



Service Information

File In/With:

SI0399

New 918

Equipment Affected: YVAA

YVAA 170mm Steel Discharge Line Design Change

GENERAL

Through job site applications it has been discovered that specific YVAA chiller circuits with the 170mm screw compressor may exhibit discharge line cracks due to excessive vibration. The design has been updated in May 2016 with the use of steel instead of copper for the discharge line material. This design change is only applicable to the units and circuits with the 170mm screw compressor.

STEEL DISCHARGE LINE

CHILLER MODEL	QUANTITY OF 170MM
0500/1700	2
0413/1443	2
0523/1843	1
0373/1343	1
0443/1543	2
0425/1515	2
0490/1650	2
0483/1693	1
0375/1315	1
0475/1665	2
0368/1288	1
0398/1388	1
0428/1488	1

Work on this equipment should only be done by properly trained personnel who are qualified to work on this type of equipment. Failure to comply with this requirement could expose the worker, the equipment and the building and its inhabitants to the risk of injury or property damage.

The instructions on this service bulletin are written assuming the individual who will perform this work is a fully trained HVAC & R journeyman or equivalent, certified in refrigerant handling and recovery techniques, and knowledgeable with regard to electrical lock out/tag out procedures. The individual performing this work should be aware of and comply with all Johnson Controls, national, state and local safety and environmental regulations while carrying out this work. Before attempting to work on any equipment, the individual should be thoroughly familiar with the equipment by reading and understanding the associated service literature applicable to the equipment. If you do not have this literature, you may obtain it by contacting a Johnson Controls Service Office.

Should there be any question concerning any aspect of the tasks outlined in this bulletin, please consult a Johnson Controls Service Office prior to attempting the work. Please be aware that this information may be time sensitive and that Johnson Controls reserves the right to revise this information at any time. Be certain you are working with the latest information.

Product Technical Support

Part Numbers

MODEL	KIT NUMBER	
	STD PIPING	SSV/FV PIPING
0373/1343	392-42136-000	392-42136-010
0413/1443	392-42136-100	392-42136-110
0443/1543	392-42136-200	392-42136-210
0483/1693	392-42136-300	392-42136-310
0523/1843	392-42136-300	392-42136-310
0375/1315	392-42136-000	392-42136-010
0425/1515	392-42136-000	392-42136-010
0475/1665	392-42136-300	392-42136-310
0368/1288	392-42136-000	392-42136-010
0398/1388	392-42136-000	392-42136-010
0428/1488	392-42136-000	392-42136-010
0490/1650	392-42136-400	392-42136-410
0500/1700	392-42136-400	392-42136-410

For any YVAA chillers currently experiencing copper discharge line cracks, please follow the below procedure to retrofit from copper to steel discharge line.

Preparation Procedure to weld steel discharge line on YVAA 170mm compressor

PREPARATION PROCEDURE:

Transfer all of the system's refrigerant to bottles:

1. On System to install new steel line, open all valves: suction, discharge, liquid, flashtank drain, condenser drain (electric valve) and economizer (ball and electric valve) (electric valves can be opened when the panel is in "Service Mode")
2. Transfer all refrigerant into cylinders (record weight of each cylinder)
3. Close suction valve (if equipped), condenser drain (electric), and economizer (ball valve) to prevent air from entering this part of the system.
4. Remove power from the chiller, and lock out / tag out chiller power

Carefully cut and remove copper discharge lines:

1. Use tubing cutter if possible. If cutting with saw, cut next to each of the two discharge line ball valves (upper and lower valve) to prevent metal chips from entering the muffler and oil separator.
2. Unbolt and remove muffler and the section of copper discharge line
3. Unbrazed copper lines from muffler and oil separator
4. Using hand sandpaper or rotary sander on the muffler, and hand sanding only on the oil separator, remove excess braze material from muffler and oil separator pipes. **DO NOT USE A GRINDER, IT MAY SPRAY STEEL PARTICLES ONTO THE MICROCHANNEL COILS WHICH WILL CAUSE A CORROSION FAILURE**
5. Clean all metal chips and dust from inside muffler: wash with oil-free solvent and inspect inside of muffler.
6. **ANY METAL CHIPS INSIDE MUFFLER WILL CAUSE THE COMPRESSOR TO FAIL DURING BACK-SPIN.**
7. Clean all metal chips and dust from oil separator pipe: wash with oil-free solvent and inspect inside of oil sep
8. Remove copper discharge line support bracket and support rail between compressor and oil separator.

Assemble steel discharge lines:

1. Preassemble the two discharge lines and the three couplings to ensure proper fit and insertion into the muffler and oil separator – see separate assembly procedure

Welding:

1. Purge piping with nitrogen during welding to prevent oxidation and scale formation on the inside of the pipes
2. Weld requires a minimum of two layers of weld.

Assemble brass ball valves:

1. See separate assembly procedure for location of the three brass ball valves.

Brazing:

1. On copper hot gas tubing that will receive new brass ball valves (see separate assembly procedure), use Scotch Brite or sand paper to remove all oxides from copper tubing to ensure a good braze joint
2. Wash all braze joint surfaces with oil-free solvent, such as CRC or R-141. See pictures of CRC and R-141 in Appendix
3. ALL BRAZE JOINT SURFACES MUST BE SHINY AND OIL FREE
4. Use flux on all braze joints
5. All brazed joints must have good penetration and capped properly
6. Wet rags must be used to protect all ball valve
7. All wiring must be moved so that it is not near any open flame
8. BEFORE ANY BRAZING PROCESS IS STARTED ALL SURFACES MUST BE VERIFIED TO BE CLEANED WITH SOLVENT
9. Purge piping with nitrogen during brazing to prevent oxidation and scale formation on the inside of the pipes
10. All brazed joints must have good penetration and capped properly.

Leak Checking:

1. Using nitrogen pressurize the system to approximately 100 psig
2. Check for leaks with soap solution. Repair any leaks and repeat process
3. If no leaks found, remove nitrogen, open all valves, pressurize with approximately 80 psig R-134a, then boost pressure to approximately 150 psig with nitrogen
4. Using an electronic R-134a leak detection device leak check all system refrigerant piping for leaks
5. Repair any leaks and repeat process.

Evacuate system

1. Use clean hoses with good seals
2. Use electronic vacuum gauge to determine final vacuum reading
3. Ensure vacuum pump has fresh oil
4. All valves are to be capped
5. Evacuate the system to < 1000 microns

Charging the Refrigerant

1. Weigh all refrigerant that is to be charged
2. Charge each 170mm compressor system to 75 lbs (35 kg) less than nameplate

Appendix

Acceptable solvents to remove all oils and dirt from surfaces to be brazed: (it is important that the solvent does not contain any oil)

Solvent CRC:



Composition/Information on Ingredients			
Mixtures			
Chemical Name	Common Name and Synonyms	CAS Number	%
Acetone		67-64-1	40-50
Naphtha (petroleum), hydrotreated light		64742-49-0	30-40
2-Methylpentane		107-83-5	5-10
Carbon Dioxide		124-38-9	5-10
n-Hexane		110-54-3	1-3



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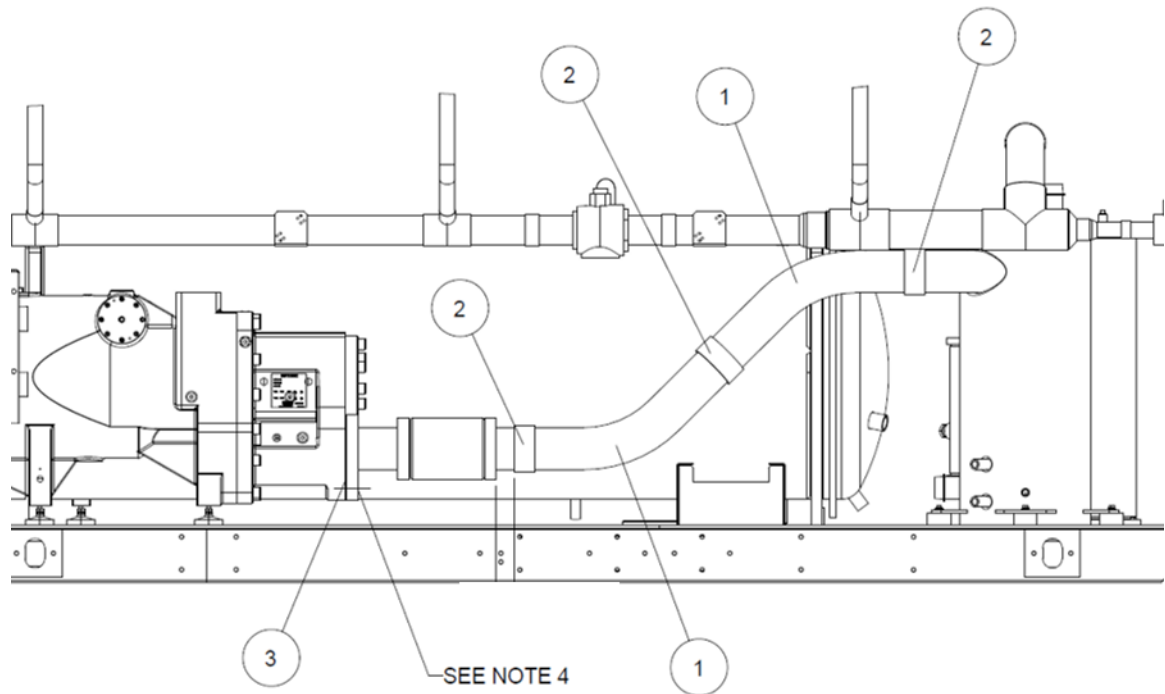
Solvent 141b



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YVAA 170MM STEEL DISCHARGE LINE:

YVAA 170mm Compressor Discharge line installation procedure



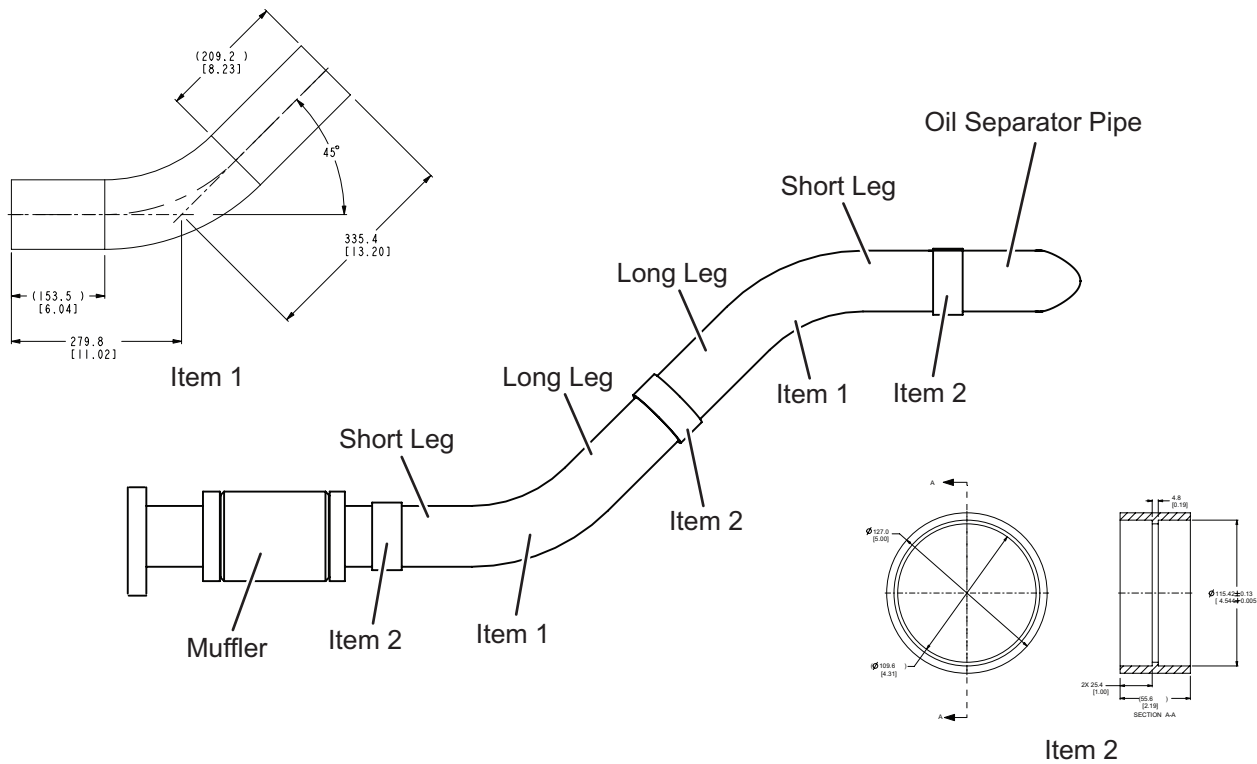
Items 1 and 2 are designed to fit without modification. However, DO NOT weld before fitting on chiller.



Carefully read through all directions prior to performing any of the following modifications.

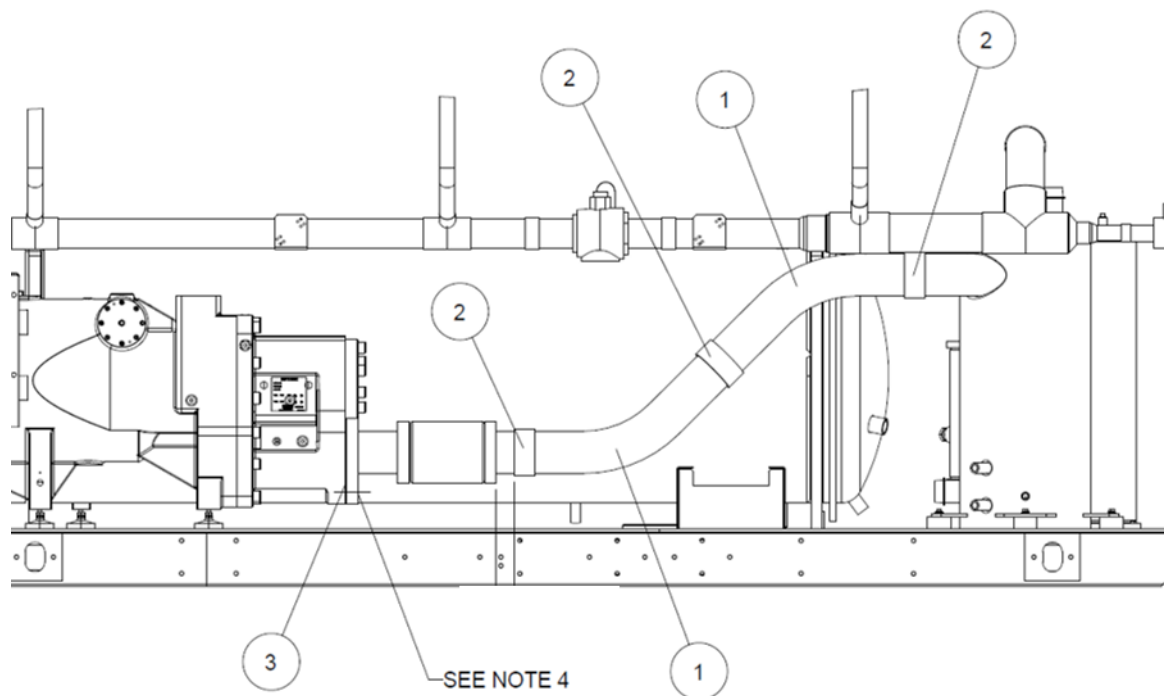
ASSEMBLY PROCEDURE: DISCHARGE LINE

1. Loosely Fit Items; 1, 2 And Muffler Together.
2. Insert Item 2 Over Oil Separator Pipe
3. Insert Muffler And Piping Assembly Into Item 2 Of Oil Separator Pipe.



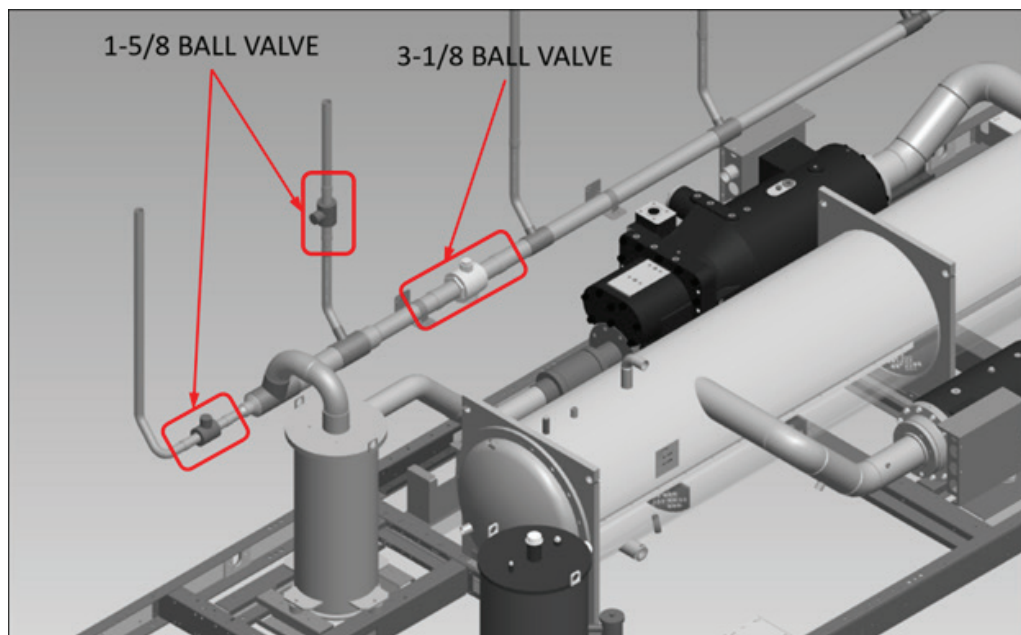
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4. Torque Muffler Bolts To 160 Ft-Lb (217 N-M).
5. Weld Assembly: Minimum 2 Layers Of Weld.
6. Use Old Muffler Gasket While Brazing Then Replace With New Muffler Gasket After Brazing.



ASSEMBLY PROCEDURE: BALL VALVES

1. Cut Piping Where Indicated Below.
2. Be Sure To Remove All Chips From Piping.
3. Braze Valves In The Locations Indicated.



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