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.

	Hydraulic											
HOSE	**H017**	**H039**	**H104**	**H114**	**H145**	**H145R**	**H146**	**H190**	**H190H**	**H245**	**H245L**	**H280**
Page	**B-3**	**B-2**	**B-3**	**B-6**	**B-6**	**B-7**	**B-7**	**B-4**	**B-5**	**B-9**	**B-10**	**B-11**
Usage	General Purpose Hydraulic	Suction	Hydraulic	Ag. Hyd. & Hyd. Synthetic	Hydraulic	Construction	Ag. Hyd. & Hyd. Synthetic	Diamond Advantage	High Temp. Hydraulics	Hydraulic	Low Temp Flexing	Diamond Advantage
Meets	USCG MSHA	USCG ABS MSHA	USCG MSHA ABS	MSHA	ABS USCG MSHA	—	—	MSHA, USCG, ISO 1436a, EN 853 Type 1SN	MSHA, ISO1436a	USCG MSHA ABS	USCG[2] MSHA	ABS, USCG, MSHA, ISO 1436, EN 857, Type 2SC
SAE No.	J1942/1, 100R3	100R4 J1942/1	J1942 /1/1 100R1AT	—	J1942/1, 100R17	100R17	—	J1942/1, 100R1 AT, Type S	100R1 AT, 1SN, EN853	J1942 100R16	100R16	J1942, Code H, 100R16, Type S
Temp. Range °F	-40°F +212°F	-40°F +275°F	-40°F +212°F	-40°F +250°F	See Page 55	-40°F +212°F	-65°F +250°F	-40°F +260°F	-40 - +302°F	-40°F +212°F	-70 - +212°F	-40°F +260°F
Inner Tube	Nitrile	CPE	Nitrile	Hytrel[1]	Nitrile	Nitrile	Hytrel[1]	Nitrile	CPE	Nitrile	Low Temp. Nitrile	Nitrile
Reinforcement	2 Fiber Braids	2 Fiber Ply & Helical Wire	1 Steel Braid	1 Steel Braid	1 Steel Braid†	1-2 Steel Braids	1 Steel Braid	1 Steel Braid	1 Steel Braid	2 Steel Braids	2 Wire Braids	2 Steel Braids
Cover	Neoprene	Neoprene	Neoprene	Neoprene	Neoprene	UHMWPE	Polyester Braid	Weather-SHIELD™	CPE	Neoprene	Weather-SHIELD™	Weather-SHIELD™
Hose I.D. - Maximum Recommended Operating Pressure - PSI												
3/16												
1/4	1250		2750	3000	3045	3000	3000	3700	3265	5000	6000	6500
5/16												
3/8	1125		2250	3000	3045	3000	3000	3400	2610	4000	5000	5300
13/32												
7/16												
1/2	1000		2000	3000	3045	3000	3000	2900	2320	3500	4500	4500
5/8			1500		3045	3000		1885	1885	2750	4000	4000
3/4	750	300†	1250		3045	3000		2000	1525	2250	3500	3500
7/8												
1	565	250†	1000		3045	3000		1500	1275	2000	2800	3000
1-1/8												
1-1/4	375	200†	625					1000	900	1625	2300	2500
1-1/2		150						750			2000	2000
1-3/8												
1-13/16												
2		100						600			1500	1600
2-3/8												
3												
Hose Fittings												
C-O-C	J-39-57	J-38, J-39-57, J-58-68, J-69-94	J-38, J-39-57, J-69-94	J-38, J-39-57	J-69-94, J-38, J-39-57, J-58-68	J-69-94	J-39-57	J-69-94	J-69-94	J-69-94, J-38, J-39-57, J-58-68	J-69-94	J-69-94
Field Attach.	—	K-14, K-15	K-16-18	—	—	—	—	—	—	—	—	—

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

[2] Firesleeve required for fuel applications.

**At 70° F.

† When used with 'U' Series Ends.

Hose Selection Chart

⚠ WARNING

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	Hydraulic												
HOSE	**H290**	**H290H**	**H324**	**H325**	**H335**	**H336**	**H345**	**H350**	**H400**	**H421**	**H425**	**H430**	**H430R**
Page	**B-13**	**B-13**	**B-2**	**B-10**	**B-19**	**B-19**	**B-5**	**B-8**	**B-9**	**B-18**	**B-12**	**B-14**	**B-15**
Usage	Diamond Advantage	High Temp. Hydraulics	Power Steering	Low Temp. Hydraulic	Thermo-plastic Non-Conductive	Thermo-plastic	Pressure Washer	Hydraulic	Very High Pressure Hydraulic	Hyd. Jacking System	Hydraulic	Very High Pressure Hydraulic	Very High Pressure Hydraulic
Meets	USCG, MSHA, ISO 1436, EN 853, Type 2SN	MSHA	—	—	EN 855 Type R8	EN 855 Type R8	MSHA	MSHA	MSHA	—	USCG MSHA ABS	USCG MSHA, ABS	—
SAE No.	J1942/1, 100R2 AT, Type S	100R2, 2SN, EN853	—	—	100R8 Non-Cond.	100R8	—	—	—	—	J1942/1, 100R2AT	J1942, 100R12	100R12
Temp. Range °F	-40°F +260°F	-40 - +302°F	-40°F +250°F	-67°F +175°F	See page 79	See page 79	See Page 60	-40°F +212°F	-40°F +212°F	-40 - +212°F	-40°F +212°F	-40°F +260°F	-40°F +250°F
Inner Tube	Nitrile	CPE	Neoprene	Synthetic Rubber	Nylon	Nylon	Nitrile	Synthetic Rubber	Nitrile	Synthetic Rubber	Nitrile	Nitrile	Nitrile
Reinforce-ment	2 Steel Braids	2 Steel Braids	2 Fiber Braids	2 Steel Braids	Multi Yarn Braids	Multi Fiber Braids	1 Steel Braid	2 Steel Braids†	2 Steel Braids	2 Wire Braids	2 Steel Braids	4 Spiral Steel Plies	Steel Plies
Cover	Weather-SHIELD™	CPE	Neoprene	Synthetic Rubber	Orange Polyurethane	Black Polyurethane Perforated	Blue Vinyl Nitrile	Neoprene	Vinyl Nitrile	Synthetic Rubber	Neoprene	Weather-SHIELD™	UHMW
Hose I.D. - Maximum Recommended Operating Pressure - PSI													
3/16					5000	5000							
1/4	6500	5800		5000	5000	5000	3000			10000	5000		
5/16													
3/8	5800	4800	1500	4000	4000	4000	3000	3500		10000	4000	6500	4000
13/32													
7/16													
1/2	5000	4000		3500	3500	3500	3000	3500			3500	6000	4000
5/8	4000	3630						3500	4000		2750	6000	4000
3/4	3500	3120		2250		2250		3500	4000		2250	5500	4000
7/8		2400			2250								
1	3000			2000	2000	2000		3500			2000	5100	4000
1-1/8													
1-1/4	2500	2250									1625	4500	3000
1-1/2	2000	1750									1250	4000	2500
1-3/8													
1-13/16													
2	1600	1500									1125	4000	2500
2-3/8													
3													
Hose Fittings													
C-O-C	J-69-94	J-69-94	J-39-57	J-39-57	J-15-18	J-15-18	J-69-94	J-69-94, J-39-57, J-58-68	J-69-94	J-69-94	J-69-94, J-38, J-39-57, J-58-68	J-58-68	J-58-68
Field Attach.	—	—	—	—	—	—	—	—	—	—	K-27-29	—	—

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**At 70° F.
† When used with 'U' Series Ends.

Hose Selection Chart

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	Hydraulic								General Purpose				
HOSE	**H435**	**H436**	**H464**	**H470**	**H471**	**H485**	**H487**	**H545**	**H100**	**H101**	**H115**	**H116**	**H201**
Page	**B-20**	**B-21**	**B-16**	**B-15**	**B-16**	**B-17**	**B-17**	**B-8**	**C-2**	**C-3**	**C-4**	**C-4**	**C-5**
Usage	Thermo-plastic Non-Conductive	Thermo-plastic	Hydraulics	Very High Pressure Hydraulic	Very High Pressure Hydraulic	Very High Pressure Hydraulics	Very High Pressure Hydraulics	Hydraulic	Air, Oil, Water, Diesel Fuel	Air, Oil, Water, Diesel Fuel	Air Tool & Water	Pneumatic Tools	Air, Oil, Water, Diesel Fuel
Meets	—	—	MSHA	USCG** MSHA, ABS	MSHA	—	EN856, MSHA	—	—	MSHA	—	—	MSHA (Black only)
SAE No.	100R7	100R7	EN856, 4SH`	J1942/1, 100R13	100R13	100R15	—	—	—	—	—	—	—
Temp. Range °F	-40°F +200°F	-40°F +200°F	-40 - +212°F	See page 64	-40 - +260°F	-40 - +250°F	-70 - +212°F	-40°F +250°F	-40°F +212°F	-40°F +212°F	-40°F +160°F	-40 - +180°F	-40°F +200°F
Inner Tube	Nylon 11	Nylon 11	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile
Reinforce-ment	2 Fiber Braids	2 Fiber Braids	4 Spiral Steel Plies	Multi Spiral Steel	Multi Spiral	Multi-Spiral Steel	Multi Spiral	1 Steel Braid*	1 Fiber Braid	1 Fiber Braid	Multi Fiber Braid	Multi-Fiber Braids	1 Fiber Braid
Cover	Orange Polyurethane	Polyurethane Perforated	Nitrile	Vinyl Nitrile	Weather-SHIELD	Vinyl Nitrile	Vinyl Nitrile	Abrasive Resistant Nylon	Fiber Braid	Neoprene	Red Vinyl Nitrile	Vinyl Nitrile	Neoprene (black), Vinyl Nitrile (colors)
Hose I.D. - Maximum Recommended Operating Pressure - PSI													
3/16							—						
1/4	2750	2750						3000	350	350	300	225	300
5/16	2500	2500							350	350	300	225	
3/8	2250	2250						3000	350	350	300	225	300
13/32													
7/16													
1/2	2000	2000		5000				3000	350	350	300	225	300
5/8								3000	350	350			300
3/4	1250	1250	6090	5000	5076		6090	3000	350	350	300		300
7/8													
1	1000	1000	5510	5000	5076	6000	6090	3000			300		
1-1/8													
1-1/4			5075	5000	5076	6000	6090				225		
1-1/2			4350	5000	5076	6000	6090				225		
1-3/8													
1-13/16													
2			3625	5000	5076		5076						
2-3/8													
3													
Hose Fittings													
C-O-C	J-2-8	J-2-8	J-92-102	J-19-23, J-95-105	J-95-105	J-95-105	J-95-105	J-38, J-39-57, J-58-68	—	—	J-39-57, J-58-68, J-69-94	J-39-57, J-58-68, J-69-94	—
Field Attach.	K-30-31	K-30-31	—	—	—	—	—	—	K-5-7	K-5-7	K-3-4, K-8	K-3-4, K-8	K-5-7

* Minimum Burst Pressure
** Size -12 thru -20.
† 2 Steel Braids -06 thru -12.
4 Steel Spirals size -16.

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**At 70° F.
† When used with 'U' Series Ends.

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	General Purpose						Industrial						
HOSE	**H009**	**H209**	**H265**	**H275**	**H332**	**H1571**	**H0105**	**H0106**	**H285**	**H160**	**H1719**	**H1776/7**	**H1812**
Page	**C-2**	**C-5**	**C-6**	**C-6**	**C-7**	**C-7**	**D-2**	**D-2**	**D-3**	**D-4**	**D-4**	**D-5**	**D-5**
Usage	Lube	Car Wash	Air, Water, Air Tools, Washdown	Air & Water	Air, Oil, Water, Diesel Fuel	Air and Water Transfer	Air & Water	Air/Water Apps.	Food & Beverage, Air, Water, Chemicals	Food & Beverage A/C Drainage	General Purpose	Pneunatic Tools	Fertilizer and Pesti-cides
Meets	USCG MSHA	—	—	—	—		—	—	FDA/NSF	FDA/NSF			
SAE No.	J1942/1, 100R6	—	—	—	—		—	—					
Temp. Range °F	-40°F +212°F	-40°F +200°F	-20°F +180°F	-10°F +150°F	-40 +302°F	-20° +150°F	See page 73	See page 73	-15° +150°F	-15° +150°F	-15° +150°F	-40° +180°F	-40° +180°F
Inner Tube	Nitrile	Nylon 11	Modified PVC	PVC	CPE	Modified PVC	EPDM	EPDM	PVC	PVC	Polyvinyl Chloride PVC	Nitrile	EPDM
Reinforce-ment	1 Fiber Braid	1 Fiber Braid	2 Fiber Spirals	2 Fiber Spirals	1 Fiber Braid	4 Fiber Spiral	Multi Fiber Spiral	2 Spiral	Fiber		2 Fiber Spiral	1 or 2 Fiber Braid	2 Fiber Braid
Cover	Neoprene	Polyurethane	Blue Rubber Modified Thermoplastic	Red PVC	CPE	PVC/Nitrile Blend	Red EPDM	EPDM	PVC	PVC	Polyvinyl Chloride PVC	Red Vinyl Nitrile	Red EPDM
Hose I.D. - Maximum Recommended Operating Pressure - PSI													
3/16									250	55			
1/4	400	2250	350**	250**	250		300†	200	250	55		325	275
5/16	400	1750							250	50		325	
3/8	400	1350	350**	250**	250		300†	200	225	55		325	275
13/32													
7/16													
1/2	400	1000	300**	250**	250		300†	200	200	45		325	250
5/8					250		300	200	200	40	150	325	250
3/4			250**	250**	250	400	225		150	35	150	325	250
7/8										30			
1			200**	200**			200†		125	25		325	250
1-1/8													
1-1/4			150	200			200		100	20		325	250
1-1/2			150	200			200		100	35		325	250
1-3/8													
1-13/16													
2			125	125					75	35			
2-3/8													
3													
Hose Fittings													
C-O-C	J-2-8	J-2-8	J-2-8, J-32, J-69-94	J-2-8, J-32, J-69-94	—	J-39-57, J-69-94	J-39-57	J-39-57	—	—	—	J-39-57, J-58-68, J-69-94	J-39-57, J-58-68, J-69-94
Field Attach.	K-2	—	—	—	K-5-7	—	K-3-4, K-8	K-3-4, K-8	—	—	—	—	—

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	Industrial			Fuel							Silicone		
HOSE	**H1981/2**	**H1987**	**H9949**	**EH049**	**EH089**	**H057**	**H059**	**H077**	**H366**	**H900**	**EH225**	**EH226**	**EH227**
Page	**D-6**	**D-7**	**D-7**	**E-2**	**E-2**	**E-3**	**E-3**	**E-4**	**E-4**	**E-5**	**F-2**	**F-2**	**F-3**
Usage	Air and Water Transfer	Contractors Water	Non-Conductive	Fuel	Fuel	Fuel & Oil	Fuel Oil/ Lube	Elec. Fuel Inject.	LPG	Propane	Engine	Engine	Engine
Meets				EPA	EPA	—	ABS NMMA USCG	—	UL 21	UL 21			
SAE No.						30R7	J1942/1	30R9	—		J20R3 Class A	J20R4 Class A	
Temp. Range °F	-40° +180°F	-30°F +160°F	-40°F +180°F	-25°F +150°F	-25°F +150°F	-40°F +275°F	-40°F +212°F	-30°F +275°F	-40°F +300°F	-40°F +140°F	-65°F +350°F	-65°F +350°F	-65°F +500°F
Inner Tube	Blended Nitrile	EPDM	Nitrile (Non-Conductive	PVDF	PVDF	Nitrile	Nitrile	Fluoro-elastomer Veneer	Nitrile	Nitrile	Silicone	Silicone	Silicone
Reinforcement	2 or 4 Spiral	2 Fiber Spiral	2 Fiber Braid		Fiber	1 Fiber Braid	1 Wire 1 Fiber Braid	Multi Fiber Braid	1 Fiber & 1 S.S. Braid	Fiber Braid	1 Ply Polyester	4 Plies Polyester	4 Plies Aramid
Cover	Neoprene Pinpricked	EPDM Perforated	Vinyle Nitrile (Non-Conductive)	PVC	PVC	Hypalon[1]	Blue Neoprene	ECO	Fiber Braid	Vinyl Nitrile Perforated	Silicone	Silicone	Silicone
Hose I.D. - Maximum Recommended Operating Pressure - PSI													
3/16						50	500						
1/4	200/300		275	50	250	50	500	125		350	400		
5/16	200/300			50	250	50	500	125	350		300	1080	
3/8	200/300		275	50	250	50		125		350	250	1060	
13/32							500		350				
7/16						35							
1/2	200/300		275				500			350	250	872	
5/8	300	600					500				250	797	
3/4	225/300	600	275							350	200	754	
7/8											200	732	
1	200		275				500			350	175	699	
1-1/8												658	
1-1/4												617	
1-1/2												521	
1-3/8												550	
1-13/16													
2												442	
2-3/8												400	
3												317	
Hose Fittings													
C-O-C	J-39-57, J-69-94	—	J-39-57, J-69-94	J-32	J-32	—	K-9-12, K-33	—	J-9-12	J-39-57	—	—	—
Field Attach.	—	—	—	K-3-4	K-3-4	K-3-4	K-22-26	Clamps M-24	K-12-13, K-22-26	—	—	—	—

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	A/C		Truck									Teflon	
HOSE	**H757**	**GH134W**	**H069**	**H166**	**H169**	**H213**	**H229**	**H239**	**H338**	**H429**	**H569**	**H243**	**H277**
Page	**G-2**	**G-2**	**H-6**	**H-4**	**H-4**	**H-5**	**H-2**	**H-2**	**H-3**	**H-3**	**H-7**	**I-2**	**I-2**
Usage	Air Cond. R12 & R134a	Air Cond. R404a, HFC134a, R22, R407C	Truck & Hydraulic	High Temp. Truck	Hydraulic	High Temp. Truck	Air & Hydraulic	Transmission Oil Cooler, Diesel Fuel, Air Brake	Air Brake	Transmission Oil Cooler, Fuel and Diesel Lines	A/B & Hydraulic	Hydraulic/ Air/Steam	Hydraulic/ Air/ Steam w/ Conductive Static Dissipating Liner
Meets	—	—	DOT AII+ ABS	DOT AII	MSHA	DOT AI	DOT AII	DOT AII	DOT A	—	ABS* DOT AII + USCG	FDA	—
SAE No.	J2064 Type C, CL-1	J2064 Type E Class 1	J1402 AII 100R5	J1402 Type AII	—	J1402 Type AI	J1402 Type AII	J1402 Type AII	J1402 Type A	J1019	100R5 J1942 /1 J1402 Type AII	—	—
Temp. Range °F	See page 49	-40°F +257°F	See page 36	See page 42	-40°F +212°F	See page 43	See page 43	See page 44	-40°F +200°F	-55°F +302°F	See page 53	-65°F +450°F	-65°F +450°F
Inner Tube	Rubber/ Nylon/ Rubber	Polyamide Veneer	Nitrile	Nitrile	Nitrile	CPE	Nitrile	CPE	EPDM	CPE	CPE	Teflon	Teflon
Reinforce-ment	1 Fiber Braid	Rubber Backing, 1 Fiber Braid	1 Fiber & Steel Braid	1 Fiber & 1 S.S. Braid	1 Steel Braid	1 Fiber & 1 Wire Braid	2 Fiber Braids	2 Fiber	Multi Fiber Braid	1 Wire Braid	1 Fiber & 1 Steel Braid	1 S.S. Braid	1 S.S. Braid
Cover	Butyl Perforated	Chlorobutyl	Fiber Braid	Fiber Braid	Neoprene (Perforated)	Fiber Braid	Fiber Braid	Fiber Braid	EPDM	Fiber Braid	Blue Fiber Braid	Stainless Steel Braid	Stainless Steel Braid
Hose I.D. - Maximum Recommended Operating Pressure - PSI													
3/16			3000	1500	3000	2000	225	225			3000	3000	3000
1/4			3000	500	3000	1500					3000	3000	3000
5/16	400		2250	500	2250	1500	225				2250	2500	2500
3/8		500							225			2000	2000
13/32	400		2000	500	2000	1250	225	225		250	2000		
7/16													
1/2	350	500	1750	450	1750	1000	225	225	225	250	1750	1750	1750
5/8	350	500	1500	450	1500	750	225	225			1500		
3/4		500										1000	1000
7/8			800	250	800	400	225	225			800		
1												1000	1000
1-1/8			625	250	625			225			625		
1-1/4													
1-1/2													
1-3/8			500		500								
1-13/16			350		350								
2													
2-3/8			350										
3			200										
Hose Fittings													
C-O-C	J-24-31	—	J-9-12	J-9-12	J-9-12	—	J-9-12, J-33	J-9-12, J-33	J-24-31	J-24-31, J-32	J-9-12	J-2-8	J-2-8
Field Attach.	—	K-37-58	K-12-13, K-22-26	K-12-13, K-22-26	K-12-13, K-22-26	K-19-21	K-12-12, K-22-26	K-22-26	K-9-11	—	K-22-26	—	—

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Teflon® is a registered trademark of DuPont used under license by Eaton.

**At 70° F.
† When used with 'U' Series Ends.

Hose Selection

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 fittings
- 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./in.^{2} 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 Fittings and Fluid Conveyed

In most cases, the end fitting openings are slightly smaller than the hose itself. However, this varies widely with hose fitting 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}

⚠ WARNING

For important safety information concerning hose selection, see pages A-2-3 of this catalog.

CHART 1. Hose Flow Rate vs. Pressure Drop

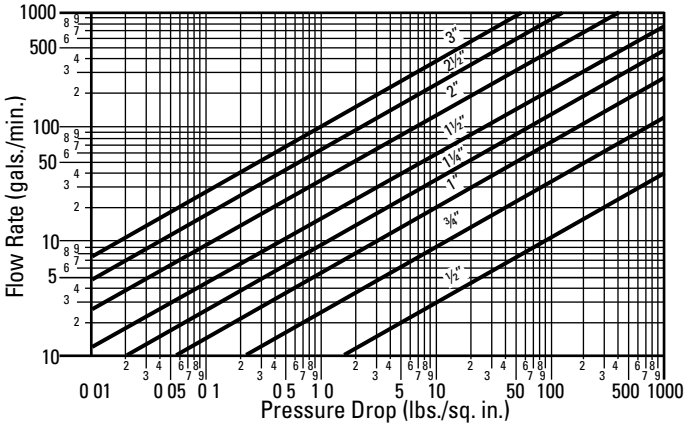
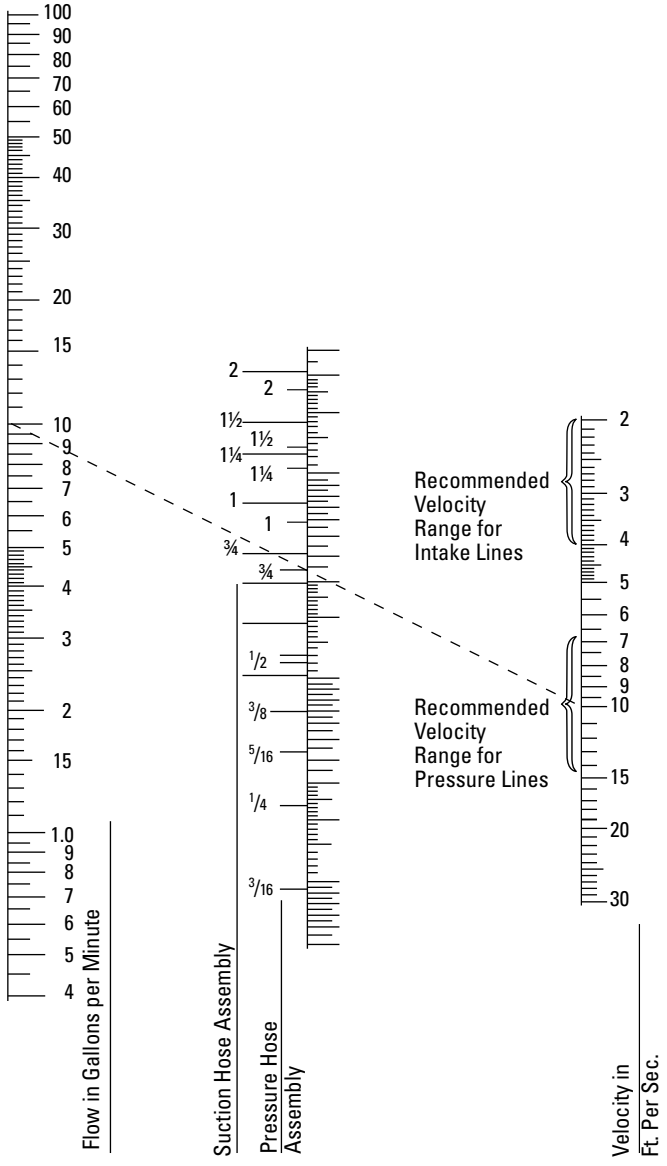


CHART 2. Hose Flow Capacity



Hose Selection

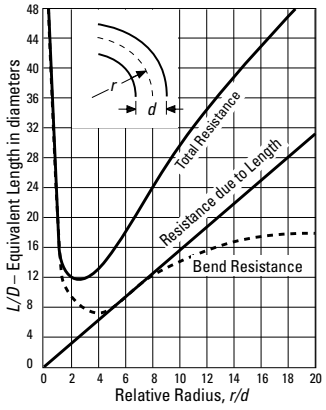
⚠ WARNING
For important safety information concerning hose selection, see pages A2-3 of this catalog.

CHART 3. Fluid Flow Correction Factors

Liquid	Specific Gravity	Viscosity Centistokes	Viscosity Centipoises	Correction Factor R.
		CS	CP	
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%	0.907	–	1.3	0.943
Asphalt* @ 120°F	1.40	–	300.0	0.350
Beer*	1.01	1.15	–	0.990
Benzene Benzol	0.88	0.744	–	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	900.00	–	0.27
Crude Petroleum Typical*				
1. Pennsylvania Crude@100°F	0.80	–	3.0	0.78
2. California Crude @ 150°F	0.915	–	9.0	0.64
3. #33 API Crude @ 100°F	0.86	7.2	–	0.685
4. Texas Crude @ 150°F	0.875	–	3.0	0.792
5. Mexican Crude @ 150°F	0.96	–	550.0	0.287
Decane - n	0.73	1.24	–	0.975
Ethyl Alcohol @ 100°F	0.794	–	1.25	0.93
Ethyl Alcohol @ 95°F	0. 808	–	1.45	0.904
Ethyl Alcohol @ 40°F	0.939	–	3.00	0.807
Ethyl Glycol	1.12	–	24.00	0.55
Formic Acid	1.22	–	–	0.94
Fuel Oils*				
No. 1 @ 100°F Sp Gr 82-95 Visc 30 to 40 SSU	0.88	2.45	–	0.85
No. 2 @ 100°F Sp Gr 82-95 Visc 35 to 50 SSU	0.88	4.50	–	0.752
No. 3 @ 100°F Sp Gr 82-95 Visc 55 SSU max	0.88	8.6	–	0.66
No. 5 @ 100°F Sp Gr 82-95 Visc 60 to 450 SSU	0.88	55.0	–	0.47
No. 6 @ 122°F Sp Gr 82-95 Visc 430 to 2900 SSU	0.88	38.0	–	0.493
Gasoline (representative)*				
Type #1	0.74	0.88	–	1.04
Type #2	0.72	0.64	–	1.11
Type #3	0.68	0.46	–	1.19
Glycerine (Glycerol) – 100% @ 150°F	1.26	–	75.0	0.45
Glycerine & Water – 50%	1.13	–	6.5	0.717
Heptaine – n	.684	0.60	–	1.16
Hexane – n	.66	0.49	–	1.21
Hydrochloric Acid – 31.5%	1.16	–	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	–	0.892
Lubricating Oil (Machine Oil)	0.90	–	198.0	0.35
Lubricating Oil (Automotive)	0.893	–	110.0	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	0.39
Napthalene	1.15	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	–	0.36
Sodium Hydroxide – 50%	1.53	–	95.0	0.443
Soya Bean Oil	0.924	86.0	–	0.418
Sperm Oil	0.88	21.0	–	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 4. Resistance of 90° Bends



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.

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.

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.

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

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.

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 equivalent 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.

Hose Selection

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 fitting 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.

Chemical Compatibility Chart

FLUID	HOSE MATERIAL											HOSE FITTINGS		
	PVC	Nitrile	Vinyl Nitrile	Neoprene	Teflon	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	X	G	F	G
Amyl Alcohol	X	G	G	F	G	G	G	G	G	X	G	G	F	F
Aniline	X	X	X	X	G	X	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
Butyl Alcohol, Butanol	X	G	G	G	G	G	G	G	G	X	G	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® is a registered trademark of E.I. DuPont.
- 2 Hypalon® is a registered trademark of E.I. 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.

Hose Selection

Chemical Compatibility Chart

Chemical Compatibility Chart

FLUID	HOSE MATERIAL											HOSE FITTINGS		
	PVC	Nitrile	Vinyl Nitrile	Neoprene	Teflon	Nylon/Nylon II	EPDM	Hypalon[2]	Hytrel[1]	Polyurethane	CPE	Brass	Steel	316 Stainless
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	G	X	F	F
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	F	F	G	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	X	F	F	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	X
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	X	X	X	X	G
Copper Sulfate	G	G	G	G	G	G	G	G	G	G	G	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	X	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	G	X	G	G
Ethers (Ethyl Ether)	X	X	X	X	G	F	X	X	X	F	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	X	F	X	F	G	G	G
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	F	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	-	G	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	G	X	F	X	G	F	X	G
Formic Acid	X	F	F	F	G	X	G	X	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	F	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
Houghto Safe 5046, 5047F	G	G	G	G	G	G	X	X	G	X	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	G	X	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	F	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	G	G	G	X	G	X	X	X
Hydrogen	X	X	X	X	X	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	X	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	X	F	X	-	-	-	G	-	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
Lye	G	F	F	G	G	X	G	G	-	-	G	F	X	G

Codes:

- **G** Good resistance.
- **F** Fair resistance.
- **X** Incompatible.
- **–** No data available.
- ⅄ In all applications, the cover must be pinpricked.
- 1 Hytrel® is a registered trademark of E.I. DuPont.
- 2 Hypalon® is a registered trademark of E.I. 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.

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Hose Selection

Chemical Compatibility Chart

Chemical Compatibility Chart

FLUID	HOSE MATERIAL											HOSE FITTINGS		
	PVC	Nitrile	Vinyl Nitrile	Neoprene	Teflon	Nylon/Nylon II	EPDM	Hypalon[2]	Hytrel[1]	Polyurethane	CPE	Brass	Steel	316 Stainless
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	G	X	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
Methyl Chloride	X	X	X	X	G	F	X	X	X	X	F	G	G	G
Methylene Chloride	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	X	-	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 à	G	G	G	G	G	G	G	-	G	G	G	-	-	-
Nitrous Oxide	X	X	X	X	G	X	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	X	F	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	X	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	X	X	F	X	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	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	F	G	X	G	G	G	X	G	G
Potassium Hydroxide	G	F	F	F	G	G	G	G	F	X	G	F	X	G
Potassium Sulfate	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	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
Skydrol (Transfer Only)	X	X	X	X	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
Sodium Bisulfate	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	X	G	G
Sodium Chloride	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	X	F	G
Sodium Hydroxide	G	F	F	G	G	X	G	G	F	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	G	G
Sodium Perborate	G	G	G	X	G	G	G	X	G	X	X	F	F	G

FLUID	HOSE MATERIAL											HOSE FITTINGS		
	PVC	Nitrile	Vinyl Nitrile	Neoprene	Teflon	Nylon/Nylon II	EPDM	Hypalon[2]	Hytrel[1]	Polyurethane	CPE	Brass	Steel	316 Stainless
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	F	F	G
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	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	-			
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	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

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

Codes:

G Good resistance.
F Fair resistance.
X Incompatible.
– No data available.
⅄ In all applications, the cover must be pinpricked.
1 Hytrel® is a registered trademark of E.I. DuPont.
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For compatibility of fluids not listed with this chart, contact Technical Support at 1-888-258-0222.

Hose Selection

Hose Fitting Pressure Charts

Thread Style Pressure Performance

Eaton closely follows industry standards in design and in application recommendations. A key principle within ISO, SAE and other standards bodies is that the MAXIMUM DYNAMIC WORKING PRESSURE OF THE HOSE OR ADAPTER ASSEMBLY IS THE LESSER OF THE HOSE AND END CONNECTOR(S) USED. The first table below provides excerpts from standard industry pressure rating charts for connector types as published by SAE (Society of Automotive Engineers).

Note: The tables below are applicable for low carbon free machining steels typically used in Fluid Power connections. For port type connections, the material and design of the port must be considered and may reduce expected strength.

For high pressure applications Eaton recommends the use of more robust connector designs such as Code 62 flange or O ring Face Seal.

Selected SAE Pressure Ratings

Dash Size	Inch Size	37° JIC SAE J514	Pipe SAE J476	Male ORB SAE J1926 ORS Adapt.	Male ORB SAE J1926 Non-ORS Adapt.	Adjustable ORB SAE J1926 ORS Adapt.	Adjustable ORB SAE J1926 Non-ORS Adapt.	ORS SAE J1453	Male Flareless SAE J514	Code 61 SAE J518	Code 62 SAE J518
-2	1/8	5000	5000	-	5000	-	5000	-	5000	-	-
-3	3/16	5000	-	9000	5000	6000	5000	-	5000	-	-
-4	1/4	4500	5000	9000	5000	6000	4500	9000	4500	-	-
-5	5/16	4000	-	9000	5000	6000	4500	9000	4000	-	-
-6	3/8	4000	4000	9000	5000	6000	4000	9000	4000	-	-
-8	1/2	4000	3000	9000	4500	6000	4000	9000	4000	5000	6000
-10	5/8	3000	-	9000	3500	6000	3000	6000	3000	-	-
-12	3/4	3000	2500	6000	3500	6000	3000	6000	3000	5000	6000
-14	7/8	2500	-	6000	3000	6000	2500	6000	2500	-	-
-16	1	2500	2000	6000	3000	5000	2500	6000	2500	5000	6000
-20	1 1/4	2000	1150	4000	2500	4000	2000	3600	2000	4000	6000
-24	1 1/2	1500	1000	4000	2500	3000	2000	3600	1500	3000	6000
-32	2	1125	1000	3000	2000	2500	1500	3000	1125	3000	6000

International Pressure Rating Charts

Maximum Working Pressure (PSI)

Hose Fitting Connection	Code Letter or Number	Hose Fitting Size									
		-04	-05	-06	-08	-10	-12	-16	-20	-24	-32
Male British Pipe (BSP)	150	5,000		4,000	4,000	3,500	4,000	3,500	2,500	2,000	2,000
Female British Pipe (BSP)	05P, 70P, 350	5,000		4,000	4,000	3,500	4,000	3,500	2,500	2,000	2,000
Female Pipe (JIS)	00L	5,000		5,000	5,000		4,000	4,000			

Maximum Working Pressure (PSI)

Hose Fitting Connection	Code Letter or Number	Hose Fitting 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 descriptions on pages B1 thru I-2.

Hose Selection

Hose Fitting Pressure Charts

All Eaton Components

With higher pressures it is critical to know the construction materials and manufacturing method to ensure performance. When all components in a system are Eaton supplied, for example an Eaton hose fitting is mated with an Eaton adapter or tube fitting, the combination may be used at higher pressures with confidence, These higher ratings are noted in the chart below. MAXIMUM DYNAMIC WORKING PRESSURE OF THE HOSE OR ADAPTER ASSEMBLY IS THE LESSER OF THE HOSE AND END CONNECTOR(S) USED.

All Eaton Pressure Ratings[1]

Dash Size	Inch Size	37° JIC	Male Pipe	Female Pipe[2]	Male ORB ORS Adapters	Male ORB Non-ORS Adapters	Adjustable ORB ORS Adapters	Adjustable ORB Non-ORS Adapters	ORS	Male Flareless	Code 61	Code 62	STC
-2	1/8	-	10000	6000	-	5000	-	5000	-	5000	-	-	-
-3	3/16	-	-	-	9000	5000	6000	5000	-	5000	-	-	-
-4	1/4	7000	9500	5000	9000	5000	6000	4500	9000	4500	-	-	6000
-5	5/16	7000	-	-	9000	5000	6000	4500	-	4000	-	-	-
-6	3/8	5000	8000	4000	9000	5000	6000	4000	9000	4000	-	-	5000
-8	1/2	4000	6000	4000	9000	4500	6000	4000	9000	4000	5000	6000	4250
-10	5/8	3800	-	-	9000	3500	6000	3000	9000	3000	-	-	4000
-12	3/4	3300	5000	3500	6000	3500	6000	3000	6000	3000	5000	6000	4000
-14	7/8	-	-	-	6000	3000	6000	2500	-	2500	-	-	-
-16	1	3500	4000	3000	6000	3000	5000	2500	6000	2500	5000	6000	4000
-20	1 1/4	2500	3000	2000	4000	2500	4000	2000	4500	2000	4000	6000	-
-24	1 1/2	2100	2000	1500	4000	2500	3000	2000	4000	1500	3000	6000	-
-32	2	1750	2000	1500	3000	2000	2500	1500	3000	1125	3000	6000	-

Notes:

1) These ratings are based on both brazed and one piece construction, one-piece pressures could be increased. Please contact Eaton in these situations.
2) This rating is for thin walled adapters or fittings, the use of manifolds or oversized female ports would allow full rated male pressures.

Dynamic Operating Pressure – Dynamic operating conditions refers to cyclic pressure impulses, usually considered to be from near zero to the highest system pressure. Hydraulic standards typically represent these as square waves and expect a component to handle on the order of 200,000 to well over one million such cycles with a burst:operating safety factor of 4:1. The above charts are created with Dynamic applications in mind. Most industrial and mobile hydraulic systems fit the dynamic operating pressure profile, for example hydraulic work circuits on construction equipment or on injection molding equipment.

Static Operating Pressure – Static operating conditions typically range from zero to operating pressure, but with far fewer cycles expected for the system life – perhaps 30,000 to 50,000 cycles and sharp pressure spikes are not expected, allowing a burst:operating safety factor of 3:1 or less. For static operating conditions, the Eaton ratings above can be safely increased by 25-30%. For example, a 3000 psi dynamic rated hose might be used in a 4000 psi static pressure application. Typical examples of static applications are water blast and hydraulic jacking.

Materials – The above tables represent performance using common low carbon steel material. Other materials and their characteristics influence these ratings. Medium carbon steels or heat treated materials can support higher working pressures. Conversely non-ferrous materials such as aluminum or brass will have reduced capability – as much as 50%, or less, pressure handling capability. It is important to consider material properties in designing a system to ensure pressure rating compatibility of all materials.

Design & Application – Eaton's Fluid Conveyance engineering and support teams have many decades of experience in designing, manufacturing and servicing hydraulic and other fluid conveyance systems globally. Eaton's product line is designed as a comprehensive collection of hose, fittings, connectors, couplings and accessories that allow a system designer to select components to complete a fluid power system or a service technician to replace a component with confidence. The individual product specifications, the above pressure ratings and other technical information are intended as supporting guidelines for system design and service needs and are not to be construed as a guarantee of performance of the system or of individual Eaton components. Eaton provides comprehensive technical support so please call with questions about pressure needs not covered by these charts or for specific application support.