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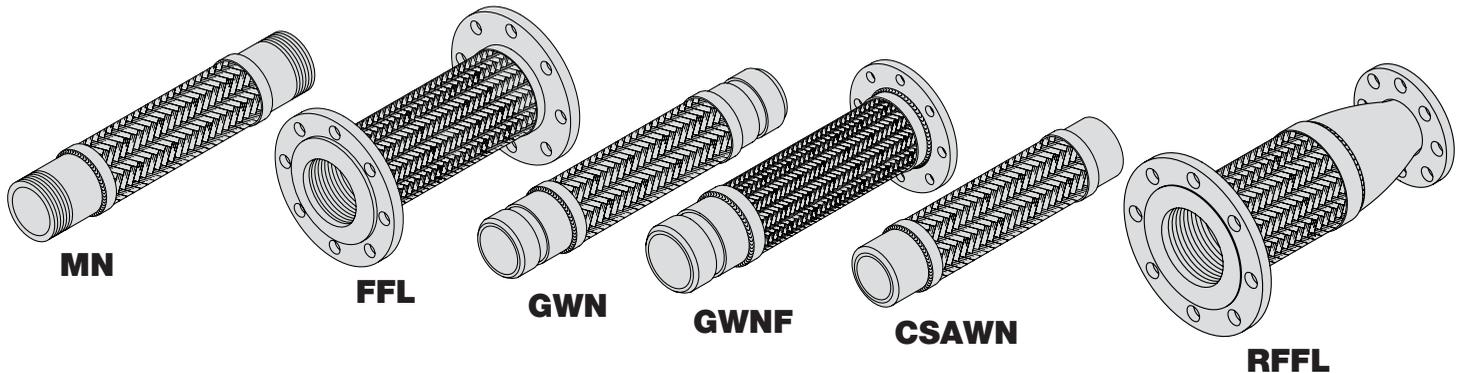
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**INSTALLATION AND MAINTENANCE
INSTRUCTIONS FOR STRAIGHT, BRAIDED
METAL HOSE ASSEMBLIES (MN, FFL,
GWN, GWNF, CSAWN & RFFL)**

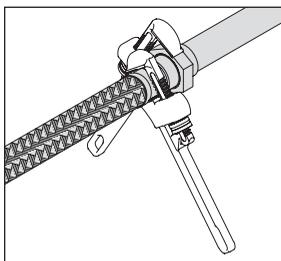
FORM A-32998



INSTALLATION PROCEDURES

1. Braided Hoses are easily damaged. Please use care during transportation, storage, and installation. The braided hose sections must not be allowed to bend, compress, sag, or scuff.
2. The wooden spacer strips between flanges on all flanged hoses keep the braided metal hose assembly in its neutral face-to-face dimension during shipping and installation. Remove them after installation.
3. a) If the flanges are fixed, do not twist the hose assembly when aligning bolt holes. Tighten the bolts to one pipe flange. If the opposite fixed flange holes do not line up, rotate the piping flange before welding. Do not damage the hose by twisting the hose body to install the bolts.
b) If the hose is made with a floating flange on one end, tighten the fixed flange first and then rotate the floating flange to align holes before bolting.
4. If hoses have nipples, it is much easier to install with a pipe union on one end. Tighten the union to the hose by using two wrenches. One to restrain the nipple and the second to tighten the union.

Tighten the nipple end without the union to the coupling between pipes first. Do not use the wrench on the braided area or the Stainless Steel ring at the end of the braid. Apply the wrench to the unthreaded portion of the nipple when screwing it in.



Separate the union on the opposite end. Screw the loose end of the coupling to the mating pipe. Connect the pipe to the flexible hose with the coupling nut. When tightening this nut, be sure to use a second pipe wrench on the flexible hose nipple so you do not twist the hose body.

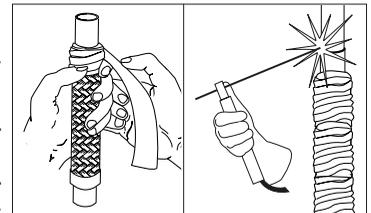
5. Hoses are never exactly the right length shown on the submittal drawings. They may be slightly longer or slightly shorter. If the hose is substantially shorter than the allowed space, move the piping before installing the hose. Do not use the flange

bolts or union to pull the piping together, as it will weaken the braid weld. Adjust the opening. Then install the hose.

If the hose is slightly too long for the opening, the braid will be slack. Normally, the pressure in the piping will extend it until the braid is tight. If the hose is bowed, the opening must be made to the hose length.

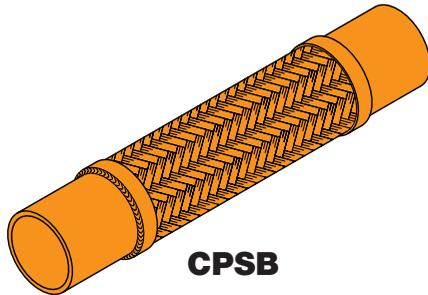
6. Do not install the hose with more than the allowable offset, as shown on the submittal drawings. If there is offset in the hose after installation, this will reduce the allowable motion in the offset direction.
7. Avoid over bending. The bending of a hose assembly to a radius smaller than specified means early failure. Avoid sharp bends, especially near the end fittings.
8. Prevent out-of-plane flexing. Always install the hose assembly so that the flexing takes place in one direction at 90° to the hose. Piping must be properly anchored, guided, and supported.
9. The maximum system test pressure must not exceed 150% of the maximum rated working pressure as shown on the Mason Industries, Inc. submittal drawing.
10. Check system pressures and temperatures. Do not exceed the hose ratings. Operation beyond design limits will cause failure.

11. When installing a CSAWN Weld End Hose or when welding near a hose, cover the entire hose braid with weld blankets or wet wraps to protect against splatter. Direct the torch away from the base of the fitting and braided section.



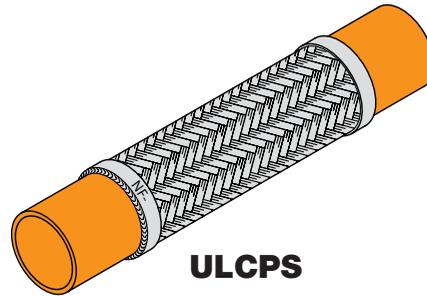
MAINTENANCE

Hose assemblies should be inspected during routine maintenance to ensure there are no signs of external damage. Inspect for frayed, dented, or broken braid wires, or any damage to the end fittings or leakage. Replace suspect hoses.



CPSB

General Purpose
Bronze Hose
and Braid



ULCPS

Combination Bronze
and Stainless Steel
for Gas Service Only

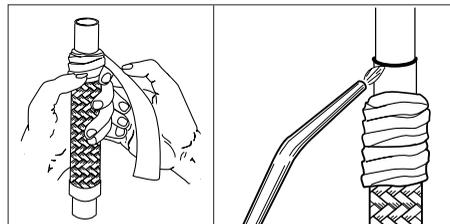
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8. Thoroughly clean male and female ends using steel wool and steel brushes.
9. Apply flux.
10. Wrap base of copper fitting on connector and 2" (50mm) of the braid with a wet cloth to prevent overheating during soldering.



11. Direct the torch away from the base of the copper fitting and braided section. Avoid contact of the flame with the base of the copper fitting and braid. Heat end of copper fitting for proper flow of silver solder. Silver solder flows at approximately 430°F.
12. Be careful when using brazing rod or other higher temperature techniques. Overheating will cause leaks.
13. Remove wet rag and remove all soldering flux immediately after installation. Flux chlorides will cause premature failure of joint.

MAINTENANCE

During maintenance shutdowns, inspect any of the above for signs of wear or damage such as frayed, dented, or broken braid wires, damage to the end fittings, minor leakage in the body, or at welds or soldered joints. Replace suspect units rather than risk failure.