

Owner's Manual

Installation, Operation, and Maintenance WEDECO Ideal Horizons ME, MWE Models

IMPORTANT: *Anyone responsible for installation, maintenance or operation of this equipment must have a thorough understanding of the instructions and safety requirements before attempting to install or service this unit.*

KEEP THIS MANUAL HANDY
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Please keep this manual with or near your WEDECO Ideal Horizons equipment to provide a quick and accurate reference.

Model Types

The ME and MWE series are designed for point-of-use or point-of-entry system applications. The water contact vessel is fabricated out of 304 stainless steel. All models are constructed utilizing plasma fusion welding, providing strong food-grade, uncontaminated welds. All models meet primary requirements for bacteria reduction in potable water supplies.

ME MODELS

The ME series offers a failsafe design when used with an N.C. Solenoid Valve. The ultraviolet intensity meter is incorporated with this system as a package design. The meter board and electronics are combined with the electronics of the unit within the electrical enclosure. The LED display is connected to the unit with a 10' cable for remote mounting in a location that will allow convenient access to view the display.

MWE MODELS

In addition to the features of the ME Model, the **MWE** models provide a quartz sleeve wiper system to be used where frequent cleaning of the quartz sleeve is needed. The **MWE** series has a removable flanged head on the vessel to allow interior access for inspection and cleaning.

Please read the following instructions carefully before installing or servicing your unit.

Applications

Ultraviolet Germicidal Disinfection

WEDECO Ideal Horizons Ultraviolet Disinfection Units are designed to destroy micro-organisms in water supplies. The Ultraviolet lamp peak radiation of 254 nanometer wavelength (nm) destroys or inactivates the DNA (deoxyribonucleic acid) which absorbs the Ultraviolet radiation. DNA is the major constituent of all micro-organisms. WEDECO Ideal Horizons Germicidal Disinfection units meet minimum dosages of 30,000 microwatt seconds per square centimeter.

INSTALLATION INSTRUCTIONS

This unit is designed to be installed in the vertical position (electrical box on top). The unit should be securely anchored. Mounting holes are provided in the electrical box underneath the lid. Allow enough clearance above the unit to allow removal of the quartz (length of unit plus four inches).

IMPORTANT: Please regard the following safety precautions and preparation requirements seriously. **Failure to comply will affect your safety or system performance, and can invalidate your warranty.**

The following restrictions apply to all standard models regardless of application. **Upon request, WEDECO Ideal Horizons can design systems to perform beyond some thresholds stated below.** However, unless your model includes written authorization to operate beyond specific restriction, these restrictions supersede all claims.

Safety Precautions

1. **Never look at ultraviolet light with the naked eye.** The light will cause burning and irritation to unprotected eyes and skin. View light only through an authorized ultraviolet face mask.
2. **Always shut off and disconnect power before servicing unit.**
3. **Always depressurize unit before servicing.**
4. Make sure power to the **equipment matches the voltage requirements** of the unit on name plate. Make sure unit is **properly grounded**. Use of a ground fault protected circuit, voltage surge protector is recommended.
5. **Only authorized personnel possessing a strong understanding of the information in this manual should attempt to work on this equipment.**
6. If you have any questions relating to proper maintenance or operating procedures, contact the factory before servicing unit.

Preparation Requirements

1. Vibration of ultraviolet equipment will damage lamps and lead to premature system failure. **Choose a location for your WEDECO Ideal Horizons unit isolated from vibration.** Potential vibration sources include heavy equipment, poorly connected pipes and erratic or improper pumps.

Install the unit as close as possible to the point of use. Operating pressure should not exceed 125 PSI. A water hammer may cause o-ring failure. If your system is subject to water hammer conditions, we recommend that you install a water surge suppressor.

2. **The unit is designed to be installed vertically (electrical box on top) or horizontally**, using the brackets provided with a clearance at the head end at least equal to the overall length of the chamber.

Flow direction enters the unit through the side inlet and exits through the side outlet. When mounting unit, please allow room above and below to service the filter, quartz sleeve, and lamp.

3. **Temperature:** Inlet water temperature should not exceed 100°F. Ambient temperatures in the area surrounding the Ultraviolet unit should be between 25° - 90°F.
4. **Check ultraviolet unit and components.** The lamps, quartz, and o-rings are packed separately. Lamps and quartz should be handled with clean cotton gloves. Care should be taken that fingerprints are not left on lamps and quartz. Clean with denatured alcohol.
5. **Be sure transmission of water meets acceptable standards.**

RECOMMENDED MAXIMUM CONCENTRATION LEVELS

BEFORE ULTRAVIOLET INFLUENT
FOR STANDARD APPLICATIONS

Turbidity	5 NTU	Maximum
Suspended Solids	10 mg/l	Maximum
Color	None	Maximum
Iron	0.3 ppm	Maximum
Manganese	0.05 mg/l	Maximum
Ph	6.5 - 9.5	Maximum
Hardness	7 Grains	Maximum

6. Flow rate must not exceed rated capacity.
7. Before using the ultraviolet treatment unit, **sanitize the unit** through all the discharge piping and fittings to the point(s) of use. Using a sanitizing solution to remove any existing contaminants will give the unit a "clean start". Once sanitized, turn on ultraviolet unit and flush out the sanitizing solution with ultraviolet treated water.
8. **Adhere to the Maintenance Procedures** as provided.

INSTALLATION OF QUARTZ SLEEVES

The quartz sleeve surrounds the lamp and prevents water from contacting the lamp and the electrical enclosure. **WEDECO Ideal Horizons** uses sleeves made of pure-fused quartz which allows 95 percent of the ultraviolet light to pass through.

The quartz must be kept clean and free of organic build-up to ensure optimum ultraviolet output. The quartz sleeves require manual or mechanical periodic cleaning with the frequency of such cleanings determined by the quality of the water passing through the system.

After the ultraviolet unit has been secured and the inlet/outlet piping connections have been made, remove lamp/quartz cover and gland nut from the end of the disinfection unit. **FRAGILE:** Take great care when removing the quartz sleeves from the packing carton.

Slowly and carefully slide the quartz through the head (and wiper assembly for **MWE** units) until it sticks beyond the nipple of the chamber. Place the o-ring over the end of the quartz and push the o-ring back until it stops at the nipple.

Be very careful when installing the gland nut over the quartz sleeve. Tighten the gland nut by hand. **NEVER USE PLIERS OR A CHANNEL LOCK.** Make sure as you tighten the gland nut that you maintain a clearance between the stop ridge machined in the gland nut and the edge of the quartz sleeve.

After you have tightened the gland nut and all other plumbing connections, open the outlet valve. Slowly open the inlet valve and flush out all remaining air. Then, close the outlet valve and slowly open the inlet valve fully. Check the unit for leaks. If you find a leak at the gland nut, tighten the nut further. If the leak continues, drain the unit and inspect the quartz o-ring and quartz sleeve for possible damage. Once you complete checking the unit, carefully reassemble o-ring and tighten gland nut. Repressurize the unit and check again for leaks.

INSTALLING THE ULTRAVIOLET LAMPS

Take care when removing the ultraviolet lamp from the packing carton. Remove all paper and warning tags. Slowly and carefully slide the lamp into the quartz sleeve. Attach the ultraviolet lamp socket and ensure contact with the ultraviolet lamp pin.

Push the ultraviolet lamp into the quartz sleeve.

OPERATION

Keys to Successful Operation

1. Establish and implement a routine physical monitoring and maintenance schedule.
2. Monitor the LED lamp display on the electrical enclosure. Immediately replace any failed lamp.
3. Measure the performance of the Ultraviolet treatment unit at scheduled intervals to ensure the effluent meets quality requirements.

MANUAL QUARTZ SLEEVE WIPER ASSEMBLY (MWE Series Only)

The manual quartz sleeve wiper is a manually-operated push/pull system. A wiper rod attaches through the nipple flange to a series of wiper plate discs with EPDM wiper rings. The quartz sleeves are inserted through the wiper rings in the wiper assembly (see quartz sleeve installation).

The influent water quality will determine the necessary frequency of operating the manual wiper. **WEDECO Ideal Horizons** recommends the wiper be stroked weekly or more often as the water condition requires. Operate the wiper with a straight, even stroke.

DOMESTIC NARROW BAND ULTRAVIOLET METER

OPERATION/CALIBRATION INSTRUCTIONS

Note: The meter is calibrated with the use of an International Light Meter Model 1350 Radiometer/Photometer and preset at the factory. Minor adjustments may be required during start-up procedures. Only qualified personnel should attempt calibration procedures. Consult the factory if questions arise.

The ultraviolet meter can only be calibrated when the power is in the ON position and the ultraviolet lamp is on and operational. Lamps must be allowed to warm up for two minutes prior to any calibrations.

1. Locate the UV meter board inside the electrical enclosure PCB0031 (large board).
2. To set the low ultraviolet intensity alarm, move the run/set switch located on the circuit board to the set position. The LED display should indicate a reading of 60%. If the actual operational UV output falls below this point, the alarm will sound and relays will switch.
3. Adjustment of the low ultraviolet setpoint on the meter can be made by adjusting the potentiometer marked SET (Note – the markings for the switch and potentiometers are on the circuit board).

Turn to right for Up Scale.

Turn to left for Down Scale.

Final adjustment should be at the 60% bar.

4. Move the run/set switch back to the run position.
5. Adjustment for normal operations on the 0-100% meter scale can be made by adjusting the potentiometer located on the circuit board marked SCALE up to the 100% level.

Turn to the right for Up Scale.

Turn to the left for Down Scale.

Note - Final adjustment should be made after an initial ultraviolet lamp burn-in of 100 hours. Adjustment up to the 100% level must be made with water running through the unit. The ultraviolet meter is now calibrated.

There is a 30 second time delay after the ultraviolet dosage level exceeds the low ultraviolet intensity alarm setpoint. This is built in at the factory as a safety margin to insure optimum ultraviolet dosage levels. After 30 seconds, the low ultraviolet intensity alarm will turn off.

SOLENOID VALVE CONNECTIONS

Terminals are provided to allow for normally open and normally closed accessories to be installed on the system. The 5 amp contacts provided are energized with the incoming line voltage. For example, you can install a green indicator lamp to monitor safe operation remotely by connecting to the normally open contracts. An additional audible alarm or red lamp to alert failure can be connected to the normally closed contacts. A fail safe design would incorporate a normally closed solenoid valve connected to the normally open contacts. There is a removable plug in the bottom of the electrical enclosure on **ME/MWE 4-20GPM** to allow wiring to pass through. The removable plug is located next to the power cord (side of unit) on **ME/MWE 30, 45, 60GPM**.

ME, MWE 4-20GPM

For the single lamp models all performance monitoring for alarm conditions is done through the UV meter board. Lamp failure would trigger an alarm condition as would a low UV indication for a variety of reasons. There is a green LED provided to indicate the lamp is operational. The remote UV display indicates relative UV intensity of the system. The audible alarm and contacts are provided on the UV meter board.

Terminal #8 on PCB0031 (large circuit board) is for the neutral wire.

Terminal #13 on PCB0031 (large circuit board) is the hot normally open connection.

Terminal #12 on PCB0031 (large circuit board) is the hot normally closed connection.

To hook up a lead, simply lift the white tab, insert wire and push the tab back down to lock the wire.

*Note: A normally closed solenoid valve must be wired to the normally open contacts (#8 & #13).

ME, MWE 30-60GPM

The multiple lamp systems are equipped with a UV meter board along with a lamp status alarm board. The meter board monitors the UV intensity and the lamp status board monitors the individual lamps for operational status. The alarm functions of the UV meter board are sent to the lamp status board to trigger alarm contacts. A green LED indicates lamp status. The remote UV display indicates relative UV intensity of the system. An audible alarm will sound to indicate failure of either system.

Terminal #1 on PCB0046 (board at top of enclosure) is for the neutral wire.

Terminal #14 on PCB0046 is for the normally open connections.

Terminal #15 on PCB0046 is for the normally closed connection.

***Note: A normally closed solenoid valve must be wired to the normally open contacts (#1 & #14).**

WATER SAMPLING

SAMPLING VALVES

WEDECO Ideal Horizons recommends installation of sampling valves on the inlet and outlet sample ports located on the ultraviolet unit. The wetted material should be 304 stainless steel construction or PVC ball valve. A minimal length of thread connections of the sample valve port should be maintained to reduce the dead volume on the upstream side of the valve. The inside diameter of the sample valve must not exceed one quarter inch (1/4") to insure proper velocity. Any valve used for sampling should be constructed in a manner to reduce or prevent the retention of bacteria within its internal surfaces. The valve should also be easy to sanitize.

SAMPLING PROCEDURE

1. Prior to sampling the water, acquire an adequate supply of bacteriological monitors, total count water samplers, presterilized plastic bottles within presterilized plastic bags from a water testing laboratory.
2. With the ultraviolet system operating, open the sample valve fully and flush for at least one minute at full fast flow. Then close the valve.
3. Sanitize the valve and sampling port in accordance with the proper standards established for the specific valve installed. Isopropyl alcohol, 70% to 90%, is recommended.
4. Fully open and flush the valve again to remove any contaminants. The flushing time sequence may run from a minimum of three to five minutes. Do not reduce the water flow before taking the water sample because the back of the valve (not previously exposed) may contain contaminants. If you reduce the flow prior to taking a sample, continue to flush as before.
5. When sampling, take the measurement at the center of the stream in order to reduce the possibility of bio-fouling.
6. Follow ASTM or your bacteriological monitor manufacturer guidelines when using that monitor with a total count water sampler and a presterilized plastic bag to sample the in-line.
7. Carefully fill the presterilized bottle from the bottom up allowing the water stream to overflow and flush the bottle for a minimum of one minute.

8. Take duplicate samples at each test station during each test in order to prevent lost samples due to laboratory error and to ensure reasonable validity through comparison.
9. Handle the water sample as noted in ASTM practice D4453. The sample should be analyzed in laboratory conditions, under established guidelines, as soon as possible.
10. The test method assumes that great care and skill will be employed in obtaining the water sample and be tested. Operators must prevent container and airborne contamination and make note of possible sources of contamination due to sampling procedure (i.e., breathing in container or container lid; touching inside container or container lid; or touching stream of water to be sampled before it enters container).

MAINTENANCE

Note: *Keep a record of ultraviolet lamp replacement dates and servicing dates.*

Note: *We recommend sanitizing of the entire system after shutdown or servicing.*

Lamp Replacement

The ultraviolet lamps are rated to provide 9000 hours of continuous use. After 9000 hours the lamp hard glass sleeve will photochemically change and the lamp will not allow sufficient amount of the 254 nm or 185nm wavelength for the minimum site application requirements. The **lamps should be replaced** when any one of the following conditions occur: 9,000 hours of use have elapsed; 12 months have passed.

Lamp Cleaning Procedure

If it becomes necessary to clean the lamp due to dust or fingerprints, the lamps can be cleaned with denatured alcohol. Use clean cotton gloves and a clean cloth when cleaning the lamps. Wait for lamps to cool before cleaning.

Quartz Cleaning Procedure

Significant film or debris deposits formed on the quartz sleeves will impair the ability of the Ultraviolet rays to penetrate through the quartz and into the fluid. To a great extent, your frequency of cleaning will depend upon the water quality (i.e. amount of minerals present in the fluid). The more minerals present in the fluid the more frequently the quartz will require cleaning. A periodic visual inspection of the quartz will be necessary to determine the frequency of cleaning. Initial inspection should take place after thirty (30) days of operation. If the quartz are dirty, shorten the cleaning intervals. If the quartz are clean, lengthen the cleaning intervals.

To clean quartz sleeves, depressurize the unit by first turning off the valves on the inlet and then the outlet of the vessel. Turn off the power to the Ultraviolet unit. Drain the vessel. Remove control box cover from top of the electrical enclosure. Disconnect the lamps and slowly and carefully remove the lamps using clean cotton gloves. Remove the gland nut from the nipple. Remove quartz sleeve and o-rings from top of head. The quartz sleeves may be cleaned with denatured alcohol. If this is not adequate, a mild abrasive can be used. **FRAGILE: Be careful when handling quartz.**

Whenever the quartz are cleaned, the quartz o-rings should be replaced. Install the quartz sleeves using clean cotton gloves.

TROUBLESHOOTING: (for qualified Service Technician)

SITUATION	RECOMMENDED ACTION
Leakage	<ul style="list-style-type: none">- Check to ensure that the compression nut is tight.- Verify influent water pressure 125 PSI maximum.- Lubricate o-rings using food-grade silicone.- Carefully check quartz sleeve for possible cracks. If broken, call distributor for replacement.
Ultraviolet Lamp is Out	<ul style="list-style-type: none">- Exchange lamp connectors from questionable lamp to known good lamp. If good lamp lights, replace bad lamp.- If the lamp does not light, verify ballast output. If ballast is bad, replace ballast.- Check input voltage.
Poor Bacterial Performance	<ul style="list-style-type: none">- Ultraviolet lamps operating properly.- Lamp more than 9,000 hours old.- Influent water quality changed (i.e., more turbid, higher iron content, more color, etc.). Check filter.- Improper sampling technique.- Verify flow rate.

If questions still remain after completing a troubleshooting procedure, please contact the factory.