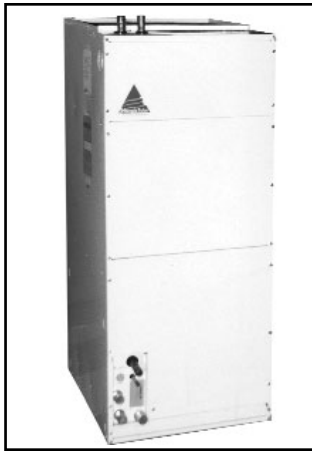


Series 1 and 2 Vertical / Horizontal Air Handler without “A” Coil



Series 3 and 4 Vertical / Horizontal Air Handler with “A” Coil

- Up to 125,000 BTUH Heating Capacity
- 1.5 to 5.0 Ton Cooling Capacity
- Series 1 and 3 handles up to 1,000 CFM of air movement
- Series 2 and 4 Series handles up to 2,000 CFM of air movement

INSTALLATION AND MAINTENANCE MANUAL

WARNING

Before proceeding with installation and operation, read entire manual carefully. Failure to do so can cause injury or property damage.

NOTICE

Warranty Registration Card must be filled out by the customer and mailed within thirty (30) days of installation in order to gain warranty coverage.

When receiving a Triangle Tube product, any claims for damage or shortage in shipment must be filed immediately against the transportation company by the consignee.

Leave all documentation received with appliance with owner for future reference.

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Following terms are used to bring attention to the presence of various risk levels, or to important information concerning product life.

WARNING

Indicates the presence of a hazard which can cause severe personal injury, death or substantial property damage if ignored.

CAUTION

Indicates the presence of a hazard which will or can cause minor personal injury, or substantial property damage if ignored.

NOTICE

Indicates special instructions on installations, operation or maintenance which are important but not related to personal injury hazards.

CAUTION

Do not use this appliance if any part has been under water. Have a qualified service technician inspect the appliance and to replace any part of the control system that might have been under water.

WARNING

Installation and service must be performed by a qualified installer or service agency.

CAUTION

Prior to servicing this appliance, the service technician should;

- Allow the appliance to sufficiently cool down.**
- Shut off electrical power supplied to the appliance.**

A. Code Compliance

- Air Handler installation must conform with the instructions in this manual and where applicable:
 - Local, state, provincial, and national codes, laws, regulations and ordinances.
- Clean Air Act of 1990 requires technician certification for handling refrigerant.

Where recommendations in this manual differ from local, or national codes, the local or national codes take precedence.

B. Locating the Air Handler

- The Air Handler is not intended for outdoor installation.
- Keep distance between boiler or Combination Water Heater and air handler to a minimal to:
 - reduce piping heat loss
 - provide minimum friction loss
- The Air Handler should not be located in an area where possible water leakage will result in damage to the appliance or to the surrounding structure.
 - When such a location is unavoidable, a suitable drain pan with adequate drainage should be placed under the Air Handler.

NOTICE

Exterior surface of the air handler may sweat when the unit is installed in a non-condition space (i.e. attic or garage). Install protection such as an auxiliary drain pan to prevent damage from condensation run-off.

C. Recommended Clearances

- Zero clearance is permissible to the rear and either side of the Air Handler, but some information labels may be hidden.
- Recommended front clearance is 30" for servicing.

- Zero clearance is permissible for discharge air plenum and duct.
- Refer to the boiler or Combination Water Heater installation manual for installation clearances.

D. Operating Restrictions

- Maximum primary water temperature is 180°F.
- Maximum working pressure for Air Handler hydro-coil is 125 psig.

E. Duct Work Installation & Sizing

- Installed in accordance with NFPA 90A and 90B installation of Air Conditioning, Warm Air Heating and Ventilating Systems.
- Refer to Air Conditioning Contractors of America Manual D for duct sizing recommendations.
- Air distribution duct system should be sized for 0.2 inches of available static pressure.
- Installation of ducts in non-conditioned spaces must be insulated to prevent formation of condensation and for maximum operating efficiency.

F. General Piping

- All plumbing must meet or exceed all local, state and national plumbing codes.
- Use isolation valves to isolate system components.

G. Hydro Coil System Piping

- Air Handler may be piped in conjunction with a radiant system using zone valves or zone circulators
- For recommended primary system piping arrangements see Fig. 1 and 2 page 4.

H. Refrigerant Piping

- Refer to condensing unit manufacturer's specifications for sizing liquid and suction lines to the cooling coil.

- Use silver solder or other high temperature brazing alloy to sweat refrigerant lines to the cooling coil.
- It is recommended to flow dry nitrogen through the refrigerant lines when soldering to the cooling coil to prevent oxidation.
- If coil is supplied with an optional Thermal Expansion Valve Kit, secure bulb to suction line after connections are made.
- U.S.A - National Electrical Code and any other national, state or local code requirements having jurisdiction.
- Canada - C.S.A. C22.1 Canadian Electrical Code Part 1 and any other national, provincial and local code requirements having jurisdiction.

I. Condensate Drain

- Air Handler drain pan has 3/4" MPT primary and secondary connections.
- Drain piping from each connection is required to have a 1 1/2" minimum trap.
- Each drain must slope away from the air handler for adequate drainage to a visible area.
- DO NOT pipe these two connections into a common drain.
- Direct drain piping to the side of the Air Handler, so as not to interfere with removal of the air filter.

J. Air Filter

- Air Handler has factory installed filter.
 - Series 1 & 3 require 16" x 20" x1"
 - Series 2 & 4 require 20" x 25" x1"
- If return grille has a filter, the Air Handler filter is not required.

K. Electrical Wiring

CAUTION

Electrical shock hazard. Can cause severe personal injury, death or substantial property damage. Disconnect power before installing and/or servicing.

Wiring Diagram Requirements

- All wiring must be a minimum of 14 gauge and installed in accordance with:

- If original wire supplied with appliance must be replaced, Type 75°C or its equivalent must be used.
- All electrical contacts shown do not have power applied - off shelf condition.

L. Field Wiring - Hot Water Boilers

- For single zone control wiring, see Figs 3, pages 5 .
- Optional aquastat is recommend to ensure minimum water temperature to hydro coil.

M. Blower Motor Wiring

- Air Handler is equipped with a three speed blower motor.
- Blower is factory set for high speed during heating mode and high speed for cooling mode.
- Air Handler is equipped with a factory installed Time Delay Relay (TDR) to increase cooling efficiency.

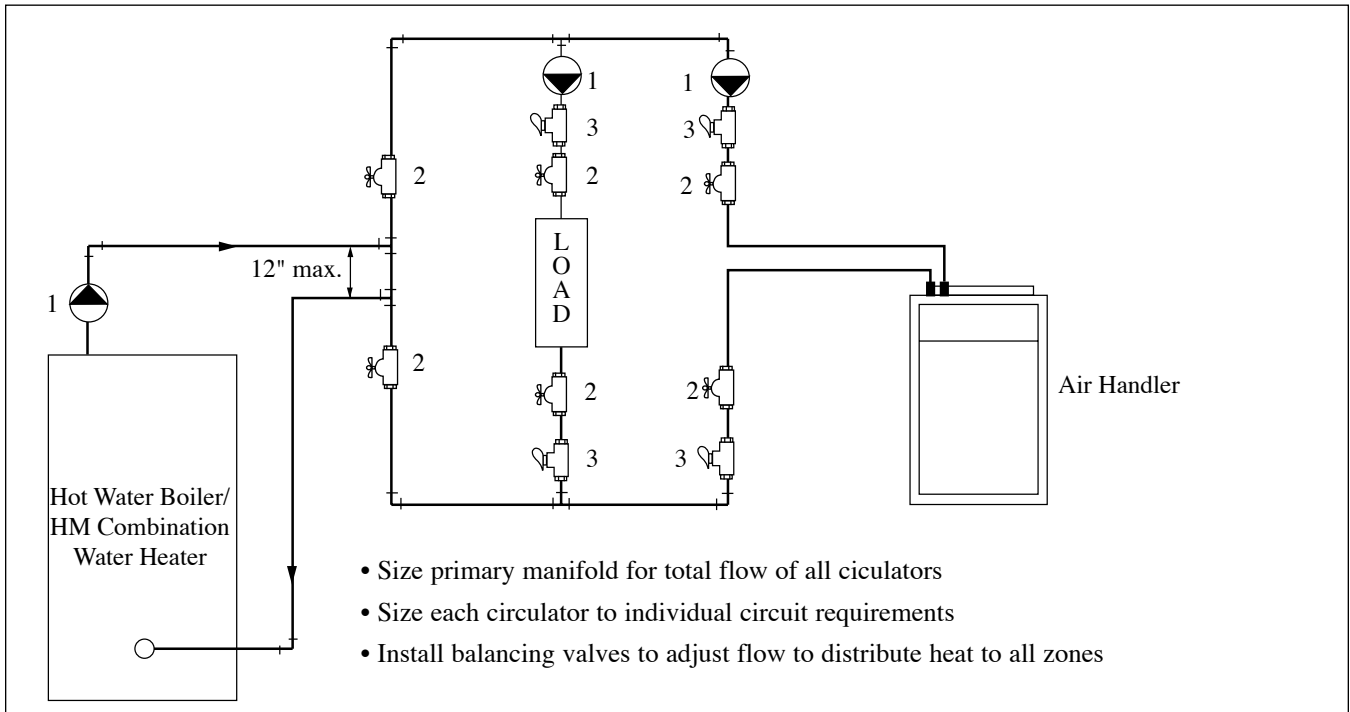


Fig. 1: Primary piping - Zoning with Circulators

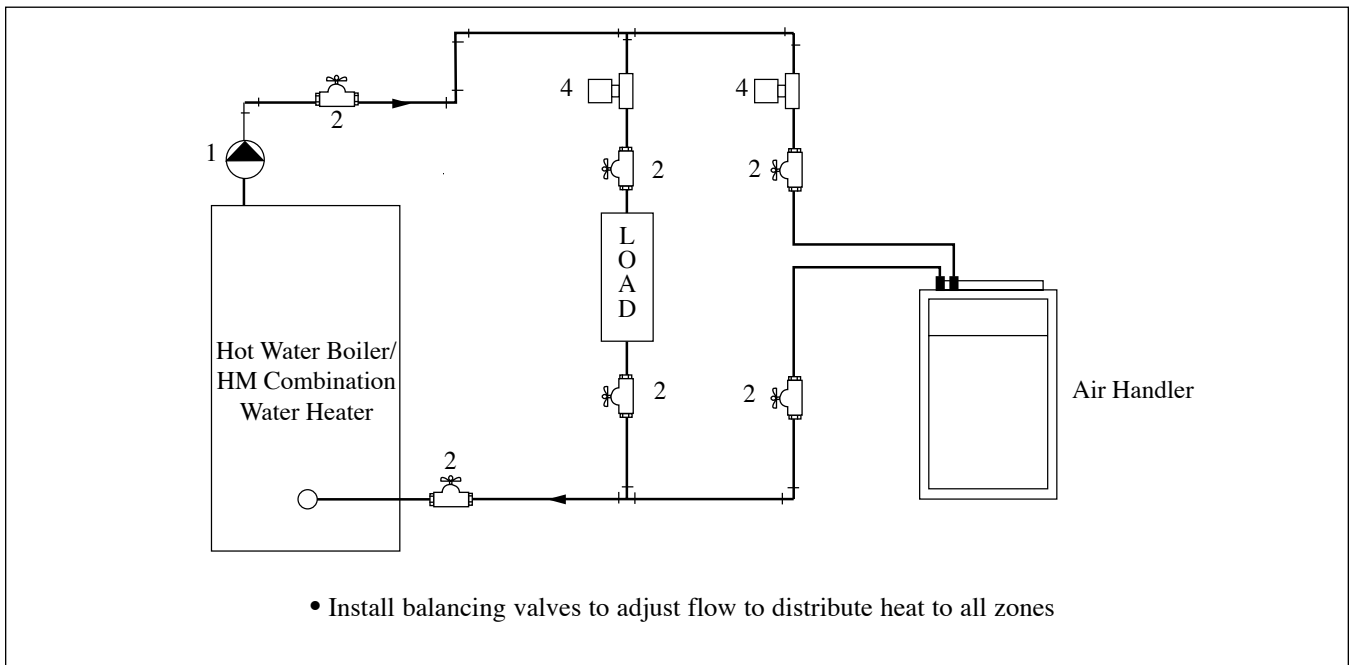
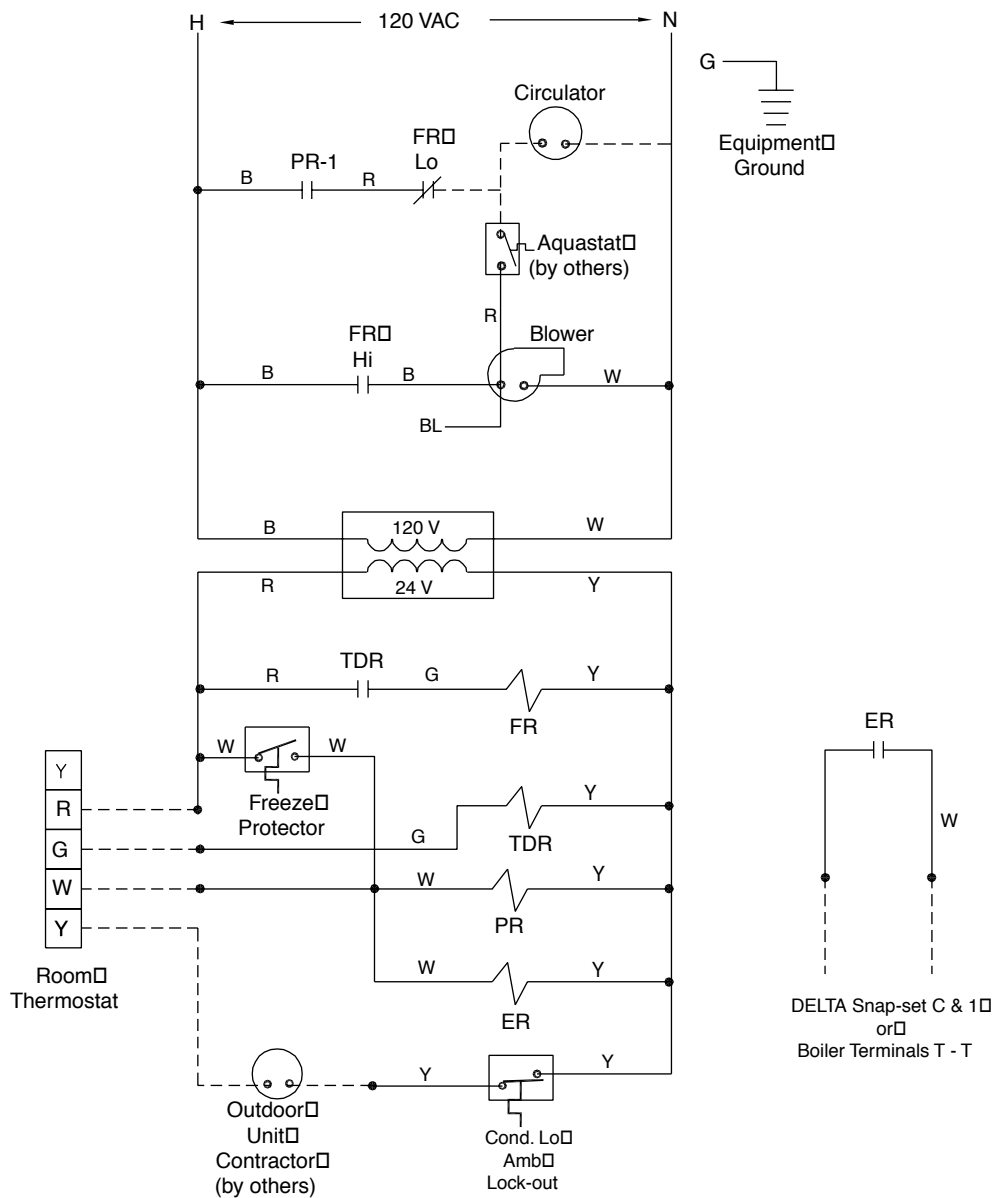


Fig. 2: Primary Piping - Zoning with Zone Valves

1. Circulator
2. Manual shut-off valves
3. Flow check valve
4. Zone valve

Note: Refer to Hot Water Boiler or Combination Water Heater Installation Manual for near appliance piping.



Notes:

1. All wiring must comply with the National Electrical Code and additional national, state or local code requirements. For Canadian installations, all wiring must comply with the Canadian Electrical Code.
2. All wiring must be N.E.C. Class 1.
3. Use 75°C. thermoplastic wire or equivalent, if any of the original wire must be replaced .
4. ----- indicates field wiring.
5. TDR - Time Delay Relay.

Fig. 3: Single Zone Control Wiring - Hot Water Boiler

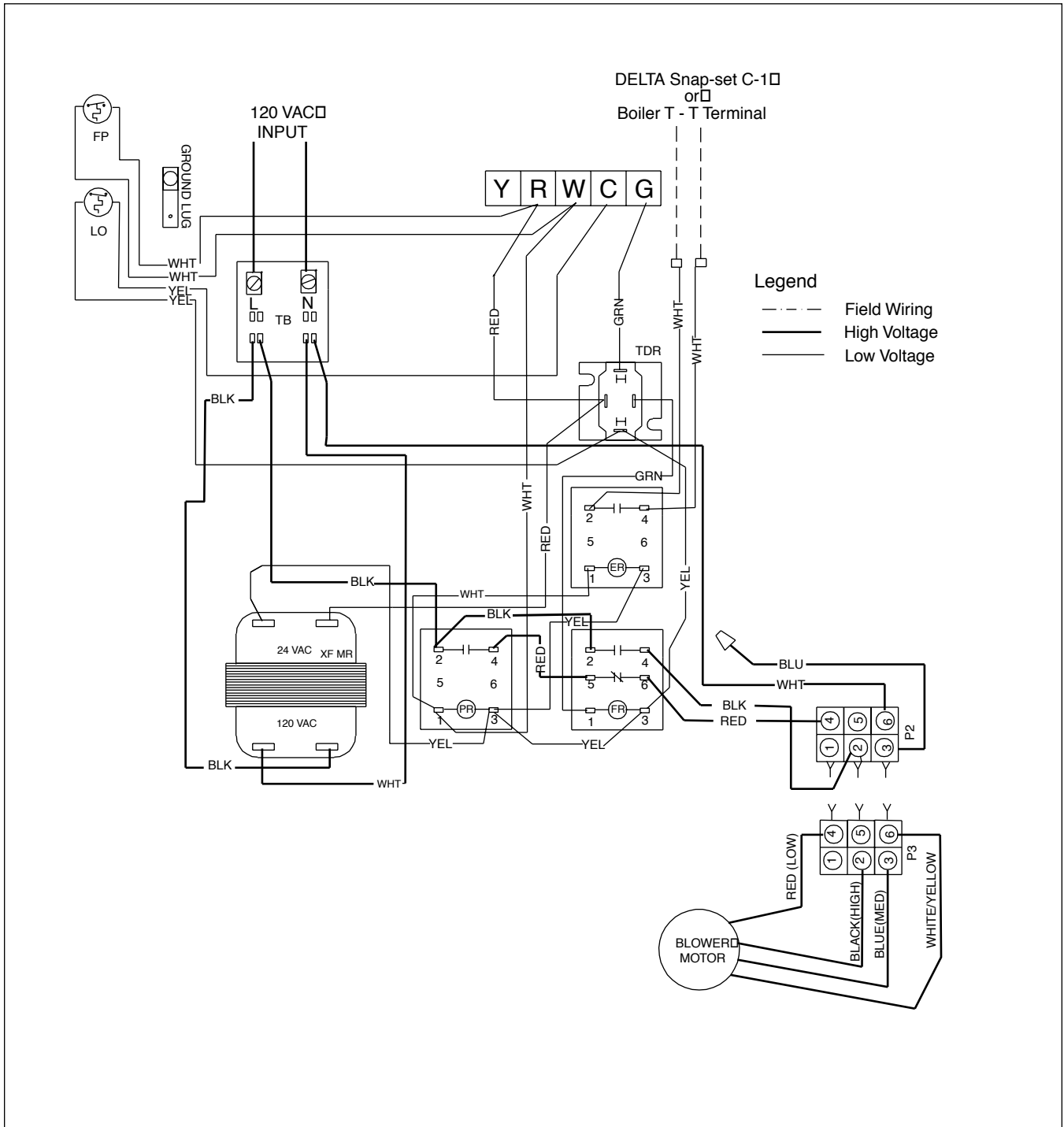


Fig. 4: Internal Wire Connection Diagram

A. Start up Procedures

- Refer to the Hot Water Boiler or HM Combination Water Heater Installation Manual for start up procedures.
- 1. Ensure all isolation valves are open.
- 2. Attach a hose to the flush valve on the hydro coil. Direct discharge to a safe place of disposal.
- 3. Follow the procedures outlines in the Installation Manual for filling and pressuring the Hot Water Boiler or HM Combination Water Heater.
- 4. Open the flush valve and purge the hydro coil supply and return lines during the fill procedure.
- 5. When the hydro coil is completely purged:
 - close flush valve completely
 - disconnect hose.
- 6. Complete the fill procedure required for the Hot Water Boiler or HM Combination Water Heater.

CAUTION

Never operate the Hot Water Boiler or Combination Water Heater and/or Air Handler unless the system is completely filled with water and purged of any air.

B. Periodic Maintenance

Air Filter

- Filter must be changed at least twice a year to permit proper air flow for safe and efficient operation.

Blower Motor

- Must be lubricated annually.
- Use No. 20 grade non-detergent oil. Use 30 - 40 drops per tube.

CAUTION

To avoid damage to blower motor, do not over oil.

Misc. Items

- Check valves, pipes and fittings for leaks.
- Check function of field installed controls.

C. Draining Hydro Coil

1. Disconnect power supply to the Air Handler.
2. Close isolation valves on the supply and return lines.
3. Connect a garden hose to the flush valve on the coil. Direct discharge to a safe place of disposal and drain the coil.

WARNING

Water from open drain valves, unions and other connections may be extremely hot. To avoid personal injury, death or other substantial property damage;

- Tighten all drain hose connections
 - Direct hot water away from all persons.
4. Open flush valve located on the coil.
 5. When draining is completed;
 - close drain valve
 - remove hose

Specifications and Performances

Blower Data:

Series	Model No.	Airflow Tonnage Range	Motor @ 115V 1 PH 60 Hz		DD Blower Wheel	3 Speed	SCFM vs. ESP (1) (2)				
			HP	FLA			0.1	0.2	0.3	0.4	0.5
1 & 3	52	1.5	1/4	3.2	10x6	H	840	790	750	700	660
						M	820	760	755	680	630
						L	770	700	630	600	----
	63	2.5	1/3	6.2	10 x 7	H	1010	980	930	865	830
						M	975	935	895	845	800
						L	950	900	860	810	-----
2 & 4	82	3.0 - 3.5	1/3	6.2	10 x 8	H	1360	1310	1270	1230	1190
						M	1340	1250	1170	1090	1060
						L	1280	1170	1040	970	-----
	107	3.5 - 4.0	3/4	9.5	11 x 9	H	1860	1740	1640	1530	1480
						M	1780	1620	1510	1390	1280
						L	1680	1500	1320	1250	-----
	125	5.0	3/4	9.7	11 x 11	H	1950	1900	1845	1770	1720
						M	1820	1750	1620	1470	1440
						L	1750	1640	1390	1270	-----

Note:

1. Based upon unit with nominal tonnage dry cased coil and filter installed.
2. Use 0.96 as approximate SCFM correction factor for wet coil
3. Series 1 and 2 units do not include cased cooling coil.

Heating Performance Data:

Series	Model No.	Heating Nominal SCFM/Spd	Heating Capacities						GPM	Pressure Drop (Ft. H ₂ O)
			Entering Water Temperature							
			130°F	140°F	150°F	160°F	170°F	180°F		
1 & 3	52	790H	29,000	33,000	38,000	42,800	47,600	52,000	4	2.3
	63	980 H	34,000	39,000	43,000	48,500	56,000	62,500	4	2.3
2 & 4	82	1170 L	45,000	50,000	60,000	67,000	74,000	82,000	4	1.4
	107	1740 L	59,000	67,000	78,000	88,000	97,000	107,000	4	0.8
	125	1900 H	69,000	80,000	91,000	102,500	113,500	125,000	7	2.5

Note:

Based on 65°F Entering Air Temperature

Coil Connections:

Series	Model No.	Water (Heating) Coil		"A" Frame (Cooling) Coil	
		Inlet	Outlet	Liquid	Vapor
1 & 3	52	1/2"	1/2"	3/8"	3/4"
	63	1/2"	1/2"	3/8"	3/4"
2 & 4	82	1/2"	1/2"	3/8"	3/4"
	107	1/2"	1/2"	3/8"	7/8"
	125	3/4"	3/4"	3/8"	7/8"

Specifications and Performances

Outdoor Condenser Compatibilities:

Unit: S3-52A

Coil: CAO24A861 - Summit

Manufacturer	Condensing Unit Model	Cooling Cost \$	SEER	Capacity Mbtuh	TXV
Armstrong	SCU13A24A	148	13	24.0	
Lennox	12ACB24-2P, 3P, 4P	161	12	24.0	
Rheem	FADB-019JA	124	11	17.0	

Unit: S3-63A

Coil: CAO30A862 - Summit

Manufacturer	Condensing Unit Model	Cooling Cost \$	SEER	Capacity Mbtuh	TXV
Armstrong	SCU13A30A	173	13	28.0	X
Coleman	ACO30X1221	197	12	29.4	
Frigidaire	S3BC-024K	147	13	23.8	X

Unit: S4-82A

Coil: CA036A892 - Summit

Manufacturer	Condensing Unit Model	Cooling Cost \$	SEER	Capacity Mbtuh	TXV
Coleman	AC036X1221	234	12	35.0	
Ducane	AC12B30	179	13	29.0	X
Comfort Maker	AG036GB	251	11	34.4	

Unit: S4-107A

Coil: CAO48A865 - Summit

Manufacturer	Condensing Unit Model	Cooling Cost \$	SEER	Capacity Mbtuh	TXV
Comfort Maker	AGO42GB	307	11	42.0	X
Tempstar	ACS230G2A	191	12	28.6	X
Luxaire	HABE-FO30S	170	14	29.6	X

Unit: S4-125A

Coil: CA060A695 - Summit

Manufacturer	Condensing Unit Model	Cooling Cost \$	SEER	Capacity Mbtuh	TXV
Aire-Flo	AFAIR12B60	391	12	58.5	
Heil	ACS248G2A	308	12	46.0	
Tappan	S3BC-O60K	388	12	58.0	

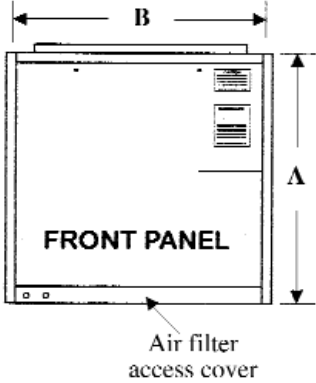
Note:

- TXV - Thermal Expansion Valve kit is required.
- For other outdoor condensing unit compatibilities contact the Triangle Tube Engineering Department or refer to the ARI Directory of Certified Unitary Equipment Standards.

Dimensional Specifications

Series 1 & 2

Series No.	Cabinet Dimensions			Air Duct Connections				Air Filter Size	Shipping Weight (lb)
	Height "A"	Width "B"	Depth "C"	Supply "D"	Supply "E"	Return "F"	Return "G"		
1	27 5/8"	17 1/2"	20"	12 3/4"	15 3/4"	15 1/4"	17"	16 x 20 x 1	96
2	30"	21 1/2"	25"	17 1/4"	19 3/4"	19 1/4"	22 1/4"	20 x 25 x 1	112



Series No.	Cabinet Dimensions			Air Duct Connections				Air Filter Size	Shipping Weight (lb)
	Height "A"	Width "B"	Depth "C"	Supply "D"	Supply "E"	Return "F"	Return "G"		
3	39 3/4"	17 1/2"	20"	12 3/4"	15 3/4"	15 1/4"	17"	16 x 20 x 1	140
4	49 3/4"	21 1/2"	25"	17 1/4"	19 3/4"	19 1/4"	22 1/4"	20 x 25 x 1	199