

OWNERS MANUAL

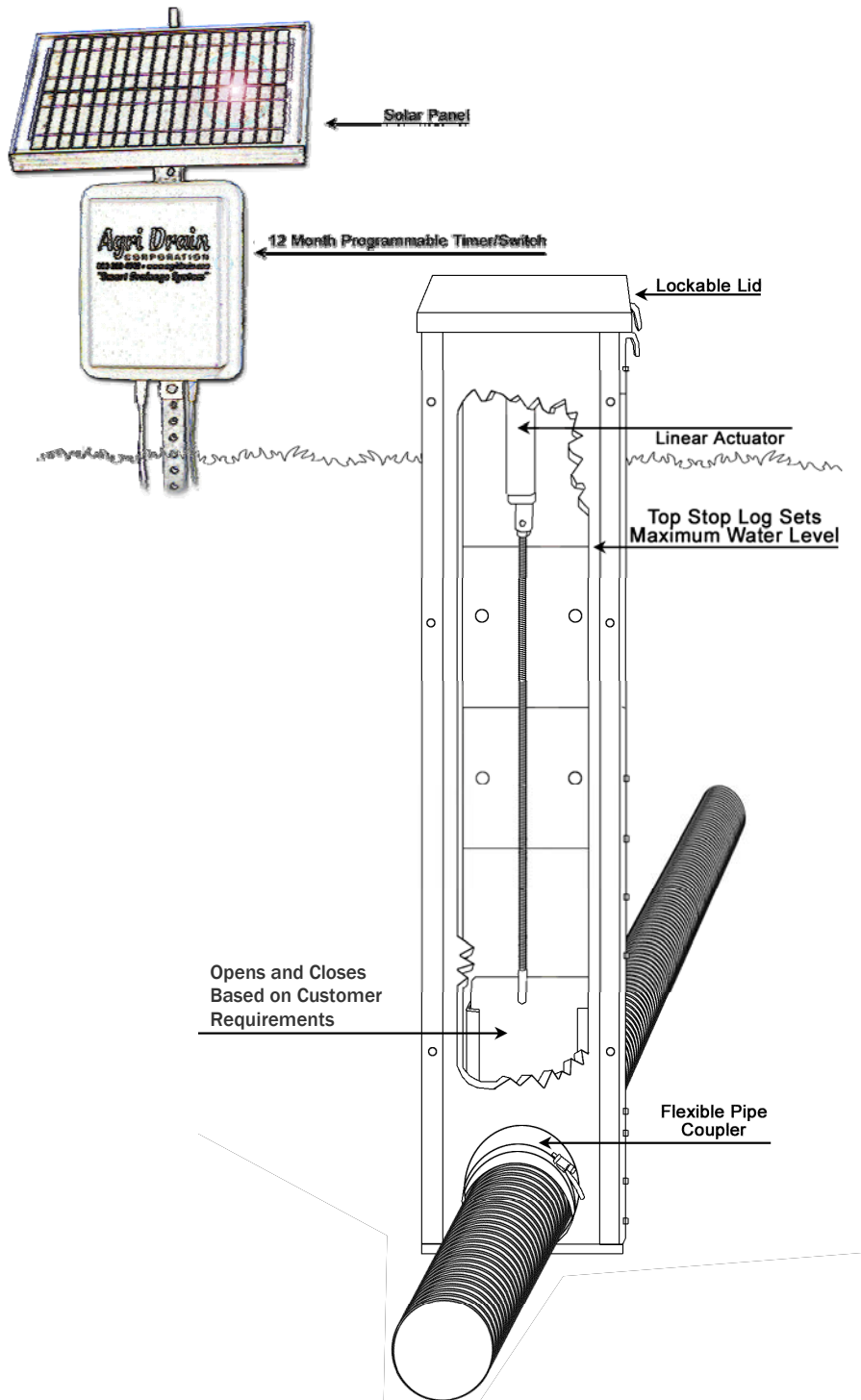
Mine Reclamation Edition



**Smart
Drainage
SYSTEM®**

Congratulations on your purchase of Agri Drain's Smart Drainage System®

Agri Drain is committed to providing high quality products with fast, friendly service and we sincerely appreciate your business. If you have any questions or comments about this or any other product we offer, please don't hesitate to call 1-800-232-4742.



OPERATING PRINCIPLE

The Agri Drain "Smart Drainage System" is designed to allow the operator to open and close the slide gate based on the desired schedule.

The steps required to program the controller for this function are explained in the "*Setting Timers*" section of this manual.

The unit has a solar panel which keeps the battery charged, a controller which is programmed to control the slide gate, and an actuator that raises and lowers the slide gate. The electronic components are housed in a weather tight enclosure.

INSTALLATION OF INLINE WATER CONTROL STRUCTURE

1.) EXCAVATION AND GRADING

The structure base, the inlet pipe, and the outlet pipe must be set on firm, flat surfaces of compacted soil or fill sand to provide a solid, stable base. This will prevent settling and reduce stress or misalignment of pipe connections.

2.) PIPE CONNECTION

Remove black tape from both inlet and outlet flex couplers exposing the stainless steel clamps. The flex couplers must be placed directly over the outside diameter of the pipes; then secured by tightening the stainless steel clamps as shown in the illustration.

3.) BACK FILL AND COMPACTION

Level the structure vertically before placing backfill. Backfill around the control structure by hand in 6" lifts. Hand tamp only - **do not** mechanically compact. **Do not** use a backhoe or blade to place backfill directly against the water control structure.

****Excessive compaction may cause structural damage or failure.**

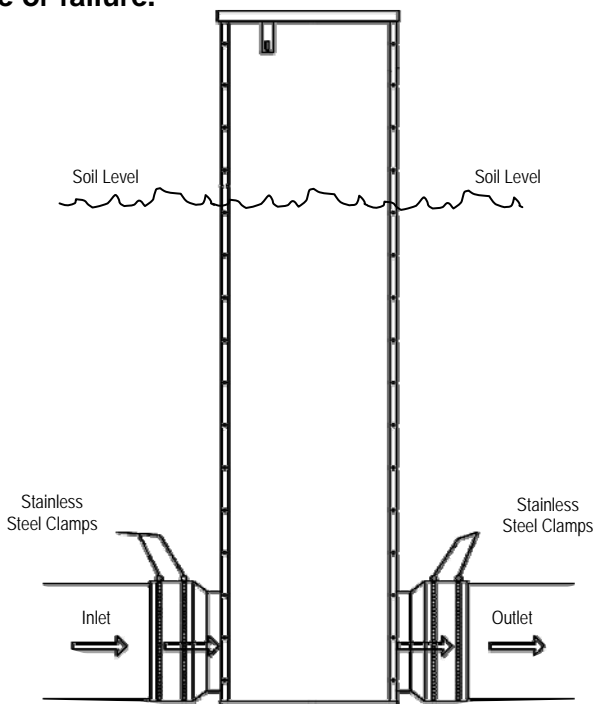
The inline structure may be used for primary or secondary outlet with larger pipe or emergency spillway as primary.

Inline structure removes sub-surface water.

On the inline installation, the inlet end of the pipe should be held off the bottom of the impoundment to allow for siltation and be protected with an inlet guard. The outlet end should be protected with a rodent guard.

In a controlled drainage or sub-surface irrigation application, the structure nearest the outlet should be installed with a minimum of 20' of non-perforated pipe on the down stream end. Anti-seep collars are recommended.

(The above mentioned companion products are available from Agri Drain Corp.)



INSTALLATION OF SOLAR PANEL & CONTROL BOX

Install the Inline water control structure as explained in *"Installation of Inline Water Control Structure"* in this manual.

There will be two pieces of square tubing: One 6' piece of 1 3/4" and One 8' piece of 1 1/2". The 6' piece of 1 3/4" should be buried next to the side of the structure that has the receptacle. (Leave about two inches sticking out of the ground.)



- Mount the solar panel and one of the "T" brackets on one end of the 1 1/2" tube using one of the 3/8" bolts and nuts provided.
- Mount the other "T" brackets to the 1 1/2" tube using one of the 3/8" bolts and nuts so that the four holes line up with the four holes on the control box. Use four of the 1/4" bolts and nuts to secure the control box to the "T" brackets. (Make sure the receptacles are on the bottom, facing the ground.)
- Insert the 1 1/2" tube with the control box and solar panel into the 1 3/4" tube in the ground. Make sure the solar panel is facing South so it receives as much sunlight as possible. Insert the remaining 3/8" bolt through the two tubes and tighten down with the nut.
(The height of the control box and solar panel is determined by placement of the bolt through the two tubes. For start-up and testing, adjust it to a point at or near eye level.)
- Connect the cable from the solar panel to the male receptacle on the control box.
- Connect the male end of the provided cable to the female receptacle on the control box. The other end of the cable connects to the receptacle on the structure.
- Open the control box and remove the packaging material.
- Connect the wires to the battery terminals. The unit is now ready to be programmed and tested.
- Set the clock, time, and date as explained in the *"Set Clock, Time, and Date"* section of this manual.
- Insure the actuator is operating correctly by using the key strokes as explained in the *"Manual Activation"* section.
- Set the timers as explained in the *"Setting Timers"* section.
- Close the control box and set to desired height.

SET CLOCK, TIME, AND DATE

When the unit is first powered up by connecting the battery, it will be necessary to insure that the correct time and date are entered into the control unit. A few seconds after the battery is connected, the screen will display Day, Time, and Date. To set the clock follow the directions below:

- Push ESC key
- Push the Down Arrow to "Set Clock"
- Push the OK key
- Arrow up or down to correct Day
- Arrow Right to set Hour (Military Time)
- Arrow up or down to correct Hour
- Arrow Right to set Minute
- Arrow up or down to correct Minute
- Arrow Right to set Year
- Arrow up or down to correct Year
- Arrow Right to set Month
- Arrow up or down to correct Month
- Arrow Right to set Day
- Arrow up or down to correct Day
- Push the OK key
- Push the ESC key



SETTING TIMERS

From the screen that displays the Day and Time, push ESC then follow directions below:

- Arrow down to "Set Param" and push the OK key
- Arrow up or down until "Open 1" is displayed (This is the open gate timer)
- To program, push the OK key
- Push the Right arrow to move the cursor to the days of the week the gate is to open
- Arrow up or down to set the day
- Arrow Right to On Time (Military Time)
- Arrow up or down to set On Time
- Push the Right arrow to set Off Time (Always set this for one minute later than On Time)
- Push the OK key after the Day, On, and Off Time has been set
- Arrow up or down until "Close 1" is displayed
- Program the Close day and time the same as the "Open 1" directions
- Push the ESC key twice to get back to the screen that displays Day and Time

SMART DRAINAGE SYSTEM[®] OPERATIONS

The slide gate movement is controlled by programming the Open and Close timers. Set the Open timer for the day and time the gate needs to open. Set the Close timer for the day and time the gate is to close. When setting the timers always set the Off Time for one minute after the On Time. The signal to move the gates will activate on the On Time and turn off on the Off Time. Set the gate movements to happen at a time of day when there is a chance of optimal sunshine. This will help to keep the battery charged.

MANUAL ACTIVATION

When the slide gate needs to be moved to a different position or tested, it can be activated at any time using the keys on the controller. From the screen that displays the date and time, push the left arrow key. The screen will display ESC+C and four directional arrows. The up arrow is used to raise the gate; the bottom arrow is used to lower the gate. To activate the gate, first push and hold the ESC key and then the arrow for the direction desired. The chosen arrow will be highlighted on the screen. Hold the arrow until the gate stops moving. There is an internal limit switch in the linear actuator that will stop the movement when fully extended or retracted. If the ESC key is held too long before a directional arrow is pressed, another screen will appear. Press the ESC key to get back to the correct screen.

LOW BATTERY

The battery voltage is monitored at all times. If the voltage drops below a certain level, the message "LOW BATTERY" will be displayed on the controller. The date and time that the incident occurred will also be displayed. This message will continue to be displayed until the voltage rises to an acceptable level and the OK key on the controller is pressed. If the battery voltage stays low for too long, the slide gate will move to a safe position.

MONITORING BATTERY VOLTAGE

Timer "Bat Volt" will display the current voltage level of the battery. Access "Bat Volt" using the same key strokes as explained earlier for "*Setting Timers*". When "Bat Volt" is displayed it will look like this:

"Bat Volt"

On = 551

Off = 550

Ax = (See below)

Ax will display the current voltage level of the battery. This value should be between 600 and 725. If the value is not in this range, please consult the factory.

PARTS LIST

Description	Part #
Battery	800218
Solar Panel	800272
Actuator	800298
Actuator Connector	800606
Fuse	800617

CONTACT INFO

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