

Gas-Fired Tempered Make-Up Air Unit

Model:

TK5-1PH-FF

1-Phase, 230V, 7.50 HP, Belt driven with Motorized Damper and 20" Blower. MAX 14,300 CFM's





TK5-2000 Direct Fired (2090 lbs.)

Supply Motor:

Model DTP7/54, 7.500 HP, 3 Phase, 230 V, 60Hz, 33.1 FLA, ODP, Premium (E-Plus3) Eff.

Supply Motor Pulleys:

<u>Part Type</u>	<u>Qty.</u>	<u>Browning #</u>	<u>Turns Out</u>
Blower Pulley	1	2B5V154	
Bushing	1	B-2 3/16	
Motor Pulley	1	2VP60 x 1-3/8	3.5

Burner:

Min Output BTU: 73,333 BTU/Hr
Max Output BTU: 2,200,000 BTU/Hr
Size: 48" long
Gas Type: Natural

Supply Performance:

Volume: 14300 cfm Volume Range: 10000-14300 cfm
RPM: 582
TS: 3809 ft/min
SP: 0.660" w.g.
0.500" Ext. + 0.123" Int. + 0.037" Opt.
BHP: 7.15

Heating Schedule:

Altitude: 0'
Winter Entering Air Dry Bulb Temp: 0°F
Temp Rise: 100°F
Output BTU: 1544400
Input BTU: 1678696
BTUs BASED OFF STANDARD AIR DENSITY

Supply Installation Information:

Gas Inlet Pressure: 7 in. w.c. - 14 in. w.c.
Insurance: No Insurance Requirement (ANSI)
Unit Main Input: 61.1 Amps MCA, 100 Amps MOP, 208 V, 6 AWG Wire Min.
Supply Unit Voltage: 1 phs 230 V 60Hz via VFD

Blower:

25" forward curved, centrifugal blower. Permanently lubricated pillow block ball bearings. Enamel finish. 10000-25000 CFM. 2 3/16" x 54-1/2" Shaft. 1000 maximum RPM. Heavy duty angle iron frame. Used in heated and non-heated supply fans.

Temp Control:

RTC Solutions • 40-90°F Discharge Temp Control • Field Wired On/Off Start Command

Intake:

Sloped Filtered Intake for Size #5 Modular Heater. 55.81" Wide X 70.05" Long X 51.00" High. Includes 2" MV EZ Kleen Metal Mesh Filter.

Filters:

8x MV EZ Kleen Metal Mesh Filter. 20"x 25"x 2" Used for heater and supply fan intakes. (3416)

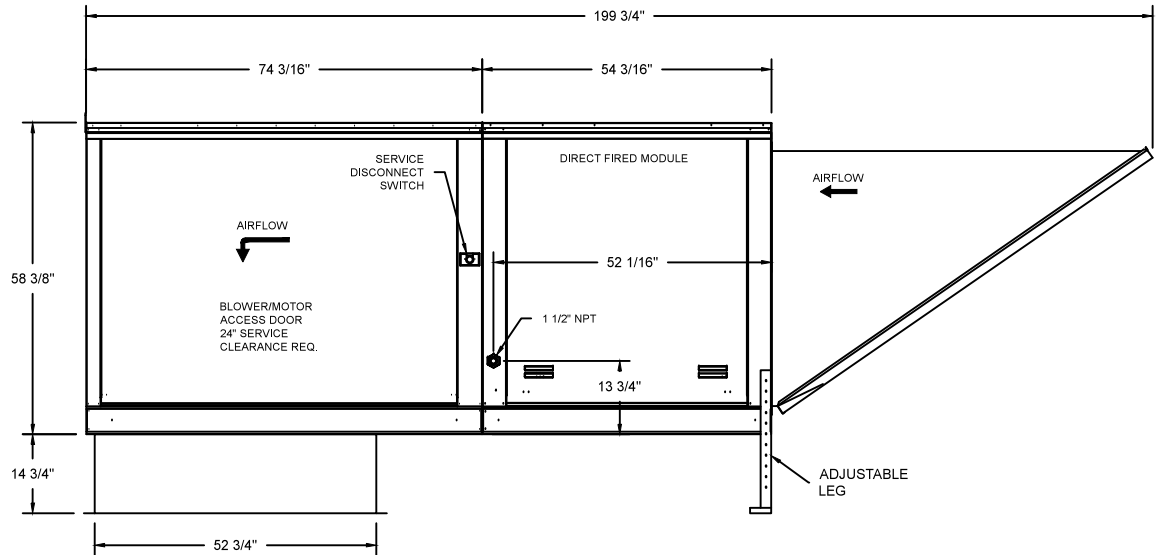
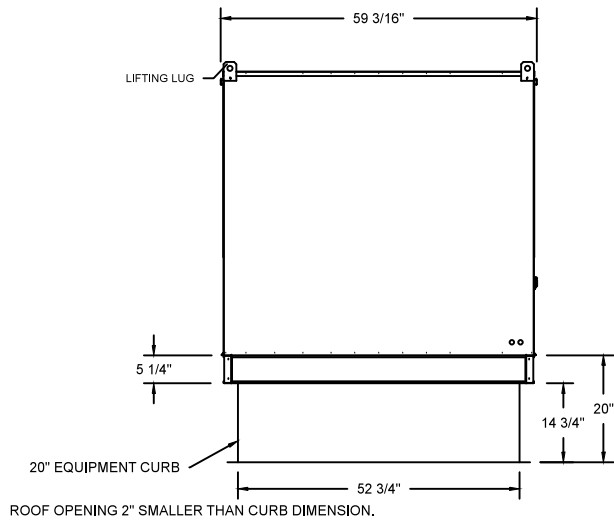
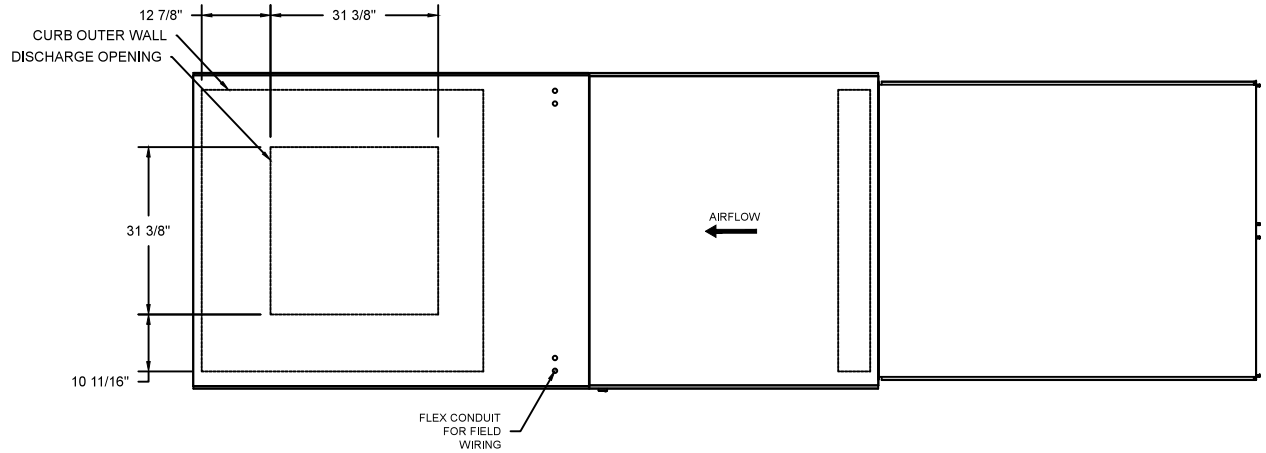
Selected Options:

- Motorized Back Draft Damper 43" X 43" for Size 5 Standard & Modular Heater Units w/Extended Shaft, Standard Galvanized Construction, 3/4" Rear Flange, Low Leakage, NFBUPS Actuator Included
- Low Fire Start. Allows the burner circuit to energize when the modulation control is in a low fire position.
- Gas Pressure Gauge, 0-35", 2.5" Diameter, 1/4" Thread Size
- Gas Pressure Gauge, -5 to +15 Inches Wc., 2.5" Diameter, 1/4" Thread Size
- VAV (Variable-Air-Volume) Wiring Package for Commercial Fans. Manual Speed Control Variable Frequency Drive Included
- Supply Variable Frequency Drive - 15 HP Max., 200/240 V, Three Phase, 42.0 A Max., NEMA 1 Enclosure, (Default is Shipped Loose for Field Installation) PART NEEDS PROGRAMMING
- VFD factory mounted and wired on unit control panel.

TK5 DIRECT FIRED HEATER

1. DIRECT GAS FIRED HEATED MAKE UP AIR UNIT WITH 25" BLOWER AND 48" BURNER
2. INTAKE HOOD WITH EZ FILTERS
3. DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT
4. MOTORIZED BACK DRAFT DAMPER 43" X 43" FOR SIZE 5 STANDARD & MODULAR HEATER UNITS W/EXTENDED SHAFT, STANDARD GALVANIZED CONSTRUCTION, 3/4" REAR FLANGE, LOW LEAKAGE, NFBUPS ACTUATOR INCLUDED
5. LOW FIRE START. ALLOWS THE BURNER CIRCUIT TO ENERGIZE WHEN THE MODULATION CONTROL IS IN A LOW FIRE POSITION.
6. GAS PRESSURE GAUGE, -5 TO +15 INCHES WC., 2.5" DIAMETER, 1/4" THREAD SIZE
7. GAS PRESSURE GAUGE, 0-5#, 2.5" DIAMETER, 1/4" THREAD SIZE

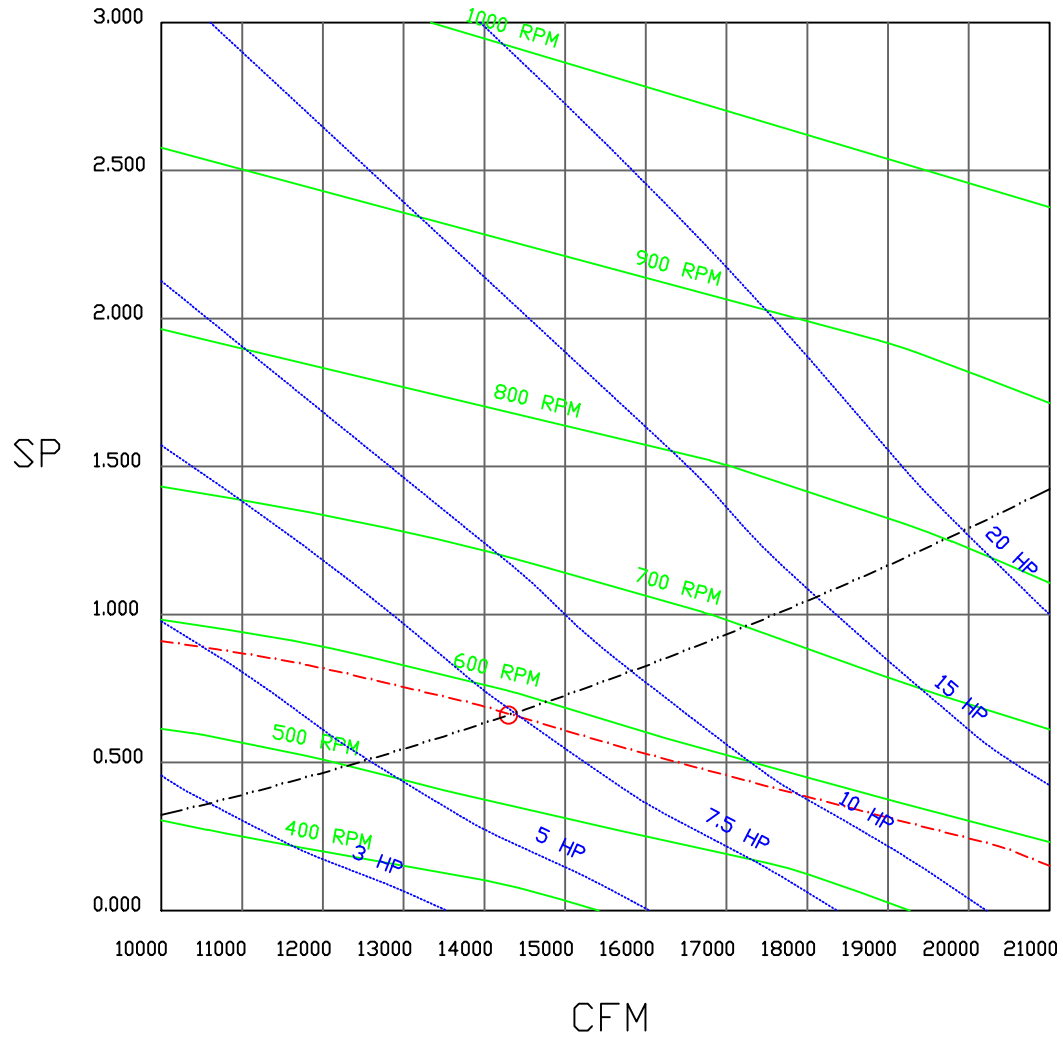
NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE UNLESS OTHERWISE SPECIFIED. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT.



	NORTH AMERICAN KITCHEN SOLUTIONS INCORPORATED	JOB	
		LOCATION	
		DATE 08/01/2018	JOB #
		DWG # TK5	DRAWN BY
		REV.	SCALE

(14300 7.5HP/1PH-230V) - HEATER PERFORMANCE CURVES.

14300 CFM, 0.66 SP @ 582 RPM and 7.15 BHP at 0 feet and 100 deg F
 * Please note that these curves were adjusted for job specific temperature and altitude.



			JOB	
			LOCATION	
			DATE 8/3/2018	JOB #
			DWG #	DRAWN BY
			REV.	SCALE 3/8" = 1'-0"

Direct Fired Heater Wiring

JOB NAKS Direct Fired MUA

DRAWING NUMBER

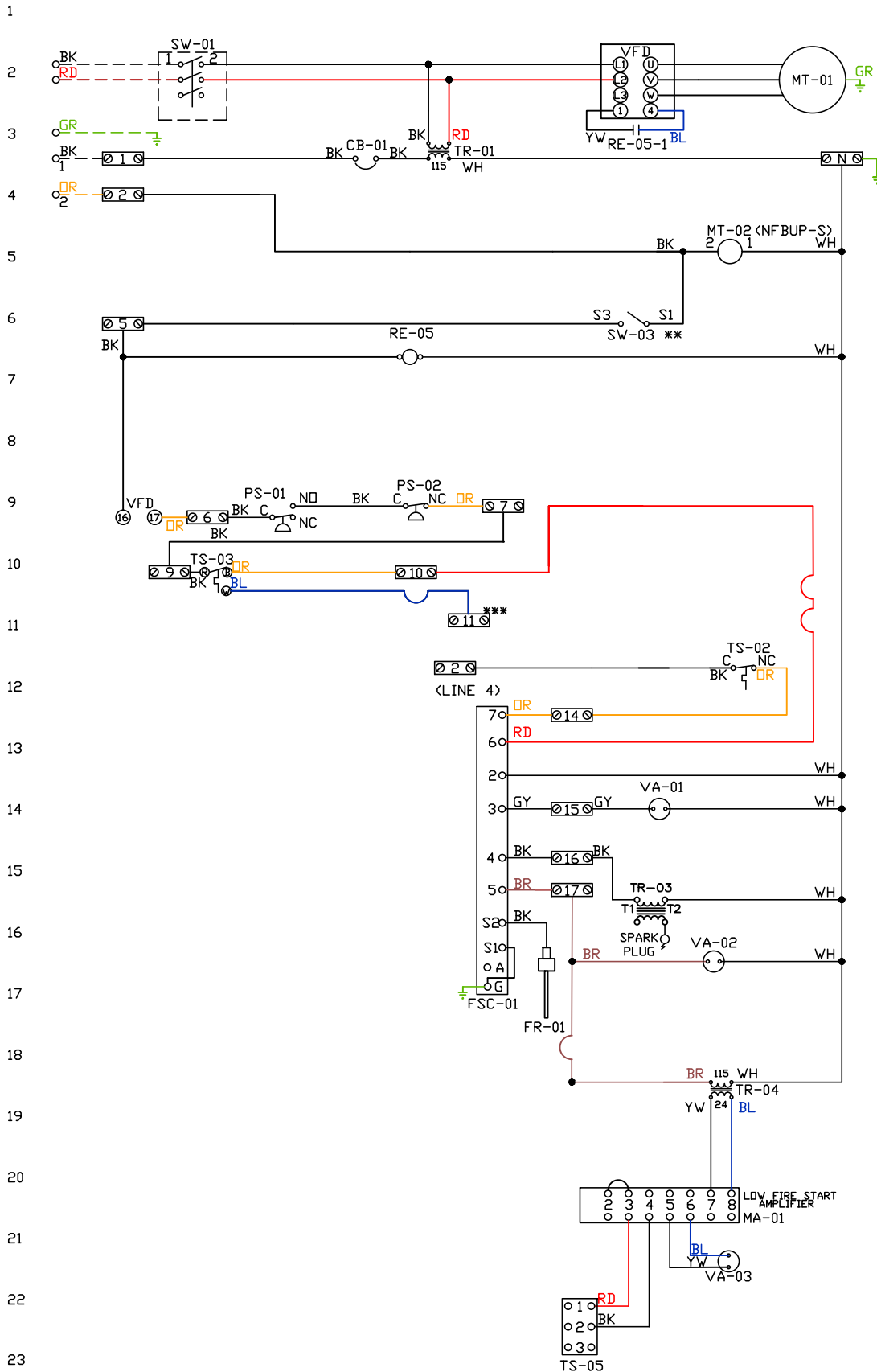
SHIP DATE

MODEL TK 1-5 Series

ATTENTION ELECTRICIAN!
 DROP FOR DISCONNECT CONNECTION
 IS FACTORY SUPPLIED
 CONNECT POWER TO THE DROP

Installed Options
 Field Wired Single Switch Control
 Motorized Back Draft Damper

Discharge Temp. Control



Label	Description	Location
CB-01	Circuit breaker (2amp)	[3]
FR-01	Flame rod	[16]
FSC-01	Fireeye FSC	[11-14]
MA-01	Modulating amplifier	[19]
MT-01	Supply motor	[2]
MT-02	Damper motor	[5]
PS-01	Low AirFlow Switch	[9]
PS-02	High AirFlow Switch	[9]
RE-05	VFD Start Relay	[3I6]
SW-01	Main disconnect switch	[2]
SW-03	Damper end limit switch	[4]
TR-01	Power transformer(200v/33)	
TR-03	Ignition transformer	[14]
TR-04	Power transformer(20va)	[17]
TS-02	High temp limit switch	[10]
TS-03	Intake Air Sensor	[10]
TS-05	Discharge Air Sensor	[21]
VA-01	Pilot gas valve	[12]
VA-02	Main gas valve	[15]
VA-03	Modulating gas valve	[20]

MOTOR INFO
 SUPPLY 7.5HP-230V-3P-33.1FLA
 VFD PART: ESV752N02TXB

ELECTRICAL INFORMATION
 MOTOR/CTRL CIRCUIT MCA: 61.1A
 MOTOR/CTRL CIRCUIT MOP: 100A

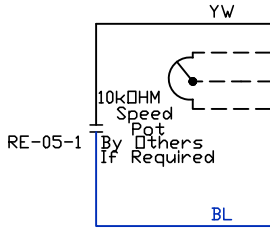
NOTES
 --- DENOTES FIELD WIRING
 _____ DENOTES INTERNAL WIRING

** TERMINALS S4 AND S6 USED ON NF & AF SERIES ACTUATORS
 *** TERMINAL 11 PROVIDES COOLING CONNECTION

WIRE COLOR	SOCKET STYLE
BK-BLACK	ND 4 3
BL-BLUE	NC 2 1
BR - BROWN	CDL 8 7
DR - ORANGE	CDM 6 5
GY - GRAY	
GR - GREEN	
WH - WHITE	
PR - PURPLE	
RD - RED	
YW - YELLOW	

Installed Options
Manual Control

SMV SERIES VARIABLE FREQUENCY DRIVE



TERMINAL	FUNCTION
1	Digital Input(Start/Stop)
2	Analog Common
5	Analog Input: 0-10 VDC
6	Internal DC Supply for Speed Pot: +10 VDC
25	Analog Input: 4-20 mA
30	Analog Output
4	Digital Reference/Common
11	Internal DC Supply for External Devices
13A	Digital Input: Configurable with P121
13B	Digital Input: Configurable with P122
13C	Digital Input: Configurable with P123
14	Digital Output: Configurable with P142
30	Analog Output: Configurable with P150...P155
16	Relay Output: Configurable with P140
17	
PE	Ground Terminal
L1	3 Phase Input or Single Phase Input
L2	3 Phase Input or Single Phase Input
L3 (N)	3 Phase input (Neutral for 120v)
U	3 Phase AC Motor
V	3 Phase AC Motor
W	3 Phase AC Motor

BK
OR BURNER CIRCUIT CONTACT

POWER SUPPLY

MOTOR

Component Identification

RE-05 VFD Start relay [2]

SUPPLY DRIVE PARAMETER SETTINGS*

All external control wires to motor speed control should be 16-20 AWG shielded multiconductor cables and must not be run in the same conduit or raceway with any high power wiring. Ground Shielded Cable at the drive chassis ONLY.

PG. 11 OF THE DRIVE MANUAL DESCRIBES THE PROPER INSTALLATION PROCEDURE

PG. 19 OF THE DRIVE MANUAL DESCRIBES THE PROGRAMMING PROCEDURE OF THE DRIVE

PG. 23 OF THE DRIVE MANUAL DESCRIBES THE PARAMETER SETTINGS OF THE DRIVE

*NOTE: THE DEFAULT PASSWORD FROM THE FACTORY REQUIRED TO PROGRAM THE DRIVE IS '225'.

EPM PROGRAM: VAV_MANKUSE LG_HP EPM IF >= 15HP)
 P100 (Start Source) = 01 (Terminal Strip)
 P102 = ***Minimum Frequency (Hz)
 P103 = ***Maximum Frequency (Hz)
 (P103 is based on max wheel RPM)
 P110 (Start Method) = 03 (Auto Re-start)
 P140 (Form A [NO] Relay) = 01 (Run)
 P144 (Relay Inversion) = 00 (None)
 P166 (Carrier Frequency) = 00 (4 kHz)
 P171 (Current Limit) = 150 (% of Max I)

Adjust manually on all drives
 P107 = 00 (If 120 or 208 VAC)
 or 01 (If 230, 480 or 575 VAC)
 P108 = Motor FLA x 100 / Drive Output Rating
 P165 (Base Voltage) = Set to Motor Voltage
 (Preset@230V) P165 FDR STANDARD DRIVE ONLY
 P167 (Base Frequency) = Calculated Per Fan

When Speed POT is Required the Following Parameters Must be Set:
 P101 (Reference Source) = 01 (0-10 VDC)
 P160 (Speed @ 0 VDC Signal) = Min Frequency
 P161 (Speed @ 10 VDC Signal) = Max Frequency

IT MAY BE REQUIRED TO FULLY POWER DOWN THE DRIVE AND TURN BACK ON IN ORDER TO INITIATE NEW PARAMETER SETTINGS.

***Min. and Max. Frequency Settings override all other Preset speeds/Parameters.

MOTOR INFO
 SUPPLY 7.5HP-230V-3P-33.1FLA
 VFD PART: ESV113N02TXB571

ELECTRICAL INFORMATION
 MOTOR/CTRL CIRCUIT MCA: 61.1A
 MOTOR/CTRL CIRCUIT MDP: 100A

GENERAL NOTES

NOTES
 - - - - DENOTES FIELD WIRING
 _____ DENOTES INTERNAL WIRING
 WIRE COLOR
 BK - BLACK YW - YELLOW
 BL - BLUE GR - GREEN
 BR - BROWN GY - GRAY
 OR - ORANGE PR - PURPLE
 RD - RED PK - PINK
 WH - WHITE

Installation Wiring

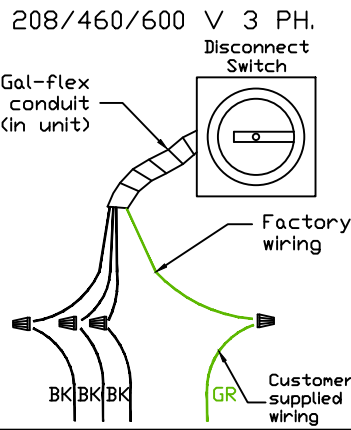
JOB *NAKS Direct Fired MUA*

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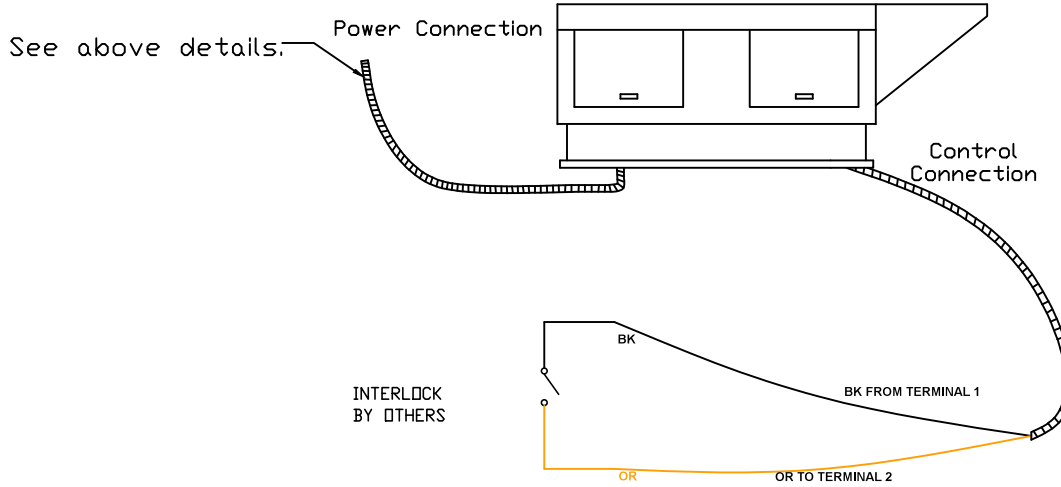
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MODEL **TK 1-5 Series**

Installed Options



Field Wired On/Off Switch



NOTES

- WIRE COLOR
- BK - BLACK
 - BL - BLUE
 - BR - BROWN
 - OR - ORANGE
 - RD - RED
 - WH - WHITE
 - YW - YELLOW
 - GR - GREEN
 - GY - GRAY
 - PR - PURPLE
 - PK - PINK