

Installation Instructions

Hose assemblies from Flow Design Inc. have been specially engineered for hydronic hook-up. Assuming proper installation and application, they will provide long trouble-free service. Good maintenance practice dictates periodic inspections, typically when servicing other components such as motors, filters, etc.. Look for small water leaks, residue, or discoloration on exterior of braid or fittings. If a leak is detected, replace the hose. Do not attempt to repair it in the field.

CAUTION: Introduction of chemicals into the loop may cause damage to the hose inner liner or cause stress corrosion cracks in the fittings. Consult a water treatment specialist before introducing chemicals, or call Flow Design Inc. for additional assistance if unsure of how to proceed. (1-800-ASK-FLOW)

Application

Since hose assemblies may change in length $\pm 4\%$ under pressure, it is necessary to provide sufficient slack for expansion and contraction. (See Figure 1) Hoses should not be stretched tightly between two connection points. If installation minimum bend radius (See Figure 2 and Table below) falls below the required minimum, an angle adapter should be used to avoid sharp bends in the hose (See Figure 3). Do not bend the hose across the face of the fitting as this may cut the inner tube. The first bend in the hose should begin at least one and a half times the inside diameter of the hose away from the end of the nearest ferrule. In other words, for a 1/2" hose the bend should not start within 3/4" from the end of the crimped aluminum area. Exceeding the minimum bend radius can cause reduced water flow and/or damage to the hose wall construction. A minimum bend radius of 7" means that the shortest distance between sections of that hose cannot be less than 14".

Figure 1

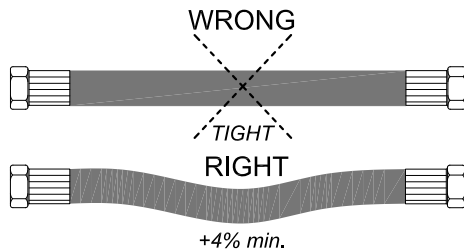


Figure 2

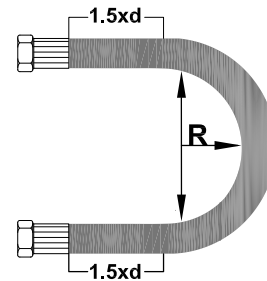
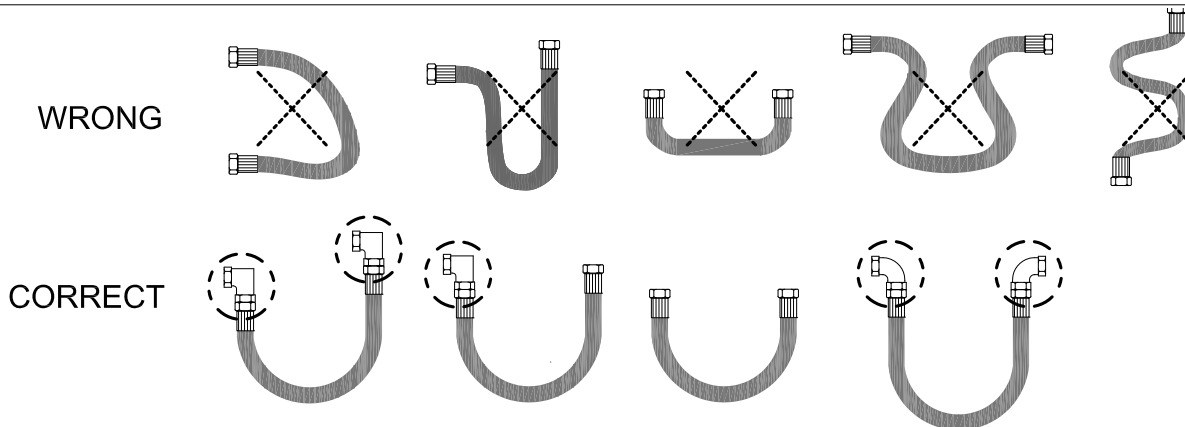


Figure 3



Bend Radius Specifications

Hose Size	Minimum Bend Radius (R)
1/2"	5"
3/4"	7"
1"	7"
1 1/4"	8"
1 1/2"	9"
2"	10"

Low Temperatures

If hose assemblies have been stored at temperatures below 40 degrees and/or are being installed in these conditions, the minimum bend radius should be increased 50% and care should be taken not to collapse the hose.

Fittings/Connections

Do not over-torque fittings. Generally, maximum torque is 30 foot pounds. Use two wrenches to tighten unions: one to hold the line and the other to tighten the nut. Do not turn fittings in the hose. Do not twist hose. Sharp bends, kinking or twisting of the connector during installation must be avoided. The 1/2", 3/4" and 1" hose connections are metal to metal seals. Brass mating surfaces should be smooth and free of debris. Surfaces that have been marred due to dropping or mishandling should be smoothed out using emery cloth or other suitable means. 1 1/4", 1 1/2" and 2" hose connections use a specially designed rubber washer. It is not necessary to use pipe dope or a tape thread sealant on either metal to metal or rubber washer connections on 1/2" through 2" hoses. Fixed male ends are typically installed with pipe dope or teflon tape.

Storage Note

The following information is printed on all shipping boxes containing hose products/assemblies:

Contains Hoses – *Do Not store hose assemblies such as switch gears, motors, and fluorescent lamps near sources of ozone. Store in shipping boxes to protect from light and damage.*

Warranty

A "Limited Warranty" For Sales of Products Used In Consumer Applications.

Flow Design, Inc. supplies products to you which may be used by you or others in consumer product applications. We wish to inform you of the scope of our warranty statement which is listed below. Because of its limitations and exclusions, our warranty must be designated a "limited" warranty for purposes of potential consumer uses of our products.

We warrant that our products will be of good merchantable quality, free from defects in material and workmanship, and will possess the characteristics represented in writing by us. Claim from breach of the above warranty must be made within the time specified below from the ship date to the Original User.

- 12 months - hoses and components • 60 months - brass/steel products unless otherwise specified

(All others please consult factory)

Some states do not allow limitations on how long implied warranty lasts, so the above limitations may not apply to you. Upon satisfactory proof of claim, we will, within a reasonable amount of time, make any necessary repairs, additions or corrections or, at our option, replace any defective parts free of charge. FDI is not responsible for field labor to remove defective products and/or reinstall replacement products. **All returned products must have a Return Material Authorization (RMA).** The foregoing is in lieu of all other warranties, expressed or implied. This warranty statement sets forth the extent of our liability for breach of any warranty or deficiency in connection with the sale/use of the products.

It is understood that we will not be liable for consequential damages of any nature, including but not limited to loss of profit, delays or expenses, whether based on tort or contract nor does a delay in shipping constitute FDI the obligation to pay freight charges. (Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.) This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

No Representative of Flow Design Inc. has any authority to change or extend the provisions of this warranty or contract in any manner whatsoever.