

## Gas-Fired Tempered Make-Up Air Unit

Model:

**TK1ECDD-1PH-FF**

1-Phase, 208V, 1.675 HP, Direct Drive, ECM Motor with Motorized Damper and 18" Blower. MAX 2300 CFM's



TK1-250-18Z Direct Fired Direct Drive (618 lbs.)



Direct Gas Fired Heated Make Up Air Unit with 18" Direct Drive Fan

**Supply Motor:**

Model 162775/A01-ECM-50-277-18, 1.675 HP, 1 Phase, 208 V, 50Hz, 9.6 FLA, ODP-ECM (Open Drip Proof Electronically Commutated Motor)

**Burner:**

Min Output BTU: 18,000 BTU/Hr  
Max Output BTU: 275,000 BTU/Hr  
Size: 6" long  
Gas Type: Natural

**Supply Performance:**

Volume Range: 1000-2300 cfm  
RPM: 1939  
TS: 9137 ft/min  
SP: 0.601" w.g.  
0.500" Ext. + 0.060" Int. + 0.041" Opt.  
BHP: 1.552

**Heating Schedule:**

Altitude: 0'  
Winter Entering Air Dry Bulb Temp: 0°F  
Temp Rise: 100°F  
Output BTU: 248400  
Input BTU: 270000  
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: 13.2 Amps MCA, 20 Amps MOP, 208 V, 14 AWG Wire Min.  
Supply Unit Voltage: 1 phs 208 V 50Hz

**Construction Features**

Housing constructed of heavy duty G90 galvanized steel • Forward curved centrifugal blower wheel • Vibration isolation • Adjustable drive assemblies • Adjustable motor mount • Ball bearing motors • Heavy duty, pre-lubricated bearings rated for 200,000 hours of operation • Static resistant belts • Service doors on both sides • Horizontal & down discharge • Large intake area ensures low pressure drop across unit • Spring loaded profile plates automatically adjust for any airflow - no manual setting required! • Weatherproof safety disconnect switch • Modular design provides design flexibility • Fully insulated casing

**Blower:**

18 Inch Plenum Fan for size 1 MOD. Motor integral to Wheel. Max RPM = 2900

**Temp Control:**

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

**Intake:**

Sloped Filtered Intake for Size #1 Modular Heater. 21.813" Wide x 44.375" Long x 23.375" High. Includes 2" MV EZ Kleen Metal Mesh Filters.

**Filters:**

3x MV EZ Kleen Metal Mesh Filter. 16"x 20"x 2" Used for heater and supply fan intakes. (3412)

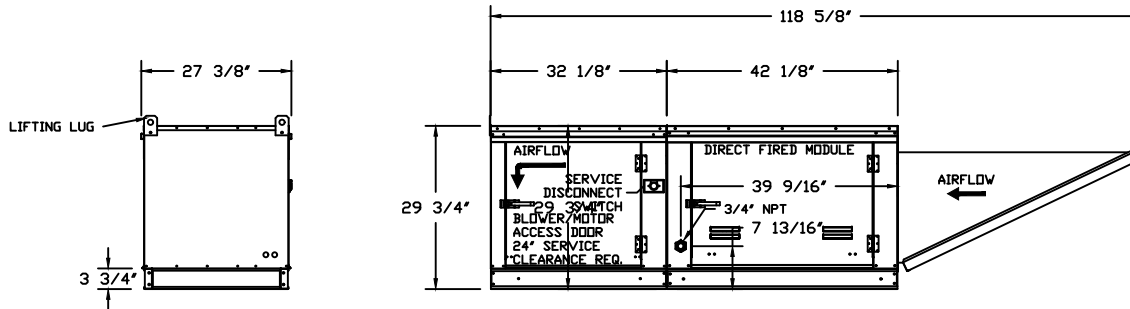
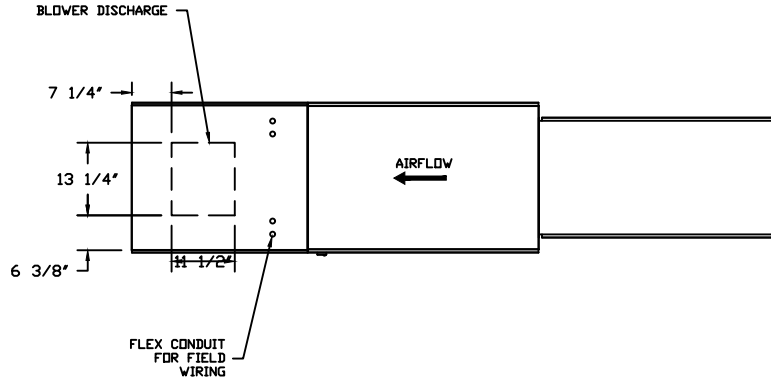
**Selected Options:**

- Motorized Back Draft Damper 16" X 18" for Size 1 Standard & Modular Heater Units w/Extended Shaft, Standard Galvanized Construction, 3/4" Rear Flange, Low Leakage, TFB120S 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
- ECM Wiring Package and Manual or 0-10 VDC Control for Supply EC Ziehl Fans. RTC Controller

TK1-D.250-18Z DIRECT FIRED HEATER

1. DIRECT GAS FIRED HEATED MAKE UP AIR UNIT WITH 18" DIRECT DRIVE FAN
2. INTAKE HOOD WITH EZ FILTERS
3. DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT
4. MOTORIZED BACK DRAFT DAMPER 16" X 18" FOR SIZE 1 STANDARD & MODULAR HEATER UNITS W/EXTENDED SHAFT, STANDARD GALVANIZED CONSTRUCTION, 3/4" REAR FLANGE, LOW LEAKAGE, TFB120S 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, 0-35", 2.5" DIAMETER, 1/4" THREAD SIZE
7. GAS PRESSURE GAUGE, -5 TO +15 INCHES WC., 2.5" DIAMETER, 1/4" THREAD SIZE
8. ECM WIRING PACKAGE AND MANUAL DR 0-10 VDC CONTROL FOR SUPPLY EC ZIEHL FANS. RTC CONTROLLER

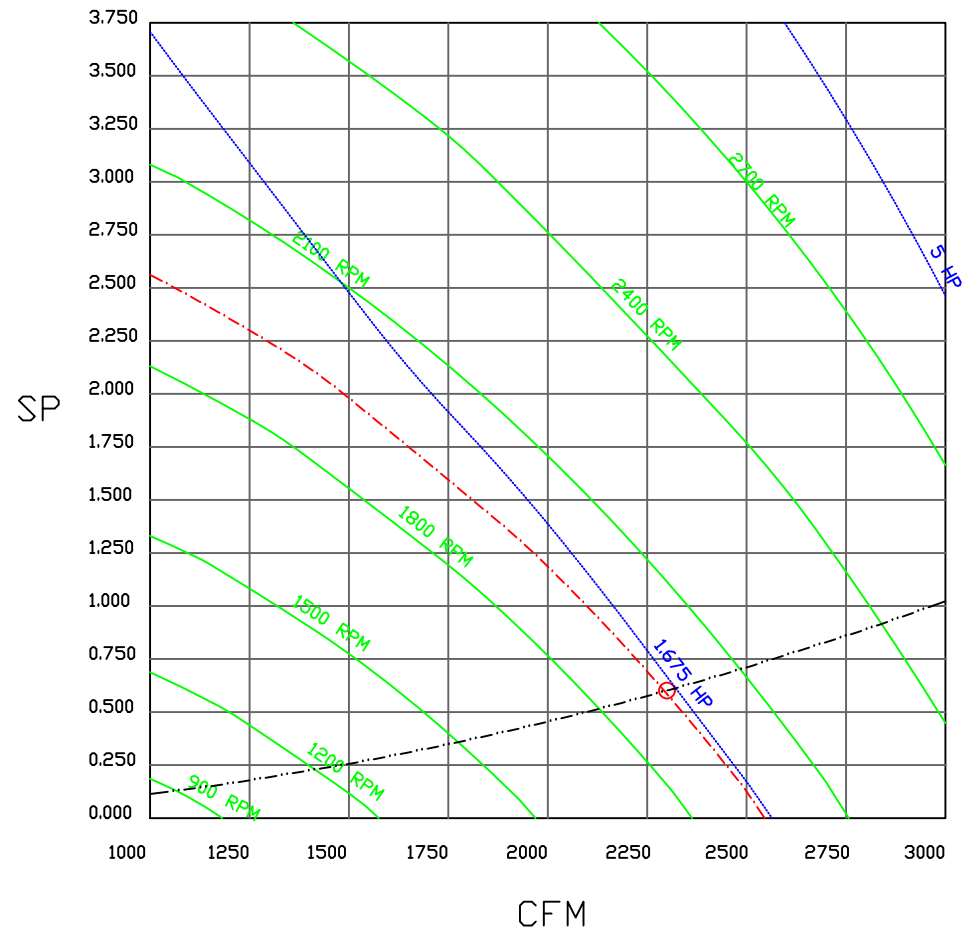
NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE UNLESS OTHERWISE SPECIFIED. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF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



	<b>NORTH AMERICAN KITCHEN SOLUTIONS INCORPORATED</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">JOB</td> </tr> <tr> <td colspan="2">LOCATION</td> </tr> <tr> <td>DATE</td> <td>JOB #</td> </tr> <tr> <td>DWG #</td> <td>DRAWN BY</td> </tr> <tr> <td>REV.</td> <td>SCALE 1/4" = 1'-0"</td> </tr> </table>	JOB		LOCATION		DATE	JOB #	DWG #	DRAWN BY	REV.	SCALE 1/4" = 1'-0"
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(2300 1.675HP/1PH-208V) - HEATER PERFORMANCE CURVES.

2300 CFM, 0.601 SP @ 1939 RPM and 1.552 BHP at 0 feet and 100 deg F  
 \* Please note that these curves were adjusted for job specific temperature and altitude.



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

# Direct Fired Heater Wiring

JOB NAKS Direct Fired Direct Drive MUA

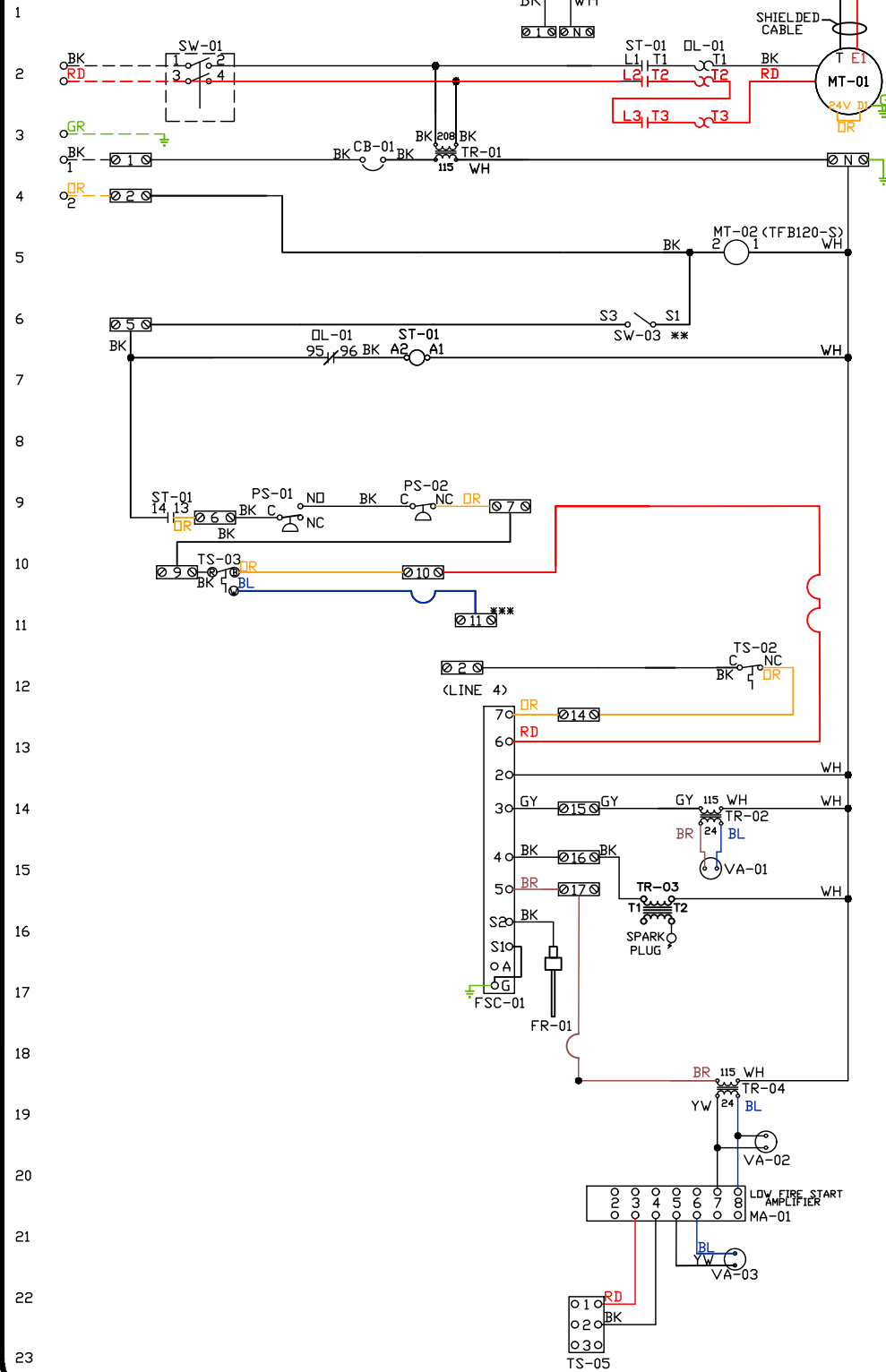
DRAWING NUMBER

SHIP DATE

MODEL TK 1-5 Series Direct Drive ECM

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

OPTIONAL 0-10VDC  
SPEED REFERENCE  
INPUT



Installed Options  
Field Wired Single Switch Control  
Motorized Back Draft Damper

Discharge Temp. Control

Label	Component Identification 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]
DL-01	Supply motor overload	[2][7][9]
PS-01	Low Air-Flow Switch	[9]
PS-02	High Air-Flow Switch	[9]

SC-01	RTC-FSC-1	[1]
ST-01	Supply motor contactor	[2][7][9]
SW-01	Main disconnect switch	[2]
SW-03	Damper end limit switch	[4]
TR-01	Power transformer(200va)	[12]
TR-02	Power transformer(20va)	[12]
TR-03	Ignition transformer	[14]
TR-04	Power transformer(20va)	[17]
TR-06	24VAC 20VA Transformer	[1]
TS-02	High temp limit switch	[10]
TS-03	Intake Air Sensor	[10]
TS-05	Discharge Air Sensor	[21]

**MOTOR INFO**  
SUPPLY: 1.675HP-208V-1P-9.6FLA  
CONTACTOR: 100-K12D10  
OVERLOAD: 193-KC10

**ELECTRICAL INFORMATION**  
MOTOR/CTRL CIRCUIT MCA: 13.2A  
MOTOR/CTRL CIRCUIT MDP: 20A

### 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	NO 4 1 3
BL-BLUE	NC 2 1 1
GR - GREEN	COM 8 7 7
BR - BROWN	COM 6 1 5
GY - GRAY	
RD - RED	
WH - WHITE	
PK - PINK	
PR - PURPLE	

# Installation Wiring

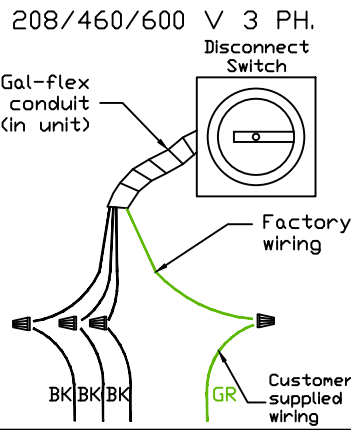
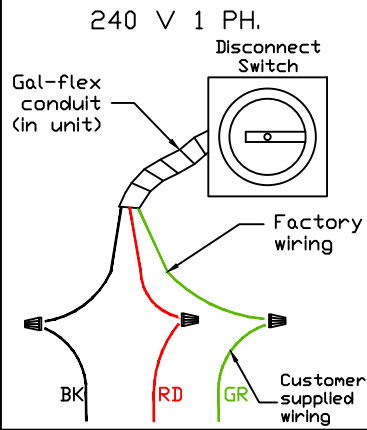
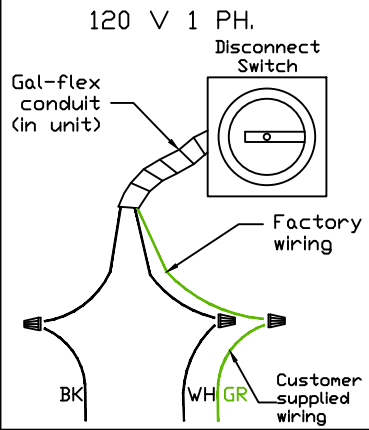
JOB *NAKS Direct Fired MUA*

DRAWING NUMBER

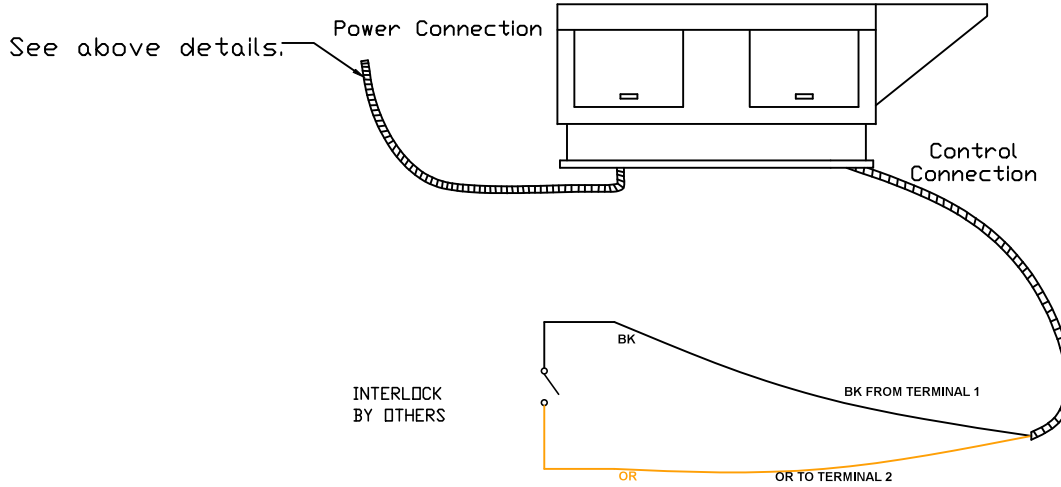
SHIP DATE

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