

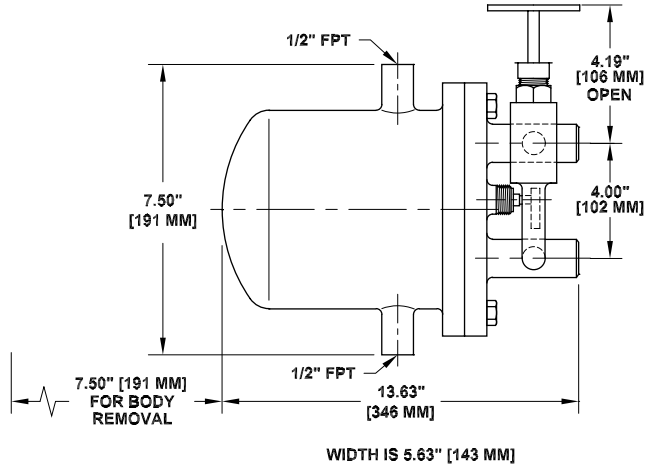
DEFROST DRAINERS



Defrost Drainer: HD101

The HD101 defrost drainer (float drain regulator) is designed specifically for removing liquid condensate from evaporators during the defrost period. The oversize seat orifice is designed to quickly remove liquid. As hot gas is introduced into the evaporator, the gas is condensed and drains to the lower coil row of the evaporator and into the defrost drainer. The defrost drainer meters the liquid and a minimal amount of gas back to the intercooler or low-pressure receiver. The defrost drainer offers the advantage of higher energy efficiency by not allowing unneeded hot gas to return to the suction and the unnecessary increase in compressor capacity and operation, and corresponding increase in suction pressures.

INSTALLATION DIMENSIONS



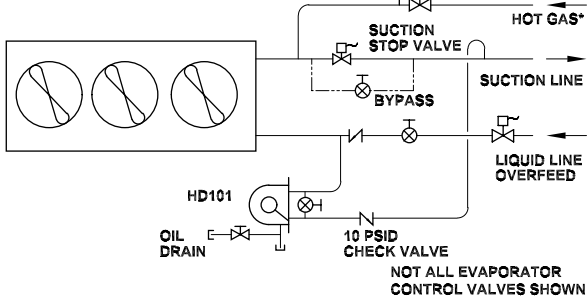
MAXIMUM CAPACITIES

HD101N AMMONIA	HD101F R22	CONNECTIONS
42 tons (147 kW)	11 tons (39 kW)	3/4" FPT / 1" Weld

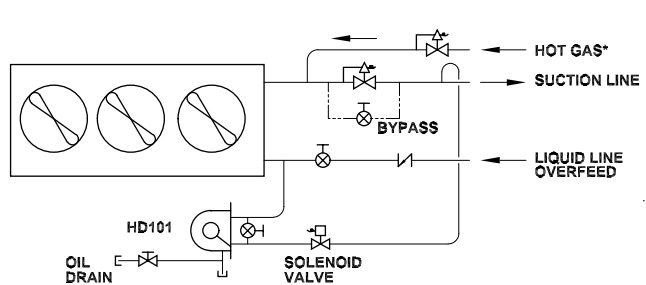
The maximum operating pressure differential is 100 psi (6.8 bar). For higher capacities, the HT200 and HT300 can be used by adding the bypass valve (customer supplied) in the field.

TYPICAL APPLICATIONS—DEFROST DRAINERS

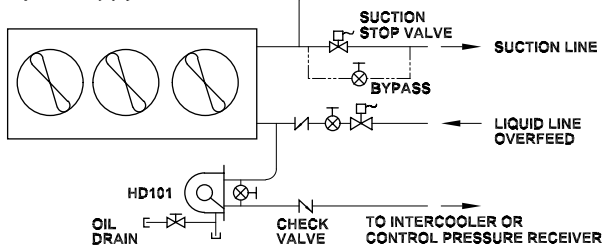
CONDENSATE DRAINER INSTALLATION TO SUCTION LINE



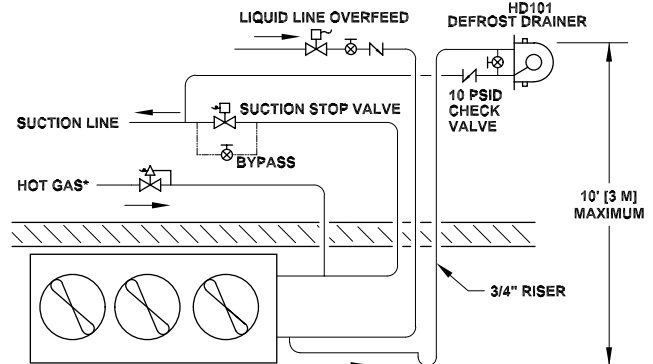
DEFROST DRAINER WITH BACK PRESSURE REGULATOR WITH ELECTRIC SHUT-OFF CONTROLLING EVAPORATOR PRESSURE



CONDENSATE DRAINER INSTALLATION TO INTERCOOLER



DEFROST DRAINER ABOVE THE EVAPORATOR



*An outlet regulator with electric shut-off (HA4AOS) is required to maintain hot gas pressure at a reasonable defrost pressure, as recommended by the evaporator manufacturer.

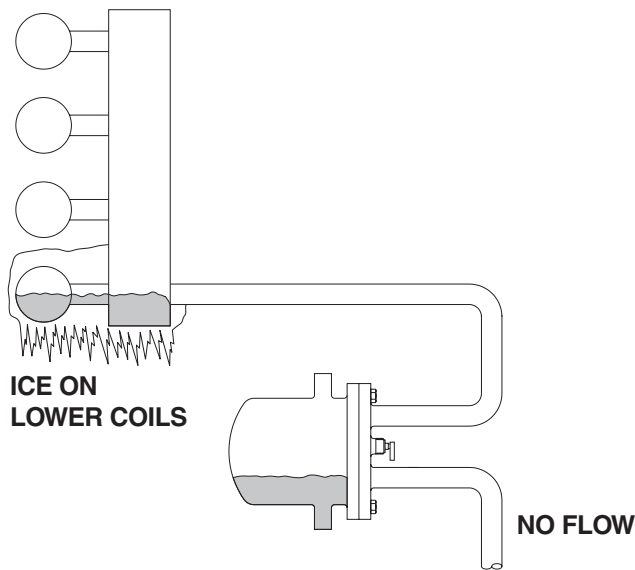
Note: All diagrams, schematics, and installation drawings in this bulletin are representations for illustration purposes only and should not be used for actual engineering or design purposes.

BUILT-IN BYPASS

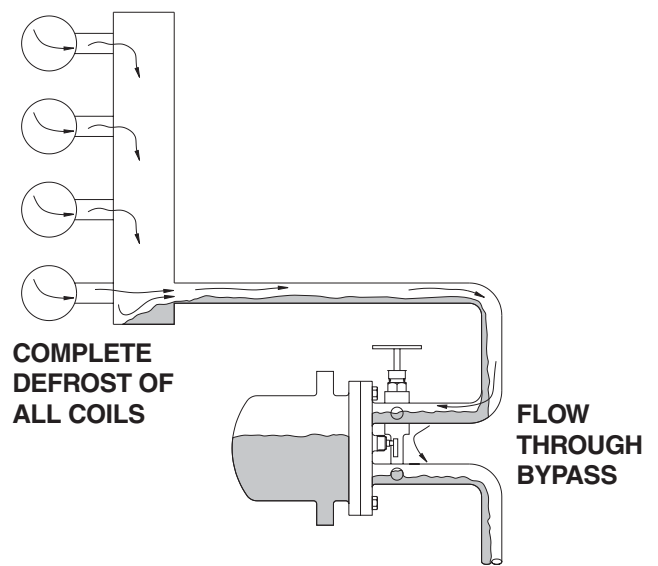
The key to efficient defrost is the complete removal of liquid from all coils of the evaporator. To prevent subcooled liquid from accumulating in the lower coils and hindering defrost, it is critical to maintain a constant flow of hot gas through the evaporator, even when the defrost drainer slide valve is closed. To achieve this, the HD101 has a hand expansion valve incorporated as a built-in bypass valve. The bypass valve allows a continuous flow of hot gas through the evaporator when the defrost drainer slide valve is closed by bleeding a small amount of hot gas around the defrost drainer. This constant flow prevents subcooled liquid from accumulating in the lower coils and blocking the flow from the evaporator outlet. Free-draining coils may not require any bypass gas.

The bypass valve on the HD101 is factory set at 1 ½ turns open. This setting should provide a nominal flow of hot gas through the bypass valve when the defrost drainer slide valve is closed. However, it may be necessary to “fine tune” the bypass valve setting to match the specific conditions of a system. If the system is experiencing incomplete defrost of the lower evaporator coils, the bypass valve needs to be opened additional turns. If the evaporator is completely defrosting but there is excessive gas blow by, the bypass valve may need to be open fewer turns. After making any adjustments, observe system operation before making further adjustments.

Without Bypass



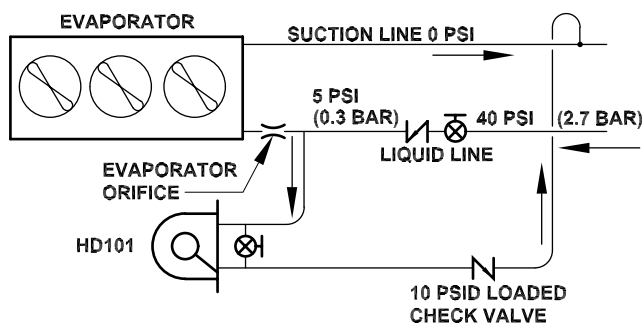
With Bypass



LOADED CHECK VALVES

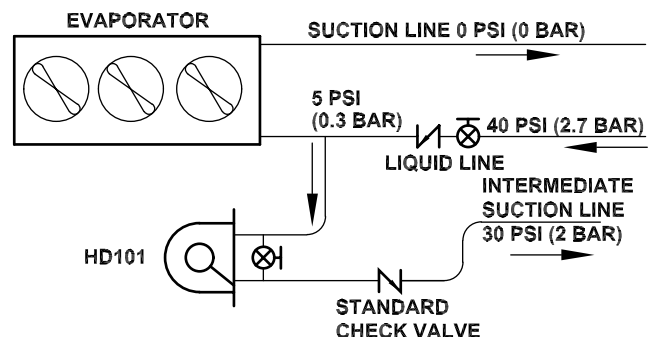
If the outlet of the defrost drainer is piped to a suction line with a lower pressure than the pressure at the inlet of the defrost drainer during the normal refrigeration cycle, a loaded check valve, typically 10 psid, must be installed. This check valve prevents flow of refrigerant through the defrost drainer to the

suction line during the normal refrigeration cycle. If the outlet of the defrost drainer is piped to an intermediate suction line, a standard check valve can be used if the pressure of the intermediate suction line is higher than the pressure at the inlet of the defrost drainer during the normal refrigeration cycle.



Hot gas defrost condition not shown.

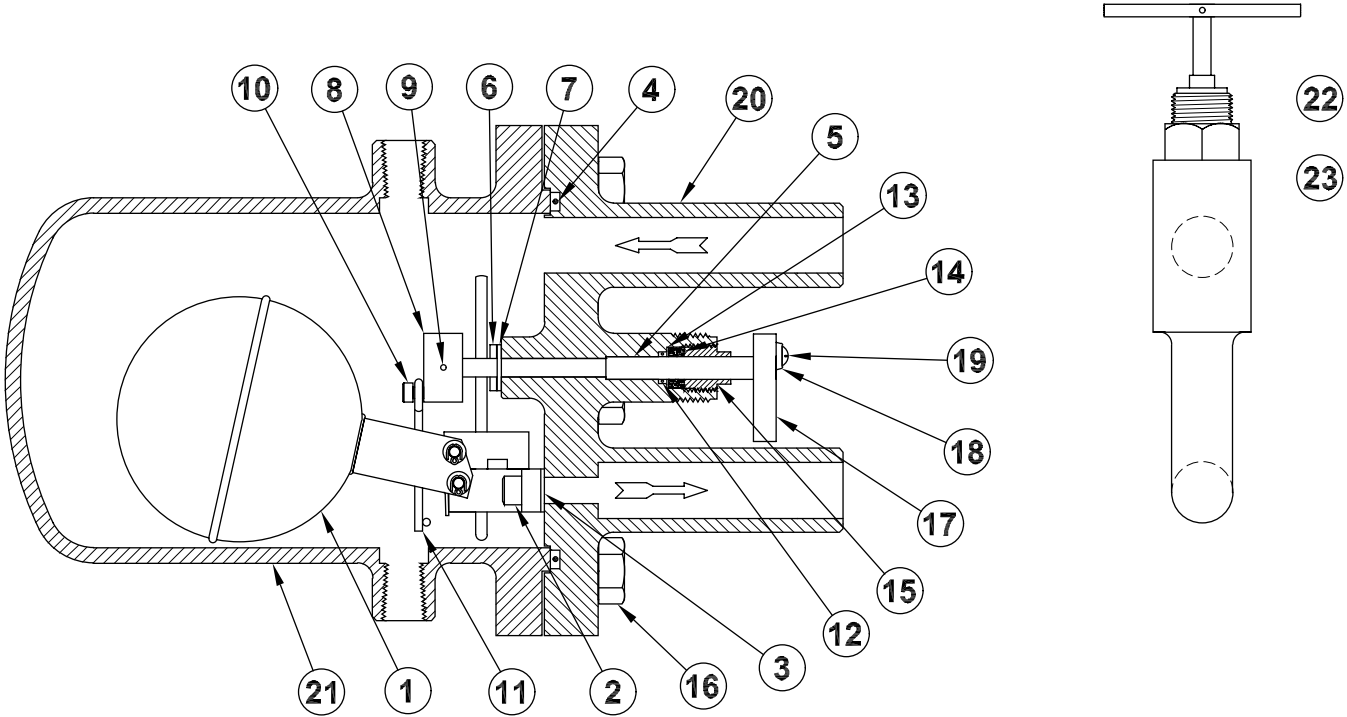
A loaded check valve is required for this configuration.



Hot gas defrost condition not shown.

A standard check valve is adequate for this configuration.

PARTS LIST DEFROST DRAINERS HD101



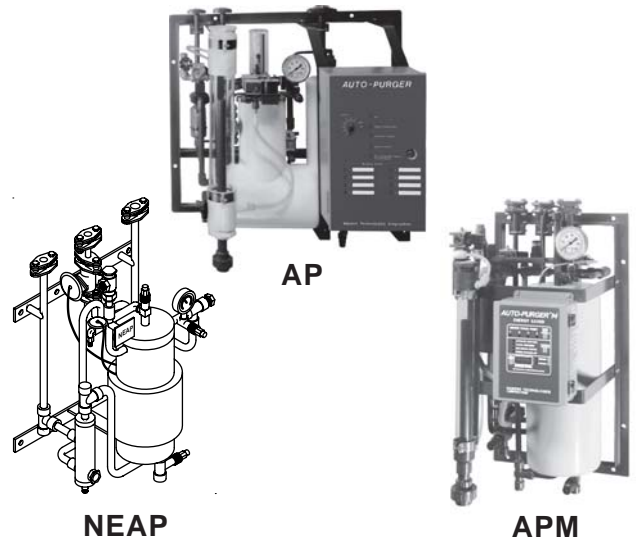
ITEM	DESCRIPTION	QTY.	HD101	HD101 FLOAT BALL REPLACEMENT KITS
1	R717, Float Ball Assembly *	1	65-0222	65-1025
	Halocarbon, Float Ball Assembly *	1	65-0212	65-1026
2	Seat Screw	2	65-0024	The above Float Ball Replacement Kits include the Float Ball Assembly, Seat Screw, Seat Gasket, Housing O-ring, Cam Screw, and Manual-Opening Lifting Tee.
3	Seat Gasket	1	65-0094	
4	Housing O-Ring	1	65-0022	
5	Stem	1	65-0073	
6	Stem Pin	1	65-0032	
7	Stem Washer	1	65-0034	
8	Cam	1	65-0074	
9	Cam Pin	1	65-0031	
10	Cam Screw	1	65-0067	
11	Manual-Opening Lifting Tee	1	65-0037	
12	Stem O-Ring	1	50-0179	
13	Packing Washer	1	50-0046	
14	Stem Packing	1	50-0045	
15	Packing Nut	1	50-0013	
16	Housing Screw for HD101	6	65-0023	
17	Manual-Opening Handle	1	65-0035	
18	Washer	1	50-0129	
19	Screw	1	50-0028	
20	Flanged Housing	1	65-0227	
21	Body	1	65-0038	
22	Shut-off valve gasket kit	1	50-1040	
23	Shut-off valve plug kit	1	50-1053	

* Float Ball Assembly includes the float ball plus replacement slide valve.

OTHER HIGH-QUALITY PRODUCTS FROM HANSEN TECHNOLOGIES...

The Hansen Technologies AUTO-PURGERS are noncondensable gas (air) refrigerant purgers. These purgers reduce the energy costs associated with a refrigeration system by removing noncondensable gases. These gases remain in vapor form throughout the system and increase head pressure. This, in turn, increases the load on the compressor and results in excessive energy costs.

There are three AUTO-PURGERS to choose from. The AUTO-PURGER AP is a multipoint purger capable of handling systems up to 1500 tons ammonia and is available to purge 1, 8, 16, or 24 purge points. The AUTO-PURGER APM is a smaller version with a capacity up to 200 tons ammonia. It can control up to 4 purge points. The Nonelectric AUTO-PURGER (NEAP) is completely nonelectric, yet has self-controlled start-up. It is capable of handling systems up to 100 tons ammonia.



GS200H



AW300H

Hansen Technologies offers a wide range of high-quality shut-off valves. These valves are ideal for shut-off of liquid, suction, discharge, recirculating liquid, hot gas, and oil lines in ammonia refrigeration systems. When used with seal caps, they are also suitable for use in R22, R134a, and other Hansen-approved refrigerant systems.

A bypass shut-off valve can be used in conjunction with the HT200 or HT300 high side floats to create a defrost drainer with higher capacity than the HD101. Contact our sales engineers for details and assistance in selecting the appropriate shut-off valve for this application.

Hansen SEE-LEVEL liquid indicators provide simple indication of true liquid levels in industrial and large commercial refrigeration systems. When liquid is present, the distinctive reflex lens appears dark. When vapor is present, the lens is light. The long universal housing provides adequate length for easy welding and insulation clearance for low-temperature applications. An optional frost shield facilitates clear viewing of liquid level under frosting conditions.

SEE-LEVEL liquid indicators are suitable for ammonia, R22, and other Hansen-approved refrigerants. Typical uses include refrigerant receivers, level columns, accumulators, intercoolers, suction lines, oil lines, and liquid lines. See pages 4 and 5 for applications in conjunction with the Hansen float drain regulators.



SEE-LEVEL



HCK4

Hansen's HCK4 series of in-line check valves are dependable, rugged, disc-type nonreturn valves. They are ideally suited for refrigerant flow control applications, such as in conjunction with the HD101 float drain regulator. These valves open wide for flow in the direction of the arrow on the valve body. The valve closes quickly and reliably when flow reversals occur. Model HCK4-2 is a standard 1 psid check valve. The HCK4-2-10 is a special 10 psid loaded check valve. Refer to pages 12 and 13 for application drawings in conjunction with the HD101.

The Frost Master® is an easy-to-use defrost controller that provides for more efficient removal of frost accumulation on evaporator coil surfaces. This controller uses reliable solid-state electronics with a precision quartz time clock with battery backup and time adjusting slide knobs to sequentially operate through logical defrost steps for smooth, but complete and effective, defrosting. The Frost Master® Plus has a defrost terminate feature built in. When the terminate temperature is satisfied, the hot gas step ceases and the equalize step begins. By ending the hot gas step as soon as the coil is clean, a quick and efficient defrost occurs.



FM-71

CAUTION

These float drain regulators are for refrigeration systems only. These instructions and related safety precautions must be read completely and understood before selecting, using, or servicing these float drain regulators. Only knowledgeable, trained refrigeration technicians should install, operate, or service these float drain regulators. Stated temperature and pressure limits should not be exceeded. Float drain regulators should not be opened unless the system has been evacuated to zero pressure. See also Safety Precautions in the current List Price Bulletin and the Safety Precautions Sheet supplied with the product. Escaping refrigerant can cause injury, especially to the eyes and lungs.

WARRANTY

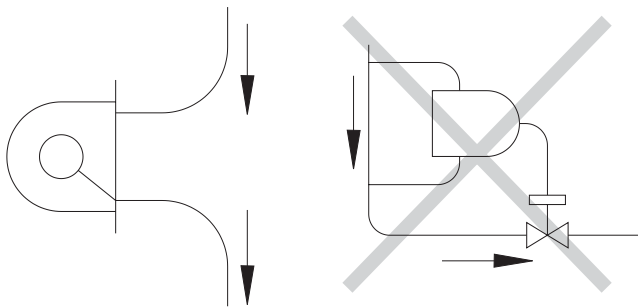
These valves are guaranteed against defective materials or workmanship for one year F.O.B. our plant. No consequential damages or field labor is included.

TYPICAL SPECIFICATIONS

“Float drain regulators shall be direct operated with steel bodies, flanged housing for servicing, precision-guided stainless steel float ball assembly, low-friction composite slide valve, manual-opening stem, and connections for oil drain and equalizer/purge lines, as manufactured by Hansen Technologies Corporation or approved equal.”

REPLACEMENT

Hansen’s direct-operated float drain regulator (high side float) is a self-contained unit. It replaces pilot-operated float drain regulators and simplifies piping.



HANSEN FLOAT DRAIN REGULATOR

PILOT-OPERATED LIQUID DRAINER

OTHER PRODUCTS

- Refrigerant Pressure Regulators
- Thermostatic Expansion Valves (TXV)
- Hand Expansion Valves (Regulators)
- Refrigerant Solenoid Valves
- Small Pressure Regulators and Reliefs
- Refrigerant Check Valves
- Liquid Refrigerant Filter System
- Strainers
- Gas-Powered Valves
- Refrigerant Float Switches
- Vari-Level® Adjustable Level Controls
- Techni-Level® Transducer Probes
- Refrigerant Liquid Pumps
- Pump Guardian® Pump Controllers

ORDERING INFORMATION, FLOAT DRAIN REGULATORS

Refrigerant	Catalog Number	Inlet & Outlet Connections
R717	HT100N HT200N HT300N	3/4" FPT/1" Weld 1 1/2" Weld 2" Weld
	HD101N	3/4" FPT/1" Weld
R22	HT100F HT200F HT300F	3/4" FPT/1" Weld 1 1/2" Weld 2" Weld
	HD101F	3/4" FPT/1" Weld

Connections are butt weld to match U.S. Schedule 80 to 1 1/2"; Schedule 40 over 1 1/2".

TO ORDER: Specify catalog number, refrigerant, refrigeration capacity, inlet pressure, outlet pressure, refrigerant temperature, and application details. Assistance with selection is available.

To help when placing your order, fill out the following form before contacting Hansen.

Refrigerant: _____

Capacity: _____

Inlet Liquid Temperature: _____

Inlet Pressure: _____

Outlet Pressure: _____

Description and Sketch of Float Drain Regulator Application: _____

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