PELCO OPERATOR'S MANUAL

Pelco Hot Water Boiler

Congratulations on purchasing a Pelco Hot Water Boiler. The Pelco Hot Water Boiler is designed for domestic, agricultural, commercial or industrial applications and is professionally designed and engineered.

To get maximum benefit from your new Pelco Hot Water Boiler, please read this owner's manual and follow the instructions carefully.

These operation instructions are for models: PC1020, PC1520 and PC2520, each with individual editions SI, SII and SIII.

IMPORTANT: Save this manual for future reference.

Figure 1 - Pelco Hot Water Boiler

Model & Serial Number Information

Locate and record the model number (Fig. 2) and serial number in the space provided.

Model Number: _____

Serial Number: _____

Have this information available when contacting the dealer or company for service, warranty or other information.

PELCO HOT WATER OUTDOOR/INDOOR BOILER

CHAUDIÈRE À EAU CHAUDE PELCO, EXTÉRIEURE/INTÉRIEURE

81797J901

CERTIFIED HEATING APPLIANCE
CSA STANDARD B366-1-M91
UL STANDARD 391 & UL STANDARD 726

MODEL NO. _____ N° DU MODÈLE
SERIAL NO. _____ N° DE SERIÉ

APPAREIL DE CHAUFFAGE CERTIFIÉ
NORME ACNOR (CSA) B366.1-M91
NORME UL 391 ET UL 726

Electrical ratings: Volts 220, 1 Phase, 60 Hz
Control Voltage 24, 20 Amps max. on complete unit

Classifications électriques: 220 volts, courant monophasé, 60 Hz.
Contrôle de tension : 24, maximum de 20 ampères pour l'unité au complet.

Base — Noncombustible, concrete preferred.

Do not burn Garbage, Gasoline, Naphtha or other inappropriate materials.

Do not leave doors open at any time.

Feed ashes into a steel container with a tightly fitting lid.

Refer to owners manual for complete instructions.

Installation clearances: 38 inches above/ 48 inches front/ 6 inches from sides/ 18 inches from flue pipe.

Plate-forme – non-combustible, de préférence en béton.

Ne pas brûler de déchets, d'essence, de naphta ou tout autre combustible non-certifié ou impropre.

Assurez-vous en tout temps, que les portes soient en positions, sécurisées et fermées.

Entreposer les cendres dans un récipient en métal sécuritaire qui est munis d'un couvercle serré.

Référez-vous au manuel de l'opérateur pour les instructions complètes.

Installation – dégagement minimum : 97 cm (38 po) au-dessus, 122 cm (48 po) de l'avant, 15 cm (6 po) des côtés, 46 cm (18 po) de la cheminée.

Manufactured by Pro-Fab Industries Inc.
Arborg, Manitoba
MADE IN CANADA

Intertek
W/N 16827

Fabriqué par Pro-Fab Industries Inc.
Arborg, Manitoba
FABRIQUÉ AU CANADA

Figure 2 - Pelco Serial Number Decal

Certifications

Complies with the requirements of:

CAN/CSA-B365 and changes to the installation should comply with CSA-B139 (for oil fired), C 22.1 (for electric) or CAN/CGA-B149.1 or CAN/CGA-B149.2 (for gas fired).
Warnock Hersey CAN/CSA-B366.1-M91
-Solid Fuel Fired Central Heating Appliances
UL Standard 391 & UL Standard 726

Things To Know / General Information

- This operator's manual is intended for the installation of the Pelco Hot Water Boiler and its safe operation.
- Your certified Pelco installer is responsible for all sizing, plumbing and positioning of the Pelco Hot Water Boiler.
- The Pelco Hot Water Boiler must be installed by a certified Pelco installer who has an understanding of an open pressure system.
- Complete the Warranty Registration and return to Pro-Fab Industries Inc. Failure to do so may result in delays in warranty claim resolution.
- The Pelco Hot Water Boiler comes in three sizes. Be sure that you are referring to the correct dimensions for your Pelco when reading this manual.
- The Pelco Hot Water Boiler is an OPEN PRESSURE system. When placing equipment above the boiler, the system should be a complete closed loop with no leaks. With an existing heating system a heat exchanger is recommended. Your qualified installer will advise of the correct size for your installation.
- Once installed, add water treatment. An initial water test sample should be taken, using the test bottles supplied, and submitted to your dealer 30 - 60 days after installation. Maintain the results on file. Thereafter, draw a water sample once a year and forward to your dealer for testing. **Failure to use Pro-Fab approved water treatment in accordance with the Operator's Manual will void the warranty. See your dealer for authorized supplies. It is the responsibility of the owner to maintain yearly water sample results on file.**
- A complete installation will have a backup heating system in the event of a failure.
- When shutting down the Pelco Boiler, the circulating pumps must keep operating until the fuel in the combustion chamber is consumed and the chamber is cooled. As long as there is solid fuel burning in the combustion chamber, the water in the boiler will continue to absorb heat. Turning off the circulating pumps will result in the water heating past the boiling point and overflowing of the expansion tank.
- In the event of a power failure, the Pelco Hot Water Boiler will shut down. When power resumes the beacon will have a solid red light. If the fire is still hot enough to sustain continued combustion, press and turn to release the emergency button. If the fire is out, restart the fire and press the emergency button and turn to release to reset the computer.
- At the end of the season, do not turn off power to the control panel. Prolonged lack of power may result in computer memory loss, requiring reprogramming.
- Pelco Boilers are not to be plumbed in series. Zone your application when more than one boiler is required in your location.
- Fuel must be stored in an appropriate location, away from the firebox door, ash auger or ash storage and from Pelco exhaust. It should be in a weatherproof bin, with main fuel storage being separate from smaller furnace supply storage hopper by means of a fire-break.

IMPORTANT

- **DO NOT** connect this unit to a chimney flue serving another appliance.

Fire Out Offset

The intent of the Fire Out Offset is to completely shut down the Pelco in the event that there is no fire in the firebox. This action prevents the firebox to be continually feeding fuel when there is no fire. The programmable logic controller (PLC) will only activate this feature once the delay time is over and the unit has not reached operating temperature.

SAFETY PRECAUTIONS

- The Pelco Hot Water Boiler must be installed by a certified Pelco Installer.
- The Pelco Hot Water Boiler must be installed on a noncombustible concrete pad.
- Contact an insurance provider prior to installation to ensure that installation is in compliance with local insurance requirements and all terms have been met.
- The Pelco Hot Water Boiler is designed to work in conjunction with another heat source. We recommend this furnace not to be used as a stand alone unit. Should the system fail or run out of fuel, a backup system should be in place.
- For best efficiency and cleanest burn use only Pro-Fab approved fuel. NEVER burn trash, tires, solvents, plastics, gasoline, engine oil or other flammable liquids, rubber, naptha, household garbage, material treated with petroleum products (particle board, railroad ties and pressure treated, painted or kiln dried wood), leaves, paper products or cardboard.
- Keep area around the boiler clean at all times to avoid possible fire hazards. Adhere to installation clearances and restrictions.
- Furnace must be kept in good condition. Follow cleaning and maintenance instructions in the Pelco Operator's Manual.
- Minimum clearances between the Pelco Hot Water Boiler and any combustible materials, as indicated in this manual, must be adhered to and maintained.
- Fire Hazard. Ash and/or residue may ignite outside of the combustion chamber. Press Emergency Stop Button. Use fire extinguisher to contain fire. Contact your local Fire Department.
- Disposal of Ashes. Ashes should be placed in a metal container with a tight fitting lid. The closed container of ashes should be placed on a noncombustible floor or on the ground, well away from all combustible materials, pending final disposal. If the ashes are disposed of by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all cinders have throughly cooled.
- When inspecting the fire chamber, open door slowly.
- Do not operate the Pelco Hot Water Boiler without cover plates and guards in their proper positions and properly secured.
- Electrocution hazard. Disconnect electrical power supply to the Pelco Hot Water Boiler prior to performing any service or maintenance.
- IN THE CASE OF A RUNAWAY CHIMNEY FIRE, shut down power to unit, keep all doors closed, and contact local fire department.
- Potential residue accumulation. A small, intense fire in the Pelco Hot Water Boiler is preferable to a large, smoldering fire, which can produce undesirable amounts of residue.
- Combustion chamber pressurization. The Pelco Hot Water Boiler is designed to be operated at atmospheric pressure. Ensure that vent cap is in place with a loose fit to prevent pressurization.
- Review all safety decals on the Pelco Hot Water Boiler prior to use and with all operating personnel annually.
- Read this manual carefully and read all decals on the Pelco boiler. Should you have any questions not answered in this manual, contact your dealer.

CAUTION!

- **DO NOT** store fuel or combustible materials within the installation clearance area.
- **DO NOT** burn trash in this furnace.
- **DO NOT** dump ash close to any combustible materials.
- **DO NOT** use chemicals or fluids to start the fire.
- **DO NOT** burn garbage, gasoline, Naptha, engine oil, or any other inappropriate materials.
- **DO NOT** relocate or bypass any of the safety controls on this unit.
- **DO NOT** operate with control panel doors open.
- **DO NOT** add fuel during a power outage.
- **DO NOT** modify this unit in any way. Any modification will void the warranty.
- **DO NOT** connect this unit to a chimney serving another appliance.

CAUTION! Hot surfaces. Keep children away.

- **DO NOT** touch during operation.

In the event of loss of electrical power:

In the event of a power failure, the Pelco Hot Water Boiler will shut down. When power resumes the beacon will have a solid red light. If the fire is still hot enough to sustain continued combustion, press and turn to release the emergency button. If the fire is out, restart the fire and press the emergency button and turn to release to reset the computer.

Safety Alert Symbol

The Safety Alert symbol identifies important safety messages in the manual and on the Pelco Hot Water Boiler. This symbol indicates the possibility of injury or death. Follow all of the instructions in the safety message given. This symbol means “attention,” “be alert,” and “your safety is involved.”

Why is SAFETY important to you? Three big reasons:

1. Accidents disable and kill.
2. Accidents cost.
3. Accidents can be avoided.

Signal Words

Note the use of the signal words: **DANGER, WARNING** and **CAUTION** with the safety messages. The appropriate signal word has been selected using the following guidelines:

DANGER

DANGER: Indicates an imminently hazardous situation that, if not avoided, WILL result in death or serious injury.

WARNING

WARNING: Indicates a potentially hazardous situation that, if not avoided, COULD result in death or serious injury.

CAUTION

CAUTION: Indicates a potentially hazardous situation that, if not avoided, MAY result in minor or moderate injury, or serves as a reminder to follow appropriate safety practices.

Maintenance Safety

⚠ WARNING

Fire Hazard. Ash and/or residue may ignite outside of the combustion chamber.

- Press Emergency Stop Button
- Use fire extinguisher to contain fire
- Contact your local Fire Department

⚠ WARNING

Fire Hazard. Collect ashes in a non-combustible container with a tight fitting lid. Waste other than ashes should not be placed in the same container.

⚠ WARNING

Do not operate the Pelco Hot Water Boiler without cover plates and guards in their proper positions. Ensure all cover plates and guards are in position and properly secured prior to operating the Pelco Hot Water Boiler.

⚠ DANGER

Electrocution hazard. Disconnect electrical power supply to the Pelco Hot Water Boiler prior to performing any service or maintenance.

⚠ CAUTION

Potential residue accumulation. A small, intense fire in the Pelco Hot Water Boiler is preferable to a large, smoldering fire, which can produce undesirable amounts of residue.

Size & Model Specifications

	PC 1020		PC 1520		PC 2520	
Height	10 ft.	3 m	11 ft.	3.4 m	11 ft.	3.4 m
Width	53 1/2 in.	136 cm	61 1/4 in.	156 cm	73 1/4 in.	186 cm
Water Capacity	130 Gal.	492 L	220 Gal.	833 L	350 Gal.	1,325 L
Shipping Weight	4,000 lbs.	1,814 kg	5,400 lbs.	2,449 kg	7,500 lbs.	3,402 kg
Burner Size	20 in.	51 cm	28 1/2 in.	72 cm	36 1/2 in.	93 cm
Maximum Input BTU*	750,000		1,500,000		2,500,000	
Computerized Controls	Included		Included		Included	
Electrical Requirements	220V / 20 amp		220V / 20 amp		220V / 20 amp	
Outlet Fitting Sizes	1 1/2 in.		2 in.		2 1/2 in.	

*BTU numbers indicated are approximate input values based on tests using maximum value fuel. For proper sizing and output BTU values, contact an authorized Pelco installer. (BTU value will vary by fuel type)

Identifying Main Components

Figure 3 -The Pelco

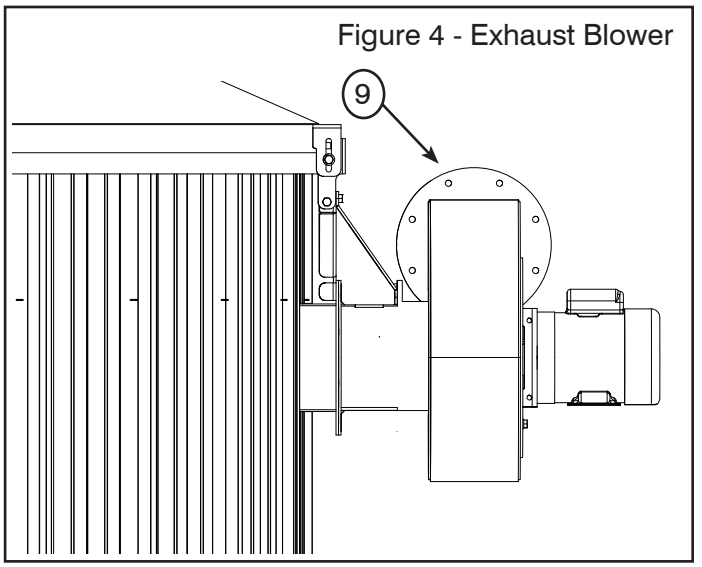


Figure 4 - Exhaust Blower

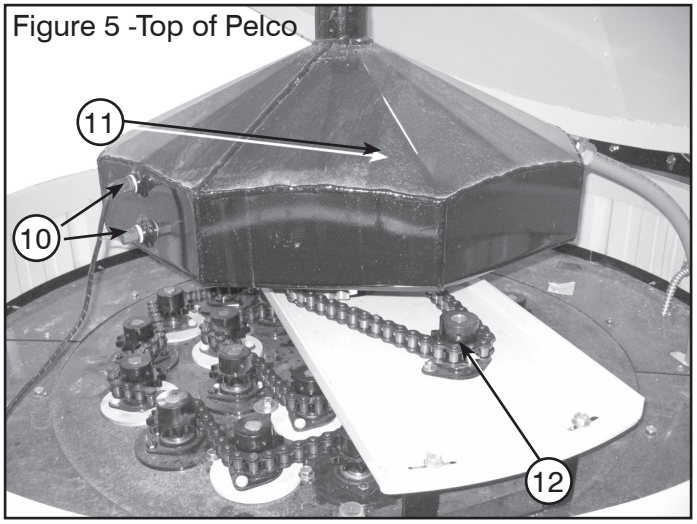


Figure 5 -Top of Pelco

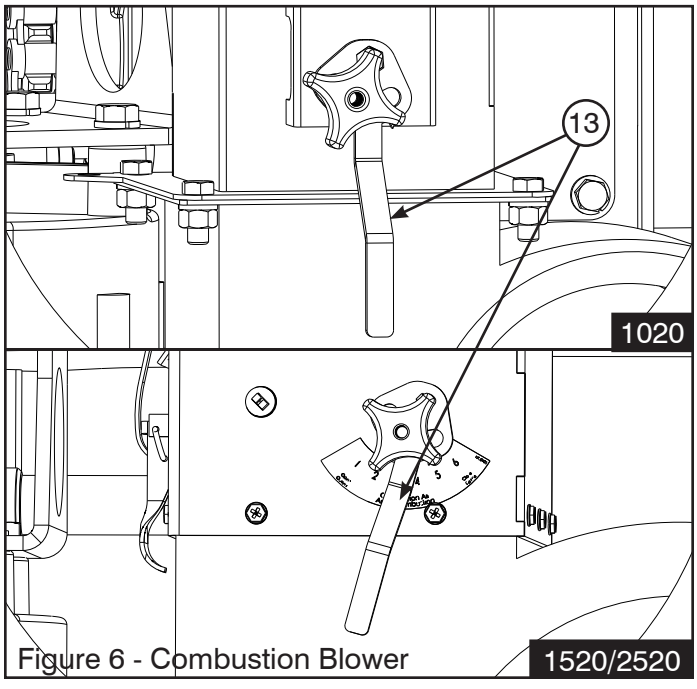


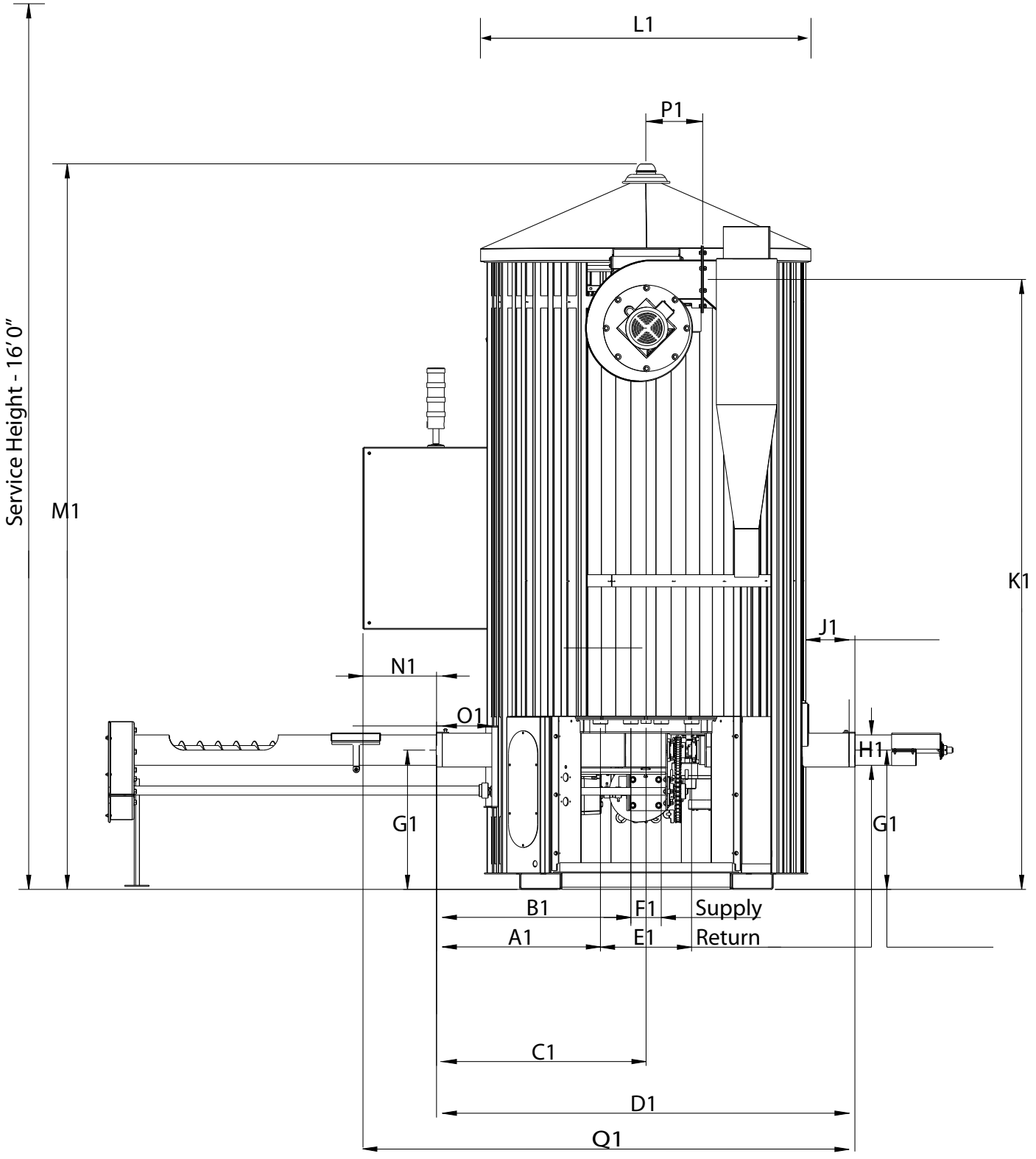
Figure 6 - Combustion Blower

1520/2520

Figure 3 - The Pelco Figure 4 - Exhaust Blower		Figure 5 - Top of Pelco Figure 6 - Combustion Blower
Item No.	Figure Number	Description
1	3	Vent Opening
2	3	Service Box & Light
3	3	Ash Auger
4	3	Beacon
5	3	Control Panel
6	3	Intake Feed Auger
7	3	Magnehelic
8	3	Electrical Service Cover
9	4	Exhaust Blower
10	5	Liquid Level Sensors
11	5	Expansion Tank
12	5	Flue Cleaner Drive
13	6	Combustion Blower Adjuster

Specifications - Pelco Rear View

Figure 7 - Pelco Rear View
see table on following page

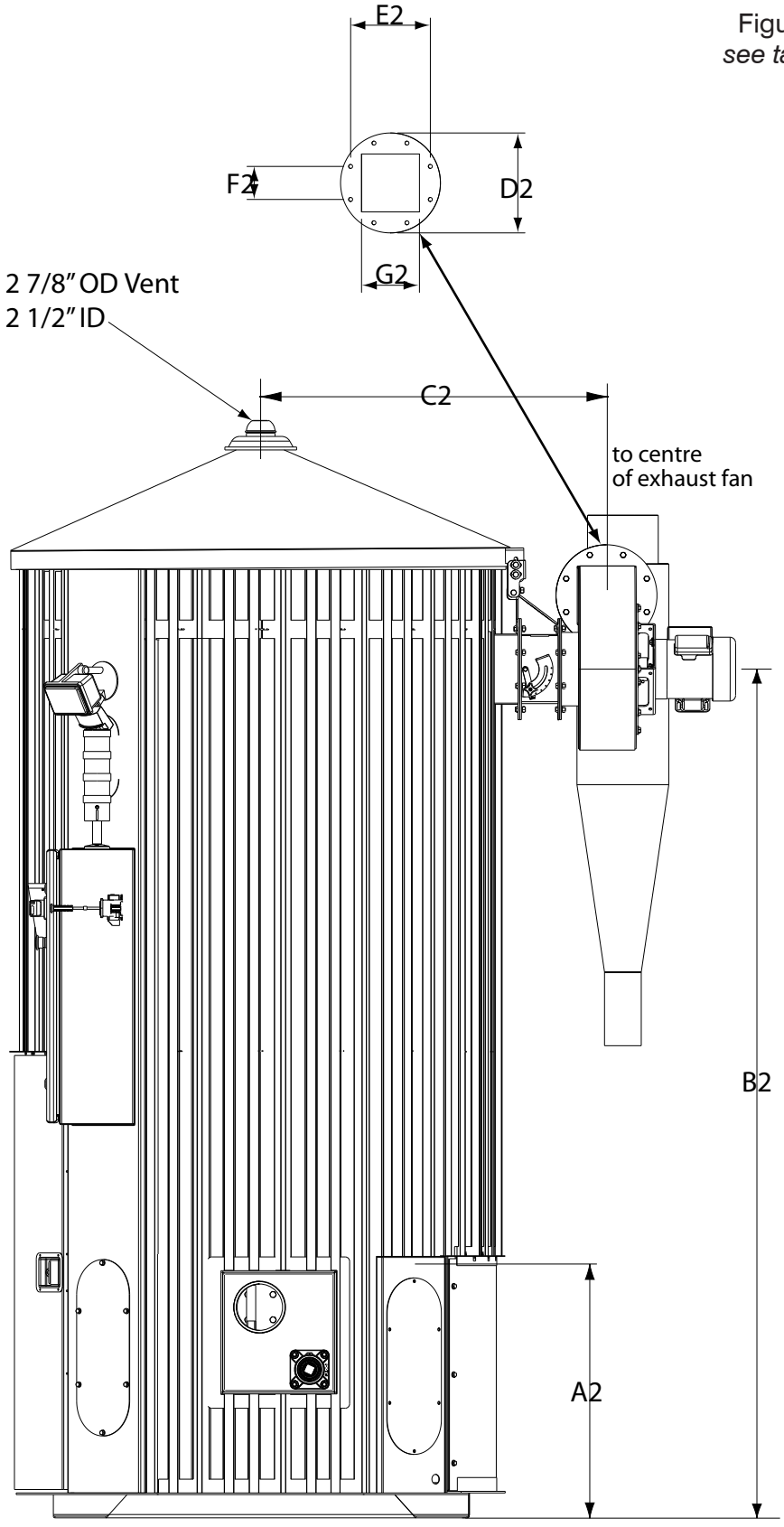


Specifications - Pelco Rear View

Figure 7 - Pelco Rear View [metres (inches)]				
	Detailed Description	PC1020	PC1520	PC2520
A1	Centre of return (1.5” NPT) to end of feed auger	0.75 m (29.64 in)	0.79 m (36.25 in)	0.94 m (30.74 in)
B1	Centre of supply (1.5” NPT) to end of feed auger tube	0.79 m (31.10 in)	0.93 m (36.63 in)	1.01 m (39.83 in)
C1	Centre of drain (1” NPT) to end of feed auger tube	0.85 m (33.60 in)	1.00 m (39.50 in)	1.14 m (44.73 in)
D1	End of feed auger to end of ash auger tube	1.70 m (66.99 in)	1.97 m (77.50 in)	2.22 m (87.49 in)
E1	Centre of return (1.5” NPT) to centre of return (1.5” NPT)	0.38 m (15.00 in)	0.43 m (16.73 in)	0.71 m (27.97 in)
F1	Centre of supply (1.5” NPT) to centre of supply (1.5” NPT)	0.13 m (5.00 in)	0.15 m (5.73 in)	0.25 m (9.81 in)
G1	Ground to centre of auger	0.58 m (22.93 in)	0.58 m (22.92 in)	0.58 m (22.90 in)
H1	Outside diameter ash auger	0.13 m (5.00 in)	0.13 m (5.00 in)	0.13 m (5.00 in)
J1	End of ash auger tube to siding	0.18 m (7.18 in)	0.20 m (7.75 in)	0.17 m (6.66 in)
K1	Ground to centre of exhaust outlet	2.56 m (100.67 in)	2.76 m (108.96 in)	2.83 m (111.41 in)
L1	Boiler diameter	1.35 m (53.25 in)	1.55 m (61.32 in)	1.85 m (73.00 in)
M1	Boiler height	3.07 m (120.71 in)	3.38 m (132.98 in)	3.38 m (133.24 in)
N1	End of feed auger tube to end of control box	0.33 m (13.97 in)	0.21 m (8.33 in)	0.15 m (5.86 in)
O1	End of feed auger tube to siding	0.19 m (7.31 in)	0.24 m (9.55 in)	0.22 m (8.71 in)
P1	Centre of boiler to face of fan	0.24 m (9.43 in)	0.23 m (9.18 in)	0.23 m (9.19 in)
Q1	End of ash auger tube to edge of control box	2.03 m (80.07 in)	2.18 m (85.83 in)	2.37 m (93.35 in)

Specifications - Pelco Side View

Figure 8 - Pelco Side View
see table on following page



Specifications - Pelco Side View

Figure 8 - Pelco Side View [metres (inches)]				
	Detailed Description	PC1020	PC1520	PC2520
A2	Floor to line hookup	0.69 m (27.24 in)	0.69 m (27.20 in)	0.66 m (26.18 in)
B2	Floor to centre of exhaust (fan shaft)	2.35 m (92.63 in)	2.56 m (100.65 in)	2.55 m (100.54 in)
C2	Centre of boiler to centre of exhaust fan	0.97 m (38.04 in)	1.07 m (41.95 in)	1.23 m (48.48 in)
D2	Flange diameter	0.28 m (11.00 in)	0.28 m (11.00 in)	0.28 m (11.00 in)
E2	Centre to centre of mounting holes	0.22 m (8.78 in)	0.22 m (8.78 in)	0.22 m (8.78 in)
F2	Centre to centre of mounting holes	0.09 m (3.64 in)	0.09 m (3.64 in)	0.09 m (3.64 in)
G2	Exhaust hole	0.16 m (6.37 in)	0.16 m (6.37 in)	0.16 m (6.37 in)

Specifications - Pelco Bottom Rear View

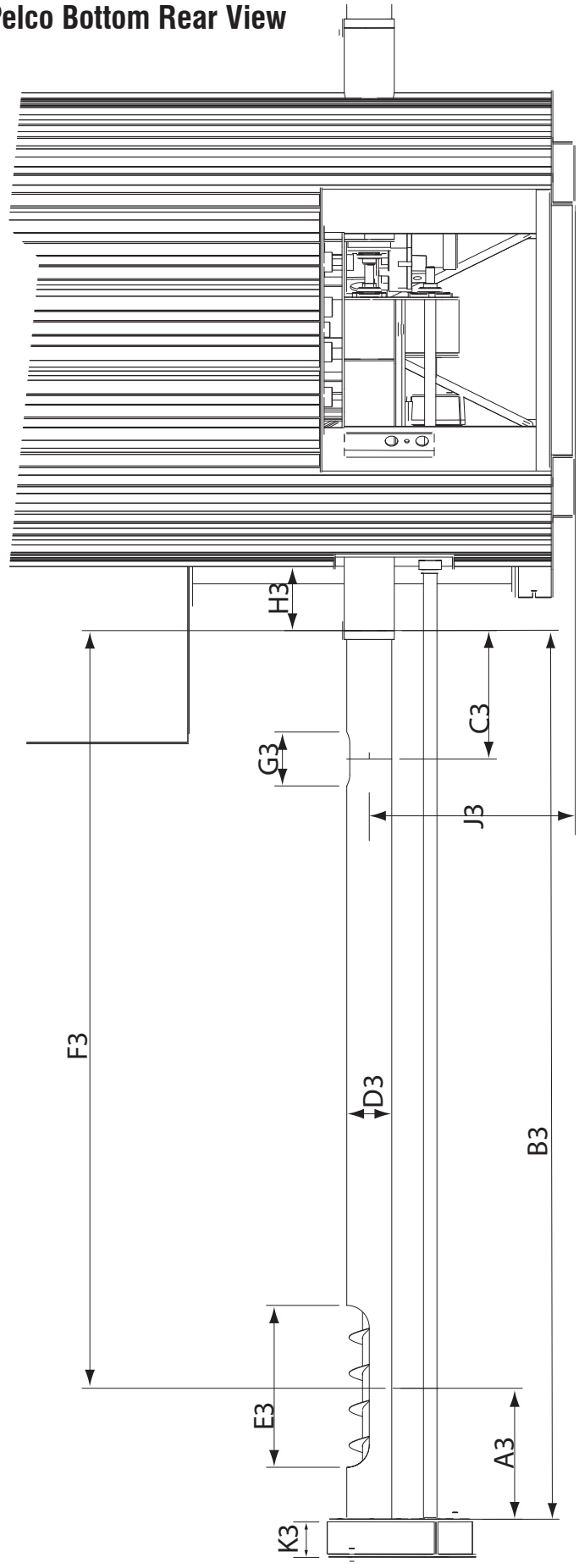
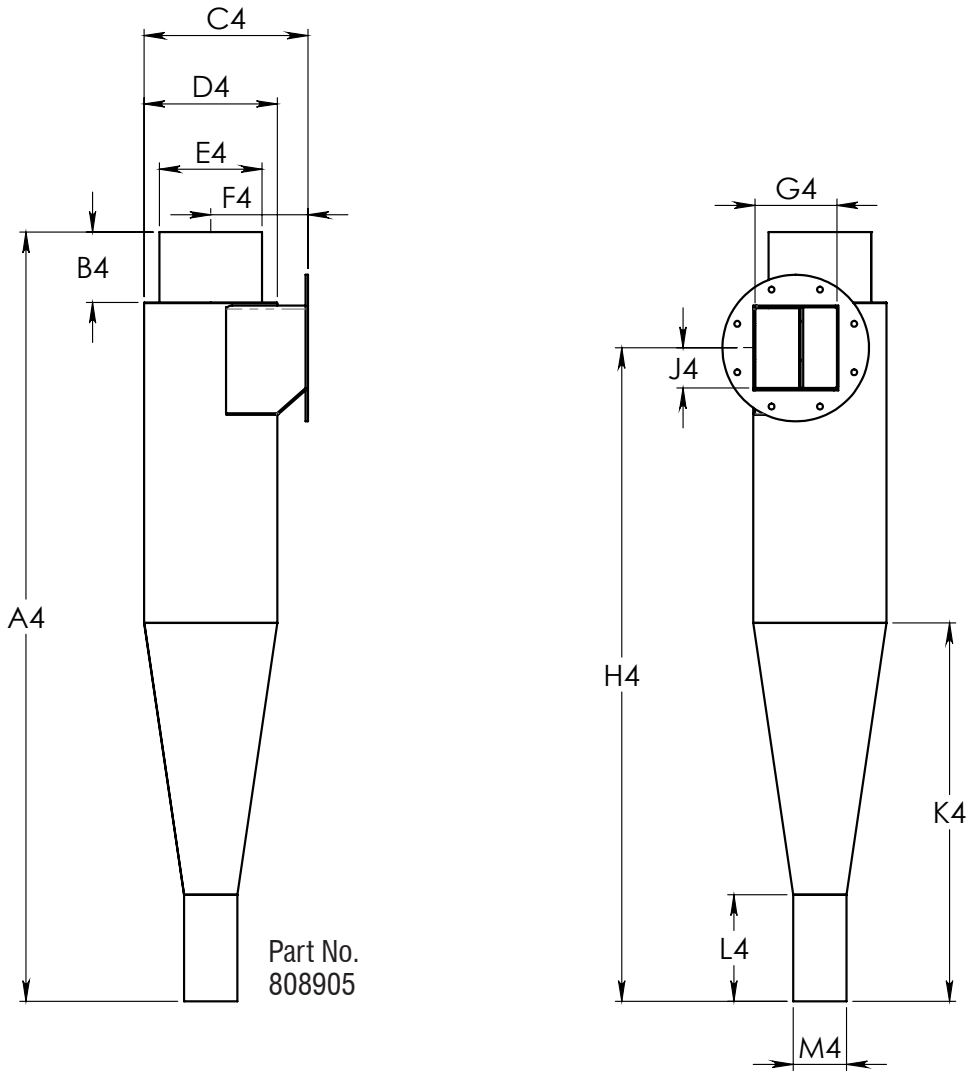


Figure 9 - Pelco Bottom Rear View
see table on following page

Specifications - Pelco Bottom Rear View

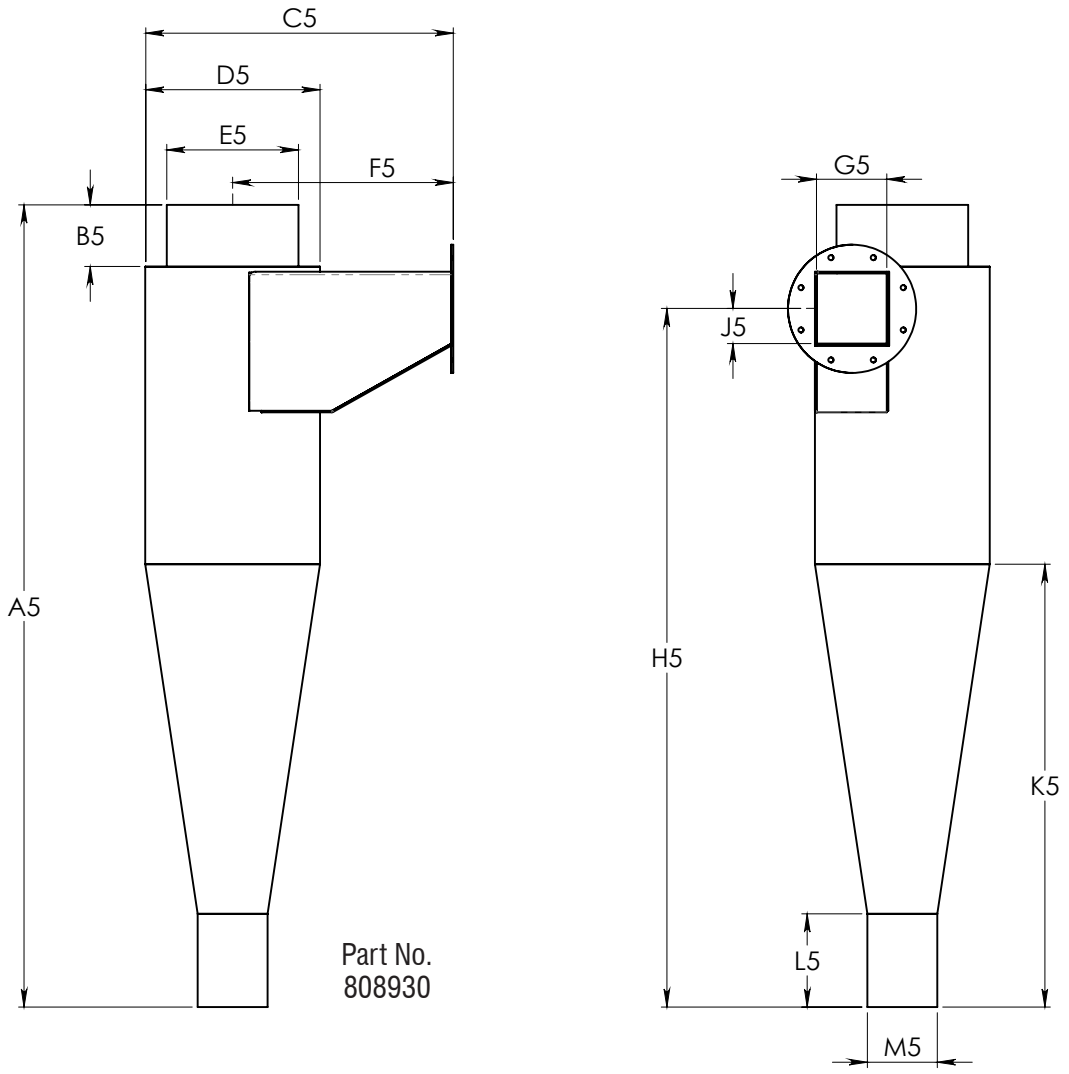
Figure 9 - Pelco Bottom Rear View [metres (inches)]				
	Detailed Description	PC1020	PC1520	PC2520
A3	Bearing mount to centre of feed auger intake hole	0.37 m (14.55 in)	0.37 m (14.55 in)	0.37 m (14.55 in)
B3	Total length of auger extension minus bearing frame (3 ft)	1.32 m (51.99 in)	1.32 m (51.99 in)	1.32 m (51.99 in)
B3	Total length of auger extension minus bearing frame (5 ft)	1.93 m (75.75 in)	1.93 m (75.75 in)	1.93 m (75.75 in)
B3	Total length of auger extension minus bearing frame (7 ft)	2.54 m (99.82 in)	2.54 m (99.82 in)	2.54 m (99.82 in)
B3	Total length of auger extension minus bearing frame (9 ft)	3.15 m (123.75 in)	3.15 m (123.75 in)	3.15 m (123.75 in)
B3	Total length of auger extension minus bearing frame (11 ft)	3.75 m (147.75 in)	3.75 m (147.75 in)	3.75 m (147.75 in)
C3	Boiler to centre of sight glass	0.36 m (14.27 in)	0.36 m (14.27 in)	0.36 m (14.27 in)
D3	Outside diameter	0.13 m (5.00 in)	0.13 m (5.00 in)	0.13 m (5.00 in)
E3	Auger intake hole	0.46 m (18.00 in)	0.46 m (18.00 in)	0.46 m (18.00 in)
F3	End of feed auger to centre of intake hole (3 ft)	1.04 m (40.95 in)	1.04 m (40.95 in)	1.04 m (40.95 in)
F3	End of feed auger to centre of intake hole (5 ft)	1.54 m (60.63 in)	1.54 m (60.63 in)	1.54 m (60.63 in)
F3	End of feed auger to centre of intake hole (7 ft)	2.15 m (84.65 in)	2.15 m (84.65 in)	2.15 m (84.65 in)
F3	End of feed auger to centre of intake hole (9 ft)	2.76 m (108.66 in)	2.76 m (108.66 in)	2.76 m (108.66 in)
F3	End of feed auger to centre of intake hole (11 ft)	3.37 m (132.68 in)	3.37 m (132.68 in)	3.37 m (132.68 in)
G3	Sight glass opening	0.15 m (6.00 in)	0.15 m (6.00 in)	0.15 m (6.00 in)
H3	Siding to end of feed auger tube	0.19 m (7.31 in)	0.24 m (9.55 in)	0.22 m (8.71 in)
J3	Floor to centre of feed auger tube	0.58 m (22.93 in)	0.58 m (22.93 in)	0.58 m (22.93 in)
K3	Frame, bearing mount, feed auger	0.10 m (4.09 in)	0.10 m (4.09 in)	0.10 m (4.09 in)

Options - Cyclones - PC1020 and PC1520



Cyclone Dimensions for PC1020 and PC1520			
	Detailed Description	PC1020	PC1520
A4	Total height	1.47 m (57.74 in)	1.47 m (57.74 in)
B4	Chimney insert height	0.13 m (5.28 in)	0.13 m (5.28 in)
C4	Total width to flanged surface	0.31 m (12.26 in)	0.31 m (12.26 in)
D4	Diameter	0.25 m (9.95 in)	0.25 m (9.95 in)
E4	Chimney insert diameter	0.19 m (7.30 in)	0.19 m (7.30 in)
F4	Centre line to flange surface	0.19 m (7.30 in)	0.19 m (7.30 in)
G4	Width of square opening	0.16 m (6.37 in)	0.16 m (6.37 in)
H4	Height of bottom end to control flange	1.25 m (49.03 in)	1.25 m (49.03 in)
J4	Half dimension of flange opening	0.08 m (3.18 in)	0.08 m (3.18 in)
K4	Height of bottom to top of cone	0.72 m (28.41 in)	0.72 m (28.41 in)
L4	Height of bottom section	0.20 m (8.00 in)	0.20 m (8.00 in)
M4	Diameter of bottom section	0.10 m (4.00 in)	0.10 m (4.00 in)

Options - Cyclones - PC2520



Cyclone Dimensions for PC2520		
	Detailed Description	PC2520
A5	Total height	1.75 m (68.83 in)
B5	Chimney insert height	0.13 m (5.29 in)
C5	Total width to flanged surface	0.67 m (26.43 in)
D5	Diameter	0.29 m (11.30 in)
E5	Chimney insert diameter	0.29 m (11.30 in)
F5	Centre line to flange surface	0.48 m (18.93 in)
G5	Width of square opening	0.16 m (6.37 in)
H5	Height of bottom end to control flange	1.52 m (59.92 in)
J5	Half dimension of flange opening	0.08 m (3.18 in)
K5	Height of bottom to top of cone	0.97 m (38.00 in)
L5	Height of bottom section	0.20 m (8.00 in)
M5	Diameter of bottom section	0.15 m (6.00 in)

Site Preparation - Foundation

The Pelco Hot Water Boiler (1, Fig. 11) should be installed on a concrete pad (2, Fig. 11) large enough to fit both the Pelco Hot Water Boiler and the fuel hopper (3, Fig. 11). The pad should be constructed to provide stability between the hopper and the Pelco Hot Water Boiler to prevent the intake feed auger from binding. The thickness of the pad will vary, according to the size of the fuel hopper and ground conditions.

For installation on a concrete pad of your hopper bottom bin, please see your bin supplier for specifications.

Provide an opening (4, Fig. 11) in the pad to allow water line and electrical wire installation.

Minimum spacing from control box to bin is 6 inches.

It is recommended that the main fuel storage bin be separated from a smaller furnace supply hopper by means of a firebreak.

Note: This furnace is designed to work in conjunction with another heat source. When installing, DO NOT relocate or bypass any of the safety controls in the original (gas, oil or electric) boiler installation that is to be used as the backup system.

The following information is to be used for estimating purposes only. Before construction, the owner must check with their local authority to take soil conditions into consideration and concrete psi recommendations.

General rules for Fuel Bins up to 40 tons capacity:
- Gravel Base
- 8” Thick Concrete Pad
- 1/2” Re-Bar at 18” Centers

General rules for Fuel Bins up to 60 tons capacity:
- Gravel Base
- 10” Thick Concrete Pad
- 1/2” Re-Bar at 18” Centers

Figure 11 - Pelco Hot Water Boiler Foundation

Item No.	Description
1	Pelco Hot Water Boiler
2	Concrete Pad
3	Fuel Hopper
4	Opening in Concrete Pad

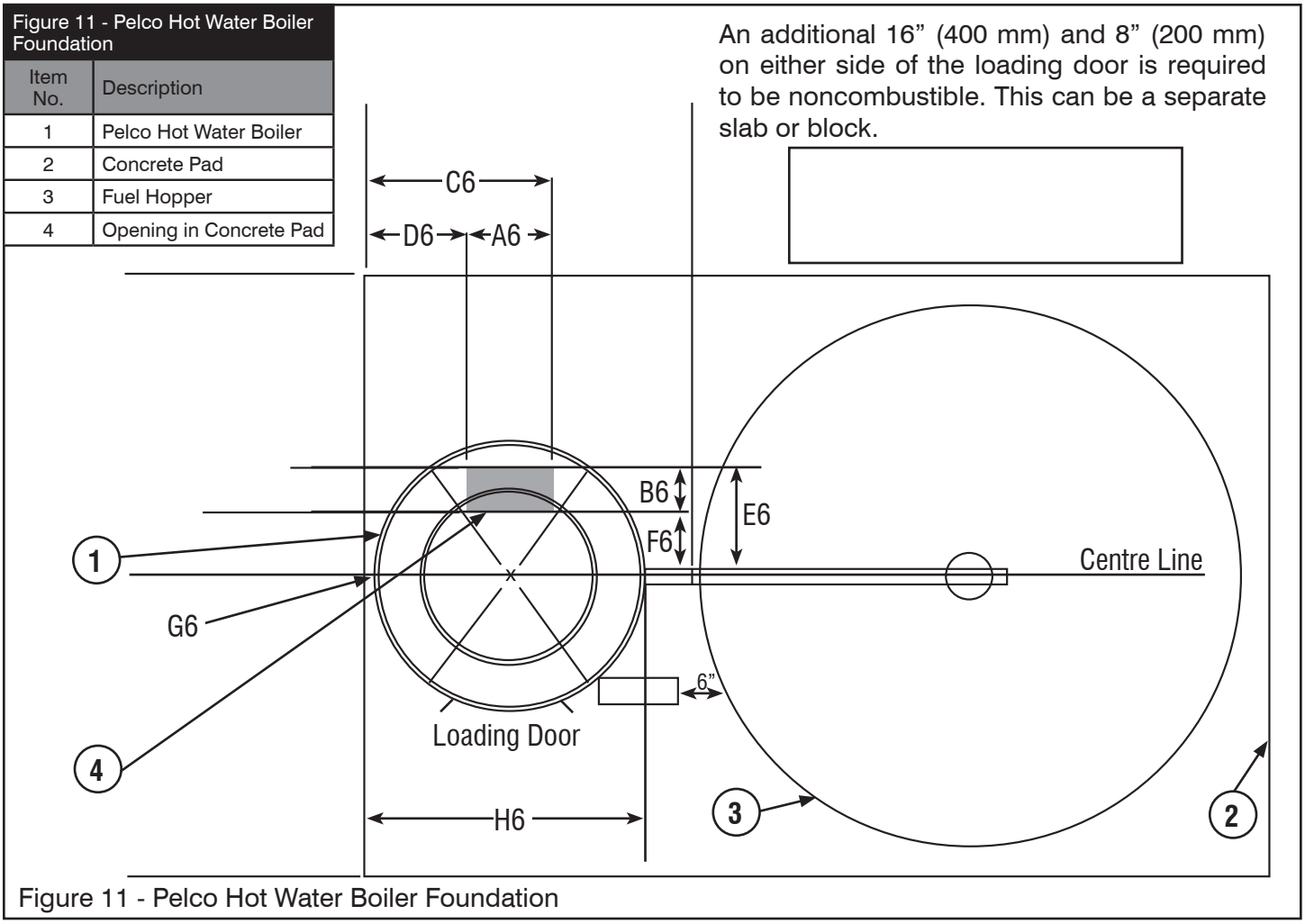
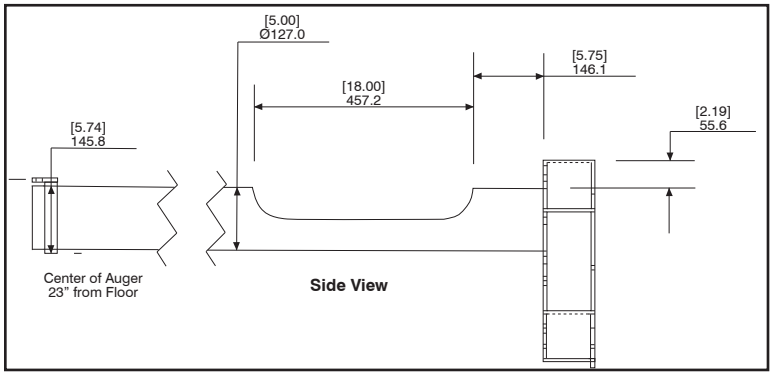


Figure 11 - Pelco Hot Water Boiler Foundation

		Concrete Pad Dimensions [metres (inches)]		
	Detailed Description	PC1020	PC1520	PC2520
A6	Total length of opening	0.48 m (19.00 in)	0.53 m (21.00 in)	0.92 m (32.20 in)
B6	Total width of opening	0.20 m (8.00 in)	0.20 m (8.00 in)	0.28 m (11.00 in)
C6	Length from Pelco edge to end of hole	0.44 m (17.13 in)	1.06 m (41.66 in)	0.47 m (18.40 in)
D6	Length from Pelco edge to start of hole	0.92 m (36.13 in)	0.51 m (20.16 in)	1.39 m (54.60 in)
E6	Length from Pelco centre line to end of hole	0.45 m (17.82 in)	0.58 m (22.67 in)	0.48 m (18.77 in)
F6	Length from Pelco centre line to end of hole	0.25 m (9.82 in)	0.37 m (14.67 in)	0.76 m (29.77 in)
G6	Minimum distance of edge of furnace to slab edge	0.10 m (4.00 in)	0.10 m (04.00 in)	0.10 m (4.00 in)
H6	Total Pelco cabinet diameter	1.35 m (53.25 in)	1.56 m (61.32 in)	1.85 m (73.00 in)

Intake Opening



Pelco Hot Water Boiler Placement

1. Place the Pelco Hot Water Boiler above the water line openings in the concrete pad.
2. Adjust positioning of the Pelco Hot Water Boiler to properly align the feed auger tube both horizontally and vertically between the fuel hopper and the Pelco Hot Water Boiler to prevent binding in the auger tube.

Water Lines

Connect the Pelco Hot Water Boiler to the supply and return water lines.

1. Install shut off valves (1, Fig. 12) on all lines to prevent loss of water during maintenance.

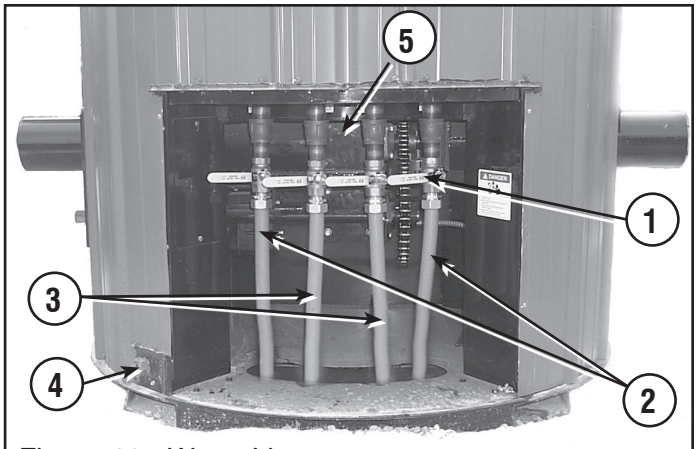


Figure 12 - Water Lines

2. Connect the water lines. The two outside fittings (2, Fig. 12) are returns, and the two middle fittings (3, Fig. 12) are supply outlets.
3. If the system is overfilled with water there is an overflow outlet (4, Fig. 12) that the water will drain through. DO NOT use overflow drain as a filler pipe.

Figure 12 - Water Lines	
Item No.	Description
1	Shut Off Valves
2	Return Lines
3	Supply Lines
4	Overflow Outlet
5	Drain Valve

IMPORTANT: To ensure maximum performance of your Pelco Hot Water Boiler please consult a qualified engineer/installer.

Feed Auger Installation

1. Slide the feed auger tube (1, Fig. 13) through fuel hopper discharge boot (2, Fig. 13).
2. Secure the feed auger tube (1, Fig. 14) on the Pelco Hot Water Boiler (2, Fig. 14) with a ⅜" x ½" hex bolt (3, Fig. 14).
3. Slide the auger shaft (1, Fig. 15) into the auger tube.
4. Install the auger bearing (2, Fig. 15) into the bearing housing (3A, Fig. 15) and attach to the support plate (3B, Fig. 15) with four 7/16" x 1-1/2" hex bolts and nuts as shown. Next, slide the bearing assembly onto the auger shaft and secure to the mounting plate (4, Fig. 15) with four 7/16" x 1-1/2" hex bolts and nuts as shown. Secure with locking ring.
5. Slide the auger sprocket (5, Fig. 15) over the end of the auger shaft. Insert key (6, Fig. 15) into keyway. Tighten set screws on auger sprocket hub.
6. Slide the drive shaft (7, Fig. 15) through the opening in the mounting plate. Assemble the bearing and bearing housing (8, Fig. 15) and slide over the end of the drive shaft. Secure the bearing housing to the mounting plate with four 7/16" x 1½" hex bolts.
7. Slide the drive sprocket (9, Fig. 15) over the end of the drive shaft. Insert key (10, Fig. 15) into keyway. Align sprockets and tighten screws on drive sprocket.
8. Place the chain (11, Fig. 15) on the sprockets. Tighten the chain by loosening the drive bearing housing mounting bolts and pulling down on the drive shaft. Once the chain is properly adjusted, tighten the bolts.
9. Install the chain drive cover (12, Fig. 15).

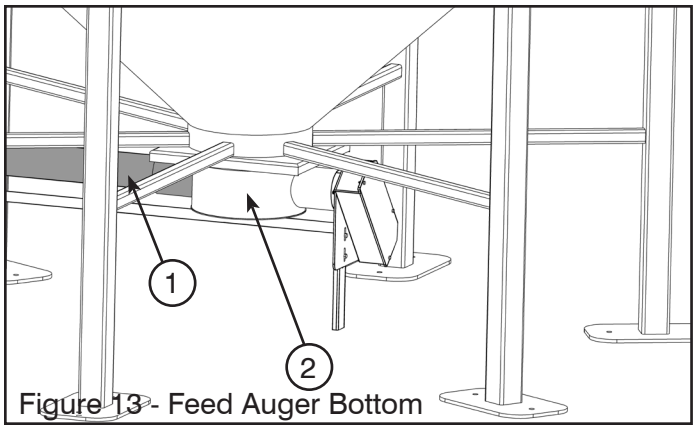


Figure 13 - Feed Auger Bottom

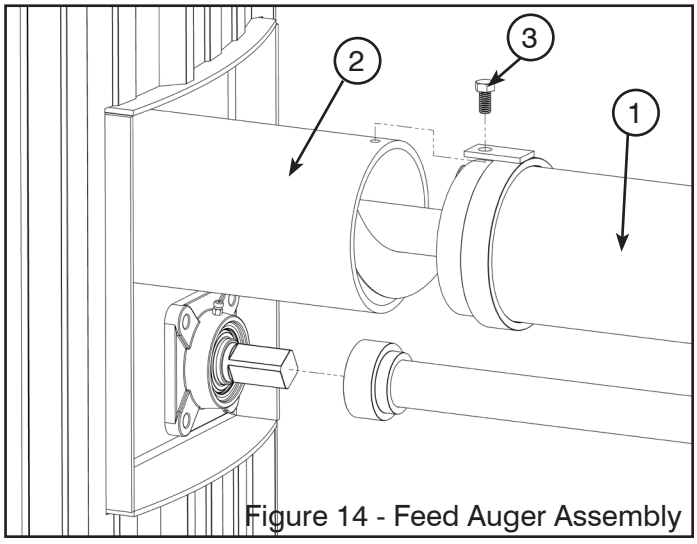


Figure 14 - Feed Auger Assembly

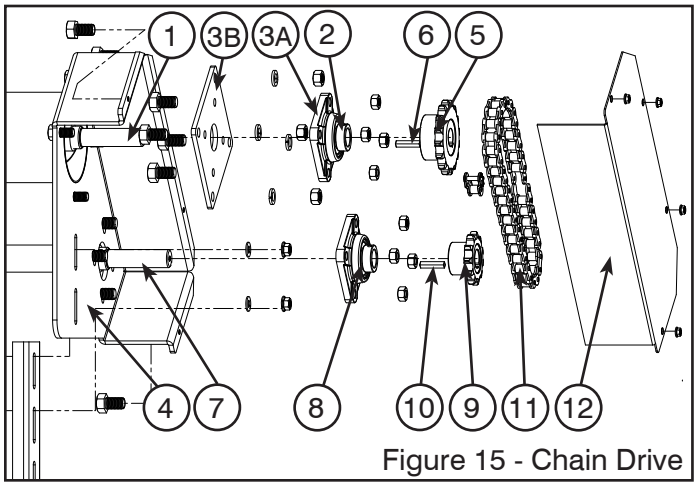


Figure 15 - Chain Drive

IMPORTANT: The Pelco Hot Water Boiler must be aligned properly, both horizontally and vertically, to prevent the feed auger flighting from binding in the tube.

Ash Auger

NOTE: The Pelco Hot Water Boiler comes standard with a 1.22 m (4 ft) ash auger extension.

1. Insert the ash auger shaft (1, Fig. 16) into the ash auger discharge tube (4, Fig. 13) ensuring the square hub is on the square shaft.
2. Slide the ash auger extension tube (2, Fig. 16) over the auger extension shaft and flighting.
3. Secure the ash auger extension tube to the discharge auger tube with a 3/8" x 1/2" hex bolt (3, Fig. 16).
4. Bolt together piece number 1 and 2 (1, 2, Fig. 17) with four 1/4" x 1" bolts (3, Fig. 17).
5. Slide the bolted part 1 and 2 onto the ash auger tube (4, Fig. 17).
6. Slide the flange (5, Fig. 17) onto the ash auger shaft (8, Fig. 17), then slide the bearing (6, Fig. 17) followed by the second flange (7, Fig. 17). Fasten with two 5/16" carriage bolts (9, Fig. 17).
7. Tighten the locking collar (10, Fig. 17) onto the bearing.

IMPORTANT: Bolt thread length (3, Fig.16) must not exceed 12.7 mm (1/2 in) to prevent collapsing of the tube and binding auger flighting.

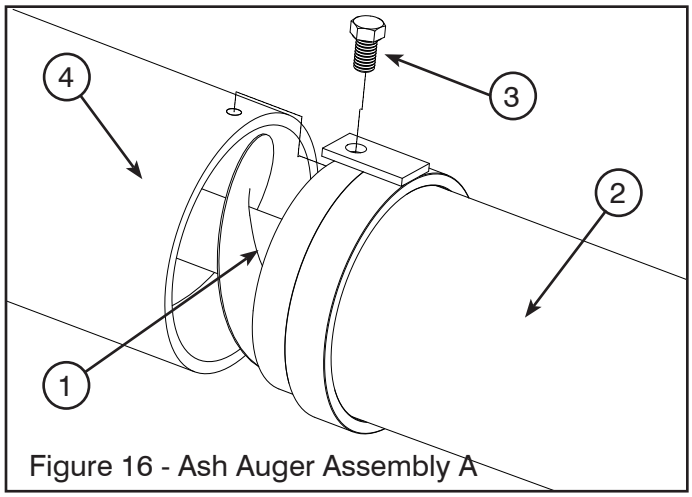


Figure 16 - Ash Auger Assembly A

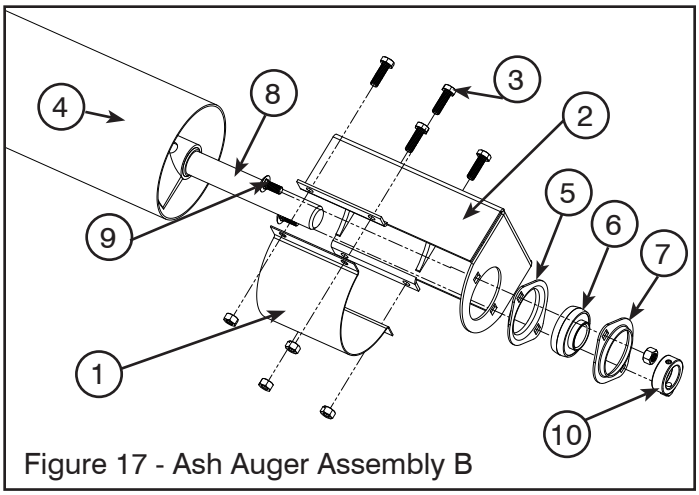
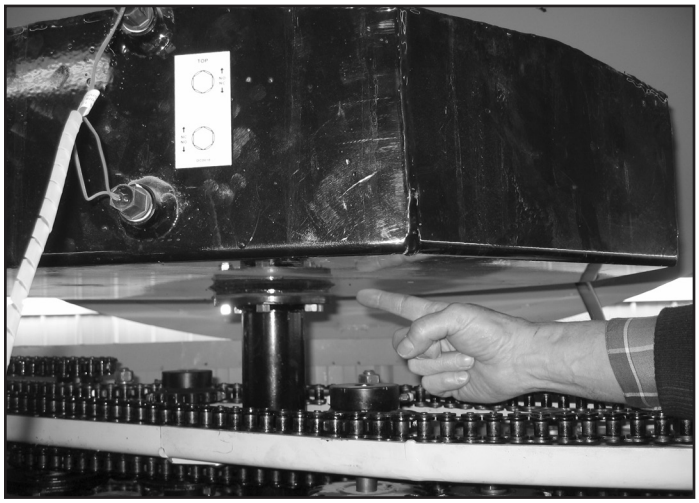


Figure 17 - Ash Auger Assembly B

Expansion Tank



Gasket or high temp silicone must be installed beneath the tank to prevent leakage.

NOTE: Overflow tank connection must line up with drain hose.

Filling the System with Water

1. To fill the Pelco Hot Water Boiler with water from inside the building being heated, install a “T” in the return or supply line with a valve and boiler fill/drain fitting (Fig. 18).
2. Attach a water supply hose.
3. Isolate the Pelco Hot Water Boiler by closing off the supply and return valves at the back of the Pelco Hot Water Boiler.
4. Turn on the water to pressurize the line system.
5. Inspect all lines and connectors for leaks.
6. After checking for leaks, open the supply valve at the Pelco Hot Water Boiler and let water enter the Pelco Hot Water Boiler water jacket for 2 minutes, then close.
7. Next open the return valve at the Pelco Hot Water Boiler and let water run for 2 minutes, then close.

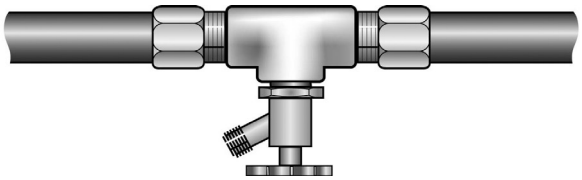


Figure 18 - Fill/Drain Fitting

⚠ CAUTION

Do not pressurize the Pelco Hot Water Boiler.

NOTE: Alternating between lines will ensure that most of the air is bled from the system.

8. Repeat the above procedure 3 to 4 times during filling of the Pelco Hot Water Boiler.

NOTE: Electrical power supply must be “on” for green beacon to illuminate.

9. When the Pelco Hot Water Boiler is full, the green beacon light will illuminate. Shut off the water supply valve.

IMPORTANT:

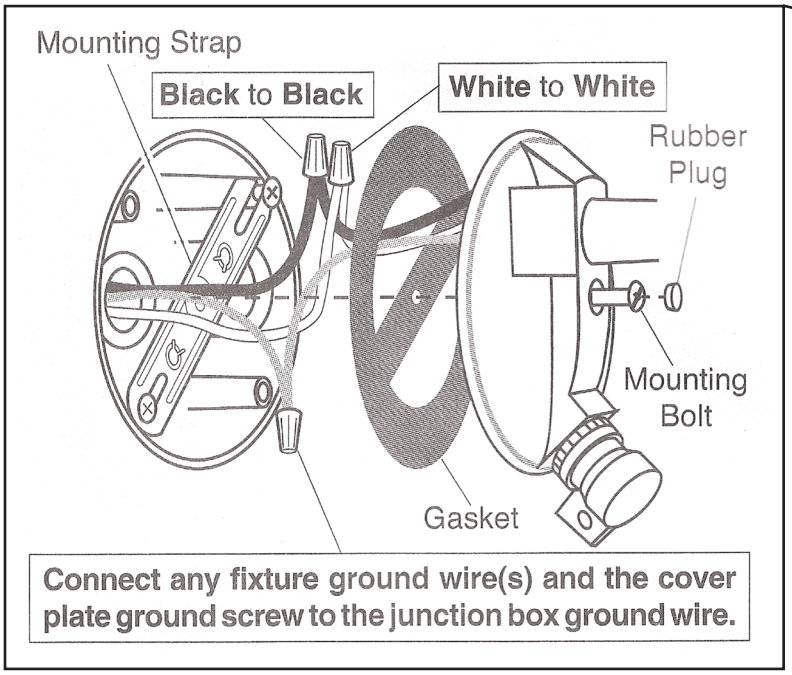
- **Use only clean, filtered water (not softened) in the Pelco Hot Water Boiler. Add Pro-Fab approved water treatment to the water to prevent corrosion (available from your Pelco dealer). For the amount of treatment to add follow instructions on the container.**

Clinker Stick

Prop Rod

Light

Install as per instructions included with light fixture.



NOTE: Junction box not included.

Start Up Instructions

IMPORTANT: Read the Control Panel information and become familiar with the controls prior to starting the Pelco Hot Water Boiler.

NOTE: The message display will now start to scroll through a series of codes, to where it will display the Main Window.

After the Pelco Hot Water Boiler has been properly installed, connections tightened properly, and the water reservoir and system are filled to the proper level, your Pelco Hot Water Boiler is ready to start.

1. Push emergency switch to OFF.
2. Turn main disconnect switch to ON. The red and green lights should be illuminated after unit has booted up.
3. Turn to release the emergency switch to ON. The Pelco Hot Water Boiler will start and the green light on the beacon will illuminate.

   The following components should be operating as follows:

   Exhaust Blower - running steady.

   Combustion Blower - running steady.

   Ash Ring Drive - running according to settings on the Electronic Digital Display panel.

   Feeder Drive - running according to settings on the Electronic Digital Display panel.
4. Using the Electronic Digital Display adjust the fuel input rate to 99% until the burner is covered. Once covered, use the Electronic Digital Display to adjust the fuel rate down to 1%. Set the exhaust air to 50%.
5. Light the fire. (See the following instructions to start the fire.)

   a) Heavy fuel such as coal:

   - Your Pelco boiler has two different burner designs based on fuels used. Heavy fuels (coal) use a CH burner, lighweight fuels use a CN burner.
   - To start a fire with coal the following is required: a one gallon tin can, wood pellets or sawdust and fire starter fluid (diesel fuel).
   - Fill the tin can full with wood pellets and pour fire starter fluid over the wood pellets. Let the wood pellets soak for a few minutes before placing them on the burner.
   - Start the Pelco Hot Water Boiler before putting the wood pellets in the fire chamber. Select manual feed on the main window of the control panel to bring the coal up to the burner (this may already have been done based on the above instructions). Once there is an even layer of coal covering the burner rings, stop feeding the coal and pour the pellets into the centre of the burner.
   - With the combustion blower still off, light the fire using a small propane torch. Once the wood pellets are burning, the Pelco Hot Water Boiler can be turned on ensuring the combustion air control is completely closed and the fuel feed rate is at 1%.
   - Slowly turn up the combustion air until the fire starts to burn rapidly. Once the coal is burning, the fuel feed rate can be increased to feed more coal.
   - Close firebox door and increase exhaust fan to obtain a -0.2 vacuum on the magnahelic.
   - At this time the fire should be burning on its own and ready for final adjustments depending on the heat load.

   b) Lightweight fuel such as pellets or corn:

   - To start a fire with corn the following is required: a one gallon tin can, wood pellets or sawdust and fire starter fluid (diesel fuel).
   - Fill up the tin can with wood pellets and pour fire starter fluid over the wood pellets. Let the pellets soak for a few minutes before proceeding.

Start Up Instructions Cont'd

- Before putting the wood pellets into the burner ensure the Pelco Hot Water Boiler is ON and select manual feed on the main window of the control panel to bring the corn up to the burner (this may already have been done based on the above instructions).
- When there is about two pounds of corn (or fuel) in the centre of the burner, stop feeding the corn and pour the pellets into the centre of the burner over the corn (or fuel).
- With the combustion blower off, light the fire using a small propane torch. Once the wood pellets are nicely burning turn on the Pelco Hot Water Boiler ensuring the combustion air control is completely closed and the fuel feed rate is at 1%.
- Slowly turn up the combustion air until the fire starts to burn rapidly. Once the corn (or fuel) is starting to burn the fuel feed rate can be turned up to bring in more corn (or fuel).
- Close firebox door and increase exhaust fan to obtain a -0.2 vacuum on the magnahelic.
- At this time the fire should be burning on its own and ready for final adjustments depending on the heat load.

6. Adjust the Combustion Blower air control as required.
7. Once the fire is lit, turn the Fuel Input Rate to approximately 30%.
8. After the fuel is burning evenly all around the burner, readjust the combustion blower air control, and the Fuel Input Rate to ensure proper burning.
9. Check the ash auger to make sure that no unburned fuel or live embers are feeding into the ash auger. Reduce fuel feed as necessary to prevent over fueling.

NOTE: Final adjustments are best made on a unit at operating temperature. Settings on feed rate, combustion fan, exhaust fan speed and firebox vacuum are affected by the operating temperature. The furnace must be monitored until these settings can be obtained for peak efficiency.

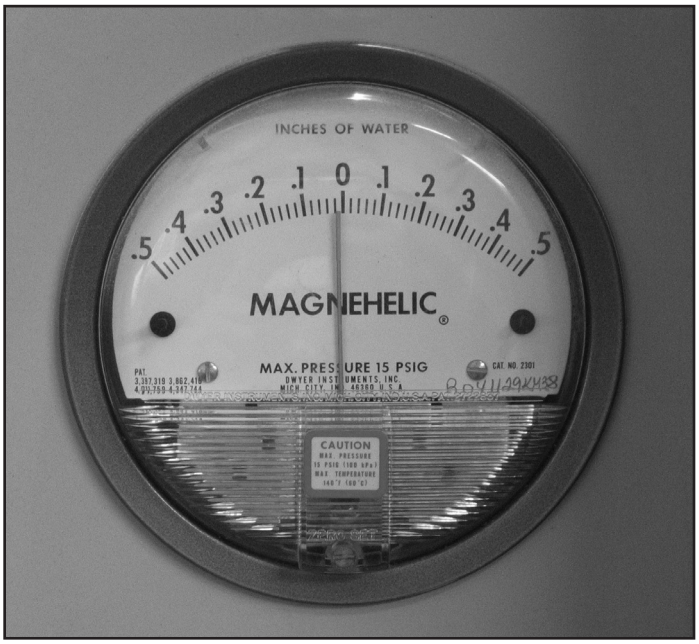
Warning: Risk of Fire

- **DO NOT** operate with firebox door open.
- **DO NOT** store fuel or other combustible material within marked installation clearances.
- **DO NOT** store fuel on Pelco cement pad other than in approved feed hopper or bin.

  It is recommended to install a fire-break or gap between the main storage bin and the Pelco approved hopper. This is in the case of "burn back" to contain the amount of fuel involved and protect the main fuel bin. Ask your dealer for more information.
- Inspect flues and chimney regularly. If creosote has accumulated, it should be removed to reduce the risk of a chimney fire.
- Creosote—Formation and Need for Removal—When wood is burned slowly, it produces tar and other organic vapors, which combine with expelled moisture to form creosote. The creosote vapors condense in the relatively cool chimney flue of a slow-burning fire. As a result, creosote residue accumulates on the flue lining. When ignited this creosote makes an extremely hot fire. When burning wood, the chimney connector and chimney should be inspected at least once every two months during the heating season to determine if a creosote buildup has occurred.

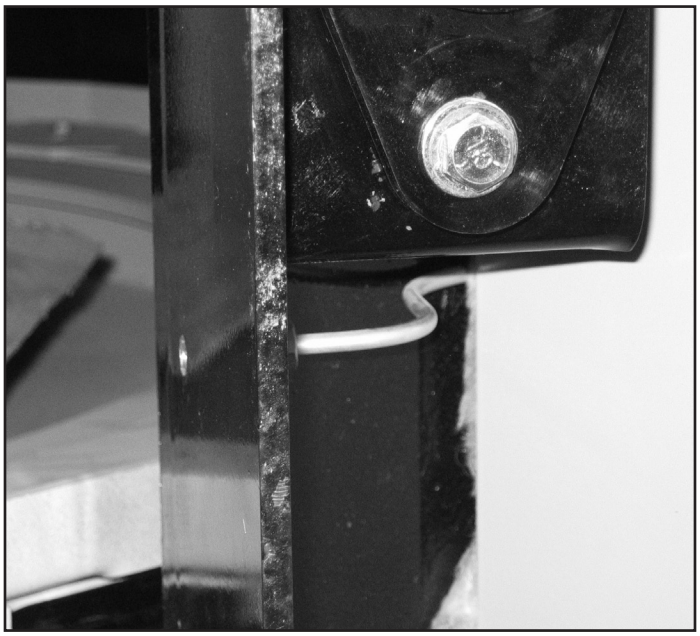
Magnehelic

Normal over fire operating draft would be -0.1” wc (water column) to -0.2” wc. This will ensure having the correct draft for combustion of most alternative fuels. This will also ensure a maximum level of heat transfer from firebox to boiler (always confirm this range at operating temperatures).



Tube

For proper operation of your Pelco Boiler ensure that the tube opening is clear of foreign material. Use a wire or pipe cleaner to clear.



Operation - Electronic Digital Display Settings

Factory Settings	Label	Allowable Values	Description
50%	Feed Input Rate	0–100%	Percentage of feed motor speed.
180°F	Water Set Point	150°F–180°F	Maximum temperature that the boiler will get to.
40°F	Fire Out Offset	20°F–100°F	Variance setting to shut down unit if temperature drops.
6°F	Temp. Diff.	2°F–9°F	Running operating variance.
10 hrs 59 mins	Heat Dissipation	0–20 hrs 0–59 mins	Time set for the unit to operate the heat dissipater circuit.
2	Flue Clean	2–48	Number of times in a 24 hour period that the flue augers operate.
1 min	Ash Ring On	1–100 min	Ash ring on time.
1 min	Ash Ring Off	1–100 min	Ash ring off time.
	Blower Off Delay	1 sec to 20 min	Time delay after exhaust fan start before combustion for start.
	Exhaust Fan Speed	1 to 100%	Variable manual setting to maintain firebox vacuum.
	Email Resend Option	On/Off	Option to send or not send email alarm.
	Email Resend Delay	1 min to 23 hr 59 min	Time between alarm emails sent.
	Start Up Alarm Delay	1 min to 150 min	Allowance to set maximum time to achieve operating temps.

Operation - Beacon Messages

Beacon	Alarm Display	Functions of the Pelco	Solution
Red Solid	Water level low	Unit shuts down	Need to fill water
	Fire out	Unit shuts down	Start/Restart fire
	Water overheated	Unit shuts down	Wait for cool down
	Ash Auger Overheat	Unit shuts down	Reduce amount of feed, allow to cool and monitor
	Motor Overload	Unit shuts down	Reset and check operation
	Drives Overload	Unit shuts down	Reset and check operation
	Fire Out	Unit shuts down	Restart fire
	Feed Auger Overheated	Unit shuts down	Attend unit, add fuel to push burn back into firebox. Restart unit.
	Clean Out Overload	Unit shuts down	Reset and check operation
	E-Stop Depressed	Unit shuts down	Twist and release, check operation
Red Solid Green Solid	Ash auger overheated	Unit has shut down	Wait for cool down
Amber Solid	Overload tripped	Unit will not run	Reset breaker
Amber Solid Green Solid	Add water	Unit will continue to run	Need to fill water
	Flue Cleaning	Unit shuts down during cleanout	Wait for completion
	Flue cleanout breaker is tripped.	Flue cleanout motors will shut down. Rest of boiler will continue to run.	Reset breaker

Operation - Alarm Messages

Alarm message will be displayed on the control panel. Follow instructions on the alarm message.

Combustion Blower Settings

1. Set combustion blower adjuster (1, Fig. 24A for PC 1020; Fig. 24B for PC 1520 and PC 2520) to the centre position, initially.
2. Refer to Standard Operation Procedure.

IMPORTANT: Too little air will result in the incomplete combustion of fuel. Too much air may result in unburned fuel or "clinkers" and may produce excessive smoke.

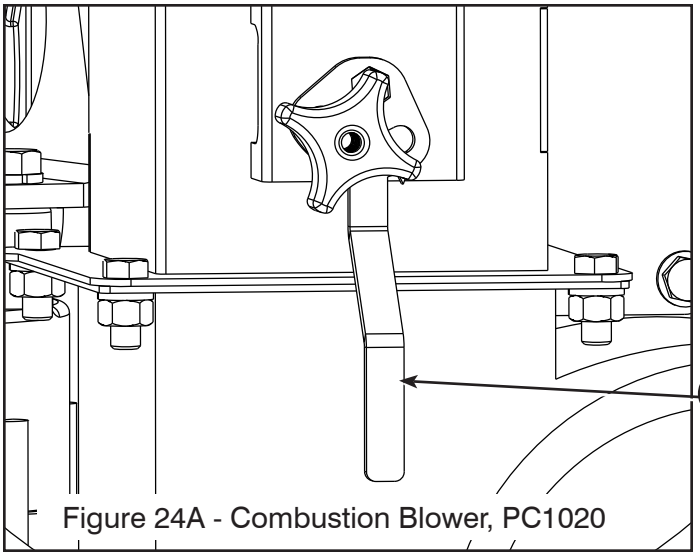


Figure 24A - Combustion Blower, PC1020

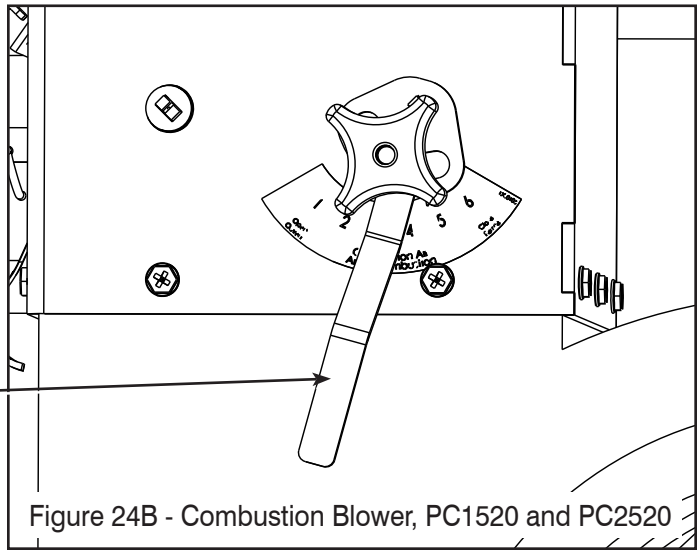


Figure 24B - Combustion Blower, PC1520 and PC2520

Exhaust Blower Settings

The exhaust blower controls the emissions and efficiency of the Pelco Hot Water Boiler. Proper exhaust blower adjustments will result in a slightly negative pressure in the firebox.

IMPORTANT: Contact your dealer for suggested settings.

Warning: Risk of Fire

- **DO NOT** operate with firebox door open.
- **DO NOT** store fuel or other combustible material within marked installation clearances.
- **DO NOT** store fuel on Pelco cement pad other than in approved feed hopper.

  It is recommended to install a fire-break or gap between the main storage bin and the Pelco approved hopper. This is in the case of "burn back" to contain the amount of fuel involved and protect the main fuel bin. Ask your dealer for more information.

- Inspect flues and chimney regularly. If creosote has accumulated, it should be removed to reduce the risk of a chimney fire.
- Creosote—Formation and Need for Removal—When wood is burned slowly, it produces tar and other organic vapors, which combine with expelled moisture to form creosote. The creosote vapors condense in the relatively cool chimney flue of a slow-burning fire. As a result, creosote residue accumulates on the flue lining. When ignited this creosote makes an extremely hot fire. When burning wood, the chimney connector and chimney should be inspected at least once every two months during the heating season to determine if a creosote buildup has occurred.

The Pelco is designed to burn various types of solid fuel. Understanding that solid fuel does require maintenance and the particular type of fuel used will assist in the peak operation of your Pelco. The removal of clinkers is considered normal. It is best to pay attention to the moisture content, fines and quality of the fuel.

Factory Tested and Approved Fuels

Coal: There are typically four types of coal. Anthracite, Bituminous, Sub-bituminous and Lignite. Anthracite and Bituminous coal IS NOT recommended and the use of such coal will void any warranty available. Sub-bituminous and Lignite coals are approved and recommended. Normal BTU values of Sub-bituminous and Lignite coal range from 7000 to 9500 BTU's per pound. Desired size is - 1" x ½" stoker coal with an ash content of 5 to 8% and a moisture content of 20% or less. Clinker buildup can be minimal depending on the moisture content and foreign matter mixed in with the coal, such as clay.

Wood Pellets: ¼" diameter pellets burn well. 3/8" diameter pellets are preferred. Premium wood pellets as per the Pellet Fuels Institute are recommended. Premium grade spruce with 2% ash and 3% fines is considered good quality grades. Pellets made from bark and generally dark pellets are considered subject as to their quality. Normal BTU value for wood pellets is considered to 8,000 BTU's per pound. Clinker buildup is generally not considered to be a problem with wood pellets, but can be troublesome with poor quality pellets.

Corn: Corn has many variables that are out of the control of the producer. For best performance use a corn that has low wax content. Cracked corn will produce large quantities of clinkers and in most cases will not sustain a burn. Maximum moisture content must be 15% or less. The normal BTU value range for corn is 6500 to 7500 BTU's per pound. Corn is subject to large clinker buildup. It is normal for the clinkers to have to be removed at least twice a day.

Agricultural Residue: As the blends, moisture content and sizes are so varied, it is recommended that a qualified Pelco dealer is consulted for assistance in choosing and using agricultural residue.

The Pelco line of products is divided into three basic models, the PC1020, PC1520, and the PC2520 and each of these have three individual lines:

Pelco-SI-This is the basic unit, and is only able to be monitored and adjusted at the unit.

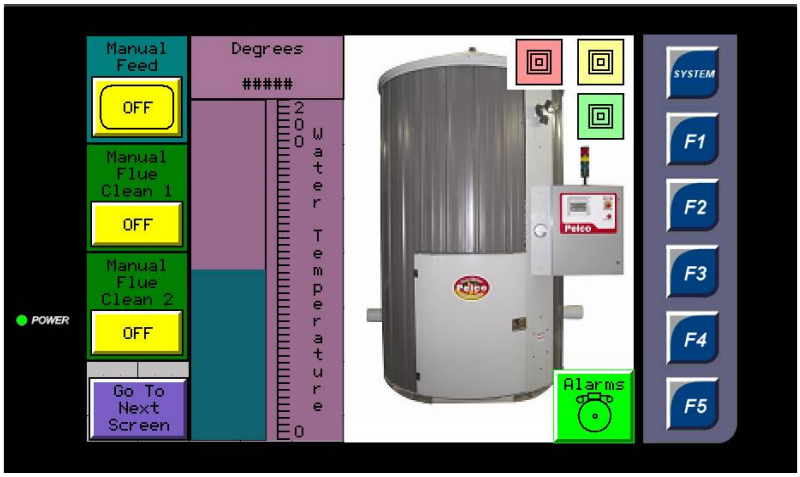
Pelco-SII-This is the mid range model. It is the basic unit with an email alarm option included. This means that if the unit experiences an alarm setting, an email will be sent to the customer advising them an action at the unit is needed.

Pelco-SIII-This is the deluxe model. Its features include internet access to remotely monitor the furnace, access to basic functions to adjust for ambient temperature changes or load demand changes on the unit, and email alarm alerts to keep the customer informed and updated on any potential problems.

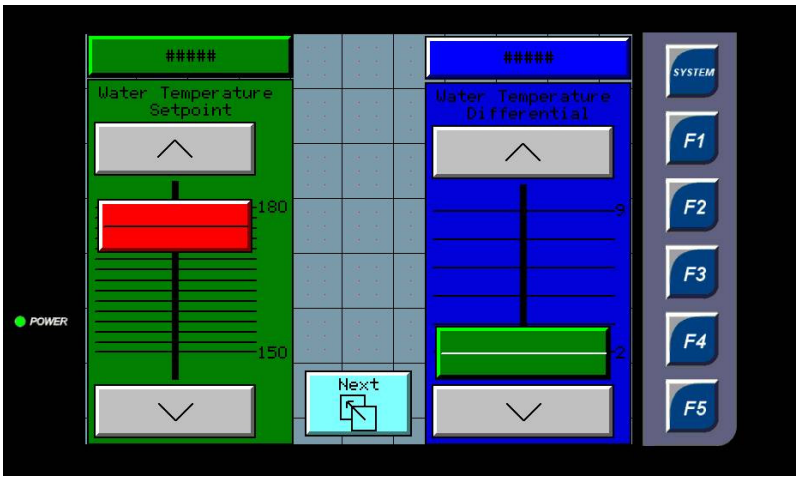
Below is a walk through of the operations and functions of the SIII and the SI models focusing on the control pad.

Model SIII Operation Instructions

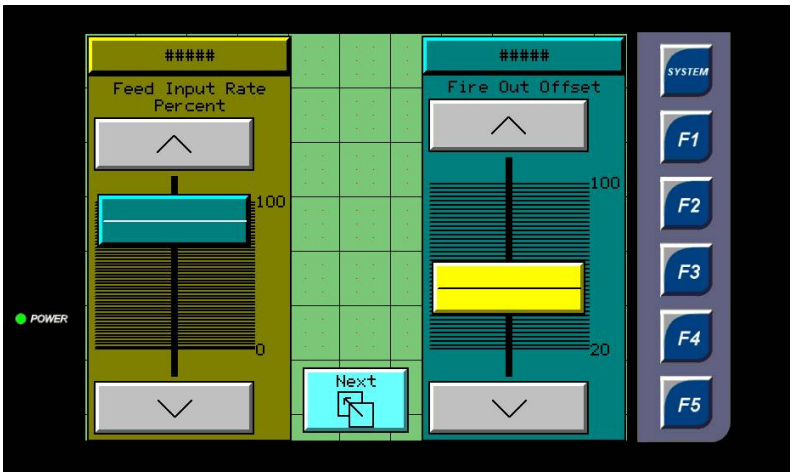
This screen is for the manual feed, manual flue cleans and general diagnostics. Pressing the manual feed button will activate the feed auger as long as the button is held. Manual flue clean buttons work the same way. Degrees are not changeable but is an actual water degree display. Alarm button will turn red if alarms are active, or amber when acknowledged. Indicators operate the same as the stacklight. To go to the next screen, momentarily depress the next screen button.

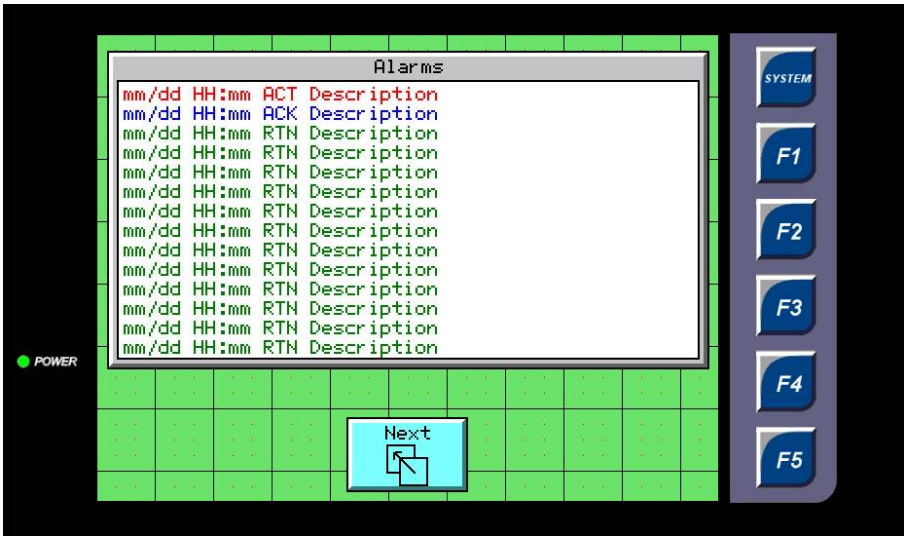


This screen is for setting the water temperature and water temperature differential. Touch top block to bring up a number pad to enter exact number, press the up/down arrow to raise or lower the setpoint, or hold finger on slider and slide up or down to adjust.

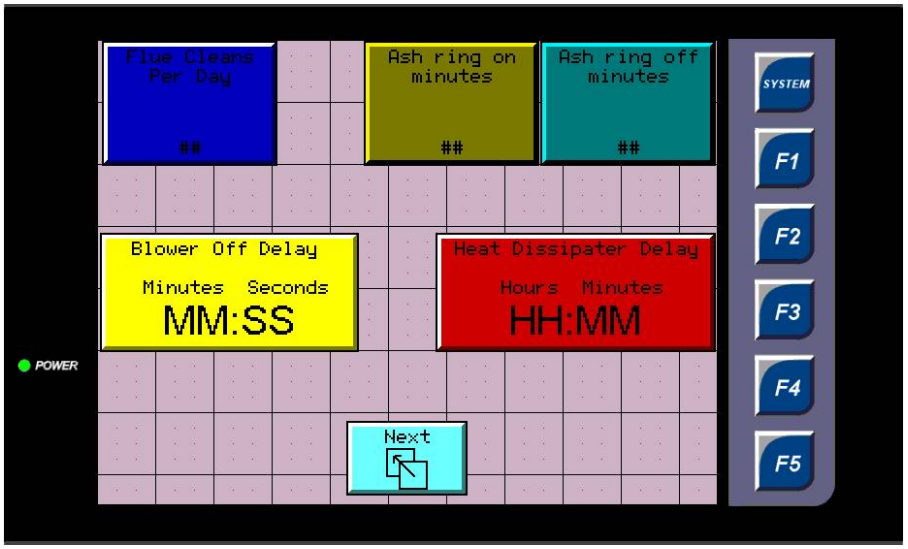


This screen is for setting the feed input rate and fire out offset temperature. Touch top block to bring up a number pad to enter exact number, press up/down arrow to raise or lower setpoint, or hold finger on slider and slide up or down to adjust

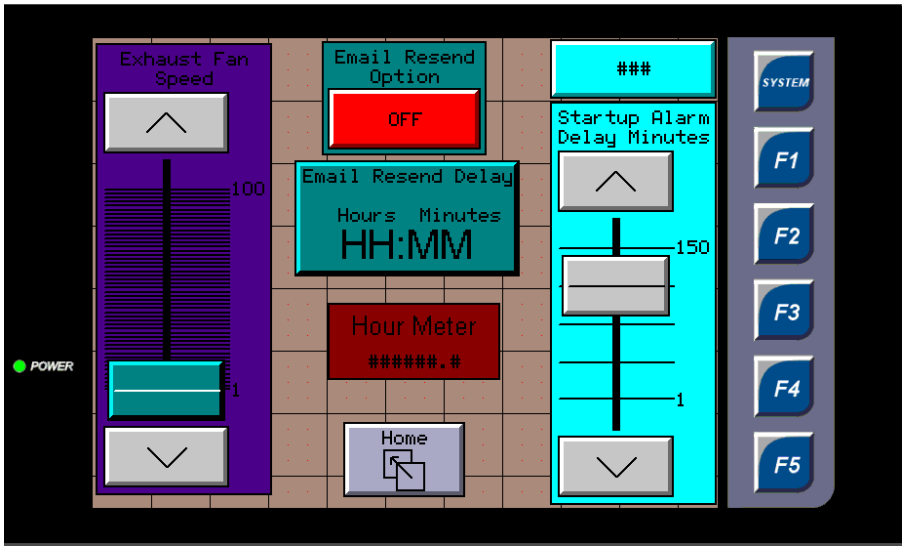




This screen contains the alarms. There is no need to clear alarms. When a new alarm occurs, its entries text is displayed in red at the top of the partial list to alert the operator. The operator can then display the alarm viewer by touching the screen and acknowledging that alarm. On return to the alarm object's screen, the entries text color is changed to blue. Should the operator fail to acknowledge the alarm before the alarm point returned to inactive, the entry text color is changed to green.



This screen is for setting the flue cleans, ash ring auger on/off times, blower off delay, and heat dissipater delay. Touch block to bring up a number pad to enter exact number. Press "enter" to return to the access screen.



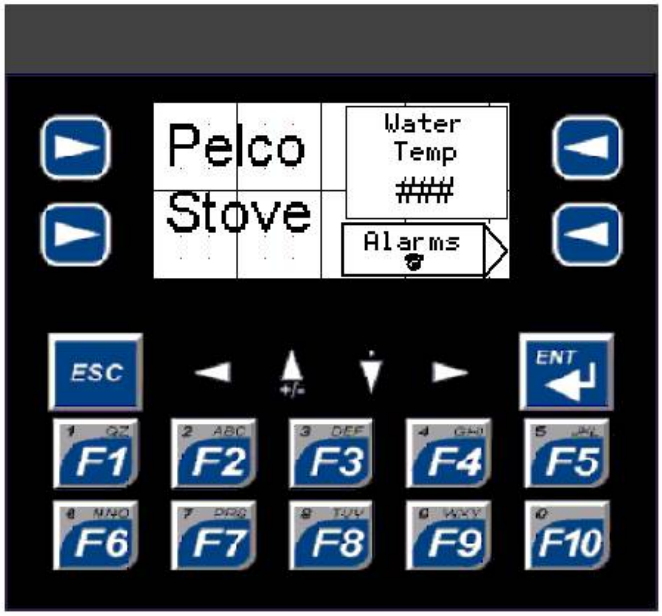
This screen is for setting the exhaust fan speed, email resend off/on, email resend delay time, and the time between start up and alarm activation. Press "enter" to return to the access screen.

Model SI and SII Operation Instructions

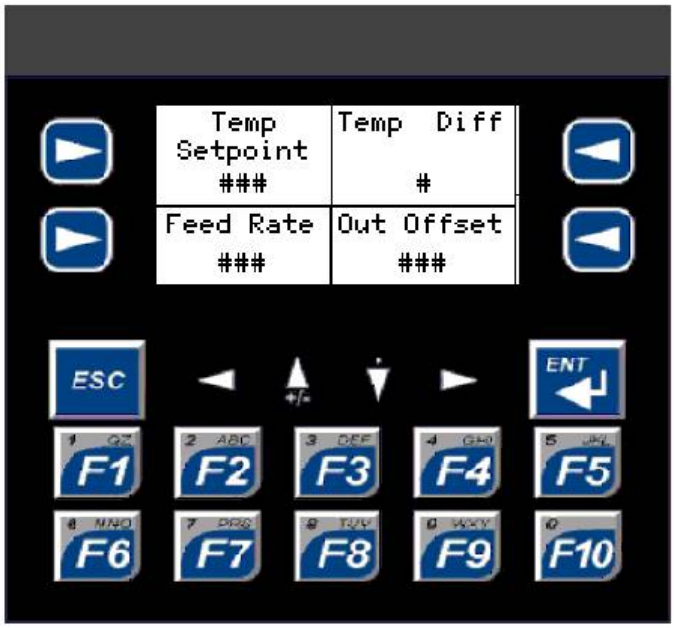
There are seven screens on this panel.

F1 = screen one. F2 = screen two and so on.

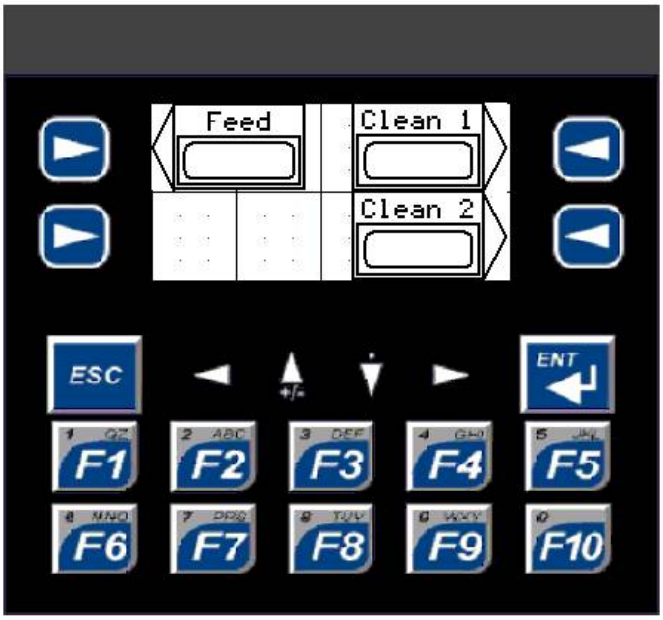
This screen is only for display. Alarm button will blink when alarms are present.



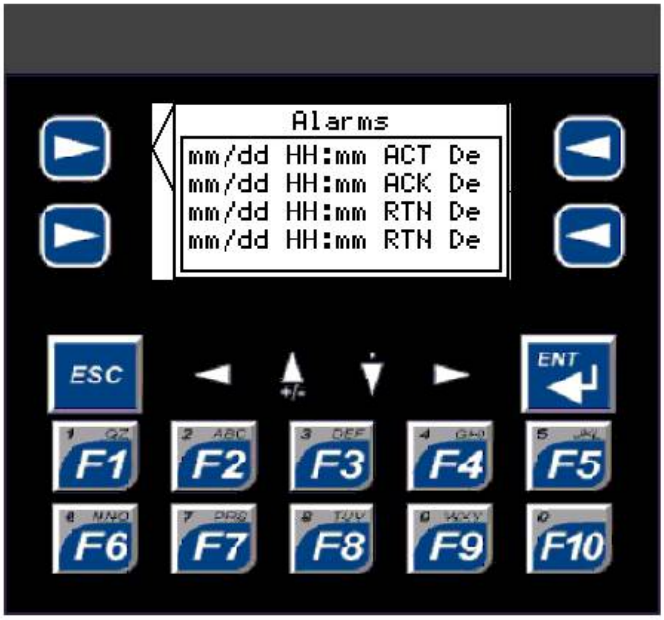
This screen is for the adjustments shown. Press arrows under the screen left/right/up/down to select which block to change. Selected block will have a dotted line around it. Then press enter and the numbers to be changed will be highlighted. Press up/down arrow for adjustment. Press enter to save the change.



This screen allows the operator to perform manual operations by pressing the arrow beside the button.

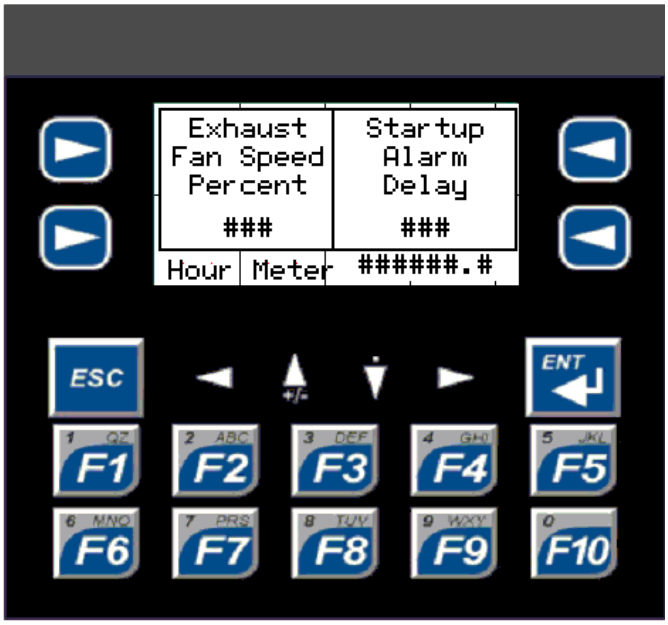


This screen contains the alarms. There is no need to clear alarms. When a new alarm occurs, its entry text is displayed in red at the top of the partial list to alert the operator. The operator can then display the alarm viewer and acknowledge that alarm by pressing the top right arrow and F1. On return to the alarm object's screen, the text now shows acknowledged.

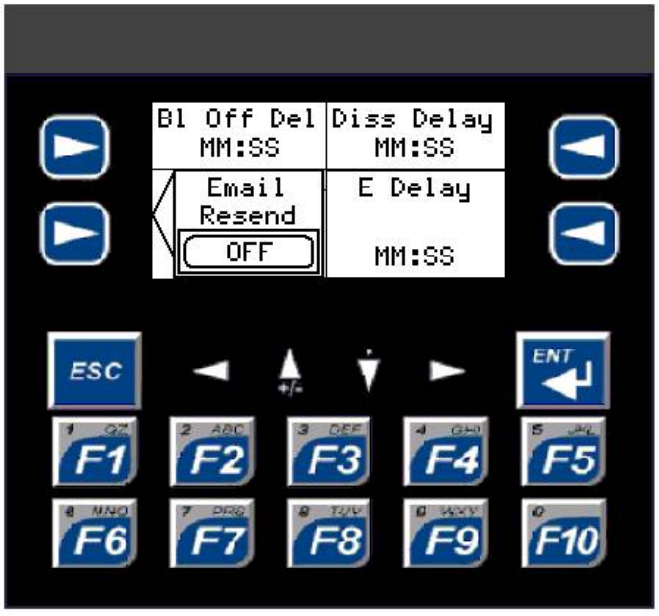


This screen is for controlling the flue cleans and the ash ring auger on/off timer. Press arrows under screen left/right/up/down to select which block you want to change. Selected block will have dotted line around it. Then press enter and the numbers to be changed will be highlighted. Press up/down arrow for adjustment. Press enter to save the change.

This screen is for exhaust fan speed and start up alarm delay. Press arrows under the screen left/right/up/down to select which block to change. Selected block will have a dotted line around it. Then press enter and the numbers to be changed will be highlighted. Press up/down arrow for adjustment. Press enter to save the change.



This screen is for blower off delay, heat dissipater delay, email resend off/on, and email resend delay time. Press arrows under the screen left/right/up/down to select which block to change. Selected block will have a dotted line around it. Then press enter and the numbers to be changed will be highlighted. Press up/down arrow for adjustment. Press enter to save the change. The email on/off can be changed simply by pressing the arrow beside it.



Routine Maintenance - During Heating Season

Note: It is recommended to keep a maintenance log for service reference. This will assist in preventing failures due to normal wear.

Daily:

1. Inspect combustion chamber to ensure proper fuel feeding. Adjust fuel feed rate, if necessary.
2. Inspect combustion chamber for presence of accumulation of non-combusted fuel (clinkers).
3. Inspect water level in reservoir. Add water, if necessary.

⚠ WARNING

Extreme heat source. Open access doors and covers carefully when inspecting combustion chamber.

Daily/Weekly:

Note: Disconnection of power supply may be necessary.

1. Creosote—On some fuels, a creosote buildup in the chimney can occur. On using a new fuel, check the chimney exhaust to ensure a buildup does not occur. Clean as necessary to reduce risk of chimney fire.

⚠ WARNING

Combustion chamber pressurization. The Pelco Hot Water Boiler is designed to be operated at atmospheric pressure. Ensure that vent cap is in place with a loose fit to prevent pressurization.

Monthly:

Note: Disconnection of power supply may be necessary.

1. Clean chimney and exhaust blower to remove accumulated ash and other residue.
2. Inspect vent opening for blockage. Remove blockage if present.
3. Ensure vent cap is in place and maintains a loose fit.
4. Lubricate flue cleaning auger drive.
5. Operate the backup heating system (gas, oil or electric) periodically to ensure that it will operate satisfactorily when needed.

Routine Maintenance - End of Heating Season

1. For safety, disconnect the electrical power supply during repairs.
2. To minimize corrosion, thoroughly clean chimney, exhaust blower and fire chamber to remove any residue or ash accumulation.
3. Inspect the door gasket for leaks. Ensure there is an air tight fit. Replace the gasket if necessary.
4. Check to make sure there is no moisture in the fire chamber.
5. Lubricate the fire chamber and exhaust system with diesel fuel or motor oil to prevent corrosion.
6. When not in use, cover and seal the chimney to prevent any rain or moisture from entering the fire chamber.
7. Ensure water reservoir is full during the non-heating season to prevent corrosion inside the water jacket.
8. Upon receipt of water test results adjust as recommended. If rust inhibitor is added, operate the water circulating pump for 24 hours after adding rust inhibitor to ensure proper mixing of the rust inhibitor with the water.
9. Draw a water sample once a year and forward to your dealer for testing. Contact your dealer for details. All laboratory results must be kept on file as proof of maintenance.

   Water properly treated with Pro-Fab approved water treatment should have a ph level between 8.8 and 11.0, a nitrate level between 730 and 1460 ppms as NaN02, and a conductivity must be less than or equal to 4000 mmhos.

   If the ph is not within tolerance, treat by adding a ratio of 1 part Pro-Fab approved Wood Burning Furnace Treatment (WBFT) to 300 parts of system water and retest. If the nitrate is less than 730 ppm, treat by adding a ratio of 1 part WBFT to 300 parts of system water and retest. If the conductivity is higher than 4000 micromhos, drain 50% of the system water. Refill and treat by adding a ratio of 1 part WBFT to 300 parts of system water and retest.
10. Do not turn the power off to the control panel for extended periods to prevent the possible loss of computer information.

IMPORTANT: Failure to use a Pro-Fab approved rust inhibitor in accordance with the Operator's Manual instructions will void your warranty. Contact your dealer for supplies. It is the responsibility of the owner to maintain yearly water sample results on file.

Routine Maintenance - Yearly (Once each year, or every 2,000 hours)

1. Clean, check and lubricate the Pelco Hot Water Boiler. (Lockout power by shutting off and tagging the breaker, or disconnect the power. Water pumps may be left on.)
2. Grease (as per illustrations) with High Temperature Grease:

   a) Motor/Drive Chamber Bearings in the bottom of the Pelco.

   Three bearings are located at the bottom of the Pelco Hot Water Boiler under the fire chamber (Fig. 27). The forth bearing is located by the feed auger (Fig. 26) on the outside of the Pelco Hot Water Boiler.

   b) Bushing on the Ash Ring Drive.

   Every Pelco Hot Water Boiler has one bushing with front access under the fire chamber (Fig. 28).

   c) Bearings on the Clean Out Driveshaft.

   The PC1020 has one bearing on the clean out driveshaft (Fig. 29) located at the top left of the Pelco Hot Water Boiler, under the lid.

   The PC1520 and PC2520 have two clean out driveshaft bearings (Fig. 30, 31) located at the top of the Pelco Hot Water Boiler, under the lid.

3. Check Oil (SAE 15W40 Motor Oil) and add as necessary:

   a) Gearboxes in the Motor/Drive Chamber in the bottom of the Pelco.

   The PC1020 has two gearboxes located in the bottom (Fig. 32) of the Pelco Hot Water Boiler. One is the feed drive and is located under the centre of the fire chamber. The other is a flue drive and is located at the right rear of the unit.

   The PC1520 and PC2520 have three gearboxes. The first two are located on the bottom (Fig. 32) of the Pelco Hot Water Boiler on the left and right sides. The third gearbox is located under the fire chamber (Fig. 33) attached to the vertical feed auger.

4. Lubricate with Chain Lube:

   a) Flue Cleanout Auger Drive Chains.

   The Flue Cleanout Auger Drive Chains are located on the top (Fig. 34) of the Pelco Hot Water Boiler under the lid. Spray an even coating of chain lube on all chains.

   b) Feed Auger Drive Chains

   The Feed Auger Drive Chains are located beneath the stoker in the bottom of the unit, and at the end of the feed auger outside of the unit. To grease the chain under the stoker, place cardboard under the chain to protect from overspray and apply a light coat of lube to the chain. To grease the chain at the end of the auger, remove the safety cover and spray lube over the whole chain. Replace the safety cover.

5. Remove burner plates and clean out any accumulated ash.
6. Replace all safety covers removed for service access. Do not operate the unit with any safety covers removed. Do not leave safety covers off for extended periods of time.

Routine Maintenance - Yearly (Once each year, or every 2,000 hours)

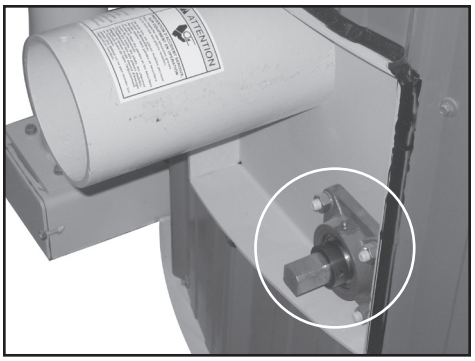


Figure 26

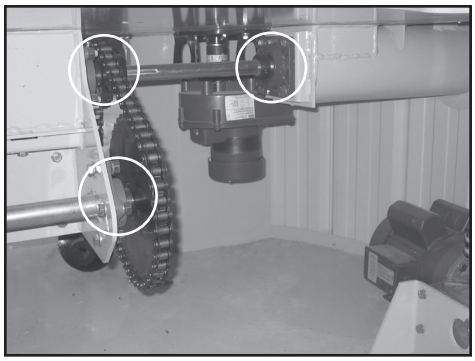


Figure 27

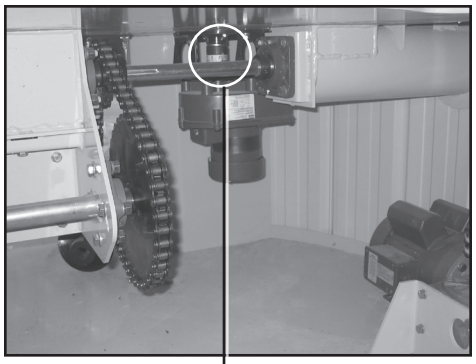


Figure 28

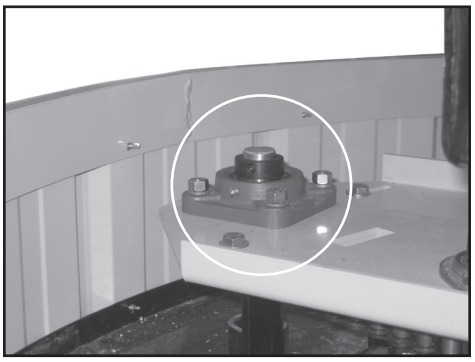


Figure 29

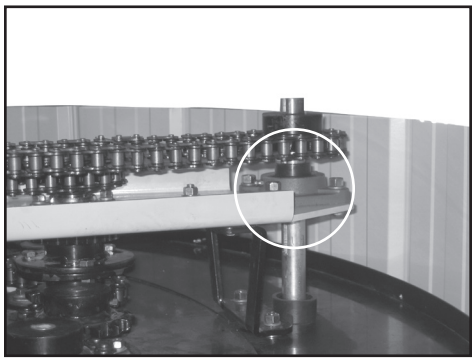
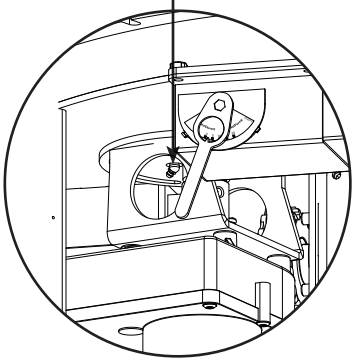


Figure 30



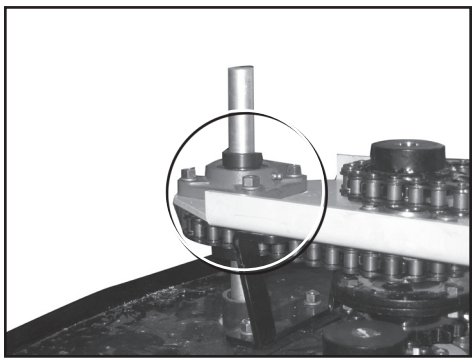


Figure 31

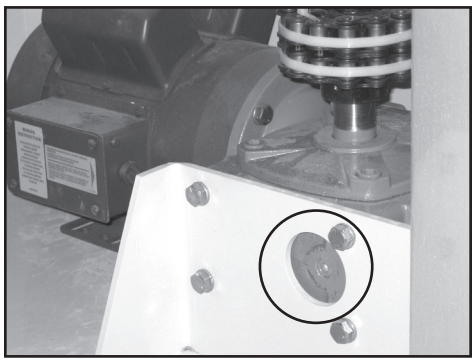


Figure 32

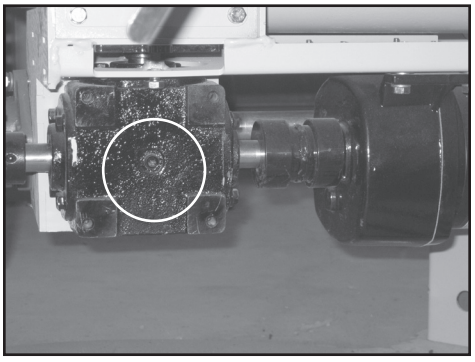


Figure 33

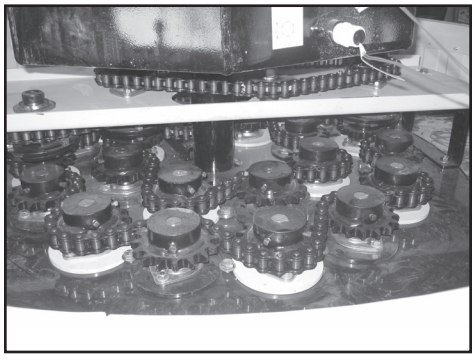


Figure 34

Heat Dissipation

There is an electrical outlet on the Pelco Hot Water Boiler where either a pump or a fan can be connected which will cut in at a preset time; this is called the “heat dissipation” connection.

The control panel can be set so that when the Pelco Hot Water Boiler is on a hold fire cycle (temperature has reached its maximum setting but is above the low limit temperature for longer than the prescribed set), the heat dissipation will get rid of the heat (through a heat exchange system, supplied by the customer, in the building or right beside the Pelco Hot Water Boiler) so that the Pelco Hot Water Boiler will cut in and cycle automatically. This eliminates the unit from sitting idle and the fire from going out.

The heat dissipation connection is accessed through the back panel. The connection is found on the left side with a label directly below (Fig. 36).

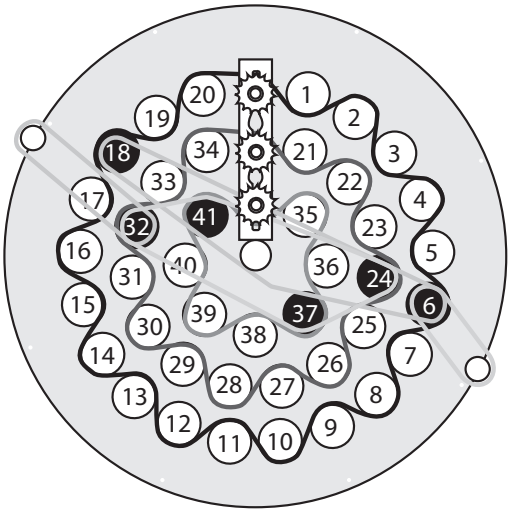
Figure 36 - Heat Dissipation

Aligning Drive Chain Synchronizers

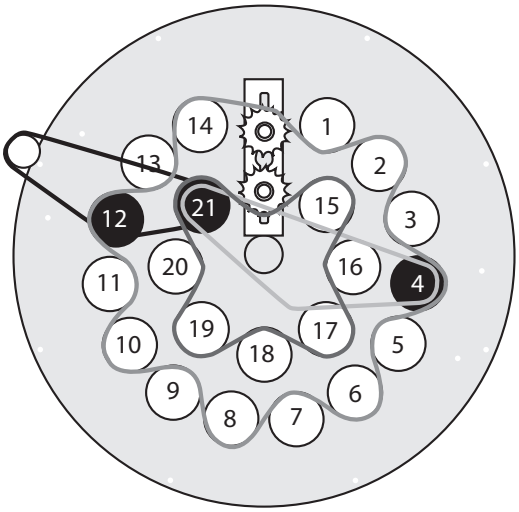
Synchronizing Drive Chains

During routine operation and maintenance, the flue clean drive chains may become misaligned. Indication of misaligned flue auger drive chains is rough operation or the chain disengaging from the sprocket. Alignment procedure is as follows:

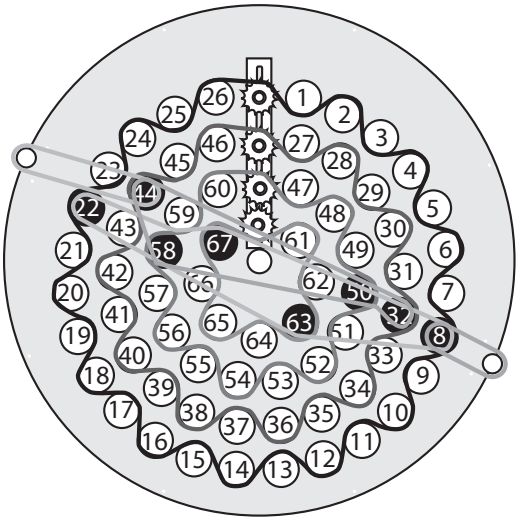
1. Identify chain and synchronizer sprockets to be aligned.
2. Loosen three bolts (A) on each synchronizer sprocket.
3. Loosen idler sprockets (C) to relax the chain (B).
4. Tighten idler sprockets (C) to place tension on the chain.
5. Tighten three bolts (A) on each synchronizer sprocket (B).
6. If alignment cannot be achieved, the chain may need to be relaxed and move a synchronizer sprocket one tooth.
7. Repeat from step 2.
8. If necessary, all chain drives may need to be realigned independently.
9. Lubricate all chains with a high temperature chain lube.



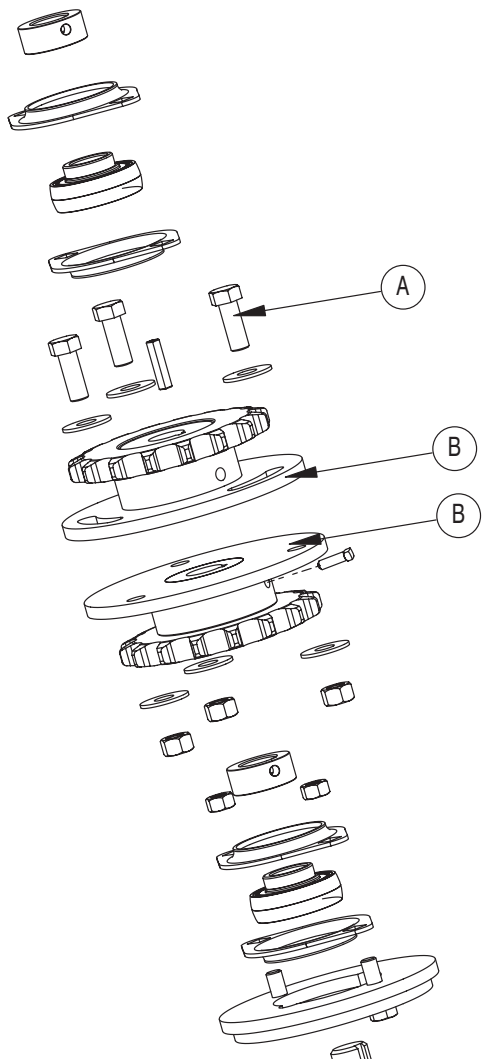
PC1520 — Synchronizers
6/18, 24/32, 37/41



PC1020 — Synchronizers
12/4, 21



PC2520 — Synchronizers
8/22, 32/44, 50/58, 63/67



Ash Ring Assembly PC1020 (Figure 1)

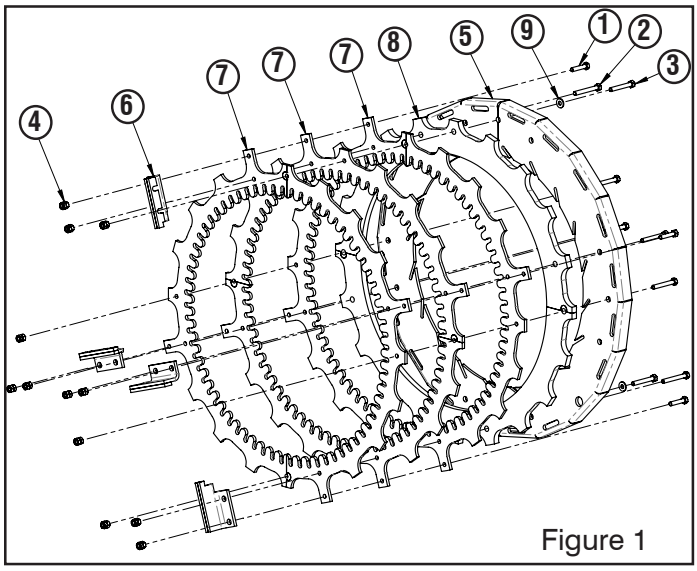


Figure 1

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	800205	Bolt, Standard, NC, 5/16 in. x 1 1/2 in., Gr. 5	4
2	800207	Bolt, Standard, NC, 5/16 in. x 2 1/2 in., Gr. 8	4
3	800208	Bolt, Standard, NC, 5/16 in. x 2 1/4 in., Gr. 5	4
4	804194	Nut, Standard, NC, 5/16 in	24
5	804934	Retainer, Coal, Pelco 1020	2
6	804949	Shovel, Ash, Pelco (Welded)	4
7	805089	Crown Gear, Pelco 1020	6
8	806192	Crown, Pelco 1020	2
9	807522	Washer, SAE, 5/16 in.	2

Ash Ring Assembly PC1520 (Figure 2)

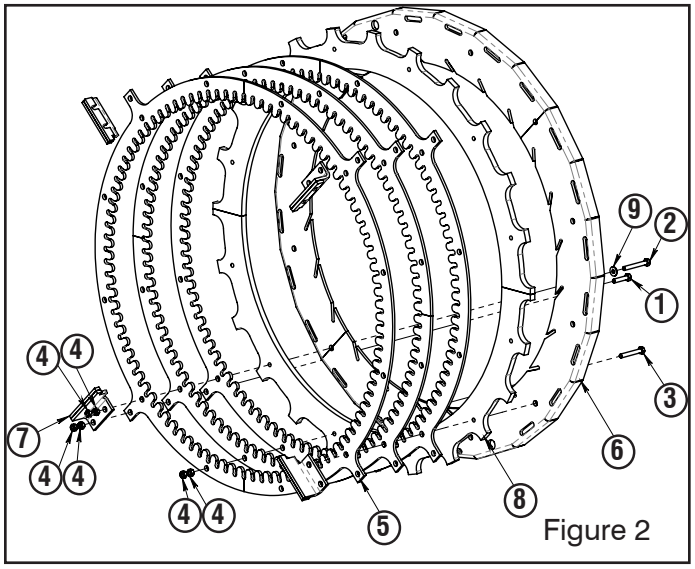


Figure 2

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	800205	Bolt, Standard, NC, 5/16 in. x 1 1/2 in., Gr. 5	4
2	800207	Bolt, Standard, NC, 5/16 in. x 2 1/2 in., Gr. 8	4
3	800208	Bolt, Standard, NC, 5/16 in. x 2 1/4 in., Gr. 5	8
4	804194	Nut, Standard, NC, 5/16 in	32
5	804512	Crown Gear, Pelco 1520	6
6	804744	Retainer, Coal, Pelco 1520 (Welded)	2
7	804949	Shovel, Ash, Pelco (Welded)	4
8	806108	Crown, Pelco 1520	2
9	807522	Washer, SAE, 5/16 in.	2

Ash Ring Assembly PC2520 (Figure 2)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	800198	Bolt, Standard, NC, 3/8 in. x 1 3/4 in., Gr. 5	4
2	800200	Bolt, Standard, NC, 3/8 in. x 2 1/2 in., Gr. 5	4
3	800200	Bolt, Standard, NC, 3/8 in. x 2 1/2 in., Gr. 5	8
4	800236	Nut, Standard, NC, 3/8 in.	32
5	806046	Crown Gear, Pelco 2520	6
6	804936	Retainer, Coal, Pelco 2520 (Welded)	2
7	804949	Shovel, Ash, Pelco (Welded)	4
8	806203	Crown, Pelco 2520	2
9	807523	Washer, SAE, 3/8 in.	2

Ash Ring Drive Assembly (Figure 3)

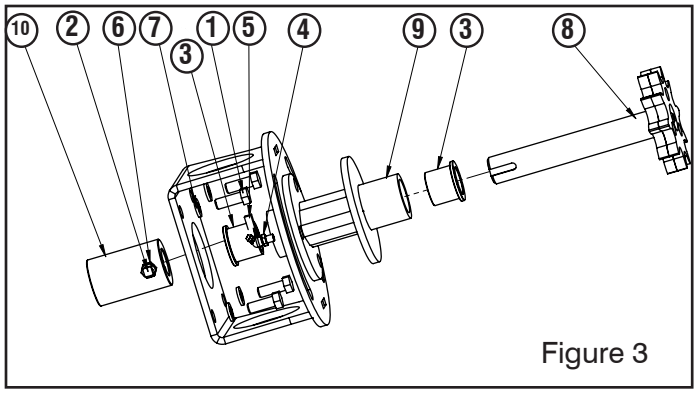


Figure 3

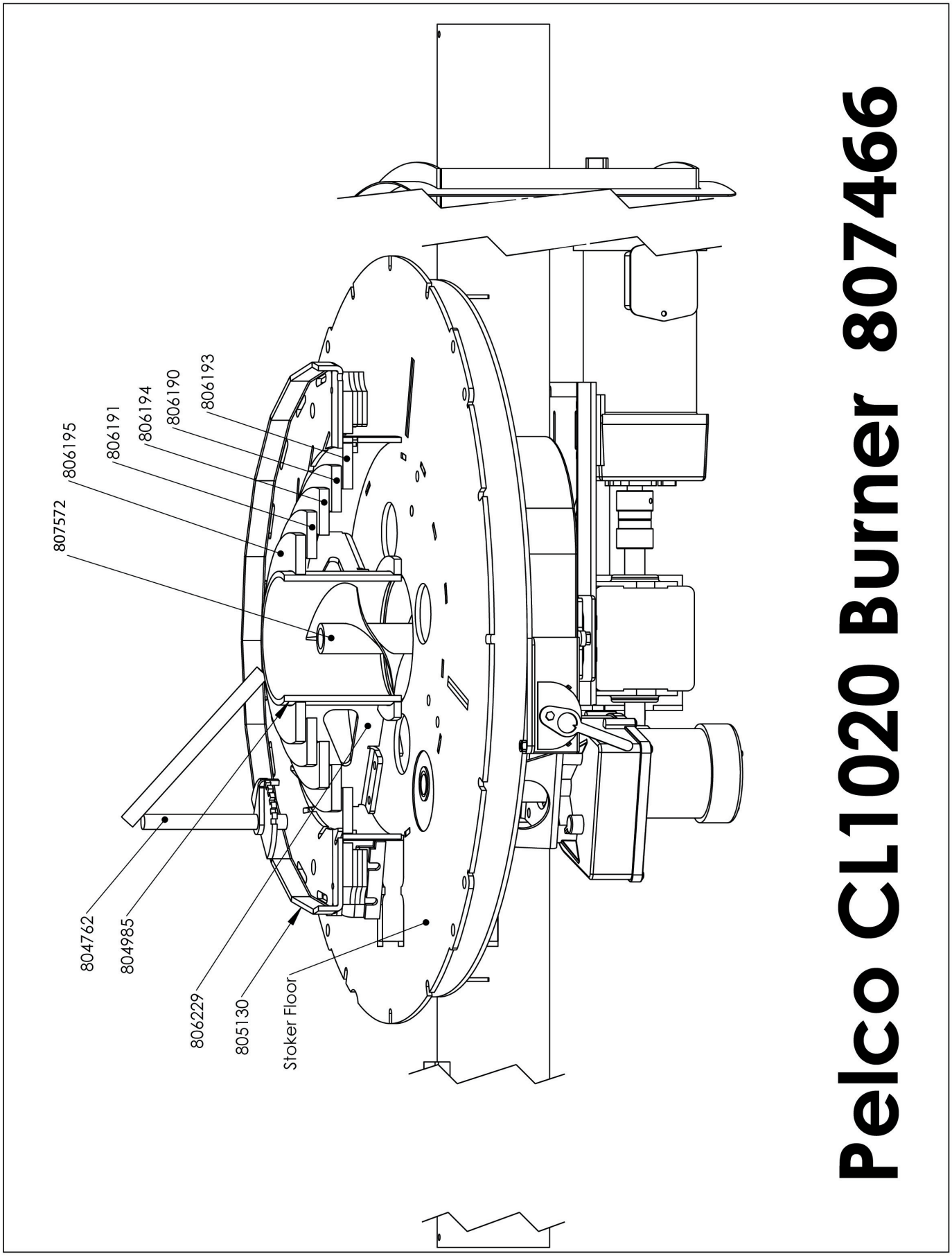
ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	800195	Bolt, Standard, NC, 3/8 in. x 1 in., Gr. 5	4
2	800264	Setscrew, Sq Hd, NC, 5/16 in. x 3/4 in.	1
3	800272	Bushing, Flange, 1.000 ID x 1.250 OD x 1.000 L	2
4	801631	Nipple, Grease, 45 Degree, 1/4 NF	1
5	803659	KE1604-R0 Key, 1/4" x 1"	1
6	804194	Nut, Standard, NC, 5/16 in	1
7	804366	Washer, Lock, Spring, 3/8 in. Gr. 8	4
8	804681	Gear, Drive (Welded)	1
9	804917	Drive, Motor Mount Brkt, Ash Ring, Pelco (Welded)	1
10	806937	Coupler, Ash Ring Drive, Pelco	1

Burners

Installation instructions for the Pelco CL1020 Burner (807466)—Heavy Fuel

Part Number	Description	Quantity
806229	Burner Support	4
804985	Tube Burner - 6”	1
807572	Feed Auger - 16.9”	1
806190	Burner Ring - 17.2”	1
806194	Burner Ring - 14.9”	1
806191	Burner Ring - 12.7”	1
806195	Burner Ring - 10.4”	1
Bolts	3/8” x 3/4”	8
Washers	3/8” - Spring Lock	8
804762	Stir Fingers	2
Silicone	High Heat	
806193	Burn Plate - 19.4” with tabs (stoker part)	1

1. Locate 2 burner supports (806229), over pre-drilled and tapped holes in the stoker floor.
2. Insert bolts through holes in burner support and into pre-drilled holes but do not tighten. Leave loose.
3. On the flange of the burner tube (804985), apply bead of silicone.
4. Place burner tube over coal auger hole and under notches of burner supports. Silicone will make seal between flange of burner tube and stoker floor.
5. Locate and bolt the last 2 burner supports (806229).
6. Tighten all 8 bolts.
7. Install burner rings on burner supports in the following order: 806190, 806194, 806191 and 806195.
8. Install stir fingers (804762). Do not install fingers pointing directly to the centre. The stir fingers should be located so that they sweep the coals. If stir fingers are too close to the burner, they may lift the ash ring and allow contaminants to enter the air chamber.
9. Install feed auger and ensure alignment and overlap on square drive shaft.


Pelco CL1020 Burner 807466
807572
806195
806191
806194
806190
806193
804762
804985
806229
805130
Stoker Floor

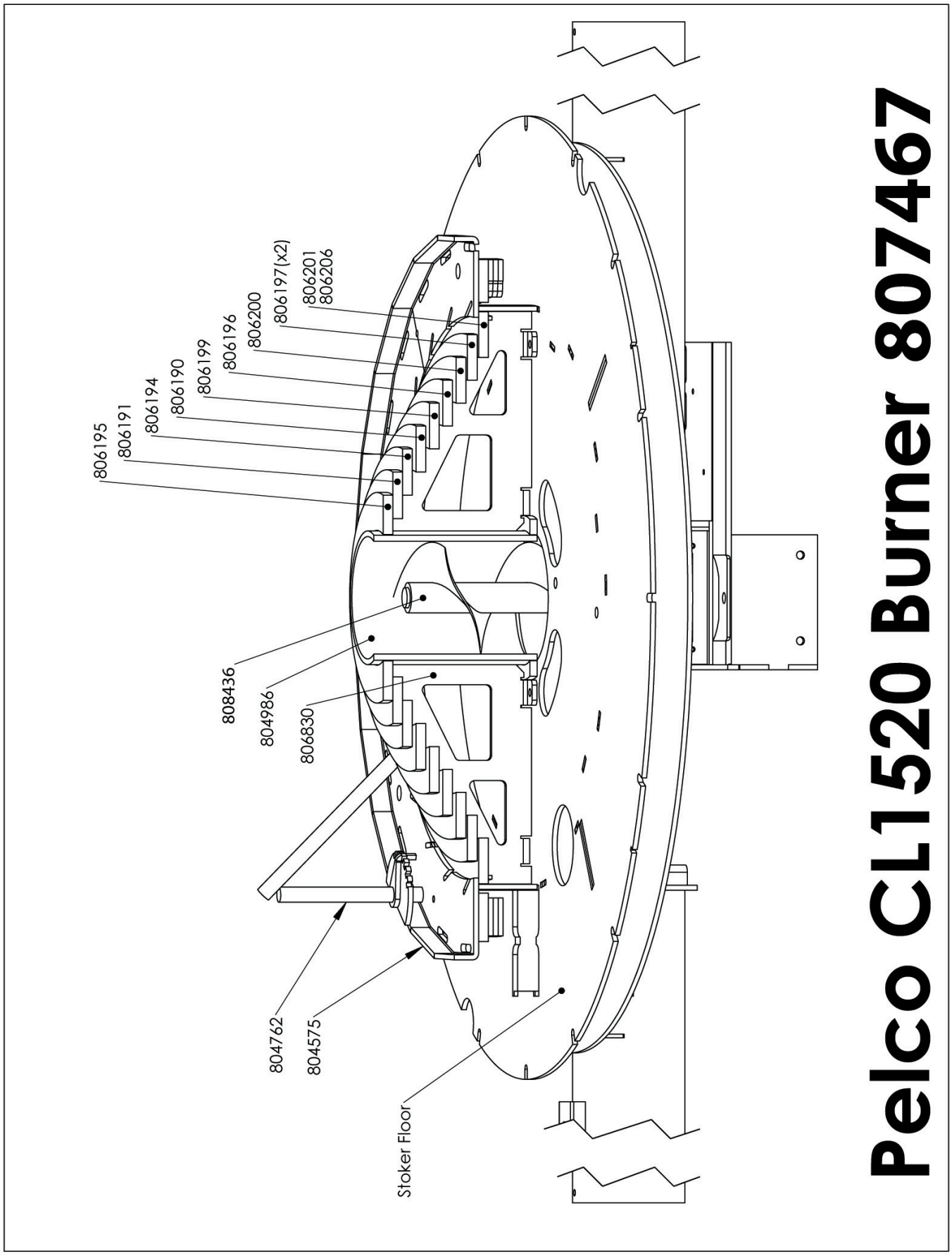
Burners

Installation instructions for the Pelco CL1520 burner (807467)—Heavy Fuel

Part Number	Description	Quantity
806830	Burner Support	4
804986	Tube Burner - 8.4”	1
808436	Feed Auger - 18.3”	1
806197	Burner Ring - 26.2”	2 pieces
806200	Burner Ring - 23.4”	1
806196	Burner Ring - 21.7”	1
806199	Burner Ring - 19.4”	1
806190	Burner Ring - 17.2”	1
806194	Burner Ring - 14.9”	1
806191	Burner Ring - 12.7”	1
806195	Burner Ring - 10.4”	1
Bolts	3/8” x 3/4”	8
Washers	3/8” - Spring Lock	8
804762	Stir Fingers	2
Silicone	Heat High	
806201	Burn Plate - 28.4” with tabs (welded, stoker part)	1
806206	Burn Plate - 28.4” (stoker part)	1

1. Locate 2 burner supports (806830), over pre-drilled and tapped holes in the stoker floor.
2. Insert bolts through holes in burner support and into pre-drilled holes but do not tighten. Leave loose.
3. On the flange of the burner tube (804986), apply bead of silicone.
4. Place burner tube over coal auger hole and under notches of burner supports. Silicone will make seal between flange of burner tube and stoker floor.
5. Locate and bolt the last 2 burner supports (806830).
6. Tighten all 8 bolts.
7. Install burner rings on burner supports in the following order: 806197, 806200, 806196, 806199, 806190, 806194, 806191 and 806195.
8. Install stir fingers (804762). Do not install fingers pointing directly to the centre. The stir fingers should be located so that they sweep the coals. If stir fingers are too close to the burner, they may lift the ash ring and allow contaminants to enter the air chamber.
9. Install feed auger and ensure alignment and overlap on square drive shaft.

Burners


Pelco CL1520 Burner 807467
806195
806191
806194
806190
806199
806196
806200
806197(x2)
806201
806206
808436
804986
806830
804762
804575
Stoker Floor

Burners

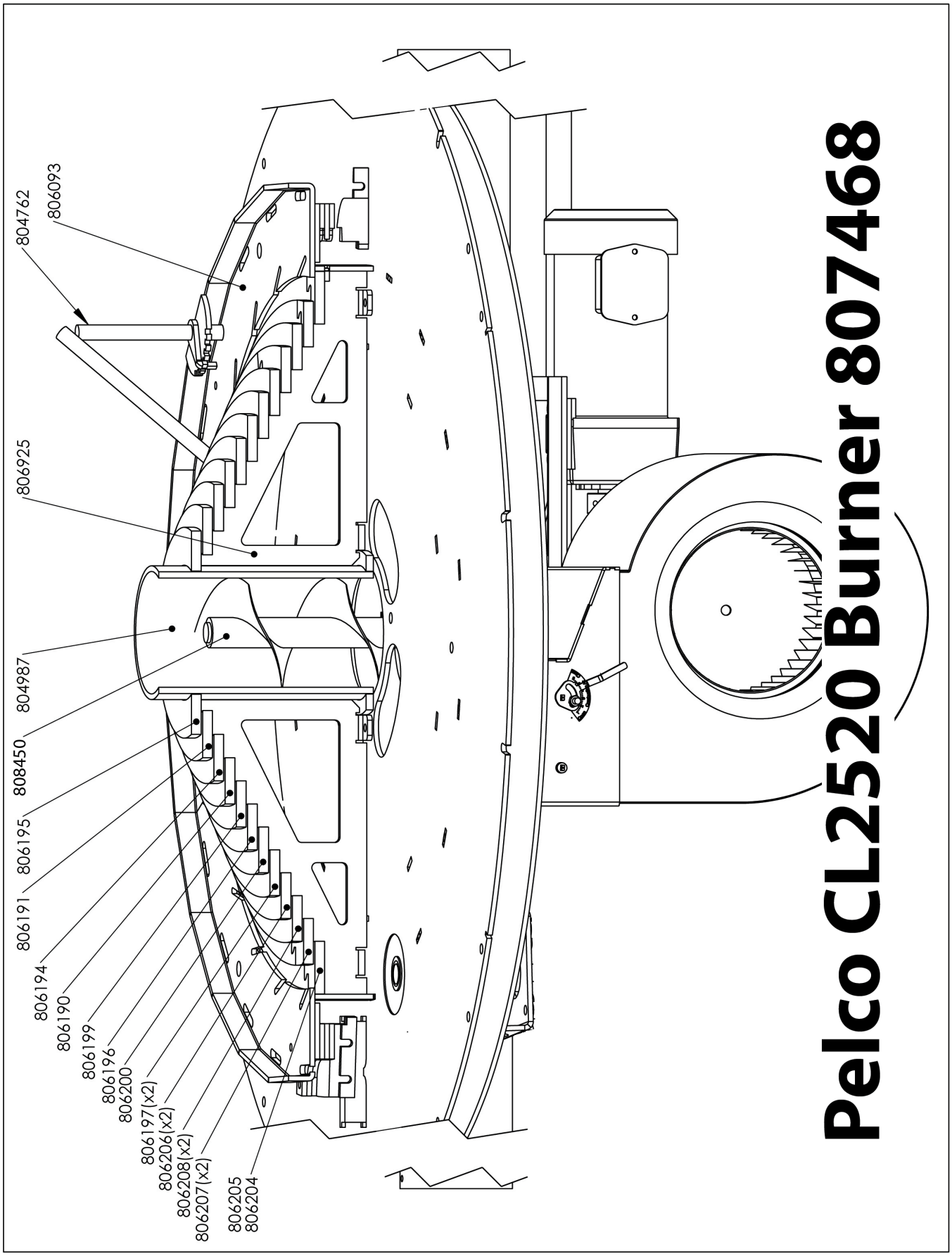
Installation instructions for the Pelco CL2520 burner (807468)—Heavy Fuel

Part Number	Description	Quantity
806925	Burner Support	4
804987	Tube Burner - 11”	1
808450	Feed Auger - 19.6”	1
Bolts	3/8” x 3/4”	8
Washers	3/8” Spring Lock	8
804762	Stir Fingers	2
Silicone	High Heat	
806204	Burn Plate - 35.9” with tabs (welded, stoker part)	1
806205	Burn Plate, 35.9” (stoker part)	1

1. Locate 2 burner supports (806925), over pre-drilled and tapped holes in the stoker floor.
2. Insert bolts through holes in burner support and into pre-drilled holes but do not tighten. Leave loose.
3. On the flange of the burner tube (804987), apply bead of silicone.
4. Place burner tube over coal auger hole and under notches of burner supports. Silicone will make seal between flange of burner tube and stoker floor.
5. Locate and bolt the last 2 burner supports (806925).
6. Tighten all 8 bolts.
7. Install burner rings on burner supports in the following order:

806207	Burner Ring - 32.9”	2 pieces
806208	Burner Ring - 30.7”	2 pieces
806206	Burner Ring - 28.4”	2 pieces
806197	Burner Ring - 26.2”	2 pieces
806200	Burner Ring - 23.9”	1
806196	Burner Ring - 21.7”	1
806199	Burner Ring - 19.4”	1
806190	Burner Ring - 17.2”	1
806194	Burner Ring - 14.9”	1
806191	Burner Ring - 12.7”	1
806195	Burner Ring - 10.4”	1

8. Install stir fingers (804762). Do not install fingers pointing directly to the centre. The stir fingers should be located so that they sweep the coals. If stir fingers are too close to the burner, they may lift the ash ring and allow contaminants to enter the air chamber.
9. Install feed auger and ensure alignment and overlap on square drive shaft.

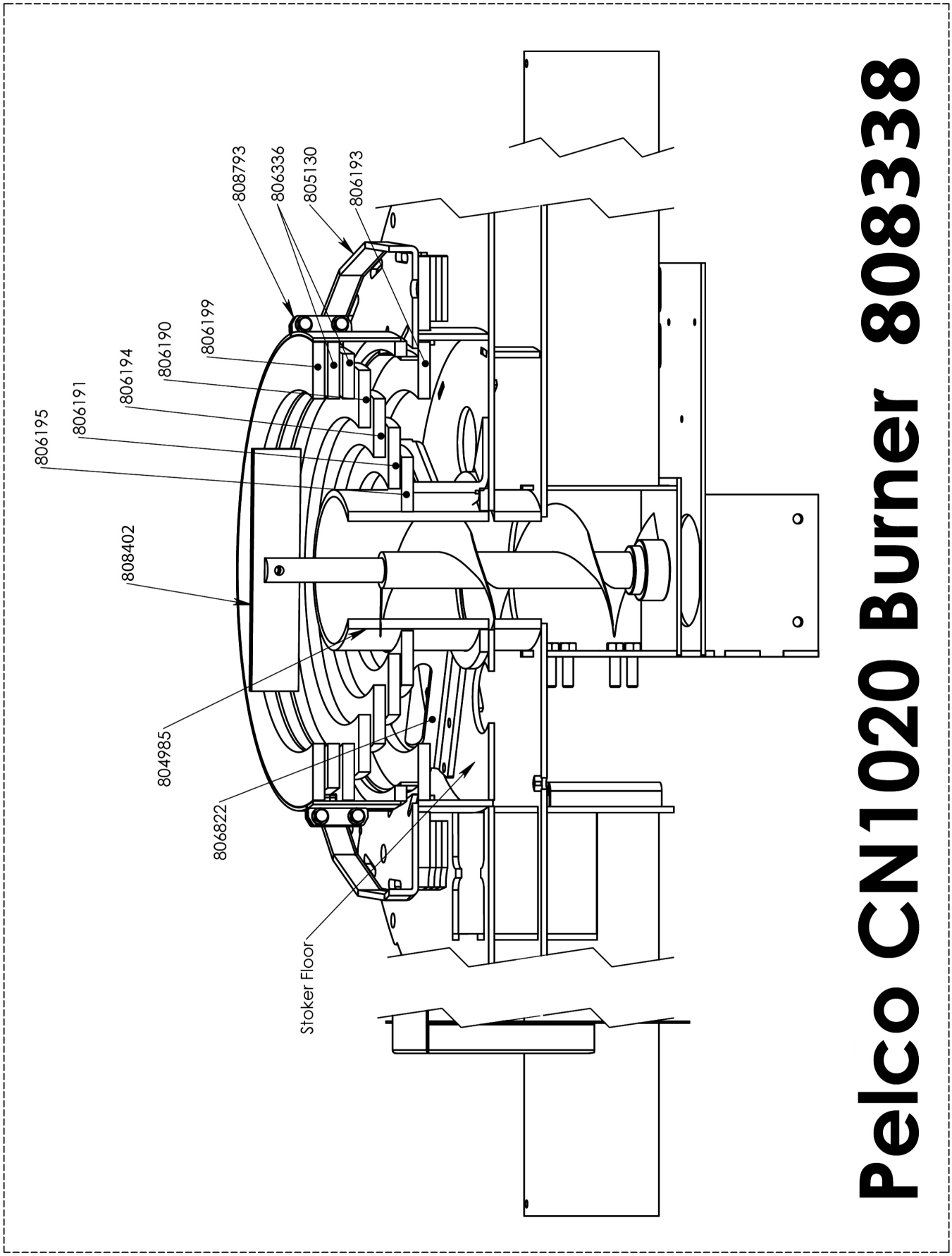

Pelco CL2520 Burner 807468
804762
806093
806925
804987
808450
806195
806191
806194
806190
806199
806196
806200
806197(x2)
806206(x2)
806208(x2)
806207(x2)
806205
806204

Burners

Installation instructions for the Pelco CN1020 Burner (808338)—Lightweight Fuel

Part Number	Description	Quantity	Part Number	Description	Quantity
806822	Burner Support	4	806199	Burner Ring - 14.4”	1
804985	Tube Burner	1	Bolts	3/8” x 3/4”	8
807572	Feed Auger - 17”	1	Washers	3/8” Spring Lock	4
806195	Burner Ring - 10.4”	1	808173	Air Band	2
806191	Burner Ring - 12.7”	1	Bolts	3/8” x 1 1/4”	4
806194	Burner Ring - 14.9”	1	Washers	3/8” - Flat	4
806190	Burner Ring - 17.2”	1	Nuts	3/8”	6
806336	Burner Ring - 19.4”	2	Silicone	High Heat	
808402	Scraper	1	806193	Burn Plate - 19.4” with tabs (stoker part)	1
800196	3/8” x 1 1/2” Bolt	1			

1. Locate 2 burner supports (806822), over pre-drilled and tapped holes in the stoker floor.
2. Insert bolts through holes in burner support and into pre-drilled holes but do not tighten. Leave loose.
3. On the flange of the burner tube (804985), apply bead of silicone.
4. Place burner tube over coal auger hole and under notches of burner supports. Silicone will make seal between flange of burner tube and stoker floor.
5. Locate and bolt the last 2 burner supports (806822).
6. Tighten all 8 bolts.
7. Place the two air bands (808793) together with the flanges facing each other over the installed support plates. Insert bolts, apply washer and nut. Only start nut on bolt. Leave loose at this time.
8. Apply silicone around complete perimeter of base of air band and up the two vertical joints.
9. Starting with the smallest burner ring, place the burner rings on the burner supports in the following order: 806195, 806191, 806194 and 806190.
10. Burner ring (806336) has notches cut out on the perimeter. This is to allow for air to pass through. Alternate the notches when placing the second ring in position. Both rings have knobs welded on one side. The knobs must be facing up when installed.
11. Final ring (806199) is now installed on the top of the stack.
12. Tighten bolts on the air band.
13. Attach scraper to vertical auger with 3/8” x 1 ¼” bolt, and lock with 2 nuts.
14. Locate and install auger assembly ensuring that it is fully engaged over square drive shaft.


Pelco CN1020 Burner 808338
808793
806336
805130
806193
806199
806190
806194
806191
806195
808402
804985
806822
Stoker Floor

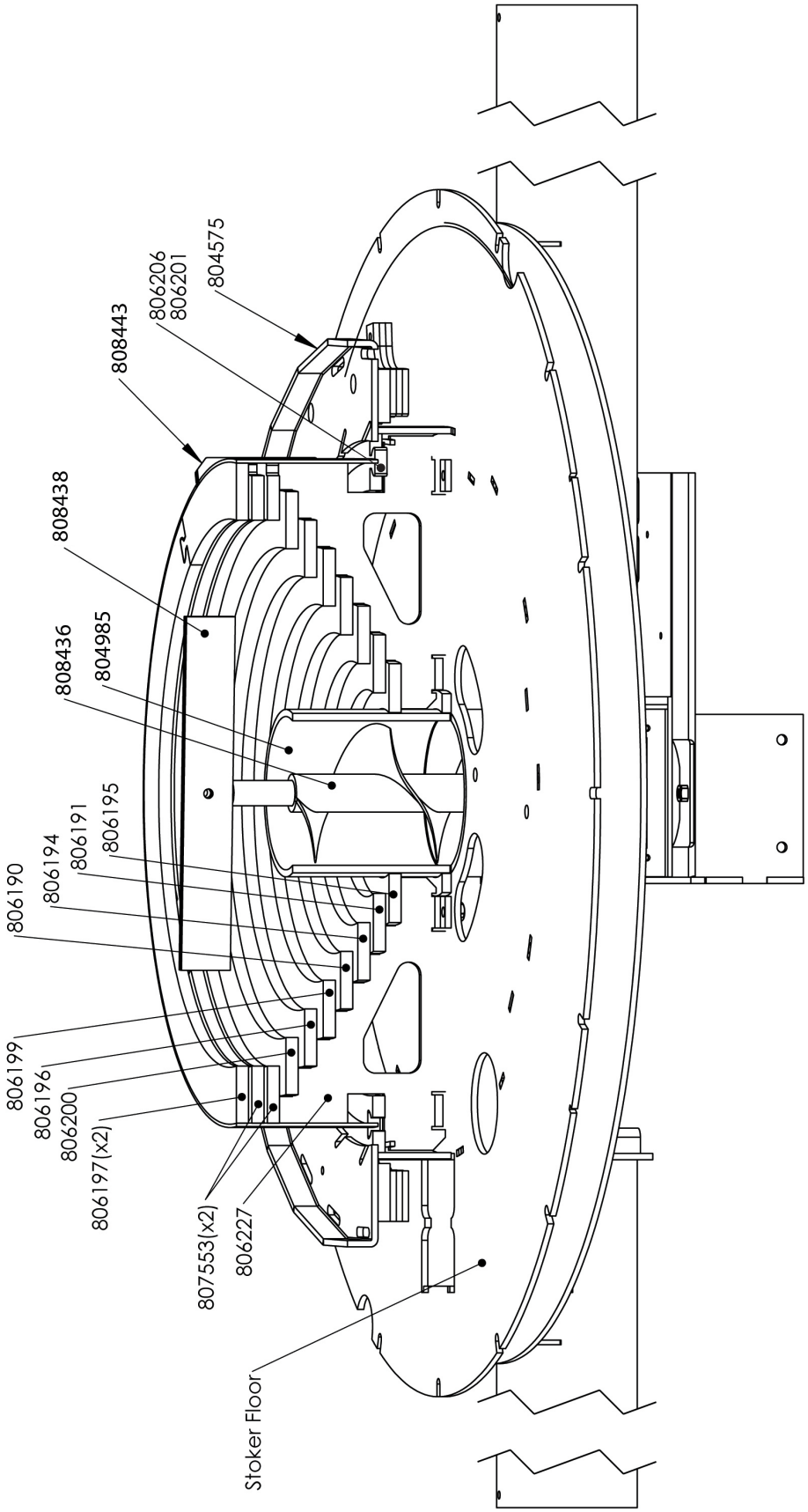
Burners

Installation instructions for the Pelco CN1520 burner (807551)—Lightweight Fuel

Part Number	Description	Quantity	Part Number	Description	Quantity
806227	Burner Support	4	806553	Burner Ring - 26.2”	2 pieces (two sets)
804985	Tube Burner - 6”	1	806197	Burner Ring - 26.2”	2 pieces
808436	Feed Auger - 18.3”	1	Bolts	3/8” x 3/4”	8
806195	Burner Ring - 10.4”	1	Washers	3/8” - Spring Lock	6
806191	Burner Ring - 12.7”	1	808443	Air Band	2
806194	Burner Ring - 14.9”	1	Bolts	3/8” x 1 1/4”	6
806190	Burner Ring - 17.2”	1	Washers	3/8” - Flat	6
806199	Burner Ring - 19.4”	1	Nuts	3/8”	8
806196	Burner Ring - 21.7”	1	Silicone	High Heat	
806200	Burner Ring - 23.9”	1 (see #7)	806201	Burn Plate - 28.4”	1
808438	Scraper	1		with tabs (welded, stoker)	
800196	3/8” x 1 1/2” Bolt	1	806206	Burn Plate - 28.4” (stoker part)	1

1. Locate 2 burner supports (806227), over pre-drilled and tapped holes in the stoker floor.
2. Insert bolts through holes in burner support and into pre-drilled holes but do not tighten. Leave loose.
3. On the flange of the burner tube (804865), apply bead of silicone.
4. Place burner tube over coal auger hole and under notches of burner supports. Silicone will make seal between flange of burner tube and stoker floor.
5. Locate and bolt the last 2 burner supports (806227).
6. Tighten all 8 bolts.
7. Place burner ring (806200) in fire box for future installation.
8. Place the two air bands (808794) together with the flanges facing each other over the installed burner supports. Insert bolts, apply washer and nut. Only start nut on bolt. Leave loose at this time.
9. Apply silicone around complete perimeter of base of air band and up the two vertical joints.
10. Starting with the smallest burner ring, place the burner rings on the burner supports in the following order (806195, 806191, 806194, 806190, 806199, 806196, 806200).
11. Burner ring (806336) has notches cut out on the perimeter. This is to allow for air to pass through. Alternate the notches when placing the second ring in position. Both rings have knobs welded on one side. The knobs must be facing up when installed.
12. Final ring (806199) is now installed on the top of the stack.
13. Tighten bolts on the air band.
14. Attach scraper to vertical auger with 3/8” x 1 ¼” bolt, and double nut to secure.
15. Locate and install auger assembly ensuring that it is fully engaged over square drive shaft.

Pelco CN1520 Burner 807551

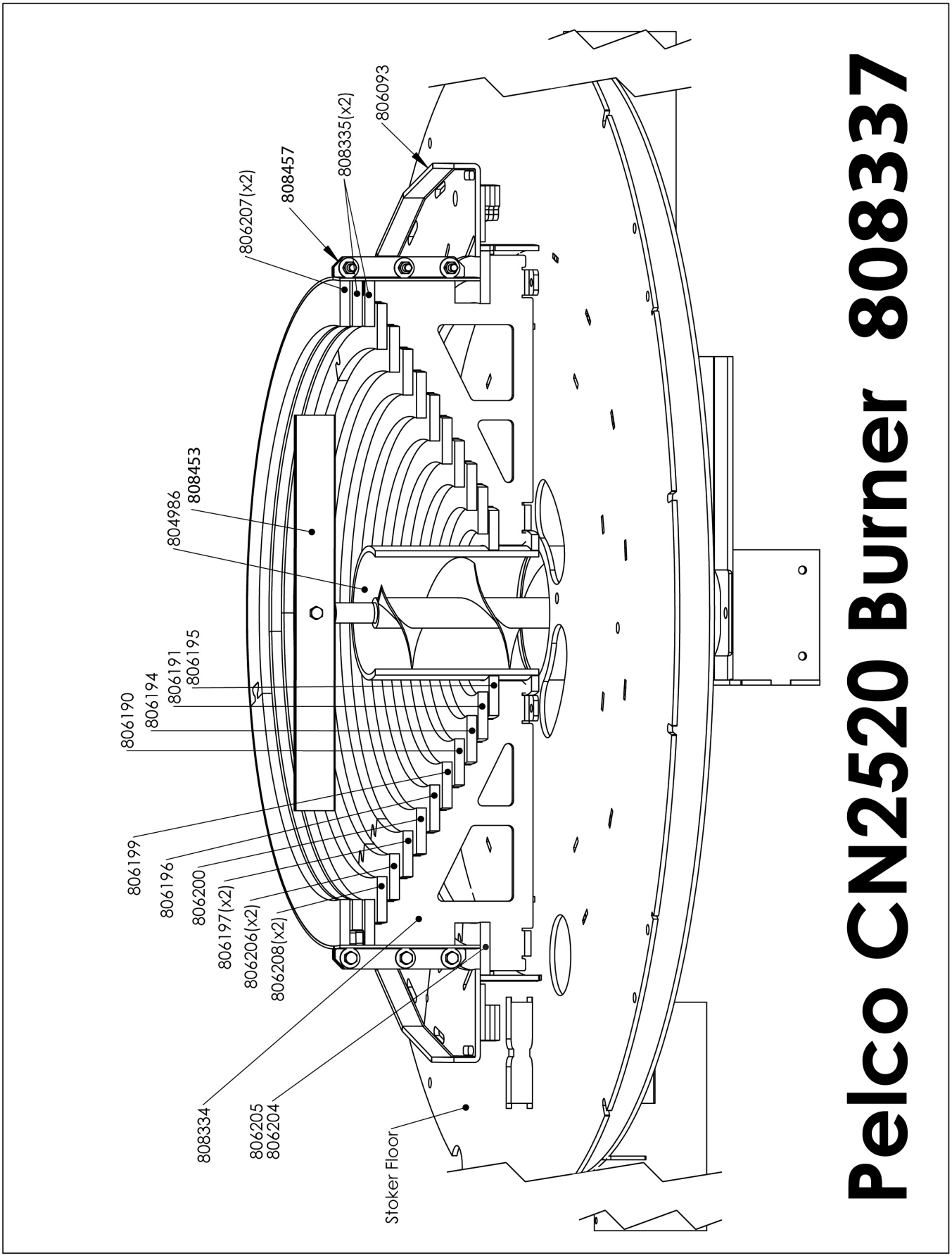


Burners

Installation instructions for the Pelco CN2520 burner (808337)—Lightweight Fuel

Part Number	Description	Quantity	Part Number	Description	Quantity
808334	Burner Support	4	806208	Burner Ring - 30.7”	2 pieces
804986	Tube Burner - 8.7”	1	806335	Burner Ring - 32.9”	2 pieces (two sets)
808450	Feed Auger - 19.6”	1	806207	Burner Ring - 32.9”	2 pieces
806195	Burner Ring - 10.4”	1	Bolts	3/8” x 1”	8
806191	Burner Ring - 12.7”	1	Washers	3/8”	8
806194	Burner Ring - 14.9”	1	808457	Air Band	2 pieces
806190	Burner Ring - 17.2”	1	Bolts	3/8” x 1 ¼”	6
806199	Burner Ring - 19.4”	1	Lock Washers	3/8”	6
806196	Burner Ring - 21.7”	1	Nuts	3/8”	8
806200	Burner Ring - 23.9”	1	Silicone	High Heat	
806197	Burner Ring - 26.2”	2 pieces	806204	Burn Plate - 35.9”	1
806206	Burner Ring - 28.4”	2 pieces		with tabs (welded, stoker)	
808453	Scraper	1	806205	Burn Plate - 35.9”	1
800196	3/8” x 1 1/2” Bolt	1		(stoker part)	

1. Locate 2 burner supports (808334), over pre-drilled and tapped holes in the stoker floor.
2. Insert bolts through holes in burner support and into pre-drilled holes but do not tighten. Leave loose.
3. On the flange of the burner tube (804986), apply bead of silicone.
4. Place burner tube over coal auger hole and under notches of burner support. Silicone will make seal between flange of burner tube and stoker floor.
5. Locate and bolt the last 2 burner supports (808334).
6. Tighten all 8 bolts.
7. Place the two air bands (808457) together with the flanges facing each other over the installed burner supports. Insert bolts, apply washer and nut. Only start nut on bolt. Leave loose at this time.
8. Apply silicone around complete perimeter of base of air band and up the two vertical joints.
9. Starting with the smallest burner ring, place the burner rings on the burner supports in the following order (806195, 806191, 806194, 806190, 806199, 806196, 806200, 806206, 806208).
10. Burner ring (808335) has notches cut out on the perimeter. This is to allow for air to pass through. Alternate the notches when placing the second ring in position. Both rings have knobs welded on one side. The knobs must be facing up when installed.
11. Final ring (806207) is now installed on the top of the stack.
12. Tighten bolts on the air band.
13. Attach scraper to vertical auger with 3/8” x 1 ¼” bolt, and double nut to secure.
14. Locate and install auger assembly ensuring that it is fully engaged over square drive shaft.


Pelco CN2520 Burner 808337
806093
808335(x2)
808457
806207(x2)
808453
804986
806195
806191
806194
806190
806199
806196
806200
806197(x2)
806206(x2)
806208(x2)
808334
806205
806204
Stoker Floor

Wiring Diagram

CAUTION

Do not modify the electrical components or any other part of this furnace. Modifications to any part of this furnace will void the warranty.

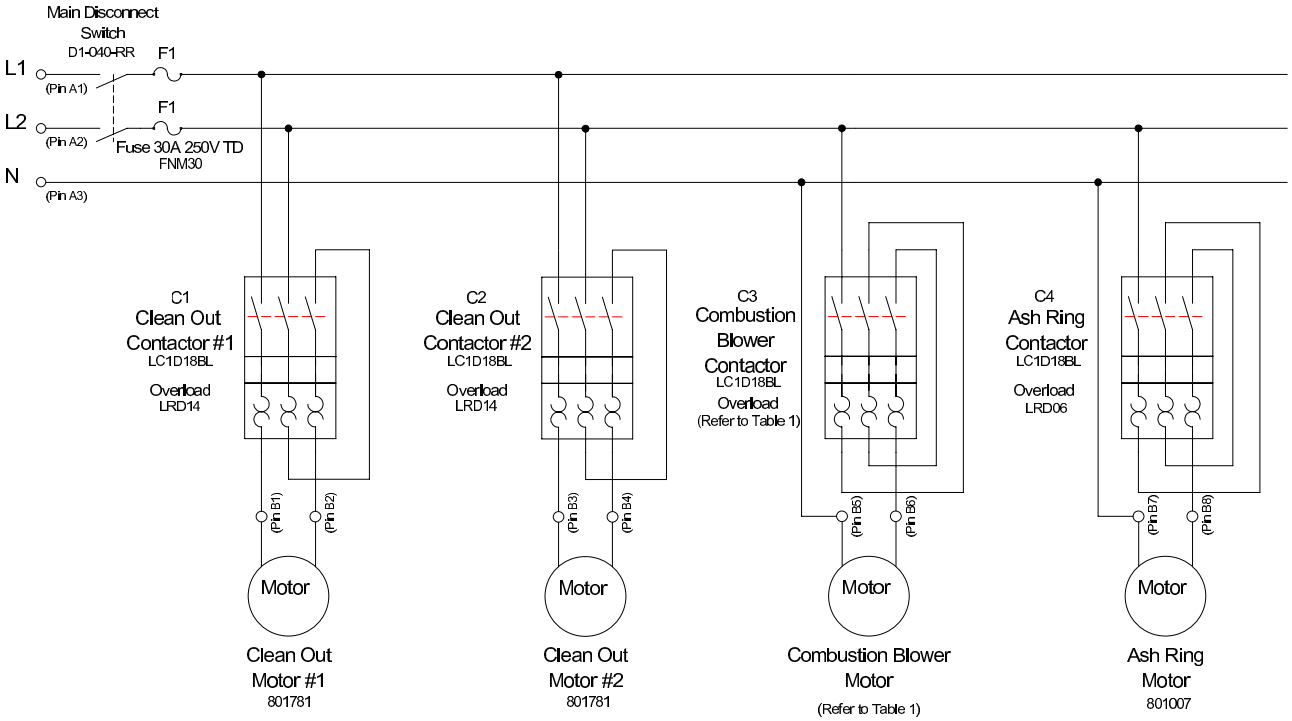


Table 1

Model	Motor	Overload
PC 1020	800788	LRD06
PC 1520	808636	LRD14
PC 2520	800013	LRD14

Plug A

Pin A1 - Line 1
Pin A2 - Line 2
Pin A3 - Neutral
Pin A4 - Aux. Plugs #1 & #2 Neutral
Pin A5 - Feeder Motor T1
Pin A6 - Feeder Motor T2
Pin A7 - Feeder Motor T3
Pin A8 - Exhaust Blower T1
Pin A9 - Exhaust Blower T2
Pin A10 - Exhaust Blower T3
Pin A11 - Aux. Plug #1
Pin A12 - Aux. Plug #2

Plug Part #'s

Hoods - ZP-MC24B-2-STE21M
Bulkheads - ZP-MC24B-2-SBHM
Plug A
Male Insert - ZP-MC24B-1-MS048
Female Insert - ZP-MC24B-1-FS048
Plug B
Male Insert - ZP-MC24B-1-MS024
Female Insert - ZP-MC24B-1-FS024

Plug B

Pin B1 - Clean Out Motor #1 L1
Pin B2 - Clean Out Motor #1 L2
Pin B3 - Clean Out Motor #2 L1
Pin B4 - Clean Out Motor #2 L2
Pin B5 - Combustion Blower Motor Neutral
Pin B6 - Combustion Blower Motor
Pin B7 - Ash Ring Motor Neutral
Pin B8 - Ash Ring Motor
Pin B9 - Heat Dissipation Plug Neutral
Pin B10 - Heat Dissipation Plug
Pin B11 - Motion Light
Pin B12 - Motion Light Neutral
Pin B13 - Green Indicator
Pin B14 - Amber Indicator
Pin B15 - Red Indicator
Pin B16 - Indicator Neutral
Pin B17 - Liquid Full Sensor
Pin B18 - Liquid Low Sensor
Pin B19 - Boiler Hi Temp. Sensor
Pin B20 - Ash Auger Hi Temp. Sensor
Pin B21 - Feed Auger Burn Back Sensor
Pin B22 - Sensor Common
Pin B23 -
Pin B24 -

Wiring Diagram

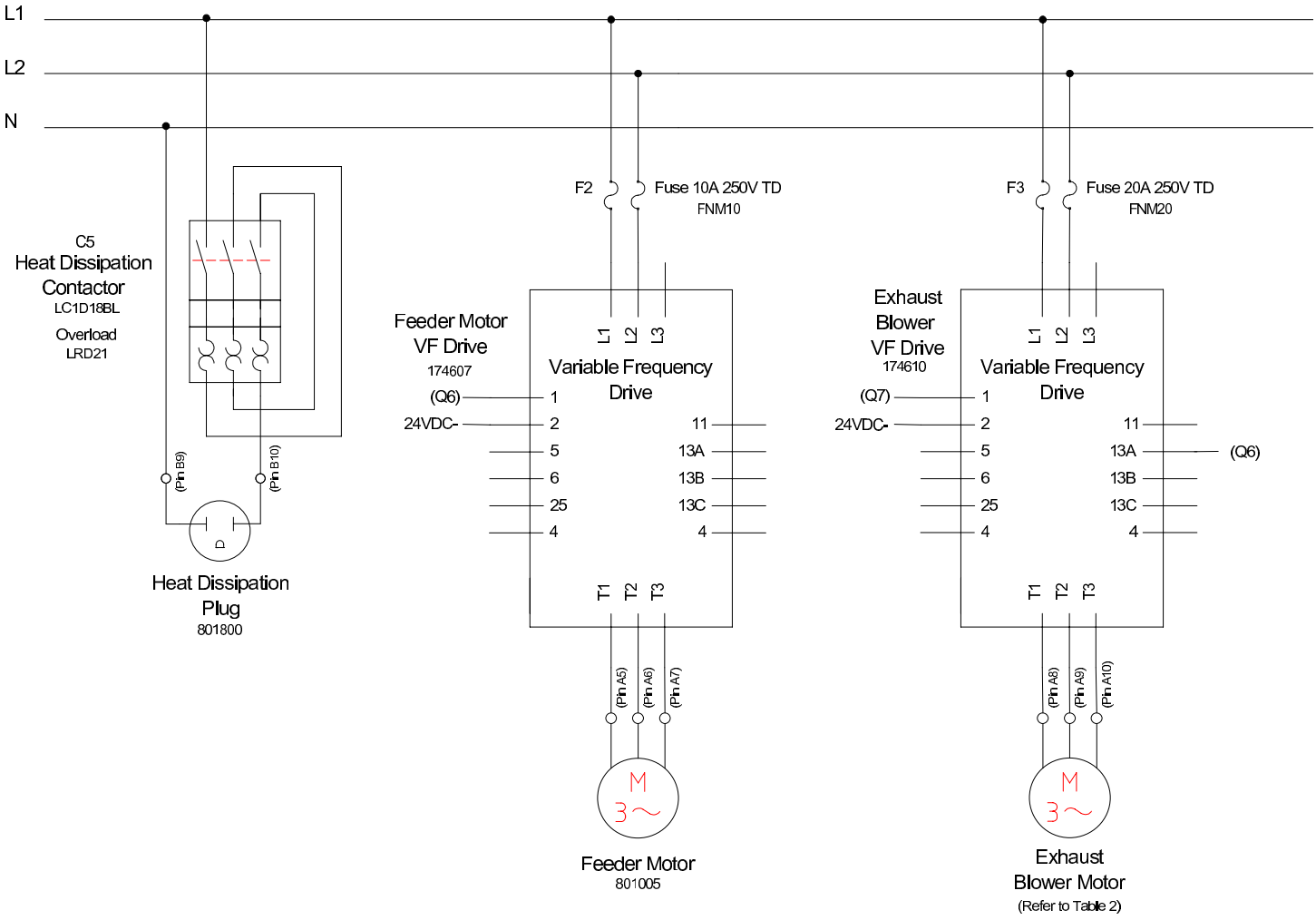
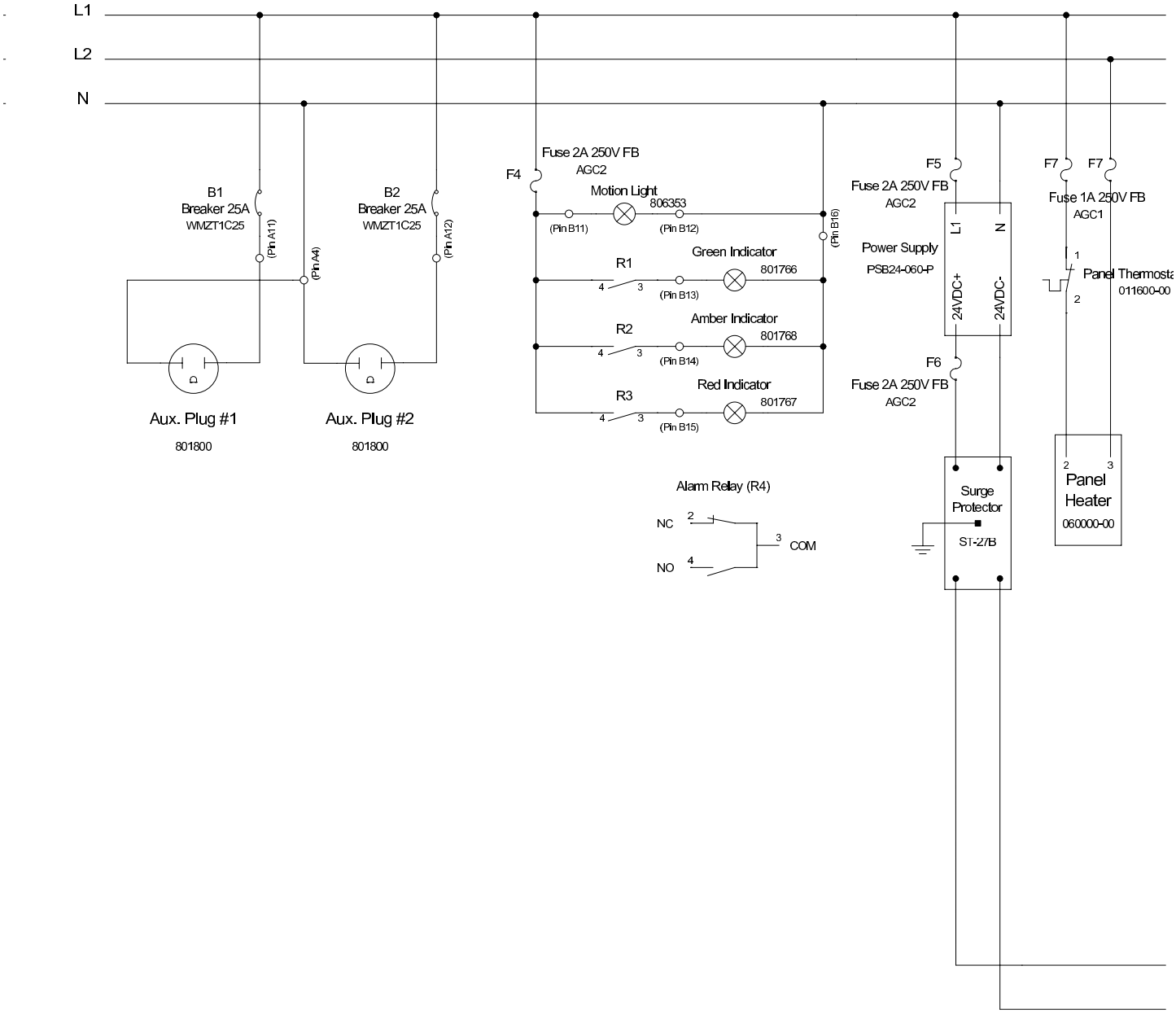


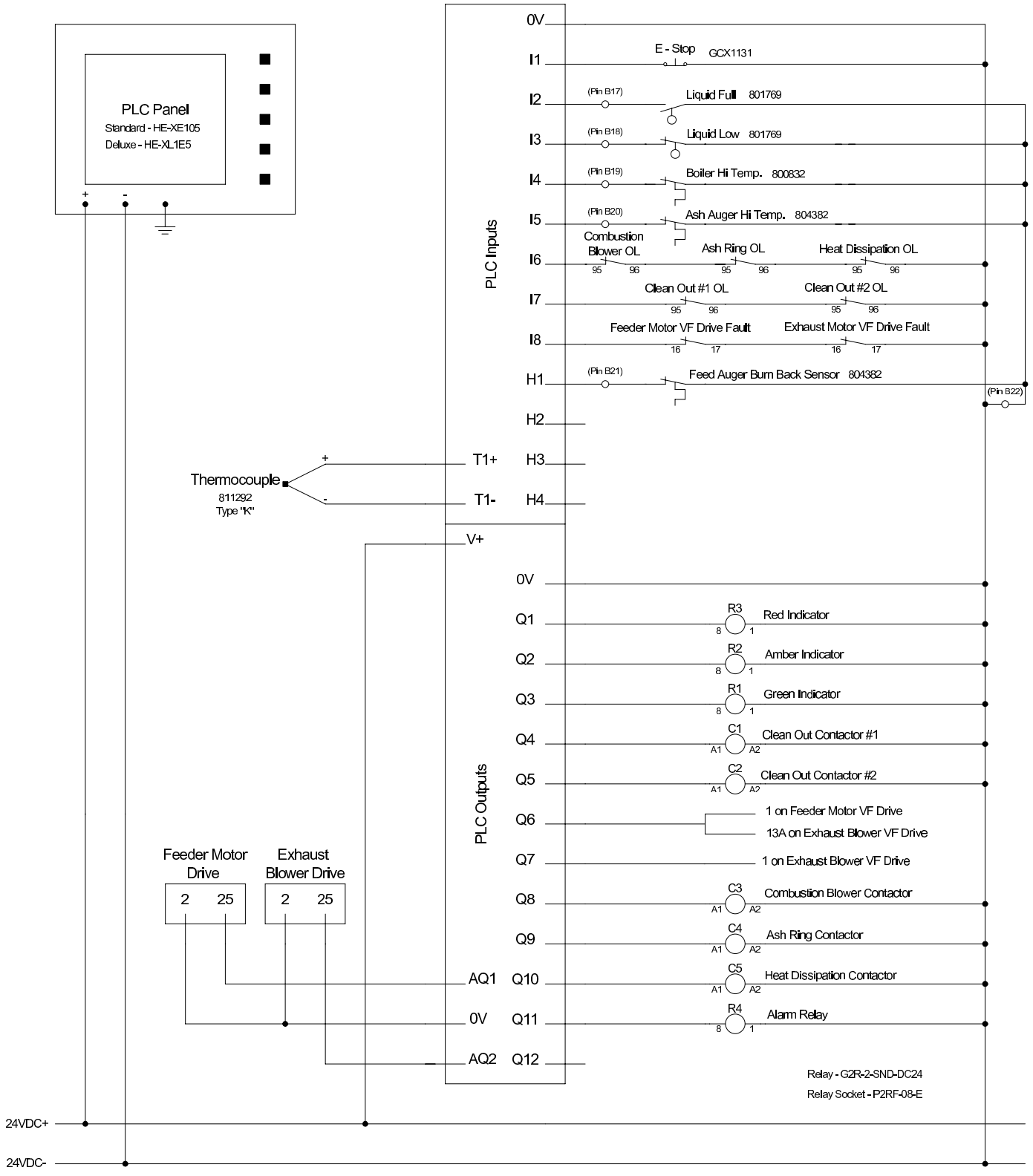
Table 2

Model	Motor
PC1020	818902
PC1520	818902
PC2520	819174

Wiring Diagram



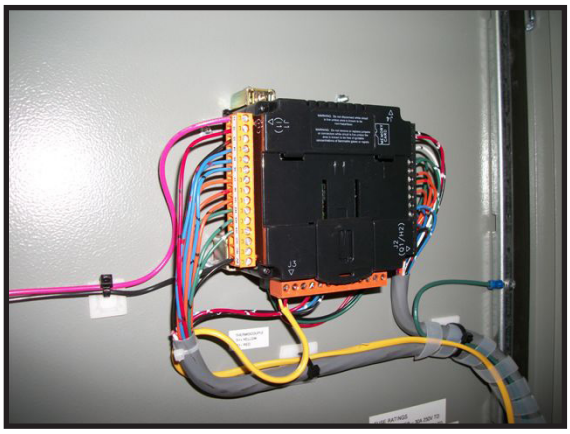
Wiring Diagram



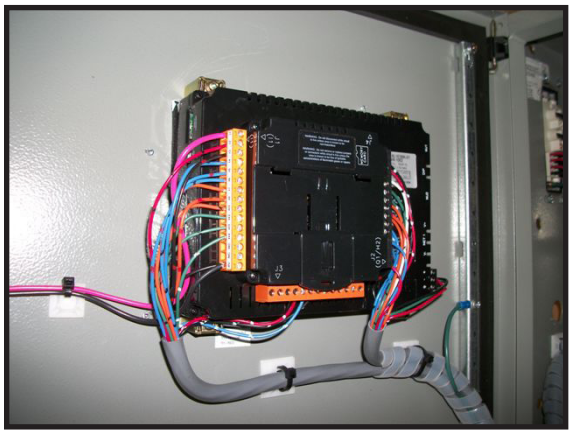
How to Replace the Electronic Digital Display

1. Turn Main Power off.
2. Open the control box door.
3. Take note of wire connector.
4. Firmly grasp connectors and carefully pull out of sockets. The telephone cable has a special snap catch.
5. Loosen screws on four retaining clamps until clamps can be removed from display.
6. Carefully pass the display out through the front opening.
7. Install new display and reverse steps to complete.

SI and SII Model



SIII Model



How to Replace a Beacon Bulb

1. Twist the ring below the bulb to be replaced counter clockwise (Fig. 1).
2. Lift up beacon stack (Fig. 2).
3. Lightly push in and twist bulb counter clockwise (Fig. 3).
4. Pull bulb out (Fig. 4).
5. Put new bulb in place, push down and twist clockwise (Fig. 3).
6. Place beacon stack in position taking care to align properly.
7. Twist/lock ring clockwise.

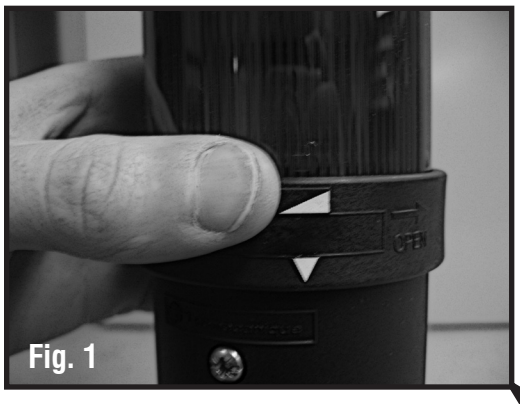


Fig. 1


Fig. 2

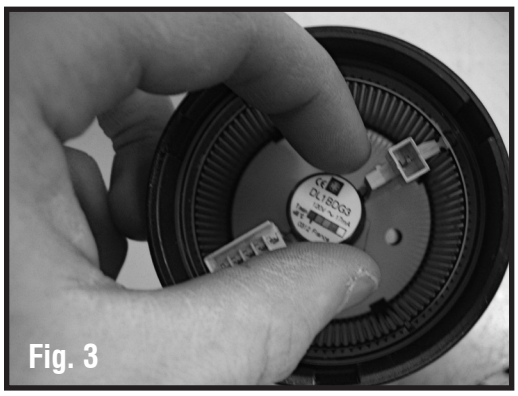
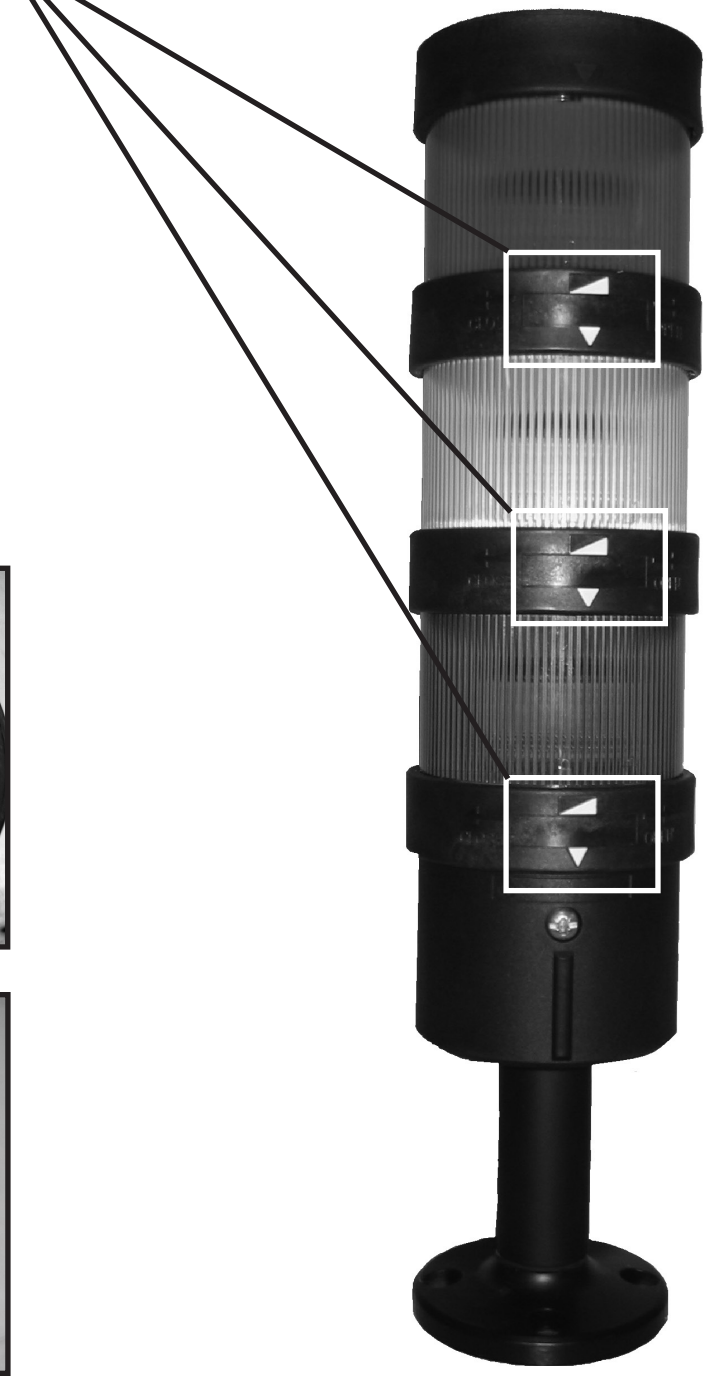


Fig. 3


Fig. 4



How to Replace a Fuse

1. Turn power off and open control box.
2. To replace main fuses, firmly but carefully pull down on centre of fuse block. A door will open to reveal the fuse. Replace with the proper size and design (Fig. 1).

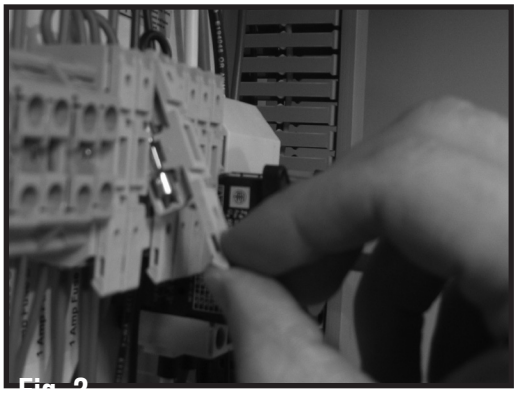


Fig. 2

How to Replace a Relay

1. Turn power off and open control box.
2. Gently pry down on tab. This will release the relay.
3. Firmly grasp relay and carefully pull straight out.
4. Install the new relay of proper specs in reverse order of above.

How to Replace a Contactor and Overload

1. Disconnect Main Power before replacing a contactor.
2. Take note of locations, then remove all wires connected to the contactor.
3. To remove, pull contactor down (Fig. 3) then pull the bottom out (Fig. 4).
4. To install, hook top over din rail (Fig. 4), click into place by pushing the bottom of the contactor in (Fig. 3).
5. Reinstall wires.
6. Figure 1 shows the contactors with the overloads already mounted on the bottom (Fig. 1).
7. Overload settings (Fig. 2).
8. Contactor (Fig. 5).
9. Open door to adjust the overload (Fig. 2).

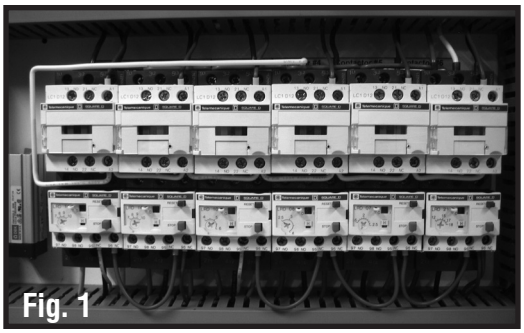


Fig. 1

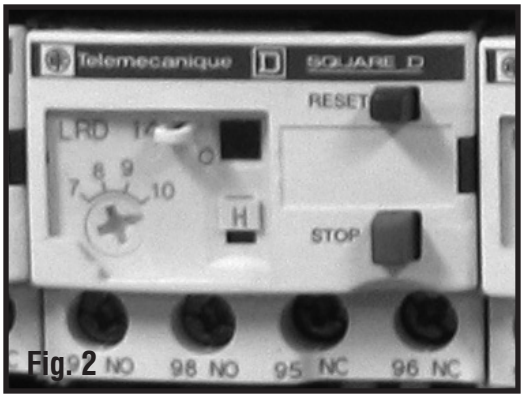


Fig. 2

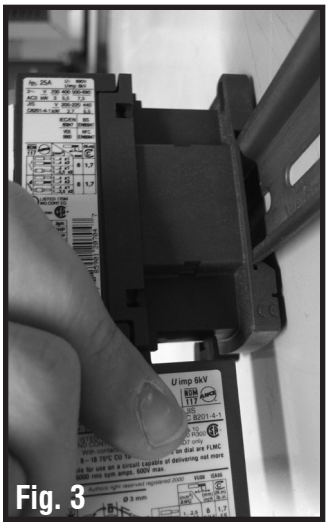


Fig. 3


Fig. 4

Fig. 5

How to Replace a Snap Disc

1. 190°F degree Snap Disc is located behind "Service Cover A" (Fig. 1).
2. 250°F Snap Disc is located behind the cover "Service Cover B" (Fig. 2).
3. Burn Back Snap Disc is situated on side of feed auger in base of Pelco (Fig.3).
4. To replace the Snap Disc, disconnect the wires and slide it out of the holder.
5. Slide in new snap disc ensuring contact is made. If necessary, curl up the edges slightly to increase the contact tension. Reconnect the wires and reinstall the access panel.

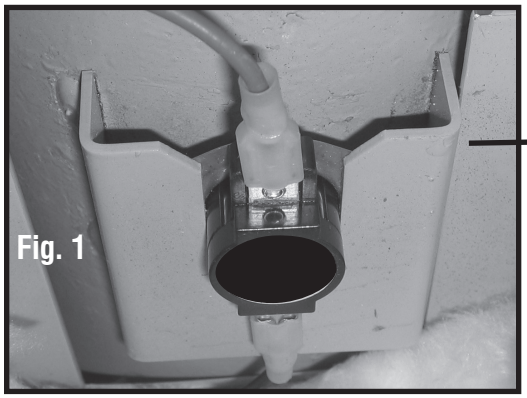


Fig. 1

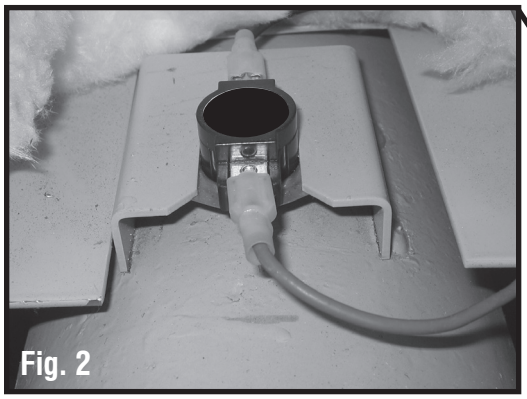


Fig. 2

Fig. 3

Pelco Pressure Drop and GPM Requirements

Note: Installing the pump close to the boiler, on the supply side, will keep it from cavitating.

Description	PC 1020	PC 1520	PC 2520
Maximum recommended gpm through the Pelco (both sides)	50 gpm	100 gpm	200 gpm
Recommended gpm through the Pelco per loop (side)*	25 gpm	50 gpm	100 gpm
Total pressure drop through the Pelco in foot of head**	7.359 ft.	7.5 ft.	7.5 ft.
Maximum temperature difference (ΔT) per loop (side)*	20˚F	20˚F	20˚F
Minimum flow rate	10 gpm	15 gpm	25 gpm

*There are 2 hookups on all Pelco models for supply and return. Refer to specifications on pages 7-12 for connection sizes and placement.

**Foot of Head based on maximum recorded flow rate.

NOTE: Have your heat load requirements (gpm) calculated by a qualified plumbing specialist.

NOTE: Water properly treated must have a pH balance of between 8.8 and 11.0, nitrite level must remain between 730 and 1460 ppm as $NaNO_2$. Water should have conductivity less than 4000 mmhos. For instructions on how to bring levels into tolerance, see page 31.

Standard Operation Procedure

1. For best results make all adjustments with the boiler burning at operating temperature.
2. Set the exhaust to 95%. Normal chimney height is 10 feet or less. If the chimney exceeds 10 feet, draft will have to be taken into account in order to properly complete this operation.
3. Adjust the combustion air so the firebox has a slight negative pressure. This can be done four ways:

   Method one is to use the existing magnehelic. Adjust the combustion fan so that the flame is clean and approximately half way down rings (coal) or half way up rings (corn). With door closed, adjust exhaust so that the magnehelic would read 0.1" to 0.2" of water.

   Method two is by opening the combustion air damper until smoke starts coming out of the ash or feed auger, then turn back the combustion air damper until the smoke stops.

   Method three is to place a plastic bag over the end of the ash auger. Adjust the combustion air damper until the bag is gently pulled in.

   Method four is to use a vacuum gage. With a vacuum gage, the negative pressure in the firebox should read 0.1" to 0.2" inches of water. To use a vacuum gage remove one of the bolts holding the inside plate on the firebox door and place the vacuum gage hose into the bolt hole for testing.
4. Once the proper pressure has been established within the firebox we can now adjust the feed rate. To do this turn the feed rate up progressively, waiting a few minutes between each advancement, until smoke is visible coming out of the exhaust. Turn back the fuel feed until the smoke disappears. When the fuel feed is increased the extra heat may change the pressure within the firebox thus resulting in readjustment of the firebox pressure again as described in the above paragraph.
5. Adjustments to the combustion air and the feed rate may have to be made several times to ensure the Pelco is operating at its best.
6. Please note that when burning corn, it is important that the burner is not over fed fuel. Overfeeding of fuel will result in excess emissions causing the flue augers to become plugged. A specific sign of overfeeding will be smoke rising from the chimney. A good burn will have no smoke. It is good practice to manually run the flue clean system weekly to test the operation of the cleaning system and ensure that the drives are functioning properly.
7. If the boiler is burning continuously at its maximum rate, the flue clean drive bearings, and especially the chains, must be kept well lubricated. Failure to keep the flue cleaning drive lubricated could shorten the life of the flue drive assembly.

Remember, safety first! Lock out power prior to servicing the unit.

1. On the main drive gearbox, there is a service cover which allows access to the vertical feed auger, as well as access to remove foreign objects, such as rocks, that stop the fuel feed.
2. Reset buttons can be found on the clean out motors. They are located on the side of the electrical connection box.
3. Test to ensure the float switches are making a connection. When the boiler is not operating because of low or no water indicator and the water level has been manually measured and found satisfactory, the float switches can be tested to ensure they are operating correctly. In the control panel, disconnect wire from '12' and jumper 'OV' and the '12' on PLC inputs. This will give the same signal to the PLC as if the water in the expansion tank is at its operating level.
4. All motors are protected by overload relays in the control panel. Each relay is factory set to operate under normal conditions. The factory uses 220V 3 phase. Some installations use 220V 1 phase. If a motor continues to trip the overload relay, it is acceptable to increase the amperage of the overload relays.
5. When the flue auger system fails to work, we can check if the motors are operational and the flue augers are seized by removing the cable tie strap on the double chain. Reset the overload, as per above, and run the circuit. Align the flue auger shaft and gearbox sprockets by carefully inserting a small screwdriver or narrow nylon blade into the slots at the end of the motor and carefully rotating the cooling fan. DO NOT PRY OR FORCE, the cooling fan should turn freely.
6. Each boiler is shipped with a water sample bottle. Read the instructions and test once a year.
7. The beacon lights are LED bulbs. In the event that the bulb malfunctions, the circuit becomes a dead short and will give incorrect readings to the PLC and shut the boiler down.
8. In the event the source power is interrupted, the boiler electronic system will automatically shut down. In each case, the boiler must be restarted manually.
9. In the event the internal heater inside the control box shorts out, the boiler electronic system will shut down.
10. Prior to 2005, the fire out offset could not be varied. If the heat recovery is too slow, then the boiler will shut down, thinking that the fire has gone out and the boiler does not want to continue feeding fuel. This must be monitored accordingly.
11. When installing augers with a square socket, always ensure that the socket fits completely over the square shaft.
12. If the main drive is not operating check the main drive gearbox with power off. Take note of the chain driving the feed auger. If the chain is loose then the vertical feed auger is jammed. Remove inspection plate and remove obstruction. If the chain is tight then the horizontal feed auger is jammed. Remove obstruction.
13. If the ash ring is lifting, then the drive is not adjusted correctly or the ash auger is not engaged and the ash is building up under the ring. Ensure the ash auger is operating. Adjust pinion drive and slack on the ash ring. The pinion should be as high as possible without rubbing on the shielding, and the ash ring should have approximately 3/8" side to side movement in the firebox.
14. If the ash ring is not turning, check for above and then determine if the coupler is secured tightly to the shaft and pinion.

Frequently Asked Questions

Q. What is a clinker?
A. A clinker is a mass of fused stony matter formed in a furnace, usually from the impurities in the fuel.

Q. Do I have to remove the clinker or will the ash auger take it out?
A. The clinker usually has to be removed. If clinkers are soft, they will be broken up by the ash ring but usually they are hard and must be removed manually.

Q. How often do I have to remove the clinker?
A. This depends on the fuel. Coal can burn for days (or longer) before a clinker is formed. Corn will form a clinker rapidly and twice a day is not unusual. Most wood pellets seldom have clinkers. Clinkers in the Pelco are totally dependent upon the quality of the fuel used. Some of the factors that affect coal is the amount of overburden, clay or any foreign matter delivered with the fuel. It is important that after receiving a fresh load of fuel that the Pelco be inspected at minimum of once a day for clinker buildup. Once a confidence level is reached then the frequency of the inspections can be reduced. We recommend that daily inspection always be carried out for peak efficiency.

Q. Can I install several Pelco boilers in a series?
A. No. The Pelco computer operates by understanding the water temperature in the boiler itself. By having two or more boilers in series would only confuse each computer on all boilers in the series.

Q. We had a minor power failure and my Pelco shut down. Is this normal?
A. Yes. Any interruption in the power supply will shut the boiler down. This is to prevent excess fuel being fed into the boiler when there is no combustion in the event of an extended power failure and the fire has gone out.

Q. We had a lighting storm in our area causing a power surge. The Pelco has since not been able to function. What happened?
A. In the case of a power surge the problem of returning the Pelco to normal operation can be corrected by checking the one amp. fuses, “F4” or “F5”. In some cases, the LED in the beacon may have malfunctioned. An LED will cause a dead short when not operating. Replacement of the LED and fuse is then necessary.

Q. Our Pelco shut down and a warning “Ash auger overheated” was displayed. What happened?
A. Hot coals or ash was exiting the firebox. The cause of this is usually overfeeding or improper fan settings. Reduce your fuel feed rate and allow the fuel to completely turn to ash prior to it being swept from the burner.

Q. The water temperature will continue to rise higher than the set value on the display even after the Pelco shuts down.
A. With solid fuel, there is residue in the firebox which will take some time to burn and the firebox to start to cool down. This is normal.

Q. The Pelco operates but the fuel and ash augers do not operate. What may be wrong?
A. If foreign objects such as rocks, or misplaced wrenches enter the fuel feed auger, they usually get trapped in the gear box below the vertical auger. With power off, remove the four bolts holding the inspection plate and remove the object. Reverse the gear box by carefully inserting a small screwdriver or narrow nylon blade into the slots at the end of the motor and carefully rotating the cooling fan. DO NOT PRY OR FORCE, the cooling fan should turn freely. The use of a pipe wrench to reverse the gear box may be necessary to loosen the object, however, this is not recommended as the gearbox may be damaged as a result.

Q. I cleared the vertical auger but the auger still will not operate. What do I do?
A. Remove the chain from the drives to eliminate the feed auger. Turn on the power and check the shaft on the motor for operation. Occasionally the key will shear on the connector shaft between the feed motor and the gearbox. Turn the power on and, from a safe location, watch the shaft on the feed motor to determine if it is turning. If it is not, the cause may be electrical in nature.

Frequently Asked Questions Con't

Q. I have a large installation and the water overflows the expansion tank. Can I add an auxiliary expansion tank?

A. The expansion tank on the Pelco is designed for the boiler and a short water loop. It is preferred that if the system is designed where there is a large amount of water that a heat exchanger be installed so that the Pelco operates with a minimum of water. But if necessary the Pelco can be fitted with a larger expansion tank. Please consult a qualified dealer. It is important to remember that the Pelco is an open pressure system boiler and proper care must be taken when introducing expansion tanks into the system. It is not recommended to pull the excess water from the vent tube.

Q. Why can I not raise the water temperature beyond 180°F?

A. The Pelco boiler is an open pressure system. Open pressure systems are only allowed to operate to a maximum of 180°F, otherwise boiling will result.

Q. My Pelco has been operating normally and now the PLC is repeatedly turning on and off. What do I check for?

A. Check the main 30 amp (F1) power fuses. If one of the main power fuses is blown due to a possible power surge, the PLC with have intermittent power going to it.

Q. I have just replaced my exhaust blower motor and my main power supply circuit breakers trip. What could be the problem?

A. All motors, except for the combustion blower motor, are designed to be wired for 220V. Ensure that the wiring configuration is followed.

Q. If I use antifreeze in my system, do I still have to add water treatment?

A. Yes. You must follow the instructions for water treatment as indicated in this manual.

Q. What is "burn back"?

A. "Burn back" is a rare occurrence when the fuel in the feed auger can begin to burn. This is usually caused by low demand on heat and a long period of idle use.

Q. How can "burn back" be prevented?

A. Burn back is prevented by setting the heat dissipation to a time allowance to create draw on the furnace, which will add fuel to the firebox. Since 2012, a snap disc has been installed on the feed auger that, if a burn back occurs, it will run the feed auger for 20 seconds (at current set feed rate), send an email to the customer and then shut down the unit. This does not stop a burn back but allows for more response time. This option is only available on the SIII (Deluxe model) Pelco line.

Q. Can burn back damage the fuel hopper?

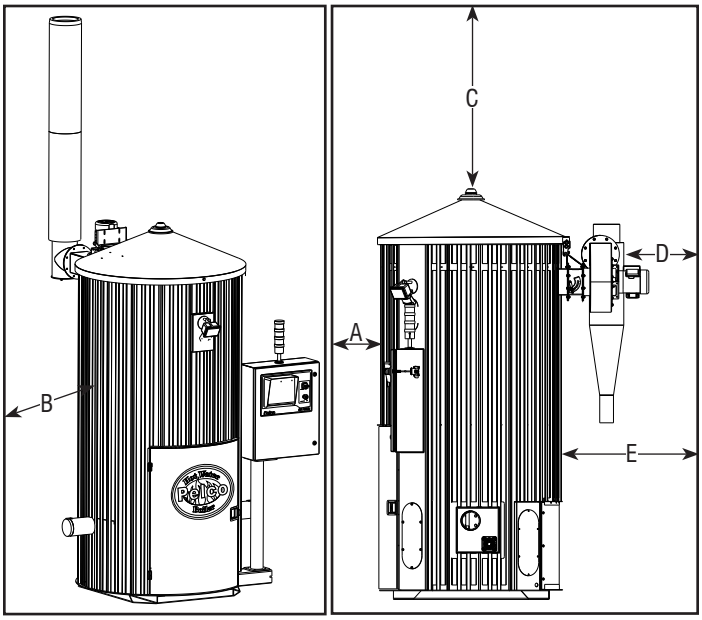
A. The possibility exists of fuel in the storage hopper being involved. That is why the furnace fuel supply must have a break that separates the main fuel storage from the furnace. Your dealer will have more information on this.

Safe Use Requirements - Indoor Installation

The Pelco Hot Water Boiler must be installed on a noncombustible concrete pad.

There must be a minimum clearance between the Pelco Hot Water Boiler and any combustible material as follows:

	Description	Min. Indoor Clearance
A	Front of Pelco Hot Water Boiler	1219 mm (48 in)
B	Sides of Pelco Hot Water Boiler	152 mm (6 in)
C	Above Pelco Hot Water Boiler	965 mm (38in)
D	From Chimney	457 mm (18 in)
E	Rear of Pelco (from rear siding)	1321 mm (52 in)



Installation of the Pelco Hot Water Boiler must be in a location that minimizes the effect the exhaust will have on residences, other buildings or the property of nearby neighbours. Consider the direction exhaust will travel with prevailing winds.

The Pelco Hot Water Boiler is certified for indoor (see drawing) and outdoor installation.

Contact an insurance provider prior to installing the Pelco Hot Water Boiler to ensure that installation is in compliance with local insurance requirements and all terms have been met.

A water treatment must be added to the system at installation to prevent corrosion. Use only the water treatment approved by Pro-Fab Industries Inc. Put the water treatment in the system after it has warmed and is circulating hot water so as to avoid loss.

NOTE: If height of chimney is too high this can affect the draft.

IMPORTANT: The Pelco Hot Water Boiler must be installed by a certified Pelco installer.

⚠ WARNING

A spark arrester must be installed if the Pelco Hot Water Boiler is used in a high fire risk area.

Installation of the Pelco Hot Water Boiler must be in accordance with building and fire codes. Check these regulations carefully. The Pelco Hot Water Boiler operates at atmospheric pressure and does not require a pressure vessel or boiler certification. It is not recommended to install more than one boiler on one circuit.

IMPORTANT:

The installation drawings in this manual are typical layouts shown as examples of types of layouts only. We recommend that you engage a professional plumbing and heating company to ensure that your installation is suitable for your application, will serve your needs and conform to all local codes. The Pelco Hot Water Boiler must be installed by a certified Pelco installer.

The Pro-Fab Industries warranty covers the Pelco Boiler only and does not include anything outside of the Pelco Boiler. Pro-Fab Industries takes NO responsibility for faulty installations, etc. DO NOT modify this unit in any way. Any modification will void the warranty.

These drawings should assist in establishing a list of material required for a typical installation. All parts should be available from your Pelco provider. Ask your dealer for a parts list.

Pelco Hot Water Boiler Elevation - Outdoor Installation

Optimum Elevation

Install a water circulating pump (1, Fig. 36) in the hot water supply line (2, Fig. 36) several meters below the water level (3, Fig. 36) in the Pelco Hot Water Boiler (4, Fig. 36) to minimize pump cavitation.

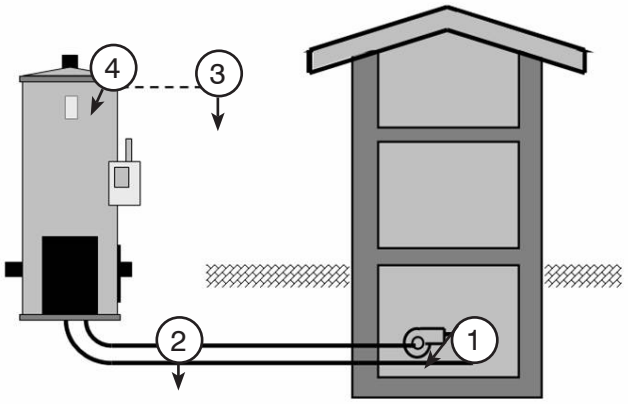


Figure 36 - Optimum Elevation Installation

Low Elevation

If the water level (1, Fig. 37) is less than 600 mm (2 ft) above the level at which the hot water supply enters the building, then the pump (2, Fig. 37) must be installed in the hot water supply line (3, Fig. 37) at the Pelco Hot Water Boiler (4, Fig. 37).

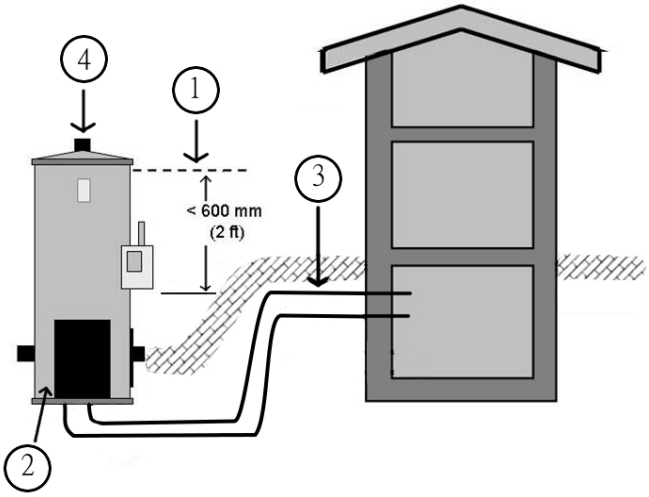


Figure 37 - Low Elevation Installation

Uneven Ground

The pump may be installed inside the building as long as it is at least 900 mm (3 ft) below the water line (1, Fig. 38) and is not above the highest point of the hot water supply line (3,4, Fig. 38).

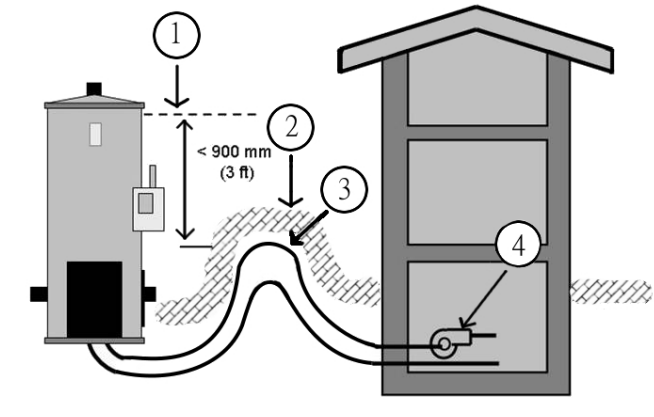


Figure 38 - Uneven Ground Installation

Figure 36 - Optimum Elevation Installation	
Item No.	Description
1	Circulating Pump
2	Hot Water Supply Line
3	Water Level
4	Pelco Hot Water Boiler

Figure 37 - Low Elevation Installation	
Item No.	Description
1	Water Level
2	Circulating Pump
3	Hot Water Supply Line
4	Pelco Hot Water Boiler

Figure 38 - Uneven Ground Installation	
Item No.	Description
1	Water Level
2	Highest Point of Ground
3	Hot Water Supply Line
4	Pelco Hot Water Boiler

Example Residential Installations

The following drawings should help in establishing a list of materials required for a typical installation. All materials should be available from your Pelco Hot Water Boiler dealer.

The installation drawings in this manual are shown as examples only. We recommend that you engage a plumbing and heating professional to ensure that your installation will serve your needs and conform to local and national codes.

IMPORTANT: Pro-Fab Industries Inc. does not warranty the Pelco Hot Water Boiler or accessories if there is evidence of damage caused by a faulty installation.

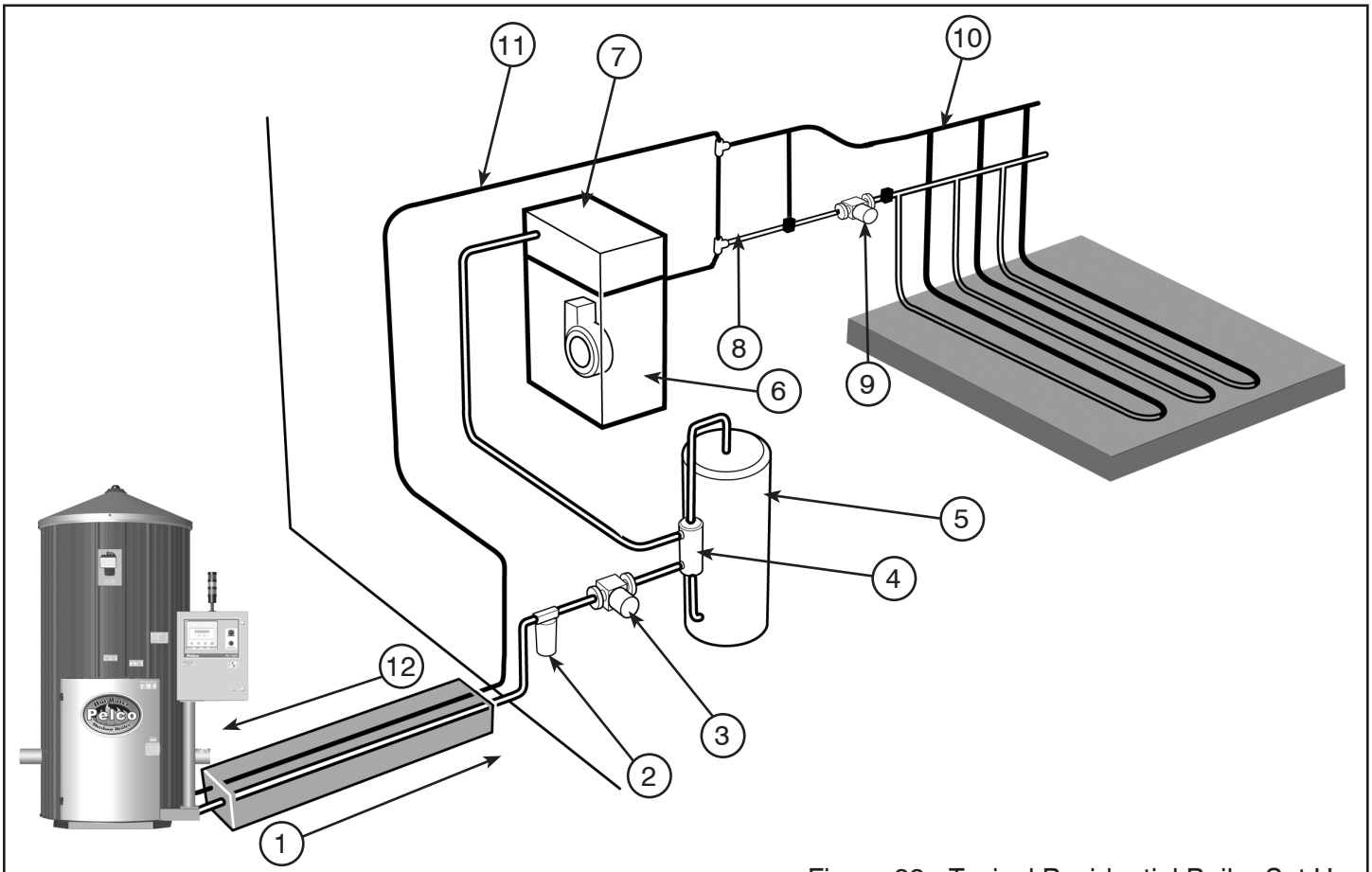


Figure 39 - Typical Residential Boiler Set Up

Figure 39 - Typical Residential Boiler Set Up					
No.	Description	No.	Description	No.	Description
1	Insulated Supply Line	5	Hot Water Tank	9	Circulating Pump
2	Filter (optional)	6	Furnace (existing)	10	Heating Piles (under floor)
3	Pump	7	Heat Exchanger	11	Return Line
4	Side Arm Heat Exchanger	8	Mixing Valve	12	Insulated Return Line

Existing Heating System

1. Install the heat exchange radiator (1, Fig. 40) in the hot air plenum of the forced air furnace, taking care to seal joints and holes.
2. Install the circulating pump (2, Fig. 40) on the supply line.

IMPORTANT: Ensure that the pump is oriented horizontally.

3. After installing the heat exchanger with the forced air system, check to ensure that the air flow is as specified by the manufacturer of the existing heating system.

IMPORTANT: The fan should accommodate the addition of the heat exchanger.

4. Adjust the pulleys on the motor and blower to obtain proper air flow rate for the belt driven hot air fan.
5. Adjust the motor speed on variable speed fans to obtain the correct air flow.
6. Install a second thermostat to allow the blower to operate separately from the Pelco Hot Water Boiler.
7. Set the existing thermostat several degrees lower than the new thermostat. This will allow the existing furnace system to operate normally, should the Pelco Hot Water Boiler run out of fuel.
8. A bleeder valve (3, Fig. 40) installed in the return line allows filling and draining of the system.

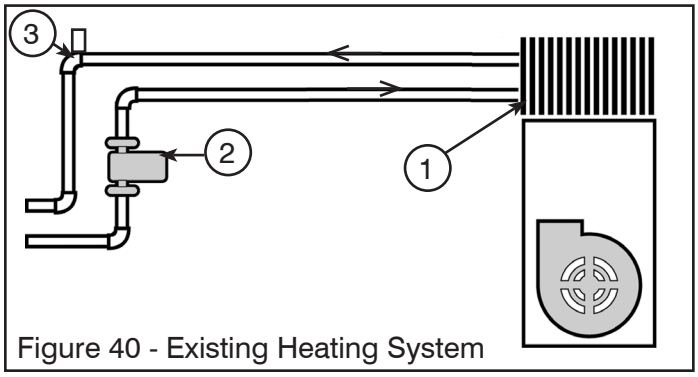


Figure 40 - Existing Heating System

Figure 40 - Existing Heating System	
Item No.	Description
1	Exchange Radiator
2	Circulating Pump
3	Bleeder Valve

IMPORTANT: Have a qualified electrician and plumber verify the installation to ensure all connections to the furnace are in accordance with the manufacturer's specifications and performed by qualified, licensed personnel in accordance with local codes.

Under Floor Heat

1. Use a 25 volt thermostat with relay to control the circulating pump (1, Fig. 41) for under floor piping (2, Fig. 41).
2. Each zone can be manually adjusted with the ball valves (3, Fig. 41) on the supply header line (4, Fig. 41).
3. Adjust the mixing valve (5, Fig. 41) for water temperature between 43°- 49°C (110°- 120°F) for concrete floor installations.

Figure 41 - Under Floor Heat	
Item No.	Description
1	Circulating Pump
2	Under Floor Piping
3	Ball Valves
4	Supply Header Line
5	Mixing Valve

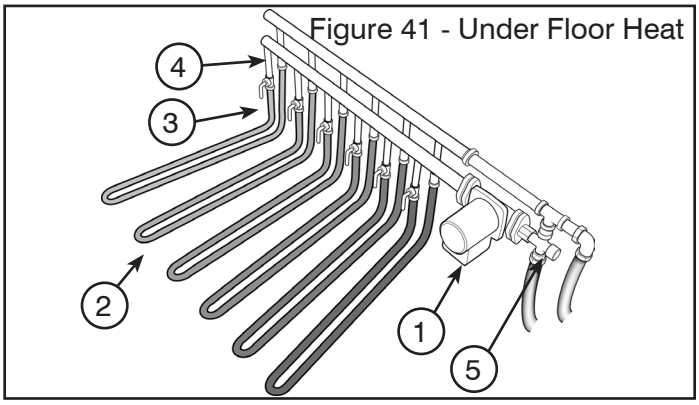


Figure 41 - Under Floor Heat

Side Arm Heat Exchanger

Heated water from the Pelco Hot Water Boiler is introduced to the hot water tank through the side arm heat exchanger (1, Fig. 42).

Figure 42 - Side Arm Heat Exchanger Set Up	
Item No.	Description
1	Side Arm Heat Exchanger
2	Hot Water Tank

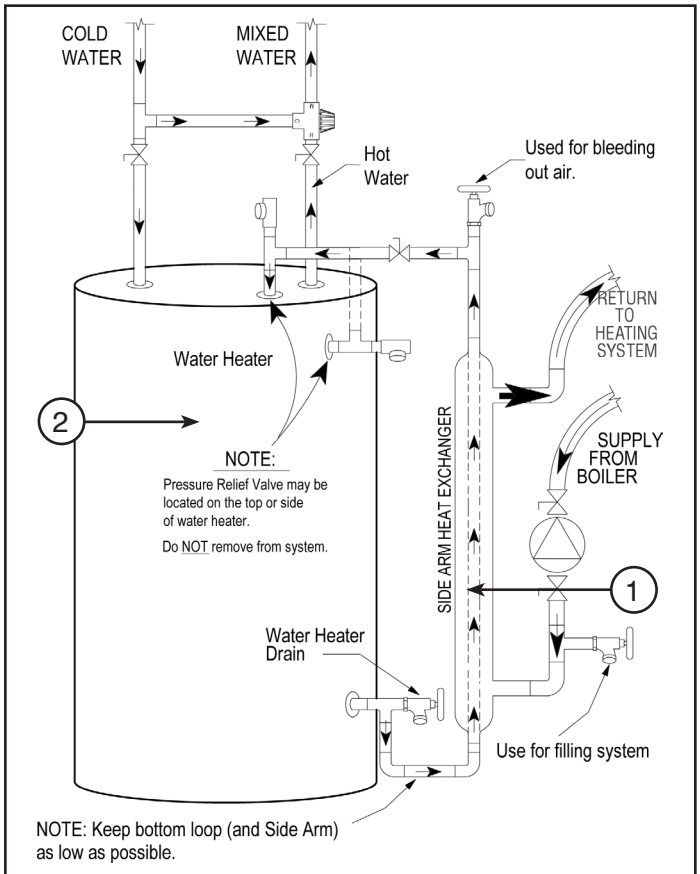


Figure 42 - Side Arm Heat Exchanger Set up

Installing the Pelco Hot Water Boiler with Existing Indoor Furnace (Plate Water to Water Heat Exchanger)

Figure 43 - Installation with Existing Indoor Furnace

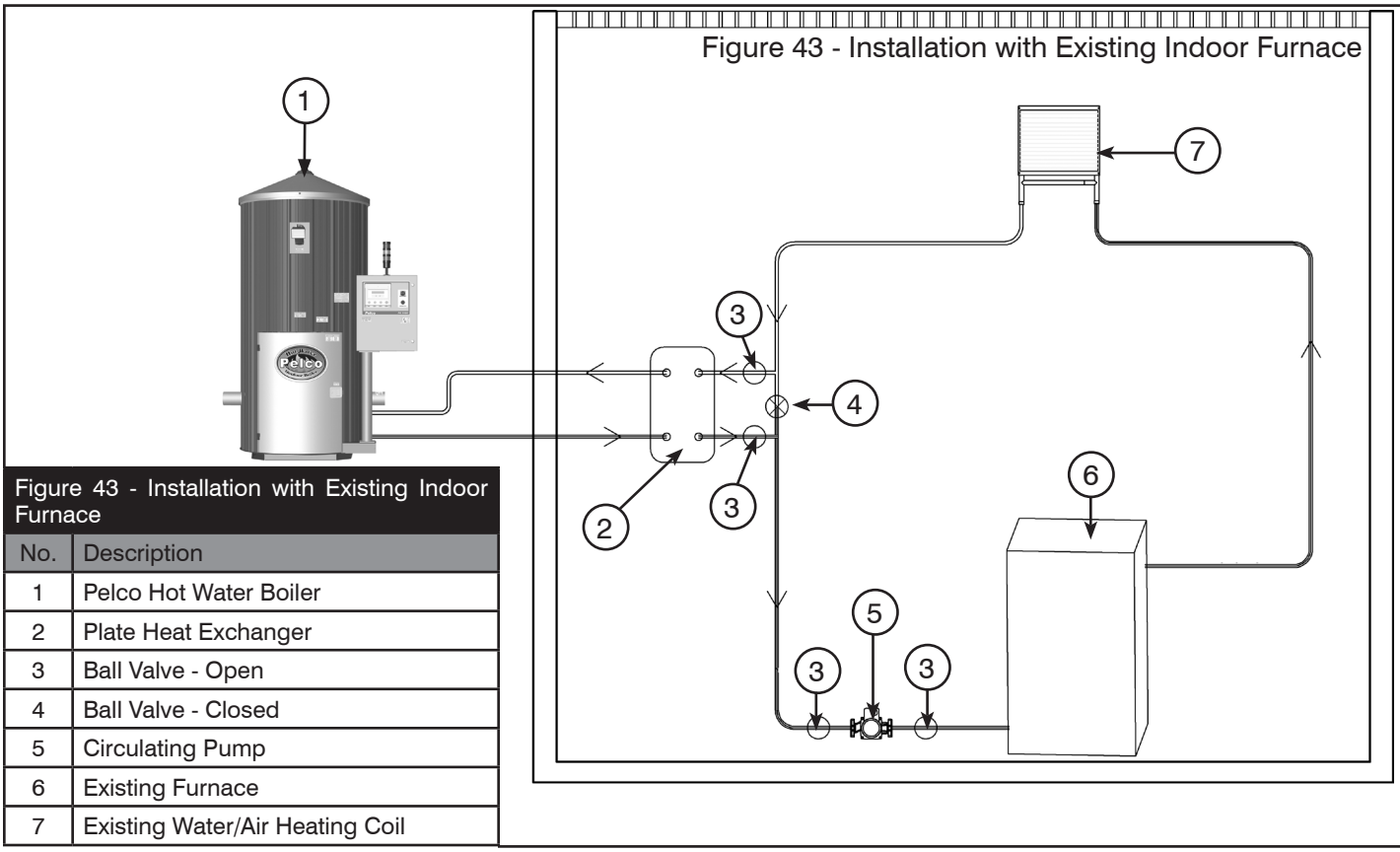


Figure 43 - Installation with Existing Indoor Furnace

No.	Description
1	Pelco Hot Water Boiler
2	Plate Heat Exchanger
3	Ball Valve - Open
4	Ball Valve - Closed
5	Circulating Pump
6	Existing Furnace
7	Existing Water/Air Heating Coil

Baseboard Distribution

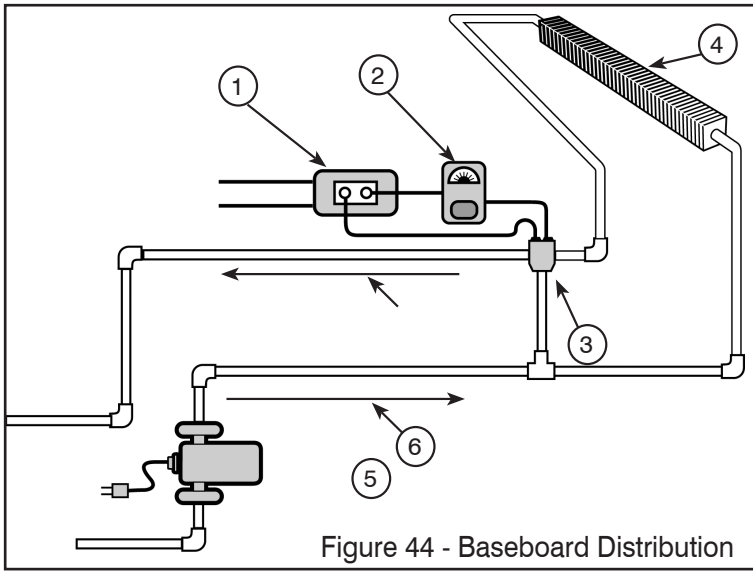


Figure 44 - Baseboard Distribution

Figure 44 - Baseboard Distribution	
No.	Description
1	24 V Transformer
2	Thermostat
3	3-way Zone Valve
4	Baseboard Unit
5	Outdoor Pelco Hot Water Boiler Circulation Pump
6	From Outdoor Pelco Hot Water Boiler
7	Return to Outdoor Pelco Hot Water Boiler

WARNING:

- DO NOT connect this unit to a chimney flue serving another appliance.
- DO NOT relocate or bypass any of the safety controls in the original boiler installation.
- Installation must comply with requirements of CAN/CSA-B365 (gas, oil, electric), and changes to the installation must comply with CSA-B139 (oil fired), C22.1 (for electric) or CAN/CGA-B149.1 or CAN/CGA-B149.2 (gas fired).

WARNING:

- The operation of the gas boiler must be verified for acceptable operation before and after installation of the add-on appliance by a gas fitter who is recognized by the regulatory authority.
- Operate the (gas, oil, electric) boiler periodically to ensure that it will operate satisfactorily when needed.
- **CAUTION:** Hot Surfaces: Keep children away. Do not touch during operation. The following is for boilers intended to be connected to an existing boiler system:

1. Instructions describing the installation procedures for independent of combined operation including complete electrical circuit and piping diagrams. The add-on boiler shall:
   i. be installed without interfering with the normal delivery of heated water from the original boiler;
   ii. be installed without affecting the operation of the electrical and mechanical safety controls of the original boiler;
   iii. provide for a changeover from one fuel to the other without requiring manual adjustment of any controls or components other than the thermostats;
   iv. have provisions, or adequate water capacity within the boiler, to prevent damage from loss of circulation due to electrical power failure;
   v. be installed without changing the function of the controls or rewiring the original boiler. A wiring interconnection is permitted. The electrical system of both boilers shall be powered from a single branch circuit without exception.
2. The recommended piping be such that excessive pressure will not be developed in any portion of the boiler or system.

Pool and Spa Hookup

Figure 45 - Pool and Spa Hookup

No.	Description
1	From Pelco Hot Water Boiler
2	Bypass Valve
3	Pool Heater
4	To Pelco Hot Water Boiler
5	Immersion Control
6	To Pool or Spa
7	Black Wire
8	Black Wire - 110 v
9	White Wire - 110 v
10	Transformer
11	From Pool or Spa

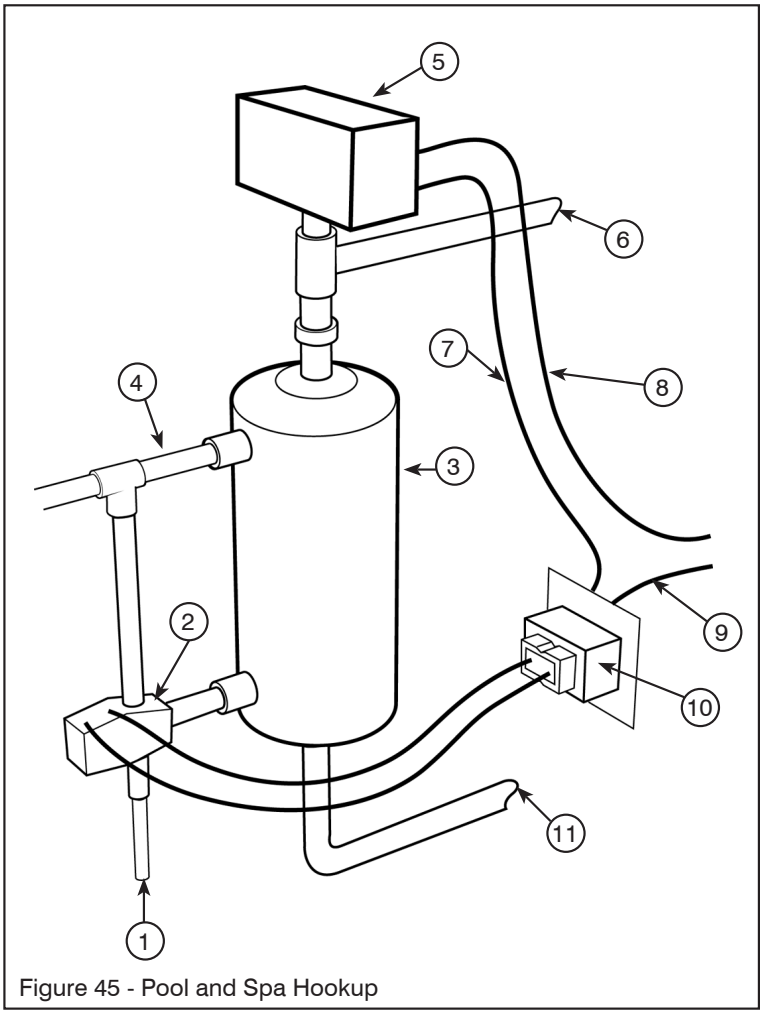


Figure 45 - Pool and Spa Hookup

Trench Details for Supply and Return Water Lines

1) The water lines (1, Fig. 46) must be insulated to minimize heat loss.
2) Contact an authorized Pelco dealer for underground water line insulation.
3) Dig a trench, 610 mm (24 in) deep and 305 mm (12 in) wide, and as level as possible to avoid damage to the water lines. Dig the trench at least 914 mm (36 in) deep under driveways.
4) The water lines should be rated and approved for use with high temperature water and boiler glycol. Size of the water lines depends upon the distance of the line and volume of heat required.

IMPORTANT: Check with a qualified heating professional to determine the necessary line size to meet the requirements of your specific application.

5) Clearly identify each water line as supply and return lines.
6) Install a power cable (minimum 10/3 AWG) (2, Fig. 46) approved for underground installation.
   - Pelco Hot Water Boiler “Optional Alarm” needs room in the trench for cables and a telephone line.
   - Pelco Hot Water Boiler “Optional Remote Display” (tower beacon lights) needs room in the trench for cables.

IMPORTANT: Obtain required electrical permit and confirm electrical code requirements prior to installation.

NOTE: Consider adding room for an alarm system in the trenching.

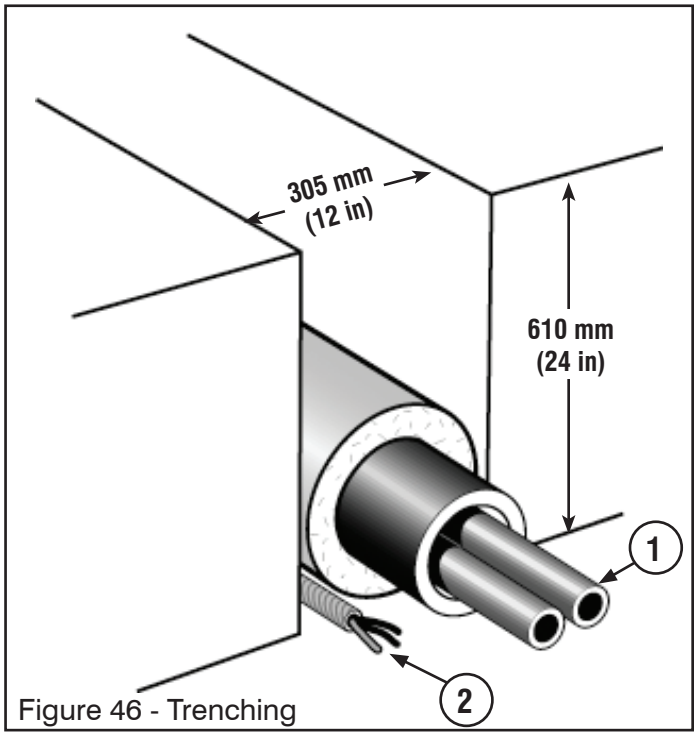


Figure 46 - Trenching

Figure 46 - Trenching	
Item No.	Description
1	Water Lines
2	Power Cable

DANGER

Electrocution hazard. Trench should not be dug in low lying area with standing water.

Notes:

Pelco Hot Water Boiler

Limited Warranty

Warranty service may only be performed by Pro-Fab Industries or a Pro-Fab Authorized Pelco Outdoor Hot Water Boiler Dealer or a Pro-Fab Authorized Pelco Outdoor Hot Water Boiler Service Centre.

PRO-FAB INDUSTRIES INC. WARRANTY

Pro-Fab Industries Inc. (hereinafter called “Pro-Fab”) warrants to the original owner of the Pelco Outdoor Hot Water Boiler (hereinafter called the “Pelco”) the following:

A two (2) year warranty on the workmanship of the furnace and workmanship on all parts manufactured by Pro-Fab, from the date of manufacture, and excluding normal wear items such as (but not limited to) the door gasket, fire brick, insulation, refractory, exterior finish and chimney.

All moving parts (including augers, sprockets, chain, ash ring, burner, bearings) have a one (1) year warranty; however, normal wear of these parts is not included.

A one (1) year warranty for any labour required for any repair or replacement of the furnace or parts from the date of manufacture based on Pro-Fab’s predetermined labour rates and allowable hours.

A limited pro-rated warranty coverage (which includes the one (1) year labour coverage at Pro-Fab rates and hours as stated above) for a defective firebox, flues and water jacket only, based on the following pro-rated scale from the date of manufacture:

- Years one (1) and two (2) – one hundred percent (100%) coverage;
- Year three (3) – seventy-five percent (75%) coverage;
- Year four (4) – fifty percent (50%) coverage;
- Year five (5) – twenty percent (20%) coverage;
- Year six (6) – ten percent (10%) coverage;

Absolutely no warranty is provided after six (6) years from the date of manufacture.

Note: All parts NOT manufactured by Pro-Fab carry their own manufacturer’s warranty. The owner is responsible for all costs necessary to replace those parts unless covered by the applicable manufacturer (except for the one (1) year labour coverage at Pro-Fab rates and hours as stated above).
The above warranties are based on the following factors:

Pro-Fab reserves the right to repair or replace at its discretion any defective part or furnace, in whole or in part.

Use of Pro-Fab approved water treatment. IMPORTANT: Pro-Fab approved water treatment is available from your local dealer or service centre and must be used and validated for warranty coverage. The pH balance must remain between 8.8 and 11.0, the nitrite level must remain between 730 and 1460 ppm as $NaNO_2$, and conductivity must be less than or equal to 4000 mmhos. A copy of the invoice itemizing the purchase of approved water treatment will be required as proof of maintenance in the event of a warranty claim. Water samples must be tested annually and all laboratory reports must be kept on file by the owner as proof of maintenance (see the Pelco Operator’s Manual).

All instructions in the Pelco Operator’s Manual must be followed.

The Warranty Registration and a copy of the original bill (invoice) must be forwarded to Pro-Fab within thirty (30) days of the date of purchase to validate the warranty.

Pro-Fab will not be responsible or liable for any of the following: a) If warranty work requires removal or replacement of all or a part of the furnace, Pro-Fab is not responsible for the cost of plumbing, freight, permits, removal or disposal of damaged furnace or parts, replacement of water or additives, labour after the one (1) year warranty coverage expires, or any cost other than the warrantied replacement part itself or the furnace; b) The care, maintenance and safe operation of the Pelco which is the responsibility of the owner of the furnace; c) Any accidents, injury, damage or loss incurred due to a heating system failure; d) Any accidents, injury, damage or loss incurred due to faulty installation, operation or maintenance; e) Any cost incurred for replacing or repairing of parts not manufactured by Pro-Fab which carry their own manufacturer’s warranty (except for the one (1) year labour coverage at Pro-Fab rates and hours as stated above); f) Any out-of-pocket expenses, alternative accommodations or loss of revenue due to defective parts or furnace; g) Performance problems caused by improper sizing of the furnace, vent connection, or air openings; h) Damages, malfunctions or failures resulting from the use of any attachment not authorized by Pro-Fab; i) Units installed outside the continental United States, Alaska, or the provinces and territories of Canada without prior approval from Pro-Fab; j) Units with their safety certification labels removed; or k) Damages, malfunctions or failures caused by force majeure, abuse, accident, fire, or acts of God.

Any available warranty will be void if: a) Maintenance procedures are not followed (see Operator’s Manual); b) Water treatment and proper additives are not used as specified in the Operator’s Manual; c) The Pelco has been altered in any way; d) Any material other than Pro-Fab approved fuel has been used; e) Any instruction given in the Operator’s Manual which has not been followed including during installation or regular maintenance; or f) Any claim made under the warranty for a person other than the original owner.

There are no other warranties, expressed or implied, by Pro-Fab or its Authorized Pelco Dealers or Authorized Pelco Service Centres regarding the Pelco except the warranty expressed herein. ANY IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE, SHALL NOT EXTEND BEYOND THE APPLICABLE WARRANTY PERIODS SPECIFIED ABOVE. PRO-FAB’S SOLE LIABILITY, WITH RESPECT TO ANY DEFECT, SHALL BE AS SET FORTH IN THIS LIMITED WARRANTY, AND ANY CLAIMS FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES ARE EXCLUDED.

No person is authorized to bind Pro-Fab to any other warranty whatsoever. Pro-Fab reserves the right at any time to make changes or improvements to the design, materials, or specifications of the Pelco line of boilers or parts without thereby becoming liable to make similar changes in the boilers or any of its parts previously manufactured.

Manufactured by:
Pro-Fab Industries Inc.
Box 112
Arborg, MB R0C 0A0

PRO-FAB INDUSTRIES INC.

Issue Date: September 2013 Part No. 812242R04 Printed in Canada MB0913