

## 5780 Series

# Quick Connect Precharging Refrigerant Couplings



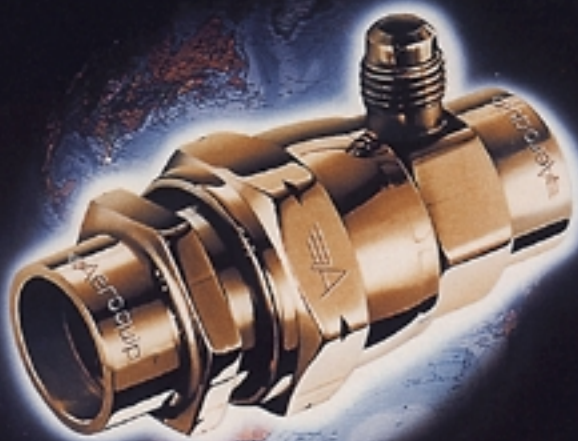
An environmentally responsible  
connection allowing virtually no loss  
of refrigerant to the atmosphere.

The Aeroquip logo features the word "Aeroquip" in a bold, sans-serif font. To the left of the text is a stylized graphic consisting of three horizontal lines of varying lengths, resembling a wing or a propeller blade.

A TRIMOVA Company



# Quick Connect Precharging Refrigerant Couplings



Aeroquip 5780 Series Refrigerant Couplings enable manufacturers of split type air conditioning units and heat pumps to factory precharge both the outdoor, as well as indoor units. They also allow quicker and cleaner line connections for field installations.

When these environmentally responsible couplings are incorporated with a system, precharging eliminates improper field joining, and the inherent possibility of refrigerant escaping into the atmosphere. This also greatly reduces system contamination upon installation and virtually eliminates compressor burnout or clogged systems resulting from contaminants. Total precharging with 5780 Series Couplings helps insure that the system is properly charged, contributing to improved energy efficiency ratings (EER).

The key to a fully reliable field installation is precharging with 5780 Series Couplings. The unique coupling design prevents air inclusion or refrigerant loss while the components are being connected. Upon completing the installation, which is simply a matter of using two wrenches to tighten a union nut on each of four joints, a final metal-to-metal seal assures reliability for the life of the system.

5780 Series Couplings are U.L. Recognized (U.L. File No. SA2709, Guide No. SDTWZ) with an operating pressure rating of 500 psi.

Total precharging using the 5780 Series Coupling is the only positive method of quickly hooking up a split type air conditioning system and being assured that it is free of contaminants and will function properly. Partially precharged systems (using base valves) and field charged systems both leave a margin of doubt of the system's total reliability. With total system precharging, using 5780 Series Couplings, you can virtually forget about contamination and the resulting damaging effects.

## Advantages of Precharge System with 5780 Series Couplings

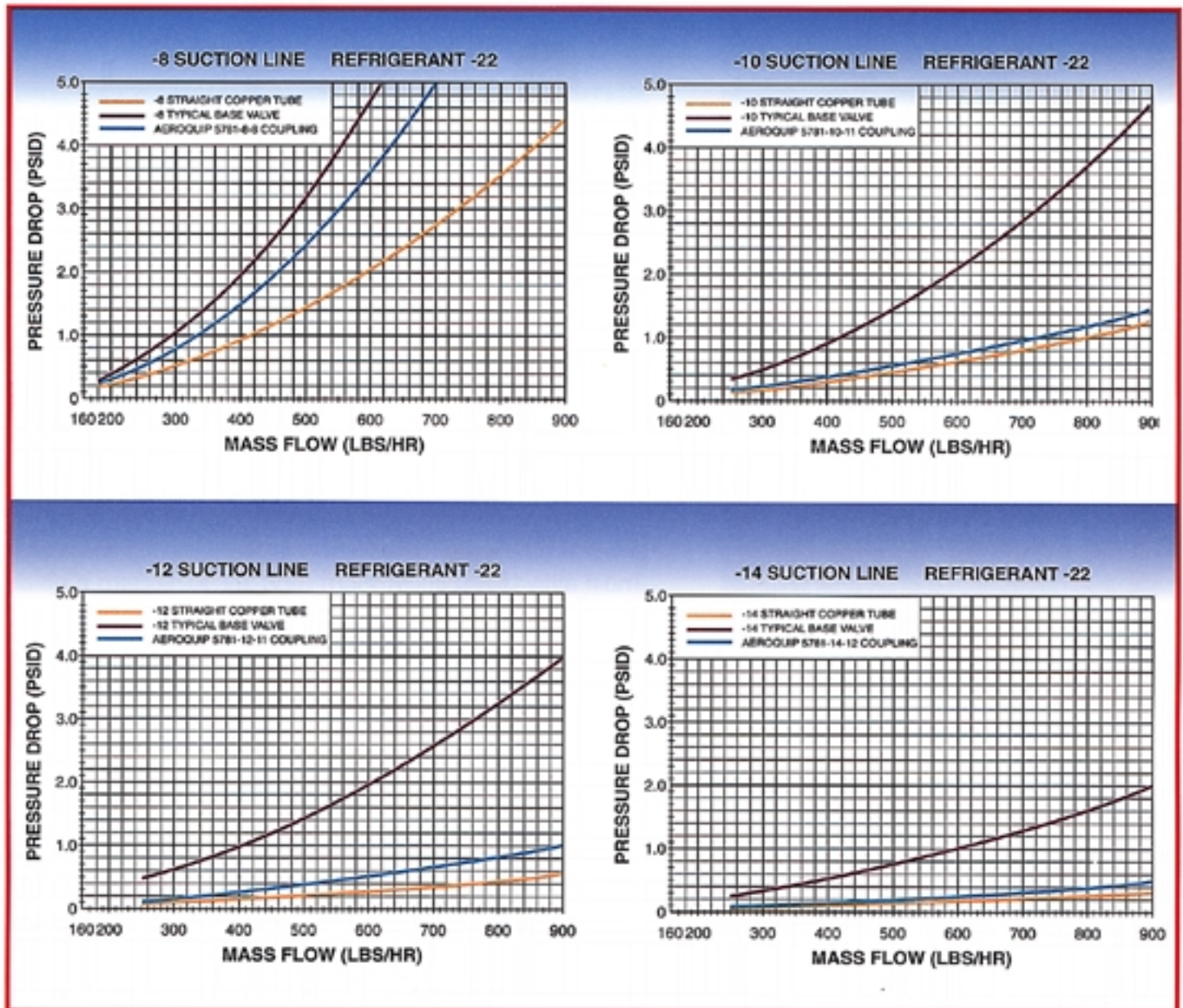
- **Environmentally Responsible...** Coupling design eliminates the possibility of refrigerant loss upon line connection.
- **Ease of Installation...** Only four coupling connections are required using just two wrenches. No need to evacuate, add charge, etc. Faster installation than valve systems.
- **100% Sealed System...** Condenser, evaporator and line sets can be sealed at the factory, assuring system will operate at OEM rated conditions.
- **Proper Refrigerant Charge Assured...** No risk of over/under charging by field installation, jeopardizing system performance. Correct charge is set at the factory.
- **Cleaner System...** There is far less contaminant inclusion and a lower moisture level than with field brazed installations.
- **Lower Warranty...** A cleaner system helps reduce warranty claims and service callbacks after the installation.
- **Contributes to Higher SEER...** The low pressure drop of 5780 Series Couplings helps in maximizing energy efficiency performance.
- **Small Envelope Area...** 5780 Series Couplings require a smaller area on unit for accessibility than valve systems.
- **Superior Mechanical Connection...** The metal-to-metal seal design of the 5780 Series Coupling reduces the potential for air or other contaminants entering the system during installation. Plus, a connection using 5780 Series Couplings is far more resistant to changing conditions like ground settling, freezing, thawing, unit movement, tubing movement than other mechanical connections.



## Pressure Drop Comparison

# 5780 Series Couplings VS. Standard Base Valves

The graphs below show significant reduction in pressure drop and associated efficiency gains utilizing Aeroquip 5780 Series Couplings vs. standard base valves.



# Quick Connect Precharging Refrigerant Couplings

## Design and Operation

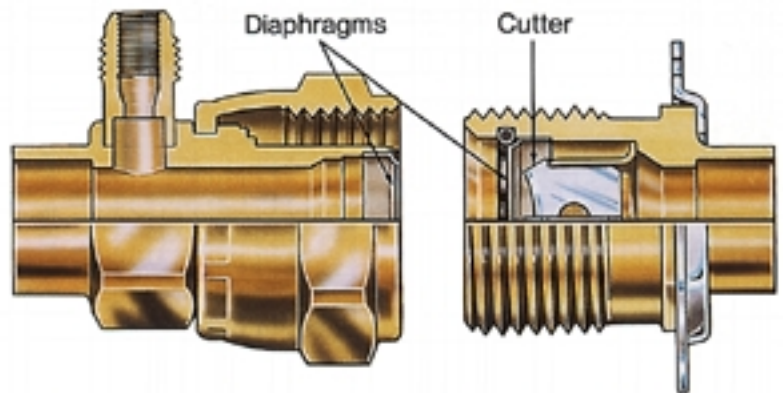
A complete 5780 Series Coupling consists of the combination of male and female coupling halves. You have the option of choosing either coupling half with or without a charging port, depending on your particular application. See the illustrations on the top of page 6 for dimensional data on the male (Part Number 5782 and 5783) and female (Part Number 5780 and 5781) coupling halves.

## Coupling Halves Before Connection

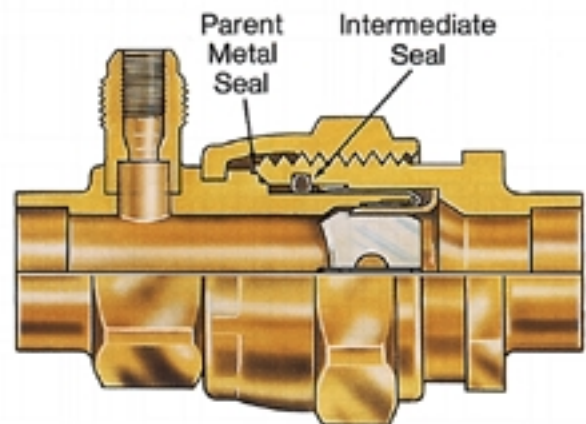
Diaphragms in the coupling halves provide a seal that prevents refrigerant loss before connection. The male half (right unit) contains a cutter blade, the metal refrigerant sealing diaphragm and intermediate synthetic rubber seal which prevent loss of refrigerant while the coupling is being connected. The female half (left unit) contains a metal diaphragm which is a leakproof metal closure.

## Coupling Halves Connected

Tightening the union nut draws the coupling halves together, piercing and folding both metal diaphragms back and opening the fluid passage, thereby providing minimal restriction to flow. When fully coupled, a parent metal seal forms a permanent leakproof joint between the two coupling halves preventing the loss of refrigerant to the atmosphere.



**Coupling Halves Before Connection**

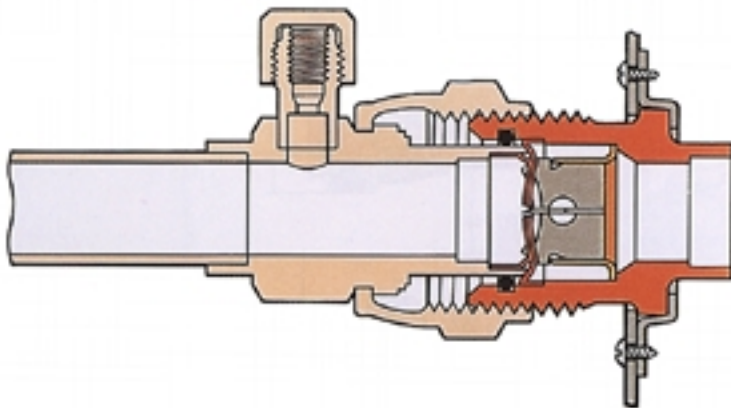


**Coupling Halves Connected**

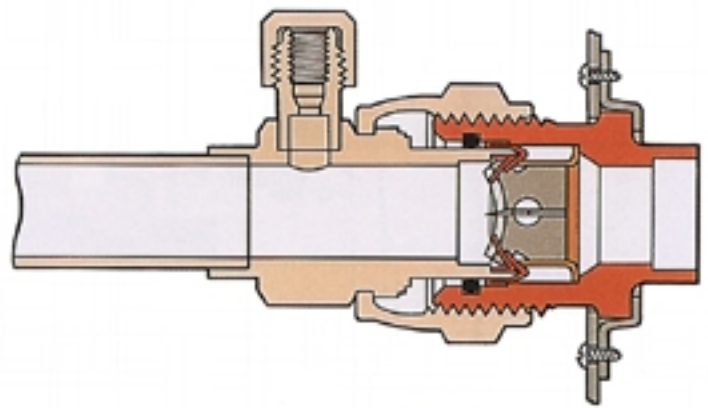


The three illustrations below show you a cutaway view of the male and female coupling halves being joined at 20%, 50% and 100% connection. Note the way the cutter blades pierce the diaphragms and

fold them back out of the flow path. Also note the difference in the final sealing area before and after torquing.



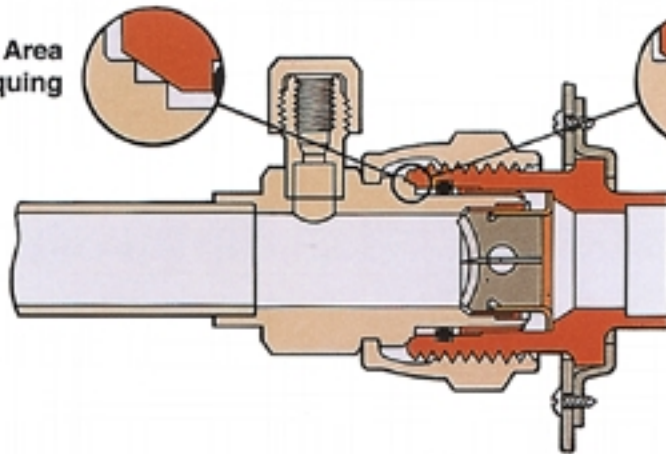
20% Connected



50% Connected



Final Sealing Area  
Connected prior to torquing



Final Sealing Area  
Connected after torquing

100% Connected

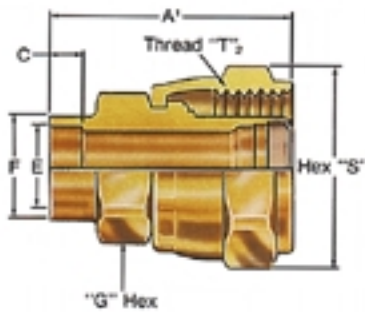


For instructions on brazing and field installation, see pages 8 and 9.

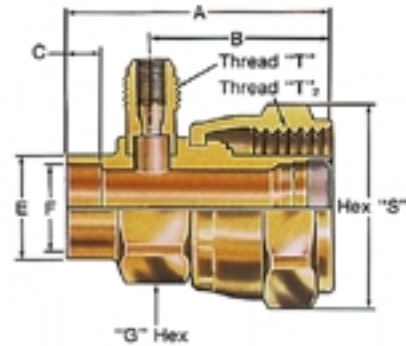
## 5780 Series

# Quick Connect Precharging Refrigerant Couplings

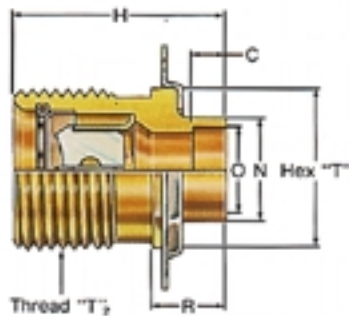
5780-Size



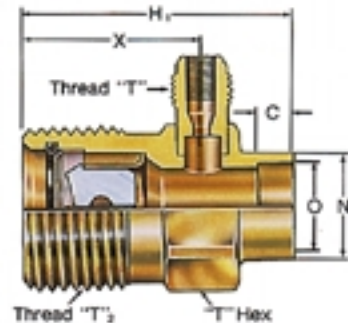
5781-Size



5782-Size



5783-Size

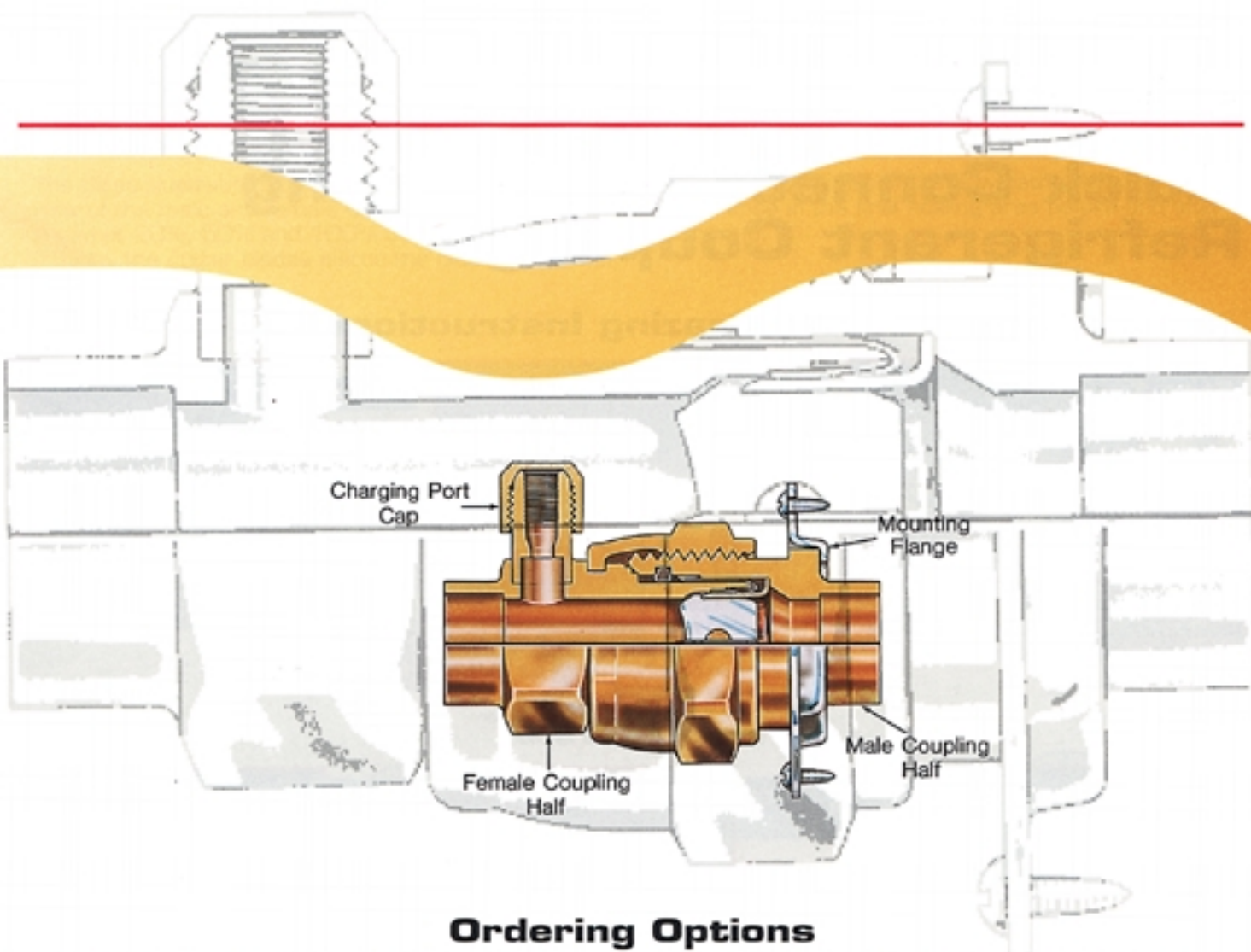


## Dimensional Data

Basic Cplg. Size	O.D. Tube Size	Cplg. Dash Size	Thread "T"	Thread "T2"	A	A1	B	C	E	F	G	H	H1	N	O	R	S	T	X
-6	1/4	-4-6	7/16-20	5/8-18	1.55	1.30	1.06	.19	.25	.38	.62	1.21	1.48	.38	.25	.50	.81	.75	.95
-6	5/16	-5-6	7/16-20	5/8-18	1.55	1.30	1.06	.19	.32	.44	.62	1.21	1.48	.44	.32	.50	.81	.75	.96
-6	3/8	-6-6	7/16-20	5/8-18	1.55	1.30	1.06	.19	.38	.50	.62	1.21	1.51	.50	.38	.50	.81	.75	.96
-8	3/8	-8-8	7/16-20	15/16-12	1.80	1.54	1.21	.19	.38	.46	.86	1.35	—	.46	.38	.52	1.12	.94	—
-8	1/2	-8-8	7/16-20	15/16-12	1.80	1.54	1.21	.25	.50	.58	.88	1.35	—	.58	.50	.52	1.12	.94	—
-8	5/8	-10-8	7/16-20	15/16-12	1.80	1.54	1.21	.25	.62	.72	.88	1.35	—	.72	.62	.52	1.12	.94	—
-10	1/2	-8-10	7/16-20	1 1/16-12	1.81	1.56	1.24	.25	.50	.62	1.00	1.37	1.66	.62	.50	.52	1.31	1.06	1.10
-10	5/8	-10-10	7/16-20	1 1/16-12	1.86	1.81	1.24	.25	.62	.75	1.00	1.43	—	.75	.62	.56	1.31	1.06	—
-10	3/4	-12-10	7/16-20	1 1/16-12	1.92	1.87	1.24	.25	.75	.91	1.00	1.52	1.66	.91	.75	.65	1.31	1.06	1.10
-11	1/2	-8-11	7/16-20	1 1/8-12	1.85	1.80	1.28	.25	.50	.62	1.00	1.48	1.78	.62	.50	.50	1.31	1.12	1.21
-11	5/8	-10-11	7/16-20	1 1/8-12	1.90	1.85	1.28	.25	.62	.75	1.00	1.54	1.84	.75	.62	.56	1.31	1.12	1.22
-11	3/4	-12-11	7/16-20	1 1/8-12	1.96	1.71	1.28	.25	.75	.91	1.00	1.63	1.84	.91	.75	.65	1.31	1.12	1.22
-11	7/8	-14-11	7/16-20	1 1/8-12	2.08	1.81	1.28	.31	.88	.98	1.00	1.70	1.82	1.03	.88	.72	1.31	1.12	1.22
-12	3/4	-12-12	7/16-20	1 7/16-16	2.26	1.01	1.60	.25	.75	.91	1.38	1.78	—	.91	.75	.63	1.69	1.44	—
-12	7/8	-14-12	7/16-20	1 7/16-16	2.36	2.11	1.60	.31	.88	1.03	1.38	1.87	—	1.03	.88	.72	1.69	1.44	—
-12	1-1/8	-18-12	7/16-20	1 7/16-16	2.43	2.18	1.60	.31	1.12	1.28	1.38	1.98	—	1.28	1.12	.84	1.69	1.44	—

All dimensions in inches





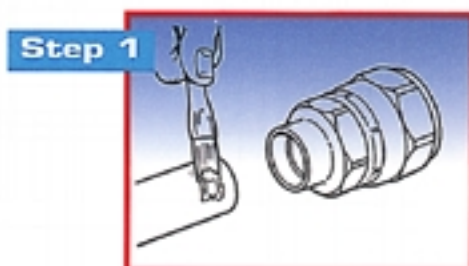
## Ordering Options

Basic Cplg. Size	O.D. Tube Size	Female Coupling Half without Charging Port (Includes Protector Plug)	Female Coupling Half with Charging Valve Port less Cap and Core (Includes Protector Plug)	Male Coupling Half with Protector Cap less Mounting Flange	Male Coupling Half with Charging Valve Port less Cap and Core (Includes Protector Plug)	Mounting Flanges for 5782 Couplings Only		Charging Port Cap	Charging Valve Core
						Bolt Hole Dia. 0.15 (#10 Screw)	Bolt Hole Port (#14 Screw)		
-6	1/4	5780-4-6	5781-4-6	5782-4-6	5783-4-6	5706-22-6	5700-22-6	221014-4B	222034-4
-6	5/16	5780-5-6	5781-5-6	5782-5-6	5783-5-6	5706-22-6	5700-22-6	221014-4B	222034-4
-6	3/8	5780-6-6	5781-6-6	5782-6-6	5783-6-6	5706-22-6	5700-22-6	221014-4B	222034-4
-8	3/8	5780-6-8	5781-6-8	5782-6-8	—	FD67-1006-10	—	221014-4B	222034-4
-8	1/2	5780-8-8	5781-8-8	5782-8-8	—	FD67-1006-10	—	221014-4B	222034-4
-8	5/8	5780-10-8	5781-10-8	5782-10-8	—	FD67-1006-10	—	221014-4B	222034-4
-10	1/2	5780-8-10	5781-8-10	5782-8-10	5783-8-10	FD67-1006-12	FD67-1110-10	221014-4B	222034-4
-10	5/8	5780-10-10	5781-10-10	5782-10-10	—	FD67-1006-12	FD67-1110-10	221014-4B	222034-4
-10	3/4	5780-12-10	5781-12-10	5782-12-10	5783-12-10	FD67-1006-12	FD67-1110-10	221014-4B	222034-4
-11	1/2	5780-8-11	5781-8-11	5782-8-11	5783-8-11	5700-22-10	150-22-8	221014-4B	222034-4
-11	5/8	5780-10-11	5781-10-11	5782-10-11	5783-10-11	5700-22-10	150-22-8	221014-4B	222034-4
-11	3/4	5780-12-11	5781-12-11	5782-12-11	5783-12-11	5700-22-10	150-22-8	221014-4B	222034-4
-11	7/8	5780-14-11	5781-14-11	5782-14-11	5783-14-11	5700-22-10	150-22-8	221014-4B	222034-4
-12	3/4	5780-12-12	5781-12-12	5782-12-12	—	FD67-1111-12	FD67-1110-12	221014-4B	222034-4
-12	7/8	5780-14-12	5781-14-12	5782-14-12	—	FD67-1111-12	FD67-1110-12	221014-4B	222034-4
-12	1-1/8	5780-18-12	5781-18-12	5782-18-12	—	FD67-1111-12	FD67-1110-12	221014-4B	222034-4



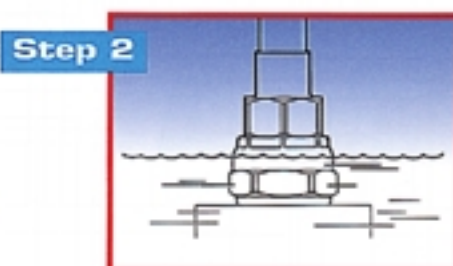
## Quick Connect Precharging Refrigerant Couplings

### Factory Brazing Instructions



**Step 1**

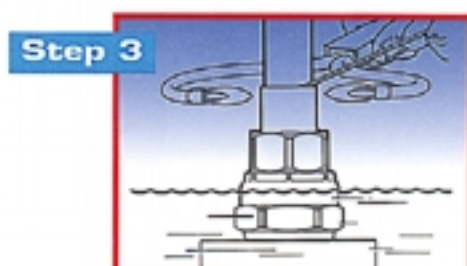
Springly apply paste flux to the copper tube.  
**Note:** Liquid flux or excessive flux can run inside the coupling and cause corrosion.



**Step 2**

Immerse the coupling (diaphragm end) into a flowing cool water bath.

- 5780 and 5781 female halves: Water level should be halfway up the nut and the nut hex fully immersed.
- 5782 and 5783 male halves: Water level should fully cover the threads.



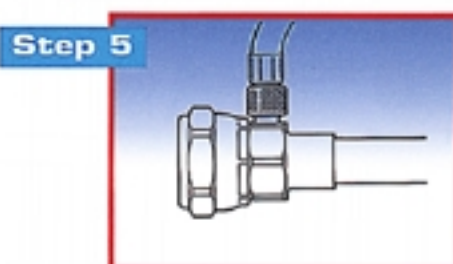
**Step 3**

Use a double tip torch to promote even heating and reduce braze time.



**Step 4**

After the alloy solidifies, quench the tubing and coupling to reduce the temperature below 400°F. Make sure the water does not enter the open charge port in the 5781 or 5783 half.



**Step 5**

The couplings can be subjected to unit test pressures up to 300 psig. If pressures in excess of 300 psig are used, the protector caps and plugs should be installed.



**Step 6**

Protector caps and plugs should be installed finger tight. Overtightening can damage the diaphragm. The diaphragm and O-ring can be lubricated with refrigerant oil prior to installing the protector caps or plugs as added assurance of proper lubrication when connected at unit installation. The protector cap or plug is fully compatible with refrigerant oil.

### Male half installation procedure

Male half (5782) should be mounted with the hex on the inside of the unit held in place with the appropriate mounting flange. Sheet metal opening, screw

hole diameter and mounting bolt circle dimensions are included in the chart below.

Coupling Part Number 5782	Coupling Hex Size	Recommended Sheet Metal Opening	Flange Part Number	Mounting Bolt Circle	Screw Hole Dia.
5782-Size-6	3/4"	.856	5700-22-6	1.44	.201
5782-Size-6	3/4"	.856	5706-22-6	1.44	.153
5782-Size-8	15/16"	.969	FD67-1008-10	1.69	.153
5782-Size-10	1-1/16"	1.094	FD67-1110-10	1.69	.201
5782-Size-10	1-1/16"	1.094	FD67-1008-12	1.69	.153
5782-Size-11	1-1/8"	1.156	150-22-8	1.69	.201
5782-Size-11	1-1/8"	1.156	5700-22-10	1.69	.153
5782-Size-12	1-7/16"	1.469	FD57-1110-12	2.12	.201
5782-Size-12	1-7/16"	1.469	FD57-1111-12	2.12	.153

All dimensions in inches



# Field installation instructions

## Step 1

Route the suction line and liquid line between the indoor and outdoor unit.

## Step 2

Remove protector caps and plugs.

## Step 3

If necessary, carefully wipe coupling seats and threaded surfaces with a clean cloth to prevent the inclusion of dirt or any foreign material in the system.

## Step 4

Lubricate male half diaphragm and synthetic rubber seal with refrigerant oil. Thread coupling halves together by hand to insure proper mating of threads. Use proper size wrenches (on coupling body hex and on union nut) and tighten until coupling bodies "bottom" or a definite resistance is felt.

## Step 5

Using a marker or ink pen, mark a line lengthwise from the coupling union nut to the bulkhead. Then tighten an additional 1/4 turn; the misalignment of the line will show the amount the coupling has been tightened. This final 1/4 turn is necessary to insure the formation of a leakproof joint.

If a torque wrench is used, the following torque values are recommended:

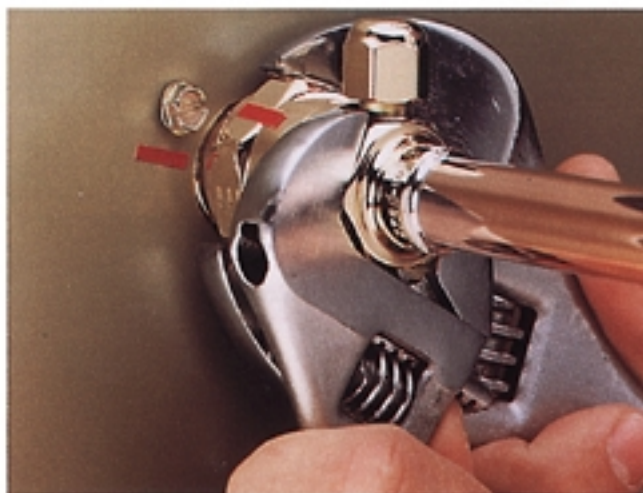
Coupling Size	Foot Pounds (Ft. Lbs.)
-6	10-12
-8	25-30
-10	35-45
-11	35-45
-12	50-65



Couplings halves prior to connection.



Coupling halves connected — untorqued.

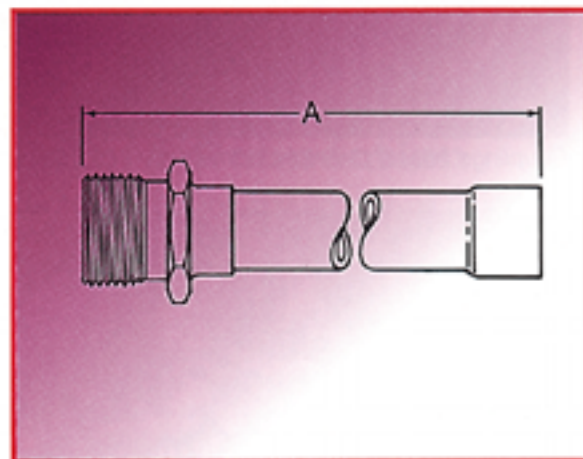
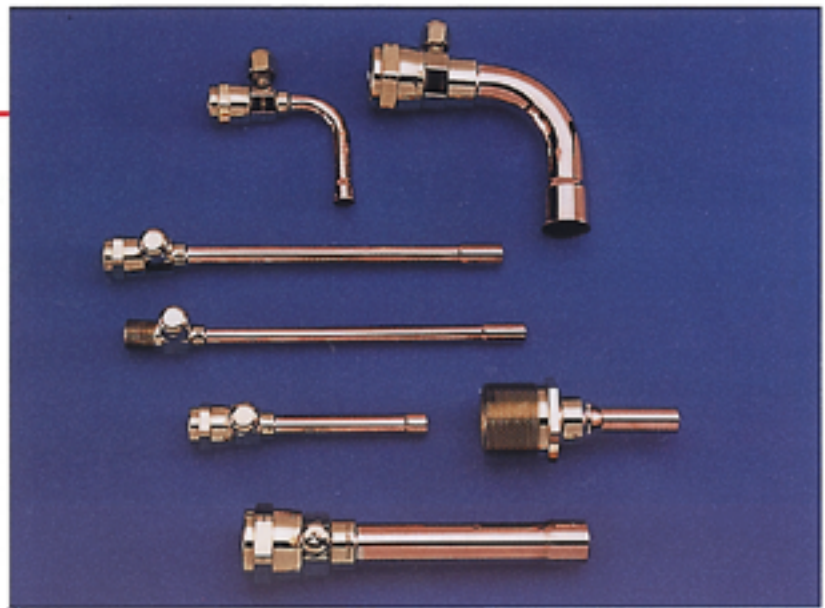


Couplings halves connected — torqued.

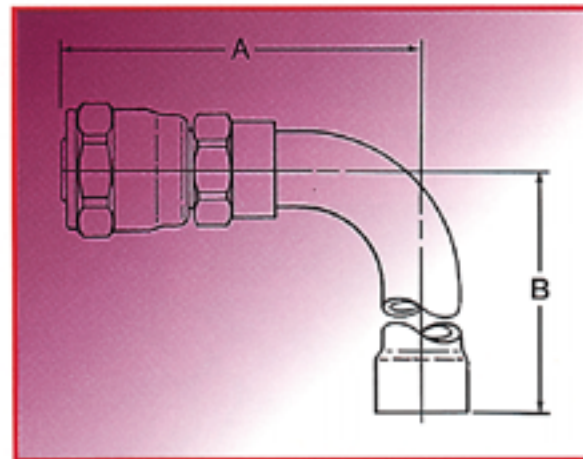


# Stub Kits

The Aeroquip 5780 Series Coupling is also available with a wide variety of factory brazed copper stub tubes which provide a direct copper braze capability. Stub kits allow easy installation of replacement units. See the table below for dimensional information. If the exact configuration you desire is not referenced, consult Aeroquip.



*Straight with Belled End*



*90° Elbow with Belled End*

Part Number	Coupling Style	Tube Config.	Dimension "A"	Dimension "B"
FD57-1084-05-06	5781	Straight with Belled End	7.42	—
FD57-1084-06-06	5781		7.42	—
FD57-1084-10-10	5781		7.86	—
FD57-1084-12-10	5781		7.92	—
FD57-1084-10-11	5781		7.90	—
FD57-1084-12-11	5781		7.96	—
FD57-1084-14-11	5781		8.00	—
FD57-1084-14-12	5781		8.30	—
FD57-1121-05-06	5783	Straight with Belled End	7.33	—
FD57-1121-06-06	5783		7.33	—
FD57-1121-10-11	5783		7.84	—
FD57-1121-12-11	5783		7.84	—
FD57-1121-14-11	5783		7.85	—
FD57-1144-04-06	5781	Straight with Belled End	4.34	—
FD57-1144-05-06	5781		4.34	—
FD57-1144-06-06	5781		4.34	—
FD57-1144-10-11	5781		6.02	—
FD57-1144-12-11	5781		6.08	—
FD57-1144-14-11	5781		6.09	—
FD57-1144-18-11	5781		6.09	—
FD57-1145-10-11	5781	90° Elbow with Belled End	3.15	3.34
FD57-1145-12-11	5781		4.71	4.50
FD57-1145-14-11	5781		3.81	2.97
FD57-1145-18-11	5781		3.81	3.45
FD57-1146-06-06	5782	Straight without Belled End	3.14	—
FD57-1146-06-11	5782		3.30	—
FD57-1146-08-11	5782		3.22	—
FD57-1146-08-12	5782		3.53	—
FD57-1146-10-12	5782		3.65	—
FD57-1148-06-06	5781	90° Elbow with Belled End	2.55	2.16
FD57-1148-06-11	5781		2.85	2.06
FD57-1148-08-10	5781		3.06	2.94
FD57-1148-08-12	5781		3.64	2.72
FD57-1148-10-12	5781		3.51	3.32



# Other Quality Products

For years, Aeroquip has supplied air conditioning and refrigeration customers with valves, couplings and flow control products which have set industry standards.

Today's Aeroquip product line

has been proven through years of reliable service in millions of installations worldwide.

With these tested products as a base, Aeroquip's Air Conditioning and Refrigeration Products

Division is firmly committed to developing the most comprehensive array of problem solving components in the industry.

## Refrigerant Process Coupling



This environmentally responsible coupling offers a fast, reliable method to evacuate and charge refrigerant systems in-plant or in the field. Utilizing a quick connect/disconnect feature, the male coupling half and service adapter immediately self-seal upon disconnection, preventing refrigerant loss to the atmosphere.

**Request Bulletin KA17.**

## 5500 Series Self-Sealing Couplings



The Aeroquip 5500 Series Couplings seal upon disconnection while providing full flow and low pressure drop when connected. Available for brazing to 1/4" through 1 1/8" tubing.

**Request Bulletin KA5.**

## 5400 Series Self-Sealing Couplings



Most commonly used in mobile equipment applications, the 5400 Series Coupling seals upon disconnection. Available in sizes from 1/4" through 1" with adapter ends for braze or threaded connections.

**Request Catalog 258C.**

## FD20 Flow Control



The FD20 Flow Control is a primary expansion mechanism that replaces capillary tubes or thermostatic expansion valves. This unique product combines a field connector and a distributor with a primary expansion device.

**Request Bulletin KA22.**

## FD67 Series Combination Valve



The Aeroquip FD67 Series Combination Valve offers added flexibility, easy installation and maximum serviceability. A male threaded port allows the connection of Aeroquip's 5780 refrigerant coupling or a conventional sweat valve. Available for brazing to 1/4" through 7/8" tubing.

**Call Aeroquip for more information**

# Yesterday, today and tomorrow... We help air condition the world.

For Aeroquip, the future has always been the beginning, a spring-board to new challenges. The goal of Aeroquip's Air Conditioning and Refrigeration Products Division is to meet the challenges in its industry and translate them into a line of innovative products unequalled by any manufacturer, anywhere.

In doing so, the Division will draw upon over 50 years of Aeroquip experience in merging technology and service into a solid, profitable partnership with its customers and their customers...worldwide. To you, that means new opportunities for an even more productive relationship now and in the future.



The Aeroquip logo features a stylized red winged 'A' followed by the word 'Aeroquip' in a bold, red, sans-serif font.

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Refrigeration Products Division**  
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**A TRINNOVA Company**

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***Aeroquip products are available around the corner, around the world***