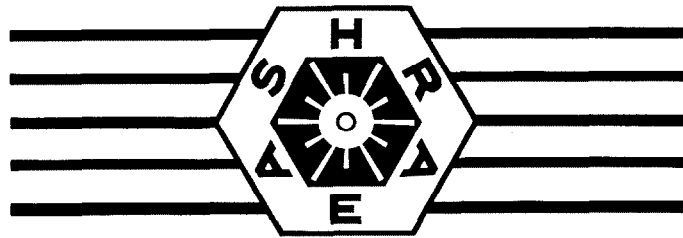


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ANSI/ASHRAE 63.1-1995

(Supersedes ANSI/ASHRAE 63.1-1988)



ASHRAE[®]

STANDARD

AN AMERICAN NATIONAL STANDARD

Method of Testing Liquid Line Refrigerant Driers

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1 PURPOSE

The purpose of this standard is to prescribe test methods for determining flow capacity and water capacity performance characteristics of liquid line refrigerant driers.

2 SCOPE

2.1 This standard applies only to those driers that employ a desiccant.

2.2 A desiccant's performance varies with respect to its activation. The water capacity test method prescribed in this standard can be used to test a drier either "as received" or after being reactivated in accordance with the manufacturer's recommendations.

2.3 This standard applies only to liquid line driers for use in systems employing halocarbon refrigerants that have an atmospheric boiling point below 20°C (68°F).

2.4 This standard does not attempt to reflect the complete performance of a drier. Specifically, the following topics are not considered:

- (a) the physical characteristics of the desiccants,
- (b) the chemical characteristics of the desiccants,
- (c) the mechanism of water adsorption,
- (d) the filtration ability of a drier,
- (e) the acid adsorption of a drier,
- (f) the performance of a drier in other than a liquid line,
- (g) the speed of drying,
- (h) the drier water capacity needed in relation to the size of a system, potential freeze-up problems, or potential chemical activity problems, or
- (i) the effect of oil on a drier's performance.

2.5 This standard defines methods of testing but does not specify the standard rating conditions for temperature, equilibrium point dryness, pressure drop, etc. ARI Standard 710 is suggested as a reference for these values.

3 DEFINITIONS

desiccant: a solid that will collect and hold water from a liquid or gas. It must be insoluble in the refrigerating medium to be used in refrigerant driers.

drier: a device containing desiccant(s). It is used in the liquid line of a refrigerant system for the primary purpose of collecting and holding water that may have entered the system.

equilibrium point dryness (EPD): the water content of a liquid refrigerant after being in contact with a specific drier at a particular temperature long enough to reach an equilibrium state. EPD is expressed in milligrams of water per kilogram of refrigerant (PPM).

pressure drop: the difference in refrigerant pressure between the drier inlet and the drier outlet, expressed in kilopascals (or pounds per square inch).

flow capacity: the flow rate of the specified refrigerant through the drier when subjected to the specified pressure drop. Flow capacity is expressed as the kilograms per second (or pounds per minute) of refrigerant flow at 43°C (110°F) liquid temperature.

water capacity: the mass of water a drier will collect and hold in equilibrium with a specified refrigerant at a given temperature and a specified EPD. The value may be expressed in grams or drops of water, based on 20 drops per gram.

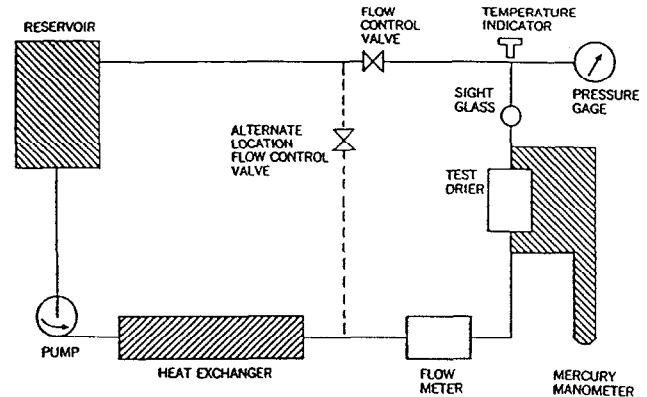


Figure 1 Schematic diagram—liquid pump test loop.

4 STANDARD TEST METHOD FOR DETERMINING THE FLOW CAPACITY OF DRIERS

4.1 Principles of Flow Capacity Testing. The purpose of this test is to accurately determine mass flow rate when a specified refrigerant is flowing through the drier at a specified pressure drop. The test is performed with clean refrigerant and a new, uncontaminated drier. It should be noted that in actual use the flow capacity may be less, depending on the degree of contamination. Performing such a test on a refrigerating system involves numerous experimental difficulties; therefore, liquid-pumped test loops, such as diagrammed in Figure 1, have been developed.

4.2 Equipment. The apparatus required for flow capacity testing is shown in Figure 1. The requirements and limitations of the equipment are described herein.

4.2.1 Lines and Arrangement. The line sizes used through the system may be any convenient size so that the capacity of the system can be varied over a wide range of flow rates to accommodate testing of driers of many sizes. However, the lines connected to the drier should be the same size as the test drier fittings and should be straight for a distance of at least 15 inside tube diameters upstream and 15 inside tube diameters downstream of the test drier.