

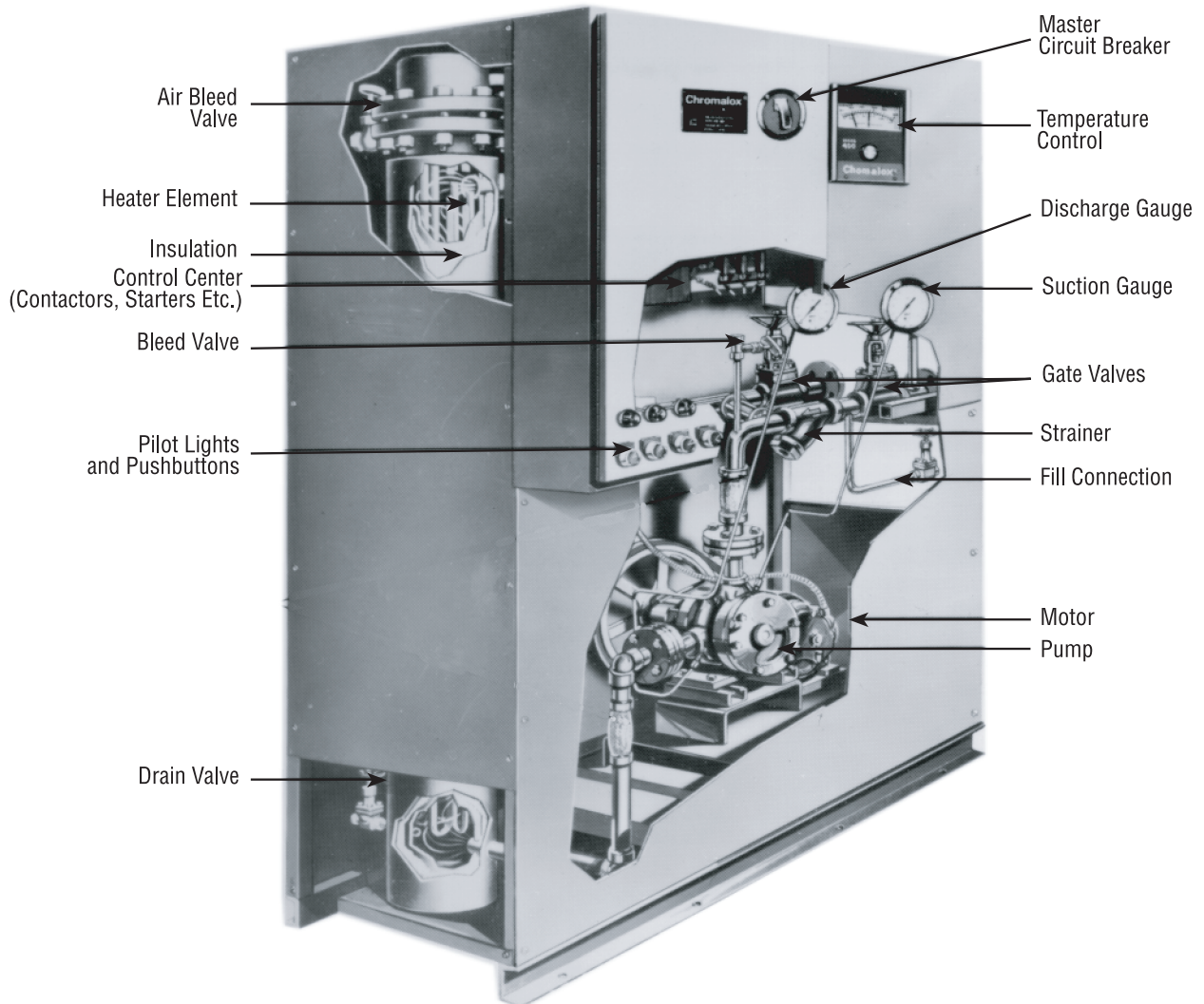
Chromalox®

Installation, Operation and **RENEWAL PARTS IDENTIFICATION**

SERVICE REFERENCE	
DIVISION 4	SECTION CLD
SALES REFERENCE	PQ424
	161-00000-000
DATE	MARCH, 2005

Electric Fluid Heat Transfer Systems Temperatures to 750°F* at 150 psig. – For Heat Transfer Oils Catalog Numbers as Listed on Page 2. 9 kW thru 400 kW Systems

Manufacturing Data	System Catalog Number and Rating	System Serial Number
	Customer's Name	
	Customer's Order Number	Date



*Depends upon heat transfer fluid properties.

SPECIFICATIONS

kW Rating	Amperes**		300# Flanged Piping Connection	System Volume* (Gals.)	Expansion Tank † (Gals.)	Pump ‡		Catalog Number			Approx. Net Wt., Lbs.	Catalog Number	Approx. Net Wt., Lbs.
	240V	480V				GPM	HP	Standard NEMA I	Oil & Dust Tight NEMA XIII	Weather-resistant NEMA IV			
9	29.2	14.6	1-1/2	4	12	40	5	CLD-750-9	CLDO-750-9	CLDW-750-9	1500	CLDX-750-9	1800
12	37.4	18.7	1-1/2	7	12	40	5	CLD-750-12	CLDO-750-12	CLDW-750-12	1500	CLDX-750-12	2100
15	44.6	22.3	1-1/2	7	18	40	5	CLD-750-15	CLDO-750-15	CLDW-750-15	1500	CLDX-750-15	2100
20	56.6	28.3	1-1/2	7	18	40	5	CLD-750-20	CLDO-750-20	CLDW-750-20	1500	CLDX-750-20	2100
30	81.6	40.6	1-1/2	7	18	40	5	CLD-750-30	CLDO-750-30	CLDW-750-30	1600	CLDX-750-30	2300
40	105.6	52.6	2	10	30	60	5	CLD-750-40	CLDO-750-40	CLDW-750-40	1700	CLDX-750-40	2400
60	159.7	79.2	2	16	42	80	7-1/2	CLD-750-60	CLDO-750-60	CLDW-750-60	2000	CLDX-750-60	2700
80	207.9	103.9	2	20	42	80	7-1/2	CLD-750-80	CLDO-750-80	CLDW-750-80	2100	CLDX-750-80	3200
100	260.0	130.0	3	30	80	120	7-1/2	CLD-750-100	CLDO-750-100	CLDW-750-100	2200	CLDX-750-100	3500
125	310.0	155.0	3	42	80	150	10	CLD-750-125	CLDO-750-125	CLDW-750-125	2300	CLDX-750-125	3600
150	385.0	192.0	3	42	80	150	10	CLD-750-150	CLDO-750-150	CLDW-750-150	2400	CLDX-750-150	3600
200	-	255	3	55	80	150	10	CLD-750-200	CLDO-750-200	CLDW-750-200	2500	CLDX-750-200	3900
250	-	315.0	3	76	115	200	15	CLD-750-250	CLDO-750-250	CLDW-750-250	3500	CLDX-750-250	5000
300	-	375.0	3	76	115	200	15	CLD-750-300	CLDO-750-300	CLDW-750-300	3600	CLDX-750-300	5200
350	-	435.0	3	100	115	200	15	CLD-750-350	CLDO-750-350	CLDW-750-350	3800	CLDX-750-350	5400
400	-	495.0	3	100	115	200	15	CLD-750-400	CLDO-750-400	CLDW-750-400	3900	CLDX-750-400	5500

‡ Horsepower and GPM ratings are based on a cold start with a heat transfer medium having a viscosity of approximately 500 SSU at 70°F.

* Excludes expansion tank and volume in customer's equipment.

** All amperes based on 3ph 60 cycle power.

† Recommended minimum size.

kW Rating	Dimensions (Inches)							
	L	D**	H	A	B	C	E	G
9-30	60	32	84	24	12	36	6	50
40	60	32	84	24	12	36	6	50
60	60	32	84	24	11-1/4	36	5-1/2	50
80	60	32	98	35	11-1/4	45	5-1/2	66
100	60	40	98	36	13-1/2	48	6-1/2	66
125-150	66	40	98	45	12	54	8	66
200	66	40	98	45	12	57	8	66
250	66	50	98	42	22	54	12	66

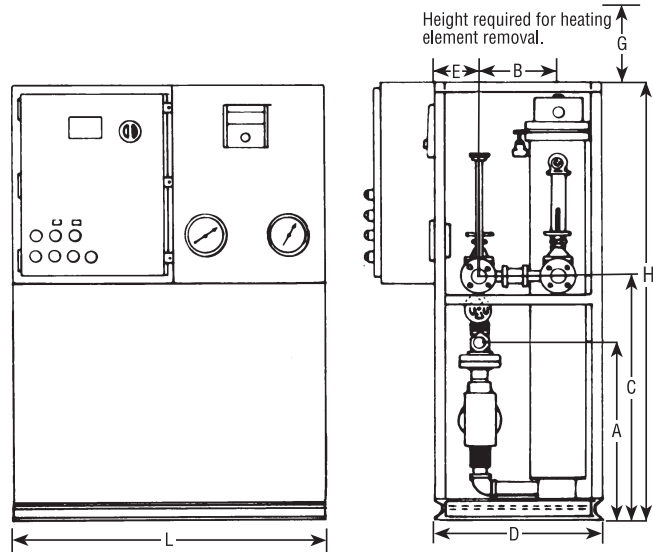
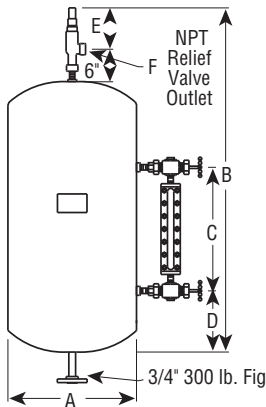
** Add 10" to depth of CLD, CLDO, and CLDW and 15" to depth of CLDX for control box overhang.

H – Height excludes expansion tank.

Expansion tank specifications and dimensions

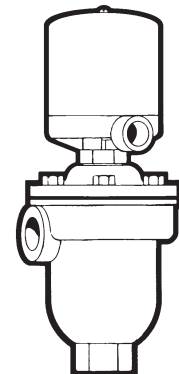
The expansion tanks used with the CLD line of hot oil heat transfer systems are ASME Rated for 150 psi. at 650°F. They are made of carbon steel and come complete with 3/4" – 300 lb. flanged inlet connections, ASME relief valve and a sight glass assembly.

Size Gal.	Dimensions						Empty Wt. (Lbs.)
	A (ID)	B	C	D	E	F	
12	12	25 1/2	15	6	6 3/8	1	50
18	12	37 1/2	22	8 1/2	6 3/8	1	60
30	14	38 1/4	22	12 1/2	6 3/8	1	70
42	16	35	22	14 1/2	6 3/8	1	105
80	20	63	38 1/2	12 1/2	6 3/8	1	205
120	24	63 3/8	38 1/2	12 1/2	7 13/16	1 1/4	310



Optional Liquid Level Control for Expansion Tank

This optional liquid level control or float switch is mounted on the expansion tank and is used for automatic shutdown of the heat transfer system in case of low liquid level. It can be used with most of the heat transfer fluids having a minimum specific gravity of 0.85.



GENERAL

The Chromalox Heat Transfer Unit is a thoroughly engineered, pretested package, designed to give years of service, virtually maintenance free if properly installed. The CLD series can operate at 750°F at 150 psi. (depending upon heat transfer fluid properties) and is available in four models, each with basic features that comply with the National Electrical Code. Model CLD has general-purpose NEMA I construction and can be used where no hazards exist. Model CLD W can be used where weather-resistant construction is required and is constructed according to NEMA IV specifications.

Model CLDO is oil and dust tight as specified by NEMA XII standards. Model CLDX, Class I, Group D, Division I is explosion resistant and is constructed to operate in hazardous or explosive areas. (**Warning:** Pipe surfaces could achieve temperatures higher than allowed for Class I, Group D, Division I hazardous areas). Common to all four models: steel heater sheath, maximum density 22 watts per square inch; cast steel centrifugal pump; power requirements 208, 240, 480 and 550 volts, 3 phase, 60 cycles, 9 thru 400kW.

INSTALLATION

CAUTION: *This system is not for use with water, ethylene glycol and water mixture or some of the synthetic heat transfer fluids. Check with your local Chromalox Sales and Application Engineer to be sure you are using an accepted heat transfer medium in this system and request PQ301.*

Note: When installing system allow sufficient room to remove element if and when necessary. (See dimensional table column G Page 2)

HYDRAULIC:

Note: The CLDW systems should be mounted so the control box does not fall in direct sunlight.

The bed plate should be mounted on a solid foundation, preferably level.

The pipe size should be the same as the system piping connections. All piping must be supported so the pump is not carrying any of the pipe weight. If these instructions are **not** followed, distortion in the pump may cause unnecessary wear and faulty operation.

1. The piping of the entire system should be arranged to minimize pockets where air may be trapped. Manual air vents or bleeder valves should be provided in the system where air pockets may occur and every time the flow of fluid drops.
2. Mount the expansion tank so it is the highest point in the system and if possible at least 15 feet above the height of the pump. Connect the fluid level sight glass to the expansion tank. To safeguard employees and equipment, run the relief line out of the building. This relief line should be the same size as the relief valve discharge.

When the system is going to operate above THE boiling temperature of the heat transfer fluid, the expansion tank will have to be pressurized with air or nitrogen. This eliminates the possibility of heat transfer fluid flashing into vapor in the heater, at the point of high velocity in the system, at the suction of the pump or causing the pump to vapor lock due to insufficient NPSH (net positive suction head). On hot oil heat transfer system, this pressurizing is usually done with nitrogen as this eliminates the possibility of the hot fluid coming in contact with oxygen thus reducing the possibility of oxidation, extending the life of the heat transfer fluid. This pressure should be 5-10 PSI above the vapor pressure of the heat transfer fluid at its operating temperature. The expansion tank is to be pressurized, and must be equipped with safety relief valve(s). The heat transfer system and expansion tank should be ASME coded.

3. **Pump Alignment** – The pump and motor have been carefully aligned and testes at the factory. However, they should be checked for alignment after the unit is permanently mounted since movement and vibration in transit can throw them out of alignment. Alignment should be made when unit is cold but alignment should be rechecked after system is operating. If out of alignment again final alignment should be made when system is at normal operating temperature. Follow the alignment procedures recommended by the pump manufacturer.
4. **Pump Cooling** – This system is furnished with a high-temperature centrifugal pump that requires water cooling of the bearing journal and mechanical seal. To provide this water cooling, connect water supply and drain lines to the unions provided on the system.
 - a. **BEARING JOURNALS** – The flow should be adjusted by using the valve supplied on the system to maintain a temperature range of 120°F to 200°F in the bearing housing. Approximate flow should be 2 GPM.

- b. **MECHANICAL SEAL** – the seal requires a water flow rate of approximately 1/2 GPM. **Note:** There should be no leakage of the heat transfer fluid at the seal. **CAUTION:** *Do not rotate pump when the seal is dry as seal could be damaged.*

5. **Pump Lubrication** – **CAUTION:** *Pumps are shipped from the factory without oil in the bearing housing.*

- a. Lubrication of ball type radial and thrust bearings in the pump is by oil contained in the sump of the bearing housing. The oil level is controlled by a constant level oiler of a fixed height setting. Failure to level the assembly when the unit is installed may adversely affect this level and cause damage to pump bearings. Use a good grade SAE-20 oil to fill the oil reservoir. Remove the oil reservoir cup of the constant level oiler and pour oil through the oil reservoir cup until the oil can be seen at the bottom. Fill the oil reservoir cup and put it back into place. The oil will bubble into the bearing housing until the proper level has been reached. Remove the oil reservoir and after refilling it, put it back into place. Thereafter the oil level remains constant as long as some oil remains in reservoir cup.
 - b. The top of the bearing housing is fitted with a screened vent plug to provide the necessary ventilation. It is not an oil fill plug and the bearing housing should never be filled through this opening.
 - c. The oil should be drained and relaced at regular intervals, the intervals depend on the atmospheric conditions (dust, soot, corrosive vapors, humidity, temperature variations, etc.) prevailing at the pump installation site. The bearing housing should be flushed with a good solvent before the oil is replaced.
6. Flanged connections and motor mounts sometimes loosen during transit. Check and tighten if necessary.

ELECTRIC:

CAUTION: Hazard of Electric Shock. The heat transfer system must be grounded using grounding means provided in control box and employing wiring in accordance with National Electrical Code.

1. The unit is completely wired. The only wiring necessary is to terminals L1, L2, and L3 on the main circuit breaker and the ground lug in the control panel.

CAUTION: Hazard of Electric Shock. Disconnect all power before servicing the heat transfer system.

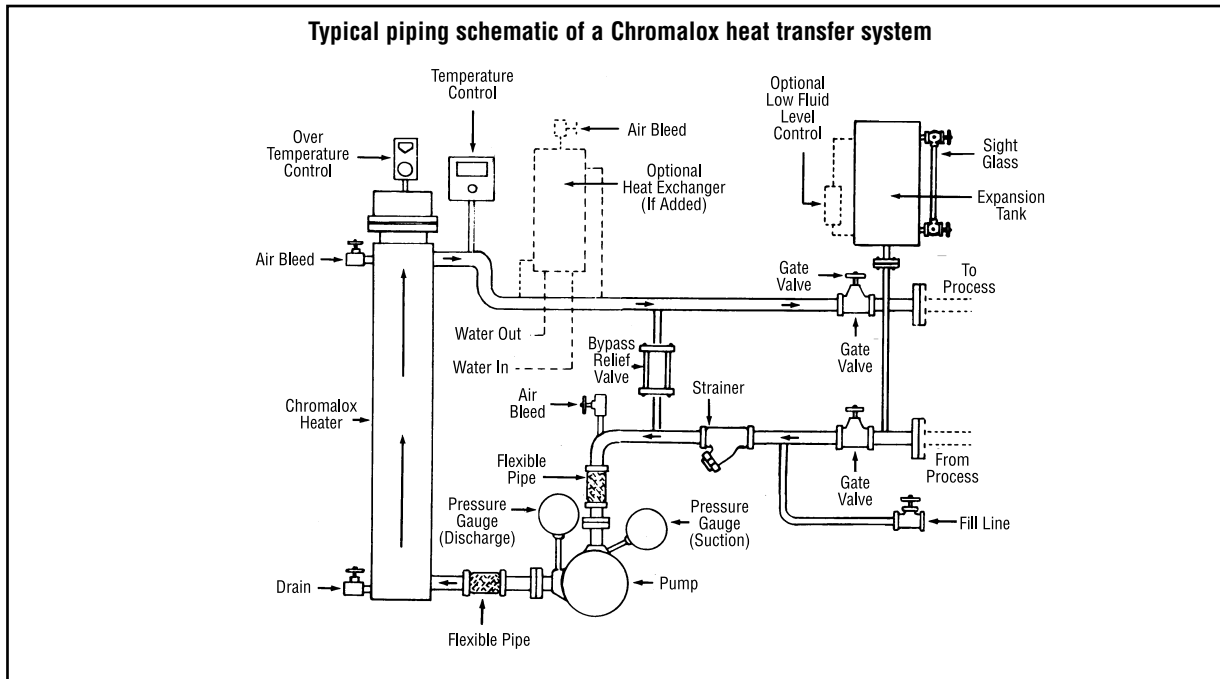
2. Turn the thermostat(s) to the lowest temperature possible and the ON-OFF Selector Switch(es) to the OFF position. Start the unit by pushing the push button marked START, located on the front of the panel. This test is to check pump rotation and the unit should be turned off immediately upon learning the direction of rotation.
3. The pump rotation should be as indicated by arrows on motor. If direction of rotation is wrong, reverse the input leads (L1 and L3) at the master circuit breaker. Momentarily start the pump to check rotation.
4. All electrical connections should be checked and tightened if necessary. These sometimes loosen during transit.

OPERATION

CAUTION: To avoid possible damage to the heaters, DO NOT energize the heater until the system is filled with fluid.

1. All systems are pretested using Mobiltherm®. (System can be pretested with other fluids. Check with your local Chromalox Sales & Application Engineer). Check to insure your fluid is compatible with fluid used in pretest.
2. On systems equipped with a float switch on the expansion tank it will be necessary to bypass this switch until the system is filled in order to operate the pump. After system is filled remove bypass jumper to obtain protection of float switch. This switch will shut the system down in the event of a low liquid level or loss of heat transfer liquid thus preventing damage to system.

3. You are now ready to start filling the system with heat transfer fluid. Close the system inlet gate valve and open the outlet and fill line gate valves and heater bleed valve on all heaters. Prime the pump by pouring approximately 1 pint to 1 quart of fluid through the 1/4" air bleed valve located above pump. (Close this 1/4" air bleed valve and leave closed while pump is in operation.)
4. The system is then filled directly from the 55 gallon drum(s) by connecting a hose to fill line and inserting it into the drum.
5. Next, energize the pump to pull the fluid into the complete system and up into the expansion tank. When the fluid reaches the heater bleed valve, it should then be closed, and accordingly the bleeds on the customer's process closed when the fluid reaches them.



The fill line remains open until the expansion tank sight glass indicates being 1/3 full. After the system is filled, shut down the pump and close the fill valve. Open system inlet valve.

WARNING: Avoid having the heat-transfer fluid spilled or leaked into the pipeline insulation as it has been found that spontaneous ignition of this fluid may result at elevated temperatures.

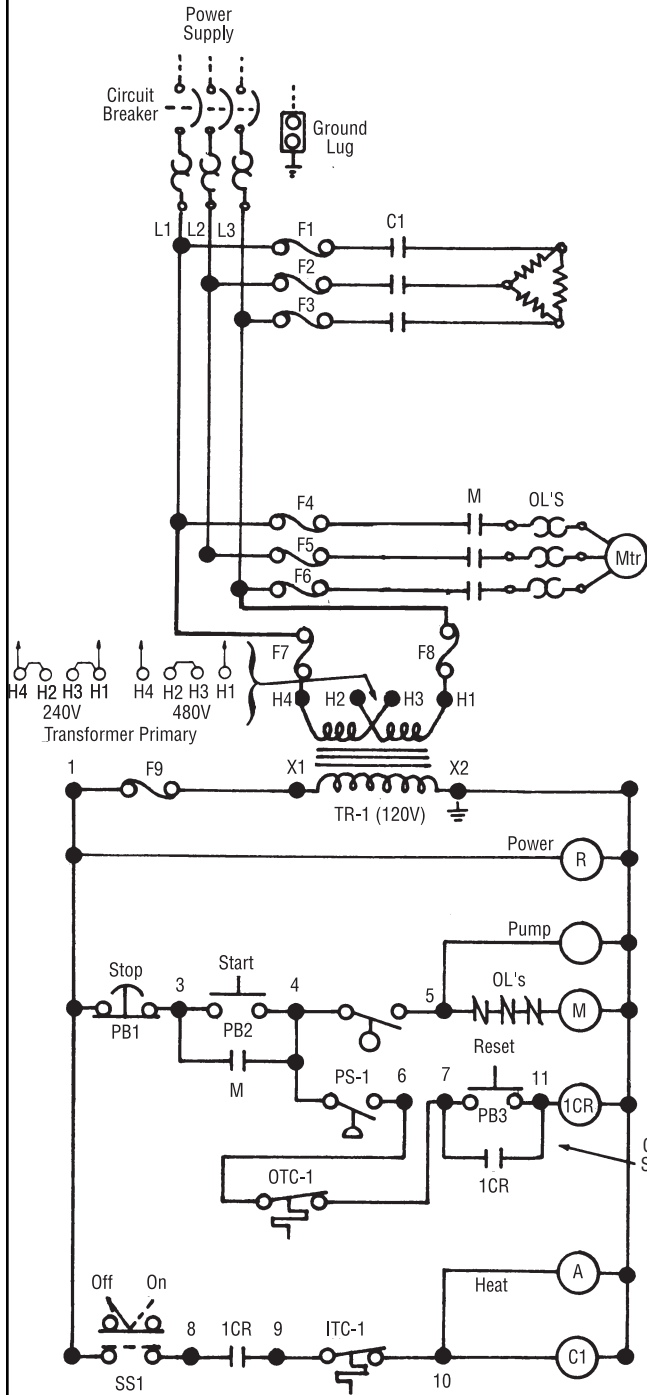
6. Turn master circuit breaker off. Bleed air from all lines (including one located above pump) and reclose all bleed valves.
7. If included in your system, locate the optional pressure switch inside the control panel. It should be set approximately three pounds higher than that indicated by the suction gauge. The pressure switch is a safety control which will automatically de-energize the heaters if the pump belt should break and stop the flow of fluid.
8. The overheat thermostats, also located inside the control panel should be checked to insure manual reset buttons are in the closed position. They should be set approximately 50°F higher than the control thermostat during normal operation.
9. Close control box door and turn circuit breaker on. Start pump – do not be alarmed if the pump is noisy during the initial start-up operation since it is due to air in the system.
10. Bleed out all air by opening bleeder valves. The pump should become quiet.

CAUTION: During the initial start-up operation, the liquid level in the expansion tank must be checked continually. This level should not exceed the three-quarter mark on the glass nor drop below the one-quarter mark. **Note:** If abnormal expansion of fluid is detected, this is probably due to a pocket of air or steam still present in the system. Check all bleed valves for air or steam and bleed if necessary. If problem continues, de-energize pump and bleed again.

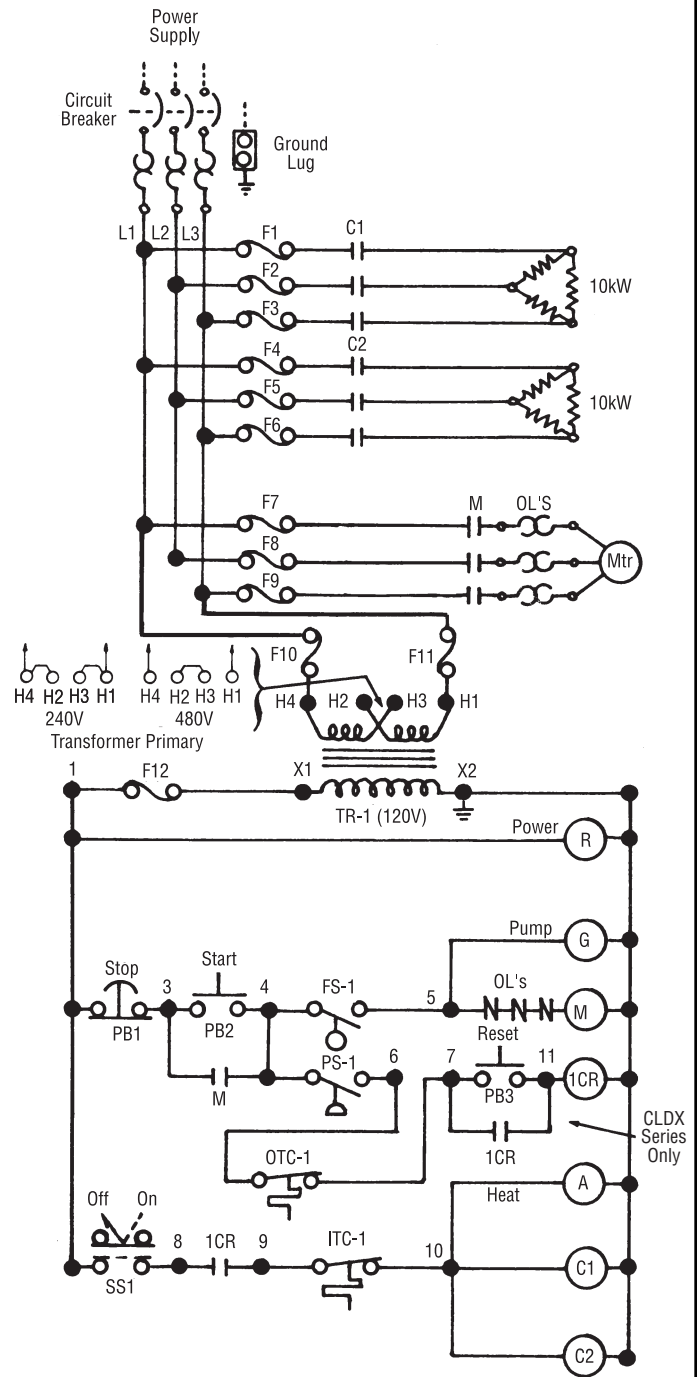
11. On systems equipped with a flow switch, the liquid must be flowing at a minimum of 75% of rated pump capacity in order to close the flow switch and energize the heater.
 12. Set indicating or controlling thermostat at 220°F.
 13. To energize the heater, turn the ON-OFF selector switch to the ON position after starting the pump. The heater is interlocked with the pump motor starter so that, in the event of motor failure, the heating elements will shut off automatically.
 14. Run the system until 220°F is reached. Periodically open the bleeder valves to remove air from the system. At 220°F, any moisture trapped in the system will flash into steam as it goes through the heater and can be bled out through the bleeder valves.
 15. Excessive moisture and air in the system will cause the heat transfer liquid to back up into the expansion tank, thus evacuating the heating chamber or chambers. If this happens, shut the system down, bleed off the steam and air and allow liquid to return to the heating chamber(s). Drain the system and recharge with new moisture-free heat transfer liquid. If pump continues to be noisy and cavitates or if abnormal expansion persists there is excessive moisture in the fluid.
 16. After the system has been completely charged and free of air pockets, set controlling thermostat at the desired temperature.
 17. If there is an abnormally low reading (less than zero) on the suction gauge, the strainer should be cleaned to remove all foreign material which may have accumulated during assembly. After the system is in operation, the strainer should be checked and cleaned (if necessary) once a year or more frequently if system operating conditions dictate.
- Note:** Consult Service Manual PQ410 for additional aid to help start-up and to service Chromalox Heat Transfer Systems.

WIRING DIAGRAMS

**9 kW to 15 kW, 208V thru 575V
20 kW, 240V thru 575V**

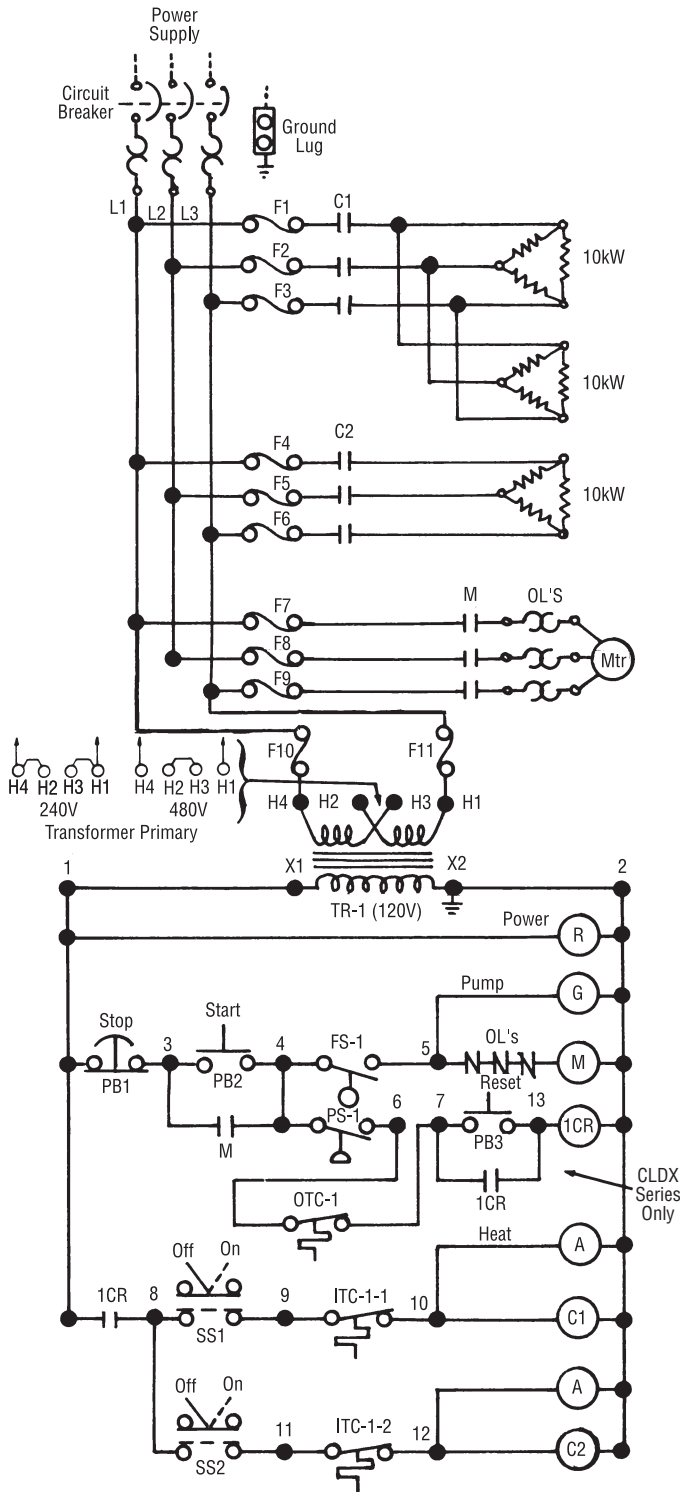


20 kW, 208V

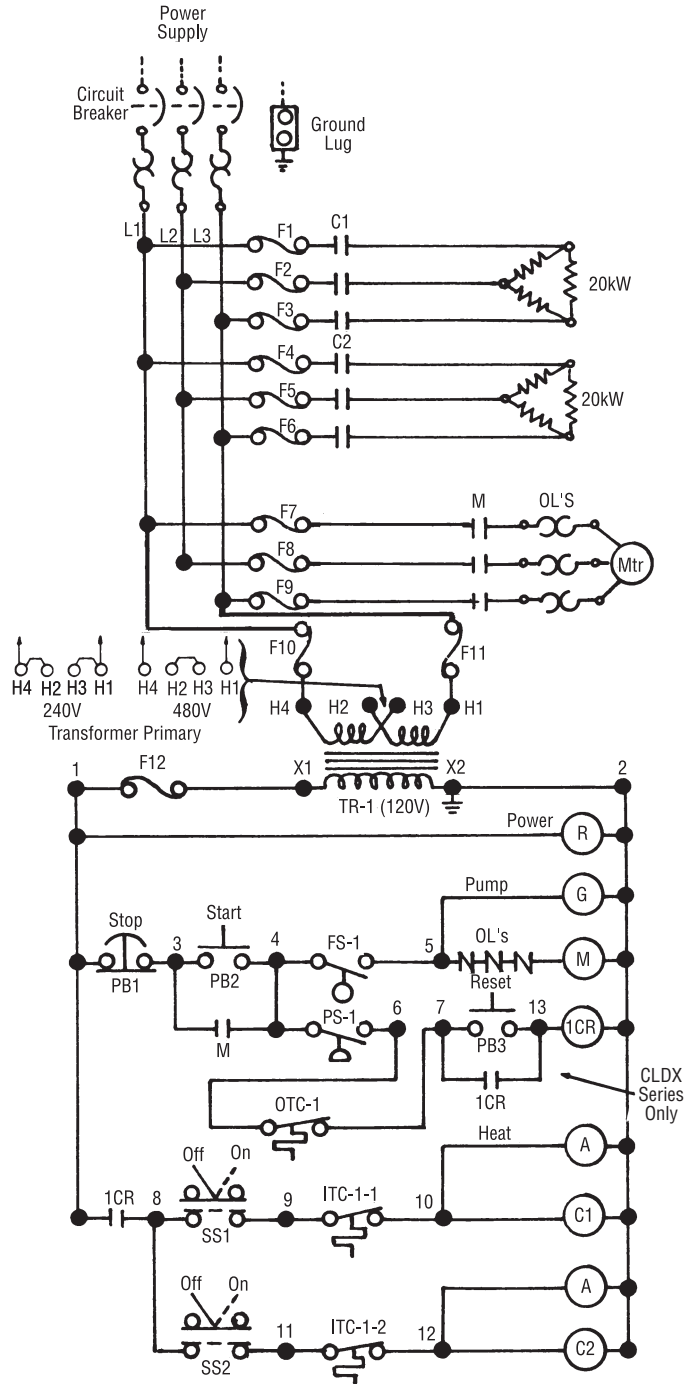


WIRING DIAGRAMS

30 kW, 240V thru 575V

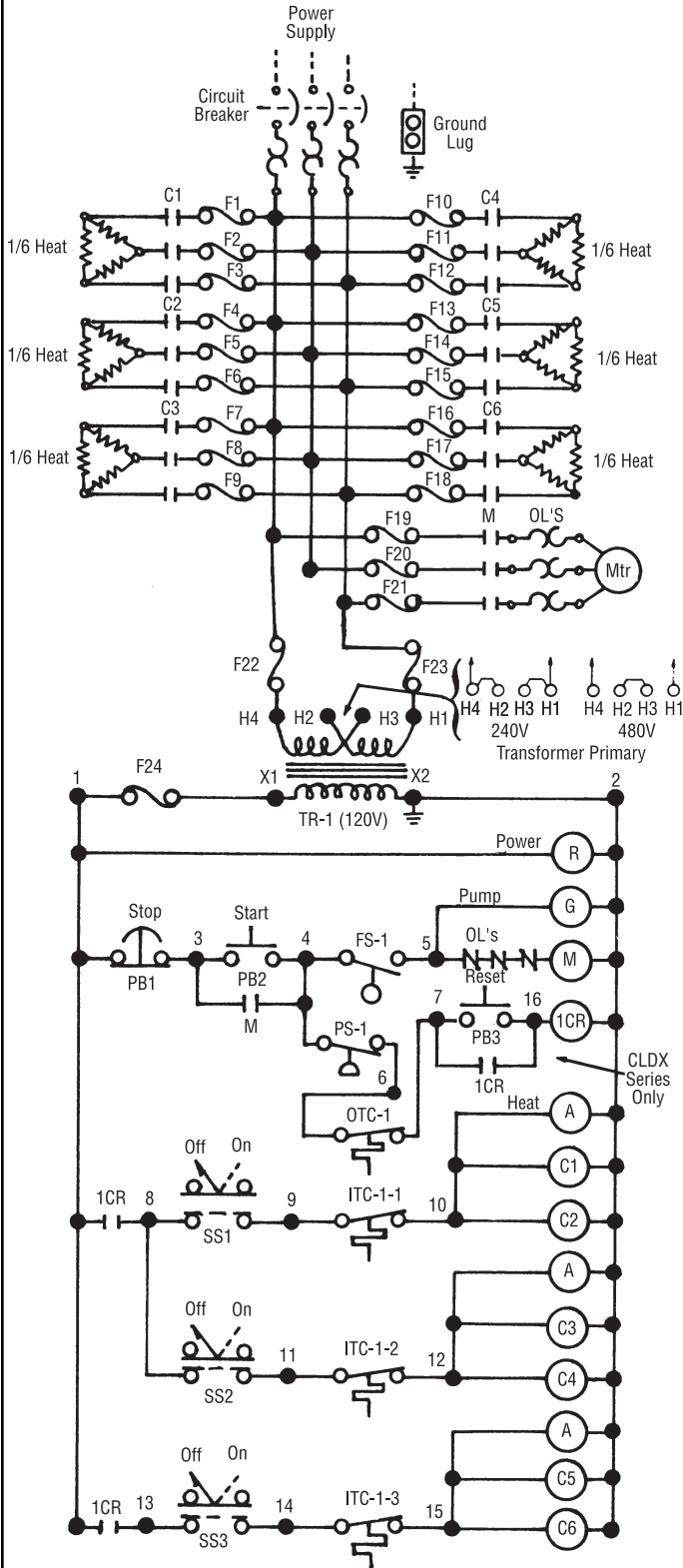


40 kW, 240V thru 575V

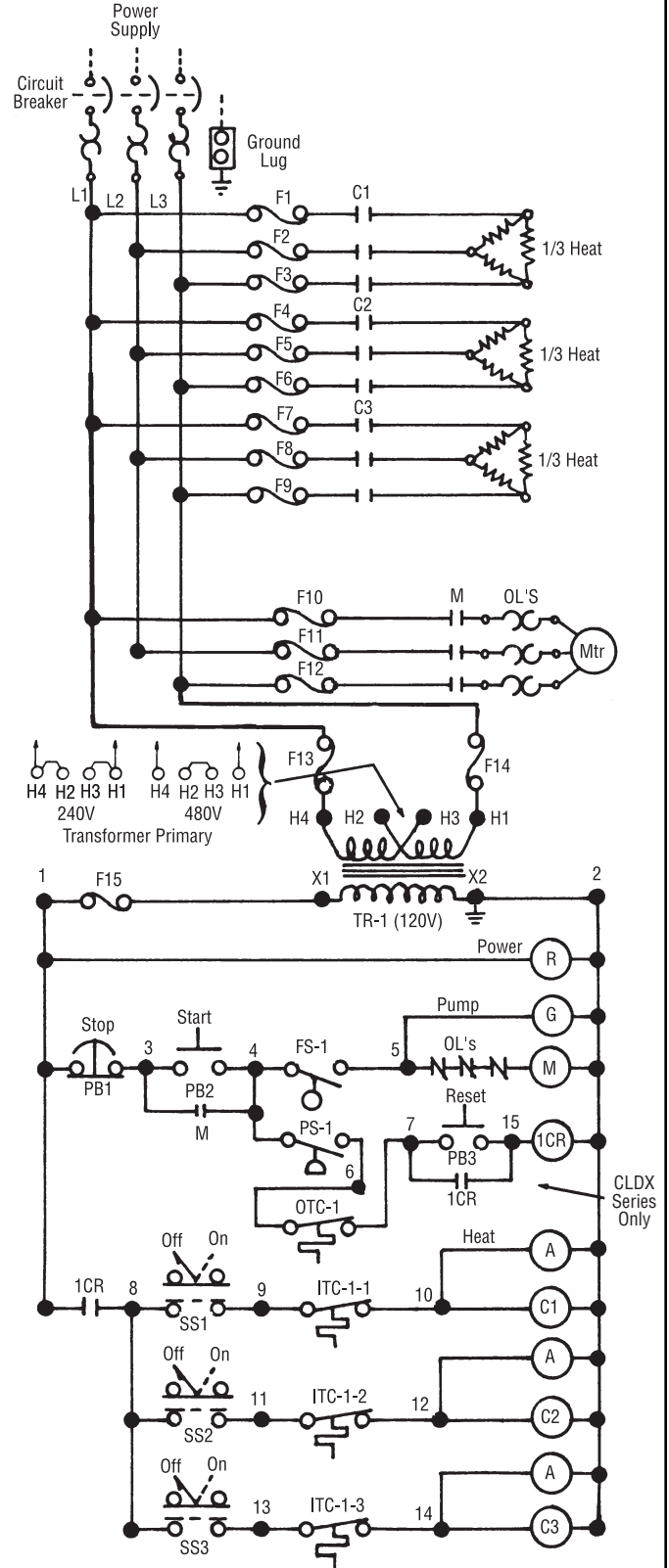


WIRING DIAGRAMS

**60 kW 208V
80 kW 208V
80 kW 240V**

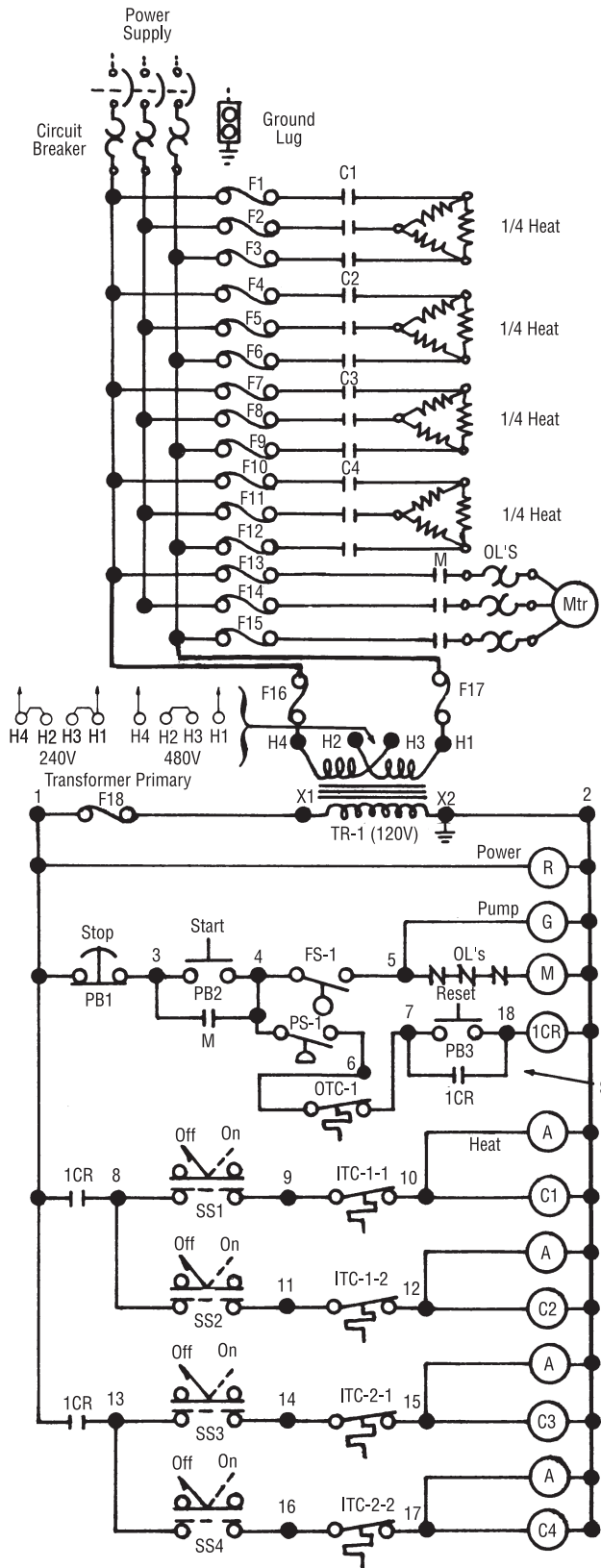


**60 kW, 240V thru 575V
80 kW, 480V thru 575V**

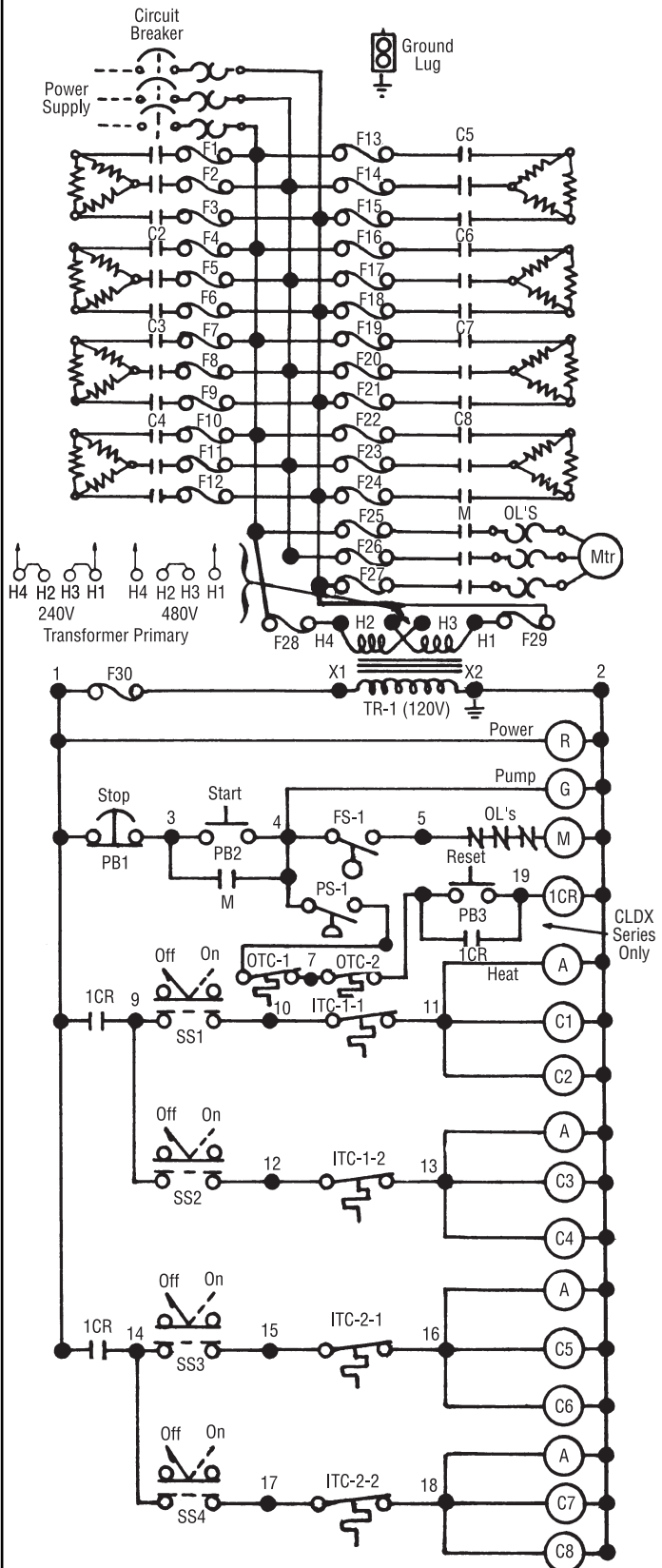


WIRING DIAGRAMS

100, 125, 150 kW, 480V and 575V

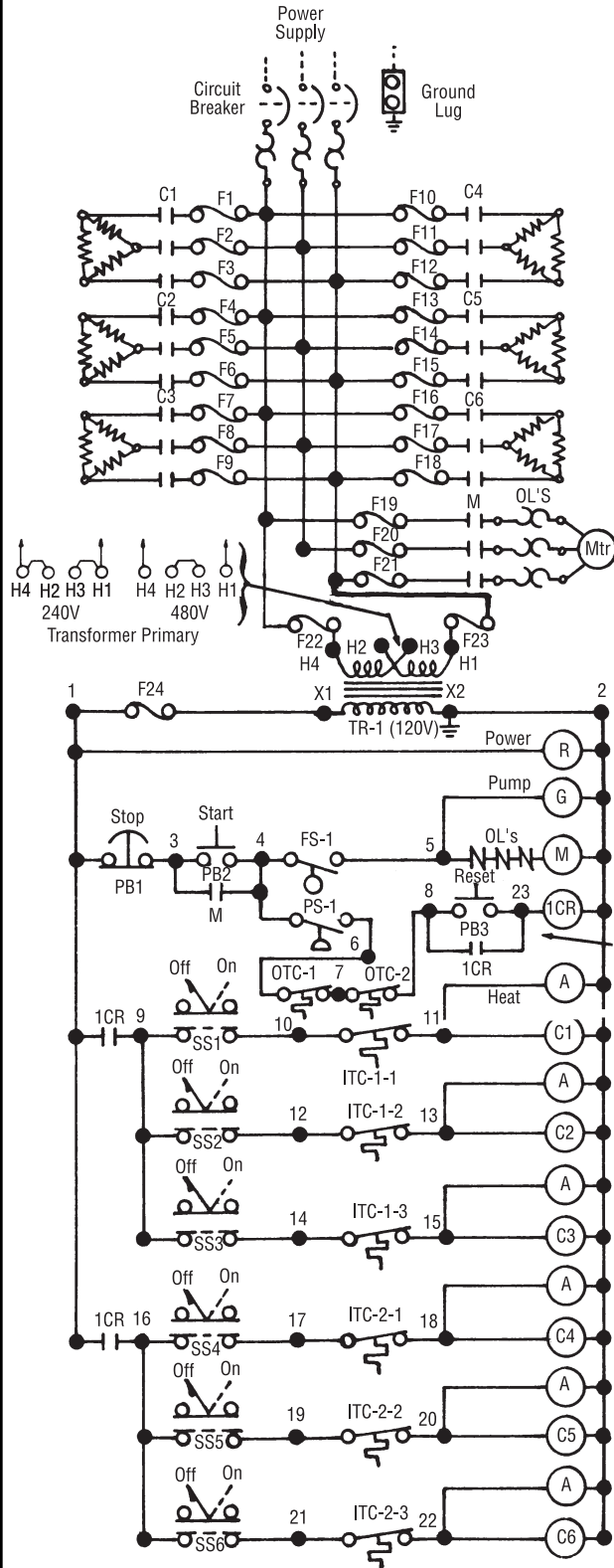


**100 kW, 208V and 240V
200 kW, 480V and 575V**

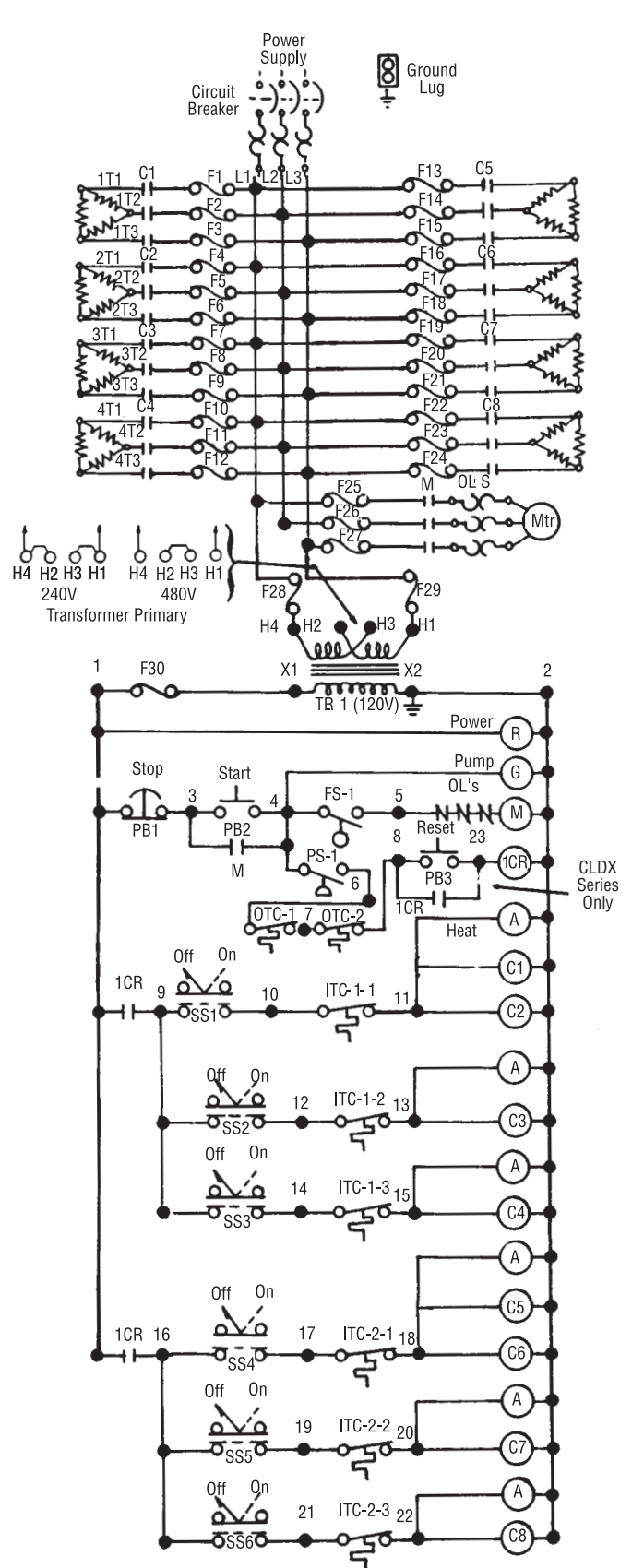


WIRING DIAGRAMS

250 kW, 480V and 575V

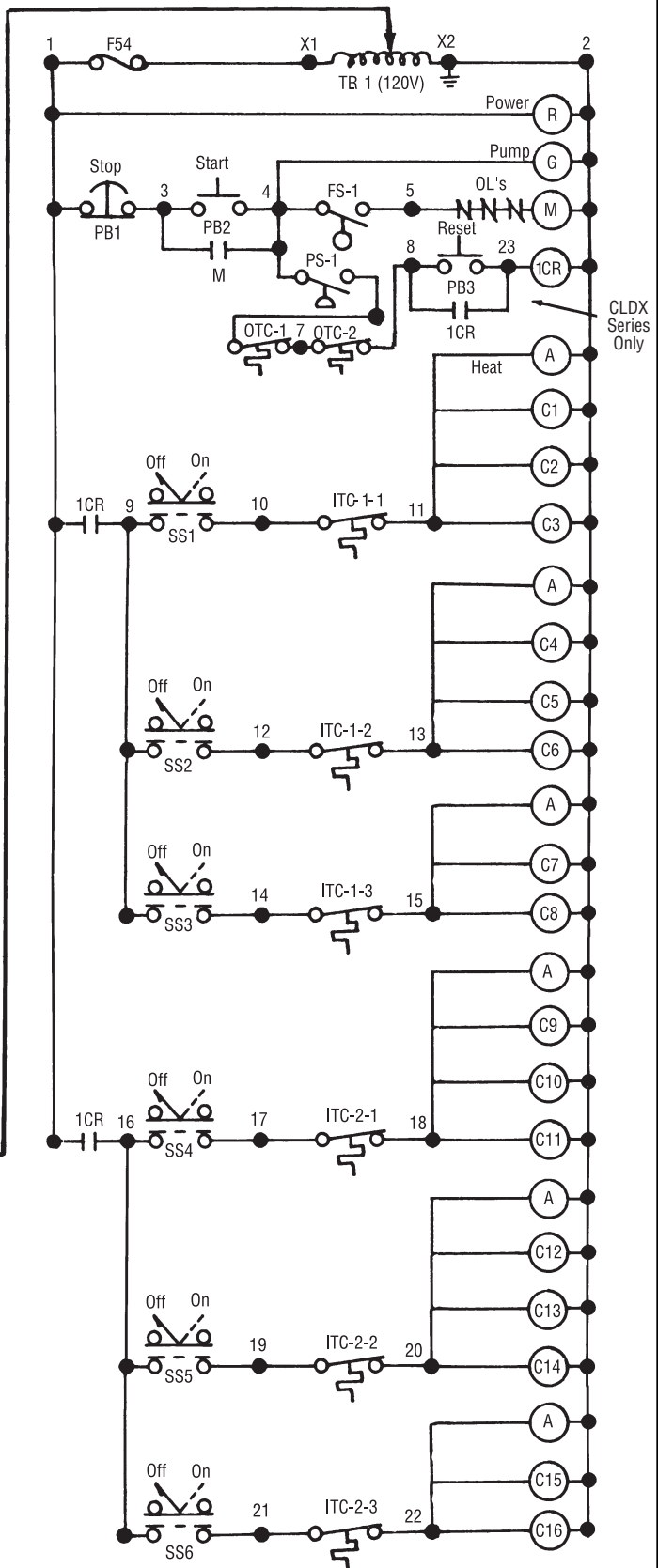
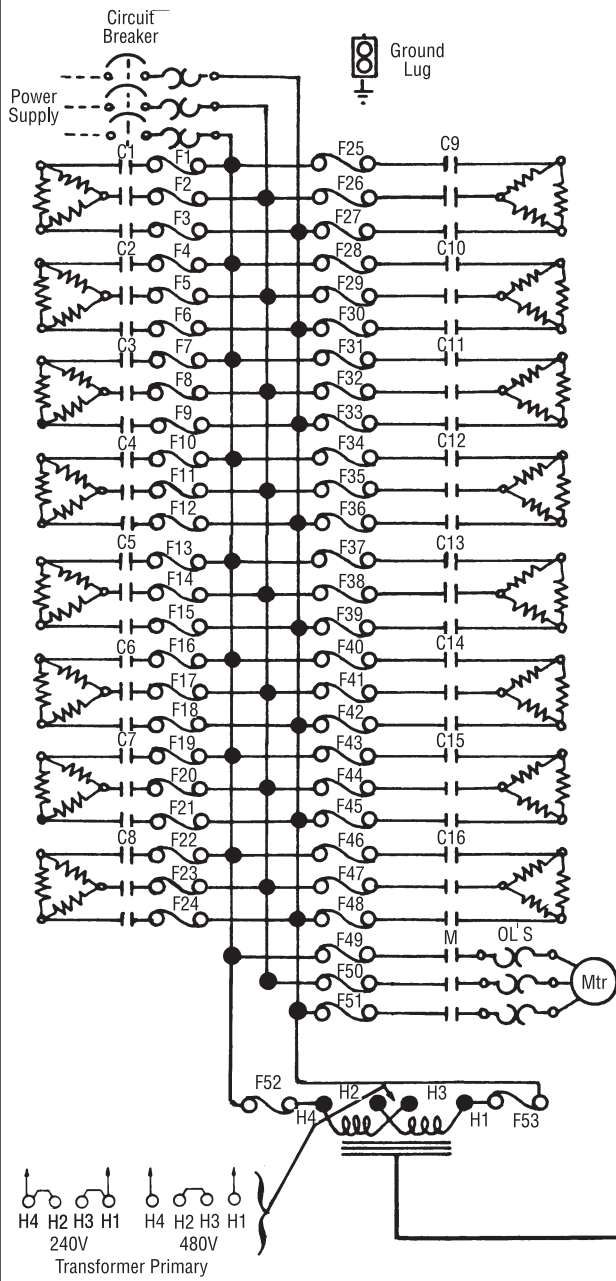


300 kW, 480V and 575V
350 kW, 575V



WIRING DIAGRAMS

**350 kW, 480V
400 kW, 480V and 575V**



RENEWAL PARTS IDENTIFICATION

FUSES*

SYSTEM RATING		FUSES (128)		Primary	Secondary
Voltage	kW	Heater	Motor (3)	Control (2)	Control (1)
208	9	121133-076 (3)	121133-059	114696-012	072576-015
	12	121133-078 (3)	121133-059	114696-012	072576-015
	15	121133-080 (3)	121133-059	114696-012	072576-015
	20	121133-076 (6)	121133-059	114696-012	072576-015
	30	121133-076 (9)	121133-059	114696-012	072576-015
	40	121133-076 (12)	121133-060	114696-012	072576-015
	60	121133-076 (18)	121133-061	114696-013	072576-018
	80	121133-079 (18)	121133-061	114696-013	072576-018
220/240	9	121133-075 (3)	121133-058	114696-012	072576-015
	12	121133-077 (3)	121133-058	114696-012	072576-015
	15	121133-078 (3)	121133-058	114696-012	072576-015
	20	121133-080 (3)	121133-058	114696-012	072576-015
	30	121133-080 (3)	121133-058	114696-012	072576-015
	40	121133-075 (3)	121133-058	114696-012	072576-015
	60	121133-080 (6)	121133-059	114696-013	072576-015
	80	121133-080 (9)	121133-060	114696-013	072576-018
440/480	9	121133-059 (3)	121133-052	114696-010	072576-015
	12	121133-060 (3)	121133-052	114696-010	072576-015
	15	121133-061 (3)	121133-052	114696-010	072576-015
	20	121133-062 (3)	121133-052	114696-010	072576-015
	30	121133-062 (3)	121133-052	114696-010	072576-015
	30	121133-059 (3)	121133-052	114696-010	072576-015
	40	121133-062 (6)	121133-056	114696-010	072576-015
	60	121133-062 (9)	121133-059	114696-010	072576-015
	80	121133-064 (9)	121133-059	114696-010	072576-018
	100	121133-064 (12)	121133-060	114696-005	072576-018
	125	121133-066 (12)	121133-060	114696-005	072576-018
	150	121133-067 (12)	121133-060	114696-005	072576-018
	200	121133-064 (24)	121133-060	114696-005	072576-018
	250	121133-066 (24)	121133-061	114696-005	072576-018
	300	121133-067 (24)	121133-061	114696-005	072576-018
	350	121133-063 (48)	121133-061	114696-011	072576-020
400	121133-064 (48)	121133-061	114696-011	072576-020	
550/575	9	121133-059 (3)	121133-052	121133-034	072576-015
	12	121133-059 (3)	121133-052	121133-034	072576-015
	15	121133-060 (3)	121133-052	121133-034	072576-015
	20	121133-061 (3)	121133-052	121133-034	072576-015
	30	121133-061 (3)	121133-052	121133-034	072576-015
	30	121133-059 (3)	121133-052	121133-034	072576-015
	40	121133-061 (6)	121133-054	121133-034	072576-015
	60	121133-061 (9)	121133-056	121133-034	072576-015
	80	121133-063 (9)	121133-056	121133-034	072576-015
	100	121133-063 (12)	121133-059	121133-035	072576-018
	125	121133-064 (12)	121133-059	121133-035	072576-018
	150	121133-066 (12)	121133-059	121133-035	072576-018
	200	121133-063 (24)	121133-059	121133-035	072576-018
	250	121133-064 (24)	121133-060	121133-035	072576-018
	300	121133-066 (24)	121133-060	121133-035	072576-018
	350	121133-067 (48)	121133-060	121133-035	072576-018
	400	121133-063 (48)	121133-060	121133-037	072576-020

HEATING ELEMENTS*

Voltage	kW	COS (NEMA I)	COS (NEMA XII) (NEMA IV)	COSX GROUP C & D	Class I
208V	9	155-122210-019	155-122210-031	155-022210-009	
208V	12	155-122212-028	155-122212-032	155-122212-041	
208V	15	155-122212-018	155-122212-014	155-122212-045	
208V	20	155-122212-015	155-122212-037	155-122212-057	
208V	30	155-122431-009	155-122431-010	155-122431-011	
208V	40	155-122711-005	155-122711-006	155-122711-007	
208V	60	155-122701-005	155-122701-014	155-122701-022	
208V	80	155-122701-003	155-122701-012	155-122701-020	
208V	100	155-123087-005	155-123087-006	155-123087-007	
240V	9	155-122210-020	155-122210-010	155-122210-043	
240V	12	155-122212-029	155-122212-033	155-122212-042	
240V	15	155-122212-019	155-122212-020	155-122212-046	
240V	20	155-122212-062	155-122212-017	155-122212-058	
240V	30	155-122431-012	155-122431-013	155-122212-014	
240V	40	155-122711-001	155-122711-008	155-122711-009	
240V	60	155-122701-006	155-122701-015	155-122701-023	
240V	80	155-122701-002	155-122701-011	155-122701-019	
240V	100	155-123087-001	155-123087-008	155-123087-003	
240V	125	155-122800-017	155-122800-018	155-122800-019	
480V	9	155-122210-021	155-122210-008	155-122210-044	
480V	12	155-122212-030	155-122212-034	155-122212-043	
480V	15	155-122212-022	155-122212-023	155-122212-047	
480V	20	155-122212-063	155-122212-025	155-122212-059	
480V	30	155-122431-004	155-122431-005	155-122431-015	
480V	40	155-122711-002	155-122711-003	155-122711-010	
480V	60	155-122701-007	155-122701-016	155-122701-024	
480V	80	155-122701-001	155-122701-010	155-122701-018	
480V	100	155-123087-002	155-123087-009	155-123087-004	
480V	125	155-122800-002	155-122800-004	155-122800-010	
480V	150	155-122800-001	155-122800-003	155-122800-005	
480V	200	155-122836-001	155-122836-002	155-122836-003	
480V	250	155-122800-002 (2)	155-122800-004 (2)	155-122800-010 (2)	
480V	300	155-122800-001 (2)	155-122800-003 (2)	155-122800-005 (2)	
480V	350	155-123098-001 (2)	155-123098-002 (2)	155-123098-003 (2)	
480V	400	155-122836-001 (2)	155-122836-002 (2)	155-122836-003 (2)	
575V	9	155-122210-022	155-122210-034	155-122210-045	
575V	12	155-122212-031	155-122212-035	155-122212-044	
575V	15	155-122212-026	155-122212-036	155-122212-048	
575V	20	155-122212-027	155-122212-039	155-122212-060	
575V	30	155-122431-016	155-122431-017	155-122431-018	
575V	40	155-122711-011	155-122711-012	155-122711-013	
575V	60	155-122701-008	155-122701-017	155-122701-025	
575V	80	155-122701-004	155-122701-013	155-122701-021	
575V	100	155-123087-010	155-123087-011	155-123087-012	
575V	125	155-122800-011	155-122800-013	155-122800-015	
575V	150	155-122800-012	155-122800-014	155-122800-016	
575V	200	155-122836-004	155-122836-005	155-122836-006	
575V	250	155-122800-011 (2)	155-122800-013 (2)	155-122800-015 (2)	
575V	300	155-122800-012 (2)	155-122800-014 (2)	155-122800-016 (2)	
575V	350	155-123098-004 (2)	155-123098-005 (2)	155-123098-006 (2)	
575V	400	155-122836-004 (2)	155-122836-005 (2)	155-122836-006 (2)	

MOTOR

System Model	kW	Motor Voltage & Part Number		
		208V	240/480V	550/575
CLD-750	9 thru 30	193-120834-208	193-120834-008	193-120834-508
	40	193-120834-211	193-120834-011	193-120834-511
	60 & 80	193-120834-214	193-120834-014	193-120834-514
	100 thru 200	193-120834-217	193-120834-017	193-120834-517
	250 thru 400	193-120834-220	193-120834-020	193-120834-520
CLDO-650 CLDW-650	9 thru 30	193-120835-208	193-120835-008	193-120835-508
	40	193-120835-211	193-120835-011	193-120835-511
	60 & 80	193-120835-214	193-120835-014	193-120835-514
	100 thru 200	193-120835-217	193-120835-017	193-120835-517
	250 thru 400	193-120835-220	193-120835-020	193-120835-520
CLDX-650	9 thru 30	193-120836-208	193-120836-008	193-120836-508
	40	193-120836-212	193-120836-012	193-120836-512
	60 & 80	193-120836-215	193-120836-015	193-120836-515
	100 thru 200	193-120836-218	193-120836-018	193-120836-518
	250 thru 400	193-120836-221	193-120836-021	193-120836-521

System kW	Standard Pump	Pump with Mech. Seal	Belt*	Relief Valve	Relief Valve Gasket* (2)
9 thru 30	226-122768-001	226-122768-011	017-056981-003 (1)	344-122411-001	132-073008-003
40	226-122768-001	226-122768-011	017-056981-004 (2)	344-122411-002	132-073008-004
60 & 80	226-122768-002	226-122768-012	017-056981-001 (2)	344-122411-003	132-073008-005
100	226-122768-003	226-122768-013	017-056981-001 (3)	344-122411-004	132-073008-006
125 thru 200	226-122768-004	226-122768-014	017-056981-005 (2)	344-122411-004	132-073008-006
250 thru 400	226-122768-005	226-122768-015	017-056981-001 (2)	344-122411-005	132-073008-007

EXPANSION TANK

Expansion Tank Part	Tank Size (Gals.)	Part Number
Valves (Pair)	All Tanks	344-120970-001
Sight Glass	12	374-121046-001
	18, 30 & 42	374-121046-002
	80, 115, 215	374-121046-003
Guard Rods (4)	12	272-121047-001
	18, 30, 42	272-121047-002
	80, 115, 215	272-121047-003

Inlet and Outlet Pump Gaskets	Part Number
9 – 30kW	132-073008-006
40 – 80kW	132-073008-007
100 – 400kW	132-073008-009

PARTS COMMON TO ALL SYSTEMS

Description	Part Number All Systems
Discharge Gauge	130-121200-001
Suction Gauge	130-121200-002
Expansion Tank Line Gasket	132-073008-003
Pump Packing	251-12194

RENEWAL PARTS IDENTIFICATION

ELECTRICAL COMPONENTS

SYSTEM RATING		Circuit Breaker*	Circuit Breaker Handle†	Motor Starter*	Motor		Transformer	Indicating Temp. Controls (ITC)	Heater Gaskets
Voltage (3 phase)	kW				Overload Heaters	Contactors*			
208	9	104-071818-005	139-071820-006	358-122687-001	359-122688-038	072-122686-004 (1)	315-048507-019	300-121011-002	132-073008-009
	12	104-071818-007	139-071820-006	358-122687-001	359-122688-038	072-122686-005 (1)	315-048507-019	300-121011-002	132-073008-013
	15	104-071818-009	139-071820-006	358-122687-001	359-122688-038	072-122686-007 (1)	315-048507-019	300-121011-002	132-073008-013
	20	104-071818-011	139-071820-006	358-122687-001	359-122688-038	072-122686-004 (2)	315-048507-019	300-121011-002	132-073008-013
	30	104-071818-014	139-071820-006	358-122687-001	359-122688-038	072-122686-004 (3)	315-048507-019	300-121011-002	132-073008-013
	40	104-071818-055	139-071820-006	358-122687-001	359-122688-043	072-122686-004 (4)	315-048507-019	300-121011-027	132-073008-014
	60	104-071819-021	139-071820-010	358-122687-001	359-122688-047	072-122686-004 (6)	315-048507-025	300-121011-028	132-073008-015
	80	104-071817-017	139-071820-012	358-122687-001	359-122688-047	072-122686-005 (6)	315-048507-025	300-121011-028	132-073008-015
	100	104-071817-018	139-071820-012	358-122687-003	359-122688-050	072-122686-005 (8)	315-048507-025	300-121011-027 (2)	132-073008-016
220/240	9	104-071818-005	139-071820-006	358-122687-001	359-122688-036	072-122686-001 (1)	315-048507-018	300-121011-002	132-073008-009
	12	104-071818-007	139-071820-006	358-122687-001	359-122688-036	072-122686-004 (1)	315-048507-018	300-121011-002	132-073008-013
	15	104-071818-009	139-071820-006	358-122687-001	359-122688-036	072-122686-005 (1)	315-048507-018	300-121011-002	132-073008-013
	20	104-071818-010	139-071820-006	358-122687-001	359-122688-036	072-122686-007 (1)	315-048507-018	300-121011-002	132-073008-013
	30	104-071818-013	139-071820-006	358-122687-001	359-122688-036	072-122686-004 (1)	315-048507-018	300-121011-027	132-073008-013
	40	104-071818-055	139-071820-006	358-122687-001	359-122688-040	072-122686-007 (2)	315-048507-018	300-121011-027	132-073008-013
	60	104-071818-052	139-071820-010	358-122687-001	359-122688-045	072-122686-007 (3)	315-048507-018	300-121011-027	132-073008-014
	80	104-071817-016	139-071820-012	358-122687-001	359-122688-045	072-122686-005 (6)	315-048507-024	300-121011-028	132-073008-015
	100	104-071817-017	139-071820-012	358-122687-002	359-122688-049	072-122686-005 (8)	315-048507-024	300-121011-028	132-073008-015
125	104-071817-019	139-071820-012	358-122687-002	359-122688-049	072-122686-005 (8)	315-048507-024	300-121011-027 (2)	132-073008-016	
440/480	9	104-071818-018	139-071820-006	358-122687-001	359-122688-027	072-122686-002 (1)	315-048507-018	300-121011-002	132-073008-009
	12	104-071818-018	139-071820-006	358-122687-001	359-122688-027	072-122686-002 (1)	315-048507-018	300-121011-002	132-073008-013
	15	104-071818-019	139-071820-006	358-122687-001	359-122688-027	072-122686-002 (1)	315-048507-018	300-121011-002	132-073008-013
	20	104-071818-022	139-071820-006	358-122687-001	359-122688-027	072-122686-002 (1)	315-048507-018	300-121011-002	132-073008-013
	30	104-071818-024	139-071820-006	358-122687-001	359-122688-027	072-122686-002 (2)	315-048507-018	300-121011-027	132-073008-013
	40	104-071818-026	139-071820-006	358-122687-001	359-122688-032	072-122686-002 (2)	315-048507-018	300-121011-027	132-073008-014
	60	104-071818-029	139-071820-006	358-122687-001	359-122688-037	072-122686-002 (3)	315-048507-018	300-121011-028	132-073008-015
	80	104-071818-050	139-071820-006	358-122687-001	359-122688-037	072-122686-006 (3)	315-048507-018	300-121011-028	132-073008-015
	100	104-071818-050	139-071820-006	358-122687-001	359-122688-043	072-122686-006 (4)	315-048507-024	300-121011-027 (2)	132-073008-016
	125	104-071818-021	139-071820-010	358-122687-001	359-122688-043	072-122686-006 (4)	315-048507-024	300-121011-027 (2)	132-073008-017
	150	104-071817-016	139-071820-012	358-122687-001	359-122688-043	072-122686-009 (4)	315-048507-024	300-121011-027 (2)	132-073008-017
	200	104-071817-018	139-071820-012	358-122687-001	359-122688-043	072-122686-006 (8)	315-048507-024	300-121011-027 (2)	132-073008-018
	250	104-071817-019	139-071820-012	358-122687-001	359-122688-045	072-122686-006 (8)	315-048507-024	300-121011-027 (2)	132-073008-017 (2)
300	104-071817-026	139-071820-012	358-122687-001	359-122688-045	072-122686-009 (8)	315-048507-024	300-121011-027 (2)	132-073008-017 (2)	
350	104-071817-027	139-071820-012	358-122687-001	359-122688-045	072-122686-003 (16)	315-048507-030	300-121011-027 (2)	132-073008-018 (2)	
400	104-071817-028	139-071820-012	358-122687-001	359-122688-045	072-122686-006 (16)	315-048507-030	300-121011-027 (2)	132-073008-018 (2)	
550/575	9	104-071818-031	139-071820-006	358-122687-001	359-122688-022	072-122686-002 (1)	315-048507-020	300-121011-002	132-073008-009
	12	104-071818-031	139-071820-006	358-122687-001	359-122688-025	072-122686-002 (1)	315-048507-020	300-121011-002	132-073008-013
	15	104-071818-032	139-071820-006	358-122687-001	359-122688-025	072-122686-002 (1)	315-048507-020	300-121011-002	132-073008-013
	20	104-071818-033	139-071820-006	358-122687-001	359-122688-025	072-122686-002 (1)	315-048507-020	300-121011-002	132-073008-013
	30	104-071818-036	139-071820-006	358-122687-001	359-122688-025	072-122686-002 (2)	315-048507-020	300-121011-027	132-073008-013
	40	104-071818-038	139-071820-006	358-122687-001	359-122688-028	072-122686-002 (2)	315-048507-020	300-121011-027	132-073008-014
	60	104-071818-041	139-071820-006	358-122687-001	359-122688-034	072-122686-002 (3)	315-048507-020	300-121011-028	132-073008-015
	80	104-071818-043	139-071820-006	358-122687-001	359-122688-034	072-122686-003 (3)	315-048507-020	300-121011-028	132-073008-015
	100	104-071818-045	139-071820-006	358-122687-001	359-122688-040	072-122686-003 (4)	315-048507-026	300-121011-027 (2)	132-073008-016
	125	104-071818-051	139-071820-010	358-122687-001	359-122688-040	072-122686-006 (4)	315-048507-026	300-121011-027 (2)	132-073008-017
	150	104-071818-052	139-071820-010	358-122687-001	359-122688-040	072-122686-006 (4)	315-048507-026	300-121011-027 (2)	132-073008-017
	200	104-071817-016	139-071820-012	358-122687-001	359-122688-040	072-122686-003 (8)	315-048507-026	300-121011-027 (2)	132-073008-018
	250	104-071817-018	139-071820-012	358-122687-001	359-122688-043	072-122686-006 (8)	315-048507-026	300-121011-027 (2)	132-073008-017 (2)
	300	104-071817-019	139-071820-012	358-122687-001	359-122688-043	072-122686-006 (8)	315-048507-026	300-121011-027 (2)	132-073008-017 (2)
	350	104-071817-025	139-071820-012	358-122687-001	359-122688-043	072-122686-009 (8)	315-048507-026	300-121011-027 (2)	132-073008-018 (2)
	400	104-071817-026	139-071820-012	358-122687-001	359-122688-043	072-122686-003 (16)	315-048507-032	300-121011-027 (2)	132-073008-018 (2)

Limited Warranty:

Please refer to the Chromalox limited warranty applicable to this product at <http://www.chromalox.com/customer-service/policies/termsofsale.aspx>.

Chromalox®

PRECISION HEAT AND CONTROL

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