



MARKET FORGE

TS-E TURBO STEAM ELECTRIC COUNTERTOP CONVECTION STEAMER PARTS AND SERVICE MANUAL

EFFECTIVE JUNE 12, 2017

Superseding All Previous Parts Lists.

The Company reserves the right to make substitution in the event that items specified are not available.

ERRORS: Descriptive and/or typographic errors are subject to correction.

MARKET FORGE

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TABLE OF CONTENTS

TROUBLESHOOTING	3
ELEMENT BLOCK REPLACEMENT	5
WIRING DIAGRAMS	6
ILLUSTRATED PART LIST	
TS-E EXPLODED VIEW	9
FLOOR DRAIN KIT ASSEMBLY	12

TROUBLESHOOTING

GENERAL TROUBLE-SHOOTING GUIDE

PROBLEM	PROBABLE CA	REMEDY
COOKING INDICATOR LIGHT FAILS TO LIGHT WITH TIMER SET.	a. Main power circuit breaker tripped. b. Door interlock switch contacts not closed. c. Door interlock switch faulty. d. Indicator light burned out. e. Faulty timer contacts. f. Faulty wiring. g. Fuse blown.	a. Locate external circuit breaker for incoming power and place in ON position. b. Shut cooker door to close switch contacts. Check alignment of door with switch. c. Replace switch. d. Replace light. e. Replace timer. f. Inspect condition of wire and tightness of all connections. Correct as needed. g. Replace with same rated fuse.
STEAM FAILS TO GENERATE WITH COOKING INDICATOR LIGHT ON.	a. Faulty wiring.	a. Inspect condition of wire and tightness of all connections. Correct as needed.
STEAMS CONTINUOUSLY WITHOUT THE COOKING OR READY LIGHT ON.	a. Faulty thermostatic switch.	a. Replace thermostat.
TIMER DIAL NOT TURNING.	a. Faulty timer motor. b. Faulty wiring.	a. Replace timer. b. Inspect condition of wire and tightness of all connections. Correct as needed.
BUZZER FAILS TO SOUND AT END OF TIMER SETTING.	a. Timer contacts faulty. b. Buzzer faulty. c. Faulty wiring.	a. Replace timer. b. Replace buzzer. c. Inspect condition of wire and tightness of all connections. Correct as needed.

COMPONENT TESTING

Exterior Panel Removal



WARNING

To prevent hazard in servicing the cooker, be certain that the electrical disconnect circuit breaker for the steamer is OFF before removing side panels.

Access to all internal plumbing and electrical assemblies is from the right side. The right-side panel is removed by removing the bottom screws from panel.

60-MINUTE TIMER

Timer Contacts

Defective timer contacts will result in failure of cooker compartment to operate. When this occurs, remove the side panel and proceed as follows:

1. Turn off power at external circuit breaker.
2. Disconnect all three wires from timer terminals.

3. Connect an ohmmeter between terminals 21 and 22.
4. Rotate timer dial beyond the "0 - Minute" point (any setting) to obtain a reading of zero ohms on the ohmmeter. If zero ohm reading cannot be obtained, timer contacts are defective and the timer must be replaced.
5. Move ohmmeter leads to terminals 21 and 24.
6. Rotate timer dial to "0 - Minute" position. (An audible click indicates correct position). If zero ohm reading cannot be obtained, the timer is defective and must be replaced.
7. Move ohmmeter leads to terminals 11 and 12.
8. Rotate the timer dial to the "CONSTANT STEAM" position. If zero ohm reading cannot be obtained, the timer is defective and must be replaced.
9. Remove ohmmeter and replace all three leads on timer terminals.

TROUBLESHOOTING

Timer Motor

A defective timer motor will cause continuous operation in the TIME mode, with the timer dial failing to return to the "0 - Minute" position.

To confirm timer motor condition, proceed as follows:

1. Carefully check motor wire leads and tighten loose connections.



WARNING

**Use care while working with control panel.
Terminals carry 240 Volts.**

2. Turn on power to the steamer.
3. Set timer dial (*any setting beyond "0 - Minute"*). If operation is correct, the motor will turn the dial toward "0 - Minute". If the motor fails to operate, it is defective and the timer must be replaced.
4. Shut off power to the cooker.

Door Interlock Switch:

Malfunction of the cooker door interlock switch prevents timer indicator lights from turning on and steam generator from operating when the timer dial is set. If steam does not enter the compartment and the cooking indicator light fails to turn on with the door latch securely engaged, the fault may be in the door interlock switch.

Proceed as follows:

1. Turn off power to the cooker.
2. Disconnect wires to the door switch terminals.
3. Connect an ohmmeter between the terminals of the switch. The switch is marked "C" for common, "NC" for normally closed and "NO" for normally open.
4. Actuate the switch by closing the cooking compartment door. If a zero reading cannot be obtained between the C and NO terminals, the switch is defective and must be replaced.
5. Remove the ohmmeter and replace the leads on switch terminals.

Indicator Lights

If the cooker compartment functions correctly, with the single exception that the indicator light fails to light during operation, the fault is a defective indicator light. A "burned out" or defective light is verified by using an AC voltmeter at the leads, with input power on the selector switch in the correct position for that timer, the timer set, and the door latches closed. If 240 volts is present, the fault is in the indicator light and requires replacement. If 240 volts is not present, the fault is in the wiring or control components (selector switch, timer or door switch).

Buzzer

If the buzzer does not sound at the termination of the operator-selected timer setting (timer dial returned to "0 - Minute" position), the fault may be a defective buzzer. Buzzer operation is verified using an AC voltmeter at buzzer coil connections with input power on and selector switch and coinciding timer dial set at the "0 - Minute" position. If voltage is 240 volts, the fault is in the buzzer, which must be replaced. If 240 volts is not present, the fault is in the wiring or control components (timer or selector switch).

Wiring



WARNING

Disconnect the power supply to the appliance before cleaning or servicing.

Using an ohmmeter, wiring continuity between the connections shown on the wiring diagram is readily verified. This is best done in stages, removing only those wires required for each continuity check. As each lead is replaced, it should be checked for evidence of corrosion, and cleaned if necessary. All leads must be tightly attached so as to provide a good electrical connection.

Door Gasket

Check gasket for cuts and replace if necessary.

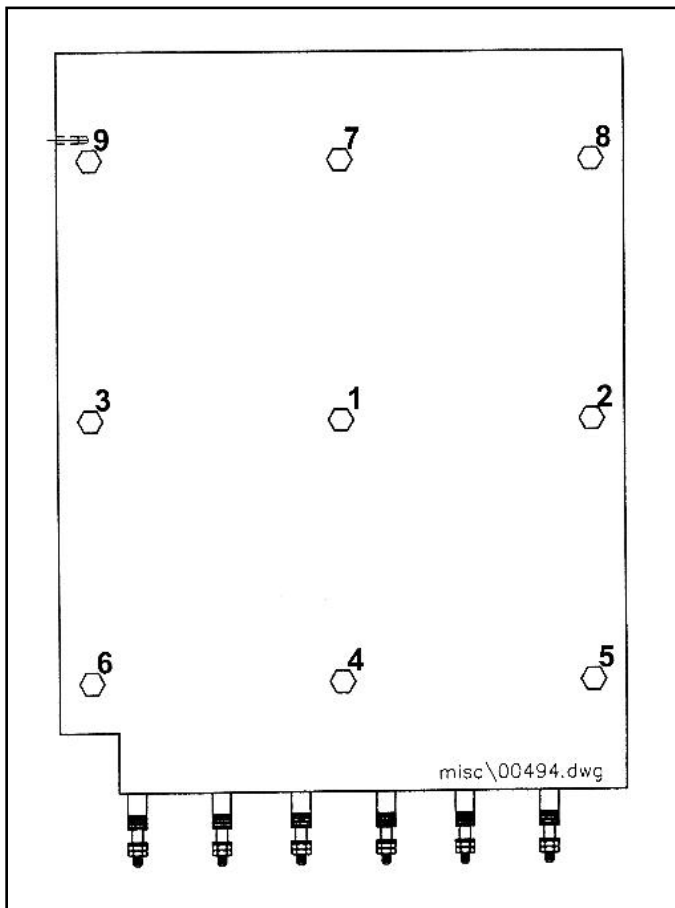
Door Gasket Replacement

The cooking compartment door gaskets are made of a silicone-type rubber material that is very durable but subject to wear during normal operation. Should the gasket leak replace it.

1. Open the cooking compartment door.
2. Remove the six or eight screws from the gasket plate in the door panel assembly.
3. Remove the gasket plate and the door gasket from door panel.
4. Install the new door gasket to the door panel. Replace the gasket plate and six or eight screws.
5. Gasket replacement is now complete.

Door may be difficult to close until gasket has compressed to conform to opening. Firmly slam the door, leaving door closed several hours or overnight will compress gasket.

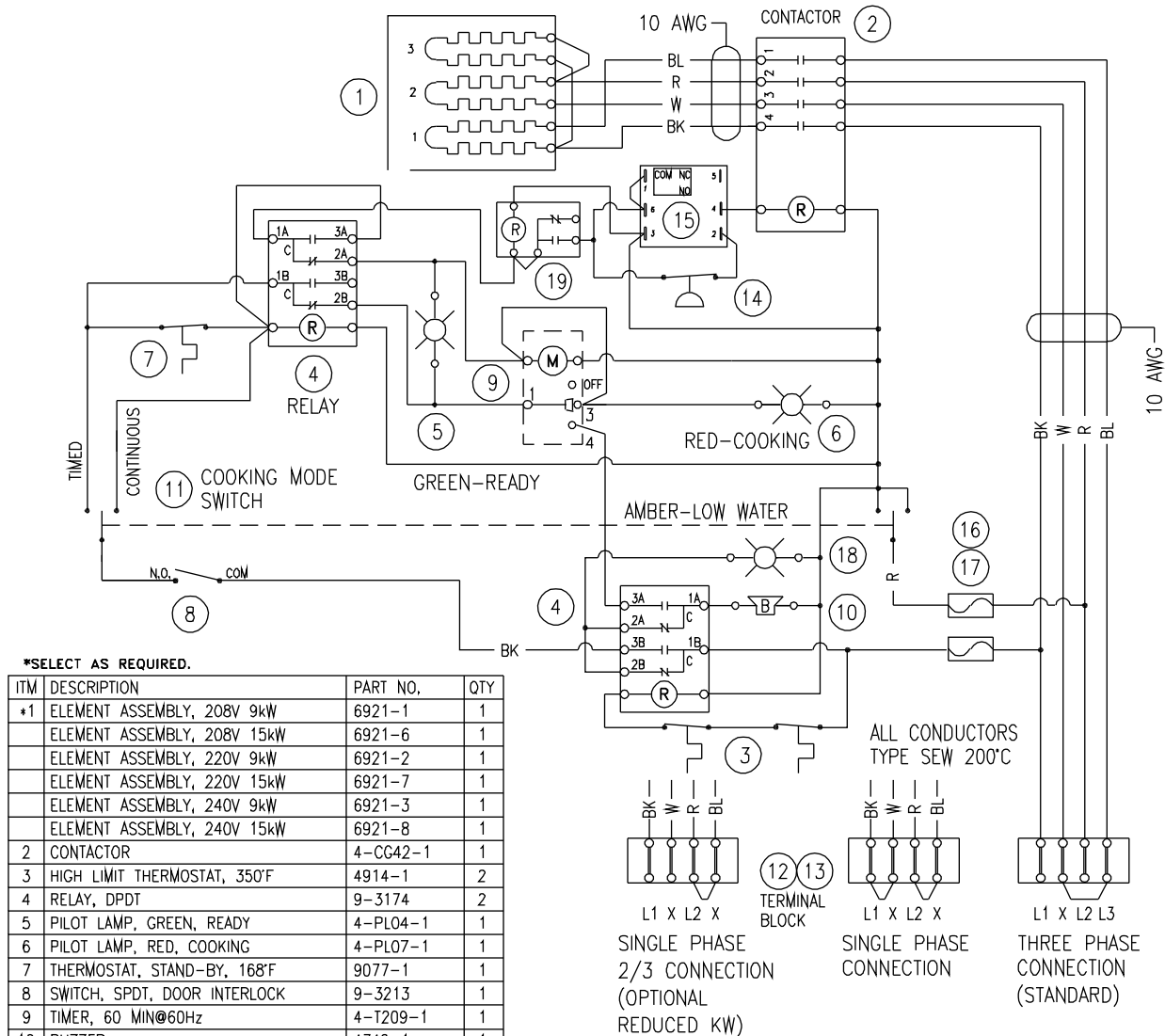
ELEMENT BLOCK REPLACEMENT



1. Disconnect power supply.
2. Ensure the unit is cool and empty.
3. Remove the right side panel by removing two screws near the base of the unit. Lift panel up and away to remove and set aside.
4. Remove top cover by removing two screws in back of unit. Raise the cover to clear the vent and slide towards the front of the unit to remove. Remove insulation from top of cooker and set aside.
5. Tilt the unit to rest on it's face using wooden supports to steady the unit. Remove the leftback panel by removing screws from the base and sliding it towards the back of the unit, upwards in this case and set aside. Remove the insulation from the left side and set aside.
6. Remove two screws that retain the component mounting board, carefully supporting it and saving from damage. Leave it rest at the side of the unit.
7. Remove the unit base by removing four screws near the face of the unit and set aside. Remove the insulation to expose the element plate.
8. Remove the failed element block and residual heat sink compound
9. Apply about 4 ounces of heat sink compound with a 3/16" "V" and pitch of 112" notched trowel across the width of the element block on the contact surface. Mount the element block to the unit. Using plain flat washers, torque each nut to 100 inch pounds following the recommended pattern. Start back at position one removing the flat washer and replace with two beleville washers and torque to 45 inch pounds using Loctite #271 thread locking adheasive. Repeat this for each of the rest of the studs.
10. Reassemble the unit using steps 1 through 8 in reverse order.

NFG WIRING DIAGRAMS

208-240V



AMPS			
Volts	1 PH @ 2/3	1 PH	3-PH
208-9	28.9	43.3	25.0
220-9	27.3	41.0	23.7
240-9	25.0	37.5	21.7
208-15	48.1	72.2	41.7
220-15	45.5	68.2	39.4
240-15	41.7	62.5	36.1

3E-15049R6
EPX-3, EPX-5 (208-240V)

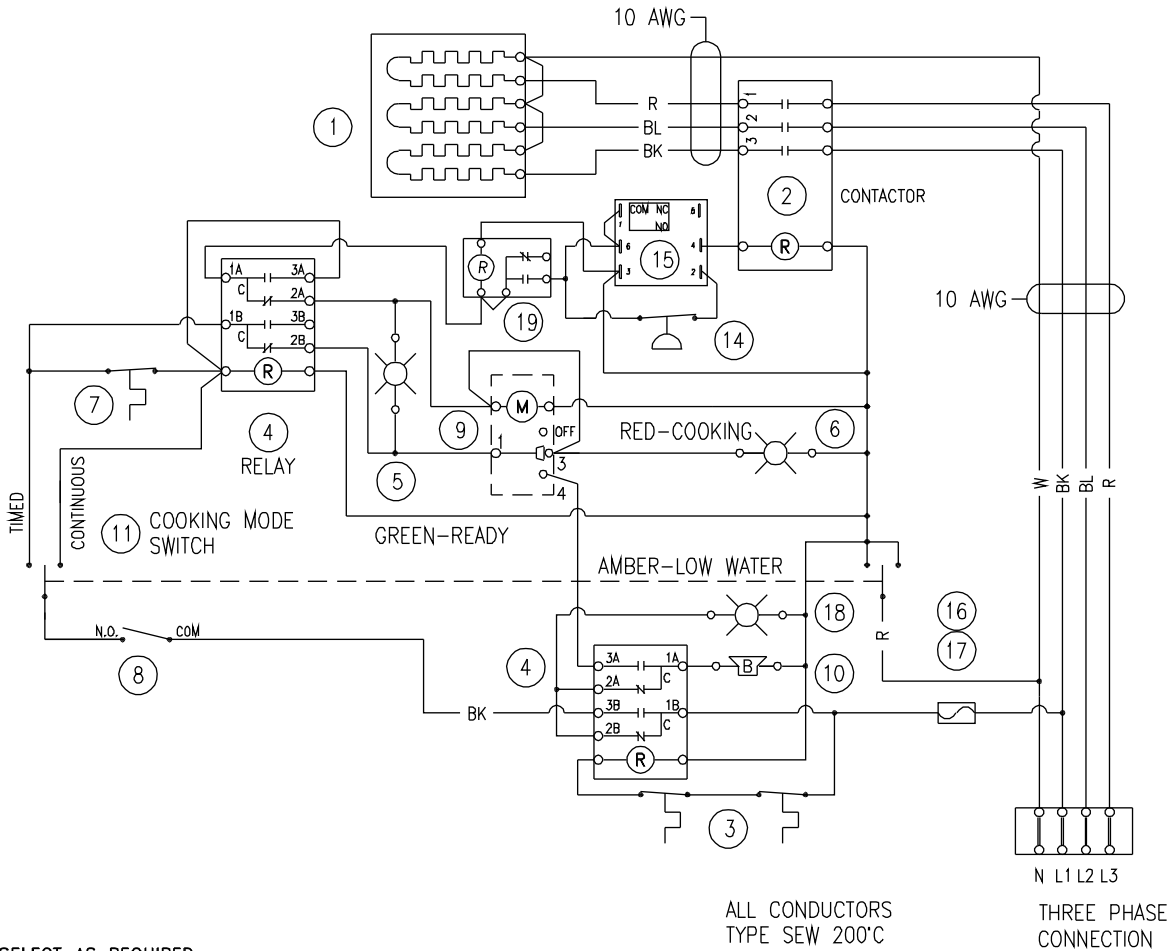
380-600V



3E-15050R3
EPX-3, EPX-5 (380, 415, 480, 600V)

NFG WIRING DIAGRAMS

380/220-415/240V

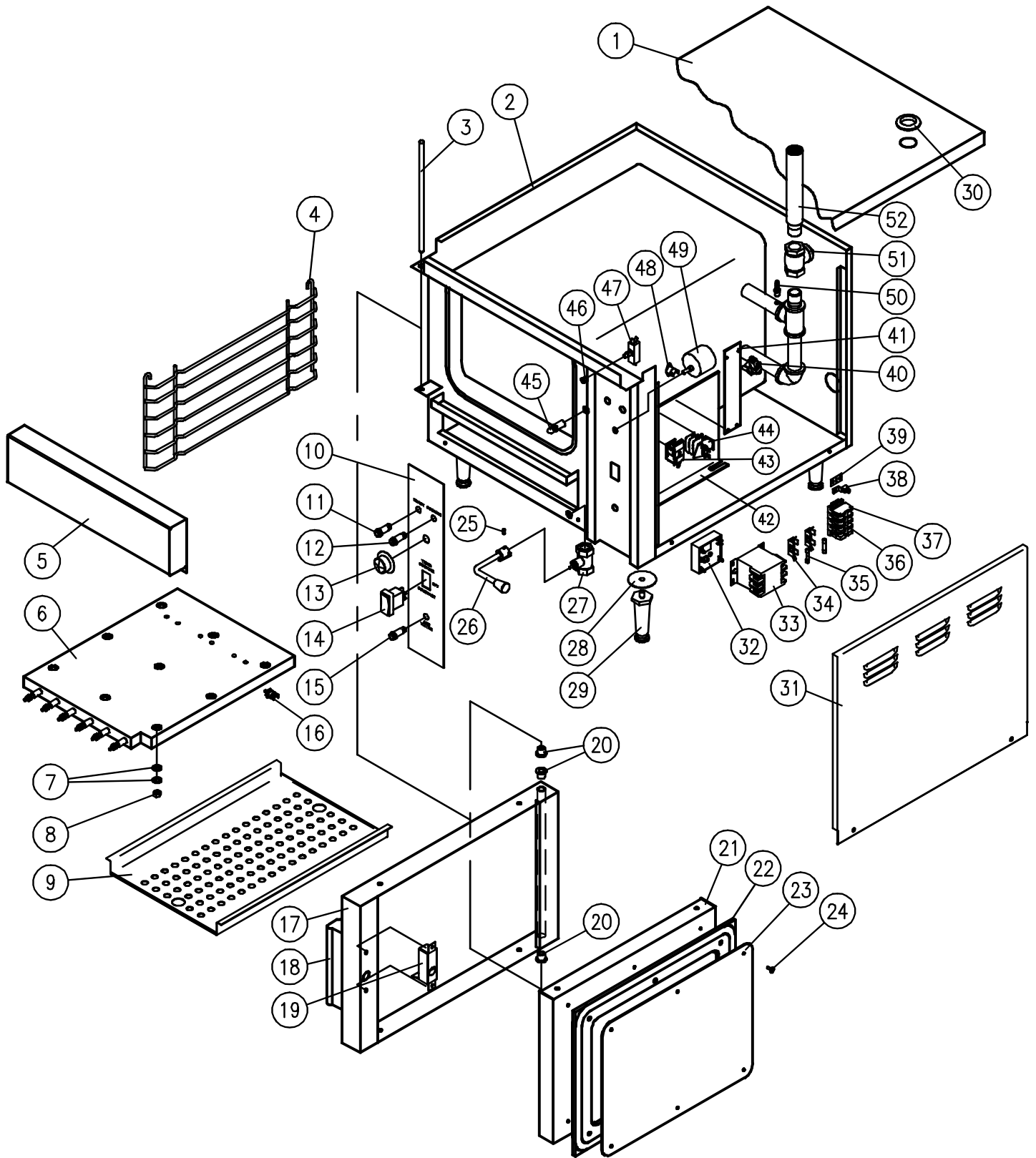


*SELECT AS REQUIRED.

ITM	DESCRIPTION	PART NO.	QTY	ITM	DESCRIPTION	PART NO.	QTY
*1	EL. ASM. 380V (220V)9kW, 13.7 A/PH	6921-2	1	9	TIMER, 60 MIN@60Hz	4-T209-1	1
	EL. ASM. 380V (220V)15kW, 22.8 A/PH	6921-7	1	10	BUZZER	4742-1	1
	EL. ASM. 415V (240V)9kW, 12.6 A/PH	6921-3	1	11	SWITCH, ON/OFF/ON, DPDT	9124-1	1
	EL. ASM. 415V (240V)15kW, 20.9 A/PH	6921-8	1	12	TERMINAL SECTION	4-22TB	4
2	CONTACTOR	4-NG41	1	13	TERMINAL END PIECE	4-22ES	1
3	HIGH LIMIT THERMOSTAT, 350°F	4914-1	2	14	PRESSURE SWITCH	08-6502	1
4	RELAY, DPDT	9-3174	2	15	TIME DELAY RELAY, DUAL	9242-2	1
5	PILOT LAMP, GREEN, READY	4-PL04-1	1	16	FUSE, 1A, 250V	9092-1	1
6	PILOT LAMP, RED, COOKING	4-PL07-1	1	17	FUSE HOLDER	9068-1	1
7	THERMOSTAT, STAND-BY, 168°F	9077-1	1	18	PILOT LAMP, AMBER, LOW WATER	4-PL06-1	1
8	SWITCH, SPDT, DOOR INTERLOCK	9-3213	1	19	RELAY, DPDT, 220 VAC	9344-2	1

3E-15051R3
EPX-3, EPX-5 (380/220, 415/240)

TS-E EXPLODED VIEW



TS-E EXPLODED VIEW

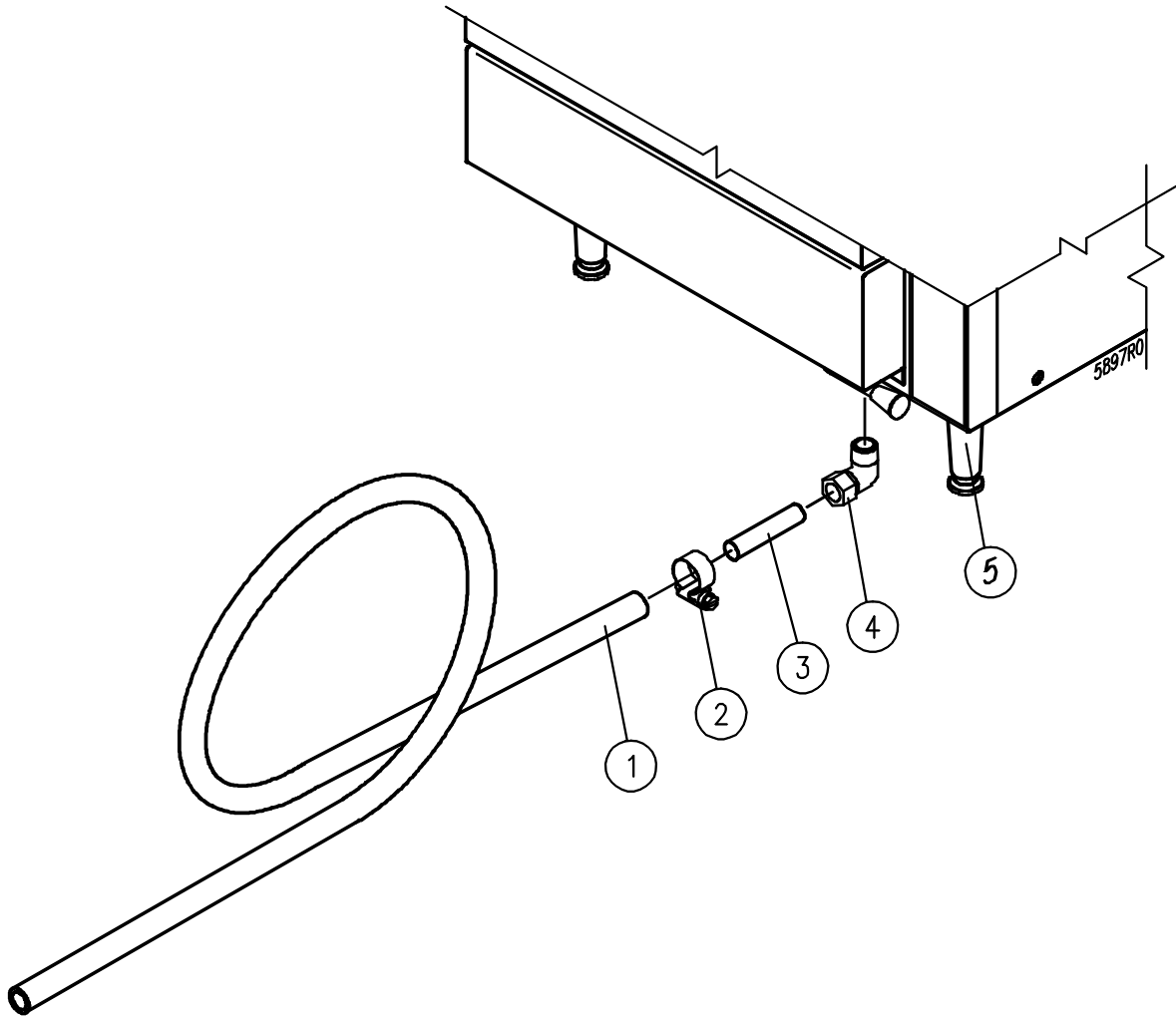
ITEM	PART NO.	DESCRIPTION	QTY	
			TS-3E	TS-5E
1	97-6750	TOP PANEL	1	1
2*	97-6751	LEFT/REAR PANEL		1
	97-6752	LEFT/REAR PANEL	1	
3*	97-6364	HINGE ROD		1
	97-6299	HINGE ROD	1	
4*	97-6175	PAN RACK		2
	97-6338	PAN RACK	2	
**	97-6340	PAN RACK HANGER ASSEMBLY	4	4
5	97-6753	ELEMENT FRONT COVER	1	1
6*	97-6754	ELEMENT ASSEMBLY, 208V, 9 KW	1	
	97-6755	ELEMENT ASSEMBLY, 220V, 380V, 9 KW	1	
	97-6756	ELEMENT ASSEMBLY, 240V, 415V, 9 KW	1	
	97-6757	ELEMENT ASSEMBLY, 480V, 9 KW	1	
	97-6758	ELEMENT ASSEMBLY, 600V, 9 KW	1	
	97-6759	ELEMENT ASSEMBLY, 208V, 15 KW		1
	97-6760	ELEMENT ASSEMBLY, 220V, 380V, 15 KW		1
	97-6761	ELEMENT ASSEMBLY, 240V, 415V, 15 KW		1
	97-6762	ELEMENT ASSEMBLY, 480V, 15 KW		1
	97-6763	ELEMENT ASSEMBLY, 600V, 15 KW		1
7	97-6764	SPRING DISC, 3/4 OUTSIDE DIAMETER	18	18
8	97-6765	HEX NUT, 5/16-18	9	9
9	97-6766	COMPARTMENT DRIP PAN	1	1
10*	97-6767	DECAL, TS-3E	1	
	97-6768	DECAL, TS-5E		1
11	97-6270	PILOT LAMP, GREEN, READY	1	1
12	97-6271	PILOT LAMP, RED, COOKING	1	1
13*	08-3826	KNOB	1	1
14	97-6732	SWITCH, ON/OFF	1	1
15	97-6769	PILOT LAMP, AMBER, LOW WATER	1	1
16	97-6770	HIGH LIMIT THERMOSTAT	1	1
17*	97-6227	DOOR FRAME		1
	97-6295	DOOR FRAME	1	
18	97-6432	DOOR HANDLE ASSEMBLY	1	1
	97-6771	DOOR HANDLE DECAL	1	1
19	97-6232	LATCH ASSEMBLY	1	1
20	97-6261	DOOR BUSHING	3	3
21*	97-6230	DOOR PANEL		1
	97-6262	DOOR PANEL	1	
22*	97-6228	DOOR GASKET		1
	97-6264	DOOR GASKET	1	
23*	97-6229	GASKET PLATE		1
	97-6266	GASKET PLATE	1	
24	97-6233	GASKET PANEL SCREWS	6	8
25	97-6772	SET SCREW, 10-32 x 3/8	1	1

TS-E EXPLODED VIEW

ITEM	PART NO.	DESCRIPTION	QTY	
			TS-3E	TS-5E
26	97-6773	DRAIN HANDLE ASSEMBLY	1	1
26A	97-6774	KNOB	1	1
27	97-6775	DRAIN VALVE	1	1
28	97-6776	WASHER	4	4
29	97-6211	LEG ASSEMBLY	4	4
30	97-6777	GROMMET	1	1
31*	97-6778	SIDE PANEL		1
	97-6779	SIDE PANEL	1	
32	97-6600	RELAY TIMER, 230V	1	1
33*	97-6575	CONTACTOR, 4-POLE	1	1
	97-5609	CONTACTOR, 3-POLE	1	1
34*	97-5864	FUSE HOLDER, 250V	2	2
	98-6187	FUSE HOLDER, 600V	2	2
35*	98-6134	FUSE, 1A, 250V	2	2
	98-6188	FUSE, 1/2A, 600V	2	2
36*	10-6962	TERMINAL BLOCK		4
	10-6963	TERMINAL BLOCK	4	3
37*	98-6186	TERMINAL END SECTION		1
	10-6962	TERMINAL END SECTION	1	
38	97-5052	GROUNDING LUG	1	1
39	97-6738	EARTH ID TAG	1	1
40	08-6502	PRESSURE SWITCH	1	1
41	97-6780	PRESSURE SWITCH BRACKET	1	1
42	97-6781	COMPONENT BOARD	1	1
43	97-6307	BUZZER	1	1
44	97-6280	REPLAY, DPDT	2	2
45	97-6178	STRIKER	1	1
45A	97-6650	LOCK WASHER	1	1
45B	97-6302	STAINLESS STEEL WASHER	1	1
45C	97-6651	HEX NUT, 1/2-20 UNF	1	1
46	97-6429	SWITCH ACTUATOR ROD WITH CLIP	1	1
47	97-6191	DOOR SWITCH	1	1
48	97-6782	STAND-BY TEMPERATURE THERMOSTAT	1	1
49	08-6621	TIMER, 60-MINUTE	1	1
50	97-6447	HOSE BARB, 1/4" x 1/8" MPT	1	1
**	97-6783	TUBE, 1/4" x 9" LONG	1	1
51	97-6784	CHECK VALVE	1	1
52*	97-6785	VENT TUBE SUB ASSEMBLY		1
	97-6786	VENT TUBE SUB ASSEMBLY	1	
53**	97-6279	RELAY, SPDT	1	1
*54**	97-5616	TRANSFORMER, 380/220, 100VA	1	1
	97-5616	TRANSFORMER, 415/240, 100VA	1	1
	97-5613	TRANSFORMER, 480/240, 100VA	1	1
	98-6191	TRANSFORMER, 600/240, 100VA	1	1

* SELECT AS REQUIRED. ** NOT SHOWN.

FLOOR DRAIN KIT ASSEMBLY



ITEM	PART NO.	DESCRIPTION	QTY	
			TS-3E	TS-5E
1	15-7459	3/4" SILICONE HOSE, 5' LONG	1	1
2	08-1206	HOSE CLAMP	1	1
3	90-8030	1/2" x 3/4" HOSE BARB	1	1
4	10-2863	1/2", 90° STREET ELBOW, BRASS	1	1
5	97-6211	LEG	4	4

These parts provide a means of draining the steam generator to a suitable drain or collector. These ports will not complete the connection, additional parts will be needed and may be obtained locally.