



TECHNICAL GUIDE

SPLIT-SYSTEM AIR-COOLED CONDENSING UNITS

YD360, 480 & 600
30 THRU 50 NOMINAL TONS



Description

These units are completely assembled, piped and wired at the factory to provide one-piece shipment and rigging. Each unit is pressurized with a holding charge of Refrigerant R-410A for storage and/or shipping.

The compact design, clean styling, low silhouette, and quiet operation make these condensing units suitable for almost any outdoor location. On rooftops . . . because they weigh much less than a single package unit of similar capacity and are much easier to rig and support. At ground level . . . because their ample sub-cooling capacity allows them to be located three or more stories below the evaporator coil.

Every condenser coil is pressurized with air to 325 psig and leak tested. After assembly, the unit is pressurized with a combination of Refrigerant R-410A and nitrogen to 450 psig for pressure testing and additional leak testing. During this pressure test, the operation of the high pressure control is checked. As the unit is being evacuated and dehydrated, the operation of the low pressure control is checked. Every compressor, condenser fan motor, crankcase heater, and electrical control circuit is checked to assure a trouble-free start-up and years of reliable operation.

The condenser fan guards are vinyl-coated to provide additional rust protection and to enhance the appearance of the unit.

Compressors are mounted on rubber isolators to reduce the transmission of vibration. Vertical discharge condenser fans direct sound upward and away from any surrounding structures.

All sheet metal parts are constructed of commercial grade galvanized steel. After fabrication, each part is thoroughly cleaned to remove any grease or dirt from its surfaces. The external parts are coated with a powder paint to assure a quality finish for many years. This UL approved coating system has passed the 750-hour, 20% salt spray test per ASTM Standard B117.

All models include a 1-year limited warranty on the complete unit. An additional 4-year extended compressor warranty is available as an option on all models.

A matching line of Evaporator Blower units is also offered to meet your precise capacity and air handling requirements.



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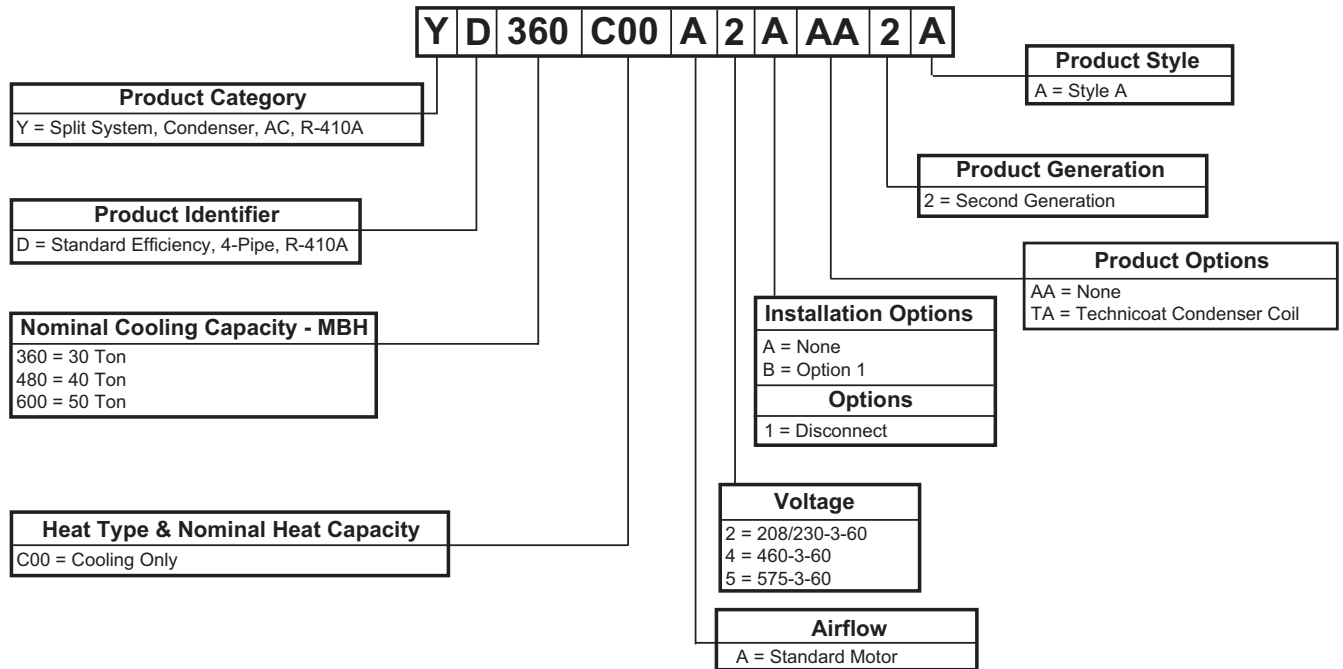
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Product Nomenclature

Configured Split Condenser Model Number Nomenclature



Condensing Unit Features and Benefits

- Meets or exceeds ASHRAE 90.1 standards.
- Scroll compressors provide both high efficiency and reliability.
- Smart Equipment™ Controls
- Dual refrigerant circuits.
- Condenser coils are constructed of copper tubes and aluminum fins for durability and long lasting efficient operation.
- Crankcase heaters that will be de-energized when the compressor is operating.
- Both high and low pressure controls. Since these controls are self-contained, there are no capillary lines to be damaged.
- Solid state or internal line break compressor motor protection.
- Class 2, 24-volt thermostat control circuit.
- Factory installed service valves are standard.
- Two filter-driers are shipped in the unit's control box for field installation in the liquid line near the condensing unit.
- Copper stub-outs are factory mounted on the suction and liquid line service valves to simplify the field piping connections.
- Multiple controls to provide stable system operation at ambient temperatures down to 40°F with kits available for operation to 0°F.
- Capacity staging for more economical operation and more even temperature levels within the conditioned space.
- A lockout circuit to prevent the unit from cycling on safety control.
- Pump-out on unit startup to prevent liquid refrigerant returning to the compressor is standard on all models.
- Inherently protected condenser fan motors.
- V-Coil Design with exterior service port connections.
- Five-minute anti-short cycle timer and minimum compressor run time.
- Factory installed disconnect and Technicoat coils option.
- Self contained high and low pressure controls.

Condensing Unit Accessories

- Low ambient VFD control to 0° F.
- Phase Monitors - Designed to prevent unit damage. The phase monitor will shut the unit down and out-of phase condition.
- Hot Gas Bypass Kit - That will provide a metered flow of compressor discharge gas to the system's evaporator coil during reduced load operation.
- Optional skid for fork truck handling (requires 96" length forks).

Guide Specifications

SPLIT SYSTEM COOLING ONLY CONDENSING UNITS MODELS YD360, YD480 AND YD600

THE INSTALLER SHALL:

- Furnish York® air-cooled condensing units or equivalent in accordance with the performance schedule shown on the plans, and
- Install each unit as shown on the plans in accordance with:
 - The manufacturers recommendations and
 - All applicable national and local codes

EACH UNIT SHALL BE:

- CSA approved.
- Completely assembled for one-piece shipping and rigging.
- Leak pressure and functionally tested at the factory to assure a trouble-free start-up after installation.
- Covered by a 1-year limited parts warranty on the complete unit.
- In current production with published literature available to check performance, limitations, specifications, power requirements, dimensions, operation and appearance.

EACH UNIT SHALL HAVE:

- A steel angle frame to provide the rigid support required for shipping, rigging and years of dependable operation.
- Zinc-coated steel that has been finished by a powder paint process to provide a long lasting, quality appearance.
- Removable panels for easy access to all internal components during maintenance and service.

THE DIMENSIONS OF EACH UNIT SHALL:

- Not exceed those specified on the plans.

EACH COMPRESSOR SHALL:

- Be mounted on isolators to minimize the transmission of vibration.

ALL CONDENSER COILS SHALL:

- Be draw through design.
- Be constructed of copper tubes arranged in staggered rows and mechanically expanded into aluminum fins.

THE CONDENSER FAN MOTOR(S) SHALL:

- Be directly connected to the condenser fans.
- Have permanently lubricated ball bearings.
- Have inherent overload protection.
- Motors shall be three phase.
- The propeller-type condenser fans shall be arranged for vertical discharge of the condenser air.

THE WIRING FOR EACH UNIT SHALL INCLUDE:

- A crankcase heater (one per compressor)
- All 24-volt temperature control circuit.
- Both high and low pressure cutouts.
- Solid-state or internal line break compressor motor protection.
- Condenser fan motor control to assure stable operation at ambient temperatures down to 40°F.

THE REFRIGERANT PIPING of each system shall include:

- A filter-drier shipped for field installation.

Physical Data

YD360 thru 600 Physical Data

Component		Models			
		YD360	YD480	YD600	
Nominal Tonnage		30	40	50	
REFRIGERANT					
Refrigerant type		R-410A	R-410A	R-410A	
Holding charge (lb) ¹		1.0	1.0	1.0	
Operating Charge (lb) ²	System #1	35.0	47.0	51.0	
	System #2	35.0	47.0	51.0	
DIMENSIONS (inches)					
Length		128.5	128.5	128.5	
Width		88.5	88.5	88.5	
Height		37.5	57.7	57.7	
WEIGHTS (lb)					
Shipping		1875	2315	2345	
Operating		1895	2347	2381	
COMPRESSORS					
Type		Tandem Scroll	Tandem Scroll	Tandem Scroll	
Quantity		2	2	2	
Cooling					
Nominal Capacity (Tons)	System #1	15	20	25	
	System #2	15	20	25	
Capacity Stages	System #1	2	2	2	
	System #2	2	2	2	
SYSTEM DATA					
No. Refrigeration Circuits		2	2	2	
Suction Line OD (in.)		1 5/8	1 5/8	1 5/8	
Liquid Line OD (in.)		7/8	7/8	7/8	
OUTDOOR COIL DATA					
Face area (Sq. Ft.)	System #1	32.5	45.5	52.0	
	System #2	32.5	45.5	52.0	
Rows		2	2	2	
Fins per inch		16	16	16	
Tube diameter (in.)		3/8	3/8	3/8	
Circuitry Type		Interlaced	Interlaced	Interlaced	
Refrigerant Control		---	---	---	
CONDENSER FAN DATA					
No. Fans / Diameter (in.)		4/30	4/30	4/30	
Type		Axial	Axial	Axial	
Drive type		Direct	Direct	Direct	
No. speeds		1	1	1	
Number of motors	System #1	2	2	2	
	System #2	2	2	2	
Motor HP (ea.)		1 1/2	1 1/2	1 1/2	
Rotation ³		CW	CW	CW	
RPM		1140	1140	1140	
Nominal CFM	System #1	15400	19400	19900	
	System #2	15400	19400	19900	

¹ Holding Charge is the amount in the unit as shipped from the factory.

² Includes matched evaporator unit with 25 ft of piping.

³ When viewing the shaft end of the motor.

Unit Limitations

Condenser Unit limitations

Model	Nominal Tonnage	Unit Voltage	Applied Voltage ¹		Outdoor DB Temp Cooling (°F)		Indoor DB Temp Cooling (°F)	
			Min ²	Max	Max	Min [†]	Max	Min
YD360	30	208/230-3-60	187	252	125	40	86	68
		460-3-60	432	504				
		575-3-60	540	630				
YD480	40	208/230-3-60	187	252	125	40	86	68
		460-3-60	432	504				
		575-3-60	540	630				
YD600	50	208/230-3-60	187	252	125	40	86	68
		460-3-60	432	504				
		575-3-60	540	630				

¹ Rated in accordance with AHRI Standard 110, Range "A" Utilization Voltage.

² Low Ambient accessories are available to permit stable system operation at ambient temperatures down to 0°F.

Cooling Ratings

Cooling Ratings

Outdoor Unit	Condensing Unit Only		
	Gross Capacity ¹ (MBH)	kW	EER
YD360	333	29.9	11.1
YD480	469	37.4	12.5
YD600	576	50.0	11.5

¹ Condensing unit only ratings are at 45 F SST and 95 F entering-air temperature.

EER = Energy Efficiency Ratio at full load - the cooling capacity in Btu's per hour (Btuh) divided by the power input in watts, expressed in Btuh per watt (Btuh/watt).

EER; condensing unit only ratings based on 45° F SST and 95°F entering outdoor air temperature.

LEGEND

EER = Energy Efficiency Ratio

SST = Saturated Suction Temperature

Capacity Performance

Condenser Only Cooling Capacities

YD360 thru 600 Condenser Only Capacities

MODEL	Suction Press. & Corresponding Temp. @ Saturation		Temperature of Air on Condenser Coil, °F																	
			65			75			85			95			105			115		
	PSIG	°F	MBH	KW	EER	MBH	KW	EER	MBH	KW	EER	MBH	KW	EER	MBH	KW	EER	MBH	KW	EER
YD360	104	35	275.4	28.5	9.6	264.0	27.4	9.6	250.0	26.4	9.5	238.2	28.8	8.3	231.8	32.0	7.2	228.5	35.1	6.5
	117	40	327.9	29.2	11.2	316.0	28.1	11.3	302.0	27.0	11.2	285.8	29.4	9.7	273.0	32.5	8.4	263.3	35.6	7.4
	129	45	380.4	29.8	12.8	368.0	28.7	12.8	354.0	27.5	12.9	333.5	29.9	11.1	314.2	33.0	9.5	298.1	36.2	8.2
	142	50	432.9	30.4	14.3	420.0	29.3	14.3	406.0	28.1	14.4	381.1	30.5	12.5	355.4	33.6	10.6	332.9	36.7	9.1
	154	55	485.4	31.0	15.7	472.0	30.0	15.8	458.0	28.7	16.0	428.8	31.0	13.8	396.6	34.1	11.6	367.7	37.2	9.9
YD480	105	35	418.0	33.2	12.6	408.0	32.4	12.6	399.2	32.4	12.3	397.3	36.2	11.0	389.6	40.4	9.6	389.2	45.0	8.6
	117	40	461.0	34.4	13.4	451.0	33.5	13.5	441.6	33.1	13.3	433.0	36.8	11.8	419.2	40.9	10.3	410.8	45.2	9.1
	130	45	504.0	35.6	14.1	494.0	34.6	14.3	484.1	33.8	14.3	468.8	37.4	12.5	448.9	41.3	10.9	432.4	45.4	9.5
	142	50	547.0	36.9	14.8	537.0	35.7	15.0	526.5	34.5	15.3	504.5	38.0	13.3	478.5	41.8	11.5	454.0	45.6	9.9
	155	55	590.0	38.1	15.5	580.0	36.8	15.8	569.0	35.2	16.2	540.3	38.5	14.0	508.2	42.2	12.0	475.6	45.8	10.4
YD600	105	35	489.4	45.3	10.8	487.2	44.1	11.0	482.6	43.4	11.1	442.2	48.4	9.1	391.3	54.4	7.2	334.0	60.7	5.5
	118	40	561.4	46.2	12.1	558.7	45.2	12.4	554.6	44.4	12.5	509.2	49.4	10.3	456.8	55.1	8.3	400.0	61.1	6.5
	130	45	633.4	47.2	13.4	630.2	46.3	13.6	626.6	45.4	13.8	576.2	50.5	11.4	522.3	55.9	9.3	466.0	61.5	7.6
	142	50	705.4	48.2	14.6	701.7	47.4	14.8	698.6	46.4	15.1	643.2	51.3	12.5	587.8	56.6	10.4	532.0	62.0	8.6
	154	55	777.4	49.2	15.8	773.2	48.5	15.9	770.6	47.4	16.2	710.2	52.3	13.6	653.3	57.4	11.4	598.0	62.4	9.6

Sound Performance

Outdoor Sound Power Levels (dB), 60 Hz

Model	Nominal Tonnage	dB(A) ¹	Octave Bands (Hz)							
			63	125	250	500	1000	2000	4000	8000
YD360	30	92	90	93	91	89	87	83	79	74
YD480	40	92	90	93	91	89	87	84	80	75
YD600	50	93	91	94	92	90	87	84	80	75

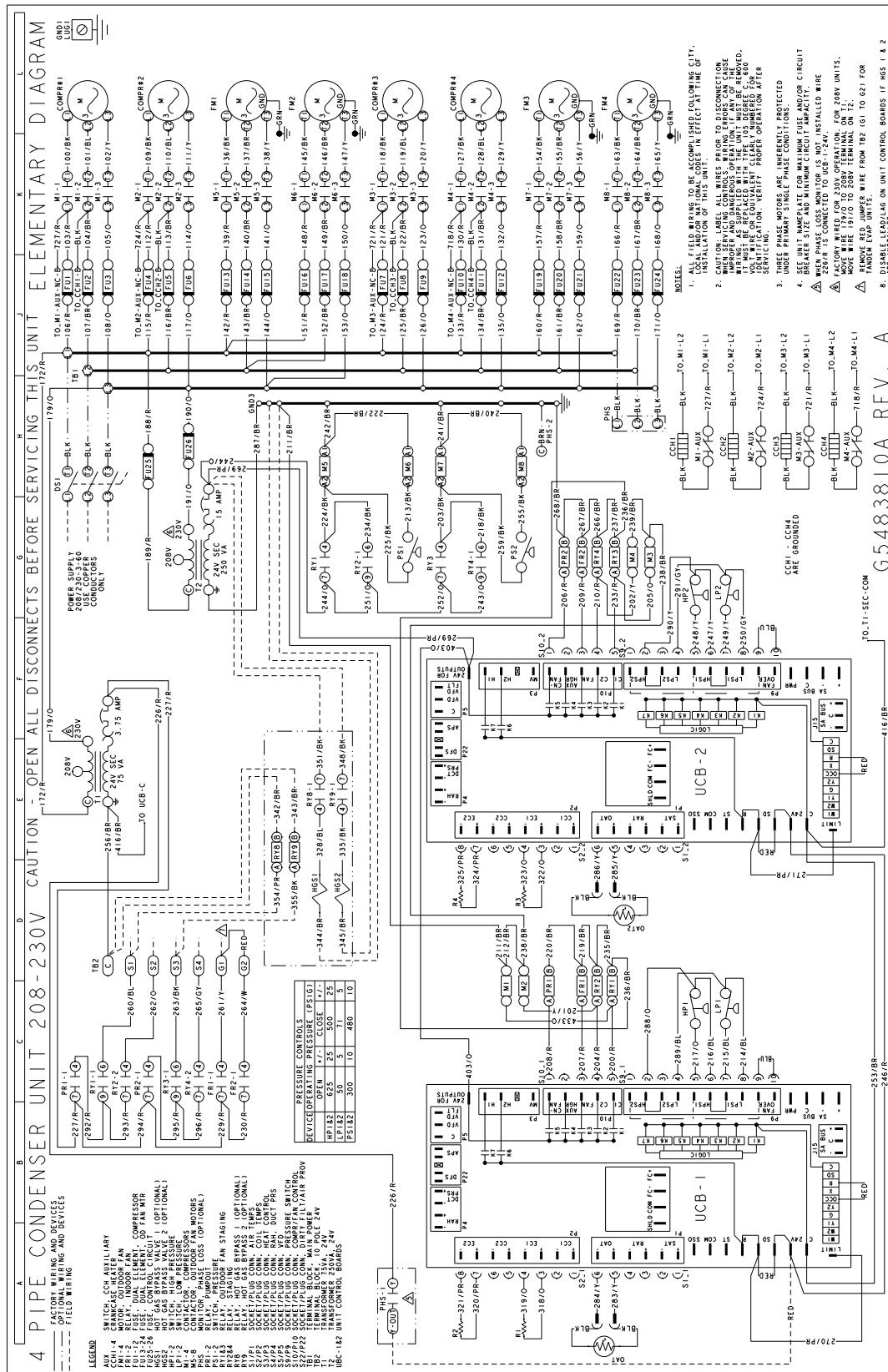
¹ Rated in accordance with AHRI 270 Standard.

Electrical Data

YD360 thru 600 Electrical Data

Model	Compressors					Outdoor Fan Motor				Minimum Circuit Ampacity	Maximum Fuse Size (A)
	Power Supply	Qty	RLA (each)	MCC (each)	LRA (each)	Power Supply	HP	Qty	FLA (each)		
YD360	208/230-3-60	4	25.0	39	164	208/230-3-60	1 1/2	4	5.8	129.5	150
	460-3-60	4	12.2	19	100	460-3-60	1 1/2	4	2.9	63.5	70
	575-3-60	4	9.0	14	78	575-3-60	1 1/2	4	2.2	47.1	50
YD480	208/230-3-60	4	30.1	47	225	208/230-3-60	1 1/2	4	5.8	151.1	175
	460-3-60	4	16.7	26	114	460-3-60	1 1/2	4	2.9	82.6	90
	575-3-60	4	12.2	19	80	575-3-60	1 1/2	4	2.2	60.7	70
YD600	208/230-3-60	4	48.1	75	245	208/230-3-60	1 1/2	4	5.8	227.6	250
	460-3-60	4	18.6	29	125	460-3-60	1 1/2	4	2.9	90.7	100
	575-3-60	4	14.7	23	100	575-3-60	1 1/2	4	2.2	71.3	80

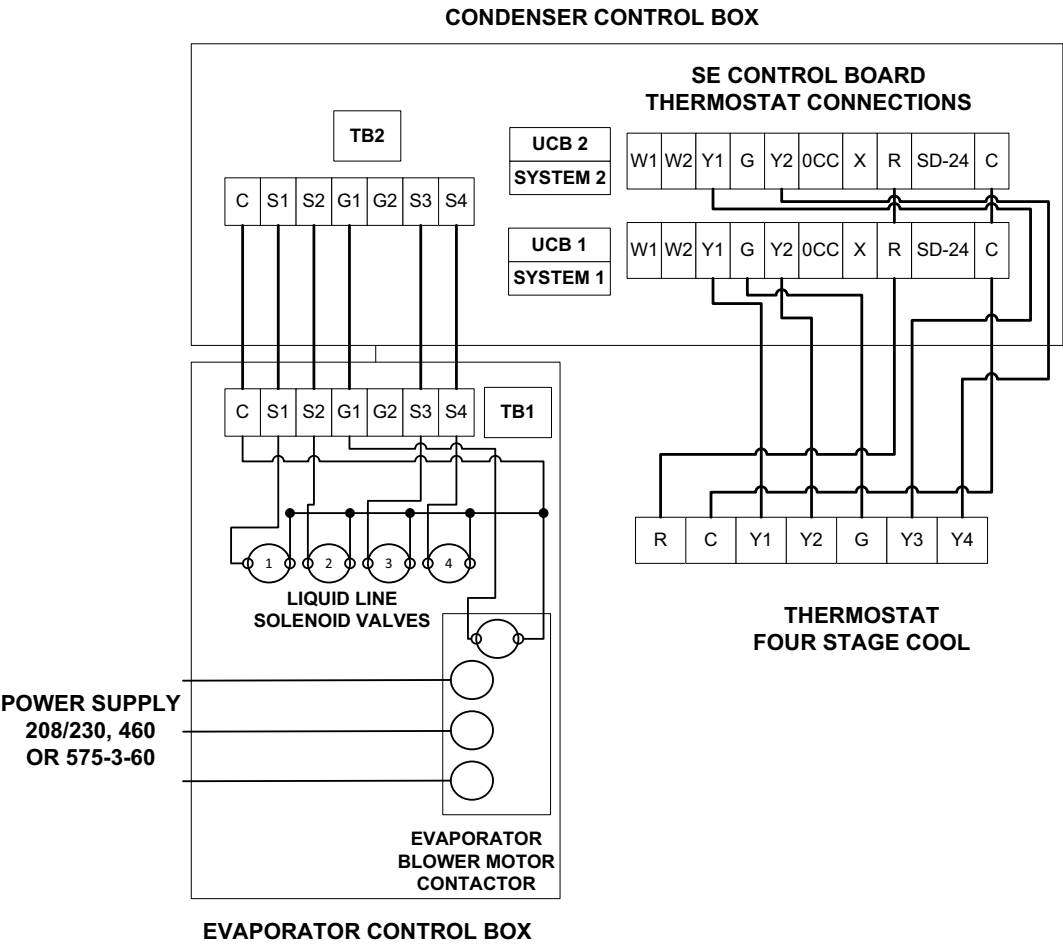
Typical Wiring Diagrams



Typical 208/230 Volt, YD360/480/600 Condensing Unit Wiring Diagram



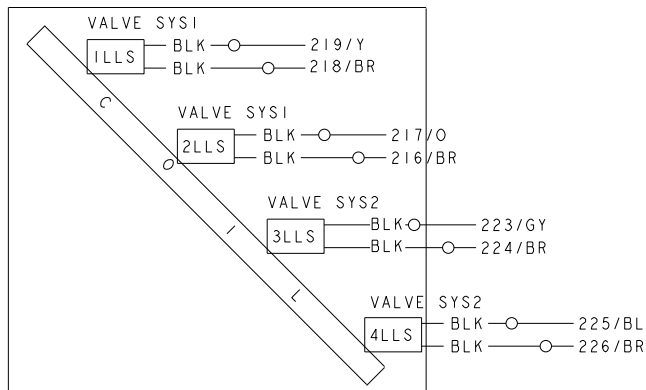
Typical Field Wiring Diagrams



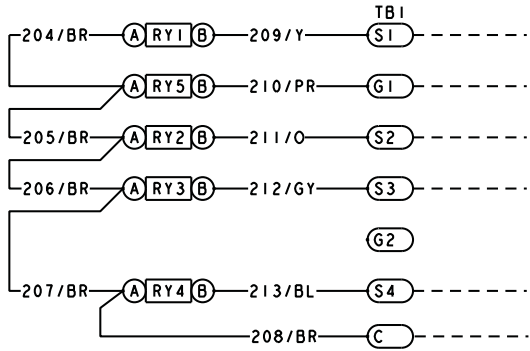
Typical Field Wiring Diagram ND360/480 Evaporator Units, ND600 Air Handler and M1CZ600A Evaporator Coil when Matched with YD360, 480, 600 Condenser

NOTE: Typical field wiring when OD unit is matched with ND air handler. When matching condensing unit with models other than ND an additional control transformer is required on the Indoor unit.

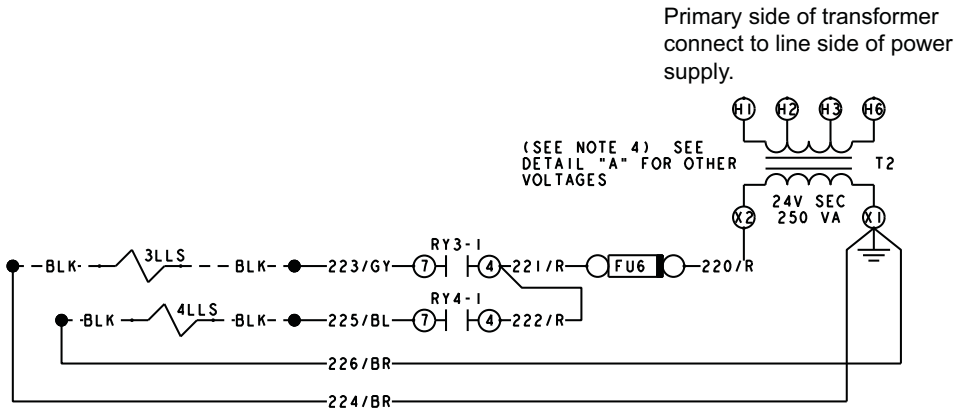
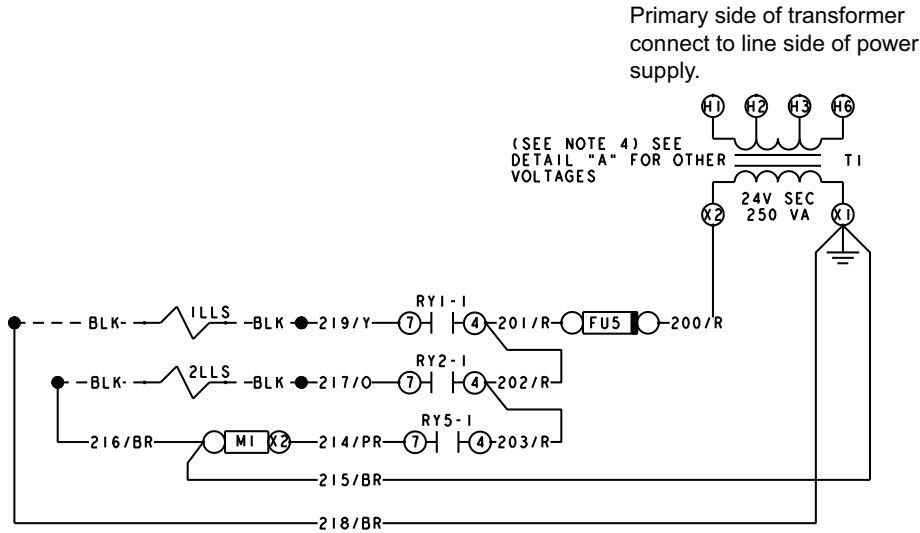
NOTE: For applications on airhandlers/evaporator DX coils other than ND360-600 certified matchups liquid line solenoids may be required for proper operation and refrigerant system dump out.



Typical ND360/480 & M1CZ600A Liquid Line Solenoid Wiring



Standard Terminal Block on ND360/480 and ND600 with M1CZ600A models. On non ND models isolation relays must be installed to avoid overloading on 75 VA transformer on condensing unit.



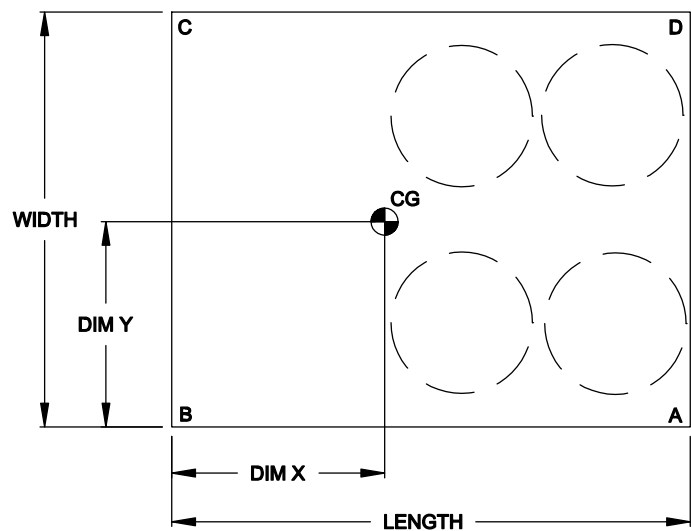
Non ND units may not include any or all of the components required to wire the unit. Use the diagram as general reference only.

Typical Liquid Line Solenoid Wiring

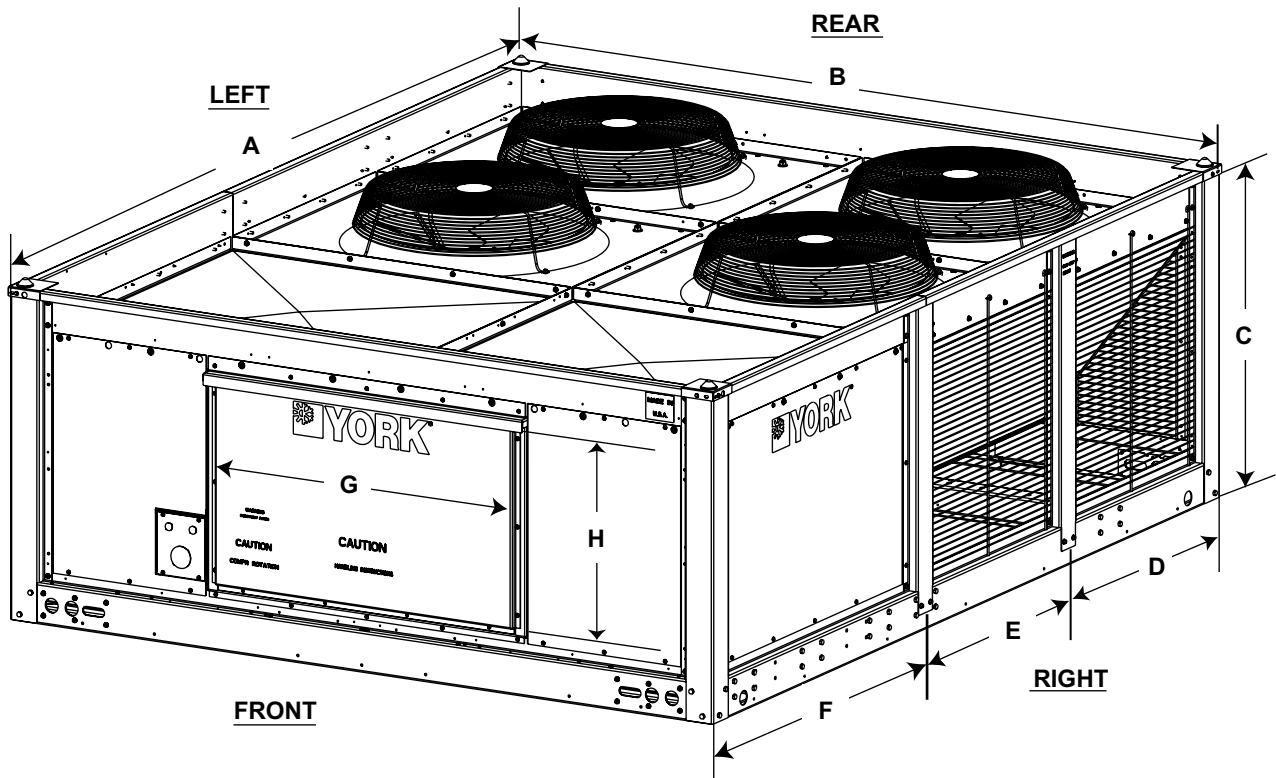
Weight And Dimensions

Corner Weights & Center Of Gravity (Inches)

Unit Model	Unit Weight (Lbs.)		Unit Dimensions (Inches)		A	B	C	D	Dim X	Dim Y	Weight A to B	Weight D to C
	Shipping	Operation	Length	Width								
YD360	1875	1895	128.5	88.5	404	537	533	401	55.2	44.1	934	941
YD480	2315	2347	128.5	88.5	486	675	671	483	53.8	44.1	1154	1161
YD600	2345	2381	128.5	88.5	486	693	685	481	53.0	44.0	1166	1179



Corner Weights & Center Of Gravity



YD Unit Dimensions

Unit Dimensions (Inches)

Model	A	B	C	D	E	F	G	H
YD360	128.5	88.5	37.5	41.8	40.0	46.1	37.1	23.6
YD480	128.5	88.5	57.7	41.8	40.0	46.1	37.1	23.6
YD600	128.5	88.5	57.7	41.8	40.0	46.1	37.1	23.6

Piping And Electrical Connections

Piping connections are made from the rear of the unit. Connections can be made directly to the suction and liquid line service valves.

Piping can be routed to the unit from the left or right side.

Electrical connections for power and control wiring is made from the front of all units, left of the electrical control box access. See piping sizes and electrical knockout details.

Unit Clearances

Location	Dimensions
Overhead (Top) ¹	120"
Front access panels	36"
Left Side	30"
Right Side	30"
Rear	36"
Bottom ²	0"

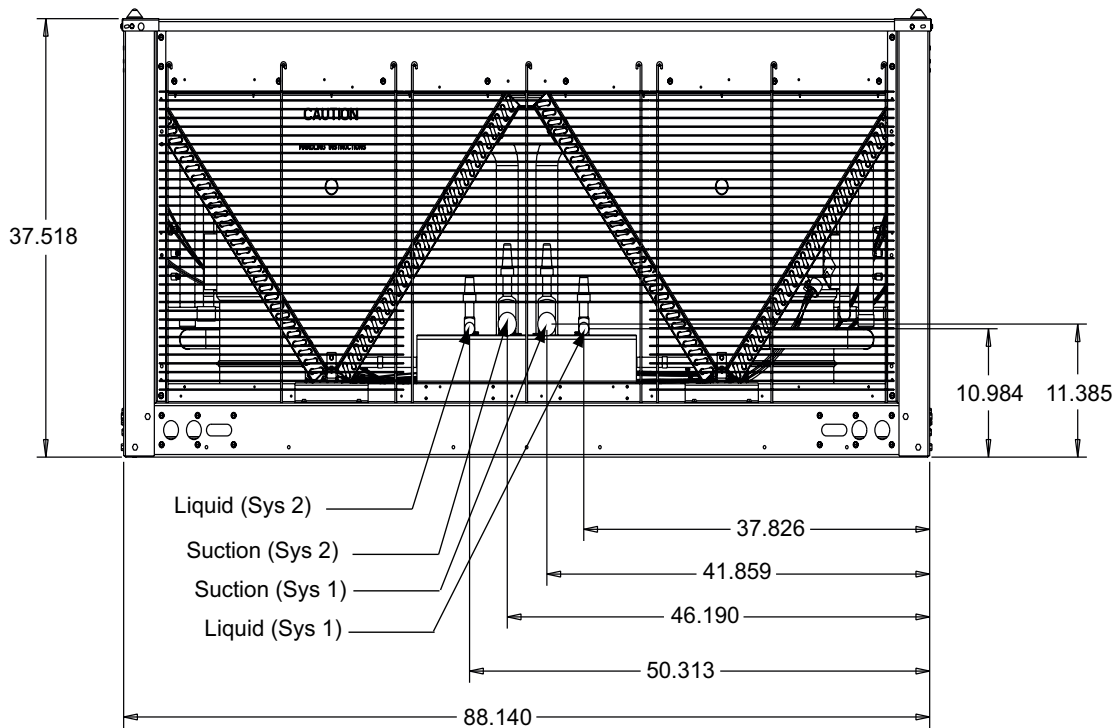
¹ Units must be installed outdoors. Overhanging structures or shrubs should not obstruct condenser air discharge.
² Adequate snow clearance must be provided if winter operation is expected.

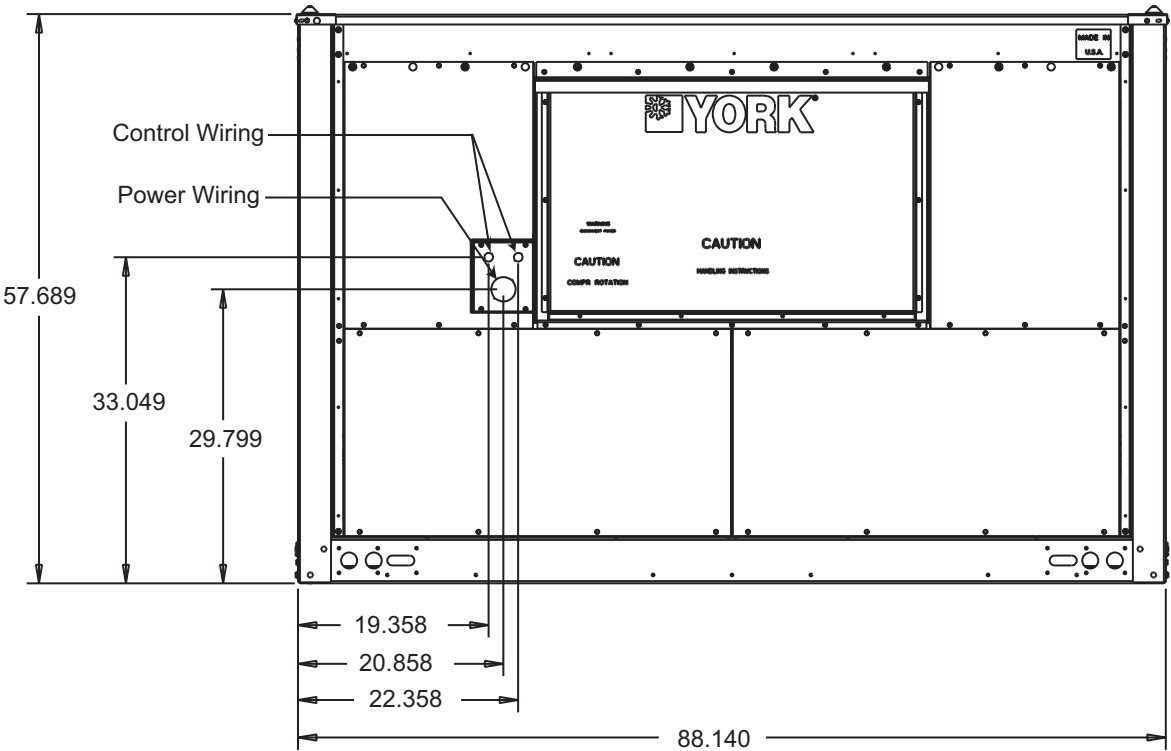
Piping And Electrical Connection Sizes (30/40/50T) (Inches)

Connection Entry	Size
Suction Line Sys #1	1-5/8 OD
Liquid Line Sys #1	7/8 OD
Suction Line Sys #2	1-5/8 OD
Liquid Line Sys #2	7/8 OD
Power Wiring Knockout	SEE BELOW
Control Wiring	7/8 HOLE

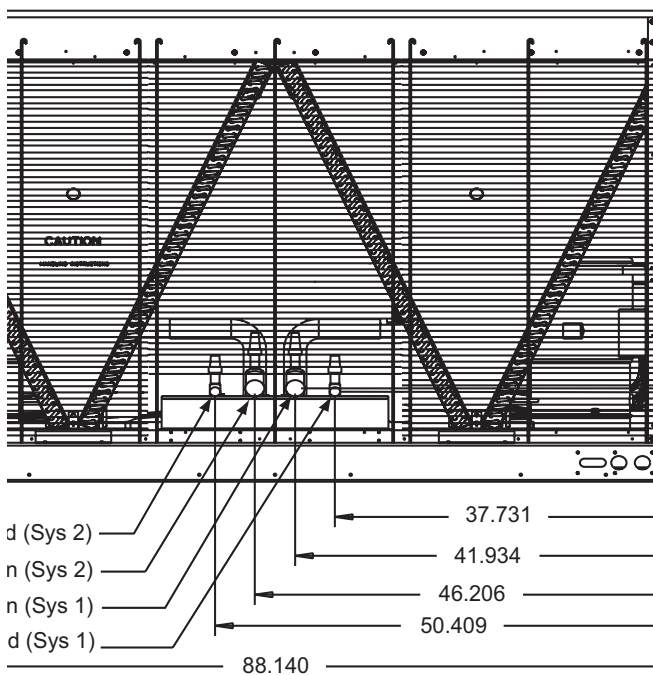
Electrical Power Knockout Sizes (Inches)

Connection Entry	30-40-50T/230V	30-40-50T/460-575V
Power Wiring	2-1/2"	1-1/2"

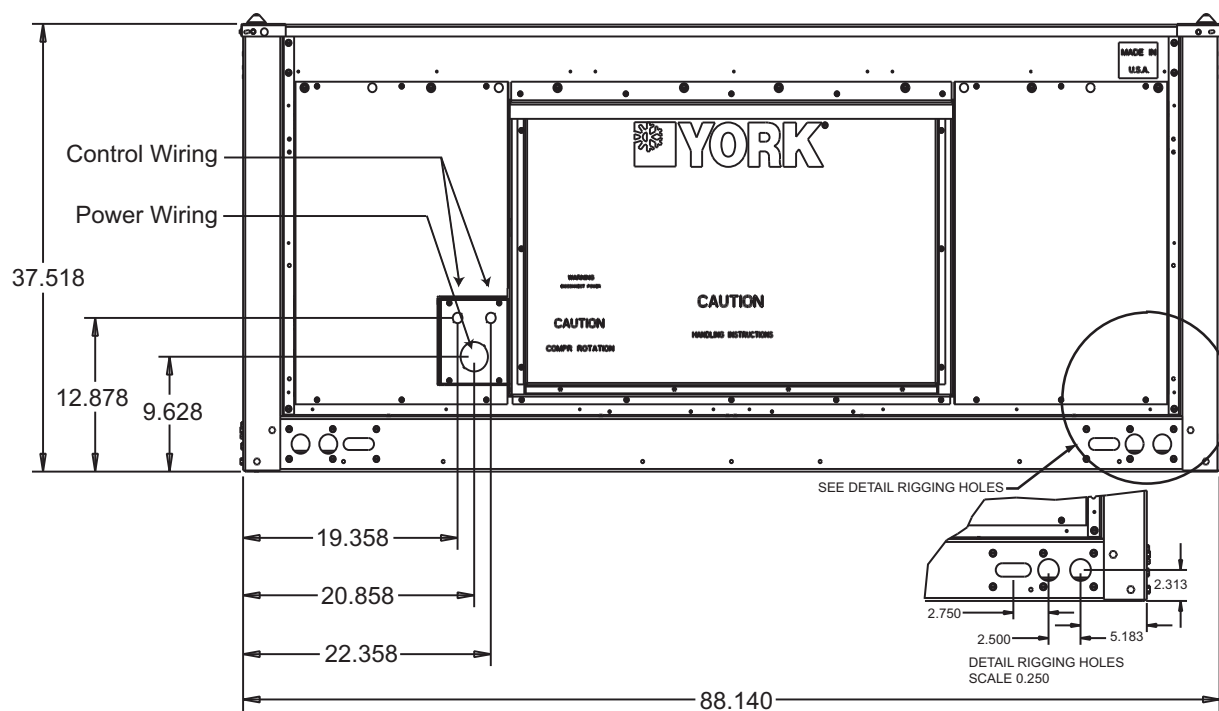
**30 Ton Piping Connections**



40 & 50 Ton Power and Control Wiring Connections



40 & 50 Ton Piping Connections



30 Ton Power And Control Wiring Connections

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York International Corporation
 5005 York Drive
 Norman, OK 73069