



WIRING DIAGRAMS model VG, vertical gas-fired unit heaters

DIAGRAM SELECTION

Diagrams are provided for both single- and three-phase circuits, and are readily identified in the Selection Table on the following page. The Selection Table enables easy selection of the correct wiring diagram after the electrical components of the unit heater have been determined. The control codes are listed to aid in locating the correct diagram.

DIAGRAM INTERCHANGEABILITY

The following Model VG gas-fired unit heater wiring diagrams are for either 115-volt, 60 Hertz, single-phase power, or for 460-volt, 60 Hertz, three-phase electrical service.

The 115V / 60Hz / 1 ϕ diagrams may also be utilized for 230V / 60Hz / 1 ϕ by substituting 230-volt components for the 115-volt shown.

The 460V / 60Hz / 3 ϕ diagrams may be converted to 208V / 60V / 3 ϕ by substituting a 208V / 115V transformer for the 460V / 115V model shown.

The 460V / 60Hz / 3 ϕ diagrams may be modified to 230 / 60V / 3 ϕ by reconnecting the primary of the 460V / 115V transformer as shown or by substituting 230-volt components for the 115-volt shown and supplying 230V / 60Hz / 1 ϕ power to the control system and accessories.

NOTE: As indicated in every diagram, all wiring must comply with the National Electrical Code and all local codes. All components must agree with their respective power source.

POWER REQUIREMENTS — VERTICAL GAS-FIRED UNIT HEATERS

Model	Full Load Amperes			
	115V/60/1	230V/60/1	230/60/3	460/60/3
VG-300	7.8	3.9	2.2	1.1
VG-450	—	—	3.8	1.9
VG-600	—	—	4.4	2.2

ABBREVIATIONS AND SYMBOLS

To facilitate interpretation and enable simplification the abbreviations and symbols have been selected as recommended by ANSI (American National Standards Institute) and NEMA (National Electrical Manufacturers Association) standards.

XFMR or TR	Transformer
V	Volts
Hz	Cycle or Hertz
ϕ	Phase
LC	Limit Control
THERM or TH	Thermostat
MV	Main Valve
PV	Pilot Valve
SO	Shut Off
RC	Relay Contact or Coil
G	Ground
H	Hot
SW	Switch
EPS	Electric Pilot Switch
Hi	High
Lo	Low
C	Common

"J" Box	Junction Box
H1, H2, etc.	Transformer Primary Terminals
SUM	Summer Contact (Summer-Winter Switch)
WIN	Winter Contact (Summer-Winter Switch)
S-W	Summer-Winter Switch
O.L.C.	Overload Contact
C.S.	Power Venter Centrifugal Switch
SPDT	Single-Pole Double-Throw Switch
VA	Volt Ampere
W	Watts

WIRE COLOR CODING

BK	Black
BU	Blue
R	Red
W	White
Y	Yellow
X1, X2, etc.	Transformer Secondary Terminals
L1, L2, etc.	Electric Load Terminals
T1, T2, etc.	Starter or Motor Terminals

WIRING DIAGRAM SELECTION

A) Field and Submittal Wiring Diagram Selection

The wiring which must be done in the field does not change when the brand of the controls furnished on the unit heater changes. Selection of the correct wiring diagram is possible by following these steps:

- 1) Determine unit heater model and size.
- 2) Select desired control code option from Table 1.
- 3) Locate unit heater model and size in the Page Location Index (and match with the correct control code number), and determine the correct page number for single or three-phase control. The single phase diagrams are shown in the unshaded areas of the page location index and the three-phase wiring diagrams are shown in the shaded areas.
- 4) Wiring diagrams for unit heaters with accessories have the same page number as the diagram for the appropriate unit heater control code, but are suffixed according to Table 2.

B) Service and Trouble Shooting

Because internal or factory wiring may vary depending upon the unit heater controls manufacturer, it is required that the wiring diagrams be selected by using the unit heater model number, size, control code and *series identity number* when servicing or trouble shooting unit heater control systems. The wiring diagrams in this bulletin are for model VG unit heaters manufactured after January 1, 1977 and the series identity number is the 5th thru 7th digits of the unit heater serial number.

EXAMPLE: Serial No. 02021010377 has a series identity number of 101.

To select the correct wiring diagram for servicing or trouble-shooting follow these steps:

- 1) Determine the unit heater model and size from unit serial plate.
- 2) Determine the *control code* as shown in the box marked Control Code which follows the unit heater model number and size on the serial plate.
- 3) Determine the *series identity number* from the unit serial number.
- 4) Select the Page Location Index which corresponds with the series identity number of the unit heater, then proceed with steps 3 thru 5 of Field & Submittal Wiring Diagram Selection.

EXAMPLE SELECTION

Select the correct wiring diagram for a VG-450A with Control Code 08, and series identity number 101.

The Page Location Index shows the page numbers for units with series identity number 101. Follow down the column for VG-450's until it intersects with the line for Control Code 08. The wiring diagram for this unit is found on page 10.

If this example unit also had a power venter, the correct wiring diagram would be found on page 10b as determined from Table 2.

TABLE 1 — CONTROL CODE DESCRIPTIONS

08,09	Intermittent Pilot Ignition, Non-100% Shut-Off (line voltage thermostat, Natural Gas.)
11,12	Standing Pilot, 100% Shut-Off, (line voltage thermostat, Natural Gas.)
28,29	Intermittent Pilot Ignition, 100% Shut-Off (line voltage thermostat, Natural Gas.)
78,79	Intermittent Pilot Ignition, 100% Shut-Off, (line voltage thermostat, Propane Gas.)

TABLE 2 — ACCESSORY SUFFIXES

Page Suffix	Accessory
a	Summer/Winter Switch
b	Power Venter
c	Summer/Winter Switch and Power Venter

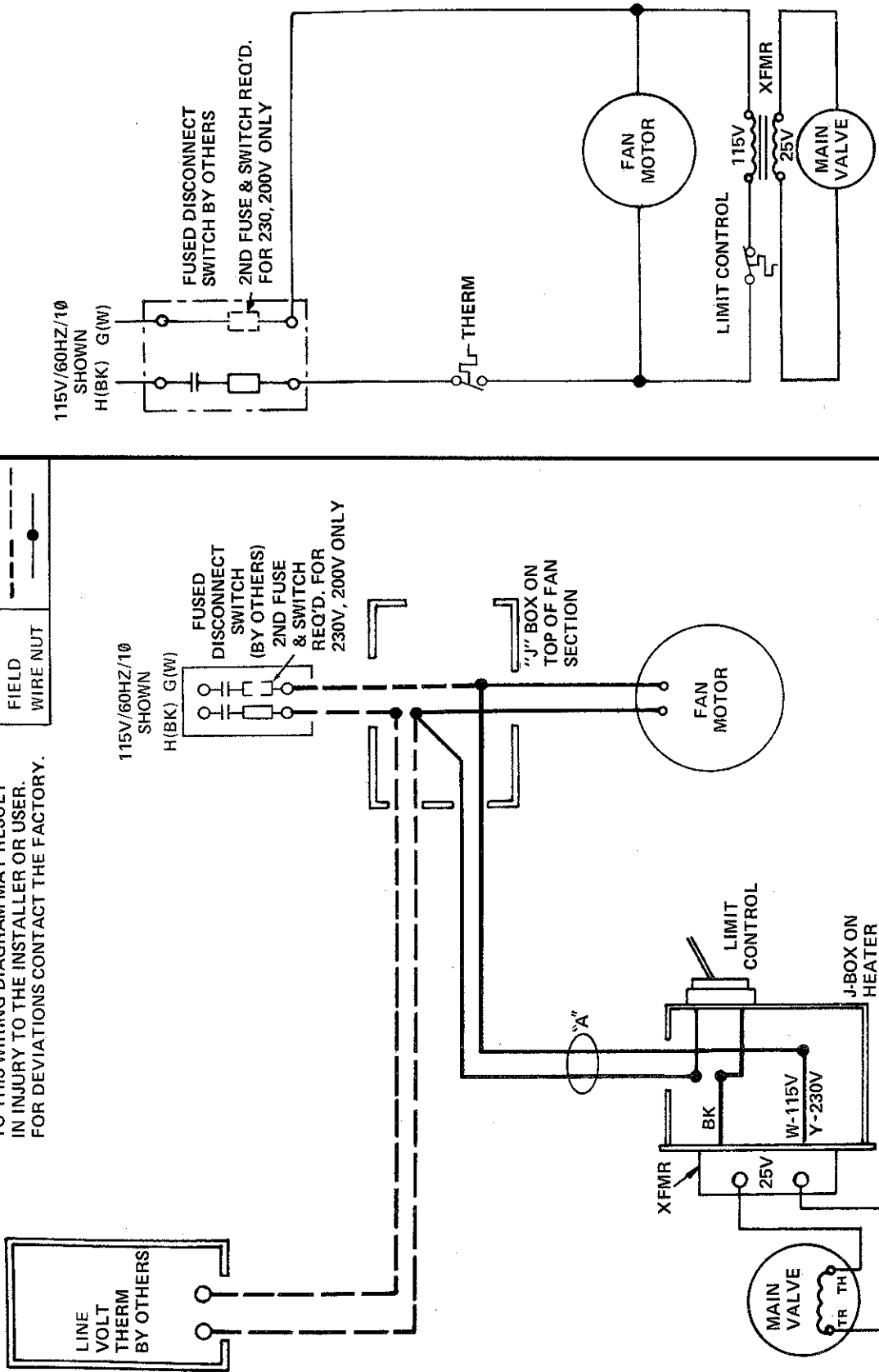
PAGE LOCATION INDEX
SERIES IDENTITY NO. 101

Control Code	VG 300	VG 450	VG 600
08,09	8	—	—
	9	10	10
11,12	3	—	—
	4	5	5
28,29	6	—	—
	7	11	11
78,79	12	—	—
	13	14	14

6-432 WIRING DIAGRAM MODEL VG

CAUTION
FAILURE TO WIRE THIS UNIT ACCORDING
TO THIS WIRING DIAGRAM MAY RESULT
IN INJURY TO THE INSTALLER OR USER.
FOR DEVIATIONS CONTACT THE FACTORY.

WIRING LEGEND	
FACTORY	LINE
FIELD	LOW
WIRE NUT	

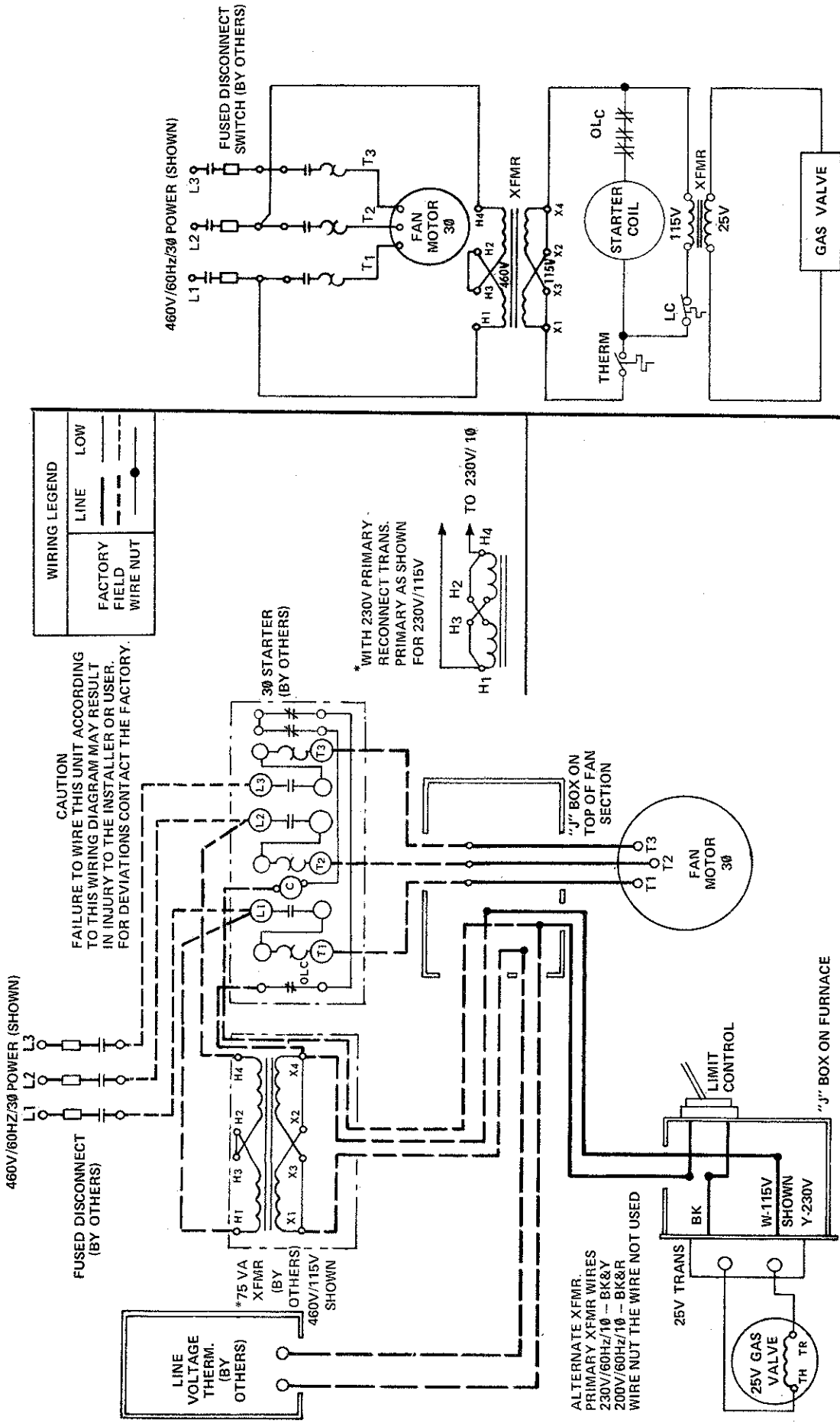


ALTERNATE XFMR.
PRIMARY XFMR WIRES
230V/60Hz/10 - BK&Y
200V/60Hz/10 - BK&R
WIRE NUT THE WIRE NOT USED

ALL WIRING MUST COMPLY WITH NATIONAL
ELECTRIC CODE AND ALL LOCAL CODES.
ALL COMPONENTS MUST AGREE WITH
THEIR RESPECTIVE POWER SOURCE.

5H70461B29 — Single phase, standing pilot, 100% shut-off, line-voltage thermostat.

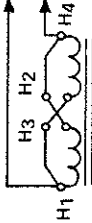
6-432 WIRING DIAGRAM MODEL VG



WIRING LEGEND	
FACTORY FIELD WIRE NUT	---
LINE	---
LOW	---

CAUTION
FAILURE TO WIRE THIS UNIT ACCORDING TO THIS WIRING DIAGRAM MAY RESULT IN INJURY TO THE INSTALLER OR USER. FOR DEVIATIONS CONTACT THE FACTORY.

*WITH 230V PRIMARY. RECONNECT TRANS. PRIMARY AS SHOWN FOR 230V/115V



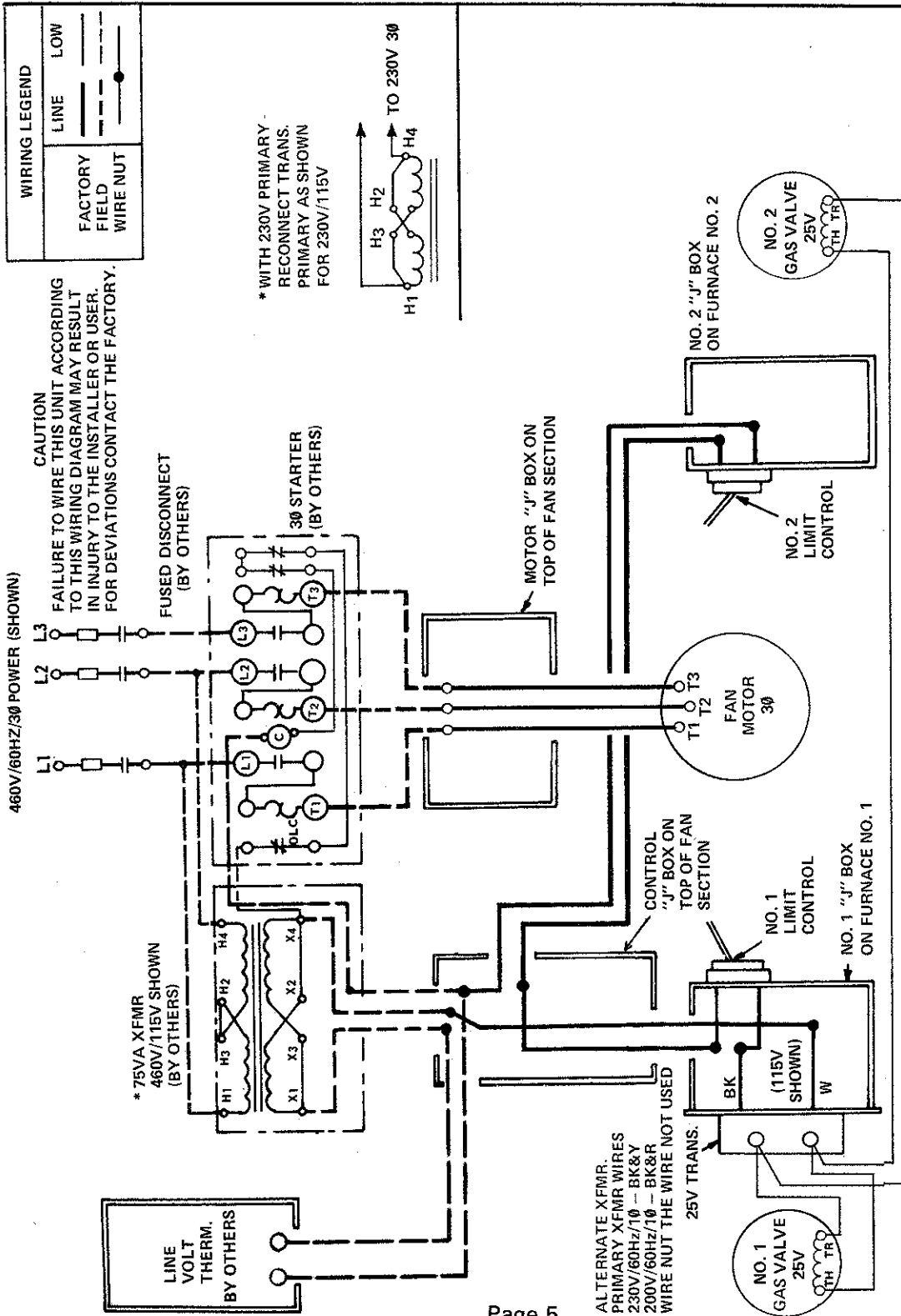
ALTERNATE XFMR. PRIMARY XFMR WIRES 230V/60Hz/1Ø - BK&Y 200V/60Hz/1Ø - BK&R WIRE NUT THE WIRE NOT USED

*TRANSFORMER NOT REQUIRED FOR 230V/3Ø POWER SUPPLY WITH 230V/25V CONTROL TRANSFORMER

ALL WIRING MUST COMPLY WITH NATIONAL ELECTRIC CODE AND ALL LOCAL CODES
 USE 105°C WIRE FOR REPLACEMENT
 NOTE TO INSTALLER: ATTACH THIS DIAGRAM NEAR HEATER
 ALL COMPONENTS MUST AGREE WITH THEIR RESPECTIVE POWER SOURCE

5H70461B29 — Three phase, standing pilot, 100% shut-off, line-voltage thermostat.

6-432 WIRING DIAGRAM MODEL VG



ALL WIRING MUST COMPLY WITH NATIONAL ELECTRIC CODE AND ALL LOCAL CODES
 ALL COMPONENTS MUST AGREE WITH THEIR RESPECTIVE POWER SOURCE

USE 105°C WIRE FOR REPLACEMENT

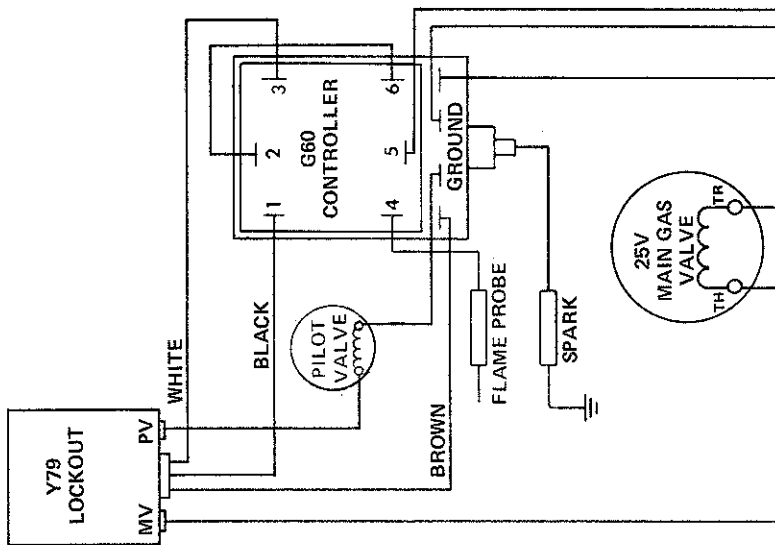
NOTE TO INSTALLER: ATTACH THIS DIAGRAM NEAR HEATER

5H70461B30 — Three phase, standing pilot, 100% shut-off, line-voltage thermostat.

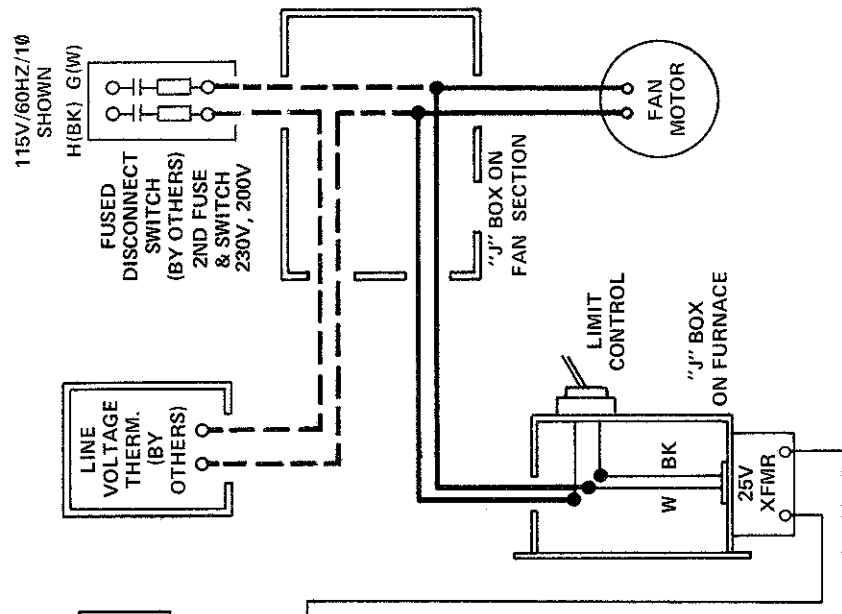
6-432 WIRING DIAGRAM MODEL VG

WIRING LEGEND	
FACTORY	LINE
FIELD	LOW
WIRE NUT	

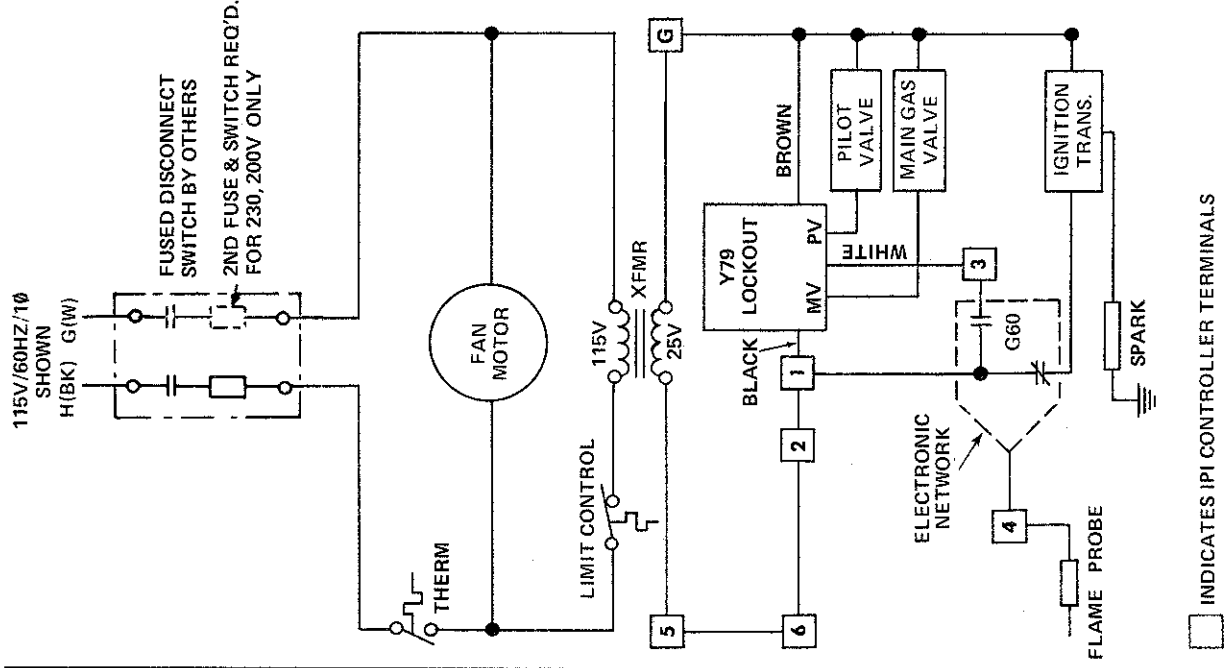
CAUTION
FAILURE TO WIRE THIS UNIT ACCORDING TO THIS WIRING DIAGRAM MAY RESULT IN INJURY TO THE INSTALLER OR USER. FOR DEVIATIONS CONTACT THE FACTORY.



NOTE TO INSTALLER:
ATTACH THIS DIAGRAM NEAR UNIT HEATER
ALL WIRING MUST COMPLY WITH NATIONAL ELECTRIC CODE AND ALL LOCAL CODES
ALL COMPONENTS MUST AGREE WITH THEIR RESPECTIVE POWER SOURCE
USE 105°C WIRE FOR REPLACEMENT

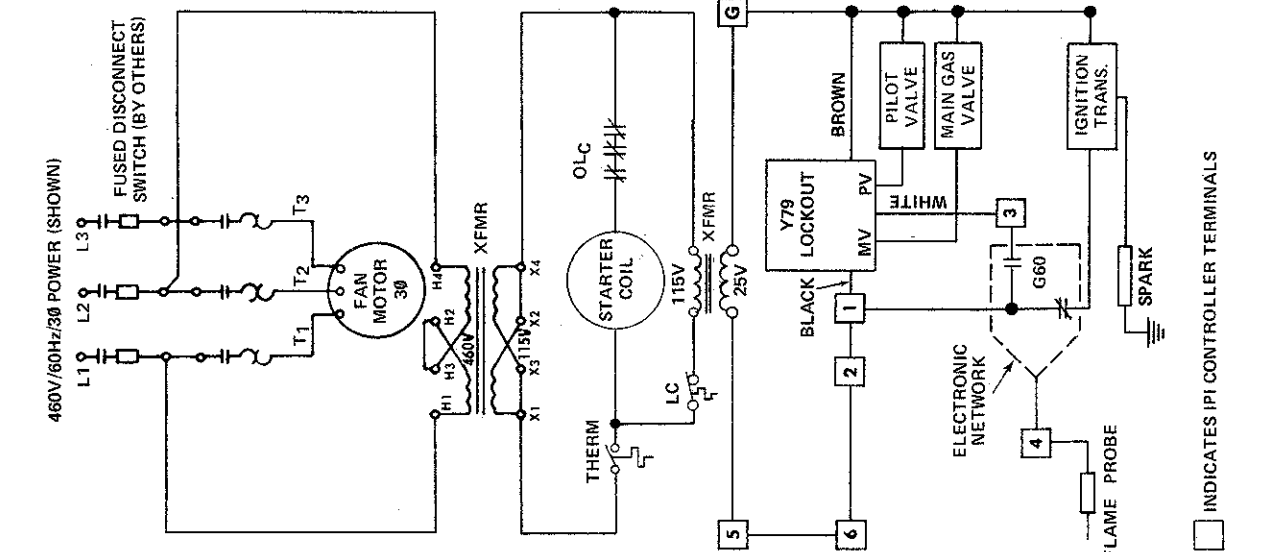
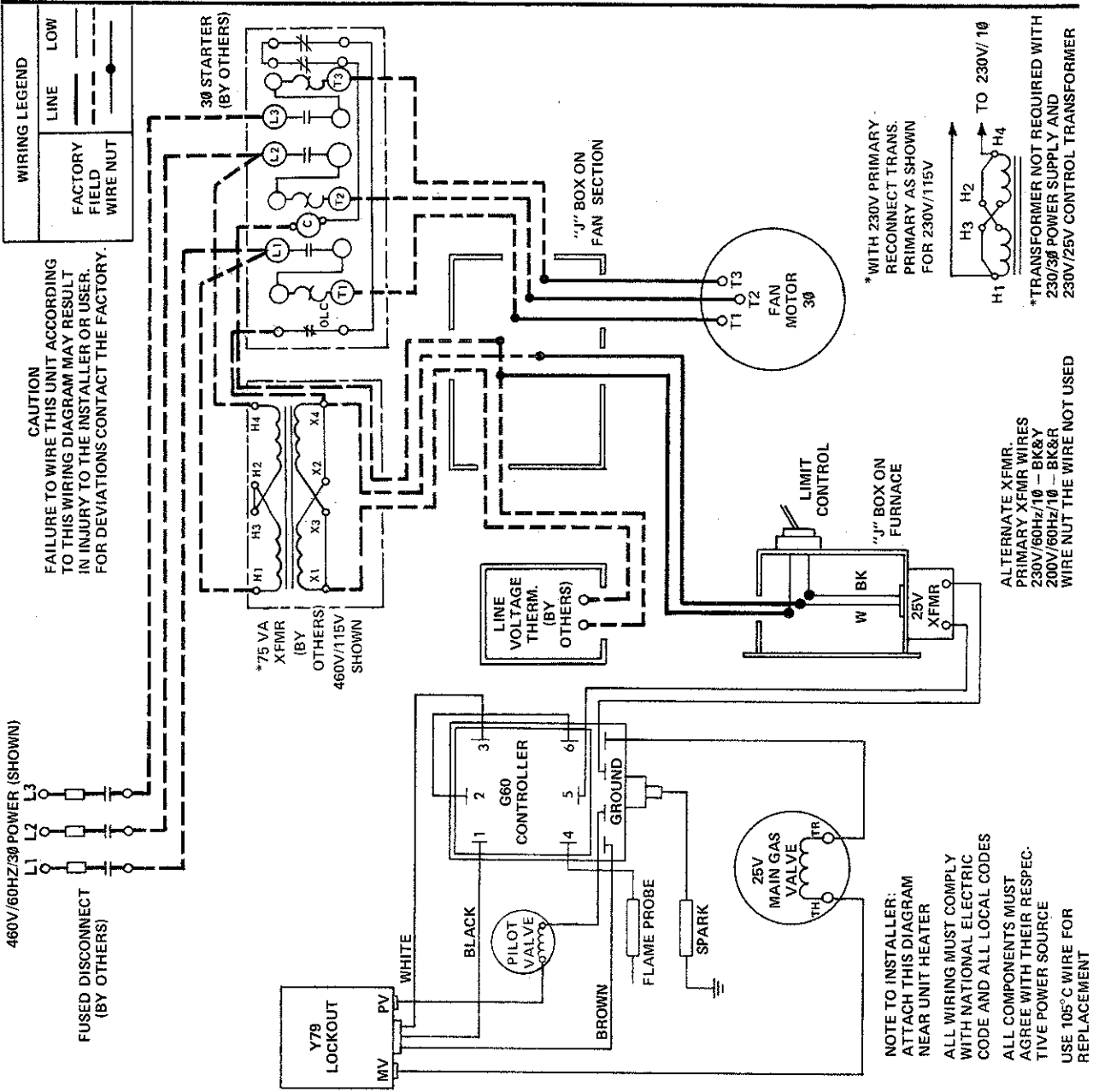


ALTERNATE XFMR.
PRIMARY XFMR WIRES
230V/60Hz/1Ø - BK&Y
200V/60Hz/1Ø - BK&R
WIRE NUT THE WIRE NOT USED



□ INDICATES PI CONTROLLER TERMINALS

6-432 WIRING DIAGRAM MODEL VG

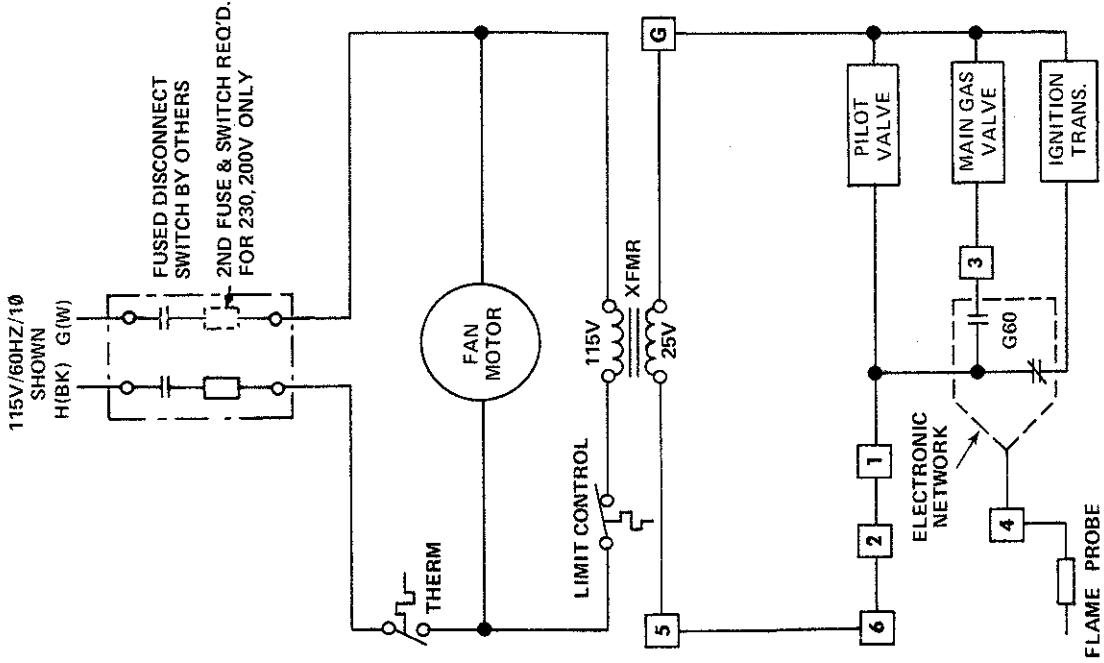


5H70461B21 — Three phase, intermittent pilot ignition, 100% shut-off, line-voltage thermostat (Rev. B)

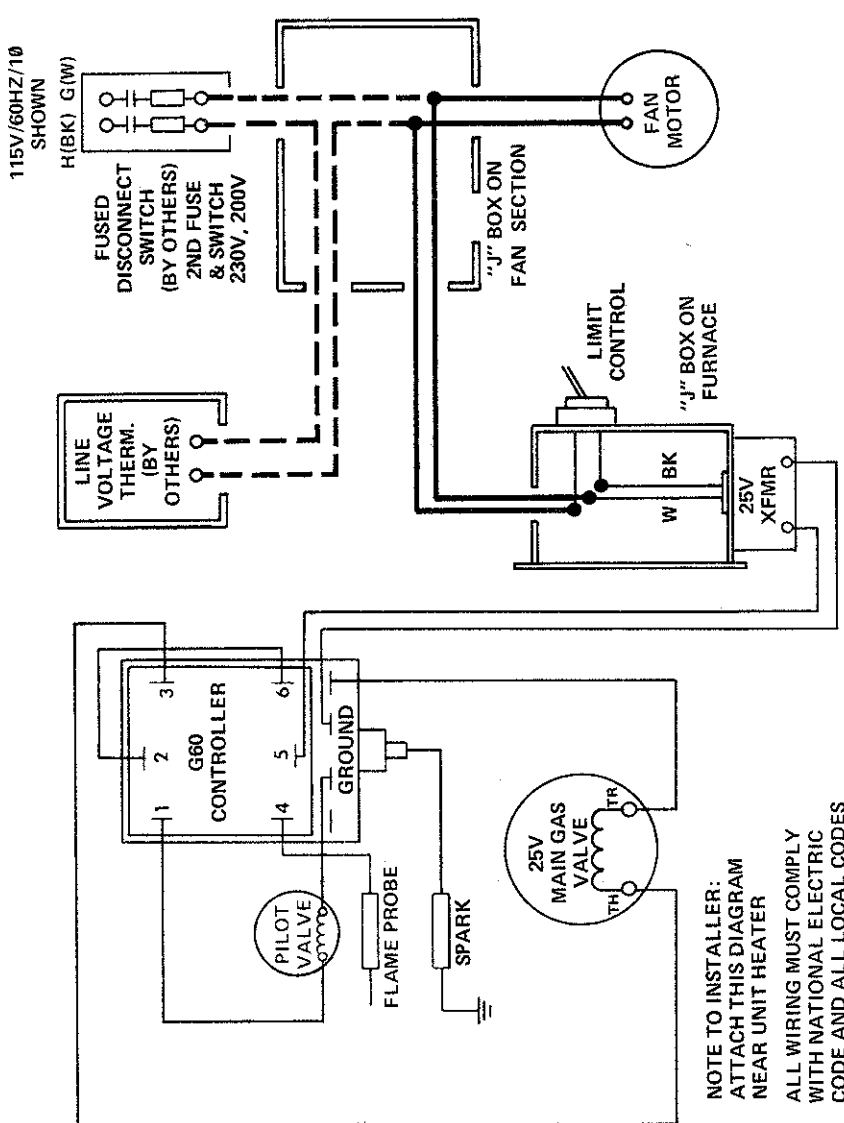
6-432 WIRING DIAGRAM MODEL VG

CAUTION
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WIRING LEGEND	
FACTORY	LINE
FIELD	LOW
WIRE NUT	



□ INDICATES IPI CONTROLLER TERMINALS

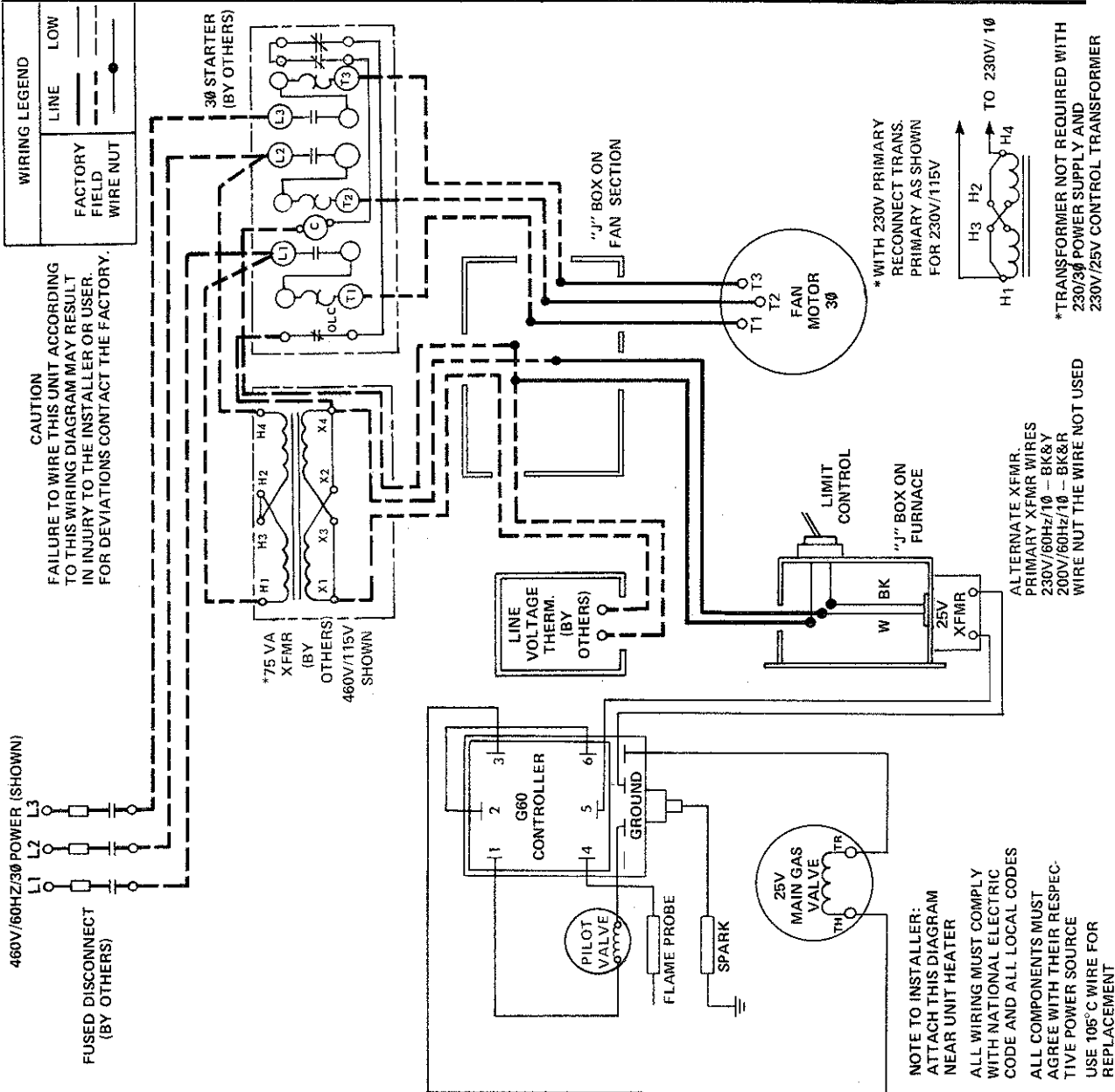


ALTERNATE XFMR.
PRIMARY XFMR WIRES
230V/60Hz/10 - BK&Y
200V/60Hz/10 - BK&R
WIRE NUT THE WIRE NOT USED

NOTE TO INSTALLER:
ATTACH THIS DIAGRAM NEAR UNIT HEATER
ALL WIRING MUST COMPLY WITH NATIONAL ELECTRIC CODE AND ALL LOCAL CODES
ALL COMPONENTS MUST AGREE WITH THEIR RESPECTIVE POWER SOURCE
USE 105°C WIRE FOR REPLACEMENT

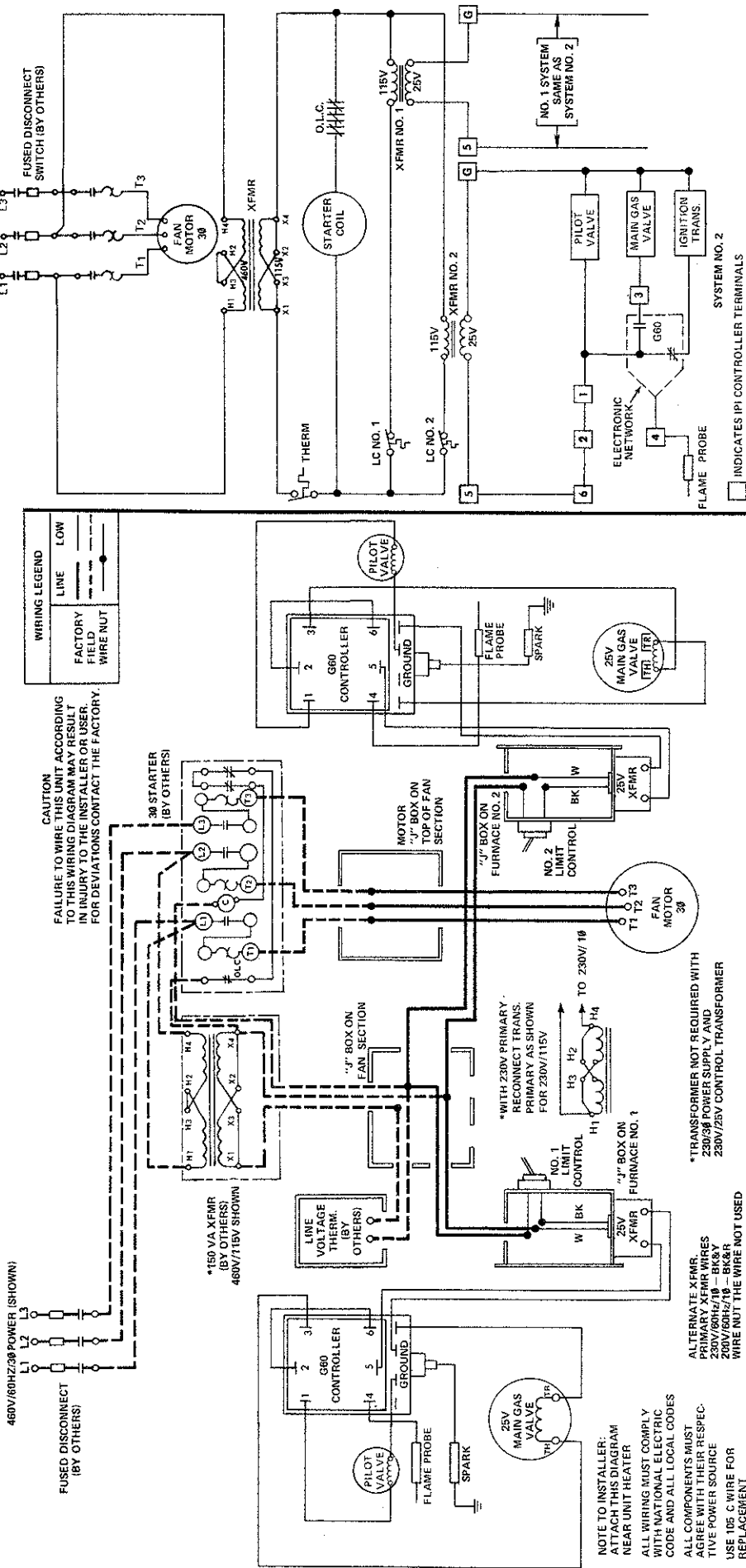
5H70461B23 — Single phase, intermittent pilot ignition, non-100% shut-off, line-voltage thermostat (Rev. B)

6-432 WIRING DIAGRAM MODEL VG



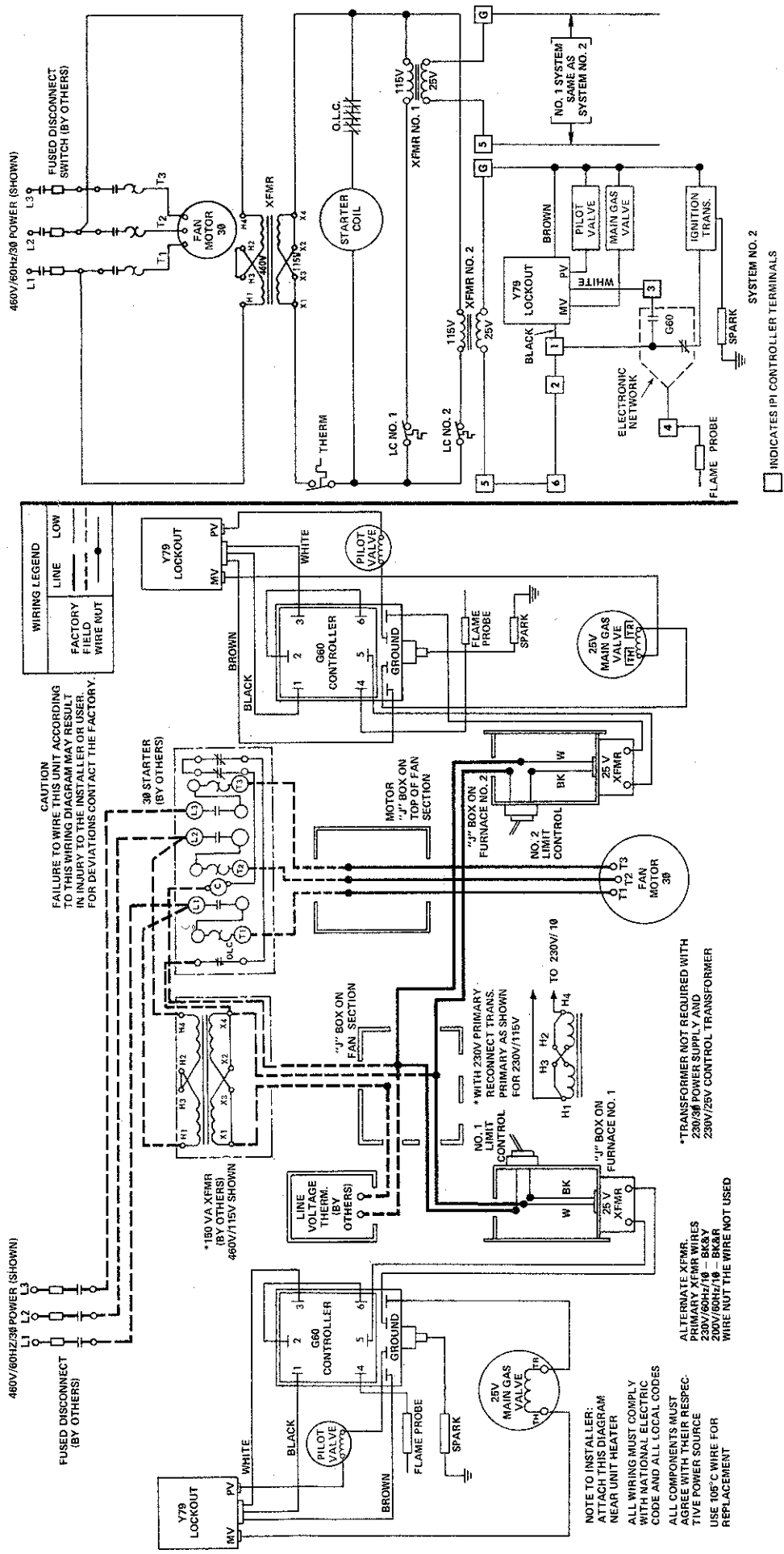
5H70461B24 --- Three phase, intermittent pilot ignition, non-100% shut-off, line-voltage thermostat (Rev. B)

6-432 WIRING DIAGRAM MODEL VG



5H70461B25 — Three phase, intermittent pilot ignition, non-100% shut-off, line-voltage thermostat (Rev. B)

6-432 WIRING DIAGRAM MODEL VG

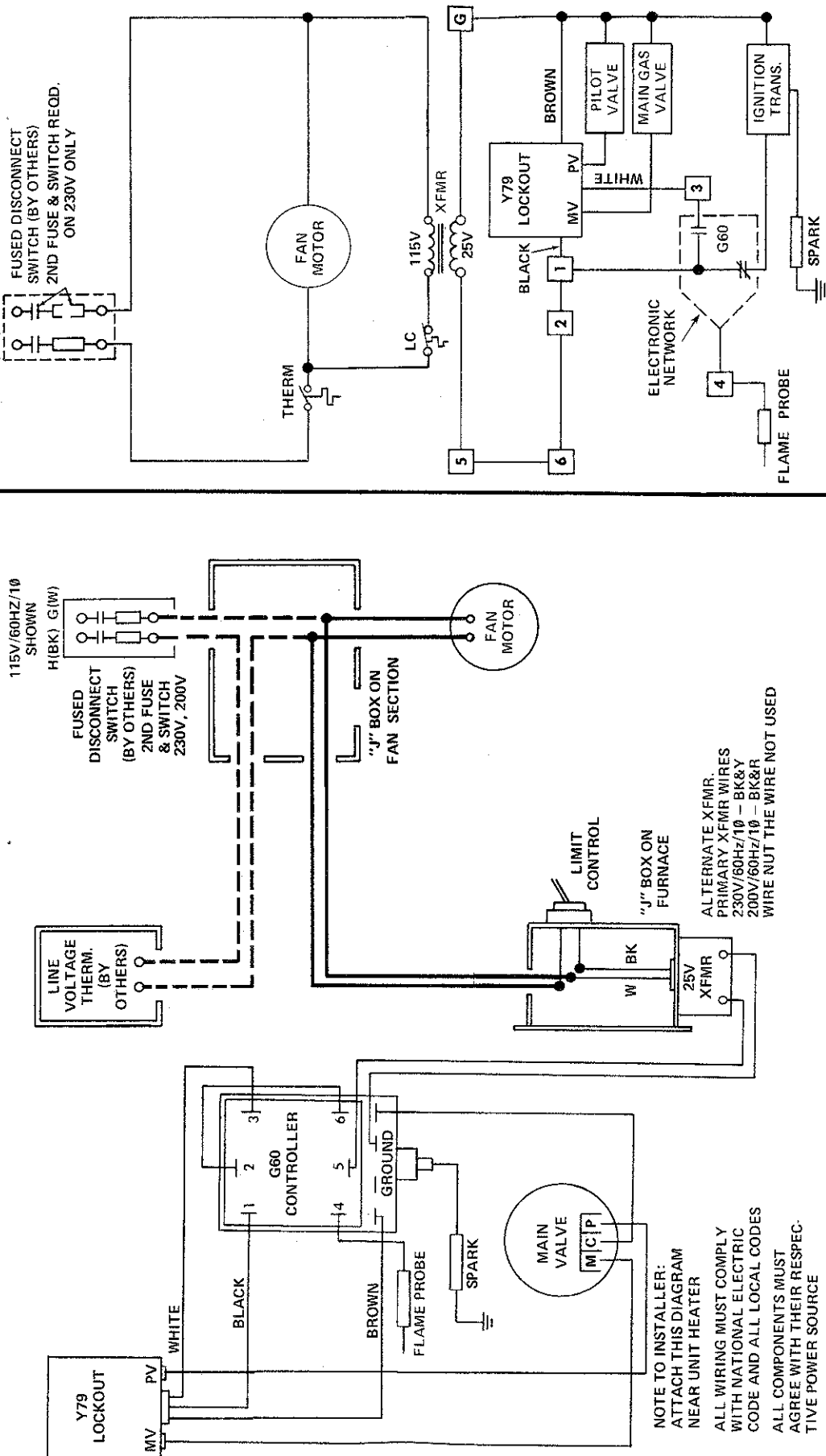


5H70461B22 — Three phase, intermittent pilot ignition, 100% shut-off, line-voltage thermostat (Rev. B)

6-432 WIRING DIAGRAM MODEL VG

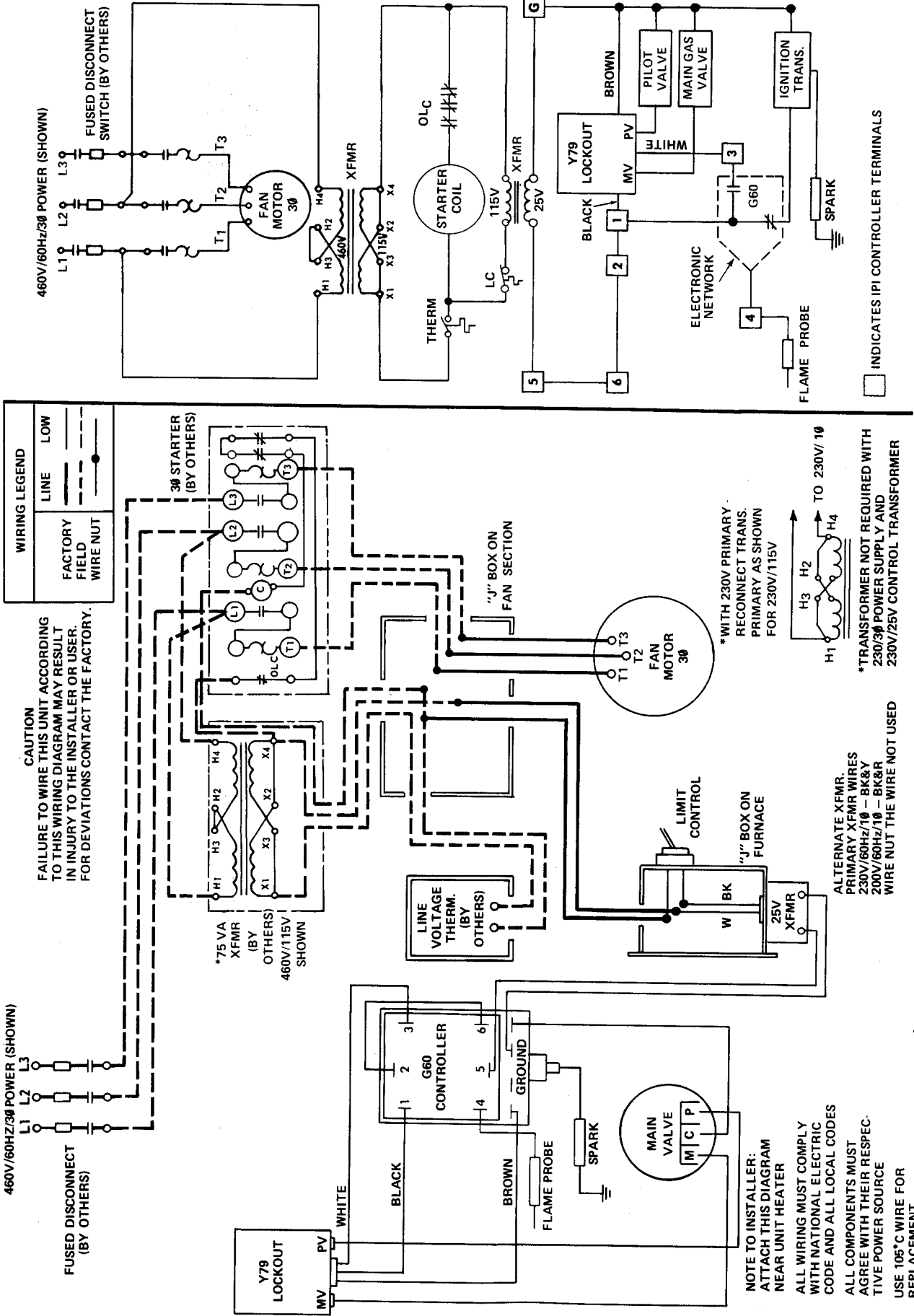
WIRING LEGEND	
FACTORY	LINE
FIELD	LOW
WIRE NUT	

CAUTION
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NOTE TO INSTALLER:
ATTACH THIS DIAGRAM NEAR UNIT HEATER
ALL WIRING MUST COMPLY WITH NATIONAL ELECTRIC CODE AND ALL LOCAL CODES
ALL COMPONENTS MUST AGREE WITH THEIR RESPECTIVE POWER SOURCE
USE 105°C WIRE FOR REPLACEMENT

6-432 WIRING DIAGRAM MODEL VG



460V/60HZ/3Ø POWER (SHOWN)
 L1 L2 L3
 FUSED DISCONNECT SWITCH (BY OTHERS)

WIRING LEGEND

FACTORY FIELD WIRE NUT	LINE	LOW
(Symbol)	(Symbol)	(Symbol)

CAUTION
 FAILURE TO WIRE THIS UNIT ACCORDING TO THIS WIRING DIAGRAM MAY RESULT IN INJURY TO THE INSTALLER OR USER. FOR DEVIATIONS CONTACT THE FACTORY.

460V/60HZ/3Ø POWER (SHOWN)
 L1 L2 L3
 FUSED DISCONNECT (BY OTHERS)

*75 VA XFMR (BY OTHERS) 460V/115V SHOWN

3Ø STARTER (BY OTHERS)

LINE VOLTAGE THERM. (BY OTHERS)

"J" BOX ON FAN SECTION

LIMIT CONTROL

"J" BOX ON FURNACE

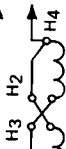
NOTE TO INSTALLER:
 ATTACH THIS DIAGRAM NEAR UNIT HEATER

ALL WIRING MUST COMPLY WITH NATIONAL ELECTRIC CODE AND ALL LOCAL CODES

ALL COMPONENTS MUST AGREE WITH THEIR RESPECTIVE POWER SOURCE

USE 105°C WIRE FOR REPLACEMENT

*WITH 230V PRIMARY RECONNECT TRANS. PRIMARY AS SHOWN FOR 230V/115V



ALTERNATE XFMR. PRIMARY XFMR WIRES 230V/60HZ/1Ø - BK&Y 200V/60HZ/1Ø - BK&R WIRE NUT THE WIRE NOT USED

*TRANSFORMER NOT REQUIRED WITH 230V/3Ø POWER SUPPLY AND 230V/25V CONTROL TRANSFORMER

□ INDICATES IPI CONTROLLER TERMINALS

5H70164B27 — Three phase, intermittent pilot ignition, 100% shut-off, line voltage thermostat (Rev. B)

