

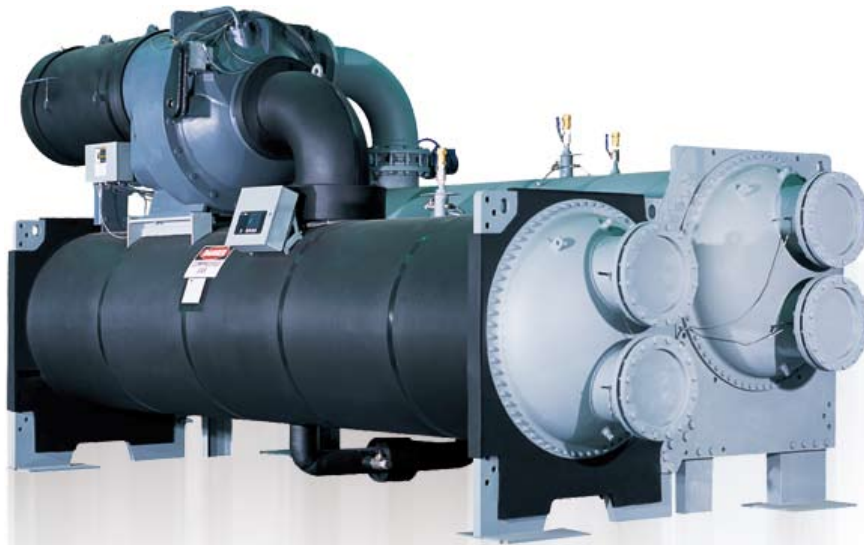


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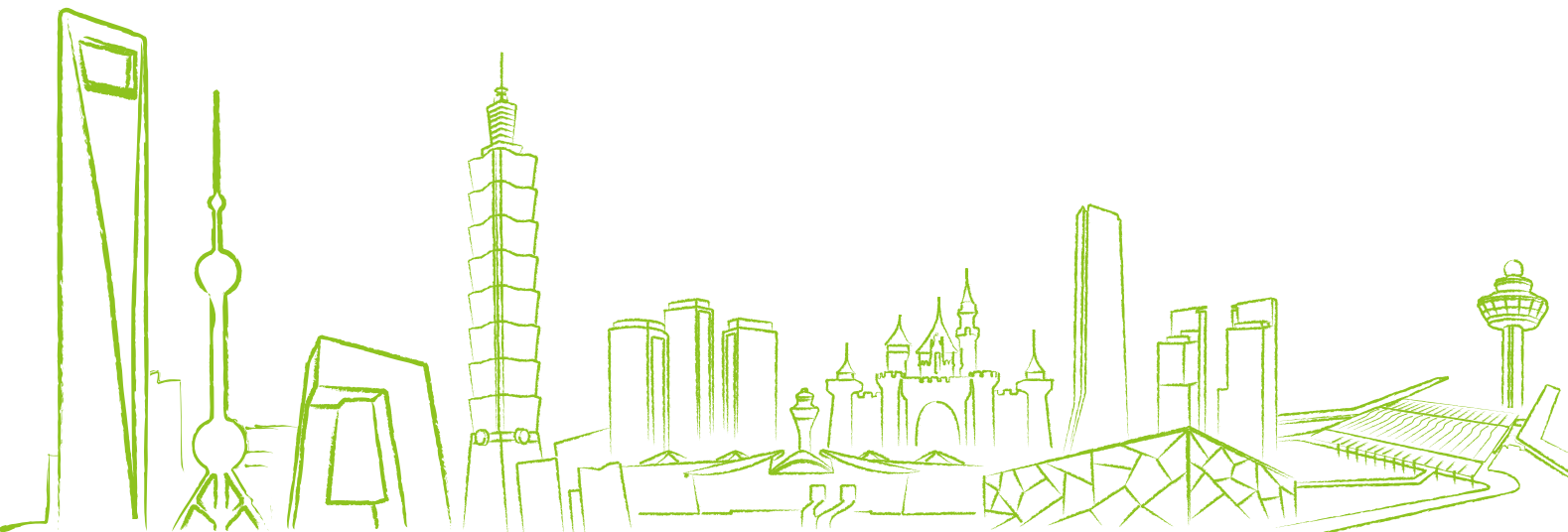
HERMETIC CENTRIFUGAL LIQUID CHILLER

19XR

Cooling Capacity 1055-5274kW



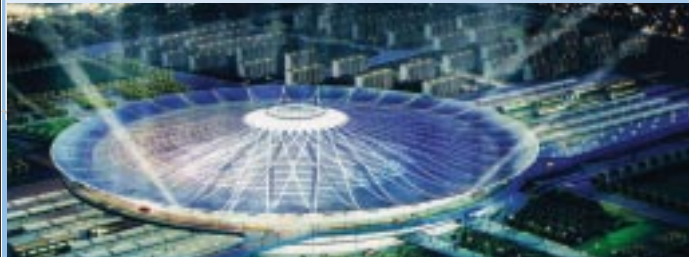
Energy-saving and High Efficiency, Reliability, Environmental Leadership, Advanced Design, Convenient Installation and Easily Operated Control System



For more than 100 years, Carrier has brought over 800 patent innovations since the invention of the first modern air conditioning system in 1902.

Today, Carrier has annual revenues over US\$10 billion ranking No. 1 in HVAC industry with approximately 45,000 employees and 78 manufacturing facilities in the world.

Carrier has led the development of centrifugal chiller, including the invention of centrifugal chiller in 1922, manufacture of the first centrifugal chiller with cooling capacity of 10,000 RT in 1972, and introduction of non-ozone-depleting, chlorine-free refrigerant HFC-134a in 1996.



**South Railway Station,
Shanghai, China**
19XR750 X4



**Wanda Plaza,
Beijing, China**
19XR1000 X3
19XR750 X1
19XR650 X2
19XR350 X2



**Wal-mart Asia Center,
Shenzhen, China**
19XR1200 X4
19XR700 X2
19XR600 X4



**Chongqing International
Convention & Exhibition
Centre,
Chongqing, China**
19XR1000(10kV) X7



**Shangri-la Hotel Phase II,
Shanghai, China**
19XR750 X2
19XR750 X1

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19XR



19XRV

Model Number Nomenclature

19XR 65 65 467 DJ S 52

Description

19XR-High Efficiency Hermetic Centrifugal Liquid Chiller
 19XRV-Ultra High Efficiency Hermetic Centrifugal Liquid Chiller with VFD

Cooler Size

30, 31, 32
 35, 36, 37
 40, 41, 42
 45, 46, 47
 50, 51, 52
 55, 56, 57
 60, 61, 62
 65, 66, 67
 70, 71, 72
 75, 76, 77
 80, 81, 82
 85, 86, 87

Condenser Size

30, 31, 32
 35, 36, 37
 40, 41, 42
 45, 46, 47
 50, 51, 52
 55, 56, 57
 60, 61, 62
 65, 66, 67
 70, 71, 72
 75, 76, 77
 80, 81, 82
 85, 86, 87

Compressor Code

First Digit Indicates Compressor Frame Size

Motor Voltage Code

52-(380V-3Ph-50Hz)
 55-(6.3kV-3Ph-50Hz)
 5A-(10kV-3Ph-50Hz)

Motor Efficiency Code

S - Standard Efficiency
 H - High Efficiency

Motor Code

CD	DC	EH	MD
CE	DD	EJ	MF
CL	DE	EK	
CM	DF	EL	
CN	DG	EM	
CP	DH	EN	
CQ	DJ	EP	

Note: Carrier is dedicated to continuous product development. Components list will vary to meet different demands

*Availability please check with local sales office

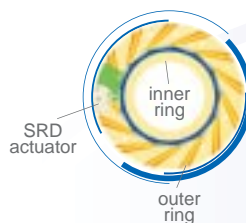
Cooling Capacity

1055~5274kW (19XR-380V)
 3164~5274kW (19XR-6kV/10kV)
 1055~1934kW (19XRV-380V)

Features

Energy-saving and High Efficiency

- Compressor key components design uses advanced jet engine technology.
- Aerodynamically contoured impellers - Impellers that use high back sweep main blades with low-vent and are smaller and lighter than profile intermediate splitter blades are aerodynamically contoured to improve compressor full-load and part-load operating efficiency.
- High performance tubing - Tubing with internally and externally enhanced fins improves chiller performance by reducing overall resistance to heat transfer. The new heat exchanger reduces refrigerant charge and manufacturing cost.
- Carrier patent AccuMeter™ system regulates refrigerant flow according to load conditions, provides a liquid seal at all operating conditions and eliminates unintentional hot gas bypass.
- Optimized piping design reduces refrigerant pressure loss and ensures chiller efficiency.



Stable Operation

- Variable inlet guide vanes - The guide vanes are connected with air-water piping, reducing installation craft-quality cable and controlled by a precise electronic actuator. The vanes regulate inlet flow to provide high efficiency through a wide operating range.
- Single-stage design - This increases product reliability by eliminating the additional moving parts associated with multiple stage chillers.



Environment Protection

- Designed specifically for chlorine-free HFC-134a refrigerant (the environmentally preferred HFC-134a refrigerant with zero-ozone-depletion potential)



Advanced Design

- The positive pressure design reduces the chiller size by up to 35% compared to low-pressure design. The smaller size minimizes the need for valuable mechanical room floor space. In addition, positive-pressure design eliminates the need for additional cost of low-pressure containment devices.
- Refrigerant-cooled oil cooler-Refrigerant cooling eliminates field water piping, reduces installation cost.
- Cooler and condenser are designed and manufactured in accordance with the Standard of Pressure Vessel of China. The unit isolation valves make the heat exchangers into a liquid containers and the pump out system is also provided to output refrigerant, which provides ease of maintenance.
- Mix-match capability - The chillers provide a complete line of compressors, motors and heat exchangers, ensuring the best combination of chiller components regardless of tonnage, lift, and efficiency specifications.



Convenient Installation

- Water boxes are equipped with standard flanges, which facilitate the field installation and protect temperature sensor.
- International Chiller Visual Control (ICVC) -a large English LCD (liquid crystal display) features 4 menu-specific soft keys. The default display offers all in one glance review of key chiller operation data, simplifying the interaction between chiller and user.
- Direct digital Product Integrated Control (PIC II)- Automated controls test can be executed prior to start-up to verify that the entire control system is functioning properly. Carrier's PIC II integrates directly with the Carrier Comfort Network (CCN) via DATAPORT module, providing a system solution to controls applications.
- Carrier offers NEW option, 19XR 10kV Hermetic Centrifugal Chiller, to provide more choices for installation with 10kV and power supply, as makes 19XR chiller family more versatile.
- 19XRV Evergreen Chiller. Equipped with a LF2 VFD, the 19XRV Becomes A More Cost-Effective choice for installations with a high percentage of time operating at part load.
- Special protector design for the chiller make it more attractive; meanwhile, it can protect the heat preservation layer from water permeation more effectively. (optional)



Selection Table

380V-3ph-50Hz

Model	Chiller			Motor Data			Cooler			Condenser			Dimension			Weight		
	Cooling Capacity		Full Load Performance	Motor Input	RLA	LRYA	Flow Rate	Pressure Drop	Nozzle Size	Flow Rate	Pressure Drop	Nozzle Size	Length	Width	Height	Operating	Rigging	Refrigerant
	kW	Tons	ikW/kW	kW	A	A	l/s	kPa	mm	l/s	kPa	mm	mm	mm	mm	kg	kg	kg
19XR3030327CES52	1,055	300	0.194	203	362	632	45.8	70.9		55	78		4172	1707	2073	6285	5865	277
19XR3031334CLS52	1,231	350	0.178	218	385	685	53.5	93.5		63.3	72.7		4172	1707	2073	6442	5985	277
19XR3132347CNS52	1,406	400	0.184	257	466	851	61.1	87.8		72.8	71.8		4172	1707	2073	6733	6210	308
19XR3232366CNS52	1,582	450	0.180	283	510	851	68.7	83.7	DN200	81.5	88.2	DN200	4172	1707	2073	6877	6323	340
19XR4040385CPS52	1,758	500	0.178	311	540	904	76.4	77.3		90.4	79.2		4365	1908	2153	7804	6998	381
19XR4040385CQS52	1,934	550	0.180	347	597	904	84	91.8		99.6	94.6		4365	1908	2153	7809	7002	381
19XR5050446DDS52	2,110	600	0.170	358	620	1057	91.7	68.5		107.9	58.7		4460	2054	2207	9555	8500	522
19XR5050446DES52	2,285	650	0.171	389	677	1057	99.3	79.3		117	68		4460	2054	2207	9555	8500	522
19XR5555456DFS52	2,461	700	0.171	419	723	1210	106.9	100.6	DN200	126	86.8	DN250	4980	2054	2207	10325	9173	617
19XR5655467DHS52	2,637	750	0.177	466	805	1510	114.6	95.3		135.7	99.4		4980	2054	2207	10560	9361	649
19XR6565467DJS52	2,813	800	0.179	501	870	1540	122.2	77	DN250	145	75.7		5000	2124	2261	11633	10183	694
19XR7070476DJS52	3,059	870	0.168	511	887	1540	132.9	69.2		156.2	62.7		5156	2426	2985	14874	12955	907
19XR7070475DJS52	3,164	900	0.161	510	883	1540	137.5	73.5		160.6	66		5156	2426	2985	14874	12955	907
19XR7070555EJS52	3,516	1000	0.171	602	1042	2165	152.8	88.9		180	81.3		5156	2426	2985	17213	15294	907
19XR7071555ELS52	3,868	1100	0.170	657	1130	2358	168	105.7	DN300	197.8	82.1	DN300	5156	2426	2985	17527	15533	907
19XR7171595EMS52	4,218	1200	0.168	707	1212	2358	183.3	102.2		214.9	95.6		5156	2426	2985	17815	15749	962
19XR7777595ENS52	4,571	1300	0.160	730	1251	2358	198.6	91.6		231.6	84.8		5766	2426	2985	19608	17205	1157
19XR8585595EPS52	4,922	1400	0.167	819	1429	3216	213.9	116.8		251	108.5		5810	2711	3029	21621	18813	1157
19XR8787505ENS52	5,274	1500	0.161	849	1475	3216	229.2	102.2	DN350	268	95.3	DN350	5810	2711	3029	22775	19650	1270

- Notes:**
- The above selection is made based on the In/Out temperature of CW being 12.2/6.7°C, and that of CDW being 29.5/35°C; the fouling factor of cooling water side being 0.0176m² °C/kW, and that of chilled water side being 0.044 m² °C/kW.
 - Carrier will select specific models using computer on different requests for tonnage, lift, and efficiency. For details, please contact local agencies.
 - The above selection is made based on the voltage being 380V. For details, please contact local agencies.

Electrical Data

Motor Size	Motor Electrical Characteristics	380V Electrical data	
		Max lkw (kw)	Amps (A)
CDS	RLA		341
	LRYA	199	620
	LRDA		1952
CES	RLA		374
	LRYA	219	620
	LRDA		1952
CLS	RLA		422
	LRYA	243	784
	LRDA		2461
CMS	RLA		449
	LRYA	267	694
	LRDA		2167
CNS	RLA		522
	LRYA	295	851
	LRDA		2660
CPS	RLA		551
	LRYA	323	904
	LRDA		2824
CQS	RLA		606
	LRYA	360	904
	LRDA		2824

Motor Size	Motor Electrical Characteristics	380V Electrical data	
		Max lkw (kw)	Amps (A)
DCS	RLA		597
	LRYA	366	917
	LRDA		2990
DDS	RLA		643
	LRYA	394	974
	LRDA		2136
DES	RLA		674
	LRYA	416	1197
	LRDA		3891
DFS	RLA		728
	LRYA	449	1199
	LRDA		3903
DGS	RLA		786
	LRYA	485	1332
	LRDA		4335
DHS	RLA		856
	LRYA	528	1483
	LRDA		4821
DJS	RLA		968
	LRYA	597	1365
	LRDA		4457

Motor Size	Motor Electrical Characteristics	380V Electrical data	
		Max lkw (kw)	Amps (A)
EHS	RLA		1028
	LRYA	603	1889
	LRDA		5993
EJS	RLA		1102
	LRYA	646	2175
	LRDA		6903
EKS	RLA		1151
	LRYA	692	2082
	LRDA		6635
ELS	RLA		1256
	LRYA	746	2368
	LRDA		7531
EMS	RLA		1354
	LRYA	809	2368
	LRDA		7531
ENS	RLA		1512
	LRYA	876	3224
	LRDA		9973
EPS	RLA		1588
	LRYA	931	3293
	LRDA		10454

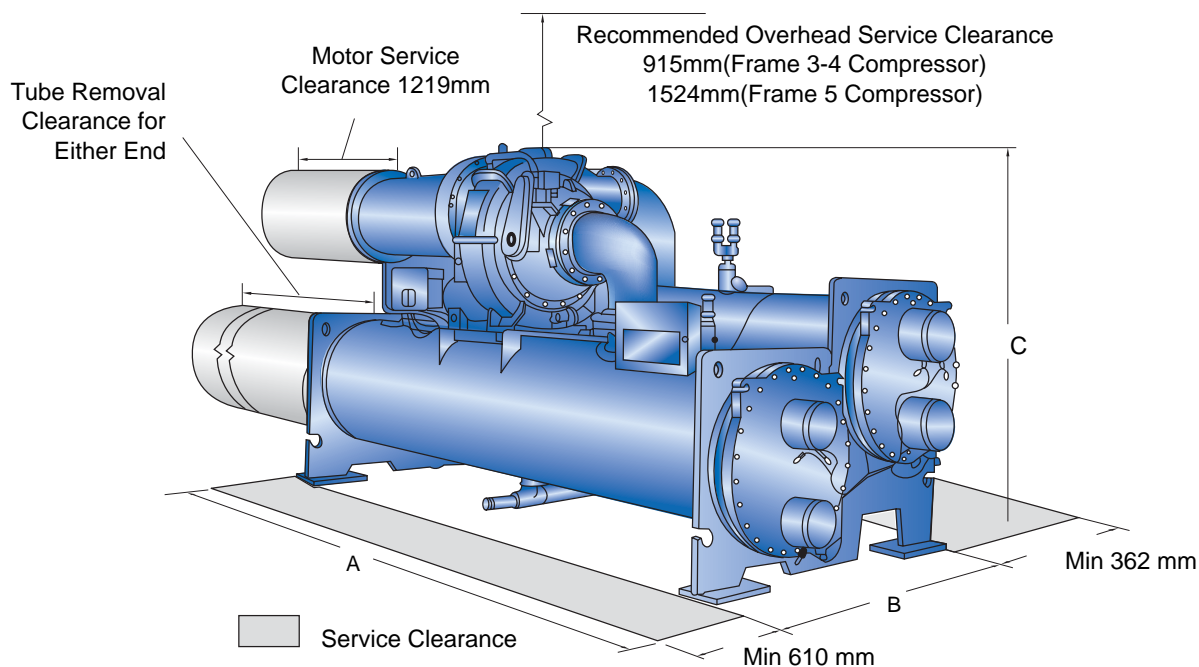
Motor Size	Motor Electrical Characteristics	6300V Electrical data	
		Max lkw (kw)	Amps (A)
DDH	RLA		43
	LRYA	412	237
	LRDA		-
DEH	LRYA		45
	RLA	439	243
	LRDA		-
DFH	RLA		49
	LRYA	473	276
	LRDA		-
DGH	RLA		53
	LRYA	517	279
	LRDA		-
DHH	RLA		56
	LRYA	552	308
	LRDA		-
DJH	RLA		56
	LRYA	552	308
	LRDA		-

Motor Size	Motor Electrical Characteristics	6300V Electrical data	
		Max lkw (kw)	Amps (A)
EHH	RLA		62
	LRYA	603	318
	LRDA		-
EJH	RLA		67
	LRYA	646	327
	LRDA		-
EKH	RLA		73
	LRYA	692	379
	LRDA		-
ELH	RLA		79
	LRYA	752	384
	LRDA		-
EMH	RLA		84
	LRYA	812	414
	LRDA		-
ENH	RLA		93
	LRYA	878	484
	LRDA		-
EPH	RLA		99
	LRYA	938	507
	LRDA		-

Motor Size	Motor Electrical Characteristics	10000V Electrical data	
		Max lkw (kw)	Amps (A)
MDH	RLA		49
	LRYA	745	217
	LRDA		-
MFH	RLA		63
	LRYA	942	236
	LRDA		-

- Notes:** 1. Legend: RLA-Rated Load Amps, LRYA-Locked Rotor Y Amps, LRDA-Locked Rotor Delta Amps.
2. For other details, please contact local agencies.

Chiller Dimensions



Heat Exchanger Size	A-Length mm(2 passes)	B-Width mm	C-Height mm	D-Tube Removal Space for Either End mm
30 ~ 32	4172	1707	2073	3747
35 ~ 37	4693	1707	2073	4343
40 ~ 42	4365	1908	2153	3747
45 ~ 47	4885	1908	2153	4343
50 ~ 52	4460	2054	2207	3747
55 ~ 57	4980	2054	2207	4343
60 ~ 62	4480	2124	2261	3747
65 ~ 67	5000	2124	2261	4343
70 ~ 72	5156	2426	2985	4267
75 ~ 77	5766	2426	2985	4877
80 ~ 82	5200	2711	3029	4267
85 ~ 87	5810	2711	3029	4877

- Notes:**
1. A-length includes flanges with both cooler and condenser having two passes and nozzles being at the same end (compressor end for standard units)
 2. The above dimensions are based on the waterside pressure being 1.0Mpa. A-length will vary while the waterside pressure increases.

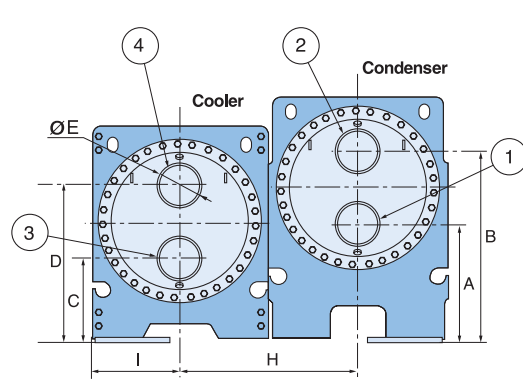
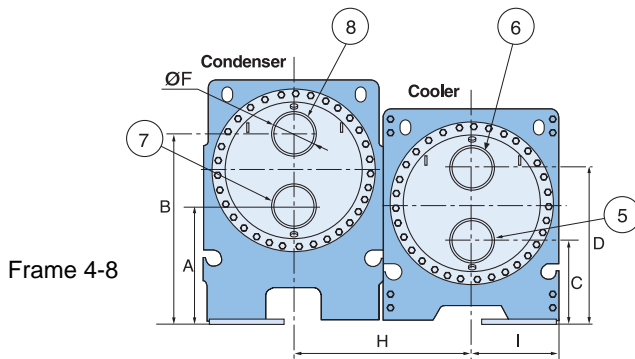
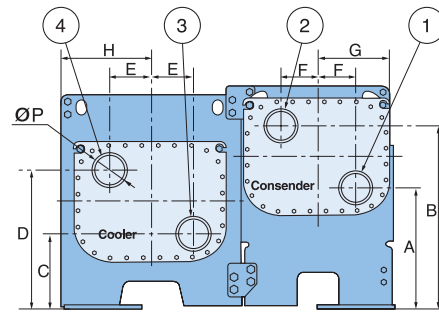
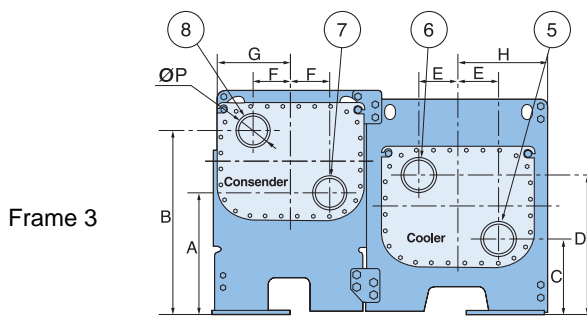
Starter Dimensions

(380V-3ph-50Hz)

Starter Type	Rated Current(A)	Width(mm)	Depth(mm)	Height(mm)
Y-△	< 620	1000	600	2000
Y-△	620 ~ 950	1000	600	2000
Y-△	950 ~ 1560	1000	800	2000

Notes: The wiring of starter enters and exits from the bottom.

Nozzle Dimensions



Drive End (Type A)

For C of Cooler Waterbox: 5 in and 6 out
For R of condenser Water box: 7 in and 8 out

Compressor End (Type B)

For D of Cooler Waterbox: 3 in and 4 out
For S of condenser Water box: 1 in and 2 out

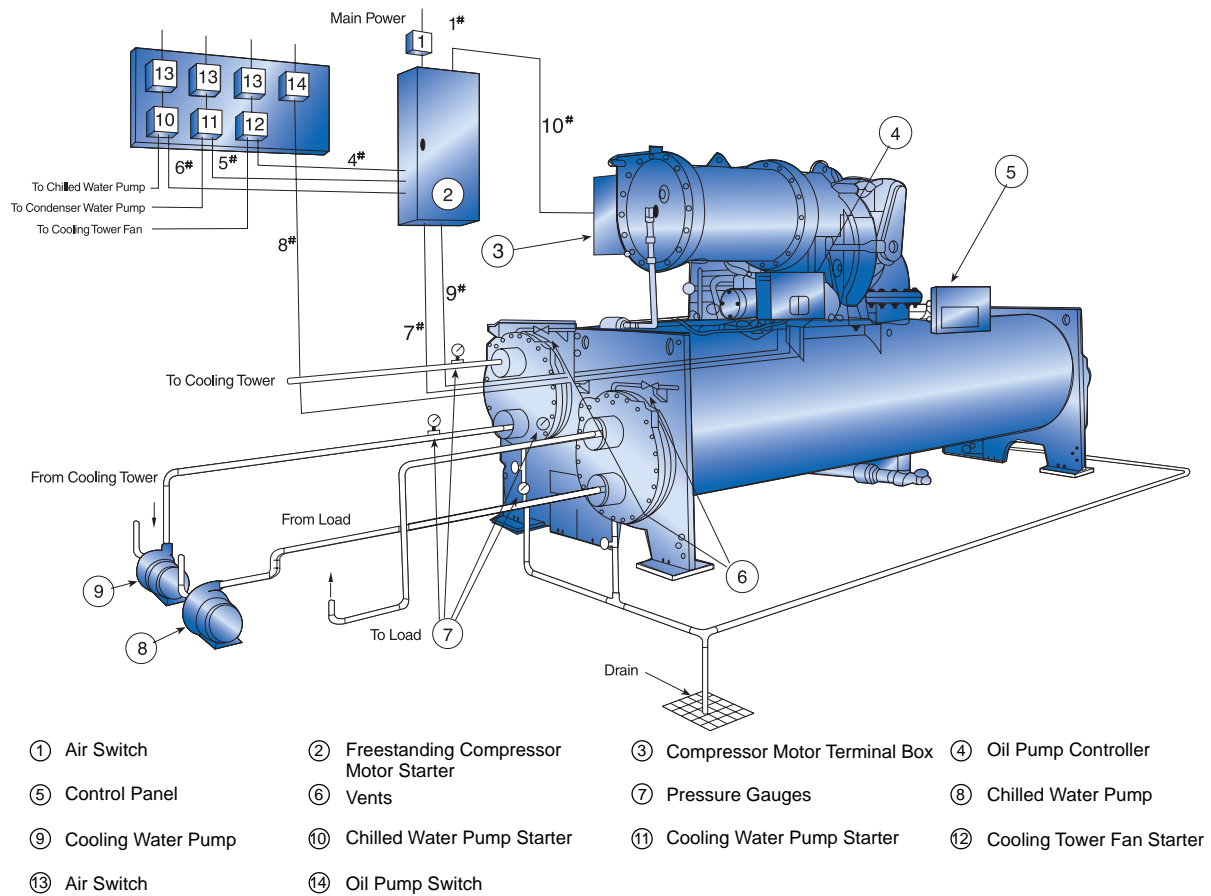
(mm)

Heat Exchanger Size	A	B	C	D	E	F	G	H	ØP	
Frame 3	30 ~ 32 35 ~ 37	635	895	410	679	213	152	381	454	DN200
Heat Exchanger Size	A	B	C	D	ØE	ØF	H	I		
Frame 4	40 ~ 42 45 ~ 47	627	995	499	867	DN200	DN200	940	464	
Frame 5	50 ~ 52 55 ~ 57	736	1168	482	850	DN200	DN250	997	489	
Frame 6	60 ~ 62 65 ~ 67	788	1220	489	921	DN250	DN250	1048	521	
Frame 7	70 ~ 72 75 ~ 77	1047	1555	807	1315	DN300	DN300	1213	610	
Frame 8	80 ~ 82 85 ~ 87	1062	1620	757	1315	DN350	DN350	1356	678	

Notes: 1. Nozzles of standard units are at the compressor end (Type B). Type A is also available on request.

2. The above dimensions are based on the waterside pressure being 1.0Mpa. Dimensions will vary while the waterside pressure increases.

Typical Piping and Wiring



Line Purpose

1# Main power to Starter:

Specification

380V AC: 3 phases, 1 neutral, and 1 grounding
Or 6300V AC: 3 phases, 1 grounding (medium voltage)

4# To Cooling Tower Fan Starter:

2 control lines (optional)

5# To Cooling Tower Water Pump Starter:

2 control lines (optional)

6# To Chilled Water Pump Starter:

2 control lines (optional)

7# To Oil Heater Contactor:

115V AC: 2 power lines, 1 grounding

8# To Oil Pump Contactor:

380V AC power line, 3 phases 5A(For 6300V chiller, customer supply 380V power line to oil pump contactor)

9# To Lubrication System Power Panel:

8 control shielding lines, 600V, 80°C, grounding in starter

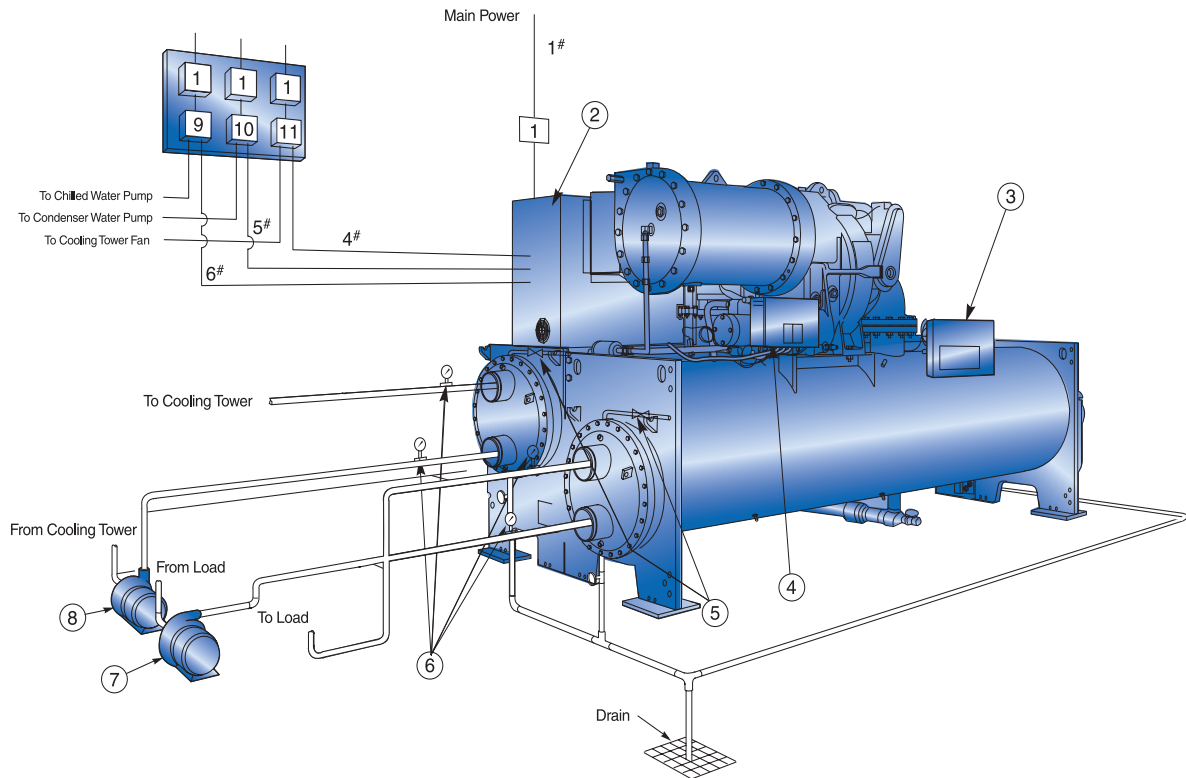
10# To Motor:

380V AC: 6 leads (Minimum ampacity per conductor = $0.721 \times RLA$), 2 grounding
Or 6300V AC: 3 leads, 1 grounding (medium voltage)

Piping and Wiring Requirements:

1. The installer must get all pipes and wires in place and mark the ends.
2. Filters must be installed in cooling water and chilled water pipes.
3. Thermometer (0-50°C) and pressure gauge (0-1Mpa or 2MPa) must be installed at inlet and outlet of the pipes.
4. The installer must install the relief valve vent to outdoors with a steel pipe(outer diameter 42mm, thickness 4mm).
5. It is suggested that an oxygen content monitor be installed in the machine room for safety, which will give an alarm when the oxygen content is less than 19.5%.

Typical Piping and Wiring (with VFD)



- | | | | |
|------------------------------|------------------------------|----------------------|-----------------------|
| ① Air Switch | ② Unit-mounted Starter | ③ Control Panel | ④ Oil Pump Controller |
| ⑤ Vents | ⑥ Pressure Gauges | ⑦ Chilled Water Pump | ⑧ Cooling Water Pump |
| ⑨ Chilled Water Pump Starter | ⑩ Cooling Water Pump Starter | | |

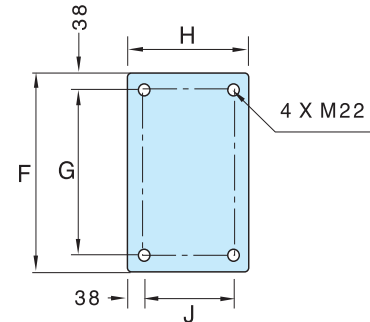
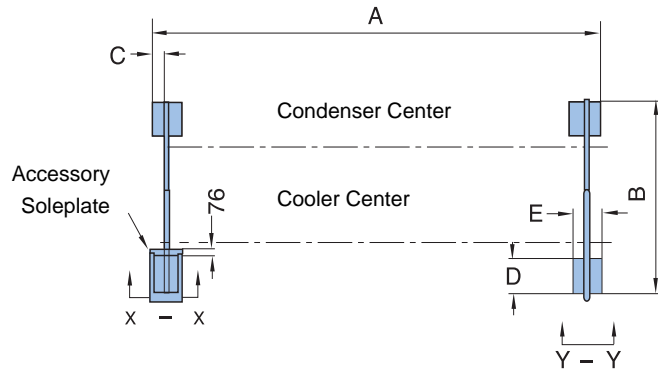
Line	Purpose	Specification
1#	Main power to Starter:	380V AC: 3 phases, 1 neutral, and 1 grounding
4#	To Cooling Tower Fan Starter:	2 control lines (optional)
5#	To Cooling Tower Water Pump Starter:	2 control lines (optional)
6#	To Chilled Water Pump Starter:	2 control lines (optional)

Piping and Wiring Requirements:

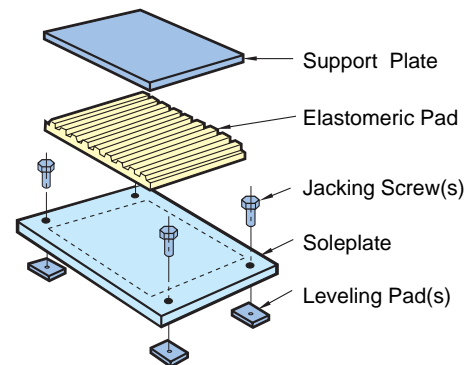
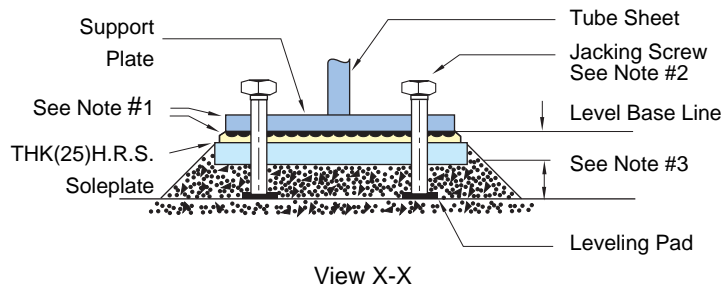
1. The installer must get all pipes and wires in place and mark the ends.
2. Filters must be installed in cooling water and chilled water pipes.
3. Thermometer (0-50°C) and pressure gauge (0~1Mpa or 2MPa) must be installed at inlet and outlet of the pipes.
4. The installer must install the relief valve vent to outdoors with a steel pipe(outer diameter 42mm, thickness 4mm).
5. It is suggested that an oxygen content monitor be installed in the machine room for safety, which will give an alarm when the oxygen content is less than 19.5%.

Types of Base Isolation

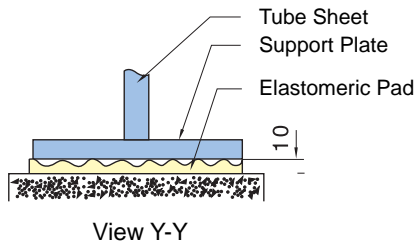
Location Of Isolator



Standard Isolation



Simplified Isolation



Notes:

- Accessory soleplate package includes 4 soleplates, 16 jacking screws, and 16 leveling pads.
- Jacking Screws should be removed after the grout has set.
- Thickness of grout varies, depending on the amount necessary to level chiller.

Heat Exchanger Size	A	B	C	D	E	F	G	H	J	
Frame 3	30-32	3931	1632	92	387	229	540	464	254	178
	35-37	4451	1632	92	387	229	540	464	254	178
Frame 4	40-42	3931	1829	92	387	229	540	464	254	178
	45-47	4451	1829	92	387	229	540	464	254	178
Frame 5	50-52	3931	1969	92	387	229	540	464	254	178
	55-57	4451	1969	92	387	229	540	464	254	178
Frame 6	60-62	3931	2070	92	387	229	540	464	254	178
	65-67	4451	2070	92	387	229	540	464	254	178
Frame 7	70-72	4620	2400	176	559	406	711	635	432	356
	75-77	5230	2400	176	559	406	711	635	432	356
Frame 8	80-82	4620	2686	176	559	406	711	635	432	356
	85-87	5230	2686	176	559	406	711	635	432	356

Option Specifications

Waterside Pressure of condenser:

the standard pressure is 1.0Mpa. 2.0Mpa is also available if necessary.

Waterside Pressure of cooler:

the standard pressure is 1.0Mpa. 2.0Mpa is also available if necessary.

Spring Isolator:

the standard isolator is made of elastomeric rubber. Spring Isolator is also available for further isolation if necessary.

Discharge Line Sound Reduction Kit:

this helps reduce the noise by 1~2dB (A)

(For details, please contact local agencies.)

Dimension Selection for Selected Model

19XR Centrifugal Chillers can be configured according to customers' requirements. Dimensions of chiller, piping and base correspond to the heat exchanger and can be identified in the table listed in the catalog. Take as an example 19XR4142386CQS, of which the size of cooler and condenser is 41 and 42 respectively:

See Chiller Dimension Table on Page 6, the Heat Exchanger 40~42 Line for length, width, height of the chiller as follows:

Heat Exchanger Size	A-Length mm	B-Width mm	C-Height mm	D-Tube Removal Space mm
40 ~ 42	4365	1908	2153	3747

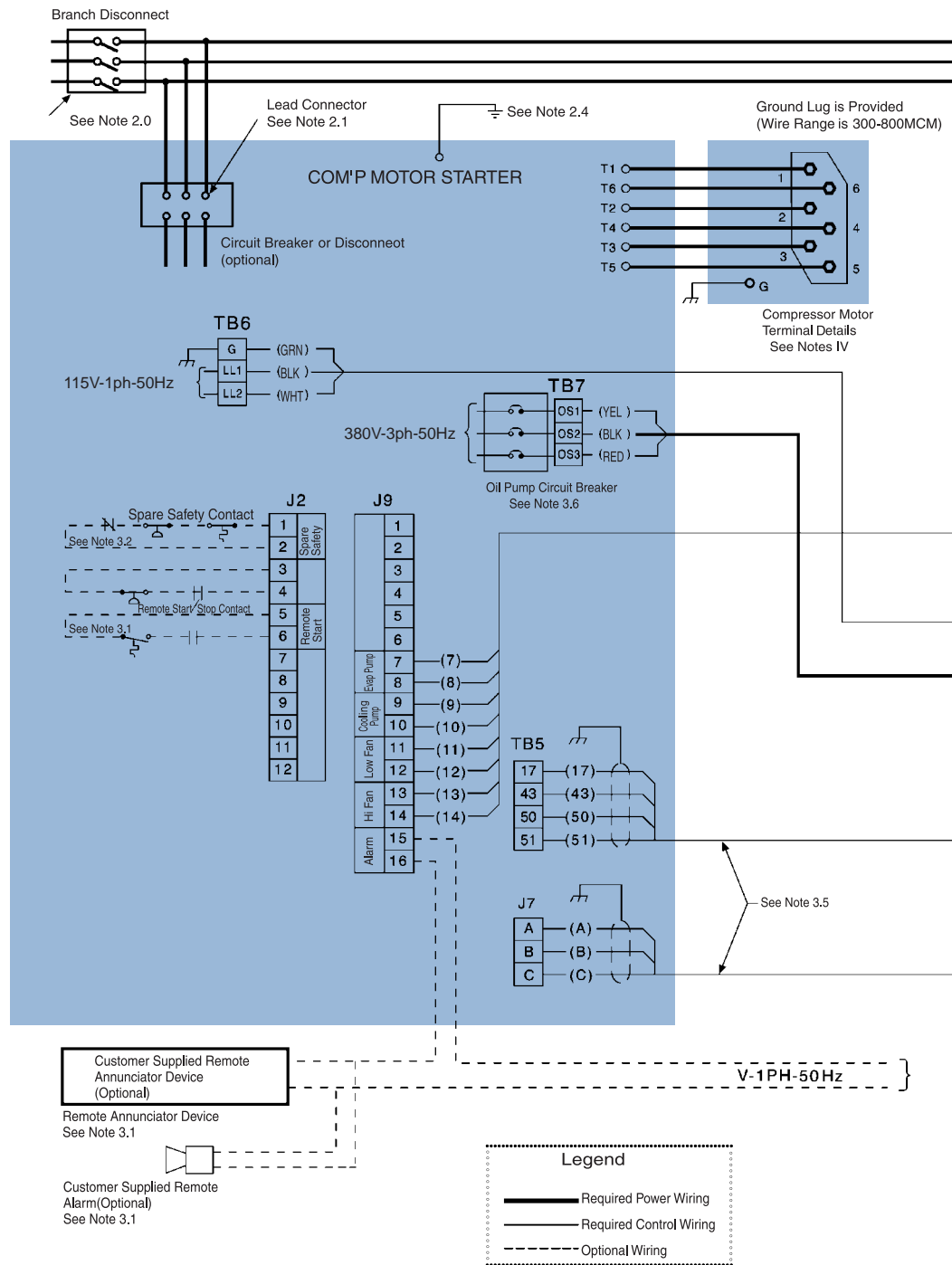
See Nozzle Dimensions Table on Page 7, the Heat Exchanger 40~42 Line for dimensions of main nozzles and flanges as follows:

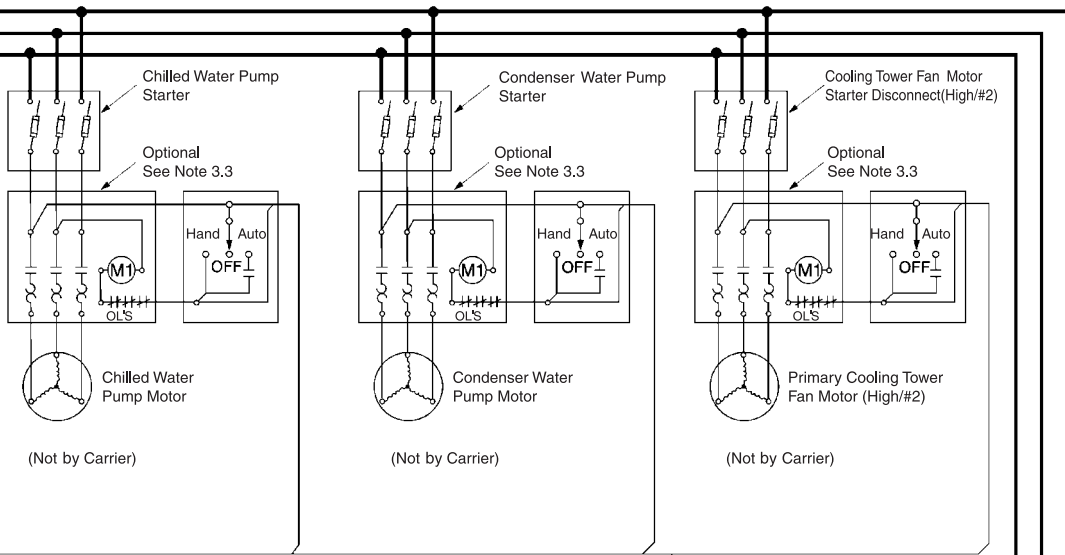
Heat Exchanger Size	A	B	C	D	ØE	ØF	H	I
40 ~ 42	627	995	499	867	DN200	DN200	940	464

See Base Dimensions Table on Page 10, the Heat Exchanger 40~42 Line for base dimensions as follows:

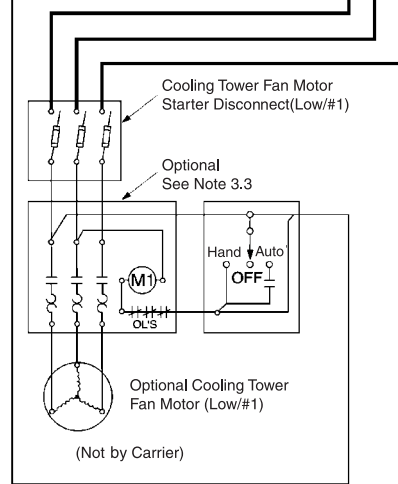
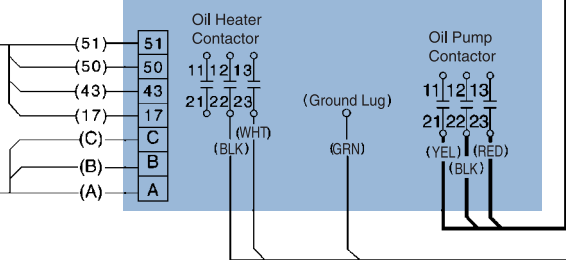
Heat Exchanger Size	A	B	C	D	E	F	G	H	J
40 ~ 42	3931	1829	92	387	229	540	464	254	178

19XR Typical Field Wiring With Free-Standing Starter (380V-3Ph-50Hz)



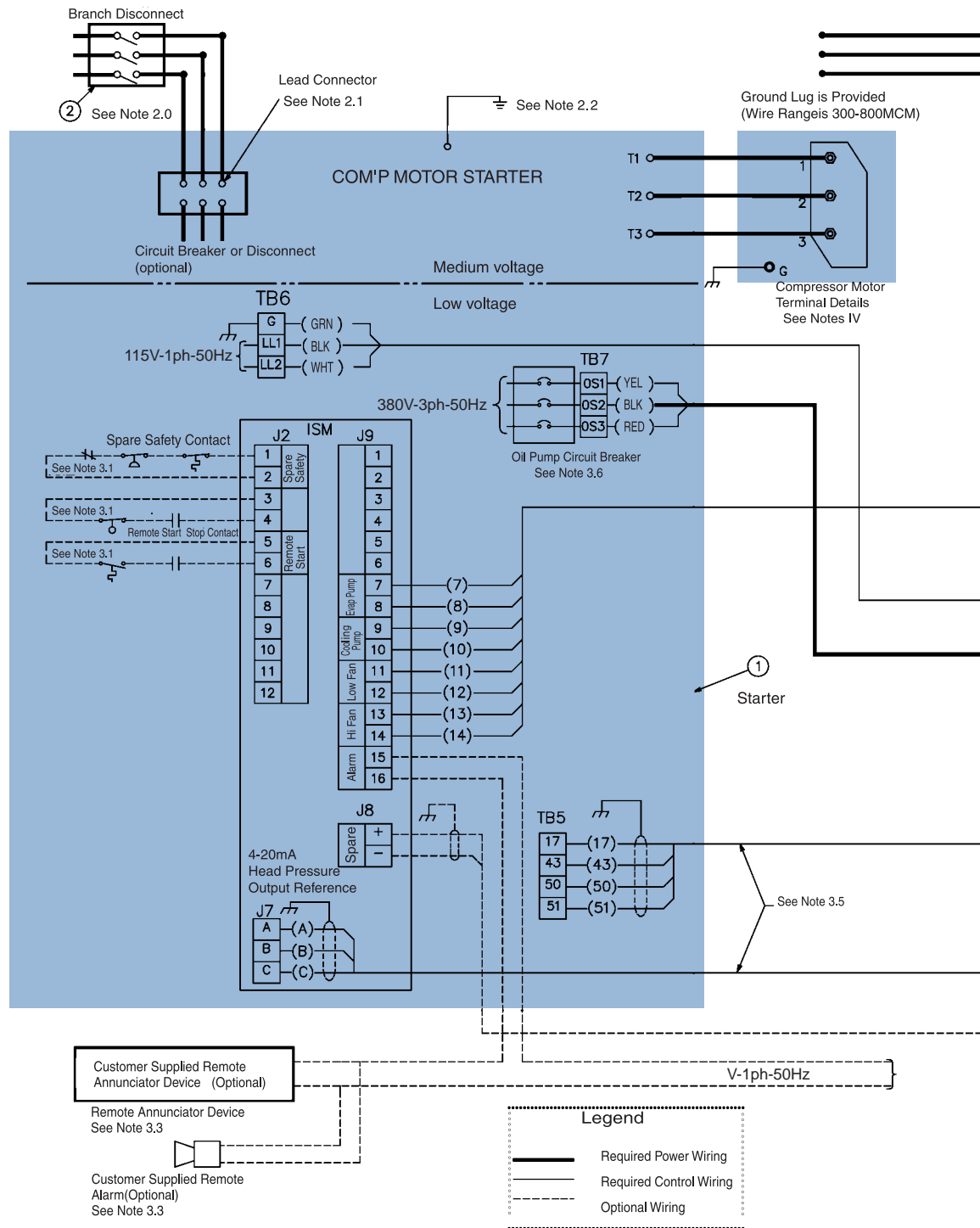


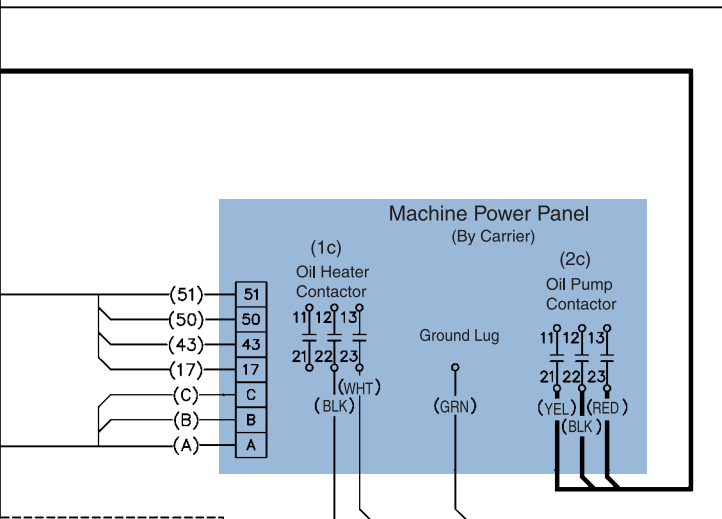
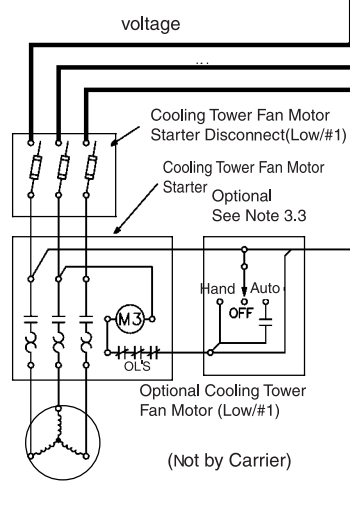
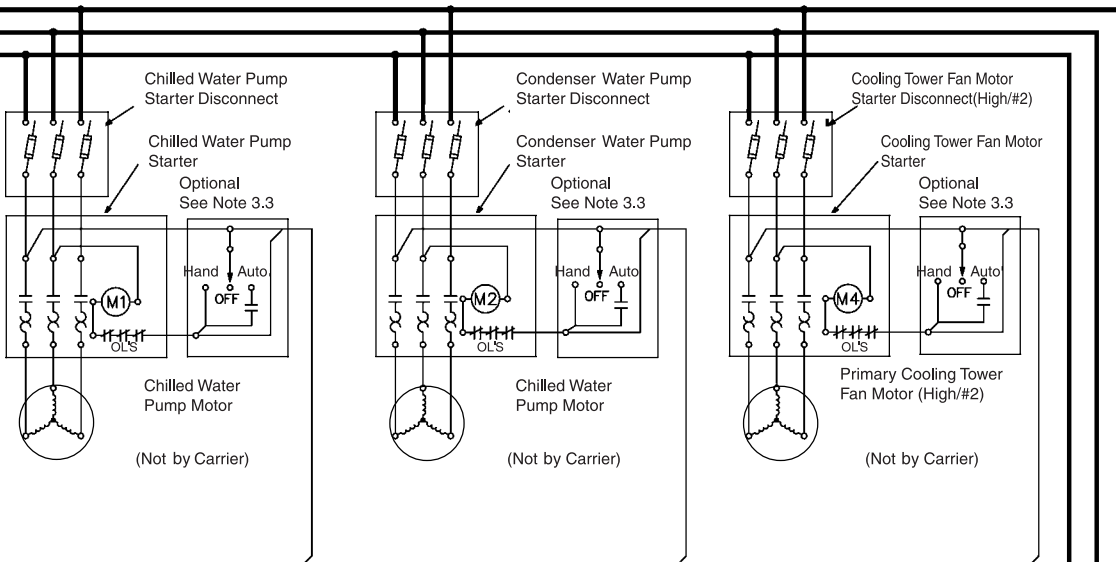
Lubrication System Power Panel
(by Carrier)



Field Wiring

19XR Typical Field Wiring With Free-Standing Starter (Medium Voltage)

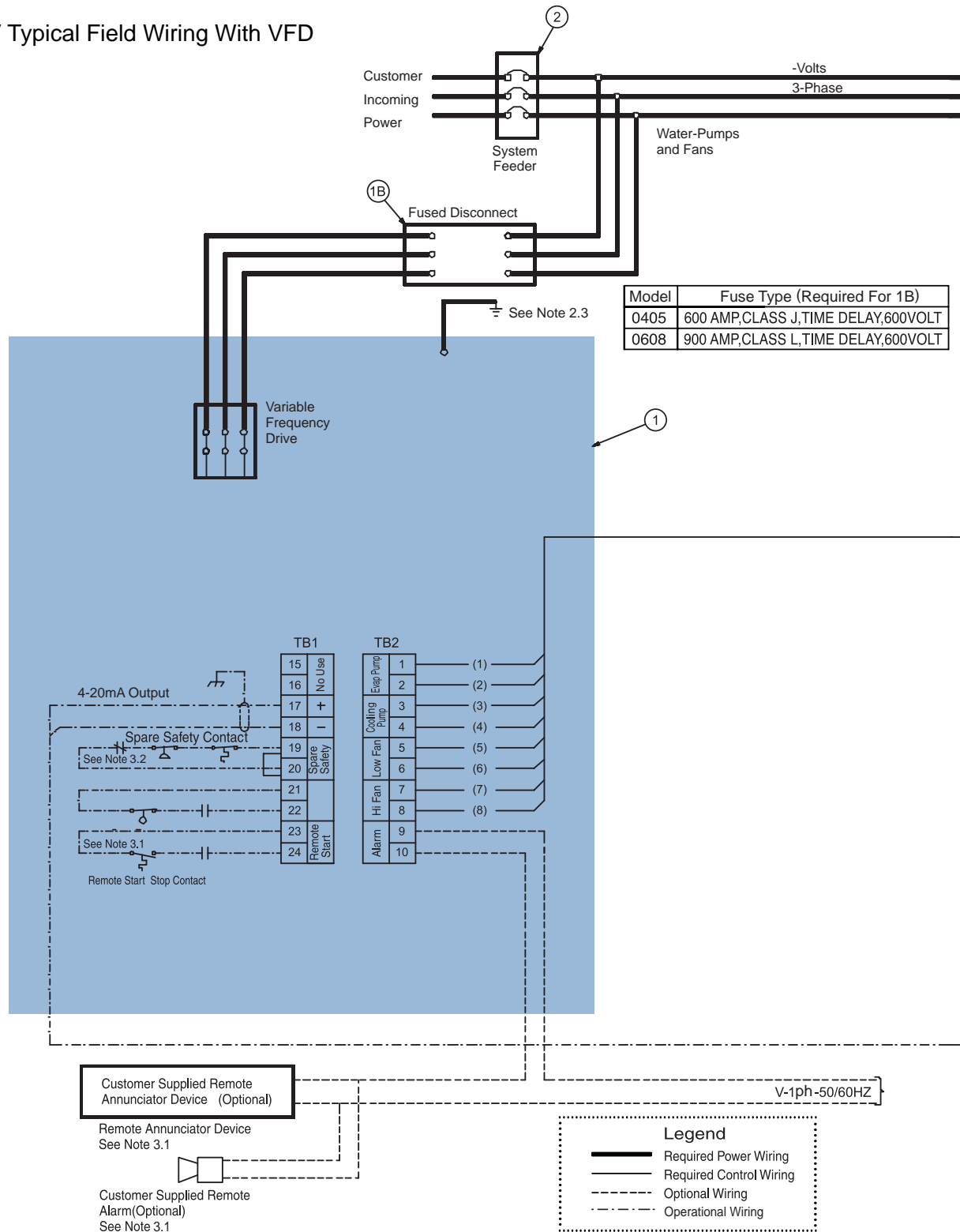


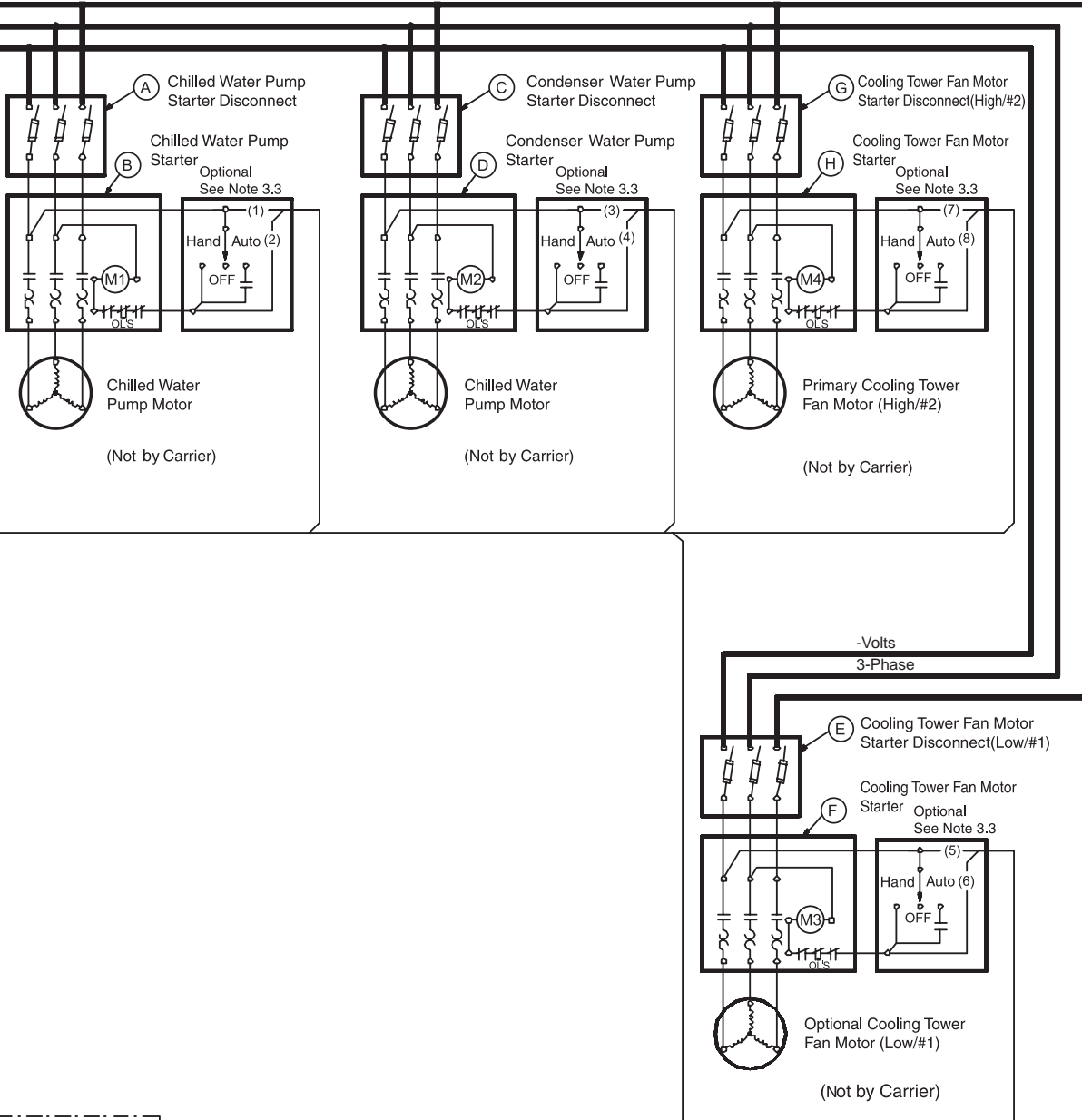


4-20mA Output Reference to Device Choice (Not by Carrier)
 Examples: Tower Bypass Value
 Tower Speed Control
 Condenser Pump Speed Control

Field Wiring

19XRV Typical Field Wiring With VFD





4-20mA Output Reference to Device Choice (Not by Carrier)
 Examples: Tower Bypass Value
 Tower Speed Control
 Condenser Pump Speed Control
 See Note 3.5

Microprocessor Controls

Microprocessor controls provide the safety, interlock, and indications necessary to operate the chiller in a safe and efficient manner. In addition, the program logic ensures proper starting, stopping, and recycling of the chiller and provides a communication link to the Carrier Comfort Network (CCN).

The microprocessor control on each Carrier centrifugal system is factory mounted, wired, and tested to ensure machine protection and efficient capacity control.

Control system

- LCD with Language Pre-programmed for Chinese
- Component Test and Diagnostic Check
- Programmable Recycle Allows Chiller to Recycle at Optimum Loads for Decreased Operating Costs
- Menu-Driven Keypad Interface for Status Display, Set Point Control, and System Configuration
- CCN Compatible
- Primary and Secondary Status Message
- Individual Start/Stop Schedules for Local and CCN Operation Modules
- Recall of Up to 25 Alarm/Alert Messages with Diagnostic Help
- Two Chiller Lead/Lag with Third Chiller Standby is Standard in the PIC II Software
- Optional Soft Stop Unloading Closes Guide Vanes to Unload the Motor to the Configured Amperage Level Prior to Stopping

Safety cutouts

- Bearing Oil High Temperature*
- Motor High Temperature*+
- Refrigerant (Condenser) High Pressure*+
- Refrigerant (Cooler) Low Pressure*+
- Lube Oil Low Pressure
- Compressor (Refrigerant) Discharge Temperature*
- Under Voltage**
- Over Voltage**
- Oil Pump Motor Overload
- Cooler and Condenser Water Flow
- Motor Overload+
- Motor Acceleration Time
- Intermittent Power Loss
- Compressor Starter Faults
- Compressor Surge Protection*
- Low Level Ground Fault
- Low Level-phase to phase and phase to ground

Display

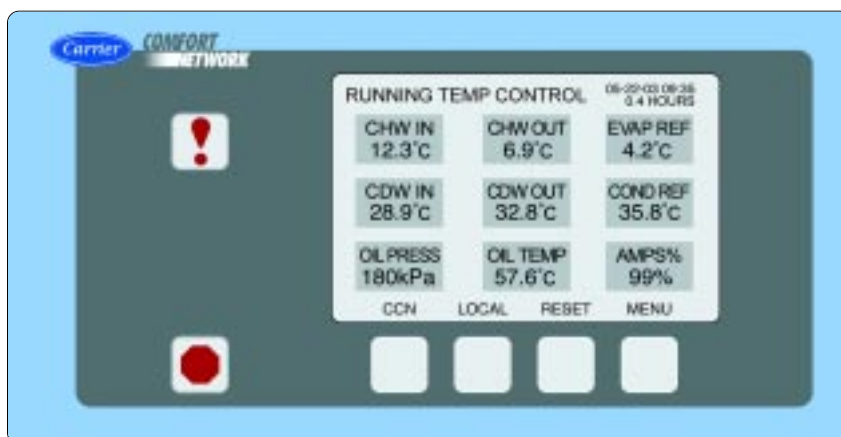
- Chiller Operation Status Message
- Power-On
- Pre-Start Diagnostic Check
- Compressor Motor Amps
- Pre-Alarm Alert++
- Alarm
- Contact for Remote Alarm
- Safety Shutdown Messages
- Elapsed Time (Hours of Operation)
- Chiller Input kW

Capacity Control

- Leaving Chilled Water Control
- Entering Chilled Water Control
- Soft Loading Control by Temperature or Load Ramping
- Guide Vane Actuator Module
- Hot Gas Bypass Valve
- Power (Demand) Limiter

Interlocks

- Manual/Automatic Remote Start
- Starting/Stopping Sequence
 - Pre-lube/Post-Lube
 - Pre-Flow/Post-Flow
 - Compressor Starter Run Interlock
- Pre-Start Check of Safeties and Alerts
- Low Chilled Water (Load) Recycle
- Monitor/Number Compressor Starts and Run Hours
- Manual Reset of Safeties



Notes:

- * These can be configured by users to provide alert indication at user-defined limit.
- + Override Protection: Causes compressor to first unload and then, if necessary, shut down.
- * * Will not require manual reset or cause an alarm if auto-restart after power failure is enabled.
- + + By display code only.

Field Wiring Specifications (with Free-standing Starter)

I. General

- 1.0 Starters shall be designed and manufactured in accordance with Carrier Engineering Requirement Z-415.
- 1.1 All field-supplied conductors, devices, and the field-installation wiring, termination of conductors and devices, must be in compliance with all applicable codes and job specifications.
- 1.2 The routing of field-installed conduit and conductors and the location of field-installed devices must not interfere with equipment access or the reading, adjusting, or servicing of any component.
- 1.3 Equipment installation and all starting and control devices, must comply with details in equipment submittal drawings and literature.
- 1.4 Contacts and switches are shown in the position they would with the circuit deenergized and the chiller shut down.
- 1.5 WARNING - Do not use aluminum conductors.
- 1.6 Installer is responsible for any damage caused by improper wiring between starter and machine.

II. Power Wiring to Starter

- 2.0 Circuit breaker is to be used to disconnect power to starter.
- 2.1 Unit-mounted starter power conductor rating must meet minimum nameplate voltage and compressor motor RLA.
- 2.2 Lug adapters may be required if installation conditions dictate that conductors be sized beyond the minimum ampacity required.
- 2.3 Flexible conduit should be used for the last few feet of the power conductor to start enclosure to provide unit vibration isolation.
- 2.4 Compressor motor and controls must be grounded by using equipment-grounding lugs provided inside unit mounted starter enclosure.

III. Control Wiring

- 3.0 Field supplied control conductors should be at least 1 mm² or larger.
- 3.1 Optional ice build start/terminate device contacts, optional remote start/stop device contacts and optional spare safety device contacts, must have 24 VAC rating. MAX current is 60 MA, nominal current is 10 MA. Switches with gold plated bifurcated contacts are recommended.
- 3.2 Remove jumper wire between J2-1 and J2-2 before connecting auxiliary safeties between these terminals.
- 3.3 ISM contact outputs can control cooler and condenser pump and tower fan motor contactor coil loads (VA) rated 5 Amps at 115 VAC up to 3 Amps at 220 VAC. Do not use starter control transformer as the power source for contactor coil loads.
- 3.4 Do not route control wiring carrying 30V or less within a conduit which has wires carrying 50V or higher or along side wires carrying 50V or higher.
- 3.5 Control wiring between free-standing starter and power panel must be separate shielded cables with minimum rating of 600V, 80°C Ground shield at starter.
- 3.6 If optional oil pump circuit breaker is not supplied within the starter enclosure as shown, it must be located within sight of the chiller with wiring routed to suit.

IV. Power Wiring Between Free-standing Starter and Compressor Motor

- 4.0 Low voltage (600 v or less) compressor motors have (6) 5/8" terminal studs (lead connectors not supplied by Carrier). Either 3 or 6 conductors must be run between compressor motor and starter, depending on the type of motor starter employed. If only 3 leads are utilized, jumper motor terminals as follows : 1 to 6, 2 to 4, and 3 to 5. Center to center distance between terminals is 8mm. Compressor motor starter must have nameplate stamped as to conform with Carrier Engineering Requirement Z-415.
- 4.1 Medium voltage [over 600 volts] compressor motors have (3) terminals. Connections are 9/16-threaded stud. Compressor motor starter must have nameplate stamped as to conform with Carrier Engineering requirement "Z-415."
- 4.2 Power conductor rating must meet compressor motor RLA. When (3) conductors are used: Minimum ampacity per conductor = $1.25 \times$ compressor RLA When (6) conductors are used: Minimum ampacity per conductor = $0.721 \times$ compressor RLA
- 4.3 When more than one conduit is used to run conductors from starter to compressor motor terminal box, three leads from each phase (conductor) must be in each conduit to prevent excessive heating (e.g., conductors to motor terminals 1, 2, & 3 in one conduit, and those to 4, 5, & 6 in another).
- 4.4 Compressor motor power conductors may enter terminal box through top, bottom or right side using holes cut by contractor to suit conduit. Flexible conduit should be used for the last few feet to the terminal box for unit vibration isolation.
- 4.5 Compressor motor frame should be grounded in accordance with the National Electrical Code-us (NFPA-70) and applicable codes. Means for grounding compressor motor is a #4 AWG-500 MCM pressure connector, supplied and located in the lower left side corner of the compressor motor terminal box.
- 4.6 Do not allow motor terminals to support weight of wire cables. Use cable supports and strain relieves as required.
- 4.7 Use backup wrench when tightening lead connectors to motor terminal studs. Torque to 45 lb-ft max.
- 4.8 Motor terminals and wire connectors must be insulated with insulation putties and tapes attached to chillers to prevent moisture condensing and electrical arc.

Field Wiring Specifications (with VFD)

I. General

- 1.0 VFD starters shall be designed and manufactured in accordance with Carrier Engineering Requirement Z-420.
- 1.1 All field-supplied conductors, devices, and the field-installation wiring, termination of conductors and devices, must be in compliance with all applicable codes and job specifications.
- 1.2 The routing of field-installed conduit and conductors and the location of field-installed devices must not interfere with equipment access or the reading, adjusting, or servicing of any component.
- 1.3 Equipment installation and all starting and control devices, must comply with details in equipment submittal drawings and literature.
- 1.4 Contacts and switches are shown in the position they would with the circuit deenergized and the chiller shut down.
- 1.5 WARNING - Do not use aluminum conductors.

II. Power Wiring to VFD Starter

- 2.0 Provide a means of disconnecting power to starter. Fused disconnect is required on VFD.
- 2.1 Incoming power wire must be protected with metal jacket.
- 2.2 Line side power conductor rating must meet VFD nameplate voltage and chiller full load amps (minimum circuit ampacity).
- 2.3 Compressor motor and controls must be grounded by using equipment grounding lugs provided inside unit mounted starter enclosure.

III. Control Wiring

- 3.0 Field supplied control conductors should be at least 1 mm² or larger.
- 3.1 Optional ice build start/terminate device contacts, optional remote start/stop device contacts and optional spare safety device contacts, must have 24 VAC rating. MAX current is 60 MA, nominal current is 10 MA. Switches with gold plated bifurcated contacts are recommended.
- 3.2 Remove jumper wire between TB1-19 and TB1-20 before connecting auxiliary safeties between these terminals.
- 3.3 VFD ISM contact outputs can control cooler and condenser pump and tower fan motor contactor coil loads (VA) rated 5 Amps at 115 VAC up to 3 Amps at 227 VAC. Do not use VFD starter control transformer as the power source for contactor coil loads.
- 3.4 Do not route control wiring carrying 30V or less within a conduit which has wires carrying 50V or higher or along side wires carrying 50V or higher.
- 3.5 VFD provide spare output terminal for customer, Input sign must be 4~20mA, not grounded. Input resistance of terminal is soon.

Carrier Corporation identified six specific areas of concentration that directly impact how we, as a world manufacturer, balance our customers' needs for comfort with the environment's needs for responsible consumption.



The Manufacturer reserves the right to change any product specifications without notices

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