

# **Lang**<sup>TM</sup>

A Division of Star Mfg. Int'l, Inc.

## **Installation, Operation, Maintenance and Service Instructions**

**Fryer**

Model: 130F



**CAUTION** EACH UNIT IS HEAVY. FOR SAFE HANDLING, INSTALLER SHOULD OBTAIN HELP AS NEEDED, OR EMPLOY APPROPRIATE MATERIALS HANDLING EQUIPMENT (SUCH AS A FORKLIFT, DOLLY, OR PALLET JACK) TO REMOVE THE UNIT FROM THE SKID AND MOVE IT TO THE PLACE OF INSTALLATION. ANY STAND, COUNTER OR OTHER DEVICE ON WHICH FRYER WILL BE LOCATED MUST BE DESIGNED TO SUPPORT THE WEIGHT OF THE FRYER. SHIPPING STRAPS ARE UNDER TENSION AND CAN SNAP BACK WHEN CUT.

**DANGER** THIS APPLIANCE MUST BE GROUNDED AT THE TERMINAL PROVIDED. FAILURE TO GROUND THE APPLIANCE COULD RESULT IN ELECTROCUTION AND DEATH.

**WARNING** INSTALLATION OF THE UNIT MUST BE DONE BY PERSONNEL QUALIFIED TO WORK WITH ELECTRICITY. IMPROPER INSTALLATION CAN CAUSE INJURY TO PERSONNEL AND/OR DAMAGE TO EQUIPMENT. UNIT MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES.

The data plate is located behind access door over tank drain. The fryer voltage, wattage, serial number, wire size, and clearance specifications are on the data plate. This information should be carefully read and understood before proceeding with the installation.

**NOTICE:** The installation of any components such as a vent hood, grease extractors, fire extinguisher systems, must conform to their applicable National, State and locally recognized installation standards. During the first few hours of operation, you may notice a small amount of smoke coming off the melter, and a faint odor from the smoke. This is normal for a new melter and will disappear after the first few hours of use. ALWAYS KEEP THE AREA NEAR THE APPLIANCE FREE FROM COMBUSTIBLE MATERIALS.

**CAUTION:** KEEP FLOOR IN FRONT OF EQUIPMENT CLEAN AND DRY. IF SPILLS OCCUR, CLEAN IMMEDIATELY, TO AVOID THE DANGER OF SLIPS OR FALLS.



**WARNING:** KEEP WATER AND SOLUTIONS OUT OF CONTROLS. NEVER SPRAY OR HOSE CONTROL CONSOLE, ELECTRICAL CONNECTIONS, ETC.

**CAUTION** MOST CLEANERS ARE HARMFUL TO THE SKIN, EYES, MUCOUS MEMBRANES AND CLOTHING. PRECAUTIONS SHOULD BE TAKEN TO WEAR RUBBER GLOVES, GOGGLES OR FACE SHIELD AND PROTECTIVE CLOTHING. CAREFULLY READ THE WARNING AND FOLLOW THE DIRECTIONS ON THE LABEL OF THE CLEANER TO BE USED.

**NOTICE:** Service on this or any other, STAR appliance must be performed by qualified personnel only. Consult your authorized service agent directory or call the factory at 1-800-807-9054 or visit our website [WWW.STAR-MFG.COM](http://WWW.STAR-MFG.COM) for the service agent nearest you.

**WARNING:** BOTH HIGH AND LOW VOLTAGES ARE PRESENT INSIDE THIS APPLIANCE WHEN THE UNIT IS PLUGGED/WIRED INTO A LIVE RECEPTACLE. BEFORE REPLACING ANY PARTS, DISCONNECT THE UNIT FROM THE ELECTRIC POWER SUPPLY.

**WARNING** DO NOT THROW ICE INTO THE FRYER BASKET WHILE THE UNIT IS HOT. FAILURE TO COMPLY MAY RESULT IN SERIOUS INJURY AND MAY DAMAGE THE EQUIPMENT.

**CAUTION:** USE OF ANY REPLACEMENT PARTS OTHER THAN THOSE SUPPLIED BY STAR OR THEIR AUTHORIZED DISTRIBUTORS CAN CAUSE BODILY INJURY TO THE OPERATOR AND DAMAGE TO THE EQUIPMENT AND WILL VOID ALL WARRANTIES.



## **Electric Fryer**

### **Counter Model**

The fryer dimensions are 19" (48.25cm) High, 32" (81.25cm) Deep, 15" (38cm) wide. The sides, bottom, and rear wall are constructed stainless steel.

### **Floor Models**

The interior dimensions are 36" (91.5cm) High, 38" (96.5cm) Deep, 15" (38cm) wide. The Sides, Bottom, and Rear wall are constructed stainless steel.

### **Controls**

Easy to use manual control knobs.

Indicator lights for "Power", "Heat", and "Over-temperature".

The fryer is supplied with an auxiliary power interrupt terminal, which when connected, automatically shuts off primary power to the fryer.

## Installation

### Receiving the Fryer

Upon receipt, check for freight damage, both visible and concealed. Visible damage should be noted on the freight bill at the time of delivery and signed by the carrier's agent. Concealed loss or damage means loss or damage, which does not become apparent until the merchandise has been unpacked.

If concealed loss or damage is discovered upon unpacking, make a written request for inspection by the carrier's agent within 15 days of delivery. All packing material should be kept for inspection.

Do not return damaged merchandise to Star Manufacturing Company. File your claim with the carrier.

Prior to un-crating, move the fryer as near its intended location as practical. The crating will help protect the unit from the physical damage normally associated with moving it through hallways and doorways.

### Electrical Connection

Check the data plate located inside the drain valve door for fryer electrical rating. Check power source to insure that it is the correct voltage and current rating.

Electrical service may be made through a standard 1¼-inch conduit. A hole is provided through the rear panel.

A knockout is also provided in the bottom rear of the fryer, so that power may be brought in from below the unit. Connect power cord to 3-Pole terminal block, refer to wiring diagram.

Plug the hole on the rear panel when using bottom power entry.

Check the National Electrical Code for fuse or circuit breaker requirements.

A two pole terminal block is provided behind the rear access cover for connection to an external fire control system if required. A jumper is provided across these terminals when the fryer leaves the factory. The jumper on this terminal block is in series with the contactor coil circuits. If connection to a fire control system is required, remove this jumper and supply a relay contact closure to maintain this closed circuit. If the fire control system does not have this type output, a separate relay must be provided to interface the system. Use copper wire only.

## PHASING

### CAUTION:

**DO NOT APPLY POWER TO THESE TERMINAL  
EXTERNAL POWER WILL DAMAGE THE FRYER  
CONTROL CIRCUITRY.**



Connect a ground lead to the green ground lug provided in the rear compartment. These fryers are to be connected to three-phase power as follows: Connect wires 1 and 4 to line 1, wires 2 and 5 to line 2, and wires 3 and 6 to line 3.

**Please refer to wiring diagram for correct single/three-phase connections, if problems occur please contact factory.**

### CAUTION:

**DO NOT CONNECT TO A CIRCUIT OPERATING  
AT MORE THAN 150 VOLTS TO GROUND.**



# General

## General Operation

Fill the fryer with cooking oil. There are two fill marks on the sides of the kettle. The oil level should be maintained between the upper and lower marks.

The power switch on the control box at the front of the fryer energizes the control circuits. When this switch is on, the “power” pilot lamp will be illuminated.

Turn the temperature selector dial on the thermostat to the desired temperature setting. This control is located above the elements at the rear of the kettle. The “heat” pilot lamp will illuminate indicating power is applied to the heating elements.

The lamp marked “overtemp” will illuminate if the oil reaches an over temperature condition. The over temperature thermostat shuts off the fryer before the oil reaches a dangerously high temperature.

The elements may be raised and locked in the up position. The latch is located on the rear top surface of the fryer and may be activated by lifting the handle at either side of the fryer.

A drain valve is provided at the left front of the fryer. Always turn the fryer power off before lifting the elements or draining the oil from the fryer.

On those models with automatic bracket lifts, the cooking times may be set from 1 to 16 minutes with the timer control dials.

Pressing down on the spring return elevator switches will lower the basket lifts. At the end of the time set on the dial the lift will return to the up position. The time cycle may be canceled at any time by pressing the elevator switch to the up position.

## Controls

**Power Switch** - A toggle switch used to turn the unit on and off.

**Pilot Lights** - Lights that are located in the rear control panel area.

**Power:** Lights up when the power switch is in the “ON” position.

**Heat:** Lights up when the element contactors engage.

**Over-temp:** Lights up when the over-temperature thermostat trips.

**Test Switch** Optional on all models, it gives the user the ability to test the over-temperature thermostat by overriding the thermostat and allowing the oil to exceed normal operating temperatures.

# Sequence of Operation

## Electric Fryer

### Power switch to "ON" position

208/240 VAC to "POWER" pilot lamp.

208/240 VAC to Thermostat through Over-Temperature thermostat.

### Thermostat Set

208/240 VAC to "HEAT" pilot lamp.

208/240 VAC to Contactors.

### Contactors Energize

208/240 VAC to Elements.

### Elements Energize

Fryer heats up.

## **Maintenance**

Maintenance of the C-28 series fryers is simple and straightforward. A bulb thermostat located near the right heating element as the fryer is viewed from the front provides temperature control. This thermostat controls the No. 1 contactor. The over temperature thermostat located next to the left heating element provides protection in case of malfunction of the temperature control. It will open both contactors removing all power from the heating elements.

A circuit diagram of the fryer is located on the rear cover of the control box. This box may be removed by removing the four sheet metal screws located beneath the box on the left and right sides of the fryer lower front.

In the event the fryer is built into a location, all maintenance may be done from the front by removing the oil pot to gain access to the contactors. To remove the pot, the control box must be removed as above. Also, remove the small section of sheet metal baffle held on by two sheet metal screws, located just above the drain valve. The front of the pot may now be lifted up and moved forward until the rear of the pot will rotate up and out. The baffles behind the pot may be removed by taking out four screws. This exposes the contactors.

The thermostats are located in the head assembly. The bottom cover of the head is removable for access to the elements, thermostats and pilot lamps.

In 480-volt units, a transformer is provided in the rear of the fryer to step 480 volts to 240 volts for operation of the control circuit.



## Troubleshooting

### Will Not Heat

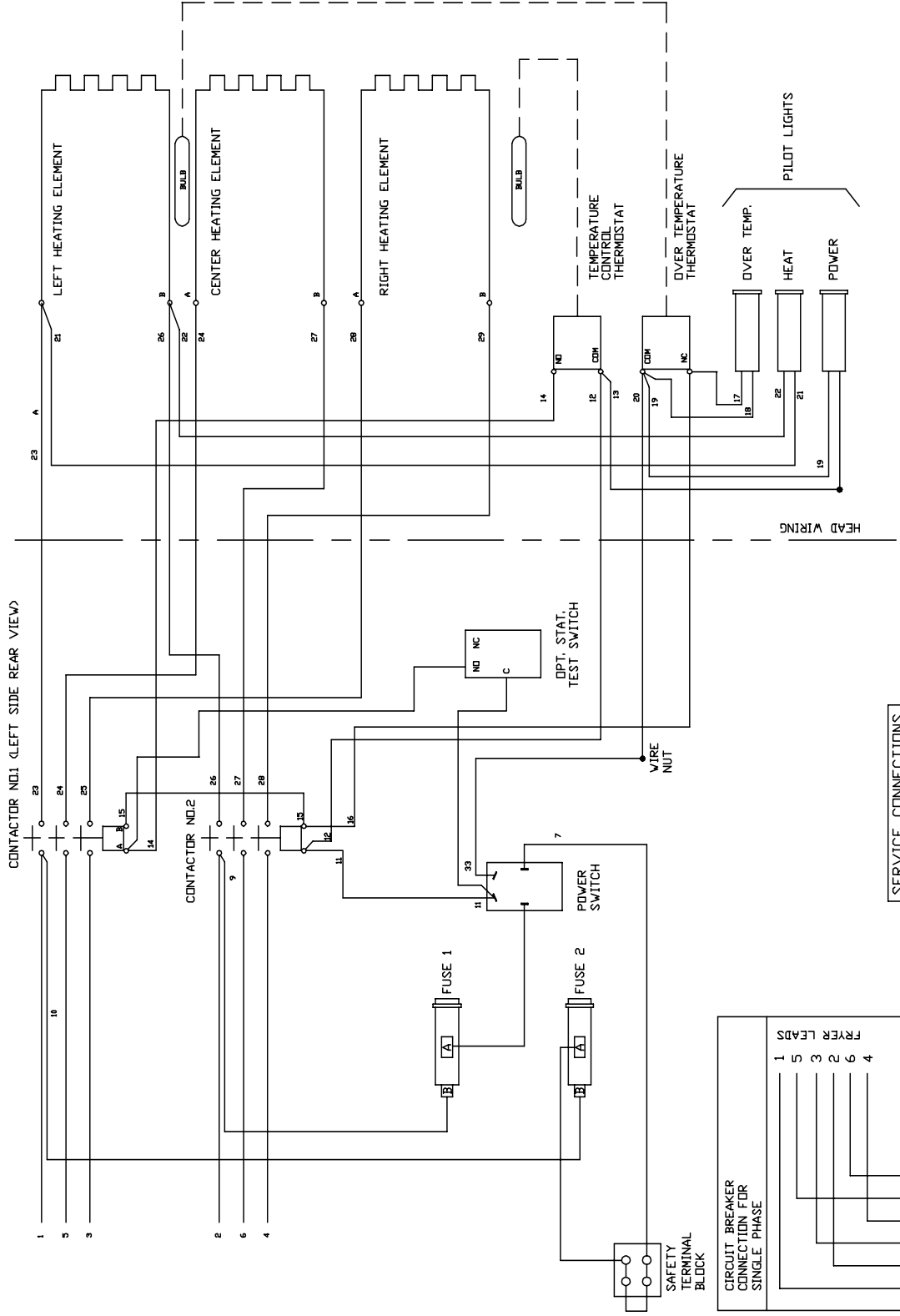
PROBABLE CAUSE	CORRECTIVE ACTION
<b>Incorrect voltage</b>	Confirm that correct voltage is coming to unit. Confirm that unit is phased correctly.
<b>Defective Fuses</b>	Confirm that fuses have 208/240 VAC to it. Check fuses for proper operation.
<b>Defective Power Switch</b>	Confirm that switch has 208/240 VAC to it. Check switch for proper operation.
<b>Defective Over temperature thermostat</b>	Confirm that thermostat has 208/240 VAC to it. Confirm that over temperature thermostat is closed and working properly.
<b>Defective Thermostat</b>	Confirm that thermostat has 208/240 VAC to it. Check that thermostat is operating properly.
<b>Defective Contactor</b>	Confirm that contactor has 208/240 VAC to it. Check contactor for normal operation. (554 $\Omega$ )
<b>Defective Element</b>	Confirm that elements are wired correctly. Confirm that element has 208/240 VAC to it. Confirm that there are no broken wires to the elements. Check Element for continuity.

### Overheating

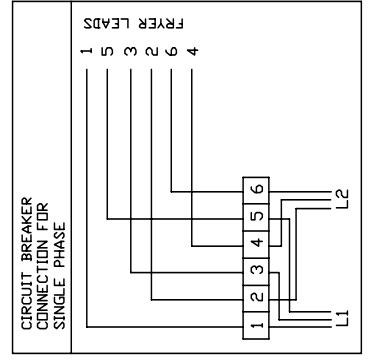
PROBABLE CAUSE	CORRECTIVE ACTION
<b>Bulb out of placement</b>	Confirm that bulb is centered in element. Confirm that bulb is secured in clips.
<b>Oil level to low</b>	Confirm that oil levels are at proper level.
<b>Sticking contactor</b>	Confirm that points are not pitted. Replace if necessary.
<b>Food stuck between element and bulb.</b>	Remove food from element.

# WIRE DIAGRAMS

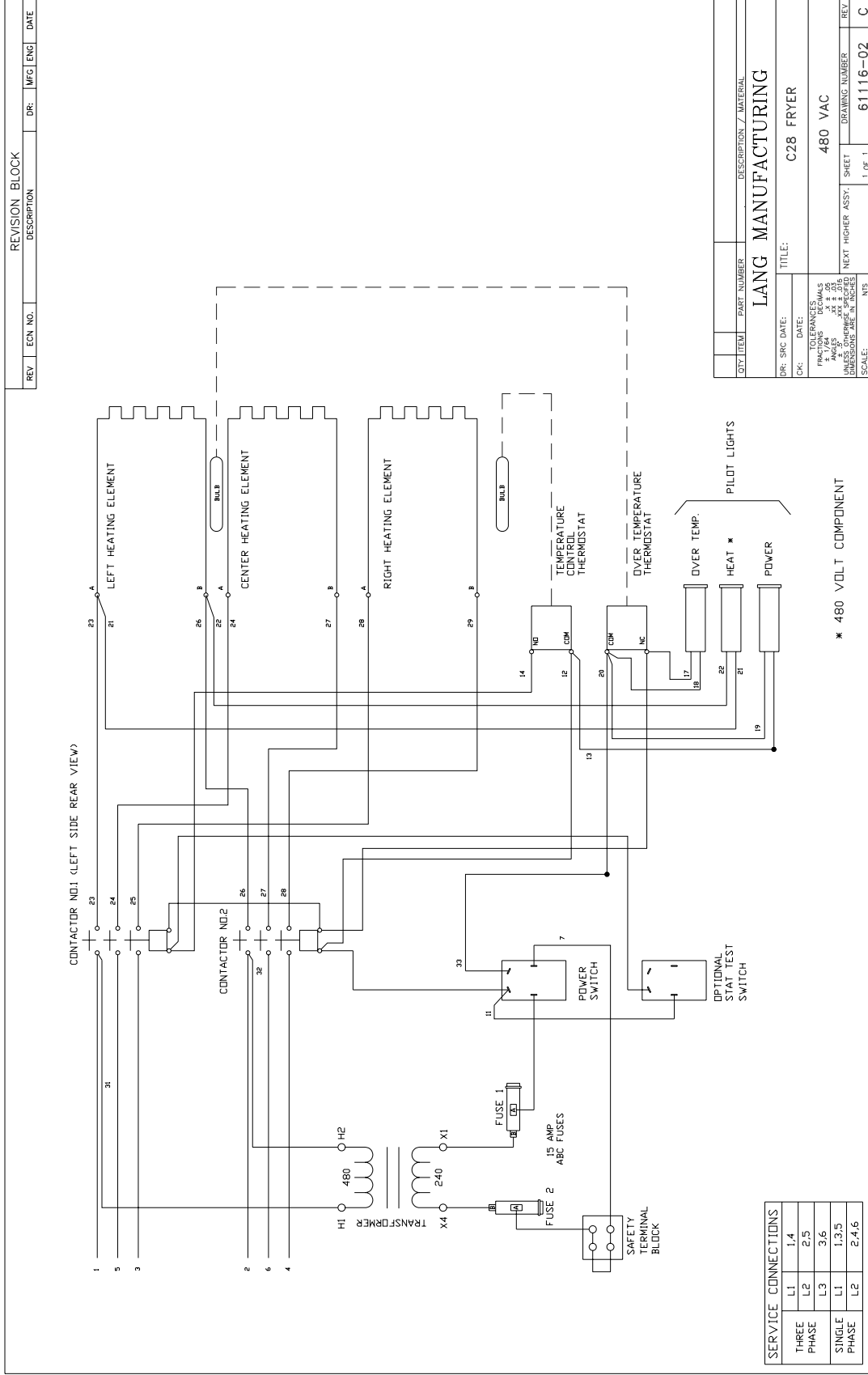
## 208/240 VOLT



SERVICE CONNECTIONS	
THREE PHASE	L1 1,4 L2 2,5 L3 3,6
SINGLE PHASE	L1 1,3,5 L2 2,4,6



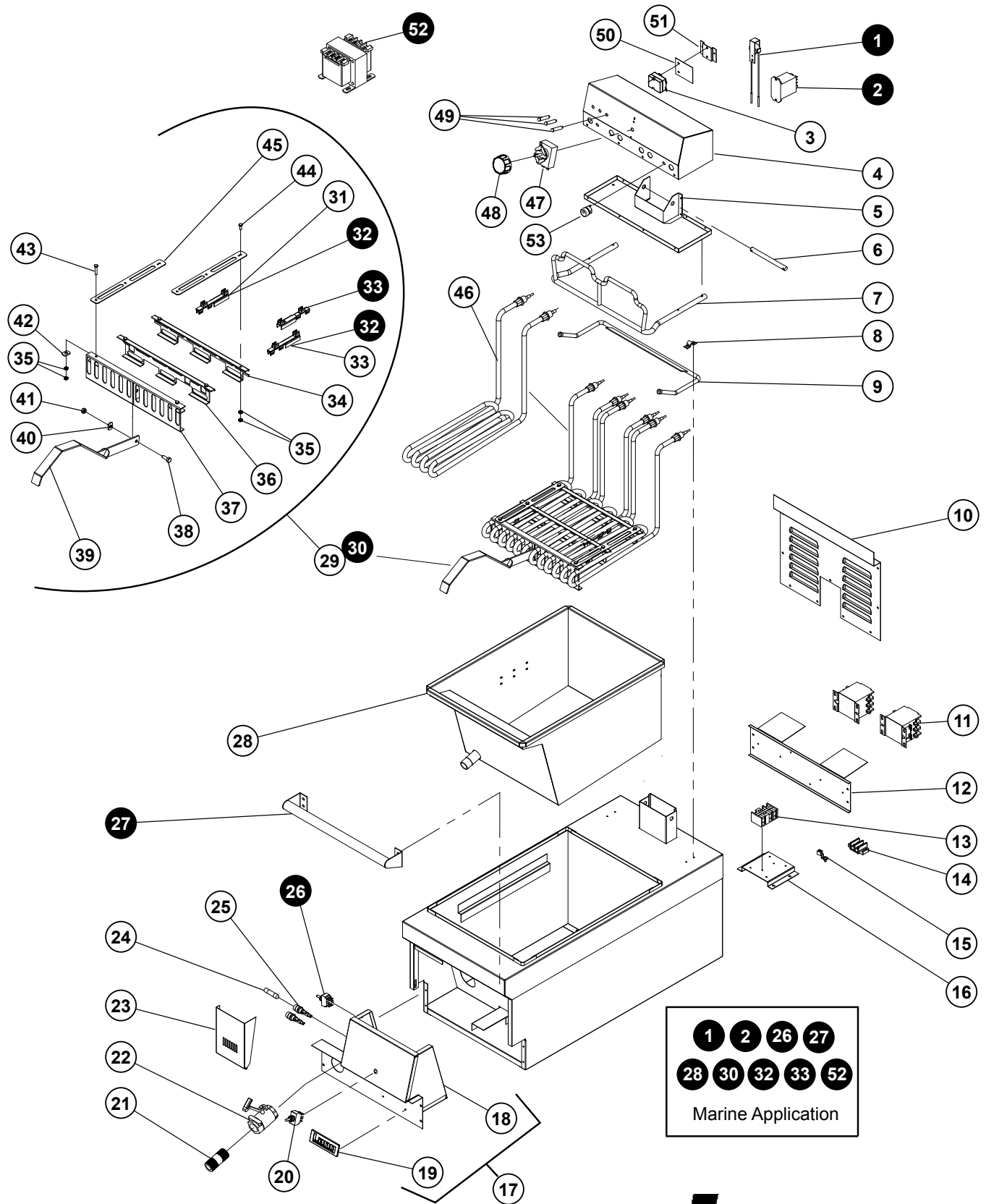
# WIRE DIAGRAMS 480



REV	ECN NO.	DR	MFG	ENG	DATE

QTY	ITEM	PART NUMBER	DESCRIPTION / MATERIAL
			LANG MANUFACTURING
			TITLE: C28 FRYER
			DR: SRC DATE:
			DATE:
			TOLERANCES: DECIMALS
			FRACTIONS: 1/8 1/4 3/8 1/2 3/4
			ANGLES: 45 60 90 120
			UNLESS OTHERWISE SPECIFIED
			DIMENSIONS ARE IN INCHES
			SCALE: NTS
			NEXT HIGHER ASSY: L OF 1
			SHEET DRAWING NUMBER: 61116-02
			REV: C

SERVICE CONNECTIONS	
L1	1,4
L2	2,5
L3	3,6
L1	1,3,5
L2	2,4,6



**Model Commercial & Marine**  
 130F Counter Model Fryer  
 C28 Counter Model Fryer

**Lang**<sup>®</sup>

SK2294

Rev. B 7/15/14

# PARTS LIST

October 21, 2014, Rev C

## Model No: 130F & C28 COMMERCIAL & MARINE ELECTRIC FRYER

130F & FM Commercial & Marine Fryer				
Fig No.	Part No	Qty	Description	Application
1	09-C28-251	1	C28 SOLAS BUZZER W/WIRES	130F 208VM, 240VM, 440VM, 480VM
2	2E-30600-10	1	RELAY 2PDT 240V	130F 208VM, 240VM, 440VM, 480VM
3	2T-30401-13	1	STAT FXD TEMP 240VAC 450°F	130F 208V, 240V, 480V 130FM MARINE
	2T-30401-21		STAT FXD TMP NEGBIAS 450°F	
	2T-30401-33		STAT FXD TMP NEGBIAS 490°F	
4	09-C28-130	1	HEAD WRAP	130F 208VM, 240VM, 440VM, 480VM
	09-C28-130-1		HEAD WRAP FOR TEST SWITCH	130F 208VM, 240VM, 440VM, 480VM
	09-C28-135	2	HEAD END	ALL MODELS
5	09-C28-136	1	HEAD PIVOT SUPPORT	ALL MODELS
	09-C28-138		HEAD BOTTOM NO LIFT	ALL MODELS
6	09-C28-137	1	HEAD PIVOT	ALL MODELS
7	2B-51100-02	1	BASKET HANGER ASSY (C28)	ALL MODELS
8	09-C28-134-1	2	CLAMP	ALL MODELS
9	09-C28-133	1	ELEMENT STOP A	ALL MODELS
10	09-C28-117	1	REAR COVER	ALL MODELS
11	2E-30700-03	2	CONTC 3POLE 40A208-240VAC	ALL MODELS
12	09-C28-111-2	1	CONTACTOR MOUNT SPOTWELD	ALL MODELS
13	2E-30500-09	1	TRM BLOCK 3 POLE SMALL 95	ALL MODELS
14	2E-30500-01	AR	TRM STRP 2 POLE 30A 300V	ALL MODELS
15	Y9-31200-02-1	1	GROUNDING LUG/+LABEL	ALL MODELS
16	09-C28-315	1	TRANSFORMER MOUNT	09-60102-327
17	09-60102-322	1	CONTROL BOX ASSY, w/labels	ALL MODELS
18	09-C28-186	1	CONTROL BOX ASSY	ALL MODELS
19	K9-60301-43-1	1	DIE CAST LOG + TINNEMAN	ALL MODELS
20	2E-30303-06	1	SWT TOG ON-ON DPDT BLK	ALL MODELS
21	2K-70302-15	1	PIPE NIPPLE 1X 2 1/2 BLK	ALL MODELS
22	2V-70400-01	1	VALVE 1BALL NIC PLTD (NO	ALL MODELS
23	09-C28-109-01	1	VALVE ACCESS PNL	ALL MODELS
24	2E-30900-15	2	FUSE 3 AMP AGC	130F 208V, 240V, 480V
25	2E-30901-02	2	FUS HLDR FOR 15AMP FUSE	130F 208V, 240V, 480V
26	2E-30303-13	1	SWT TOG ON-OFF-ON MOM MTL	ALL MODELS
27	09-50300-49	1	GRAB BAR ASSY 15	130F 208VM, 240VM, 440VM, 480VM
28	09-C28-118	1	BUCKET WELDMENT	ALL MODELS
29	09-C28-182	1	ELEMENT ASSY. COMMERCIAL	130F 208V, 240V, 480V
	09-C28-181		ELEMENT ASSY. MARINE (NO-ELEM)	130F 208VM, 240VM, 440VM, 480VM
30	PS-60101-W10	1	ELEMENTS & BRKT ASSY - MARINE	208VM
	PS-60101-W11			480VM
	PS-60101-W12			440VM
31	09-C28-174	1	EGO STAT HOLDER WELDMENT	130F 208V, 240V, 480V
32	09-C28-184	2	OVER TEMP BULB BRKT	130F 208VM, 240VM, 440VM, 480VM
33	09-C28-180	1	THERMOSTAT BULB BRKT	ALL MODELS

**IMPORTANT: WHEN ORDERING, SPECIFY VOLTAGE OR TYPE GAS DESIRED  
INCLUDE MODEL AND SERIAL NUMBER**

PAGE 1  
OF 2

Some items are included for illustrative purposes only and in certain instances may not be available.



# PARTS LIST

October 21, 2014, Rev C

## Model No: 130F & C28 COMMERCIAL & MARINE ELECTRIC FRYER

130F & FM Commercial & Marine Fryer				
Fig No.	Part No	Qty	Description	Application
34	09-C28-154	1	ELEMENT HOLDER BACK	ALL MODELS
35	2C-20301-45	6	NUT HEX 10-32 18-8 TOP	ALL MODELS
36	09-C28-153	1	ELEMENT HOLDER MIDDLE	ALL MODELS
37	09-C28-152	1	ELEMENT HOLDER FRONT	ALL MODELS
38	2C-20111-02	1	SCRW HXHD CAP 1/4-20X3/4	ALL MODELS
39	09-C28-158	1	HANDLE WELDMENT	ALL MODELS
40	2C-20305-05	1	WELD NUT S/S 1/4-20 2-EAR	ALL MODELS
41	2C-20303-01	1	NUT HX SS 1/4-20	ALL MODELS
42	09-C28-155	2	ELEMENT CLAMP	ALL MODELS
43	2C-20111-13	1	SCRW HXHD CAP 10-32X1 SS	ALL MODELS
44	09-C28-150	2	ELEMENT BRACKET SUPPORT	ALL MODELS
45	2C-20111-09	AR	SCRW HXHD CAP 10-32X1/2	ALL MODELS
46	2N-11110-39	3	ELMNT FRYER 480V 4KW C28	130F 480V AND 480VM
	2N-11110-43		ELMNT FRYER 208V 4KW C28	130F 208V AND 208VM
	2N-11110-44		ELMNT FRYER 240V 4KW C28	130F 240V AND 240VM
	2N-11110-45		ELMNT FRYER 380V 4KW C28	130F-380VM
	2N-11110-47		ELMNT FRYER 440V 4KW C28	130F 440VM
47	2T-30402-12	1	STAT ADJ 400°F 24 C/T	ALL MODELS
48	09-70701-06-2	1	KNOB ASSY TEMP CONTROLPNL	RED KNOB ASSY
	09-70701-06		KNOB ASSY TEMP CONTROLPNL	BLACK KNOB ASSY
49	2J-31601-15	1	PILOT LT 250V 6LEAD AMBER	130F 208VM, 240VM, 440VM, 480VM
	2J-31601-16		PILOT LT 250V 6LEAD GREEN	130F 208VM, 240VM, 440VM, 480VM
	2J-31601-20		PILOT LT 250V 6LEAD RED	130F 208VM, 240VM, 440VM, 480VM
	Y9-31601-01-1	3	PILOT LT 250V W/TIN CLIP	130F 208V, 240V, 480V
50	09-C28-131-2	2	OVERTEMP STAT INSULATOR	ALL MODELS
51	09-C28-131-1	2	O.T. STAT SPACER	ALL MODELS
52	2E-31400-04	1	XFRMR 480/240VAC 100VA	130F-440VM, 480VM
	2E-31400-17		XFORMR 380/240VAC 100VA	130F-380VM
53	2K-70801-05	3	SNAP BUSHING, CAP TUBE	
NI	2P-70900-01	1	CAP PLUG 1-5/16IDX1.89	

**IMPORTANT: WHEN ORDERING, SPECIFY VOLTAGE OR TYPE GAS DESIRED  
INCLUDE MODEL AND SERIAL NUMBER**

PAGE 2  
OF 2

Some items are included for illustrative purposes only and in certain instances may not be available.



**Lang**<sup>®</sup>

# START-UP Technical Data

## Element Resistance

Part Number	Voltage	Amps	Resistance
2N-11110-43	208 Volts	19	10.6 Ω
OB-11110-41	240 Volts	7.6	29.6 Ω
2N-11110-39	480 Volts	8	56.6 Ω
2N-11110-46	415 Volts	9.5	40.1 Ω
2N11110-45	380 Volts	10.5	35.6 Ω

## Contactor Resistance

Part #	Voltage	Coil
OB-30700-05	208/240 Volts	554 Ω

## Transformer Resistance

Part #	Primary	Resistance	Secondary	Resistance
2E-31400-04	480 Volts	66 Ω	240 Volts	16 Ω

## Fryer Line Amperage and Wattage

All Series 28 Electric Fryers 12.0 kW														
Three Phase Loading			Nominal Amps Per Line										Single Phase	
			Three Phase											
K.W. Per Phase			208 Volts			240 Volts			480 Volts			208v	240v	
L1-L2	L2-L3	L3-L1	L1	L2	L3	L1	L2	L3	L1	L2	L3	See Factory	See Factory	
4.0	4.0	4.0	33.3	33.3	33.3	28.9	28.9	28.9	14.4	14.4	14.4			

**STAR MANUFACTURING**

10 Sunnen Drive, St. Louis, MO 63143 U.S.A.

(800) 807-9054 (314) 781-2777

Parts & Service (800) 807-9054

[www.star-mfg.com](http://www.star-mfg.com)