

WARNING

Selection of Tubing

Selecting the proper Weatherhead tubing for a given application is essential to the proper operation and safe use of the tubing and related equipment. Inadequate attention to the selection of the tubing for your application can result in leakage, bursting, or other failure which can cause serious bodily injury or property damage from spraying fluids or flying projectiles. In order to avoid serious bodily injury or property damage resulting from selection of the wrong tubing, you should carefully review the information in this catalog. Some of the factors that are involved in the selection of the proper tubing are:

- material of tubing
- tubing size
- tubing length
- tubing end connections
- fluid conveyed (compatibility)
- bends
- temperature
- tubing pressure rating
- installation design

These factors and the other information in this catalog should be considered by you in selecting the proper tubing for your application. If you have any questions regarding the proper tubing for your application, please contact the Boston Weatherhead Division of Dana Corporation, Technical Support 1-800-PRO-DANA.

Proper Selection of Tube Fittings

Selecting the proper Weatherhead tube fittings for the application is essential to the proper operation and safe use of tubing and related equipment. Inadequate attention to the selection of the end fittings for your application can result in tube leakage, bursting, or other failure which can cause serious injury or property damage from spraying fluids or flying projectiles. In order to avoid serious bodily injury or property damage resulting from selection of the wrong tube end fitting, you should carefully review the information in this catalog. Some of the factors which are involved in the selection of the proper tube end fittings are:

- tube fitting
- compatibility with tubing
- temperature
- installation design
- tubing size
- corrosion requirements

These factors and the other information in this catalog should be considered by you in selecting the proper tube end fitting for your application.

If you have any questions regarding the proper tube end fittings for your application, please contact the Boston Weatherhead Division of Dana Corporation, Technical Support at 1-800-PRO-DANA.

 **WARNING****Tubing Installation**

Proper installation of the tubing is essential to the proper operation and safe use of the tubing and related equipment. Improper installation of the tubing can result in serious injury or property damage. In order to avoid serious bodily injury or property damage resulting from improper installation of the tubing, you should carefully review the information in this catalog regarding tubing installation. Some of the factors you must consider in installing the tubing properly are:

- proper installation procedures
- protection from high temperature sources
- stress
- changes in length
- twisting
- rubbing and abrasion

These factors and other information in this catalog regarding tubing installation should be considered by you before installing the tubing.

If you have any questions regarding proper installation of the tubing, please contact the Boston Weatherhead Division of Dana Corporation, Technical Support 1-800-PRO-DANA.

Tubing Assembly

Changes in materials, finishes, and assembly techniques may affect the sealing or holding capability of the joint. Due to the great variety of possible assembly scenarios, assembly procedures should be tested to determine if the joint is adequate for its intended use. We stress the importance of referring to assembly instructions on page 9 for determining the appropriate tightening procedure. Improper assembly or overtightening could result in fitting leakage, tubing separation or other failures which could cause serious bodily injury or property damage from spraying fluids or flying projectiles.

These factors and other information in this catalog regarding tubing assembly should be considered by you before installing the tubing.

If you have any questions regarding proper assembly and installation of the tubing, please contact the Boston Weatherhead Division of Dana Corporation, Technical Support 1-800-PRO-DANA.

Fitting Dimensions

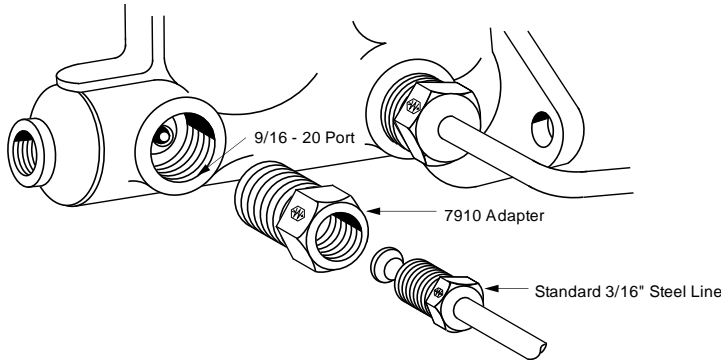
Boston Weatherhead molded compression fittings as described in this catalog may not reflect running changes made to improve part performance. Check with Boston Weatherhead Division of Dana Corporation, Technical Support 1-800-PRO-DANA in critical applications.

Operating Pressures

Operating pressures of Boston Weatherhead molded compression fittings are regulated by ambient and fluid temperatures, type of fluid being carried, tubing type and conditions of mechanical abuse. Pressures in excess of above specifications in all fitting sizes should be tested by the customer for their particular application.


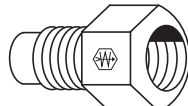
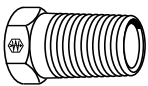
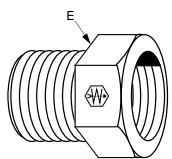
 Refer to safety information regarding tubing selection on page 1.

Adapters can be used to adapt standard steel brake lines to the different size ports used in dual master cylinders. The tube O.D. is the outside diameter of the steel brake line. Thread size can be determined by measuring with a U.S. or Metric screw pitch gauge. See page 16.



STANDARD INVERTED FLARE TUBE AND THREAD SIZE

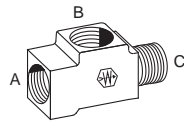
Tube Size	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
Thread Size	5/16-28	3/8-24	7/16-24	1/2-20	5/8-18	11/16-18	3/4-18	7/8-18	1-1/16-16	1-3/16-16	1-5/16-16

<p>Standard Tube Nut (Steel)</p>  <p>*11/16-18 Thread</p>	<table border="1"> <thead> <tr> <th>Tube Size</th> <th>Catalog Number</th> </tr> </thead> <tbody> <tr><td>1/8</td><td>105x2</td></tr> <tr><td>3/16</td><td>105x3</td></tr> <tr><td>1/4</td><td>105x4</td></tr> <tr><td>5/16</td><td>105x5</td></tr> <tr><td>3/8</td><td>105x6</td></tr> <tr><td>3/8</td><td>105x6x7*</td></tr> <tr><td>7/16</td><td>105x7</td></tr> <tr><td>1/2</td><td>105x8</td></tr> <tr><td>5/8</td><td>105x10</td></tr> <tr><td>3/4</td><td>105x12</td></tr> <tr><td>7/8</td><td>105x14</td></tr> <tr><td>1</td><td>105x16</td></tr> </tbody> </table>	Tube Size	Catalog Number	1/8	105x2	3/16	105x3	1/4	105x4	5/16	105x5	3/8	105x6	3/8	105x6x7*	7/16	105x7	1/2	105x8	5/8	105x10	3/4	105x12	7/8	105x14	1	105x16	<p>Dual Master Cylinder Adapter</p> 	<table border="1"> <thead> <tr> <th>Inverted Male Thread</th> <th>Inverted Female Thread</th> <th>Catalog Number</th> </tr> </thead> <tbody> <tr><td>3/16</td><td>3/16</td><td>1441</td></tr> <tr><td>5/16</td><td>3/16</td><td>7897</td></tr> </tbody> </table>	Inverted Male Thread	Inverted Female Thread	Catalog Number	3/16	3/16	1441	5/16	3/16	7897																									
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<p>Long Tube Nut (Steel)</p> 	<table border="1"> <thead> <tr> <th>Tube Size</th> <th>Catalog Number</th> </tr> </thead> <tbody> <tr><td>3/16</td><td>7896x3</td></tr> <tr><td>1/4</td><td>7896x4</td></tr> </tbody> </table>	Tube Size	Catalog Number	3/16	7896x3	1/4	7896x4	<p>Dual Master Cylinder Adapter</p>  <p>† 3/16", 1/4", 5/16" Tube Connection with 1/2-20 Thread. *Seals On Hex Face (E)</p>	<table border="1"> <thead> <tr> <th>Inverted Male Thread (Exceptions Noted)</th> <th>Inverted Female Thread (Exceptions Noted)</th> <th>Catalog Number</th> </tr> </thead> <tbody> <tr><td>3/16(9/16-18)</td><td>3/16</td><td>7911</td></tr> <tr><td>3/16(9/16-18)</td><td>3/16(1/2-20)</td><td>7913</td></tr> <tr><td>3/16(9/16-20)</td><td>3/16</td><td>7910</td></tr> <tr><td>3/16</td><td>1/4</td><td>7828</td></tr> <tr><td>1/4</td><td>3/16</td><td>7818</td></tr> <tr><td>7/16-20</td><td>1/4</td><td>7732*</td></tr> <tr><td>1/4 (9/16-18)</td><td>1/4</td><td>7908</td></tr> <tr><td>1/4</td><td>5/16†</td><td>7917</td></tr> <tr><td>5/16</td><td>3/16</td><td>7817*</td></tr> <tr><td>5/16</td><td>3/16</td><td>7909</td></tr> <tr><td>5/16</td><td>3/16(9/16-18)</td><td>7912</td></tr> <tr><td>5/16</td><td>1/4</td><td>7727*</td></tr> <tr><td>5/16</td><td>1/4</td><td>7829</td></tr> <tr><td>5/16</td><td>5/16</td><td>1074*</td></tr> <tr><td>5/16</td><td>3/8</td><td>7915</td></tr> <tr><td>3/8 NPTF</td><td>5/16</td><td>7771</td></tr> <tr><td>3/8</td><td>5/16</td><td>7916</td></tr> </tbody> </table>	Inverted Male Thread (Exceptions Noted)	Inverted Female Thread (Exceptions Noted)	Catalog Number	3/16(9/16-18)	3/16	7911	3/16(9/16-18)	3/16(1/2-20)	7913	3/16(9/16-20)	3/16	7910	3/16	1/4	7828	1/4	3/16	7818	7/16-20	1/4	7732*	1/4 (9/16-18)	1/4	7908	1/4	5/16†	7917	5/16	3/16	7817*	5/16	3/16	7909	5/16	3/16(9/16-18)	7912	5/16	1/4	7727*	5/16	1/4	7829	5/16	5/16	1074*	5/16	3/8	7915	3/8 NPTF	5/16	7771	3/8	5/16	7916
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Hydraulic Brake Fittings

**Brass
Fittings**

Towed Trailer Brake Tee

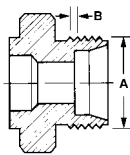


Inverted Seat		Male Thread		Catalog Number
A	B	C		
3/16 (3/8-24)	3/16 (3/8-24)	3/16 inv. (3/8-24)		7900
3/16 (1/2-20)	3/16 (3/8-24)	1/2-20 inv.		7906
3/16 (9/16-18)	3/16 (3/8-24)	3/16 inv. (9/16-18)		7933
3/16 (9/16-20)	3/16 (3/8-24)	3/16 inv. (9/16-20)		7905
3/16 (7/16-24)	3/16 (3/8-24)	1/4 inv. (7/16-24)		7914
3/16 (3/8-24)	1/4 (7/16-24)	3/16 inv. (3/8-24)		7899*
1/4 (7/16-24)	3/16 (3/8-24)	1/4 inv. (7/16-24)		7901
1/4 (7/16-24)	3/16 (3/8-24)	1/4 pipe		7902*
1/4 (9/16-18)	3/16 (3/8-24)	1/4 inv. (9/16-18)		7904
1/4 (7/16-24)	1/4 (7/16-24)	1/4 inv. (7/16-24)		7898

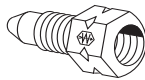
Metric Hydraulic Brake Fittings

How to Measure Metric Threads

Metric threads are measured and specified by the thread diameter in millimeters and the pitch in millimeters per thread. If dimension "A" is 22mm and dimension "B" (crest to crest distance) is 1.5mm, then the metric thread size is M22 x 1.5.



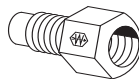
Metric Adapter



Male Thread	Tube O.D./ Female Thread	Catalog Number
M10 x 1.0	3/16 (3/8-24)	1442*
M11 x 1.5	3/16 (M10 x 1.0)	7935*
M12 x 1.0	3/16 (M10 x 1.0)	7936*
M13 x 1.5	3/16 (M10 x 1.0)	7937*

*Use standard S Series Brake Lines. See page 130.

Metric Adapter



Male Thread	Tube O.D./ Female Thread	Catalog Number
M10 x 1.0	3/16 (3/8-24)	1443*
M11 x 1.5	3/16 (M10-1.0)	7942**♦
M12 x 1.0	3/16 (M10-1.0)	7943**♦
M13 x 1.5	3/16 (M10-1.0)	7944**♦

*Use S Series Brake Lines. (standard flare)

**Use SJ Series Steel Brake Lines. (standard flare)

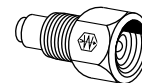
Adapter Standard to Metric Bubble



Female Std. Fl. Seat	Male Bubble Fl. Tube	Catalog Number
3/16" (3/8-24 thread)	4.762 (3/16") (10x1.25 thread)	7970

Used on Fiat applications when converting 3/16" (3/8-24) inverted flare brake lines to 3/16" (10x1.25) metric thread bubble flare.

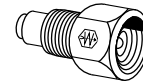
Adapter Standard to Bubble



Female Inv. Fl. Seat	Male Bubble Fl. Tube	Catalog Number
3/16" (3/8-24 thread)	1/4" (7/16-20 thread)	7971

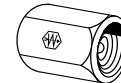
Used on British vehicles when converting Edelmann 3/16" (3/8-24) STD thread inverted flare brakelines to 1/4" (7/16-20) STD thread bubble flare.

Adapter Standard to Metric Bubble



Female Inv. Fl. Seat	Male Metric Bubble Flare Thread	Catalog Number
3/16" (3/8-24 thread)	13x1.5	7972
3/16" (3/8-24 thread)	11x1.5	7973
3/16" (3/8-24 thread)	12x1.0	7974

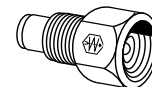
Metric Union



Bubble Fl. Seat	Thread Size	Catalog Number
3/16"	10 x 1.0	7975

For joining Edelmann 6300 Series metric thread bubble flare 3/16" brakelines.

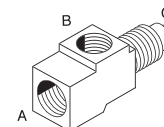
Adapter Standard to Metric Standard



Female Inv. Fl. Seat	Male Bubble Fl. Tube	Catalog Number
3/16" (3/8-24 thread)	4.762 (3/16") (10x1.25 thread)	7976

Adapts Edelmann 3/16" brake lines to most Japanese Cars (Colt, Datsun, LUV, Mazda, Toyota)

Metric Towed Trailer Brake Tee



Inverted A	Seat B	Male Thread C	Catalog Number
3/16 (M10x1.0)	3/16 (3/8-24)	3/16 (M10x1.0)	7918♦
3/16 (M10x1.0) ISO	3/16 (3/8-24)	3/16 (M10x1.0) ISO	7919†♦
3/16 (M11x1.5)	3/16 (3/8-24)	3/16 (M11x1.5)	7920†♦
3/16 (M12x1.0)	3/16 (3/8-24)	3/16 (M12x1.0)	7921†
3/16 (M13x1.5)	3/16 (3/8-24)	3/16 (M13x1.5)	7922†♦

†Bubble flare type


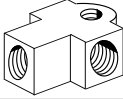
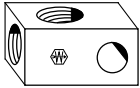
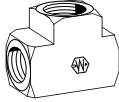
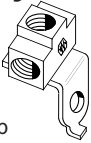


♦MTO - Made To Order

BRASS



Brass Fittings


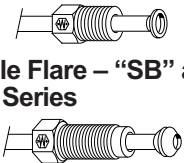

Hydraulic Brake Fittings

Brake Fittings 	Inv. Seat 1/4	Bolt Hole 19/32	Catalog Number 7709	Rear Axle Tee 	Inv. Seat 3/16 (2)	Bolt Hole 9/32	Hose End Port 3/8-24	Catalog Number 7805
					Inv. Seat 3/16 (2)	Hose End Port 7/16-20	Catalog Number 7907*	
Tee Connector 	Inv. Seat 1/4 (3)	Bolt Hole 11/32	Catalog Number 7708*	Tee 	Tube O.D. 3/16	Thread Size 3/8-24	Catalog Number 7896x3	
					Tube O.D. 1/4	Thread Size 7/16-24	Catalog Number 7896x4	
Strap Tee Assembly 	Inv. Seat 3/16 (3)	Bolt Hole 11/32	Catalog Number 7812	Long Tube Nut (Steel) 	Spring Lock 			Catalog Number 5188
	Inv. Seat 1/4 (3)	Bolt Hole 11/32	Catalog Number 7765*					1/2" Clip or Spring Lock

*Has flat strap

Brass Fittings

Steel Brake Lines

Steel Brake Lines for Domestic Vehicles Standard Flare – “S” Series 	Length	Catalog Number 3/16" O.D.	Catalog Number 1/4" O.D.	Catalog Number 5/16" O.D.	Catalog Number 3/8" O.D.
	6" 8" 10" 12" 20" 30" 40" 51" 60" 72" UNION	S306 S308 S310 S312 S320 S330 S340 S351 S360 S372 302x3	– – – – S408 – S412 S420 S430 S440 S451 S460 – 302x4	– – – – S512 S520 S530 S540 S551 S560 – 302x5	– – – – S612 S620 S630 S640 S651 S660 – 302x6
Steel Brake Lines for Imported Vehicles Standard Flare – “SJ” Series Bubble Flare – “SB” and “SC” Series 	Length	British Vehicles* 3/8-24 Thread Catalog Number 3/16" O.D.	Japanese Vehicles 10-1.0mm**Thread Catalog Number 3/16" O.D.	European Vehicles* 10-1.0mm Thread Catalog Number 3/16" O.D.	
	8" 12" 20" 30" 40" 51" 60" UNION	SB308 SB312 SB320 SB330 SB340 SB351 SB360 7940	SJ308 SJ312 SJ320 SJ330 SJ340 SJ351 SJ360 7934A	SC308 SC312 SC320 SC330 SC340 SC351 SC360 7941	
Brake Line Unions for Domestic and Imported Vehicles 	Description				Catalog No.
	3/16" line to 3/16" line (3/8-24 thread), (Standard Flare) 'S' Series 1/4" line to 1/4" (7/16-24 thread), (Standard Flare) 'S' Series 5/16" line to 5/16" line (1/2-20 thread), (Standard Flare) 'S' Series 3/8" line to 3/8" line (5/8-18 thread), (Standard Flare) 'S' Series British line to British line (3/8-24 thread), (ISO flare) 'SB' Series (Steel) European line to European line (10-1.0mm thread), (Bubble Flare) 'SC' Series (Steel) Japanese line to Japanese line (10-1.0mm thread), (Standard Flare) 'SJ' Series (Brass)				302x3 302x4 302x5 302x6 7940 7941* 7934A

*MTO - Made To Order