



## QUOTED SERVICE REPORT

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**Service Request Number:** 1-46720117811

**Status:** Completed

**Requestor:** Raul Cozza

JOHNSON CONTROLS SALISBURY WILMINGTON CB - 0N28

812 First State Blvd

Wilmington, DE 19804-3573

(866) 589-9275

**Service Site:**

DUPONT EXPERIMENTAL STATION

DUPONT EXPERIMENTAL

Rt 141 Lancaster Pike

Wilmington, DE 19880-0000

**Bill To:**

E I DUPONT DENEMOURS CO

1325779

Attn Accounts Payable Department

Po Box 80040

Wilmington, DE 19880-0040

**Purchase Order:** 6501701543

**Blanket Purchase Order:**

**Customer Authorization:**

**Customer Work Order:**

**Quoted Amount:** \$8,699.09

**Service Requested:**

6501701543

CHILLER #9 SHAFT SEAL REPLACEMENT:

Based on measurements take over the past 2 months CHILLER#9 seal oil leak has been calculated at 4.975ml/hr.

This is double the factory recommended max leak rate of 2.23ml/hr (signal point for replacement).

**SCOPE:**

TRANSFER REFRIGERANT CHARGE INTO CENTRAL RECOVERY TANK DOWN TO EPA SPECS

BRING UP TO ATMOSPHERIC PRESSURE WITH SITE NITROGEN

REMOVE COMPRESSOR COUPLING HUB

REMOVE OLD SHAFT SEAL

CLEAN & INSPECT INTERNAL COMPRESSOR SHAFT SURFACES

CLEAN & RESUSE SHAFT SEAL COVER PLATE (if not damaged)

INSTALL NEW SHAFT SEAL COMPONENTS (COLLAR, SEAL, SPRINGS, O-RINGS)

CHECK FOR LEAKS & REASSEMBLE COUPLING

EVACUATE CHILLER AND PERFORM VACUUM HOLD TEST

TRANSFER REFRIGERANT CHARGE BACK INTO CHILLER

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Version: Release # PHL 3

Lynn Dolphin

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Service Provided:				
Date	Activity Number	Activity Status	Work Performed	By
02/13/2017	1-LGNRS9F	Completed	<p>CHILLER #9 SHAFT SEAL REPLACEMENT JOB DuPont PO#: 6501701543</p> <p>Based on measurements take over the past 2 months CHILLER #9 Seal Oil Leak Rate has been calculated at 4.975ml/hr. This is double the factory recommended max leak rate of 2.23ml/hr (signal point for replacement).</p> <ul style="list-style-type: none"> <li>• Ordered Shaft Seal Parts</li> <li>• Began Refrigerant Transfer from CHILLER #9 to Central Recovery Tank</li> </ul>	Kevin Frazee
02/14/2017	1-LH9VLTD	Completed	<ul style="list-style-type: none"> <li>• Continued Recovery of CHILLER #9 R-134A Charge into the YORK Central Recovery Tank.</li> </ul>	Kevin Frazee
02/16/2017	1-LK5GCD3	Completed	<ul style="list-style-type: none"> <li>• Completed Recovery of CHILLER #9 down to EPA Required Spec of 15"hg Vacuum.</li> </ul> <p>Refrigerant is being stored in the YORK Central Recovery Tank.</p> <p>TOTAL R-134A Recovered= 2,840lbs DESIGN CHARGE= 3,300lbs SHORT: 460lbs</p> <ul style="list-style-type: none"> <li>• Brought Chiller up to Atmospheric Pressure with Powerhouse Nitrogen and safed off.</li> </ul>	Kevin Frazee
02/17/2017	1-LNZUEKE	Completed	<ul style="list-style-type: none"> <li>• Fabricated Shaft Seal Removal / Installation Tools</li> <li>• Removed Compressor Coupling Hub</li> </ul>	Kevin Frazee
02/20/2017	1-LOUVXS1	Completed	<ul style="list-style-type: none"> <li>• Ordered Parts</li> <li>• Organized and Prepped for Remainder of Work</li> </ul>	Kevin Frazee
02/21/2017	1-LOUVXT7	Completed	<ul style="list-style-type: none"> <li>• Removed Old Shaft Seal</li> <li>• Clean &amp; Inspect Internal Compressor Shaft Surfaces</li> <li>• Cleaned &amp; Resused Shaft Seal Cover Plate (No Damaged Detected)</li> <li>• Installed New Shaft Seal Components (Collar, Seal, Springs, O-Rings)</li> </ul>	Kevin Frazee

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Service Provided:				
Date	Activity Number	Activity Status	Work Performed	By
02/22/2017	1-LPTO2KL	Completed	<ul style="list-style-type: none"> <li>Pressure Tested Chiller with Nitrogen Pressure.</li> <li>Verified Leak Free Static Integrity of New Shaft Seal.</li> </ul>	Kevin Frazee
02/24/2017	1-LQPAZL6	Completed	<ul style="list-style-type: none"> <li>Rechecked Compressor Low-Speed Axial Thrust = 0.014" @ 0 PSIG (Good)</li> </ul>	Kevin Frazee
02/27/2017	1-LPXMZA5	Completed	<ul style="list-style-type: none"> <li>Bled off Nitrogen Pressure.</li> <li>Began Evacuation of Chiller.</li> </ul>	Kevin Frazee
02/28/2017	1-LSH571A	Completed	<ul style="list-style-type: none"> <li>Valved off Vacuum Pump</li> <li>Chiller was Evacuated down to 460 microns.</li> <li>Performed Vacuum Hold Test: OBSERVED= 43u/hr Rise (Good) YORK MAX LIMIT= 650u/hr Rise</li> <li>TRANSFERED Recovered R-134A Charge (2,840lbs) back to CHILLER</li> <li>ADDED an Additional 100lbs from YORK Central Recovery Tank.</li> </ul> <p>CURRENT TOTAL CHILLER CHARGE= 2,940lbs DESIGN CHARGE= 3,250lbs CURRENT CHARGE DEFICIT= 310lbs</p>	Kevin Frazee

Materials Used:
Description
SCREW SHLD SOCKET HEAD 1/ / 021 17294 000
SEAL-O-RING 4-1/2 ID X 1/ / 028 11993 000
RING SHAFT SEAL LTH & YDT / 029 20282 000
SPRING HELICAL ASC / 029 13770 004
WASHER SHAFT SEAL TL-EA, / 064 47555 000

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Materials Used:	
Description	
SEAL O RING 2-5/8 / 028 05194 000	
COLLAR SHAFT SEAL / 064 47814 000	

Refrigerant Tracking:									
Activity #	Action Taken	Type	Amount	Asset ID	Customer Tag	Serial Number	Model Number	Leak Location	Leak Rate
1-LSH571A	Add Refrig Leak Test Repair	NA	100		CHILLER #9	GACM127698	OTT4G2-ZBES	PIPING	3.15
1-LH9VLTD	Recovery Reclaim	NA	2840		CHILLER #9	GACM127698	OTT4G2-ZBES	NA	0

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### Service Order Warranty Terms and Conditions

#### **PARTS WARRANTY:**

Johnson Controls, Inc. (JCI) warrants that original equipment, parts or components manufactured or labeled by JCI shall be free from defects in material and workmanship under normal usage and proper installation and maintenance for a period of one (1) year from the date of shipment. Equipment, parts or components not manufactured or labeled by JCI shall carry a warranty from defects in material and workmanship under normal usage and proper installation and maintenance for a period of ninety (90) days from the date of shipment. Notwithstanding the foregoing, in the event JCI is reasonably able to identify a warranty for a period longer than the ninety (90) days applicable to equipment, parts or components not manufactured or labeled by JCI, it will assign all assignable rights under such warranty to Customer and reasonably cooperate in the enforcement of any warranty claim. Recertified or replacement parts installed on equipment and still under the original equipment manufacturer's warranty are covered for ninety (90) days or the remainder of the original equipment manufacturer warranty period, whichever is longer. For large tonnage chillers, JCI will warrant under normal usage and proper installation and maintenance for a period of one (1) year from the date of shipment: screw compressors, motors, control panels and components, VFD's and components and Liquid Cooled Solid State Starters and components. For small tonnage chillers, JCI will warrant under normal usage and proper installation and maintenance for a period of one (1) year from the date of shipment: scroll compressors, condenser coils, control panels and components, screw compressors (DXS and Mustang), and fan motors. In the event of a valid warranty claim, the Customer's remedy shall, at JCI's sole discretion and subject to the exclusions herein, be limited to repair or replacement of the subject equipment, part or component conditioned upon the return to JCI of any defective equipment, part or component. This Parts Warranty does not cover any shipping, handling or transportation charges or any associated labor costs.

#### **LABOR WARRANTY:**

Johnson Controls, Inc. (JCI) warrants its workmanship or that of its agents in relation to installation of materials for a period of ninety (90) days from date of installation or with respect to service work for a period of ninety (90) days from the date of service. Customer acknowledges that re-performance shall be its exclusive and only remedy with regards to any services provided by JCI. Customer shall bear all labor costs associated with the repair or replacement of failed material that is outside the scope of this express labor warranty. All warranty labor shall be executed during JCI normal business hours.

These warranties do not extend to any equipment which has been repaired by others, abused, altered, or misused in any way, or which has not been properly and reasonably maintained.

THESE WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THOSE OF MERCHANTABILITY AND FITNESS FOR A SPECIFIC PURPOSE. UNDER NO CIRCUMSTANCES SHALL JCI BE LIABLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES ARISING FROM OR RELATING TO ANY DEFECT IN MATERIAL OR WORKMANSHIP OF EQUIPMENT OR THE PERFORMANCE OF SERVICES.

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