



Instructions for Use

Contents	Page
Description	1
Changing pump tubes	1
Pump tube life	1
Safety	1
Accuracy	1
Electrical supply	1
Water flow sensor	1
Set Up Guide	2
Operation – screen controls	3
Water meter total and zero	6
Flow sensor capacities	6
Proportional dosing	6
Max. water flows for each dosing ratio	6
Alarms and warnings	6
Water line pressure	6
Constant pumping	7
Max. water flow chart	7
Rotor Adjustment	7
Encoding	7
Installation	7
Maintenance	7
Problems / errors	8

Single pump tube for all ratios.
Heavy duty motor and gearbox.

Genesis Instruments
200 Main Street
Elmwood, WI 54740

Phone: 715-953-2417
Phone: 800-826-3301
Fax: 715-953-2880
Email: sales@genesisinstruments.com

Description

The Select Doser™ 640 dosing system is a proportional additive pump designed to dispense medications, vaccines, nutritional products, acidifiers, and sanitizers into the drinking water of domestic livestock. The components include: the main pump unit, a water flow sensor, and connections to the drinking lines. There are no user serviceable parts inside the Select Doser™ 640.

Changing Pump Tubes

ENSURE EITHER THE POWER SUPPLY OR FLOW SENSOR LINE IS DISCONNECTED BEFORE CHANGING THE PUMP TUBE. OTHERWISE ROTOR TURNING IS POSSIBLE.

Removal of pump tube: Remove the pump cover (3 screws). Unclip the pump tube at the inlet. Lift out the pump tube while rotating the pump rotor by hand in a clockwise direction (or use Load Tube function). When the pump tube is clear of the rotors, completely remove the tube. Pull the old (soft) pump tube from the tube connectors.

Push the new pump tube onto the tube connectors **WITH THE WHITE TUBE RESTRAINT ON THE INLET SIDE (left side on pump head).**

Ensure that all connectors between the pump tube and delivery tubes are securely fitted. If necessary, warm the delivery tube with warm air or water to soften it to make fitting easier.

Pump Tube Life

The life of the pump tube will depend on many factors including the product being dosed, the back pressures under which the pump is working, and the amount of time the pump needs to run to perform correctly. It is suggested that, in order to maintain dosing accuracy, the pump tube is replaced on a MONTHLY BASIS or sooner if wear or disfiguration of the tube is apparent. Spare tubes are available from your pump supplier. **NOTE:** Only tubes supplied by Genesis Instruments are recommended for use in the Select Doser™ 640 system to ensure accuracy of operation.

Safety

The Select Doser™ 640 is an extremely safe unit. However, the following points should be observed:

Normal electrical safety precautions apply. Avoid water contact with any pump parts apart from the pump tube in normal working conditions. Do not immerse the Select Doser™ 640 in water.

Take precautions to ensure the Select Doser™ 640 cannot fall into the stock solution. Consider extra tethering if necessary. Cover stock solution at all times. If immersion does happen accidentally, isolate the Select Doser™ 640 from the electrical supply immediately.

The use of safety circuit breakers is recommended. If in doubt, seek advice from a qualified electrician.

Accuracy

The Select Doser™ 640 is factory set to provide accurate dosing. If, during normal operation, the output needs to be increased or decreased slightly, this can be achieved using the screen command "Adjust %".

Electrical Supply

The Select Doser™ 640 uses a 12V DC power supply. This can either be supplied from a 12V battery or a transformer power supply from the main electricity supply.

A 4.0 Amp maximum current power supply is recommended. The Select Doser™ 640 normally runs below 2.0 Amps although starting currents are larger and dependant on the pumping conditions encountered.

The Water Flow Sensor

The Select Doser™ 640 is available with one of three water flow sensors:

- Sensor 1 registers water flow at less than 1 gal/hour and is fully accurate from 3 gal/hour to 300 gal/hour.
- Sensor 2 registers water flow at 3 gal/hour and is fully accurate from 10 gal/hour to 450 gal/hour.
- Sensor 3 registers water flow at 10 gal/hour and is fully accurate from 50 gal/hour to 2,500 gal/hour.

The standard VTY10 sensor will withstand pressures up to 90psi.

Water flow should be in the direction of the arrow on the sensor.

Several flow sensors can be pre-installed in different drinking lines along with connection points for the additive delivery tube. Lines can then be individually medicated.

Select Doser™ 640 Set Up Guide



Unpack the 10 ft delivery tube.



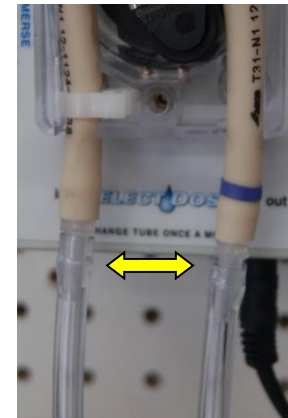
Cut length necessary to reach from the stock container to the inlet end of the pump tube. Cut tubing to reach from the outlet end of the pump tube to the check valve assembly to the quick fit male connector.



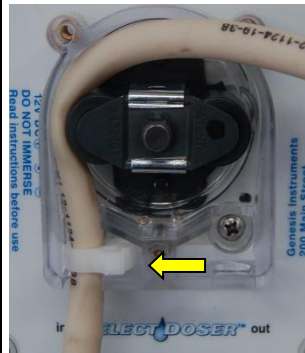
Fit the check valve assembly into the quick-connect in the sensor assembly.



Remove the 3 screws holding the pump cover in place and remove cover.



Using the tube connectors provided, connect the pump tube as shown.



Place the tube restraint in the left hand (IN) side of the pump head as shown. Select "Yes" from the "Load Tube?" screen.



With the rollers pulsing, guide the pump tube around the rollers until it lays in the output notch on the right side of the pump housing.

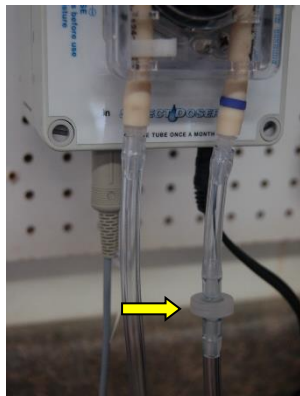
CAUTION: WATCH YOUR FINGERS!



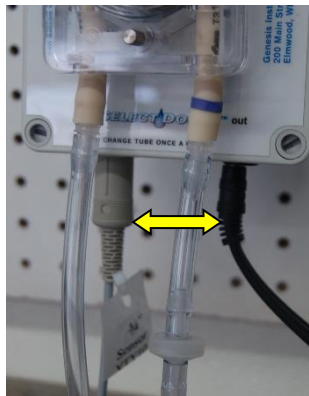
Replace the pump cover and the 3 screws. The tube can be primed using the on-screen controls once the cover is re-fitted.



To fit the check valve, cut a piece off the clear tubing long enough to reach from the OUTSIDE of the pump tube to the valve.



Finish connecting the tube as shown.



Connect the flow sensor plug along with the power supply.

Follow the on-screen controls described in the following pages to complete the set-up.

Operation

When the electric supply is first connected, the version of the programming will be shown.

<p>This is the Welcome Screen, To see the options available press "Set" (Options). To start dosing immediately, press "Adjust (Start)". Unit will state if programmed in Gallons or Litres.</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>STD Gal 1001</p> <p>Start Options</p> </div>
<p>If the "Options" button is pressed, the first option is to choose if the doser will continue to dose in a situation when the water flow is out of range (too high). Press Adjust until Y (yes) or N (No) is displayed. When choosing Y, the doser will run constantly during high water flow. With N the doser will stop dosing and return to the Welcome Screen during high water flow.</p> <p>Press Set with the correct Y or N shown.</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Doser options</p> <p>Cont at Hi Flo Y</p> </div>
<p>Where tube fracture alarm option is fitted, press Adjust to select either Y to enable (activate) the tube burst function, or N to cancel it. If the tube burst device is not fitted, you must select "N".</p> <p>Then press Set.</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Doser options</p> <p>Tube Burst En. Y</p> </div>
<p>New Diagnostic tool has been incorporated into the newer Select Doser™ 640. See Pumping Problems/Errors to set up this option. Then press Set to return to the Welcome Screen.</p> <p>At the Welcome Screen, press Start.</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Doser options</p> <p>Test Mode? N</p> </div>
<p>IF ONLY WATER METERING (NO DOSING) IS DESIRED,</p> <p>Press Adjust (Meter).</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Select</p> <p>Meter Dose</p> </div>
<p>Press Adjust repeatedly until the correct flow sensor number (the one to be connected to the doser) is shown. Not all flow sensors will be offered.</p> <p>Then press Set.</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Sensor Type</p> <p>3</p> </div>
<p>The Select Doser™ 640 is also a water meter. If you wish to reduce the water total to zero, press Set. If you wish to keep the water total already recorded, press Adjust.</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Zero water tot?</p> <p>No Yes</p> </div>

<p>This is the metering screen. The flow rate of water is 4,740 gallons per hour, Sensor 3 has been selected, and the total on the water meter is 108 gallons.</p> <p>Press and hold the Adjust button for a short time to exit this screen.</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Meter only 4740H</p> <p>00000108T S3</p> </div>
<p>TO DOSE PRODUCT USING THE SELECT DOSER™ 640,</p> <p>Press Set (Dose) to start the dosing process.</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Select</p> <p>Meter Dose</p> </div>
<p>First choose the flow sensor that is to be connected to the doser (it will be written on a tag attached to the sensor plug).</p> <p>Then press Set.</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Sensor Type?</p> <p>3</p> </div>
<p>By pressing Adjust repeatedly, the available ratios are shown. When the desired ratio is shown, press Set.</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Ratio 1:?</p> <p>1K</p> </div>
<p>Ratio of 1:1000 will be shown as displayed on this screen where K is the abbreviation for thousand. 12K5 is 1:12,500, 20K is 1:20,000.</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Ratio 1:?</p> <p>12K5</p> </div>
<p>Once the desired ratio has been chosen, the correct tube to fit is displayed. Fit the correct color pump tube as described on the Select Doser™ 640 Set Up Guide on page 2.</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>1:50</p> <p>Use tube: Purple</p> </div>
<p>Pump tubes may be slightly too large or too small after manufacture. The correction for this is shown as % Adjust on the packet that the tube was supplied in. Press Adjust to scroll from -20% to +20% until the correct tube adjust is shown. Then press Set.</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Adjust %</p> <p>-5%</p> </div>
<p>The Select Doser™ 640 is also a water meter. If you wish to reduce the water total to zero, press Set. If you wish to keep the water total already recorded, press Adjust.</p> <p>The water total is updated every 5 minutes. Short recording times may lose a small amount of water data.</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Zero water tot?</p> <p>No Yes</p> </div>
<p>To load a new tube in the pump head, press Yes to start the rotor pulse turning to assist in the loading procedure.</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Load tube?</p> <p>No Yes</p> </div>

<p>Once the tube is loaded and level, press Stop.</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Loading...</p> <p>Stop</p> </div>
<p>In order to fill up the delivery tube with the product to be dosed, press Set (Yes). The pump will run constantly to fill the delivery tube. Press No if tube filling is not required.</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Prime pump?</p> <p>No Yes</p> </div>
<p>This screen will be shown while the pump is running to fill the delivery tube. Press Stop once the tube is filled to the injection assembly.</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Priming...</p> <p>Stop</p> </div>
<p>For the first few seconds, this screen will be shown. The doser is collecting water flow information before dosing commences.</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>1K Ppl -5 0H</p> <p>Dosing... S3</p> </div>
<p>This is the normal dosing screen. A ratio of 1:1000 has been selected, the water flow rate is 420 gallons per hour, the water meter is showing a total of 106 gallons, and Sensor 3 has been chosen.</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>1K Ppl -5 420H</p> <p>00000106T S3</p> </div>
<p>If the water flow is too high for the doser to be able to dose correctly, this screen is shown every 5 seconds alternating with the normal dosing screen to show the water total. If "Cont at Hi Flo?" is set at Yes (in Options), the doser will run continuously, but will return to normal dosing when the water flow reduces to a manageable level. Press Adjust for a short time to return to the Welcome Screen and clear the "High Flow!" message</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>1K Ppl -5 1420H</p> <p>High Flow! S3</p> </div>
<p>If Tube Fracture detection kit is fitted, and moisture connects the two pins, this message will be shown on-screen and the doser will stop dosing.</p> <p>Press OK to return to the Welcome Screen.</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Tube fractured!</p> <p>OK</p> </div>

To make any adjustments to settings, return to the Welcome Screen and progress through the options. To return to the Welcome Screen, press and hold **Adjust** from the Operational Screen.

Water Meter Total and Zero

Note: The maximum quantity of water that is shown on the water total quantity is 100,000,000 gallons. After this the meter will return to zero and water metering will re-commence as normal.

The water total can be returned to zero at any time from the dosing screen by pressing "Set" and holding for 3 seconds.

Flow Sensor Capacities

There is a maximum limit on the flow of water permissible through each flow sensor. The maximum flows are:

TBR (Sensor 1)	300 gal/hr
VTY 10 (Sensor 2)	450 gal/hr
VTH 25 (Sensor 3)	2,500 gal/hr

Proportional Dosing

A feature of the Select Doser™ 640 is that, due to upgraded software, a single pump tube can be used for all dosing ratios.

During proportional dosing, the Select Doser™ 640 constantly monitors the water flow in the drinking line. Every 5 seconds the doser injects exactly the right amount of additive into the drinking line or tank according to the ratio of administration selected.

When water flows are low, it is possible that the rotor may not turn in one or more of the 5 second periods. In this state, the doser will store accumulated flow information until it is possible to make a minimum turn of the pump rollers.

Complete mixing of additive into the drinking water is achieved by turbulent flow in the water delivery lines.

Maximum Water Flows for Each Dosing Ratio

The maximum water flow for any ratio is $8.5 \times \text{ratio}$, where 8.5 is the maximum pumped output of the pump in gallons per hour with the purple tube fitted. E.g., with a dosing ratio of 1:128, the maximum water flow that can be dosed is $8.5 \times 128 = 1,088$ gal/hr.

If the Select Doser™ 640 is turning for almost the full 5 seconds of each 5 second dosing period, this is the maximum output of the pump. If the water flow is exceeded, then "High Flow" will be shown on-screen.

Note: The actual maximum water flow allowable will be the lower value of the calculation above or the sensor flow capacity shown above (Flow Sensor Capacities).

Alarms and Warnings

If a high water situation is detected where the doser is unable to keep pace, the doser will either continue to dose and display "High Water Flow" on-screen (If the "Cont. at Hi. Flo? Option is answered Yes under Options) or a warning will be shown on-screen and the doser will stop operation (If the "Cont. at Hi. Flo? Option is answered No under Options).

If the rotor becomes jammed or there is a mechanical fault within the pump drive system, a warning of "Pump Error" may appear on-screen. If the fault is not immediately apparent and rectifiable, PLEASE CONTACT YOUR DEALER OR GENESIS INSTRUMENTS.

Water Line Pressure

The Select Doser™ 640 will operate against a water pressure in the drinking line of up to 32psi. Install a pressure regulator if necessary. The flow sensor is rated to 90psi.

Constant Pumping

If the priming option is selected from the menu on the control screen, the pump rotor will turn continuously regardless of the flow in the drinking line. This can be useful for filling the suction and delivery lines prior to proportional dosing. It can also be used if a particular product needs to be dosed quickly within a given period. The following pumping rates will be achieved when the Select Doser™ 640 is set to “prime”:

Pump Tube Color	Priming pump rate	Note:
Purple	8.5 gallons/hour	Normal proportional dosing tube

It is not recommended to use the Select Doser™ 640 for more than 2 hours at a time in the priming mode, as tube and motor life will be reduced.

Rotor Adjustment

The rotors in the Select Doser™ 640 pump head are not adjustable.

Encoding

Under the rotor assembly, there is a magnet holder plate that turns with the rotor on the drive shaft. This plate should be fitted so that the magnets are facing upwards.

There is a nylon washer under the magnet holder plate.

Installation

The Select Doser™ 640 can be powered from a 12V DC battery or via a transformer from the main electricity supply. Position the dosing point on the drinking lines to be convenient for a power source if power is to be taken via a transformer from the main. Ensure that the Select Doser™ 640 is properly secured to prevent it becoming immersed in water or the stock container.

Avoid undue strain on the flow sensor during installation as damage to the sensor may result. The use of a water filter immediately upstream of the flow sensor is recommended. Ensure flow is in the direction as indicated on the flow sensor.

The female connector on the injection port has a valve that closes when the male end is removed. The valve is opened once the male end on the delivery tube is pushed home.

Connect the signal cable from the flow sensor into the Select Doser™ 640 unit. Connect the Select Doser™ 640 to either the battery or transformer. Choose program options from the control screen. Ensure pump tube is fitted and connected to inlet and outlet delivery tubes. Place inlet tube weight into additive liquid. Connect delivery outlet tube into quick-fit connector clamp. Commence proportional dosing.

Note: The pump will self prime. The pump can also be run dry for a limited time without damaging any parts, although it is not recommended to run the pump dry for extended periods as tube damage may result.

Maintenance

Weekly

Flush out filters protecting the flow sensor.

Inspect the pump tube for signs of wear.

Check doser output. Adjust as necessary via the control screen.

Monthly

Replace pump tube monthly or sooner if any of the following occur:

- Sharply decreased or increased rate of dosing
- Split tube
- Doser won't prime

Every 6 Months

After disconnecting from electric supply, remove cover from Select Doser™ 640 and inspect interior of pump enclosure. Ensure no ingress of moisture or other contaminant. In case of difficulty, contact your Dealer or Genesis Instruments.

Pumping Problems / Errors

If the Select Doser™ 640 fails to operate correctly, check the following table. If the problem cannot be resolved, contact your Dealer or Genesis Instruments.

Problem	Solution
Error message “High Flow!” showing on screen.	<ol style="list-style-type: none"> 1. Problem may have passed. Check if max. water flow is still being exceeded. 2. Consider using more concentrated stock solution at a higher ratio. 3. Check Magnetic Plate for both magnets. 4. Possible pump fault. Contact your Dealer or Genesis Instruments.
Incorrect dosing.	<ol style="list-style-type: none"> 1. Check for low battery power (if external battery is in use). 2. Pump tube should be replaced regularly. Replace if necessary. 3. Flow sensor could be entangled with debris. Check and clean if necessary. Note: Clear carefully – delicate mechanism. Fit filter upstream of sensor and clean regularly. 4. Is correct dosing ratio selected and/or correct Flow Sensor? 5. Water pressure in the drinking water line should not exceed 32psi. Fit pressure reduction device if necessary, before flow sensor. 6. Incorrect Tube Adjust Factor entered on the control screen. Check and re-enter. 7. Incorrect pump tube fitted. Are screen details correct?
Medication not being pumped from stock container.	<ol style="list-style-type: none"> 1. Check all tube connections are firmly in place. 2. Pump rotor may not be fully occluding the pump tube due to tube wear. Replace tube. 3. Inlet tube could be blocked. Clear as necessary. 4. If a knife has been used to free a tube connector on the inlet side of the pump, the connector could be damaged and letting air into the suction line.
Sudden loss of pumping pressure (with possible return of fluid into stock container).	<ol style="list-style-type: none"> 1. Check if there is any lateral movement in the rotor. It is possible the rotor shaft bearings may be worn. Consult Dealer or Genesis Instruments. 2. Check for physical damage to pump head fixing screws. 3. Ensure that check valve is fitted in delivery line.
Error message “pump error”.	<ol style="list-style-type: none"> 1. A failure of the motor or data encoder is indicated. Check that connections to circuit board from motor are in place. Consult your Dealer or Genesis Instruments.
Proportional dosing does not commence.	<ol style="list-style-type: none"> 1. Check flow sensor and other electrical connections. 2. Check that there is water flow in your water lines. 3. Is power supply sufficient?
Test mode: To determine if the problem lies with the Select Doser™ 640 unit or the flow sensor. (Offered on units with a PIC number 160 and greater).	<ol style="list-style-type: none"> 1. With the Welcome Screen displayed, press Set 4 times and get into the “Doser Options Test Mode? “N”. Press the Adjust button once, switching it to “Y”. Press the Set button once and it will return to the Welcome Screen. Press Adjust once and then Set 10 times to the “Test Mode”. Rollers will spin a couple of revolutions. Doser is operating, the issue lies with the flow sensor. Test mode will only work for 5 minutes, after which the doser will revert to normal dosing mode. Press the Adjust button and it will return to the Welcome Screen.