

# Desert Spring® Products



## DS-RDAH Rotary Disc Humidifier Installation & User Manual

### IMPORTANT

Thank you for selecting the Desert Spring® Rotary Disc Humidifier. Carefully read this manual before starting your installation. Follow the step-by-step instructions as written.

#### CUSTOMER SERVICE

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### WARNING

**Electrocution and Chemical Hazard. Can cause death, blindness or electrical shock**

- Disconnect electrical power to the furnace before starting electrical installation. Electrical shock could result in serious injury.
- Sharp edges may cause serious injury. Use care when making openings in ducts.
- Do not drill into air conditioning coil, refrigeration line or electrical accessory.
- Follow local standards and codes.



### CAUTION

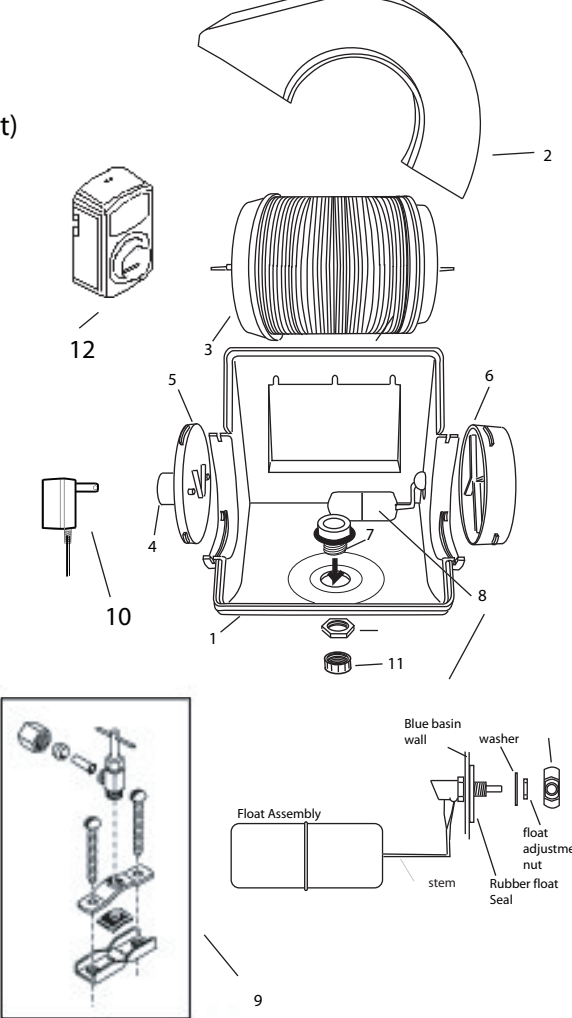
- Do not install the humidifier on the furnace jacket, only on the return air duct or plenum.
- Serious water damage may result if humidifier is exposed to freezing temperatures. Do not install humidifier in location where ambient temperatures may drop below 32° F / 0° C.
- If the heating system also has central cooling, the humidifier supply takeoff must have a damper. The damper should be closed during the cooling season.
- Lithium grease may be used to lubricate metal-on-plastic contact points.
- Do not connect the transformer directly to multi-speed furnace blower motors or blower motors other than 110 VAC. (Disregard for plug in style transformer)
- Turn off the water supply before starting water connection and release pressure in the system by opening a tap or flushing a toilet.
- Install the water supply valve on household water supply pressure only.
- Follow furnace manufacturer recommendations for electrical connections if provided.
- Incorrect use of any tool can cause injury to person or product. Be sure you understand how to use the required tools to avoid any hazards. Arrange for professional installation if required.
- To ensure that your new humidifier will provide maximum benefit, your furnace must be operating in accordance with the manufacturer's specifications. If your furnace is operating outside of its manufacturer's specifications, your Desert Spring warranty could be voided.
- Ensure that the hot air supply temperature does not exceed 150° F / 65° C.
- Ensure that unit is mounted level.

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## Parts List

Part #	Reference	Description
DS00004	1	Blue Basin
DS00027	2	Clear Lid
DS00013	7	Drain Assembly (Threaded insert,washer,nut)
DS00009	11	Drain Cap c/w washer
DS00015	not shown	Duct Flange (plastic collar + damper plate)
DS00019	8	Float Assembly
DS00024	12	Manual Humidistat
DS00025	6	Humidifier Duct Air Inlet (plastic snap-in)
DS00021	not shown	Humidifier Hanging Bracket (metal J-hook)
DS00091	4	Motor
DS00030	5	Motor Mount End Plate (plastic snap-in)
DS00036	9	Self-piercing Saddle Valve Assembly
DS00046	10	Transformer 110/24VAC Plug-in
DS-WA	3	Wheel Assembly (disc wheel,axle assembly)
DS-AX	not shown	Axel Assembly (axel, clip)
Hardware	not shown	3 x 3/16"(5mm)machine screws + nuts 4 x Marettes (wire nuts) 6 x Self-tapping metal screws
Water line	not shown	10' (305cm) x 0.25" (6mm) clear plastic
Air duct	not shown	2.5' (75cm) x 6" (15cm) flex hose
Gear Clamps	not shown	6.5" (16cm), (2x)
LV Wire	not shown	2.5' (76cm) low voltage wire
Instructions	not shown	Manual

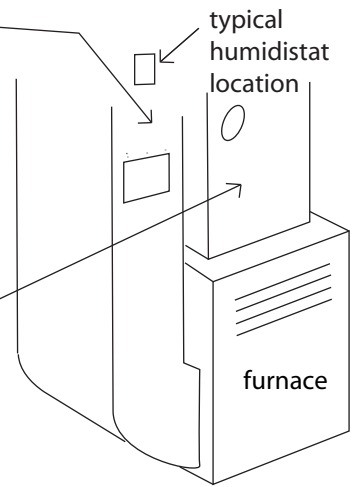


## Tool Suggestions

- Variety of small open end wrenches
- Slot, Philips, or #2 (red) Robertson screw driver.
- Tin snips or compass cutter
- Pencil or marker
- Level
- Electric drill with 1/16" and 3/16" drill bits
- 1/4" hex head screw driver
- Tape Measure or ruler

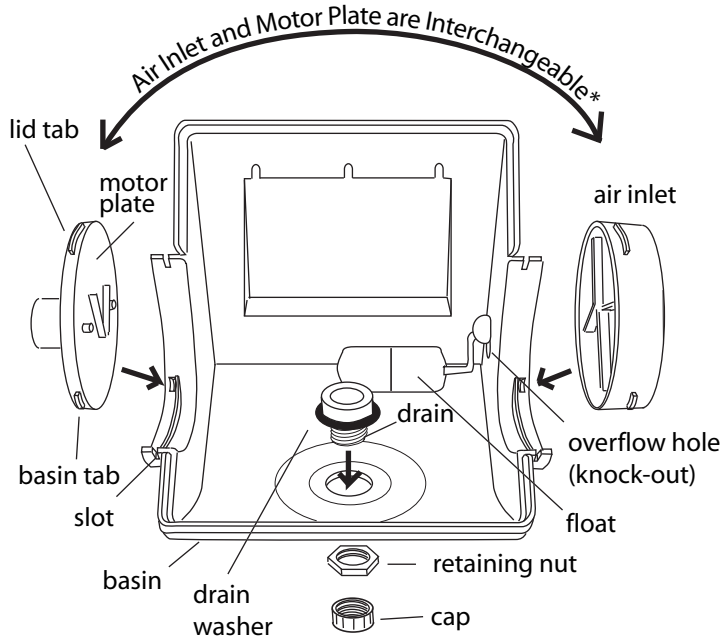
# 1. Selecting a location

- This humidifier is to be mounted on the COLD AIR RETURN (preferably on the narrow side) of a forced air heating system. If the humidifier must be mounted on a plenum/duct which is over 12" wide or on non-metal duct, the plenum/duct must be reinforced and/or the humidifier must be supported by other means.
- Ensure that there is sufficient clearance for the humidifier, water supply, and air supply ductwork. If clearance problems exist with utilities, qualified tradespeople should be called.
- Air is supplied to the humidifier with a 3' flexible duct connected to the air take-off (with damper) mounted on the HOT AIR SUPPLY coming out of the furnace. (Check clearance to air conditioner coil)
- Follow the instructions on the humidifier TEMPLATE (Page 7) to locate and cut holes for the humidifier and take-off.
- Note that the top of the round take-off opening should be a minimum of 1" higher than the rectangular humidifier opening (max. 8'). Mount the take-off so that the damper can be easily opened and closed.
- Mount the humidistat according to the guidelines supplied in the humidistat box.
- Humidistat should be located at least 8" upstream of the Humidifier.

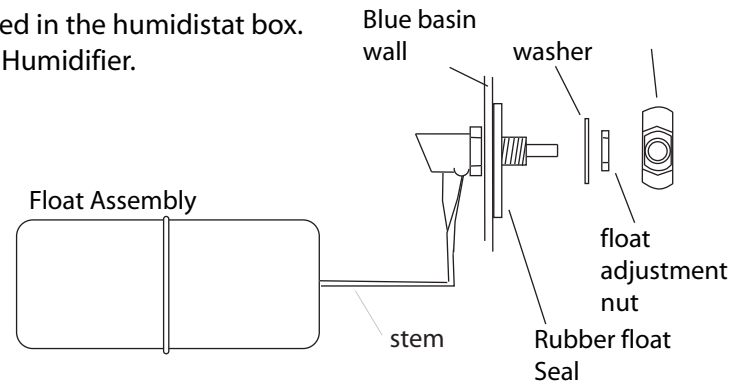


## 2. Humidifier assembly

- Install the float valve into the slot in the side of the basin, ensuring that the float seal is against the outside wall of the basin. Hand tighten the float locking nut.



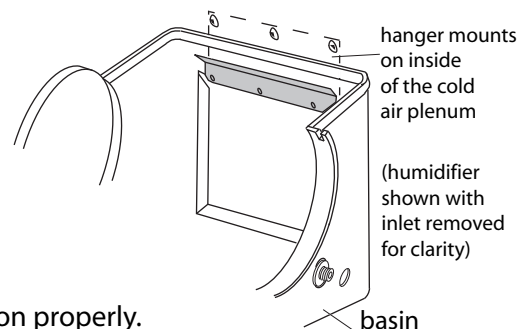
\*interchangeable: install air inlet on the side closest to the hot air supply take-off.



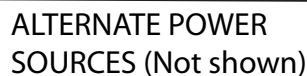
- Install the drain into the bottom of the basin and finger tighten retaining nut. Note - Teflon tape is recommended for these connections. After ensuring that the drain is centered, tighten securely but Do Not over tighten.
- Next install the drain cap.
- The humidifier can be configured with either a right or left air supply. This will depend upon the layout of your furnace.\*
- Snap the motor plate and inlet into the basin. Ensure that the basin tabs on these parts fit into the corresponding slots in the basin. To remove the motor plate and inlet, squeeze the lower tab with pliers and pull upwards.

## 3. Hanging the basin

- Hang the basin from the mounting hanger on the COLD AIR RETURN. See template for instructions to mount the hanger. (Page 7)
- If the optional AutoFlush and Over-Flow kits were purchased, refer to the manuals for installation at this point.
- Ensure humidifier is level or else the overflow may not function properly.



- Before making electrical connections ENSURE THAT THE POWER IS OFF!
- Connect motor, transformer and humidistat as shown in diagram below.  
Used supplied marettes (wire nuts) to secure the connections
- If the optional Electronic Humidistat and/or Current Sensor Relay were purchased, refer to the manuals for installation at this point.



- i) Hard wire transformer power from Furnace directly
- ii) Direct from furnace board.  
Note: Humidifier will only operate when the furnace is in heat mode and eliminates fan-only operation.

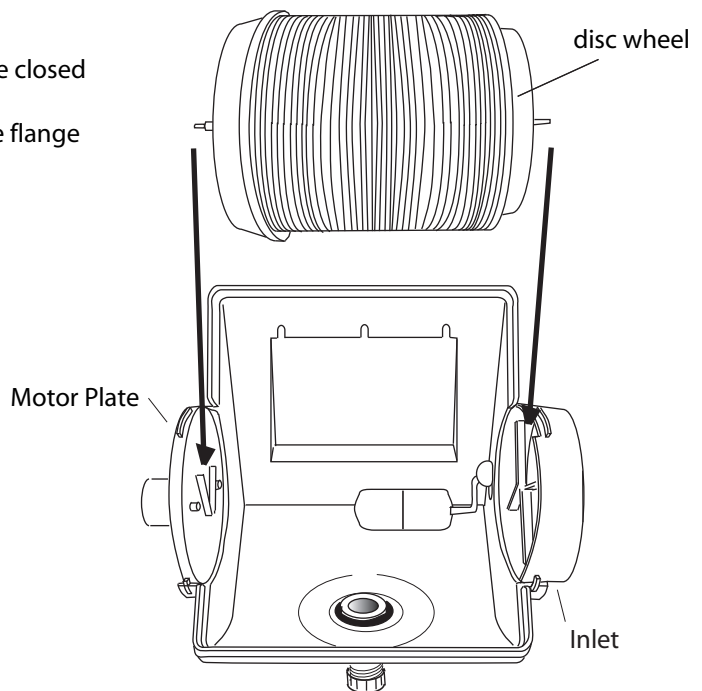
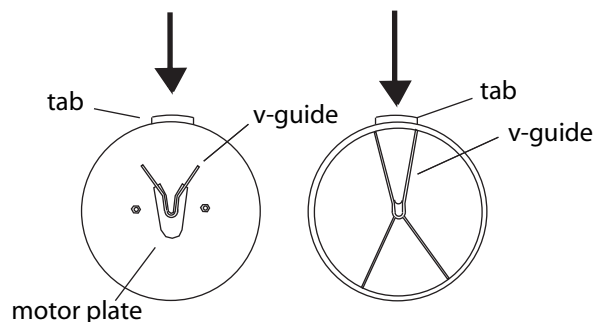
For either of these options, strictly follow the furnace manufacturer's instructions.

- The humidifier can be connected to either hard or softened water. Note: Softened water will require more frequent cleaning, therefore the optional AutoFlush unit is recommended.
- Before starting TURN OFF THE WATER SUPPLY and relieve the pressure.
- Install the saddle valve on a copper water line as close to the humidifier as possible.  
Note: For PVC piping, use appropriately sized PVC saddle (not supplied)
- CAUTION: ensure that the piercing pin is backed up into the valve body. If installing on galvanized pipe, pre drill a 1/8" diameter for the piercing pin.
- Assemble one side of the top clamp to the bottom clamp and place over the water line ensuring that the rubber gasket is in place over the piercing pin.
- Assemble the other side of the top clamp to the bottom clamp with remaining fastener and tighten evenly until unit is firmly attached to water pipe.
- Connect supplied plastic water line to valve using the compression sleeve/ insert as shown below.
- Insert the waterline through the plastic compression nut and locking sleeves inside the nut
- thread the compression nut onto the float thread, and finger tighten.
- Turn the valve handle clockwise fully to pierce the water pipe. NOTE: This is the OFF/CLOSED position.

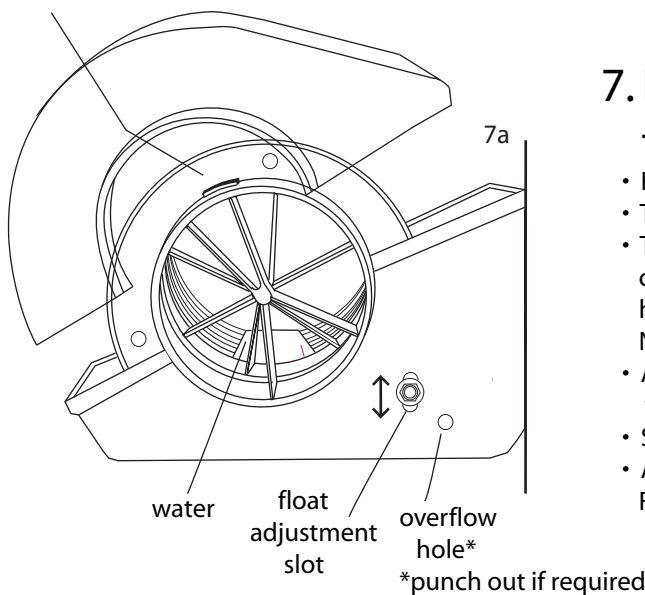


## 6. Installing the disc wheel

- Hold disc wheel with open end over the duct inlet side and the closed end over motor plate side
- Angle drive shaft into motor coupling and rotate to ensure the flange is fully inserted into motor coupling key hole.
- Lower the opposite end of drive shaft into duct inlet V-guide.



ensure tabs on inlet and motor plate fit into slots in lid flanges



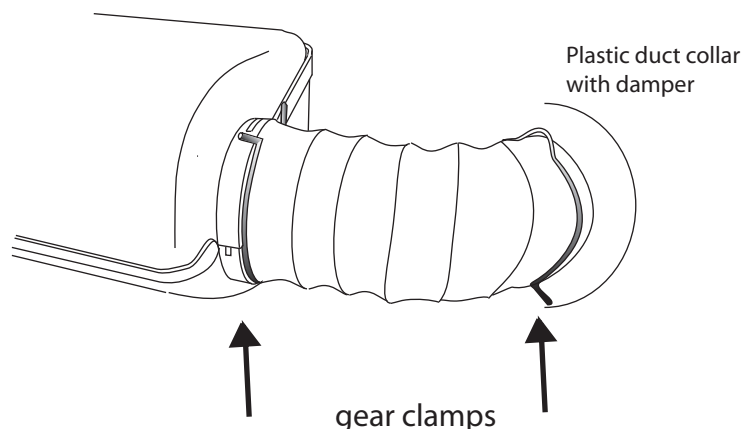
## 7. Installing the lid and adjusting the water level

- Fit the lid onto the basin.
- Turn on the water supply and check for any leaks.
- The float assembly should be adjusted so that the water fully covers the discs as illustrated in 7a. This will ensure maximum humidity output and will minimize calcium build up.  
Note - look through the inlet to see the water level.
- Adjust the float by sliding up/down in slot or by adjusting the angle of the float bulb
- Secure the float locking nut with a 9/16" wrench.
- As an additional measure, you can fit an overflow kit to the humidifier.

For more information visit [www.desertspringproducts.com](http://www.desertspringproducts.com)

## 8. Connecting the air supply

- Use one of the supplied gear clamps to secure the flex ducting to the hot air take-off.
- Use the remaining gear clamp to secure the flex duct to the humidifier's inlet.
- Make the flex duct connection as short and straight as possible, DO NOT let the flex duct sag. Trim excess duct.
- If the supplied flex duct is not long enough, use 6" round rigid pipe components instead of flex duct.
- Ensure damper is set in the OPEN position.



## 9. About humidity

- Humidity requirements will vary from home to home. Your comfort level is the best gauge of the correct humidity. If your windows are fogged then you have too much humidity.
- In some cases it may take a week or more for the humidity to build up to the proper level. Setting the furnace fan to run continuously will speed up this process. p.
- Humidity buildup will be hampered by leaks through windows and doors, exhaust fans, open fireplace dampers, and open attics.
- Some types of carpets produce static electricity even with the correct humidity.
- Tests were conducted to determine safe, relative humidity levels for homes exposed to various low outside temperatures. Recommended humidity levels are shown in the chart below.

Outside Air Temperature	Recommended Control Setting
-30°C/-22°F	15 %
-25°C/-13°F	20 %
-20°C/-4°F	25 %
-10°C/14°F	30 %
-5°C/23°F	35 %
>0°C/32°F	40 %

## 10. Startup, maintenance and shutdown

- Turn on the water supply to the humidifier turn on the electrical power and adjust the humidistat so that the humidifier starts. Adjust humidistat to the desired setting. Regularly change the setting in accordance with the outside temperature.
- Under normal use, scale and other minerals will accumulate in the basin. This requires periodic removal to ensure free rotation of the disc wheel is maintained, or motor damage may result. Cleaning frequency will depend on water quality and the amount of humidifier duty-time. For routine cleaning, remove the drain cap to drain water and sediment from the basin, allowing the float valve to fill and rinse the basin for a few extra seconds. If required, use vinegar, or a scale removing cleaning solution on basin and disc wheel for major cleaning jobs.
- The optional AutoFlush accessory provides a scheduled purge/rinse cycle for the humidifier to remove mineral accumulation and eliminate manual routine maintenance. It also assures fresh water is always available for humidification, eliminating concerns over standing water. ALTERNATIVELY, connect a garden hose ball valve to the humidifier drain with a length of garden hose to a floor drain.
- At season-end, or if the humidifier is not used for an extended period;
  - a) turn humidistat to OFF position; b) shut off water supply, and; c) slide air damper to closed position. Remove disc wheel and drain cap to drain water from basin. Wipe sediment from basin as required with vinegar or scale removing cleaning solution.LET THE HUMIDIFIER DRY-OFF COMPLETELY BEFORE RE-INSTALLING DISC WHEEL.
- The disc wheel assembly is dishwasher safe in normal cycle temperatures not exceeding 150° F/65° C. (avoid 'heavy-duty', or pots/pans cycles). To clean individual discs, un-tighten stainless nuts from three alignment rods at air inlet side and remove drive shaft retaining clip. Lift end cap and remove discs from alignment rods.
- Over time metal parts may discolor. This is a normal reaction and will not affect performance.

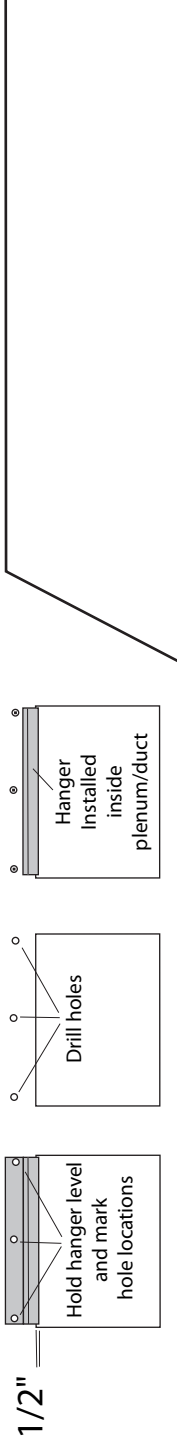


# DESERT SPRING® HUMIDIFIER MOUNTING TEMPLATE

## TO USE TEMPLATE:

- Cut out opening from paper, retain inside as instruction sheet, outside as template.
- Tape template onto RETURN duct/plenum so that it is level and draw the opening shape onto the duct.
- Drill starter hole in a corner, cut out opening with tin snips. Use care to cut opening accurately. **CAUTION - CUT EDGES ARE VERY SHARP.**
- Hold hanger bracket against duct/plenum so that the bottom of the hanger bracket is about 1/2" from the top edge of the opening in the duct/plenum. Ensure that it is level and mark the three mounting bolt locations. Drill three 3/16" holes in the duct/plenum. Mount the hanger bracket on the inside of the duct/plenum using the 3/16" machine screws and nuts.

Hanger may be dropped up to 3/4" to accommodate larger preexisting holes.



1/2"

6"  
(150 mm)

Pilot hole

## HOT AIR SUPPLY TEMPLATE

- Use the plastic hot air take-off/damper assembly as a template.
- Hold the Hot Air Take-off against the HOT AIR supply and trace outside the opening.
- Drill a starter hole inside the line and cut with compass cutter or tin snips.
- Hold the air take-off over the opening and mark the screw locations.
- Drill 1/16" pilot holes and or drive the screws directly into the SUPPLY duct.
- Make sure to open the damper when you start the unit open and closed.

7 7/8"  
(200 mm)

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U.S. Patents 5,795,505, 5,171,486

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In the interest of continuous improvement the manufacturer reserves the right to change specifications without notice