



## QUOTED SERVICE REPORT

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**Service Request Number:** 1-63695549302

**Status:** Scheduled

**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:** 6501866668

**Blanket Purchase Order:**

**Customer Authorization:**

**Customer Work Order:**

**Quoted Amount:** \$4,182.22

**Service Requested:**

6501866668

CHILLER #10 REFRIGERANT LEAK REPAIRS (2018):

DUE TO REFRIGERANT LEAKS DISCOVERED ON 03/23/2018 THE FOLLOWING WORK IS RECOMMENDED:

TRANSFER ENTIRE R-134A CHARGE TO YORK CENTRAL RECOVERY TANK  
DOCUMENT WEIGHT OF CHARGE AND CALCULATED PERCENTAGE LOSS BASED ON DESIGN

REPAIR OF THE FOLLOWING LEAKS FOUND ON 03/23/2018:

OIL COOLER THERMOSTATIC VALVE O-RING SEAL  
2" HOT GAS VALVE O-RING SEALS  
GASKETS ON BOTH RUPTURE DISKS  
HIGH SPEED THRUST COVER PLATE O-RING SEAL  
3/8 COPPER FLARE ON OIL-RETURN LINE

VERIFY LEAK TIGHTNESS WITH NITROGEN PRESSURE TEST  
EVACUATE / DEHYDRATE CHILLER & PERFORM VACUUM HOLD TEST  
TRANSFER RECOVERED CHARGE BACK INTO CHILLER  
PROVIDE DUPONT WITH EPA DOCUMENTATION

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Service Provided:				
Date	Activity Number	Activity Status	Work Performed	By
12/03/2018	1-123R62ED	Completed	CHILLER #10 REFRIGERANT LEAK REPAIRS (2018) DUPONT PO#: 6501866668 JCI QUOTE#: 1-T60E4O9 SR#: 1-63695549302  42,866 HRS / 1436 STARTS  12/3/18 - 12/4/18:  <ul style="list-style-type: none"> <li>• Performed Recovery of CHILLER #8's R-134A Charge. Transferred refrigerant to the YORK Central Recovery Tank, until Chiller reached a vacuum depth of 17"Hg (better than EPA Requirement), Weighed, &amp; Documented               <ul style="list-style-type: none"> <li>◇ TOTAL R-134A RECOVERED: 3,120 LBS (12/04/2018)</li> <li>◇ TOTAL DESIGN CHARGE: 3,250 LBS</li> <li>◇ DEFICIT = 130 LBS (4.0% LOW)</li> <li>◇ LAST DATE OF RECORDED CHARGE: 03/14/2017 (633 Days)</li> <li>◇ CHARGE at that TIME: 3,250 LBS</li> <li>◇ LEAK RATE (Based on EPA Formula)= 4.0%</li> </ul> </li> <li>• Broke Chiller's Recovery Vacuum w/ Site supplied Nitrogen, up to Atmospheric Pressure, making Chiller available to open</li> </ul>	Kevin Frazee

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Service Provided:				
Date	Activity Number	Activity Status	Work Performed	By
12/04/2018	1-123RBIZK	Completed	<ul style="list-style-type: none"> <li>• REPAIRED REFRIGERANT LEAK SOURCES [2], [3], [4], &amp; [5]</li> <li>[2] 2" HOT GAS VALVE O-RING SEALS               <ul style="list-style-type: none"> <li>- Removed/Replaced O-Ring Seals (12/04/18)</li> </ul> </li> <li>[3] GASKETS ON BOTH RUPTURE DISKS               <ul style="list-style-type: none"> <li>- Removed/Replaced Gaskets on Both Rupture Disks w/G49B (GARLOCK 3504). Torqued Flanges to Spec (12/05/18)</li> </ul> </li> <li>[4] OIL COOLER THERMOSTATIC VALVE O-RING SEAL               <ul style="list-style-type: none"> <li>- Removed/Replaced Leaking O-Ring Seal (12/06/18)</li> </ul> </li> <li>[5] HIGH SPEED THRUST COVER PLATE O-RING SEAL               <ul style="list-style-type: none"> <li>- Removed/Replaced Leaking O-Ring Seal (12/07/18)</li> </ul> </li> </ul> <p>** Leak Source [1] "COPPER FLARE ON OIL-RETURN LINE" was repaired on 03/30/2018 under SR# 1-68728578445 **</p>	Kevin Frazee

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Date	Activity Number	Activity Status	Work Performed	By
12/19/2018	1-123RBJ0I	Completed	<p>12/07/18:</p> <ul style="list-style-type: none"> <li>• Added R-134a Trace Gas from the Central Recovery Tank to the Chiller, up to 5 PSIG Static.</li> <li>• Increased Chiller Pressure to 110 PSIG with Site supplied Nitrogen</li> <li>• Performed a Complete Leak Test of Chiller w/ Electronic Leak Detector &amp; Soap Bubble</li> <li>• All Repairs were Verified LEAK-FREE</li>   <li>• Safely Released Nitrogen Pressure to Outdoors</li> <li>• Performed Chiller Evacuation / Dehydration Process</li>   <li>• CHILLER VACUUM LEVEL reached 1080 microns</li> <li>• Performed a VACUUM HOLD TEST for 1.5 Hrs</li> <li>• VACUUM RISE = NEGLIGIBLE (&lt;5-10 microns) (VERY GOOD)</li> <li>• Brought Chiller out of Vacuum, with the Recovered R-134A Charge in the Central Storage Tank</li>   <li>◊ ALL RECOVERED CHARGE WAS RE-INSTALLED= 3,120 LBS</li> <li>◊ ADDITIONAL CHARGE ADDED FROM DUPONT'S TANK SURPLUS= 130 LBS</li> <li>◊ CURRENT CHILLER CHARGE= 3,250 LBS (as of 12/07/2018)</li> <li>◊ DESIGN CHARGE= 3,250 lbs</li> <li>◊ CURRENT CHARGE DEFICIT= 0 LBS</li>   <li>• Provided DuPont with detailed EPA Refrigerant Conservation Report</li>   <li>***Proceeded to Check Operation of Controls &amp; Discovered the Compressor Oil Pump would not make Oil Pressure, was Over-Amping &gt;12A (Normal FLA=3A), and tripping on Internal Overload. The Pump's significant noise and vibration was noted &amp; documented on the last too</li> </ul>	Kevin Frazee

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Date	Activity Number	Activity Status	Work Performed	By
			Annual PMs, and Customer informed. (SR#'s 1-47953222455 & 1-60506490261. FAILURE was imminent***  • QUOTE# 1-12BBHJS1 was sent to the Customer for the Replacement of the Pump	

Materials Used:	
Description	
SEAL O RING / 028 12961 022	

Refrigerant Tracking:											
Activity #	Action Taken	Type	Amount	Asset ID	Customer Tag	Serial Number	Model Number	Circuit ID	Circuit Tag	Leak Location	Leak Rate
1-123RBJ01	Add Refrig Lk Tst Rep Rcov Rcl	R-134a	130	1-FNV12L6	CHILLER #10	GACM127699	OTT4G2-ZBES	1-YEYJK5V	CHILLER #10	MECHANICAL SEAL	4

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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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