



1717 Arlingate Lane  
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# TEST REPORT

PROJECT NO.: G100536011

ISSUE DATE: December 30th, 2011

REPORT NO. 100536011COL-001

## RENDERED TO

Company: Universal Technologies Inc  
5626 Southwestern Blvd  
Baltimore, MD 21227, USA  
Contact: Tom Lucas  
Phone: (410) 737-9300

**GENERAL:** This Report gives the results of the evaluation of Leak Freeze with Magic Frost, effect on orifice tubes, capillary tubes, and Schrader valves, per Intertek Non Standard Capillary Tube Testing Procedure COL-LOP-2.2.0 Version 2.0. This investigation was authorized by Signed Quote Number Q500335430 dated October 6<sup>th</sup>, 2011. A Production sample of Leak Freeze with Magic Frost in good condition was provided by Universal Technologies Inc and received on October 24<sup>th</sup>, 2011. The sample was assigned the unique identification number COL1110240954-001 and tested at Intertek's Columbus laboratory at 1717 Arlingate Lane, Columbus, OH 43228, USA between November 18<sup>th</sup>, 2011 and December 30<sup>th</sup>, 2011.

**CONCLUSION:** This report completes the evaluation of Leak Freeze with Magic Frost, effect on orifice tubes, capillary tubes, and Schrader valves per Intertek Non Standard Capillary Tube Testing Procedure COL-LOP-2.2.0 Version 2.0.

See Table 1, 2, 3, 4 and 5 for Flow Loss Data  
See Table 6 for Test Equipment

Test Performed by:

Report Approved by:

Brandon Button  
Senior Associate Engineer  
Analytical Laboratory

John Senediak  
Reviewer  
Analytical Laboratory

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### Table 1

Date:	28-Nov-11		
Process Fluid #:	<b>Leak Freeze with Magic Frost</b>		
Amount of Pro Fluid:	1.5 oz		
Lubricant Added:	900 grams 3MAF POE		
Water Added:	0.9 grams		
System #:	<b>4</b>	System Run Time:	<b>233.3 hours</b>
Refrigerant:	R-410A		
Compressor Model #:	ZP25K5E-PFV-130		
Compressor Ser #:	09B4593HL		
Filter Drier:	Emerson EK053 Extra Klean Liquid Line Drier		

### Data

	<u>New Cap Tubes</u>	<u>Pressure (In Hg)</u>	<u>Flow (ml/min)</u>		<u>Weekly Flow Loss History</u>
	11EZ1 schrader	0.05	3.05	0 hours	0%
Ø0.036"	11EZ2 21"	29.90	4.23	233.3	-0.13%
Ø0.020"	11EZ3 orifice	29.90	3.75		
Ø0.020"	11EZ4 orifice	29.90	3.83		
		Average	3.72		
		Std Dev	0.49		
	<u>System Tubes</u>				
	11EZ1 schrader	0.05	3.03		
Ø0.036"	11EZ2 21"	29.90	4.22		
Ø0.020"	11EZ3 orifice	29.90	3.78		
Ø0.020"	11EZ4 orifice	29.90	3.85		
		Average	3.72		
		Std Dev	0.50		

### Calculations

Flow for New Cap Tubes	3.72 ml/min
Flow for System Cap Tubes	3.72 ml/min
Difference	0.00 ml/min
% Difference from New	<b>-0.13 %</b>

### Comments

Reference tube measured initially and after 233.3 hours with other tubes at 4.56 ml/min.  
Adjustment of metering valve needed to keep same pressure for each tube.

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**Table 2**

Date: 5-Dec-11  
 Process Fluid #: **Leak Freeze with Magic Frost**  
 Amount of Pro Fluid: 1.5 oz  
 Lubricant Added: 900 grams 3MAF POE  
 Water Added: 0.9 grams  
 System #: **4** System Run Time: **395.0 hours**  
 Refrigerant: R-410A  
 Compressor Model #: ZP25K5E-PFV-130  
 Compressor Ser #: 09B4593HL  
 Filter Drier: Emerson EK053 Extra Klean Liquid Line Drier

**Data**

		<u>New Cap Tubes</u>	<u>Pressure (In Hg)</u>	<u>Flow (ml/min)</u>		<u>Weekly Flow Loss History</u>
		11EZ1 schrader	0.05	3.05	0 hours	0%
Ø0.036"		11EZ2 21"	29.90	4.23	233.3	-0.13%
Ø0.020"		11EZ3 orifice	29.90	3.75	395.0	0.07%
Ø0.020"		11EZ4 orifice	29.90	3.83		
			Average	3.72		
			Std Dev	0.49		
		<u>System Tubes</u>				
		11EZ1 schrader	0.05	3.04		
Ø0.036"		11EZ2 21"	29.90	4.21		
Ø0.020"		11EZ3 orifice	29.90	3.77		
Ø0.020"		11EZ4 orifice	29.90	3.83		
			Average	3.71		
			Std Dev	0.49		

**Calculations**

Flow for New Cap Tubes 3.72 ml/min  
 Flow for System Cap Tubes 3.71 ml/min  
 Difference 0.00 ml/min  
 % Difference from New **0.07 %**

**Comments**

Reference tube measured initially and after 395.0 hours with other tubes at 4.56 ml/min.  
 Adjustment of metering valve needed to keep same pressure for each tube.

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**Table 3**

Date: 12-Dec-11  
 Process Fluid #: **Leak Freeze with Magic Frost**  
 Amount of Pro Fluid: 1.5 oz  
 Lubricant Added: 900 grams 3MAF POE  
 Water Added: 0.9 grams  
 System #: **4** System Run Time: **557.0 hours**  
 Refrigerant: R-410A  
 Compressor Model #: ZP25K5E-PFV-130  
 Compressor Ser #: 09B4593HL  
 Filter Drier: Emerson EK053 Extra Klean Liquid Line Drier

**Data**

		<u>New Cap Tubes</u>	<u>Pressure (In Hg)</u>	<u>Flow (ml/min)</u>		<u>Weekly Flow Loss History</u>
	11EZ1	schrader	0.05	3.05	0 hours	0%
Ø0.036"	11EZ2	21"	29.90	4.23	233.3	-0.13%
Ø0.020"	11EZ3	orifice	29.90	3.75	395.0	0.07%
Ø0.020"	11EZ4	orifice	29.90	3.83	557.0	-0.34%
				Average		
				Std Dev		
		<u>System Tubes</u>				
	11EZ1	schrader	0.05	3.08		
Ø0.036"	11EZ2	21"	29.90	4.21		
Ø0.020"	11EZ3	orifice	29.90	3.79		
Ø0.020"	11EZ4	orifice	29.90	3.83		
				Average		
				Std Dev		

**Calculations**

Flow for New Cap Tubes 3.72 ml/min  
 Flow for System Cap Tubes 3.73 ml/min  
 Difference -0.01 ml/min  
 % Difference from New **-0.34 %**

**Comments**

Reference tube measured initially and after 557.0 hours with other tubes at 4.56 ml/min.  
 Adjustment of metering valve needed to keep same pressure for each tube.

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**Table 4**

Date:	20-Dec-11		
Process Fluid #:	<b>Leak Freeze with Magic Frost</b>		
Amount of Pro Fluid:	1.5 oz		
Lubricant Added:	900 grams 3MAF POE		
Water Added:	0.9 grams		
System #:	<b>4</b>	System Run Time:	<b>740.4 hours</b>
Refrigerant:	R-410A		
Compressor Model #:	ZP25K5E-PFV-130		
Compressor Ser #:	09B4593HL		
Filter Drier:	Emerson EK053 Extra Klean Liquid Line Drier		

**Data**

	<u>New Cap Tubes</u>	<u>Pressure (In Hg)</u>	<u>Flow (ml/min)</u>		<u>Weekly Flow Loss History</u>
	11EZ1 schrader	0.05	3.05	0 hours	0%
Ø0.036"	11EZ2 21"	29.90	4.23	233.3	-0.13%
Ø0.020"	11EZ3 orifice	29.90	3.75	395.0	0.07%
Ø0.020"	11EZ4 orifice	29.90	3.83	557.0	-0.34%
		Average	3.72	740.4	-0.47%
		Std Dev	0.49		
	<u>System Tubes</u>				
	11EZ1 schrader	0.05	3.09		
Ø0.036"	11EZ2 21"	29.90	4.22		
Ø0.020"	11EZ3 orifice	29.90	3.78		
Ø0.020"	11EZ4 orifice	29.90	3.84		
		Average	3.73		
		Std Dev	0.47		

**Calculations**

Flow for New Cap Tubes	3.72 ml/min
Flow for System Cap Tubes	3.73 ml/min
Difference	-0.02 ml/min
% Difference from New	<b>-0.47 %</b>

**Comments**

Reference tube measured initially and after 740.4 hours with other tubes at 4.56 ml/min.  
Adjustment of metering valve needed to keep same pressure for each tube.

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**Table 5**

Date: 30-Dec-11  
 Process Fluid #: **Leak Freeze with Magic Frost**  
 Amount of Pro Fluid: 1.5 oz  
 Lubricant Added: 900 grams 3MAF POE  
 Water Added: 0.9 grams  
 System #: **4** System Run Time: **984.7 hours**  
 Refrigerant: R-410A  
 Compressor Model #: ZP25K5E-PFV-130  
 Compressor Ser #: 09B4593HL  
 Filter Drier: Emerson EK053 Extra Klean Liquid Line Drier

**Data**

		<u>New Cap Tubes</u>	<u>Pressure (In Hg)</u>	<u>Flow (ml/min)</u>		<u>Weekly Flow Loss History</u>
	11EZ1	schrader	0.05	3.05	0 hours	0%
Ø0.036"	11EZ2	21"	29.90	4.23	233.3	-0.13%
Ø0.020"	11EZ3	orifice	29.90	3.75	395.0	0.07%
Ø0.020"	11EZ4	orifice	29.90	3.83	557.0	-0.34%
			Average	3.72	740.4	-0.47%
			Std Dev	0.49	984.7	-0.13%
		<u>System Tubes</u>				
	11EZ1	schrader	0.05	3.07		
Ø0.036"	11EZ2	21"	29.90	4.21		
Ø0.020"	11EZ3	orifice	29.90	3.77		
Ø0.020"	11EZ4	orifice	29.90	3.83		
			Average	3.72		
			Std Dev	0.48		

**Calculations**

Flow for New Cap Tubes 3.72 ml/min  
 Flow for System Cap Tubes 3.72 ml/min  
 Difference 0.00 ml/min  
 % Difference from New **-0.13 %**

**Comments**

Reference tube measured initially and after 984.7 hours with other tubes at 4.56 ml/min.  
 Adjustment of metering valve needed to keep same pressure for each tube.

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**Table 6**

**Calibrated Equipment**

Equipment	Calibration Number	Calibration Due Date	Calibration Range If Applicable
Meriam Manometer	CE1118	FRO	40"
Mercury	N/A	N/A	N/A
Aalborg Flowmeter	CE1121	FRO	0.5 – 5.0 L/min
Nitrogen	N/A	N/A	N/A
Reference Cap Tube	LL1	N/A	N/A

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