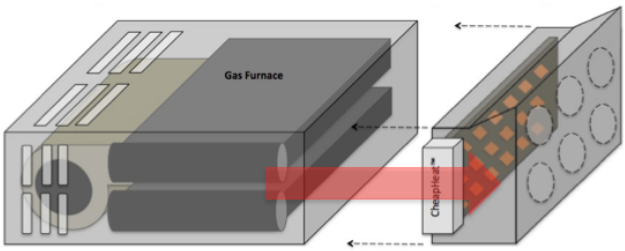
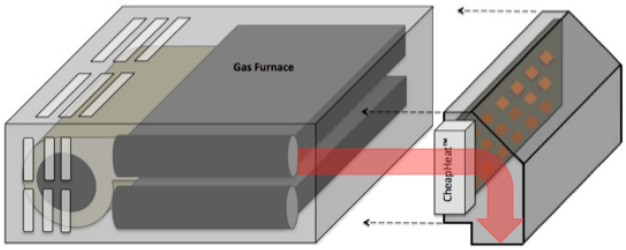
Selecting Your CheapHeat System



Red arrow denotes the correct airflow ducted model enclosure.



Red arrow denotes the correct airflow plenum model Enclosure.

Important Clearance information

- Add-on kit adds 6 inches in overall length to the existing furnace. This means that the furnace will extend 6 inches feather into the RV. MAKE YOU HAVE THE CLEARANCE.
- With the Ducted Add-on system (4 inch ducts) all ducts need to be moved to the end of the new cabinet adapter (No Exceptions) "MAKE SURE YOU HAVE THAT ADDITIONAL ROOM".
- Be sure to check the top and side clearances need on the Compatibility Chart at the bottom of our "FAQ" page.
- **Ductless System** only adds 1 ¾ inches to the front of the furnace.
- The CheapHeat Hybrid Kit MAY NOT work on **vertically installed furnaces**, Confirm duct configuration and clearances (also requires L200 TOD from manufacture).

General Information

30 amp Service: limits the amount of heat output to 1800 Watts (30 amp to 50 amp upgrade document available).

50 Amp Service; Because there are two legs at 50 amps on a 4 prong plug you actually get 100 amps or power to work with so our system will put out 3750 watts on medium heat or 5000 watts on high heat (see page 2 for heater setting recommendations).

Furnace Location

- **Under Refer:** Be sure to check clearance from end of furnace to cabinet face (usually only 4 1/2 inches)
  Optional fix**:** Fur out R/A grill even with front of Refer to gain needed clearance.
- **Under Cabinet/Stove:** Normally not enough clearance off the end of the furnace.
- **Under Bench Seat:** Usually enough clearance off the end of furnace (Confirm 12 inches clear off the end furnace).
- **In Basement**: Be sure there is a clear space off the end of the furnace for approximately 12 inches the ducting

Mounted

- **Horizonal** : Underfloor discharge requires 6" clearance off the end of furnace for Cabinet Adapter.
  Ducted 4" round requires 12" clearance off the end of furnace 6" for Cabinet adapter, and 6" for duct work.
- **Vertical:** Be sure there is at least 3" above furnace for the power head on top of the cabinet adapter and 12 " off the end of the furnace to attach the cabinet adapter and ducting.

Define Ducting Style

- **Ductless** (All of the heat comes out of the grill on the front of the furnace)
- **Ducted** (System that has multiple 4 inch round ducts attached to the Furnace)
- **Plenum** (System that has a trunk line attached to the bottom of the furnace that connects to a main duct that runs under the floor fore and aft in the center of the RV with registers in the floor).
- **Combination System** (Plenum system with one or two 4 inch ducts)

Furnace Brand

Ducted System Cabinet Adapters

ATWOOD	*8500 Series*	*8900 Series*	*8900 (2-Stage)*	*AFMD Series*	*AFLD Series*
Horizonal Adapter	Discontinued	SAH89	Discontinued	SAH7	SAH9
Vertical Adapter	Discontinued	N/A	Discontinued	SAV7	SAV9
DOMETIC			*DFLD (2-Stage)*	*DFMD Series*	*DFLD Series*
Horizonal Adapter	N/A	N/A	Discontinued	SAH7	SAH9
Vertical Adapter	N/A	N/A	Discontinued	SAV7	SAV9
SUBURBAN	*SF Series*	*SH Series*	*SH 25/42*	*Ductless Only NT-12, NT-16, NT-20*	*NT-20 & Larger Ducted*
Horizonal Adapter	SFH7	SHH9	SHH9	NT-DH19	N/A
Vertical Adapter	SFV7	SHV9	SHV9	N/A	N/A

Plenum System Cabinet Adapters

ATWOOD	*8500 Series*	*8900 Series*	*8900 (2-Stage)*	*AFMD Series*	*AFLD Series*
Horizonal Adapter	Discontinued	PAH89	Discontinued	PAH7	PAH9
Vertical Adapter	Discontinued	N/A	Discontinued	N/A	N/A
DOMETIC			*DFLD (2-Stage)*	*DFMD Series*	*DFLD Series*
Horizonal Adapter	N/A	N/A	Discontinued	PAH7	PAH9
Vertical Adapter	N/A	N/A	Discontinued	N/A	N/A
SUBURBAN	*SF Series*	*SH Series*	*SH 25/42*	*Ductless Only NT-12, NT-16, NT-20*	*NT-20 & Larger Ducted*
Horizonal Adapter	PFH7	PHH9	PHH9	N/A	N/A
Vertical Adapter	N/a	N/A	N/A	N/A	N/A

Technical:

When talking about heat output, remember that a gas furnace is only 60% efficient, 40% of the heat goes out the flue. But an Electric heater has no flue so its 100% efficient. So this means a 40,000 btu furnace has only 24,000 btu output. Additionally a gas furnace has a 60 sec pre-purge cycle and a 90 sec post-purge cycle. Which means that for every heating cycle there is 2 1/2 minutes of run time with no flame (heat). After taking into consideration the 2 1/2 minutes of no fire each heat cycle, along with the efficiency issues your true output into the coach with a 40,000 btu gas furnace is about 20,000 btu when measured at the register.

The 100% efficient CheapHeat™ DH50 has a true 17,500 btu output to the register (Add-On or Stand-A-Lone) or just under 90% of a 40,000 Btu gas furnace output.
All of that being said because the Gas Furnace is NOT UL certified it is not required to meet the same standards as our elect. We are not allowed to have an internal temperature of over 200 F Degrees. The gas furnace people run theirs at 250 F Degrees with no overheat fail safe like our fusible link.

The CheapHeat™ Add-on and the Stand-A-Lone systems, use our patented multi tap heater, that can be configured to run on 30 or 50 amps. The difference is that a 30-amp has 3600 watts of energy (one leg at 30 amps) available. Where a 50-amp service (two legs at 50 amps) has 12,000 watts available. That being said you can configure the multi tap heater for 3 different settings as follows:

30 Amp service (DH18 Configuration; one leg limited power)

Coach 20 to 26 ft. -— 20 F deg. Outdoor heat to 70 - 72 F deg. inside
Coach 27 to 32 ft. —- 35 F deg. Outdoor heat to 70 - 72 F deg. inside
Coach 33 to 40 ft. —- 45 F deg. Outdoor heat to 70 - 72 F deg. inside
The DH18 system will keep heating at lower temps it just won't keep up with the heat loss when setup to run on 30 amps.

50 Amp service (DH37 Configuration; two legs of power)

Coach 26 to 36 ft. -— 10 F deg. Outdoor heat to 70 - 72 F deg. inside

50 Amp service (DH50 Configuration; two legs of power)

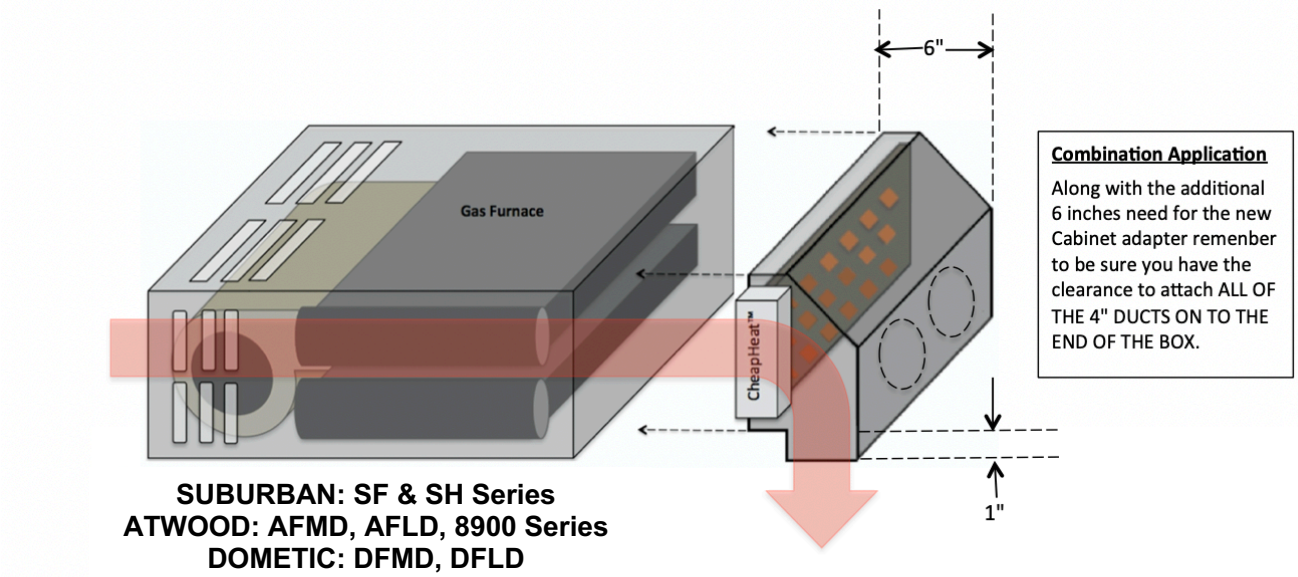
Coach 37 to 40 ft. — 10 F deg. Outdoor heat to 70 - 72 F deg. Inside

ALL TEMPTURE EATIMATES ARE SUBJECT TO AMOUNT OF INSULATION AND TYPE OF WINDOWS

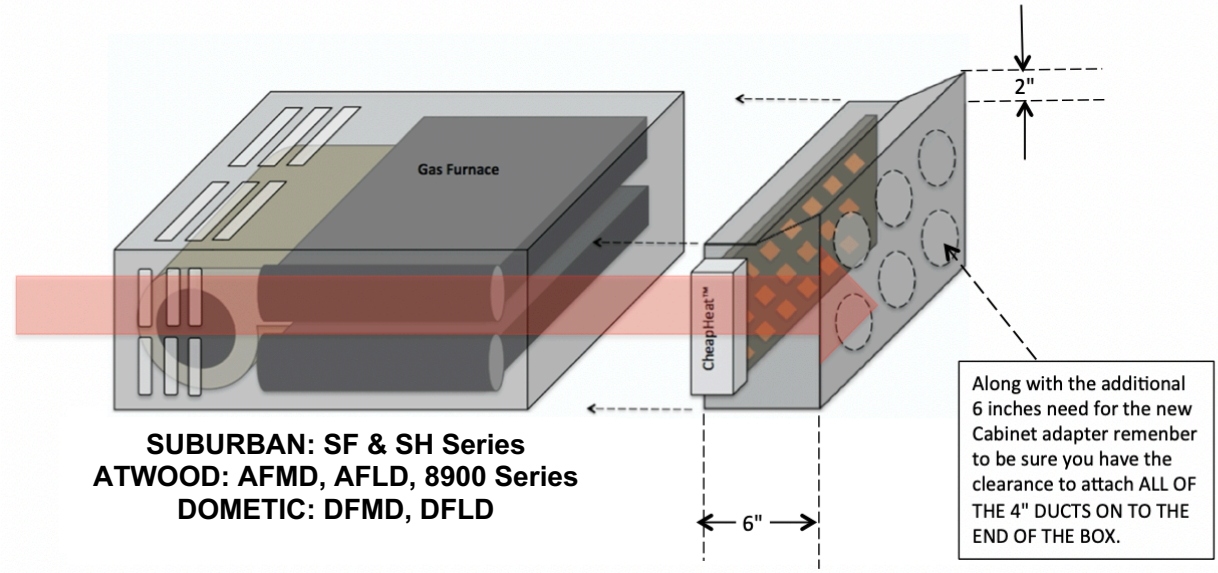
Electrical:

The DH50 21 amps per leg on 50-amp service (about the same as 2 roof AC)
The DH37 16 amps per leg on 50-amp service (about the same as 2 roof AC)
The DH18 16 amps per leg on 30-amp service (about the same as 1 roof AC)

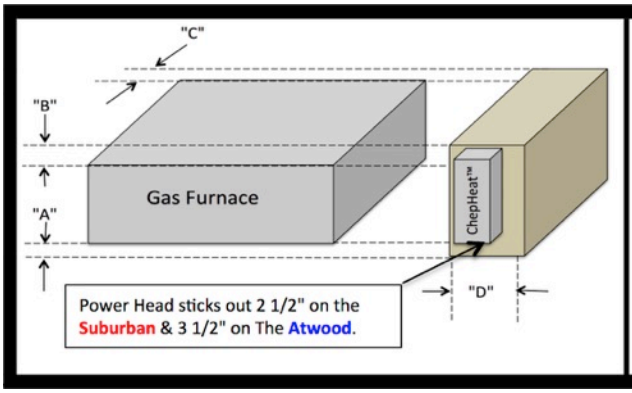
The DH50 leaves 29 amps per leg to run the coach (**58 amps at 120 VAC to run the coach**).
The DH37 leaves 34 amps per leg to run the coach (**68 amps at 120 VAC to run the coach**).
The DH18 leaves 14 amps to run the coach (**14 amps at 120 VAC to run the coach**).



SUBURBAN: SF & SH Series
ATWOOD: AFMD, AFLD, 8900 Series
DOMETIC: DFMD, DFLD



SUBURBAN: SF & SH Series
ATWOOD: AFMD, AFLD, 8900 Series
DOMETIC: DFMD, DFLD



* With the Ducted Add-on system (4 inch ducts) all ducts need to be moved to the end of the new cabinet adapter (No Exceptions) MAKE SURE YOU HAVE THAT ADDITIONAL ROOM.
** The CheapHeat™ Hybrid Kit work on vertically installed and also requires L200 TOD from upgrade (contact RV Comfort Systems.

FURNACE BRAND	MODEL SERIES	CABINET ADAPTER	CLEARANCE MEASUREMENT			
			A	B	C	D
Atwood	AFMD	SAH7 & SAV-7	0	2.5"	1 3/4	5.75"
Atwood	AFMD	PAH-7 & PAV-7	1"	0.5"	1.75	6"
Atwood	AFLD	SAH-9 & SAV-9	0	1.5"	1.75	5.75"
Atwood	AFLD	PAH-9 & PAV-9	1"	0.5"	1.75	6"
*Atwood	**8500	AT10	0	3"	1.25"	5"
*Atwood	**8900	SAH-89	0	1"	1.75"	5.75"
Atwood	8900	PAH-89	1"	0.5	1.75"	6"
Suburban	SF	SFH-7 & SFV-7	0	2.5"	0	5.75"
Suburban	SF	PFH-7 & PFV-7	1"	0.5"	0	6"
Suburban	SH	SHH-9 & SHV-9	0	1.5"	0	5.75"
Suburban	SH	PHH-9 & PHV-9	1"	0.5"	0	6"
Suburban	SF	DRV	0	0.5"	0.5"	8"

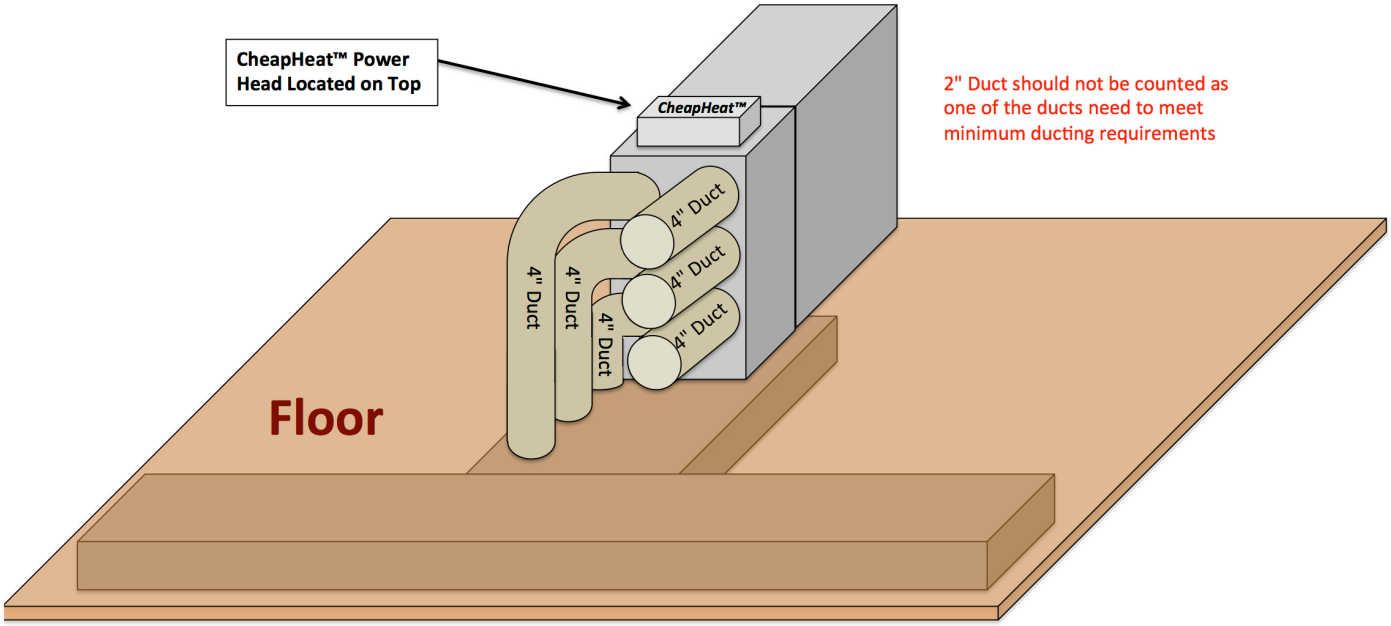
RVComfortSystems
www.rvcomfortsystems.com

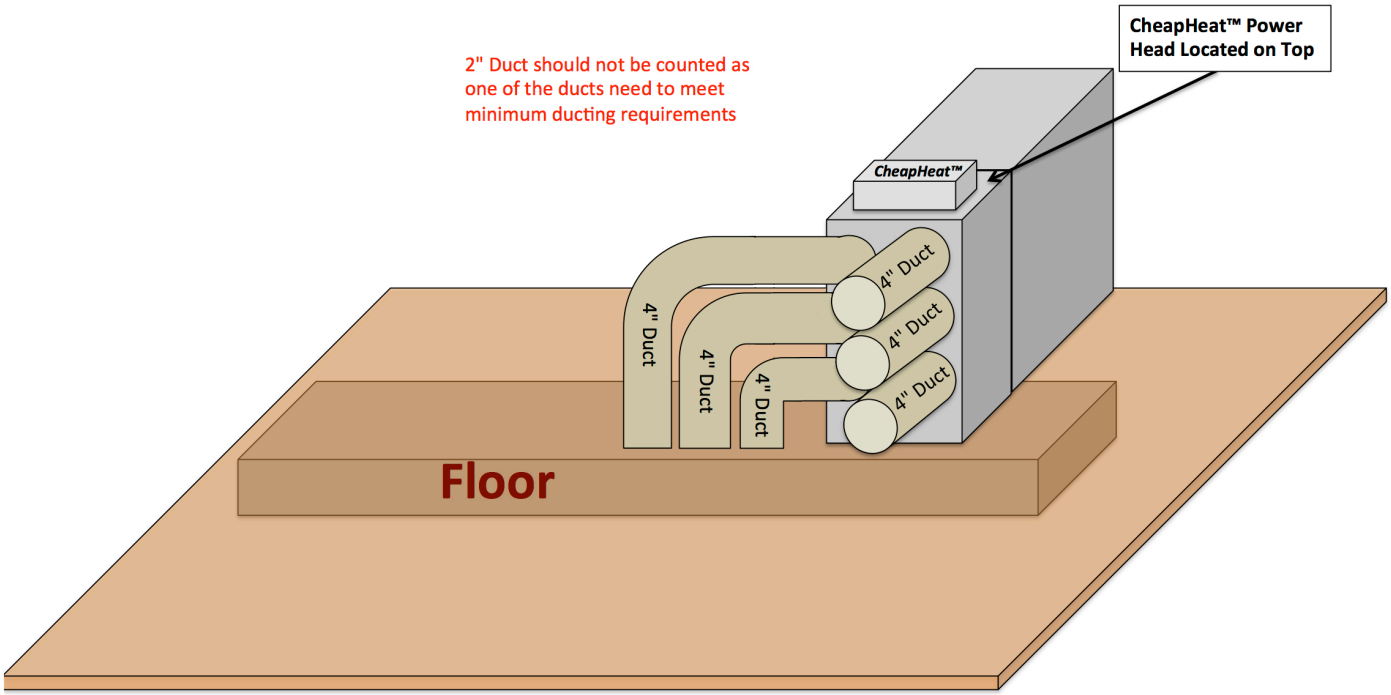
CheapHeat™

Options for modifying duct work in an Suburban SF/SH and Atwood 8900 Series vertical mount furnace with a bottom discharge

VERTICAL REQUIRES TOD TO 200 F DEGREES TO PREVENT SHORT CYCLING

Note: Each 4 inch round duct is equivalent to 12 1/2" area of free air flow. So when your feeding duct work into the rectangle duct under the floor make sure you have provided enough square inches of air from to match the square inches of area in the duct your feeding.





Duct Heater and Controller
Installation Standards

Electrical Specifications

Heat Range Configuration	*Voltage*	*Current*	*Wattage*	*Fuse/Breakers*	*UL Rated, Wire Size Max length 100 ft.*
1800	120 VAC	15 Amp	1800	(1) Single 20 Amp	(2) 12 Gauge W/Ground
3750	240 VAC	15.6 Amp	3750	(2) Dual 20 Amp	(2) 12 Gauge W/Ground
5000	240 VAC	20.8 Amp	5000	(2) Dual 30 Amp	(2) 10 Gauge W/Ground

Fan Specifications (Third party Air Handler)

Heat Range Configuration	Max Voltage	Max Current	Minimum CFM	Minimum Velocity	Static Pressure	Max inlet Air Temp Energized	Max Air Temp De-Energized
1800 Watt	15 VDC	12.6 Amps	120	400 fpm	.01-0-5" wc	75 F Degrees	250 F Degrees
3750 Watts	15 VDC	12.6 Amps	180	400 fpm	.01-0.5" wc	75 F Degrees	250 F Degrees
5000 Watts	15 VDC	12.6 Amps	240	400 fpm	.01-0.5" wc	75 F Degrees	250 F Degrees

VERTICAL MOUNTED FURNACES REQUIRE AUTO TEMP LIMIT UPGRADE TO 200°F

(Contact RV Comfort Systems LLC for correct Auto Temp Limit upgrade part)

Air Flow Specifications 4" Round Duct

UL 2158A Rated-Max temp rating 285° F, Max Static 1.0 in.

Heat Range Configuration	*Min Total CFM*	*Max Total CFM*	*Min # Supply Runs*	*Single 4" Round Duct*			*Average all 4" Round Ducts Combined*		
				Max Length Supply Runs	Max 45° Bends	Max 90° Bends	Max Avg. Length of Runs	Max 45° Bends	Max 90° Bends
1800 Watt	120	300	3	25 Ft	2	1	15 Ft	6	3
3750 Watts	180	400	5	25 ft	2	1	15 Ft	10	5
5000 Watts	240	500	6	25 ft	2	1	15 Ft	12	6

Air Flow Specifications Rectangle Duct

28 Ga. Sheet Metal

Heat Range Configuration	*Min Total CFM*	*Max Total CFM*	*Min Sq. in Supply Side Trunk line*	*Min # 4x8 Supply Registers*	*Min # 4X10 Supply Registers*	*Min # 2 1/4x10 Supply Registers*	*Min # 2 1/4x12 Supply Registers*
1800 Watts	120	300	40	3	2	3	3
3750 Watts	180	400	60	4	3	5	5
5000 Watts	240	500	80	5	4	6	6

Clearance Around Duct Heater Plenum

Heat Range Configuration	*Top*	*Bottom*	*Left Side Without Power Head*	*Left Side With Power Head*	*Right Side Without Power Head*	*Right Side With Power Head*	*Model PL-7 Front*	*Model SA-7 Front*
1800 Watts	1"	0"	1"	2 ½"	1"	2 ½"	1"	N/A
3750 Watts	1"	0"	1"	2 ½"	1"	2 ½"	1"	N/A
5000 Watts	1"	0"	1"	2 ½"	1"	2 ½"	1"	N/A

Multiple Systems

Setting up multiple systems in one coach requires the following configurations and a separate CH-50 controller for each system.

Shore Power	CheapHeat™ Heater Configurations	Ducting
50 Amp	1@ 1800W & 1@ 1800W	***Each system requires its own ducting with no common connections to the other system.***
50 Amp	1@ 1800W & 1@ 3750W	
50 Amp	1@ 3750W & 1@ 3750W	