23XRV Service Updates

October 2012

23XRV SERVICE UPDATES

23XR compressor assembly

Turn to the Experts

Compressor build moving to Charlotte

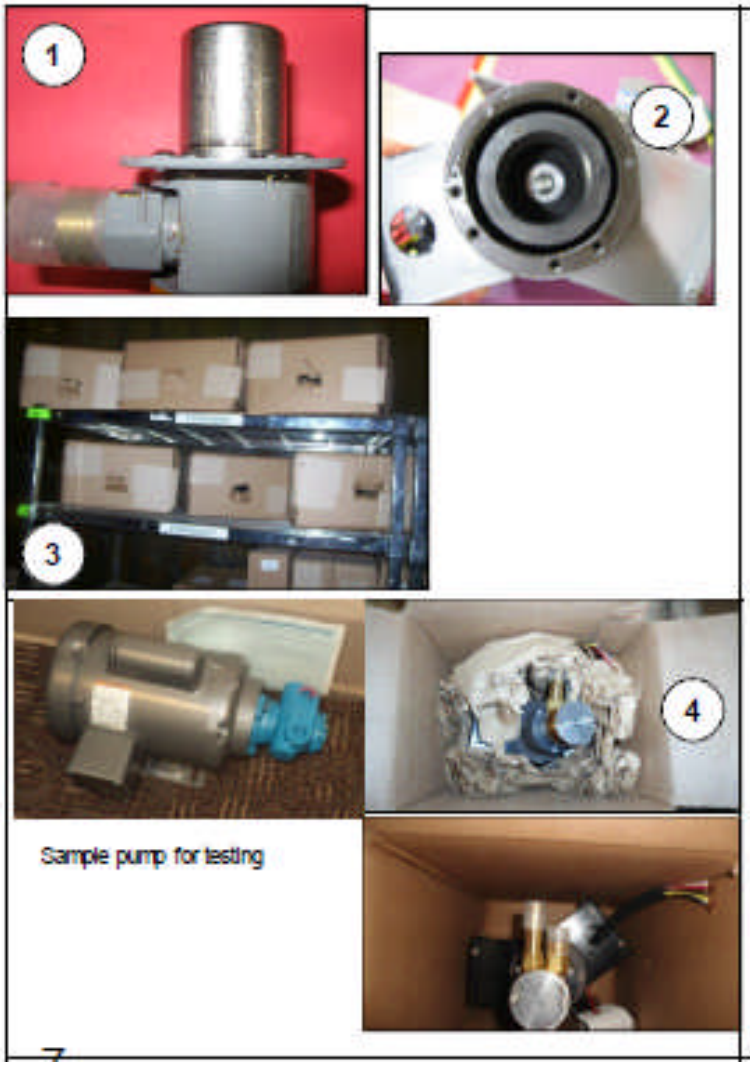
23XRV SERVICE UPDATES

Latest Manuals

Manual Name	Type	Form #
23XRV PIC III Controls HFC 134a	Installation Instructions	23XRV-2SI
23XRV PIC III Controls HFC 134a	Startup, Operation, and Maintenance Instructions	23XRV-2SS
23XRV 134a	Product Data	23XRV-4pd
19XRV, 23XRV with PIC III Controls Rockwell PowerFlex 755VFD Option	Startup and Service Instructions	19/23XR-2SS
EVERVU Touch Screen Display for 19XRV, 23XRV PIC II or PIC III Controls	Installation and Startup Instructions	19/23-2SI

23XRV SERVICE UPDATES

Oil pump motor stall out



Issue/project description: Oil pump motor can stall out or will not start – issue found both on production line and field returns

Milestone	Dates	Status
D1 – ID Team	3/28/12	Complete
D2 – Describe problem	3/28/12	Multiple oil pumps replaced in the field, pumps rejected in QAC lab run test
D3 – Interim CA	3/28/12	All 23XR units tested 100% in QAC lab, alignment tabs now included. Tuthill is developing a standard packaging to prevent transit damage.
D4 – ID Root cause	4/27/12	Shaft is rubbing (rub marks photo 1) → Magnet is shifted off-center in the shaft (photo 2) → Pumps are being damaged in transit (photo 3) → Inconsistent pump packaging by Tuthill (photo 4)
D5 – Choose Corrective action	5/10/12	Alignment tabs to prevent misalignment (complete). Implement standard work in Tuthill packing area with large visuals. Change to different pump – Tuthill or Gerotor to be tested.
D6 – Implement Corrective action	12/31/12	Estimated date for design change, actions at Tuthill complete
D7 Permanent Corrective Actions	12/31/12	Est
D8 – Recognize Team	12/31/12	Est

23XRV SERVICE UPDATES

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23XRV Lead lag does not work

23XRV Lead-Lag Load sharing

Charlotte Issue Resolution Process (23XRV)

D1 D2 D3 D4 D5 D6 D7 D8

IRP Issue Description : 23XRV Lead-lag function does not operate properly. Running one chiller at less than preferred levels

Root Cause Findings: Lead / lag controls in the PIC use the demand limit function to load balance. However, the demand limit range is only 40-100%. At 50% load condition, 23XRV chillers are so efficient that they may each only be using 25% of amps. So what happens is one chiller runs at 40% and the other at 10% rather than both at 25%. Object sharing between 19XRV and 23XRV prevent lowering the limit to lower than 40%.

Containment: Use kW as demand limit source

Corrective Action Plan: Break-out shared library. Re-qualify 23XRV S/W

Issues/Risks: S/W Resource

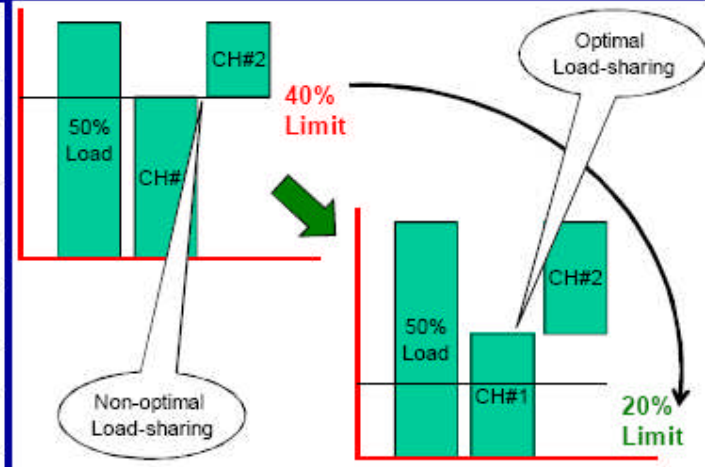
Project Team: Tats, Scott, Wayne

IRP PROJECT MILESTONES (8D)	PLAN	FCT	ACTUAL
Problem Assigned (D1)	6/1/10	6/1/10	6/1/10
Problem Described (D2)	6/1/10	6/1/10	6/1/10
Problem Contained (D3)	6/20/11	6/20/11	6/20/11
Root Cause Determined (D4)	6/20/11	6/20/11	6/20/11
Corrective Action Chosen (D5)	6/20/11	6/20/11	6/20/11
Corrective Action Implemented (D6)	10/31/11	7/31/12	
Reoccurrence Prevented (D7)	10/31/11	12/31/12	
Team Congratulated! (D8)	11/4/11	12/31/12	

Example Problem Sites

Data collection in progress.

Active Tasks	Owner	Plan	Complete
Write S/W change request and write psedu-code	Tats	6/20/11	6/20/11
Prioritize the change against other S/W change requests	Steve	6/30/11	6/30/11
Implement S/W change	Wayne	10/31/11	10/31/11
Field test sites to be identified	Don	1/31/12	1/31/12
Field testing	Tats	7/31/12	



23XRV SERVICE UPDATES

23XRV Oil Heater Leaks

Turn to the Experts

Issue/project description: Leaks found around oil heater in the field and during assembly. Nut on oil heater won't tighten down during assembly

Milestone	Dates	Status
D1 – ID Team	10/25/11	Complete
D2 – Describe problem	10/25/11	Complete
D3 – Interim CA	1/31/12	All heaters at Carrier Charlotte were inspected and suspect pieces were put on hold and returned to Watlow for analysis (1/31). Watlow completed containment of their o-rings (6/1)
D4 – ID Root cause	2/6/12	FB was welded into heater outside the 2° tolerance used for Watlow general spec squareness. Weld spatter damaging threads.
D5 – Choose Corrective action	2/6/12	Watlow implemented fixture to ensure head is mounted straight (complete), noted improvement at CLT assembly. Prevent spatter from entering threads.
D6 – Implement Corrective action	7/31/12	Fixture implemented at Watlow factory.
D7 Permanent Corrective Actions	8/23/12	0 recurrences of issue since fixture implemented
D8 – Recognize Team	8/23/12	Estimated

23XRV SERVICE UPDATES

23XRV Leak at Sight Glass

Turn to the Experts

Oil found leaking from sight glass on 23XR oil vaporizer

A torque wrench has been issued to ensure all sight glasses are secured to manufacturing specification.

Issue/project description: 23XR oil vaporizer sight glass leaking on several chillers built for the Arizona school district project.

Milestone	Dates	Status
D1 – ID Team	3/12/2012	Complete
D2 – Describe problem	3/12/2012	Oil found leaking from sight glass of 23XR oil vaporizer
D3 – Interim CA	3/13/2012	Complete
D4 – ID Root cause	3/13/2012	Unable to determine root cause for this particular leak because we did not have the opportunity to examine the units. Similar leaks were found at the Compressor sight glass in the past and issuing a torque wrench resolved the leak.
D5 – Choose Corrective action	3/13/2012	Complete
D6 – Implement Corrective action	3/16/2012	Complete
D7 Permanent Corrective Actions	9/2012 est	Update mfg specifications
D8 – Recognize Team	TBD	

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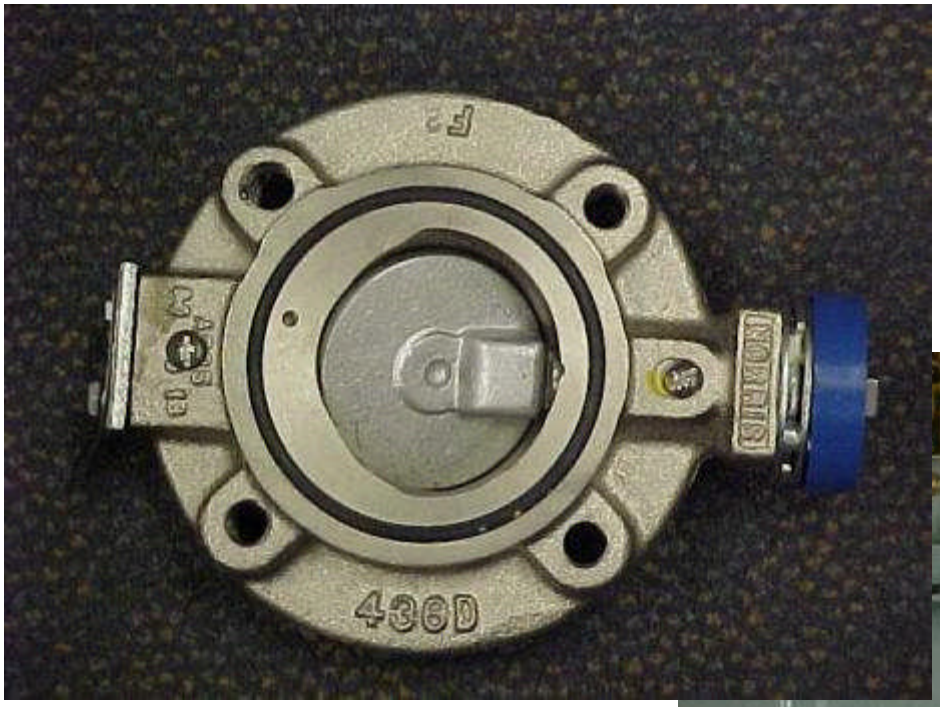
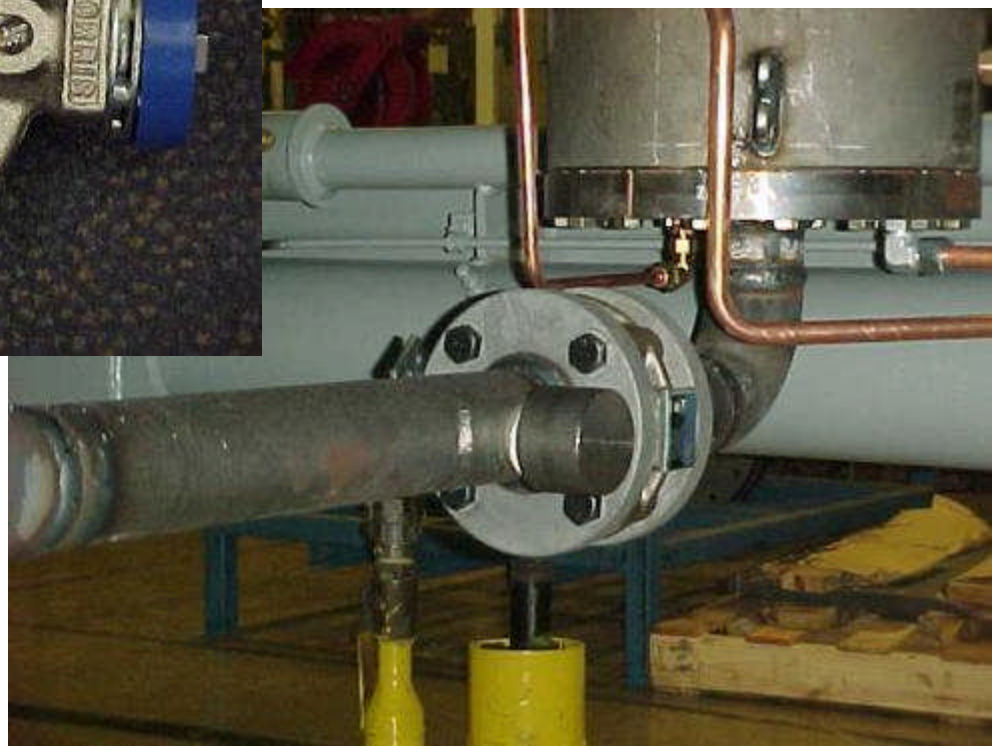
23XRV Norriseal Valve Leak





23XRV SERVICE UPDATES

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23XRV Muffler issues

23XRV SERVICE UPDATES

23XRV Motor Cooling Filter

Carrier®
Turn to the Experts.

We discovered that the drawings for the 23XR did not show the orientation of the motor cooling filter dryer, so the orientation of the filter may be backwards on units.

We had a report from the Philippines that a 23XR had a couple of shutdowns on high motor temperature. They found the filter in backwards. They reversed it and the motor temperature went back to normal.