

DTT-74

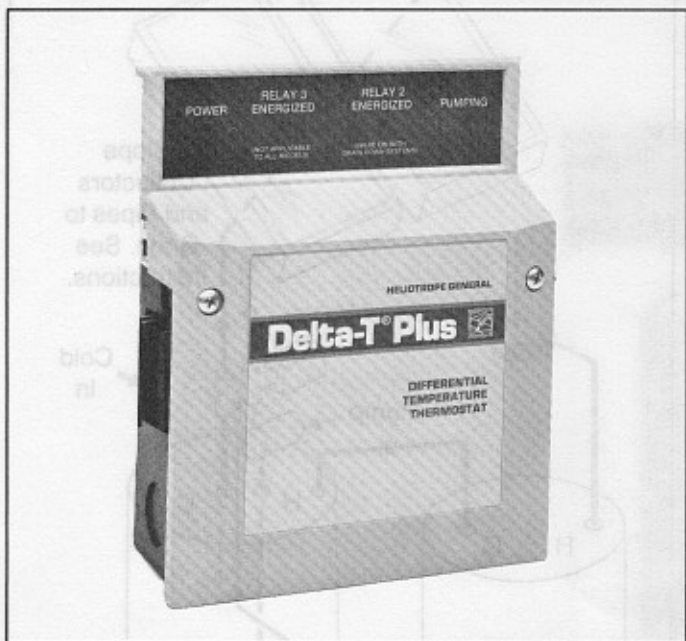
Drain Down Solar Controller

The name means reliability.

**HELIOTROPE
GENERAL**

3733 Kenora Dr.
Spring Valley, CA 92077

(800) 552-8838 (619) 460-3930



The DTT-74 series controller is for use with a 115 VAC circulation pump and either the HG Spool 115 VAC or HG Spool 12 VAC drain down valve. When the 115 VAC valve is used the interconnection between the controller and valve is hard wired or line cord connected. When the 12 VAC valve is used the interconnection is low voltage and the valve wiring is connected to a plug which plugs into the mating connector on the side of the DTT-74 series enclosure. The DTT-74 is the culmination of years of accumulative data on the best method of control logic for drain-down systems. The DTT-74 assures proper performance and protection from freeze damage without the need for redundant freeze sensors.

CONTROL LOGIC

Valve Start-Up Activation

With an empty collector the valve will open when the collector has reached 80 degrees and will remain open for a mandatory 45 minutes. This time interval is required to prevent the collector prematurely draining when cold incoming water cools the empty collector below 55 degrees.

Pump Start-Up

Once the valve is activated to open, the pump is allowed to turn on after a 10 minute wait. The pump will turn on when the collector is 15 degrees or more warmer than storage.

Pump Turn Off

When the collector becomes less than 3 degrees warmer than the storage the pump turns off.

Storage High Limit Off

When the storage reaches a selectable high limit of 160-180 degrees, the control goes into the collector drain strategy. The valve is immediately deactivated and because the valve takes approximately 10 minutes to fully drain the pump is required to run for 10 minutes after High Limit has been reached. This pumping is required to prevent the collector from reaching very high stagnation temperatures during the 10 minute valve drain period. Stagnation temperatures are harmful to the collector plumbing, air vent and T & P Valves, and the drain down valve itself.

The hysteresis of the high limit is set at 30 degrees to prevent refilling of the collector upon minimal water usage.

End of Solar Day Valve De-Activation

Upon decreasing collector temperatures the valve will close when the collector has reached 55 degrees.

VACUUM RELIEF AND AIR VENT

Because of the nearly daily draining and refilling of the solar collectors it is extremely important to use high quality air vent and vacuum relief valves. To completely evacuate air from the solar collectors, during fill, thus achieving full pumped flow without any air block the Vent-Vac™ is highly recommended. Mount the Vent-Vac™ at the highest point of the collectors.

COMMON DTT-74/DTT-794 FEATURES

The low voltage sensors hook-up with plug-in connectors. The sensor leads are screw attached to the connectors and the connectors are plugged into the mating halves which are mounted on the circuit board.

Both pump and valve relays are 1/3 HP and constructed with silver cadmium oxide contacts and rated at a full 10 Amps. Because relay life is a function of contact size and type of material, the full 10 Amp rating of the DTT-74/794 relays insure a longer life than relays which are rated at less than 10 Amps.

The board lifts out and can be replaced in minutes in the unlikely event that a failure occurs. The circuit board is field replaceable. To replace a board merely remove the sensor plugs, disconnect the high voltage wires and remove the retaining screws. Due to the complexity of the circuitry, replacement boards are available at low cost to solar contractors.

TRANSIENT PROTECTION AND OTHER PHENOMENA

The DDT-74 controller utilizes several methods of input protection which go beyond typical design criteria. These methods include a Transzorb voltage clamping component or a metal oxide varistor on power inputs. Suppression front-end circuitry buffers the sensor input lines so that shielded wire is unnecessary for any conditions. This buffering is achieved through a protected voltage follower operational amplifier.

ORDERING INFORMATION

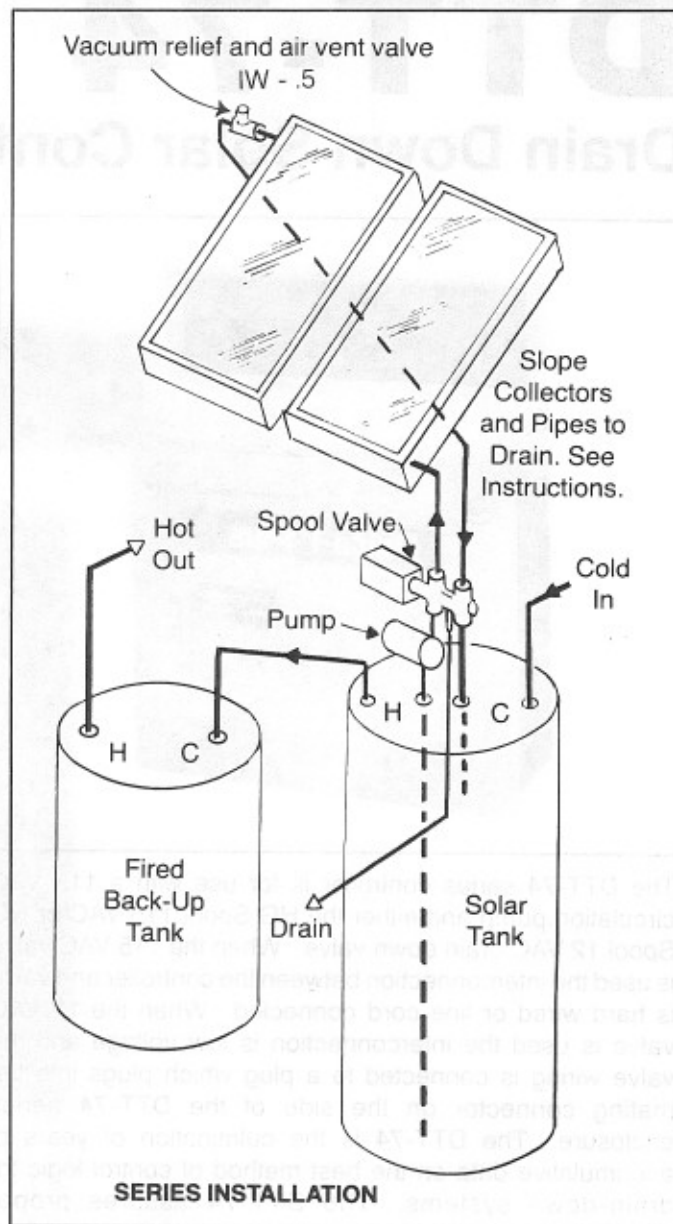
DDT-74 Hard wired model
DDT-794 Line cord and dual receptacle
SAS-10 Sensor (10K) Two sensors are required

QUALITY CONTROL AND WARRANTY

Extreme emphasis is placed on quality control at Heliotrope General. There are a number of quality control steps in the manufacturing of every Delta-T controller, from verification of components specifications from outside sources, to numerous in-process inspections and then final inspection of each control before it is finally packaged for shipment.

As a direct result of this quality control emphasis, all Delta-T controls carry a ten year limited warranty. During the first year repair or replacement will be made at no charge.

For years 2 through 5 repair will be made for a service fee not to exceed 25% of the current list price and for years 6 through 10 for a service fee not to exceed 50% of the current list price. Ask for a copy of the warranty for full details.



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3733 KENORA DRIVE
SPRING VALLEY, CA 91977
(619) 460-3930

TOLL FREE: (800) 552-8838
FAX (619) 460-9211