Carrier

United Technologies

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greenspeed AQUAEDGE™

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19XR

Hermetic Centrifugal Liquid Chiller

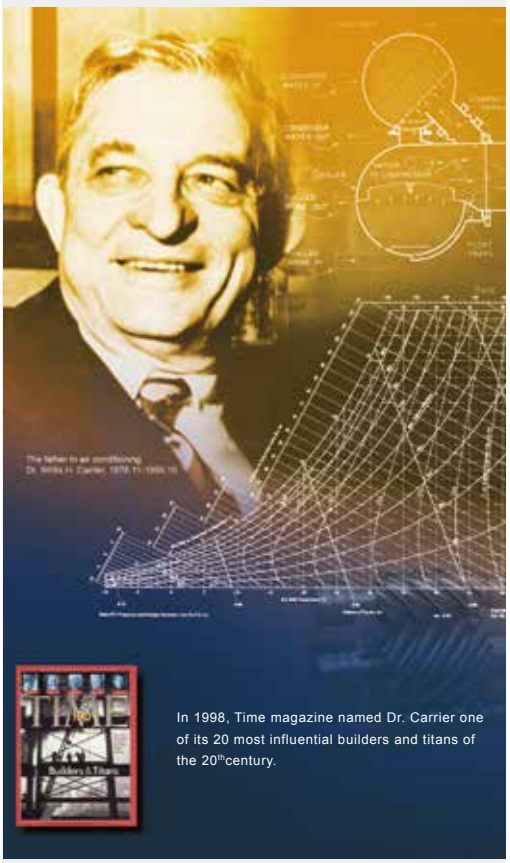
Cooling Capacity：300~1650 RT (single-stage)

800~2250 RT (two-stage)

Carrier China

Carrier Corporation is a subsidiary of the United Technologies Corp. (UTC), which ranks the 150th in Fortune Top 500 in 2011 and has its operations in aerospace and building systems industries all over the world. From the time the founder Dr. Carrier invented the first system of modern air conditioning in 1902, Carrier has been the world leader in the air conditioning industry with its products and system solutions supplied to numerous famous buildings, and up to now, the network of distribution cover more than 170 countries all over the world. In 2011, Carrier ranked top in the HVAC industry field with its sales revenue of US $12 billion.

In China, there are 6 Carrier factories which have more than 2500 employees. As the world-class factory, Carrier has a number of technically advanced production lines, manufacturing commercial and residential chillers, compressors and air-side products. A wide range of products are able to meet diversified requirements of different customers. The global R&D center located in Shanghai has the capability of developing several major projects in the same time, with many advanced technical patents awarded to support Carrier stay most competitive in terms of technology advantage in the HVAC industry.



In 1998, Time magazine named Dr. Carrier one of its 20 most influential builders and titans of the 20th century.

Model Number Nomenclature

19XR/XR-E

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	60-64, 6P-6R
35, 36, 37	65-69, 6X-6Z
40, 41, 42	70-74, 7P-7R
45, 46, 47	75-79, 7X-7Z
50-54, 5P-5R	80-84, 8P-8R
55-59, 5X-5Z	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

Motor Voltage Code
52-400-3-50
53-3000-3-50
54-3300-3-50
55-6300-3-50
5A-10000-3-50
5B-11000-3-50
62-380-3-60
63-416-3-60
67-3300-3-60
68C4160-3-60
59-6900-3-60
6A-11000-3-60

Motor Efficiency Code
Compressor Frame 2, 3, 4, 5
H-High Efficiency
S-Standard Efficiency
Compressor Frame E
A,B,C,D,E-A-E Gear Ratio

Motor Code

Compressor Code
First Digit Indicates Compressor Frame
Size 2, 3, 4, 5-Single-Stage
E-Two-Stage

Note: Carrier is dedicated to continuous product development. Components list will vary to meet different demands
*Availability please check with local sales office

19XR-6

19XR- A4H A4H 648 J N 7

Description
19XR- -High efficiency hermitic centrifugal liquid chiller

Cooler Size

Condenser Size

Compressor Code
First Digit Indicates Compressor Frame
Size 6-Two-stage

Motor Voltage code
4-3kV-3Ph-50Hz
5-3.3kV-3Ph-50Hz
6-6.3kV-3Ph-50Hz
7-10kV-3Ph-50Hz
8-11kV-3Ph-50Hz
F-3.3kV-3Ph-60Hz
G-4.16kV-3Ph-60Hz
H-6.9kV-3Ph-60Hz
J-11kV-3Ph-60Hz

Motor Size Code

Gear Code
E, J, M, P

Cooling Capacity

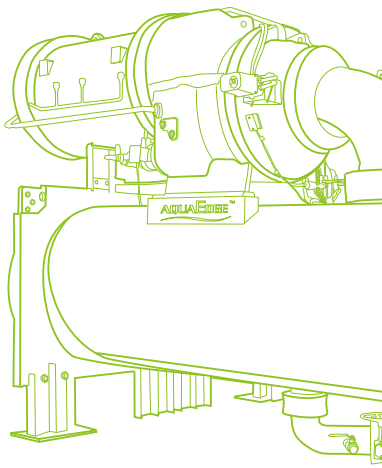
19XR: 1055~5274kW (Air condition Low voltage/Medium votage)
2110~5803kW (Air condition High voltage)
1055~5135kW (Air condition Low voltage VFD)

19XR-E: 2813~5274kW (Air condition Low voltage/Low voltage VFD/Medium voltage/High voltage)
2110~3517kW (Ice condition Low voltage/Medium voltage/High voltage)

19XR-6: 5627~7913kW (Air condition Medium voltage/High voltage)

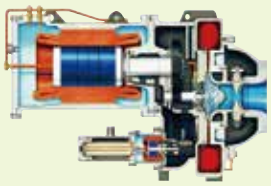
Energy-saving and High Efficiency

- Compressor key components designed with advanced jet engine technology.
- Aerodynamically contoured impellers use high back sweep main blades with low-profile intermediate splitter blades. The impellers 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.（Only for single stage compressor)
- Optimized piping design reduces refrigerant pressure loss and ensures chiller efficiency.

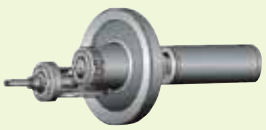


Stable Operation

- 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.
- Diffuser design-pipe diffuser design uses jet engine technology, increasing centrifugal compressor peak efficiency (single-stage only). Two-stage compressor utilizes vane-less diffuser to meet high lift application requirement with stable operation.
- Hermetical Motors—cooling is accomplished by spraying liquid refrigerant on the motor windings. This highly efficient motor cooling method also eliminates the potential for shaft seal leaks and refrigerant/oil loss.



Single-stage compressor

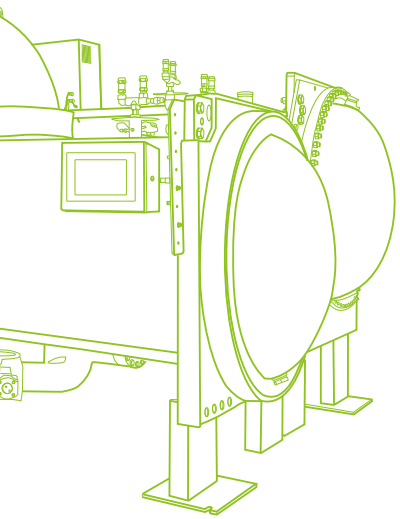


Integrated transmission

Environmental Leadership

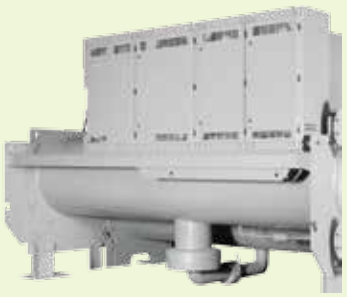
- Designed specifically for chlorine-free HFC-134a refrigerant (the environmentally preferred HFC-134a refrigerant with zero-ozone-depletion potential)

Advanced Design



- 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.(For 19XR/XR-E)
- Color Touch Screen - friendly human machine interface , graphical display screens for the main components and multi languages selection.(Only for 19XR-6)
- 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 communication protocol translator, providing a system solution to controls applications.
- Carrier offers 19XR/XR-E/XR-6 10/11kV hermetic centrifugal chiller to provide more choices for installation with 10/11kV and power supply.
- 19XRV/XR(V)-E AquaEdge chiller equipped with a LF2 VFD that designs with total harmonic distortion (THD)<5% and fully meets IEEE519-1992 requirement. The 19XRV/XR(V)-E becomes a more cost-effective choice for installations with a high percentage of time operating at part load.
- 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.

Free-standing VFD starter



Unit-mounted VFD starter

Convenient Installation

- Water boxes are equipped with standard flanges, which facilitate the field installation and protect temperature sensor.
- 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, which provides ease of maintenance.

19XR Two-stage Hermetic Centrifugal Chiller

In 2013, Carrier introduced a high-efficiency two-stage hermetic centrifugal chiller to deliver continuous energy saving and environmental protection, as well as the most comprehensive range of air-conditioning, heat pump, energy recovery, ice thermal storage, VFD and high-voltage applications.

Environmental Leadership

The system has been designed specifically for chlorine-free HFC-134a refrigerant, the environmentally preferred HFC-134a refrigerant with zero-ozone depletion potential.

Industry-leading Efficiency

The all-new design greatly increases chiller full-load and part-load efficiency with a COP up to 6.5 (AHRI conditions) and an IPLV up to 7.4 or up to 10.5 with VFD.
High-efficiency technologies include:

- Advanced technology two stage high efficiency compressor , design specifically for R134a.
- New blunt leading-edge IGV for part load efficiency improvement.
- An interstage economizer that improves system and efficiency and increases capacity.


Two-stage Compressor


IGV


Impeller


Economizer

Wide Application

The innovative two-stage compressor provides a dramatic range of capabilities. With a maximum LWT of 65℃ and a minimum LCWT of -6℃, the 19XR-E/19XR-6 is ideal wherever energy conservation and environmental protection are required.

Stable Operation

The two-stage compressor has excellent load-adjustment capabilities to achieve high efficiency and stability at a variety of load and temperature conditions, including its minimum load of 10%.
The 19XR-E/19XR-6 also features a refrigerant cooled semi hermetic low current inrush motor, eliminating the need for shaft seal and oil refrigerant containment components.
Double-grooved tube sheets make a superior leak-tight joint when combined with roller expansion.

Low Sound Level

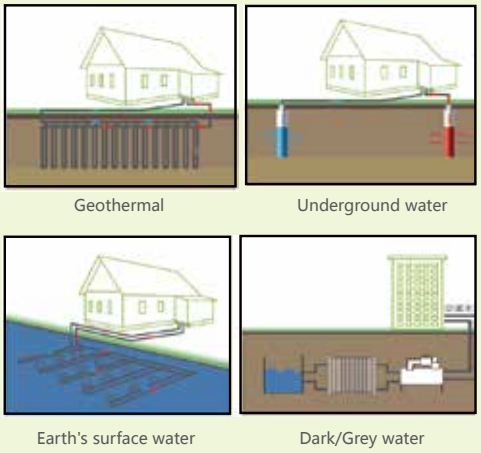
For ultra-quiet operation, the advanced two-stage compressor has an optimized aero-structural design and allows lower impeller speed.

Modular Construction

The cooler, condenser and compressor assemblies are compact and entirely bolted together. This design makes the chiller ideally suited for replacement projects where ease of disassembly and reassembly at the jobsite is essential.

Heat Pump Application

The heat pump system utilizes natural energy storage in soil, bedrock, groundwater, surface water, wastewater and air to satisfy demand for building cooling, heating and hot water.

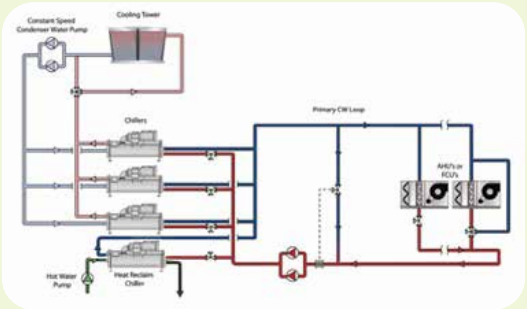


Heat Pump System Benefits
- Cooling/heating
- Improved system efficiency
- Use of low-grade energy

19XR-E Benefits
- Wide range of applications with high efficiency
- Hot water temperature (LWT) up to 65℃

Energy Recovery Application

Discharging condenser heat via a cooling tower not only causes thermal pollution but is a tremendous waste for locations with high demand for heating, such as hotels, factories and hospitals.

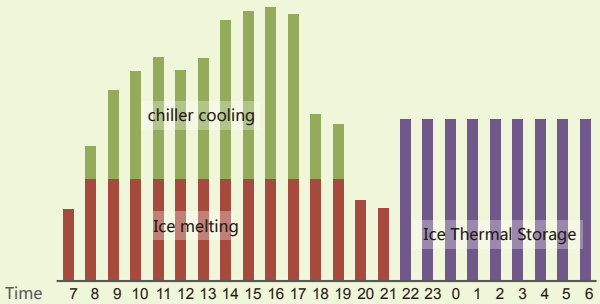


Energy Recovery System Benefits
- Reduced boiler size and operating time
- Reduced cooling tower size and waste heat discharge
- Improved system efficiency by 15-25%

19XR-E Benefits
- High efficiency operation
- Hot water temperature(LWT) up to 65℃

Ice Thermal Storage Application

The chiller stores energy as ice during the night, when electricity costs and utilization are low. This energy is then discharged to satisfy cooling loads when electricity costs peak during the day, greatly reducing building operating costs.



Ice Thermal Storage System Benefits
- Reduced chiller and cooling tower size
- Reduced chiller operating time
- Operational cost savings by using off-peak electricity
- Backup cooling in emergency situations

19XR-E Benefits
- Stable 24-hour operation
- Suitable for variable voltage and VFD applications
- Minimum leaving water temp (LCWT): -6℃
- Suitable for cold air distribution district cooling systems

Performance Data

Air-conditioning (380V-3ph-50Hz)

Model	Chiller				Motor		Evaporator			Condenser			Footprint			Weight		
	Cooling Capacity		Input Power	Full load COP	RLA	LRYA	Flow Rate	Pressure Drop	Water Connection	Flow Rate	Pressure Drop	Water Connection	Length	Width	Height	Operating	Rigging (w/o Refrigerant)	Refrigerant Charge
	kW	Tons	kW	ikW/kW	A	A	l/s	kPa	mm	l/s	kPa	mm	mm	mm	mm	kg	kg	kg
19XR-3031327CLS52	1055	300	210	0.199	369	896	50.4	86.4		60.8	66.9		4172	1707	2073	6555	5725	371
19XR-3131336CMS52	1231	350	240	0.195	410	782	58.8	84.2		70.6	87.8		4172	1707	2073	6677	5791	396
19XR-3132347CNS52	1407	400	278	0.198	481	916	67.2	107.1	DN200	80.8	86.2	DN200	4172	1707	2073	6805	5884	396
19XR-4040356CPS52	1583	450	306	0.193	534	1119	75.6	77.9		90.7	79.1		4365	1908	2153	7970	6678	483
19XR-4141386CQS52	1759	500	335	0.190	580	1122	84.0	78.1		100.5	78.5		4365	1908	2153	8212	6828	508
19XR-5051385KGH52	1934	550	347	0.179	605	1146	92.4	71.3		109.7	51.7		4460	2054	2137	9433	7730	609
19XR-5P51436DES52	2110	600	381	0.181	667	1357	100.8	68.8		119.8	60.7		4460	2054	2207	9719	8110	493
19XR-5P504QEDDS52	2110	600	388	0.184	678	1357	100.8	68.8		120.1	70.8		4460	2054	2207	9967	8393	493
19XR-5Q5144FLEH52	2286	650	427	0.187	748	1521	109.2	73.2	DN200	130.5	71.0	DN250	4460	2054	2207	10096	8449	510
19XR-5R514QELEH52	2286	650	417	0.182	730	1521	109.2	66.8		130.2	70.7		4460	2054	2207	10549	8864	524
19XR-5Q5245FLFH52	2462	700	469	0.190	808	1637	117.6	83.9		140.9	72.0		4460	2054	2207	10239	8558	510
19XR-5Q524R5LFH52	2462	700	452	0.184	781	1637	117.6	83.9		140.3	71.5		4460	2054	2207	10614	8932	510
19XR-6X65467LGH52	2638	750	487	0.185	851	1794	126.0	77.2		150.3	80.2		5000	2124	2261	11797	9735	619
19XR-6R614T5LGH52	2638	750	460	0.174	807	1794	126.0	58.4	DN250	148.9	64.0	DN250	4480	2124	2261	11570	9589	579
19XR-6Z6747FLGH52	2814	800	508	0.181	886	1794	134.4	72.8		159.8	73.1		5000	2124	2261	12259	10029	657
19XR-6Z664U5LGH52	2814	800	484	0.172	847	1794	134.4	72.8		158.5	79.3		5000	2124	2261	12497	10305	657
19XR-7P704V5LGH52	3164	900	554	0.175	962	1794	151.2	74.0		179.2	80.0		5169	2426	2750	15575	12787	836
19XR-70704W6LHH52	3517	1000	621	0.177	1055	1837	168.1	108.5		199.3	97.2		5169	2426	2750	16354	13381	1020
19XR-7P71E53MDB52	3869	1100	680	0.176	1145	2362	184.9	106.8	DN300	218.4	97.7	DN300	5169	2426	2902	17495	14499	964
19XR-7Q72E53MDB52	3869	1100	670	0.173	1129	2362	184.9	89.5		218.1	85.1		5169	2426	2902	17974	14802	1002
19XR-7Q72E53MEB52	4220	1200	736	0.174	1251	2729	201.7	105.0		238.0	99.9		5169	2426	2902	18008	14836	1002
19XR-8P81E51MEB52	4220	1200	697	0.165	1187	2729	201.7	72.6		236.3	76.5		5205	2711	2950	20483	16619	1113
19XR-8P80E63MFB52	4572	1300	799	0.175	1359	3276	218.5	84.0		257.8	102.1		5205	2711	2950	20284	16495	1113
19XR-8Q81E61MFB52	4572	1300	766	0.168	1305	3276	218.5	72.6	DN350	256.4	88.8	DN350	5205	2711	2950	20790	16805	1156
19XR-8P81E63MFB52	4924	1400	862	0.175	1461	3276	235.3	96.2		277.7	102.8		5205	2711	2950	20548	16684	1113
19XR-8R84E63MFB52	5276	1500	910	0.172	1538	3276	252.1	83.4		297.1	84.9		5205	2711	2950	21773	17435	1204

Brine application (380V-3ph-50Hz)

Model	Chiller				Motor		Evaporator			Condenser			Footprint			Weight		
	Cooling Capacity		Input Power	Full Load COP	RLA	LRYA	Flow Rate	Pressure Drop	Water Connection	Flow Rate	Pressure Drop	Water Connection	Length	Width	Height	Operating	Rigging (w/o refrigerant)	Refrigerant Charge
	kW	Tons	kW	ikW/kW	A	A	l/s	kPa	mm	l/s	kPa	mm	mm	mm	mm	kg	kg	kg
19XR-7070E43MDE52	2462	700	603	0.245	1020	2362	158.0	129.2		210.1	108.0		5169	2426	2902	17982	14877	1148
19XR-7R72E53MEE52	2814	800	697	0.248	1189	2729	180.6	95.6	DN300	240.6	102.8	DN300	5169	2426	2902	18207	14935	1039
19XR-8R82E63MFE52	3164	900	779	0.246	1328	3276	203.2	72.4		270.4	88.0		5205	2711	2950	21297	17115	1204
19XR-8787E65MFD52	3517	1000	828	0.235	1408	3276	225.8	135.4	DN350	298.1	116.0	DN350	5731	2711	2950	23926	19203	1549

Note:
1. The above selections are based on entering/leaving chilled water temperature:12/7℃; entering/leaving cooled water temperature:32/37℃. Cooler fouling factor is 0.0176 m²℃/kW and condenser fouling factor is 0.044 m²℃/kW.
2. The above brine application selections are based on entering/leaving chilled water temperature:-2/-6℃; entering/leaving cooled water temperature:30/33.5℃. Cooler fouling factor is 0.0176 m²℃/kW and condenser fouling factor is 0.044 m²℃/kW, 25% ethylene glycol.
3. Carrier will select specific models using computer on different requests for tonnage, lift, and efficiency. For details, please contact local agencies.
4. Standard water box pressure is 1.0MPa, and can provide 1.6Mpa, 2.0Mpa as option; For more requirements, please contact local agencies.
5. The above selections are made based on the voltage being 380V. For details or customized selections, please contact local agencies.
6. 60Hz selections are also available. Please contact local agencies to get more support.

Performance Data

Air-conditioning (10kV-3ph-50Hz)

Model	Chiller				Motor		Evaporator			Condenser			Footprint			Weight		
	Cooling Capacity		Input Power	Full load COP	RLA	LRYA	Flow Rate	Pressure Drop	Water Connection	Flow Rate	Pressure Drop	Water Connection	Length	Width	Height	Operating	Rigging (w/o Refrigerant)	Refrigerant Charge
	kW	Tons	kW	ikW/kW	A	A	l/s	kPa	mm	l/s	kPa	mm	mm	mm	mm	kg	kg	kg
19XR-7P704V5LHH5A	3164	900	556	0.176	38	200	151.2	74.0		179.3	80.0		5169	2426	2750	16192	13403	836
19XR-70704W6LHH5A	3517	1000	620	0.176	42	200	168.1	108.5		198.5	96.4		5169	2426	2750	16960	13985	1020
19XR-7P71E53MDB5A	3869	1100	681	0.176	45	231	184.9	106.8	DN300	218.4	97.8	DN300	5169	2426	2902	18067	15069	964
19XR-7Q72E53MDB5A	3869	1100	671	0.173	45	231	184.9	89.5		218.1	85.1		5169	2426	2902	18546	15372	1002
19XR-7Q72E53MFB5A	4220	1200	735	0.174	49	244	201.7	105.0		237.9	99.8		5169	2426	2902	18446	15273	1002
19XR-8P81E51MFB5A	4220	1200	696	0.165	46	244	201.7	72.6		236.3	76.4		5205	2711	2950	20922	17057	1113
19XR-8P80E63MFB5A	4572	1300	798	0.175	53	244	218.5	84.0		257.7	102.0		5205	2711	2950	20658	16868	1113
19XR-8Q81E63MFB5A	4572	1300	786	0.172	52	244	218.5	72.6	DN350	257.4	89.4	DN350	5205	2711	2950	21164	17178	1156
19XR-8P81E63MFB5A	4924	1400	861	0.175	57	244	235.3	96.2		277.6	102.8		5205	2711	2950	20922	17057	1113
19XR-8R84E63MFB5A	5276	1500	909	0.172	60	244	252.1	83.4		297.1	84.9		5205	2711	2950	22147	17808	1204
19XR-878750EMHH5A	5803	1650	988	0.170	64	299	277.3	148.1		326.0	135.6		5731	2711	3029	24551	19955	1420
19XR-A4FA45626JN7	5627	1600	965	0.171	63	366	268.9	67.7		316.6	90.2		5270	3051	3484	29209	23789	1321
19XR-A4FA46638JN7	5978	1700	1017	0.170	67	366	285.7	76.1		336.2	84.8		5270	3051	3484	29652	24065	1321
19XR-A4FA47638JN7	6330	1800	1072	0.169	70	366	302.5	85.0		355.7	82.0	DN400	5270	3051	3484	30050	24311	1321
19XR-A4FA47638JP7	6682	1900	1141	0.171	75	399	319.3	94.3	DN400	375.7	90.6		5270	3051	3484	30050	24311	1321
19XR-A4FA47648JQ7	7033	2000	1206	0.171	79	430	336.1	104.1		395.7	99.6		5270	3051	3484	30050	24311	1321
19XR-A6FB66648JQ7	7385	2100	1229	0.166	81	430	352.9	127.1		414.3	93.2		5879	3185	3484	33965	26906	1650
19XR-A6GB66648JQ7	7737	2200	1296	0.168	85	430	369.7	121.8		434.3	101.5	DN450	5879	3185	3484	34373	27148	1706

Brine application (10kV-3ph-50Hz)

Model	Chiller				Motor		Evaporator			Condenser			Footprint			Weight		
	Cooling Capacity		Input Power	Full Load COP	RLA	LRYA	Flow Rate	Pressure Drop	Water Connection	Flow Rate	Pressure Drop	Water Connection	Length	Width	Height	Operating	Rigging (w/o refrigerant)	Refrigerant Charge
	kW	Tons	kW	ikW/kW	A	A	l/s	kPa	mm	l/s	kPa	mm	mm	mm	mm	kg	kg	kg
19XR-7070E43MDE5A	2462	700	604	0.245	40	231	158.0	129.2		210.2	108.1		5169	2426	2902	18554	15447	1148
19XR-7R72E53MFE5A	2814	800	696	0.247	46	244	180.6	95.6	DN300	240.5	102.7	DN300	5169	2426	2902	18646	15373	1039
19XR-8R82E63MFE5A	3164	900	779	0.246	52	244	203.2	72.4		270.3	88.0		5205	2711	2950	21671	17488	1204
19XR-8787E65MFE5A	3517	1000	859	0.244	57	244	225.8	135.4	DN350	300.0	117.4	DN350	5731	2711	2950	24300	19576	1549

Note: 1. The above selections are based on entering/leaving chilled water temperature:12/7℃; entering/leaving cooled water temperature:32/37℃. Cooler fouling factor is 0.0176 m²℃/kW and condenser fouling factor is 0.044 m²℃/kW.
2. The above brine application selections are based on entering/leaving chilled water temperature:-2/-6℃; entering/leaving cooled water temperature:30/33.5℃. Cooler fouling factor is 0.0176 m²℃/kW and condenser fouling factor is 0.044 m²℃/kW, 25% ethylene glycol.
3. Carrier will select specific models using computer on different requests for tonnage, lift, and efficiency. For details, please contact local agencies.
4. Standard water box pressure is 1.0MPa, and can provide 1.6Mpa, 2.0Mpa as option; For more requirements, please contact local agencies.
5. The above selections are made based on the voltage being 380V. For details or customized selections, please contact local agencies.
6. 60Hz selections are also available. Please contact local agencies to get more support.

Electrical Data

Motor Size	Motor Electrical Characteristics	380V Electrical data	
		Max Ikw (kw)	Amps (A)
CDS	LRYA LRDA	199	687 1992
CES	LRYA LRDA	217	777 2252
CLS	LRYA LRDA	242	896 2596
CMS	LRYA LRDA	266	934 2706
CNS	LRYA LRDA	294	1053 3051
CPS	LRYA LRDA	323	1119 3244
CQS	LRYA LRDA	360	1295 3752

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

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

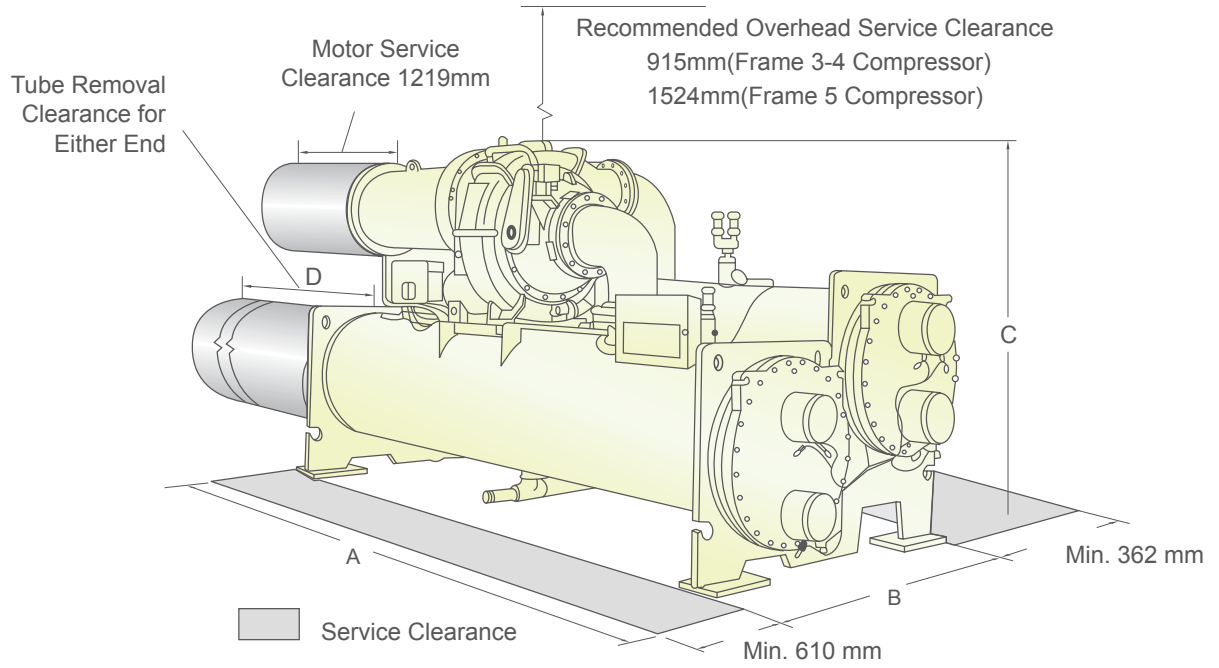
Motor Size	Motor Electrical Characteristics	6300V Electrical data	
		Max Ikw (kw)	Amps (A)
DDH	LRA LRDA	410	222 –
DEH	LRA LRDA	437	222 –
DFH	LRA LRDA	471	253 –
DGH	LRA LRDA	515	253 –
DHH	LRA LRDA	549	292 –
DJH	LRA LRDA	549	292 –

Motor Size	Motor Electrical Characteristics	6300V Electrical data	
		Max Ikw (kw)	Amps (A)
EHH	LRA LRDA	603	314 –
EJH	LRA LRDA	646	342 –
EKH	LRA LRDA	692	387 –
ELH	LRA LRDA	752	380 –
EMH	LRA LRDA	812	380 –
ENH	LRA LRDA	882	415 –
EPH	LRA LRDA	938	531 –

Motor Size	Motor Electrical Characteristics	10000V Electrical data	
		Max Ikw (kw)	Amps (A)
MDH	LRA LRDA	738	231 –
MFH	LRA LRDA	944	244 –
N	LRA LRDA	1161	366 –
P	LRA LRYA	1258	399 –
Q	LRA LRYA	1356	430 –
R	LRA LRYA	1449	448 –
S	LRA LRYA	1548	491 –
T	LRA LRYA	1629	487 –

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

19XR Chiller Dimensions



Cooler Size	Condenser Size	A-Length mm(2 passes)	B-Width mm	C-Height mm	D-Tube Removal Space for Either End mm
30 ~ 32	30 ~ 32	4172	1707	2073	3747
35 ~ 37	35 ~ 37	4693	1707	2073	4343
40 ~ 42	40 ~ 42	4365	1908	2153	3747
45 ~ 47	45 ~ 47	4885	1908	2153	4343
5P ~ 54	50 ~ 54	4460	2054	2207	3747
5X ~ 59	55 ~ 59	4980	2054	2207	4343
6P ~ 64	60 ~ 64	4480	2124	2261	3747
6X ~ 69	65 ~ 69	5000	2124	2261	4343
7P ~ 74	70 ~ 74	5156	2426	2985	4267
7X ~ 79	75 ~ 79	5766	2426	2985	4877
8P ~ 84	80 ~ 84	5200	2711	3029	4267
8X ~ 89	85 ~ 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.

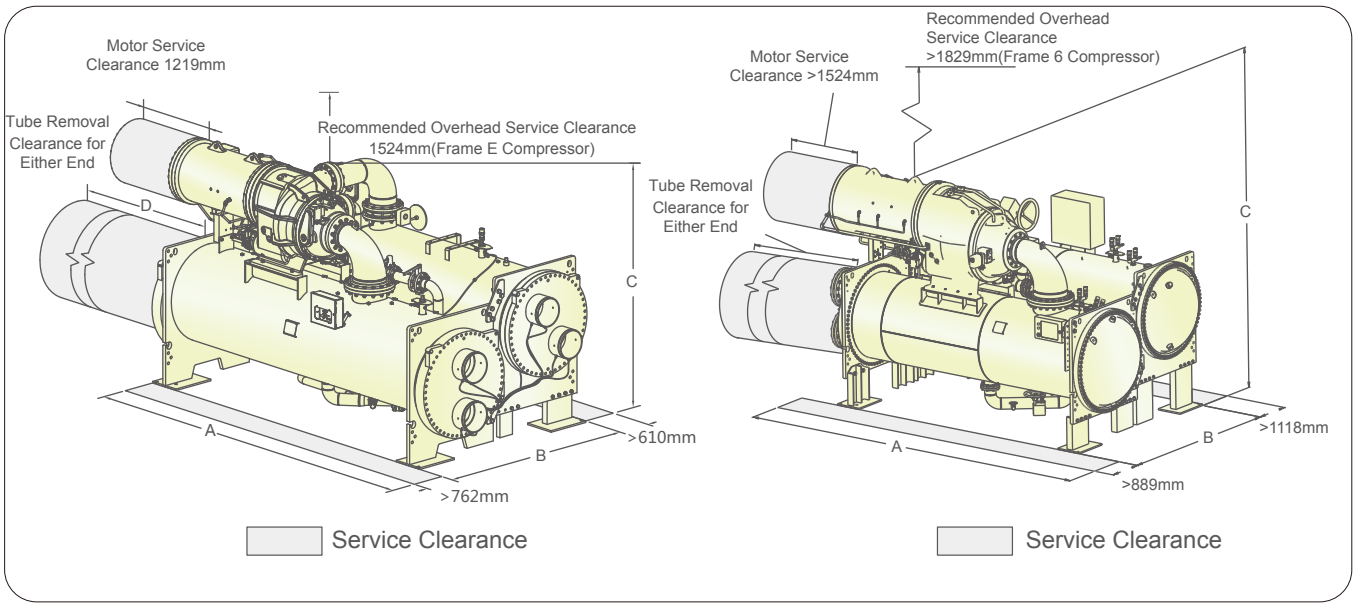
19XR/XR-E Starter Dimensions (Free standing)

(380V-3ph-50Hz/60Hz)

Voltage	Starter Type	Rated Current(A)	Width(mm)	Width(mm)	Depth(mm)	Height(mm)
380V	Y-Δ	<740 740-1560	800 1000	800 1000	600 600	2000 2000
380V	Solid State	<1157 1157-1550	1200 1600	1200 1600	800 800	2000 2000
6.3kV	Across the Line Primary Reactor		1000 2000	1000 2000	1660 1660	2600 2600
10/11kV	Across the Line Primary Reactor		1000 2000	1000 2000	1660 1660	2600 2600

Notes: The wiring of 380V starter enters from the top and exits from the bottom.
The wiring of 6.3/10/11kV starter enters from the top and exits from the top.

19XR-E/19XR-6 Chiller Dimensions



Cooler Size	Condenser Size	A-Length for NIH waterbox (2Passes)	B-Width	C-Width	D-Tube Removal Space for Either End
		mm	mm	mm	mm
7P-74	70-74	5169	2426	2902	4267
7X-79	75-79	5779	2426	2902	4877
8P-84	80-84	5205	2711	2950	4267
8X-89	85-89	5817	2711	2950	4877
A4A-A47	A4A-A47	5270	3051	3484	4267
A6A-A67	A6A-A67	5879	3051	3484	4877
A4A-A47	B4A-B47	5270	3185	3484	4267
A6A-A67	B6A-B67	5879	3185	3484	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.

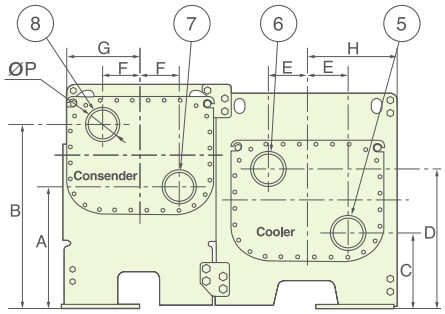
19XR-6 Starter Dimensions (Free standing)

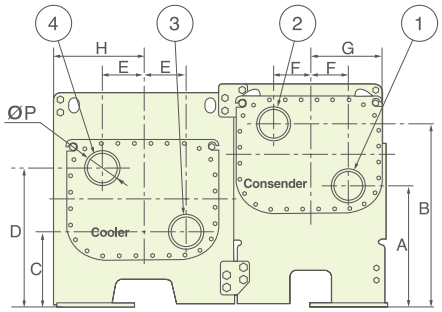
Voltage	Starter Type	Width(mm)	Depth(mm)	Height(mm)
10/11kV	Across the Line	1000	1300	2500
	Primary Reactor	2000	1300	2700
	Auto-Transformer	3000	1500	2700

Notes: The wiring of 10/11kV starter enters from the top and exits from the top. For other wiring requirements, please contact local agencies to get more support.

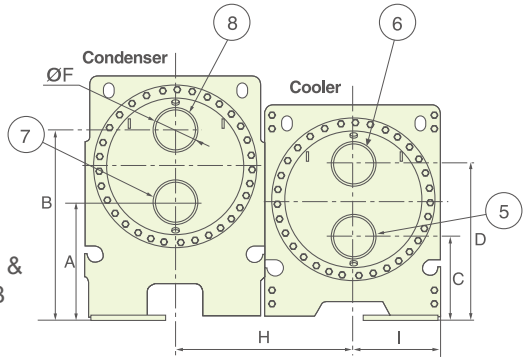
Nozzle Dimensions

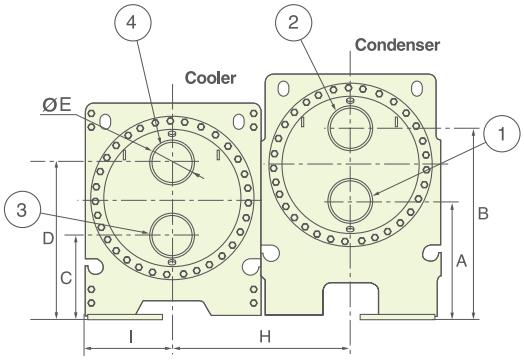
Frame 3





Frame 4-8 &
Frame A-B





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

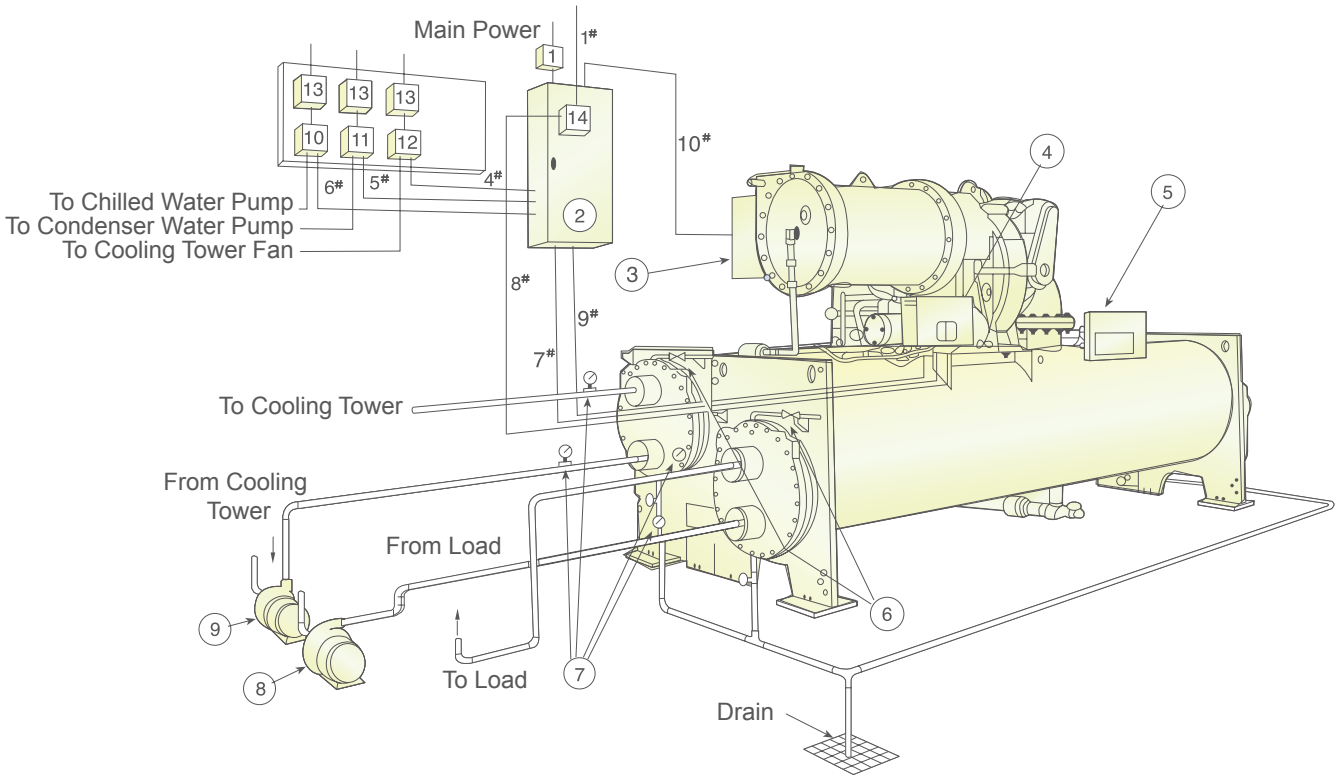
(mm)

Cooler Size	Condenser Size	A	B	C	D	E	F	G	H	ØP
30 ~ 32	30 ~ 32	635	895	410	679	213	152	381	454	DN200
35 ~ 37	35 ~ 37									

Cooler Size	Condenser Size	A	B	C	D	ØE	ØF	H	I
40 ~ 42	40 ~ 42	627	995	499	867	DN200	DN200	940	464
45 ~ 47	45 ~ 47								
5P ~ 54	50 ~ 54	736	1168	482	850	DN200	DN250	997	489
5X ~ 59	55 ~ 59								
6P ~ 64	60 ~ 64	788	1220	489	921	DN250	DN250	1048	521
6X ~ 69	65 ~ 69								
7P ~ 74	70 ~ 74	1047	1555	807	1315	DN300	DN300	1213	610
7X ~ 79	75 ~ 79								
8P ~ 84	80 ~ 84	1062	1620	757	1315	DN350	DN350	1356	678
8X ~ 89	85 ~ 89								
A4A-A47	A4A-A47	1337	1947	917	1557	DN400	DN400	1525	796
A6A-A67	A6A-A67								
A4A-A47	B4A-B47	1231	1892	917	1557	DN400	DN450	1593	796
A6A-A67	B6A-B67								

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



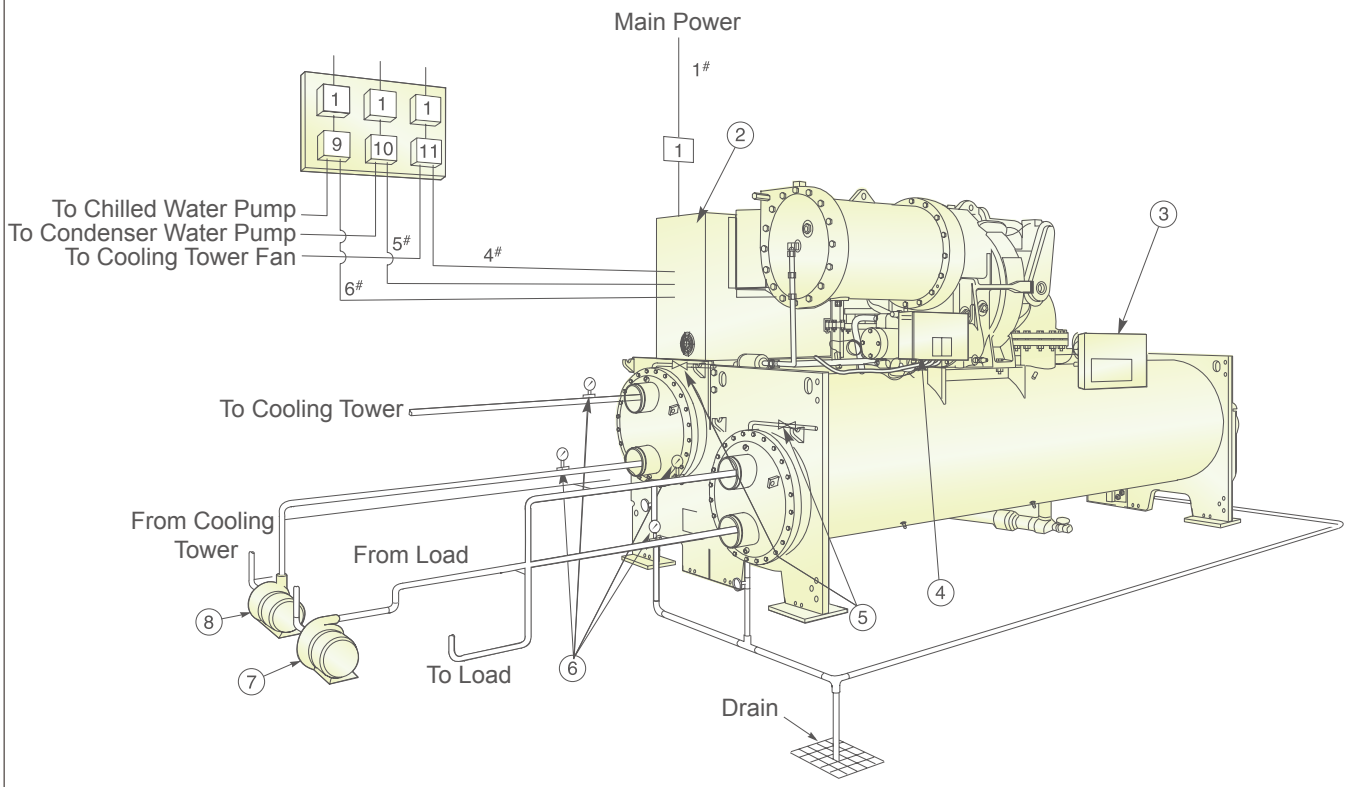
① Air Switch	② Freestanding Compressor Motor Starter	③ Compressor Motor Terminal Box	④ Oil Pump Controller
⑤ Control Panel	⑥ Vents	⑦ Pressure Gauges	⑧ Chilled Water Pump
⑨ Cooling Water Pump	⑩ Chilled Water Pump Starter	⑪ Cooling Water Pump Starter	⑫ Cooling Tower Fan Starter
⑬ Air Switch	⑭ Oil Pump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

Line	Purpose	Specification
1#	Main power to Starter:	380V AC: 3 phases, 1 neutral, and 1 grounding
		Or 6300V/10kV/11kV AC: 3 phases, 1 grounding (medium/high 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/10kV/11kV chiller,customer supply 380V power line to oil pump contactor)
9#	To Lubrication System Power Panel:	8 control shielding lines, 600V, 80℃, grounding in starter
10#	To Motor:	380V AC: 6 leads (Minimum ampacity per conductor = 0.721 x RLA), 2 grounding
		Or 6300V/10kV/11kV AC: 3 leads, 1 grounding (medium/high 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℃) 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

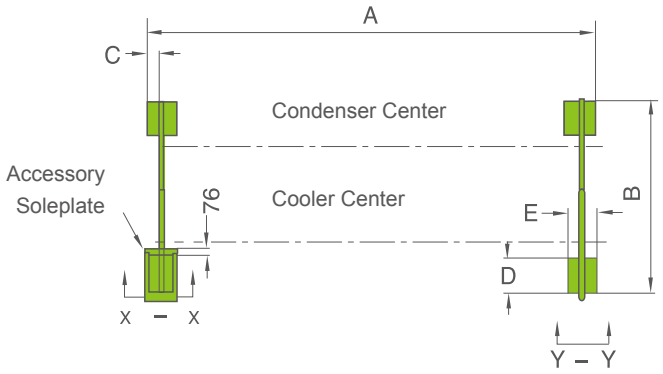
Line	Purpose	Specification
1#	Main power to Starter:	380V AC: 3 phases, 1 neutral, and 1 grounding
4#	To Cooling Tower Fan Starter:	2 control lines (optional)
5#	To Cooling Tower Water Pump Starter:	2 control lines (optional)
6#	To Chilled Water Pump Starter:	2 control lines (optional)

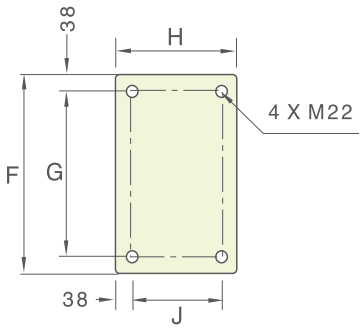
Piping and Wiring Requirements:

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%.

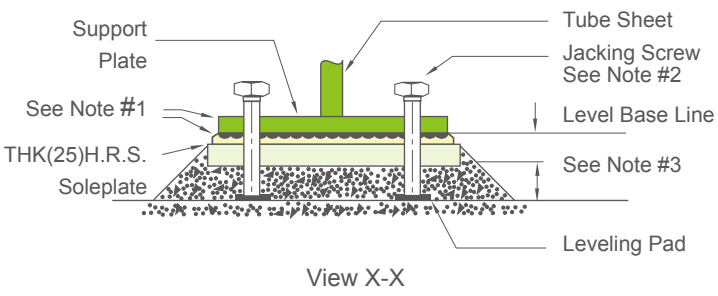
Types of Base Isolation

Location Of Isolator

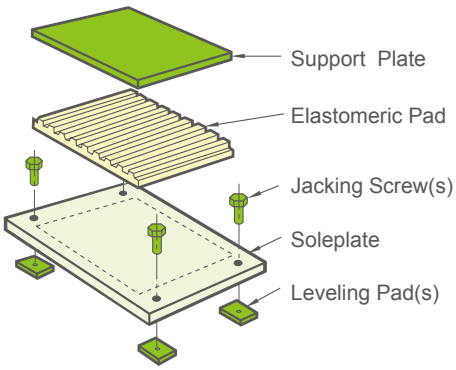




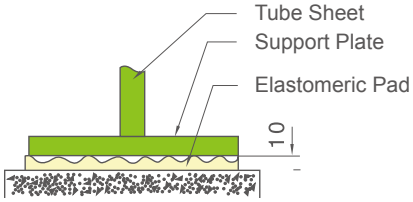
Standard Isolation



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.

Cooler/Condenser Size	A	B	C	D	E	F	G	H	J
30-32/30-32	3931	1632	92	387	229	540	464	254	178
35-37/35-37	4451	1632	92	387	229	540	464	254	178
40-42/40-42	3931	1829	92	387	229	540	464	254	178
45-4745-47	4451	1829	92	387	229	540	464	254	178
5P-54/50-54	3931	1969	92	387	229	540	464	254	178
5X-59/55-59	4451	1969	92	387	229	540	464	254	178
6P-64/60-64	3931	2070	92	387	229	540	464	254	178
6X-69/65-69	4451	2070	92	387	229	540	464	254	178
7P-74/70-74	4620	2400	176	559	406	711	635	432	356
7X-79/75-79	5320	2400	176	559	406	711	635	432	356
8P-84/80-84	4620	2686	176	559	406	711	635	432	356
8X-89/85-89	5320	2686	176	559	406	711	635	432	356
A4A-A47/A4A-A47	4492	3051	164	559	406	711	635	432	356
A6A-A67/A6A-A67	5102	3051	164	559	406	711	635	432	356
A4A-A47/B4A-B47	4492	3185	164	559	406	711	635	432	356
A6A-A67/B6A-B67	5102	3185	164	559	406	711	635	432	356

Option Specifications (for 19XR/XR-E)

Waterside Pressure of condenser:
The standard pressure is 1.0Mpa, 1.6Mpa and 2.0Mpa are also available if necessary.1.6Mpa is not available for 19XR-6.
Waterside Pressure of cooler:
The standard pressure is 1.0Mpa, 1.6Mpa and 2.0Mpa are also available if necessary.1.6Mpa is not available for 19XR-6.
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（19XR only）:
This helps reduce the noise by 1~2dB (A)

(For details, please contact local agencies.)

Dimension Selection for Selected Model

19XR series 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 10, 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

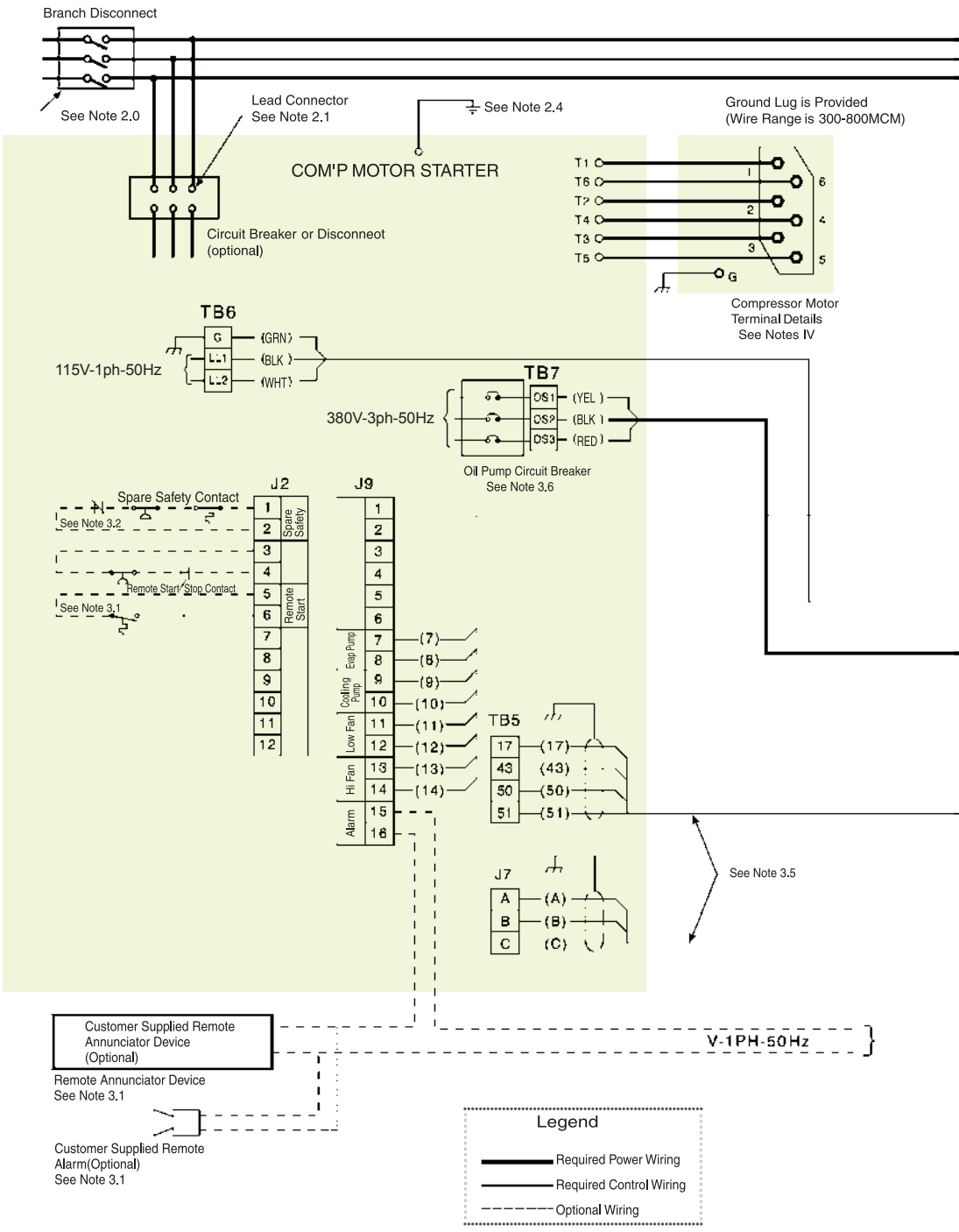
See nozzle dimensions table on page 12, the heat exchanger 40~42 line for dimensions of main nozzles and flanges as follows:

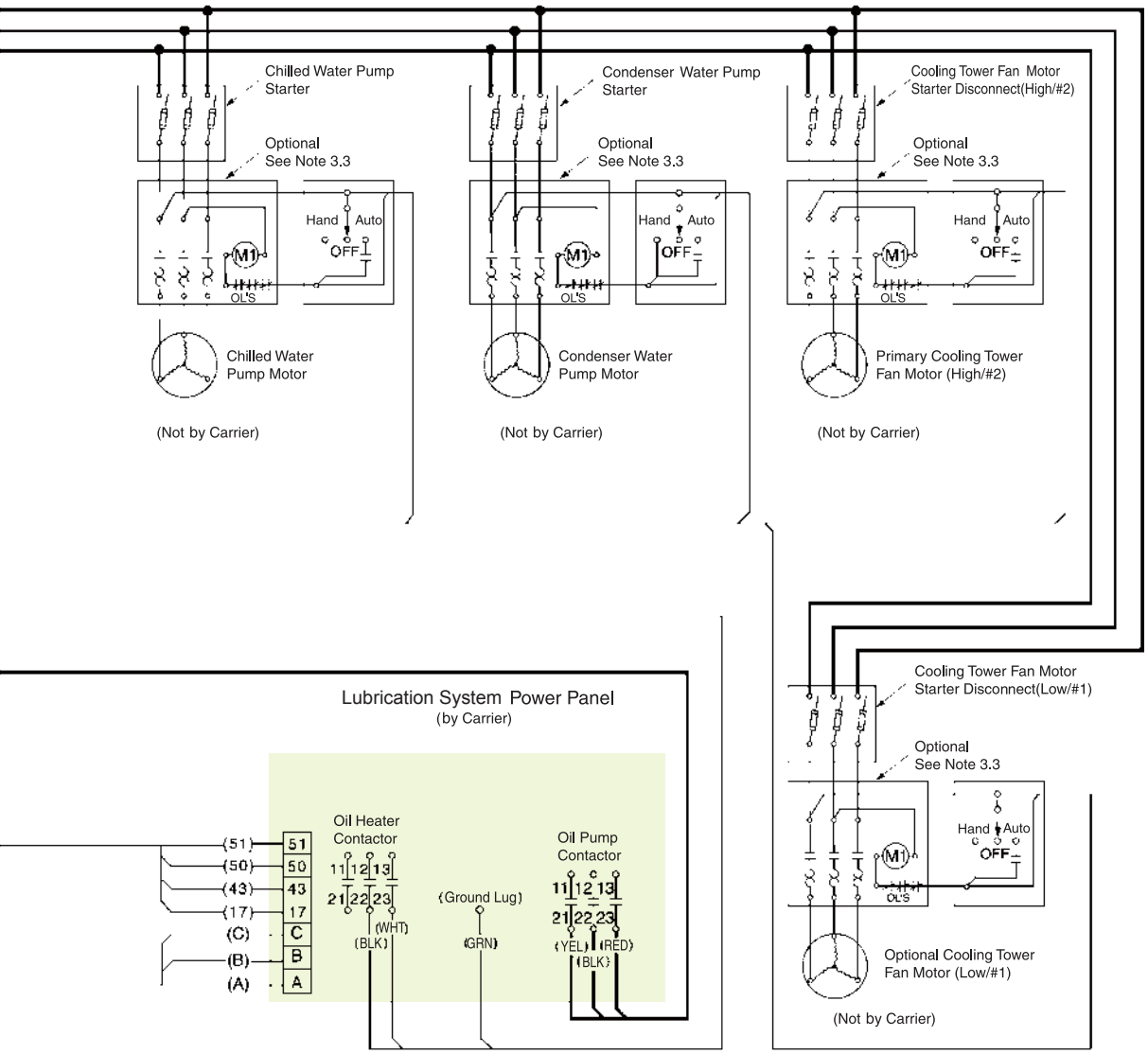
Cooler Size	Condenser Size	A	B	C	D	ØE	ØF	H	I
40 ~ 42	40 ~ 42	627	995	499	867	DN200	DN200	940	464

See base dimensions table on page 15, the heat exchanger 40~42 line for base dimensions as follows:

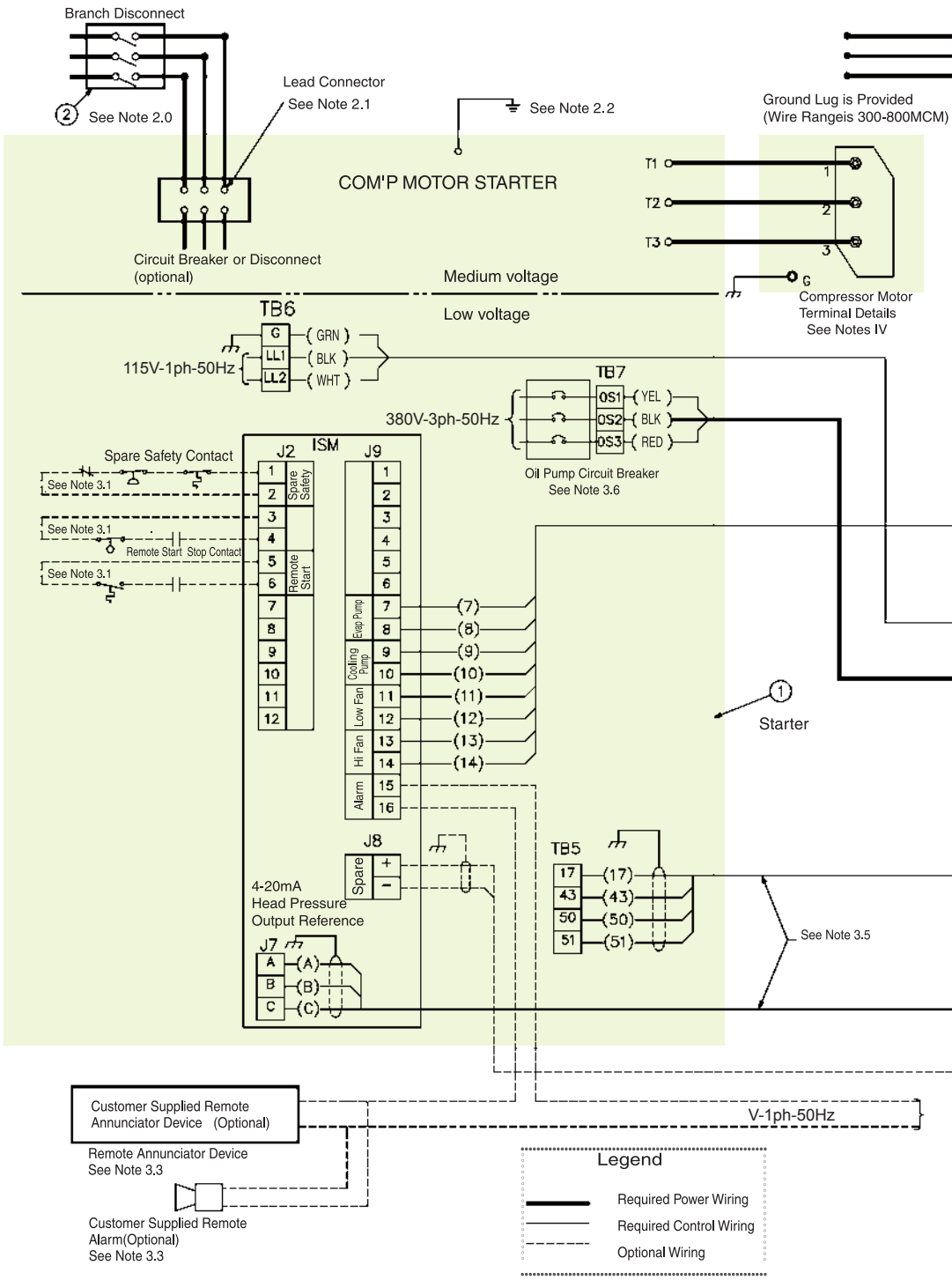
Cooler Size	Condenser Size	A	B	C	D	E	F	G	H	J
40 ~ 42	40 ~ 42	3931	1829	92	387	229	540	464	254	178

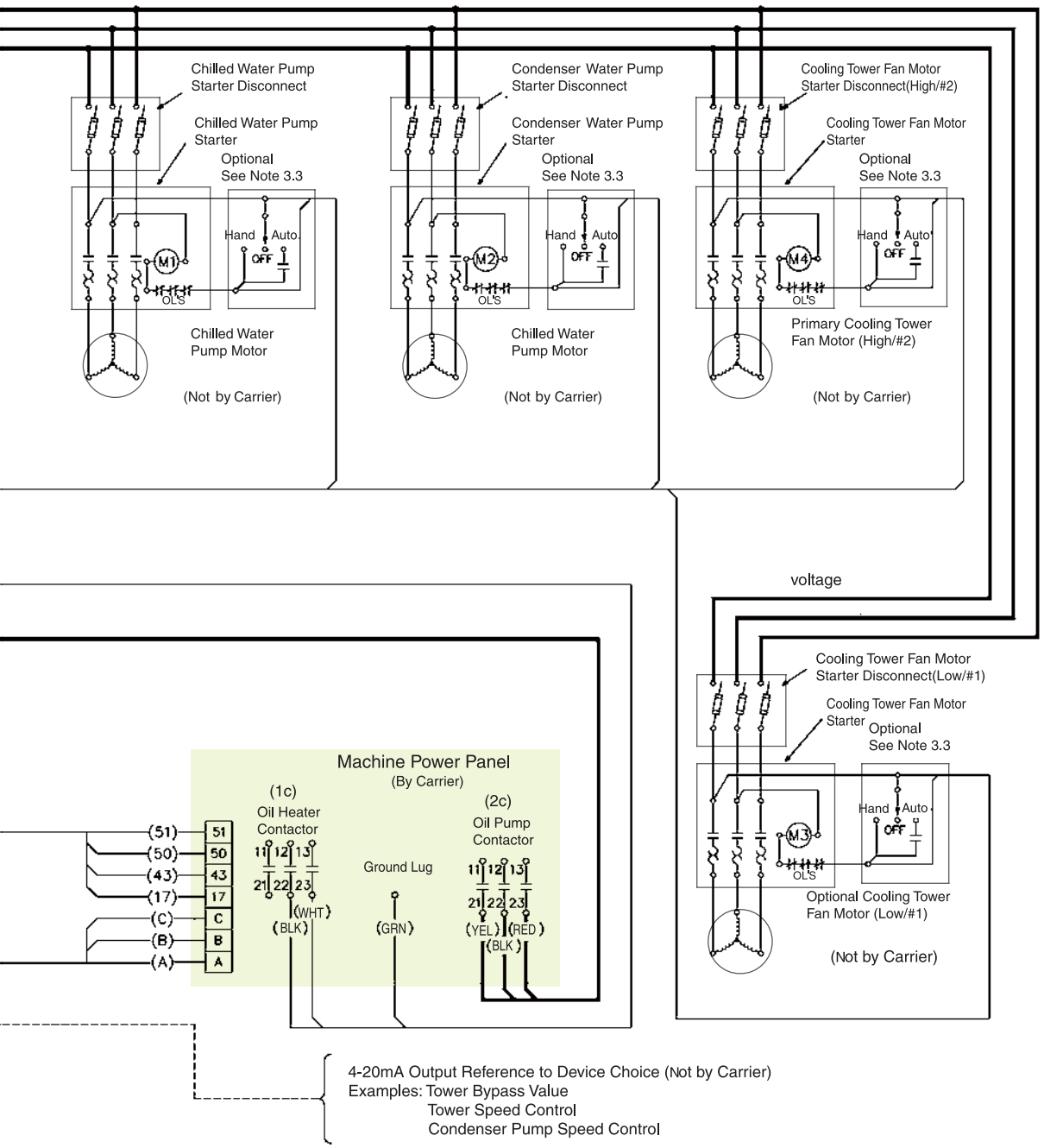
19XR/XR-E Typical Field Wiring with Free-Standing Starter (380V-3ph-50Hz/60Hz)




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)

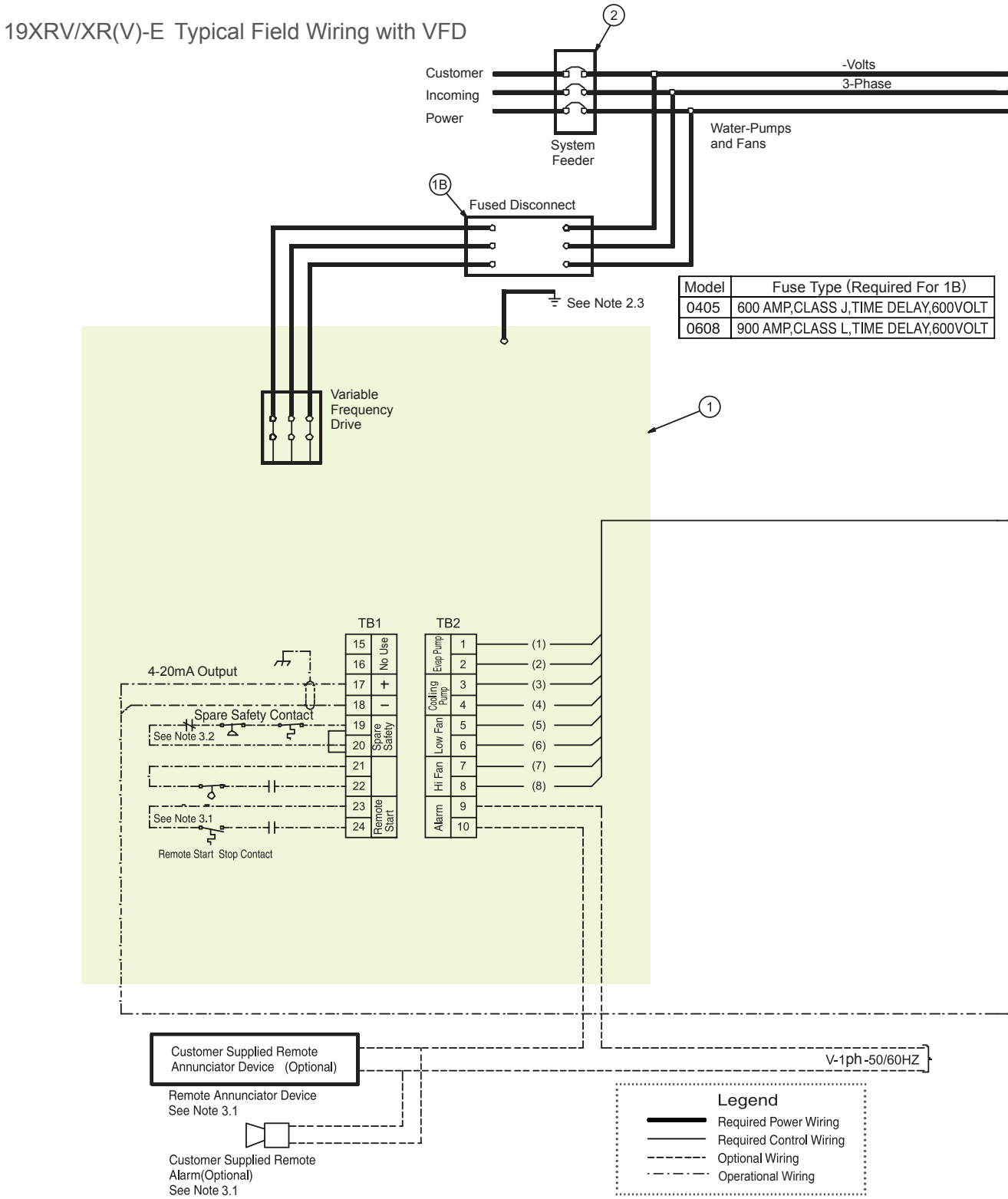
19XR/XR-E Typical Field Wiring with Free-Standing Starter (Medium Voltage)



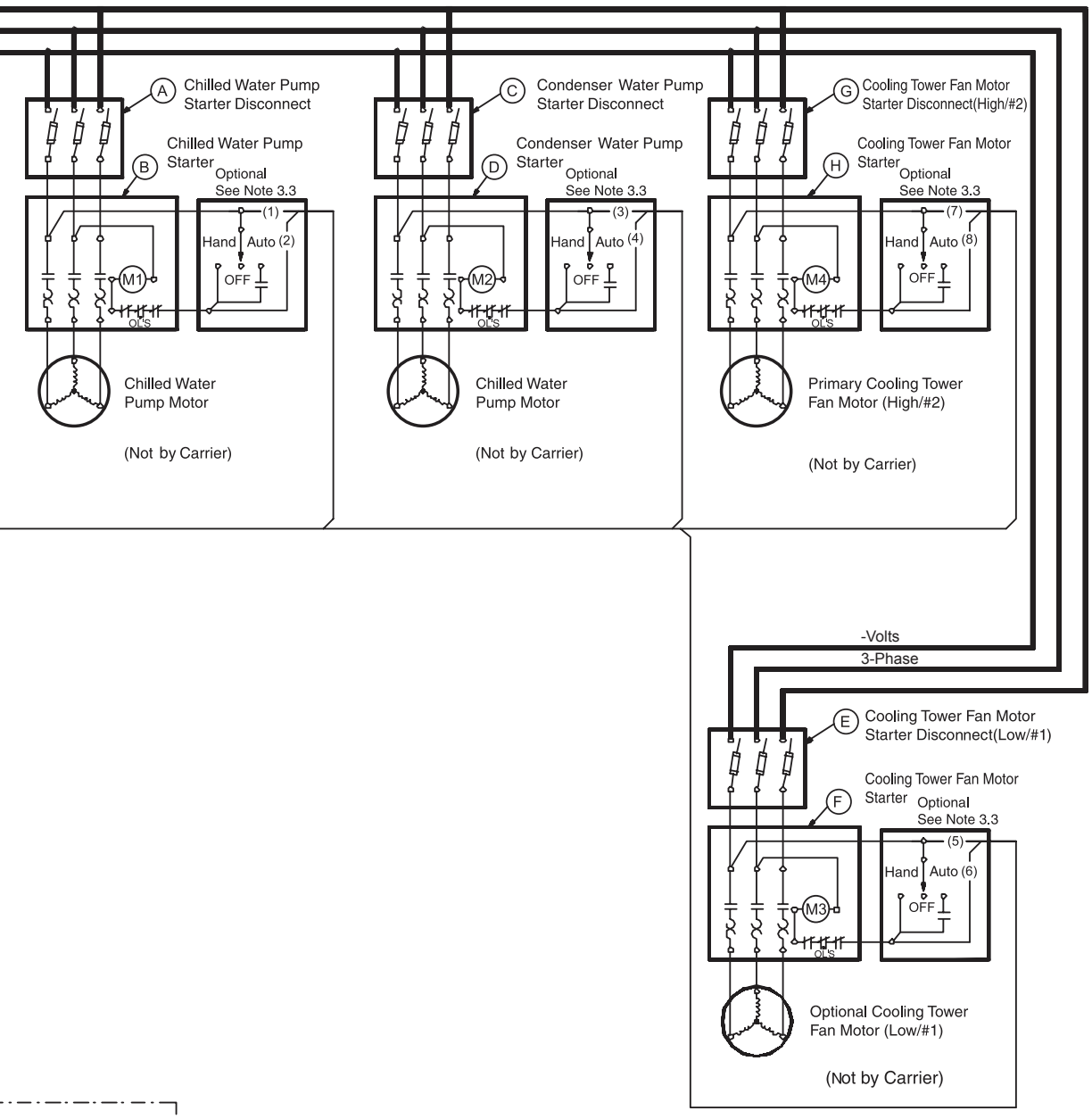

Chilled Water Pump
Starter Disconnect
Chilled Water Pump
Starter
Optional
See Note 3.3
Hand
Auto
OFF
M1
OL'S
Chilled Water
Pump Motor
(Not by Carrier)
Condenser Water Pump
Starter Disconnect
Condenser Water Pump
Starter
Optional
See Note 3.3
M2
Chilled Water
Pump Motor
(Not by Carrier)
Cooling Tower Fan Motor
Starter Disconnect(High/#2)
Cooling Tower Fan Motor
Starter
Optional
See Note 3.3
M4
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
M3
Optional Cooling Tower
Fan Motor (Low/#1)
(Not by Carrier)
Machine Power Panel
(By Carrier)
(1c)
Oil Heater
Contactor
(2c)
Oil Pump
Contactor
Ground Lug
(51)
(50)
(43)
(17)
(C)
(B)
(A)
51
50
43
17
C
B
A
11 12 13
21 22 23
(WHT)
(BLK)
(GRN)
(YEL)
(RED)
(BLK)
4-20mA Output Reference to Device Choice (Not by Carrier)
Examples: Tower Bypass Value
Tower Speed Control
Condenser Pump Speed Control

Field Wiring

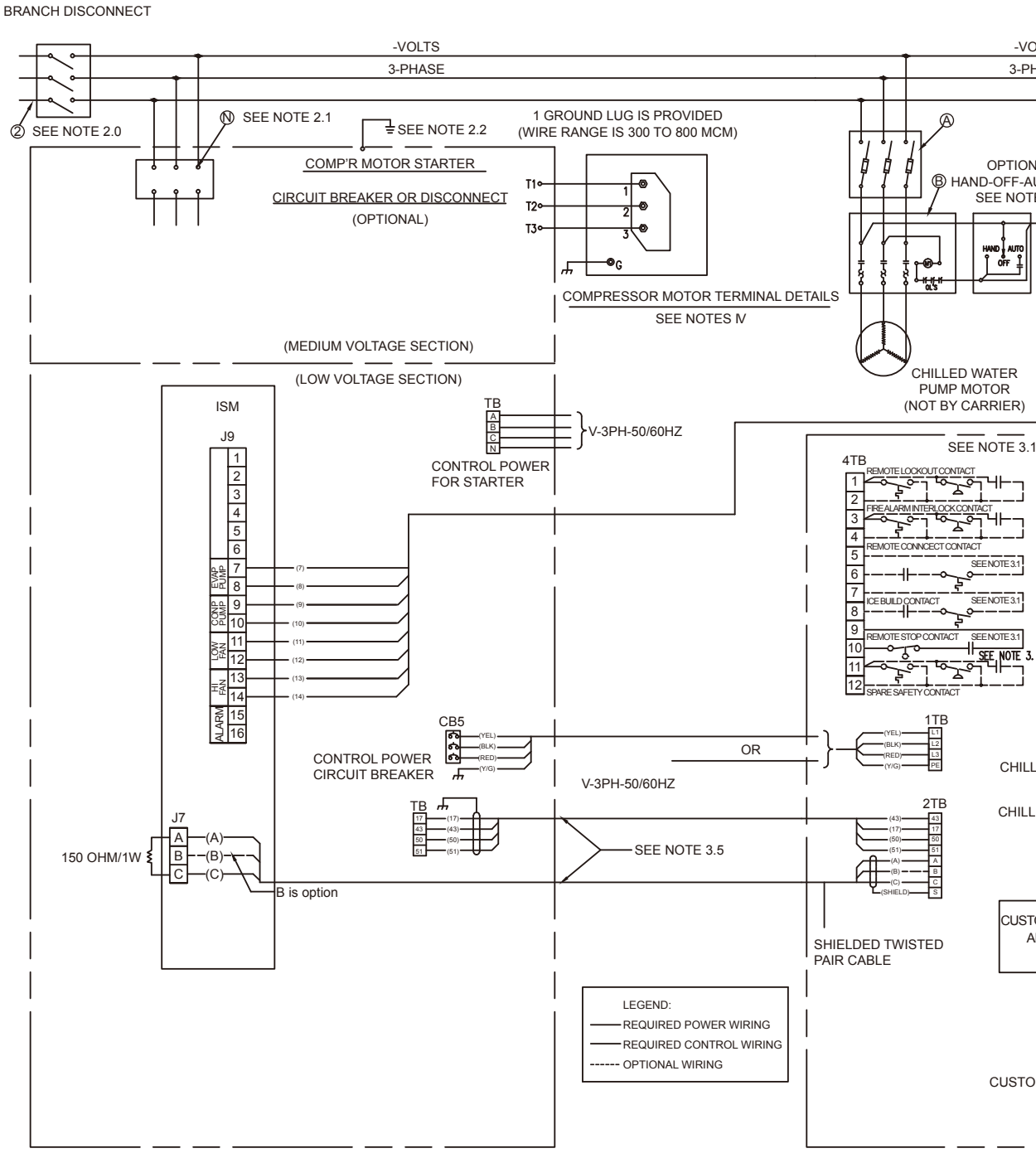
19XRV/XR(V)-E Typical Field Wiring with VFD

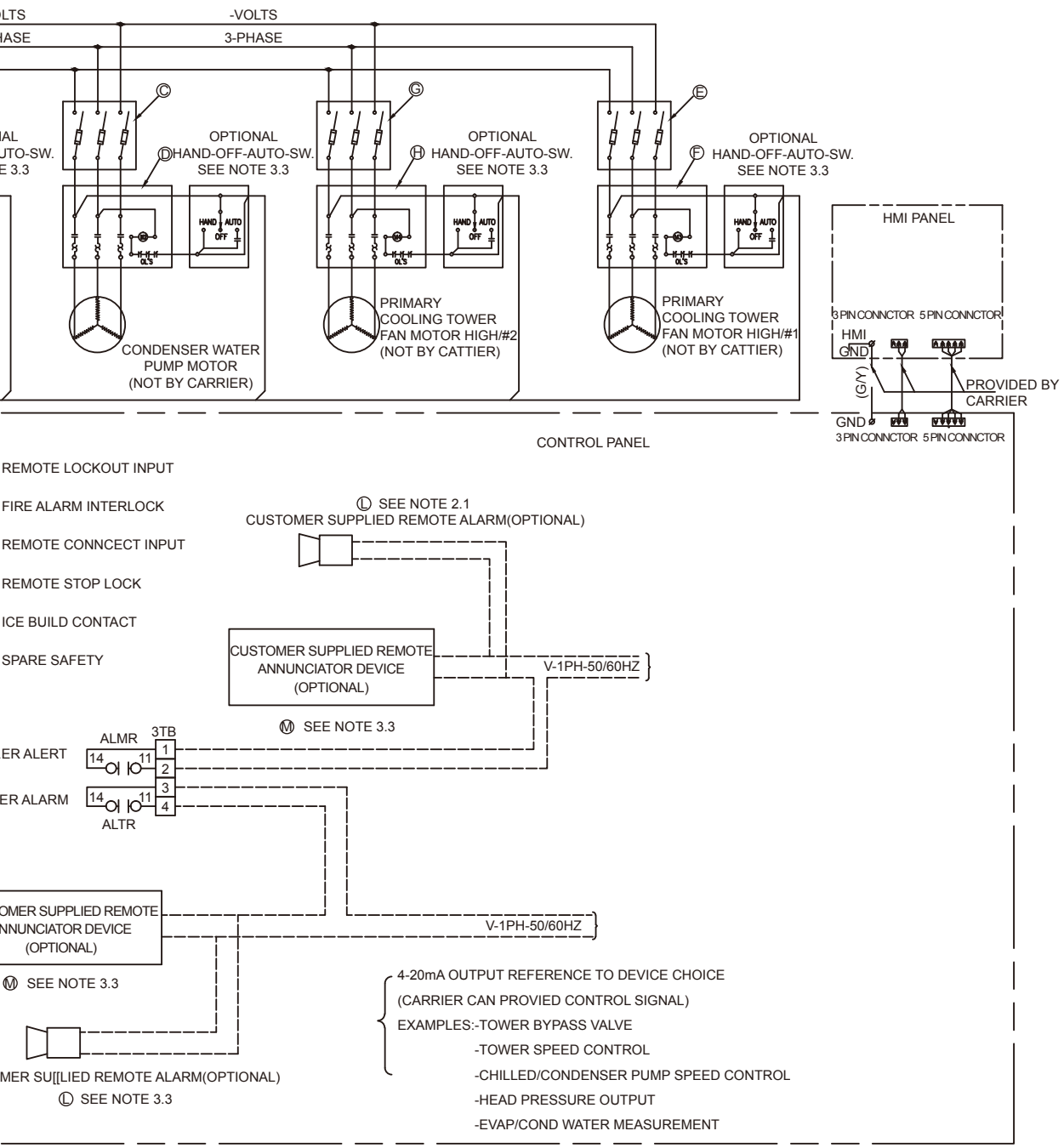


Model	Fuse Type (Required For 1B)
0405	600 AMP,CLASS J,TIME DELAY,600VOLT
0608	900 AMP,CLASS L,TIME DELAY,600VOLT


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

19XR-6 Typical Field Wiring with Free-Standing Starter (High Voltage)




-VOLTS
3-PHASE
OPTIONAL
HAND-OFF-AUTO-SW.
SEE NOTE 3.3
OPTIONAL
HAND-OFF-AUTO-SW.
SEE NOTE 3.3
OPTIONAL
HAND-OFF-AUTO-SW.
SEE NOTE 3.3
HMI PANEL
3 PIN CONNCTOR 5 PIN CONNCTOR
HMI
GND
(G/Y)
PROVIDED BY
CARRIER
GND
3 PIN CONNCTOR 5 PIN CONNCTOR
CONDENSER WATER
PUMP MOTOR
(NOT BY CARRIER)
PRIMARY
COOLING TOWER
FAN MOTOR HIGH/#2
(NOT BY CATTIER)
PRIMARY
COOLING TOWER
FAN MOTOR HIGH/#1
(NOT BY CATTIER)
CONTROL PANEL
REMOTE LOCKOUT INPUT
FIRE ALARM INTERLOCK
REMOTE CONNCECT INPUT
REMOTE STOP LOCK
ICE BUILD CONTACT
SPARE SAFETY
SEE NOTE 2.1
CUSTOMER SUPPLIED REMOTE ALARM(OPTIONAL)
CUSTOMER SUPPLIED REMOTE
ANNUNCIATOR DEVICE
(OPTIONAL)
V-1PH-50/60HZ
SEE NOTE 3.3
ALMR
3TB
ALTR
4-20mA OUTPUT REFERENCE TO DEVICE CHOICE
(CARRIER CAN PROVIED CONTROL SIGNAL)
EXAMPLES:-TOWER BYPASS VALVE
-TOWER SPEED CONTROL
-CHILLED/CONDENSER PUMP SPEED CONTROL
-HEAD PRESSURE OUTPUT
-EVAP/COND WATER MEASUREMENT
V-1PH-50/60HZ
SEE NOTE 3.3
SEE NOTE 3.3

Microprocessor Controls (for 19XR/XR-E)

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

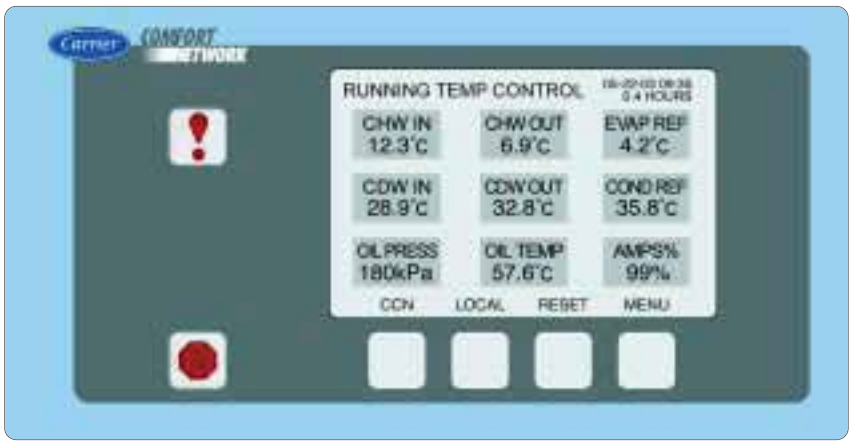
- Chiller Operation Status Message
- Power-On
- Pre-Start Diagnostic Check
- Compressor Motor Amps
- Pre-Alarm Alert++
- Alarm
- Contact for Remote Alarm
- Safety Shutdown Messages
- Elapsed Time (Hours of Operation)
- Chiller Input kW

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.

Microprocessor Control（for 19XR-6)

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

- Multi Tiers Color Touch Screen with Multi Languages Selection
- Friendly Human Machine Interface
- Component Test and Diagnostic Check
- Programmable Recycle Allows Chiller to Recycle at Optimum Loads for Decreased Operating Costs
- CCN and Bacnet Compatible
- Graphical display screens for the main components
- Individual Start/Stop Schedules for Local and CCN Operation Modules
- Recall of Up to 50 Alarm/Alert Messages with Diagnostic Help
- Two Chiller Lead/Lag with Parallel or Series Water Pipe Connection Configuration
- Optional Soft Stop Unloading the Compressor Prior to Stopping
- Advanced Surge Prevention and Protection Control Algorithm
- Optional Variable Speed Water System Equipments Control
- Support Multi Temperature Sensor Types (Thermistor and RTD)
- Graphical Trending
- Black Box Function for Trouble Shooting
- Alarm Email Function for Remote Monitoring
- Ethernet Compatibility with Web Server for Remote Controls and Monitoring
- Swift Restart for Data Center Application
- Allowed Smart Phones Connection to Review Web Pages with Additional Equipments
- Prognostic
- End of Line Test
- Electronic User Manuals
- Different Access Levels
- Temperature Reset for Energy Saving

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
- Optional Water Pressure Sensor for Water Flow Check
- Optional Fire Security Interlocks
- Optional Customer Interlock

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
- Start Up Sequence
- Compressor Motor Amps
- Pre-Alarm Alert
- Alarm
- Contact for Remote Alarm
- Chiller Operation Status (Events)
- Safety Shutdown Messages
- Elapsed Time (Hours of Operation)
- Chiller Input kW

Capacity Control

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

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.

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/remote lockout contacts, optional remote start/stop device contacts, optional fire alarm interlock 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(Not applicable for 19XR6).

3.3 IOB relay 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 control panel must be separate shielded cables with minimum rating of 600V, 80°C For communication must use shield twist pair wire.

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. (Not applicable for 19XR6)

Field Wiring Specifications (with Free-standing Starter)

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.

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Supersede:	CAT_AQUAEDGE-19XR_E_1312_01
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