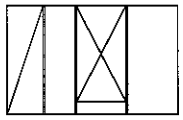
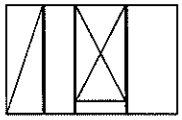
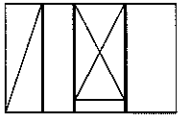
Attachment B



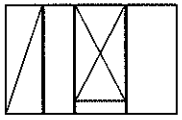
RTU-10 5TON



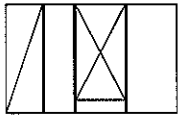
RTU-11 5TON



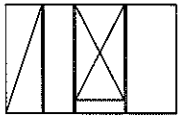
RTU-5 15TON



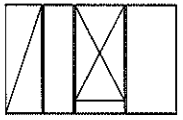
RTU-1 15TON



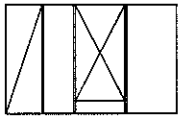
RTU-2 10TON



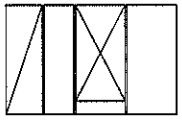
RTU-6 15TON



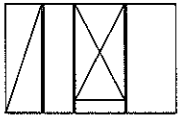
RTU-7 15TON



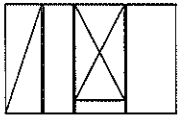
RTU-3 15TON



RTU-4 10TON



RTU-9 15TON



RTU-8 15TON

RTU LAYOUT

SCALE: 1/64"=1'-0"

SEAL:

REVISIONS

NO.	DESCRIPTION	DATE

PROJECT NAME: City of Roswell Park department
Bill Johnson Building

TITLE: RTU LAYOUT

DRAWN BY:

CHECKED:

DATE: 09-07-16

JOB NO:

SHEET NO:

OF SHEETS

DATE PRINTED:

Bill Johnson Physical Building, Roswell, GA.

SINGLE PACKAGED ROOFTOP AIR-CONDITIONING EQUIPMENT

1.0 GENERAL

1.1 RELATED WORK

A. Crane rental.

B. All necessary labor to complete turnkey installation.

C. Appropriate roof curb adapter as required.

D. Reconnection to existing high and low voltage connections and controls connection.

E. Replacement and reconnection of flexible gas lines.

F. Reconnection to existing condensate piping.

G. Coordination with existing units' power supply prior to placing purchase order for new units.

H. Complete startup.

I. Complete cleanup of work area.

J. Disposal of old equipment and refrigerant in compliance with EPA regulations.

K. Work to be completed during normal business hours with minimal interference with daily operation of the building and the park.

L. Provide proper licensing and liability insurance.

M. Provide work schedule and have approval of the client prior to commencing the work.

1.2 WARRANTY

A. Equipment provided under this Section shall be provided with a parts and labor warranty, including refrigerants and lubricants, for 1 year after date of substantial completion.

B. Compressors shall be furnished with the manufacturer's 5-year warranty.

1.3 SUBMITTALS

A. Submit product information to the client for his review and approval prior to placing the order.

2 .0 PRODUCTS

2.1 GENERAL

A. Units shall be UL listed.

B. All moving parts shall be protected with factory installed metal guards. Rotating parts shall be statically and dynamically balanced at the factory.

C. Portions of equipment exposed to the weather shall be constructed of heavy gauge galvanized steel with a factory weatherproof finish.

D. Units shall be furnished with factory refrigerant precharge.

2.2 ROOFTOP AIR-CONDITIONING UNITS

A. General Description: Units shall be factory-assembled and tested, designed for roof installation, and consisting of compressors, condensers, evaporator coils, condenser and evaporator fans, refrigeration and temperature controls, motor controllers, filters, dampers and gas-fired heating section. Units shall be provided with single point power connection. Capacities and electrical characteristics are per attached.

B. Casing: manufacturer's standard casing construction, having corrosion protection coating, and exterior finish. Casings shall have removable panels or access doors for inspection and access to internal parts, a minimum of 1" thick thermal insulation in compliance with NFPA 90A, knockouts for electrical and piping connections, an exterior condensate drain connection and lifting lugs. Casing shall be equipped with a base rail and corrosion resistant metal coil and fan guards. Casing shall mount on a full roof curb and shall have down-shot duct connections inside the roof curb. The roof curb shall be shimmed to provide a level platform for the unit when installed on a sloped roof.

C. Evaporator fans: forward-curved, centrifugal, with direct drive fans on units 5 ton and smaller, belt-driven fans with adjustable sheaves on units larger than 5 tons; and permanently lubricated motor bearings. Belt driven units shall be provided with automatic belt tension devices.

D. Condenser fans: propeller-type, direct-driven fans with permanently lubricated bearings.

E. Filters: 2" pleated type. Contractor shall be responsible for the maintenance of all filters during the construction period.

F. Compressors: hermetic, scroll or reciprocating compressors, complete with integral vibration isolators. Provide crankcase heaters as required. Each unit shall be provided with the maximum number of compressors or capacity steps available, and a minimum capacity reduction of two steps (50% and 100%) on units 7-1/2 tons nominal and larger.

G. Safety controls: manual reset type for:
1. Low pressure cutout.
2. High pressure cutout.
3. Compressor motor overload protection.

H. Gas-fired heating sections: Completely assembled, wired and piped natural gas-fired heating section within unit, certified by AGA specifically for outdoor application, with provisions to direct flue gas vertically upward. Provide with single gas connection.
1. Heat exchangers: stainless steel, factory tested for leaks and stress relieved.
2. Burners: Stamped and seam-welded 20-gauge aluminized steel.
3. Controls:
   a. Redundant main gas valve.
   b. Electronic spark ignition system.
   c. High limit cutout.
   d. Induced draft providing switch.
   e. Flame roll-out switch.
   f. Pilot flame sensor.

I. Economizer control (excluding unit # 10): consisting of outside air, return air, and relief air dampers, a 24 volt spring return damper motor, adjustable mixed air controller, adjustable compressor cutout thermostat, adjustable minimum position, and dry bulb control to energize the economizer cycle. Automatic dampers shall be minimum 16 gauge galvanized steel or airfoil shape extruded aluminum with neoprene or vinyl blade seals. Outside air dampers shall also include compressible metal jamb seals.

J. Dehumidification cycle (for unit # 10 only): The cycle shall use a second refrigerant coil downstream of the evaporator coil, the coil shall be a hot gas reheat coil. Liquid sub-cooling coil not acceptable.

K. Accessories: Units shall include the following additional accessories:
1. Compressor cycle delay: Time delay before successive starts for each compressor.
2. Automatic head pressure control for operation down to 0°F.
3. Non corrosive drain pan.
4. Factory installed capillary bulb embedded in the face of the evaporator coil to monitor coil temperature and prevent evaporator icing for protection of compressor.
5. Factory installed disconnect.
6. Powered convenience outlet.

L. Rooftop air-conditioning units shall be manufactured by American Standard.

3.0 EXECUTION

3.1 Coordinate sizes of curbs and mounting with actual unit sizes.

3.2 Units shall be installed as recommended by the manufacturer.

3.3 Perform required adjustments & lubrication. Clean units of foreign materials. Install clean filters.

3.4 Contractor shall coordinate Testing & Balancing.

3.5 Contractor shall be responsible for the maintenance of all filters during the construction period and will not allow them to become overloaded with dust or dirt. The units shall not be operated without air filters at any time. Prior to the HVAC units being started up, the Contractor will replace the filter with new filter.

3. 6 At the time of substantial completion, if the coils are dirty they shall be cleaned by the contractor.

END OF SECTION

American Standard.
HEATING & AIR CONDITIONING

RTU-1,3,5,6,7,8, &9

Model Number YSD180F4RHAD0B0C2B0000000000000000000**

Customer : City of Roswell, Park department
Project : Bill Johnson Physical Activity Building, Roswell, Georgia.
Name : MEP Design Engineers, Inc.

Y4V

General			
Unit function	**Gas/Electric**	Unit efficiency	**Standard efficiency**
Unit controls	**Reliatel**	Fresh air selection	**Econ-Dry Bulb 0-100% w/ bar ref**
Hinged service access/filters	**Std panels/2" pltd filters MERV 8**	Tonnage	**15 Ton**
Airflow	**Downflow**	Cooling Entering Dry Bulb	**80.00 F**
Cooling Entering Wet Bulb	**67.00 F**	Ambient Temp	**95.00 F**
Heating capacity	**Gas Heat - High**	Heating EAT	**70.00 F**
Voltage	**460/60/3**	Major design sequence	**F - R-410A with Microchannel**

Main Cooling			
Tonnage	**15 Ton**	Cooling Entering Dry Bulb	**80.00 F**
Cooling Entering Wet Bulb	**67.00 F**	Ambient Temp	**95.00 F**

Main Heating	
Heating EAT	**70.00 F**

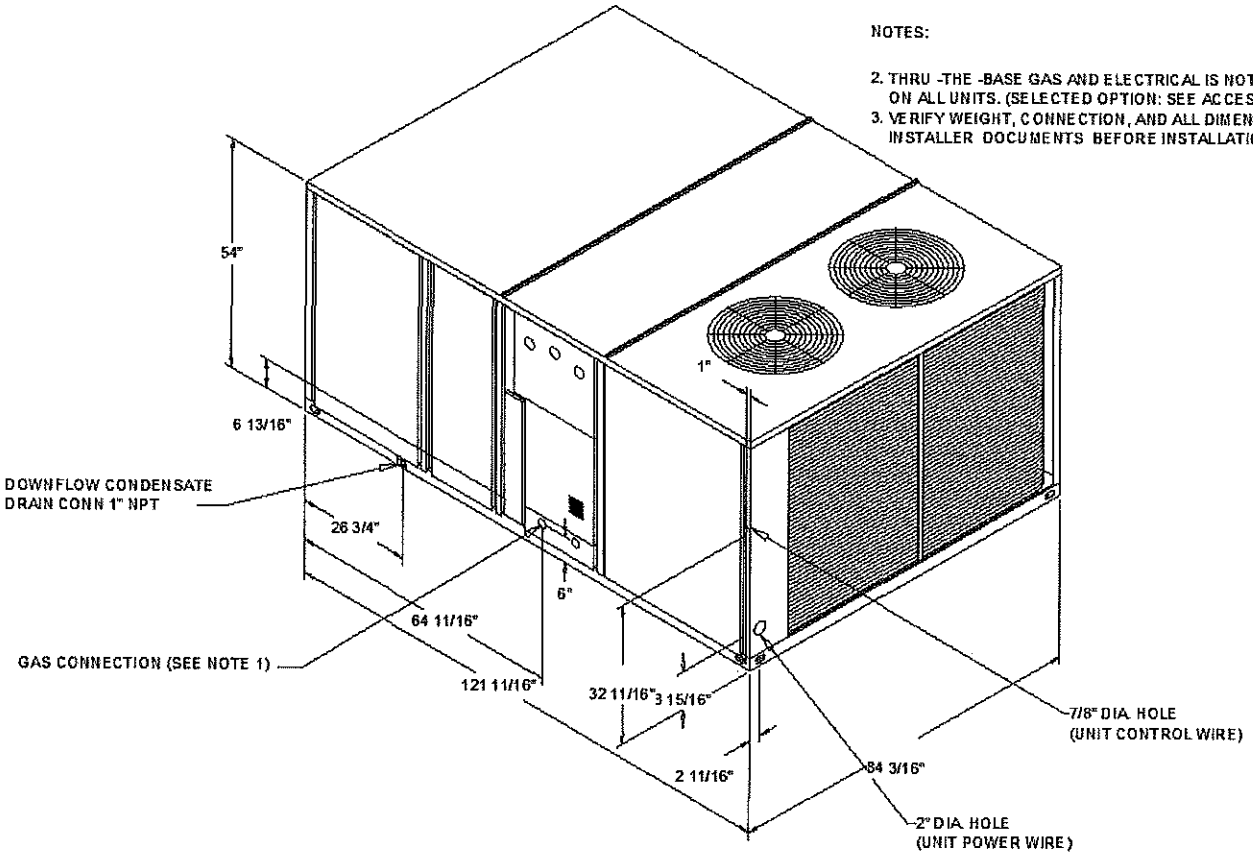
Motor/Electrical	
Voltage	**460/60/3**

DX cooling			
Through the base provisions	**Through the base electric/gas**	Disconnect sw/circuit breaker	**Unit Mounted Circuit Breaker**
Convenience outlet option	**Powered conv. outlet (factory)**		

American Standard
HEATING & AIR CONDITIONING

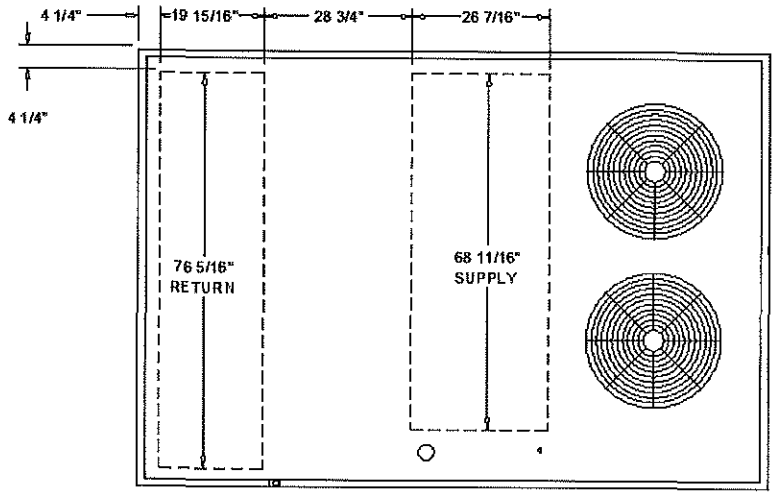
NOTES:

2. THRU -THE -BASE GAS AND ELECTRICAL IS NOT STANDARD ON ALL UNITS. (SELECTED OPTION: SEE ACCESSORY SHEET)
3. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION



PACKAGED GAS/ELECTRIC - DOWNFLOW

ISOMETRIC DRAWING



PACKAGED GAS/ELECTRIC - DOWNFLOW

PLAN VIEW DRAWING

American Standard
HEATING & AIR CONDITIONING

ELECTRICAL / GENERAL DATA

GENERAL PERFORMANCE

Model (Ton):	YSD180F (15.0)
Unit Operating Voltage Range:	414-506
Unit Primary Voltage:	460
Unit Secondary Voltage:	-
Unit Hertz:	60
Unit Phase:	3
EER: [5]	11.0

Standard Motor [1] [3]

Minimum Circuit Ampacity:	38.0
Maximum Fuse Size:	50.0
Maximum (HACR) Circuit Breaker:	50.0

Oversized Motor [1] [4]

MCA:	N/A
MFS:	N/A
MCB (HACR):	N/A

Field Installed Oversized Motor [1] [4]

MCA:	N/A
MFS:	N/A
MCB (HACR):	N/A

GAS HEATING

Heating Models:	High
Heating and 1 Stage Input (Btu/h)	350,000 / 250,000
Heating and 1 Stage Output (Btu/h):	284,000 / 203,000
Min./Max. Gas Input -	
Pressure Natural or LP:	2.5 / 14.0
Gas Connection Pipe Size:	3/4"

COMPRESSOR

	Circuit(s)
Number:	2
Horsepower:	8.60/4.75
Phase:	3
Rated Load Amps:	15.6/9.6
Locked Rotor Amps:	142.0/62.0

INDOOR MOTOR

Number: [3]	1
Horsepower:	3.00
Motor Speed (RPM):	1,740
Phase:	3
Full Load Amps:	4.8
Locked Rotor Amps:	40.5

Oversized Motor [4]

Number:	N/A
Horsepower:	N/A
Motor Speed (RPM):	N/A
Phase:	N/A
Full Load Amps:	N/A
Locked Rotor Amps:	N/A

Field Installed Oversized Motor [4]

Number:	N/A
Hp:	N/A
Motor Speed (RPM):	N/A
Phase:	N/A
FLA:	N/A
LRA:	N/A

OUTDOOR MOTOR

Number:	2
Horsepower:	0.50
Motor speed (RPM):	1,100
Phase:	1
Full Load Amps:	1.6
Locked Rotor Amps:	3.8

POWER EXHAUST

(Field Installed Power Exhaust)

Horsepower:	N/A
Motor Speed (RPM):	N/A
Phase:	N/A
Full Load Amps:	N/A
Locked Rotor Amps:	N/A

COMBUSTION BLOWER MOTOR

(Gas-Fired Heating only)

Horsepower:	0.1
Motor Speed (RPM):	3,500/2,800
Phase:	1
Full Load Amps:	0.8
Locked Rotor Amps:	2.00

FILTER

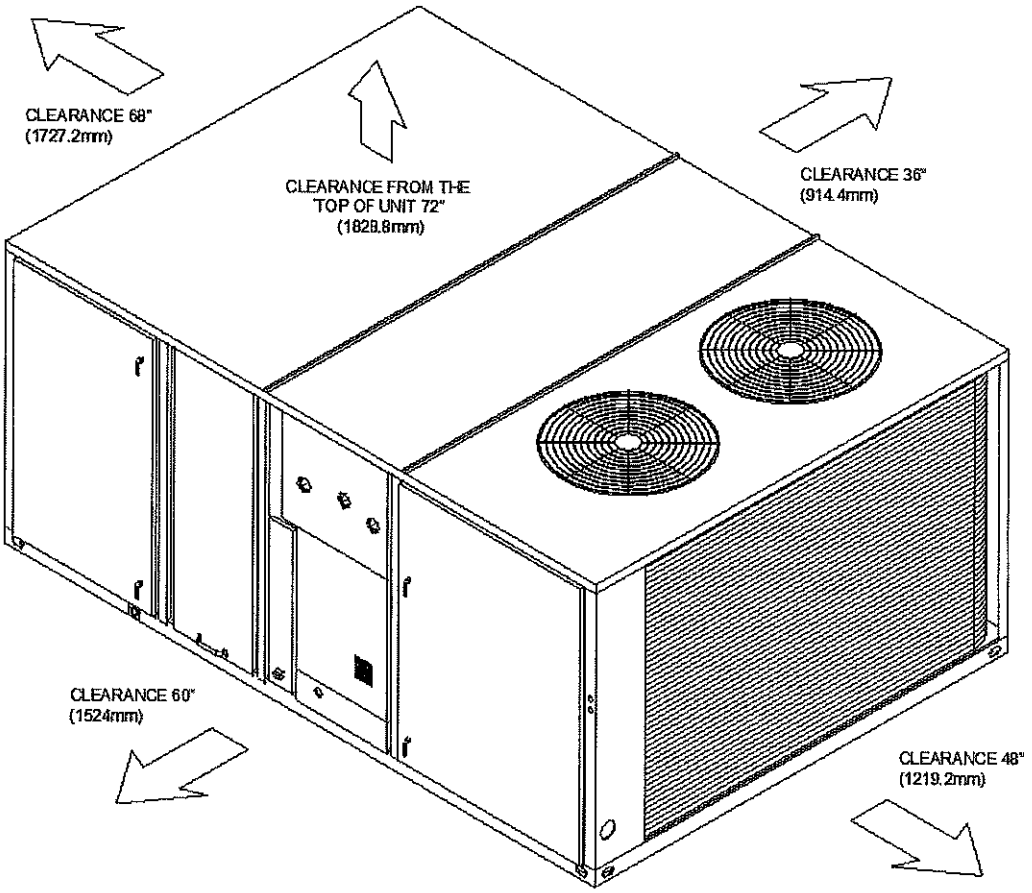
Type:	Throwaway
Furnished:	Yes
Number:	4 / 4
Recommended Size:	20"x20"x2" / 20"x25"x2"

REFRIGERANT [2]

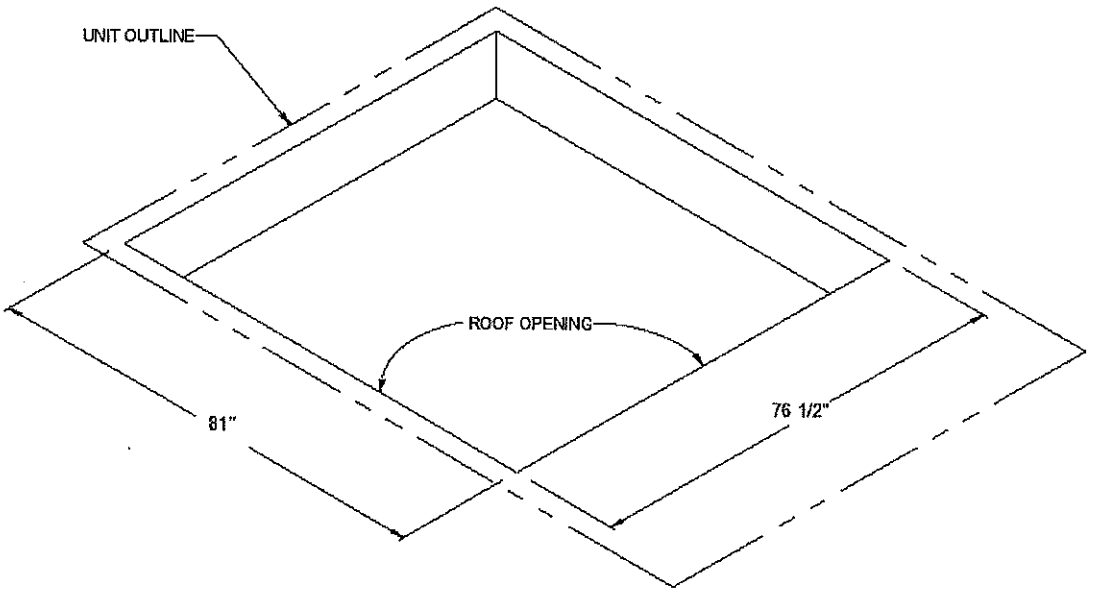
	Circuit #1 / 2
Type:	R410
Factory Charge Circuit #1 / 2:	11.4 lb / 6.0 lb

NOTES:

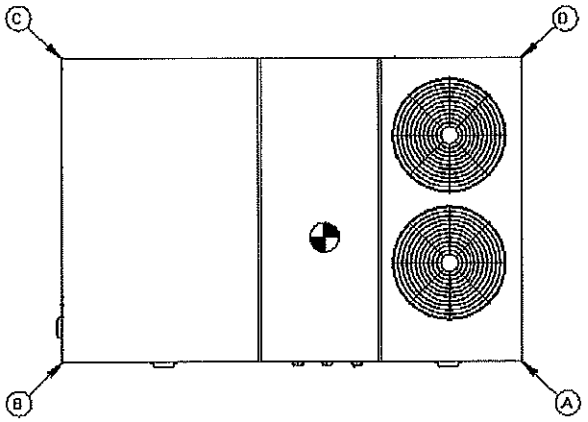
1. Maximum (HACR) Circuit Breaker sizing is for installations in the United States only.
2. Refrigerant charge is an approximate value. For a more precise value, see unit nameplate and service instructions.
3. Value includes oversized motor.
4. Value does not include Power Exhaust Accessory.
5. EER is rated at AHRI conditions and in accordance with DOE test procedures.



DOWNFLOW-PACKAGED GAS/ELECTRIC CLEARANCE



DOWNFLOW-PACKAGED GAS/ELECTRIC ROOF OPENING CLEARANCE



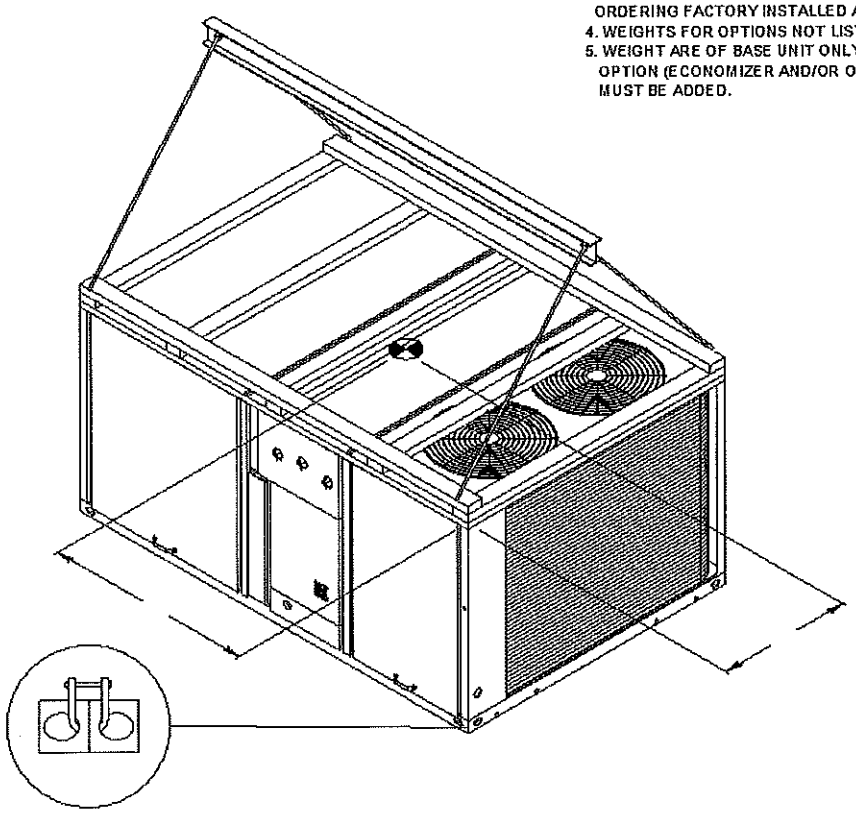
CORNER WEIGHT

INSTALLED OPTIONS NET WEIGHT DATA

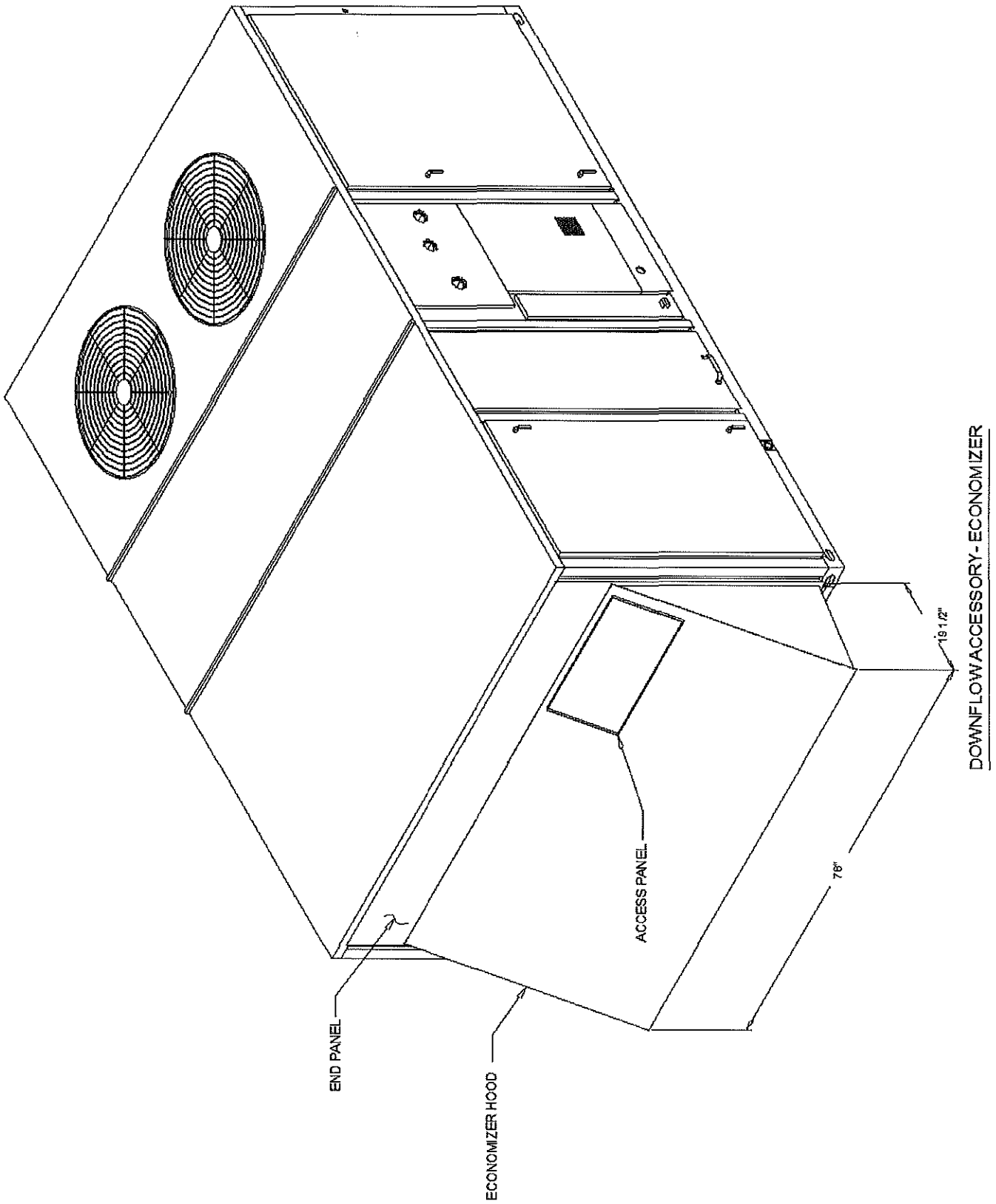
Accessory	Accessory
Economizer	80.0 lb
Motorized Outside Air Damper	
Manual Outside air Damper	
Oversized Motor	
High Static Drive	
Thru the Base Electrical	23.0 lb
Unit Mounted Circuit Breaker	10.0 lb
Unit Mounted Disconnect	
Power Exhaust	
Hinged Doors	
Zone Sensor	
LPG Conversion Kit	
Powered Convenience Outlet	38.0 lb
Roof Curb	

BASE UNIT WEIGHTS		CORNER WEIGHTS				CENTER OF GRAVITY	
SHIPPING	NET	(A)	(B)	(C)	(D)	E	F
2281.0 lb	1822.0 lb	618.0 lb	493.0 lb	336.0 lb	378.0 lb	57"	33"

NOTE:
1. CORNER WEIGHTS ARE GIVEN FOR INFORMATION ONLY.
2. TO ESTIMATE SHIPPING WEIGHT OF OPTION/ACCESSORIES ADD 5 LBS TO NET WEIGHT.
3. NET WEIGHT OF OPTIONAL ACCESSORIES SHOULD BE ADD TO UNIT WEIGHT WHEN ORDERING FACTORY INSTALLED ACCESSORIES.
4. WEIGHTS FOR OPTIONS NOT LISTED ARE < 5 LBS.
5. WEIGHT ARE OF BASE UNIT ONLY. FOR TOTAL WEIGHT, 10 DIGIT FACTORY INSTALLED OPTION (ECONOMIZER AND/OR OVERSIZED MOTOR OR FIOP/ACCESSORY WEIGHT MUST BE ADDED.



RIGGING AND CENTER OF GRAVITY



General

The units shall be dedicated downflow or horizontal airflow. The operating range shall be between 115°F and 0°F in cooling as standard from the factory for all units. Cooling performance shall be rated in accordance with AHRI testing procedures. All units shall be factory assembled, internally wired, fully charged with R-410A, and 100 percent run tested to check cooling operation, fan and blower rotation and control sequence, before leaving the factory. Wiring internal to the unit shall be colored and numbered for simplified identification. Units shall be UL listed and labeled, classified in accordance to UL 1995/C 22.2, 236-05 3rd Edition.

Casing

Unit casing shall be constructed of zinc coated, heavy gauge, galvanized steel. Exterior surfaces shall be cleaned, phosphatized, and finished with a weather-resistant baked enamel finish. Unit's surface shall be tested 672 hours in a salt spray test in compliance with ASTM B117. Cabinet construction shall allow for all maintenance on one side of the unit. In order to ensure a water and air tight seal, service panels shall have lifting handles and no more than three screws to remove. All exposed vertical panels and top covers in the indoor air section shall be insulated with a 1/2 inch, 1 pound density foil-faced, fire-resistant, permanent, odorless, glass fiber material. The base of the downflow unit shall be insulated with 1/2 inch, 1 pound density foil-faced, closed-cell material. The downflow unit's base pan shall have no penetrations within the perimeter of the curb other than the raised 11/8 inch high supply/return openings to provide an added water integrity precaution, if the condensate drain backs up. The base of the unit shall have provisions for forklift and crane lifting.

Unit Top

The top cover shall be one piece, or where seams exist, double hemmed and gasket sealed to prevent water leakage.

Filters

Two inch standard filters shall be factory supplied on all units. Optional two inch pleated media filters shall be available.

Compressors

All units shall have direct-drive, hermetic, scroll type compressors with centrifugal type oil pumps. Motor shall be suction gas-cooled and shall have a voltage utilization range of plus or minus 10 percent of nameplate voltage. Internal overloads shall be provided with the scroll compressors. All models shall have crankcase heaters, phase monitors and low and high pressure control as standard.

Crankcase Heaters

These band heaters provide improved compressor reliability by warming the oil to prevent migration during off-cycles or low ambient conditions. These are standard on all Voyager models.

Refrigerant Circuits

Each refrigerant circuit shall have independent fixed orifice or thermostatic expansion devices, service pressure ports, and refrigerant line filter driers factory installed as standard. An area shall be provided for replacement suction line driers.

Evaporator and Condenser Coils

Microchannel coils will be burst tested by the manufacturer. internally finned, 5/16¿ copper tubes mechanically bonded to a configured aluminum plate fin shall be standard for evaporator coils. Microchannel condenser coils shall be standard on all units. Coils shall be leak tested to ensure the pressure integrity. The evaporator coil and condenser coil shall be leak tested to 225 psig and pressure tested to 450 psig. Sloped condensate drain pans are standard.

Gas Heating Section

The heating section shall have a drum and tube heat exchanger design using corrosion resistant steel components. A forced combustion blower shall supply premixed fuel to a single burner ignited by a pilotless hot surface ignition system. In order to provide reliable operation, a negative pressure gas valve shall be used on standard furnaces and a pressure switch on furnaces with modulating heat that requires blower operation to initiate gas flow. On an initial call for heat, the combustion blower shall purge the heat exchanger 45 seconds before ignition. After three unsuccessful ignition attempts, the entire heating system shall be locked out until manually reset at the thermostat. Units shall be suitable for use with natural gas or propane (field installed kit) and shall also comply with California requirements for low NOx emissions. The 12½- 25 tons shall have two stage heating (Gas/Electric Only).

Microchannel coils

The microchannel type condenser coil is standard for the T/YCD 12.5-25 ton standard efficiency models.

Due to flat streamlined tubes with small ports, and metallurgical tube-tofin bond, microchannel coil has better heat transfer performance. Microchannel condenser coil can reduce system refrigerant charge by up to 50% because of smaller internal volume, which leads to better compressor reliability. Compact all-aluminum microchannel coils also help to reduce the unit weight. All-aluminum construction improves re-cyclability. Galvanic corrosion is also minimized due to all aluminum construction. Strong aluminum brazed structure provides better fin protection. In addition, flat streamlined tubes also make microchannel coils more dust resistant and easier to clean. Coils shall be leak tested at the factory to ensure the pressure integrity. The evaporator coil and condenser coil shall be leak tested to 600 psig. The assembled unit shall be leak tested to 465 psig.

Outdoor Fans

The outdoor fan shall be direct-drive, statically and dynamically balanced, draw-through in the vertical discharge position. The fan motor(s) shall be permanently lubricated and shall have built-in thermal overload protection.

Indoor Fan

Units above shall have belt driven, FC centrifugal fans with adjustable motor sheaves. Units with standard motors shall have an adjustable idler-arm assembly for quick-adjustment of fan belts and motor sheaves. All motors shall be thermally protected. Oversized motors shall be available for high static application. All indoor fan motors meet the U.S. Energy Policy Act of 1992 (EPACT).

Controls

Unit shall be completely factory wired with necessary controls and contactor pressure lugs or terminal block for power wiring. Unit shall provide an external location for mounting a fused disconnect device. ReliaTel controls shall be provided for all 24 volt control functions. The resident control algorithms shall make all heating, cooling, and/or ventilating decisions in response to electronic signals from sensors measuring indoor and outdoor temperatures. The control algorithm maintains accurate temperature control, minimizes drift from set point, and provides better building comfort. A centralized control shall provide anti-short cycle timing and time delay between compressors to provide a higher level of machine protection.

High Pressure Cutout

This option is offered for units that do not have High Pressure cutout as standard.

Discharge Line Thermostat

A bi-metal element discharge line thermostat is installed as a standard option on the discharge line of each system. This standard option provides extra protection to the compressors against high discharge temperatures in case of loss of charge, extremely high ambient and other conditions which could drive the discharge temperature higher. Discharge line thermostat is wired in series with high pressure control. When the discharge temperature rises above the protection limit, the bi-metal disc in the thermostat switches to the off position, opening the 24 VAC circuit. When the temperature on the discharge line cools down, the bi-metal disc closes the contactor circuit, providing power to the compressor. When the thermostat opens the fourth time, the ReliaTel control must be manually reset to resume operation on that stage.

Two-Inch Pleated Filters

Two inch pleated media filters shall be available on all models.

American Standard
HEATING & AIR CONDITIONING

RTU-2, & 4

Model Number YSC120F4RHAD0B0A1B00000000000000000000**

Customer : City of Roswell, Park department
Project : Bill Johnson Physical Activity Building, Roswell, Georgia.
Name : MEP Design Engineers, Inc.

Y4C

General			
Unit function	**DX cooling, gas heat**	Unit efficiency	**Standard efficiency**
Airflow	**Convertible configuration**	Airflow Application	**Downflow**
Fresh air selection	**Econ-dry bulb 0-100% w/ bar relief 3ph**	Hinged service access/filters	**Std panel/2 in pltd filters MERV 8-3ph**
Tonnage	**10 Ton**	Cooling Entering DB	**80.00 F**
Cooling Entering WB	**67.00 F**	Ambient Temp	**95.00 F**
Heating capacity	**High gas heat 3ph**	Heating EAT	**70.00 F**
Voltage	**460/60/3**	Major design sequence	**F - R-410A With Microchannel**

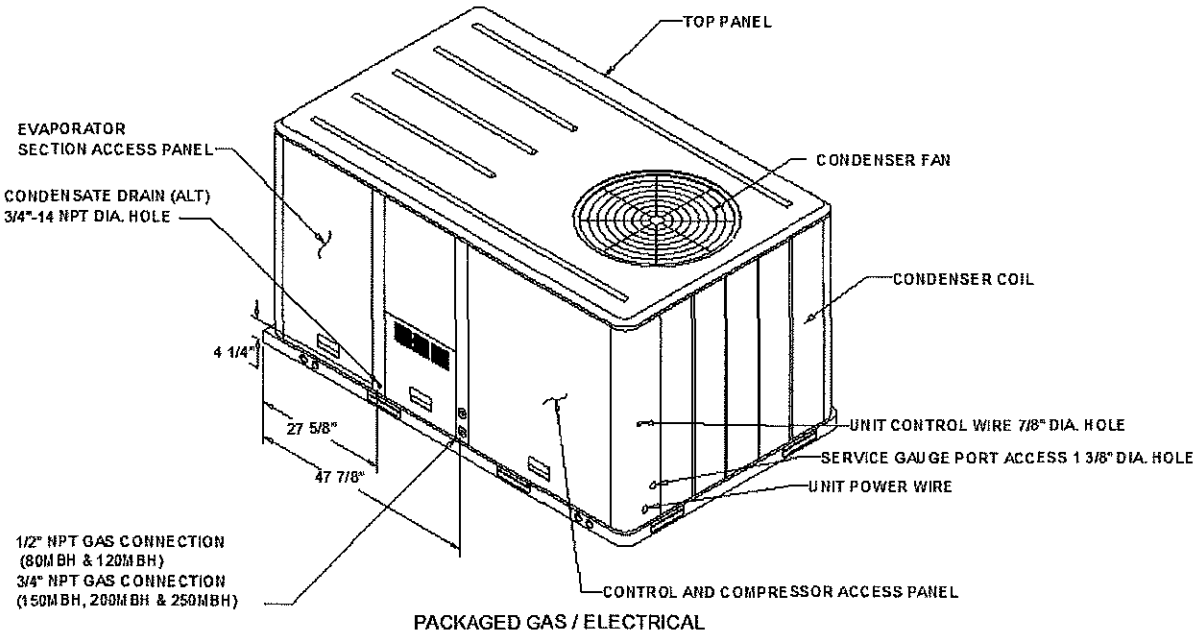
Main Cooling			
Tonnage	**10 Ton**	Cooling Entering DB	**80.00 F**
Cooling Entering WB	**67.00 F**	Ambient Temp	**95.00 F**

Main Heating			
Heating capacity	**High gas heat 3ph**	Heating EAT	**70.00 F**

Motor/Electrical	
Voltage	**460/60/3**

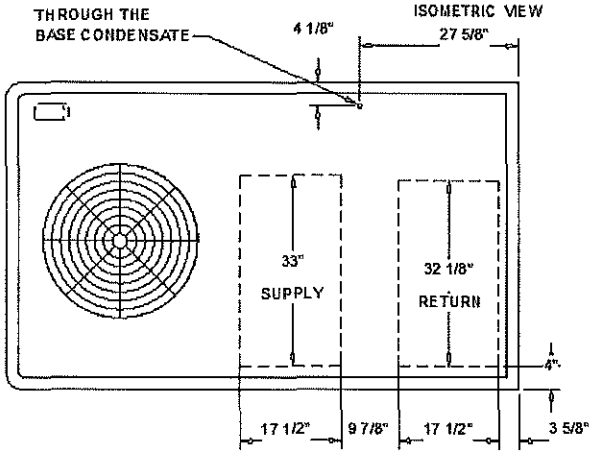
DX Cooling, Gas Heat 3-10 Ton			
Unit controls	**Microprocessor controls 3ph**	Through the base provisions	**Through the base electrical 3ph**
Disconnect sw/circuit breaker	**Non-fused disconnect**	Convenience outlet option	**Powered convenience outlet (3ph units)**

American Standard
HEATING & AIR CONDITIONING



PACKAGED GAS / ELECTRICAL

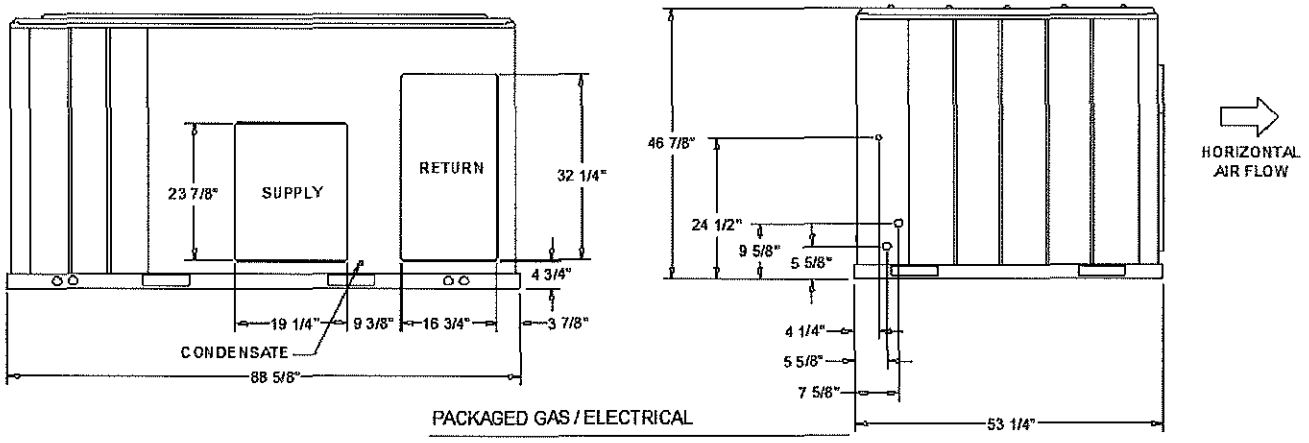
ISOMETRIC VIEW



NOTES:
1. THRU -THE -BASE ELECTRICAL IS NOT STANDARD ON ALL UNITS.
2. VERIFY ALL DIMENSIONS WITH INSTALLER DOCUMENTS BEFORE INSTALLATION.

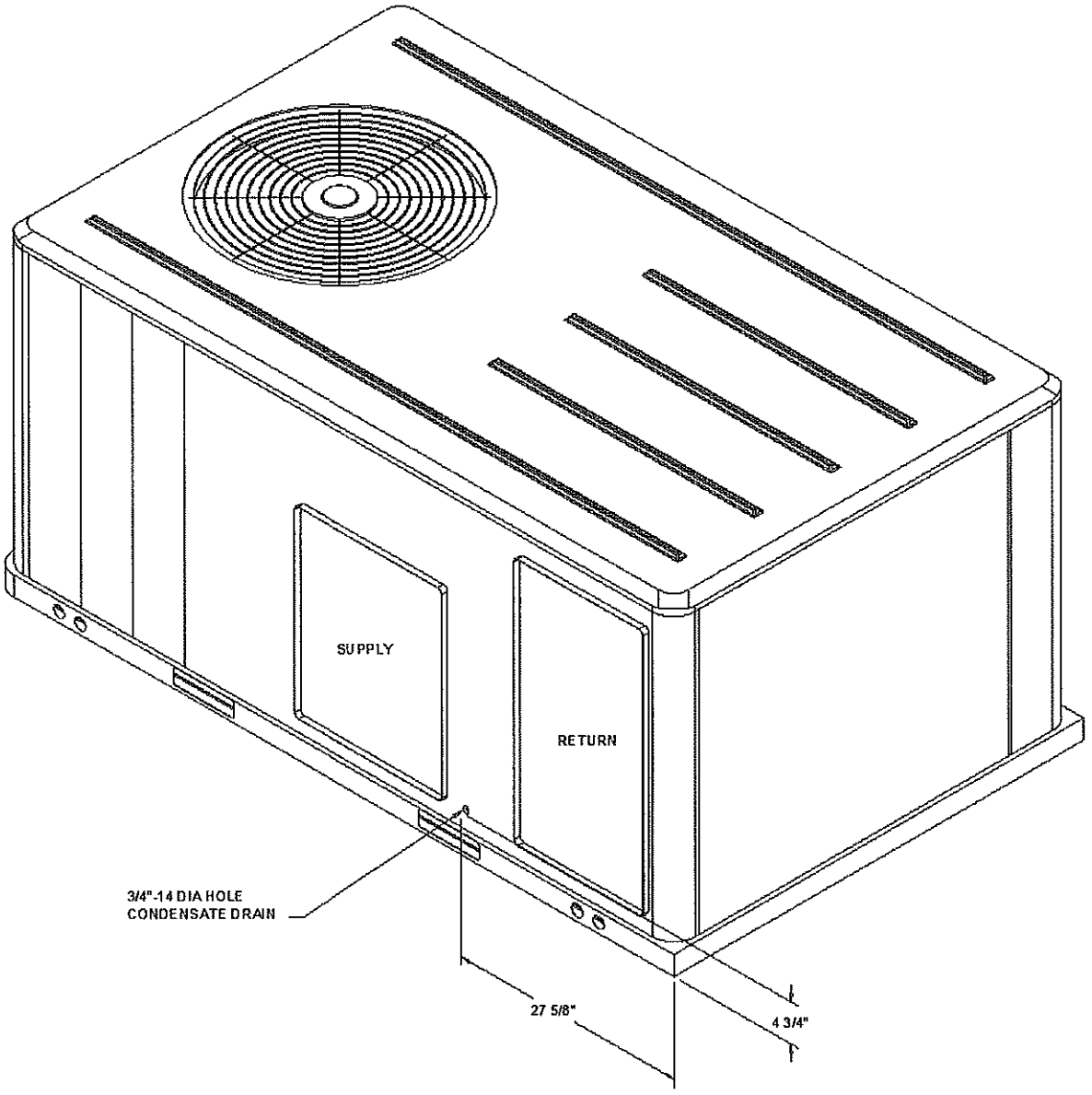
PLAN VIEW UNIT

DIMENSION DRAWING

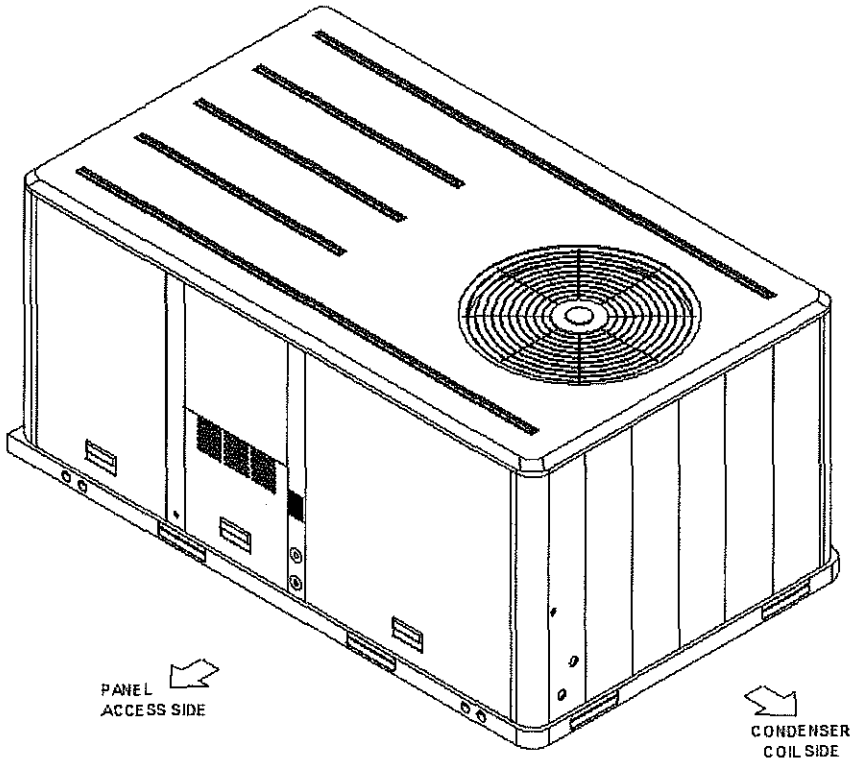


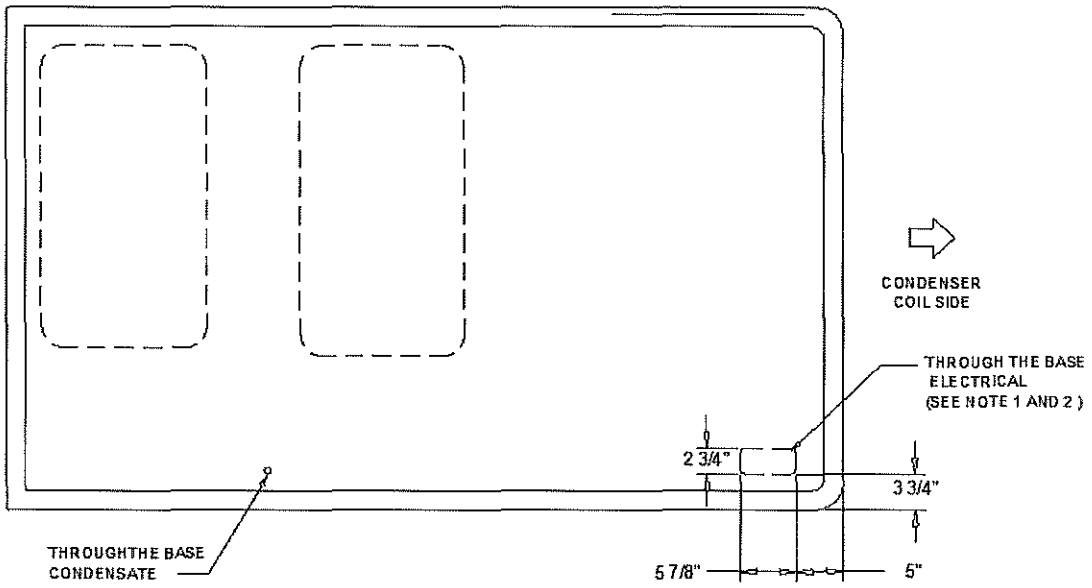
PACKAGED GAS / ELECTRICAL

DIMENSION DRAWING



ISOMETRIC-PACKAGED COOLING





PANEL
ACCESS SIDE

NOTES:
1. THRU -THE -BASE GAS AND ELECTRICAL IS NOT STANDARD. VERIFY OPTION IN PRODUCT DATA IN THIS DOCUMENT.
2. VERIFY WEIGHT, CONNECTION, OPTION CONFIGURATION AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION

THRU THE BASE ELECTRICAL

PLAN / ISO VIEW DRAWING

American Standard
HEATING & AIR CONDITIONING

ELECTRICAL / GENERAL DATA

GENERAL (2)(4)(6)

		Oversized Motor	
Model:	YSC120F	MCA:	N/A
Unit Operating Voltage:	414-506	MFS:	N/A
Unit Primary Voltage:	460	MCB:	N/A
Unit Secondary Voltage	–		
Unit Hertz:	60		
Unit Phase:	3		
EER	11.3		
Standard Motor		Field Installed Oversized Motor	
MCA:	22.7	MCA:	N/A
MFS:	30.0	MFS:	N/A
MCB:	30.0	MCB:	N/A

HEATING PERFORMANCE

HEATING - GENERAL DATA

Heating Model:	High
Heating Input (BTU):	250,000/175,000
Heating Output (BTU):	200,000/140,000
No. Burners:	5
No. Stages	2
Gas Inlet Pressure	
Natural Gas (Min/Mix):	4.5/14
LP (Min/Max)	10.0/14.0
Gas Pipe Connection Size:	3/4"

INDOOR MOTOR

Standard Motor		Oversized Motor		Field Installed Oversized Motor	
Number:	1	Number:	N/A	Number:	N/A
Horsepower:	3.6	Horsepower:	N/A	Horsepower:	N/A
Motor Speed (RPM):	–	Motor Speed (RPM):	N/A	Motor Speed (RPM):	N/A
Phase	3	Phase	N/A	Phase	N/A
Full Load Amps:	4.3	Full Load Amps:	N/A	Full Load Amps:	N/A
Locked Rotor Amps:	-	Locked Rotor Amps:	N/A	Locked Rotor Amps:	N/A

COMPRESSOR Circuit 1/2

Number:	2
Horsepower:	4.8/3.7
Phase:	3
Rated Load Amps:	9.6/7.1
Locked Rotor Amps:	75.0/46.0

OUTDOOR MOTOR

Number:	1
Horsepower:	0.75
Motor Speed (RPM):	1100
Phase:	1
Full Load Amps:	2.8
Locked Rotor Amps:	6.8

POWER EXHAUST ACCESSORY (3)

(Field Installed Power Exhaust)

Phase:	N/A
Horsepower:	N/A
Motor Speed (RPM):	N/A
Full Load Amps:	N/A
Locked Rotor Amps:	N/A

FILTERS

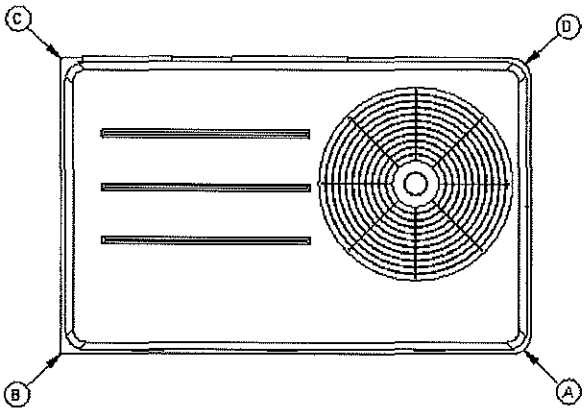
Type:	Throwaway
Furnished:	Yes
Number	4
Recommended	20"x25"x2"

REFRIGERANT (2)

Type	R-410
Factory Charge	
Circuit #1	5.5 lb
Circuit #2	4.2 lb

NOTES:

1. Maximum (HACR) Circuit Breaker sizing is for installations in the United States only.
2. Refrigerant charge is an approximate value. For a more precise value, see unit nameplate and service instructions.
3. Value does not include Power Exhaust Accessory.
4. Value includes oversized motor.
5. Value does not include Power Exhaust Accessory.
6. EER is rated at AHRI conditions and in accordance with DOE test procedures.



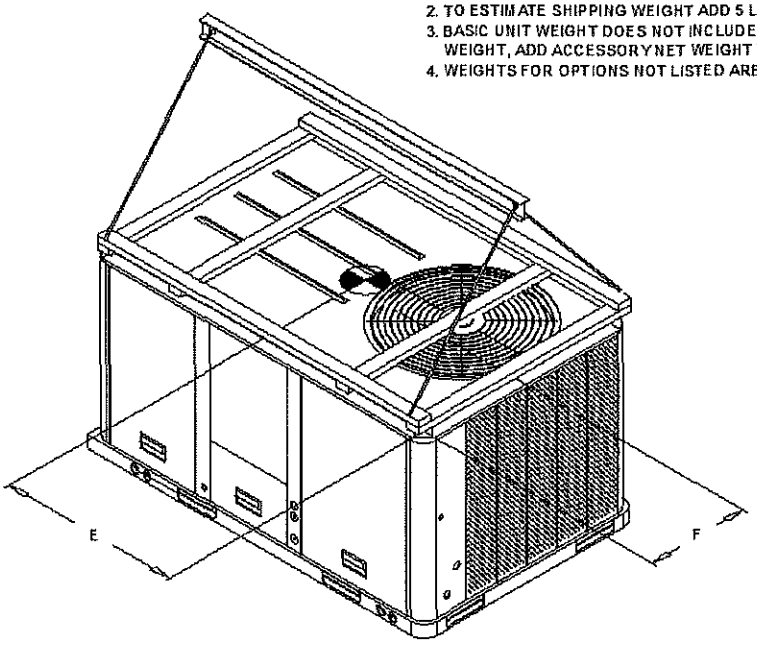
PACKAGED GAS / ELECTRICAL
CORNER WEIGHT

INSTALLED ACCESSORIES NET WEIGHT DATA

ACCESSORY	WEIGHTS
ECONOMIZER	36.0 lb
MOTORIZED OUTSIDE AIR DAMPER	
MANUAL OUTSIDE AIR DAMPER	
BAROMETRIC RELIEF	
OVERSIZED MOTOR	
BELT DRIVE MOTOR	
POWER EXHAUST	
THROUGHT THE BASE ELECTRICAL/GAS (FIOPS)	13.0 lb
UNIT MOUNTED CIRCUIT BREAKER (FIOPS)	
UNIT MOUNTED DISCONNECT (FIOPS)	5.0 lb
POWERED CONVENIENCE OUTLET (FIOPS)	38.0 lb
HINGED DOORS (FIOPS)	
HAIL GUARD	
SMOKE DETECTOR, SUPPLY/ RETURN	
NOVAR CONTROL	
STAINLESS STEEL HEAT EXCHANGER	
REHEAT	
ROOF CURB	

BASIC UNIT WEIGHTS		CORNER WEIGHTS				CENTER OF GRAVITIY	
SHIPPING	NET	(A)	345.0 lb	(C)	258.0 lb	(E) LENGHT	(F) WIDTH
1156.0 lb 1453.0 lb	1058.0 lb	(B)	242.0 lb	(D)	213.0 lb	41"	23"

NOTE:
1. CORNER WEIGHTS ARE GIVEN FOR INFORMATION ONLY.
2. TO ESTIMATE SHIPPING WEIGHT ADD 5 LBS TO NET WEIGHT.
3. BASIC UNIT WEIGHT DOES NOT INCLUDE ACCESSORY WEIGHT. TO OBTAIN TOTAL WEIGHT, ADD ACCESSORY NET WEIGHT TO BASIC UNIT WEIGHT.
4. WEIGHTS FOR OPTIONS NOT LISTED ARE <5 LBS.

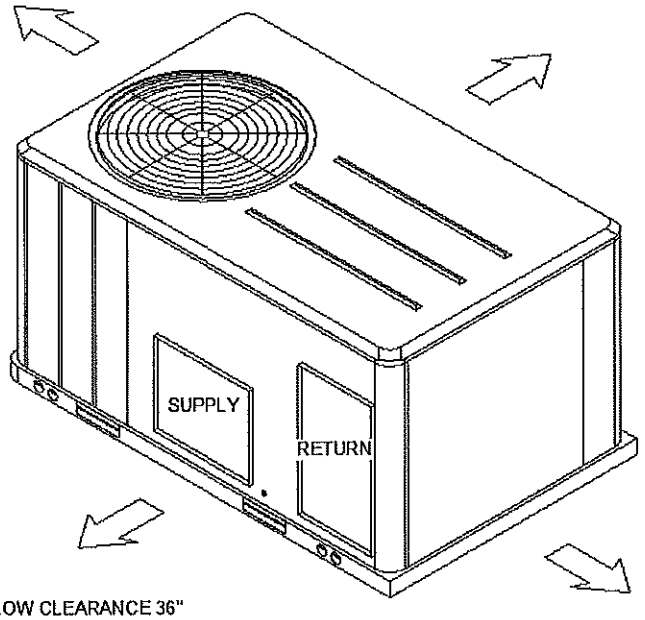


PACKAGED GAS / ELECTRICAL
RIGGING AND CENTER OF GRAVITY

CLEARANCE FROM TOP OF UNIT 72"

CLEARANCE 36"

CLEARANCE 48"



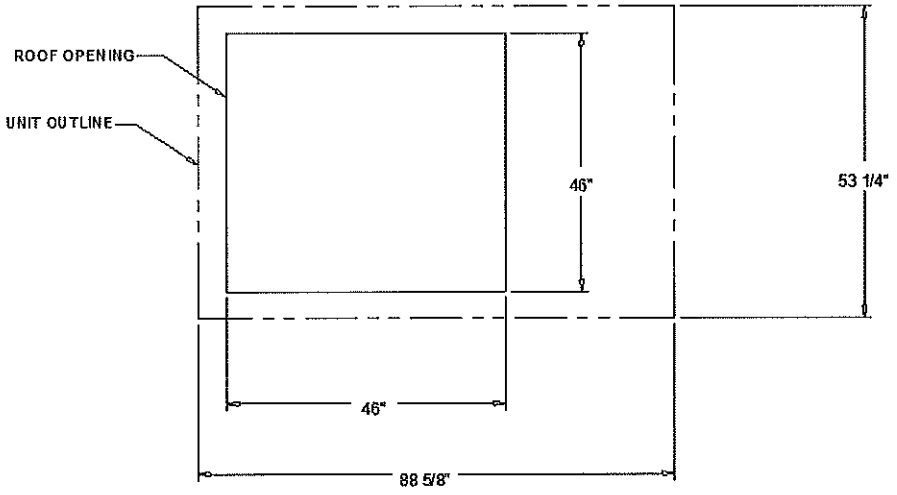
DOWNFLOW CLEARANCE 36"

HORIZONTAL CLEARANCE 18"

CLEARANCE 36"

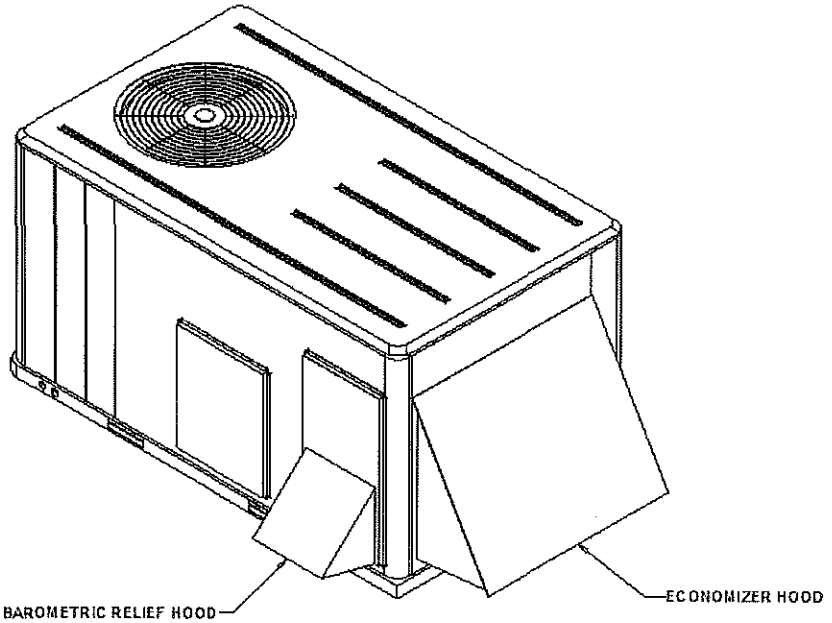
PACKAGED GAS / ELECTRIC

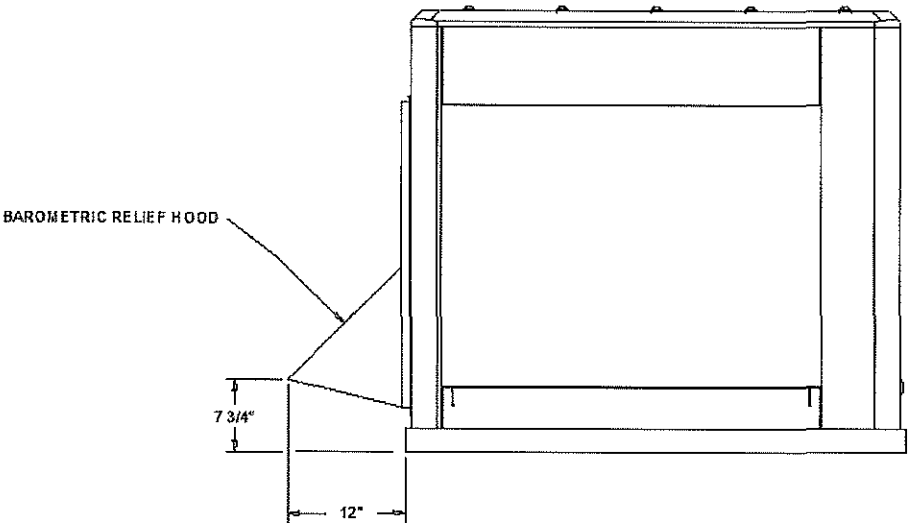
CLEARANCE



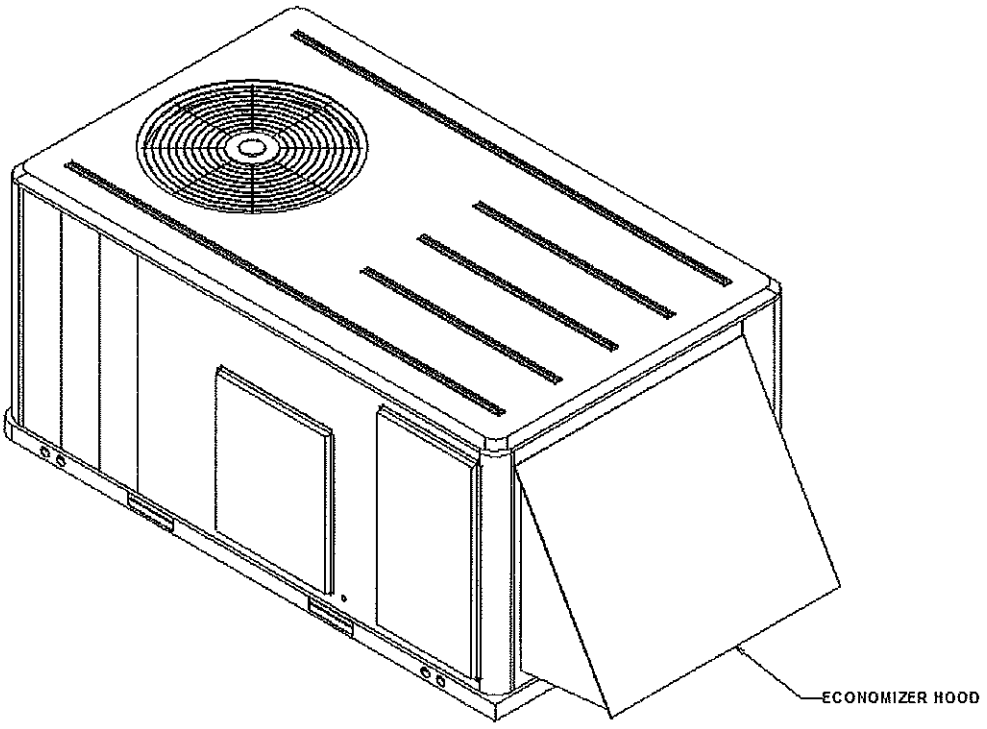
PACKAGED GAS / ELECTRIC

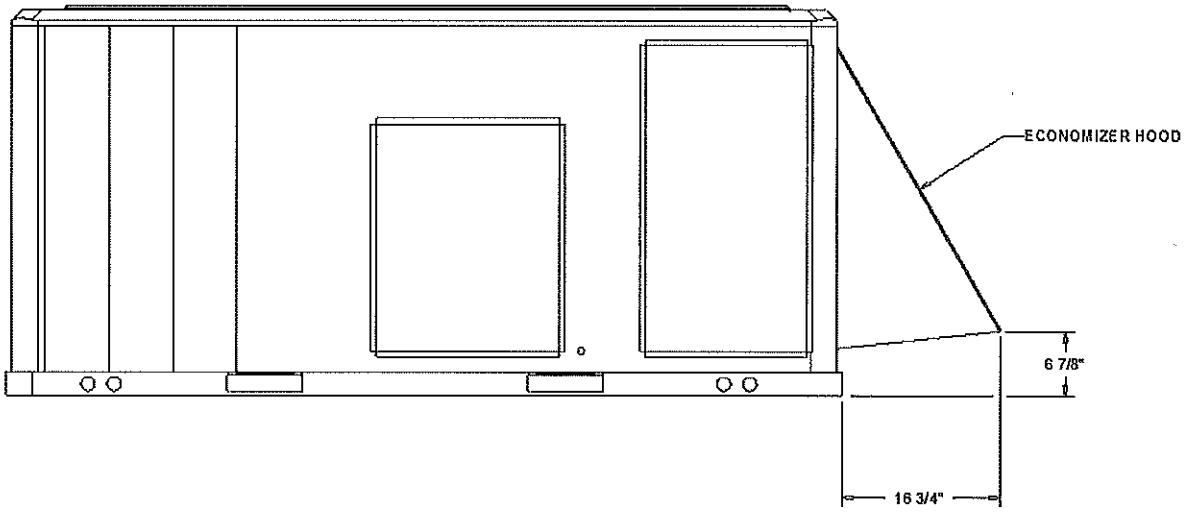
DOWNFLOW TYPICAL ROOF OPENING





ACCESSORY - BAROMETRIC RELIEF DAMPER HOOD





ACCESSORY - ECONOMIZER HOOD

General

The units shall be convertible airflow. The operating range shall be between 115°F and 0°F in cooling as standard from the factory for units with microprocessor controls. Operating range for units with electromechanical controls shall be between 115°F and 40°F. Cooling performance shall be rated in accordance with ARI testing procedures. All units shall be factory assembled, internally wired, fully charged with R-410A, and 100 percent run tested to check cooling operation, fan and blower rotation, and control sequence before leaving the factory. Wiring internal to the unit shall be colored and numbered for simplified identification. Units shall be cULus listed and labeled, classified in accordance for Central Cooling Air Conditioners.

Casing

Unit casing shall be constructed of zinc coated, heavy gauge, galvanized steel. Exterior surfaces shall be cleaned, phosphatized, and finished with a weather-resistant baked enamel finish. Unit's surface shall be tested 672 hours in a salt spray test in compliance with ASTM B117. Cabinet construction shall allow for all maintenance on one side of the unit. Service panels shall have lifting handles and be removed and reinstalled by removing two fasteners while providing a water and air tight seal. All exposed vertical panels and top covers in the indoor air section shall be insulated with a cleanable foil-faced, fire-retardant permanent, odorless glass fiber material. The base of the unit shall be insulated with 1/8 inch, foil-faced, closed-cell insulation. All insulation edges shall be either captured or sealed. The unit's base pan shall have no penetrations within the perimeter of the curb other than the raised 1 1/8 inch high downflow supply/return openings to provide an added water integrity precaution, if the condensate drain backs up. The base of the unit shall have provisions for forklift and crane lifting, with forklift capabilities on three sides of the unit.

Unit Top

The top cover shall be one piece construction or, where seams exist, it shall be double-hemmed and gasket-sealed. The ribbed top adds extra strength and enhances water removal from unit top.

Two-Inch Pleated Filters

2" pleated media filters shall be available on all models.

Compressors

All units shall have direct-drive, hermetic, scroll type compressors with centrifugal type oil pumps. Motor shall be suction gas-cooled and shall have a voltage utilization range of plus or minus 10 percent of unit nameplate voltage. Internal overloads shall be provided with the scroll compressors.

Dual compressors are outstanding for humidity control, light load cooling conditions and system back-up applications. Dual compressors are available on 7½-10 ton models and allow for efficient cooling utilizing 3-stages of compressor operation for all high efficiency models.

Notes:

Crankcase heaters are optional on YSC (036, 048, 060, 072, 090, 102, 120); standard on YHC (036, 048, 060, 072, 092, 102, 120).

Indoor Fan

The following units shall be equipped with a direct drive plenum fan design (T/YSC120E, T/YHC092,102, 120E). Plenum fan design shall include a backward-curved fan wheel along with an external rotor direct drive variable speed indoor motor. All plenum fan designs will have a variable speed adjustment potentiometer located in the control box. 3-5 ton units (standard efficiency 3-phase or high efficiency 3-phase with optional motor) are belt driven, FC centrifugal fans with adjustable motor sheaves. 3-5 ton units (1-phase or high efficiency 3-phase) have multispeed, direct drive motors. All 6-8½ ton units (standard efficiency) shall have belt drive motors with an adjustable idler-arm assembly for quick-adjustment to fan belts and motor sheaves. All motors shall be thermally protected. All 10 tons and 7½-8½ (high efficiency) have variable speed direct drive motors. All indoor fan motors meet the U.S. Energy Policy Act of 1992 (EPACT).

Outdoor Fans

The outdoor fan shall be direct-drive, statically and dynamically balanced, draw-through in the vertical discharge position. The fan motor shall be permanently lubricated and shall have built-in thermal overload protection.

Evaporator and Condenser Coils

Internally finned, 5/16" copper tubes mechanically bonded to a configured aluminum plate fin shall be standard. The microchannel type condenser coil is standard for the T/YSC 10 ton models and 7½ ton high efficiency models. The microchannel type condenser coil is not offered on the 7½ ton dehumidification model. Due to flat streamlined tubes with small ports, and metallurgical tube-to-fin bond, microchannel coil has better heat transfer performance. Microchannel condenser coil can reduce system refrigerant charge by up to 50% because of smaller internal volume, which leads to better compressor reliability. Compact all-aluminum microchannel coils also help to reduce the unit weight. All-aluminum construction improves re-cyclability. Galvanic corrosion is also minimized due to all aluminum construction. Strong aluminum brazed structure provides better fin protection. In addition, flat streamlined tubes also make microchannel coils more dust resistant and easier to clean. Coils shall be leak tested at the factory to ensure the pressure integrity. The evaporator coil and condenser coil shall be leak tested to 600 psig. The assembled unit shall be leak tested to 465 psig. The condenser coil shall have a patent pending 1+1+1 hybrid coil designed with slight gaps for ease of cleaning. A removable, reversible, double-sloped condensate drain pan with through the base condensate drain is standard.

Controls

Unit shall be completely factory-wired with necessary controls and contactor pressure lugs or terminal block for power wiring. Unit shall provide an external location for mounting a fused disconnect device. A choice of microprocessor or electromechanical controls shall be available. Microprocessor controls provide for all 24V control functions. The resident control algorithms shall make all heating, cooling, and/or ventilating decisions in response to electronic signals from sensors measuring indoor and outdoor temperatures. The control algorithm maintains accurate temperature control, minimizes drift from set point, and provides better building comfort. A centralized microprocessor shall provide anti-short cycle timing and time delay between compressors to provide a higher level of machine protection. 24-volt electromechanical control circuit shall include control transformer and contactor

High Pressure Control

All units include High Pressure Cutout as standard.

Phase monitor

Phase monitor shall provide 100% protection for motors and compressors against problems caused by phase loss, phase imbalance, and phase reversal. Phase monitor is equipped with an LED that provides an ON or FAULT indicator. There are no field adjustments. The module will automatically reset from a fault condition.

Refrigerant Circuits

Each refrigerant circuit offer thermal expansion valve as standard. Service pressure ports, and refrigerant line filter driers are factory-installed as standard. An area shall be provided for replacement suction line driers.

Gas Heating Section

The heating section shall have a progressive tubular heat exchanger design using stainless steel burners and corrosion resistant steel throughout. An induced draft combustion blower shall be used to pull the combustion products through the firing tubes. The heater shall use a direct spark ignition (DSI) system. On initial call for heat, the combustion blower shall purge the heat exchanger for 20 seconds before ignition After three unsuccessful ignition attempts, the entire heating system shall be locked out until manually reset at the thermostat/zone sensor. Units shall be suitable for use with natural gas or propane (field-installed kit) and also comply with the California requirement for low NOx emissions (Gas/Electric Only).

Powered or Unpowered Convenience Outlet

This is a GFCI, 120v/15amp, 2 plug, convenience outlet, either powered or unpowered. When the convenience outlet is powered, a service receptacle disconnect will be available. The convenience outlet is powered from the line side of the disconnect or circuit breaker, and therefore will not be affected by the position of the disconnect or circuit breaker. This option can only be ordered when the Through the Base Electrical with either the Disconnect Switch or Circuit Breaker option is ordered.

Economizer

This accessory shall be available with or without barometric relief. The assembly includes fully modulating 0-100 percent motor and dampers, minimum position setting, preset linkage, wiring harness with plug, spring return actuator and fixed dry bulb control. The barometric relief shall provide a pressure operated damper that shall be gravity closing and shall prohibit entrance of outside air during the equipment off cycle. Optional solid state or differential enthalpy control shall be available for either factory or field installation. The economizer arrives in the shipping position and shall be moved to the operating position by the installing contractor.

Through the Base Electrical Access

An electrical service entrance shall be provided allowing electrical access for both control and main power connections inside the curb and through the base of the unit. Option will allow for field installation of liquid-tight conduit and an external field-installed disconnect switch.

Through the Base Electrical with Disconnect Switch

This 3-pole, molded case, disconnect switch with provisions for through the base electrical connections are available. The disconnect switch will be installed in the unit in a water tight enclosure with access through a swinging door. Wiring will be provided from the switch to the unit high voltage terminal block. The switch will be UL/CSA agency recognized.

Note:

The disconnect switch will be sized per NEC and UL guidelines but will not be used in place of unit overcurrent protection.

American Standard
HEATING & AIR CONDITIONING

RTU-11

Model Number YSC063G4RHAD0B0A1B00000000000000000000**

Customer : City of Roswell, Park department
Project : Bill Johnson Physical Activity Building, Roswell, Georgia.
Name : MEP Design Engineers, Inc.

Y4C

General

Unit function	**DX cooling, gas heat**	Unit efficiency	**Standard efficiency**
Airflow	**Convertible configuration**	Airflow Application	**Downflow**
Fresh air selection	**Econ-dry bulb 0-100% w/ bar relief 3ph**	Hinged service access/filters	**Std panel/2 in pltd filters MERV 8-3ph**
Tonnage	**5 Ton 13 SEER (053)**	Cooling Entering DB	**80.00 F**
Cooling Entering WB	**67.00 F**	Ambient Temp	**95.00 F**
Heating capacity	**High gas heat 3ph**	Heating EAT	**70.00 F**
Voltage	**460/60/3**	Major design sequence	**G**

Main Cooling

Tonnage	**5 Ton 13 SEER (053)**	Cooling Entering DB	**80.00 F**
Cooling Entering WB	**67.00 F**	Ambient Temp	**95.00 F**

Main Heating

Heating capacity	**High gas heat 3ph**	Heating EAT	**70.00 F**

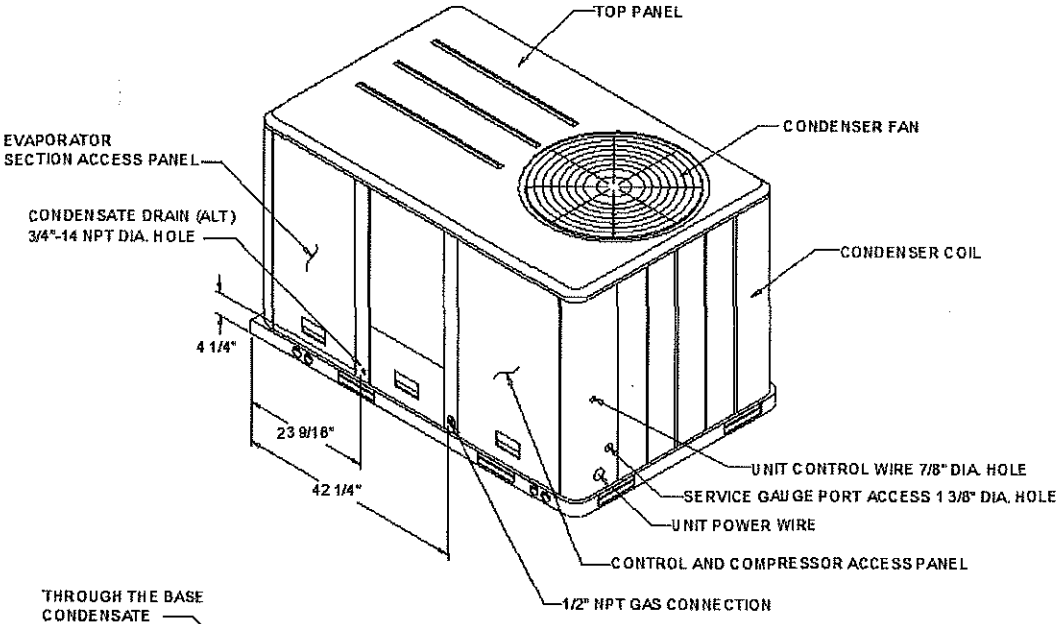
Motor/Electrical

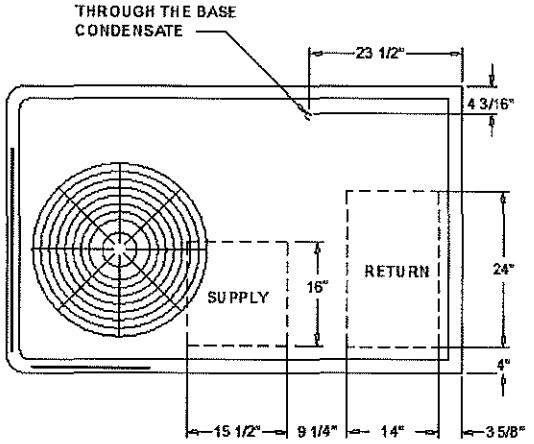
Voltage	**460/60/3**

DX Cooling, Gas Heat 3-10 Ton

Unit controls	**Microprocessor controls 3ph**	Through the base provisions	**Through the base electrical 3ph**
Disconnect sw/circuit breaker	**Non-fused disconnect**	Convenience outlet option	**Powered convenience outlet (3ph units)**

American Standard
HEATING & AIR CONDITIONING

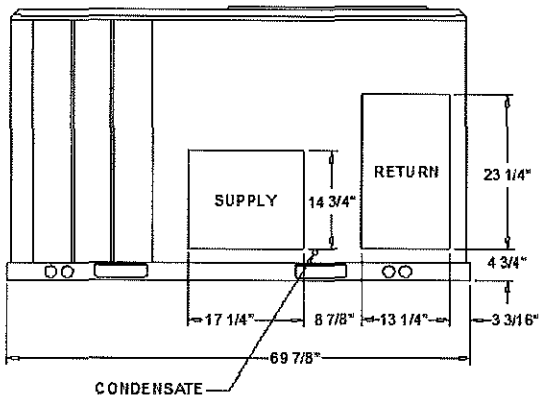


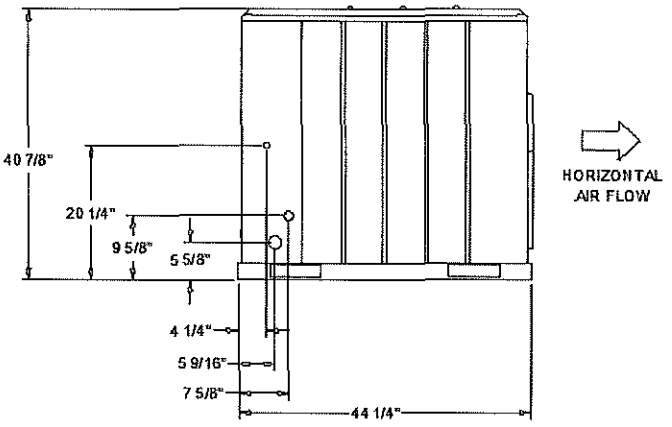


NOTES:
1. THRU -THE -BASE GAS AND ELECTRICAL IS NOT STANDARD ON ALL UNITS.
2. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION

PLAN VIEW UNIT

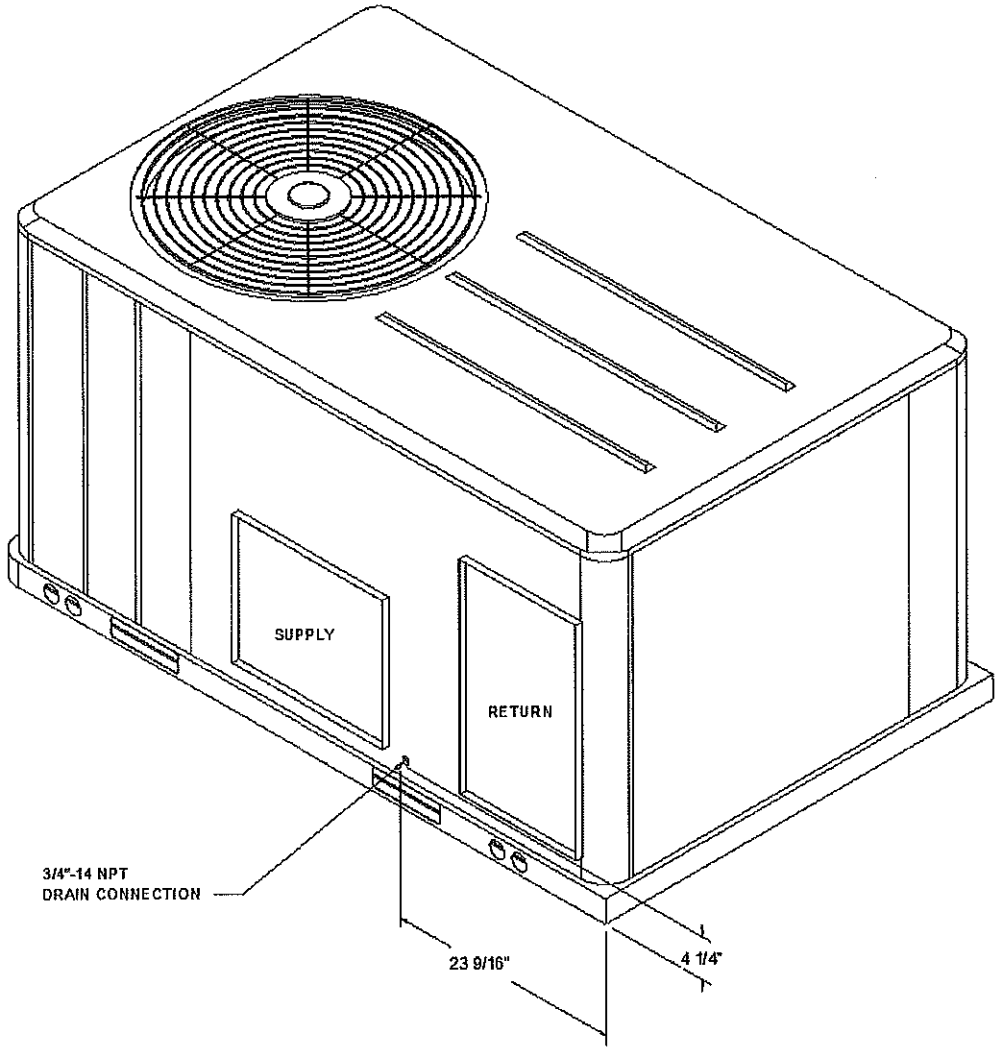
DIMENSION DRAWING



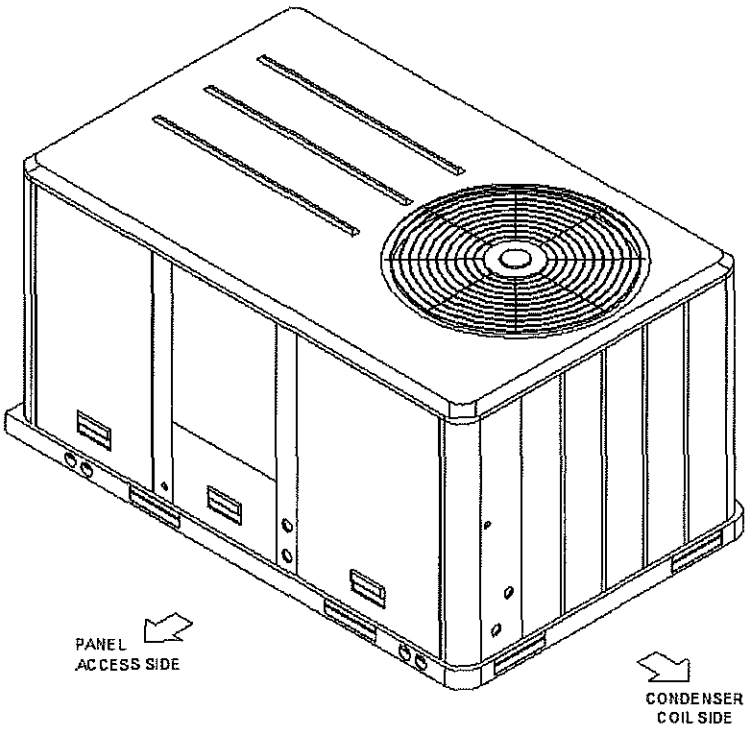


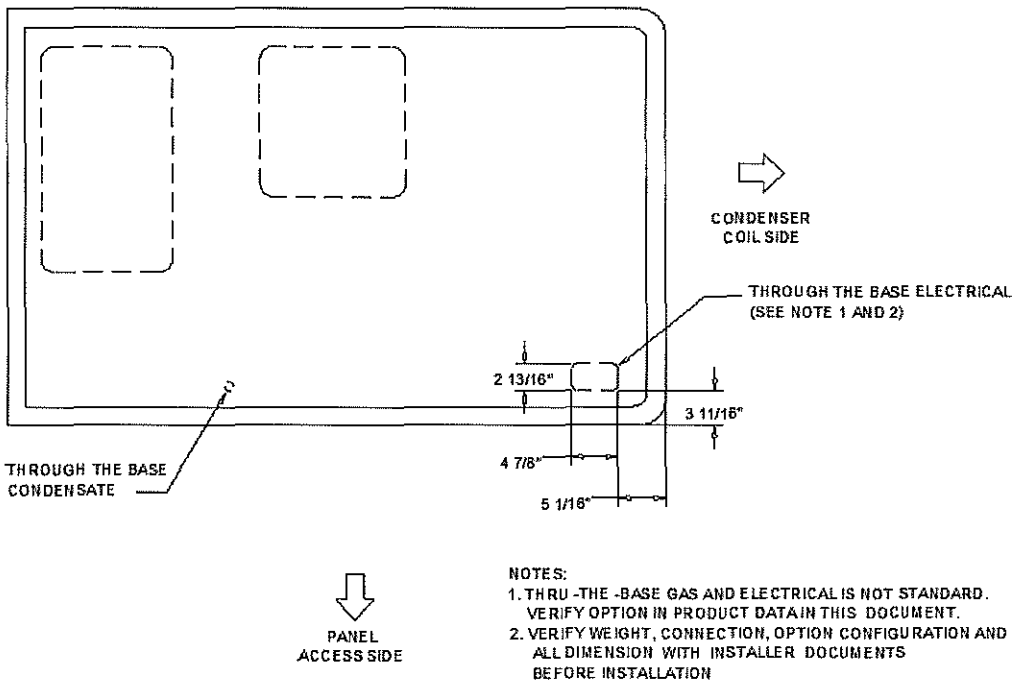
PACKAGED GAS / ELECTRICAL

DIMENSION DRAWING



ISOMETRIC-PACKAGED COOLING





NOTES:
1. THRU -THE -BASE GAS AND ELECTRICAL IS NOT STANDARD. VERIFY OPTION IN PRODUCT DATA IN THIS DOCUMENT.
2. VERIFY WEIGHT, CONNECTION, OPTION CONFIGURATION AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION

THRU THE BASE ELECTRICAL

PLAN / ISO VIEW DRAWING

American Standard
HEATING & AIR CONDITIONING

ELECTRICAL / GENERAL DATA

GENERAL (2)(4)(6)

		Oversized Motor	
Model:	YSC063G	MCA:	N/A
Unit Operating Voltage:	414-506	MFS:	N/A
Unit Primary Voltage:	460	MCB:	N/A
Unit Secondary Voltage	--		
Unit Hertz:	60		
Unit Phase:	3		
EER/SEER	11.0/13.0		

Standard Motor		Field Installed Oversized Motor	
MCA:	12.9	MCA:	N/A
MFS:	20.0	MFS:	N/A
MCB:	20.0	MCB:	N/A

HEATING PERFORMANCE

HEATING - GENERAL DATA

Heating Model:	High
Heating Input (BTU):	130000
Heating Output (BTU):	106600
No. Burners:	3
No. Stages	1

Gas Inlet Pressure

Natural Gas (Min/Mix):	4.5/14.0
LP (Min/Max)	11.0/14.0
Gas Pipe Connection Size:	1/2"

INDOOR MOTOR

Standard Motor		Oversized Motor		Field Installed Oversized Motor	
Number:	1	Number:	N/A	Number:	N/A
Horsepower:	1.0	Horsepower:	N/A	Horsepower:	N/A
Motor Speed (RPM):	--	Motor Speed (RPM):	N/A	Motor Speed (RPM):	N/A
Phase	3	Phase	N/A	Phase	N/A
Full Load Amps:	2.5	Full Load Amps:	N/A	Full Load Amps:	N/A
Locked Rotor Amps:	16.1	Locked Rotor Amps:	N/A	Locked Rotor Amps:	N/A

COMPRESSOR Circuit 1/2

Number:	1
Horsepower:	4.3
Phase:	3
Rated Load Amps:	7.8
Locked Rotor Amps:	52.0

OUTDOOR MOTOR

Number:	1
Horsepower:	0.33
Motor Speed (RPM):	1100
Phase:	1
Full Load Amps:	0.7
Locked Rotor Amps:	2.6

POWER EXHAUST ACCESSORY (3)

(Field Installed Power Exhaust)

Phase:	N/A
Horsepower:	N/A
Motor Speed (RPM):	N/A
Full Load Amps:	N/A
Locked Rotor Amps:	N/A

FILTERS

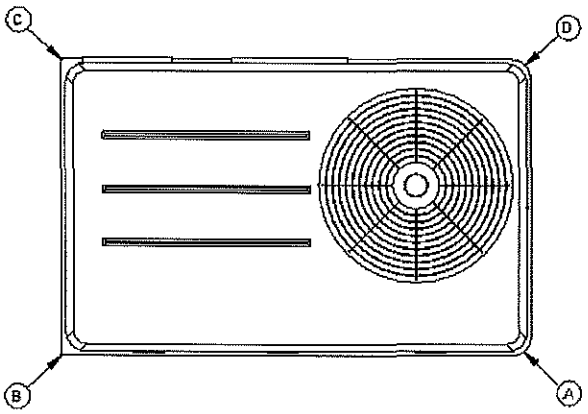
Type:	Throwaway
Furnished:	Yes
Number	2
Recommended	20"x30"x2"

REFRIGERANT (2)

Type	R-410
Factory Charge	
Circuit #1	3.4 lb
Circuit #2	N/A

NOTES:

1. Maximum (HACR) Circuit Breaker sizing is for installations in the United States only.
2. Refrigerant charge is an approximate value. For a more precise value, see unit nameplate and service instructions.
3. Value does not include Power Exhaust Accessory.
4. Value includes oversized motor.
5. Value does not include Power Exhaust Accessory.
6. EER is rated at AHRI conditions and in accordance with DOE test procedures.



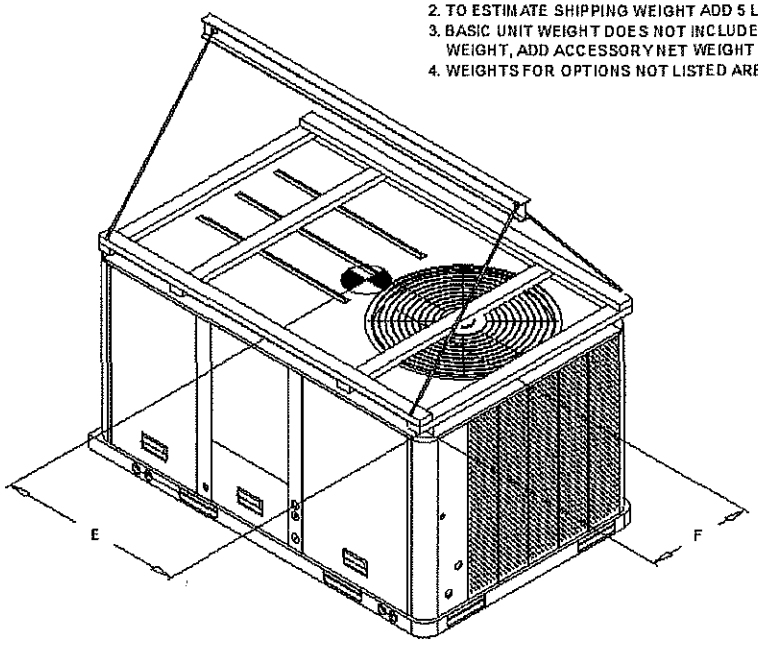
PACKAGED GAS / ELECTRICAL
CORNER WEIGHT

INSTALLED ACCESSORIES NET WEIGHT DATA

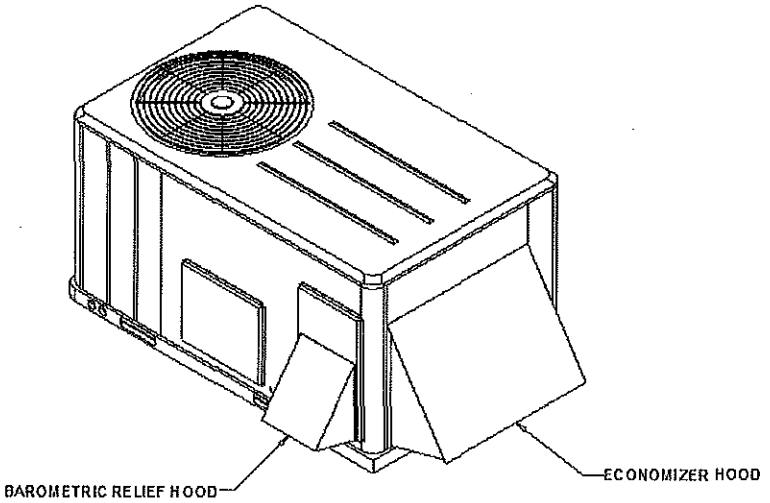
ACCESSORY	WEIGHTS
ECONOMIZER	
MOTORIZED OUTSIDE AIR DAMPER	
MANUAL OUTSIDE AIR DAMPER	
BAROMETRIC RELIEF	
OVERSIZED MOTOR	
BELT DRIVE MOTOR	
POWER EXHAUST	
THROUGHT THE BASE ELECTRICAL/GAS (FIOPS)	
UNIT MOUNTED CIRCUIT BREAKER (FIOPS)	
UNIT MOUNTED DISCONNECT (FIOPS)	5.0 lb
POWERED CONVENIENCE OUTLET (FIOPS)	
HINGED DOORS (FIOPS)	
HAIL GUARD	
SMOKE DETECTOR, SUPPLY/ RETURN	
NOVAR CONTROL	
STAINLESS STEEL HEAT EXCHANGER	
REHEAT	
ROOF CURB	

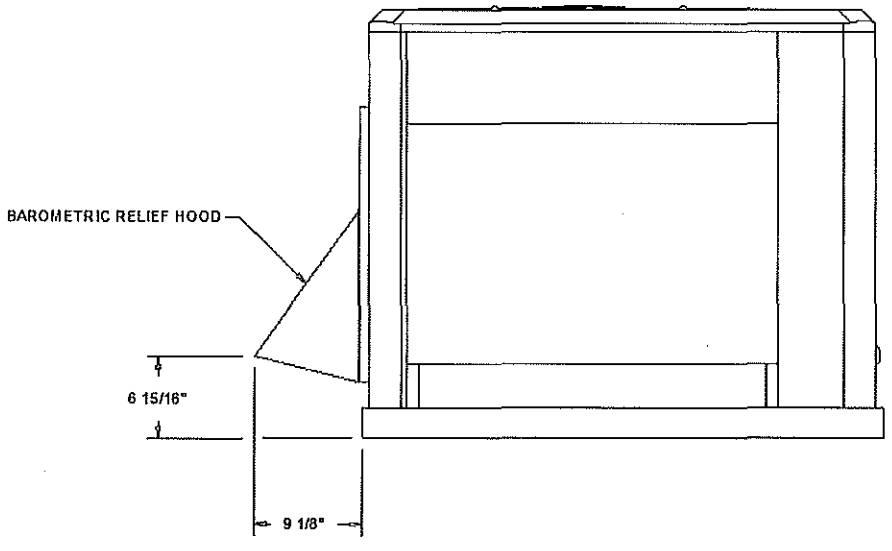
BASIC UNIT WEIGHTS		CORNER WEIGHTS				CENTER OF GRAVITIY	
SHIPPING	NET	A	208.0 lb	C	47.0 lb	(E) LENGHT	(F) WIDTH
602.0 lb	497.0 lb	B	184.0 lb	D	59.0 lb	32"	9"

NOTE:
1. CORNER WEIGHTS ARE GIVEN FOR INFORMATION ONLY.
2. TO ESTIMATE SHIPPING WEIGHT ADD 5 LBS TO NET WEIGHT.
3. BASIC UNIT WEIGHT DOES NOT INCLUDE ACCESSORY WEIGHT. TO OBTAIN TOTAL WEIGHT, ADD ACCESSORY NET WEIGHT TO BASIC UNIT WEIGHT.
4. WEIGHTS FOR OPTIONS NOT LISTED ARE <5 LBS.



PACKAGED GAS / ELECTRICAL
RIGGING AND CENTER OF GRAVITY





ACCESSORY - BAROMETRIC RELIEF DAMPER HOOD

Casing

Unit casing shall be constructed of zinc coated, heavy gauge, galvanized steel. Exterior surfaces shall be cleaned, phosphatized, and finished with a weather-resistant baked enamel finish. Unit's surface shall be tested 672 hours in a salt spray test in compliance with ASTM B117. Cabinet construction shall allow for all maintenance on one side of the unit. Service panels shall have lifting handles and be removed and reinstalled by removing two fasteners while providing a water and air tight seal. All exposed vertical panels and top covers in the indoor air section shall be insulated with a cleanable foil-faced, fire-retardant permanent, odorless glass fiber material. The base of the unit shall be insulated with 1/8 inch, foil-faced, closed-cell insulation. All insulation edges shall be either captured or sealed. The unit's base pan shall have no penetrations within the perimeter of the

curb other than the raised 1 1/8 inch high downflow supply/return openings to provide an added water integrity precaution, if the condensate drain backs up. The base of the unit shall have provisions for forklift and crane lifting, with forklift capabilities on three sides of the unit.

Unit Top

The top cover shall be one piece construction or, where seams exist, it shall be double-hemmed and gasket-sealed. The ribbed top adds extra strength and enhances water removal from unit top.

Two-Inch Pleated Filters

2" pleated media filters shall be available on all models.

Indoor Fan

The following units shall be equipped with a direct drive plenum fan design (T/YSC120E, T/YHC092,102, 120E). Plenum fan design shall include a backward-curved fan wheel along with an external rotor direct drive variable speed indoor motor. All plenum fan designs will have a variable speed adjustment potentiometer located in the control box. 3-5 ton units (standard efficiency 3-phase or high efficiency 3-phase with optional motor) are belt driven, FC centrifugal fans with adjustable motor sheaves. 3-5 ton units (1-phase or high efficiency 3-phase) have multispeed, direct drive motors. All 6-8½ ton units (standard efficiency) shall have belt drive motors with an adjustable idler-arm assembly for quick-adjustment to fan belts and motor sheaves. All motors shall be thermally protected. All 10 tons and 7½-8½ (high efficiency) have variable speed direct drive motors. All indoor fan motors meet the U.S. Energy Policy Act of 1992 (EPACT).

Outdoor Fans

The outdoor fan shall be direct-drive, statically and dynamically balanced, draw-through in the vertical discharge position. The fan motor shall be permanently lubricated and shall have built-in thermal overload protection.

Evaporator and Condenser Coils

Internally finned, 5/16" copper tubes mechanically bonded to a configured aluminum plate fin shall be standard. The microchannel type condenser coil is standard for the T/YSC 10 ton models and 7½ ton high efficiency models. The microchannel type condenser coil is not offered on the 7½ ton dehumidification model. Due to flat streamlined tubes with small ports, and metallurgical tube-to-fin bond, microchannel coil has better heat transfer performance. Microchannel condenser coil can reduce system refrigerant charge by up to 50% because of smaller internal volume, which leads to better compressor reliability. Compact all-aluminum microchannel coils also help to reduce the unit weight. All-aluminum construction improves re-cyclability. Galvanic corrosion is also minimized due to all aluminum construction. Strong aluminum brazed structure provides better fin protection. In addition, flat streamlined tubes also make microchannel coils more dust resistant and easier to clean. Coils shall be leak tested at the factory to ensure the pressure integrity. The evaporator coil and condenser coil shall be leak tested to 600 psig. The assembled unit shall be leak tested to 465 psig. The condenser coil shall have a patent pending 1+1+1 hybrid coil designed with slight gaps for ease of cleaning. A removable, reversible, double-sloped condensate drain pan with through the base condensate drain is standard.

High Pressure Control

All units include High Pressure Cutout as standard.

Phase monitor

Phase monitor shall provide 100% protection for motors and compressors against problems caused by phase loss, phase imbalance, and phase reversal. Phase monitor is equipped with an LED that provides an ON or FAULT indicator. There are no field adjustments. The module will automatically reset from a fault condition.

Refrigerant Circuits

Each refrigerant circuit offer thermal expansion valve as standard. Service pressure ports, and refrigerant line filter driers are factory-installed as standard. An area shall be provided for replacement suction line driers.

Gas Heating Section

The heating section shall have a progressive tubular heat exchanger design using stainless steel burners and corrosion resistant steel throughout. An induced draft combustion blower shall be used to pull the combustion products through the firing tubes. The heater shall use a direct spark ignition (DSI) system. On initial call for heat, the combustion blower shall purge the heat exchanger for 20 seconds before ignition After three unsuccessful ignition attempts, the entire heating system shall be locked out until manually reset at the thermostat/zone sensor. Units shall be suitable for use with natural gas or propane (field-installed kit) and also comply with the California requirement for low NOx emissions (Gas/Electric Only).

Powered or Unpowered Convenience Outlet

This is a GFCI, 120v/15amp, 2 plug, convenience outlet, either powered or unpowered. When the convenience outlet is powered, a service receptacle disconnect will be available. The convenience outlet is powered from the line side of the disconnect or circuit breaker, and therefore will not be affected by the position of the disconnect or circuit breaker. This option can only be ordered when the Through the Base Electrical with either the Disconnect Switch or Circuit Breaker option is ordered.

Economizer

This accessory shall be available with or without barometric relief. The assembly includes fully modulating 0-100 percent motor and dampers, minimum position setting, preset linkage, wiring harness with plug, spring return actuator and fixed dry bulb control. The barometric relief shall provide a pressure operated damper that shall be gravity closing and shall prohibit entrance of outside air during the equipment off cycle. Optional

solid state or differential enthalpy control shall be available for either factory or field installation. The economizer arrives in the shipping position and shall be moved to the operating position by the installing contractor.

Through the Base Electrical Access

An electrical service entrance shall be provided allowing electrical access for both control and main power connections inside the curb and through the base of the unit. Option will allow for field installation of liquid-tight conduit and an external field-installed disconnect switch.

Through the Base Electrical with Disconnect Switch

This 3-pole, molded case, disconnect switch with provisions for through the base electrical connections are available. The disconnect switch will be installed in the unit in a water tight enclosure with access through a swinging door. Wiring will be provided from the switch to the unit high voltage terminal block. The switch will be UL/CSA agency recognized.

Note:

The disconnect switch will be sized per NEC and UL guidelines but will not be used in place of unit overcurrent protection.