



# installation instructions

## UNIT HEATERS

**342 & 342S**  
 Series A  
 Sizes 30  
 thru 400

Cancels: 39342D1 39342DP13  
 11/174

Before proceeding to install Models 342 and 342S Unit Heaters, refer to Bryant form No. 39003D1 "Procedures for Gas Appliances" (packaged with the equipment) for information concerning combustion, venting, piping, and other standard installation practices. The current edition of the American National Standard "Installation of Gas Appliances and Gas Piping", Z21.30, takes precedence over all other reference publications pertinent to this installation instruction. Both models are shipped factory-assembled. Installation comprises the following:



- \* I. Inspection
- \* II. Location and Suspension
- \* III. Gas Piping
- IV. Wiring
- \* V. Venting
- VI. Startup and Adjustment
- VII. Service and Maintenance

\*To perform these sections (or installation steps), refer to the appropriate sections of Bryant form No. 39003D1 (packaged with this equipment).

### SPECIAL AIRPLANE HANGAR AND GARAGE APPLICATION PRECAUTIONS

NOTE: Refer to NFPA No. 406-1966, "Standard on Aircraft Hangars," and NFPA No. 88-1962, "Standard for Garages."

1. A clearance of 10 feet to the bottom of the heater from the top of a wing or fuselage or aircraft likely to be housed in the hangar must be maintained.
2. A minimum clearance of 8 feet from the floor to the bottom of the heater in other sections of the aircraft hangar, such as offices and shops which communicate with areas used for servicing or storage, must be maintained.
3. The heater must also be so located that it is protected from damage by aircraft or other objects such as cranes or movable scaffoldings. In addition, it must be located to be accessible for servicing and adjustment.

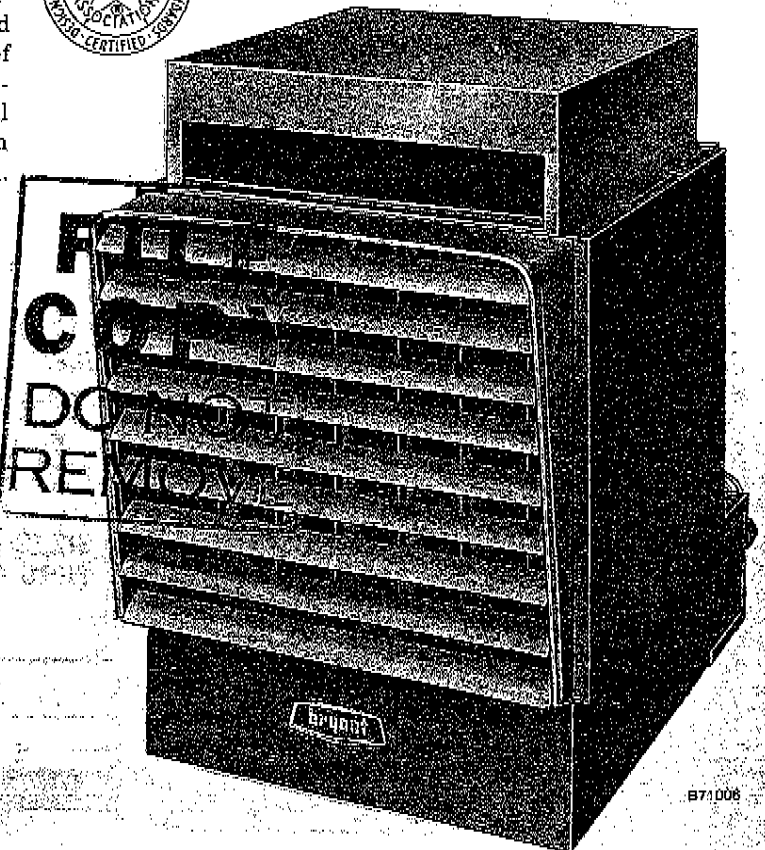


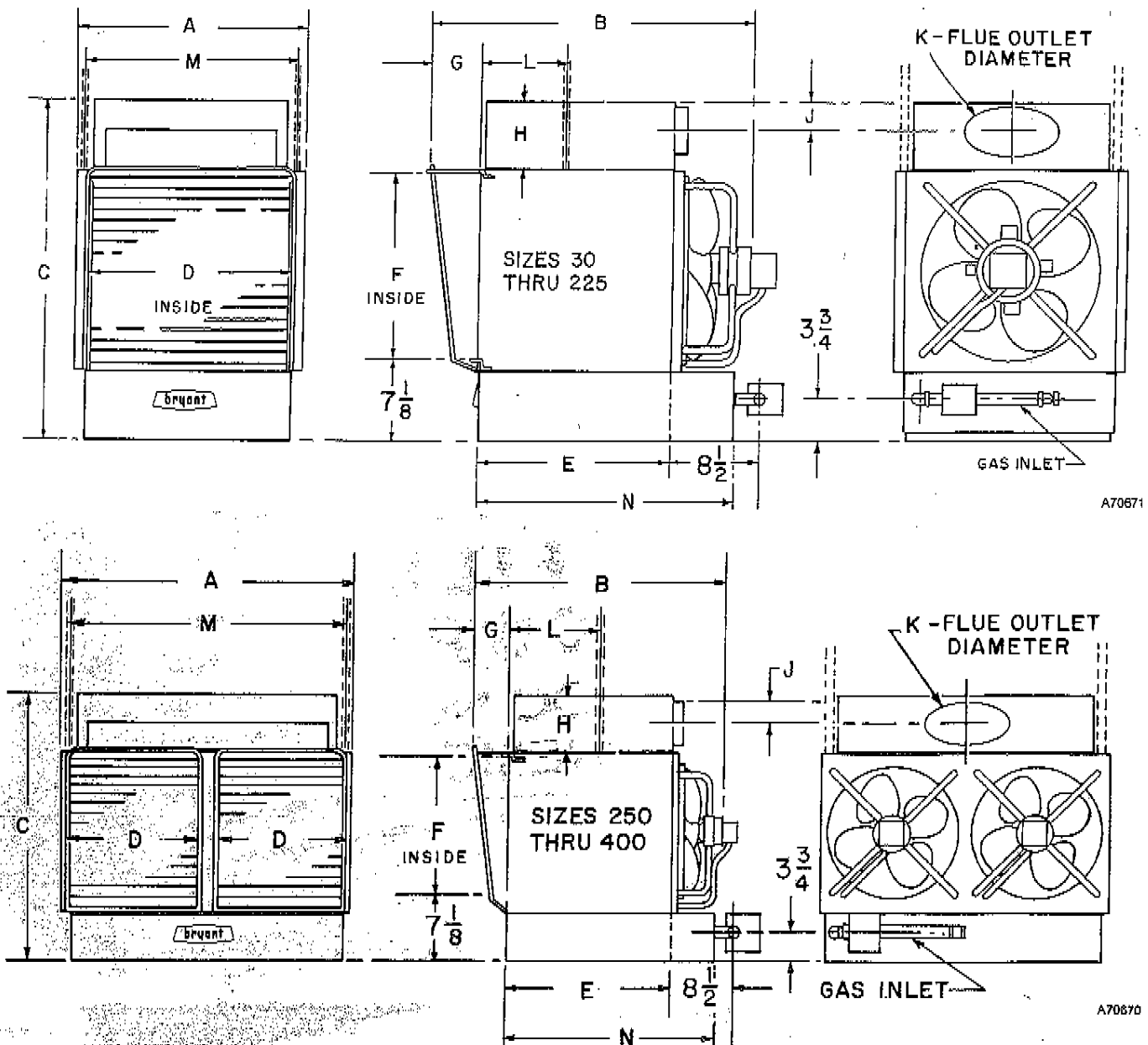
Figure 1

4. A clearance of 6 inches from combustible material must be maintained from the top and the sides of the heater.
5. A service clearance of 18 inches at the rear and 12 inches from any obstruction at the bottom of the heater must be maintained.

TABLE I—CONTROL OPTIONS<sup>1</sup>

COMPONENT	PROPANE GAS		NATURAL	
	D2	D4	D4	D5
Bryant Auto Pilot	—	—	X	X
Bryant Gas Valve*	X	—	X	X
Gas Pressure Regulator*	—	—	X	X
Transformer	X	—	X	X
100% Shutoff	X	—	—	X
Thermocouple Pilot	X	—	—	X
Pilot Relay or Pilotstat	X	—	—	X

<sup>1</sup>All three options available on 342 & 342S are available with D2 propane and D5 natural gas only.  
 \*A-643 Bryant Gas Valve with integral gas pressure regulator is used on D4 and D5 for sizes 30 thru 150; A-641 Gas Valve without regulator is used on D2 for all sizes. A-641 with separate gas pressure regulator is used on D4 and D5 for sizes 175 thru 400.



NOTE: One fan used on size 250. Two fans on sizes 300 & 400.

Figure 2—Dimensional Drawing

TABLE II—DIMENSIONS IN INCHES

Size	A	B	C	D	E	F	G	H	J	K	L	M	N	Gas Inlet	
														Nat	Prop.
30	11-1/2	25-7/8	23-5/8	10-1/16	15	12-1/16	3-3/4	4-5/16	1-7/8	3	10-1/8	10	22-3/32	1/2	1/2
50	16-3/4	25-7/8	23-5/8	15-5/16	15	12-1/16	3-3/4	4-5/16	2-1/8	4	10-1/8	15-1/4	22-3/32	1/2	1/2
75	15-5/8	31-1/16	30-1/8	14-3/16	18-7/8	18-9/16	4-1/2	4-5/16	2-1/8	5	12-1/8	14-1/8	25-31/32	1/2	1/2
100	18-5/8	31-1/16	30-1/8	17-3/16	18-7/8	18-9/16	4-1/2	4-15/16	2-1/8	5	12-1/8	17-1/8	25-31/32	1/2	1/2
125	21-5/8	31-1/16	31-5/8	20-3/16	18-7/8	18-9/16	4-1/2	5-13/16	2-11/16	6	12-1/8	20-1/8	25-31/32	1/2	1/2
150	24-5/8	31-1/16	31-5/8	23-3/16	18-7/8	18-9/16	4-1/2	5-13/16	2-7/8	7	12-1/8	23-1/8	25-31/32	1/2	1/2
175	21-5/8	37-1/4	34-5/8	20-3/16	23-7/8	21-9/16	4-15/16	5-13/16	2-7/8	7	14-1/4	20-1/8	30-31/32	1/2	1/2
200	24-5/8	37-1/4	34-5/8	23-3/16	23-7/8	21-9/16	4-15/16	5-13/16	2-7/8	8	14-1/4	23-1/8	30-31/32	1/2	1/2
225	27-5/8	37-1/4	34-5/8	26-3/16	23-7/8	21-9/16	4-15/16	5-13/16	2-7/8	8	14-1/4	26-1/8	30-31/32	1/2	1/2
250	33-5/8	37-1/4	34-5/8	14-3/16	23-7/8	21-9/16	4-15/16	5-13/16	2-7/8	8	14-1/4	32-1/8	30-31/32	3/4	3/4
300	39-5/8	36-1/2	36-5/8	17-3/16	23-7/8	21-9/16	4-15/16	7-13/16	3-7/8	9	14-1/4	38-1/8	30-31/32	3/4	3/4
400	51-5/8	38	38	23-3/16	23-7/8	21-9/16	5-7/16	9-5/16	4-5/8	10	14-1/4	50-1/8	30-31/32	3/4	3/4

TABLE III—RATINGS AND SPECIFICATIONS—MODEL 342

Size	*Ratings Btuh		Equivalent Sq Ft of Steam Radiation	Temp Rise °F	Total Air Delivery CFM	Velocity ft/min	** Effective Throw & Mounting Height										Fan RPM	Nominal Motor HP	Approx Shipping Weight	
							Distance from Floor to Top of Heater													
	Input	Output					8'	10'	12'	14'	16'	18'	20'	22'	24'	26'				28'
30	30,000	24,000	100	60	360	535	15	13									1500	1/125	65	
50	50,000	40,000	167	60	600	585	30	28	25	22							1500	1/40	84	
75	75,000	60,000	250	70	900	615	35	33	30	28							1500	1/30	117	
100	100,000	80,000	333	60	1200	675	45	43	40	38	35	33	30				1050	1/15	139	
125	125,000	100,000	417	60	1500	720	55	53	50	48	45	43	40	38			1050	1/10	164	
150	150,000	120,000	500	80	1800	750	60	58	55	53	50	48	45	43	40		1050	1/10	180	
175	175,000	140,000	583	60	2100	850	65	63	60	58	55	53	50	48	45		1050	1/5	212	
200	200,000	160,000	667	60	2400	865	70	68	65	63	60	58	55	53	50		1050	1/5	235	
225	225,000	180,000	750	60	2700	860	70	68	65	63	60	58	55	53	50		1050	1/5	258	
250	250,000	200,000	833	60	3000	850	85	83	80	78	75	73	70	68	65		1025	1/5	317	
300	300,000	240,000	1000	60	3600	900	75	73	70	68	65	63	60	58	55	53	50	1050	(2) 1/10	378
400	400,000	320,000	1334	60	4800	1000	90	88	85	83	80	78	75	73	70	68	65	1025	(2) 1/5	560

\*The above ratings are approved for altitudes to 2000 ft. For elevations above 2000 ft, reduce ratings 4% for each 1000 ft above sea level.

\*\*Effective throw as shown is the horizontal distance in feet that the heated airstream travels from the outlet of the unit heater with louvers positioned for maximum throw with air reaching the floor. Spread or width of the air pattern is approximately 20% of the maximum throw. For additional spread, use vertical louvers. Above data are test results.

#### Specific Location and Suspension Precautions

For general location and suspension information, refer to Section II of Bryant form No. 39008D1. In addition, the following precautions should be observed when selecting a mounting site.

1. Direct heated airstream toward area having greatest heat loss.
2. For multiple installations, locate heaters so that each will warm a specific area. Arrange so that the overall air pattern results in a continuous circular flow of warm air throughout the space.
3. Do not locate the heater in areas where combustion air is limited.
4. If located in spaces equipped with exhaust fans, provide sufficient makeup air.
5. Two 1/2-inch pipe tapings are provided in the top casing for use in suspending the heater. Use pipe unions to join the unit heater to the ceiling hangar.
6. Do not lift the heater by the motor mount, manifold, or louvers. Use a rope sling whenever this is possible.

#### IV. WIRING.

Make all electrical connections in accordance with the National Electric Code and any local codes that may apply. The unit must be grounded electrically in accordance with the National Electric Code and local codes governing such installations. A permanent and uninterrupted or unbroken ground is essential to minimizing personal injury if an electrical fault should occur.

If aluminum conductors are to be used, the wire size selected must have a current capacity not less than that of the copper wire specified and must not create a voltage drop between the service panel and the unit in excess of 2% of the unit rated voltage. As a minimum, aluminum wire must be treated to prevent oxidation.

With electric power turned off, recheck all electrical connections (both factory and field) for tightness. Be sure to check power supply connections, especially if aluminum conductors are used.

The unit heater is completely wired at the factory and is

ready for connections to a 115/60/1 power source. See wiring diagram.

The heat anticipator on the thermostat should be set at 0.8 amps.

#### VI. STARTUP AND ADJUSTMENT

NOTE: Remove burner hold-down shipping bracket.

1. Start unit using procedure outlined on lighting instruction plate attached to heater.
2. Adjust pilot flame. Adjusting screw under screw cap on pilot valve is used for this purpose.

For D4 controls, flame should be long enough for good impingement on metal element of Bryant automatic pilot. For D5 and D2 controls, flame should surround thermocouple element of pilot and extend downward to include 3/8 to 1/2 inch of thermocouple. Flame should never come in contact with any part of thermocouple lead wire.

To adjust pilot flame on units equipped with Model A-643 valve, adjustment screw is located in pilot outlet portion of valve body. Remove capscrew, make necessary adjustment, and replace capscrew.

3. Check input. Input should be checked at meter to make sure that it corresponds with input shown on rating plate attached to unit. See Bryant form No. 39003D1 for method.
4. Final Checkout. Move thermostat setting above and below room temperature several times, pausing between each "on" and "off" cycle to make sure that main burners ignite properly.

Attach low-voltage test light to electrical leads of gas valve. With thermostat set above room temperature, close manual pilot valve. If light goes out when pilot cools, pilot is functioning properly. Test light should go out within 45 seconds after pilot gas supply is turned off.

Check operation of temperature limit control. Do this by allowing burners to operate while fan is not running to see that limit switch opens.

Check all connections in gas piping for leaks. Use soap-and-water solution.

**WARNING:** Never use a flame to check for leaks.

**VII. SERVICE AND MAINTENANCE**

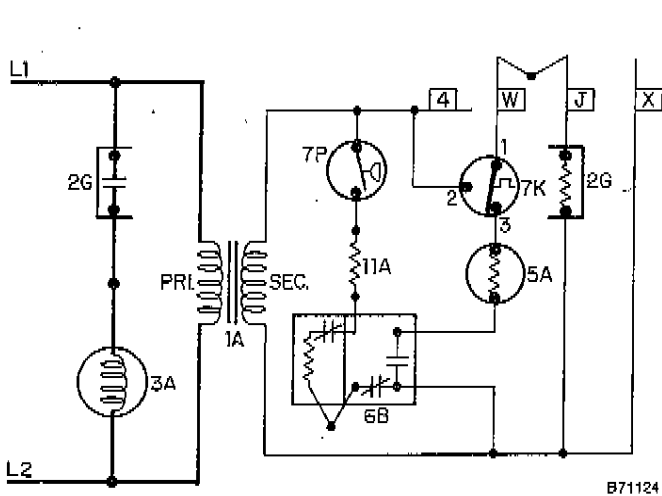
1. Pilot Orifice - is located in bottom fitting of pilot and is readily accessible for inspection and cleaning.
2. Main Burner Orifices - Orifice is readily unscrewed from manifold after burner is removed.
3. Removing Main Burners - Lift rear of burner and push it away from manifold enough to disengage orifice spud from mixer shield. Then pull down and out of heater. End of burner away from manifold seats in slotted burner support. It is necessary to lift burner out of this slot before attempting to push burner back. See Figure 12.

**NOTE:** Disconnect the pilot tubing and wires to remove the burner that holds the pilot. However, it is not necessary to remove the pilot itself from the burner.

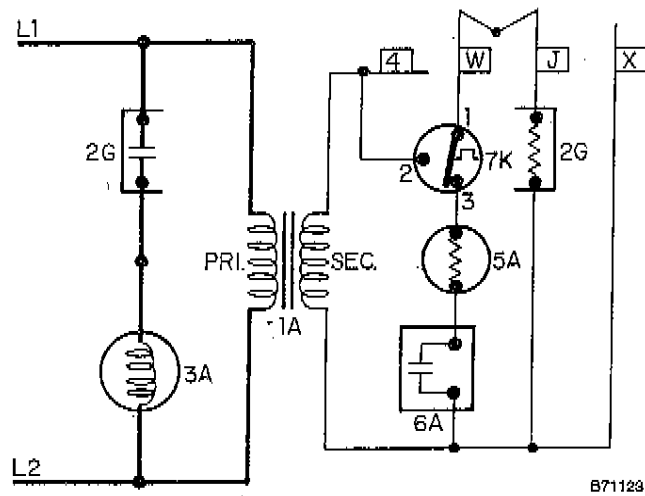
4. Cleaning - Heat exchanger tubes should be inspected at regular intervals and cleaned when necessary.
  - a. Shut off gas and electricity. Heater should be cool.
  - b. Loosen two knurled-head screws to release rear access door. Door will hang down freely.
  - c. Disconnect pilot tube and wires.
  - d. Remove main burners and pilot.
  - e. Use stiff brush to scrub heat exchanger tubes. Remove all loose scale and any soot that may have collected.
  - f. Replace burners and pilot. Reconnect pilot tube and wires.
  - g. Unit is now ready for relighting.
5. Oiling - Oil fan motor (s) yearly, or more often, with enough drops of SAE No. 20 nondetergent oil to overflow oil cup; or every 2 years, or more often, with Anderol L-465\* obtainable in tubes from your dealer. (Bryant P/N 70291DØ1). See FTB143.

\*Lehigh Chemical Company

**SIZES 30 THRU 150 UNIT HEATER WIRING DIAGRAMS**



B71124



B71123

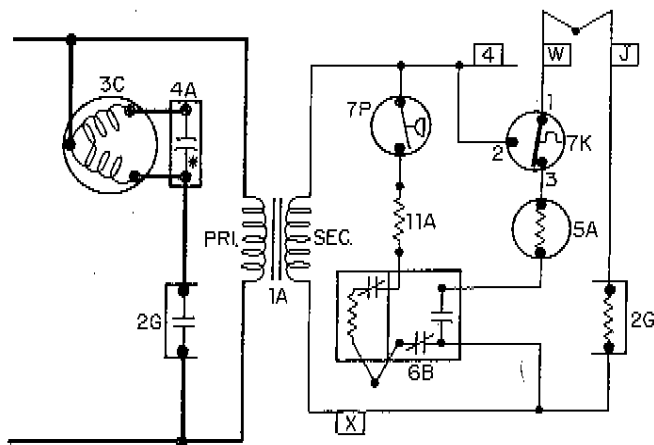
Figure 3—With 733 Pilot Installed

Figure 4—With 732 Pilot Installed

**LEGEND**

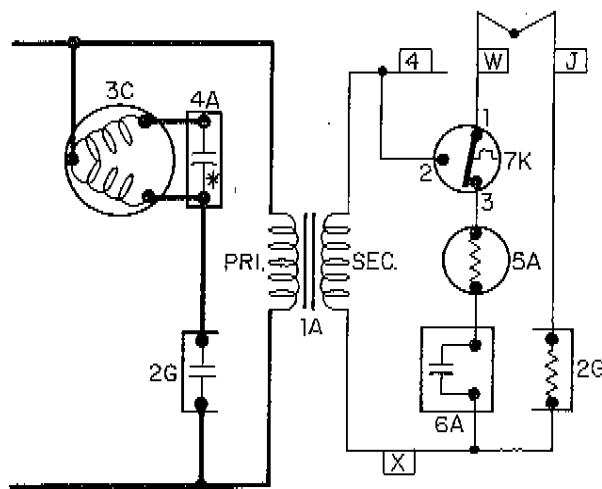
- |     |                     |     |                     |
|-----|---------------------|-----|---------------------|
| 1A  | Transformer         | 5B  | Pilot with Auto.    |
| 2G  | Fan Relay—N.O.      |     | Ignition Coil       |
| 3A  | Fan Motor           | 7K  | Temp Limit Control— |
| 3A1 | Fan Motor           |     | SPDT—N.C.           |
| 3A2 | Fan Motor           | 7P  | Pressure Switch—    |
| 3C  | Fan Motor           |     | SPST—N.O.           |
| 5A  | Automatic Gas Valve | 11A | Resistor            |
| 6A  | Pilot Switch—No.O.  |     |                     |
|     | (None on Propane)   |     |                     |
- If wires are replaced, use 18 AWG wire with 150° C., 3/64-inch thick insulation.

**SIZES 175 THRU 250 UNIT HEATER WIRING DIAGRAMS**



A74282

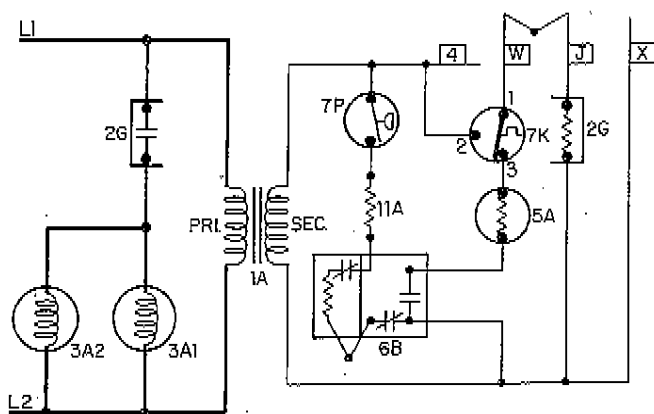
**Figure 5—With 733 Pilot Installed**



A74281

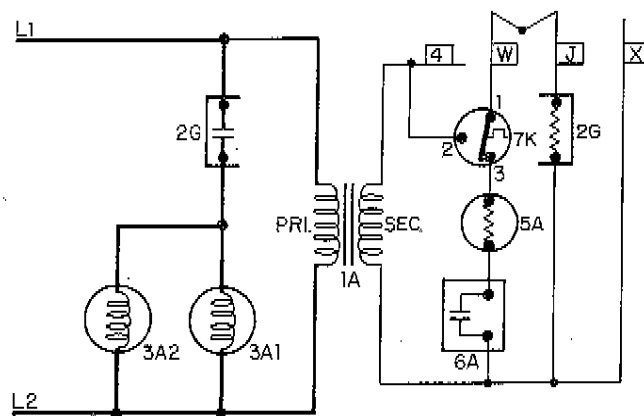
**Figure 6—With 732 Pilot Installed**

**SIZE 300 UNIT HEATER WIRING DIAGRAMS**



B71126

**Figure 7—With 733 Pilot Installed**



B71125

**Figure 8—With 732 Pilot Installed**

**LEGEND**

1A	Transformer	6B	Pilot with Auto.
2G	Fan Relay—N.O.		Ignition Coil
3A	Fan Motor	7K	Temp Limit Control—
3A1	Fan Motor		SPDT—N.C.
3A2	Fan Motor	7P	Pressure Switch—
3C	Fan Motor		SPST—N.O.
5A	Automatic Gas Valve	11A	Resistor
6A	Pilot Switch—N.O.	If wires are replaced, use 18 AWG wire with	
	(None on Propane)	150° C., 3/64-inch thick insulation.	

SIZE 400 UNIT HEATER WIRING DIAGRAMS

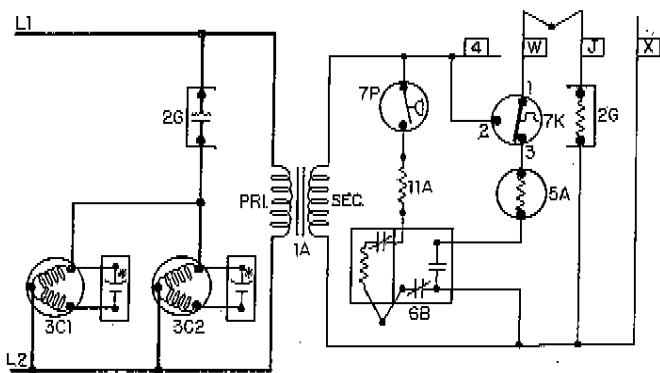


Figure 9—With 733 Pilot Installed

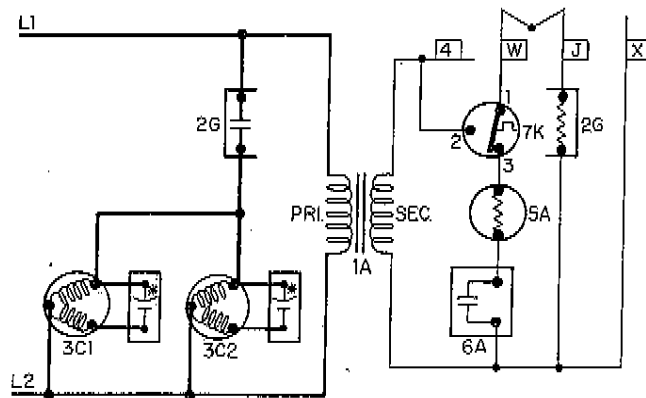


Figure 10—With 732 Pilot Installed

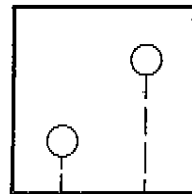
LEGEND

- 1A Transformer
- 2G Fan Relay—N.O.
- 3C1 Fan Motor
- 3C2 Fan Motor
- 5A Automatic Gas Valve
- 6A Pilot Switch—N.O.  
(None on Propane)
- 6B Pilot with Auto.  
Ignition Coil

- 7K Temp Limit Control—  
SPDT—N.C.
- 7P Pressure Switch—  
SPST—N.O.
- 11A Resistor

If wires are replaced, use 18 AWG wire with 160° C., 3/64-inch thick insulation.

\*THERMOSTAT  
P/N 34427D74



TO THERMOSTAT  
FLAGGED CONNECTIONS

4 & W

←

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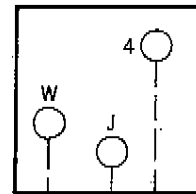
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\*THERMOSTAT  
P/N 34427D74  
W/34427D36  
SUBBASE



\* SET HEAT  
ANTICIPATOR  
AT 0.8 AMPS

SEPARATE WIRES MARKED W & J BEFORE CONNECTION TO THERMOSTAT WHEN SUBBASE P/N 24427D36 IS USED FOR SUMMER FAN.

Figure 11—Thermostat Field Wiring, Models 342 & 342S Unit Heaters

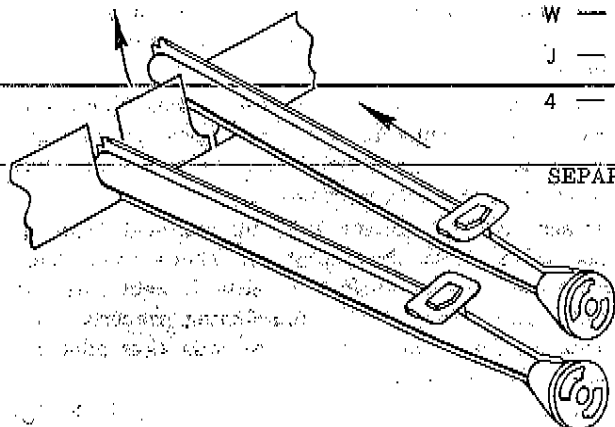


Figure 12—Removing Burner

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