General Service Bulletin

RTAA

CHHB Piston Rebuild

Order No:**RTAA-SVB09C-EN** DATE: August 2004

Introduction

The purpose of this bulletin is to explain the proper procedure for rebuilding the unloader piston on CHHB 70-100 ton compressors. CHHB compressors are used on RTAA 130-400 ton units.

NOTICE: Warnings and Cautions appear at appropriate sections throughout this literature. Read these carefully.

⚠ **WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

CAUTION: Indicates a situation that may result in equipment or property-damage only accidents.

Discussion

The design of the CHHB compressor includes a modulating slide valve, that varies the capacity of the compressor. This slide valve is operated by a piston/cylinder assembly. The piston will need to be rebuilt if it is stuck or leaking. Both of these situations could lead to the unit tripping on "Low Oil Flow" or "HPC". It is very important to follow proper troubleshooting procedures to determine the cause of these trips. Please refer to RTAA-SB-4, RTAA-SB-12, RTAA-SB-18 and RTAA-SVD01A-EN for troubleshooting and additional repair procedures.

Piston Repair Procedure

⚠ WARNING

Contains Refrigerant!

System contains oil and refrigerant under high pressure. Recover refrigerant to relieve pressure before opening the system. See unit nameplate for refrigerant type. Do not use non-approved refrigerants, refrigerant substitutes, or refrigerant additives.

Failure to follow proper procedures or the use of non-approved refrigerants, refrigerant substitutes, or refrigerant additives could result in death or serious injury or equipment damage.

Hazardous Voltage!

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

It would be advantageous to have the slide valve in the fully unloaded position before performing the following. See RTAA-SB-4 Figure A.

1. Isolate and evacuate the compressor.

   Note: Energize the load, unload and master oil solenoids during evacuation.

2. Remove the M16 capscrews which retain the discharge flange and the copper line to the compressor. There are 5 bolts for the 70 ton compressor and 6 bolts for the 85 and 100 ton compressors.

3. Remove the M16 capscrews which retain the bearing cover plate and the bearing housing. There are 9 bolts for the 70 ton compressor and 11 bolts for the 85 and 100 ton compressors.

4. Discard the old gasket found between the bearing cover plate and bearing housing, and the o-ring under the discharge flange. If there are belleville springs, set the belleville springs found in the bearing bores off to the side for later re-assembly. Note the orientation of the Belleville Spring before removing.

   Note: Belleville Springs only apply to older compressors Design Sequence G, U95K**** and prior. Newer compressors Design Sequence H, U95L**** and later have the bearing nut configuration.

5. Note that there is a large countersunk area on the outer face of the slide valve piston to accept a M16 nut. Remove the nut which attaches the slide valve piston to the unloader shaft.

   If the piston is recessed in the piston cavity, loosen the M16 nut such that it is half on and half off of the rod. Use one of the discharge flange bolts to thread into the nut. The entire assembly can then be pulled forward.

   Note: The piston shaft should *never* rotate in the slide valve, nor should it ever come loose from the slide valve. If it does see slide valve repair procedure.

6. Remove the unloader piston from its bore.

7. Clean the unloader shaft, bore and piston to remove all debris and oil. Inspect the cylinder for scoring or damage.

8. Apply refrigerant oil (Trane Oil 15) to both the piston/wear ring assembly and the bore.

9. Install the replacement piston assembly into the bore with the countersunk area on the piston face (see step 4) out. Check that the back face of the piston is parallel with the back face of the bearing housing during this installation. The new piston will probably be significantly "tighter" than the old piston. This is normal.

10. Exercise piston/slide valve assembly by threading an M16 coupling nut finger tight onto the shaft, threading a long M16 bolt into the coupling nut and gripping the blot move the assembly back and forth. When finished exercising the assembly, remove the coupling nit and bolt.

11. Apply a drop of Locktite 271 to the threads of the M16 nut and assemble to the unloader shaft. Torque the nut to 100 ft-lb.

12. Re-install the belleville springs if present and install the new, pre-oiled (use Trane Oil 15) bearing cover gasket.

    Note: To keep the belleville spring in place, put electrical tape across the "face" of the bearing housing to hold the spring. Then, align the discharge face plate and *remove* the tape when the plate is very close to the housing.

13. Secure the bearing cover to the bearing housing with the proper M16 capscrews. Secure the discharge flange/copper tube assembly to the bearing cover with new o-ring and the M16 capscrews. Torque the M16 capscrews to 165 ft-lb.

14. Evacuate the Compressor. Open all valves.

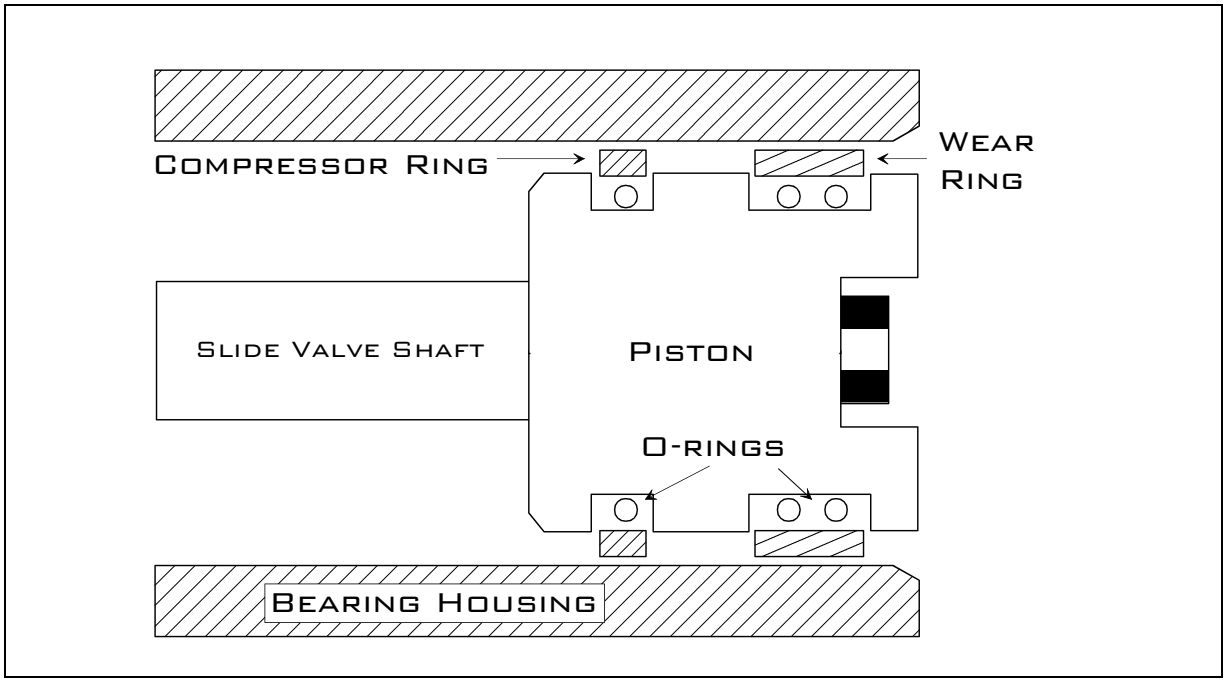


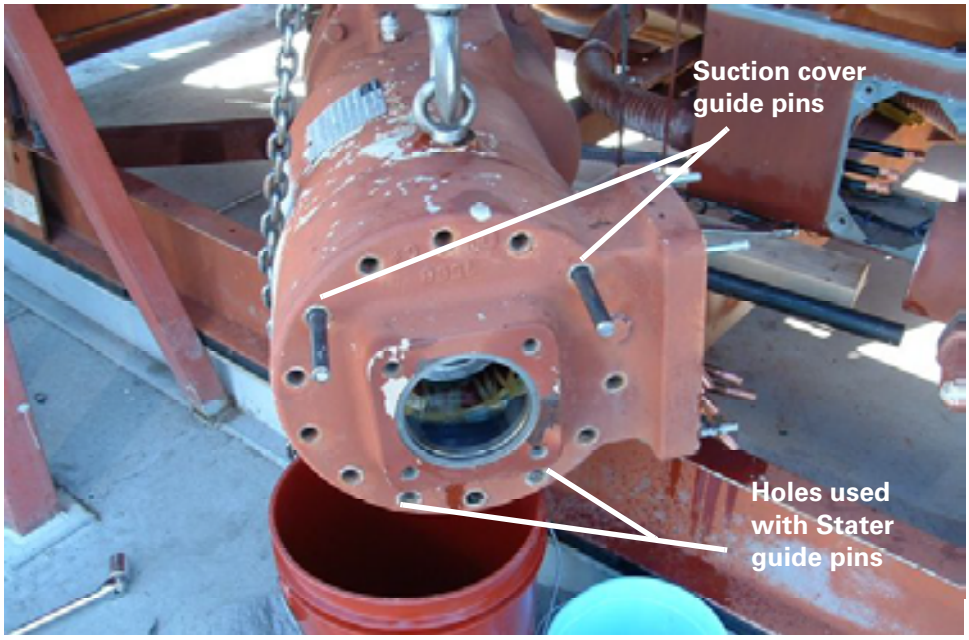
Figure 1 Slide Valve Piston and Shaft

Slide Valve Repair

This procedure is based on finding the slide valve shaft turning when attempting to remove the piston nut.

1. Remove the suction valve, oil lines, and electrical connections. Disassemble the motor terminals, refer to RTAA-SVB08B-EN for additional instructions and part numbers. Mark wires and terminals for re-installation. Inspect motor terminal for damage
2. Set up rigging and install eyebolts (M16) on the compressor.
3. Remove two of the compressor mounting bolts and rotate the suction end of the compressor out to have access to the suction cover. Remove two of the suction cover bolts and install guide pins (M16, 12-18" all thread). Remove suction cover.

Figure 2 Compressor



4. Remove rotor bolt, then slide rotor off shaft.

CAUTION

Compressor Damage!

Protect the stator windings from damage during removal of the stator and rotor.

5. Mark stator top for assistance in realignment. Remove stator bolt, twist the windings by hand to break the stator free.

6. Pullout half way and install a strap around stator to support weight. Pull out and twist at the same time. Do not support the stator by the windings.

   or

   If stator guide pins are available install them in the holes marked in Figure 2. Pull out the stator allowing it to rest on the stator guide pins.

7. Set the stator aside. Protect the windings from damage.

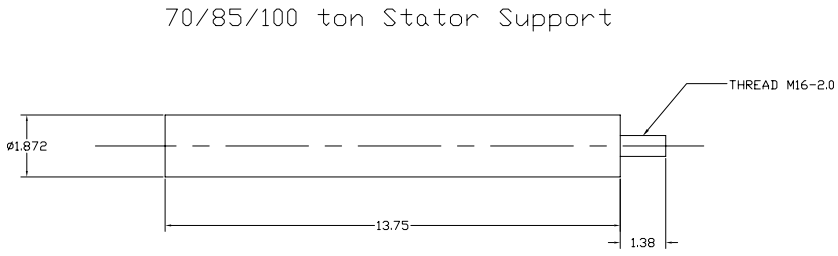
Figure 3 Compressor and Stator

8. The slide valve bolt is in the upper right hand corner. Use a deepwell magnetic socket or put perma gum in the bottom of the socket to keep bolt from falling into the rotors. Remove bolt and apply Loctite 271 to the threads. Reinstall and torque bolt to 70ft-lbs.

9. Re-install stator and stator bolt with new o-ring. Install rotor and rotor bolt (150 ft-lbs). Install suction cover (170 ft-lbs) and terminal cover (40 ft-lbs) for electrical.

10. Install compressor in mounting holes(150 ft-lbs) , re-install electrical connections, suction valve and replace o-rings for oil lines to top of compressor.

Figure 4 Stator guide pins - obtain locally not available from service parts



Parts Ordering Information

This bulletin is informational only and does not authorize any parts or labor. Use the following table to order the necessary parts.

Description	Compressor Size	Part Number
Piston Kit	70 TON	KIT02583
Piston Kit	85 TON	KIT02584
Piston Kit	100 TON	KIT02585
Additional Parts required for Slide Valve repair Procedure.		
Stator Bolt O-ring	All	RNG01484
Terminal Cover Gasket	All	GKT03811
Terminal Seal (need 6)	All	RNG01651
Inside Insulator (need 6)[1]	All	INS02386
Inside Insulator (need 6)1	All	INS02387
Suction Valve Gasket	All	GKT02718
Suction Bell Gasket	All	GKT03233
Oil line O-rings	All	RNG01650 (qty 2)

[1] Replace only if necessary

Questions

Contact the Product Technical Service department in Pueblo, Colorado with questions regarding this Service Bulletin. They can be reached at techservicepueblo@trane.com.

Trane
A business of American Standard Companies
www.trane.com

For more information contact your local district office or e-mail us at comfort@trane.com

Literature Order Number	RTAA-SVB09C-EN
File Number	SL-RF-RLC-RTAA-SVB09C-EN-0804
Supersedes	RTAA-SVB09A-EN
Stocking Location	Electronic Only