Hose ID Selection Nomograph

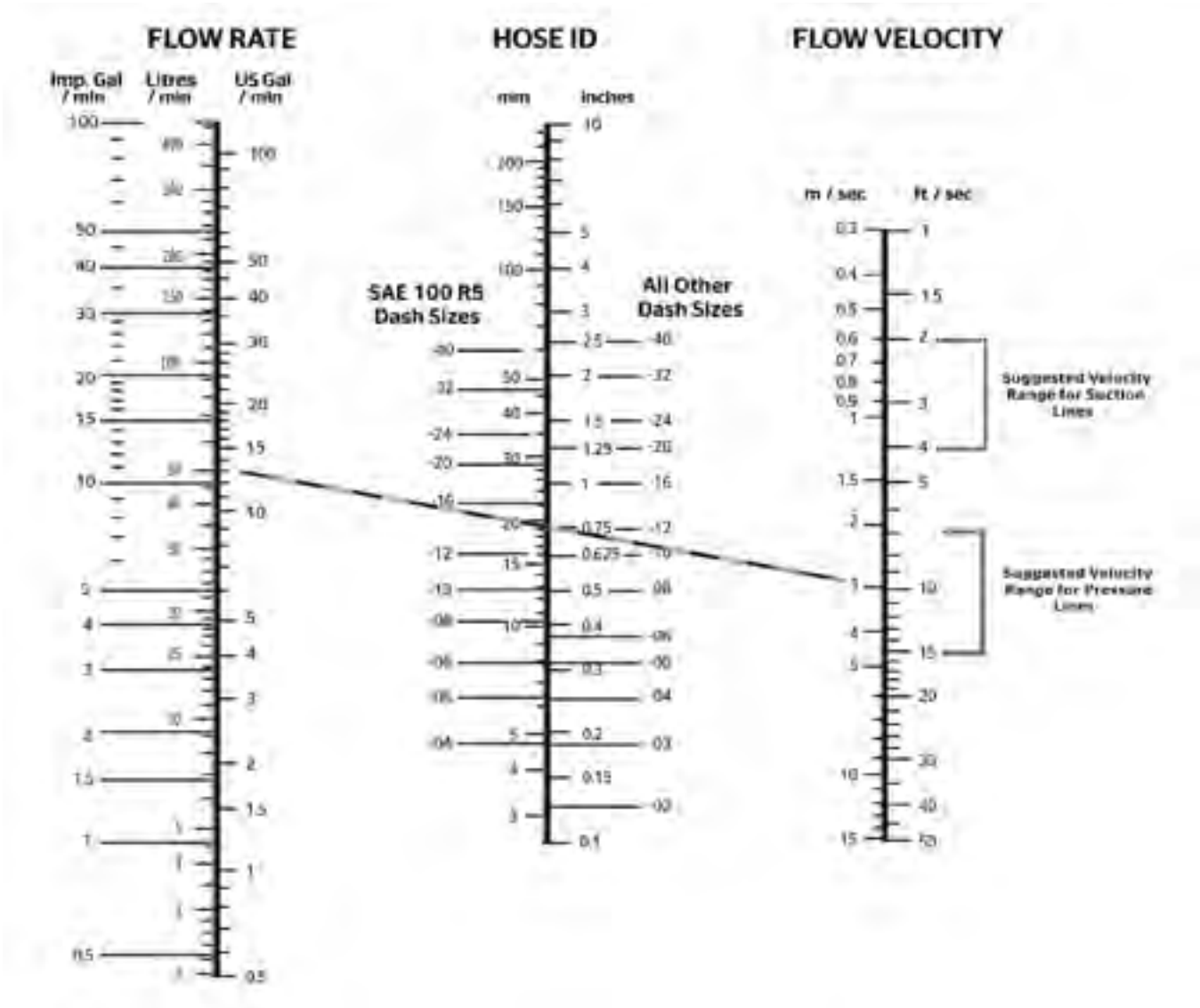
The chart below is intended to aid in the selection of the correct hose size. By choosing a flow rate and a flow velocity, the optimum hose ID can be determined. Selecting the correct hose ID is important to prevent an oversized assembly, which can be heavy and costly or an undersized assembly causing an excessive pressure drop.

Selecting the Correct Hose ID

1. Choose flow rate and flow velocity. Locate each value on its grid.
2. Lay a straightedge to connect the two values.
3. The recommended hose ID is located on the ID scale, at the intersection of the line drawn between flow rate and flow velocity. Should the line intersect between two values, use the next highest ID.

Example: To find the correct hose ID for a system running at 13 gallons/minute and 10 feet/second, draw a line between the two values on each grid. The intersection of that line on the ID grid is 3/4" ID

Recommendations are based on a oil viscosity of 315 S.S.U., at 100˚F, operating at a temperature of 65˚F to 155˚F.



Hose ID Selection Nomograph

The following table represents the maximum flow rate in gallons per minute (GPM) by hose ID for pressure lines and suction lines. The recommended maximum fluid velocity for pressure systems is 15 feet per second (FPS).

Hose ID	Recommended Maximum Flow (GPM) Pressure Lines	Recommended Maximum Flow (GPM) Suction Lines
	in.	
3/16	1.29	0.35
1/4	2.30	0.61
5/16	3.59	0.96
3/8	5.16	1.38
13/32	6.06	16.20
1/2	9.18	2.45
5/8	14.35	3.83
3/4	20.66	5.51
7/8	28.12	7.50
1	36.72	9.79
1⅛	46.48	12.39
1¼	57.38	15.30
1⅜	69.43	18.51
1½	82.63	22.03
1 13/16	120.64	32.17
2	146.89	39.17

Use the following formulas for Velocity, Gallons per Minute, or Hose ID

V= Velocity in Feet per Second (FPS) = (.408 x GPM)/D2

GPM = Flow rate in Gallons per Minute (GPM) = V x D2/ .408

D = Hose ID (inches) = $\sqrt{\frac{.408 \times GPM}{V}}$

The recommended maximum velocity for hydraulic systems is 15 FPS. For higher velocity, contact Continental ContiTech Technical Support with specific system information.

Imperial Gallon = U.S. Gallon x 0.83267
U.S. Gallon = Imperial Gallon x 1.20095
Liter = U.S. Gallon x 3.785
U.S. Gallon = Liter x .2642

Hose Pressure Drop

Pressure drop is defined as the difference in input pressure and output pressure of a hose assembly. There are many factors which can contribute to pressure drop including the length of the hose assembly, the type and temperature of the fluid, flow rate, the inside diameter of the hose, and the type of couplings used.

If pressure drop is a concern, this chart can be used for a quick estimate for a hose assembly that is 10 feet long with a fluid specification of .85 specific gravity, a viscosity of 20 centistokes (97 S.S.U.), and a temperature of 100˚F (38˚C). Differences in fluids, fluid temperature, and viscosity can increase or decrease actual pressure drop compared to the values listed.

Pressure Drop (psi)

	Dash Size	-3	-4	-5	-6	-8	-10	-12	-16	-20	-24	-32	-40	-48
	Hose ID	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1	1¼	1½	2	2½	3
	in.													
U.S.	0.25	10	3.1											
	0.50	19	6	2.7										
gpm	1	40	12	5.5	2.4									
	2	95	24	10	4.8									
	3	185	46	17	7	2.2								
	4		78	29	12	3	1.2							
	5		120	44	18	4.5	1.6	0.7						
	8			95	39	10	3.6	1.4						
	10				59	15	5.7	2	0.6					
	12				80	20	7.2	2.6	0.8					
	15					30	10	4.2	1.2	0.4				
	18					40	15	6.3	1.5	0.6				
	20					49	19	8	2	0.7	0.3			
	25					72	26	11	3	1	0.4			
	30						34	14	3.6	1.3	0.5	0.1		
	35						47	19	5	1.7	0.7	0.2		
	40							25	6.5	2.2	0.9	0.2		
	50							36	9	3.3	1.3	0.4	0.2	
	60							50	12	4.4	1.8	0.5	0.2	
	70								17	6	2.4	0.7	0.3	
	80								21	7.1	3	0.8	0.3	0.1
	90								27	9	3.8	1	0.5	0.1
	100								33	12	4.7	1.3	0.6	0.2
	150								60	22	8.5	2.2	1	0.3
	200									36	15	3.9	1.7	0.6
	250									54	22	5.3	2.5	0.8
	300										29	7.5	4	1.1
	400										51	14	6.5	2.2
	500											20	10	3
	800												18	5
	1000													10