MULTISTACK®

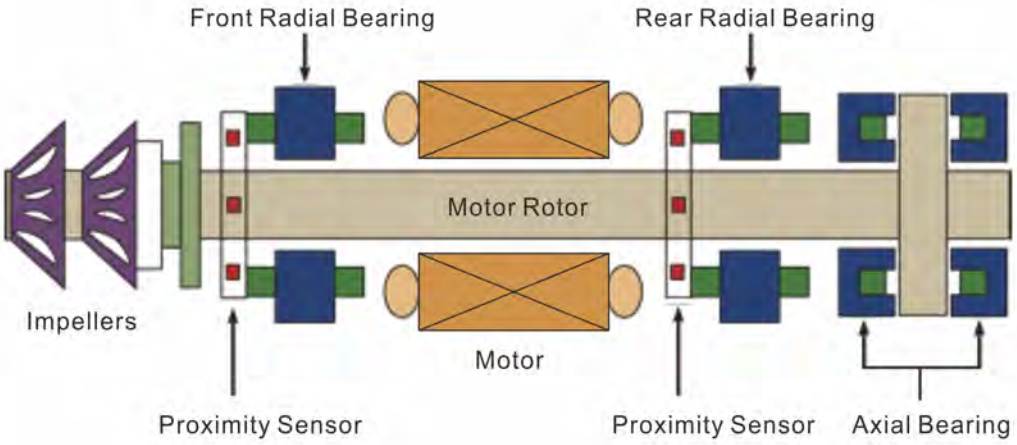
MTW-F SERIES

Flooded Water Cooled Oil-free Centrifugal Chiller

AHRI CERTIFIED®
www.ahridirectory.org
Water-Cooled Chillers
AHRI Standard 550/590

We are
the application pioneer of magnetic levitation technology
the creator of modular refrigeration technology

Oil-free Magnetic Levitation Centrifugal Compressor



The oil-free centrifugal compressor is a totally digital part with an onboard digital control system monitoring all variables that may affect the safe operation of compressors. The control system consists of several multi-functional modules, including AC-DC converter module, magnetic bearing control module, soft-start module, inlet guide valve control module and communication module. All these modules are integrated in the compressor and make the compressor an electronic rather than a mechanical part.

When the condensing temperature and/or heating load change, variable frequency drive (VFD) control is utilized to regulate the compressor capacity with variable revolving speed of the motor and impellers based on actual load. With the application of VFD control, energy consumptions are reduced and part load efficiency is improved. Chiller will retain smooth running even in 10% part load. This is a great advantage over conventional chillers at part load conditions.

Oil-free Magnetic Levitation Centrifugal Compressor

The internal insulated gate bipolar transistor (IGBT) acts as an inverter to convert DC voltage to three-phase adjustable AC voltage. The motor RPM is regulated based on the inverter frequency output, voltage and phases which are controlled through the motor signals and the proximity sensor signals. The compressor speed is smoothly confined within 15,000-38,000RPM based on load, suction/discharge pressure, running current and other conditions. Compared with 250-350 amps starting current of a conventional compressor, the oil-free centrifugal compressor pulls only 2 amps. The requirements for power distribution system and heat stress on the stator are accordingly reduced.

The compressor control system detects capacity required and compression ratio synchronously to match up with the revolving speed. Inlet guide valve control module continuously regulates the inlet guide vane open percentage and suction dynamic pressure in order to maximize operation at compressor sweet spots and avoid surge. In this way, the compressor can remain smooth operation without surge even at 30% part load condition or at low condenser water temperature. The compressor can even run at part load condition closed to 0% if the chiller has load balancing valve.

Proximity sensors in the magnetic bearing control module sense and reposition the impellor shaft 6 million times a minute to ensure the bearing is within a 0.007mm range.

In the event of a shutdown or power outage, the controller will detect power loss and switch the compressor motor to generator mode. In this mode, the bearing and control system are powered by both the power accumulator and the motor power generated by the inertial kinetic energy of the impellers and shaft. The revolving assembly remains levitating until it is brought to a safe stop without any friction. This is an unprecedented reliability feature of the compressor.

The compressor runs very quietly since it seldom generates mechanical friction or mechanical vibration. Sound level of the compressor measured at 5 meters horizontally around the chiller is as low as 65dB(A).

Advanced communication capability of the compressor enables it to connect to the Ethernet and makes it convenient for the users to access to the compressor running data via Web browser.

Advantages of Oil-free Feature

Oil Free = Enhanced Reliability

Oil-free system eliminates lubrication oil, oil pump, oil separator, oil cooler, oil heater, oil filter, oil pressure control system, oil tube and oil sump, etc. It makes a simpler compressor with enhanced reliability.

Oil Free = Improved Performance

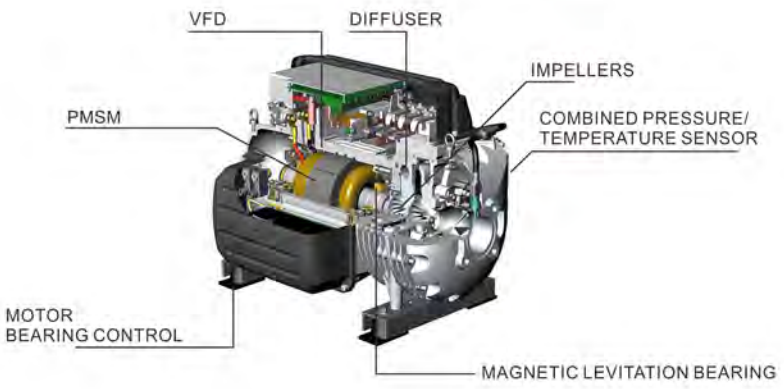
Oil-free cooling system eliminates oil film formed on the surface of heat exchanger which leads to increasing evaporating temperature and decreasing condensing temperature. Efficiency is accordingly improved. Capacity decline caused by oil accumulation in the evaporator will not exist.

Oil Free = Increased Efficiency

Oil free means zero power consumption for oil pump, oil heater and oil cooler. Efficiency of the chiller is therefore increased.

Oil Free = Reduced Maintenance & Operating Costs

Maintenance and operating costs are reduced by getting rid of lubrication, replacements of oil, oil filter and evaporator refrigerant.



MULTISTACK Flooded Water Cooled Oil-free Centrifugal Chiller

With years of rich experience in modular chiller industry since 1986,Multistack launches a brand-new energy-efficient product MTW-F oil-free centrifugal chiller with the unique MV7-plus control system, leading the way in HVAC industry.

MULTISTACK's MTW-F chillers represent oil-free chiller technology standard not only in product performance, but also in other aspects including reliability, redundancy and maintenance.

Nowadays, air conditioning industry is placing more and more emphasis on energy-efficient and environment-friendly products rather than low cost products. The use of high-efficient compressor, heat exchanger and variable water flow (VWF) system further indicates the necessity of pursuing multiple solutions. In response to the trend of today, MULTISTACK develops MTW-F oil-free centrifugal chiller, an energy-saving and high-tech product.

MULTISTACK Flooded Water Cooled Oil-free Centrifugal Chiller

Oil-free Magnetic Levitation Centrifugal Compressor

Oil-free magnetic levitation centrifugal compressor is a perfect combination of top aerospace technology and state-of-the-art digital control technology. It is a 2-stage centrifugal compressor featuring light weight and enhanced mechanical intensity. It not only enables small-capacity compressors to share a same cooling system but also pushes the efficiency, reliability and redundancy to a higher standard. The compressor uses patented technology of magnetic bearing system with only one moving part, which eliminates vibration and allows the compressor to run extremely quiet.

Excellent Part Load Efficiency

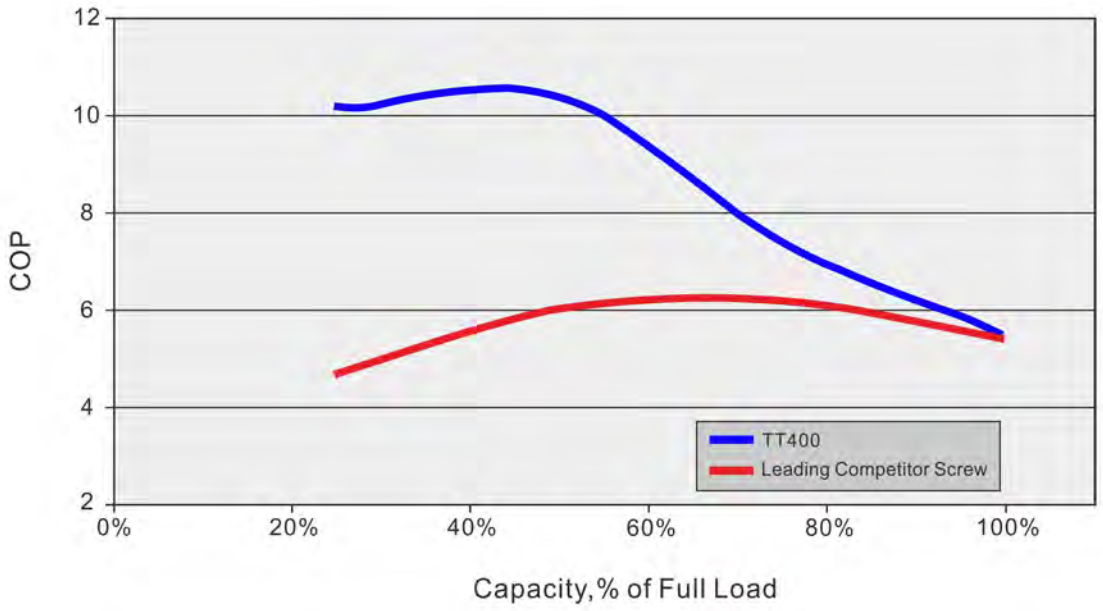
MTW-F compressors feature optimized part load efficiency. The special design and structure allow the compressors to run at part load condition as long as possible to achieve the best COP (W/W). When the cooling load decreases, MULTISTACK's unique MS ONE controller will shut down a certain number of compressors if necessary, leaving the rest to run at part load to meet the required capacity at high efficiency. With this self-adaptive control logic, a 450RT (1,600kW) MTW-F chiller can satisfy the required cooling capacity as low as 45RT (158kW) at high efficiency with Integrated Part Load Value (IPLV) of 10.95.

The use of multiple compressors allows the full play of redundancies of both evaporator and condenser at part load condition. This feature satisfies not only the building's best peak load efficiency but also the optimum operating efficiency at various part loads. IPLV can reach as high as 12 or even higher.

Compared with other chillers, power consumption of MTW-F chillers can be saved by about 42% and carbon emissions are equally reduced, undoubtedly meeting the needs of low carbon and energy-saving.

MULTISTACK Flooded Water Cooled Oil-free Centrifugal Chiller

Part Load Efficiency: MTW Chillers vs. Conventional Chillers



Energy Saving: MULTISTACK MTW-F Chillers vs. Other Leading Competitors' Chillers

	MULTISTACK MTW-F	Other Leading Competitor	Saving
Cooling Capacity (kw)	1583	1583	-
IPLV (kw/kw)	10.95	6.00	4.95
Average Annual Run Hours(1) (h)	3600	3600	3600-
Total Annual Consumption(kWh)	550800	948600	397800
Annual CO_2 Emissions(2) (metric Tons)	138.42	227.98	89.56

(1) Chillers annual run hours from May to Sepember;

(2) CO_2 emission factor: 7.18x10-4 metric Tons (CO_2/kWh);

Compared with conventional chillers, MTW-F magnetic levitation chillers can save operating costs by 42% or more and reduce CO2 emissions with only 2-3 years of investment payback period.

MULTISTACK Flooded Water Cooled Oil-free Centrifugal Chiller

Ultra Low Noise and Vibration

Main shaft of oil-free centrifugal compressor revolves at high speed without any mechanical contact with the bearing, achieving extremely low noise and vibration at either part load or full load condition.

Redundancy

Redundancy is very important to a chiller. However, it is usually overlooked for limited costs. MTW-F oil-free centrifugal chillers provide a solution by using multiple compressors sharing the same set of evaporator and condenser. Redundancy is then taken into consideration regardless of budget concerns. If one of the compressors encounters malfunction, others will remain in normal operation.

On the other hand, the efficiency of a conventional large centrifugal chiller will obviously decline when the load is lower than 50% of design load. This is a high-cost-consume design which hinders the chiller from achieving high efficiency at part load. In comparison, the MTW-F chiller uses a number of VFD oil-free centrifugal compressors. This design saves expenses for additional independent systems, providing better cost efficiency not only in peak hours but also at part load condition.

100% Oil-free Design

The rotor and impellers of the compressor remain levitating in the magnetic field. The proximity sensors on the bearing constantly send feedback to the magnetic bearing system, reposition the rotor and ensure that the rotor is levitating in the center, staying in the best working condition.

Oil-free magnetic centrifugal bearing promises quiet and reliable running of the compressor. Oil-free design eliminates complicated oil system, reduces operating maintenance costs and improves the chiller reliability and economy efficiency.

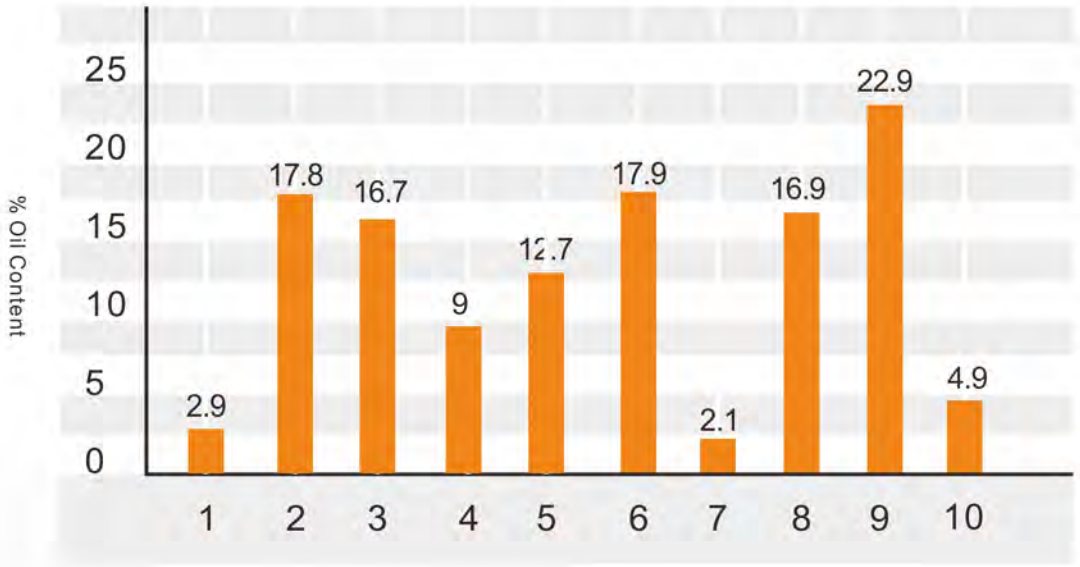
According to in-depth laboratory tests and a research project (601#) led by American Society of Heating Refrigerating and Air-conditioning Engineers (ASHRAE), refrigerant-entrained oil in the heat exchanger will greatly reduce chiller efficiency. Based on the 12% average oil content (data source from the research), oil built up in the evaporator will eventually causes declines on chiller performance and efficiency by about 18%. Since large centrifugal chillers must use lubrication oil and require annual maintenance (oil change, sampling, oil filter change and oil leakage handling). The need of heating up the oil sump may also result in more operation cost and maintenance cost. Nevertheless, because of the unavoidable refrigerant-entrained oil problem, lubrication oil will still greatly reduce the performance and efficiency of chillers.

MTW-F chillers operate without any lubrication oil which avoids declines of cooling capacity and efficiency.

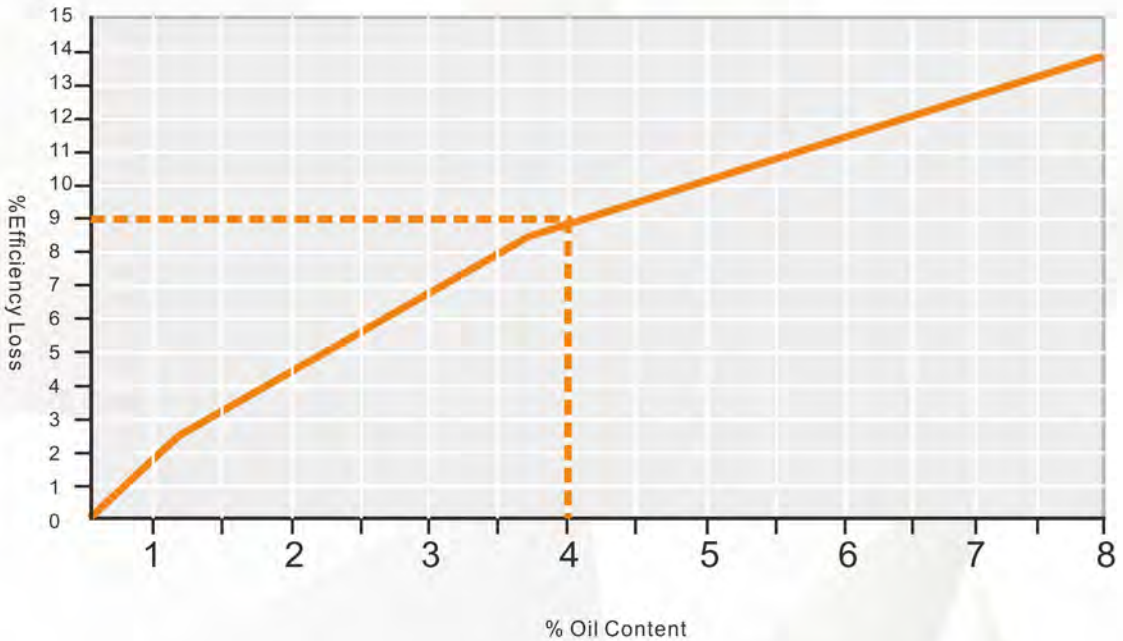
MULTISTACK Flooded Water Cooled Oil-free Centrifugal Chiller

ASHRAE Research Project 601#

Oil Content in Evaporator for Conventional Flooded Chiller Sample



How Much Does the Oil Decrease the Chiller Energy Efficiency



MULTISTACK Flooded Water Cooled Oil-free Centrifugal Chiller

Flooded Evaporator

MTW-F chillers use high efficient flooded evaporator with enhanced tubes. Balanced feeding system is adopted to ensure that each tube is infiltrated into refrigerant to improve heat transfer.

The optimized structure design of an evaporator ensures performance as below:

— Approaching temperature between refrigerant and water ≤ 1.5k;

— Suction Superheat ≤ 1.0k;

— Minimum pressure drop;

— Optimum part load efficiency;

— Chilled water VWF (optional)

VICTAULIC coupling water connection of evaporator provides great convenience for field piping connection.

Electronic Expansion Valve (EXV) (Figure 1)

A MULTISTACK MTW-F chiller with multiple compressors features two electronic expansion valves for maximum redundancy and reliability. This feature allows the chiller to run one or two valves to always meter the proper amount of refrigerant. By using electronic valves in conjunction with level control, MTW-F chillers are able to unload further than chillers with only one large EXV, TXV or orifices.

(Figure 1)

(Figure 2)

Environment-friendly Refrigerant R134a (Figure 2)

According to Montreal Convention, R11, R22 and some other refrigerants are forbidden to use in a time period because of their high ozone depletion. New products are not allowed to use such refrigerants. MTW-F oil-free centrifugal chillers use R134a with 0 ozone depletion potential (ODP). R134a is globally recognized to be the environment-friendly alternative refrigerant to HCFC. This allows for energy-efficient operation. Carbon emission is also reduced by 40%.

Factory-installed Differential Pressure Transducers

All MULTISTACK MTW-F chillers come with factory-installed differential pressure transducers on the evaporator and condenser. The transducers are plumbed and wired into the control system to decrease field installation requirements. Differential Pressure Transducers are used for protection in place of flow switches which flutters when used in variable flow applications and causing nuisance trips.

MS ONE Control System

Home Screen

The control system consists of programs, touch screen and system input/output. Features of the MS One controller include:

* Remote start/stop input
* Emergency stop input
* Chiller running status output
* Chiller fault alarm output
* Compressor fault lock out output
* Load limit input
* Cooling tower frequency signal setpoint (0-10VDC)
* Chilled/condenser water pump frequency output (0-10VDC)

Chiller Control Screen

This is where a general system summary for the entire chiller can be found. Features of this page include:

* System On/Off switch
* Compressor Override Controls
* Navigation Menus
  - User Menu (level 1 password login) includes: fault logs, alarm logs and logbook
  - Service Menu (level 2 password login) includes: edit system, edit I/O, edit I/O controls, edit alarms and Modbus set up
* Latest running status overview
* Power status and output
* System information, system fault, alarm and status
* Compressor information, fault, alarm and status

Technical Data

Model		Unit	MTW125F	MTW150F	MTW200F	MTW250F	MTW300F	MTW400F	MTW450F
Nominal Cooling Capacity		kW	440	528	703	879	1055	1407	1583
Nominal Power		kW	73.4	86.6	110.8	150.2	173.4	222.8	259.5
COP		W/W	6.00	6.10	6.34	5.85	6.08	6.31	6.10
IPLV		W/W	10.33	10.80	10.89	10.35	10.98	11.20	10.95
Comp. Type			Magnetic Levitation Oil-free Centrifugal						
Capacity Control			30%~100%	30%~100%	30%~100%	15%~100%	15%~100%	15%~100%	10%~100%
Power Supply			AC380V/50Hz/3Ph						
FLA per Comp.		A	210	170	206	210	170	206	170
Refrigerant Type			R134a						
Refrigerant Charge		kg	125	170	200	250	320	380	440
Evaporator	Type		Flooded						
	CHW Flow Rate	m^3/h	75.7	90.8	120.9	151.2	181.4	241.9	272.2
	Water Pressure Drop	kPa	105.9	98.4	94.3	62.2	81.6	81.7	75.0
	Fouling Factor	m^2k/kW	0.018						
	Max. Working Pressure (Water Side)	Mpa	1						
	Connection Size		DN150	DN150	DN150	DN150	DN200	DN200	DN200
Condenser	Type		Shell & Tube						
	CW Flow Rate	m^3/h	88.3	105.7	139.9	177	211.2	280.3	316.8
	Water Pressure Drop	kPa	69.6	68.3	79.4	51.2	56.0	68.0	55.9
	Fouling Factor	m^2k/kW	0.044						
	Max. Working Pressure (Water Side)	Mpa	1						
	Connection Size		DN150	DN150	DN150	DN150	DN200	DN200	DN200
Physical Dimensions	L	mm	2598	2598	2598	3704	4301	4301	4352
	W	mm	976	976	1081	976	976	1081	1912
	H	mm	1999	1999	2098	2057	2057	2148	1998
Operating Weight		kg	2150	2450	2900	4300	4900	5300	6800
Shipping Weight		kg	2300	2600	3100	4700	5300	5800	7500

Notes:

(1) Chillers are designed and constructed in conformity with *GB/T18430.1-2007 Vapor Compression Cycle Chiller (Heat Pump) for Commercial, Industrial and Other Similar Uses;*

(2) Nominal Conditions: Entering/leaving chilled water temperature: 12℃/7℃;
entering/leaving condenser water temperature: 30℃/35℃;

(3) Non-standard products are available upon request;

(4) Technical data herein may differ from those of specific models.
Please refer to the included manuals of selected models for specific data;

Technical Data

Model		Unit	MTW600F	MTW750F	MTW800F	MTW900F	MTW1000F	MTW1200F
Nominal Cooling Capacity		kW	2110	2638	2814	3165	3517	4220
Nominal Power		kW	345.1	431.6	442.7	513.3	554.0	660.8
COP			6.11	6.11	6.36	6.17	6.35	6.39
IPLV			11.03	11.02	11.28	11.10	11.22	11.32
Comp. Type			Magnetic Levitation Oil-free Centrifugal					
Capacity Control			7.5%~100%	6%~100%	7.5%~100%	5%~100%	6%~100%	5%~100%
Power Supply			AC380V/50Hz/3Ph					
FLA per Comp.		A	170	170	206	170	206	206
Refrigerant Type			R134a					
Refrigerant Charge		kg	690	780	880	990	1060	1200
Evaporator	Type							
	CHW Flow Rate	m^3/h	362.8	453.6	483.9	544.3	604.8	725.7
	Water Pressure Drop	kPa	76.3	68.2	68.1	93.9	76.1	98.7
	Fouling Factor	m^2k/kW	0.018					
	Max. Working Pressure (Water Side)	Mpa	1					
	Connection Size		DN250	DN300	DN300	DN300	DN300	DN300
Condenser	Type		Shell & Tube					
	CW Flow Rate	m^3/h	422.2	527.8	560.0	632.5	700.1	839.3
	Water Pressure Drop	kPa	53.3	52.2	46.3	63.9	55.2	76.5
	Fouling Factor	m^2k/kW	0.044					
	Max. Working Pressure (Water Side)	Mpa	1					
	Connection Size		DN250	DN300	DN300	DN300	DN350	DN350
Physical Dimensions	L	mm	4376	4361	4430	4930	4458	4958
	W	mm	2021	2382	2325	2325	2439	2489
	H	mm	2165	2177	2205	2225	2225	2225
Operating Weight		kg	9100	10250	11000	12500	13050	14500
Shipping Weight		kg	9200	11500	12300	14000	14750	16000

Notes:

(1) Chillers are designed and constructed in conformity with *GB/T18430.1-2007 Vapor Compression Cycle Chiller (Heat Pump) for Commercial, Industrial and Other Similar Uses;*

(2) Nominal Conditions: Entering/leaving chilled water temperature: 12℃/7℃;
entering/leaving condenser water temperature: 30℃/35℃;

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(4) Technical data herein may differ from those of specific models.
Please refer to the included manuals of selected models for specific data;

Heat Exchanger Water Pressure Drop

MTW	150	F	E	A
1	2	3	4	5

1——MULTISTACK Turbocor Water Cooled

2——Model Number (125, 150, 200, 250, 300, 400, 450, 600, 750, 800, 900, 1000, 1200RT)

3——F: Flooded Evaporator

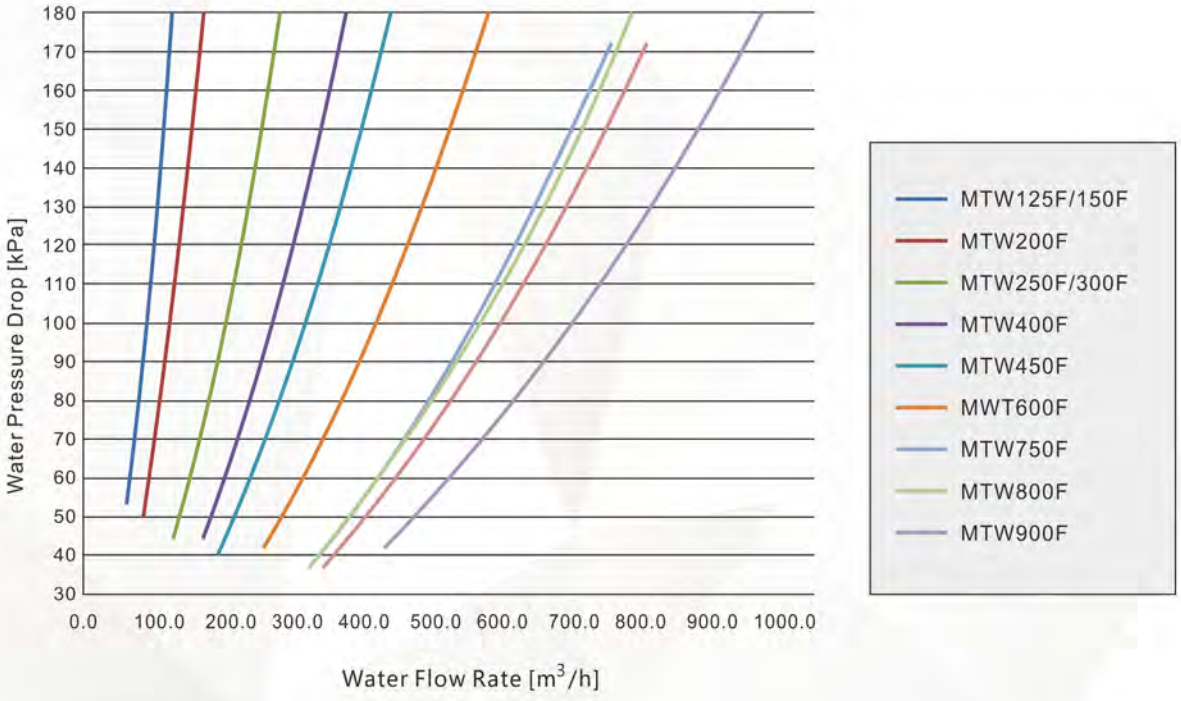
4——Refrigerant Type E:R134A

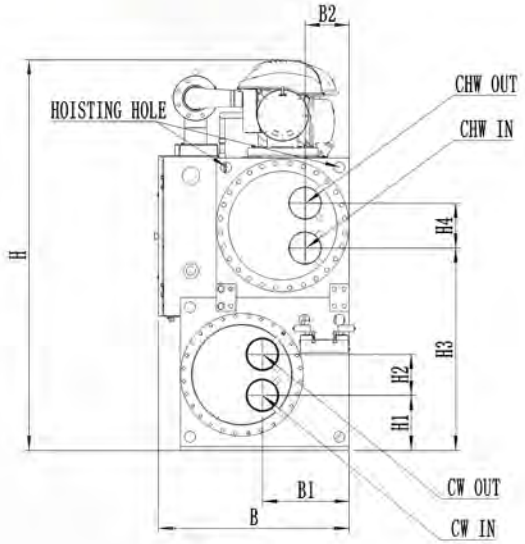
5——Electrical Specifications:

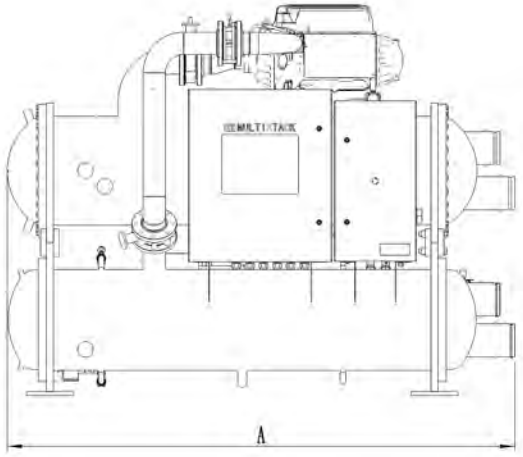
A: AC380V-50Hz-3Ph

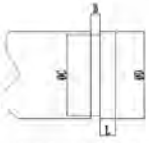
B: AC(380V-460V)60Hz-3Ph

Water Pressure Drop









INDENTATION SIZE OF COUPLING DN150

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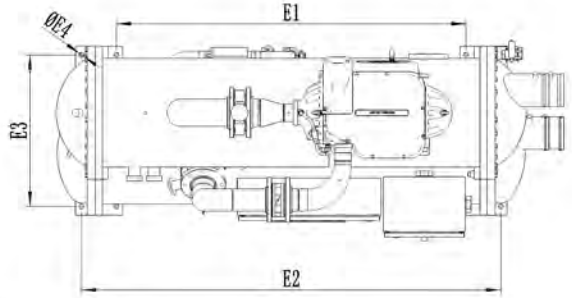
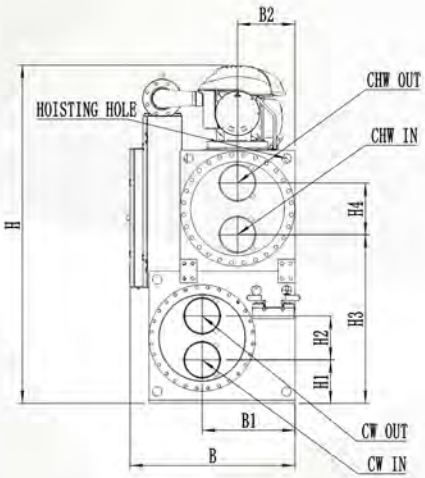
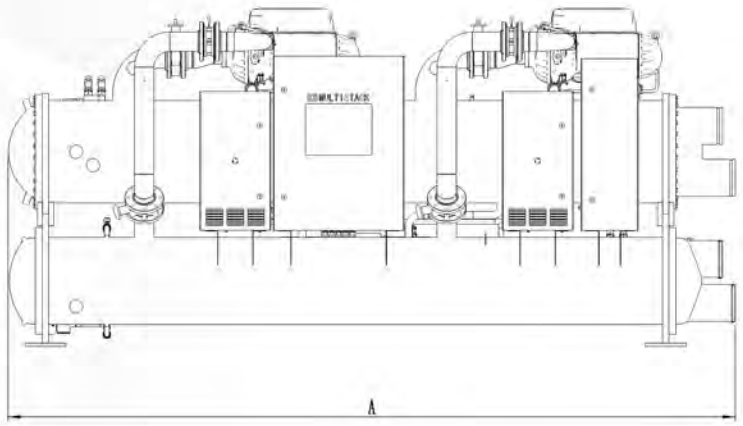
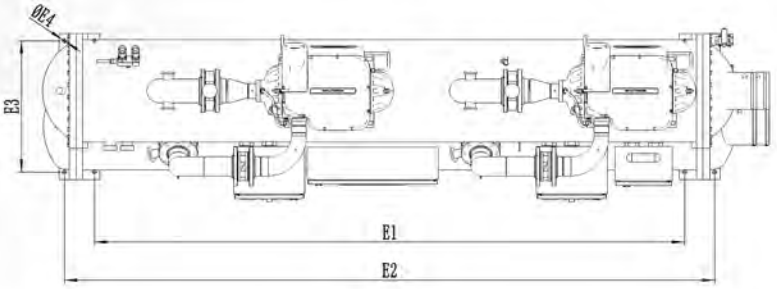
165.1	166.7	164.3	15.9	16.6	15.1	8.74	9.50	7.98	160.5	160.78	160.22

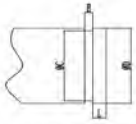


MODEL	LENGTH A(mm)	WIDTH B(mm)	HEIGHT H(mm)	MOUNTING FOOT SIZE(mm)				HEADER POSITIONING SIZE(mm)						CONNECTION SIZE	WEIGHT (kg)
				E1	E2	E3	E4	H1	H2	H3	H4	B1	B2		
MTW125F	2598	976	1999	1790	2146	775	25	272	230	1035	230	444	225	DN150	2150
MTW150F	2598	976	1999	1790	2146	775	25	272	230	1035	230	444	225	DN150	2450
MTW200F	2598	1081	2098	1790	2146	905	25	292	240	1105	240	549	250	DN150	2900









INDENTATION SIZE OF COUPLING DN200

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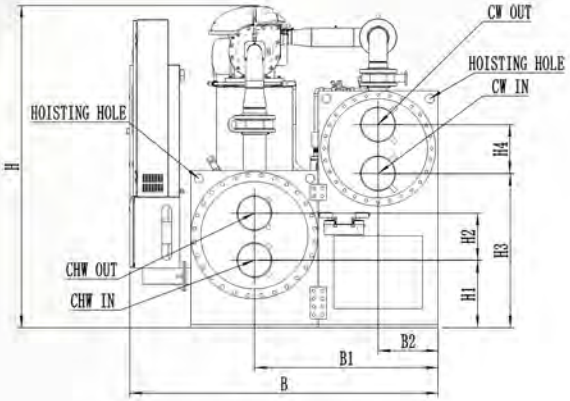
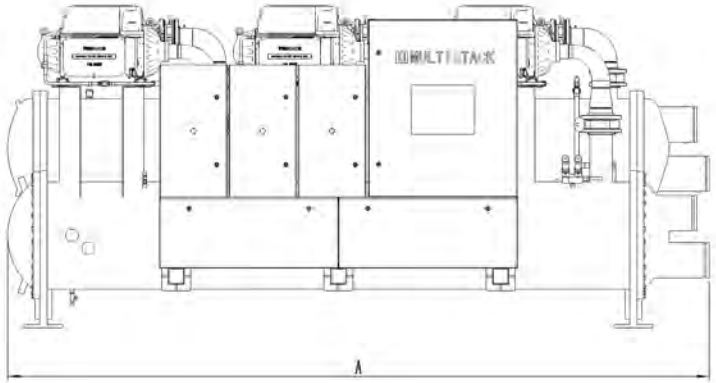
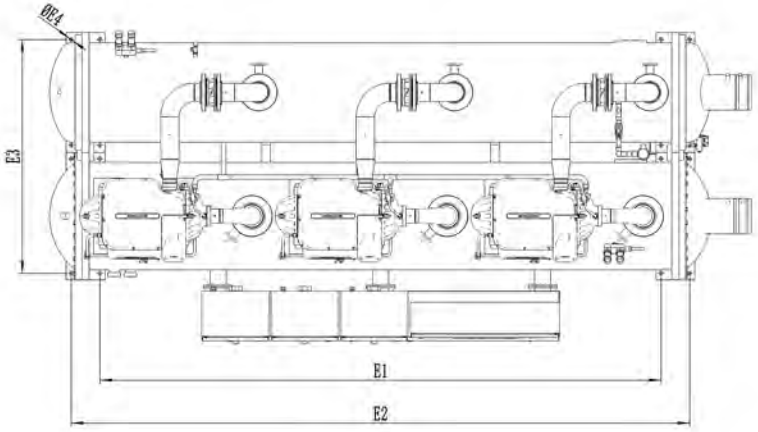
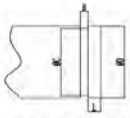
STD.	MAX.	MIN.	STD.	MAX.	MIN.	STD.	MAX.	MIN.	STD.	MAX.	MIN.
219.1	220.7	218.3	19.1	19.8	18.3	11.91	12.67	11.15	213.3	213.70	212.98

MODEL	LENGTH A(mm)	WIDTH B(mm)	HEIGHT H(mm)	MOUNTING FOOT SIZE(mm)				HEADER POSITIONING SIZE(mm)						CONNECTION SIZE	WEIGHT (kg)
				E1	E2	E3	E4	H1	H2	H3	H4	B1	B2		
MTW250F	3704	976	2057	2896	3252	775	25	252	270	997	306	549	340	DN200	4300
MTW300F	4301	976	2057	3490	3846	775	25	252	270	997	306	549	340	DN200	4900
MTW400F	4301	1081	2148	3490	3846	905	25	267	290	1072	306	654	365	DN200	5300







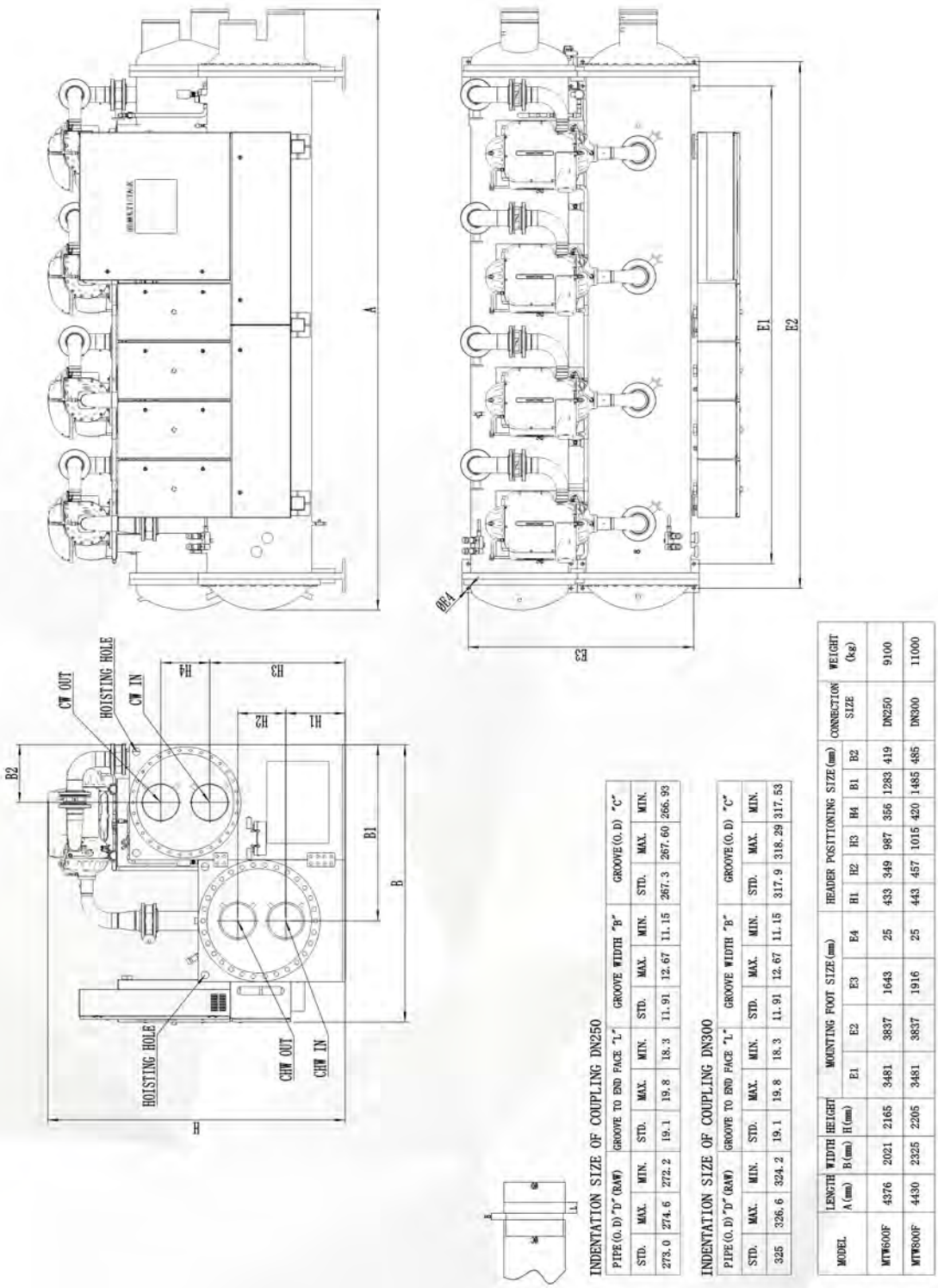


INDENTATION SIZE OF COUPLING DN200

PIPE(O.D)"D"(RAW)			GROOVE TO END FACE "L"			GROOVE WIDTH "B"			GROOVE(O.D) "C"		
STD.	MAX.	MIN.	STD.	MAX.	MIN.	STD.	MAX.	MIN.	STD.	MAX.	MIN.
219.1	220.7	218.3	19.1	19.8	18.3	11.91	12.67	11.15	213.3	213.70	212.98

MODEL	LENGTH A(mm)	WIDTH B(mm)	HEIGHT H(mm)	MOUNTING FOOT SIZE(mm)				HEADER POSITIONING SIZE(mm)						CONNECTION SIZE	WEIGHT (kg)
				E1	E2	E3	E4	H1	H2	H3	H4	B1	B2		
MTW450F	4352	1912	1998	3481	3837	1449	25	419	292	956	304	1138	372	DN200	6800

Physical Dimensions



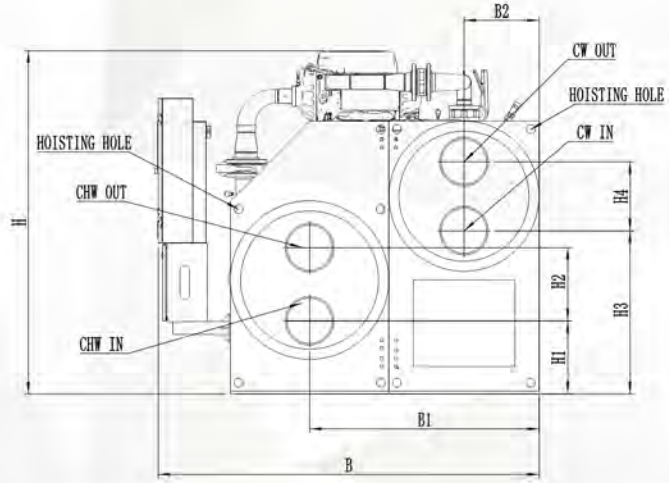
INDENTATION SIZE OF COUPLING DN250

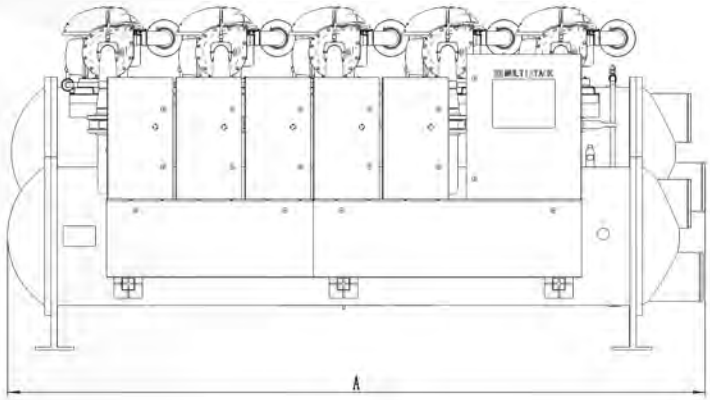
PIPE(O.D)"D"(RAW)		GROOVE TO END FACE "L"			GROOVE WIDTH "B"			GROOVE(O.D) "C"	
STD.	MAX.	MIN.	STD.	MAX.	MIN.	STD.	MAX.	STD.	MIN.
273.0	274.6	272.2	19.1	19.8	18.3	11.91	12.67	267.3	266.93

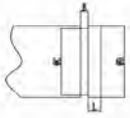
INDENTATION SIZE OF COUPLING DN300

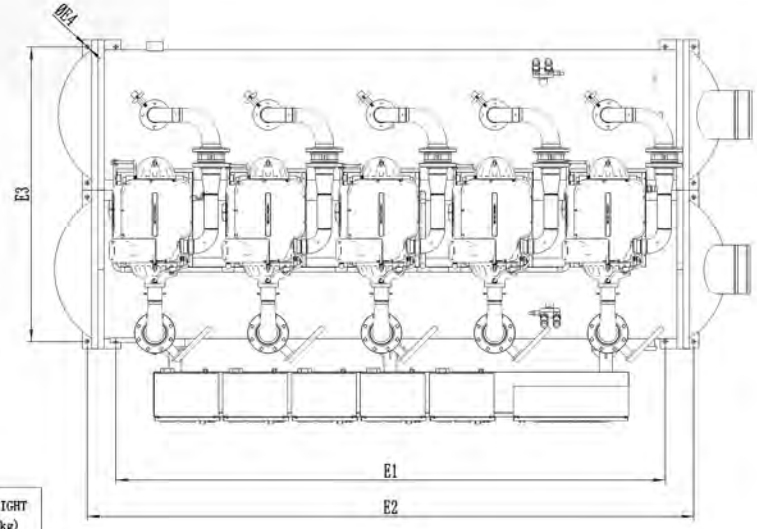
PIPE(O.D)"D"(RAW)		GROOVE TO END FACE "L"			GROOVE WIDTH "B"			GROOVE(O.D) "C"	
STD.	MAX.	MIN.	STD.	MAX.	MIN.	STD.	MAX.	STD.	MIN.
325	326.6	324.2	19.1	19.8	18.3	11.91	12.67	317.9	318.29	317.53

MODEL	LENGTH A(mm)	WIDTH B(mm)	HEIGHT H(mm)	MOUNTING FOOT SIZE(mm)				HEADER POSITIONING SIZE(mm)						CONNECTION SIZE	WEIGHT (kg)
				E1	E2	E3	E4	H1	H2	H3	H4	B1	B2		
MTW600F	4376	2021	2165	3481	3837	1643	25	433	349	987	356	1283	419	DN250	9100
MTW800F	4430	2325	2205	3481	3837	1916	25	443	457	1015	420	1485	485	DN300	11000









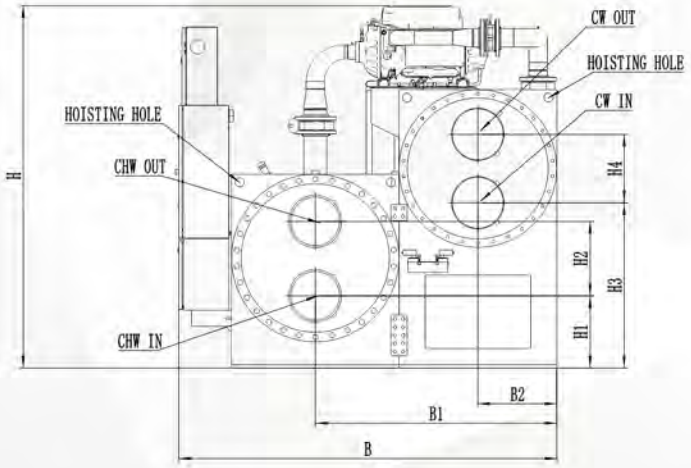
INDENTATION SIZE OF COUPLING DN300

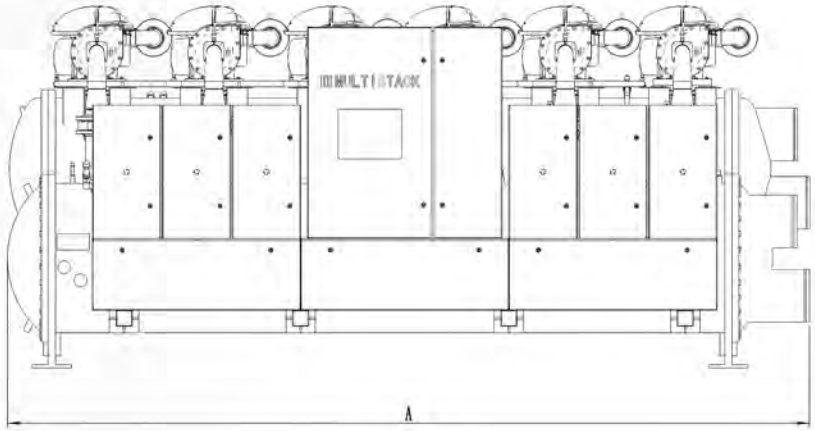
PIPE(O.D)"D"(RAW)			GROOVE TO END FACE "L"			GROOVE WIDTH "B"			GROOVE(O.D) "C"		
STD.	MAX.	MIN.	STD.	MAX.	MIN.	STD.	MAX.	MIN.	STD.	MAX.	MIN.
325	326.6	324.2	19.1	19.8	18.3	11.91	12.67	11.15	317.9	318.29	317.53

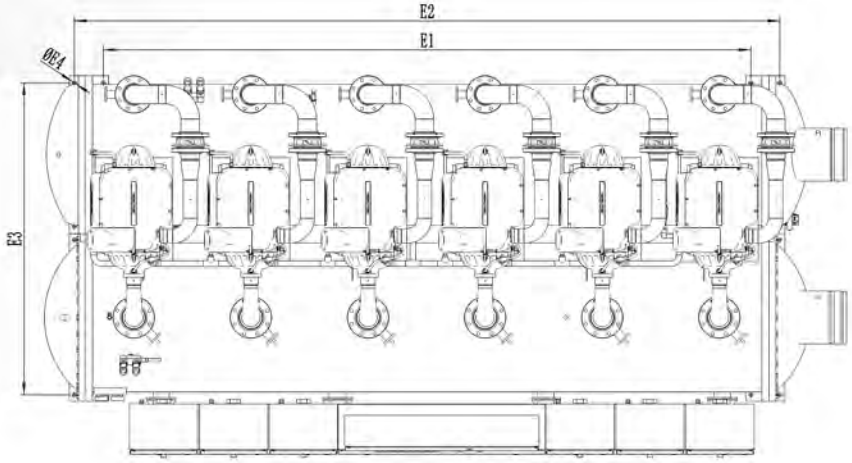
INDENTATION SIZE OF COUPLING DN350

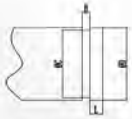
PIPE(O.D)"D"(RAW)			GROOVE TO END FACE "L"			GROOVE WIDTH "B"			GROOVE(O.D) "C"		
STD.	MAX.	MIN.	STD.	MAX.	MIN.	STD.	MAX.	MIN.	STD.	MAX.	MIN.
377	378.6	376.2	23.9	24.7	23.1	12.7	13.5	11.9	371.5	372.3	370.7

MODEL	LENGTH A(mm)	WIDTH B(mm)	HEIGHT H(mm)	MOUNTING FOOT SIZE(mm)				HEADER POSITIONING SIZE(mm)						CONNECTION SIZE	WEIGHT (kg)
				E1	E2	E3	E4	H1	H2	H3	H4	B1	B2		
MTW750F	4361	2382	2177	3436	3791	1842	25	457	457	1019	432	1435	470	DN300	10250
MTW1000F	4458	2439	2225	3481	3837	2016	25	443	457	1010	460	1565	515	CHW:DN300 CW:DN350	13050







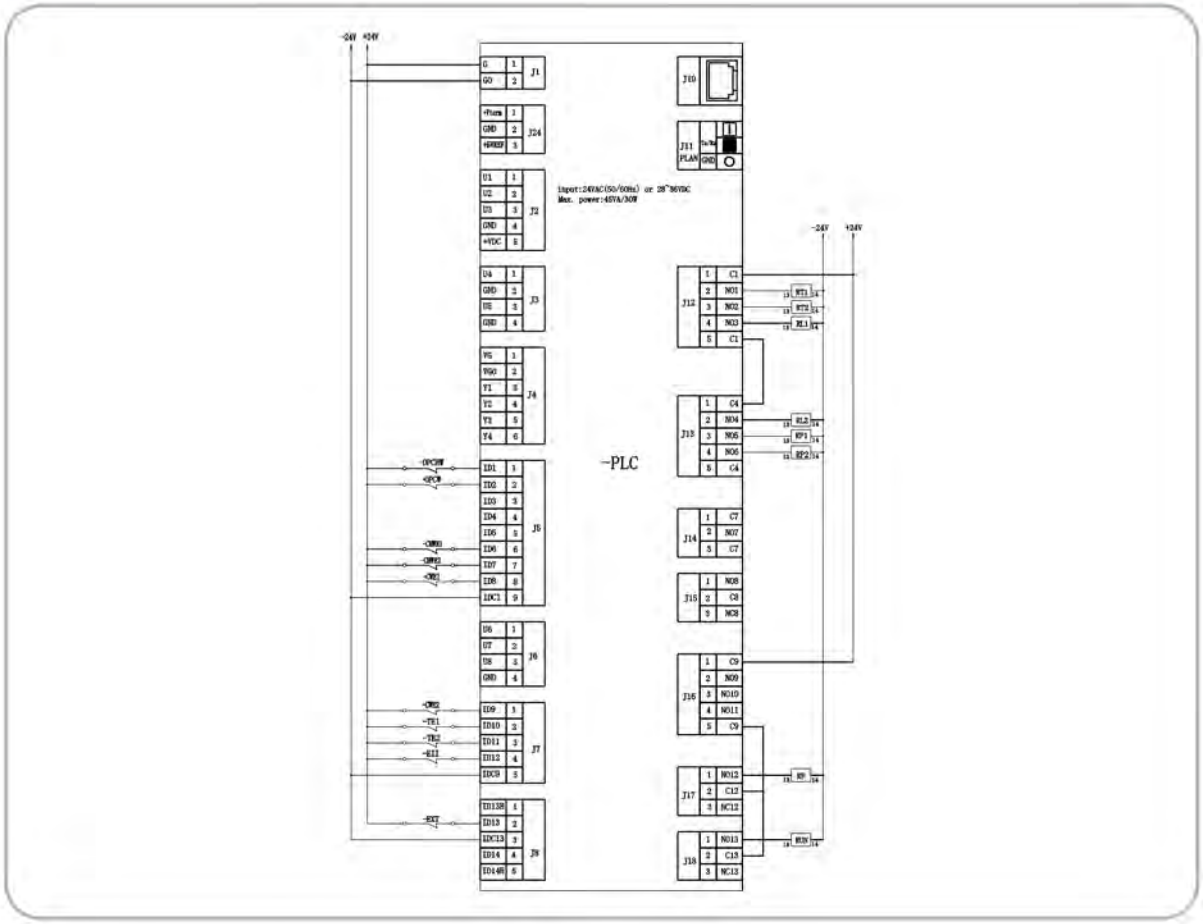


INDENTATION SIZE OF COUPLING DN300

PIPE(O.D)"D"(RAW)			GROOVE TO END FACE "L"			GROOVE WIDTH "B"			GROOVE(O.D) "C"		
STD.	MAX.	MIN.	STD.	MAX.	MIN.	STD.	MAX.	MIN.	STD.	MAX.	MIN.
325	326.6	324.2	19.1	19.8	18.3	11.91	12.67	11.15	317.9	318.29	317.53

MODEL	LENGTH A(mm)	WIDTH B(mm)	HEIGHT H(mm)	MOUNTING FOOT SIZE(mm)				HEADER POSITIONING SIZE(mm)						CONNECTION SIZE	WEIGHT (kg)
				E1	E2	E3	E4	H1	H2	H3	H4	B1	B2		
MTW900F	4930	2325	2225	3981	4337	1916	25	443	457	1015	420	1485	485	DN300	12500
MTW1200F	4958	2489	2225	3981	4337	2066	25	443	457	1010	460	1590	515	CHW:DN300 CW:DN350	14500

Electrical System Wiring



Notes:

OPCHW:Chilled water differential pressure switch,verifying water flows;

OPCW:Cooling water differential pressure switch;

CHWE1~2:#1-#2 Chilled water pump fault signal;

CHWE1~2:#1-#2 Cooling water pump alarm input;

TE1~2:#1-#2 Cooling tower alarm input;

EXT:External remote start/stop input;

EII:External interlock signal;

RL1~2:#1-#2 Chilled water pump running signal output;

RT1~2:#1-#2 Cooling tower on/off relay;

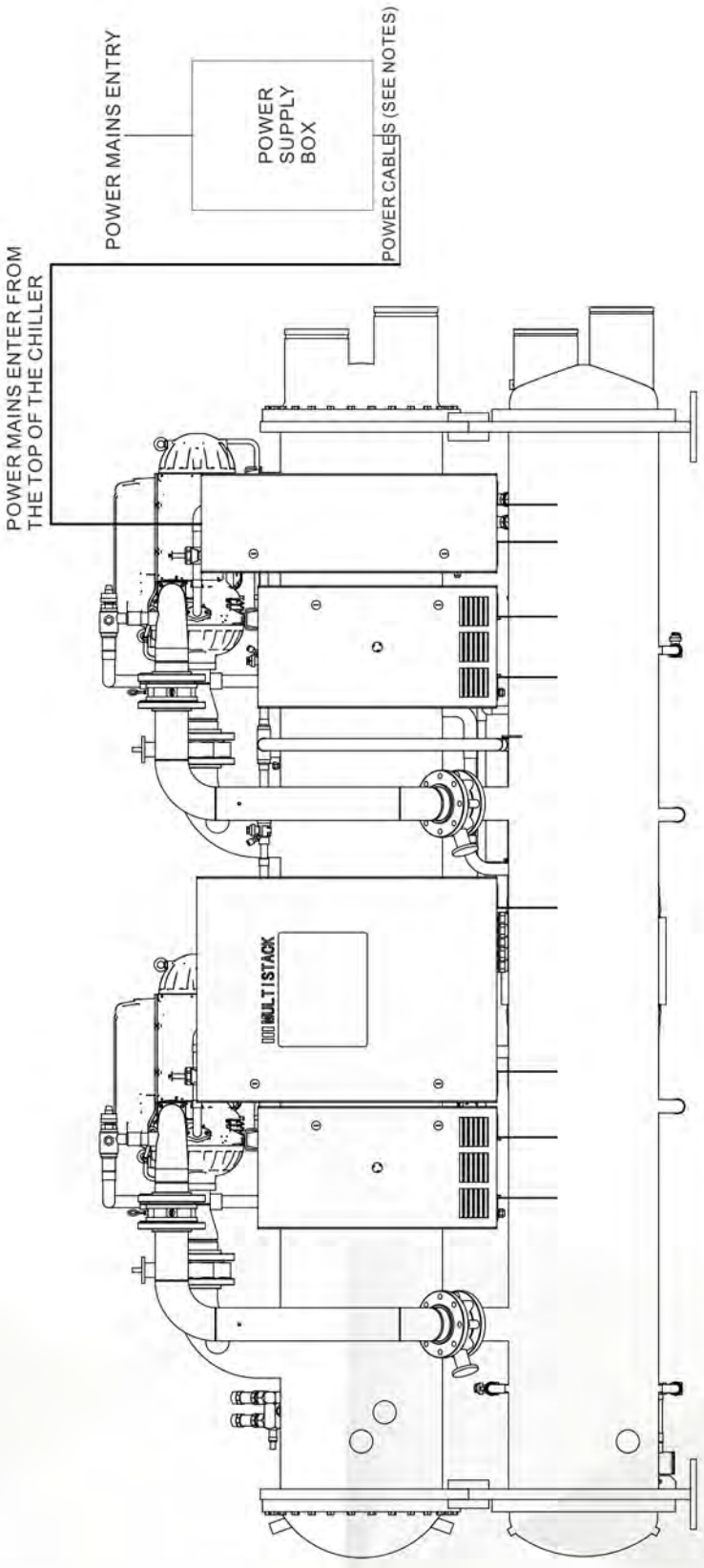
RF:Chiller fault status output;

RUN:Chiller running status output.

Wiring Considerations:

- Minimum cross section size of control control wire to be 1mm²;
- Inputs to terminals ID12 and ID13 to be bridged to common port G as per wiring diagram if EII and EXT are not used;
- Maximum current allowable for passive contact to be 5A;
- External interlock devices to be supplied by users;
- The flow switches have been factory-installed and wired;
- "—" for factory wiring and "--" for field wiring.

Power Mains Connection



Power Mains Connection

NOTES:

1. This drawing is for reference only. Actual size and electrical control box are subject to specific model
2. When starting the chiller, the compressor will start stage by stage. Chiller starting current is equal to the total current of operating compressors plus the starting current of the compressor(s) being actuate
3. The selection of power mains should base on the voltage, allowable voltage drop and local electrical codes. Cables to the chiller should be of flexible copper cord.

4.Electrical Performance Data

SOUND PRESSURE LEVEL dB(A)									
Model	OCTAVE BAND CENTRE FREQUENCY (Hz)								Overall
	63	125	250	500	1000	2000	4000	8000	
MTW125F	57	60	65	73	78	72	68	65	80
MTW150F	57	60	65	73	78	72	68	65	80
MTW200F	60	63	68	76	81	75	71	68	83
MTW250F	60	63	68	76	81	75	71	68	83
MTW300F	60	63	68	76	81	75	71	68	83
MTW400F	63	66	71	79	84	78	74	71	86
MTW450F	62	65	70	78	83	77	73	70	85
MTW600F	63	66	71	79	84	78	74	71	86
MTW750F	64	67	72	80	85	79	75	72	87
MTW800F	66	69	74	82	87	81	77	74	89
MTW900F	65	68	73	81	86	80	76	73	88
MTW1000F	67	70	75	83	88	82	78	75	90
MTW1200F	68	71	76	84	89	83	79	76	91

M.O.P -- Maximum Operating Power F.L.A. – Full Load Ampere
Power Supply: AC380V/50Hz/3Ph; Allowable Fluctuation Voltage: 10%; 3-Phase Voltage Imbalance: 3%

5. In order to reduce harmonic interference, the chiller should be equipped with special input line reactor to restrict the fluctuation of power grid or current surge in system operation. Spike impulse in smooth supply voltage or phase missing resulted from rectifier circuit commutation will not only prevent interference from the grid but also reduce impacts on the grid caused by harmonic current of the rectifier unit.

6. Harmonic filter (optional) improves power transmission and utilization, further reducing local parallel harmonic or series resonant and noise created by electrical system, improving system capacity of the transformer, breaker and cables, etc. and ensuring normal functions of safeties and automatic devices. All these configurations comply with GB/T 14549. Total harmonic distortion (THD) is ≤5% and automatic compensation power factor of the chiller can reach 0.95.

MULTISTACK MTW-F 08.2016 V04