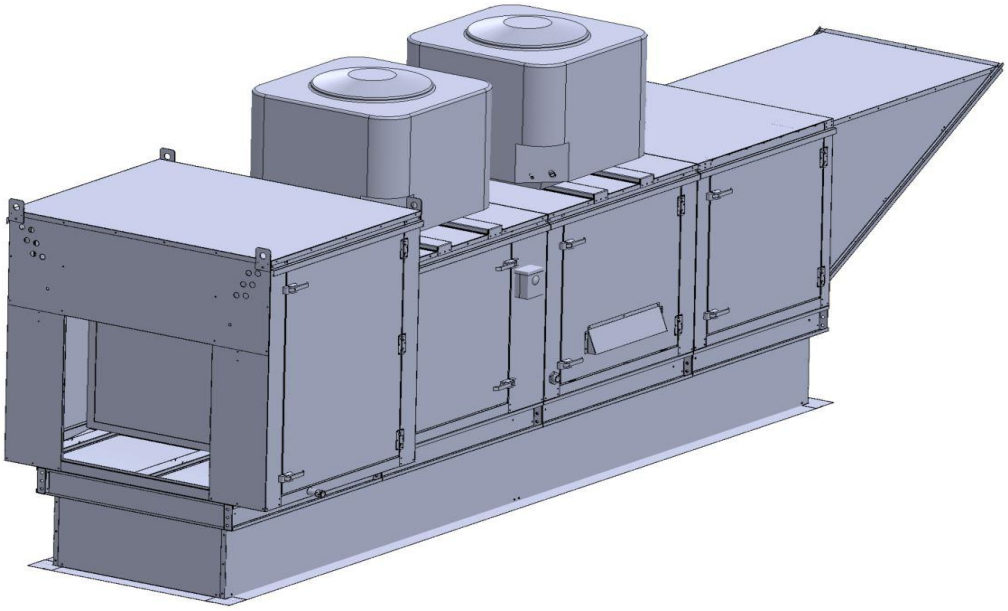
NORTH AMERICAN KITCHEN SOLUTIONS INCORPORATED

Gas-Fired Tempered Make-Up Air Unit / DX

Model:

TK4-DX-3PH-FF

3-Phase, 208V, 7.50 HP, Belt driven with Motorized Damper and 20” Blower. MAX 9000 CFM’s



NAKS Inc
172 Reaser Ct
Elyria, OH 44035

Tel: (440) 365-4567
Fax: (440) 365-2100
www.naksinc.com

TK4-1000 Direct Fired MPU (3438 lbs./163 curb)

Supply Motor:
Model DTP7/54, 7.500 HP, 3 Phase, 208 V, 60Hz, 21.1 FLA, ODP, Premium (E-Plus3) Eff.

Supply Motor Pulleys:

Part Type	Qty	Browning #	Turns Out
Belt	2	BX85	
Blower Pulley	1	2BK130H	
Motor Pulley	1	2VP60 x 1-3/8	3.5

Burner:
Min Output BTU: 36,667 BTU/Hr
Max Output BTU: 1,100,001 BTU/Hr
Size: 24" long
Gas Type: Natural

Supply Performance:
Volume: 9000 cfm Volume Range: 6000-9000 cfm
RPM: 723
TS: 3786 ft/min
SP: 1.315" w.g.
0.500" Ext. + 0.083" Int. + 0.732" Opt.
BHP: 4.807

Heating Schedule:
Altitude: 0'
Winter Entering Air Dry Bulb Temp: 0°F
Temp Rise: 100°F
Output BTU: 972000
Input BTU: 1056522
BTUs BASED OFF STANDARD AIR DENSITY

Cooling Schedule:
DX Coil Entering Dry Bulb Temperature: 90°F
DX Coil Entering Wet Bulb Temperature: 72°F
DX Coil Leaving Dry Bulb Temperature: 78°F
DX Coil Leaving Wet Bulb Temperature: 67°F
DX Coil Total Capacity: 153.8 MBH
DX Coil Sensible Capacity: 113.6 MBH
DX Coil Latent Capacity: 40.2 MBH
Temperature drop calculations are based on tested data.

Supply Installation Information:
Gas Inlet Pressure: 7 in. w.c. - 14 in. w.c.
Insurance: No Insurance Requirement (ANSI)
Unit Main Input: 27.6 Amps MCA, 45 Amps MOP, 208 V, 10 AWG Wire Min.
Condenser #1: 21.4 Amps MCA, 30 Amps MOP, 208-230, 12 AWG Wire Min.
Condenser #2: 21.4 Amps MCA, 30 Amps MOP, 208-230, 12 AWG Wire Min.
Condenser #3: 21.4 Amps MCA, 30 Amps MOP, 208-230, 12 AWG Wire Min.
Supply Unit Voltage: 3 phs 208 V 60Hz

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:
20" forward curved, centrifugal blower. Permanently lubricated pillow-block ball bearings. Enamel finish. 5000-18000 CFM. 1-7/16" x 37.25" Shaft. 1100 max. 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 #4 Modular Direct Fired Make-Up Air Units. 45.81" Wide x 70.05" Long x 44.00" High. Includes 2" MV EZ Kleen Metal Mesh FIlter.

Filters:
10x MV EZ Kleen Metal Mesh Filter. 16"x 20"x 2" Used for heater and supply fan intakes. (3412)

Curb & Supports:
RAIL - 6" Width X 42" Length X 20" Height
RAIL - 6" Width X 42" Length X 20" Height
RAIL - 6" Width X 42" Length X 20" Height
ROOF CURB - 42" Square X 20" Supply Height, Insulated

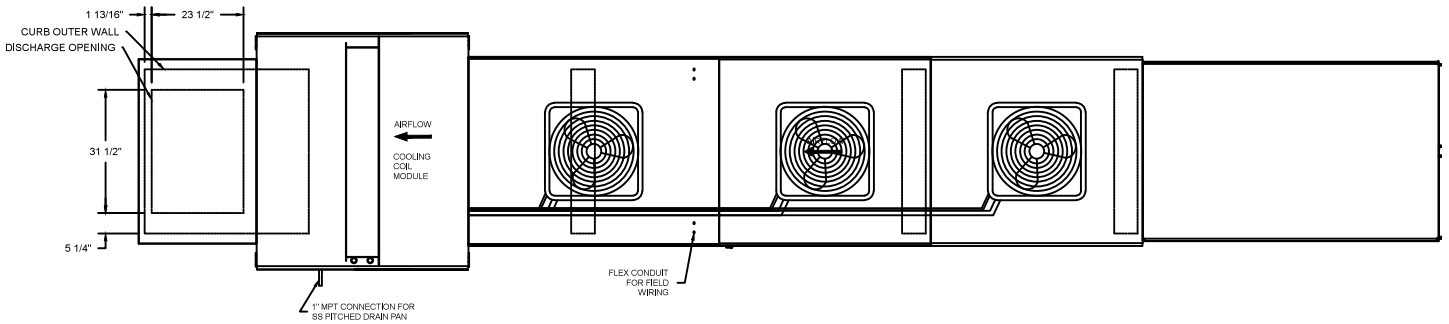
Selected Options:
- Low Fire Start. Allows the burner circuit to energize when the modulation control is in a low fire position.
- Gas Pressure Gauge, 0-35", 2.5" Diameter, 1/4" Thread Size
- Gas Pressure Gauge, -5 to +15 Inches Wc., 2.5" Diameter, 1/4" Thread Size
- DX Cooling Intake Air Thermostat and Relays Mounted in Unit - Set Point For Thermostat Should Be 85°F.
- 15 Ton, 3 Circuit (5/5/5) Modular Packaged Cooling Option for Size 4 Modular Packaged Unit. Includes Condenser, DX Coil, Filter/Dryer Kit, Hard Start Kit, Thermal Expansion Valve, R410A Refrigerant, and Refrigerant Piping. (6,000 to 9,000 cfm) NOT BUILT WITH OPPOSITE SIDE CONTROLS OR OPPOSITE AIRFLOW DIRECTION. CONDENSERS REQUIRE SEPARATE 208V, 3 PHASE POWER SUPPLY UNLESS ORDERED WITH SINGLE POINT CONNECTION. Coil = 4EZ0602B
- Downturn Plenum for Size 4 Cooling Coil Module - Required for Down Discharge Cooling Coil Applications
- Support shell for Size 4 Modular Package Unit for Third Condenser. Includes control vestibule. Includes condenser supports.

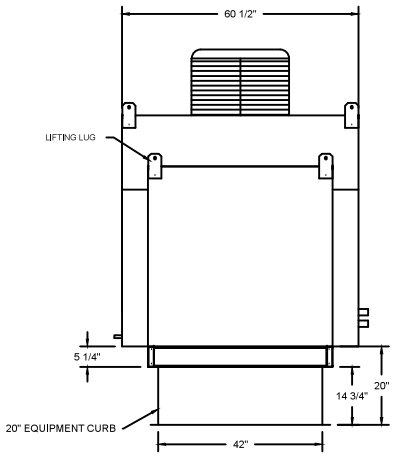
Does not include return air or inlet air damper.

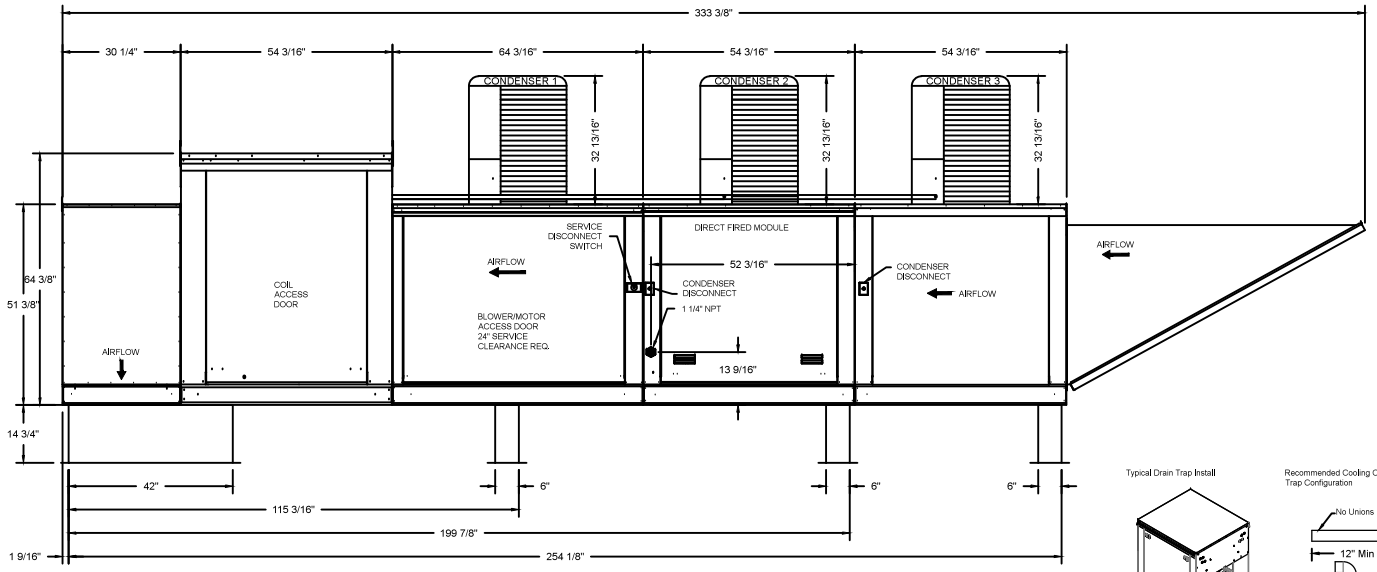
- Motorized Back Draft Damper 34" X 36" for Size 4 Standard & Modular Heater Units w/Extended Shaft, Standard Galvanized Construction, 3/4" Rear Flange, Low Leakage, NFBUP-S Actuator Included

TK4 DIRECT FIRED HEATER WITH DX COOLING
1. DIRECT GAS FIRED HEATED MAKE UP AIR UNIT WITH 18" BLOWER AND 12" BURNER.
2. INTAKE HOOD WITH EZ FILTERS
3. DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT
4. MOTORIZED BACK DRAFT DAMPER 30" X 30" FOR SIZE 3 STANDARD & MODULAR HEATER UNITS W/EXTENDED SHAFT, STANDARD GALVANIZED CONSTRUCTION, 3/4" REAR FLANGE, LOW LEAKAGE, NFBUP-S 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. 15 TON, DUAL CIRCUIT (10/5) MODULAR PACKAGED COOLING OPTION FOR SIZE 3 MODULAR PACKAGED UNIT. INCLUDES CONDENSER, DX COIL, FILTER/DRYER KIT, THERMAL EXPANSION VALVE, R410A REFRIGERANT, AND REFRIGERANT PIPING.
9. FULL CRATING FOR COMMERCIAL HEATERS FOR SHIPPING.
10. DOWNTURN PLENUM FOR SIZE 3 COOLING COIL MODULE - REQUIRED FOR DOWN DISCHARGE COOLING COIL APPLICATIONS
11. DX COOLING INTAKE AIR THERMOSTAT AND RELAYS MOUNTED IN UNIT - SET POINT FOR THERMOSTAT SHOULD BE 85°F.

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.

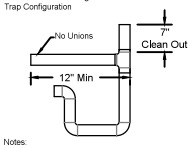






Typical Drain Trap Install

Recommended Cooling Coil Drain Trap Configuration



Notes:
1) 1" diameter PVC Pipe only
2) Use only low profile couplings
3) Add clean out as shown

BUILT IN ACCORDANCE WITH NFPA No. 96

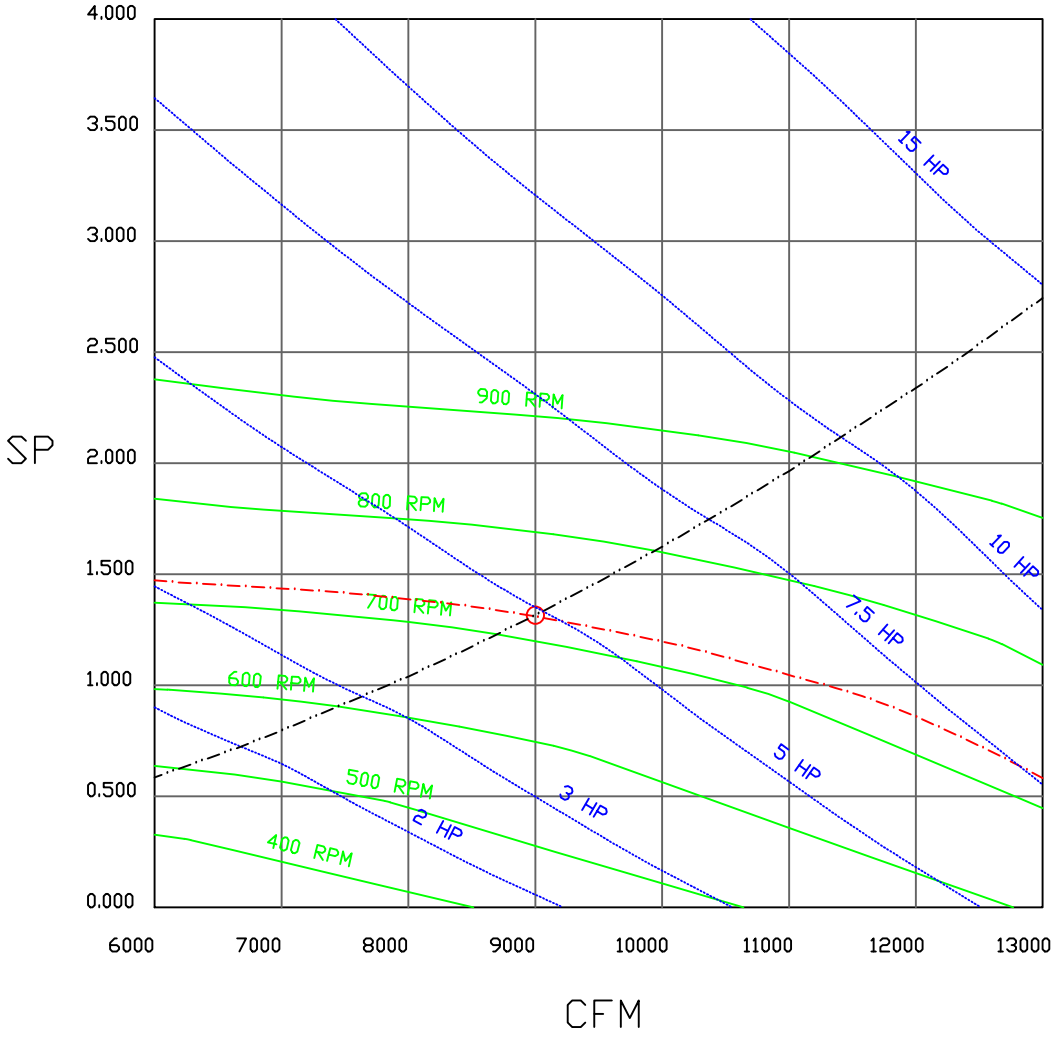
naks NORTH AMERICAN KITCHEN SOLUTIONS INCORPORATED

JOB	
LOCATION	
DATE 8/31/18	JOB #
DWG #	DRAWN BY
REV.	SCALE

(MPU 9000 7.5HP/3PH-208V) - HEATER PERFORMANCE CURVES.

9000 CFM, 1.315 SP @ 723 RPM and 4.807 BHP at 0 feet and 100 deg F

* Please note that these curves were adjusted for job specific temperature and altitude.



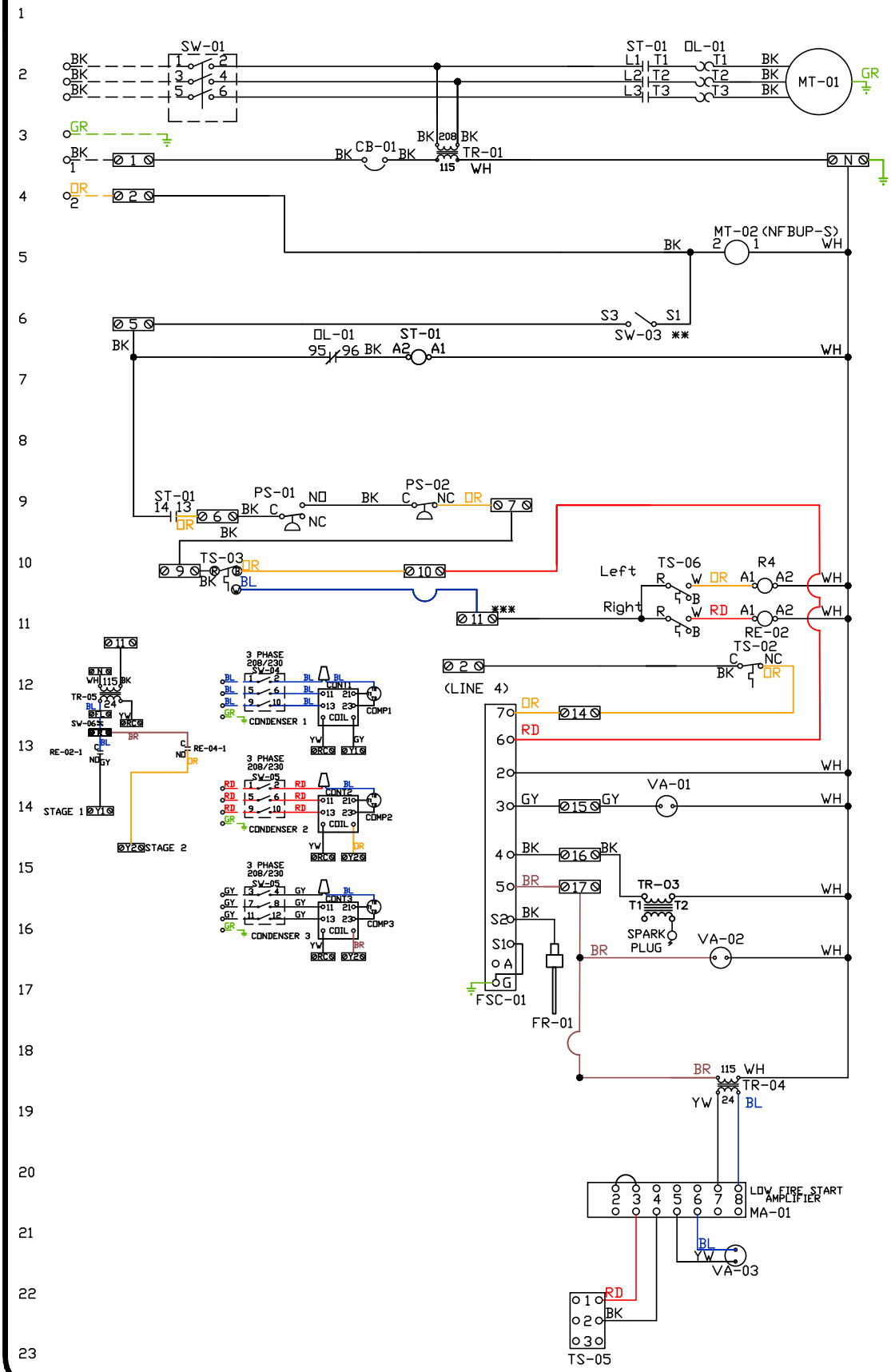
naks NORTH AMERICAN KITCHEN SOLUTIONS INCORPORATED	JOB		
	LOCATION		
	DATE 8/27/2018	JOB #	
	DWG #	DRAWN BY	
	REV.	SCALE 3/8" = 1'-0"	

Modular Package Unit Wiring

DRAWING NUMBER	SHIP DATE	MODEL **TK 1-4 Series**

JOB *NAKS DIRECT FIRED MPU*

!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

Cooling Thermostat and Relay

Component Identification

Label	Description	Location
CB-01	Circuit breaker (2amp)	[3]
FR-01	Flame rod	[16]
FSC-01	Fireye 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]
PS-01	Low Airflow Switch	[9]
PS-02	High Airflow Switch	[9]
RE-02	Stage 1 Heat/Cool Relay	[11][13]
RE-04	Stage 2 Cooling Relay	[11][13]
ST-01	Supply motor contactor	[2][7][9]
SW-01	Main disconnect switch	[2]
SW-03	Damper end limit switch	[4]
SW-04	40 Amp Rotary Disconnect	[12-14]
SW-05	40 Amp Rotary Disconnect	[14-15]
SW-06	Overflow Switch	[12-13]
TR-01	Power transformer(200v)	[3]
TR-03	Ignition transformer	[14]
TR-04	Power transformer(20va)	[17]
TR-05	Cond Transformer(40va)	[12]
TS-02	High temp limit switch	[10]
TS-03	Intake Air Sensor	[10]
TS-05	Discharge Air Sensor	[21]
TS-06	Cooling Thermostat	[16]
VA-01	Pilot gas valve	[12]
VA-02	Main gas valve	[15]
VA-03	Modulating gas valve	[20]

MOTOR INFO

SUPPLY	7.5HP-208V-3P-21.1FLA
CONTACTOR:	100-C23D10
OVERLOAD:	193-T1AC21

ELECTRICAL INFORMATION

MOTOR/CTRL CIRCUIT MCA: 27.6A
MOTOR/CTRL CIRCUIT MOP: 45A
COND1 MCA = 21.4A COND1 MOP = 30A
COND2 MCA = 21.4A COND2 MOP = 30A
COND3 MCA = 21.4A COND3 MOP = 30A

NOTES

- - - - - DENOTES FIELD WIRING
——— DENOTES INTERNAL WIRING

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

WIRE COLOR

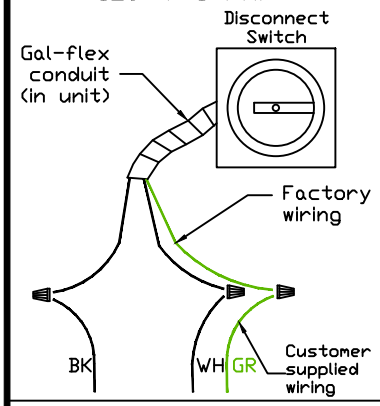
BK-BLACK	YW - YELLOW	RD - RED
BL-BLUE	GR - GREEN	WH - WHITE
BR - BROWN	GY - GRAY	PK - PINK
OR - ORANGE	PR - PURPLE	

SOCKET STYLE "CLION" RELAY

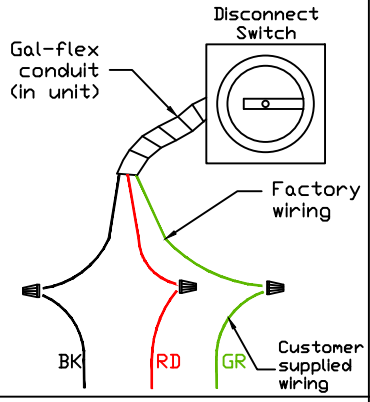
NO	4	3
NC	2	1
COIL	8	7
COM	6	5

Installation Wiring	JOB NAKS Direct Fired MPU	
DRAWING NUMBER	SHIP DATE	MODEL **TK 1-4 Series**

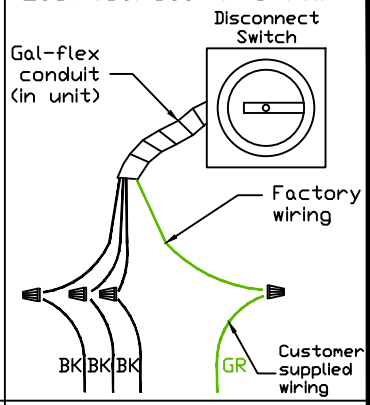
120 V 1 PH.



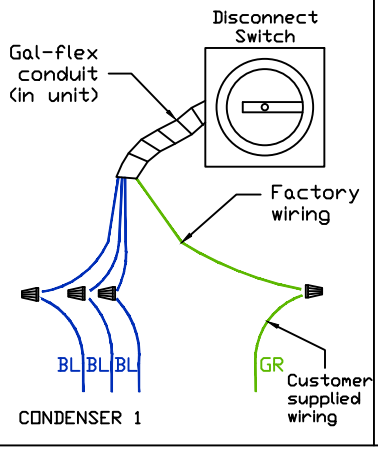
240 V 1 PH.



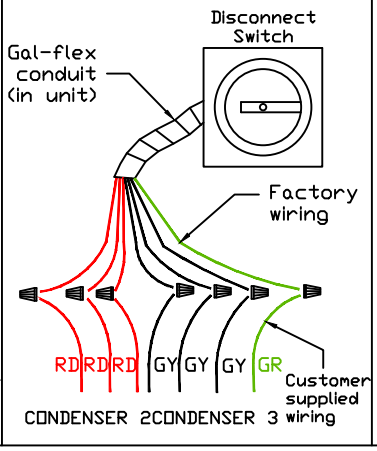
208/460/600 V 3 PH.



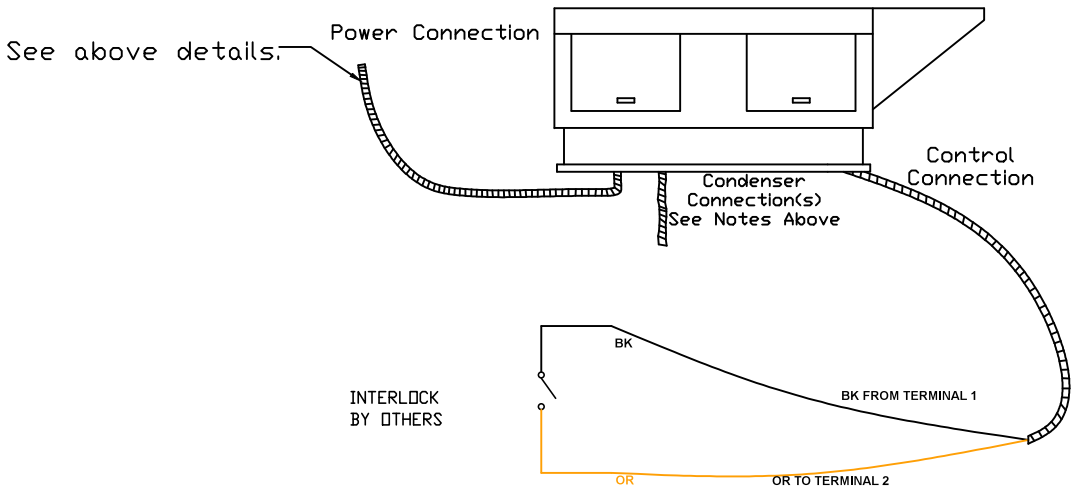
208/230V 3PH



208/230V 3PH



DO NOT CONNECT CONDENSER POWER DROPS TO KITCHEN CONTROL PACKAGE STARTERS OR VFDS



Installed Options

Field Wired On/Off Switch

NOTES

WIRE COLOR

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