

C = Carbon Steel

J = 316 Stainless Steel S = 321 or 347 Stainless Steel

Machined Flange Burst Pressure Rating at +70°F (21.1° C)

Material: Stainless steel. Flange burst pressures are shown in the performance charts instead of operating pressures since the safety factor over operating conditions might vary with each application. Flange burst pressure ratings are based on static internal pressure.

See page 45 for correction factors to use for other materials and elevated temperatures.





# **Schedule 40 Pipe**

# Basic Part Number



.88





Flat Faced Flange

O-Ring Flange

#### Dimensions: **inches in boldface** mm in lightface

| mm in lightlace        |                     |                     |                             |                      |  |
|------------------------|---------------------|---------------------|-----------------------------|----------------------|--|
| PipeSize<br>100=1 inch | A<br>Dia.           | т                   | O-Ring Size<br>Ref SAE J120 | H. Dia.<br>± .015    |  |
| 100                    | <b>1.32</b><br>33.5 | <b>.133</b><br>3.38 | -219                        | <b>1.88</b><br>47.8  |  |
| 125                    | <b>1.66</b><br>42.1 | <b>.140</b><br>3.56 | -223                        | <b>2.22</b><br>56.4  |  |
| 150                    | <b>1.90</b><br>48.2 | <b>.145</b><br>3.68 | -225                        | <b>2.46</b><br>62.5  |  |
| 200                    | <b>2.38</b><br>60.1 | <b>.154</b><br>3.91 | -229                        | <b>2.94</b><br>74.7  |  |
| 250                    | <b>2.88</b><br>73.2 | <b>.203</b><br>5.16 | -232                        | <b>3.44</b><br>87.4  |  |
| 300                    | <b>3.50</b><br>88.9 | <b>.216</b><br>5.49 | -237                        | <b>4.06</b><br>103   |  |
| 350                    | <b>4.00</b><br>102  | <b>.226</b><br>5.74 | -241                        | <b>4.56</b><br>116   |  |
| 400                    | <b>4.50</b><br>114  | <b>.237</b><br>6.02 | -245                        | <b>5.06</b><br>129   |  |
| 500                    | <b>5.56</b><br>141  | <b>.258</b><br>6.55 | -254                        | <b>6.12</b><br>155.4 |  |
| 600                    | <b>6.62</b><br>168  | <b>.280</b><br>7.11 | -260                        | <b>7.19</b><br>183   |  |
| 800                    | <b>8.62</b><br>219  | <b>.322</b><br>8.18 | -268                        | <b>9.19</b><br>2.33  |  |

# TUBE



**Material Code** 

Tube O.D. (100 = 1 inch)

#### Material Code

- A = Aluminum
- C = Carbon Steel

J = 316 Stainless Steel S = 321 or 347 Stainless Steel

For cap flange, part number MFM5704 or MFM5705, contact Eaton. For sizes not shown contact Eaton

Dimensions: **inches in boldface** mm in lightface

| Tube Size<br>100=1 inch | H Dia.<br>± .015    | O-Ring Size<br>Ref SAE J120 |
|-------------------------|---------------------|-----------------------------|
| 100                     | <b>1.88</b><br>47.8 | -220                        |
| 125                     | <b>2.22</b><br>56.4 | -224                        |
| 150                     | <b>2.46</b><br>62.5 | -226                        |
| 200                     | <b>2.94</b><br>74.7 | -230                        |
| 250                     | <b>3.44</b><br>87.4 | -234                        |
| 300                     | <b>4.06</b><br>103  | -236                        |
| 350                     | <b>4.56</b><br>116  | -240                        |
| 400                     | <b>5.06</b><br>129  | -244                        |
| 500                     | <b>6.12</b><br>155  | -252                        |
| 600                     | <b>7.19</b><br>183  | -259                        |
| 800                     | <b>9.19</b><br>233  | -267                        |

Note: O-Rings are not supplied by Eaton

## Flanges

# Applications



Telephone repeaters stay pressurized when assembled and sealed with V-Bands.



Quick Coupler is excellent for frequent maintenance such as filter applications.



V-Band Couplings secure exhaust system to engine manifold.



Motors assemble with uniform stresses when housings are joined with V-Band Couplings.



Fog horns that stay dry – stay sold; V-Band Coupling retains and seals the plastic cover.



This sprayer locks onto the canister with a flip of the Over Center Latch.

30



Coupling with one screw assemblies and seals pump, valves, motor and tank.



Dry sea instruments submerged over 20,000 feet stay dry inside. V-Bands assure the seal.



The best way yet to mount a muffler; many line-haul rigs use an Eaton Support Clamp.



This precision instrument is sealed by a V-Band Coupling and supported by a Band Clamp assembly.



Dry cleaner solvent filter condensers use V-Band Couplings, benefiting cost and service.



Transponder case is sealed with this square coupling and Over Center Latch.



Klystron tube is water cooled; V-Bands keep water jacket tight but easily accessible for maintenance.



Interchangeable cheese molds clamp quickly onto this machine with Over Center Latch Coupling.



Strong and simple Lug Ear Coupling seals this spherical filter.



Strong seals, fast access for screen changes make these "sifters" the best.



Hermetically sealed compressor's 4 V-Band Couplings save bolts, machining and TIME!



No wrench is needed for this doubleacting screw V-Band Coupling.



V-Band Couplings connect double diaphragm system with inlet and outlet piping.



Cleanable mixing chamber for urethane foaming machine uses an Over Center Latch Coupling.



Central vacuum sweepers use motors assembled and sealed by a V-Band Coupling.



Stainless V-Band Couplings assemble gas turbine compressor, burners and exhaust duct.



V-Band Couplings allow easy cleaning of these chemical and oil tank breather valves.



Oscilloscope "Expander" clamps onto CRT bezel with Over Center Latch Band Clamp.

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## 



- **C** = Plated Steel Hex Nut
- F = Plated Steel Fiber Insert Hex Locknut

 $\mathbf{T}$  = Stainless Steel Hex Nut

V = Stainless Steel All Metal Hex Locknut

|  | Basic Part Number  | МВ9325  | MB9425  | MB9525   | MB9625  |
|--|--|---|---|--|---|
|  | Bolt Size  | 10–24   | 1⁄4–20  | <sup>5</sup> /16–18  | <sup>3</sup> /8– 16   |
|  | Minimum Nominal<br>Diameter                              | <b>1.25</b><br>31.8                                       | <b>1.50</b><br>38.1   | <b>4.5</b><br>114.3  | <b>6.00</b><br>152.4  |
|  | Band Material &<br>Thickness                             | <b>.025</b><br>.64  | . <b>040</b><br>1.02  | . <b>063</b><br>1.60   | <b>.080</b><br>2.03   |
|  | J=316 Stainless<br>Steel, 316 Stainless<br>Steel T=Bolt. |   |   |  |   |
|  | S= Stainless Steel,<br>316 Stainless Steel<br>Bolt       | <b>.020</b><br>.51  | . <b>025</b><br>.64   | <b>.050</b><br>1.27  | . <b>063</b><br>1.60  |
|  | Band Widths  | <b>.52, .62, .75, 1.00</b> ,<br>13.2, 15.7, 19.1,<br>25.4 | . <b>75, .88, 1.00, 1.25</b> ,<br>19.1, 22.4, 25.4,<br>31.8 | <b>.88, 1.00, 1.25,</b><br><b>1.50</b> , 22.4, 25.4,<br>31.8, 38.1 | <b>1.25, 1.50, 1.75,</b><br><b>2.00</b> , 31.8, 38.1,<br>44.5, 50.8 |
| Dimensions: <b>inches in boldface</b><br>mm in lightface | Latch Code   | T,K, or L   | T, K, or L  | T or K only  | T or K only   |



## **Basic Part Number MB9336 MB9446**

For clamping ducting connections which do not require the integrity of flanges. Can be used to join exhaust ducting.

## Dimensions: inches in boldface

mm in lightface

| Basic Part Number   | MB9336                         | MB9446                              |
|---|--------------------------------|-------------------------------------|
| Bolt Size   | 10-24                          | 1⁄4-20                              |
| Band Material and Thickness<br>J=316 Stainless Steel,<br>316 Stainless Steel T-Bolt | <b>.032</b><br>.81             | . <b>032</b><br>.81                 |
| S=301 Stainless Steel<br>316 Stainless Steel T-Bolt                                 | <b>.025</b><br>.64             | <b>.025</b><br>.64                  |
| Band Width Range<br>.25 in. increments<br>6.4 mm                                    | <b>1.75-6.00</b><br>44.5-152.4 | <b>2.00-6.00</b><br>50.80-<br>152.4 |
| Latch Style   | Quick Release Sad              | ldle                                |
| Minimum Nominal Diameter  | <b>2.00</b><br>50.8            | <b>2.50</b><br>63.5                 |



| Example of Part Number for Ordering | MB9446 S 600T 800 |
|-------------------------------------|-------------------|
| Basic Part No                       |                   |
| Material Code                       |                   |
| Width (100 = 1 inch)                |                   |
| Nut Code                            |                   |
| Nom. Dia. (100 = 1 inch)            |                   |
| Nut Code:                           |                   |

Nut Code:

C = Plated Steel HEX Nut F = Plated Steel Fiber Insert Hex Locknut

T = Stainless Steel Hex nut

V = Stainless Steel All Metal Hex Locknut

# **Utility Band Clamp**



Utility band clamps are for use on applications such as thermal blankets. These clamps are for use on irregular shapes, too.

#### Dimensions: inches in boldface mm in lightface

| Basic Part Number                                | MB9802   |
|--|--|
| Screw: Nut Size                                  | 10-24  |
| Material   | Stainless Steel  |
| Band Material and Thickness<br>S=Stainless Steel | <b>.020</b><br>.51   |
| Band Width                                       | <b>.25, .38, .50, .62, .75</b><br>6.4, 9.7, 12.7, 15.8, 19.1 |
| Minimum Nominal Diameter                         | <b>.75</b><br>19.1   |

| Example of Part Number for Ordering          | MB9802 S 100 - 38 |
|--|-------------------|
| Basic Part No                                |                   |
| Material Code                                |                   |
| Nom. Dia. (100 = 1 inch)                     |                   |
| Width (50 = .50 inch)                        |                   |
| These band clamps are shipped flat with pref | ormed ends        |

# Band Clamp/Heavy Duty

# Basic Part Number 55083



How to Order: Order by Part Number Shown

| Basic Part Number                  | 55083  |
|------------------------------------|--|
| Bolt Size<br>& Material            | ¼-20,<br>Plated Steel                              |
| Diameter Range                     | Tabulated  |
| Band Material<br>Thickness & Width | Stainless<br>Steel<br>. <b>025x.75</b><br>.64x19.1 |
| Locknut                            | Plated Steel,<br><b>+ 250°F</b><br>(+121°C)        |

The Heavy Duty Band Clamp is designed to provide high performance clamping on heavy duty applications. Use of this clamp can eliminate the need for double clamping to secure heavy rubber hose connections on trucks, tractors, construction equipment, or wherever high reliability is needed with a minimum of maintenance. The corrosion resistant, stainless steel band provides even take-up. Two or more clamps can be easily coupled together for diameters in excess of **8.00 in**. (203.2 mm) sizes.

Dimensions:

**inches in boldface** mm in lightface

| Part<br>Number | Nominal<br>Diameter | Maximum<br>Diameter | Minimum<br>Diameter | Part<br>Number | Nominal<br>Diameter  | Maximum<br>Diameter  | Minimum<br>Diameter  |
|----------------|---------------------|---------------------|---------------------|----------------|----------------------|----------------------|----------------------|
| 55083-150      | <b>1.50</b><br>38.1 | <b>1.53</b><br>38.9 | <b>1.38</b><br>35.1 | 55083-356      | <b>3.56</b><br>90.4  | <b>3.71</b><br>94.2  | <b>3.36</b><br>85.3  |
| 55083-163      | <b>1.63</b><br>41.4 | <b>1.66</b><br>42.2 | <b>1.47</b><br>37.3 | 55083-375      | <b>3.75</b><br>95.3  | <b>3.90</b><br>99.1  | <b>3.55</b><br>90.2  |
| 55083-175      | <b>1.75</b><br>44.4 | <b>1.78</b><br>45.2 | <b>1.59</b><br>40.4 | 55083-400      | <b>4.00</b><br>101.6 | <b>4.10</b><br>104.1 | <b>3.75</b><br>95.3  |
| 55083-188      | <b>1.88</b><br>47.8 | <b>1.91</b><br>48.5 | <b>1.72</b><br>43.7 | 55083-425      | <b>4.25</b><br>107.9 | <b>4.35</b><br>110.5 | <b>4.00</b><br>101.6 |
| 55083-200      | <b>2.00</b><br>50.8 | <b>2.03</b><br>51.6 | <b>1.84</b><br>46.7 | 55083-450      | <b>4.50</b><br>114.3 | <b>4.60</b><br>116.8 | <b>4.25</b><br>107.9 |
| 55083-212      | <b>2.12</b><br>53.8 | <b>2.18</b><br>55.4 | <b>1.92</b><br>48.8 | 55083-475      | <b>4.75</b><br>120.6 | <b>4.85</b><br>123.2 | <b>4.50</b><br>114.3 |
| 55083-225      | <b>2.25</b><br>57.2 | <b>2.34</b><br>59.4 | <b>2.05</b><br>52.1 | 55083-500      | <b>5.00</b><br>127.0 | <b>5.10</b><br>129.5 | <b>4.75</b><br>120.6 |
| 55083-238      | <b>2.38</b><br>60.5 | <b>2.47</b><br>62.7 | <b>2.18</b><br>55.4 | 55083-525      | <b>5.25</b><br>133.4 | <b>5.35</b><br>135.9 | <b>5.00</b><br>127.0 |
| 55083-256      | <b>2.56</b><br>65.0 | <b>2.65</b><br>67.3 | <b>2.36</b><br>59.9 | 55083-550      | <b>5.50</b><br>139.7 | <b>5.60</b><br>142.2 | <b>5.25</b><br>133.4 |
| 55083-282      | <b>2.82</b><br>71.6 | <b>2.91</b><br>73.9 | <b>2.62</b><br>66.5 | 55083-600      | <b>6.00</b><br>152.4 | <b>6.10</b><br>154.9 | <b>5.75</b><br>146.0 |
| 55083-294      | <b>2.94</b><br>74.7 | <b>3.03</b><br>77.0 | <b>2.74</b><br>69.6 | 55083-650      | <b>6.50</b><br>165.1 | <b>6.60</b><br>167.6 | <b>6.25</b><br>158.8 |
| 55083-306      | <b>3.06</b><br>77.7 | <b>3.21</b><br>81.5 | <b>2.86</b><br>72.6 | 55083-700      | <b>7.00</b><br>177.8 | <b>7.10</b><br>180.3 | <b>6.75</b><br>171.5 |
| 55083-325      | <b>3.25</b><br>82.6 | <b>3.40</b><br>86.4 | <b>3.05</b><br>77.5 | 55083-800      | <b>8.00</b><br>203.2 | <b>8.10</b><br>205.7 | <b>7.75</b><br>196.9 |
| 55083-344      | <b>3.44</b><br>87.4 | <b>3.59</b><br>91.2 | <b>3.24</b><br>82.3 |                |                      |                      |                      |

These band clamps are shipped flat with preformed ends.

#### How to Order: Order by Part Number Shown

| Part          | Nominal     | Maximum     | Minimum     |
|---------------|-------------|-------------|-------------|
| Number        | Diameter    | Diameter    | Diameter    |
| NE100899-0200 | <b>2.00</b> | <b>2.01</b> | <b>1.80</b> |
|               | 50.8        | 51.1        | 45.7        |
| NE100899-0212 | <b>2.12</b> | <b>2.13</b> | <b>1.92</b> |
|               | 53.8        | 54.1        | 48.8        |
| NE100899-0225 | <b>2.25</b> | <b>2.26</b> | <b>2.05</b> |
|               | 57.2        | 57.4        | 52.1        |
| NE100899-0238 | <b>2.38</b> | <b>2.39</b> | <b>2.18</b> |
|               | 60.5        | 60.7        | 55.4        |
| NE100899-0250 | <b>2.50</b> | <b>2.51</b> | <b>2.30</b> |
|               | 63.5        | 63.8        | 58.4        |
| NE100899-0262 | <b>2.62</b> | <b>2.63</b> | <b>2.42</b> |
|               | 66.5        | 66.8        | 61.5        |
| NE100899-0275 | <b>2.75</b> | <b>2.76</b> | <b>2.55</b> |
|               | 69.9        | 70.1        | 64.8        |
| NE100899-0288 | <b>2.88</b> | <b>2.89</b> | <b>2.68</b> |
|               | 73.2        | 73.4        | 68.1        |
| NE100899-0300 | <b>3.00</b> | <b>3.01</b> | <b>2.80</b> |
|               | 76.2        | 76.5        | 71.1        |
| NE100899-0312 | <b>3.12</b> | <b>3.13</b> | <b>2.92</b> |
|               | 79.2        | 79.5        | 74.2        |
| NE100899-0325 | <b>3.25</b> | <b>3.26</b> | <b>3.05</b> |
|               | 82.6        | 82.8        | 77.5        |
| NE100899-0350 | <b>3.50</b> | <b>3.51</b> | <b>3.25</b> |
|               | 88.9        | 89.2        | 82.6        |
| NE100899-0375 | <b>3.75</b> | <b>3.76</b> | <b>3.50</b> |
|               | 95.3        | 95.5        | 88.9        |
| NE100899-0400 | <b>4.00</b> | <b>4.01</b> | <b>3.75</b> |
|               | 101.6       | 101.9       | 95.3        |
| NE100899-0425 | <b>4.25</b> | <b>4.26</b> | <b>4.00</b> |
|               | 107.9       | 108.2       | 101.6       |
| NE100899-0450 | <b>4.50</b> | <b>4.51</b> | <b>4.25</b> |
|               | 114.3       | 114.6       | 107.9       |
| NE100899-0475 | <b>4.75</b> | <b>4.76</b> | <b>4.50</b> |
|               | 120.6       | 120.9       | 114.3       |
| NE100899-0500 | <b>5.00</b> | <b>5.01</b> | <b>4.75</b> |
|               | 127.0       | 127.3       | 120.6       |
| NE100899-0550 | <b>5.50</b> | <b>5.51</b> | <b>5.25</b> |
|               | 139.7       | 140.0       | 133.4       |
| NE100899-0600 | <b>6.00</b> | <b>6.01</b> | <b>5.75</b> |
|               | 152.4       | 152.7       | 146.0       |
| NE100899-0650 | <b>6.50</b> | <b>6.51</b> | <b>6.25</b> |
|               | 165.1       | 165.4       | 158.8       |
| NE100899-0700 | <b>7.00</b> | <b>7.01</b> | <b>6.75</b> |
|               | 177.8       | 178.1       | 171.5       |
| NE100899-0750 | <b>7.50</b> | <b>7.51</b> | <b>7.25</b> |
|               | 190.5       | 190.8       | 184.1       |
| NE100899-0800 | <b>8.00</b> | <b>8.01</b> | <b>7.75</b> |
|               | 203.2       | 203.5       | 196.9       |

Basic Part Number NE100899



The Spring Loaded Band Clamp was developed to eliminate leakage problems inherent on connections requiring soft silicone hose. When assembled on the hose, the spring compensates for thermal expansion and contraction as well as cold flow of the hose.

| Basic Part<br>Number                  | NE100899  |
|---------------------------------------|---|
| Bolt Size<br>& Material               | <sup>1</sup> ⁄4-20<br>Plated Steel                    |
| Diameter Range                        | Tabulated   |
| Band Material<br>Thickness &<br>Width | Stainless<br>Steel<br><b>.025 x .75</b><br>.64 x 19.1 |
| Locknut                               | Plated Steel<br>+250°F<br>(+121°C)                    |
| Spring                                | Plated Music<br>Wire                                  |

Dimensions: **inches in boldface** mm in lightface Basic Part Number 820

Basic Part Number 57120





The adjustable feature of universal band clamps makes them ideal for clamping hose, duct or pipe. They can be used as a strap hanger or mounting bracket, or to clamp irregularly shaped objects.

Universal Band Clamps feature an adjustable diameter range enabling the reduction of individual part numbers within an inventory system.

| Basic Part Number             | 820                         | 57120                         |  |
|-------------------------------|-----------------------------|-------------------------------|--|
| Screw Size                    | 1⁄4-20                      | 3/8-16                        |  |
| Material                      | Plated Alloy Steel          |                               |  |
| Band Material                 | Stainless Steel             |                               |  |
| Thickness & Width             | <b>.012x.56</b><br>.31x14.3 | . <b>020x1.25</b><br>.51x31.8 |  |
| Saddle Material               | Stainless Steel             | Plated Car-<br>bon Steel      |  |
| Minimum Nominal Diame-<br>ter | <b>.69</b><br>17.5          | <b>1.50</b><br>38.1           |  |

## **Order by Part Number**

| Part Number | Maximum Diameter       |
|-------------|------------------------|
| 57120-10    | <b>10.75</b><br>2.73   |
| 57120-18    | <b>18.00</b><br>457.20 |

Dimensions: inches in boldface

mm in lightface

### How to Order: Order by Part Number shown

| Part<br>Number | Max.<br>Dia.         | Part<br>Number | Max.<br>Dia.          | Part<br>Number | Max.<br>Dia.          | Part<br>Number | Max.<br>Dia.           | Part<br>Number | Max.<br>Dia.           | Part<br>Number | Max.<br>Dia.           | Part<br>Number | Max.<br>Dia.            |
|----------------|----------------------|----------------|-----------------------|----------------|-----------------------|----------------|------------------------|----------------|------------------------|----------------|------------------------|----------------|-------------------------|
| 820-13         | <b>2.12</b><br>53.85 | 820-16         | <b>3.62</b><br>91.95  | 820-20         | <b>6.12</b><br>155.45 | 820-26         | <b>9.12</b><br>231.65  | 820-32         | <b>12.12</b><br>307.85 | 820-38         | <b>18.12</b><br>460.25 | 820-44         | <b>24.12</b><br>612.65  |
| 820-14         | <b>2.62</b><br>66.55 | 820-17         | <b>4.12</b><br>104.65 | 820-22         | <b>7.12</b><br>180.85 | 820-28         | <b>10.12</b><br>257.05 | 820-34         | <b>14.12</b><br>358.65 | 820-40         | <b>20.12</b><br>511.05 | 820-48         | <b>28.12</b><br>714.25  |
| 820-15         | <b>3.12</b><br>79.25 | 820-18         | <b>5.12</b><br>130.05 | 820-24         | <b>8.12</b> 206.25    | 820-30         | <b>11.12</b> 282.45    | 820-36         | <b>16.12</b><br>409.45 | 820-42         | <b>22.12</b><br>561.85 | 820-64         | <b>44.12</b><br>1120.65 |

### **Universal Band Clamp/Installation Instructions**



1. Bend strap outward to simplify insertion through saddle.



2. Unscrew thumbscrew fully, then wrap strap around object or objects to be clamped, inserting strap end through opening in saddle.



 Pull up snug and fold strap into saddle, bending tip inward so that extra material will conform to shape of object being clamped. Tighten screw.

## TO REMOVE:

Loosen screw and press screw head down toward strap. Lift on free end of clamp

# Band Clamp/Adjustable

**Basic Part Number** 

NH2000110

The Adjustable Band Clamp is designed for flexibility and allows for quick and easy assembly of irregular shapes as well as round objects. For diameters in excess of **7.66 in.** (194.6 mm), two or more clamps can be coupled together.

These band clamps feature an adjustable diameter range enabling the reduction of individual part numbers within an inventory system.

Band clamps will be shipped flat.

How to Order: Order by Part Number Shown

Dimensions: inches in boldface mm in lightface

| Basic Part Number    | NH2000110-10                          | NH2000110-20                    | NH2000110-30                    |  |  |  |
|----------------------|---------------------------------------|---------------------------------|---------------------------------|--|--|--|
| Bolt Size & Material | ¼-20, Plated Steel                    | ¼-20, Plated Steel              |                                 |  |  |  |
| Diameter Range       | <b>2.50-4.00</b><br>63.5-101.6        | <b>4.00-6.00</b><br>101.6-152.4 | <b>6.00-7.66</b><br>152.4-194.6 |  |  |  |
| Band Material        | Stainless Steel                       | Stainless Steel                 |                                 |  |  |  |
| Thickness & Width    | .020x.75<br>.51x19.1                  |                                 |                                 |  |  |  |
| Locknut              | Plated Steel, + <b>250°F</b> (+121°C) |                                 |                                 |  |  |  |

# **Adjustable Band Clamp/ Installation Instructions**



 Remove the T-Bolt from the trunnion and insert in the desired hole on the inside of the clamp. Which hole to use depends on the diameter of the application.



 Bend the excess length of clamp over the end of the T-Bolt.



3. Insert the T-Bolt through the trunnion.



4. Tighten the clamp down with the nut.

# Band Clamp/Adjustable Over Center Latch



Min Nom. Dia.: MB9360 = **2.81 in.** (71.4 mm) MB9460 = **6.50 in.** (165.1 mm) MB9560 = **6.50 in.** (165.1 mm)

#### Max. Dia.:

MB9360 = **20.00 in.** (508.0 mm) MB9460 = **31.00 in.** (787.4 mm) MB9560 in. = **31.00 in.** (787.4 mm)

| Basic Part Number   | MB9360  | MB9460   | MB9560                          |  |
|---|---|--|---------------------------------|--|
| Bolt Size   | 10-24   | 1⁄4-20   | 5/16-18                         |  |
| Minimum Nominal<br>Diameter   | <b>2.81</b><br>71.4                                       | <b>6.50</b><br>165.1                           |                                 |  |
| Band Material and Thickness<br>J = 316 Stainless Steel,<br>316 Stainless Steel T-Bolt | <b>.032</b><br>.81  | <b>.032</b><br>.81                             | <b>.050</b><br>1.27             |  |
| S=301 Stainless Steel<br>316 Stainless Steel<br>T-Bolt                                | <b>.020</b><br>.51  | <b>.032</b><br>.81                             | <b>.050</b><br>1.27             |  |
| Band Widths   | .62, .75,<br>.88, 1.00<br>15.7,<br>19.1,<br>22.4,<br>25.4 | . <b>88, 1.00,</b> <sup>,</sup><br>22.4, 25.4, | <b>I.25, 1.50</b><br>31.8, 38.1 |  |

## **Example of Part Number for Ordering**

|                           | MB9460 S 100 N 650 V |
|---------------------------|----------------------|
| Basic Part No             |                      |
| Material Code             |                      |
| Band Width (100 = 1 inch) |                      |
| Pad Code                  |                      |
| Nom. Dia. (100 = 1 inch)  |                      |
| Nut Code                  |                      |
| Pad Code:                 |                      |

P = Pad, Cork, Neoprene; **.06 in.** (1.52 mm) N = No pad

#### Nut Code:

C = Plated Steel Hex Nut

- F = Plated Steel Fiber Insert Hex Locknut
- T = Stainless Steel Hex Nut
- V = Stainless Steel All Metal Hex Locknut

Dimensions: inches in boldface

mm in lightface

Note: Nominal diameter is taken to the strap I.D. Allow for pad thickness when ordering

## Basic Part Number MB9914 MB9915



Particularly suited for mounting oxygen bottles or other containers. They can be used to support piping and other objects. The clamps are also used for securing cylindrical objects during shipping.

Min. Nom. Dia.: MB9914=**1.50 in**. (38.1 mm) MB9915=**1.50 in**. (38.1 mm)

Max. Dia.: MB9914=**12.00 in**. (304.8 mm) MB9915=**13.99 in**. (355.3 mm)

| Basic Part Number   | MB9914                   | MB9915                     |
|---|--------------------------|----------------------------|
| Bolt Size   | 10-24                    | 1⁄4-20                     |
| Nominal Diameter  | <b>Min. 1.50</b><br>38.1 | <b>Max. 12.00</b><br>304.8 |
| Band Material & Thickness<br>J=316 Stainless Steel,<br>316 Stainless Steel T-Bolt | <b>.025</b><br>.64       | <b>.040*</b><br>1.02       |
| S=301 Stainless Steel<br>316 Stainless Steel T-Bolt                               | <b>.020</b><br>.51       | <b>.025</b><br>.64         |

Dimensions: inches in boldface

mm in lightface

\* Band Thickness: .032 in. (.81 mm) for nominal diameters under 3.00 in. (76.2 mm)

| Nominal           | Bracket Off- | Bracket      | Bracket Hole |
|-------------------|--------------|--------------|--------------|
| Diameter          | set A        | Thickness B  | Center C     |
| 1.50-2.49         | .16          | .040         | 2.50         |
| 38.1-63.3         | 4.1          | 1.02         | 63.5         |
| <b>2.50-4.49</b>  | <b>.30</b>   | <b>.050</b>  | <b>2.75</b>  |
| 63.5-114.1        | 7.6          | 1.27         | 69.9         |
| <b>4.50-12.00</b> | <b>.41</b>   | . <b>063</b> | <b>4.00</b>  |
| 114.3-304.8       | 10.4         | 1.60         | 101.6        |



#### Example of Part Number for Ordering MB9914-900 S V



#### Nut Code:

C = Plated Steel Hex Nut

F = Plated Steel Fiber Insert Hex Locknut

T = Stainless Steel Hex Nut

V = Stainless Steel All Metal Hex Locknut

#### **Band Straps**

For general tie-down or holding applications. Ideal for strapping down hydraulic accumulators, fuel tanks, etc.





| Length     |
|------------|
| <br>Length |

| Basic<br>Part No. | MB5306              | MB5406              | MB5506               | MB5606               | Basic<br>Part No. | MB5308              | MB5408              | MB5508               | MB5608               |
|-------------------|---------------------|---------------------|----------------------|----------------------|-------------------|---------------------|---------------------|----------------------|----------------------|
| Min. Length       | <b>2.50</b><br>63.5 | <b>2.75</b><br>69.9 | <b>6.50</b><br>165.1 | <b>9.00</b><br>228.6 | Min. Length       | <b>2.50</b><br>63.5 | <b>2.75</b><br>69.9 | <b>6.50</b><br>165.1 | <b>9.00</b><br>228.6 |



| Basic<br>Part No. | MB5310 | MB5410 | MB5510 | MB5610 |
|-------------------|--------|--------|--------|--------|
| Min. Length       | 2.50   | 2.75   | 6.50   | 9.00   |
|                   | 63.5   | 69.9   | 165.1  | 228.6  |

|     |        | Length |        | <b>→</b> |
|-----|--------|--------|--------|----------|
| sic | MB5312 | MB5412 | MB5512 |          |

| Basic<br>Part No. | MB5312      | MB5412      | MB5512      | MB5612      |
|-------------------|-------------|-------------|-------------|-------------|
| Min. Length       | <b>2.50</b> | <b>2.75</b> | <b>6.50</b> | <b>9.00</b> |
|                   | 63.5        | 69.9        | 165.1       | 228.6       |

| Example of Part Number for Ordering | MB5306 S 52 N 350 V |
|-------------------------------------|---------------------|
| Basic Part No                       |                     |
| Material Code                       |                     |
| Strap Width (100 = 1 inch)          |                     |
| Pad Code                            |                     |
| Strap Length (100 = 1 inch)         |                     |
| Nut Code                            |                     |

#### Pad Code:

P = Pad, Cork, Neoprene; .06 in. (1.52 mm) N = No pad

#### Nut Code:

C = Plated Steel Hex Nut

F = Plated Steel Fiber Insert Hex Locknut

T = Stainless Steel Hex Nut

V = Stainless Steel All Metal Hex Locknut

Applies only to straps that contain T-Bolts.

| Basic Series No.   | MB5300   | MB5400   | MB5500  | MB5600   |
|--|--|--|---|--|
| Bolt Size<br>Length  | 10-24 x<br>2.25  | ¼-20 x<br>3.00   | 5/16-18 x<br>4.50                                     | 3/8-16 x<br>5.00   |
| Band Material<br>& Thickness                               |  |  |   |  |
| J=316 Stainless<br>Steel, 316 Stain-<br>less Steel T-Bolt  | . <b>025</b><br>.64  | . <b>040</b><br>1.02   | . <b>063</b><br>1.60                                  | <b>.080</b><br>2.03  |
| S=301 Stainless<br>Steel, 316<br>Stainless Steel<br>T-Bolt | . <b>020</b><br>.51  | . <b>025</b><br>.64  | <b>.050</b><br>1.27                                   | <b>.063</b><br>1.60  |
| Band Widths  | <b>.52, .62,</b><br><b>.75, .88</b><br>13.2, 15.7,<br>19.1, 22.4 | <b>.75, .88,</b><br><b>1.00, 1.25</b><br>19.1, 22.4,<br>25.4, 31.8 | .88, 1.00,<br>1.25, 1.50<br>22.4, 25.4,<br>31.8, 38.1 | <b>1.25, 1.50,</b><br><b>1.75, 2.00</b><br>31.8, 38.1,<br>44.5, 50.8 |



# Band Straps/Strap Assemblies Metal

Dimensions: inches in boldface

mm in lightface

#### **Strap Assemblies**

Note: When assembly part no. is ordered, the length will be the total length of both straps, plus the gap reference.



| Assembly<br>Part No.<br>(Both A&B) | Strap A<br>Basic<br>Part No. | Strap B<br>Basic<br>Part No. | Min. Strap<br>Length<br>(Each Side) | Gap<br>Ref.         |
|------------------------------------|------------------------------|------------------------------|-------------------------------------|---------------------|
| MB5316                             | MB5313                       | MB5315                       | <b>2.50</b><br>63.5                 | <b>.81</b><br>20.8  |
| MB5416                             | MB5413                       | MB5415                       | <b>2.75</b><br>69.9                 | <b>1.00</b><br>25.4 |
| MB5516                             | MB5513                       | MB5515                       | <b>6.50</b><br>165.1                | <b>1.25</b><br>31.8 |
| MB5616                             | MB5613                       | MB5615                       | <b>9.00</b><br>228.6                | <b>1.25</b><br>31.8 |

Loop Dia. : Part No. MB5316: **.32 in.** (8.1 mm); Part No. MB5416: **.38 in.** (9.7 mm); Part No. MB5516: **.50 in.** (12.7 mm); Part No. MB5616: **.50 in.** (12.7 mm).



| Assembly<br>Part No.<br>(Both A&B) | Strap A<br>Basic<br>Part No. | Strap B<br>Basic<br>Part No. | Min. Strap<br>Length<br>(Each Side) | Gap<br>Ref.         |
|------------------------------------|------------------------------|------------------------------|-------------------------------------|---------------------|
| MB5320                             | MB5321                       | MB5323                       | <b>2.50</b><br>63.5                 | <b>1.31</b><br>33.3 |
| MB5420                             | MB5421                       | MB5423                       | <b>2.75</b><br>69.9                 | <b>1.56</b><br>39.6 |
| MB5520                             | MB5521                       | MB5523                       | <b>6.50</b><br>165.1                | <b>1.88</b><br>47.8 |
| MB5620                             | MB5621                       | MB5623                       | <b>9.00</b><br>228.6                | <b>3.00</b><br>76.2 |

Loop Dia. : Part No. MB5320: **.32 in.** (8.1 mm); Part No. MB5420: **.38 in.** (9.7 mm); Part No. MB5520: **.50 in.** (12.7 mm); Part No. MB5620: **.50 in.** (12.7 mm).



| Assembly<br>Part No.<br>(Both A&B) | Strap A<br>Basic<br>Part No. | Strap B<br>Basic<br>Part No. | Min. Strap<br>Length<br>(Each Side) | Gap<br>Ref.         |
|------------------------------------|------------------------------|------------------------------|-------------------------------------|---------------------|
| MB5328                             | MB5327                       | MB5329                       | <b>5.00</b><br>127.0                | <b>1.50</b><br>36.8 |
| MB5428                             | MB5427                       | MB5429                       | <b>6.25</b><br>158.8                | <b>2.00</b><br>49.0 |
| MB5528                             | MB5527                       | MB5529                       | <b>6.50</b><br>165.1                | <b>2.00</b><br>49.0 |
| MB5628                             | MB5627                       | MB5629                       | <b>9.00</b><br>228.6                | <b>2.50</b><br>61.2 |

Loop Dia. : Part No. MB5328: **.32 in.** (8.1 mm); Part No. MB5428: **.38 in.** (9.7 mm); Part No. MB5528: **.50 in.** (12.7 mm); Part No. MB5628: **.50 in.** (12.7 mm).



| Assembly<br>Part No.<br>(Both A&B) | Strap A<br>Basic<br>Part No. | Strap B<br>Basic<br>Part No. | Min. Strap<br>Length<br>(Each Side) | Gap<br>Ref.         |
|------------------------------------|------------------------------|------------------------------|-------------------------------------|---------------------|
| MB5314                             | MB5309                       | MB5311                       | <b>2.25</b><br>57.2                 | <b>.81</b><br>20.8  |
| MB5414                             | MB5409                       | MB5411                       | <b>2.25</b><br>57.2                 | <b>1.00</b><br>25.4 |
| MB5514                             | MB5509                       | MB5511                       | <b>4.00</b><br>101.6                | <b>1.25</b><br>31.8 |
| MB5614                             | MB5609                       | MB5611                       | <b>5.25</b><br>133.4                | <b>1.25</b><br>31.8 |



| Assembly<br>Part No.<br>(Both A&B) | Strap A<br>Basic<br>Part No. | Strap B<br>Basic<br>Part No. | Min. Strap<br>Length<br>(Each Side) | Gap<br>Ref.         |
|------------------------------------|------------------------------|------------------------------|-------------------------------------|---------------------|
| MB5318                             | MB5317                       | MB5319                       | <b>2.25</b><br>57.2                 | <b>1.31</b><br>33.3 |
| MB5418                             | MB5417                       | MB5419                       | <b>2.25</b><br>57.2                 | <b>1.56</b><br>39.6 |
| MB5518                             | MB5517                       | MB5519                       | <b>4.00</b><br>101.6                | <b>1.88</b><br>47.8 |
| MB5618                             | MB5617                       | MB5619                       | <b>5.25</b><br>133.4                | <b>3.00</b><br>76.2 |



| Assembly<br>Part No.<br>(Both A&B) | Strap A<br>Basic<br>Part No. | Strap B<br>Basic<br>Part No. | Min. Strap<br>Length<br>(Each Side) | Gap<br>Ref.         |
|------------------------------------|------------------------------|------------------------------|-------------------------------------|---------------------|
| MB5324                             | MB5325                       | MB5326                       | <b>2.25</b><br>57.2                 | <b>1.50</b><br>36.8 |
| MB5424                             | MB5425                       | MB5426                       | <b>2.50</b><br>63.5                 | <b>2.00</b><br>49.0 |
| MB5524                             | MB5525                       | MB5526                       | <b>4.00</b><br>101.6                | <b>2.00</b><br>49.0 |
| MB5624                             | MB5625                       | MB5626                       | <b>5.25</b><br>133.4                | <b>2.50</b><br>61.2 |

See page 40 for example of Part Number for Ordering.



Band Clamps secure hose segments on the turbo-charger/intercooler duct work.



Band Clamps and hose segment make easy work of this compressor air supply.



Special low-profile Band Clamp assembly keeps Scuba bottle safe, easy to change.



Eaton Fuel Tank Straps provide high strength and install in seconds.



Aeroquip fire extinguisher mount makes ideal use of clamp with quick release.



Heavy duty truck air intake hoses are secured by Heavy Duty Band Clamps.

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| Flange and V-Band Coupling Materials and |      |
| Temperature Correction Charts            | 45   |
| V-Band Coupling Selection                | 44   |

# V-Band Coupling Selection under combined loading of pressure, bending and axial loads.

The following factors must be determined: loading, desired safety factor and size.

Loading may consist of internal pressure, bending moment and/ or axial tension.

The following steps should be followed to select the correct V-Band Coupling from this catalog:

Step 1. If an internal pressure load exists, use Formula 1.

 $N_p = \frac{PD}{4}$ 

Step 2. If a bending moment load exists, use Formula 2.  $N_{b} = \frac{4M}{\varpi D^{2}}$ 

**Step 3.** If an axial tension load exists (other than pressure), use Formula 3.

N<sub>a</sub> =<u>A</u> ϖD

**Step 4.** If combined loading exists, determine the total load intensity. Formula 4 is used.

 $N = N_p + N_b + N_a$ 

Example:

A V-Band Coupling is required for the following conditions: Tube O.D. = **3.00 inch** Operating Pressure = **300 psi** Bending Moment = **2000 pound-inch** 

Axial Load = 1000 lbs

Example:  $N_p = \frac{300 (3.00)}{4} = 225 \text{ lb/inch}$ 

 $N_{b} = \frac{4 (2000)}{\varpi (3.00)^{2}} =$  **283 lb/inch** 

 $N_a = 1000 = 106 \text{ lb/inch}$  $\overline{\varpi}(3.00)$ 

N = 225 + 283 + 106 = **614 lb/inch** To convert total load intensity to an equivalent operating pressure, use Formula 5.

EOP =  $\frac{4(614)}{3}$  = **819 psi** 

For a safety factor of 3, the required system burst pressure would be 2457 psi. The burst pressure rating for individual V-Band Couplings are charted on pages 12 through 24.

## Explanation of symbols

| Explanation of symbols |        |   |  |                              |  |  |  |
|------------------------|--------|---|--|------------------------------|--|--|--|
| Formula                | Symbol | Meaning   | Units                                    | Formula                      |  |  |  |
| 1                      | Np     | Load<br>Intensity Due<br>to Pressure              | pounds/<br>inch<br>of circum-<br>ference | Np = $\frac{PD}{4}$          |  |  |  |
| 2                      | Nb     | Load Intensity<br>Due to Bend-<br>ing<br>Movement | pounds/<br>inch<br>of circum-<br>ference | $Nb = \frac{4M}{\varpi D^2}$ |  |  |  |
| 3                      | Na     | Load Intensity<br>Due to<br>Axial Tension         | pounds/<br>inch<br>of circum-<br>ference | Na = A<br><del>w</del> D     |  |  |  |
| 4                      | N      | Total Load<br>Intensity                           | pounds/<br>inch<br>of circum-<br>ference | N = Np +<br>Nb + Na          |  |  |  |
| 5                      | EOP    | Equivalent<br>Operating<br>Pressure               | psi                                      | EOP = 4N                     |  |  |  |
|                        | D      | Shell or<br>Flange O.D.                           | inch                                     |                              |  |  |  |
|                        | Ρ      | Pressure  | psi                                      |                              |  |  |  |
|                        | Μ      | Bending<br>Moment                                 | pound inch                               |                              |  |  |  |
|                        | А      | Axial<br>Tension                                  | pounds                                   |                              |  |  |  |

The above formulas are applicable for systems with static load conditions.

Note: Safety factor and material selection should be based on strength requirements and environmental conditions.

#### Table 1. Flange material and temperature correction chart

| Material                      | <b>+70°F</b><br>+21.1°C | <b>+200°F</b><br>+93.3°C | <b>+400°F</b><br>+204.4°C | <b>+600°F</b><br>+315.6°C | <b>+800°F</b><br>+426.7°C |
|-------------------------------|-------------------------|--------------------------|---------------------------|---------------------------|---------------------------|
| 300 Series<br>Stainless Steel | 1.00                    | .88                      | .75                       | .68                       | .60                       |
| Carbon Steel                  | .67                     | .63                      | .59                       | .51                       |                           |
| Aluminum                      | .50                     | .45                      | .26                       |                           |                           |

#### Table 2. V-Band Coupling material and temperature correction chart.

| Matorial            | +70°F   | +200°F  | +400°F   | +600°F   | +800°F   |
|---------------------|---------|---------|----------|----------|----------|
| Ivialeria           | +21.1 C | +35.5 C | +204.4 C | +315.0 C | +420.7 C |
| 301 Stainless Steel | 1.00    | .88     | .75      | .68      | .60      |
| 316 Stainless Steel | .50     | .47     | .44      | .42      | .39      |
| Carbon Steel        | .50     | .46     | .43      | .37      |          |

#### Table 3. Bolt Strength

Maximum torque levels are not always required for proper joint function. Apply nut torque to a level where joint is properly closed. Bolt strength values given below are based on material properties equivalent to SAE J429, Grade 5, at + 70°F (21.1°C).

| Bolt<br>Size | Bolt<br>Material         | Maximum<br>Allowable<br>Torque<br>(in-lbs. N-m) | Minimum<br>Breaking<br>Strength<br>(lbs./kg) |
|--------------|--------------------------|---|--|
| 10-24        | Stainless or Alloy Steel | <b>50</b><br>6                                  | <b>2100</b><br>955                           |
| 1⁄4-20       | Stainless or Alloy Steel | <b>75</b><br>8                                  | <b>3800</b><br>1727                          |
|              | Carbon Steel*            | <b>50</b><br>6                                  | <b>2100</b><br>955                           |
| 5/16-18      | Stainless or Alloy Steel | <b>200</b><br>23                                | <b>6300</b><br>2864                          |
| 3/8-16       | Stainless or Alloy Steel | <b>450</b><br>51                                | <b>9300</b><br>4227                          |

Note: in-Ibs and Ibs in boldface/ N-m and kg in lightface \* Equivalent to SAE J429, Grade 2.

### Table 4. Band Strengths

The strength values below are based on 301 stainless steel at **+70°F** ( +21.1°C). To adjust for other materials and/or temperatures, multiply the band strength value by the applicable factor from Table 2.

|          | Band Thickness |                      |                      |                      |                      |                      |                      |                      |                      |                      |
|----------|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|          |                | <b>0.020</b><br>0.51 | <b>0.025</b><br>0.64 | <b>0.032</b><br>0.81 | <b>0.040</b><br>1.02 | <b>0.050</b><br>1.27 | <b>0.063</b><br>1.60 | <b>0.080</b><br>2.03 | <b>0.090</b><br>2.29 | <b>0.125</b><br>3.18 |
|          | <b>0.25</b>    | <b>375</b>           | <b>469</b>           | <b>600</b>           | <b>750</b>           | <b>938</b>           | <b>1181</b>          | <b>1500</b>          | <b>1688</b>          | <b>2344</b>          |
|          | 6.35           | 170                  | 213                  | 273                  | 341                  | 426                  | 537                  | 682                  | 767                  | 1065                 |
|          | <b>0.38</b>    | <b>563</b>           | <b>703</b>           | <b>900</b>           | <b>1125</b>          | <b>1406</b>          | <b>1772</b>          | <b>2250</b>          | <b>2531</b>          | <b>3516</b>          |
|          | 9.53           | 256                  | 320                  | 409                  | 511                  | 639                  | 805                  | 1023                 | 1151                 | 1598                 |
|          | <b>0.50</b>    | <b>750</b>           | <b>938</b>           | <b>1200</b>          | <b>1500</b>          | <b>1875</b>          | <b>2363</b>          | <b>3000</b>          | <b>3375</b>          | <b>4688</b>          |
|          | 12.70          | 341                  | 426                  | 545                  | 682                  | 852                  | 1074                 | 1364                 | 1534                 | 2131                 |
| _        | <b>0.62</b>    | <b>930</b>           | <b>1163</b>          | <b>1488</b>          | <b>1860</b>          | <b>2325</b>          | <b>2930</b>          | <b>3720</b>          | <b>4185</b>          | <b>5813</b>          |
|          | 15.88          | 423                  | 528                  | 676                  | 845                  | 1057                 | 1332                 | 1691                 | 1902                 | 2642                 |
| widt     | <b>0.75</b>    | <b>1125</b>          | <b>1406</b>          | <b>1800</b>          | <b>2250</b>          | <b>2813</b>          | <b>3544</b>          | <b>4500</b>          | <b>5063</b>          | <b>7031</b>          |
|          | 19.05          | 511                  | 639                  | 818                  | 1023                 | 1278                 | 1611                 | 2045                 | 2301                 | 3196                 |
| and      | <b>0.88</b>    | <b>1313</b>          | <b>1641</b>          | <b>2100</b>          | <b>2625</b>          | <b>3281</b>          | <b>4134</b>          | <b>5250</b>          | <b>5906</b>          | <b>8203</b>          |
|          | 22.22          | 597                  | 746                  | 955                  | 1193                 | 1491                 | 1879                 | 2386                 | 2685                 | 3729                 |
| <u> </u> | <b>1.00</b>    | <b>1500</b>          | <b>1875</b>          | <b>2400</b>          | <b>3000</b>          | <b>3750</b>          | <b>4725</b>          | <b>6000</b>          | <b>6750</b>          | <b>9375</b>          |
|          | 25.40          | 682                  | 852                  | 1091                 | 1364                 | 1705                 | 2148                 | 2727                 | 3068                 | 4261                 |
|          | <b>1.12</b>    | <b>1680</b>          | <b>2100</b>          | <b>2688</b>          | <b>3360</b>          | <b>4200</b>          | <b>5292</b>          | <b>6720</b>          | <b>7560</b>          | <b>10500</b>         |
|          | 28.58          | 764                  | 955                  | 1222                 | 1527                 | 1909                 | 2405                 | 3055                 | 3436                 | 4773                 |
|          | <b>1.25</b>    | <b>1875</b>          | <b>2344</b>          | <b>3000</b>          | <b>3750</b>          | <b>4688</b>          | <b>5906</b>          | <b>7500</b>          | <b>8438</b>          | <b>11719</b>         |
|          | 31.75          | 852                  | 1065                 | 1364                 | 1705                 | 2131                 | 2685                 | 3409                 | 3835                 | 5327                 |
|          | <b>1.50</b>    | <b>2250</b>          | <b>2813</b>          | <b>3600</b>          | <b>4500</b>          | <b>5625</b>          | <b>7088</b>          | <b>9000</b>          | <b>10125</b>         | <b>14063</b>         |
|          | 38.10          | 1023                 | 1278                 | 1636                 | 2045                 | 2557                 | 3222                 | 4091                 | 4602                 | 6392                 |
|          | <b>1.75</b>    | <b>2625</b>          | <b>3281</b>          | <b>4200</b>          | <b>5250</b>          | <b>6563</b>          | <b>8269</b>          | <b>10500</b>         | <b>11813</b>         | <b>16406</b>         |
|          | 44.45          | 1193                 | 1491                 | 1909                 | 2386                 | 2983                 | 3759                 | 4773                 | 5369                 | 7457                 |
|          | <b>2.00</b>    | <b>3000</b>          | <b>3750</b>          | <b>4800</b>          | <b>6000</b>          | <b>7500</b>          | <b>9450</b>          | <b>12000</b>         | <b>13500</b>         | <b>18750</b>         |
|          | 50.80          | 1364                 | 1705                 | 2182                 | 2727                 | 3409                 | 4295                 | 5455                 | 6136                 | 8523                 |

Dimensions: **inches in boldface** mm in lightface

Minimum Yield Strength: **pounds in boldface** kg in lightface

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