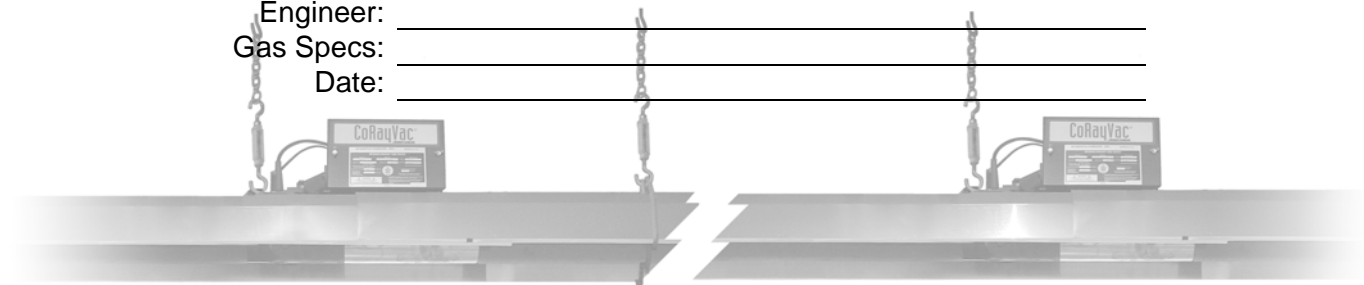


# CoRayVac<sup>®</sup>

## Custom-Engineered, Low-Intensity Infrared Heating Systems Submittal: CRV-Series

Job: \_\_\_\_\_  
 Location: \_\_\_\_\_  
 Engineer: \_\_\_\_\_  
 Gas Specs: \_\_\_\_\_  
 Date: \_\_\_\_\_



QTY.	_____	MODEL NO. CRV	_____	UNIT INPUT	_____	BTU/HR
QTY.	_____	MODEL NO. CRV	_____	UNIT INPUT	_____	BTU/HR
QTY.	_____	MODEL NO. CRV	_____	UNIT INPUT	_____	BTU/HR
QTY.	_____	MODEL NO. CRV	_____	UNIT INPUT	_____	BTU/HR
TOTAL INPUT				_____	BTU/HR	_____

**Important**

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**Before installation and operation of heating equipment, read and understand the Installation, Operation and Service Manual.**

Applications, engineering and detailed guidance on systems design, installation and product performance is available upon request. ROBERTS GORDON<sup>®</sup> products are to be installed only in accordance with local laws, codes and regulations, and only by a contractor qualified in the installation and service of gas-fired heating equipment.



**Roberts-Gordon**  
 1250 William Street  
 P.O. Box 44  
 Buffalo, New York 14240-0044  
 Telephone: 716.852.4400  
 Fax: 716.852.0854  
 Toll Free: 800.828.7450

**Roberts-Gordon**  
 76 Main Street West  
 Unit 10  
 Grimsby, Ontario L3M 1R6  
 Canada  
 Telephone: 905.945.5403  
 Fax: 905.945.0511

**Quality in Any Language™**

[www.rg-inc.com](http://www.rg-inc.com)

**STANDARD PARTS LIST**

**Contents of CRV-Series Burner Carton**

Part No.	Description	Quantity
0270XXXX	CRV-Series Burner (Rate and Fuel Varies)	1
91412200	1/2" Flex Gas Line	1
013676XX	End Vent Plate	1
<b>01397300</b>	<b>Accessory Package</b>	-
01361200	Filter Support Disk	1
01367800	Combustion Chamber Gasket	1
02724901	Door Assembly w/ Hole	1
91115100	Screw #10 - 24x5/8	4
91119500	U-Clip	4
91905500	Filter Support	1
92123900	Nut 5/16 - 18	2
92511601	Wing Nut #10 - 24	1
96411600	Lock washer 5/16"	2
01312401	Filter and Gasket	1

**Common CRV-Series Components**

Part No.	Description
<b>Combustion Chamber:</b>	
02722300-1P	Hot Rolled Steel Combustion Chamber
02722301-1P	Heat-Treated Aluminized Steel Combustion Chamber
0272230D-1P	Porcelain Coated Steel Combustion Chamber
02721200-1P	Cast Iron Combustion Chamber
<b>Tubing and Related Accessories</b>	
01312700	4" Plain Coupling
01312706	6" Plain Coupling
01312701	4" Lined Coupling
01331900	4" Damper Coupling
E0009356	6" Damper Coupling
0133022D	4" Coated Tee
01330203	4" Aluminized Tee
01330204	6" Aluminized Tee
0133092D	4" Coated Cross
01330903	4" Aluminized Cross
01330904	6" Aluminized Cross
01330800	4" Tube Plug
01335801	4" Aluminized 90° Elbow
T0100320	6" Aluminized 90° Elbow

0133580D	4" Coated 90° Elbow
01336101	4" Aluminized 45° Elbow
0133610D	4" Coated 45° Elbow
91409300	16 Ga. Hot Rolled Steel 4" dia. 10' Tube
91409403	16 Ga. Non-heat treated Aluminized 4" dia. 10' Tube
91409408	16 Ga. Heat Treated Aluminized 4" dia. 10' Tube
91409420	16 Ga. Non-Heat Treated Aluminized 6" dia. 10' Tube
9141030D	16 Ga. Coated 4" dia. 10' Tube
E0009105	16 Ga. Heat Treated Aluminized 6" dia. 10' Tube
91418200	Aluminized Tube Adapter 6" dia. x 4" dia.
02722100	4" Cast Iron Adapter
91240010	6" Tube Hanger

**Venting Accessories**

01316000	Outside Air Supply Blower Mounting Kit
01324401	4" Outside Air Supply Takeoff
01326801	Outside Air Filter Housing
90707501	Air Supply Blower/Power Venter
91409601	4" Outside Air Flex Duct (Box of 8 - 8' sections)
90434501	Outside Air Pressure Switch

**Reflectors and Related Accessories**

01329910	Reflector Side Extension Support
03050010	Reflector Support Package (Tubing)
02712700	Reflector Side Extension, 2 Clips, 2 Screws
02716400	Reflector Support Package (Schedule 40 Pipe)
02750303	Aluminum Reflector
027503SS	Stainless Steel Reflector
02750304	Aluminum Reflector with Hole
027503SH	Stainless Steel Reflector with Hole
02750800	Aluminum Reflector End Cap
027508SS	Stainless Steel Reflector End Cap
027508SH	Stainless Steel Reflector End Cap with Hole
02750900	Reflector Joint
027509SS	Stainless Steel Reflector Joint
027127SS	Reflector Side Extension, Stainless Steel
03090100	Tube and Reflector Hanger
02790300	Tube and Reflector Hanger, Cast Iron
91907302	"S" Hook
91903201	Turnbuckle
91903300	Spring Hook

91903202	Turnbuckle with Eyebolt
02712100	Universal Shield Support
02751800	Universal Shield with Holes
02751801	Universal Shield
027518SS	Universal Shield, Stainless Steel
<b>Control Packages and Accessories</b>	
BZC700	ROBERTS GORDON® BZC 700 Controller
10001500	Indoor Sensor*, ROBERTS GORDON® BZC 700 Controller
	* One required per zone
10001501	Water Resistant Sensor
02770002	System Control
<b>URVCCM</b>	<b>ROBERTS GORDON® ULTRAVAC™ Central Controller (with Modem Chip &amp; Software) Includes:</b>
URVSC	ROBERTS GORDON® ULTRAVAC™ Controller
10080142	Modem Chip
10081501	Outdoor Sensor
10080410	PC Connection Cable Package
<b>URVCCR</b>	<b>ROBERTS GORDON® ULTRAVAC™ Central Controller (with RS-485 Converter &amp; Software) Includes:</b>
URVSC	ROBERTS GORDON® ULTRAVAC™ Controller
10080430	RS-485 Converter with 9V Power Supply
10081501	Outdoor Sensor
10080410	PC Connection Cable Package
<b>URVCCL</b>	<b>ROBERTS GORDON® ULTRAVAC™ Central Controller (with TCP/IP Communication Module &amp; Software) Includes:</b>
URVSC	ROBERTS GORDON® ULTRAVAC™ Controller
10080440	TCP/IP Communication Module
10081501	Outdoor Sensor
10080410	PC Connection Cable Package
URVSC	Controller, ROBERTS GORDON® ULTRAVAC™, 1 Pump 3 Zones (Satellite Control)
VFD75115	Variable Frequency Drive Assembly, 75HP, 115V Input
VFD75230	Variable Frequency Drive Assembly, 75HP, 230V Input
10080142	Modem, Plug-In Chip
10080410	Cable Package, PC connection
10080430	RS-485 Converter with 9V Power Supply
10080440	TCP/IP Communication Module
10081500	Sensor, Adjustable Indoor, Deg F, ROBERTS GORDON® ULTRAVAC™ Controller
10081501	Sensor, Outdoor, ULTRAVAC™
10081502	Sensor, Adjustable Indoor, Deg C, ULTRAVAC™

<b>Thermostats</b>	
05023000	Load Relay Package
90417600	Transformer Relay - SPST (12A)
90436300	Transformer Relay - DPDT (12A)
90423000	24V Low Voltage Thermostat (Marked 1-5)
90424300	Thermostat Guard
<b>Deco Grille(1' x 8')</b>	
01363003	Bracket
01365901	End Piece
01326801	Reinforcement
01365903	Joint Piece
91406700	1' x 8' Protective Grille
<b>Deco Grille(2' x 4')</b>	
01365900	Shield Frame
01370408	Reflector Side Extension 8" x 48"
01370412	Reflector Side Extension 12" x 48"
01370416	Reflector Side Extension 16" x 48"
91407000	Aluminum Grille 2' x 4'
<b>Protective Grille</b>	
08050001	40" Protective Grille
08050002	Protective Grille End Cap
<b>Shields</b>	
02750303	Barrier Shield
02751801	Universal Shield
027518SS	Stainless Steel Universal Shield
02751800	Universal Shield with Holes

Pump Packages and Accessories	
<b>02719105</b>	<b>EP-100 Pump Package</b>
02719100	EP-100 Pump
02724700	Accessory Package
<b>02716305</b>	<b>EP-201 Pump Package</b>
01312001	EP-201 Pump
01317805	Accessory Package
<b>02712034</b>	<b>EP-203 Pump Package</b>
01312002	EP-203 Pump
01317805	Accessory Package
<b>02723014</b>	<b>EP-301 Pump Package 4"</b>
02730101	EP-301 Pump Assembly
02730104	Accessory Package
<b>02723016</b>	<b>EP-301 Pump Package 6"</b>
02730101	EP-301 Pump Assembly
02730106	Accessory Package
Pump Accessories	
90430600	Pressure Switch
01327001	Condensate Check Valve Assembly
02718851	4" Drain Cap
02718852	6" Drain Cap
Starters	
10050002	12V DC Starter for EP-201, 1PH
10050003	120V AC Starter for EP-201, 1PH
10050008	120V AC Starter for EP-301, 1PH
10050009	Contactora Package-230VAC Coil for EP-300, 2HP*

\*Starter Package can replace contactor package if pump trip indication is desired when used in conjunction with the ROBERTS GORDON® BZC 700 controller.



**GENERAL SPECIFICATIONS**

**Material Specification**

**Reflectors**

.024 Mill Finish Aluminium (Optional - 024 Stainless Steel Type 304).

**Heater Specifications**

**Ignition**

Fully Automatic, Three-Try, Direct Spark, Electronic Ignition Control, 100% Safety Shut-Off.

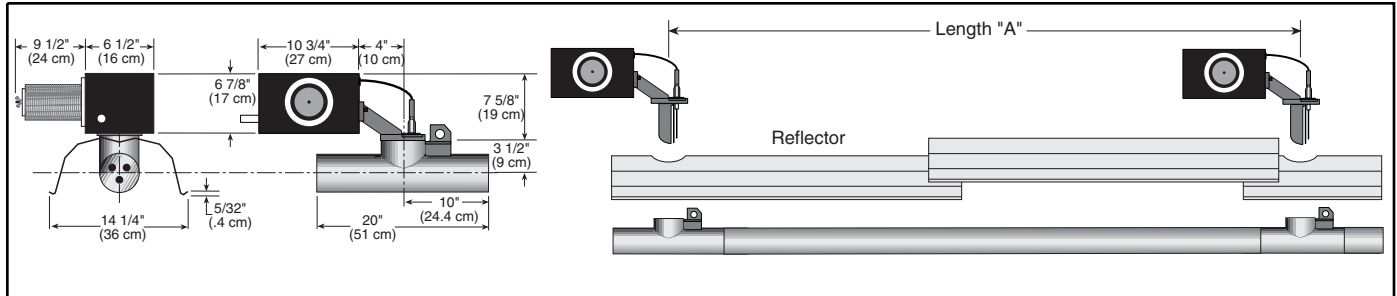
General Specifications for CRV-Series heaters are as follows:

**Suspension Specifications**

Hang heater with materials with a minimum working load of 75 lbs (33 kg).

**Controls Specifications**

Time switches, thermostats, etc. can be wired into the electrical supply. External controls supplied as an option.



Model	Heat Input Rate (BTUH X1000)	Length "A"		Recommended Minimum Mounting Height* Spot Heating
		Minimum	Maximum	
CRV-B-2 (NG only)	20	10' (3 m)	20' (6.1 m)	8' (2.4 m)
CRV-B-4	40	12.5' (3.8 m)	25' (7.6 m)	8' (2.4 m)
CRV-B-6	60	20' (6.1 m)	35' (10.7 m)	8' (2.4 m)
CRV-B-8	80	20' (6.1 m)	45' (13.7 m)	10' (3 m)
CRV-B-9	90	25' (7.6 m)	50' (15.2 m)	10' (3 m)
CRV-B-10	100	30' (9.1 m)	60' (18.3 m)	15' (4.5 m)
CRV-B-12A (NG only)	110	35' (10.7 m)	70' (21.3 m)	15' (4.5 m)
CRV-B-12 (LP only)	120	35' (10.7 m)	70' (21.3 m)	15' (4.5 m)

**Pipe Connection**

1/2" NPT

(36" Stainless Steel Flex Included with Burner)

**Gas Inlet Pressure**

Natural Gas: 4.5" w.c. Minimum 14.0" w.c. Maximum

LP Gas: 10.5" w.c. Minimum 14.0" w.c. Maximum

**Dimensions**

Vent Connection Size: 4" (10 cm) or 6" (15 cm)

Outside Air Connection Size: 4" (10 cm)

Refer to figure above for dimensional information.

**Electrical Rating**

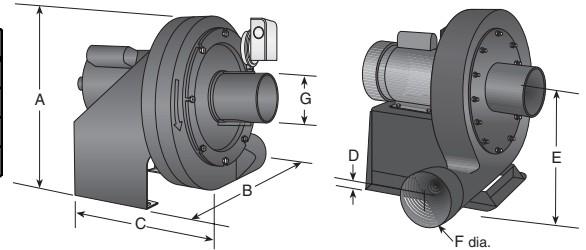
120V - 60 Hz., 0.3 Amp

**Ignition System**

Fully Automatic, Three-Try, Direct Spark, Electronic Ignition Control, 100% Shut-Off

### Pump Specifications

Pump Dimensional Data (in.)							
Model	A	B	C	D	E	F	G
EP-100	17	14.5	21	3.75	10	4	4
EP-201/203	17.75	17	18.75	3.25	10	4.5	4.5
EP-301	25.6	24.8	22.7	4.8	15.2	6	6



### Pump Specifications

Model	EP-100	EP-201	EP-203	EP-301
Horsepower (Hp)	1/3	3/4	3/4	2*
Phase	1	1	3	1
Hertz (Hz)	60	60	60	60
Voltage (V)	115/230	115/230	230	230
Full Load Amp (Amps)	4.8/2.4	6.6/3.3	3.0	11.5
R.P.M.	3450	3450	3450	3450
Motor Frame	56	56	56	90
Motor Enclosure	TENV	TENV	TEFC	TEFC
Noise Level @ 5' (DBA)	-	70	70	-
Inlet/Outlet (In.)	4/4	4/4	4/4	6/6
Weight (lbs.)	62	112	112	170

\* For starter, see National Electric Code (NEC) requirement for motors 1 hp or higher.

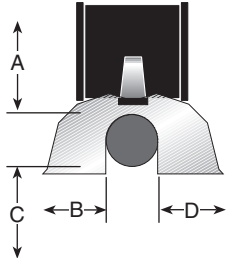
### Air Supply Blower Specifications

Capacity	240 CFM @ 0.75" w.c.
Power (W)	167
Phase	1
Hertz (Hz)	60
Voltage (V)	120
Full Load Amp (Amps)	1.5
R.P.M.	3000
Motor Enclosure	OPEN FC
Inlet/Outlet (In.)	5/5
Weight (lbs.)	10

**CLEARANCES TO COMBUSTIBLES**

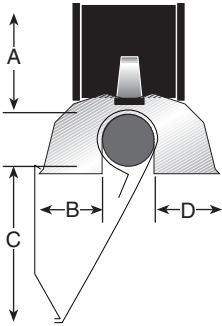
- NOTE:**
1. All dimensions are from the surfaces of all tubes, couplings, elbows, tees and crosses.
  2. Clearances B, C and D can be reduced by 50% after 25' (7.5 m) of tubing downstream from where the combustion chamber and the tube connect.
  3. "-" indicates an unapproved application. Roberts-Gordon prohibits the installation of this heater for all unapproved applications.
- \* Protective Grille clearances are the same as Standard Reflector.

**Standard Reflector\***



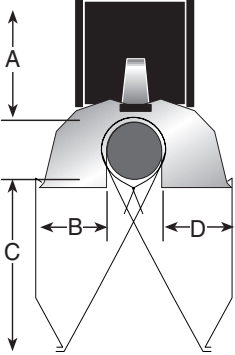
Model	(inches)				(centimeters)			
	A	B	C	D	A	B	C	D
CRV-B-2	4	20	48	20	11	51	122	51
CRV-B-4	4	20	48	20	11	51	122	51
CRV-B-6	4	20	48	20	11	51	122	51
CRV-B-8	4	20	48	20	11	51	122	51
CRV-B-9	4	36	60	36	11	92	153	92
CRV-B-10	4	36	60	36	11	92	153	92
CRV-B-12	4	36	60	36	11	92	153	92
CRV-B-12A	4	36	60	36	11	92	153	92

**One Side Reflector**



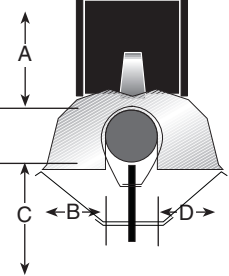
Model	(inches)				(centimeters)			
	A	B	C	D	A	B	C	D
CRV-B-2	4	12	56	20	11	31	143	51
CRV-B-4	4	12	56	20	11	31	143	51
CRV-B-6	4	12	56	20	11	31	143	51
CRV-B-8	4	12	56	20	11	31	143	51
CRV-B-9	4	12	60	42	11	31	153	107
CRV-B-10	4	12	60	42	11	31	153	107
CRV-B-12	4	12	60	42	11	31	153	107
CRV-B-12A	4	12	60	42	11	31	153	107

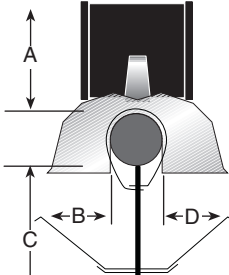
**Two Side Reflectors**

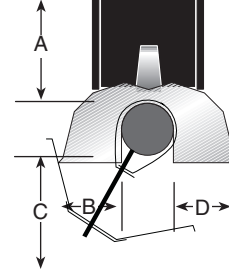


Model	(inches)				(centimeters)			
	A	B	C	D	A	B	C	D
CRV-B-2	4	12	56	12	11	31	143	31
CRV-B-4	4	12	56	12	11	31	143	31
CRV-B-6	4	12	56	12	11	31	143	31
CRV-B-8	4	12	56	12	11	31	143	31
CRV-B-9	4	12	60	12	11	31	153	31
CRV-B-10	4	12	60	12	11	31	153	31
CRV-B-12	4	12	60	12	11	31	153	31
CRV-B-12A	4	12	60	12	11	31	153	31

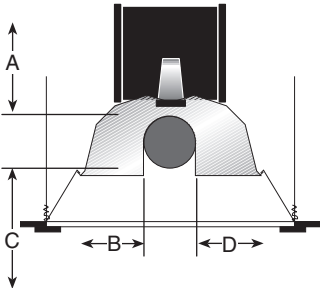
- NOTE:** 1. All dimensions are from the surfaces of all tubes, couplings, elbows, tees and crosses.  
 2. Clearances B, C and D can be reduced by 50% after 25' (7.5 m) of tubing downstream from where the combustion chamber and the tube connect.  
 3. "-" indicates an unapproved application. Roberts-Gordon prohibits the installation of this heater for all unapproved applications.

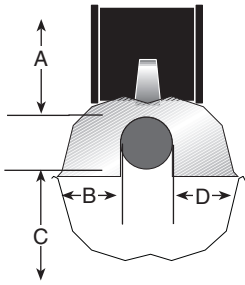
<b>Universal Shield, Position 1</b>		<b>(inches)</b>				<b>(centimeters)</b>			
	<b>Model</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
		CRV-B-2	4	12	12	12	11	31	31
	CRV-B-4	4	12	12	12	11	31	31	31
	CRV-B-6	4	12	12	12	11	31	31	31
	CRV-B-8	4	12	12	12	11	31	31	31
	CRV-B-9	8	18	24	18	21	46	61	46
	CRV-B-10	8	18	24	18	21	46	61	46
	CRV-B-12	8	18	24	18	21	46	61	46
	CRV-B-12A	8	18	24	18	21	46	61	46

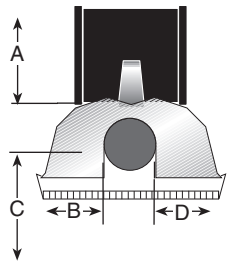
<b>Universal Shield, Position 2</b>		<b>(inches)</b>				<b>(centimeters)</b>			
	<b>Model</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
		CRV-B-2	4	24	48	24	11	61	122
	CRV-B-4	4	24	48	24	11	61	122	61
	CRV-B-6	4	24	48	24	11	61	122	61
	CRV-B-8	4	24	48	24	11	61	122	61
	CRV-B-9	4	36	48	36	11	92	122	92
	CRV-B-10	4	36	48	36	11	92	122	92
	CRV-B-12	4	36	48	36	11	92	122	92
	CRV-B-12A	4	36	48	36	11	92	122	92

<b>Universal Shield, Position 3</b>		<b>(inches)</b>				<b>(centimeters)</b>			
	<b>Model</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
		CRV-B-2	4	12	56	30	11	31	143
	CRV-B-4	4	12	56	30	11	31	143	77
	CRV-B-6	4	12	56	30	11	31	143	77
	CRV-B-8	4	12	56	30	11	31	143	77
	CRV-B-9	8	12	60	42	21	31	153	107
	CRV-B-10	8	12	60	42	21	31	153	107
	CRV-B-12	8	12	60	42	21	31	153	107
	CRV-B-12A	8	12	60	42	21	31	153	107

- NOTE:** 1. All dimensions are from the surfaces of all tubes, couplings, elbows, tees and crosses.  
 2. Clearances B, C and D can be reduced by 50% after 25' (7.5 m) of tubing downstream from where the combustion chamber and the tube connect.  
 3. "-" indicates an unapproved application. Roberts-Gordon prohibits the installation of this heater for all unapproved applications.

<b>2-Foot Deco Grille</b>		(inches)				(centimeters)			
	<b>Model</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
		CRV-B-2	4	12	48	12	11	31	122
	CRV-B-4	4	12	48	12	11	31	122	31
	CRV-B-6	4	12	48	12	11	31	122	31
	CRV-B-8	4	12	48	12	11	31	122	31
	CRV-B-9	4	18	56	18	11	46	143	46
	CRV-B-10	4	18	56	18	11	46	143	46
	CRV-B-12	4	18	56	18	11	46	143	46
	CRV-B-12A	4	18	56	18	11	46	143	46

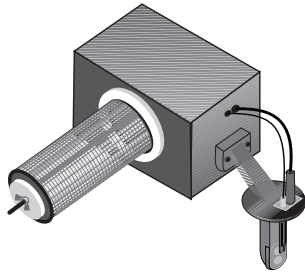
<b>Barrier Shield</b>		(inches)				(centimeters)			
	<b>Model</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
		CRV-B-2	4	12	12	12	11	31	31
	CRV-B-4	4	12	12	12	11	31	31	31
	CRV-B-6	4	12	12	12	11	31	31	31
	CRV-B-8	4	12	12	12	11	31	31	31
	CRV-B-9	-	-	-	-	-	-	-	-
	CRV-B-10	-	-	-	-	-	-	-	-
	CRV-B-12	-	-	-	-	-	-	-	-
	CRV-B-12A	-	-	-	-	-	-	-	-

<b>1-Foot Deco Grille</b>		(inches)				(centimeters)			
	<b>Model</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
		CRV-B-2	4	12	48	12	11	31	122
	CRV-B-4	4	12	48	12	11	31	122	31
	CRV-B-6	4	12	48	12	11	31	122	31
	CRV-B-8	4	12	48	12	11	31	122	31
	CRV-B-9	4	18	56	18	11	46	143	46
	CRV-B-10	4	18	56	18	11	46	143	46
	CRV-B-12	4	18	56	18	11	46	143	46
	CRV-B-12A	4	18	56	18	11	46	143	46

## CRV-SERIES ASSEMBLY OVERVIEW

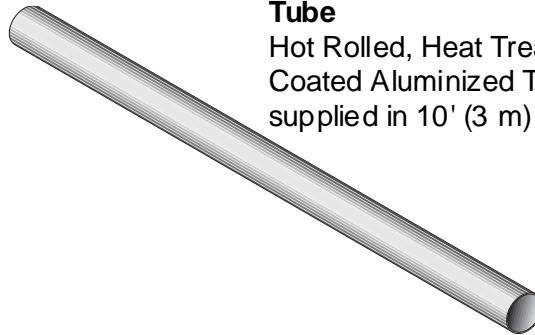
### Major Component Descriptions

**Burner**



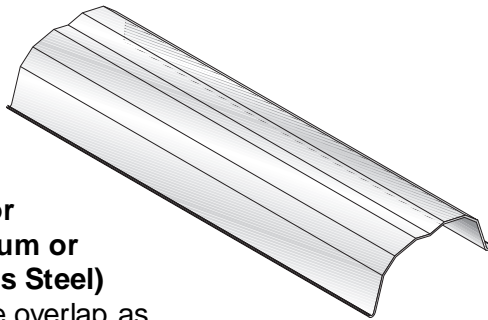
**Tube**

Hot Rolled, Heat Treated or Coated Aluminized Tube supplied in 10' (3 m) lengths.



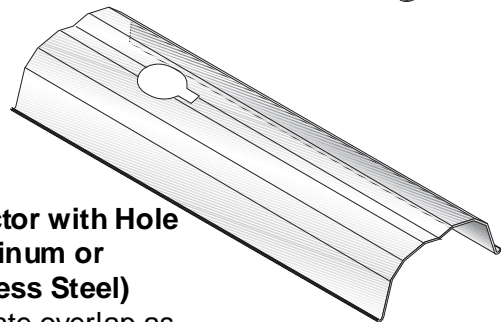
**Reflector (Aluminum or Stainless Steel)**

Alternate overlap as shown on overview. Minimum overlap is 7" (18 cm).

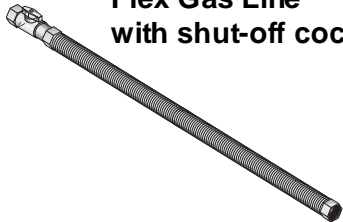


**Reflector with Hole (Aluminum or Stainless Steel)**

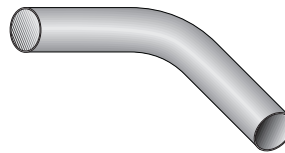
Alternate overlap as shown on overview. Minimum overlap is 7" (18 cm).



**Flex Gas Line with shut-off cock**



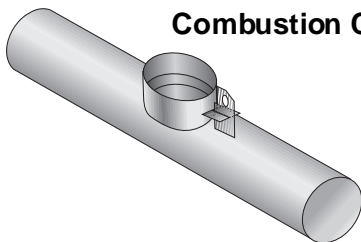
**45° Elbow**



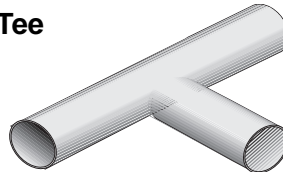
**90° Elbow**



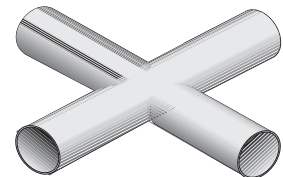
**Combustion Chamber**



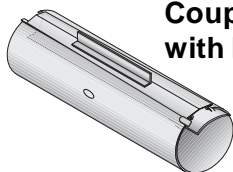
**Tee**



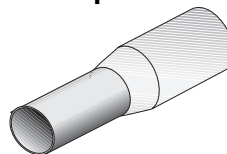
**Cross**



**Coupling Assembly with Lock**



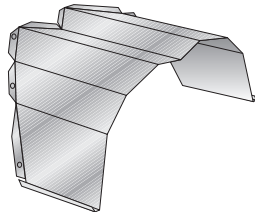
**Tube Adapter**



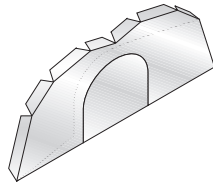
**End Vent**



**Major Component Descriptions (Continued)**

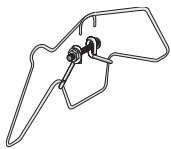


**Reflector Joint**



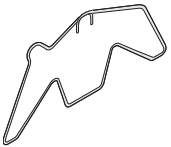
**Reflector End Cap  
(Aluminum or Stainless Steel)**

Remove center section to accommodate heat exchanger tube when necessary.



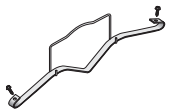
**Tube and Reflector Hanger with Clamp Package**

Position this hanger no more than 4" (10 cm) away from the burner.



**Tube and Reflector Hanger**

Suspend system from these hangers.



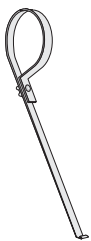
**Reflector Support Strap & Wire Form**



**"S" Hook**



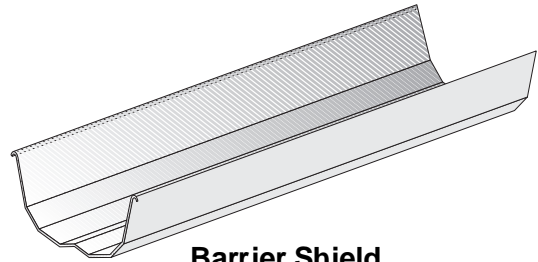
**Turnbuckle**



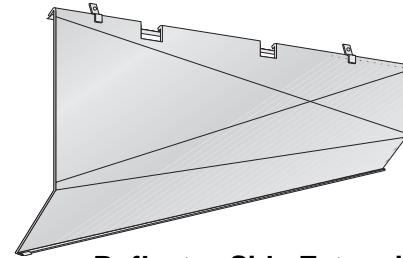
**Reflector Side Extension Bracket**



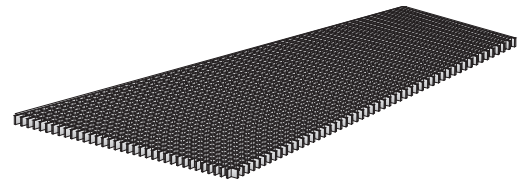
**Condensate Valve Assembly**



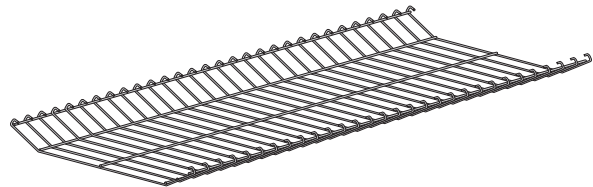
**Barrier Shield**



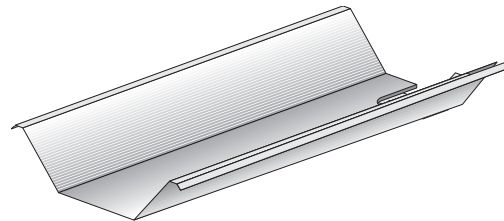
**Reflector Side Extension**



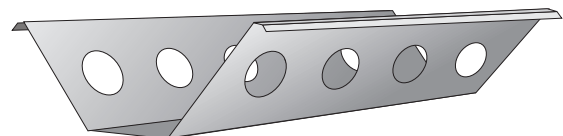
**Deco Grille**



**Protective Grille**



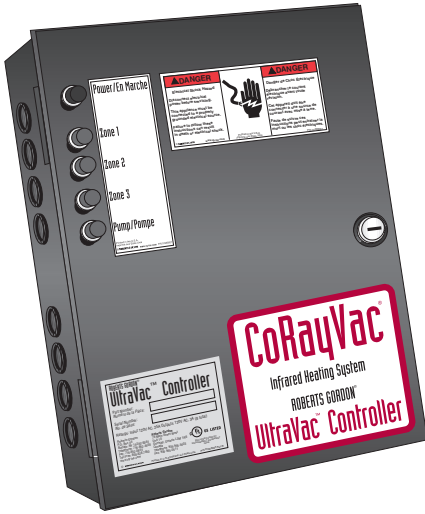
**Universal Shield**



**Universal Shield with Holes**



Major Component Descriptions (Continued)



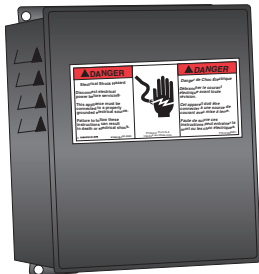
**ROBERTS GORDON®  
ULTRAVAC™ Controller**



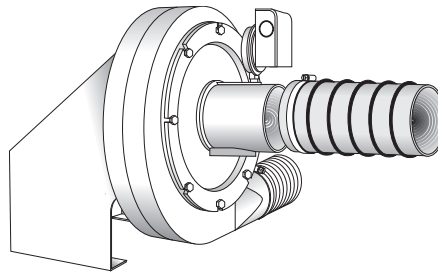
**ROBERTS GORDON®  
ULTRAVAC™  
Adjustable Indoor Sensor**



**ROBERTS GORDON®  
BZC Indoor Sensor**



**ROBERTS GORDON®  
ULTRAVAC™  
Variable Frequency Drive**



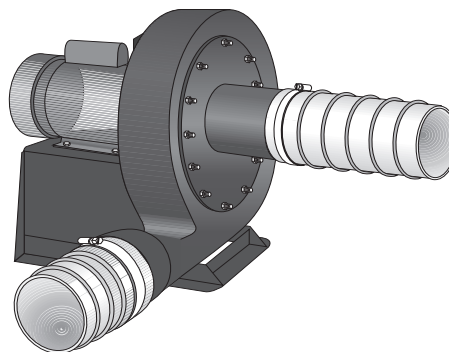
**EP-100 Pump Package - 4" dia.**  
For more information, refer to the EP-100 Installation, Operation and Service Manual (P/N 127201NA).

**EP-201 Pump Package - 4" dia.**  
For more information, refer to the EP-201/203 Installation, Operation and Service Manual (P/N 127200NA).

**EP-203 Pump Package - 4" dia.**  
For more information, refer to the EP-201/203 Installation, Operation and Service Manual (P/N 127200NA).



**System Control**



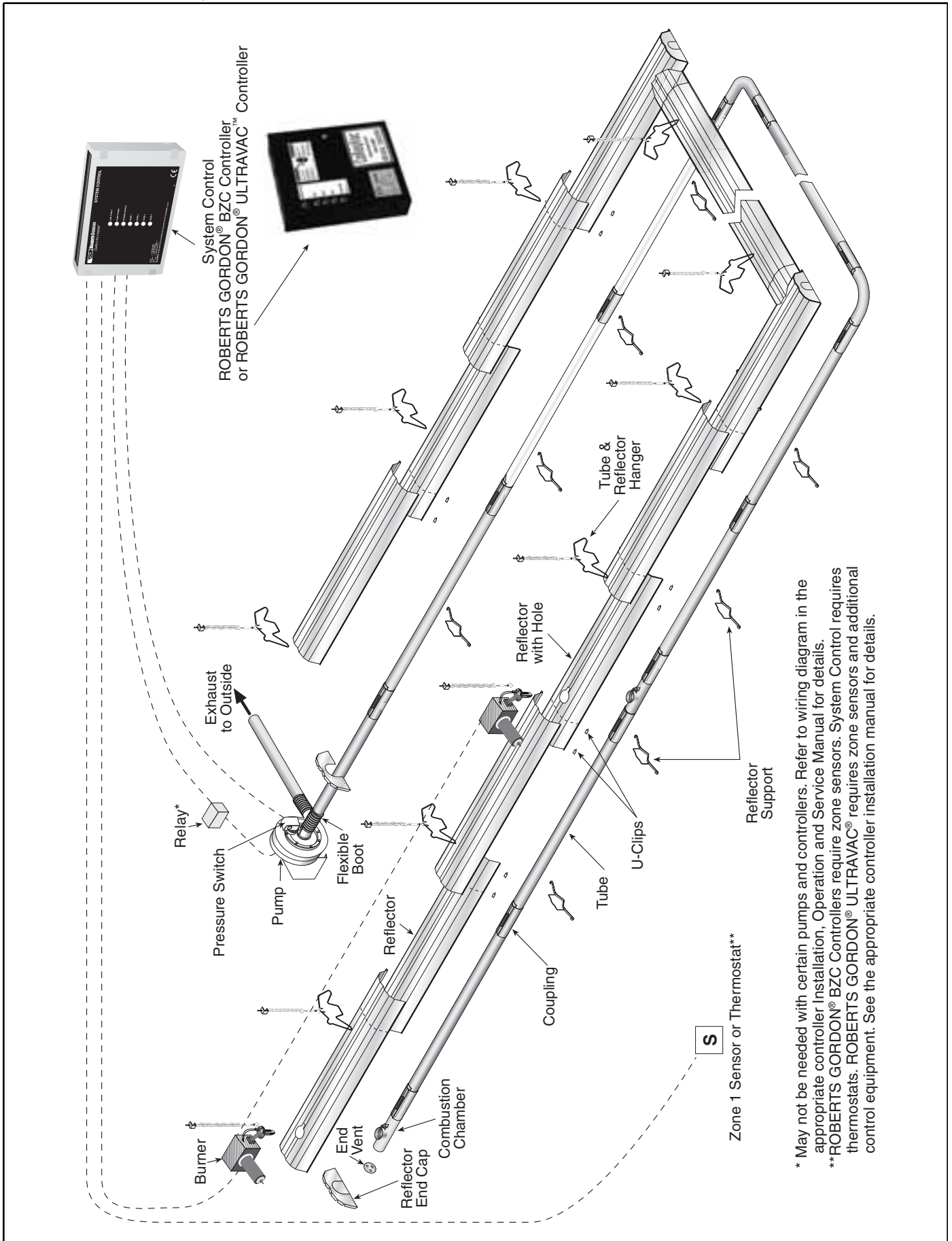
**EP-301 Pump Package - 4" dia.**  
**EP-301 Pump Package - 6" dia.**  
For more information, refer to the EP-301 Installation, Operation and Service Manual (P/N 127202NA).



**ROBERTS GORDON®  
BZC 700 Controller**



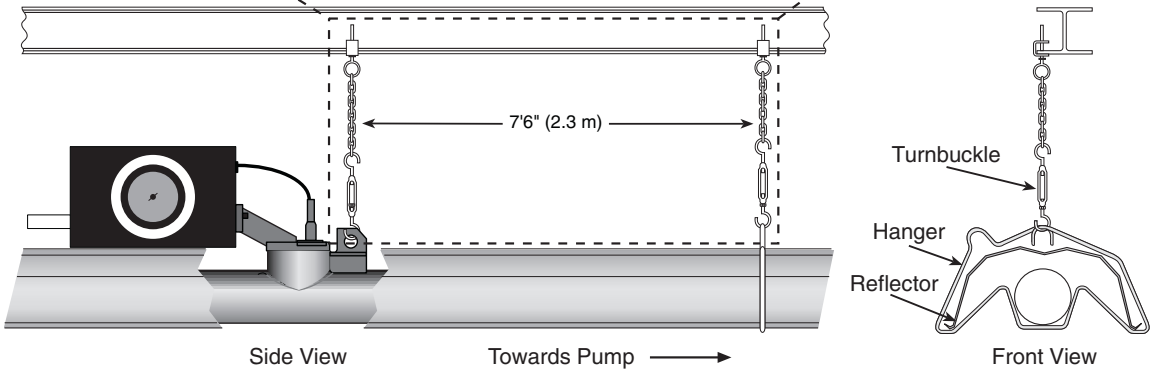
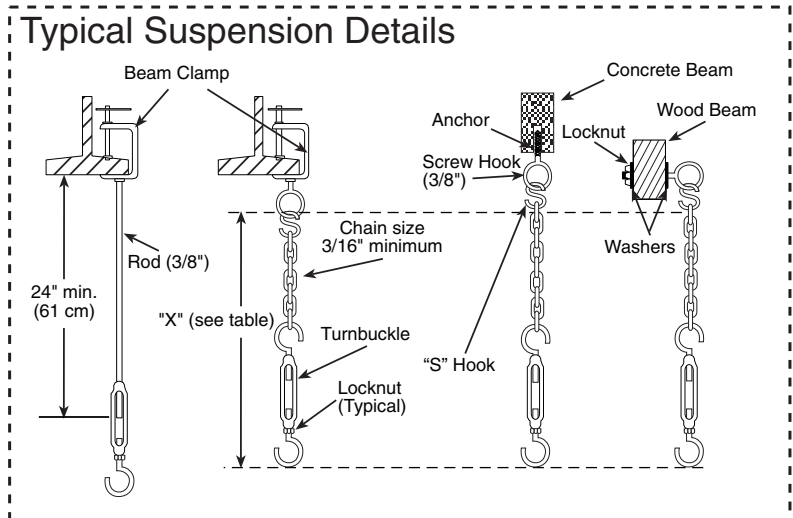
# CRV-Series Assembly Overview



\* May not be needed with certain pumps and controllers. Refer to wiring diagram in the appropriate controller Installation, Operation and Service Manual for details.  
 \*\* ROBERTS GORDON® BZC Controllers require zone sensors. System Control requires thermostats. ROBERTS GORDON® ULTRAVAC® requires zone sensors and additional control equipment. See the appropriate controller installation manual for details.

# HEATER INSTALLATION

## Critical Hanger Placement



Description	Part Number
Turnbuckle	91903201
S-Hook	91907302
Tube/Reflector Hanger	03090100

Run Length	Typical Expansion	Minimum "X" Length
50' (15 m)	±1" (3 cm)	12" (30 cm)
100' (31 m)	±2" (5 cm)	24" (61 cm)
150' (46 m)	±3" (8 cm)	36" (91 cm)
200' (61 m)	±4" (10 cm)	46" (122 cm)
250' (76 m)	±5" (13 cm)	57" (145 cm)

### Tube Installation

**NOTE:** Tubing requires a downward slope of 1/2" (13 mm) per 20' (6 m) away from burner. Tailpipe Tubing requires a downward slope of 1" (26 mm) per 20' (6 m) away from burner.

Description	Part Number
Tube	91409XXX
Turnbuckle	91903201
Tube/Reflector Hanger	03090100

### Coupling and Tube Assembly

**A** Close coupling with tab

**B** Start slide bar/coupling lock onto coupling

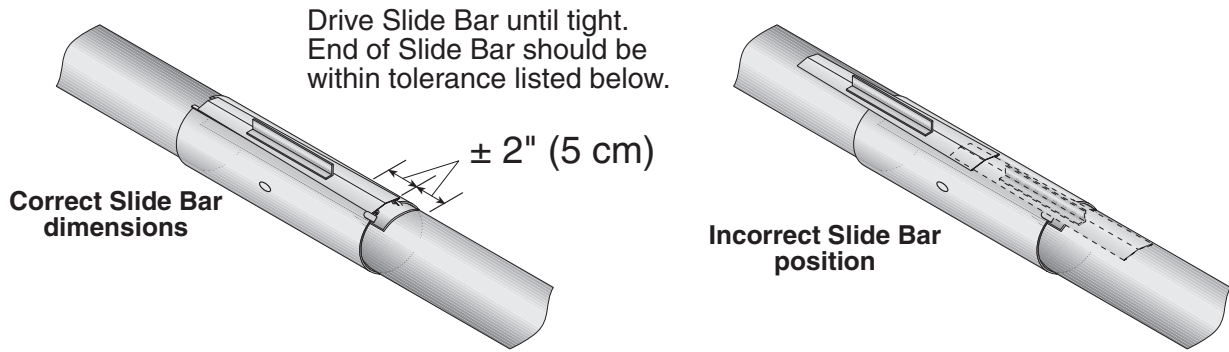
**C** Insert tubes into coupling

**D** Tighten coupling to join tubes

Description	Part Number
Coupling	01329600
Slide Bar/Coupling Lock	01329700
Tube	91409XXX

### Coupling and Tube Assembly (Continued)

**Tighten Slide Bar as shown below.**

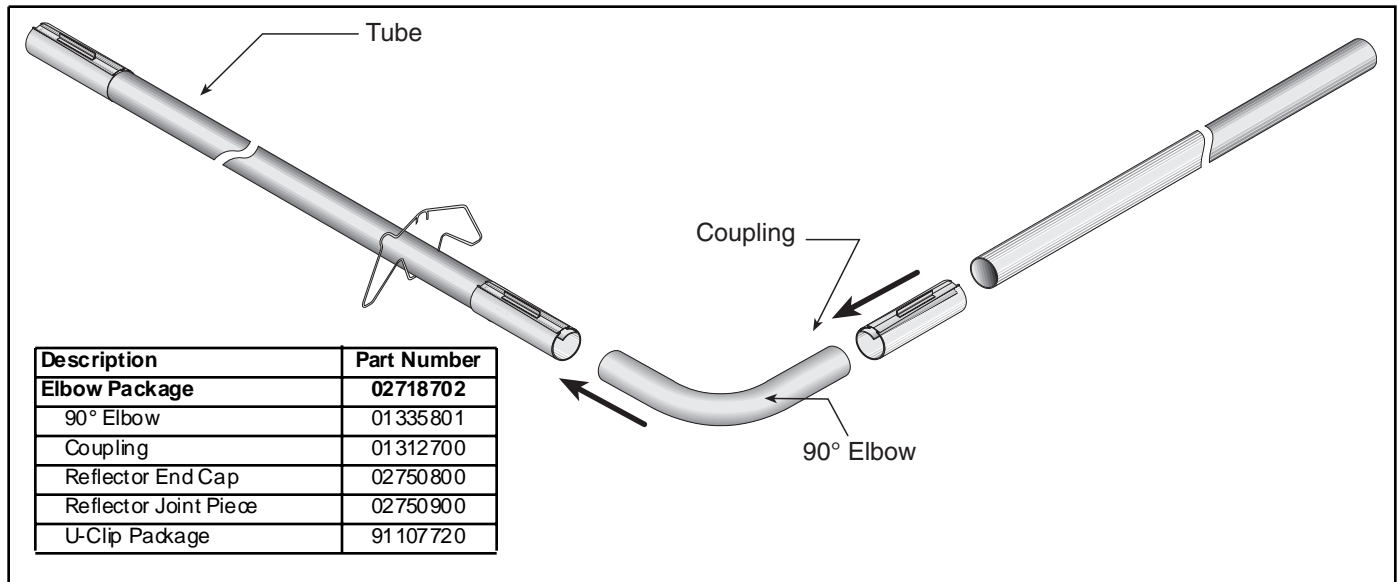


**Repeat A - D until all tubes are assembled.**

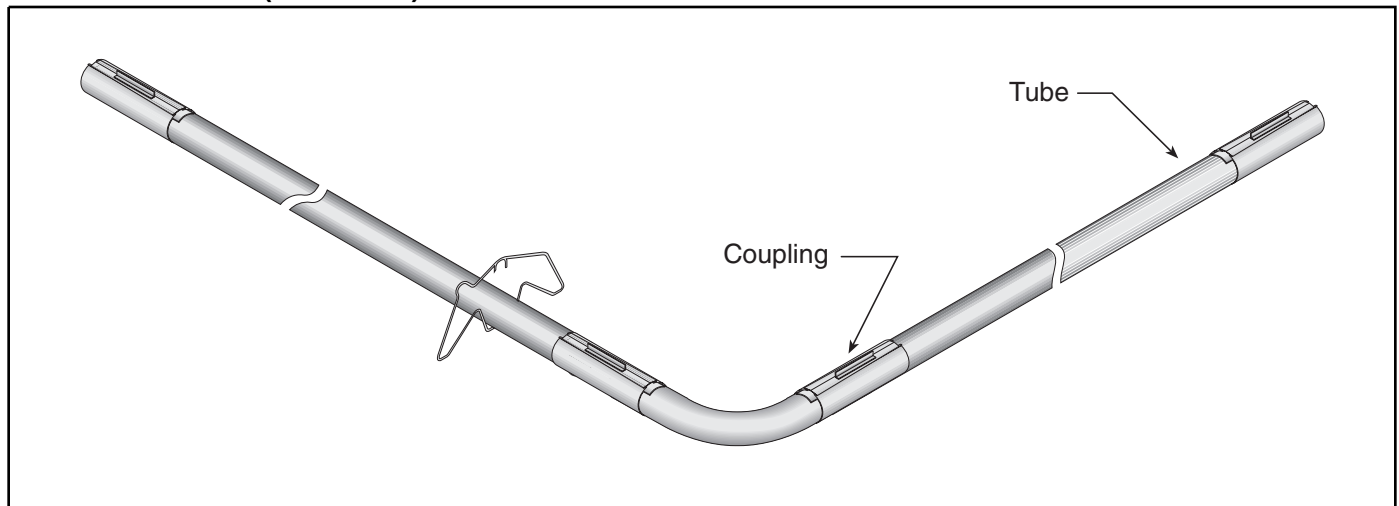
**NOTE: If Coupling is not tight, loss of vacuum can occur.**

### ELBOW PACKAGE CONFIGURATION

#### Elbow Installation



#### Elbow Installation (continued)



## REFLECTOR INSTALLATION

### Reflector Installation with Hole

Slide Reflector with hole through hanger. Unhook combustion chamber from chain and insert through hole. Reconnect chain.

Reflector with Hole

Hanger

Tube

Combustion Chamber

Description	Part Number
Tube/Reflector Hanger	03090100
Tube	91409XXX
Reflector with Hole	02750304

### Reflector Installation

Wire Form

Reflector

Sheet Metal Screw

Reflector Support Strap

Tube

U-Clip (2 clips per alternate overlaps per side)

Description	Part Number
Reflector Support Package	03050010
U-Clip Package	91107720
Reflector End Cap	027508XX



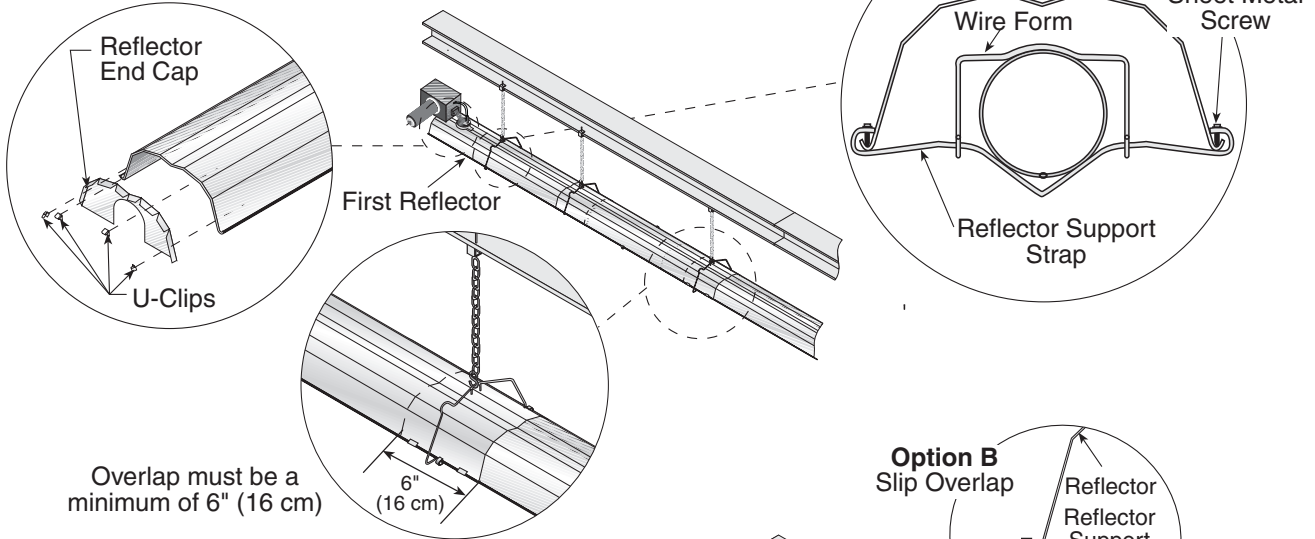
## Reflector, U-Clip and Reflector Support Installation

The pictorial drawings of the heater construction in this Section are schematic only and provide a general guideline of where hangers, reflector supports and U-clips are to be installed.

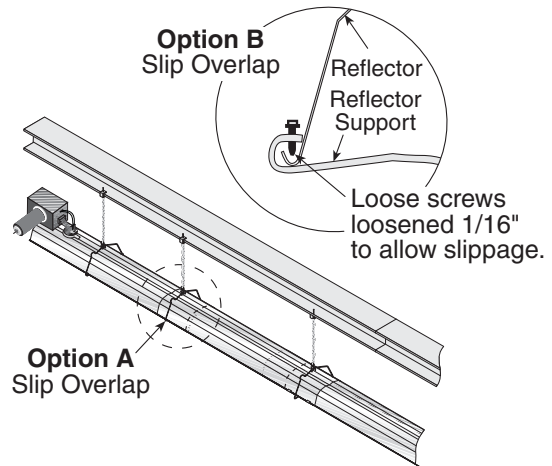
To ensure proper expansion and contraction movement of the reflectors, a combination of U-clips and reflector supports are used. The positioning of reflector

supports and U-clips depend on the individual installation. Use either pop rivets or sheet metal screws instead of u-clips when installing end caps and joint pieces in areas where impact and high wind may be a factor. The following rules must be observed.

1. The first reflector after the burner must be affixed in the middle of the reflector with a reflector support and tight screws.

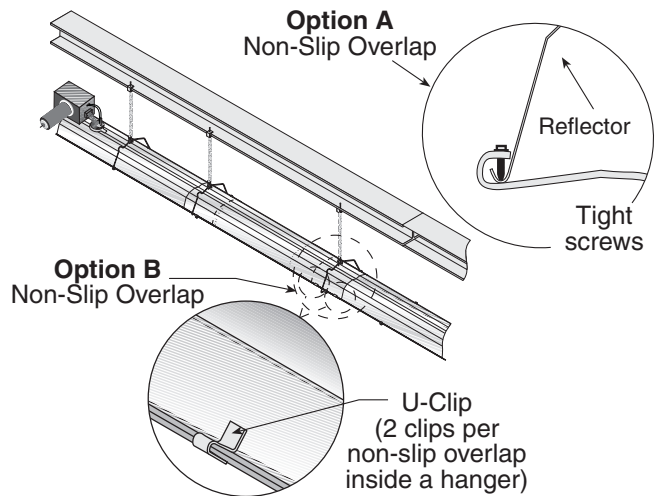


2. The overlap at the first and second reflector is a slip overlap. Thereafter, every third reflector joint is a slip overlap. A slip overlap is achieved by either:
  - a.) both reflectors lay inside a hanger. (no reflector support needed).
  - b.) using a reflector support with loose screws at the reflector overlap.



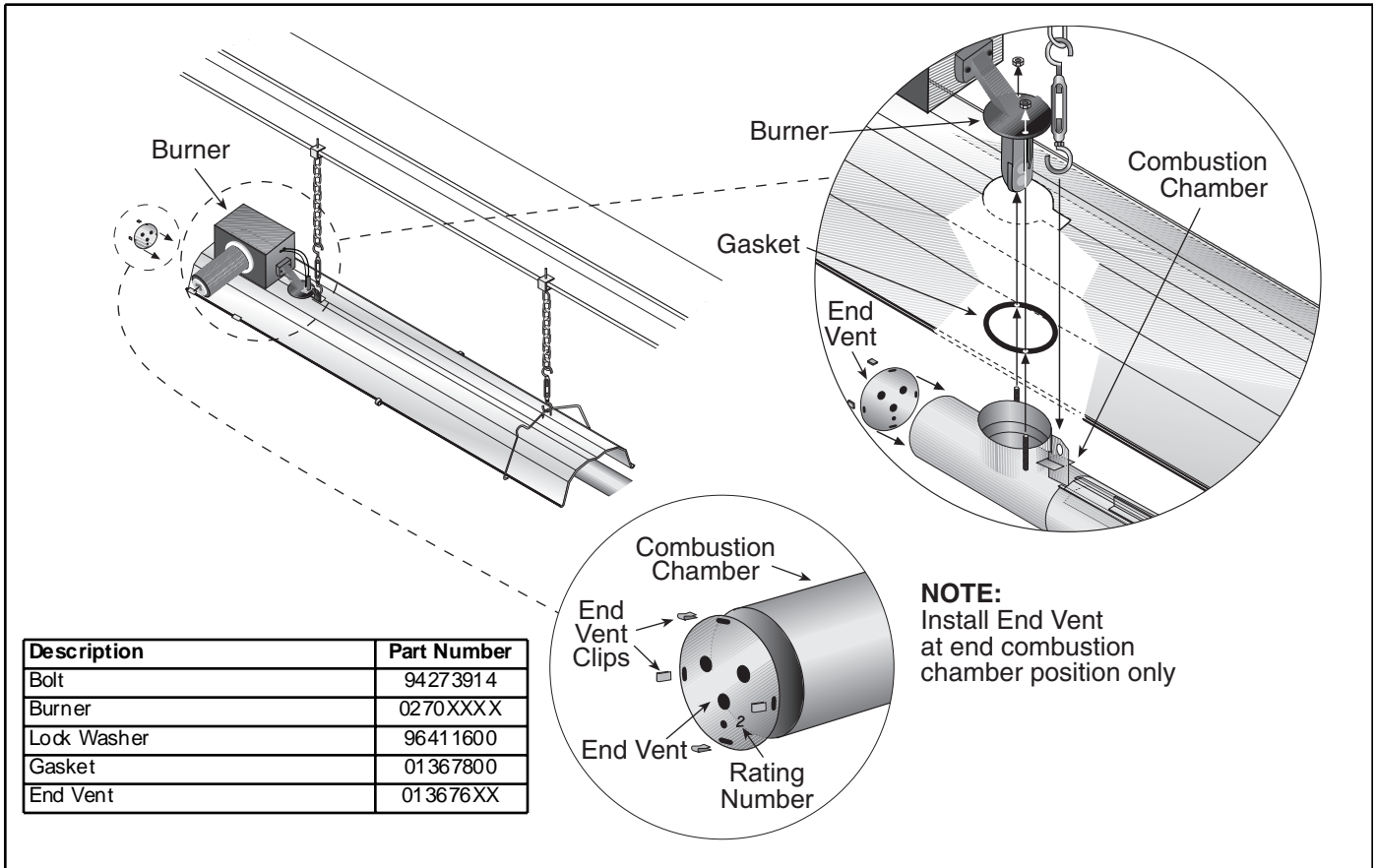
3. The remaining reflector overlaps require a non-slip overlap connection. To affix the reflectors together in a non-slip overlap either:
  - a.) use reflector support and tight screws.
  - b.) if both reflectors lay inside a hanger, u-clips or sheet metal screws may be used.

This section of three reflectors joined together must be affixed to the tube with at least one reflector support with tight screws.



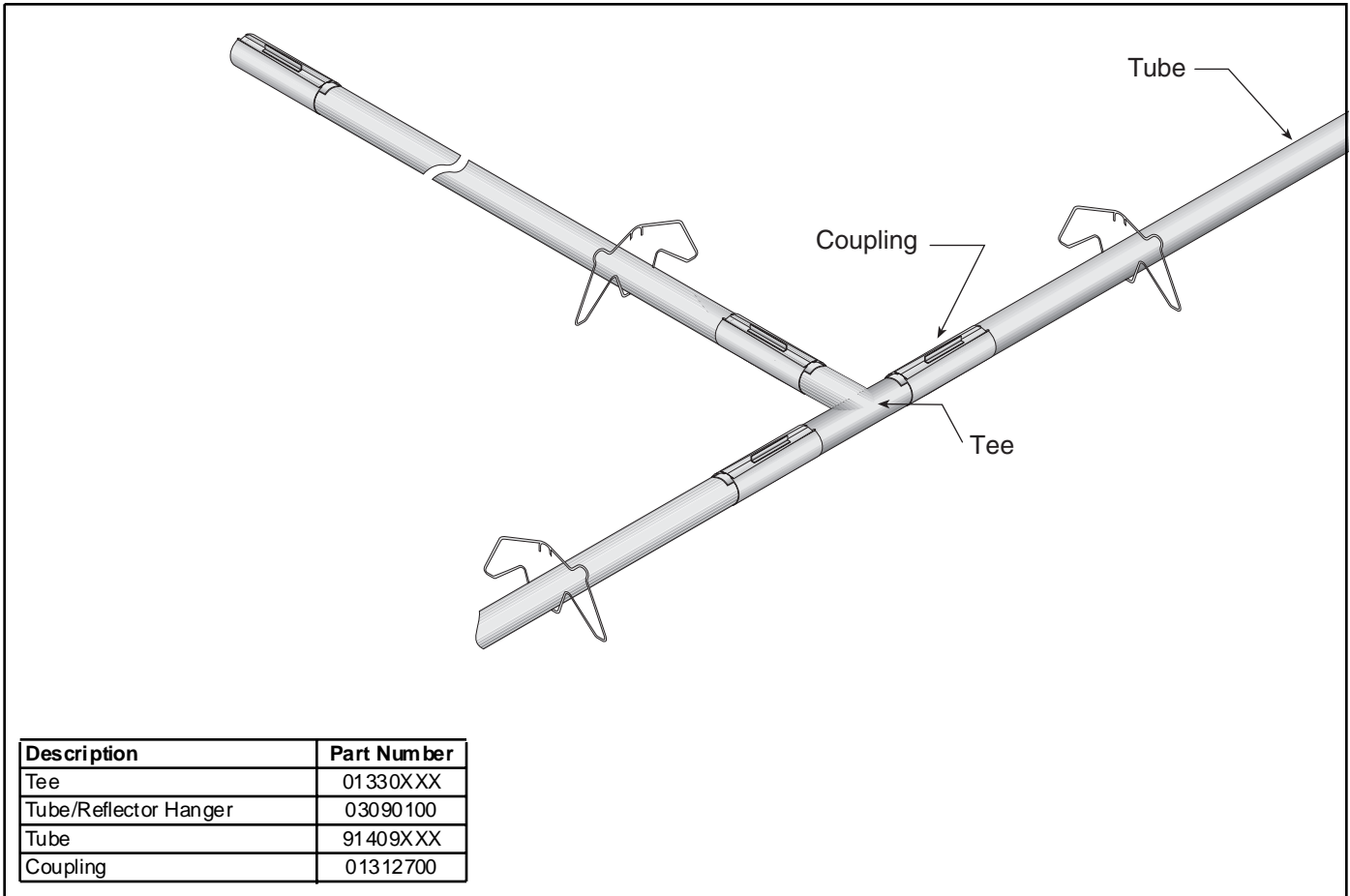
Description	Part Number
<b>Reflector Support Package</b>	<b>03050010</b>
Wire Form	91908004
Reflector Support Strap	03050000
Screw #8 x 3/4	94320812
U-Clip Package	91107720
Reflector End Cap	027508XX

### Burner Installation

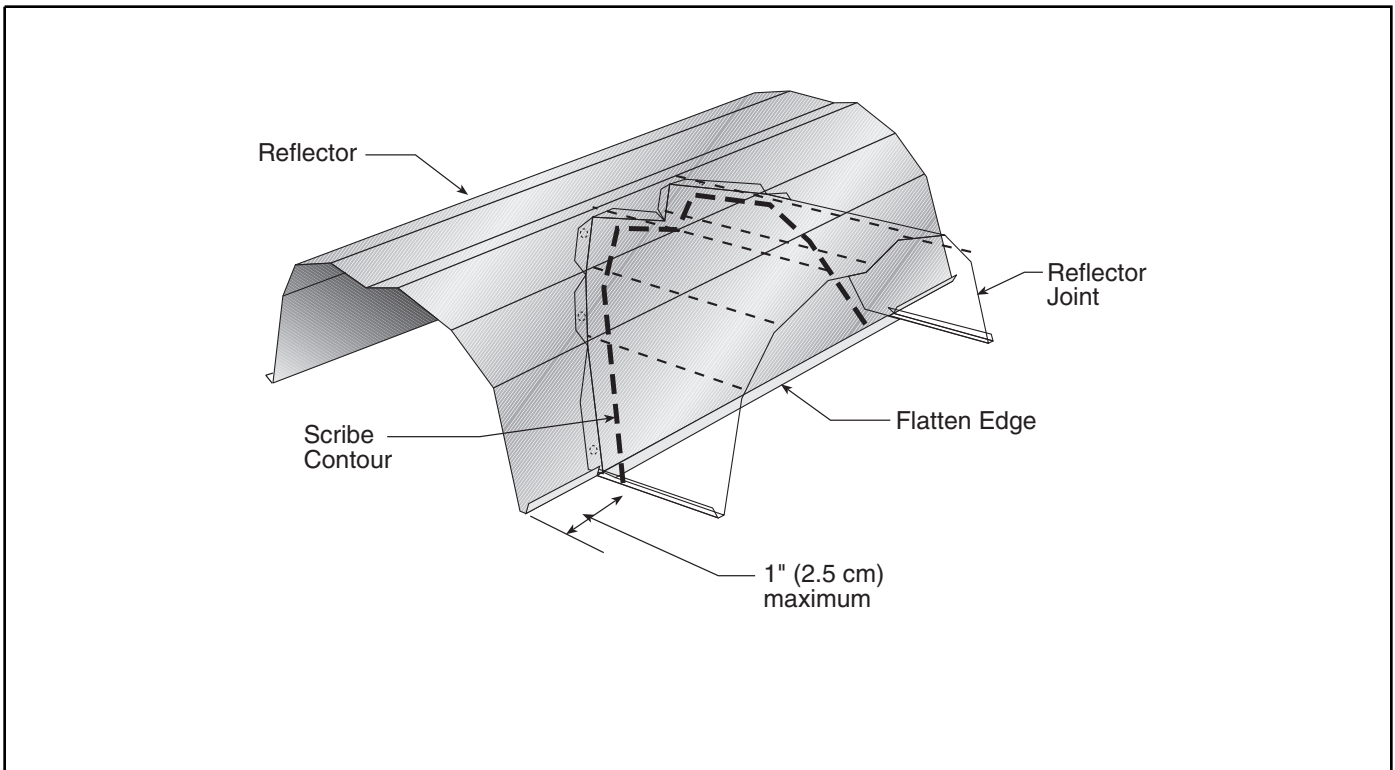


## OPTIONAL HEATER ACCESSORIES

### Tee Installation

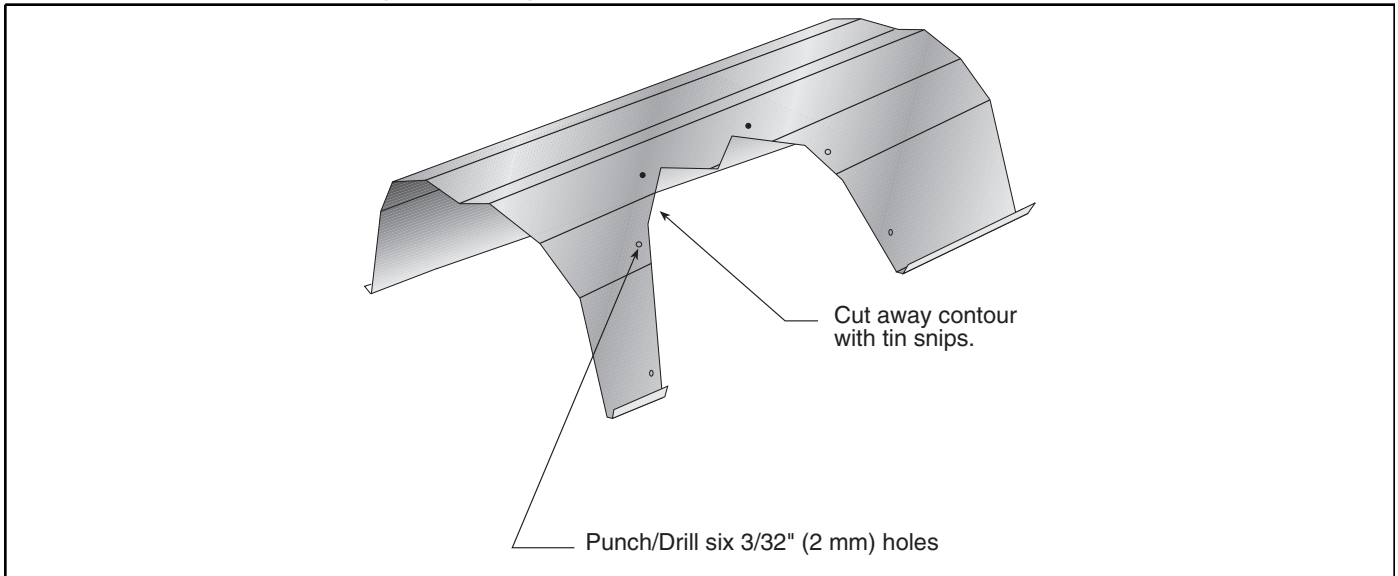


### Reflector Joint Installation

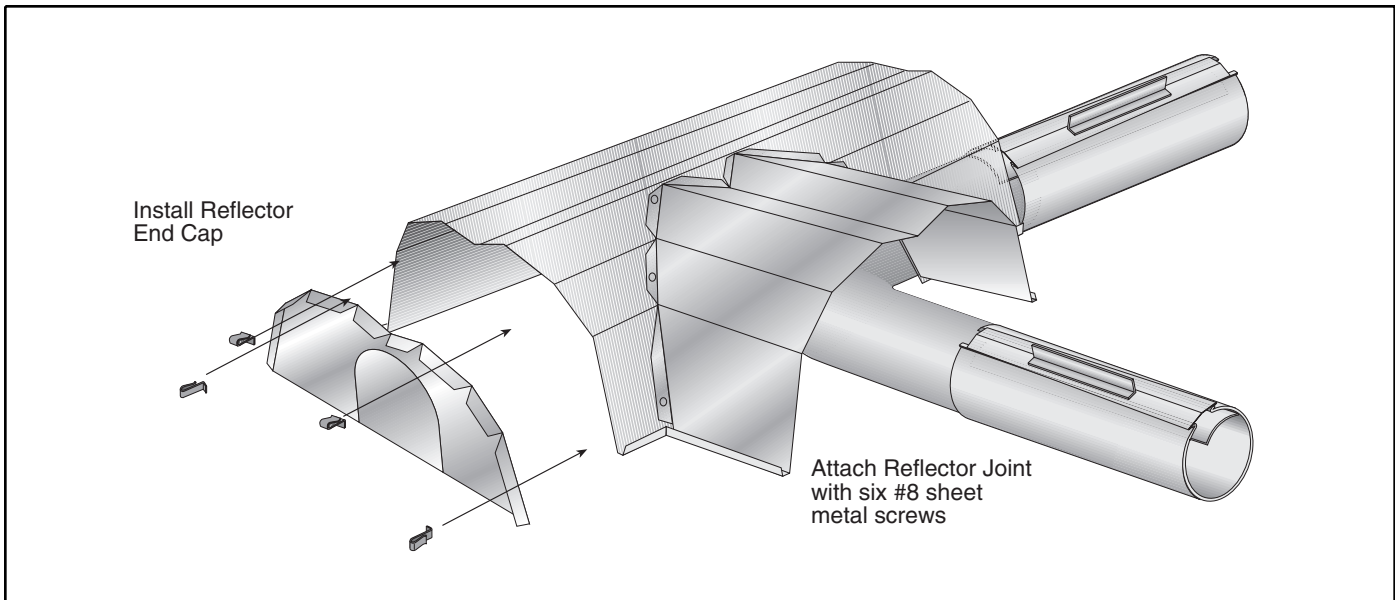




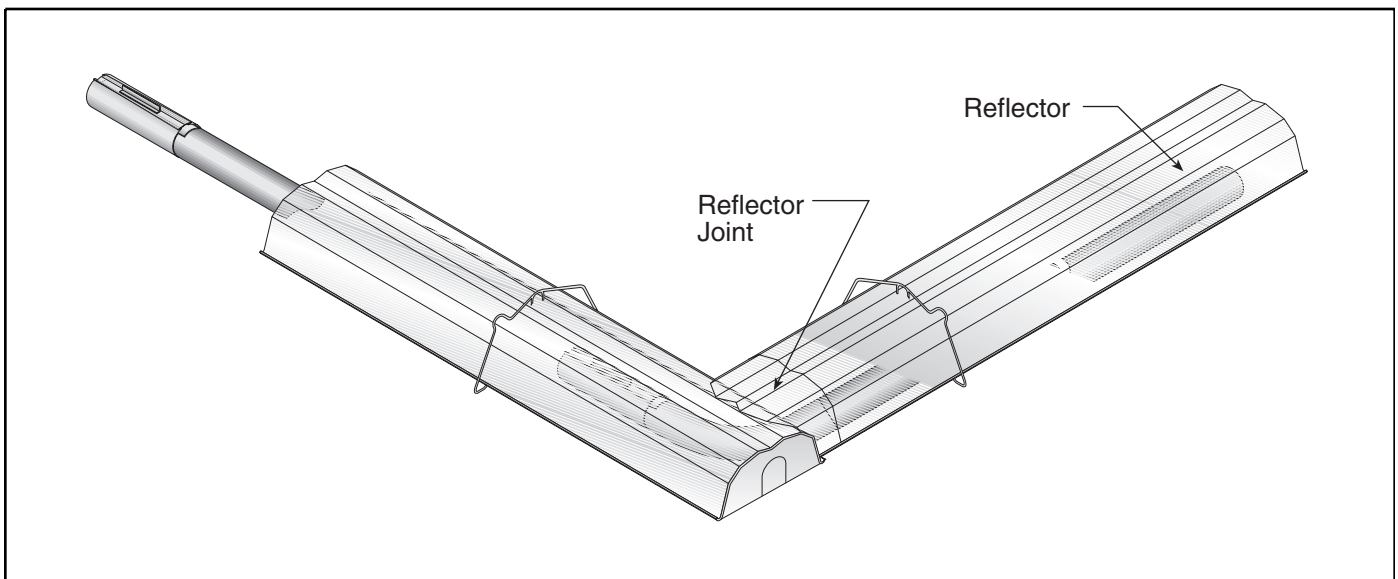
### Reflector Joint Installation (continued)



### Reflector Joint Detail

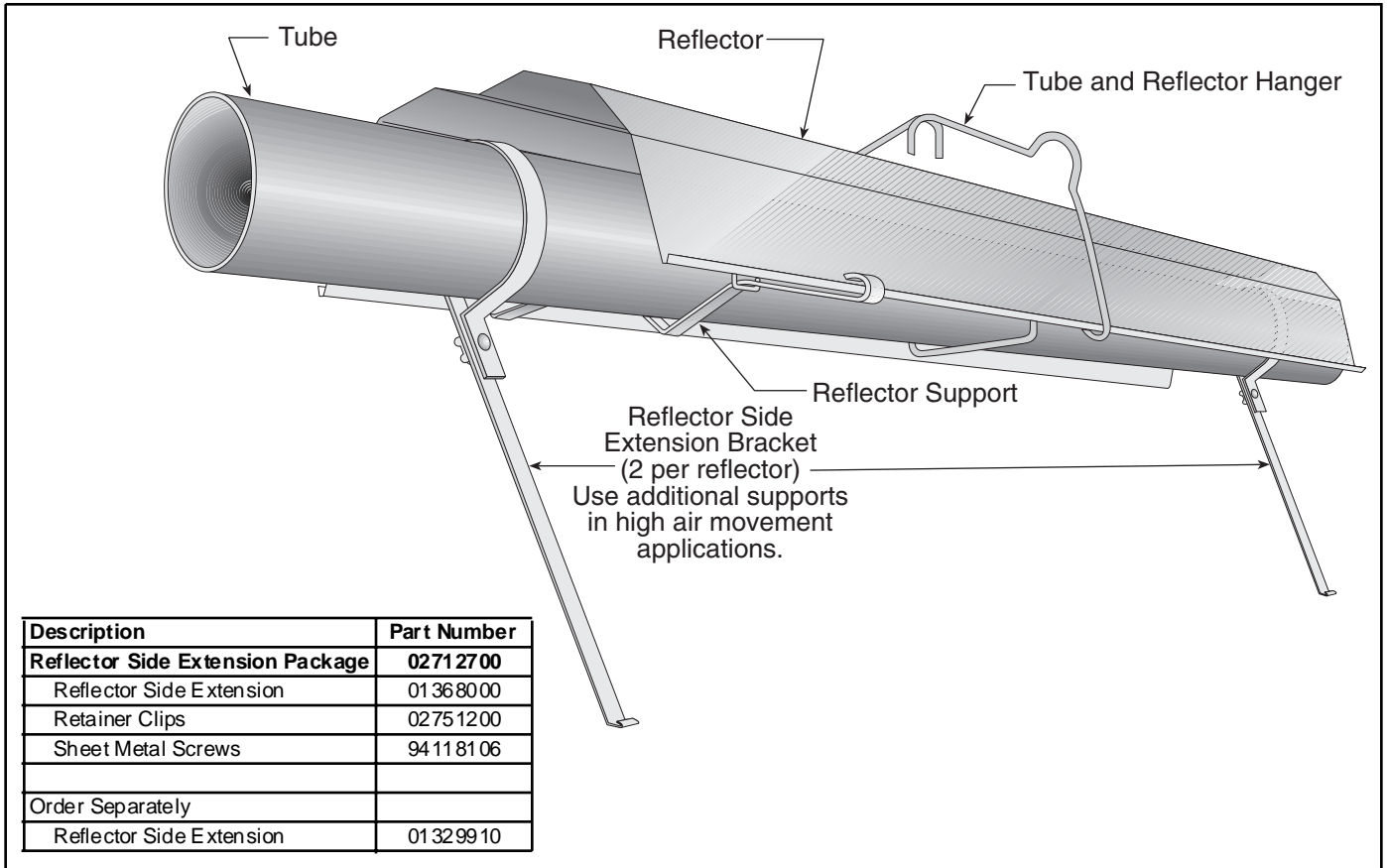


### Reflector Joint Detail

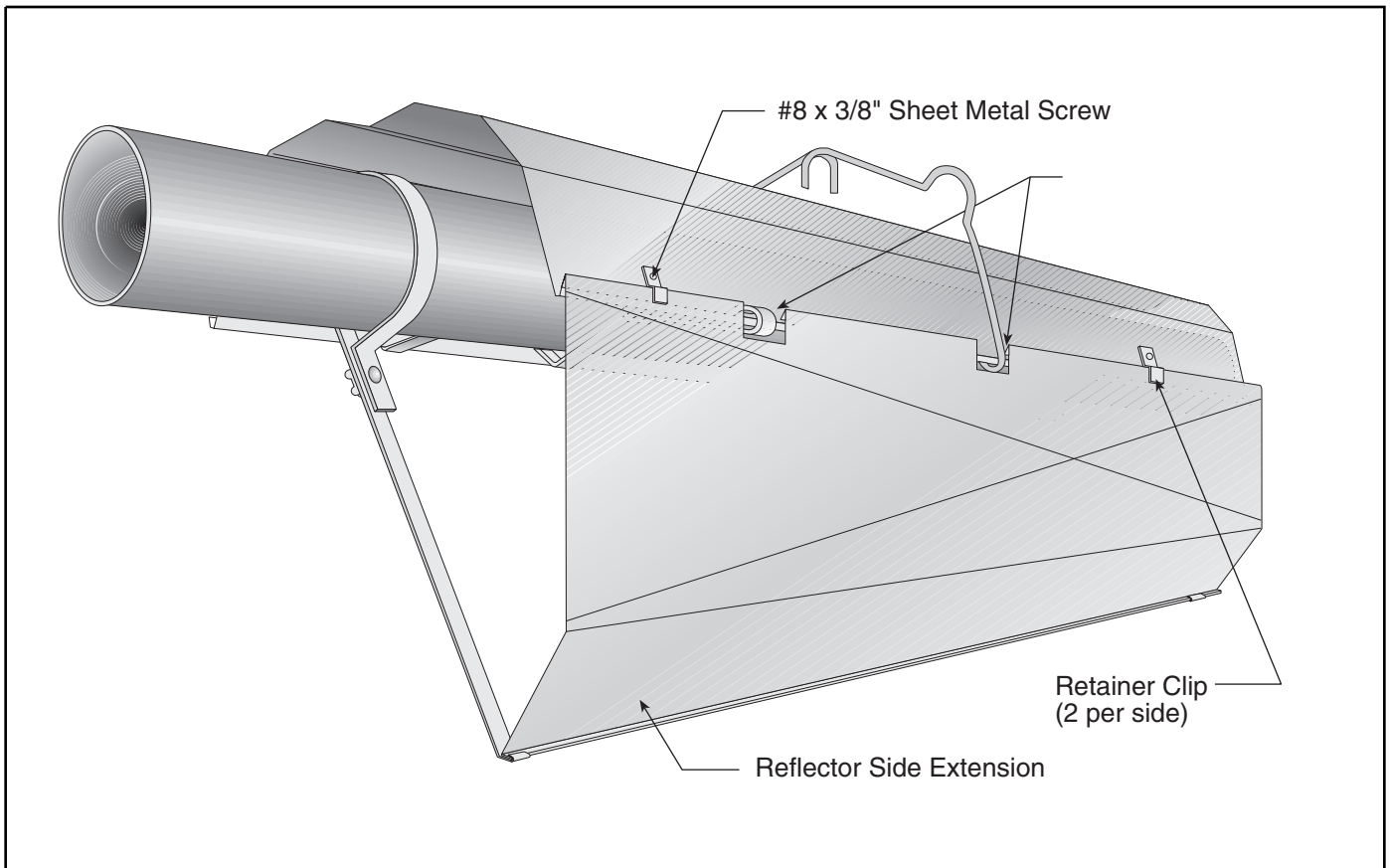


## REFLECTOR SIDE EXTENSION

### Bracket Installation

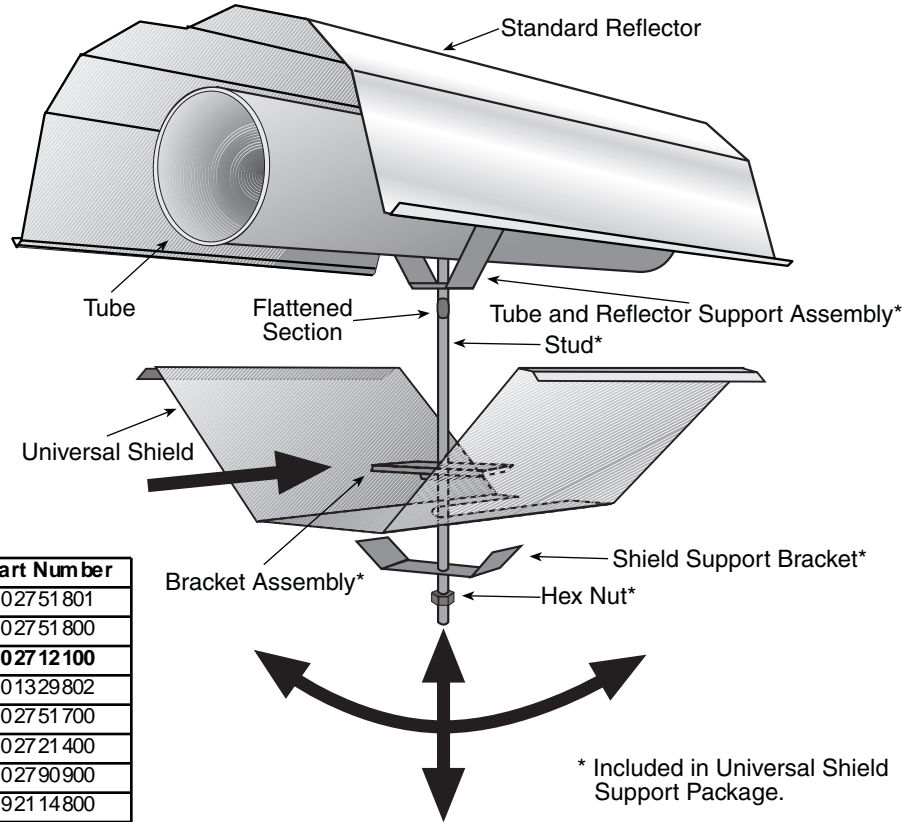


### Side Reflector Installation



### Universal Shield

Universal shields are adjustable aluminum reflectors that can be angled and height adjusted to direct heat to or away from a desired area.



Description	Part Number
Universal Shield	02751801
Universal Shield with Holes	02751800
<b>Universal Shield Support Package</b>	<b>02712100</b>
Tube and Reflector Support Assembly	01329802
Universal Shield Support	02751700
Shield Bracket Assembly	02721400
Stud	02790900
Hex Nut	92114800

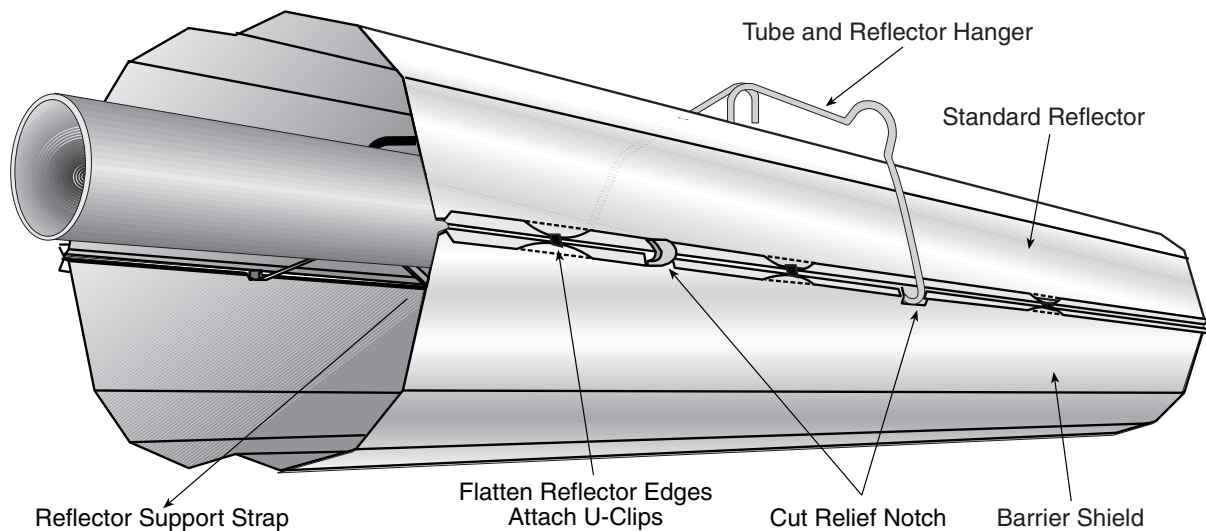
\* Included in Universal Shield Support Package.

### Barrier Shield

Do not install barrier shield less than 20' (6 m) downstream of any burner.

Do not attach end caps to the ends of the barrier shields. For lengths greater than 8' (2.6 m), use universal shields.

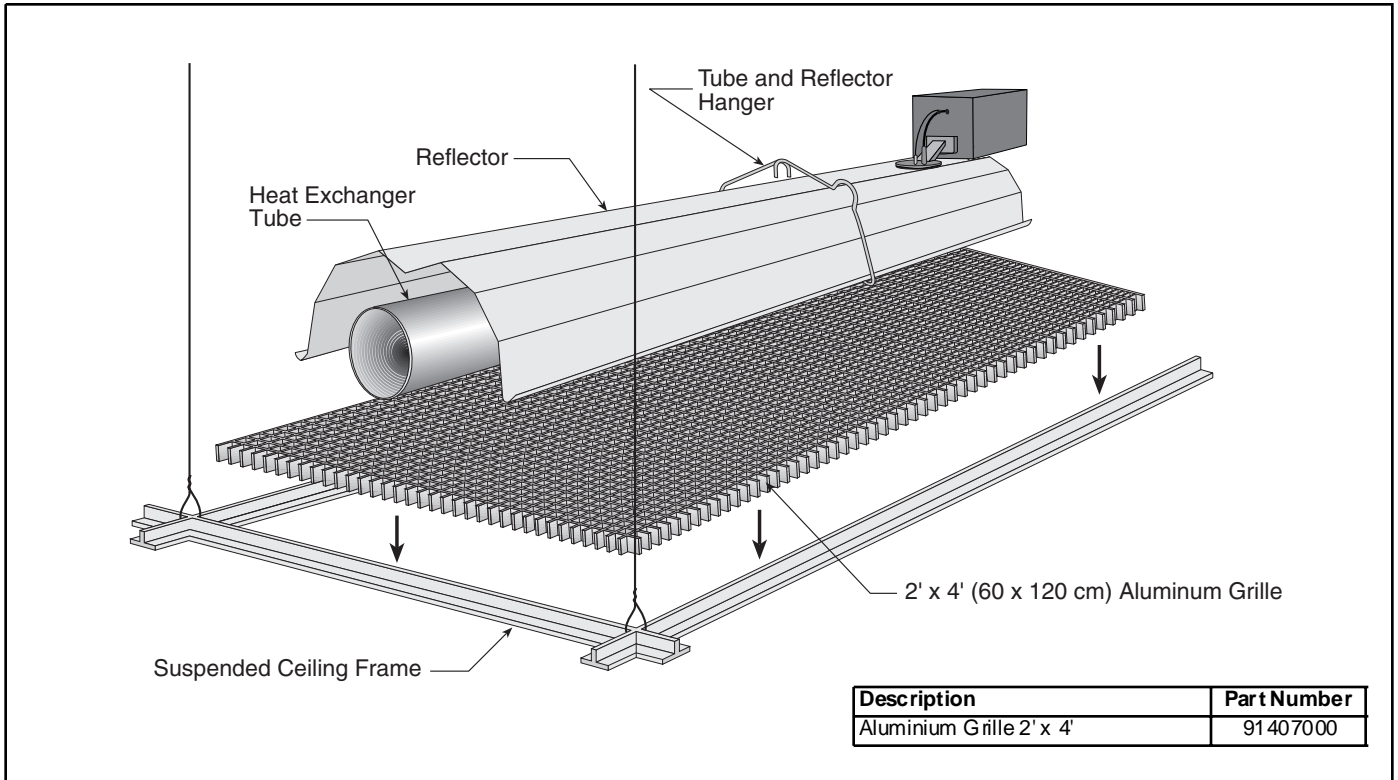
Do not use barrier shields for burner sizes larger than 80,000 btu/Hr.



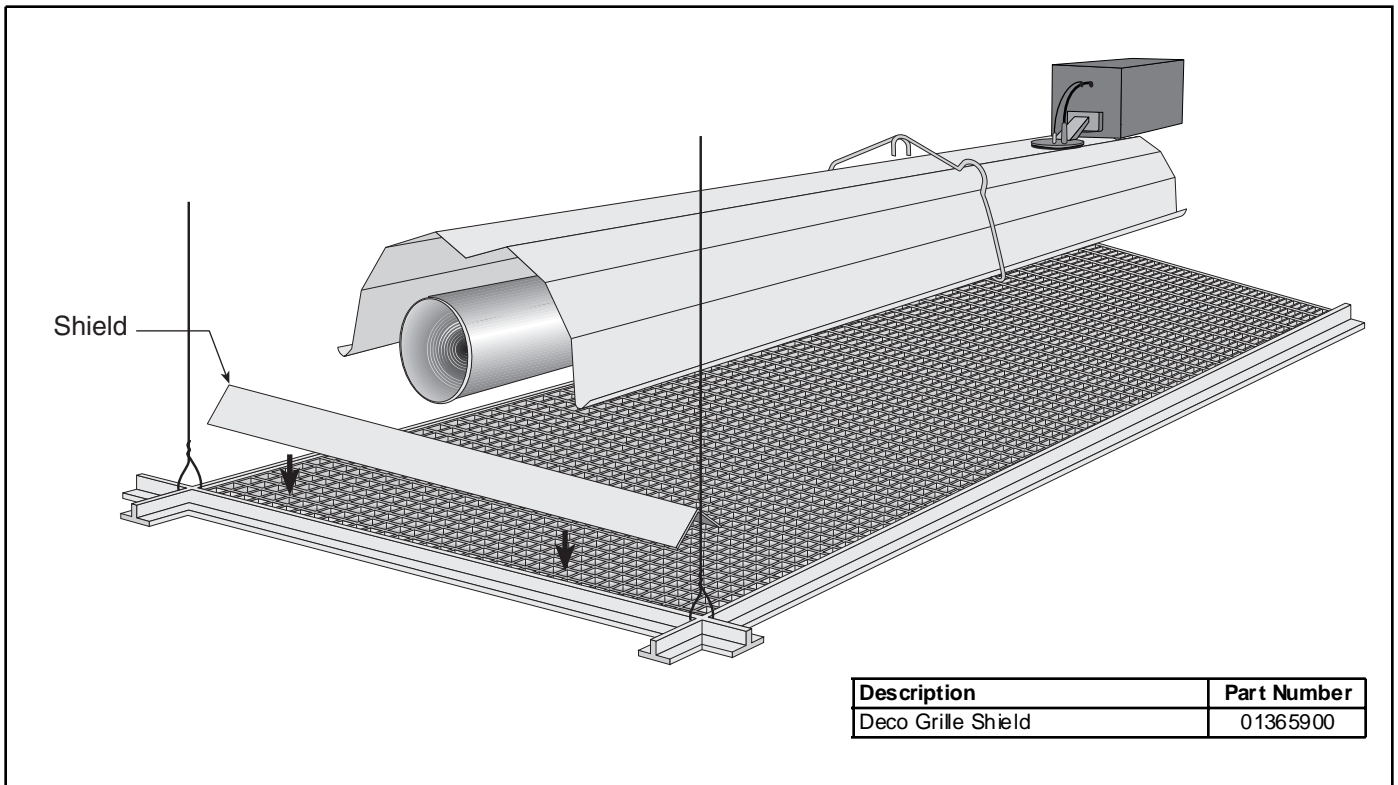
Description	Part Number
Barrier Shield	02750303
U-Clip Package	91107720

## TWO-FOOT DECORATIVE GRILLE INSTALLATION

### Grille Installation



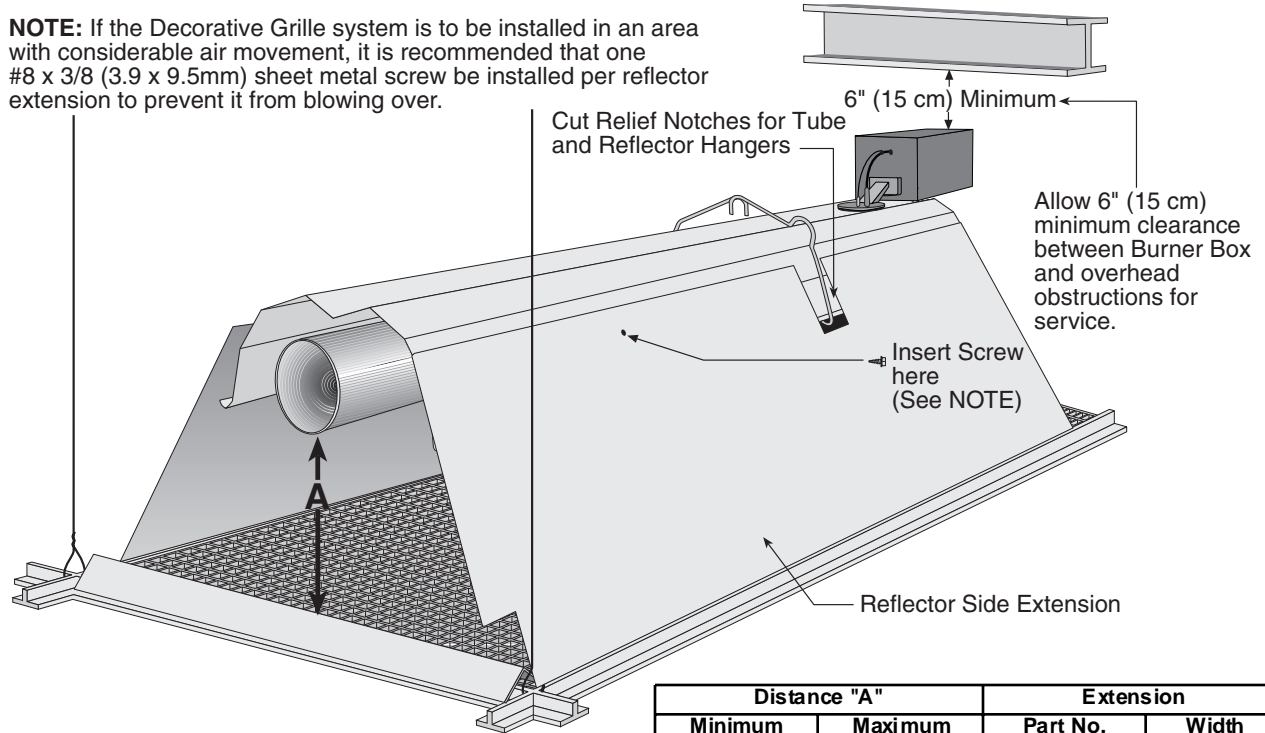
### Frame Shield Installation





## Reflector Side Extension Installation for Decorative Grilles

**NOTE:** If the Decorative Grille system is to be installed in an area with considerable air movement, it is recommended that one #8 x 3/8 (3.9 x 9.5mm) sheet metal screw be installed per reflector extension to prevent it from blowing over.

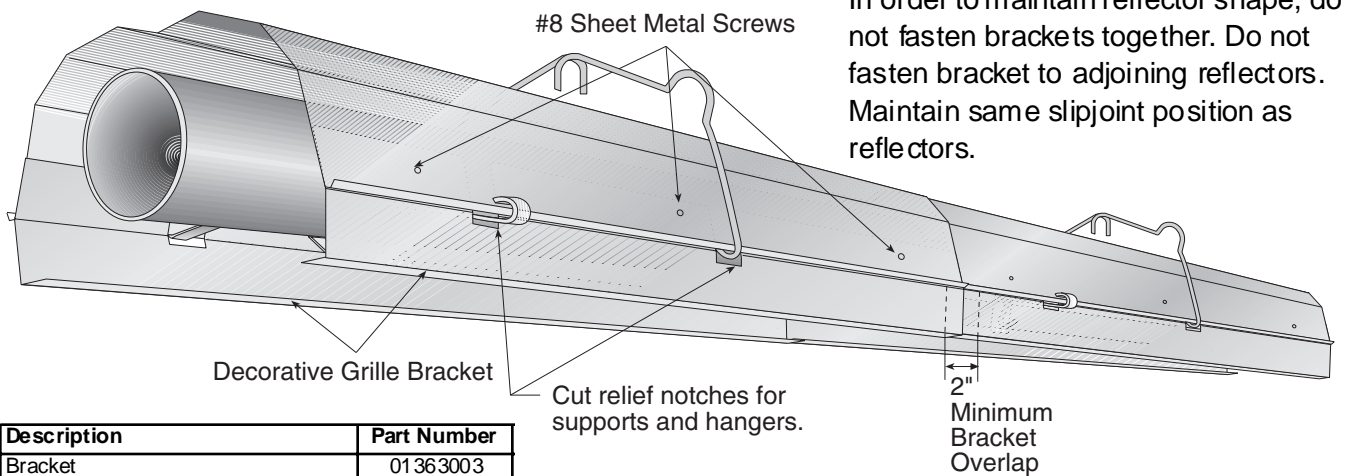


Description	Part Number
Reflector Side Extension	01370412

Distance "A"		Extension	
Minimum	Maximum	Part No.	Width
2" (4 cm)	6" (15 cm)	01370408	8" (20 cm)
6" (15 cm)	10" (26 cm)	01370412	12" (30 cm)
10" (26 cm)	14" (37 cm)	01370416	16" (40 cm)

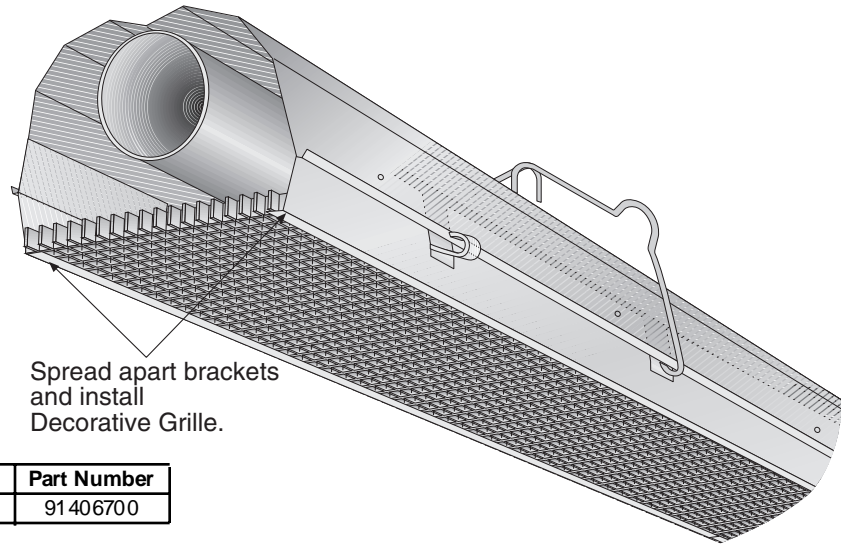
## ONE-FOOT DECORATIVE GRILLE INSTALLATION

### One-Foot Decorative Grille Bracket



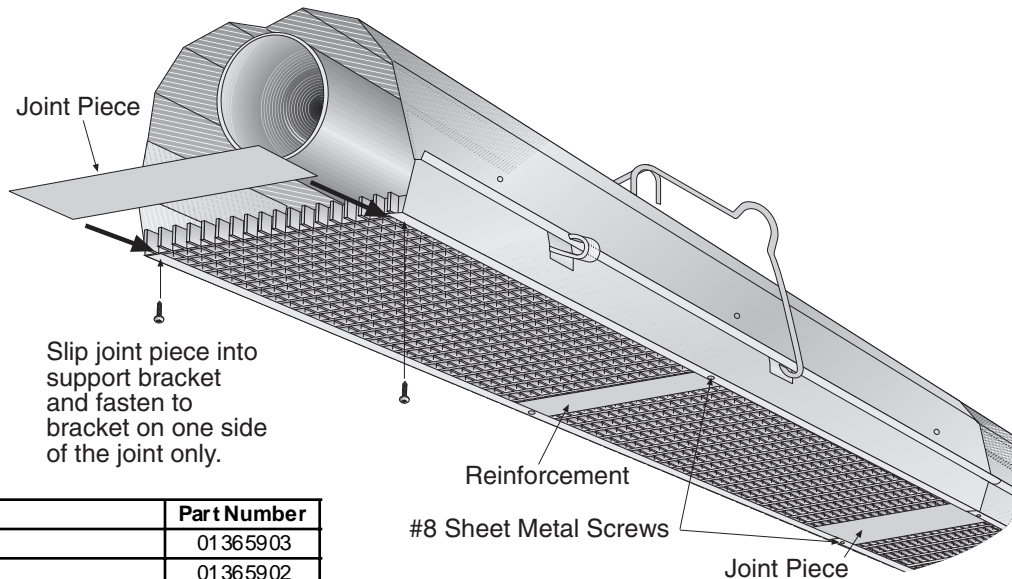
Description	Part Number
Bracket	01363003

### Decorative Grille



Description	Part Number
Decorative Grille 8' x 1'	91406700

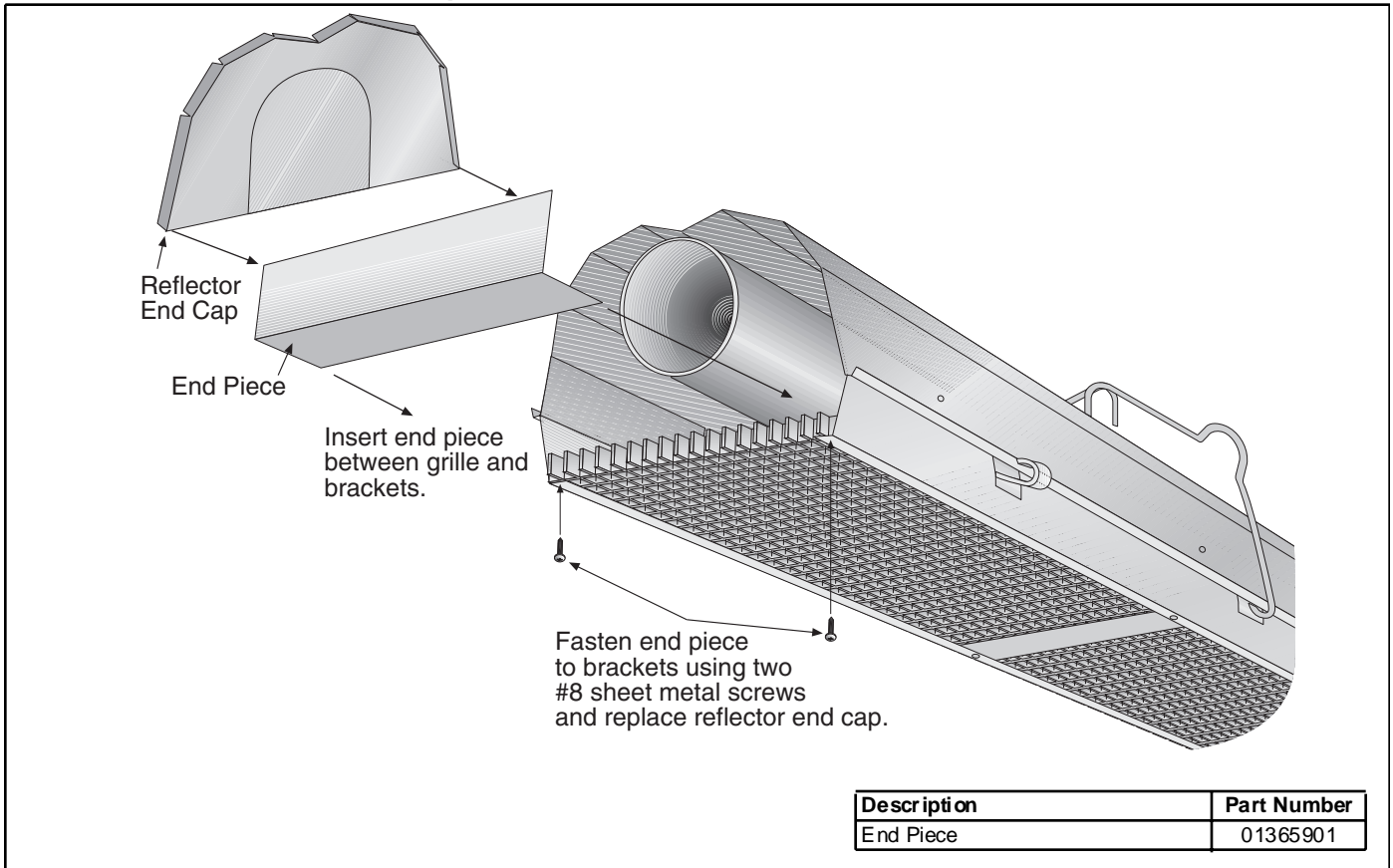
### Joint Piece and Reinforcement



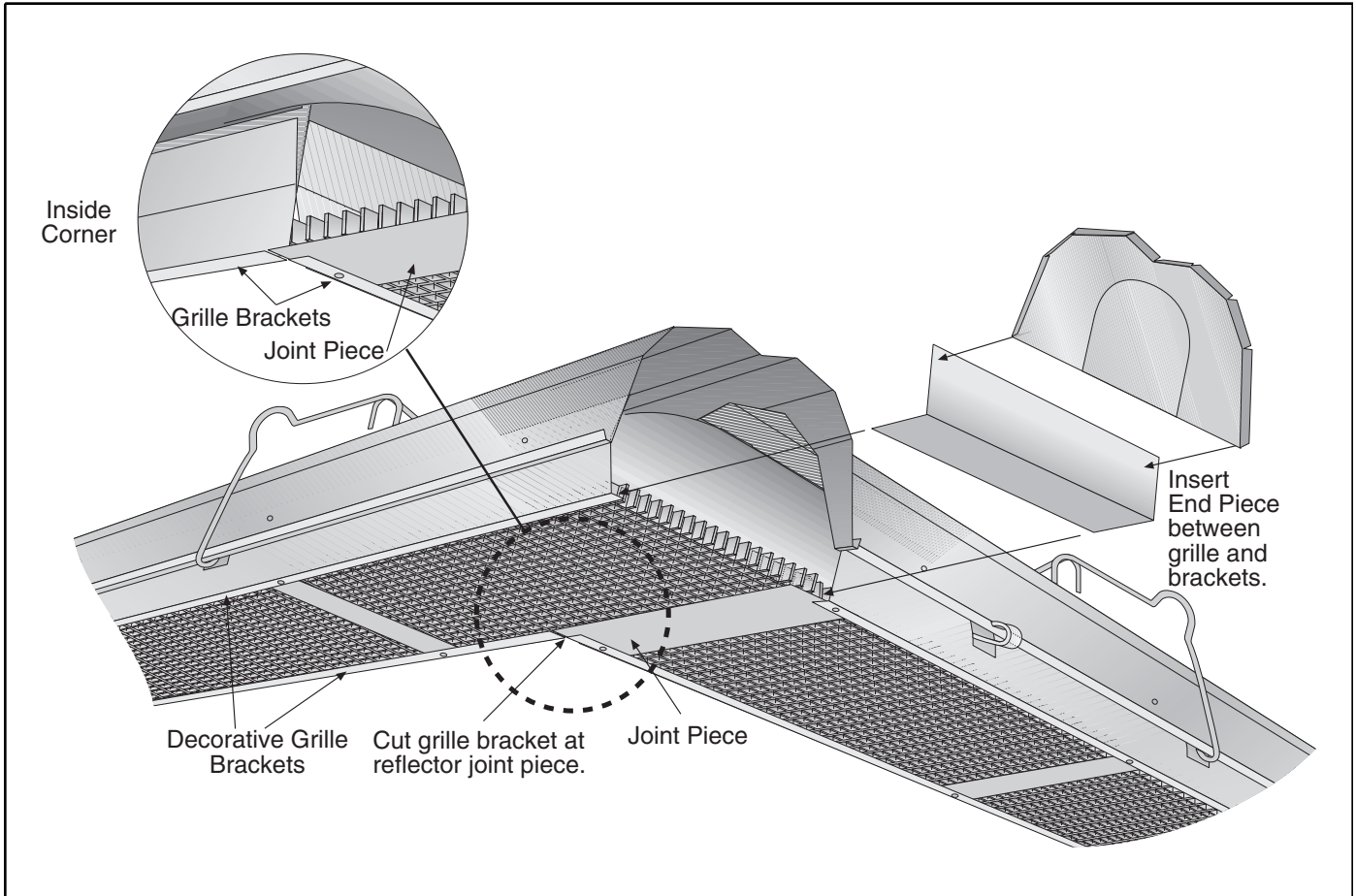
Slip joint piece into support bracket and fasten to bracket on one side of the joint only.

Description	Part Number
Joint Piece	01365903
Reinforcement	01365902

### End Piece and Reflector End Cap

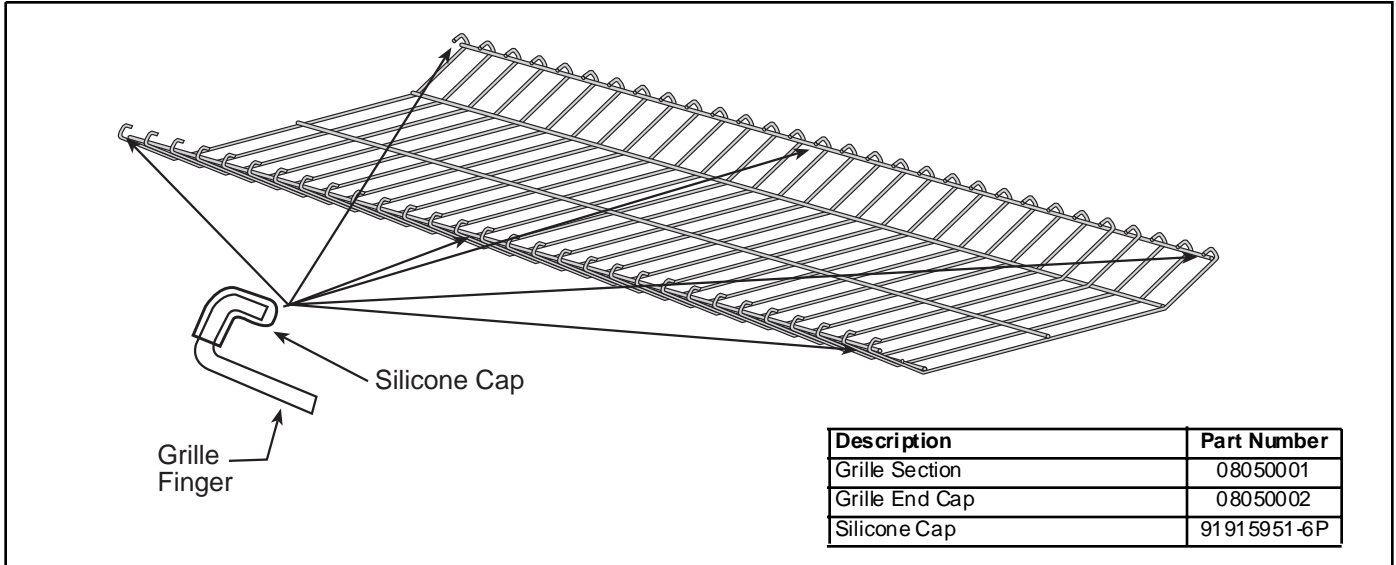


### 90° Elbow

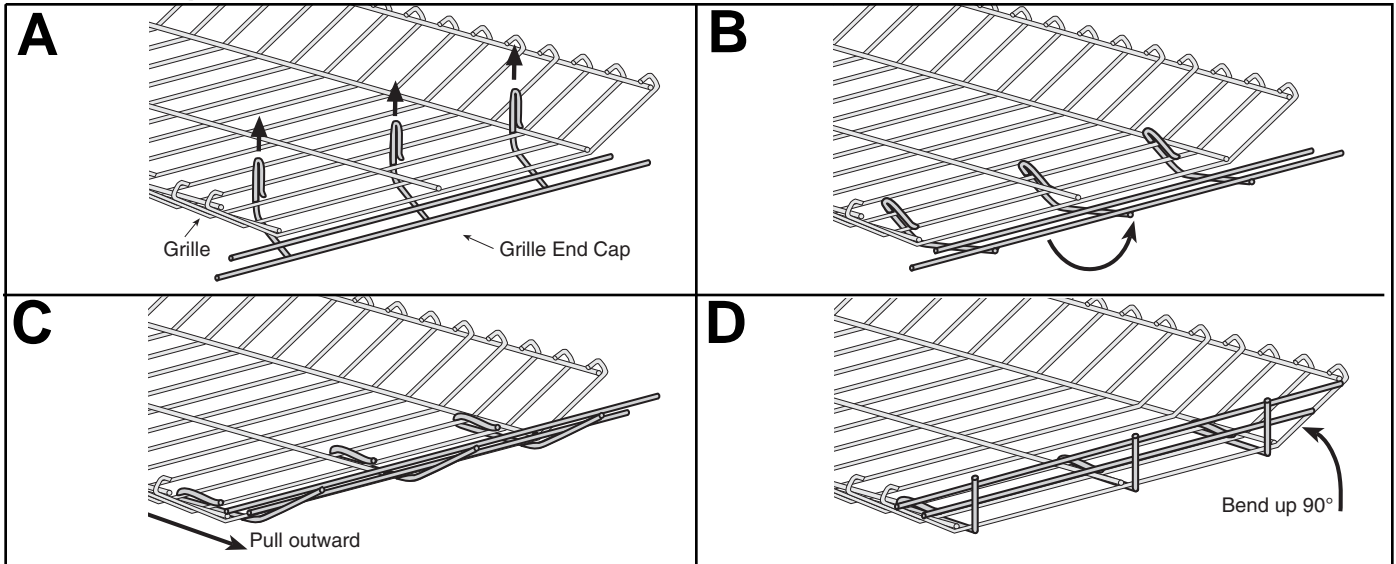


## PROTECTIVE GRILLE INSTALLATION

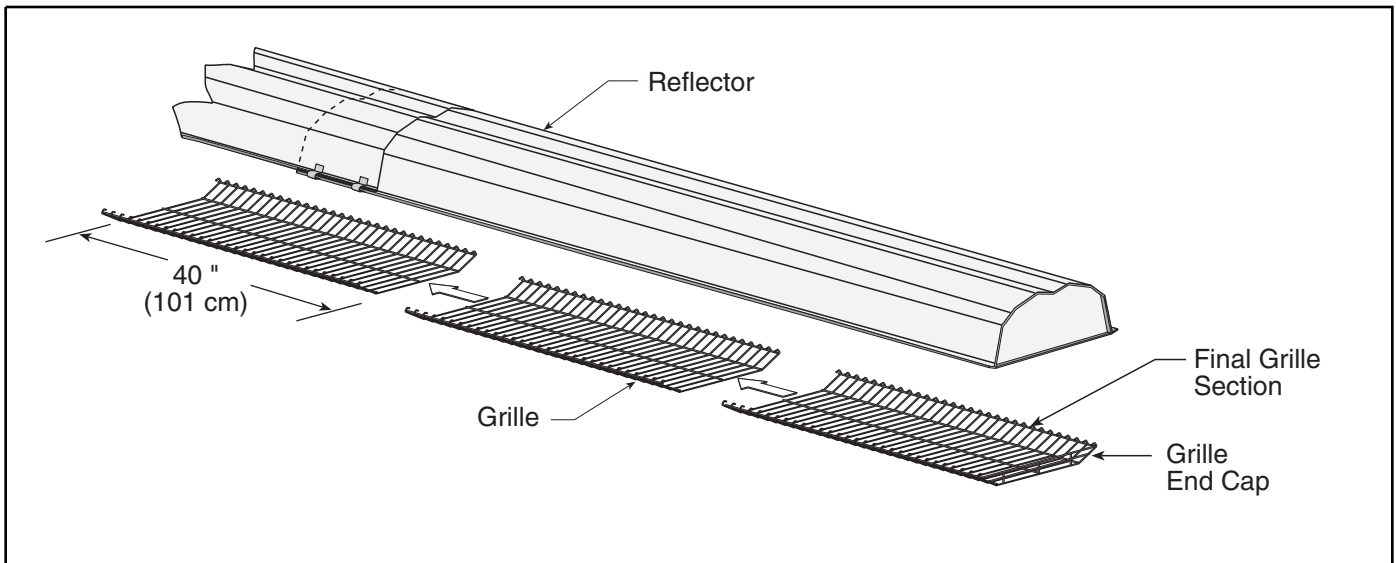
### Silicone Cap Installation



### Grille End Cap Installation



### Grille Installation






**CRV-Series Classic Cast-Iron Components**

⚠

## WARNING



**Suspension Hazard**

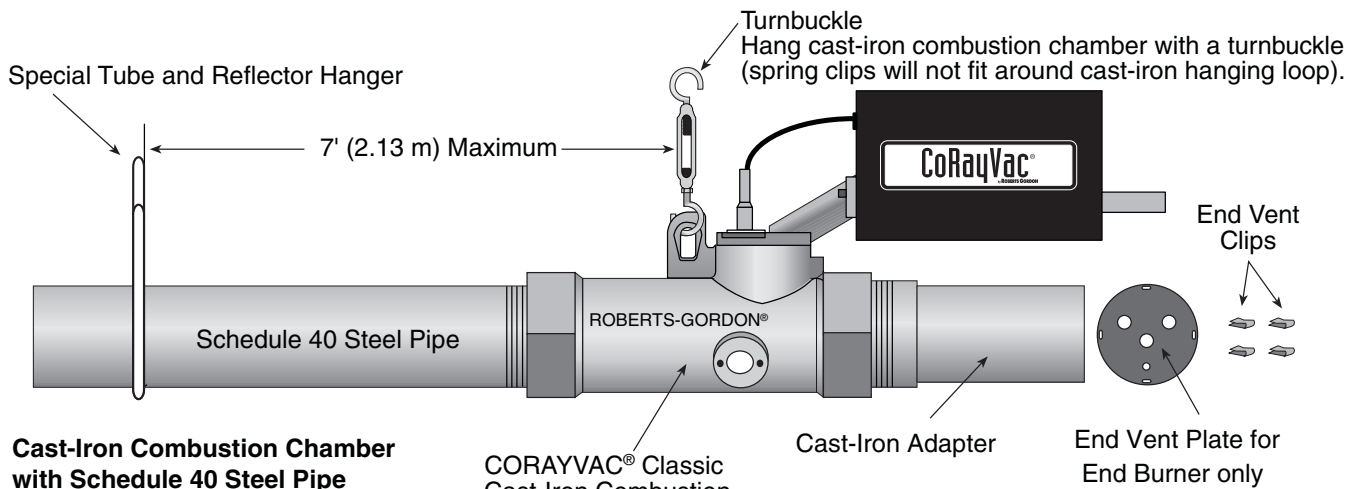
Hang heater with materials with a minimum working load of 750 lbs. (340 kg).

Use special tube and reflector hangers when suspending the schedule 40 steel pipe system.

Schedule 40 steel pipe is heavy and will fall if not supported properly.

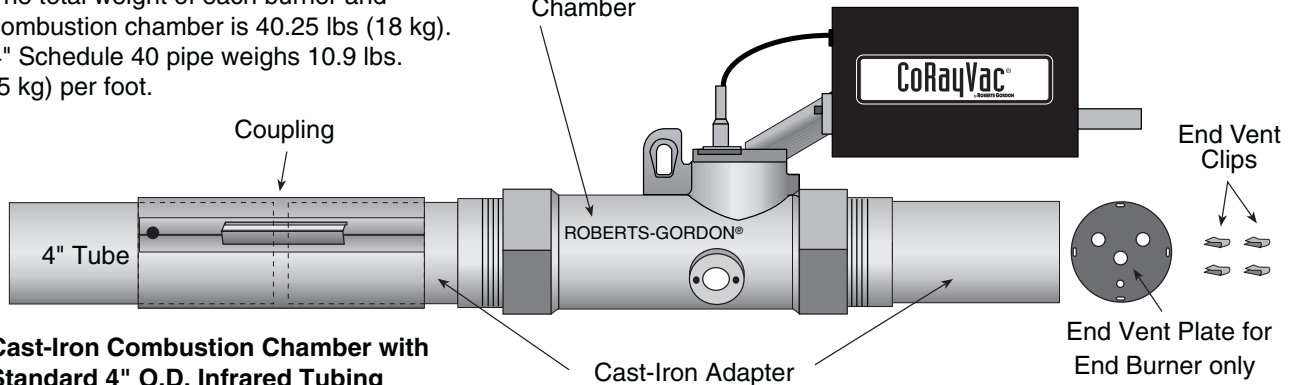
Distance between supports must be 7' (2.13 m) or less.

Failure to follow these instructions can result in death, injury or property damage.



**Cast-Iron Combustion Chamber with Schedule 40 Steel Pipe**

The total weight of each burner and combustion chamber is 40.25 lbs (18 kg).  
 4" Schedule 40 pipe weighs 10.9 lbs. (5 kg) per foot.



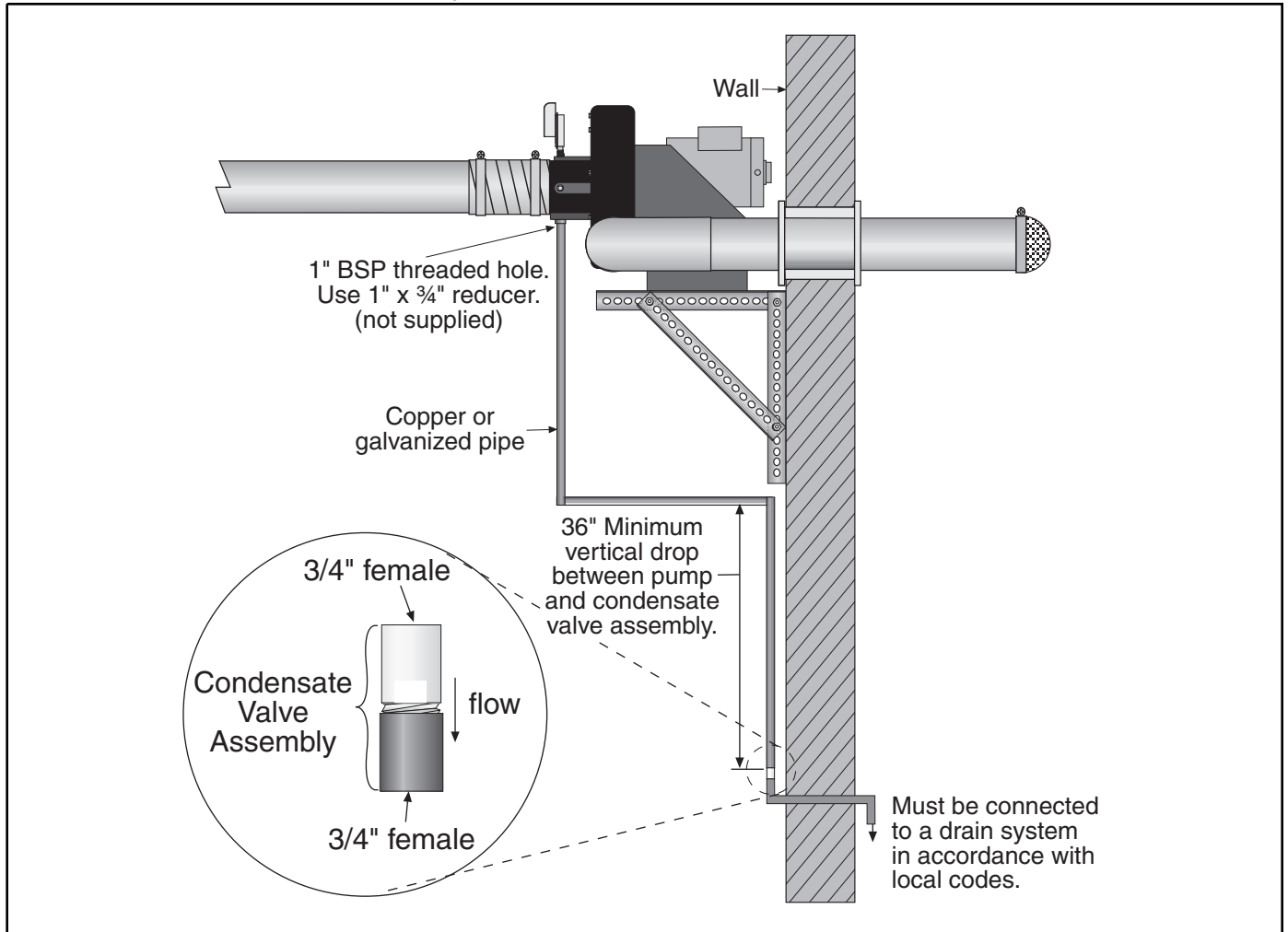
**Cast-Iron Combustion Chamber with Standard 4" O.D. Infrared Tubing**

The total weight of each burner and combustion chamber is 40.25 lbs (18 kg).  
 4" O.D. 16 Ga. tubing weighs 2.8 lbs. (1.3 kg) per foot.

Description	Part Number
Special Tube & Reflector Hanger	02790300
Turnbuckle	91903201
Cast-Iron Combustion Chamber	02721200-1P
Cast-Iron Adapter	02722100
Coupling	01312700

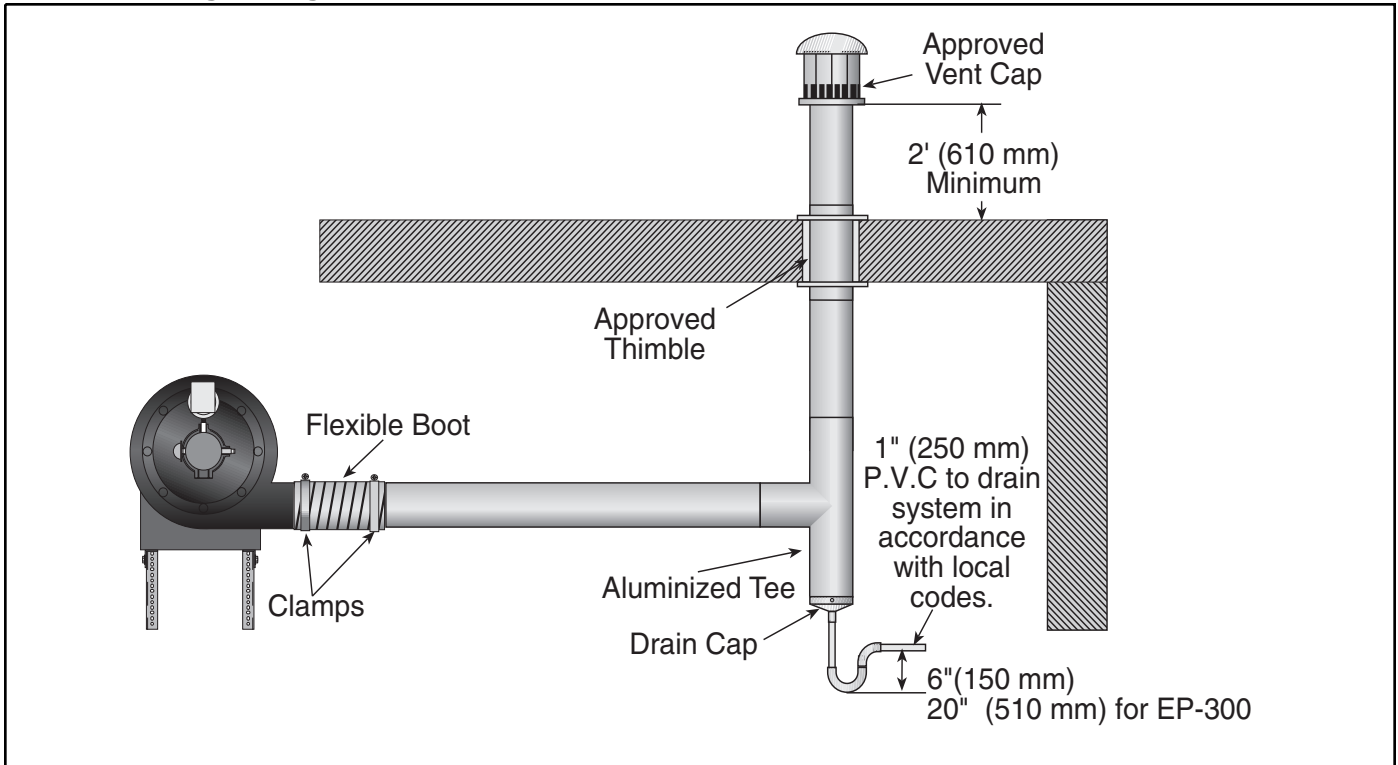
## PUMP INSTALLATION

### EP-200 Condensate Valve Assembly

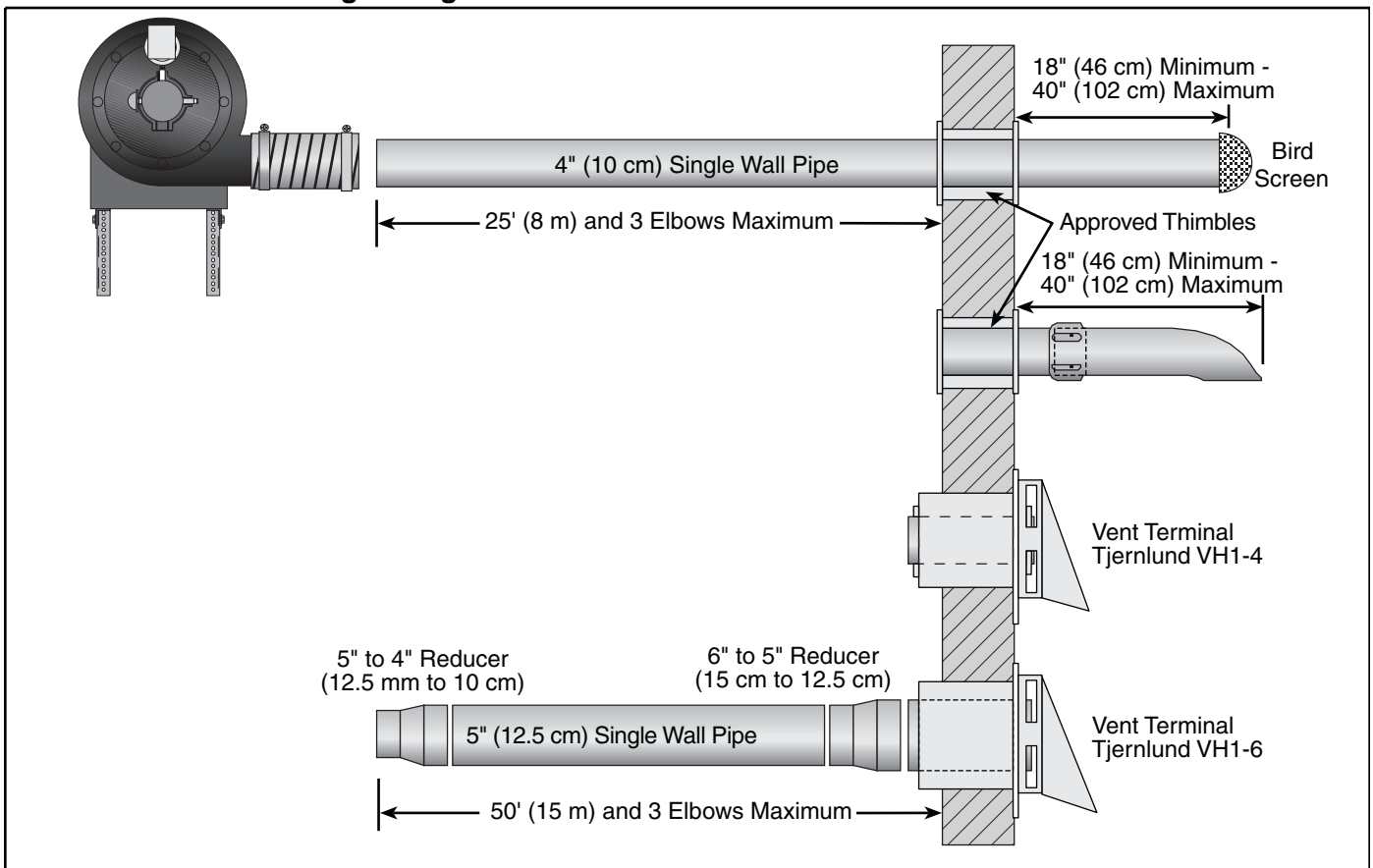


## VENTING

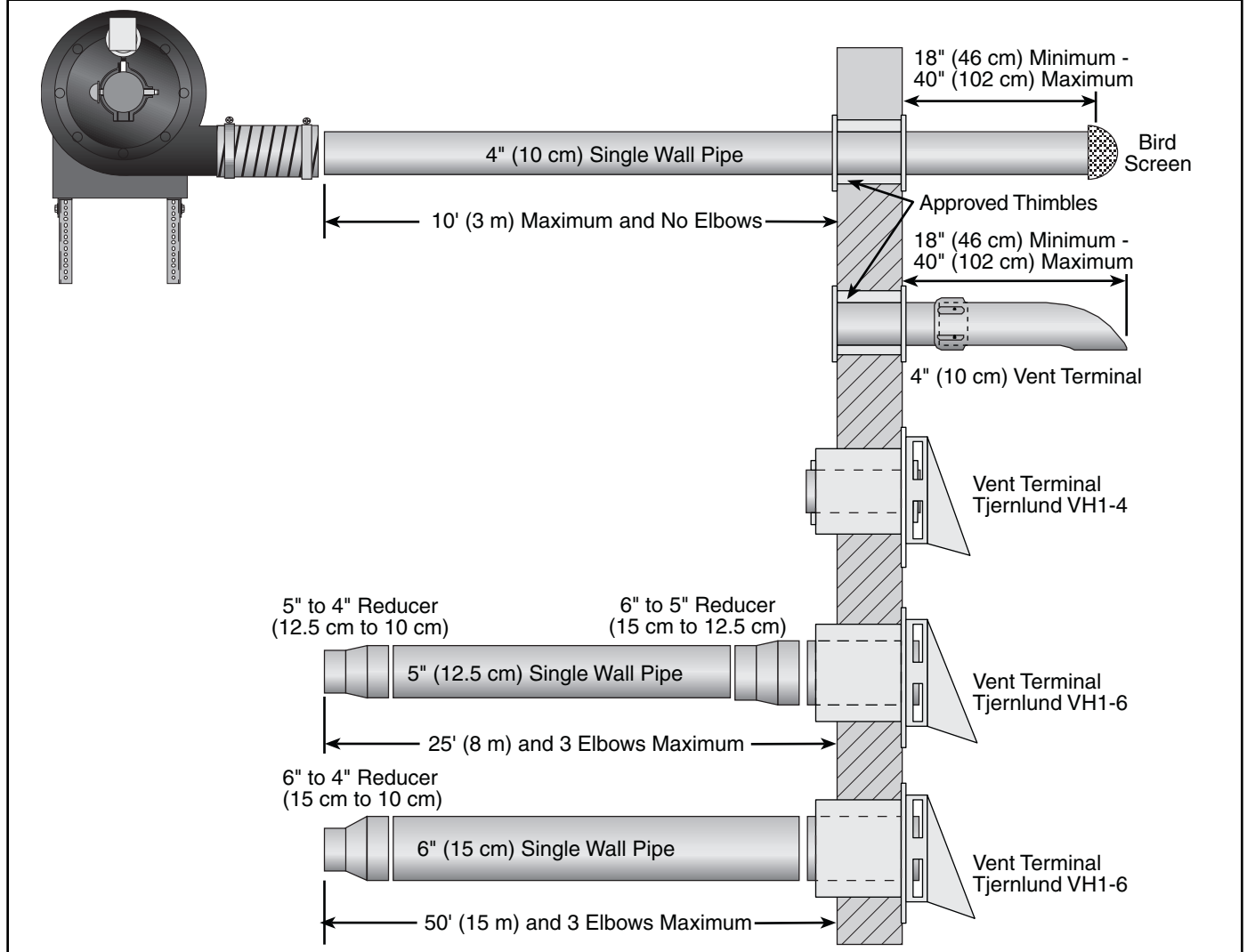
### Vertical Venting Configuration



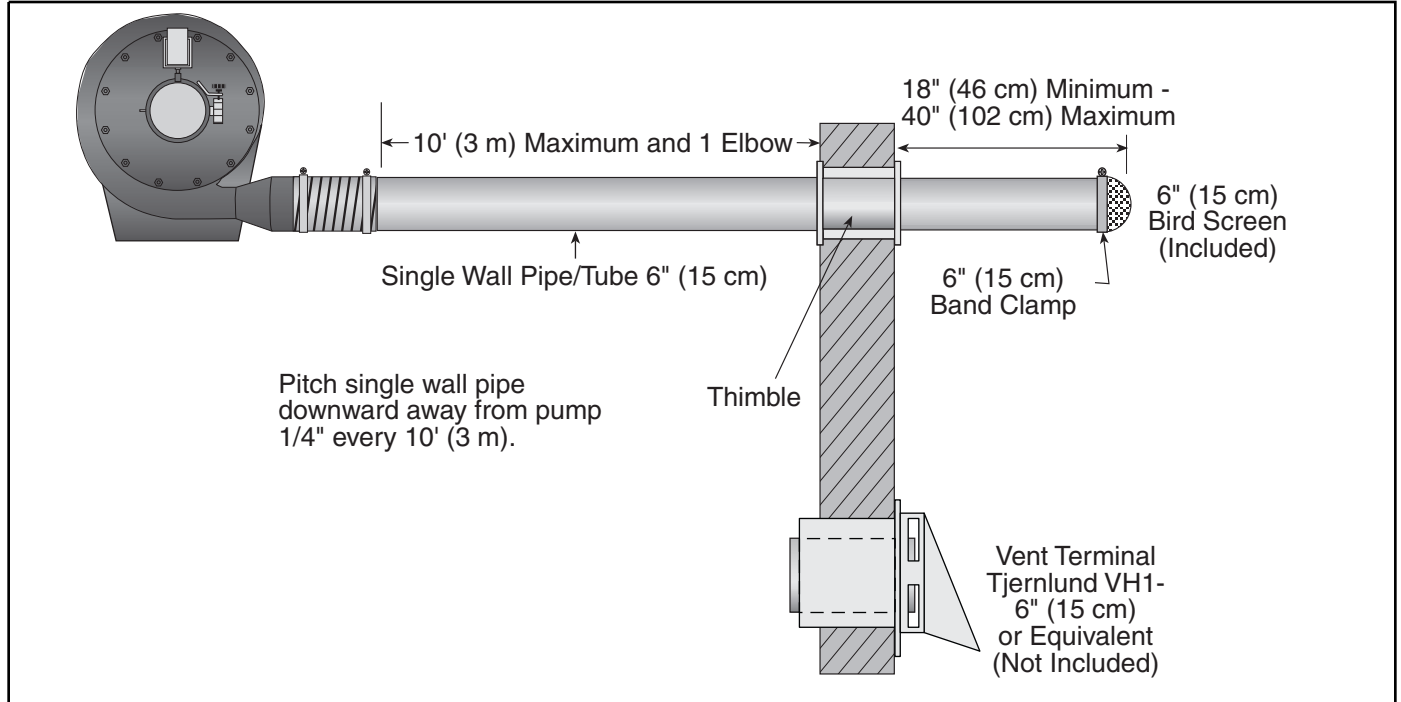
### HORIZONTAL VENTING 4" (10 CM) PIPE EP-100 Horizontal Venting Configurations



### EP-200 Series Horizontal Venting Configurations

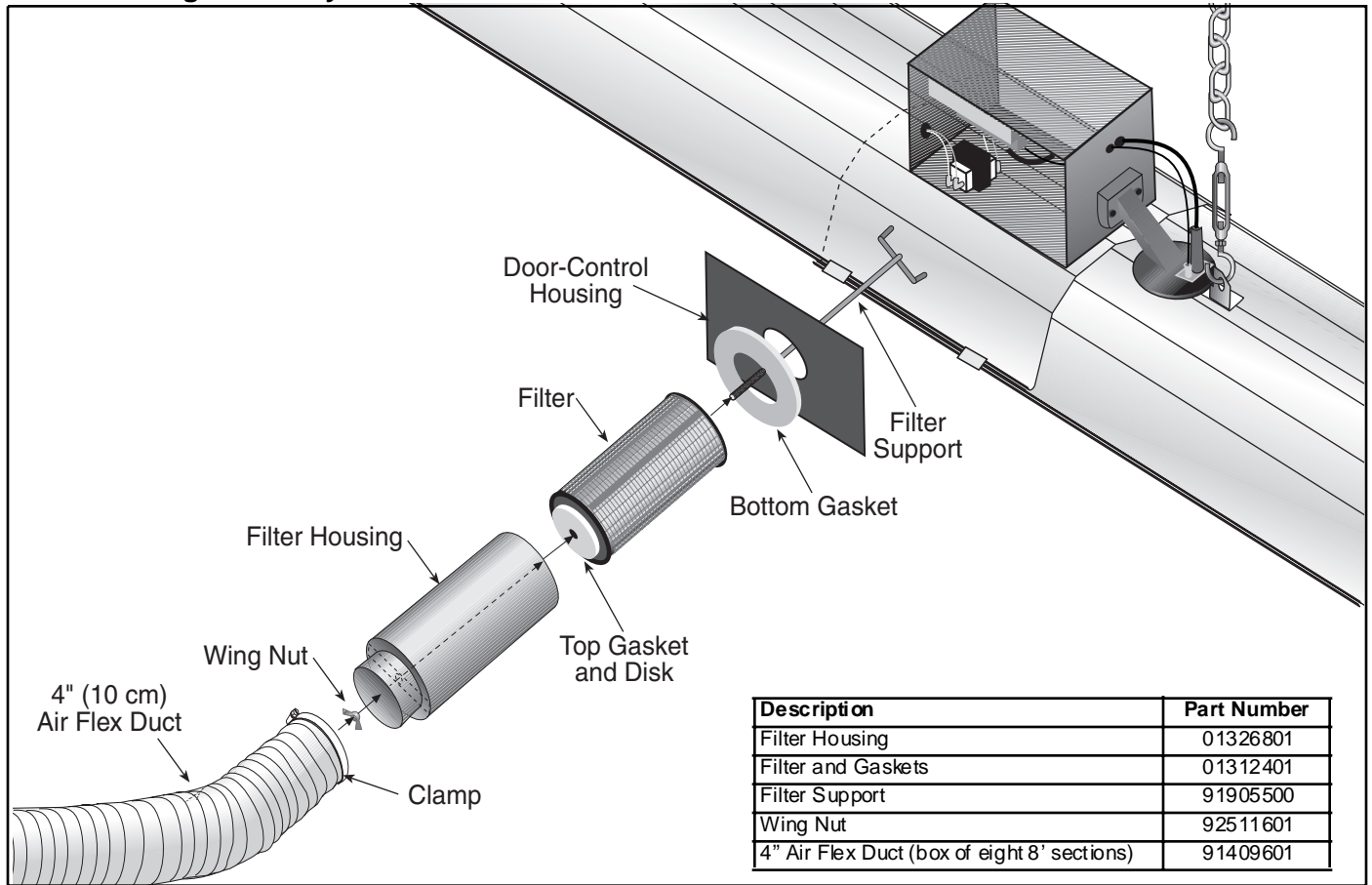


### EP-300 Series Horizontal Venting Configurations

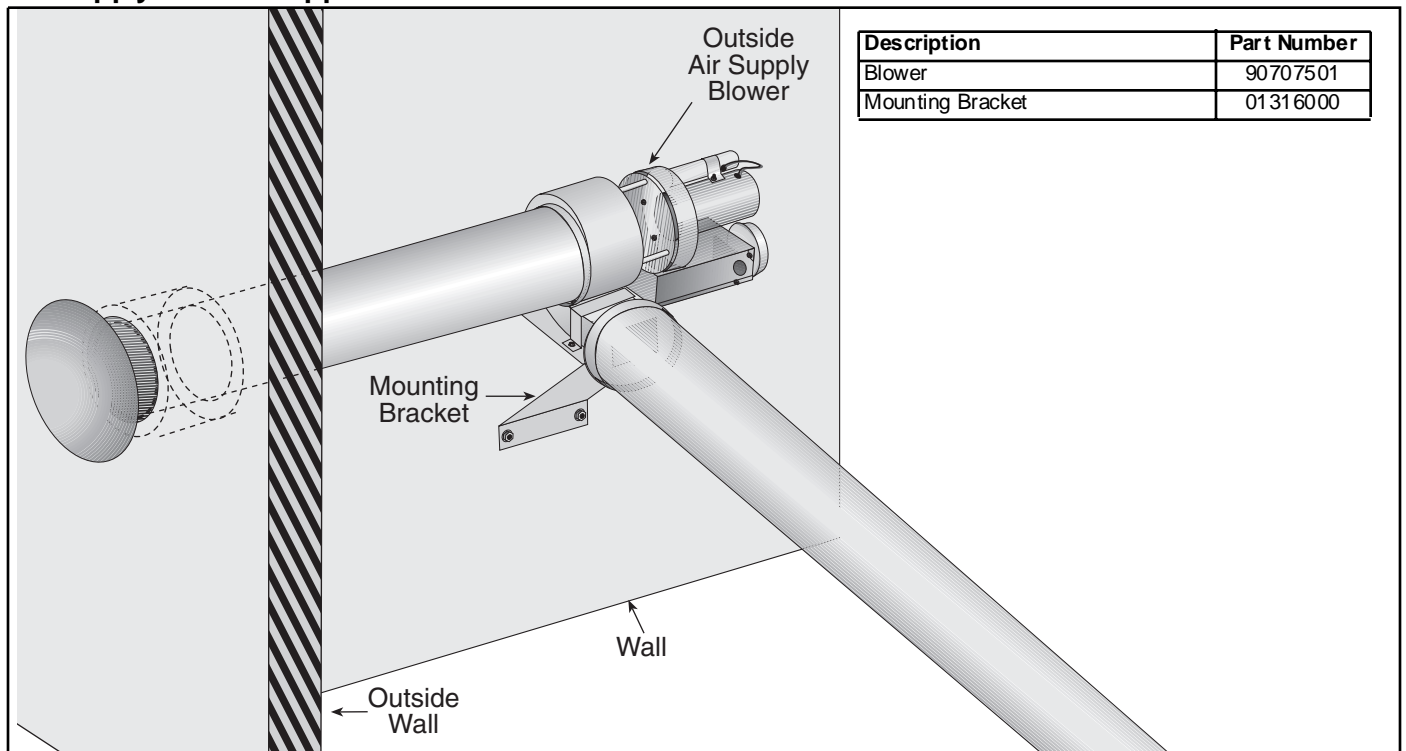


## OUTSIDE COMBUSTION AIR SUPPLY

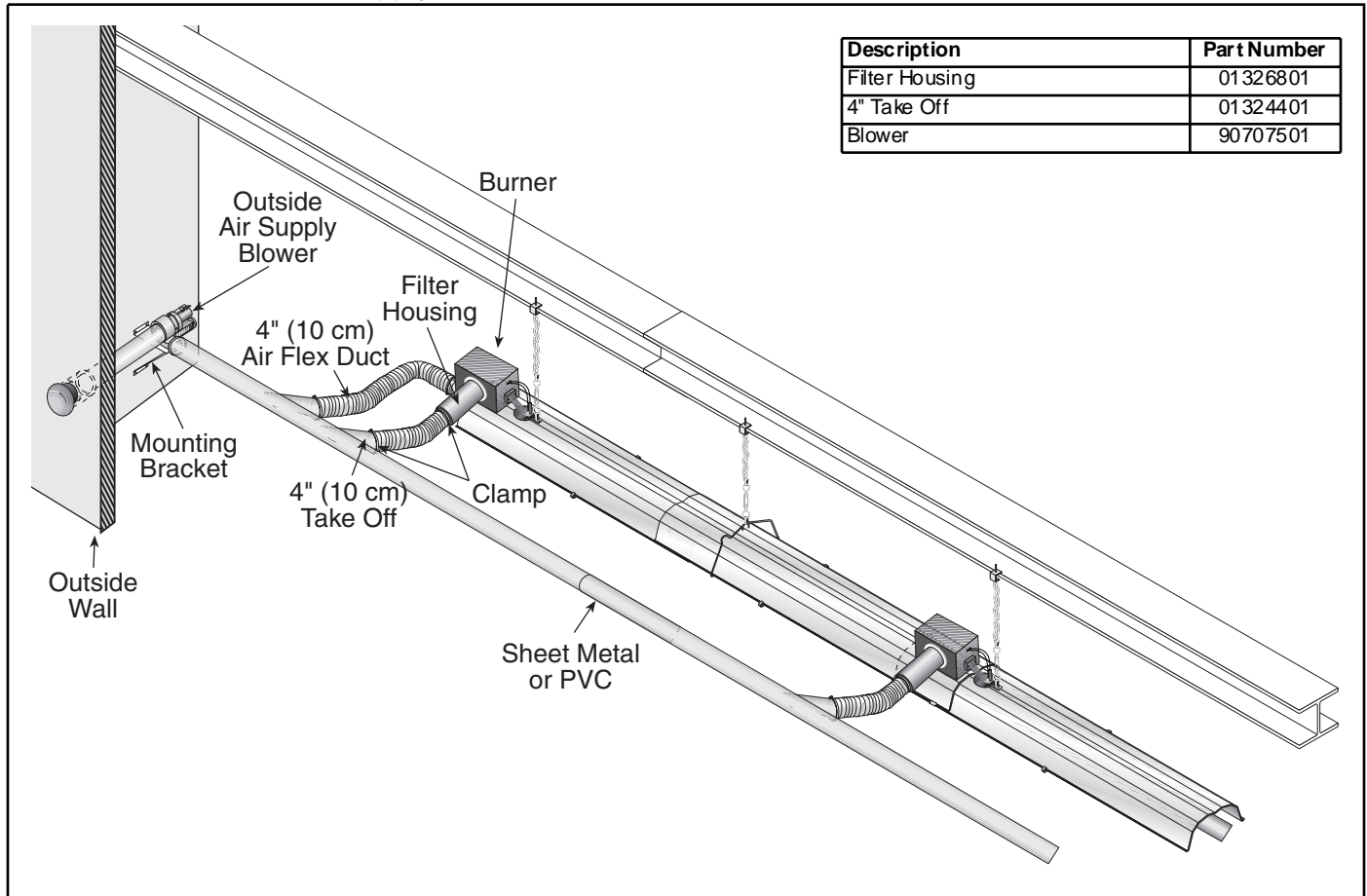
### Filter Housing Assembly



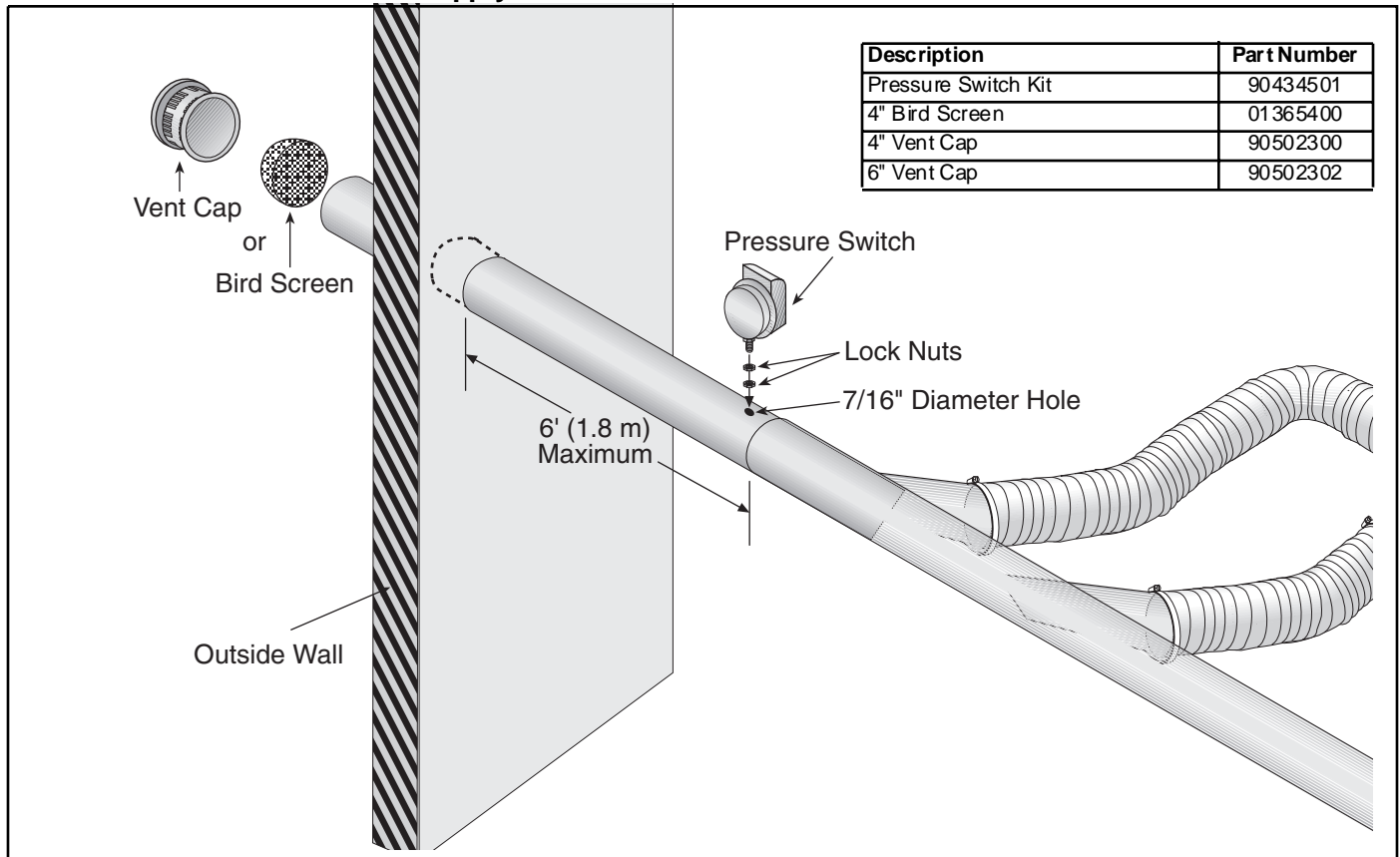
### Air Supply Blower Support



### Pressurized Outside Air Supply



### Non-Pressurized Outside Air Supply

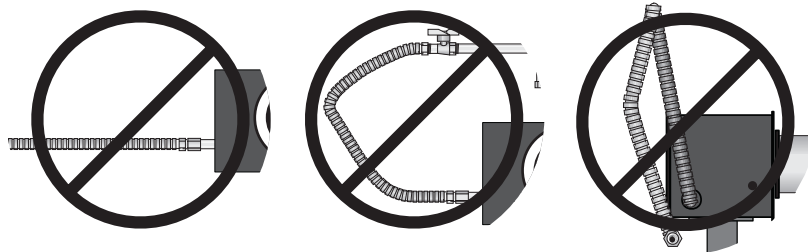


## GAS PIPING

### Gas Connection with Stainless Steel Flex Gas Connector

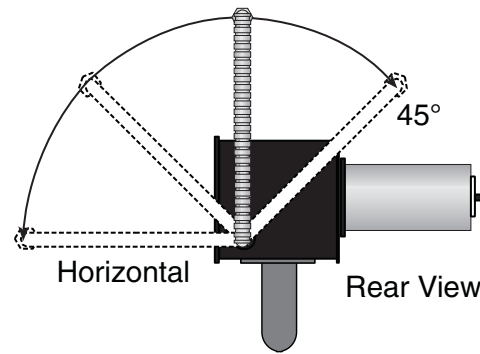
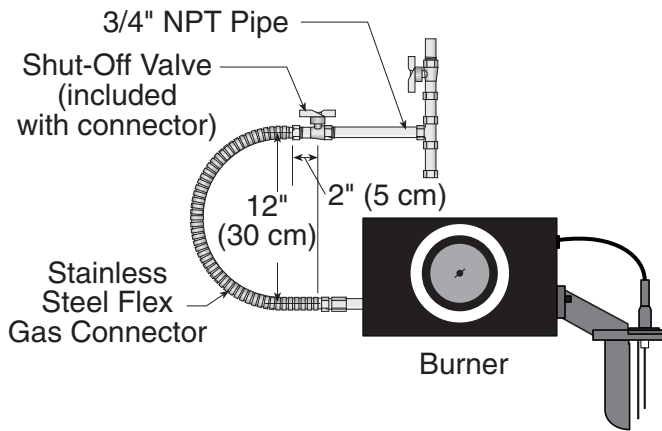
Shut-Off Valve must be parallel to burner gas inlet. The 2" (50 mm) displacement shown is for the cold condition. This displacement may reduce when the system is fired.

Description	Part Number
1/2" Flex Gas Line	91412200
3/4" Flex Gas Line	91412203



Hold gas nipple securely with pipe wrench when attaching the flex gas connector.

Failure to follow these instructions can result in product damage.






**WIRING**

**One Zone Operation without Control Panel**

**⚠ WARNING**

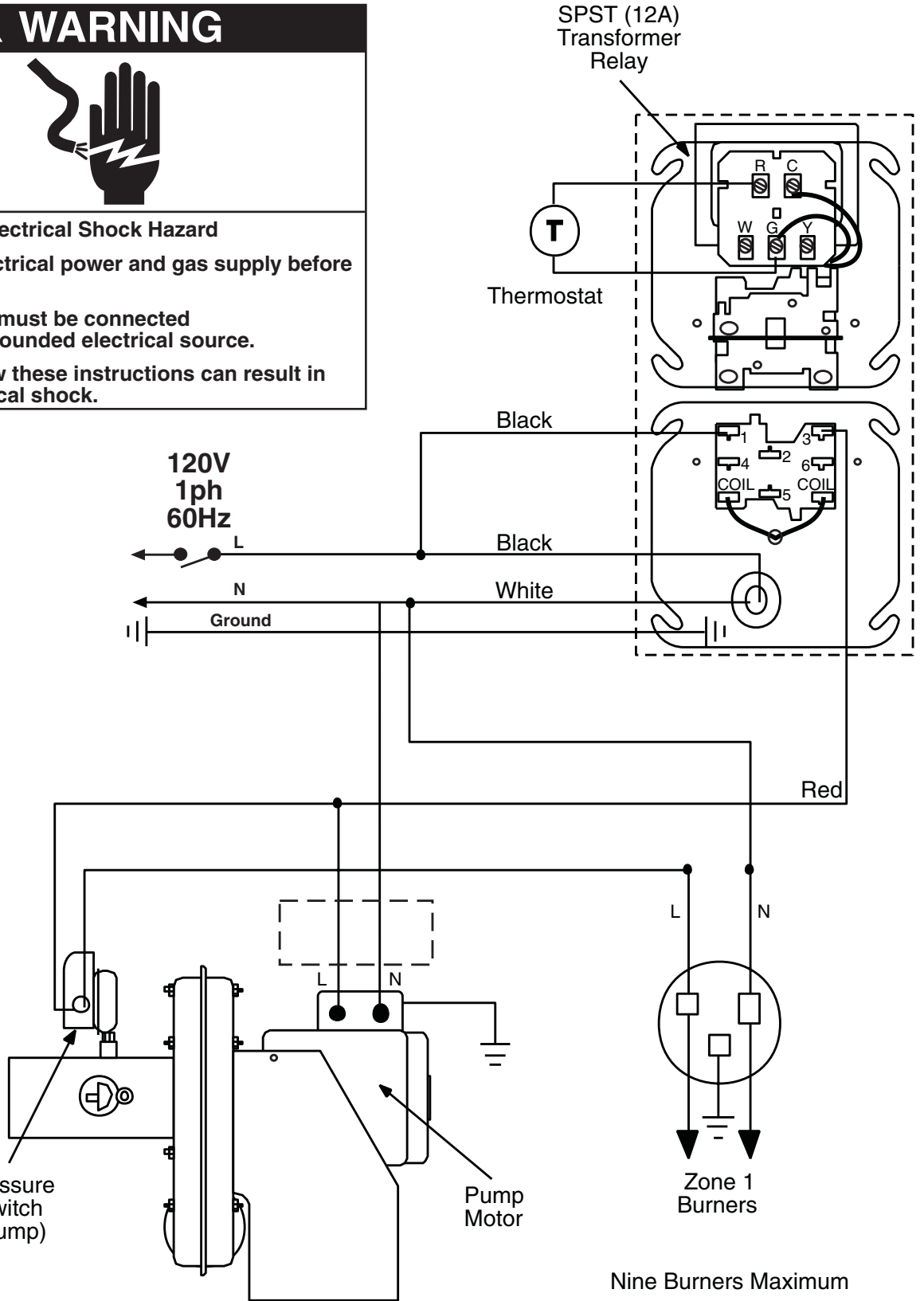


**Electrical Shock Hazard**

Disconnect electrical power and gas supply before servicing.

This appliance must be connected to a properly grounded electrical source.

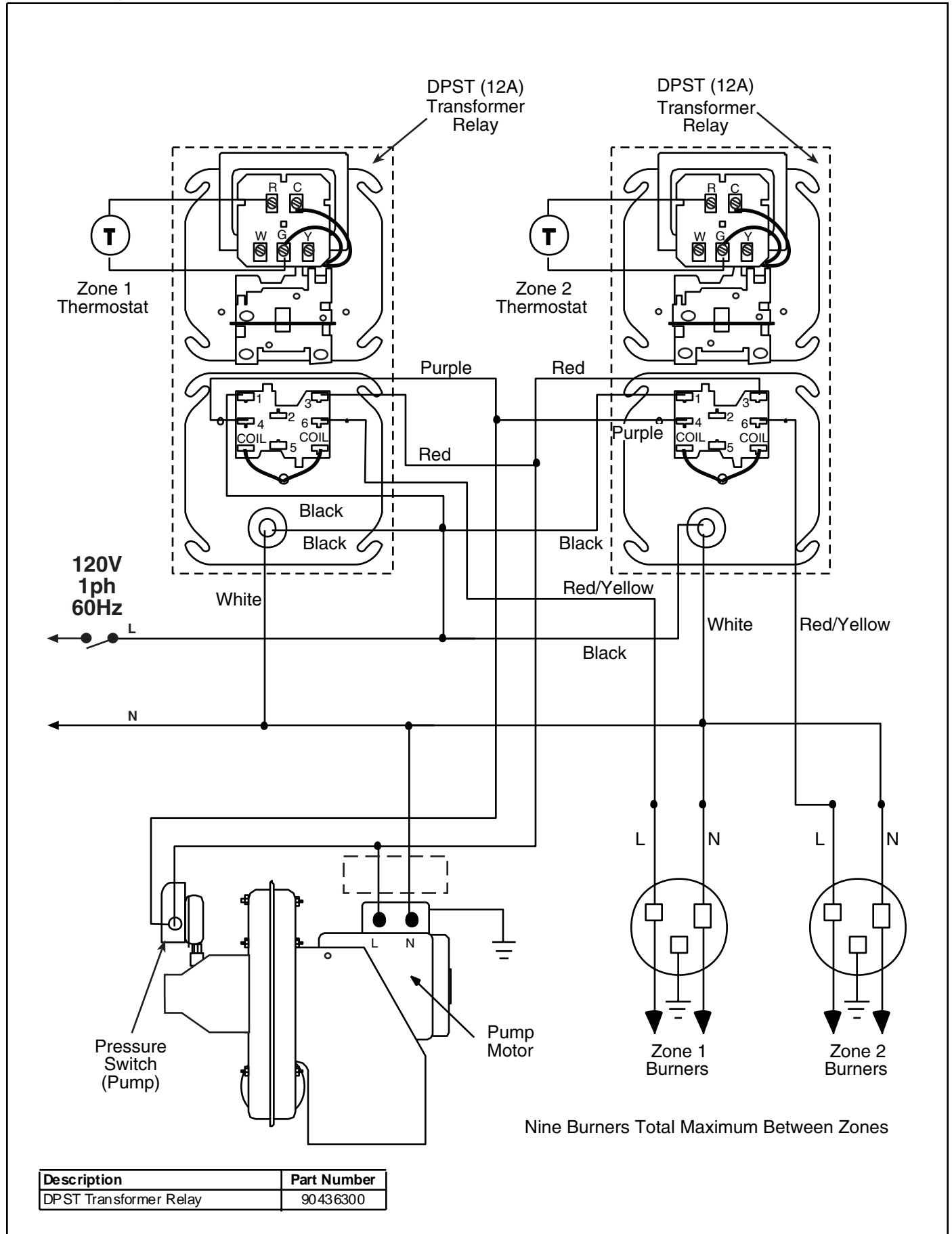
Failure to follow these instructions can result in death or electrical shock.



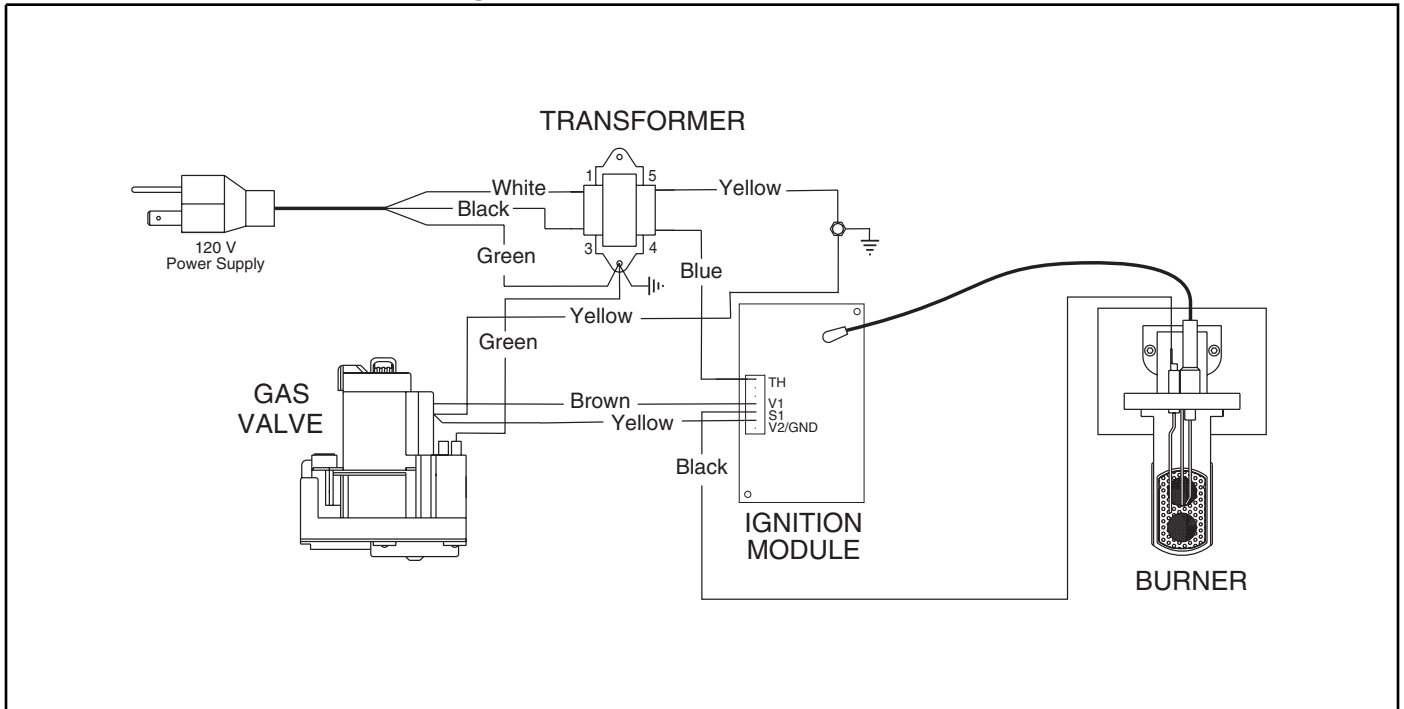
Description	Part Number
SPST Transformer Relay	90417600



## Two Zone Operation without Control Panel

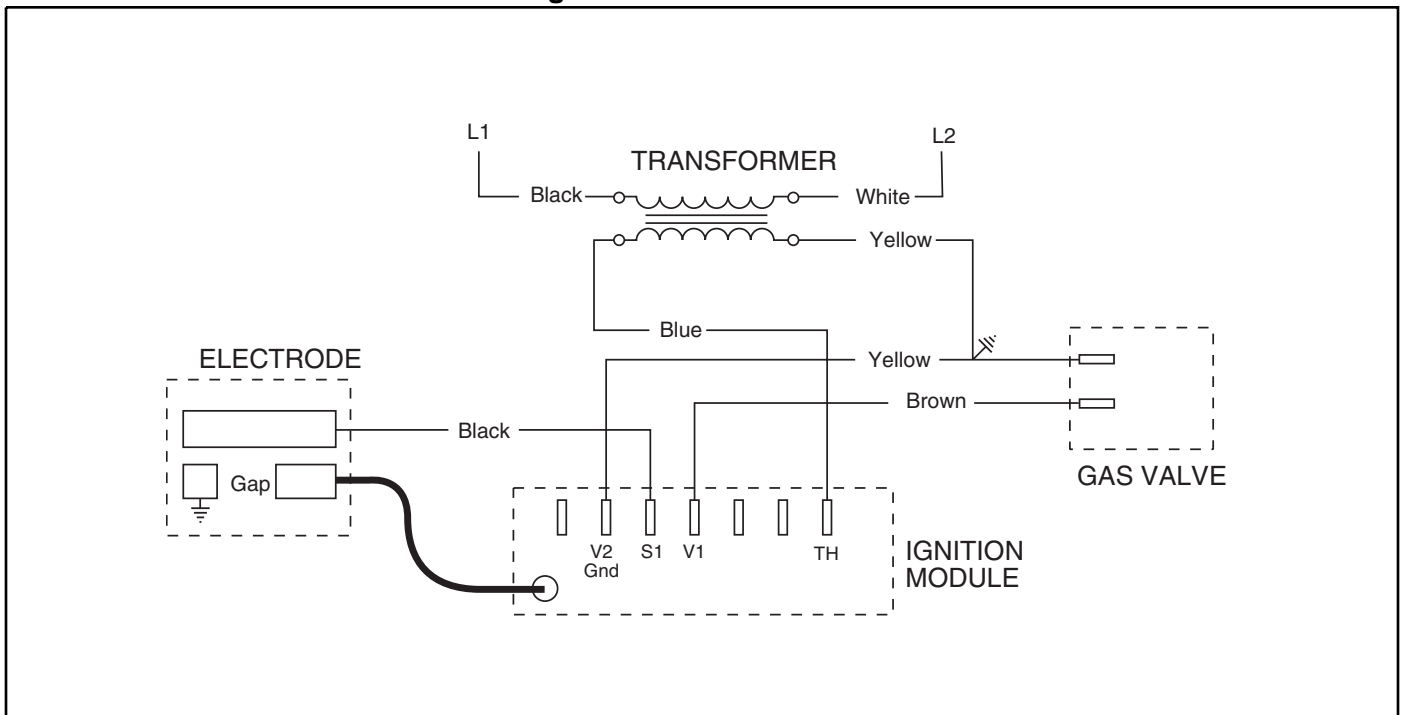


### CRV-Series Burner Internal Wiring

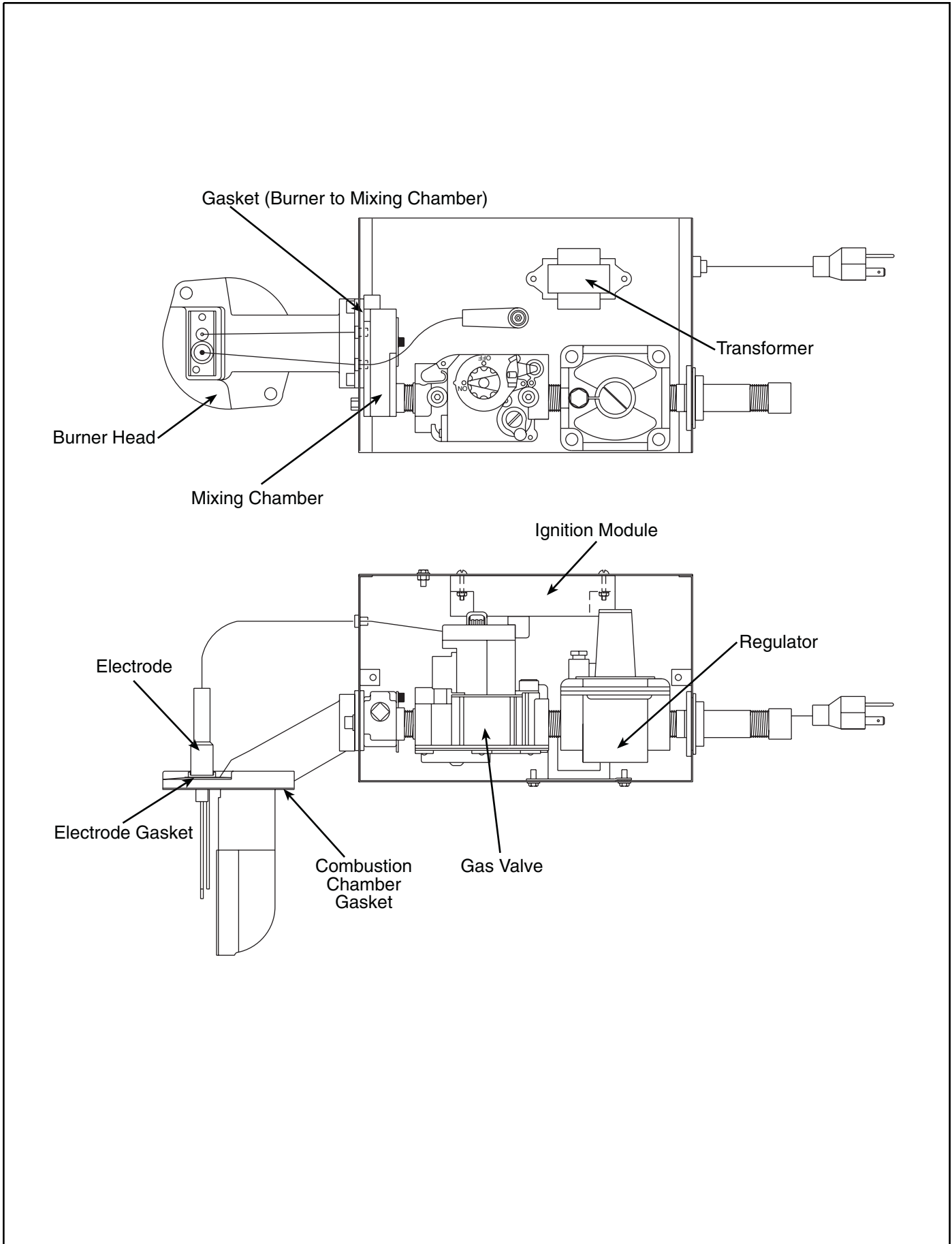


If any of the original wire as supplied with the heater must be replaced, it must be replaced with wiring material having a temperature rating of at least 105°C and 600 volts.

### CRV-Series Burner Internal Ladder Diagram



# INTERNAL BURNER DIAGRAM



**THE ROBERTS GORDON® CORAYVAC® LIMITED WARRANTY****ROBERTS-GORDON WILL PAY FOR:**

Within 42 months from date of shipment from Roberts-Gordon, replacement parts will be provided free of charge for any part of the controller which fails due to a manufacturing or material defect.

Roberts-Gordon will require the part in question to be returned to the factory. Roberts-Gordon will, at its sole discretion, repair or replace after determining the nature of the defect and disposition of part in question.

ROBERTS GORDON® warrants the cast iron combustion chamber of the CORAYVAC® Classic System will be free from defects in material and workmanship. This warranty is limited to twenty-five (25) years from the date of shipment by Roberts-Gordon. All other components of the CORAYVAC® Classic System adhere to the standard warranty listed in the paragraph above.

ROBERTS GORDON® Replacement Parts are warranted for a period of 18 months from date of shipment from Roberts-Gordon or the remaining CORAYVAC® warranty.

**ROBERTS-GORDON WILL NOT PAY FOR:**

Service trips, service calls and labor charges.

Shipment of replacement parts.

Claims where the total price of the goods have not been paid.

Damage due to:

- Improper installation, operation or maintenance.
- Misuse, abuse, neglect, or modification of the CORAYVAC® in any way.
- Use of the CORAYVAC® for other than its intended purpose.
- Incorrect gas or electrical supply, accident, fire, floods, acts of God, war, terrorism, or other casualty.
- Improper service, use of replacement parts or accessories not specified by Roberts-Gordon.
- Failure to install or maintain the CORAYVAC® as directed in the Installation, Operation and Service manual.
- Relocation of the CORAYVAC® after initial installation
- The use of the CORAYVAC® in a corrosive atmosphere containing contaminants.
- The use of the CORAYVAC® in the vicinity of a combustible or explosive material.
- Any defect in the CORAYVAC® arising from a drawing, design, or specification supplied by or on behalf of the consumer.
- Damage incurred during shipment. Claim must be filed with carrier.

**WARRANTY IS VOID IF:**

The CORAYVAC® is not installed by a contractor qualified in the installation and service of gas fired heating equipment.

You cannot prove original purchase date and required annual maintenance history.

The data plate and/or serial number are removed, defaced, modified or altered in any way.

The ownership of the CORAYVAC® is moved or transferred. This warranty is nontransferable.

Roberts-Gordon is not permitted to inspect the damaged controller and/or component parts.

**READ YOUR INSTALLATION, OPERATION AND SERVICE MANUAL**

If you have questions about your controller, contact your installing professional. Should you need Replacement Parts or have additional questions, call or write Roberts-Gordon:

**U.S.A.**

1250 William Street  
P.O. Box 44  
Buffalo, New York 14240-0044  
716.852.4400

**Canada**

76 Main Street West, Unit 10  
Grimsby, Ontario L3M 1R6  
905.945.5403

**On the web at:** [www.rg-inc.com](http://www.rg-inc.com)

**Roberts-Gordon's liability, and your exclusive remedy, under this warranty or any implied warranty (including the implied warranties of merchantability and fitness for a particular purpose) is limited to providing replacement parts during the term of this warranty.**

Some jurisdictions do not allow limitations on how long an implied warranty lasts, so this limitation may not apply to you. There are no rights, warranties or conditions, expressed or implied, statutory or otherwise, other than those contained in this warranty.

**Roberts-Gordon shall in no event be responsible for incidental or consequential damages or incur liability for damages in excess of the amount paid by you for the CORAYVAC®.** Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from jurisdiction to jurisdiction.

Roberts-Gordon shall not be responsible for failure to perform under the terms of this warranty if caused by circumstances out of its control, including but not limited to war, fire, flood, strike, government or court orders, acts of God, terrorism, unavailability of supplies, parts or power. No person is authorized to assume for Roberts-Gordon any other warranty, obligation or liability.

**LIMITATIONS ON AUTHORITY OF REPRESENTATIVES:**

No representative of Roberts-Gordon, other than an Executive Officer, has authority to change or extend these provisions. Changes or extensions shall be binding only if confirmed in writing by Roberts-Gordon's duly authorized Executive Officer.

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