HOBART

SERVICE

VK & TR GAS FRYERS

Customer Maintenance Manual

SPECIFICATION SHEETS

INSTALLATION / OPERATION MANUAL

SERVICE MANUAL

HOBART SERVICE PARTS STORE

CATALOG OF REPLACEMENT PARTS

F48053

POWERFRY5™ 1VK45 SERIES
FREE STANDING GAS FRYER

Model 1VK45C

1VK45A: Solid state analog knob control behind the door. Accurate temperature control 200° to 390°F. User selectable fat melt modes. Electronic ignition.

1VK45D: Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes. Two count-down timers. Auto boil-out mode.

1VK45C: Programmable computer controls with digital character display. 10 menu timers display product name and cook times. Offline programming of menu items uploaded through USB interface, software included. Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes.

SPECIFICATIONS

45 - 50 lbs. capacity free standing gas fryer, Vulcan Model No. (1VK45A) (1VK45D) (1VK45C). 70,000 BTU/hr. input. Stainless steel cabinet. Set of four 6" adjustable casters (2 locking). Stainless steel fry tank with FivePass™ heat transfer system yielding 66% cooking and 78% thermal efficiency and "V" shaped cold zone. SoftStart™ ignition system using 35,000 BTU/hr. to extend oil life during start up. Idle rate of 4,251 BTU/hr. to maintain cooking temperature. 1¼" full port ball type drain valve. Twin fry baskets with plastic coated handles. Solid state analog knob control, digital, or programmable computer control systems all standard with electronic matchless ignition. Tank brush and clean-out rod included.

Overall dimensions:
15½"w x 30⅛"d x 47⅛"h. Working height 36¼".

CSA design certified. NSF listed.

SPECIFY TYPE OF GAS WHEN ORDERING

- ☐ Natural Gas.
- ☐ Propane Gas.

SPECIFY ALTITUDE

The 1VK45 Series fryer does not require any special adjustments for varying altitudes ranging from 0 - 10,000 feet for either Natural or Propane gas.

STANDARD FEATURES

- 70,000 BTU/hr. input.
- Maintains idle temperature setting with only 4,251 BTU/hr. to save energy.
- Energy saving SoftStart™ ignition system extends oil life while requiring lower BTU's.
- Energy efficient FivePass™ heat transfer system yielding 66% cooking and 78% thermal efficiency.
- Stainless steel fry tank, 45 - 50 lb. capacity. Includes 10 year limited tank warranty.
- 1¼" full port ball type drain valve.
- Stainless steel cabinet.
- Set of four 6" adjustable (2 locking) casters.
- Twin fry baskets with plastic coated handles.
- Hi-limit shut-off.
- Electronic matchless ignition.
- Tank brush and clean-out rod.
- One year limited parts and labor warranty.

ACCESSORIES

- ☐ FRYMATE-VX15 add-on frymate.
- ☐ Stainless steel tank cover – doubles as a work surface top.
- ☐ Connecting Kit(s) – Connects two fryers together (brackets, grease strip and hardware included).
- ☐ Single large basket – 13"w x 13¼"d x 5½"h.
- ☐ Set of twin baskets – 6½"w x 13¼"d x 6"h.
- ☐ ¾" Flexible gas hose with quick disconnect.
- ☐ 10" high stainless steel removable splash guard.

OPTIONS

- ☐ Second year extended limited parts and labor warranty

VULCAN
a division of ITW Food Equipment Group LLC
P.O. Box 696 ■ Louisville, KY 40201 ■ Toll-free: 1-800-814-2028 ■ Local: 502-778-2791 ■ Quote & Order Fax: 1-800-444-0602

POWERFRY5™ 1VK45 SERIES
FREE STANDING GAS FRYER

INSTALLATION INSTRUCTIONS

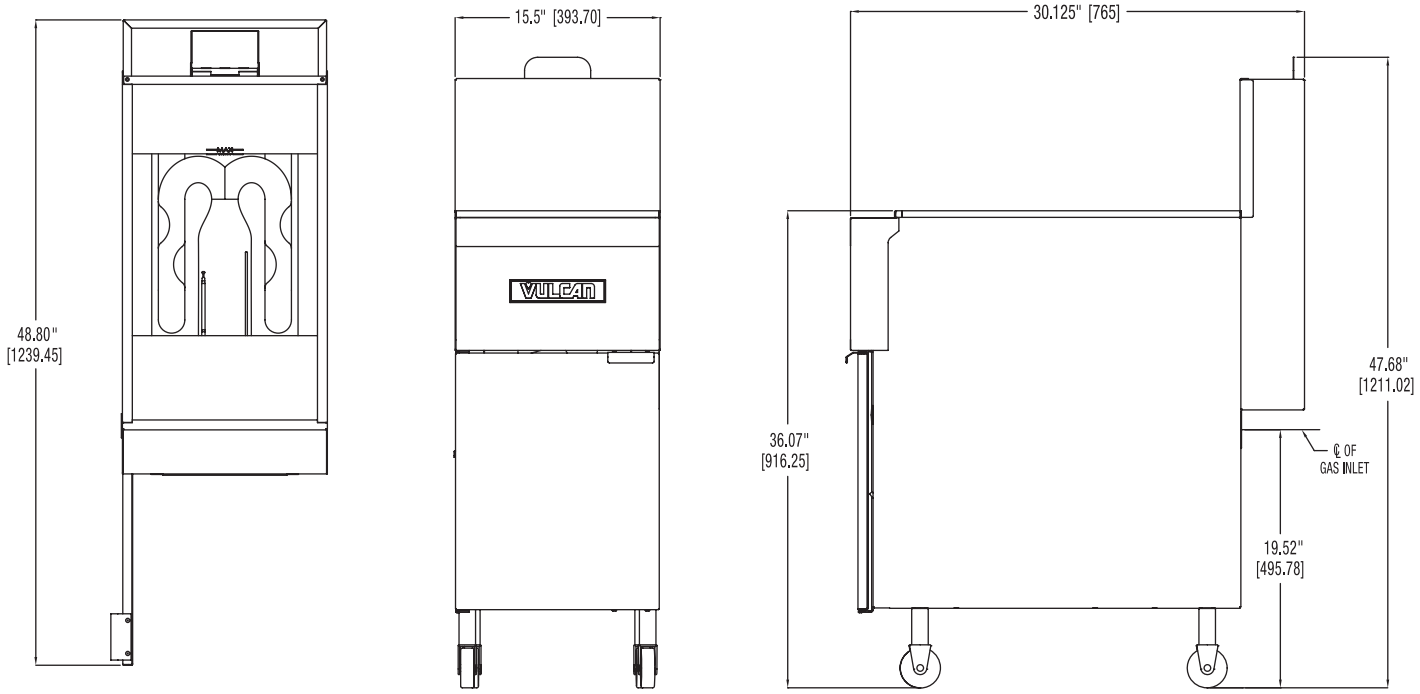
1. A gas valve with internal pressure regulator is provided with this unit.
   - The supply pressure should be 7-9" W.C. for natural gas and 11-12" W.C. for propane gas
   - If incoming pressure exceeds 14" W.C. (½ psig -3.45 kPa), a step-down pressure regulator must be installed
2. An adequate ventilation system is required for Commercial Cooking Equipment. Information may be obtained by writing to the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269. When writing refer to NFPA No. 96.
3. All models require a 6" (152 mm) clearance at both sides and rear adjacent to combustible construction.All models require a 16" (407 mm) minimum clearance to adjacent open top burner units.
4. This appliance is manufactured for commercial installation only and is not intended for home use.

SERVICE CONNECTIONS:

(P1) ¾" (19 mm) OD rear gas connection.

(E1) NEMA 5-15P 120 Volt cord & plug supplied with fryers.

NOTE: In line with its policy to continually improve its product, Vulcan reserves the right to change materials and specifications without notice.



MODEL	Width	Depth	Overall Height	Working Height	Tank Size	BTU/hr.	Fry Comp. Capacity	Approx. Shipping Weight
1VK45A 1VK45D 1VK45C	15½"	30⅛"	47⅛"	36¼"	14" x 14"	70,000	45 - 50 lbs.	196 lbs.

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FRYERS

VK KLEENSCREEN *PLUS*® FILTRATION SYSTEM
BUILT-IN FILTRATION SYSTEM FOR 1VKF FRYERS

Model 1VK45CF

SPECIFICATIONS

Built-in filter system, Vulcan Model No. 1VK (lb. capacity - 45, 65 or 85) (control type A, D, or C) F (add suffix-F to fryer battery model No., i.e. 1VK45DF). Filter system accommodates one 45 lbs., 65 lbs. or 85 lbs fryer. Filter vessel constructed of 18 gauge stainless steel. ⅓ H.P. motor/pump circulates hot frying compound at the rate of 8 gallons per minute, activated by a one touch push button switch. System provided standard with stainless steel mesh filter screen. Optional KleenScreen *PLUS*® envelopes filter out particulate down to .5 microns. Standard equipment comes on casters, tank brush, and clean-out rod. Hands free oil return line connection. Drain valve interlock switch turns fryer's burners off when drain valve is opened. Requires 120 volt, 50 / 60 Hz, 1 phase power supply.

CSA design certified. NSF listed.

SPECIFY TYPE OF GAS WHEN ORDERING

- ☐ Natural Gas
- ☐ Propane Gas

SPECIFY ALTITUDE

The VK Series fryer does not require any special adjustments for varying altitudes ranging from 0 - 10,000 feet for either Natural or Propane gas.

STANDARD FEATURES

- ■ Filter system accommodates 1VK45F, 1VK65F and 1VK85F.
- ■ Choose from Solid State Knob Control (A) Solid State Digital (D), or Computer (C) Controls.
- ■ Drain valve interlock switch turns off burners when drain valve is opened.
- ■ 6" Casters adjustable - 2 locking, 2 non-locking.
- ■ 18 gauge, stainless steel filter pan. 65 lbs. frying compound capacity on 1VK45F, 100 lbs. capacity on 1VK65F and 1VK85F.
- ■ Stainless steel mesh filter screen filters from 2 sides; filter area: 1VK45F=220 sq .inches; 1VK65F and 1VK85F=462 sq. inches.
- ■ ⅓ H.P. motor and pump circulates frying compound at a rate of 8.0 gallons per minute.
- ■ 4' high temperature discard hose.
- ■ One touch push button switch to engage pump and motor.
- ■ Tank brush and clean-out rod.
- ■ NEMA 5-15 for 120 volt, 50/60 Hz, 1 phase.
- ■ One year limited parts and labor warranty.
- ■ 10 year fry tank limited warranty.

ACCESSORIES (Packaged & Sold Separately)

- ☐ Stainless steel tank cover – doubles as a work surface top.
- ☐ Micro-Filtration Fabric Envelopes – 6 filters/per package.
- ☐ "Add-On" Frymate – VX15, VX21S (Field Installed).
- ☐ 1VK45F – Twin Basket Lifts (Factory Installed).
- ☐ 1VK65F and 1VK85F – Single and Twin Basket Lifts (Factory Installed).
- ☐ Prison Security Package (Factory Installed).
- ☐ Flexible gas hose with quick disconnect.
- ☐ 10" high stainless steel splash guard.

OPTIONS

- ☐ Second year extended limited parts and labor warranty.

REFERENCE MATERIALS

- ■ See 1VK45 Spec Sheet F32999.
- ■ See 1VK65 Spec Sheet F45366.
- ■ See 1VK85 Spec Sheet F45367.

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VK KLEENSCREEN *PLUS*® FILTRATION SYSTEM
BUILT-IN FILTRATION SYSTEM FOR 1VKF FRYERS

INSTALLATION INSTRUCTIONS

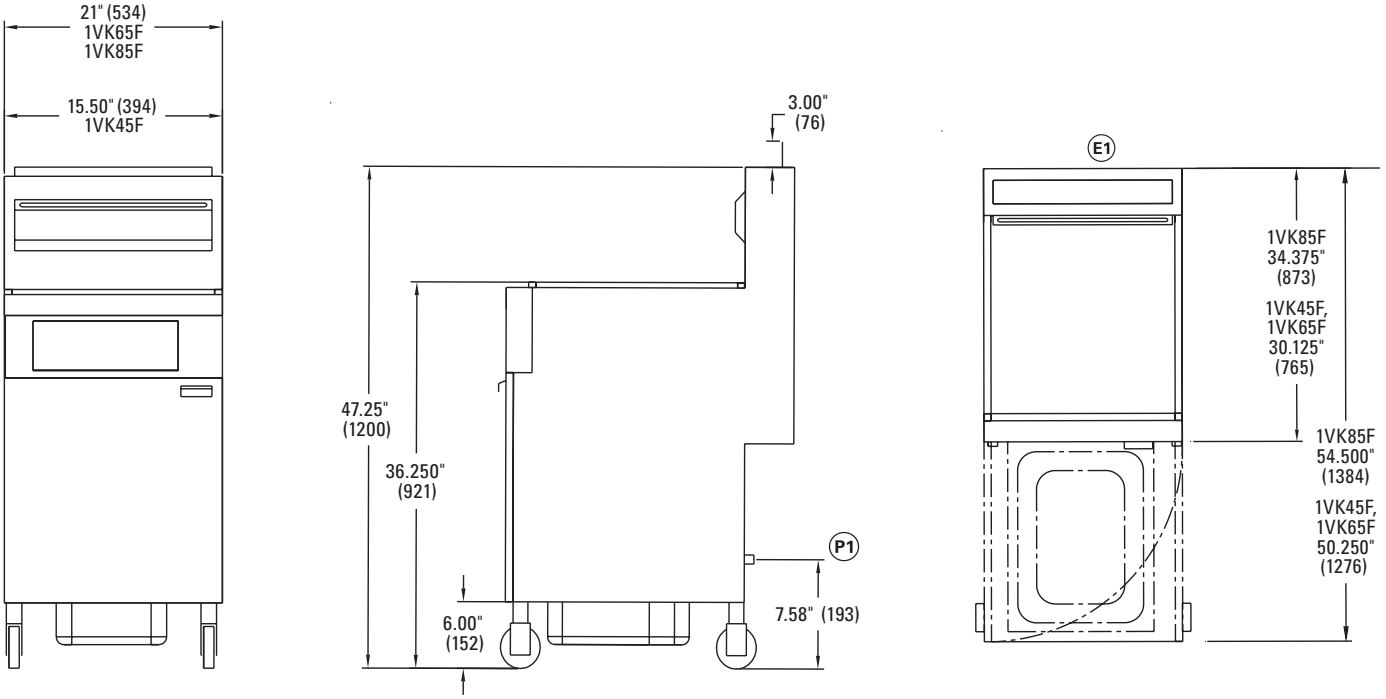
1. A combination valve with pressure regulator is provided with this unit. Natural Gas 4.0" (102 mm) W.C. Propane Gas 10.0" (254 mm) W.C.
2. An adequate ventilation system is required for Commercial Cooking Equipment. Information may be obtained by writing to the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269. When writing refer to NFPA No. 96.
3. All models require a 6" (152 mm) clearance at both sides and rear adjacent to combustible construction.
4. All models require a 16" (407 mm) minimum clearance to adjacent open top burner units.
5. This appliance is manufactured for commercial installation only and is not intended for home use.

SERVICE CONNECTIONS:

(P1) ¾" (19 mm) O.D. NPT common rear gas connection.

(E1) NEMA 5-15P, 120 volt, 60 Hz, 1 phase electrical connection (filter pump).

NOTE: In line with its policy to continually improve its product, Vulcan reserves the right to change materials and specifications without notice.



Model	Filter Pan Capacity	Filter Screen Fabric Envelope	Motor	Pump	Electric / Amps	Electric / Power
1VK45F	65 lbs.	220 sq. in. 225 sq. in.	⅓ H.P. 1750 RPM	8 Gal/Min	115V 7.0A	115V 50/60Hz 1Ph
1VK65F	100 lbs.	462 sq. in. 515 sq. in.	⅓ H.P. 1750 RPM	8 Gal/Min	115V 7.0A	115V 50/60Hz 1Ph
1VK85F	100 lbs.	462 sq. in. 515 sq. in.	⅓ H.P. 1750 RPM	8 Gal/Min	115V 7.0A	115V 50/60Hz 1Ph

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Item # _____ C.S.I. Section 11420

FRYERS

POWERFRY5™ VK45 SERIES
GAS FRYERS

Model 1VK45C

VK45A: Solid state analog knob control behind the door. Accurate temperature control 200° to 390°F. User selectable fat melt modes. Electronic ignition.

VK45D: Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes. Two count-down timers. Auto boil-out mode.

VK45C: Programmable computer controls with digital character display. 10 menu timers display product name and cook times. Offline programming of menu items uploaded through USB interface, software included. Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes.

SPECIFICATIONS

45 - 50 lbs. capacity free standing gas fryer, Vulcan Model No. (1VK45A) (1VK45D) (1VK45C). 70,000 BTU/hr. input. Stainless steel cabinet. Set of four 6" adjustable casters (2 locking). Stainless steel fry tank with FivePass™ heat transfer system. ENERGY STAR® certified. SoftStart™ ignition system using 35,000 BTU/hr. to extend oil life during start up. Idle rate of 4,251 BTU/hr. to maintain cooking temperature. 1¼" full port ball type drain valve. Twin fry baskets with plastic coated handles. Solid state analog knob control, digital, or programmable computer control systems all standard with electronic matchless ignition. Tank brush and clean-out rod included.

Overall dimensions:
15½"w x 30⅛"d x 47⅛"h. Working height 36¼".

CSA design certified. NSF listed.

SPECIFY TYPE OF GAS WHEN ORDERING

- ☐ Natural Gas.
- ☐ Propane Gas.

SPECIFY ALTITUDE

The 1VK45 Series fryer does not require any special adjustments for varying altitudes ranging from 0 - 10,000 feet for either Natural or Propane gas.

STANDARD FEATURES

- 70,000 BTU/hr. input.
- Maintains idle temperature setting with only 4,251 BTU/hr. to save energy.
- Energy saving SoftStart™ ignition system extends oil life while requiring lower BTU's.
- Energy efficient FivePass™ heat transfer system yielding 66% cooking and 78% thermal efficiency. ENERGY STAR® certified.
- Stainless steel fry tank, 45 - 50 lb. capacity. Includes 10 year limited tank warranty.
- 1¼" full port ball type drain valve.
- Stainless steel cabinet.
- Set of four 6" adjustable (2 locking) casters.
- Twin fry baskets with plastic coated handles.
- Hi-limit shut-off.
- Electronic matchless ignition.
- Tank brush and clean-out rod.
- One year limited parts and labor warranty.

ACCESSORIES

- ☐ FRYMATE-VX15 add-on frymate.
- ☐ Stainless steel tank cover – doubles as a work surface top.
- ☐ Connecting Kit(s) – Connects two fryers together (brackets, grease strip and hardware included).
- ☐ Single large basket – 13"w x 13¼"d x 5½"h.
- ☐ Set of twin baskets – 6½"w x 13¼"d x 6"h.
- ☐ ¾" Flexible gas hose with quick disconnect.
- ☐ 10" high stainless steel removable splash guard.

OPTIONS

- ☐ Second year extended limited parts and labor warranty

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VK KLEENSCREEN *PLUS*® FILTRATION SYSTEM
BUILT-IN FILTER SYSTEM FOR 2VKF, 3VKF & 4VKF FRYERS

Model 2VK45CF

SPECIFICATIONS

Built-in filter system, Vulcan Model No. (# of fryers 2, 3, 4) VK (45, 65, 85) (control type A, D, or C) F (add suffix-F to fryer battery model No., i.e. 2VK45DF). Filter system accommodates maximum of four cabinets. Filter vessel constructed of drawn (seamless) 18 gauge series stainless steel. The 2VK45F filter pan weighs only 12.2 lbs. and the filter pan for the 2VK65 & VK85F weighs only 20.5 lbs. ⅓ H.P. motor/pump circulates hot frying compound at the rate of 8 gallons per minute, activated by a one touch push button switch. System provided standard with stainless steel mesh filter screen. Optional KleenScreen *PLUS*® envelopes filter out particulate down to .5 microns. Standard equipment comes on casters, has a tank brush, and clean-out rod. Hands free oil return line connection. Drain valve interlock switch turns fryer's burners off when drain valve is opened. Requires 120 volt, 60 Hz, 1 phase power supply.

CSA design certified. NSF listed.

SPECIFY TYPE OF GAS WHEN ORDERING

- ☐ Natural Gas
- ☐ Propane Gas

SPECIFY ALTITUDE

The VK Series fryer does not require any special adjustments for varying altitudes ranging from 0 - 10,000 feet for either Natural or Propane gas.

STANDARD FEATURES

- Filter system accommodates maximum of four fryer cabinets.
- Drain valve interlock switch – turns off gas burners automatically when draining oil.
- 6" Casters adjustable – 2 locking, 2 non-locking.
- Drawn (seamless) 18 gauge stainless steel filter pan. 70 lbs. frying compound capacity on VK45F, 110 lbs. capacity on VK65 & VK85F.
- Stainless steel mesh filter screen filters from 2 sides; filter area = 270 square inches.
- ⅓ H.P. motor and pump circulates frying compound at a rate of 8.0 gallons per minute.
- One touch push button switch to engage pump and motor.
- Tank brush and clean-out rod.
- 120 volt, 60 Hz, 1 phase (NEMA 5-15P).
- One year limited parts and labor warranty.
- 10 year fry tank limited warranty.
- 6' High Temperature Discard Hose.

ACCESSORIES (Packaged & Sold Separately)

- ☐ Stainless steel tank cover – doubles as a work surface top.
- ☐ Micro-Filtration Fabric Envelopes – 6 filters/per package.
- ☐ "Add-On" Frymate™ – VX15 or VX21S.
- ☐ Rear oil reclamation discard connection (Factory Installed).
- ☐ VK45F – Twin Basket Lifts (Factory Installed).
- ☐ VK65F & VK85F – Single and Twin Basket Lifts (Factory Installed).
- ☐ Prison Security Package (Factory Installed).
- ☐ Flexible gas hose with quick disconnect.

OPTIONS

- ☐ Second year extended limited parts and labor warranty.

REFERENCE MATERIALS

- See 1VK45 Spec Sheet F32999.
- See 1VK65 Spec Sheet F45366.
- See 1VK85 Spec Sheet F45367.
- See 1VKF Spec Sheet F45368 for single unit KleenScreen *PLUS*®.

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F R Y E R S

VK KLEENSCREEN *PLUS*® FILTRATION SYSTEM
BUILT-IN FILTER SYSTEM FOR 2VKF, 3VKF & 4VKF FRYERS

INSTALLATION INSTRUCTIONS

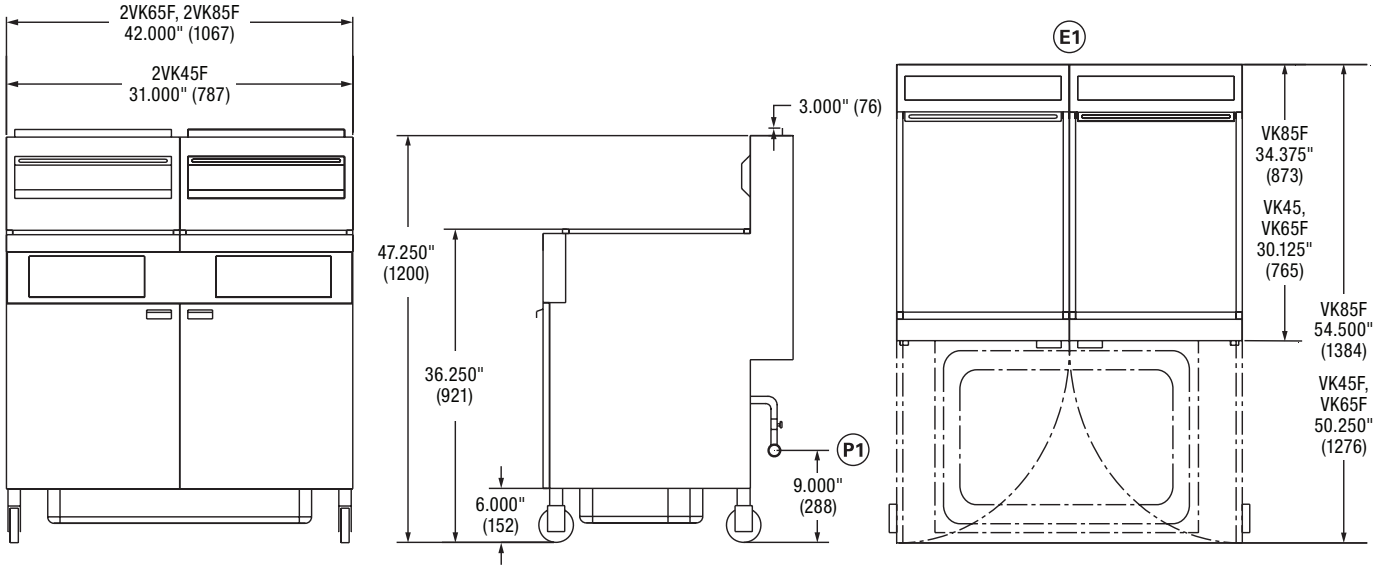
1. A combination valve with pressure regulator is provided with this unit.
   - Natural Gas 4.0" (102 mm) W.C.
   - Propane Gas 10.0" (254 mm) W.C.
2. An adequate ventilation system is required for Commercial Cooking Equipment. Information may be obtained by writing to the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269. When writing refer to NFPA No. 96.
3. All models require a 6" (152 mm) clearance at both sides and rear adjacent to combustible construction.
4. All models require a 16" (407 mm) minimum clearance to adjacent open top burner units.
5. This appliance is manufactured for commercial installation only and is not intended for home use.

Service Connections:

(P1) 1¼" (32 mm) NPT common rear gas connection.

(E1) 120 volt, 60 Hz, 1 phase electrical connection (NEMA 5-15P).

NOTE: In line with its policy to continually improve its product, Vulcan reserves the right to change materials and specifications without notice.



Views
Front, Side and Top
2VK45F, 2VK65F, 2VK85F

Model	Filter Pan Capacity	Filter Area / Fabric Envelope	Motor	Pump	Electric Amps	Electric Power	Battery Dimensions (Widths)		
							2 Fryers	3 Fryers	4 Fryers
VK45F	70 lbs.	270 sq. in 350 sq. in	⅓ HP 1750 RPM	8 Gal/Min	115V 7.0A	115V 60Hz 1Ph	31"	46½"	62"
VK65F	110 lbs.	270 sq. in 350 sq. in	⅓ HP 1750 RPM	8 Gal/Min	115V 7.0A	115V 60Hz 1Ph	42"	63"	84"
VK85F									

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FRYERS

POWERFRY5™ VK65 SERIES
GAS FRYERS

Model 1VK65C

SPECIFICATIONS

65 - 70 lbs. capacity free standing gas fryer, Vulcan Model No. (1VK65A) (1VK65D) (1VK65C). 80,000 BTU/hr. input. Stainless steel cabinet. Set of four 6" adjustable casters (2 locking). Stainless steel fry tank with FivePass™ heat transfer system. ENERGY STAR® certified. SoftStart™ ignition system using 35,000 BTU/hr. to extend oil life during start up. Idle rate of 4,802 BTU/hr. to maintain cooking temperature. 1¼" full port ball type drain valve. Twin fry baskets with plastic coated handles. Solid state analog knob control, digital, or programmable computer control systems all standard with electronic matchless ignition. Tank brush and clean-out rod included.

Overall dimensions:
21"w x 30⅛"d x 47⅛"h. Working height 36¼".

CSA design certified. NSF listed.

SPECIFY TYPE OF GAS WHEN ORDERING

- ☐ Natural Gas.
- ☐ Propane Gas.

SPECIFY ALTITUDE

The 1VK65 Series fryer does not require any special adjustments for varying altitudes ranging from 0 - 10,000 feet for either Natural or Propane gas.

VK65A: Solid state analog knob control behind the door. Accurate temperature control 200° to 390°F. User selectable fat melt modes. Electronic ignition.

VK65D: Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes. Two count-down timers. Auto boil-out mode.

VK65C: Programmable computer controls with digital character display. 10 menu timers display product name and cook times. Offline programming of menu items uploaded through USB interface, software included. Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes.

STANDARD FEATURES

- ■ 80,000 BTU/hr. input.
- ■ Maintains idle temperature setting with only 4,802 BTU/hr. to save energy.
- ■ Energy saving SoftStart™ ignition system extends oil life while requiring lower BTU's.
- ■ Energy efficient FivePass™ heat transfer system yielding 68% cooking and 78% thermal efficiency. ENERGY STAR® certified.
- ■ Stainless steel fry tank, 65 - 70 lb. capacity. Includes 10 year limited tank warranty.
- ■ 1¼" full port ball type drain valve.
- ■ Stainless steel cabinet.
- ■ Set of four 6" adjustable (2 locking) casters.
- ■ Twin fry baskets with plastic coated handles.
- ■ Hi-limit shut-off.
- ■ Electronic matchless ignition.
- ■ Tank brush and clean-out rod.
- ■ One year limited parts and labor warranty.

ACCESSORIES

- ☐ FRYMATE-VX15 add-on frymate.
- ☐ Stainless steel tank cover – doubles as a work surface top.
- ☐ Connecting Kit(s) – Connects two fryers together (brackets, grease strip and hardware included).
- ☐ Single large basket – 18¾"w x 13¼"d x 5½"h.
- ☐ Set of twin baskets – 9¼"w x 13¼"d x 6"h.
- ☐ ¾" Flexible gas hose with quick disconnect.
- ☐ 10" high stainless steel removable splash guard.

OPTIONS

- ☐ Second year extended limited parts and labor warranty

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VK KLEENSCREEN *PLUS*® FILTRATION SYSTEM
BUILT-IN FILTER SYSTEM FOR 2VKF, 3VKF & 4VKF FRYERS

Model 2VK45DF

SPECIFICATIONS

Built-in filter system, Vulcan Model No. (# of fryers 2, 3, 4) VK (45, 65, 85) (control type A, D, or C) F (add suffix-F to fryer battery model No., i.e. 2VK45DF). Filter system accommodates maximum of four cabinets. Filter vessel constructed of drawn (seamless) 18 gauge series stainless steel. The 2VK45F filter pan weighs only 12.2 lbs. and the filter pan for the 2VK65 & VK85F weighs only 20.5 lbs. ⅓ H.P. motor/pump circulates hot frying compound at the rate of 8 gallons per minute, activated by a one touch push button switch. System provided standard with stainless steel mesh filter screen. Optional KleenScreen *PLUS*® envelopes filter out particulate down to .5 microns. Standard equipment comes on casters, has a tank brush, and clean-out rod. Hands free oil return line connection. Drain valve interlock switch turns fryer's burners off when drain valve is opened. Requires 120 volt, 60 Hz, 1 phase power supply.

CSA design certified. NSF listed.

SPECIFY TYPE OF GAS WHEN ORDERING

- ☐ Natural Gas
- ☐ Propane Gas

SPECIFY ALTITUDE

The VK Series fryer does not require any special adjustments for varying altitudes ranging from 0 - 10,000 feet for either Natural or Propane gas.

STANDARD FEATURES

- ■ Filter system accommodates maximum of four fryer cabinets.
- ■ Drain valve interlock switch – turns off gas burners automatically when draining oil.
- ■ 6" Casters adjustable – 2 locking, 2 non-locking.
- ■ Drawn (seamless) 18 gauge stainless steel filter pan. 70 lbs. frying compound capacity on VK45F, 110 lbs. capacity on VK65 & VK85F.
- ■ Stainless steel mesh filter screen filters from 2 sides; filter area = 270 square inches.
- ■ ⅓ H.P. motor and pump circulates frying compound at a rate of 8.0 gallons per minute.
- ■ One touch push button switch to engage pump and motor.
- ■ Tank brush and clean-out rod.
- ■ 120 volt, 60 Hz, 1 phase (NEMA 5-15P).
- ■ One year limited parts and labor warranty.
- ■ 10 year fry tank limited warranty.
- ■ 6' High Temperature Discard Hose.

ACCESSORIES (Packaged & Sold Separately)

- ☐ Stainless steel tank cover – doubles as a work surface top.
- ☐ Micro-Filtration Fabric Envelopes – 6 filters/per package.
- ☐ "Add-On" Frymate™ – VX15 or VX21S.
- ☐ Rear oil reclamation discard connection (Factory Installed).
- ☐ VK45F – Twin Basket Lifts (Factory Installed).
- ☐ VK65F & VK85F – Single and Twin Basket Lifts (Factory Installed).
- ☐ Prison Security Package (Factory Installed).
- ☐ Flexible gas hose with quick disconnect.

OPTIONS

- ☐ Second year extended limited parts and labor warranty.

REFERENCE MATERIALS

- ■ See 1VK45 Spec Sheet F32999.
- ■ See 1VK65 Spec Sheet F45366.
- ■ See 1VK85 Spec Sheet F45367.
- ■ See 1VKF Spec Sheet F45368 for single unit KleenScreen *PLUS*®.

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VK KLEENSCREEN*PLUS*® FILTRATION SYSTEM
BUILT-IN FILTER SYSTEM FOR 2VKF, 3VKF & 4VKF FRYERS

INSTALLATION INSTRUCTIONS

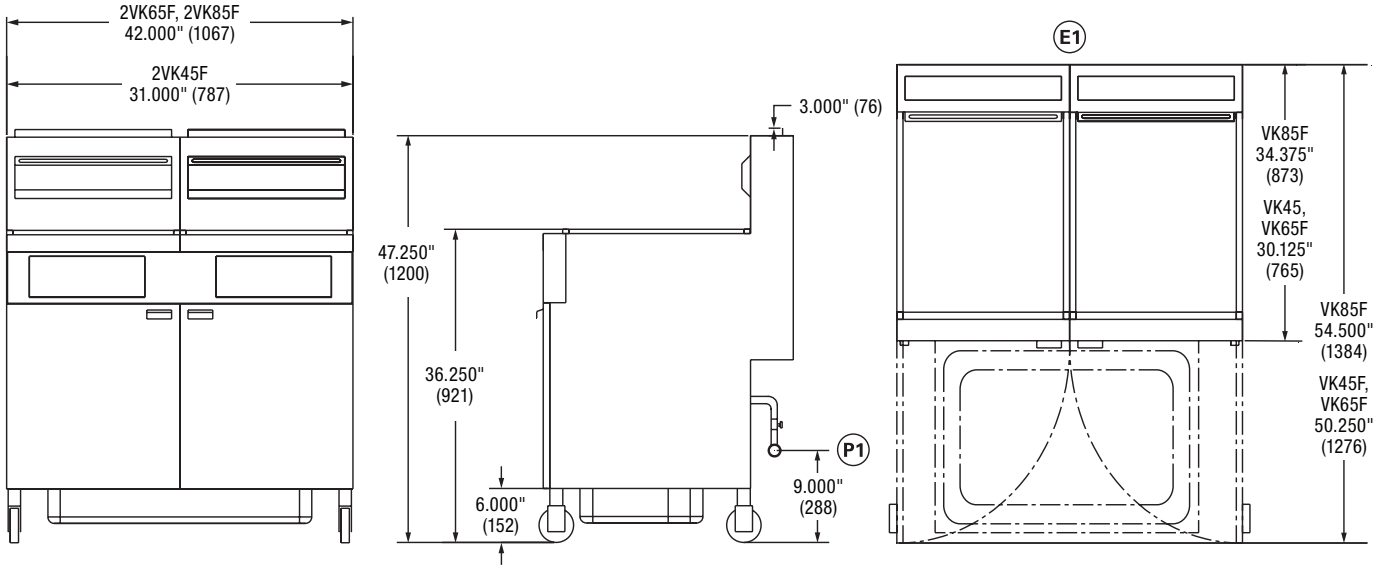
1. A combination valve with pressure regulator is provided with this unit.
   - Natural Gas 4.0" (102 mm) W.C.
   - Propane Gas 10.0" (254 mm) W.C.
2. An adequate ventilation system is required for Commercial Cooking Equipment. Information may be obtained by writing to the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269. When writing refer to NFPA No. 96.
3. All models require a 6" (152 mm) clearance at both sides and rear adjacent to combustible construction.
4. All models require a 16" (407 mm) minimum clearance to adjacent open top burner units.
5. This appliance is manufactured for commercial installation only and is not intended for home use.

Service Connections:

(P1) 1¼" (32 mm) NPT common rear gas connection.

(E1) 120 volt, 60 Hz, 1 phase electrical connection (NEMA 5-15P).

NOTE: In line with its policy to continually improve its product, Vulcan reserves the right to change materials and specifications without notice.



Views
Front, Side and Top
2VK45F, 2VK65F, 2VK85F

Model	Filter Pan Capacity	Filter Area / Fabric Envelope	Motor	Pump	Electric Amps	Electric Power	Battery Dimensions (Widths)		
							2 Fryers	3 Fryers	4 Fryers
VK45F	70 lbs.	270 sq. in 350 sq. in	⅓ HP 1750 RPM	8 Gal/Min	115V 7.0A	115V 60Hz 1Ph	31"	46½"	62"
VK65F	110 lbs.	270 sq. in 350 sq. in	⅓ HP 1750 RPM	8 Gal/Min	115V 7.0A	115V 60Hz 1Ph	42"	63"	84"
VK85F									

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FRYERS

POWERFRY5™ 1VK85 SERIES
FREE STANDING GAS FRYER

Model 1VK85C

SPECIFICATIONS

85 - 90 lbs. capacity free standing gas fryer, Vulcan Model No. (1VK85A) (1VK85D) (1VK85C). 90,000 BTU/hr. input. Stainless steel cabinet. Set of four 6" adjustable casters (2 locking). Stainless steel fry tank with FivePass™ heat transfer system yielding 65% cooking and 78% thermal efficiency and "V" shaped cold zone. SoftStart™ ignition system using 35,000 BTU/hr. to extend oil life during start up. Idle rate of 6,298 BTU/hr. to maintain cooking temperature. 1¼" full port ball type drain valve. Twin fry baskets with plastic coated handles. Solid state analog knob control, digital, or programmable computer control systems all standard with electronic matchless ignition. Tank brush and clean-out rod included.

Overall dimensions:
21"w x 34⅜"d x 47⅛"h. Working height 36¼".

CSA design certified. NSF listed.

SPECIFY TYPE OF GAS WHEN ORDERING

- ☐ Natural Gas.
- ☐ Propane Gas.

SPECIFY ALTITUDE

The 1VK85 Series fryer does not require any special adjustments for varying altitudes ranging from 0 - 10,000 feet for either Natural or Propane gas.

1VK85A: Solid state analog knob control behind the door. Accurate temperature control 200° to 390°F. User selectable fat melt modes. Electronic ignition.

1VK85D: Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes. Two count-down timers. Auto boil-out mode.

1VK85C: Programmable computer controls with digital character display. 10 menu timers display product name and cook times. Offline programming of menu items uploaded through USB interface, software included. Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes.

STANDARD FEATURES

- ■ 90,000 BTU/hr. input.
- ■ Maintains idle temperature setting with only 6,298 BTU/hr. to save energy.
- ■ Energy saving SoftStart™ ignition system extends oil life while requiring lower BTU's.
- ■ Energy efficient FivePass™ heat transfer system yielding 65% cooking and 78% thermal efficiency.
- ■ Stainless steel fry tank, 85 - 90 lb. capacity. Includes 10 year limited tank warranty.
- ■ 1¼" full port ball type drain valve.
- ■ Stainless steel cabinet.
- ■ Set of four 6" adjustable (2 locking) casters.
- ■ Twin fry baskets with plastic coated handles.
- ■ Hi-limit shut-off.
- ■ Electronic matchless ignition.
- ■ Tank brush and clean-out rod.
- ■ One year limited parts and labor warranty.

ACCESSORIES

- ☐ FRYMATE-VX21S add-on frymate.
- ☐ Stainless steel tank cover – doubles as a work surface top.
- ☐ Connecting Kit(s) – Connects two fryers together (brackets, grease strip and hardware included).
- ☐ Single large basket – 18¾"w x 17¼"d x 5½"h.
- ☐ Set of twin baskets – 8¾"w x 16¾"d x 6"h.
- ☐ ¾" Flexible gas hose with quick disconnect.
- ☐ 10" high stainless steel removable splash guard.

OPTIONS

- ☐ Second year extended limited parts and labor warranty

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POWERFRY5™ 1VK85 SERIES
FREE STANDING GAS FRYER

INSTALLATION INSTRUCTIONS

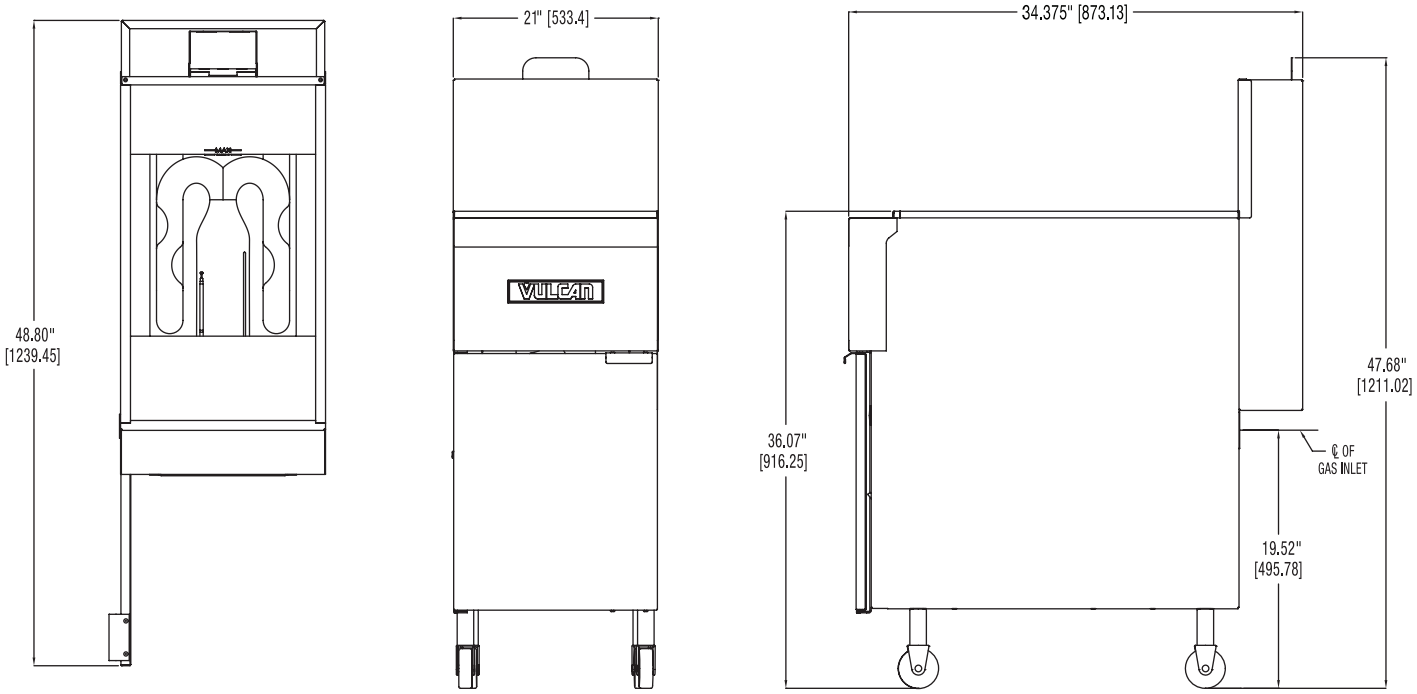
1. A gas valve with internal pressure regulator is provided with this unit.
   - The supply pressure should be 7-9" W.C. for natural gas and 11-12" W.C. for propane gas
   - If incoming pressure exceeds 14" W.C. (½ psig -3.45 kPa), a step-down pressure regulator must be installed
2. An adequate ventilation system is required for Commercial Cooking Equipment. Information may be obtained by writing to the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269. When writing refer to NFPA No. 96.
3. All models require a 6" (152 mm) clearance at both sides and rear adjacent to combustible construction.All models require a 16" (407 mm) minimum clearance to adjacent open top burner units.
4. This appliance is manufactured for commercial installation only and is not intended for home use.

SERVICE CONNECTIONS:

(P1) ½" (13 mm) ID and ¾" (19 mm) OD rear gas connection.

(E1) NEMA 5-15P 120 Volt cord & plug supplied with fryers.

NOTE: In line with its policy to continually improve its product, Vulcan reserves the right to change materials and specifications without notice.



MODEL	Width	Depth	Overall Height	Working Height	Tank Size	BTU/hr.	Fry Comp. Capacity	Approx. Shipping Weight
1VK85A 1VK85D 1VK85C	21"	34⅜"	47⅛"	36¼"	19½" x 18¼"	90,000	85 - 90 lbs.	265 lbs.

This appliance is manufactured for commercial use only and is not intended for home use.

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F R Y E R S

POWERFRY3™ 1TR45 SERIES
FREE STANDING GAS FRYER

Model 1TR45A

SPECIFICATIONS

45 - 50 lbs. capacity free standing gas fryer, Vulcan Model No. (1TR45A) (1TR45D) (1TR45C). 70,000 BTU/hr. input. Stainless steel cabinet. Set of four 6" adjustable casters (2 locking). Stainless steel fry tank with ThreePass™ heat transfer system. ENERGY STAR® qualified. SoftStart™ ignition system using 35,000 BTU/hr. to extend oil life during start up. Idle rate of 4,318 BTU/hr. to maintain cooking temperature. 1¼" port ball type drain valve. Twin fry baskets with plastic coated handles. Solid state analog knob control, digital, or programmable computer control systems all standard with electronic matchless ignition. Tank brush and clean-out rod included.

Overall dimensions:
15½"w x 30⅛"d x 47⅛"h. Working height 36¼".

CSA design certified. NSF listed.

SPECIFY TYPE OF GAS WHEN ORDERING

- ☐ Natural Gas.
- ☐ Propane Gas.

SPECIFY ALTITUDE

The 1TR45 Series fryer does not require any special adjustments for varying altitudes ranging from 0 - 10,000 feet for either Natural or Propane gas.

1TR45A: Solid state analog knob control behind the door. Accurate temperature control 200° to 390°F. User selectable fat melt modes. Electronic ignition.

1TR45D: Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes. Two count-down timers. Auto boil-out mode.

1TR45C: Programmable computer controls with digital character display. 10 menu timers display product name and cook times. Offline programming of menu items uploaded through USB interface, software included. Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes.

STANDARD FEATURES

- ■ 70,000 BTU/hr. input.
- ■ Maintains idle temperature setting with only 4,318 BTU/hr. to save energy.
- ■ Energy saving SoftStart™ ignition system extends oil life while requiring lower BTU's.
- ■ Energy Efficient ThreePass™ heat transfer system yielding 60.9% cooking efficiency and 72% Thermal Efficiency. ENERGY STAR® certified.
- ■ Stainless steel fry tank, 45 - 50 lb. capacity. Includes 10 year limited tank warranty.
- ■ 1¼" port ball type drain valve.
- ■ Stainless steel cabinet.
- ■ Set of four 6" adjustable (2 locking) casters.
- ■ Twin fry baskets with plastic coated handles.
- ■ Hi-limit shut-off.
- ■ Electronic matchless ignition.
- ■ Tank brush and clean-out rod.
- ■ One year limited parts and labor warranty.

ACCESSORIES

- ☐ FRYMATE-VX15 add-on frymate.
- ☐ Stainless steel tank cover – doubles as a work surface top.
- ☐ Connecting Kit(s) – Connects two fryers together (brackets, grease strip and hardware included).
- ☐ Single large basket – 13"w x 13¼"d x 5½"h.
- ☐ Set of twin baskets – 6½"w x 13¼"d x 6"h.
- ☐ ¾" Flexible gas hose with quick disconnect.
- ☐ 10" high stainless steel removable splash guard.

OPTIONS

- ☐ Second year extended limited parts and labor warranty

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POWERFRY3™ 1TR45 SERIES
FREE STANDING GAS FRYER

INSTALLATION INSTRUCTIONS

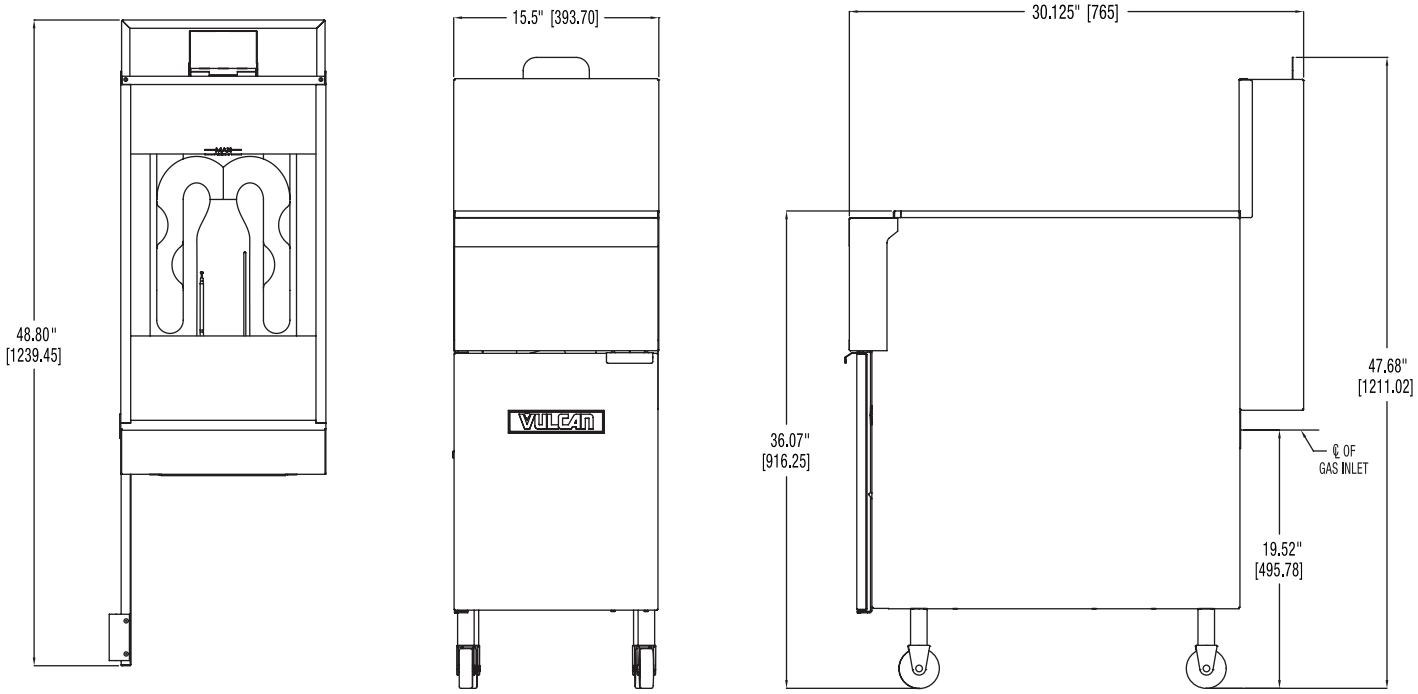
1. A gas valve with internal pressure regulator is provided with this unit.
   - The supply pressure should be 7-9" W.C. for natural gas and 11-12" W.C. for propane gas
   - If incoming pressure exceeds 14" W.C. (½ psig -3.45 kPa), a step-down pressure regulator must be installed
2. An adequate ventilation system is required for Commercial Cooking Equipment. Information may be obtained by writing to the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269. When writing refer to NFPA No. 96.
3. All models require a 6" (152 mm) clearance at both sides and rear adjacent to combustible construction.All models require a 16" (407 mm) minimum clearance to adjacent open top burner units.
4. This appliance is manufactured for commercial installation only and is not intended for home use.

SERVICE CONNECTIONS:

(P1) ¾" (19 mm) OD rear gas connection.

(E1) NEMA 5-15P 120 Volt cord & plug supplied with fryers.

NOTE: In line with its policy to continually improve its product, Vulcan reserves the right to change materials and specifications without notice.



MODEL	Width	Depth	Overall Height	Working Height	Tank Size	BTU/hr.	Fry Comp. Capacity	Approx. Shipping Weight
1TR45A 1TR45D 1TR45C	15½"	30⅛"	47⅛"	36¼"	14" x 14"	70,000	45 - 50 lbs.	196 lbs.

This appliance is manufactured for commercial use only and is not intended for home use.

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FRYERS

POWERFRY3™ TR45 SERIES
GAS FRYERS

Model 1TR45A

SPECIFICATIONS

45 - 50 lbs. capacity free standing gas fryer, Vulcan Model No. (1TR45A) (1TR45D) (1TR45C). 70,000 BTU/hr. input. Stainless steel cabinet. Set of four 6" adjustable casters (2 locking). Stainless steel fry tank with ThreePass™ heat transfer system. ENERGY STAR® certified. SoftStart™ ignition system using 35,000 BTU/hr. to extend oil life during start up. Idle rate of 4,318 BTU/hr. to maintain cooking temperature. 1¼" port ball type drain valve. Twin fry baskets with plastic coated handles. Solid state analog knob control, digital, or programmable computer control systems all standard with electronic matchless ignition. Tank brush and clean-out rod included.

Overall dimensions:
15½"w x 30⅛"d x 47⅛"h. Working height 36¼".

CSA design certified. NSF listed.

SPECIFY TYPE OF GAS WHEN ORDERING

- ☐ Natural Gas.
- ☐ Propane Gas.

SPECIFY ALTITUDE

The 1TR45 Series fryer does not require any special adjustments for varying altitudes ranging from 0 - 10,000 feet for either Natural or Propane gas.

TR45A: Solid state analog knob control behind the door. Accurate temperature control 200° to 390°F. User selectable fat melt modes. Electronic ignition.

TR45D: Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes. Two count-down timers. Auto boil-out mode.

TR45C: Programmable computer controls with digital character display. 10 menu timers display product name and cook times. Offline programming of menu items uploaded through USB interface, software included. Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes.

STANDARD FEATURES

- ■ 70,000 BTU/hr. input.
- ■ Maintains idle temperature setting with only 4,318 BTU/hr. to save energy.
- ■ Energy saving SoftStart™ ignition system extends oil life while requiring lower BTU's.
- ■ Energy Efficient ThreePass™ heat transfer system yielding 60.9% cooking efficiency and 72% Thermal Efficiency. ENERGY STAR® certified.
- ■ Stainless steel fry tank, 45 - 50 lb. capacity. Includes 10 year limited tank warranty.
- ■ 1¼" port ball type drain valve.
- ■ Stainless steel cabinet.
- ■ Set of four 6" adjustable (2 locking) casters.
- ■ Twin fry baskets with plastic coated handles.
- ■ Hi-limit shut-off.
- ■ Electronic matchless ignition.
- ■ Tank brush and clean-out rod.
- ■ One year limited parts and labor warranty.

ACCESSORIES

- ☐ FRYMATE-VX15 add-on frymate.
- ☐ Stainless steel tank cover – doubles as a work surface top.
- ☐ Connecting Kit(s) – Connects two fryers together (brackets, grease strip and hardware included).
- ☐ Single large basket – 13"w x 13¼"d x 5½"h.
- ☐ Set of twin baskets – 6½"w x 13¼"d x 6"h.
- ☐ ¾" Flexible gas hose with quick disconnect.
- ☐ 10" high stainless steel removable splash guard.

OPTIONS

- ☐ Second year extended limited parts and labor warranty

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TR KLEENSCREEN *PLUS*® FILTRATION SYSTEM
BUILT-IN FILTER SYSTEM FOR 2TRF, 3TRF & 4TRF FRYERS

Model 2TR45CF

SPECIFICATIONS

Built-in filter system, Vulcan Model No. (# of fryers 2, 3, 4) TR (45, 65, 85) (control type A, D, or C) F (add suffix-F to fryer battery model No., i.e. 2TR45DF). Filter system accommodates maximum of four cabinets. Filter vessel constructed of drawn (seamless) 18 gauge series stainless steel. The 2TR45F filter pan weighs only 12.2 lbs. and the filter pan for the 2TR65 & TR85F weighs only 20.5 lbs. ⅓ H.P. motor/pump circulates hot frying compound at the rate of 8 gallons per minute, activated by a one touch push button switch. System provided standard with stainless steel mesh filter screen. Optional KleenScreen *PLUS*® envelopes filter out particulate down to .5 micron. Standard equipment comes on casters, has a tank brush, and clean-out rod. Hands free oil return line connection. Drain valve interlock switch turns fryer's burners off when drain valve is opened. Requires 120 volt, 60 Hz, 1 phase power supply.

CSA design certified. NSF listed.

SPECIFY TYPE OF GAS WHEN ORDERING

- ☐ Natural Gas
- ☐ Propane Gas

SPECIFY ALTITUDE

The TR Series fryer does not require any special adjustments for varying altitudes ranging from 0 - 10,000 feet for either Natural or Propane gas.

STANDARD FEATURES

- ■ Filter system accommodates maximum of four fryer cabinets.
- ■ Drain valve interlock switch – turns off gas burners automatically when draining oil.
- ■ 6" Casters adjustable – 2 locking, 2 non-locking.
- ■ Drawn (seamless) 18 gauge stainless steel filter pan. 70 lbs. frying compound capacity on TR45F, 110 lbs. capacity on TR65 & TR85F.
- ■ Stainless steel filter mesh screen filters from 2 sides; filter area = 270 square inches.
- ■ ⅓ H.P. motor and pump circulates frying compound at a rate of 8.0 gallons per minute.
- ■ One touch push button switch to engage pump and motor.
- ■ Tank brush and clean-out rod.
- ■ 120 volt, 60 Hz, 1 phase (NEMA 5-15P).
- ■ One year limited parts and labor warranty.
- ■ 10 year fry tank limited warranty.
- ■ 6' High Temperature Discard Hose.

ACCESSORIES (Packaged & Sold Separately)

- ☐ Stainless steel tank cover – doubles as a work surface top.
- ☐ Micro-Filtration Fabric Envelopes – 6 filters/per package.
- ☐ "Add-On" Frymate™ – VX15 or VX21S.
- ☐ Rear oil reclamation discard connection (Factory Installed).
- ☐ TR45F – Twin Basket Lifts (Factory Installed).
- ☐ TR65F & TR85F – Single and Twin Basket Lifts (Factory Installed).
- ☐ Prison Security Package (Factory Installed).
- ☐ 1¼" flexible gas hose with quick disconnect.

OPTIONS

- ☐ Second year extended limited parts and labor warranty.

REFERENCE MATERIALS

- ■ See 1TR45 Spec Sheet F45378.
- ■ See 1TR65 Spec Sheet F45381.
- ■ See 1TR85 Spec Sheet F45383.

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TR KLEENSCREEN *PLUS*® FILTRATION SYSTEM
BUILT-IN FILTER SYSTEM FOR 2TRF, 3TRF & 4TRF FRYERS

INSTALLATION INSTRUCTIONS

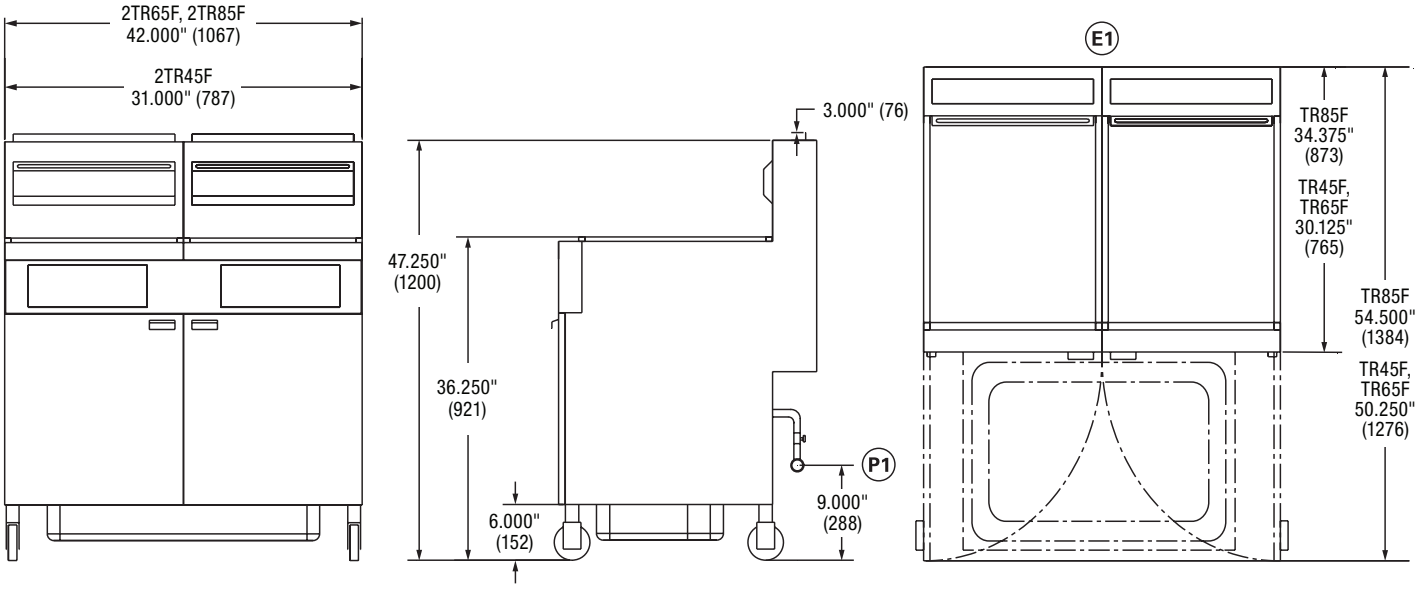
1. A gas valve with internal pressure regulator is provided with this unit.
   - The supply pressure should be 7-9" W.C. for natural gas and 11-12" W.C. for propane gas
   - If incoming pressure exceeds 14" W.C. (½ psig -3.45 kPa), a step-down pressure regulator must be installed
2. An adequate ventilation system is required for Commercial Cooking Equipment. Information may be obtained by writing to the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269. When writing refer to NFPA No. 96.
3. All models require a 6" (152 mm) clearance at both sides and rear adjacent to combustible construction.
4. All models require a 16" (407 mm) minimum clearance to adjacent open top burner units.
5. This appliance is manufactured for commercial installation only and is not intended for home use.

Service Connections:

(P1) 1¼" (32 mm) NPT common rear gas connection.

(E1) 120 volt, 60 Hz, 1 phase electrical connection (NEMA 5-15P).

NOTE: In line with its policy to continually improve its product, Vulcan reserves the right to change materials and specifications without notice.



Views
Front, Side and Top
2TR45F, 2TR65F, 2TR85F

Model	Filter Pan Capacity	Filter Area / Fabric Envelope	Motor	Tank Size	Pump	Electric Amps	Electric Power	Battery Dimensions (Widths)		
								2 Fryers	3 Fryers	4 Fryers
TR45F	70 lbs.	270 sq. in 350 sq. in	⅓ HP 1750 RPM	14" x 14"	8 Gal/Min	115V 6.0A	115V 60Hz 1Ph	31"	46½"	62"
TR65F	110 lbs.	270 sq. in 350 sq. in	⅓ HP 1750 RPM	19½" x 14"	8 Gal/Min	115V 6.0A	115V 60Hz 1Ph	42"	63"	84"
TR85F				19½" x 18¼"						

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Item # _____ C.S.I. Section 11420

F R Y E R S

POWERFRY3™ 1TR65 SERIES
FREE STANDING GAS FRYER

Model 1TR65A

1TR65A: Solid state analog knob control behind the door. Accurate temperature control 200° to 390°F. User selectable fat melt modes. Electronic ignition.

1TR65D: Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes. Two count-down timers. Auto boil-out mode.

1TR65C: Programmable computer controls with digital character display. 10 menu timers display product name and cook times. Offline programming of menu items uploaded through USB interface, software included. Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes.

SPECIFICATIONS

65 - 70 lbs. capacity free standing gas fryer, Vulcan Model No. (1TR65A) (1TR65D) (1TR65C). 80,000 BTU/hr. input. Stainless steel cabinet. Set of four 6" adjustable casters (2 locking). Stainless steel fry tank with ThreePass™ heat transfer system. ENERGY STAR® qualified. SoftStart™ ignition system using 40,000 BTU/hr. to extend oil life during start up. Idle rate of 5,083 BTU/hr. to maintain cooking temperature. 1¼" port ball type drain valve. Twin fry baskets with plastic coated handles. Solid state analog knob control, digital, or programmable computer control systems all standard with electronic matchless ignition. Tank brush and clean-out rod included.

Overall dimensions:
21"w x 30⅛"d x 47⅛"h. Working height 36¼".

CSA design certified. NSF listed.

SPECIFY TYPE OF GAS WHEN ORDERING

- ☐ Natural Gas.
- ☐ Propane Gas.

SPECIFY ALTITUDE

The 1TR65 Series fryer does not require any special adjustments for varying altitudes ranging from 0 - 10,000 feet for either Natural or Propane gas.

STANDARD FEATURES

- ■ 80,000 BTU/hr. input.
- ■ Maintains idle temperature setting with only 5,083 BTU/hr. to save energy.
- ■ Energy saving SoftStart™ ignition system extends oil life while requiring lower BTU's.
- ■ Energy Efficient ThreePass™ heat transfer system yielding 60.0% cooking efficiency and 72% Thermal Efficiency. ENERGY STAR® certified.
- ■ Stainless steel fry tank, 65 - 70 lb. capacity. Includes 10 year limited tank warranty.
- ■ 1¼" port ball type drain valve.
- ■ Stainless steel cabinet.
- ■ Set of four 6" adjustable (2 locking) casters.
- ■ Twin fry baskets with plastic coated handles.
- ■ Hi-limit shut-off.
- ■ Electronic matchless ignition.
- ■ Tank brush and clean-out rod.
- ■ One year limited parts and labor warranty.

ACCESSORIES

- ☐ FRYMATE-VX15 add-on frymate.
- ☐ Stainless steel tank cover – doubles as a work surface top.
- ☐ Connecting Kit(s) – Connects two fryers together (brackets, grease strip and hardware included).
- ☐ Single large basket – 18¾"w x 13¼"d x 5½"h.
- ☐ Set of twin baskets – 9¼"w x 13¼"d x 6"h.
- ☐ ¾" Flexible gas hose with quick disconnect.
- ☐ 10" high stainless steel removable splash guard.

OPTIONS

- ☐ Second year extended limited parts and labor warranty

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POWERFRY3™ 1TR65 SERIES
FREE STANDING GAS FRYER

INSTALLATION INSTRUCTIONS

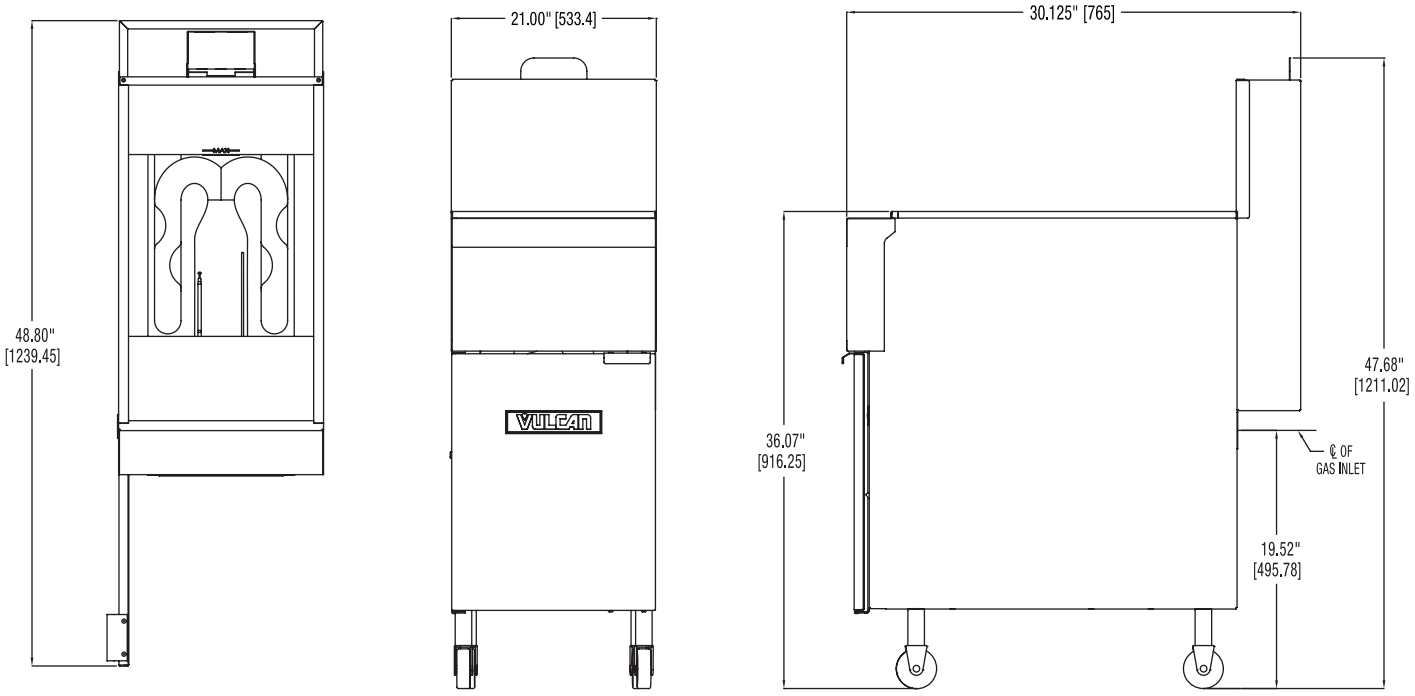
1. A gas valve with internal pressure regulator is provided with this unit.
   - The supply pressure should be 7-9" W.C. for natural gas and 11-12" W.C. for propane gas
   - If incoming pressure exceeds 14" W.C. (½ psig -3.45 kPa), a step-down pressure regulator must be installed
2. An adequate ventilation system is required for Commercial Cooking Equipment. Information may be obtained by writing to the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269. When writing refer to NFPA No. 96.
3. All models require a 6" (152 mm) clearance at both sides and rear adjacent to combustible construction.All models require a 16" (407 mm) minimum clearance to adjacent open top burner units.
4. This appliance is manufactured for commercial installation only and is not intended for home use.

SERVICE CONNECTIONS:

(P1) ¾" (19 mm) OD rear gas connection.

(E1) NEMA 5-15P 120 Volt cord & plug supplied with fryers.

NOTE: In line with its policy to continually improve its product, Vulcan reserves the right to change materials and specifications without notice.



MODEL	Width	Depth	Overall Height	Working Height	Tank Size	BTU/hr.	Fry Comp. Capacity	Approx. Shipping Weight
1TR65A 1TR65D 1TR65C	21"	30⅛"	47⅛"	36¼"	19½" x 14"	80,000	65 - 70 lbs.	235 lbs.

This appliance is manufactured for commercial use only and is not intended for home use.

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FRYERS

POWERFRY3™ TR65 SERIES
GAS FRYERS

Model 1TR65A

SPECIFICATIONS

65 - 70 lbs. capacity free standing gas fryer, Vulcan Model No. (1TR65A) (1TR65D) (1TR65C). 80,000 BTU/hr. input. Stainless steel cabinet. Set of four 6" adjustable casters (2 locking). Stainless steel fry tank with ThreePass™ heat transfer system. ENERGY STAR® certified. SoftStart™ ignition system using 40,000 BTU/hr. to extend oil life during start up. Idle rate of 5,083 BTU/hr. to maintain cooking temperature. 1¼" port ball type drain valve. Twin fry baskets with plastic coated handles. Solid state analog knob control, digital, or programmable computer control systems all standard with electronic matchless ignition. Tank brush and clean-out rod included.

Overall dimensions:
21"w x 30⅛"d x 47⅛"h. Working height 36¼".

CSA design certified. NSF listed.

SPECIFY TYPE OF GAS WHEN ORDERING

- ☐ Natural Gas.
- ☐ Propane Gas.

SPECIFY ALTITUDE

The 1TR65 Series fryer does not require any special adjustments for varying altitudes ranging from 0 - 10,000 feet for either Natural or Propane gas.

TR65A: Solid state analog knob control behind the door. Accurate temperature control 200° to 390°F. User selectable fat melt modes. Electronic ignition.

TR65D: Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes. Two count-down timers. Auto boil-out mode.

TR65C: Programmable computer controls with digital character display. 10 menu timers display product name and cook times. Offline programming of menu items uploaded through USB interface, software included. Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes.

STANDARD FEATURES

- ■ 80,000 BTU/hr. input.
- ■ Maintains idle temperature setting with only 5,083 BTU/hr. to save energy.
- ■ Energy saving SoftStart™ ignition system extends oil life while requiring lower BTU's.
- ■ Energy Efficient ThreePass™ heat transfer system yielding 60.0% cooking efficiency and 72% Thermal Efficiency. ENERGY STAR® certified.
- ■ Stainless steel fry tank, 65 - 70 lb. capacity. Includes 10 year limited tank warranty.
- ■ 1¼" port ball type drain valve.
- ■ Stainless steel cabinet.
- ■ Set of four 6" adjustable (2 locking) casters.
- ■ Twin fry baskets with plastic coated handles.
- ■ Hi-limit shut-off.
- ■ Electronic matchless ignition.
- ■ Tank brush and clean-out rod.
- ■ One year limited parts and labor warranty.

ACCESSORIES

- ☐ FRYMATE-VX15 add-on frymate.
- ☐ Stainless steel tank cover – doubles as a work surface top.
- ☐ Connecting Kit(s) – Connects two fryers together (brackets, grease strip and hardware included).
- ☐ Single large basket – 18¾"w x 13¼"d x 5½"h.
- ☐ Set of twin baskets – 9¼"w x 13¼"d x 6"h.
- ☐ ¾" Flexible gas hose with quick disconnect.
- ☐ 10" high stainless steel removable splash guard.

OPTIONS

- ☐ Second year extended limited parts and labor warranty

VULCAN
a division of ITW Food Equipment Group LLC
P.O. Box 696 ■ Louisville, KY 40201 ■ Toll-free: 1-800-814-2028 ■ Local: 502-778-2791 ■ Quote & Order Fax: 1-800-444-0602

TR KLEENSCREEN *PLUS*® FILTRATION SYSTEM
BUILT-IN FILTER SYSTEM FOR 2TRF, 3TRF & 4TRF FRYERS

Model 2TR45CF

SPECIFICATIONS

Built-in filter system, Vulcan Model No. (# of fryers 2, 3, 4) TR (45, 65, 85) (control type A, D, or C) F (add suffix-F to fryer battery model No., i.e. 2TR45DF). Filter system accommodates maximum of four cabinets. Filter vessel constructed of drawn (seamless) 18 gauge series stainless steel. The 2TR45F filter pan weighs only 12.2 lbs. and the filter pan for the 2TR65 & TR85F weighs only 20.5 lbs. ⅓ H.P. motor/pump circulates hot frying compound at the rate of 8 gallons per minute, activated by a one touch push button switch. System provided standard with stainless steel mesh filter screen. Optional KleenScreen *PLUS*® envelopes filter out particulate down to .5 microns. Standard equipment comes on casters, has a tank brush, and clean-out rod. Hands free oil return line connection. Drain valve interlock switch turns fryer's burners off when drain valve is opened. Requires 120 volt, 60 Hz, 1 phase power supply.

CSA design certified. NSF listed.

SPECIFY TYPE OF GAS WHEN ORDERING

- ☐ Natural Gas
- ☐ Propane Gas

SPECIFY ALTITUDE

The TR Series fryer does not require any special adjustments for varying altitudes ranging from 0 - 10,000 feet for either Natural or Propane gas.

STANDARD FEATURES

- ■ Filter system accommodates maximum of four fryer cabinets.
- ■ Drain valve interlock switch – turns off gas burners automatically when draining oil.
- ■ 6" Casters adjustable – 2 locking, 2 non-locking.
- ■ Drawn (seamless) 18 gauge stainless steel filter pan. 70 lbs. frying compound capacity on TR45F, 110 lbs. capacity on TR65 & TR85F.
- ■ Stainless steel mesh filter screen filters from 2 sides; filter area = 270 square inches.
- ■ ⅓ H.P. motor and pump circulates frying compound at a rate of 8.0 gallons per minute.
- ■ One touch push button switch to engage pump and motor.
- ■ Tank brush and clean-out rod.
- ■ 120 volt, 60 Hz, 1 phase (NEMA 5-15P).
- ■ One year limited parts and labor warranty.
- ■ 10 year fry tank limited warranty.
- ■ 6' High Temperature Discard Hose.

ACCESSORIES (Packaged & Sold Separately)

- ☐ Stainless steel tank cover – doubles as a work surface top.
- ☐ Micro-Filtration Fabric Envelopes – 6 filters/per package.
- ☐ "Add-On" Frymate™ – VX15 or VX21S.
- ☐ Rear oil reclamation discard connection (Factory Installed).
- ☐ TR45F – Twin Basket Lifts (Factory Installed).
- ☐ TR65F & TR85F – Single and Twin Basket Lifts (Factory Installed).
- ☐ Prison Security Package (Factory Installed).
- ☐ Flexible gas hose with quick disconnect.

OPTIONS

- ☐ Second year extended limited parts and labor warranty.

REFERENCE MATERIALS

- ■ See 1TR45 Spec Sheet F45378.
- ■ See 1TR65 Spec Sheet F45381.
- ■ See 1TR85 Spec Sheet F45383.

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TR KLEENSCREEN *PLUS*® FILTRATION SYSTEM
BUILT-IN FILTER SYSTEM FOR 2TRF, 3TRF & 4TRF FRYERS

INSTALLATION INSTRUCTIONS

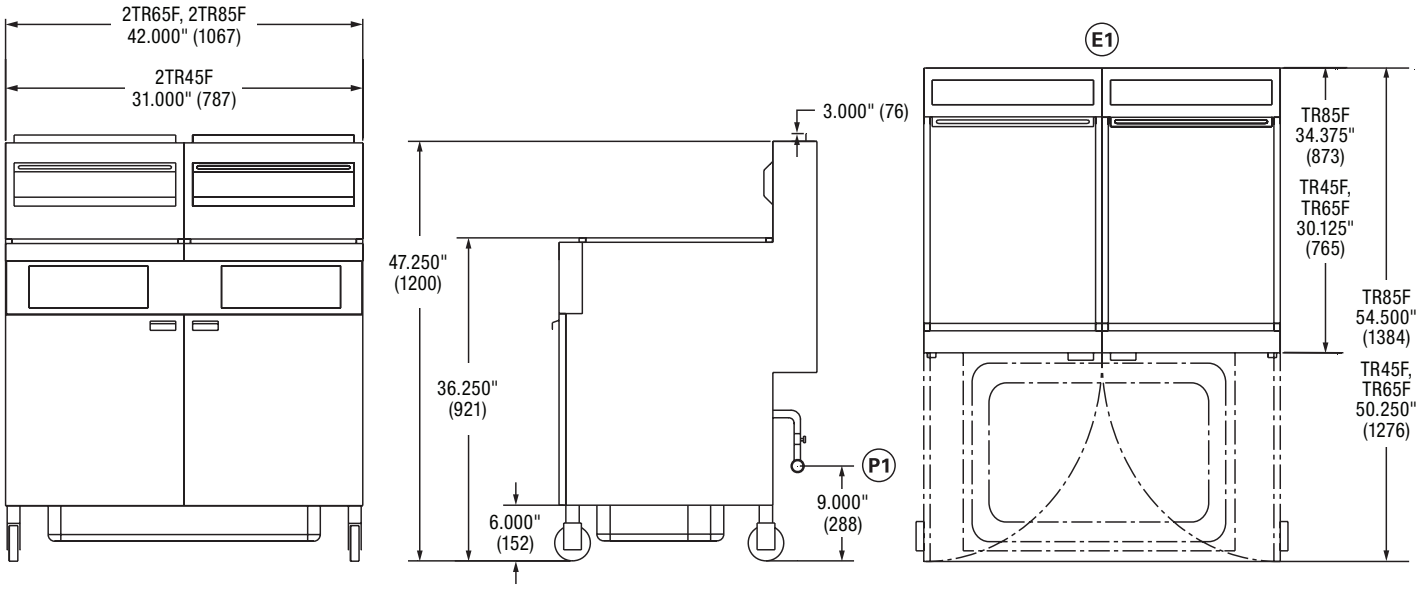
1. An exterior gas regulator has been installed on the incoming gas manifold of the fryer and has been preset at the factory for the specific gas type – Natural or Propane Gas.
   - Natural Gas 8.0" (203 mm) W.C.
   - Propane Gas 11.0" (279 mm) W.C.
2. An adequate ventilation system is required for Commercial Cooking Equipment. Information may be obtained by writing to the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269. When writing refer to NFPA No. 96.
3. All models require a 6" (152 mm) clearance at both sides and rear adjacent to combustible construction.
4. All models require a 16" (407 mm) minimum clearance to adjacent open top burner units.
5. This appliance is manufactured for commercial installation only and is not intended for home use.

Service Connections:

(P1) 1¼" (32 mm) NPT common rear gas connection.

(E1) 120 volt, 60 Hz, 1 phase electrical connection (NEMA 5-15P).

NOTE: In line with its policy to continually improve its product, Vulcan reserves the right to change materials and specifications without notice.



Views
Front, Side and Top
2TR45F, 2TR65F, 2TR85F

Model	Filter Pan Capacity	Filter Area / Fabric Envelope	Motor	Pump	Electric Amps	Electric Power	Battery Dimensions (Widths)		
							2 Fryers	3 Fryers	4 Fryers
TR45F	70 lbs.	270 sq. in 350 sq. in	⅓ HP 1750 RPM	8 Gal/Min	115V 6.0A	115V 60Hz 1Ph	31"	46½"	62"
TR65F	110 lbs.	270 sq. in 350 sq. in	⅓ HP 1750 RPM	8 Gal/Min	115V 6.0A	115V 60Hz 1Ph	42"	63"	84"
TR85F									

This appliance is manufactured for commercial use only and is not intended for home use.

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FRYERS

POWERFRY3™ TR85 SERIES
GAS FRYERS

Model 1TR85A

SPECIFICATIONS

85 - 90 lbs. capacity free standing gas fryer, Vulcan-Hart Model No. (1TR85A) (1TR85D) (1TR85C). 90,000 BTU/hr. input. Stainless steel cabinet. Set of four 6" adjustable casters (2 locking). Stainless steel fry tank with ThreePass™ heat transfer system. Energy Star® certified. SoftStart™ ignition system using 45,000 BTU/hr. to extend oil life during start up. Idle rate of 5,575 BTU/hr. to maintain cooking temperature. 1¼" port ball type drain valve. Twin fry baskets with plastic coated handles. Solid state analog knob control, digital, or programmable computer control systems all standard with electronic matchless ignition. Tank brush and clean-out rod included.

Overall dimensions:
21"w x 34⅜"d x 47⅛"h. Working height 36¼".

CSA design certified. NSF listed.

SPECIFY TYPE OF GAS WHEN ORDERING

- ☐ Natural Gas.
- ☐ Propane Gas.

SPECIFY ALTITUDE

The 1TR85 Series fryer does not require any special adjustments for varying altitudes ranging from 0 - 10,000 feet for either Natural or Propane gas.

TR85A: Solid state analog knob control behind the door. Accurate temperature control 200° to 390°F. User selectable fat melt modes. Electronic ignition.

TR85D: Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes. Two count-down timers. Auto boil-out mode.

TR85C: Programmable computer controls with digital character display. 10 menu timers display product name and cook times. Offline programming of menu items uploaded through USB interface, software included. Accurate temperature control 200-390°F with digital display. Fast recovery. Cook with compensating time or actual time. Electronic ignition. Digital temperatures: Fahrenheit or Celsius. Three melt modes.

STANDARD FEATURES

- ■ 90,000 BTU/hr. input.
- ■ Maintains idle temperature setting with only 5,575 BTU/hr. to save energy.
- ■ Energy saving SoftStart™ ignition system extends oil life while requiring lower BTU's.
- ■ Energy Efficient ThreePass™ heat transfer system yielding 60.0% cooking efficiency and 72% Thermal Efficiency. ENERGY STAR® certified.
- ■ Stainless steel fry tank, 85 - 90 lb. capacity. Includes 10 year limited tank warranty.
- ■ 1¼" port ball type drain valve.
- ■ Stainless steel cabinet.
- ■ Set of four 6" adjustable (2 locking) casters.
- ■ Twin fry baskets with plastic coated handles.
- ■ Hi-limit shut-off.
- ■ Electronic matchless ignition.
- ■ Tank brush and clean-out rod.
- ■ One year limited parts and labor warranty.

ACCESSORIES

- ☐ FRYMATE-VX21S add-on frymate.
- ☐ Stainless steel tank cover – doubles as a work surface top.
- ☐ Connecting Kit(s) – Connects two fryers together (brackets, grease strip and hardware included).
- ☐ Single large basket – 18¾"w x 17¼"d x 5½"h.
- ☐ Set of twin baskets – 8¾"w x 16¾"d x 6"h.
- ☐ ¾" Flexible gas hose with quick disconnect.
- ☐ 10" high stainless steel removable splash guard.

OPTIONS

- ☐ Second year extended limited parts and labor warranty

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TR KLEENSCREEN *PLUS*® FILTRATION SYSTEM
BUILT-IN FILTER SYSTEM FOR 2TRF, 3TRF & 4TRF FRYERS

Model 2TR45CF

SPECIFICATIONS

Built-in filter system, Vulcan Model No. (# of fryers 2, 3, 4) TR (45, 65, 85) (control type A, D, or C) F (add suffix-F to fryer battery model No., i.e. 2TR45DF). Filter system accommodates maximum of four cabinets. Filter vessel constructed of drawn (seamless) 18 gauge series stainless steel. The 2TR45F filter pan weighs only 12.2 lbs. and the filter pan for the 2TR65 & TR85F weighs only 20.5 lbs. ⅓ H.P. motor/pump circulates hot frying compound at the rate of 8 gallons per minute, activated by a one touch push button switch. System provided standard with stainless steel mesh filter screen. Optional KleenScreen *PLUS*® envelopes filter out particulate down to .5 microns. Standard equipment comes on casters, has a tank brush, and clean-out rod. Hands free oil return line connection. Drain valve interlock switch turns fryer's burners off when drain valve is opened. Requires 120 volt, 60 Hz, 1 phase power supply.

CSA design certified. NSF listed.

SPECIFY TYPE OF GAS WHEN ORDERING

- ☐ Natural Gas
- ☐ Propane Gas

SPECIFY ALTITUDE

The TR Series fryer does not require any special adjustments for varying altitudes ranging from 0 - 10,000 feet for either Natural or Propane gas.

STANDARD FEATURES

- ■ Filter system accommodates maximum of four fryer cabinets.
- ■ Drain valve interlock switch – turns off gas burners automatically when draining oil.
- ■ 6" Casters adjustable – 2 locking, 2 non-locking.
- ■ Drawn (seamless) 18 gauge stainless steel filter pan. 70 lbs. frying compound capacity on TR45F, 110 lbs. capacity on TR65 & TR85F.
- ■ Stainless steel mesh filter screen filters from 2 sides; filter area = 270 square inches.
- ■ ⅓ H.P. motor and pump circulates frying compound at a rate of 8.0 gallons per minute.
- ■ One touch push button switch to engage pump and motor.
- ■ Tank brush and clean-out rod.
- ■ 120 volt, 60 Hz, 1 phase (NEMA 5-15P).
- ■ One year limited parts and labor warranty.
- ■ 10 year fry tank limited warranty.
- ■ 6' High Temperature Discard Hose.

ACCESSORIES (Packaged & Sold Separately)

- ☐ Stainless steel tank cover – doubles as a work surface top.
- ☐ Micro-Filtration Fabric Envelopes – 6 filters/per package.
- ☐ "Add-On" Frymate™ – VX15 or VX21S.
- ☐ Rear oil reclamation discard connection (Factory Installed).
- ☐ TR45F – Twin Basket Lifts (Factory Installed).
- ☐ TR65F & TR85F – Single and Twin Basket Lifts (Factory Installed).
- ☐ Prison Security Package (Factory Installed).
- ☐ Flexible gas hose with quick disconnect.

OPTIONS

- ☐ Second year extended limited parts and labor warranty.

REFERENCE MATERIALS

- ■ See 1TR45 Spec Sheet F45378.
- ■ See 1TR65 Spec Sheet F45381.
- ■ See 1TR85 Spec Sheet F45383.

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TR KLEENSCREEN *PLUS*® FILTRATION SYSTEM
BUILT-IN FILTER SYSTEM FOR 2TRF, 3TRF & 4TRF FRYERS

INSTALLATION INSTRUCTIONS

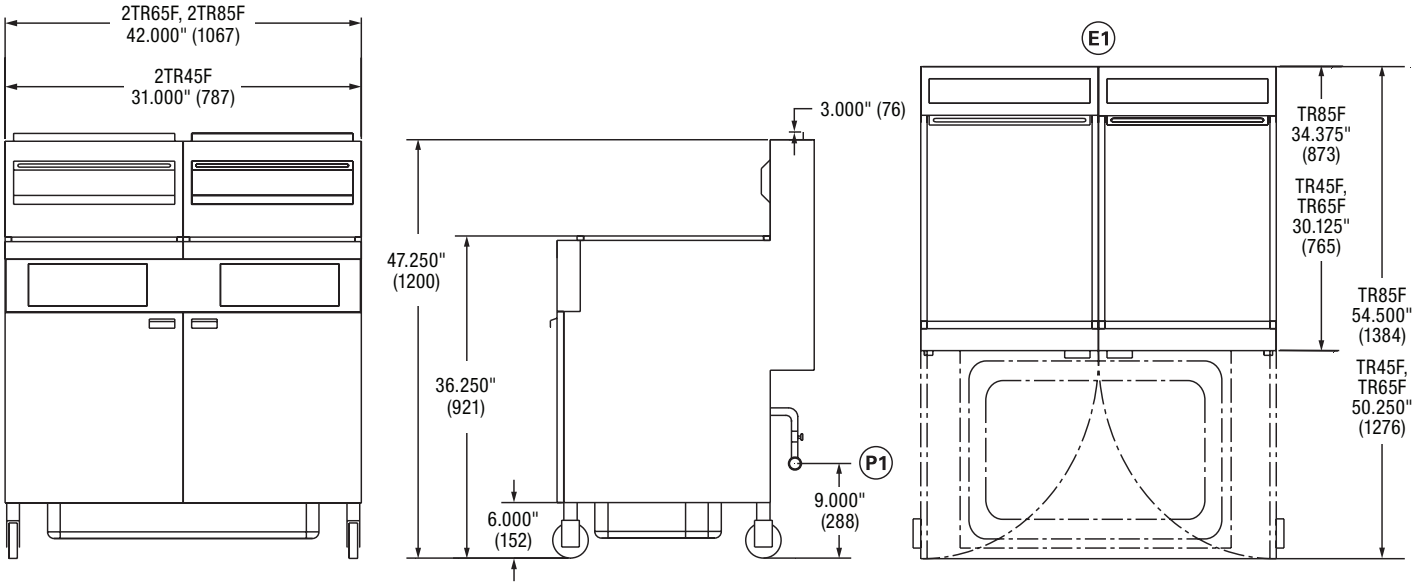
1. An exterior gas regulator has been installed on the incoming gas manifold of the fryer and has been preset at the factory for the specific gas type – Natural or Propane Gas.
   - Natural Gas 8.0" (203 mm) W.C.
   - Propane Gas 11.0" (279 mm) W.C.
2. An adequate ventilation system is required for Commercial Cooking Equipment. Information may be obtained by writing to the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269. When writing refer to NFPA No. 96.
3. All models require a 6" (152 mm) clearance at both sides and rear adjacent to combustible construction.
4. All models require a 16" (407 mm) minimum clearance to adjacent open top burner units.
5. This appliance is manufactured for commercial installation only and is not intended for home use.

Service Connections:

(P1) 1¼" (32 mm) NPT common rear gas connection.

(E1) 120 volt, 60 Hz, 1 phase electrical connection (NEMA 5-15P).

NOTE: In line with its policy to continually improve its product, Vulcan reserves the right to change materials and specifications without notice.



Views
Front, Side and Top
2TR45F, 2TR65F, 2TR85F

Model	Filter Pan Capacity	Filter Area / Fabric Envelope	Motor	Pump	Electric Amps	Electric Power	Battery Dimensions (Widths)		
							2 Fryers	3 Fryers	4 Fryers
TR45F	70 lbs.	270 sq. in 350 sq. in	⅓ HP 1750 RPM	8 Gal/Min	115V 6.0A	115V 60Hz 1Ph	31"	46½"	62"
TR65F	110 lbs.	270 sq. in 350 sq. in	⅓ HP 1750 RPM	8 Gal/Min	115V 6.0A	115V 60Hz 1Ph	42"	63"	84"
TR85F									

This appliance is manufactured for commercial use only and is not intended for home use.

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INSTALLATION & OPERATIONAL MANUAL

VK / TR / VFRY SERIES GAS FRYERS
With KleenScreen *PLUS*® Filtration Systems

1VK45C Shown

MODELS:

1VK45	1TR45
1VK65	1TR65
1VK85	1TR85
2VK45	2TR45
2VK65	2TR65
2VK85	2TR85
3VK45	3TR45
3VK65	3TR65
3VK85	3TR85
4VK45	4TR45
4VK65	4TR65
4VK85	4TR85
5VK45	5TR45
5VK65	5TR65
5VK85	5TR85
6VK45	6TR45
6VK65	6TR65
6VK85	6TR85
2MB	VFRY18
3MB	
4MB	
5MB	
6MB	

For additional information on Vulcan or to locate an authorized parts and service provider in your area, visit our website at www.vulcanequipment.com

DIVISION OF ITW FOOD EQUIPMENT GROUP, LLC
WWW.VULCANEQUIPMENT.COM
3600 NORTH POINT BLVD.
BALTIMORE, MD 21222
F-32971 REV. S (01-17)

IMPORTANT FOR YOUR SAFETY

THIS MANUAL HAS BEEN PREPARED FOR PERSONNEL QUALIFIED TO INSTALL GAS EQUIPMENT, WHO SHOULD PERFORM THE INITIAL FIELD START-UP AND ADJUSTMENTS OF THE EQUIPMENT COVERED BY THIS MANUAL.

POST IN A PROMINENT LOCATION THE INSTRUCTIONS TO BE FOLLOWED IN THE EVENT THE SMELL OF GAS IS DETECTED. THIS INFORMATION CAN BE OBTAINED FROM THE LOCAL GAS SUPPLIER.

IMPORTANT

IN THE EVENT A GAS ODOR IS DETECTED, SHUT DOWN UNITS AT THE MAIN SHUTOFF VALVE AND CONTACT THE LOCAL GAS COMPANY OR GAS SUPPLIER FOR SERVICE.

FOR YOUR SAFETY

DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS OR LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

TABLE OF CONTENTS

INTRODUCTION

GENERAL

Vulcan Fryers are produced with quality workmanship and material. Proper installation, usage and maintenance will result in years of satisfactory performance.

Before installing the fryer, thoroughly read this manual and carefully follow all instruction.

This manual is applicable to models listed on the cover page. Procedures in this manual will apply to all models unless specified. Pictures and illustrations can be of any model unless the picture or illustration needs to be model specific.

ORDERING PARTS

Customers may order parts directly from their local authorized service center. If not known, call Vulcan Customer Service at 800-814-2028.

To speed up your order, provide the model number, serial number, gas type, part needed, item part number (if known) and quantity needed.

UNPACKING

This fryer was carefully inspected before leaving the factory. The carrier assumes full responsibility for the safe delivery upon acceptance of the shipment. Check for possible shipping damage immediately after receipt.

If the fryer is found to be damaged, complete the following steps:

1. Carrier must be notified within 5 business days of receipt.
2. Carrier's local terminal must be notified immediately upon discovery (note time, date, and who was spoken to), and follow up and confirm with written or electronic communication.
3. All original packing materials must be kept for inspection purposes.
4. The fryer cannot have been moved, installed, or modified.
5. Notify Vulcan Customer Service immediately at 800-814-2028.

Check that the following have been included:

- Crumb Rack(s)
- Basket Hanger(s)
- Tank Brush for Boil Out Procedure Only
- Adjustable Casters (4) two locking, two non-locking for freestanding fryers. Fryer Batteries with the KleenScreen *PLUS*® Filtration System have casters installed from the factory.
- Drain Pipe Extension for freestanding fryers only.
- Twin Fry Baskets (2) per fry tank
- Cleanout Rod
- Fryer Batteries with the KleenScreen *PLUS®* Filtration System
  - Filter Pan

- Suction Tube
- Screen Assembly
- High temperature discard hose

- Manual, Quick Start Guide(s), and Warranty – Keep in safe place for future reference.

INSTALLATION

Do not use the door or its handle to lift the fryer.

Before installing the fryer, verify that the type of gas (natural or propane) agrees with the specifications on the fryer data plate, which is located on the inside of the door panel. Make sure the fryer is configured for the proper elevation.

Record your fryer model, device, and serial numbers for future reference in the space provided below. This information can be found on the fryer data plate.

Fryer Model No: _____

Device: _____

Serial No: _____

Clearances

- Minimum clearance from combustible construction:

  6” (15 cm) from the sides of the fryer
  6” (15 cm) from the back of the fryer
  The fryer may be installed on combustible floors

- Minimum clearance from noncombustible construction:

  0” from the sides of the fryer
  0” from the back of the fryer

- Between the fryer and any open-top flame units:

  16” (41 cm)

- Allow space for servicing and operation.

Location

- Install fryer in an area with sufficient air supply for gas combustion.
- Do not obstruct the flow of combustion and ventilation air.
- Provide adequate clearance for air openings into the combustion chamber.
- Do not permit fans to blow directly onto fryer.

- Keep the fryer area free and clear from combustibles.
- Avoid wall-type fans, which create cross-currents within a room. Avoid open windows next to sides or back.

CODES AND STANDARDS

The fryer must be installed in accordance with:

In the United States:

- State and local codes, or in the absence of local codes, with:
- National Fuel Gas Code, ANSI-Z223.1/NFPA #54 (latest edition). Copies may be obtained from The American Gas Association Accredited Standards Committee Z223, @ 400 N. Capital St. NW, Washington, DC 20001 or the Secretary Standards Council, NFPA, 1 Batterymarch Park Quincy, MA 02169-7471.
- NFPA Standard #96 Vapor Removal from Cooking Equipment, latest edition, available from the National Fire Protection Association, Batterymarch Park, Quincy, MA. 02169-7471.
- National Electrical Code, ANSI/NFPA-70 (latest edition). Copies may be obtained from The National Fire Protection Association, Batterymarch Park, Quincy, MA. 02169-7471.
- In the commonwealth of Massachusetts all gas appliances vented through a ventilation hood or exhaust system with a damper or with a power means of exhaust shall comply with 248 CMR.

In Canada:

- Local codes
- CAN/CSA-B149.1 Natural Gas and Propane Installation Code (latest edition),available from the Canadian Standards Association, 155 Queen Street, Suite 1300, Ottawa, Ontario Canada K1P 6L1.
- CSA C22.1 Canadian Electric Code (latest edition), available from the Canadian Standards Association, 155 Queen Street, Suite 1300, Ottawa, Ontario Canada K1P 6L1.

ASSEMBLY

The fryer must be restrained to prevent tipping and the splashing of hot liquid. The means of restraint may be the manner of installation, such as connection to a battery of appliances, installing the fryer in an alcove, or by separate means such as adequate ties.

FLUE CONNECTION

Make the flue connection as follows:

- Comply with *Vapor Removal from Cooking Equipment*, ANSI-NFPA Standard #96 (latest edition), available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.
- Locate the fryer under a hood with adequate connection to an exhaust duct. The hood must extend 6" (15 cm) beyond fryer on both sides.
- Clearance above the fryer should be adequate for combustion byproducts to be removed efficiently.
- An 18" (46 cm) minimum clearance should be maintained between the flue vent and the filters of the hood venting system.
- Never make flue connections directly to the fryer.
- Do not obstruct the flow of the gases from the appliance. Proper air balance should be maintained in the room.
- Ensure that your ventilation system does not cause a down draft at the fryer's flue opening. Down drafts will not allow the fryer to exhaust properly and will cause overheating which may cause permanent damage. Damage caused by down drafts will not be covered under equipment warranty. NEVER allow anything to obstruct the flue of combustibles or ventilation exiting from the fryer flue. DO NOT put anything on top of flue area.

ELECTRICAL CONNECTION

⚠ WARNING Electrical Grounding Instructions:

This appliance is equipped with a three prong (grounding) plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle. Do not cut or remove the grounding prong from this plug. Fryer must be electrically grounded in accordance with local codes, or in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, or the Canadian Electrical Code, CSA C22.2, as applicable.

Electrical diagram located on inside of door.

GAS CONNECTION

NOTICE All gas supply connections and any pipe joint compound must be resistant to the action of propane gases.

The gas inlet is located on the lower rear of the fryer. Codes require that a gas shutoff valve be installed in the gas line ahead of the fryer.

The gas supply line must be at least the equivalent of ½" (12.7 mm) iron pipe for single units and 1-1/4" (31.75 mm) for batteries. If using the optional quick-disconnect flex hose, ¾" (19 mm) iron pipe for single units and 1-1/4" (31.75 cm) iron pipe for batteries.

Make sure the pipes are clean and free of obstructions, dirt, and piping compound. A battery requires one or two connections of appropriate size for the gas requirement.

⚠ WARNING Prior to lighting, check all joints in the gas supply line for leaks. Use soap and water solution. Do not use an open flame.

After piping has been checked for leaks, fully purge gas pipes to remove air.

GAS PRESSURES (ALL MODELS):

The gas measured exiting the gas valve should be set at .08" W.C. (Water Column) (0.02 kPa) for natural gas and .08" W.C. (0.02 kPa) for propane gas. This fryer has been gas calibrated at the factory to achieve maximum performance. Do not make any adjustments to the gas valve assembly. The supply pressure should be 7-9" W.C. for natural gas and 11-12" W.C. for propane gas. If incoming pressure exceeds 14" WC (½ psig -3.45 kPa), a step-down pressure regulator must be installed.

TESTING THE GAS SUPPLY PIPING SYSTEM:

When test pressures exceed ½ psig (3.45 kPa), the fryer and its individual shutoff valve must be disconnected from the gas supply piping system.

When test pressures are ½ psig (3.45 kPa) or less, the fryer must be isolated from the gas supply piping system by closing its individual shutoff valve.

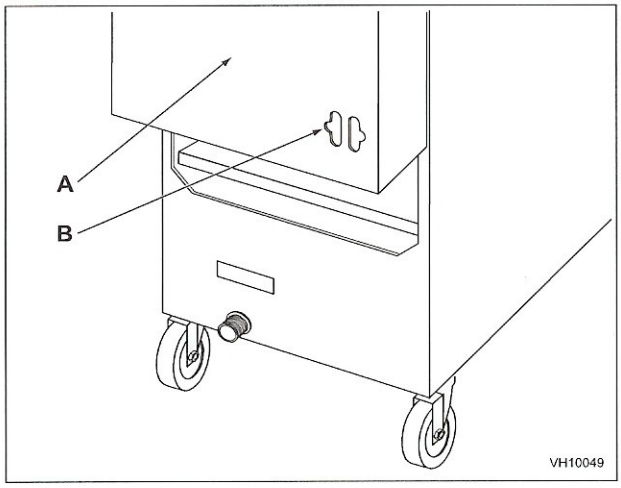
Fryers with Casters:

Separate instructions for installing casters are included with the casters:

- The installation shall be made with a connector that complies with the Standard for Connectors for Movable Gas Appliances, ANSI Z21.69, CAN/CGA-6.16, and a quick-disconnect device that complies with the Standard for Quick-

Disconnect Devices for Use with Gas Fuel, ANSI z21.41.CSA 6.9 or Quick-Disconnect Devices for Use with Gas Fuel.

- When installing a quick disconnect you must also install a means for limiting the movement of the fryer. This device will prevent the gas line or quick disconnect from being strained. The restraining device should be attached to the cutout on the back panel. See illustration for location.



A Rear of Fryer
B Strain Relief Chain Connection (Chain supplied by others)

- The fryer must be installed with a connector (not supplied by Vulcan) complying with the above codes.
- The fryer must be installed with restraining means to guard against transmission of strain to the connector. See illustration.
- The fryer must be installed with the casters provided.
- If the restraint is ever to be disconnected, first turn the gas supply off. If disconnection of the restraint is necessary, reconnect this restraint after the fryer has been returned to its originally installed position.

LEVELING THE FRYER

Check the level of the fryer by placing a level on top of the fryer after gas connections have been made.

Ensure that the fryer is level front-to-back and side-to-side in the final installed position.

If using casters, lock the wheels after unit is level.

OPERATION

⚠ WARNING Hot oil and parts can cause burns. Use care when operating, cleaning and servicing the fryer.

⚠ WARNING Spilling hot frying compound can cause severe burns. Do not move fryer without draining all frying compound from the tank.

⚠ WARNING Fryer is not to be used during a power outage.

OVER-TEMPERATURE SHUTDOWN

If the shortening becomes overheated, a high-temperature shutoff device will turn the gas valve off.

If the fryer shuts down due to overheating, DO NOT power up the fryer until the shortening temperature is below 300°F (149°C).

If an overheating situation persists, contact your local Vulcan authorized service office.

BEFORE FIRST USE

Cleaning
New units are wiped down at the factory to remove any visible signs of dirt, oil, grease, etc. remaining from the manufacturing process.

Before any food preparation, thoroughly wash the protective oil from all surface parts and the tank interior with hot soapy water to remove any film residue and dust or debris.

NOTICE Do not use chlorine or sulfate/sulfide cleaners.

- Wash any accessories shipped with unit.
- Rinse fryer and accessories thoroughly and drain the fryer.
- Wipe tank completely dry with a soft, clean cloth.
- Close the drain valve.
- Fill the fryer tank with liquid shortening.
- Shortening level should be between the min and max lines in the fryer tank.
- Shortening will expand when heated. Do not fill the fryer tank past the MAX line.
- Add fresh shortening as needed to maintain oil level.

BASIC FRYING INSTRUCTION

- Set the desired temperature and allow shortening to heat up to that temperature.
- Fry items that are the same size to ensure equal doneness.
- Drain or wipe dry raw or wet foods to minimize splatter when lowering into hot shortening.
- Add fresh shortening as needed.

Fry Basket Guidelines

- Do not overfill baskets. (See table for recommended basket capacities below) Carefully lower basket into oil.
- When frying doughnuts and fritters, turn product only once during frying.
- When cooking French fries or onion rings, shake the basket several times.
- Batter covered foods should be dropped carefully, one by one, into shortening or basket. If you use the basket, first dip the basket into the shortening to reduce batter-build up on basket surfaces.
- When frying is completed, remove basket or product. Hang basket on rear hanger.

Fry Basket Capacity:

1VK / TR45 & VFRY18: Recommended pounds per basket are 2.5 lbs. (1.1 kg).
1VK / TR65: Recommended pounds per basket are 3.0 lbs. (1.4 kg).
1VK / TR85: Recommended pounds per basket are 3.5 lbs. (1.6 kg).

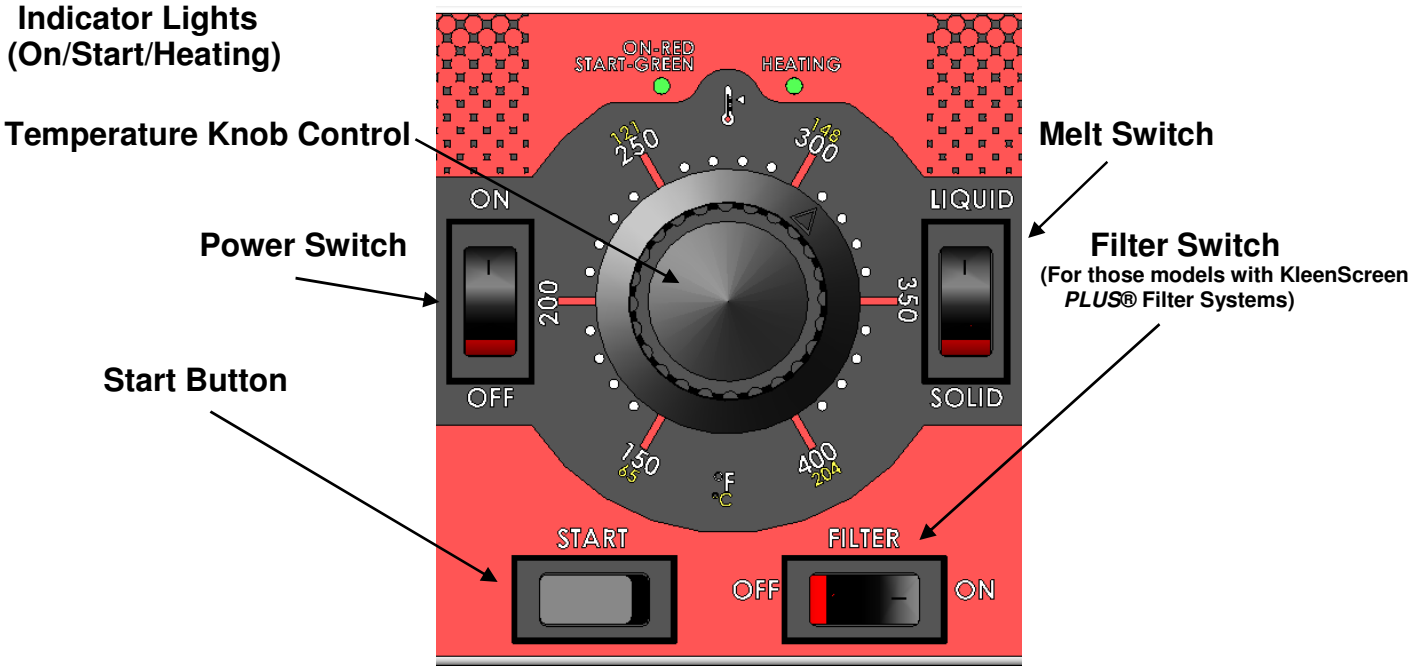
EXTENDING SHORTENING LIFE

Shortening life can be extended by the following guidelines:

- Do not salt foods over the fryer.
- Use good-quality shortening.
- Filter shortening daily (at a minimum).
- Replace shortening if it becomes poorly flavored.
- Keep equipment and surrounding clean. Use tank covers when not in use. (accessory).
- Set thermostat correctly.
- Remove excess moisture and particles from food products before placing on fryer.

TURNING ON THE FRYER

(VK / TR / VFRY)A solid state knob control:



- Open the door to the fryer. Select Liquid or Solid Shortening by pressing the switch to the desired selection.
- Set temperature by turning the knob to the desired temperature.
- Press the power switch to the ON position. The burners will not light until the next step is completed.
- Press the START switch once for the burners to light. The START switch is a momentary switch and will reset after being pressed. The indicator light will change from Red to Green. Heating light will glow Yellow.
- The power burner will cycle on and off throughout the melt cycle. When the fry tank oil reaches 135° F the burners will stop cycling and remain on until the set temperature is reached. Once set temperature is reached the burners will cycle on and off to maintaining the set temperature.

(VK / TR)D solid state digital and (VK / TR)C programmable controls:

For solid state digital and programmable computer controls the power burner will light automatically. The power burner will cycle on and off throughout the melt cycle and continue afterwards maintaining the set temperature.

VULCAN FRYERS
SOLID STATE CONTROLS GUIDE

VULCAN
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START UP in 4 Easy Steps

STEPS 1-4
TURNING ON THE FRYER

1. Fill fry tank with oil. Press the power switch **ON**. The red light will come on.

2. Set temperature knob to the desired set temperature.

3. Move the **MELT** switch to the correct shortening being used: Solid or Liquid.

4. Press the **START** switch and fryer will begin to heat. The burners or heating elements will cycle on and off through the melt cycle. When temperature reaches 135° F the burner or heating element will stay on until set temperature is reached. The red light will change to green. When the fryer calls for heat the yellow light with come on.

TURNING OFF THE FRYER

1. Open the door to the fryer. Press the power switch to the **OFF** position

SOLID STATE KNOB CONTROLS GUIDE

⚠WARNING

- HOT FRYING COMPOUND AND PARTS CAN CAUSE BURNS. USE CARE WHEN OPERATING, CLEANING, OR SERVICING THE FRYER. USE CARE WHEN FILTERING. DO NOT LEAVE UNATTENDED.
- SPILLING HOT FRYING COMPOUND CAN CAUSE SEVERE BURNS. DO NOT MOVE THE FRYER WITHOUT FIRST DRAINING ALL FRYING COMPOUND FROM TANK.

NOTICE IF POWER IS MISTAKENLY TURNED OFF DURING THE FILTERING OPERATION, THE CORRECTIVE ACTION IS AS FOLLOWS:

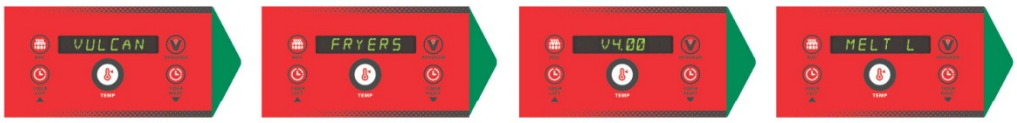
1. CLOSE DRAIN VALVE
2. TURN POWER SWITCH ON
3. **IMMEDIATELY** OPEN DRAIN VALVE
4. CONTINUE FILTERING OPERATION PER STEPS 1-7 USING FILTERING GUIDE

VULCAN FRYERS
SOLID STATE CONTROLS GUIDE

VULCAN
DONE TO PERFECTION.

PROGRAMMING in 8 Easy Steps (for revisions V4.00 or higher)

STEP 1
Fill fry tank with oil and then turn power on



Display will scroll through VULCAN ➤ FRYERS ➤ Rev. No. ➤ MELT CYCLE LIQUID

STEP 2-8
PROGRAMMING MODES

To make changes to your program:

1. If display is locked it must be unlocked using the unlock code.

2. After unlocking go to steps 2 – 8

2

Press program button to enter the program mode: LEFT TIMER displays

Press to increase time.

Press to decrease time.

Press to go to Step 3.

3

RIGHT TIMER displays

Press to increase time.

Press to decrease time.

Press to go to Step 4.

4

COMPENSATING TIME

Press to change to "N" OFF.

Press to go to Step 5.

5

TEMPERATURE SETTING displays

Press to increase temp.

Press to decrease temp.

Press to go to Step 6.

6

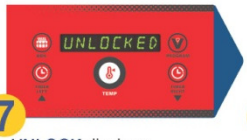
MELT CYCLE displays

Press to change to "S" Solid.

Press to change to NO MELT.

Press to change to "L" Liquid.

Press to go to Step 7.



7

UNLOCK displays

Press to LOCK.

Press to UNLOCK.

Press to go to Step 8.

Note: VULCAN recommends keeping the controls LOCKED after programming to prevent altering

8

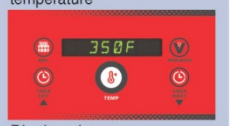
Press button and HOLD FOR 3-5 seconds to save and exit program mode.

Note: Programming modes can be initiated while the fryer is ON by pressing the button. If 'LOCKED' appears refer to 'UNLOCK' code.

OPTIONAL DISPLAY MODE
After the program mode is completed, the following screen will be displayed.

TEMPERATURE SETTING RESULTS

Results of programming for oil temperature is at set temperature



Display shows ACTUAL TEMPERATURE

TO STOP A TIMER ONCE THE COUNTDOWN SEQUENCE HAS STARTED:

Press and hold the timer button until timer is reset and flashing light goes OFF.

OPTIONAL DISPLAY MODES
After the program mode is completed, one of the following screens will be displayed.

MELT CYCLE RESULTS

Results of programming MELT L

Display will say MELT L if oil temperature is below 135 degrees F

Results of programming MELT S

Display will say MELT S if oil temperature is below 135 degrees F

Results of programming NO MELT

VULCAN FRYERS
COMPUTER CONTROLS GUIDE

VULCAN
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PROGRAMMING in 7 Easy Steps (for revisions V2.79 or higher)

START
Fill fry tank with oil and then turn power on.

Display will scroll through VULCAN FRYER ➤ Rev. No. ➤ MELT CYCLE LIQUID

STEP 1-7 PROGRAMMING MODES

UNLOCK CODE

1. If display is locked it must be unlocked using the unlock code.

To UNLOCK this control, press buttons 1 2 3 4 while the word 'LOCKED' is displayed

2. After unlocking go to steps 1 - 7

1

Press program button. USER SETTINGS displays.
To set cook temperature, press 1.
The current temperature will begin to flash. Type in the revised temperature.
Press to save your new cook temperature.

2

To set the melt cycle, press 2. The LIQUID display will begin to flash.
Press the button to select, LIQUID, SOLID, and NO MELT options.
Press to save your melt cycle.

3

To set Cook Time manually, press 3.
SELECT MENU ITEM will display.

Select an item to be edited by pressing the corresponding number 1-10. The menu will change to allow edits to the menu item selected using the MENU ITEM SETTINGS in the right display.

3a Press 1 to edit the NAME of the menu item and follow the directions on the right display. To change the letters press button 1 move towards the beginning of the alphabet and button 2 to move towards the end of the alphabet. The LED above the button selected for the menu item to be edited will be lit and the available parameters for editing will be listed in the right display.
Press to save the new NAME of the menu item.

3b Press 2 to change the COOK TIME. The current time will flash. Type in the new COOK TIME.
Press to save your new COOK TIME.

3c Press 3 to edit the SHAKE TIME.
The current shake time will flash. Type in the new SHAKE TIME.
Press to save your new SHAKE TIME.

3d Press 4 to change the HOLD TIME.
The HOLD TIME will flash. Type in the new HOLD TIME.
Press to save your new HOLD TIME.

3e Press 5 to choose COMPENSATING TIME or ACTUAL TIME.
YES will begin to flash. Press the button to select YES for COMP TIME or NO for ACTUAL TIME.
Press to save your selection.
Press again to exit MENU ITEM SELECTION and return to SELECT MENU ITEMS.

4

Press the program button. USER SETTINGS displays.
To Lock control or keep the computer UNLOCKED press 4.
The current setting will flash.
Press the button to select YES or NO.
Press to save your selection.

5

To adjust the Beeper VOLUME, press 5. The current setting will flash and will sound.
Press the button to select 1, 2 or 3.
Press to save your selection.

6

To set Language, press 6. The current setting will flash.
Press the button to select ENGLISH, SPANISH, or FRENCH.
Press to save your selection.

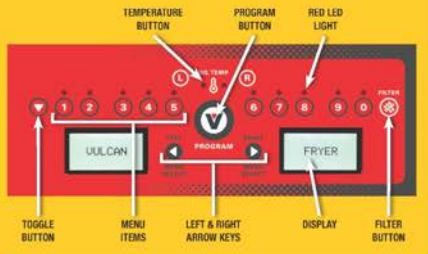
7

To set the IDLE SETBACK, press 7.
The current time will flash.
Type in the new IDLE TIME (10-99 minutes).
Press to save your new IDLE SETBACK time.
Press again to SAVE ALL OF YOUR SETTINGS and exit the programming mode. MENU ITEMS will display.

OPERATION TIPS:

- To scroll through Menu Items 1-10 press the button.
- To activate a cook cycle timer press a button 1 - 0. First push the desired cook timer button and then press L or R corresponding to which basket is being used. Example: 2 L, 5 R. NOTE: You can use the same button for both L and R baskets. For example, 4 L, 4 R.
- To cancel a cook timer, press and release the L or R button and the corresponding number button 1 - 0. The timer will stop and reset.
- With single basket lift fryers only press timer buttons 1 - 0 to activate the basket lift. There is no need to use the L and R buttons. To cancel the timer, press the same button again and the basket will raise up.
- Product keys blink when activated and are solid when programming.
- To silence alarm when timer is complete, press flashing menu item.
- VULCAN recommends keeping the controls LOCKED after programming to prevent altering.

DISPLAY PANEL CONTROL GUIDE



TO REVIEW SETTINGS:

To REVIEW SETTINGS, press the OIL TEMP button.
ACT temperature displays. Set temperature displays.

Hit LEFT or RIGHT arrow, followed by desired product key 1 - 0.
Display will scroll through settings for Time, Shake, Hold, and Cook Cycle.

OFFLINE PROGRAMMING WITH SOFTWARE MENU PROGRAM:

(Desktop or Laptop computer required. Download the Menu Programming Software from www.vulcanequipment.com).

To load a new product menu using the software menu program offline with a desktop or laptop computer:

1. With power switch in OFF position, insert USB memory drive.
2. Turn power switch ON and allow computer to complete start-up diagnostics before proceeding. Allow 2-3 minutes.
3. Press to start at USER SETTINGS screen.
4. From the USER SETTINGS screen, press 3.
5. Quickly press the toggle button once.
6. Press the 1 to select file.
7. Press key to confirm.
8. Remove USB memory device and confirm program was loaded.

F32979 (October 2016)

TURNING OFF THE FRYER

1. Press the power switch to the off position.

DRAINING THE TANK

Freestanding Models ONLY:

1. Turn off fryer.
2. Insert the drain extension into the drain valve. Tighten only hand tight.
3. Direct the drain spout into the container that you want to drain the shortening into.
4. Open the drain valve. The oil will drain into the container. When the container is full or the fryer tank is empty, close the drain valve. Repeat this step until the fryer is empty. Remove the drain extension and place it back into the provided holder.
5. It is recommended to now boil out your fry tank. Follow the Boil Out procedure. Then perform the weekly clean-out as described under CLEANING.
6. Once tank is completely empty, boiled out and cleaned, add new shortening. Turn on the power switch to begin heating the oil to desired temperature.

BOIL OUT PROCEDURE

Weekly or when oil is replaced:

Freestanding Models ONLY:

1. Drain the tank as described under DRAINING THE OIL.
2. Close the drain valve and fill tank with water. Use a boil out solid degreaser which can be ordered from your local dealer. Follow the instructions on the side of the package.

NOTICE Do not use chlorine or sulfate/sulfide cleaners.

3. Solution level must be between the MIN and MAX levels on the fryer tank.
4. Turn the power switch to the on position. With solid state knob controls (A), set the temperature knob to 200°F. Press the start button. Water boils at 212°F. For solid state digital models (D) and computer models (C) models, the temperature will automatically set for 195-200°F. Do not bring water temperature to an overly active boil.
5. Use the tank brush; clean the sides, bottom and heat exchanger tubes.
6. Screw the drain extension in the drain valve and hand tighten only. Drain the cleaning solution from the tank into a container.
7. Close the drain valve and refill the tank with water. Add 1 cup (1/4 L) of vinegar to neutralize alkaline left by the cleaner. Solution level must be between the MIN and MAX level on the fryer tank. Press the start button for (A) and Temp Button for (D) and C) models, to allow the solution to heat up. Allow solution to stand for a few minutes.
8. Drain the tank according to DRAINING THE TANK. Rinse thoroughly with clear, hot water. All traces of cleaner must be removed. Dry the tank thoroughly.

9. Close the drain valve and add shortening. Follow the FILLING TANK WITH SHORTENING procedure in this manual. The fryer is now ready for use. Press the start button for (A) and Temp Button for (D) and C) models, to allow the solution to heat up.

CLEANING

⚠ WARNING Hot oil and hot parts can cause burns. Use care when operating, cleaning, and servicing the fryer.

Daily

Clean your fryer regularly with the tank brush along with a damp cloth, and polish with a soft dry cloth. If regular cleaning is neglected, grease will be burned on and discolorations may form.

Fingerprints are sometimes a problem on highly polished surfaces of stainless steel. They can be minimized by applying a cleaner that will leave a thin oily or waxy film.

- Clean all exterior surfaces of your fryer at least once daily.
- Use a damp cloth with warm water and a mild soap or detergent.

NOTICE Do not use chlorine or sulfate/sulfide cleaners.

- Rinse thoroughly, and then dry with a soft dry cloth.
- Keep the fryer exterior clean and free of accumulated grease to prevent stubborn stains from forming. If regular cleaning is neglected, grease will be burned on and discolorations may form.
- Remove discolorations by washing with any detergent or soap and water.
- Use a self-soaping, non-metallic scouring pad for particularly stubborn discolorations.
- Always rub with the grain of the stainless steel.
- Do not use a metallic scoring pad or harsh cleaners.

Air Filter Cleaning (VK fryers only):
The air filter needs to be cleaned at least once every three months. Pull the air filter off and clean in a dishwasher or by hand. Dry thoroughly before replacing it into position. There is no need to tighten the band clamp with tools.

EXTENDED SHUTDOWN

1. Thoroughly drain the fryer. Refer to DRAINING THE FRYER.
2. Clean the fryer according to CLEANING.
3. Push Power switch to the off position
4. Turn off the main gas shutoff valve.

KleenScreen *Plus*® Filtration System

General

The KleenScreen *PLUS*® filtration system filters the oil as it is pumped back into its' respective tank(s). Only one tank can be drained and filtered at a time. Under no circumstances should both tanks be drained at the same time.

Assembly

- After unpacking, wash the filter pan, crumb basket and filter screen assembly. Make sure you remove the insert located inside the filter screen. Use dishwashing detergent and warm water, (parts are dishwasher safe). Rinse the filter pan, crumb basket and filter screen components completely and wipe all parts dry with a clean cloth.
- Pull out the filter drawer all the way leaving the filter pan opening exposed.
- Place the filter tank into the filter drawer making sure that the pins on the bottom of the filter pan line up with the holes in the filter drawer. Position the filter screen assembly into the suction tube clip in the filter pan positioning the filter screen assembly flat on the bottom of the filter pan.
- Carefully line up the suction tube nozzle so that it mates with the oil receptacle block mounted on the frame of the fryer battery. Close the drawer. See Figures 1, 2 3 and 4

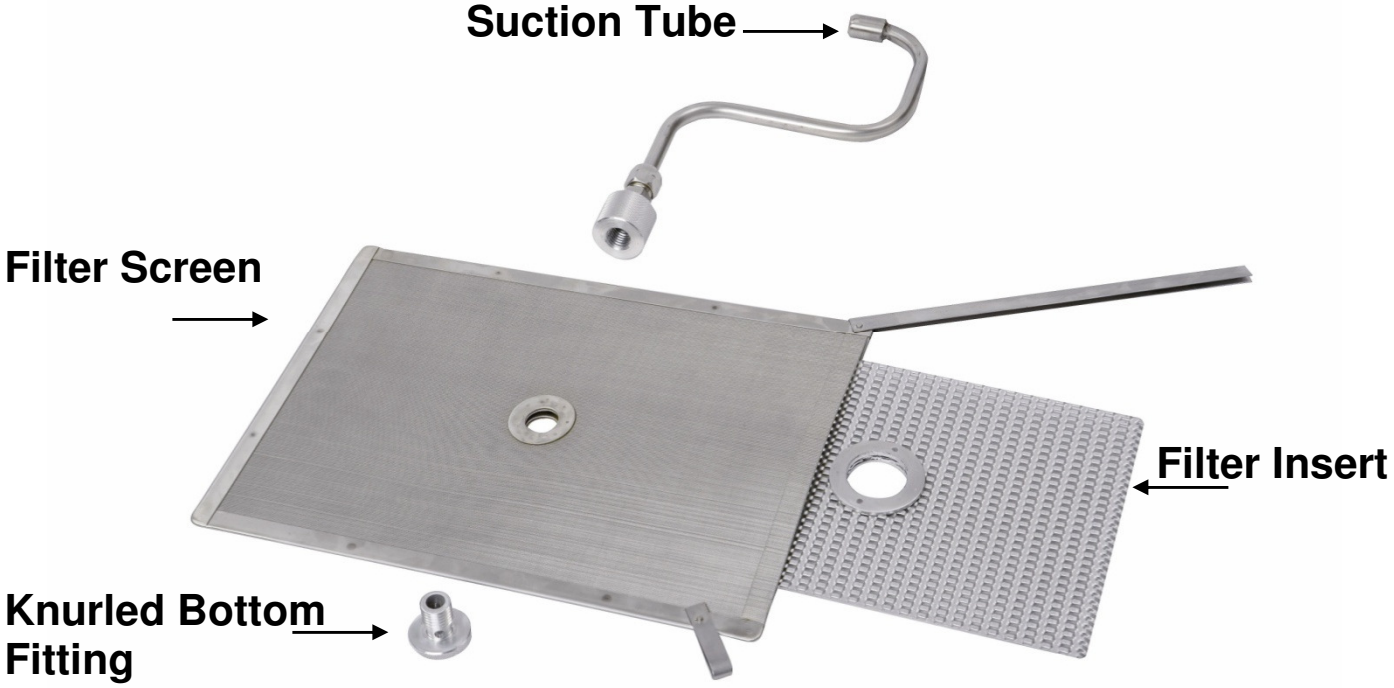
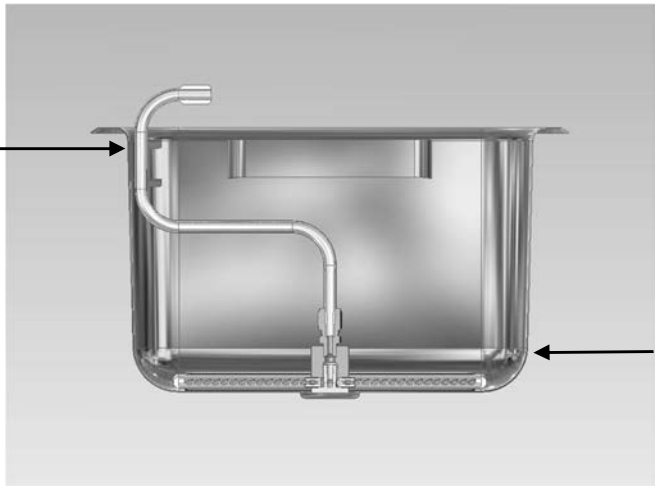


Fig. 1

Fully assembled filter screen assembly:

Fig. 2

Secure Tube with Suction Tube Clip



Filter Screen Lays Flat On Bottom of Filter Pan

Fig. 3

Micro-Filtration Fabric Envelope Accessory Assembly:

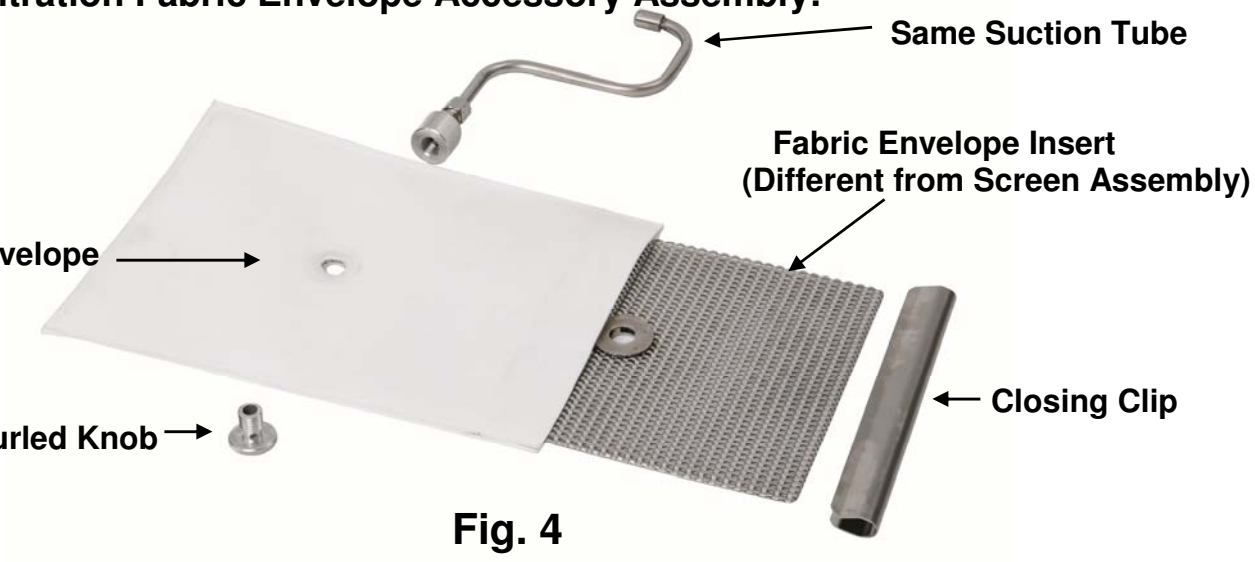
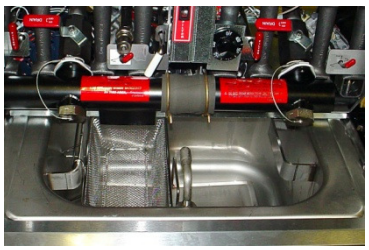


Fig. 4

INSTRUCTIONS TO REMOVE & REPLACE KLEENSCREEN *PLUS*® FILTER ENVELOPE

FOR ABSOLUTE FILTRATION & MAXIMUM FLOW RATE WE RECOMMEND YOU CHANGE YOUR FILTER ENVELOPES AT EVERY OIL CHANGE (10-14 DAYS DEPENDING ON OIL USAGE).



Step 1
Discard all oil from the filter vessel, (see pages 23 or 24). When the filter pan is empty, use a spatula and scrape off all debris left on the filter envelope and in the filter pan.

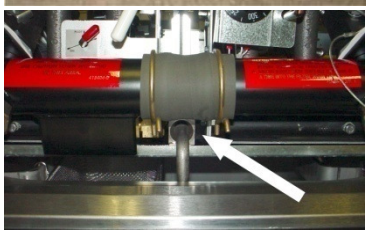
Step 2
Unscrew "S" Tube from filter by turning the Bottom Knurled fitting counter- clockwise.

Step 3
Remove SST Closure Clip by lifting off one side.

Step 4
Remove SST Filter Screen Insert and wash insert with hot water and dry thoroughly. The Filter Screen Insert is dishwasher safe. Place the insert into a new KleenScreen *PLUS*® Filter envelope.

DO NOT WASH FABRIC ENVELOPE

Step 5
Place Filter Screen Insert into the fabric envelope making sure that the holes line up. Fold over the other end of the envelope and place SST Closure Clip on – hinge over and firmly press clip all the way down to secure and seal filter assembly. Making sure that the folded end is face down; screw "S" Tube Assembly onto the Filter Assembly. Tighten the Bottom Knurled fitting. When tightened, the "S" Tube assembly should be perpendicular to the long side of the filter assembly.



Step 6
Reposition the filter tube into the provided clip. Align filter tube so that the end of the "S" Tube engages the Oil Receptacle fitting each time the drawer is opened and closed.

Operation

⚠ WARNING Hot oil and parts can cause burns. Use care when operating, cleaning and servicing the fryer.

⚠ WARNING Spilling hot frying compound can cause severe burns. Do not move fryer without draining all frying compound from the tank.

NOTICE Never run water or boil out solution through filter and motor / pump. Doing so will void your fryer warranty.

NOTICE Filter ONLY one fry tank at a time

FILTERING PROCEDURE – KleenScreen *PLUS*® Models ONLY

Filter shortening at least once a day.

1. **NOTICE** Do NOT turn off the power to the fryer. Leave power on.
2. Vulcan recommends adding an oil treatment media to the oil prior to filtering.
3. Make sure that the filter drawer is closed completely and that the suction tube and receptacle block are in the correct position. Fig. 5

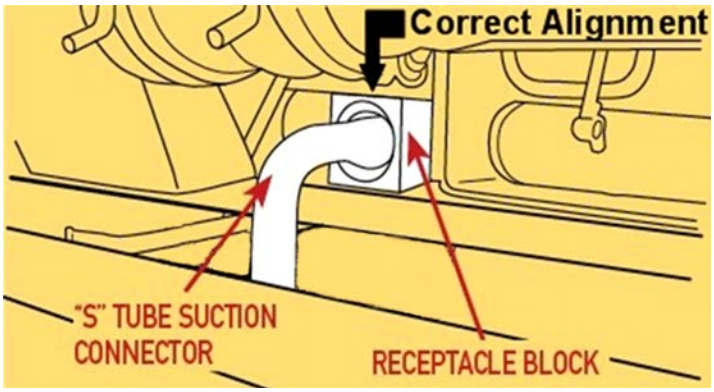


Fig. 5

4. A cold fryer will not drain easily. Always filter shortening between 250°F and 350°F. The shortening in the cold zone area will remain hard if the heat is only on for a few minutes. If necessary, use the clean-out rod to carefully move the hard shortening to an area above the cold zone where it will melt.
5. Slowly open the drain valve to allow oil to flow from the fry tank to the filter pan. Then open the drain valve all the way. Please note the gas power burner will automatically turn off at this point. DRAINING will appear on the digital display for solid state digital (D) and DRAINING OIL will display on computer models (C).

6. When fry tank is empty turn on the filter pump by pressing the filter button on the (A) control or by holding your finger on the filter icon for 3-4 seconds on the solid state digital models (D) and for computer models (C). Allow the pump to filter the oil for a couple of minutes BEFORE closing the drain valve.

7. Close the drain valve. The display will change to; FILL TANK for solid state digital models (D) and FILL TANK for computer models (C).

8. Fill tank with new shortening. Fill to a minimum of the MIN level but no higher than halfway between MIN and MAX. Oil will expand as it is heated.

9. On solid state digital models (D) and computer models (C) models, the display will ask if the tank is full; TANK FULL, HIT TEMP. If the tank is full, press the Temp Button on the display. Once pressed, the gas power burner will ignite and begin heating the oil to desired temperature.

10. Press the START button for solid state knob control (A) and gas power burner with ignite and begin heating the oil.

VULCAN FRYERS
SOLID STATE KNOB CONTROLS GUIDE

VULCAN
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FILTERING in 7 Easy Steps

STEPS 1-4

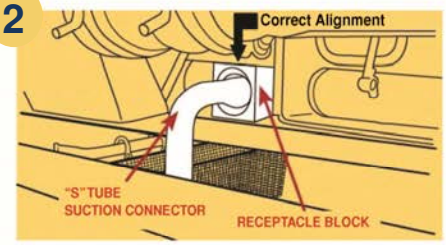
TIP: Use provided crumb scoop to remove and suspend crumbs on the bottom of tank before proceeding to Step 1.

1

Make sure that the Power is on.
Do NOT turn off the power to the fryer

- Vulcan recommends adding an oil treatment media to the oil prior to filtering.
- Make sure that the filter drawer is closed completely and that the suction tube and receptacle block are in the correct position.

2



Open the fryer doors and ensure that the filter drawer is pushed back into place under the fryer with the "S" Tube Suction Connector and Receptacle Block engaged.

3

Open the drain valve slowly allowing the oil to drain down into the filter pan. The burners or heating elements will automatically turn off.

TIP: Use the provided tank brush to clean and remove food particles from the fry tank.

4

Press **FILTER** switch to engage the motor/pump. Allow the oil to cycle for a few minutes until the oil and fryer are clean.

STEPS 5-7

5

Close the drain valve slowly allowing the oil to fill the fry tank with clean oil. The burners or heating elements will not turn on at this point. Allow the oil to fill back into the fry tank from the filter pan. It is normal to see a few air bubbles during this process.

6

When the filter pan is empty push the **FILTER** switch to turn off the motor / pump. Oil level should be between the MIN and MAX lines.

7

Once the level of the oil has been checked and verified, press the **START** switch. The red light will turn to green. The burners or heating elements will automatically turn back on and the fryer will resume heating. Yellow light will display when heating.

DRAINING AND DISCARDING OIL FROM THE FRYER

A Follow filtering instructions steps 2 – 3, however **DO NOT** put oil treatment media into fryer. Drain the fryer oil into the filter pan.

B Attach the quick disconnect hose to the discard male quick disconnect fitting. Do not connect hose while motor/pump is running.

C Place other end of the discard hose into a container that is large enough to retain the discarded shortening.

D To start the discard operation, filter switch behind door must be in the "use hose to discard only" position.

E Before pressing the FILTER button located behind the door, hold the hose firmly and point to the discard container. Press the FILTER button and the motor/pump will start immediately. Oil will begin to flow through the hose into the container.

F To turn off the motor/pump, simply push the FILTER button on the control again. Push the filter switch behind the door back to the "use hose to rinse & fill" position. Disconnect the discard hose. Be careful to let the hose drain before putting away. Close the drain valve and refill the fry tank with new oil.

NOTICE If discard vessel is not large enough to hold the entire shortening amount, stop the flow by pushing the FILTER button to turn the motor/pump off. Empty the container and resume discard operation by pushing the FILTER button and holding it for approximately 3 seconds.

NOTICE Open the filtering drawer approximately 1" to allow any oil in the return line to run back into the filter pan. This will take about 30 seconds to complete. Then open the drawer completely to clean filter components.

THESE INSTRUCTIONS ARE FOR FRYERS WITHOUT REAR OIL RECLAMATION CONNECTIONS.

⚠ WARNING

HOT FRYING COMPOUND AND PARTS CAN CAUSE BURNS. USE CARE WHEN OPERATING, CLEANING, OR SERVICING THE FRYER. USE CARE WHEN FILTERING. DO NOT LEAVE UNATTENDED.

SPILLING HOT FRYING COMPOUND CAN CAUSE SEVERE BURNS. DO NOT MOVE THE FRYER WITHOUT FIRST DRAINING ALL FRYING COMPOUND FROM TANK.

NOTICE IF POWER IS MISTAKENLY TURNED OFF DURING THE FILTERING OPERATION, THE CORRECTIVE ACTION IS AS FOLLOWS:

1. CLOSE DRAIN VALVE
2. TURN POWER SWITCH ON
3. **IMMEDIATELY** OPEN DRAIN VALVE
4. CONTINUE FILTERING OPERATION PER STEPS 1-7

NOTICE NOT RECOMMENDED TO BE USED WITH SOLID SHORTENING.

Filtering Instructions for Solid State Controls

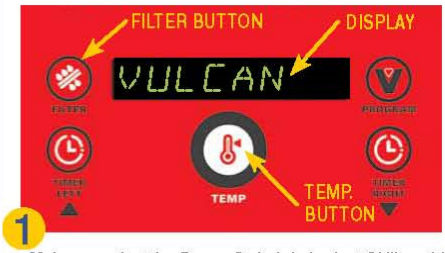
VULCAN FRYERS
SOLID STATE CONTROLS GUIDE

VULCAN
DONE TO PERFECTION.

FILTERING in 7 Easy Steps (for revisions V4.00 or higher)

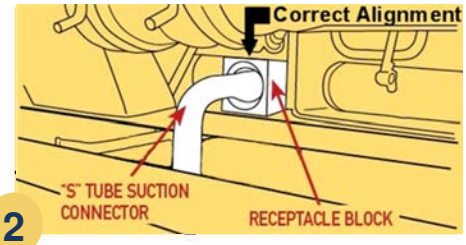
STEPS 1-3

TIP: Use provided crumb scoop to remove and suspend crumbs on the bottom of tank before proceeding to Step 1.



1

Make sure that the Power Switch is in the "ON" position.
Fryer must have power to operate the motor/pump.
Fryer Temperature should be between 300-350 Degrees Fahrenheit.
RECOMMENDED: ADD OIL TREATMENT MEDIA.



2

Open the fryer doors and ensure that the filter drawer is pushed back into place under the fryer with the "S" Tube Suction Connector and Receptacle Block engaged.

3

- Turn the drain valve to allow the oil to drain into the filter pan below. The burners will automatically turn off.
- While draining the tank, use the provided tank brush to move the residue at the bottom and sides of the tank down into drain tube.
- To turn on the filter motor/pump, push the FILTER button located on the control panel, holding it for approximately 3 seconds.
- Allow the oil to cycle through the filtering operation for about 3 minutes or until satisfied that the oil and fry tank are clean. **DRAINING displays.**

TIP: Use provided tank brush to clean and remove food particles on the fry tank.

STEPS 4-7

4

When filtering is finished, close the red drain valve by turning the red drain handle.
FILL VAT displays.

5

- Allow all of the oil to flow back into the fryer from the filter pan. It is normal to see air bubbles in the tank towards the end of filtering.
- When the filter pan is empty, push the FILTER button to turn off the motor/pump.
- Oil level should be between the Min/Max lines on the tank back. **VAT FULL displays.**

(Display is asking if the tank is full).

6

Once the oil level has been checked and verified, press the TEMP button. The burners will automatically turn back on and the fryer will resume heating. **HIT TEMP displays.**

7

After pressing the TEMP button the fryer resumes heating. **HEATING displays.**

DRAINING AND DISCARDING OIL FROM THE FRYER

A Follow filtering instructions steps 2 – 4, however **DO NOT** put oil treatment media into fryer. Drain the fryer oil into the filter pan.

B Attach the quick disconnect hose to the discard male quick disconnect fitting. Do not connect hose while motor/pump is running.

C Place other end of the discard hose into a container that is large enough to retain the discarded shortening.

D To start the discard operation, filter switch behind door must be in the "use hose to discard only" position.

YOU MUST USE THE FILTER BUTTON ON THE DIGITAL CONTROL TO DISCARD THE OIL. Press the FILTER button on the digital control and hold for approximately 3 seconds to activate the motor/pump. Oil will begin to flow through the hose and into the container. **PLEASE NOTE** that the display will not change for this operation.

E To turn off the motor/pump, simply push the FILTER button on the digital control again. Push the filter switch behind door back to the "use hose to rinse & fill" position. Disconnect the discard hose. Be careful to let the hose drain before putting away. Close the drain valve and refill the fry tank with new oil.

WARNING: Hose connection will be HOT. Use protective heat resistant gloves when handling.

NOTE: If discard vessel is not large enough to hold the entire shortening amount, stop the flow by pushing the FILTER button to turn the motor/pump off. Empty the container and resume discard operation by pushing the FILTER button and holding it for approximately 3 seconds.
THESE INSTRUCTIONS ARE FOR FRYERS WITHOUT REAR OIL RECLAMATION CONNECTIONS.

NOTICE Open the filtering drawer approximately 1" to allow any oil in the return line to run back into the filter pan. This will take about 30 seconds to complete. Then open the drawer completely to clean filter components.
THESE INSTRUCTIONS ARE FOR FRYERS WITHOUT REAR OIL RECLAMATION CONNECTIONS.

⚠ WARNING

- HOT FRYING COMPOUND AND PARTS CAN CAUSE BURNS. USE CARE WHEN OPERATING, CLEANING, OR SERVICING THE FRYER. USE CARE WHEN FILTERING. DO NOT LEAVE UNATTENDED.
- SPILLING HOT FRYING COMPOUND CAN CAUSE SEVERE BURNS. DO NOT MOVE THE FRYER WITHOUT FIRST DRAINING ALL FRYING COMPOUND FROM TANK.

IMPORTANT:
IF POWER IS MISTAKENLY TURNED OFF DURING THE FILTERING OPERATION, THE CORRECTIVE ACTION IS AS FOLLOWS:
1. CLOSE DRAIN VALVE
2. TURN POWER SWITCH ON
3. **IMMEDIATELY** OPEN DRAIN VALVE
4. CONTINUE FILTERING OPERATION PER STEPS 1-6

NOTE: NOT RECOMMENDED TO BE USED WITH SOLID SHORTENING.

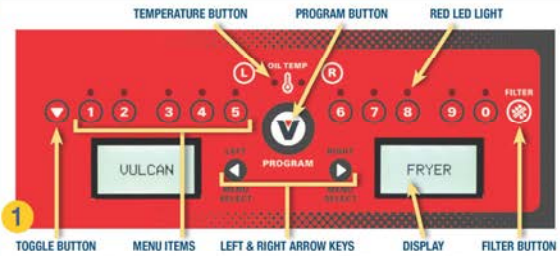
VULCAN FRYERS
COMPUTER CONTROLS GUIDE

VULCAN
DONE TO PERFECTION.

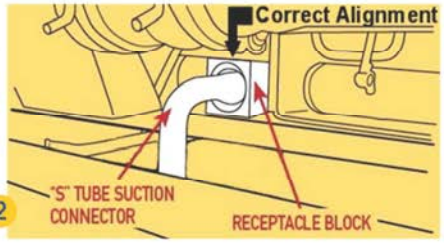
FILTERING in 6 Easy Steps (for revisions V2.79 or higher)

STEPS 1-3

TIP: Use provided crumb scoop to remove and suspend crumbs on the bottom of tank before proceeding to Step 1.



Make sure that the Power Switch is in the "ON" position. Fryer must have power to operate the motor/pump. Fryer Temperature should be between 300-350 Degrees Fahrenheit. RECOMMENDED: ADD OIL TREATMENT MEDIA.



Open the fryer doors and ensure that the filter drawer is pushed back into place under the fryer with the "S" Tube Suction Connector and Receptacle Block engaged. Filter switch behind the door must be in the filter position (not on hose).

- Turn the drain valve to allow the oil to drain into the filter pan below. The fryer will automatically turn off.
- While draining the tank, use a crumb scoop to move the residue at the bottom and sides of the tank down into drain tube.
- To turn on the filter motor/pump, push the FILTER button located on the control panel, holding it for approximately 3 seconds.
- Allow the oil to cycle through the filtering operation for about 3 minutes or until satisfied that the oil and fry tank are clean. DRAINING OIL displays.

TIPS: Use provided tank brush to clean and remove food particles on the fry tank. Use provided clean-out rod to clear drain if clogging occurs.

STEPS 4-6

- When filtering is finished, close the red drain valve by turning the red drain handle. FILL VAT displays.
- Allow all of the oil to flow back into the fryer from the filter pan. It is normal to see air bubbles in the tank toward the end of filtering.

- When the filter pan is empty, push the FILTER button to turn off the motor/pump.
- Oil level should be between the Min/Max lines on the tank back. VAT FULL ? PUSH TEMP displays. (Display is asking if the tank is full.)

Once the oil level has been checked and verified, press the OIL TEMP button. The fryer will automatically turn back on and the fryer will resume heating. HEATING displays if oil temperature is below set temperature.

DRAINING AND DISCARDING OIL FROM THE FRYER

A Follow filtering instructions steps 2 – 4, however DO NOT put oil treatment media into fryer. Drain the fryer oil into the filter pan.

B Attach the quick disconnect hose to the discard male quick disconnect fitting. Do not connect hose while motor/pump is running.

C Place other end of the discard hose into a container that is large enough to retain the discarded shortening.

D To start the discard operation, filter switch behind door must be in the "use hose to discard only" position.

YOU MUST USE THE FILTER BUTTON ON THE COMPUTER CONTROL TO DISCARD THE OIL. Press the FILTER button on the computer control and hold for approximately 3 seconds to activate the motor/pump. Oil will begin to flow through the hose and into the container. **PLEASE NOTE** that the display will not change for this operation.

E To turn off the motor/pump, simply push the FILTER button on the computer control again. Push the filter switch behind door back to the "use hose to rinse & fill" position. Disconnect the discard hose. Be careful to let the hose drain before putting away. Close the drain valve and refill the fry tank with new oil.

⚠WARNING Hose connection will be HOT. Use protective heat resistant gloves when handling.

NOTE: If discard vessel is not large enough to hold the entire shortening amount, stop the flow by pushing the FILTER button to turn the motor/pump off. Empty the container and resume discard operation by pushing the FILTER button and holding it for approximately 3 seconds. THESE INSTRUCTIONS ARE FOR FRYERS WITHOUT REAR OIL RECLAMATION CONNECTIONS

NOTICE Open the filtering drawer approximately 1" to allow any oil in the return line to run back into the filter pan. This will take about 30 seconds to complete. Then open the drawer completely to clean filter components.
THESE INSTRUCTIONS ARE FOR FRYERS WITHOUT REAR OIL RECLAMATION CONNECTIONS..

⚠WARNING

HOT FRYING COMPOUND AND PARTS CAN CAUSE BURNS. USE CARE WHEN OPERATING, CLEANING, OR SERVICING THE FRYER. USE CARE WHEN FILTERING. DO NOT LEAVE UNATTENDED.

SPILLING HOT FRYING COMPOUND CAN CAUSE SEVERE BURNS. DO NOT MOVE THE FRYER WITHOUT FIRST DRAINING ALL FRYING COMPOUND FROM TANK.

IMPORTANT:
IF POWER IS MISTAKENLY TURNED OFF DURING THE FILTERING OPERATION, THE CORRECTIVE ACTION IS AS FOLLOWS:
1. CLOSE DRAIN VALVE
2. TURN POWER SWITCH ON
3. **IMMEDIATELY** OPEN DRAIN VALVE
4. CONTINUE FILTERING OPERATION PER STEPS 1-6

NOTE: NOT RECOMMENDED TO BE USED WITH SOLID SHORTENING.

F32980 (October 2016)

www.vulcanequipment.com • Fryer Technical Support: 1-800-814-2028

⚠WARNING Hot oil and hot parts can cause burns.

NOTICE Never run water or boil out solution through filter and motor / pump. Doing so will void your fryer warranty.

FILTERING TIP:

Open the filtering drawer approximately 1" to allow any oil in the return line to run back into the filter pan. This will take about 30 seconds to complete. Then open the drawer completely to clean filter components.

REMOVING EXCESS DEBRIS FROM THE SCREEN FILTER:

1. Pull the filter drawer out.

2. Remove the filter screen assembly. Scrape debris from the filter screen. Then remove the insert by unlatching the latch. Clean all parts thoroughly as mentioned in the assembly section on page 19.

3. Scrape debris from the bottom of the filter pan and discard in the trash. Clean all parts thoroughly as mentioned in the Assembly section on page 19. Clean all parts thoroughly as mentioned in the Assembly section on page 19.

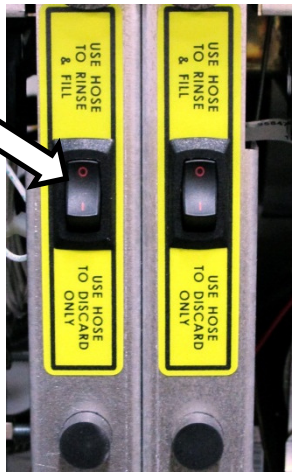
4. Reassemble all filter components after being dried thoroughly as in the assembly section on page 19.

FLUSH/RINSE AND DISCARD OIL:

1. Follow filtering instructions 1-3, however do not put oil treatment media into the fryer. Drain the fryer oil into the filter pan.

2. Attach the quick disconnect hose to the discard male quick disconnect fitting,

3. To discard the oil, place the nozzle end of the discard hose into a container that is large enough to retain the discarded shortening. Press the filter switch behind the door to the "USE HOSE TO DISCARD ONLY" position. This will allow all of the oil to be pumped through the hose only.



4. For flushing/rinsing the tank with filtered oil to remove the particulates that have accumulated, press the filter switch behind the door to the "USE HOSE TO RINSE AND FILL" position. This will allow the oil to pass through the hose and come in from behind the tank at the same time.

5. With the power switch still ON; press the discard/flush switch on. Press and hold the filter button for at least 3 seconds and the Motor/Pump will begin to operate. NOTE: Oil will exit immediately out of the nozzle end of the hose.

6. Once the oil has been discarded completely and the filter pan is empty, press the filter button to turn off the Motor/ Pump. Then press the discard/flush switch off.

7. Disconnect the discard hose. The hose connection will be hot due to the temperature of the oil that was discarded. Be careful to let the hose drain before putting away. Close the drain valve and fill the fry tank with new oil.

BOIL OUT PROCEDURE:

Use the Boil Out By-Pass™ drain extension allowing the boil out solution to exit the fry tank without using the filtering system. Do NOT allow water to run through the motor / pump. Drain the boil out solution into a bucket or place a high temperature rated water hose on the end of the drain extension allowing the other end to flow into a floor drain. In Fig. 6 the arrow is pointing to the drain extension. It is threaded into the top coupling of the oil drain tube. Drain extension needs to be only hand tightened.

Boil Out By-Pass™ Extension Tube

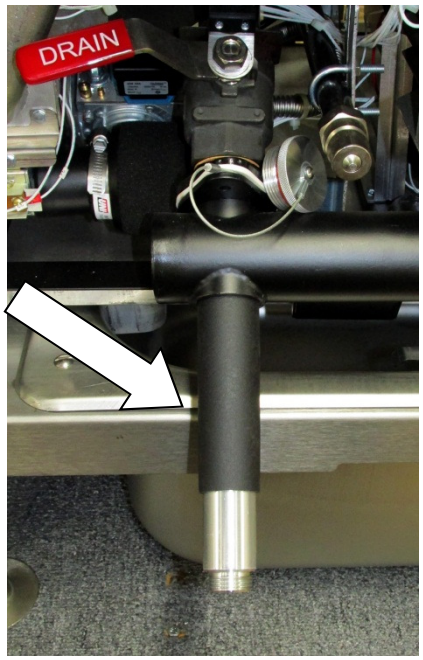
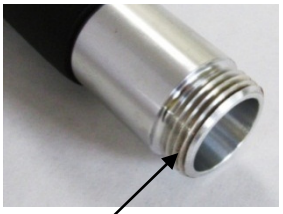


Fig. 6

Standard Hose End (Smaller Thread Side)



Drain Tube End (Larger Size Threads)

THERMAL OVERLOAD PROTECTION BUTTON:

The motor/pump supplied with the filtering system has a thermal overload protection circuit that senses when excess heat occurs. This can occur due to filtering for long periods of time or under heavy load prior to discarding debris buildup. If the thermal overload protection is tripped, wait 5 minutes and then reset the motor by pushing in the red button. The arrow in Figure 7 shows the location of the reset button; located on the front of the motor / pump facing towards you.

⚠ WARNING Hot oil and hot parts can cause burns.

Fig 7.

MAINTENANCE

⚠ WARNING Hot oil and hot parts can cause burns. Use care when operating, cleaning, and servicing the fryer.

⚠ WARNING Spilling hot fryer compound can cause severe burns. Do not move fryer without draining all frying compound from the tank.

FLUE VENT INSPECTION

When the fryer is cool, inspect annually. Check the flue and clear any obstructions.

Service in the US and Canada

Contact the Service Contractor in your area to obtain service and parts information. For a complete listing of Service and Parts depots refer to www.vulcanequipment.com.

ALARMS AND ERROR MESSAGES

NO OR LOW GAS SUPPLY – If no action is taken after 90 seconds, an alarm sounds continuously, the heat demand is disabled and any running cooking cycles are cancelled. The digital display the following message:

"D" Solid State – IGNITION LOCKOUT

"C" Computer – IGNITION LOCKOUT CHECK GAS SUPPLY

The fryer must be turned off, then back on to re-initialize the control and to have normal functions resumed.

OPEN PROBE – If an open probe is detected, the heat demand is disabled and any running cooking cycles are cancelled. All operator buttons are disabled. The digital control displays the following message:

"D" Solid State – OPEN PROBE

"C" Computer – PROBE OPEN

SHORTED PROBE – If a shorted probe is detected, the heat demand is disabled and any running cooking cycles are cancelled. All operator buttons are disabled. The digital control displays the following message:

"D" Solid State – SHORTED PROBE

"C" Computer – PROBE SHORT

Hi TEMPERATURE – If the temperature is greater than or equal to 415°F (212°C), the heat demand is disabled and any running cooking cycles are cancelled. All operator buttons are disabled. The control displays the following message:

"D" Solid State – HIGH TEMP

"C" Computer – HIGH TMP HIGH TMP

Troubleshooting Chart:

Problem:	Probable Cause:
No Heat:	Power switch not turned on. Gas supply not turned on. Wire connections loose (call service) Wires connections need cleaning High Limit (call service)
Insufficient or too much heat:	Temperature not set to desired temperature. High limit tripped (call service) Temperature probe (call service)
Tank will not drain:	Shortening too cold. Drain pipe clogged with debris.
Motor / pump will not pump oil:	Suction tube not seated correctly in receptacle block. Filter screen is clogged and needs cleaning. Shortening is too thick / cold. Heat oil up to min. 300º F. Discard valve lever not fully engaged either for filtering or discarding. Thermal overload protection button tripped.

SERVICE MANUAL

VK and TR GAS FRYERS W/Wo KleenScreen PLUS

VK Series
TR Series
VFRY18 (after SN 481819109)

- NOTICE -

This Manual is prepared for the use of trained Hobart Service Technicians and should not be used by those not properly qualified.

This manual is not intended to be all encompassing. If you have not attended a Hobart Service School for this product, you should read, in its entirety, the repair procedure you wish to perform to determine if you have the necessary tools, instruments and skills required to perform the procedure. Procedures for which you do not have the necessary tools, instruments and skills should be performed by a trained Hobart Service Technician.

This manual has been provided to you by ITW Food Equipment Group LLC ("ITW FEG") without charge and remains the property of ITW FEG, and by accepting this manual you agree that you will return it to ITW FEG promptly upon its request for such return at any time in the future.

TABLE OF CONTENTS

Service Updates

SERVICE UPDATES

November 2018
- Added TIS Document List.

November 2017
- Updated SPECIFICATIONS.

September 2017
- Added INTERFACE CONTROL BOARD PIN-OUTS.

TIS DOCUMENT LIST - VK & TR GAS FRYERS

SERVICE TAB	
Document Title	**Document Type**
VK and TR GAS FRYERS W/Wo KleenScreen PLUS Service Manual	Service Manual
DVI Switch Malfunction on Fryers with or without Kleenscreen Plus Filtering Systems	Temporary Service Instructions (TSI)

SERVICE TAB (Multimedia)	
Document Title	**Document Type**
VK/TR Analog Control W/Kleenscreen Fryer Wiring Diagram	Electrical Diagram
VK/TR Analog Control W/E.I. Stand Alone Fryer Wiring Diagram	Electrical Diagram
VK/TR D & C Fryer Wiring Diagram	Electrical Diagram
KleenScreen Filtration System User's Guide	Instructions
Repair Flood-Damaged Equipment	Misc
Fryer Computer Control Guide	Operator
VK Series Gas Fryers with KleenScreen Plus Filtration Systems I & O Manual	Operator
Fryers, Mobile Filters, Gas & Electric Service Information	Service Instructions
Fundamentals of Gas	Service Instructions
Hobart Fryers with TDI Computer Control Quick Reference Programming Guide	Service Instructions
Hobart Gas Fryers with Drawer Filter System Solid State Controller Kits - Part No. 913012-6 & 913012-7 Installation Instructions	Service Instructions
Pilot & Burner Problems on Units without Powered Burners Service Information	Service Instructions
Vulcan Fryers Part No. 415144-17 & 415144-18 Control Board Instructions	Service Instructions
Rating Plate Locations ON Current Vulcan-Hart/Wolf Range Equipment	Technical Service Bulletin (TSB)
TSB 0559 Fryers - Contractor Bags	Technical Service Bulletin (TSB)
TSB 1037A Hobart to Vulcan "Common" Model Cross Reference List	Technical Service Bulletin (TSB)
TSB 1159 Floor & Battery Fryers (Gas & Electric) - "Continuous Hinge" Door Assembly	Technical Service Bulletin (TSB)
TSB 1254 Gas & Electric fryers - New Door Magnet (Hobart & Vulcan)	Technical Service Bulletin (TSB)
TSB 1301 Onwatch Quicklook 72 for Gas Cooking Equipment	Technical Service Bulletin (TSB)

SERVICE TAB (Multimedia)	
TSB 1304 Gas Millivolt Controls	Technical Service Bulletin (TSB)
TSB 1324 Solid State Control - Software Revision 3.0 & Higher / Hobart & Vulcan Gas & Electric Fryers	Technical Service Bulletin (TSB)
TSB 1325 Computer Control - Software Revision 3.0 & Higher / Hobart & Vulcan Gas & Electric Fryers	Technical Service Bulletin (TSB)
TSB 1345 Fryer Tank Assembly - Drain Size Change	Technical Service Bulletin (TSB)
TSB 1352 Hobart & Vulcan Gas & Electric Fryers - AFC to NCC Computer Control Conversion Kits	Technical Service Bulletin (TSB)

PARTS TAB	
Document Title	**Document Type**
VK & TR Series Fryers Parts Catalog	Parts Catalog

GENERAL

INTRODUCTION

This service manual covers the specific service information related to the models listed in the chart below. The VK and TR series gas fryers come equipped with solid state analog (A), solid state digital (D) or programmable computer (C) controls. This manual covers single floor model fryers, battery fryers as well as fryers with the KleenScreen *PLUS*® Filtration System. All pictures and illustrations will be of a 2VK45A unless otherwise noted.

All of the information, illustrations and specifications contained in this manual are based on the latest product information available at the time of printing.

MODEL AND ML NUMBERS

MODEL	ML #		MODEL	ML #		MODEL	ML #
1VK45A	136885		1VK45D	136886		1VK45C	136887
1VK65A	136888		1VK65D	136889		1VK65C	136890
1VK85A	136891		1VK85D	136892		1VK85C	136893
1VK45AF	136684		1VK45DF	136895		1VK45CF	136896
1VK65AF	136897		1VK65DF	136898		1VK65CF	136899
1VK85AF	136900		1VK85DF	136901		1VK85CF	136902
2VK45AF	136903		2VK45DF	136904		2VK45CF	136905
2VK65AF	136906		2VK65DF	136907		2VK65CF	136908
2VK85AF	136909		2VK85DF	136910		2VK85CF	136911
3VK45AF	136912		3VK45DF	136913		3VK45CF	136914
3VK65AF	136915		3VK65DF	136916		3VK65CF	136917
3VK85AF	136918		3VK85DF	136919		3VK85CF	136920
4VK45AF	136921		4VK45DF	136922		4VK45CF	136923
4VK65AF	136935		4VK65DF	136941		4VK65CF	136937
4VK85AF	136938		4VK85DF	136939		4VK85CF	136940
1TR45A	136946		3TR45CF	136959		3TR65CF	136972
1TR45AF	136947		4TR45CF	136960		1TR85A	136973
2TR45AF	136948		1TR65A	136961		1TR85AF	136974
3TR45AF	136949		1TR65AF	136962		2TR85AF	136975
4TR45AF	136950		2TR65AF	136963		3TR85AF	136976
1TR45D	136951		3TR65AF	136964		1TR85D	136977
1TR45DF	136952		1TR65D	136965		1TR85DF	136978
2TR45DF	136953		1TR65DF	136966		2TR85DF	136979
3TR45DF	136954		2TR65DF	136967		3TR85DF	136980
4TR45DF	136955		3TR65DF	136968		1TR85C	136981
1TR45C	136956		1TR65C	136969		1TR85CF	136982

MODEL	ML #		MODEL	ML #		MODEL	ML #
1TR45CF	136957		1TR65CF	136970		2TR85CF	136983
2TR45CF	136958		2TR65CF	136971		3TR85CF	136984
4TR65AF	136985		4TR65DF	136986		4TR65CF	136987
4TR85AF	136988		4TR85DF	136989		4TR85CF	136990

MODELS, FEATURES AND OPTIONS

MODELS, FEATURES AND OPTIONS				
MODEL	FEATURES			OPTIONS
	FRYER WIDTH (INCHES)	SHORTENING CAPACITY PER FRYER (POUNDS)	BTU/HR/SECTION	AUTOMATIC BASKET LIFTS
1VK/TR45A /D / C / AF / DF / CF	15.5"	45 - 50	70,000	SINGLE OR DUAL
1VK/TR65A / D / C AF / DF / CF	21.0"	65 - 70	80,000	SINGLE OR DUAL
1VK/TR85A / D / C / AF / DF / CF	21.0"	85 - 90	90,000	SINGLE OR DUAL
2VK/TR45AF / DF / CF	31.0"	45 - 50	70,000	SINGLE OR DUAL
3VK/TR45AF / DF / CF	46.5"	45 - 50	70,000	SINGLE OR DUAL
4VK/TR45AF / DF / CF	62.0"	45 - 50	70,000	SINGLE OR DUAL
2VK/TR65AF / DF / CF	42.0"	65 - 70	80,000	SINGLE OR DUAL
3VK/TR65AF / DF / CF	63.0"	65 - 70	80,000	SINGLE OR DUAL
4VK/TR65AF / DF / CF	84.0"	65 - 70	80,000	SINGLE OR DUAL
2VK/TR85AF / DF / CF	42.0"	85 - 90	90,000	SINGLE OR DUAL
3VKTR85AF / DF / CF	63.0"	85 - 90	90,000	SINGLE OR DUAL
4VK/TR85AF / DF / CF	84.0"	85 - 90	90,000	SINGLE OR DUAL

KLEENSCREEN PLUS FILTRATION SYSTEM: (KSP)

The KleenScreen *PLUS*® filtration system is integrated into the VK Series fryer battery. The filter is housed in a pullout drawer assembly at the base of the fryer. The filtering components in the drawer include a stainless steel filter tank, a stainless steel mesh filter screen with a stainless steel insert, a suction tube and a knurled knob that holds the assembly together. In addition, the KSP comes with a second filtering system; a microfiltration fabric envelope (3), a dedicated stainless steel insert and stainless steel clip that holds the assembly together. With the filter drawer closed, a self-sealing oil return line provides the path to return the filtered shortening back into the fry tank.

This system is designed to provide a through and easy method to filter the shortening. Some of the benefits include:

- Self-contained system eliminating the use of external filter equipment
- Paperless filtering system
- Easy to clean and low maintenance
- Extends the life of the shortening

KSP fryer batteries are standard in single and up to a maximum of a four fryer battery in most cases. Batteries are made up of only fryers, no warming stations.

SERIAL NUMBER LOCATION

Serial number plate is attached to door of fryer.

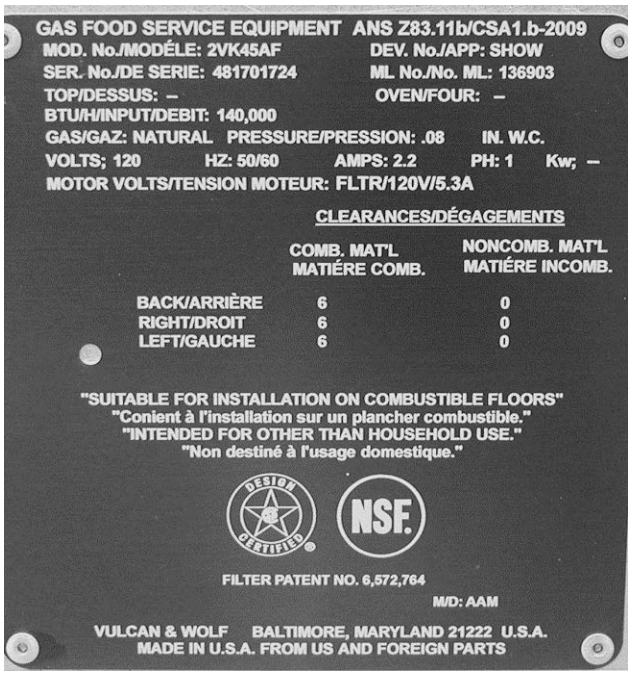


Fig. 1

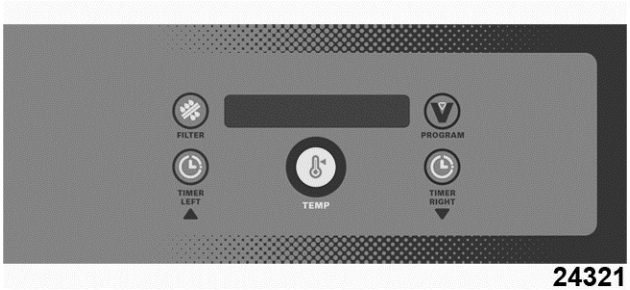
This serial number plate supplies more than the serial number. It also contains electric requirements, gas requirements, clearances and agency approvals. This plate is pop riveted to the door and should not be removed. However, the door sometimes comes off and can become misplaced. If that happens there is a second serial number location on fryer.

Fig. 2

This serial number plate is attached to bottom rear support panel. This plate is pop riveted to support panel and should not come off.

CONTROL PANELS

ANALOG CONTROL



24321

SOLID STATE CONTROL

21322

COMPUTER CONTROL

24319

USB Port

INSTALLATION

Refer to the Instruction Manual for detailed installation instructions.

OPERATION

Refer to the Instruction Manual for specific operating instructions.

CLEANING

Refer to the Instruction Manual for specific cleaning instructions.

TOOLS

STANDARD

- Standard set of hand tools.
- VOM with minimum of NFPA-70E CATIII 600V, UL/CSA/TUV listed. Sensitivity of at least 20,000 ohms per volt. Meter leads must also be rated at CAT III 600V.

SPECIAL

- Temperature tester (thermocouple type).
- Manometer.
- Combustion analyzer.
- Set of metric hex wrenches (must include a 2 mm wrench).
- Set of jeweler's screwdrivers.
- Grounding kit.
- Burndy pin extraction tool RX2025 GE1; Newark Electronics Catalog Number 16F6666. Used for removing pin terminals on Burndy connectors.
- Thumb drive (part number 443444).

NOTE: Customer to supply program for uploading menu items.

SPECIFICATIONS

ELECTRICAL:

- 120VAC supply.
  - Filter motor/pump
  - Basket lift motors
  - Transformer
- 24VAC transformer
  - Fryer controls
  - Basket lift relays
  - Filter relay

MANIFOLD GAS PRESSURES (per fryer section)

- Natural - 0.08" W.C.
- Propane - 0.08" W.C.

BUILDING SUPPLY PRESSURE (MAXIMUM)

- Natural Gas Single Fryer - 6" W.C.
- Natural Gas Battery Fryer - 8" W.C.
- Propane Gas Single and Battery Fryers - 11" W.C.

  Building supply pressure max ½ psi. (14" W.C.)

NOTE: A separate high pressure step-down gas regulator (not supplied with unit) must be used for pressures exceeding maximum. On fryers built between 12/1/12 thru 4/7/16 an incoming gas

pressure regulator is installed on the fryer that has a max supply pressure rating of ½ PSI (14" W.C.).

VK INPUT BTU RATING	
VK SERIES	**BTU/HR/SECTION**
VK45A, VK45AF, VK45D, VK45DF, VK45C, VK45CF	70,000
VK65A, VK65AF, VK65D, VK65DF, VK65C, VK65CF	80,000
VK85A, VK85AF, VK85D, VK85DF, VK85C, VK85CF	90,000

TR INPUT BTU RATING	
TR SERIES	**BTU/HR/SECTION**
TR45A, TR45AF, TR45D, TR45DF, TR45C, TR45CF	70,000
TR65A, TR65AF, TR65D, TR65DF, TR65C, TR65CF	80,000
TR85A, TR85AF, TR85D, TR85DF, TR85C, VK85CF	90,000

REMOVAL AND REPLACEMENT OF PARTS

COVERS AND PANELS

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

Shut off the gas before servicing the unit and follow lockout / tagout procedures.

Control Panel (Solid State and Computer)

1. Remove screws at top of control panel and rotate panel downwards.

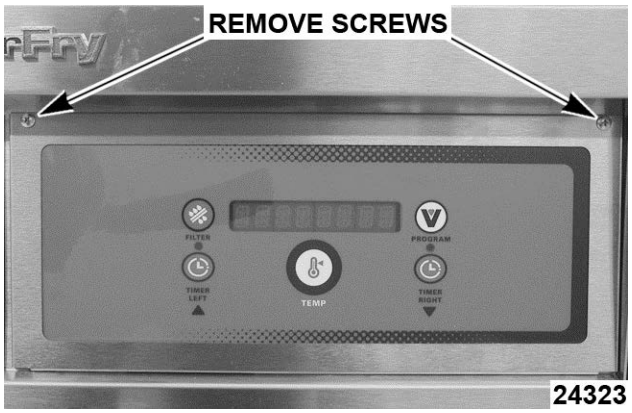


Fig. 7

2. Disconnect wiring harness then lift panel off.

NOTE: The cooking control, control box, interface board and wiring harness are now accessible.

3. Reverse procedure to install.

Basket Lift Covers

⚠ WARNING

Shut off the gas before servicing the unit and follow lockout / tagout procedures.

⚠ WARNING

All gas joints disturbed during servicing must be checked for leaks. Check with a soap and water solution (bubbles). Do not use an open flame.

NOTE: This procedure applies to fryers with automatic basket lift option only.

1. Remove basket assembly lift arms from support rods.
2. Remove screws securing upper cover to flue wrap.

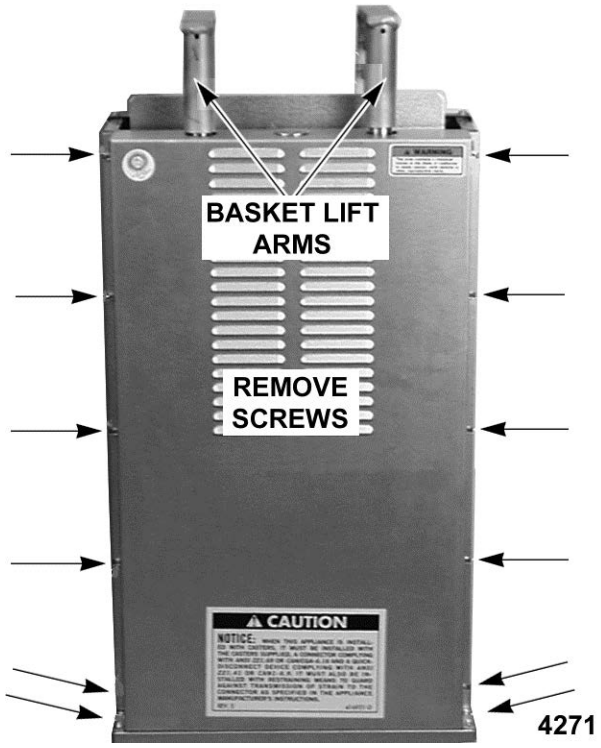


Fig. 8

   A. Lift upper cover over support rods and place cover to the side.

3. Remove screws securing lower cover to motor mounting base.

Fig. 9

4. Reverse procedure to install.

ANALOG CONTROL

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

Shut off the gas before servicing the unit and follow lockout / tagout procedures.

1. Open the door.
2. Unplug wiring harnesses from bottom of control box.
3. Remove control box from frame of fryer.
4. Loosen set screw in control knob and remove from shaft.

Fig. 10

5. Remove control box cover.

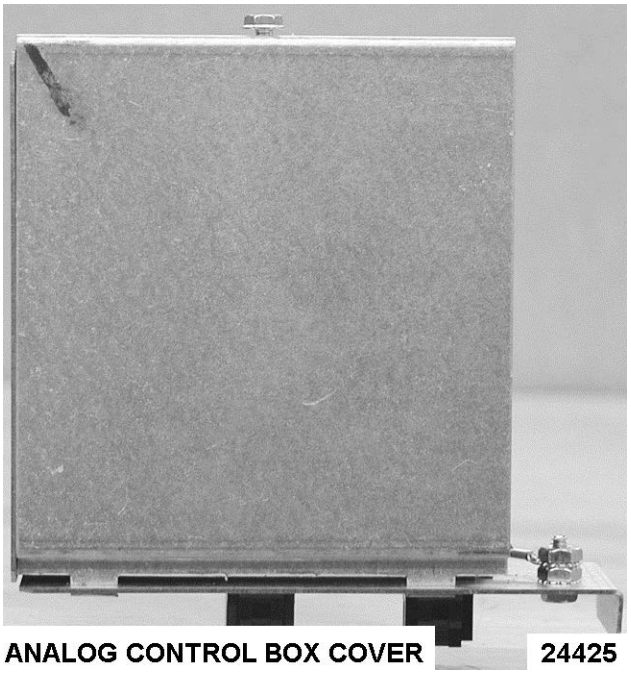


Fig. 11

6. Disconnect lead wires as necessary to remove control.

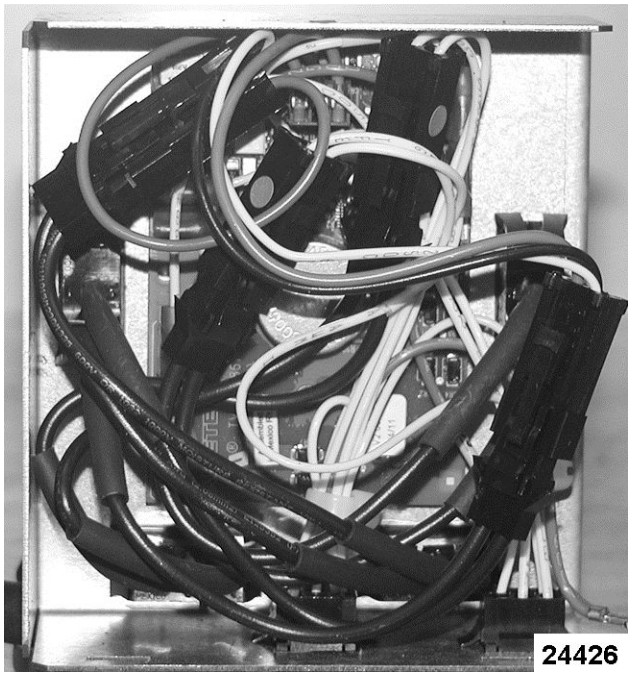


Fig. 12

7. Remove screws from front of control panel and remove control.

INTERFACE CONTROL - D and C SERIES

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

Shut off the gas before servicing the unit and follow lockout / tagout procedures.

1. Remove CONTROL PANEL.
2. Note lead wire locations and remove wiring.
3. Remove screws securing control to fryer and remove.

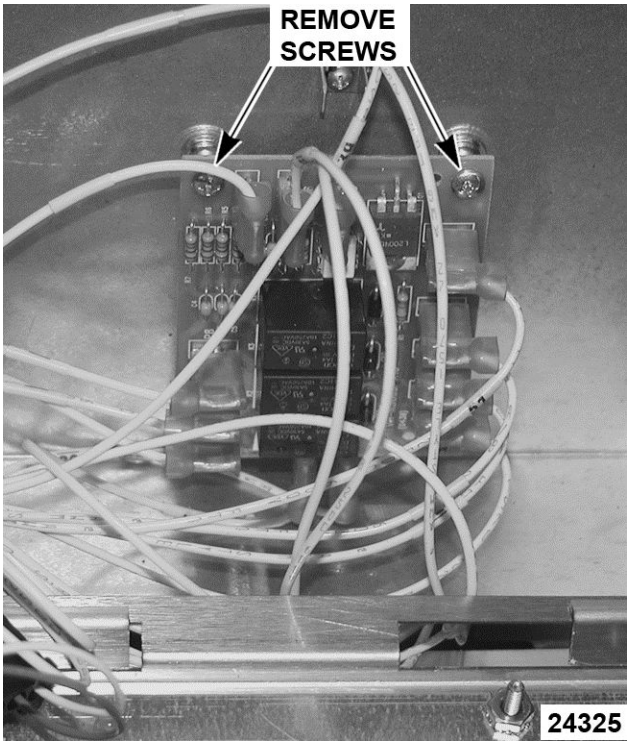


Fig. 13

4. Reverse procedure to install and check for proper operation.

POWER SWITCH - D and C SERIES

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

NOTE: This procedure is for solid state and computer controls. Power switch for analog controls is part of the analog control box.

1. Open fryer door to access power switch.

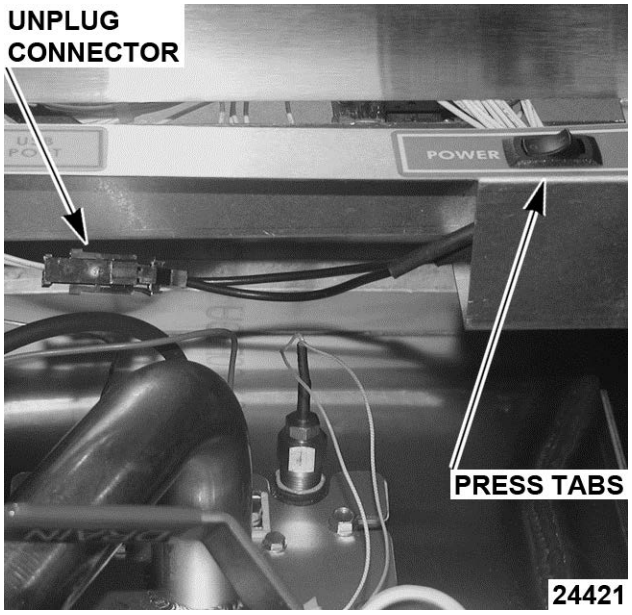


Fig. 14

2. Unplug power switch connector.
3. Reach behind power switch and press tabs on both sides of power switch to remove switch.

NOTE: Power switch is removed from front of the panel.

4. Reverse procedure to install new power switch.
5. Check operation of machine.

TEMPERATURE PROBE

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

Shut off the gas before servicing the unit and follow lockout / tagout procedures.

1. Drain shortening from fryer tank.
2. Unplug temperature probe lead wire connector.

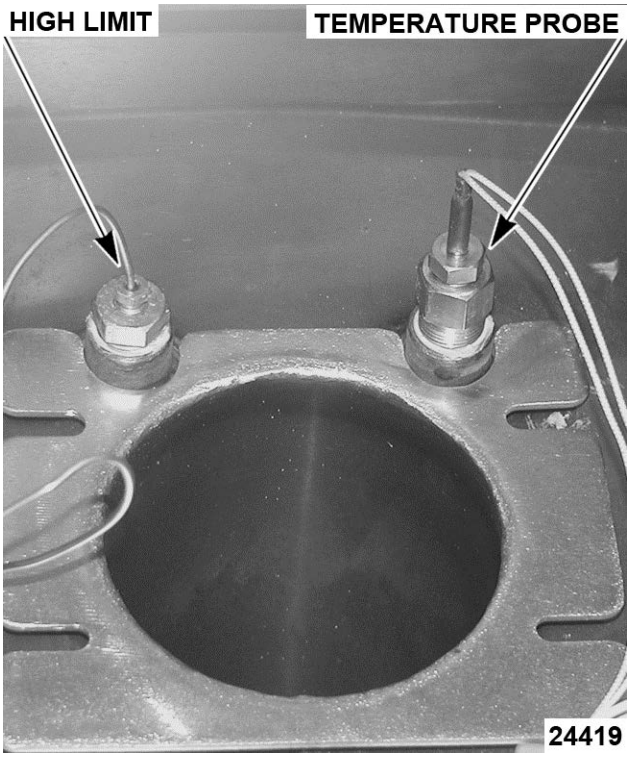


Fig. 15

NOTE: This picture shows the probes with the burner removed.

3. Loosen compression nut and remove probe from fryer.

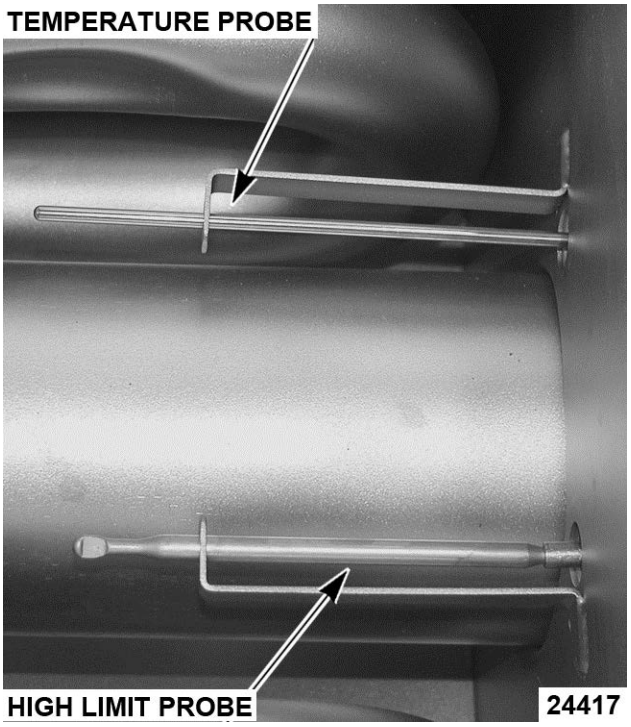


Fig. 16

4. Install new probe making sure that probe is installed into bracket shown.

HIGH LIMIT THERMOSTAT

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

Shut off the gas before servicing the unit and follow lockout / tagout procedures.

NOTICE

Do not sharply bend or kink the high limit capillary tube or damage may occur.

1. Drain shortening from fryer tank.
2. Disconnect lead wires from high limit thermostat.
3. Remove screws securing high limit to mounting bracket.

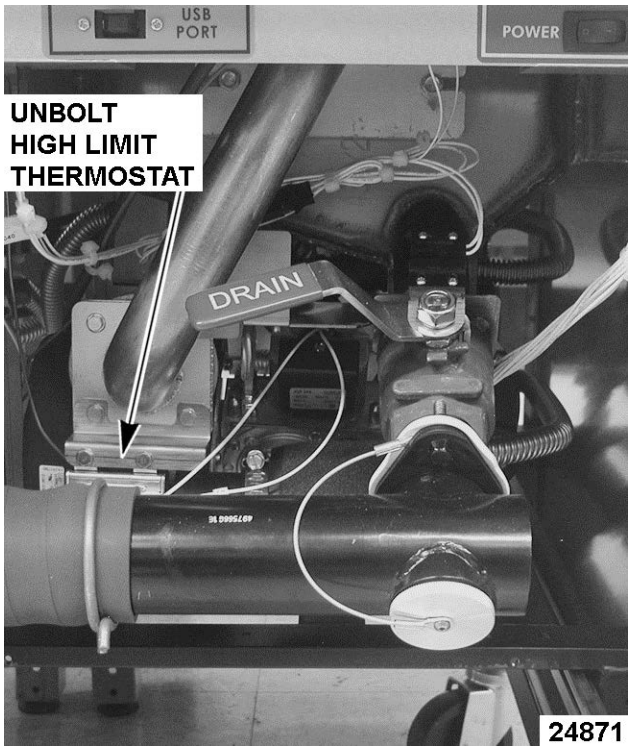


Fig. 17

4. Remove the capillary tube retaining and packing nuts.

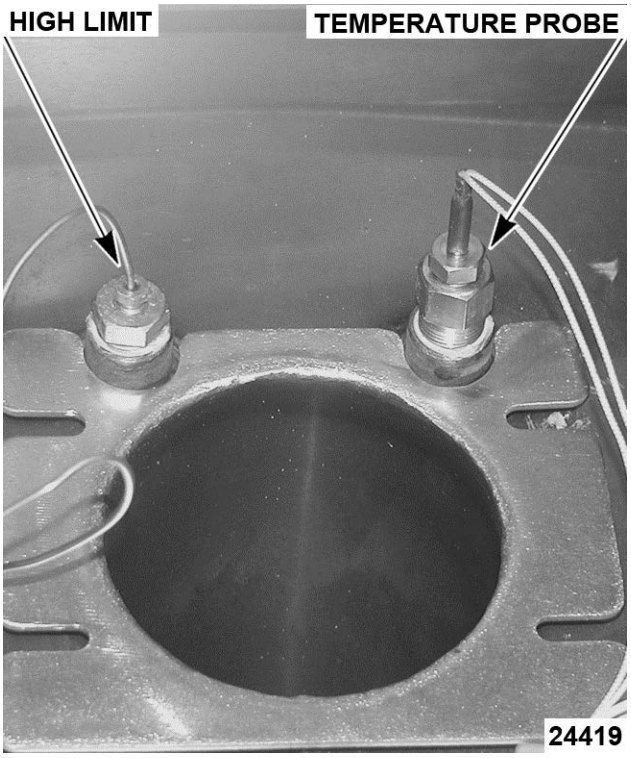


Fig. 18

NOTE: This picture shows the probes with the burner removed.

5. Slide high limit probe out of fry tank.

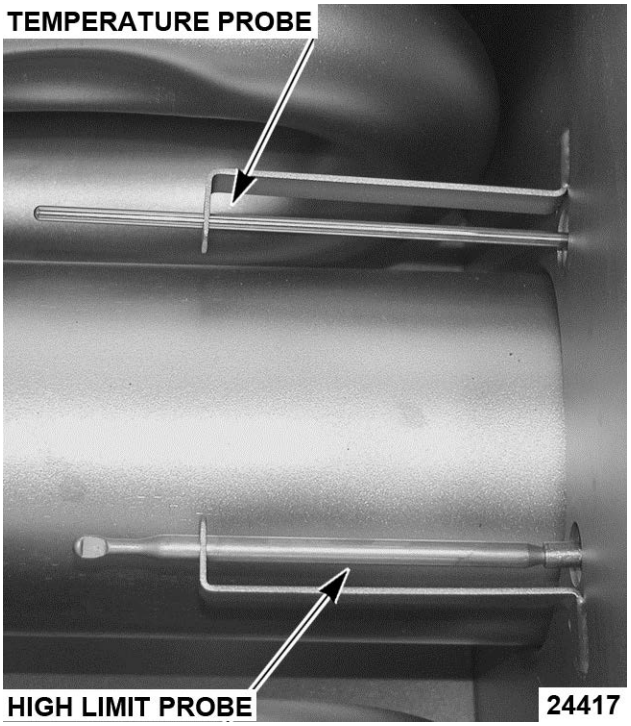


Fig. 19

6. Reverse procedure to install and check for proper operation.

POWER SUPPLY BOX

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

Shut off the gas before servicing the unit and follow lockout / tagout procedures.

⚠ WARNING

All gas joints disturbed during servicing must be checked for leaks. Check with a soap and water solution (bubbles). Do not use an open flame.

NOTE: The power supply box must be removed to access the following components: ignition module, all 24 volt relays, blower control board, both time delay timers, 120 volt transformer.

1. Access rear of fryer and remove screw holding power supply box to support bracket. The box will lower to clear bracket.

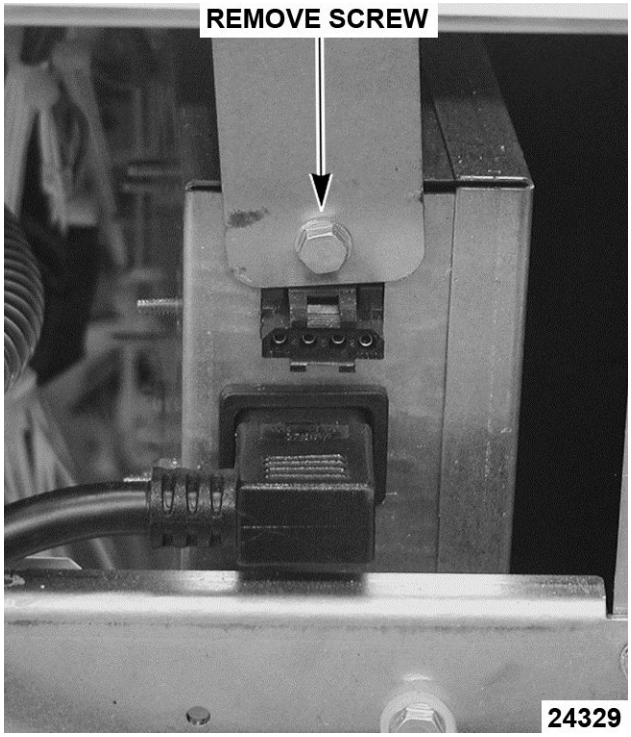


Fig. 20

2. Access front of fryer to slide power supply box toward rear of fryer to disconnect from front support bracket.

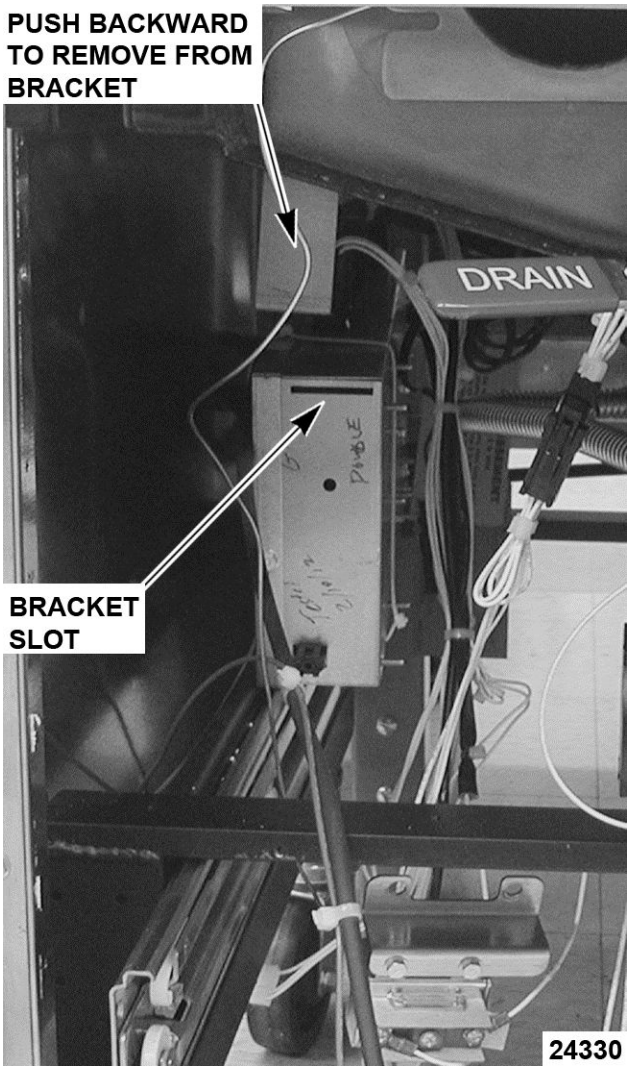


Fig. 21

3. Unplug all connecters from power supply box and remove box from under fryer.

4. Remove cover to access power supply box components.

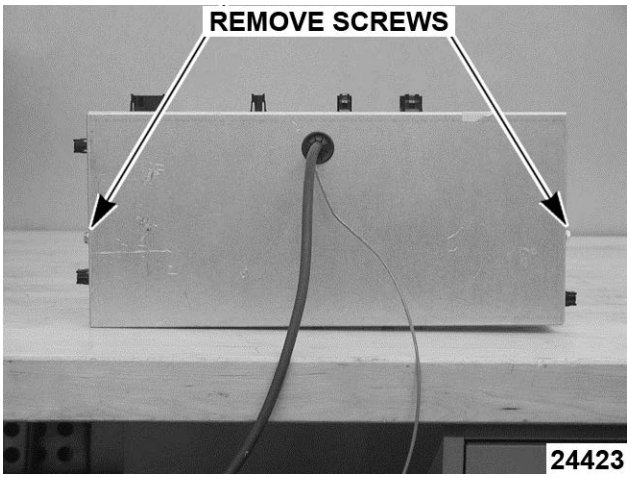


Fig. 22

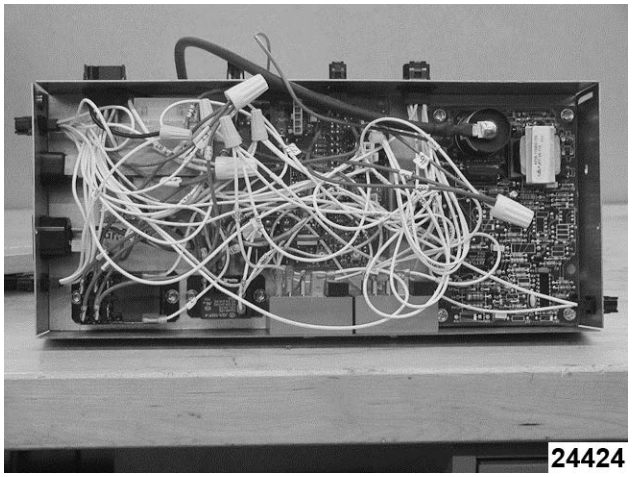


Fig. 23

5. Reverse procedure to install.

POWER SUPPLY BOX COMPONENTS BEFORE 12/1/12

NOTE: The ignition module, blower control board and the time delay timers will not be available to the field any longer. If any one of these items fail, replace power supply box. However, the filter relays and the transformer are still available and can be replaced in the field.

Ignition Module
Replace with updated Power Supply Box Assembly.

Blower Control Board
Replace with updated Power Supply Box Assembly.

Time Delay Timers
Replace with updated Power Supply Box Assembly.

Blower Relay
Replace with updated Power Supply Box Assembly.

Filter Relays (24 VAC and 120 VAC)

1. Remove POWER SUPPLY BOX.
2. Note location of all wiring to the relay and remove wiring.
3. Remove screw and remove relay from box.

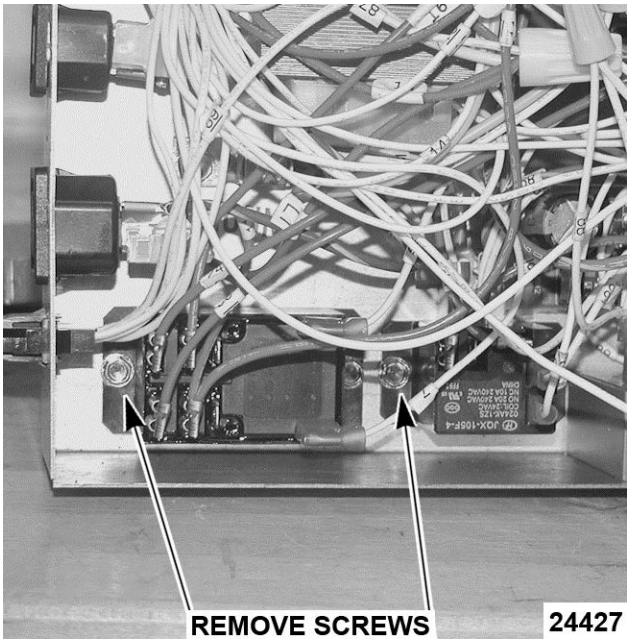


Fig. 24

4. Reverse procedure to install new relay.
5. Reinstall power supply box and check operation.

120 Volt Transformer

1. Remove POWER SUPPLY BOX.
2. Note location of wiring on 120 volt transformer and remove wiring.
3. Remove screws and remove transformer from the box.

Fig. 25

4. Reverse procedure to install new transformer.
5. Reinstall power supply box and check operation.

POWER SUPPLY BOX COMPONENTS AFTER 12/1/12

NOTE: Power supply boxes built after 12/1/12 have different components in them. The 24 volt electronic ignition relay, blower control board, ignition module and both time delay relays are replaced by a single control board.

NOTE: The new ignition module will not have a separate flame sense rod and wire. Ignition module will rectify flame through high voltage wire.

120 Volt Transformer

1. Remove POWER SUPPLY BOX.
2. Note location of all wiring and remove wiring from transformer.
3. Remove four screws and remove transformer from box.

Fig. 26

4. Reverse the procedure to install new transformer.
5. Reinstall power supply box and check operation.

Control Board

1. Remove POWER SUPPLY BOX.
2. Note location of wiring to relay control board and remove wiring.

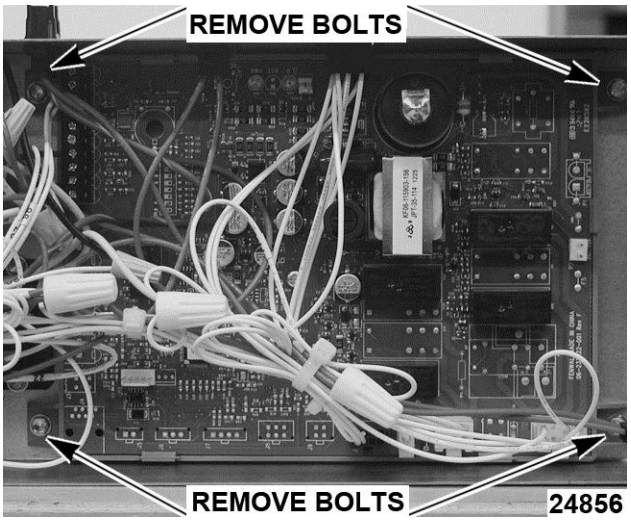


Fig. 27

3. Remove screws and remove from box.
4. Reverse the procedure to install new relay control board.

5. Reinstall power supply box and check operation.

Filter Relays

1. Remove POWER SUPPLY BOX.
2. Note location of wiring to the relays and remove wiring.

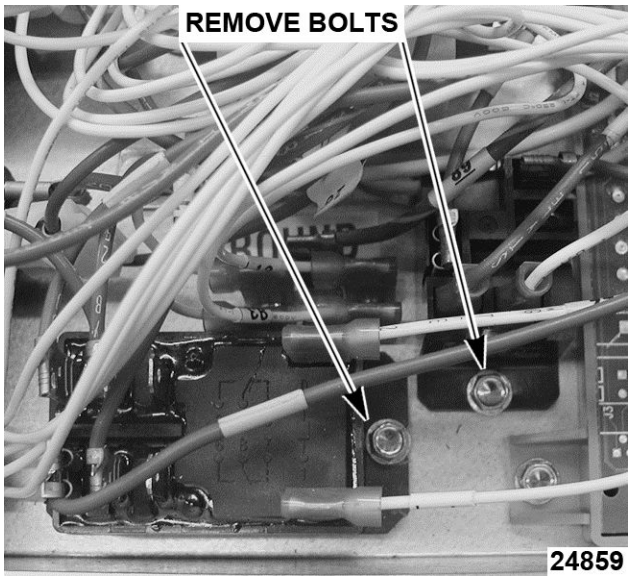


Fig. 28

3. Remove screws and remove from box.
4. Reverse the procedure to install new relays.
5. Reinstall power supply box and check operation.

BURNER ASSEMBLY

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

Shut off the gas before servicing the unit and follow lockout / tagout procedures.

⚠ WARNING

All gas joints disturbed during servicing must be checked for leaks. Check with a soap and water solution (bubbles). Do not use an open flame.

1. Remove gas line from gas valve.
2. Remove electric plug connector from gas valve.
3. Unbolt high limit thermostat clamp from transfer tube.

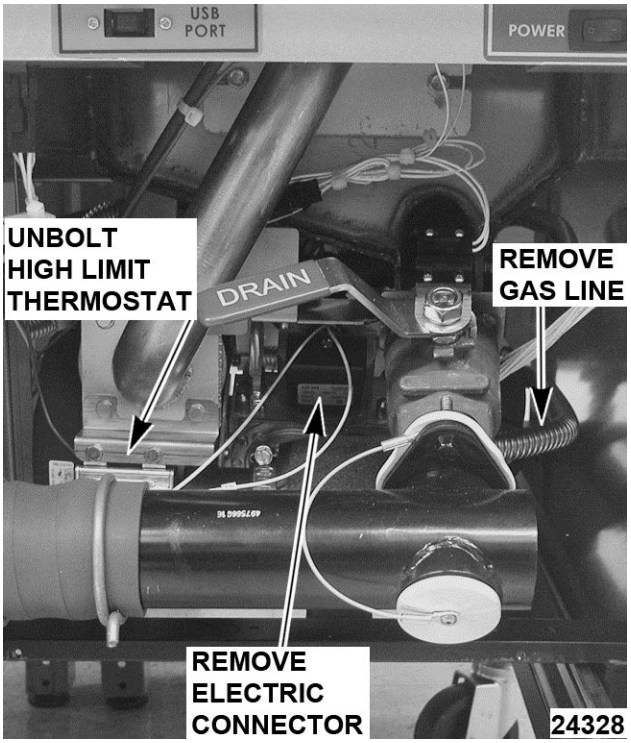


Fig. 29

4. Remove bolts and remove burner from fryer.

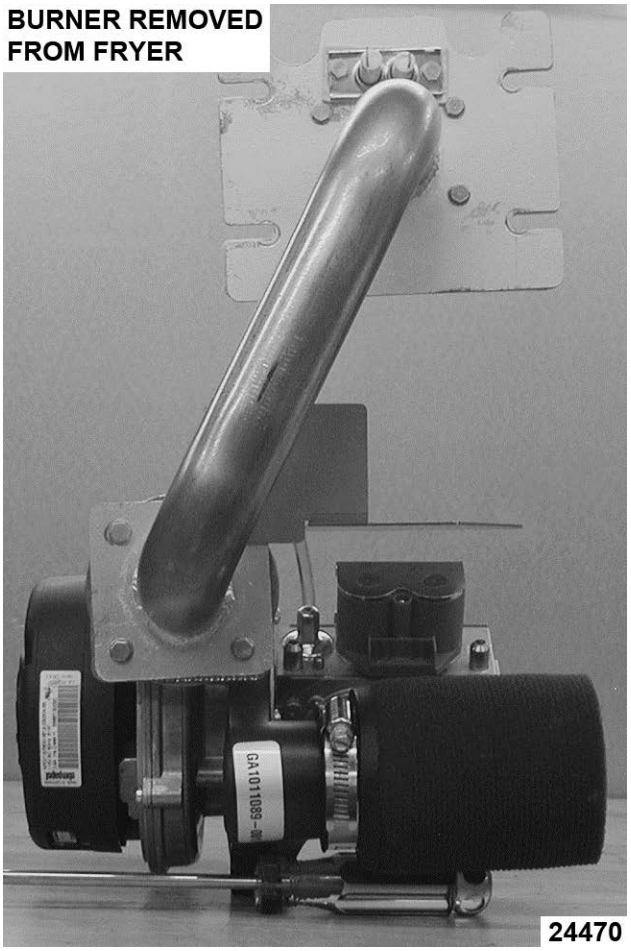


Fig. 30

5. Reverse procedure to reinstall burner.

GAS VALVE

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

Shut off the gas before servicing the unit and follow lockout / tagout procedures.

⚠ WARNING

All gas joints disturbed during servicing must be checked for leaks. Check with a soap and water solution (bubbles). Do not use an open flame.

The gas valve is considered part of the burner assembly. If the gas valve fails and needs to be replaced, you must order a complete blower/gas valve assembly (burner). The reason for this is every blower/gas valve assembly (burner) is set up at the factory to operate at the most efficient level possible. This set up procedure cannot be duplicated in the field. If you feel that the gas valve is not set up correctly or not operating correctly, call product service and they will help solve the problem.

BASKET LIFT TUBE

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove BASKET LIFT COVERS.
2. Remove nut securing lift bar to lift tube.
3. Remove screws securing lift tube bracket to fryer then remove bracket and lift tube.

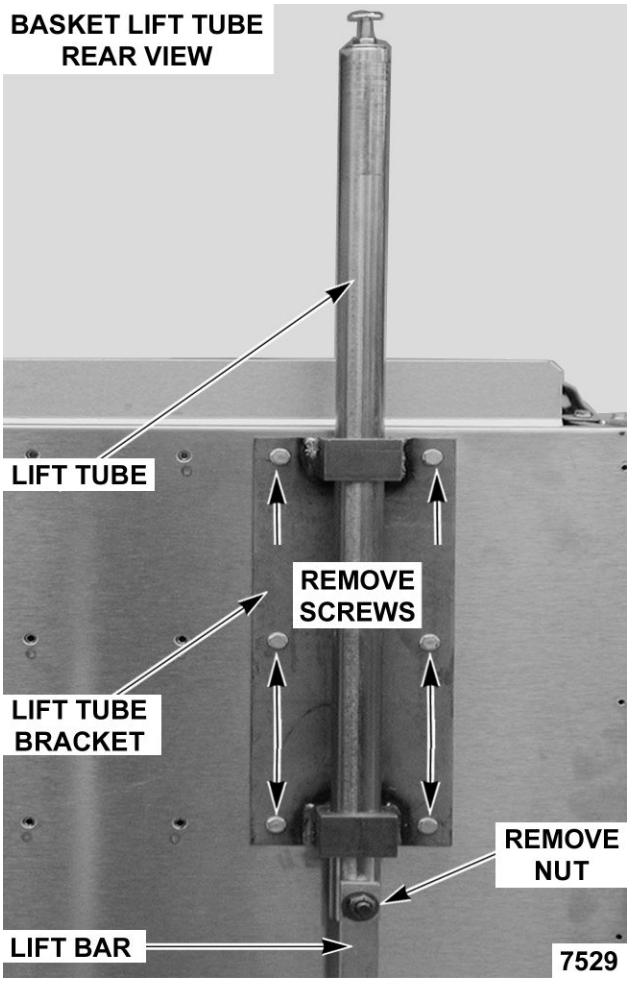


Fig. 31

4. Reverse procedure to install.

BASKET LIFT MOTOR

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove BASKET LIFT TUBE.
2. Disconnect lead wires from cam switch and basket lift motor.
3. Loosen set screws securing crank arm assembly to basket lift motor shaft.

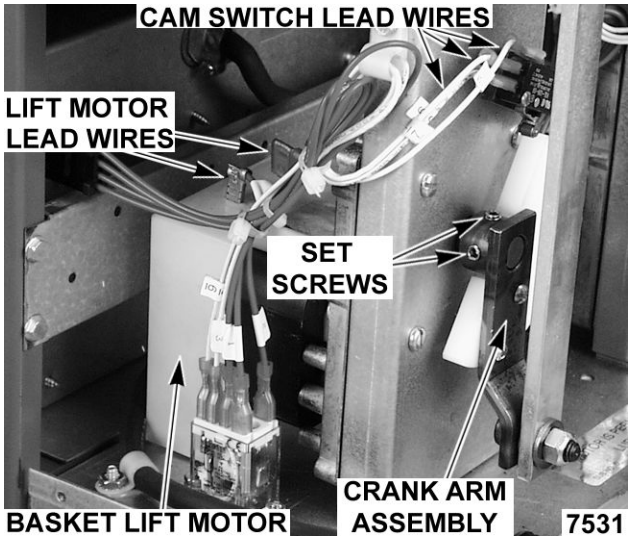


Fig. 32

4. Remove screws securing basket lift motor to cam bracket, then remove motor from bracket.

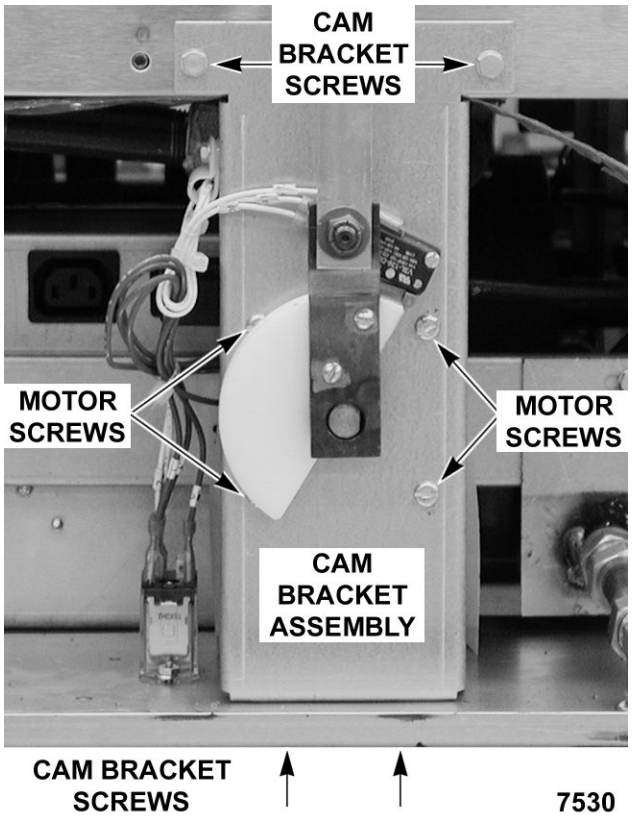


Fig. 33

5. Reverse procedure to install and check for proper operation.

NOTE: After reinstalling motor keep all wire leads clear from moving parts.

BASKET LIFT CAM SWITCH

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove BASKET LIFT TUBE.
2. Disconnect lead wires from cam switch.
3. Remove screws securing cam switch to cam bracket.

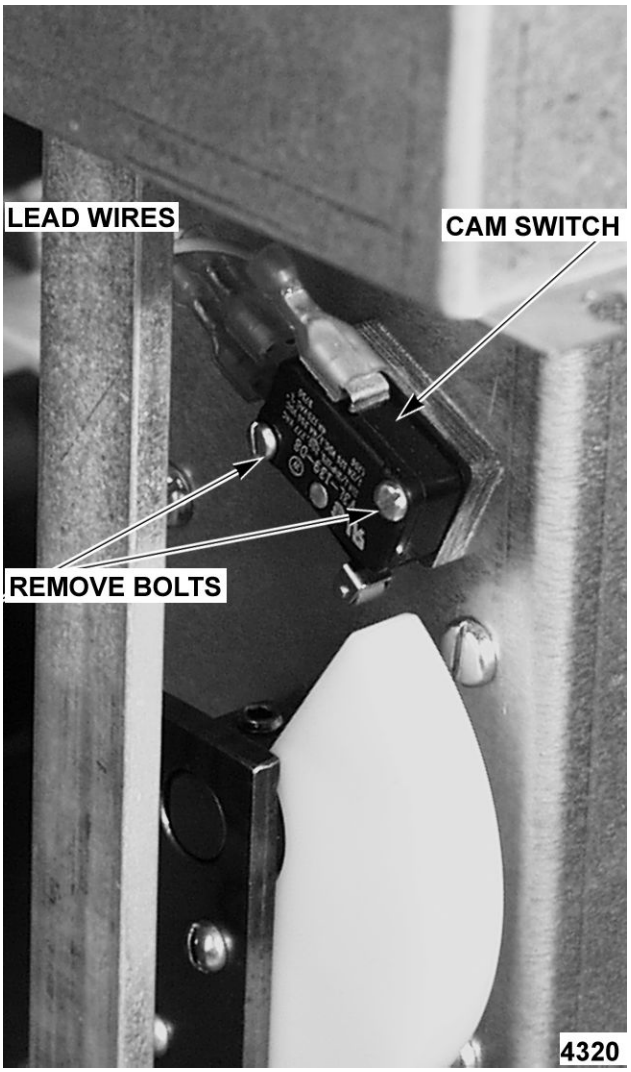


Fig. 34

4. Reverse procedure to install.

BASKET LIFT CAM

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove BASKET LIFT COVERS.
2. Remove nut securing lift bar to cam assembly.
3. Loosen cam set screw.
4. Remove screws securing cam to the crank arm assembly.

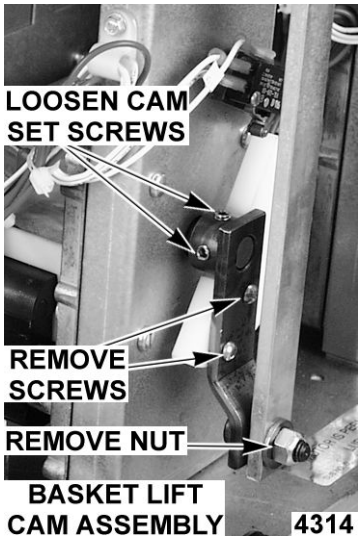


Fig. 35

5. Reverse procedure to install.

FILL SOLENOID VALVE (KSP)

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

Shut off the gas before servicing the unit and follow lockout / tagout procedures.

1. Remove filter tank from fryer.
2. Access fill solenoid valve.
3. Loosen union at rear of valve,
4. Remove bolts securing valve and remove valve from the fryer.

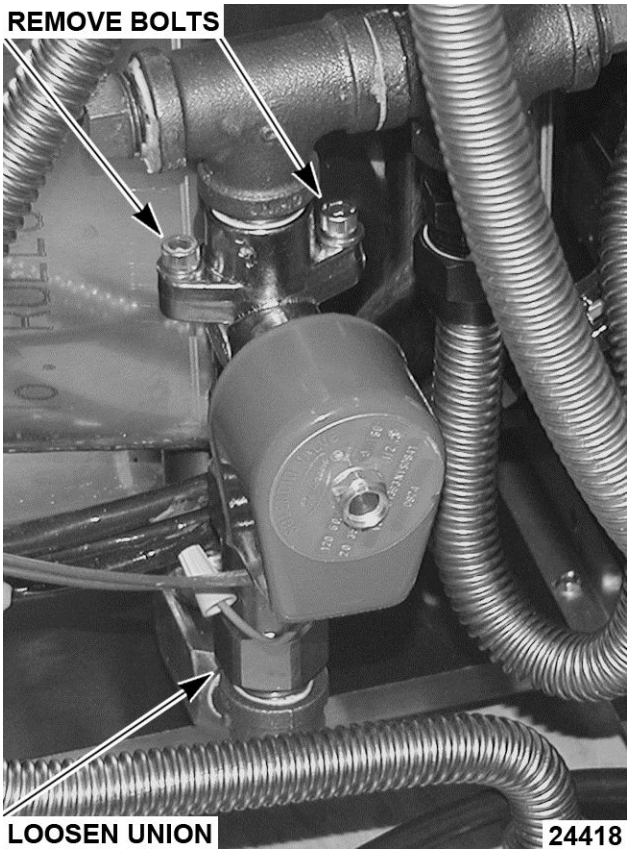


Fig. 36

5. Reverse procedure to reinstall valve.

FILTER HOSE SWITCH (KSP)

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Open fryer door to access filter hose switch.
2. Unplug lead wire connections.

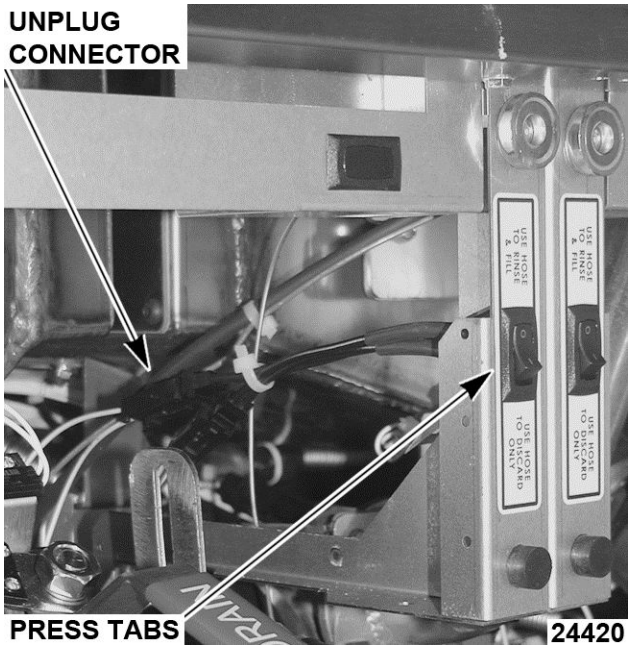


Fig. 37

3. Press tabs on rear of switch and push out front of fry cabinet.
4. Reverse procedure to install new switch.

FILTER PUMP AND MOTOR (KLEENSCREEN FRYERS ONLY)

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Access rear of fryer.
2. Remove four bolts holding serial plate bracket, and carefully lower bracket.
3. Disconnect both hoses from filter pump.

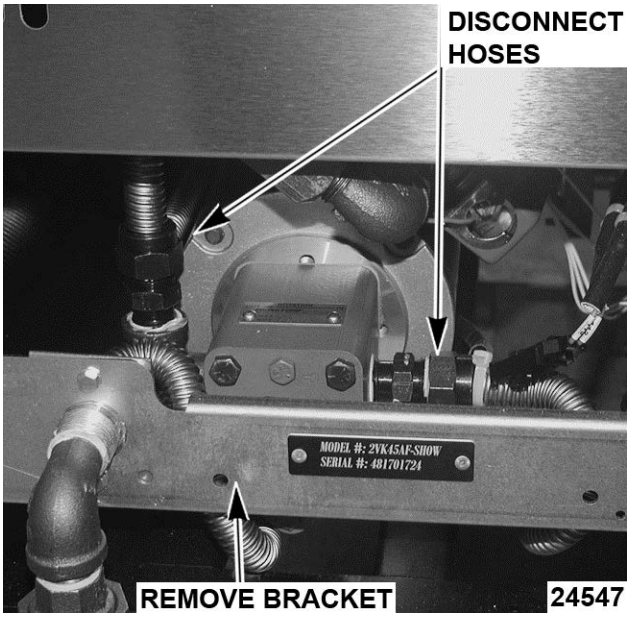


Fig. 38

4. Disconnect electric connections to filter pump motor.
5. Unbolt filter pump motor from fryer frame.
6. Carefully remove filter pump assembly through rear of fryer.
7. Reverse procedure to reinstall filter pump assembly.

DRAIN VALVE INTERLOCK SWITCH (DVI)

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

Shut off the gas before servicing the unit and follow lockout / tagout procedures.

1. Open fryer section door.
2. Locate drain valve switch
3. Remove nut holding drain valve handle and remove handle.

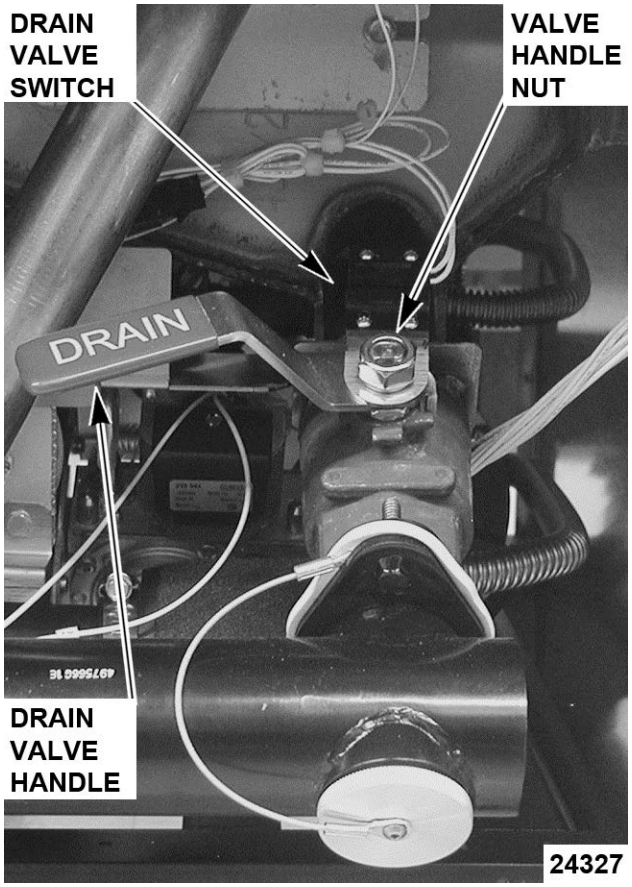


Fig. 39

NOTE: Make sure drain handle is in closed position. If fry tank is full of shortening, carefully remove drain handle. Make sure you do not turn handle to open position. Doing so will allow shortening to drain on floor or you.

4. Remove drain valve interlock switch bracket from valve.
5. Remove screws holding the drain valve interlock switch on bracket and take switch from bracket.

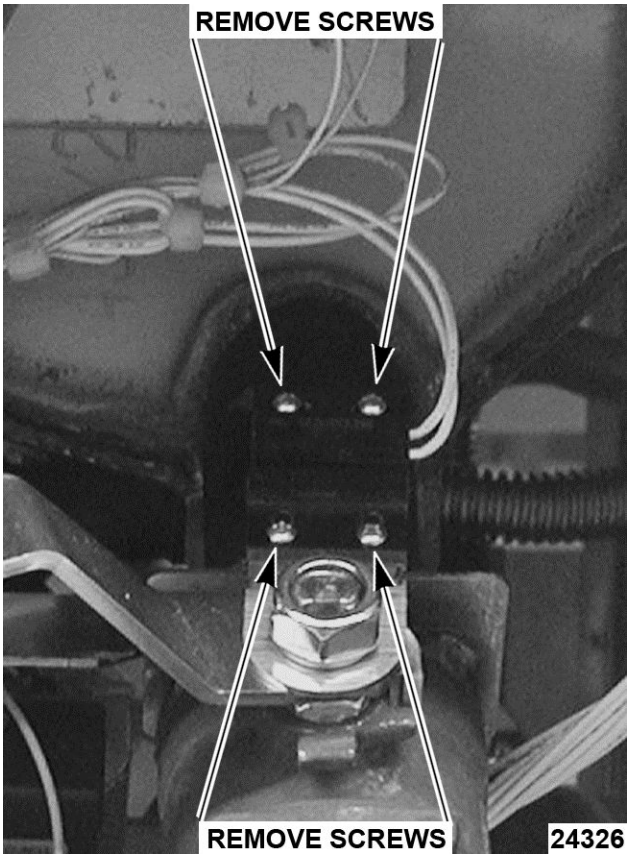


Fig. 40

6. Unplug drain valve interlock switch from wiring harness and remove switch from fryer.
7. Reverse procedure to install and check for proper operation.

FRY TANK

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

Shut off the gas before servicing the unit and follow lockout / tagout procedures.

⚠ WARNING

All gas joints disturbed during servicing must be checked for leaks. Check with a soap and water solution (bubbles). Do not use an open flame.

1. Remove BURNER ASSEMBLY.

2. Remove both HIGH LIMIT THERMOSTAT and TEMPERATURE [ROBE.
3. Remove DRAIN VALVE INTERLOCK SWITCH.
4. Remove drain assembly from drain valve.
   A. Remove hose clamp from rubber boot.
   B. Remove drain piping from drain valve.

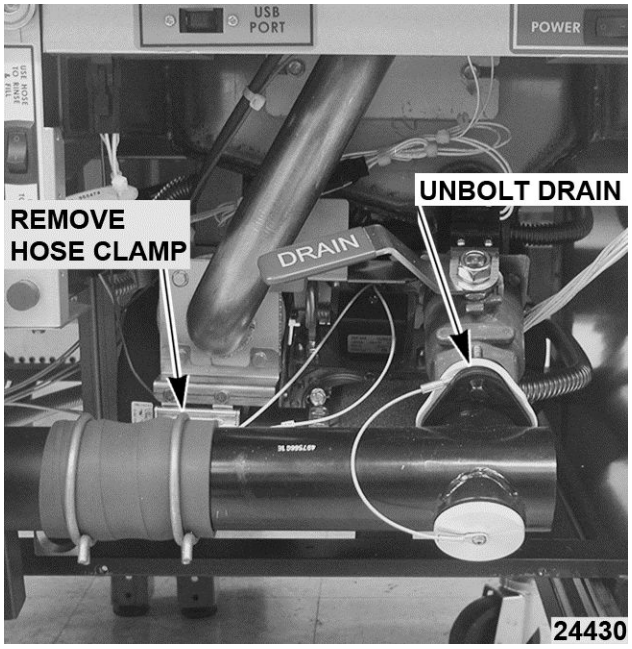


Fig. 41

5. Remove drain valve from fry tank.

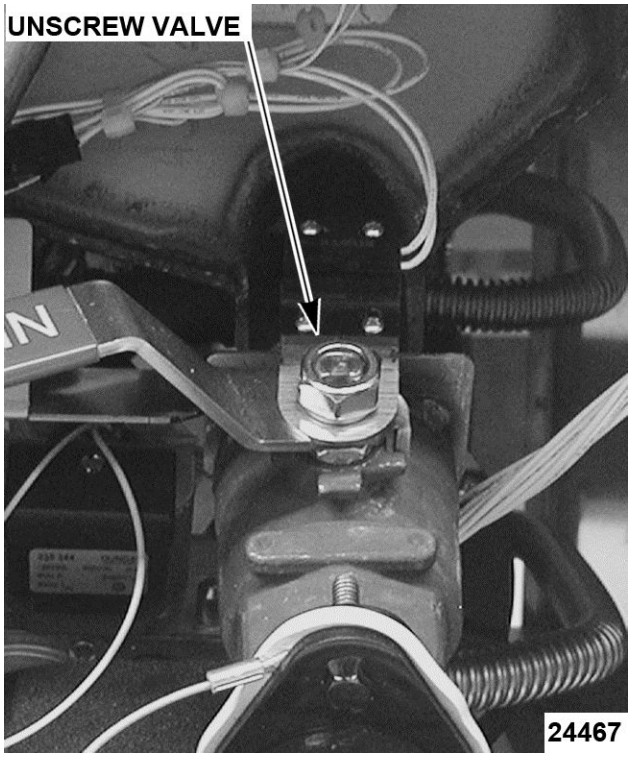


Fig. 42

6. Loosen and disconnect the oil return line, if equipped with filter system.

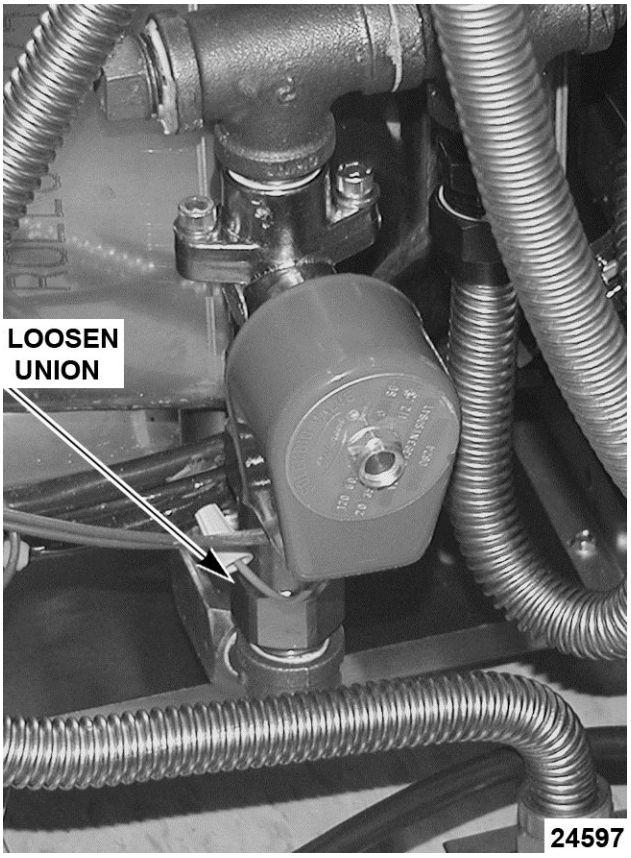


Fig. 43

7. Remove fry tank bolt down bracket.

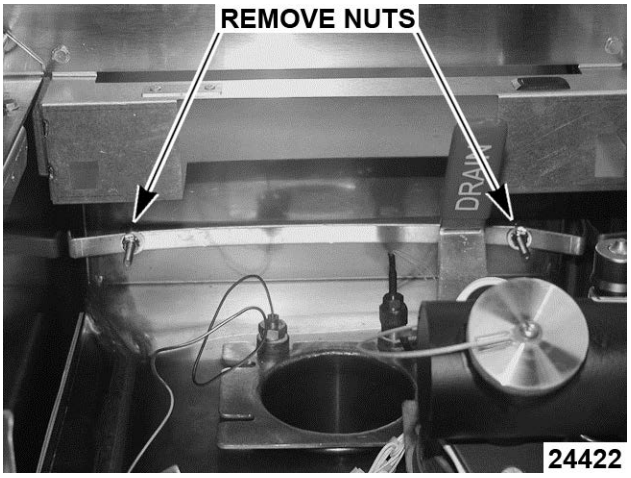


Fig. 44

8. Remove fry tank cover plate.

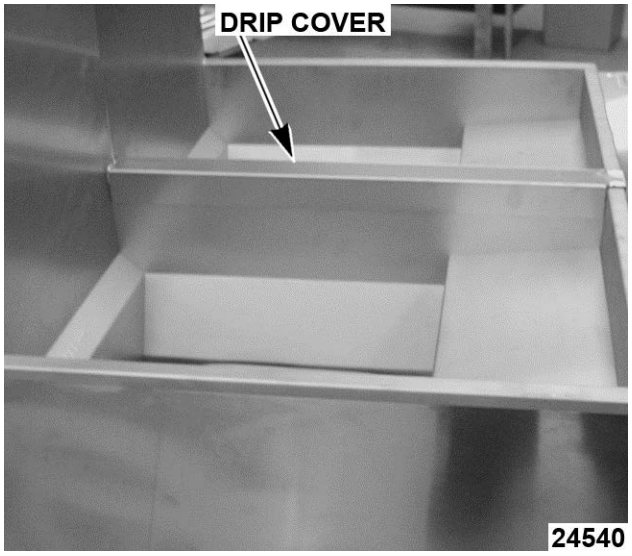


Fig. 45

A. Cover plate is glued to tank and will have to be pried off.

B. Order a replacement plate prior to replacing fry tank.

9. If basket lifts are installed, they will have to be removed from rear of tank.

10. Remove tank from fryer.

Fig. 46

11. Reverse order of this procedure to install new fry tank.

SERVICE PROCEDURES AND ADJUSTMENTS

⚠ WARNING

Certain procedures in this section require electrical test or measurements while power is applied to the machine. Exercise extreme caution at all times and follow Arc Flash procedures. If test points are not easily accessible, disconnect power and follow Lockout/Tagout procedures, attach test equipment and reapply power to test.

ELECTRIC CONNECTIONS

The VK series fryers are supplied with a 120Volt cord and three prong plug. If local electrical codes require that these fryers be plugged into a Ground Fault Interrupter or GFI. You must use GFI part number 913053. Other GFI outlets may not have the correct tolerance for the spark to ground ignition system employed with the VK series fryers.

HARMONIC TONE

Harmonic Tone (hum) at First Start

At first start, fryer will begin heating in low fire. There will be a harmonic tone that is NORMAL to hear. As fryer continues to heat, harmonic tone will dissipate and become less noticeable. When fryer reaches 135°F (end of melt cycle), fryer will heat on high fire and blower speed will increase.

TEMPERATURE PROBE FAULT CODES

The temperature probe is used for both the solid state control and the computer control. The probe is an RTD (resistance temperature detector) of the thermistor type. As temperature increases the resistance value decreases.

Probe Fault

If a temperature probe fault or high temperature condition occurs, a fault message will be displayed and the electronic alarm will sound continuously. The heat demand and basket lift outputs are de-activated. If a cooking cycle is in process (timer active), it will be cancelled and the key pad disabled.

This will continue until the fault clears, power is cycled or problem resolved.

CONTROL TYPE	FAULT
SOLID STATE	An open will display Prob and a short or high temperature condition will display HI.
COMPUTER	An open will display PROBE OPEN and a short or high temperature condition will display PROBE SHORT.

TEMPERATURE PROBE TEST

To Check:

1. Turn power switch off.
2. Disconnect the temperature probe plug.

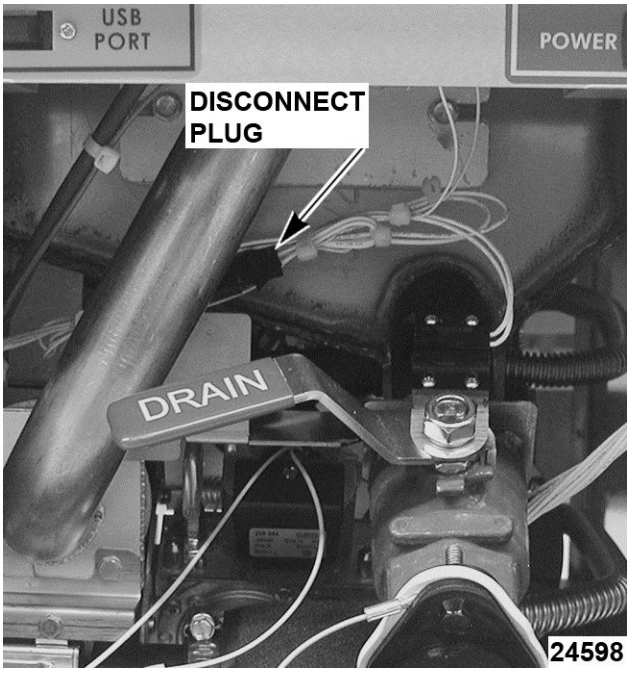


Fig. 47

3. Test the probe using a VOM to measure resistance. Connect the meter leads to the wires removed in step 2.
   A. If the measured resistance values are within the allowable range, the probe is functioning properly. Reverse procedure to install.

B. If the measured resistance values are outside the allowable range, install a replacement probe and check for proper operation.

TEMPERATURE (°F)	RESISTANCE (Ω)
77	90,000 - 110,000
350	604 - 836
415 [1]	302 - 369
460 [2]	191 - 233

[1] High temperature alarm level for the cooking controls

[2] Shorted probe equivalent temperature

COOKING CONTROL CALIBRATION

NOTE: Verify condition of temperature probe as outlined under TEMPERATURE PROBE TEST before proceeding.

1. Check the level of shortening in fry tank. The level must be between the MIN & MAX fill lines before proceeding.
2. Allow shortening to cool below 300°F.
3. Place a thermocouple in the geometric center of the fry tank one inch below the shortening surface.
4. Set the cooking control to 350°F and turn the fryer on.
5. Monitor the heat indicator lamp. When cooking control is calling for heat, lamp will be on. If cooking control is satisfied, lamp will be off.

   Analog Control - Heat light is to right of zero on temperature scale.

   Solid State Control - Decimal point of first character indicates heat on when lit.

   Computer Control - Two LED lamps on the Oil Temp key that indicate heat on.

NOTE: Agitate the shortening, to eliminate any cold zones.

   A. Allow cooking control to cycle three times to stabilize shortening temperature.

   B. Record meter reading from thermocouple when the cooking control cycles off and on for at least two complete heating cycles.

6. Calculate the average temperature by adding the temperature reading when the heat lamp goes out to the temperature reading when the heat lamp comes on & divide this answer by 2.

   [Temp. (Lamp off) + Temp. (lamp on)] ÷ 2 = Average Temp. Example: 360° + 340° ÷ 2 = 350°F.

   The average temperature should be 350°F (± 5°F).

   A. If the average temperature reading is within tolerance, cooking control is properly calibrated.

   B. If the average temperature reading is out of tolerance, perform the following:

      1) *Analog Control* - Remove knob and turn adjustment screw counterclockwise to increase temperature and clockwise to decrease temperature.

      2) *Solid State Control* - Adjust OFFSET TEMPERATURE.

      3) *Computer Control* - Adjust OFFSET TEMPERATURE.

7. Repeat the average temperature calculation for up to three attempts. Allow the cooking control to cycle at least two times between adjustments before performing the calculation.
8. If calibration is unsuccessful, the cooking control may be malfunctioning and cannot be adjusted properly. Install a replacement cooking control and check calibration.

FLAME SENSE CURRENT CHECK PRIOR TO 12/1/12

⚠ WARNING

Certain procedures in this section require electrical test or measurements while power is applied to the machine. Exercise extreme caution at all times. If test points are not easily accessible, disconnect power and follow lockout / tagout procedures, attach test equipment and reapply power to the test.

1. Remove cover of power supply box.
2. Locate red flame sense wire.

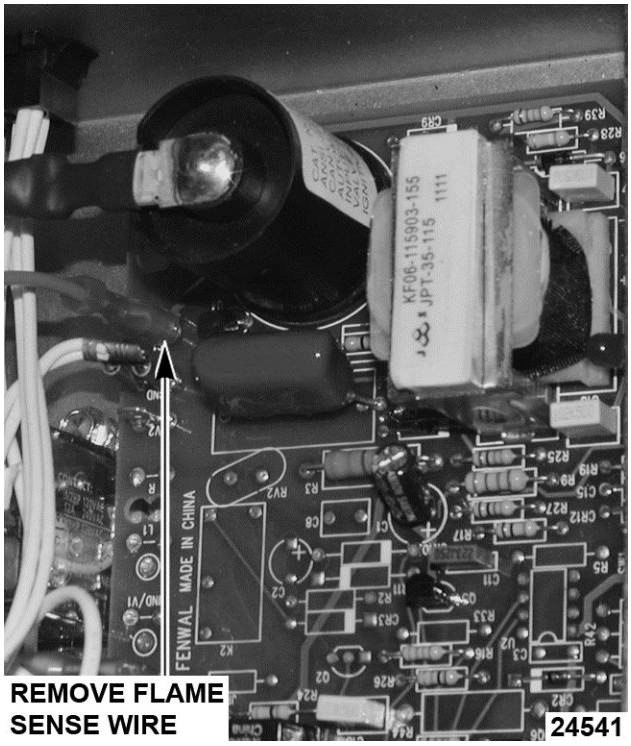


Fig. 48

3. Remove the red flame sense wire.
4. Place one Microamp meter lead on the red wire.
5. Place the other meter lead on the terminal you removed the red flame sense wire from.
6. Power up the fryer and have it call for heat.
7. You should receive a minimum Microamp reading of at least 1.0 microamp.
8. If the reading is greater or equal to the value given, then the flame sense current is within tolerance.
9. If the reading is lower than the value given, then troubleshoot the flame sense circuit.

NOTE: If the reading is below 0.0 microamps, reverse the meter leads and take another reading.

FLAME SENSE CURRENT CHECK AFTER 12/1/12

⚠ WARNING

Certain procedures in this section require electrical test or measurements while power is applied to the machine. Exercise extreme caution at all times. If test points are not easily accessible, disconnect power and follow lockout / tagout procedures, attach test equipment and reapply power to the test.

1. Remove cover from power supply box.
2. Locate two pins (FC- and FC+) on side of the ignition/ blower control board.

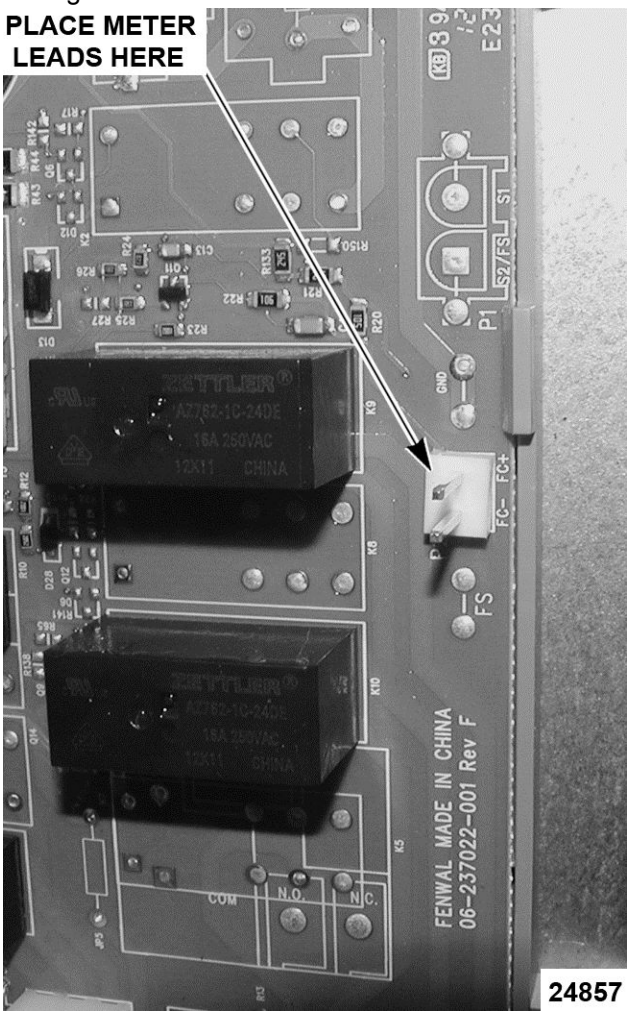


Fig. 49

3. Set your multi meter for Microamps and place meter leads on two pins.
4. Restart the fryer and read the microamps as the fryer is sparking.

NOTE: The only time you will be able to read the microamps is when the fryer is sparking. When the spark quits the reading will go away. You may only have several seconds to obtain this reading.

5. The flame sense current must be at least 2.0 to 3.0 microamps, and the reading must be steady.
6. If reading is below 1.3 microamp or unsteady, check pilot flame and electrical connections.

ELECTRONIC IGNITION CONTROL

NOTE: This procedure applies to all fryers.

Ignition Module Lockout
This happens when fryer is unable to detect flame sense. The electrode will try to ignite one time. When flame has not been detected within 5 seconds red light on ignition module will blink.

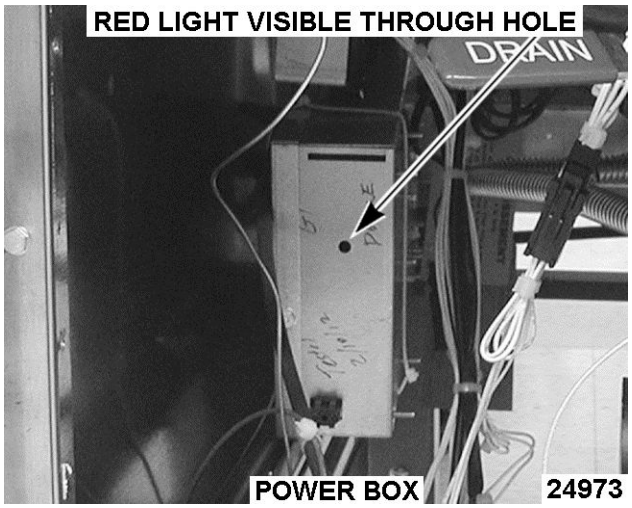


Fig. 50

"A" style controller: Red light will blink and blower will continue to run until power has been turned off.

"C" and "D" style controllers: Red light will continue to blink, but blower will shut down after a number of seconds and a loud "beep" will continue to sound until fryer is powered down.

Electronic Ignition System

⚠ WARNING

Certain procedures in this section require electrical test or measurements while power is applied to the machine. Exercise extreme caution at all times and follow Arc Flash procedures. If test points are not easily accessible, disconnect power and follow Lockout/Tagout procedures, attach test equipment and reapply power to test.

1. Access burner electrode.
2. Remove ignition wire from burner electrode.
3. Fasten metal end of ignition wire about ¼ away from a grounded metal surface on fryer.
4. Try to light the burner.
5. You should be able to see a spark. If no spark, check ignition module in power supply box.

MODULATING GAS VALVE ADJUSTMENTS

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

⚠ WARNING

Shut off the gas before servicing the unit and follow lockout / tagout procedures.

⚠ WARNING

All gas joints disturbed during servicing must be checked for leaks. Check with a soap and water solution (bubbles). Do not use an open flame.

The modulating gas valve is adjusted at the factory and requires no adjustments. If the modulating gas valve needs to be replaced, the new gas valve from the parts depot will be adjusted property and will only need to have the gas pressure verified coming into the gas valve.

All fryers built after 12/1/12 will have gas regulators installed on the incoming gas line. The gas pressure on the new gas vales will not have to be checked.

BASKET LIFT ARM ADJUSTMENT

1. With shortening at room temperature, verify the shortening level is between MIN & MAX lines in fry tank. Add shortening as needed.

NOTE: Shortening will expand when heated. Do not fill the fry tank past the MAX line.

2. Turn power switch on and set temperature to 350°F. Allow the shortening to reach set temperature.
3. Check basket lift operation.
   A. If necessary, adjust as outlined below.
4. When basket is in the up position, the bottom of the basket should be out of the shortening. When basket is in the down position, the bottom of the basket should clear the crumb screen and the product should be submerged.
   A. To adjust, remove basket arm from lift shaft, loosen stop nut and turn height adjustment bolt to raise or lower basket arm as required. Both baskets should be same height.
   B. Tighten stop nut when complete.

NOTE: If adjustment is to low, when the basket is lowered, it will disengage from basket arm

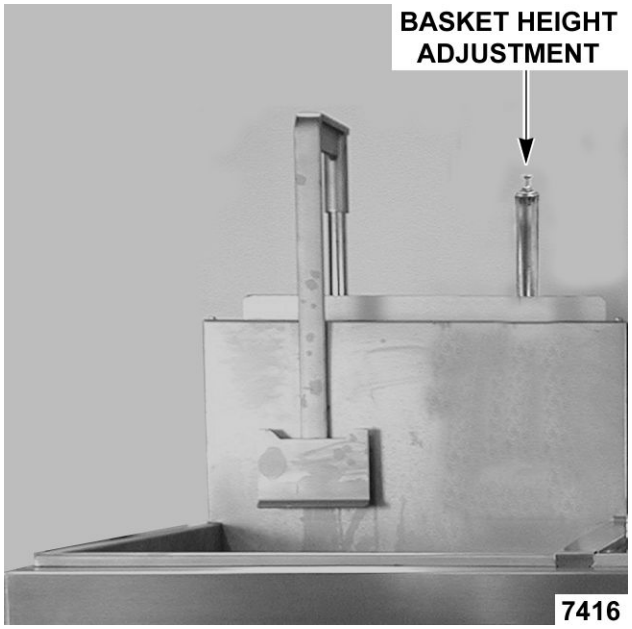


Fig. 51

SOLID STATE CONTROL

Operation
Use service information in this section when servicing a fryer with a solid state control. Refer to instruction manual for specific operating instructions.

NOTE: In operator programming mode, control can be reset to its default values by pressing the TEMP key for 2 seconds.

Service Programming
Solid state control Service Mode is used to perform system diagnostic tests or edit programs that affect the fryers operation.

Error Messages
Refer to ALARM MESSAGES at end of section.

Enter Service Mode
NOTE: Control heat demand output signal is off and heat/ignition status input signal is ignored.

1. Cycle power switch. When the program version number is displayed, press PROGRAM key to enter Service Mode.
   A. Beeper chirps on each successful keypress.
2. To scroll through each of the program items, press PROGRAM key and release.
   A. To reset all service mode program items to factory default, press and hold TEMP key for 2 seconds.
3. To exit Service Mode and save selections, press PROGRAM key and hold for 1 second. Fryer returns to normal operation and display shows the current heating mode based on shortening temperature:
   - MELT L (liquid; default) or Melt S (solid) if shortening temperature is below 135°F.
   - HEATING if no melt is selected and shortening temperature is below set point.
   - Fryer set point temperature if actual shortening temperature is within set point range.

Control Programming		
PROGRAM ITEM	**KEY SEQUENCE**	**DISPLAY [1]**
Brand Name	Press left or right basket to select display name.	Hobart or **Vulcan**

Control Programming			
PROGRAM ITEM	**KEY SEQUENCE**	**DISPLAY** [1]	
Temperature Display Mode	Press left or right basket to select temperature unit of measure.	DEG **F** OR C	
Boil or Filter Function	Press left or right basket to select fryer type. Boil key overlay = stand alone fryer. Filter key overlay = filtering system fryer batteries.	**BOIL** OR FILTER	
Fryer Type	Press left or right basket to select fryer energy source (electric or gas heat) Gas Star must be selected for VK and TR Fryers[4]	**ELECTRIC** or GAS or Gas* (Star)	
Calibration Offset	Press left basket to increase or right basket to decrease offset temperature (range -20 to 20)[2]	OFS **00F** (always in °F)	
Low Cook Temp Lockout	Press left basket to increase or right basket to decrease cooking cycle lockout temperature (range 30 to 50F)[2] **NOTE:** Prevents cook timers from starting if actual shortening temperature is not within the lockout temperature setting.	LOCKO **40** (always in °F)	
NOTE: The program items listed below are for *verifying settings only*. Do not change the default setting for these program items.			
PROGRAM ITEM	**KEY SEQUENCE**	**DISPLAY** [1]	
Instant On Time (heat)	Press left basket to increase or right basket to decrease instant on time. **NOTE:** At the start of a cook cycle, the heat output will be activated for this time (range 0 to 20 seconds).	INSTO **20**	
Melt Cycle On/ Off Times	Press left basket to increase or right basket to decrease melt cycle time.[3]		
	Gas Fryers Adjustment Range: Melt ON - 0 to 20 seconds; Melt OFF - 0 to 30 seconds.	MLTG 1 **16** (Liq) 08 (Sol)	(Melt ON)
		MLTG 0 **18** (Liq) 26 (Sol)	(Melt OFF)
	Electric Fryers Adjustment Range: Melt ON - 0 to 2 seconds; Melt OFF - 10 to 30 seconds.	MLTE1 **04** (Liq) 02 (Sol)	(Melt ON)
		MLTE0 **11** (liq) 13 (Sol)	(Melt OFF)

Control Programming		
PROGRAM ITEM	**KEY SEQUENCE**	**DISPLAY [1]**
Proportional Offset	Press left basket to increase or press right basket to decrease proportional offset (range 0 to 30).	POFST **02**
Proportional Gain	Press left basket to increase or right basket to decrease proportional gain (range 0 to 30).	PGAIN **24**
Derivative Gain	Press left basket to increase or right basket to decrease derivative gain (range 0 to 30).	DGAIN **20**
Integral Gain	press left basket to increase or right basket to decrease integral gain (range 0 to 30).	IGAIN **08**
Integral Limit	Press left basket to increase or right basket to decrease integral limit (range 0 to 255).	ILIM **255**
NOTES	**[1] Default value shown in bold type.** **[2] Temperature will change in one degree increments, accelerating if the button is held.** **[3] Time will change in one second increments, accelerating if the button is held.** **[4] Gas* and Gas Star are the same value. The Solid State Display cannot show an asterick(*).**	

Display Test

1. Cycle power switch. When FRYERS is displayed, press PROGRAM key.
   A. Display shows DSP TEST.
   B. Press PROGRAM key again to light all the display segments in the first character.
   C. Continue pressing PROGRAM key until the display segments for all eight characters are tested.
2. To exit test, press and hold the PROGRAM key for one second.

Alarm Messages

Alarms take precedence over any other controller mode or function (except drain valve function).

ALARMS	DESCRIPTION
OPEN PROBE	If an open probe is detected, the heat demand (heat on) and basket lift outputs are disabled. Any cooking in progress is cancelled and all operator buttons are disabled. the display alternates OPEN PROBE and the electronic alarm will sound continuously. **NOTE:** A temperature of 460°F is an open probe equivalent.
SHORTED PROBE	If a shorted probe is detected, the heat demand (heat on) and basket lift outputs are disabled. Any cooking in progress is cancelled and all operator buttons are disabled. The display alternates SHORTED PROBE and the electronic alarm will sound continuously. **NOTE:** A temperature of 460°F or greater is a shorted probe equivalent.
HI TEMP	If the temperature is greater than or equal to 415°F, the heat demand (heat on) and basket lift outputs are disabled. Any cooking in progress is cancelled and all operator buttons are disabled. The display alternates HIGH TEMP and the electronic alarm will sound continuously. Normal fryer operation resumes when the temperature drops below the high temperature alarm level.

ALARMS	DESCRIPTION
IGNITION STATUS (gas models only)	If the ignition status input to the control is not active (24VAC = active), the display shows NO PILOT. If the input remains inactive for greater than 90 seconds, the display will alternate IGNITION LOCKOUT, the electronic alarm will sound continuously, and the controller will be disabled (all outputs including heat demand off) until power is cycled.
DRAIN VALVE INTERLOCK (DVI) Filtering System Fryer Batteries (Filter Key)	When drain valve is opened, the DVI switch contacts open, and the 24VAC input to the control is removed. The heat demand (heat on) and basket lift outputs are disabled. Any cooking in progress is cancelled and all operator buttons are disabled. The display will show DRAINING. Press FILTER key and hold for 3 seconds to begin filtering (pump on). Control is signaled that filtering has started. When the drain valve is closed, the DVI switch contacts close, and the 24VAC input to the controller is restored. The heat demand (heat on) and all operator buttons will remain disabled and the display will show FILL VAT. To resume operation, allow the tank to fill with shortening between the MIN and MAX lines. Press FILTER key to turn the pump motor off. Control is signaled that filtering has stopped and the tank is full, Display will ask VAT FULL HIT TEMP. Press TEMP key after confirming the shortening is at the proper level and to resume heating.
DRAIN VALVE INTERLOCK (DVI) Stand Alone Fryers (Boil Key)	When drain valve is opened, the DVI switch contacts open, and the 24VAC input to the control is removed. The heat demand (heat on) and basket lift outputs are disabled. Any cooking in progress is cancelled and all operator buttons are disabled. The display will show DRAINING. When the drain valve is closed, the DVI switch contacts close, and the 24VAC input to the controller is restored. The heat demand (heat on) and all operator buttons will remain disabled and the display will show FILL VAT HIT TEMP. To resume operation, allow the tank to fill with shortening between the MIN and MAX lines. Press TEMP key. Display will ask VAT FULL HIT TEMP. Press TEMP key a second time after confirming the shortening is at the proper level and to resume heating.
PROGRAM LOST RECHECK	When the program has detected errors in the data that is stored in the controls non volatile memory (EEPROM), the control will automatically reload the factory default settings. Display will alternate the alarm message until program mode is entered then exited or power is cycled to control.
IGNITION STATUS GAS Selected incorrectly under service settings - type	After 20 seconds in normal operation mode. IGNITION LOCKOUT will be shown on the display and the alarm will sound continuously. Enter SERVICE SETTINGS and select GAS* as the type.

COMPUTER CONTROL

Operation
For operating instructions and programming, refer to OPERATOR MANUAL and computer controls programing start guide.

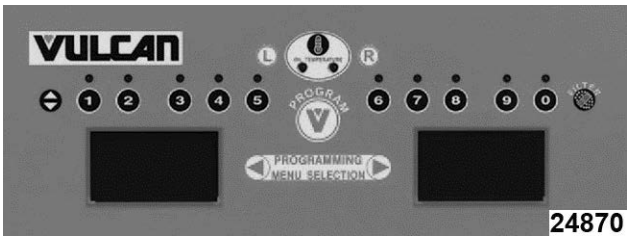


Fig. 52

Service Programming
The computer controls service settings mode is used to select the settings that affect fryer operation and to perform fryer diagnostic tests.

Enter Service Setting Mode

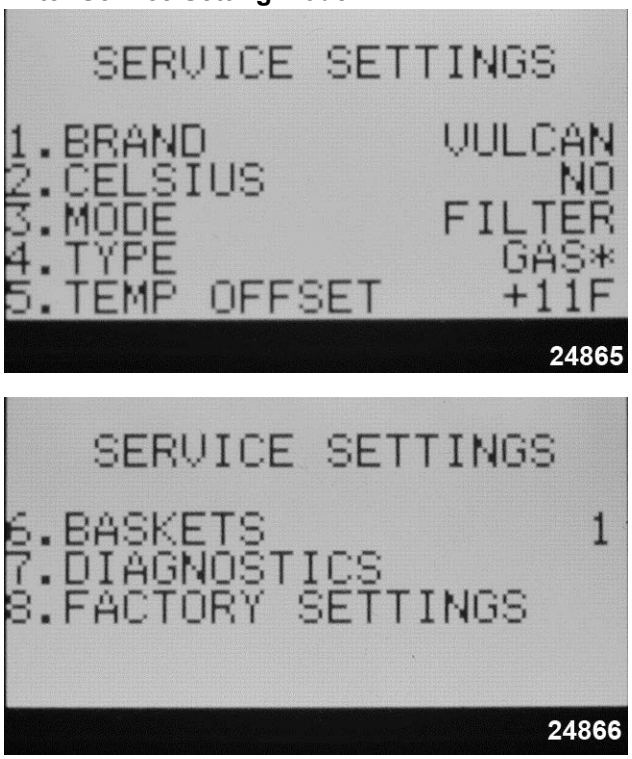


Fig. 54

NOTE: The controls heat demand output signal is off and the heat/ignition status input signal is ignored if the fryer is in cook mode or idling.

1. Turn power switch on and when the program revision is displayed, press PROGRAM to enter Service Setting Mode.
   A. The SERVICE SETTINGS are shown on the left and right display screens.
2. Verify the settings shown on the display screen are correct for the fryer being serviced.
3. To change a service setting.
   A. Press the desired product number key (1 thru 6) on the control panel that corresponds to the service setting number on the display screen.
      1) Beeper chirps on each successful key press and all LED's are off. When a service item is selected, only the keys required to change the setting are active.
   B. Press toggle key to alternate between available selections, or use product number keys where indicated to enter a value. The current selection will be "blinking".
   C. Press PROGRAM key to save the selection - "Blinking" stops.
   D. Access the other service settings as necessary.
4. To enter DIAGNOSTICS mode, press product number key 7 on the control panel.

Fig. 55

Fig. 56

   A. Press the desired product number key (1, 2, 3, 4, & 6) on the control panel that corresponds to the diagnostic test number on the display screen to check the output signal to the component.
      1) Press the same product number key again to turn the output off.

NOTE: Item 5 (drain) displays the real time status and does not require pressing the corresponding product number key. Item 3 (heater) - The output signal will be active for 3 seconds (heat on) then turn off.

   B. For item 6 DISPLAY: - change the setting as desired.
      1) Press product number key 6 to access the display screen adjustment settings.
      2) Press the left or right arrow key on the PROGRAMMING MENU SELECTION screen to select the screen to adjust. Display shows "THIS LCD SELECTED".

Fig. 57

3) To adjust the selected screen:

   a. BACKLIGHT - Press toggle key to turn display backlight ON or OFF.

   b. PIXEL MODE - Press product key number 1 two times to change display from white background with black letters to black background with white letters. Press the key again to change it back to original setting.

   c. CONTRAST - Press the L key on the keypad to lower the contrast or press the R key on the keypad to raise the contrast.

4) Press PROGRAM key to return to DIAGNOSTICS MODE.

5. To exit SERVICE SETTINGS MODE and return to normal operation, keypress PROGRAM key.

   A. Display reverts to product menu items.

SERVICE SETTINGS	KEY SEQUENCE	DISPLAY ITEM FLASHES[1]	DESCRIPTION
1. Brand	Press 1 to change brand name. Press toggle key to select HOBART or VULCAN. Press PROGRAM Key to save the selection.	**VULCAN**	Brand name at power on
2. Celsius	Press 2 to change temperature scale. Press toggle key to select NO or YES. Press PROGRAM Key to save the selection.	**NO**	Temperature °F/°C No = Fahrenheit Yes = Celsius
3. Mode	Press 3 to change fryer mode. Press toggle key to select BOIL or FILTER. Press PROGRAM Key to save the selection.	**Boil**	Boil or Filter Boil key = Stand alone fryer Filter key = Filter system battery
4. Type	Press 4 to change energy source. Press toggle key to select ELECTRIC, GAS or GAS*. **NOTE:** VK and TR Gas Fryers MUST be set to GAS*. Press PROGRAM Key to save the selection.	**ELECTRIC**	Electric or Gas

SERVICE SETTINGS	KEY SEQUENCE	DISPLAY ITEM FLASHES[1]	DESCRIPTION
5 Temp Offset	Press 5 to change offset temperature. Press toggle key to change offset value to (+) or (-) (positive or negative). Enter the offset value using the number keys on the keypad. **NOTE:** Offsets the actual oil temp sensed by the temperature probe during calibration. Enter a positive number to decrease the actual oil temperature; or a negative number to increase the oil temperature. Press PROGRAM Key to save the selection.	OFF **00** F (always in °F)	Degrees Fahrenheit and positive zero are the defaults.
6. Baskets	Press 6 to change the number of basket lifts. Press toggle key to select 0, 1, or 2. Press PROGRAM Key to save the selection.	**2**	Display shows 0, 1 or 2
7. Diagnostics	Press 7 to enter diagnostic mode (outputs for heat, basket lifts and cooking timers remain off).	——	DIAGNOSTICS (shown on display screen)
1.) L Basket	Press 1 to toggle left basket lift output to lower the lift.	DOWN	Lowers basket
	Press 1 again to raise the lift.	**UP**	Raises basket
2.) R Basket	Press 2 to toggle right basket lift output to lower the lift.	DOWN	Lowers basket
	Press 2 again to raise the lift.	**UP**	Raises basket
3.) Heater	Press 3 to turn heat output ON for 3 seconds only. OIL TEMPERATURE LED's light with heat demand.	On then **OFF**	Gas burner or heating elements turn on then off.
4.) Filter	Press 4 to turn filter output ON.	ON	Pump motor on
	NOTE: Filtering system fryer batteries only		
	Press 4 again to turn output OFF.	**OFF**	Pump motor off
5.) Drain	Display indicates the position of the drain valve. (DVI switch input to control) (keypress not required). Manually change valve position to test, and display will update.	**CLOSED**	
	Drain valve open	OPEN	
	Drain valve closed	**CLOSED**	

SERVICE SETTINGS	KEY SEQUENCE	DISPLAY ITEM FLASHES[1]	DESCRIPTION
6.) Display	Press 6 to adjust the left and right display screen settings. Refer to LCD display screen picture under ENTER SERVICE SETTINGS MODE. Press the left or right arrow key on control panel to select the screen to adjust. To adjust the selected screen: • BACKLIGHT - Press toggle key to turn display backlight ON or OFF. • PIXEL MODE - Press product key number 1 two times to change display from white background with black letters to black background with white letters. Press the key again to change it back to original setting. • CONTRAST - Press the L key on the keypad to lower the contrast or press the R key on the keypad to raise the contrast.	N/A	THIS LCD SELECTED
Exit Diagnostic and Service Mode	Press PROGRAM Key to exit the selected DIAGNOSTICS test and return to Service Settings Mode.	N/A	SERVICE SETTINGS (shown on display screen)
NOTES:	**[1] Default values shown in bold.**		

Alarm Messages
The alarms take precedence over any other controller mode or function (outputs off, active timers canceled).

ALARMS	DESCRIPTION
PROBE FAULT	If a temperature probe fault occurs, the alarm sounds continuously and the display shows PROBE on the left display and either OPEN or SHORT on the right display. This alarm state will remain until the fault clears or power switch is cycled. • OPEN - Probe detects temperature less than 40°F. • SHORTED - Probe detects temperature greater than 460°F.
IGNITION STATUS GAS -Selected under service settings - Type.	If the ignition status input is not present, both displays show IGNITION LOCKOUT. If the input comes back in less than 8 seconds, the displays will revert to normal operation. If the input remains inactive for more than 90 seconds, IGNITION LOCKOUT will be shown on the left display and CHECK GAS SUPPLY will be shown right display, and the alarm will sound continuously. This alarm state will remain until power switch is cycled.
IGNITION STATUS GAS Selected incorrectly under service settings - Type.	After 20 seconds in normal operation mode, IGNITION LOCKOUT will be shown on the left display and CHECK GAS SUPPLY will be shown right display, and the alarm will sound continuously. Enter SERVICE SETTINGS and select GAS* as the type

DISPLAY, LED AND KEYPAD TEST - COMPUTER CONTROL

1. Press and hold the 5 key while turning power on to Initiate test. Release the 5 key during display of software revision level and all LED<s and display segments should light.
2. For each number key (1-9, & 0) pressed, the corresponding value is displayed in each character position on the left and right display.

   (i.e.5 key shows 55555555 55555555).

NOTE: Beeper chirp's for as long as key is held.

3. For each function key pressed, the following values are displayed in each character position on the left and right display:

L (left)	L Cook
R (right)	R Cook
TEMPERATURE	Temp
PROGRAM (V)	Program
TOGGLE	Toggle
BOIL	B (single floor model fryers)
FILTER	D (Kleenscreen fryers)
LEFT TIME	< (Left Arrow)
RIGHT TIME	> (R Arrow)

4. Turn power off to exit test.

BLOWER CONTROL BOARD SETTINGS

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

NOTE: This procedure for fryers built before 12/1/2012.

Whenever you have problems with the blower motor make sure the following adjustments are correct.

1. **SW2:** Set the SW2 potentiometer to the number 2 setting.
2. **SW4:** Set the SW4 potentiometer to the number 4 setting.
3. **Dip switches:** Set the fourth switch (the one closest to the potentiometers) to the up position.

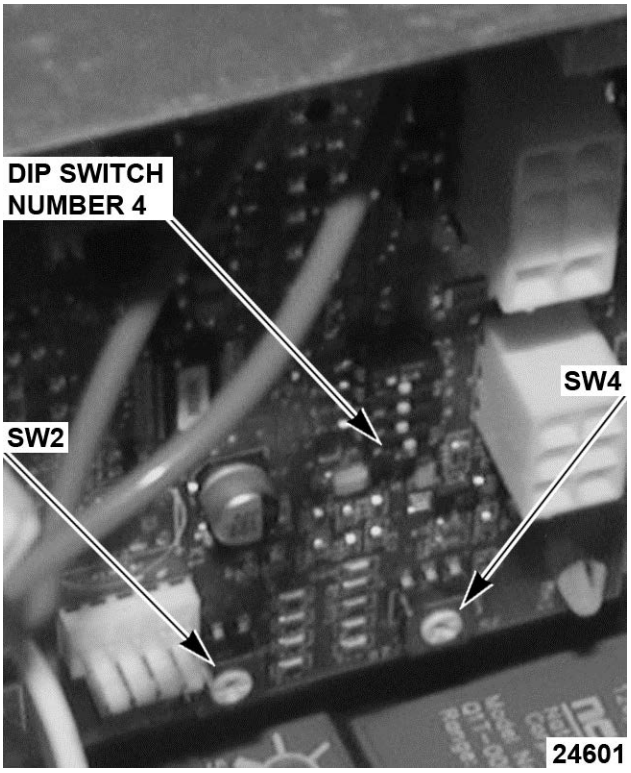


Fig. 58

NOTE: For fryers built after 12/1/2012, there are no adjustments for blower settings, The Ignition/Blower control board is preprogrammed. If a fryer built before 12/1/12 has been converted to the new Ignition/ Blower control board, there will be no adjustments.

HIGH/LOW FIRE TIMER SETTING

⚠ WARNING

Disconnect the electrical power to the machine and follow lockout / tagout procedures.

NOTE: This procedure is for fryers built before 12/1/2012

Whenever you have problems with high or low firing of the burner make sure the following adjustments are correct.

NOTE: To set the fire timers use a jeweler's flathead screwdriver.

NOTE: The timer closest to the ignition module is the low fire timer, and the one closest to the bottom is the high fire timer.

1. **Low fire timer:** Set the low fire timer for 2 seconds.
2. **High fire timer:** Set the high fire timer for 8 seconds.

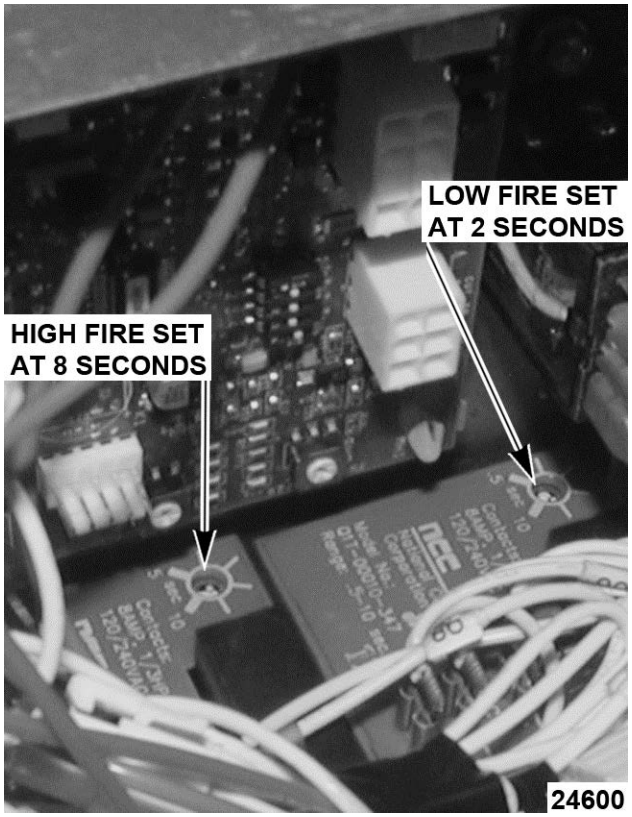


Fig. 59

NOTE: For fryers built after 12/1/12, the fire timers are replaced by a Ignition/Blower control board. The high and low fire time settings are programmed into the control board. If a fryer built before 12/1/12 has been converted to the new Ignition/Blower control board, there will be no adjustments.

AIR FILTER

A dirty air filter will prevent the correct amount of air intake for the blower. The results are poor combustion resulting in the fryer "puffing" severely.

To clean the air filter, remove the filter by pulling it off. The clamp is only hand tightened. Clean air filter in dishwasher or in sink with hot soapy water. Make sure air filter is completely dry prior to reinstalling, making sure that the filter is snug onto the blower intake. Make sure **NOT** to tighten the clamp more than hand tight.

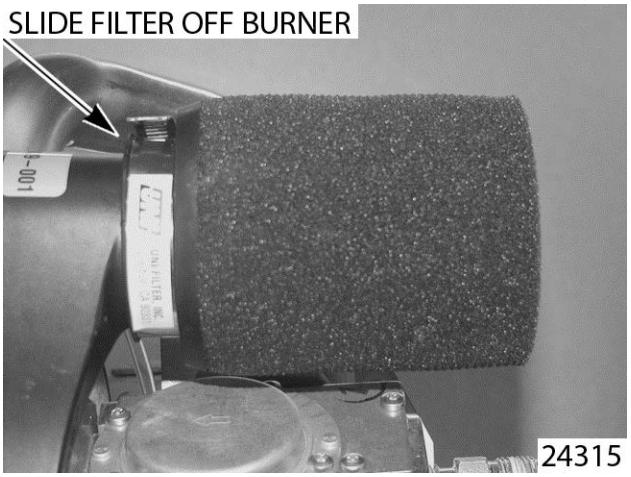


Fig. 60

SPARK GAP SETTING BEFORE 12/1/12

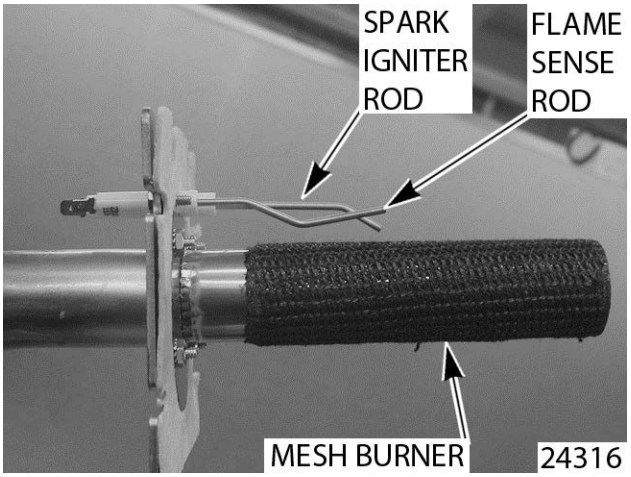


Fig. 61

The spark igniter rod should be set between 1/8" and 3/16" away from the mesh burner. This gap will allow the igniter to produce the optimal spark required to ignite the burner.

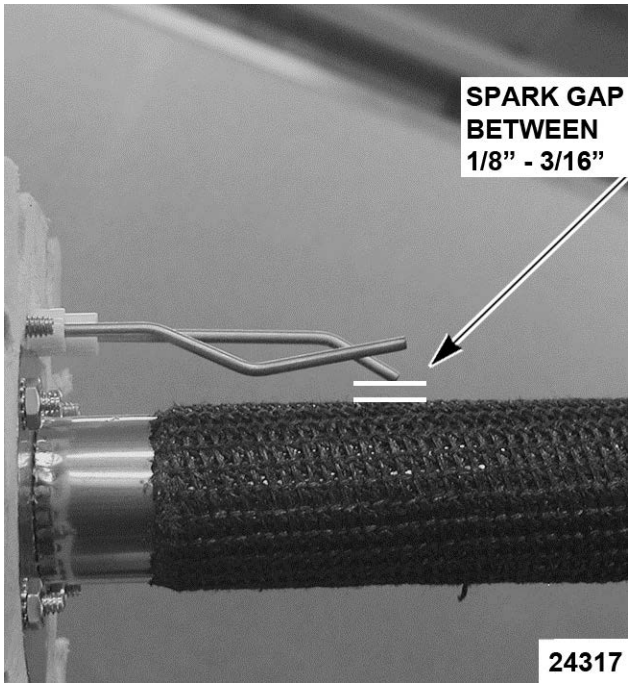


Fig. 62

If the spark igniter rod is not adjusted correctly the gas could build up in the burner assembly and cause a delayed ignition of the burner. The resulting "puffing" could result in damage to the fryer.

NOTE: If the power supply box has been converted to the new controls, the spark igniter rod should be replaced with the new style spark rod.

SPARK GAP SETTING AFTER 12/1/12

1. Insure the spark igniter is installed properly on the burner.
2. The ground rod should be set touching mesh or with a maximum gap between rod and burner mesh of 1/16 of an inch.

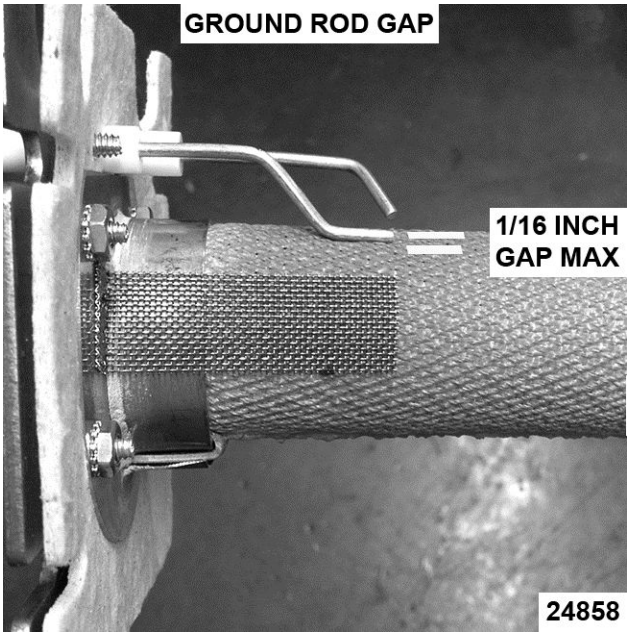


Fig. 63

3. There should be a gap of 1/8 to 3/16 of an inch between igniter rod and ground rod.

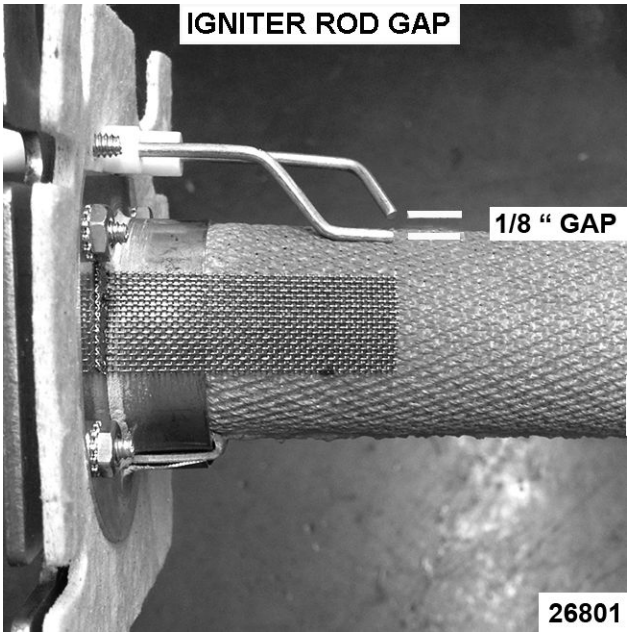


Fig. 64

4. This igniter sparks to the ground rod. To insure we have a proper ground, we put a wire on the ground rod terminal and secure it to burner.

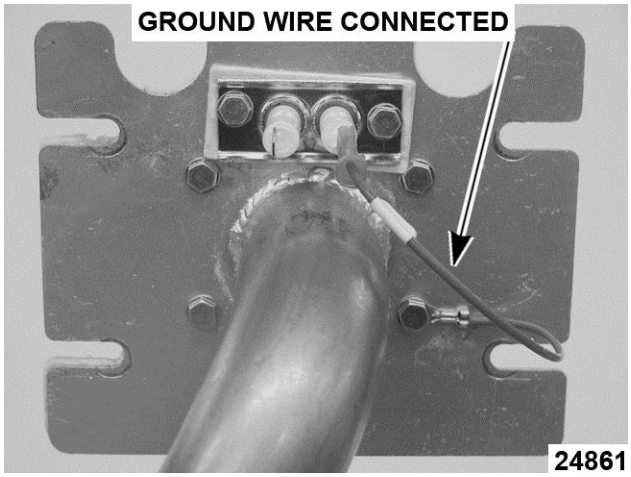


Fig. 65

ELECTRICAL OPERATION

COMPONENT FUNCTION - FRYER CONTROLS

Ignitor/ Ground (After 12/1/12)	Ignites the gas burner and senses the presence of a flame. The flame presence generates a micro-amp flame sense current that is rectified to the ignition control module.
Ignition/Blower control board (After 12/1/12)	Provides the output signal interface from the cooking control to operate the burner blower motor in low or high speeds, controls and monitors gas burner ignition. Monitors the presence of a flame and supplies an ignition status input signal to the cooking control,
Analog (A), Solid State (D) or Computer Cooking Control (C)	Monitors and evaluates input signals to the control: Activates heat output signal to maintain shortening temperature; counts product cook time(s) and signals the electronic alarm at the end of a cooking cycle; activates the left and right lift output signal to operate the basket lifts(s); and activates filter output signal to power the fill solenoid valve. **NOTE:** By utilizing the same wiring harness connections D and C controls are interchangeable between fryers.
Control Interface Board (D and C fryers only)	Provides the output signal interface from the cooking control to regulate gas heating, basket lift operation and fill solenoid valve operation. The board components consist of a heat control Triac and K1, K2 & K3 N.O. relays.
Transformer	Supplies 24VAC to the cooking control, also supplies power to ignition control module. Transformer is energized when power switch is turned on.
Power Switch	Supplies power to control circuit for fryer operation and filtering.
Modulating Gas Valve	Allows the gas flow to modulate between low and high flame when gas valve coil is energized.
High Limit Thermostat	Prevents the shortening from reaching temperatures over 450°F (auto reset @ 415°F). Serves as a backup to the cooking control's high temperature alarm setting of 415°F (normal operation resumes when temperature falls below this point).
Temperature Probe . . .	Senses temperature of shortening. Converts the temperature into a resistance valve which is monitored by the cooking control. The probe is an RTD (resistance temperature detector) of the Thermistor type. As temperature increases the resistance value decreases.
Drain Valve Interlock Switch (DVI)	A magnetic reed switch mounted on the manual drain valve that supplies a drain valve position signal (open/closed) to the cooking control. When drain valve is open, the drain interlock input to the control is removed (magnetic reed switch contacts open). This prevents gas burners from coming on with the fry tank empty.
Ignition Control Module (Before 12/1/12)	Controls and monitors gas burner ignition. Monitors the presence of a flame and supplies an ignition status input signal to the cooking control.
Ignitor/Flame Sense (Before 12/1/12)	Ignites the gas burner and senses the presence of a flame. The flame presence generates a micro-amp flame sense current that is rectified to the ignition control module.
Burner Time Delay Relays (Before 12/1/12)	These relays are used in conjunction with the burner either in high or low fire settings.
Blower Relay (Before 12/1/12)	When the relay coil is energized, it supplies voltage to operate the burner blower motor.
Blower Control Board (Before 12/1/12)	Provides the output signal interface from the cooking control to operate the burner blower motor in low or high speeds. The board components consist of 4 dip switches, SW2 and SW4.

COMPONENT FUNCTION - KLEENSCREEN FILTER CONTROLS

Fill Solenoid Valve . . . . When energized by filter key, the solenoid valve opens to allow the flow of shortening thru filtering system.

Pump Motor . . . . . . Operates pump to circulate shortening through filtering system.

Drain Valve Interlock Switch (DVI) . . . . . . A magnetic reed switch mounted on the mechanical discard valve that closes when discard valve handle is extended to discard the shortening. Prevents R2 filter relay N.C. contacts from suppling power to the fill solenoid valve when filter key is pressed.

R1 Pump Motor Relay . . . . . . When 24VAC relay coil is energized by filter key, supplies 120VAC to pump motor; and fill solenoid valve (thru R2 fill relay N.C. contacts.

R2 Fill Relay . . . . . . When 24VAC relay coil is energized by filter key, supplies 24VAC to the fill solenoid valve to open the valve and allow shortening to flow thru filter system.

COMPONENT LOCATION

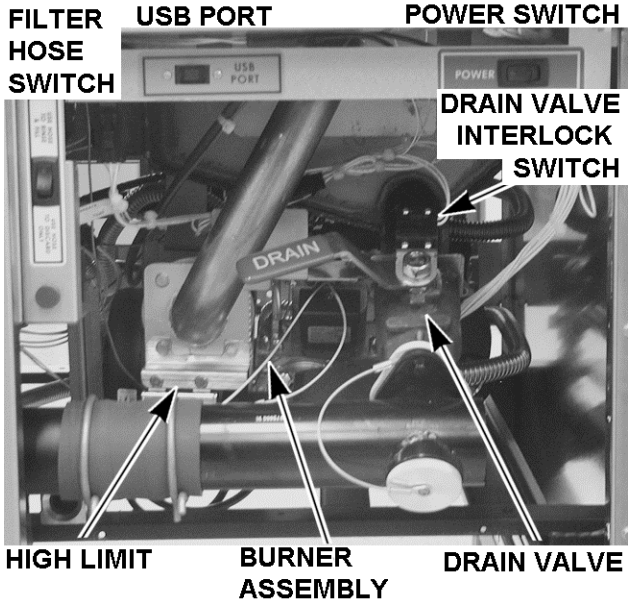


Fig. 66

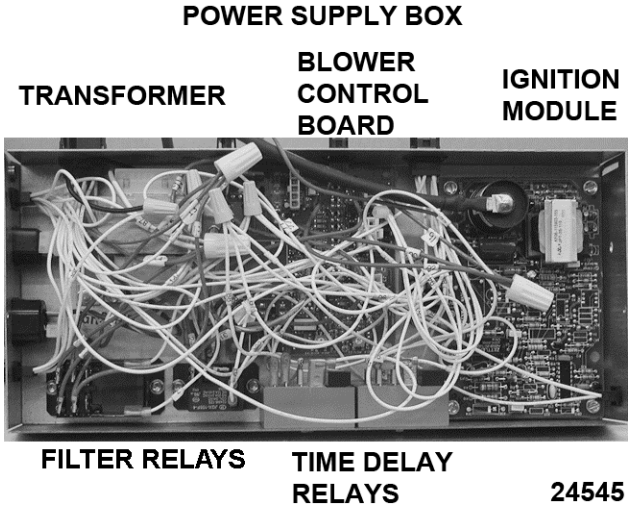


Fig. 67

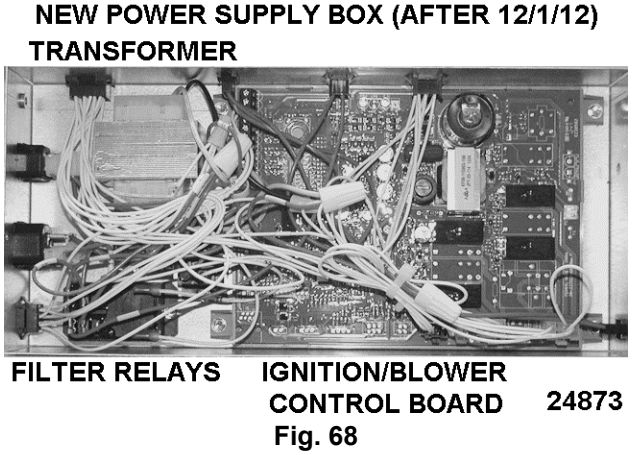


Fig. 68

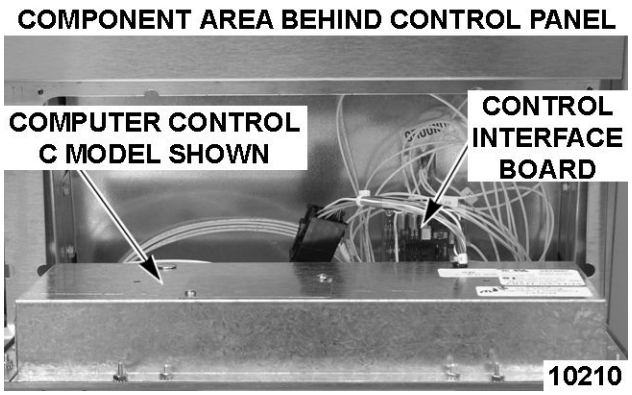


Fig. 69

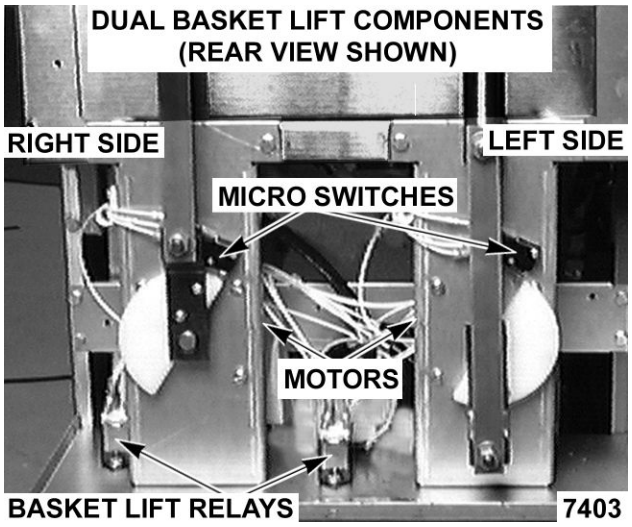


Fig. 70

SEQUENCE OF OPERATION - A SERIES - AFTER 12/1/12

Refer to the schematic diagrams for Analog Control operation.

NOTE: If the Solid/ Liquid switch is set to Solid, the control will cycle the heat on and off in short intervals until the shortening is heated to 135°F.

Melt Cycle times	
Liquid	8 sec on and 18 sec off
Solid	16 sec on and 18 sec off

1. Conditions:
   - A. Fryer connected to correct supply voltage and properly grounded.
   - B. Incoming gas supply is on and manual gas valve turned on.
   - C. Power switch to the fryer section in the off position.
   - D. Solid/Liquid switch set to correct position.
   - E. Shortening at proper level in fry tank and below last set point temperature used.
   - F. Manual drain valve closed (drain valve interlock switch N.O. is closed).
   - G. High limit thermostat closed.
2. Turn power switch on.
   - A. 24VAC transformer energized.
3. Analog control is powered 24VAC.
4. Start switch is closed (momentary).
5. If shortening temp is below 135°F then melt cycle will operate.
6. Temperature goes above 135°F and control calls for heat.
   - A. 3 sec prepurge.
   - B. Spark sent to igniter.
     - 7 sec trial for ignition. If flame not detected after 8 sec, Lockout.

NOTE: System remains locked out until the power switch is cycled to reset system and restart trial for ignition cycle. (Wait 5 minutes for gas to dissipate)

     - 2 sec after flame detected, burner blower motor in low speed and low fire initiated.
   - C. Once burner flame is present, burner blower motor goes from low speed to high speed.
   - D. Ignition module provides ignition status input signal to control.
7. Cooking control evaluates input signals from: Ignition status, drain valve interlock, and temperature probe.
   - A. Ignited burner heats shortening in fry tank.

NOTE: As long as the ignition module senses a flame, the internal main voltage (MV) contacts (N.O.) on the ignition module remain closed, and the gas valve stays on.

8. Shortening reaches set temperature.
   - A. Cooking control de-activates heat output (24VAC).
     1) Gas valve coil de-energized and valve closes.
     2) Gas flow stops and burner goes out.
9. When fryer calls for heat again, ignition sequence will begin at step 6A.

SEQUENCE OF OPERATION D AND C SERIES

Refer to SCHEMATIC AI3495 for Cooking Control operation.

NOTE: If using solid shortening, the control should be programmed to use the melt cycle. In the melt cycle, the control will cycle the heat on/off in short intervals. This will gradually heat and liquify the shortening until it reaches 135°F. Melt cycle default times in seconds are:

Melt Cycle Times	
Liquid	L = 16 on, 18 off
Solid	S = 8 on, 26 off (default for gas)
No Melt	0 = 100% on

On solid state controls only, CY (cycle) is displayed before the shortening letter designation and zero represents no melt.

The control then resumes normal operation as described in this sequence.

1. Conditions.
   - A. Fryer connected to correct supply voltage and properly grounded.
   - B. Gas supply and gas combination valves are on.
   - C. Power switch to the fryer section in the off position.
   - D. Shortening at proper level in fry tank and below last set point temperature.
   - E. Desired shortening selected. (Solid/Liquid)
   - F. Cooking control is setup properly and ready to use.
   - G. Manual drain valve closed (drain valve interlock switch N.O. is closed).
   - H. High limit thermostat closed.
2. Turn power switch on.
   - A. Power to terminal 5 (COM) on left and right basket relays.
   - B. 24VAC transformer energized.
3. Cooking control powers on, initializes and performs a diagnostic self check.

NOTE: If cooking control passes diagnostic self check, the output signals are turned on and operation sequence continues. If cooking control does not pass diagnostic self check, the control displays an error message for the problem, disables keypad and sounds the electronic alarm continuously. Refer to SOLID STATE CONTROL ALARMS OR COMPUTER CONTROL ALARMS.

4. 24VAC to P5 of interface board.
5. Control calls for heat.
   - A. 25 VDC to P3 on interface board.
   - B. Triac on interface board supplies 24VAC to ignition module to P6 on interface board.
6. If shortening temp is below 135°F then melt cycle will operate.
7. Temperature goes above 135°F and control calls for heat.
   - A. 3 sec prepurge.
   - B. Spark sent to igniters.
     - 7 sec trial for ignition. If flame not detected after 8 sec, Lockout.

NOTE: System remains locked out until the power switch is cycled to reset system and restart trial for ignition cycle. (Wait 5 minutes for gas to dissipate)

     - 2 sec after flame detected, burner blower motor in low speed and low fire initiated.
   - C. Once burner flame is present, burner blower motor goes from low speed to high speed.
   - D. Ignition module provides ignition status input signal to control.
8. Cooking control evaluates input signals from: Ignition status, drain valve interlock, and temperature probe.
   - A. Ignited burner heats shortening in fry tank.

NOTE: As long as the ignition module senses a flame, the internal main voltage (MV) contacts (N.O.) on the ignition module remain closed, and the gas valve stays on.

9. Shortening reaches set temperature.
   - A. Triac on Interface Board de-energized.
     1) Gas valve coil de-energized and valve closes.
     2) Gas flow stops and burner goes out.
10. When fryer calls for heat again, ignition sequence will begin at step 5A.
11. If fryer is left idle, the ignition sequence changes.

12. If shortening is allowed to cool over a long period of time, burner will operate on low heat to maintain shortening temperature near operating temperature.

NOTE: When the fryer shortening is cooling, the controller observes how fast or slow the temperature drops. If the temperature drops slowly the controller will operate the burner with the blower motor in low speed allowing the burner to operate at a lower BTU output to save our customers money by using less gas. The fryer will still reach set temperature, just at a slower pace. If the temperature drops rapidly, the controller will operate the burner blower motor in low speed until the flame is rectified, then it will change to the high speed for the rest of the call for heat

Drawer Filter System

Refer to SCHEMATIC AI3496 for Drawer Filter System operation. Refer to VK OPERATOR MANUAL and DRAWER FILTRATION SYSTEM SUPPLEMENT for specific instructions on filtering.

NOTE: The discard valve handle is connected to a mechanical valve and magnetic reed switch assembly to route the flow of shortening in the filtering system and supply power to the pump motor.

1. Conditions.
    A. Fryer connected to correct supply voltage and is properly grounded .
    B. Power switch to fryer section to filter turned on.
    C. The cooking control should be setup properly and ready to use.
    D. Cooking control temperature setting between 300°F (minimum) and 350°F (maximum).

NOTE: Shortening should not be filtered outside of this temperature range. At lower temperatures the shortening is thicker which may increase filtering time and place a greater load on the pump. At higher shortening temperatures, oil seal life is decreased.

    E. Filter drawer assembly installed properly.
    F. Drain valve handle (white) retracted.
        1) Drain valve interlock switch N.O. contacts open. Mechanical drain valve closed.

2. Allow shortening to cycle between 300°F and 350°F for approximately 10 minutes.

NOTE: If using solid shortening, once it has melted, stir the shortening to eliminate any sold shortening in cold zone of the fry tank.

3. Open drain valve to fryer section in need of filtering and drain shortening into filter tank.
    A. Display indicates draining.
    B. Drain valve interlock switch contacts open and position of drain valve is indicated to cooking control.

NOTE: If using solid shortening, allow hot shortening to stand in filter tank for approximately 6 minutes prior to filtering.

4. Press filter key on the control panel and hold for 3 seconds. The filter output signal (24VAC) at pin E1-9 is turned on and the interface board K3 relay coil is energized at pins 11 & 4.
    A. K3 N.O. contacts close and 24VAC is output from the interface board at pin 12.
    B. R1 pump motor relay coil (24VAC) is energized and both sets of N.O. contacts close.

NOTE: Jumper wire number 24 connects one set of R1 N.O. contacts to R2 COM.

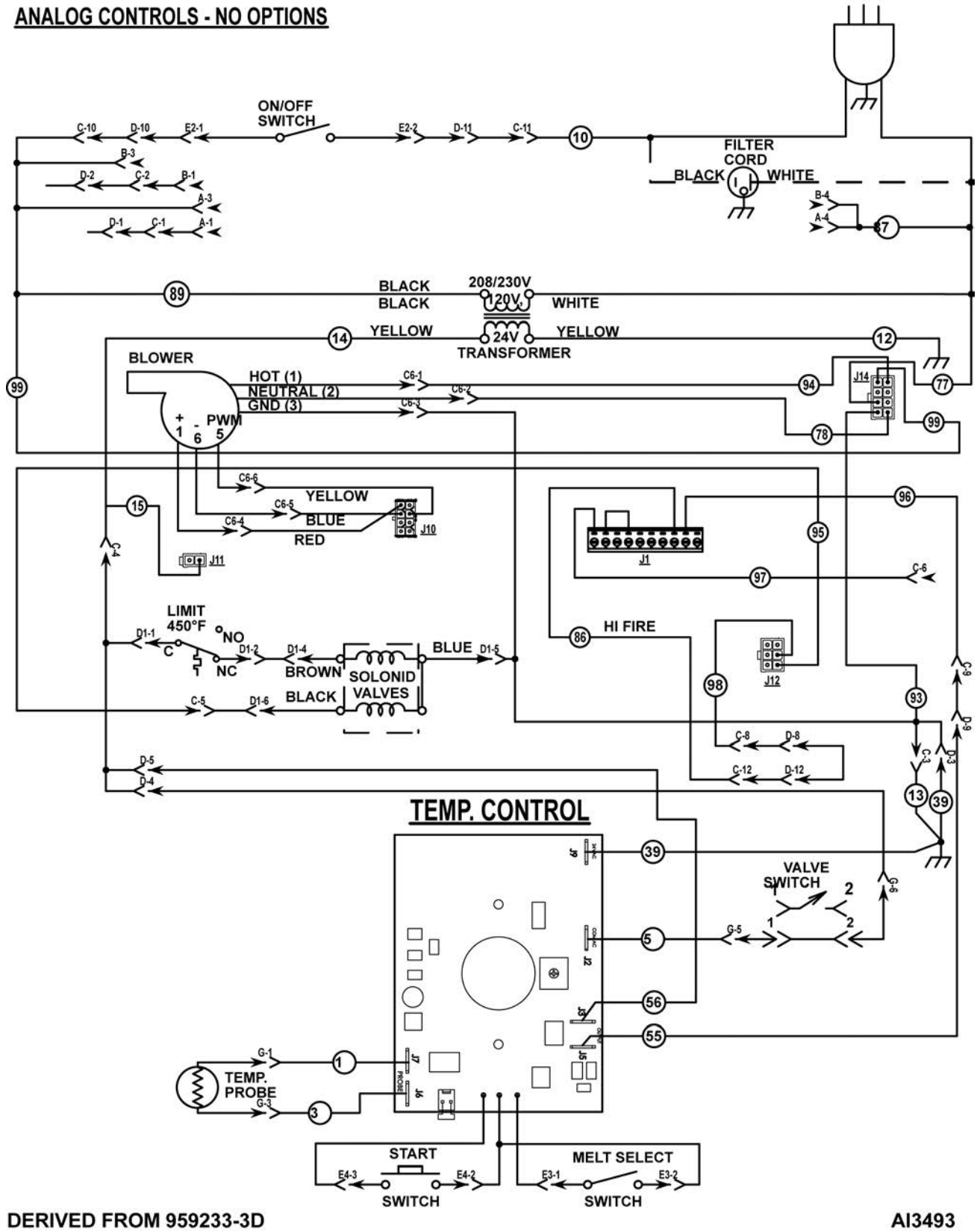
        1) Fill solenoid valve is energized (120VAC) thru R2 fill relay N.C. contacts and valve opens.
        2) Pump motor is energized (120VAC) and pump circulates shortening through filtering system.

5. When filtering is completed, close the drain valve and allow the fry tank to refill.
    A. Display indicates fill tank.
    B. Drain valve interlock contacts close and the position of the drain valve is indicated to the cooking control.

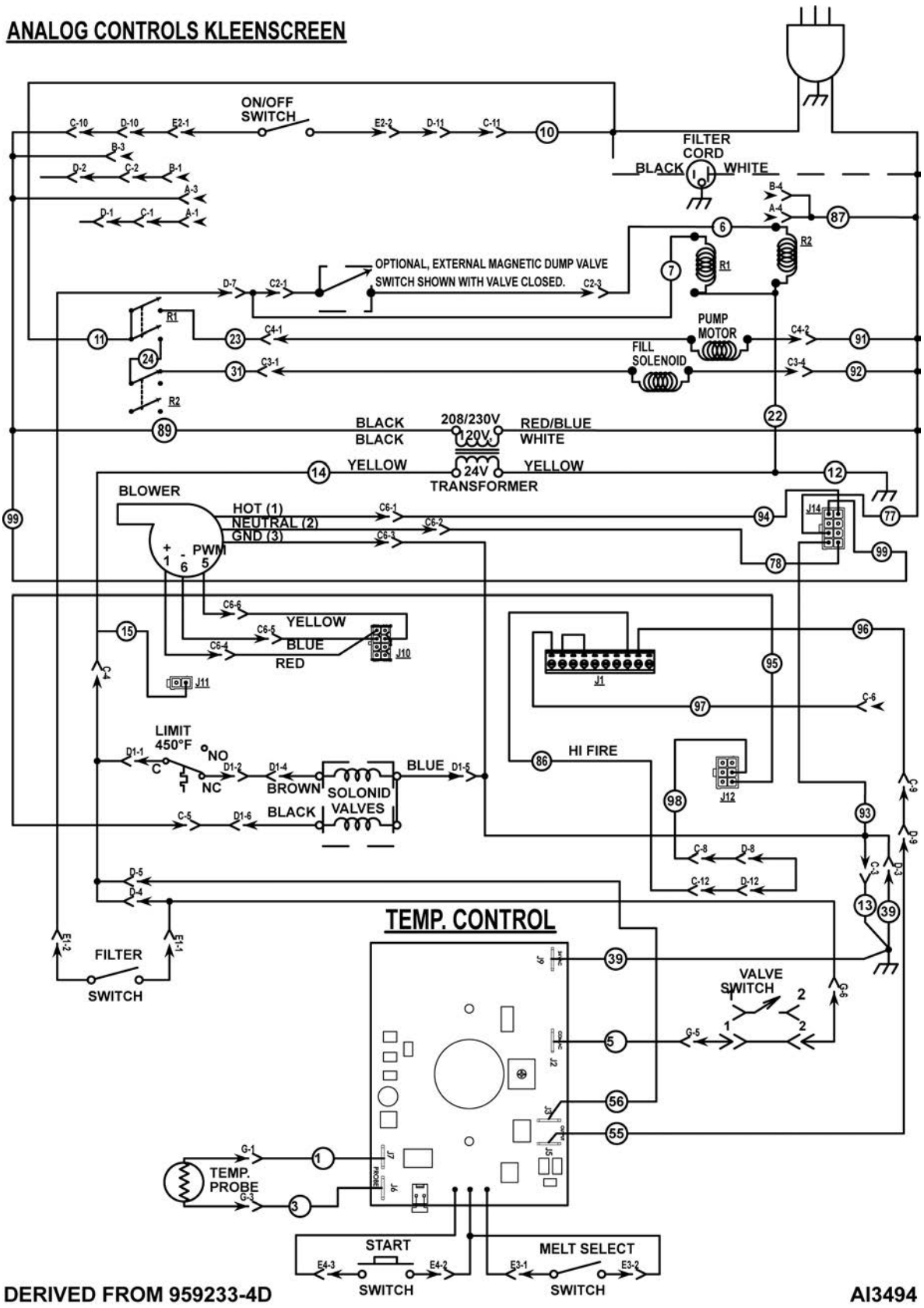
6. When all filtered shortening is returned to the fry tank, press filter key on the control panel.
    A. Power is removed from fill solenoid valve and pump motor.
    B. Display indicates tank full hit temp. If shortening is at proper level in fry tank, press and hold temp key until shortening temperature is displayed. Filtering cycle is complete and fryer resumes normal operation.

NOTE: If using solid shortening, when all filtered shortening is returned to fry tank and pump motor is off, open filter drawer approximately one inch. Allow remaining shortening in line to drain into filter tank to prevent possible clogging after shortening cools and solidifies. Close filter drawer when complete.

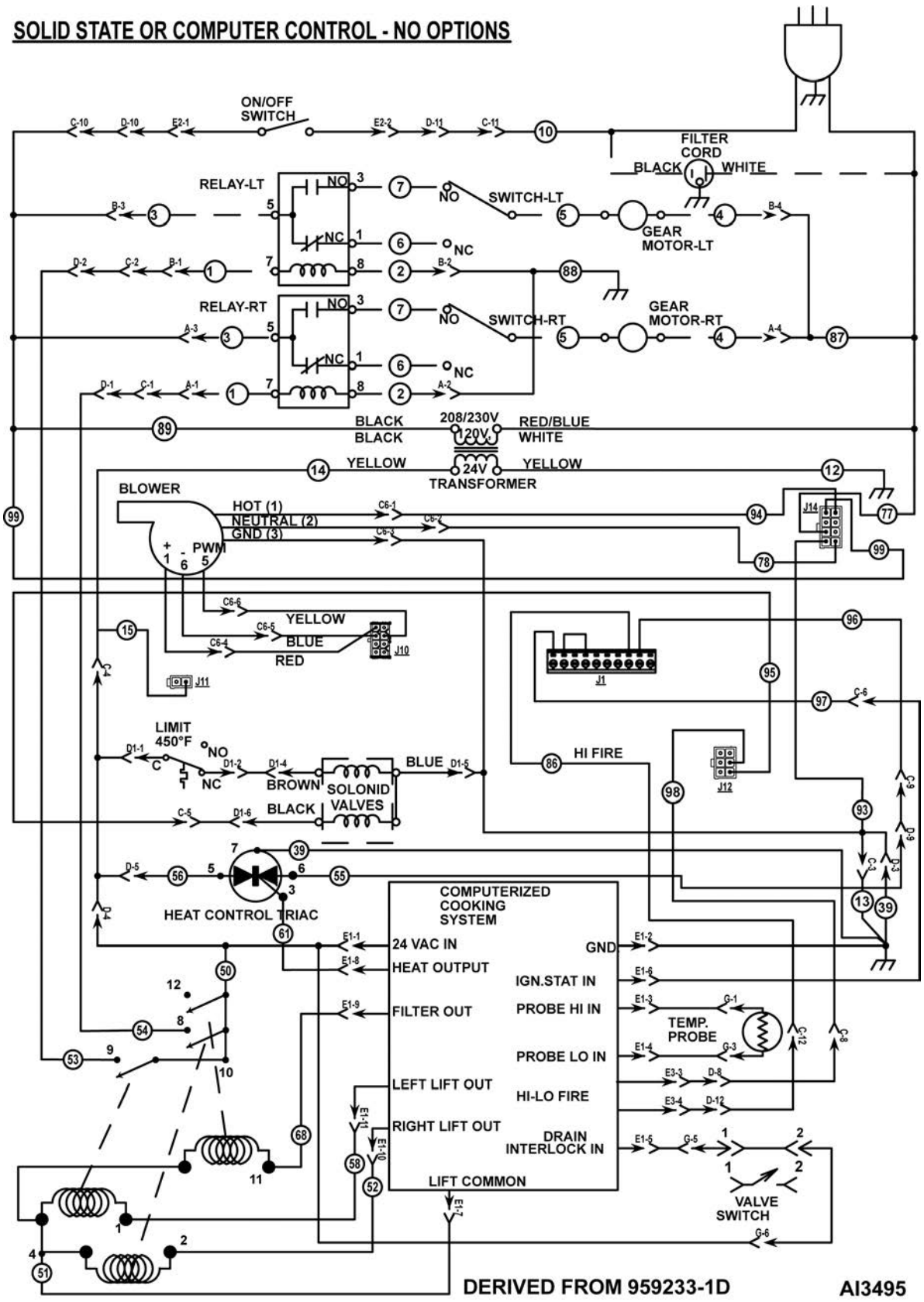
SCHEMATIC DIAGRAMS



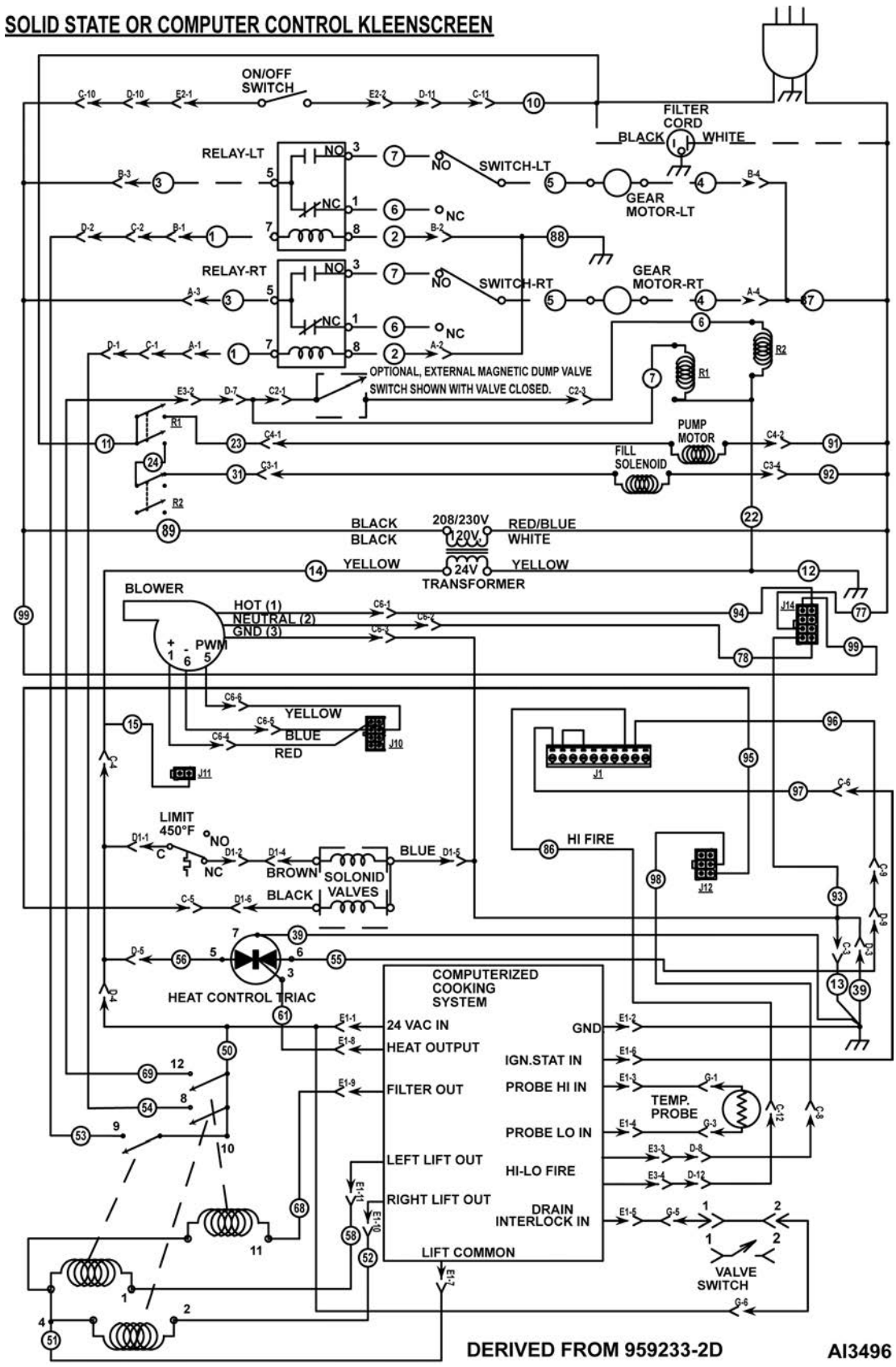
Analog Controls - No Options



Analog Controls - Kleenscreen

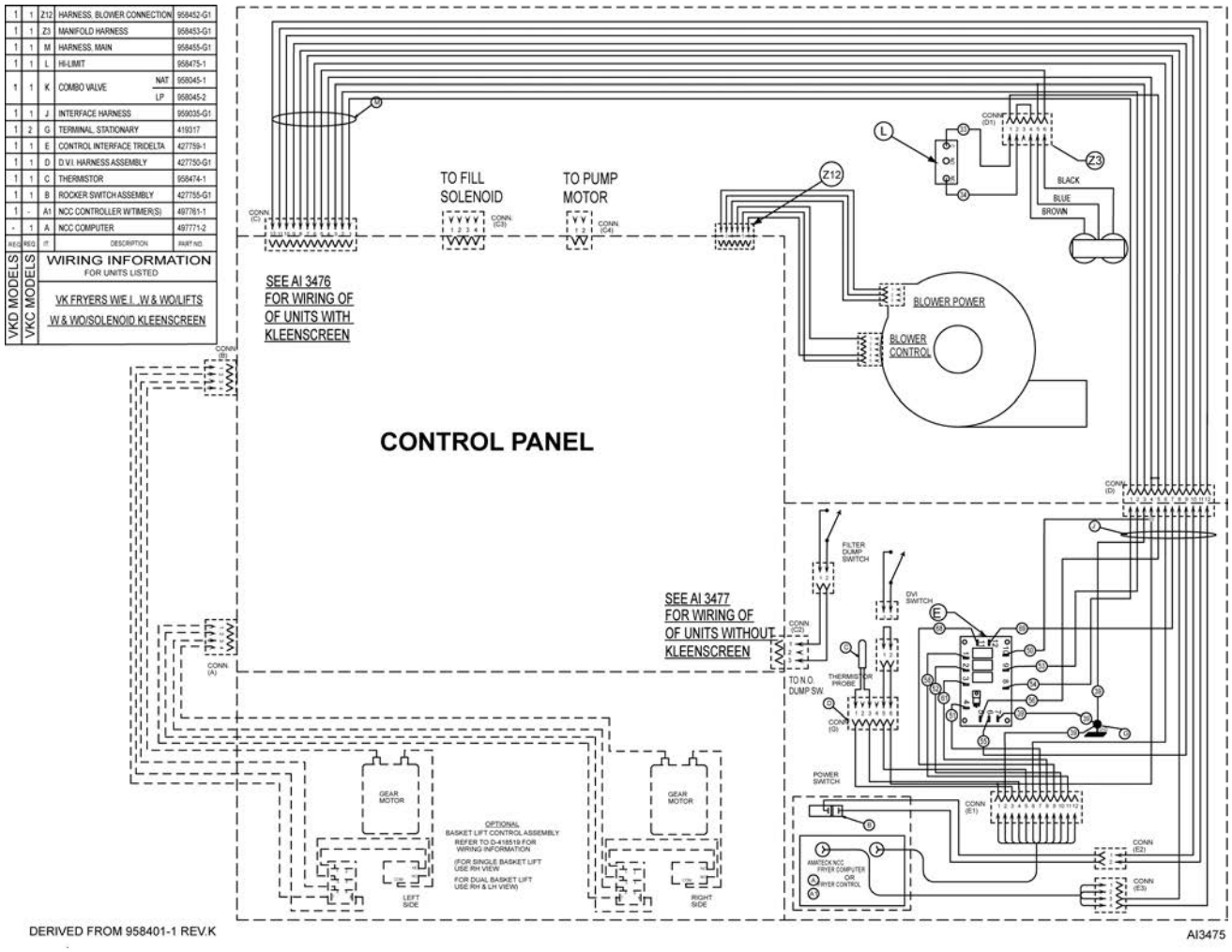


Solid State or Computer Control - No Options

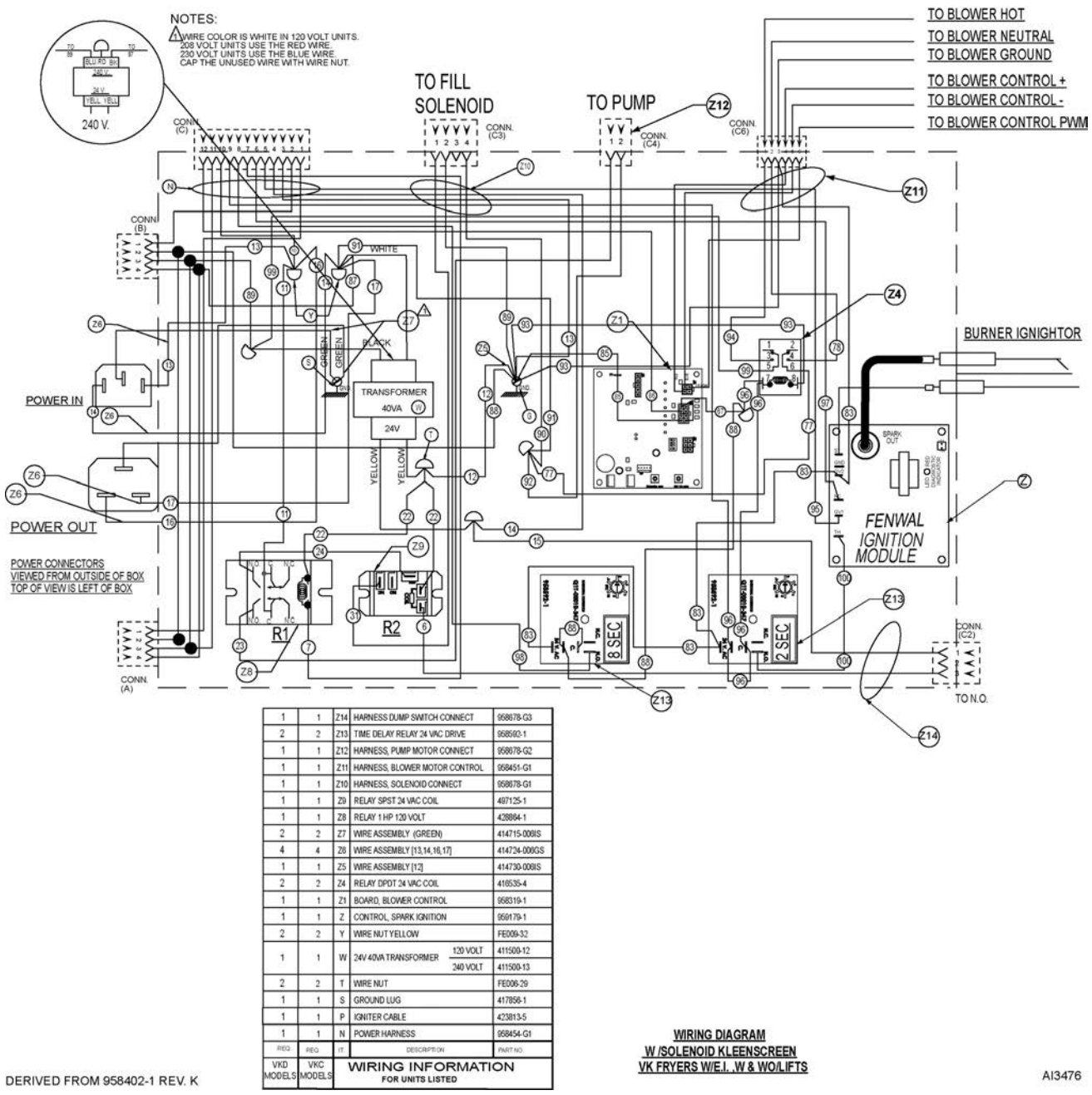


Solid State of Computer Control - Kleenscreen

WIRING DIAGRAMS

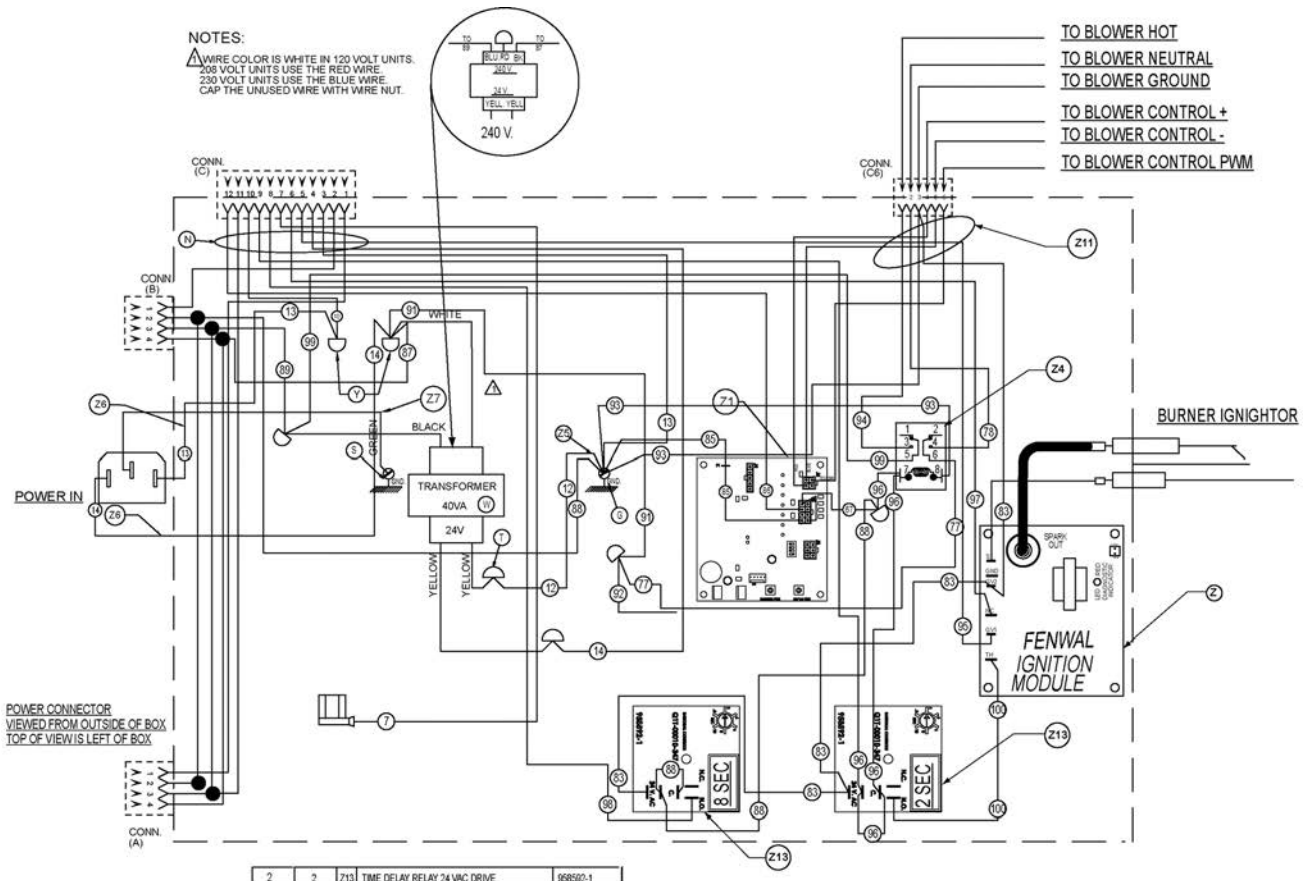


VK Fryer (C and D Models)



VKD MODELS	VKC MODELS	IT.	DESCRIPTION		PART NO.
			WIRING INFORMATION FOR UNITS LISTED		
1	1	Z14	HARNESS DUMP SWITCH CONNECT		958878-G3
2	2	Z13	TIME DELAY RELAY 24 VAC DRIVE		958503-1
1	1	Z12	HARNESS, PUMP MOTOR CONNECT		958878-G2
1	1	Z11	HARNESS, BLOWER MOTOR CONTROL		958451-G1
1	1	Z10	HARNESS, SOLENOID CONNECT		958878-G1
1	1	Z9	RELAY SPST 24 VAC COIL		497125-1
1	1	Z8	RELAY 1 HP 120 VOLT		428864-1
2	2	Z7	WIRE ASSEMBLY (GREEN)		414715-008IS
4	4	Z6	WIRE ASSEMBLY [13,14,16,17]		414724-000GS
1	1	Z5	WIRE ASSEMBLY [12]		414730-008IS
2	2	Z4	RELAY DPDT 24 VAC COIL		416535-4
1	1	Z1	BOARD, BLOWER CONTROL		958319-1
1	1	Z	CONTROL, SPARK IGNITION		959179-1
2	2	Y	WIRE NUT YELLOW		FE009-32
1	1	W	24V 40VA TRANSFORMER	120 VOLT	411500-12
				240 VOLT	411500-13
2	2	T	WIRE NUT		FE006-29
1	1	S	GROUND LUG		417856-1
1	1	P	IGNITER CABLE		423813-5
1	1	N	POWER HARNESS		958454-G1

Power Supply Box (Before 12/1/12) - VK Fryer with basket lifts and Kleenscreen



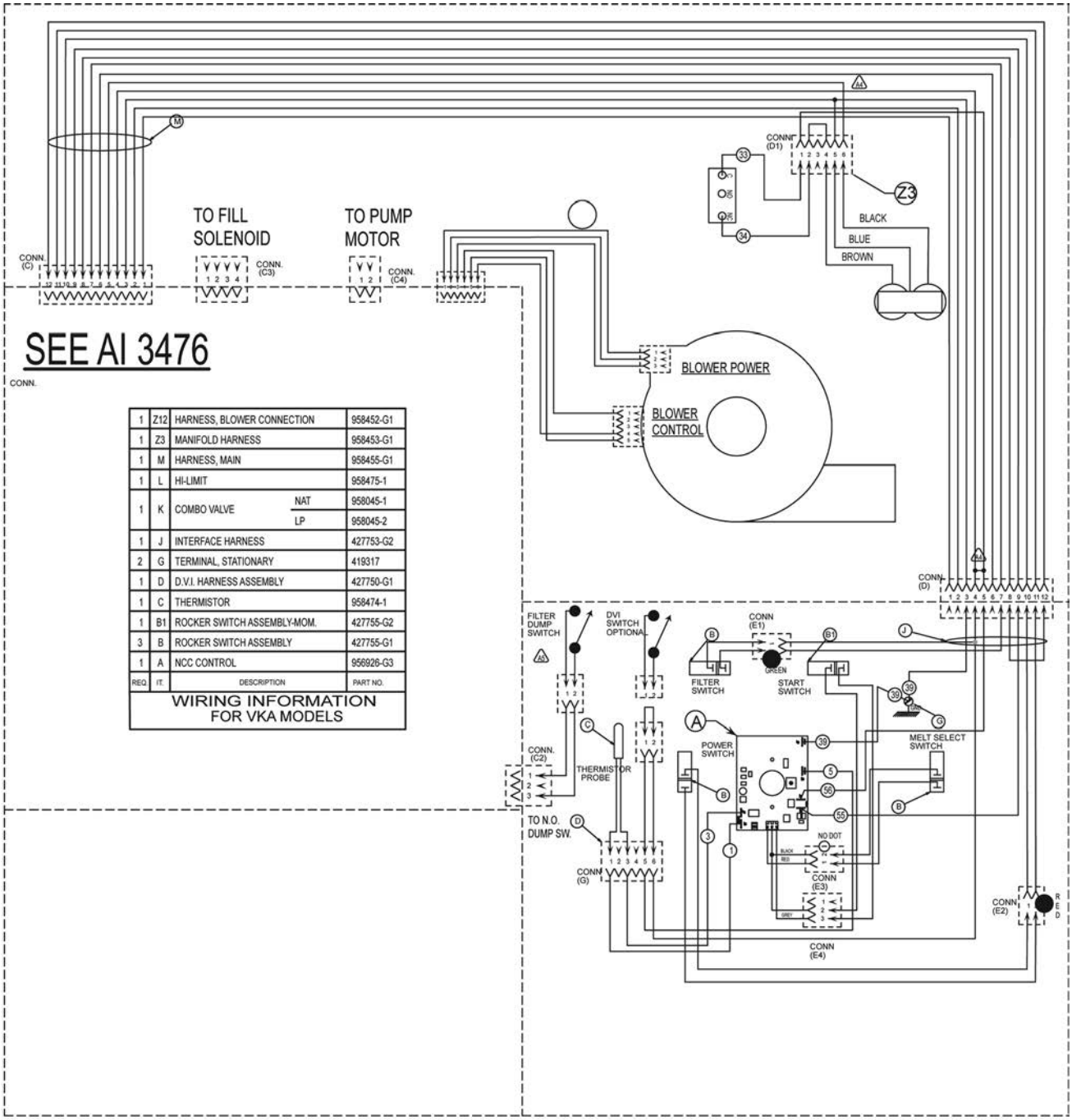
2	2	Z13	TIME DELAY RELAY 24 VAC DRIVE	958502-1
1	1	Z11	HARNESS, BLOWER MOTOR CONTROL	958451-G1
1	1	Z7	WIRE ASSEMBLY (GREEN)	414715-006IS
2	2	Z6	WIRE ASSEMBLY [13,14]	414724-006GS
1	1	Z5	WIRE ASSEMBLY [12]	414730-006IS
2	2	Z4	RELAY DPDT 24 VAC COIL	416535-4
1	1	Z1	BOARD, BLOWER CONTROL	958319-1
1	1	Z	CONTROL, SPARK IGNITION	959179-1
2	2	Y	WIRE NUT YELLOW	FE009-32
1	1	W	24V 40VA TRANSFORMER 120 VOLT	411500-12
			240 VOLT	411500-13
2	2	T	WIRE NUT	FE006-29
1	1	S	GROUND LUG	417856-1
1	1	P	IGNITER CABLE	423813-5
1	1	N	POWER HARNESS	958454-G1
REQ.	REQ.	IT	DESCRIPTION	PART NO.
VKD MODELS	VKC MODELS	WIRING INFORMATION FOR UNITS LISTED		

WIRING DIAGRAM WO/SOLENOID KLEENSCREEN
VK FRYERS W/E.I. ,W & WO/LIFTS

DERIVED FROM 958402-1 REV. K

AI 3477

Power Supply Box (Before 12/1/12) - VK Fryer without basket lifts and Kleenscreen



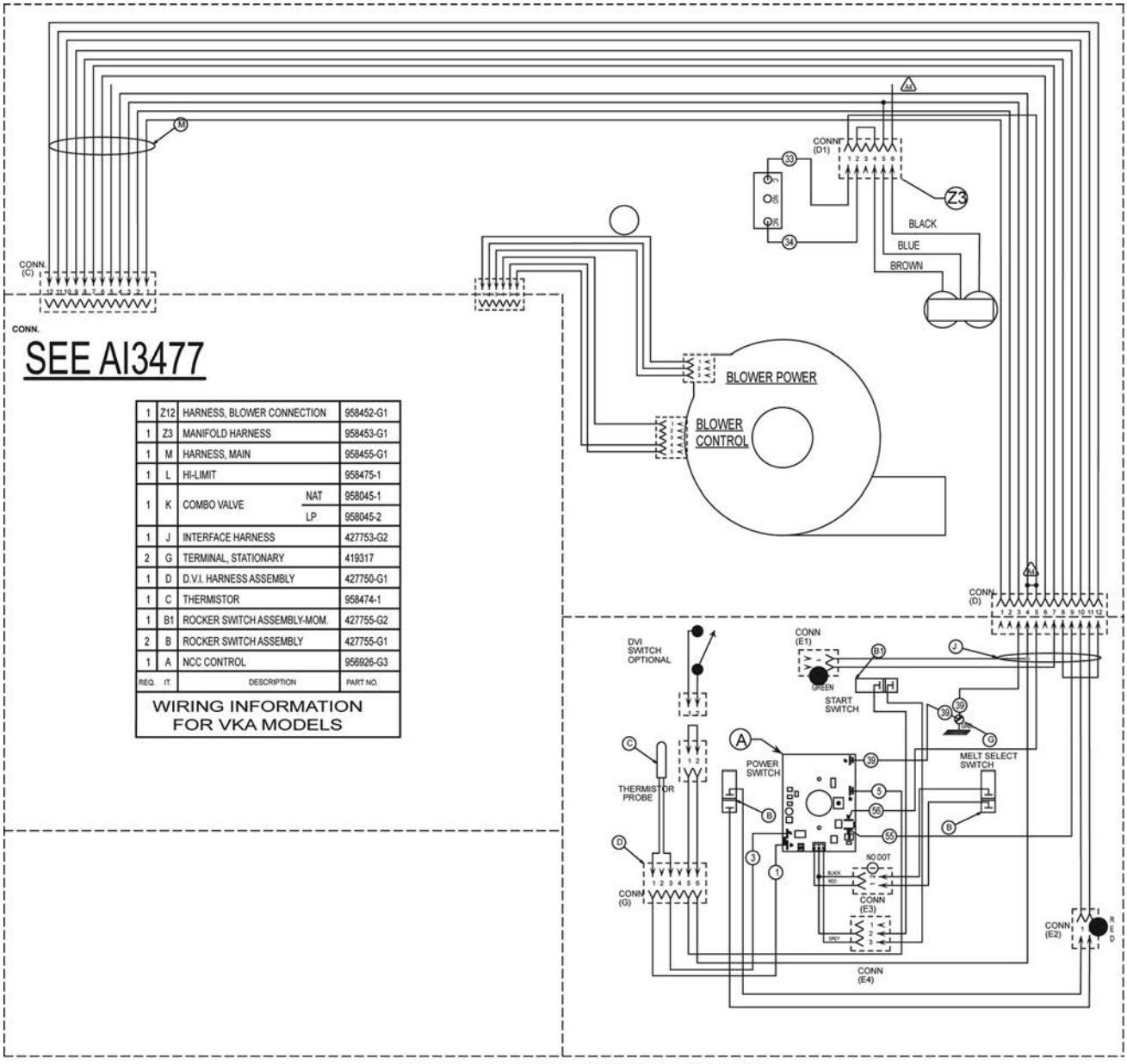
REQ.	IT.	DESCRIPTION		PART NO.
1	Z12	HARNESS, BLOWER CONNECTION		958452-G1
1	Z3	MANIFOLD HARNESS		958453-G1
1	M	HARNESS, MAIN		958455-G1
1	L	HI-LIMIT		958475-1
1	K	COMBO VALVE	NAT	958045-1
			LP	958045-2
1	J	INTERFACE HARNESS		427753-G2
2	G	TERMINAL, STATIONARY		419317
1	D	D.V.I. HARNESS ASSEMBLY		427750-G1
1	C	THERMISTOR		958474-1
1	B1	ROCKER SWITCH ASSEMBLY-MOM.		427755-G2
3	B	ROCKER SWITCH ASSEMBLY		427755-G1
1	A	NCC CONTROL		956926-G3

WIRING DIAGRAM ANALOG - WITH KLEENSCREEN

DERIVED FROM 958402-2 REV. E

AI 3478

VK Fryers with Electronic Ignition and Analog Control and Kleenscreen



REQ.	IT.	DESCRIPTION	PART NO.
1	Z12	HARNESS, BLOWER CONNECTION	958452-G1
1	Z3	MANIFOLD HARNESS	958453-G1
1	M	HARNESS, MAIN	958455-G1
1	L	HI-LIMIT	958475-1
1	K	COMBO VALVE NAT	958045-1
		COMBO VALVE LP	958045-2
1	J	INTERFACE HARNESS	427753-G2
2	G	TERMINAL, STATIONARY	419317
1	D	D.V.I. HARNESS ASSEMBLY	427750-G1
1	C	THERMISTOR	958474-1
1	B1	ROCKER SWITCH ASSEMBLY-MOM.	427755-G2
2	B	ROCKER SWITCH ASSEMBLY	427755-G1
1	A	NCC CONTROL	956926-G3

WIRING INFORMATION FOR VKA MODELS

WIRING DIAGRAM ANALOG CONTROL - NO OPTIONS

DERIVED FROM 958402-3 REV E

AI 3479

VK Fryers with Electronic Ignition and Analog Control

Diagram LINKS below for Power Box Wiring for Units Built after December 2012

VK/TR D & C Fryer Wiring Diagram

VK/TR Analog Control W/ Kleenscreen Fryer Wiring Diagram

VK/TR Analog Control W/E.I. Stand Alone Fryer Wiring Diagram

TROUBLESHOOTING

TROUBLESHOOTING

ALL MODELS	
SYMPTOMS	**POSSIBLE CAUSES**
Ignition lockout, continuous loud beep	1. Harness connection to gas valve. 2. Gas valve or gas pressure. 3. Air filter. 4. All harness connections. 5. Electrode. 6. Drain valve switch open or switch malfunction. 7. Interconnecting wiring malfunction. 8. Ignition module malfunction. 9. High limit or thermostat open. 10. Vent hose closed off or restricted.
Initial beep then shut off	1. Grounding status. 2. Check electrode.
No spark no blower	1. Harness connections (check for flashing light in A control). 2. Probe lead wires. 3. Open probe. 4. Controller. 5. Open fuse on ignition/blower control board
"Puffing" during initial start up	1. Air Filter dirty. 2. Incorrect gas pressure. 3. Vent hose closed off or restricted. 4. Cracked electrode. 5. Electrode gap exceeding 3/16".
Burner lights but will not maintain flame	1. Igniter/flame sense misaligned. 2. Insufficient gas pressure. 3. Incorrect polarity from transformer to ignition module.

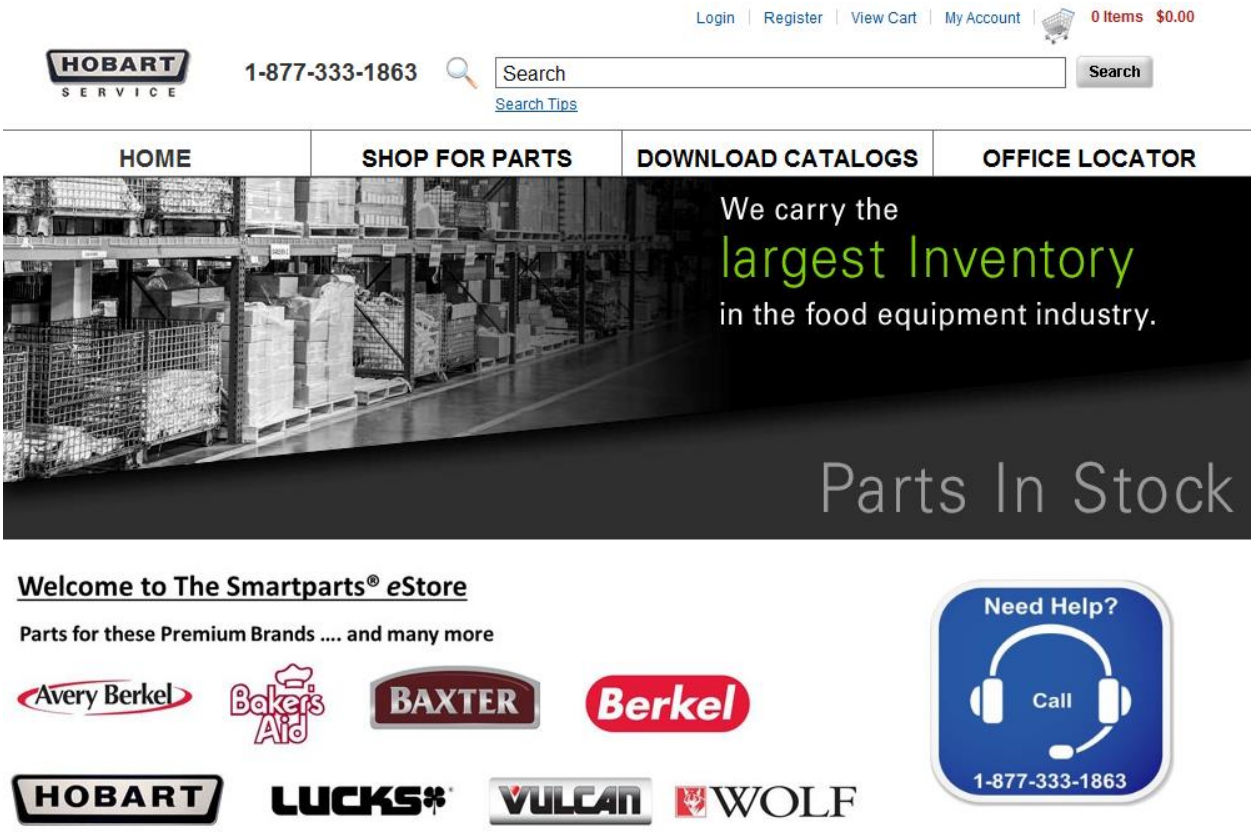
ALL MODELS	
SYMPTOMS	**POSSIBLE CAUSES**
Excessive heat	1. Incorrect temperature offset selected. 2. Set temperature exceeding 400°F. 3. Temperature probe malfunction. 4. Cooking control malfunction. 5. Interface board malfunction. 6. Gas pressure incorrect.
Low heat	1. Incorrect temperature offset selected. 2. Cooking control malfunction. 3. Temperature probe malfunction. 4. High limit tripped. 5. Interface board malfunction. 6. Gas pressure incorrect.
Intermittent problems	1. High ambient temperatures. 2. Wiring connections loose.
No power to cooking control, fryer does not heat	1. Power switch off or malfunction. 2. Main circuit breaker off. 3. Transformer inoperative. 4. Interconnecting wiring malfunction.
High limit thermostat shutting down system	1. Shortening level below minimum fill line. 2. Probe malfunction. 3. Control malfunction.
Excessive time to melt shortening (more than 45 minutes)	1. Melt cycle timing incorrect. 2. Insufficient gas pressure. 3. Air inlet obstructed or incorrect. 4. Probe malfunction. 5. Control malfunction.
Dry fire fry tank	1. Magnets on drain valve (DVI switch) not aligned properly. 2. Control malfunction. 3. Probe malfunction.

INTERFACE CONTROL BOARD PIN-OUTS

PIN NO.	INPUTS	PIN NO.	OUTPUTS
P1	24VDC Left Basket Lift	P6	Heat Demand, Triac (24VAC) **NOTE:** To J1-2 terminal of blower/ignition control board.
P2	24VDC Right Basket Lift	P7	System Ground
P3	24VDC Heat Demand Control	P8	24VAC Right Basket Lift **NOTE:** To basket lift relay coil.
P4	DC (-) Common	P9	24VAC Left Basket Lift
P5	Heat Demand, Triac (24VAC)	---	---
P10	Heat Status (24VAC) **NOTE:** Relays connected internally.	P12	24 VAC to the filter pump and external magnetic dump valve switch.
P11	24 VDC from the computer to the interface board for the filter pump.	---	---

ONLINE PARTS CATALOG

Order parts online at our Hobart Service Parts store: http://thesmartpartsestore.hobartservice.com/



VULCAN

CATALOG OF REPLACEMENT PARTS

VK & TR SERIES FRYERS

See Page 2 for Complete List of ML's Covered in This Catalog

For additional information on Vulcan-Hart Company or to locate an authorized parts and service provider in your area, visit our website at www.vulcanequipment.com

VULCAN-HART
DIVISION OF ITW FOOD EQUIPMENT GROUP, LLC
WWW.VULCANEQUIPMENT.COM

3600 NORTH POINT BLVD.
BALTIMORE, MD 21222

F-43249 Rev. F (June 2020)

VK Series Without Filter

ML-136885	*1VK45A*
ML-136886	*1VK45D*
ML-136887	*1VK45C*
ML-136888	*1VK65A*
ML-136889	*1VK65D*
ML-136890	*1VK65C*
ML-136891	*1VK85A*
ML-136892	*1VK85D*
ML-136893	*1VK85C*

TR Series Without Filter

ML-136946	*1TR45A*
ML-136951	*1TR45D*
ML-136956	*1TR45C*
ML-136961	*1TR65A*
ML-136965	*1TR65D*
ML-136969	*1TR65C*
ML-136973	*1TR85A*
ML-136977	*1TR85D*
ML-136981	*1TR85C*

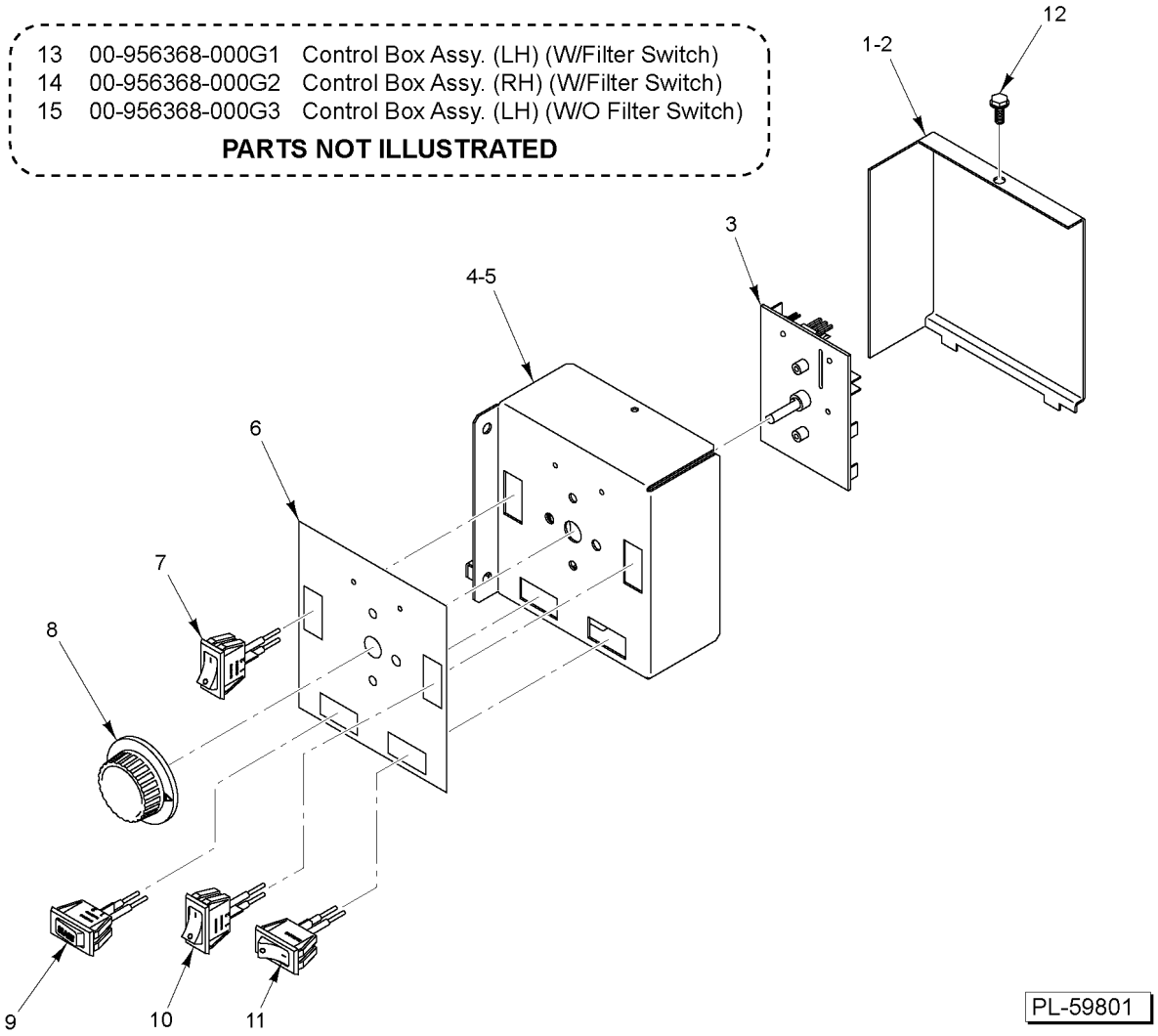
VK Series With Filter

ML-136894	*1VK45AF*
ML-136895	*1VK45DF*
ML-136896	*1VK45CF*
ML-136897	*1VK65AF*
ML-136898	*1VK65DF*
ML-136899	*1VK65CF*
ML-136900	*1VK85AF*
ML-136901	*1VK85DF*
ML-136902	*1VK85CF*
ML-136903	*2VK45AF*
ML-136904	*2VK45DF*
ML-136905	*2VK45CF*
ML-136906	*2VK65AF*
ML-136907	*2VK65DF*
ML-136908	*2VK65CF*
ML-136909	*2VK85AF*
ML-136910	*2VK85DF*
ML-136911	*2VK85CF*
ML-136912	*3VK45AF*
ML-136913	*3VK45DF*
ML-136914	*3VK45CF*
ML-136915	*3VK65AF*
ML-136916	*3VK65DF*
ML-136917	*3VK65CF*
ML-136918	*3VK85AF*
ML-136919	*3VK85DF*
ML-136920	*3VK85CF*
ML-136921	*4VK45AF*
ML-136922	*4VK45DF*
ML-136923	*4VK45CF*
ML-136935	*4VK65AF*
ML-136941	*4VK65DF*
ML-136937	*4VK65CF*
ML-136938	*4VK85AF*
ML-136939	*4VK85DF*
ML-136940	*4VK85CF*

TR Series With Filter

ML-136947	*1TR45AF*
ML-136952	*1TR45DF*
ML-136957	*1TR45CF*
ML-136962	*1TR65AF*
ML-136966	*1TR65DF*
ML-136970	*1TR65CF*
ML-136974	*1TR85AF*
ML-136978	*1TR85DF*
ML-136982	*1TR85CF*
ML-136948	*2TR45AF*
ML-136953	*2TR45DF*
ML-136958	*2TR45CF*
ML-136963	*2TR65AF*
ML-136967	*2TR65DF*
ML-136971	*2TR65CF*
ML-136975	*2TR85AF*
ML-136979	*2TR85DF*
ML-136983	*2TR85CF*
ML-136949	*3TR45AF*
ML-136954	*3TR45DF*
ML-136959	*3TR45CF*
ML-136964	*3TR65AF*
ML-136968	*3TR65DF*
ML-136972	*3TR65CF*
ML-136976	*3TR85AF*
ML-136980	*3TR85DF*
ML-136984	*3TR85CF*
ML-136950	*4TR45AF*
ML-136955	*4TR45DF*
ML-136960	*4TR45CF*
ML-136985	*4TR65AF*
ML-136986	*4TR65DF*
ML-136987	*4TR65CF*
ML-136988	*4TR85AF*
ML-136989	*4TR85DF*
ML-136990	*4TR85CF*

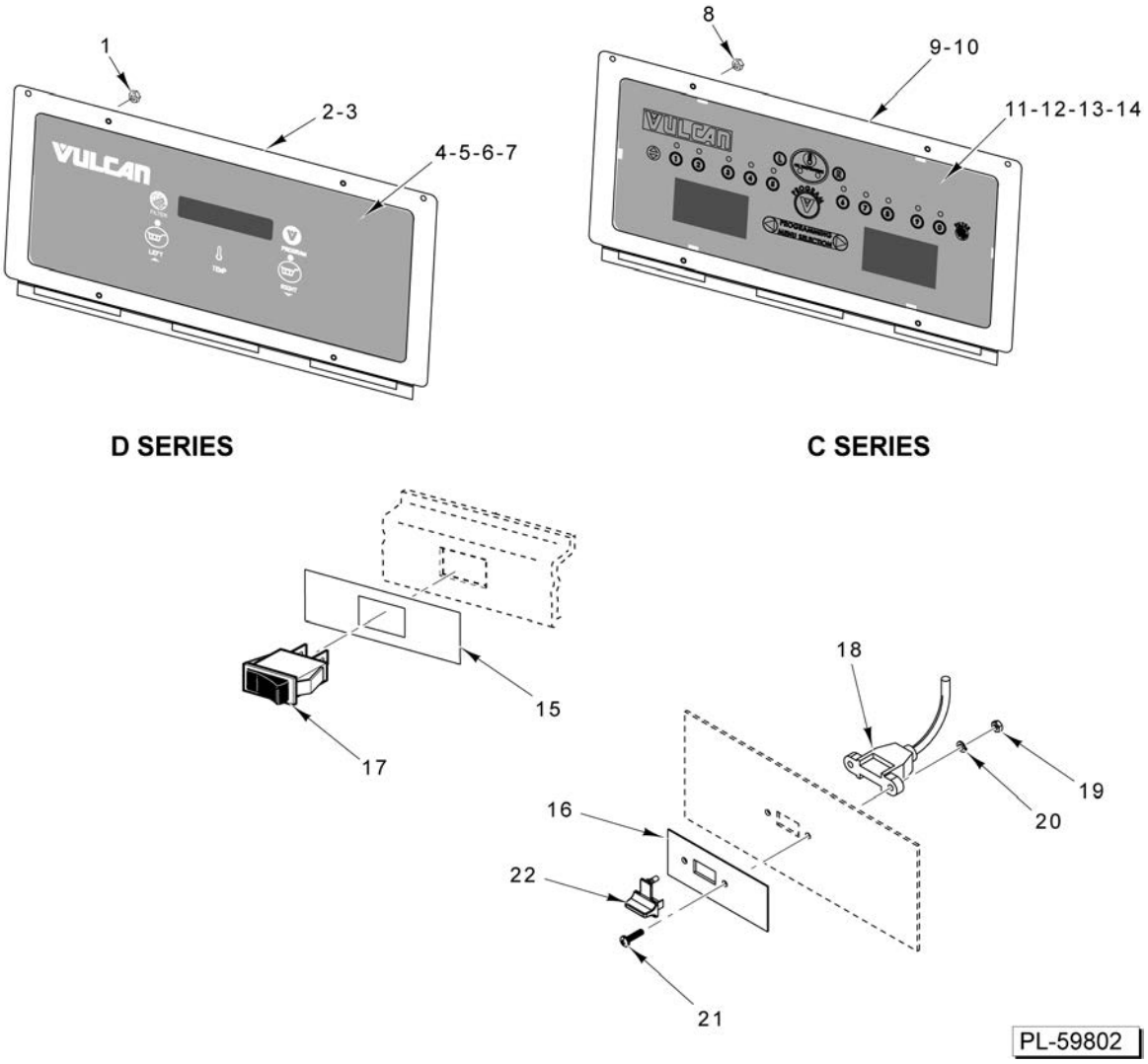
Table of Contents



BEHIND DOOR CONTROL BOX ASSEMBLY

BEHIND DOOR CONTROL BOX ASSEMBLY

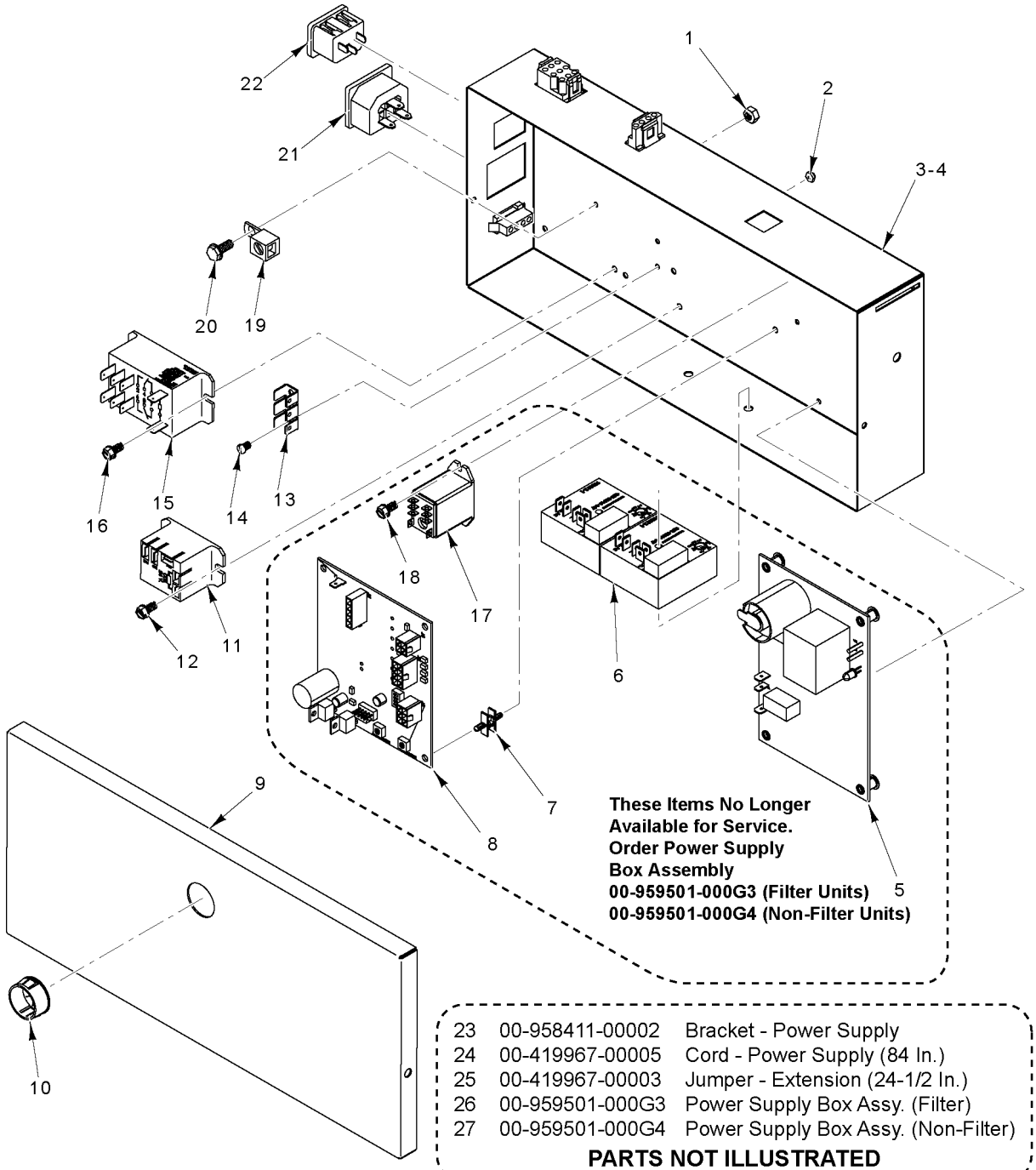
ILLUS. PL-59801	PART NO.	NAME OF PART	AMT.
1	00-957822-00004	Cover - Control Box (LH)	1
2	00-957822-00005	Cover - Control Box (RH)	1
3	00-956926-000G3	Control Assy. - Temperature (W/ LED's)	1
4	00-499716-00001	Plate - Control Mounting (LH)	1
5	00-499716-00002	Plate - Control Mounting (RH)	1
6	00-956827-00002	Overlay	1
7	00-427755-000G1	Rocker Switch Assy. (Power)	1
8	00-411242-00001	Knob	1
9	00-427755-000G2	Rocker Switch Assy. (Start)	1
10	00-427755-000G1	Rocker Switch Assy. (Power)	1
11	00-426251-00002	Plug (Non-Filter)	1
12	SD-032-07	Self-Tapping Screw 10-24 x 1/2 Hex Washer Hd., Type TT	1
13	00-956368-000G1	Control Box Assy. (LH) (W/Filter Switch) (Incls. Items 1, 3, 4, 6 thru 10, & 12)	1
14	00-956368-000G2	Control Box Assy. (RH) (W/Filter Switch) (Incls. Items 2, 3, 5 thru 10, & 12)	1
15	00-956368-000G3	Control Box Assy. (LH) (W/O Filter Switch) (Incls. Items 1, 3, 4, & 6 thru 12)	1



CONTROL PANELS

CONTROL PANELS

ILLUS. PL-59802	PART NO.	NAME OF PART	AMT.
1	NS-046-89	Nut Assy. 6-32 Hex	4
2	00-426815-000G1	Plate Assy. - Mounting (45 Series)	1
3	00-426815-000G2	Plate Assy. - Mounting (65/85 Series)	1
4	00-497745-00001	Overlay - Vulcan (Filter)	1
5	00-497745-00003	Overlay - Vulcan (Boil)	1
6	00-913086-00004	Control Assy. - Solid State (Filter Button) (Incls. Item 4)	1
7	00-913086-00003	Control Assy. - Solid State (Boil Button) (Incls. Item 5)	1
8	NS-046-89	Nut Assy. 6-32 Hex	4
9	00-426815-000G1	Plate Assy. - Mounting (45 Series)	1
10	00-426815-000G2	Plate Assy. - Mounting (65/85 Series)	1
11	00-913086-00002	Computer Cooking Assy. (Filter Button) (Incls. Item 13)	1
12	00-913086-00001	Computer Cooking Assy. (Boil Button) (Incls. Item 14)	1
13	00-958620-00001	Overlay - Vulcan (Filter Button)	1
14	00-958620-00002	Overlay - Vulcan (Boil Button)	1
15	00-428906-00001	Overlay - Power	1
16	00-428906-00004	Overlay (USB Port)	1
17	00-427755-000G1	Rocker Switch Assy	1
18	00-959000-000G1	Cable Assy. (USB) (1 Ft.) (Incls. Items 19 thru 22)	1
19		Nut 4-40 Hex	2
20		Lockwasher #4	2
21		Screw 4-40 x 1/2	2
22	00-959000-00002	Cap (USB)	1



23	00-958411-00002	Bracket - Power Supply
24	00-419967-00005	Cord - Power Supply (84 In.)
25	00-419967-00003	Jumper - Extension (24-1/2 In.)
26	00-959501-000G3	Power Supply Box Assy. (Filter)
27	00-959501-000G4	Power Supply Box Assy. (Non-Filter)

PARTS NOT ILLUSTRATED

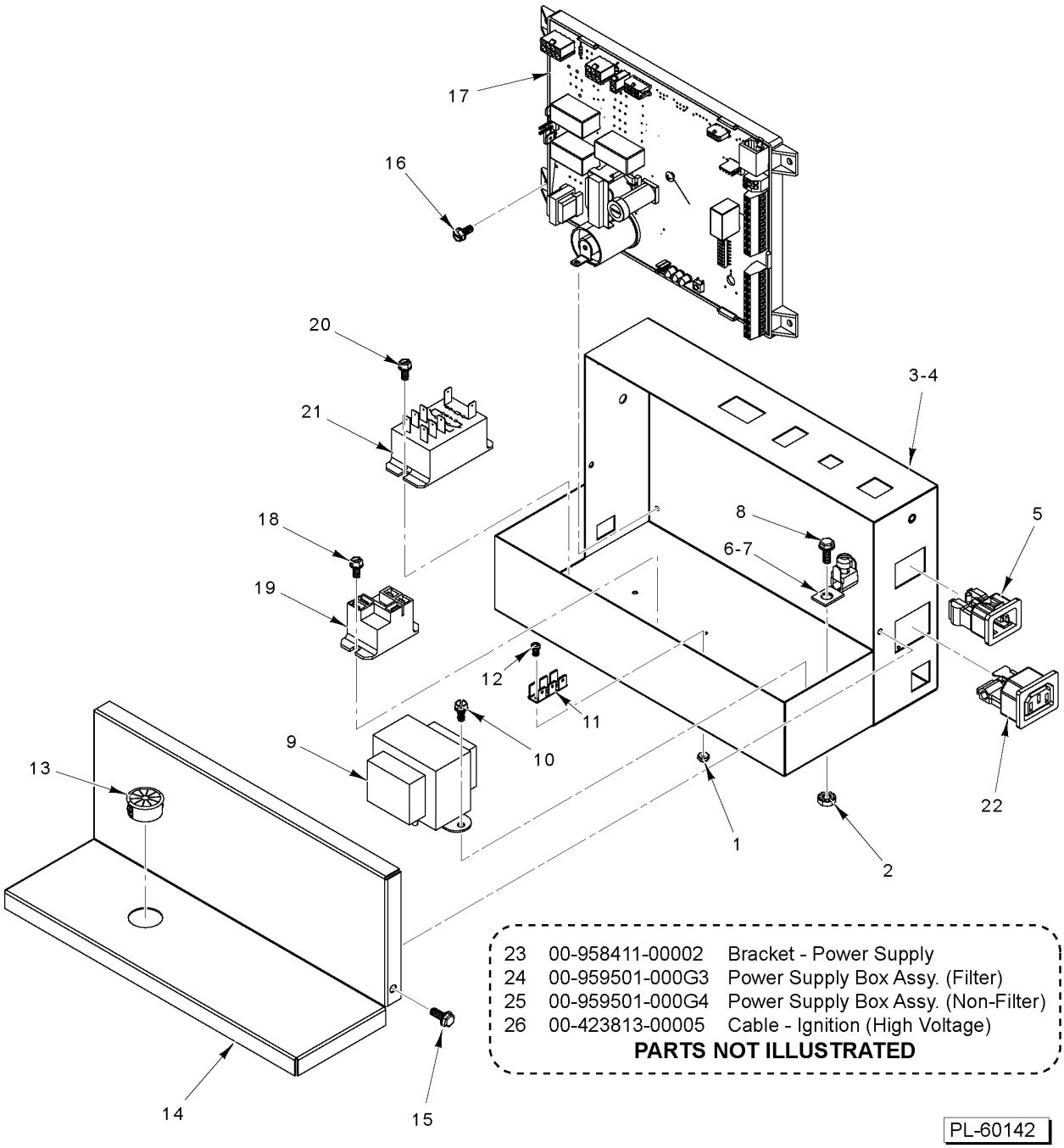
PL-59803

POWER SUPPLY BOX (BEFORE 12/1/12)

POWER SUPPLY BOX
(BEFORE 12/1/12)

ILLUS. PL-59803	PART NO.	NAME OF PART	AMT.
1	NS-044-09	Nut Assy. 10-24 Hex KEPS	1
2	NS-047-32	Lock Nut 4-40	2
3	00-958404-000G1	Box - Power Supply (Filter)	1
4	00-958404-000G2	Box - Power Supply (Non-Filter)	1
*5		Module - Ignition	1
*6		Timer - Delay	2
*7		Standoff	4
*8		Board - Blower Control	1
9	00-958405-00001	Lid - Power Supply	1
10	FE-024-24	Bushing - Electrical Snap	1
11	00-497125-00001	Relay (SPDT, 24 VAC) (Filter - Solenoid Valve)	1
12	SD-036-03	Self-Tapping Screw 8-18 x 3/8 Hex Washer Hd., Type AB	2
13	00-419317	Terminal - Stationary	1
14	SC-060-23	Mach. Screw 4-40 x 1/4 Slotted Rd. Hd	2
15	00-428864-00001	Relay (Filter - Pump Motor)	1
16	SD-036-03	Self-Tapping Screw 8-18 x 3/8 Hex Washer Hd., Type AB	2
*17		Switch - Relay	1
18	SD-036-03	Self-Tapping Screw 8-18 x 3/8 Hex Washer Hd., Type AB	2
19	00-417856-00001	Lug - Grounding (With Set Screw)	1
20	SD-032-07	Self-Tapping Screw 10-24 x 1/2 Hex Washer Hd., Type TT	1
21	00-419973-000G2	Receptacle - Female Power (Filter)	1
22	00-419973-000G1	Receptacle - Male Power	1
23	00-958411-00002	Bracket - Power Supply	1
24	00-419967-00005	Cord - Power Supply (84 In.)	1
25	00-419967-00003	Jumper - Extension (24-1/2 In.)	1
26	00-959501-000G3	Power Supply Box Assy. (Filter)	1
27	00-959501-000G4	Power Supply Box Assy. (Non-Filter)	1

* (Item No Longer Available for Service on these Models. Order Item 26 or 27.)



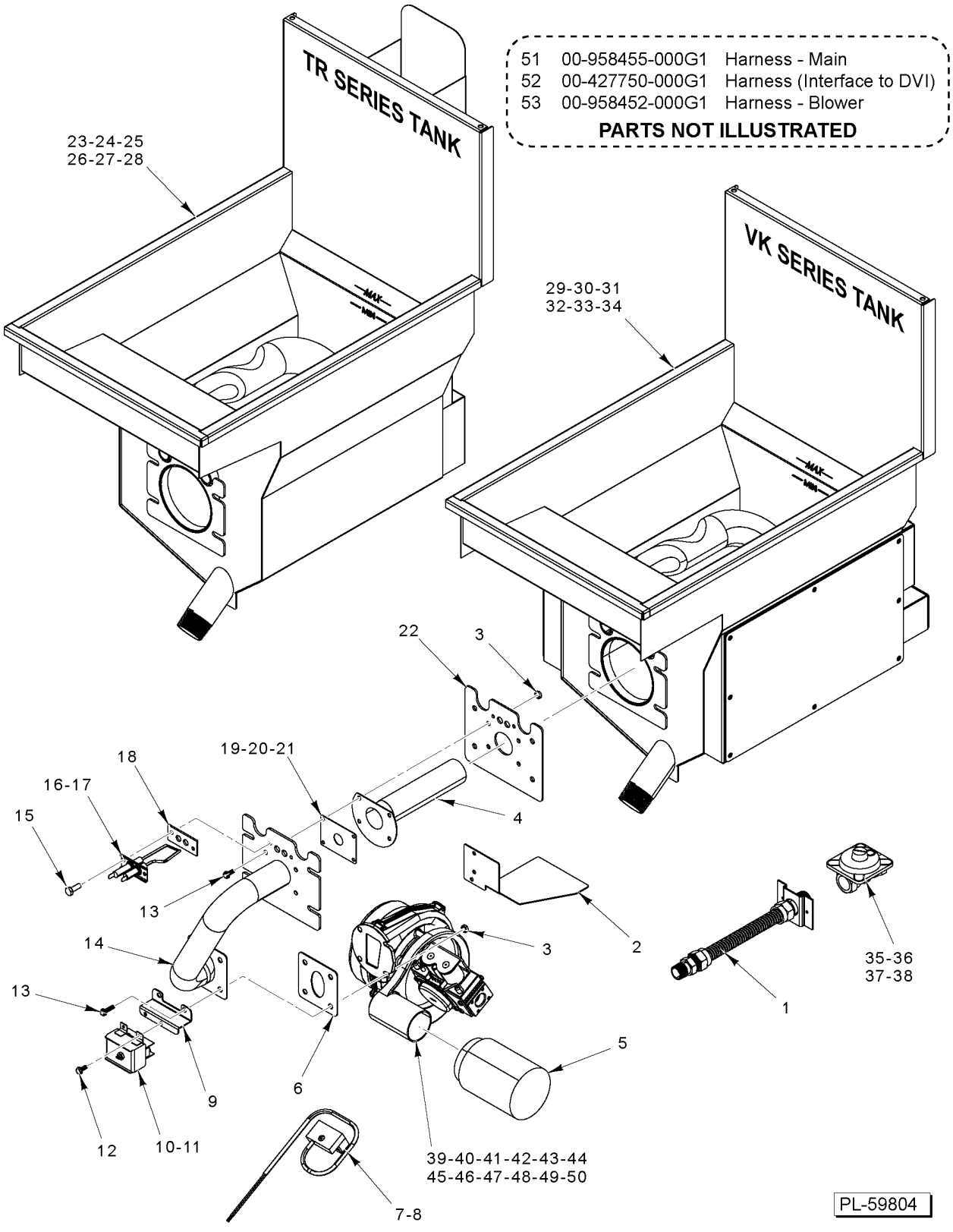
23	00-958411-00002	Bracket - Power Supply
24	00-959501-000G3	Power Supply Box Assy. (Filter)
25	00-959501-000G4	Power Supply Box Assy. (Non-Filter)
26	00-423813-00005	Cable - Ignition (High Voltage)

PARTS NOT ILLUSTRATED

POWER SUPPLY BOX
(STARTING 12/1/12)

POWER SUPPLY BOX
(STARTING 12/1/12)

ILLUS. PL-60142	PART NO.	NAME OF PART	AMT.
1	NS-047-32	Lock Nut 4-40	2
2	NS-044-09	Nut Assy. 10-24 Hex KEPS	1
3	00-959498-000G3	Box - Power Supply (Filter)	1
4	00-959498-000G4	Box - Power Supply (Non-Filter)	1
5	00-419973-000G1	Receptacle - Male Power	1
6	00-417856-00001	Lug - Grounding (With Set Screw)	1
7		Set Screw (Included With Item 6)	1
8	SD-032-07	Self-Tapping Screw 10-24 x 1/2 Hex Washer Hd., Type TT	1
9	00-411500-00012	Transformer (120 VAC, 24 V., 40 VA)	1
10	SD-036-03	Self-Tapping Screw 8-18 x 3/8 Hex Washer Hd., Type AB	2
11	00-419317	Terminal - Stationary	1
12	SC-060-23	Mach. Screw 4-40 x 1/4 Slotted Rd. Hd	2
13	FE-024-24	Bushing - Electrical Snap	1
14	00-959499-00002	Lid - Power Supply	1
15	SD-032-07	Self-Tapping Screw 10-24 x 1/2 Hex Washer Hd., Type TT	2
16	SD-036-03	Self-Tapping Screw 8-18 x 3/8 Hex Washer Hd., Type AB	4
17	00-959500-00001	Gas Ignitor - Board	1
18	SD-036-03	Self-Tapping Screw 8-18 x 3/8 Hex Washer Hd., Type AB	2
19	00-497125-00001	Relay (SPDT, 24 VAC) (Filter - Solenoid Valve)	1
20	SD-036-03	Self-Tapping Screw 8-18 x 3/8 Hex Washer Hd., Type AB	2
21	00-428864-00001	Relay (Filter - Pump Motor)	1
22	00-419973-000G2	Receptacle - Female Power (Filter)	1
23	00-958411-00002	Bracket - Power Supply	1
24	00-959501-000G3	Power Supply Box Assy. (Filter) (Incls. Items 1, 2, 3, & 5 thru 22)	1
25	00-959501-000G4	Power Supply Box Assy. (Non-Filter) (Incls. Items 1, 2, & 4 thru 17)	1
26	00-423813-00005	Cable - Ignition (High Voltage)	1



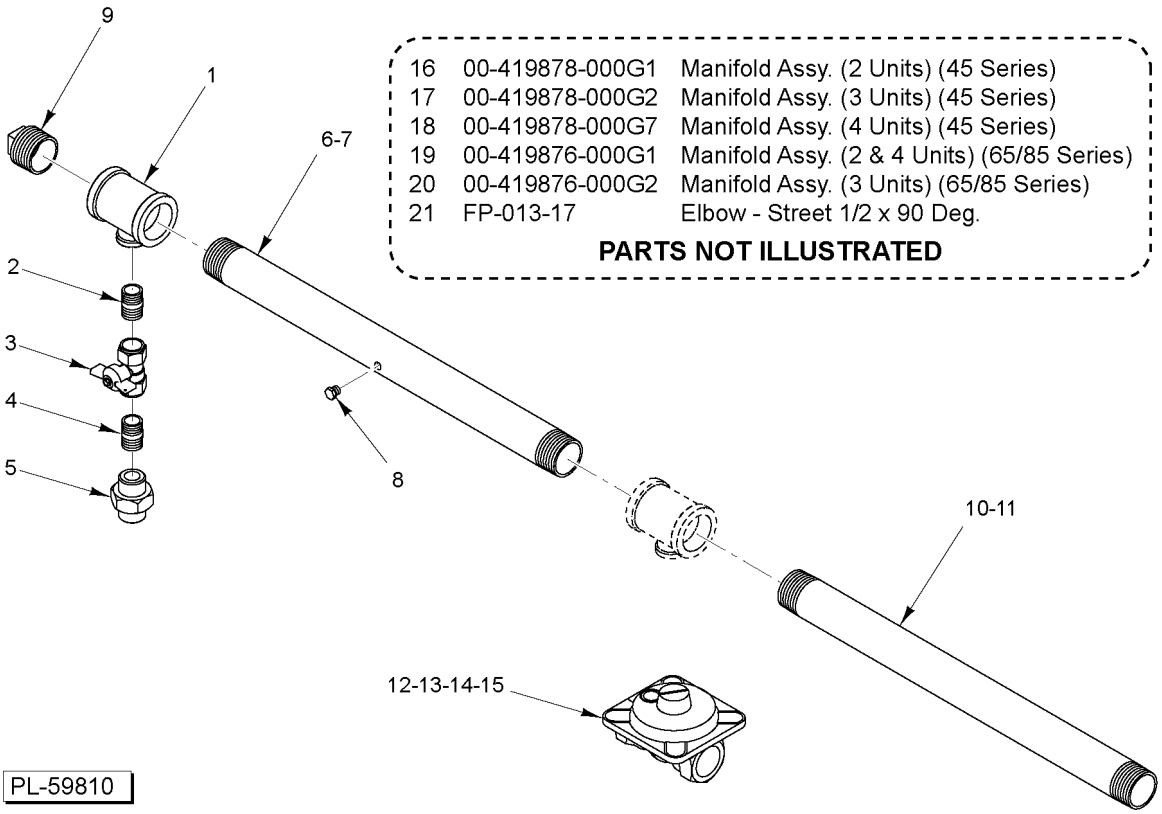
TANK AND GAS COMPONENTS

TANK AND GAS COMPONENTS

ILLUS. PL-59804	PART NO.	NAME OF PART	AMT.
1	00-427882-000G3	Tube - Flex (Gas Inlet)	1
2	00-958067-00001	Bracket - Heat Shield	1
3	NS-044-09	Nut Assy. 10-24 Hex KEPS	8
4	00-958691-00002	Burner - Ceramic	1
5	00-959046-00001	Filter - Blower (VK Series Only)	1
6	00-976613-00002	Gasket - Transport Tube (Lower)	1
7	00-958453-000G1	Harness - Gas Solenoid (Before 8/10/17, Used with Item 10)	1
8	00-976589	Harness - Gas Solenoid (Starting 8/10/17, Used with Item 11)	1
9	00-959080-00001	Bracket - High Limit	1
10	00-958475	Control - High Limit (Capilary Wire Type) (Before 8/10/17)	1
11	00-976588	Control - High Limit (No Capilary Wire) (Starting 8/10/17)	1
12	SD-032-07	Self-Tapping Screw 10-24 x 1/2 Hex Washer Hd., Type TT	6
13	SD-036-86	Self-Tapping Screw 10-24 x 3/4 Hex Hd. Type TT	4
14	00-959879-000G2	Tube - Transport	1
15	SC-127-31	Mach. Screw 1/4-20 x 3/4 Hex Hd. (SST)	2
16	00-976641	Kit - Ignitor with Gaskets (Incls. Items 6, 14, 18, & 22) (Before 6/22/17)	1
17	00-976568	Kit - Ignitor (Incls. Electrode & Gasket) (Starting 6/22/17)	1
18	00-959100-00001	Gasket - Electrode	1
19	00-958505-00002	Plate - Orifice (45 Series)	1
20	00-958505-00003	Plate - Orifice (65 Series)	1
21	00-958505-00004	Plate - Orifice (85 Series)	1
22	00-959100-00002	Gasket - Transport Tube (Upper)	1
*23	00-958689-000G2	Tank Assy. (TR45 Series)	1
**24	00-976558-000G2	Tank Assy. (TR45 Series)	1
*25	00-958704-000G2	Tank Assy. (TR65 Series)	1
**26	00-976562-000G2	Tank Assy. (TR65 Series)	1
*27	00-958700-000G2	Tank Assy. (TR85 Series)	1
**28	00-976564-000G2	Tank Assy. (TR85 Series)	1
*29	00-958689-000G1	Tank Assy. (VK45 Series)	1
**30	00-976558-000G1	Tank Assy. (VK45 Series)	1
*31	00-958704-000G1	Tank Assy. (VK65 Series)	1
**32	00-976562-000G1	Tank Assy. (VK65 Series)	1
*33	00-958700-000G1	Tank Assy. (VK85 Series)	1
**34	00-976564-000G1	Tank Assy. (VK85 Series)	1
35	00-408279-00022	Regulator - Pressure (3/4 In.) (NAT) (On Units Before 4/17/16)	1
36	00-408279-00021	Regulator - Pressure 3/4 In. (LP) (3/4 In.) (LP) (On Units Before 4/17/16)	1
37	00-408279-00012	Regulator - Pressure (1-1/4 In.) (NAT) (On Units Before 4/17/16)	1
38	00-408279-00013	Regulator - Pressure (1-1/4 In.) (LP) (On Units Before 4/17/16)	1
39	00-944782-VK45N	Gas Valve & Blower Assy. (NAT) (VK45)	1
40	00-944782-VK45P	Gas Valve & Blower Assy. (LP) (VK45)	1
41	00-944782-VK65N	Gas Valve & Blower Assy. (NAT) (VK65)	1
42	00-944782-VK65P	Gas Valve & Blower Assy. (LP) (VK65)	1
43	00-944782-VK85N	Gas Valve & Blower Assy. (NAT) (VK85)	1
44	00-944782-VK85P	Gas Valve & Blower Assy. (LP) (VK85)	1
45	00-944782-TR45N	Gas Valve & Blower Assy. (NAT) (TR45)	1
46	00-944782-TR45P	Gas Valve & Blower Assy. (LP) (TR45)	1
47	00-944782-TR65N	Gas Valve & Blower Assy. (NAT) (TR65)	1
48	00-944782-TR65P	Gas Valve & Blower Assy. (LP) (TR65)	1
49	00-944782-TR85N	Gas Valve & Blower Assy. (NAT) (TR85)	1
50	00-944782-TR85P	Gas Valve & Blower Assy. (LP) (TR85)	1
51	00-958455-000G1	Harness - Main	1
52	00-427750-000G1	Harness (Interface to DVI)	1
53	00-958452-000G1	Harness - Blower	1

* (Revision A - Manufactured before 8/1/17 with drain valve handle mounted at 12 o'clock position. The filter system drain manifolds are 2-1/4 In. diameter and painted black.)

** (Revision B - Manufactured after 8/1/17 with drain valve handle mounted at 10 o'clock position. The filter system drain manifolds are 3 In. diameter and painted red.)



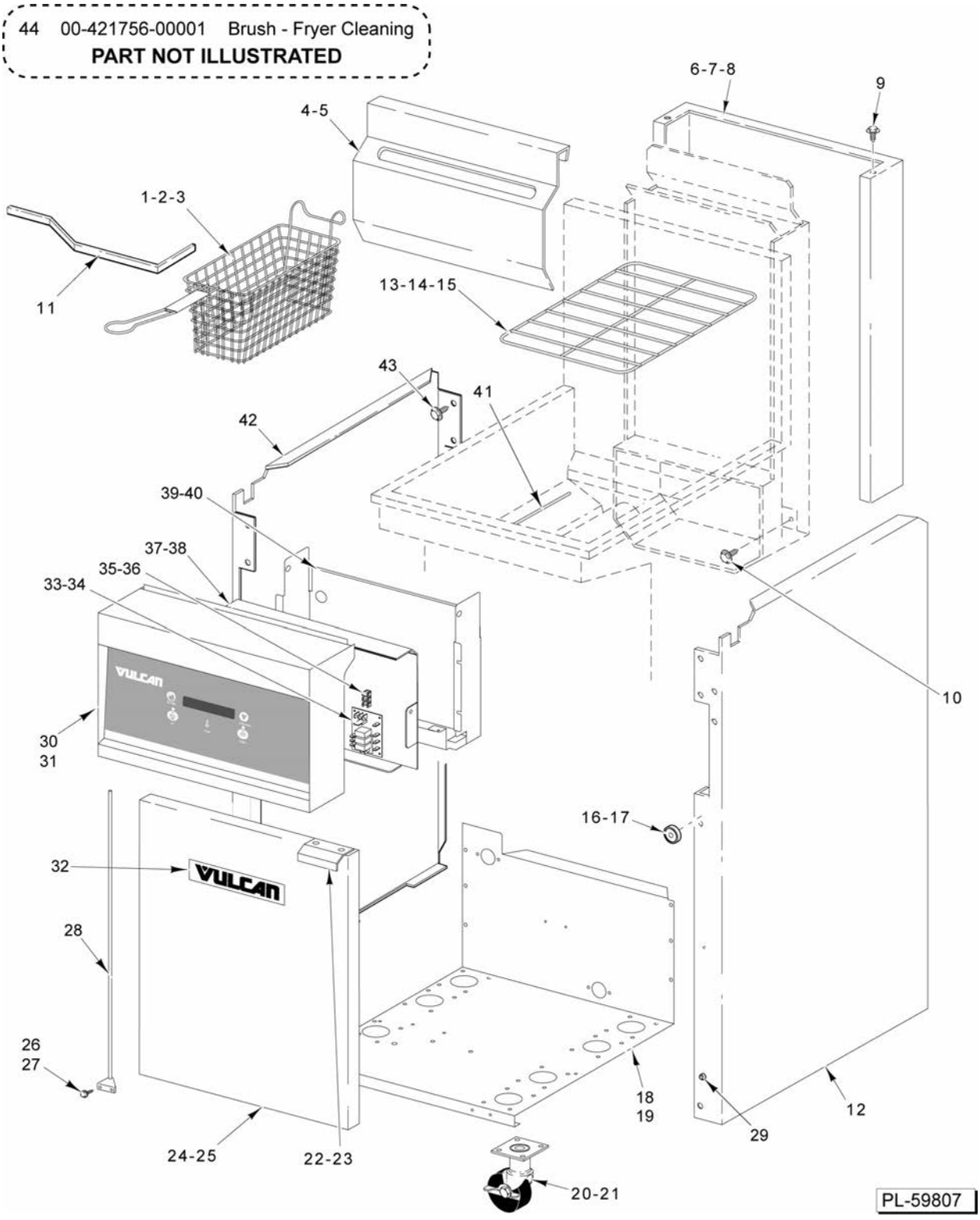
16	00-419878-000G1	Manifold Assy. (2 Units) (45 Series)
17	00-419878-000G2	Manifold Assy. (3 Units) (45 Series)
18	00-419878-000G7	Manifold Assy. (4 Units) (45 Series)
19	00-419876-000G1	Manifold Assy. (2 & 4 Units) (65/85 Series)
20	00-419876-000G2	Manifold Assy. (3 Units) (65/85 Series)
21	FP-013-17	Elbow - Street 1/2 x 90 Deg.

PARTS NOT ILLUSTRATED

GAS INLET MANIFOLD

GAS INLET MANIFOLD

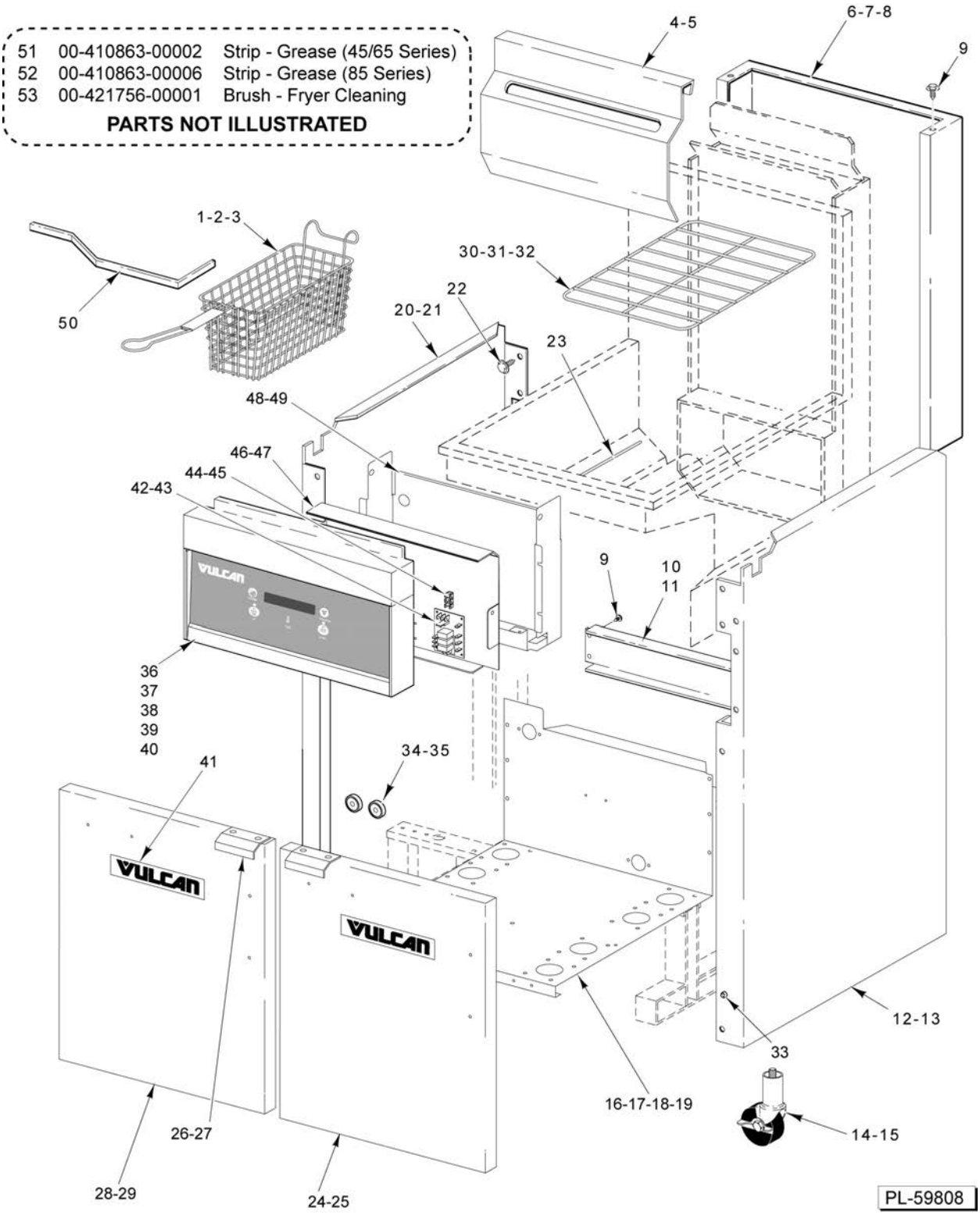
ILLUS. PL-59810	PART NO.	NAME OF PART	AMT.
1	FP-090-80	Tee 1-1/4 x 1-1/4 x 1/2	AR
2	FP-035-91	Pipe 1/2 x 1-1/8 TBE	AR
3	00-428472-00001	Valve - Ball	AR
4	FP-035-91	Pipe 1/2 x 1-1/8 TBE	AR
5	FP-022-11	Union - Pipe	AR
6	00-957744-00001	Pipe - Rear Gas (With Tap) (45 Series)	AR
7	00-957744-00002	Pipe - Rear Gas (With Tap) (65/85 Series)	AR
8	FP-085-53	Pipe Plug 1/8	AR
9	FP-028-26	Pipe Plug 1-1/4 Sq. Hd	AR
10	00-957744-00004	Pipe - Rear Gas (Without Tap) (45 Series)	AR
11	00-957744-00003	Pipe - Rear Gas (Without Tap) (65/85 Series)	AR
12	00-408279-00022	Regulator - Pressure (3/4 In.) (NAT) (On Units Before 4/17/16)	AR
13	00-408279-00021	Regulator - Pressure 3/4 In. (LP) (3/4 In.) (LP) (On Units Before 4/17/16)	AR
14	00-408279-00012	Regulator - Pressure (1-1/4 In.) (NAT) (On Units Before 4/17/16)	AR
15	00-408279-00013	Regulator - Pressure (1-1/4 In.) (LP) (On Units Before 4/17/16)	AR
16	00-419878-000G1	Manifold Assy. - Gas Inlet (2 Units) (45 Series) (Incls. Items 1 thru 6, 8, & 9)	AR
17	00-419878-000G2	Manifold Assy. - Gas Inlet (3 Units) (45 Series) (Incls. Items 1 thru 6, 8, 9, & 10)	AR
18	00-419878-000G7	Manifold Assy. - Gas Inlet (4 Units) (45 Series) (Incls. Items 1 thru 6, 8, 9, & 10)	AR
19	00-419876-000G1	Manifold Assy. - Gas Inlet (2 & 4 Units) (65/85 Series) (Incls. Items 1 thru 5, 7, 8, 9, & 11)	AR
20	00-419876-000G2	Manifold Assy. - Gas Inlet (3 Units) (65/85 Series) (Incls. Items 1 thru 5, 7, 8, 9, & 11)	AR
21	FP-013-17	Elbow - Street 1/2 x 90 Deg	AR



BODY UNIT
(A/C/D SERIES)
(NON- FILTER)

BODY UNIT
(A/C/D SERIES)
(NON- FILTER)

ILLUS. PL-59807	PART NO.	NAME OF PART	AMT.
1	00-499223-00001	Basket - Twin (45 Series)	AR
2	00-499223-00002	Basket - Twin (65 Series)	AR
3	00-499223-00004	Basket - Twin (85 Series)	AR
4	00-417056-00002	Hanger - Basket (45 Series)	1
5	00-418321-00002	Hanger - Basket (65/85 Series)	1
6	00-958711-00001	Flue - Wrap (SST) (45 Series)	1
7	00-958711-000G2	Flue - Wrap (SST) (65 Series)	1
8	00-418336-00002	Flue - Wrap (SST) (85 Series)	1
9	SD-032-07	Self-Tapping Screw 10-24 x 1/2 Hex Washer Hd., Type TT	2
10	SD-037-70	Self-Tapping Screw 1/4-20 x 1/2 Hex Washer Hd., Type TT	4
11	00-409300-00005	Rod - Clean-Out	1
12	00-420596-00004	Body - Side (SST) (RH)	1
13	00-427883-00001	Screen - Basket Support (45 Series)	1
14	00-427883-00003	Screen - Basket Support (65 Series)	1
15	00-427883-00004	Screen - Basket Support (85 Series)	1
16	RS-033-04	Rivet - Pop	1
17	00-497296-000G2	Magnet Assy	1
18	00-497428-00002	Body - Bottom (45 Series)	1
19	00-497428-00004	Body - Bottom (65/85 Series)	1
20	00-421893-00001	Caster - Plate Mount (W/ Brake)	AR
21	00-421893-00002	Caster - Plate Mount (No Brake)	AR
22	00-419653	Handle	1
23	RS-033-04	Rivet - Pop	2
24	00-499487-000G1	Door Assy. (LH) (45 Series)	1
25	00-499487-000G5	Door Assy. (LH) (65/85 Series)	1
26	SD-032-07	Self-Tapping Screw 10-24 x 1/2 Hex Washer Hd., Type TT	2
27	NS-044-09	Nut Assy. 10-24 Hex KEPS	2
28	00-428023-000G2	Hinge Assy	1
29	00-420769-00001	Bumper - Rubber	1
30	00-426806-000G1	Frame - Front Assy. (45 Series)	1
31	00-426806-000G4	Frame - Front Assy. (65/85 Series)	1
32	00-957916-00005	Nameplate - Vulcan	1
33	00-427759-00001	Control - Interface	1
34	SD-024-40	Self-Tapping Screw 6-32 x 5/8 Phil. Pan Hd., Type TT	4
35	00-419317	Terminal - Stationary	1
36	SC-060-23	Mach. Screw 4-40 x 1/4 Slotted Rd. Hd	2
37	00-428541-00001	Plate - Control Mounting	1
38	00-428541-00002	Extension - Control (65/85 Series)	1
39	00-428542-00002	Deflector Assy. (45 Series)	1
40	00-428689-00002	Deflector Assy. (65/85 Series)	1
41	00-958474	Probe - Temperature	1
42	00-420596-00003	Body - Side (SST) (LH)	1
43	SD-036-03	Self-Tapping Screw 8-18 x 3/8 Hex Washer Hd., Type AB	AR
44	00-421756-00001	Brush - Fryer Cleaning	1



BODY UNIT
(A/C/D SERIES) (FILTER)

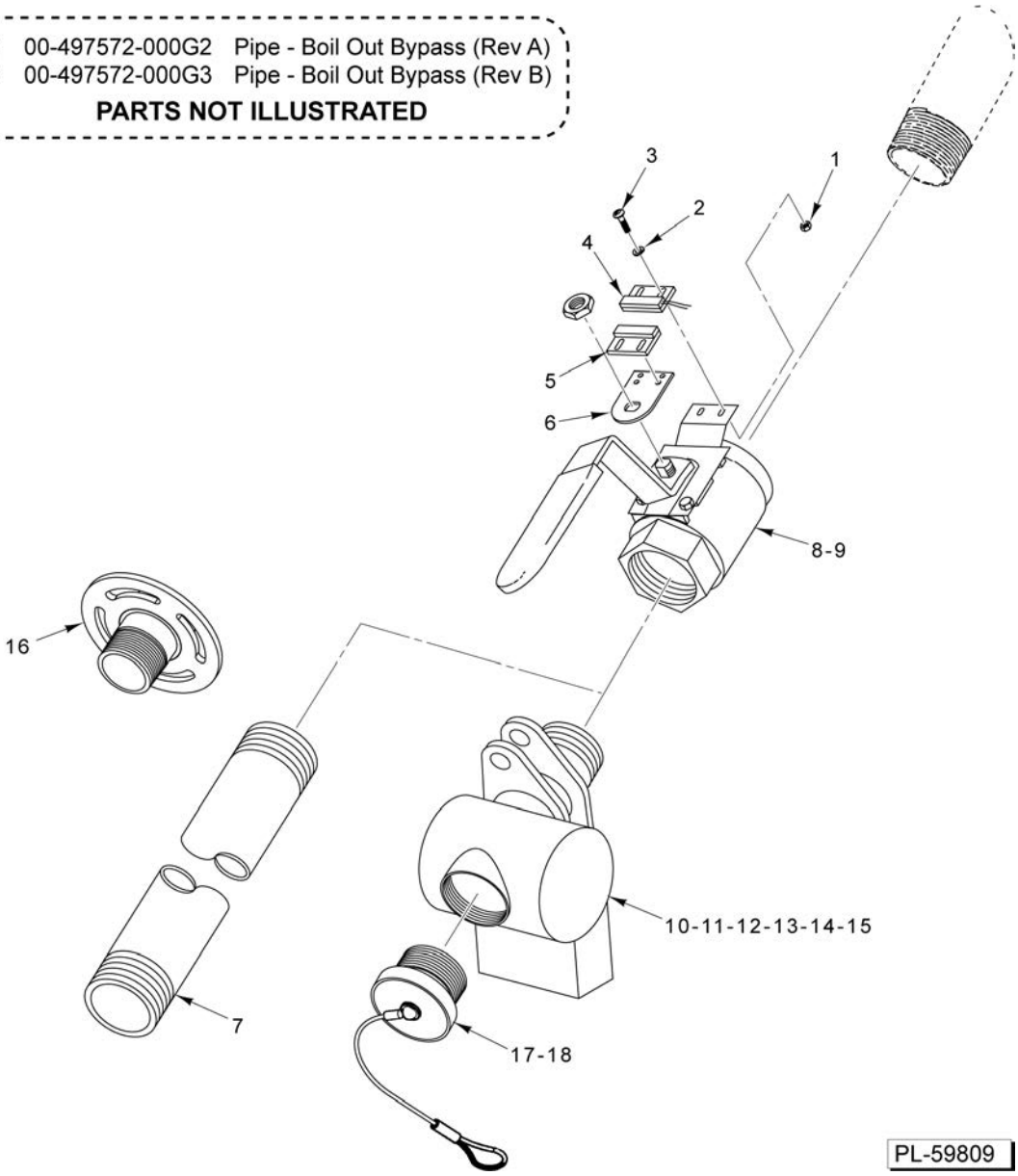
BODY UNIT
(A/C/D SERIES) (FILTER)

ILLUS. PL-59808	PART NO.	NAME OF PART	AMT.
1	00-499223-00001	Basket - Twin (45 Series)	AR
2	00-499223-00002	Basket - Twin (65 Series)	AR
3	00-499223-00004	Basket - Twin (85 Series)	AR
4	00-417056-00002	Hanger - Basket (45 Series)	2
5	00-418321-00002	Hanger - Basket (65/85 Series)	2
6	00-958711-00001	Flue - Wrap (SST) (45 Series)	1
7	00-958711-000G2	Flue - Wrap (SST) (65 Series)	1
8	00-418336-00002	Flue - Wrap (SST) (85 Series)	1
9	SD-032-07	Self-Tapping Screw 10-24 x 1/2 Hex Washer Hd., Type TT	AR
10	00-428699-00002	Brace - Rear (45 Series)	1
11	00-428749-00002	NLA - Obsolete--Brace - Rear (65/85 Series)	1
*12	00-419777-00004	Body - Side (SST) (RH)	1
**13	00-420596-00004	Body - Side (SST) (RH)	1
14	00-959832-00001	Caster - Screw-In Mount (W/ Brake)	AR
15	00-959832-00003	Caster - Screw-In Mount (No Brake)	AR
16	00-497428-00001	Body - Bottom (22-1/2 Deep) (45 Series) (Section W/O Filter)	1
17	00-497428-00002	Body - Bottom (27-1/2 Deep) (45 Series) (Section W/O Filter)	1
18	00-497428-00003	Body - Bottom (22-1/2 Deep) (65/85 Series) (Section W/O Filter)	1
19	00-497428-00004	Body - Bottom (27-1/2 Deep) (65/85 Series) (Section W/O Filter)	1
*20	00-419777-00003	Body - Side (SST) (LH)	1
**21	00-420596-00003	Body - Side (SST) (LH)	1
22	SD-036-03	Self-Tapping Screw 8-18 x 3/8 Hex Washer Hd., Type AB	AR
23	00-958474	Probe - Temperature	1
24	00-499487-000G4	Door Assy. (RH) (45 Series)	1
25	00-499487-000G8	Door Assy. (RH) (65/85 Series)	1
26	00-419653	Handle	2
27	RS-033-04	Rivet - Pop	4
28	00-499487-000G3	Door Assy. (LH) (45 Series)	1
29	00-499487-000G7	Door Assy. (LH) (65/85 Series)	1
30	00-427883-00001	Screen - Basket Support (45 Series)	1
31	00-427883-00003	Screen - Basket Support (65 Series)	1
32	00-427883-00004	Screen - Basket Support (85 Series)	1
33	00-420769-00001	Bumper - Rubber	AR
34	00-497296-000G2	Magnet Assy	2
35	RS-033-04	Rivet - Pop	4
36	00-426806-000G2	Frame - Front Assy. (45 Series) (2 Units)	1
37	00-426806-000G3	Frame - Front Assy. (45 Series) (3 Units)	1
38	00-426806-000G5	Frame - Front Assy. (65/85 Series) (2 Units)	1
39	00-426806-000G6	Frame - Front Assy. (65/85 Series) (3 Units)	1
40	00-426806-000G7	Frame - Front Assy. (45 Series) (4 Units)	1
41	00-957916-00005	Nameplate - Vulcan	2
42	00-427759-00001	Control - Interface	1
43	SD-024-40	Self-Tapping Screw 6-32 x 5/8 Phil. Pan Hd., Type TT	4
44	00-419317	Terminal - Stationary	1
45	SC-060-23	Mach. Screw 4-40 x 1/4 Slotted Rd. Hd	2
46	00-428541-00001	Plate - Control Mounting	1
47	00-428541-00002	Extension - Control (65/85 Series)	1
48	00-428542-00002	Deflector Assy. (45 Series)	1
49	00-428689-00002	Deflector Assy. (65/85 Series)	1
50	00-409300-00005	Rod - Clean-Out	1
51	00-410863-00002	Strip - Grease (45/65 Series)	1
52	00-410863-00006	Strip - Grease (85 Series)	1
53	00-421756-00001	Brush - Fryer Cleaning	1

* Used if directly adjacent to the filter pan
** Used if not directly adjacent to the filter pan

19	00-497572-000G2	Pipe - Boil Out Bypass (Rev A)
20	00-497572-000G3	Pipe - Boil Out Bypass (Rev B)

PARTS NOT ILLUSTRATED



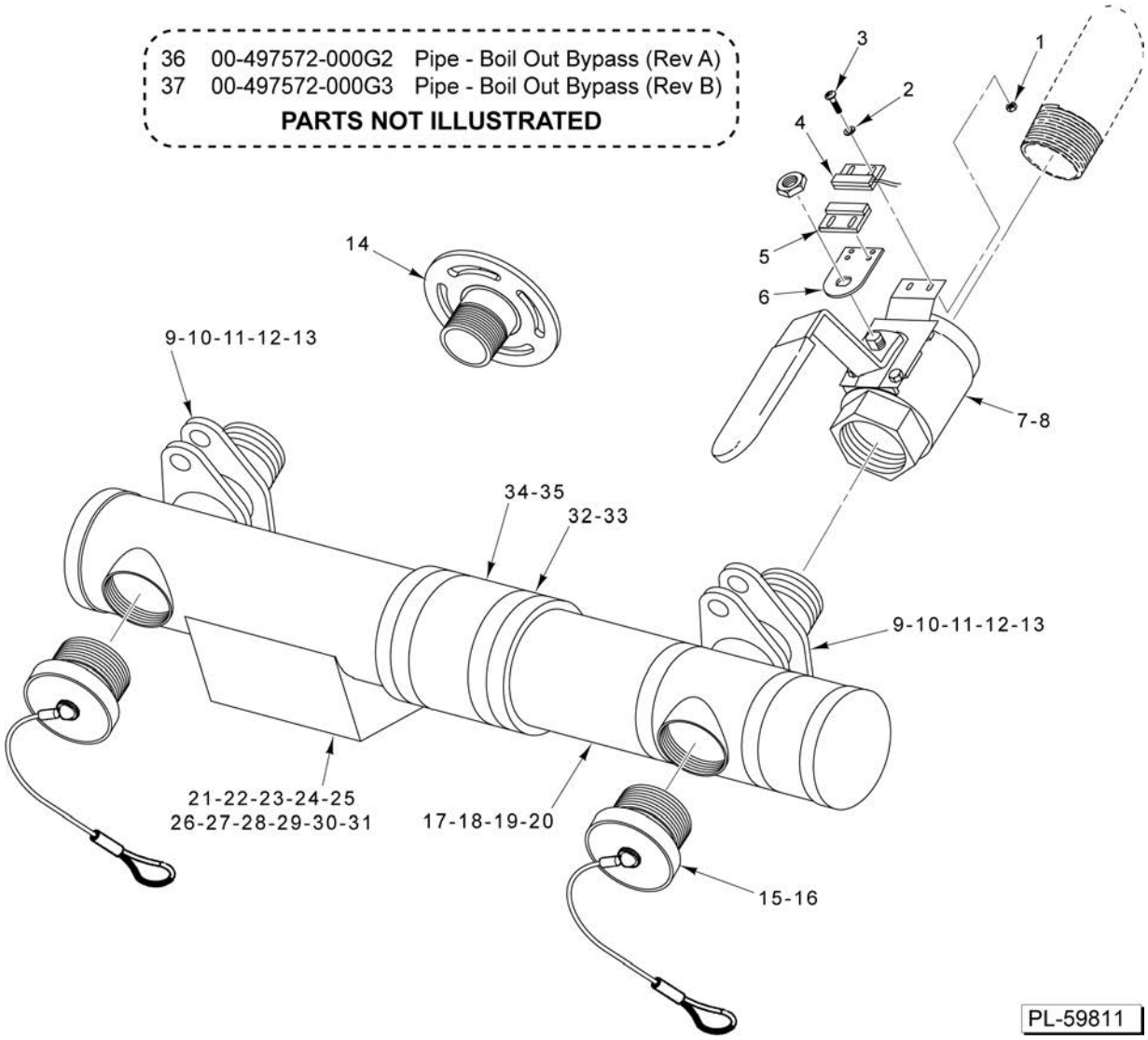
DRAIN ASSEMBLY
(SINGLE UNIT)

DRAIN ASSEMBLY
(SINGLE UNIT)

ILLUS. PL-59809	PART NO.	NAME OF PART	AMT.
1	NS-044-01	Nut Assy. 4-40 KEPS	4
2	WL-003-03	Lockwasher #4 Helical	4
3	SC-018-55	Mach. Screw 4-40 x 1/2 Phil. Pan Hd	4
4	00-426805-000G1	Switch Assy	1
5	00-426801-00002	Magnet - Switch Element Head	1
6	00-426798-00002	Plate - Switch	1
7	00-958713-00001	Pipe - Transition (No Filter)	1
8	00-913111	Valve Assy. (1-1/4) (LH) (Incls. Items 1 thru 6) (Before 7/4/19)	1
*9	00-976656-00002	Valve - Drain Assy. (1-1/4) (LH) (Incls. Items 1 thru 6) (Starting 7/4/19)	1
**10	00-956829-000G2	Pipe - Drain (2-1/4 In.)	1
*11	00-976518-00023	Pipe - Drain (3 In.)	1
**12	00-420553-00002	Gasket - Silicone	1
*13	00-976617-00001	Gasket - Silicone	1
**14	00-420726-00003	Flange - Pipe (1-1/4) (Before 8/1/17)	1
*15	00-976549	Flange - Pipe (Large) (8/1/17 thru 7/4/19)	1
16	00-976693-00001	Drain Flange (Starting 7/4/19)	1
**17	00-497571-000G1	Plug - Drain	1
*18	00-497571-000G2	Plug - Drain	1
**19	00-497572-000G2	Pipe - Boil Out Bypass	1
*20	00-497572-000G3	Pipe - Boil Out Bypass	1

* (Revision B - Manufactured after 8/1/17 with drain valve handle mounted at 10 o'clock position. The filter system drain manifolds are 3 In. diameter and painted red.)

** (Revision A - Manufactured before 8/1/17 with drain valve handle mounted at 12 o'clock position. The filter system drain manifolds are 2-1/4 In. diameter and painted black.)



DRAIN ASSEMBLY
(MULTIPLE UNITS)

DRAIN ASSEMBLY
(MULTIPLE UNITS)

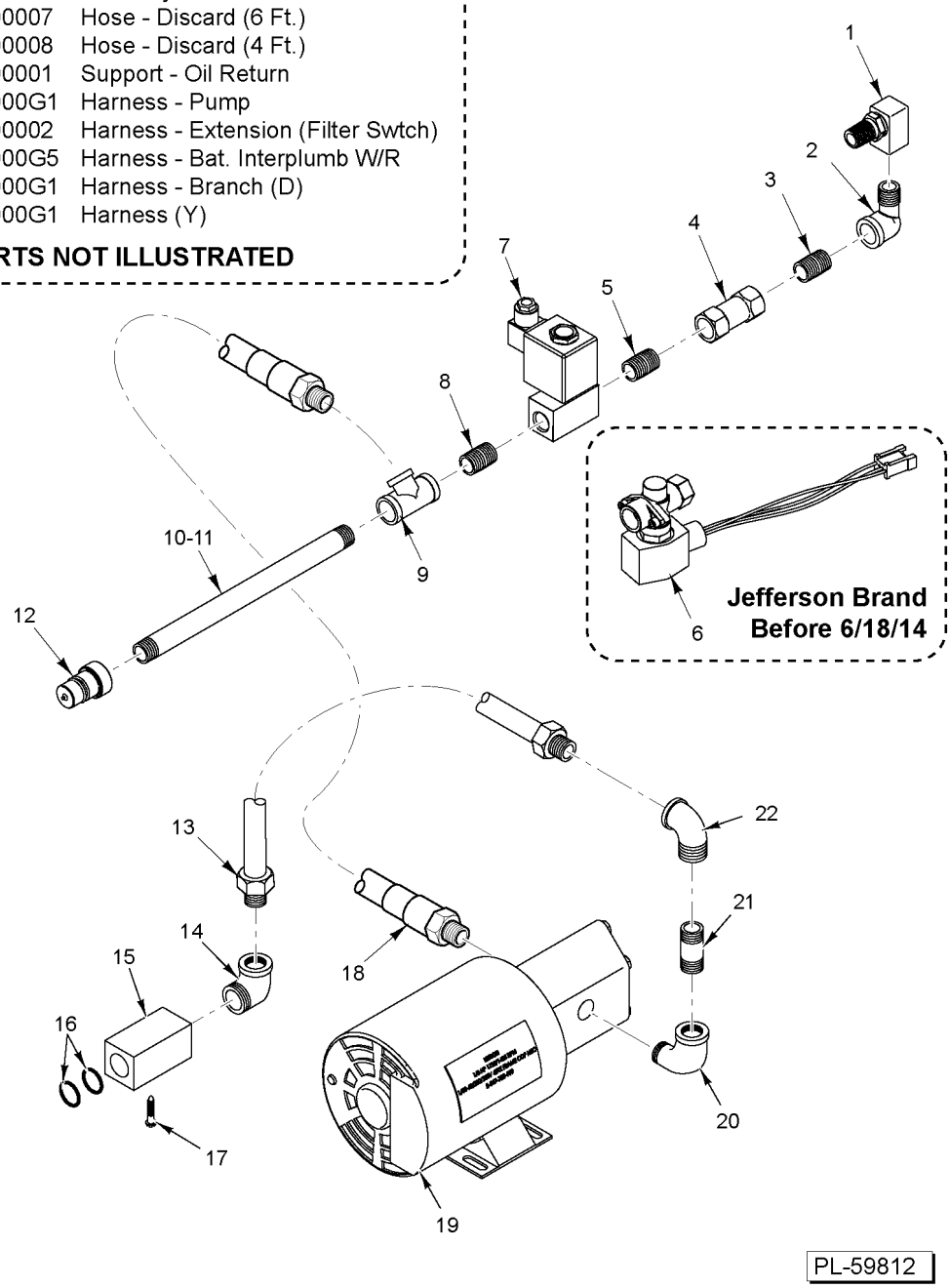
ILLUS. PL-59811	PART NO.	NAME OF PART	AMT.
1	NS-044-01	Nut Assy. 4-40 KEPS	4
2	WL-003-03	Lockwasher #4 Helical	4
3	SC-018-55	Mach. Screw 4-40 x 1/2 Phil. Pan Hd	4
4	00-426805-000G1	Switch Assy	1
5	00-426801-00002	Magnet - Switch Element Head	1
6	00-426798-00002	Plate - Switch	1
7	00-913111	Valve Assy. (1-1/4) (LH) (Incls. Items 1 thru 6) (Before 7/4/19)	1
*8	00-976656-00002	Valve - Drain Assy. (1-1/4) (LH) (Incls. Items 1 thru 6) (Starting 7/4/19)	1
*9	00-976617-00001	Gasket - Silicone	2
10	SC-036-13	Cap Screw 1/4-20 x 3/4 Hex Hd	4
**11	00-420553-00002	Gasket - Silicone	2
**12	00-420726-00003	Flange - Pipe (1-1/4) (Before 8/1/17)	2
*13	00-976549	Flange - Pipe (Large) (8/1/17 thru 7/4/19)	2
14	00-976693-00001	Drain Flange (Starting 7/4/19)	1
**15	00-497571-000G1	Plug - Drain	2
*16	00-497571-000G2	Plug - Drain	2
**17	00-497566-000G1	Pipe - Drain (End) (45 Series)	1
*18	00-976518-00013	Pipe - Drain (45 Series)	1
**19	00-497566-000G4	Pipe - Drain (End) (65/85 Series)	1
*20	00-976522-00013	Pipe - Drain (End) (65/85 Series)	1
*21	00-976518-00A5V	Pipe - Drain (Entire Manifold) (45 Series) (2 Units)	1
*22	00-976522-00A5V	Pipe - Drain With Spout (Entire Manifold) (65/85 Series) (2 Units)	1
**23	00-497567-000G3	Pipe - Drain (End) With Spout (45 Series) (3 Units)	1
*24	00-976518-00015	Pipe - Drain (45 Series) (3 Units)	1
**25	00-497567-000G4	Pipe - LH Drain (End) With Spout (65/85 Series) (2 Units)	1
*26	00-976518-00014	Pipe - Drain (Center) With Spout (45 Series) (4 Units)	1
*27	00-976518-00015	Pipe - Drain (Center) With Spout (45 Series) (3 Units)	1
**28	00-497569-000G4	Pipe - Drain (Center) With Spout (65/85 Series) (3 Units)	1
*29	00-976522-00015	Pipe - Drain (Center) With Spout (65/85 Series) (3 Units)	1
**30	00-497568-000G1	Pipe - Drain (Center) (45 Series) (4 Units)	1
*31	00-976522-00014	Pipe - Drain (Center) With Spout (65/85 Series) (4 Units)	1
**32	00-497409-00001	Clamp - Drain Tube (2-1/4 In.)	AR
*33	00-497409-00002	Clamp - Drain Tube (3 In.)	AR
**34	00-419351-00001	Hose - Connect	AR
*35	00-419351-00002	Hose - Connect	AR
**36	00-497572-000G2	Pipe - Boil Out Bypass	1
*37	00-497572-000G3	Pipe - Boil Out Bypass	1

* (Revision B - Manufactured after 8/1/17 with drain valve handle mounted at 10 o'clock position. The filter system drain manifolds are 3 In. diameter and painted red.)

** (Revision A - Manufactured before 8/1/17 with drain valve handle mounted at 12 o'clock position. The filter system drain manifolds are 2-1/4 In. diameter and painted black.)

23	00-521820	U-Bolt
24	NS-046-52	Nut Assy. 1/4-20 Hex
25	00-422281-00007	Hose - Discard (6 Ft.)
26	00-422281-00008	Hose - Discard (4 Ft.)
27	00-958681-00001	Support - Oil Return
28	00-428914-000G1	Harness - Pump
29	00-497320-00002	Harness - Extension (Filter Swtch)
30	00-422304-000G5	Harness - Bat. Interplumb W/R
31	00-422297-000G1	Harness - Branch (D)
32	00-422299-000G1	Harness (Y)

PARTS NOT ILLUSTRATED



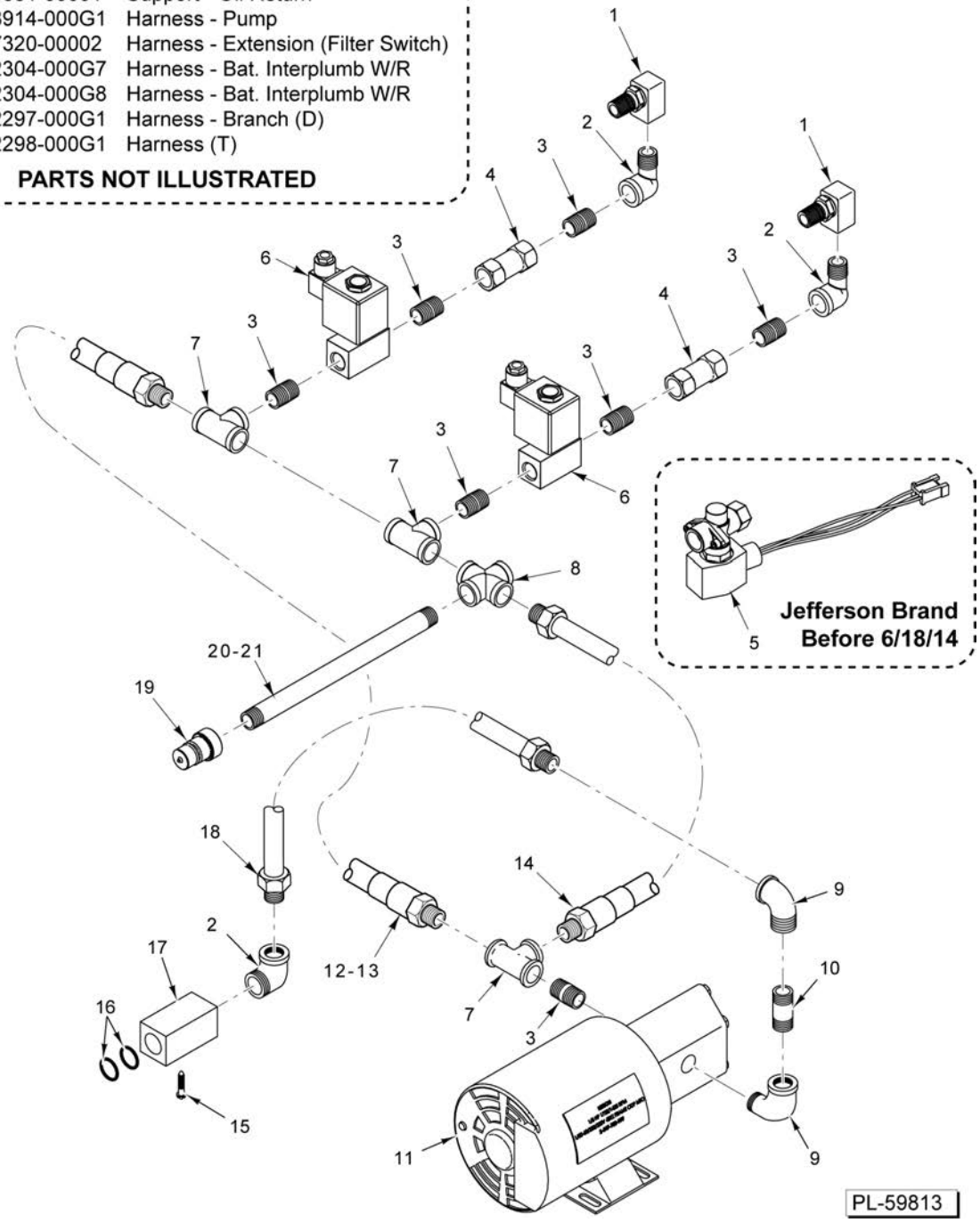
OIL RETURN
(SINGLE UNIT)

OIL RETURN
(SINGLE UNIT)

ILLUS. PL-59812	PART NO.	NAME OF PART	AMT.
1	00-419251-00001	Fitting - 90 Deg. Swivel	1
2	FP-013-17	Elbow - Street 1/2 x 90 Deg	1
3	FP-035-91	Pipe 1/2 x 1-1/8 TBE	1
4	00-418786-00001	Valve - Check	1
5	FP-035-91	Pipe 1/2 x 1-1/8 TBE	1
6	00-428691-00002	Valve - Solenoid (120 V.) (Jefferson Brand) (Before 6/18/14)	1
7	00-959909-00001	Valve - Solenoid (120 V.) (Bacarra Brand) (Starting 6/18/14)	1
8	FP-035-91	Pipe 1/2 x 1-1/8 TBE	1
9	FP-019-25	Tee 1/2 x 1/2 x 1/2	1
10	FP-085-79	Pipe 1/2 x 14-1/4 TBE	1
11	FP-090-79	Pipe 1/2 x 19 TBE	1
12	00-418781-00001	Quick Disconnect	1
13	00-426602-00004	Tube - Flex (19 In.)	1
14	FP-013-17	Elbow - Street 1/2 x 90 Deg	1
15	00-426567-00003	Receptacle - Oil Suction	1
16	00-426567-00002	O-Ring (Viton)	2
17	SC-114-01	Mach. Screw 10-32 x 3/8 Hex Washer Hd	2
18	00-426602-00001	Tube - Flex (12 In.)	1
19	00-417792-00008	Pump Motor Assy. (115/230 V., 60 Hz.) (8 G.P.M.)	1
20	FP-077-68	Elbow 1/2 x 90 Deg	1
21	FP-035-95	Pipe 1/2 x 2 TBE	1
22	FP-077-68	Elbow 1/2 x 90 Deg	1
23	00-521820	U-Bolt	1
24	NS-046-52	Nut Assy. 1/4-20 Hex	2
25	00-422281-00007	Hose - Discard (6 Ft.)	AR
26	00-422281-00008	Hose - Discard (4 Ft.)	AR
27	00-958681-00001	Support - Oil Return	1
28	00-428914-000G1	Harness - Pump	1
29	00-497320-00001	Harness - Extension (Filter Switch)	1
30	00-422304-000G5	Harness - Bat. Interplumb W/R	1
31	00-422297-000G1	Harness - Brand (D)	1
32	00-422299-000G1	Harness (Y)	1

22	00-521820	U-Bolt
23	NS-046-52	Nut Assy. 1/4-20 Hex
24	00-422281-00007	Hose - Discard (6 Ft.)
25	00-422281-00008	Hose - Discard (4 Ft.)
26	00-958681-00001	Support - Oil Return
27	00-428914-000G1	Harness - Pump
28	00-497320-00002	Harness - Extension (Filter Switch)
29	00-422304-000G7	Harness - Bat. Interplumb W/R
30	00-422304-000G8	Harness - Bat. Interplumb W/R
31	00-422297-000G1	Harness - Branch (D)
32	00-422298-000G1	Harness (T)

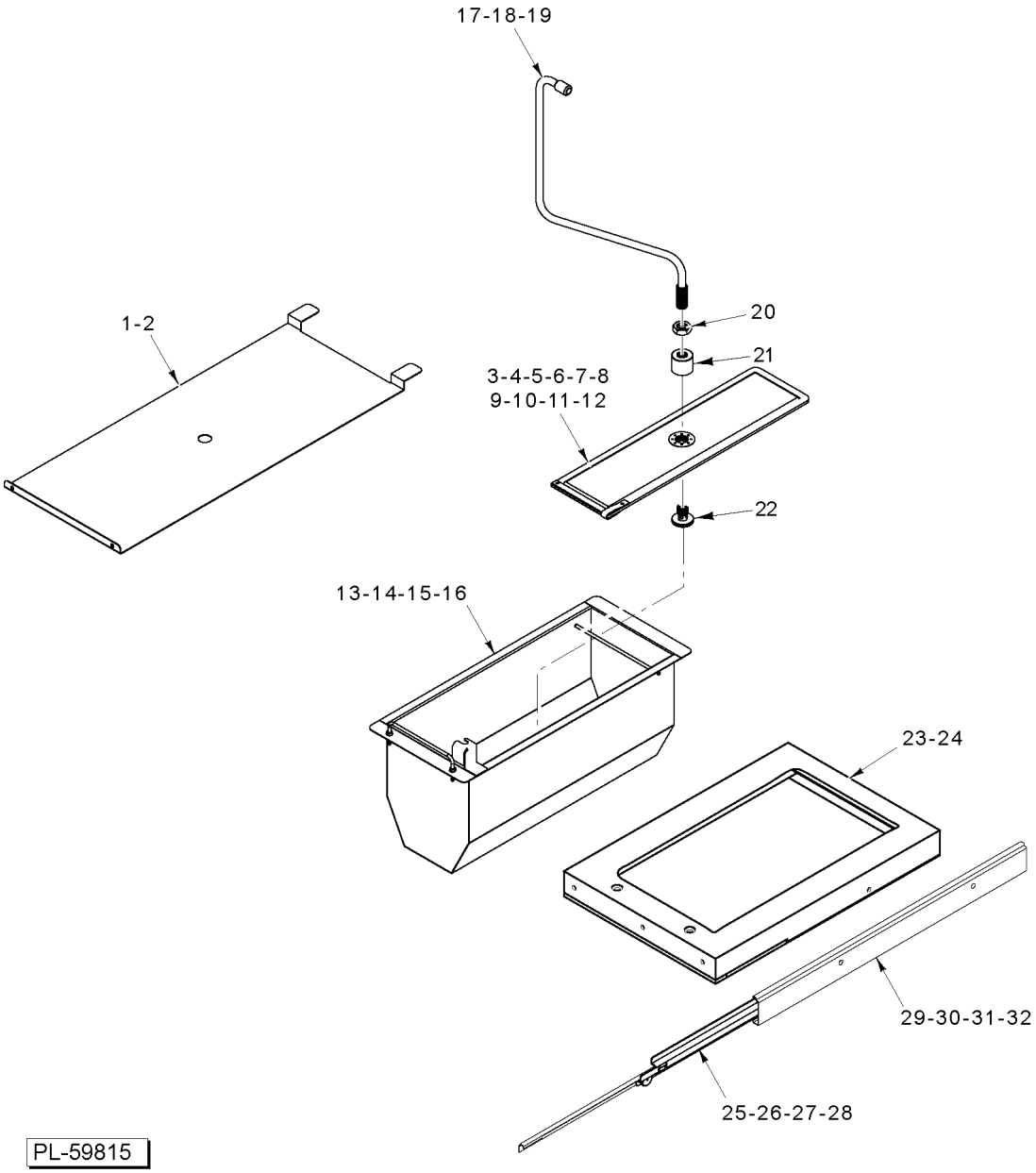
PARTS NOT ILLUSTRATED



OIL RETURN
(MULTIPLE UNITS)

OIL RETURN
(MULTIPLE UNITS)

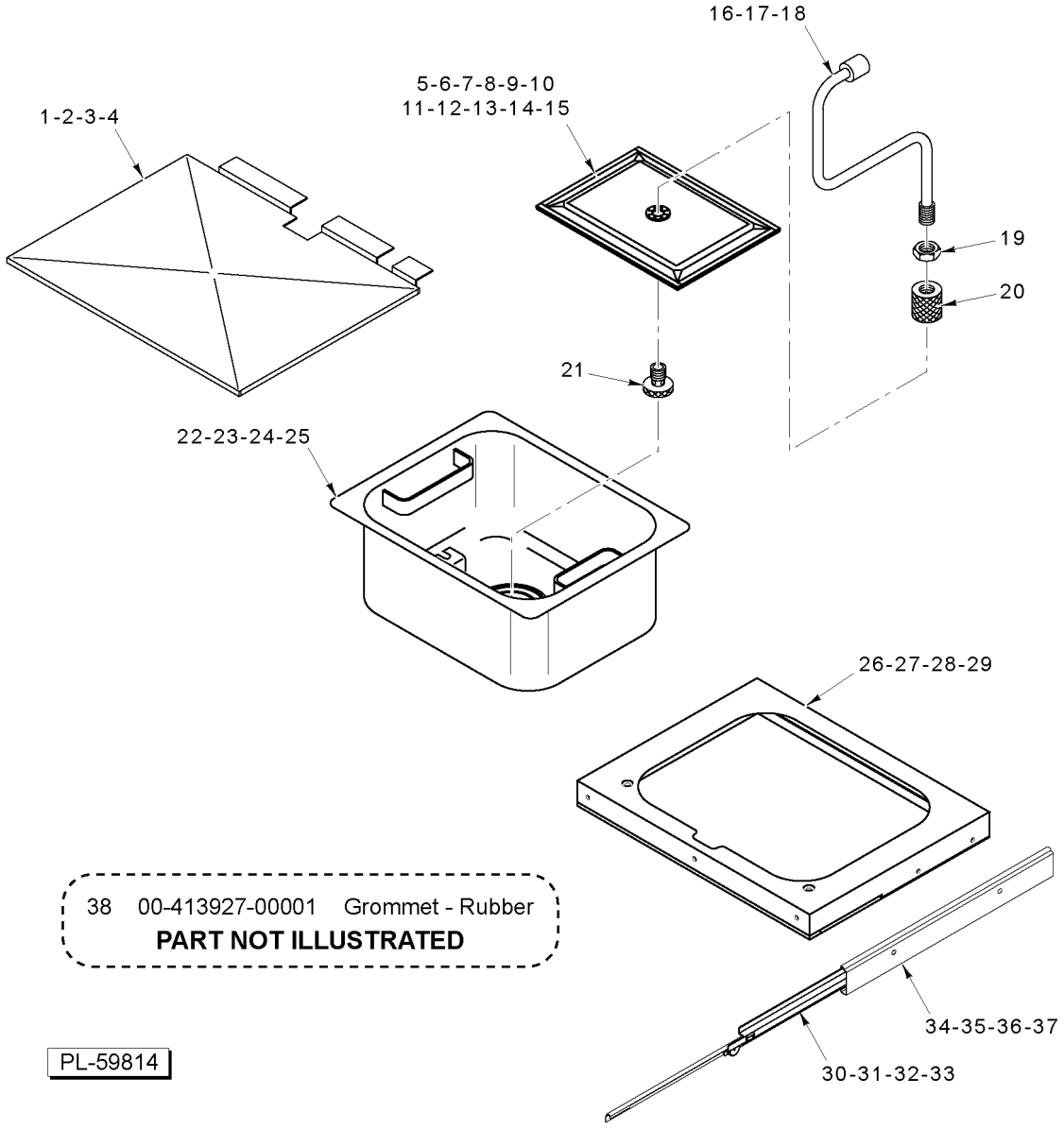
ILLUS. PL-59813	PART NO.	NAME OF PART	AMT.
1	00-419251-00001	Fitting - 90 Deg. Swivel	2
2	FP-013-17	Elbow - Street 1/2 x 90 Deg	3
3	FP-035-91	Pipe 1/2 x 1-1/8 TBE	7
4	00-418786-00001	Valve - Check	2
5	00-428691-00002	Valve - Solenoid (120 V.) (Jefferson Brand) (Before 6/18/14)	2
6	00-959909-00001	Valve - Solenoid (120 V.) (Bacarra Brand) (Starting 6/18/14)	2
7	FP-019-25	Tee 1/2 x 1/2 x 1/2	3
8	FP-034-01	Pipe - Cross 1/2 NPT	1
9	FP-077-68	Elbow 1/2 x 90 Deg	2
10	FP-035-95	Pipe 1/2 x 2 TBE	1
11	00-417792-00008	Pump Motor Assy. (115/230 V., 60 Hz.) (8 G.P.M.)	1
12	00-426602-00001	Tube - Flex (12 In.)	1
13	00-426602-00004	Tube - Flex (19 In.)	1
14	00-426602-00001	Tube - Flex (12 In.)	1
15	SC-114-01	Mach. Screw 10-32 x 3/8 Hex Washer Hd	2
16	00-426567-00002	O-Ring (Viton)	2
17	00-426567-00003	Receptacle - Oil Suction	1
18	00-426602-00002	Tube - Flex (29 In.)	1
19	00-418781-00001	Quick Disconnect	1
20	FP-085-79	Pipe 1/2 x 14-1/4 TBE	1
21	FP-090-79	Pipe 1/2 x 19 TBE	1
22	00-521820	U-Bolt	1
23	NS-046-52	Nut Assy. 1/4-20 Hex	2
24	00-422281-00007	Hose - Discard (6 Ft.)	AR
25	00-422281-00008	Hose - Discard (4 Ft.)	AR
26	00-958681-00001	Support - Oil Return	1
27	00-428914-000G1	Harness - Pump	1
28	00-497320-00002	Harness - Extension (Filter Switch)	1
29	00-422304-000G7	Harness - Bat. Interplumb W/R	1
30	00-422304-000G8	Harness - Bat. Interplumb W/R	1
31	00-422297-000G1	Harness - Brand (D)	1
32	00-422298-000G1	Harness (T)	1



FILTER ASSEMBLY
(SINGLE UNIT)

FILTER ASSEMBLY
(SINGLE UNIT)

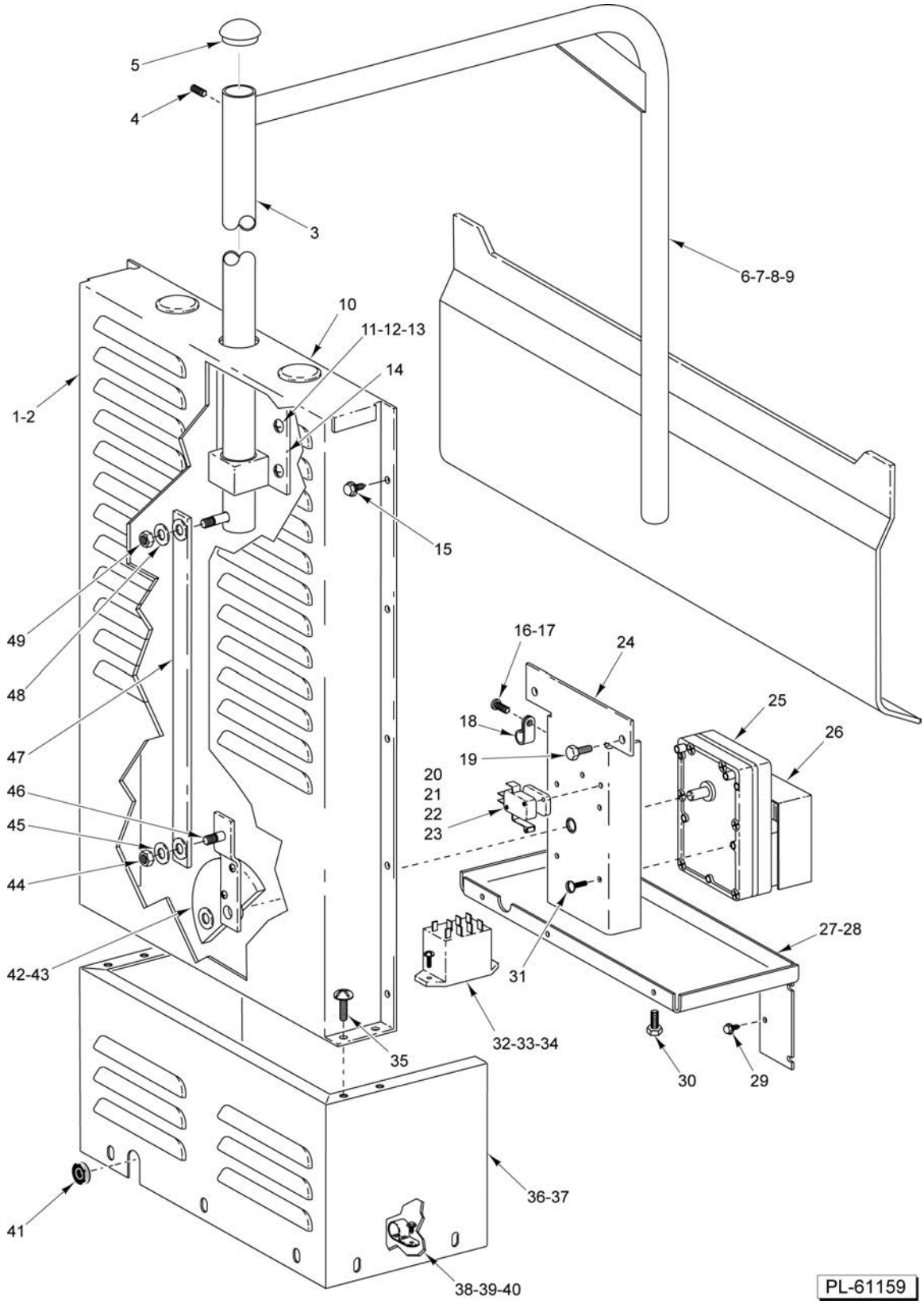
ILLUS. PL-59815	PART NO.	NAME OF PART	AMT.
1	00-956904-00001	Splash Guard (11 x 22 In.) (45 Series)	1
2	00-956904-00002	Splash Guard (16-1/2 x 22 In.) (65/85 Series)	1
3	00-499087-00002	Screen - Fine Mesh Filter (Metal) (22 x 5 In.) (45 Series)	1
4	00-499087-00004	Screen - Fine Mesh Filter (Metal) (22 x 10-1/2 In.) (65/85 Series)	1
5	00-499085-00003	Insert - Filter Screen (2-1/4 x 19 In.) (45 Series)	1
6	00-499085-00005	Insert - Fabric Envelope (3-3/4 x 22 In.) (45 Series)	1
7	00-499085-00006	Insert - Fabric Envelope (9-1/4 x 22 In.) (65/85 Series)	1
8	00-499085-00007	Insert - Filter Screen (7-3/4 x 19 In.) (65/85 Series)	1
9	00-499086-00002	Filter - Envelope (23.5 x 5) (45 Series)	1
10	00-499086-00003	Filter - Envelope (23.5 x 10.5) (65/85 Series)	1
11	00-499089-00002	Clip - Filter, Envelope (5 In. Lg.) (45 Series)	1
12	00-499089-00003	Clip - Filter, Envelope (10-1/2 In. Lg.) (65/85 Series)	1
13	00-958000-000G5	Pan Assy. - Filter (11-1/8 Tall) (45 Series)	1
14	00-958000-00G11	Pan Assy. - Filter (10-1/4 Tall) (45 Series)	1
15	00-958000-000G6	Pan Assy. - Filter (11-1/8 Tall) (65/85 Series)	1
16	00-958000-00G12	Pan Assy. - Filter (10-1/4 Tall) (65/85 Series)	1
17	00-499081-00G10	Tube - Suction (Used With Item 13 & 15)	1
18	00-956901-00G11	Suction Tube Assy. (Incls. Items 21 & 22) (Used With Item 13 & 15)	1
19	00-956901-00G23	Suction Tube Assy. (Incls. Items 21 & 22) (Used With Item 14 & 16)	1
20	NS-017-49	Jam Nut 3/4-16 Hex	1
21	00-499083-00002	Coupling - Suction	1
22	00-499084-00002	Knob - Port Suction	1
23	00-956907-000G3	Top - Counter Assy. (9.875 x 24 Cutout) (45 Series)	1
24	00-956907-000G4	Top - Counter Assy. (15.375 x 24 Cutout) (65/85 Series)	1
25	00-958026-00008	Roller (RH) (27-1/2 In.)	1
26	00-958026-00002	Roller (RH) (21-1/2 In.)	1
27	00-958026-00011	Roller (LH) (27-1/2 In.)	1
28	00-958026-00005	Roller (LH) (21-1/2 In.)	1
29	00-958026-000G3	Guide - Cabinet (RH) (21-1/2 In.)	1
30	00-958026-000G5	Guide - Cabinet (RH) (27-1/2 In.)	1
31	00-958026-000G4	Guide - Cabinet (LH) (21-1/2 In.)	1
32	00-958026-000G6	Guide - Cabinet (LH) (27-1/2 In.)	1



FILTER ASSEMBLY
(MULTIPLE UNITS)

FILTER ASSEMBLY
(MULTIPLE UNITS)

ILLUS. PL-59814	PART NO.	NAME OF PART	AMT.
1	00-428518-00001	Splash Guard (25.25 x 22.125) (45 Series)	1
2	00-956904-00001	Splash Guard (11 x 22 In.) (45 Series)	1
3	00-428519-00001	Splash Guard (36.25 x 22.125) (65/85 Series)	1
4	00-956904-00002	Splash Guard (16-1/2 x 22 In.) (45/65/85 Series)	1
5	00-499087-00002	Screen - Fine Mesh Filter (Metal) (22 x 5 In.)	1
6	00-499087-00003	Screen - Fine Mesh Filter (Metal) (16 x 12-1/2 In.)	1
7	00-499087-00004	Screen - Fine Mesh Filter (Metal) (22 x 10-1/2 In.)	1
8	00-499085-00002	Insert - Fabric Envelope (11 x 15 In.)	1
9	00-499085-00003	Insert - Filter Screen (2-1/4 x 19 In.)	1
10	00-499085-00004	Insert - Filter Screen (10-1/2 x 13-1/2 In.)	1
11	00-499085-00005	Insert - Fabric Envelope (3-3/4 x 22 In.)	1
12	00-499085-00006	Insert - Fabric Envelope (9-1/4 x 22 In.)	1
13	00-499085-00007	Insert - Filter Screen (7-3/4 x 19 In.)	1
14	00-499089-00002	Clip - Filter, Envelope (5 In. Lg.)	1
15	00-499089-00003	Clip - Filter, Envelope (10-1/2 In. Lg.)	1
16	00-499081-000G3	Tube - Suction (Used With Item 22 & 24)	1
17	00-499092-000G1	Suction Tube Assy. (Incls. Items 19 & 20) (Used With Items 22 & 24)	1
18	00-956901-00G23	Suction Tube Assy. (Incls. Items 19 & 20) (Used With Items 23 & 25)	1
19	NS-017-49	Jam Nut 3/4-16 Hex	1
20	00-499083-00002	Coupling - Suction	1
21	00-499084-00002	Knob - Port Suction	1
22	00-497374-000G1	Vessel Assy. (23 x 16 Bottom) (45 Series)	1
23	00-958000-00G11	Pan Assy. - Filter (10-1/4 Tall) (23.5 x 5.25 Bottom) (45 Series)	1
24	00-497374-000G2	Vessel Assy. (28 x 16 Bottom) (65/85 Series)	1
25	00-958000-00G12	Pan Assy. Filter (23.5 x 10.75 Bottom) (45/65/85 Series)	1
26	00-956907-000G1	Top - Counter (21 x 17 Cutout) (45 Series)	1
27	00-956907-000G3	Top - Counter Assy. (24 x 9.875 Cutout) (45 Series)	1
28	00-956907-000G2	Top - Counter (29-1/4 x 17 Cutout) (65/85 Series)	1
29	00-956907-000G4	Top - Counter Assy. (24 x 15.375 Cutout) (45/65/85 Series)	1
30	00-958026-00002	Roller (RH) (21-1/2 In.)	1
31	00-958026-00008	Roller (RH) (27-1/2 In.)	1
32	00-958026-00005	Roller (LH) (21-1/2 In.)	1
33	00-958026-00011	Roller (LH) (27-1/2 In.)	1
34	00-958026-000G3	Guide - Cabinet (RH) (21-1/2 In.)	1
35	00-958026-000G5	Guide - Cabinet (RH) (27-1/2 In.)	1
36	00-958026-000G4	Guide - Cabinet (LH) (21-1/2 In.)	1
37	00-958026-000G6	Guide - Cabinet (LH) (27-1/2 In.)	1
38	00-413927-00001	Grommet - Rubber	1



BASKETLIFT COMPONENTS

BASKETLIFT COMPONENTS

ILLUS. PL-61159	PART NO.	NAME OF PART	AMT.
1	00-418481-00001	Wrap - Top (45 Series)	1
2	00-418511-00001	Wrap - Top (65/85 Series)	1
3	00-418503-00001	Tube - Basketlift	1
4	SC-088-40	Set Screw 5/16-24 x 1/4 Hex Hdls., Cup Pt	1
5	PB-004-04	Plug Button (1-1/4)	1
6	00-956914-00G10	Arm - Basket Assy. (Single) (45/65 Series)	1
7	00-956914-000G2	Arm - Basket Assy. (Single) (85 Series)	1
8	00-956914-00G11	Arm - Basket Assy. (Double) (45/65 Series)	1
9	00-956914-000G1	Arm - Basket Assy. (Double) (85 Series)	1
10	PB-004-04	Plug Button (1-1/4)	2
11	SD-032-07	Self-Tapping Screw 10-24 x 1/2 Hex Washer Hd., Type TT	2
12	WS-004-33	Washer	6
13	NS-047-73	Lock Nut 5/16-18 Hex	6
14	00-418478-000G1	Bearing Support Assy	1
15	SD-036-03	Self-Tapping Screw 8-18 x 3/8 Hex Washer Hd., Type AB	10
16	SC-109-10	Mach. Screw 6-32 x 3/8 Slotted Pan Hd. (SST)	1
17	NS-009-07	Nut 6-32 Hex	1
18	00-078752-00012	Clamp - Cable	1
19	SC-037-80	Cap Screw 10-24 x 1/2 Hex Hd	8
20	NS-009-02	Nut 4-40 Hex	2
21	SC-112-90	Mach. Screw 4-40 x 1 Slotted Pan Hd	2
22	00-411496-000F3	Microswitch	1
23	00-418159-00001	Block - Cam Switch	1
24	00-418123-000G1	Plate - Motor	1
25	00-418156-00001	Gear - Motor (115 V., 60 Hz.)	1
26	00-418517-00001	Shroud - Motor	1
27	00-418484-00001	Base - Motor Mounting (45 Series)	1
28	00-418513-00001	Base - Motor Mounting (65/85 Series)	1
29	SD-032-07	Self-Tapping Screw 10-24 x 1/2 Hex Washer Hd., Type TT	2
30	SC-037-80	Cap Screw 10-24 x 1/2 Hex Hd	2
31	SC-018-47	Mach. Screw 10-32 x 3/4 Slotted Pan Hd	4
32	00-416535-00004	Switch - Relay S.P.D.T. 24 V	1
33	SC-109-10	Mach. Screw 6-32 x 3/8 Slotted Pan Hd. (SST)	3
34	NS-009-07	Nut 6-32 Hex	3
35	SD-036-03	Self-Tapping Screw 8-18 x 3/8 Hex Washer Hd., Type AB	4
36	00-418480-00001	Wrap - Bottom (45 Series)	1
37	00-418510-00001	Wrap - Bottom (65/85 Series)	1
38	00-078752-00012	Clamp - Cable	1
39	SC-109-10	Mach. Screw 6-32 x 3/8 Slotted Pan Hd. (SST)	1
40	NS-009-07	Nut 6-32 Hex	1
41	00-418482-00001	Grommet	1
42	00-418475-000G1	Crank - Arm Assy	1
43	SC-055-02	Set Screw 1/4-20 x 1/4 Hdls., Cup Pt. (SST)	2
44	NS-047-73	Lock Nut 5/16-18 Hex	1
45	WS-004-33	Washer	1
46	SD-015-41	Self-Tapping Screw 8-32 x 1/2 Phil. Pan Hd., Type TT	2
47	00-418477-000G1	Coupler Assy	1
48	WS-004-33	Washer	1
49	NS-047-73	Lock Nut 5/16-18 Hex	1