STFX Replaceable Element Electric Immersion Heaters

Installation Instructions

Chromalox®
PRECISION HEAT AND CONTROL

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STFX Replaceable Element Electric Immersion Heaters

General

The Chromalox Replaceable Element Electric Immersion Heater Model STFX, is an engineered, pretested package designed to give years of virtually maintenance free service and it is shipped ready for installation into a storage tank. STFX provides even heating over the heating surface with precise temperature control for materials such as asphalt, fuel oil, pitch and tar, liquid sugar, lube oils, linseed oil, biodiesel, glycerin, ethanol and many other compounds.

The single-end heating elements are housed in carbon steel, stainless steel or alloy pipes, which are welded into the 150# ANSI flange. Once the STFX is mated to your tank, the heating elements may be removed and replaced without draining the tank.

Since excessive temperatures may permanently damage the heater and cause premature failure, the use of temperature controls, limiting controls, and liquid level sensors must be used.

⚠WARNING

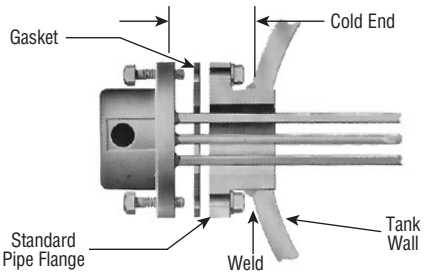
The system designer is responsible for the safety of this equipment and should install adequate back-up controls and safety devices with their electric heating equipment. Where the consequences of failure could result in personal injury or property damage, back-up controls are essential.

Installation

⚠WARNING

ELECTRIC SHOCK HAZARD. Disconnect all power before installing or servicing heater. Failure to do so could result in personal injury or property damage. Heater must be installed or serviced by a qualified person in accordance with the National Electrical Code, NFPA 70.

1. Before installing, unpack and check your STFX series immersion heater for any damage that may have occurred during shipment. Report any claims to your carrier if damage has occurred in shipment. Do not operate damaged equipment. Consult factory for instructions.
2. To ensure proper operation, please inspect all threaded connections for looseness that may have occurred during shipment. This includes the element hold-down attachments, housing hold-down attachments/electrical plates, and wire terminal connections.
3. The gasket surface must be clean and dry before the heater is seated (see figure 1).



⚠WARNING

Care must be taken to ensure the heated portion does not extend into the coupling area.

Figure 1

4. Select a location for this installation according to the following guidelines: (refer to Figure 2).

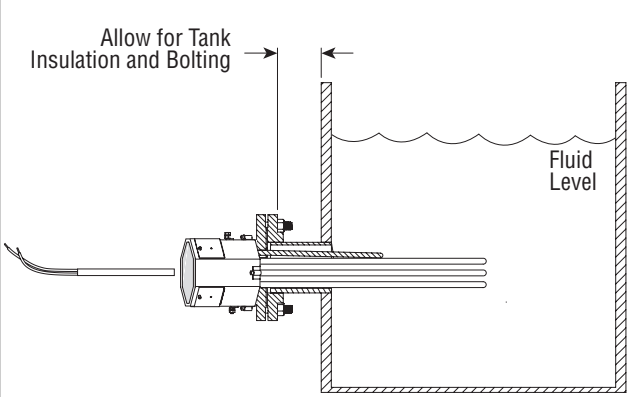


Figure 2

   a. ***IMPORTANT: Mount heater in the tank so the liquid level will always be above the effective heated portion of the heater. Provide expansion tank if necessary*** **(see Figure 2).**
   b. Heating elements are removable through the terminal enclosure. However, adequate room must be provided for this purpose. The removal distance required is equal to the immersion length of the heater tube plus an additional 6”(152 mm). On E4 models, the terminal housing may also be removed to facilitate easier element replacement.
   c. The unit should be installed with the thermowell on the top only.
   d. The neck on the tank’s mating flange should be of adequate length to accommodate tank insulation and flange bolting (refer to Figure 2).

5. For Closed Tank Installation - When heating in closed vessels, proper care should be taken to exclude the buildup of pressure/temperatures due to fluid expansion. Provide proper venting and/or an expansion tank if necessary.
6. Tube supports (internal to the tank) should be used for any immersion length of 36” or above to ensure gasket sealing integrity. Supports should be placed under the tube support plate. Do not anchor the heater tubes to the supports, as the tubes must be allowed to expand.
7. Proper controls, monitoring equipment, and safety equipment must be used. This may include, but is not limited to: liquid level controls, expansion tank, safety relief valve, pressure switch, back-up devices, etc.
8. To ensure proper sealing, a material appropriate gasket needs to be installed between the mating flanges. The mating flanges should then be secured by tightening the bolting according to TEMA Standards.
9. Tank suction piping should be mounted at least 2” above the level of the heaters. A separate line can be provided to drain tank after heaters have been de-energized. **Heater must not be operated in sludge.**
10. Be sure the sheath material is compatible with the material being heated. Steel sheath elements are used to heat oil, alkaline, wax and other similar materials. Stainless steel and Incoloy sheathed elements are most often used for heating water and corrosive solutions. Check with the supplier of the material or factory for a recommendation of a suitable sheath material.
11. Make sure the watt-density of the heater is suitable for the material being heated. The velocity, viscosity, thermal conductivity of the material and operating temperature are all factors in determining the allowable watt-density of the element. Consult factory if in doubt about the proper watt-density for the heater in a particular application.
12. When heating liquids in a large tank, the use of several small heaters will provide more uniform heat distribution than a single large heater.

Thermostats

1. Integrally mounted thermostats are available as single throw models.
2. Electrical rating of thermostats:

Voltage	Thermostat Type	
	T1	T2
120	30 Amps	30 Amps
240	30 Amps	30 Amps
480	Pilot Duty	Pilot Duty

3. Thermostats may be connected directly to heaters that are rated within the electrical capacities specified. When the heater phase or amperage exceeds the contact rating of the thermostat, the heater should be controlled by a magnetic contactor with the thermostat wired for pilot duty. Refer to the thermostat instruction sheet if provided.
4. If separate thermostat kit is purchased, please refer to instruction manual shipped with kit for proper bracket and thermostat mounting.

Wiring

⚠WARNING

ELECTRIC SHOCK HAZARD. Disconnect all power before installing or servicing heater. Failure to do so could result in personal injury or property damage. Heater must be installed or serviced by a qualified person in accordance with the National Electrical Code, NFPA 70.

⚠WARNING

ELECTRIC SHOCK HAZARD. Any installation involving electric heaters must be performed by a qualified person and must be effectively grounded in accordance with the National Electrical Code to eliminate shock hazard.

⚠WARNING

The system designer is responsible for the safety of this equipment and should install adequate back-up controls and safety devices with their electric heating equipment. Where the consequences of failure could result in personal injury or property damage, back-up controls are essential.

1. Electric wiring to heater must be installed in accordance with the National Electrical Code, International Electric code and/or with local codes by a qualified person.

2. Use copper conductors only; rated higher than applied voltage and rated 125˚C minimum.
3. Check to ensure that the line voltage is the same as stamped on the nameplate. Verify wattage and capacity versus the requirements at installation site.
4. Where work will pass over or near equipment, additional protection such as a metal guard may be needed.
5. A drip loop is recommended to minimize passage of moisture from condensation along wiring into terminal box enclosure and connections.
6. Electrical wiring to heater should be contained in rigid conduit or in sealed flexible conduit to keep corrosive vapors and liquids out of the terminal enclosure. If high humidity is encountered, the conduit should slope away from the heater.
7. If flexible cord is employed, a watertight connector should be used for entry of the cord into the terminal enclosure. Outdoor applications require liquidtight conduit and connectors.
8. Bring the power line wires through the opening in the terminal box.
9. Check for loose terminal connections and tighten if necessary.

   Note: Bussing tags, if applicable, are made with a non-conducting material. Please leave in place for proper identification during wiring.
10. Individual heater elements are bussed together for easy installation of electrical wiring to the heater. Most units are wired for single circuit, three phase power supply. If further detail is required, please contact the factory for a product specific wiring diagram. Carefully check the voltage, phase, kW, and number of circuits on the heater nameplate.
11. The current carrying capacity of the power supply leads should exceed the heater amperage by at least 25%. Be sure to consider the ambient operating temperature and apply the appropriate correction factor to the ampacity rating of the wire. Heaters with the same voltage and wattage may be connected in series for operation at a higher voltage.

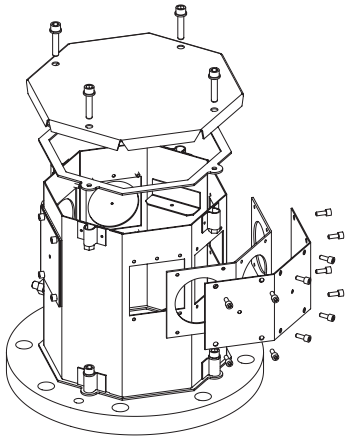
Wiring Installation

Use only E2 terminal enclosures in hazardous location environments as applicable. The proper use of E2 terminal enclosures on electric heaters located in hazardous areas requires that all electrical wiring comply with National Electrical Code (NEC) and/or International Electric Code requirements for hazardous locations.

Wiring Entrance Locations - Moisture Resistant Housing Only (E4 Option)

The Moisture Resistant (E4) Housing offers several convenient options for conduit wiring & location. The housing is equipped with two removable service entrance plates for installation of wiring. Any or all of the six sides can be used for wiring locations. Refer to exploded view drawing. The housing can also be rotated (by removal from flange) to allow for more position possibilities. To install service entrance holes, simply remove the side Allen screws and use the centering depression to drill the appropriate size hole. Reinstall the gasket(s), if applicable, and service entrance plates by tightening the Allen head screws to 4-5 in/lbs. The 'Octobox' style of housing can be removed for ease of access to element bussing or to better locate the power conduit(s) entry point. To accomplish, simply remove the Allen-head screws on the outside of the housing. When reinstalling, be sure to properly align gasket, if applicable, and tighten to 40-50 in/lbs.

Tip for Reinstalling Gaskets:
Place Allen Head screws through metal covers and gentle push gasket hole over the threaded screw. This will allow the gasket to stay in place while tightening the cover.



E4 Terminal Housing, Exploded View - 'Octobox' Style

Wiring Installation continued

Wiring Entrance Locations - Explosion Resistant Housing Only (E2 Option)
The Explosion Resistant (E2) Housing features dedicated conduit connection sizes and locations for installation of conduit. Wiring installation must be in accordance with Hazardous Area requirements. The use of EYS seals or rigid conduit may be required. Please consult with the local inspection authority.

Maximum Temperatures
Safe operation in a hazardous location requires the maximum operating temperatures of all exposed surfaces of the heater including temperatures on the outside of the vessel, piping, flanges, screw plugs, tank walls, enclosures and other heat conducting parts be limited. The flammable liquids, vapors or gases present determine the maximum surface temperature permitted in any hazardous location. The end user or purchaser of the electric heating equipment is responsible for determining the proper classification of an area and for providing Chromalox with hazardous area specifications and requirements for proper equipment design. (NEC and IEC provide guidelines for evaluating and classifying hazardous locations.)

⚠WARNING

An approved liquid level control or overtemperature control must be installed to deenergize the heater if the liquid level drops below the top of the heater.

Safety Devices
Approved pressure, temperature and liquid level limiting controls must be used with electric tank heaters to ensure safe operation in the event of system malfunctions.

Note: Locations including hydrogen gas require additional conduit seals and thread engagement.

Operation

⚠WARNING

FIRE HAZARD. All heater tubes are to be filled with elements and thermocouple or thermostat while unit is in operation. To avoid possible damage to the heater, do not energize until the tank is filled with fluid. Recommended fluid level is 2" above the heater tube or pipe.

1. Do not operate heaters at voltages in excess of that stamped on the heater since excess voltage will shorten heater life.
2. Always maintain a minimum of 2" (.005mm) of liquid above the heated portion of the element to prevent exposure of the effective heated length. If the heater is not properly submerged, it may overheat and shorten heater life. **DO NOT OPERATE HEATER IF DRY.**
3. Be sure all trapped air is removed from a closed tank. Bleed the air out of the liquid piping system prior to energizing.

   Note: The tank or heating chamber in closed tank systems must be kept filled with liquid at all times.
4. Keep heating elements above sediment deposits.
5. Low Megohm Condition — The refractory material used in electric heaters may absorb moisture during transit, storage or when subject to humid environments that will reduce the cold insulation resistance (low megohm). Low megohm may result in high leakage current to ground and nuisance trips of ground fault protection equipment. Normally, the megohm value increases after heat-up.

   Typical insulation valves are 5 megohm or greater on complete assemblies of unsealed elements or 20 megohm on individual unsealed elements. It is recommended that heaters with 1 megohm or less be dried out before applying full power. If dried properly low megohm will not effect heater life or efficiency.

   To correct a low megohm condition, remove terminal enclosure cover, gaskets, and terminal hardware. Bake heaters in an oven at 250˚F (121˚C) for several hours or preferably overnight.

   An alternate procedure is to cycle the heater in 10 to 15 minute periods at low voltage until megohm values are normal. Sheath temperatures should not exceed 250˚F (121˚C).

Note: Low megohm on heating elements with epoxy or hermetic seals cannot be serviced in the field. Typical resistance values when sealed are 200 megohm or greater. Contact Chromalox service center.

When using an element sheath thermocouple, be sure to install flange with the imprinted "Top" designation directly upward.

For initial operation and tuning the control scheme:
1. Turn the master circuit breaker off and open the control box door.
2. Set the indicating temperature control at the desired temperature and the over-temperature cutout at 50°F above this temperature.
3. Interlock the liquid level control with the cutout device.
4. Close the control box door and turn the circuit breaker on. To energize the heater circuits, turn the on-off selector switch to the "on" position.

Maintenance

⚠WARNING

ELECTRIC SHOCK HAZARD. Disconnect all power before installing or servicing heater. Failure to do so could result in personal injury or property damage. Heater must be installed or serviced by a qualified person in accordance with the National Electrical Code, NFPA 70 and/or International Electrical Code.

1. Check electrical connections at heater terminals and tighten if necessary. This will help avoid hot terminals which may destroy wire insulation or heater terminals.
2. Check overheat operation to assure heater protection.
3. Heaters should be checked regularly for coatings and corrosion and cleaned if necessary.
4. The tank should be checked regularly for sediment around the heater as sediment can act as an insulator and shorten heater life.

   Note: User is responsible for maintenance schedule based on their knowledge of the heated medium and operating conditions.
5. Remove any accumulated sludge deposits from heater and from tank.
6. Check for loose terminal connections and tighten if necessary.
7. If corrosion is indicated in the terminal enclosure, check terminal enclosure gasket and replace if necessary. Check conduit layout to correct conditions that allow moisture to enter the terminal enclosure.
8. Clean terminal ends of all contamination.
9. The heater can be protected from possible mechanical damage by placing a screen or grill around the elements.
10. Protect the terminal end of the heater from spray, condensation, dripping and vapors. A protective terminal enclosure should be used if the heater is to be subjected to these conditions.
11. If the heater is to be operated in the presence of explosive vapors or dust, an explosion resistant terminal enclosure must be provided.
12. Do not set the thermostats above the boiling point of the liquid. The boiling liquid could create a steam pocket which could cause the element(s) to overheat and burn out.
13. Periodically, remove the heater from the tank to inspect the elements for signs of corrosion and remove any deposits from the sheath. **BE SURE POWER IS DISCONNECTED BEFORE REMOVING ELEMENTS.**

Element Replacement - Moisture Resistant Housing Only (E4 Option)

1. To remove the heating elements, first turn the circuit breaker to the off position.
2. Next remove the housing lid, element wiring and the element mounting screw. Now pull the element straight out of the heating tube.
3. When removing the heating elements, make certain that the terminal connectors do not contact oil or any other liquid foreign matter.
4. Installation is the reverse of steps 1 through 3.
5. Tighten set screw to 40-50 in/lbs. **NOTE:** E4 style housing may be removed to aid in element removal. Refer to previous instructions

Element Replacement - Hazardous Locations, Explosion Resistant Housing Only (E2 option)

1. To remove the heating assembly, first turn the circuit breaker to the off position and allow time for heater to adequately cool..
2. Next remove the housing lid and element wiring. Individual heater elements may be removed by unthreading heater element from the flange surface.
3. When removing the heating elements, make certain that the terminal connectors do not contact oil or any other liquid foreign matter.
4. Inspect the element connection threads and surface for any debris, oils, or contamination(s). Note: Surfaces must be in suitable condition to ensure proper hazardous rating.
5. Installation is the reverse of steps 1 through 3.
6. Tighten heater element threads to 33 in/lbs.
7. Reattach element wiring. When reinstalling housing lid, be sure to properly align gasket, and tighten housing bolts to 40-50 in/lbs.

STFX Renewal Parts

Steel Flange, 304 Stainless Steel applications

Model Specifications - 40 WPSI Applications

Heater Model	Volts	kW	Immersion Length (In)	Circuits	Phase	ANSI Flange Size	Number of Heater Tubes	Heater Part Number	Replacement Element Part Number
STFXS-03-003P-E4	480	2.0	24	1	1	3" - 150#	1	306608-050	306675-001
STFXS-06-006P-E4	480	6.0	24	1	3	3" - 150#	3	306608-051	306675-001
STFXS-09-009P-E4	480	12.0	24	1	3	4" - 150#	6	306608-052	306675-001
STFXS-12-012P-E4	480	18.0	24	1	3	5" - 150#	9	306608-053	306675-001
STFXS-24-024P-E4	480	24.0	24	1	3	6" - 150#	12	306608-054	306675-001
STFXS-01-001P6-E4	600	1.6	24	1	1	3" - 150#	1	306608-055	306675-002
STFXS-03-004P7-E4	600	4.7	24	1	3	3" - 150#	3	306608-056	306675-002
STFXS-09-006P4-E4	600	9.4	24	1	3	4" - 150#	6	306608-057	306675-002
STFXS-09-014P-E4	600	14.0	24	1	3	5" - 150#	9	306608-058	306675-002
STFXS-12-018P7-E4	600	18.7	24	1	3	6" - 150#	12	306608-059	306675-002

Model Specifications - 20 WPSI Applications

Heater Model	Volts	kW	Immersion Length (In)	Circuits	Phase	ANSI Flange Size	Number of Heater Tubes	Heater Part Number	Replacement Element Part Number
STFXS-03-003P-E4	480	3.0	24	1	3	3" - 150#	3	306608-060	306675-002
STFXS-06-006P-E4	480	6.0	24	1	3	4" - 150#	6	306608-061	306675-002
STFXS-09-009P-E4	480	9.0	24	1	3	5" - 150#	9	306608-062	306675-002
STFXS-12-012P-E4	480	12.0	24	1	3	6" - 150#	12	306608-063	306675-002
STFXS-24-024P-E4	480	24.0	24	1	3	8" - 150#	24	306608-064	306675-002
STFXS-03-003P2-E4	600	3.2	24	1	3	3" - 150#	3	306608-065	306675-001
STFXS-06-006P3-E4	600	6.3	24	1	3	4" - 150#	6	306608-066	306675-001
STFXS-09-009P4-E4	600	9.4	24	1	3	5" - 150#	9	306608-067	306675-001
STFXS-12-012P5-E4	600	12.5	24	1	3	6" - 150#	12	306608-068	306675-001
STFXS-24-025P-E4	600	25.0	24	1	3	8" - 150#	24	306608-069	306675-001

Model Specifications - 10 WPSI Applications

Heater Model	Volts	kW	Immersion Length (In)	Circuits	Phase	ANSI Flange Size	Number of Heater Tubes	Heater Part Number	Replacement Element Part Number
STFXS-03-001P5-E4	240	1.5	24	1	3	3" - 150#	3	306608-070	306675-001
STFXS-06-003P-E4	240	3.0	24	1	3	4" - 150#	6	306608-071	306675-001
STFXS-12-006P-E4	240	6.0	24	1	3	6" - 150#	12	306608-072	306675-001
STFXS-24-012P-E4	240	12.0	24	1	3	8" - 150#	24	306608-073	306675-001
STFXS-36-018P-E4	240	18.0	24	1	3	10" - 150#	36	306608-074	306675-001
STFXS-48-024P-E4	240	24.0	24	1	3	12" - 150#	48	306608-075	306675-001
STFXS-03-001P6-E4	600	1.6	24	1	3	3" - 150#	3	306608-076	306675-002
STFXS-06-003P2-E4	600	3.2	24	1	3	4" - 150#	6	306608-077	306675-002
STFXS-12-006P3-E4	600	6.3	24	1	3	6" - 150#	12	306608-078	306675-002
STFXS-24-012P5-E4	600	12.5	24	1	3	8" - 150#	24	306608-079	306675-002
STFXS-36-018P8-E4	600	18.8	24	1	3	10" - 150#	36	306608-080	306675-002
STFXS-48-025P1-E4	600	25.1	24	1	3	12" - 150#	48	306608-081	306675-002

Model Specifications - 5 WPSI Applications

Heater Model	Volts	kW	Immersion Length (In)	Circuits	Phase	ANSI Flange Size	Number of Heater Tubes	Heater Part Number	Replacement Element Part Number
STFXS-03-001P5-E4	240	0.75	24	1	3	3" - 150#	3	306608-083	306675-002
STFXS-06-003P-E4	240	1.5	24	1	3	4" - 150#	6	306608-084	306675-002
STFXS-12-006P-E4	240	3.0	24	1	3	6" - 150#	12	306608-085	306675-002
STFXS-24-012P-E4	240	6.0	24	1	3	8" - 150#	24	306608-086	306675-002
STFXS-36-018P-E4	240	9.0	24	1	3	10" - 150#	36	306608-087	306675-002
STFXS-48-024P-E4	240	12.0	24	1	3	12" - 150#	48	306608-088	306675-002
STFXS-06-001P6-E4	600	1.6	24	1	3	4" - 150#	6	306608-089	306675-001
STFXS-12-003P2-E4	600	3.2	24	1	3	6" - 150#	12	306608-090	306675-001
STFXS-24-006P3-E4	600	6.3	24	1	3	8" - 150#	24	306608-091	306675-001
STFXS-36-009P4-E4	600	9.4	24	1	3	10" - 150#	36	306608-092	306675-001
STFXS-48-012P5-E4	600	12.5	24	1	3	12" - 150#	48	306608-093	306675-001

Application Recommended WPSI

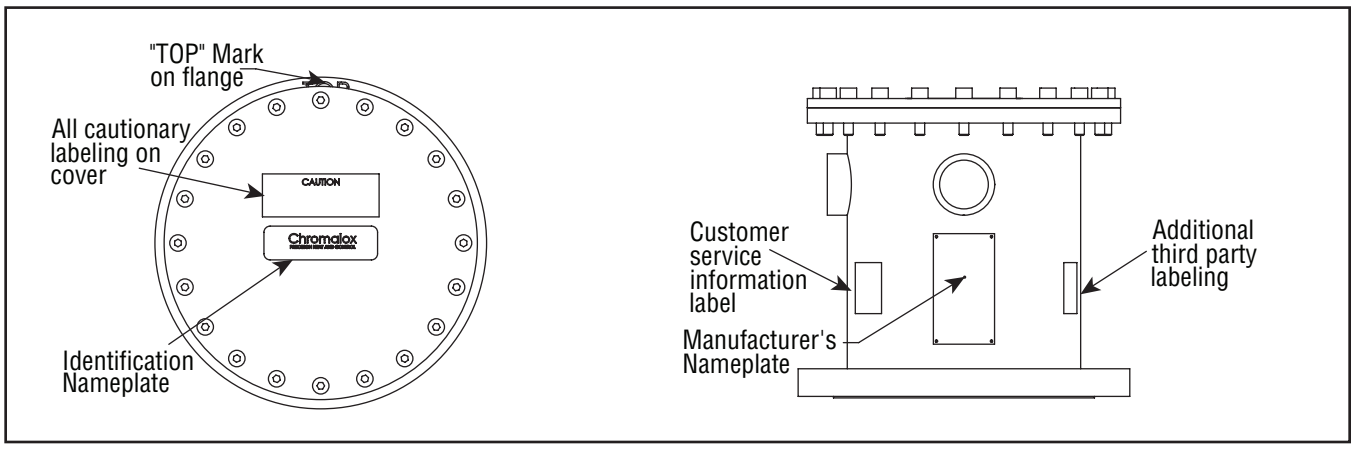
Oil	wpsi	Water
----------	40	Water or Water/Glycol Mix
Light Weight	20	Mildly Corrosive
Medium Weight	10	Severely Corrosive
Heavy Weight	5	----------

Note: To maximize heater life, the unit selection requires critical engineering judgement by the plant engineer in the selection of proper heater materials and watt density.

Unit Identification

Labeling Descriptions

Specific model information such as the unique Chromalox part number, manufacturing date, third party certifications, etc. can be found by using the diagram below. For additional information not contained here, please contact you local Chromalox Sales Office.



Spare Parts List for STFX Flange Heaters

Flange Size	3”	5”	6”	8”	10”	12”	14”
150# ANSI Flange Gasket	132-017222-015	132-017222-016	132-017222-005	132-017222-007	132-017222-009	132-017222-011	132-017222-013
(1) Set of Flange Bolting & Nuts (rated 150LB*)	168-306161-001	168-306161-002	168-306161-003	168-306161-004	168-306161-005	168-306161-006	168-306161-007
(1) Set of Cover/Enclosure Bolts & Nuts (E1&E4)	N/A	N/A	168-306161-008	168-306161-008	168-306161-008	168-306161-009	168-306161-009
Terminal Housing Cover (E4)	N/A	N/A	080-305809-006	080-305809-008	080-305809-010	080-305809-012	080-305809-014
Blank Service Entrance Plate (E4)	N/A	N/A	080-305807-006	080-305807-008	080-305807-010	080-305807-012	080-305807-014
Service Entrance Plate Gasket (E4)	N/A	N/A	132-305811-006	132-305811-008	132-305811-010	132-305811-012	132-305811-014
Terminal Housing to Flange Gasket (E4)	N/A	N/A	132-305810-006	132-305810-008	132-305810-010	132-305810-012	132-305810-014
Terminal Housing Cover Gasket (E4)	N/A	N/A	132-305810-006	132-305810-008	132-305810-010	132-305810-012	132-305810-014
Terminal Housing Cover Gasket (E2)	132-305967-004	132-305969-005	132-116937-040	132-116937-044	132-116937-047	132-116937-046	132-116937-050
Terminal Housing Cover (E2)	080-305967-003	080-305969-004	080-306161-021	080-306161-022	080-306161-023	080-306161-024	080-306161-025
(1) Set of Cover/Enclosure Bolts (E2)	N/A	N/A	168-306161-010	168-306161-011	168-306161-012	168-306161-013	168-306161-014
Thermostat Install Kit (Parts to Mount Thermostat-E4)	N/A	N/A	300-306012-009	300-306012-001	300-306012-010	300-306012-012	300-306012-014
Thermostat Install Kit (Parts to Mount Thermostat-E2)	N/A	300-306012-005	300-306012-007	300-306012-008	300-306012-011	300-306012-013	300-306012-015
Thermostat (0-100˚F)	N/A	300-048518-012	300-048518-012	300-048518-012	300-048518-012	300-048518-012	300-048518-012
Thermostat (60-250˚F)	N/A	300-048518-013	300-048518-013	300-048518-013	300-048518-013	300-048518-013	300-048518-013
Thermostat (200-550˚F)	N/A	300-048518-014	300-048518-014	300-048518-014	300-048518-014	300-048518-014	300-048518-014
Circuit Labels (Pack of 9 unique labels-3 circuits)				168-306161-020			

* = Grade SA-325, oiled structural steel.

Unit Identification

To Order— Complete model number using the matrix provided.

Model — Small Tank Heating Systems

STFX Small Tank Flange Heater

Code — Thermowell Material

Code	Thermowell Material
S	304 Stainless Steel
I	Incoloy 800
X	Other Material

Code — Flange Material

Code	Flange Material
(Blank)	Carbon Steel
S	304 Stainless Steel
X	Other Material

Code — Number of Thermowells

Code	Number of Thermowells	Code	Number of Thermowells
01	One	**05**	Five
02	Two	**06**	Six
03	Three	**07**	Seven
04	Four	**08**	Eight

Code — Wattage

Code	Wattage
004P5	4.5 kW (use actual kilowatt in three digits)

Code — Terminal Housing Style

Code	Terminal Housing Style
E4	Moisture Resistant
E2	Explosion / Moisture Resistant

Code — Non-Standard Feature

Code	Non-Standard Feature
(Blank)	Catalog PCN item
XX	Custom Feature

Code — Voltage

Code	Voltage	Code	Voltage	Code	Voltage
208	208V	**240**	240V	**380**	380V
415	415V	**480**	480V	**600**	600V

Code — Number of circuits

Code	Number of circuits	Code	Number of circuits
1	One	**3**	Three
2	Two	**4**	Four

Code — Phase

Code	Phase
1P	Single Phase
3P	Three Phase

Code — Kilowatts

Code	Kilowatts
4.5	kW

STFX	**S**	**S**	**-03**	**-004P5**	**-E4**		**480V**	**1**	**-3P**	**4.5kW**	**Typical Model Number**

Example of Final Model Description: STFXSS-03-004P5-E4 480V 1-3P 4.5kWH

Note — Shaded sections of the model build table are not a finite list. Items such as Number of Tubes, Length, Wattage, and Voltage should be adjusted to match design.

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

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