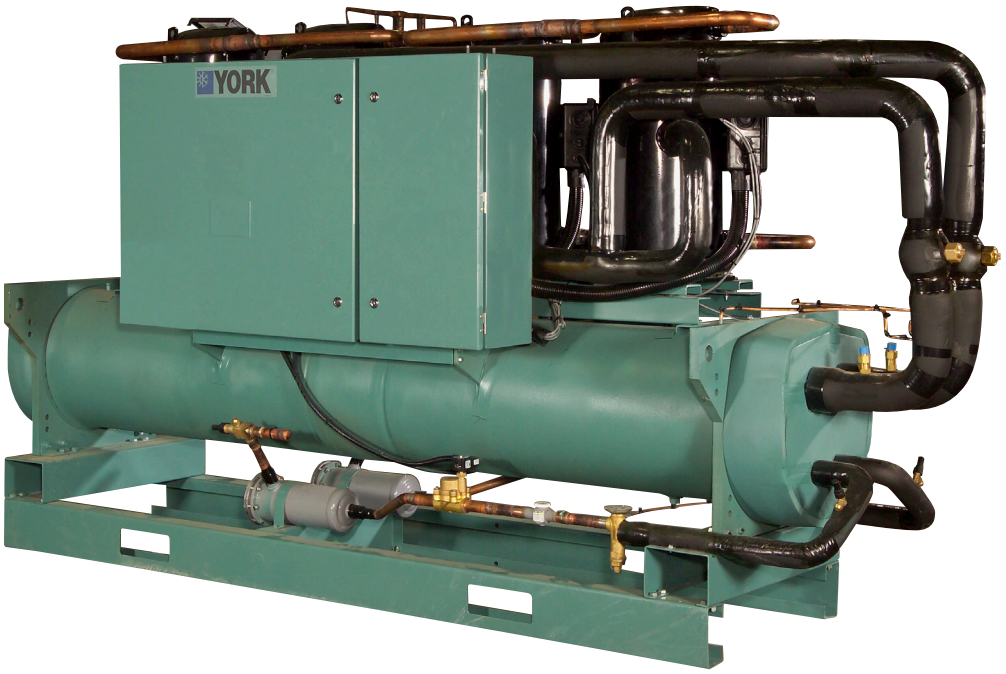
FORM 150.27-EG1 (1115)

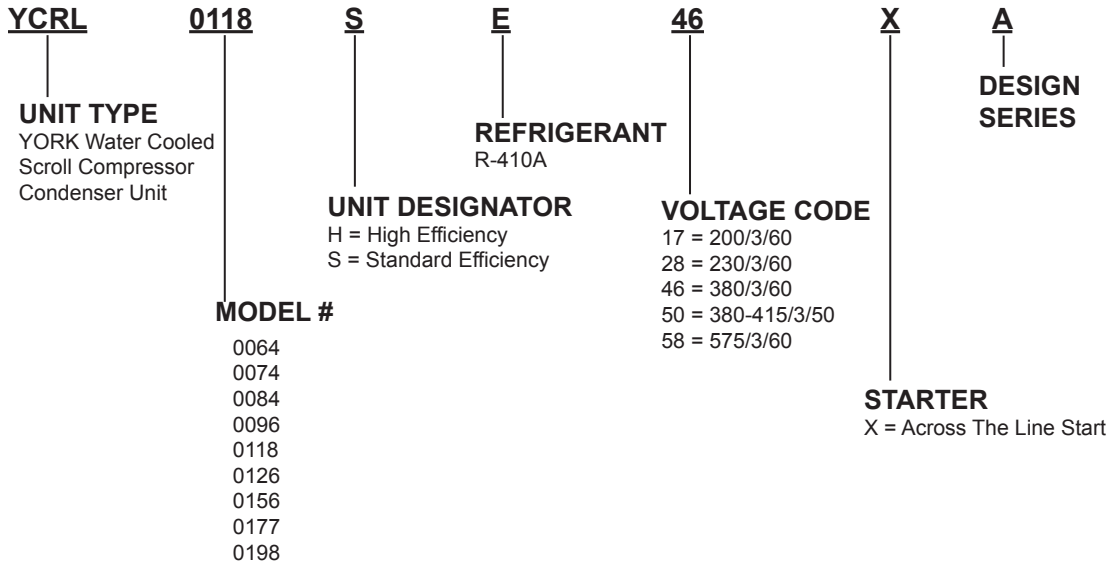
MODEL YCRL
REMOTE CONDENSER SCROLL LIQUID CHILLER
STYLE A

50 Through 170 Tons
175 Through 597 Kw
60Hz
R-410a



YORK®

Nomenclature



Performance data provided in this document was created in accordance with Johnson Controls software: **YORKworks version 15.01 and DXCHILL version 6.16.**

Approvals

- ASME Boiler and Pressure Vessel Code –Section VIII Division 1
- c/U.L. – Underwriters Laboratory
- ASHRAE 15 – Safety Code for Mechanical Refrigeration
- ASHRAE Guideline 3 – Reducing Emission of Halogenated Refrigerants in Refrigeration and Air Conditioning Equipment and Systems
- N.E.C. – National Electrical Code
- OSHA – Occupational Safety and Health Act

INTERTEK ETL CM C US LISTED

ISO 9001 Registered

Products are produced at a facility whose quality-management systems are ISO9001 certified.

Table of Contents

THIS PAGE INTENTIONALLY LEFT BLANK.

Equipment Overview

YORK YCRL Remote Condenser Liquid Chillers provide chilled water for all air conditioning applications that use central station air handling or terminal units. They are self-contained and are designed for indoor (new or retrofit) installation. Each unit includes hermetic scroll compressors, a liquid evaporator, and a user-friendly, diagnostic Microcomputer Control Center all mounted on a rugged steel base. Remote condensers (model VDC) are available separately from Johnson Controls. The units are produced at an ISO 9001 registered facility. The YCRL chillers are rated in accordance with AHRI Standard 550/590.

GENERAL

The chiller will be completely assembled with all interconnecting refrigerant piping and internal wiring, ready for field connection to a remote condenser.

The unit will be pressure-tested, evacuated, and charged with a nitrogen holding charge, and York 'V' (POE) synthetic oil.

The unit can be covered with an optional overspray coat of Caribbean Blue enamel. Units are designed in accordance with NFPA 70 (National Electric Code), ASHRAE/ANSI 15 Safety Code for Mechanical Refrigeration. All units are produced at an ISO 9001 registered facility. All YCRL condensing units are rated in accordance with AHRI Standard 550/590 at AHRI conditions.

COMPRESSORS

The chiller has suction-gas cooled, hermetic, scroll compressors. The YCRL's compressors incorporate a compliant scroll design in both the axial and radial direction. All rotating parts are statically and dynamically balanced. A large internal volume and oil reservoir provides greater liquid tolerance. Compressor crankcase heaters are also included for extra protection against liquid migration. All compressors are mounted on isolator pads to reduce transmission of vibration to the rest of the unit.

REFRIGERANT CIRCUIT

Two independent refrigerant circuits will be furnished on each unit. All piping will be copper with brazed joints. The liquid line will include: a shutoff valve with charging port; sight-glass with moisture indicator; thermal expansion valve; solenoid valve; and high-absorption removable-core filter drier. The entire suction line and the liquid line between the expansion valve and the cooler will be insulated with flexible, closed-cell, foam insulation.

POWER AND CONTROL PANELS

All controls and motor starting equipment necessary for unit operation shall be factory wired and function tested. The panel enclosures shall be designed to NEMA 1 (IP 32) and manufactured from powder-painted galvanized steel.

The Power and Control Panel shall be divided into a power section for each electrical system, a common input section and a control section.

Equipment Overview (Cont'd)

Each power panel shall contain: compressor starting contactors, control circuit serving compressor capacity control, compressor contactor coils, and compressor motor overloads. The compressor motor overloads contain current transformers which sense each phase, as an input to the microprocessor, to protect the compressor motors from damage due to low input current, high input current, unbalanced current, single phasing, phase reversal, and compressor locked rotor.

The common input section shall contain the control supply transformer providing 115V, customer relay board and control circuit switch disconnect/emergency stop device.

Microprocessor Controls

MICROPROCESSOR CONTROLS

The control section shall contain: On/Off rocker switch, microcomputer keypad and display, microprocessor board, I/O expansion board, relay boards, and 24V fused power supply board.

The control display shall include: TFT Display with Light Emitting Diode backlighting for outdoor viewing:

- Two display lines
- Twenty characters per line

Color coded 12-button non-tactile keypad with sections for

- Display/Print of typical information:
- Chilled liquid temperatures
- System pressures (each circuit)
- Operating hours and starts (each compressor)
- Print calls up to the liquid crystal display:
- Operating data for the systems
- History of fault shutdown data for up to the last six fault shutdown conditions
- An RS-232 port, in conjunction with this press-to-print button, is provided to permit the capability of hard copy print-outs via a separate printer (by others).

Entry section to:

- **ENTER** setpoints or modify system values

Setpoints updating can be performed to:

- Chilled liquid temperature setpoint and range
- Remote reset temperature range
- Set daily schedule/holiday for start/stop
- Manual override for servicing
- Number of compressors
- Low liquid temperature cutout
- Low suction pressure cutout
- High discharge pressure cutout
- Anti-recycle timer (compressor start cycle time)
- Anti-coincident timer (delay compressor starts)

Microprocessor Controls (Cont'd)

Unit section to:

- Set time
- Set unit options

The microprocessor control center is capable of displaying the following:

- Return and leaving chilled liquid temperature
- Low leaving liquid temperature cutout setting
- English or Metric data
- Suction pressure cutout setting
- Each system suction pressure
- Discharge pressure
- Liquid Temperature Reset via a Building Automation System via a 4-20 milliamp input or a 0-10 VDC input
- Anti-recycle timer status for each system
- Anti-coincident system start timer condition
- Compressor run status
- No cooling load condition
- Day, date and time
- Daily start/stop times
- Holiday status
- Automatic or manual system lead/lag control
- Lead system definition
- Compressor starts & operating hours (each compressor)
- Status of hot gas valves (if supplied)
- Run permissive status
- Number of compressors running
- Liquid solenoid valve status
- Load & unload timer status

Microprocessor Controls (Cont'd)

The standard controls shall include: automatic pumpdown, run signal contacts, demand load limit form external building automation system input, remote reset liquid temperature reset input, unit alarm contacts, chilled liquid pump control, automatic reset after power failure, automatic system optimization to match operating conditions.

The operating program software shall be stored in nonvolatile memory (EPROM) to eliminate chiller failure due to AC power failure. Programmed setpoints are retained in lithium battery-backed regulated time clock (RTC) memory for 5 years minimum.

COMMUNICATIONS

- Native communication capability for BACnet (MS/TP) and Modbus
- Optional communciation available for N2 and LON via eLink option

Accessories and Options

All accessories and options are factory mounted unless otherwise noted.

POWER OPTIONS

Single Point Supply Terminal Block – The standard power wiring connection on all models is a single point power connection to a factory provided terminal block. Components included are the enclosure, terminal–block and interconnecting wiring to the compressors. Separate external protection must be supplied, by others, in the incoming power wiring.

Single Point Circuit Breaker – An optional unit mounted circuit breaker with external, lockable handle (in compliance with N.E.C. Article 440–14), can be supplied to isolate the power voltage for servicing.

Multiple Point Circuit Breaker – Optional multiple point supply with independent system circuit breakers and locking external handles (in compliance with Article 440–14 of N.E.C.) can be factory supplied.

Control Transformer – Converts unit power voltage to 115–1–60 (0.5 or 1.0 KVA capacity). Factory mounting includes primary and secondary wiring between the transformer and the control panel.

CONTROLS OPTIONS

Language LCD And Keypad – Standard display language and keypad is in English. Spanish, French, German, and Italian are available as an option.

HEAT EXCHANGER OPTIONS

Flow Switch – An optional flow switch can be factory supplied for the evaporator. Vapor–proof SPDT, NEMA 3R switch, 150 PSIG (10.3 bar) DWP, 20°F to 250°F (–29°C to 121°C) with 1" NPT (IPS) connection for upright mounting in horizontal pipe. The flow switch or its equivalent must be furnished with each unit. (**Field Mounted**)

Differential Pressure Switch – An alternative option to the paddle–type flow switch. 3–45 PSIG (0.2–3 bar) range with ¼" NPTE pressure connections. (**Field Mounted**)

Pressure Vessel Codes – Evaporator is supplied (Standard) in conformance with the A.S.M.E. pressure codes.

Flanges (ANSI/AWWA C–606 Couplings Type) – Consists of (2) flange adapters for grooved end pipe on evaporator (note: the 0064HE units do not include evaporator flanges). Standard 150 PSIG (10.3 bar). (**Field Kit, matching pipe flange by contractor.**)

Double Thick Insulation – Doubled thickness (totalling 1–1/2" or 38mm) insulation provided on the evaporator

Accessories and Options (Cont'd)

CHILLER OPTIONS

Final Paint Overspray – Overspray painting of unit after assembly.

Service Isolation Valve – Service suction isolation valve added to unit per system in addition to the standard discharge service valve.

Hot Gas By-Pass – Permits continuous, stable operation at capacities below the minimum step of compressor unloading to as low as 5% capacity (depending on both the unit and operating conditions) by introducing an artificial load on the evaporator. Hot gas by–pass is installed on only refrigerant system #2 on two–circuited units.

Compressor Acoustic Sound Blanket – Each compressor is individually enclosed by an acoustic sound blanket. The sound blankets are made with one layer of acoustical absorbent textile fiber of 5/8” (15mm) thickness; one layer of anti–vibrating heavy material thickness of 1/8” (3mm). Both are closed by two sheets of welded PVC, reinforced for temperature and UV resistance.

VIBRATION ISOLATION

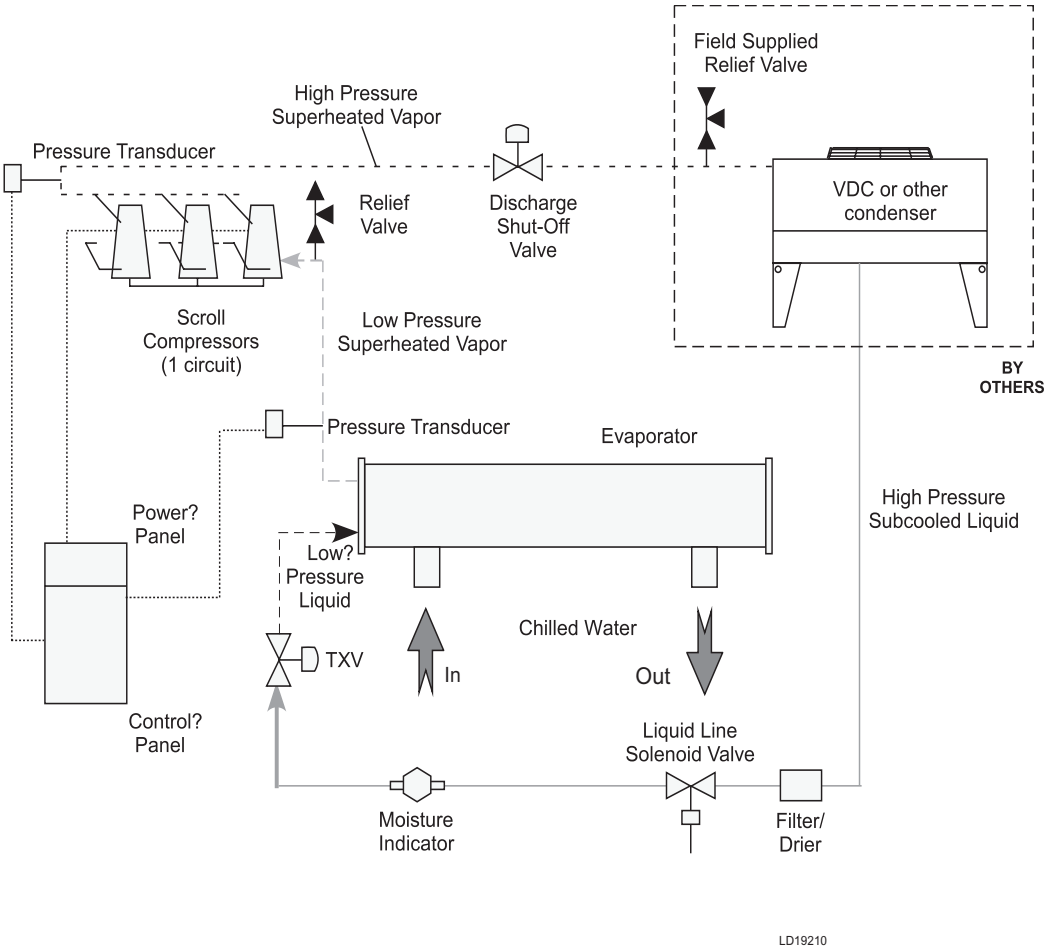
Rubber Isolators – Recommended for normal installations. Provides very good performance in most applications for the least cost. (**Field Installed**)

1” Spring Isolators – Level adjustable, spring and cage type isolators for mounting under the unit base rails. 1” nominal deflection may vary slightly by application. (**Field Installed**)

2” Spring Isolators – Restrained Spring–Flex Mountings incorporate a rugged welded steel housing with vertical and horizontal limit stops. Housings designed to withstand a minimum 1.0g accelerated force in all directions to 2”. Level adjustable, deflection may vary slightly by application. (**Field Installed**)

Refrigerant Flow Diagram

Low-pressure liquid refrigerant enters the evaporator tubes and is evaporated and superheated by the heat energy absorbed from the chilled liquid passing through the evaporator shell. Low-pressure vapor enters the compressor where pressure and superheat are increased. High-pressure vapor is passed through a remote condenser where heat is rejected to the air flow passing through the coil. The fully condensed and subcooled liquid leaves the condenser and enters the expansion valve, where pressure reduction and further cooling take place. The low pressure liquid refrigerant then returns to the evaporator.



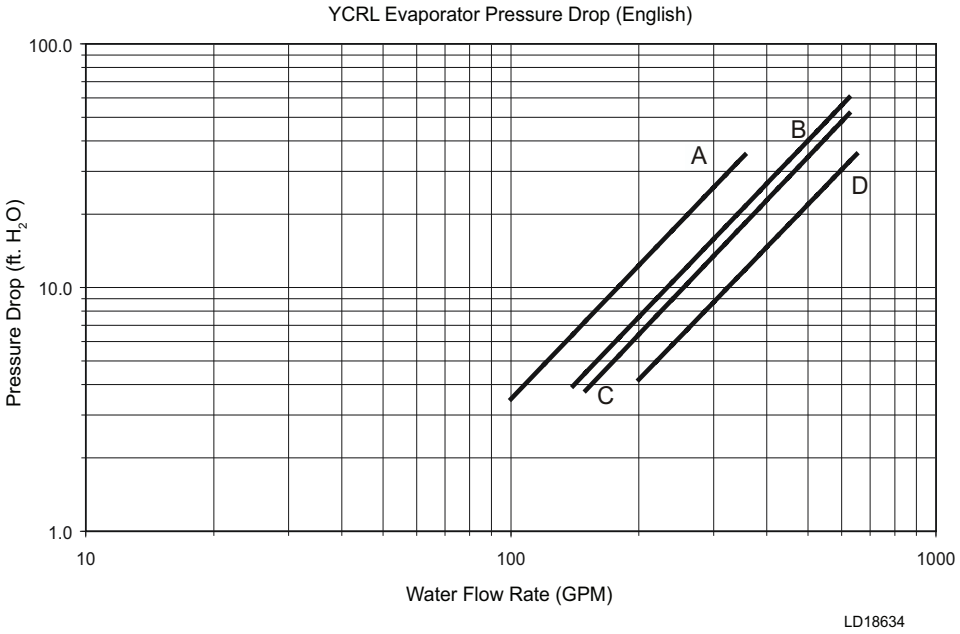
Design Parameters

DESIGN PARAMETERS								
YCRL	EVAPORATOR FLOW (GPM)		LEAVING EVAPORATOR WATER TEMP. °F (C°)		MIN SAT. DISCH. TEMP. °F (C°)	MAX. SAT DISCH TEMP °F (C°)	EQUIPMENT ROOM TEMP. °F (C°)	
	MIN	MAX	MIN[1]	MAX[2]	MIN	MAX	MIN	MAX
0064HE	100	355	40	50	80	130	40	115
0074HE	140	625	40	50	80	130	40	115
0084HE	140	625	40	50	80	130	40	115
0096HE	150	625	40	50	80	130	40	115
0118HE	140	625	40	50	80	130	40	115
0126HE	200	650	40	50	80)	130	40	115
0156HE	200	650	40	50	80	130	40	115
0177SE	200	650	40	50	80	130	40	115
0198SE	200	650	40	50	80	130	40	115

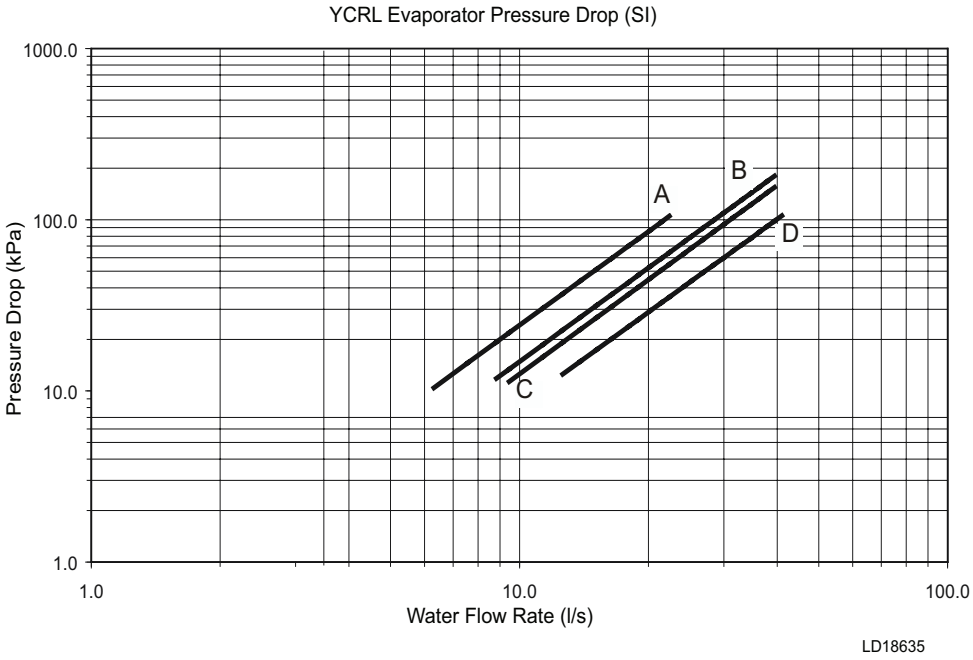
NOTES:

1. For leaving brine temperature below 40°F (4.4°C), contact the nearest Johnson Controls Office for application requirements.
2. For leaving water temperature higher than 50°F (10°C), contact the nearest Johnson Controls Office for application guidelines.

Design Parameters (Cont'd)



EVAPORATOR	YCRL
A	0064HE
B	0074HE, 0084HE, 0118HE,
C	0096HE
D	0126HE, 0156HE, 0177SE, 198SE



Selection Data

GUIDE TO SELECTION

Complete water chilling capacity ratings for YORK YCRL condensing units are shown on the following pages to cover the majority of job requirements. For any application beyond the scope of this Engineering Guide, consult your nearest Johnson Controls office.

SELECTION RULES

1. **Ratings** - All YCRL ratings are in accordance with AHRI Standard 550/590, at the AHRI standard conditions. Ratings not at standard AHRI conditions are rated in accordance with AHRI rating procedures. These ratings may be interpolated but extrapolated.

2. **Cooling Water Quantity** - Ratings are based on 10ºF chilled water range with the evaporator at sea level. Use the chilled water correction factors (below) for other ranges except as limited by water pressure drop, minimum or maximum water flows for the evaporator.

3. **Fouling Factors** – Ratings are based on 0.0001 evaporator fouling factor. For other fouling factors, consult the table below or contact your Johnson Controls representative.

EVAPORATOR CORRECTION FACTORS				
FF=TEMP SPLIT	0.00010		0.00025	
	TONS	COMPR KW	TONS	COMPR KW
6	0.976	0.996	0.969	0.997
8	0.990	0.999	0.960	0.996
10	1.000	1.000	0.991	0.999
12	1.009	1.001	0.999	1.000
14	1.017	1.002	1.007	1.001

4. **Ethylene Glycol Correction Factors** – The following factors are to be applied to the standard ratings for units cooling ethylene glycol.

ETHYLENE GLYCOL					
%WEIGHT	TONS	COMPR KW	GPM	PRESS DROP	FREEZE POINT
10	0.993	1.002	1.029	1.095	26
20	0.980	1.004	1.040	1.191	18
30	0.964	1.007	1.055	1.302	7
40	0.945	1.009	1.071	1.435	-8
50	0.922	1.013	1.091	1.599	-29

5. **Propylene Glycol Correction Factors** – The following factors are to be applied to the standard ratings for units cooling propylene glycol.

PROPYLENE GLYCOL					
%WEIGHT	TONS	COMPR KW	GPM	PRESS DROP	FREEZE POINT
10	0.985	1.002	1.003	1.078	28
20	0.968	1.005	1.000	1.157	19
30	0.937	1.008	0.992	1.288	9
40	0.898	1.012	0.982	1.414	<1
50	0.862	1.019	0.985	1.605	-28

Selection Data (Cont'd)

METHOD OF SELECTION

If the duty requires a 10ºF (6°C) range on the evaporator, see “Ratings”. For water ranges other than 10ºF (6°C), use the following procedure. Line sizes can be determined by reviewing York DX Piping Guide 050.40-ES2.

1. Determine capacity required from the following formula:

$$\text{Capacity (Tons)} = \frac{\text{GPM x Chilled Water Range (°F)}}{24}$$

2. After applying any fouling factor corrections, the actual condenser heat rejection may be determined as follows:

$$\text{Heat Rejection (MBH)} = \frac{\text{Heat Rejection (Btuh)}}{1000}$$

$$= \text{(Tons x 12)} = \text{(kW x 3.415)}$$

3. Size condenser using manufacturer’s recommendations.

SAMPLE SELECTION

Water Cooled Chiller (**YCRL**)

GIVEN – Chill 200 GPM of water from 56ºF to 44ºF and 0.0001 evaporator fouling factor with 125°F saturated discharge temperature.

FIND – The required unit size capacity, kW, EER, and water pressure drop, and the condenser MBH heat rejection.

SOLUTION:

1. Chilled water range = 56ºF - 44ºF = 12ºF and correction factors are 1.009 for Tons and 1.001 for kW for the evaporator.

$$\text{Capacity (Tons)} = \frac{\text{GPM x Chilled Water Range (°F)}}{24}$$

$$= \frac{200 \times 12}{24} = 100\text{TR}$$

2. From the rating, a model YCRL0118HE has a capacity range required. For the evaporator leaving water temperature of 44ºF and a saturated discharge temperature of 125°F, the unit capacity rating table indicates:

```
Tons = 101.7
KW = 110.0
EER =  11.1
```

Correcting for the 12ºF chilled water range:

```
Tons = 101.7 x 1.009 = 102.6 TR
KW = 110.0 x 1.001 = 110.1 kW
```

Selection Data (Cont'd)

3. Determine the average full load kW and EER at 100 Tons

$$\frac{100}{102.6} \times (110.1) = 107.3$$

$$EER = \frac{Tons \times 12}{kW} = \frac{100 \times 12}{107.3} = 112$$

4. Determine the condensing Heat rejection as follows:

```
Heat Rejection (MBH)  = (Tons x 12) + (kW x 3.415)
                      = (102.6 x 12) + (110.1 x 3.415)
                      = 1231.2 + 376.0
                      = 1607.2
```

5. From *"Pressure Drop Curves" on page 17*, locate the pressure drops with 200 GPM through the evaporator of the Model YCRL118HE:

```
Evaporator Pressure Drop at 200 GPM = 8 ft
```

The unit is suitable.

Selection Data (Cont'd)

REFRIGERANT PIPING

General – When the unit has been located in its final position, the unit piping may be connected. Normal installation precautions should be observed in order to receive maximum operating efficiencies. System piping should conform to the York DX Piping Guide form 050.40-ES2 or ASHRAE refrigeration handbook guidelines. All piping design and installation is the responsibility of the user.

JOHNSON CONTROLS ASSUMES NO WARRANTY RESPONSIBILITY FOR SYSTEM OPERATION OR FAILURES DUE TO IMPROPER PIPING OR PIPING DESIGN.

All filter driers, sight glasses, expansion valves and liquid line solenoid valves are factory installed on each refrigerant circuit. Interconnecting refrigerant piping and refrigerant charge are supplied and installed by others.

Table 1 lists refrigerant line connections sizes per unit model number.

TABLE 1 - YCRL LINE CONNECTION SIZES

YCRL	LIQUID LINE SYSTEM 1, IN.	LIQUID LINE SYSTEM 2, IN.	DISCHARGE LINE SYSTEM 1, IN.	DISCHARGE LINE SYSTEM 2, IN.
0064HE	7/8	7/8	1-3/8	1-3/8
0074HE	1-1/8	7/8	1-5/8	1-3/8
0084HE	1-1/8	1-1/8	1-5/8	1-5/8
0096HE	1-1/8	1-1/8	1-3/8	1-3/8
0118HE	1-1/8	1-1/8	1-5/8	1-5/8
0126HE	1-1/8	1-1/8	2-1/8	2-1/8
0156HE	1-1/8	1-1/8	2-1/8	2-1/8
0177SE	1-1/8	1-1/8	2-1/8	2-1/8
0198SE	1-1/8	1-1/8	2-1/8	2-1/8

REFRIGERANT LINE SIZING

Refrigerant piping systems must be designed to provide practical line sizes without excessive pressure drops, prevent compressor oil from being “trapped” in the refrigerant piping, and ensure proper flow of liquid refrigerant to the thermal expansion valve. Be sure to review form 050.40-ES2. Considerations should be given to:

1. Discharge line pressure drop due to refrigerant flow.
2. Discharge line refrigerant velocity for oil return.
3. Liquid line pressure drop due to refrigerant flow.
4. Liquid line pressure drop (or gain) due to vertical rise of the liquid line.

To ensure a solid column of liquid refrigerant to the expansion valve, the total liquid line pressure drop should never exceed 40 PSIG (2.8 barg). Refrigerant vapor in the liquid line will measurably reduce valve capacity and poor system performance can be expected.

To allow adequate oil return to the compressor, discharge risers should be sized for a minimum of 1000 FPM (5.08 m/s) while the system is operating at minimum capacity to ensure oil return up the suction riser.

Selection Data (Cont'd)

Chiller Below Condenser – On a system where the chiller is located below the condenser, the discharge line must be sized for both pressure drop and oil return. In some cases a double discharge riser must be installed to ensure reliable oil return at reduced loads.

Condenser Below Chiller – When the condenser is located below the chiller, the liquid line must be designed for both friction loss and static head loss due the vertical rise. The value of static head loss of 5 PSI/ft. (3.4 kPa/30 cm) must be added to the friction loss pressure drop in addition to all pressure drops due to driers, valves, etc.

OIL TRAPS

All horizontal discharge lines should be pitched at least 1/4" per foot (2 cm/m) in the direction of the refrigerant flow to aid in the return of oil to the chiller. All discharge lines with a vertical rise exceeding 3 feet (.91 meters) should have a "P" trap at the bottom and top of the riser. Discharge lines with a vertical rise exceeding 25 feet (7.6 meters) should be trapped every 15 feet (4.6 meters).

REFRIGERANT CHARGE

The chiller is charged and shipped with a dry nitrogen holding charge. The operating charge for the chiller, remote condenser and refrigerant piping must be weighed in after all refrigerant piping is installed, leak checked, and evacuated. Final adjustment of refrigerant charge should be verified by subcooling values (refer to IOM section on Pre-Startup for checking subcooling).

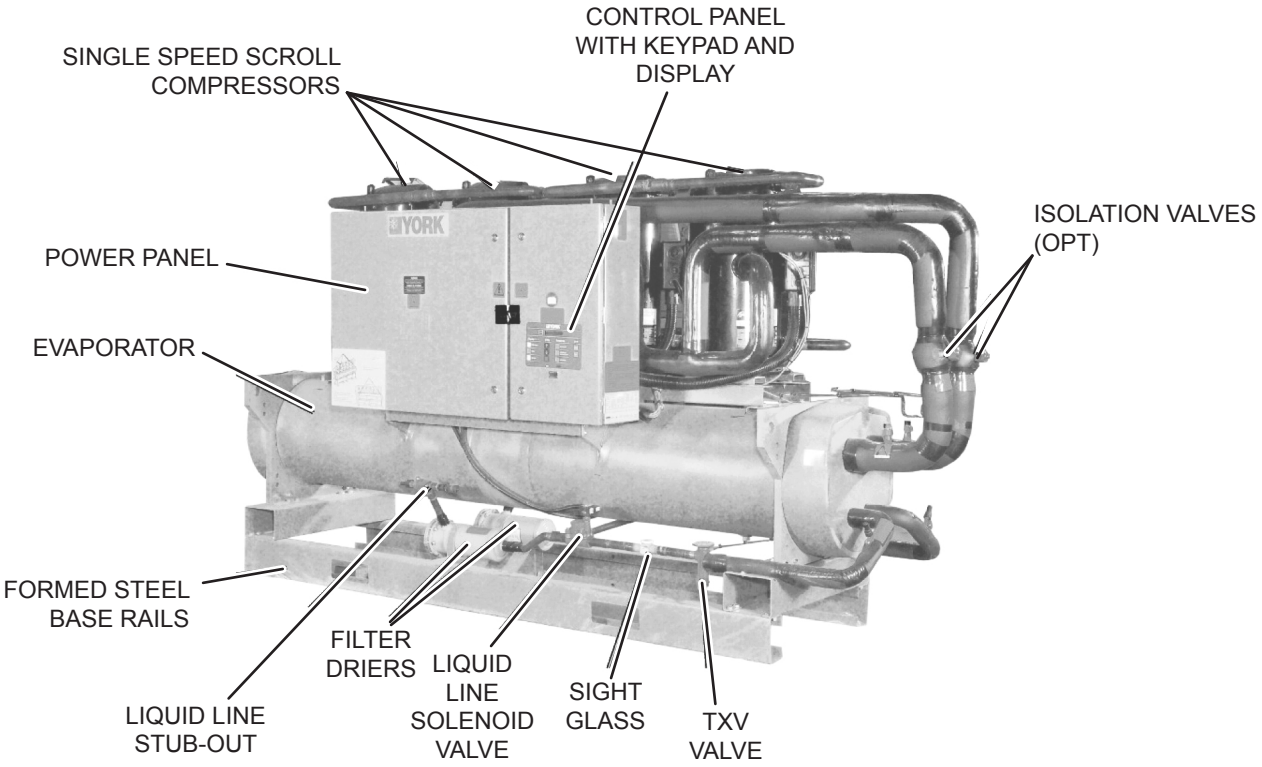
REFRIGERANT PIPING REFERENCE

For more details, refer to ASHRAE Refrigeration Handbook, Chapter 2.

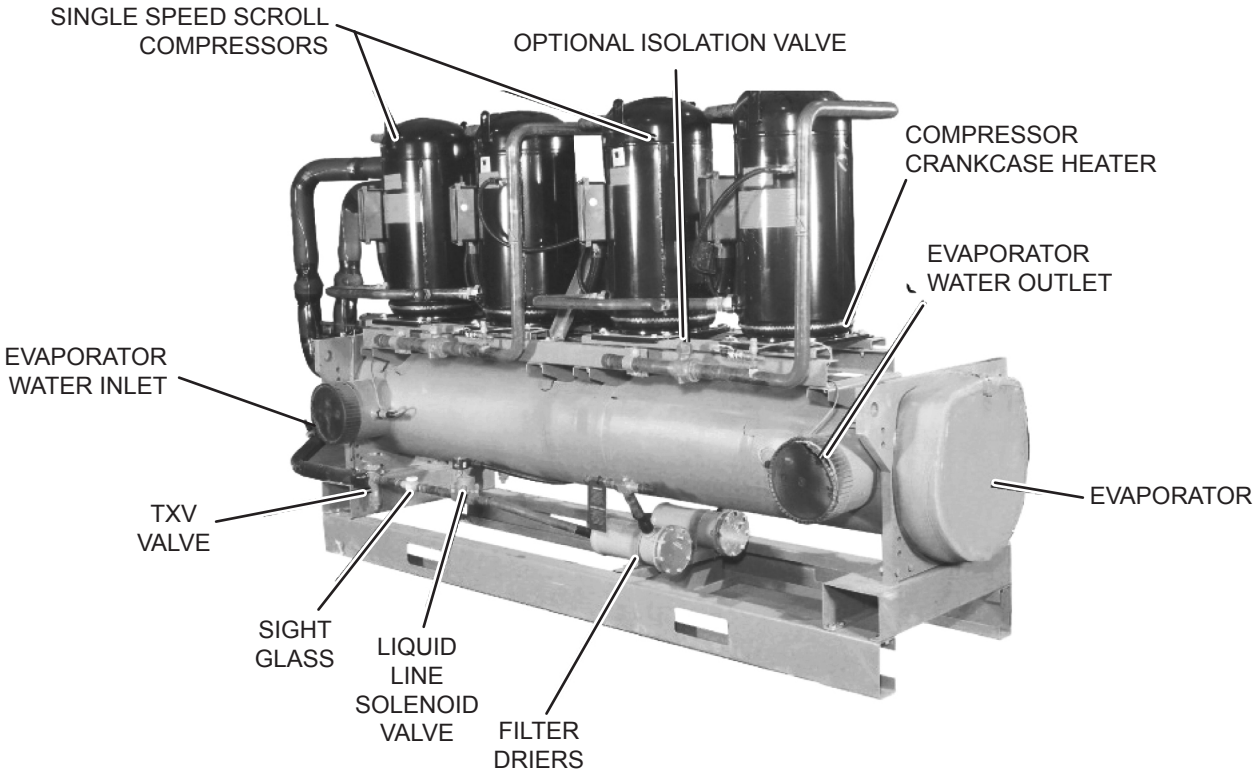
TABLE 2 - YCRL CHILLER CHARGES

YCRL	TOTAL HFC-410A CHARGE, LBS	PER SYSTEM, LBS
0064HE	34	17
0074HE	40	20
0084HE	82	41
0096HE	106	53
0118HE	90	45
0126HE	126	63
0156HE	126	63
0177SE	122	63/59
0198SE	126	63

Unit Components



Unit Components (Cont'd)



Application Data

UNIT LOCATION

Chillers are designed for indoor installation. Units should be located away from noise-critical areas. Service clearance must be allowed and include space for removing condenser tubes. A doorway or window can sometimes provide space for tube removal. Units should be installed indoors where they are not exposed to rain or water splash. Chillers should be located near a drain. The use of chillers in corrosive, dusty or explosive atmospheres should be avoided unless the unit is properly protected. A unit located in a clean room will run best, require least maintenance, and last longest. Heat or ventilation may be required to maintain the ambient between 40°F and 115°F (4.4°C and 46.1°C).

UNIT ISOLATION

The chiller foundation must be rigid to reduce vibration transmission to a minimum. All upper story installations should use vibration isolators under the unit base. To maintain isolator efficiency, no mechanical ties should be made to the building. Properly selected flexible connectors and piping isolators are recommended. All the above recommendations will help to reduce vibration transmission and result in a quieter operation.

FIELD CONNECTED WATER PIPING

Piping must comply in all respects with applicable local plumbing codes and ordinances. In no case should the unit support the weight of connecting piping. Since elbows, tees, and valves increase pressure drop, all piping should be kept as simple as possible. Hand stop valves should be installed where required to facilitate servicing. Piping to the inlet and outlet connections of the evaporator and condenser may include high-pressure rubber hose or piping loops to ensure against water pump transmission of vibration.

Facilities should be provided for measuring temperature and pressure in the evaporator and condenser field water piping. Drain connections should be provided at all low points to permit complete drainage of the evaporator(s) and system piping. This is especially important if the unit is located in an unheated room where freezing could prevail. Water lines subjected to ambient temperatures below freezing may require heater cables or antifreeze (by others).

Water loops should contain provisions for venting. A strainer, preferably 40 mesh, should be installed in the evaporator inlet line, located where it will protect the circulating pump and the heat exchanger tube bundles. It should be determined that the maximum water pressure at the evaporator does not exceed the maximum design working pressure.

The water circulating pump should be located on the inlet side of the heat exchanger. If, however, space does not permit this, the pumps may be located in the outlet water piping. The net positive suction head must be considered when applying pumps.

Application Data (Cont'd)

FIELD WIRING

All field wiring must comply with the National Electric Code and all applicable local codes. YORK liquid chiller units are factory wired for optimum reliability. Therefore the unit controls must not be modified without expressed written consent by Johnson Controls. The use of a simple switch or timer from a remote point is permitted; but it must be connected to the unit panel at points expressly indicated for that purpose.

REFRIGERANT RELIEF PIPING

Each chiller is equipped with pressure relief valves. The purpose of the relief valves is to quickly relieve excess pressure of the refrigerant charge as a safety precaution in the event of an emergency such as a fire. Sized to the requirements of applicable local codes, a vent line must be run from the relief valve to the outside of the building. Vent piping must be arranged to avoid imposing a strain on the relief valves and should include flexible connections.

The low side relief valve is located on the suction line. It has a pressure setting of 400 PSIG (27.6 bar) and a capacity of 28.6 lbs. air/min (166.3 l/s).

The 0064, 0074, and 0096 units have additional relief valves on the discharge line(s) in lieu of compressor internal relief. The valve has a pressure setting of 650 PSIG (44.5 barg), a capacity of 44.6 lbs air/min (277 l/s) and a 1/2” flare connection.

Ratings

YCRL0064HE																		IPLV= 17.7
SATURATED DISCHARGE TEMP																		
LCWT	100.0			105.0			110.0			115.0			120.0			125.0		
(°F)	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER
40.0	60.4	46.3	15.7	58.7	48.9	14.4	57.0	51.8	13.2	55.2	54.9	12.1	53.4	58.3	11.0	51.6	62.0	10.0
42.0	62.7	46.4	16.2	61.0	49.0	14.9	59.2	51.9	13.7	57.4	55.0	12.5	55.5	58.4	11.4	53.6	62.0	10.4
44.0	65.2	46.6	16.8	63.4	49.1	15.5	61.5	52.0	14.2	59.6	55.0	13.0	57.7	58.4	11.9	55.7	62.1	10.8
45.0	66.4	46.7	17.0	64.6	49.2	15.7	62.7	52.0	14.5	60.8	55.1	13.2	58.8	58.4	12.1	56.8	62.1	11.0
46.0	67.6	46.9	17.3	65.8	49.3	16.0	63.8	52.1	14.7	61.9	55.1	13.5	60.0	58.5	12.3	57.9	62.1	11.2
48.0	70.1	47.1	17.9	68.2	49.5	16.5	66.3	52.2	15.2	64.3	55.2	14.0	62.3	58.6	12.8	60.2	62.2	11.6
50.0	72.6	47.4	18.4	70.7	49.8	17.1	68.8	52.4	15.7	66.7	55.4	14.5	64.6	58.7	13.2	62.5	62.2	12.0

YCRL0074HE																		IPLV= 17.7
SATURATED DISCHARGE TEMP																		
LCWT	100.0			105.0			110.0			115.0			120.0			125.0		
(°F)	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER
40.0	70.5	54.0	15.7	68.4	56.8	14.4	66.2	60.0	13.3	64.1	63.3	12.1	61.9	67.0	11.1	59.7	71.1	10.1
42.0	73.3	54.2	16.2	71.1	57.1	15.0	68.9	60.1	13.7	66.7	63.5	12.6	64.4	67.2	11.5	62.1	71.2	10.5
44.0	76.1	54.5	16.8	73.9	57.3	15.5	71.6	60.4	14.2	69.3	63.7	13.1	67.0	67.4	11.9	64.6	71.3	10.9
45.0	77.6	54.6	17.1	75.3	57.4	15.8	73.0	60.5	14.5	70.7	63.8	13.3	68.3	67.5	12.1	65.9	71.4	11.1
46.0	79.1	54.7	17.4	76.8	57.5	16.0	74.4	60.6	14.7	72.0	63.9	13.5	69.6	67.6	12.4	67.2	71.5	11.3
48.0	82.1	55.0	17.9	79.7	57.8	16.6	77.3	60.8	15.3	74.9	64.1	14.0	72.4	67.8	12.8	69.8	71.7	11.7
50.0	85.2	55.2	18.5	82.8	58.0	17.1	80.3	61.0	15.8	77.7	64.4	14.5	75.2	68.0	13.3	72.6	71.9	12.1

YCRL0084HE																		IPLV= 18.7
SATURATED DISCHARGE TEMP																		
LCWT	100.0			105.0			110.0			115.0			120.0			125.0		
(°F)	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER
40.0	79.9	59.5	16.1	77.4	62.5	14.9	74.9	65.7	13.7	72.4	69.3	12.5	69.9	73.1	11.5	67.4	77.3	10.5
42.0	83.1	59.8	16.7	80.5	62.8	15.4	78.0	66.0	14.2	75.4	69.5	13.0	72.8	73.4	11.9	70.1	77.6	10.9
44.0	86.4	60.0	17.3	83.7	63.1	15.9	81.1	66.3	14.7	78.4	69.8	13.5	75.7	73.7	12.3	73.0	77.8	11.3
45.0	88.1	60.1	17.6	85.4	63.2	16.2	82.7	66.5	14.9	80.0	70.0	13.7	77.2	73.8	12.6	74.5	78.0	11.5
46.0	89.8	60.3	17.9	87.0	63.3	16.5	84.3	66.6	15.2	81.5	70.1	14.0	78.8	73.9	12.8	75.9	78.1	11.7
48.0	93.3	60.5	18.5	90.4	63.6	17.1	87.6	66.9	15.7	84.8	70.4	14.4	81.9	74.2	13.2	79.0	78.4	12.1
50.0	96.9	60.7	19.1	93.9	63.8	17.7	91.0	67.2	16.3	88.1	70.7	14.9	85.1	74.5	13.7	82.1	78.7	12.5

YCRL0096HE																		IPLV= 18.4
SATURATED DISCHARGE TEMP																		
LCWT	100.0			105.0			110.0			115.0			120.0			125.0		
(°F)	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER
40.0	92.2	69.5	15.9	89.6	73.4	14.6	87.0	77.7	13.4	84.3	82.4	12.3	81.6	87.5	11.2	78.7	93.0	10.2
42.0	95.7	69.8	16.5	93.1	73.6	15.2	90.4	77.8	13.9	87.6	82.5	12.7	84.8	87.6	11.6	81.9	93.1	10.6
44.0	99.3	70.1	17.0	96.6	73.8	15.7	93.8	78.0	14.4	91.0	82.6	13.2	88.0	87.7	12.1	85.1	93.1	11.0
45.0	101.1	70.3	17.3	98.4	74.0	16.0	95.6	78.1	14.7	92.7	82.7	13.4	89.7	87.7	12.3	86.7	93.1	11.2
46.0	103.0	70.4	17.5	100.2	74.1	16.2	97.4	78.2	14.9	94.4	82.8	13.7	91.4	87.8	12.5	88.3	93.2	11.4
48.0	106.8	70.9	18.1	104.0	74.4	16.8	101.0	78.5	15.4	98.0	83.0	14.2	94.9	87.9	13.0	91.7	93.3	11.8
50.0	110.7	71.3	18.6	107.8	74.8	17.3	104.7	78.8	16.0	101.6	83.2	14.7	98.4	88.1	13.4	95.2	93.4	12.2

YCRL0118HE																		IPLV= 18.5
SATURATED DISCHARGE TEMP																		
LCWT	100.0			105.0			110.0			115.0			120.0			125.0		
(°F)	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER
40.0	109.9	83.6	15.8	107.0	88.2	14.6	104.0	93.1	13.4	100.9	98.3	12.3	97.7	104.0	11.3	94.4	110.0	10.3
42.0	113.9	84.0	16.3	110.9	88.5	15.0	107.9	93.4	13.9	104.7	98.6	12.7	101.4	104.2	11.7	98.0	110.3	10.7
44.0	118.1	84.3	16.8	115.0	88.8	15.5	111.8	93.7	14.3	108.6	98.9	13.2	105.2	104.5	12.1	101.7	110.5	11.0
45.0	120.2	84.5	17.1	117.1	89.0	15.8	113.9	93.8	14.6	110.6	99.0	13.4	107.1	104.7	12.3	103.6	110.7	11.2
46.0	122.3	84.7	17.3	119.2	89.1	16.0	115.9	94.0	14.8	112.6	99.2	13.6	109.1	104.8	12.5	105.5	110.8	11.4
48.0	126.7	85.1	17.9	123.4	89.5	16.5	120.1	94.3	15.3	116.6	99.5	14.1	113.1	105.1	12.9	109.4	111.1	11.8
50.0	131.1	85.5	18.4	127.7	89.9	17.1	124.3	94.7	15.8	120.8	99.9	14.5	117.1	105.4	13.3	113.3	111.4	12.2

NOTES:
1. Tons = Unit Cooling Capacity Output
2. KW = Compressor Input Power
3. MBH = Condenser Heat Rejection
4. EER = Chiller Energy Efficiency Ratio
5. LCWT = Leaving Chilled Water Temperature
6. Provided ratings are in accordance with AHRI 550/590 but condenserless chillers are outside the scope of the AHRI certification program.

Ratings (Cont'd)

YCRL0126HE																		IPLV= 19.6
SATURATED DISCHARGE TEMP																		
LCWT	100.0			105.0			110.0			115.0			120.0			125.0		
(°F)	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER
40.0	120.6	91.2	15.9	117.0	95.8	14.7	113.3	100.8	13.5	109.5	106.1	12.4	105.8	112.0	11.3	101.9	118.5	10.3
42.0	125.3	91.6	16.4	121.6	96.2	15.2	117.8	101.2	14.0	114.0	106.6	12.8	110.1	112.4	11.8	106.1	118.8	10.7
44.0	130.1	91.9	17.0	126.3	96.6	15.7	122.4	101.6	14.5	118.5	107.0	13.3	114.5	112.9	12.2	110.5	119.2	11.1
45.0	132.5	92.1	17.3	128.7	96.8	15.9	124.8	101.8	14.7	120.8	107.2	13.5	116.8	113.1	12.4	112.6	119.5	11.3
46.0	135.0	92.3	17.6	131.1	97.0	16.2	127.1	102.0	14.9	123.1	107.4	13.7	119.1	113.3	12.6	114.9	119.7	11.5
48.0	140.1	92.6	18.1	136.0	97.4	16.8	131.9	102.5	15.5	127.8	107.9	14.2	123.6	113.8	13.0	119.4	120.1	11.9
50.0	145.2	92.9	18.7	141.1	97.8	17.3	136.9	102.9	16.0	132.6	108.3	14.7	128.3	114.2	13.5	124.0	120.6	12.3

YCRL0156HE																		IPLV= 18.0
SATURATED DISCHARGE TEMP																		
LCWT	100.0			105.0			110.0			115.0			120.0			125.0		
(°F)	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER
40.0	139.5	106.8	15.7	135.9	112.6	14.5	132.2	118.9	13.3	128.4	125.6	12.3	124.5	132.9	11.2	120.4	140.6	10.3
42.0	144.6	107.2	16.2	140.9	113.0	15.0	137.1	119.2	13.8	133.2	125.9	12.7	129.1	133.2	11.6	125.0	140.9	10.6
44.0	149.8	107.6	16.7	146.0	113.4	15.5	142.1	119.6	14.3	138.1	126.3	13.1	133.9	133.5	12.0	129.7	141.2	11.0
45.0	152.5	107.9	17.0	148.6	113.6	15.7	144.7	119.8	14.5	140.6	126.5	13.3	136.4	133.7	12.2	132.0	141.4	11.2
46.0	155.2	108.1	17.2	151.3	113.8	16.0	147.2	120.0	14.7	143.1	126.6	13.6	138.8	133.8	12.4	134.5	141.5	11.4
48.0	160.7	108.6	17.8	156.7	114.3	16.5	152.5	120.4	15.2	148.3	127.0	14.0	143.9	134.2	12.9	139.4	141.9	11.8
50.0	166.4	109.1	18.3	162.2	114.7	17.0	157.9	120.8	15.7	153.5	127.5	14.5	149.0	134.6	13.3	144.4	142.2	12.2

YCRL0177SE																		IPLV= 19.0
SATURATED DISCHARGE TEMP																		
LCWT	100.0			105.0			110.0			115.0			120.0			125.0		
(°F)	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER
40.0	158.5	121.9	15.6	154.2	129.4	14.3	149.7	137.4	13.1	145.3	146.1	11.9	140.6	155.4	10.9	135.8	165.4	9.9
42.0	164.2	122.1	16.1	159.8	129.6	14.8	155.2	137.6	13.5	150.6	146.2	12.4	145.8	155.5	11.3	140.9	165.5	10.2
44.0	170.1	122.3	16.7	165.5	129.8	15.3	160.9	137.8	14.0	156.1	146.4	12.8	151.2	155.7	11.7	146.1	165.6	10.6
45.0	173.1	122.5	17.0	168.4	129.9	15.6	163.7	137.9	14.3	158.9	146.5	13.0	153.9	155.7	11.9	148.8	165.7	10.8
46.0	176.1	122.6	17.2	171.4	130.0	15.8	166.6	138.0	14.5	161.7	146.6	13.2	156.6	155.8	12.1	151.5	165.8	11.0
48.0	182.3	122.9	17.8	177.4	130.2	16.3	172.5	138.2	15.0	167.4	146.7	13.7	162.2	156.0	12.5	156.9	165.9	11.3
50.0	188.6	123.2	18.4	183.6	130.5	16.9	178.5	138.4	15.5	173.3	147.0	14.1	168.0	156.2	12.9	162.5	166.1	11.7

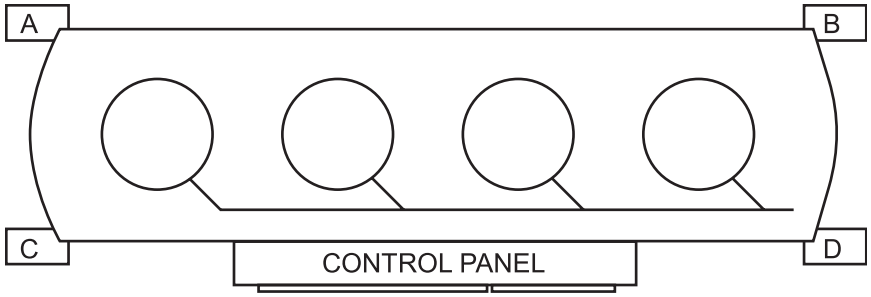
YCRL0198SE																		IPLV= 19.1
SATURATED DISCHARGE TEMP																		
LCWT	100.0			105.0			110.0			115.0			120.0			125.0		
(°F)	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER	TONS	KW	EER
40.0	190.4	149.1	15.3	185.4	158.3	14.1	180.2	168.2	12.9	174.9	178.8	11.7	169.4	190.2	10.7	163.7	202.5	9.7
42.0	197.3	149.4	15.8	192.0	158.5	14.5	186.7	168.4	13.3	181.2	179.0	12.2	175.6	190.4	11.1	169.8	202.6	10.1
44.0	204.2	149.6	16.4	198.9	158.8	15.0	193.4	168.6	13.8	187.8	179.2	12.6	182.0	190.5	11.5	176.0	202.8	10.4
45.0	207.8	149.8	16.6	202.4	158.9	15.3	196.8	168.7	14.0	191.1	179.2	12.8	185.2	190.6	11.7	179.2	202.8	10.6
46.0	211.4	149.9	16.9	205.9	159.0	15.5	200.2	168.8	14.2	194.4	179.3	13.0	188.5	190.7	11.9	182.3	202.9	10.8
48.0	218.8	150.3	17.5	213.0	159.3	16.0	207.2	169.1	14.7	201.3	179.6	13.4	195.1	190.9	12.3	188.8	203.1	11.2
50.0	226.3	150.6	18.0	220.4	159.6	16.6	214.4	169.3	15.2	208.2	179.8	13.9	202.0	191.1	12.7	195.5	203.3	11.5

NOTES:
1. Tons = Unit Cooling Capacity Output
2. KW = Compressor Input Power
3. MBH = Condenser Heat Rejection
4. EER = Chiller Energy Efficiency Ratio
5. LCWT = Leaving Chilled Water Temperature
6. Provided ratings are in accordance with AHRI 550/590 but condenserless chillers are outside the scope of the AHRI certification program.

Physical Data

YCRL	0064HE	0074HE	0084HE	0096HE	0118HE	0126HE	0156HE	0177SE	0198SE
GENERAL UNIT DATA									
NOMINAL UNIT CAPACITY (TONS)	55.7	64.6	73.0	85.1	101.7	110.5	129.7	146.1	176.0
NUMBER OF INDEPENDENT REFRIGERANT CIRCUITS	2	2	2	2	2	2	2	2	2
OIL CHARGE, CKT. 1/CKT. 2, (GAL.)	2.2/2.2	2.5/2.2	2.5/2.5	3.3/3.3	3.3/3.1	3.7/3.7	4.7/4.7	4.7/4.7	4.7/4.7
SHIPPING WEIGHT (LBS.)	2883	3261	3439	3753	3705	4587	4989	4418	4773
OPERATING WEIGHT (LBS.)	2973	3531	3709	4043	3975	5037	5439	4868	5223
COMPRESSORS, SCROLL									
QUANTITY PER CHILLER	4	4	4	6	4	6	6	5	6
NOMINAL SIZE CKT. 1/ CKT. 2	15-15/ 15-15	20-20 / 15-15	20-20/ 20-20	15-15-15/ 15-15-15	32-32/ 25-25	20-20-20/ 20-20-20	25-25-25/ 25-25-25	32-32-32/ 32-32	32-32-32/ 32-32-32
EVAPORATOR									
WATER VOLUME (GALS.)	37.3	59.8	59.8	57.6	59.8	77	77	77	77
MAXIMUM WATER SIDE PRESSURE (PSIG)	150	150	150	150	150	150	150	150	150
MAXIMUM REFRIGERANT SIDE PRESSURE (PSIG)	450	450	450	450	450	450	450	450	450
DIA. X LENGTH (INCHES X FEET)	13” X 8’	16” X 8’	16” X 8’	15” X 10’	16” X 8’	17” 10’	17” 10’	17” 10’	17” 10’
WATER NOZZLE CONNECTION SIZE, (IN.)	6	8	8	8	8	8	8	8	8

Isolator Selection Data



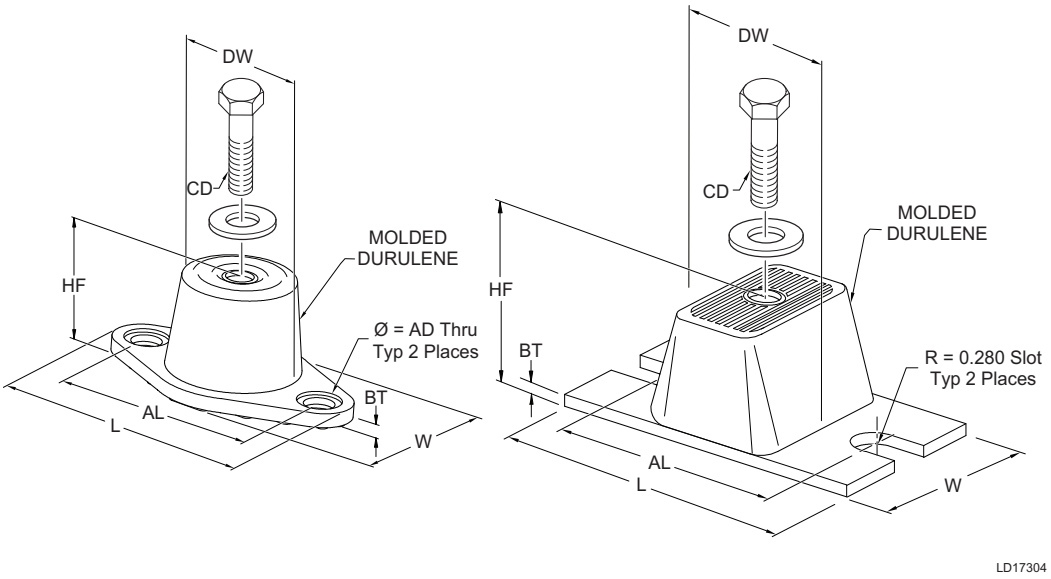
LD18636

YCRL	UNIT SHIPPING WEIGHT	TOTAL OPERATING WEIGHT	WEIGHT ON EACH FRONT ISOLATOR	WEIGHT ON EACH BACK ISOLATOR	1" SPRING ISOLATOR SELECTION	NEOPRENE ISOLATOR	2" SPRING ISOLATOR SLRS-2-C2-
0064HE	2883	2973	699	766	CP-1D-1200 GRAY	RD-3 CHARCOAL	RED/BLACK
0074HE	3261	3531	797	913	CP-1D-1200 GRAY	RD-4 BRICK RED	RED/BLACK
0084HE	3439	3709	821	977	CP-1D-1200 GRAY	RD-4 BRICK RED	RED/BLACK
0096HE	3753	4043	896	1112	CP-1D-1360 WHITE	RD-4 BRICK RED	PINK
0118HE	3705	3975	866	1092	CP-1D-1360 WHITE	RD-4 BRICK RED	PINK
0126HE	4587	5037	1008	1386	CP-1D-1785N GRAY/RED	RD-4 BRICK RED	PINK/GRAY
0156HE	4989	5439	1084	1609	C2P-1D-2400 GRAY	RD-4 BRICK RED	PINK/GRAY
0177SE	4418	4773	1380	1054	CP-1D-1785N GRAY/RED	RD-4 BRICK RED	PINK
0198SE	4868	5223	1522	1089	C2P-1D-1800 DARK GREEN	RD-4 BRICK RED	PINK/GRAY

Isolator Information

ELASTOMERIC ISOLATOR

RDX-



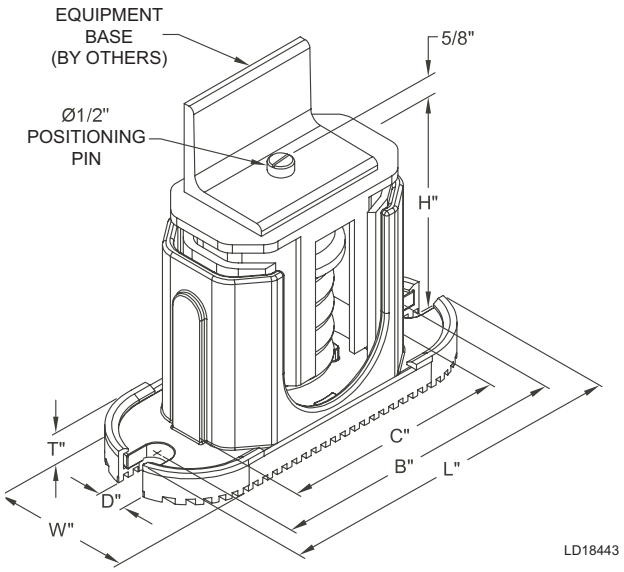
MOUNT TYPE	DIMENSION DATA (INCHES)							
	L	W	HF	AL	AD	BT	CD	DW
RD1-WR	3.13	1.75	1.25	2.38	0.34	0.19	5/16-18 UNC X 3/4	1.25
RD2-WR	3.88	2.38	1.75	3.00	0.34	0.22	3/8-16 UNC X 1	1.75
RD3-WR	5.50	3.38	2.88	4.13	0.56	0.25	1/2-13 UNC X 1	2.50
RD4-WR	6.25	4.63	2.75	5.00	0.56	0.38	1/2-13 UNC X 1	3.00

MODEL NUMBER	ISOLATOR COLOR	WEIGHT RANGE (LBS)	WEIGHT RANGE (KGS)
RD-3-CHARCOAL-WR	CHARCOAL	Up thru 825	UP TO 374
RD-4-BRICK RED-WR	BRICK RED	826 thru 1688	375 - 766
RD-4-CHARCOAL-WR	CHARCOAL	1689 thru 4000	767 - 1814

Isolator Information (Cont'd)

ONE INCH DEFLECTION SPRING ISOLATOR

CP-



MOUNT TYPE	DIMENSION DATA (INCHES)						
	W	D	L	B	C	T	H
CP	3	5/8	7-3/4	6-1/2	4-3/4	1/2	5-5/8
C2P	3	5/8	10-1/2	9-1/4	7-3/4	9/16	6

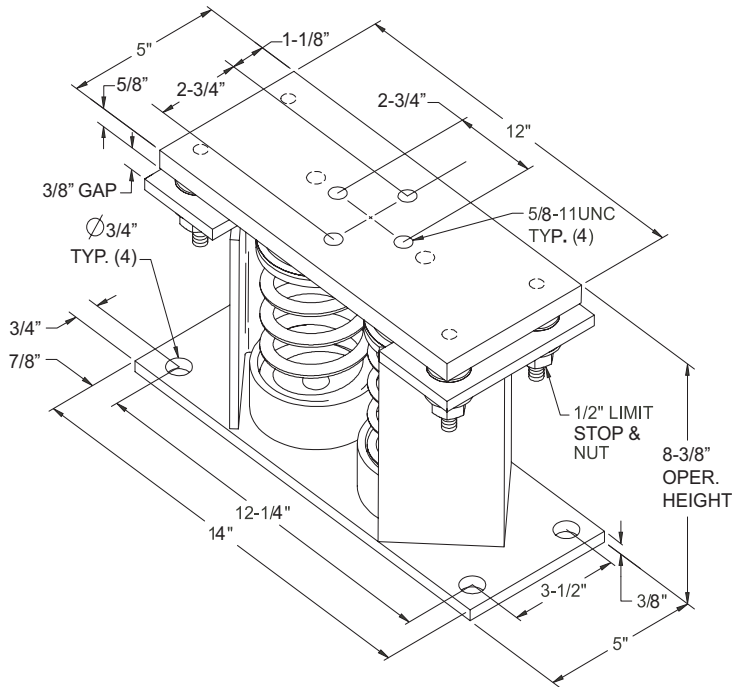
MODEL NUMBER	COLOR CODE	RATED CAPACITY (FOR UNITS WITH ALL LOAD POINTS LESS THAN 1785 LBS (810 KG)	
		LBS.	KG
CP-1D-510	BLACK	Up thru 434	Up thru 197
CP-1D-900	DARK GREEN	435 thru 765	198 thru 347
CP-1D-1200	GRAY	766 thru 1020	348 thru 463
CP-1D-1360	WHITE	1021 thru 1156	464 thru 524
CP-1D-1785N	GRAY/RED	1157 thru 1785	525 thru 810

MODEL NUMBER	COLOR CODE	RATED CAPACITY (FOR UNITS WITH ANY LOAD POINT ABOVE 1518 LBS (689 KG)	
		LBS.	KG
C2P-1D-1350	DARK PURPLE	Up thru 1148	Up to 521
C2P-1D-1350	DARK PURPLE	Up thru 1148	Up to 521
C2P-1D-1800	DARK GREEN	1149 thru 1530	522 - 694
C2P-1D-2400	GRAY	1531 thru 2040	695 - 925
C2P-1D-2400	GRAY	1531 thru 2040	695 - 925
C2P-1D-2720	WHITE	2041 thru 2312	926 - 1049
C2P-1D-3570N	GRAY/RED	2313 thru 3570	1050 - 1619

Isolator Information (Cont'd)

TWO INCH DEFLECTION, SPRING ISOLATOR

Y2RS-



MODEL NUMBER	ISOLATOR COLOR	WEIGHT RANGE (LBS)	WEIGHT RANGE (KGS)
Y2RSI-2D-460	GREEN	Up thru 391	UP TO 177
Y2RSI-2D-710	DARK BROWN	392 thru 604	178 - 274
Y2RSI-2D-870	RED	605 thru 740	275 - 336
Y2RSI-2D-1200N	RED/BLACK	741 thru 1020	337 - 463
Y2RSI-2D-1690	PINK	1021 thru 1437	464 - 652
Y2RSI-2D-2640N	PINK/GRAY	1438 thru 2244	653 - 1018
Y2RSI-2D-2870N	PINK/GRAY/ORANGE	2245 thru 2618	1019 - 1188
Y2RSI-2D-3280N	PINK/GRAY/DK.BROWN	2619 thru 3740	1189 - 1696

Sound Data

YCRL	BASE UNITS (ARI 575 SOUND PRESSURE LEVELS DB RE: 20 MICROPASCALS)								
	63	125	250	500	1000	2000	4000	8000	DBA
0064HE	59	52	54	68	68	69	62	53	74
0074HE	60	56	63	70	70	75	68	57	78
0084HE	60	58	66	71	72	77	70	59	80
0096HE	61	54	55	69	70	71	64	55	75
0118HE	69	68	74	77	78	76	70	57	82
0126HE	62	59	68	73	73	79	72	61	82
0156HE	72	65	71	78	79	76	72	58	82
0177SE	69	71	78	80	79	79	71	58	84
0198SE	69	72	78	80	80	80	72	59	85

YCRL	COMPRESSOR ACOUSTIC BLANKETS (ARI) 575 SOUND PRESSURE LEVELS DB RE: 20 MICROPASCALS)								
	63	125	250	500	1000	2000	4000	8000	DBA
0064HE	59	52	53	66	63	63	56	48	69
0074HE	60	56	62	68	65	69	62	52	72
0084HE	60	58	65	69	67	71	64	54	74
0096HE	61	54	54	67	65	65	58	50	70
0118HE	69	68	73	75	73	70	64	52	77
0126HE	62	59	67	71	68	73	66	56	76
0156HE	72	65	70	76	74	70	66	53	78
0177SE	69	71	77	78	74	73	65	53	80
0198SE	69	72	77	78	75	74	66	54	80

Unit Dimensions

FOUR COMPRESSOR

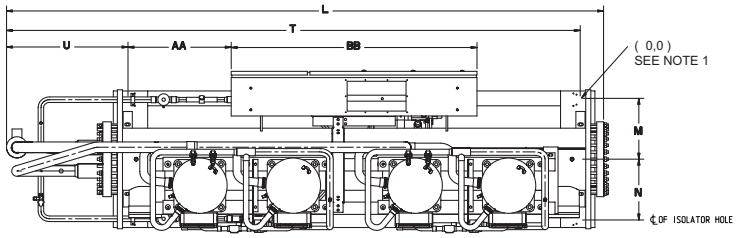
YCRL	0064HE	0074HE	0084HE	0118HE
W	32.5	33.7	33.7	33.7
H	56.6	63.6	63.6	63.3
L	121.5	120.5	123.2	120.5
A	13.8	13.8	13.8	13.8
B	27.5	27.5	27.5	27.5
D	11.8	16.0	16.0	16.0
E	8.6	8.6	8.6	8.6
F	24.5	29.0	29.0	29.0
G	29.0	29.0	29.0	29.0
J	17.7	17.7	17.7	17.7
K	12.3	12.8	12.8	12.8
M	12.3	12.3	12.3	12.3
N	12.3	12.3	12.3	12.3
R	85.0	83.0	83.0	83.0
S	3.5	4.5	4.5	4.5
T	116.7	115.7	118.3	115.7
U	24.7	23.7	26.3	22.1
X	21.0	22.2	22.3	22.2
AA	21.0	21.0	21.0	21.0
BB	50.0	50.0	50.0	50.0
CC	13.5	13.5	13.5	14.0
DD	30.7	33.0	33.0	33.0
EE	81.1	82.1	78.7	79.1
FF	37.3	34.9	34.4	34.8
GG-1	39.5	39.5	39.5	41.0
GG-2	39.5	39.5	39.5	41.0
HH	18.3	14.7	14.7	14.9

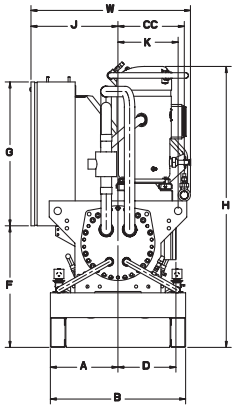
H* - for 200/230 volt units, which require a larger electrical enclosure

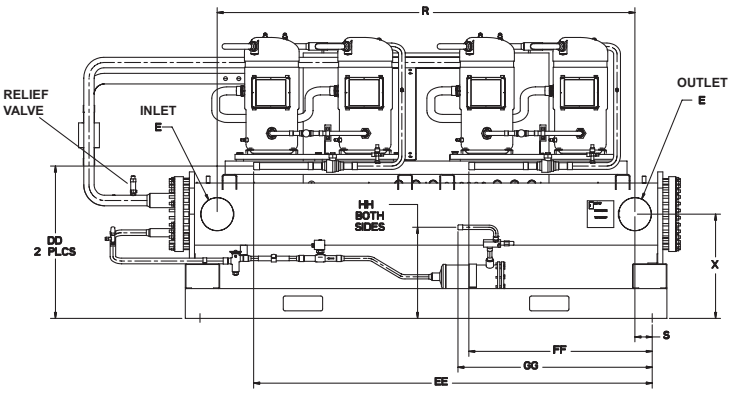
Unit Dimensions (Cont'd)

FOUR COMPRESSOR

NOTES:
1. Recommended service clearances.
   Rear to wall: 20” (508mm)
   Front to wall: 36” (915mm)
   Top: 43” (1092mm)
   Tube cleaning and removal: 132” (3353mm) either end
2. Relief valve connection sizes.
   Low side (suction line): 1/2” flare







LD18637

Unit Dimensions (Cont'd)

FIVE & SIX COMPRESSOR

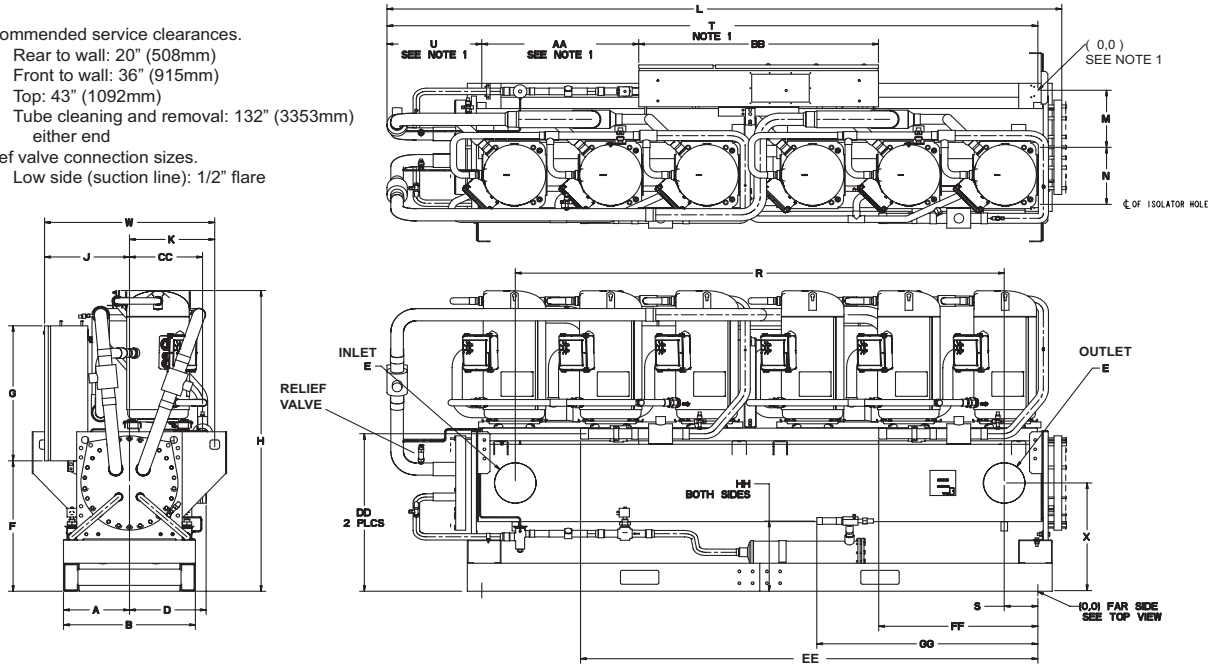
YCRL	0096HE	0126HE	0156HE	0177SE	0198SE
W	38.0	38.0	38.0	38.0	38.0
H	59.1	64.6	64.5	64.5	64.5
L	140.6	142.6	140.8	140.8	140.8
A	13.8	13.8	13.8	13.8	13.8
B	27.5	27.5	27.5	27.5	27.5
D	16.0	16.0	16.0	16.0	16.0
E	8.6	8.6	8.6	8.6	8.6
F	28.0	28.0	28.0	28.0	28.0
G	29.0	29.0	29.0	29.0	29.0
J	17.7	17.7	17.7	17.7	17.7
K	17.8	17.8	15.3	15.3	15.3
M	12.3	12.3	12.3	12.3	12.3
N	12.3	12.3	12.3	12.3	12.3
R	102.0	102.0	102.0	102.0	102.0
S	7.0	7.0	7.0	7.0	7.0
T	135.8	137.6	135.8	135.8	135.8
U	19.8	21.6	19.8	19.8	19.8
X	23.3	23.3	23.2	23.2	23.2
AA	32.8	32.8	32.8	32.8	32.8
BB	50.0	50.0	50.0	50.0	50.0
CC	15.0	15.3	17.8	17.8	17.8
DD	33.3	33.8	33.8	33.8	33.8
EE	94.2	95.4	95.4	95.4	95.4
FF	32.0	33.2	33.2	33.2	33.2
GG-1	57.9	57.7	53.7	53.7	53.7
GG-2	57.9	57.7	53.7	53.7	53.7
HH	14.7	14.9	14.9	14.9	14.9

H* - for 200/230 volt units, which require a larger electrical enclosure

Unit Dimensions (Cont'd)

FIVE & SIX COMPRESSOR

NOTES:
1. Recommended service clearances.
   Rear to wall: 20” (508mm)
   Front to wall: 36” (915mm)
   Top: 43” (1092mm)
   Tube cleaning and removal: 132” (3353mm) either end
2. Relief valve connection sizes.
   Low side (suction line): 1/2” flare



LD18638

Single Point Electrical Data

WITHOUT OPTIONAL EXTERNAL COMPRESSOR OVERLOADS

YCRL	VOLT	HZ	MINIMUM CIRCUIT AMPS MCA	MIN N/F DISC SW MDSW	MIN DUAL ELEM FUSE	MAX DUAL ELEM FUSE	LUGS PER PHASE			
							CIRCUIT BREAKER LUG SIZE (OPT)		TERMINAL BLOCK LUG SIZE (STD)	
							QTY/∅	LUG INFO	QTY/∅	LUG INFO
0064HE	208	60	237	400	300	300	1	250 - 500 KCM	1	# 4 - 500 KCM
	230	60	237	400	300	300	1	250 - 500 KCM	1	# 4 - 500 KCM
	380	60	153	200	175	175	1	# 4 - 300 KCM	1	# 10 - 300 KCM
	460	60	114	150	125	125	1	# 2 - 4/0 AWG	1	# 10 - 300 KCM
	575	60	101	150	110	110	1	# 2 - 4/0 AWG	1	# 10 - 300 KCM
0074HE	208	60	278	400	300	350	1	250 - 500 KCM	1	# 4 - 500 KCM
	230	60	278	400	300	350	1	250 - 500 KCM	1	# 4 - 500 KCM
	380	60	158	200	175	175	1	# 4 - 300 KCM	1	# 10 - 300 KCM
	460	60	122	150	150	150	1	# 2 - 4/0 AWG	1	# 10 - 300 KCM
	575	60	103	150	110	125	1	# 2 - 4/0 AWG	1	# 10 - 300 KCM
0084HE	208	60	314	400	350	350	1	250 - 500 KCM	1	# 4 - 500 KCM
	230	60	314	400	350	350	1	250 - 500 KCM	1	# 4 - 500 KCM
	380	60	162	200	175	200	1	# 4 - 300 KCM	1	# 10 - 300 KCM
	460	60	129	150	150	150	1	# 2 - 4/0 AWG	1	# 10 - 300 KCM
	575	60	105	150	125	125	1	# 2 - 4/0 AWG	1	# 10 - 300 KCM
0096HE	208	60	349	400	400	400	1	250 - 500 KCM	2	#10 - 300 KCM
	230	60	349	400	400	400	1	250 - 500 KCM	2	#10 - 300 KCM
	380	60	225	250	250	250	1	# 6 - 350 KCM	1	# 4 - 500 KCM
	460	60	168	200	175	175	1	# 4 - 300 KCM	1	# 4 - 500 KCM
	575	60	148	200	175	175	1	# 6 - 350 KCM	1	# 4 - 500 KCM
0118HE	208	60	425	600	500	500	2	250 - 500 KCM	2	#10 - 300 KCM
	230	60	425	600	500	500	2	250 - 500 KCM	2	#10 - 300 KCM
	380	60	265	400	300	300	1	250 - 500 KCM	1	# 4 - 500 KCM
	460	60	208	250	225	250	1	# 6 - 350 KCM	1	# 4 - 500 KCM
	575	60	175	200	200	200	1	# 6 - 350 KCM	1	# 4 - 500 KCM
0126HE	208	60	462	600	500	500	2	250 - 500 KCM	2	# 10 - 300 KCM
	230	60	462	600	500	500	2	250 - 500 KCM	2	# 10 - 300 KCM
	380	60	239	400	250	250	1	# 6 - 350 KCM	1	# 4 - 500 KCM
	460	60	190	250	200	200	1	# 6 - 350 KCM	1	# 4 - 500 KCM
	575	60	154	200	175	175	1	# 6 - 350 KCM	1	# 4 - 500 KCM
0156HE	208	60	557	800	600	600	2	250 - 500 KCM	2	# 4 - 500 KCM
	230	60	557	800	600	600	2	250 - 500 KCM	2	# 4 - 500 KCM
	380	60	341	400	400	400	1	250 - 500 KCM	2	# 10 - 300 KCM
	460	60	268	400	300	300	1	250 - 500 KCM	1	# 4 - 500 KCM
	575	60	201	250	225	225	1	250 - 500 KCM	1	# 4 - 500 KCM
0177SE	380	60	358	400	400	400	*	*	2	# 10 - 300 KCM
	460	60	288	400	300	300	1	250 - 500 KCM	1	# 4 - 500 KCM
	575	60	261	400	300	300	1	#6 AWG - 350 KCM	1	# 4 - 500 KCM
0198SE	380	60	435	600	500	500	2	250 - 500 KCM	2	#10 - 300 KCM
	460	60	343	400	350	350	2	#3/0 - 250 KCM	1	# 4 - 500 KCM
	575	60	310	400	350	350	1	250 - 500 KCM	1	# 4 - 500 KCM

* - Contact Johnson Controls

Single Point Electrical Data (Cont'd)

WITHOUT OPTIONAL EXTERNAL COMPRESSOR OVERLOADS

YCRL	SYSTEM # 1						SYSTEM # 2					
	COMPR 1		COMPR 2		COMPR 3		COMPR 1		COMPR 2		COMPR 3	
	RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA
0064HE	55.8	425	55.8	425	-	-	55.8	425	55.8	425	-	-
	55.8	425	55.8	425	-	-	55.8	425	55.8	425	-	-
	36.0	239	36.0	239	-	-	36.0	239	36.0	239	-	-
	26.9	187	26.9	187	-	-	26.9	187	26.9	187	-	-
	23.7	148	23.7	148	-	-	23.7	148	23.7	148	-	-
0074HE	73.9	505	73.9	505	-	-	55.8	425	55.8	425	-	-
	73.9	505	73.9	505	-	-	55.8	425	55.8	425	-	-
	38.2	290	38.2	290	-	-	36.0	239	36.0	239	-	-
	30.4	225	30.4	225	-	-	26.9	187	26.9	187	-	-
	24.6	180	24.6	180	-	-	23.7	148	23.7	148	-	-
0084HE	73.9	505	73.9	505	-	-	73.9	505	73.9	505	-	-
	73.9	505	73.9	505	-	-	73.9	505	73.9	505	-	-
	38.2	290	38.2	290	-	-	38.2	290	38.2	290	-	-
	30.4	225	30.4	225	-	-	30.4	225	30.4	225	-	-
	24.6	180	24.6	180	-	-	24.6	180	24.6	180	-	-
0118HE	109.6	599	109.6	599	-	-	89.1	500	89.1	500	-	-
	109.6	599	109.6	599	-	-	89.1	500	89.1	500	-	-
	69.2	358	69.2	358	-	-	54.5	305	54.5	305	-	-
	54.5	310	54.5	310	-	-	42.9	250	42.9	250	-	-
	49.4	239	49.4	239	-	-	32.1	198	32.1	198	-	-
0096HE	55.8	425	55.8	425	55.8	425	55.8	425	55.8	425	55.8	425
	55.8	425	55.8	425	55.8	425	55.8	425	55.8	425	55.8	425
	36.0	239	36.0	239	36.0	239	36.0	239	36.0	239	36.0	239
	26.9	187	26.9	187	26.9	187	26.9	187	26.9	187	26.9	187
	23.7	148	23.7	148	23.7	148	23.7	148	23.7	148	23.7	148
0126HE	73.9	505	73.9	505	73.9	505	73.9	505	73.9	505	73.9	505
	73.9	505	73.9	505	73.9	505	73.9	505	73.9	505	73.9	505
	38.2	290	38.2	290	38.2	290	38.2	290	38.2	290	38.2	290
	30.4	225	30.4	225	30.4	225	30.4	225	30.4	225	30.4	225
	24.6	180	24.6	180	24.6	180	24.6	180	24.6	180	24.6	180
0156HE	89.1	500	89.1	500	89.1	500	89.1	500	89.1	500	89.1	500
	89.1	500	89.1	500	89.1	500	89.1	500	89.1	500	89.1	500
	54.5	305	54.5	305	54.5	305	54.5	305	54.5	305	54.5	305
	42.9	250	42.9	250	42.9	250	42.9	250	42.9	250	42.9	250
	32.1	198	32.1	198	32.1	198	32.1	198	32.1	198	32.1	198
0177SE	69.2	358	69.2	358	69.2	358	69.2	358	69.2	358	-	-
	54.5	310	54.5	310	54.5	310	54.5	310	54.5	310	-	-
	49.4	239	49.4	239	49.4	239	49.4	239	49.4	239	-	-
0198SE	69.2	358	69.2	358	69.2	358	69.2	358	69.2	358	69.2	358
	54.5	310	54.5	310	54.5	310	54.5	310	54.5	310	54.5	310
	49.4	239	49.4	239	49.4	239	49.4	239	49.4	239	49.4	239

Dual Point Electrical Data

WITHOUT EXTERNAL COMPRESSOR OVERLOADS

YCRL	VOLT	HZ	SYSTEM 1 WIRING				SYSTEM 2 WIRING			
			MINIMUM CIRCUIT AMPS	MIN N/F DISC SW	MIN DUAL ELEM FUSE & MIN CB	MAX DUAL ELEM FUSE & MAX CB	MINIMUM CIRCUIT AMPS	MIN N/F DISC SW	MIN DUAL ELEM FUSE & MIN CB	MAX DUAL ELEM FUSE & MAX CB
0064HE	208	60	126	150	150	175	126	150	150	175
	230	60	126	150	150	175	126	150	150	175
	380	60	81	100	90	110	81	100	90	110
	460	60	61	100	70	80	61	100	70	80
	575	60	53	60	60	70	53	60	60	70
0074HE	208	60	166	200	200	225	126	150	150	175
	230	60	166	200	200	225	126	150	150	175
	380	60	86	100	100	110	81	100	90	110
	460	60	68	100	80	90	61	100	70	80
	575	60	55	60	70	70	53	60	60	70
0084HE	208	60	166	200	200	225	166	200	200	225
	230	60	166	200	200	225	166	200	200	225
	380	60	86	100	100	110	86	100	100	110
	460	60	68	100	80	90	68	100	80	90
	575	60	55	60	70	70	55	60	70	70
0118HE	208	60	247	400	300	350	200	250	225	250
	230	60	247	400	300	350	200	250	225	250
	380	60	156	200	175	200	123	150	150	175
	460	60	123	150	150	175	97	100	110	125
	575	60	111	150	125	150	72	100	90	100
0096HE	208	60	181	200	200	225	181	200	200	225
	230	60	181	200	200	225	181	200	200	225
	380	60	117	150	150	150	117	150	150	150
	460	60	87	100	100	110	87	100	100	110
	575	60	77	100	90	100	77	100	90	100
0126HE	208	60	240	400	300	300	240	400	300	300
	230	60	240	400	300	300	240	400	300	300
	380	60	124	150	150	150	124	150	150	150
	460	60	99	150	110	125	99	150	110	125
	575	60	80	100	90	100	80	100	90	100
0156HE	208	60	290	400	350	350	290	400	350	350
	230	60	290	400	350	350	290	400	350	350
	380	60	177	200	200	225	177	200	200	225
	460	60	139	150	175	175	139	150	175	175
	575	60	104	150	125	125	104	150	125	125
0177SE	208	60	361	450	450	450	252	350	350	350
	230	60	361	450	450	450	252	350	350	350
	380	60	228	250	250	250	158	200	200	250
	460	60	179	200	200	225	125	150	150	150
	575	60	162	150	150	175	113	100	110	125
0198SE	208	60	361	450	450	450	252	350	350	350
	230	60	361	450	450	450	252	350	350	350
	380	60	228	250	250	250	158	200	200	250
	460	60	179	200	200	225	125	150	150	150
	575	60	162	150	150	175	113	100	110	125

Dual Point Electrical Data (Cont'd)

WITHOUT EXTERNAL COMPRESSOR OVERLOADS

YCRL	VOLT	SYSTEM 1 CIRCUIT BREAKER LUG SIZE		SYSTEM # 1						SYSTEM 2 CIRCUIT BREAKER LUG SIZE		SYSTEM # 2					
				COMPR 1		COMPR 2		COMPR 3				COMPR 1		COMPR 2		COMPR 3	
		QTY	LUG INFO	RLA	LRA	RLA	LRA	RLA	LRA	QTY	LUG INFO	RLA	LRA	RLA	LRA	RLA	LRA
0064HE	208	1	#6 - 350 kcmil	55.8	425.0	55.8	425.0	-	-	1	#6 - 350 kcmil	55.8	425.0	55.8	425.0	-	-
	230	1	#6 - 350 kcmil	55.8	425.0	55.8	425.0	-	-	1	#6 - 350 kcmil	55.8	425.0	55.8	425.0	-	-
	380	1	#14 - 1/0AWG	36.0	239.0	36.0	239.0	-	-	1	#14 - 1/0AWG	36.0	239.0	36.0	239.0	-	-
	460	1	#14 - 1/0AWG	26.9	187.0	26.9	187.0	-	-	1	#14 - 1/0AWG	26.9	187.0	26.9	187.0	-	-
	575	1	#14 - 1/0AWG	23.7	148.0	23.7	148.0	-	-	1	#14 - 1/0AWG	23.7	148.0	23.7	148.0	-	-
0074HE	208	1	#6 - 350 kcmil	73.9	505.0	73.9	505.0	-	-	1	#6 - 350 kcmil	55.8	425.0	55.8	425.0	-	-
	230	1	#6 - 350 kcmil	73.9	505.0	73.9	505.0	-	-	1	#6 - 350 kcmil	55.8	425.0	55.8	425.0	-	-
	380	1	#2 - 4/0AWG	38.2	290.0	38.2	290.0	-	-	1	#14 - 1/0AWG	36.0	239.0	36.0	239.0	-	-
	460	1	#14 - 1/0AWG	30.4	225.0	30.4	225.0	-	-	1	#14 - 1/0AWG	26.9	187.0	26.9	187.0	-	-
	575	1	#14 - 1/0AWG	24.6	180.0	24.6	180.0	-	-	1	#14 - 1/0AWG	23.7	148.0	23.7	148.0	-	-
0084HE	208	1	#6 - 350 kcmil	73.9	505.0	73.9	505.0	-	-	1	#6 - 350 kcmil	73.9	505.0	73.9	505.0	-	-
	230	1	#6 - 350 kcmil	73.9	505.0	73.9	505.0	-	-	1	#6 - 350 kcmil	73.9	505.0	73.9	505.0	-	-
	380	1	#2 - 4/0AWG	38.2	290.0	38.2	290.0	-	-	1	#2 - 4/0AWG	38.2	290.0	38.2	290.0	-	-
	460	1	#14 - 1/0AWG	30.4	225.0	30.4	225.0	-	-	1	#14 - 1/0AWG	30.4	225.0	30.4	225.0	-	-
	575	1	#14 - 1/0AWG	24.6	180.0	24.6	180.0	-	-	1	#14 - 1/0AWG	24.6	180.0	24.6	180.0	-	-
0096HE	208	1	250 - 300 kcmil	55.8	425.0	55.8	425.0	55.8	425.0	1	#6 - 350 kcmil	55.8	425.0	55.8	425.0	55.8	425.0
	230	1	250 - 300 kcmil	55.8	425.0	55.8	425.0	55.8	425.0	1	#6 - 350 kcmil	55.8	425.0	55.8	425.0	55.8	425.0
	380	1	#6 - 350 kcmil	36.0	239.0	36.0	239.0	36.0	239.0	1	#6 - 350 kcmil	36.0	239.0	36.0	239.0	36.0	239.0
	460	1	#6 - 350 kcmil	26.9	187.0	26.9	187.0	26.9	187.0	1	#2 - 4/0AWG	26.9	187.0	26.9	187.0	26.9	187.0
	575	1	#2 - 4/0AWG	23.7	148.0	23.7	148.0	23.7	148.0	1	#14 - 1/0AWG	23.7	148.0	23.7	148.0	23.7	148.0
0118HE	208	1	#6 - 350 kcmil	109.6	599.0	109.6	599.0	-	-	1	#6 - 350 kcmil	89.1	500.0	89.1	500.0	-	-
	230	1	#6 - 350 kcmil	109.6	599.0	109.6	599.0	-	-	1	#6 - 350 kcmil	89.1	500.0	89.1	500.0	-	-
	380	1	#2 - 4/0AWG	69.2	358.0	69.2	358.0	-	-	1	#2 - 4/0AWG	54.5	305.0	54.5	305.0	-	-
	460	1	#14 - 1/0AWG	54.5	310.0	54.5	310.0	-	-	1	#14 - 1/0AWG	42.9	250.0	42.9	250.0	-	-
	575	1	#14 - 1/0AWG	49.4	239.0	49.4	239.0	-	-	1	#14 - 1/0AWG	32.1	198.0	32.1	198.0	-	-
0126HE	208	1	250 - 300 kcmil	73.9	505.0	73.9	505.0	73.9	505.0	1	250 - 300 kcmil	73.9	505.0	73.9	505.0	73.9	505.0
	230	1	250 - 300 kcmil	73.9	505.0	73.9	505.0	73.9	505.0	1	250 - 300 kcmil	73.9	505.0	73.9	505.0	73.9	505.0
	380	1	#2 - 4/0AWG	38.2	290.0	38.2	290.0	38.2	290.0	1	#2 - 4/0AWG	38.2	290.0	38.2	290.0	38.2	290.0
	460	1	#2 - 4/0AWG	30.4	225.0	30.4	225.0	30.4	225.0	1	#2 - 4/0AWG	30.4	225.0	30.4	225.0	30.4	225.0
	575	1	#14 - 1/0AWG	24.6	180.0	24.6	180.0	24.6	180.0	1	#14 - 1/0AWG	24.6	180.0	24.6	180.0	24.6	180.0
0156HE	208	1	250 - 300 kcmil	89.1	500.0	89.1	500.0	89.1	500.0	1	250 - 300 kcmil	89.1	500.0	89.1	500.0	89.1	500.0
	230	1	250 - 300 kcmil	89.1	500.0	89.1	500.0	89.1	500.0	1	250 - 300 kcmil	89.1	500.0	89.1	500.0	89.1	500.0
	380	1	#6 - 350 kcmil	54.5	305.0	54.5	305.0	54.5	305.0	1	#6 - 350 kcmil	54.5	305.0	54.5	305.0	54.5	305.0
	460	1	#6 - 350kcmil	42.9	250.0	42.9	250.0	42.9	250.0	1	#6 - 350 kcmil	42.9	250.0	42.9	250.0	42.9	250.0
	575	1	#2 - 4/0AWG	32.1	198.0	32.1	198.0	32.1	198.0	1	#2 - 4/0AWG	32.1	198.0	32.1	198.0	32.1	198.0
0177SE	208	1	(2) #3/0 AWG-250 kcmil	109.6	599	109.6	599	109.6	599	1	(1) 250 - 500 kcmil	109.6	599	109.6	599	-	-
	230	1	(2) #3/0 AWG-250 kcmil	109.6	599	109.6	599	109.6	599	1	(1) 250 - 500 kcmil	109.6	599	109.6	599	-	-
	380	1	(1) #4 AWG-300 kcmil	69.2	358	69.2	358	69.2	358	1	(1) #6 AWG-350 kcmil	69.2	358	69.2	358	-	-
	460	1	(1) #4 AWG-300 kcmil	54.5	310	54.5	310	54.5	310	1	(1) #2 - 4/0 AWG	54.5	310	54.5	310	-	-
	575	1	(1) #2-4/0 AWG	49.4	239	49.4	239	49.4	239	1	(1) #2 - 4/0 AWG	49.4	239	49.4	239	-	-
0198SE	208	1	(1) 250-500 kcmil	109.6	599	109.6	599	109.6	599	1	(1) 250 - 500 kcmil	109.6	599	109.6	599	109.6	599
	230	1	(1) 250-500 kcmil	109.6	599	109.6	599	109.6	599	1	(1) 250 - 500 kcmil	109.6	599	109.6	599	109.6	599
	380	1	(1) #6 AWG-350 kcmil	69.2	358	69.2	358	69.2	358	1	(1) #6 AWG-350 kcmil	69.2	358	69.2	358	69.2	358
	460	1	(1) #4 AWG-300 kcmil	54.5	310	54.5	310	54.5	310	1	(1) #4 AWG-300 kcmil	54.5	310	54.5	310	54.5	310
	575	1	(1) #2 - 4/0 AWG	49.4	239	49.4	239	49.4	239	1	(1) #2 - 4/0 AWG	49.4	239	49.4	239	49.4	239

Electrical Notes

1. Minimum Circuit Ampacity (MCA) is based on 125% of the rated load amps for the largest motor plus 100% of the rated load amps for all other loads included in the circuit, per N.E.C. Article 43024. If the optional Factory Mounted Control Transformer is provided, add the following MCA values to the electrical tables for the system providing power to the transformer: 17, add 2.5 amps; 28, add 2.3 amps; 40, add 1.5 amps, 46, add 1.3 amps; 58, add 1 amps.

2. The minimum recommended disconnect switch is based on 115% of the rated load amps for all loads included in the circuit, per N.E.C. Article 440.

3. Minimum fuse size is based upon 150% of the rated load amps for the largest motor plus 100% of the rated load amps for all other loads included in the circuit to avoid nuisance trips at startup due to lock rotor amps. It is not recommended in applications where brown outs, frequent starting and stopping of the unit, and/or operation at ambient temperatures in excess of 95ºF (35ºC) is anticipated.

4. Maximum fuse size is based upon 225% of the rated load amps for the largest motor plus 100% of the rated load amps for all other loads included in the circuit, per N.E.C. Article 440-22.

5. Circuit breakers must be UL listed and CSA certified and maximum size is based on 225% of the rated load amps for the largest motor plus 100% of the rated load amps for all other loads included in the circuit. Otherwise, an HACR type circuit breakers must be used. Maximum HACR circuit breaker rating is based on 225% of the rated load amps for the largest motor plus 100% of the rated load amps for all other loads included in the circuit.

6. The “INCOMING WIRE RANGE” is the minimum and maximum wire size that can be accommodated by the unit wiring lugs. The (2) preceding the wire range indicates the number of termination points available per phase of the wire range specified. Actual wire size and number of wires per phase must be determined based on the National Electrical Code, using copper connectors only. Field wiring must also comply with local codes.

7. An equipment ground lug(s) is provided for the incoming power. Ground line sizing shall be in accordance with the current NEC Table 250-122.

8. Field Wiring by others which complies to the National Electrical Code & Local Codes.

9. Voltage Utilization Range

RATED VOLTAGE	UTILIZATION RANGE
200/60/3	180 - 220
230/60/3	208 - 254
380/60/3	342 - 402
460/60/3	414 - 508
575/60/3	520 - 635

LEGEND

ACR	ACROSS THE LINE START
C.B.	CIRCUIT BREAKER
D.E.	DUAL ELEMENT FUSE
DISC SW	DISCONNECT SWITCH
FACT MOUNT CB	FACTORY MOUNTED CIRCUIT BREAKER
FLA	FULL LOAD AMPS
HZ	HERTZ
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPACITY
MIN	MINIMUM
MIN NF	MINIMUM NON FUSED
RLA	RATED LOAD AMPS
S.P. WIRE	SINGLE POINT WIRING
UNIT MTD SERV SW	UNIT MOUNTED SERVICE (NON-FUSED DISCONNECT SWITCH)
LRA	LOCKED ROTOR AMPS
ECWT	ENTERING CONDENSER WATER TEMPERATURE

Ground Wire Sizing

GROUND LUG SIZING		
CIRCUIT BREAKER OPTION		
RATING	**INCOMING WIRE**	**GROUND WIRE**
60A	# 14 -1/0AWG	# 14-6AWG
70A	# 14 -1/0AWG	# 14-6AWG
BOA	# 14 -1/0AWG	# 14-6AWG
90A	# 14 -1/0AWG	# 14-6AWG
100A	# 14 -1/0AWG	#8-2AWG
125A	# 14 -1/0AWG	#8-2AWG
125A	#2-4/0AWG	#8-2AWG
150A	#2-4/0AWG	#8-2AWG
175A	#4-300KCM	#6-1/0AWG
200A	#4-300KCM	#6-1/0AWG
225A	#4-300KCM	#6-1/0AWG
250A	#6-350KCM	#4-3JOAWG
400A	# 250 - 500 KCM	#2-4/0AWG
400A	(2) # 310- 250 KCM	(2)#6-1/0AWG
600A	(2) # 250 - 500 KCM	(2) # 2-410 AWG

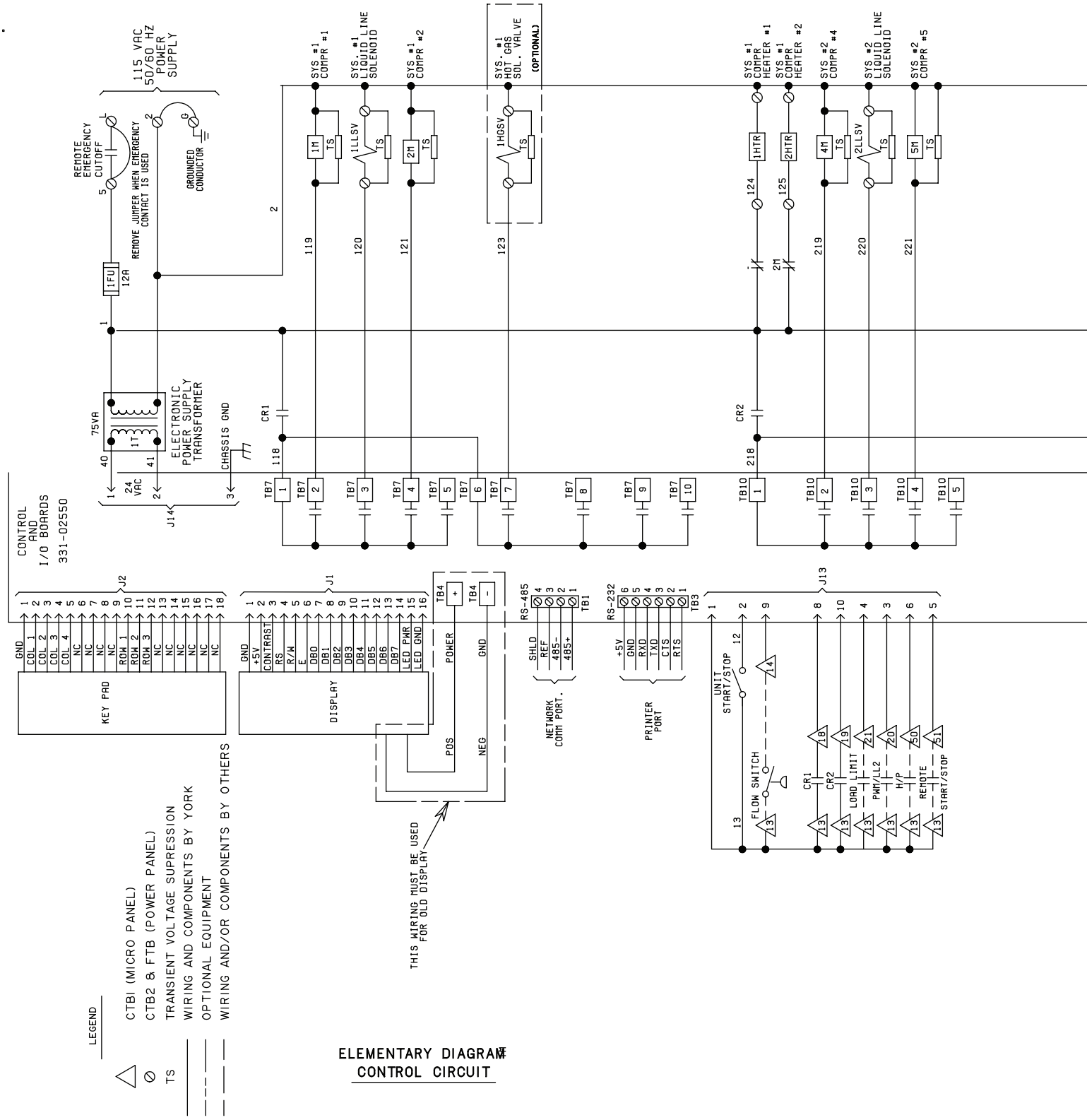
TERMINAL BLOCK OPTION		
RATING	**INCOMING WIRE**	**GROUND WIRE**
130A	#12-1AWG	#8-2AWG
165A	#10-3JOAWG	#6-1/0AWG
240A	#10-300KCM	#4-3JOAWG
320A	#4-500KCM	#2-4/0AWG
480A	(2) # 10- 300 KCM	(2)#4-3JOAWG

INSTRUCTIONS

1. Start in correct power option table (breaker, tenninal block)
2. Match engineertng guide value for Amperage
3. Match engineering guide value for wire range
4. Note corresponding ground wire range

Typical Control Panel Wiring

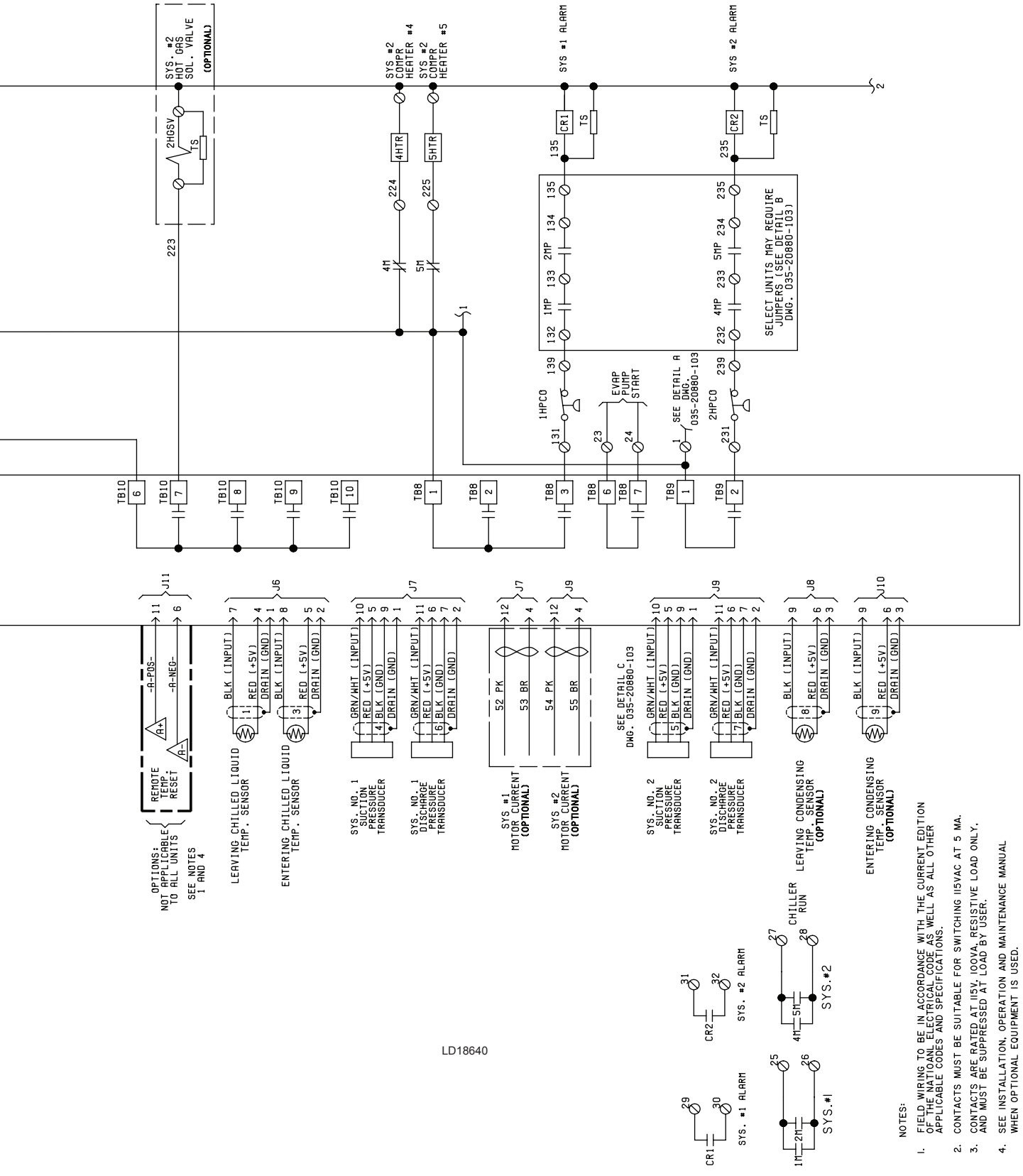
4 COMPRESSOR



ELEMENTARY DIAGRAM
CONTROL CIRCUIT

Typical Control Panel Wiring (Cont'd)

4 COMPRESSOR

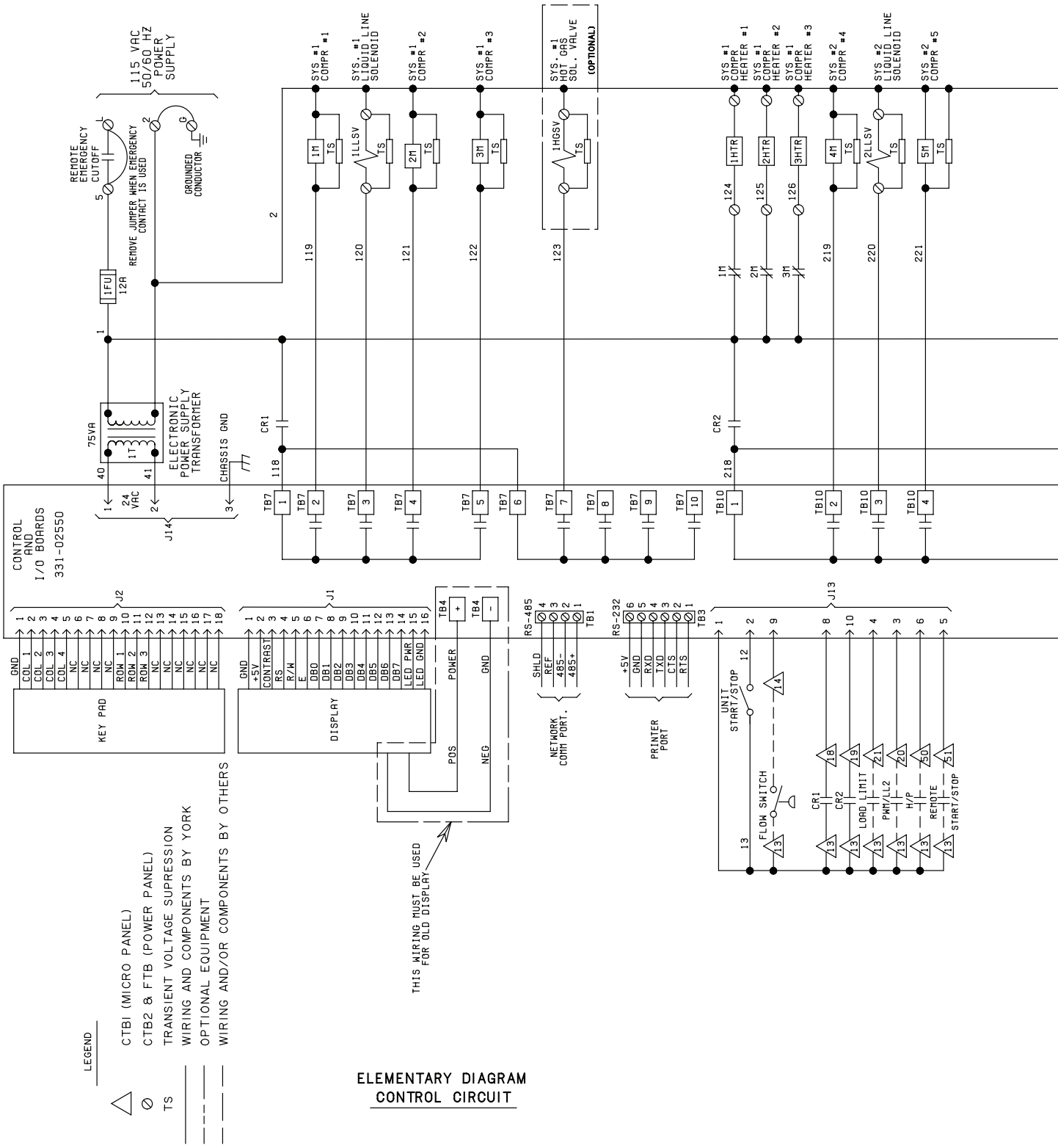


NOTES:

1. FIELD WIRING TO BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE NATIOANL ELECTRICAL CODE AS WELL AS ALL OTHER APPLICABLE CODES AND SPECIFICATIONS.
2. CONTACTS MUST BE SUITABLE FOR SWITCHING 115VAC AT 5 MA.
3. CONTACTS ARE RATED AT 115V, 100VA, RESISTIVE LOAD ONLY, AND MUST BE SUPPRESSED AT LOAD BY USER.
4. SEE INSTALLATION, OPERATION AND MAINTENANCE MANUAL WHEN OPTIONAL EQUIPMENT IS USED.
5. WIRING BY OTHERS ON REMOTE EVAP.UNITS

Typical Control Panel Wiring (Cont'd)

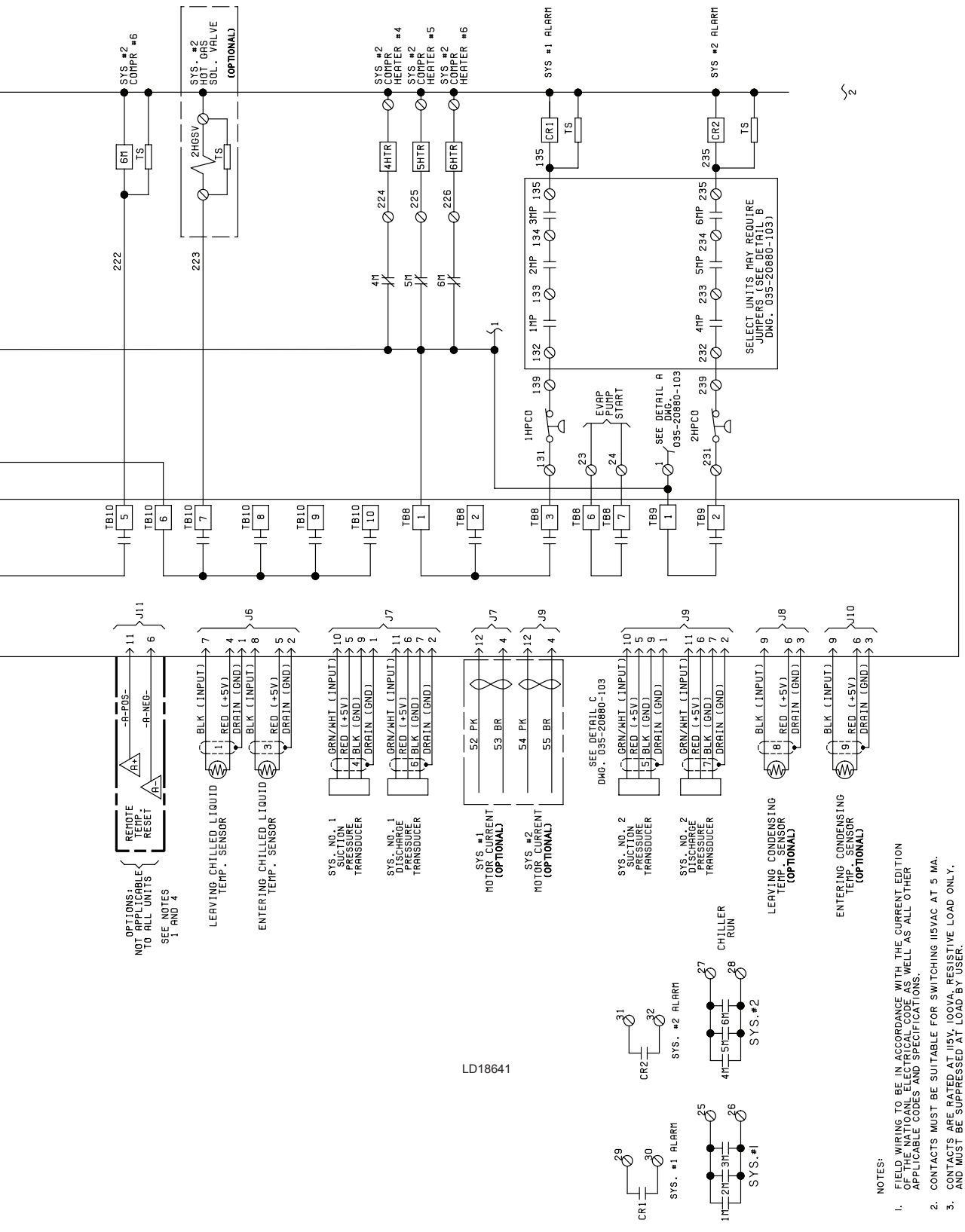
5 & 6 COMPRESSOR



ELEMENTARY DIAGRAM
CONTROL CIRCUIT

Typical Control Panel Wiring (Cont'd)

5 & 6 COMPRESSOR



NOTES:

1. FIELD WIRING TO BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE NATIONAL ELECTRICAL CODE AS WELL AS ALL OTHER APPLICABLE CODES AND SPECIFICATIONS.
2. CONTACTS MUST BE SUITABLE FOR SWITCHING 115VAC AT 5 MA.
3. CONTACTS ARE RATED AT 115V, 100VA, RESISTIVE LOAD ONLY, AND MUST BE SUPPRESSED AT LOAD BY USER.
4. SEE INSTALLATION, OPERATION AND MAINTENANCE MANUAL WHEN OPTIONAL EQUIPMENT IS USED.
5. WIRING BY OTHERS ON REMOTE EVAP.UNITS

Customer Wiring Information

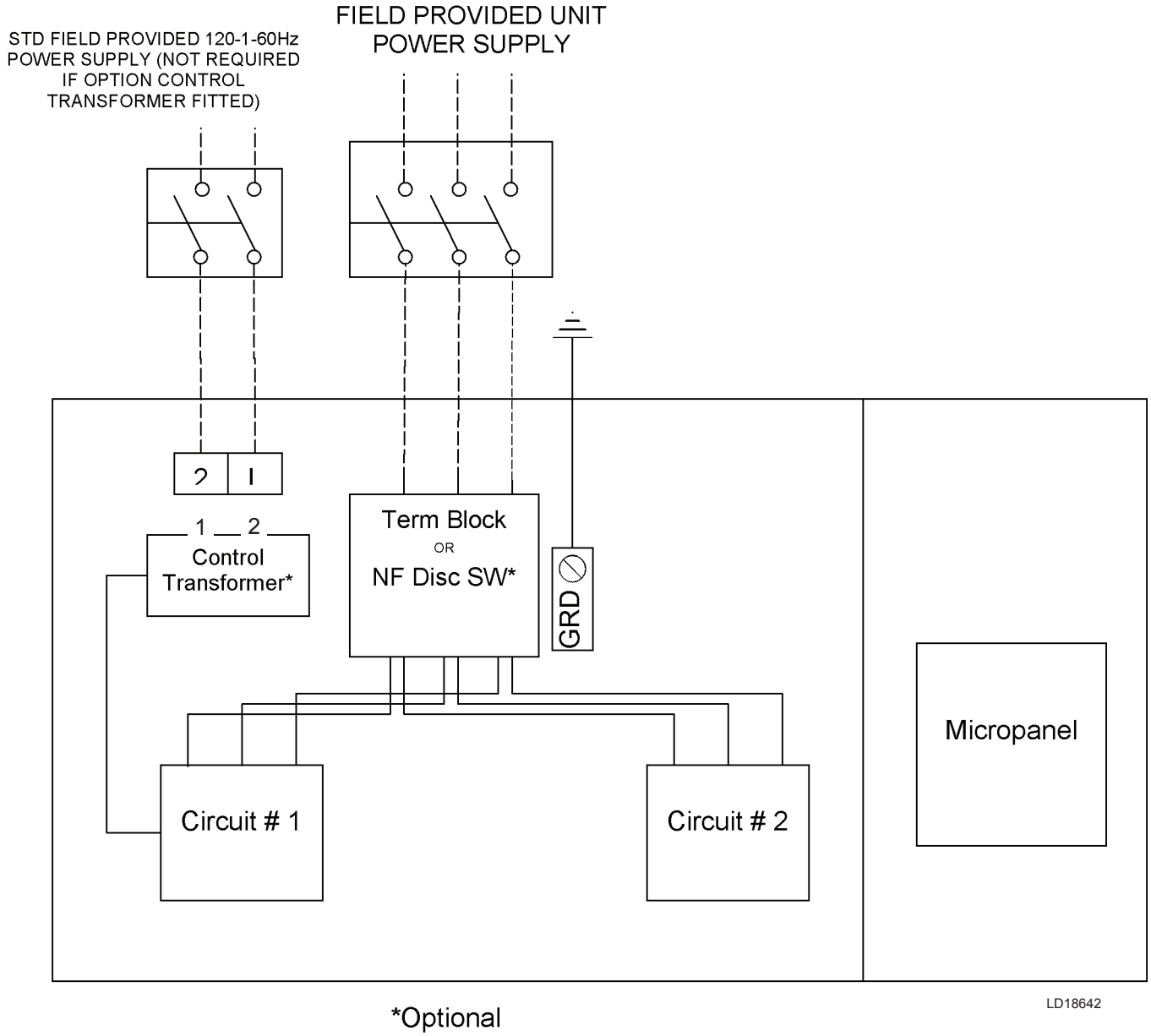


FIGURE 1 - SINGLE POINT POWER SUPPLY CONNECTION – STANDARD UNIT

Customer Wiring Information (Cont'd)

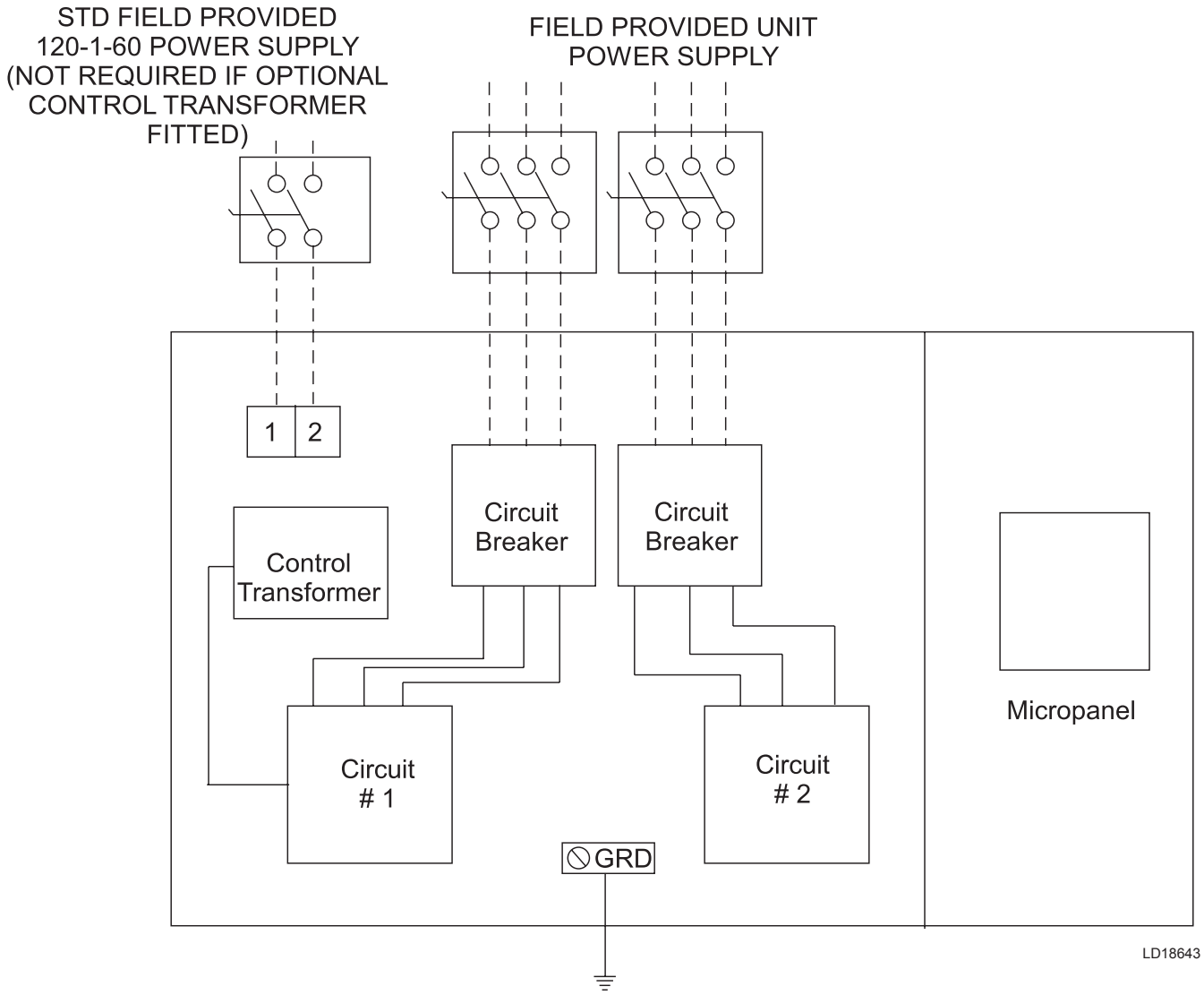


FIGURE 2 - DUAL POINT POWER SUPPLY CONNECTION – OPTIONAL

Guide Specifications

PART 1 – GENERAL

1.01 SCOPE

A. The requirements of the General Conditions, Supplementary Conditions, Division 1, and Drawings apply to all Work herein. Provide Microprocessor controlled, multiple-scroll compressor, water-cooled, liquid chillers of the scheduled capacities as shown and indicated on the Drawings, including but not limited to:

1. Chiller package
2. Electrical power and control connections
3. Chilled water connections
4. Charge of refrigerant and oil
5. Factory start-up

1.02 QUALITY ASSURANCE

A. Products shall be Designed, Tested, Rated and Certified in accordance with, and installed in compliance with applicable sections of the following Standards and Codes:

1. ANSI/ASHRAE Standard 15 – Safety Code for Mechanical Refrigeration
2. ASHRAE 90.1– Energy Efficiency compliance.
3. ANSI/NFPA Standard 70 – National Electrical Code (N.E.C.)
4. ASME Boiler & Pressure Vessel Code, Section VIII, Division 1
5. ASHRAE 34 – Number Designation and Safety Classification of Refrigerants
6. AHRI Standard 550/590 – Positive Displacement Compressors and Water Cooled Rotary Screw Water-Chilling Packages
7. Conform to UL code 1995 for construction of chillers and provide ETL/cETL Listing label
8. Manufactured in facility registered to ISO 9001
9. OSHA - Occupational Safety and Health Act

B. Factory Test: Chiller shall be pressure-tested, evacuated and fully charged with oil and a nitrogen holding charge. Refrigerant shall be field supplied.

C. Chiller manufacturer shall have a factory trained and supported service organization that is within a 50 mile radius of the site.

D. Warranty: Manufacturer shall Warrant all equipment and material of its manufacture against defects in workmanship and material for a period of one year from date of initial start-up or eighteen (18) months from date of shipment, whichever occurs first.

Guide Specifications (Cont'd)

1.03 DELIVERY AND HANDLING

A. Unit shall be delivered to job site fully assembled, and charged with refrigerant and oil by the Manufacturer.

B. Unit shall be stored and handled per Manufacturer's instructions.

C. Unit and its accessories shall be protected from the weather and dirt exposure during shipment.

D. During shipment, a covering shall be provided over vulnerable components. Nozzles and open ends shall be fitted with plastic enclosures.

PART 2 – PRODUCTS

2.01 CHILLER MATERIALS AND COMPONENTS

A. **General**: Install and commission, as shown on the schedules and plans, factory assembled, charged, and tested water-cooled scroll compressor chiller(s) as specified herein. Chiller shall be designed, selected, and constructed using a refrigerant with Flammability rating of "1", as defined by ANSI/ASHRAE STANDARD - 34 Number Designation and Safety Classification of Refrigerants. Chiller shall include, but is not limited to: a complete system with not less than two refrigerant circuits, scroll compressors, direct expansion type evaporator, lubrication system, interconnecting wiring, safety and operating controls including capacity controller, control center, motor starting components, and special features as specified herein or required for safe, automatic operation.

2.02 COMPRESSORS

A. Compressors Shall be hermetic, scroll-type, including:

1. Compliant design for axial and radial sealing.
2. Refrigerant flow through the compressor with 100% suction cooled motor.
3. Large suction side free volume and oil sump to provide liquid handling capability.
4. Compressor crankcase heaters to provide extra liquid migration protection.
5. Annular discharge check valve and reverse vent assembly to provide low pressure drop, silent shutdown and reverse rotation protection.
6. Initial Oil charge.
7. Oil Level sightglass.
8. Vibration isolator mounts for compressors.
9. Brazed-type connections for fully hermetic refrigerant circuits.
10. Microprocessor controlled, Factory installed Across-the-Line type compressor motor starters

Guide Specifications (Cont'd)

2.03 REFRIGERANT CIRCUIT COMPONENTS

Each refrigerant circuit shall include: liquid line shutoff valve with charging port, low side pressure relief device, filter-drier, solenoid valve, discharge service valve, sight glass with moisture indicator, expansion valves, and flexible, closed-cell foam insulated suction line.

2.04 HEAT EXCHANGER

A. Evaporator:

1. Evaporator shall be a direct expansion shell and tube construction, dual circuit heat exchanger capable of refrigerant working pressure of 450 PSIG (31.0 bar) and liquid side pressure of 150 PSIG (10.3 bar).

2. Evaporator shall be covered with 3/4” (19mm), flexible, closed-cell insulation, thermal conductivity of 0.26k ([BTU/HR-Ft2-°F]/in.) maximum. Water nozzles shall be insulated by Contractor after pipe installation.

3. Heat exchangers shall be ASME pressure vessel code certified.

4. Installing contractor must include accommodations in the chilled water piping to allow proper drainage and venting of the heat exchanger.

5. 5. The water connections shall be fully accessible and grooved to accept ANSI/AWWA C-606 couplings if used (by others).

2.05 CONTROLS

A. General: Automatic start, stop, operating, and protection sequences across the range of scheduled conditions and transients.

B. Microprocessor Enclosure: NEMA 1 (IP32) powder- painted steel cabinet with hinged, latched, and gasket sealed door.

C. Microprocessor Control Center:

1. Automatic control of compressor start/stop, anti coincidence and anti-recycle timers, automatic pumpdown on shutdown, evaporator pump, and unit alarm contacts. Automatic reset to normal chiller operation after power failure.

2. Software stored in non-volatile memory, with programmed setpoints retained in lithium battery backed regulated time clock (RTC) memory for minimum 5 years.

3. Forty character liquid crystal display, numeric data in English (or Metric) units. Sealed keypad with sections for Setpoints, Display/Print, Entry, Unit Options & clock, and On/Off Switch. Display descriptions and membrane keypad graphics shown in English language.

4. Programmable Setpoints (within Manufacturer’s limits): display language; chilled liquid temperature setpoint and range, remote reset temperature range, set daily schedule/holiday for start/ stop, manual override for servicing, number of compressors, low liquid temperature cutout, low suction pressure cutout, high discharge pressure cutout, anti-recycle timer (compressor start cycle time), and anti-coincident timer (delay compressor starts).

Guide Specifications (Cont'd)

5. Display Data: Return and leaving evaporator liquid temperatures, low leaving liquid temperature cutout setting, English or metric data, suction pressure cutout setting, each system suction pressure, discharge pressure, liquid temperature reset via a 4-20 milliamp or 0- 10 VDC input or contact closure, anti-recycle timer status for each compressor, anti-coincident system start timer condition, compressor run status, no cooling load condition, day, date and time, daily start/ stop times, holiday status, automatic or manual system lead/lag control, lead system definition, compressor starts/operating hours (each), status of hot gas valves (if supplied), run permissive status, number of compressors running, liquid solenoid valve status, load & unload timer status, water pump status.

6. System Safeties: Shall cause individual compressor systems to perform auto shut down; manual reset required after the third trip in 90 minutes. Includes: high discharge pressure, low suction pressure, high pressure switch, and motor protector. Compressor motor protector shall protect against damage due to high input current or thermal overload of windings.

7. Unit Safeties: Shall be automatic reset and cause compressors to shut down if low ambient, low leaving chilled liquid temperature, under voltage, and flow switch operation. Contractor shall provide flow switch installation and wiring per chiller Manufacturer's requirements.

8. Alarm Contacts: Low ambient, low leaving chilled liquid temperature, low voltage, low battery, and (per compressor circuit): high discharge pressure, and low suction pressure.

9. BAS/EMS Temperature Reset: Chiller to accept 4 to 20mA, 0 to 10 VDC, or discrete contact closure input to reset the leaving chilled liquid temperature.

D. Pressure Transducers and Readout Capability

1. Discharge Pressure Transducers: Permits unit to sense and display discharge pressure.

2. Suction Pressure Transducers: Permits unit to sense and display suction pressure.

E. Manufacturer shall provide any controls not listed above, necessary for automatic chiller operation. Mechanical Contractor shall provide field control wiring necessary to interface sensors to the chiller control system.

2.06 POWER CONNECTION AND DISTRIBUTION

A. Power Panels:

1. NEMA 1 (IP32), powder painted steel cabinets with hinged, latched, and gasket sealed outer doors. Provide main power connection(s), control power connections, compressor start contactors, current overloads, and factory wiring.

2. Power supply shall enter unit at a single location, be 3 phase of scheduled voltage, and connect to individual terminal blocks per compressor. Separate disconnecting means and/ or external branch circuit protection (by Contractor) required per applicable local or national codes.

B. Exposed compressor and control power wiring shall be routed through liquid tight conduit.

Guide Specifications (Cont'd)

C. Power Supply Connection shall be: Single Point Power Supply: Single point Terminal Block for field connection and interconnecting wiring to the compressors. Separate external protection must be supplied, by others, in the incoming power wiring, which must comply with the National Electric Code and/or local codes.

2.07 ACCESSORIES AND OPTIONS

Some accessories and options supersede standard product features. Your Johnson Controls sales representative will be pleased to provide assistance. All options and accessories are factory mounted unless otherwise noted.

A. Power Supply Connections:

1. Single Point Circuit Breaker: Single point Terminal Block with Circuit Breaker and lockable external handle (in compliance with Article 440 14 of N.E.C.) can be supplied to isolate power voltage for servicing. Incoming power wiring must comply with the National Electric Code and/or local codes.

B. Control Power Transformer: Converts unit power voltage to 120-1-60 (500 VA capacity). Factory mounting includes primary and secondary wiring between the transformer and the control panel.

C. Flow Switch (Field-mounted): Vapor proof SPDT, NEMA 3R switch (150 PSIG), -20°F to 250°F. Available with evaporator.

D. Differential Pressure Switch (Field mounted): Alternative to the paddle-type flow switch. 3-45 PSIG (0.2-3 bar) range with ¼" NPTE pressure connections. Available with evaporator.

E. Double Thick Evaporator Insulation: Evaporator covered with double thick (1-1/2") flexible, closed-cell Insulation in lieu of standard (3/4") insulation. Water nozzles shall be insulated by Contractor after pipe installation.

F. ANSI/AWWA C-606 Flange Kit (Field Mounted): ANSI/AWWA C-606 flange adapters included with the water connections on the evaporator providing raised face flanges for field piping connection (note: the 0064HE units do not include condenser flanges).

G. Service Isolation valves: Service suction (ball type) isolation valves are added to unit per circuit in addition to the standard discharge service valve. (Factory-mounted.)

H. Hot Gas By-Pass: Permits continuous, stable operation at capacities below the minimum step of unloading to as low as 5% capacity (depending on both the unit & operating conditions) by introducing an artificial load on the evaporator. Hot gas by-pass is installed on only one refrigerant circuit (System #2).

I. Microprocessor Membrane Keypad Graphics on in lieu of Standard English:

1. Spanish language.
2. French language.
3. German language.
4. Italian language.

Guide Specifications (Cont'd)

J. Sound Reduction:

1. Each compressors is individually enclosed in an acoustic sound blankets.

K. Vibration Isolation (Field-mounted):

1. Neoprene Pad Isolators.

2. 1 Inch Deflection Spring Isolators: Level adjustable, spring and cage type isolators for mounting under the unit base.

3. 2 Inch Deflection Seismic Isolators: Level adjustable, restrained isolators, mounts in rugged welded steel housing with vertical and horizontal limit stops. Housings shall be designed to withstand a minimum 1.0g accelerated force in all directions to 2 inches.

L. Final Paint Overspray: Overspray painting of assembled unit with Caribbean blue enamel.

PART 3 – EXECUTION

3.01 INSTALLATION

A. General: Rig and Install in full accordance with Manufacturer's requirements, Project drawings, and Contract documents.

B. Location: Locate chiller as indicated on drawings, including cleaning and service maintenance clearance per Manufacturer's instructions. Adjust and level chiller on support structure. If equipment provided exceeds height of scheduled chiller, installing contractor is responsible for additional costs associated with extending the height of parapet or screening walls/enclosures

C. Components: Installing Contractor shall provide and install all auxiliary devices and accessories for fully operational chiller.

D. Electrical: Coordinate electrical requirements and connections for all power feeds with Electrical Contractor.

E. Controls: Coordinate all control requirements and connections with Controls Contractor.

F. Finish: Installing Contractor shall paint damaged and abraded factory finish with touch-up paint matching factory finish.

Printed on recycled paper
Form 150.27-EG1 (1115) Supersedes: 150.27-EG1 (915)
© 2015 Johnson Controls, Inc. P.O. Box 423, Milwaukee, WI 53201 Printed in USA
www.johnsoncontrols.com
Issued on 11/25/2015

Johnson Controls