Important Safety Information

⚠ WARNING!

Selection of Hose

Selection of the proper Weatherhead hose for the application is essential to the proper operation and safe use of the hose and related equipment. Inadequate attention to selection of the hose for your application can result in hose 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 hose, you should carefully review the information in this catalog. Some of the factors which are involved in the selection of the proper hose are:

- hose size
- hose length
- hose ends
- material conveyed
- bends
- temperature
- hose pressure
- static head pressure
- installation design

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

If you have any questions regarding the proper hose for your application, please contact Eaton Technical Support at 1-888-258-0222.

Proper Selection of Hose Ends

Selection of the proper Weatherhead end fittings for the hose end application is essential to the proper operation and safe use of the hose and related equipment. Inadequate attention to the selection of the end fittings for your application can result in hose 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 end fitting, you should carefully review the information in this catalog. Some of the factors which are involved in the selection of the proper hose ends are:

- fluid compatibility
- temperature
- installation design
- hose size
- corrosion requirements
- material conveyed

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

If you have any questions regarding the proper hose for your application, please contact Eaton Technical Support at 1-888-258-0222.

Hose Installation

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

- changes in length
- proper bend radius
- protection from high temperature sources
- elbows and adapters to relieve strain
- rubbing or abrasion
- twisting
- improper hose movement

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

If you have any questions regarding proper hose installation, please contact Eaton Technical Support at 1-888-258-0222.

Hose Maintenance

Proper maintenance of the hose is essential to the safe use of the hose and related equipment. Hose should be stored in a dry place. Hose should also be visually inspected. Any hose that has a cut or gouge in the cover that exposes the reinforcement should be retired from service. Hoses should also be inspected for kinking or broken reinforcement. If the outside diameter of the hose is reduced by 20% at the spot where it is bent then the hose should be retired from service. Inadequate attention to maintenance of the hose can result in hose leakage, bursting, or other failure which can cause serious bodily injury or property damage from spraying fluids, flying projectiles, or other substances.

Hose and Field Attachable Hose Ends

Weatherhead Hose and Field Attachable Hose Ends have been engineered and designed as a complete hose assembly system. Component compatibility along with the use of quality components insures the production of reliable hose assemblies when assembled properly. The use or intermixing of ends and hose not specifically engineered and designed for use with each other may result in the production of unsafe or unreliable hose assemblies. This can result in hose assembly leakage, hose separation or other failures which can cause serious bodily injury or property damage from spraying fluids, flying projectiles, or other substances. The Eaton warranty is limited to apply only when Weatherhead Field Attachable Hose Ends are used on compatible Weatherhead hose. See back inside cover for warranty information.

Coll-O-Crimp® Hose, Hose Ends and Assembly Equipment Compatibility

The Coll-O-Crimp® Equipment Package, Coll-O-Crimp Hose Ends and Coll-O-Crimp Hose have been engineered and designed as a complete hose assembly system. Each component of the Coll-O-Crimp hose assembly system is compatible with other Coll-O-Crimp components to which it relates. Component compatibility, along with the use of quality components, insures the production of reliable hose assemblies when assembled properly. The use or intermixing of fittings and hose not specifically engineered and designed for use with each other and Coll-O-Crimp equipment is not recommended and may result in the production of unsafe or unreliable hose assemblies. This can result in hose assembly leakage, hose separation or other failures which can cause serious bodily injury or property damage from spraying fluids, flying projectiles, or other substances. The Eaton warranty is limited to apply only when Coll-O-Crimp Hose Ends and compatible Coll-O-Crimp Hose are used with Coll-O-Crimp assembly equipment.

Hose Selection Chart

How to use chart: Locate the hose I.D. required and move to the right to the correct pressure. Then move up or down in this column for data on material, temperature, etc. to quickly determine whether the hose meets your requirements. For complete information on any hose refer to hose catalog page number at bottom of column.

⚠ WARNING

Selection of Hose: Selection of the proper hose for the application is essential to the proper operation and safe use of the hose and related equipment. Inadequate attention to selection of the hose for your application can result in hose leaking, bursting, or other failure which can cause serious bodily injury or property damage from spraying fluids or flying projectiles. You should carefully review the information in this catalog.

HOSE #	H057	H077	H338	H229	H239	H429	H285	H105	H275	H201
Usage	Fuel & Oil	Elec. Fuel Inject.	Air Brake	Air & Hydraulic	Transmission Oil Cooler, Diesel Fuel, Air Brake	Transmission Oil Cooler, Fuel and Diesel Lines	Agriculture & Food	Air & Water	Air & Water	General Purpose Air & Oil
Meets	NMMA	–	DOT All	DOT All	DOT All	–	FDA, NSF 51	–	–	MSHA (Black only)
SAE No.	30R7	30R9	J1402 Type A	J1402 Type All	J1402 Type All	J1019	–	–	–	–
Temperature Range	-40°F +275°F	-30°F +275°F	-40°F +200°F	See page 32	See page 33	-55°F +302°F	+25°F +150°F	See page 34	-10°F +150°F	-40°F +212°F
Inner Tube	Nitrile	Fluoro-elastomer Veneer	EPDM	Nitrile	CPE	CPE	Clear PVC	EPDM	PVC	Nitrile
Reinforcement	1 Fiber Braid	Multi Fiber Braid	Multi Fiber Braid	2 Fiber Braids	2 Fiber	1 Wire Braid	2 Fiber Spirals	Multi Fiber Spiral	2 Fiber Spirals	1 Fiber Braid
Outer Cover	Hypalon®[1]	ECO	EPDM	Fiber Braid	Fiber Braid	Fiber Braid	Clear PVC	Red EPDM	Red PVC	Neoprene (black), Vinyl Nitrile (colors)
Hose I.D.	MAXIMUM RECOMMENDED OPERATING PRESSURE - PSI									
3/16	50			225	225					
1/4	50	125					250*	300†	250**	250
5/16	50	125		225						
3/8	50	125	225				225*	300†	250**	250
13/32				225	225	250				
7/16	35									
1/2			225	225	225	250	200*	300†	250**	250
5/8				225	225					250
3/4							150*	300†	250**	250
7/8				225	225					
1							125*	200†	200	
1-1/8					225					
1-1/4										
1-1/2										
1-3/8										
1-13/16										
2										
2-3/8										
3										
Hose	Page 31	Page 31	Page 32	Page 32	Page 33	Page 33	Page 34	Page 34	Page 35	Page 35
Coll-O-Crimp Hose Ends	–	–	157-159	100-103 155	100-103 155	139-146	92-99	163-183	92-99 156	–
Field Attachable Hose Ends	206-208	89	214-217	218-219 230-235	230-235	154	156	206-208 212-213	–	209-211

[1] Hypalon® is a registered trademark of DuPont.

**At 70° F.

† When used with 'U' Series Ends.

*Not NMMA approved.

Hose Selection Chart

⚠ WARNING

Selection of Hose: Selection of the proper hose for the application is essential to the proper operation and safe use of the hose and related equipment. Inadequate attention to selection of the hose for your application can result in hose leaking, bursting, or other failure which can cause serious bodily injury or property damage from spraying fluids or flying projectiles. You should carefully review the information in this catalog.

HOSE #	H115	H039	H265	H100	H101	H366	H009	H757	GH134	H059
Usage	Air Tool & Water	Hydraulic Suction Vacuum	Air, Water	General Purpose	General Purpose	LPG	Lube	Air Cond. R12 & R134a	Air Cond. R404a, HFC134a, R22, R407C	Fuel Oil/ Lube
Meets	–	USCG ABS MSHA	–	–	MSHA	UL 21	USCG MSHA	–	–	ABS NMMA USCG
SAE No.	–	100R4 J1942/1	–	–	–	–	J1942/1, 100R6	J2064 Type C, Cl-1	J2064 Type E Class 1	J1942/1
Temperature Range	-40°F +160°F	-40°F +212°F	-20°F +180°F	-40°F +212°F	-40°F +212°F	-40°F +300°F	-40°F +212°F	See page 41	-22°F +257°F	-4°F +212°F
Inner Tube	Nitrile	Nitrile	Modified PVC	Nitrile	Nitrile	Nitrile	Nitrile	Rubber/ Nylon/ Rubber	Polyamide Veneer	Nitrile
Reinforcement	Multi Fiber Braid	2 Fiber Ply & Helical Wire	2 Fiber Spirals	1 Fiber Braid	1 Fiber Braid	1 Fiber & 1 S.S. Braid	1 Fiber Braid	1 Fiber Braid	Rubber Backing, 1 Fiber Braid	1 Wire 1 Fiber Braid
Outer Cover	Red Vinyl Nitrile	Neoprene	Blue Rubber Modified Thermoplastic	Fiber Braid	Neoprene	Fiber Braid	Neoprene	Butyl Perforated	Chlorobutyl	Blue Neoprene
Hose I.D.	MAXIMUM RECOMMENDED OPERATING PRESSURE - PSI									
3/16										500
1/4	300		350**	350	350		400			500*
5/16	300			350	350	350	400	400		500
3/8	300		350**	350	350		400		500	
13/32						350		400		500
7/16										
1/2	300		300**	350	350		400	350	500	500
5/8				350	350			350	500	500
3/4	300	300††	250**	350	350				500	
7/8										
1	300	250††	200**							500
1-1/8										
1-1/4	225	200††								
1-1/2	225	150								
1-3/8										
1-13/16										
2		100								
2-3/8										
3										
Hose	Page 36	Page 37	Page 38	Page 38	Page 39	Page 39	Page 40	Page 41	Page 41	Page 42
Coil-O-Crimp Hose Ends	163-183 184-196	160 163-183 184-196	92-99 156	–	–	100-103	92-99	139-146	115-138	100-103 155
Field Attachable Hose Ends	206-208 212-213	220 221	–	209-211	209-211	218-219 230-235	205	–		230-235

††When used with 'U' and 'S'.

**At 70° F.

† When used with 'U' Series Ends.

*Not NMMA approved.

Hose Selection Chart

⚠ WARNING

Selection of Hose: Selection of the proper hose for the application is essential to the proper operation and safe use of the hose and related equipment. Inadequate attention to selection of the hose for your application can result in hose leaking, bursting, or other failure which can cause serious bodily injury or property damage from spraying fluids or flying projectiles. You should carefully review the information in this catalog.

HOSE #	H017	H166	H209	H213	H324	H104	H069	H243	H277	H569	H169
Usage	General Purpose Hydraulic	High Temp. Truck	Car Wash	High Temp. Truck	Power Steering	Hydraulic	Truck & Hydraulic	Hydraulic/ Air/Steam	Hydraulic/ Air/Steam w/ Conductive Static Dissipating Liner	A/B & Hydraulic	Hydraulic
Meets	USCG MSHA	DOT All	–	DOT Al	–	USCG MSHA ABS	DOT All+ ABS	FDA	–	ABS DOT+ All USCG	MSHA
SAE No.	J1942/1, 100R3	J1402 Type All	–	J1402 Type Al	J188 Type 2	J1942 /1/1 100R1AT	J1402 All 100R5	–	–	100R5 J1942 /1 J1402 Type All	–
Temperature Range	-40°F +212°F	See page 43	-40°F +200°F	See page 44	-40°F +250°F	-40°F +212°F	See page 46	-65°F +450°F	-65°F +450°F	See page 48	-40°F +212°F
Inner Tube	Nitrile	Nitrile	Nylon 11	CPE	Neoprene	Nitrile□	Nitrile	PTFE	PTFE	CPE	Nitrile
Reinforcement	2 Fiber Braids	1 Fiber & 1 S.S. Braid	1 Fiber Braid	1 Fiber & 1 Wire Braid	2 Fiber Braids	1 Steel Braid	1 Fiber & Steel Braid	1 S.S. Braid	1 S.S. Braid	1 Fiber & 1 Steel Braid	1 Steel Braid
Outer Cover	Neoprene	Fiber Braid	Polyurethane	Fiber Braid	Neoprene	Neoprene	Fiber Braid	Stainless Steel Braid	Stainless Steel Braid	Blue Fiber Braid	Neoprene (Perforated)
Hose I.D.	MAXIMUM RECOMMENDED OPERATING PRESSURE - PSI										
3/16		1500		2000			3000	3000	3000	3000	3000
1/4	1250	500	2250	1500		2750	3000	3000	3000	3000	3000
5/16		500	1750	1500			2250	2500	2500	2250	2250
3/8	1125		1350		1500	2250		2000	2000		
13/32		500		1250			2000			2000	2000
7/16											
1/2	1000	450	1000	1000		2000	1750	1750	1750	1750	1750
5/8		450		750		1500	1500			1500	1500
3/4	750					1250		1000	1000		
7/8		250		400			800			800	800
1	565					1000		1000	1000		
1-1/8		250					625			625	625
1-1/4	375					625					
1-1/2											
1-3/8							500				500
1-13/16							350				350
2											
2-3/8							350				
3							200				
Hose	Page 42	Page 43	Page 43	Page 44	Page 45	Page 45	Page 46	Page 47	Page 47	Page 48	Page 49
Coll-O-Crimp Hose Ends	163-183	100-103	92-99	–	163-183	160 163-183	100-103	92-99	92-99	100-103	100-103
Field Attachable Hose Ends	–	218-219 230-235	–	226-229	–	222-225	218-219 230-235	–	–	230-235	218-219 230-235

+ Sizes -4 thru -12 only.

Size -4 inner tube Neoprene.

Hose Selection Chart

⚠ WARNING

Selection of Hose: Selection of the proper hose for the application is essential to the proper operation and safe use of the hose and related equipment. Inadequate attention to selection of the hose for your application can result in hose leaking, bursting, or other failure which can cause serious bodily injury or property damage from spraying fluids or flying projectiles. You should carefully review the information in this catalog.

HOSE #	H435	H436	H114	H190	H345	H146	H145	H545	H335	H336
Usage	Hydraulic Non-Conductive	Hydraulic	Ag. Hyd. & Hyd. Synthetic	Hydraulic	Pressure Washer	Ag. Hyd. & Hyd. Synthetic	Hydraulic	Hydraulic	Hydraulic Non-Conductive	Hydraulic
Meets	—	—	MSHA	MSHA, USCG, ISO 1436a, EN 853Type 1SN	MSHA	—	USCG MSHA	—	EN 855Type R8	EN 855 Type R8
SAE No.	100R7	100R7	—	J1942/1, 100R1 AT	—	—	J1942/1, 100R17	—	100R8 Non-Cond.	100R8
Temperature Range	-40°F +200°F	-40°F +200°F	-40°F +250°F	-40°F +212°F	See Page 55	-65°F +250°F	See Page 56	-40°F +250°F	See page 58	See page 58
Inner Tube	Nylon 11	Nylon 11	Hytrel®1	Nitrile	Nitrile	Hytrel®1	Nitrile	Nitrile	Nylon	Nylon
Reinforcement	2 Fiber Braids	2 Fiber Braids	1 Steel Braid	1 Steel Braid	1 Steel Braid	1 Steel Braid	1 Steel Braid†	1 Steel Braid*	Multi Yarn Braids	Multi Fiber Braids
Outer Cover	Orange Polyurethane	Polyurethane Perforated	Neoprene	Vinyl Nitrile	Blue Vinyl Nitrile	Polyester Braid	Neoprene	Abrasive Resistant Nylon	Orange Polyurethane	Black Polyurethane Perforated
Hose I.D.	MAXIMUM RECOMMENDED OPERATING PRESSURE - PSI									
3/16									5000	5000
1/4	2750	2750	3000	3265	3000	3000	3045	3000	5000	5000
5/16	2500	2500								
3/8	2250	2250	3000	2610	3000	3000	3045	3000	4000	4000
13/32										
7/16										
1/2	2000	2000	3000	2320	3000	3000	3045	3000	3500	3500
5/8				1885			3045	3000		
3/4	1250	1250		1525			3045	3000		2250
7/8									2250	
1	1000	1000		1275			3045	3000	2000	2000
1-1/8										
1-1/4										
1-1/2										
1-3/8										
1-13/16										
2										
2-3/8										
3										
Hose	Page 50-51	Page 52-53	Page 54	Page 54	Page 55	Page 55	Page 56	Page 57	Page 58	Page 58
Coil-O-Crimp Hose Ends	92-99	92-99	160 163-183	197-204	147-153	163-183	147-153, 160 163-183 184-196	147-153, 160 163-183 184-196	104-108	104-108
Field Attachable Hose Ends	240-241	240-241	—	—	—	—	—	—	—	—

1 Hytrel® ia a registered trademarks of Dupont.

† 2 steel braids, sizes -8 thru -16.

* 1 Steel braid sizes -4 thru -12; 2 steel braids sizes -8 thru -16.

Hose Selection Chart

⚠ WARNING

Selection of Hose: Selection of the proper hose for the application is essential to the proper operation and safe use of the hose and related equipment. Inadequate attention to selection of the hose for your application can result in hose leaking, bursting, or other failure which can cause serious bodily injury or property damage from spraying fluids or flying projectiles. You should carefully review the information in this catalog.

HOSE #	H245	H325	H280	H290	H425	H350	H400	H430	H470
Usage	Hydraulic	Low Temp. Hydraulic	Hydraulic	Hydraulic	Hydraulic	Hydraulic	Very High Pressure Hydraulic	Very High Pressure Hydraulic	Very High Pressure Hydraulic
Meets	USCG MSHA ABS	–	USCG, MSHA, ISO 1436, EN 857, Type 2SC	USCG, MSHA, ISO 1436, EN 853, Type 2SN	USCG MSHA ABS	MSHA	MSHA	USCG MSHA, ABS	USCG** MSHA, ABS
SAE No.	J1942 100R16	–	J1942, Code H, 100R16	J1942/1, 100R2 AT	J1942/1, 100R2AT	–	–	J1942, 100R12	J1942/1, 100R13
Temperature Range	-40°F +212°F	-67°F +175°F	See page 61	See page 62	-40°F +212°F	-40°F +212°F	-40°F +212°F	-40°F +250°F	See page 66
Inner Tube	Nitrile	Synthetic Rubber	Nitrile	Nitrile	Nitrile ■	Synthetic Rubber	Nitrile	Neoprene	Neoprene
Reinforcement	2 Steel Braids	2 Steel Braids	2 Steel Braids	2 Steel Braids	2 Steel Braids	2 Steel Braids ■	2 Steel Braids	Multi Spiral Steel	Multi Spiral Steel
Outer Cover	Neoprene	Synthetic Rubber	Vinyl Nitrile	Vinyl Nitrile	Neoprene	Neoprene	Vinyl Nitrile	Hypalon®	EPDM
Hose I.D.	MAXIMUM RECOMMENDED OPERATING PRESSURE - PSI								
3/16									
1/4	5000	5000	5800	5800	5000				
5/16									
3/8	4000	4000	4800	4800	4000	3500			
13/32									
7/16									
1/2	3500	3500	4000	4000	3500	3500		4000	5000
5/8	2750		3630	3630	2750	3500	4000		
3/4	2250	2250	3120	3120	2250	3500	4000	4000	5000
7/8									
1	2000	2000	2400	2400	2000	3500		4000	5000
1-1/8									
1-1/4	1625				1625			3000	5000
1-1/2					1250			2500	5000
1-3/8									
1-13/16									
2					1125			2500	5000
2-3/8									
3									
Hose	Page 60	Page 60	Pages 61	Pages 62	Page 63	Page 64	Page 64	Page 65	Page 66
Coll-O-Crimp Hose Ends	147-153, 160 163-183 184-196	163-183	197-204	197-204	160, 163-183 184-196	147-153 163-183 184-196	147-153	184-196	109-114 161-162
Field Attachable Hose Ends	–	–	–	–	240-241	–	–	–	–

▲ Size -4 inner tube Neoprene.

** Size -12 thru -20.

■ 2 Steel Braids -06 thru -12. 4 Steel Spirals size -16.

Hose Selection Chart

⚠ WARNING

For important safety information concerning hose selection, see page 1 of this catalog.

There are several factors which affect selection of a hose sized such that it will provide the desired rate of flow at the required pressure; these are:

- Hose size
- Hose length
- Hose ends
- Material conveyed
- Bends
- Static head pressure

Hose Size

Undersized pressure lines produce excessive pressure drop with attendant energy loss and heating, and undersized suction lines cause cavitation at the pump inlet. Oversized hose assemblies, on the other hand, are excessively costly and generally too heavy.

In selecting hose for hydraulic systems, the following empirical values can be used to achieve minimum pressure drop consistent with reasonable hose size (see Chart 2):

Velocity of pressure lines 7 to 15 ft./sec.Velocity of short pressure lines to 20 ft./sec. Velocity of suction lines 2 to 5 ft./sec.

To use Chart 2, lay a straight-edge across the chart as shown by the dotted line. To minimize pressure drop, always use the next larger size hose shown if the line passes between sizes listed.

Hose Length

Chart 1 gives the pressure drop in different-sized hoses based on hoses of 100-foot length, and is based on water as the material conveyed. For hoses of a different length, these values must be corrected. For example, a 100-foot length of 1/2" hose causes a pressure drop of 100 lbs./in2 at a flow rate of 10 gal./min. If the hose in question is 50 feet long, the pressure drop derived from Chart 1 must be corrected by multiplying the value by the ratio of the actual length to 100 feet, or 50/100, or 0.5. Therefore, the actual pressure drop caused by a 50-foot length of 1/2" hose, at a flow rate of 10 gal./min., is 50 lbs./in.2 (0.5 x 100 = 50 lb./in.2).

Hose Ends and Fluid Conveyed

In most cases, the end fitting openings are slightly smaller than the hose itself. However, this varies widely with hose end designs from 'full-flow' ends which have the same I.D. as the hose, down to as much as 1/8" smaller I.D. than the hose bore. To allow for this, assume a 10-to-15% greater flow rate than actually measured in the system when determining pressure drop.

Chart 1 is based on water as the material conveyed, and for other fluids it is necessary to correct for the difference in specific gravity and viscosity. Chart 3 lists common fluids, their specific gravities, viscosities, and corresponding correction factors.

To determine the pressure drop for a specific fluid, first determine the pressure drop from Chart 1 for the hose length then divide this by the correction factor found in Chart 3.

For example, the 50-foot length of 1/2" hose just described had a pressure drop of 50 lbs./in.2 at a flow of 10 gal./min. of water. To determine the pressure drop if #2 fuel oil is the material conveyed, divide by 0.752 (from Chart 3)...50 ÷ 0.752 = 66.5 lbs./in.2 pressure drop. If, on the other hand, the material conveyed is Type #3 gasoline, the pressure drop would be 50 ÷ 1.19 = 42 lbs./in.2

CHART 1. Hose Flow Rate vs Pressure Drop

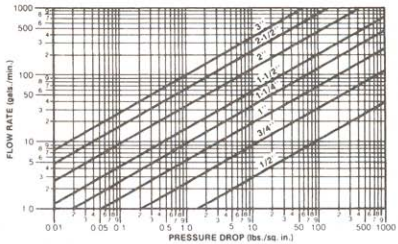
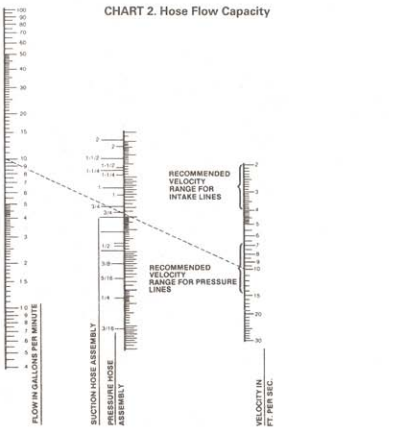


CHART 2. Hose Flow Capacity



Hose Selection Chart

⚠ WARNING

For important safety information concerning hose selection, see page 3 of this catalog.

Bends

If a hose of a given length is bent, the pressure drop will increase by some definite amount...the sharper the bend and the smaller the radius of bend the greater the pressure drop. The effect of a bend may be neglected if it is slight or if there are but few bends in a long length of hose. This is because the additional pressure drop caused by these bends is not significant when compared to the total pressure drop.

However, a dock hose may have four sharp 90° bends in a 25-foot length, and if pressure drop is important, these bends must be considered because they constitute a significant portion of the overall pressure drop.

The curves in Chart 4 show the effects of resistance due to 90° bends. This data can also be used as a guide for smooth bends less or greater than 90°. For example, a 45° bend has about 4/10 the resistance of a 90° bend.

Problem: Determine the equivalent length, in terms of hose inside diameters, of a 90° and a 180° bend whose relative radii are 12 inches.

Solution: Referring to the "total resistance curve," the equivalent length for a 90° bend is 34.5 hose diameters. The equialent length of a 180° bend is 34.5 diameters for one 90° bend, 18.7 diameters for resistance due to length, and 15.8 ÷ 2 diameters for bend resistance. Adding these 34.5, 18.7, and 15.8 ÷ 2 = 61.1 diameters for a 180° bend.* Note that this loss is less than the sum of losses through two 90° bends separated by tangents.

Static Head Pressure

Static head is the difference in height between the inlet and outlet ends of a hose. Before using Chart 1, it is necessary to correct for static head pressure because the values in Chart 1 are pressure losses due to friction only.

To correct for static head pressure, the difference in height is determined and multiplied by 0.433 to convert the head to an equivalent pressure in PSI (one foot of water exerts 0.433 PSI pressure).

If the inlet is higher than the outlet, the pressure equivalent is added to the pump pressure. If the outlet is higher than the inlet, the pressure equivalent is subtracted from the pump pressure. In both cases, it is assumed that the pump pressure is the pressure available at the inlet end and that the pump is outside of the hose system.

Liquid	Specific Gravity	Viscosity Centistokes (CS)	Viscosity Centipoises (CP)	Correction Factor, R
Acetic Acid - 100%	1.05	-	1.3	0.975
Acetic Acid - 70%	1.07	-	2.7	0.843
Ammonia liquid - 100%	0.66	0.30	-	1.290
Ammonia liquid - 26%	0.901	-	1.3	0.943
*Asphalt = 120 °F	1.40	-	300	0.350
*Beer	1.01	1.15	-	0.990
Benzol, Benzol	0.88	1.44	-	1.08
Brine, Calcium Chloride - 25%	1.23	3.80	-	0.78
Brine, Sodium Chloride - 25%	1.19	2.07	-	0.88
Butyl Alcohol	0.81	3.64	-	0.783
*Castor Oil	0.96	900	-	0.27
*Crude Petroleum Typical: 1 Pennsylvania Crude = 100 °F	0.80	-	3	0.78
2 California Crude = 150 °F	0.915	-	9	0.64
3 +30 API Crude = 100 °F	0.86	7.2	-	0.685
4 Texas Crude = 150 °F	0.875	-	3	0.792
5 Mexican Crude = 150 °F	0.96	-	550	0.287
Decane - n	0.73	1.24	-	0.975
Ethyl Alcohol - 100%	0.794	-	1.25	0.93
Ethyl Alcohol - 95%	0.808	-	1.45	0.904
Ethyl Alcohol - 40%	0.939	-	3.00	0.807
Ethyl Glycol	1.12	-	24.00	0.55
Formic Acid - *Fuel Oils	1.22	-	-	0.94
No. 1 = 100 °F Sp. Gr. - 82 to 95 Vis. - 30 to 40 SSU	0.88	7.45	-	0.85
No. 2 = 100 °F Sp. Gr. - 82 to 95 Vis. - 35 to 50 SSU	0.88	4.50	-	0.752
No. 3 = 100 °F Sp. Gr. - 82 to 95 Vis. - 55 SSU min	0.88	6.6	-	0.66
No. 5 = 100 °F Sp. Gr. - 82 to 95 Vis. - 150 to 450 SSU	0.88	55.0	-	0.47
No. 6 = 122 °F Sp. Gr. - 82 to 95 Vis. - 430 to 2900 SSU	0.88	38.0	-	0.493

Liquid	Specific Gravity	Viscosity Centistokes (CS)	Viscosity Centipoises (CP)	Correction Factor, R
*Gasoline representative: Type #1	.74	.88	-	1.04
Type #2	.72	.64	-	1.11
Type #3	.68	.46	-	1.19
Glycerine (Glycerol) - 100% @ 150°F	1.26	-	75.0	0.45
Glycerine & Water - 50%	1.13	-	6.5	0.717
Heptane - n	.684	0.60	-	1.16
Hexane - n	.66	0.49	-	1.21
Hydrochloric Acid - 31.5%	1.15	-	1.92	0.92
Isobutyl Alcohol	0.817	-	3.90	0.745
Isopropyl Alcohol	0.785	-	2.20	0.828
Kerosene	0.80	2.23	-	0.897
Lubricating Oil - Machine Oil	0.90	-	198	0.35
Lubricating Oil - Automotive	0.893	-	110	0.39
Methyl Alcohol - Methanol - 100%	0.79	.74	0.60	1.072
Methyl Alcohol - 90%	0.824	-	0.77	1.03
Methyl Alcohol - 40%	0.937	-	2.00	0.863
*Milk	1.03	1.15	-	0.99
Motor Oil	0.893	-	110	0.39
Naphthalene	1.10	0.9	-	1.04
Nitric Acid - 95%	1.50	-	1.13	1.07
Nitric Acid - 60%	1.37	-	2.35	0.913
Nonane - n	0.718	.97	-	1.02
Octane - n	0.70	.77	-	1.068
Olive Oil	0.91	93.0	-	0.41
Pentane - n	0.63	0.37	-	1.24
Propyl Alcohol	0.804	2.8	-	0.828
Rapeseed Oil	0.91	180	-	0.36
Sodium Hydroxide - 50%	1.53	-	95.0	0.443
Soybean Oil	0.924	85	-	0.418
Sperm Oil	0.88	21	-	0.55
Sugar Solution - 20%	1.08	1.9	-	0.895
Sugar Solution - 40%	1.18	5.3	-	0.728
Sugar Solution - 60%	1.29	44.0	-	0.475
Sulfuric Acid - 100%	1.83	14.6	-	0.59
Sulfuric Acid - 95%	1.83	14.5	-	0.593
Sulfuric Acid - 60%	1.50	4.4	-	0.755
Toluene	0.866	-	0.6	1.092
Turpentine	0.86	1.83	-	0.90
Water - Fresh	1.0	1.10	-	1.00
Water - Salt	1.03	1.10	-	1.00
Xylene - Xylol	0.87	0.93	-	1.03

*These figures are approximate or averages of those values available.

CHART 3. Fluid Flow Correction Factors

Installation Design

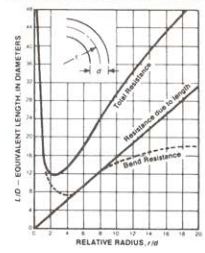
Hose should not be twisted or put in torsion either during the installation or while in service. Sharp or excessive bends may cause the hose to kink or rupture.

Be sure to allow enough slack to provide for changes in length which will occur when pressure is applied. This change in length can vary from +2% to -4%.

Design the installation so the hose assembly is accessible for inspection and easy removal.

Bend radius is important. A good working rule is that the minimum bend radius should be five or more times the O.D. dimension of the hose.

CHART 4. Resistance of 90° Bends



*In a continuous bend of 180 degrees the second 90 degree bend produces approximately one-half the resistance of the first bend.

Chemical Compatibility Chart

These tables alphabetically list commonly used materials of various chemical composition. After each fluid listing you will find the basic hose tube and fitting materials rated according to their chemical resistance to each individual fluid. The chart is intended to be used as a guide only. Consult Eaton Technical Support for further information.

⚠ WARNING

Selection of Hose:
Selection of the proper hose for the application is essential to the proper operation and safe use of the hose and related equipment. Inadequate attention to selection of the hose for your application can result in 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 hose, you should carefully review the information in this catalog.

⚠ WARNING

Proper Selection of Hose Fittings: Selection of the proper fittings for the hose end application is essential to the proper operation and safe use of the hose and related equipment.

Inadequate attention to the selection of the fittings for your application can result in serious bodily injury or property damage resulting from spraying fluids or flying projectiles. In order to avoid serious bodily injury or property damage resulting from selection of the wrong fitting, you should carefully review the information in this catalog.

⚠ WARNING

The following list of chemicals is offered as a guide to the chemical resistance properties of the tube material of the hoses shown. It should be used as a guide only, as the degree of resistance of any elastomer to a particular fluid depends upon such variables as temperature, concentration, pressure conditions, velocity of flow, duration of exposure, aeration, stability of the fluid, etc.

Therefore, when in doubt, it is advisable not to use the hose. If this is not practical, tests should be devised that simulate actual service conditions as nearly as possible. Eaton offers additional technical assistance. Contact your Eaton Customer Support representative for assistance or call Technical Support at 1-888-258-0222.

FLUID	HOSE MATERIAL										HOSE END FITTINGS		
	PVC	Nitrile	Vinyl Nitrile	Neoprene	PTFE	Nylon/Nylon II	EPDM	Hypalon[2]	Hytrel[1]	Polyurethane	CPE	Brass	Steel	316 Stainless
Acetaldehyde	X	X	X	X	G	G	G	F	X	X	-	X	X	G
Acetic Acid (Concentrated)	X	X	X	X	G	X	G	X	X	X	G	X	X	G
Acetic Acid (Diluted)	F	X	X	F	G	F	G	F	G	X	G	X	X	G
Acetic Anhydride	X	G	G	X	G	X	G	F	X	X	G	X	F	F
Acetone	X	X	X	X	G	G	G	F	F	X	G	G	G	G
Acrylonitrile	G	X	X	X	G	G	X	X	-	X	G	-	G	G
Air□	G	G	G	G	G	G	G	G	G	G	G	G	G	G
Alcohols (Methanol & Ethanol)	X	G	G	G	G	G	G	G	G	X	G	G	F	G
Aluminum Chloride	G	G	G	G	G	X	G	G	G	G	G	X	X	F
Aluminum Fluoride	G	G	G	F	G	X	G	G	-	G	X	X	X	X
Aluminum Hydroxide	G	G	G	G	G	G	G	G	-	G	G	X	F	G
Aluminum Sulfate	G	G	G	G	G	G	G	G	G	G	G	X	X	G
Alums	G	G	G	G	G	F	G	G	X	G	G	X	X	F
Ammonia, Anhydrous	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Ammonia Solution (10%)	G	G	G	F	G	G	G	G	X	X	X	X	G	G
Ammonium Chloride	G	G	G	G	G	X	G	G	G	G	G	X	G	F
Ammonium Hydroxide	X	F	F	F	G	G	G	G	X	X	G	X	F	G
Ammonium Nitrate	G	G	G	G	G	G	G	G	G	X	G	-	-	G
Ammonium Phosphate	F	G	G	G	G	G	G	G	G	F	G	X	X	G
Ammonium Sulfate	G	G	G	G	G	G	G	G	G	G	G	X	X	F
Amyl Acetate	X	X	X	X	G	G	F	X	X	X	G	X	F	G
Amyl Alcohol	X	G	G	F	G	G	G	G	G	X	G	G	F	F
Aniline	X	X	X	X	G	G	X	X	X	X	X	X	G	G
Aniline Dyes	X	F	F	F	G	X	G	F	X	X	X	X	X	F
Animal Oils and Fats	G	G	G	X	G	G	F	F	G	X	F	G	G	G
Anti-Freeze (Glycol Base)	G	G	G	G	G	F	G	G	G	X	G	G	G	G
Aqua Regia	X	X	X	X	G	X	X	X	X	X	X	-	X	X
Asphalt	X	G	G	X	G	G	X	X	-	X	F	G	G	G
Barium Chloride	G	G	G	G	G	X	G	G	G	G	G	X	F	G
Barium Hydroxide	G	G	G	G	G	G	G	G	G	X	G	X	G	G
Barium Sulfide	G	G	G	G	G	X	G	G	X	G	G	X	X	G
Beet Sugar Liquors	G	G	G	G	G	G	X	G	G	X	G	X	G	G
Benzaldehyde	X	X	X	X	G	G	F	X	X	X	X	F	F	G
Benzene, Benzol	X	X	X	X	G	G	X	X	X	X	F	G	G	G
Benzoic Acid	X	X	X	G	G	X	X	X	X	X	F	F	X	F
Black Sulfate Liquor	X	F	F	G	G	F	G	F	G	X	F	X	G	G
Borax	G	F	F	G	G	G	G	G	G	G	G	G	G	G
Boric Acid	G	G	G	G	G	G	G	G	G	G	X	X	X	G
Brake Fluid (Glycol Ether Base)	X	X	X	F	G	G	G	X	-	X	G	G	G	G
Brine	G	G	G	G	G	G	G	G	G	X	G	-	X	F
Butane	Use H366 Hose Only													
Butyl Acetate	X	X	X	X	G	G	F	X	F	X	F	G	G	G

CODES:

G Good resistance.
F Fair resistance.
X Incompatible.
– No data available.

□ In all applications, the cover must be pinpricked.

1 Hytrel® ia a registered trademarks of Dupont.

2 Hypalon® ia a registered trademarks of Dupont

NOTE: All data given herein is believed to be accurate and reliable, but presented without guarantee, warranty, or responsibility of any kind, express or implied, on our part. Chemical resistance will vary with the wide diversity of possible mixtures and service conditions. It is therefore not possible to give any guarantee whatsoever in individual cases.

Chemical Compatibility Chart

FLUID	HOSE MATERIAL											HOSE END FITTINGS		
	PVC	Nitrile	Vinyl Nitrile	Neoprene	PTFE	Nylon/Nylon II	EPDM	Hypalon®[2]	Hytrel®[1]	Polyurethane	CPE	Brass	Steel	316 Stainless
Butyl Alcohol, Butanol	X	G	G	G	G	G	G	G	G	X	G	G	G	G
Calcium Bisulfite	G	G	G	G	G	F	G	G	X	G	X	X	X	X
Calcium Chloride	G	G	G	G	G	X	G	G	G	G	X	F	F	G
Calcium Hydroxide	G	F	F	G	G	F	G	F	G	X	G	F	G	G
Calcium Hypochlorite	G	F	F	F	G	F	G	F	F	X	G	F	X	F
Cane Sugar Liquors	G	G	G	G	G	G	G	G	G	X	G	F	G	G
Carbon Dioxide (Dry)	G	G	G	G	G	G	G	G	G	G	G	G	G	G
Carbon Dioxide (Wet)	-	G	G	G	G	G	G	G	-	G	-	F	G	G
Carbon Disulfide (Bisulfide)	X	X	X	X	G	X	X	X	X	G	X	G	G	G
Carbon Monoxide (Hot)	X	F	F	F	G	X	F	G	G	F	G	X	F	G
Carbon Tetrachloride	X	X	X	X	G	G	X	X	F	X	X	G	G	G
Carbonic Acid	X	G	G	G	G	X	G	G	X	F	X	X	X	F
Castor Oil	G	G	G	F	G	G	F	G	G	F	F	G	G	G
Cellosolve Acetate	X	X	X	X	G	F	F	F	X	X	X	X	X	G
Chlorinated Solvents	X	X	X	X	G	F	X	X	X	X	X	G	G	F
Chloroacetic Acid	X	X	X	X	G	X	F	X	X	X	X	X	X	F
Chlorobenzene	X	X	X	X	G	G	X	X	X	X	F	F	G	G
Chloroform	X	X	X	X	G	G	X	X	X	X	X	G	G	G
Chlorosulfonic Acid	X	X	X	X	G	X	X	X	X	X	X	X	F	G
Chromic Acid (Under 25%)	F	X	X	X	G	X	G	G	X	X	X	X	X	G
Chromic Acid (Over 25%)	X	X	X	X	G	X	G	G	X	X	X	X	X	F
Citric Acid	G	F	F	G	G	X	G	G	G	X	X	X	X	G
Coke Oven Gas	X	X	X	X	F	X	X	X	-	X	X	F	G	G
Copper Chloride	G	G	G	F	G	G	G	G	G	G	X	X	X	G
Copper Sulfate	G	G	G	G	G	G	G	G	G	G	X	X	X	G
Corn Syrup (non-food)	G	G	G	F	G	G	G	F	G	G	-	-	G	G
Cottonseed Oil	F	G	G	X	G	G	F	F	G	G	G	G	G	G
Creosote	X	F	F	X	G	X	X	F	X	F	F	F	-	G
Cresol	X	X	X	X	G	X	X	X	X	X	G	-	G	G
Dextrose (food grade)	X	X	X	X	G	X	X	X	X	X	X	G	G	G
Diaminoethane	X	X	X	X	G	X	F	X	-	X	-	G	G	G
Dibromoethane	X	X	X	X	G	G	X	X	-	X	-	-	-	-
Dichlorobenzene	X	X	X	X	G	G	X	X	X	X	X	-	-	G
Diesel Fuel	X	G	G	X	G	G	X	F	F	F	G	G	G	G
Diethanolamine	-	F	F	X	G	X	G	X	X	X	G	X	G	G
Diethylenetriamine	-	F	F	X	G	X	G	X	X	X	G	-	-	-
Dowtherm A	X	X	X	X	G	X	G	X	X	X	X	X	F	G
Enamel (Solvent Base)	X	F	F	X	G	G	X	X	X	X	X	G	-	G
Ethanolamine	X	F	F	X	G	X	G	X	-	X	X	G	G	G
Ethers (Ethyl Ether)	X	X	X	X	G	F	X	X	X	X	G	G	G	G
Ethyl Alcohol (To 150°)	F	G	G	G	G	G	G	G	G	G	G	F	G	G
Ethyl Acetate	X	X	X	X	G	G	G	G	X	F	X	F	G	G

FLUID	HOSE MATERIAL											HOSE END FITTINGS		
	PVC	Nitrile	Vinyl Nitrile	Neoprene	PTFE	Nylon/Nylon II	EPDM	Hypalon®[2]	Hytrel®[1]	Polyurethane	CPE	Brass	Steel	316 Stainless
Ethyl Acrylate	X	X	X	X	G	G	F	X	X	X	F	-	G	G
Ethylamine	X	X	X	X	G	X	F	X	-	X	-	G	-	G
Ethyl Cellulose	-	F	F	F	G	G	F	F	G	F	G	F	G	F
Ethyl Chloride	X	X	X	X	G	G	X	X	X	X	X	F	F	G
Ethylene Dichloride	X	X	X	X	G	G	X	X	X	X	X	G	X	X
Ethylene Glycol	G	G	G	G	G	F	G	G	G	F	G	F	G	G
Ethylene Oxide	X	X	X	X	G	G	X	X	G	X	X	X	F	F
Ethyl Methacrylate	X	X	X	X	G	G	F	X	X	X	F	-	F	G
Fatty Acids	G	F	F	X	G	G	F	X	G	X	F	F	F	G
Ferric Chloride	G	G	G	G	G	G	G	G	G	F	G	X	X	X
Ferric Sulfate	G	G	G	G	G	G	G	G	G	G	G	X	X	F
Fertilizer Solution (Water Base)	G	F	F	F	G	F	G	G	-	-	-	-	-	G
Formaldehyde	X	F	F	F	G	G	X	X	X	X	G	F	X	G
Formic Acid	X	F	F	F	G	G	X	G	X	X	G	F	X	G
Freon 12□	X	F	F	F	G	G	X	X	X	X	F	G	G	G
Fuel Oil	F	G	G	F	G	G	X	X	G	F	G	F	G	G
Furfural	X	X	X	X	G	G	X	F	G	X	F	F	G	G
Gasoline (Refined)	X	F	F	X	G	G	X	X	G	F	G	G	G	G
Gasoline (Unleaded)	X	G	G	X	G	G	X	F	X	X	G	G	G	G
Gasoline (10% Ethanol)	X	G	G	X	G	G	X	X	X	X	X	G	G	G
Gasoline (10% Methanol)	X	F	F	X	G	G	X	X	X	X	X	G	G	G
Glycerine, Glycerol	G	G	G	G	G	G	G	G	G	X	G	G	G	G
Greases	G	G	G	F	G	G	X	F	G	G	G	G	G	G
Green Sulfate Liquor	G	F	F	F	G	X	G	G	X	G	X	X	X	G
Heptane	X	G	G	F	G	G	X	F	G	F	G	G	G	G
Hexane	X	G	G	F	G	G	X	F	G	F	G	G	G	G
Houghto Safe 273 to 640	F	G	G	G	G	G	G	-	X	G	G	G	G	G
Houghto Safe 5046, 5047F	G	G	G	G	G	G	X	G	X	G	G	G	G	G
Houghto Safe 1000 Series	X	X	X	X	G	G	G	X	-	X	-	G	G	G
Hydraulic Oils														
Straight Petroleum Base	G	G	G	F	G	G	X	F	G	G	G	G	G	G
Water Petroleum Emulsion	-	G	G	F	G	G	X	F	G	X	G	G	G	G
Water Glycol	-	G	G	G	G	G	G	-	X	X	G	G	G	G
Straight Phosphate Ester	X	X	X	X	G	G	G	X	-	X	G	G	G	G
Phos. Ester/Petroleum Blend	X	X	X	X	G	G	X	X	-	X	-	G	G	G
Polyol Ester	-	G	G	X	G	G	X	-	X	G	G	G	G	G
Hydrobromic Acid	G	X	X	X	G	X	G	G	X	X	X	G	X	X
Hydrochloric Acid	G	X	X	X	G	X	G	G	X	X	G	X	X	X
Hydrocyanic Acid	G	F	F	X	G	X	G	G	X	X	X	X	F	G
Hydrofluoric Acid (Under 50%)	F	X	X	X	G	X	F	G	X	X	X	X	X	G
Hydrofluoric Acid (Over 50%)	X	X	X	X	G	X	X	G	X	X	X	X	X	G
Hydrofluosilicic Acid	G	F	F	X	G	X	X	G	G	X	G	X	X	X
Hydrogen	X	X	X	X	G	X	X	X	X	X	X	X	X	X
Hydrogen Peroxide	-	X	X	X	G	X	F	X	X	-	G	X	X	G
Hydrogen Sulfide	-	X	X	X	G	X	X	F	G	-	X	F	F	F
Hydrolube	-	G	G	F	G	G	-	-	G	X	-	G	G	G
Isopropyl Alcohol	G	G	G	G	G	G	G	G	G	X	G	G	G	G
Isopropylamine	X	X	X	F	G	G	X	F	X	-	-	-	G	-
Iso-Octane	X	G	G	F	G	G	X	F	G	X	G	G	G	G
Jet Fuel (Transfer Only)	X	G	G	F	G	G	X	X	-	G	-	G	F	G
Kerosene	X	G	G	F	G	G	X	F	F	G	G	G	G	G
Lacquer	X	X	X	X	G	G	X	X	X	X	F	G	X	G
Lacquer Solvents	G	X	X	X	G	G	X	X	F	X	F	G	X	G
Lactic Acid	G	X	X	G	G	X	F	G	X	X	X	F	F	G
Lime Sulfur	G	X	X	G	G	F	G	F	-	-	-	X	-	G
Lindol	-	X	X	X	G	G	G	X	-	X	-	F	G	G
Linseed Oil	G	G	G	X	G	G	X	F	F	F	G	F	G	G
Lubricating Oils	G	G	G	F	G	G	X	F	G	F	G	G	G	G

CODES:

G Good resistance.
F Fair resistance.
X Incompatible.
– No data available.

□ Use approved Freon Hose.

□ In all applications, the cover must be pinpricked.

1 Hytrel® is a registered trademarks of Dupont.

2 Hypalon® is a registered trademarks of Dupont

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Chemical Compatibility Chart

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Lye	G	F	F	G	G	X	G	G	-	-	G	F	X	G
Magnesium Chloride	G	G	G	G	G	X	G	G	F	G	G	F	F	G
Magnesium Hydroxide	G	F	F	G	G	X	G	F	F	X	G	G	G	G
Magnesium Sulfate	G	G	G	G	G	G	G	G	X	G	G	F	G	G
Mercuric Chloride	F	F	F	G	G	X	G	G	-	G	X	X	X	X
Mercury	F	G	G	G	G	G	G	G	G	G	G	X	G	G
Methanol	X	G	G	G	G	G	G	G	G	F	G	F	G	G
Methyl Acrylate	X	X	X	X	G	X	F	X	X	X	F	G	G	G
Methylene Chloride	X	X	X	X	G	F	X	X	X	X	F	G	G	G
Methyl Ethyl Ketone	X	X	X	X	G	G*	X	X	X	X	X	G	G	G
Methyl t-Butyl Ether (MTBE)	X	F	F	X	G	G	X	X	-	-	-	-	G	G
Methyl Ethyl Ketone	X	X	X	X	G	G	F	X	G	X	X	G	G	G
Methyl Isobutyl Ketone	X	X	X	X	G	G	F	X	X	X	X	G	G	G
Methyl Isopropyl Ketone	X	X	X	X	G	G	F	X	X	X	X	G	G	G
Methyl Methacrylate	X	X	X	X	G	F	X	X	X	X	-	G	G	G
Mineral Oil	F	G	G	F	G	G	X	F	G	G	G	G	G	G
Mineral Spirits	X	G	G	F	G	G	X	X	G	G	G	G	G	G
Naphtha	X	F	F	F	G	G	X	X	G	F	G	F	G	G
Napthalene	X	X	X	X	G	G	X	X	F	F	G	F	G	G
Nickel Acetate	G	X	X	G	G	G	G	G	-	X	-	-	-	-
Nickel Chloride	G	G	G	F	G	G	G	G	X	X	G	X	X	F
Nitric Acid (Under 35%)	G	X	X	X	G	X	F	F	X	X	X	X	X	G
Nitric Acid (35% to 60%)	F	X	X	X	G	X	X	X	X	X	X	X	X	G
Nitric Acid (Over 60%)	X	X	X	X	G	X	X	X	X	X	X	X	X	G
Nitrobenzene	X	X	X	X	G	G	X	X	X	X	X	F	G	G
Nitrogen Gas	G	G	G	G	G	G	G	-	G	G	G	-	-	-
Nitrous Oxide	X	X	X	X	G	G	X	X	X	X	X	G	G	G
Oleic Acid	F	F	F	X	G	G	F	F	G	F	G	F	F	G
Oleum (Fuming Sulfuric Acid)	X	X	X	X	G	X	X	X	X	X	X	F	G	G
Oxalic Acid	G	X	X	X	G	X	G	X	X	-	G	F	X	G
Paint (Solvent Base)	X	F	F	X	G	G	X	X	-	-	-	G	G	G
Palmitic Acid	F	F	F	F	G	G	F	X	G	X	G	X	F	F
Pentane	X	G	G	F	G	G	X	F	G	G	G	G	G	G
Perchloroethylene	X	X	X	X	G	G	X	X	X	X	X	F	G	G
Petroleum Ether	X	G	F	X	G	G	X	X	G	G	G	G	G	G
Petroleum Oils	G	G	G	F	G	G	X	F	G	G	G	G	G	G
Phenol	X	X	X	X	G	G	X	X	X	X	G	F	X	F
Phosphoric Acid (to 85%)	G	X	X	F	G	X	G	G	X	X	X	X	X	F
Picric Acid (Molten)	X	X	X	X	G	G	X	X	F	X	X	X	X	F
Picric Acid (Solution)	X	F	F	X	G	X	F	G	X	F	X	X	X	F
Potassium Chloride	G	G	G	G	G	G	G	G	G	G	G	G	F	X	G
Potassium Cyanide	G	G	G	G	G	G	G	G	G	G	G	X	G	G
Potassium Dichromate	G	X	X	X	G	G	F	G	X	G	G	G	X	G
Potassium Hydroxide	G	F	F	F	G	G	G	G	F	X	G	G	F	X	G
Potassium Sulfate	G	G	G	G	G	G	G	G	G	G	G	G	F	F	G
Propane Liquid	Use H366 Hose Only											G	G	G	
Propylene Glycol	F	G	F	G	G	G	G	G	-	-	-	G	F	G	G
Pyridine	X	X	X	X	G	G	X	F	X	X	X	X	F	G	G
Sea Water	G	G	G	G	G	G	G	G	G	X	G	G	F	G	G
Skydrol (Transfer Only)	X	X	X	X	G	G	G	G	X	-	X	G	G	G	G
Soap Solution	G	G	G	F	G	G	G	G	G	G	G	G	G	G	G
Sodium Bisulfate	G	G	G	G	G	G	G	G	G	X	G	G	F	F	F
Sodium Carbonate	G	G	G	G	G	G	G	G	G	G	G	G	X	G	G
Sodium Chloride	G	G	G	G	G	G	G	G	G	G	G	G	X	F	G
Sodium Cyanide	G	G	G	G	G	G	G	G	G	G	G	G	X	F	G
Sodium Hydroxide	G	F	F	G	G	X	G	G	F	X	X	X	F	X	G
Sodium Hypochlorite	G	X	X	X	G	X	G	G	G	X	F	X	X	F	
Sodium Nitrate	G	G	G	F	G	G	G	G	G	F	G	F	F	G	G

FLUID	HOSE MATERIAL											HOSE END FITTINGS		
	PVC	Nitrile	Vinyl Nitrile	Neoprene	PTFE	Nylon/Nylon II	EPDM	Hypalon®[2]	Hytrel®[1]	Polyurethane	CPE	Brass	Steel	316 Stainless
Sodium Perborate	G	G	G	X	G	G	G	X	G	X	X	F	F	G
Sodium Peroxide	X	F	F	F	G	X	G	F	G	X	X	X	F	G
Sodium Phosphates	G	G	G	F	G	G	G	G	F	G	X	F	F	F
Sodium Silicate	G	G	G	G	G	G	G	G	G	G	G	F	F	G
Sodium Sulfate	G	G	G	G	G	G	G	G	G	G	G	F	F	G
Sodium Sulfide	G	G	G	G	G	G	G	G	G	G	G	X	X	G
Sodium Thiosulfate	G	G	G	G	G	G	G	G	-	G	G	X	X	G
Soybean Oil	F	G	G	F	G	G	F	G	G	G	G	G	G	G
Stannic Chloride	G	G	G	X	G	X	G	G	G	G	X	X	X	X
Steam 450°	X	X	X	X	G	X	G	X	X	X	X	X	F	F
Stearic Acid	F	F	F	F	G	G	F	F	G	G	G	X	X	G
Stoddard Solvent	X	G	G	F	G	G	X	X	G	G	G	G	G	G
Sulfur	F	X	X	X	X	X	X	F	-	-	G	X	X	G
Sulfur Chloride	X	X	X	X	G	F	X	F	X	X	G	X	X	X
Sulfur Dioxide	X	X	X	X	G	X	G	X	X	-	X	X	-	G
Sulfuric Acid (Under 50%)	G	X	X	X	G	X	G	G	X	X	X	X	X	X
Sulfuric Acid (51% to 70%)	G	X	X	X	G	X	F	G	X	X	X	X	X	X
Sulfuric Acid (71% to 95%)	X	X	X	X	G	X	F	F	X	X	X	X	X	X
Sulfuric Acid (96% to 98%)	X	X	X	X	G	X	X	X	X	X	X	X	X	X
Styrene	X	X	X	X	G	G	X	X	X	X	X	G	G	G
Tannic Acid	G	F	F	F	G	X	G	G	G	G	G	F	X	G
Tar	X	F	F	F	G	X	X	X	G	F	G	F	F	G
Tartaric Acid	G	G	G	F	G	X	G	G	G	G	G	F	X	F
Tetrachloroethane	X	X	X	X	G	G	X	X	X	X	X	-	-	G
Tetrahydrofuran (THF)	X	X	X	X	G	G	X	X	-	X	X	-	-	G
Toluene	X	X	X	X	G	G	X	X	X	X	X	G	G	G
Transmission Oil (Petrol. Based)	G	G	G	F	G	G	X	F	G	G	G	G	G	G
Trichloroethane	X	X	X	X	G	G	X	X	X	X	X	G	G	G
Trichloroethylene	X	X	X	X	G	G*	X	X	X	X	X	G	G	G
Tung Oil	-	G	G	F	G	G	X	F	G	X	X	F	G	G
Turpentine	X	F	F	X	G	G	X	X	F	X	F	F	G	G
Urea (Water Solution)	G	X	X	G	G	G	G	G	G	G	-	-	G	G
Varnish	X	X	X	X	G	G	X	X	-	X	F	G	G	G
Vegetable Oil (Non-food)	F	G	G	X	G	G	X	G	-	G	-	G	G	G
Vinyl Acetate	X	X	X	X	G	G	F	X	X	X	-	F	G	G
Water	G	G	G	G	G	G	G	G	G	G	G	F	F	G
Water-Glycol mixture	-	G	G	G	G	G	G	G	X	G	X	G	F	G	G
Water-Petroleum mixture	-	G	G	F	G	G	X	F	G	X	G	G	F	G
Xylene	X	X	X	X	G	G	X	X	F	X	X	G	G	G
Zinc Chloride	G	G	G	G	G	X	G	G	X	G	X	X	X	X
Zinc Sulfate	G	G	G	G	G	G	G	G	-	G	X	X	X	G

CODES:

G Good resistance.
F Fair resistance.
X Incompatible.
– No data available.

□ In all applications, the cover must be pinpricked.

1 Hytrel® ia a registered trademarks of Dupont.

2 Hypalon® ia a registered trademarks of Dupont

NOTE: All data given herein is believed to be accurate and reliable, but presented without guarantee, warranty, or responsibility of any kind, express or implied, on our part. Chemical resistance will vary with the wide diversity of possible mixtures and service conditions. It is therefore not possible to give any guarantee whatsoever in individual cases..

*This chemical has some deteriorative effects, but the elastomer is still adequate for moderate service.

For compatibility of fluids not listed with this chart, contact Technical Support at 1-888-258-0222.

Working Pressure - Hose Ends

The maximum dynamic working pressure of a hose assembly is the lesser of the rated working pressure of the hose and the end connection used.

Max Working Pressure (PSI)

HOSE END CONNECTION	CODE LETTER OR NUMBER	HOSE END SIZE									
		-04	-05	-06	-08	-10	-12	-16	-20	-24	-32
Male Pipe (NPTF)	100	5000		4000	4000		4000	4000	3000	2500	2500
Female Pipe (NPTF)	050, 200, 250	5000		4000	4000		2250	2000	1625		
37° JIC seat	C60, 500, 550, 600, 640, 660, 680	5000	5000	4000	4000	4000	4000	4000	3000	3000	3000
SAE Flareless	750	5000	5000	4000	3500	2750	2250	2000	1625		
Ready-Lok®*	00S	5000		4000	4000		4000	4000	3000	2500	
FOR-SEAL®	A20, A60, E60, J30, L60, S60	6000		6000	6000	6000	6000	6000	4000	4000	
SAE Straight Thread O-Ring Male	P00, R00, R60	5000	5000	5000	4500	4000	4000	4000	3000		
SAE Flange Code 61	G00, G40, G70, H00, H20, H50, H60, H70, H80, H90, K00, K60				5000	3000	5000	5000	4000	3000	3000
SAE Flange Code 62	D00, D40, D60, N20, N50						5000	5000	5000	5000	5000
THICK-FLANGE Code 62	K00, K40, K70						5000	5000	5000	5000	5000

*Rated pressures are for low surge, static type applications. O-Ring Face Seal (ORFS) Style Fitting.

Metric Pressure Rating Charts

Max Working Pressure (PSI)

HOSE END CONNECTION	CODE LETTER OR NUMBER	HOSE END SIZE									
		-04	-05	-06	-08	-10	-12	-16	-20	-24	-32
Male British Pipe (BSP)	150	5000		4000	4000	3500	4000	3500	2500	2000	2000
Female British Pipe (BSP)	05P, 70P, 350	5000		4000	4000	3500	4000	3500	2500	2000	2000
Female Pipe (JIS)	00L	5000		5000	5000		4000	4000			

Maximum Working Pressure (PSI)

HOSE END CONNECTION	CODE LETTER OR NUMBER	HOSE END SIZE									
		-06	-08	-10	-12	-15	-18	-22	-28	-35	-42
Din Light	00A, 00C, 00D, 50D	3625	3625	3625	3625	3625	2325	2325	1450	1450	1450

Temperature vs. Pressure Table for Reinforced PVC Hose

TEMPERATURE		ALLOWABLE % OF ORIGINAL WORK. PRESSURE		TEMPERATURE		ALLOWABLE % OF ORIGINAL WORK. PRESSURE	
°C	°F	2-Spiral	4-Spiral	°C	°F	2-Spiral	4-Spiral
20	68	100%	100%	50	120	40%	53%
25	77	86%	90%	55	131	33%	47%
30	86	75%	81%	60	140	27%	43%
35	95	65%	73%	65	149	23%	40%
40	104	56%	66%	70	158	20%	38%
45	113	47%	59%	75	167	17%	37%
				80	176	15%	35%

Note: For additional information on a specific hose, refer to the hose description on pages 31-66.

Fitting Identification

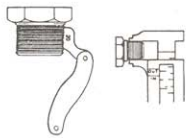
Fitting Thread Size Comparison Chart

The male connections have (Male unified thread class 2 fit) UN-2A specification threads and the female connections have (Female unified thread class 2 fit) UN-2B specification threads. The exceptions are male and female pipe threads.

Tube Fittings

There are four basic types of tube fittings: Flare, Flareless, Straight Thread O-Ring, and Flat Face O-Ring Seal (FOR-SEAL™). Tube fittings seal in two ways. Flare and Flareless fittings use metal to metal contact joints. Straight Thread O-Ring and Flat Face O-Ring fittings use a rubber o-ring. Where extreme vibration is present, use Flareless, Straight Thread or Flat FaceO-Ring Seal fittings.

SIZING: For accuracy, it is recommended the male thread be measured. Measure the outside diameter. For our example use 7/16" Next measure the threads per inch – use 20. Our fitting size measures 7/16-20. Refer to the thread chart on this page for appropriate tube size and illustration.



See page 384 for Thread Measuring Kits.

SIZE	PIPE	FOR-SEAL®	37° FLARE FLARE-TWIN®	ERMETO® 7000 SERIES	STRAIGHT THREAD O-RING SAE	45° FLARE	INVERTED FLARE
1/8	1/8-27	—	5/16-24	5/16-24	5/16-24	5/16-24	5/16-28
3/16	—	—	3/8-24	3/8-24	3/8-24	3/8-24	3/8-24
1/4	1/4-18	9/16-18	7/16-20	7/16-20	7/16-20	7/16-20	7/16-24
5/16	—	—	1/2-20	1/2-20	1/2-20	1/2-20	1/2-20
3/8	3/8-18	11/16-16	9/16-18	9/16-18	9/16-18	5/8-18	5/8-18
7/16	—	—	—	—	—	11/16-16	11/16-18
1/2	1/2-14	13/16-16	3/4-16	3/4-16	3/4-16	3/4-16	3/4-18
5/8	—	1-14	7/8-14	7/8-14	7/8-14	7/8-14	7/8-18
3/4	3/4-14	1-3/16–12	1-1/16–12	1-1/16–12	1-1/16–12	1-1/16–14	1-1/16–16
7/8	—	—	1-3/16–12	1-3/16–12	1-3/16–12	—	1-3/16–16
1	1–11-1/2	1-7/16–12	1-5/16–12	1-5/16–12	1-5/16–12	—	1-5/16–16
1 1/4	1-1/4–11-1/2	1-11/16–12	1-5/8–12	1-5/8–12	1-5/8–12	—	—
1 1/2	1-1/2–11-1/2	2-12	1-7/8–12	1-7/8–12	1-7/8–12	—	—
2	2–11-1/2	—	2-1/2–12	2-1/2–12	2-1/2–12	—	—
2 1/2	2-1/2–8	—	3-12	—	—	—	—
3	3-8	—	3-1/2–12	—	—	—	—

Pipe Fittings

The American Society of Automotive Engineers in cooperation with industry set up a standard for improvement in pipe threads. This improvement is known as the Dryseal Pipe Thread. All Weatherhead pipe threads are American Standard Taper Dryseal Pipe Threads (NPTF). The metal to metal seal is formed by contact at the thread crest and root.

Nominal pipe sizes do not agree with either the I.D., O.D., or thread sizes. To determine pipe size (up to 1-1/4") measure the diameter of the threads and subtract 1/4" For example, subtract 1/4" from a 1" pipe to obtain the nominal pipe size of 3/4".

Pipe sizes can also be given in 'dash numbers.' A dash number is always the numerator of an inch over 16th. For instance, if the pipe O.D. measures 1/2" that would be converted to 16ths (8/16), but be written as -8.

Fitting Identification

Identifying metric, or non-USA, threaded connections is similar to identifying the connections that have been commonly used in the United States. The following text covers how to identify the different styles of metric connections offered by Eaton.

BSPP & BSPT Thread Chart

BSP Thread Size	1/8-28	1/4-19	3/8-19	1/2-14	5/8-14	3/4-14	1-11	1-1/4–11	1-1/2–11	2-11
Male Thread Diameter	9.72 (.375)	13.16 (.518)	16.66 (.656)	20.96 (.825)	22.91 (.902)	26.44 (1.041)	33.25 (1.309)	41.91 (1.650)	47.80 (1.882)	59.51 (2.347)
Female Thread Diameter	8.73 (.343)	11.66 (.459)	15.37 (.605)	18.90 (.744)	20.85 (.821)	24.38 (.960)	30.61 (1.205)	39.24 (1.545)	45.24 (1.781)	55.94 (2.242)
Pitch	.91 (.036)	1.34 (.053)	1.34 (.053)	1.81 (.071)	1.81 (.071)	1.81 (.071)	2.31 (.091)	2.31 (.091)	2.31 (.091)	2.31 (.091)

Figure 4a. Dimension Note: MM(IN)

Threads

The thread forms and their corresponding specifications listed below are used on all of the metric styles of connections which will be discussed later. These cover the basic forms of the threads but not the style of connection.

THREAD TYPE	SPECIFICATIONS
British Parallel Pipe Threads	BS 2779, ISO/R 228
British Taper Pipe Threads	BS 21, ISO/R 7
Metric Parallel Threads	DIN 3852, ISO/R 6149
Metric Taper Threads	DIN 3852

Note: **BS** British Standards Institution

ISO International Standards Organization

DIN Deutsche Industrie Norme

To identify metric connections, you will need instruments that can accurately measure thread inside and outside diameters, thread pitch and fitting seat angles. The TA-1002 Thread Measuring Guide and Tool Kit is a basic kit that will help you in identifying most of the connections you will be encountering on imported equipment.

Parallel Threads ('G')

Figure 1.

apered Threads ('R')

Figure 2.

Parallel and Tapered Threads

The first step in identifying thread forms is to determine if the thread is parallel or tapered. Parallel threads are not used for sealing fluids. Sealing is achieved by an elastomeric o-ring, metal seal, machined ring into the hex itself or a seat machined into the end of the fitting. This style is similar to straight thread o-ring port connections where the threads are used for retention of the sealing method against a machine port. Parallel threads can be determined by laying a straight edge along the threads. If the threads are parallel to the center line of the fitting, then the fitting has parallel threads. See Figure 1.

Tapered threads seat by the interference caused by the male and female threads. These threads create a pressure-tight joint by metal deformation when they are tightened. Sealants on the threads are commonly used in this style of connection. Laying a straight edge on the threads, compare this line with the center line of the fitting. If this line tapers slightly away from the center line, then the threads are tapered. See Figure 2.

British Pipe Threads

There are two forms of British Standard Pipe Threads that are used in the world today. They are BSPP (British Standard Pipe Parallel) and BSPT (British Standard Pipe Tapered). The BSPT male thread mates with the female BSPT thread similar to an NPTF connection. The 30° BSPP male adapters connect to a female BSPP thread with a 30° cone. This style is comparable to an NPSM swivel style. These threads are almost identical to the NPTF Pipe Thread except for the flank angle. This angle is 55° versus 60° on the NPTF. See Figure 3. Because of this difference, the two forms are NOT interchangeable.

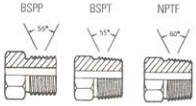


Figure 3.

Fitting Identification

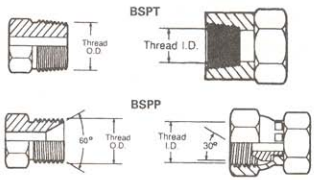


Figure 4.

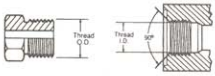
Identifying BSP threads starts with determining if it is a parallel or tapered thread. Next, referencing Figure 4 and 4a, measure the lead thread diameter. Compare this measurement to the listed dimensions to determine size. If instruments are not available to measure this, you can compare it end-to-end with a known NPTF thread to approximately arrive at the nominal BSP size. Finally, measure the pitch and compare it to the chart on Figure 4 to complete the identification. These dimensions will be the same for both BSPP and BSPT.

Metric Threads

Metric threads are similar to inch-sized threads except for the sizing which is based on standard metric units. Identifying metric threads starts with determining if it is a parallel or tapered thread. Next, measure the thread diameter. Compare this measurement to the dimensions listed in Figure 5 to determine size. Finally, measure the pitch and compare to chart. These dimensions will be common for both parallel and tapered threads.

DIN 3901/3902L, 3901/3902S

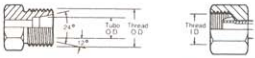
The most popular metric flareless, or bite-type, fitting style is the 24° Metric Tube Seat. This style incorporates a tapered seat in the fitting body with a bite-type sleeve, or ferrule, for the connection. When the nut is tightened, the tapered seat forces the sleeve into the tube creating a positive seal. This style of connection is available in both a Light and Heavy series and is designed for medium and high pressure applications respectively. The two series have different parallel thread sizes in relationship to the nominal tube outside diameter, but share a common sleeve. This style can be identified by the combination of the 24° internal seat and a male metric parallel thread. The series can be determined by measuring the seat counterbore, which is the approximate tube outside diameter, and comparing it to the thread size. Compare these di-mensions to those shown in Figure 6 to determine the series. The nominal sleeve size is taken directly from the tube outside diameter dimension.



METRIC THREAD SIZE	MALE THREAD DIAMETER		FEMALE THREAD DIAMETER		PITCH	
	MM	IN	MM	IN	MM	IN
M10 x 1.0	10.0	.394	8.5	.335	1.0	.039
M12 x 1.5	12.0	.472	10.5	.413	1.5	.059
M14 x 1.5	14.0	.551	12.5	.492	1.5	.059
M16 x 1.5	16.0	.630	15.5	.610	1.5	.059
M18 x 1.5	18.0	.709	16.5	.650	1.5	.059
M20 x 1.5	20.0	.787	18.5	.728	1.5	.059
M22 x 1.5	22.0	.866	20.5	.807	1.5	.059
M24 x 1.5	24.0	.945	22.5	.886	1.5	.059
M26 x 1.5	26.0	1.024	24.5	.964	1.5	.059
M27 x 2.0	27.0	1.063	25.5	1.004	2.0	.079
M30 x 2.0	30.0	1.181	28.5	1.122	2.0	.079
M33 x 2.0	33.0	1.299	31.5	1.240	2.0	.079
M36 x 2.0	36.0	1.417	34.5	1.358	2.0	.079
M42 x 2.0	42.0	1.653	40.5	1.594	2.0	.079

Figure 5.

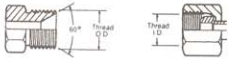
See page 384 for Thread Measuring Kits.



TUBE O.D.		NOM. O.D.	SERIES–THREAD	
MM	IN	(MM)	LIGHT - l.Rh.	HEAVY - s.Rh.
8	.315	8	M14 x 1.5	M16 x 1.5
10	.394	10	M16 x 1.5	M18 x 1.5
12	.472	12	M18 x 1.5	M20 x 1.5
14	.551	14	—	M22 x 1.5
15	.591	15	M22 x 1.5	—
16	.630	16	—	M24 x 1.5
18	.709	18	M26 x 1.5	—
20	.787	20	—	M30 x 2.0
22	.866	22	M30 x 2.0	—
25	.984	25	—	M36 x 2.0
28	1.102	28	M36 x 2.0	—
30	1.181	30	—	M42 x 2.0

Figure 6.

Fitting Identification



METRIC THREAD SIZE	MALE THREAD DIAMETER		FEMALE THREAD DIAMETER		PITCH	
	MM	IN	MM	IN	MM	IN
M12 x 1.5	12.0	.472	10.5	.413	1.5	.059
M14 x 1.5	14.0	.551	12.5	.492	1.5	.059
M16 x 1.5	16.0	.630	15.5	.610	1.5	.059
M18 x 1.5	18.0	.709	16.5	.650	1.5	.059
M22 x 1.5	22.0	.866	20.5	.807	1.5	.059
M26 x 1.5	26.0	1.024	24.5	.964	1.5	.059

Figure 7.

Metric Flareless Connections

Metric 60° Tube Seat DIN 7631

This series combines an internal 60° seat with parallel metric Light series threads. Mating with female metric swivel fittings with a globe seal made to DIN 3863L, this connection provides a metal to metal seal when tightened. This style can be identified by the internal 60° seat on the male metric threaded portion. Reference Figure 7 for thread information.

Japanese 30° Flare

The Japanese 30° flare style is similar to the 37° JIC flare connection except for two things. The seat angle is 30° and threads are metric straight threads. This fitting is often referred to as a 'Komatsu' style connection. To identify this style, first verify the seat angle is 30°. Next establish the metric thread size by measuring the thread outside diameter. Compare this dimension to those shown in Figure 9. The threads in this series will conform to Japanese Industrial Standard (JIS) B 0207.

Japanese 30° Flare (JIS)

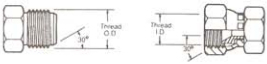
Similar to BSPP and a 30° seat. The seal is made when contact is made between the male and female flares, with the threads retaining the connection. The JIS 30° flare is similar to the 37° flare connection. To determine the difference between the JIS 30° flare and the JIC 37° flare, carefully measure the seat angle. The threads in this series conform to Japanese Industrial Standard (JIS) B 0202.

Metric Split Flange Fittings

Metric split flanges are found in applications where high pressure and high vibration conditions exist. A flange clamp is used to secure the split flange head and o-ring against a machined port to provide an elastomeric and metal-to-metal seal. They are used in applications up to 3000 PSI. The physical dimensions are similar to the SAE Code 61 standard pressure series which makes the two styles fully interchangeable. To identify, referencing Figure 10, simply measure the flange head diameter to arrive at the nominal flange size.

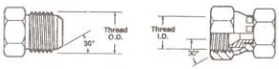
Note: To prevent leakage when replacing this type of fitting with standard Code 61 hose end, make sure to use the existing flange halves and hardware with a new SAE-style o-ring. Also note that in this series there is a 5/8 nominal size which is a non-standard SAE size and require a special o-ring. Failure to reuse flange halves and hardware will result in an improper connection which could cause the hose assembly to fail.

⚠ Proper selection of hose and hose ends is critical for proper operation and safe use of the hose and hose ends. See page 3 of this catalog for important safety information.



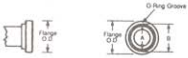
METRIC TUBE SIZE	THREAD SIZE	MALE THREAD DIAMETER		FEMALE THREAD DIAMETER		PITCH	
MM	MM	MM	IN	MM	IN	MM	IN
6	M14x1.5	14	.551	12.5	.492	1.5	.059
9	M18x1.5	18	.709	16.5	.650	1.5	.059
12	M22x1.5	22	.866	20.5	.807	1.5	.059
16	M24x1.5	24	.945	22.5	.886	1.5	.059
19	M30x2.0	30	1.181	28.5	1.122	1.5	.059
25	M33x2.0	33	1.299	31.5	1.240	1.5	.059
32	M42x2.0	42	1.653	40.5	1.594	1.5	.059

Figure 8.



INCH SIZE	THREAD SIZE	MALE THREAD O.D.		FEMALE THREAD I.D.	
		IN	MM	IN	MM
1/4	1/4-19	17/32	13.7	1/2	12.4
3/8	3/8-19	11/16	17.2	5/8	16.0
1/2	1/2-14	27/32	21.5	25/32	19.8
3/4	3/4-14	1-1/16	26.9	1	25.4
1	1-11	1-11/32	34.0	1-1/4	31.8
1-1/4	1-1/2-11	1-29/32	48.5	1-27/32	46.2
2	2-11	2-3/8	60.4	2-5/16	58.2

Figure 9.



NOMINAL FLANGE SIZE		FLANGE HEAD O.D.		O-RING GROOVE DIA "A"		DIA. "B"	
MM	IN	MM	IN	MM	IN	MM	IN
12.7	1/2	30	1.19	18.5	.73	25.0	.98
15.9	5/8	34	1.34	20.1	.79	28.0	1.10
19.0	3/4	38	1.50	21.5	.85	31.0	1.22
25.4	1	44	1.75	28.5	1.12	38.0	1.50
31.8	1-1/4	51	2.00	34.5	1.36	44.0	1.73
38.1	1-1/2	60	2.38	44.4	1.75	54.0	2.12
50.8	2	71	2.81	56.5	2.22	65.0	2.56

Figure 10.

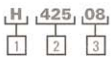
Numbering Systems

Hose

1. All Weatherhead hose is designated with the letter 'H.'
2. Each hose is assigned a three digit base number from 001-999, i.e., H069, H425, H470, H1571.
3. The last two digits indicate inside hose diameter (I.D.) in sixteenths of an inch. In the example used above 08 is equal to 8/16" – or 1/2" I.D. hose.

   Exceptions: H059, H069, H166, H169, H213, H229, H239, H366, H429, H569 and H757. The I.D. sizes of these hoses deviate somewhat from the above standard. The sizing method used on these hoses is based on deducting twice the wall thickness from the O.D. of the connecting tubing to determine the I.D. of the hose. In other words, match the inside diameters rather than the dash sizes when going from tubing to hose. See example 1.

Table 1 shows standard hose size and H069 type hose sizes and dash numbers. Wherever these hoses are listed in this catalog, the size is listed and the dash number is the last two digits of the Catalog Number.



Examples:

	ACTUAL HOSE I.D.	NOMINAL HOSE I.D.	TUBING I.D.	TUBING O.D.
H06906	5/16	3/8	5/16	3/8
H06910	1/2	5/8	1/2	5/8

Table 1 – Catalog Numbers for Hose Sizes

ACTUAL HOSE I.D.	STANDARD CATALOG NUMBERS	H069 TYPE CATALOG NUMBERS
3/16	03	04
1/4	04	05
5/16	05	06
3/8	06	
13/32	08	
7/16	07	
1/2	08	10
5/8	10	12
3/4	12	
7/8		16
1	16	
1-1/8		20
1-1/4	20	
1-3/8		24
1-1/2	24	
1-13/16		32
2	32	
2-3/8		40
3		48

Numbering Systems

Hose Ends

Every type of Weatherhead hose end is designed to fit a certain group of hose with limiting dimensions and tolerances. For your convenience the hoses used on each end style are indicated in the hose end catalog listings.

Crimp

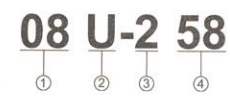
1. The first two digits indicate hose size (I.D.) in sixteenths of an inch.

   The exceptions to this are the **spiral and truck hose.**

   Spiral hose ends use the hose base number as a prefix to the size. Example: 47012E.

   Truck hose ends use the base number 069 as a prefix to the size. Example: 06908E.

   Refer to the top of the catalog page where these hose ends are detailed for recommended hose types.
2. Hose end type and material. Refer to Table 2. This letter is always followed by a dash.
3. The first number or letter indicates the style of the end connection. See individual hose end catalog listings or refer to the hose end configuration chart on pages 22-25.
4. The last two digits indicate the size of the end connection in sixteenths of an inch. Refer to individual catalog listing for metric and specialty ends.



Field Attachable

1. Description of basic hose.

   The exceptions are the 247 series and clamp-type ends. These ends are designed for use with a variety of hose types.

   Refer to the top of the catalog page where these hose ends are detailed for recommended hose types.
2. Hose size (I.D.) in sixteenths of an inch, or as shown in Table 1.
3. Hose end type and material. Refer to Table 2. This letter is always followed by a dash.
4. The first number or letter indicates the style of the end connection. See individual hose end catalog listings or refer to the hose end configuration chart on pages 22-25.
5. The last two digits indicate the size of the end connection in sixteenths of an inch. Refer to individual catalog listing for metric and specialty ends.

Numbering Systems

Table 2 – Standard Hose End and Material Code

CODE LETTER	COUPLING TYPE	MATERIAL
A	Crimp/Field Attachable	Aluminum
B	Field Attachable	Brass
C	Crimped	Brass
D	Field Attachable*	Steel*
E	Crimp	Steel
H	Crimp	Brass
K	Clamp Type	Steel
M	Crimp	Steel
N	Field Attachable	Steel
P	Crimp	Brass
S	Crimp	Stainless Steel
T	Field Attachable*	Brass
U	Crimp	Steel
W	Crimp	Steel

*High Flow Hose Assemblies

Numbering Systems

Hose Assemblies

Catalog numbers for hose assemblies are basically the same as hose ends, except both the ends must be specified as well as the overall length. This process is detailed below:

1. Type of desired hose
   (see hose selection guide pages 4-8 or individual hose listings).

2. Hose size (I.D.) in sixteenths of an inch (04 = 4/16" = 1/4").
   Exception: 13/32" I.D. hose.

3. End style and material. Refer to Table 2 (Page 20).

4./5. Style and size of each hose end. Refer to the individual hose end catalog listings or to Hose End Configuration Chart on pages 22-25 for available styles and sizes.
   Example: P04 Male Straight Thread O-Ring 1/4",
   604 SAE 37° Female Swivel 1/4."

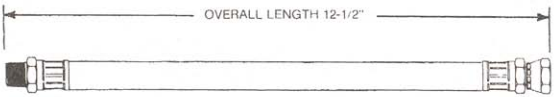
6. Length of assembly. The first three digits specify a length in inches. The last two digits are for fractions of an inch expressed in decimal hundreths (01250 = 12 1/2").

Note: To determine the hose only length when making a hose assembly, subtract each hose end cut-off factor from the overall hose assembly length. Please see the individual hose end listings for cut-off factor information.

To determine Hose Cut-Off Factors reference page 26.

425 04 U - P04 604 01250

① ② ③ ④ ⑤ ⑥



Numbering Systems

The chart below is designed to offer quick identification of Weatherhead hose end series. Included in this chart are: base numbers, descriptions, hose end series, and page number in which the configuration appears.

Catalog numbers may be derived by adding the size in sixteenths of an inch to the base. Example: 100 series 3/4" male pipe rigid. 3/4" = 12/16" thus 100 + 12 = 112.

Part # Suffix	Hose End	Style	009 'B'	057 'B'	100 'B'	105 'B'	057 'P'	338 'B'	069 'D'	'E'	069 'E'	336 'E'	470 'E'	757 'E'	'K'	039 'K'	'M'	104 'N'	213 'N'	247 'N'	425 'N'	436 'N'	229 'P'	265 'P'	338 'P'	'S'	570 'S'	069 'T'	'U'	430 'U'	'W'
00A	Male DIN (Light)	Rigid															148												164		197
00C	Female DIN (Light)	Swivel															149												170	186	200
00D	Female DIN 45° (Light)	Swivel															151												175		
00E	Female Din 24° 45° Tube Elbow	Swivel															151														
00F	Male DIN (Heavy)	Rigid											110				148												165		
00K	Female 30° Flare (Komatsu)	Swivel									02																		171	187	
00L	Female JIS 30° Flare	Swivel								95																			172		201
00P	Female Flat Face BSPP	Swivel																											172		
00S	Ready Lok®	Rigid																											173	187	
0PW	Pressure Washer	Swivel															150														204
30T	Straight Tube-Metric	Rigid																											174		
40P	Brit. Std. 60° Cone Parallel Female Pipe 45°	Swivel											112				151												178	189	
50C	Female DIN (Heavy)	Swivel															149												171	186	
50D	Female DIN 90° (Light)	Swivel															152												180		
50E	Female DIN 90° (Heavy)	Swivel															153												180		
70P	Brit. Std 60° Cone Parallel Female Pipe 90°	Swivel								98			114				153												181	192	203
050	Female Straight Pipe	Swivel															149												170		199
100	Male Pipe	Rigid	205	206	209	212			218	92			109		220	221	147	222	226	230	236	240		156	158	160		180	163	184	197
150	Male Pipe, British Standard Tapered	Rigid																											164		
200	Female Pipe	Rigid				212																		156					168		199
250	Female Pipe	Swivel			210																237								169		
300	SAE 45° Male	Rigid		207	209									140						231									166		
350	Brit. Std 60° Cone Parallel Female Pipe	Swivel								95			110																171	187	201
380	SAE 45° Male 45° Elbow	Rigid												142																	
400	SAE 45° Female	Swivel			211		154		219	94				141				223	227	233	238	241	155		158				170		200
440	SAE 45° Female 90° Tube Elbow Long	Swivel																		235									179		
460	SAE 45° Female 90° Tube Elbow Short	Swivel								98				121					229	235											
480	SAE 45° Female 45° Tube Elbow	Swivel												119					228	234									174		202
500	JIC 37° Male	Rigid								93								223	231	237	240								166	185	198

[shaded box] = Denotes Coll-O-Crimp® Hose Ends

Numbering Systems

Part # Suffix	Hose End	Style	009 'B'	057 'B'	100 'B'	105 'B'	057 'P'	338 'B'	069 'D'	'E'	069 'E'	336 'E'	470 'E'	757 'E'	'K'	039 'K'	'M'	104 'N'	213 'N'	247 'N'	425 'N'	436 'N'	229 'P'	265 'P'	338 'P'	'S'	570 'S'	069 'T'	'U'	430 'U'	'W'
550	JIC 37° Female 90° Tube Elbow	Swivel																											182		
600	JIC 37° Female	Swivel	205		210				181	87	93	98	110			221	148	223	227	232	237	241				160			169	156	200
640	JIC 37° Female 90° Tube Elbow Long	Swivel								90		99						225		235	239								179	163	203
660	JIC 37° Female 90° Tube Elbow	Swivel								89	95	99	113				153	224	228	234	239	241							180		203
680	JIC 37° Female 45° Tube Elbow	Swivel								89	94	98	112				151	224	228	234	238	241							176	160	202
750	Flareless Tube Ermeto®	Rigid								86				140						232									167		
950	Flareless Tube Ermeto® 45°	Rigid																											175		
970	Flareless Tube Ermeto® 90°	Rigid																											179		
A00	Inverted Female	Rigid			210																										
A20	Female For-Seal® 90° Tube Elbow Short	Swivel								99			113				152												181	163	204
A60	Female For-Seal® 90° Tube Elbow Long	Swivel								99							152												183	163	204
B00	Inverted Male	Swivel			210				219	93									226	231									166		
B20	Inverted Male Swivel Extended	Swivel																		231											
B40	Inverted Male 45° Tube Elbow	Swivel								96																			174		
B60	Inverted Male 90° Tube Elbow	Swivel		207						97																			177		
C00	Male Pipe 90° Elbow	Rigid		207	211																								168		
C30	Female Grease Tap	Rigid																												190	
C60	SAE 37° Female 60° Tube Elbow	Swivel																											188		
D00	Flange Straight	Code 62											111													161					
D40	Flange 45° Tube Elbow	Code 62											112													161				191	
D70	Flange 90° Tube Elbow	Code 62											114													162				195	
E00	Inverted Male 90° Elbow	Swivel																	228	234											
E40	Inverted Male 45° Tube Elbow	Swivel																	227	233											
E60	Male For-Seal® Straight	Rigid																											139	185	198
G00	Flange Straight	Code 61											111					224			238								145	188	
G09	Flange Straight (Komatsu)	Special															150												145		
G40	Flange 45° Tube Elbow	Code 61											112					224			238								148	191	
G69	Flange 45° Tube Elbow (Komatsu)	Special															152												148		

= Denotes Coll-O-Crimp® Hose Ends

Numbering Systems

= Denotes Coll-O-Crimp® Hose Ends

Part # Suffix	Hose End	Style	009 'B'	057 'B'	100 'B'	105 'B'	057 'P'	338 'B'	069 'D'	'E'	069 'E'	338 'E'	470 'E'	757 'E'	'K'	039 'K'	'M'	104 'N'	213 'N'	247 'N'	425 'N'	436 'N'	229 'P'	265 'P'	338 'P'	'S'	570 'S'	069 'T'	'U'	430 'U'	'W'
G70	Flange 90° Tube Elbow	Code 61											115					225			239								183	194	
G99	Flang 90° Tube Elbow	Special															153														
H00	Flange 22-1/2° Tube Elbow	Code 61																												189	
H20	Flange 30° Tube Elbow	Code 61																												190	
H50	Flange 60° Tube Elbow	Code 61																												192	
H60	Flange 67-1/2° Tube Elbow	Code 61																												192	
H70	Flange 100° Tube Elbow	Code 61																												195	
H80	Flange 110° Tube Elbow	Code 61																												195	
H90	Flange 135° Tube Elbow	Code 61																												196	
J00	Male Pipe	Swivel							92	92							147								158				165	185	198
J33	Female For-Seal® 90° Tube Elbow Med.	Swivel																											182		204
J63	Female For-Seal® Straight	Swivel																													201
K00	Flange Straight "Thick Flange"	Code 62																									162				
K30	Flange 45° Tube Elbow "Thick Flange"	Code 62																													
K60	Flange 90° Tube Elbow "Thick Flange"	Code 62																									162				
L00	Banjo (Ford Tractor)	Special																											173		
L10	JIC 37° Female 30° Tube Elbow	Swivel															150												174		
L40	Male 45° Tube Elbow O-Ring Port	Swivel																											176		
L60	Female 45° For-Seal® Tube Elbow	Swivel								97							150												178	158	202
M00	Male Pipe 90° Elbow	Swivel																											179		202
N20	Split Flange 30° Tube Elbow	Code 62											111																		
N50	Split Flange 60° Tube Elbow	Code 62											113																		
N60	Split Flange 67 1/2° Tube Elbow	Code 62											113																		
P00	Male Straight Thread O-Ring	Rigid															147												168	187	199
P50	Male Pipe, Brit. Std. 60° Cone Parallel	Rigid																											164	184	
R00	Male Straight Thread O-Ring	Swivel																											167		
R60	Male Straight Thread O-Ring 90° Elbow	Swivel																											182		
S60	Female For-Seal® Straight	Swivel								95			110				149												172	187	
T00	Straight Tube	Rigid																											175		
T50	Straight Tube-Long	Rigid								96										233											

Numbering Systems

░ = Denotes Coll-O-Crimp® Hose Ends

Part # Suffix	Hose End	Style	009 'B'	057 'B'	100 'B'	105 'B'	057 'P'	338 'B'	069 'D'	'E'	069 'E'	336 'E'	470 'E'	757 'E'	'K'	039 'K'	'M'	104 'N'	213 'N'	247 'N'	425 'N'	436 'N'	229 'P'	265 'P'	338 'P'	'S'	570 'S'	069 'T'	'U'	430 'U'	'W'
W00	Bumped Tube O-Ring Male	Rigid												140																	
W40	Bumped Tube O-Ring Female 45° Tube Elbow	Swivel												142																	
W60	Bumped Tube O-Ring Male 90° Tube Elbow	Rigid												143																	
X00	SAE 45° Flare Male 90° Elbow	Rigid												143																	
X20	30° Flare Female (P.T.T. Thread for Diesel Applications	Swivel							219										227												
X60	SAE 37° Male 90° Elbow	Rigid																											177		
X80	Compressor Discharge (PTFE Hose)	Flange								96																					
Y00	Hose Mender	Rigid			211			215																							
Y20	Male Connector	Rigid						214																							
Y30	Male Connector w/ Spring Guard	Rigid						214																							
Y33	Hose Splicer	Special												141																	
Y50	Air Brake Connection Tube	Rigid								93										232											
Y60	Air Brake Slider	Rigid																							158						
Y70	Air Brake	Swivel						215																	159						
Y80	Female Connector	Swivel						215																							
Z00	Bumped Tube O-Ring Male	Swivel												140																	
Z20	Bumped Tube O-Ring 45° Tube Elbow	Swivel												142																	
Z40	Bumped Tube O-Ring Female	Swivel												141																	
Z50	Bumped Tube O-Ring Female w/Service Port	Swivel												141																	
Z60	Bumped Tube O-Ring Male 90° Tube Elbow	Swivel												143																	
Z80	Bumped Tube O-Ring Female 90° Tube Elbow	Swivel												144																	
Z90	Bumped Tube O-Ring 90° Tube Elbow w/Service Port	Swivel												144																	

Skiving Procedure

Hose Cut-Off Factor

Select the proper hose and ends and cut hose to length. The cut length of the hose is determined by subtracting the cut-off factor for each end from the overall length of the assembly. See individual catalog listings for hose cut-off factors.

Skiving Weatherhead Hose

(When using H470 hose with 470 'E' and 570 'S' series hose ends)

The outer protective covering of wire-wrapped hose must be carefully removed (skived) to the wire to allow proper installation of crimped hose ends and to assure the best possible hose service.

When skiving a hose, it is advisable to skive a practice piece of hose to determine:

- That covering is properly removed and that the hose wire-wrap reinforcements are not displaced, damaged or cut in the process.
- The hose should be checked for correct skive length.
- The hose should be checked for 100% cover removal.

HOSE H470

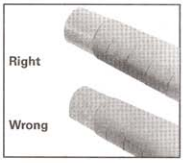
HOSE I.D.	SKIVE LENGTH	CUTTING HEAD
1/2	1-1/4	T-410-50
3/4	1-13/16	T-410-52
1	2-1/8	T-410-53
1-1/4	2-7/8	T-410-54
1-1/2	3-1/8	T-410-55
2	3-3/8	T-410-56
T-410-36	Handle	
T-410-37	Replacement cutting blades	

Hand-Tool Method

Skiving heads are shipped preset for proper skive length. Depending on hose cover thickness, the skiving blade may require adjustment. The skiving blade may need periodic adjustment. Directions are packed with the skive tool.

1. Clamp hose in a vise or other suitable holding device. Be sure not to clamp so tight as to damage hose.
2. Lubricate hose I.D. and skiving tool mandrel with oil/soap solution.
3. Carefully align mandrel with hose I.D.; apply steady pressure and start mandrel into hose.
4. When cutting head contacts hose end, slowly rotate skiving tool clockwise. Cutting head will remove hose covering while threading itself to a preset skive length when bottomed against hose end. Continue to rotate skiving tool clockwise to remove excess rubber from wire wrap while slowly pulling tool from hose. (See illustration to right.)
5. Wire-brush hose end to remove any remaining cover from wire wrap.
6. Inspect skive for 100% cover removal.

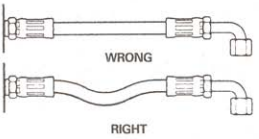
⚠ **IMPORTANT:** Clean hose I.D. by brushing, blowing compressed air, or by flushing. By doing so, contaminants are kept out of operating systems.



⚠ **WARNING** - Failure to completely remove the cover may result in serious personal injury or property damage due to hose ends blowing off, hose leakage, and other failures.

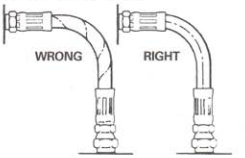
Hose Installation

1. Provide for length change.



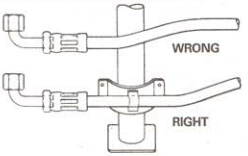
In straight hose installations, allow enough slack in the hose line to provide for changes in length that will occur when pressure is applied. This change in length can be from +2% to -4%.

2. Avoid twisting and orient properly.



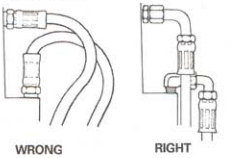
Do not twist hose during installation. This can be determined by the printed layline on the hose. Pressure applied to a twisted hose can cause hose failure or loosening of connections.

3. Protect from hazardous environment.



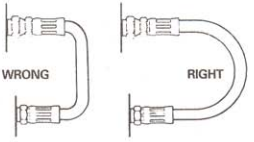
Keep hose away from hot parts. High ambient temperature will shorten hose life. If you can not route it away from the heat source, insulate it. (See Spring Guards page 66-76.)

4. Avoid mechanical strain.



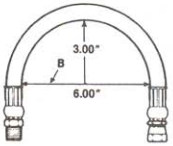
Use elbows and adapters in the installation to relieve strain on the assembly and to provide easier and neater installations that are accessible for inspection and maintenance.

5. Use proper bend radius.



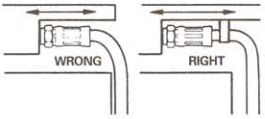
Keep the bend radius of the hose as large as possible to avoid collapsing of the hose and restriction of flow. Follow catalog specs on minimum bend radii.

6. Use proper bend radius (cont'd).



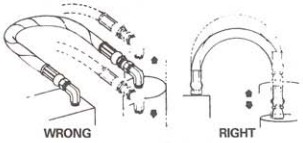
Minimum bend radius is measured on the inside bend of the hose. To determine minimum bend, divide the total distance between ends (B length) by 2. For example, B = 6, minimum bend radius = 3.

7. Secure for protection.



Install hose runs to avoid rubbing or abrasion. Use Weatherhead Hose Clamps to support long runs of hose or to keep hose away from moving parts. It is important that the clamps not allow the hose to move. This movement will cause abrasion and premature hose failure. (See Hose Clamps pg 83.)

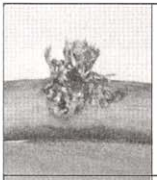
8. Avoid improper hose movement.



Make sure relative motion of the machine components produces bending rather than twisting of the hose. Hose should be routed so that the flex is in the same plane as the equipment movement.

⚠ Refer to safety information regarding Coll-O-Crimp® hose installation on page 1.

Hose Failure Analysis

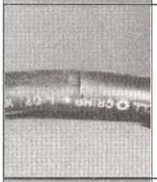


1. Problem: Hose has burst. Rusted wire, torn and rotted fibers are present. This was caused by abrasion damage. Exposure to elements will accelerate the deterioration.

   Solution: Route the hose so it does not rub against other objects while under pressure. Suggest using clamps and spring guards to protect.

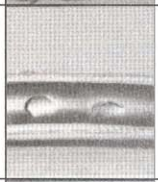
2. Problem: Hose has burst on outside bend of hose. This hose has been bent past minimum bend radius. It has also taken a set in a bent position due to a kink in the inner tube or reinforcement.

   Solution: Check minimum bend radius for hose. Refer to page 26 to determine minimum bend radius. Utilize bend tube elbows if possible.



3. Problem: Excessive heat. Hose cover or inner tube is brittle and cracked and is not flexible at room temperature.

   Solution: Use hose with higher temperature rating or protect from heat with shields. Examine entire system for potential heat source. For example: undersized lines, excessively long lines, too many bends and/or fittings, reservoir low on oil.



4. Problem: Incompatible fluid. Portions of the inner tube are swollen and/or washed out. Cover may also be swollen.

   Solution: Make sure hose used is compatible with fluid being used. Refer to chemical compatibility chart.

5. Problem: Hose cover blistered and pulling away from carcass. Gas has effused through the tube and become trapped under the cover.

   Solution: Use perforated, pin-pricked or fiber cover hose.

6. Problem: End fitting blown off. Improper assembly procedures, incorrect hose end series, mixing competitor's components and Weatherhead components.

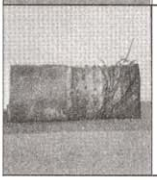
   Solution: Refer to hose assembly procedures and Hose End and Tool Selector Chart in this catalog. NEVER intermix components. Refer to pages 1-2 for important safety information.

7. Problem: Hose has burst cleanly with no random wire breakage and cover abrasion. This condition is caused by excessive pressure.

   Solution: Use hose with higher pressure rating. Check pressure relief for damage or improper setting.

8. Problem: Hose has burst. Hose is permanently twisted and kinked. Many broken wires in failure area.

   Solution: Hose twisting can reduce hose life 90%. Tighten ends properly. Reroute hose to eliminate twist. Route hose to flex in only one plane. Use hose layline for a guide.



9. Problem: End fitting blown off. This condition has been caused by improper skiving. Any remaining cover on hose in the crimping area will prohibit proper end retention.

   Solution: Make sure hose is properly skived. Refer to page 25 for hose skiving instructions.

10. Problem: Hose end appears to have been pinched on one side.

    Solution: This is an early sign of collet wear. Replace collet. New Weatherhead® collets offer the feature of being rebuildable. See the tool section chart in the back of this catalog.

⚠ **WARNING** – Selection of Hose: Selection of the proper hose for the application is essential to the proper operation and safe use of the hose and related equipment. Inadequate attention to selection of hose for application can result in serious bodily injury or property damage. In order to avoid serious bodily injury or property damage resulting from selection of the wrong hose, you should carefully review the information in this catalog. Refer to Selection of Hose and Hose Installation (page 3-11 and page 26) for additional safety information. Hose failures can be caused by conditions such as excessive pressures, fluid incompatibility, extreme temperatures, and many more. Eaton has illustrated above some of the more common failures. If the conditions you are experiencing are not listed, please contact your Eaton representative for further assistance.

Qualified Hoses for Marine Applications

SAE J1942

Hose Number	Application Code	Hose ID	MAWP (PSI)	Hose Ends	Fire Sleeve Required
H009	H	1/4	400	009 'H'	--
H009	H	5/16	400	'E', 009 'H'	--
H009	H	3/8	400	'E', 009 'H'	--
H009	H	1/2	400	'E', 009 'H'	--
H017	H	1/4	1250	'U'	--
H017	H	3/8	1125	'U'	--
H017	H	1/2	1000	'U'	--
H017	H	3/4	750	'U'	--
H017	H	1	560	'U'	--
H017	H	1-1/4	375	'U'	--
H039	H	3/4	300	'U', 'S'	--
H039	H	1	250	'U', 'S'	--
H039	H	1-1/4	200	'U', 'S'	--
H039	H	1-1/2	150	430 'U'	--
H039	H	2	100	430 'U'	--
H059	F	3/16	500	069 'E', 229 'P', 247 'N'	--
H059	F	1/4	500	069 'E', 247 'N'	--
H059	F	5/16	500	069 'E', 229 'P', 247 'N'	--
H059	F	13/32	500	069 'E', 229 'P', 247 'N'	--
H059	F	1/2	500	069 'E', 229 'P', 247 'N'	--
H059	F	5/8	500	069 'E', 247 'N'	--
H059	F	7/8	500	069 'E', 247 'N'	--
H104	H	1/4	2750	'U', 104 'N', 'S'	--
H104	H	3/8	2250	'U', 104 'N', 'S'	--
H104	H	1/2	2000	'U', 104 'N', 'S'	--
H104	H	5/8	1500	'U'	--
H104	H	3/4	1250	'U', 104 'N', 'S'	--
H104	H	1	1000	'U', 104 'N', 'S'	--
H104	H	1-1/4	625	'U', 'S'	--
H104*	F	1/4	500	'U', 104 'N', 'S'	A6912
H104*	F	3/8	500	'U', 104 'N', 'S'	A6914
H104*	F	1/2	500	'U', 104 'N', 'S'	A6916
H104	F	5/8	500	'U'	--
H104	F	3/4	500	'U', 104 'N', 'S'	--
H104	F	1	500	'U', 104 'N', 'S'	--
H104	F	1-1/4	500	'U', 'S'	--
H145	H	1/4	3000	'U', 'M', 'S'	--
H145	H	3/8	3000	'U', 'M', 'S'	--
H145	H	1/2	3000	'U', 'M', 'S'	--
H145	H	5/8	3000	'U', 'M'	--
H145	H	3/4	3000	'U', 'S'	--
H145	H	1	3000	430 'U', 'S'	--
H190	H	1/4	3265	'W'	--
H190	H	3/8	2610	'W'	--
H190	H	1/2	2320	'W'	--
H190	H	5/8	1885	'W'	--
H190	H	3/4	1575	'W'	--
H190	H	1	1275	'W'	--
H245	H	1/4	5000	'U', 'S', 'M'	--
H245	H	3/8	4000	'U', 'S', 'M'	--
H245	H	1/2	3500	'U', 'S', 'M'	--
H245	H	5/8	2750	'U', 'M'	--
H245	H	3/4	2250	'U', 'S', 430 'U'	--
H245	H	1	2000	'U', 'S', 430 'U'	--
H245	H	1-1/4	1625	'U', 'S', 430 'U'	--
H245*	F	1/4	500	'U', 'S'	A6912
H245*	F	3/8	500	'U', 'S'	A6914
H245*	F	1/2	500	'U', 'S'	A6916

Hose Number	Application Code	Hose ID	MAWP (PSI)	Hose Ends	Fire Sleeve Required
H245*	F	5/8	500	'U'	A6920
H245*	F	3/4	500	'U', 'S'	A6924
H245*	F	1	500	'U', 'S'	A6928
H245*	F	1-1/4	500	'U', 'S'	A6936
H280	H	1/4	5600	'W'	--
H280	H	3/8	4800	'W'	--
H280	H	1/2	4000	'W'	--
H280	H	5/8	3630	'W'	--
H280	H	3/4	3120	'W'	--
H280	H	1	2350	'W'	--
H290	H	1/4	5800	'W'	--
H290	H	3/8	4800	'W'	--
H290	H	1/2	4000	'W'	--
H290	H	5/8	3630	'W'	--
H290	H	3/4	3120	'W'	--
H290	H	1	2350	'W'	--
H425	H	1/4	5000	'U', 'S'	--
H425	H	3/8	4000	'U', 'S', 425 'N'	--
H425	H	1/2	3500	'U', 'S', 425 'N'	--
H425	H	5/8	2750	'U'	--
H425	H	3/4	2250	'U', 'S', 430 'U', 425 'N'	--
H425	H	1	2000	'U', 'S', 430 'U', 425 'N'	--
H425	H	1-1/4	1625	'U', 'S', 430 'U', 425 'N'	--
H425	H	1-1/2	1250	430 'U'	--
H425	H	2	1125	430 'U', 425 'N'	--
H425*	F	1/4	500	'U', 'S', 425 'N'	A6912
H425*	F	3/8	500	'U', 'S', 425 'N'	A6916
H425*	F	1/2	500	'U', 'S', 425 'N'	A6920
H425*	F	5/8	500	'U'	A6920
H425*	F	3/4	500	'U', 'S', 425 'N'	A6924
H425*	F	1	500	'U', 'S', 425 'N'	A6928
H425*	F	1-1/4	500	'U', 'S', 425 'N'	--
H430	H	3/4	4000	430 'U'	--
H430	H	1	4000	430 'U'	--
H430	H	1-1/4	3000	430 'U'	--
H430	H	1-1/2	2500	430 'U'	--
H430	H	2	2500	430 'U'	--
H470	H	3/4	5000	470 'E'	--
H470	H	1	5000	470 'E'	--
H470	H	1-1/4	5000	470 'E'	--
H569	H	3/16	3000	069 'E'	--
H569	H	5/16	2250	069 'E', 247 'N'	--
H569	H	13/32	2000	069 'E', 247 'N'	--
H569	H	1/2	1750	069 'E', 247 'N'	--
H569	H	5/8	1500	069 'E', 247 'N'	--
H569	H	7/8	800	069 'E'	--
H569	H	1-1/8	625	069 'E'	--

Note: Application codes: H - Hydraulic service; F - Fuel and Lube service

MAWP - Maximum Allowable Working Pressure

*Fire sleeve required for fuel applications

Qualified Hoses for the American Bureau of Shipping

ABS Steel Vessle Rules 2000 (4-6-2/5.7)

Intended Service: Fuel Oil, Hydraulic Fluid and Water Systems for Marine and Offshore Applications

Hose Number	Hose ID	MAWP (PSI)	Hose End Series	Fire Sleeve
H03912	3/4	300	'U', 'S', 039 'K'	A6924
H03916	1	250	'U', 'S', 039 'K'	A6928
H03920	1-1/4	200	'U', 'S', 039 'K'	A6932
H03924	1-1/2	150	430 'U'	A6936
H03932	2	100	430 'U'	A6948
H05904	3/16	500	247 'N', 229 'P', 069 'E'	--
H05905	1/4	500	247 'N', 069 'E'	--
H05906	5/16	500	247 'N', 229 'P', 069 'E'	--
H05908	13/32	500	247 'N', 229 'P', 069 'E'	--
H05910	1/2	500	247 'N', 229 'P', 069 'E'	--
H05912	5/8	500	247 'N', 069 'E'	--
H05916	7/8	500	229 'P', 069 'E'	--
H06904	3/16	3000	069 'E', 247 'N'	--
H06905	1/4	500	069 'E', 247 'N'	--
H06906	5/16	2250	069 'E', 247 'N'	--
H06908	13/32	2000	069 'E', 247 'N'	--
H06910	1/2	1750	069 'E', 247 'N'	--
H06912	5/8	1500	069 'E', 247 'N'	--
H06916	7/8	800	069 'E', 247 'N', 069 'D'	--
H06920	1-1/8	625	069 'E'	--
H06924	1-3/8	500	069 'E'	--
H06932	1-13/16	350	069 'E'	--
H10404	1/4	2750	'U', 'S', 104 'N'	--
H10406	3/8	2250	'U', 'S', 104 'N'	--
H10408	1/2	2000	'U', 'S', 104 'N'	--
H10410	5/8	1500	'U'	--
H10412	3/4	1250	'U', 'S', 104 'N'	--
H10416	1	1000	'U', 'S', 104 'N'	--
H10420	1-1/4	625	'U', 'S'	--
H24504	1/4	5000	'U', 'S'	--
H24506	3/8	4000	'U', 'S'	--
H24508	1/2	3500	'U', 'S'	--
H24510	5/8	2750	'U'	--
H24512	3/4	2250	'U', 'S'	--
H24516	1	2000	'U', 'S'	--
H24520	1-1/4	1625	'U', 'S'	--
H42504	1/4	5000	'U', 'S', 425 'N'	--
H42506	3/8	4000	'U', 'S', 425 'N'	--
H42508	1/2	3500	'U', 'S', 425 'N'	--
H42510	5/8	2750	'U'	--
H42512	3/4	2250	'U', 'S', 425 'N'	--
H42516	1	2000	'U', 'S', 425 'N'	--
H42520	1-1/4	1625	'U', 'S', 425 'N'	--
H42524	1-1/2	1250	430 'U', 425 'N'	--
H42532	2	1125	430 'U', 425 'N'	--
H43008	1/2	4000	430 'U'	--
H43012	3/4	4000	430 'U'	--
H43016	1	4000	430 'U'	--
H43020	1-1/4	3000	430 'U'	--
H43024	1-1/2	2500	430 'U'	--
H43032	2	2500	430 'U'	--
H47012	3/4	5000	570 'S'	--
H47016	1	5000	570 'S'	--
H47020	1-1/4	5000	570 'S'	--
H47024	1-1/2	5000	570 'S'	--
H47032	2	5000	570 'S'	--
H56906	5/16	2250	069 'E'	--
H56908	13/32	2000	069 'E'	--
H56910	1/2	1750	069 'E'	--
H56912	5/8	1500	069 'E'	--
H56916	7/8	800	069 'E'	--
H56920	1-1/8	625	069 'E'	--

MAWP - Maximum Allowable Working Pressure

Note: Restrictions on taper thread joints in hydraulic systems for steering gear, controllable pitch propellers, or other systems associated with propulsion or propulsion control are applicable. See SVR 2000 4-6-2/5.5.5.
Split flanges, such as 570 'S' Series, are not permitted in steering gear systems.
Each hose may only utilize end fitting series listed above.

These products/models are covered under ABS Product Design Assessment Certificate #00-HS191306-PDA dated 15/Dec/2000. It will remain valid for five years from date of issue or until rules or specifications used in the assessment are revised (whichever occurs first).