



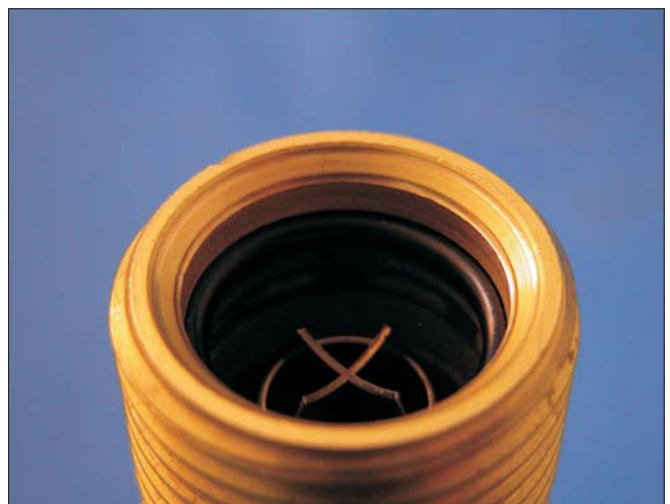
Refrigeration Line Set Installation

Details of Quick Connect Coupling Assembly

Quick connect coupling assembly can be as simple as tightening a nut. But if not done properly, an expensive, not-covered-by-warranty refrigerant leak will occur. This booklet lists correct assembly steps, shows results of partial assembly and describes how a leak proof joint is made.



Male Fitting Before Connecting



Male Fitting After Connecting

Coupling Assembly Details

Coupling Connection Instructions

1. Remove the protector caps and plugs. Wipe the seats and threaded surfaces with a clean cloth to remove any possible foreign matter.

2. Thoroughly lubricate the threads, o-rings, diaphragms and all internal coupling surfaces with polyolester refrigerant oil. **Failure to lubricate could cause a false sense of tightness and a leak will result from the incomplete assembly.**

Note: Scotsman line sets include lubricant packets.

3. Position the fittings on the correct connections on the condenser and ice machine.

4a. Begin to tighten the couplings together by hand. Continue to turn the swivel nuts by hand until it is certain that the threads are properly engaged.

4b. Using two wrenches, one to rotate the swivel nut and one to hold the tubing in place, tighten each coupling.

It is CRITICAL that ONLY the NUT on the pre-charged tube be turned, or the diaphragms will be torn by the piercing knives and become loose in the refrigeration system causing severe operational problems.



Note: As the coupling is tightened, the diaphragms in the quick connect couplings will begin to be pierced. As that happens, there will be increased resistance to tightening the swivel nut.

4c. Continue tightening the swivel nut until it bottoms out or a very definite increase in resistance is felt (no threads should be showing). Do NOT overtighten.

5. Use a marker or pen to mark a line on the coupling nut and unit panel. Then tighten the coupling nut an additional one-quarter turn. The line will show the amount that the nut turns.

Note: The final 1/4 turn forces two shoulders on the swivel nut end into the beveled surface of the male end, resulting in a sealed brass-to-brass connection.

6. After all connections have been made check the couplings for leaks.



Coupling Assembly Details

Coupling Description

The following pages show the stages of coupling assembly as the swivel nut and male fitting are drawn together.

The swivel nut end contains one diaphragm in the center post. The male fitting contains the knife blades and its own diaphragm.

Note: 3/8 male ends have one knife blade.

No sealing takes place until the **final stage**, when the outer edge of the center post in the swivel nut is forced against the bottom of the male fitting, creating a mechanical seal.

- Page 4 shows what appears to be a completed assembly with only two threads showing, but the diaphragms have just begun to be pierced. Stopping here causes severe operational issues as well as refrigerant leaks.
- Page 5 shows an even more complete assembly, with only one thread showing. However, this assembly is still not complete. If not tightened further there will be refrigeration restrictions and leaks.
- Page 6 shows the two parts almost together; the threads are flush. At this point the main problem will be refrigerant leaks.
- Page 7 shows the couplings properly assembled with the critical last 1/4 turn.
- Page 8 shows details of the brass-to-brass sealing action, not visible when the couplings are assembled.

Note that couplings that are screwed together but have threads showing are not only leaking refrigerant, they are restricting the flow of refrigerant through the small slits in the membranes or diaphragms.

Coupling Assembly Details



Two Threads Showing



Barely Pierced



Knives Just Showing

Coupling Assembly Details



One Thread Showing



Partly Pierced



Knives Exposed

Coupling Assembly Details



Threads Flush



Pierced but will leak



Knives Visible

Coupling Assembly Details



Correctly Tightened



Fully Open



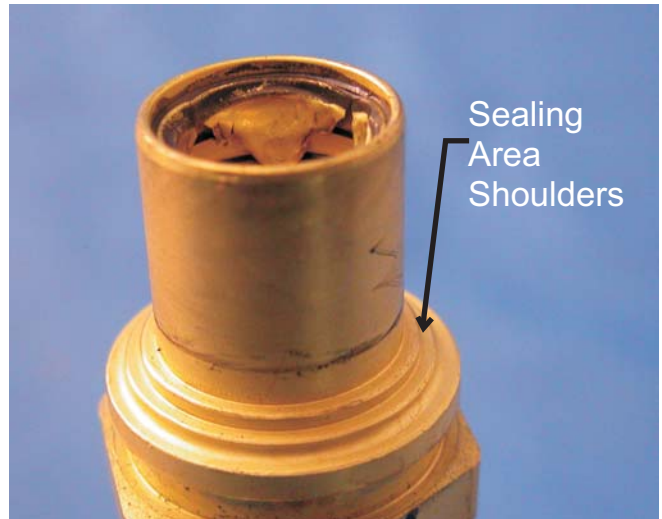
Fully Open

Coupling Sealing Details

Coupling sealing occurs when the two sections seat together. At the final 1/4 turn, the shoulders in the swivel nut end are compressed against the male end sealing area, forming two grooves in it and sealing the coupling.



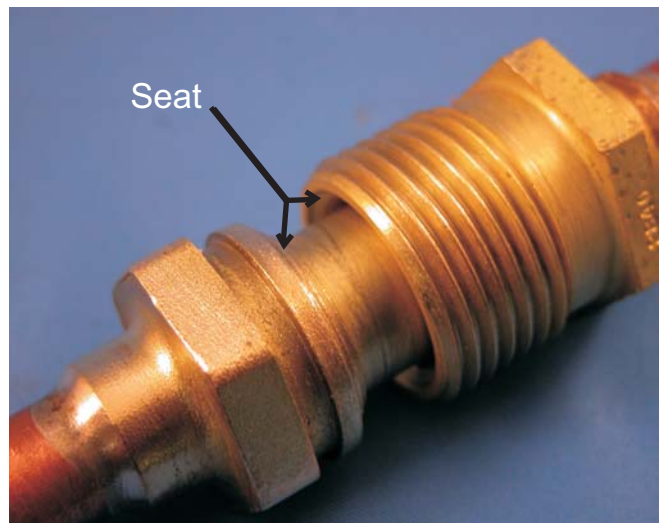
Male End Before Use



Swivel Nut End, Swivel Nut Removed



Male End After Connection



Seating Area, Swivel Nut Removed

Scotsman Ice Systems

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