SERVICE BULLETIN

Title: **17/19EX Pumpout and Leak Check Operation**
Models Affected: **17/19EX**

Number: **C9726**
Date: **9/16/97**
Supersedes: **New**

Purpose:

This bulletin is intended to inform the field of recent findings from pumpout tests performed on the 17/19EX machines and to provide information on pumpout times and pressures. The pumpout test was performed on a 19EX4857, the largest of the EX vessel family, at normal ambient conditions with a standard 19EA pumpout machine. Field results will vary depending on job site conditions.

File: Purge, Pumpout

Prepared By: Tom Pietrowicz

Approved By: Alan M. Johnson

Information:

During the testing, to push the liquid into the economizer/storage tank from the vessel side took approximately 1.5 hours. Once the liquid is pushed over to the economizer/storage tank, there is approximately 800 lbs (363 kg) of vapor left in the cooler and condenser. In accordance with the EPA regulations, and since it makes good economic sense, the pumpout should be used to condense the remaining vapor and add it to the storage tank. Once in the vapor cycle, it takes approximately 8 hours to pull the unit down to 4 psia. At 4 psia, there is approximately 45 lbs. (20.4 kg) of refrigerant left in the unit. Again, field pumpout times will vary depending on job site conditions.

Perhaps the most important finding during the test is that the pumpout compressor can lose oil upon initial start up, primarily due to the refrigerant absorption in the oil. There is no crankcase heater on this compressor. The oil is collected in the discharge oil separator and reaches an equilibrium state relative to oil return during operation. However, the separator is not 100% efficient and a certain amount of oil is lost to the chiller. All pumpout units should be monitored for oil level when in the pumpout mode.

A table depicting the amount of refrigerant left in the vessels at various pressures is included. Also included with the table is the amount of nitrogen and tracer gas needed to leak check a machine. The number of nitrogen bottles refers to the number of 300 ft^3 cylinders. To find the total amount required add the individual vessel amounts listed in the table.

Pressure, in. Hg vacuum (mm Hg vacuum)				4 (101.6)	10 (254)	29.17 (740.9)
Absolute Pressure, psia (kPa)				12.74 (87.8)	9.79 (67.5)	0.37 (2.55)
Spec. Vol. of R-134a, ft^3/lb (m^3/kg)				3.48 (0.22)	4.46 (0.28)	95.30 (5.95)
Vessel Code	lbs (kg) of Nitrogen required	# of Nitrogen bottles required	5% Tracer Refrigerant lbs. (kg)	Refrigerant Remaining, lbs (kg)		
17/19EX Cooler						
31-33	59.2 (26.9)	2.7	3.0 (1.3)	40.7 (18.5)	31.8 (14.5)	1.5 (0.7)
41-44	78.6 (35.7)	3.6	3.9 (1.8)	54.1 (24.6)	42.2 (19.2)	2.0 (0.9)
45-48	108.6 (49.4)	5.0	5.4 (2.5)	74.8 (34.0)	58.4 (24.9)	2.7 (1.2)
17/19EX Condenser						
31-33	40.4 (18.4)	1.9	2.0 (0.9)	27.8 (12.6)	21.7 (9.9)	1.0 (0.5)
41-43	50.5 (23.0)	2.3	2.5 (1.1)	34.8 (15.8)	27.2 (12.4)	1.3 (0.6)
45-47	69.9 (31.8)	3.2	3.5 (1.6)	48.1 (21.9)	37.6 (17.1)	1.8 (0.8)
51-53	59.2 (26.9)	2.7	3.0 (1.4)	40.7 (18.5)	31.8 (14.5)	1.5 (0.7)
55-57	81.8 (37.2)	3.8	4.1 (1.9)	56.3 (25.6)	44.0 (20.0)	2.1 (1.0)
17/19EX Economizer						
12	33.3 (15.1)	1.5	1.7 (0.8)	22.9 (10.4)	17.9 (8.1)	0.8 (0.4)
17	46.0 (20.9)	2.1	2.3 (1.0)	31.7 (14.4)	24.7 (11.2)	1.2 (0.5)

Notes: — Test Pressure 70 psig (482 kPa).
— Test Ambient 70 (F (21 (C).
— Cooler sizes 31-44 use the 12 economizer. Cooler sizes 45-48 use the 17 economizer.
— ‘‘# of Nitrogen bottles required’’ refers to the number of 300 ft^3 Nitrogen bottles.

Example: Find the amount of nitrogen required to pressurize a 19EX4857 cooler, condenser and economizer, to leak check at 70 psig (482 kPa) and 70° F (21° C).

Cooler, 48	108.6 lbs	5.0 bottles
Condenser, 57	81.8 lbs	3.8 bottles
Economizer, 17	46.0 lbs	2.1 bottles
Total	236.4 lbs (107.5 kg)	10.9 bottles