KKT Training Series

The cBoxX Start-up Guide V2

cBoxX Series Overview

Front View

Electrical Cabinet

Compressor Compartment

Pump Compartment

what to check before start-up

Before starting the chiller, we must check the following

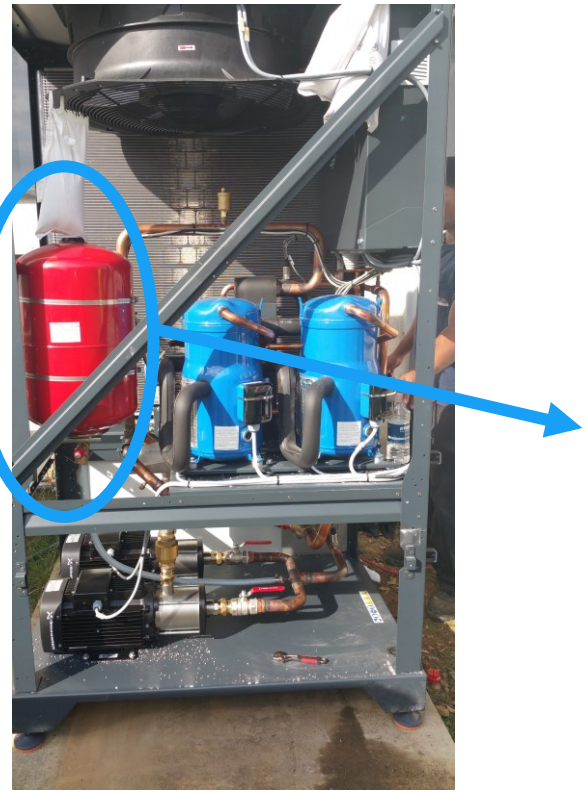
- Expansion tank nitrogen pressure
- Clean filter strainers after flushing the lines and after starting the chiller
- Verify correct piping diameter (Please refer to Installation Guidelines)
- Check phase rotation
- Air vents should be placed at the highest point of the water loop

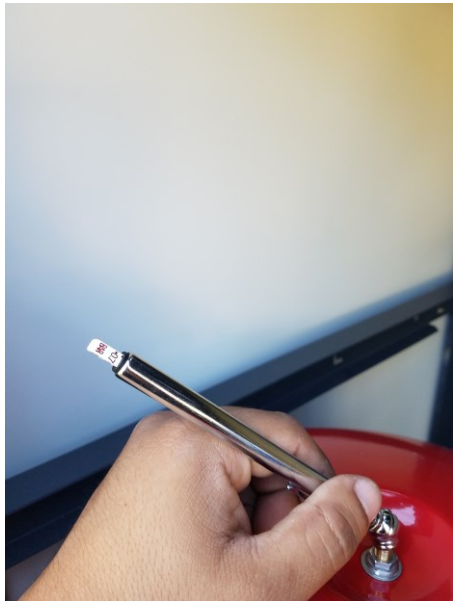
expansion tank

Check expansion tank nitrogen pressure with no glycol mixture in the system. Check with a tire pressure gauge.

Tank Pressure

0.4- 0.6 Bar (5.8 – 8.7 PSI)



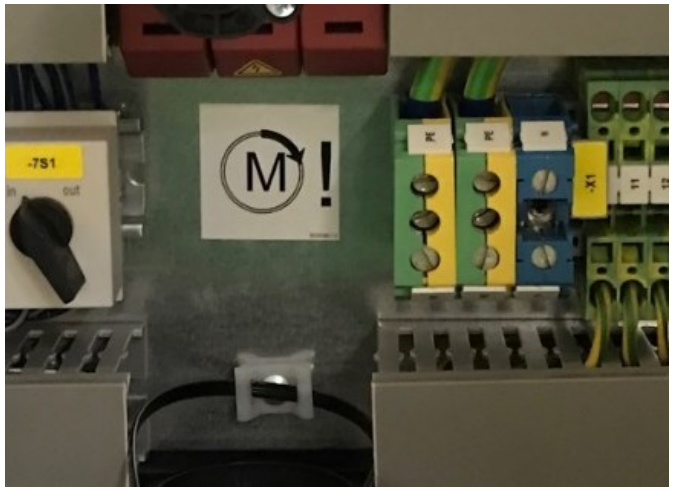


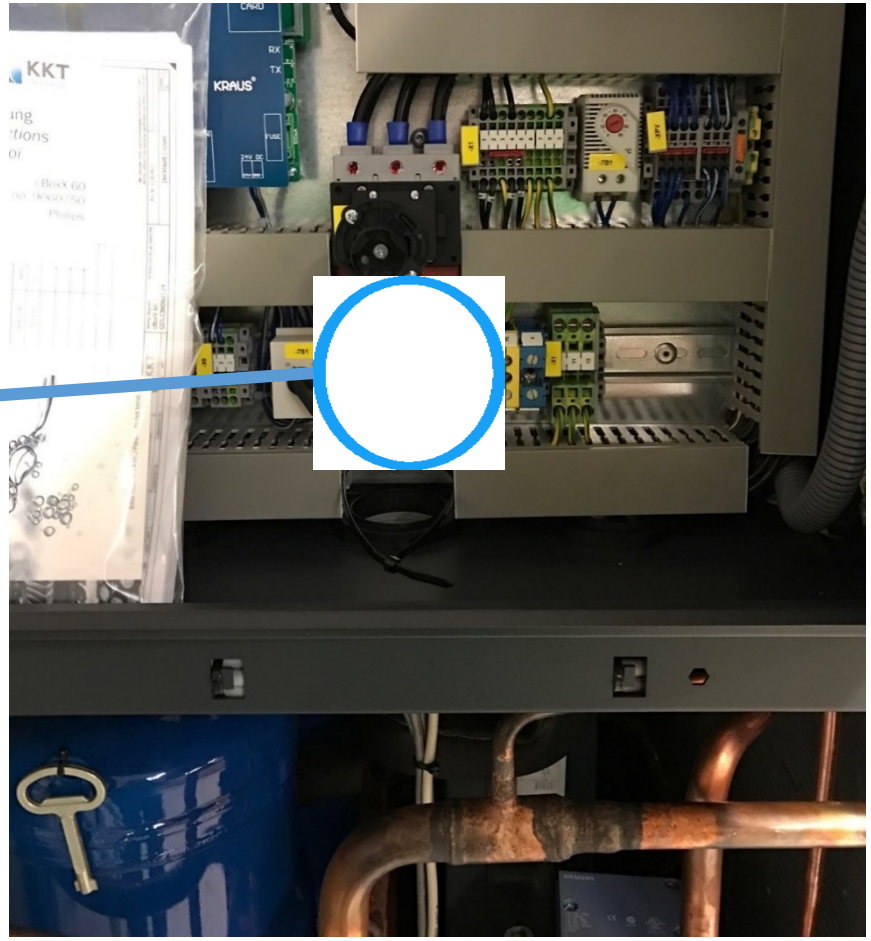
strainers

Clean filter strainers before and after start-up procedure.

phase rotation

Check for correct phase rotation to the chiller.





air vents

Air vents should be placed at the highest point of the glycol loop.

start-up

Start-up Procedure

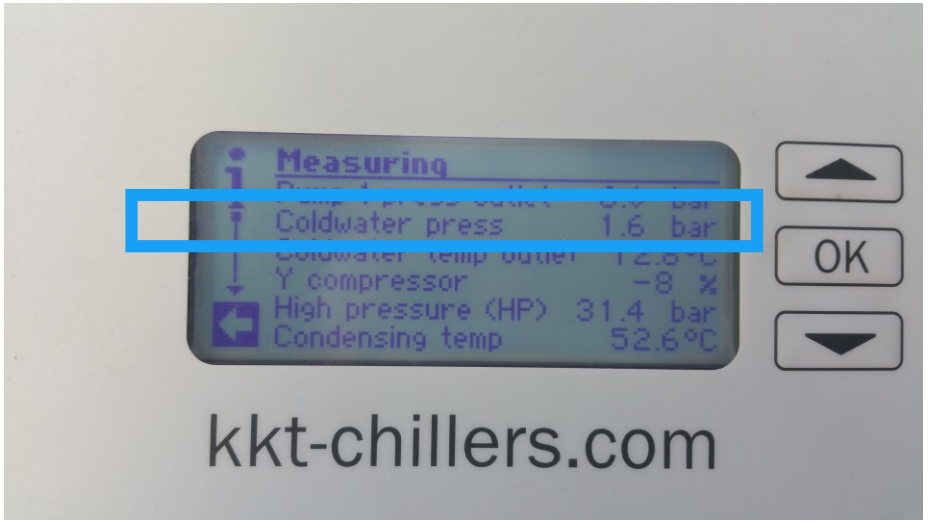
- Static fill unit
- System start-up and air bleeding
- Operation
  - Glycol operation
  - Refrigeration operation
- Electrical
  - Amperage
    - Pump
    - Compressor
    - Fan
- Complete checklist

static filling

Static filling for the chiller is done outside of the chiller. Can be read at the display screen of the chiller with compressor breakers powered off (see wiring diagram) .

Static Fill Pressure

1.0 to 1.5 Bar (21.7 psi)



system start-up and air bleeding

- Allow the pump to run for 15 seconds and turn it off again
- Open the air vents, purge the remaining air
- If the pressure drops. Fill again until the pressure with the pump OFF reaches 1.0 to 1.5 Bar
- Clean the filter strainer during the next-to last pass

If the pressure remains constant for 60 – 90 minutes of operation, proceed with chiller operation

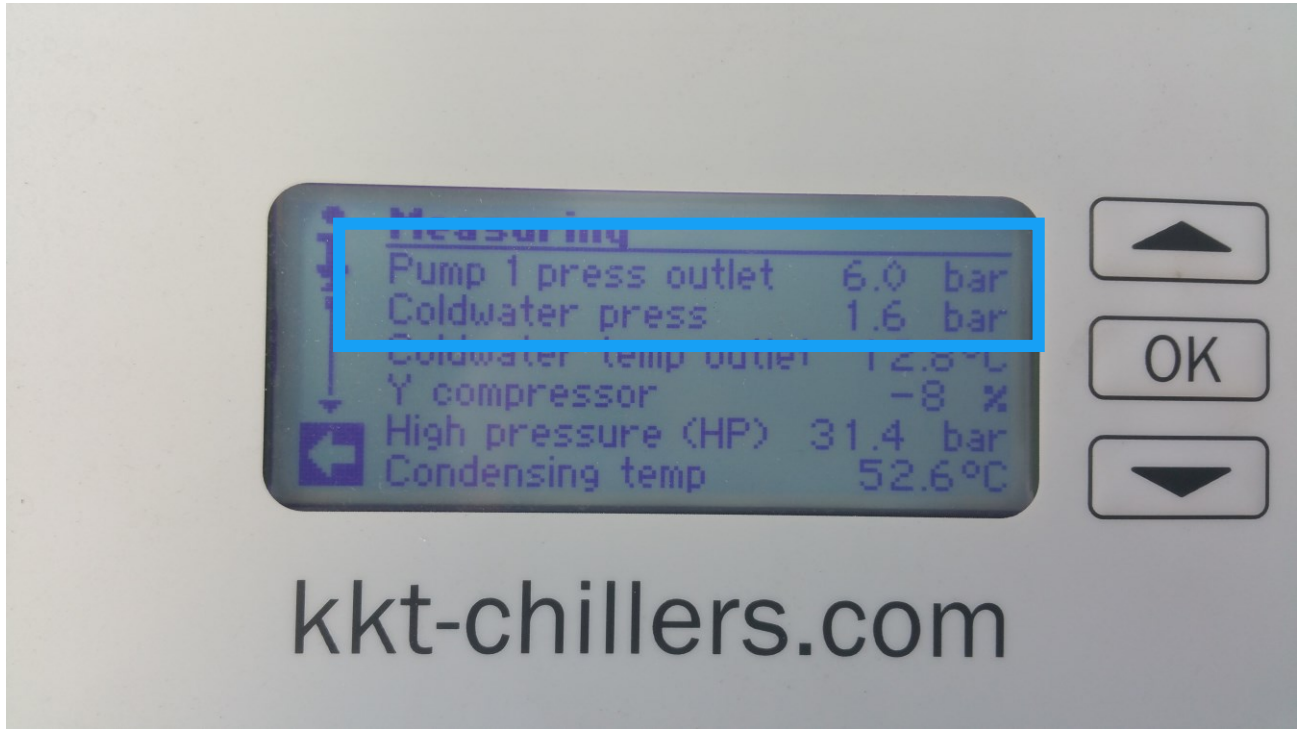
glycol operation

Power on chiller, pump should begin shortly.

Operating Pressures (Glycol Circuit)

Coldwater Pressure: 1-2 Bar
Pump 1 Pressure Outlet: 5-6 Bar

<u>Tip:</u> If pump pressure differential isn't 3-4 bar after pump start, check the following: Strainers/Closed Valves, Phase Rotation and Reversed Piping!



refrigeration operation

If heat load is present, the compressor will start.

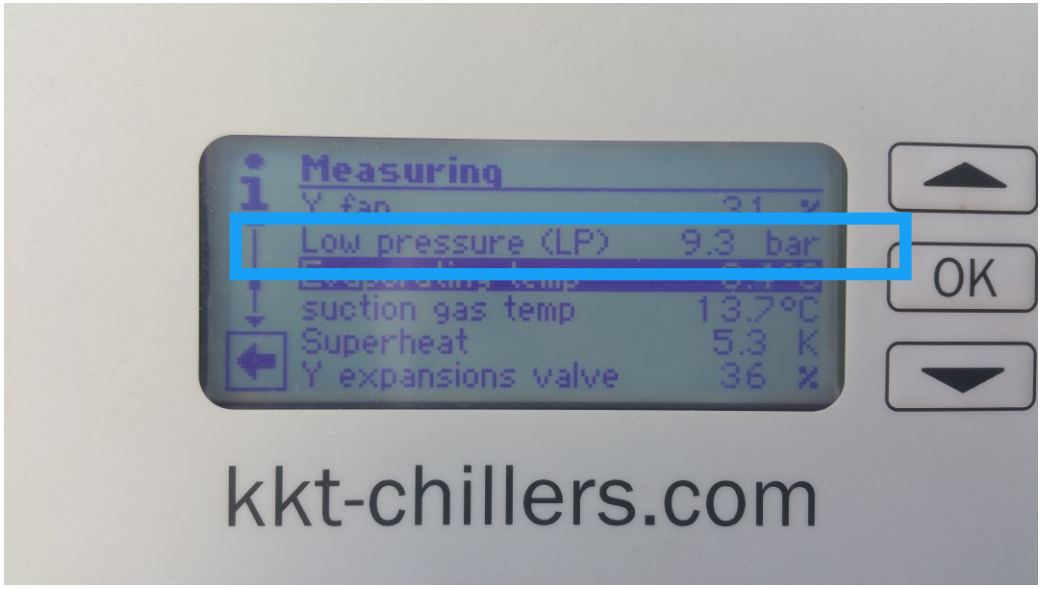
Operating Pressures (Refrigeration Circuit)

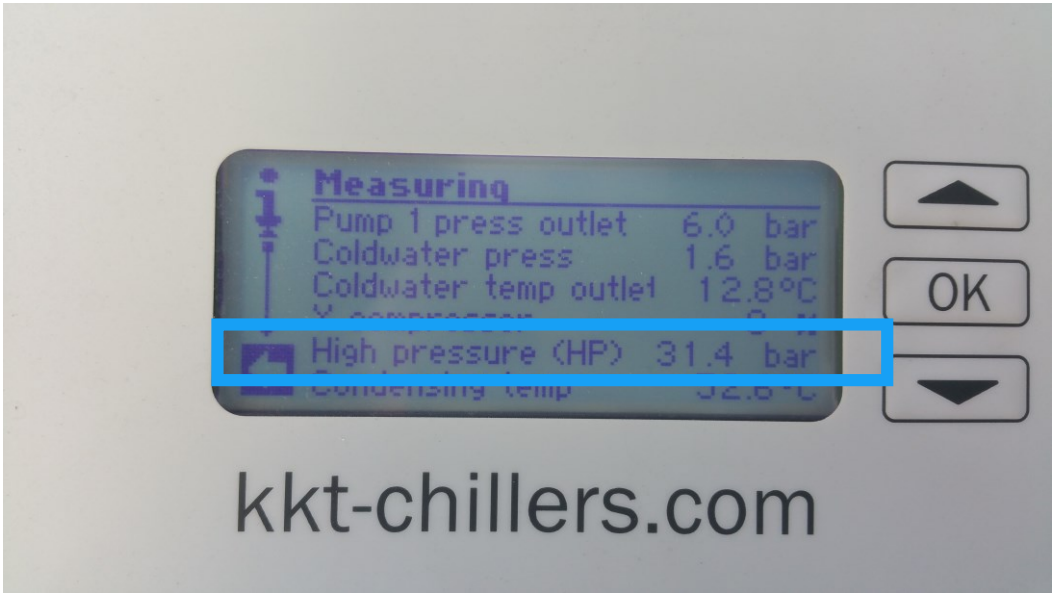
Low Pressure: 7-11 Bar

High Pressure: 28-31 Bar

Chiller Set point

10 C





amperage

Amperage checks are done at the electrical cabinet (please use wiring diagram to identify the circuit).

Pump Amperage Average

4-4.5

Compressor Amperage Average

13-14

Fan Amperage Average

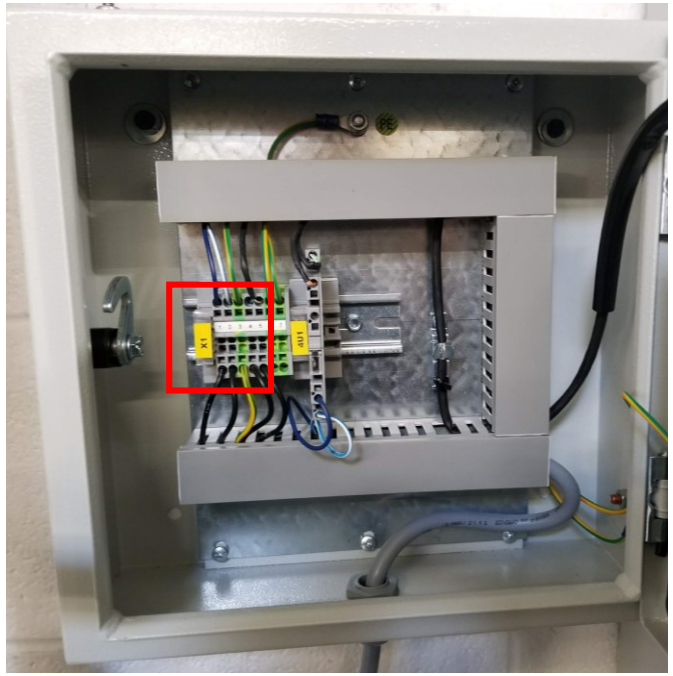
.2-1.0

connecting the remote panel

After completion of the start-up, the remote panel will need to be connected. Power must be off to perform the installation!

Chiller

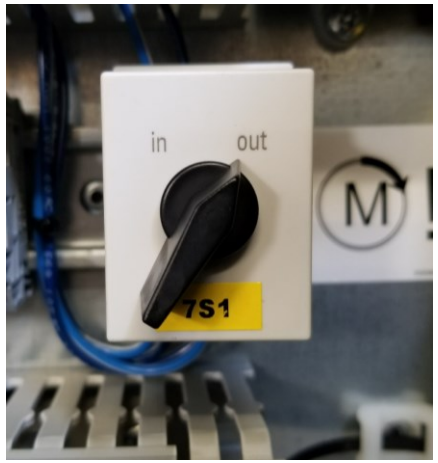
Wired Supplied by KKT (Wire Label Number)	1	2	PE	3	4
Chiller Terminal Wire Block (X-4)	1	2	3	4	6
Remote Panel Wire Terminal Block (X-1)	1	2	3	4	5



Remote Panel

activating the remote panel

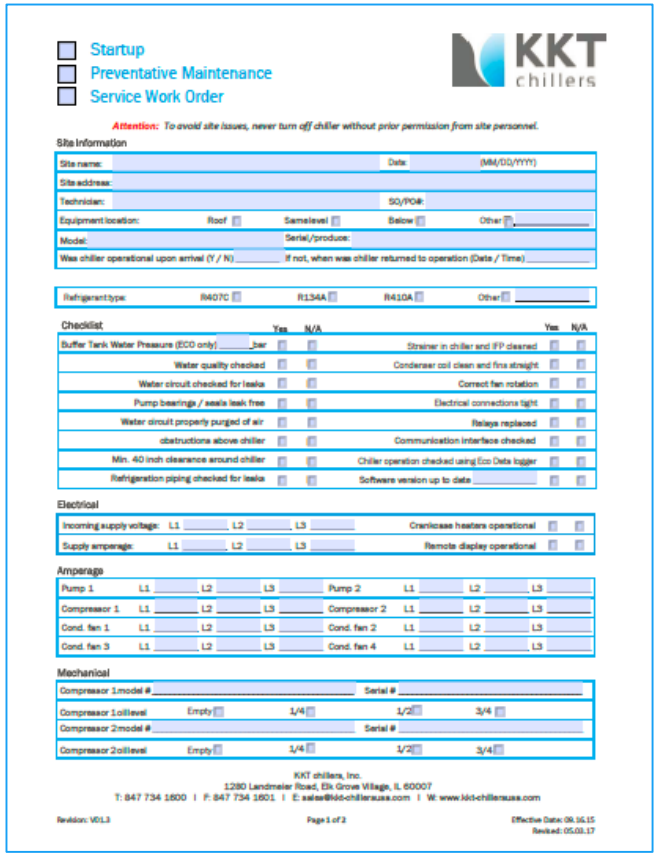
Once the connections are made and verified we must energize the controller with the switch in the cabinet. Switch must be in the “OUT” position.



Note: Only one screen can be viewed while the chiller is in operation.
“IN” position = Screen viewed at chiller.
“OUT” position = Screen viewed at the remote panel.

checklist

After verifying chiller operation, a checklist is completed.



Startup
Preventative Maintenance
Service Work Order

KKT chillers

Attention: To avoid site issues, never turn off chiller without prior permission from site personnel.

Site Information

Site name:		Date:	(MM/DD/YYYY)
Site address:			
Technician:		SO/PO#:	
Equipment location:	Roof	Samelevel	Below / Other
Model:		Serial/produce:	
Was chiller operational upon arrival (Y / N)		If not, when was chiller returned to operation (Date / Time)	

Refrigerant type:	R407C	R134A	R410A	Other

Checklist	Yes	N/A		Yes	N/A
Buffer Tank Water Pressure (ECO only) ____bar			Strainer in chiller and IFP cleaned		
Water quality checked			Condenser coil clean and fins straight		
Water circuit checked for leaks			Correct fan rotation		
Pump bearings / seals leak free			Electrical connections tight		
Water circuit properly purged of air			Relays replaced		
obstructions above chiller			Communication interface checked		
Min. 40 inch clearance around chiller			Chiller operation checked using Eco Data logger		
Refrigeration piping checked for leaks			Software version up to date		

Electrical

Incoming supply voltage:	L1		L2		L3		Crankcase heaters operational				
Supply amperage:	L1		L2		L3		Remote display operational				

Amperage

Pump 1	L1		L2		L3		Pump 2	L1		L2		L3	
Compressor 1	L1		L2		L3		Compressor 2	L1		L2		L3	
Cond. fan 1	L1		L2		L3		Cond. fan 2	L1		L2		L3	
Cond. fan 3	L1		L2		L3		Cond. fan 4	L1		L2		L3	

Mechanical

Compressor 1 model #			Serial #		
Compressor 1 oil level	Empty	1/4	1/2	3/4	
Compressor 2 model #			Serial #		
Compressor 2 oil level	Empty	1/4	1/2	3/4	

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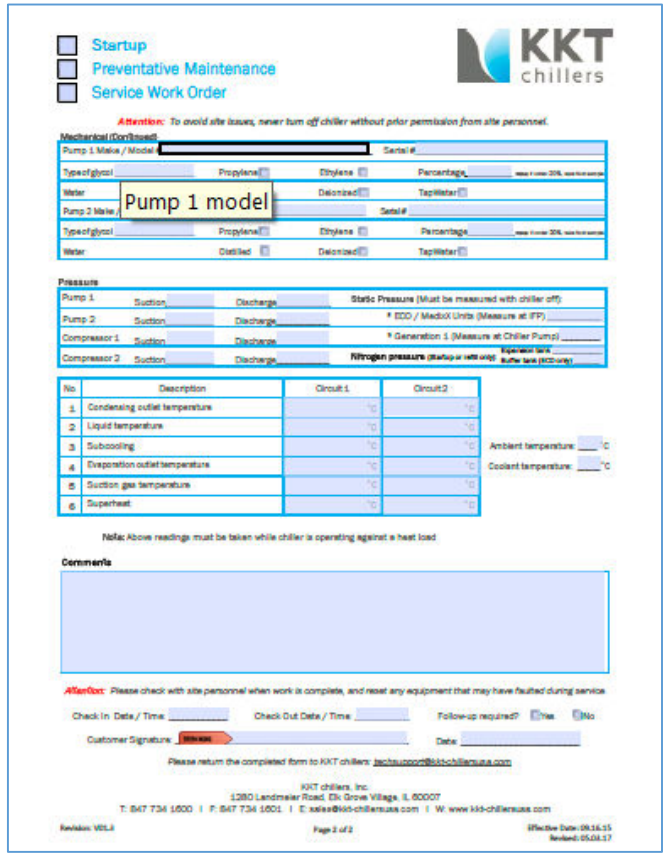

Startup
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KKT chillers

Attention: To avoid site issues, never turn off chiller without prior permission from site personnel.

Mechanical (Continued)

Pump 1 Make / Model # [redacted] Serial #

Type of glycol ____ Propylene ☐ Ethylene ☐ Percentage ____

Water ____ Deionized ☐ Tap Water ☐

Pump 2 Make / Model # Serial #

Type of glycol ____ Propylene ☐ Ethylene ☐ Percentage ____

Water ____ Distilled ☐ Deionized ☐ Tap Water ☐

Pump 1 model

Pressure

Pump 1	Suction	Discharge	Static Pressure (Must be measured with chiller off)
Pump 2	Suction	Discharge	* ECO / MedXX Units (Measure at IFP)
Compressor 1	Suction	Discharge	* Generation 1 (Measure at Chiller Pump)
Compressor 2	Suction	Discharge	Nitrogen pressure (Startup or refill only) Expansion tank / Buffer tank (ECO only)

No.	Description	Circuit 1	Circuit 2
1	Condensing outlet temperature	°C	°C
2	Liquid temperature	°C	°C
3	Subcooling	°C	°C
4	Evaporation outlet temperature	°C	°C
5	Suction gas temperature	°C	°C
6	Superheat	°C	°C

Ambient temperature: ____°C
Coolant temperature: ____°C

Note: Above readings must be taken while chiller is operating against a heat load

Comments

Attention: Please check with site personnel when work is complete, and reset any equipment that may have faulted during service.

Check In Date / Time: ____ Check Out Date / Time: ____ Follow-up required? ☐ Yes ☐ No

Customer Signature: [redacted] Date: ____

Please return the completed form to KKT chillers: techsupport@kkt-chillersusa.com

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