



## **COLLECTION BOTTLE ROTATOR—MODEL 1512**

### *Instructions*

### **Description**

The Collection Bottle Rotator (Model 1512) is a device which allows segregating the catch of any of our miniature mechanical or pheromone traps or a collection device of your design into 8 bottles over periods of time determined by a programmable timer. The design permits almost complete flexibility in the collection schedule which may range in total length from a few hours (or even minutes) to weeks. Timer accuracy is  $\pm 4$  minutes per year. An internal capacitor maintains the current date/time and switching program for several months (100 days) without external power. The Collection Bottle Rotator (CBR) requires 12 VDC and supplies timer-switched 12 VDC power to the trap via the 5-way binding posts on the top of the housing. With the option of the Constant Voltage Power Supply (PN: 8.07) the output of the 5-way binding posts is automatically regulated to 6.1 VDC so any of our 6-volt traps can be used without modification. The output voltage will be specified with a label next to the binding posts.

### **Electrical Requirements and Connections**

The timer circuit and the gearmotor of the Collection Bottle Rotator (CBR) require 12 VDC; when the gearmotor is not turning, the timer takes 0.01 amps and when the gearmotor is moving the platen the total is 0.15 amps. The size, i.e., the amp-hour rating, of the battery is determined by the requirement of the attached trap.

The external gray cord set with its red and black leads is used to attach the unit to the battery. The color-coded terminals on the top of the unit provide timer-switched 12 VDC power to the trap which is installed into the top of the Collection Bottle Rotator. This 12 VDC is appropriate for any of our 12 volt blacklight traps. The standard CDC Miniature Light Trap, Model 512, however, requires 6 VDC. Users can order a Model 512 modified to operate on 12 VDC from us for use with the Collection Bottle Rotator or modify one of their own by using a 12-volt/330-mAmps bulb (CM-1816) and installing a 10-wt/50- $\Omega$  resistor in series with the motor—call if you need parts and/or some help. The other option is specifying the optional Constant Voltage Power Supply (PN: 8.07).

The CBR and power supply terminals are protected with a 10-amp fuse that is mounted in-line at the battery-terminal end of the power cord. When the CBR is not powering a trap, it takes 0.01 amps to power the timer; when the platen moves from one position to the next the unit requires 0.14 amps for 4-5 seconds.

### **Operation**

#### *Outdoor mounting*

The central stainless steel rod extending from underneath the Collection Bottle Rotator is used to support the unit and associated trap; the diameter is 0.50" (18 mm). This should be inserted into a user-supplied piece of pipe or wood which has been driven into the ground. It is important that the platen of the CBR is horizontal and that the power supply cord and the support do not interfere with the rotation of the bottles. Take care that when inserting the shaft of the rotator into your holder that you do not drive the shaft collar up and make the platen bind.

## ***Installing the trap and filling collection bottles***

Insert the base of your trap into the screened holder located on the top of the CBR unit; the inside diameter of the holder is 3.87" (98 mm). Secure the trap with the thumb screws. You can fill the collection bottles with a few ounces of water or a water and alcohol solution and then screw them into the jar lids fastened to the bottom side of the platen; some users collect into dry bottles by using a DDVP-based material (Hercon Vaportape, Great Lakes IPM, (517) 268-5693) to provide knock-down. However, in early 2005, we modified the mechanism so that after collecting into a bottle, and the program calls for power to be shut off to the trap, the platen will rotate to the next bottle and stop; the previous catch is prevented from flying out, the bottle now being covered with the internal cover over all bottles except the one under the trap. Note that after collecting into the eighth bottle, bottle one will be brought under the inactivated trap, possibly permitting the loss of catch from this bottle.

## ***Electrical connections***

If your collection device requires 12 VDC power, connect it to the switched power supply terminals on the top of the CBR. The gray power supply cord of the CBR is connected to a 12 VDC battery. The red lead is positive (+) and the black lead in negative (-); connecting the CBR to the battery with reversed polarity will not harm the unit, but, it will not run either.

## ***Manual movement of bottles***

The bottle positions are marked consecutively from 1 to 8 on the underside of the bottle platen. There is a small push button switch located near the trap holder on the top of the CBR housing. With the CBR connected to power, momentarily pressing this for about one second will rotate the platen one bottle. Each time the switch is pressed and held closed for *ca.* one second, the platen will rotate, automatically stopping when the next bottle comes into position under the trap.

## ***Operation of the timer unit<sup>1</sup>***

### **Battery backup of timer data**

The timer module is located in the small white screw-top container on top of the CBR housing. If the CBR is disconnected from an external power source for several months, the internal capacitor will completely discharge and the LCD display, the switching program and the date/time information will be lost; the backup capacitor will maintain date, time, and program for 100 days but only if fully charged at the onset. Once the unit is reconnected to a 12 VDC source, it may take a few moments for the timer display to become visible. The internal backup capacitor alone will not run the CBR; even if you do not need power for your trap, the CBR requires 12 VDC to operate the gearmotor and to energize the switch relay in the timer module.

*Be careful to keep the timer enclosure tightly closed when in operation, the circuitry can stand humidity but not rainfall on to the face of the timer itself.*

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<sup>1</sup> The Grässlin timer (model FM1D14-12) in current CBRs replaced the timers used previously during September 2013.

## Setting the time of day and the day of the week

1. Connect the CBR to an external 12 volt DC power source and wait for the display to become visible.
2. Press and release the **Reset** button with a blunt object to reset the unit. The timer screen will flash.
3. Press and release simultaneously the  $\ominus$  and **h+** buttons to access the 12:00 AM screen. Release the two buttons.
4. Take one of these actions:
5. Press and hold the  $\ominus$  button while you repeatedly press the **h+** button until you advance to the current hour.
6. Press and hold the  $\ominus$  button while you repeatedly press the **m+** button until you advance to the current minute of the hour.
7. Press and hold the  $\ominus$  button while you repeatedly press the **Day** button until you advance to the current day of the week.



If...	Then...
Your time zone currently is in Daylight Savings Time	Press the <b>+h</b> button and go to the next step (5).
Your time zone is not in Daylight Savings Time	Go to the next step (5).

## Programming on and off times to move the platen and turn the 5-way binding posts on and off.

Using the push button switch on the top of the CBR housing, rotate the platen until the bottle location “1” is under the funnel and trap; the external battery must be connected to do this. The first ON time programmed into the timer will start the trap filling into bottle “1”; the corresponding OFF time will shut off the trap (binding posts not powered) AND the platen will move one bottle, to number 2. Moving the platen after an ON period moves the bottle hole under the donut laying on the top side of the platen.

Note: The Grässlin timer was primarily designed to program start and stop times and days for air conditioners, etc. Hence you will see below the ability to select multiple days for each particular ON/OFF. Most programming their Grässlin for CBR studies will either program it for a particular day or for all days of the week so that any day you connect external power the program of OFFs and ONs will be executed that day. Also, mid-2013 Grässlin modified the timer to be much simpler to program and reduced the number of sets of ON/OFFs to be only seven.

1. Press the **Timer** button; dashed lines (---) appear to indicate no ON or OFF event is programmed for event 1.
2. Press the **Day** button to select the days of the week for the ON event; repeatedly pressing this button will give you a number of options:

Trap ON a specific day	Select: The desired day, <b>MO, FR</b> , etc.
Trap ON every day of the week	Select: <b>MO, TU, WE, TH, FR, SA, SU</b>
Trap ON every weekday	Select: <b>MO, TU, WE, TH, FR</b>
Trap ON every weekend	Select: <b>SA, SU</b>
Trap ON Monday thru Saturday	Select: <b>MO, TU, WE, TH, FR, SA</b>
Trap ON Monday, Wednesday, and Friday	Select: <b>MO, WE, FR</b>

3. Press the **h+** button to scroll to the desired hour for the ON event.
4. Press the **m+** button to scroll to the desired minutes for the ON event.
5. Press the **Timer** button again to advance to the OFF event screen.
6. Press the **h+** button to scroll to the desired hour for the associated OFF event.
7. Press the **m+** button to scroll to the desired minutes for the OFF event.
8. If you need to program another ON/OFF event, i.e., for the next bottle, press the **Timer** button to advance to the next event ON screen and repeat steps 2-7 above.
9. If you want to delete a particular ON/OFF event, repeatedly press the **Timer** button to scroll to the event and then press **OVR** to delete. You may need to delete both the ON event and its associated OFF. When modifications are complete press the  $\ominus$  button to return to the time of day screen.
10. If you want to edit a particular ON or OFF event, repeatedly press the **Timer** button to scroll to the event and then press as needed the **Day**, **h+**, and/or the **m+** buttons set new time and day. Press the  $\ominus$  button to return to the time of day screen.
11. When out of the program mode, the **OVR** button will manually override the program so you can manually turn the switch of the timer to ON or OFF; once pressed, the display will show **OVR** in the top left of the display. The display of **OVR** will disappear when the timer executes the next program ON or OFF.

### Traps available for use with the Collection Bottle Rotator

1. The **CDC Miniature Light Trap, Model 512**. The **Model 512** is an improved version of the mosquito light trap developed by scientists from the Centers for Disease Control (CDC) . The trap was designed for mosquito abatement operations and arbovirus survey purposes. It is constructed of an acrylic cylinder housing a small motor/fan. Attraction is from an incandescent bulb. The trap is covered by a rainshield. The unit can be supplied for 12 VDC operation for use with the CBR.
2. The **Miniature DownDraft Blacklight Trap, Model 912**. Similar in construction to the **Model 512**, this trap employs a 4-wt blacklight tube and a very efficient transistorized inverter-ballast to provide radiation in the near-UV range (ca. 320-420 nm). Blacklight is attractive to a great diversity of insects of medical, veterinarian, and agricultural importance. The trap requires 12 VDC and ca. 500 mAmps/hour to operate.

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