

DRAFT INDUCER

Model: DI-1, DI-2, & DI-3



READ THESE INSTRUCTIONS CAREFULLY AND COMPLETELY BEFORE PROCEEDING WITH THE INSTALLATION

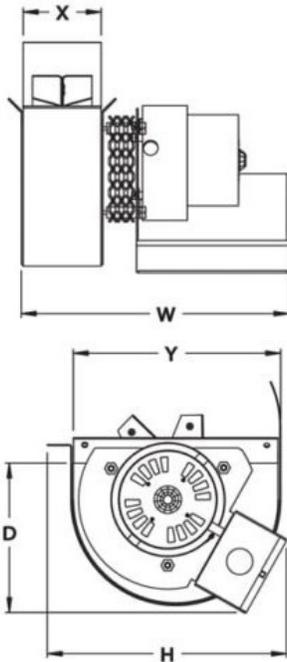
This device **MUST** be installed by a qualified agency in accordance with the manufacturer's installation instructions. The definition of a qualified agency is: any individual, firm, corporation or company which either in person or through a representative is engaged in, and is responsible for, the installation and operation of HVAC appliances, who is experienced in such work, familiar with all the precautions required, and has complied with all the requirements of the authority having jurisdiction. Please retain these instructions after installation.

SELECTING THE PROPER CONTROL KIT

CONTROL KITS (CK) CONTROL THE OPERATION OF FIELD DRAFT INDUCERS.										
SEE THE CHART BELOW TO SELECT THE PROPER KIT FOR YOUR APPLICATION.										
	MODEL	APPLICATIONS	Draft Proving Switch	Gas Pressure Switch	Secondary Safety Switch	Thermal Post Purge	Adjustable Electronic Post Purge	Fixed Post Purge	Draft Control	
OIL	CK-63	SINGLE NON CONDENSING OIL FIRED SYSTEM WITH 120 VAC SAFETY CONTROL CIRCUIT. ALL REQUIRE A SINGLE ACTING DRAFT CONTROL APPROVED FOR OIL. MAY REQUIRE OPTIONAL DELAY VALVE FOR SIMULTANEOUS POST PURGE POWER VENTER BURNER OPERATION.	✓		✓		✓			
GAS	30 mv and 750 mv CK-20FV	SINGLE DRAFT-HOOD EQUIPPED GAS FIRED 30 TO 750 MILLIVOLT WATER HEATER, POOL HEATER OR SPA HEATER WITH A MANUAL OR INTERNALLY MOUNTED THERMOSTAT.		✓	✓			✓		
	24 v CK-41F CK-41P**	SINGLE DRAFT-HOOD EQUIPPED GAS FIRED FURNACE, BOILER, UNIT HEATER OR WATER HEATER OPERATING WITH A 24 VAC GAS VALVE WITHOUT FACTORY MOUNTED THERMAL SAFETY SWITCHES.	✓		✓			✓		
	CK-43F	SINGLE DRAFT INDUCED GAS FIRED NON CONDENSING FURNACE, BOILER OR UNIT HEATER WITH A 24 VAC GAS CONTROL CIRCUIT. INCLUDES 4 INCH MG-1 DRAFT CONTROL AND POST PURGE.	✓					✓	✓	
	Co-venting Multiple Appliances CK-91FV	SINGLE DRAFT INDUCED NON CONDENSING GAS FIRED FURNACE, BOILER OR UNIT HEATER WITH A 24 VAC GAS CONTROL CIRCUIT AND A DRAFT HOOD EQUIPPED GAS FIRED 30 TO 750 MILLIVOLT WATER HEATER. INCLUDES POST PURGE AND 4 INCH MG-1 DRAFT CONTROL FOR THE DRAFT INDUCED APPLIANCE.	✓	✓	✓			✓	✓	
	CK-92FV CK-92FVP**	DRAFT-HOOD EQUIPPED GAS FIRED - FURNACE, BOILER, UNIT HEATER WITH 24 VAC GAS CONTROL CIRCUIT AND A DRAFT HOOD EQUIPPED 30 TO 750 MILLIVOLT GAS FIRED WATER HEATER.	✓	✓	✓			✓		

** Plugs into 24V electric damper
 F = Fixed Post Purge
 FV = Right hand threaded TCA Safety Switch

SPECIFICATIONS



UNIT DIMENSIONS (INCHES)					
MODEL	H	W	D	X	Y
DI-1	8 3/32	8 3/32	5 17/32	2 5/8	7
DI-2	9 7/16	9 3/16	6 7/10	3	8 3/8
DI-3	12 9/16	10 1/16	9	3 3/4	11 3/4

UNIT DIMENSIONS (INCHES)						
MODEL	VOLTS	HZ	RPM	WATTS	AMPS	THERMAL PROTECTION
DI-1	115	60	1550	33	.43	YES
DI-2	115	60	1550	78	1.1	YES
DI-3	115	60	1725	186	3.9	YES

CAUTION: This draft inducer is to be installed on FUEL OIL, NATURAL GAS or PROPANE burning appliances. This draft inducer is NOT to be installed on solid fuel burning appliances. Refer to unit selection table to determine proper draft inducer selection.

CAUTION: Failure to install, maintain, and/or operate the draft inducer in accordance with the manufacturers instructions will result in conditions which may produce bodily injury and/or property damage.

 **DO NOT DESTROY:** These instructions **MUST** remain with heating appliance instructions.

 **CAUTION:** DRAFT INDUCERS ARE DESIGNED TO INCREASE DRAFT IN VENTING APPLICATIONS WHERE INADEQUATE NATURAL DRAFT EXISTS, THIS DEVICE IS NOT DESIGNED FOR SIDEWALL VENTING APPLICATION, THE VENT TO WHICH THE INDUCER IS TO BE MOUNTED IS TO BE INSTALLED IN ACCORDANCE WITH NFPA 54, NFPA 31, OR OTHER LOCAL CODES.

DRAFT INDUCER SIZING

DRAFT INDUCER SELECTION TABLE									
GAS-FIRING WITH DRAFT HOOD					GAS-FIRING WITH BAROMETRIC DRAFT CONTROL				
INPUT (BTU/HR)	PIPE DIA. (IN)	DRAFT INDUCER MODEL	STATIC PRESSURE (IN W.C)	FLOW (CFM)	INPUT (BTU/HR)	PIPE DIA. (IN)	DRAFT INDUCER MODEL	STATIC PRESSURE (IN W.C)	FLOW (CFM)
69,000	3	DI-1	.04	47	69,000	3	DI-1	.05	36
105,000	4		.04	72	105,000	4		.05	55
111,000	5		.06	75	118,000	5		.06	65
120,000	6		.05	82	123,000	6		.05	68
279,000	5	DI-2	.06	190	300,000	5	DI-2	.07	156
308,000	6		.07	210	340,000	6		.08	176
330,000	7		.11	225	364,000	7		.09	189
353,000	8		.07	240	390,000	8		.06	200
522,000	8	DI-3	.18	355	683,000	8	DI-3	.15	355
674,000	9		.15	458	880,000	9		.13	458
694,000	10		.12	472	908,000	10		.10	475
835,000	12		.08	568	1,092,000	12		.06	568

1. Inputs shown are believed to be typical capacities for inducers when mounted on pipe sizes shown. This chart indicated applications where moderate level of mechanically induces draft is required.
2. Where pressure requirements are known and believed to be unusually severe, consult factory.
3. Heating capacities shown are for 1,000 BTU per cubic foot natural gas for 139,000 BTU per gallon No. 2 fuel oil.

 **CAUTION:**

1. Always install draft inducer between draft hood and/or barometric draft control and chimney. (See Figure 2)
2. Never install inducer on top or side of horizontal or inclined vent pipe.
3. When venting two or more appliances, with the Draft Inducer installed in common vent pipe, follow ASHRAE standards for vent pipe sizing.

Note: If the draft inducer is to be installed in an unsupported run of vent pipe, install adequate support brackets to prevent vent pipe separation from the additional weight.

PROVING SWITCH ADJUSTMENTS

- A. If installing a DI-2, mount draft adjustment plate onto fan housing. (See Figure 1)
- B. Draft inducer can be installed on horizontal, vertical or inclined vent pipe. Never install draft inducer on top or side of horizontal or inclined vent pipe. Using supplied mounting template, cut out indicated area on vent pipe. Install inducer into vent pipe and mark the location of the mounting holes. Drill holes to the diameter indicated on template. Secure inducer housing to vent pipe with screws supplied. (See Figure 1) Support the vent pipe and draft inducer with an accepted method.

Note: For DI-2, and DI-3 units, install supplied speed nuts before installing mounting screws.

Caution: Disconnect electrical power when wiring inducer.

- C. Wire the draft inducer in accordance with the National Electrical Code and applicable local codes. **UNIT MUST BE GROUNDED!** Check ground circuit to make certain that the unit has been properly grounded. For wiring instructions, refer to Diagrams A-D. For wiring diagrams of systems not shown, contact factory.

Note: For typical installation diagrams, see Figures 3, 4, and 5.

- D. Fan proving switch kit (Model CK series control) **MUST** be installed on all systems **EXCEPT** 30 millivolt controlled appliances. A CK-20FV Control Kit **MUST** be installed when installing a draft inducer on a 30 millivolt controlled appliance. Installation of an optional exhaust gas spillage sensing switch (Model GSK-3 for gas, Model WMO-1 for oil) is recommended.
- E. To adjust draft inducer air flow on the Model DI-1, manually bend the draft adjustment plate until desired draft is obtained. For Models DI-2 and DI-3, loosen the nut(s) and readjust the position of the draft adjustment plate until desired draft is obtained. Then re-tighten nut(s). (See Figure 1). Removal of adjustment plate will increase air flow.

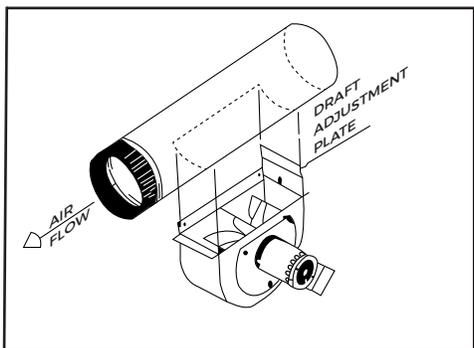


Figure 1

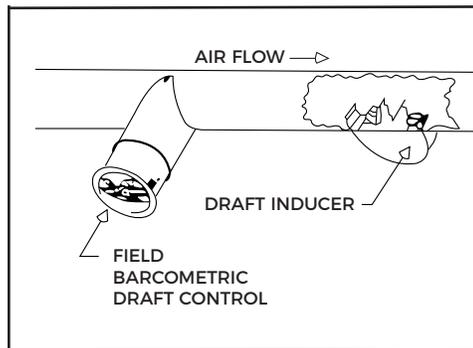


Figure 2

- F. A Field barometric draft control should be installed on all oil-fired and gas-fired appliances not equipped with a draft hood. The barometric draft control is used to fine tune the desired draft at the appliance. Some type of draft control device **MUST** be used on all heating systems with a draft inducer installed. (See Figure 3)

Note: For appliances equipped draft hood, a barometric draft control is not normally required. (See Figure 4)

- G. Seal ALL pipe joints and seams on the positive pressure side of the inducer with a high temperature silicone sealant or equivalent.

Note: Run draft inducer through 2 or 3 cycles to insure proper operation.

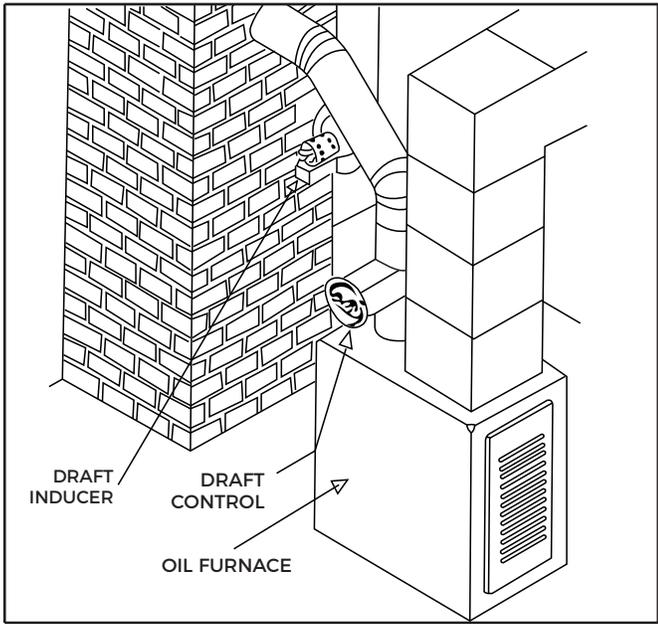


Figure 3

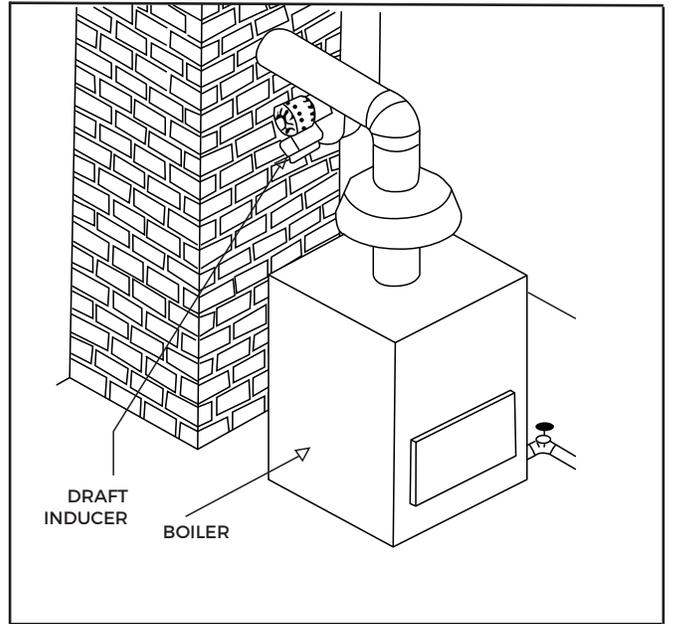


Figure 4

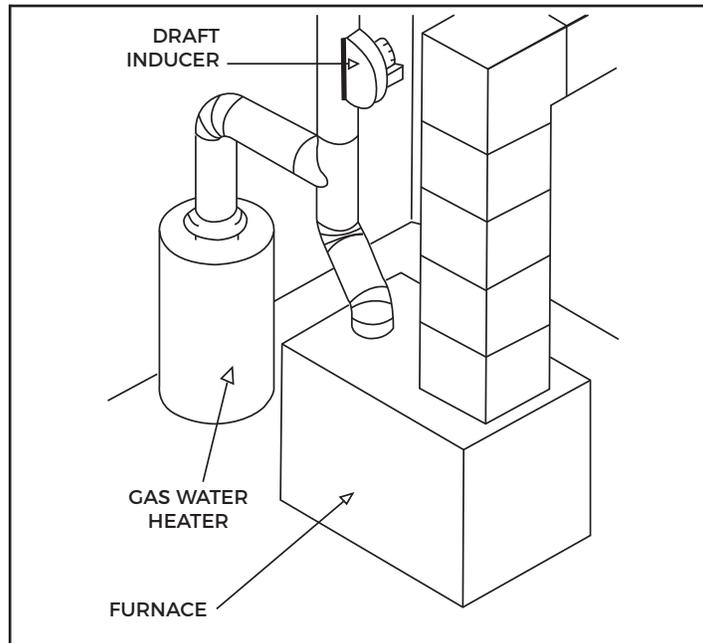


Figure 5

H. Draft Inducer Installation onto Type "B" Vent or Other Multi wall Vent Pipe:
 Choose a suitable draft inducer location according to the instructions stated previously.

Remove one section of the double wall vent pipe which is long enough to accommodate the draft inducer.

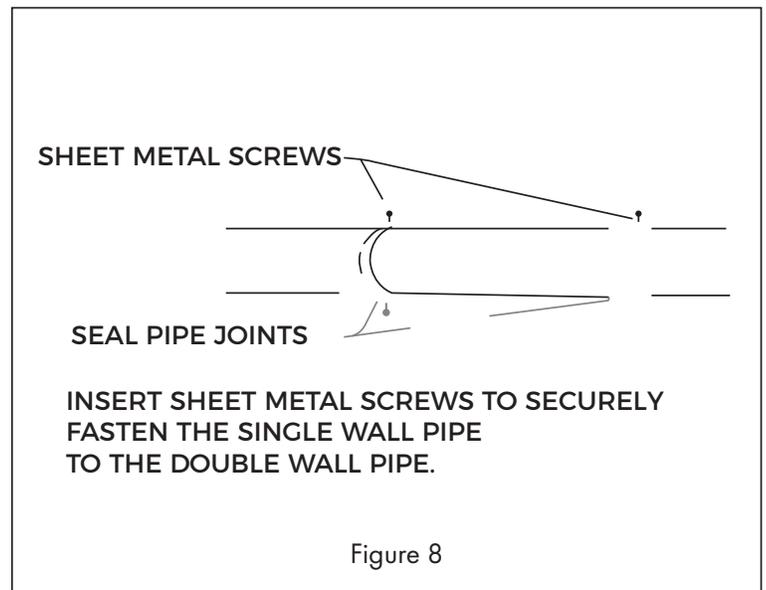
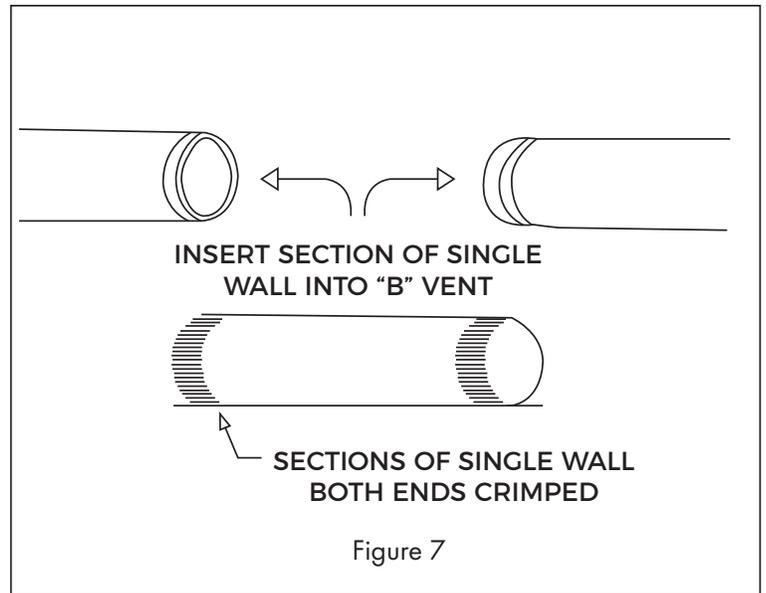
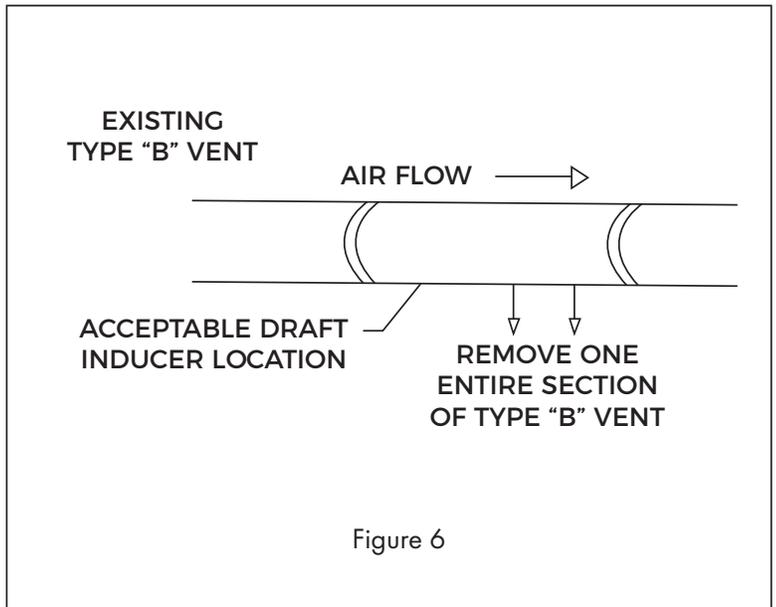
Replace the section of the double wall vent pipe with a section of single wall vent pipe of similar length. (See Figure 6)

Crimp both ends of the single wall pipe and insert each end into the inner pipe of the Type "B" vent. (See Figure 7)

Securely fasten each end by inserting sheet metal screws through both layers of the double wall vent pipe and the single wall vent pipe. Seal any air gaps which exist between the double wall vent pipe and the single wall vent pipe. Use a high temperature rated silicone sealant or other approved material. (See Figure 8)

Install the draft inducer onto the section of single wall vent pipe in accordance with the instructions stated within this manual.

CAUTION: Clearance to combustible materials **MUST** be maintained. Any section of single wall vent installed **MUST** be at least the minimum allowable distance from combustible materials as required by the pipe manufacturer. Refer to NFPA 54, NFPA 31 and any local codes for installation guidelines. The draft inducer requires a minimum of six (6) inches clearance to combustible materials from any point of the fan housing surface.



CK SERIES CONTROL KIT

I. CK-series Control Kit

The Field Controls CK series control kit has been designed to monitor pressure within the fan housing. This switch is not meant to prove draft, however, it does detect inducer failure, vent obstructions and other system deficiencies affecting pressures within the inducer housing. Venting deficiencies will be automatically sensed by the switch which will prevent heating appliances operation until the vent system is inspected and the deficiency has been corrected.

Note: It is the responsibility of the end user to properly maintain the combustion system. The combustion system should be inspected and serviced annually by qualified personnel. Failure to follow such maintenance and inspection procedures may result in generation of toxic carbon monoxide gas.

Location

The CK series controls kit can be mounted on any vertical surface within 5 feet of the draft inducer. It **MUST NOT** be mounted on the inducer or any other surface with a temperature in excess of 190 degrees F.

Maintenance

Under normal usage the Draft Inducer Motor should not need oiling more than twice a year. (Models DI-3 do not require oiling.) No more than two drops of SWG SuperLube or equivalent should be used. The oil hole locations indicated on the inducer motor. Misadjustment and inefficient combustion of a heating unit may cause soot and hard carbon buildup on the inducer blower wheel. This buildup can cause the blower wheel to become unbalanced and, therefore, cause damage to the motor shaft and bearings, as well as reduce the effectiveness of the Draft Inducer. Inspect the Draft Inducer periodically, at least once a year, and clean if necessary. Burner adjustment may be required to reduce carbon buildup on the inducer.

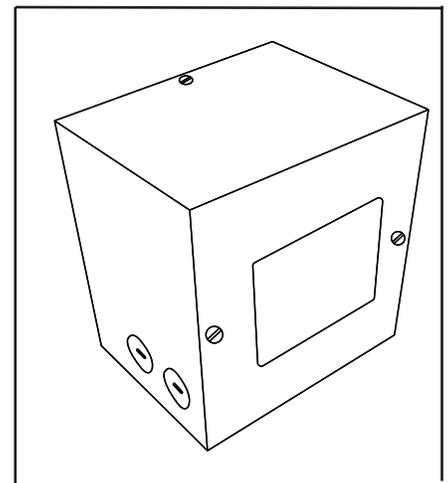
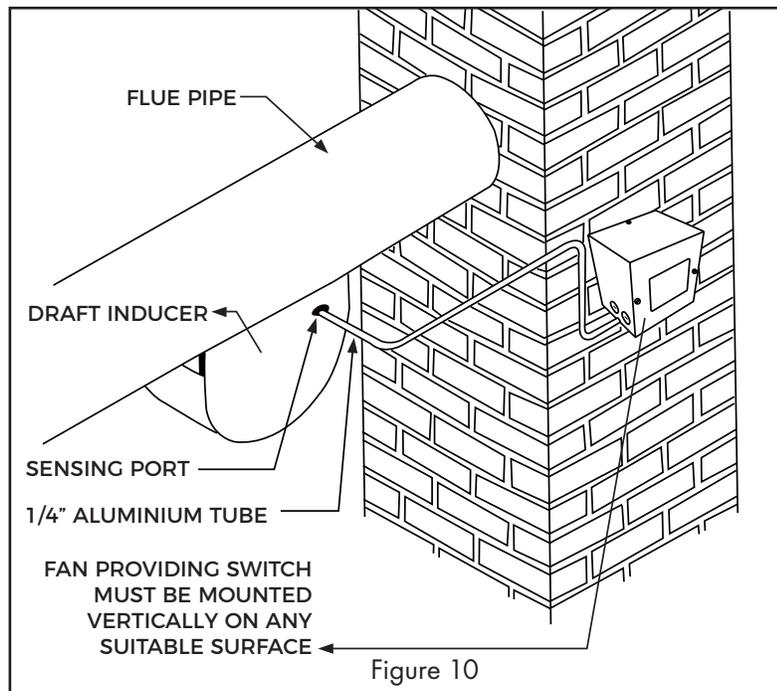


Figure 9

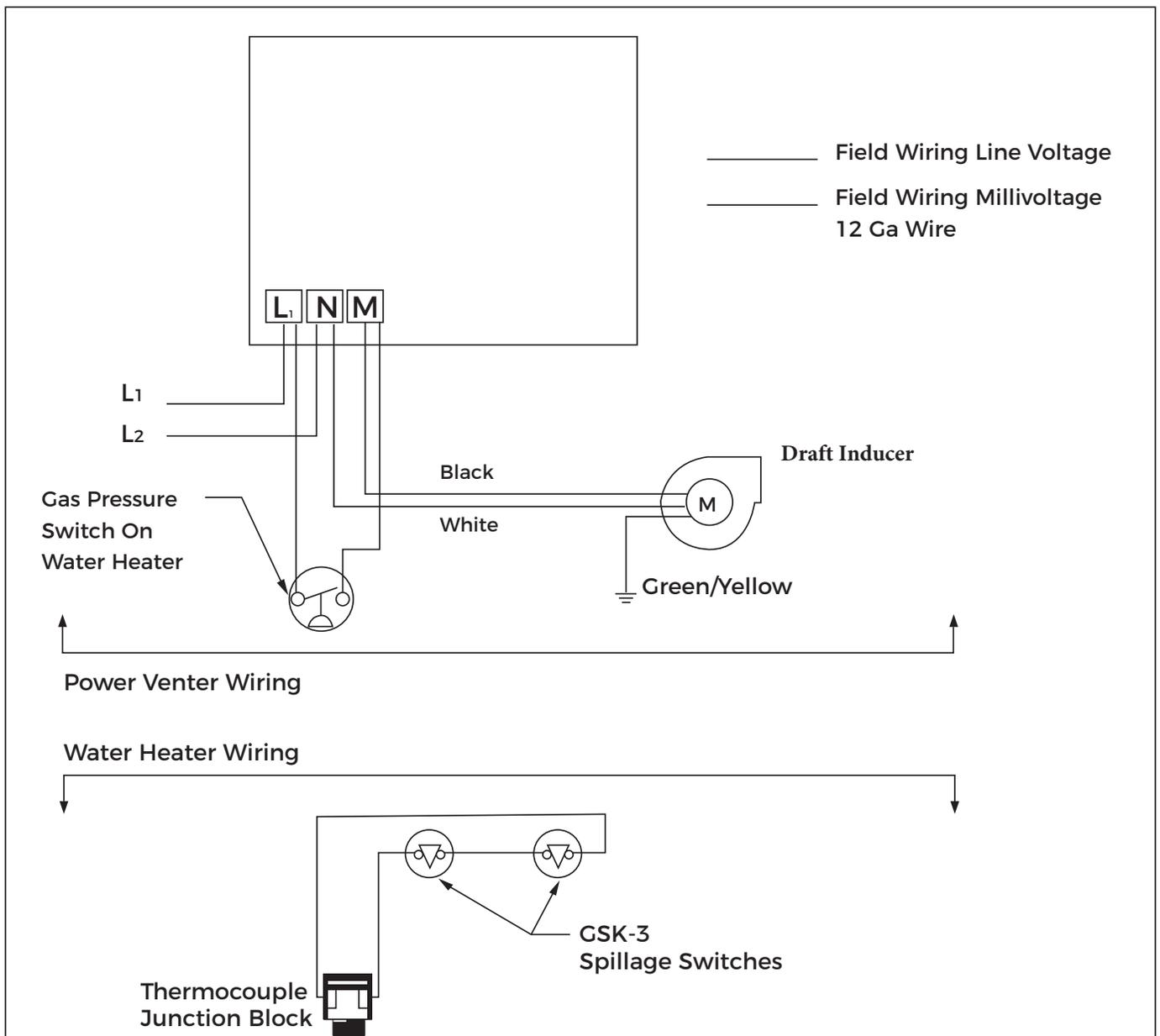


WIRING

! CAUTION: Disconnect electrical power when wiring draft inducer.

Wire the venter motor and controls in accordance with the National Electrical Code, manufacturer's recommendations and/or applicable local codes. Units must be grounded. Check ground circuit to make certain that the unit has been properly grounded. The wiring should be protected by an overcurrent circuit device rated at 15 amperes. CAUTION must be taken to ensure that the wiring does not come into contact with any heat source. All line voltage and safety control circuits between the venter and the appliance must be wired in accordance with the National Electrical Code for class one wiring or equivalent methods. Route the venter motor and control wiring with an appropriate wiring method. Refer to Wiring Diagram A.

Refer to the SWG Venter Installation Instructions for setting system airflow.

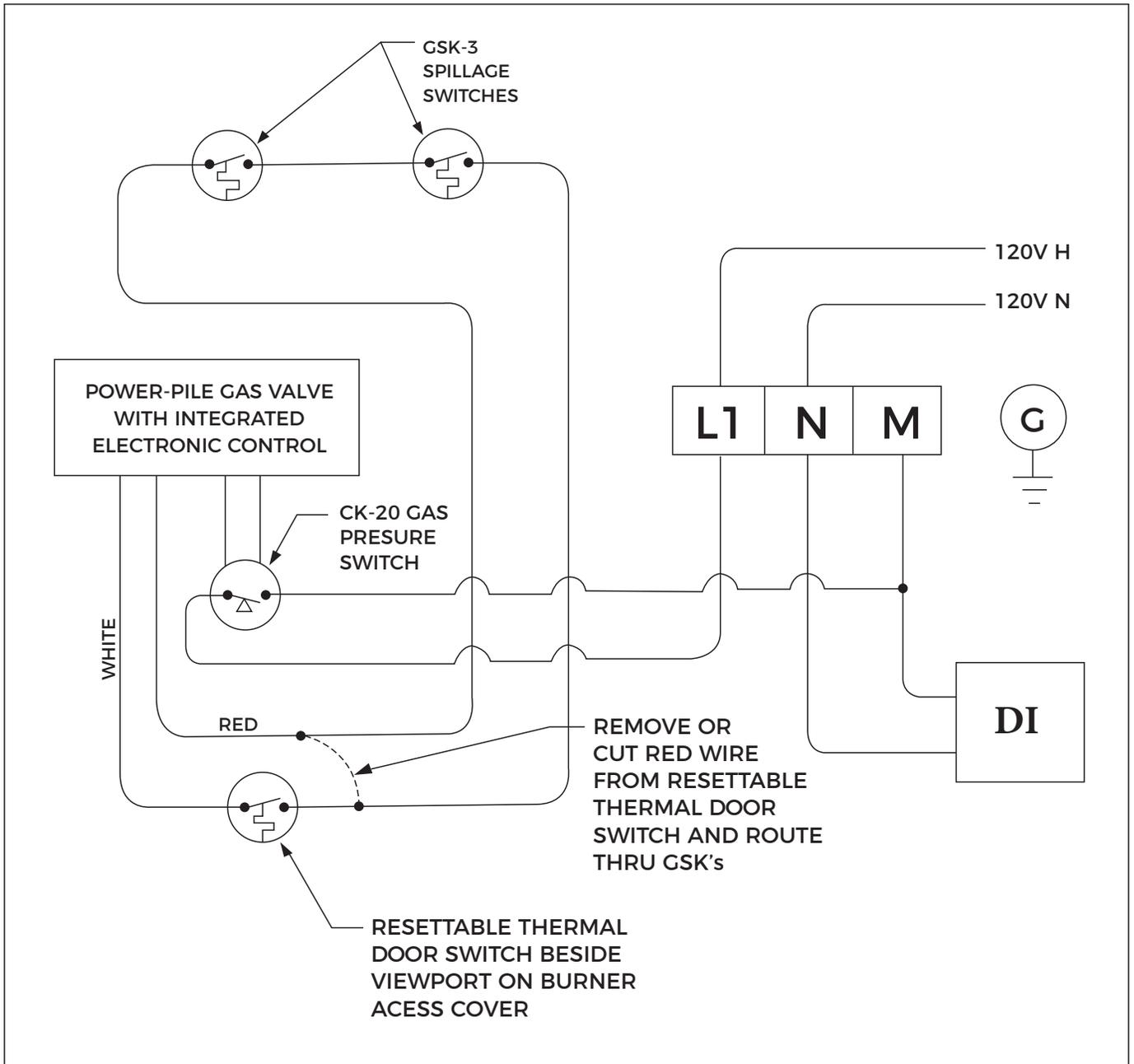


Wiring Diagram A

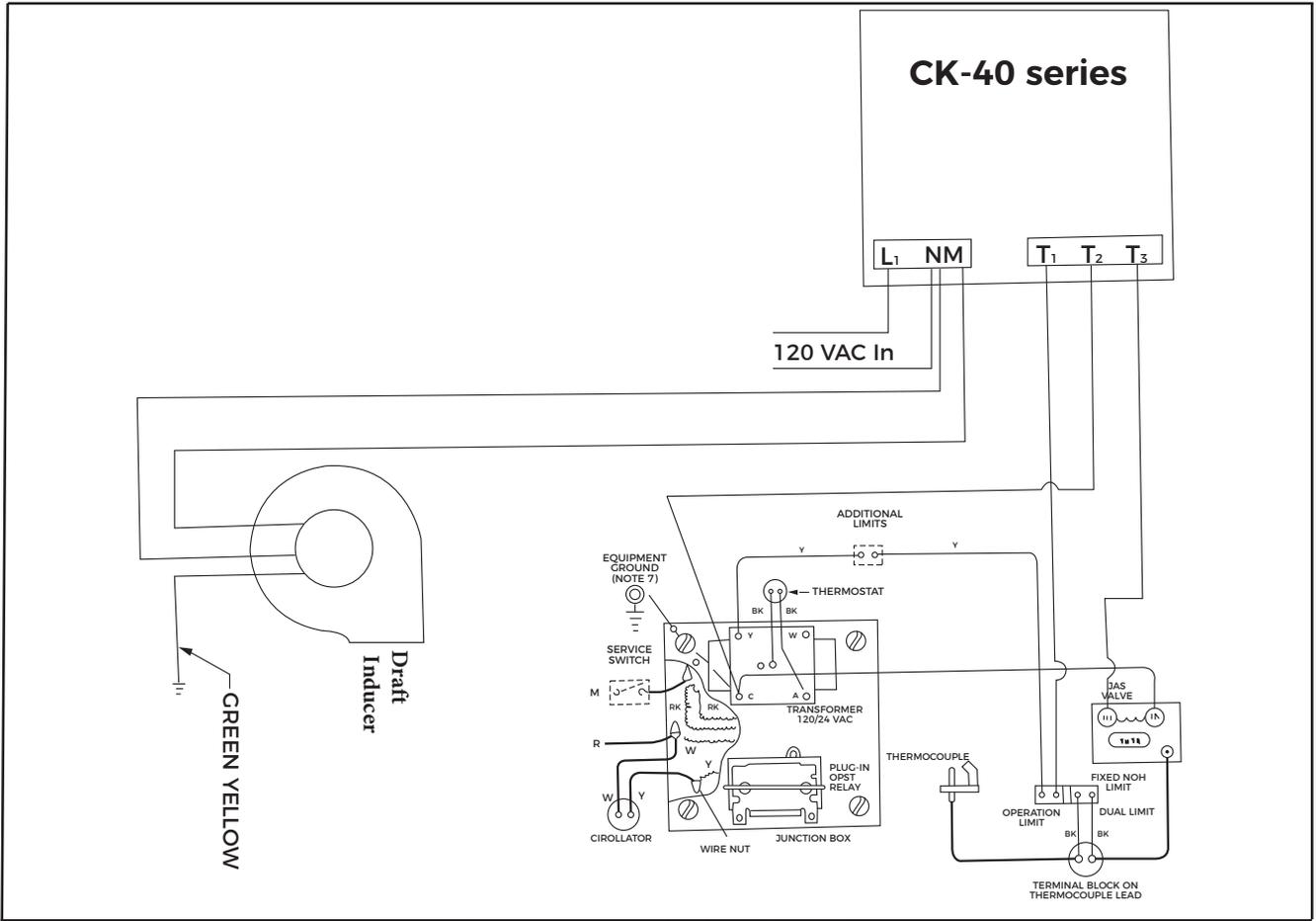
Wiring 750mV Gas Valve System with Electronic Temperature Control

CAUTION: Disconnect electrical power when using power venter.

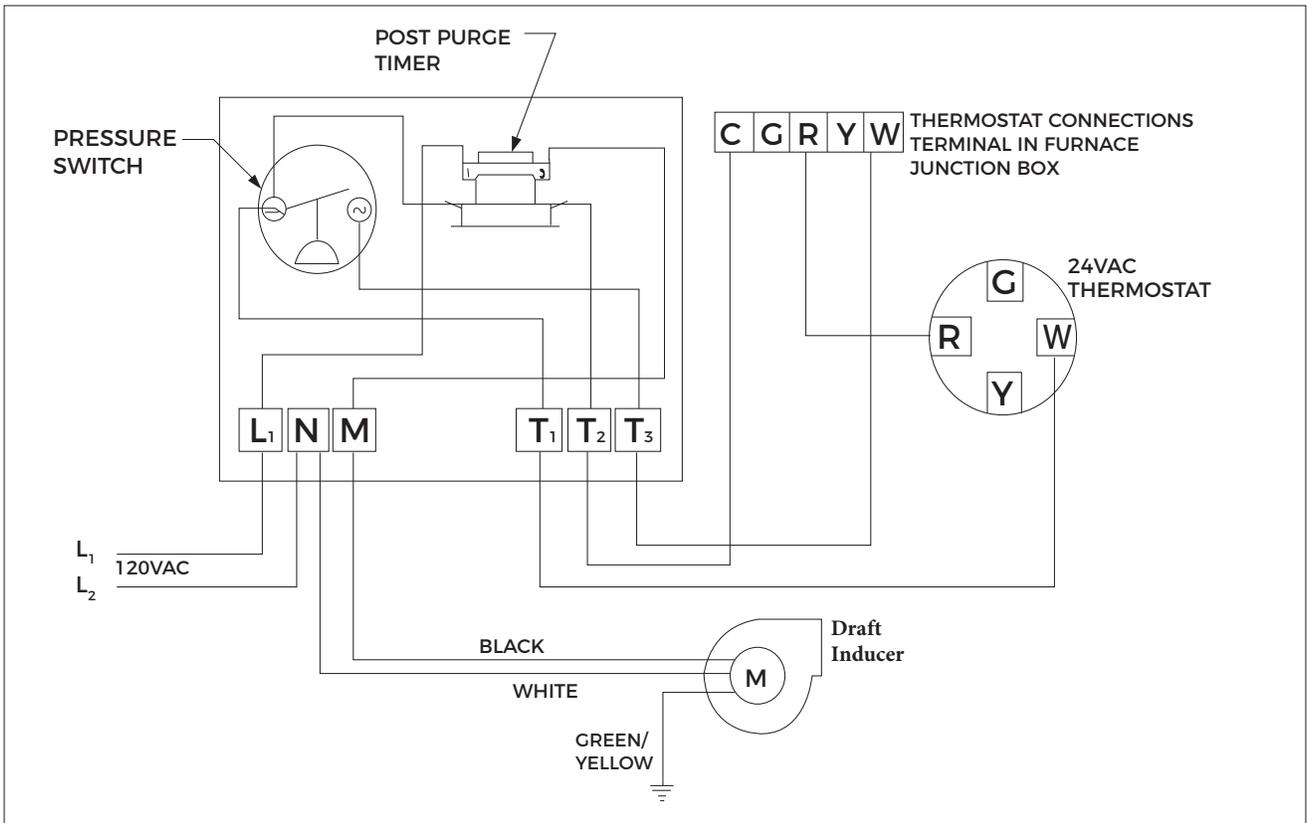
When wiring with a power-pile system having an integrated electronic control, which have a diagnostic LED indicator; please refer to Diagram B. You will not use the TCA thermocouple adapter, supplied with the CK-20FV. Install the GSK spill switches per instruction and connect to the red wire and the thermal door switch per diagram. Wire the venter motor and controls in accordance with the National Electrical Code, manufacturer's recommendations and/or applicable local codes. Units must be grounded. Check ground circuit to make certain that the unit has been properly grounded. The wiring should be protected by an overcurrent circuit device rated at 15 amperes **CAUTION must be taken to ensure that the wiring does not come into contact with any heat source.** All line voltage and safety control circuits between the venter and the appliance must be wired in accordance with the National Electrical Code for class one wiring or equivalent methods Route the venter motor and control wiring with an appropriate wiring method.



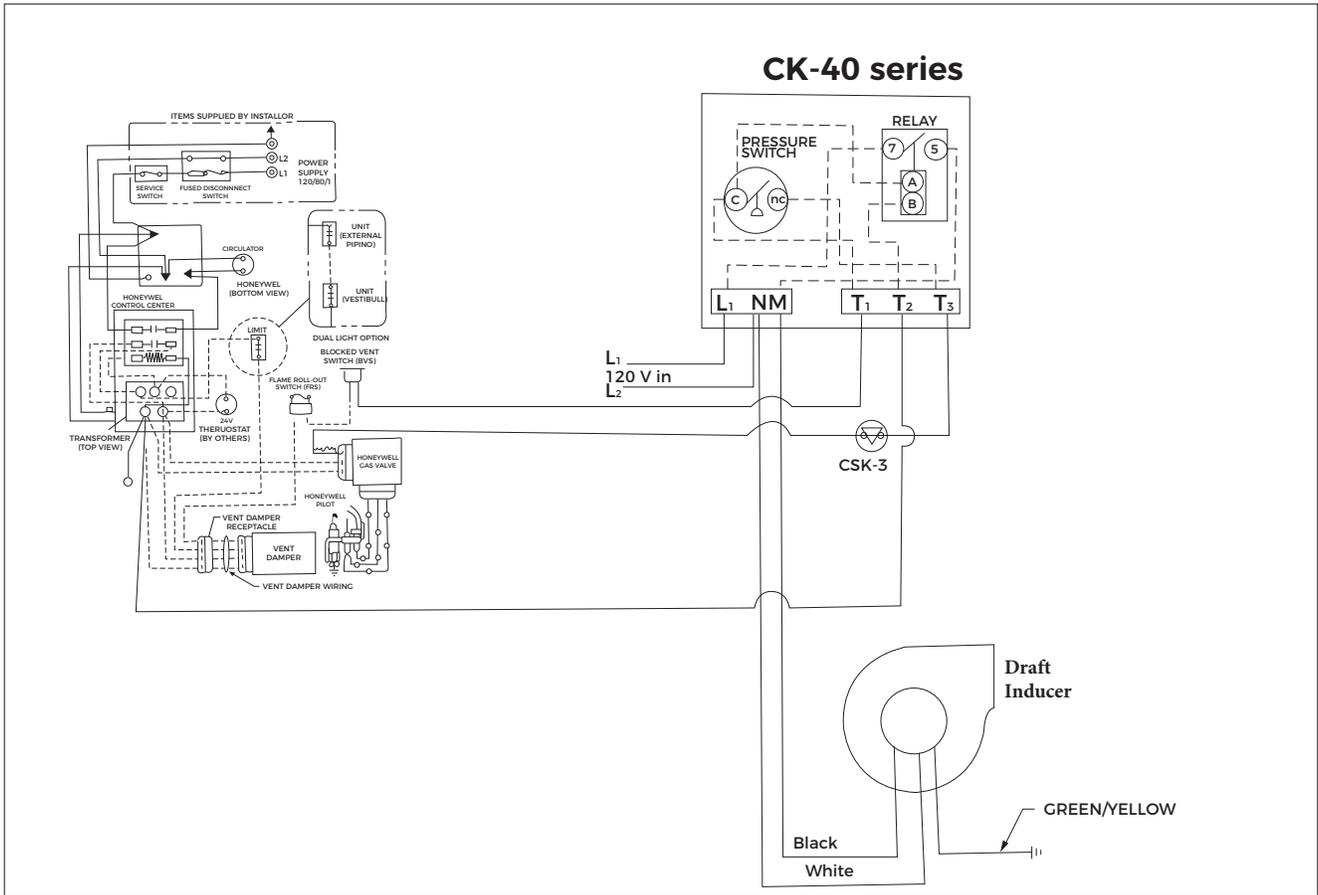
Wiring Diagram B



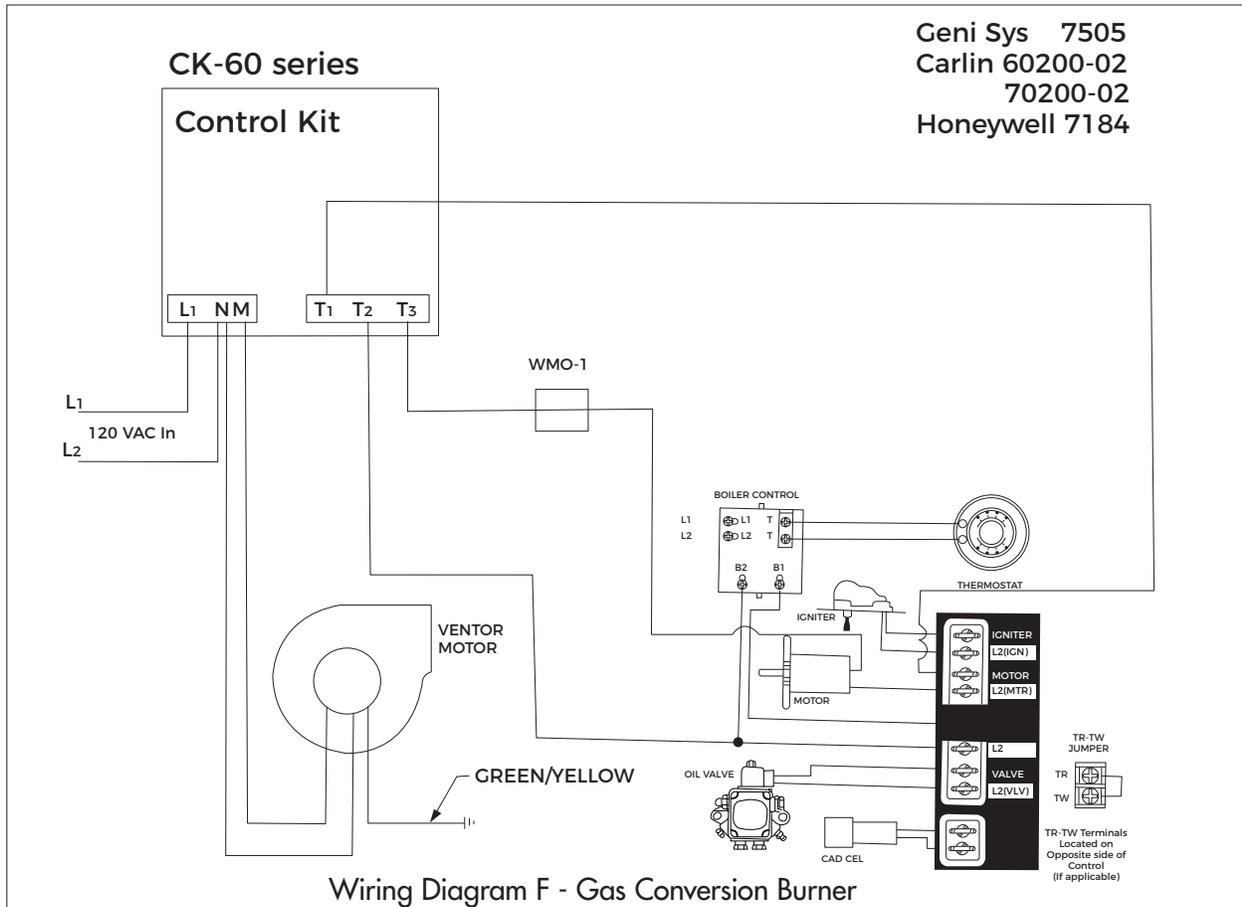
Wiring Diagram C - Standing Pilot



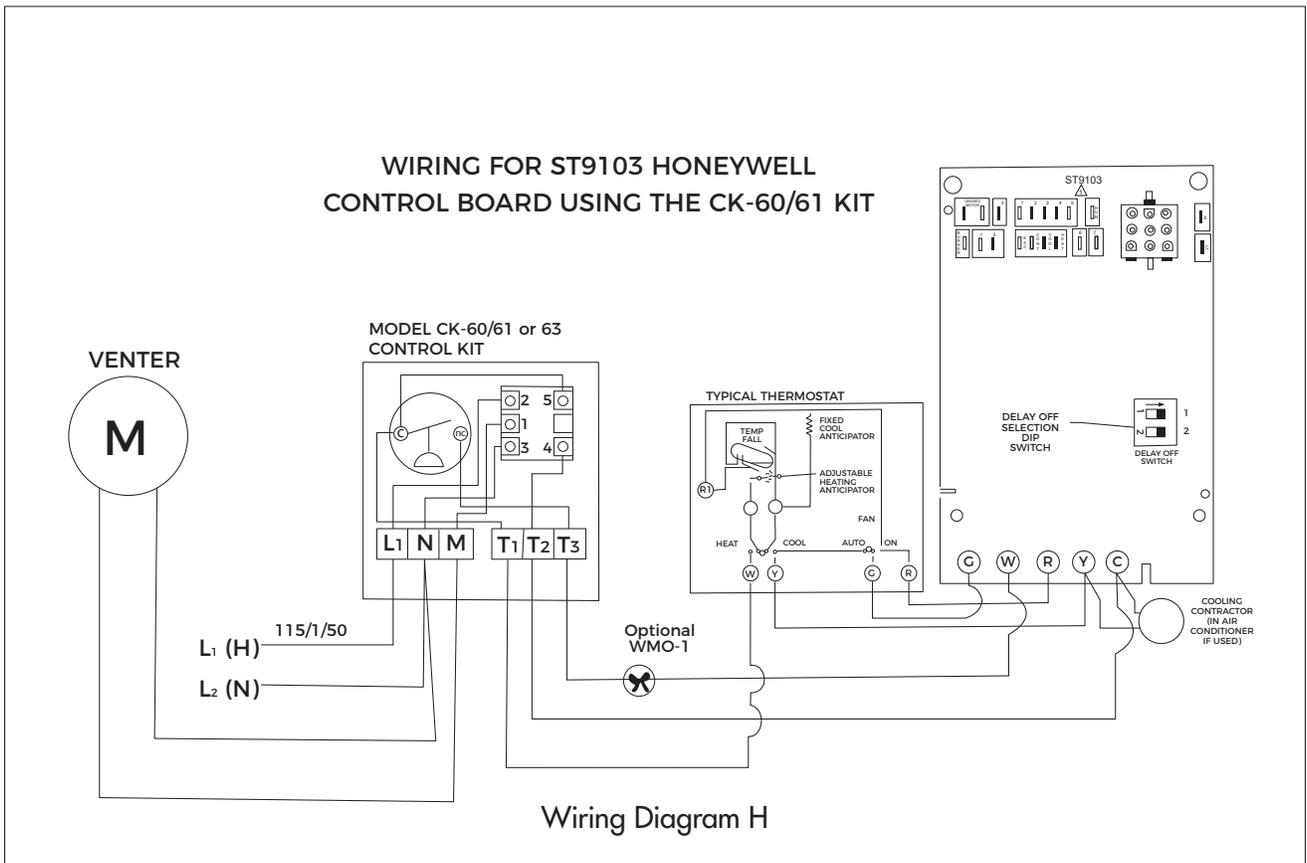
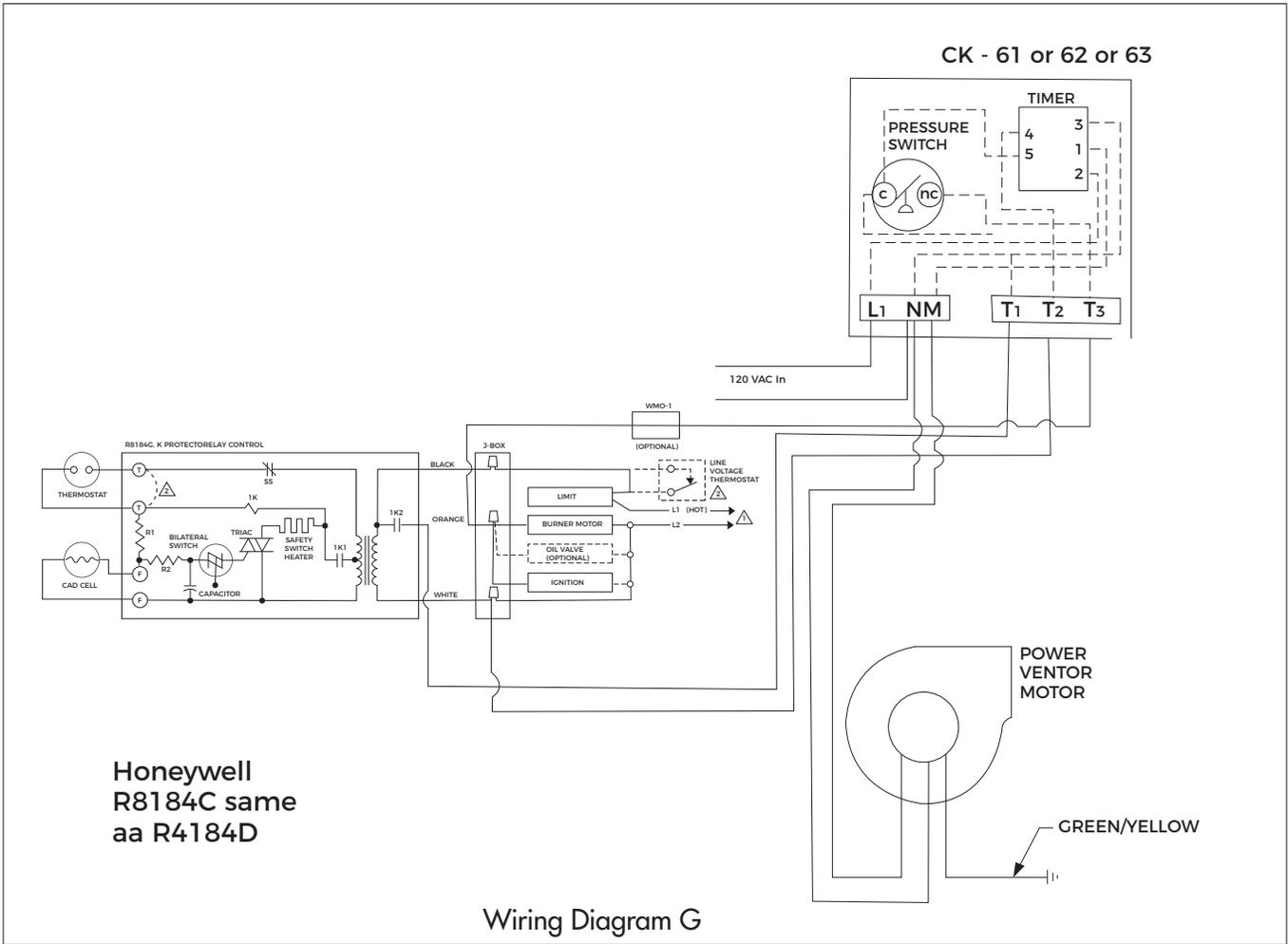
Wiring Diagram D - Warm Air Furnace



Wiring Diagram E - Spark Ignition



Wiring Diagram F - Gas Conversion Burner



HONEYWELL R7184, CARLIN 60200-02 & BECKETT GENISYS™ 7505

POLARITY SENSITIVE

*L1 = Hot

*L2 = Neutral

WARNING: Reversed polarity may cause equipment damage!

----- New wire supplied by installer

 Solderless connector (wire nut)

* L1 is 120V

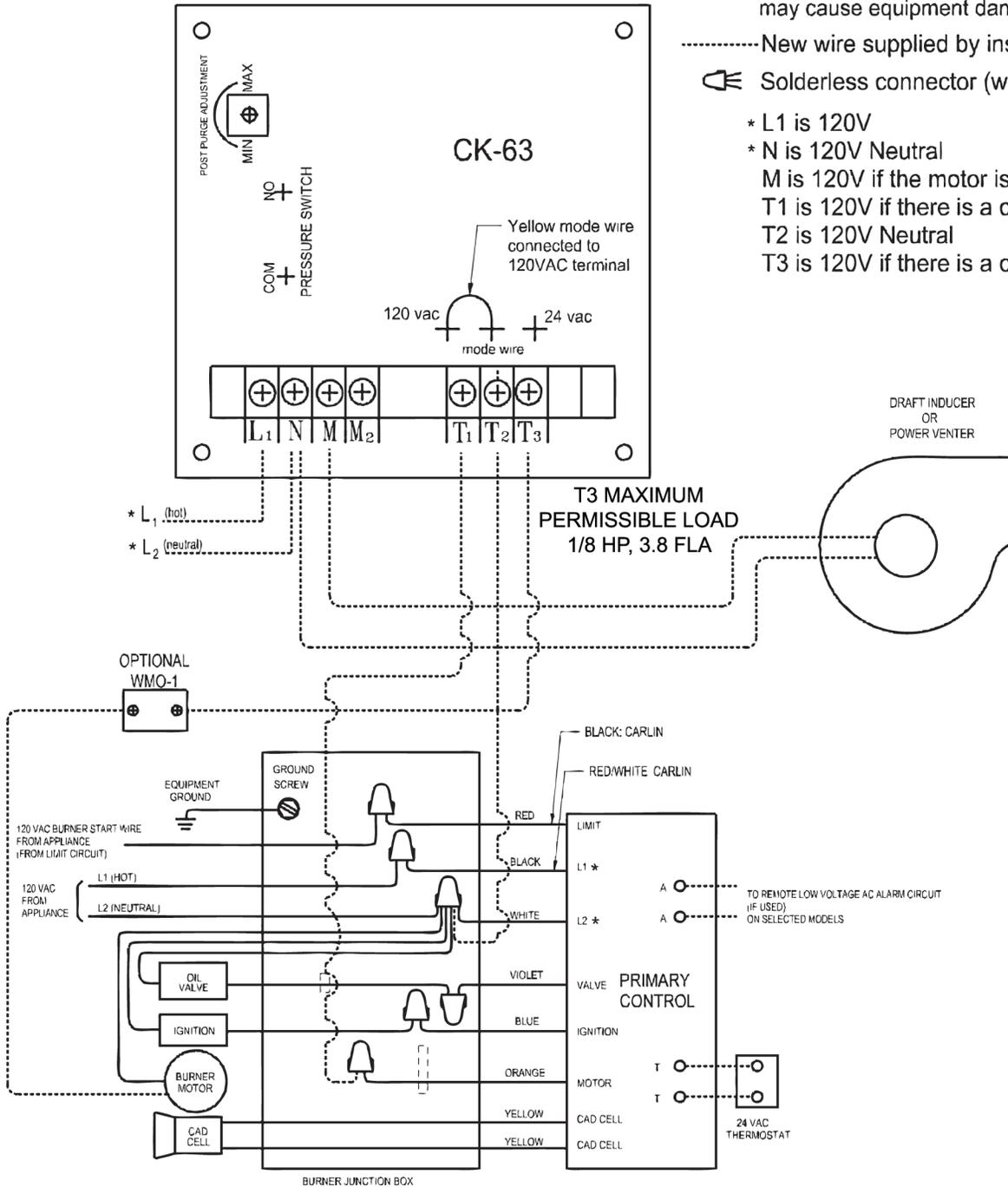
* N is 120V Neutral

M is 120V if the motor is running

T1 is 120V if there is a call for heat

T2 is 120V Neutral

T3 is 120V if there is a call for heat



Wiring Diagram H

This manual may be downloaded and printed from the Field Controls website:
www.fieldcontrols.com

WARRANTY

For warranty information about this or any Field Controls product, visit:
www.fieldcontrols.com

Field Controls Customer Service
252.522.3031



FIELDCONTROLS

AIR TREATMENT COMBUSTION VENTILATION PORTABLES

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