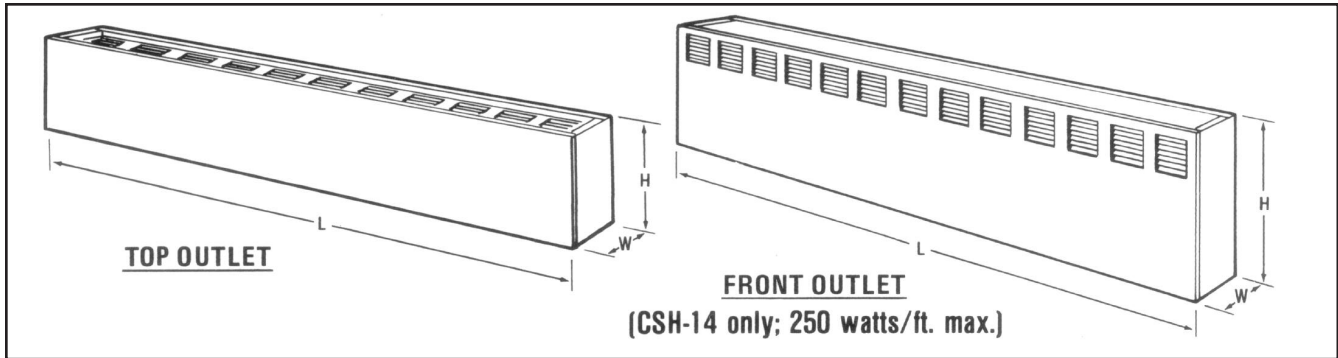




SUBMITTAL SHEET

Commercial Sill-Height Convection Heaters Type CSH



DIMENSIONS

Type	Height	Width	Length
CSH05A	5-1/2"	3"	28" to 10'
CSH07A	7"	5"	28" to 10'
CSH14A	14"	5"	28" to 10'



Minimum Mounting Height Above Floor	
Up to 250W/Ft.	1-3/4"
Over 250W/Ft.	3"

ARCHITECT/ENGINEER SUGGESTED SPECIFICATIONS*

Heaters shall be low profile (3" x 5-1/2" x 7", 5" x 14") and available in lengths from 28 inches through 10 feet. Enclosures shall be 16 gauge, furniture quality steel with reinforced, all welded construction; designed to withstand heavy-duty commercial and institutional use. Enclosures shall be chemically-treated to resist corrosion. Finish shall be mar and temperature-resistant to retain contemporary appearance throughout years of rough use.

For safety, the electric heating bank shall consist of metal sheath heating elements. The elements shall have a copper clad steel for strength and corrosion resistance, and aluminum fins for faster heat transfer. One, two, or three, low density elements shall be installed side-by-side on the same plane to uniformly warm all incoming air. Elements shall be center-anchored and shall float freely on each end through nylon bushings for quietness.

Discharge louvers shall be closely spaced steel to direct

heat away from wall and to minimize wall surface temperatures and control dirt streaking. A 1/4-inch mesh screen shall be installed beneath the discharge grille to deter the insertion of foreign objects. Optional built-in controls shall include single-pole, double-pole, or two-stage thermostats, disconnect switch, transformer relay and power relay. The thermostat shall be capable of controlling multiple units on a pilot duty circuit. (Observe the control limitations indicated.) Thermostat adjustment shall be with a thin-bladed screwdriver through the discharge louvers and shall be considered tamper-resistant. An automatic reset thermal overheat protector shall run the full-length of the heater and shall turn off heating elements should overheating occur at any point along heating length. Overheat protector shall restore operation automatically when cause of overheating is removed.

Heaters shall be designed with a built-in pre-wired race-

way to enable multiple unit wiring from one feeder source.

Back panel shall be one-piece heavy gauge painted steel completely finished, and shall be suitable for mullion to mullion mounting in front of a glass curtain wall. 28-inch control sections, finished to match the heating units, shall be available with factory built-in mercury contactors, circuit breakers, control transformer, PE, switch or SCR controls. This control section shall also be furnished blank, as an optional accessory, for field installation of controls.

All heaters and electrical accessories shall be labeled by Underwriters' Laboratories, Inc. Accessories shall include end caps, blank sections (28" blank sections shall be designed for field-cutting), inside and outside corners, splice plates, and telescoping filler sections. All accessories shall be completely enclosed to enable the installer to pull standard wiring from heater to heater through the accessories.

* QMark reserves the right to change specifications without prior notice.

APPLICATION LIMITATIONS AND PRECAUTIONS

A. Hazardous Atmosphere - Because the possibility of a concealed spark can exist from the built-in overhead cutout, heaters should not be used in potentially explosive atmospheres.

B. Corrosive Atmosphere - The high quality finish and steel internal sheet metal parts will give excellent service under most operating conditions, including coastal salt air and industrial atmospheres. However, the finish is not intended for direct salt spray exposure in marine applications or highly corrosive greenhouse, swimming pool, chemical storage or industrial atmospheres.

C. Cleanliness - Although specifically designed for mounting below window areas, heaters can be installed on plaster, wood paneled, metal, masonry, or composition wall surfaces with reasonable expectation of clean wall operation. Should some soiling occur, after a period of years, smooth walls may be cleaned with standard maintenance materials. For deep textured walls, consideration should be given to choice of enclosure height and watt per foot capacity - generally, the enclosure

with lowest surface temperature will have the least soiling tendency.

D. Comfort - Optimum room comfort results when heater is mounted just below the window sill, since window cold down draft is eliminated and maximum convection air distribution without stratification is maintained throughout the room. Because of the tendency for warm air to stratify, installing heaters close to ceiling is not recommended. If it should be necessary, at least 18" clearance above the air discharge must be maintained. Bottom of heaters are not intended for attractive appearance when mounted above eye level.

E. Air Throw - Since heaters provide only natural convection air throw, they are not blasts through high traffic, main entryways and vestibules. Heaters will maintain satisfactory comfort conditions in low traffic, side entryways and vestibules, but for most entryways, faster response fan driven heaters would be preferred.

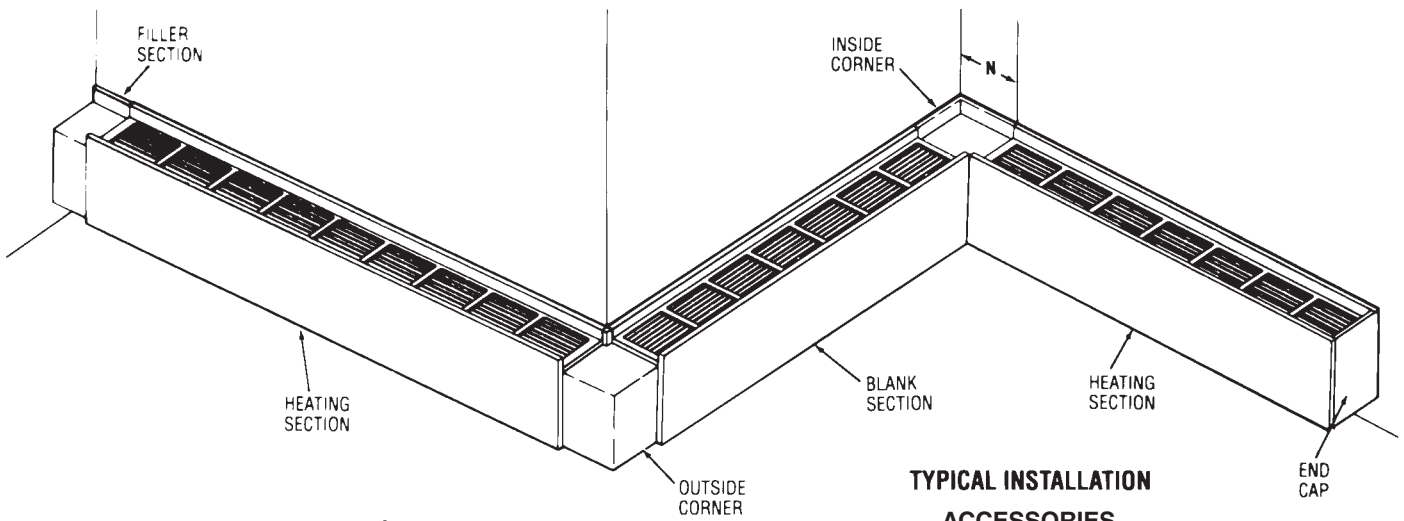
F. Curtains, drapes, or blinds - should clear the top of the heater by at least six inches. Never permit draperies

to completely cover the unit. Furniture - should be placed so it does not touch the heater and so it does not completely block the air vents. Allow at least four inches free space between furniture and the heaters.

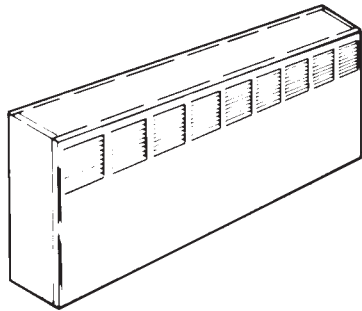
G. Recess mounting - UL labeled for free standing wall surface mounting only. Not recommended for mounting behind built-in book shelves, storage cabinets, window seats, etc..

H. In institutional applications such as hospitals, nursing homes, child day-care centers, and clinics. It is recommended that low-watt density convectors be used to provide optimum comfort at lowest case temperatures.

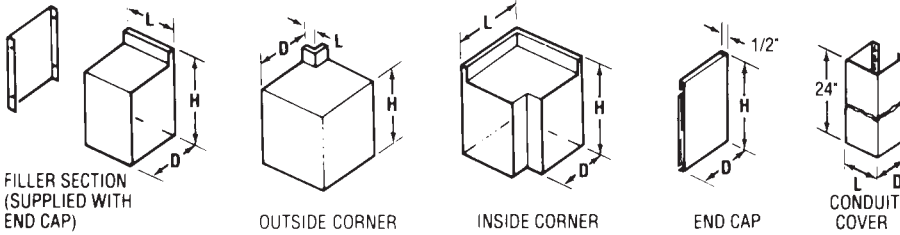
I. Due to variations in vinyl compositions and their potential to discolor, the use of stand-off brackets (SO1 or SO2) and/or specifying a lower watt density unit may be required when installing on vinyl wall coverings or under vinyl window dressings. Prior to setting specifications, consult factory for installation recommendations.



TYPICAL INSTALLATION



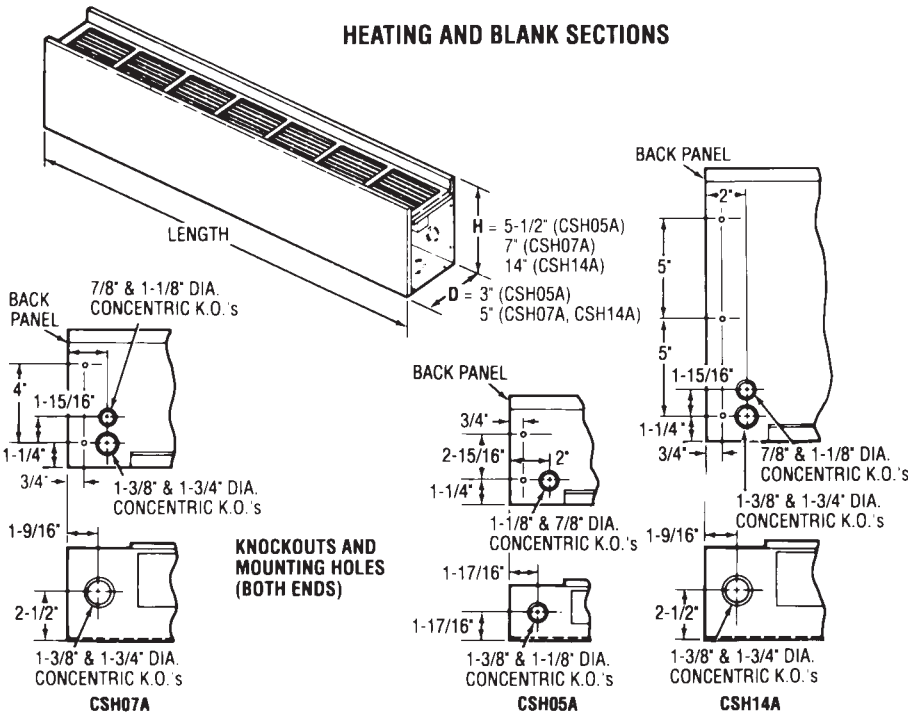
FRONT OUTLET MODEL
 Front outlet is available on Catalog No. CSH14A heaters only in 125, 188 and 250 watts/foot configuration. Outlet mesh is not available on front outlet models.



ACCESSORIES

CATALOG NUMBER	USE W/CSH	DIMENSIONS (inches)			
		H	D	L	N*
LEFT END CAPS					
CSH-05-ECL**	05	5-1/2	2-1/2		1/8
CSH-07-ECL**	07	7	4-1/4		
CSH-14-ECL**	14	14	4-1/4		
RIGHT END CAPS					
CSH-05-ECR**	05	5-1/2	2-1/2		1/8
CSH-07-ECR**	07	7	4-1/4		
CSH-14-ECR**	14	14	4-1/4		
FILLER SECTIONS					
CSH-05-FL3	05	5-1/2	5-1/8	4	0-3
CSH-07-FL3	07	7	6-1/8		
CSH-14-FL3	14	14	13-1/8		
CSH-05-FL6**	05	5-1/8	2-1/2	7	3-6
CSH-07-FL6**	07	6-1/8	4-1/2		
CSH-14-FL6**	14	13-1/8	4-1/2		
CSH-05-FL9**	05	5-1/8	2-1/2	10	6-9
CSH-07-FL9**	07	6-1/8	4-1/2		
CSH-14-FL9**	14	13-1/8	4-1/2		
CSH-05-FL12**	05	5-1/8	2-1/2	13	9-12
CSH-07-FL12**	07	6-1/8	4-1/2		
CSH-14-FL12**	14	13-1/8	4-1/2		
CSH-05-FL18**	05	5-1/8	2-1/2	19	15-18
CSH-07-FL18**	07	6-1/8	4-1/2		
CSH-14-FL18**	14	13-1/8	4-1/2		
INSIDE CORNERS					
CSH-05-IC-1	05	5-1/8	2-1/2	4-1/2	3-3-1/2
CSH-07-IC-1	07	6-1/8	4-1/2	6	5-5-1/2
CSH-14-IC-1	14	13-1/8	4-1/2	6	5-5-1/2
OUTSIDE CORNERS					
CSH-05-OC-1	05	5-1/8	2-1/2		
CSH-07-OC-1	07	6-1/8	4-1/2	1	0-1/2
CSH-14-OC-1	14	13-1/8	4-1/2		
CONDUIT CORNERS					
SHCC-05	05		2-5/8	2-1/2	
SHCC-07	07				
SHCC-14	14		3-5/8	3	
STAND-OFF BRACKETS					
SO-1	05	4-3/4	3/4	3	
SO-2	07	6-3/4	3/4	3	
BLANK SECTIONS (CSH-05)					
CSH-05-BL2-1				28	28
CSH-05-BL3-1				36	36
CSH-05-BL4-1				48	48
CSH-05-BL5-1	05	5-1/2	3	60	60
CSH-05-BL6-1				72	72
CSH-05-BL8-1				96	96
CSH-05-BL10-1				120	120
BLANK SECTIONS (CSH-07)					
CSH-07-BL2-1				28	28
CSH-07-BL3-1				36	36
CSH-07-BL4-1				48	48
CSH-07-BL5-1	07	7	5	60	60
CSH-07-BL6-1				72	72
CSH-07-BL8-1				96	96
CSH-07-BL10-1				120	120
BLANK SECTIONS (CSH-14)					
CSH-14-BL2-1				28	28
CSH-14-BL3-1				36	36
CSH-14-BL4-1				48	48
CSH-14-BL5-1	14	14	5	60	60
CSH-14-BL6-1				72	72
CSH-14-BL8-1				96	96
CSH-14-BL10-1				120	120

HEATING AND BLANK SECTIONS



† N is the additional length the accessory adds to the total installation length.

* Add model numbers suffix "-1" for bottom inlet - top outlet; add suffix "-3" for bottom inlet - front outlet.

** Built-in duplex receptacle available. See page 3.

CSH-05A CONVECTOR SPECIFICATIONS

LENGTH	AMPERAGE						NOMINAL WATTS/FT.	TOTAL HEATING CAPACITY		NO. OF ELEMENTS	CATALOG NUMBER*
	120V	208V	240V	277V	347V	600V		WATTS	BTU/HR		
28" (711mm)	2.4	1.2	1.0	0.9	—	—	125	250	853	One	*-2125
	3.1	1.8	1.6	1.4	—	—	188	375	1,280		*-2188
	4.2	2.4	2.1	1.8	1.4	—	250	500	1,706		*-2250
3' (914mm)	3.1	1.8	1.6	1.4	1.1	—	125	375	1,280	One	*-3125
	4.7	2.7	2.4	2.0	1.6	—	188	564	1,925		*-3188
	6.2	3.6	3.1	2.7	2.2	—	250	750	2,500		*-3250
4' (1219mm)	4.2	2.4	2.1	1.8	1.4	—	125	500	1,706	One	*-4125
	6.2	3.6	3.1	2.7	2.2	1.3	188	750	2,560		*-4188
	8.3	4.8	4.2	3.6	2.9	1.7	250	1,000	3,413		*-4250
5' (1524mm)	5.2	3.0	2.6	2.2	1.8	1.0	125	625	2,133	One	*-5125
	7.8	4.5	3.9	3.4	2.7	1.6	188	940	3,208		*-5188
	10.4	6.0	5.2	4.5	3.6	2.1	250	1,250	4,266		*-5250
6' (1829mm)	6.2	3.6	3.1	2.7	2.2	1.3	125	750	2,560	One	*-6125
	9.4	5.4	4.7	4.1	3.2	1.9	188	1,125	3,840		*-6188
	12.5	7.2	6.2	5.4	4.3	2.5	250	1,500	5,120		*-6250
8' (2438mm)	—	4.8	4.2	3.6	2.9	1.7	125	1,000	3,413	One	*-8125
	—	7.2	6.2	5.4	4.3	2.5	188	1,500	5,120		*-8188
	—	9.6	8.3	7.2	5.8	3.3	250	2,000	6,826		*-8250
10' (3048mm)	—	6.0	5.2	4.5	3.6	2.1	125	1,250	4,266	One	*-10125
	—	9.0	7.8	6.7	5.4	3.1	188	1,875	6,400		*-10188
	—	12.0	10.4	9.0	7.2	4.2	250	2,500	8,532		*-10250

CSH07A and CSH14A SELECTION CHART

LENGTH	AMPERAGE								NOMINAL WATTS/FT.	TOTAL HEAT CAPACITY		NO. OF ELEMENTS	CATALOG NUMBER*
	208V		240V		277V		347V			600V			
	1Ø	3Ø	1Ø	3Ø	1Ø	1Ø	1Ø	3Ø		1Ø	3Ø		
28" (711mm)	1.2	—	1.0	—	0.9	—	—	—	125	250	853	One	*-2125
	1.8	—	1.6	—	1.4	—	—	—	188	375	1,280		*-2188
	2.4	—	2.1	—	1.8	1.4	—	—	250	500	1,706		*-2250
	3.6	—	3.1	—	2.7	—	—	—	375	750	2,560	Two	*-2375
	4.8	—	4.2	—	3.6	2.9	—	—	500	1,000	3,413		*-2500
	5.4	3.1	4.7	2.7	4.1	—	—	—	564	1,125	3,839		Three
6.0	3.5	5.2	3.0	4.5	—	—	—	625	1,250	4,266	*-2625		
7.2	4.2	6.3	3.6	5.4	4.3	—	—	750	1,500	5,119	*-2750		
3' (914mm)	1.8	—	1.6	—	1.4	1.1	—	—	125	375	1,280	One	*-3125
	2.7	—	2.4	—	2.0	1.6	—	—	188	564	1,925		*-3188
	3.6	—	3.1	—	2.7	2.2	—	—	250	750	2,560		*-3250
	5.4	—	4.7	—	4.1	3.2	—	—	375	1,125	3,839	Two	*-3375
	7.2	—	6.3	—	5.4	4.3	—	—	500	1,500	5,119		*-3500
	8.1	4.7	7.0	4.1	6.1	4.9	—	—	564	1,690	5,768		Three
9.0	5.2	7.8	4.5	6.8	5.4	—	—	625	1,875	6,399	*-3625		
10.8	6.3	9.4	5.4	8.1	6.5	—	—	750	2,250	7,679	*-3750		
4' (1219mm)	2.4	—	2.1	—	1.8	1.4	—	—	125	500	1,706	One	*-4125
	3.6	—	3.1	—	2.7	2.2	1.3	—	188	750	2,560		*-4188
	4.8	—	4.2	—	3.6	2.9	1.7	—	250	1,000	3,413		*-4250
	7.2	—	6.3	—	5.4	4.3	2.5	—	375	1,500	5,119	Two	*-4375
	9.6	—	8.3	—	7.2	5.6	3.3	—	500	2,000	6,826		*-4500
	10.8	6.3	9.4	5.4	8.1	6.5	3.8	2.2	564	2,250	7,679		Three
12.0	6.9	10.4	6.0	9.0	7.2	4.2	2.4	625	2,500	8,532	*-4625		
14.4	8.3	12.5	7.2	10.8	8.6	5.0	2.9	750	3,000	10,238	*-4750		
5' (1524mm)	3.0	—	2.6	—	2.3	1.8	1.0	—	125	625	2,133	One	*-5125
	4.5	—	3.9	—	2.4	2.7	1.6	—	188	940	3,208		*-5188
	6.0	—	5.2	—	4.5	3.6	2.1	—	250	1,250	4,266		*-5250
	9.0	—	7.8	—	6.8	5.4	3.1	—	375	1,875	6,399	Two	*-5375
	12.0	—	10.4	—	9.0	7.2	4.2	—	500	2,500	8,532		*-5500
	13.6	7.8	11.8	6.8	10.2	8.1	4.7	2.7	564	2,820	9,624		Three
15.2	8.8	13.1	7.6	11.4	9.1	5.3	3.0	625	3,152	10,757	*-5625		
18.0	10.4	15.6	9.0	13.5	10.8	6.3	3.6	750	3,750	12,798	*-5750		
6' (1829mm)	3.6	—	3.1	—	2.7	2.2	1.3	—	125	750	2,560	One	*-6125
	5.4	—	4.7	—	4.1	3.2	1.9	—	188	1,125	3,839		*-6188
	7.2	—	6.3	—	5.4	4.3	2.5	—	250	1,500	5,119		*-6250
	10.8	—	9.4	—	8.1	6.5	3.8	—	375	2,250	7,679	Two	*-6375
	14.4	—	12.5	—	10.8	8.6	5.0	—	500	3,000	10,238		*-6500
	16.3	9.4	14.1	8.1	12.2	9.7	5.6	3.3	564	3,380	11,535		Three
18.0	10.4	15.6	9.0	13.5	10.8	6.3	3.6	625	3,750	12,798	*-6625		
21.6	12.5	18.8	10.8	16.2	13.0	7.5	4.3	750	4,500	15,358	*-6750		
8' (2438mm)	4.8	—	4.2	—	3.6	2.9	1.7	—	125	1,000	3,413	One	*-8125
	7.2	—	6.3	—	5.4	4.3	2.5	—	188	1,500	5,119		*-8188
	9.6	—	8.3	—	7.2	5.8	3.3	—	250	2,000	6,826		*-8250
	14.4	—	12.5	—	10.8	8.6	5.0	—	375	3,000	10,238	Two	*-8375
	19.2	—	16.7	—	14.4	11.5	6.7	—	500	4,000	13,651		*-8500
	21.6	12.5	18.8	10.8	16.2	13.0	7.5	4.3	564	4,500	15,358		Three
24.0	13.9	20.8	12.0	18.1	14.4	8.3	4.8	625	5,000	17,064	*-8625		
28.8	16.7	25.0	14.5	21.7	17.3	10.0	5.8	750	6,000	20,477	*-8750		
10' (3048mm)	6.0	—	5.2	—	4.5	3.6	2.1	—	125	1,250	4,266	One	*-10125
	9.0	—	7.8	—	6.8	5.4	3.1	—	188	1,875	6,399		*-10188
	12.0	—	10.4	—	9.0	7.2	4.2	—	250	2,500	8,532		*-10250
	18.0	—	15.6	—	13.5	10.8	6.3	—	375	3,750	12,798	Two	*-10375
	24.0	—	20.8	—	18.1	14.4	8.3	—	500	5,000	17,064		*-10500
	27.1	15.7	23.5	13.6	20.4	16.3	9.4	5.4	564	5,640	19,248		Three
30.0	17.4	26.0	15.1	22.6	18.0	10.4	6.0	625	6,250	21,330	*-10625		
36.1	20.8	31.3	18.1	27.1	21.6	12.5	7.2	750	7,500	25,596	*-10750		

* Prefix with CSH for Commercial Still-Height Convector.

Optional Built-in Control Specifications

Optional built-in Control (CATALOG No. Suffix)	Rating
1-Pole Thermostat (-T)	Thermostat adjustable through grill; tamper resistant; range 60-120°F; rated 24 amps @ 120-240 VAC and 22 amps @ 277 VAC; Pilot Duty rating of 125 VA @ 24-277 VAC.
2-Pole Thermostat (-2T)	Thermostat adjustable through grill; tamper resistant; range 60-120°F; rated 24 amps @ 120-240 VAC and 22 amps @ 277 VAC; Pilot Duty rating of 125 VA @ 24-277 VAC.
2-Stage Thermostat (-2ST)	Thermostat adjustable through grill; tamper resistant; range 60-120°F; rating (per stage) 24 amps @ 120-240 VAC and 22 amps @ 277 VAC; Pilot Duty (per stage) 125 VA @ 24-277 VAC; 3°F differential between stages.
Disconnect Switch* (-DS)	Disconnect switch energized through grill; Tamper resistant; double pole single throw switch rated 20 amps (per pole) @ 120-277 VAC.
Transformer Relay (-TR)	Single pole relay with 24 volts holding coil and built-in transformer; relay contacts rated 24 amp @ 120-240 VAC and 22 amps @ 277 VAC for 07 and 14 units; 22 amps @ 120-240 VAC and 19 amps @ 277 VAC for 05 units. 24 volt control.
Power Relay (-PR)	Single pole magnetic relay rated 25 amps @ 120-277 VAC; available with 24, 120, 208/240, or 277 VAC holding coil.
1-Pole Thermostat and Disconnect Switch (-TDS)	Line voltage control, both thermostat and disconnect in power circuit; thermostat adjustable through grill (range 60-120°F); disconnect switch energized through grill; control combination rated 20 amps @ 120-277 VAC.
Disconnect Switch and Transformer Relay (-DSTR)	Line voltage control (requires a remote 24V Pilot Duty thermostat); both disconnect switch and transformer relay in power circuit; disconnect switch energized through grill; control combination rated 20 amps @ 120-240 VAC and 19 amps @ 277 VAC.
Disconnect Switch and Power Relay (-DSPR)	Line voltage control; both disconnect switch and power relay in power circuit; requires a remote control voltage and thermostat for power relay (holding coil voltages available: 24, 120, 208/240, 277 VAC); disconnect switch energized through grill. Control combination rated 18 amps @ 120-277 VAC.
Pilot Duty Thermostat (-PDT)	Thermostat adjustable through grill; tamper resistant; range 60-120°F; thermostat (rated 125 VA @ 24-277 VAC) is wired for Pilot Duty operation of Power Relay (PR) or Transformer Relay (TR). See circuit amperage restrictions with -PR or -TR.
120V Duplex Receptacle (-R)	20 amp duplex receptacle built into left or right end cap of 6, 9, 12 or 18-inch filler section.

NOTES:

These control options are available on all models as built-in components. In cases where the amperage of the heater (or heaters) exceeds the rated limit of the control, multiple controls must be specified.

Example: CSH07-8750
240 Volt Single-Phase
Pilot Duty Thermostat & Power Relay Required
Rated 25 Amps
Order: CSH07-8750-PDT-2PR (240V holding coil)

240 volt, 1 PH supply
For 3-phase operation, multiple controls must be specified

Example: CSH07-8750
240 Volt 3-Phase
Pilot Duty Thermostat & Power Relay Control
Order: CSH07-8750-PDT-3PR
240 Volt, 3 PH supply

*2 required for 3-phase units & single-phase units over 20A.



Submittal Table

ITEM	QTY.	CATALOG NUMBER	TAG	LENGTH	NO. OF ELEMENTS	WATTS	VOLTS	Ø	AMPS	BUILT-IN CONTROLS

Accessories
and Controls

ITEM	QTY.	CAT. NO.	TAG	DESCRIPTION

SUBMITTED BY:	DATE

APPROVED BY:	DATE