

**SEARS**

**HVAC**

**FUNCTIONAL**

**REPLACEMENT PARTS**

**II**

D92/192/LIT  
4322248 Rev.B

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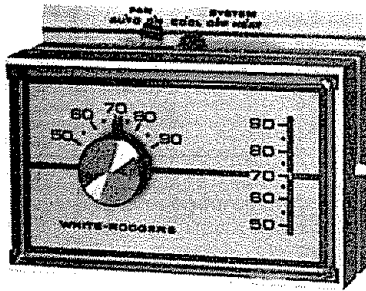
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# SINGLE STAGE LOW VOLTAGE THERMOSTATS



42/387 1F56-585

## HEATING/COOLING AND HEAT ONLY— WITH SELECTOR SWITCHES

RELIABLE PERFORMANCE COMBINED WITH THIN-PROFILE SUBBASE MOUNTING PLATE. ENTIRE UNIT ONLY EXTENDS 1-5/8 INCHES FROM WALL.

### FEATURES

- Includes wallplate for heat only applications
- Dustproof sealed mercury cells or snap-action contacts with dust cover.
- Positive contact snap-switches on subbase.
- Bimetal thermometer
- Heating and cooling anticipators provide narrow differential control of room temperature.
- **ACCESSORIES:** F92-0563 — Temperature lever locking or limiting kit; F61-2070 — Wallplate (5 5/8" x 5 3/4") only.
- Sears Logo with Sears Product Services 800 number on thermostat dial

### SPECIFICATIONS

**Selector Switches:** Fan: AUTO-ON  
System: COOL-OFF-HEAT  
**Anticipation:** Heating — Adjustable 0.15 to 1.2A  
Cooling — Fixed 0 to 1.5A  
**Dimensions:** 3 1/4" H x 4 1/2" W x 1 5/8" D including subbase.  
**Electrical Rating:** 30 VAC maximum  
**Thermostat Style:** Horizontal

### HEATING/COOLING TYPE (SEALED MERCURY CELLS)

Type Number	Range	Differential	Switch Action
1F56-585	50 to 90°F	Heating 1°F Cooling 1.5°F	SPDT

NOW WITH B&O TERMINALS FOR SINGLE STAGE HEAT PUMPS

## VERTICAL THERMOSTATS WITH MERCURY CELL SWITCH

VERTICAL THERMOSTAT MODEL FOR CONTROL OF LOW VOLTAGE HEATING, COOLING AND ZONING INSTALLATIONS.

### FEATURES

- Sealed mercury cells provide long life and protection against dirt and moisture.
- Heating and cooling anticipators provide narrow differential control of room temperature.
- Snap-on cover
- Beige case with gold and black dial
- **ACCESSORIES:** F92-0563 — Temperature lever locking or limiting kit; F61-2068 — Wallplate (5 5/8" x 5 3/4") with adapter for vertical J-box; 42/387 F61-2072 — Wallplate (5 5/8" x 5 3/4") only



42/387 1E30-910

### SPECIFICATIONS

**Dimensions:** 4 1/2" H x 2 3/4" W x 1 1/2" D  
**Electrical Rating:** 30 VAC maximum  
**Thermostat Style:** Vertical

### HEATING TYPES—24 VAC.

Type Number	Range	Differential	Switch Action	Type Anticipation
1E30-910	50 to 90°F	1°F	Open on Rise	Adj. 0.15 to 1.0A

### HEATING TYPES—millivolt

Type Number	Range	Differential	Switch Action	Type Anticipation
1E30-913	50 to 90°F	3°F	Open on Rise	Non-Anticipated (for 250-750mV)

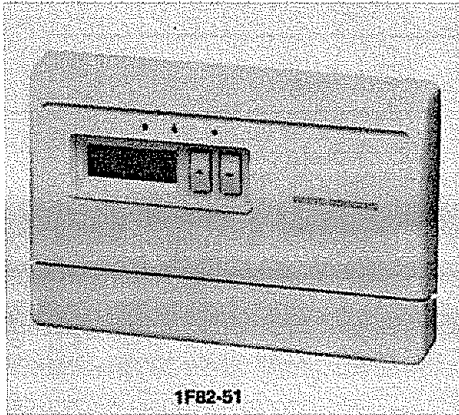
TO ORDER THE ABOVE PARTS USE 42/387

# SINGLE STAGE LOW VOLTAGE THERMOSTATS



## 42/387 1F82-51 DIGITAL HEAT PUMP THERMOSTAT

DIGITAL THERMOSTAT IS SYSTEM POWERED AND COMPATIBLE WITH MOST TWO STAGE HEAT ONE STAGE COOL HEAT PUMP SYSTEMS



### FEATURES

- 1F82-51 5 + 2 Day mode and programmability options.
- System powered (requires HOT and COMMON sides of the 24 volt transformer).
- LCD displays setpoint continuously and alternates the current time and room temperature.
- Pre-programmed times and temperatures that are easy to change.
- Optional EMR (Energy Management Recovery)
- Fossil fuel or electric heat fan option.
- Armchair programming (touching a 9 volt battery to the back of the thermostat charges an onboard capacitor) allows the thermostat to be programmed up to 45 minutes before the 24 volt power is applied. The capacitor also maintains the program in the event of power loss.
- Temporary temperature override until the next time period. Hold Temp button for manual operation.
- B/O changeover terminal selector switch. Choice of Fahrenheit or Celsius temperature display.
- Five minute compressor short cycle protection
- Adjustable room temperature calibration.
- LED indicators for Emergency, Auxiliary Heat, and Malfunction.

### SPECIFICATIONS

**Electrical Rating:** 20 to 30 volts (50/60 Hz or DC)  
0.05 to 1.5 Amps (Load per terminal)

**1.5 Amps Max. All Terminals Combined**

**Temperature Range:** 40 to 99°F.

Operating Ambient Temperature Range 32 to 105°F.

Shipping Temperature Range -40 to 150°F.

Operating Humidity Range 0-90% RH (non-condensing)

### \* HEAT PUMP 5 + 2 PROGRAMMABLE (with 2nd Stage Heating)

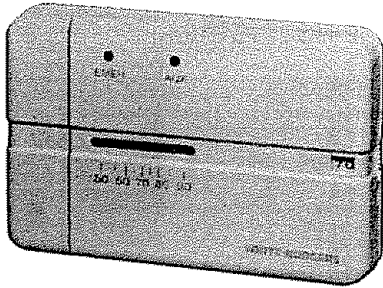
Type Number	Application	System System Switch	Fan Fan Switch
1F82-51	For heat pumps with auxiliary/emergency back-up heat (2 heat-1 Cool)	Heat-Off-Cool Emer	On-Auto

\*Requires both sides of the 24 volt transformer secondary to be available at thermostat

N = New Product

TO ORDER THE ABOVE PARTS USE 42/387

# LOW VOLTAGE HEAT PUMP THERMOSTATS



42/387 1F59-11

## ELECTRONIC MULTI-STAGE HEAT PUMP THERMOSTAT — NON PROGRAMMABLE

THE 1F59 ELECTRONIC HEAT PUMP THERMOSTAT IS A MICROCOMPUTER-BASED STAGING HEAT PUMP THERMOSTAT FOR RESIDENTIAL AND COMMERCIAL APPLICATIONS THAT DO NOT REQUIRE SETBACK PROGRAMMING. THE THERMOSTAT FEATURES PRECISE TEMPERATURE CONTROL AND COMPRESSOR DELAY PROTECTION. THE THERMOSTAT ALSO FEATURES CONTEMPORARY STYLING AND CLASSIC WHITE COLOR TO BLEND WITH ANY ROOM DECOR. THE DESIGN OF THIS THERMOSTAT ELIMINATES THE NEED FOR AN OUTDOOR THERMISTOR SOMETIMES NECESSARY WITH MECHANICAL HEAT PUMP THERMOSTATS

### FEATURES

- Microcomputer-based design provides electronic accuracy.
- For heat pump systems that do not require temperature setbacks or automatic changeover
- Two stage heat, single stage cool
- Rotary temperature dial
- Five-minute compressor delay after power outage
- Compressor lockout override.
- Mercury-free design
- Low profile design and soft white color
- Adjustable compressor cycle rate

### SPECIFICATIONS

**Temperature Range:** 40° to 90° (4° to 32°C)

**Electrical Rating:**

- 18 to 30 VAC, (50/60 Hz)
- 0.01 to 1.5 Amps (load per terminal)
- 2.5 Amps max total load (all terminals combined)

**Staging:** Up to two heating stages; one stage cooling

**Rated Differential:**

- Stage 1 heat — 1.3°F (max)
- Stage 2 heat — 0.9°F (max)
- Cooling — 1.3°F (max)

**Dimensions:** 3 5" high, 5 5" wide, 1 0" deep

**Thermostat Style:** Horizontal

This thermostat is designed control systems where both sides of the 24 VAC transformer are present to the thermostat.

Type Number	Stages		Indicator Lights			System Switch Positions	
	Heat	Cool	Emer.	Aux.	Sig.	System	Fan
1F59-11	2	1	Yes	Yes	No	Cool-Off-Heat-Emer.	Auto-On



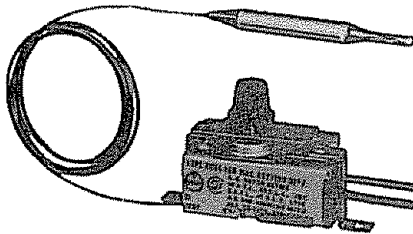
# LOW VOLTAGE THERMOSTATS

## OUTDOOR HEAT PUMP THERMOSTATS

PROVIDES AUXILIARY HEATER "LOCKOUT" DURING MILD WEATHER.

### FEATURES

- Mounts inside heat pump
- Adjustable 0 to 50°F range.
- Keeps auxiliary heaters OFF when outdoor temperature is warm
- Self contained mounting bracket
- Calibrated temperature dial
- Snap action switch
- U L recognized and C S A certified



42/387 2B61-186

### SPECIFICATIONS

**Dimensions:** 1¼"W x 3½" (to mounting hole centers) x 2½"D

**Bulb Size:** 3½" x 3/8"

**Capillary Length:** 48"

**Lead Length:** 6"

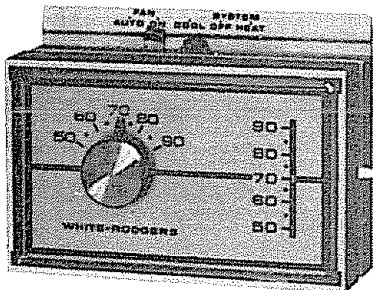
Type Number	Range	Differential	Switch Action	Resistive (Non-Inductive)				Motor Rating			
				120 VAC	240 VAC	277 VAC	Full Load	Locked Rotor			
2B61-186	0 to 50°F (18 to 10°C) in 128° of ARC	6°F	Open on Rise	25 0A	25 0A	22 0A	10 0A	6 0A	60 0A	36 0A	

## MULTI-STAGE THERMOSTATS

FOR MULTI-STAGE LOW VOLTAGE HEATING/COOLING COMBINATIONS

### FEATURES

- Single bimetal construction
- Controls up to 2 stages of heat and 2 stages of cooling
- Subbase has system and fan switches to select system function and blower operation.
- Dust proof sealed mercury cells for reliable operation
- Beige case with gold tone dial
- **ACCESSORIES:** F92-0563 — Temperature lever locking or limiting kit.



42/387 1F57-306

### SPECIFICATIONS

**Dimensions:** 2¾"H x 4½"W x 2"D

**Selector Switches:** System: COOL-OFF-HEAT  
Fan: AUTO-ON

**Anticipation:** Heating — Adjustable 1st stage 0.15 to 1.0A  
2nd stage non-anticipated  
Cooling — Fixed 1st stage 0 to 1.5A  
2nd stage non-anticipated

**Electrical Rating:** 30 VAC maximum

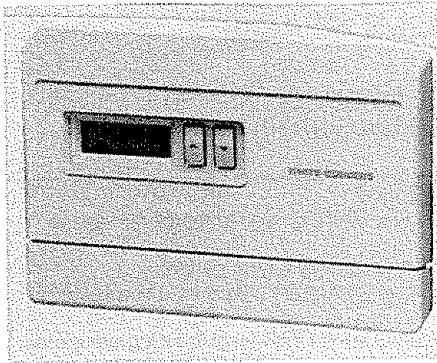
**Finish:** Champagne, gold and black

**Thermostat Style:** Horizontal

Type Number	Range	Differential			Switch Action
		Stage	Heating	Cooling	
1F57-306	50 to 90°F	1st	1.0°F	1.5°F	2 Heat 2 Cool
		2nd	2.0°F	2.0°F	



# SINGLE STAGE DIGITAL THERMOSTAT



42/042 91861

## DIGITAL SINGLE STATE THERMOSTATS

THE DIGITAL THERMOSTATS ARE BATTERY POWERED AND COMPATIBLE WITH MOST HEATING AND COOLING SYSTEMS. THE THERMOSTATS FEATURE CONTEMPORARY STYLING TO BLEND WITH ANY ROOM DECOR.

### FEATURES

- Battery powered for maximum compatibility (requires 3 "AA" alkaline batteries not included).
- Low battery indicator — battery life one year +
- 91871 has 7 independent programs, one for each day of the week with 4 times and temperatures. The 91861 has a 5 + 2 day program style with 4 times and temperatures for weekdays and weekends.
- 91841 is non-programmable with no clock function.
- Simultaneous heating and cooling program storage eliminates the need to reprogram each season.
- Time and temperature settings are pre-programmed and easy to change.
- LCD displays setpoint temperature continuously and alternately shows actual time and temperature.
- Low and high-limit temperature protection in case of battery failure.
- Temporary temperature override until next program period.
- Hold temperature button allows manual program override for an indefinite period without changing programming
- Selectable °F/°C display.
- Forced air or hydronic heating anticipation.
- Five-minute compressor short cycle protection in cooling
- Unique temperature display recalibration feature allows user to modify room temperature display to suit individual needs (+/-4°F)
- Sears Logo

### SPECIFICATIONS

#### Electrical Rating:

Millivolt to 30 VAC (50/60 Hz) or D C  
0.05 to 1.5 Amps (load per terminal)  
1.5 Amps max total load (all terminals combined)

**Temperature Range:** 45° to 90°F (7° to 32°C)

**Rated Differential:** 0.8°F forced air  
2.2°F hydronic  
1.2°F cooling

**Dimensions:** 4.5" high, 6.75" wide,  
1.25" deep

### APPLICATIONS

#### FOR USE WITH

- Single stage heat/cool or heat only systems
- Electric heat systems
- Gas or oil fired systems
- Gas systems with intermittent ignition devices (I I D) and/or vent dampers
- Hydronic (hot water or steam) systems
- Mobile home (D C) systems
- Millivolt systems

#### DO NOT USE WITH:

- Multi-stage systems
- Multi-stage heat pump systems
- 3-wire zoned heating systems
- Systems exceeding 30 V
- Single stage heat pumps

#### NON PROGRAMMABLE

Type Number	Application	System Switch	Fan Switch
91841	For heating and cooling, and 24V electric heat.	Heat-Off-Cool	On-Auto

#### 5 + 2 DAY PROGRAMMING

Type Number	Application	System Switch	Fan Switch
91861	For heating and cooling, and 24V electric heat.	Heat-Off-Cool	On-Auto
IF80-71	For heating and cooling, and 24V electric heat.	Heat-Off-Cool-Auto	On-Auto

#### 7 DAY INDEPENDENT PROGRAMMABLE

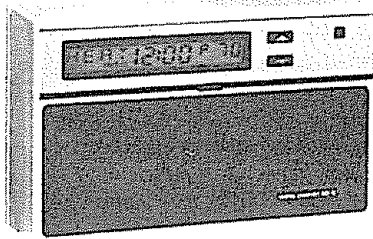
Type Number	Application	System Switch	Fan Switch
91871	For heating and cooling, and 24V electric heat.	Heat-Off-Cool	On-Auto

TO ORDER THE ABOVE PARTS USE 42/042



**SEARS BEST—DIGITAL SINGLE STAGE  
THERMOSTAT**

PROGRAMMABLE CONTROL OF MOST SINGLE STAGE HEATING AND COOLING SYSTEMS. AVAILABLE IN 5 + 2 WEEKDAY/WEEKEND PROGRAMMING.



42/042 91112

**FEATURES**

- Four separate time/temperature settings per 24 hour period.
- Simultaneous heating and cooling program storage eliminates the need to reprogram as the seasons change.
- Pre-programmed time and temperature settings in **all four** programming periods.
- Optional computed EMR™ (Energy Management Recovery) program allows for a head start on recovery from setback or setup
- Programmable fan (PRG FAN) control permits continuous fan during any given program period.
- Unique "back-lit" display.
- Audio program prompting—thermostat beeps to signal that a change has been made.
- Battery backup with 3 "AA" alkaline batteries (not included).
- LCD displays set point temperature continuously and alternately shows actual time and temperature. Also shows system and fan status.
- Suitable for use on central electric heat systems where blower is energized by fan relay on heat and cool.
- "HOLD TEMP" key provides manual override of program
- Selectable °F/°C display.
- Blower delays "OFF" in cooling (approximately 1 minute)
- Independently adjustable anticipation for heating and cooling.
- Compressor short cycle protection.
- Temperature set-points reset and hold at 64°F in heating or 82°F in cooling, in case of power failure and no battery backup
- "Arm-chair" programming
- Red LED indicator light glows whenever heating, cooling, or fan is in operation.
- Compatible with 3 wire zone or 250-750 millivolt systems
- Sears Logo

**SPECIFICATIONS 91112**

**Electrical Rating:** 17 to 30 volts AC (50/60 Hz)  
0.05 to 1.5 Amps

**Temperature Range:** 40 to 99°F (4 to 37°C).

**Anticipation Index Range:** Heating 2 to 40 Preset at 5  
Cooling 4 to 40 Preset at 14.

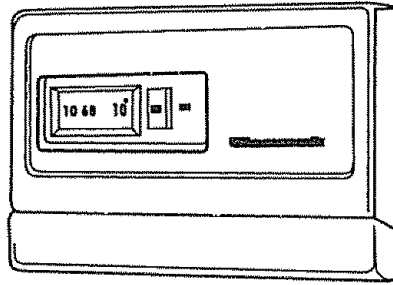
**Rated Differential:** 0.5 to 1.5°F with adjustable anticipation

**Dimensions:** 3 3/16" high, 6 3/8" wide, 1 3/4" deep

**SINGLE STAGE 5 + 2 DAY PROGRAMMING**

Type Number	Application	System Switch	Fan Switch
91112	For heating and cooling systems	Heat-Off-Cool	On-Auto

# White-Rodgers 1F81-51 Series Digital Multi-Stage Thermostats



1F81-51

The 1F8X-51 Series Multi-Stage (two stage heat and two stage cool) thermostats offer a unique dual power option. If common (neutral) is available, attach it to terminal C to power the thermostat. If common is not available, the thermostat will use the AA batteries for power. No need to pull new wire! Features contemporary styling and Classic White coloring to blend with any room decor.

## FEATURES

- Dual Power Option: Thermostat may be powered using system hot and common from 24 volt transformer, or battery powered (no common required).
- Simultaneous heating and cooling program storage eliminates the need to reprogram each season.\*
- Time and temperature settings are pre-programmed and easy to change.\*
- LCD displays setpoint temperature continuously and alternately shows actual time and temperature.\*
- Manual changeover.
- Optional Energy Management Recovery (EMR).
- System-energized or thermostat-energized fan option (for electric heat).
- Temporary temperature override until next program period.\*
- Hold temperature button allows manual program override for an indefinite period without changing programming.\*
- Selectable °F/°C display.
- Adjustable anticipation.
- Five-minute compressor short cycle protection.
- Temperature display recalibration feature allows user to modify room temperature display to suit individual needs.
- Program reset button.

## SPECIFICATIONS

### Electrical Rating:

- 20 to 30 VAC (50/60 Hz) or DC
- 0.05 to 1.5 Amps (load per terminal)
- 1.5 Amps max total load (all terminals combined)

### Temperature Rating: 45° to 90°F (7° to 32°C)

### Rated Differential: 0.5 to 1.5 °F with adjustable anticipation.

### Dimensions: 4.5" high, 6.75" wide, 1.25" deep

### Terminals: R, C, G, W, W2, Y, Y2

## APPLICATIONS

### For Use With:

- Manual changeover multistage systems with up to two stages heat, two stages cool

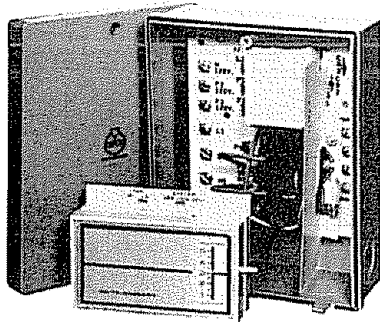
### DO NOT USE WITH:

- Millivolt systems
- Systems exceeding 30VAC and 1.5 amps
- 3-wire zoned hydronic heating systems
- Heat pump systems

## MULTISTAGE MODELS AVAILABLE

Type Number	Programming
1F81-51	5+2 Day (2 programs)





42/387 21D28-2

**EVAPORATIVE COOLING CONTROL 21D28-2**

THE 21D28-2 CONTROL PACKAGE CONSISTS OF A THERMOSTAT (1F51-619) AND A CONTROL RELAY (8A18Z-2). THE 8A18Z-2 FUNCTIONS AS A SWITCHING DEVICE FOR THE THERMOSTAT TO PROVIDE AN EVEN LEVEL OF COOLING PLUS A CHOICE OF HIGH AND LOW SPEED CONTROL OF THE FAN ON EVAPORATIVE COOLERS.

**FEATURES**

- Gray plastic case is lightweight and weather resistant Meets all code requirements
- Fully automatic
- System designed with a fan delay (approximately 60 seconds) to pre-wet the cooler pads before the fan starts
- Separate fan and pump relays
- High or low fan speed selection.
- Relay panel is removable from enclosure to facilitate field wiring
- Integral transformer 120/240 VAC to 24 VAC 60 Hz

**SPECIFICATIONS FOR 21D28-2 PACKAGE**

**Dimensions:** 1F51-619 — 3¼"H x 4½"W x 1½"D.  
 8A18Z-2 — 8"H x 6"W x 3"D.

**Electrical Rating:** 1F51-619 — 24 VAC (30 VAC maximum)

**Anticipation:** 0 to 1.5A Cooling — Fixed.

Type Number	Package Consists Of
21D28-2	1F51-619 and 8A18Z-2

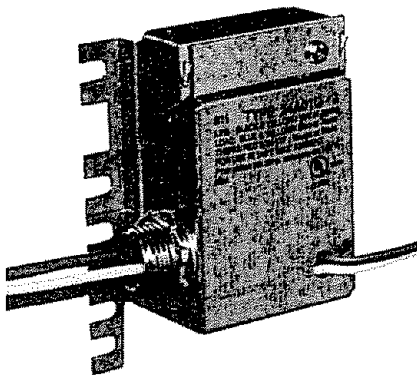
Type Number	Range	Differential	System Switch Positions	
			System	Fan
1F51-619	Scale 1-2-3-4-5* (55 to 95°F)	1°F	Off-Cool-Vent	Hi-Lo

\*Less thermometer

**CONTACT RATINGS:**

Type Number	Input Voltage	Combined Relay Loads		Pump Relay		Fan Relay	
		Full Load	Locked Rotor	Full Load	Locked Rotor	Full Load	Locked Rotor
8A18Z-2**	120 VAC	16.0A	96.0A	10.0A	60.0A	12.0A	72.0A
	240 VAC	8.0A	48.0A	5.0A	30.0A	6.0A	36.0A

\*\*U L listed



42/387 24A01G-3

**LEVEL-TEMP LOW VOLTAGE  
CONTROL SYSTEMS FOR ELECTRIC HEAT**

PROVIDES SILENT OPERATION AND NARROW DIFFERENTIAL CONTROL FOR HEATING OR COOLING INSTALLATIONS FOR USE WITH A 2-WIRE 24 VOLT THERMOSTAT.

**FEATURES**

- Level-Temp allows low voltage 2-wire thermostat to control line voltage loads such as baseboard heaters.
- Conduit hub or screw mounting.
- Ideal for all types of electrical heat
- Non-critical mounting angle Universal break-off mounting tabs.
- U.L. listed and C.S.A. certified Design complies with U.L. 873 T.I.R.E. (Temperature Indicating and Regulating Equipment) standard.

**SPECIFICATIONS**

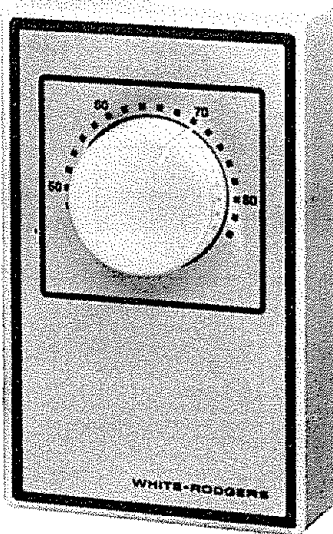
Switch action — SPST normally open  
Average time delay — 45 seconds  
Lead length — 18 inches  
Ambient range from -20 to +140°F

**SINGLE LEVEL TEMPS — Normally Open**

Type Number	Input Voltage/Frequency	Thermostat Current	A.C. Resistive (Non-Inductive)	A.C. Motor Rating (Inductive)	
				Full Load	Locked Rotor
24A01G-3	240 VAC 60Hz	0.2A	25A, 6000W, 240v	12A, 240v	72A, 240v

**PHYSICAL DIMENSIONS**

Type Number	Overall Length	Case Width	Height
24A01	4½"	2⅞"	1⅞"



42/387 1A66-641

**LINE VOLTAGE WALL THERMOSTATS**

ELECTRIC HEAT THERMOSTATS USED FOR CONTROLLING BASEBOARDS, CABLE HEAT, GLASS PANELS, ETC.

**FEATURES**

- 1A66 types are a double-pole disconnect model with "OFF" position which mechanically breaks both sides of line
- **ACCESSORIES:** F61-2152 — Wallplate (6½" x 5½"); F75-0176 — for locking or limiting temperatures at 66°, 69°, 72° or 75°F Temperature limit can also be set at 60° or 63°F.
- U.L. listed and C.S.A. certified

**SPECIFICATIONS**

Dimensions: 4½"H x 2¾"W x 1¼"D

Type Number	Range	Differential	Switch Action	Resistive (Non-Inductive)
1A65-641	40 to 85°F (4 to 29°C)	1°F	Open on Rise	22A, 2500W, 120 VAC 22A, 5000W, 240 VAC 18A, 5000W, 277 VAC

1A66-641	40 to 85°F (4 to 29°C)	1°F	Open on Rise	22A, 5000W, 240 VAC 18A, 5000W, 277 VAC
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REPLACES: Honeywell T498A/B Series



**HUMIDISTAT**

PROVIDES AUTOMATIC CONTROL OF HUMIDIFICATION EQUIPMENT FOR OPTIMUM HUMIDITY CONTROL

**FEATURES**

- Attractive white case.
- Choice of horizontal or vertical styling.
- Line voltage or low voltage
- Snap action switch.
- Mounts on 2" x 3" single gang box.
- Pigtail leads.
- Approximate size: Vertical 4½"H x 2¾"W x 2⅞"D

	Type Number	Description	Switch Action	Range	Differential	Contact Ratings
N	2271W-21	Humidistat (Horizontal)	Open on Rise	30% to 80% RH	5% RH	120VAC .5A Pilot Duty 30VAC 60VA
N	2272W-21	Humidistat (Vertical)	Open on Rise	30% to 80% RH	5% RH	120VAC .5A Pilot Duty 30VAC 60VA

**DEHUMIDISTAT**

PROVIDES AUTOMATIC CONTROL OF DEHUMIDIFICATION EQUIPMENT OR OPERATES DAMPER/EXHAUST FANS TO CONTROL HUMIDITY LEVELS

**FEATURES**

- Attractive white case.
- Choice of horizontal or vertical styling.
- Line voltage or low voltage
- Snap action switch.
- Mounts on 2" x 3" single gang box.
- Pigtail leads
- Approximate size: Vertical 4½"H x 2¾"W x 2⅞"D

	Type Number	Description	Switch Action	Range	Differential	Contact Ratings
N	2274W-21	Dehumidistat (Vertical)	Close on Rise	30% to 80% RH	5% RH	120VAC 1A Pilot Duty 30VAC 60VA

N = New product

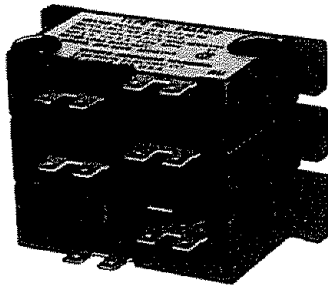


**MODEL 24A50  
ELECTRIC HEAT SEQUENCERS**

PROVIDE HIGHLY VERSATILE CIRCUITRY ON ELECTRIC FURNACES, DUCT HEATERS, HEAT PUMP, AUXILIARY HEATERS AND OTHER ELECTRIC HEATING EQUIPMENT

**FEATURES**

- Complete line with fewest number of components for maximum economy.
- All models meet latest EE1-NEMA sequencing standards
- Multi-poise mounting
- -20 to +165°F (-29 to +74°C) ambient rating
- Staging capability
- Easily accessible dual tab terminals
- Ambient compensated.
- Pilot duty rating (for contactors on 3-phase service)
- Eliminates need for separate blower temperature control
- Quiet, snap-acting "E-Blade" main switches.
- U L recognized.



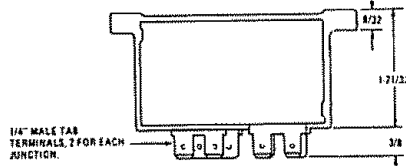
42/387 24A54-2

**SPECIFICATIONS**

**Terminals:** Dual 1/4" male quick connects  
**Main Switches:** Available with one, two or three SPST switches  
**Auxiliary Switches:** Low voltage — SPST  
**Bimetal Heater:** Input — 24 VAC 60 Hz Current draw — 16Amps

**ELECTRICAL RATINGS  
SINGLE LOAD CONTACT RATINGS (ALL MODELS):**

VAC	Resistive (Non-Inductive)		Motor Ratings (Inductive)		Pilot Duty
	Watts	Amps	Full Load	Locked Rotor	
120	3000	25.0	16.0A	96.0A	—
240	6000	25.0	12.0A	72.0A	—
277	6000	22.0	—	—	—
600	6000	12.0	4.0A	24.0A	750VA



Top View

**COMBINED LOAD RATING (ALL MODELS):**

22A non-inductive plus 4A inductive at 240 VAC, or 20 8A non-inductive plus 5 2A inductive at 240 VAC  
 Auxiliary switch — Terminals designated (A)  
 1A at 30 VAC non-inductive.

Type Number	Number of Switches	APPROXIMATE TIMING (SECONDS)							
		ON TIMES				OFF TIMES			
		Main SW1	Main SW2	Main SW3	Aux. SW	Main SW1	Main SW2	Main SW3	Aux. SW
24A51-1	1 Main	35	—	—	—	40	—	—	—
24A51-6	1 Main	18	—	—	—	90	—	—	—
24A51-10	1 Main	45	—	—	—	25	—	—	—
24A52-1	2 Main	35	35	—	—	40	40	—	—
24A52-6	2 Main	18	18	—	—	90	90	—	—
24A52-101	2 Main	18	35	—	—	90	40	—	—
24A52-109	2 Main	35	45	—	—	45	25	—	—
24A53-1	3 Main	18	18	35	—	90	90	35	—
24A53-101	3 Main	18	30	45	—	90	40	25	—
24A54-2	1 Main + Aux.	35	—	—	35	35	—	—	25
24A55-1	2 Main + Aux.	35	35	—	35	50	50	—	40
24A55-101	2 Main + Aux.	18	35	—	35	90	35	—	25
24A55-106	2 Main + Aux.	35	45	—	45	45	25	—	15
24A56-1	3 Main + Aux.	18	18	35	35	90	90	35	25
24A56-101	3 Main + Aux.	18	30	45	45	90	40	25	15

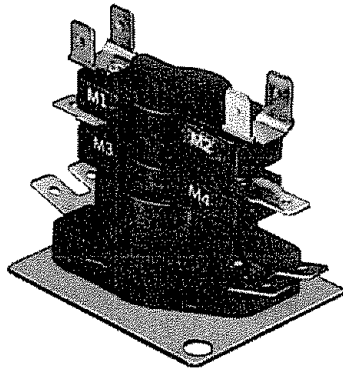


**MODEL 24A34  
ELECTRIC HEAT SEQUENCERS**

DIRECT REPLACEMENT FOR MOST FAN/HEAT SEQUENCING FUNCTIONS. TERMINAL MARKINGS ARE EQUIVALENT TO COMPETITIVE TYPES AND ALLOW ONE WIRING METHOD FOR VARIOUS SOURCES OF SEQUENCERS.

**FEATURES**

- Replaces Honeywell, Klixon (Texas Instruments), MARS, TOD, GEMLINE types
- Solid-state reliability
- Ambient rated from -40 to +165°F
- 24V input control
- Multi-poise mounting
- Any contacts (except M1 and M2) can be used as auxiliary contacts
- Double quick-connect terminals for combination loads
- U.L. component recognized



42/387 24A34-4

**SPECIFICATIONS**

**ELECTRICAL RATINGS  
SINGLE LOAD CONTACT RATINGS (ALL MODELS):**

VAC	Resistive (Non-Inductive)		Motor Ratings (Inductive)		Pilot Duty
	Watts	Amps	Full Load	Locked Rotor	
120	3000	25.0	10.0A	60.0A	125 VA
240	6000	25.0	5.0A	30.0A	125 VA
480	6000	12.5	3.0A	18.0A	480 VA

**COMBINED LOAD RATING (ALL MODELS):**

30A @ 240 VAC — TOTAL; 23 A Non-inductive + 7 FLA/42 LRA Inductive.  
ON TIME — Elapsed time to make contacts after heater is energized (Min. to Max.)  
OFF TIME — Elapsed time to break contacts after heater is de-energized (Min. to Max.).

Type Number	Timings	Switches	Timings										
			On					Off					
			M1-M2	M3-M4	M5-M6	M7-M8	M9-M10	M1-M2	M3-M4	M5-M6	M7-M8	M9-M10	
24A34-1	1	1	1-20	—	—	—	—	—	40-110	—	—	—	—
24A34-2	1	1	—	—	30-90	—	—	—	—	—	1-30	—	—
24A34-3 <sup>Ⓢ</sup>	1	2	1-20	1-20	—	—	—	—	40-110	40-110	—	—	—
24A34-4	1	2	—	—	30-90	30-90	—	—	—	—	1-30	1-30	—
24A34-5 <sup>Ⓢ</sup>	2	3	1-110	1-110	1-110	—	—	—	1-110	1-110	1-110	—	—
24A34-6 <sup>Ⓢ</sup>	2	4	1-110	1-110	1-110	1-110	—	—	1-110	1-110	1-110	1-110	—
24A34-14 <sup>Ⓢ</sup>	4	5	1-160	1-160	1-160	1-160	1-160	1-160	1-160	1-160	1-160	1-160	1-160

<sup>Ⓢ</sup> M1-M2 and M3-M4 are always first switches to turn ON and last to turn OFF. All other switches are random ON and random OFF.

<sup>Ⓢ</sup> 24A34-14 Switch contacts designated F-F, instead of M, M.

◆ These contacts switch simultaneously

**Note:** Underwriters Laboratories requires a fan interlock circuit to insure the blower remains operating whenever more than one sequencer is used. The fan interlock should be the M/M, contacts of the second or third sequencer. All M/M, contacts are wired to the blower motor so that any sequencer that is energized will keep the blower ON.

**24A34-15**

**NORMALLY OPEN CONTACTS 1-3**

- Used in heat pump air handler applications.
- Provides a delay off to the blower motor in cooling mode
- Single pole double throw.

**ELECTRICAL RATINGS**

VAC	Resistive (Non-Inductive)		Motor Rating (Inductive)		Pilot Duty VA
	Watts	Amps	Full Load	Locked Rotor	
120	3000	25	14	72	125
240	6000	25	7	42	125

**NORMALLY CLOSED CONTACTS 1-2**

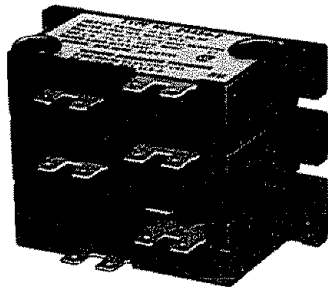
120	1200	10	4.1	8.0	125
240	1200	5	4.1	8.0	125

**TIMINGS**

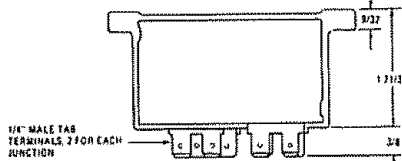
Type No.	Timings	Switches	Timings	
			On 1-3	Off 1-3
24A34-15	1	1	1-60	75-95



# ELECTRIC HEAT SEQUENCERS CROSS REFERENCE



42/387 24A54-2



Top View

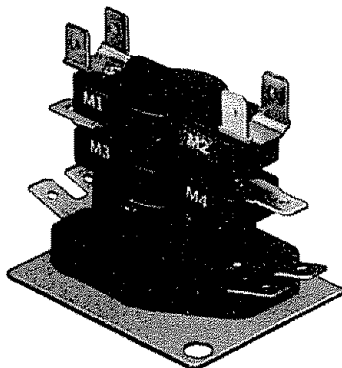
## MODEL 24A50 OEM TO WHOLESALE CROSS REFERENCE

O.E.M. Number	Type Number	O.E.M. Number	Type Number
24A51-1 24A51-2 24A51-5 24A51-17 24A51-20 24A51-21 24A51-22 24A51-25 24A51-26 24A51-27 24A51-28 24A51-29	24A51-1	24A53-101 24A53-102 24A53-107 24A53-108 24A53-109 24A53-110 24A53-111 24A53-112 24A53-116	24A53-101
24A51-6 24A51-32 24A51-33	24A51-6	24A54-2 24A54-5 24A54-13 24A54-14 24A54-15 24A54-17 24A54-18 24A54-20	24A54-2
24A51-7 24A51-8 24A51-10 24A51-12	24A51-10	24A55-1	24A55-1
24A52-1 24A52-15	24A52-1	24A55-101 24A55-103 24A55-105 24A55-109 24A55-112 24A55-113 24A55-115 24A55-119 24A55-121 24A55-124 24A55-125 24A55-126	24A55-101
24A52-2 24A52-6 24A52-11	24A52-6	24A55-106 24A55-116 24A55-120 24A55-122 24A55-123	24A55-106
24A52-101 24A52-102 24A52-104 24A52-111 24A52-116 24A52-120 24A52-123 24A52-127 24A52-129 24A52-135	24A52-101	24A56-1 24A56-7 24A56-8	24A56-1
24A52-107 24A52-109 24A52-110 24A52-113 24A52-114 24A52-115 24A52-118 24A52-119 24A52-122 24A52-126 24A52-128 24A52-130 24A52-134	24A52-109	24A56-101 24A56-104 24A56-106 24A56-107 24A56-108 24A56-109 24A56-110 24A56-113	24A56-101
24A53-1 24A53-6	24A53-1		

### O.E.M. Types That Do Not Have Replacements

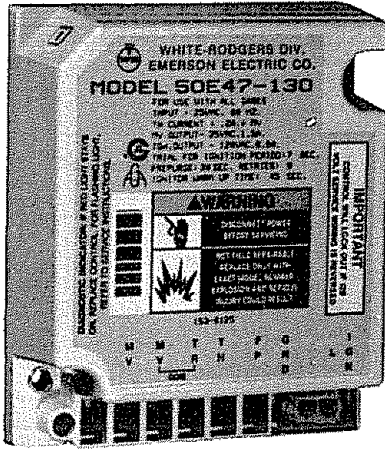
24A51-18	24A51-205	24A52-205	24A55-5
24A51-24	24A51-401	24A53-204	24A56-202
24A51-201	24A52-106	24A53-205	24A56-203
24A51-203	24A52-204	24A54-16	

## MODEL 24A34 COMPETITIVE CROSS REFERENCE



42/387 24A34-3

White-Rodgers Type Number	Heater Voltage	T.O.D. Number	Klixon Number
24A34-1 (Fan)	24	15SH1 309571	60000AOM
24A34-2	24	15SH1 309572	A012 60000AOM
24A34-3 (Fan)	24	15SH2 309573	E017 60000EOM
24A34-4	24	15SH2 309574	51172-22 60000EO49
24A34-5	24	15SH21 309575	51172-32
24A34-6	24	15SH22 309576	51172-33
24A34-14	24	15SH241 309671	—
24A34-15	24	12S50 305232	—



42/387 50E47-150 Microprocessor based  
H.S.I. Control

## IGNITION MODULE FOR HOT SURFACE IGNITION (H.S.I.) SYSTEMS

THE HOT SURFACE IGNITION (H.S.I.) UNIT IS A MICROPROCESSOR BASED GAS IGNITION CONTROL DESIGNED PRIMARILY FOR DIRECT IGNITION AND BURNER SUPERVISION APPLICATIONS SUCH AS GAS FURNACES, BOILERS, WATER HEATERS AND OTHER SIMILAR DEVICES. IN GENERAL, AN H.S.I. SYSTEM CONSISTS OF A LINE VOLTAGE 767A SERIES SILICON CARBIDE IGNITOR, A 760 REMOTE SENSE ELECTRODE, A 24 VOLT AC 50E47 IGNITION-DETECTION CONTROL AND A 24 V AC REDUNDANT GAS VALVE. THE SYSTEM FEATURES DIRECT MAIN BURNER IGNITION, REMOTE SENSING, PREPURGE, RETRY FOR IGNITION AND A FIXED TIME FOR FLAME LOCKOUT TIME.

### FEATURES

- Models with two different lockout safety times
- Prepurge
- Ignition retries (some models)
- Keyed wiring
- Remote sense capability
- Microprocessor self-check system for operational integrity prior to each cycle
- A G A. design certified and C.G.A. certified

**Prepurge** — The prepurge feature allows the operation of an induced draft blower to purge the combustion chamber during the period between initial thermostat contact closure to the start of the ignition cycle.

**Retry** — The retry feature allows the control to re-initiate an ignition sequence in the event that flame is undetected after the initial try for ignition. Two retries (for a total of three attempts at ignition) are permitted before system lockout, thus helping to reduce unnecessary service call-backs.

**Recycle** — If flame is detected, then lost, the 50E47 control will repeat the ignition sequence for a total of four (4) "recycles". After four (4) unsuccessful ignition "recycle" attempts, the control will go into system lockout.

### SPECIFICATIONS:

**Electrical Rating:** 24 VAC, 60Hz, 0.2 amps.

**Ambient Operating Range:** -40 to +175 °F (-40 to +79 °C)

**Flame-Out Recognition Time:** 0.8 seconds maximum.

**Dimensions:** 1½" H x 4" W x 5" D.

**Mounting:** Panel mount or 4" x 4" junction box

Type Number	Lockout Time	Ignitor Warm-Up Time	50E47 Prepurge Time (In seconds)	Retries
50E47-50	4 seconds	45 seconds	30 seconds	2
50E47-150	7 seconds	45 seconds	30 seconds	2

### CROSS REFERENCE

50E47-50	Replaces 50E47-60, 50E47-70
50E47-150	Replaces 50E47-140, 50E47-160, 50E47-170



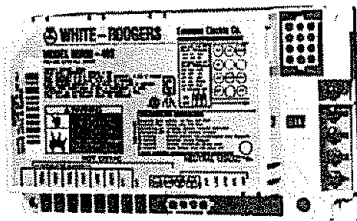


### 50A55 INTREGATED FURNACE CONTROL

THE 50A55-XXX IS AN AUTOMATIC GAS INTERRUPTED IGNITION CONTROL EMPLOYING A MICROPROCESSOR TO CONTIUALLY MONITOR, ANALYZE, AND CONTROL THE PROPER OPERATION OF THE GAS BURNER, INDUCER, AND FAN. SIGNALS INTERPRETED DURING CONTINUAL SURVEILLANCE OF THE THERMOSTAT AND FLAME SENSING ELEMENT INITIATE AUTOMATIC IGNITION OF THE BURNER, SENSING OF THE FLAME, AND SYSTEM SHUTOFF DURING NORMAL OPERATION.

THE CONTROL INCORPORATES SYSTEM FAULT ANALYSIS FOR QUICK GAS FLOW SHUTOFF, COUPLED WITH AUTOMATIC IGNITION RETRY UPON SENSING A FAULT CORRECTION.

#### PRECAUTIONS



42/387 50A55  
Microprocessor based  
Integrated  
Furnace Control

**Contractor tip:**  
• Check ground  
• Reset system

#### WARNING

**Furnace equipped with combustion air blower. Continous flashing diagnostic indicator warns of a problem that could cause personal injury or fire.**  
**Turn off gas supply BEFORE turning off electrical power.**  
**Call qualified serviceman.**  
**Not field repairable.**

#### GENERAL PRECAUTION

Application of this type of control may cause flame rollout on initial startup and could cause personal injury and/or property damage  
Replace only with exact model number, including dash number Failure to use exact replacement control could cause personal injury and/or property damage

#### NOTE

If in doubt about whether your wiring is millivolt, line, or low voltage, have it inspected by a qualified heating and air conditioning contractor, electrician, or someone familiar with basic electricity and wiring  
Do not exceed the specification ratings  
All wiring must conform to local and national electrical codes and ordinances  
This control is a precision instrument, and should be handled carefully. Rough handling or distorting components could cause the control to malfunction

#### CAUTION

To prevent electrical shock and/or equipment damage, disconnect electric power to system, at main fuse or circuit breaker box, until installation is complete

#### WARNING

Do not use on circuits exceeding specified voltage Higher voltage will damage control and could cause shock or fire hazard.  
Do not short out terminals on gas valve or primary control to test Short or incorrect wiring will damage thermostat and could cause personal injury and/or property damage.

#### SPECIFICATIONS FOR 50A55-143, 285, 286\*\*, 438\*\*

##### ELECTRICAL RATINGS [ @ 77° F (25° C) ]:

**Input Voltage:** 25 VAC 50/60 Hz

**Max. Input Current @ 25 VAC:** 0.35 amp

##### Relay Load Ratings:

Valve Relay: 1.5 amp @ 25 VAC 50/60 Hz 0.6 pf

Ignitor Relay: 6.0 amp @ 120 VAC 50/60 Hz resistive

##### Flame Current Requirements:

Minimum current to insure flame detection: 1 µ DC

Maximum current for non-detection: 0.1 µ DC\*

Maximum allowable leakage resistance: 100 M ohms

\*Measures with a DC microammeter in the flame probe lead

##### OPERATING TEMPERATURE RANGE:

-40° to 175°F (-40° to 80°C)

**HUMIDITY RANGE:** 5% to 93% relative humidity (non-condensing)

**MOUNTING:** Surface mount multipoise

##### Timing Specs: (@ 60 Hz)\*\*

Flame Establishing Time: 0.8 sec minimum

Flame Failure Response Time: 0.8 sec maximum

\*\* At 50 Hz, all timing specifications should be increased by 20%

**Gases Approved:** Natural, Manufactured, Mixed, Liquid Petroleum, and LP Gas Air Mixtures are all approved for use



## SPECIFICATIONS FOR 50A55-143, -285, -286, -438

TIMING SPECIFICATIONS (All times are in seconds, unless noted otherwise)

TYPE NUMBER	50A55-143	50A55-285	50A55-286	50A55-438
Pre-Purge	30	0	0	0
Trial for Ignition Period	7	7	7	6
Ignition Activation	4	4	4	3
Retries	6 times	2 times	2 times	2 times
Valve Sequence Period	49	21	21	18
Interpurge	60	60	60	60
Post-Purge	0	15	15	5
Lockout Time	678	272	272	269
Delay to Heat On	15, 30, 45, 60	30	30	45
Delay to Heat Off	60, 90, 120, 180	90	60, 90, 120, 180	90, 120, 150, 210
Delay to Cool Off	110	45	45	0, 80
Air Cleaner terminal	Yes	Yes	N/A	Yes
Humidifier terminal	Yes	Yes	N/A	N/A
Replaces 50A50-XXX	-110, -111, -112, -113, -143	-205, -206, -207, -285, -288, -295	-209, -286, -296	-405, -406, -408, -438, -471, -472, -473, -474

## PRECAUTIONARY, SYSTEM LOCKOUT, AND DIAGNOSTIC FEATURES

### PRECAUTIONARY FEATURES

The following precautionary features are built into the 50A50 control.

1. If, at any time, the high temperature limit or flame rollout sensor open, the gas is deenergized
2. If, at any time, flame is sensed when the gas valve is deenergized, the circulator blower and inducer fan are energized at high speed and the system is locked out
3. If, at any time, the rollout switch opens, the circulator blower and inducer fan are energized at high speed and the system is locked out.
4. If, at any time during a call for heat, the high limit and/or auxiliary high limit open, the circulator blower and inducer fan are energized at high speed.

### SYSTEM LOCKOUT FEATURES

When system lockout occurs, the gas valve is deenergized, the circulator blower is energized at heat speed, and, if flame is sensed, the inducer blower is energized. The diagnostic indicator light will flash or glow continuously to indicate system status **(System lockout will never override the precautionary features described above.)**

To reset the control after system lockout, do one of the following:

1. Interrupt the call for heat at the thermostat for at least one second (if flame is sensed with the gas valve deenergized, interrupting the call for heat at the thermostat will **not** reset the control.
2. Interrupt the 24 VAC power at the control for at least one second. You may also need to reset the flame rollout sensor switch.

### DIAGNOSTIC FEATURES

The 50A50 control continuously monitors its own operation and the operation of the system. If a failure occurs, the LED light on the control will flash a failure code. **If the failure is internal to the control, the light will stay on continuously. In this case, the entire control should be replaced, as the control is not field-repairable.**

#### 50A50-143, -285, -286

If the sensed failure is in the system (external to the control), the LED will flash in the following flash-pause sequences to indicate failure status (each flash will last approximately 0.25 seconds, and each pause will last approximately 2 seconds).

Flash-Pause Sequence	Operation/Failure Status
1 flash, then pause	System lockout
2 flashes, then pause	Pressure switch stuck closed
3 flashes, then pause	Pressure switch stuck open
4 flashes, then pause	Open high limit switch
5 flashes, then pause	Open rollout switch
Continuous flashing (no pause)	Flame has been sensed when no flame should be present (no call for heat)

The LED will also flash once at power-up.

#### 50A50-438

If the sensed failure is in the system (external to the control), the LED will flash in the flash-pause sequences shown in the table below to indicate operation or failure status

Flash-Pause Sequence	Operation/Failure Status
Continuously ON	Internal control failure
Continuously OFF	No power, or control failure
Flashing slow	Normal operation w/no call for heat
Flashing fast	Normal operation w/call for heat
2 flashes, then pause 2 sec.	System locked (no flame sensed)
3 flashes, then pause 2 sec.	Pressure switch problem
4 flashes, then pause 2 sec.	Thermal protection device open
5 flashes, then pause 2 sec.	Flame sensed with gas valve off

Slow flash rate = 0.25 seconds on, 0.75 seconds off

Fast flash rate = 0.25 seconds on, 0.25 seconds off

The LED will also flash once at power-up.

# HOT SURFACE IGNITION CONTROLS (H.S.I.)



## SILICON CARBIDE HOT SURFACE IGNITOR

THE WHITE-RODGERS 767 HOT SURFACE IGNITOR IS A HIGHLY RELIABLE IGNITION SOURCE THAT IS NOT AS POSITION SENSITIVE AS SPARK IGNITION SYSTEMS BECAUSE IT PROVIDES A MUCH LARGER SURFACE AREA TO IGNITE THE GAS. THE IGNITOR PROVIDES THREE TIMES MORE ENERGY THAN THAT OF A STANDARD PILOT BURNER. THE IGNITOR CAN BE USED WITH EITHER A 15, 17, OR 45 SECOND WARM UP TIME SYSTEM.

### FEATURES

- All universal replacements have 5.5" leads rated at 250°C/480°F, and are usable with either 15, 17 or 45 second H.S.I. systems
- A G A design certified and C G A certified

### SPECIFICATIONS

Electrical Rating: 120 VAC, 60Hz, 5.0 amps

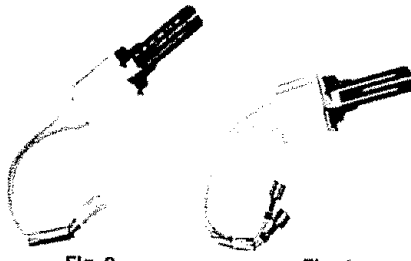


Fig. 3

Fig. 4

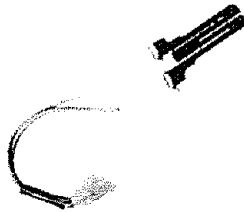


Fig. 5

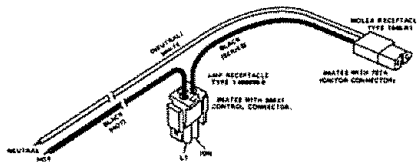
Universal Replacement Type Number*	Replaces O.E.M. Type Number	O.E.M. Type		Both O.E.M. & Replacement*	
		Lead Length	Lead Insulation Temperature Rating	Electrical Connection	Ceramic Insulator Mounting Locator
F767A-361	767A-301	4-1/2"	200°C	two (2) terminal receptacle with .093 male pins	tab on r.h. side (see figure #3)
	767A-306	6"	200°C		
	767A-350	4-1/2"	250°C		
	767A-354	9"	250°C		
	767A-361	9"	250°C		
F767A-365	767A-310	4-1/2"	200°C	1/4" female spade terminals, uninsulated.	tab on r.h. side (see figure #4)
	767A-365	9"	250°C		
F767A-366	767A-311	4-1/2"	200°C	2 terminal receptacle with .084 male pins	tab on r.h. side (see figure #5)
	767A-364	4-1/2"	250°C		
	767A-366	9"	250°C		

\*All universal replacements have 5.5" leads rated at 250°C

## HARNESS CONNECTOR FOR HOT SURFACE IGNITION (H.S.I.) SYSTEMS

THE HARNESS CONNECTS THE 767A IGNITOR WITH THE 50E47 IGNITION MODULE. THE WIRE AND CONNECTORS ARE RATED AT 105°C.

### FEATURES



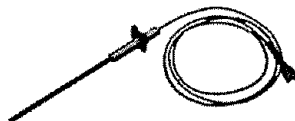
F115-XXXX  
Harness Connector

Type Number	Lead Lengths		
	Control	Series	Ignition
F115-0100*	24"	24"	24"

\*If harness lead lengths are not sufficient for application, contact O.E.M. for exact replacement harness

## FLAME SENSOR FOR HOT SURFACE IGNITION (H.S.I.) SYSTEMS

THE FLAME SENSOR CAN BE MOUNTED REMOTELY ON MULTIPLE BURNER OR ADJACENT TO IGNITOR ON OTHER APPLICATIONS AND IS DESIGNED TO DETECT THE PRESENCE OF FLAME. IF NOT DETECTED WITHIN THE SPECIFIED SAFETY TIME, IGNITION WILL LOCK-OUT OR INITIATE ONE OR MORE RETRIES.



42/387 760-401  
Flame Sensor

### FEATURES

- High quality Alumina ceramic insulator
- High temperature Kanthal flame rod material that can withstand 1800°F
- Teflon insulated (250°C rating) lead wire.
- Single screw, plated steel mounting bracket
- A G A design certified and C G A certified

Type Number	Lead Length	Electrical Connection
760-401	30"	1/4" female spade terminal

TO ORDER THE ABOVE PARTS USE 42/387

# PRODUCT CROSS REFERENCE



OEM Part No.	Wholesale Part No.
50E47-60	50E47-50
50E47-70	50E47-50
50E47-140	50E47-150
50E47-170	50E47-150
50E47-160	50E47-150
50E47-60	50E47-50

OEM Part No.	Wholesale Part No.
36E01-105	36E36-304
36E01-106	36E36-304
36E01-204	36E36-304
36E01-205	36E36-304
36E01-206	36E36-304
36E01-211	36E36-304
36E01-221	36E36-304
36E01-223	36E36-304
36E01-225	36E36-304
36E01-226	36E36-304
36E01-227	36E36-304
36E01-233	36E36-304
36E01-235	36E36-304
36E01-240	36E36-304
36E01-242	36E36-304
36E01-243	36E36-304
36E01-244	36E36-304
36E01-245	36E36-304
36E01-248	36E36-304
36E01-253	36E36-304
36E01-257	36E36-304
36E01-259	36E36-304
36E01-305	36E36-304
36E01-307	36E36-304
36E01-308	36E36-304
36E01-310	36E36-304
36E01-311	36E36-304
36E01-312	36E36-304
36E36-003	36E36-304
36E36-004	36E36-304

36E36-108	36E36-304
36E36-201	36E36-304
36E36-216	36E36-304
36E36-220	36E36-304
36E36-227	36E36-304
36E36-230	36E36-304
36E36-232	36E36-304
36E36-235	36E36-304
36E36-237	36E36-304
36E36-238	36E36-304
36E36-243	36E36-304
36E36-244	36E36-304
36E36-245	36E36-304
36E36-248	36E36-304
36E36-252	36E36-304
36E36-256	36E36-304
36E36-263	36E36-304
36E36-265	36E36-304
36E36-266	36E36-304
36E36-267	36E36-304
36E36-268	36E36-304
36E36-272	36E36-304
36E36-273	36E36-304
36E36-274	36E36-304
36E36-277	36E36-304
36E36-278	36E36-304
36E36-279	36E36-304
36E36-280	36E36-304
36E36-281	36E36-304
36E36-282	36E36-304
36E36-284	36E36-304
36E36-285	36E36-304
36E36-286	36E36-304
36E36-287	36E36-304
36E36-288	36E36-304
36E36-303	36E36-304
36E36-304	36E36-304
36E36-305	36E36-304
36E36-313	36E36-304
36E36-317	36E36-304
36E36-318	36E36-304

36E97-201	36E98-304
36E97-204	36E98-304
36E97-205	36E98-304
36E97-206	36E98-304
36E98-201	36E98-304
36E98-202	36E98-304
36E98-203	36E98-304
36E98-204	36E98-304
36E98-205	36E98-304
36E98-206	36E98-304
36E98-207	36E98-304
36E98-304	36E98-304

OEM Part No.	Wholesale Part No.
767A-309	F767A-356
767A-356	F767A-356
767A-303	F767A-357
767A-353	F767A-357
767A-357	F767A-357
767A-301	F767A-361
767A-306	F767A-361
767A-350	F767A-361
767A-354	F767A-361
767A-361	F767A-361
767A-310	F767A-365
767A-365	F767A-365
767A-311	F767A-366
767A-364	F767A-366
767A-366	F767A-366

760-401
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## COMPETITIVE CROSS-REFERENCE FOR 36E GAS VALVES

VR8345M4802	36E36-304*
VR8304M2501	36E36-304
VR8304M3509	36E36-304
VR8304M4507	36E36-304*
VR8204A2076	36E36-304
VR8204A2258	36E36-304
VR8204A2266	36E36-304
VR8204M1091	36E36-304
VR8204M8005	36E36-304
VR8204M8013	36E36-304
VR4304M4519	36E36-304*
VR8305M3506	36E36-304

VR8205A2024	36E36-304
VR4305M4532	36E36-304*
VR8204H1006	36E98-304
VR8204H1014	36E98-304
VR8304H3505	36E98-304
VR8304H4503	36E98-304
VR8205H1003	36E98-304
VR8205H1011	36E98-304
VR8205H1052	36E98-304
VR8205H8024	36E98-304
VR8305H4005	36E98-304

720-051	36E36-304
720-079	36E36-304
720-070	36E98-304
720-072	36E98-304
720-050	36E98-304
720-052	36E98-304

\*For capacities over 210,000 BTUH use 36C68-423



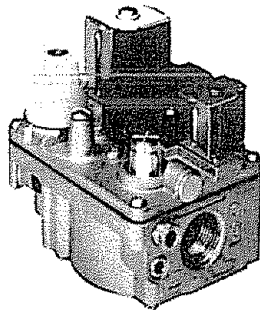
**(HSI) CROSS REFERENCE**

<b>Integrated Furnace Controls</b>		
<b>OEM</b>	<b>OEM PART No.</b>	<b>WHOLESALE Part No.</b>
ICP	50A50-110	50A50-113
ICP	50A50-111	50A50-113
ICP	50A50-112	50A50-113
Amana	50A50-205	50A50-295
Amana	50A50-206	50A50-295
Amana	50A50-207	50A50-295
York	50A50-209	50A50-296
Trane	50A50-405	50A50-408
Trane	50A50-406	50A50-408

<b>HSI Ignition-Detection Controls</b>		
<b>OEM</b>	<b>OEM PART No.</b>	<b>WHOLESALE Part No.</b>
Trane	50E47-60	50E47-50
York	50E47-70	50E47-50
ICP	50E47-140	50E47-150
ICP	50F47-60	50E47-50
Amana	50E47-170	50E47-150
Multiple	50E47-101	50E47-130
Multiple	50E47-160	50E47-150

**Product cross reference comparisons do not imply that all products compared are available, or in the case of functional equivalency, that performance and other characteristics are perfectly comparable. For critical applications, review specifications prior to purchase.**

<b>Proven Pilot/DSI/HSI Redundant Gas Valves</b>		
<b>OEM</b>	<b>OEM PART No.</b>	<b>WHOLESALE Part No.</b>
Multiple	36E01-204	36E36-304
Trane	36E01-221	36E36-304
Trane	36E01-222	36E36-304
Goodman	36E01-233	36E36-304
York	36E01-243	36E36-304
Snyder General/ICP	36E01-244	36E36-304
Snyder General/ICP	36E01-245	36E36-304
Rheem	36E01-247	36E36-304
York	36E01-248	36E36-304
American Dryer	36E01-257	36E36-304
H.B. Smith	36E01-308	36E36-304
H.B. Smith	36E01-310	36E36-304
Snyder General/ICP	36E03-205	36E38-301
Snyder General/ICP	36E03-206	36E38-302
Heil Quaker/ICP	36E03-209	36E38-301
Heil Quaker/ICP	36E03-217	36E38-302
Trane	36E03-238	36E38-301
Vaillant	36E03-304	36E38-302
Heatilator	36E36-003	36E36-304
Heatilator	36E36-004	36E36-304
Multiple	36E36-105	36E36-304
Multiple	36E36-106	36E36-304
Carrier	36E36-201	36E36-304
Heil Quaker/ICP	36E36-216	36E36-304
York	36E36-220	36E36-304
Amana	36E36-230	36E36-304
Carrier	36E36-232	36E36-304
Heil Quaker/ICP	36E36-235	36E36-304
Heil Quaker/ICP	36E36-237	36E36-304
Heil Quaker/ICP	36E36-238	36E36-304
Lennox	36E36-243	36E36-304
Snyder General/ICP	36E36-244	36E36-304
Snyder General/ICP	36E36-245	36E36-304
Heil Quaker/ICP	36E36-248	36E36-304
Trane	36E36-252	36E36-304
Snyder General/ICP	36E36-256	36E36-304
Carrier	36E36-263	36E36-304
Weil McLain	36E36-265	36E36-304
Weil McLain	36E36-266	36E36-304
Weil McLain	36E36-267	36E36-304
Carrier	36E36-303	36E36-304
Carrier	36E36-305	36E36-304
York	36E38-206	36E38-302
York	36E38-207	36E38-301
ICP	36E38-212	36E38-302
ICP	36E38-213	36E38-302
ICP	36E38-214	36E38-301
Rheem	36E86-201	36E86-302
Trane	36E86-204	36E86-302
Utica	36E86-205	36E86-302
Trane	36E86-207	36E86-302
Utica	36E86-303	36E86-302



42/387 36E86

## 36E REDUNDANT GAS VALVE

THE 36E COMBINATION GAS MANIFOLD IS A COMPACT MULTIFUNCTION VALVE DESIGNED TO MEET THE REQUIREMENTS FOR USE WITH ALL TYPES OF INTERMITTENT IGNITION SYSTEMS (PROVEN PILOT, DIRECT SPARK IGNITION AND HOT SURFACE IGNITION). ALONG WITH ITS COMPACT SIZE, ALL VALVE ADJUSTMENTS AND FEATURES, AS WELL AS THE SYSTEM INTERFACE WIRING PANEL, HAVE BEEN DESIGNED ON THE TOP SURFACE OF THE CONTROL FOR SIMPLIFIED SERVICING AND EASY ACCESSIBILITY. THE 36E GAS VALVE IS DESIGNED TO MEET TODAY'S REQUIREMENTS FOR CAPACITY AND SIZE.

### FEATURES

- Poppet style manual valve (capable of withstanding high inlet pressures)
- Conical inlet and outlet screens protected from pipe damage.
- Keyed wiring
- Direct acting solenoid valve with high sealing force
- Controlled gasket clinch between castings to withstand high inlet pressures
- Tamper-resistant screws.
- May be mounted horizontal, vertical and 90° from horizontal
- All valves have pilot filter, adjustable pilot pressure and manual shut-off valve
- A.G.A. and C.G.A. design certified

### SPECIFICATIONS

**Electrical Rating:** 0.54 amps.

**Regulator Adjustment Range:** Natural gas, 2.5 to 5.0" W.C.  
L.P. gas, 7.0 to 12.0" W.C.

**Maximum Pressure Rating:** ½ PSI (14.0" W.C.)

**Swing Radius:** 3/16"

**Ambient Operating Range:** -40 to +175°F (-40 to +79°C)

Type Number	Coil Voltage	Inlet-Outlet Size	Capacity A.G.A. Standard Gas*	Total Reg. Capacity	Electrical Connection	Regulator Setting	Step Opening	Gas Type	System Usage	Reducer Bushing Kit	Side Taps
36E36-304†	24 VAC, 60 Hz	½" x ¾"	140,000	210,000	3 spade terminals ¼"	3.5" W.C.	—	Natural	Proven Pilot, HSI and DSI	Yes	Yes
36E36-301†	24 VAC, 60 Hz	½" x ¾"	140,000	210,000	3 spade terminals ¼"	3.5" W.C.	1.2" W.C.	Natural	Proven Pilot, HSI and DSI	Yes	Yes
36E36-302†	24 VAC, 60 Hz	½" x ¾"	140,000	210,000	3 spade terminals ¼"	10.0" W.C.	2.5" W.C.	L.P.	Proven Pilot, HSI and DSI	Yes	Yes
36E93-304	24 VAC, 60 Hz	½" x ¾"	140,000	210,000	5 spade terminals	3.5" W.C.	—	Natural	Proven Pilot with Pressure Switch	No	No
N 36E98-304	24 VAC, 60 Hz	½" x ¾"	140,000	210,000	3 spade terminals ¼"	3.5" W.C.	Slow Open, No Step	Natural	Proven Pilot, HSI, DSI	Yes	No

† Pilot fittings included with valves

N = New product.

## H.S.I. GAS VALVE CROSS REFERENCE

O.E.M. Control Type Number	W-R Replacement Type Number	O.E.M. Control Type Number	W-R Replacement Type Number	O.E.M. Control Type Number	W-R Replacement Type Number
36C68-423	36C68-423	36E01-308	36E36-304	36E36-201	36E36-304
36E01-103	36E36-304	36E01-310	36E36-304	36E36-210	36E36-304
36E01-105	36E36-304			36E36-216	36E36-304
36E01-106	36E36-304			36E36-220	36E36-304
36E01-201	36E36-304			36E36-227	36E36-304
36E01-204	36E36-304	36E03-205	36E38-301	36E36-230	36E36-304
36E01-205	36E36-304	36E03-206	36E38-302	36E36-232	36E36-304
36E01-206	36E36-304	36E03-209	36E38-301	36E36-235	36E36-304
36E01-221	36E36-304	36E03-211	36E38-301	36E36-237	36E36-304
36E01-223	36E36-304	36E03-215	36E38-302	36E36-238	36E36-304
36E01-225	36E36-304	36E03-217	36E38-302	36E36-244	36E36-304
36E01-226	36E36-304	36E03-224	36E38-301	36E36-245	36E36-304
36E01-227	36E36-304			36E36-254	36E36-304
36E01-233	36E36-304			36E36-255	36E36-304
36E01-238	36E36-304	36E03-301	36E38-302	36E36-303	36E36-304
36E01-240	36E36-304			36E36-304	36E36-304
36E01-241	36E36-304			36E36-305	36E36-304
36E01-243	36E36-304				
36E01-244	36E36-304				
36E01-245	36E36-304	36E36-1	36E36-304		
36E01-248	36E36-304	36E36-2	36E36-304	36E38-301	36E38-301
36E01-305	36E36-304	36E36-105	36E36-304	36E38-302	36E38-302
36E01-307	36E36-304	36E36-106	36E36-304		

Product cross reference comparisons do not imply that all products compared are available, or in the case of functional equivalency, that performance and other characteristics are perfectly comparable. For critical applications, review specifications prior to purchase.

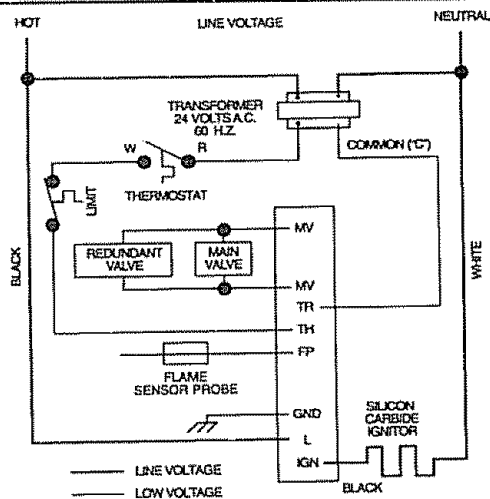


## SYSTEM APPLICATIONS

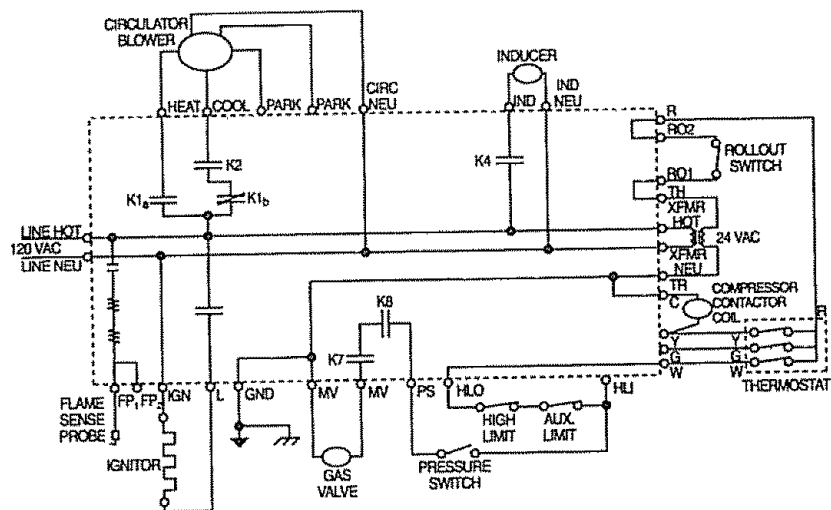
### HOT SURFACE IGNITION SYSTEMS

**HSI CONTROL.** The thermostat calls for heat and energizes the HSI control. If the system is equipped with prepurge, the purge fan is energized and power will be delayed thirty seconds before application of power to the silicon carbide ignitor. If prepurge is not selected, the ignitor is powered within one second. The ignitor heats up and at the end of the heating period, the redundant and main valves are opened. A flame must be detected within a fixed time period or both valves close, the ignitor is turned off and the HSI control locks out unless the system is equipped with retry. Retry indicates the ignition sequence will be repeated for a total of three tries if flame is undetected or lost within 30 seconds of ignition.

**Accessories:** HSI Control, Sense Electrode, Silicon Carbide Ignitor.



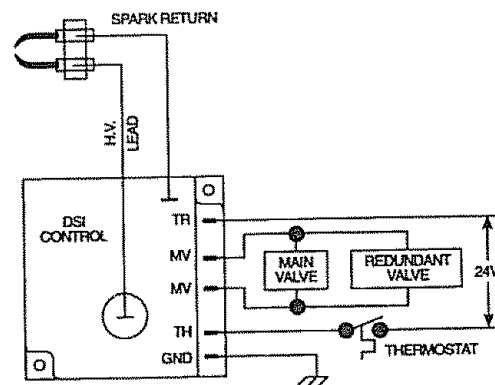
**INTEGRATED CONTROL.** The 50A50 Integrated Hot Surface Ignition control employs a microprocessor to continuously monitor, analyze, and control the proper operation of the gas burner, inducer, and fan. Signals interpreted during continual surveillance of the thermostat and flame sensing element initiate automatic ignition of the burner, sensing of the flame, and system shut-off during normal operation. The control incorporates system fault analysis for quick gas flow shut-off, coupled with automatic ignition retry upon sensing a fault correction.



### DIRECT SPARK IGNITION SYSTEM

The thermostat calls for heat and simultaneously energizes the DSI control module and both redundant and main gas valves. Sparks at the ignition electrodes ignite the gas at the main burner. Flame is sensed through the electrodes by the flame detection circuit and shuts off the sparking. If flame is not established within a fixed time period (lock-out time) both valves close, sparking ceases and the control module locks out.

**Accessories:** DSI Control, Electrodes





# 36E GAS VALVE INFORMATION

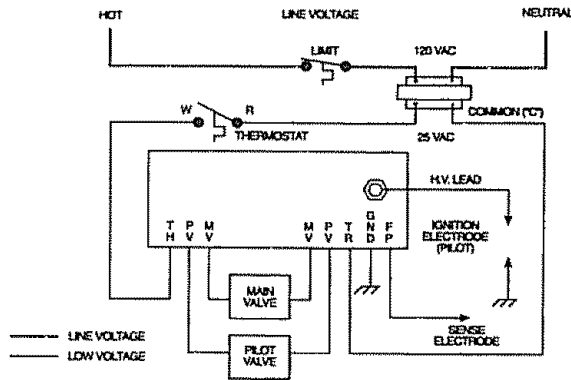


## SYSTEM APPLICATIONS

### PROVEN PILOT SYSTEM

The thermostat calls for heat and simultaneously energizes the pilot valve and the Proven Pilot control. Sparking from the ignition electrode to the pilot burner ignites the gas at the pilot burner. Flame is sensed by the flame detection circuit which energizes the main valve. Main burner gas is ignited and sparking ceases once a pilot flame is detected.

**Accessories:** Proven Pilot Control, Pilot Burner Assembly



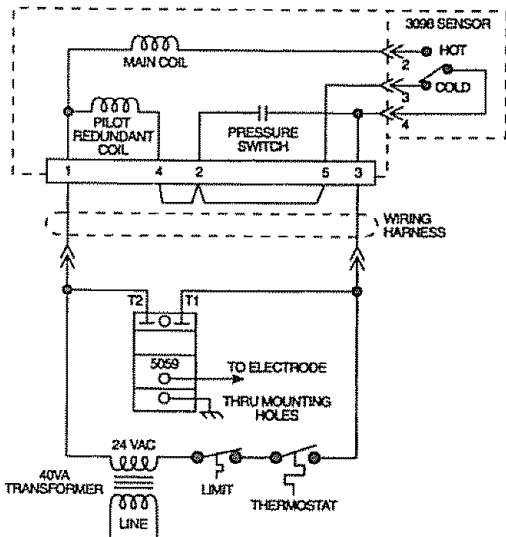
### CYCLE PILOT SYSTEM

The thermostat calls for heat and simultaneously energizes pilot solenoid and pilot relight control. Pilot valve opens and relight begins sparking. Gas flow activates the pressure switch. Sparks ignite pilot gas. Once the flame is detected, the sparks stop. After sufficient heat is sensed by the Mercury Flame Sensor, the main valve is energized and the system is in operating mode (Fig. 1)

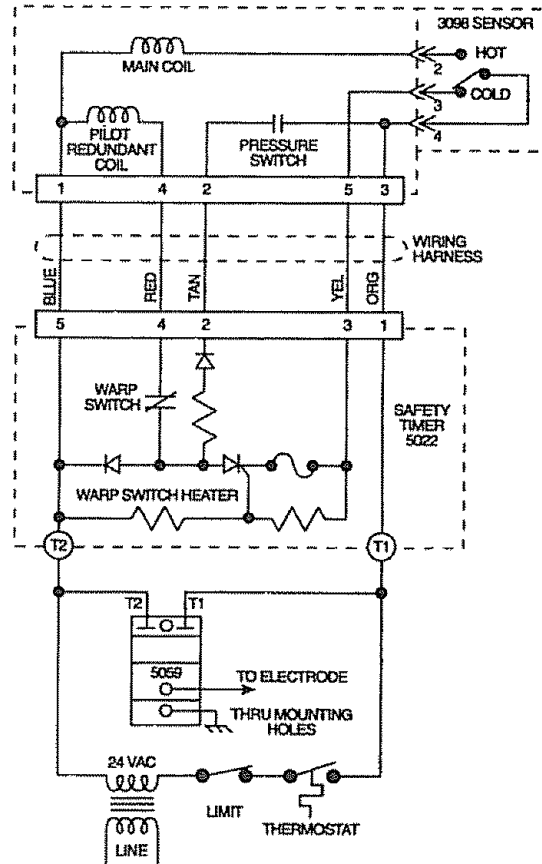
The schematic for "ALL GASES," figure 2, includes a safety timer which acts to close the main gas valve, turns off the pilot redundant coil and locks out the system should a flame not be detected within a fixed period of time

**Accessories:** Mercury Flame Sensor, pilot Burner/Electrode Assembly, Pilot Relight Control, Safety Timer (for all gas systems)

Cycle Pilot Harnesses		
Harness Length	Natural Gas Type No.	All Gases Type No.
36"	F115-0087	F115-0083



**NATURAL GAS  
Figure 1**

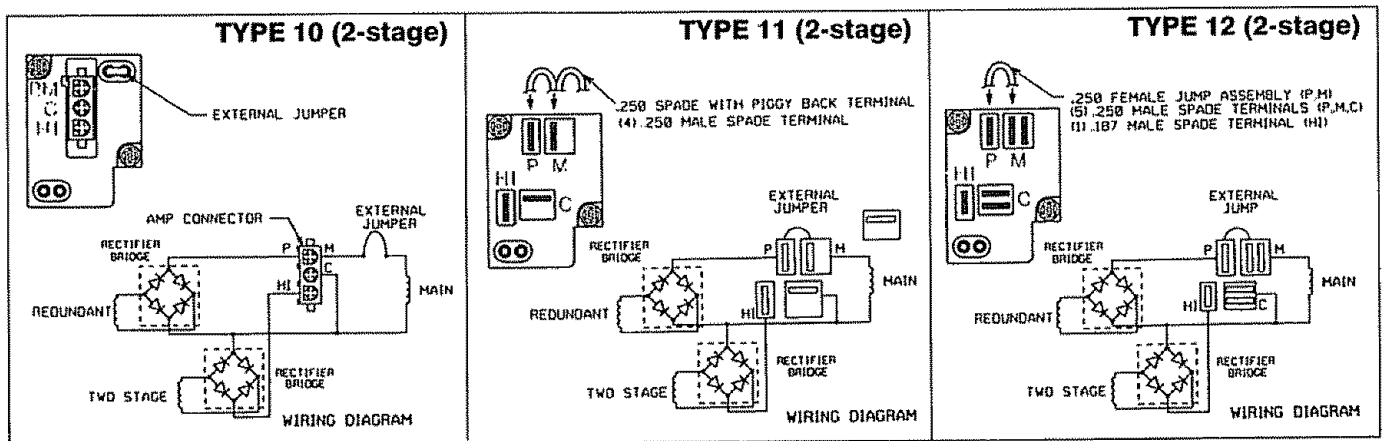
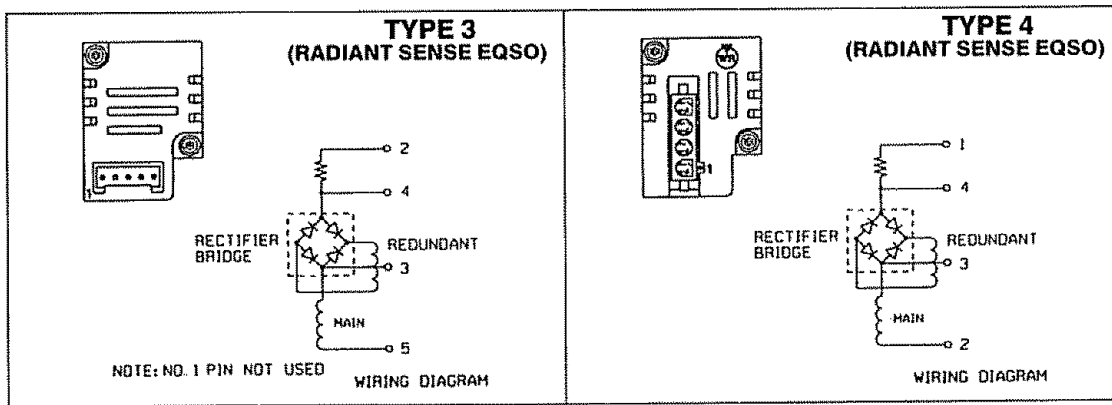
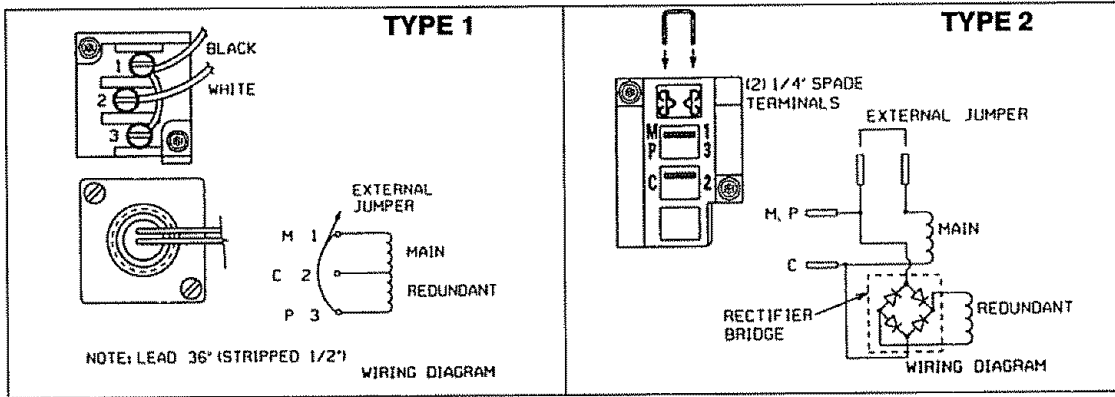


**ALL GASES  
Figure 2**



**ELECTRICAL PANEL/CONNECTIONS**

**HOT SURFACE IGNITION**

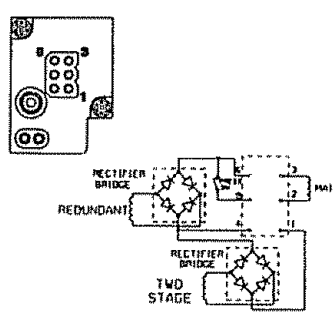
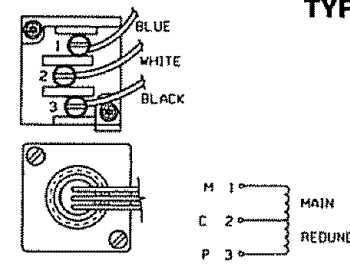
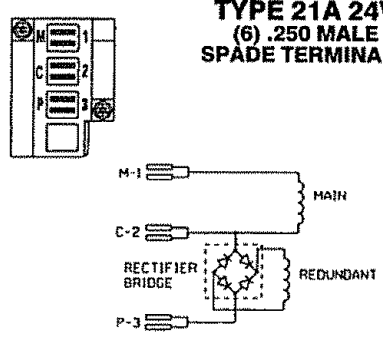


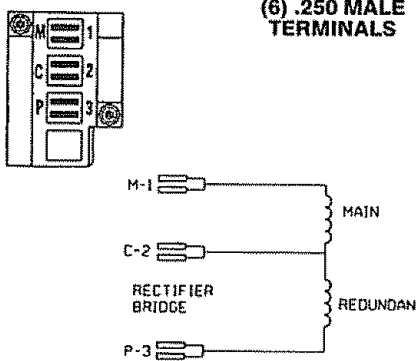
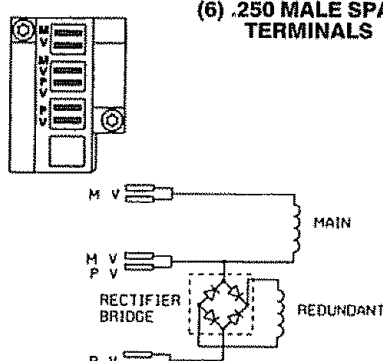
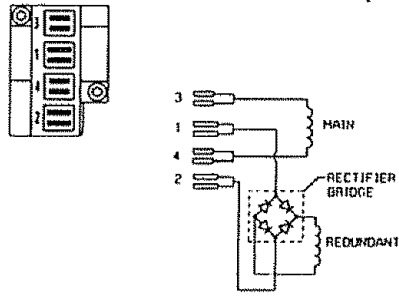
# 36E GAS VALVE INFORMATION



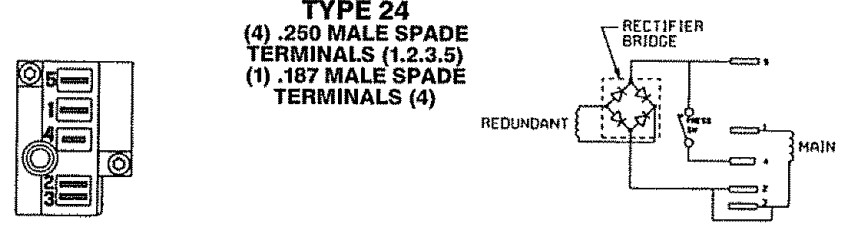
## ELECTRICAL PANEL/CONNECTIONS

### PROVEN PILOT

<p style="text-align: center;"><b>TYPE 13 (2-stage)</b></p>  <p style="text-align: center;">WIRING DIAGRAM</p>	<p style="text-align: center;"><b>TYPE 20</b></p>  <p style="text-align: center;">NOTE: LEAD 36" (STRIPPED 1/2")</p> <p style="text-align: center;">WIRING DIAGRAM</p>	<p style="text-align: center;"><b>TYPE 21A 24V (6) .250 MALE SPADE TERMINALS</b></p>  <p style="text-align: center;">WIRING DIAGRAM</p>
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<p style="text-align: center;"><b>TYPE 21B 120V (6) .250 MALE TERMINALS</b></p>  <p style="text-align: center;">WIRING DIAGRAM</p>	<p style="text-align: center;"><b>TYPE 22 (6) .250 MALE SPADE TERMINALS</b></p>  <p style="text-align: center;">WIRING DIAGRAM</p>	<p style="text-align: center;"><b>TYPE 23 (4) .250 MALE SPADE TERMINALS (1.2)</b></p>  <p style="text-align: center;">WIRING DIAGRAM</p> <p style="text-align: center;"><b>(4) .187 MALE SPADE TERMINALS (3.4)</b></p>
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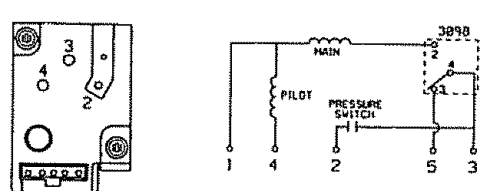
**TYPE 24  
(4) .250 MALE SPADE  
TERMINALS (1.2.3.5)  
(1) .187 MALE SPADE  
TERMINALS (4)**



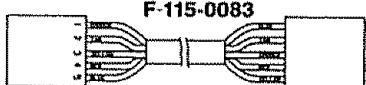
WIRING DIAGRAM

### CYCLE PILOT

**TYPE 30**

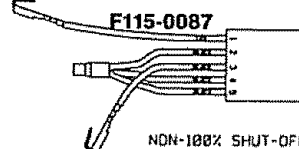


WIRING DIAGRAM



**F-115-0083**

100% SHUT-OFF  
HARNESS ASSEMBLY



**F115-0087**

NON-100% SHUT-OFF  
HARNESS ASSEMBLY



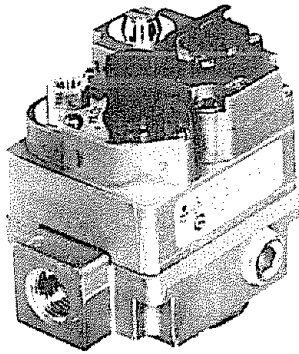
# GAS VALVE CROSS REFERENCE

## 36C AND 36E VALVE WHITE-RODGERS TO WHITE-RODGERS

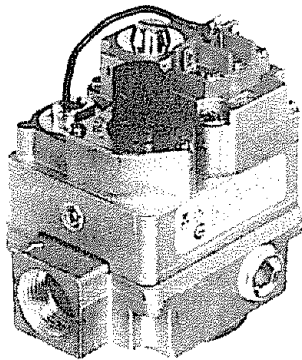
O.E.M. Control Type Number	W-R Replacement Type Number	O.E.M. Control Type Number	W-R Replacement Type Number	O.E.M. Control Type Number	W-R Replacement Type Number
36C01-212	36C01-405#	36C67-183	36C67-188	36E01-240	36E36-304#
36C01-282	36C01-405#	36C68-209	36C68-209	36E01-241	36E36-304#
36C01-302	36C01-405#	36C68-212	36C68-423	36E01-243	36E36-304#
36C01A-284	36C01A-405#	36C68-218	36C68-423	36E01-244	36E36-304#
36C01Z-282	Consult O E M	36C68-229	Consult O E M	36E01-245	36E36-304#
36C02-176	See # Below	36C68-259	Consult O E M	36E01-248	36E36-304#
36C02-278	See # Below	36C68-261	36C68-423	36E01-305	36E36-304#
36C03-200	36C03-200	36C68-423	36C68-423	36E01-307	36E36-304
36C03-205	36C03-434	36C68-429	Consult O E M	36E01-308	36E36-304#
36C03-211	36C03-434#	36C68-434	36C68-423#	36E01-310	36E36-304#
36C03-221	36C03-333	36C68-441	36C68-423#	36E01A-246	Consult O E M
36C03-222	36C03-434#	36C68A-229	Consult O E M	36E02-201	Consult O E M
36C03-228	36C03-333	36C68A-241	Consult O E M	36E02-202	Consult O.E.M
36C03-230	36C03-434#	36C74-201	Consult O E M	36E03-205	36E36-301
36C03-233	36C03-433	36C74-205	36C74-413#	36E03-206	36E36-302
36C03-234	36C03-333	36C74-210	Consult O E M	36E03-209	36E36-301
36C03-245	36C03-434	36C74-215	36C74-413	36E03-211	36E36-301
36C03-251	36C03-434#	36C74-219	Consult O E M	36E03-215	36E36-302
36C03-255	36C03-434#	36C74-227	Consult O E M	36E03-217	36E36-302
36C03-258	36C03-434	36C74-305	36C74-413#	36E03-224	36E36-301
36C03-270	Consult O.E.M	36C74-313	36C74-413#	36E03-235	Consult O E M
36C03-300	36C03-300	36C76-224	Consult O.E.M	36E03-238	Consult O.E.M
36C03-305	36C03-333	36C76-406	36C76-406	36E03-301	36E36-302
36C03-309	36C03-433	36C76-407	36C76-406	36E03-304	Consult O E M
36C03-310	36C03-333	36C76-408	36C76-420	36E32-101	Consult O E M
36C03-322	36C03-434#	36C76-420	36C76-420	36E32-102	Consult O E M
36C03-333	36C03-333	36C76-427	Consult O.E.M	36E32-201	Consult O E M
36C03-400	36C03-400	36C84-201	36C84-412	36E32-232	Consult O E M
36C03-409	36C03-434	36C84-209	36C84-412	36E33-301	Consult O.E.M
36C03-410	36C03-433	36C84-220	36C84-421	36E36-1	36E36-304
36C03-433	36C03-433	36C84-227	36C84-427#	36E36-2	36E36-304#
36C03-445	36C03-434#	36C84-231	36C84-421	36E36-105	36E36-304
36C03C-435	Consult O.E.M	36C84-235	36C84-235	36E36-106	36E36-304#
36C03U-333	36C03U-333	36C84-240	36C84-445	36E36-201	36E36-304
36C03U-409	36C03U-433	36C84-252	36C84-445#	36E36-210	36E36-304#
36C03U-433	36C03U-433	36C84-253	36C84-445#	36E36-216	36E36-304#
36C04-222	Consult O.E.M	36C84-255	36C84-445#	36E36-220	36E36-304#
36C04U-307	36C04U-307	36C84-258	36C84-412	36E36-227	36E36-304#
36C04U-310	36C04U-438	36C84-304	36C84-412	36E36-230	36E36-304#
36C04U-422	36C04U-438	36C87-300	36C87-444	36E36-232	36E36-304#
36C05-100	Consult O E M	36C90A-207	Consult O E M	36E36-235	36E36-304#
36C06-100	Consult O.E.M	36C92-404	Consult O E M	36E36-237	36E36-304#
36C06-101	36C06-210#	36C94-213	36C94-407#	36E36-238	36E36-304#
36C07-103	Consult O E M	36C94-243	36C94-443	36E36-244	36E36-304#
36C33-301	Consult O.E.M	36C96-203	See # Below	36E36-245	36E36-304#
36C53-200	36C53-418#	36C98-206	Consult O E M	36E36-254	36E36-304#
36C53-213	36C53-418#	36D01-176	Consult O E M	36E36-255	36E36-304#
36C53-222	36C53-418	36D13-405	Consult O.E.M	36E36-303	36E36-304#
36C53-237	36C53-418#	36E01-103	36E36-304#	36E36-304	36E36-304
36C53-305	36C53-418#	36E01-105	36E36-304	36E36-305	36E36-304#
36C53C-204	Consult O E M	36E01-106	36E36-304#	36E37-203	Consult O E M
36C53C-216	Consult O E M	36E01-201	36E36-304#	36E38-206	Consult O E M
36C53U-107	Consult O E M	36E01-204	36E36-304	36E38-207	Consult O.E.M
36C61-210	See # Below	36E01-205	36E36-304#	36E38-301	36E38-301
36C61-222	See # Below	36E01-206	36E36-304	36E38-302	36E38-302
36C61-224	Consult O E M	36E01-221	36E36-304#	36E38A-205	Consult O E M
36C61-232	See # Below	36E01-223	36E36-304#	36E67-201	Consult O.E.M
36C67-100	36C67-189	36E01-225	36E36-304#	36E86-201	36E86-302
36C67-175	36C67-189	36E01-226	36E36-304#	36E86-204	36E86-302
36C67-176	36C67-188	36E01-227	36E36-304#	36E87-204	Consult O.E.M
36C67-177	36C67-188	36E01-233	36E36-304#	36E93-301	36E93-304
36C67-178	36C67-188	36E01-238	36E36-304#	36E93-303	36E93-304

# See special instructions in W-R Control Replacement Information Guide, Unit R-3588

**Product cross reference comparisons do not imply that all products compared are available, or in the case of functional equivalency, that performance and other characteristics are perfectly comparable. For critical applications, review specifications prior to purchase.**



42/387 36C03-333



42/387 36C03U-433

## “36C” REPLACEMENT GAS CONTROL WITH SIDE TAPS

IDEAL FOR GENERAL PURPOSE REPLACEMENT, THESE 36C COMBINATION GAS VALVES ARE FURNISHED WITH NATURAL TO LP CONVERSION KIT, REDUCER BUSHINGS AND SELF-ADHESIVE LABEL WITH PILOT LIGHTING INSTRUCTIONS

### FEATURES

- Valve may be mounted in any position, except upside down.
- Both main valve seat and line-interrupter seal with line pressure, assuring positive gas seal-off
- Inlet screen, pilot gas filter and top operated main valve provide maximum protection against chips and dirt.
- Gas cock knob, pilot adjust screw and regulator adjustment are on top of control.
- Thermocouple connection and combination tab-screw terminals on low voltage models located on top of control for ease of wiring.
- Easy-grip pipe boss simplifies installation. Built-in regulator system provides constant outlet pressure throughout entire usable capacity of valve, regardless of inlet pressure fluctuations
- For use with all gases (F92-0737 LP kit included with each valve)
- Model 36C03 (24v) is for use with thermocouple
- Model 36C03U is for use with 750 millivolt power generator and may be used with 250 millivolt system if nonanticipated room thermostat is used

### SPECIFICATIONS

**Electrical Rating:** 24 VAC 60 Hz, 0.23 amps

**Regulator Setting:** Natural gas, 3 5" W C  
L.P. gas, 11 0" W C.

**Ambient Operating Range:** - 40 to + 175° F (- 40 to + 79° C)

**Maximum Pressure Rating:** ½ PSI (14.0" W C.)

**Pilot Gas Connection:** ¼" compression fitting furnished

**Pressure Tap:** ½" NPT

**Regulator Adjustment Range:** 2.5 to 5.0" W C

Type Number	Coil Voltage	Inlet-Outlet Size	Capacity A.G.A. Standard Gas*	Gas Type	L.P. Conversion Kit	Reducer Bushing Kit	Side Taps	Inlet Pressure Tap
36C03-333	24 VAC, 60Hz	½" x ¾"	230,000	Natural	Yes	Yes	Yes	No
36C03-433	24 VAC, 60Hz	¾" x ¾"	280,000	Natural	Yes	Yes	Yes	Yes
36C03U-433‡	750mV	¾" x ¾"	280,000	Natural	Yes	Yes	Yes	Yes

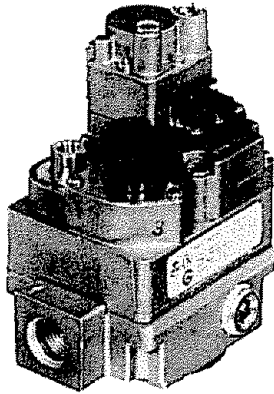
\*See page 230 for capacities of other gases    ‡Vented applications only

### CROSS REFERENCE

W-R Type Number	Replaces		Comments
	Honeywell	Robertshaw	
36C03-333	V800A1070	700-402	
36C03-333	V800A1484	700-402	Order F92-0659 regulated L.P. kit to achieve 11.0" regulation of 36C03-333
36C03-333			
36C03-433	V800A1088	700-406	
36C03-433	V800A1482	700-406	Order F92-0659 regulated L.P. kit to achieve 11.0" regulation of 36C03-433
36C03U-333	VS820A1047	700-504	
36C03U-333			
36C03U-333			
36C03U-433	VS820A1054	700-510	
36C03U-433	VS820A1336	700-515	Order F92-0659 regulated L.P. kit to achieve 11.0" regulation of 36C03U-433

Product cross reference comparisons do not imply that all products compared are available, or in the case of functional equivalency, that performance and other characteristics are perfectly comparable. For critical applications, review specifications prior to purchase.

TO ORDER THE ABOVE PARTS USE 42/387



42/387 36C12-310

## “36C” STEP-OPENING COMPLETE GAS CONTROL WITH NATURAL/LP GAS SELECTOR

24V AC THERMOCOUPLE-OPERATED COMBINATION GAS VALVE PROVIDES DEFINITE REGULATED STEP FOR SMOOTHER IGNITION OF MAIN BURNER.

### FEATURES

- Step-opening main operator; valve initially opens to ½ input for a minimum of two seconds, then fully opens.
- Gas selector (two positions: UP for natural, DOWN for LP) changes regulator setting from one gas to the other.
- Both main seat and flow-interrupter seal with line pressure, assuring positive gas seal-off.
- Inlet screen, pilot gas filter and top-operated main valve provide maximum protection against dirt and chips
- Epoxy encapsulated coil.
- Multipoise mounting (except upside down).
- Easily accessible pilot-gas and pressure taps, combination tab-screw terminals and easy grip pipe boss simplify installation.
- A G A design certified and C G A certified

### SPECIFICATIONS

**Electrical Rating:** 0.23 amps

**Regulator Setting:** Natural gas, 3.5" W.C. L.P. gas, 11.0" W.C.

**Ambient Operating Range:** - 40 to +175°F (- 40 to +79°C)

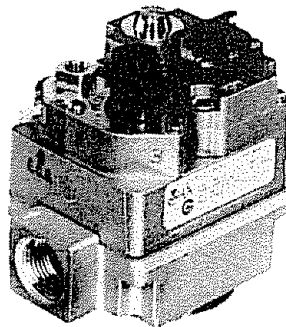
**Maximum Pressure Rating:** ½ PSI (14.0" W.C.)

**Pilot Gas Connection:** ¼" compression fitting furnished.

**Pressure Tap:** ⅙" NPT

**Swing Radius:** 4.5"

Type Number	Coil Voltage	Inlet-Outlet Size	Capacity A.G.A. Standard Gas*	Reducer Bushing Kit
36C12-310	24 VAC, 60 Hz	½" x ¾"	230,000	Yes



42/387 36C53-418

## TYPE 36C53-418 SLOW OPENING COMBINATION GAS VALVE

MODEL 36C53 COMPLETE GAS CONTROL COMBINES INTO A SINGLE COMPACT PACKAGE THE FUNCTIONS OF 3-POSITION GAS COCK, PRESSURE REGULATOR, 100% SHUT-OFF AUTOMATED PILOT AND MAIN OPERATOR. THIS MODEL FEATURES A SLOW OPENING MAIN VALVE THAT PROVIDES A SOFTER IGNITION.

### FEATURES

- Valve can be mounted in any position, except upside down
- Both main valve seat and line-interrupter seal with line pressure, assuring positive gas seal-off.
- For LP, use conversion kits, F92-0737 or F92-0659 (order separately)
- Thermocouple connection and combination tab-screw terminals provided.
- E.C.O. terminal with jumper wire included
- A G A design certified and C G A certified

### SPECIFICATIONS

**Electrical Rating:** 0.23 amps

**Regulator Setting:** Natural gas, 3.5" W.C.

**Regulator Adjustment Range:** 2.5 to 5.0" W.C.

**Ambient Operating Range:** - 40 to +175°F (- 40 to +79°C)

**Maximum Pressure Rating:** ½ PSI (14.0" W.C.)

**Pilot Gas Connection:** ¼" compression fitting furnished

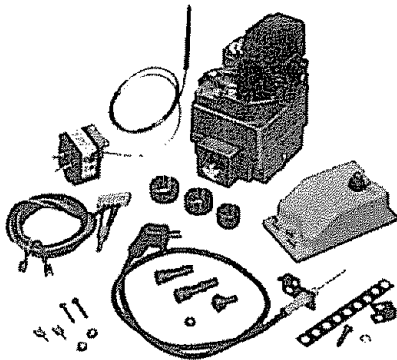
**Pressure Tap:** ⅙" N.P.T

Type Number	Coil Voltage	Inlet-Outlet Size	Capacity A.G.A. Standard Gas*	Gas Type	Reducer Bushing Kit
36C53-418	24 VAC, 60 Hz	¾" x ¾"	280,000	Natural	Yes



## CYCLE-PILOT® RETROFIT KIT

CONTROL SYSTEM DESIGNED TO ELIMINATE STANDING PILOTS BY CONVERTING TO CYCLE - PILOT CONTROLS WITH AUTOMATIC SPARK IGNITION. GAS VALVE FUNCTIONS ARE TERMINATED ON A PRINTED CIRCUIT BOARD THAT EXITS THROUGH THE MERCURY FLAME SENSOR RECEPTACLE HOUSING, ON THE TERMINAL PANEL SIDE. INTERFACING TO THE IGNITION MODULE IS ACHIEVED WITH WIRING HARNESSSES. F115-0064 OR F115-0087 FOR SYSTEMS WITH 5059-23 AND F115-0059 FOR SYSTEMS WITH 50A22-201. HARNESS CONNECTIONS ARE KEYED FOR POSITIVE CONNECTIONS TO THE GAS MANIFOLD. FOR USE ON MOST RESIDENTIAL AND LIGHT COMMERCIAL GAS-FIRED APPLICATIONS.



42/387 21D18-3

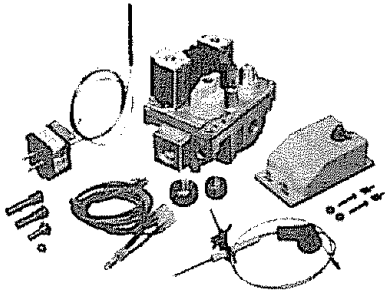
### FEATURES

- Eliminates gas wasted by a standing pilot.
- Eliminates pilot outage problems due to occasional drafts.
- Each package contains the controls and hardware needed for conversion to cycling pilot operation.
- Uses existing pilot burner and wiring
- **PARTS AND ACCESSORIES:**

### SPECIFICATIONS

<b>Ambient Operating Range:</b>	36C84	-40 to 175°F
	36E86	-40 to 175°F
	5059	-40 to 150°F
	50A22	-40 to 150°F
	3098**	-20 to 175°F
	760**	-40 to 482°F

\*\*Element tip to 1400°F

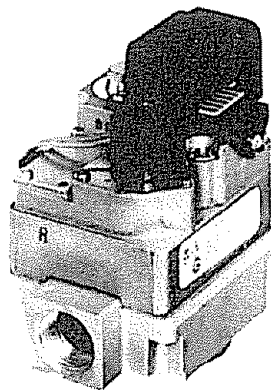


42/387 21D18-14

### PACKAGES AVAILABLE:

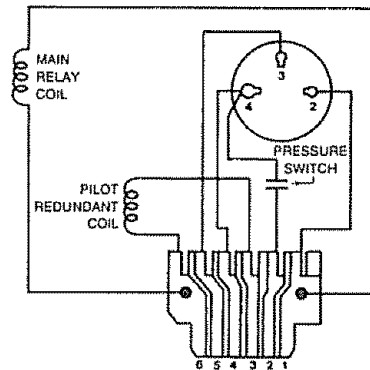
Type Number	Gas Valves	Flame Sensor	Lockout Timer	Electrode Assembly	Pilot Relight	Wiring Harness
21D18-3	36C84-426	3098-134	---	760-56	5059-23	F115-0064
21D18-14	36E86-302	3098-134	---	760-310	5059-23	F115-0087
21D18-15	36C84-436	3098-134	50A22-201	760-56	50A22-201	F115-0059
21D18-16	36C84-426	3098-135	50A22-201	760-56	50A22-201	F115-0059

\* Hard wire to terminals, no printed circuit board wiring harness connection



42/387 36C84-426

### 36C84-426 WIRING DIAGRAM

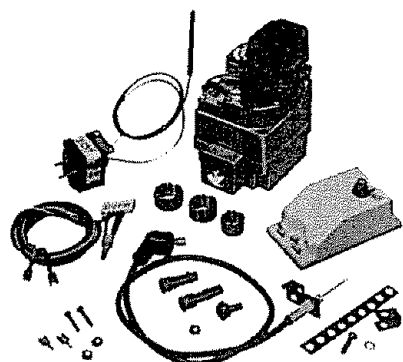






## CYCLE PILOT (Continued)

### SPECIFICATIONS



42/387 21D18-3

Type Number	Coil Voltage 60Hz	Electrical Rating	Inlet-Outlet Size	Capacity A.G.A. Standard Gas*	Gas Type	Description
21D18-3	24 VAC	0.61 amps	3/4" x 3/4"	280,000	Natural only	—
21D18-14	24 VAC	0.54 amps	1/2" x 3/4"	140,000	Natural only	—
21D18-15	24 VAC	0.61 amps	3/4" x 3/4"	280,000	L.P. only	Regulator set @ 11.0" W.C.
21D18-16	24 VAC	0.61 amps	3/4" x 3/4"	280,000	Natural only	Regulator set @ 3.5" W.C.

### EXPLANATION OF TERMS

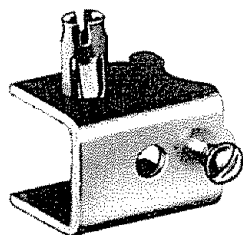
**"Redundant" Gas Valve** — Mechanical arrangement of pilot valve and main valve so that gas flow to the main burners must pass through both valves. Since two valves control main burner gas, if one of the valves fails to seal, the second valve would provide positive shut off. (Electrically, the pilot and main valve solenoids are in parallel.) The "extra" valve is called the redundant valve since it performs the same function as the main valve.

**Mercury Flame Sensor** — Consists of a bulb, capillary and a diaphragm assembly connected to snap-switch. The bulb is inserted into the pilot burner. As the pilot flame heats the bulb, the mercury within the bulb and capillary expands and causes the snap-switch to energize the main valve relay, allowing main gas to flow through the gas series valve. Flame sensors are designed to plug directly into the gas valve or are equipped with spade terminals to be wired to the gas valve.

**Pilot Relight Controls** — Solid-state "boxes" that create the ignition voltages used to ignite pilot gas. Provides automatic relight if pilot flame is extinguished while thermostat is calling for heat. Type 50A22 contains built-in safety timer to de-energize cycle pilot system if pilot is not established within safety timing. (21D18-15)

**Gas Pressure Switch** — Senses incoming gas pressure. When sufficient pressure is sensed, contacts make and act as holding circuit for pilot solenoid. If gas pressure drops when system is in operation, pressure switch contacts open, de-energizing pilot redundant solenoid, stopping all gas flow.

## F6-1794 — PILOT ADAPTER KIT CARRIER, BRYANT, PAYNE — SERIES 19 FURNACES ONLY

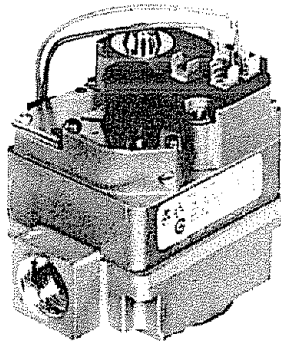


42/387 F6-1794

THIS PILOT BURNER ADAPTER IS DESIGNED TO ADAPT THE MERCURY FLAME SENSOR AND IGNITION ELECTRODE ON THE **CYCLE-PILOT®** IGNITION SYSTEM FOR THE DIFFERENTIAL EXPANSION (BIMETAL) PILOTS USED ON THE FOLLOWING EQUIPMENT:

The pilots in these furnaces do not use a standard thermocouple. A bimetal sensor is located at the back of the burner, and interrupts power to the gas valve circuit if the pilot flame is extinguished. This type of burner can be identified by its rectangular shape and lead wires exiting the back of the burner bracket. The adapter is used to mount the flame sensor bulb to burner bracket.

Type Number	Description
F6-1794	Pilot adaptor kit



42/387 36C68-423

## REDUNDANT GAS CONTROLS FOR INTERMITTENT AND DIRECT SPARK APPLICATIONS

THE FOLLOWING COMBINATION 24 VOLT GAS MANIFOLDS HAVE "REDUNDANT" ELECTRICALLY OPERATED LINE VALVES, ARE APPROVED FOR USE ON SPARK OR HOT SURFACE IGNITION SYSTEMS AND REPLACE MANY O.E.M. GAS VALVES. THEY INCLUDE THE NECESSARY HARDWARE TO ADAPT TO EXISTING SYSTEMS.

### FEATURES

- All valves are 3/4" x 3/4" pipe size.
- Adapter pipe bushings included on some models to provide 1/2" x 3/4", 1/2" x 1/2" and 3/8" x 1/2" pipe sizes.
- Equipped with a redundant pilot solenoid line valve
- Both main seat and line valves seal with line pressure, assuring positive gas shut-off
- May be mounted in any position except upside down.
- Inlet screen and pilot gas filter provide maximum protection against chips and dirt
- Easily accessible pilot-gas connection and outlet pressure tap
- Inlet pressure tap included on some models.
- Gas cock knob, pilot adjust screw and regulator adjustment (on some models) are on top of valve for quick changes when required.
- Large, easy-grip pipe boss speeds installation
- A.G.A. and C.G.A. design certified.

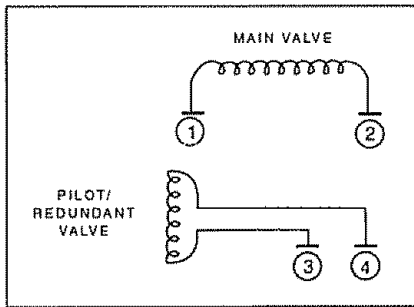
### SPECIFICATIONS

**Electrical Rating:** 0.6 amps

**End to End Dimensions:** 3 15/16"

**Maximum Pressure Rating:** 1/2 PSI (14.0" W.C.)

**Ambient Operating Range:** -40 to +175°F (-40 to +79°C)



36C68 INTERNAL WIRING

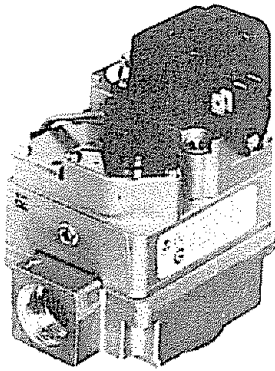
## TYPE 36C68-423

REPLACES MOST 36C68 SERIES GAS VALVES WITH QUICK-CONNECT TERMINALS ON PROVEN PILOT IGNITION SYSTEMS. (WILL NOT REPLACE 36C68Z SERIES VALVES.) VALVE PROVIDES ELECTRICALLY OPERATED PILOT SOLENOID WHICH IS CONTROLLED BY ROOM THERMOSTAT (OR OTHER TEMPERATURE CONTROL). MAIN VALVE IS ENERGIZED BY A MECHANICAL FLAME SENSOR OR ELECTRONIC IGNITION/FLAME DETECTING MODULE. **FOR USE ON L.P. APPLICATIONS WITH USE OF F92-0659 L.P. CONVERSION KIT ONLY IF IGNITION/DETECTION CONTROL WILL PROVIDE ELECTRICAL LOCKOUT IN THE EVENT OF PILOT FLAME FAILURE.**

Type Number	Coil Voltage	Inlet-Outlet Size	Capacity A.G.A. Standard Gas*	Total Reg. Capacity	Regulator Setting	Adjustment Range	Step Opening	Inlet Gas Type	Reducer Pressure Tap	Swing Radius	Bushing Kit
36C68-423	24 VAC, 60 Hz	3/4" x 3/4"	280,000	400,000	3.5" W.C.	2.5 to 5.0" W.C.	None	Natural**	No	3 1/2"	Yes

\*\*For use with L.P. gas, but requires use of F92-0659 Natural to L.P. conversion kit (provided) and use of manometer to read manifold or burner pressure at pressure tap while adjusting. Also requires an ignition/detection control to provide electrical lockout in the event of a pilot flame failure on equipment.

# GAS BURNER CONTROLS



42/387 36C84-412

## MODEL 36C84 CYCLE PILOT GAS VALVES

THESE VALVES ARE EQUIPPED WITH REDUNDANT PILOT SOLENOID MAIN GAS REGULATOR, INTEGRAL GAS PRESSURE SWITCH AND ELECTRICAL CONNECTION ON THE GAS VALVE FOR MERCURY FLAME SENSOR CONNECTION

### SPECIFICATIONS

**Electrical Rating:** 0.6 amps  
**Maximum Pressure Rating:** ½ PSI (14.0" W.C.)  
**Ambient Operating Range:** -40 to +175°F (-40 to +79°C)  
**Regulator Adjustment Range:** Natural gas, 2.5 to 5.0" W.C.  
 L.P. gas, 7.0 to 12.0" W.C.

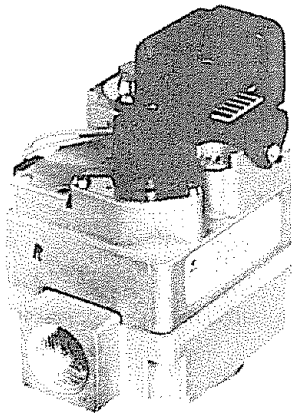
**End to End Dimension:** 3<sup>15</sup>/<sub>16</sub>"

### FEATURES

A.G.A. and C.G.A. design certified

Type Number	Coil Voltage	Inlet-Outlet Size	Capacity A.G.A. Standard Gas*	Use with Mercury Flame Sensor Style	Electrical Connection	Flame Sensor Socket Location	Regulator Setting	Gas Type	L.P. Conversion Kit	Reducer Bushing Kit
36C84-412	24 VAC, 60 Hz	¾" x ¾"	280,000	3098	4 spade terminals, ¼", (C,C,L,S)	side	3.5" W.C.	Natural	Yes	Yes
36C84-445	24 VAC, 60 Hz	¾" x ¾"	280,000	3049	3 spade terminals, ¼", 1 PIN terminal, ⅜" dia. 1 lead, 24", with barrel and ¼" connectors	—	3.5" W.C.	Natural	Yes	Yes

\*\*Use F115-0064 wiring harness for applications using 5059 and F115-0059 wiring harness for applications having 5022 or 50A22 lockout timers



42/387 36C94-407

## MODEL 36C94 SLOW OPENING CYCLE PILOT VALVES

VALVES ARE SLOW OPENER TYPES WITH REDUNDANT PILOT SOLENOID, MAIN GAS REGULATOR, INTEGRAL GAS PRESSURE SWITCH AND THREE STYLES OF ELECTRICAL CONNECTIONS TO THE 24 VOLT COIL. DIRECTLY REPLACES OTHER TYPES OF 36C94 VALVES. REFERENCE THE GAS VALVE SECTION IN THE WHITE-RODGERS CROSS REFERENCE GUIDE

### SPECIFICATIONS

**Electrical Rating:** 0.6 amps  
**End to End Dimensions:** 3<sup>15</sup>/<sub>16</sub>"  
**Swing Radius:** 4"  
**Maximum Pressure Rating:** ½ PSI (14.0" W.C.)  
**Ambient Operating Range:** -40 to +175°F (-40 to +79°C)  
**Regulator Adjustment Range:** 2.5 to 5.0" W.C.

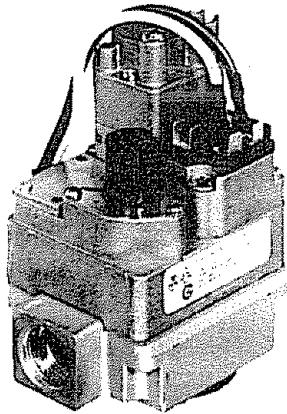
### FEATURES

A.G.A. and C.G.A. design certified

Type Number	Coil Voltage	Inlet-Outlet Size	Capacity A.G.A. Standard Gas*	Use with Mercury Flame Sensor Style	Electrical Connection	Flame Sensor Socket Location	Regulator Setting	Gas Type	L.P. Conversion Kit	Reducer Bushing Kit
36C94-407	24 VAC, 60Hz	¾" x ¾"	280,000	3098	Edge connector to P.C. board**	Side	3.5" W.C.	Natural	Yes	Yes

\*\*Use F115-0064 wiring harness for applications using 5059 and F115-0059 wiring harness for applications having 5022 or 50A22 lockout timers

TO ORDER THE ABOVE PARTS USE 42/387

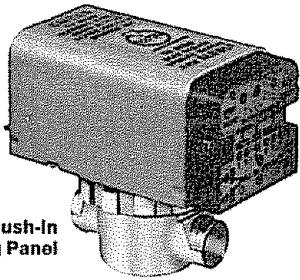


42/387 36C74-413

### TYPES: 36C74-413

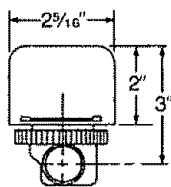
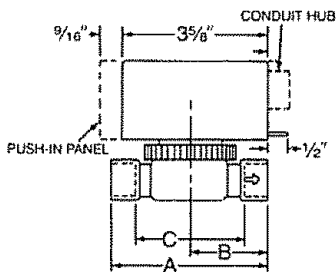
VALVE IS EQUIPPED WITH AN ELECTRICALLY OPERATED PILOT SOLENOID WHICH IS CONTROLLED BY A ROOM THERMOSTAT (OR OTHER TEMPERATURE CONTROL) MAIN VALVE IS SET FOR 3.5" W.C. AND PROVIDES A 0.9" (OR 1.2") W.C. STEP-OPENING (APPROXIMATELY 50% OF FULL FLOW) WHEN ENERGIZED BY A MECHANICAL FLAME SENSOR OR ELECTRONIC IGNITION/FLAME-DETECTION MODULE. STEP PRESSURE TIME IS BETWEEN 2 AND 15 SECONDS, AND IS DIRECTLY RELATED TO BURNER FLOW AND INLET PRESSURE. **NOT FOR USE ON L.P. APPLICATIONS.** REPLACES ONLY 36C74 SERIES GAS VALVES WITH FACTORY STEP PRESSURE SETTINGS OF 0.9" (OR 1.2") W.C. AND QUICK-CONNECT TERMINALS ON PROVEN PILOT IGNITION SYSTEMS. CONSULT THE ORIGINAL EQUIPMENT MANUFACTURER FOR VALVES WITH STEP PRESSURES OTHER THAN 0.9" (OR 1.2") W.C. (THIS VALVE WILL NOT REPLACE 36C74Z SERIES VALVES USED WITH WHITE-RODGERS 50A47 OR 50A48 IGNITION CONTROLS.)

Type Number	Coil Voltage	Inlet-Outlet Size	Capacity A.G.A. Standard Gas*	Regulator Setting	Adjustment Range	Step Opening	Gas Type	Inlet Pressure Tap	Reducer Swing Radius	Bushing Kit
36C74-413	24 VAC, 60 Hz	3/4" x 3/4"	280,000	3.5" W.C.	2.5 to 5.0" W.C.	0.9" W.C.	Natural only	Yes	4 1/2"	Yes



Types With Push-In Wiring Panel and Auxiliary Switch

42/387 13A02-101



## 2-WIRE, 2-WAY COMPACT ZONE VALVES

VALVE STYLES FOR 24V AC WITH CONDUIT HUB, PUSH-IN CONNECTORS, FOR SYSTEMS UP TO 150 PSI. USE WITH 2-WIRE THERMOSTATS.

### FEATURES

- Fits in baseboard enclosures
- Controlled by 2-wire thermostat
- Spanner nut design allows motor assembly to be mounted directly on top of body with no swing radius (turning) required
- Flow-rate through valve can be adjusted. Eliminates need for separate balancing valve.
- Non-synchronous torque motor opens valve and remains energized to hold valve open
- Spring loaded valve disk insures positive seal off.
- Lever-type, non-recycling manual operator
- All operating components accessible from top of valve for easy servicing.
- All valves have sweat fittings
- Types with push-in panel have auxiliary switch to control burner or circulator

### 24 VAC 2-WAY VALVES WITH PUSH-IN WIRING PANEL AND AUXILIARY SWITCH (2.0A at 24 VAC)

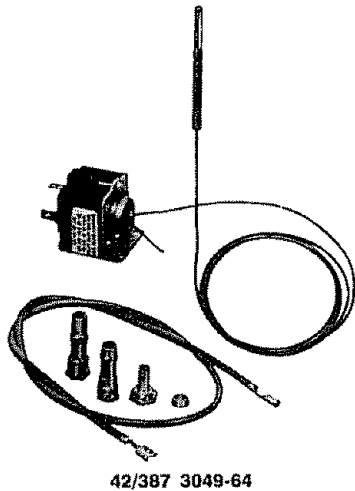
Type Number	Tubing Size (I.D.)	Electrical Rating	Time Cycle	Maximum Differential Across Valve	Maximum System Pressure	Water Temperatures		Friction Loss Equivalents	
						Max.	Min.	CV Factor	Ft. of Tubing
13A02-101	1/2"	0.35A at 24 VAC	Open: 30 sec Close: 20 sec.	30 PSI	150 PSI	250°F (121°C)	40°F (4°C)	5.4	5
13A02-102	3/4"	0.35A at 24 VAC	Open: 30 sec Close: 20 sec.	25 PSI	150 PSI	250°F (121°C)	40°F (4°C)	6.0	22

Valve Size	Dimensions		
	A	B	C
1/2"	2 5/8"	1 5/16"	1 5/8"
3/4"	3 7/8"	1 19/16"	2 3/8"

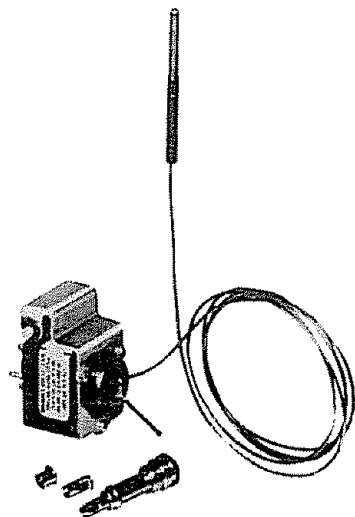


## MERCURY FLAME SENSORS

THE MERCURY FLAME SENSOR IS A MECHANICAL DEVICE THAT PROVES THE EXISTENCE OF AN ACCEPTABLE PILOT FLAME. IT CONVERTS THE HEAT OF A PILOT FLAME TO MOTION WHICH IS USED TO OPEN AND CLOSE A SET OF ELECTRICAL CONTACTS, AND CONSISTS OF A BULB, CAPILLARY, DIAPHRAM, SNAP-SWITCH MECHANISM, AND MERCURY-FILL. WHEN THE BULB IS HEATED BY A PILOT FLAME, THE MERCURY IS VAPORIZED CAUSING PRESSURE IN THE CAPILLARY AND DIAPHRAM. MOVEMENT OF THE DIAPHRAM CAUSES THE SNAP-SWITCH TO OPEN ONE SET OF CONTACTS, AND CLOSE A SECOND SET. THESE CONTACTS CONTROL THE PILOT VALVE AND THE MAIN VALVE.



42/387 3049-64



42/387 3094-118

### SPECIFICATIONS

Type Number	Element Length	Panel Type	Bulb Style	Description
3049-3	26"	A	#5	—
3049-4	33"	A	#2	—
3049-5	48"	B	#3	Stud mount bulb.
3049-15	33"	A	#7	—
3049-18	30"	D	#7	—
3049-33	24"	B	#2	Includes pilot burner.
3049-41	24"	B	#4	—
3049-64*	48"	D	#19	Replaces bulb styles #9 or #13.
3049-115*	48"	D	#20	Replaces bulb styles #17 or #18.
3094-118	48"	C	#13	Replaces 3094-102.
3094-123	30"	G	#9	Includes additional 1/4" spade terminal for fan delay relay.
3098-134*	48"	E	#19	Replaces bulb styles #9 or #13.
3098-135	48"	E	#3	Stud mount bulb.
3098-148	48"	E	#4	—
3098-156*	48"	E	#20	Replaces bulb styles #17 or #18.
3098-522	30"	E	#17	Make before break switch.

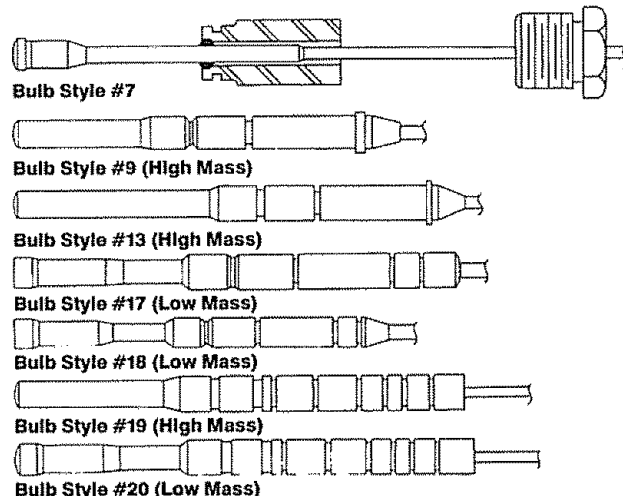
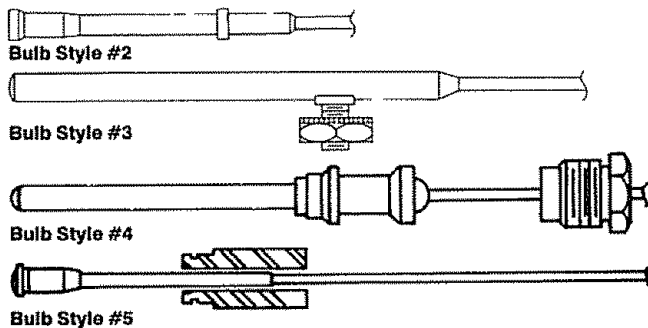
\*Adapter fittings packed with control.

### ELECTRICAL RATINGS:

Type Number	30vAC	120vAC	240vAC
3098-522	30VA	125VA	125VA
All others listed above	3A	1A	0.5A

### FEATURES

- Bulb styles are designed to fit with various OEM applications
- See Cross Reference to OEM control type numbers on next page.
- Adapter fittings to allow use of these mercury flame sensors with competitive burners are packed with controls identified with an asterisk (\*).
- A.G.A. design certified and C.G.A. certified
- Maximum temp. 1450°F at bulb tip.



TO ORDER THE ABOVE PARTS USE 42/387

# MERCURY FLAME SENSOR CROSS REFERENCE

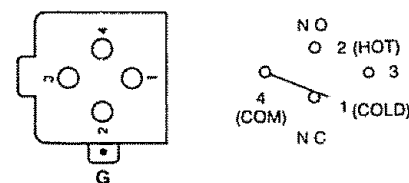
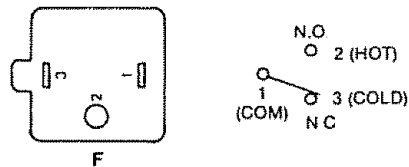
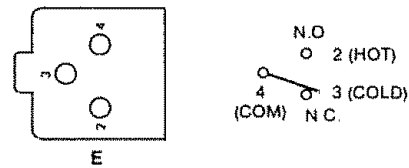
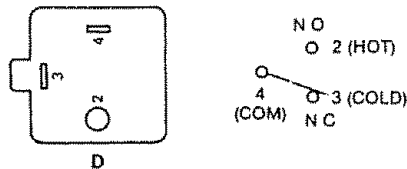
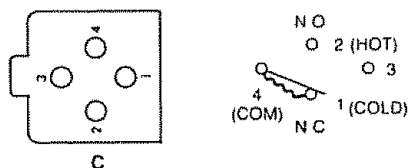
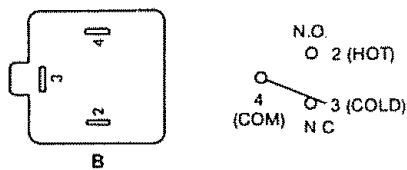
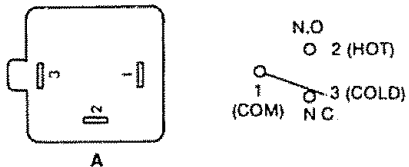


## TYPES WITH SPADE TERMINALS

O.E.M. Number	Original Capillary Length	Original Panel Types**	Suggested Replacement Type Number	O.E.M. Number	Original Capillary Length	Original Panel Types**	Suggested Replacement Type Number
3049-1	30"	A	3049-5	3049-59	30"	B	None*
3049-3	26"	A	3049-3	3049-61	24"	B	3049-64
3049-4	33"	A	3049-4	3049-62	18"	B	None*
3049-5	48"	B	3049-5	3049-64	48"	D	3049-64
3049-6	12"	B	3049-5	3049-66	30"	B	3049-115
3049-7	24"	B	3049-5	3049-68	30"	B	3049-115
3049-11	24"	B	None*	3049-70	30"	B	None*
3049-15	33"	A	3049-15	3049-71	30"	B	3049-4
3049-18	30"	D	3049-18	3049-72	30"	E	None*
3049-20	42"	B	None*	3049-101	24"	B	None*
3049-29	20"	B	3049-4	3049-105	42"	B	3049-115
3049-31	12"	B	3049-33	3049-106	24"	D	3049-115
3049-32	12"	B	3049-33	3049-107	12"	B, D	3049-115
3049-33	24"	B	3049-33	3049-111	24"	B, D	3049-115
3049-36	48"	B	3049-5	3049-112	18"	B, D	3049-115
3049-37	30"	B	3049-5	3049-114	30"	D	3049-115
3049-41	24"	B	3049-41	3049-115	48"	D	3049-115
3049-49	42"	B	3049-64	3049-119	24"	B	3049-115
3049-52	30"	B, D	3049-115	3049-120	30"	B	3049-115
3049-54	30"	B	3049-115	3049-121	18"	B	3049-115
3049-55	30"	A, D	3049-115	3049-537	30"	B	None*
3049-58	30"	B	3049-64	3049-561	24"	B	None*

† Note: refers to a Electrical Quick Shut-Off Resistor

### TERMINAL PANELS CONFIGURATIONS



## PLUG-IN TYPES

O.E.M. Number	Original Capillary Length	Original Panel Types**	Suggested Replacement Type Number	O.E.M. Number	Original Capillary Length	Original Panel Types**	Suggested Replacement Type Number
3094-101	30"	C†	3049-101	3098-141	48"	E	3098-134
3094-102	30"	C†	3094-118	3098-142	30"	E	3098-156
3094-104	30"	C†	3049-104	3098-143	36"	E	3098-156
3094-105	30"	C†	3094-105	3098-147	18"	E	3098-161
3094-111	30"	C†	None*	3098-148	48"	E	3098-148
3094-118	48"	C†	3094-118	3098-149	24"	E	3098-156
3094-122	30"	C	None*	3098-151	26"	E	None*
3094-123	30"	G	3094-123	3098-153	24"	E	3098-156
3094-127	48"	C†	3094-118	3098-156	48"	E	3098-156
3094-131	22"	C†	None*	3098-161	24"	E	3098-134
3098-111	30"	E	3098-134	3098-165	48"	E	3098-134
3098-117	24"	E	3098-135	3098-168	48"	E	3098-156
3098-120	30"	E	3098-135	3098-169	27"	E	3098-134
3098-122	30"	E	3098-156	3098-171	30"	E	3098-156
3098-126	30"	E	3098-156	3098-174	36"	E	3098-156
3098-127	24"	E	3098-149	3098-175	18"	E	3098-149
3098-130	24"	E	3098-156	3098-177	24"	E	None*
3098-131	30"	E	3098-156	3098-178	30"	E	None*
3098-134	48"	E	3098-134	3098-182	24"	E	3098-149
3098-135	48"	E	3098-135	3098-183	12"	E	None*
3098-136	30"	E	3098-134	3098-184	42"	E	3098-134
3098-137	12"	E	3098-148	3098-522	30"	E	3098-522
3098-139	36"	E	3098-148	3098-536	30"	E	None*

\* Consult the O.E.M. for replacement type number.

\*\* Suggested replacement type may have different panel configuration. Some controls experienced modification. Determine proper wiring with the aid of panel diagrams A through G.

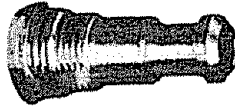


## UNIVERSAL REPLACEMENT THERMOCOUPLES

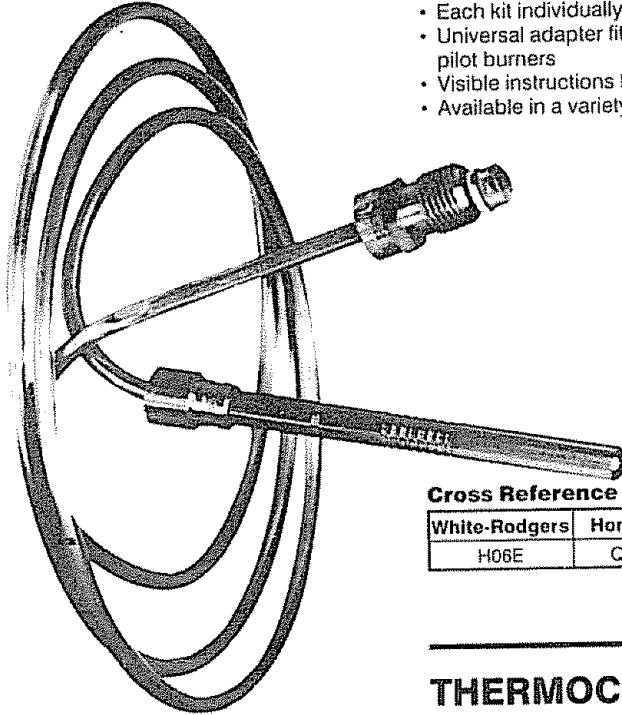
HIGH TEMPERATURE STAINLESS STEEL ELEMENT SPECIALLY DESIGNED FOR UNIVERSAL REPLACEMENT. THERMOCOUPLES ARE PRICED INDIVIDUALLY. ORDER ONLY IN MULTIPLES OF TEN.



F13-0227



F26-0134



### FEATURES

- Stainless steel element construction for prolonged thermocouple life
- Each kit individually enclosed in plastic
- Universal adapter fittings included with each kit for replacing thermocouple in most types of pilot burners
- Visible instructions for quick, easy installation
- Available in a variety of 10-packs in desired thermocouple lengths

### Thermocouples

Type Number	Description
Standard <sup>Ⓢ</sup>	
H06E-36	36" Thermocouples
H06E-48	48" Thermocouples

<sup>Ⓢ</sup>Hot junction maximum temperature rating: 1450°F

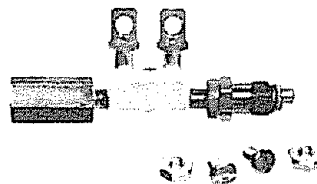
### Cross Reference

White-Rodgers	Honeywell	Johnson	Robertshaw
H06E	Q340A	K19	1980

## THERMOCOUPLE ACCESSORIES

Type Number	Description
F145-1109	High Limit Adapter; energy cut-off for thermocouple; EC09 (9001).

H06E-36



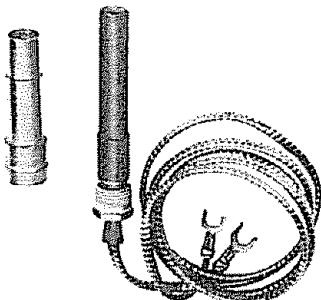
F145-1109

## 750 MILLIVOLT POWER GENERATOR

PROVIDES POWER FOR 750 MILLIVOLT SELF-GENERATION CONTROL SYSTEMS.

### FEATURES

- For replacement of similar screw-in type generators now in field or for use with type E31-12 pilot burner
- G01A-332 has 36 inch armored cable leads with split-spade terminals
- PG9 adapter included with each G01A-332.

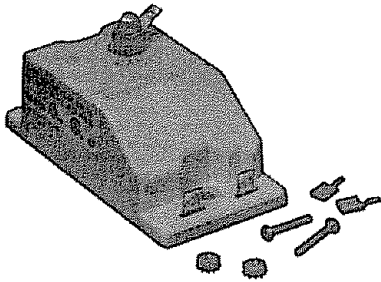


G01A-332

W-R Type Number	Description	Jade Number	Honeywell Number
G01A-332	750 mV with 36" leads (armored cable) and PG9 adapter	PGA-36 (3111)	—

\*Replaces F92-0448

# PILOT RELITE AND LOCKOUT TIMER



42/387 5059-23  
Pilot Relite Control

## PILOT RELITE CONTROL

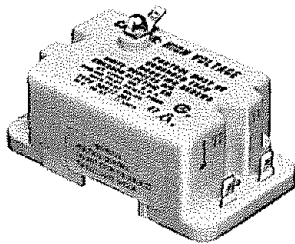
IGNITION CONTROL GENERATES SPARK PULSES TO IGNITE PILOT GAS. THE RELITE CONTROL GENERATES SPARKS UNTIL A PILOT FLAME IS SENSED BETWEEN THE ELECTRODE AND GROUND. THE RELITE CONTROL DETECTS A FLAME THROUGH "FLAME CONDUCTION" (ABILITY OF A FLAME TO CONDUCT A CURRENT). WHEN FLAME CURRENT IS SENSED BETWEEN THE ELECTRODE AND PILOT BURNER GROUND, THE RELITE CONTROL STOPS SPARKING. IF THE FLAME IS EXTINGUISHED DURING THE HEAT CALL, THE RELITE CONTROL WILL BEGIN SPARKING THE INSTANT THE FLAME GOES OUT.

### FEATURES

- A.G.A. design certified and C.G.A. certified.

Type Number	Input Voltage	Electrical Rating	Description
5059-23	24 VAC	0.03 amps	Spark plug and 1/4" spade connectors.

Note: Pilot Relite must be grounded at grounding terminal shown on unit.

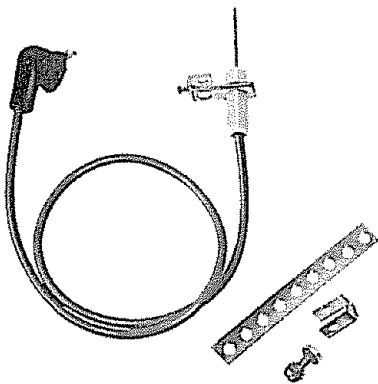


42/387 50A22-201

## COMBINATION RELITE CONTROL AND LOCKOUT TIMER: MODEL 50A22

COMBINES IN ONE ENCLOSURE THE FUNCTIONS OF ONE 5059 TYPE AND ONE 5022 TYPE CONTROLS.

Type Number	Input Voltage	Electrical Rating	Description
50A22-201	24 VAC	0.11 amps	5 wire edge connector used with edge connect gas valves. Spark plug or 1/4" spade connectors.



42/387 760-56

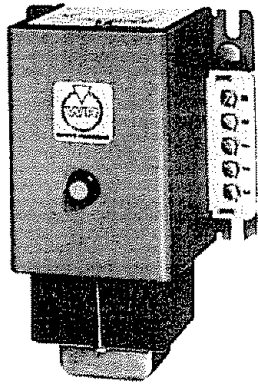
## IGNITION ELECTRODE ASSEMBLIES

USE TYPE 760-56 TO REPLACE CYCLE-PILOT® IGNITION ELECTRODES AND CABLE ASSEMBLIES

Type Number	Description
760-56	24" lead with slip on bracket. Also includes perforated mounting strap for varying applications.

TO ORDER THE ABOVE PARTS USE 42/387





**668-451**  
U.L. recognized, CSA certified.

**668 SERIES KWIK-SENSOR CAD CELL RELAYS**

REPLACES INTERMITTENT IGNITION KWIK-SENSOR CAD CELL RELAYS ON OIL BURNER SYSTEMS WITH 15, 30 OR 45 SECOND SAFETY TIMING. CERTAIN TYPES HAVE UNIQUE SIGNAL-LITE FEATURE WHICH GLOWS WHENEVER SAFETY LOCK-OUT OCCURS

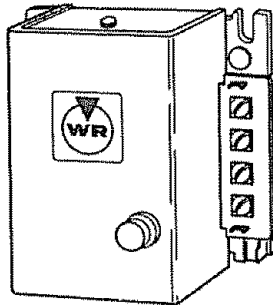
**FEATURES**

- Grey enclosure
- 120 VAC, 60 Hz standard input voltage • 24 VAC control voltage
- Full 10 FLA, 60 LRA, 120 VAC rating on motor relay contacts
- Ignition transformer rating 360 VA (3 0A)
- 10" useable leads • Mounts to 4" x 4" junction box
- Line voltage safety switch eliminates burner run-on in event motor relay contacts weld closed
- Solid state flame detection circuitry is not affected by vibration or high or low ambient temperatures. Suitable for use from - 40 to 150°F (- 40 to 66°C)
- Screw terminals for low voltage connections provide positive contact
- Recycles upon momentary flame failure or power interruption.
- **ACCESSORIES:** F145-0248 — Permits replacement of stack switches with cad cell control without charges in wiring. Special bracket for stack mounting (includes flame detector).

Type Number	Safety Timing	Thermostat Type	Thermostat Anticipator Setting	Safety Lock-out Light	Manual Lock-out Lever	Integral Transformer	Time Start Fan Switch
668-401	45 Sec.	2-Wire	0.4A	No	No	No	No
668-430	45 Sec.	2 or 3 Wire <sup>Ⓞ</sup>	0.4A	Yes	Yes	No	F <sup>Ⓞ</sup> -B
668-451 <sup>Ⓞ</sup>	45 Sec.	2-Wire	0.4A	No	No	40VA	C-W

<sup>Ⓞ</sup> 3-wire series 10.

<sup>Ⓞ</sup> Models with external transformer have safety switch contacts in motor relay (low voltage) circuit

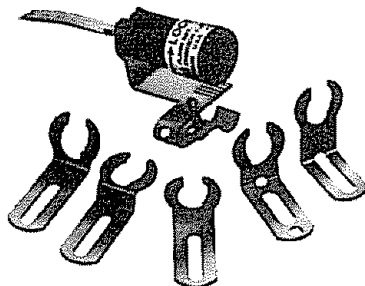


**668-401**

**OIL PRIMARIES CROSS REFERENCE**

W-R Type Number	Replaces Honeywell	Comments
668-401	R8184G1005/4009	MH anticipator setting 0.2 amps/WR anticipator setting 0.4 amps.
668-430	R8184G1138/4009	MH anticipator setting 0.2 amps/WR anticipator setting 0.4 amps.
668-430	R8184G4009	
668-451	R8184M1002	
668-451	R8184M1051	
956-1	C554A1794	Standard Cad Cell Flame Detector
956-154	C554A1463/ C554A1794	Features brackets for multiple applications.

U.L. recognized and C.S.A certified.



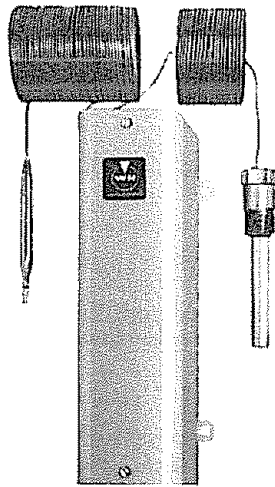
**956-154**  
Includes six brackets

**FLAME DETECTORS**

SOLID STATE ELECTRONIC FLAME DETECTOR WHICH UTILIZES LIGHT INTENSITY TO SENSE THE PRESENCE OF A FLAME IN OIL BURNING HEATING EQUIPMENT.

Type Number	Description
956-154	Universal flame detector with 6 brackets. 60" leads.

TO ORDER THE ABOVE PARTS USE 42/387



42/387 1050-1

## ADJUSTABLE INDOOR-OUTDOOR CONTROL

CUTS FUEL COSTS AND PROVIDES UTMOST COMFORT PERFORMANCE FROM CONVENTIONAL HOT WATER HEATING SYSTEMS; ESPECIALLY IDEAL FOR ZONED SYSTEMS.

### FEATURES

- Fully adjustable reset ratio covers all climate conditions and eliminates stocking controls with different reset ratios
- Well-insertion bulb monitors boiler water temperature, outdoor bulb monitors outdoor temperature. Control modulates water temperature based on reset ratio selected
- Hydraulic action elements unaffected by vibration or moisture
- Easy to wire screw terminals
- Mounting clamp for outdoor bulb included
- F89-0148 well included with control

### SPECIFICATIONS

**Dimensions:** 9" H x 3½" W x 4" D

**Finish:** Grey

**Capillary Length:** 15 feet to inside bulb 30 feet to outside bulb

**Thread Size:** ½" pipe thread

Type Number	Differential	Switch Action	Full Electrical Rating	Motor Rating (Full Load)	
				120 VAC	240 VAC
1050-1	Fixed 10°F (5°C)	Open on Rise	FG* See page 228	14 OA	7 OA

\* Except no 600 VAC

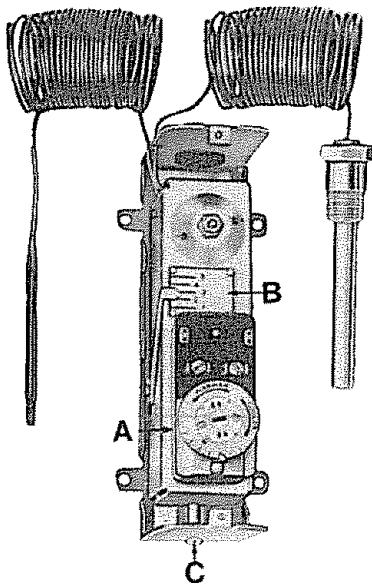
### RESET RATIOS (OUTDOOR TO INDOOR)

Example: For 1.5 to 1 ratio, each 1.5°F drop in outdoor temperature will cause 1°F rise in boiler water.

Reset Ratio	Square Dial Setting
1.5 to 1	1
1 to 1	2.5
1 to 1.5	4.5

### Selecting Square Dial Setting (Round dial set at "N")

Outdoor Design Temperature	Suggested Square Dial Setting					
20°F (-7°C)	3	4.5	—	—	—	—
10°F (-12°C)	2.5	3.5	5	—	—	—
0°F (-17°C)	2	3	4	5	—	—
-10°F (-23°C)	1.5	2.5	3.5	4.5	5	—
-20°F (-29°C)	1	2	3	4	4.5	5
	140	160	180	200	220	240
	Boiler Design Temperature (°F)					



- A. Round dial adjusts comfort level required.
- B. Square dial adjusts for heat-loss of specific installation.
- C. Adjustment screw for changing setting of square dial.

### CROSS REFERENCE DATA

HONEYWELL	W-R	
T475A-1016	1050-1	1050-1 HAS ADJUSTABLE RESET RATIO AND CAPILLARY LENGTH TO REPLACE EVERY MODEL LISTED
T475A-1032	1050-1	
T475A-1057	1050-1	

Charts 1, 2 and 3 show the effect dial settings have on the operating water temperature under varying conditions

The installation setting of the square (heat-loss ratio) dial can be estimated from the table above. Some installations may require minor additional adjustments when first severe weather is encountered.

- If area is too cool at low outdoor temperatures, raise square dial setting
- If area is too warm at low outdoor temperatures, lower square dial setting
- If area is too warm or too cool at all outdoor temperatures, then adjust round dial — cooler or warmer.

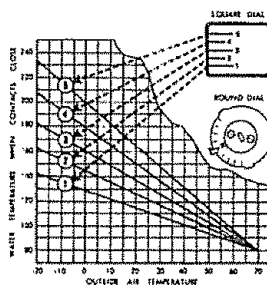


Chart 1 — Round dial set at "N".

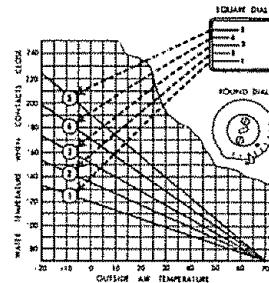


Chart 2 — Round dial set 2 divisions "COOLER" than "N". Each round dial increment equals approximately 5°F (3°C)

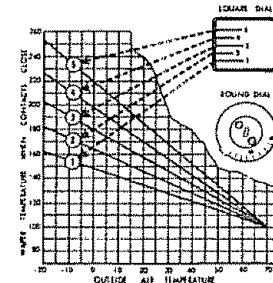
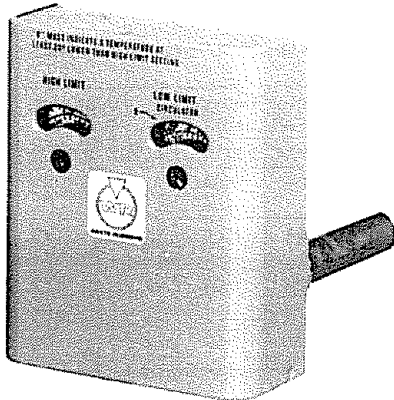


Chart 3 — Round dial set 4 divisions "WARMER" than "N".



## TRIPLE ACTION CONTROL

PERFORMS THREE FUNCTIONS: CONTROLS CIRCULATOR, FURNISHES HIGH LIMIT PROTECTION AND PROVIDES LOW LIMIT CONTROL FOR DOMESTIC HOT WATER SERVICE.



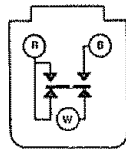
11A61-103

### FEATURES

- Triple action provides high limit, low limit and circulator control
- Two half-round bulbs fit snugly against well for fastest obtainable response to temperature.
- High limit has adjustable dial stop to limit maximum setting
- Dial evenly calibrated in °F and °C for exact setting
- Field convertible for horizontal or vertical mounting
- Furnished with 3/4" N P T. extended shank well
- U.L. listed and C S.A. certified
- **ACCESSORIES:** F89-0072 — Standard shank well

### SPECIFICATIONS

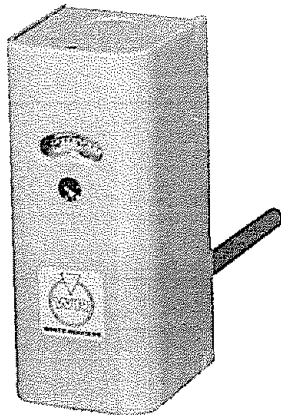
**Dimensions:** 5 3/8" H x 4 3/8" W x 2 1/2" D  
**Finish:** Grey



Contact structure of "SPDT" rated controls

**Switch Action:**  
R-B Open on Rise — R-W Close on Rise

Type Number		Range		Differential		Switch Action	Full Electrical Rating	Motor Rating (Full Load)	
								120 VAC	240 VAC
11A61-103	High Limit	100 to 240°F	38 to 116°C	Fixed 8°F	4 5°C	Open on Rise	HTV	10 0A	6 0A
	Low Limit/ Circulator	100 to 240°F	38 to 116°C	Adj 10 to 40°F	5 5 to 22°C	SPDT	HH	7 4A	3 7A



11D31-1

## WELL IMMERSION SINGLE CONTROL

TYPES FOR USE AS HIGH LIMIT, REVERSE ACTION OR SPDT SWITCHING ACTION; MAY BE MOUNTED EITHER HORIZONTAL OR VERTICAL

### FEATURES

- Extra capillary for extended shank wells
- Special screw terminals with "ears" securely hold solid and stranded wires
- Adjustable differential with direct-read indicator
- Screwdriver adjustments for cut-in and cut-out temperatures
- Knockouts on top and bottom and plenty of wiring room
- Hydraulic action element — fast acting
- HTV rated contacts handle all voltages from millivolt to 240 VAC.
- Models designed as exact competitive replacements (11D05, 11D18, 11D31 series)
- U.L. listed and C S.A. certified
- **ACCESSORIES:** F145-0650 — Well adapter and heat conductive compound; F71-0924 — Well adapter only; F145-0163 — Tube heat conductive compound; Immersion wells —

### SPECIFICATIONS

**Dimensions:** 5 3/8" H x 2 5/16" W x 2 9/16" D  
**Finish:** Grey

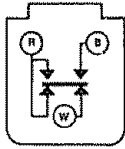
**TYPES WITH BULBS DIRECTLY INTERCHANGEABLE WITH HONEYWELL (2 3/4" x 3/8") (No wells included except 11D18-8.)**

Type Number	Range	Differential	Switch Action	Full Electrical Rating	Motor Rating (Full Load)		Valves and Relays	
					120 VAC	240 VAC	24 VAC	0.3-12v DC
11D18-1 <sup>Ⓢ</sup>	100-240°F (38 to 116°C)	5 to 45°F (3 to 25°C)	Open on Rise	HTV	10 0A	6 0A	6 0A	1 0A
11D18-8 <sup>Ⓢ</sup>	100-240°F (38 to 116°C)	5 to 45°F (3 to 25°C)	Open on Rise	HTV	10 0A	6 0A	6 0A	1 0A
11D55-1	150-290°F (66 to 143°C)	Manual Reset	Open on Rise	HTV	10 0A	6 0A	6 0A	1 0A
11D31-1	100-240°F (38 to 116°C)	7 to 45°F (4 to 25°C)	SPDT	HH	7 4A	3 7A	2 9A	—

<sup>Ⓢ</sup> Well included and U.L. approved adjustable dial stop, factory set at 160°F maximum  
<sup>Ⓢ</sup> Has U.L. approved adjustable dial stop, factory set at 150°F maximum



## WELL IMMERSION SINGLE CONTROL (Continued)



Contact structure of "HH" rated controls

Switch Action  
R-B Open on Rise  
R-W Close on Rise

**TYPES WITH TAPERED BULBS (27/16" x 7/16") (All types include 1/2" standard shank well.)**

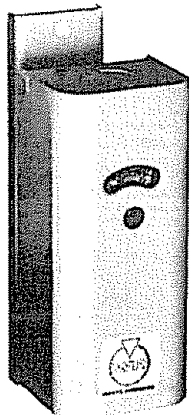
Type Number	Range	Differential	Switch Action	Full Electrical Rating	Motor Rating (Full Load)		Valves and Relays	
					120 VAC	240 VAC	24 VAC	0.3-12v DC
11B05-101	100-240°F (38 to 116°C)	5 to 45°F (3 to 25°C)	Close on Rise	HT	14 0A	7 0A	—	—
11B18-101 <sup>Ⓢ</sup>	100-240°F (38 to 116°C)	5 to 45°F (3 to 25°C)	Open on Rise	HTV	10 0A	6 0A	6.0A	1 0A
11B18-153 <sup>Ⓢ</sup>	35-110°F (2 to 43°C)	Fixed 2°F (1°C)	Open on Rise	HTV	10.0A	6 0A	6.0A	1 0A
1131-102 <sup>Ⓢ</sup>	100-240°F (38 to 116°C)	7 to 45°F (4 to 25°C)	SPDT	HH	7 4A	3.7A	2.9A	—

<sup>Ⓢ</sup> Has U.L. approved adjustable dial stop factory set at 150°F maximum.

<sup>Ⓢ</sup> Has special straight well for 4" x 7/16" straight bulb.

## SURFACE (STRAP-ON) TYPES

ATTACH DIRECTLY TO SURFACE OF PIPE. TYPES FOR USE AS HIGH LIMIT, REVERSE ACTING OR SPDT SWITCHING ACTION CONTROL.



1127-2

Contact structure of "SPDT" rated controls

Switch Action  
R-B Open on Rise  
R-W Close on Rise

### FEATURES

- Strap-on eliminates need for tapping of boiler or draining system.
- Sensing element has twice the contact area of competitive models
- Hydraulic action element can be mounted in any position — No leveling required.
- Dial evenly calibrated in °F and °C for exact setting
- Dustproof steel case
- Differential remains constant through entire range of control.
- Special screw terminals with "ears" securely hold solid and stranded wire.
- Includes pipe strap and mounting screws.
- HTV rated contacts suitable for millivolts to 240 VAC
- U.L. listed and C.S.A. certified.

### SPECIFICATIONS

**Dimensions:** 6 7/8" H (includes plate) x 2 5/16" W x 3 3/16" D.

**Finish:** Grey.

Type Number	Range	Differential	Switch Action	Full Electrical Rating	Motor Rating (Full Load)		Valves and Relays	
					120 VAC	240 VAC	24 VAC	0.3-12v DC
11B02-1 <sup>Ⓢ</sup>	100 to 240°F (38 to 116°C)	Fixed 10°F (5.5°C)	Open on Rise	HTV	10.0A	6 0A	6 0A	1 0A
11B09-2 <sup>Ⓢ</sup>	100 to 200°F (38 to 93°C)	Fixed 10°F (5.5°C)	Close on Rise	HT	14 0A	7 0A	—	—
1127-2 <sup>Ⓢ</sup>	100 to 240°F (38 to 116°C)	Fixed 10°F (5.5°C)	SPDT	HH	7 4A	3.7A	2.9A	—

<sup>Ⓢ</sup> Dial has summer "ON" position.

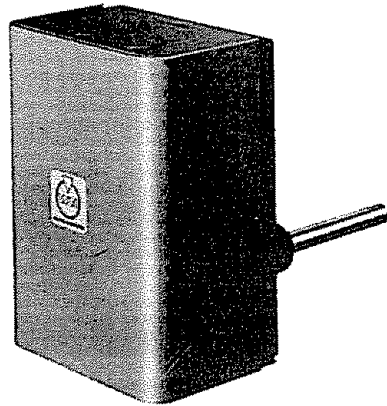
<sup>Ⓢ</sup> Has U.L. approved adjustable dial stop, factory set at 220°F maximum

<sup>Ⓢ</sup> Has U.L. approved adjustable dial stop, factory set at 150°F maximum

### CROSS REFERENCE

W-R Type Number	Replaces Honeywell	Comments
1127-2	L6006C-1018	W-R has fixed differential — Honeywell has adjustable differential Honeywell range is 65 to 200°F.

TO ORDER THE ABOVE PARTS USE 42/387



## COMBINATION HIGH LIMIT/SWITCHING RELAY CONTROLS

REPLACEMENT CONTROLS FOR HOT WATER SYSTEMS WHERE BOILER DOES NOT SUPPLY DOMESTIC HOT WATER.

### FEATURES

- High limit and circulator relay combined in one case and wired to terminal panel.
- Clearly marked terminal panels for thermostat, circulator and burner circuits.
- Knockouts on top and bottom — Plenty of wiring room.
- Can be used on systems zoned with circulators (8B48A) or zone valves (8J48A).
- Dustproof steel case with cover.
- Mounting is directly interchangeable with competition
- 8J48A-209 has 30 VA transformer for external power (zone valves).
- Maximum sensing element temperature is 260°F (127°C) regardless of temperature control setpoint.
- When thermostat calls for heat, the control operates circulator and burner. If water temperature exceeds high limit setting, burner stops but circulator runs until thermostat is satisfied.
- U.L. recognized.
- **ACCESSORIES:** F145-0650 — Well adapter and heat conductive compound; F71-0924 — Well adapter only; F145-0163 — Tube heat conductive compound; Immersion wells —

### SPECIFICATIONS

**Dimensions:** Vertical — 6¼" H x 4¾" W x 3½" D.  
Horizontal — 4¾" H x 6¼" W x 3½" D.

**Finish:** Grey

**Switch Action:** open on rise

**Input Voltage (60 Hz):** 120 VAC

**Thermostat Current:** 0.25A

### ELECTRICAL RATINGS:

Type Number	Circulator Motor 120 VAC	Ignition Transformer 120 VAC	Burner	24 VAC External Lead
				Motorized Zone Valve
8B48A-217	Ⓢ 7.4 FLA, 44.4 LRA	Ⓢ 3.0A	Same as circulator	—
8J48A-209	8.0 FLA, 48.0 LRA	—	0.25 TO 12.0v DC or 0.65A, 24 VAC	Ⓢ 30 VA running 45 VA inrush

Ⓢ Total connected load 2000 VA maximum.

Ⓣ Combined gas valve and motorized zone valve load not to exceed 1.2A

Type Number	Burner Control Voltage	Range		Differential		External Power Available @ 24 VAC	Bulb Size	Accessories
		140 to 240°F	60 to 116°C	Fixed 8°F	4.5°C			
8B48A-217	Line (120 VAC)	140 to 240°F	60 to 116°C	Fixed 8°F	4.5°C	None	3" x ¾"	Ⓢ ②
8J48A-209	Millivolt or Low (24 VAC)	140 to 240°F	60 to 116°C	Fixed 8°F	4.5°C	Yes — 30 VA	3" x ¾"	Ⓢ ① ②

Ⓢ Includes well adapter and heat transfer compound (grease).

① Includes manual switch (AUTO-ON) which will energize burner circuit with system power off/on millivolt system.

② Includes terminals for adding SPDT low limit/circulator control

# IMMERSION WELLS AND PACKING NUTS



## IMMERSION WELLS AND PACKING NUT

### FEATURES

- Wells are used where it is desired that the control operates from the temperature of a liquid in a closed system.
  - The bulb of the control can be removed from an immersion well in the tank wall without draining the boiler or tank.
  - The packing nut can be used with any of the remote bulb types listed.
  - Packing nuts permit closer control than wells because the bulb is directly immersed in the liquid.
- NOTE: WELLS AND PACKING NUTS CANNOT BE USED WITH LIQUIDS THAT ARE CORROSIVE TO BRASS OR COPPER. THESE WELLS ARE NOT RECOMMENDED FOR APPLICATIONS THAT EXCEED 100 PSI WITH 250°F

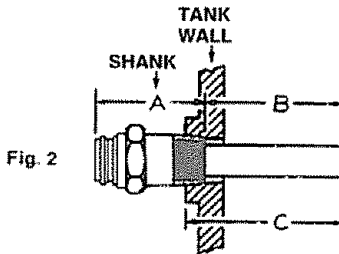
### PACKING NUT

Type Number	Description	Figure Number
F55-0088	Packing nut with 1/2" threads	1



### UNIVERSALLY INTERCHANGEABLE WELLS

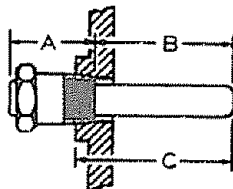
Type Number	Basic Types Well is Used with	Bulb Size of Control Used	Well Description		Figure Number	Dimensions		
			Pipe Size N.P.T.	Shank		A	B	C
F89-0211	All	3 1/2" x 3/8"	1/2"	Standard	2	1 13/16"	3"	3 5/16"
F89-0212	All	3 1/2" x 3/8"	1/2"	Standard Extended	2	3 5/16"	3"	3 5/16"
F89-0213	All	3 1/2" x 3/8"	3/4"	Standard	2	1 13/16"	3"	3 5/16"
F89-0214	All	3 1/2" x 3/8"	3/4"	Standard Extended	2	3 5/16"	3"	3 5/16"
F89-0215	All	3 1/2" x 3/8"	3/4"	Extra Extended	2	4 13/16"	3"	3 5/16"
F89-0216	Same as 89-0213 except plastic sleeve on well for water heaters.							
F89-0217	Same as 89-0214 except plastic sleeve on well for water heaters.							
F89-0218	Same as 89-0215 except plastic sleeve on well for water heaters.							



### WELLS FOR REMOTE BULB CONTROLS (with sleeve for retaining bulb)

Type Number	Basic Types Well is Used with	Bulb Size of Control Used	Well Description		Figure Number	Dimensions		
			Pipe Size N.P.T.	Shank		A	B	C
F89-0007	230, 241, 2A38	7 1/4" x 3/8" and 6 3/4" x 3/8"	1/2"	Standard	3	1 5/8"	8 1/4"	8 5/16"
F89-0027	1609, 1629, 2A23	5 3/4" x 3/8"	1/2"	Standard	3	1 5/8"	6"	6 5/16"
F89-0033	11B06, 11B37, 11B2	3 1/2" x 7/16"	3/4"	Standard	3	1 5/8"	2 13/16"	3 1/8"
F89-0036	11B06, 11B37, 11B2	3 1/2" x 7/16"	1/2"	Standard	3	1 5/8"	2 13/16"	3 1/8"
F89-0148	1050-1	2 15/16" x 7/16"	1/2"	Standard	3	1 5/8"	2 13/16"	3 1/8"

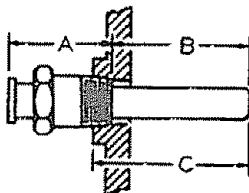
Fig. 3



### For well-immersion controls with front removable well

Type Number	Basic Types Well is Used with	Bulb Size of Control Used	Well Description		Figure Number	Dimensions		
			Pipe Size N.P.T.	Shank		A	B	C
F89-0088	11C18, 11C31, 11C61	2 7/8" x 5/16"	1/2"	Standard	4	1 13/16"	2 13/16"	3 1/8"
F89-0089	8B42, 8F42, 8B43	2 7/8" x 5/16"	3/4"	Standard	4	1 13/16"	2 13/16"	3 1/8"

Fig. 4

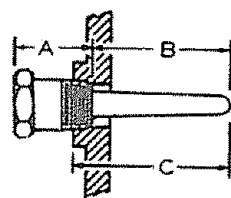


### WELLS FOR CONTROLS THAT MOUNT DIRECTLY ONTO WELL

For well-immersion single controls with tapered bulb

Type Number	Basic Types Well is Used with	Bulb Size of Control Used	Well Description		Figure Number	Dimensions		
			Pipe Size N.P.T.	Shank		A	B	C
F89-0062	11B18, 11B05, 11B55, 1131	—	1/2"	Standard	5	1 5/8"	2 13/16"	3 1/8"
F89-0063	11B18, 11B05, 11B55, 1131	—	3/4"	Standard	5	1 5/8"	2 13/16"	3 1/8"
F89-0075	11B18, 11B05, 11B55, 1131	—	1/2"	Extended	5	3 1/8"	2 13/16"	3 1/8"

Fig. 5



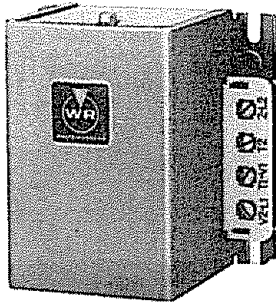
TO ORDER THE ABOVE PARTS USE 42/387

# RELAY TRANSFORMERS

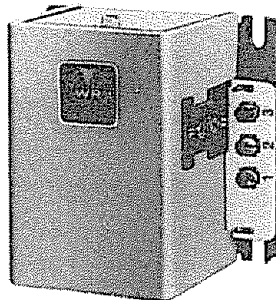


## RELAY/TRANSFORMER COMBINATIONS

CHOICE OF SPST OR DPST RELAY MODELS ENCLOSED WITH A TRANSFORMER CAPABLE OF POWERING EXTERNAL LOADS UP TO 35VA. IDEAL FOR USE ON BOILERS WITHOUT DOMESTIC COIL. EQUALLY ADAPTABLE FOR ZONED AND UNZONED SYSTEMS.



8A02A-1



8A03A-2

### FEATURES

- Combines switching relay and transformer (for powering external loads) in one case
- Low voltage screw terminals — 3 color coded, end stripped line voltage leads
- Internal transformer can power up to 35VA external loads
- Mounts to 4" x 4" junction box
- Dustproof steel case
- Type 8A02A-1 — One set of line voltage contacts only
- Type 8A03A-2 — One set of line voltage contacts and one set of low voltage or millivolt contacts for use on 24 VAC or 750mV DC.
- U.L. recognized and C.S.A. certified

### SPECIFICATIONS

**Dimensions:** 4¼"H x 2¾"W x 2¾"D

**Finish:** Grey

**Mounting:** to 4" x 4" junction box

**Length of Leads:** 8 inches

**Transformer:** 35VA maximum connected external load.

**Wiring Diagrams:** See page 209-210.

Type Number	Input Voltage	Switch Action	Thermostat Current	Contact Ratings					
				Lead Color	Motor Rating		Valves and Relays		
					Full Load	Locked Rotor	Terminals V1 and V2		
120 VAC		30 VAC	0.3-12v DC						
8A02A-1	120 VAC, 60Hz	SPST	0.28A	Yellow & White	10.0A	60.0A	—	—	
8A03A-2	120 VAC, 60Hz	DPST	Ⓢ	Orange & White	10.0A	60.0A	1.0A	1.0A	

Ⓢ Thermostat current is 0.28A plus gas valve current

## UNIVERSAL REPLACEMENT LINE VOLTAGE SWITCHING RELAYS

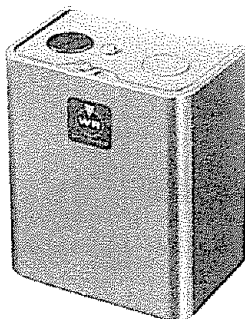
FOR CONTROLLING LINE VOLTAGE LOADS WITH A LOW VOLTAGE CIRCUIT.

### FEATURES

- Case size, switching function and terminal identification similar to competitive models
- "In-Line" line voltage terminal layout speeds wiring
- Full 10 amp load rating for increased flexibility
- Line voltage knockouts top and bottom
- Plastic grommet in low voltage knockout
- Terminal screws "grab" wire without need for "button hooking" the wire around terminal.
- U.L. listed and C.S.A. certified.

### SPECIFICATIONS

**Dimensions:** 5¼"H x 4¼"W x 2¾"D **Finish:** semi-gloss grey



42/387 829A832

Type Number	Input Voltage	Switching Action	Thermostat Current	Motor Ratings			
				Full Load		Locked Rotor	
				120 VAC	240 VAC	120 VAC	240 VAC
829A-832 Ⓢ	120 VAC, 60Hz	DPST Ⓢ	0.3A	8.0A	4.0A	48.0A	24.0A
829A-845	120 VAC, 60Hz	DPST	0.3A	10.0A	6.0A	60.0A	36.0A

Ⓢ One set of contacts with two terminals for line voltage, one set of contacts for low (30 VAC) or millivolt circuits "xx" contacts — 0.3-12v DC maximum — 1 amp maximum or 30 VAC maximum at 1 amp

TO ORDER THE ABOVE PARTS USE 42/387



# DUAL PURPOSE AIR SWITCH

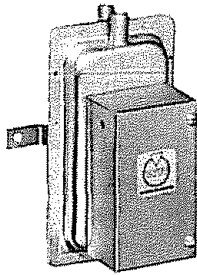
## DUAL PURPOSE AIR SWITCH

### FEATURES

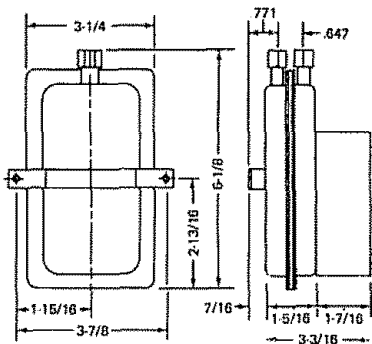
- Responds to positive, negative or differential air pressure.
- Design eliminates "fluttering" or malfunction due to shock or vibration normally encountered with "sail switches."
- Wide operating range.
- Furnished with one 6" piece 1/4" O.D. flexible tubing, nuts and ferrules
- Can be mounted in any position except upside down.

### SPECIFICATIONS

**Ambient Temperature:** -40 to +180°F.



42/387 770-1



Dimensions

Type Number	Operating Range*	Switch Action	Electrical Ratings			Pilot Duty 125-277 VAC
			Resistive (Non-Inductive)			
			120 VAC	240 VAC	277 VAC	
42/387 770-1	0.07 to 12.0 W.C.	SPDT	15.0A	15.0A	15.0A	300 VA

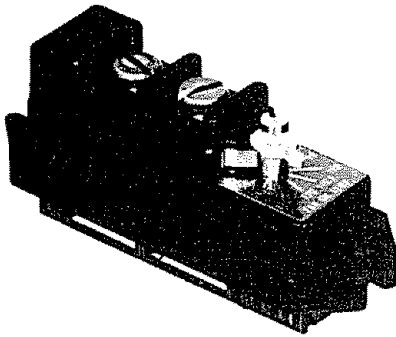
\* Field Adjustable

## USE FOR ALL THESE APPLICATIONS

LEGEND			
<b>N</b> Negative Pressure	<b>D</b> Pressure Differential		<b>POWER HUMIDIFIERS</b> Switch permits unit to operate whenever there is proper air movement
<b>P</b> Positive Pressure	Pressure Sample Line		<b>PROCESS DRYING</b> Switch monitors negative pressure to stop conveyor or process and provides alarm signal on fan failure. Ideal for bulk chemicals, food processing, grain drying
	<b>ELECTRONIC AIR CLEANERS</b> Switch permits power to cleaner whenever blower of system is operating		<b>NATURAL DRAFT BOILERS</b> Switch signals insufficient draft, provides safety limit to stop firing on lack of draft, starts again on sufficient draft
	<b>INDUCED DRAFT BOILERS</b> Proves operation of I. D. fan by sampling draft or air flow. Shuts off firing equipment on fan failure.		<b>REFRIGERATION EQUIPMENT</b> Switch responds to pressure drop across refrigeration coils to signal alarm condition or automatically initiate or terminate defrost cycle
	<b>DUCT STRIP HEATERS</b> Switch proves air movement across heaters by positive pressure to prevent burn-out on insufficient air flow.		<b>GAS-FIRED UNITS</b> Switch proves sufficient air flow before permitting gas valve to open and ignition to occur
	<b>FORCED DRAFT BOILERS</b> Proves operation of blower by sampling positive or negative pressures for firing control and safety.		

TO ORDER THE ABOVE PARTS USE 42/387





42/387 757-1

**FLUSH MOUNT FAN OR LIMIT CONTROLS**

IDEAL FOR REPLACEMENT OF SIMILAR TYPE CONTROLS.

**FEATURES**

- Particularly well suited for use where space limitations are a problem
- Small bimetal sensing element is completely in air stream to give quick response
- Snap-action switch with heavy duty contacts
- Fan control has adjustable range with direct reading temperature dial
- Limit has adjustable cut-out setting.

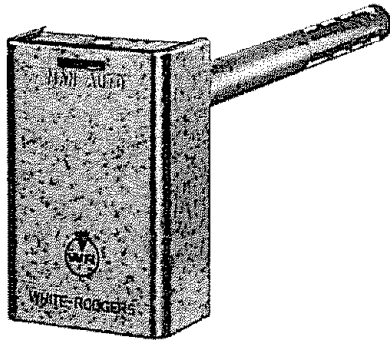
**SPECIFICATIONS**

Dimensions: 1"H x 3"W x 1 1/4"D.

Type Number	Description	Range	Differential (Fixed)	Switch Action	Motor Rating (Full Load)		Valves and Relays	
					120 VAC	240 VAC	24 VAC	24 VAC
757-1	Fan	70 to 160°F <sup>Ⓢ</sup> (21 to 71 °C)	25°F (14°C)	Close on Rise	6.0A	3.0A	—	—
758-1	Limit	110 to 200°F <sup>Ⓢ</sup> (43 to 93°C)	25°F (14°C)	Open on Rise	4.0A	2.0A	3.2A	—

<sup>Ⓢ</sup> Cut-in setting (cut-out is cut-in setting minus the differential.)

<sup>Ⓢ</sup> Cut-out setting (cut-in is cut-out setting minus the differential.)



42/387 5D51-35

**FAN AND LIMIT CONTROLS FOR UNIVERSAL REPLACEMENT**

SINGLE ELEMENT TYPE FOR APPLICATIONS WITH NARROW SPACE LIMITATIONS. REGULATES FAN OR BLOWER OPERATION AND ACTS AS HIGH LIMIT SAFETY CONTROL.

**FEATURES**

Designed to be interchangeable with other flush mounted, single element fan and limits

- Slotted mounting holes for easy installation
- Long terminal screws for wiring — Functions can be made on terminal block
- Limit switch has "universal" contact structure capable of handling millivolts to 240 VAC
- Limit switch has adjustable stop to limit maximum setting — Shipped at 200°F (93°C).
- Dial has individual pointers for fan cut-in and cut-out settings.
- Removable solid copper jumper between fan and limit switches.
- Summer fan switch for ventilation without changing control settings. Has same fan and limit switch mechanism.
- C S A certified and U L recognized.

**SPECIFICATIONS AND CROSS REFERENCE**

Finish: Grey

Type Number	Element Length	Description
5D51-35	5"	With standard enclosure
5D51-90	8"	
5D51-78	11"	

W-R Type Number	Honeywell
5D51-35	L4064B2228
5D51-90	L4064B2236
5D51-78	L4064B2210

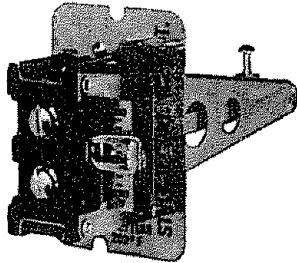
Type Number	Description	Range	Differential	Switch Action	Full Electrical Rating	Motor Rating (Full Load)		Valves and Relays	
						120 VAC	240 VAC	24 VAC	0.3-12v DC
5D51 Series	Fan	50 to 265°F (10 to 129°C)	Adjustable 15°F minimum	Close on Rise	HT	14.0A	7.0A	—	—
	Limit	100 to 300°F (38 to 149°C)	Fixed 25°F	Open on Rise	HTV	10.0A	6.0A	6.0A	1.0A

TO ORDER THE ABOVE PARTS USE 42/387



## FAN OR LIMIT CONTROLS

PROVIDES HIGH LIMIT PROTECTION FOR WARM AIR FURNACES OR CONTROLS BLOWER OPERATION.



42/387 5C02-1

### FEATURES

- Interchangeable with competitive makes.
- Adjustable differentials remain constant through entire range of control.
- Limit control has "universal" contacts capable of handling millivolts to 240 VAC.
- Limit control equipped with adjustable stop to limit setting. Shipped at 200°F/93°C.
- Both fan and limit controls have screw terminals
- U.L. recognized and C.S.A. certified.

### FAN TYPES WITHOUT ENCLOSURE

Type Number	Range (Cut-Out)	Differential	Element Length	Switch Action	Full Electrical Rating	Motor Rating (Full Load)		Valves and Relays	
						120v AC	240v AC	25v AC	0.3-12v DC
5C22-2	Ⓢ 70 to 125°F Ⓢ (21 to 52°C)	Adj. 25 to 50°F (14 to 28°C)	3"	Close on Rise	CF	8 0A	6 0A	—	—
5C22-52	Ⓢ 70 to 125°F Ⓢ (21 to 52°C)	Adj. 25 to 50°F (14 to 28°C)	7"	Close on Rise	CF	8 0A	6 0A	—	—

### LIMIT TYPES WITHOUT ENCLOSURE

Type Number	Range (Cut-Out)	Differential	Element Length	Switch Action	Full Electrical Rating	Motor Rating (Full Load)		Valves and Relays	
						120v AC	240v AC	25v AC	0.3-12v DC
5C02-1	Ⓢ 150 to 250°F Ⓢ (66 to 121°C)	Fixed 25°F (14°C)	3"	Open on Rise	CL	10 0A	6 0A	4 0A	1 0A
5C02-51	Ⓢ 150 to 250°F Ⓢ (66 to 121°C)	Fixed 25°F (14°C)	7"	Open on Rise	CL	10 0A	6 0A	4 0A	1 0A

Ⓢ Cut-in point is cut-out setting plus differential for fan controls

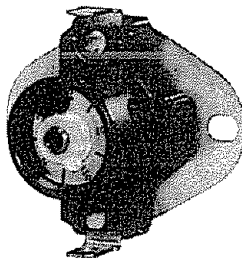
Ⓢ Cut-in point is cut-out setting minus differential for limit controls

## ADJUSTABLE SNAP DISC FAN AND LIMIT CONTROLS

THIS ADJUSTABLE SNAP DISC THERMOSTAT ALLOWS YOU TO SET THE TEMPERATURE SET POINT TO MATCH YOUR SPECIFIC NEEDS WHICH SIMPLIFIES INVENTORY.

### FEATURES

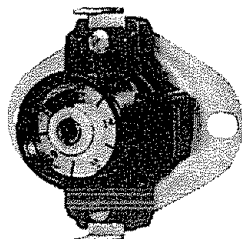
- 1/4" quick connect terminals are standard
- Reduces inventory while providing coverage for a wide range of temperature applications
- Replaces the majority of fixed disc thermostats now on heating equipment and various appliances
- 2 adjustable fan control models replace 7 fixed snap disc models



42/387 3F05-3

### ACCESSORIES

Type Number	Temperature Range	Differential	Switch Action	Function	Accessories	Therm-O-Disc Number
3F05-3	90 to 130°F	20°F	SPST	Fan controls (Close on Rise)	Includes thermostat, tab-to-screw terminals, adapter bracket and mounting screws	74T12-310708
3F05-4	140 to 180°F	20°F	SPST			74T12-310709
3L05-4	135 to 175°F	40°F	SPST	Limit controls (Open on Rise)		74T11-310710
3L05-5	175 to 215°F	40°F	SPST			74T11-310711
3L05-6	210 to 250°F	40°F	SPST			74T11-310712



42/387 3L05-4

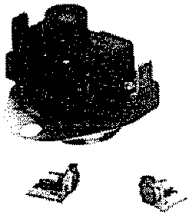
### TYPICAL ELECTRICAL RATINGS

VAC	Resistive (Non-Inductive)	Motor Rating (Inductive)		Pilot Duty
		Full Load	Locked Rotor	
120	25.0A	14.0A	72.0A	125 VA
240	25.0A	10.0A	60.0A	125 VA

TO ORDER THE ABOVE PARTS USE 42/387



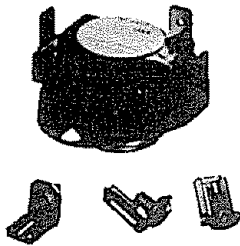
## SNAP DISC FAN OR LIMIT CONTROLS



42/387 3L02-190

### LIMIT CONTROLS — MANUAL RESET

Type Number	Fixed Temperature Settings		Switch Action	Therm-O-Disc Part Number
	Cut-in	Cut-out		
3L02-160	Manual Reset	160°F (71°C)	Open on Rise	60T15-330534
3L02-190		190°F (88°C)		60T15-330537



42/387 3L03-140

### SPDT CONTROLS

Type Number	Fixed Temperature Settings				Switch Action	Therm-O-Disc Part Number
	Terminal 1 & 3		Terminal 1 & 2			
	Cut-out	Cut-in	Cut-in	Cut-out		
3L03-140	140°F (60°C)	120°F (49°C)	140°F (60°C)	120°F (49°C)	SPDT	60T13-611015
3L03-190	190°F (88°C)	170°F (77°C)	190°F (88°C)	170°F (77°C)	SPDT	60T13-611014

### ELECTRICAL RATINGS

Electrical Rating (AC) for Type Numbers	Motor Rating (Full Load)		Resistive (Non-Inductive)		Pilot Duty 120/240/277 VAC
	120 VAC	240 VAC	120/240 VAC	277 VAC	
3L02	10.0A	5.0A	25.0A	21.6A	125 VA
3L03	1 & 2 Close on Rise	5.8A	2.9A	—	125 VA
	1 & 3 Open on Rise	10.0A	5.0A	25.0A	21.6A

## ADD-A-RELAY ENCLOSED SWITCHING

BASE WITH A BUSHING, LOCKNUTS AND POSITION LOCKING PLATE TO MOUNT THIS RELAY IN STANDARD ELECTRIC BOX WITH ½" KNOCK OUT. RELAY HAS DOUBLE BREAK SILVER ALLOY CONTACTS AND IS COMPLETELY ENCLOSED OPERATES IN ANY POSITION.

### GENERAL DATA

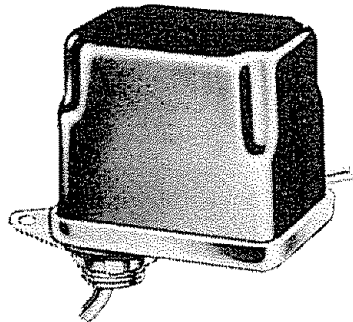
- Temperature Range: -40°F to 130°F
- Mechanical Life (no load): 500,000 operations, 60 operations per minute
- Electrical Life (rated load): 100,000 operations, 6 operations per minute
- Weight (approximate): 6.5 oz.
- U.L. File No: E12139
- C.S.A. File No: LR13360

### Coils

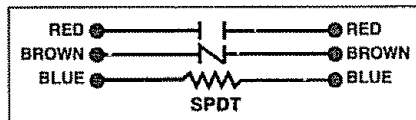
- Frequency — 50/60 Hz
- Class Insulation — B
- Operate — 85% of nominal coil voltage, 110% maximum safe operate
- Duty Cycle — Continuous

### SINGLE POLE DOUBLE THROW (S.P.D.T.) Isolated Terminals — All Must Be Same Polarity

Steveco No.	Coil Voltage (60 Hz.)	Coil Data			
		DC Res.	MA	Nom. VA.	Inrush VA
90-123	24	45.7	167	4	8



42/387 90-123  
APPROXIMATE OVERALL DIMENSIONS  
2<sup>45</sup>/<sub>64</sub>" x 2<sup>38</sup>/<sub>64</sub>" x 3<sup>3</sup>/<sub>64</sub>"



Contact Rating			
	120V	240V	250V
FLA	10	5	—
LFA	60	30	—
RES	—	25	18

TO ORDER THE ABOVE PARTS USE 42/387

### 42/387 94-388

TYPE 121 CONTACTORS WITH STRAIGHT-THROUGH WIRING, REPLACES 1½ POLE DEVICES USED PRIMARILY IN RESIDENTIAL CENTRAL AIR CONDITIONING. COILS ARE CLASS B, 24 VOLT A.C

CONTACTOR EQUIPPED WITH SCREW OR QUICK CONNECT TERMINATION AND QUICK CONNECT AUXILIARY TERMINALS.

#### GENERAL INFORMATION

**Temperature Range:** -40°F to 150°F

**Mechanical Life (no load):** Conforms to UL and ARI specifications

**Electrical Life**

- Conforms to UL and ARI specifications
- 200,000 cycles make LRA at 5 pf, break 125% of FLA at .75 pf at rated voltage. 10,000 cycles make and break LRA at 5 pf rated voltage

**Weight (approximate):** 9.25 oz

**U.L. File No.:** E12139

**CSA File No.:** LR13360

**Coils**

**Frequency:** 50/60 Hz

**Class Insulation:** B

**Termination:** Double ¼" Q.C

**Operate:** 85% of nominal coil voltage; 110% maximum safe operate

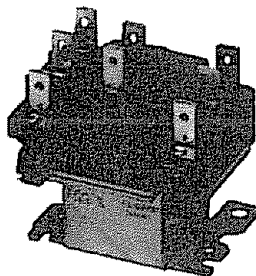
**Duty Cycle:** continuous

#### COIL DATA

Steveco No.	Voltage AC	Res DC OHMS	Current MA	Nominal VA	Max. Inrush VA
30 Amp					
94-388	24	7.6	340	8.2	40

#### CONTACT RATINGS

Type	Voltage	FLA	LRA	RES
94-388	277	30	150	40
	480	15	75	40
	600	12.5	50	40



APPROXIMATE OVERALL DIMENSIONS  
2½" x 1½" x 2¼"  
42/387 90-340

### 90-340

A TWO POLE DOUBLE THROW SEMI-ENCLOSED RELAY. EASY TO INSTALL AND WIRE. RELAY AVAILABLE FOR POWER OR PILOT DUTY. SUITED FOR VENDING MACHINES, APPLIANCES, FAN CONTROLS, HEATING AND AIR CONDITIONING APPLICATIONS AND GENERAL PURPOSE SWITCHING

90-340 fit fan control centers 90-112, 90-113, 90-118E, and 90-119

#### GENERAL INFORMATION

- **Temperature Range:** -40°F to 130°F
- **Mechanical Life (no load):** 750,000 operations, 30 operations per minute
- **Electrical Life (rated load):**
  - ★ 100,000 operations, 6 operations per minute
  - ★ Load test making inrush ratings (0.4 to 0.5 P.F.); breaking 100% continuous rating (0.65 to 0.8 P.F.)
- **Weight (approximate):** 6 oz.
- **U.L. File No.:** E12139
- **C.S.A. File No.:** LR13360

**Coils**

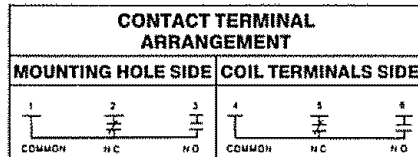
• **Frequency:** 50/60 Hz

• **Class Insulation:** B

• **Termination:** ¼-inch Quick Connect

• **Operate:** 85% of nominal coil voltage; 110% maximum safe operate

• **Duty Cycle:** continuous



N.C. = NORMALLY CLOSED  
N.O. = NORMALLY OPEN

#### TWO POLE DOUBLE THROW (2P.D.T.) FITS FAN CENTER RECEPTACLES

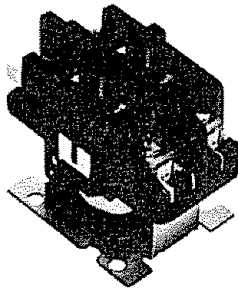
Steveco No.	Coil Voltage (50/60 Hz)	Terminals 1-2-3	Terminals 4-5-6	COIL DATA			
				DC Res.	MA	Nom. VA	Inrush VA
90-340	24	Power	Power	15	334	8	22

CONTACT RATING (Per Pole)		
A.C. Voltage	Power	
	Inductive	Resistive
125	13.8A ½ H.P 13.8 A. Full Load 82.8 A. Inrush	15 A
250	½ H.P 6 A. Full Load 35 A. Inrush 15 A.	15 A
277	@ 75% P.F (Power Factor)	15 A

# DEFINITE PURPOSE CONTACTOR (30A THRU 40A)



steveco



42/387 90-244  
APPROXIMATE OVERALL  
DIMENSIONS  
3 1/4" x 2 3/4" x 2 1/2"

## 42/387 90-244

### FEATURES

- Low VA coil for cooler operation and increased life.
- Self aligning 'E' and 'I' lamination design reduces A/C hum providing quieter operation.
- Universal mounting bracket fits existing mounting holes
- Double break contacts ensure positive make and break
- Screw terminals and double 1/4" quick connects provided on all models for easy installation.

### GENERAL INFORMATION

**Insulating Material:** Contact block and carrier are high quality electrical-grade thermosetting resin

**Dielectric Strength** (all terminals 60Hz RMS):

- 2200 Volts Opposite Polarity
- 2200 Volts Contacts to Coil
- 2200 Volts to Ground

**Temperature Range:** -40°F to 150°F

**Mechanical Life** Conforms to UL and ARI 780 specifications

**Electrical Life:** Conforms to UL and ARI 780 specifications

**Weight** (Approximate): 10.5 oz

**U.L. File No.:** E12139

**C.S.A. File No.:** LR13360

### Coils

- **Frequency:** 50/60 Hz
- **Class Insulation:** B
- **Termination:** Double 1/4" Q.C.
- **Operate:** 85% of nominal coil voltage; 110% maximum safe operate
- **Duty Cycle:** Continuous

### COIL DATA

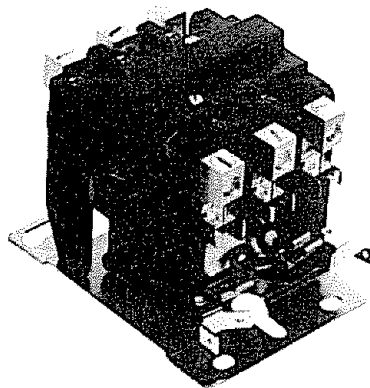
Steveco No.	Voltage AC	Res DC OHMS	Current MA	Nominal VA	Max. Inrush VA
30 Amp					
90-244	24	11.54	200	5	24

### CONTACT RATINGS

Type	Voltage	FLA	LRA	RES
90-244	277	30	150	40
	480	21	125	40
	600	17	100	40

## 40 AMP WITH COVER

Non-corroding  
Structure  
Low Temp. Rise  
Riveted Terminal  
Assemblies



APPROXIMATE OVERALL  
DIMENSIONS  
42/387 90-170  
3 3/4" x 3 3/4" x 2 3/4"

## 42/387 90-170

DESIGNED FOR CENTRAL AIR CONDITIONING AND HEATING EQUIPMENT. STANDARD FEATURES AVAILABLE ARE: ANY POSITION MOUNTING, INTER-CHANGEABLE MOUNTING PLATE WITH MULTIPLE HOLES, LOW WATTAGE COIL, DOUBLE BREAK CONTACT ACTION. QUICK CONNECT AUXILIARY TERMINALS.

### GENERAL INFORMATION

- **Temperature Range:** -40°F to 155°F
- **Mechanical Life** (no load): Conforms to UL and ARI specifications
- **Electrical Life:** Conforms to UL and ARI specifications
- **Weight** (Approximate): 19.5 oz
- **U.L. File No.:** E12139
- **C.S.A. File No.:** LR13360

### Coils

- **Voltage** — 24VAC
- **Frequency** — 50/60 Hz
- **Class Insulation** — B
- **Operate** — 85% nominal coil voltage, 110% maximum safe operate
- **Duty Cycle** — Continuous

## 40 AMP. 600 VOLT THREE POLE NORMALLY OPEN (3P.N.O.)

### CONTACT RATINGS

Voltage	277 VAC	480 V.A.C	600 VAC
Full Load	40 A.	40 A	40 A
Lock Rotor	240 A.	200 A	160 A
Resistive	50 A.	50 A.	50 A.

Steveco No.	Coil Voltage (60 Hz.)	COIL DATA			
		DC Res.	Current MA	Nominal VA	Max. Inrush VA
90-170	24	3.96	270	6.5	80

Pressure Connectors on line and load side for #14 thru #4 wire. 1/4" Double Quick Connect auxiliary and coil terminals.

# HEAVY-DUTY ENCLOSED FAN RELAYS



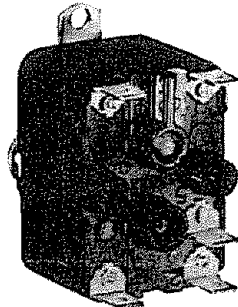
steveco

## 90-370 Thru 90-384 WR/RBM TYPE 184

WHEN YOU NEED A COMPACT, TOTALLY ENCLOSED RELAY WITH 50% MORE ELECTRICAL RATING, (14 A.) THAT'S QUIET ON THE JOB . . . SELECT THE STEVECO 90-370 SERIES. THIS HEAVY DUTY GENERAL PURPOSE RELAY OPERATES IN ANY POSITION, PLUS ENCLOSED DESIGN MINIMIZES EXPOSURE TO, AND DAMAGE FROM, ELEMENTS. PLUGS INTO RECEPTACLES. ALL GOOD REASONS TO REACH FOR STEVECO.

THE 90-370 SERIES IS BUILT TO DO A VARIETY OF JOBS QUIETLY, RELIABLY AND ECONOMICALLY. IT IS PERFECT FOR APPLICATIONS INVOLVING:

- Air Conditioning
- Heating
- Appliances
- Fan Control
- General Purpose Switching



Totally Enclosed  
Low Cost  
1/4" Quick Connect  
Operates  
Any Position  
Isolated Coil  
1 Mounting Bracket  
90-370

### GENERAL INFORMATION

- Temperature Range: -40°F to 150°F
- Mechanical Life (no load): 1,000,000 operations, 30 operations per minute
- Electrical Life (rated load):
  - 100,000 operations, 6 operations per minute
  - Load test making inrush ratings (0.4 top 0.5 P.F.); breaking 100% continuous rating (0.65 to 0.8 P.F.)
- Weight (approximate): 3 oz.
- U.L. File No.: E12139 and E22381
- C.S.A. File No.: LR13360

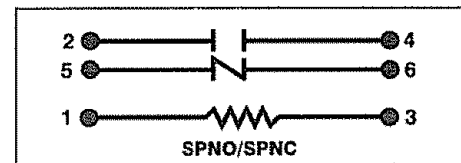
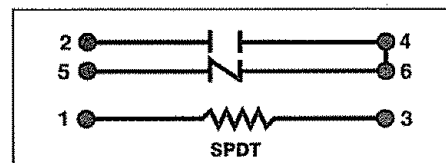
### Coils

- Frequency — 50/60 Hz
- Class Insulation — B
- Termination — 1/4-inch quick connect
- Operate — 85% of nominal voltage; 110% maximum safe operate
- Duty Cycle — continuous

### SINGLE POLE DOUBLE THROW (S.P.D.T.) ISOLATED CONTACTS (S.P.N.O./S.P.N.C.)

Contact Rating	
Inductive	Resistive
14 Amps. Continuous 84 Amps. Inrush @ 125 VAC	25 Amps Continuous @ 277 VAC
8 Amps. Continuous 48 Amps. Inrush @ 250 VAC	
7 Amps. Continuous 42 Amps. Inrush @ 277 VAC	

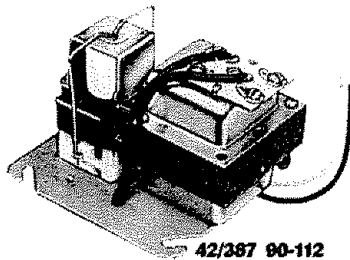
Steveco No.			Coil Voltage (50/60 Hz.)	COIL DATA			
S.P.N.O.	S.P.D.T.	S.P.N.O./ S.P.N.C.		Res.	Nom. Current MA	Nom. VA Sealed	Inrush VA
See Note*	90-370	90-380	24	77	125	3	4



WIRING DIAGRAM

\*NOTE: For S.P.N.O use either S.P.D.T. or S.P.N.O./S.P.N.C.

TO ORDER THE ABOVE PARTS USE 42/387



42/387 90-112

U.L. RECOGNIZED

### 90-112 STEVECO FAN CONTROL CENTERS

A ONE PACKAGE TRANSFORMER AND RELAY COMBINATION, 90-112 RUGGED CONTROL FOR REMOTE MOUNTING. IT INCORPORATES THE RECENTLY DEVELOPED OVER/UNDER BOBBIN WOUND ENERGY-LIMITING CLASS 2 TRANSFORMER AND FAN RELAY ON A COMMON PLATE FOR MOUNTING ON A STANDARD FOUR INCH JUNCTION BOX.

**For Use In Remote Control Circuits:**

- Furnace and air conditioners.
- Operation of relays, contactors and solenoids.
- Temperature indicating and regulation equipment.

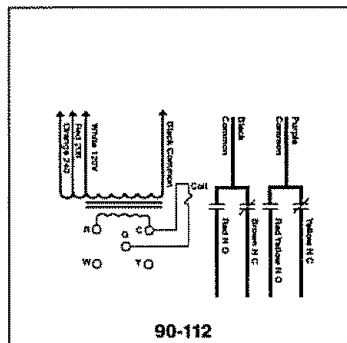
**Ease Of Installation**

- Line voltage connections pre-wired.
- Color coded pre-stripped leads.
- Low voltage connections on terminal board.

**UL File # 33334**

- CSA # LR-16094

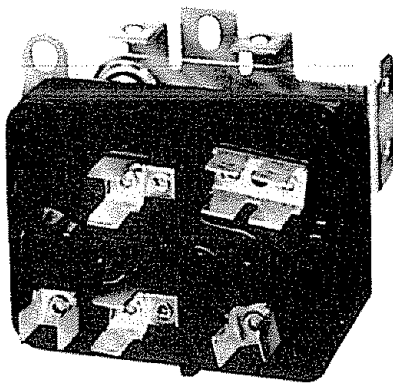
Steveco No.	Mars No.	Transformer						Relay	Contact Ratings			
		Primary			Secondary				120 VAC (amps)		240 VAC (amps)	
		Voltage	HZ	Connections	Voltage	VA	Connections		Full Load	Locked Rotor	Full Load	Locked Rotor
90-112	24010	120	50/60	Color coded leads, pre-stripped	24V	40	Terminal board with 5 screw terminals	DPDT	13.8	82.8	6.9	41.4



90-112

**Replacement Relay for Fan Control Center:**

Steveco Number	Replaces Relay On	Description
90-340	90-112	DPDT Universal Plug-in Relay

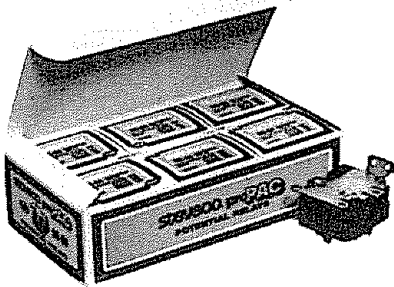


90-63

**90-69, 90-63 thru 90-68 TYPE 128000  
UNIVERSAL BRACKET**

UNMATCHED VERSATILITY IN A STANDARD 6 PART PAC!!

- RBM Reliability!
- Replaces Thousands of OEM Models.
- Universal Break-off Bracket for Mounting Flexibility.
- Guide to Replace GE, RBM and Other Steveco 90-#'s Included with Each Relay.
- Order by Convenient PAC-90-69, or Individually.
- Temperature Range: -40°F to 130°F
- Mechanical Life (no load): 500,000 operations, 60 operations per minute
- Electrical Life (rated load): Meets U.L. and ARI specifications
- Weight (approximate): 6.5 oz. each
- Shipping Weight: 3 3/4 lbs. for 90-69.
- U.L. File No.: SA 1984
- C.S.A. File No.: LR13360
- Class Insulation — B
- Duty Cycle — Continuous

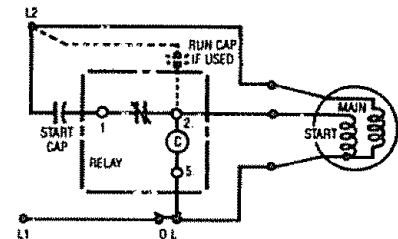
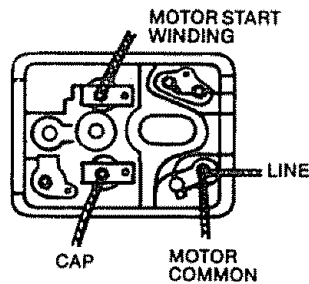


90-69

Steveco No.	Mars No.	Continuous Coil Voltage	Pick-up		Drop Out Max.	Coil Data			
			Min.	Max.		DC Res.	MA	Nom. VA	Inrush VA
90-69	19001	Standard 6 Part PRO PAC Includes one each of the following 6 part numbers:							
90-63	19002	170	140	153	65	1,399	29	5	10
90-64	19003	395	245	275	140	7,147	12.7	5	10
90-65	19004	336	171	184	90	5,180	15	5	10
90-66	19005	395	208	239	130	7,147	12.7	5	10
90-67	19006	420	300	328	121	10,000	12.0	5	10
90-68	19007	495	323	352	135	11,950	10	5	10
90-26*	19008	395	180	195	100	7,147	12.7	5	10
90-70*	19009	256	278	306	115	3,316	19.5	5	10
90-71*	19010	420	223	252	150	10,000	12.0	5	10

\*Optional. Not Included in "PRO-PAC".

CONTACT RATING		
Voltage	Standard (Interrupt)	Special (Interrupt)
240 VAC	35A	50A
480 VAC	35A	50A



**MOTOR START APPLICATION**





**90-69, 90-63 thru 90-68 TYPE 128000 UNIVERSAL BRACKET**

Individual Pro Pac Part No.	Pro Pac Replaces		
	Steveco Nos.	RBM Groups	GE Groups
<b>90-63</b>	90-1; 90-17; 90-21	1J; 1K; 1L; 1M; 1N; 2J; 2K; 2L; 2M; 2N	2J; 2K; 2L; 2M; 7J; 7K; 7L; 7M; 7N; 8L; 8M; 8N
<b>90-64</b>	90-4; 90-11; 90-13; 90-14; 90-22	4A; 4B; 5A; 5B; 6A; 6B	3A; 3B; 6A; 6B; 10A; 10B
<b>90-65</b>	90-3; 90-7; 90-24; 90-26; 90-40; 90-41	2S; 3P; 3R; 3S; 3T; 4P; 4R; 4S; 4T; 5P; 5S; 5T	3P; 3R; 5P; 5R; 5S; 5T; 22S
<b>90-66</b>	90-10; 90-27	4U; 4V; 5U; 5V; 6U; 6V; 6W	3U; 3V; 6U; 6V; 6W
<b>90-67</b>	90-2; 90-5; 90-6; 90-8; 90-15; 90-18	4C; 4D; 5C; 5D; 6C; 6D; 7C; 7D	3C; 3D; 4C; 4D; 6C; 6D; 10C; 10D; 26C; 26D
<b>90-68</b>	90-9; 90-12; 90-16; 90-19; 90-20; 90-23; 90-25	4E; 4F; 4G; 5F; 5G; 5H; 6E; 6F; 6G; 6H; 7E; 7F; 7G	3E; 3F; 4E; 4F; 4G; 6E; 6F; 6G; 26E; 26F; 26G; 26H; 27E; 27F; 27G

**ALL STEVECO (S.P.N.C. 128000 COMMON TO COIL) POTENTIAL RELAYS  
MAY BE REPLACED WITH PRO PAC!**

NO OTHER MANUFACTURER OFFERS SUCH VERSATILITY

**CROSS REFERENCE INFORMATION**

Steveco No.	Steveco Pro Pac	Steveco No.	Steveco Pro Pac	Steveco No.	Steveco Pro Pac
90-1	90-63	90-11	90-64	90-22	90-64
90-2	90-67	90-12	90-68	90-23	90-68
90-3	90-65	90-13	90-64	90-24	90-65
90-4	90-64	90-14	90-64	90-25	90-68
90-5	90-67	90-15	90-67	90-26	90-65
90-6	90-67	90-16	90-68	90-27	90-66
90-7	90-65	90-17	90-63		
90-8	90-67	90-18	90-67		
90-9	90-68	90-20	90-68		
90-10	90-66	90-21	90-63		

## 24 VOLT SECONDARY CLASS 2 TRANSFORMERS ENERGY LIMITING

AIR CONDITIONING, HEATING AND REFRIGERATION REPLACEMENTS  
FOOT MOUNTED—4" x 4" PLATE—CONDUIT HUB

STEVECO MULTI-MOUNTING CONTROL TRANSFORMERS ARE DESIGNED ESPECIALLY FOR THE AIR CONDITIONING MARKET. THE 24 VOLT OUTPUT OF THE TRANSFORMER ASSURES THE OPERATION OF VALVES, RELAYS AND CONTACTORS UNDER MOST LOW VOLTAGE CONDITIONS, ELIMINATING CALL BACKS DUE TO BROWN OUTS.

CLASS 2 TRANSFORMERS ARE USED FOR INDUSTRIAL, HEATING AND AIR CONDITIONING CONTROLS APPLICATIONS.

U.L. FILE # E2334.

CSA # LR-16094.

### STEVECO TRANSFORMERS

#### Multi-Mount (Closed) Universal Mounting With Plate.

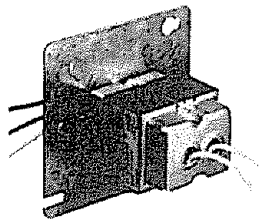
Steveco Part No.	Mars Part No.	Jard Part No.	VA	HZ	Primary	Connections	Sec.	Connections
90-4031M	50304	4031M	40	50/60	120/208/240V	Leads	24V	Leads
90-5031M	50314	5031M	50	50/60	120/208/240V	Leads	24V	Leads

#### Foot-Mount (Open Construction).

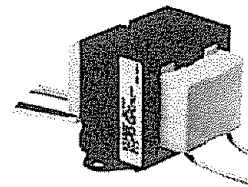
Steveco Part No.	Mars Part No.	Jard Part No.	VA	HZ	Primary	Connections	Sec.	Connections
90-4031F	50354	4031F	40	50/60	120/208/240V	Leads	24V	Leads

#### Steveco Transformer Lead Color Coding

Primary Side				Secondary Side	
Common	120V	208V	240V	Common	24V
Black	White	Blue	Red	Yellow	Yellow



90-4031M



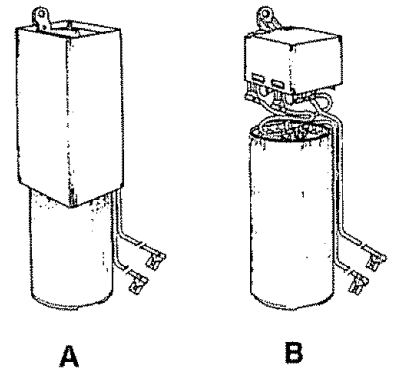
90-4031F

# Kickstart® Hard Start Devices



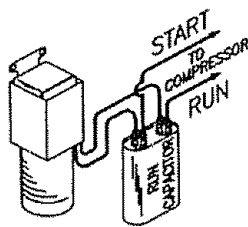
## Features:

- Two-wire hard start device using potential relay with start capacitor.
- No PTCR devices or time delays.
- Works on all 208-265 volt PSC & CSIR air conditioning, heat pump and refrigeration compressors; 1-5 HP — Reciprocating, Scroll, and Rotary.
- Restarts Instantly™.
- Easy to install, eliminates expensive inventory of multiple potential relays and capacitors.

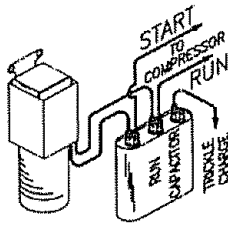


Kickstart® #	Compressor Size	Fig.
95-TO-5P	1 - 3 HP	A
KS1	3.5 - 5 HP	B
KS8	REPLACES SPP5, SPP6, SPP7, SPP8	B

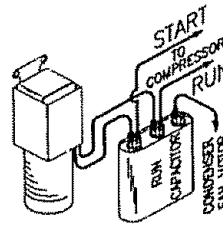
Hard Start Versus Soft Start	HARD START		SOFT START	
	POTENTIAL RELAY		PTCR DEVICES	TIMING DEVICES
	KICKSTART®	CONVENTIONAL 3 WIRE RELAY CAPACITOR KIT	GEMLINE HS600 & HS650 MARS 32701 & 32702 ROBERTSHAW 600-052 & 600-057 SUPCO SPP5, SPP6, SPP7 WATSCO WSX-5 & WSX-6	SUPCO SPP8 WATSCO WSX-1
Uses potential motor starting relay	Yes	Yes	No	No
Two wires, non-polarized	Yes	No	Yes	Yes
Restarts Instantly™	Yes	Yes	No	No
Senses whether motor started or not	Yes	Yes	No	No
Replaces 3-wire relay & capacitor kit	Yes	N/A	No	No
UL & CSA Recognized	Yes	No	No	No
Approved by compressor manufacturers	Yes	Yes	No	No
Approved by equipment manufacturers	Yes	Yes	No	No
Used by OEM manufacturers	Yes	Yes	No	No
PTCR device	No	No	Yes	No
Timing Circuit Device	No	No	No	Yes
Surface temperature hot spot	No	No	Yes	No
Affected by ambient temperature	No	No	Yes	Yes
Stays in circuit too long at start up	No	No	Yes	Yes



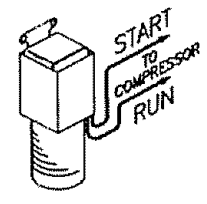
Standard Connection



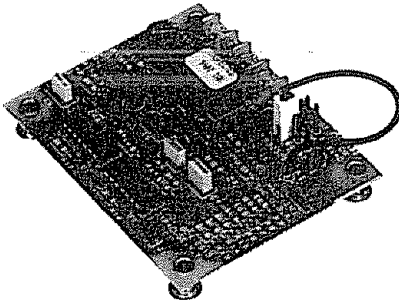
Split Capacitor



Dual Capacitor



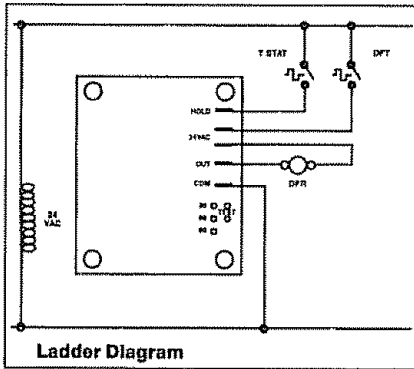
CSIR Compressor



## 90-621 HEAT PUMP DEFROST TIMER

ULTRA LOW COST HEAT PUMP DEFROST TIMER, PIN-FOR-PIN COMPATIBLE WITH OEM TYPE 621 CONTROLS. THE STEVECO 90-621 INTEGRATES MULTIPLE TIME AND TEMPERATURE DEFROST FUNCTIONS ONTO A LOW COST, CONFORMALLY COATED, OPEN BOARD PACKAGE.

- HOLD feature tracks compressor run times
- Time and Temperature terminate
- 10 min. fixed defrost time
- Pin-selectable 30/60/90 min. defrost intervals
- On-board test pins reduce test time by 256X
- Replaces OEM Type 621 controls
- Stable pin post construction
- Ⓢ recognized: E118867



### SPECIFICATIONS

#### Input

- Control voltage: 18-30 VAC
- Frequency: 50/60 Hz
- Power Consumption: 1 watt max

#### Output

- Type: max. relay
- Form: SPST, normally open
- Rating: max 2 amps

#### Time Delays

- Defrost time: fixed at 10 min. ±5%
- Interval time between defrosts: pin-selectable 30/60/90 min.
- Power on reset time: 500 milliseconds
- Test time: short across test terminals reduces test time by 256X

#### Mechanical

- Mounting: surface mount using (4) #6 or #8 screws

### ORDERING INFORMATION

<b>90-621</b>	10 min. Defrost 30/60/90, min. Interval
---------------	---

### Environmental

- Operating Temperature: -40° to +75°C, -40° to +176°F
- Transient Protection: Meets IEEE 587 Standards for Categories A & B without false output or degradation (6Kv 0.5 μs x 100 KHz Ring Wave)(6Kv 1.2 x 50 μs Impulse Wave)

### 90-621 TEST MODE TEST TIMES

Compressor Run Times		Defrost Times	
Actual Run Time	Equivalent Test Time	Actual Defrost Time	Equivalent Test Time
30 min.	7.03 sec.	10 min. fixed	2.34 sec.
60 min.	14.06 sec.	10 min. fixed	2.34 sec.
90 min.	21.09 sec.	10 min. fixed	2.34 sec.

### Mode Of Operation

The 90-621 provides a selectable time interval between defrost cycles. It will allow heat for the selected 30/60/90 minute period and provide a 10 minute defrost. A hold input permits the timer to accumulate time only while the compressor is running.

Additionally, a warm coil causes the disc sensor to open which will prevent time accumulation or end an in-progress defrost period. When the defrost period ends either by opening the DFT or after the 10 minute defrost period has elapsed, the timer is reset.

## OTHER MANUFACTURERS NUMBER TO STEVECO NUMBER

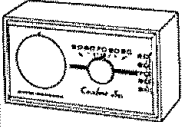

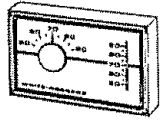
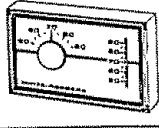
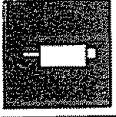


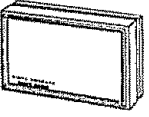
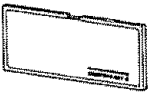
### STEVECO 90-621 REPLACES THE FOLLOWING OEM PARTS:

Manufacturer P/N	P/N
Amana	C64310-1
Coleman	30930A374
Goodman Mfg.	B12260-06
Heil Quaker	HQ1052757
Intertherm	6208800
Lennox	33G950
Snyder General	1395-329
Trane	Defrost Control

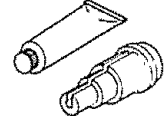
TO ORDER THE ABOVE PARTS USE 42/387



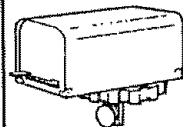
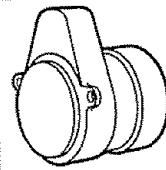
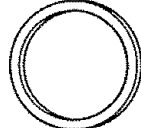
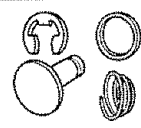
**ROOM THERMOSTATS  
100 SERIES**

Item	Type Number	Description
	<b>F16-5046</b>	Replacement front cover for 1F70 through 1F76 COMFORT SET® thermostats. Temperature range: 50-90°F. (Beige)
	<b>F16-5047</b>	Replacement front cover for all vertical 1C30 through 1C36 and 1E30 through 1E56 series standard low voltage thermostats. Temperature range: 50-90°F. (Beige)
	<b>F16-5048</b>	Replacement front cover for all horizontal 1D30 through 1D56 and 1F30 through 1F56 series standard low voltage thermostats. Temperature range: 50-90°F. (Not for 1F58 heat pump series ) Beige
	<b>F16-5482</b>	Replacement front cover for 1F58 Heat Pump Thermostats. (Beige)
	<b>F61-2072</b>	Wall coverplate for low voltage standard thermostats (5-5/8"H x 5-3/4"W). Beige, plastic.
	<b>F61-2270</b>	Gray, plastic.
	<b>F75-0184</b>	Plastic trippers for all 1F70/1F76 COMFORT-SET® series setback thermostats; replaces F75-0168.
	<b>F145-0864</b>	1.2v DC battery for post-1980 nickel cadmium model 1F70 series setback thermostats. For pre-1981 thermostats use 2 pieces.
	<b>F145-1049</b>	Beige Remote Sensor for: 1F90, 1F91, 1F92, 1F94, 1F95, 1F97 in -71 models only Replacement for 1F92-101, 1F91-101, -103, 1F94-101, 1F95-103
	<b>F145-1170</b>	Classic White color for 1F90W, 91W, 94W, 95W, 1F92W and 1F97W in -71 models only.
	<b>F145-1082</b>	Replacement door 1F90/1F97 (-51, -60, -71) 1F91-71, 1F92-71, 1F94-71, 1F95-71.

**TEMPERATURE AND HOT WATER CONTROLS  
1000-1100 SERIES**

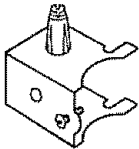
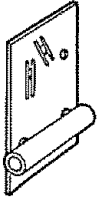
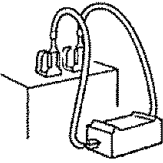
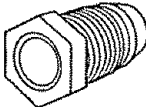



Item	Type Number	Description
	<b>F145-0650</b>	F71-0924 and F145-0163 packed together.



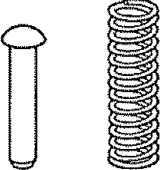

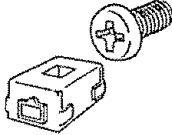
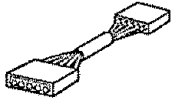

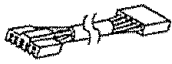

**COMPACT ZONE VALVES  
13A00 SERIES**

Item	Type Number	Description
	<b>F19-0181</b> <b>F19-0187</b>	<b>POWER HEAD</b> (Includes seal ring) For 2-way zone valves 25v with conduit hub 25v with plug-in panel For 3-way zone valves
	<b>F19-0190</b>	<b>MOTOR</b> 24v motor
	<b>F65-0439</b>	<b>BODY SEAL RING</b>
	<b>F84-1215</b>	<b>VALVE DISC</b> Contains one disc, spring, E-ring and body seal ring



**COMBINATION GAS MANIFOLD VALVES 3600 SERIES**

Item	Type Number	Description
	<b>F6-1794</b>	Bracket for Bryant pilots when retrofitting with Cycle-Pilot®
	<b>F67-0918</b>	Resistor assembly for use with 36C Cycle-Pilot® gas valves with pressure switch (NATURAL GAS APPLICATIONS ONLY) 3098 plug-in type mercury elements and used with a 5059 pilot relite control.
	<b>F67-0924</b>	Resistor assembly for use with 36C Cycle-Pilot® gas valves with pressure switch (NATURAL GAS APPLICATION ONLY) 3049 non-plug-in type mercury elements and used with a 5059 pilot relite control
	<b>F69-0727</b>	¼" brass compression fitting for pilot line connections
	<b>F92-0514</b>	Reducer bushings for 36C and 36E gas valves. Contains one ¾" x ½" N P T. and one ¾" x ½" N P T.
	<b>42/387</b> <b>F115-0092</b>	Harness assembly for use with 36C Cycle-Pilot® gas valves with pressure switch (NATURAL GAS APPLICATION ONLY) when used with 5022-2xx or 50A22-2xx safety timers
	<b>42/387</b> <b>F115-0100</b>	Harness assembly for HSI systems with 36E gas valves; connects the 767A Ignitor with the 50E47 or the 50F47 ignition module

Item	Type Number	Description
	<b>F92-0656</b>	L. P. to natural gas conversion kit for 36C and 36E gas valves with regulation range of 2.5 to 5" W.C.
	<b>F92-0659</b>	Natural to regulated L. P. gas conversion kit for 36C and 36E gas valves with regulation range of 7.5 to 12 0" W.C.
	<b>F92-0737</b>	Natural to unregulated L. P. gas conversion kit for 36C gas valves
	<b>F92-0866</b>	Conversion kit for 36C gas valves with regulation range of 4.2 to 11 0" W.C.
	<b>F92-0773</b>	Adapter bracket for remote rod adjustment of A-cock on 36C type gas valves
	<b>42/387</b> <b>F115-0059</b>	36" replacement harness assembly for connection of 50A22-201 to 36C84-426 in the 21D18-5 Cycle-Pilot® retrofit kit or to 36C84-436 in the 21D18-15.
	<b>42/387</b> <b>F115-0064</b>	36" replacement harness assembly for connection of 5059-23 to 36C84-426 in the 21D18-3 Cycle-Pilot® retrofit kit
	<b>42/387</b> <b>F115-0083</b>	36" replacement harness assembly for L. P. applications using 36E gas valves
	<b>42/387</b> <b>F115-0087</b>	36" replacement harness assembly for connection of 5059-23 to 36E86-302 in the 21D18-14 Cycle-Pilot® retrofit kit

TO ORDER THE ABOVE PARTS USE 42/387

# AIR CLEANER COMPARTMENTS FURNACE MOUNT



## AIR CLEANER MEDIA FILTER

AIR CLEANER MEDIA FILTER THAT IS CONTAINED IN A DURABLE CORRUGATED BOX AND SLIDES EASILY INTO COMPARTMENT. REPLACEMENT AND DISPOSAL IS QUICK AND SIMPLE.

### FEATURES

- Two sizes
- Slides easily into air cleaner compartment
- 5" Filter
- Corrugated box surrounding paper filter

### SPECIFICATIONS

42/387 F825-0548

Model Number	CFM Range	Power Requirements	Shipping Weight
<b>F825-0548</b> (fits SST-14 cabinet)	800-1400	None	6 lbs.
<b>F825-0549</b> (fits SST-20 cabinet)	1400-2000	None	7 lbs

TO ORDER THE ABOVE PARTS USE 42/387

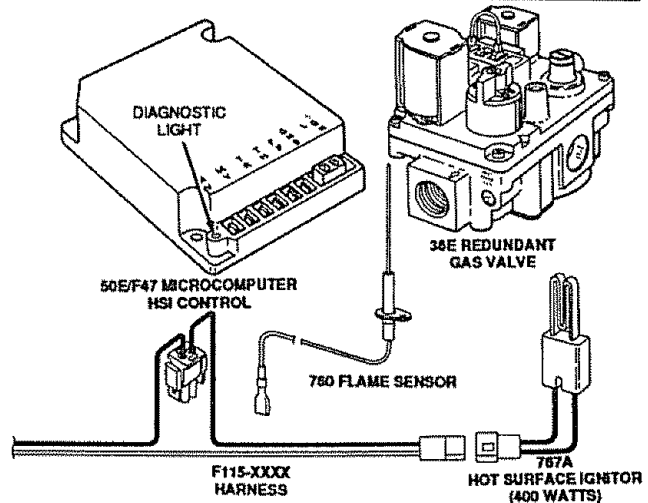


**HOT SURFACE IGNITION SYSTEM**  
**Product Information and Troubleshooting Guide \***

**DESCRIPTION**

White-Rodgers Hot Surface Ignition (HSI) System is used primarily in heating applications such as gas furnaces, boilers, water heaters and other similar devices. In general, the remote-sense HSI System consists of a line voltage 767A Series Silicon Carbide Ignitor, 760 Series Sense Electrode, 50E/F47 Ignition-Detection Control, 36EXX Redundant Gas Valve and an F115-XXXX Harness.

The system features direct main ignition, remote sensing, prepurge, retry, trial for ignition period, and system fault analysis. The diagnostic LED (light emitting diode) simplifies troubleshooting in the event of a fault. HSI models with diagnostic light are polarity sensitive and may lock out if 120 volt service wiring is reversed.



**CONTROL MODULE SPECIFICATIONS**

**Electrical Ratings:**

Input Voltage: 25v AC 50/60 Hz  
Current: 0.2 Amp

**Relay Contact Ratings:**

Valve Relay 1.5 Amp @25v AC 50/60 Hz 0.6 pf  
Ignitor Relay 6.5 Amp @ 120/277v AC 50/60 Hz Resistive

**Flame Current Requirements:**

Minimum current to insure flame detection: 1µA DC\*\*  
Maximum current for non-detection: 0.2µA DC\*\*  
Maximum allowable leakage resistance: 100M ohms

\*\* Measured with a DC microammeter in the flame probe lead.

**Operating Temperature Range:** -40° to +175°F (-40° to +80°C)

**Humidity Range:** To 95% Rh, non-condensing

**Termination:**

- (2) 3/16" male tab terminals (main valve)
- (4) 1/4" male tab terminals (TR, TH, FP, GND)
- (1) two-pin polarized Amp connector (L-IGN)

**Physical Data:**

Size: (L) 5" x (W) 4" x (H) 1-1/2"  
Mounting: Surface mount on any convenient surface using two #6 x 5/8 sheet metal screws **OR** mount on a 4" x 4" junction box using two #8-32 x 5/8 machine screws.

**Flame Sensor Lead Length:** 36" (.9m approx.) maximum recommended

**Timing Specs: (Maximum)**

	60Hz	50Hz
Prepurge Time (if so equipped) 50E47	30 sec.	37 sec.
50F47	17 sec.	20 sec.
Flame Establishing Time (Standard)	4.0 sec.	4.8 sec.
(Optional)	7.0 sec.	8.4 sec.
Flame Failure Response Time	0.8 sec.	0.96 sec.
Trial for Ignition Period (Standard)	4.0 sec.	4.8 sec.
(Optional)	7.0 sec.	8.4 sec.
Ignition Activation Period (Standard)	1.0 sec.	1.2 sec.
(Optional)	4.0 sec.	4.8 sec.

**Recycle Time:** Immediate on models without prepurge. On models with prepurge, recycle occurs at end of prepurge time.

(For selection of TRIAL FOR IGNITION PERIOD, RETRIES, PREPURGE, & IGNITOR WARM-UP time, see chart at end of this bulletin.

**A.G.A. Certified and C.G.A Certified.**

**Gases Approved:** Natural, manufactured, mixed, liquid petroleum and LP gas air mixtures are all approved for use.

**Definitions:**

Recycle - Flame has been sensed but lost. Initiate new ignition sequence (4 recycles permitted)

Retry - No flame has been sensed; retry for ignition (0 or 2 retries optional).

\* **NOTE** For troubleshooting in the field, the qualified serviceman may use the four page soil-resistant R-3641 "Qualified Serviceman's All HSI Troubleshooting Guide."





## OPERATION

### TYPICAL FURNACE INSTALLATION

In a typical system, a call for heat is initiated by closing the thermostat contacts. This will energize the 50E/F47 control. If the system is equipped with prepurge, the prepurge fan or interfacing relay is also energized through the thermostat contacts. In the prepurge mode, the 50E47 control will delay 30 seconds (or the 50F47 will delay 17 seconds) before applying power to the silicon carbide ignitor. If prepurge is not selected, the ignitor is powered within one second.

The ignitor then heats up to ignition temperature in either 17 or 45 seconds depending on the control type number. Various ignitors on the market must use the 45 second option to allow them to fully attain ignition temperatures at low voltage conditions. On models with 17-second warm-up time, the White-Rodgers (W-R) Model 767A Type 3XX Ignitor (or equivalent\*) must be used. It is specifically designed to heat up quickly at a low voltage condition without overheating at a high voltage condition. The W-R 17-second ignitor may also be used with a 45 second warm-up time without detrimental effects.

At the end of the ignitor warm-up time, both valves in the 36E manifold gas valve are opened. The ignitor will remain on for an additional 1 second (Ignition Activation Period) in standard models with 4-second trial for ignition period, or for 4 seconds (Ignition Activation Period) in the models with optional 7-second trial for ignition period. Ignition occurs, flame is detected by the 760-XXX Flame Sensor, and the burner continues to operate until the thermostat is satisfied.

### HOW THE 50E/F47 CONTROL DEALS WITH EXCEPTIONS

Flame must be detected within the trial for ignition period. If flame is not detected, both valves are de-energized, the ignitor is turned off and the 50E/F47 control goes into lockout. (The 50E/F47 control de-energizes the ignitor 3 seconds before the end of the lockout time.)

At this point the diagnostic light indicates whether the fault is likely to be internal to the module (steady light) or external to the module (flashing light). If internal fault is indicated, interrupt line or 25 volt thermostat power for a few seconds and then restore. If internal

fault is indicated again, and flame sensor is not shorted to ground, replace control; if external fault, refer to Troubleshooting Guide.

If the control is locked out with an external fault, it may be reset by momentary power interruption of a few seconds. Either the 25 volt thermostat or line voltage may be interrupted.

The controller may also be equipped with a "retry" option depending on type number. This provides a 60-second wait following an unsuccessful ignition attempt (flame not detected). If the prepurge option is used, the waiting time becomes 90 seconds (30 second prepurge, plus 60 second wait) for the 50E47, or 77 seconds (17 second prepurge plus 60 second wait) for the 50F47. After this wait, the ignition sequence is restarted with an additional 10 seconds of ignitor warm-up time. If this ignition attempt is unsuccessful, one more retry will be made before lockout.

If flame is established and then lost, all 50E/F47 controls will "recycle" the ignition sequence 4 times (5 total ignition cycles).

If flame is established for more than 10 seconds after ignition, the 50E/F47 controller will clear the "retry" counter. The ignition "recycle" counter, however, remains unchanged.

During burner operation, a momentary loss of power of 50 milliseconds or longer will drop out the main gas valve. When power is restored, the gas valve will remain de-energized and a restart of the ignition sequence will begin immediately.

A momentary loss of gas supply, flame blowout, or a shorted or open condition in the flame probe circuit will be sensed within 0.8 seconds. The gas valve will de-energize and the control will restart the ignition sequence after waiting 60 seconds. Recycles will begin and the burner will operate normally if the gas supply returns, or the fault condition is corrected, prior to the last ignition attempt. Otherwise, the control will lockout.

\* **NOTE** Refer to heating appliance manufacturer's literature for other approved ignitor sources.

## WARNING



**FAILURE TO READ AND FOLLOW ALL INSTRUCTIONS CAREFULLY, BEFORE INSTALLING OR OPERATING THIS CONTROL, COULD CAUSE PERSONAL INJURY AND/OR PROPERTY DAMAGE.**

## INSTALLATION, MOUNTING & WIRING

### INSTALLATION

THESE CONTROLS MUST BE INSTALLED BY A QUALIFIED INSTALLER.

Do not exceed the specification ratings.

Shut off main gas to heating system until installation is complete.

Route and secure all wiring as far from flame as practical to prevent fire and/or equipment damage. All wiring must conform to local and national electrical codes and ordinances.

This control is a precision instrument, and should be handled carefully. Rough handling or distorting components could cause the control to malfunction.

## CAUTION



**Do not short out terminals on gas valve or primary control to test. Short or incorrect wiring will burn out thermostat heat anticipator – could cause personal injury and/or property damage.**

**To prevent electrical shock and/or equipment damage, disconnect electric power to system, at main fuse or circuit breaker box, until installation is complete. DO NOT USE ON CIRCUITS EXCEEDING SPECIFIED VOLTAGE. HIGHER VOLTAGE WILL DAMAGE CONTROL – COULD CAUSE SHOCK OR FIRE HAZARD.**



**ENHANCED  
50E47, 50F47 HSI TROUBLESHOOTING GUIDE**

The following troubleshooting guide provides systematic procedures for isolating equipment problems and is intended for use by a QUALIFIED ELECTRICIAN OR SERVICEMAN.

**READ ENTIRE MANUAL BEFORE ATTEMPTING TO TROUBLESHOOT.**

To effectively use these flow charts, each step must be completed in sequence, performing whatever tests are suggested. After the completion of each test, the guide will direct the serviceman to the next logical step in troubleshooting based on the outcome of the previous check.

Components should be replaced only after each step has been completed and replacement is suggested in the flow chart.

**TEST EQUIPMENT**

The following pieces of test equipment will be required to troubleshoot this system with minimal time and effort:

- **Volt Ohmmeter** – for measuring voltage and resistance.
- **Precision Microammeter** – for checking flame sensor location
- **Pressure Gauge** – low reading – for checking outlet pressure of gas valve against nameplate rating.

<b>WARNING</b>		<b>HIGH VOLTAGE WILL BE PRESENT</b> Troubleshooting this system may require operating the unit with 120v AC and gas to be on. Extreme caution must be used when working on the appliance. Failure to follow the flow charts exactly may cause property damage, personal injury, or death. This guide is intended for use by qualified service technicians only.
		50E/F47 controls contain no serviceable parts - replace with exact model and type number to prevent a possible flame roll out and resulting injury.
		Turn power off before servicing. Line voltage (120v AC) could be present on the surface of the ignitor, if the system is not correctly wired. Such voltage can cause serious injury or death.

**DIAGNOSTIC LIGHT**

MODELS WITH DIAGNOSTIC LIGHT have self diagnostic capabilities.

**Flash On-Off** – On start-up, the light on the module will FLASH ONCE, indicating the control is functional.

**Steady Light** – If the light is ON CONTINUOUSLY, the fault is likely to be internal to the module. To make sure, interrupt line or 25 volt thermostat power for a few seconds and then restore. If internal fault is indicated again, replace control

**Flashing Light** – A FLASHING LIGHT indicates the problem is most likely in the external components or wiring; proceed to PRELIMINARY STEPS.

**TROUBLESHOOTING – FLASHING LIGHT ONLY**

**Preliminary Steps - Do Not Omit**

The following four steps must be performed first before any troubleshooting begins.

1. Disconnect electric power to system at main fuse or circuit breaker.
2. Remove draft shield (if necessary) to gain access to the ignitor.
3. Visually inspect equipment for apparent damage. Check wiring for loose connections.

4. Check for Reversed Polarity. (HSI models with diagnostic light are polarity sensitive and may lock out if 120 volt service wiring is reversed.)

- A. Disconnect the ignitor socket from the wiring harness. Connect an AC voltmeter across the terminal connected to the white wire and chassis ground.
- B. Re-connect electric power to system. If no voltage exists, polarity is correct; proceed to step 4D.
- C. If voltage exists between the terminal connected to the white wire and the chassis ground, the main power supply lines are improperly connected to the furnace (REVERSED POLARITY). Again disconnect electric power to system; then reverse incoming line voltage leads and repeat step 4B.
- D. Re-connect the ignitor socket to the wiring harness. Re-check the system for proper operation.

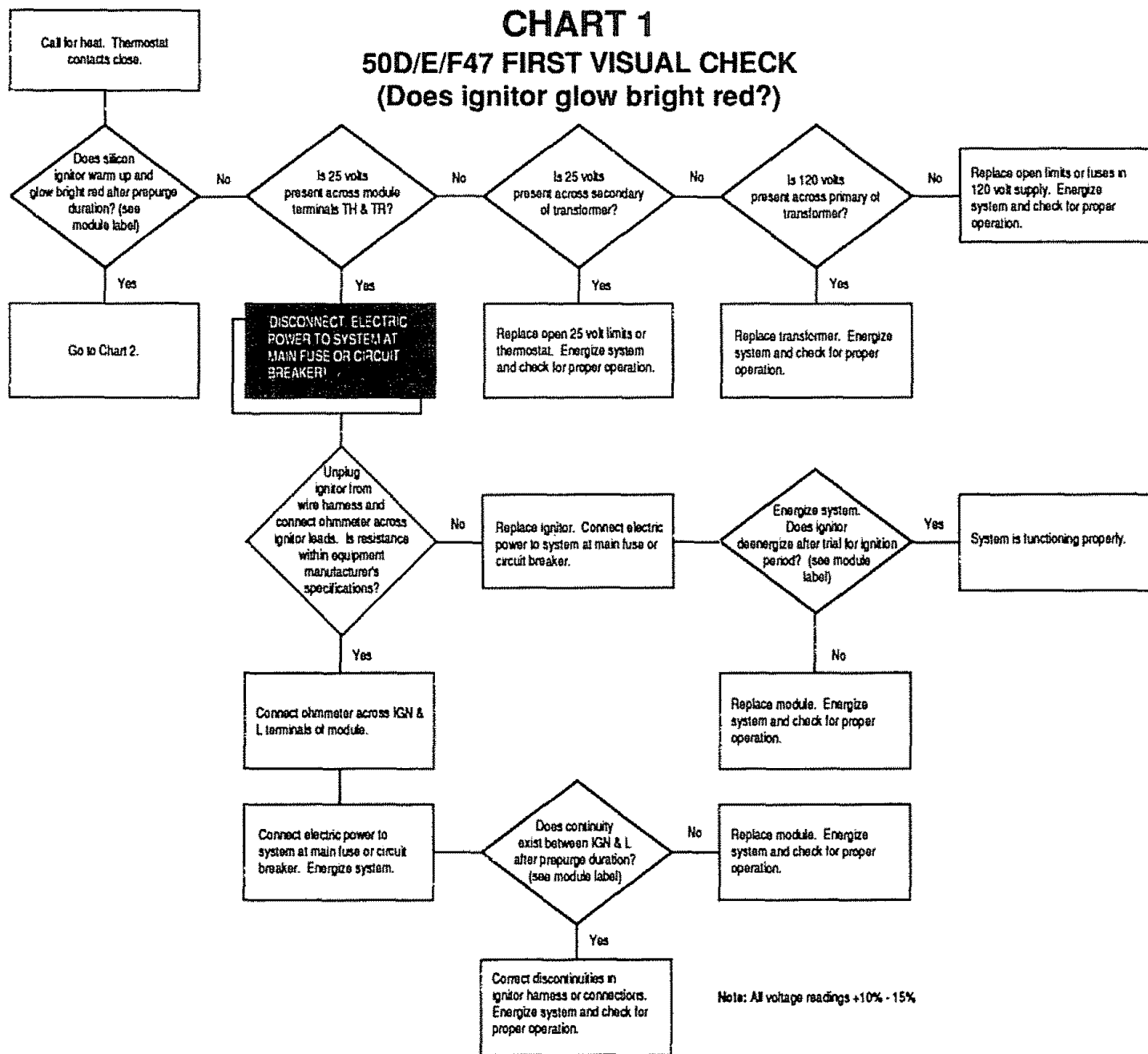
If neither apparent damage, loose connection nor reversed polarity is the problem, proceed to the visual check chart (1st, 2nd or 3rd) that is suggested by the actual condition.

**THREE VISUAL CHECKS**

1. The ignitor will warm up and glow red (See Chart 1).
2. The main burner flame will ignite (See Chart 2).
3. The main burner flame will continue to burn after the ignitor is turned off (See Chart 3).



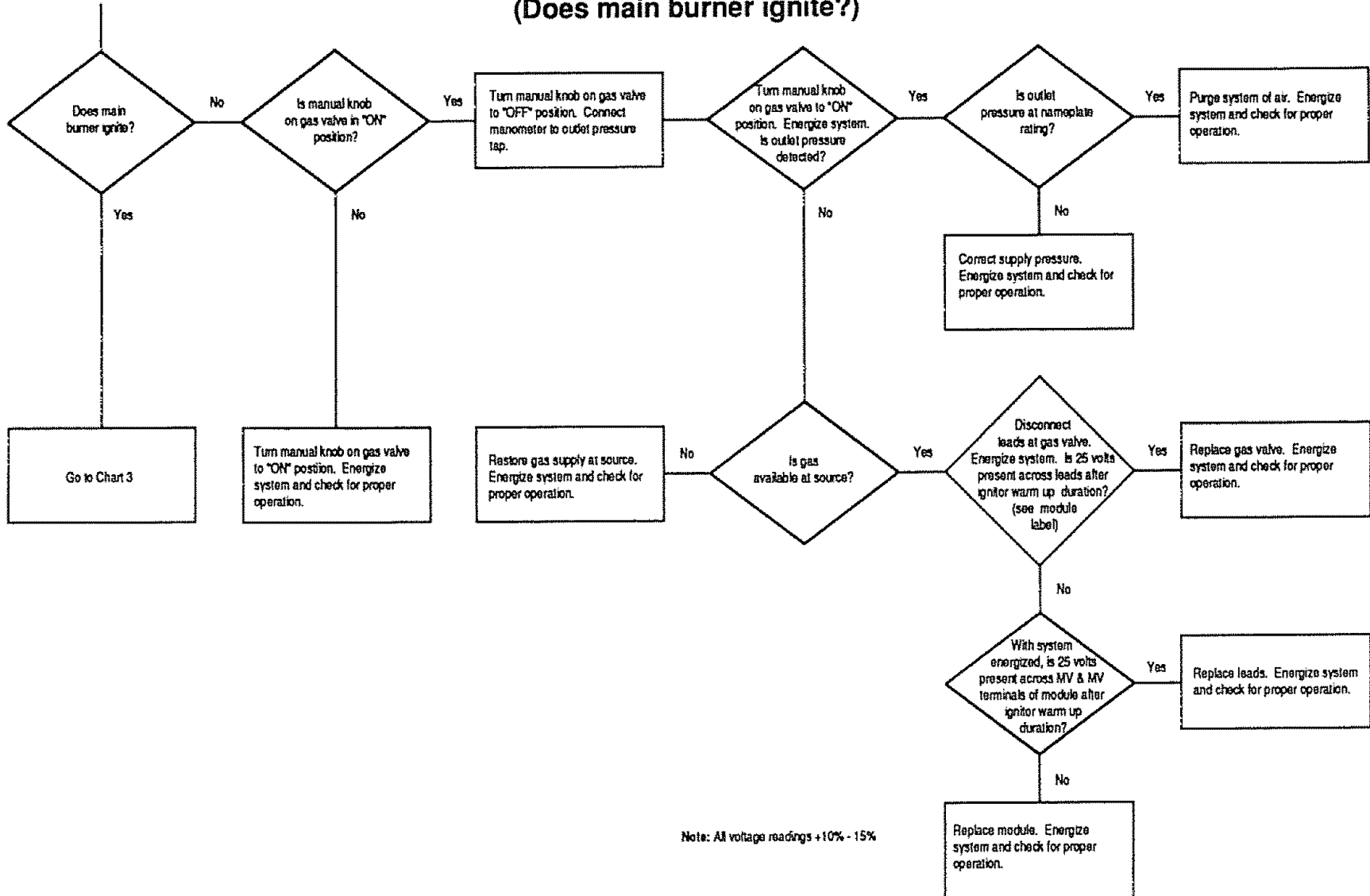
### CHART 1 50D/E/F47 FIRST VISUAL CHECK (Does ignitor glow bright red?)



Note: All voltage readings +10% - 15%

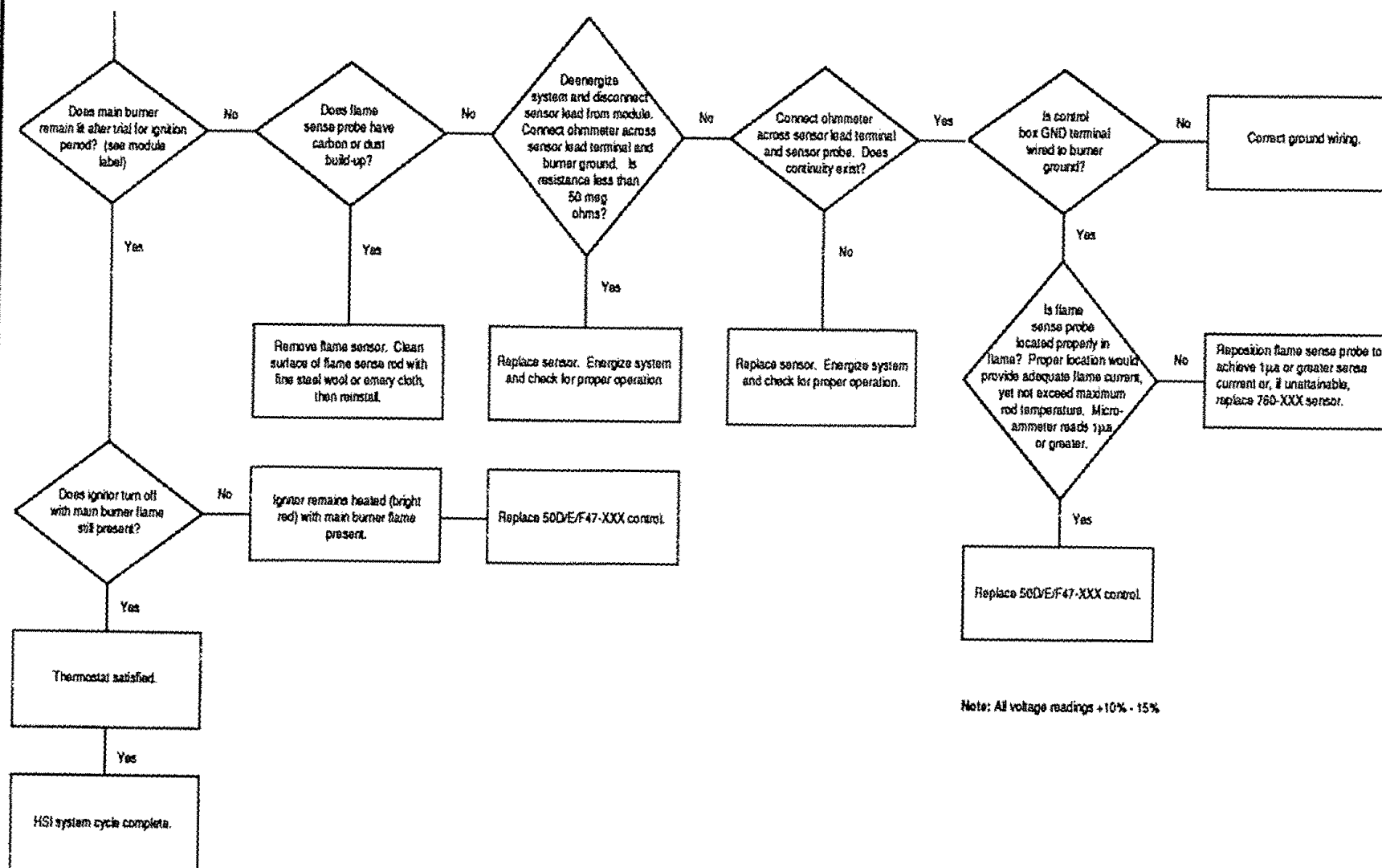


## CHART 2 50D/E/F47 SECOND VISUAL CHECK (Does main burner ignite?)





### CHART 3 50D/E/F47 THIRD VISUAL CHECK (Does main burner remain lit?)



Note: All voltage readings +10% - 15%



**50E47 TYPES AVAILABLE**

TYPE NO.	TRIAL FOR IGNITION PERIOD	RETRIES	PREPURGE	IGNITOR WARM-UP	120V CONNECTION
50E47 - 1 thru 9	4 sec.	0	0 sec.	17 sec.	plug
50E47 - 10 thru 19	4 sec.	0	0 sec.	45 sec.	plug
50E47 - 20 thru 29	4 sec.	0	30 sec.	17 sec.	plug
50E47 - 30 thru 39	4 sec.	0	30 sec.	45 sec.	plug
50E47 - 40 thru 49	4 sec.	2	30 sec.	17 sec.	plug
50E47 - 50 thru 59	4 sec.	2	30 sec.	45 sec.	plug
50E47 - 60 thru 69	4 sec.	2	0 sec.	17 sec.	plug
50E47 - 70 thru 79	4 sec.	2	0 sec.	45 sec.	plug
50E47 - 101 thru 109	7 sec.	0	0 sec.	17 sec.	plug
50E47 - 110 thru 119	7 sec.	0	0 sec.	45 sec.	plug
50E47 - 120 thru 129	7 sec.	0	30 sec.	17 sec.	plug
50E47 - 130 thru 139	7 sec.	0	30 sec.	45 sec.	plug
50E47 - 140 thru 149	7 sec.	2	30 sec.	17 sec.	plug
50E47 - 150 thru 159	7 sec.	2	30 sec.	45 sec.	plug
50E47 - 160 thru 169	7 sec.	2	0 sec.	17 sec.	plug
50E47 - 170 thru 179	7 sec.	2	0 sec.	45 sec.	plug
50E47 - 201 thru 209	4 sec.	0	0 sec.	17 sec.	lead
50E47 - 210 thru 219	4 sec.	0	0 sec.	45 sec.	lead
50E47 - 220 thru 229	4 sec.	0	30 sec.	17 sec.	lead
50E47 - 230 thru 239	4 sec.	0	30 sec.	45 sec.	lead
50E47 - 240 thru 249	4 sec.	2	30 sec.	17 sec.	lead
50E47 - 250 thru 259	4 sec.	2	30 sec.	45 sec.	lead
50E47 - 260 thru 269	4 sec.	2	0 sec.	17 sec.	lead
50E47 - 270 thru 279	4 sec.	2	0 sec.	45 sec.	lead
50E47 - 301 thru 309	7 sec.	0	0 sec.	17 sec.	lead
50E47 - 310 thru 319	7 sec.	0	0 sec.	45 sec.	lead
50E47 - 320 thru 329	7 sec.	0	30 sec.	17 sec.	lead
50E47 - 330 thru 339	7 sec.	0	30 sec.	45 sec.	lead
50E47 - 340 thru 349	7 sec.	2	30 sec.	17 sec.	lead
50E47 - 350 thru 359	7 sec.	2	30 sec.	45 sec.	lead
50E47 - 360 thru 369	7 sec.	2	0 sec.	17 sec.	lead
50E47 - 370 thru 379	7 sec.	2	0 sec.	45 sec.	lead

**50F47 TYPES AVAILABLE**

TYPE NO.	TRIAL FOR IGNITION PERIOD	RETRIES	PREPURGE	IGNITOR WARM-UP	120V CONNECTION
50F47 - 1 thru 9	4 sec.	0	0 sec.	17 sec.	plug
50F47 - 10 thru 19	4 sec.	0	0 sec.	45 sec.	plug
50F47 - 20 thru 29	4 sec.	0	17 sec.	17 sec.	plug
50F47 - 30 thru 39	4 sec.	0	17 sec.	45 sec.	plug
50F47 - 40 thru 49	4 sec.	2	17 sec.	17 sec.	plug
50F47 - 50 thru 59	4 sec.	2	17 sec.	45 sec.	plug
50F47 - 60 thru 69	4 sec.	2	0 sec.	17 sec.	plug
50F47 - 70 thru 79	4 sec.	2	0 sec.	45 sec.	plug
50F47 - 101 thru 109	7 sec.	0	0 sec.	17 sec.	plug
50F47 - 110 thru 119	7 sec.	0	0 sec.	45 sec.	plug
50F47 - 120 thru 129	7 sec.	0	17 sec.	17 sec.	plug
50F47 - 130 thru 139	7 sec.	0	17 sec.	45 sec.	plug
50F47 - 140 thru 149	7 sec.	2	17 sec.	17 sec.	plug
50F47 - 150 thru 159	7 sec.	2	17 sec.	45 sec.	plug
50F47 - 160 thru 169	7 sec.	2	0 sec.	17 sec.	plug
50F47 - 170 thru 179	7 sec.	2	0 sec.	45 sec.	plug
50F47 - 201 thru 209	4 sec.	0	0 sec.	17 sec.	lead
50F47 - 210 thru 219	4 sec.	0	0 sec.	45 sec.	lead
50F47 - 220 thru 229	4 sec.	0	17 sec.	17 sec.	lead
50F47 - 230 thru 239	4 sec.	0	17 sec.	45 sec.	lead
50F47 - 240 thru 249	4 sec.	2	17 sec.	17 sec.	lead
50F47 - 250 thru 259	4 sec.	2	17 sec.	45 sec.	lead
50F47 - 260 thru 269	4 sec.	2	0 sec.	17 sec.	lead
50F47 - 270 thru 279	4 sec.	2	0 sec.	45 sec.	lead
50F47 - 301 thru 309	7 sec.	0	0 sec.	17 sec.	lead
50F47 - 310 thru 319	7 sec.	0	0 sec.	45 sec.	lead
50F47 - 320 thru 329	7 sec.	0	17 sec.	17 sec.	lead
50F47 - 330 thru 339	7 sec.	0	17 sec.	45 sec.	lead
50F47 - 340 thru 349	7 sec.	2	17 sec.	17 sec.	lead
50F47 - 350 thru 359	7 sec.	2	17 sec.	45 sec.	lead
50F47 - 360 thru 369	7 sec.	2	0 sec.	17 sec.	lead
50F47 - 370 thru 379	7 sec.	2	0 sec.	45 sec.	lead



**WARNING!** FAILURE TO READ AND FOLLOW ALL INSTRUCTIONS CAREFULLY, BEFORE INSTALLING OR OPERATING THIS CONTROL, COULD CAUSE PERSONAL INJURY AND/OR PROPERTY DAMAGE.

## TROUBLESHOOTING PROCEDURE

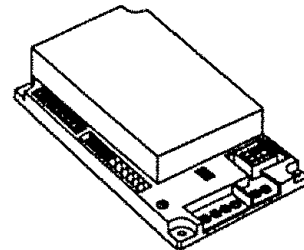
If the light on the module is on continuously, the fault is likely to be internal to the module. To make sure, interrupt line or 24 volt thermostat power for a few seconds and then restore. If internal fault is indicated again, and flame sensor is not shorted to ground, replace control. A flashing light indicates the problem is most likely in the external components or wiring. Proceed as follows:

Line voltage (120V AC) could be present on the surface of the ignitor, if the system is not correctly wired. Such voltage can cause serious injury or death.

The following steps must be performed before any troubleshooting begins:

1. Disconnect electric power to system at main fuse or circuit breaker.
2. Visually inspect equipment for apparent damage. Check wiring for loose connections.
3. Check for proper grounding and reversed polarity.
  - A. Check continuity from B/C term on module to electrical service ground and connection at the furnace junction box. If ground connection is open, check module ground connection and the electrical service ground connection. Repair and retest.
  - B. Re-connect electrical power to the system.
  - C. Check for voltage between the line neutral terminal and furnace ground. If voltage exists, the main power supply lines are improperly connected to the furnace (REVERSED POLARITY). Again disconnect electric power to system; then reverse incoming supply leads to furnace. Repeat step.
  - D. Recheck system for proper operation.

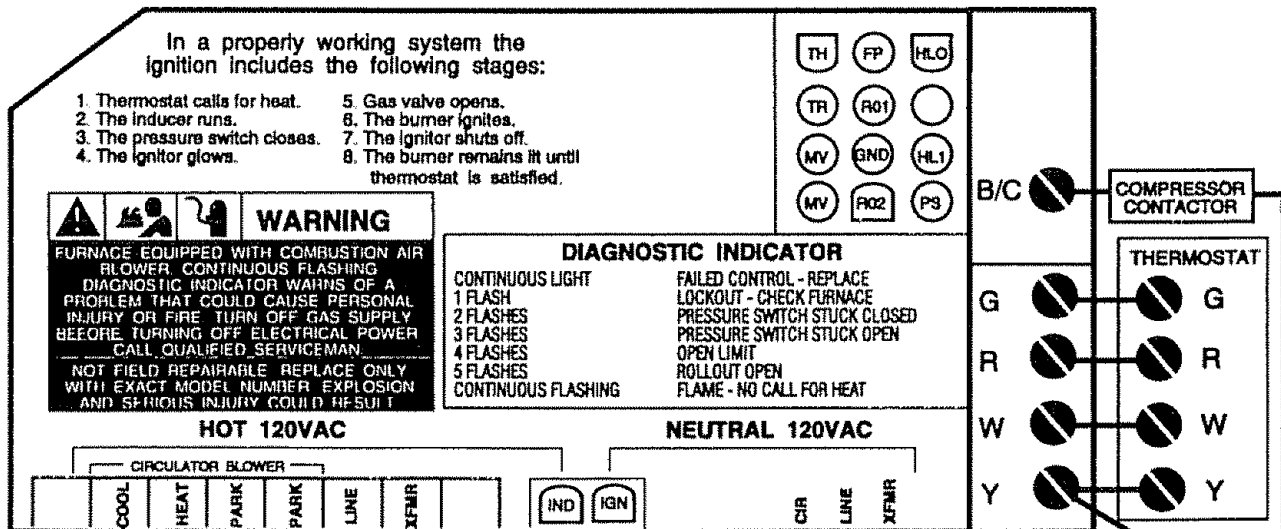
If neither apparent damage, loose connection nor reversed polarity is the problem, proceed to troubleshooting chart or fault index chart that is suggested by the actual condition.



## FAULT INDEX CHART

Probable Fault	Chart
No manual fan	1A - 1K
Power supply and voltage	1C - 1G
No fan at cooling speed	2A - 2L
No induced draft motor	3A - 3H
LED flashing 3 X without inducer	3E
LED flashing 3 X with inducer	3I - 3O
Ignitor does not glow	4A - 4D
Burner does not stay lit	4E - 4N
Gas supply problem	4F - 4K
No outlet pressure	4H - 4J
Gas valve does not energize	4L - 4N
Flame sensor fault	5A - 5P
Burner ground	5K
Polarity check	5L - 5M
Ignitor stays on after burner ignition	5B - 5C

Note: This troubleshooting guide is not for 50A50-4XX modules found on Trane equipment.

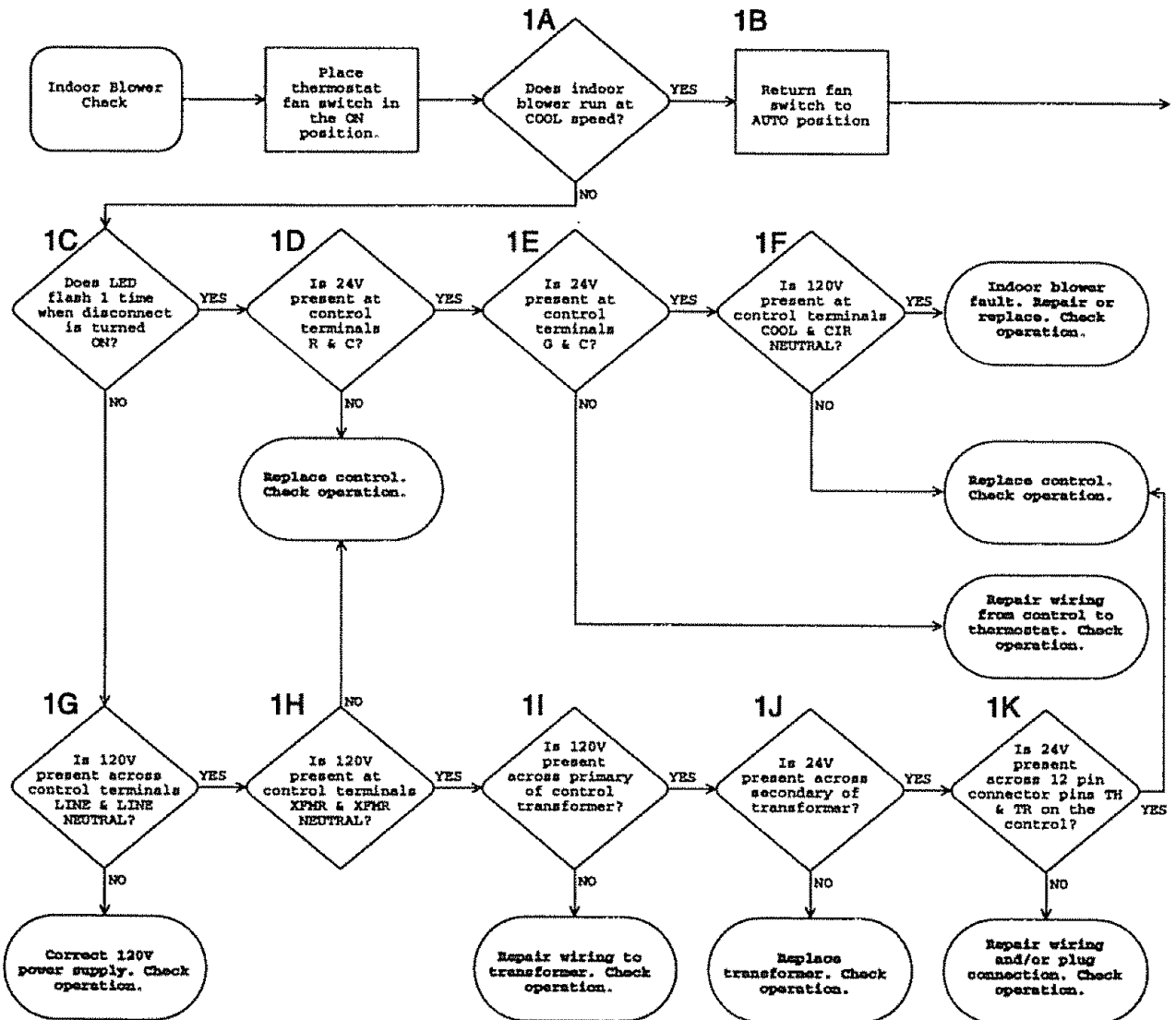


R-3747  
9332



**CHART 1**

		<b>WARNING</b>
FURNACE EQUIPPED WITH COMBUSTION AIR BLOWER. CONTINUOUS FLASHING DIAGNOSTIC INDICATOR WARNS OF A PROBLEM THAT COULD CAUSE PERSONAL INJURY OR FIRE. TURN OFF GAS SUPPLY BEFORE TURNING OFF ELECTRICAL POWER.		

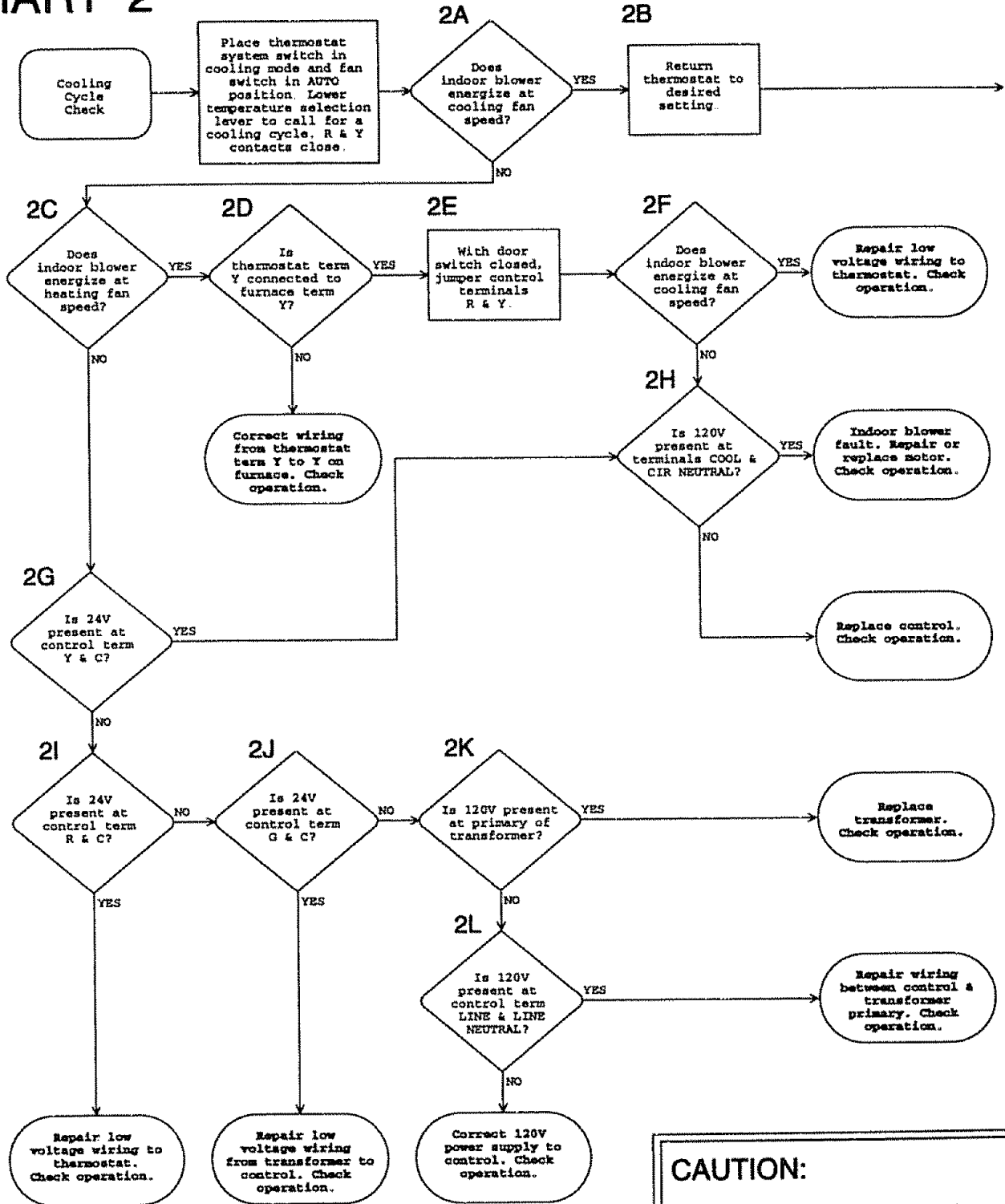


**CAUTION:**  
If diagnostic indicator (LED) shows continuous flashing, turn off gas supply at source before disconnecting electrical power!!





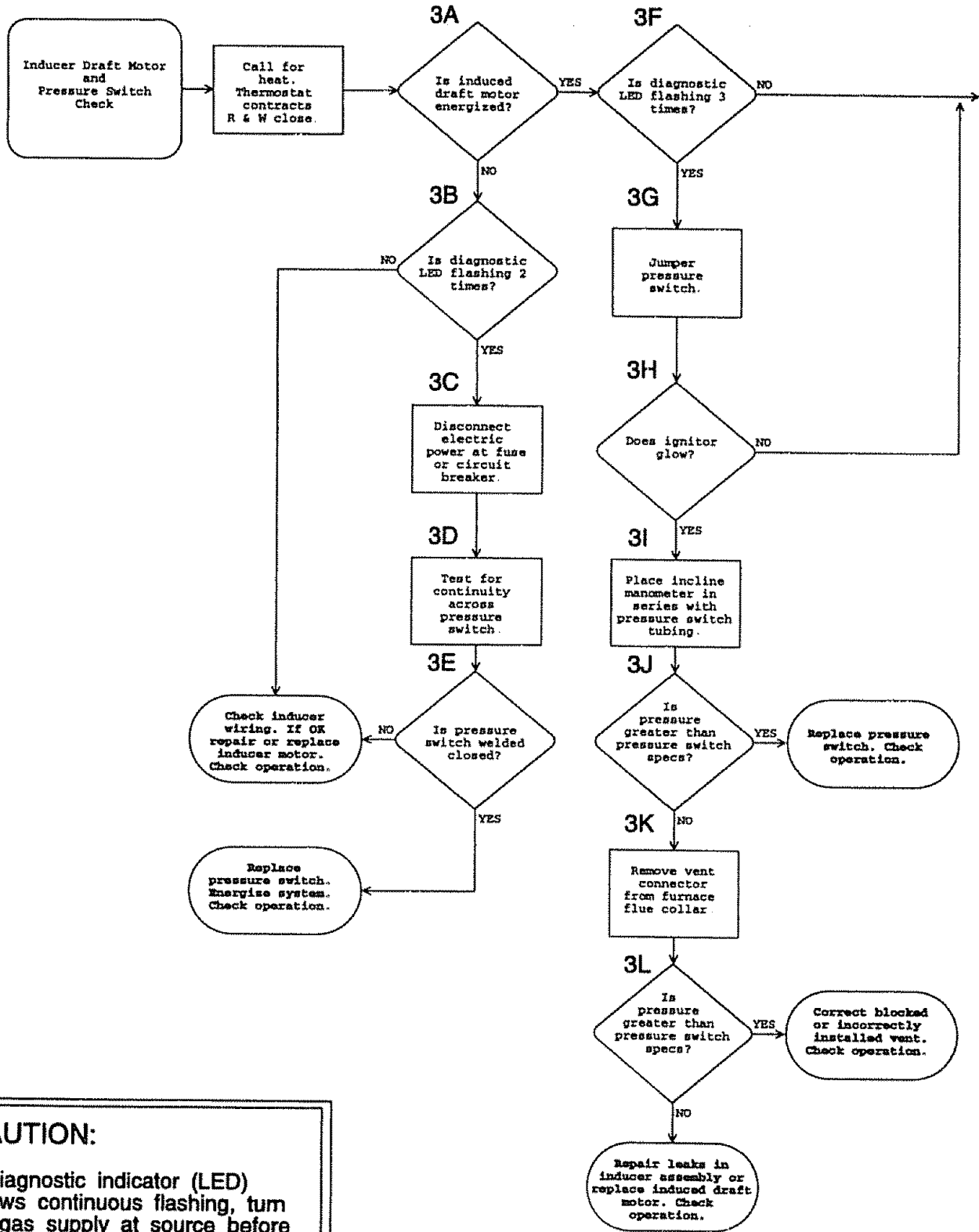
**CHART 2**



**CAUTION:**  
 If diagnostic indicator (LED) shows continuous flashing, turn off gas supply at source before disconnecting electrical power!!



**CHART 3**

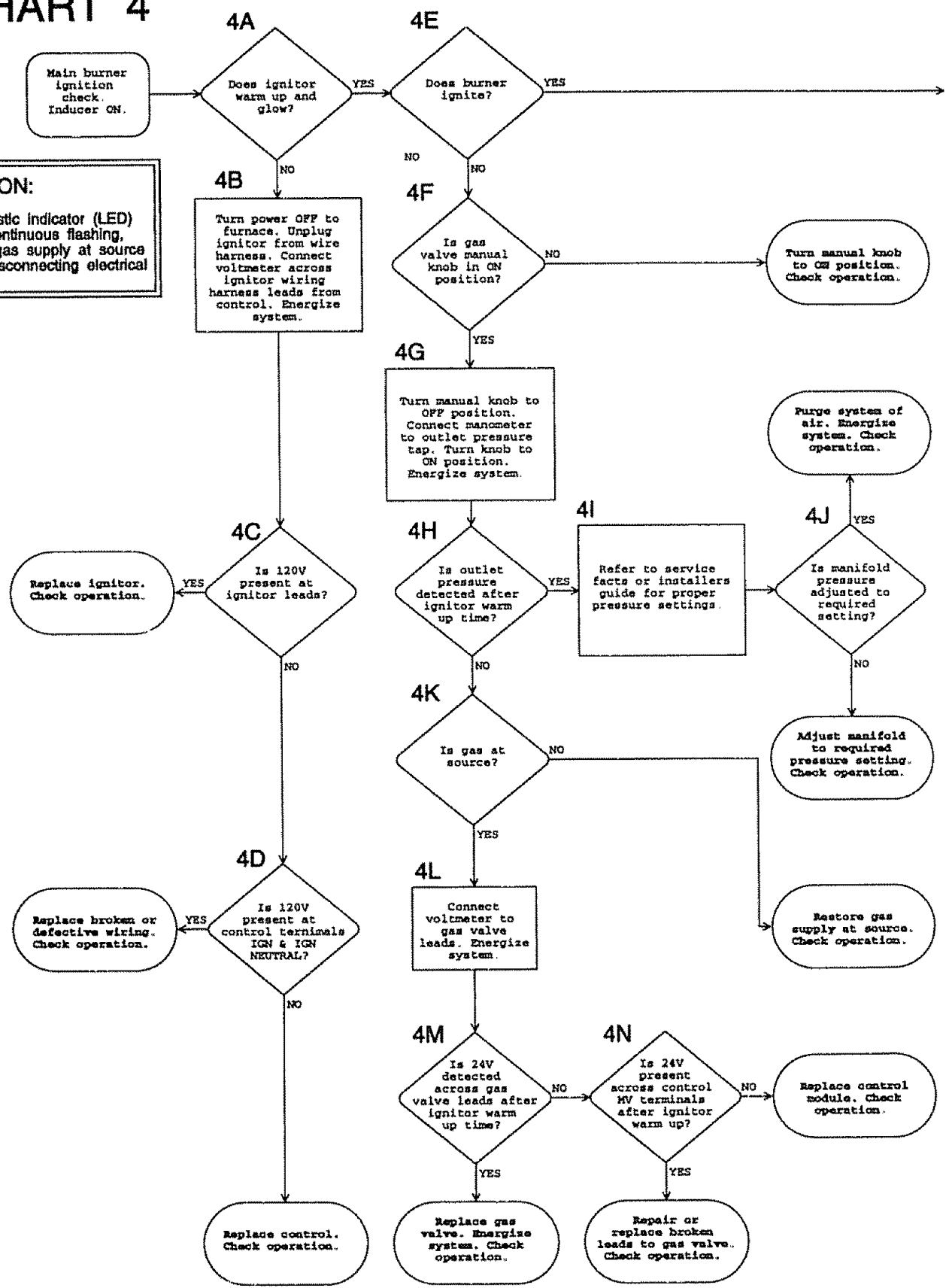


**CAUTION:**  
If diagnostic indicator (LED) shows continuous flashing, turn off gas supply at source before disconnecting electrical power!!



**CHART 4**

**CAUTION:**  
If diagnostic indicator (LED) shows continuous flashing, turn off gas supply at source before disconnecting electrical





## FULL ELECTRICAL RATINGS OF WHITE-RODGERS CONTROLS

Any number of motors may be operated from one control provided that neither the sum of the full load currents nor the sum of the locked rotor currents are greater than the rating of the control. If the electric load consists of an oil burner motor and ignition transformer in parallel, the motor current plus the transformer current cannot exceed the values shown.

### MOTOR (Amps)

Power Supply And Load	Simplified Rating Code of White-Rodgers Controls												HH2C	
	FG	FGH	HT	HTV	HH	B	CF	CL	FB	SPDT	R	White	Red	
	120 VAC Full Load	14.0	16.0	14.0	10.0	7.4	7.4	8.0	10.0	7.4	7.4	3.2	7.4	7.4
120 VAC Locked Rotor	84.0	84.0	84.0	60.0	44.5	44.5	48.0	60.0	44.5	44.5	19.2	44.5	44.5	
240 VAC Full Load	7.0	8.0	7.0	6.0	3.7	3.7	6.0	6.0	3.7	3.7	1.6	3.7	3.7	
240 VAC Locked Rotor	42.0	42.0	42.0	36.0	22.2	22.2	36.0	36.0	22.2	22.2	9.6	22.2	22.2	

### VALVES, RELAYS, MOTOR STARTERS (Amps)

Power Supply And Load	Simplified Rating Code of White-Rodgers Controls												HH2C	
	FG	FGH	HT	HTV	HH	B	CF	CL	FB	SPDT	R	White	Red	
	0.3 to 12v DC	†	†	†	1.0	†	†	†	1.0	†	†	†	†	†
25 VAC	5.6	5.6	5.6	6.0	2.9	2.9	3.2	4.0	2.9	2.9	1.2	2.9	2.9	
120 VAC	5.6	5.6	5.6	4.0	2.9	2.9	3.2	4.0	2.9	2.9	1.2	2.9	2.9	
240 VAC	2.8	2.8	2.8	2.4	1.4	1.4	2.4	2.4	1.4	1.4	0.6	1.4	1.4	
600 VAC	125VA	125VA	†	†	†	125VA	†	†	125VA	125VA	†	†	†	

### ELECTRIC HEATERS (Amps)

Power Supply And Load	Simplified Rating Code of White-Rodgers Controls												HH2C	
	FG	FGH	HT	HTV	HH	B	CF	CL	FB	SPDT	R	White	Red	
	120 VAC	25.0	25.0	14.0	10.0	7.4	25.0	8.0	10.0	25.0	24.0	5.0	*	*
240 VAC	22.0	22.0	7.0	6.0	3.7	20.0	6.0	6.0	20.0	20.0	2.5	*	*	
277 VAC	18.0	18.0	†	†	†	18.0	†	†	18.0	†	†	*	*	

### LAMPS (Watts)

Power Supply And Load	Simplified Rating Code of White-Rodgers Controls												HH2C	
	FG	FGH	HT	HTV	HH	B	CF	CL	FB	SPDT	R	White	Red	
	120 VAC	1000	1000	1000	700	500	500	700	700	500	500	200	*	*
240 VAC	1000	1000	1000	800	500	500	800	800	500	500	200	*	*	

† Indicates that control CANNOT be used on that power supply and load.

\* Indicates that control is not likely to be used on that power supply and load.

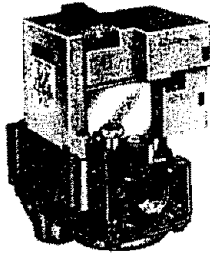
125VA means 125 volt amperes; for example: 125VA at 440 volts would be 125 ÷ 440 equals 0.28 amperes

# Gas Burner Controls—Ignition Controls

## SV9500 SmartValve™ System

Combines gas flow control and electronic intermittent pilot sequencing functions into a single unit.

- Suitable for a wide range of gas-fired appliances including furnaces, rooftop furnaces, boilers, unit heaters, infrared heaters, space heaters and commercial cooking units.



**IMPORTANT:** This control is for direct replacement of OEM installed controls only; see order table. Do not attempt to apply this control except as a direct replacement for the specific Honeywell models noted in the order table below. Use Y8610 to convert standing pilot systems to electronic ignition systems.

**APPROVAL BODIES:**

American Gas Association design certified: U70-24A.

Canadian Gas Association design certified: 1029-AB1/CC-9203.

**REPLACEMENT PART:**

1009524 Replacement Igniter/Flame Rod Assembly—30 in. [762 mm] leadwires.

Order Number	Inlet/Outlet Size (in.)	Pressure Regulator/Setting		Type of Opening	Type of Gas	Replaces
		In. wc	kPa			
1011024	½ x ½	3.5	0.87	Standard	Natural	SV9500M2603 SV9500M2637 <sup>b</sup> SV9500M2645 SV9500M2674 <sup>a</sup> SV9500M2682 SV9500M2686 SV9500M6604

<sup>a</sup> Requires vent fitting (part no. 392877, order separately).

<sup>b</sup> Requires ¾ in. straight flange (part no. 393690-14, order separately).

# Air Cleaners—Parts and Accessories

## S688A Sail Switch

Used in forced air systems to activate electronic air cleaners, humidifiers or other auxiliary equipment in response to airflow from system fan.

- Used in electric systems to prove minimum airflow.
- Allows auxiliary equipment, such as humidifiers, duct heaters or damper motors to be wired independently of blower motor.
- Senses vertical or horizontal airflow with appropriate selection of bias spring.
- Consists of polyester film sail mounted on an spdt, Micro Switch snap-acting switch.



### SAIL DIMENSIONS:

Insertion Length: 10 in. [254 mm].  
Maximum Width: 5 in. [127 mm].  
Area: 26.2 sq. in. [16,903 mm<sup>2</sup>].

APPROXIMATE CASE DIMENSIONS: 2 3/4 in. [59 mm] high, 3 3/4 in. [95 mm] wide, 2 1/4 in. [54 mm] deep.

### MAXIMUM AMBIENT TEMPERATURE:

At Switches: 125 F [52 C].  
At Sail: 170 F [77 C].

### APPROVAL BODIES:

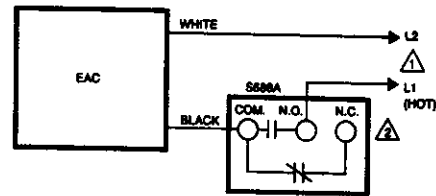
Listed by Underwriters Laboratories Inc.  
Certified by Canadian Standards Association.

### CONTACT RATINGS (A):

	N.O. Contacts <sup>a</sup>			N.C. Contacts <sup>a</sup>		
	24 Vac	120 Vac	240 Vac	24 Vac	120 Vac	240 Vac
Full Load	2.0	2.0	1.0	1.0	1.0	0.5
Locked Rotor	12.0	12.0	6.0	6.0	6.0	3.0
Resistive	5.0	5.0	2.5	2.5	2.5	2.5

<sup>a</sup> Pilot duty ratings.

Typical hookup using S688A to activate an F50A,E Electronic Air Cleaner.



⚠ POWER SUPPLY: PROVIDE OVERLOAD PROTECTION AND DISCONNECT MEANS AS REQUIRED.

⚠ TERMINAL DESIGNATIONS ARE FOR POWER OFF:  
N.O. - NORMALLY OPEN, N.C. - NORMALLY CLOSED,  
C. - COMMON.

M2013

REPLACEMENT PART:  
123773A Sail Assembly.



Part Number	Make at 250 fpm [1.3 m/s]; break at 75 fpm [0.4 m/s].	Make at 75 fpm [0.4 m/s]; break at 250 fpm [1.3 m/s].
S688A1007		

## S830A Filter Flag Indicator

Indicates need to clean or replace air filters in forced-air heating, air conditioning and heat pump equipment.

- Red flag drops into window on fan compartment suction increase, which is caused by filter becoming clogged with dirt.
- Can also actuate an indicator light on system panel or special thermostat subbase.
- Mounts on downstream side of furnace filter, directly on fan compartment or at a remote location using 1/4 in. tubing.



APPROXIMATE DIMENSIONS: 3 1/4 in. [83 mm] high, 2 1/4 in. [57 mm] wide, 2 in. [51 mm] deep from end of knob to base.

MAXIMUM OPERATING TEMPERATURE: 170 F [77 C].

PRESSURE RANGE: 0.1 to 0.7 in. wc [0.02 to 0.2 kPa].

ELECTRICAL RATINGS: 1.5A running, 7.5A inrush as 24 Vac.

### ACCESSORIES:

114729 Clip for flush mounting (two required).

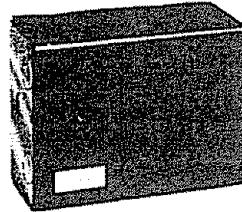
S830A1005	Normally open, makes when flag drops into window.
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# Oil Burner Controls

## R8182D Combination Protectorelay™ and Hydronic Heating Controllers

Immersion type Aquastat® controller and oil burner primary control provides high limit and low limit/circulator control for oil-fired hydronic heating systems.

- Use in intermittent ignition applications.
- Capable of zone control with zone valves.
- Circulator zone control with ZC and ZR terminals on R8182D.
- Flame failure during the running cycle results in a 45 second attempt to restart. If unsuccessful, safety shutoff occurs, requiring manual reset before burner can be restarted.
- R8182D mount directly on burner;



R8182D

- C554A Cadmium Sulfide Flame Detector and a 24 Vac thermostat required.

### APPROVAL BODIES:

Listed by Underwriters Laboratories Inc.: File no. MP268, Vol. 3, 4 (R8182D,E,F)

Certified by Canadian Standards Association: File no. LR95329-1.

APPROXIMATE DIMENSIONS: 7 1/4 in. [181 mm] high, 5 1/4 in. [133 mm] wide, 3 1/8 in. [87 mm] deep.

MAXIMUM AMBIENT TEMPERATURE: 250 F [121 C] at element.  
THERMOSTAT ANTICIPATOR SETTING: 0.2A.

MAXIMUM PRESSURE RATING: 200 psi [1378 kPa] on immersion well; 100 psi [90 kPa] direct immersion.

SAFETY SWITCH TIMING: 45 seconds.

### ELECTRICAL RATINGS:

Voltage and Frequency—120V, 60 Hz.

Burner Circulator Load Contacts (A)—4.4 AFL, 26.4 ALR, 120 Vac.  
Ignition Rating—360 VA in addition to load rating shown above.

Maximum Power Consumption—  
R8182D 9W;

### SWITCHING AND TEMPERATURE RATINGS:

Model	Switching	Adjustable Control Range		Differential	
		F	C	F	C
R8182D <sup>a</sup>	High Limit, Spst	130 to 240	54 to 116	10 Fixed	5.6 Fixed
	Low Limit/Circulator, Spdt	110 to 220	43 to 104	10 to 25 Adj.	5.6 to 14.0 Adj.

<sup>a</sup> Auxiliary ZC and ZR terminals may be used to provide circulator zone control through an R845A Switching Relay.

### REPLACEMENT PARTS:

126580 Dial Stop.

Well Assemblies (R8182D,E,F only)—

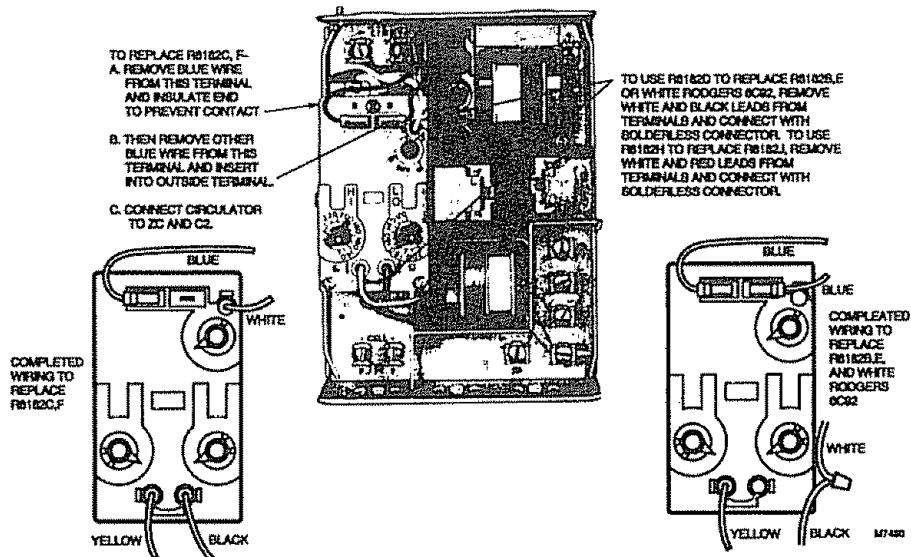
121371A, 1/2 NPT, 1 1/2 in. [38 mm] insulation, 3% in. [86 mm] insertion.

121371B, 3/4 NPT, 1 1/2 in. [38 mm] insulation, 3% in. [86 mm] insertion.

121371L, 1/2 NPT, 3 in. [76 mm] insulation, 3% in. [86 mm] insertion.  
123732AA, 1/2 NPT, 1 1/2 in. [38 mm] insulation, 3% in. [86 mm] insertion.

124299AA, 3/4 NPT, 1 1/2 in. [38 mm] insulation, 3% in. [86 mm] insertion.

### Conversion of TRADELINE R8182D Aquastat Assembly to replace R8182B,C,E,F and White Rodgers 6C92.

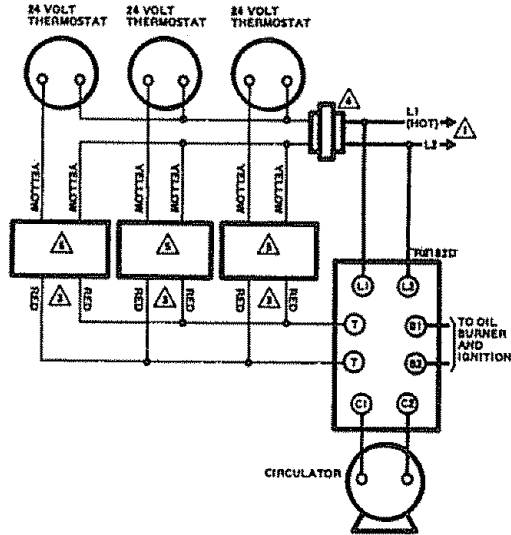


TO ORDER THE ABOVE PARTS USE 42/541

# Oil Burner Controls

R8182D, continued

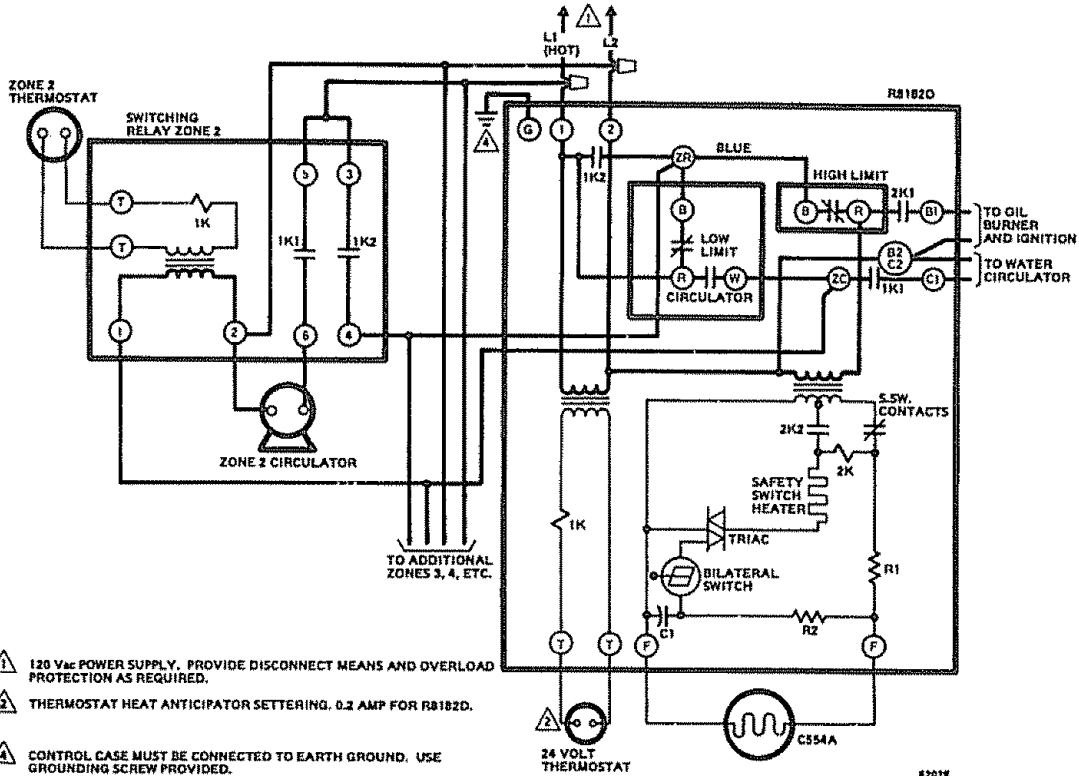
Typical connections for R8182D, for multiple zoning with zone valves. Each additional zone requires a separate 24V thermostat and zone valve.



- ⚠ POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- ⚠ RED LEADWIRES PROVIDED ONLY ON MODELS WITH END SWITCH.
- ⚠ CHOOSE TRANSFORMER TO MATCH MAXIMUM SYSTEM LOAD.
- ⚠ USE ZONE VALVES WITH AUXILIARY END SWITCH ONLY.

11.114

Internal schematics for R8182D and R845A with typical connections for multiple circulator zoning. Each additional zone requires a separate 24V thermostat and Relay.



- ⚠ 120 V<sub>AC</sub> POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- ⚠ THERMOSTAT HEAT ANTICIPATOR SETTING. 0.2 AMP FOR R8182D.
- ⚠ CONTROL CASE MUST BE CONNECTED TO EARTH GROUND. USE GROUNDING SCREW PROVIDED.

6202K

\*TRADELINE models.

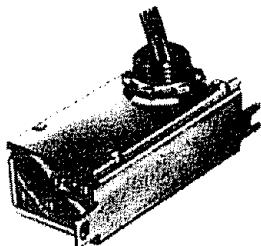
Order Number	Mounting	Case Orientation	Insulation Depth In. [mm]	Spud Size (NPT)	Includes	Capillary Size ft. (m)
* R8182D1079	On burner	Vertical	1½ [38]	¼ In.	Well adapter and tube of heat-conductive compound	N/A
* R8182D1111		Horizontal				



# Warm Air Controls

## S876A Furnace Fan Timer Control

Provides timed fan operation of forced warm air furnaces when wired in parallel with low voltage gas valve.



- Particularly suited for counter-flow and horizontal furnaces.
- Use with spdt air switch for two-speed fan applications.
- Spst, heater-actuated bimetal switch turns the fan on after the burner starts and off after the burner stops.
- May be mounted in most locations without regard to plenum temperature.
- Push-in terminals.

### APPROVAL BODIES:

Component recognized by Underwriters Laboratories Inc.  
Certified by Canadian Standards Association

**DIMENSIONS:** 3 $\frac{3}{8}$  in. [84 mm] long (4 $\frac{3}{8}$  in. [106 mm] with mounting tab), 1 $\frac{1}{8}$  in. [40 mm] wide, 1 $\frac{3}{8}$  in. [30 mm] deep (1 $\frac{1}{8}$  in. [43 mm] with bushing).

**AMBIENT TEMP RANGE:** -20 F to +140 F [-29 C to +60 C].

**SWITCHING:** Spst, makes on temperature rise.

**MOUNTING:** Male conduit bushing or mounting tabs; 18 in. [457 mm] leads.

### ELECTRICAL RATINGS (A):

	120 Vac	240 Vac
Full Load	14	7
Locked Rotor	84	42

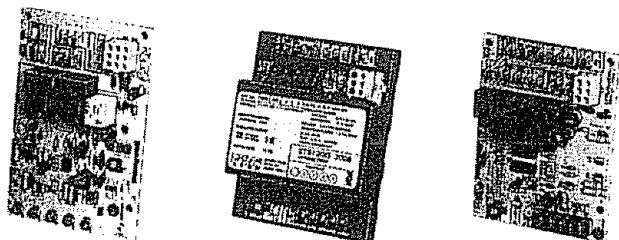
**HEAT ANTICIPATOR CURRENT:** 0.16A plus current draw of primary control.

**SUPPLY VOLTAGE:** 24 Vac.

### \*TRADELINE model

Order Number	Timing Sequence	
	Fan On	Fan Off
*S876A1016	1 min. after burner starts	2 min. after burner shutdown

## ST9101A; ST9103A; ST9120A-C, G; ST9141A Electronic Fan Timers



**ST9103A** integrates control of burner and circulating fan operations in an oil furnace. **ST9101A; ST9120A-C, G; ST9141A** integrate control of combustion blower and circulating fan operations in a gas warm air appliance.

- Central appliance wiring point simplifies appliance assembly and service.
- Fixed or field-adjustable heat fan on delay; field-adjustable heat fan off delay.

**IMPORTANT:** These controls are configured for application to specific appliance models. They are intended for direct replacement of OEM installed controls only; see order table. **Do not attempt to apply these controls except as a direct replacement for the specific Honeywell models noted in the order table.**

Follow the wiring diagram located on the appliance when replacing these controls. Set the heat fan on and off delay switches to the same settings as the settings on the replaced control, or according to the appliance label.

Order Number	Replaces	Application
ST9101A1022	ST9101A1006, ST9101A1014	Rheem/Ruud standing pilot gas furnaces.
ST9103A1002	ST9103A1002	Multiposition oil furnace. <sup>a</sup>
ST9120A2004	ST9120A1006 ST9120A2004	Armstrong gas furnace.
ST9120B1005	ST9120B1005	80+ and 90+ horizontal gas furnaces. <sup>a</sup>
ST9120C1012	ST9120C1012	Arcoaire gas rooftop appliances. <sup>a</sup>
ST9120C1020	ST9120C1020	Nordyne 80+ gas furnace.
ST9120G4038	ST9120C3000, ST9120C4008, ST9120C4016, ST9120G2008, ST9120G2016, ST9120G2024, ST9120G4004, ST9120G4012, ST9120G4038	Heil/Tempstar/Acroaire/Comfortmaker/Skymark gas furnaces and rooftop applications
ST9141A1002	ST9141A1002	Quattro multiposition gas furnace. <sup>a</sup>

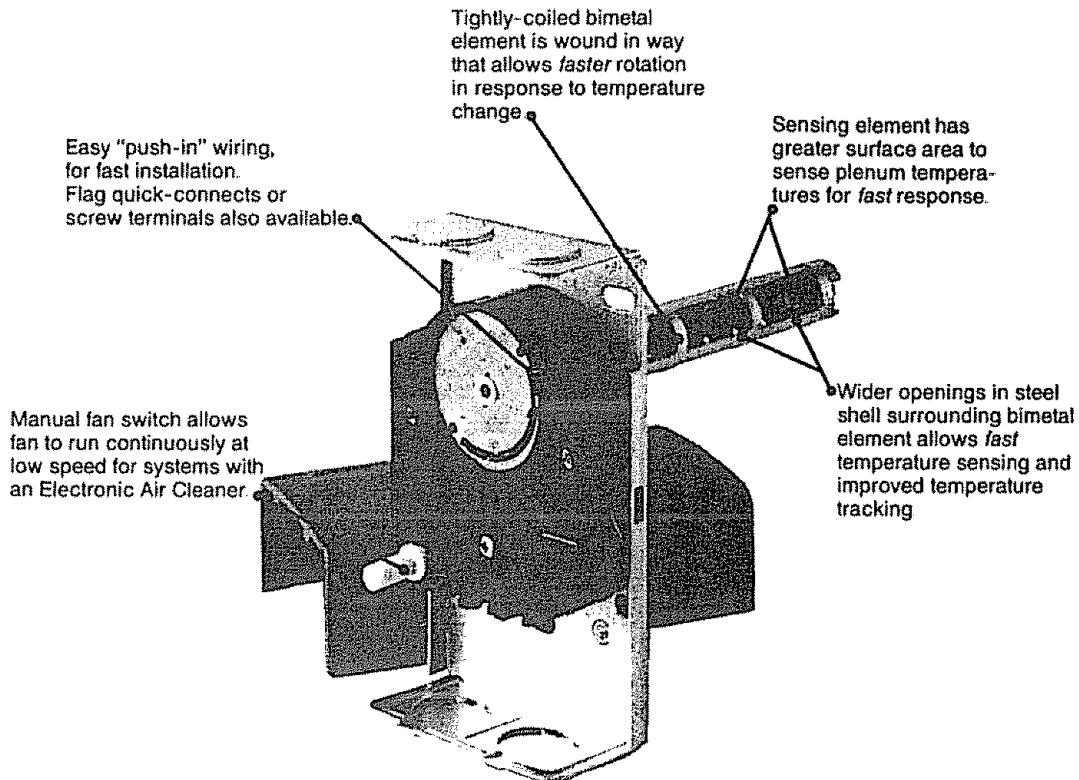
<sup>a</sup> These appliances are distributed under multiple brand names

# Warm Air Controls

## Know Your Limits— Choose L4064 Fan and Limit Controls

Contractors who know their limits consistently choose Honeywell L4064 Fan and Limit Controls. And for good reason. You simply can't buy a better performing limit. L4064 limits are better by design. They are built in a way that allows them to react *quickly* to a temperature change in the plenum. And that helps them easily meet ANSI and AGA standards that limit maximum rise in plenum temperatures to 200°F. The L4064 is the *fastest-responding* fan and limit available. Its sensitive bimetal element reacts quickly to convected and radiant energy for superior temperature sensing. Its case design

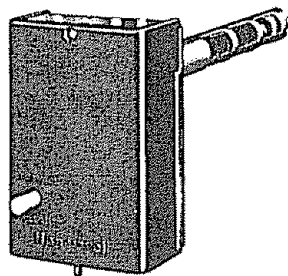
allows inserting the bimetal element at the optimum position to sense plenum conditions. OEMs generally recommend replacing limits "like for like," because they design their equipment to operate best with a specific brand of limit. And most OEMs use Honeywell. By replacing a Honeywell limit with another Honeywell limit you ensure the equipment continues to operate the way it was designed and tested. See L4064 product description for specifications and ordering information.



## L4064 W Fan and Limit Controllers

For control of high limit and fan motor in all types of forced air heating systems.

- Three wiring terminal options available for easy installation:
  - push-in receptacles for stripped wire,
  - female receptacles for ¼-in. male flag connectors, and
  - field add-on screw terminals.



- Controls adapt to many competitive mounting holes in replacement applications.
- Available in a variety of fan and high limit setting ranges.
- L4064 W models have manual fan switch that overrides fan control to keep fan running continuously.
- SUPER TRADELINE models include deluxe case with mounting adapters for easy installation and strain relief bushings to protect wiring from field abuse.

# Warm Air Controls

L4064 W continued

**APPROVAL BODIES:**

L4064W—Component recognized by Underwriters Laboratories Inc.  
 All models—Certified by Canadian Standards Association.

**ELECTRICAL RATINGS (A):**

	120 Vac		240 Vac	
	Fan	Limit	Fan	Limit
Full Load	14	8	7	4
Locked Rotor	84	48	42	24

Pilot Duty: 2A at 24 Vac; 0.25A at 0.25 to 12 Vdc.  
 Max. Combined Connected Load: 2000 VA.

**TEMPERATURE RATINGS:**

	L4064W	
	F	C
Scale Range	50 to 250	10 to 121
High Limit Range	100 to 250	38 to 121
High Limit Differential, Fixed	25	14
FAN-ON Setting Range	Fan comes on about 20 to 90 sec. after call for heat. <sup>a</sup>	
FAN-OFF Setting Range	50 to 200	10 to 96
Fan Differential, Adj.	—	—
Minimum Switch Temp.	+50	+10
Maximum Switch Temp.	115	46
Maximum Element Temp.	350	177

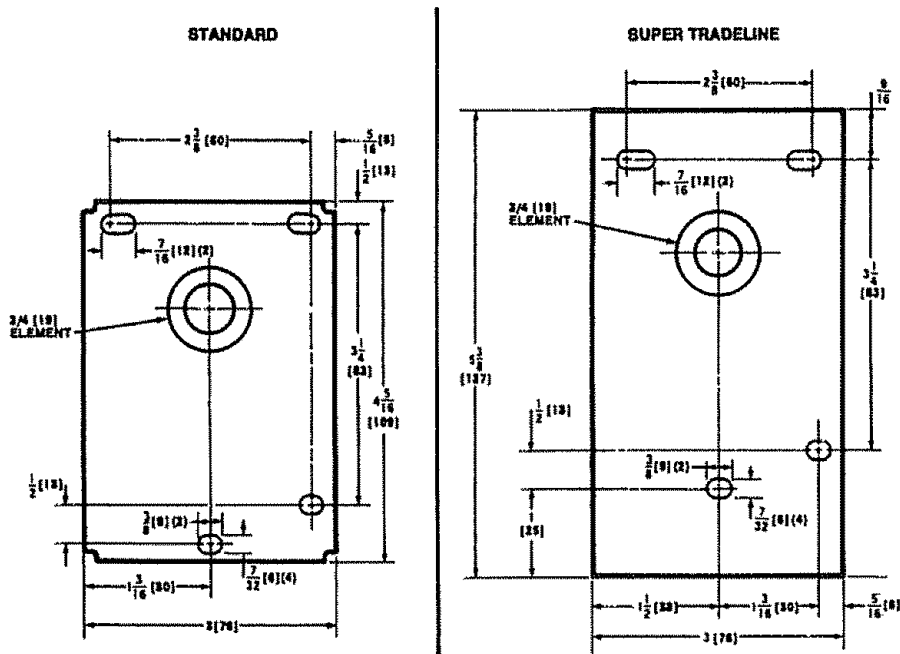
<sup>a</sup> From cold start with L4064W bimetal fan switch heater voltage between 23.6 Vac and 27.4 Vac.

**ACCESSORIES:**

129250AA Rigid Bracket. Double wing, with No. 8-32 setscrew.  
 110265A Rigid Bracket. Single wing, with No. 8-32 setscrew.

196722 Standard Limit Stop Adjustment Tool.  
 857780AFC 3-in. [76 mm] Leadwires (2) with 1/4 in. [6 mm] Male Spade Connectors attached.

**Dimensions of L4064 In in. [mm].**

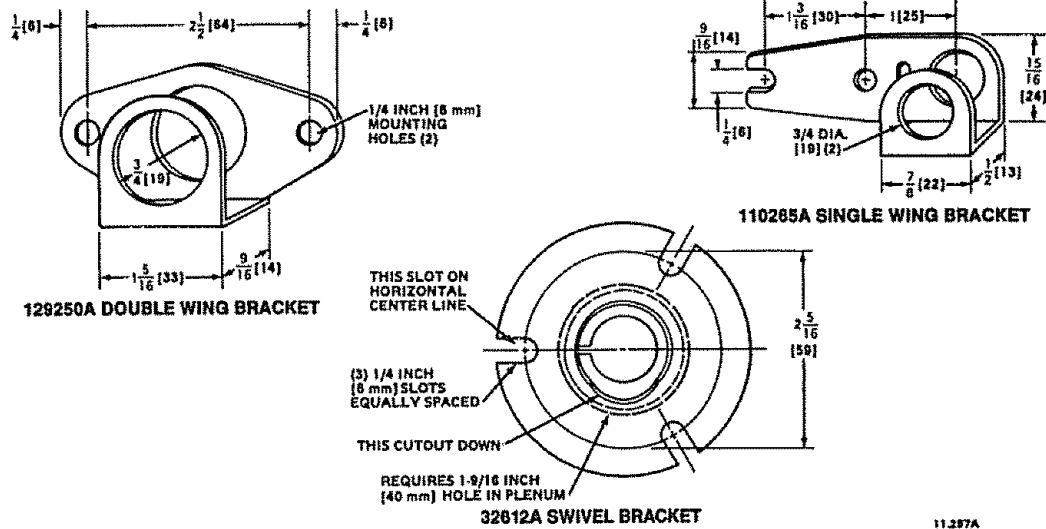


NOTE: OVERALL DEPTH WITH FAN SWITCH IS 2 INCHES [51 mm];  
 MODELS LESS FAN SWITCH ARE 1-3/8 INCHES [41 mm].

# Warm Air Controls

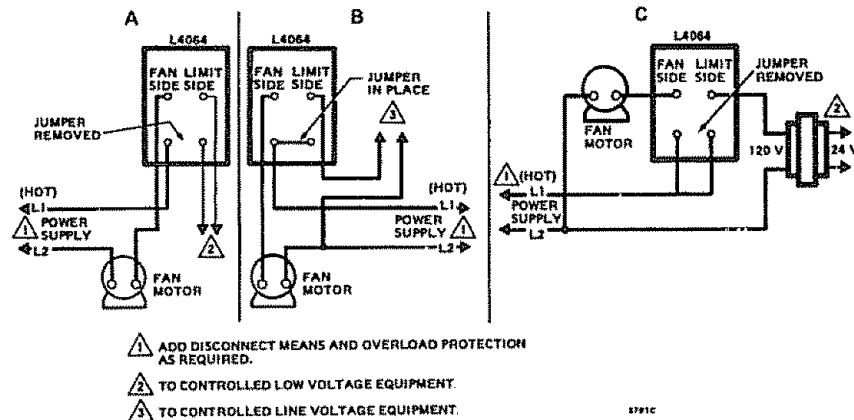
L4064 W continued

Dimensions of mounting brackets for L4064 in in. [mm].



11.287A

- A: L4064 limit in low voltage circuit.
- B: L4064 limit in line voltage circuit.
- C: L4064 limit in line voltage circuit without jumper.



3791C

\*TRADELINE models • SUPER TRADELINE models

Order Number	Application	Insertion Element		Mounting	Includes
		In.	mm.		
*L4064W1080 <sup>a</sup>	Bimetal heater switch turns fan on approximately 20 to 90 seconds after thermostat calls for heat at a cold start <sup>c</sup> . High limit stop factory-set at 200 F [93 C]. Replaces L4064T,Y.	5	127	Surface or rigid bracket	Two leadwires with 1/4 in. [6 mm] male flag terminals attached, two 1/4 in. [6 mm] female quick-connect terminals for low volt heater terminal connection, four add-on screw terminals, and two jumpers for line voltage fan and limit interconnect.
*L4064W1098 <sup>a</sup>		8	203		
*L4064W1106 <sup>a</sup>		11 1/2	292		

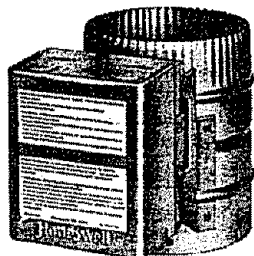
<sup>a</sup> With manual fan switch to override fan set points and keep fan running continuously.

TO ORDER THE ABOVE PARTS USE 42/541

# Hydronic Controls

## D896 Automatic Vent Damper

For use with atmospheric type, gas-fired equipment to reduce home heating losses by closing off the vent between cycles.



- Visual indicator shows damper position.
- Wiring harnesses available separately to fit a variety of applications.
- For use only on atmospheric type, gas-fired furnaces and boilers equipped with draft hoods.
- Includes wiring harness on select models to fit 4-wire plug receptacle on S86/S8600/S8610/S8620 or Penn Baso G60 or G66.
- Applicable to direct spark ignition (DSI), intermittent pilot (IP), hot surface ignition (HSI), and standing pilot systems.
- Requires dual automatic combination gas control valve or two separate single function main gas valves.
- Interlock switch provides safe operation; burner fires only with damper in open position.
- Quiet motor and relay.

### APPROVALS:

American Gas Association Certified: Certificate No. U-66-2A1 Certified.  
Canadian Gas Association Design Certified: 1029AVD-9081.

### TEMPERATURE RATINGS:

Ambient Range: 32 to 150 F (0 to 66 C).  
Maximum, Furnace Stack: 575 F (302 C)

### OPERATING TIMES:

Opening: 15 seconds minimum.  
Closing: 15 seconds minimum.

### ELECTRICAL CONNECTIONS: Four-wire plug receptacle.

### ELECTRICAL RATINGS:

Power Supply: 24 Vac, 60 Hz.  
Power:

Motor: 3.0 VA maximum.  
Relay: 0.1 VA maximum.

### Contacts:

Relay: 10.0A at 250 Vac.  
End Switch (Micro): 3.0A at 24 Vac.  
Anticipator Setting: 0.2A.

*Do not use with 120V or millivoltage, self-generating systems*

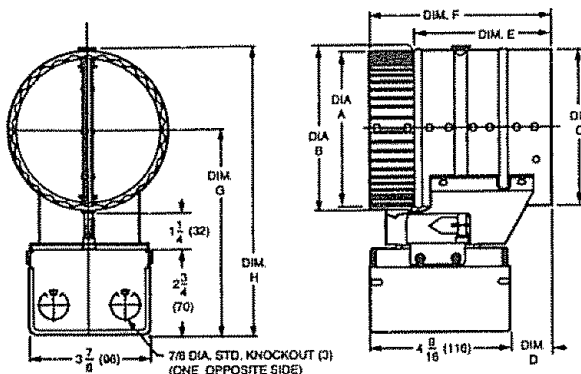
NOTE: A minimum of a 30 VA transformer must be used when D896 is installed with S86/S8600/S8610/S8620.

### REPLACEMENT PARTS:

M896A1004 Damper Actuator.

197516A Wiring Harness: 4-wire cable, 8 ft (2.4 m) long, with D896 mating plug on one end and mating plug for S86/S8600/S8610/S8620 or Penn Baso G60 or G66 on the other. Outlet box connector on each end.

### Installation dimensions in in. (mm).



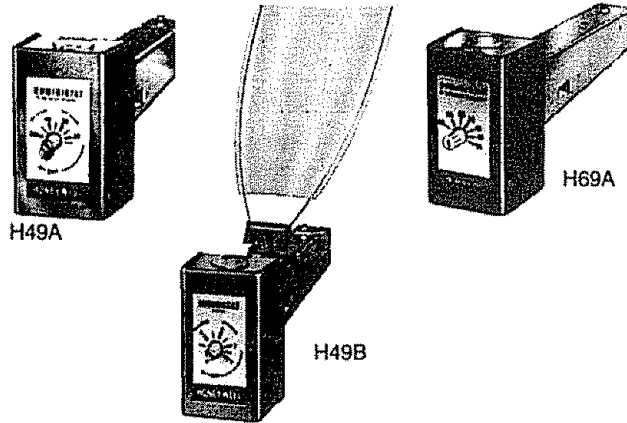
BODY SIZE (REF)	DIA. A in. (mm)	DIA. B in. (mm)	DIA. C in. (mm)	DIA. D in. (mm)	DIA. E in. (mm)	DIA. F in. (mm)	DIA. G in. (mm)	DIA. H in. (mm)
4 (102)	3 15/16 (100)	4 (102)	4 1/16 (103)	1 9/16 (40)	4 1/2 (114)	8 (152)	8 3/4 (171)	8 7/8 (225)
5 (127)	4 15/16 (125)	5 (127)	5 1/16 (129)	1 9/16 (40)	4 1/2 (114)	8 (152)	7 1/4 (184)	9 7/8 (251)
6 (152)	5 15/16 (151)	6 (152)	6 1/16 (154)	1 9/16 (40)	4 1/2 (114)	8 (152)	7 3/4 (197)	10 7/8 (276)
7 (178)	6 15/16 (176)	7 (178)	7 1/16 (179)	3 3/16 (81)	7 1/2 (191)	9 (229)	8 1/4 (209)	11 7/8 (301)
8 (203)	7 15/16 (202)	8 (203)	8 1/16 (205)	3 3/16 (81)	7 1/2 (191)	9 (229)	8 3/4 (222)	12 7/8 (327)
9 (229)	8 15/16 (224)	9 (229)	9 1/16 (230)	3 3/16 (81)	7 1/2 (191)	9 (229)	8 1/4 (235)	13 7/8 (352)
10 (254)	9 15/16 (252)	10 (254)	10 1/16 (256)	5 3/16 (132)	11 1/2 (292)	13 (330)	9 3/4 (248)	14 7/8 (378)
11 (279)	10 15/16 (278)	11 (279)	11 1/16 (281)	5 3/16 (132)	11 1/2 (292)	13 (330)	10 1/4 (260)	15 7/8 (403)
12 (305)	11 15/16 (303)	12 (305)	12 1/16 (306)	5 3/16 (132)	11 1/2 (292)	13 (330)	10 3/4 (274)	16 7/8 (428)

M11261

Part Number	Damper Size		Maximum Appliance Input		Includes
	in.	mm	Btu/h	W	
D896A1186	4	102	95,000	27,842	8 ft (2.4 m), 4-wire cable with mating plug for D896 on one end and mating plug for S86/S8600/S8610/S8620 or Penn Baso G60 or G66 plug receptacle on the other. Both ends equipped with outlet box connector.
D896A1194	5	127	148,000	43,475	
D896A1277	6	152	212,000	62,131	
D896A1285	7	178	290,000	84,991	
D896A1293	8	203	377,000	110,488	
D896A1228	9	229	475,000	139,175	
D896A1236	10	254	590,000	173,500	
D896A1301	11	279	715,000	210,300	
D896A1319	12	305	942,000	277,000	

# Humidity Controllers

## H49A,B; H69A Humidity Controllers



FIXED DIFFERENTIAL: 4 to 6 percent RH.  
 ELEMENT INSERTION LENGTH: 7½ in. [191 mm].  
 SAIL LENGTH: 12 in. [305 mm]; can be cut to fit 9, 10, or 11 in. [229, 254, or 279 mm] ducts.  
 ELECTRICAL RATINGS (AMPERES):

H49A		
	120 Vac	240 Vac
Full Load	7.5	3.8
Locked Rotor	45.0	22.8
Resistive	15.0	7.5

H49B		
	120 Vac	240 Vac
Full Load	4.4	2.2
Locked Rotor	26.4	13.2
Resistive	15.0	7.5

H69A		
	TERMINAL	
	R-W 120 Vac (N.C.)	R-B 120 Vac (N.O.)
Full Load	7.5	3.0
Locked Rotor	45.0	18.0
Resistive	15.0	10.0

Mount in return air duct of a forced air heating system to control a central humidifier or dehumidifier.

- External knob on front of case provides control point adjustment.
- Humidity sensing element is moisture-resistant nylon ribbon wound around three bobbins.

### APPROVAL BODIES:

Listed by Underwriters Laboratories Inc.  
 Certified by Canadian Standards Association.

AMBIENT TEMPERATURE RANGE: 60 F to 125 F [16 C to 52 C].

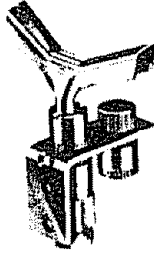
\*TRADELINE models • SUPER TRADELINE model

Order Number	Application	Switching	Range (percent RH)	Scaleplate Markings	Wiring Connections
*H49A1019	For control of humidification equipment.	Spst. Contacts break on RH rise to set point; make on fall to set point minus differential	15 to 50	OFF-20-30-40-50	Push-in terminals
*H49B1017	For control of humidification equipment With sail switch to provide fan interlock.			OFF-1-2-3-4	
•H69A1014	For control of humidification or dehumidification equipment	Spdt. Terminals R-W break on RH rise to set point; R-B make at set point. On RH fall, R-B break at set point minus differential.	35 to 65	35-40-45-50-55-60-65	Screw and push-in wire terminals

# Gas Burner Controls—Pilot Accessories

## Q327A Pilot Burner

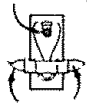
Primary-aerated, spud orifice-type pilot burner for main burner ignition with Q340 or Q390 Thermocouple for Pilotstat safety control operation.



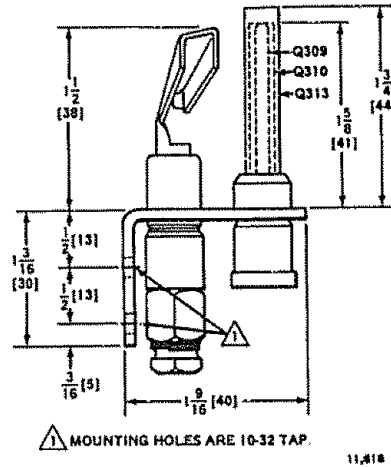
- Use with Q313 Thermopile Generator for 750 mV Powerpile applications.

TARGET SPAN: 1 in. [25 mm]

\*TRADELINE model.

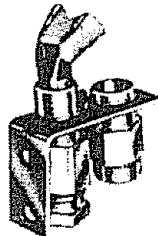
Order Number	Tip Style	Type of Gas	Mounting Bracket (see diagram at right)	Includes
*Q327A1626	 Main burner ignition flame 1 in. [25 mm] span	Natural, LP	B	Natural gas orifice; LP gas orifice; 1/4 in cc inlet fitting

Mounting bracket and dimensions for Q327A.



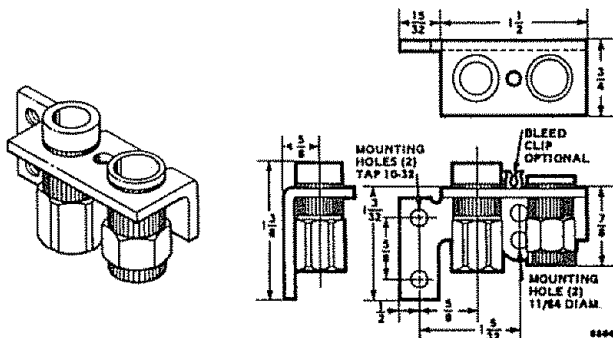
## Q314A Pilot Burner

Nonprimary-aerated, insert orifice-type pilot burner for main burner ignition with Q340 or Q390 Thermocouple for Pilotstat safety control operation.

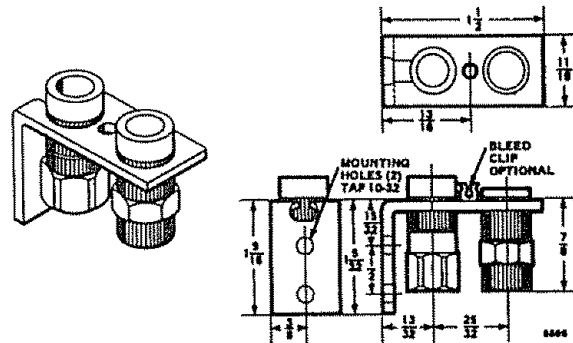


- Use with Q313 Thermopile Generator for 750 mV Powerpile applications.




A-type mounting bracket.



B-type mounting bracket.



# Gas Burner Controls—Pilot Accessories

• Q314A4586		Natural, LP	B	Natural Gas orifice; LP gas orifice; 1/4 in. cc inlet fitting; special mounting bracket with screws for converting "B" Bracket to "A."
*Q314A6094		Natural, LP	B	
*Q314A6102		Natural, LP	B	

a • denotes thermocouple.

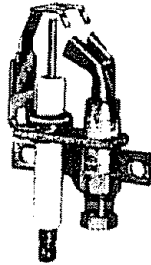
# Gas Burner Controls—Ignition Controls

## Q345A Igniter-Sensor

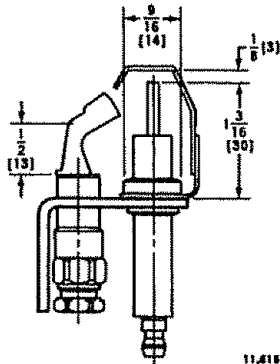
Nonprimary-aerated combination pilot burner and igniter. Used with the S86, S860, S8610 or S8670 in intermittent pilot systems.

- Includes pilot burner with bracket, ceramic-insulated Kanthal flame rod/spark igniter, and ground strap.

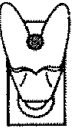


**MAXIMUM TEMPERATURE RATINGS:**  
At electrode tip—1775 F [968 C].  
At ceramic insulator—1250 F [677 C].



Mounting dimensions in in. [mm] and bracket type for Q345A.



\*TRADELINE models.

Order Number	Tip Style	Type of Gas	Mounting Bracket	Includes
*Q345A1305		Nat.*	B	1/4 in. cc inlet fitting Special mounting bracket with screws for converting "B" Bracket to "A."
*Q345A1313		Nat.*	B	
*Q345A1321		Nat.*	B	

\*For LP office for Q345A pilots order 390686-1



# Thermostats—Electromechanical Programmable

## Y8195 Chronotherm® New Construction Packs

### CONSUMER BENEFITS

Proven reliability and performance provide comfort with energy savings:

- Energy savings with winter setback and summer setup.
- Multiple setback or setup periods can be programmed, providing three or more temperature changes per day.



Y8195A,B

### Easy-to-use programming:

- Thermostat is easily programmed by placing color-coded pins in clock program dial.
- Program pins, program indicator, and temperature setting levers are color-coded for easy recognition.
- Program advance button allows you to temporarily override current program without reprogramming.
- Program status indicator on cover shows whether system is in comfort or energy savings mode.

### INSTALLER BENEFITS

The choice for professional technicians:

- Clock/timer is powered by 24 Vac transformer with battery backup; batteries not included.

- Subbase terminal barriers permit straight-in or conventional wraparound wiring connections.

### ELECTRICAL RATINGS:

Power Consumption:

System: 24 to 27 Vac (15 Vac minimum), 60 Hz

Clock: 24 to 27 Vac (15 Vac minimum), 60 Hz

Switch Ratings:

Operating Mode	Max. Current at 24 Vac	
	Running	Inrush
Heating	1.5A	3.5A
Cooling	1.5A	7.5A

Heat Anticipator: 0.1 to 1.2A, adjustable.

Cool Anticipator: fixed voltage type.

### TEMPERATURE RATINGS:

Setpoint Range: 42 F to 88 F (6 C to 31 C).

SWITCHING ACTION: Each coiled bimetal element operates each sealed mercury switch; 1 spdt.

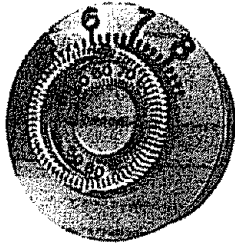
DIMENSIONS, APPROXIMATE: 6¼ in. (171 mm) wide, 3⅞ in. (91 mm) high, 2½ in. (53 mm) deep

Order Number	Application	Includes		Switch Positions		Finish	Terminal Designations
		Thermostat	Subbase	System	Fan		
Y8195B1004	New construction timer thermostat subbase package For 24V heating-cooling system.	T8195A1001	Q682B1169	HEAT-OFF-COOL	ON-AUTO		C, R, B, O, G, W, Y

# Thermostats—Electromechanical Non-Programmable

## T87F Thermostat—The Round®

Provides temperature control for 24 to 27 Vac residential heating, cooling or heating-cooling systems.



- Knurled dial provides easy set point adjustment
- Separate temperature setting and thermometer scale on thermostat face.

### ELECTRICAL RATINGS:

Switch Ratings: Mercury, at 30 Vac.

Circuit	Full Load	Locked Rotor	Resistance
Heating	1.5A	3.5A	2.0A
Cooling	1.5A	7.5A	2.0A

### ANTICIPATOR SETTINGS:

Heating: 0.1A to 1.2A.

Cooling: 0A to 1.5A, 24 to 27 Vac.

SWITCHING ACTION: Spdt mercury switch.

### REPLACEMENT PARTS:

114855-00029 Gold Thermostat Cover Ring.

### ACCESSORIES:

104456B Gold Wallplate Assembly, two terminals (heating-only models). Includes terminal screws.

104994A Calibration Wrench.

129044A Gold Adapter Kit includes 6 in. cover ring, adapter ring and screws for mounting T87F/Q539 on outlet box or to cover mounting marks from old thermostat.

137421A Gold Wallplate Assembly for heating and cooling systems. For T87F without positive OFF. Includes spdt heating-only (series 20) alternate terminal markings and cooling (also series 20) anticipator; 2000 ohm resistor; three-wire.

137421B Gold Wallplate Assembly for heating and cooling systems. For T87F with positive OFF; 3300 ohm resistor.

137421R Premier White Wallplate Assembly for heating and cooling systems; three-wire.

198170A Designer Beige Wallplate Assembly, three terminals. Includes 6 in. (152 mm) decorator ring.

198172 Designer Beige Thermostat Cover Ring.

202687A Premier White Adapter Kit (same as 129044A except Premier White color). Includes 6 in. cover ring, adapter ring and screws for mounting T87F/Q539 on outlet box or to cover mounting marks from old thermostat.

221886A Easy-To-Use™ Clear Ring. Durable plastic ring snaps on to T87F3467 dial to allow those with limited hand strength or movement impairments to easily operate thermostat. For use on T87F3467s with date code after 9244.

Q539A1014 baseplate for heat/cool applications

Order Number	Temperature Ratings		Temperature Designations	Finish	Includes	Comments
	Scale Range <sup>a</sup>					
	F	C				
*T87F1867	50 to 90	10 to 32	R (5), W (4), Y (6)	Gold	6 in. (152 mm) cover ring, 137421B 3-terminal wallplate.	With positive OFF (Series 20).
*T87F3467					137421A wallplate and switch position labels.	Enlarge scale and raised designations; Easy-to-see model.

\*TRADELINE models.

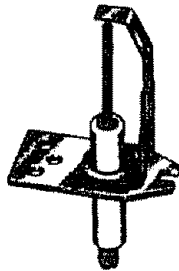
# Gas Burner Controls—Ignition Controls

## Q347A Spark Igniter

Produces spark for direct ignition of main burner.

- Includes inner Kanthal electrode with ceramic insulator, bracket and Kanthal ground strap.
- Use with S87C,D,K; S89E,F and Q354A.

**MAXIMUM TEMPERATURE RATINGS:**  
 At electrode tip—1775 F [968 C].  
 At ceramic insulator—1250 F [677 C].  
**SPARK GAP:** 3/32 in. [4 mm].



**WIRING CONNECTIONS:** 1/4 in. diameter stud for ignition cable.  
**MOUNTING:** One 3/16 in. [5 mm] slot, three 3/16 in. [5 mm] untapped screw holes.

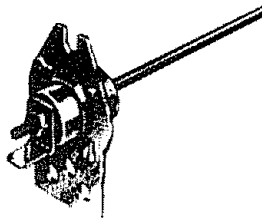
Order Number	Ground Strap Orientation	Electrode Length (bracket to tip)
Q347A1004	Standard	2 1/2 in. [52 mm]
Q347A1012	90 degree right angle	2 1/2 in. [52 mm]

## Q354A Flame Rectification Sensor

Detects the presence of a main burner flame.

- Includes Kanthal rod supported by ceramic insulator and mounting bracket.
- Use with S825, S87C,D,K or S89E,F.

**MAXIMUM TEMPERATURE RATINGS:**  
 At electrode tip—1775 F [968 C].  
 At ceramic insulator—1250 F [677 C].



**WIRING CONNECTIONS:** One 1/4 in. [6 mm] quick-connect terminal.  
**MOUNTING:** One 3/16 in. [5 mm] slot, three 3/16 in. [5 mm] untapped screw holes.

Order Number	Flame Rod Length	
	in.	mm
Q354A1000	2.5	64
Q354A1018	6	152

## Ignition System Cables

Order Number	Description	Use With
392125—2	36 in [914 mm] ignition cable; right angle boot/terminal at igniter end, straight boot/terminal at module end.	S86 Family; S87 Family.
392437—5	36 in [914 mm] high temperature ignition cable; right angle terminal at igniter end, straight boot/terminal at module end.	
393044	30 in. [762 mm] wiring harness; with 1/4 in. quick-connect terminals.	S8600 Family.
394800-30	30 in. [762 mm] ignition cable; 90 degree boot on igniter end.	S86 Family; S87 Family.
394803-2	36 in. cable with high temperature boot 750 F [400 C] on igniter end.	
394801-30	30 in. [762 mm] ignition cable; straight boot on igniter end.	S8600 Family.
4074EPM	Ignition cable adapter; connects S8600 family of ignition modules to existing cables for S86 systems.	S8600 Family.

# Permanent Split Capacitor Condenser Fan 5.6" Dia. Totally Enclosed

### Features:

- All position mounting
- Double flats on shaft on "Economizer" models
- Extended studs
- Hubless lead end
- 30" leads
- Drain holes at both ends
- Reversible

### Stud Mount, Without Capacitor (Fig. B)

HP	RPM	Volt	Bearings	Cap. MFD	Amps	Shaft N	Base XD	Shell XI	Total C	Stud YM	Emerson Number
<b>Single Speed</b>											
1/4	1075	208/230	Sleeve	5.0	1.7	5	None	4-1/16	9-5/8	1	K1880
1/3	1075	208/230	Sleeve	7.5	2.1	5	None	4-9/16	10-1/8	1	K1881
1/2	1075	208/230	Sleeve	7.5	2.9	5	None	5-1/16	10-5/8	1	K1882
3/4	1075	208/230	Sleeve	10.0	4.5	5	None	4-11/16	10-1/4	3/4	K1888 ††
<b>2 Speed, "Economizer" High Efficiency</b>											
1/8	840/2	230	Sleeve	5.0	1.0	6	None	4-5/16	10-13/16	3/4	8873
1/4	840/2	230	Sleeve	7.5	2.0	6	None	4-9/16	11-1/16	3/4	8874

††3/4" Stud Ext.—Both Ends

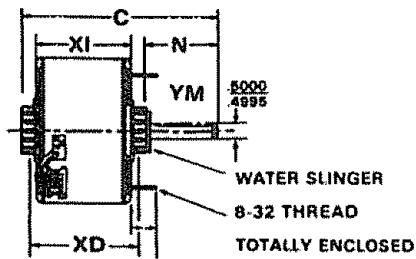


Figure A

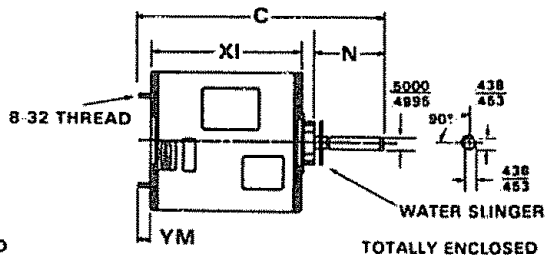


Figure B

TO ORDER THE ABOVE PARTS USE 42/118

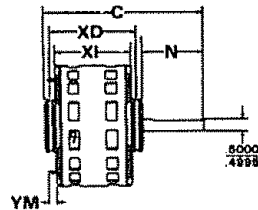
# Permanent Split Capacitor Direct Drive Fan & Blower 5.6" Dia. Open

### Features:

- Reversible
- High efficiency "Economizer"
- 24" line leads unless otherwise noted
- Connection and capacitor information furnished in the nameplate data
- Class "A" insulation
- Continuous duty, air over
- Automatic overload protector
- Sleeve bearing motors have all angle thrust system
- Designed for 370V capacitors
- 2.5" dia. hub rings included

### Hub Ring Mount (2.5"), Without Capacitor

HP	RPM	Volt	Bearings	Cap. MFD	Amps	Shaft N	Base XD	Shell XI	Total C	Stud YM	Emerson Number
<b>3 Speed</b>											
1/4	1075/3	115	Sleeve	5	3.9	5	4-5/8	4-1/16	10-5/32	None	K1863
1/4	1075/3	208/230	Sleeve	5	1.8	5	4-5/8	4-1/16	10-5/32	None	K1971
1/3	1075/3	115	Sleeve	5	5.2	5	4-7/8	4-5/16	10-13/32	None	K1864
1/3	1075/3	208/230	Sleeve	5	2.4	5	4-7/8	4-5/16	10-13/32	None	K1972
1/2	1075/3	115	Sleeve	5	8.9	5	5-3/4	5-1/16	11-1/8	None	K1865
1/2	1075/3	208/230	Sleeve	5	4.6	5	5-3/8	4-13/16	10-29/32	None	K1973
3/4	1075/3	115	Sleeve	12.5	9.5	5	6-3/8	5-13/16	11-29/32	None	K8904
3/4	1075/3	230	Sleeve	10	4.3	5	6-3/8	5-13/16	11-29/32	None	K8905



	Direct drive blower mounting ring set—double wire type Each set includes motor support ring—3 rubber mounting bushings with sleeves and mounting screws For 4.8" diameter motor — 9 1/2" blower mount dia.	1 set	16
	For 5.6" diameter motor — 10" blower mount dia.	1 set	17

TO ORDER THE ABOVE PARTS USE 42/118

**Split Phase  
Belted  
Fan & Blower  
Open Dripproof**

**Features:**

- Class "A" insulation (except otherwise noted)
- With shaft adapter for 5/8" shaft.
- With threaded conduit hole
- Reversible rotation by easy reconnection
- Automatic reset thermal protection
- Combination mounting holes for NEMA 48 and 56 frame dimensions.

**Resilient Base**

HP	RPM	Volt	NEMA Frame	Bearings	Protector	S.F.	F.L. Amps	Shaft Dim.	Emerson Number
<b>Single Speed (NEMA 48 Frame)</b>									
1/3	1725	115	48	Sleeve	Auto	1.35	6.7	1/2 x 1-9/16	8100
1/2	1725	115	48	Sleeve	Auto	1.25	8.7	1/2 x 1-9/16	8200

# Split Phase Oil Burner

## Application:

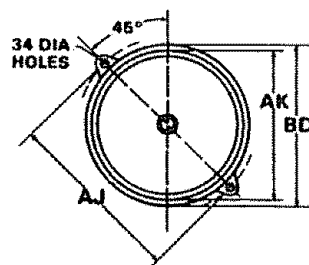
Designed to dimension, construction and performance standards established by NEMA and UL.

## Features:

- 40°C ambient
- 1.0 service factor
- Class "A" insulation
- 56N flange is totally enclosed, 48M and 48N flange are ventilated
- NEMA dimensions
- Reversible rotation — 3252 only
- 56N frame has 2 holes and screws for mounting outlet box (Kit 18)
- 20" leads, located at 3 o'clock viewed from end opposite shaft
- Manual reset thermal overload protector
- All angle sleeve bearing

## Flange Mounted

HP	RPM	Volt	NEMA Frame	Bearings	Protector	S.F.	F.L. Amps	Shaft Dim.	Emerson Number
<b>Single Speed</b>									
1/7	3450	115	48M	Sleeve	Manual	1.0	2.4	1/2 x 1-31/32	5866
1/6	1725	115	56N	Sleeve	Manual	1.0	3.4	1/2 x 1-31/32	3252



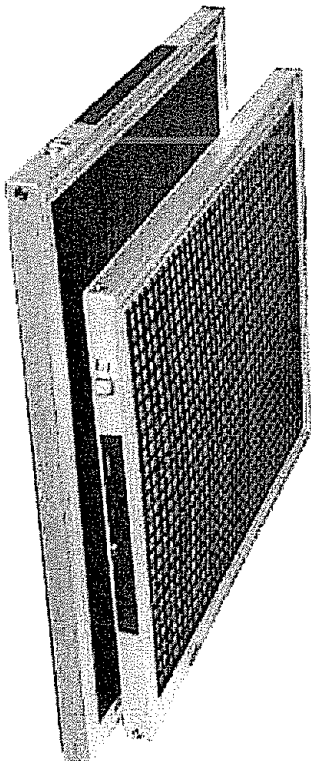
## Oil Burner Motor Flange Dimensions

NEMA Frame	Bolt Circle AJ	Rabbet Dia. AK	Outside Dia. BD
48M	6-3/4"	5-1/2"	6-1/4" max.
48N, 56N	7-1/4"	6-3/8"	7" max.

TO ORDER THE ABOVE PARTS USE 42/118

# FURNACE FILTER

<u>Sears Part No.</u>	<u>Size</u>
220-410-051	14 x 30 x 1
220-200-051	10 x 20 x 1
220-319-051	12 x 24 x 1
220-371-051	14 x 20 x 1
220-375-051	14 x 25 x 1
220-400-051	15 x 20 x 1
220-500-051	16 x 20 x 1
220-600-051	16 x 25 x 1
220-700-051	20 x 20 x 1
220-800-051	20 x 25 x 1
220-314-051	12 x 20 x 1
220-716-051	20 x 30 x 1
150-888-112	30 x 240 x 1 (Roll)
220-863-051	24 x 24 x 1
220-321-051	12 x 25 x 1
220-631-051	18 x 25 x 1
220-323-051	12 x 30 x 1
220-870-051	25 x 25 x 1
220-412-051	14 x 24 x 1
223-544-001	15 x 15 x 1
223-379-051	14 x 14 x 1



## Custom Size

Custom size high-end filters made to order: Part number called out by dimensions H x L x Thickness. Ex: 42/042/23x25x1. Largest size available 25 x 32 x 1. Filters are undercut by 3/8" on height and length unless exact size is specified. These custom filters are electrostatic, washable / reusable, and have a lifetime warranty.



# Fuses

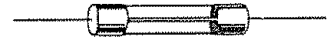
## 1/4" x 1-1/4" Type 3AG Glass Fuses Fast Acting

### Plain



Amp	Volt	Sears PN
00.250	250	STD380002
00.300	250	STD380003
00.400	250	STD380004
00.500	250	STD380005
00.600	250	STD380006
00.750	250	STD380007
00.800	250	STD380008
01.000	250	STD380010
01.250	250	STD380012
01.500	250	STD380015
02.000	250	STD380020
02.500	250	STD380025
03.000	250	STD380030
04.000	250	STD380040
05.000	250	STD380050
06.000	250	STD380060
07.000	125	STD380070
07.500	32	STD380075
10.000	32	STD380100
15.000	32	STD380150
20.000	32	STD380200
25.000	32	STD380250
30.000	32	STD380300

### Pigtail



Amp	Volt	Sears PN
00.250	250	STD381002
00.300	250	STD381003
00.375	250	STD381004
00.500	250	STD381005
00.600	250	STD381006
00.750	250	STD381007
00.800	250	STD381008
01.000	250	STD381010
01.250	250	STD381012
01.500	250	STD381015
02.000	250	STD381020
02.500	250	STD381025
03.000	250	STD381030
04.000	250	STD381040
05.000	250	STD381050
06.000	250	STD381060
08.000	250	STD381080
10.000	250	STD381100

## 1/4" x 1-1/4" Type 3AG Glass Fuses Slow Blow

### Plain



Amp	Volt	Sears PN
00.250	250	STD382002
00.300	250	STD382003
00.400	250	STD382004
00.500	250	STD382005
00.600	250	STD382006
00.700	250	STD382007
00.750	250	STD382008
01.000	250	STD382010
01.200	250	STD382012
01.500	250	STD382015
02.000	250	STD382020
02.500	250	STD382025
03.000	250	STD382030
04.000	250	STD382040
05.000	250	STD382050
06.000	250	STD382060
07.500	32	STD382075
10.000	32	STD382100
15.000	32	STD382150
20.000	32	STD382200
25.000	32	STD382250
30.000	32	STD382300

### Pigtail



Amp	Volt	Sears PN
00.250	250	STD383002
00.300	250	STD383003
00.400	250	STD383004
00.500	250	STD383005
00.600	250	STD383006
00.630	250	STD383063
00.700	250	STD383007
00.750	250	STD383008
01.200	250	STD383012
01.500	250	STD383015
02.000	250	STD383020
02.500	250	STD383025
03.000	250	STD383030
04.000	250	STD383040
05.000	250	STD383050
06.250	250	STD383625
07.000	250	STD383070
10.000	32	STD383100
15.000	32	STD383150
20.000	32	STD383200
25.000	32	STD383250
30.000	32	STD383300

# Fuses

## Plug Fuses



### Edison Base

- Time delay type.
- U.L. listed.
- Meets Federal Spec. WF-791b, Type II, Style A, Class 2 & WF-791d, Type II, Style C, Class "D" time delay fuse and MIL-F-15160D.

Amp	Sears PN
15	STD375015
20	STD375020
30	STD375030



### Non-Tamp (Type S)

- U.L. listed.
- Meets Federal Spec. WF-791b, Type II, Style B, Class 2 & WF-791d, Type II, Style D, Class 2 "D" time delay fuse.

Amp	Sears PN
15	STD375115
20	STD375120
30	STD375130

## Cartridge Fuses



- U.L. listed.
- Meets Federal Spec. WF-791b, Type I, Style A, Class 1 and WF-791d, Type I, Style A, Class 1.
- Size 9/16" x 2" through 30 amp, then 13/16" x 3".

### Standard Type

Amp	Volt	Sears PN
10	250	STD375210
15	250	STD375215
20	250	STD375220
25	250	STD375225
30	250	STD375230
35	250	STD375235
50	250	STD375250
60	250	STD375260

### Time Delay Type

Amp	Volt	Sears PN
20	250	STD375320
30	250	STD375330
40	250	STD375340
60	250	STD375360

# Gas Connectors, Fittings, Adapters, Ball Valves & Aluminum Tubing

## Stainless Steel Supr-Safe® Gas Connectors



MIP x MIP



MIP x FIP

The following chart has been developed to help you choose the correct gas connector for each appliance. Some appliances may vary as to their connection requirements, so please review the appliance requirements and the existing gas supply prior to installation. In addition, always check with local codes and ordinances prior to installation.

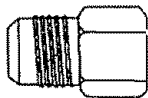
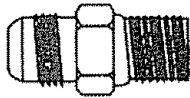
Sears PN	Description	Length (in)	Appliance	Gas Connector Max. BTU Rating
STD316025	5/8" O.D. (1/2" MIP x 1/2" MIP)*	48	Gas Ranges	106.000
STD316026	5/8" O.D. (1/2" MIP x 1/2" MIP)*	60	Gas Ranges	93.200
STD316841	1/2" O.D. (1/2" MIP x 1/2" MIP)	48	Gas Dryers/Water Heaters	60.500
STD316842	1/2" O.D. (1/2" MIP x 1/2" MIP)	60	Gas Dryers/Water Heaters	53.200
STD316862	3/8" O.D. (1/2" MIP x 1/2" FIP)	24	Small Appliances	40.000

\*5/8" O.D. has 15/16" - 16 thread

## Gas Flare Fittings/Adapters

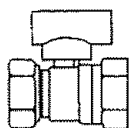
### Please note:

For other appliance installations, choose the connector in which the BTU rating meets or exceeds the requirements of the gas appliance being installed. By selecting various fitting/adapter combinations, any gas connector can be male x male, female x female or male x female based on the installation requirement. Choose from the list below:

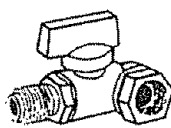


Sears PN	Description
STD575414	5/8" O.D. (15/16" - 16 thread) x 1/2" MIP (tapped 3/8" FIP)
STD575416	5/8" O.D. (15/16" - 16 thread) x 3/4" MIP (tapped 1/2" FIP)
STD575415	5/8" O.D. (15/16" - 16 thread) x 1/2" FIP
STD575417	5/8" O.D. (15/16" - 16 thread) x 3/4" FIP
STD575409	1/2" O.D. x 3/8" MIP (tapped 1/4" FIP)
STD575410	1/2" O.D. x 1/2" MIP (tapped 3/8" FIP)
STD575412	1/2" O.D. x 3/4" MIP (tapped 1/2" FIP)
STD575404	1/2" O.D. x 3/8" FIP
STD575411	1/2" O.D. x 1/2" FIP
STD575413	1/2" O.D. x 3/4" FIP
STD575405	3/8" O.D. x 3/8" MIP (tapped 1/4" FIP)
STD575407	3/8" O.D. x 1/2" MIP (tapped 3/8" FIP)
STD575406	3/8" O.D. x 3/8" FIP
STD575408	3/8" O.D. x 1/2" FIP

## Gas Ball Valves



Straight Valve



Angle Valve

Sears PN	Description
STD575418	1/2" FIP x 1/2" FIP Straight Valve
STD575419	3/4" FIP x 3/4" FIP Straight Valve
STD575400	5/8" O.D. (15/16" - 16 thread) x 3/4" FIP Angle Valve

# Compression Fittings

- For connecting water, oil, gas, vacuum and air lines.
- Use with copper, aluminum or brazed steel tubing.
- Made of unplated brass.

## Nut



Sears PN	Tubing O.D.	Thread
	(in)	Size
STD575012	1/8	5/16-24
STD575018	3/16	3/8-24
STD575025	1/4	7/16-24
STD575037	3/8	9/16-24
STD575043	7/16	5/8-24
STD575050	1/2	11/16-20

## Inverted Nut (Loxit)



Sears PN	Tubing O.D.	Thread
	(in)	Size
STD317012	1/8	5/16-24
STD317018	3/16	3/8-24
STD317025	1/4	7/16-24

## Ferrule



Sears PN	Tubing O.D.	Thread
	(in)	Size
STD575013	1/8	5/16-24
STD575019	3/16	3/8-24
STD575026	1/4	7/16-24
STD575038	3/8	9/16-24
STD575044	7/16	5/8-24
STD575051	1/2	11/16-20

## Union (Tubing to Tubing)



Sears PN	Tubing O.D.	Thread
	(in)	Size
STD575020	3/16	3/8-24
STD575027	1/4	7/16-24
STD575039	3/8	9/16-24

## Adapters

### Straight—Male Pipe to Tubing

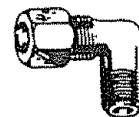


Sears PN	Tubing O.D. (in)	Thread Size	
		Tubing	Pipe
STD575211	3/16	3/8-24	1/8
STD575212	3/16	3/8-24	1/4
STD575221	1/4	7/16-24	1/8
STD575222	1/4	7/16-24	1/4
STD575232	3/8	9/16-24	1/4
STD575233	3/8	9/16-24	3/8
STD575253	1/2	11/16-20	3/8
STD575287	7/8	1-1/8-18	3/4

### Straight—Female Pipe to Tubing

Sears PN	Tubing O.D. (in)	Thread Size	
		Tubing	Pipe
STD575288	7/8	1-1/8-18	3/4

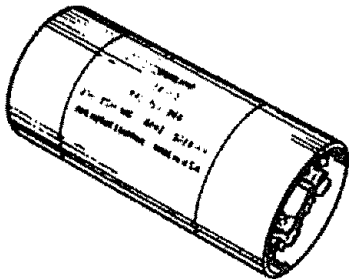
### Elbow—Male Pipe to Tubing



Sears PN	Tubing O.D. (in)	Thread Size	
		Tubing	Pipe
STD575112	3/16	3/8-24	1/4
STD575121	1/4	7/16-24	1/8
STD575122	1/4	7/16-24	1/4
STD575132	3/8	9/16-24	1/4
STD575187	7/8	1-1/8-18	3/4

# AC Motor Start Capacitors

- Meets or exceeds NEMA specifications for CP6 for AC Motor Start Capacitors.
- U.L. recognized.
- Plastic end cap and horizontal mounting bracket available separately.
- 2 watt bleed resistor available separately.



Capacitor



Bracket



End Caps

Capacitor PN	MFD	Volt AC	Bracket PN	End Cap PN
STD376107	72-88	125	STD076503	STD076601
STD376108	88-108	125	STD076503	STD076601
STD376110	108-130	125	STD076503	STD076601
STD376112	124-149	125	STD076503	STD076601
STD376113	130-156	125	STD076503	STD076601
STD376114	145-174	125	STD076503	STD076601
STD376116	161-193	125	STD076503	STD076601
STD376118	189-227	125	STD076502	STD076601
STD376121	216-295	125	STD076502	STD076601
STD376124	243-292	125	STD076502	STD076602
STD376127	270-324	125	STD076502	STD076602
STD376132	324-388	125	STD076502	STD076602
STD376202	25-30	330	STD076502	STD076602
STD376203	36-43	330	STD076502	STD076602
STD376204	43-53	330	STD076503	STD076602
STD376205	50-60	250	STD076503	STD076601
STD376207	72-88	330	STD076501	STD076603
STD376208	88-108	330	STD076501	STD076603
STD376210	108-130	330	STD076501	STD076603
STD376213	130-156	330	STD076501	STD076604
STD376214	156-174	330	STD076501	STD076604

## 2 Watt Bleed Resistor

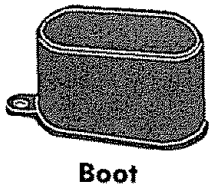
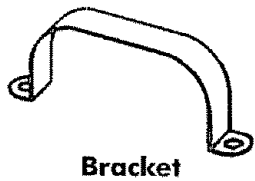
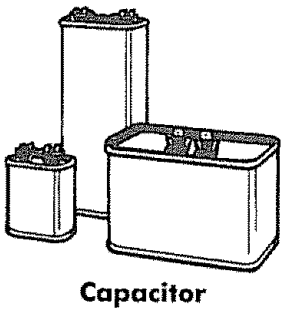
- 15,000 ohm
- .25" female spade connectors



Sears PN	Description
STD093106	2 Watt Bleed Resistor

# AC Motor Run Capacitors

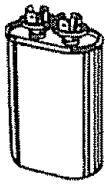
- Non-PCB type with pressure activated interrupter.
- Meets or exceeds NEMA CP5, EIA RS392 and Tecumseh H115 specifications for AC Motor Run Capacitors.
- U.L. recognized.
- Wrap-around mounting bracket and rubber boot available separately.



Capacitor PN	MFD	Volt AC	Type	Bracket PN	Boot PN
STD377303	3	370	Oval	STD093014	STD093011
STD377304	4	370	Oval	STD093014	STD093011
STD377305	5	370	Oval	STD093014	STD093011
STD377306	6	370	Oval	STD093014	STD093011
STD377307	7.5	370	Oval	STD093014	STD093011
STD377310	10	370	Oval	STD093014	STD093011
STD377312	12.5	370	Oval	STD093014	STD093011
STD377315	15	370	Oval	STD093014	STD093011
STD377317	17.5	370	Oval	STD093015	STD093011
STD377320	20	370	Oval	STD093015	STD093011
STD377325	25	370	Oval	STD093015	STD093011
STD377330	30	370	Oval	STD093015	STD093011
STD377335	35	370	Oval	STD093015	STD093011
STD377340	40	370	Oval	STD093015	STD093011
STD377345	45	370	Oval	STD093015	STD093011
STD377404	4	440	Oval	STD093014	STD093011
STD377405	5	440	Oval	STD093014	STD093011
STD377407	7.5	440	Oval	STD093014	STD093011
STD377410	10	440	Oval	STD093014	STD093011
STD377412	12.5	440	Oval	STD093014	STD093011
STD377415	15	440	Oval	STD093015	STD093011
STD377420	20	440	Oval	STD093015	STD093011
STD377425	25	440	Oval	STD093015	STD093011
STD377430	30	440	Oval	STD093015	STD093011
STD377435	35	440	Oval	STD093015	STD093011
STD377440	40	440	Oval	STD093015	STD093011
STD377445	45	440	Oval	STD093015	STD093011
STD377450	50	440	Oval	STD093116	STD093011
STD377455	55	440	Oval	STD093116	STD093011

# AC Dual Motor Run Capacitors

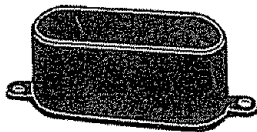
- U.L. recognized.
- Oil-filled, metallized polypropylene capacitors for motor run applications.
- Non-PCB type with internal current interrupter.
- Wrap-around bracket and rubber boot available separately.



Capacitor



Bracket



Boot






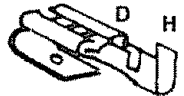







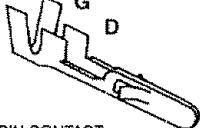
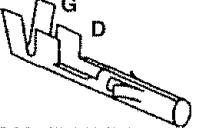
Capacitor PN	MFD	Volt AC	Type	Bracket PN	Boot PN
STD378153	15/3	370	Oval	STD093015	STD093013
STD378154	15/4	370	Oval	STD093015	STD093013
STD378155	15/5	370	Oval	STD093015	STD093013
STD378157	15/7.5	370	Oval	STD093015	STD093013
STD378151	15/10	370	Oval	STD093015	STD093013
STD378175	17.5/5	370	Oval	STD093015	STD093013
STD378204	20/4	370	Oval	STD093015	STD093013
STD378205	20/5	370	Oval	STD093015	STD093013
STD378215	20/15	370	Oval	STD093015	STD093013
STD378253	25/3	370	Oval	STD093015	STD093013
STD378254	25/4	370	Oval	STD093015	STD093013
STD378255	25/5	370	Oval	STD093015	STD093013
STD378251	25/10	370	Oval	STD093015	STD093013
STD378275	27.5/15	370	Oval	STD093015	STD093013
STD378304	30/4	370	Oval	STD093015	STD093013
STD378305	30/5	370	Oval	STD093015	STD093013
STD378353	35/3	370	Oval	STD093015	STD093013
STD378355	35/3	370	Oval	STD093015	STD093013
STD378351	35/10	370	Oval	STD093015	STD093013
STD378403	40/3	370	Oval	STD093015	STD093013
STD378405	40/5	370	Oval	STD093015	STD093013
STD379105	10/5	440	Oval	STD093116	STD093013
STD379153	15/3	440	Oval	STD093116	STD093013
STD379154	15/4	440	Oval	STD093116	STD093013
STD379155	15/5	440	Oval	STD093116	STD093013
STD379175	17.5/5	440	Oval	STD093116	STD093013
STD379215	20/15	440	Oval	STD093116	STD093013
STD379217	20/17.5	440	Oval	STD093015	STD093013
STD379253	25/3.5	440	Oval	STD093015	STD093013
STD379255	25/5	440	Oval	STD093116	STD093013
STD379257	25/7.5	440	Oval	STD093015	STD093013
STD379251	25/10	440	Oval	STD093015	STD093013
STD379301	30/10	440	Oval	STD093116	STD093013
STD379303	30/3.5	440	Oval	STD093015	STD093013
STD379305	30/5	440	Oval	STD093116	STD093013
STD379307	30/7.5	440	Oval	STD093015	STD093013
STD379315	30/15	440	Oval	STD093015	STD093013
STD379353	35/3.5	440	Oval	STD093116	STD093013
STD379355	35/5	440	Oval	STD093015	STD093013
STD379357	35/7.5	440	Oval	STD093015	STD093013
STD379351	35/10	440	Oval	STD093015	STD093013
STD379405	40/5	440	Oval	STD093116	STD093013
STD379407	40/7.5	440	Oval	STD093116	STD093013
STD379455	45/5	440	Oval	STD093116	STD093013
STD379501	50/10	440	Oval	STD093015	STD093013
STD379515	50/15	440	Oval	STD093015	STD093013
STD379615	60/15	440	Oval	STD093015	STD093013



# Terminal Kits


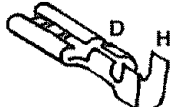



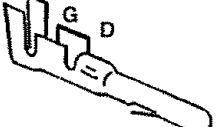
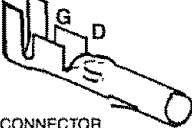

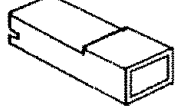

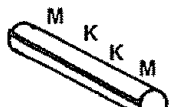
## Refrigeration & Air Conditioning Terminal Kit

Sears PN — 69755, Div. 92 Source 192

<p>PART NO. STD374180 USE DIE SET</p>  <p>.187 BLADE RECEPTACLE FASTON HI-TEMP 20-16 WIRE SIZE</p>	<p>PART NO. STD374031</p>  <p>.090 PIN RECEPTACLE REFRIGERATOR COMPRESSOR 20-14 WIRE SIZE</p>	<p>PART NO. STD374250 USE DIE SET</p>  <p>.250 BLADE RECEPTACLE FASTON HI-TEMP 18-14 WIRE SIZE</p>	<p>PART NO. STD374032</p>  <p>.090 PIN RECEPTACLE FITS CLUSTER PIN COMPRESSOR HOUSING 18-16 WIRE SIZE</p>	<p><b>SEARS</b> KIT NO. 69755 <b>REFRIGERATION &amp; AIR CONDITIONING TERMINAL KIT</b> Reorder parts from Division 98 Source 980</p>	
<p>PART NO. STD374251</p>  <p>.250 BLADE RECEPTACLE FASTON HI-TEMP FLAG 18-12 WIRE SIZE</p>	<p>PART NO. STD374252 USE DIE SET</p>  <p>.250 BLADE RECEPTACLE FASTON PIGGYBACK 18-14 WIRE SIZE</p>	<p>PART NO. STD374033</p>  <p>.250 BLADE RECEPTACLE WINDOW AIR COND. 18-12 WIRE SIZE</p>	<p>PART NO. STD374100 USE DIE SET</p>  <p>UNINSULATED RING TERMINAL 650°F RATED 16-14 WIRE SIZE 10 STUD SIZE</p>	<p>PART NO. STD374101 APPLY 2 CRIMPS USE DIE SET K#12 AWG J#10 AWG</p>  <p>UNINSULATED RING TERMINAL 650°F RATED 12-10 WIRE SIZE. 10 STUD SIZE</p>	
<p>PART NO. STD374051 USE DIE SET</p>  <p>INSULATED BUTT SPLICE 16-14 WIRE SIZE</p>	<p>PART NO. STD374052 USE DIE SET</p>  <p>INSULATED BUTT SPLICE 12-10 WIRE SIZE</p>	<p>PART NO. STD375007 USE DIE SET</p>  <p>INSULATED CLOSED END SPLICE 22-14 WIRE SIZE</p>	<p>PART NO. STD375008 USE DIE SET</p>  <p>INSULATED CLOSED END SPLICE 18-10 WIRE SIZE</p>	<p>PART NO. STD374513 USE DIE SET</p>  <p>PIN CONTACT WIRE SIZE 20-14</p>	<p>PART NO. STD374514 USE DIE SET</p>  <p>SOCKET CONTACT WIRE SIZE 20-14</p>

## Dishwasher Terminal Kit

Sears PN — 69756, Div. 92 Source 192

<p>PART NO. STD374180 USE DIE SET</p>  <p>.187 BLADE RECEPTACLE FASTON HI-TEMP 20-16 WIRE SIZE</p>	<p>PART NO. STD374250 USE DIE SET</p>  <p>.250 BLADE RECEPTACLE FASTON HI-TEMP 18-14 WIRE SIZE</p>	<p>PART NO. STD374251</p>  <p>.250 BLADE RECEPTACLE FASTON HI-TEMP FLAG 18-12 WIRE SIZE</p>	<p>PART NO. STD374252 USE DIE SET</p>  <p>.250 BLADE RECEPTACLE FASTON PIGGYBACK 18-14 WIRE SIZE</p>	<p><b>SEARS</b> KIT NO. 69756 <b>DISHWASHER TERMINAL KIT</b> Reorder parts from Division 98 Source 980</p>	
<p>PART NO. STD374512 USE DIE SET</p>  <p>TIMER TERMINAL FITS MODULAR HOUSING 20-16 WIRE SIZE</p>	<p>PART NO. STD374021 USE DIE SET</p>  <p>CONNECTOR PIN FITS NYLON HOUSING 20-14 WIRE SIZE</p>	<p>PART NO. STD374020 USE DIE SET</p>  <p>CONNECTOR SOCKET FITS NYLON HOUSING 20-14 WIRE SIZE</p>	<p>PART NO. STD374501 USE DIE SET</p>  <p>PC BOARD CONNECTOR CONTACT 24-18 WIRE SIZE</p>	<p>PART NO. STD374257</p>  <p>HOUSING 250 BLADE RECEPTACLE</p>	<p>PART NO. STD375008 USE DIE SET</p>  <p>INSULATED CLOSED END SPLICE 22-10 WIRE SIZE</p>
<p>PART NO. STD374051 USE DIE SET</p>  <p>INSULATED BUTT SPLICE 16-14 WIRE SIZE</p>					

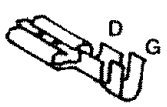




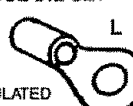



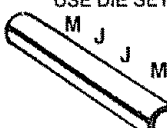




To order the above parts, use 98/980



# Terminal Kit & Tools

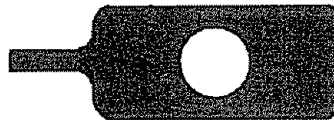
## Range & Heating Terminal Kit

Sears PN — 69757, Div. 92 Source 192

<p>PART NO. STD374180      PART NO. STD374250      PART NO. STD374254</p> <p>USE DIE SET      USE DIE SET      USE DIE SET</p>    <p>.187 BLADE RECEPTACLE FASTON HI-TEMP 20-16 WIRE SIZE</p> <p>.250 BLADE RECEPTACLE FASTON HI-TEMP 18-14 WIRE SIZE</p> <p>.250 BLADE RECEPTACLE FASTON 325° RATED 14-12 WIRE SIZE</p>			<p><b>SEARS</b>      KIT NO. 69757</p> <p><b>RANGE &amp; HEATING</b></p> <p><b>TERMINAL KIT</b></p> <p>Reorder parts from Division 98 Source 980</p>		
<p>PART NO. STD374251</p>  <p>.250 BLADE RECEPTACLE FASTON HI-TEMP FLAG 18-12 WIRE SIZE</p>	<p>PART NO. STD374252</p> <p>USE DIE SET</p>  <p>.250 BLADE RECEPTACLE FASTON PIGGYBACK 18-14 WIRE SIZE</p>	<p>PART NO. STD374100</p> <p>USE DIE SET</p>  <p>UNINSULATED RING TERMINAL 650°F RATED 16-14 WIRE SIZE 10 STUD SIZE</p>	<p>PART NO. STD374101</p> <p>APPLY 2 CRIMPS USE DIE SET</p>  <p>K#12 AWG J#10 AWG</p> <p>UNINSULATED RING TERMINAL 650°F RATED 12-10 WIRE SIZE 10 STUD SIZE</p>	<p>PART NO. STD374053</p> <p>USE DIE SET</p>  <p>UNINSULATED SPLICE 650°F RATED 16-14 WIRE SIZE</p>	<p>PART NO. STD374054</p> <p>USE DIE SET</p>  <p>UNINSULATED SPLICE 650°F RATED 12-10 WIRE SIZE</p>
<p>PART NO. STD374052</p> <p>USE DIE SET</p>  <p>INSULATED SPLICE 12-10 WIRE SIZE</p>	<p>PART NO. STD374051</p> <p>USE DIE SET</p>  <p>INSULATED SPLICE 16-14 WIRE SIZE</p>	<p>PART NO. STD375008</p> <p>USE DIE SET</p>  <p>INSULATED CLOSED END SPLICE 22-10 WIRE SIZE</p>	<p>PART NO. STD375011</p>  <p>HEAT SHRINK TUBING WITH SEALANT 3/16" DIA SHRINKS TO .093</p>	<p>PART NO. STD375012</p>  <p>HEAT SHRINK TUBING WITH SEALANT 3/8" DIA SHRINKS TO .187</p>	

## Tools

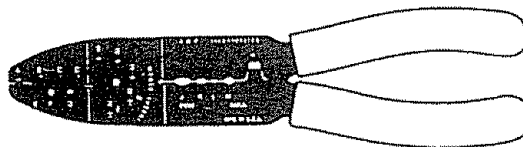
**Extraction Tool**  
Sears PN  
465644-1  
Div. 92 Source 192



**Extraction Tool**  
Sears PN  
810992-1  
Div. 92 Source 192



**Universal Hand Tool**  
Sears PN  
29359-1  
Div. 92 Source 150



# Crimp Type Terminal Connectors

## Push-on Terminals



Sears PN	Mfr. #	Application	Wire Size	Misc
STD374120	62050-1	.110 TAB	20/16	Pre-tin brass
STD374180	62372-1	.187 TAB	20/16	Hi-temp
STD374250	60705-1	.250 TAB	18/14	Hi-temp (650°F)
STD374254	60131-3	.250 TAB	12/10	Phosphor bronze

## Flag Terminals



Sears PN	Mfr. #	Application	Wire Size	Misc
STD374181	42698-1	.187 TAB	20/16	Brass
STD374251	60453-1	.250 TAB	18/12	Hi-temp (650°F)

## 2/1 Push-on Adapters



Sears PN	Mfr. #	Application	Wire Size	Misc
STD374252	42806-2	.250 TAB	18/14	Piggy back

## 2/1 Push-on Adapters



Sears PN	Mfr. #	Application	Wire Size	Misc
STD374253	61765-2	.250 TAB	18/14	Side by side

## Compressor Connector



Sears PN	Mfr. #	Application	Wire Size	Misc
STD374031	60259-2	Refrig.	20/14	Fits .090 pin

## Compressor Connector



Sears PN	Mfr. #	Application	Wire Size	Misc
STD374032	42812-2	Refrig.	20/14	Fits .090 cluster pin

## Compressor Connector



Sears PN	Mfr. #	Application	Wire Size	Misc
STD374033	42232-4	Window AC	18/12	Fits .090 pin

## Timer Connector



Sears PN	Mfr. #	Application	Wire Size
STD374512	62373-1	Dishwasher	20/16

## Housing



Sears PN	Mfr. #	Application	Wire Size
STD374257	1-480416-0	Dishwasher	18/14

## Printed Circuit Connector



Sears PN	Mfr. #	Application	Wire Size
STD374501	350011-1	Dishwasher	22/18

## Compressor Connector



Sears PN	Mfr. #	Application	Wire Size	Misc
STD374030	600537-2	Central AC	12/8	Fit .090 pin

## Butt Splice—Insulated



Sears PN	Mfr. #	Application	Wire Size	Misc
STD374050	324138	NA	22/16	600V 90°C
STD374051	328427	NA	16/14	600V 90°C
STD374052	329939	NA	12/10	600V 90°C

## Butt Splice—Bare



Sears PN	Mfr. #	Application	Wire Size	Misc
STD374053	323795	NA	16/14	Hi-temp (650°F)
STD374054	323755	NA	12/10	Hi-temp (650°F)

## End Splice—Insulated



Sears PN	Mfr. #	Application	Wire Size	Misc
STD375007	35115	NA	22/14	Nylon/300V 105°C
STD375008	35653	NA	18/10	Nylon/300V 105°C

## Socket/Pin Connectors



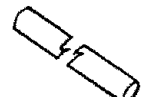
Sears PN	Mfr. #	Application	Wire Size	Misc
STD374020	60619-1	NA	20/14	Socket, tin plated brass
STD374021	60620-1	NA	20/14	Pin, tin plated brass

## Ring Terminal



Sears PN	Mfr. #	Application	Wire Size	Misc
STD374060	322797	#6 Stud	22/16	Hi-temp (650°F)
STD374080	322694	#8 Stud	16/14	Hi-temp (650°F)
STD374081	323061	#8 Stud	12/10	Hi-temp (650°F)
STD374100	322695	#10 Stud	16/14	Hi-temp (650°F)
STD374101	323062	#10 Stud	12/10	Hi-temp (650°F)
STD374140	322733	1/4" Stud	16/14	Hi-temp (650°F)
STD374141	323063	1/4" Stud	12/10	Hi-temp (650°F)

## Heatshrink Tubing, 8" Length



Sears PN	Mfr. #	Misc
STD375011	603311-7	3/16" dia/shrinks to .093/approx. half of original dimension
STD375012	603311-8	3/8" dia/shrinks to .187/approx. half of original dimension

# Electrical Wire Nuts & Plastic Cable Ties

## Electrical Wire Nuts



### Plastic

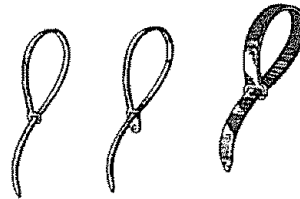
Sears PN	Size	Color	Wire Min.	Wire Max.
STD375004	Small	Gray	1#20 & 1#22	2#16
STD375005	Medium	Orange	3#22	2#14 & 1#18
STD375006	Large	Yellow	1#14 & 1#18	1#10 & 1#14

### Ceramic/Porcelain

Sears PN	Size	Color	Wire Min.	Wire Max.
STD375411	Small	Gray	1#20 & 1#22	2#16
STD375415	Medium	Gray	3#22	2#14 & 1#18
STD375417	Large	Gray	1#14 & 1#18	1#10 & 1#14

## Plastic Cable Ties

- Used to tie cables and wiring together.

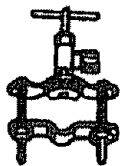


Sears PN	Length (in)	Width (in)
STD374058	3-13/16	1/8
STD398192	7-1/4	3/16
STD426375	3-3/4	1/8
STD426600	6	3/16
STD426115	11-1/2	3/16

# Copper Tubing, Fittings & Aluminum Tubing

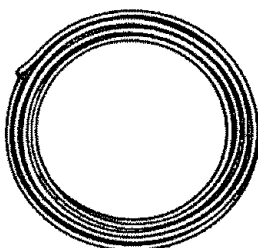
## Copper Tubing & Fittings

- For use in connecting humidifier, ice makers, etc.
- Valves fit 1/2" or 3/4" pipe or tubing allowing you to connect to 1/4" copper tubing.



**Saddle Valve**

Sears PN	Description
STD516160	Saddle Valve
STD516161	Saddle Valve/Self-tapping

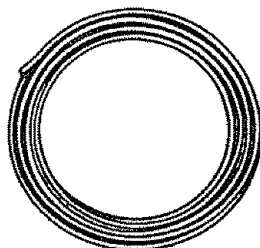


**Copper Tubing**

Sears PN	Description
STD516121	Copper Tubing 1/4" x 25'

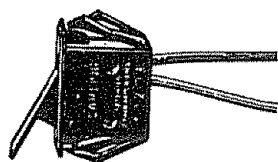
**Please note:** To order a complete packaged kit which includes 25 feet of 1/4" copper tubing with a saddle valve and compression union, order division 42/431, part number 51617.

## Aluminum Tubing



Sears PN	Width (O.D. in)	Length (ft)
STD317125	1/8	5
STD317185	3/16	5
STD317255	1/4	5
STD317375	3/8	5
STD317250	1/4	50

To order the above parts, use 98/980



### FURNACE DOOR INTERLOCK SWITCH

Snap-in replacement switch for gas furnaces made by Janitrol, Rheem-Ruud and others. Black with a 1" long actuator, 6" wire leads.

No. G31-504 —

## SEARS

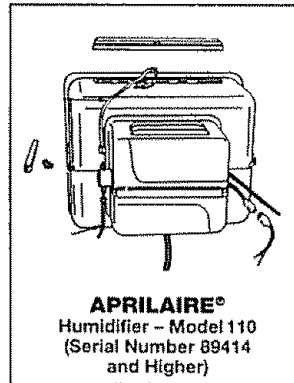
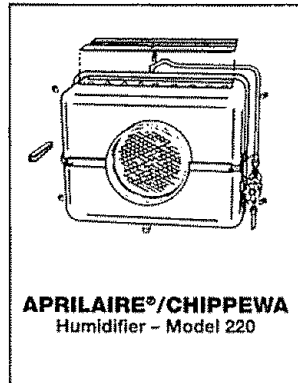
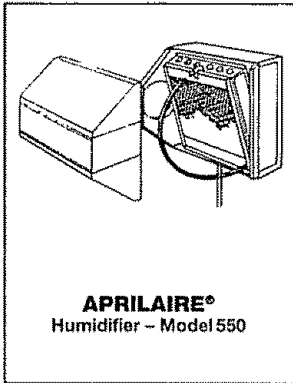
### FURNACE MOUNT HUMIDIFIER REPLACEMENT MEDIA PADS INFORMATION CHART

<u>SEARS ITEM</u>	<u>SIZE (INCHES)</u>	<u>MOUNTING LOCATION</u>	<u>FITS SEARS FURNACE MOUNT HUMIDIFIERS</u>
9336	6.00 x 1.00 x 24.00	Inside Wheel	303.938000, 303.938001, 303.938002, 303.938003 303.938004, 303.938005, 303.938010, 303.938011 303.938012, 303.938060, 303.938061, 303.938062
9335	8.25 x .75 x 24.75	Inside Wheel	303.936600, 303.936610, 303.936611, 303.936612 303.936613, 303.93240, 303.93241
9385	3.63 x .75 x 23.00	Inside Wheel	303.936800, 303.93750, 303.936810, 303.936811
14971 (was 93171)	3.69 x .50 x 22.00 Heat Staked Seam	Outside Wheel	303.931511, 303.931510, 303.93152, 303.93151 303.93150, 303.93031, 303.9303, 303.93835, 303.93834 303.93833, 303.93832, 303.93831, 303.9383, 303.9387 303.930110, 303.93010
14991 (was 93191)	3.69 x .75 x 23.00 Heat Staked Seam	Outside Wheel	303.936820, 303.936821
93181	6.13 x 1.00 x 21.75 Heat Staked Seam	Outside Wheel	303.932511, 303.932510, 303.93250, 303.93251 303.937800, 303.93770
14603	5.88 x .75 x 21.00	Inside Wheel	303.14601
14711	12" x 11" Fixed Pad	Snaps in Hsg.	303.14701, 303.147012
14611	9 13/16" x 9 1/2" ( #10 Fixed Pad )	Fits in Frame	Aprilaire 110, 220, 550 - Chippewa-220
14612	10" x 13" ( #35 Fixed Pad )	Fits in Frame	Aprilaire 350, 360, 560, 760
14613	11 1/4" x 14 5/8" ( #12 Fixed Pad )	Fits in Frame	Aprilaire 112, 136, 224, 440, 445 - Chippewa 224, 225

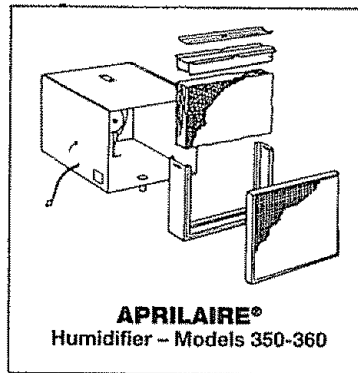
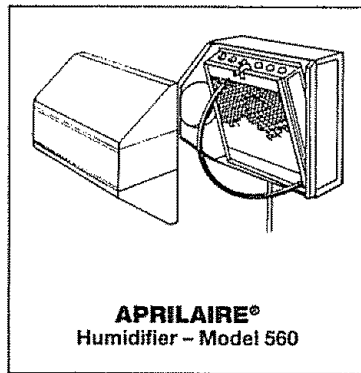
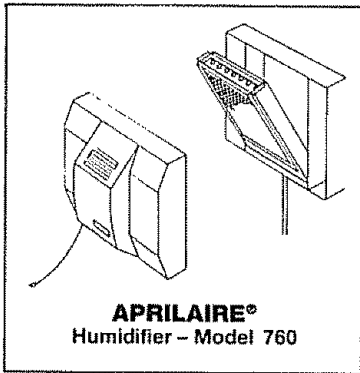
TO ORDER THE ABOVE PARTS USE 42/042

# REPLACEMENT MEDIA PAD

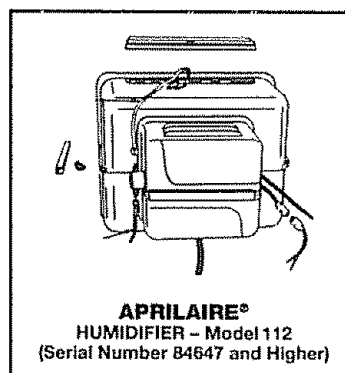
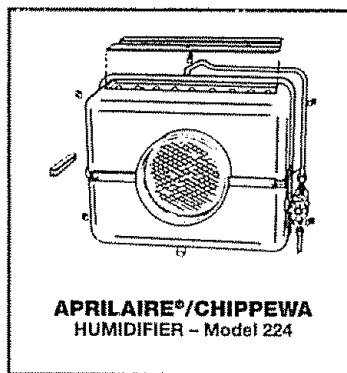
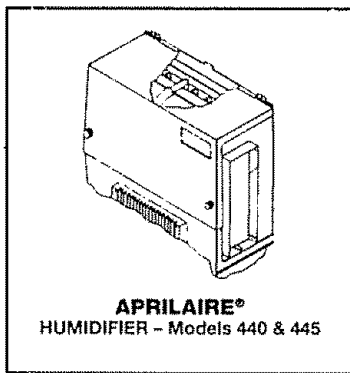
## FOR APRILAIRE® HUMIDIFIERS



Replaces  
Aprilaire®  
Stock No. 10.  
Fits Humidifier  
Models:  
• 110  
• 220  
• 550  
Also Fits  
Chippewa®  
Model:  
• 220



Replaces  
Aprilaire®  
Stock No. 35.  
Fits Humidifier  
Models:  
• 350  
• 360  
• 560  
• 760



Replaces Aprilaire®  
Stock No. 12.  
Fits Humidifier  
Models:  
• 112  
• 136  
• 224  
• 440  
• 445  
Also Fits  
Chippewa®  
Models:  
• 224  
• 225

To help keep your humidifier operating efficiently, check media pad every 60 days during season and replace as needed depending on water conditions (at least once per season).

Insert with colored spot up following manufacturers' instructions.

Aprilaire® is a registered trademark of Research Products Corporation

The manufacturer of this product is not affiliated, connected or associated with Research Products Corporation nor is this product sponsored or approved by Research Products Corporation

TO ORDER THE ABOVE PARTS USE 42/042

## SEARS

### FURNACE (PLENUM MOUNT) HUMIDIFIER CROSS REFERENCE GUIDE

*NOTE: Check available mounting area (H x W x D) to insure current model will fit. In some cases modification to the plenum opening may be required.*

#### CURRENT MODEL

#### REPLACES THESE OLDER MODELS

*(120 Volt with self contained blower)*

<b>93806</b> <b>Kenmore 3000</b> (18 gallon) H(10 5/8") x W (18 3/16") x D (11 7/16")	303.93800, 303.938001, 303.938002, 303.938003 303.938004, 303.938005, 303.938010, 303.938011 303.938012, 303.938060, 303.938061
<i>*This current model comes with a plenum stiffener mounting plate to accommodate the new opening requirements. Some trimming of the old opening may be required. Plate may overhang plenum</i>	303.936800, 303.936810, 303.936811, 303.93750  303.9303, 303.93031, 303.93150, 303.93151 303.93152, 303.931510, 303.931511  303.9383, 303.93831, 303.93823, 303.93833 303.93834, 303.93835, 303.93010, 303.930110  303.936820, 303.936821  303.93250, 303.93251, 303.932510, 303.932511 303.937800, 303.93770

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*(15 gallon by-pass w/24 volt media motor)*

<b>93661</b> <b>Kenmore 2500</b> H (10 1/2") x W (11 5/16") x D (11 3/4")	303.936600, 303.936610, 303.936611, 303.936612  303.93240, 303.93241
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*(7-11 gallon by-pass)*

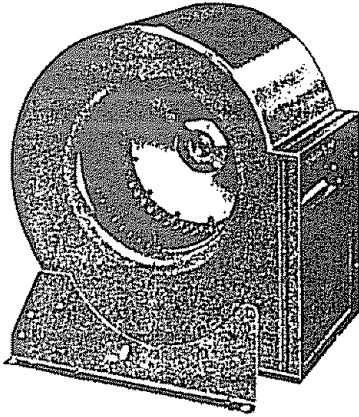
<b>14601 w/24V media motor</b> <b>Kenmore 1700</b> H (9") x W (8") x D (11 1/2")	303.932300 w/24 V media motor 303.936500 w/24V media motor 303.9302 w/120V media motor 303.93100 w/120 V media motor 303.9307 w/air drive turbine media motor 303.93230 w/air drive turbine media motor 303.147020 w/air drive turbine media motor
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*(Fixed pad flow through by-pass w/24 volt solenoid)*

<b>147012</b> <b>Kenmore 2700</b> H (14 7/16) x W (12") x D (8 7/8")	303.14701 Most Aprilaire models 220, 224, 440, 550, 560
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# DIRECT DRIVE BLOWERS LESS MOTORS

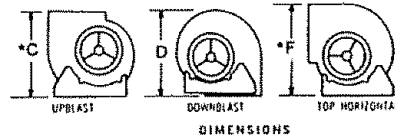
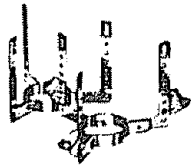
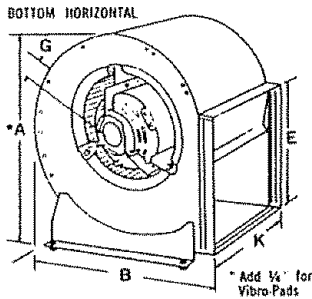


Complete Direct Drive Blower without motor consists of: Blower of heavy gauge steel, baked enamel finish, adjustable D.D. motor mounting bracket. Universal Housing Supports and Vibro-Pads.

## DIMENSIONS

Part Number	Lau Model	K	E	A	B	C	D	F	G†	Shaft Size
38-2513-01	DD9-7A Less Motor	9 $\frac{1}{16}$	10 $\frac{1}{4}$	17	14 $\frac{1}{16}$	15 $\frac{1}{16}$	14 $\frac{1}{16}$	15 $\frac{1}{16}$	1 $\frac{1}{4}$	$\frac{1}{2}$ " Bore
38-2513-02	DD9-9A Less Motor	11 $\frac{1}{16}$	10 $\frac{1}{4}$	17	14 $\frac{1}{16}$	15 $\frac{1}{16}$	14 $\frac{1}{16}$	15 $\frac{1}{16}$	$\frac{7}{8}$	$\frac{1}{2}$ " Bore
38-2513-03	DD10-8A Less Motor	10 $\frac{1}{2}$	11 $\frac{1}{8}$	18 $\frac{1}{2}$	16 $\frac{1}{2}$	16 $\frac{1}{16}$	16 $\frac{1}{2}$	17 $\frac{1}{2}$	1 $\frac{1}{8}$	$\frac{1}{2}$ " Bore
38-2513-04	DD10-10A Less Motor	13 $\frac{1}{16}$	11 $\frac{1}{8}$	18 $\frac{1}{2}$	16 $\frac{1}{2}$	16 $\frac{1}{16}$	16 $\frac{1}{2}$	17 $\frac{1}{2}$	$\frac{5}{8}$	$\frac{1}{2}$ " Bore
024840-28	DD12-9A Less Motor	12 $\frac{1}{4}$	13 $\frac{1}{16}$	21 $\frac{1}{4}$	19 $\frac{1}{8}$	19 $\frac{1}{2}$	19 $\frac{1}{8}$	20 $\frac{1}{2}$	1 $\frac{1}{16}$	$\frac{1}{2}$ " Bore
024840-29	DD12-12A Less Motor	15 $\frac{1}{16}$	13 $\frac{1}{16}$	21 $\frac{1}{8}$	19 $\frac{1}{8}$	19 $\frac{1}{2}$	19 $\frac{1}{8}$	20 $\frac{1}{2}$	1 $\frac{1}{16}$	$\frac{1}{2}$ " Bore

†These dimensions are maximum. They will vary slightly with motor sizes.



"TYPICAL" PERFORMANCE DATA FOR LAU DIRECT DRIVE BLOWERS, USING "OFF-THE-SHELF" 1075 RPM MOTORS (+ OR - 10%). For actual performance, must know exact motor being used; thus, use this as a guide, only:

MODEL NO.	MOTOR H.P. (HIGH SPEED)	C F M											
		.5SP	.6SP	.7SP	.8SP	.9SP	1.0SP	1.1SP	1.2SP	1.3SP	1.4SP	1.5SP	1.6SP
DD 9-7	1/4	---	---	1220	1170	1100	980	---	---	---	---	---	---
DD 9-7	1/3	1470	1490	1290	1330	1250	1100	---	---	---	---	---	---
DD 9-9	1/4	1330	1290	1240	1160	1000	---	---	---	---	---	---	---
DD 9-9	1/3	1560	1490	1430	1320	1150	---	---	---	---	---	---	---
DD 9-9	1/2	1820	1730	1620	1480	1260	---	---	---	---	---	---	---
DD10-8	1/4	---	---	---	---	---	1195	1130	1020	---	---	---	---
DD10-8	1/3	---	---	---	---	1460	1410	1360	1270	1100	---	---	---
DD10-8	1/2	---	2130	2070	2000	1930	1840	1740	1620	1450	---	---	---
DD 10-10	1/3	---	---	---	---	1520	1460	1350	1000	---	---	---	---
DD 10-10	1/2	---	2300	2220	2140	2060	1950	1800	1500	---	---	---	---
DD 12-9	1/2	---	---	---	---	---	---	---	---	1950	1910	1850	1740
DD 12-12	1/2	---	---	---	---	---	---	2150	2080	1950	1600	---	---

NOTE: Other light commercial Lau blowers available - see individual catalogs.

--- Motor overload will result if blower is operated below SP shown.

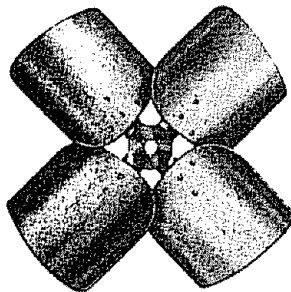
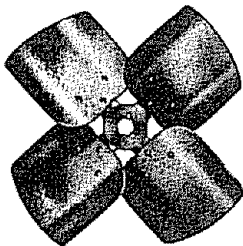
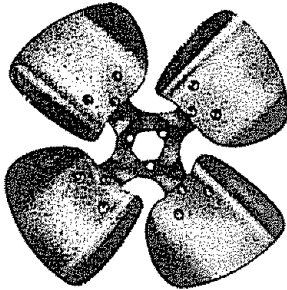
TO ORDER THE ABOVE PARTS USE 42/303



# HEAVY DUTY CONDENSER TYPE 4-BLADE

Interchangeable hubs  
for all propellers  
listed on Page  
Order separately.

**DETERMINE ROTATION  
BY FACING AIR DISCHARGE  
SIDE OF PROP.**

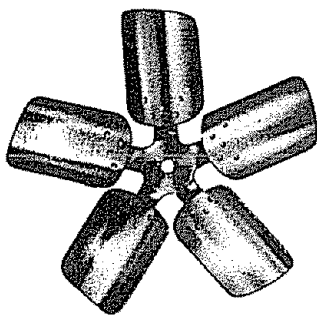
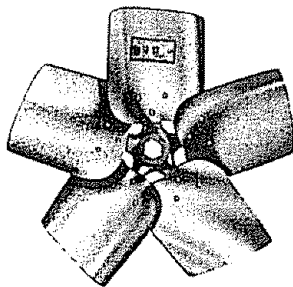
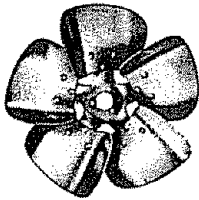


Part No.	* Lau Model Number	Rotation	Dia. (ins.)	Pitch	R.P.M.	STATIC PRESSURE								Std. Pack
						.0		.10		.20		.30		
						C.F.M.	H.P.	C.F.M.	H.P.	C.F.M.	H.P.	C.F.M.	H.P.	
60-7193-01 60-7194-01	4C1623CW 4C1623CCW	CW CCW	16	23°	1140 1550 1725	1750 2380 2650	.05 .125 .17	1610 2270 2560	.07 .15 .21	1346 2150 2460	.10 .16 .23	1070 2010 2360	.12 .20 .25	2
60-7195-01 60-7196-01	4C1627CW 4C1627CCW	CW CCW	16	27°	1140 1550 1725	1985 2700 3005	.08 .20 .28	1853 2610 2916	.09 .21 .29	1574 2490 2827	.12 .235 .32	1300 2340 2716	.15 .26 .34	2
60-7605-01 60-7606-01	4C1633CW 4C1633CCW	CW CCW	16	33°	1140 1550 1725	2330 3170 3525	.126 .315 .435	2200 3100 3450	.134 .320 .440	1870 2990 3365	.162 .330 .450	1570 2845 3275	.195 .350 .475	2
60-5591-01 60-5592-01	4C2033CW 4C2033CCW	CW CCW	20	33°	850 1000 1140	3120 3660 4160	.130 .210 .315	2700 3330 3900	.150 .235 .340	2040 2850 3520	.165 .260 .360	1610 2300 3020	.195 .282 .390	2
60-5587-01 60-5588-01	4C2027CW 4C2027CCW	CW CCW	20	27°	850 1000 1140	2590 3000 3420	.090 .150 .196	2180 2680 3120	.103 .162 .230	1700 2300 2800	.130 .180 .255	1300 1900 2450	.142 .200 .280	2
60-5585-01 60-5586-01	4C1833CW 4C1833CCW	CW CCW	18	33°	850 1000 1140	2480 2920 3300	.095 .150 .230	2130 2650 3080	.115 .172 .250	1560 2200 2750	.135 .203 .280	1240 1770 2300	.160 .230 .320	2
60-5581-01 60-5582-01	4C1827CW 4C1827CCW	CW CCW	18	27°	850 1000 1140	2150 2540 2850	.062 .100 .140	1850 2300 2650	.080 .120 .160	1350 1950 2400	.100 .140 .190	1000 1500 2060	.115 .170 .220	2
60-5593-01 60-5594-01	4C2227CW 4C2227CCW	CW CCW	22	27°	850 1000 1140	3900 4580 5220	.208 .330 .500	3650 4400 5050	.230 .365 .520	3280 4100 4840	.255 .395 .565	2800 3780 4580	.280 .427 .600	2
60-5595-01 60-5596-01	4C2233CW 4C2233CCW	CW CCW	22	33°	850 1000 1140	4460 5250 6000	.300 .480 .710	4200 5050 5800	.322 .520 .760	3830 4780 5600	.350 .552 .800	3100 4400 5320	.375 .580 .830	2
60-8043-01 60-8044-01	4C2423CW 4C2423CCW	CW CCW	24	23°	850 1000 1140	4350 5120 5850	.210 .340 .508	4200 5000 5720	.218 .350 .518	3750 4800 5600	.235 .360 .525	3000 3850 5400	.273 .417 .545	2

Part No.	* Lau Model Number	Rotation	Dia. (ins.)	Pitch	R.P.M.	STATIC PRESSURE								Std. Pack
						.0		.10		.20		.30		
						C.F.M.	H.P.	C.F.M.	H.P.	C.F.M.	H.P.	C.F.M.	H.P.	
60-5597-01 60-5598-01	4C2427CW 4C2427CCW	CW CCW	24	27°	850 1000 1140	5100 6000 6900	.265 .440 .670	4800 5850 6600	.283 .470 .695	4300 5300 6350	.320 .495 .715	3600 4900 6000	.360 .520 .735	2
60-5599-01 60-5600-01	4C2433CW 4C2433CCW	CW CCW	24	33°	850 1000 1140	6050 7050 8150	.360 .580 .900	5600 6750 7850	.400 .610 .930	5125 6350 7500	.420 .650 .955	4400 5850 7050	.460 .700 1.00	2

# HEAVY DUTY CONDENSER TYPE 5-BLADE

Interchangeable hubs  
for all propellers  
listed on Page  
Order separately.

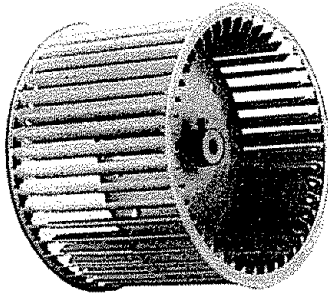


Part No.	* Lau Model Number	Rotation	Dia (Ins.)	Pitch	R.P.M.	STATIC PRESSURE						Std. Pack			
						.0		.10		.20			.30		
						C.F.M.	H.P.	C.F.M.	H.P.	C.F.M.	H.P.		C.F.M.	H.P.	
60-7199-01	5C1023CW	CW	10	23°	1140	450	.011	350	.015	200	.020	75	.023	2	
60-7200-01	5C1023CCW	CCW			1550	615	.028	540	.033	450	.040	335	.048		
					1725	680	.035	620	.042	550	.050	450	.060		
60-7201-01	5C1027CW	CW	10	27°	1140	485	.012	365	.016	225	.022	95	.025	2	
60-7202-01	5C1027CCW	CCW			1550	660	.029	580	.036	490	.042	370	.052		
					1725	734	.038	650	.047	582	.053	490	.063		
60-7203-01	5C1219CW	CW	12	19°	1140	820	.018	645	.030	395	.035	315	.040	2	
60-7204-01	5C1219CCW	CCW			1550	1115	.045	1030	.060	825	.077	610	.086		
					1725	1240	.062	1165	.080	1040	.098	775	.110		
60-7205-01	5C1223CW	CW	12	23°	1140	895	.022	720	.034	480	.040	390	.045	2	
60-7206-01	5C1223CCW	CCW			1550	1220	.055	1125	.068	940	.087	730	.098		
					1725	1354	.076	1273	.095	1145	.113	922	.125		
60-7207-01	5C1227CW	CW	12	27°	1140	970	.027	795	.036	575	.044	460	.049	2	
60-7208-01	5C1227CCW	CCW			1550	1320	.068	1215	.078	1050	.092	875	.104		
					1725	1470	.094	1375	.108	1250	.120	1080	.135		
60-7211-01	5C1423CW	CW	14	23°	1140	1190	.045	1020	.055	830	.065	670	.075	2	
60-7212-01	5C1423CCW	CCW			1550	1620	.113	1495	.127	1365	.142	1225	.154		
					1725	1800	.156	1695	.170	1580	.186	1450	.200		
60-7213-01	5C1427CW	CW	14	27°	1140	1330	.055	1130	.063	880	.076	725	.085	2	
60-7214-01	5C1427CCW	CCW			1550	1810	.138	1680	.145	1510	.160	1310	.178		
					1725	2015	.191	1900	.200	1760	.212	1580	.230		
60-5601-01	5C1627CW	CW	16	27°	850	1550	.055	1320	.065	1020	.075	705	.092	2	
60-5602-01	5C1627CCW	CCW			1000	1825	.085	1650	.100	1425	.115	1125	.130		
					1140	2150	.123	1950	.140	1750	.160	1525	.175		
60-5603-01	5C1633CW	CW	16	33°	850	1910	.071	1670	.082	1280	.097	770	.110	2	
60-5604-01	5C1633CCW	CCW			1000	2250	.115	2050	.125	1825	.140	1420	.163		
					1140	2550	.165	2400	.180	2200	.200	1925	.220		
60-5605-01	5C1827CW	CW	18	27°	850	2225	.085	1970	.100	1600	.120	1125	.140	2	
60-5606-01	5C1827CCW	CCW			1000	2625	.135	2425	.150	2170	.172	1850	.195		
					1140	2970	.190	2800	.220	2600	.240	2350	.260		
60-5607-01	5C1833CW	CW	18	33°	850	2630	.117	2440	.142	2120	.155	1450	.175	2	
60-5608-01	5C1833CCW	CCW			1000	3100	.205	2950	.220	2750	.240	2400	.260		
					1140	3500	.320	3400	.337	3220	.350	3000	.363		
60-5609-01	5C2027CW	CW	20	27°	850	2890	.130	2600	.150	2200	.163	1620	.185	2	
60-5610-01	5C2027CCW	CCW			1000	3350	.220	3100	.250	2850	.275	2500	.295		
					1140	3800	.330	3600	.350	3400	.370	3100	.400		
60-5611-01	5C2033CW	CW	20	33°	850	3460	.183	3180	.204	2750	.225	2200	.240	2	
60-5612-01	5C2033CCW	CCW			1000	4050	.300	3800	.320	3520	.350	3120	.370		
					1140	4650	.440	4450	.455	4210	.480	3960	.510		

TO ORDER THE ABOVE PARTS USE 42/303

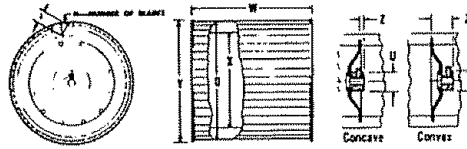
IMPORTANT: KEY SIZING INFORMATION IS COLOR CODED

# Universal replacement "DD" PRESLOK WHEELS for direct drive blowers - Maximum wheel cage RPM for DD Wheels is 1750.



Rotation determined by viewing from  
Hub side.

Offering the same outstanding  
features and high quality as Lau  
"A Series" Preslok® Wheels, "DD"  
Preslok® Wheels have a special hub  
for use with direct drive blowers.  
All Standard Replacement Wheels  
are fabricated from cold rolled  
steel with a baked enamel finish  
Standard center disc arrangements  
shown.



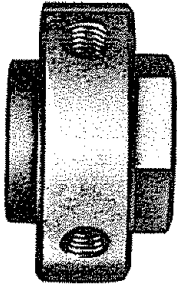
**SERVICE HINT:** If C.C.W Rot required, use a C.W.  
Rot wheel and mount motor on hub side. Set screw must be  
converted to Allen Head Screw and then tightened through the  
blades, using T handle Allen Wrench (May have to notch  
blade above set screw to provide access for T handle Allen  
Wrench).

Part No.	Lau Model	Bore Size	Rot.	Center Disc.	Y	W	D	X	U	Z	H	J
013335-01	DD 9- 6A	1/2	CW	Convex	9 <sup>15</sup> / <sub>16</sub>	6	9 <sup>1</sup> / <sub>2</sub>	7 <sup>11</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>25</sup> / <sub>32</sub>	43	1
013336-02	DD 9- 7A	1/2	CW	Convex	9 <sup>15</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>2</sub>	7 <sup>11</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>25</sup> / <sub>32</sub>	43	1
013337-01	DD 9- 8A	1/2	CW	Convex	9 <sup>15</sup> / <sub>16</sub>	8	9 <sup>1</sup> / <sub>2</sub>	7 <sup>11</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>25</sup> / <sub>32</sub>	43	1
013332-01	DD 9- 9A	1/2	CW	Concave	9 <sup>15</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>2</sub>	7 <sup>11</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>	7 <sup>3</sup> / <sub>32</sub>	43	1
013326-01	DD10- 6A	1/2	CW	Convex	11 <sup>1</sup> / <sub>8</sub>	6	10 <sup>5</sup> / <sub>8</sub>	8 <sup>7</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>15</sup> / <sub>16</sub>	48	1
013325-01	DD10- 7A	1/2	CW	Convex	11 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>8</sub>	10 <sup>5</sup> / <sub>8</sub>	8 <sup>7</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>15</sup> / <sub>16</sub>	48	1
013324-01	DD10- 8A	1/2	CW	Convex	11 <sup>1</sup> / <sub>8</sub>	8	10 <sup>5</sup> / <sub>8</sub>	8 <sup>7</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>15</sup> / <sub>16</sub>	48	1
013317-01	DD10- 9A	1/2	CW	Concave	11 <sup>1</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>2</sub>	10 <sup>5</sup> / <sub>8</sub>	8 <sup>7</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>15</sup> / <sub>16</sub>	48	1
013316-02	DD10-10A	1/2	CW	Concave	11 <sup>1</sup> / <sub>8</sub>	10 <sup>5</sup> / <sub>8</sub>	10 <sup>5</sup> / <sub>8</sub>	8 <sup>7</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>15</sup> / <sub>16</sub>	48	1
026940-09	DD11- 9A	1/2	CW	Convex	12 <sup>1</sup> / <sub>4</sub>	9 <sup>1</sup> / <sub>2</sub>	11 <sup>3</sup> / <sub>4</sub>	10	1 <sup>1</sup> / <sub>4</sub>		53	1
026941-11	DD11-10A	1/2	CW	Concave	12 <sup>1</sup> / <sub>4</sub>	10 <sup>5</sup> / <sub>8</sub>	11 <sup>3</sup> / <sub>4</sub>	10	1 <sup>1</sup> / <sub>4</sub>		53	1
013693-25	DD12- 9A	1/2	CW	Convex	13 <sup>3</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>2</sub>	12 <sup>5</sup> / <sub>8</sub>	10 <sup>9</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>	2	43	1 <sup>5</sup> / <sub>16</sub>
015565-07	DD12-12A	1/2	CW	Concave	13 <sup>3</sup> / <sub>16</sub>	12 <sup>5</sup> / <sub>8</sub>	12 <sup>5</sup> / <sub>8</sub>	10 <sup>9</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>15</sup> / <sub>16</sub>	43	1 <sup>5</sup> / <sub>16</sub>

TO ORDER THE ABOVE PARTS USE 42/303

# INTERCHANGEABLE HUBS

Steel Hub  
Combination  
Hex/Round



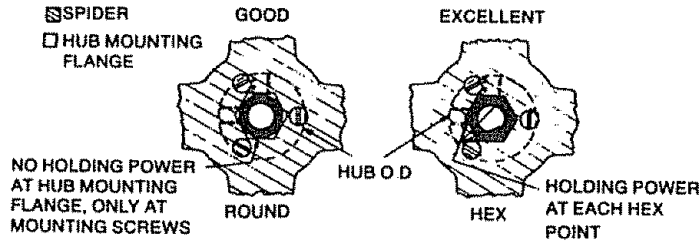
Extra metal in the two mounting surfaces (hex and round) for more secure fit

- All steel
- Hex on one side, round on other (may use either side) — one inventory for all props
- Zinc plated and coated with gold chromate for double protection
- Set screws are heat treated, black oxide
- Mounting screws: zinc plated, heat treated, pan slotted—with locking serrations under the head—with nylock patch for added locking strength (double locking device designed to grip into the threads without backing out)
- $\frac{5}{8}$ " and  $\frac{3}{4}$ " have Keyway

## HEX/ROUND HUBS with screws

Part No.	Bore	Set Screws
60-7658-01	$\frac{1}{4}$ "	1
60-7658-02	$\frac{3}{8}$ "	1
60-7658-03	$\frac{1}{2}$ "	1
60-7658-04	$\frac{1}{2}$ "	2
60-7658-05	$\frac{5}{8}$ " *	2
60-7658-06	$\frac{3}{4}$ " *	2

\* With Keyway

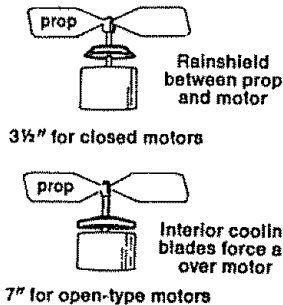


- Lau HEX design takes the torque off the screws and puts it on the hub and spider ... where it belongs!

# RAINSHIELDS

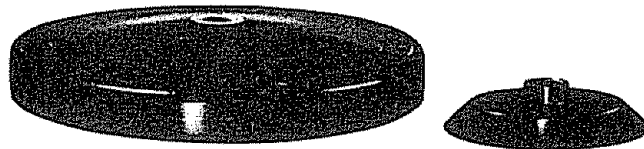
An inexpensive means to reduce the potential of rain getting into motor bearings on vertical shaft motor applications.

- Simple press fit on  $\frac{1}{2}$ " to  $\frac{5}{8}$ " shafts.
- $3\frac{1}{2}$ " for closed motors to protect bearings.
- 7" with interior cooling blades (effectively reduces motor winding temperature and protects open motors).
- Primarily for vertical shaft motors on outdoor condensing units but can be used in any position to keep water from migrating along the shaft.
- Used as original equipment on many new air conditioners.

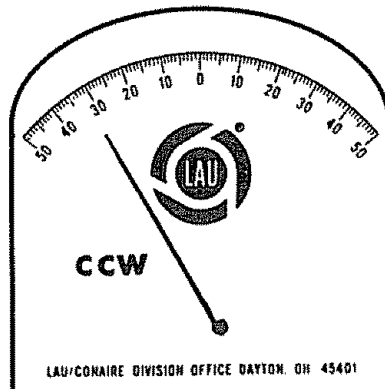


Size	Single Part No.	Weight M/C of 10
$3\frac{1}{2}$ " x $\frac{1}{2}$ "	60-3853-01	1 lb.
7" x $\frac{1}{2}$ "	60-3795-01	2 $\frac{3}{4}$ lbs.
7" x $\frac{5}{8}$ "	60-3795-02	2 $\frac{3}{4}$ lbs.

**Note:** All Rainshields are packed in Master Cartons of 10 and must be ordered in multiples of 10, ONLY. Use Single Part No. and total quantity required when placing orders.



# PITCH GAUGE

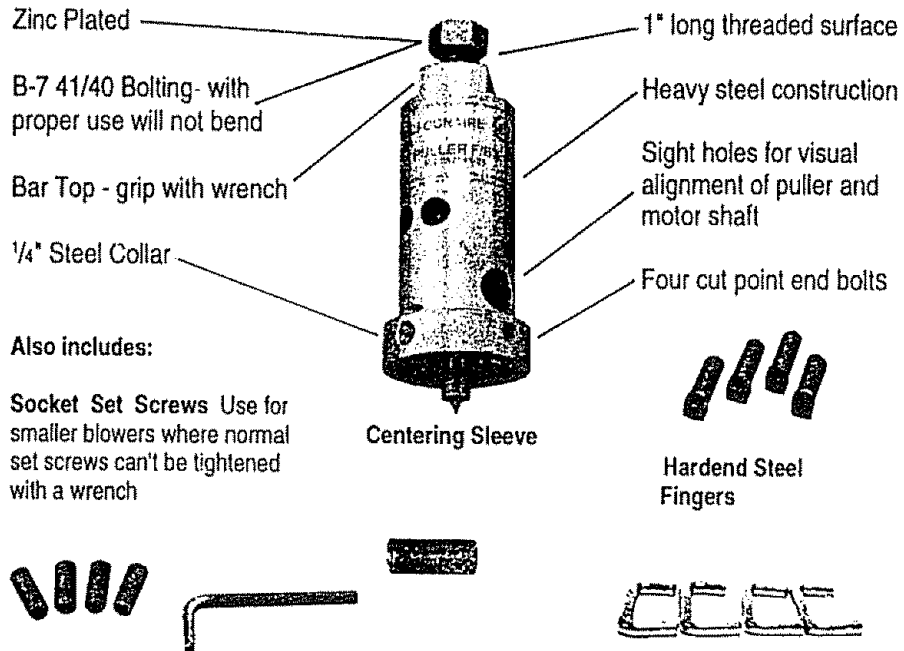


To determine blade pitch and rotation for replacement propellers, set the base on the spider and the dial plate on the blade.

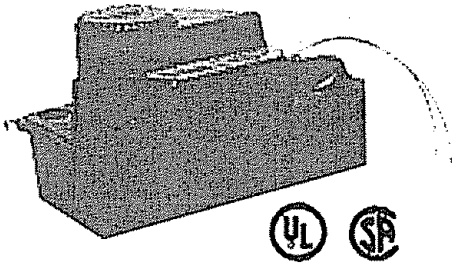
**PART NO.**  
050998-01

# HUB PULLERS - Two Tools in One - Remove Fan Blades and Blower Wheels - Easily

**FB2 Model, Pt. No. 052141-01**  
**Solid Stock Steel For Heavy Duty Applications**



## MEDIUM CONDENSATE PUMP MODELS



### CB20 Series

Beckett's new medium condensate pump is designed to meet or exceed your toughest job demands. This new pump is engineered to be user friendly with features like stronger motor, reliable micro switch float mechanism and the ability to mount the pump from either side. Check out the new larger Duck-Bill check valve design and convenient discharge with both barb and threads. A new modern design that meets the highest quality standards that you have come to expect from Beckett.

Model Number	H	W	L	Outlet	Volts	Amps	Watts	H.P.	Gallons per hour @ 60 Hz & Rated Voltage							Safety Switch	Check Valve	Cord w/plug	Shut Off (ft)
									1'	5'	10'	15'	20'	30'	40'				
CB201TUL	6"	5"	11 1/2"	3/8" O.D.	115	1.5	85	1/30	105	95	75	55	—	—	—	✓	✓	✓	20'

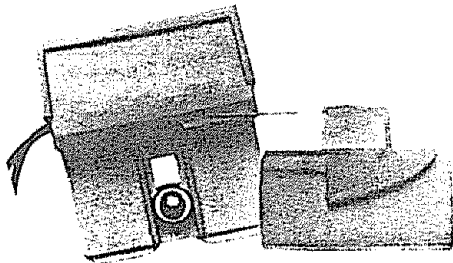
### BECKETT AUTOMATIC CONDENSATE UNITS CODING LEGEND

Tank Capacity  
 CL15, CL20 85 U S qt (80L)  
 CU14, CU19 17 U S qt (161L)  
 CU35, CU40 1 U S gallon (3785L)  
 CU45, CU55 1 U S gallon (3785L)

CU — Condensate Unit  
 CL — Low Profile Condensate Unit  
 T — Tubing Included (20', 3/8" I.D.)  
 LS — Less Safety Switch (otherwise included)  
 IPC — In Pan Condensate Unit  
 UL — U.L. Listed

HT - High Temperature Unit  
 1 = 115V 2 = 230V 4 = 460V 7 = 277V  
 CSA = Canadian Standards Association  
 \*Hi-Temperature Units for 190°F  
 \*\*150°F with Flame Retardant Plastic

## SAFETY CONTROL SWITCHES



1502

Rated 125V, 5A, 1/10 HP.  
 Wire normally closed. (Activation opens circuit)

Beckett's easy to use float actuated switch provides a reliable means to safely monitor high water levels. The switch may be wired directly to the system to turn off the air conditioner or furnace equipment, or it can be wired to sound an alarm if the water level becomes too high.

#### Specifications:

- Single pole, double throw, single break snap action switches
- Silver contacts • Pre-wired -- leads 17" ± 1/2" (except 1502R5)
- Safe for either AC or DC (low voltage) applications.
- External terminals on switches suitable for .020" x 3/16" female spade connection to your wiring harness if desired

# CAM-STAT®

## FALTS SERIES FAN & LIMIT CONTROLS

Turns the blower on and off as a function of time and temperature. Includes limit portion for safe operation of furnace

### Features:

- Adjustable fan off temperature setting
- Adjustable limit temperature setting
- Includes a "Heat Assist" circuit to provide a timed blower on function.
- Three models available.

Product No.	Element Length	Fan Off Temp.	Fan On Temp.	Limit Temp.	Limit Differential	Order No.
FALTS 57C-05T-120-A	7"	90° to 120°	N/A	150° to 250°	30°	F560

## FAL SERIES FAN & LIMIT CONTROLS

Turns the blower on and off as a function of temperature. Includes limit portion for safe operation of furnace.

### Features:

- Adjustable fan off temperature setting
- Adjustable fan differential.
- Adjustable limit temperature setting
- Three models available.

Product No.	Element Length	Fan Off Temp.	Fan Differential	Limit Temp.	Limit Differential	Order No.
FAL3C 05TD-120-A	3"	90° to 120°	25° to 50°	150° to 250°	30°	F558
FAL7C 05TD-120-A	7"	90° to 120°	25° to 50°	150° to 250°	30°	F559

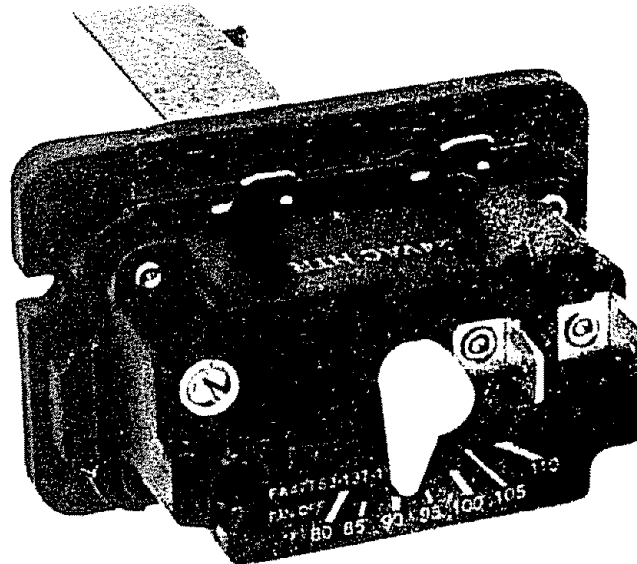
## FA47TS SERIES FAN CONTROLS

Turns the blower on and off as a function of time and temperature

### Features:

- Adjustable fan off temperature setting
- Includes "Heat Assist" circuit to provide a timed blower on function.
- Two models available.

Product No.	Extension Length	Time Delay at 24 VAC	Fan Off Temp.	Fan Differential	Order No.
FA47TS3-110	3"	25-60 Sec	90° to 120°	50° Fixed	F566
FA47TS7-110	7"	25-60 Sec	90° to 120°	50° Fixed	F567



# Universal Replacement Intermittent Pilot Ignition Control

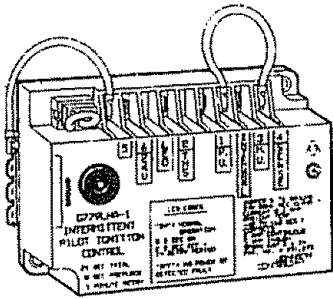
## Description

The G779 Universal Replacement Intermittent Pilot Ignition Control replaces many existing intermittent pilot controls made by various manufacturers. It is a safety control designed for indirect burner ignition and supervision, for use with all gases and applicable to gas fired appliances with a maximum firing rate of 400 000 Btu/hr

- flame detection using flame rectification technology (ability of a flame to conduct and rectify current)
- integral or remote flame sensing
- non-100% lockout, 100% lockout, or 100% shutoff with continuous retry
- trial for ignition period greater than or equal to 25 seconds
- prepurge period less than or equal to four seconds
- pilot burners with flow rates of 1500 Btu/hr or less
- operating with or without vent dampers

The G779 is not designed to replace ignition controls with the following specifications:

- pilot flame detection by any means other than flame rectification
- trial for ignition period of less than 25 seconds
- prepurge period greater than one second
- standing pilot applications



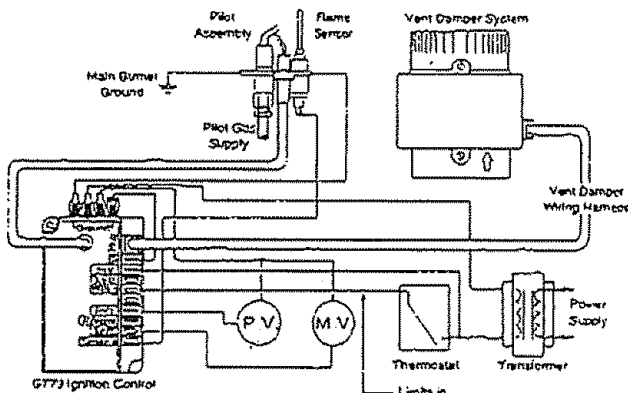
## To Order

Specify number G779LHA-1

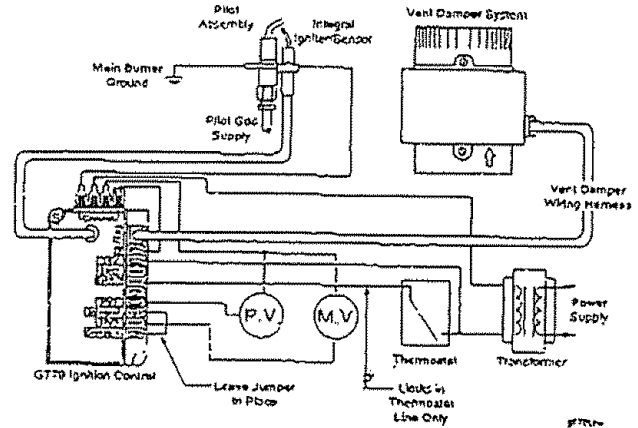
## Specifications

G779 Universal Replacement Intermittent Pilot Ignition Control	
Operating Voltage	24 VAC at 50/60 Hz
Operating Current	25 VAC, 60 Hz
Contact Rating (PV & MV)	2 A continuous, 5 A inrush
Operating Temperature	-40° to 160° F (-40° to 71° C)
Humidity Rating	95% RH @ maximum operating temperature non-condensing
Ignition Source	High voltage spark, capacitive discharge
Prepurge	Less than one second
Number of trials before 100% shutoff	One
Trial Time for Ignition	25 seconds*
Retry delay Period	5 seconds*
Recommended Spark Gap	0.125 inch maximum
Means of Flame Detection	Flame rectification
Flame failure response time	0.8 seconds
Minimum Flame Current Required	0.3 μA
Wiring Connections	Spark: Spike Control: 1/4 inch male spade
Type of Gas	Natural Liquefied Petroleum (LP), manufactured mixed or LP gas-air mix
Agency Listings	AGA, CGA

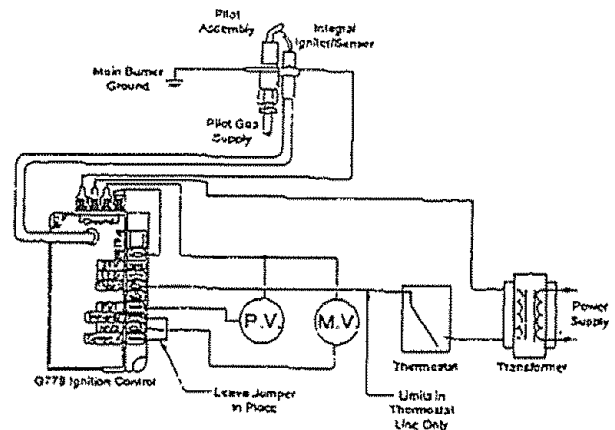
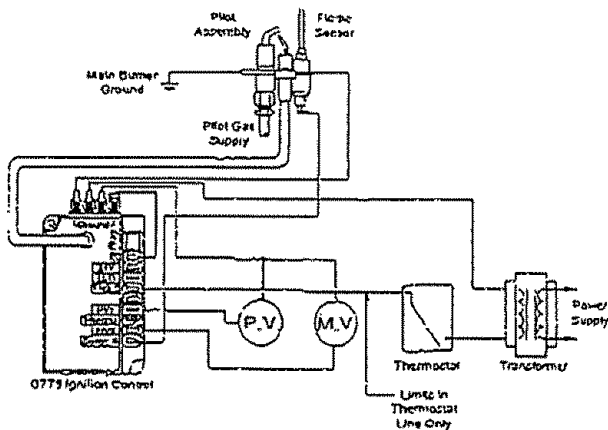
\* Timings increase by 20% under 50 Hz operation



Wiring for Integral Spark / Sense with Vent Damper

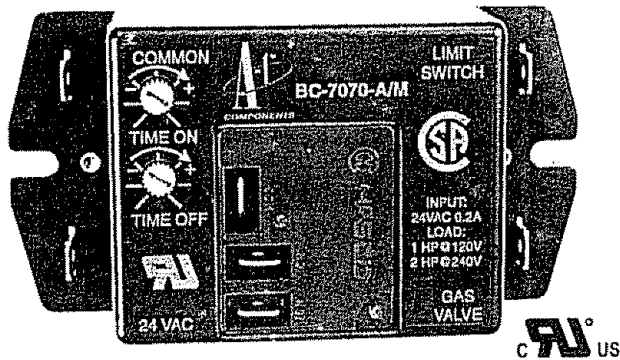


Wiring for Separate Spark / Sense with Vent Damper



TO ORDER THE ABOVE PARTS USE 64/979





## BC SERIES BLOWER CONTROL

Delays the on and off times of the blower fan resulting in increased heating efficiency. Incorporates a safety limit input circuit required for safe operation of forced air furnaces.

### Features:

- Relay output
- Easy wire hookup
- Adjustable on and off times
- Safety limit circuit.

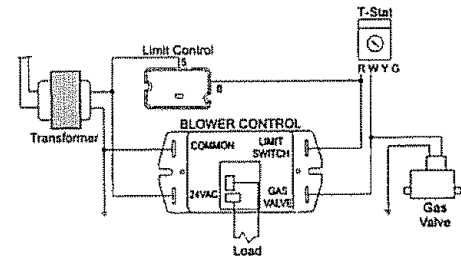


## BC SERIES - TIME DELAY BLOWER CONTROL

Product No.	Control Voltage	Blower-On Time	Blower-Off Time	Weight
BC-7070	24 VAC	0-4 min adj	0-4 min adj.	194

## DIRECT OEM REPLACEMENT

Product No.	ICP No.	Consolidated No.	Evcon No.
BC-7070	1005229	401510	7956-377
	1065188		7956-378
	1065750		7956A377

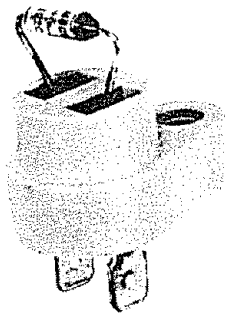


## THERMAL CUTOUT CONTROL SERIES

Designed to cut off electrical current once the temperature rating of the thermal cutout is reached.

### Features:

- One shot operation
- 15 AMP rating (with air flow).
- Low resistance
- Compact size for easy installation.
- For both in-line and face-plate mounting
- Temp tolerance +0/-2°C.



## THERMAL CUTOUTS

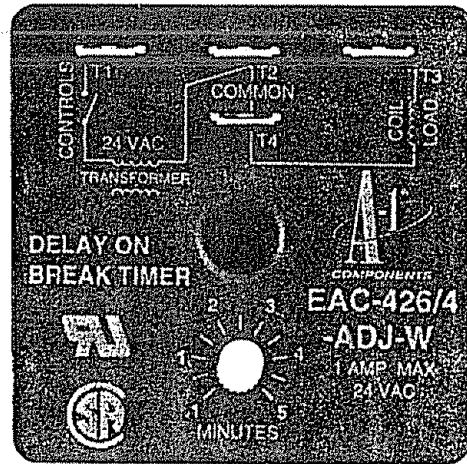
Product No.	Open Temp.	Mounting	Weight
TC-4257	257°F / 125°C	in-line	0.015
TC-4283	283°F / 139°C	in-line	0.015
TC-4300	300°F / 149°C	in-line	0.015
TC-4333	333°F / 167°C	in-line	0.015
TC-4377	377°F / 192°C	in-line	0.015
TC-4438	438°F / 226°C	in-line	0.015
TC-4668	468°F / 242°C	in-line	0.015
TC-5257	257°F / 125°C	face plate	0.09
TC-5300	300°F / 149°C	face plate	0.09
TC-5333	333°F / 167°C	face plate	0.09
TC-5377	377°F / 192°C	face plate	0.09

**EAC-426 SERIES LINEBACKER™**  
**• DELAY ON BREAK TIMERS**

Prevents short cycling and possible mechanical overload of a compressor due to short power failure or thermostat tampering.

**Features:**

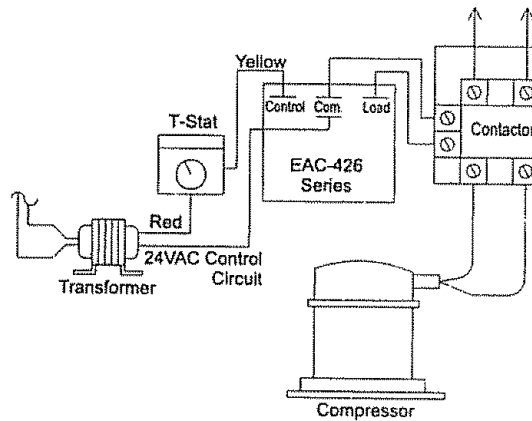
- 4-Terminal connection.
- Easy wire hook up.
- Available in fixed or adjustable delays
- Compact, durable package.



**OEM REPLACEMENT**

Rheem No.	ICP No.	York No.	Evcon No.	Amana No.
42-22756-02	1060410			
	24370800	024-26026-000	1460-500B	C64155-02
42-22756-01	1085325	031-00829-000		

Product No.	Delay Time	Control Voltage	Control Circuit Load Capacity	Termination Dimensions	Weight
EAC 426/4-ADJ	Fixed 30 sec on break	24 VAC	1 amp run, 10 amp inrush	4 - quick connect term 2" x 2" x 3/4"	0.138



# 35-6087(B,D,J,K)

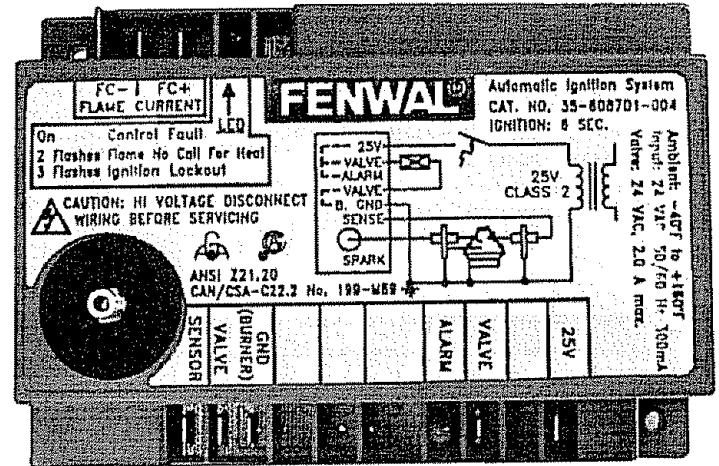
Microprocessor Based Direct Spark Ignition System

35.6087.1



## FEATURES

- 25VAC Microprocessor Based DSI Control
- Replaces **Honeywell S87** DSI modules
- System Diagnostic LED
- Flame Sense Test Pins
- Available with or without prepurge
- Available with Remote or Local Flame Sensing
- Design certified to ANSI Z21.20 and CAN/CSA C22.2 No. 199-M89



## DESCRIPTION

The 35-6087 is a 24 VAC Microprocessor Based Direct Spark Ignition Control designed for use in many types of heating applications such as gas furnaces, boilers, water heaters, commercial cooking and other similar appliances. The con-

rol utilizes a microprocessor to continually and safely monitor, analyze and control the proper operation of the gas burner. Valve added features such as LED diagnostics and flame current test pins highlight the controls benefits.

### Catalog Number Breakdown

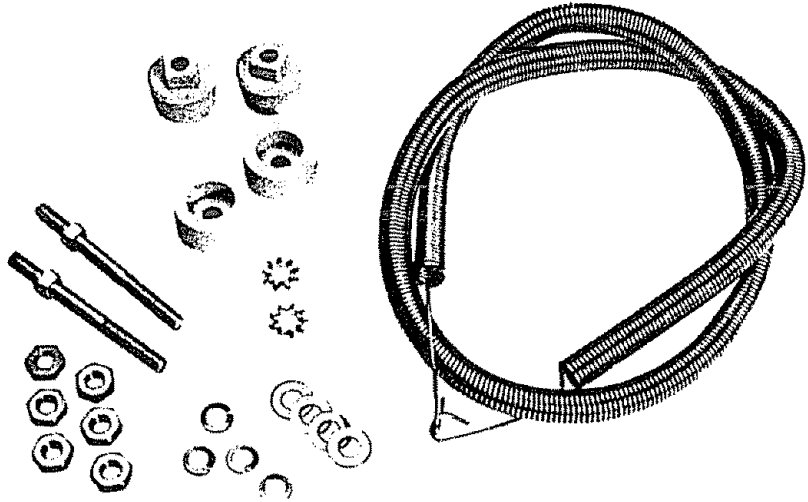
Catalog Number	Replaces Honeywell #	Flame Sense	Pre-purge	Trial for Ignition	Alarm ckt
<b>B series</b>					
35-6087B1-065	S87B1065	local	0	4	yes
35-6087B1-008	S87B1008	local	0	6	yes
35-6087B1-016	S87B1016	local	0	11	yes
35-6087B1-024	S87B1024	local	0	21	yes
<b>D Series</b>					
35-6087D1-020	S87D1020, S87C1022	remote	0	4	yes
35-6087D1-004	S87D1004, S87C1006	remote	0	6	yes
35-6087D1-012	S87D1012, S87C1014	remote	0	11	yes
35-6087D1-038	S87D1038, S87C1030	remote	0	21	yes
<b>J Series</b>					
35-6087J1-000	S87J1000	local	30	4	yes
35-6087J1-018	S87J1018	local	30	6	yes
35-6087J1-026	S87J1026	local	30	11	yes
35-6087J1-034	S87J1034	local	30	21	yes
<b>K Series</b>					
35-6087K1-008	S87K1008	remote	30	4	yes
35-6087K1-016	S87K1016	remote	30	6	yes
35-6087K1-024	S87K1024	remote	30	11	yes
35-6087K1-032	S87K1032	remote	30	21	yes

## W5KW HEATING ELEMENT KIT

Designed to permit field repairs of damaged element sections of electric heaters.

### Features:

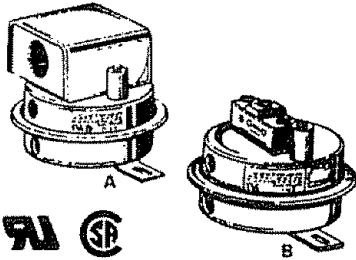
- Easy to install.
- Contains 2 ceramic terminal insulator sets, plated bolts, nuts, washers and element.
- 5KW at 240V.
- 3KW at 208V.
- Coil stretches to fit many applications.



## REPLACEMENT ELEMENT KITS

Product No.	Wattage at:		Replacement Information		
	240V	208V	Wagner	MARS	JEPCO
W5KW	5000	3750	HEK-500	34602	JP500

## ANTUNES CONTROLS



## AIR PRESSURE SWITCHES

### Direct Replacement for OEM Type Switches

Common on high-efficiency gas furnaces that are force draft induced. Compact, sensitive and reliable with trouble free operation. Their construction incorporates a sensitive diaphragm and a snap action electrical switch. Electrical rating: 10A @ 125, 8A @250, 7A @ 277 VAC. 1/8 HP @ 125 VAC, 1/4 HP @ 250 VAC. Maximum surge pressure 20" WC, maximum ambient temperature 170°F, minimum ambient temperature -40°F. Factory setting: .18" WC.

Fig.	Electrical Switch	Adjustable	Range WC	Order Stock #
B	SPDT	Yes	.17" - 6"	8021203090
A	SPDT	Yes	.17" - 12"	8021206021

**QwikCheck® Acid Test Kit**  
**5-Second Refrigerant Acid Test**  
**Order QT2000**



Perform a QWIK acid test on operating systems. Ideal for preventative maintenance checks or for verifying acid clean-up after a compressor burn-out, charge-out.

- Simple Color Change Indicates Acid
- Works with All Refrigerants and Oils
- Meets EPA Venting Rules

**QwikShot® Refrigerant/Oil Acid Treatment**  
**Removes Acid and Leaves No Residue**  
**Order QT2500**

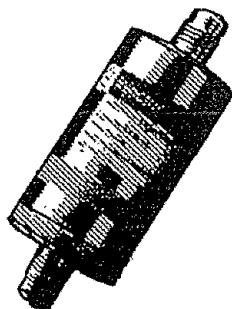
Carries unwanted acid into the filter/dryer where BOTH the acid and the QwikShot are removed without leaving any residue. Other treatments neutralize acid, but ALWAYS form a salt residue that may cause equipment problems and/or invalidate a warranty.



- Safe for All Systems
- Concentrated-Four Treatments per Box (Up to a 12-Ton Unit)
- Works with All Refrigerants and Oils

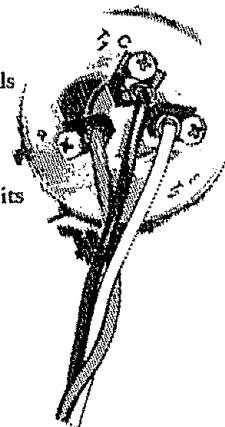
**QwikInjector™ Service Tool**  
**Fast, Easy Method to Introduce**  
**Additives into Operating Units**  
**Order QT2510 for the half-ounce QwikInjector**

Use this simple tool to inject QwikShot acid treatment into operating systems. This tool is to be used with an ordinary gauge set.



**QwikLug™ Compressor Terminal Repair Kit**  
**Order: QT2910 for 4' 10AWG**  
**QT2912 for 4' 12AWG**

- Replaces Damaged or Corroded Spade Terminals
- Fits All Standard Compressor Terminals
- Tightens From The Front with a Screwdriver
- Fast Installation
- Non Metallic Connector - Prevents Short Circuits



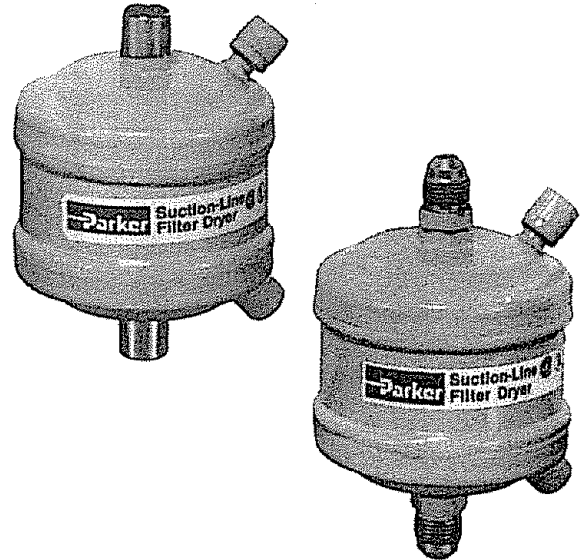
# Suction Line Filter Dryers

- The original activated alumina solid core suction line filter dryer.
- Designed for system clean-up.
- 500 hour salt spray protection.
- High capacity acid retention desiccants.
- Shortest system cut-out lengths allow installation in tight areas.
- Low pressure drop — highest effective filter area.
- Two access valves simplify pressure drop measurement.
- Solid copper sweat fittings.
- UL listed — File No. SA3449.

Parker Hannifin developed the solid-core clean-up dryer for use in a system suction line. The design incorporates a large outside diameter shell, which results in a shorter lay-in length, and a larger core, which provides a greater filtration area for maximum operating efficiency.

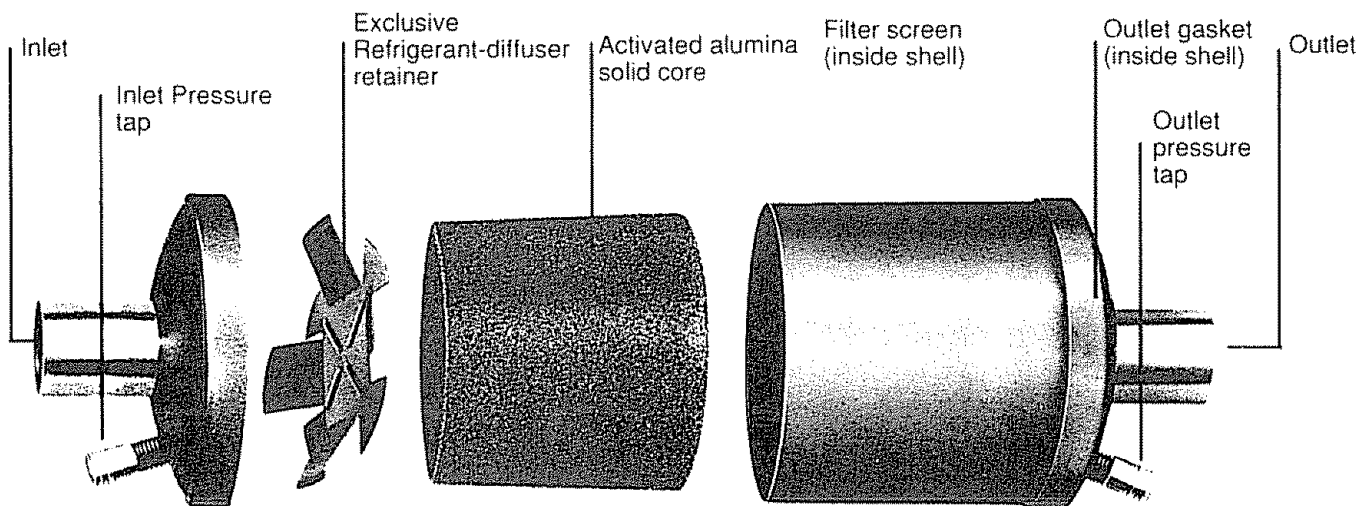
The core material has controlled porosity which effectively removes and holds a maximum amount of contaminants with a minimum of pressure drop. The special binding process protects the core from acid decomposition and allows it to collect and hold organic and inorganic acids and other harmful contaminants present after a motor burnout.

The exclusive refrigerant diffuser serves several purposes. The high velocity of flow in a suction line tends to "shoot" the refrigerant straight through a filter, concentrating its impact on one area, causing a filter core erosion. Our diffuser spreads the refrigerant evenly, to prevent erosion

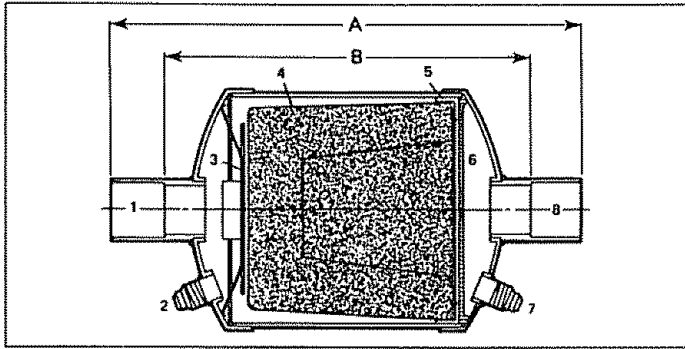


and effectively use the full filtration area. The diffuser plate also acts as a spring to hold the core in place.

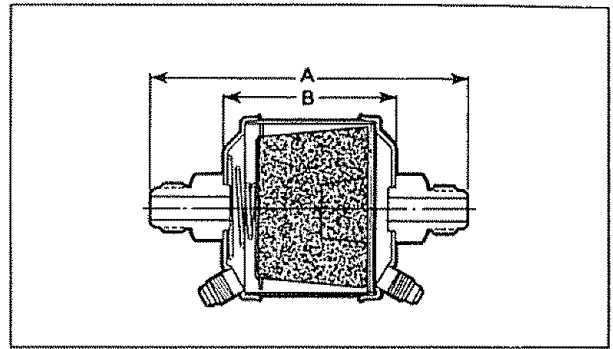
Access valves on both the inlet and outlet sides make it easy to measure pressure accurately. Occasionally, enough contaminant matter may collect in the filter core to cause a slight pressure drop. The access valves on the SLD make it easy to determine if a pressure drop exists and to measure the amount of drop.



## Specifications



Sweat Connections



Flare Connections

1. Filter-Dryer inlet      3. Retaining spring      5. Outlet gasket      7. Outlet pressure tap  
 2. Inlet pressure tap      4. Solid core      6. Filter screen      8. Filter-Dryer outlet

Parker Model Number	Fitting Type & Size	Cubic Inches Desiccant	Filter Area Sq. In.	Water Capacity In Drops @ 65°F Suction Line				A Overall Length	B Syst. Cutout Length	Shell Dia.
				R-12	R-22	R-502	R-134A			
SLD 8-3V	3/8" SAE Flare	8	17.25	200	168	185	168	5.13"	—	3"
SLD 8-3SV	3/8" Sweat	8	17.25	200	168	185	168	4.31"	3.13"	3"
SLD 8-4V	1/2" SAE Flare	8	17.25	200	168	185	168	5.38"	—	3"
SLD 8-4SV	1/2" Sweat	8	17.25	200	168	185	168	4.44"	3.13"	3"
SLD 8-5SV	5/8" Sweat	8	17.25	200	168	185	168	4.66"	3.16"	3"
SLD 8-6SV	3/4" Sweat	8	17.25	200	168	185	168	4.72"	3.16"	3"
SLD 13-5V	5/8" SAE Flare	13 1/2	26	338	284	312	284	5.82"	—	4"
SLD 13-5SV	5/8" Sweat	13 1/2	26	338	284	312	284	4.91"	3.45"	4"
SLD 13-6SV	3/4" Sweat	13 1/2	26	338	284	312	284	4.97"	3.45"	4"
SLD 13-7SV	7/8" Sweat	13 1/2	26	338	284	312	284	4.97"	3.47"	4"
SLD 13-9SV	1 1/8" Sweat	13 1/2	26	338	284	312	284	5.72"	3.47"	4"
SLD 27-7SV	7/8" Sweat	27	49	676	568	624	568	6.97"	5.47"	4"
SLD 27-9SV	1 1/8" Sweat	27	49	676	568	624	568	7.72"	5.36"	4"
SLD 54-11SV	1 3/8" Sweat	54	88	1352	1136	1248	1136	12"	9.17"	4"
SLD 54-13SV	1 5/8" Sweat	54	88	1352	1136	1248	1136	12"	9.17"	4"

## Capacity—flow in tons

Refrigerant	R-12				R-22					R-502					R-134A			
	40°F	20°F	0°F	-20°F	40°F	20°F	0°F	-20°F	-40°F	40°F	20°F	0°F	-20°F	-40°F	40°F	20°F	0°F	-20°F
Evaporator Temp	40°F	20°F	0°F	-20°F	40°F	20°F	0°F	-20°F	-40°F	40°F	20°F	0°F	-20°F	-40°F	40°F	20°F	0°F	-20°F
Pressure Drop PSI	2.0	1.5	1.0	.5	3.0	2.0	1.5	1.0	.5	3.0	2.0	1.5	1.0	.5	2.0	1.5	1.0	0.5
SLD 8-3V	.6	.5	.3	.2	1.1	.8	.6	.4	.2	.9	.6	.4	.3	.2	.7	.6	.5	.4
SLD 8-3SV	.7	.6	.4	.2	1.2	.9	.7	.5	.3	1.0	.7	.5	.4	.2	.8	.7	.6	.5
SLD 8-4V	1.3	1.0	.6	.4	2.3	1.6	1.1	.7	.4	1.8	1.2	.9	.6	.3	1.5	1.2	.9	.7
SLD 8-4SV	1.5	1.1	.7	.5	2.6	1.8	1.2	.8	.5	2.0	1.3	1.0	.7	.4	1.7	1.4	1.0	.8
SLD 8-5SV	2.1	1.5	1.0	.6	3.9	2.6	1.8	1.2	.6	3.1	2.1	1.5	1.0	.5	2.5	2.0	1.5	1.1
SLD 8-6SV	2.3	1.6	1.1	.6	4.2	2.8	1.9	1.3	.6	3.3	2.3	1.6	1.1	.5	2.7	2.1	1.6	1.2
SLD 13-5V	2.2	1.6	1.1	.6	4.1	2.7	2.0	1.3	.8	3.2	2.3	1.6	1.0	.6	2.6	2.0	1.7	1.2
SLD 13-5SV	2.5	2.0	1.5	1.0	5.0	3.0	2.5	1.5	1.0	4.0	2.5	2.0	1.0	.6	3.2	2.3	2.1	1.4
SLD 13-6SV	4.0	3.0	2.0	1.0	7.0	4.5	3.0	2.0	1.0	5.0	3.5	2.5	1.5	1.0	4.5	3.4	2.5	1.9
SLD 13-7SV	4.0	3.0	2.0	1.0	7.0	4.5	3.0	2.0	1.0	5.0	3.5	2.5	1.5	1.0	4.5	3.4	2.5	1.9
SLD 13-9SV	4.1	3.1	2.1	1.0	7.2	4.6	3.1	2.1	1.0	5.1	3.6	2.6	1.5	1.0	4.6	3.5	2.6	2.0
SLD 27-7SV	6.0	4.0	3.0	1.5	10.0	8.0	5.0	3.0	2.0	8.0	5.0	4.0	2.5	1.5	6.4	6.0	4.2	2.9
SLD 27-9SV	7.0	5.0	3.5	2.0	13.0	9.0	6.0	4.0	2.0	10.0	7.0	5.0	3.0	2.0	8.3	6.8	5.1	3.8
SLD 54-11SV	1.0	8.0	5.0	3.0	20.0	13.5	9.5	6.5	3.5	15.0	10.5	7.5	5.0	3.0	12.8	10.2	8.0	6.2
SLD 54-13SV	3.0	9.5	6.0	3.5	23.0	16.0	11.0	7.0	4.0	18.0	12.5	9.0	6.0	3.0	14.7	12.1	9.3	6.7

TO ORDER THE ABOVE PARTS USE 64/979

# Bi-Flow Liquid Line Filter Dryers

The "BF" series liquid line bi-flow dryer is designed specifically for heat pump or reverse cycle application. External check valves are not required since they are incorporated within the filter dryer shell. The core design filters out contaminant particles down to 25 microns.

- UL listed for 2500 psig minimum burst (UL File No. SA3441).
- Fully welded and furnace brazed construction.
- Bi-directional flow and filtration for heat pump or reverse cycle applications. Internal check valves provide precise bi-directional control.
- Installs in any position.
- 100% copper sweat or nickel plated flare fittings.
- Desiccant core provides reliable and effective removal of solid contaminants, acid and moisture. Core is cushioned in fiber gaskets to protect core and to insure trouble free performance.
- Powder coat paint gives maximum corrosion protection. Guaranteed 500 hour salt spray test.
- Same lay in dimensions as standard liquid line filter dryers.

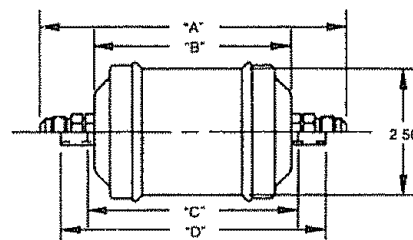


## Capacities and selection recommendations

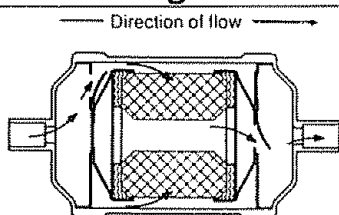
Model Number	Filter Area Sq. In.	Recommended System Capacity for Field Replacement or Field Built Up Systems - Tons	Drying Capacity Drops of H <sub>2</sub> O						Liquid Refrigerant Capacity by Weight (ounces R-22)	
			75°F			125°F			75°F	125°F
			R12	R22	R502	R12	R22	R502		
BF082S	10.4	3	112	90	85	94	83	79	7.0	6.3
BF083		4								
BF083S		4								
BF084		5								
BF084S		5								
BF162S	14.4	3	155	125	119	131	116	110	9.5	8.5
BF163		4								
BF163S		4								
BF164		5								
BF164S		5								
BF165S		7								

## Specifications

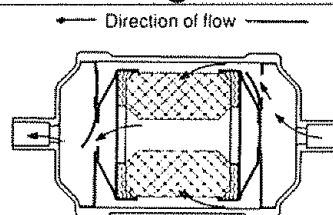
Model Number		Fitting Size (Inches)	Dimensions			
Flare	Sweat		"A"	"B"	"C"	"D"
	BF082S	1/4	6.09	3.91	4.10	5.27
BF083	BF083S	3/8				5.27
BF084	BF084S	1/2				5.41
	BF162S	1/4	6.75	4.56	4.75	5.92
BF163	BF163S	3/8				5.92
BF164	BF164S	1/2				6.06
	BF165S	5/8				6.30



### Cooling Mode

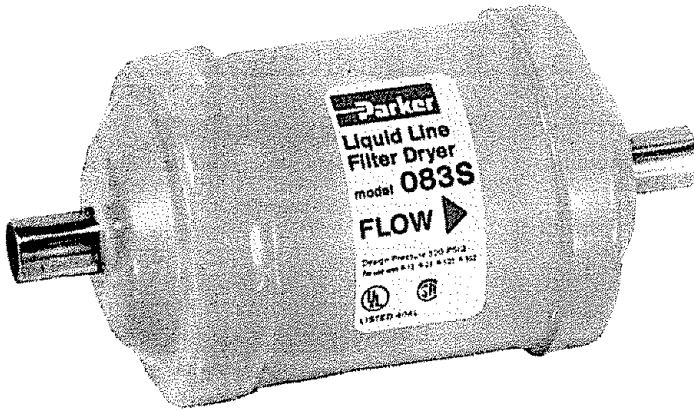


### Heating Mode





# Liquid Line Filter Dryers



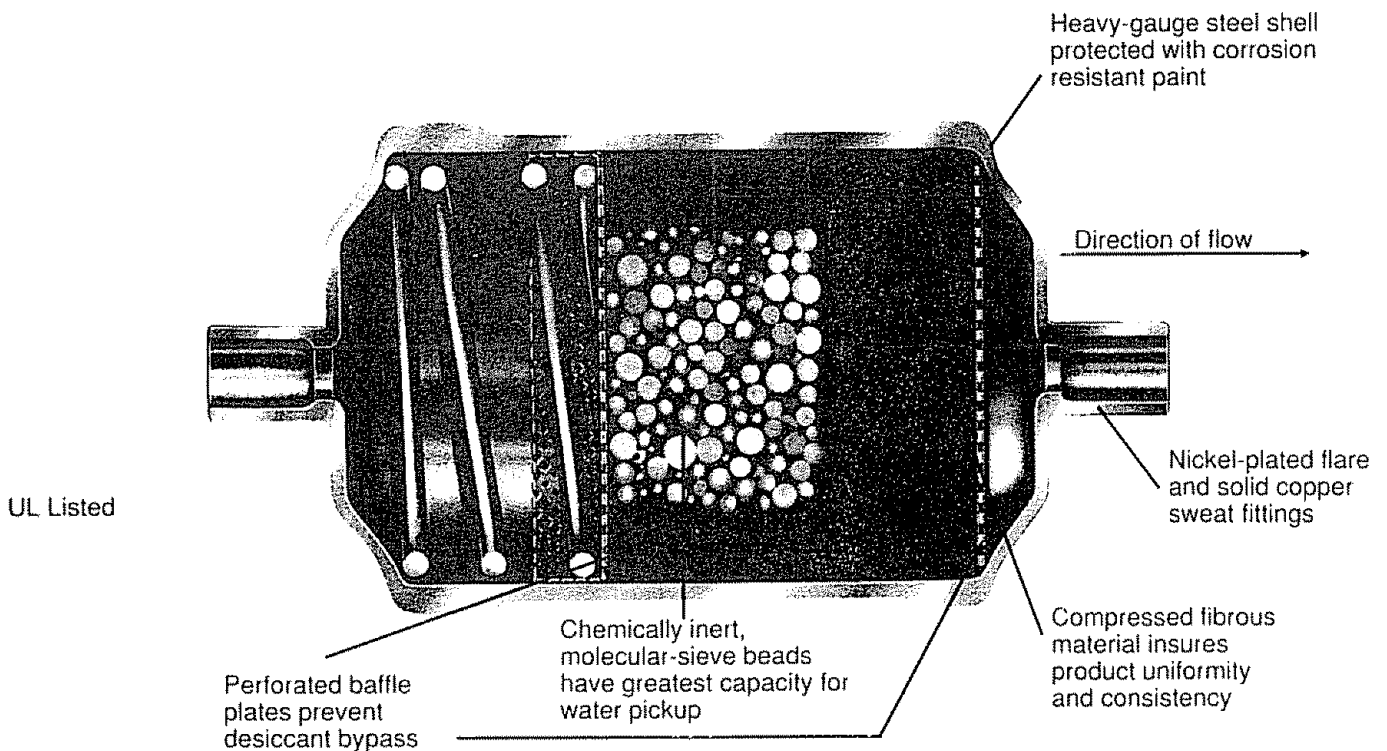
- Unique fiber cup gives greater filtration capacity.
- Chemically inert molecular sieve desiccant has greater water capacity.
- 100% molecular sieve beads for maximum water pickup  
Approved for R12, R22, R500, R502 and R134A
- High acid capacity
- UL listed for 2500 psig minimum bursting pressure (UL File No SA3441)
- Fully welded and atmospherically controlled furnace brazed construction.
- Corrosion resistant paint gives 500 hour salt spray protection
- Perforated baffle support plates insure rigid internal construction to prevent release of desiccant

This unique Parker refrigerant dehydrator has the ability to reach very low end-point dryness levels. It is available in a range of sizes for use with the common halocarbon refrigerants.

The fiber cup design, filled with molecular sieve beads, filters out contaminant particles down to 20 microns in size while allowing an unrestricted flow of the maximum amount of refrigerant. This results in the least pressure drop, trouble free operation, and longer system life. You can virtually forget emergency calls caused by clogged dryers.

The heavy gauge steel shell is fully welded and brazed in a controlled atmosphere furnace to withstand pressures, prevent leaks and give longer service life. Available with nickel plated flare fitting or solid copper solder-type connections. Rated in accordance with ARI Standard No. 710 for liquid line dryers.

Individually cartoned with protective caps on fittings to keep moisture out and prolong shelf life.



## Capacities and selection recommendations

Capacities (Ratings at ARI Standard Conditions)													Selection Recommendations (Nominal Ratings-tons)										
Model No.	Filter Area Sq. In.	Water Capacity In drops								Refrigerant flow capacity @ 2 psi pressure drop				Refrigeration Commercial Low Temp. Equipment			Air Conditioning						
		R-12 (15 ppm)		R-22 (60 ppm)		R-502 (30 ppm)		R-134A (150 ppm)		R-12	R-22	R-502	R-134A	OEM Self-contained			Field Replacement or Field Built-up						
		75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F					R-12 & R-134A	R-22	R-502	R-12 & R-134A	R-22	R-502	R-12 & R-134A	R-22	R-502	
032	10	35.0	32.0	29.0	26.0	30.0	26.0	34.0	32.0	1.8	2.4	1.6	2.3	1/4	1/4	1/4	3/4	1	3/4	1/2	3/4	1/2	
032S										2.0	2.6	1.7	2.6										
052										2.0	2.6	1.7	2.6										
052S										2.1	2.8	1.8	2.7				1	1 1/2	1	3/4	1	3/4	
NEW 0525S	17	94.0	85.0	78.0	68.0	79.0	70.0	89.0	85.0	3.5	4.7	3.1	4.5	1/3	1/3	1/3	1 1/2	2	1 1/2	1	1 3/4	1	
053										4.2	5.5	3.7	5.4										
053S										5.0	6.6	4.4	6.4		1		2	3	2	1 1/2	2 1/2	1 1/2	
082										2.0	2.6	1.8	2.6										
082S										2.2	2.9	1.9	2.8		1/2	3/4	1/2	1	1 1/2	1	3/4	1 1/2	3/4
NEW 0825S	27	121.0	110.0	101.0	88.0	102.0	90.0	115.0	109.0	3.7	4.9	3.3	4.8	1/2	1 1/2	1/2	2	3	2	1 1/4	2 1/4	1 1/4	
083										4.7	6.2	4.1	6.0										
083S										5.3	6.9	4.7	6.8		2	1	3	5	3	2	3	2	
084										7.5	9.8	6.6	9.6		1								
084S										7.6	10.0	6.7	9.7		3	1	4	7 1/2	4	3	5	3	
162										2.3	3.1	2.0	2.9										
162S										2.5	3.4	2.2	3.2		1	1 1/2	3/4	1 1/2	2	1 1/2	1	2	1
NEW 1625S	34	214.0	196.0	179.0	157.0	180.0	160.0	205.0	194.0	4.3	5.8	3.8	5.5	1 1/2	2	1 1/2	2 1/2	3 1/2	2 1/2	2	3	2	
163										5.6	7.5	4.9	7.2										
163S										6.2	8.3	5.4	7.9		2	3	2	4	5	4	3	4	3
164										9.5	12.7	7.8	12.2										
164S										10.3	13.7	8.9	13.2		2	4	2	5	7 1/2	5	3	5	3
165										13.3	17.7	11.6	17.0										
165S										13.7	18.3	11.9	17.6		2	5	2	7 1/2	10	7 1/2	5	7 1/2	5
303										5.7	7.7	5.0	7.3										
303S										6.5	8.7	5.7	8.3		3	4	2	4	5	4	3	5	3
304										11.3	15.1	9.8	14.5										
304S	61	433.0	395.0	361.0	316.0	364.0	322.0	413.0	391.0	13.1	17.5	11.4	16.8	3	5	3	7 1/2	10	7 1/2	5	7 1/2	5	
305										15.5	20.7	13.5	19.9										
305S										17.1	22.8	14.9	21.9		5	7 1/2	5	10	15	10	7 1/2	10	7 1/2
307S										21.2	28.3	18.5	27.2		10	10	15	20	12 1/2	10	12 1/2	10	7 1/2
413										5.7	7.7	5.0	7.3										
414										11.4	15.3	9.9	14.6		4	5	4	5	7 1/2	5	5	5	4
414S										13.1	17.5	11.4	16.8										
415										15.5	20.7	13.5	19.9										
415S	80	636.0	580.0	530.0	465.0	535.0	473.0	606.0	574.0	17.1	22.9	14.9	21.9	7 1/2	7 1/2	7 1/2	10	15	10	7 1/2	10	7 1/2	
417S										24.3	32.4	21.1	31.1		10	10	15	20	12 1/2	10	15	10	
756S										20.7	27.6	18.0	26.5	12 1/2	20	12 1/2	15	25	12 1/2	12 1/2	20	12 1/2	
757S	131	1115.0	1018.0	930.0	815.0	938.0	829.0	1064.0	1007.0	25.6	34.2	22.3	32.8	15	20	12 1/2	20	30	15	15	25	15	
759S										28.3	37.7	24.6	36.3	20	25	15	20	30	20	20	30	20	

## Dimensions

Model No.	Connections I.D.	Connections O.D.	Syst. Cutout Length	Overall Length (in.)	Model No.	SAE Flare	Syst. Cutout Length	Diameter in Inches
032S	1/4	3/8	29/16	3.77	032	1/4	4 1/8	1 11/16
052S	1/4	3/8		4.39	052	1/4	4 3/4	2 1/2
0525S	5/16	7/16	3 1/4	4.39				
053S	3/8	1/2		4.39	053	3/8	5 3/16	2 1/2
082S	1/4	3/8		5.27	082	1/4	5 5/8	2 1/2
0825S	5/16	7/16		5.27				
083S	3/8	1/2	4 1/8	5.27	083	3/8	6 1/16	2 1/2
084S	1/2	5/8		5.41	084	1/2	6 5/16	2 1/2
162S	1/4	3/8		5.92	162	1/4	6 5/16	2 1/2
1625S	5/16	7/16		5.92				
163S	3/8	1/2	4 3/4	5.92	163	3/8	6 3/4	2 1/2
164S	1/2	5/8		6.06	164	1/2	7	2 1/2
165S	5/8	3/4		6.30	165	5/8	7 1/4	2 1/2
303S	3/8	1/2		8.86	303	3/8	9 11/16	3
304S	1/2	5/8		9.00	304	1/2	9 15/16	3
305S	5/8	3/4	7 3/4	9.24	305	5/8	10 3/16	3
307S	7/8	1		9.30				3
414S	1/2	5/8		9.19	413	3/8	9 7/8	3 1/2
415S	5/8	3/4	7 3/4	9.43	414	1/2	10 1/8	3 1/2
417S	7/8	1		9.49	415	5/8	10 3/8	3 1/2
756S	3/4	7/8		15.11				3 1/2
757S	7/8	1	13 9/16	15.11				3 1/2
759S	1 1/8	1 1/4		15.99				3 1/2

## Refrigerant holding capacity

Amount of refrigerant to be added when installing Parker dryers on capillary tube and other critically charged systems.

Model No. by cubic Inch	Ounces of refrigerant at 100°F by weight		
	R-12	R-22	R-502 & R-134A
030	1.76	1.76	1.92
050	3.84	3.52	3.68
080	6.24	5.60	5.91
160	14.30	13.25	13.48
300	25.25	23.00	23.22
410	37.00	33.50	33.96

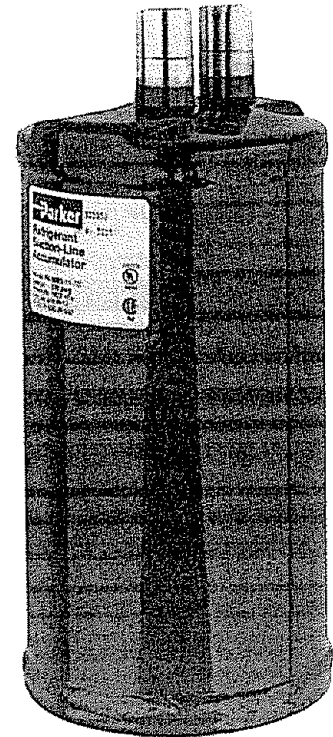
Note: All R-134A data is estimated

# Suction Line Accumulators

Solid copper connections

- "U" tube design for maximum flow of refrigerant and minimum oil entrapment.
- Inlet Flow Director guides refrigerant toward wall for smooth tangential flow and gradual expansion.
- "U" tube Entrance is positioned behind the Inlet Flow Director to prevent unwanted liquid refrigerant from entering and damaging compressor.
- Metering Orifice matched to system capacity assures optimum liquid refrigerant and oil flow back to compressor.
- Protective Screen and Orifice Assembly on U-Tube protects against foreign particles and contaminants affecting metering function.
- Fittings and "U" Tube are matched to accumulator holding capacity and total system charge for minimum pressure drop and maximum refrigerant flow.
- U.L. listed for 1775 psig minimum bursting pressure. File No. SA5172.
- Powder paint exterior coating surpasses 500 hour ASTM salt spray tests.
- Integral 430°F Fuse Plugs (U.L. File No. SA5441).

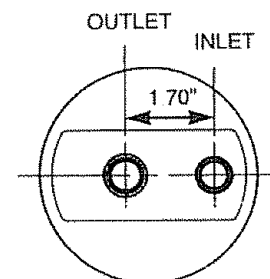
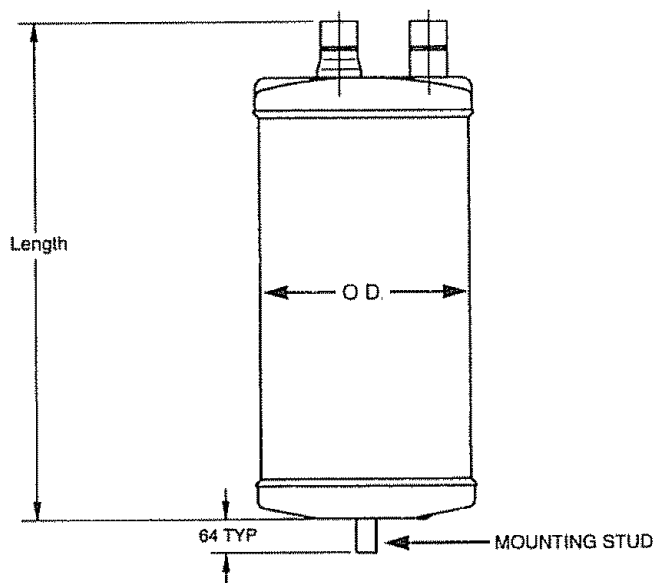
The Parker "U" tube accumulator design is a result of extensive laboratory testing plus detailed investigation of the various accumulators currently available. It takes into account all of the requirements essential for heat pump applications, including safe holding volume (relative to the system's total charge), protected flow control for positive refrigerant and oil return, and minimum pressure drop across the accumulator.



Parker offers standard accumulator models designed for application on heat pump and refrigeration systems from 1½ through 12 tons.

Liquid refrigerant holding requirements of suction accumulator may vary by application. Because of the diversity in heat pump systems, accumulator capacity selection should be determined by actual testing.

Consult Parker for assistance if required.



## Dimensional and Application Flow Data - Welded Models

Model No.	Solder Fitting Size	Dimensions (inches)		Capacity <sup>(1)</sup> (oz.)	Evap. Temp. °F	Recommended capacity in tons of refrigeration						
		Length	O.D.			R-22 & R-404		R-12 & R-401a		R-502 & R-507		R-134a
						Tons @ 1 psi	Min. Tons	Tons @ 1 psi	Min. Tons	Tons @ 1 psi	Min. Tons	Tons @ 1 psi
PA3060-10-4	1/2"	10.35	3	35	40	2.00	0.35	1.42	0.25	1.48	0.27	1.67
PA3060-10-5	5/8"				0	1.54	0.25	1.06	0.18	1.10	0.20	0.98
					-20	1.33	0.21	0.90	0.15	0.93	0.16	0.69
PA3060-15-5	5/8"	15.05	3	55	40	2.10	0.35	1.49	0.25	1.55	0.27	1.75
					0	1.62	0.25	1.11	0.18	1.16	0.20	1.03
					-20	1.40	0.21	0.95	0.15	0.98	0.16	0.73
PA3060-15-6	3/4"	15.05	3	54	40	2.30	0.35	1.63	0.25	1.70	0.27	1.92
					0	1.77	0.25	1.22	0.18	1.27	0.20	1.12
					-20	1.53	0.21	1.04	0.15	1.07	0.16	0.80
PA4065-9-5C	5/8"	9.62	4	60	40	2.96	0.35	2.10	0.25	2.19	0.27	2.47
					0	2.28	0.25	1.57	0.18	1.63	0.20	1.44
					-20	1.98	0.21	1.34	0.15	1.39	0.16	1.03
PA4065-9-6C	3/4"	9 5/8	4	58	40	3.0	0.35	2.1	0.25	2.2	0.28	2.53
					0	2.3	0.25	1.6	0.18	1.7	0.20	1.48
					-20	2.0	0.21	1.4	0.15	1.4	0.16	1.05
PA5083-9-6C	3/4"	9.62	5	89	40	3.82	0.57	2.71	0.41	2.82	0.46	3.19
					0	2.95	0.41	2.03	0.30	2.10	0.33	1.86
					-20	2.55	0.35	1.73	0.24	1.79	0.27	1.32
PA5083-9-7C	7/8"	9 5/8	5	86	40	3.9	0.57	2.7	0.41	2.8	0.46	3.21
					0	3.0	0.41	2.0	0.30	2.1	0.33	1.88
					-20	2.6	0.35	1.7	0.24	1.8	0.27	1.33
PA5083-12-7C	7/8"	12.88	5	125	40	5.41	0.88	3.83	0.64	4.00	0.70	4.51
					0	4.17	0.64	2.87	0.45	2.98	0.51	2.64
					-20	3.61	0.54	2.45	0.37	2.53	0.41	1.87
PA5083-11-7C	7/8"	11.33	5	108	40	4.38	0.57	3.1	0.41	3.23	0.46	3.21
					0	3.37	0.41	2.32	0.30	2.41	0.33	1.88
					-20	2.92	0.35	1.98	0.24	2.04	0.27	1.33
PA5083-11-6C	3/4"	11.33	5	111	40	3.85	0.57	2.72	0.41	2.84	0.46	3.21
					0	2.97	0.41	2.04	0.30	2.12	0.33	1.88
					-20	2.56	0.35	1.74	0.24	1.80	0.27	1.33
PA5083-15-7C	7/8"	15.34	5	156	40	6.20	0.88	4.39	0.64	4.58	0.70	5.17
					0	4.78	0.64	3.29	0.45	3.41	0.51	3.03
					-20	4.13	0.54	2.80	0.37	2.90	0.41	2.15
PA5083-17-7C	7/8"	17.25	5	179	40	6.20	0.88	4.39	0.64	4.58	0.70	5.17
					0	4.78	0.64	3.27	0.45	3.41	0.51	3.03
					-20	4.13	0.54	2.80	0.37	2.90	0.41	2.15
PA6125-15-9C	1 1/8"	15.00	6	211	40	9.0	3.0	6.1	1.9	7.3	3.0	
					0	5.6	2.0	3.7	1.2	4.5	2.0	
					-20	4.3	0.8	2.8	0.5	3.4	0.8	
PA6125-15-11C	1 3/8"	15.25	6	214	40	12.0	3.0	6.2	1.9	9.8	3.0	
					0	7.5	2.0	5.0	1.2	6.0	2.0	
					-20	5.8	0.8	3.6	0.5	4.6	0.8	
PA6125-18-9C	1 1/8"	18.00	6	264	40	8.8	3.0	6.0	1.9	7.2	3.0	
					0	5.5	2.0	3.7	1.2	4.4	2.0	
					-20	4.3	0.8	2.8	0.5	3.4	0.8	
PA6125-20-11C	1 3/8"	20.25	6	302	40	11.0	3.0	7.5	1.9	9.1	3.0	
					0	7.0	2.0	4.6	1.2	5.5	2.0	
					-20	5.4	0.8	3.5	0.5	4.2	0.8	

(1) holding capacity of R-22 at 40°F. Divide by .7 to obtain recommended maximum system charge on fixed orifice systems. Consult Parker for availability.

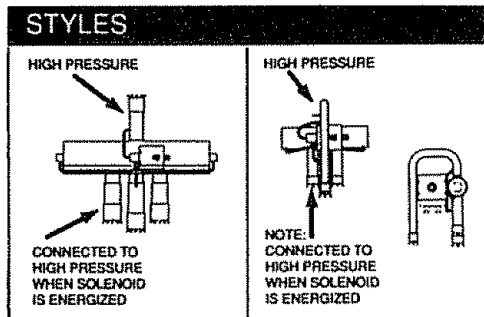
# REVERSING VALVE 4-WAY PILOT VALVE

## DESCRIPTION / APPLICATION

These solenoid operated Reversing Valves are slide type, 4-way with a 4-way valve and operate under the full pressure of the heat pump system. The valves are used on unitary, split system, and window-type heat pump applications. There are five different styles designed to meet your particular system need.

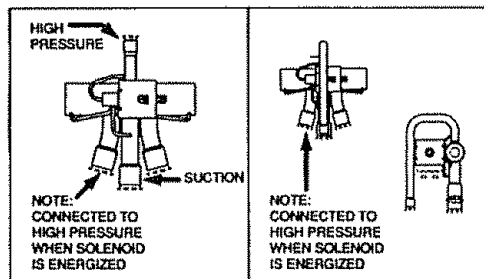
4-Way Reversing Valves						
Part Number	Capacity (Tons)		Style #	Tube Size (I.D.)		Old Valve Number
	R22	R-502		Suction	High Pressure	
*V1-158	.4 to 1.0	.4 to .8	2	3/8"	3/8"	V26-150
V2-159	.75 to 1.0	.75 to 1.6	1***	1/2"	3/8"	V26-159
*V1-188	.4 to 1.0	.4 to .8	1	1/2"	3/8"	V26-188
V2-100	.75 to 1.6	.75 to 1.6	2	1/2"	3/8"	V26-100
V2-128	.75 to 2.0	.75 to 1.6	3	1/2"	3/8"	V26-128
V2-179	1 to 2.5	.75 to 2.0	3	5/8"	3/8" O.D.	V26-179
V2-184**	.75 to 2.0	.75 to 1.6	1	1/2"	3/8"	V26-184
V2-150	.75 to 2.0	.75 to 1.6	4	5/8"	3/8"	V26-150
V3-1003	1 to 2.8	1 to 2.7	5	5/8"	1/2"	V38-1003
V3-1004	1 to 3.0	1 to 2.4	5	3/4"	1/2"	V38-1004
V6-2101	1 to 5.5	1 to 4.3	1	3/4"	1/2"	V30-2101
V6-2103	1 to 5.5	1 to 4.3	1	7/8"	1/2"	V30-2103
V6-2106	1 to 5.5	1 to 4.3	1	7/8"	3/4"	V30-2106
V10-2500	3 to 8.5	2.75 to 6.8	1	7/8"	1/2"	V25-2500
V10-2750	3 to 9.5	2.75 to 7.7	1	7/8"	3/4"	V25-2750
V10-2762	3 to 9.5	2.75 to 7.7	1	1-1/8"	7/8"	V25-2762
V10-2765**	3 to 9.5	2.75 to 7.7	1	7/8"	7/8"	V25-2765

\*Reduced Port  
\*\*Heat Recovery  
\*\*\*High Pressure 90° Left



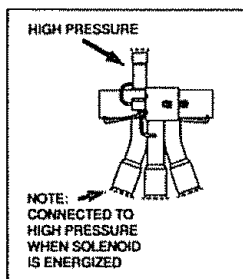
STYLE 1

STYLE 2



STYLE 3

STYLE 4



STYLE 5

Solenoid Coils				
Part Number	Voltage (VAC)	Color Code	WATTS	
			50 Hz	60 Hz
L30-0024	24	Red	6	4
L30-0120	120	Black	6	4
L30-0240	280/240	Green	6	4
L30-0277	277	Blue	6	4
L30-1114	24 VDC	-	9	9

### CHOOSING THE CORRECT SOLENOID COIL

RANCO offers Type L30 solenoid coils for use with the V1/V2/V3/V6/ V10/V12 RANCO Heat Pump Reversing Valves. These color coded epoxy encapsulated, continuous duty, moisture resistant magnetic coils are designed to operate the pilot valve controlling the Reversing Valves listed above. Included with the solenoid coil is a W29 wiring harness with 48" leads.

### WARNING

RANCO'S New Designed 4-Way Pilot Valve can be used to replace the older version valves as indicated in the far right column of the above Chart. Solenoid Coils are not interchangeable between previous model valves and the New 4-Way Pilot Valve. L30 Series coils must be used with the New 4-Way Pilot Valves and the L27 Series Coils used with the previous version valves.

TO ORDER THE ABOVE PARTS USE 64/979

**NOTICE:**

Heat pumps and heat/cool units—many original equipment manufacturers connect the system tubing to the Ranco reversing valve based on which mode (heat or cool) the system will operate should the solenoid coil fail. For example, solenoid coil energized for cooling (Figure 1); solenoid coil failure mode to heat cycle. Solenoid coil energized for heating (Figure 2); solenoid coil failure mode to cooling cycle. Prior to replacing the valve; confirm which mode (Heat/Cool) the solenoid coil controls when energized.

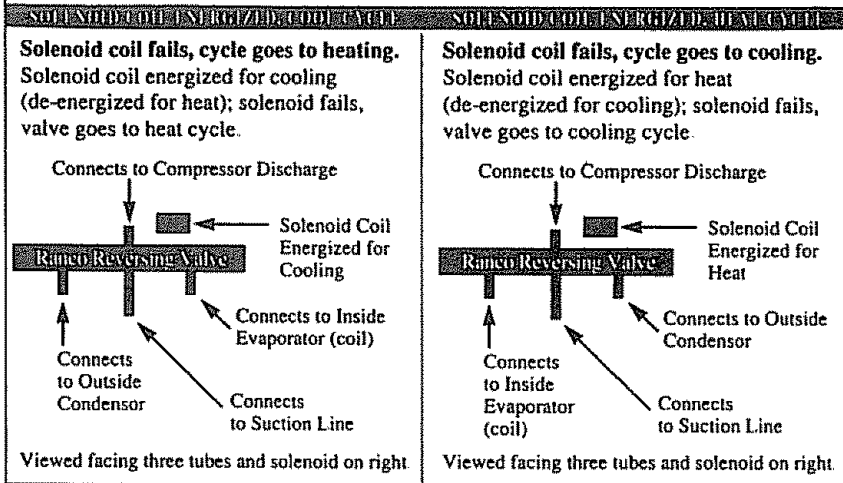


Fig. 1

Fig. 2

**REPLACING VALVE ASSEMBLY**

**SYSTEM REPAIR-** Follow the original equipment manufacturer's recommendations for replacement of refrigerant components.

**SYSTEM EVACUATION -** Follow original equipment manufacturer's recommendations and/or RESE SAM Section 83 (630-46).

**COMPRESSOR MOTOR BURNOUT -** Follow original equipment manufacturer's recommendations and/or RESE SAM Section 91.

**CAUTION**

To prevent possible electrical shock or equipment damage, disconnect electrical power to unit before and during installation. **DO NOT** restore electrical power to unit until the device is properly installed.

**GENERAL INSTALLATION PROCEDURES - REMOVAL**

● Use only an oxy-acetylene torch to unsolder connections. Other type torches may not have the heat capacity to do the job with minimum time and temperature.

● Protect the valve from excessive heat. Temperatures above 250° F are apt to damage internal parts. Wrapping a wet rag around the valve body while using the torch will help to dissipate heat.

● Inadequate heat is also a problem. Not only will the soldered joints be difficult to separate, but also the build up of heat over the longer period of time required will transfer to the valve body and possibly damage its' internal parts.

● The joint should separate in seconds, not minutes. Use enough heat to accomplish this, while relying on the wet rag to protect the valve body. Also remember that the remelt temperature of any solder alloy is much higher than the initial soldering temperature.

● After removing the valve, inspect the lines to make sure they are round and do not have any large solder blobs, which will interfere with the mechanical fit of the new joints.

**VALVE INSTALLATION**

● Avoid any rough handling of the new valve during installation. This especially includes the use of vise-type pliers to manipulate the valve body while

inserting the piping into the connection tubes. If the valve body or the capillaries are dented or flattened, the reversing action may be impaired or stopped completely.

**CAUTION**

Protect tubes from entry of all foreign matter such as moisture, metal filings, dust or dirt. It takes only a tiny bit of scale, flux, lint or the like to clog a pilot valve.

● Use wet rags around the valve body and adjoining tubing to prevent overheating. Direct the flame of the torch away from the valve body. Excess heat over 250° F may distort internal parts.

● Use low temperature brazing rod as local code will permit, and use an inert gas to prevent oxide scale on the inside of the tubing.

● Preferably use a phosphorus-bearing silver solder which requires no external flux. The entrance of even a tiny bit of flux may be enough to damage a new valve.

● If you must use silver solder with externally applied flux, be sure the sections to be joined are bright and clean and that you use the flux sparingly. This will do the job, but because this kind of solder requires exceptional skill and care in its use, most valve manufacturers are reluctant to recommend it.

**RANCO REVERSING VALVE OPERATING SPECIFICATIONS**

Min. Δ P to Reverse	15 psi
Max. Δ P to Reverse	400 psi
Max. Pressure	500 psi
Min. Burst Pressure	2500 psi
Max. Operating Temperature	250°F
Min. Life Cycles	135,000
Min. Operating Voltage	85% of Rated Volts
Max. Operating Voltage	110% of Rated Volts
Max. Leakage to Suction:	
V1/V2/V3	2,000 cc/min.
V4/V6	4,000
V/10	6,000
V/12	15,000

Note: Dry Air at 150 psi, Valve at 160° F. Air at 70° F.



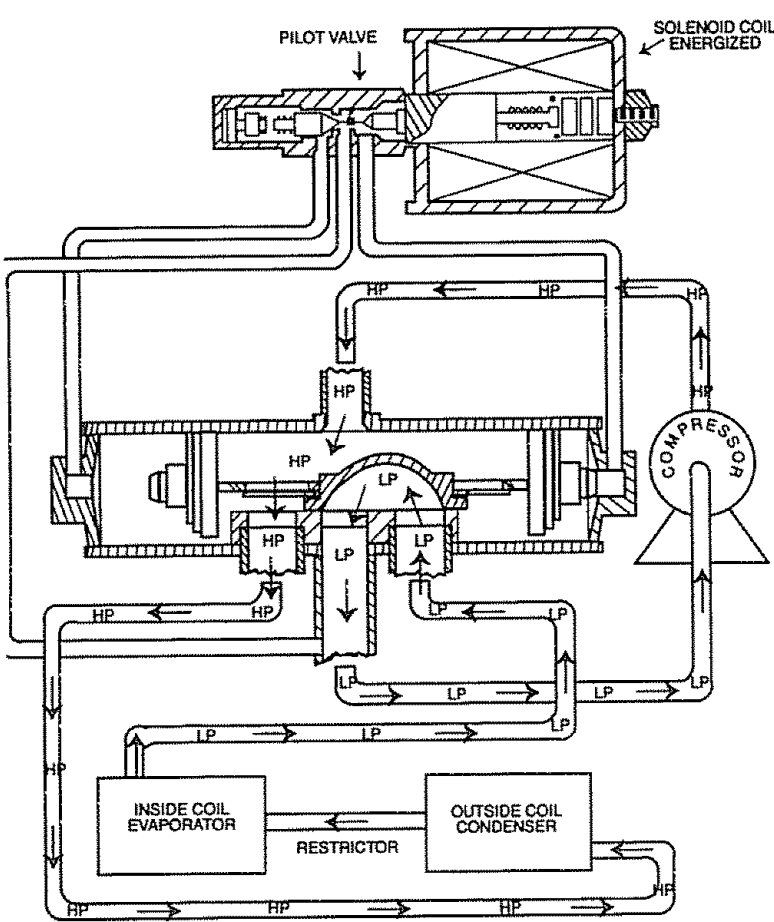
8115 U.S. RT. 42 N.  
Plain City, OH 43064

# OEM Design with Solenoid Coil Failure to Heat Cycle

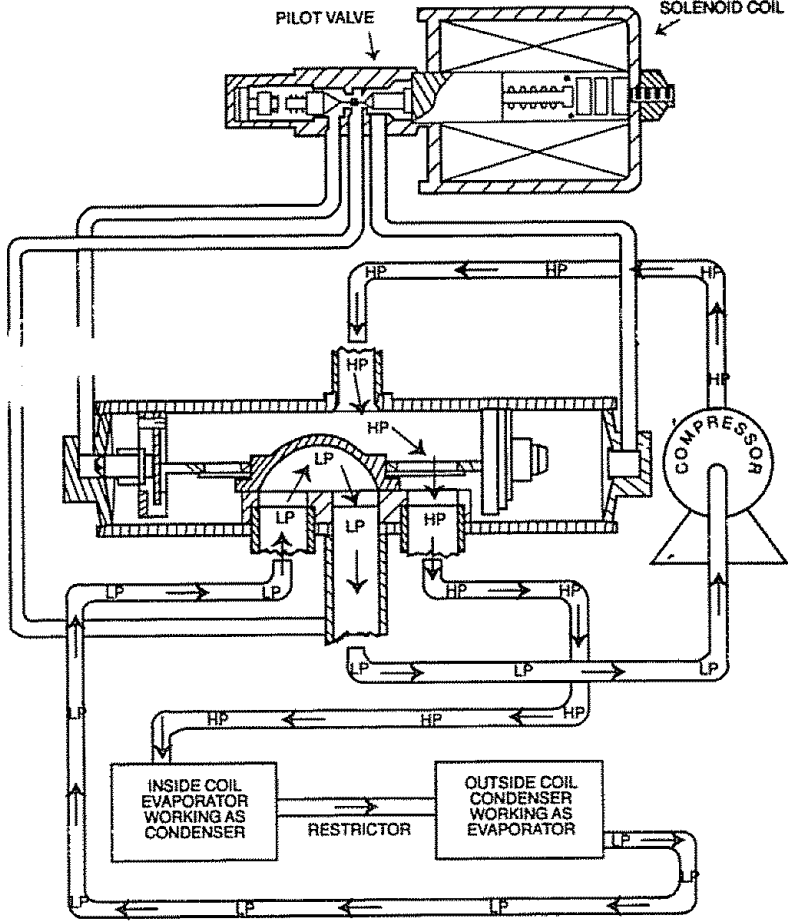
(Provides heating in the event the Solenoid Coil fails)

LP = Low Pressure      HP = High Pressure

131



**Solenoid Coil Energized - Cooling Cycle**  
(Refrigerant Flow)



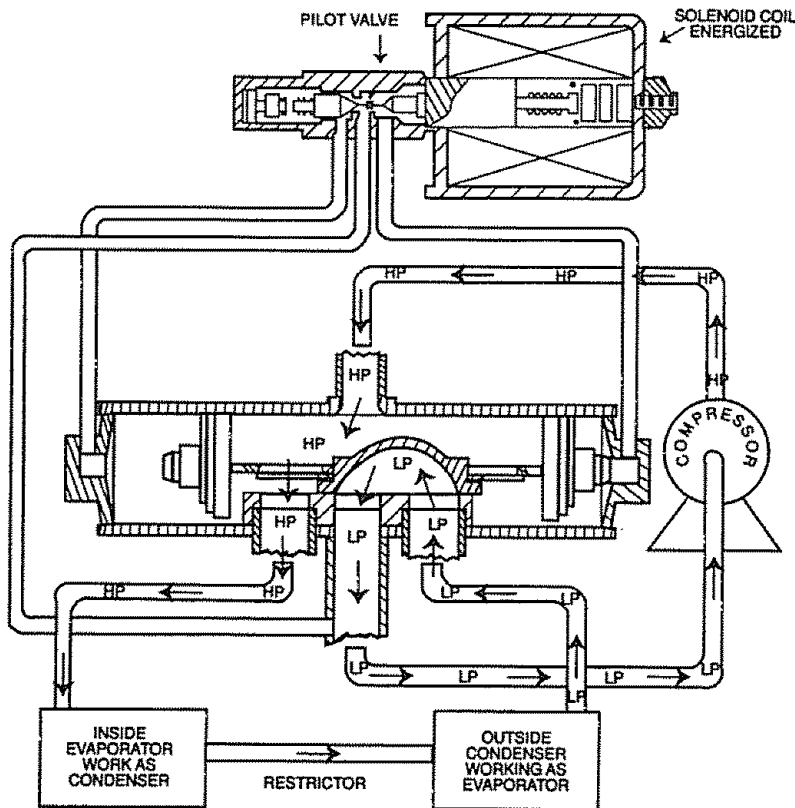
**Solenoid Coil De-energized - Heating Cycle**  
(Refrigerant Flow)

# OEM Design with Solenoid Coil Failure to Cooling Cycle

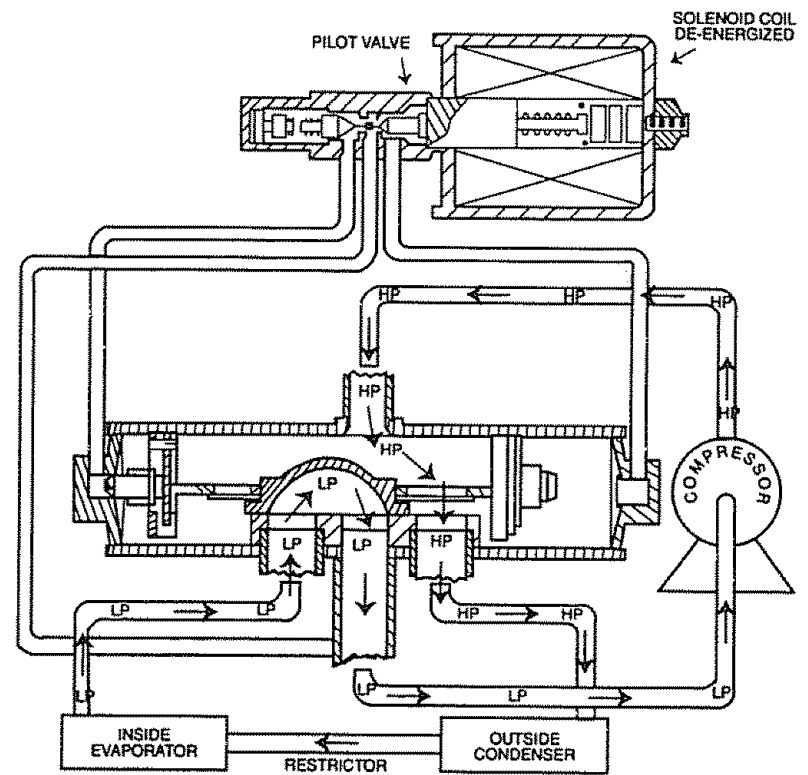
(Provides cooling in the event the Solenoid Coil fails)

LP = Low Pressure      HP = High Pressure

132



**Solenoid Coil Energized - Heating Cycle**  
(Refrigerant Flow)



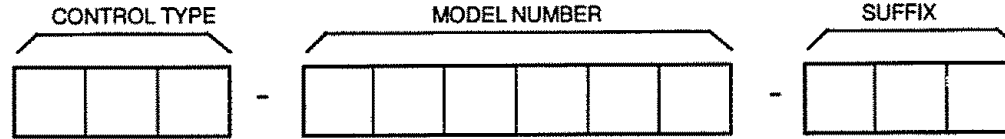
**Solenoid Coil De-energized - Cooling Cycle**  
(Refrigerant Flow)



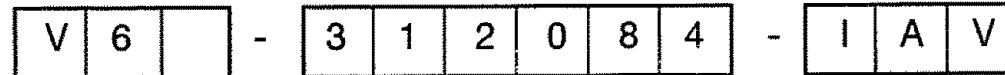
# NOMENCLATURE

## RANCO REVERSING VALVES - OEM

Effective with 4 Way Pilot Valve (1991 & Later)



EXAMPLE



MAYBE ALPHA OR NUMERICAL

**PRODUCT**  
V - VALVE

**VALVE SIZE**  
RATED CAPACITY IN TONS AT STANDARD COOLING CONDITIONS.  
EX. 05 - 1/2 TON  
4 - 6 TON  
10 - 10 TON

**DESIGN GENERATION**  
1 - ORIGINAL  
2 TO 9 - LATER MAJOR DESIGN CHANGES

**CUSTOMER OR MARKET IDENTIFICATION**  
00 - GENERAL USE  
AA TO ZZ - CUSTOMER  
57 - EXPORT  
70 - WHOLESALE

**OPTIONS**  
ALPHA-NUMERIC TUBING STYLE  
SEE DRAWING 1721092  
REFER TO OUTLINE DIMENSION DRAWINGS

STYLE	O.D.D.
1	V1-301, V2-302, V4-301, V6-301, V10-301
2	V1-302, V2-302
3	V2-303
4	V2-304
5	
6	
7	V2-301
8	V3-302
9	V12-301
0	SPECIAL
SPECIAL OPTIONS A TO Z	

**COIL INFORMATION**  
0 - NO COIL  
COIL SHIPPED ON VALVE IN STANDARD POSITION

1	24 VOLTS
2	24/30 VOLTS
3	120 VOLTS
4	208/240 VOLTS
5	277 VOLTS
6	480 VOLTS
7	12 VOLTS D.C.
8	24 VOLTS D.C.
9	SPECIAL (SEE CODE SHEET)

**CONNECTION TUBE SIZE**  
3 MAIN TUBES      HI. PRESS. TUBES

STANDARD:  
INSIDE DIAMETER SIZED IN 1/16ths INCHES

ALPHA DENOTES TUBING OUTSIDE DIAMETER SIZED IN 1/16ths INCHES  
A = 1/16, B = 2/16, ETC.

NOTE: DESIGN GENERATION EXAMPLES  
V6-2 FOR VALVES USED WITH L20 AND L29 COILS.  
V6-3 FOR VALVES USED WITH L30 COILS.

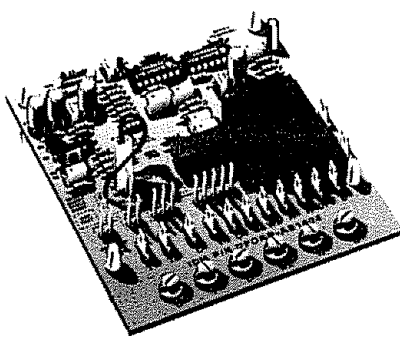
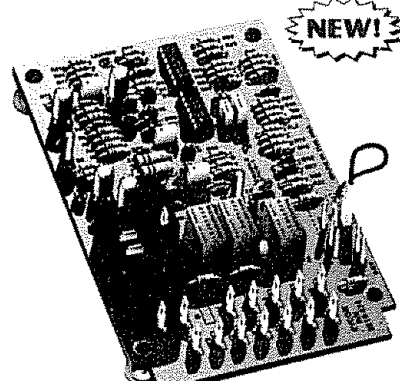
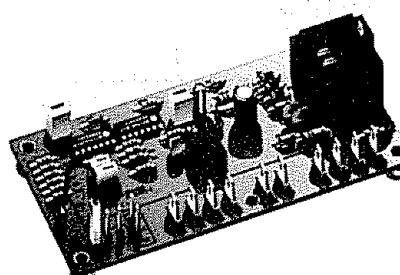
## DELAY ON MAKE TIMERS

APPLICATION	TIMING DIAGRAM		MODE OF OPERATION	
<p>"Delay ON"</p> <p>General purpose "delay on make" timing function. Ideal for compressor staging and stagger-starting multiple units. Helps to reduce power surges in multiple compressor applications.</p>			<p>When power is applied to the input, the time delay begins. After the time delay is complete, the load energizes and remains energized as long as power is applied. The control is reset by removing power during or after the time delay period.</p>	
ICM CONTROL	SERIES	FEATURES/APPLICATIONS	SPEC	REPLACES
	<b>ICM102</b>	<ul style="list-style-type: none"> <li>• Universal voltage operation.</li> <li>• Higher 1.5 amp rating</li> <li>• Knob-adjustable time delays.</li> <li>• Works with anticipator-type thermostats.</li> <li>• One model replaces many in field</li> <li>• Ideal for compressor staging</li> <li>• Simple 2-wire hookup</li> <li>• Compact 2" x 2" package</li> <li>• F suffix denotes 6" wire leads</li> </ul>	<ul style="list-style-type: none"> <li>• 18-240 VAC/VDC</li> <li>• 1.5 amps</li> <li>• 15 amp inrush</li> <li>• Adjustable delays - 0.3-10 min. (1.8-600 sec.)</li> <li>• Voltage drop: 2.5V @ 1.5 amps</li> <li>• Requires 40mA holding current</li> </ul>	<ul style="list-style-type: none"> <li>• Diversified: AC-800</li> <li>• Fixed volt: ASC-600/601</li> <li>• Gemline: 1C310/1C213</li> <li>• Mars: 32391/32367</li> <li>• Robertshaw: 3310-068</li> <li>• Supco: TD-68 D-69</li> <li>• Watsco: EAC-701-adj., -X EAC-700-A</li> </ul>

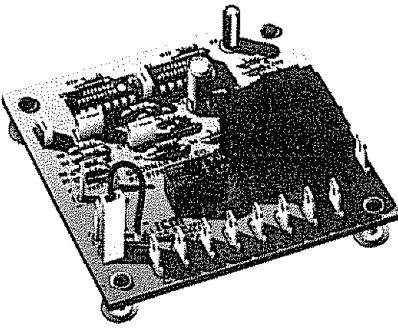
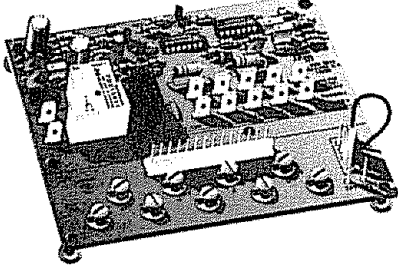
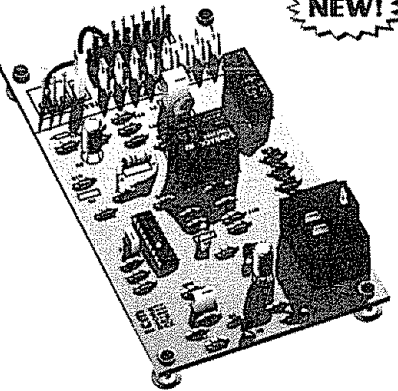
## AFTERMARKET FAN BLOWER CONTROLS – Aftermarket Replacement

ICM CONTROL	SERIES	FEATURES/APPLICATIONS	SPEC	REPLACES
	<b>ICM272</b>	<ul style="list-style-type: none"> <li>• Cooling control module with built-in fan delay</li> <li>• Integral low voltage terminal board with field thermostat wiring</li> <li>• Electronic air cleaner output</li> <li>• High power, relay output</li> <li>• DC output for fan relays and 1st stage of electric heater control</li> <li>• Interlock circuitry; prevents 2nd and 3rd stage electric heat energization without proper fan operation.</li> </ul>	<ul style="list-style-type: none"> <li>• 18-30 VAC</li> <li>• Contact ratings: n.o.: 20 amps n.c.: 10 amps</li> <li>• Time Delays</li> <li>• Factory fixed at 60 seconds</li> </ul>	<ul style="list-style-type: none"> <li>• Carrier: HK61GA003</li> <li>• Texas Instruments: 2FD-1</li> </ul>

# DEFROST CONTROLS – Aftermarket Replacement Parts

ICM CONTROL	SERIES	FEATURES/APPLICATIONS	SPEC	REPLACES
 <p><b>NEW!</b></p>	<p><b>ICM302</b></p>	<ul style="list-style-type: none"> <li>• Direct replacement for: ICM DFORB</li> <li>• Low cost, time/temperature defrost</li> <li>• 24 VAC operation (18-30 VAC)</li> <li>• Defrost terminate input</li> <li>• Integral short cycle protection</li> <li>• 10 min. defrost interval</li> <li>• Pin-selectable interval times of 30/60/90 mins</li> <li>• Test pins reduce test time by 256x.</li> <li>• High power output (1/2 hp fan @ 240 VAC)</li> <li>• Strip heat, reversing valve outputs (24 VAC, 1 amp)</li> </ul>	<ul style="list-style-type: none"> <li>• 18-30 VAC</li> <li>• 50/60 Hz</li> <li>• Relay output</li> <li>• Form: DPST</li> <li>• n o.: 1 amp</li> <li>• Defrost: 10 min. fixed</li> <li>• Interval times: Pin-selectable, 30/60/90 mins.</li> </ul>	<ul style="list-style-type: none"> <li>• Nordyne: 621301A, 621579B, 621579-C</li> <li>• ICM: DFORB-AB1004</li> </ul>
 <p><b>NEW!</b></p>	<p><b>ICM303</b></p>	<ul style="list-style-type: none"> <li>• Direct replacement for: York 031012511000</li> <li>• Time and temperature defrost</li> <li>• Integral short cycle protection</li> <li>• 24 VAC operation (18-30 VAC)</li> <li>• Lock-in defrost feature</li> <li>• Test pins reduce test time by 256x</li> <li>• High/low pressure switch monitoring</li> <li>• High power, condenser relay output (1 hp fan @ 240 VAC)</li> <li>• Strip heat, reversing valve outputs (24 VAC, 2 amp)</li> </ul>	<p>Control Input</p> <ul style="list-style-type: none"> <li>• 18-30 VAC</li> <li>• Impedance relay: 2 amps</li> <li>• Condenser relay output: 1 hp fan @ 240 VAC</li> <li>• Strip heat, reversing valve outputs: 24 VAC, 1 amp</li> <li>• Defrost: 10 min. fixed</li> <li>• Interval times: Pin-selectable, 30/60/90 mins.</li> </ul>	<ul style="list-style-type: none"> <li>• York: 9218-3741, 03101251000</li> <li>• Evcon: 9218-374</li> <li>• ICM: DFORF</li> </ul>
 <p><b>NEW!</b></p>	<p><b>ICM316</b></p>	<ul style="list-style-type: none"> <li>• Direct replacement for: Trane: 21C42827G01</li> <li>• Low cost, time/temperature defrost</li> <li>• 24 VAC operation (18-30 VAC)</li> <li>• 10 min. defrost interval</li> <li>• Pin-selectable interval times of 50/70/90 mins.</li> <li>• Test pins reduce test time by 256x</li> <li>• High power output (1/2 hp fan @ 230 VAC)</li> <li>• Strip heat, reversing valve outputs (24 VAC, 1 amps).</li> </ul>	<p>Control Input:</p> <ul style="list-style-type: none"> <li>• 18-30 VAC</li> <li>• Condenser relay output: 1/2 hp fan @ 230 VAC</li> <li>• Strip heat, reversing valve outputs: 24 VAC, 1 amp</li> <li>• Defrost: 10 min. fixed</li> <li>• Interval times: Pin-selectable 50/70/90 min.</li> </ul>	<ul style="list-style-type: none"> <li>• Trane: CNT1642, CNT1152, 21C142827G01</li> </ul>

# DEFROST CONTROLS – Aftermarket Replacement Parts

ICM CONTROL	SERIES	FEATURES/APPLICATIONS	SPEC	REPLACES
 <p><b>NEW!</b></p>	<p><b>ICM318</b></p>	<ul style="list-style-type: none"> <li>• Direct replacement for: Goodman B1226008.</li> <li>• Low cost, time/temperature defrost.</li> <li>• 24 VAC operation (18-30 VAC).</li> <li>• Defrost terminate input</li> <li>• Pin-selectable interval times of 30/60/80 mins.</li> <li>• Test pins reduce test time by 256x.</li> <li>• High power output (1/2 hp fan @ 240 VAC).</li> <li>• Strip heat, reversing valve outputs (24 VAC, 2 amps).</li> </ul>	<p>Control Input</p> <ul style="list-style-type: none"> <li>• 18-30 VAC</li> <li>• Outdoor Fan Relay Output: 1/2 hp fan @ 240 VAC</li> <li>• Strip heat, reversing valve outputs: 24 VAC, 2 amp</li> <li>• Defrost: 10 min. fixed</li> <li>• Interval times: Pin-selectable 30/60/90 min.</li> </ul>	<ul style="list-style-type: none"> <li>• Goodman: B1226008</li> <li>• ICM: W1001-4</li> </ul>
	<p><b>ICM320</b></p>	<ul style="list-style-type: none"> <li>• Direct replacement for: Carrier: HK32FA006</li> <li>• Low cost, time/temperature defrost.</li> <li>• 24 VAC operation (18-30 VAC)</li> <li>• Defrost terminate input</li> <li>• Integral short cycle protection</li> <li>• 10 min. defrost interval</li> <li>• Pin-selectable interval times of 30/50/90 mins</li> <li>• Test pins reduce test time by 256x.</li> <li>• Stable pin post construction</li> </ul>	<p>Control Input:</p> <ul style="list-style-type: none"> <li>• 18-30 VAC</li> <li>• Outdoor Fan Relay Output: 10 amp fan @ 240 VAC</li> <li>• Relay output</li> <li>• Form: DPST n.o.: 2 amps</li> <li>• Defrost: 10 min. fixed</li> <li>• Interval times: Pin-selectable 30/50/90 min.</li> </ul>	<ul style="list-style-type: none"> <li>• Carrier: HK32FA006</li> </ul>
 <p><b>NEW!</b></p>	<p><b>ICM321</b></p>	<ul style="list-style-type: none"> <li>• Direct replacement for: Carrier: CES01130063-00</li> <li>• Low cost, time/temperature defrost</li> <li>• 24 VAC operation (18-30 VAC)</li> <li>• Defrost terminate input</li> <li>• Pin-selectable interval times of 30/50/90 mins.</li> <li>• Test pins reduce test time by 256x.</li> <li>• Accumulates compressor run times when the disc is closed</li> <li>• Integral short cycle protection.</li> <li>• High power output, outdoor fan (1/2 hp fan @ 240 VAC)</li> <li>• Strip heat, reversing valve outputs (24 VAC, 1 amp).</li> </ul>	<p>Control Input</p> <ul style="list-style-type: none"> <li>• 18-30 VAC</li> <li>• Relay output</li> <li>Outdoor Fan: <ul style="list-style-type: none"> <li>• Form: SPDT n.c.: 10 amps</li> <li>n.o.: 20 amps</li> </ul> </li> <li>• Defrost: 10 min. fixed</li> <li>Interval times: Pin-selectable, 30/50/90 mins.</li> </ul>	<ul style="list-style-type: none"> <li>• Carrier: CES01130063-00</li> </ul>

TO ORDER THE ABOVE PARTS USE 64/979

# FAN/BLOWER CONTROLS – Dual On/Off Timing

APPLICATION	TIMING DIAGRAM		MODE OF OPERATION	
<p><b>"ON Delay on Break"</b></p> <p>On delay allows plenum to reach temperature before circulating fan is energized. Controls the circulating fan in heat pump, air conditioning &amp; forced air systems. OFF delay timing function continues to run the fan at the end of the heating/cooling cycle, thereby purging ducts of residual air and increasing system efficiency.</p>			<p>Power must be applied before and during the time delay period. When the initiate contact closes, 1-second of interrogation ensures contact closure. At end of interrogation, time Delay on Make timing begins, keeping the load off. Once the DOM times out, the load will be energized. Once the initiate contact opens, the Delay on Break period begins, keeping the load energized until the end of the DOB period, or loss of power. If the initiate contact closes again during the DOB period, the load will remain on, and the DOB timer will reset.</p>	
ICM CONTROL	SERIES	FEATURES/APPLICATIONS	SPEC	REPLACES
	<b>ICM254</b>	<ul style="list-style-type: none"> <li>• Dual function fan delay timer</li> <li>• Controls the circulating fan relay in heat pump, A/C and forced air systems</li> <li>• OFF delay controls fan relay to purge ducts of residual air at the end of the heating/cooling cycle</li> <li>• ON delay allows air to reach the proper comfort level prior to energizing the fan.</li> </ul>	<p>Input: 18-30 VAC Output:</p> <ul style="list-style-type: none"> <li>• 1 amp</li> <li>• 10 amp inrush</li> <li>• Solid-state</li> </ul> <p>Time Delays:</p> <ul style="list-style-type: none"> <li>• Adjustable: ON: 1-180 sec OFF: 12-390 sec.</li> </ul>	<ul style="list-style-type: none"> <li>• Honeywell: S876A1016</li> <li>• Watsco: PSTD-000-060W PSTD-000-005W</li> </ul>
	<b>ICM255</b>	<ul style="list-style-type: none"> <li>• Low cost open board design</li> <li>• High power, relay output.</li> <li>• Dual function fan delay timer.</li> <li>• Controls the circulating fan in heat pump, A/C and forced air systems.</li> <li>• OFF delay purges ducts of residual air.</li> <li>• ON delay eliminates false turn-on or damage from contact bounce.</li> </ul>	<p>Input: 18-30 VAC Output:</p> <ul style="list-style-type: none"> <li>• n.o.: 20 amps @ 240 VAC</li> <li>• n.c.: 10 amps @ 240 VAC</li> </ul> <p>Time Delays</p> <ul style="list-style-type: none"> <li>• Fixed at: ON: 1 sec OFF: 60 sec.</li> <li>• Consult factory for variations not listed</li> </ul>	<ul style="list-style-type: none"> <li>• Bard: 8201-056</li> <li>• Mars: 32393</li> <li>• Snyder General: 1395336</li> <li>• Watsco: 5893</li> <li>• Rheem: 42-22515-01 42-22515-02 42-22515-03</li> </ul>

# Heating—Air Vents

## EA67 Automatic Air Vent

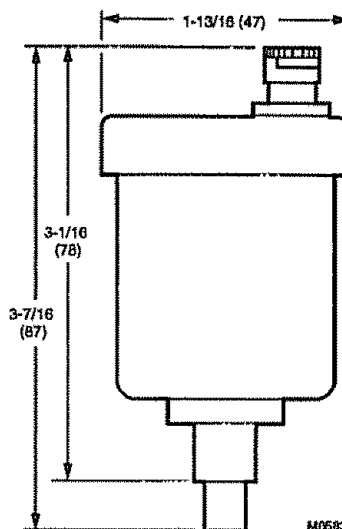
Purges air trapped in closed hot or cold water systems.

- Maintains quiet and efficient operation.
- Built-in vacuum breaker.
- Includes removable float/valve assembly for easy servicing.
- Not for use in steam systems.
- Brass body.
- Internal parts made of corrosion-resistant and chemical-resistant materials for use with water systems containing propylene glycol, mineral oils, or petroleum-based oils.
- Oil-resistant seal.



TEMPERATURE RATINGS: 230 F (110 C) maximum.  
PRESSURE RATINGS: 75 psi maximum.

EA67 dimensions in in. (mm).



Order Number	Description	Connections
EA67A1009	Automatic air vent	1/8 in male, threaded

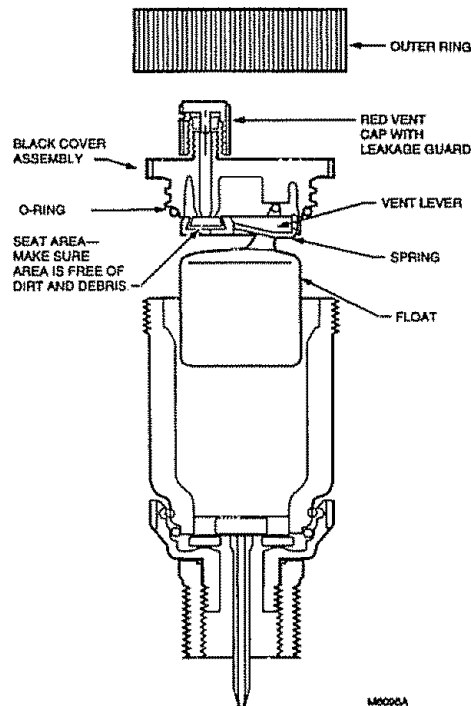
## EA79 Industrial Air Vent

Purges air from high pressure mains and equipment in closed hot or cold water systems.

- Built-in shutoff valve for servicing without system shutdown
- Built-in vacuum breaker
- Removable float/valve assembly for easy servicing
- Safety drain connection and vent cap with leakage guard
- Brass shell construction
- Internal parts made of corrosion-resistant and chemical-resistant materials for use with water systems containing propylene glycol, mineral oils, or petroleum-based oils
- Replaces Hoffman #79 or Dole #75 Vents
- Maintains quiet and efficient operation



EA79 construction.



TEMPERATURE RATINGS: 250 F (120 C) maximum  
PRESSURE RATINGS: 150 psi maximum.

ACCESSORIES:

P79B1003 Cover Assembly; includes replacement O-ring, cover and float assembly

Q122A1001 Safe Waste Connector for connecting top vent to 1/4 in O D. tube.

204992 Red Vent Cap with leakage guard.

Order Number	Description	Connections
EA79A1004	Industrial automatic air vent	3/4 in NPT male pipe thread with 1/2 in. NPT female pipe thread.

TO ORDER THE ABOVE PARTS USE 64/979

# Boiler Controls

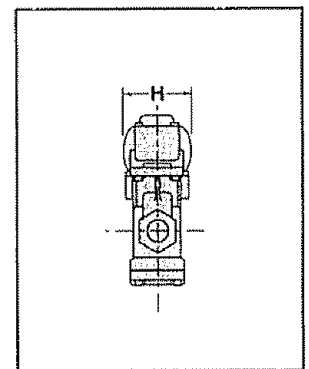
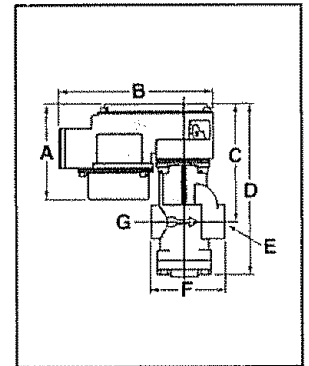
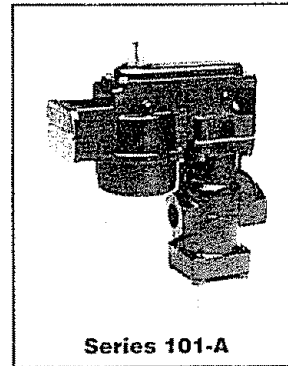
## Water Feeders – Electric

### Series 101-A



### Electric Water Feeders

- For low pressure steam boilers with **cold water feed**
- Eliminates necessity to manually add water to the boiler
- Can be used with mechanical or electronic low water cut-off controls
- Quick-change replaceable cartridge valve and strainer
- Manual feed button
- Model 101-A features a 120 VAC solenoid
- Model 101-A-24 features a 24 VAC solenoid and a separate 50VA transformer
- Maximum water pressure 150 psi (10.5 kg/cm<sup>2</sup>)
- Maximum boiler pressure 25 psi (1.8 kg/cm<sup>2</sup>)
- Maximum water temperature 175°F (79°C)
- Maximum power consumption
  - 40 watts at 24 VAC
  - 40 watts at 120 VAC



### Flow Data

Pressure Differential psi (kg/cm <sup>2</sup> )		Flow Rate gpm (lpm)	
5	(.4)	1.4	(5.3)
10	(.7)	1.7	(6.4)
20	(1.4)	2.1	(7.9)
40	(2.8)	2.9	(11.0)
60	(4.2)	3.4	(12.9)
80	(5.6)	4.0	(15.1)

### Dimensions, in. (mm)

A	B	C	D	E NPT	F	G NPT	H
4 <sup>1</sup> / <sub>16</sub> (103)	6 <sup>7</sup> / <sub>16</sub> (175)	5 <sup>1</sup> / <sub>8</sub> (130)	7 <sup>9</sup> / <sub>16</sub> (192)	½ (15)	3 <sup>5</sup> / <sub>16</sub> (84)	½ (15)	3 (76)

### Ordering Information

Model Number	Description	Weight lbs. (kg)
101A	Electric water feeder, 120V	2.8 (1.3)
101A-24V	Electric water feeder, 24V	2.8 (1.3)

# Boiler Controls

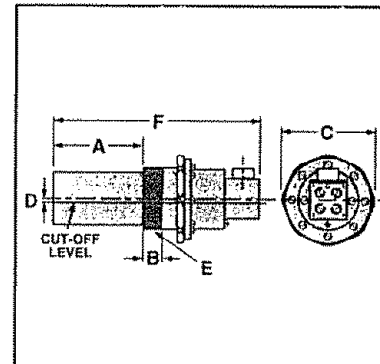
## Low Water Cut-Offs – Float Type For Steam Boilers

Series 69



Built-in Low Water Cut-Offs

- For residential and commercial low pressure steam boiler applications
- For boilers of any steaming capacity
- For mounting in 2½" (65mm) NPT boiler side tapings
- Insertion lengths available in 1⅜" - 4⅛" (30-105mm)
- Packless bellows
- Adjustable BX outlet for easy installation
- Dual precision switches for dependable operation of the low water cut-off and an alarm or electric water feeder
- Optional low voltage switches for self-generating millivolt circuits
- Maximum steam pressure 20 psi (1.4 kg/cm<sup>2</sup>)



### Electrical Ratings

Voltage	Motor Switch Rating (Amperes)		Pilot Duty
	Full Load	Locked Rotor	
120 VAC	7.4	44.4	125 VA at 120 or 240 VAC
240 VAC	3.7	22.2	

### Dimensions, in. (mm)

Model	A Insertion Length	B	C	D	E NPT	F
69	4⅛ (105)					
169	3⅜ (79)					
269	2¼ (57)	1 (25)	4⅛ (105)	½ (3)	2½ (65)	9½ (241)
369	1¾ (45)					
469, 569	1⅜ (30)					

### Ordering Information

Model Number	Description	Weight lbs. (kg)
69	Low water cut-off w/4⅛" (105mm) insertion length	3.7 (1.7)
169	69 w/3⅜" (79mm) insertion length	4.0 (1.8)
269	69 w/2¼" (57mm) insertion length	4.0 (1.8)
369	69 w/1¾" (45mm) insertion length	4.0 (1.8)
469	69 w/1⅜" (30mm) insertion length	4.0 (1.8)
569	469 w/1⅜" (30mm) insertion length w/¼" NPT tapping	4.0 (1.8)



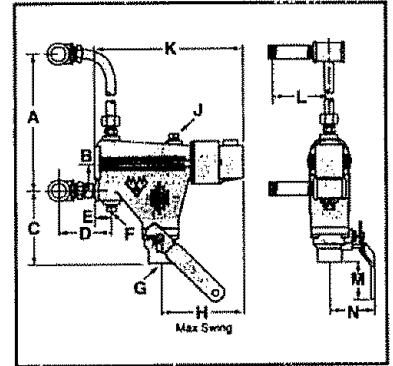
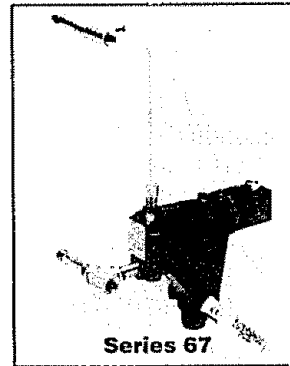
# Boiler Controls

## Low Water Cut-Offs – Float Type For Steam Boilers

### Series 67 Low Water Cut-Offs



- For residential and commercial applications
- For boilers of any steaming capacity
- Quick hook-up fittings provided
- Lever-operated, full port ball valve for easy blow down
- Adjustable BX outlet for easy installation
- Dual precision switches for dependable operation of the low water cut-off and alarm or electric water feeder
- Optional features
  - Low voltage switches for self-generating millivolt circuits
  - Manual reset switch
- Large float chamber
- Maximum steam pressure 20 psi (1.4 kg/cm<sup>2</sup>)



### Electrical Ratings

Voltage	Motor Switch Rating (Amperes)		Pilot Duty
	Full Load	Locked Rotor	
120 VAC	7.4	44.4	125 VA at 120 or 240 VAC
240 VAC	3.7	22.2	

### Dimensions, in. (mm)

A		B	C	D	E	F	G	H	J	K	L	M	N
min.	max.					NPT	NPT		NPT				
6½ (165)	14 (356)	1¾ (45)	4¾ (121)	3¾ (86)	1⅞ (29)	¾ (12)	¾ (20)	5½ (140)	¼ (8)	9 <sup>23</sup> / <sub>32</sub> (247)	3 <sup>3</sup> / <sub>16</sub> (90)	2½ (64)	2 <sup>13</sup> / <sub>16</sub> (71)

### Ordering Information

Model Number	Description	Weight lbs. (kg)
67	Low water cut-off	10 (4.5)

# Boiler Controls

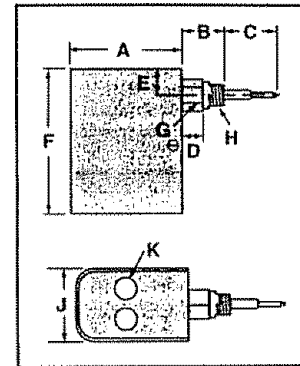
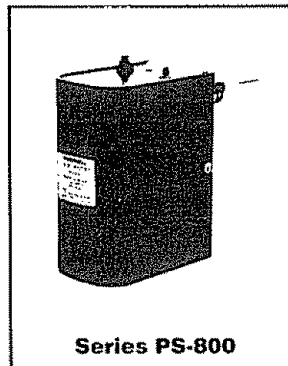
## Low Water Cut-Offs – Electronic For Steam Boilers

### Series PS-800

Low Water Cut-Offs



- For residential and commercial applications
- Electronic operation
- Delay on Make (DOM) feature (15 seconds)
- Delay on Break (DOB) feature (10 seconds)
- LED low water indicator light
- Test switch and LED indicator light
- Optional manual reset switch available
- Optional remote sensor available – Model PS-801-RX2
- Meets ANSI specification Z21.13a – Model PS-802
- No lock out with loss of power (if probe is in water)
- No blow down of control required when mounted directly into boiler tapplings
- No moving parts
- Maximum ambient temperature 120°F (49°C)
- Voltage across probe to ground 14 VAC
- Probe sensitivity 3,500 ohms
- Power consumption 3 VA
- Maximum water temperature 250°F (121°C)
- Maximum steam pressure 15 psi (1 kg/cm<sup>2</sup>)



### Electrical Ratings

Model	Voltage	Motor Switch Rating (Amperes)		Pilot Duty
		Full Load	Locked Rotor	
24 VAC	24 VAC	—	—	50 VA at 24 VAC
120 VAC	120 VAC	7.5	43.2	125 VA at 120 or 240 VAC 50 or 60 Hz
	240 VAC	3.75	21.6	

### Dimensions, in. (mm)

A	B	C	D	E	F	G	H NPT		J	K
							Model PS-802-RX2-24	All other Models		
4¼ (108)	1⅞ (40)	2⅞ (54)	¾ (19)	1⅜ (21)	5⅜ (148)	1⅜ (35)	½ (25)	¾ (20)	2⅞ (73)	⅞ (22)

### Ordering Information

Model Number	Description	Weight lbs. (kg)
PS-801-120	Low water cut-off 120V	2.7 (1.2)
PS-801-M-120	PS-801-120 w/manual reset	2.7 (1.2)
PS-801-U-120	PS-801-120 w/ext barrel	2.7 (1.2)
PS-802-24	Low water cut-off 24V	2.7 (1.2)
PS-802-M-24	PS-802-24 w/manual reset	2.7 (1.2)
PS-802-U-24	PS-802-24 w/ext barrel	2.7 (1.2)
PS-802-RX2-24	PS-802-24 w/remote sensor	2.7 (1.2)



### CAUTION

Do not use "manual reset" models with electric automatic water feeders. Failure to follow this caution can cause flooding and property damage.

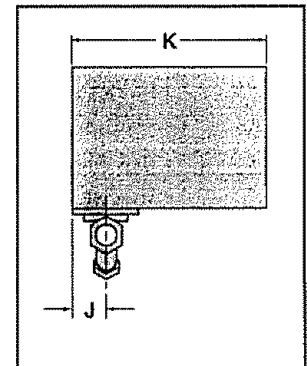
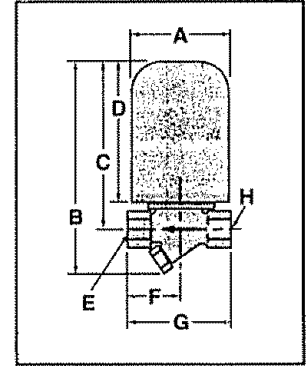
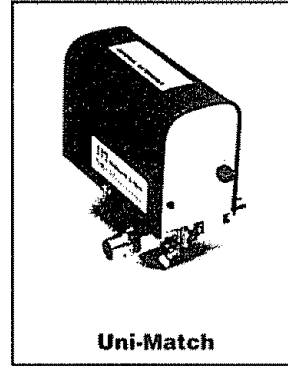
# Boiler Controls

## Water Feeders – Electric

### Uni-Match® Electric Water Feeders



- For low pressure steam boilers (1,000,000 BTU/hr. max.)
- Three position slide switch allows the timing cycle to be matched to that of the major low water cut-off manufacturers
- Field adaptable feed rate – 1, 2, or 4 gpm (3.8, 7.6, or 15.1 lpm)
- Electronic operation provides consistent, accurate cycle-to-cycle repeatability
- Universal design simplifies selection and reduces stock
- Can be used with mechanical or electronic low water cut-off controls
- Manual feed button
- Includes  $\frac{3}{8}$ " x  $\frac{1}{2}$ " (9.5 x 12.7mm) sweat adapters for quick installation with  $\frac{1}{2}$ " (13mm) copper tubing
- Easy to clean strainer
- Maximum water pressure 150 psi (10.5 kg/cm<sup>2</sup>)
- Maximum boiler pressure 15 psi (1 kg/cm<sup>2</sup>)
- Maximum water temperature 175°F (79°C)
- Maximum ambient temperature 100°F (38°C)
- Maximum power consumption (during water feed only)
  - 15 watts at 24 VAC
  - 20 watts at 120 VAC (50 or 60 Hz)



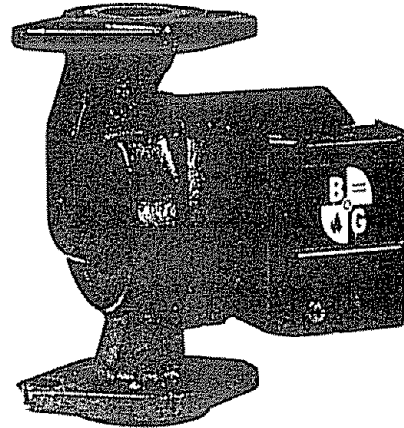
### Dimensions, in. (mm)

A	B	C	D	E NPT	F	G	H NPT	J	K
2 $\frac{7}{8}$ (73)	6 $\frac{1}{4}$ (159)	4 $\frac{7}{8}$ (124)	4 $\frac{1}{4}$ (108)	$\frac{3}{8}$ (12)	1 $\frac{17}{32}$ (39)	3 $\frac{1}{16}$ (78)	$\frac{3}{8}$ (12)	1 $\frac{1}{32}$ (26)	5 $\frac{13}{16}$ (148)

### Ordering Information

Model Number	Description	Weight lbs. (kg)
WF-2-U-24	Electric Water Feeder, 24V	2.8 (1.3)
WF-2-U-120	Electric Water Feeder, 120V	2.8 (1.3)

# Maintenance-Free Circulators Cast Iron Wet Rotor/NRF



Maximum working pressure  
150 psi (10.3 bar)  
Maximum operating temperature  
240°F (115°C)

## Cast Iron Circulators

Model No.	Part No.	Flange Sizes Inches - NPT	Approx. Shpg. Wt. lbs. (Kg)	Standard 60 Cycle Motor Characteristics*				
				Watts	∅	Voltage	F.L. AMPS	RPM
NRF-22	103251	3/4, 1, 1-1/4, 1-1/2	9.3 (4.2)	92	1	115	.80	2940

\*230/60/1 motors available upon request. Dimensions are approximate and subject to change. Contact factory for certified dimensions.

① DuraGlide™ Bearing System (blue areas in cutaway illustration) incorporates several components working together to eliminate seasonal freeze-up

② Red Fox motor has up to 80% more starting torque than competing circulators

③ One-piece, high-nickel stainless steel stator can isolate the stator from system fluid and maintains precision bearing alignment for longer bearing life

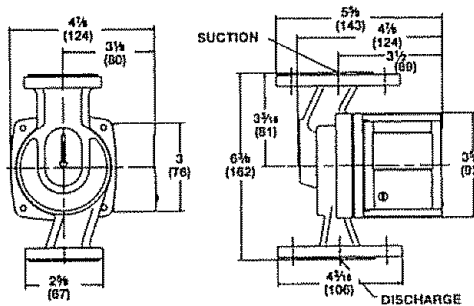
④ Carbon bearings, diamond-like ceramic shaft and generous clearances are more resistant to lime, chloride and oxide build-up

⑤ Face plate and rotor sleeve feature corrosion resistant stainless steel construction for longer life

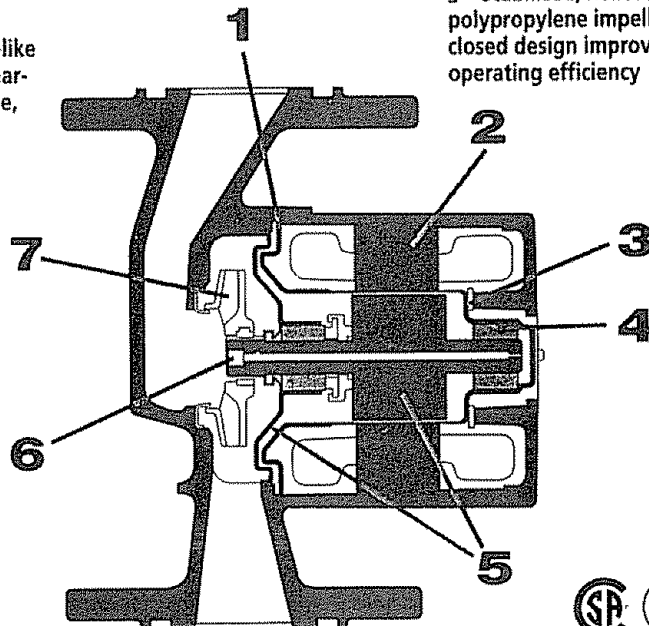
⑥ Self-cleaning particle shield protects the shaft and bearings from system start-up debris

⑦ Stabilized, heat resistant, polypropylene impeller, its closed design improves operating efficiency

## Dimensions



NRF-9F/LW or NRF-22



TO ORDER THE ABOVE PARTS USE 64/979

# HOT SURFACE IGNITION

## 780-910 UNIVERSAL HOT SURFACE IGNITION MODULE UNI-KIT®

The 780-910 Universal Hot Surface Ignition Module Uni-Kit is designed for use on gas fired systems. It is equipped with a self diagnostic green LED for quick troubleshooting. The LED indicates if the system is in normal operation, has gone into lockout, has a weak flame signal, or has an internal error (a defective module).

### FEATURES

The 780-910 Uni-Kit will easily replace the widest variety of hot surface ignition modules found in the field today including systems using:

- Local (sense through the Hot Surface Ignitor) or Remote Flame Sensors
- Single or three ignition attempts
- 4 or 7 second ignition trial time
- 17 or 34 second ignitor warm up time
- 34 seconds or less prepurge
- Natural or L.P. gas controls
- 120 VAC Hot Surface ignitors

This kit provides all the necessary instructions and hardware needed to replace most hot surface modules manufactured by Robertshaw, Honeywell and White-Rodgers.

The 780-910 provides 100% lockout and complete gas shut off if main burner does not light after the selected trial for ignition sequence has been completed. An ignition sequence is initiated by a call for heat by a room thermostat or a switch which provides power to the Ignition Control Unit (ICU). After a 34 second prepurge cycle the ICU will start the selected ignitor warm up time (17 or 34 seconds).

At the end of the ignitor warm up time, the gas valve is opened and will supply gas to the main burner for 4 or 7 seconds. In normal operation the main burner will light and the gas valve will remain open as long as there is a call for heat. After several seconds the ignitor is turned off and the sensor (local or remote) is activated.

If the main burner does not light the ICU will (depending on what option was chosen) go into lockout or retry. When 3 ignition attempts are being used the ICU will try again 2 more times. If the ICU fails to establish proof of flame it will then go into lockout. The module can be reset by opening system switch or thermostat contacts (lowering the set temperature below the room temperature) for a minimum of 10 seconds.



### SPECIFICATIONS

The 780-910 comes equipped with field selectable options; flame sense (local or remote), ignition trial times and ignitor warm up times. The flame sense option is determined by a factory installed black jumper wire. For local sense (sensing through the ignitor) the jumper must be connected to the "sense" terminal. For remote sense (a flame rod) the black jumper wire must be removed.

Ignition attempts and timing options are set by using a combination of four field removable tabs. The Cross-Reference charts in the instruction sheet will indicate the combination of tabs recommended for removal to match the specification of a specific ignition module.

Electrical rating	
Supply voltage	120 VAC, 50/60 Hz
Control input voltage	24 VAC, 50/60 Hz
Maximum ignitor current	5 amps resistive
Maximum valve current	1.5 amps at 24 VAC
Thermostat anticipator current	1 A + load
Ambient temperature	-40° to 176°F
Operating humidity	95% at 104°F

FOR REPLACEMENT REMOTE SENSORS SEE PARTS & ACCESSORIES - PAGE A118

### CROSS-REFERENCE - ROBERTSHAW

Replaces Robertshaw Model Number	Replaces Robertshaw Model Number	Replaces Robertshaw Model Number	Replaces Robertshaw Model Number	Replaces Robertshaw Model Number	Replaces Robertshaw Model Number
HS780-17PL-304A	HS780-34PR-308A	HS780-34NL-306A	100-812-08	100-812-27	100-813-01
HS780-17PL-306A	HS780-17NL-104A	HS780-17NL-104A	100-812-09	100-812-28	100-813-03
HS780-17PL-308A	HS780-17NL-106A	HS780-34NL-312A	100-812-10	100-812-29	100-813-04
HS780-17PR-104A	HS780-17NL-108A	HS780-34NR-104A	100-812-11	100-812-30	100-813-05
HS780-17-PR-108A	HS780-17NL-304A	HS780-34NR-106A	100-812-12	100-812-31	100-813-06
HS780-17PR-306A	HS780-17NL-306A	HS780-34NR-304A	100-812-13	100-812-32	780-780
HS780-17PR-308A	HS780-17NL-308A	HS780-34NR-306A	100-812-14	100-812-33	780-782
HS780-34PL-104A	HS780-17NR-104A	HS780-34NR-308A	100-812-15	100-812-34	780-783
HS780-34PL-106A	HS780-17NR-106A	HS780-34NR-312A	100-812-17	100-812-36	780-784
HS780-34PL-108A	HS780-17NR-108A	HS780-17PL-106A	100-812-18	100-812-37	780-785
HS780-34PL-304A	HS780-17NR-304A	HS780-17PL-108A	100-812-19	100-812-38	780-786
HS780-34PL-306A	HS780-17NR-306A	100-812-01	100-812-20	100-812-39	780-787
HS780-34PL-308A	HS780-17NR-308A	100-812-02	100-812-21	100-812-40	780-788
HS780-34PR-106A	HS780-17NR-312A	100-812-03	100-812-22	100-812-41	780-789
HS780-34PR-108A	HS780-34NL-106A	100-812-04	100-812-23	100-812-42	780-790
HS780-34PR-304A	HS780-34NL-108A	100-812-05	100-812-24	100-812-44	
HS780-34PR-306A	HS780-34NL-304A	100-812-06	100-812-25	100-812-45	

### CROSS-REFERENCE - HONEYWELL

Replaces Honeywell Model Number	Replaces Honeywell Model Number	Replaces Honeywell Model Number	Replaces Honeywell Model Number	Replaces Honeywell Model Number
S89C1004	S89C1103	S89G1047	S890C1007	S890G1037
S89C1012	S89D1002	S89H1003	S890D1006	S890H1002
S89C1046	S89G1005	S89H1011	S890G1003	S890H1010
S89C1079	S89G1013	S89H1029	S890G1011	S890H1028
S89C1087	S89G1021	S89J1008	S890G1029	S8910J1000



# HOT SURFACE IGNITION

**HS-780 – 34 – P – L/ 3 – 08 – A – X – X**

**R = REMOTE LOCKOUT CONNECTOR**

**M = MANUAL RESET**

**A = 120VAC MODULE SUPPLY VOLTAGE**

**B = 208/240 MODULE SUPPLY VOLTAGE \***

**C = 277VAC MODULE SUPPLY VOLTAGE \***

**= 24 VOLT MODULE SUPPLY VOLTAGE**

**04 = 4 SECOND VALVE TRIAL TIME**

**06 = 6 SECOND VALVE TRIAL TIME**

**08 = 8 SECOND VALVE TRIAL TIME**

**12 = 12 SECOND VALVE TRIAL TIME**

**1 = SINGLE IGNITION ATTEMPT, THEN LOCKOUT**

**2 = 2 SINGLE ATTEMPTS, THEN LOCKOUT**

**3 = 3 IGNITION ATTEMPTS, THEN LOCKOUT**

**L = LOCAL FLAME SENSE USING IGNITOR**

**R = REMOTE FLAME SENSE USING SEPARATE SENSING ROD †**

**N = NON PRE-PURGE (IMMEDIATE IGNITION CYCLE)**

**P = PRE-PURGE CYCLE PRIOR TO IGNITION CYCLE**

**17 = 17 SECOND PRE-PURGE / IGNITOR WARM-UP TIME**

**34 = 34 SECOND PRE-PURGE / IGNITOR WARM-UP TIME**

**HS-780 = BASIC SIMICON HOT SURFACE IGNITION CONTROL**

\* Module steps input voltage down to 120 volts for ignitor

† For replacement remote sensors, see parts and accessories - page A118

## HOT SURFACE TERMINOLOGY

### PRE-PURGE

Allows the induced draft blower to purge the combustion chamber prior to the start of the ignition cycle

### IGNITION ATTEMPTS

The number of times the system will attempt to get ignition if a flame is not detected. After last try, unit goes into lockout

### VALVE TRIAL TIME

Number of seconds valve (main gas) is left open for ignition. If flame is not detected in specified time, unit goes into lockout; if it's a single try for ignition control or sequences to next ignition attempt cycle; if it's a multi-try for ignition control

### SENSOR OR SENSE TYPE

The presence of a flame can be detected two ways; local sense using the Norton hot surface ignitor to ignite the gas and also to detect the presence

of a flame, or remote sense using a sense rod that impinges into the main burner flame. Failure to detect flame anytime during run time will safely shut the gas valve off

### IGNITOR WARM-UP

Time required for hot surface ignitor to come up to operating temperature. An induced draft blower may also come on during this time period to purge the combustion chamber prior to the main valve opening

### IGNITION RETRY

See "Ignition Attempts" above

### LOCKOUT TIMING

See "Valve Trial Time" above

### RECYCLE

See "Valve Trial Time" above

# PILOT IGNITION

## 712 SERIES INTERMITTENT PILOT IGNITION UNI-KITS®

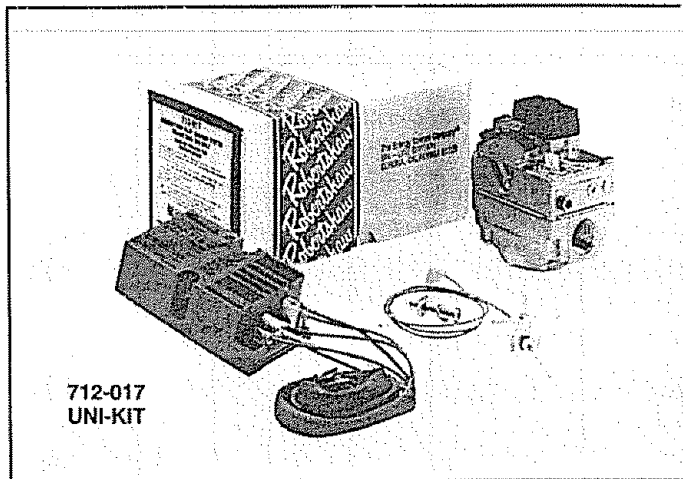
The Uni-Line 712 Series Intermittent Pilot Ignition Uni-Kits feature solid-state logic and flame sensing (flame rectification) to provide automatic sequencing that will ensure proper operation of an intermittent pilot ignition device. The 712 Series is the quickest and easiest to install in the industry, with complete, in-depth installation and troubleshooting instructions. In addition to the valve's proven reliability, its compact size makes it quick and easy to install.

### LOCKOUT MODELS

Lockout feature shuts off all gas at the valve inlet, should pilot ignition fail to occur after a predetermined time period. Wall thermostat reset will restart the system in the event of a lockout. Reignition will occur in approximately 5 seconds.

### NONLOCKOUT MODELS

Nonlockout feature provides a constant ignition spark and automatic recycling of the pilot in the event of gas interruptions or power failure.



### AGA CERTIFICATION

The complete 712 system has been AGA certified to A.N.S.I. standard Z21.71-1993 "Automatic Intermittent Pilot Ignition Systems for Field Installation."

### ORDERING DATA

UNI-LINE ORDER NO.	GAS VALVE	IGNITION UNIT	DESCRIPTION
-----------------------	--------------	------------------	-------------

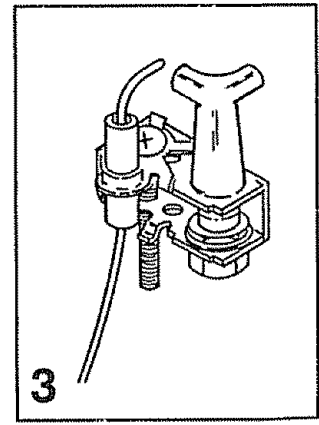
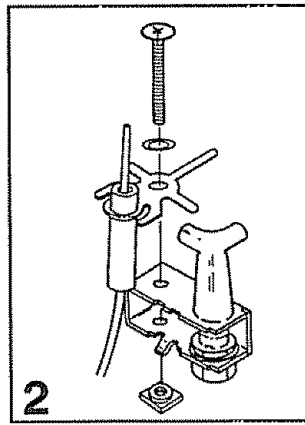
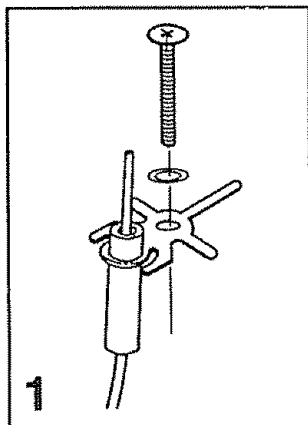
#### LOCKOUT MODELS – LOCKOUT TIMING IS 60 SECONDS

712-006	700-056 3/4" x 3/4"	780-745 (Lockout)	<b>Universal Model</b> – Gas valve has natural gas pressure regulator set at 3.5" W.C. A separate L.P. gas pressure regulator set at 11.0" W.C. is also included. 350,000 Btu Max. Nat. Gas/560,000 Btu Max. L.P. gas.
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### QUICK & EASY ELECTRODE/SENSOR ASSEMBLY

Provides universal adaptability of the electrode/sensor to virtually all pilot types. Assembly is as easy as 1, 2, 3.





# IG1000 - Universal Hot Surface Igniter

Replacment for Carrier, Norton, Rheem, Robertshaw and others. Designed with a bracket kit to replace over 70 part numbers, it can be used to replace both the narrow (1-1/4") and wide (2") porcelain block Norton furnace igniter. Complete application information and installation instructions are packed with each igniter.

## OEM Cross Reference Chart - Small Bracket

**For Robertshaw**  
41-402, 41-405, 41-408, 41-410  
**For American Road Equipment**  
201W  
**For Armstrong Air**  
38322B001  
**For Comfort Zone**  
150114-04-01  
**For Claire Brothers**  
C-238, C-242  
**For Coleman**  
1474-051, 1474-052  
**For Detroit Radiant**  
201D  
**For DMO Industries**  
20834  
**For Dornback Furnace**  
271W  
**For Enerco Tech**  
10399

**For Evcon**  
1474-051, 1474-052  
**For Hupp Industries**  
9050  
**For Majestic**  
75-92-104, 75-92-105  
**For Metzger**  
201N, 201W  
**For Mor-Flo**  
3200618  
**For Nordyne**  
632-0770, 632-0880, 105141000  
**For Norton**  
201D, 201K, 201L, 201R, 201W,  
271N, 271P 271W  
**For Rheem**  
62-22441-01  
**For Roberts Gordon**  
90436600  
**For Superior Fireplace**

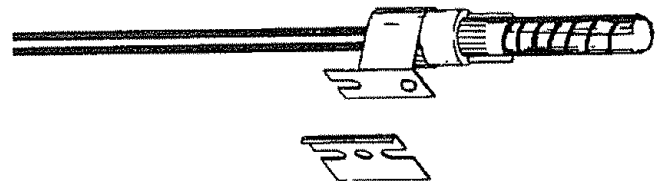
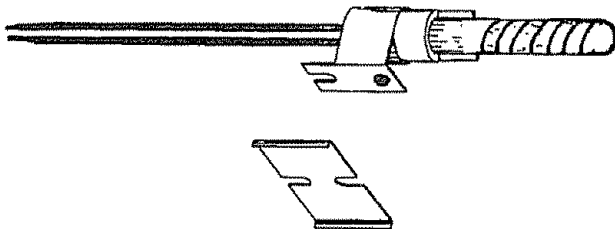
94851  
**For Trane**  
IGN23, IGN34, 340039P01,  
B340039P01, B1446676P01  
**For Viessman**  
9302-094  
**For Wyne Home Equipment**  
62821-001, 62821-002  
**For L. B. White Co.**  
120-07549  
**For White Rodgers**  
767A-357, 767A-361  
**For Williamson**  
9050  
**For York International**  
025-27774-000, 025-27776-000,  
025-29043-000, 025-29050-000

## OEM Cross Reference Chart - Large Bracket

**For Robertshaw**  
41-403, 41-407, 41-409  
**For Carrier Corp.**  
LH33ZS001A, LH33ZS002  
**For Ducane**  
20015201  
**For Norton**  
201, 271

**For Raypak**  
600915  
**For Roberts Gordon**  
90434300  
**For H.B. Smith**  
50018  
**For Snyder General**  
1380654, 1380672, 1380680

**For Trane**  
IGN26, IGN30, B138196P01,  
B144676P02  
**For Well McLain**  
511-330-139, 511-330-193



TO ORDER THE ABOVE PARTS USE 42/909

# HOT SURFACE IGNITION

## 41-400 SERIES HOT SURFACE FURNACE IGNITORS

Robertshaw's 41-400 Series Norton Hot Surface Ignitors deliver dependable ignition in heating systems of every description. From furnaces and boilers to rooftop heaters, infrared burners, unit heaters, water heaters, and many other types of HVAC equipment.

The 41-400 Series Hot Surface Ignitors are made of high-purity recrystallized silicon carbide (Crystar™) which combines physical and thermal strength with stable electrical properties. The 41-400 Series are designed to reach ignition temperature(s) within 17 seconds. They have 18-gauge nickel chrome lead wires embedded and metalized in place for maximum holding strength and electrical conductivity. The lead wires are also enclosed with a special high-temperature fiberglass insulation providing total electrical protection.

The 41-400 Series Robertshaw/Norton Hot Surface Ignitors have been field-proven in a wide variety of residential, commercial, and industrial applications for over 12 years. They are engineered for simple installation and years of trouble-free operation.

### ORDERING DATA

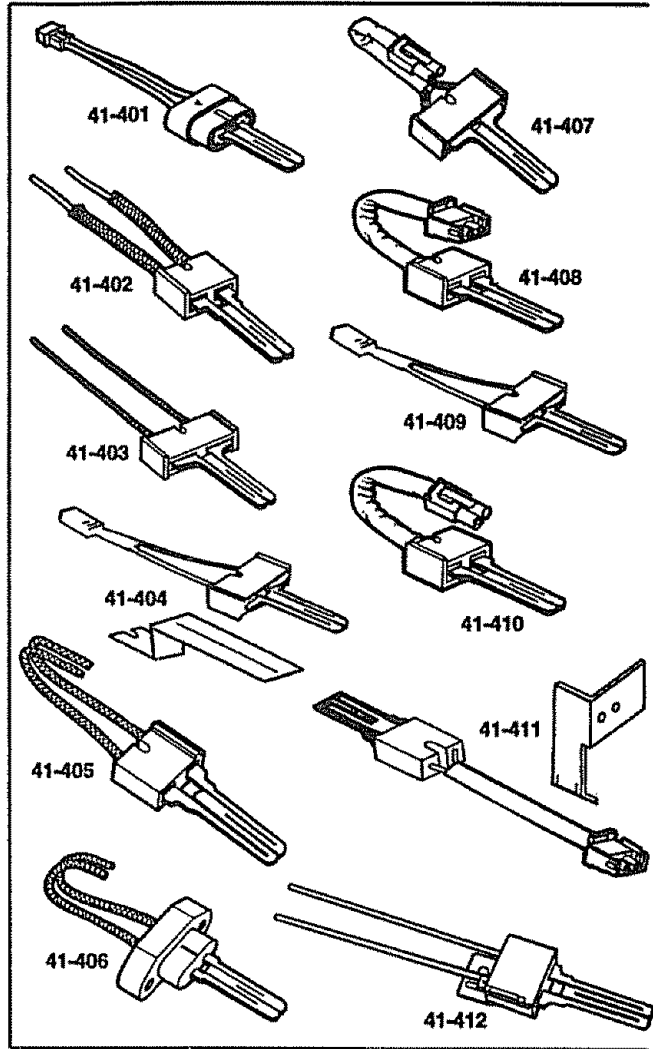
UNI-LINE ORDER NO.	FACTORY MODEL	CERAMIC BLOCK STYLE	TERMINAL CONNECTOR TYPE	LEAD WIRE LENGTH
41-401*	271A	A	A	4-1/2"
41-402	271W	B	NONE	19"
41-403	271	C	D	5-1/2"
41-404	271D	D	NONE	4-1/2"
41-405*	271Y	E	NONE	5-1/2"
41-407	271	C	B	4-1/2"
41-408	271N	B	C	
41-409	271	C	D	
41-410	271N	B	B	
41-411	271N	B	C	5-1/4"
41-412	271NM	F	NONE	

\* Includes gasket.

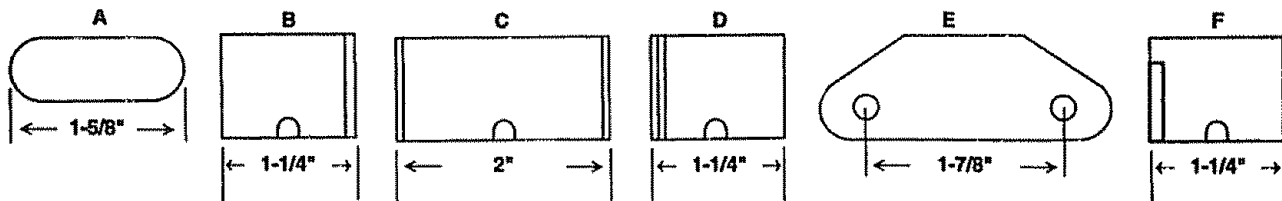
### CANADIAN MODELS

UNI-LINE ORDER NO.	FACTORY MODEL	CERAMIC BLOCK STYLE	TERMINAL CONNECTOR TYPE	LEAD WIRE LENGTH
41-413	C-238	B	D	36-1/4"
41-414	C-242	B	D	12"

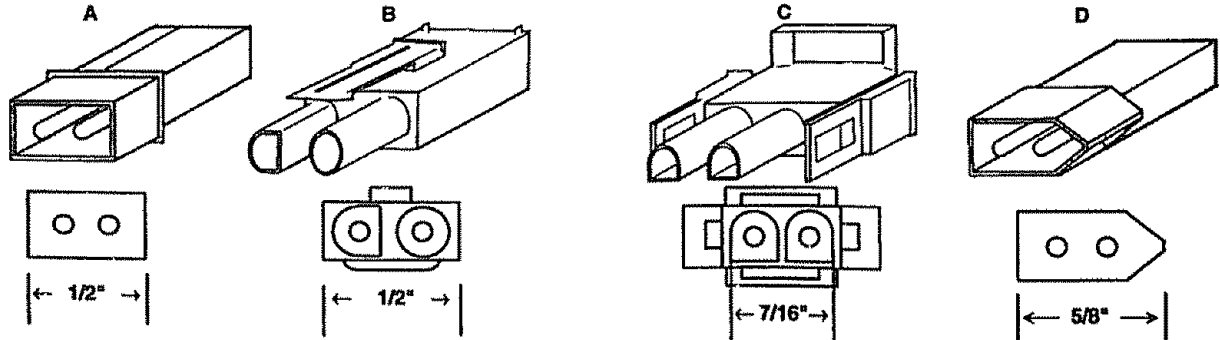
**NOTE:** All 41-400 series Ignitors are 120 VAC models. Some hot surface modules are rated for 208/240 volts input, however they step the voltage to the ignitor down to 120 VAC.



### CERAMIC BLOCK STYLES



### TERMINAL BLOCK STYLES



TO ORDER THE ABOVE PARTS USE 42/331

# HOT SURFACE IGNITION

CROSS-REFERENCE				
O.E.M.	O.E.M. PART NUMBER	UNI-LINE PART NUMBER	EXACT	FUNCTIONAL
AMANA	B1336102	41-401		X
	D99182	41-401	X	
	10041601	41-401	X	
AMERICAN APPLIANCE	271B	41-406	X	
	201W	41-402		X
	38322B001	41-402		X
AMERICAN ROAD EQUIPMENT	LH33ZS001A	41-409	X	
	LH33ZS002	41-409	X	
ARMSTRONG AIR CARRIER CORPORATION	C-238	41-402		X
	C-242	41-402		X
CLAIRE BROTHERS	1474-051	41-402		X
	1474-052	41-402		X
COLEMAN	150114-04-01	41-406		X
	201D	41-405		X
COMFORT ZONE	20834	41-402		X
	271 W	41-402		X
DETROIT RADIANT	20015201	41-409	X	
	10399	41-402		X
DMO INDUSTRIES	1474-051	41-402		X
	1474-052	41-402		X
DORNBACK FURNACE	B1401009	41-412	X	
	09050	41-402		X
DUCANE	1009604	41-412	X	
	PLT2400	41-406	X	
ENERCO TECH	75-92-104	41-402		X
	75-92-105	41-402		X
EVCON	201N	41-402		X
	201W	41-402		X
GOODMAN	3200580	41-406	X	
	3200618	41-402		X
HUPP INDUSTRIES	3210401	41-406		X
	105141000	41-402		X
INTERCITY	632-0880	41-402		X
	632-0770	41-402		X
LOCHINVAR CORPORATION	201	41-403		X*
	201A	41-401		X*
MAJESTIC	201D	41-405	+	X*
	201J	41-406	+	X*
METZGER	201K	41-402		X*
	201L	41-402		X*
MOR-FLO	201M	41-406	X	
	201N	41-406	X	
NORDYNE	201R	41-402		X*
	201W	41-402		X*
NORTON	201Y	41-406	+	X*
	271	41-403		X*
PERFECTION SCHWANK	271A	41-401		X*
	271P	41-405	+	X*
RAYPAK	271M	41-406	+	X*
	271N	41-402		X*
RHEEM	271W	41-402		X*
	271Y	41-406	+	X*
ROBERTS GORDON	108803-G1	41-406		X
	600915	41-403		X
SMITH HB	62-22441-01	41-408		X
	62-22441-01	41-402		X
SNYDER GENERAL	62-22868-82	41-411	X	
	90434300	41-409		X
SUPERIOR FIREPLACE	90436600	41-402		X
	50018	41-405	X	
TRANE COMPANY	1380672	41-409	X	
	1380680	41-409	X	
VISSMAN	1380654	41-403		X
	94851	41-402		X
WAYNE HOME EQUIPMENT	B138196P01	41-403		X
	B144676P01	41-410	X	
WEIL MCLAIN	B144676P02	41-407	X	
	B340039P01	41-408	X	
WHITE L. B. COMPANY	340039P01	41-402		X
	IGN23	41-402		X
WHITE-RODGERS	IGN26	41-409	X	
	IGN26	41-403		X
WILLIAMSON	IGN30	41-407	X	
	IGN30	41-403		X
YORK INTERNATIONAL	IGN34	41-408	X	
	2600-359	41-401	X	
YORK INTERNATIONAL	9302-094	41-405	X	
	62821-001	41-402		X
YORK INTERNATIONAL	62821-002	41-402		X
	511-330-139	41-409	X	
YORK INTERNATIONAL	511-330-188	41-406	X	
	511-330-193	41-403		X
YORK INTERNATIONAL	511-330-190	41-404	X	
	120-07549	41-402		X
YORK INTERNATIONAL	767A-309	41-401	X	
	767A-356	41-401		X
YORK INTERNATIONAL	767A-361	41-405		X
	767A-357	41-402		X
YORK INTERNATIONAL	09050	41-402		X
	025-27766-000	41-405	X	
YORK INTERNATIONAL	025-27774-000	41-405	X	
	025-29043-000	41-405	X	
YORK INTERNATIONAL	025-29050-000	41-405	X	

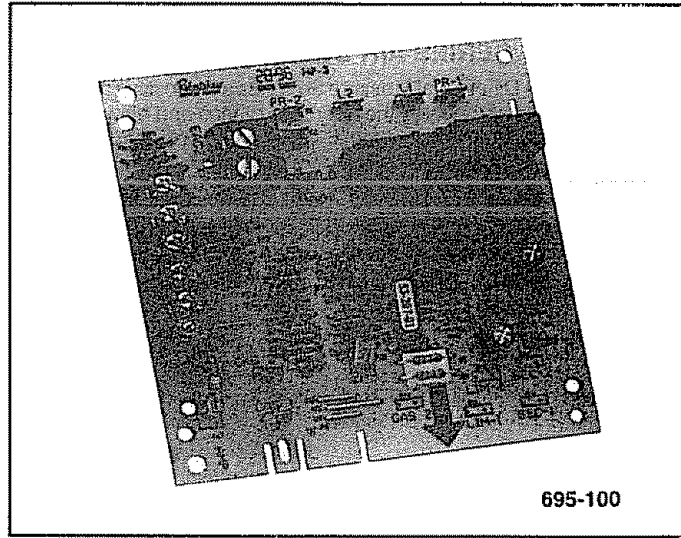
\* The O.E.M.'s used a wide variety of terminal connector types, therefore, all Robertshaw/Norton 41 Series functional replacement ignitors include ceramic wire connectors.  
 † May have exact O.E.M. terminal connector - see Ordering Data.

# WARM AIR CONTROLS

## 695-100 & 695-101

### CARRIER / BDP FAN CONTROL CENTERS

The 695-100 Series Fan Control Centers are solid state controls designed and engineered for the replacement market. They specifically replace the Carrier / BDP Gas Furnace Control Centers that have been used in new equipment for many years. The Fan Control Center is an exact replacement requiring no modification to the original wiring or to the appliance sheet metal.



695-100

### CROSS-REFERENCE

CES0110017	695-100	HH84AA013	695-100
CES0110018	695-100	HH84AA014	695-101
HH84AA001	695-101	HH84AA015	695-101
HH84AA003	695-101	HH84AA020	695-100
HH84AA005	695-101	HH84AA021	695-101
HH84AA009	695-101	P771-7002	695-100
HH84AA010	695-100	302075-3	695-100
HH84AA011	695-100	302075-302	695-100
HH84AA012	695-100		

### SPECIFICATIONS

695-100	
Input voltage	120 VAC
Terminals; PR-1, PR-2, L1 & L2	18-30 VAC
Terminals; SEC-1 & SEC-2	60 Hz
Line frequency	- 40° to 176°F
Operating temperature	95% R.H.
Maximum operating humidity	non-condensing @ 50°C
Time delay timings	
Heat "On"	75 seconds
Heat "Off"	105 seconds
Cool "Off"	90 seconds

695-101	
Input voltage	120 VAC
Terminals; PR-1, PR-2, L1 & L2	18-30 VAC
Terminals; SEC-1 & SEC-2	60 Hz
Line frequency	- 40° to 176°F
Operating temperature	95% R.H.
Maximum operating humidity	non-condensing @ 50°C
Time delay timings	
Heat "On"	50 seconds
Heat "Off"	80 to 240 seconds (ADJ)
Cool "Off"	90 seconds

### ORDERING DATA

UNI-LINE ORDER NO.	DESCRIPTION
695-100	REPLACES HH84AA020

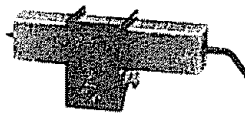
UNI-LINE ORDER NO.	DESCRIPTION
695-101	REPLACES HH84AA021

## MISCELLANEOUS CARRIER/BDP REPLACEMENT PARTS



### 10-660 (REPLACES HY660001)

The 10-660 fusible link repair kit is identical to Carrier/BDP part number HY660001. The 10-660 also replaces Carrier part number P421-1010 and 307566-701.



### 10-680 (REPLACES LH680512)

The 10-680 electrode assembly is identical to Carrier/BDP part number LH680512. The 10-680 is designed specifically to fit Carrier/BDP pilot burners part numbers LH68005 and LH33JZ053.



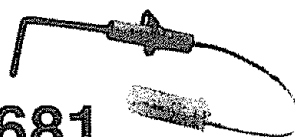
### 10-682 (REPLACES LH33CM018)

The 10-682 sensor is identical to Carrier/BDP part number LH33CM018. It is also identical to Penn-Johnson part number Y75AS-1.



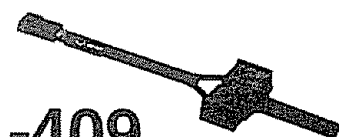
### 10-661 (REPLACES HY10LF286)

The fusible link repair kit is identical to Carrier/BDP part number HY10LF286.



### 10-681 (REPLACES LH33WZ511)

The 10-681 flame sensor is identical to Carrier/BDP part number LH33WZ511. The 10-681 is used in a system with the 41-409 hot surface ignitor.



### 41-409 (REPLACES LH33ZS002)

The 41-409 is an exact replacement for Carrier/BDP part number LH33ZS002.

TO ORDER THE ABOVE PARTS USE 42/331

# HEATING CONTROLS

## 700 SNAP-ACTION AND SNAP-THROTTLE HYDRAULIC

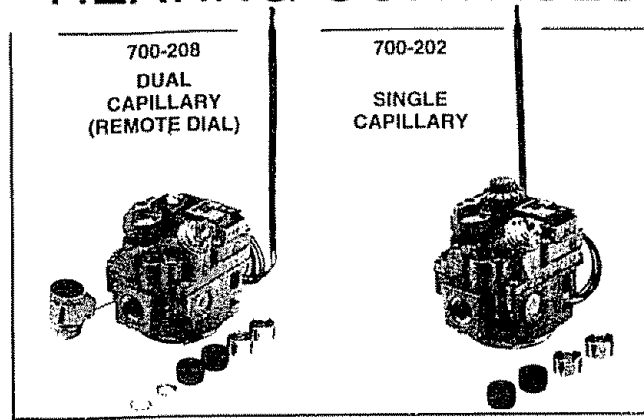
The 700-200 Series snap-action and snap-throttle (modulating) hydraulic controls are combination gas valves, thermostatically operated by a remote temperature sensing bulb

Two types of temperature adjustment models are available. One type is a single capillary model with the temperature adjustment knob on the gas valve itself. The second type is the remote dial, dual capillary model designed for cabinet mounting. These have an 18" capillary from the valve to the sensing bulb and a 48" capillary between the bulb and the remote temperature adjustment knob

The snap-throttle type controls are factory-set to snap on at 50% of the appliance capacity. From this 50% rate, the control will modulate up to full input rate if the demand for heat is great enough (as sensed by the remote bulb). As the temperature increase is sensed by the remote bulb, the control throttles the input back down to the minimum rate and when the temperature requirement is satisfied, the control snaps "off"

These controls combine a manual valve (gas cock), an automatic pilot safety valve, pressure regulator (optional by model) and a snap-acting or snap-throttle hydraulic operator for total temperature control. All models feature 3-position main gas outlets and pilot outlet, pilot gas filter, pilot adjustment key and automatic pilot valve. The automatic pilot valve is separate from the gas cock and provides gas shutoff in case of pilot outage. Consult ordering charts for individual control specifications

### EXCELLENT REPLACEMENT FOR COMPETITIVE GAS VALVES . . .



### MODELS NOW HAVE A SLOTTED SAFETY MAGNET

#### SPECIFICATIONS

Temperature range	58° to 90°F
Standard Dial	45° TO 95°F
Remote Dial	
Capillary length	36"
Single capillary type	combination 18" & 48"
Remote dial type	1/4" x 8"
Bulb O.D. & length	see ordering chart
Pressure regulator	1/4" tubing
Pilot outlet	off-pilot-on
Gas cock dial marking	-40° to 175°F
Ambient temperature	14" W.C. (1/2 PSI)
Maximum inlet pressure	

#### ORDERING DATA

UNI-LINE ORDER NO.	FACTORY MODEL*	INLET SIZE (FPT)	3 POSITION OUTLET (FPT)	CAPILLARY LENGTH	INTERNAL PRESSURE REGULATOR SETTING $\Delta$	CAPACITY <sup>1</sup>	REDUCER BUSHINGS INCLUDED (NPT)	
							3/4" x 1/2"	1/2" x 3/8"
<b>SNAP-ACTION MODELS</b>								
700-201	7000AS	1/2"	1/2"	36"	NONE*	100,000		2
700-202	7000ASR	1/2"	1/2"	36"	3.5" W.C. NAT. GAS	100,000		2
700-210	7000ASR-1H	1/2"	1/2"	REMOTE DIAL DUAL CAPILLARY MODELS	3.5" W.C. NAT. GAS	100,000		2
700-216	7000ASR-LP	1/2"	1/2"		10.0" W.C. L.P. GAS	160,000		2

\* A separate pressure regulator may be required for the system

<sup>1</sup> 1000 BTU/Cu Ft 0.64 sp gr nat gas @ 1" W.C. pd

#### SNAP-THROTTLE MODELS

700-203†	7000AST-3	1/2"	1/2"	36"	NONE*	100,000		2
700-204	7000AST-LP-3	1/2"	1/2"	36"	NONE*	160,000		2
700-205	7000ASTR-3	1/2"	1/2"	36"	3.5" W.C. NAT GAS	100,000		2
700-208	7000ASTR-3-1H	1/2"	1/2"	REMOTE DUAL CAPILLARY MODELS	3.5" W.C. NAT. GAS	100,000		2
700-212	7000ASTR-LP	1/2"	3/8"*		18"	11.0" W.C. L.P. GAS	162,000	
700-213	7000ASTR-4	1/2"	3/8"*	18"	4.0" W.C. NAT. GAS	100,000		1

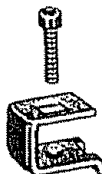
\* A separate pressure regulator may be required for the system

\*\* Right side outlet only - Williams Furnace applications

#### DRIVE ROD ACCESSORIES

##### GAS COCK

Some applications will require a drive rod for the gas cock dial. Order gas cock drive rod adaptor separately Order 1751-009



##### TEMPERATURE DIAL

If your application requires a drive rod for the temperature dial, simply pry off the temperature dial on the gas valve. A built-in drive rod adaptor is located underneath the temperature dial



TO ORDER THE ABOVE PARTS USE 42/331

# HEATING CONTROLS

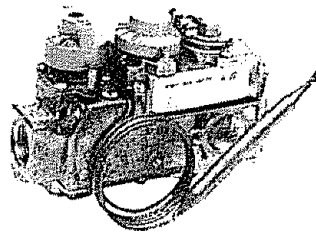
## 710 LOW PROFILE GAS HEATING VALVES

The 710 low capacity gas heating valves are designed for recreational vehicles and other applications with limited space. All models include a manual valve (gas cock), automatic pilot safety valve, pilot outlet, pilot gas filter and pilot adjusting key. THE CONTROL CAN BE MOUNTED IN ANY POSITION EXCEPT UPSIDE DOWN AND ALL MODELS HAVE 3-POSITION OUTLETS. Consult ordering chart for individual control specifications.

NOTE: Regulated 710 series gas valves can be converted from natural to L.P. gas by using the replacement pressure regulators shown below.

### SPECIFICATIONS

Valve type	see ordering chart
Temperature range (Hydraulic models)	58° to 90°F
Pilot outlet	1/4" tubing
Gas cock dial marking	off-pilot-on
Maximum ambient temperature	175°F
Maximum capacity†	70,000
Maximum inlet pressure	14" W.C. (1/2 PSI)



710-205

### ORDERING DATA

UNI-LINE ORDER NO.	FACTORY MODEL	INLET SIZE (FPT)	3-POSITION OUTLET (FPT) WITH 1/2" PIPE PLUGS	REDUCER BUSHINGS INCL. (FPT)	CAP. LENGTH	PRESSURE REGULATOR SETTING†	APPLICATION
<b>HYDRAULIC MODELS – SNAP-ACTION</b>							
710-204 ●	7000SRLC	1/2"	1/2"	(2) 1/2" x 3/8"	18"	3 5" W.C. NAT. GAS	WALL FURNACES REPLACES TV-27
710-205 ●					36"		

NOTE: Use two lead thermopiles only.

\* Has no safety valve (no magnet).  
\*\* Use for 12 VDC applications

† 1000 BTU/Cu. Ft. 0.64 sp. gr. natural gas @ 1" W.C. pd  
†† A separate pressure regulator may be required for the system.

● Regulated 710 series gas valves can be converted from natural to L.P. gas by using the replacement pressure regulators shown on page A61

## 1751 ADD-ON PRESSURE REGULATOR KITS

Add-on pressure regulator kits are available for the 700 Series (except 700-200 Series hydraulic models which have built-in regulator, replace complete operator). Each type provides "Straight Line" regulation feature. Kits include: gasket, mounting screws and instruction.

NOTE: Always use a new gasket and mounting screws when replacing the pressure regulator.

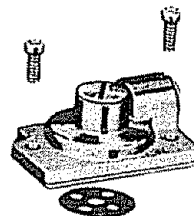
### ORDERING DATA

UNI-LINE ORDER NO.	REGULATOR TYPE	ADJUSTABLE SUITABLE FOR			
		W.C. PRESSURE		NAT. GAS	L.P. GAS
		LOW	HIGH		
1751-007*★	REGULATOR COVER PLATE				•
1751-013★	11 0" W C L P GAS	8"	12"		•

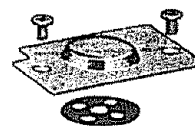
\* Used on all 7000 series except hydraulic models

★ Converts a regulated 700 gas valve to a nonregulated valve for use with L.P. gas

1751-013



1751-007

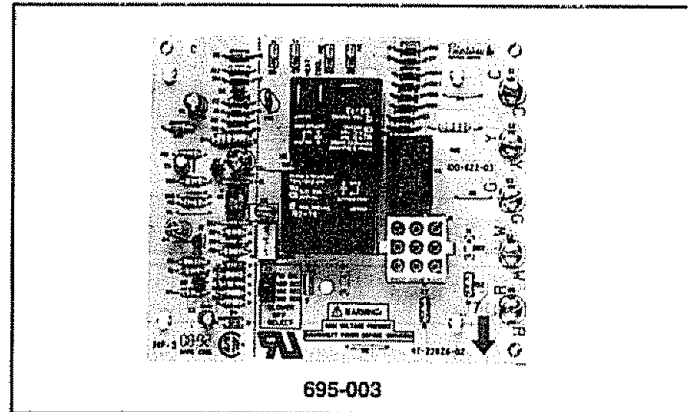


TO ORDER THE ABOVE PARTS USE 42/331

# WARM AIR CONTROLS

## 695 SERIES ELECTRONIC BLOWER CONTROLS

The Robertshaw 695 Series electronic blower motor controls were designed for use on heating and cooling equipment. The 695 controls the operation of the induced draft blower and the circulating blower in all thermostat modes. On a call for heat, the induced draft blower is energized. A pressure switch then proves the induction blower is functioning and brings in the gas valve. Operation of the gas valve starts the "on" delay timing. At the end of a pre-selected (and fixed) delay, the circulating blower is energized and it runs continuously until the call for heat is satisfied. At this time, the "off" delay (adjustable) is initiated and the circulation blower operates until the "off" delay times out.



### ORDERING DATA

UNI-LINE ORDER NO.	O.E.M.	REPLACES	BLOWER (HEATING)	
			"ON" TIME	"OFF" TIME★
695-001	EVCON/COLEMAN	2895-300	30	180
695-002	RHEEM	47-23619-01 47-23619-03 47-23619-02	50	90
695-003	RHEEM	47-22827-01 47-22827-81 47-22827-82 47-22828-01 47-22828-02 ST9120A1006†	20	120

### SPECIFICATIONS

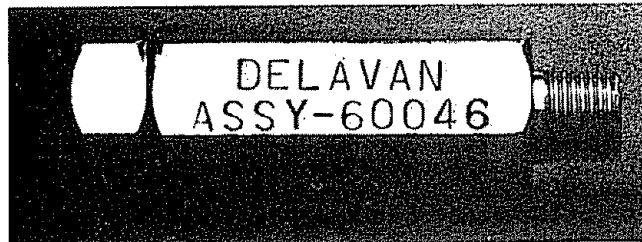
Input voltage	115 VAC, 60 Hz
Control voltage	18-30 VAC
Inducer current	2.5 FLA, 3.5 LRA @ 110/120 VAC 1.5 FLA, 1.75 LRA @ 220/240 VAC
Blower current	11.0 FLA, 24.5 LRA @ 110/120 VAC 11.0 FLA, 24.5 LRA @ 220/240 VAC
Ambient temperature rating	-40 to 176°F
Humidity	95% non-condensing

- ★ Optional settings (adjustable) 90, 120, 150 & 180 seconds
- † Honeywell part number
- Has 50 seconds of run delay at the end of a "cooling cycle"

# Accessories

## Line Filter

for nozzle protection in burner applications of 2.00 GPH or less

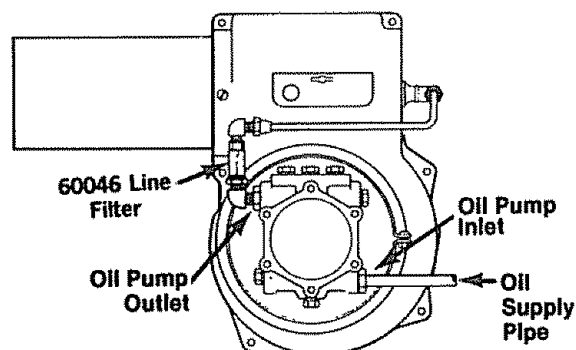


Use Delavan's new, repairable line filter for extra nozzle filtration in burner applications of 2.00 GPH or less.

These line filters offer four times the straining area of a standard nozzle strainer and twice the protection. A plugged line filter can cause a pressure drop. Check the pressure on the outlet side of the filter while the unit is flowing to see that it is the same as the pump pressure. If less, replace filter.

- 1/8" NPT inlet and outlet threads
- Easy installation (see drawing)

**NOTE:** Replace the line filter during the annual service check for an economical way to maintain clear lines.



TO ORDER THE ABOVE PARTS USE 64/407

PART NO. 60046



# Oil Burner Nozzles for Residential Applications

## Available Nozzle Sizes

Types A & B

GPH	30°	45°	60°	70°	80°	90°
.40			X	X	X	X
.50			X	X	X	X
.55			X	X	X	X
.60			X	X	X	X
.65			X	X	X	X
.70			X	X	X	X
.75			X	X	X	X
.80			X	X	X	X
.85			X	X	X	X
.90			X	X	X	X
1.00			X	X	X	X
1.10			X	X	X	X
1.20			X	X	X	X
1.25			X	X	X	X
1.35			X	X	X	X
1.50			X	X	X	X
1.65			X	X	X	X
1.75			X	X	X	X
2.00			X	X	X	X

Type W

GPH	30°	45°	60°	70°	80°	90°
.40			X	X	X	X
.50			X	X	X	X
.55			X	X	X	X
.60			X	X	X	X
.65			X	X	X	X
.70			X	X	X	X
.75			X	X	X	X
.80			X	X	X	X
.85			X	X	X	X
.90			X	X	X	X
1.00			X	X	X	X
1.10			X	X	X	X
1.20			X	X	X	X
1.25			X	X	X	X
1.35			X	X	X	X
1.50			X	X	X	X
1.65			X	X	X	X
1.75			X	X	X	X
2.00			X	X	X	X

All nozzles are listed in  
D/64 PLS 407

Part numbers are  
(X).XX GPH-Y-ZZ

X = Gallon Per Hour

Y = Type

Z = Angle

i.e. .65 GPH-A-60

1.10 GPH-B-80

## Nozzle Interchange

Replacing a nozzle of one make with another sometimes presents problems. This is partly due to unique design differences among the various makes, plus the fact that the nozzle manufacturers use different methods for evaluating spray angles, patterns and spray quality.

In many cases, nozzles with similar patterns and spray angles are directly interchangeable. However, there are other cases where nozzles that would seem to be equivalent really are not. When this happens it is best to ask the burner manufacturer for a recommendation. Otherwise, it is a matter of trial and error: (1) Trying nozzles with slightly higher or lower flow rates, (2) wider or narrower angles and (3) more solid or more hollow patterns, to see which one performs best.

Nozzle Interchange Chart	
Spray Angles 30° through 90°	
HAGO/SID HARVEY	DELANAN
H	A
ES/P	B*
MONARCH	DELANAN
NS/PL	A
PLP	B
DANFOSS	DELANAN
S	W or B
H	A

\*When interchanging a Delavan A, B or W with a Hago, it may be necessary to try the next wider spray angle.

\*\*Del-O-Flo A and B nozzles will interchange whenever standard A and B nozzles are called for

## Nozzle Ratings and Testing

Every Delavan nozzle is spray tested for flow rate, spray angle and spray quality. Our nozzles are flow rated at 100 psi. Test conditions include: fuel gravity within a total spread of 1½° API . . . viscosity within ± .04 centistoke (.03 SSU) . . . pressure at 100 psi . . . fuel temperature at 80°F, ±2°F . . . an air-conditioned test area maintained at a temperature spread of 4°F or less . . . and regularly checked pressure gauges and flow meters.

## Burner/Nozzle Selection

Proper nozzle selection is a subject of great importance because the performance of the nozzle is so directly related to the overall performance of the burner. The wrong choice of flow rate, spray angle or spray pattern for a given burner air pattern can result in improper firing.

To match a nozzle to a burner takes field-service experience, or trial-and-error, or a good foundation of understanding angles, rates and patterns. Refer to Delavan's service technicians guide #884, "A Total Look at Oil Burner Nozzles" for more technical information on nozzle selection and understanding angle, rates and patterns. Also refer to the Burner Manufacturers' Recommendations Chart below.

## Burner Manufacturer's Recommendations\*

Manufacturer	Model	Delavan Nozzle Type	
<b>Aero Burner</b>	F-AFC . . . . .	80° W or A	
	HF-US . . . . .	80° W or A	
	HF-AFC . . . . .	80° W or A	
	SV/SSV . . . . .	80° W or A	
<b>R.W. Beckett</b>	AF/AFG (F) . . . . .	60°, 70° or 80° A or B (100-150 PSI)	
	AF/AFG (M) . . . . .	60° or 70° A or B (100-150 PSI)	
	AF II . . . . .	45°, 60°, 70° A, W, or B (140-200 PSI)	
<b>The Carlin Co.</b>	99 FRD (Std )	.50-.75 GPH	60° A
		.85-3.00 GPH	45° A, 60° A
	100 CRD (Std )	.50-.75 GPH	60° A
		.85-2.25 GPH	45° A, 60° A
	Elite EZ-1	.75-1.10 GPH	60° A
		.50-1.00 GPH	70° A
		.50-.85 GPH	60° SS
1.00-1.65 GPH		60° or 70° B	
Elite (EZ-2, -3)	All Flow Rates	60° A, B, or SS	
<b>Riello Burners</b>	Mectron 3M, 5M	60° W, B, or Del-O-Flo A (Up to 85 GPH)	
	F3, F.5 . . . . .	.40-1.25 GPH	60° or 80° W
	F10 . . . . .	1.25-2.50 GPH	60° W
	F15, F20 . . . . .	2.00-5.00 GPH	45° or 60° B
	R35.3, R35.5	.60-1.25 GPH	60°, 80° W or B
	PRESS SERIES	2.00-12.00 GPH	60° or 45° B
<b>Intertherm</b>	MAC 1265	P/N 6601-181 or .579 MH	55 GPH 90° W
<b>Wayne Home Equipment</b>	P100 . . . . .	.50-1.00 GPH	60°, 70°, 80° A/B
	EHASR . . . . .	.75-3.00 GPH	80°, 70°, 60°**
	MSR . . . . .	.75-2.75 GPH	80°, 70°, 60°**
	EG-1 . . . . .	.50-2.50 GPH	80°, 70°, 60°**
	HS . . . . .	.50-3.00 GPH	80°, 70°, 60°**
	EH & EHA . . . . .	2.25-6.00 GPH	80°, 70°, 60° B

\*Effective February, 1994. Subject to updating by burner manufacturers  
For models not listed, contact burner manufacturer

### WARNING

Improper modification to combustion units may create a fire hazard resulting in possible injury.

Contact the original equipment manufacturer before modifying the combustion unit.

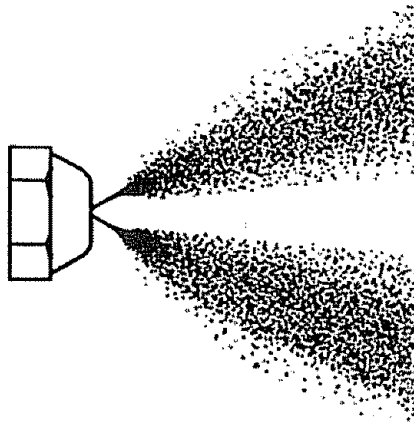
NOTE: Information on this chart is to be used as a general guide only.

## Our Nozzles Are Quality Assured

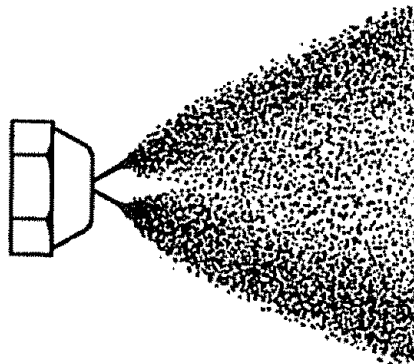
Delavan tests every oil burner nozzle before it leaves the factory to assure spray quality, correct spray angle and flow rate (gph). Spray quality includes checking for streaks, voids, off-center sprays and uniformity. Then each nozzle is packaged in a sturdy plastic vial to protect it against damage and contamination. These vials are color-coded to facilitate easy nozzle identification with large legible numbers stamped on each lid.

## Nozzle Types

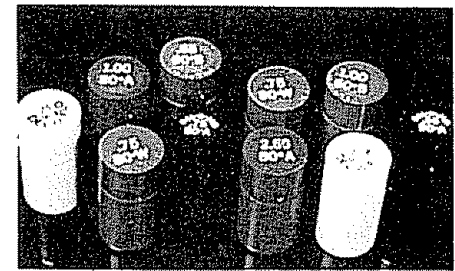
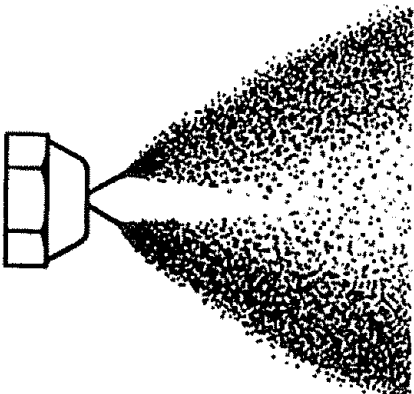
**Type A**  
Hollow Cone  
(Creates stable flame at low flows)



**Type B**  
Solid Cone  
(for larger burners & where air pattern is heavy in the center or for long fires)



**Type W**  
(Can be used in place of A or B Types in reducing specific problems)



## Nozzle Vials Color-Coded for Easy Identification

Nozzle Type	Vial Color
A	Red
Del-O-Flo A	Black
B	Royal Blue
Del-O-Flo B	Gold
W	Green
SS	Powder Blue
.579 MH	Orange
R-D	Charcoal
AR-D	Light Grey

## Hollow Cone Nozzle

Hollow cone nozzles can be used in burners with a hollow air pattern and also for use in small burners (those firing 1.00 GPH and under), regardless of air pattern. Hollow cone nozzles generally have more stable spray angles and patterns under adverse conditions than solid cone nozzles of the same flow rate. This is an important advantage in fractional gallonage nozzles where high viscosity fuel may cause a reduction in spray angle and an increase in droplet size.

Type A nozzles produce a spray which delivers fine droplets outside the periphery of the main spray cone. These fine droplets greatly enhance ignition and create a stable flame for use with flame retention burners.

Type A Del-O-Flo low flow nozzles (see page 4).

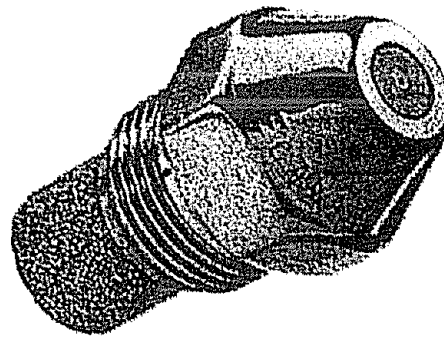
## Solid Cone Nozzle

Type B nozzles produce a spray which distributes droplets fairly uniformly throughout the complete pattern. This spray pattern becomes progressively more hollow at higher flow rates particularly above 8.00 GPH. These nozzles may be used in larger burners (those firing above 2.00 or 3.00 GPH) to provide smoother ignition. They can also be used where the air pattern of the burner is heavy in the center or where long fires are required.

Type B Del-O-Flo low flow nozzles (see page 4).

## Type W Nozzle

Type W nozzles produce a spray which is neither truly hollow nor solid. These nozzles frequently can be used in place of either solid or hollow cone nozzles between .40 GPH and 8.00 GPH, regardless of the burner's air pattern. The lower flow rates tend to be more hollow. Higher flow rates tend to be more solid.

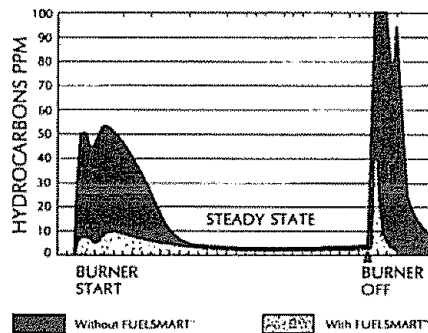


## "SMART" VALVE DESIGN REDUCES COMBUSTION POLLUTION FOR CLEANER HEATING

The Delavan FUELSMART™ Nozzle System has proven extremely effective in the efficient delivery of fuel oil in home heating systems. This unique, patented System from Delavan provides significant reductions in combustion pollutants for cleaner air. The FUELSMART™ Nozzle System includes a factory-installed, one-piece Valve Component, which reduces smoke and oil smell in the off cycle by preventing oil after-drip from the nozzle. Also, the reduction of smoke (carbon and soot) helps maintain burner set up efficiency longer and extend the time period between appliance clean ups. The Valve Component is also sold separately to replace the standard filter on a Delavan nozzle.

Installation is fast and easy; there's no need to increase pump supply pressure at installation because there's no pressure drop. Plus, FUELSMART™ Nozzle Systems maintain the same flow pattern and flow rating characteristics of comparably rated Delavan nozzles.

The dramatic benefits of the FUELSMART™ Nozzle System include greater heating efficiency, reduction - even elimination - of start-up rumble for cleaner air and safer home heating. Every Delavan home heating nozzle is 100% quality tested.



Hydrocarbon emissions are greatly reduced when the Delavan FUELSMART™ Nozzle System is used. Hydrocarbons are typically elevated at start-up and shutdown of the nozzle firing, as both of these graphs show. When the FUELSMART™ Nozzle System is installed, the dramatic benefits are seen in these charts which show comparative results with and without the FUELSMART™ valve. Results will vary by application.

### Operating Pressures

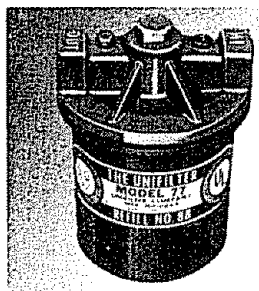
Valve Part #	Minimum Operating Pressures		
	Supply Pump PSI (BAR)	Valve Open PSI (BAR)	Valve Close PSI (BAR)
60030-1	135.0 (9,3)	125.0 (8,6)	65.0 (4,5)
60030-2	100.0 (7,0)	60.0 (4,1)	45.0 (3,1)

## TekTalk

Prior to its introduction, the FUELSMART™ nozzle system underwent approximately seven years of "on/off" cycle operation simulation in the laboratory with no failures. A total of 107,000 cycles were recorded. After the first 11,350 cycles, the cut-on pressures shifted upward an average of 3.0 PSI. The cut off pressure shifted up an average of 7.75 PSI. After this initial seating process, there was very little change of either "on" or "off" pressures. Very little change in nozzle flow was noted after 107,000 cycles, either. Additional testing has included pressure tests up to 500 PSI (34,5 BAR), as well as combustion tests and tests with various fuels such as kerosene, No 2, and heavier oils. Detailed test results are available from Delavan Technical Services.

# Fuel Oil Filters and Replacement Cartridges

## Oil Filters



**Model 8055** — Fuel filter for oil-fired heating appliances. Working pressure = 40 PSI. Firing rate = 10 GPH. UL listed. 3/8" NPT standard.  
**Model 99** — Same as above. Firing rate = 25 GPH. UL listed 3/8" NPT standard.

8055 (77)	12	26
99	12	43

## Replacement Cartridges



**Model 8057** — 10 micron wool felt. Center core bonded to prevent media migration.

**Model 101** — Same as above.

8057	(88-CR)	36	5
101		24	5

All above replacement cartridges may be combined for quantity pricing. Cartridges are individually packed with gaskets.

## Cross Reference Chart on Filter Cartridges

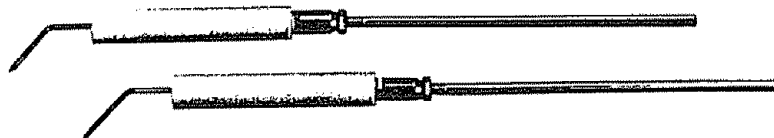
Unifilter Cartridge	Will Fit
8057	Unifilter 77 General 1A-25 & 1A-25A Autoflo F-300 Sid Harvey XF-25 Eddington S-254 Federal A-77 Sears 8055

Unifilter Cartridge	Will Fit
101	Unifilter 99 General 2A-700 & 2A-700A Autoflo F-400 Sid Harvey XF-1 Eddington S-252

TO ORDER THE ABOVE PARTS USE 64/970

## Universal Glazed Electrode Replacement Kits

Kit Nos. 5780, 5782; (51484U for AF II HLX and 51670U for AF II FBX)

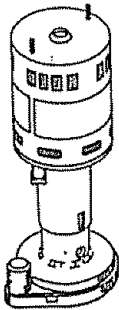


Two kits replace electrodes on any burner using F Series Heads. Kit No. 5780 is suitable for F Head flame retention air tube combinations up to 9"; Kit No. 5782 is for combinations 10-1/2" and longer. All kits contain basic electrode insulator assemblies, extension rods, hex head nuts, connectors and a convenient T-gauge if needed for precise adjustment. For AF II burners, specify Kit No. 51484U for HLX air tube combinations up to 9" and Kit. No. 51670U for FBX air tube combinations up to 9" usable lengths.

TO ORDER THE ABOVE PARTS USE 64/398

## UPRIGHT EVAPORATIVE COOLER PUMPS

**B**eckett is the leader in Upright, recirculating column pumps. We have the widest selection of Upright pumps available in the market today. From heavy duty cooler pumps to brass metal pumps to the only UL listed column pump on the market, these reliable, trouble free pumps are designed to be used in evaporative coolers, parts washers, laboratories, humidifiers and other water transfer applications.



### BRASS METAL PUMPS

These all metal pumps incorporate a heavy duty concentric motor that is thermally protected, has permanently lubricated bearings, stainless steel shaft, and are fan cooled. The pump features a corrosion resistant brass stand with a copper discharge spout and plastic impeller. Models are available with single or dual discharge spouts.

Specifications	Cooler Size CFM	H	Dia.	Out-let	Std. Pack		Volts	Amps	Watts	Gallons Per Hour			Shut Off Feet
					Qt.	Wt.				1'	3'	5'	
D30A	6,500	8"	4½"	¾"	6	16 lbs.	115	.8	60	250	200	150	9
D40A	10,000	8½"	4"	½"	6	17 lbs.	115	.9	70	350	275	200	9

### PLASTIC PUMPS

These economical evaporative cooler pumps incorporate offset motors that have permanently lubricated bearings, a corrosion resistant steel shaft, and are fan cooled. The plastic parts are made of high impact polystyrene.

Specifications	Cooler Size CFM	H	Dia.	Out-let	Std. Pack		Volts	Amps	Watts	Gallons Per Hour			Shut Off Feet
					Qt.	Wt.				1'	3'	5'	
XL5AT	5,000	8"	5"	½"	12	23 lbs.	115	.6	35	200	150	100	7
XL10A	10,000	8"	5"	½"	12	23 lbs.	115	1.0	75	325	250	175	10
XL10C	10,000	8"	5"	½"	12	23 lbs.	230	.50	75	325	250	200	10

TO ORDER THE ABOVE PARTS USE 64/926

## Split Phase

# Evaporative Cooler

## 6.3" Dia.

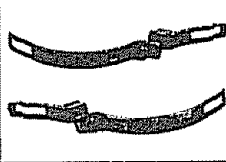
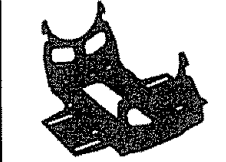
## Open Dripproof

### Features:

- Re-oilable bearings
- Class "B" insulation
- Zinc-phosphate stator studs and nuts
- Corrosion protected rotor core and actuator assembly
- CW rotation shaft end
- All copper windings
- Industry standard hub to hub dimension
- For resilient mount base kit 51
- For mounting clamps, kit 52







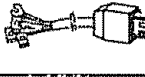
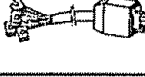



### Hub Mount

HP	RPM	Volt	NEMA Frame	Bearings	Protector	S.F.	F.L. Amps	Shaft Dim.	Emerson Number
<b>Single Speed</b>									
1/3	1725	115	56Z	Sleeve	Auto	1.0	6.0	1/2 x 1-9/16	EC6764
1/2	1725	115	56Z	Sleeve	Auto	1.0	7.9	1/2 x 1-9/16	EC6768
3/4	1725	115	56Z	Sleeve	Auto	1.0	11.0	1/2 x 1-9/16	EC6769
<b>2 Speed</b>									
1/3	1725/1140	115	56Z	Sleeve	Auto	1.0	6.4	1/2 x 1-9/16	6767
1/2	1725/1140	115	56Z	Sleeve	Auto	1.0	8.2	1/2 x 1-9/16	6765
3/4	1725/1140	115	56Z	Sleeve	Auto	1.0	10.9	1/2 x 1-9/16	6770

52	Motor Clamp	
51	Motor Base	

TO ORDER THE ABOVE PARTS USE 42/118














# COOLER PARTS & ACCESSORIES

STOCK NO	TITLE	PART	DESCRIPTION
082-0232	Rotary Switch Short Stem		5/8" shaft stem. 6 or 8 position switch for 2 or 3 speed coolers.
082-0233			2 3/8" shaft stem. 6 or 8 position switch for 2 or 3 speed coolers.
082-0212	Control Knob Short Stem		Flush fitting knob for switches with selection of face inserts.
082-0213			1/4" stem knob for switches with selection of face inserts.
082-0214	Control Knob Long Stem		5/8" stem knob for switches with selection of face inserts.
082-0244	Pump Receptacle 115v		115v 15 AMP receptacle for pump. 18 gauge 10" lead wires.
082-0245	Pump Receptacle 230v		230v 15 AMP receptacle for pump. 18 gauge 10" lead wires.
082-0243	Motor Receptacle		120v/240v 15 AMP receptacle for up to 1 Hp motor. 14 gauge 8" lead wires.
082-0240	Mini-Plug Motor Cord 115v		115v, 14 gauge, 4 wire, 36" long cord. Motor hook-up for MASTER COOL® unit.
082-0250	Mini-Plug Motor Cord 230v		230v, 16 gauge, 4 wire, 36" long cord. Motor hook-up for MASTER COOL® unit.
082-0247	Motor Cord 16 Gauge 34"		16 gauge/4 wire hook-up for up to 1/2 Hp 2 Sp motor. 34" cord.
082-0248	Motor Cord 14 Gauge 34"		14 gauge/4 wire hook-up for up to 3/4 Hp 2 Sp motor. 34" cord.
082-0242	Motor Cord 14 Gauge 84"		14 gauge/4 wire hook-up for up to 1 Hp 2 Sp motor. 84" cord. 115v.
082-0253	Motor Cord 14 Gauge 144"		14 gauge/4 wire hook-up for up to 1 Hp 2 Sp motor. 144" cord. 115v.

TO ORDER THE ABOVE PARTS USE 42/971

















# COOLER PARTS & ACCESSORIES

STOCK No	TITLE	PART	DESCRIPTION
<b>COOLER ACCESSORIES</b>			
082-0590	Pad Frame Corner Latch		Holds louver panel closed. Fits Tradewinds coolers 2 top and 2 bottom per package
082-0595	Pad Latch & Retainer		Pad frame latch for Tradewinds. Secures pad frame in place. 2 per package
082-0145	Overflow Drain		Prevents overfilling of coolers. Can be removed for cooler pan cleaning. Bulk is assembled. All plastic. 3" x 1/2" stand pipe.
082-0146	Brass Drain Fitting		Brass fitting only with rubber washer. 3/4" male hose thread with 1/2" female overflow pipe thread.
082-0147	Plastic Overflow Stand Pipe		3" x 1/2" plastic overflow stand pipe only
082-0148	Rubber Washer		Replacement washer for brass or plastic overflow drain 2 per package.
<b>ELECTRICAL COMPONENTS &amp; ACCESSORIES</b>			
082-0210	Cooler Wall Switch (English)		2 speed single gang, 6 position wall switch. Positions labeled in English. For 115v or 230v
082-0220	Cooler Wall Switch (Spanish)		2 speed, single gang, 6 position wall switch. Positions labeled in Spanish. For 115v or 230v.
082-0211	Cooler Wall Switch Mobile Home		2 speed, single gang 6 position rotary switch. 4 5/8" x 4 5/8" metal face plate for mobile homes. For 120v only.
082-0215	Cooler Thermostat		Line voltage thermostat for evaporative coolers. Boxed
082-0241	2 Speed Motor Relay		125v - Allows control of 2 speed motor with the use of one switch.
082-0217	Diffuser Grill Mobile Home		Ceiling mount grill. Will fit 4500 to 6500 CFM coolers. Made of durable plastic. Will not rust. Fits 13", 16", 18" or 20" duct.
082-0218	Diffuser Grill Regular		Ceiling mount grill. Will fit 4500 to 6500 CFM coolers. Made of durable plastic. Will not rust. NOTE: This grill does not have a punch-out for rotary switch. Fits 13", 16", 18" or 20" duct






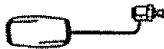

TO ORDER THE ABOVE PARTS USE 42/971

## COOLER PARTS & ACCESSORIES

Stock No	Title	Part	Description
082-0065	Float Valve 2 Pc Adjustable 1/4" All Bronze		Controls water level in cooler. Heavy duty with screw-lock adjustable arm. Will hook up to either plastic or copper 1/4" tubing. Float bulb: green in color.
082-0057	Float Valve Short Arm 1/4" All Brass		Controls water level in cooler. Heavy duty with screw-lock adjustable arm. Will hook up to either plastic or copper 1/4" tubing. Float bulb: tan in color. (Tradewinds)
082-0064	Float Valve All Brass 3/8"		Controls water level in cooler. Will hook up to either plastic or copper 3/8" tubing. Float bulb: red in color.
082-0137	Pipe Adapter 1/2"		1/2" male to 1/2" female pipe adapter with side tap to accept angle needle valve for cooler's water supply.
082-0138	Pipe Adapter 3/4"		3/4" male to 3/4" female pipe adapter with side tap to accept angle needle valve for cooler's water supply.
082-0135	Brass Sillcock		Garden hose thread. Fits directly on existing outdoor faucet. Has side tap to accept angle needle valve for cooler's water supply. Blue handle sillcock.
082-0136	Brass Sillcock		3/4" pipe thread. Fits directly to pipe. Has side tap to accept angle needle valve for cooler's water supply. Red handle sillcock.
<b>WATER DISTRIBUTION ACCESSORIES &amp; KITS</b>			
082-0553	Distribution Head 3 Way		Will hold 3 distribution tubes. For side draft coolers. Distribution head only. Attachment screw included.
082-0554	Distribution Head 4 Way Down		Will hold 4 distribution tubes. For down draft and some models of side draft coolers. Distribution head only. Attachment screw included.
082-0555	Distribution Head 4 Way Side		Will hold 4 distribution tubes. For side draft coolers. Distribution head only. Attachment screw included.
082-0556	Distribution Head 6 Way		Will hold 6 distribution tubes. For side draft coolers. Distribution head only. Attachment screw included.
082-0558	Distribution Head 8 Way		Will hold 8 distribution tubes. For down draft coolers. Distribution head only. Attachment screw included.
082-0008	Distribution Head Kit All Ways		Kit includes: 8 way head, 5 plugs, pump hose adapter, and M.E.K. glue to secure plugs in un-needed ports. Attachment screw included.
082-0503	Distribution Kit 3 Way		Kit includes: 3 way head, 3 distribution tubes, M.E.K. glue, and pump hose adapter. Attachment screw included.
082-0504	Distribution Kit 4 Way Down		Kit includes: 4 way head, 4 distribution tubes, M.E.K. glue, and pump hose adapter. Attachment screw included.
082-0544	Distribution Kit 4 Way Side		Kit includes: 4 way head, 4 distribution tubes, M.E.K. glue, and pump hose adapter. Attachment screw included.

TO ORDER THE ABOVE PARTS USE 42/971

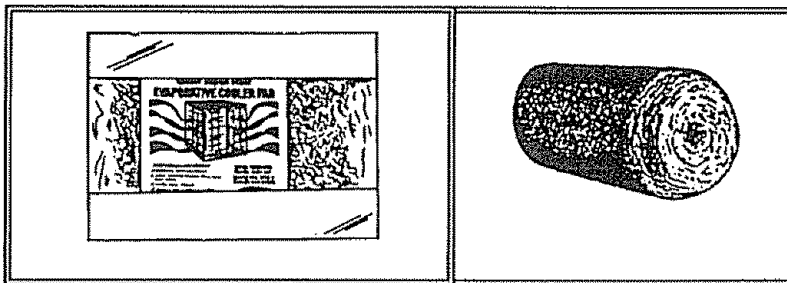
# COOLER PARTS & ACCESSORIES

STOCK No.	TITLE	PART	DESCRIPTION
<b>BRASS FITTINGS</b>			
082-0001	Plastic Tube Adapter		Insert for connecting 1/4" plastic tubing to any 1/4" brass fitting 2 per package
082-8001			
082-0054	Compression Tee Speedfit®		1/4" x 1/4" x 1/4". Will connect two coolers to one water source or any three 1/4" copper or plastic water lines.
082-0068	Male Coupling		For connecting 1/4" copper or plastic tubing to a tapped sillcock or pipe adapter
082-8068			
082-0052	Compression Coupling Speedfit®		For connecting 1/4" copper or plastic tubing to a tapped sillcock or pipe adapter
082-0059	Male Plastic Coupling		For connecting 1/4" plastic tubing to plastic tubing
082-0066	Float Valve 1/4"		Controls water level in cooler. Will hook up to either plastic or copper 1/4" tubing. Float bulb: white in color
082-0067	Float Valve All Brass 1/4"		Controls water level in cooler. Will hook up to either plastic or copper 1/4" tubing. Float bulb: blue in color.

# ASPEN COOLER PADS

INDIVIDUALLY PACKAGED  
COMPRESSED PADS

EXCELSIOR ROLL



STOCK No.	★	PAD No.	PAD SIZE
029-0001	★	1	28" x 34"
029-0003	★	3	24" x 30"
029-0005	★	5	24" x 36"
029-0008	★	8	30" x 36"
029-0012	★	12	28" x 32"
029-0030	★	30	32" x 40"
029-0046	★	46	29" x 29"

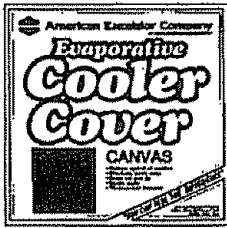
*Handwritten notes:* 24, 24, 24, 12, 24, 12, 24

STOCK No.	ROLL SIZE
031-0010	20" x 24'
031-0020	24" x 24'
031-0030	28" x 24'
031-0040	30" x 24'
031-0050	36" x 24'
031-0090	48" x 24'



# EVAPORATIVE COOLER COVERS

- Complete line for residential and commercial evaporative coolers.
- Our canvas fabric is of the highest quality and is treated with Canvac for a 13 oz. per square yard finish weight.
- Our packaging is attractive and clearly indicates the size and make of the cover. In addition to top quality merchandise, we will also supply Point of Purchase display aids that tell your customer which size cover will fit his/her cooler.
- All covers, turbines and duct insulators are UPC coded.
- Special size orders are no problem. We offer short lead times on sizes not listed below. Simply contact your Customer Representative with dimensions for pricing. Your order can be shipped directly to you.
- "D" is for Down Draft Coolers; "S" is for Side Draft Coolers.



COOLER COVERS



TURBINE COVERS



UNIVERSAL DUCT INSULATOR

CANVAS COOLER COVERS					
Stock No.	Cover No.	WIDTH	DEPTH	HEIGHT	MANUFACTURER AND SIZE
079-0070	C-4-S	34"	28"	40"	Phoenix Mfg. 4400VV - Champlon 4200VV
079-0090	C-5-S	34"	34"	40"	Champion 4000 & 4500
079-0100	C-5-D	34"	34"	40"	Champlon 4000 & 4500
079-0020	C-13-S	28"	28"	34"	Phoenix Mfg. 3300 - Champlon 3000
079-0030	C-13-D	28"	28"	34"	Phoenix Mfg. 3300 - Champlon 3000
079-0230	C-46-D	41"	41"	29"	Trimcool 40, 45, & 5500 - Tradewinds 41, 46 & 5600
079-0140	C-54-S	37"	37"	45"	"older" McGraw Edison 5500 & 6500
079-0150	C-54-D	37"	37"	45"	"older" McGraw Edison 5500 & 6500
079-0120	C-55-S	37"	37"	42"	Arvin 5500 & 6500
079-0130	C-55-D	37"	37"	42"	Arvin 5500 & 6500
079-0240	C-56-D	45"	45"	36"	Tradewinds 5600 & 6600
079-0180	C-61-S	34"	34"	36"	Arvin 4000 & 4500 - Phoenix Mfg. 4400 & 4800
079-0080	C-61-D	34"	34"	36"	Arvin 4000 & 4500 - Phoenix Mfg. 4400 & 4800
079-0190	C-70-S	38"	38"	40"	Phoenix Mfg. 5500 & 6500
079-0200	C-70-D	38"	38"	40"	Phoenix Mfg. 5500 & 6500
079-0210	C-80-S	40"	40"	43"	Champion 5500 & 6500
079-0220	C-80-D	40"	40"	43"	Champion 5500 & 6500
079-0250	C-82-S	39"	39"	31"	Champlon 4800
079-0260	C-82-D	39"	39"	31"	Champlon 4800
079-0270	C-84-S	43"	43"	33"	AdobeAir/Master Cool® 5500 & 6500
079-0280	C-84-D	43"	43"	33"	AdobeAir/Master Cool® 5500 & 6500

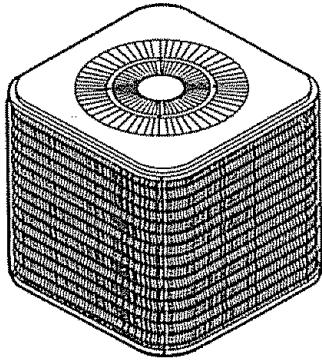
TO ORDER THE ABOVE PARTS USE 42/971

## EVAPORATIVE COOLER COVERS

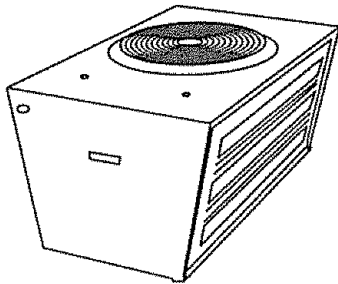
STOCK No.	COVER No.	WIDTH	DEPTH	HEIGHT	MANUFACTURER AND SIZE
079-0281	C-90-S	40"	40"	46"	Old Champion 5500 & 6500
079-0282	C-90-D	40"	40"	46"	Old Champion 5500 & 6500
079-0283	C-283-D	34"	34"	29"	Low Profile Champion 3000
079-0284	C-284-D	41"	41"	38"	Low Profile Champion 5500 & 6500
079-0285	C-285-D	42"	45"	28"	Ultra®/Master®/Aero Cool® 4000 & 4500
079-0286	C-286-D	42"	48"	35"	Ultra® / Master® / Aero Cool® 4000 & 4500
079-0295	C-143-S	50"	50"	54"	Comm: Arvin/McGraw/Champion/Phx 10,500 & 12,500
079-0300	C-143-D	50"	50"	54"	Comm: Arvin/McGraw/Champion/Phx 10,500 & 12,500
079-0305	C-213-S	62"	62"	62"	Comm: Arvin/McGraw/Champion/Phx 14,000 & 21,000
079-0310	C-213-D	62"	62"	62"	Comm: Arvin/McGraw/Champion/Phx 14,000 & 21,000
079-0314	C-830-S	42"	42"	54"	Comm: Arvin/McGraw/Champion/Phx 7,500 & 8,500
079-0315	C-830-D	42"	42"	54"	Comm: Arvin/McGraw/Champion/Phx 7,500 & 8,500
079-0005	C-505-D	Round 32" Dia.		26"	Aireze 3,000 - Cylindrical Cooler
079-0010	C-510-D	Round 40" Dia.		34"	Aireze 4,000 & 4,800 - Cylindrical Cooler
079-0015	C-515-D	Round 45" Dia.		32"	Aireze 5,500 & 6,500 - Cylindrical Cooler
079-0370	UD 1	21"	21"	6"	Universal Duct Insulator (pillow)

TO ORDER THE ABOVE PARTS USE 42/971

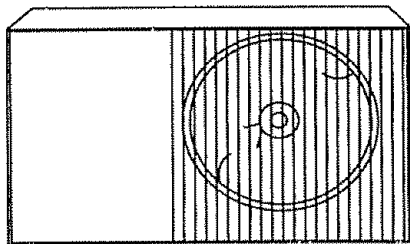
**SEARS AIR CONDITIONER COVERS**



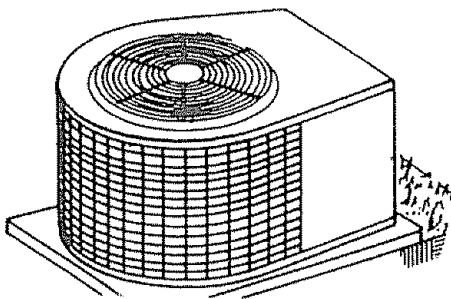
Style A



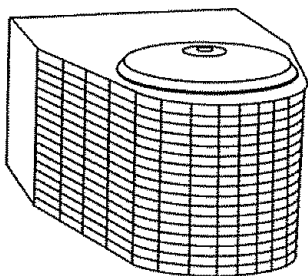
Style B



Style C



Style D



Style E

**STYLE TYPE**

**CONDENSING UNITS**

A	81900	30"L x 30"W x 30"H
A	81901	34"l X 36"w X 30"H
A	81902	34"L X 36"W X 40"H
C	81903	19-1/8"L X 42-1/2"W X 23"H
C	81904	21-3/4"L X 50"W X 28-1/4"H
A	81906	23-1/2"L X 23-1/2"W X 27-1/2"H
E	81912	54"L X 42"W X 27"H
D	81916	37-1/8"L X 29"W X 19-1/2H
D	81917	37-1/8"L X 29"W X 29-1/2H
B	81918	33-1/2"L X 54"w X 26-3/4"H

(A) Height	(B) Width	(C) Outside	Catalog No.
to 13	to 20	to 14 3/4	92060
to 19	to 27	to 24	92020
to 19	to 28	to 30	92040
to 21	to 14 3/4	to 21	9109

TO ORDER THE ABOVE PARTS USE 42/042