



Chiller Request for StartUp Checklist

Customer:	
Model Number:	Serial Number:
Install Address:	
Address Line 2:	
Startup Completed By:	
Company:	
Email:	Phone:
Installing Contractor:	
Company:	
Email:	Phone:

*****This Checklist must be completed, and returned to JTS; a minimum of 2 weeks prior to requested Startup date*****

*****This checklist is intended to be the minimum list of steps required before performing startup of the chiller system. If this checklist is not fully completed or inaccurate information is provided, additional service visits may be required to complete the unit startup. Additional service visits will be quoted at current Time and Materials rates.*****

Section 1 General		Check/Record	
		Yes	No
1	Upon delivery, was chiller damaged or missing parts?		
2	Chiller properly set in place with minimum clearance as required per JTS documentation or local code		
3	All door and panel access is clear, and doors and panels open cleanly		
4	Note Chiller Location (I.E. roof, elevated slab, inside, outside, etc)		
5	Record all discrepancies found, in Comments Section on last page		

Section 2 Electrical		Check/Record	
1	Verify electrical installed per MOCP, MCA, and SCCR requirements		
2	Ensure breaker/fuses, and disconnects are sized and installed correctly		
3	Ensure supply voltage is phased correct (Green light on Phase Monitor)		
4	Verify all communication/signal wiring is installed and operational		
5	Ensure all threaded connections that may have come loose during shipment are torqued to component specifications		
6	Record Phase/Line 1 voltage		Vac
7	Record Phase/Line 2 voltage		Vac
8	Record Phase/Line 3 voltage		Vac
9	Record all discrepancies found, in Comments Section on last page		

Section 3 Hydronics		Check/Record	
1	Ensure process piping is installed, flushed and leak tested		
2	Flow meter is installed (Where Applicable)		
3	City Water Change Over panel is installed (Where Applicable)		
4	Pull and clean Wye strainer after piping flush prior to filling glycol system		
5	Check and tighten and threaded fittings, hose clamps, or screws that may have loosened up during shipment		
6	Fill system with Glycol/Water mixture at proper concentration		
7	Ensure air vent is installed on high points of process piping for air purging		
8	Ensure all air is purged from glycol loop. Refill as necessary		
9	Record glycol concentration percentage		%
10	Inspect Hydronics system and process piping for leaks		
11	Record all discrepancies found, in Comments Section on last page		

Section 4 Refrigeration		Check/Record	
1	Ensure unit is powered on, and Crankcase Heaters are energised		
2	Check and tighten all threaded fittings that may have come loose during shipment		
3	Using manifold guage set record static Suction and Discharge pressures	Psig	Psig
4	Inspect refrigeration circuit for leaks		
5	Ensure all piping is completed and system charged (Remote Condensers)		
6	Record refrigerant type (Remote Condenser Systems Field Charged)		
7	Record all discrepancies found, in Comments Section on last page		

Section 5 Final		Check/Record	
1	Will Site, or Project Manager be on site the day of Startup?	Yes	No
2	Minimum 70% process thermal load must be available the day of Startup		
3	Is the Chiller ready for Startup	Yes	No

*****Any Steps not completed will delay scheduling of Startup. On day of Startup any steps found incomplete will result in further service visits that will be billed seperatly, and at current Time and Materials rate*****

Chiller Start Up Checklist

Customer:	
Model Number:	Serial Number:
Install Address:	
Address Line 2:	
Startup Completed By:	
Company:	
Email:	Phone:
Installing Contractor:	
Company:	
Email:	Phone:

*****Failure to return the fully completed JTS Start Up Checklist and Data Sheet to Johnson Thermal Systems within 30 days of start-up, may cause a delay in warranty coverage; and /or void the warranty.*****

*****Failure to complete any step in the Start Up Checklist may require additional service visits which may not be covered under start up or warranty. Any additional site visits will be quoted at current Time and Materials rates.*****

*****The purpose of this checklist is to ensure proper startup and commissioning of the JTS chiller system, ensuring the entire system is balanced and running to the customers unique process. This checklist must be completed by a qualified Refrigeration Technician, failure to do so may void the warranty; or limit warranty coverage*****

Section 1 General		
Section 1.1 Pre Start Inspection	Check	
1 Is there a process heat load on the Chiller?	Yes	No
2 Is a Site Representative on hand for control interface?	Yes	No
3 Double check unit for loose wiring, and connections		
4 Check unit for loose, missing or broken hardware		
5 Turn all Compressor MMS's to Off position		
6 Turn all pump MMS's to Off position		
7 Turn power On to chiller		
8 Does the phase monitor have a steady green light?	Yes	No
9 Set all Compressors to Off/Disable from controller/user interface		
10 Set all User Pumps to Off/Disable from controller/user interface		
11 Record ambient air temperature during start up on Data Sheet		
12 Ensure that user interface is functioning properly		
13 Ensure all condenser coils are clean, and free of debris		
14 Set User glycol temperature Set Point, record on Data Sheet		
15 Record all discrepancies found, in Comments Section at the end of the check list		



Section 2 Hydronic System	
Section 2.1 Hydronic System Basic	
	Check
1 Pull and check wye strainers for clogs or debris	
2 Ensure all valves in Hydronic System are open	
3 Sample and record Glycol/Water percentage on Data Sheet	
4 Ensure Hydronic system is full and all air purged from system	
5 On closed hydronic system ensure static Input/Output pressures of 12psi minimum	
6 Double check all plumbing connections, and hose clamps for tightness	
Section 2.2 Primary Hydronic Side	
	Check
1 Turn Primary Pump 1 MMS to On	
2 Set Primary Pump 1 to On/Manual Enable from controller	
3 Check pump for proper rotation	
4 Record pump voltage for all phases on Data Sheet	
5 Record pump amperage for all phases on Data Sheet	
6 Set Primary Pump 1 to Auto/ Enable from controller	
7 Turn Primary Pump 2 MMS On (As applicable)	
8 Set Primary Pump 2 to On/Manual Enable from controller (As applicable)	
9 Repeat Steps 3 thru 6 and record any information on Data Sheet	
10 Set Primary Pump 2 to Auto/ Enable from controller	
11 Turn Primary Pump 3 MMS On (As applicable)	
12 Set Primary Pump 3 to On/Manual Enable from controller (As applicable)	
13 Repeat Steps 3 thru 6 and record any information on Data Sheet	
14 Set Primary Pump 3 to Auto/ Enable from controller	
15 Turn Primary Pump 4 MMS On (As applicable)	
16 Set Primary Pump 4 to On/Manual Enable from controller (As applicable)	
17 Repeat Steps 3 thru 6 and record any information on Data Sheet	
18 Set Primary Pump 4 to Auto/ Enable from controller	
19 Record all discrepancies found, in Comments Section at the end of the check list	
Section 2.3 Secondary Hydronic Side	
	Check
1 Turn Secondary Pump 1 MMS to ON	
2 Set Secondary Pump 1 to On/Manual Enable on controller	
3 Check pump for proper rotation	
4 Record pump voltage for all phases on Data Sheet	
5 Record pump amperage for all phases on Data Sheet	
6 Record Output (Supply) pressure on Data Sheet	
7 Record Input (Return) pressure on Data Sheet (As applicable)	
8 Set pump to Auto/Enable on controller	
9 Turn Secondary Pump 2 MMS to ON (As applicable)	
10 Set Secondary Pump 2 to On/Manual Enable on controller	
11 Repeat Steps 3 thru 8 and record any information on Data Sheet	
12 Adjust bypass for proper process Output pressure	
13 Record all discrepancies found, in Comments Section at the end of the check list	



Section 3 Refrigeration		
Section 3.1 Refrigeration Per Start Inspection		Check
1	Ensure Crank Case Heaters have been on for at least 24 hours	
2	Refrigeration checks must be completed with a minimum of 80% process thermal load	
3	Ensure all manual valves in refrigeration system are open	
4	Inspect entire refrigeration system for leaks	
5	Record Refrigerant Type	
Section 3.2 Refrigeration Circuit 1		Check
1	Perform following steps after system has ran for 5 to 10 minutes	
2	Turn Circuit 1 compressor MMS On	
3	Set Circuit 1 compressor to Auto/Enable from controller	
4	Check compressor for proper rotation	
5	Record compressor voltage for all phases on Data Sheet	
6	Record compressor amperage for all phases on Data Sheet	
7	Complete Steps 4 thru 6 for tandom compressor (As Aplicable)	
8	Using refrigeration gauges, record Suction pressure on Data Sheet	
9	Record Suction Line temperature	
10	Record Suction Super Heat (SH)	
11	Is the Super Heat maintaining + or - 2 degrees of Super Heat setpoint?	Yes No
12	Using refrigeration gauges, record Discharge pressure on Data Sheet	
13	Record Liquid Line temperature	
14	Record Liquid Line Sub Cooling (SC)	
15	Is the Sub Cooling between 10 and 15 degrees?	Yes No
16	Record EEV position (As Applicable)	
17	Is the EEV more than 50% open under full load and meeting superheat setpoint?	Yes No
18	Trim refrigerant levels to proper system operation with customer load	
19	Record amout of refrigerant added or removed (As Applicable)	
20	Update refrigerant charge on UL label if changes were made (As Applicable)	
21	Check operation of condenser fans in manual and auto	
22	Record Fan voltage for all phases on Data Sheet	
23	Record Fan amperage for all phases on Data Sheet	
24	Does the fan maintain Discharge pressure setpoint without wild variation?	Yes No
25	Check operation of condenser water valves (As Applicable)	
26	Disconnect flow switch, ensure compressor(s) shut off and observe No Flow Alarm	
27	Inspect refrigeration Circuit for leaks while in operation	
28	Is Circuit 1 functioning properly?	Yes No
29	Set Circuit 1 compressor to Off/Disable from controller	
30	Record any changes from default parameters made during comissioning	
31	Record all discrepancies found, in Comments Section at the end of the check list	



Section 3 Refrigeration Continued		
Section 3.3 Refrigeration Circuit 2		Check
1 Perform following steps after system has ran for 5 to 10 minutes		
2 Turn Circuit 2 compressor MMS On		
3 Set Circuit 2 compressor to Auto/Enable from controller		
4 Check compressor for proper rotation		
5 Record compressor voltage for all phases on Data Sheet		
6 Record compressor amperage for all phases on Data Sheet		
7 Complete Steps 4 thru 6 for tandom compressor (As Appllicable)		
8 Using refrigeration gauges, record Suction pressure on Data Sheet		
9 Record Suction Line temperature		
10 Record Suction Super Heat (SH)		
11 Is the Super Heat maintaining + or - 2 degrees of Super Heat setpoint?	Yes	No
12 Using refrigeration gauges, record Discharge pressure on Data Sheet		
13 Record Liquid Line temperature		
14 Record Liquid Line Sub Cooling (SC)		
15 Is the Sub Cooling between 10 and 15 degrees?	Yes	No
16 Record EEV position (As Applicable)		
17 Is the EEV more than 50% open under full load and meeting superheat setpoint?	Yes	No
18 Trim refrigerant levels to proper system operation with customer load		
19 Record amout of refrigerant added or removed (As Applicable)		
20 Update refrigerant charge on UL label if changes were made (As Applicable)		
21 Check operation of condenser fans in manual and auto		
22 Record Fan voltage for all phases on Data Sheet		
23 Record Fan amperage for all phases on Data Sheet		
24 Does the fan maintain Discharge pressure setpoint without wild variation?	Yes	No
25 Check operation of condenser water valves (As Applicable)		
26 Disconnect flow switch, ensure compressor(s) shut off and observe No Flow Alarm		
27 Inspect refrigeration Circuit for leaks while in operation		
28 Is Circuit 2 functioning properly?	Yes	No
29 Set Circuit 2 compressor to Off/Disable from controller		
30 Record any changes from default parameters made during comissioning		
31 Record all discrepancies found, in Comments Section at the end of the check list		



Section 3 Refrigeration Continued		
Section 3.4 Refrigeration Circuit 3		Check
1	Perform following steps after system has ran for 5 to 10 minutes	
2	Turn Circuit 3 compressor MMS On	
3	Set Circuit 3 compressor to Auto/Enable from controller	
4	Check compressor for proper rotation	
5	Record compressor voltage for all phases on Data Sheet	
6	Record compressor amperage for all phases on Data Sheet	
7	Complete Steps 4 thru 6 for tandom compressor (As Appllicable)	
8	Using refrigeration gauges, record Suction pressure on Data Sheet	
9	Record Suction Line temperature	
10	Record Suction Super Heat (SH)	
11	Is the Super Heat maintaining + or - 2 degrees of Super Heat setpoint?	Yes No
12	Using refrigeration gauges, record Discharge pressure on Data Sheet	
13	Record Liquid Line temperature	
14	Record Liquid Line Sub Cooling (SC)	
15	Is the Sub Cooling between 10 and 15 degrees?	Yes No
16	Record EEV position (As Applicable)	
17	Is the EEV more than 50% open under full load and meeting superheat setpoint?	Yes No
18	Trim refrigerant levels to proper system operation with customer load	
19	Record amout of refrigerant added or removed (As Applicable)	
20	Update refrigerant charge on UL label if changes were made (As Applicable)	
21	Check operation of condenser fans in manual and auto	
22	Record Fan voltage for all phases on Data Sheet	
23	Record Fan amperage for all phases on Data Sheet	
24	Does the fan maintain Discharge pressure setpoint without wild variation?	Yes No
25	Check operation of condenser water valves (As Applicable)	
26	Disconnect flow switch, ensure compressor(s) shut off and observe No Flow Alarm	
27	Inspect refrigeration Circuit for leaks while in operation	
28	Is Circuit 3 functioning properly?	Yes No
29	Set Circuit 3 compressor to Off/Disable from controller	
30	Record any changes from default parameters made during comissioning	
31	Record all discrepancies found, in Comments Section at the end of the check list	



Section 3 Refrigeration Continued		
Section 3.5 Refrigeration Circuit 4		Check
1 Perform following steps after system has ran for 5 to 10 minutes		
2	Turn Circuit 4 compressor MMS On	
3	Set Circuit 4 compressor to Auto/Enable from controller	
4	Check compressor for proper rotation	
5	Record compressor voltage for all phases on Data Sheet	
6	Record compressor amperage for all phases on Data Sheet	
7	Complete Steps 4 thru 6 for tandom compressor (As Appllicable)	
8	Using refrigeration gauges, record Suction pressure on Data Sheet	
9	Record Suction Line temperature	
10	Record Suction Super Heat (SH)	
11	Is the Super Heat maintaining + or - 2 degrees of Super Heat setpoint?	Yes No
12	Using refrigeration gauges, record Discharge pressure on Data Sheet	
13	Record Liquid Line temperature	
14	Record Liquid Line Sub Cooling (SC)	
15	Is the Sub Cooling between 10 and 15 degrees?	Yes No
16	Record EEV position (As Applicable)	
17	Is the EEV more than 50% open under full load and meeting superheat setpoint?	Yes No
18	Trim refrigerant levels to proper system operation with customer load	
19	Record amout of refrigerant added or removed (As Applicable)	
20	Update refrigerant charge on UL label if changes were made (As Applicable)	
21	Check operation of condenser fans in manual and auto	
22	Record Fan voltage for all phases on Data Sheet	
23	Record Fan amperage for all phases on Data Sheet	
24	Does the fan maintain Discharge pressure setpoint without wild variation?	Yes No
25	Check operation of condenser water valves (As Applicable)	
26	Disconnect flow switch, ensure compressor(s) shut off and observe No Flow Alarm	
27	Inspect refrigeration Circuit for leaks while in operation	
28	Is Circuit 4 functioning properly?	Yes No
29	Set Circuit 4 compressor to Off/Disable from controller	
30	Record any changes from default parameters made during comissioning	
31	Record all discrepancies found, in Comments Section at the end of the check list	



Section 4 Final Inspection	
Section 4.1 Final Controls Inspection	
Check	
1 Return all chiller functions to Auto from controller	
2 Ensure all MMS, circuit breakers and switches are in normal operating positions	
3 Using customer control preference start unit	
4 Ensure the unit reaches set point, and unloads, or shut down refrigeration circuits	
5 Record Shutdown temperature	
6 Ensure all parameter changes are recorded on Data Sheet	
Section 4.2 Final General Inspection	
Check	
1 Ensure all tools are removed from cabinet/chiller	
2 Close up all cabinet/chiller doors	
3 Clean up all trash and debris from area	
4 Ensure all steps have been completed and data recorded	

Explain any steps not completed in Comments Section. List by Section and Step Number. If any steps are not completed, or answered No; additional service visits may be necessary. Additional service will be quoted separately at current Time and Material rates



Recorded Data Sheet

Section 1 General	
Section 1.1 Pre Start Inspection	Record
1.1.12 Ambient temperature	°F
1.1.15 User Setpoint	°F

Section 2 Hydronic System	
Section 2.1 Hydronic System Basic	Record
2.1.3 Glycol/Water Percentage	%
Section 2.2 Primary Hydronic Side	Record
2.2.4 Pump 1 Phase/Line 1 voltage	Vac
2.2.4 Pump 1 Phase/Line 2 voltage	Vac
2.2.4 Pump 1 Phase/Line 3 voltage	Vac
2.2.5 Pump 1 Phase/Line 1 amperage	Amps
2.2.5 Pump 1 Phase/Line 2 amperage	Amps
2.2.5 Pump 1 Phase/Line 3 amperage	Amps
2.2.9-1 Pump 2 Phase/Line 1 voltage	Vac
2.2.9-2 Pump 2 Phase/Line 2 voltage	Vac
2.2.9.3 Pump 2 Phase/Line 3 voltage	Vac
2.2.9.4 Pump 2 Phase/Line 1 amperage	Amps
2.2.9-5 Pump 2 Phase/Line 2 amperage	Amps
2.2.9-6 Pump 2 Phase/Line 3 amperage	Amps
Section 2.3 Secondary Hydronic Side	Record
2.3.4 Pump 1 Phase/Line 1 Voltage	Vac
2.3.4 Pump 1 Phase/Line 2 Voltage	Vac
2.3.4 Pump 1 Phase/Line 3 Voltage	Vac
2.3.5 Pump 1 Phase/Line 1 amperage	Amps
2.3.5 Pump 1 Phase/Line 2 amperage	Amps
2.3.5 Pump 1 Phase/Line 3 amperage	Amps
2.3.6 Pump 1 Output (Supply) pressure	Psig
2.3.7 Pump 1 Input (Return) pressure	Psig
2.3.11-1 Pump 2 Phase/Line 1 Voltage	Vac
2.3.11-2 Pump 2 Phase/Line 2 Voltage	Vac
2.3.11-3 Pump 2 Phase/Line 3 Voltage	Vac
2.3.11-4 Pump 2 Phase/Line 1 amperage	Amps
2.3.11-5 Pump 2 Phase/Line 2 amperage	Amps
2.3.11-6 Pump 2 Phase/Line 3 amperage	Amps
2.3.11-7 Pump 2 Output (Supply) pressure	Psig
2.3.11-8 Pump 2 Input (Return) pressure	Psig

Section 3 Refrigeration	
Section 3.1 Refrigeration Pre Start Inspection	
3.1.1 Refrigerant Type	Record
Section 3.2 Refrigeration Circuit 1	
3.2.5 Compressor PhaseLine 1 voltage	Vac
3.2.5 Compressor Phase/Line 2 voltage	Vac
3.2.5 Compressor Phase/Line 3 voltage	Vac
3.2.6 Compressor Phase/Line 1 amperage	Amps
3.2.6 Compressor PhaseLine 2 amperage	Amps
3.2.6 Compressor Phase/Line 3 amperage	Amps
3.2.8 Suction line pressure	Psig
3.2.9 Suction line Temperature	°F
3.2.10 Suction Super heat (SH)	°F
3.2.12 Discharge line pressure	Psig
3.2.13 Liquid line temperature	°F
3.2.14 Liquid line Subcooling	°F
3.2.16 EEV position	%
3.2.19 Added or Removed refrigerant	Lbs
3.2.22 Fan Phase/Line 1 voltage	Vac
3.2.22 Fan Phase/Line 2 voltage	Vac
3.2.22 Fan Phase/Line 3 voltage	Vac
3.2.23 Fan Phase/Line 1 amperage	Amps
3.2.23 Fan Phase/Line 1 amperage	Amps
3.2.23 Fan Phase/Line 1 amperage	Amps

Section 3 Refrigeration Continued	
Section 3.3 Refrigeration Circuit 2	Record
3.3.5 Compressor Phase/Line 1 voltage	Vac
3.3.5 Compressor Phase/Line 2 voltage	Vac
3.3.5 Compressor Phase/Line 3 voltage	Vac
3.3.6 Compressor Phase/Line 1 amperage	Amps
3.3.6 Compressor Phase/Line 2 amperage	Amps
3.3.6 Compressor Phase/Line 3 amperage	Amps
3.3.8 Suction line pressure	Psig
3.3.9 Suction line Temperature	°F
3.3.10 Suction Super heat (SH)	°F
3.3.12 Discharge line pressure	Psig
3.3.13 Liquid line temperature	°F
3.3.14 Liquid line Subcooling	°F
3.3.16 EEV position	%
3.3.19 Added or Removed refrigerant	Lbs
3.3.22 Fan Phase/Line 1 voltage	Vac
3.3.22 Fan Phase/Line 2 voltage	Vac
3.3.22 Fan Phase/Line 3 voltage	Vac
3.3.23 Fan Phase/Line 1 amperage	Amps
3.3.23 Fan Phase/Line 1 amperage	Amps
3.3.23 Fan Phase/Line 1 amperage	Amps

Section 3 Refrigeration Continued		Record
Section 3.4 Refrigeration Circuit 3		
3.4.5	Compressor Phase/Line 1 voltage	Vac
3.4.5	Compressor Phase/Line 2 voltage	Vac
3.4.5	Compressor Phase/Line 3 voltage	Vac
3.4.6	Compressor Phase/Line 1 amperage	Amps
3.4.6	Compressor Phase/Line 2 amperage	Amps
3.4.6	Compressor Phase/Line 3 amperage	Amps
3.4.8	Suction line pressure	Psig
3.4.9	Suction line Temperature	°F
3.4.10	Suction Super heat (SH)	°F
3.4.12	Discharge line pressure	Psig
3.4.13	Liquid line temperature	°F
3.4.14	Liquid line Subcooling	°F
3.4.16	EEV position	%
3.4.19	Added or Removed refrigerant	Lbs
3.4.22	Fan Phase/Line 1 voltage	Vac
3.4.22	Fan Phase/Line 2 voltage	Vac
3.4.22	Fan Phase/Line 3 voltage	Vac
3.4.23	Fan Phase/Line 1 amperage	Amps
3.4.23	Fan Phase/Line 1 amperage	Amps
3.4.23	Fan Phase/Line 1 amperage	Amps

Section 3 Refrigeration Continued		
Section 3.3 Refrigeration Circuit 2		Record
3.5.5	Compressor PhaseLine 1 voltage	Vac
3.5.5	Compressor Phase/Line 2 voltage	Vac
3.5.5	Compressor Phase/Line 3 voltage	Vac
3.5.6	Compressor Phase/Line 1 amperage	Amps
3.5.6	Compressor PhaseLine 2 amperage	Amps
3.5.6	Compressor Phase/Line 3 amperage	Amps
3.5.8	Suction line pressure	Psig
3.5.9	Suction line Temperature	°F
3.5.10	Suction Super heat (SH)	°F
3.5.12	Discharge line pressure	Psig
3.5.13	Liquid line temperature	°F
3.5.14	Liquid line Subcooling	°F
3.5.16	EEV position	%
3.5.19	Added or Removed refrigerant	Lbs
3.5.22	Fan Phase/Line 1 voltage	Vac
3.5.22	Fan Phase/Line 2 voltage	Vac
3.5.22	Fan Phase/Line 3 voltage	Vac
3.5.23	Fan Phase/Line 1 amperage	Amps
3.5.23	Fan Phase/Line 1 amperage	Amps
3.5.23	Fan Phase/Line 1 amperage	Amps

Section 4 Final Inspection		
Section 4.1 Final Controls Inspection		Record
1	Shutdown Temperature	°F

Additional measurement can be recorded on additional pages as required

Recorded By: _____

Print/Sign

