Carrier

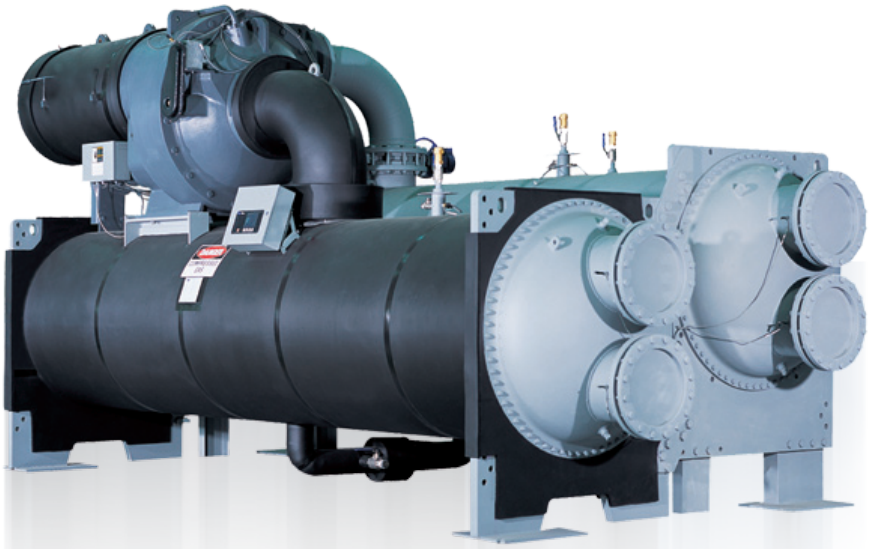
United Technologies

turn to the experts

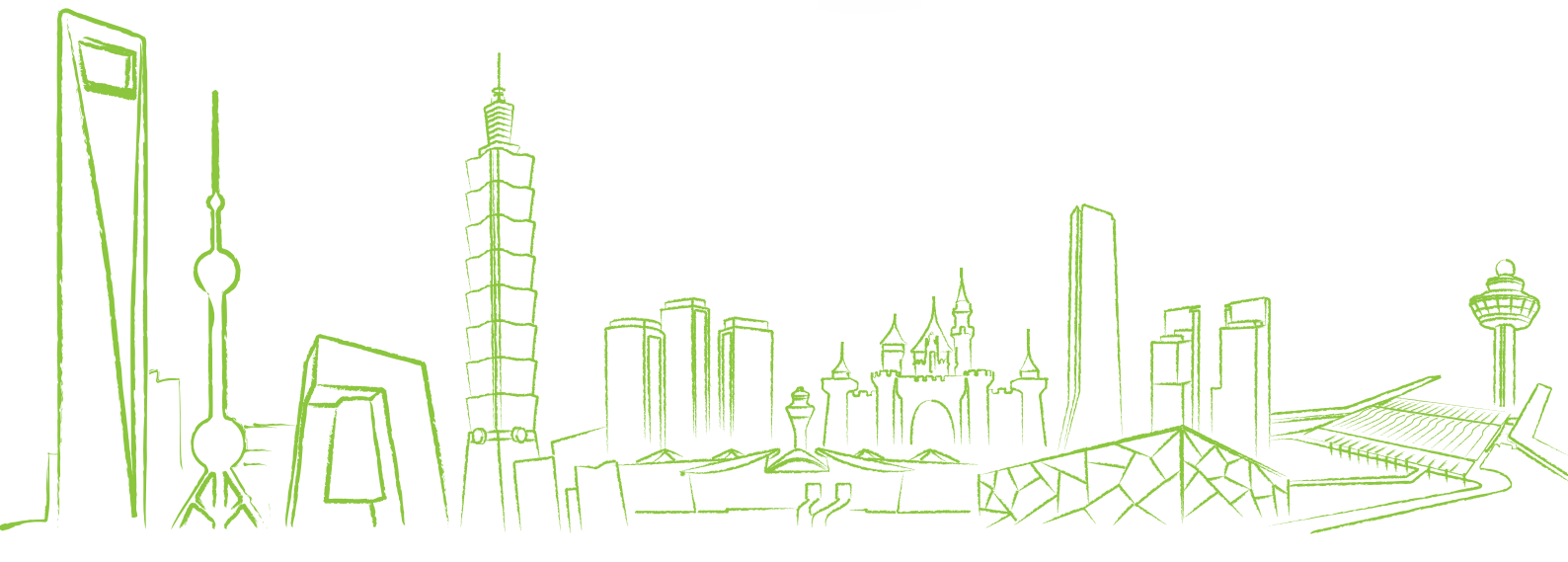
HERMETIC CENTRIFUGAL LIQUID CHILLER

19XR

Cooling Capacity 1055-5274kW



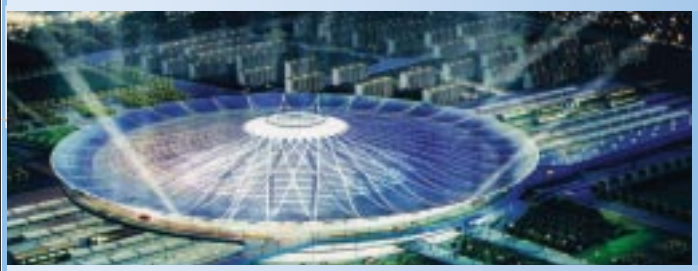
Energy-saving and High Efficency, Reliability, Environmental Leadership, Advanced Design, Convenient Installation and Easily Operated Control System



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
19XRV750 X1

CONTENTS

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
50-54, 5P-5R
55-59, 5X-5Z
60-64, 6P-6R
65-69, 6X-6Z
70-74, 7P-7R
75-79, 7X-7Z
80-84, 8P-8R
85-89, 8X-8Z

Condenser Size
30, 31, 32
35, 36, 37
40, 41, 42
45, 46, 47
50, 51, 52, 53, 54
55, 56, 57, 58, 59
60, 61, 62, 63, 64
65, 66, 67, 68, 69
70, 71, 72, 73, 74
75, 76, 77, 78, 79
80, 81, 82, 83, 84
85, 86, 87, 88, 89

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/3kV/6kV)
2110~5803kW (19XR-10kV)
1055~5135kW (19XRV-380V)

Features

Energy-saving and High Efficency

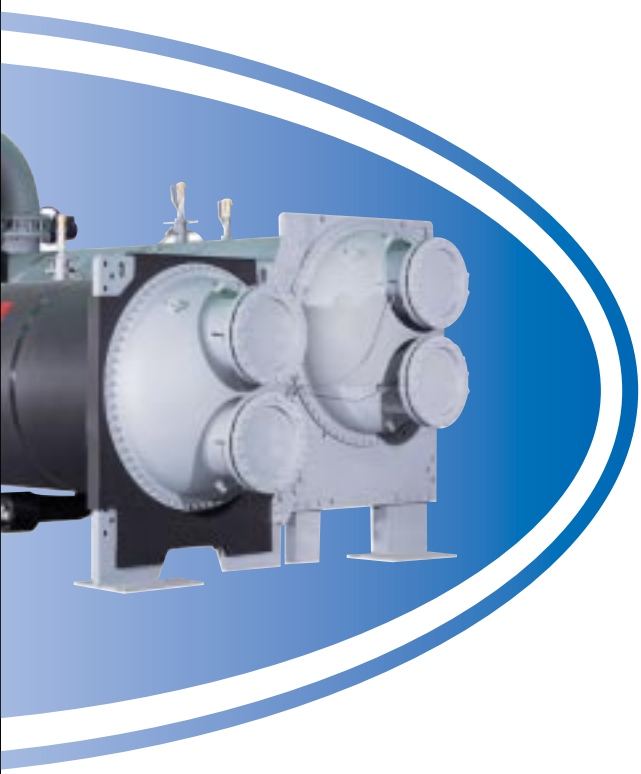
- Compressor key components design uses advanced jet engine technology.
- Aerodynamically contoured impellers - Impellers that use high back sweep main blades with low-rent and are smaller and lighter than profile intermediate splitter blades are aerodynamically contoured to improve compressor full-load 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 AccuMeterTM 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				Evaporator			Condenser			Footprint			Weight		
	Cooling Capacity		Full Load COP	Power circuit	Input Power	RLA	LRYA	Flow Rate	Pressure Drop	Water Connection	Flow Rate	Pressure Drop	Water Connection	Length	Width	Height	Operating	Rigging (w/o refrigerant)	Refrigerant
	kW	Tons	ikW/kW		kW	A	A	L/S	kPa	mm	L/S	kPa	mm	mm	mm	mm	kg	kg	kg
19XR3031327CLS52	1055	300	0.191	380V -3Ph -50Hz	201	353	896	45.8	72.8		54.8	55.9		4172	1707	2073	6555	5725	371
19XR3131336CMS52	1231	350	0.186		229	392	782	53.5	70.9		63.7	73.4		4172	1707	2073	6677	5791	396
19XR3132347CNS52	1407	400	0.189		266	461	916	61.1	90.2	DN200	72.9	72	DN200	4172	1707	2073	6805	5884	396
19XR4040356CPS52	1583	450	0.186		294	514	1119	68.7	65.6		81.9	66.2		4365	1908	2153	7970	6678	483
19XR4141386CQS52	1759	500	0.182		320	556	1122	76.4	65.8		90.7	65.6		4365	1908	2153	8212	6828	508
19XR5051385CQS52	1934	550	0.173		335	581	1122	84	60		99	43.3		4460	2054	2137	9315	7612	609
19XR5P5143FDES52	2110	600	0.190		400	698	1357	91.7	57.8		109.4	51.9		4460	2054	2207	9719	8110	493
19XR5P504QEDDS52	2110	600	0.171		360	631	1357	91.7	57.8		107.8	58.7		4460	2054	2207	9967	8393	493
19XR5Q5244FLFH52	2286	650	0.179		409	711	1637	99.3	61.4	DN200	117.8	52.4	DN250	4460	2054	2207	10239	8558	510
19XR5R514QELEH52	2286	650	0.167		382	672	1521	99.3	56.1		116.5	58.2		4460	2054	2207	10549	8864	524
19XR5Q5245FLFH52	2462	700	0.183		451	780	1637	106.9	70.4		127.3	60.4		4460	2054	2207	10239	8558	510
19XR5Q524R5LFH52	2462	700	0.168		413	717	1637	106.9	70.4		125.5	58.8		4460	2054	2207	10614	8932	510
19XR6X65467LGH52	2638	750	0.177		467	817	1794	114.6	65		135.7	67.1		5000	2124	2261	11797	9735	619
19XR6R614T5LGH52	2638	750	0.166		437	768	1794	114.6	49.1		134.4	53.4		4480	2124	2261	11570	9589	579
19XR6Z6747FLGH52	2814	800	0.173		486	850	1794	122.2	61.2	DN250	144.3	61.1	DN250	5000	2124	2261	12259	10029	657
19XR6Z664U5LGH52	2814	800	0.162		456	800	1794	122.2	61.2		142.9	66.2		5000	2124	2261	12497	10305	657
19XR7P704V5LGH52	3164	900	0.163		516	898	1794	137.5	62.3		160.8	66.1		5156	2426	2750	15575	12787	836
19XR70704W6LHH52	3517	1000	0.167		588	1000	1837	152.8	91.3	DN300	179	80.4	DN300	5156	2426	2750	16354	13381	1020
19XR7Q7257EMDH52	3869	1100	0.170		656	1107	2362	168	75.2		197.7	71.5		5156	2426	2985	18165	15121	874
19XR8P81575MEH52	4220	1200	0.165		695	1184	2729	183.3	61		214.6	64.6		5200	2711	3029	20675	16938	984
19XR8Q8158EMFH52	4572	1300	0.165		756	1289	3276	198.6	61		232.6	74.8		5200	2711	3029	20982	17125	1028
19XR8P81595MFH52	4924	1400	0.167		820	1394	3276	213.9	80.9	DN350	250.6	85.8	DN350	5200	2711	3029	20739	17003	984
19XR8R84595MFH52	5276	1500	0.164		865	1467	3276	229.2	70.1		268.3	70.8		5200	2711	3029	21965	17754	1075

Notes: 1. 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 0.0176m^2 ˚C/kW, and that of chilled water side being 0.044 m^2 ˚C/kW.

2. Carrier will select specific models using computer on different requests for tonnage, lift, and efficiency. For details, please contact local agencies.

3. 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 Ikw (kw)	Amps (A)
CDS	RLA	199	338
	LRYA		687
	LRDA		1992
CES	RLA	217	371
	LRYA		777
	LRDA		2252
CLS	RLA	242	412
	LRYA		896
	LRDA		2596
CMS	RLA	266	452
	LRYA		934
	LRDA		2706
CNS	RLA	294	500
	LRYA		1053
	LRDA		3051
CPS	RLA	323	548
	LRYA		1119
	LRDA		3244
CQS	RLA	360	611
	LRYA		1295
	LRDA		3752

Motor Size	Motor Electrical Characteristics	380V Electrical data	
		Max Ikw (kw)	Amps (A)
DCS	RLA	380	648
	LRYA		1317
	LRDA		3818
DDS	RLA	409	697
	LRYA		1357
	LRDA		3932
DES	RLA	437	741
	LRYA		1357
	LRDA		3932
DFS	RLA	471	799
	LRYA		1450
	LRDA		4203
DGS	RLA	475	809
	LRYA		1296
	LRDA		4490
DHS	RLA	549	936
	LRYA		1801
	LRDA		5220
DJS	RLA	597	968
	LRYA		1801
	LRDA		5520

Motor Size	Motor Electrical Characteristics	380V Electrical data	
		Max Ikw (kw)	Amps (A)
EHS	RLA	604	1033
	LRYA		1426
	LRDA		4133
EJS	RLA	645	1104
	LRYA		1957
	LRDA		5672
EKS	RLA	692	1187
	LRYA		1988
	LRDA		5762
ELS	RLA	751	1285
	LRYA		1988
	LRDA		5762
EMS	RLA	812	1386
	LRYA		1988
	LRDA		5762
ENS	RLA	879	1507
	LRYA		2450
	LRDA		7100
EPS	RLA	938	1606
	LRYA		2450
	LRDA		7100

Motor Size	Motor Electrical Characteristics	6300V Electrical data	
		Max Ikw (kw)	Amps (A)
DDH	RLA	410	43
	LRYA		222
	LRDA		–
DEH	LRYA	437	45
	RLA		222
	LRDA		–
DFH	RLA	471	49
	LRYA		253
	LRDA		–
DGH	RLA	515	53
	LRYA		253
	LRDA		–
DHH	RLA	549	57
	LRYA		292
	LRDA		–
DJH	RLA	549	57
	LRYA		292
	LRDA		–

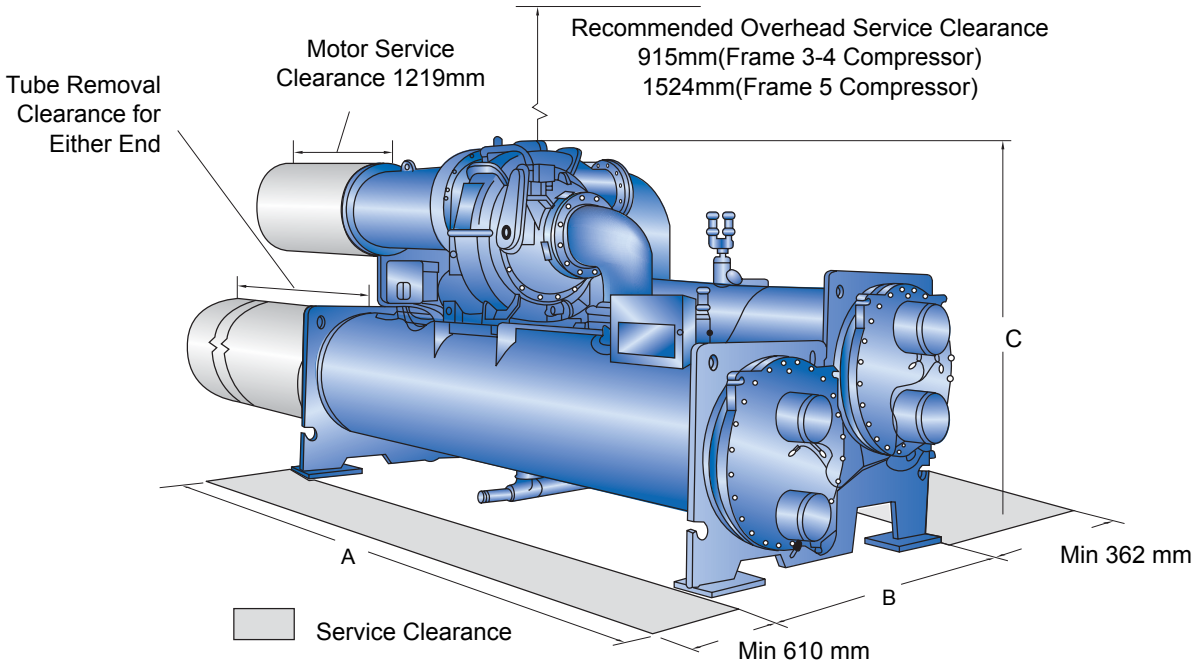
Motor Size	Motor Electrical Characteristics	6300V Electrical data	
		Max Ikw (kw)	Amps (A)
EHH	RLA	603	62
	LRYA		314
	LRDA		–
EJH	RLA	646	67
	LRYA		342
	LRDA		–
EKH	RLA	692	72
	LRYA		387
	LRDA		–
ELH	RLA	752	78
	LRYA		380
	LRDA		–
EMH	RLA	812	84
	LRYA		380
	LRDA		–
ENH	RLA	882	91
	LRYA		415
	LRDA		–
EPH	RLA	938	97
	LRYA		531
	LRDA		–

Motor Size	Motor Electrical Characteristics	10000V Electrical data	
		Max Ikw (kw)	Amps (A)
MDH	RLA	738	48
	LRYA		231
	LRDA		–
MFH	RLA	944	61
	LRYA		244
	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
5P ~ 54	4460	2054	2207	3747
5X ~ 59	4980	2054	2207	4343
6P ~ 64	4480	2124	2261	3747
6X ~ 69	5000	2124	2261	4343
7P ~ 74	5156	2426	2985	4267
7X ~ 79	5766	2426	2985	4877
8P ~ 84	5200	2711	3029	4267
8X ~ 89	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 (drive 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 (Free standing)

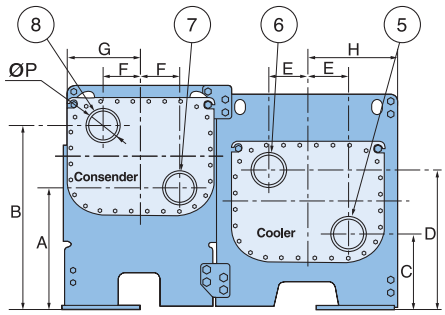
(380V-3ph-50Hz)

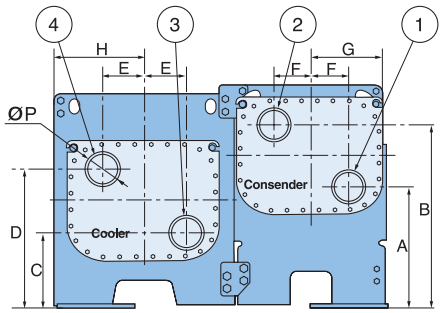
Starter Type	Rated Current(A)	Width(mm)	Depth(mm)	Height(mm)
Y- △	< 740	800	600	2000
Y- △	740 ~ 1560	1000	600	2000

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

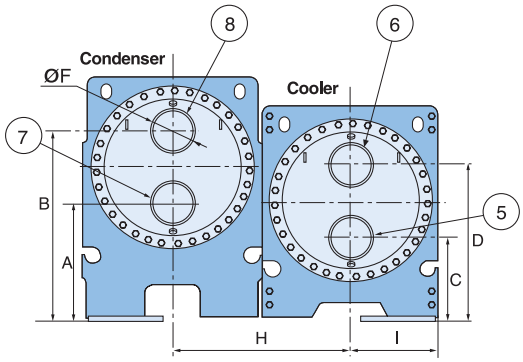
Nozzle Dimensions

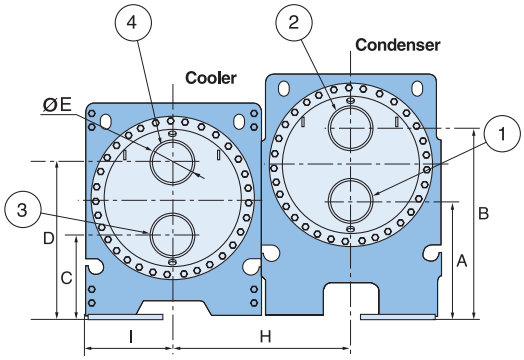
Frame 3





Frame 4-8





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

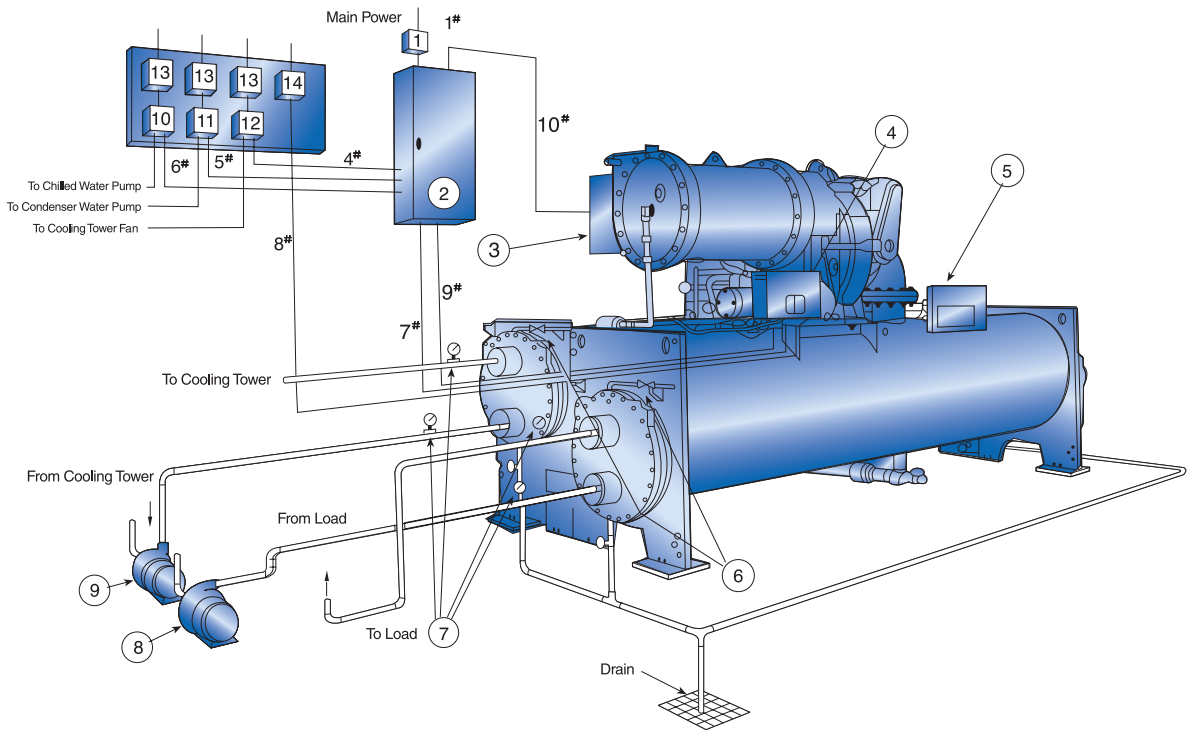
(mm)

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	5P ~ 54 5X ~ 59	736	1168	482	850	DN200	DN250	997	489
Frame 6	6P ~ 64 6X ~ 69	788	1220	489	921	DN250	DN250	1048	521
Frame 7	7P ~ 74 7X ~ 79	1047	1555	807	1315	DN300	DN300	1213	610
Frame 8	8P ~ 84 8X ~ 89	1062	1620	757	1315	DN350	DN350	1356	678

Notes: 1. Nozzles of standard units are at the drive end (Type A). Type B 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



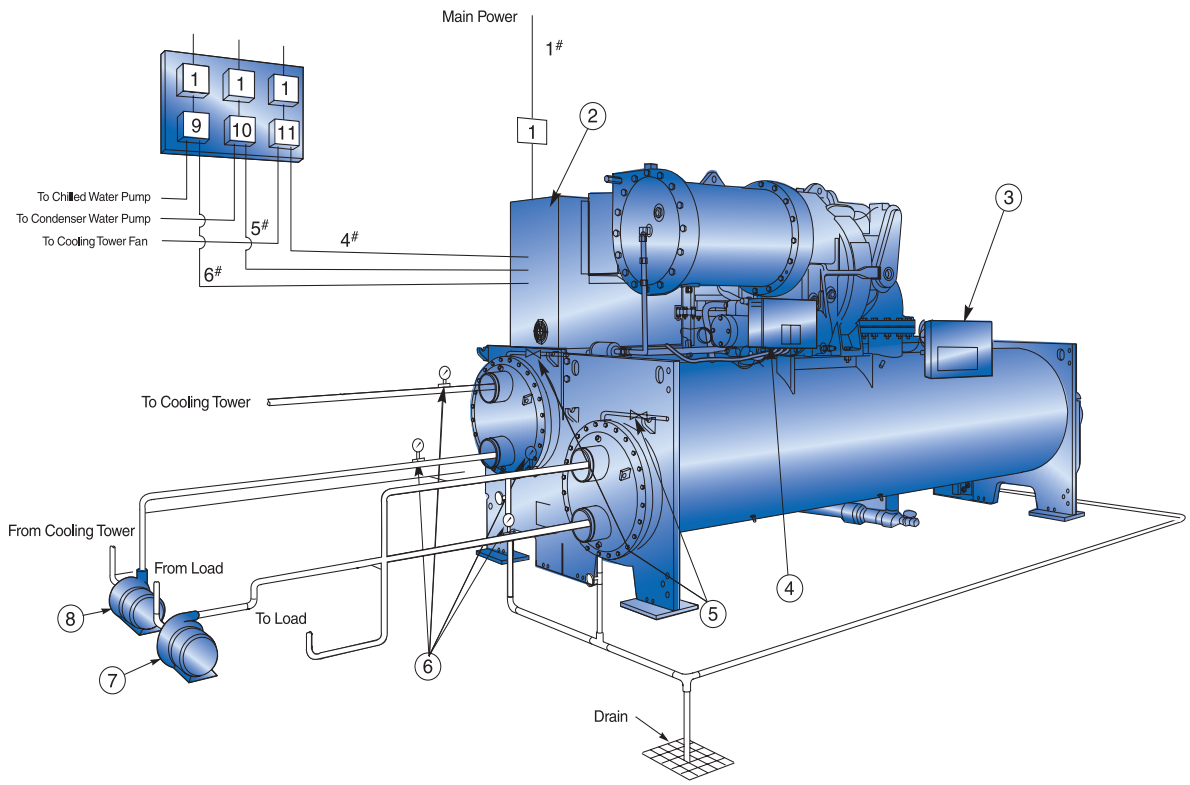
① Air Switch	② Freestanding Compressor Motor Starter	③ Compressor Motor Terminal Box	④ Oil Pump Controller
⑤ Control Panel	⑥ Vents	⑦ Pressure Gauges	⑧ Chilled Water Pump
⑨ Cooling Water Pump	⑩ Chilled Water Pump Starter	⑪ Cooling Water Pump Starter	⑫ Cooling Tower Fan Starter
⑬ Air Switch	⑭ Oil Pump Switch		

Line	Purpose	Specification
1#	Main power to Starter:	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 x 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:

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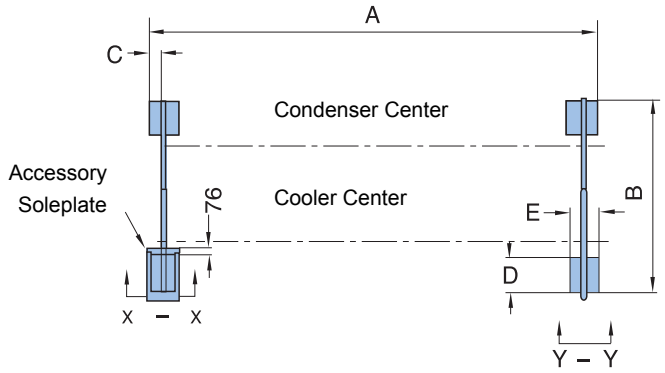
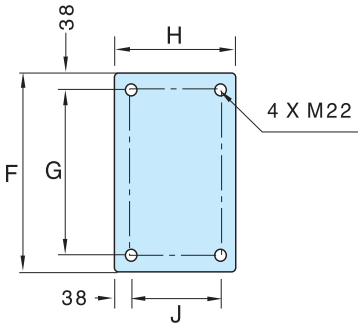
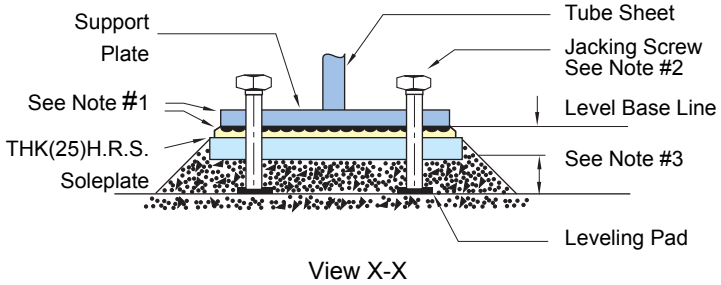
Types of Base Isolation

Location Of Isolator

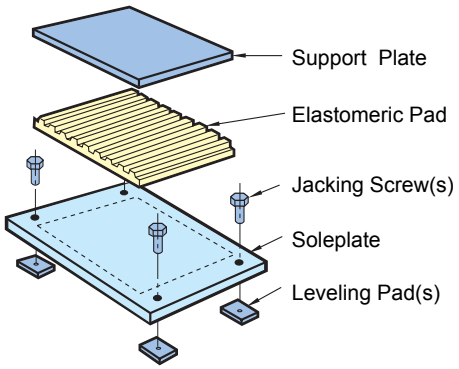




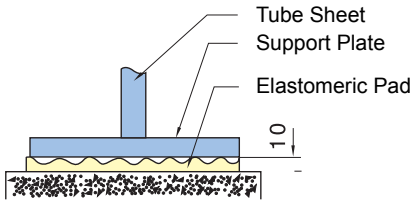
Standard Isolation



View X-X



Simplified Isolation



View Y-Y

Notes:

1. Accessory soleplate package includes 4 soleplates, 16 jacking screws, and 16 leveling pads.
2. Jacking Screws should be removed after the grout has set.
3. 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	5P~54	3931	1969	92	387	229	540	464	254	178
	5X~59	4451	1969	92	387	229	540	464	254	178
Frame 6	6P~64	3931	2070	92	387	229	540	464	254	178
	6X~69	4451	2070	92	387	229	540	464	254	178
Frame 7	7P~74	4620	2400	176	559	406	711	635	432	356
	7X~79	5230	2400	176	559	406	711	635	432	356
Frame 8	8P~84	4620	2686	176	559	406	711	635	432	356
	8X~89	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

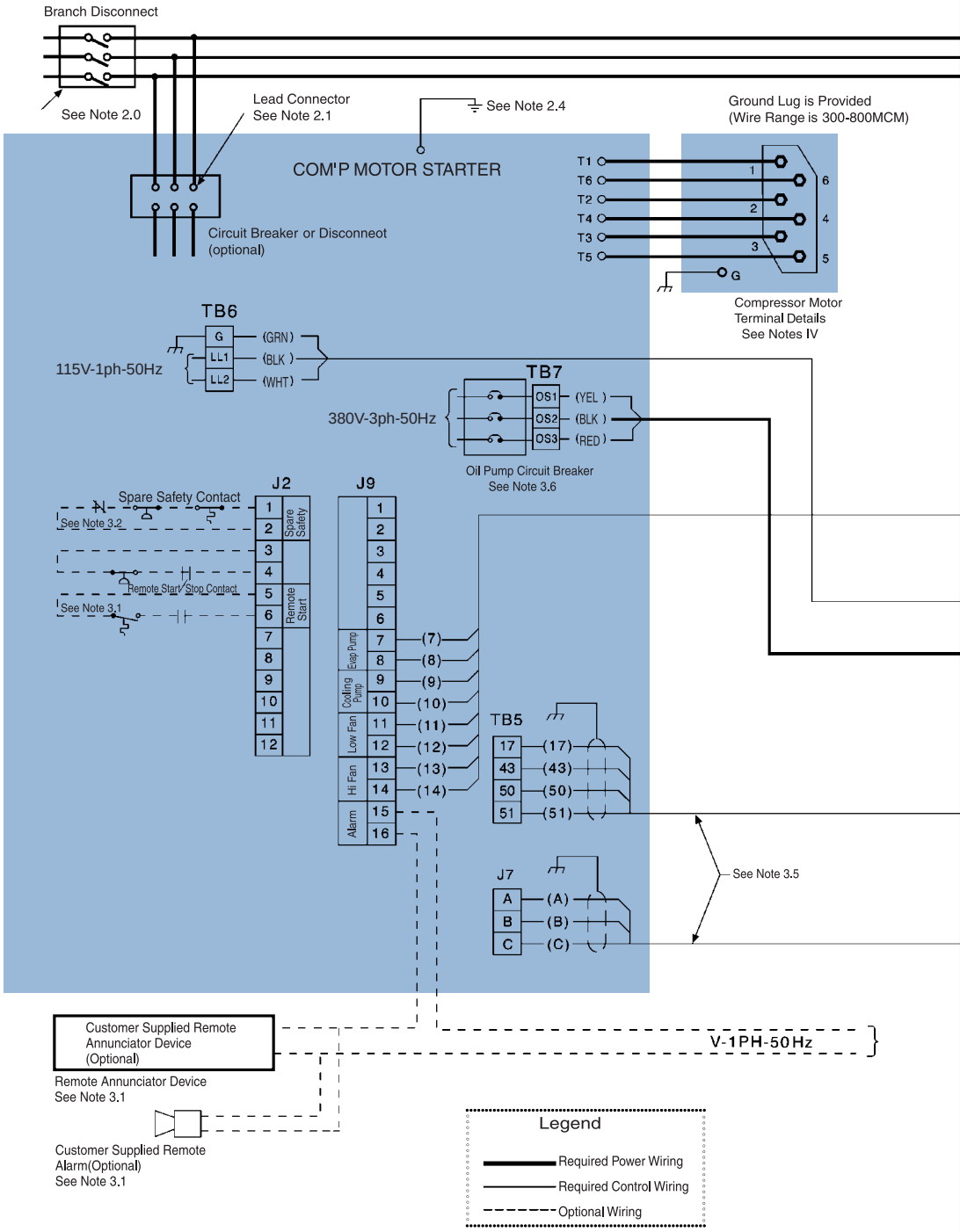
See Nozzle Dimensions Table on Page 7, the Heat Exchanger 40~42 Line for dimensions of main nozzles and flanges as follows:

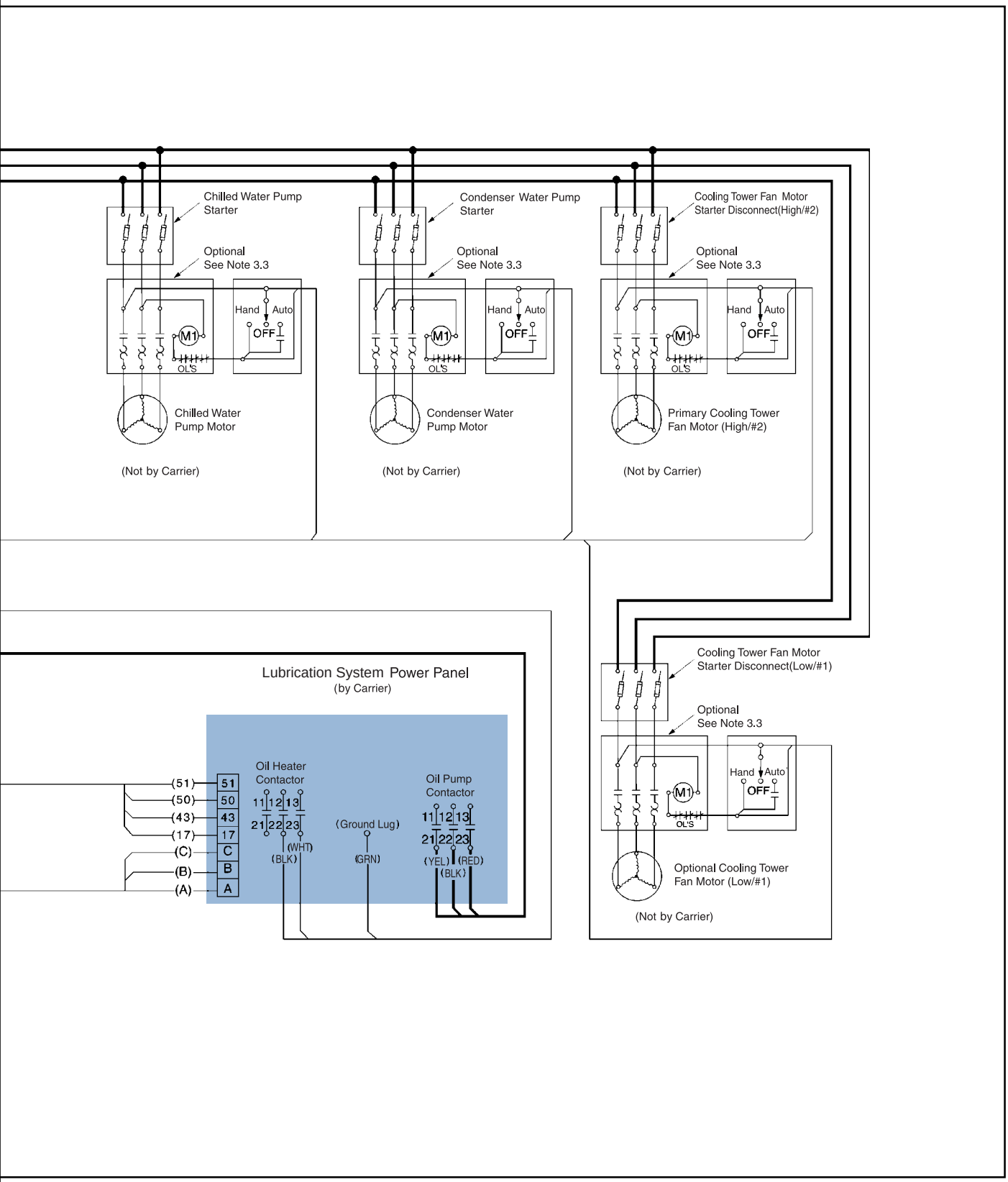
Heat Exchanger Size	A	B	C	D	ØE	ØF	H	I
40 ~ 42	627	995	499	867	DN200	DN200	940	464

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

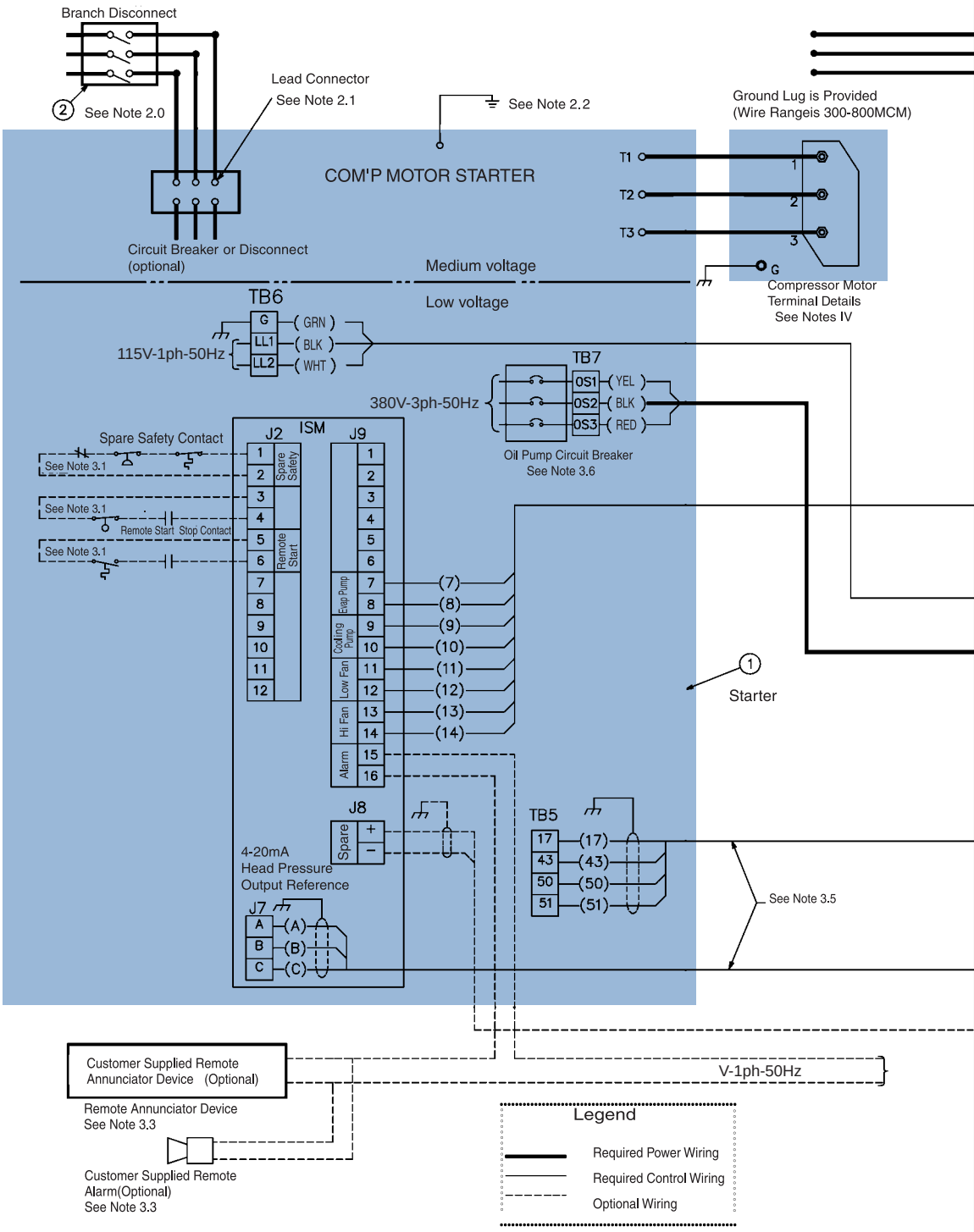
Heat Exchanger Size	A	B	C	D	E	F	G	H	J
40 ~ 42	3931	1829	92	387	229	540	464	254	178

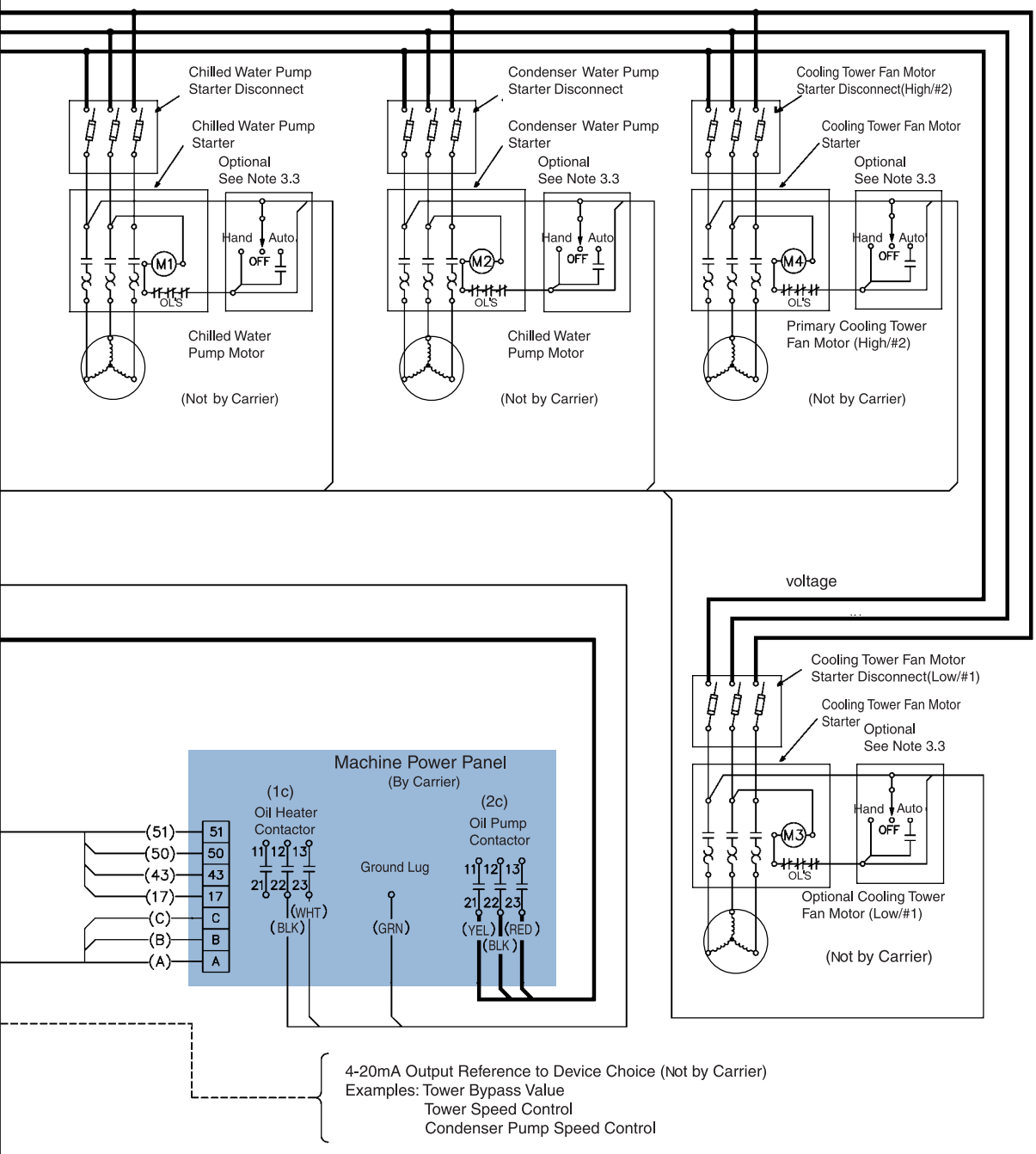
19XR Typical Field Wiring With Free-Standing Starter (380V-3Ph-50HZ)




Chilled Water Pump Starter
Optional See Note 3.3
Hand
Auto
OFF
M1
OL'S
Chilled Water Pump Motor
(Not by Carrier)
Condenser Water Pump Starter
Optional See Note 3.3
Hand
Auto
OFF
M1
OL'S
Condenser Water Pump Motor
(Not by Carrier)
Cooling Tower Fan Motor Starter Disconnect(High/#2)
Optional See Note 3.3
Hand
Auto
OFF
M1
OL'S
Primary Cooling Tower Fan Motor (High/#2)
(Not by Carrier)
Lubrication System Power Panel
(by Carrier)
(51)
(50)
(43)
(17)
(C)
(B)
(A)
51
50
43
17
C
B
A
Oil Heater Contactor
11 12 13
21 22 23
(WHT)
(BLK)
(Ground Lug)
(GRN)
Oil Pump Contactor
11 12 13
21 22 23
(YEL)
(RED)
(BLK)
Cooling Tower Fan Motor Starter Disconnect(Low/#1)
Optional See Note 3.3
Hand
Auto
OFF
M1
OL'S
Optional Cooling Tower Fan Motor (Low/#1)
(Not by Carrier)

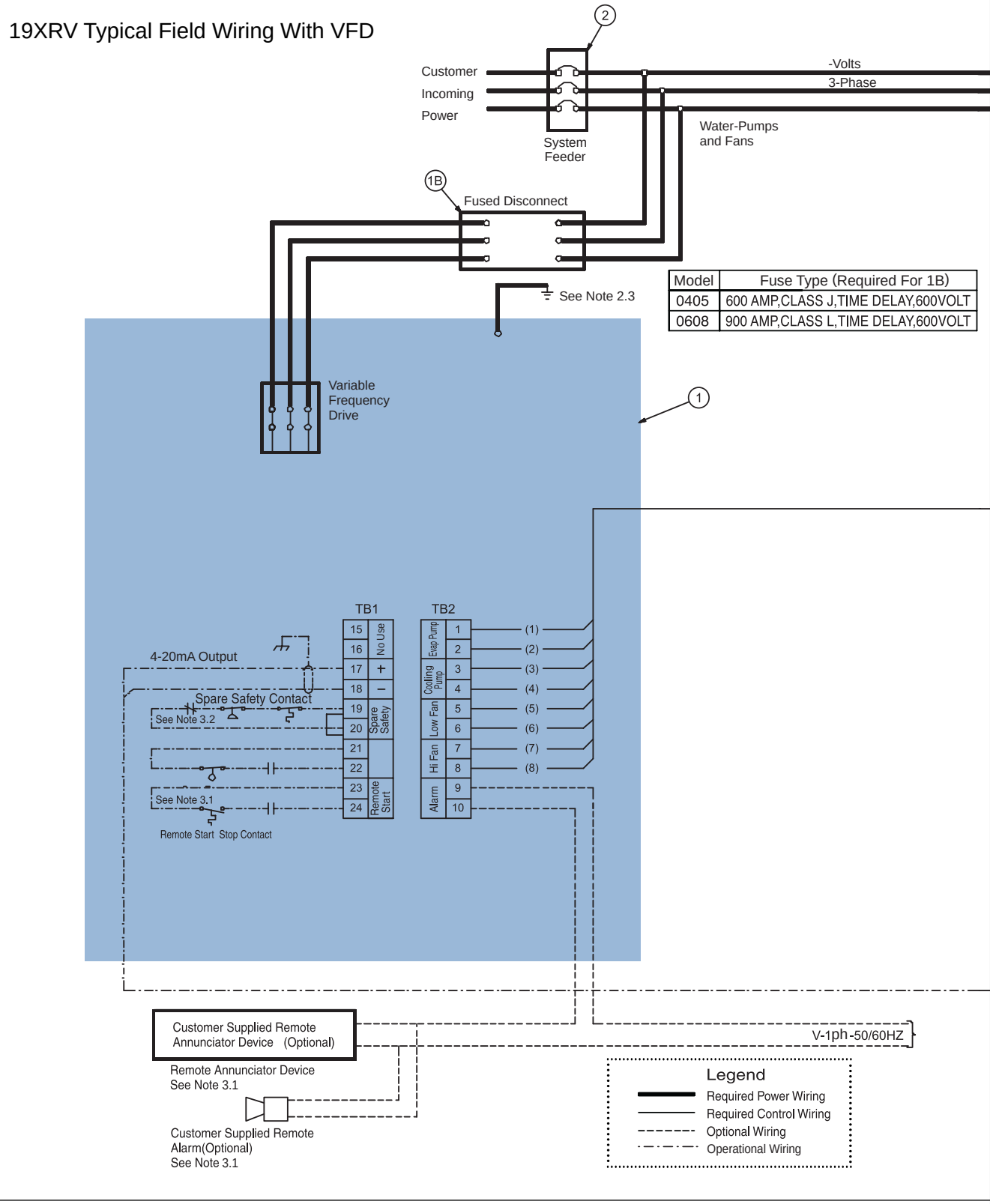
19XR Typical Field Wiring With Free-Standing Starter (Medium Voltage)



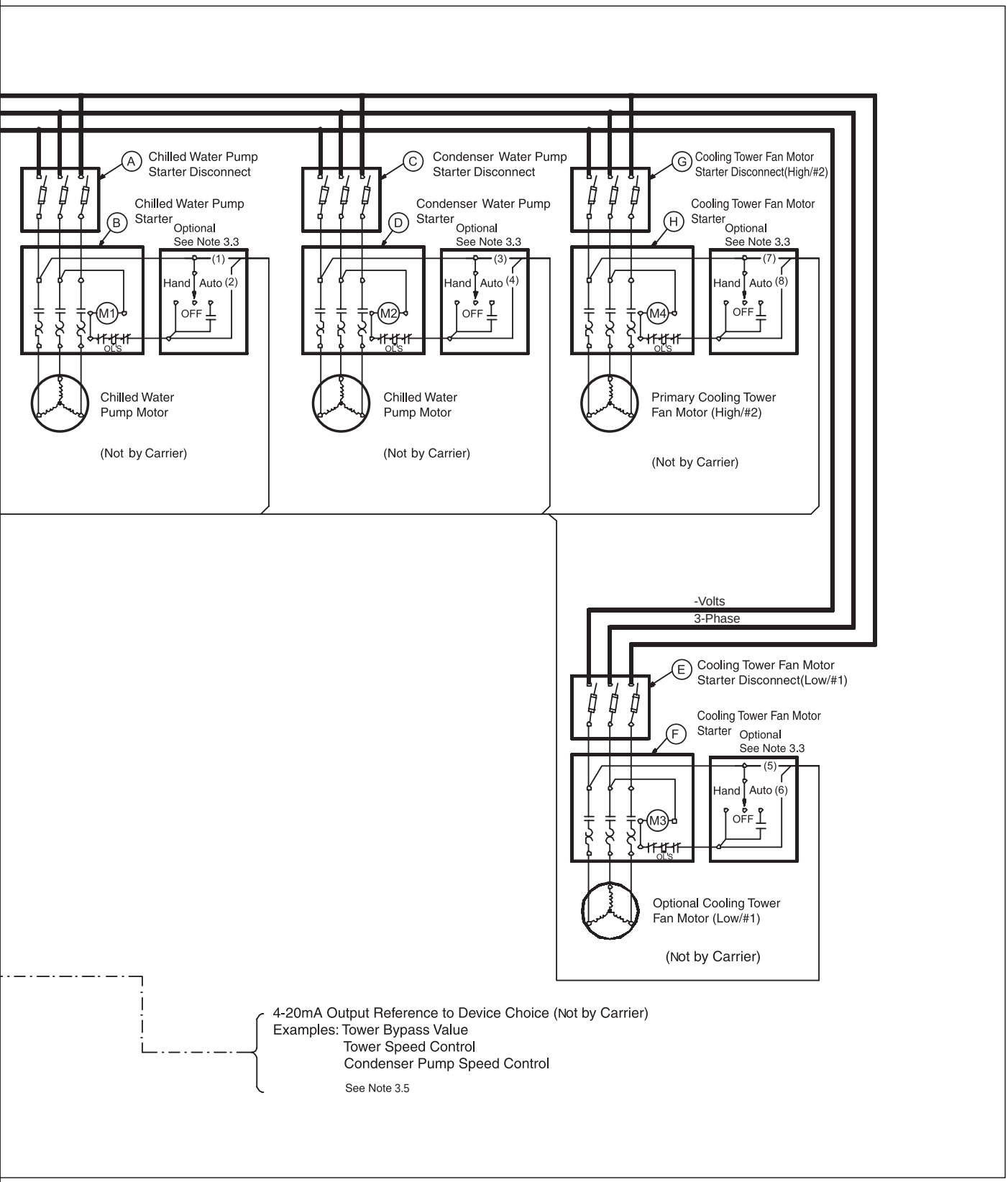

Chilled Water Pump
Starter Disconnect
Chilled Water Pump
Starter
Optional
See Note 3.3
Hand
Auto
OFF
M1
OL'S
Chilled Water
Pump Motor
(Not by Carrier)
Condenser Water Pump
Starter Disconnect
Condenser Water Pump
Starter
Optional
See Note 3.3
Hand
Auto
OFF
M2
OL'S
Chilled Water
Pump Motor
(Not by Carrier)
Cooling Tower Fan Motor
Starter Disconnect(High/#2)
Cooling Tower Fan Motor
Starter
Optional
See Note 3.3
Hand
Auto
OFF
M4
OL'S
Primary Cooling Tower
Fan Motor (High/#2)
(Not by Carrier)
voltage
Cooling Tower Fan Motor
Starter Disconnect(Low/#1)
Cooling Tower Fan Motor
Starter
Optional
See Note 3.3
Hand
Auto
OFF
M3
OL'S
Optional Cooling Tower
Fan Motor (Low/#1)
(Not by Carrier)
Machine Power Panel
(By Carrier)
(1c)
Oil Heater
Contactor
11 12 13
21 22 23
(WHT)
(BLK)
Ground Lug
(GRN)
(2c)
Oil Pump
Contactor
11 12 13
21 22 23
(YEL)
(RED)
(BLK)
(51)
(50)
(43)
(17)
(C)
(B)
(A)
51
50
43
17
C
B
A
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



Model	Fuse Type (Required For 1B)
0405	600 AMP,CLASS J,TIME DELAY,600VOLT
0608	900 AMP,CLASS L,TIME DELAY,600VOLT


A
Chilled Water Pump
Starter Disconnect
B
Chilled Water Pump
Starter
Optional
See Note 3.3
(1)
Hand
Auto (2)
OFF
M1
OL's
Chilled Water
Pump Motor
(Not by Carrier)
C
Condenser Water Pump
Starter Disconnect
D
Condenser Water Pump
Starter
Optional
See Note 3.3
(3)
Hand
Auto (4)
OFF
M2
OL's
Chilled Water
Pump Motor
(Not by Carrier)
G
Cooling Tower Fan Motor
Starter Disconnect(High/#2)
H
Cooling Tower Fan Motor
Starter
Optional
See Note 3.3
(7)
Hand
Auto (8)
OFF
M4
OL's
Primary Cooling Tower
Fan Motor (High/#2)
(Not by Carrier)
-Volts
3-Phase
E
Cooling Tower Fan Motor
Starter Disconnect(Low/#1)
F
Cooling Tower Fan Motor
Starter
Optional
See Note 3.3
(5)
Hand
Auto (6)
OFF
M3
OL's
Optional Cooling Tower
Fan Motor (Low/#1)
(Not by Carrier)
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

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

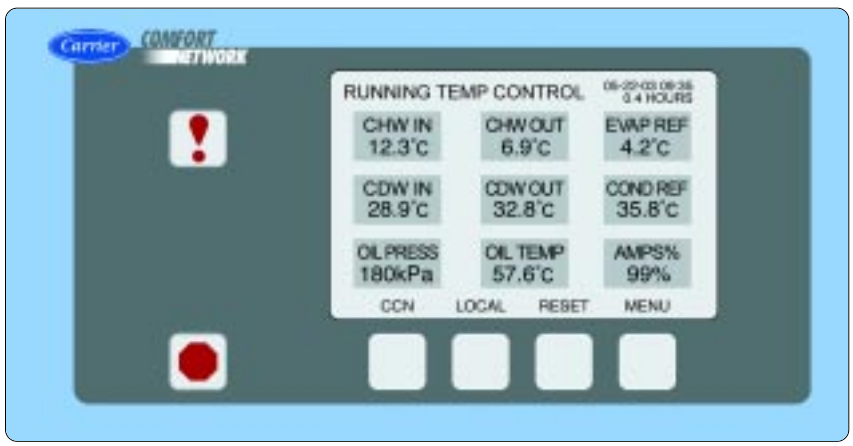
- Manual/Automatic Remote Start
- Starting/Stopping Sequence
  Pre-lube/Post-Lube
  Pre-Flow/Post-Flow
  Compressor Starter Run Interlock
- Pre-Start Check of Safeties and Alerts
- Low Chilled Water (Load) Recycle
- Monitor/Number Compressor Starts and Run Hours
- Manual Reset of Safeties

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



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 mm^2 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 x compressor RLA When (6) conductors are used: Minimum ampacity per conductor = 0.721 x 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 ncoming 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 enclossure.

III. Control Wiring

3.0 Field supplied control conductors should be at least 1 mm^2 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 customer' needs for comfort with the environment's needs for responsible consumption.

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Supersede:	T-19XR-0701-01 (E)
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