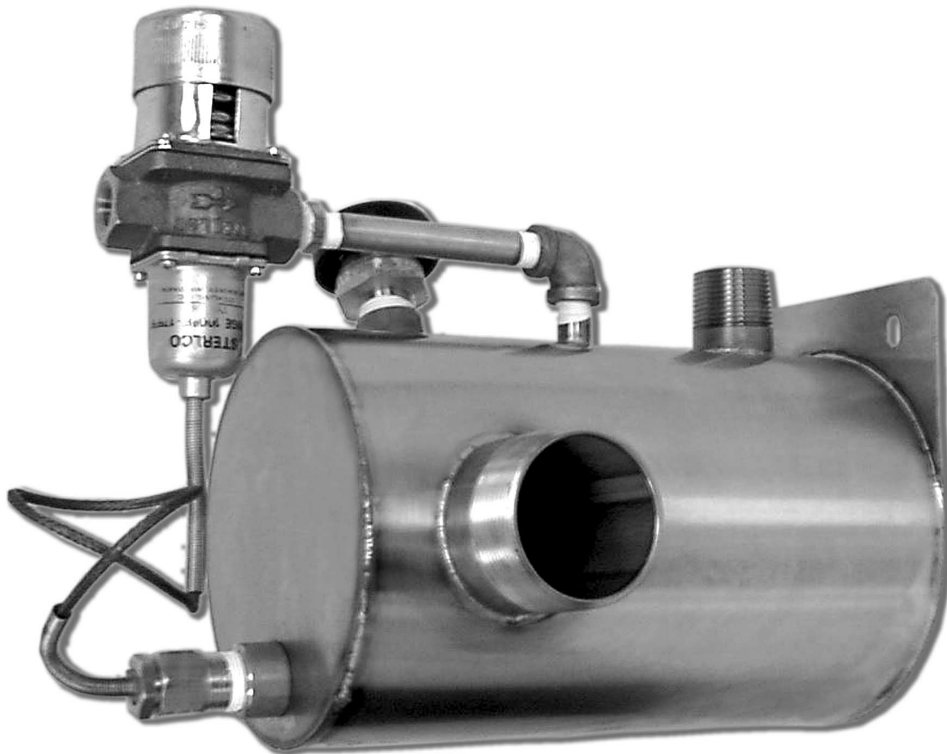


Read and save these instructions!

DRANE-KOOLER™

Water tempering device

Installation, operation and maintenance manual



DRISTEEM®
HUMIDIFIER COMPANY

A SUBSIDIARY OF RESEARCH PRODUCTS CORPORATION





PLEASE: read this manual!

This manual will guide you through installation, operation and maintenance procedures for your new DRANE-KOOLER. Proper installation and operating practices will ensure years of trouble-free service.

Technical support

For technical support, contact your DRI-STEEM distributor or call +44 1280 850122 or fax +44 1280 850124

**Visit our web site:
www.dristeem.com**

For information about other DRI-STEEM products, visit our web site, or contact us using the information listed below.



A SUBSIDIARY OF RESEARCH PRODUCTS CORPORATION

European office

Bell Place, Bell Lane • Syresham, Brackley • NNN13 5HP, UK
+44 1280 850122 • +44 1280 850124 (fax)
106277.1443@compuserve.com (e-mail)

U.S. headquarters

14949 Technology Drive • Eden Prairie, MN 55344
952-949-2415 • 800-328-4447 • 952-229-3200 (fax)
sales@dristeem.com (e-mail)

DRANE-KOOLER table of contents.

Product overview

Features summary 1
Capacities and connection sizes 2
Dimensions 3
Warranty 12

Installation

Installation instructions 4
Mounting 5
Piping 6-7

Operation

Start-up and operation instructions 8

Maintenance

Maintenance instructions 9
Troubleshooting guide 10
Replacement parts 11

DRANE-KOOLER features summary.

Cool discharged hot water

DRANE-KOOLER is a water tempering device that mixes cold water with hot water discharged from various types of equipment, such as a humidifier, to reduce the discharged water temperature before it enters a municipal sewer system.

There are two reasons to use a water tempering device. First, most water authorities prohibit draining water hotter than 60 °C into their sewer systems. And second, PVC drain pipes are susceptible to damage from water that is too hot. When faced with either of these situations, DRANE-KOOLER is the solution!

New horizontal design!

A new space-efficient horizontal orientation and side drain outlet provide enough clearance to allow the DRANE-KOOLER to be mounted directly underneath DRI-STEEM humidifiers, saving footprint space while allowing room for pitched drain piping.

How it works: Hot + cold = tempered!

1. Hot water discharged from a humidifier or other appliance enters the DRANE-KOOLER through piping connected to the top threaded connection. A vacuum breaker prevents backflow into potable water systems.
2. Cold water enters through the temperature-actuated valve. The valve and the DRANE-KOOLER's straightforward design ensure efficient mixing of hot and cold water. The valve's sensor, located near the outlet, ensures that water leaving the DRANE-KOOLER is 60 °C* or less before entering the municipal sewer system.
3. Tempered water at 60 °C* or less exits through the side outlet for safe discharge into a municipal sewer system or PVC pipe.

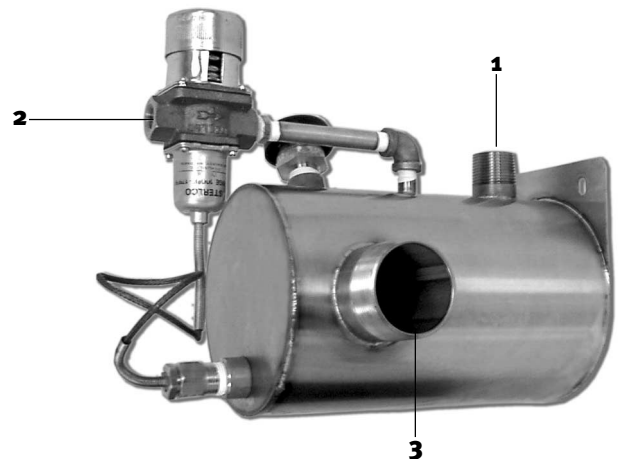
* Please see the capacities table on the next page.

Reliable, non-electric valve

The temperature-actuated valve is time-tested to be reliable and maintenance-free. And because it is non-electric, no wiring is required!

Multiple mounting options

The DRANE-KOOLER can be mounted by attaching the integral mounting plate to a wall, by attaching the mounting plate to an adjustable floor stand, or by using an assembly for suspension mounting. These multiple mounting options provide capability for the DRANE-KOOLER to be properly supported and not secured entirely by piping.



Capacities and connection sizes.

DRANE-KOOLER capacities*

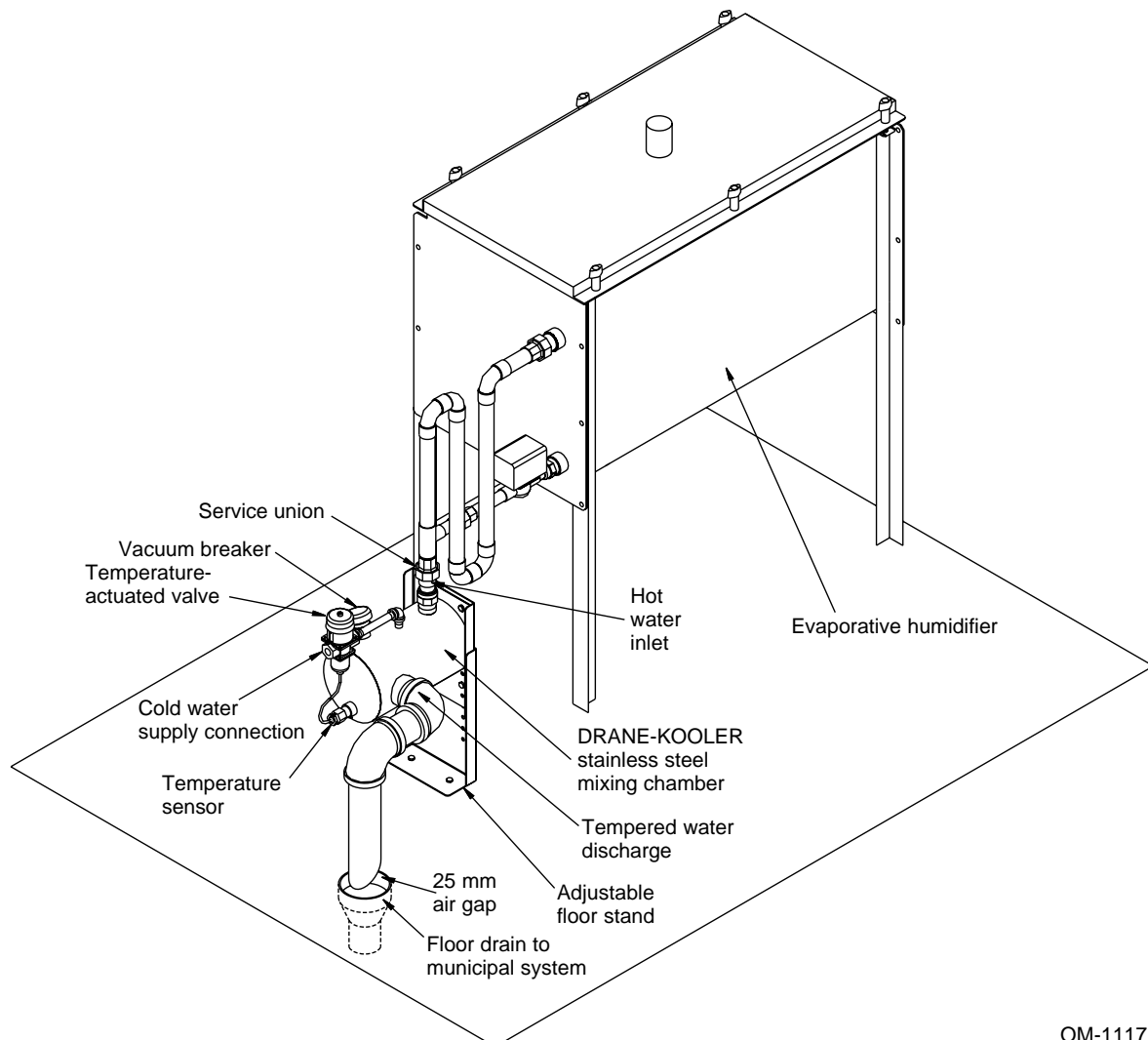
	Maximum flow rate	Maximum temperature
	ℓ/mn	°C
Hot water inflow	22.7	100
Cold water inflow**	22.7	21
Tempered water outflow	45.4	60

* This table applies only if one humidifier is connected to one DRANE-KOOLER, with no more than 3 m vertical distance between the humidifier and the DRANE-KOOLER. If you wish to connect more than one humidifier to a DRANE-KOOLER, or if the vertical distance exceeds 3 m, consult the factory.

** Cold water supply pressure must be between 170 kPa and 550 kPa.

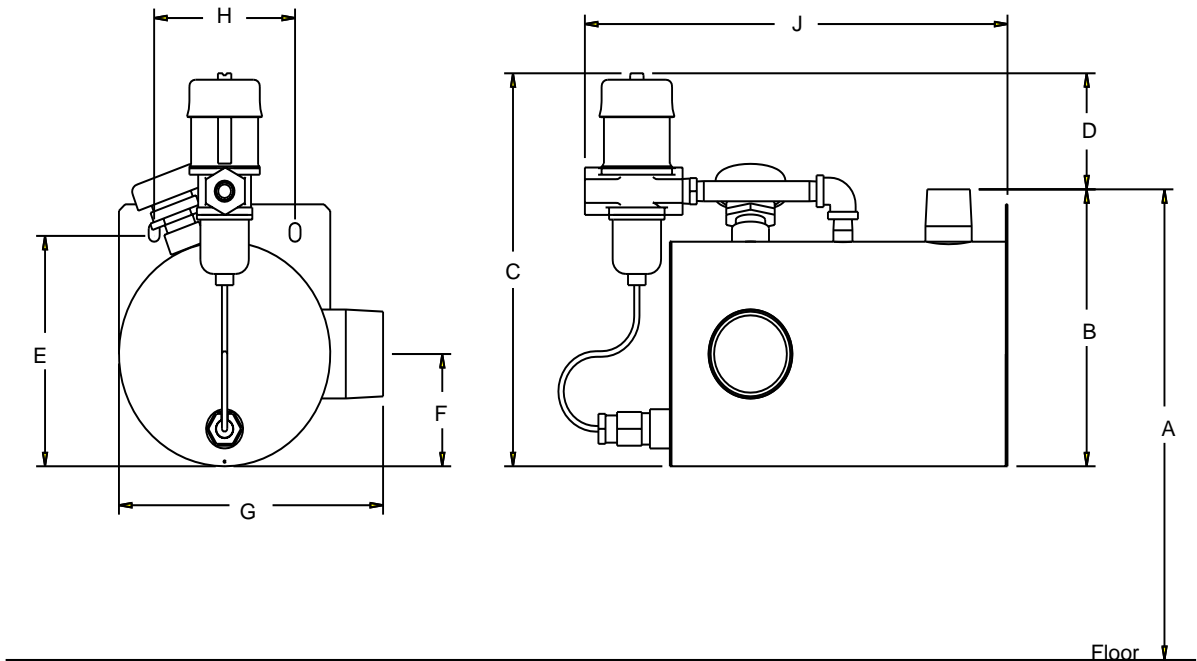
DRANE-KOOLER connections

Hot water inlet connection	DN 25 (1")
Tempered water outlet connection	DN50 (1")
Cold water supply connection	DN10 (3/8")



OM-1117

DRANE-KOOLER dimensions.



OM-1113

Dimensions

	Description	mm
A	Height with floor stand (from floor to top of hot water inlet in 25 mm increments)	210 to 312
	Height with floor stand and extension (from floor to top of hot water inlet in 25 mm increments)	337 to 515
B	Height from bottom of tank to top of hot water inlet	190
C	Height from bottom of tank to top of valve	270
D	Height from top of hot water inlet to top of valve	75
E	Height from bottom of tank to center of mounting hole	160
F	Height from bottom of tank to center of tempered water outlet	75
G	Width of tank and tempered water outlet	190
H	Width of mounting plate holes, center to center	102
J	Length, from valve inlet to mounting plate	305

Installation checklist.

Step-by-step installation instructions

- ❑ Verify that maximum flow of hot water into the DRANE-KOOLER does not exceed 22 litres per minute (ℓ/mn).
- ❑ Note that there are three connections to be made to the DRANE-KOOLER:
 - Cold water supply
 - Hot water inlet (from a humidifier or other appliance)
 - Tempered water piping to drain
- ❑ Position the DRANE-KOOLER to allow the most direct path of piping to minimize fittings (see the piping diagrams on Pages 6-7).
- ❑ Position unions on all connections as close to the DRANE-KOOLER as possible to make cleaning and maintenance easier.
- ❑ Cold water supply connection instructions:
 - Cold water supply connection on valve is DN10 (3/8").
 - Pipe a DN10 (3/8") line directly to the DRANE-KOOLER from the main water supply line.

TO ENSURE ADEQUATE WATER PRESSURE TO THE DRANE-KOOLER, DO NOT CONNECT TO A SUPPLY WATER LINE THAT IS DEDICATED TO OTHER APPLIANCES.

If installing the DRANE-KOOLER with a humidifier, do not branch off the DN8 (1/4") cold water supply line to the humidifier.

- Verify that the supply water pressure to the valve is at least 170 kPa and not more than 550 kPa.
- Install a cold water supply union as close to the DRANE-KOOLER as possible.
- Install a cold water shut-off valve before the union in the cold water supply line.

- ❑ Hot water inlet connection instructions:
 - Hot water inlet connection is DN25 (1").
 - Locate a union as close to the DRANE-KOOLER as possible
 - Run DN25 (1") pipe as directly as possible from the hot water appliance (humidifier) to the DRANE-KOOLER. If the piping to the hot water inlet has a horizontal run, maintain a pitch to the DRANE-KOOLER of at least 1%.
- ❑ Tempered water (to drain) connection instructions:
 - Tempered water outlet connection is DN50 (2").
 - Install a union as close to the DRANE-KOOLER as possible.
 - Run a DN50 (2") pipe as directly as possible from the DRANE-KOOLER to the drain. Maintain a pitch to drain of at least 1%.
 - Make sure there is a 25 mm air gap between the drain piping and the drain.

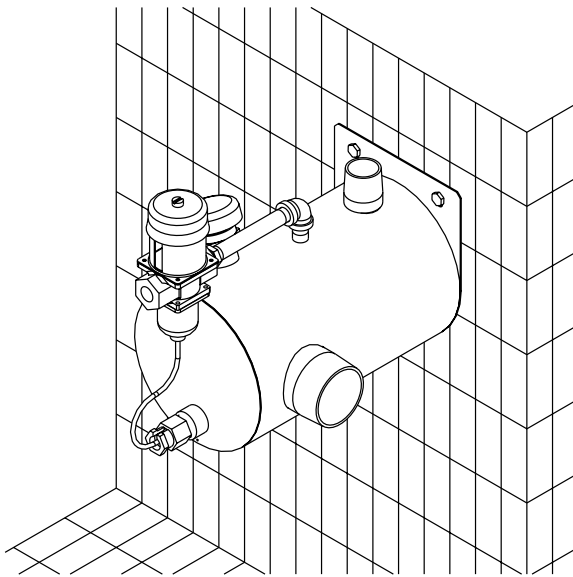
Installation

Mounting options.

Three mounting options

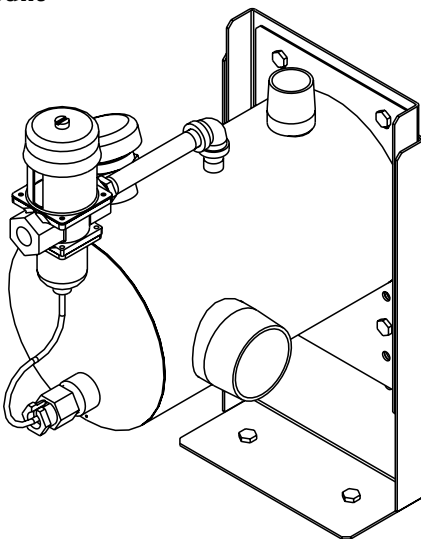
Use one of the mounting options shown on this page to ensure that the DRANE-KOOLER will be properly supported and not secured entirely by piping. Floor stand and suspension mount hanger assembly are ordered separately.

Wall mount



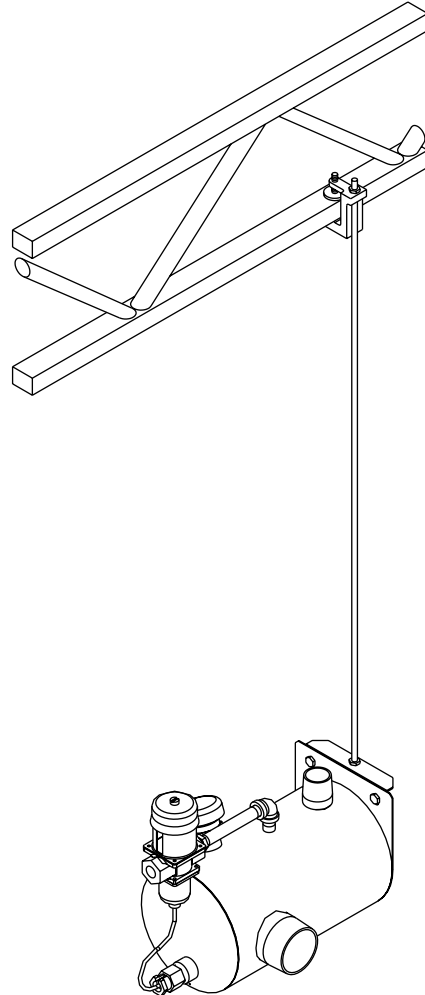
OM-1114

Floor mount



OM-1115

Suspension mount*

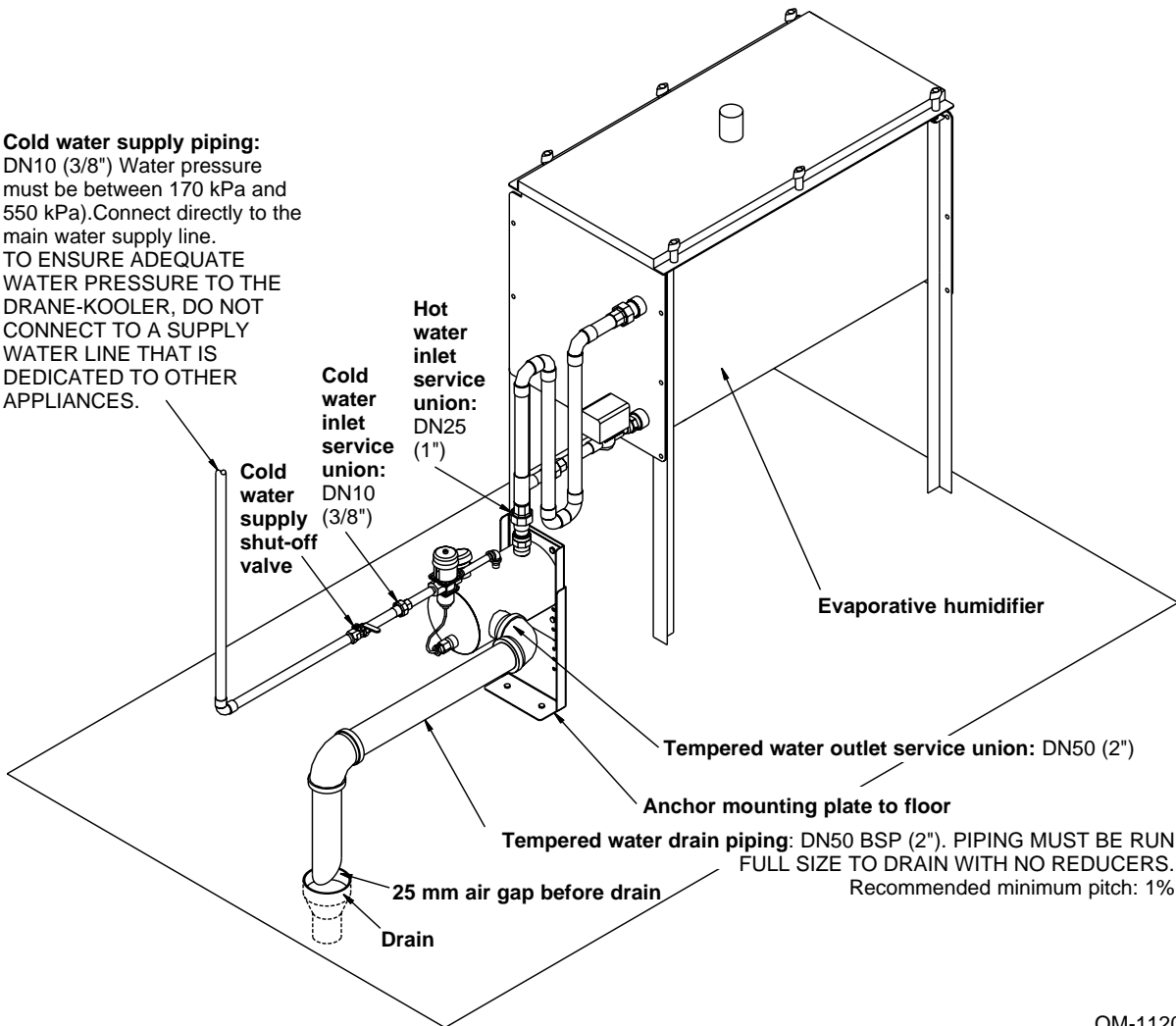


OM-1116

* The suspension mount hanger assembly includes an L-bracket, two nuts, and two bolts that attach to the DRANE-KOOLER. Beam clamp assembly and M8 threaded rod are supplied by others.

DRANE-KOOLER piping.

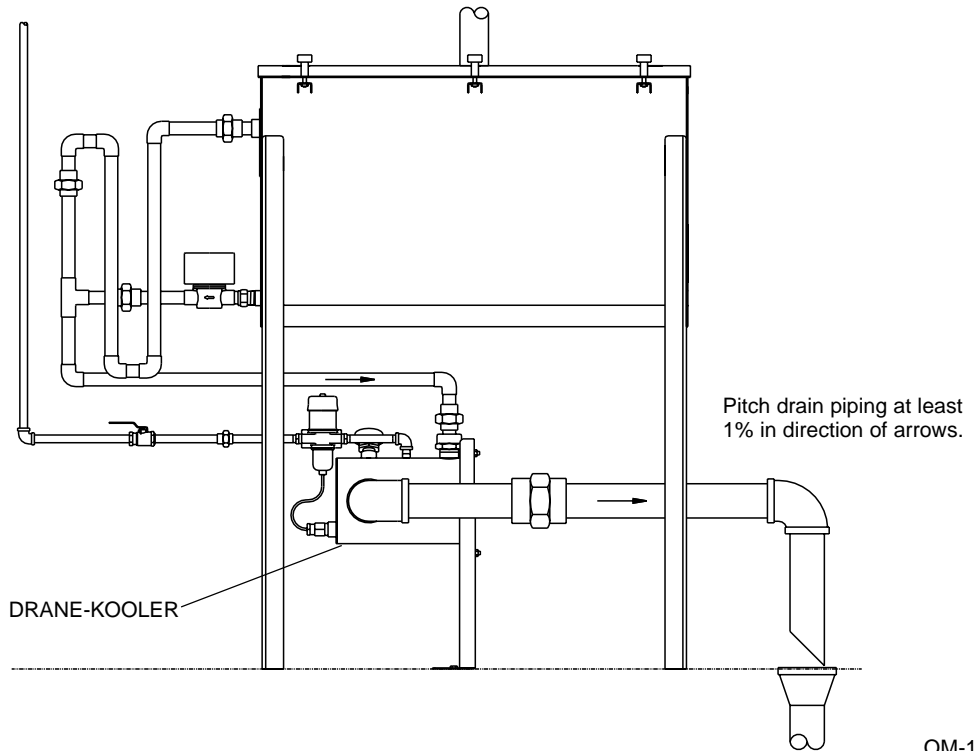
Cold water supply piping:
DN10 (3/8") Water pressure must be between 170 kPa and 550 kPa). Connect directly to the main water supply line. TO ENSURE ADEQUATE WATER PRESSURE TO THE DRANE-KOOLER, DO NOT CONNECT TO A SUPPLY WATER LINE THAT IS DEDICATED TO OTHER APPLIANCES.



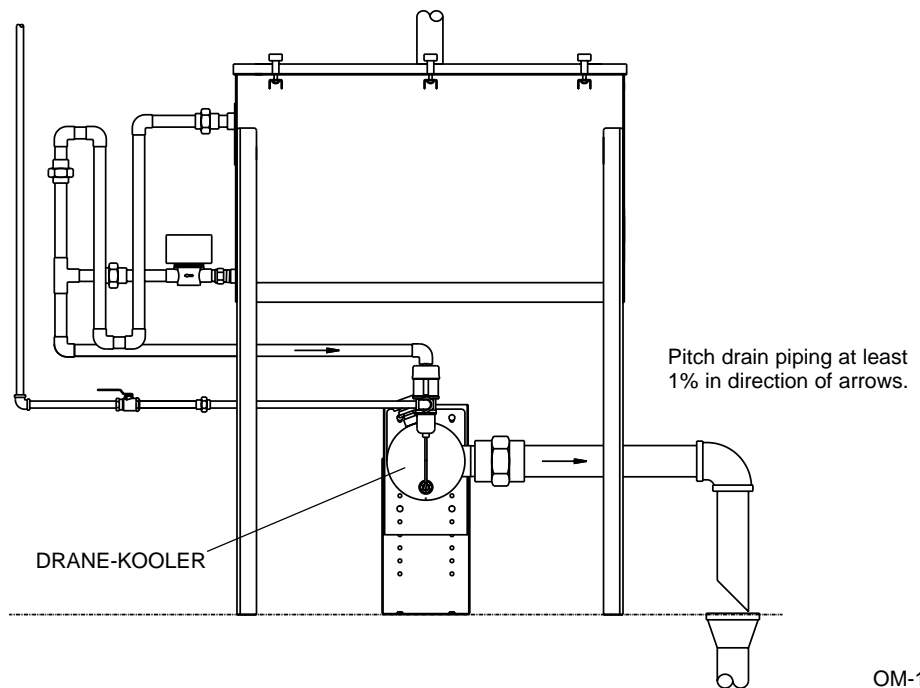
OM-1120

DRANE-KOOLER piping.

Two examples showing the DRANE-KOOLER mounted directly underneath an evaporative humidifier



OM-1121



OM-1122

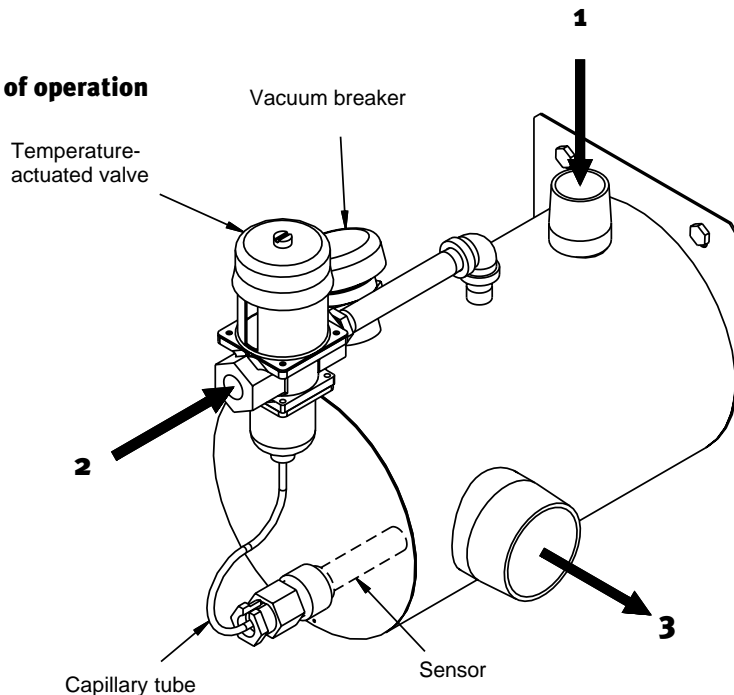
Operation

DRANE-KOOLER operation.

How to operate

Once properly installed, to operate simply open the cold water supply valve.

Principle of operation



OM-1114-2

- 1.** Hot water discharged from a humidifier or other appliance enters the DRANE-KOOLER through piping connected to the top threaded connection. The vacuum breaker prevents backflow into potable water systems.
 - 2.** Cold water enters through the temperature-actuated valve. The valve and the DRANE-KOOLER's straightforward design ensure efficient mixing of hot and cold water. The valve's sensor, located near the outlet, ensures that water leaving the DRANE-KOOLER is less than 60 °C* before entering the municipal sewer system.
 - 3.** Tempered water at 60 °C* or less exits through the side outlet for safe discharge into a municipal sewer system or PVC pipe.
- * Please see the capacities table on Page 2.

DRANE-KOOLER maintenance.

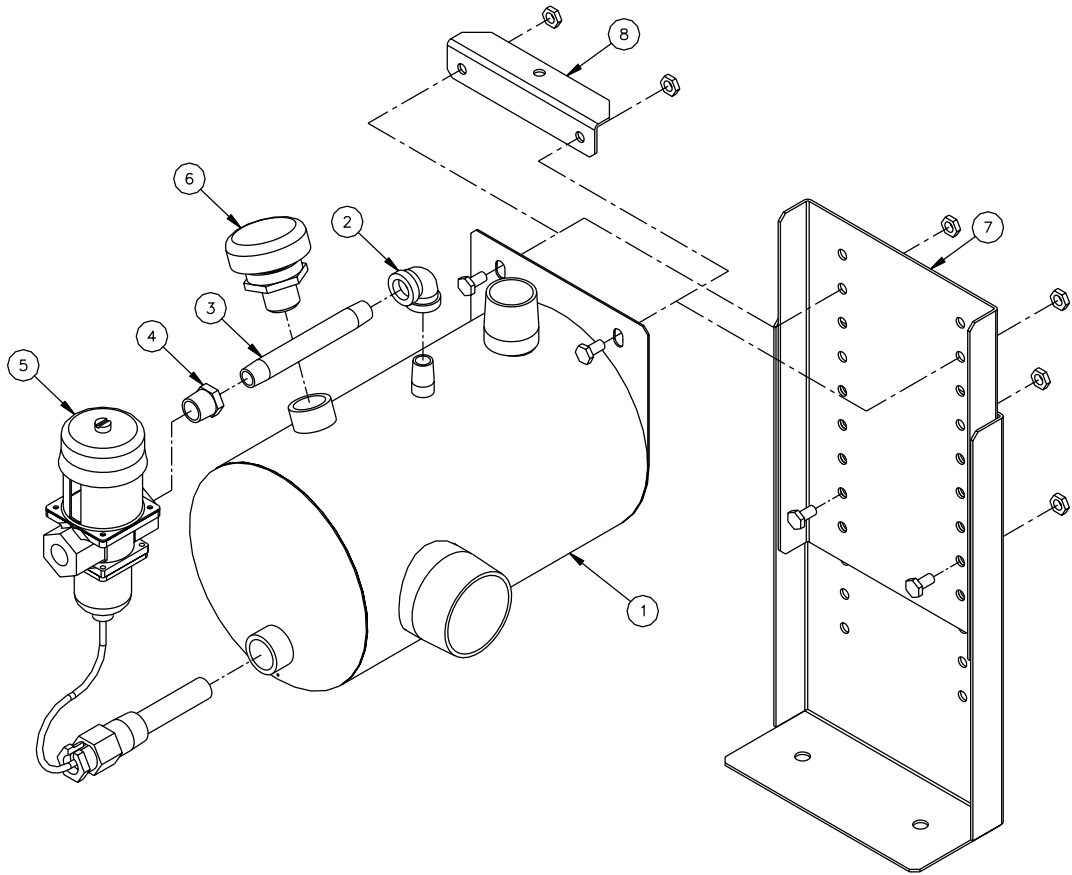
Step-by-step maintenance instructions

- ❑ Shut off cold water supply.
- ❑ Disconnect service unions at:
 - Cold water supply inlet
 - Hot water inlet
 - Tempered water drain outlet
- ❑ Remove the DRANE-KOOLER from piping and take to a service sink. Add water and, with pipe caps or hands covering the hot water inlet and tempered water outlet, shake the DRANE-KOOLER to dislodge mineral deposits. Dump mineral deposits and rinse.
- ❑ If severe mineral accumulation has occurred, remove the thermal sensor from the DRANE-KOOLER chamber and gently clean the sensor with an abrasive pad. Do not twist the capillary tube during removal or cleaning.
- ❑ Reconnect service unions and open cold water supply valve to resume operation.

Troubleshooting guide.

Problem number	Problem	Possible cause	Action
1	Water leaving the DRANE-KOOLER is hotter than 60 °C	Mineral accumulation in mixing chamber	<ul style="list-style-type: none"> Remove the DRANE-KOOLER and dislodge mineral accumulation.
		Mineral accumulation on thermal sensor	<ul style="list-style-type: none"> Remove thermal sensor from DRANE-KOOLER and gently remove mineral accumulation with an abrasive pad. Do not twist capillary tubing during removal or cleaning.
		Valve malfunction	<ul style="list-style-type: none"> Valve is not working properly. Replace. Note: This valve is factory-set and should not need adjustment.
		Steam is entering the DRANE-KOOLER	<ul style="list-style-type: none"> The DRANE-KOOLER is designed to handle hot water and hot condensate. If a large amount of steam enters the DRANE-KOOLER it is likely that discharge water temperatures will be greater than 60 °C. Check P-traps on humidifier or other appliance to ensure that the P-traps have the proper depth and are working properly to prevent steam from entering the DRANE-KOOLER.
2	Makes a loud popping or crackling noise	Steam is entering the DRANE-KOOLER	<ul style="list-style-type: none"> If steam is entering the DRANE-KOOLER, the introduction of cold water through the valve will cause the steam to collapse and make a popping or crackling sound. Check P-traps on humidifier or other appliance to ensure that the P-traps have the proper depth and are working properly.

DRANE-KOOLER replacement parts.



OM-1119

DRANE-KOOLER Model DK-12E replacement parts

Item	Description	Part no.
1	DRANE-KOOLER weldment, Model DK-12E	167001-025
2	Elbow, 1/4" NPT brass	250701-001
3	Nipple, 1/4" NPT x 4" brass	250212-004
4	Bushing, 3/8" x 1/4" hex reducer	203550-001
5	Valve, non-electric self-actuating	505090-001
6	Valve, 1/2" N36 vacuum relief	320400
7	Floor stand assembly	185110
8	Suspension mount hanger assembly	185100

Two-year limited warranty.

DRI-STEEM Humidifier Company (“DRI-STEEM”) warrants to the original user that its products will be free from defects in materials and workmanship for a period of two (2) years after installation or twenty-seven (27) months from the date DRI-STEEM ships such product, whichever date is the earlier.

If any DRI-STEEM product is found to be defective in material or workmanship during the applicable warranty period, DRI-STEEM’s entire liability, and the purchaser’s sole and exclusive remedy, shall be the repair or replacement of the defective product, or the refund of the purchase price, at DRI-STEEM’s election. DRI-STEEM shall not be liable for any costs or expenses, whether direct or indirect, associated with the installation, removal or reinstallation of any defective product.

DRI-STEEM’s limited warranty shall not be effective or actionable unless there is compliance with all installation and operating instructions furnished by DRI-STEEM, or if the products have been modified or altered without the written consent of DRI-STEEM, or if such products have been subject to accident, misuse, mishandling, tampering, negligence or improper maintenance. Any warranty claim must be submitted to DRI-STEEM in writing within the stated warranty period.

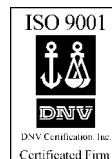
DRI-STEEM’s limited warranty is made in lieu of, and DRI-STEEM disclaims all other warranties, whether express or implied, including but not limited to any IMPLIED WARRANTY OF MERCHANTABILITY, ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, any implied warranty arising out of a course of dealing or of performance, custom or usage of trade.

DRI-STEEM SHALL NOT, UNDER ANY CIRCUMSTANCES BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS, REVENUE OR BUSINESS) OR DAMAGE OR INJURY TO PERSONS OR PROPERTY IN ANY WAY RELATED TO THE MANUFACTURE OR THE USE OF ITS PRODUCTS. The exclusion applies regardless of whether such damages are sought based on breach of warranty, breach of contract, negligence, strict liability in tort, or any other legal theory, even if DRI-STEEM has notice of the possibility of such damages.

By purchasing DRI-STEEM’s products, the purchaser agrees to the terms and conditions of this limited warranty.

DRI-STEEM[®]
HUMIDIFIER COMPANY

A SUBSIDIARY OF RESEARCH PRODUCTS CORPORATION



European office:

Bell Place, Bell Lane • Syresham, Brackley • NN13 5HP, U.K.

Phone: +44 1280 850122 • Fax: +44 1280 850124

E-mail: 106277.1443@compuserve.com

U.S. headquarters:

14949 Technology Drive • Eden Prairie, MN 55344

Phone: (952) 949-2415 • Fax: (952) 229-3200

E-mail: sales@dristeem.com • Web: www.dristeem.com

Continuous product improvement is a policy of The DRI-STEEM Humidifier Company, therefore, product features and specifications are subject to change without notice.