YORK®

Service Information

File In/With:	SI0332 New 916
Equipment Affected:	All Small Tonnage Chillers with Bitzer Compressors

Bitzer Compressor Noise Troubleshooting, Repair and Replacement Details

GENERAL

This Service Information Letter provides technicians with troubleshooting techniques and repair procedures when working with the Bitzer scroll compressor.

PROBLEM

LOUD OR UNUSUAL COMPRESSOR NOISE

It was observed that compressors in a manifold set can generate a strange noise that is often misdiagnosed as a faulty compressor. The noise has been observed as intermittent or constant and is typically found with the #2 compressor in a trio bank of compressors. This usually occurs when all three compressors are in operation, but not necessarily.

This abnormal noise was first thought to be internal to the compressor. However, the majority of compressors producing this noise were found to have no fault after failure analyses were performed. Upon further investigation, it was discovered that improper base plate mounting and torque of the compressor hardware was the cause of the abnormal noise.

SOLUTION

A. **Compressor Leveling:** A simple test can be performed to determine if the compressor is improperly mounted or has internal damage and needs to be replaced.

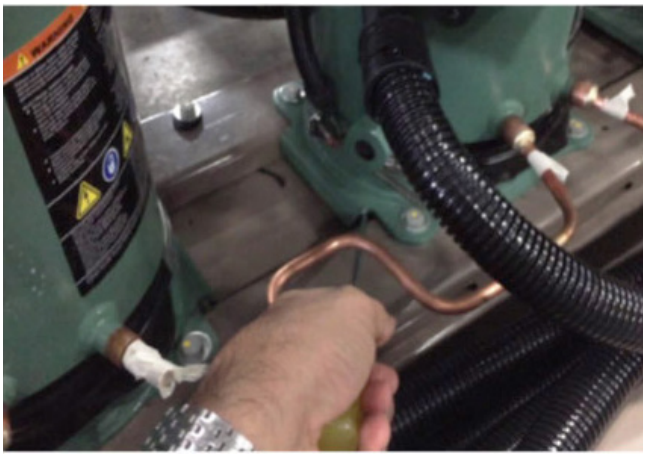
1. With a screwdriver or pry bar, carefully place the tool between the corner of the compressor and the base rail.
2. Gently lift the corner of the compressor, as shown in *Figure 1*.
3. Slowly pry/lift the corner of the compressor. If the compressor does not have internal damage the sound will dissipate and in most cases disappear completely.
4. If the sound is eliminated with this test, insert a 3/8” washer between the compressor mounting foot (where the pry bar was applied) and the base rail. Refer to *Figure 2*.

5. Check the torque of all compressor mounting bolts shown in *Figure 3*.
6. The torque on these bolts should be 33-40 ft-lbs (45-55Nm).

NOTE

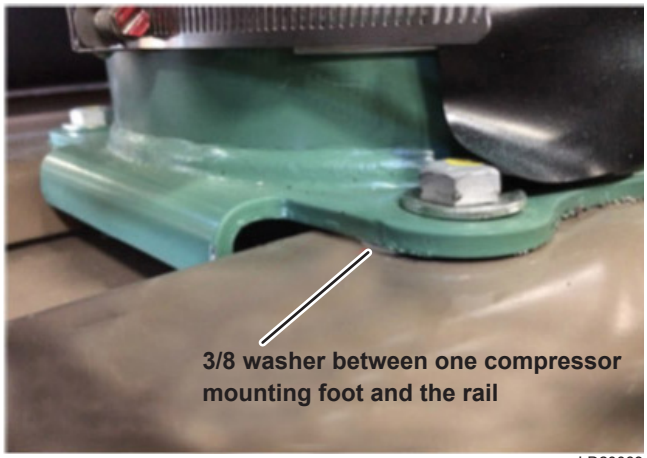
It is important not to damage the washer under the bolt head when achieving the correct torque. If washer becomes damaged you must replace it with a new, stainless steel washer (type of washer required)

7. If the noise persists after all testing and repairs are completed, please contact Product Technical Support for more options.



LD20082

FIGURE 1



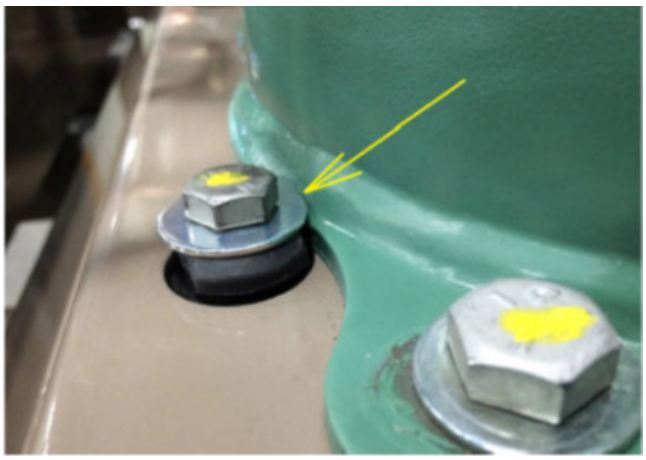
LD20083

FIGURE 2

LD20084

FIGURE 3

B. **Proper Mounting and Torque of Base Rail:** When servicing compressors, it's important that the rubber grommet be checked for proper installation (Refer to *Figure 4)*. Excessive torquing of the mounting nut can collapse the metal sleeve, as shown in *Figure 5*. The maximum torque for the hardware is 12.5ft-lbs (17Nm). Anything above this torque may result in damage to the metal sleeve. If any sleeve is found damaged, REPLACE IMEDIATELY.



LD20085

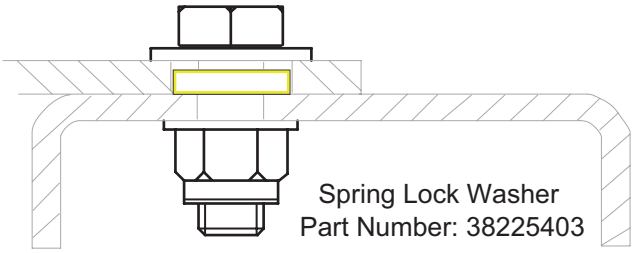
FIGURE 4

LD20086

FIGURE 5

COMPRESSOR REPLACEMENT

1. **SPRING LOCK WASHER INSIDE THE COMPRESSOR FOOT:** Within the mounting hole of each compressor foot there is a spring lock washer (part number: 38225403). This washer takes up space between the bolt shaft and the compressor foot hole and locks the compressor to the fixing rails. Refer to *Figure 6.*



LD20090

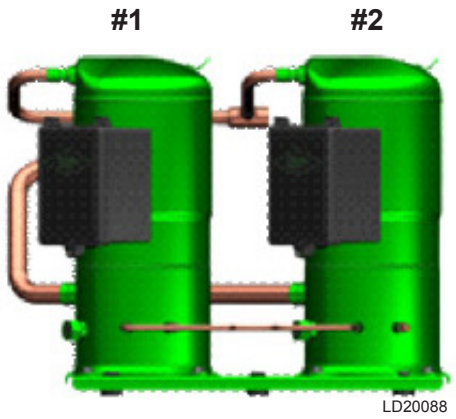
FIGURE 6

2. **COMPRESSOR CONTACTOR:** An important part of any scroll compressor replacement is determining the root cause of failure. When electrical damage to the compressor has been determined it is imperative that the compressor contactor be replaced. In some cases, damage to the contactor is obvious and evident. However, in some cases, the contactor has single phased power to the compressor, causing slow damage to the windings overtime and resulting in failure.

   NOTE: Contactors should be replaced in **any** case of scroll compressor failure caused by electrical issues.

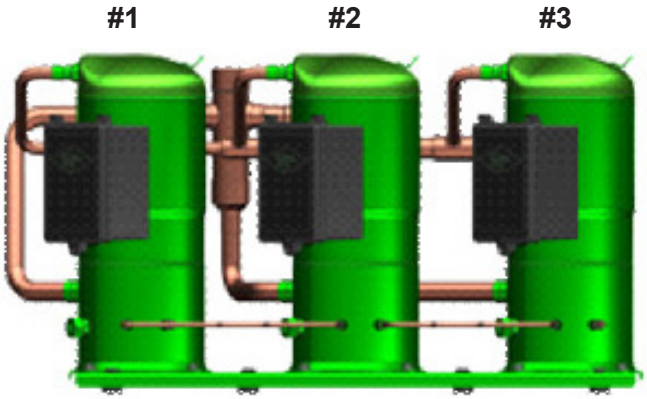
3. **DETERMINING PROPER OIL LEVELS:** The chart below list the proper oil levels in tandem and trio compressor manifold sets.

TANDEM		
COMPRESSOR	**COMPRESSOR STATUS**	**OIL LEVEL**
#1	on	1/8 to full SG
#2	on	Bottom of SG
#1	off	Bottom of SG
#2	on	1/8 to full SG
#1	on	1/8 to full SG
#2	off	Bottom of SG



LD20088

TRIO		
COMPRESSOR	**COMPRESSOR STATUS**	**OIL LEVEL**
#1	on	1/8 to full SG
#2	on	Bottom of SG
#3	on	1/8 to full SG
#1	on	1/8 to full SG
#2	off	Bottom of SG
#3	on	1/8 to full SG
#1	off	Bottom of SG
#2	on	Bottom of SG
#3	on	1/8 to full SG
#1	on	1/8 to full SG
#2	on	Bottom of SG
#3	off	Bottom of SG
#1	on	1/8 to full SG
#2	off	Bottom of SG
#3	off	Bottom of SG
#1	off	Bottom of SG
#2	off	Bottom of SG
#3	on	1/8 to full SG
#1	off	Bottom of SG
#2	on	1/8 to full SG
#3	off	Bottom of SG



LD20089