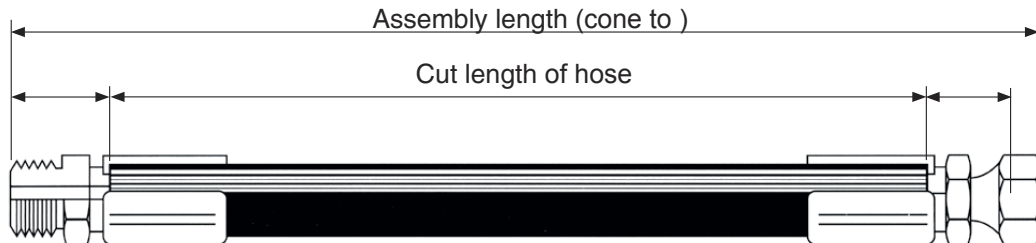


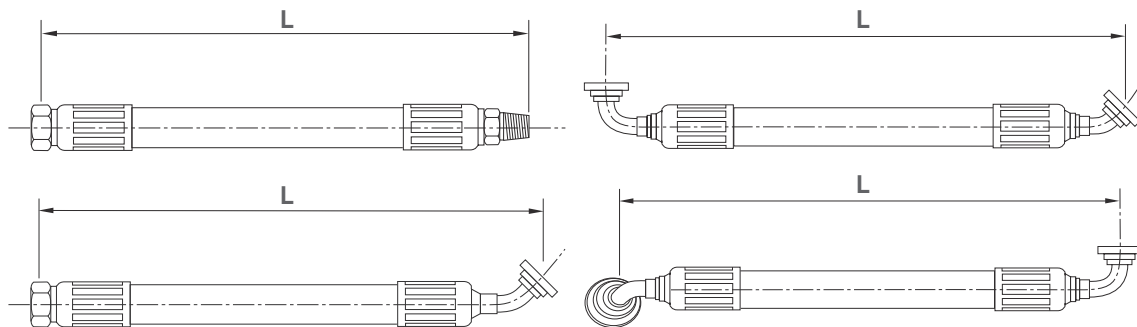
HOSE ASSEMBLY SELECTION AND INSTALLATION

1. CALCULATING HOSE ASSEMBLY LENGTHS

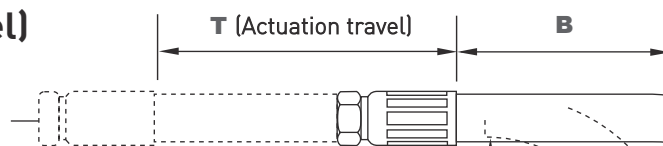
Hose assemblies are made according to overall length i.e. cone face to cone face, or where elbow couplings are used, to the centre line of the cone face.



When determining the length of hose assemblies, provide sufficient length to prevent bending strain from localising at the back of the coupling. In the figure below dimension “**B**” allows for a strain section of hose beyond the coupling to prevent concentration of bending strain. “**T**” designates the amount of travel. “**A**” indicates the smallest diameter to which the hose should be bent (2x minimum bend radius).

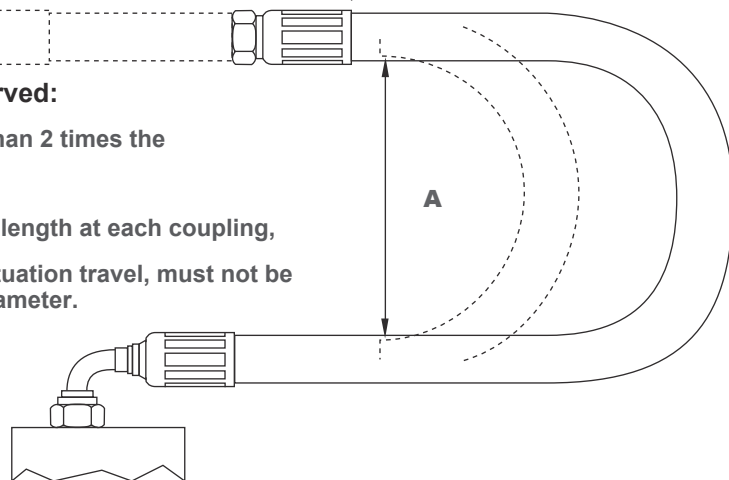


T (Actuation travel)



Critical dimensions must be observed:

1. Dimension ‘**A**’ must not be less than 2 times the hose minimum bend radius.
2. Dimension ‘**B**’, the minimum free length at each coupling, taking into account ‘**T**’ the full actuation travel, must not be less than 2 times hose outside diameter.



CAUTION

When cutting hose, always wear safety glasses and avoid loose fitting clothing. Ear protection is also strongly recommended. Ensure adequate ventilation.

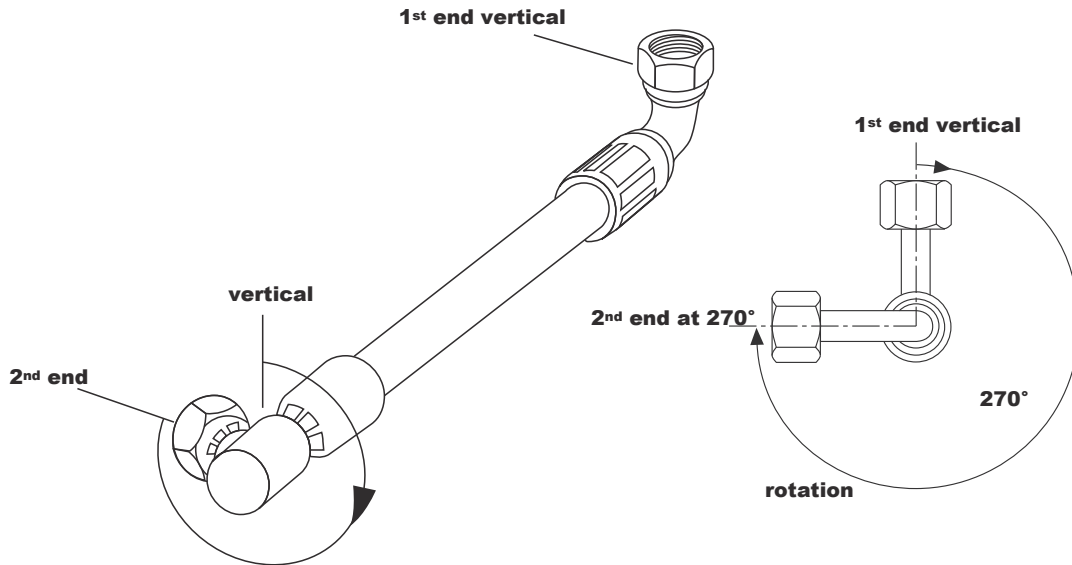
HOSE ASSEMBLY SELECTION AND INSTALLATION

2. Fitting orientation

Fitting orientation is necessary when a hose assembly requires two angled couplings that are not in line when viewed from one end of a hose. Fittings must be orientated to each other to ensure proper installation with minimal stress on the hose from twisting.

Fitting orientation is measured from the centerline of the first coupling held in a vertical position and looking at the assembly from the second end by measuring in a clockwise direction.

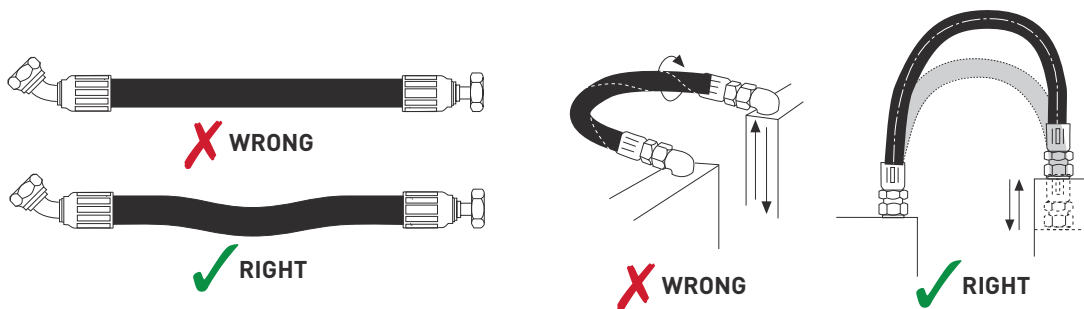
Orientation angle tolerance should be ± 3 degrees for assemblies equal or less than 600 mm and ± 5 degrees for assembly lengths over 600 mm.



3. HOSE ASSEMBLY ROUTING TIPS

Proper hose installation is essential for satisfactory performance. As we have seen, if hose length is excessive, the appearance of the installation will be unsatisfactory and unnecessary cost of equipment will be involved. If hose assemblies are too short to permit adequate flexing and changes in length due to expansion or contraction, hose service life will be reduced.

The following diagrams show proper hose installations which provide maximum performance and cost savings. Consider these examples in determining the length of a specific assembly.



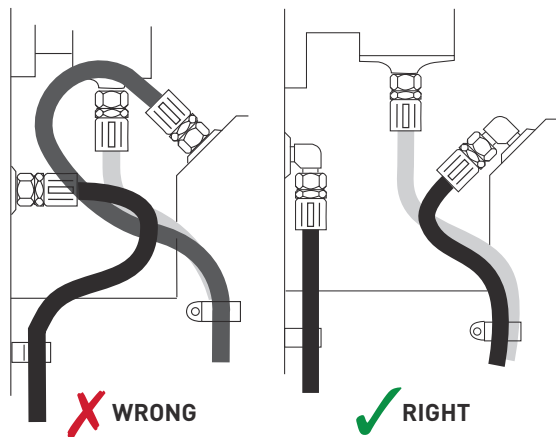
When hose installation is straight, allow enough slack in hose line to provide for length changes which will occur when pressure is applied.

Prevent twisting and distortion by bending hose in same plane as the motion of the boss to which hose is connected.

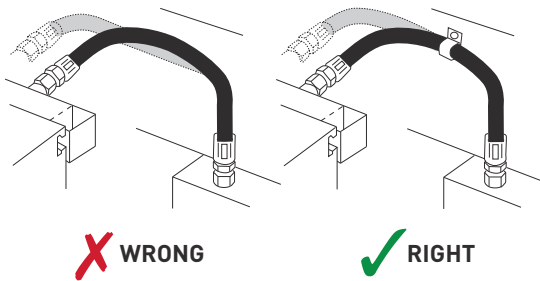
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HOSE ASSEMBLY SELECTION AND INSTALLATION

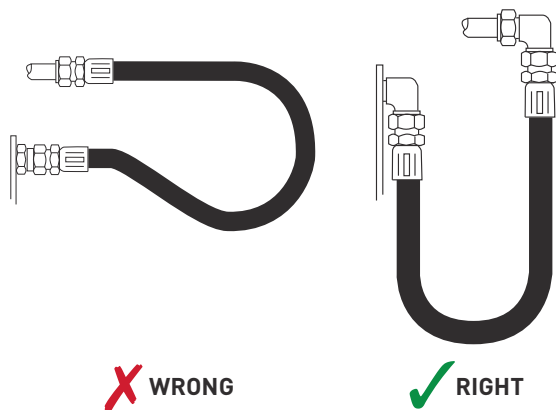
3. HOSE ASSEMBLY ROUTING TIPS



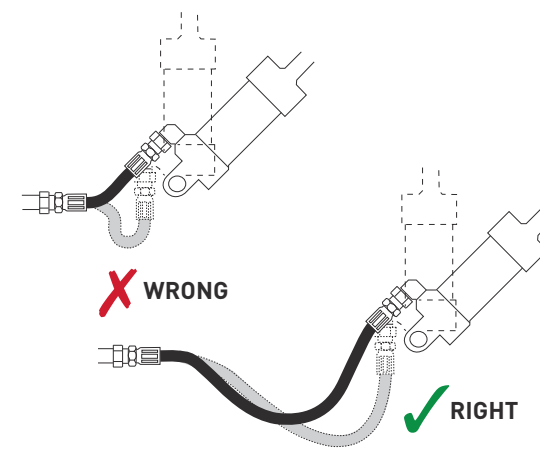
Route hose directly by using 45° and/or 90° adaptors and fittings. Avoid excessive hose length to improve appearance.



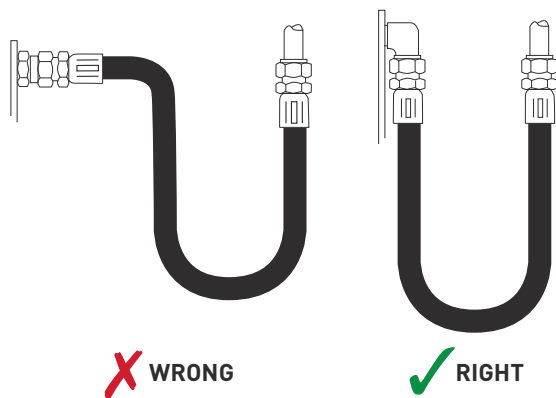
Avoid twisting of hose lines bent in two planes by clamping hose at change of plane.



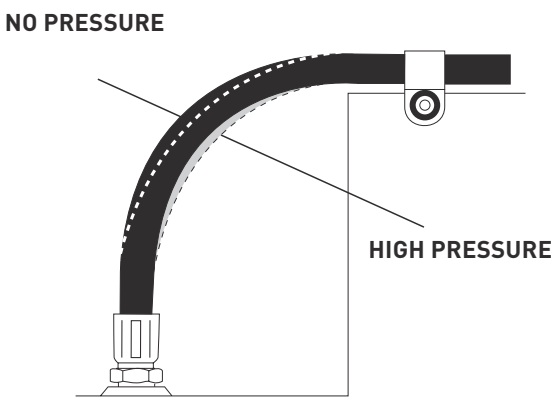
When radius is below the required minimum, use an angle adaptor to avoid sharp bends.



Adequate hose length is necessary to distribute movement on flexing applications and to avoid abrasion.



Use proper angle adaptors to avoid sharp twist or bend in hose.



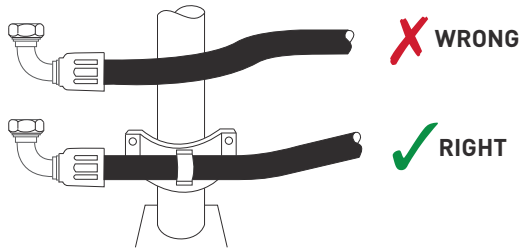
To allow for length changes when hose is pressurised, do not clamp at bends so that curves will absorb changes. Do not clamp high and low pressure lines together.

- PYPLOK
- FLANGES
- PIPES & TUBES
- CLAMPS
- VALVES
- BITE TYPE FITTINGS
- HP HOSES
- QUICK COUPL.
- TEST POINTS
- ADAPTORS
- MACHINES
- OTHER PRODUCTS

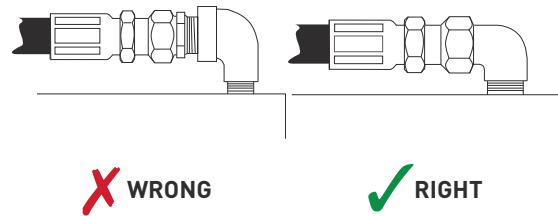
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HOSE ASSEMBLY SELECTION AND INSTALLATION

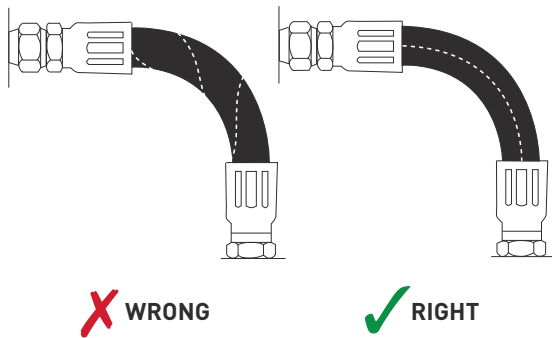
3. HOSE ASSEMBLY ROUTING TIPS



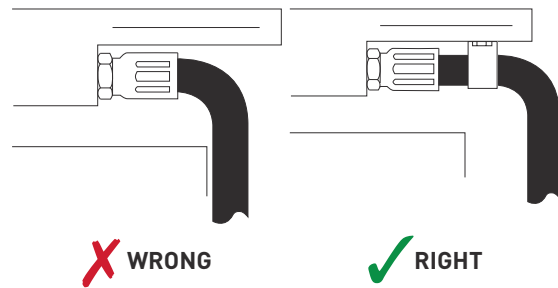
High ambient temperatures shorten hose life. Make sure hose is kept away from hot parts. If this is not possible, insulate the hose.



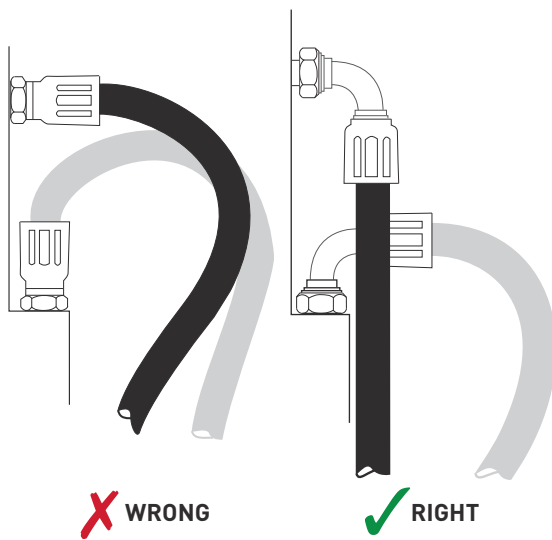
Reduce number of pipe thread joints by using proper hydraulic adaptors instead of pipe fittings.



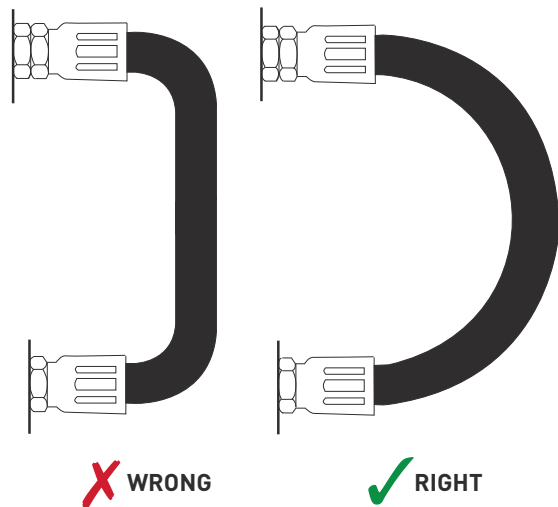
When installing a hose, make sure it is not twisted. Pressure applied to a twisted hose can result in hose failure or loosening of connections.



Run hose in the installation so that it avoids rubbing and abrasion. Often, clamps are required to support long hose runs or to keep hose away from moving parts. Use clamps of the correct size. Too large a clamp allows hose to move inside the clamp and causes abrasion.



Elbows and adaptors should be used to relieve strain on the assembly, and to provide neater installations which will be more accessible for inspection and maintenance.



To avoid hose collapse and flow restriction, keep hose bend radii as large as possible. Refer to hose specification tables for minimum bend radii.

HOSE ASSEMBLY SELECTION AND INSTALLATION

4. RECOMMENDED TORQUES HOSE COUPLINGS - ADAPTORS

SAE 37° & 45°

-size	DN		Min.	Max.
-4	6	7/16" - 20	13	15
-5	8	1/2" - 20	18	20
-6	10	9/16" - 18	23	26
-8	12	3/4" - 16	47	52
-10	16	7/8" - 14	69	76
-12	20	1.1/16" - 12	96	106
-16	25	1.5/16" - 12	127	141
-20	32	1.5/8" - 12	169	188
-24	38	1.7/8" - 12	212	235
-32	50	2.1/2" - 12	296	329

BSP 60° CONE

-size	DN		Min.	Max.
-4	6	1/4" - 19	15	18
-6	10	3/8" - 19	26	31
-8	12	1/2" - 14	41	49
-10	16	5/8" - 14	50	60
-12	20	3/4" - 14	70	80
-16	25	1" - 11	105	125
-20	32	1.1/4" - 11	170	190
-24	38	1.1/2" - 11	225	250
-32	50	2" - 11	360	420

FLAT-FACED 'O' RING SEAL

-size	DN		Min.	Max.
-4	6	9/16" - 18	14	16
-6	10	11/16" - 16	24	27
-8	12	13/16" - 16	43	54
-10	16	1" - 14	60	75
-12	20	1.3/16" - 12	90	110
-16	25	1.7/16" - 12	125	140
-20	32	1.11/16" - 12	170	190
-24	38	2" - 12	200	245

DIN SERIES

-size	DN		Min.	Max.
6	-	M12 x 1.5	13	17
8	-	M14 x 1.5	23	28
10	8	M16 x 1.5	33	38
12	10	M18 x 1.5	38	42
-	12	M20 x 1.5	48	52
15	14	M22 x 1.5	52	58
-	16	M24 x 1.5	62	68
18	-	M26 x 1.5	80	90
22	20	M30 x 2	105	115
28	25	M36 x 2	125	135
-	30	M42 x 2	200	220
35	-	M45 x 2	205	225
42	38	M52 x 2	290	310

O-RING BOSS

-size	DN		L series		S series.	
			Min.	Max.	Min.	Max.
-4	6	7/16" - 20	18	20	20	22
-5	8	1/2" - 20	20	25	24	27
-6	10	9/16" - 18	25	30	33	35
-8	12	3/4" - 16	45	50	70	75
-10	16	7/8" - 14	60	70	100	110
-12	20	1.1/16" - 12	95	105	170	180
-14	22	1.3/16" - 12	-	-	215	240
-16	25	1.5/16" - 12	150	170	270	300
-20	32	1.5/8" - 12	180	200	285	315
-24	38	1.7/8" - 12	210	230	370	410

SAE FLANGES

-size	DN	L series		S series.	
		Min.	Max.	Min.	Max.
-8	12	20	25	20	25
-12	20	28	40	34	45
-16	25	37	48	56	68
-20	32	48	62	85	102
-24	38	62	79	158	181
-32	50	75	90	271	294

HOSE ASSEMBLY SELECTION AND INSTALLATION

5. Precautions

Protection against damage and other troubles

Avoid using the hose assembly beyond the scope of its specifications. It may cause serious problems such as an early burst or leakage. For safe application, note the following instructions:

- **Do not touch the hose and the coupling under pressure.**

Should a hose or a coupling break, it may cause severe injuries, such as burn or destruction of your organs. Apply plastic cover for protection, unless the contact with them can be avoidable.

- **Use a hose under the maximum working pressure.**

The use over the maximum working pressure may lead to burst of a hose or a coupling come-off. Follow the maximum working pressure guided in its specification.

- **Do not hurt the hose.**

To protect hose assemblies from excessive wear caused by sharp objects or abrasive materials, use open wound or flat armor spring guards.

- **Avoid using a hose with a twist or a pull.**

Should the twisted or pulled hose be applied with a pressure, the hose, particularly the hose end, may possibly suffer a break. If it is unavoidable, be sure to use a swivel joint.

- **Avoid using a hose with a sharp bend.**

The use of a hose with a sharp bend may cause an early break or other unexpected troubles. Utilize proper adapters or spring guards to avoid excessive bending.

- **Do not be electrified.**

Electrifying a hose may lead to a break of the hose or an electric shock.

- **Tighten the recommended torque.**

When a hose is connected to machine, be sure to apply the recommended torque.

- **Apply the appropriate fluid.**

The use of the inappropriate fluid will deteriorate the inner tube or the reinforcement, which will lead to burst of a hose or a coupling come-off.

- **Keep the minimum bending radius.**

When the hose is bent smaller than the minimum bending radius, it may cause early burst.

- **Do not put the external force such as excessive impulse.**

Under the excessive external force, the service will decline.

- **Keep the temperature range.**

The use of a hose over the temperature range will lead to burst or problems around the coupling, such as leakage, or come-off.

- **Do not put the excessive negative pressure.**

Under the excessive negative pressure, the inner tube will scrape, which will lead to leakage.

- **Do not put into the water or any other liquid.**

In water, the hose undergoes external pressure, which will reduce the service life of a hose.

- **Remove the air inside.**

The air left inside may cause the scrape of inner tube, which will lead to leakage.

- **Keep the minimum exposed hose length.**

To acquire the service life of the hose, keep at least the minimum exposed hose length.

- **Do not fix or remodel a hose.**

The fixed or remodeled hose does not show the service life of the specification.

Fluid compatibility

- For use with water based fluid maximum temperature is +70°C (+158°F);

- For the use with any other fluid (biodegradable hydraulic fluids, oil-based hydraulic fluids with special additives and medium different from oil-based fluids) please ask us the compatibility.

Maintenance

At the inception, be sure that none of the following can be found.

- Damage of a hose
- Swelling of a hose
- Exposure of a Reinforcement
- Transformation (ex. sharp bending)

Storage

- Avoid direct rays of the sun, noxious gasses, oils and chemicals.
- Store in dry place at temperature range of -10°C to +40°C

HOSE FLOW SELECTION

Flow capacity nomogram

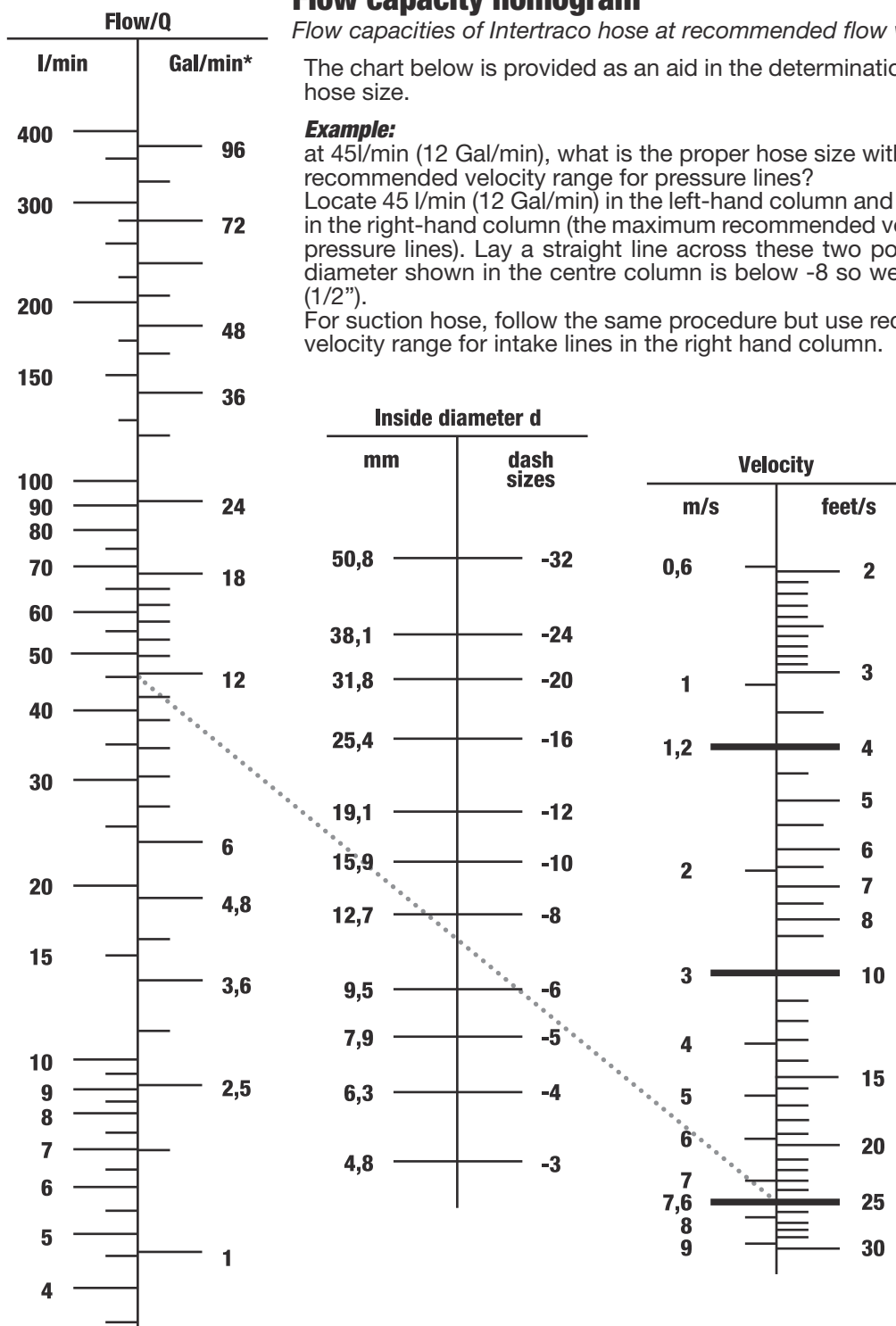
Flow capacities of Intertraco hose at recommended flow velocities

The chart below is provided as an aid in the determination of the correct hose size.

Example:

at 45l/min (12 Gal/min), what is the proper hose size within the recommended velocity range for pressure lines? Locate 45 l/min (12 Gal/min) in the left-hand column and 7,6 m/s (25 ft/s) in the right-hand column (the maximum recommended velocity range for pressure lines). Lay a straight line across these two points. The inside diameter shown in the centre column is below -8 so we have to use -8 (1/2").

For suction hose, follow the same procedure but use recommended velocity range for intake lines in the right hand column.



Q = flow in liter per minute or US Gallons per minute **V** = velocity in meter per seconds or feet per seconds
d = hose inside diameter (mm /dash size)

* Gallons are US gallons - Conversion rate: Gal/min x 3,785=l/min - feet/s x 0,3048=m/s

* Recommended velocities are according to hydraulic fluids of maximum viscosity 315 S.S.U. at 38°C (100°F) working at room temperatures within 18°C (65°F) and 68°C (155°F).