



Metafix[®] Inc.

Metafix pH Control R4 Universal



Installation Manual

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Dear Metafix Customer,

The Metafix pH Control unit you have just purchased is part of an integrated compliance system which includes the Metafix MetaAid solution.

MetaAid, manufactured by Metafix, is specifically designed to work with your Metafix pH Control, and is formulated for specific combinations of plates and developers.

The MetaAid formulation you use is specific to the model of pH Control you have, the plates you are using and the developer being used to process those plates.

By using genuine MetaAid neutralizer, you enable proper functioning of your system and are ensured to continue receiving the benefits to which you are entitled as a Metafix customer.

As a compliance specialist, Metafix is fully aware of our customers' obligations to have a Sustainable Environmental Compliance Program in place. Sites without such a program can be subjected to large fines and be forced to use other methods which are more costly than using the pH Control system.

All Metafix customers using our system, with MetaAid, receive a Sustainable Environmental Compliance Program which includes unlimited technical phone support, genuine Metafix replacement parts, the Metatrax logging and monitoring program, compliance reports as required, and MetaAid prepared in controlled conditions under the supervision of a PhD of Chemistry. Metafix can provide certificates of compliance, signed and stamped by a member of the Order of Chemists attesting to its consistent formulation.

Metafix has no control over the conditions in which NON Metafix neutralizing solutions are manufactured and has no control on how those solutions function in our units.

Using anything other than genuine MetaAid can cause irreparable damage to the pH Control unit and would void any and all guarantees, contracts or warranties associated with this product. In addition, unlimited technical phone support will be forfeited.

All calls for technical support will be chargeable at a rate of \$250.00 per incident. A credit card number for billing must be provided and approved before technical support is provided and there is no guarantee that your issue can or will be resolved while using NON Metafix neutralizing solutions.

Tracking reports will no longer be issued free of charge, they will be invoiced at a rate of \$150.00 per monthly report.

Metafix will not be held liable for any compliance issues or become involved in resolving compliance issues in any way when NON Metafix neutralizing solutions are being used.

You purchased the Metafix pH Control as part of a comprehensive sustainable Environmental Compliance Program.

Ensure your continued compliance by using only genuine Metafix MetaAid solution and parts.

Chris Thorne
General Manager
Graphics Division

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Always wear gloves, protective glasses, and an apron while working with chemistry.



Do not open the pH control when it is plugged in



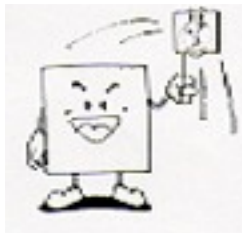
Do not stack heavy objects on the pH Control.



Do not attempt to repair the unit, or tighten the sensors unless specifically instructed by Metafix technical support personnel.



Make sure that the power source is within 6 feet of the units installed position.



Do not place the pH Control in an area where it will be exposed to extreme temperatures.



Keep the pH control in a dry and well ventilated area.



Clean the pH Control using a soft cloth or sponge. Avoid using abrasive materials or cleaners on the unit's surface.

The Metafix pH Control R4 Universal is a sophisticated state of the art waste management system that allows generators to discharge all types of Ctp effluent including negative and positive thermal and violet plate effluents ON SITE.

This system is designed to collect, measure, monitor and adjust the pH level of all Ctp waste effluents using a specially formulated neutralizing agent, MetaAid. After neutralization the effluent is safely discharged on site. It's fully automatic so there is no handling, storage or hauling of waste chemicals.

This unit, once installed and connected to the internet, will manage, monitor and track its daily operating functions and download this information to the Metafix technical support department for review and analysis. This analysis ensures the your equipment is operating at peak efficiency. Once the review process has been completed this data is entered into our Metatrax data base program and is kept on file for as long as you own and are using our system. Data maintained is used to generate reports that can be sent to you on a demand basis or if required on a set schedule.

Features and Benefits

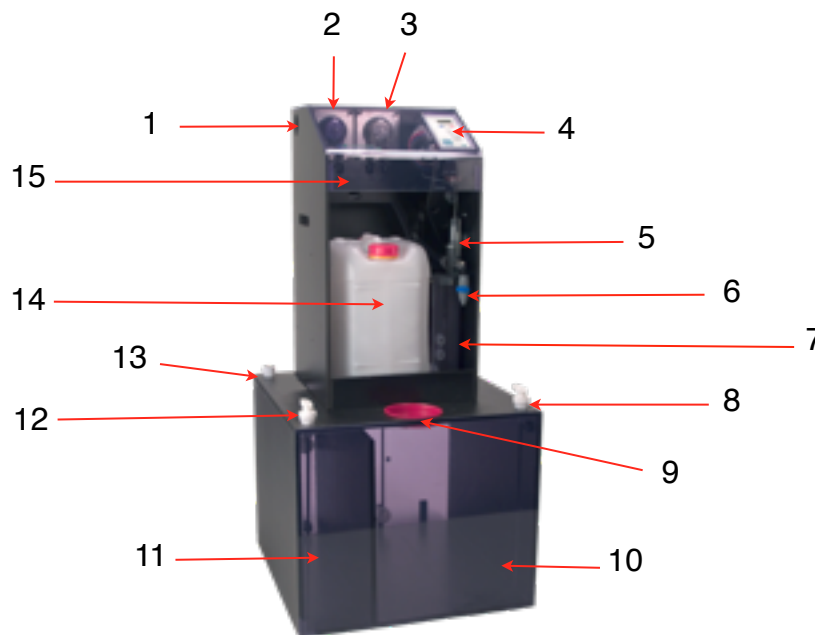
- Controls and tracks the flow of all solutions via a programmable monitoring and metering system.
- Simple and accountable effluent management.
- Small footprint - only 4.0 Sq. ft
- Eliminates storage and manifesting of hazardous chemicals - all effluent is managed and discharged on-site.
- Toll - free hotline and dedicated email address for Ctp customers delivers instant direct access to manufacturers service and support team.
- Fast treatment cycle - Keeps up with large processing volumes.
- Large holding tanks - Holds all processor maintenance dumps - No Jugs.
- Sample ports - Easy to take samples.
- Modular components - Easy to repair and maintain.
- Peristaltic Pumps - Reliable "clog - free" operation.
- Quick release connectors - Easy Maintenance and Repair.
- Key operation alarms - Alert operators to any errors.
- Operation log - Software retains Date/Time log of all operations.
- Easy to understand interactive display - Accurate pH readings.
- Robust Industrial Grade pH Probe - Accurate pH Readings.
- Network communication port - RS232 or IP Enabled Monitoring.

3 pH Control Components

1 Front View: Parts identification

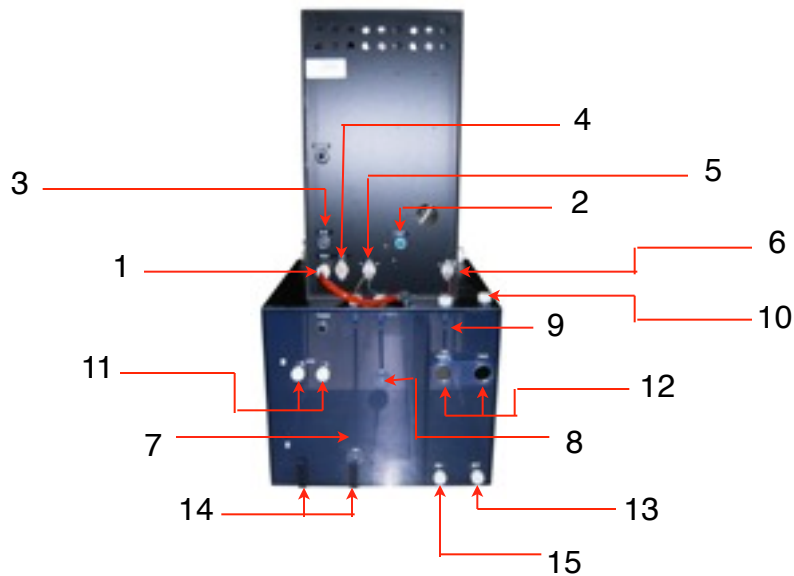
3

Diagram 1.0



Number	Item	Function
1	Upper Assembly	Houses all the major components of the R4 pH including the Neutralizer jug.
2	Developer pump	Pumps developer from the developer tank to the reactor.
3	Neutralizer pump	Pumps neutralizer from the Neutralizer jug to the reactor.
4	Power Supply	Controls all functions and provides 24 V power to all components as well as Internet communication.
5	pH probe	Measures pH of chemistries mixed within the reactor.
6	Sample Valve	Valve for sampling mixed chemistries.
7	Reactor	Blends all chemistries to be read by pH probe.
8	Developer sample pump	For taking samples of untreated developer.
9	Manual Dump cap	Remove cap to manually dump untreated developer into Dev tank if required.
10	Developer tank	Collects developer overflow from processor.
11	Water tank	Collects water overflow from water tank.
12	Water sample pump	For taking samples of process wash water.
13	Wash water port	Connection port for optional Wash water re-circulation unit.
14	Neutralize	MetaAid solution required to adjust developer pH.
15	Cover	Clear cover for upper unit.

Diagram 1.1

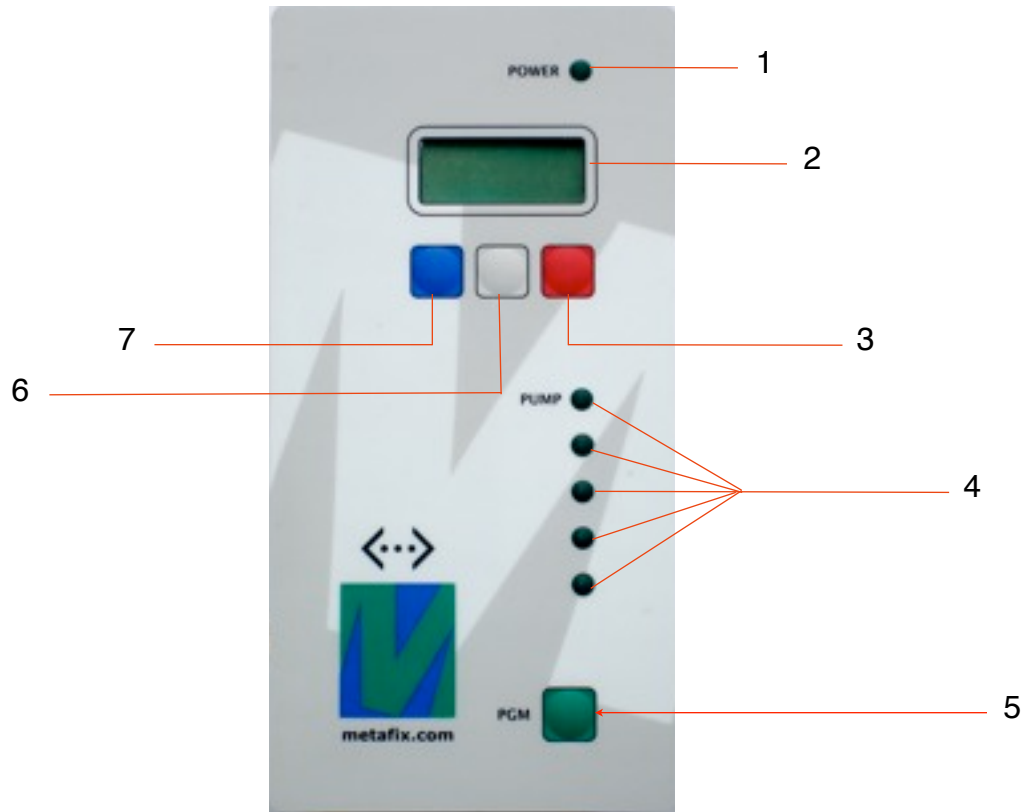


Number	Item	Function
1	Developer wand inlet	Connection for red developer wand. Used to bring waste developer up from the holding tank.
2	City water inlet	Connect high pressure black hose (supplied) here. Connect other end to cold city water supply.
3	Water inlet	Water inlet from water pump.
4	Water pump power plug	Provides power for the water pump.
5	LS1 & LS2 connectors	Plug LS1 and LS2 on lower tank here. Plugs are labeled. Match the labels for correct connection.
6	LS3 & Wet floor Connectors	Plug LS3 and puck here. LS3 is labeled, Match the label for correct connections. Puck is to be placed near open floor drain if being used.
7	LS1	Level switch LS1. Starts the processing of waste when activated along with LS3.
8	LS2	Level switch LS2. Warns of a developer overflow situation when activated.
9	LS3	Level switch LS3. Starts the processing of waste when activated in conjunction with LS2.
10	Water inlet	Water inlet connection for optional Wash recirculating system.
11	Developer overflows from processor	Allows processor overflow lines to be connect to holding tank.
12	Water overflows	Water inlet from processor and water outlet to drain.
13	Water Recirc Connection	Water connection for the optional water recirculation kit.
14	Water pump bracket	Holds water pump in place.
15	Water pump connection	Connects water pump to water tank.

3

3 Power Supply View: Parts Identification

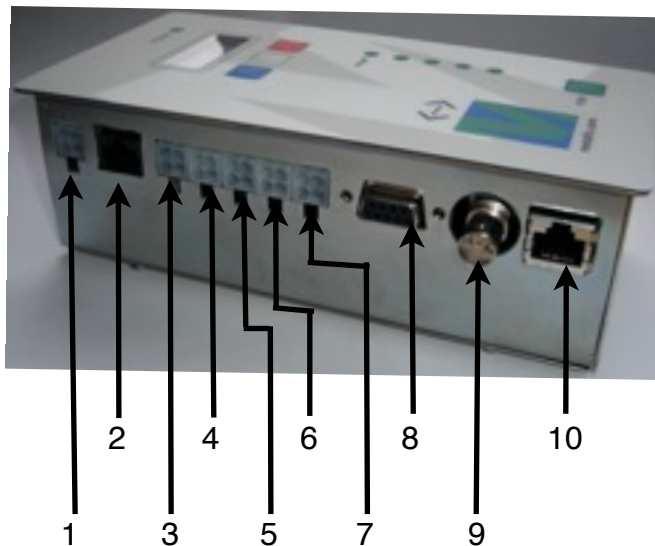
Diagram 1.2



Number	Item	Function
1	Power LED	Indicates that power is on when illuminated.
2	LCD Display	Displays TL; TN and pH readings while on. Also displays information when in Menus.
3	Function Key	Used to select yes (Y) when in program menus.
4	Status LED	Indicates that a component such as the neutralizer pump is in operation when illuminated.
5	Program Key	Used to enter the program menus.
6	Function Key	Used to select no (N) and to advance to the next level in the menu.
7	Function Key	Used to select no (N) is some of the menu levels.

4 Power Supply Side View: Parts Identification

Diagram 1.3



Number	Item	Function
1	24 Volt power plug	Accepts the 24 volt feed from the step down transformer.
2	Communication Cable (Logic Inputs)	Grey phone cable, connects all LS switches to power supply.
3	24 Volt Output (White)	Supplies 24 volts to the
4	24 Volt Output (Black)	Spare 24 volt out put. Used for optional reversing pump application only.
5	24 Volt Output (Red)	Supplies 24 volts to the
6	24 Volt Output (Blue)	Supplies 24 volts to the
7	24 Volt Output (Brown)	Supplies 24 volts to the
8	RS 232 Cable connection	Used to connect a laptop computer to the unit for software upgrades or manual downloads.
9	BNC Connector	Connects the pH Probe wire to the power supply.
10	Network connection	Connects the ethernet cable to the power supply for remote monitoring and communication.

4 Essential Steps

Unit positioning:

The pH control is typically installed at the discharge end of the processor on either side of the exit table. Which side of the processor will be determined during the installation process and will be based on the accounts work flow. Always try to install the pH Control on the side opposite to where the users pick up the processed plates.

Site requirements:

A

Power outlet must be within 4 feet of the pH-Control R4-Universal Unit.

B

Install City water line equipped with a shutoff valve and a MGHT spout. The water line must be installed one meter above the floor and within one meter of the pH Control to ensure a consistent flow of water to the unit. The allowable water pressure range is 25 to 80 psi. A back flow preventer may be required by local plumbing codes (part No. 101-404).

C

Building drain is not to be more than 12” (30 cm) above floor or farther than 2 meters from the pH-Control-R4 Universal unit.

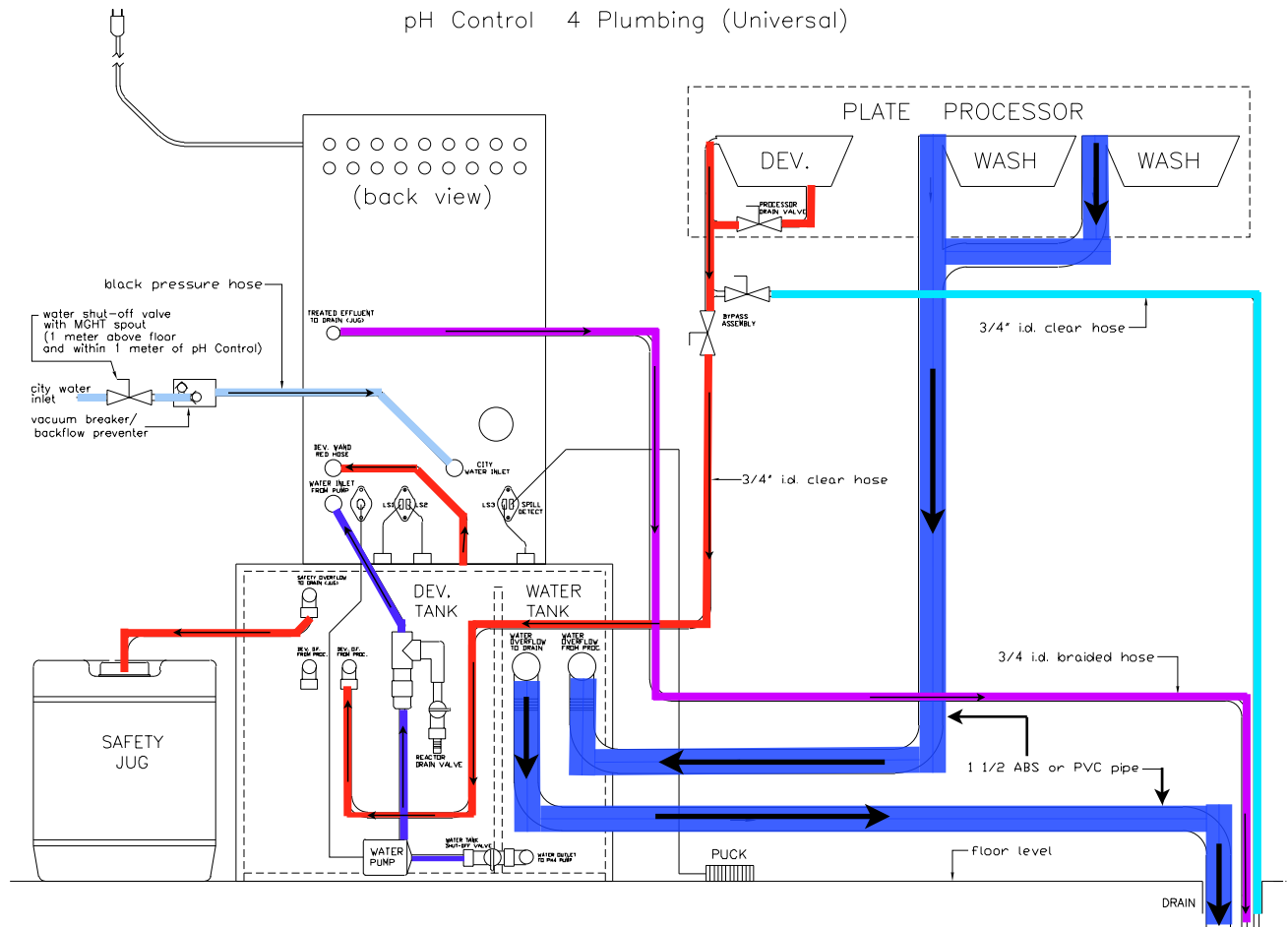
D

The “ Safety Overflow to Drain (Jug)” will serve as your emergency overflow system. It is strongly recommended that you connect the “Safety Overflow to Drain (Jug)” to a suitable container (5 gal/20L jug). **Do not connect it directly to drain.** See Diagram XXXX

Note: All plumbing must be performed according to local plumbing codes.

5 Plumbing diagram

Note: All possible sources of developer overflow within the processor MUST be identified and segregated from the process wash water manifold and directed to the pH Control developer tank. This is a critical step in the proper installation of this system. If this is not done correctly your customer will not be in compliance!



Liquid Flow Legend

- Process wash water
- Untreated developer from processor dumps and overflow
- Rinse water from processor cleaning when bypass vales are in bypass position
- Treated effluent to drain
- City water supply

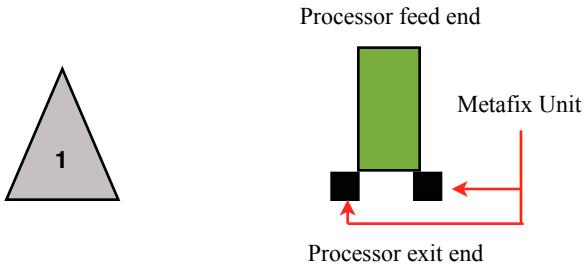
6 Installing the pH Control

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6 Installation Process

The following instructions will guide you through installing your pH-Control-R4-Universal system.

Note: All connections involving the use of plastic tubing must be secured with firmly tightened clamps. Keep tubing runs as short as possible.



Place developer holding tanks on either side of the processor where the plates come out after processing. Which side will depend on what is most convenient for the installation.



Place the upper unit on top of the pH control developer tank making sure that the locating feet on the upper unit fit into the locating holes on the developer tank.



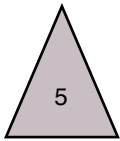
Connect LS1 from the lower tank to the upper unit.



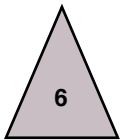
Connect LS2 from the lower tank to the upper unit.

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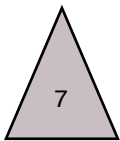


Connect LS3 from the lower tank to the upper unit.

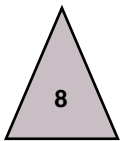


Connect spill detector from the puck to the upper unit.

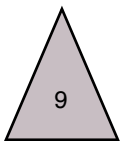
Place the puck on top of the upper tank out of the way for now. Final placement of the puck will be done once all the plumbing has been completed.



Connect the red hose to the upper tank. The red hose is the pick up wand from the lower developer holding tank. The developer pump (Blue) draws the developer up through this hose.



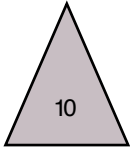
Locate the install kit and removed the High pressure washing machine hose. Open the bag that hose is packaged in, find the two rubber washers and install them, one on each end of the hose.



Connect one of the black high pressure hose to the blue solenoid fitting labeled "City Water Inlet"

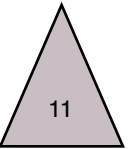
6 Installing the pH Control

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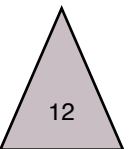
Attach the other end of the black high pressure hose to the city water supply with a shutoff valve and male garden hose thread. Affix the yellow tag that was supplied in the install kit to the shutoff valve feeding the pH Control.

Do not turn the water on yet.



Locate the water pump assembly that was packed with the developer tank.

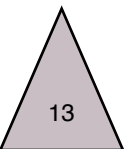
Critical steps: Follow these steps exactly or you will risk damaging the water pump.



Do not remove the small piece of hose that is already on the nipple.

With the pump laying on a solid flat surface attach the hose over the nipple while holding the pump in place.

Do not lift the pump or hold it off a flat surface or wiggle the hose excessively while attaching it, you could snap the nipple off the pump

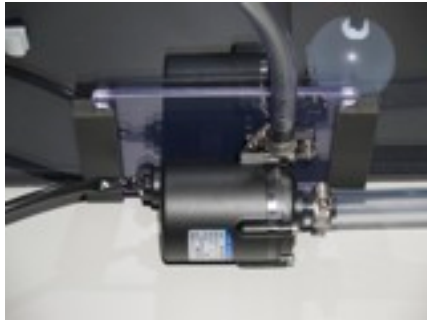
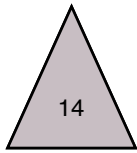


With the hose attached to the pumps nipple gently tighten the hose clamp.

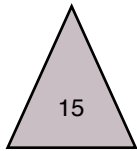
DO NOT over tighten the clamp, you will break the nipple off the pump!

6 Installing the pH Control

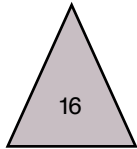
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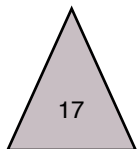
Locate the water pump mounting bracket located on the back of the lower developer holding tank and slide the pump assembly into the bracket.



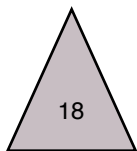
Connect the elbow swivel fitting coming from the top of the pump (small hose) to the to the back of the upper unit. The connection point is labeled “Water from pump”



Connect the elbow swivel fitting coming from the end of the pump (large hose) to the to the back of the water tank on the lower half of the unit. The connection point is labeled “outlet to pH4 pump”



Verify that the shut off valve is opened. The valve stem should be in line with the hose when in the open position.



Route the pumps wires into the wire holders running up the back of the lower half.

6 Installing the pH Control

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Connect the power for the water pump to the connection labeled:

24VAC
TO PUMP.

20



Connect the three quarter inch braided hose to the Upper unit. The connection is labeled:

TREATED EFFLUENT TO DRAIN
(JUG)

21



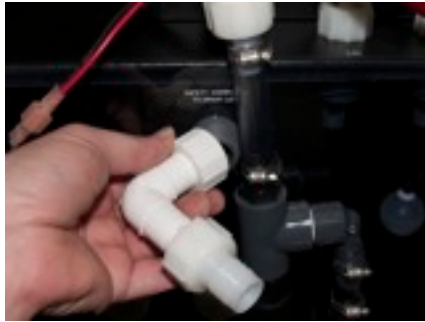
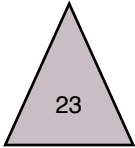
In the installation kit locate the 90% elbows and a three quarter inch” swivel fittings.

22



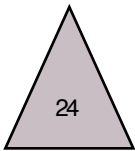
Attache the two pieces together.

NOTE: There are several sets of these fittings in the install kit. One is for the safety overflow and the other two are for the processors overflow to our unit. Normally only one is required for processor overflow if the by pass valve assembly is configured correctly.

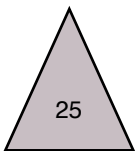


Install one of the swivel fittings to the upper most fitting on the back of the lower tank. It point is labeled:

SAFTEY OVERFLOW TO DRAIN
(JUG)

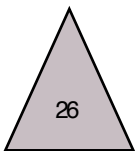


Connect the three quarter inch clear tubing and secure with one of the hose clamps provided.



Position an empty 5gal/20L jug along the side of the lower tank or behind the unit.

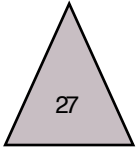
Cut the tubing to length and insert it into the empty jug.



NOTE: The jugs is a passive safety overflow and should remain empty as long as the unit is functioning properly. If the jug becomes full it's contents can be emptied into the main developer holding tank for treatment and disposal once the unit is functioning again.

6 Installing the pH Control

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Remove one of the white caps from the overflow inlets and connect the 90° elbow to this location.



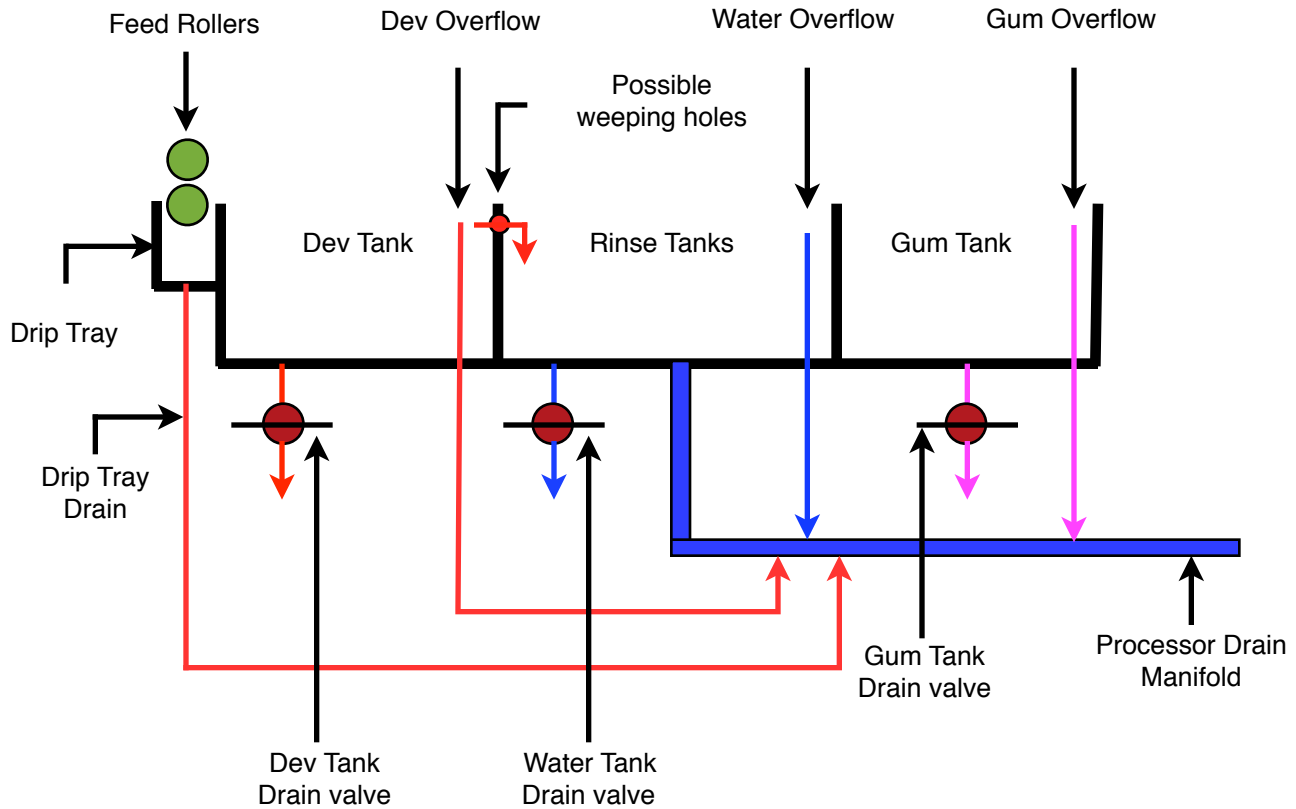
Note: Two connections are available. However, if the bypass valve assembly is configured correctly you should only need to use one of these connections unless you are connecting two processors in which case both inputs will be used.

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Re-Plumbing the processor and Installing the By Pass Assembly

Note: All possible sources of developer overflow within the processor MUST be identified and segregated from the process wash water manifold and directed to the pH Control developer tank. This is a critical step in the proper installation of this system. If this is not done correctly your customer will not be in compliance!

Typical Processor Plumbing Diagram



The diagram above illustrates the typical plumbing diagram of a Ctp processor. It is critical that you are able to understand how the processor you are connecting to is plumbed and that you are comfortable in segregating the plumbing within the processor as required.

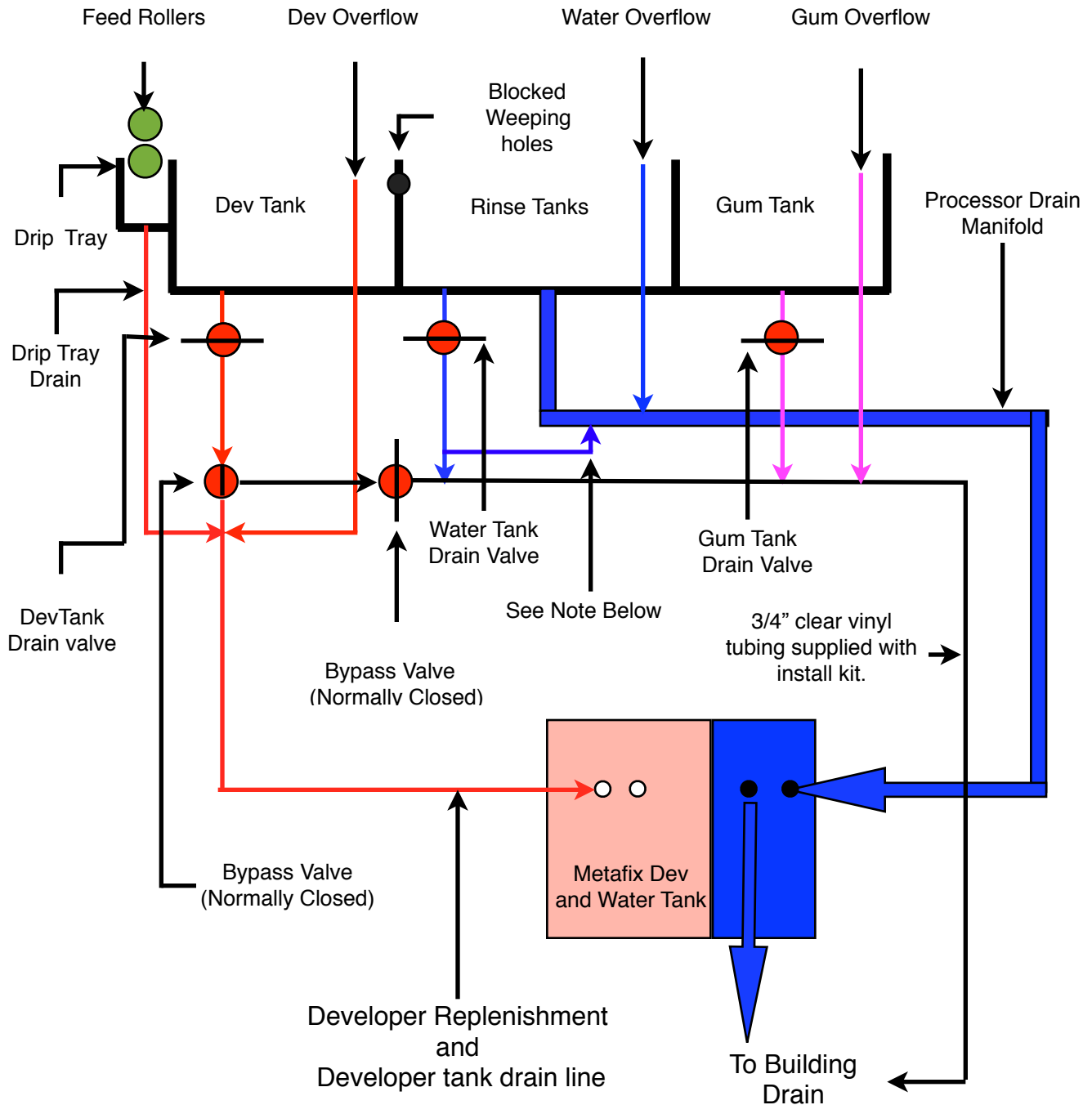
Depending on the age of the processor the drain valves for the tanks might be along one side of the processor, at the front of the processor or at the back of the processor. In addition they may or may not be connected directly to the drain manifold. Before re-plumbing the processor you must be sure you clearly identify what each of the drain valves is used for and where it is connected so you can complete the re-plumbing correctly.

Most gum tanks are run empty in a closed loop function. If this is the case then there is no need to change anything with the gum portion of the processor. However, if the gum tank is run full and there is an active overflow in use then the gum overflow and drain valve must be removed from the processor manifold and directed to the drain after the pH control system.

Note: It was common on older processors to have weeping holes in the tank wall between the developer tank and the rinse tank. These weeping holes were used as the developer overflow allowing untreated developer to be mixed with wash water so it can be sent to drain. If your processor has these weeping holes they MUST be sealed with Silicone and a separate overflow opened in the side wall of the processor.

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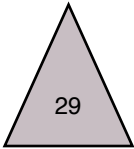
Processor plumbing configuration with By Pass Assembly after re-plumbing.



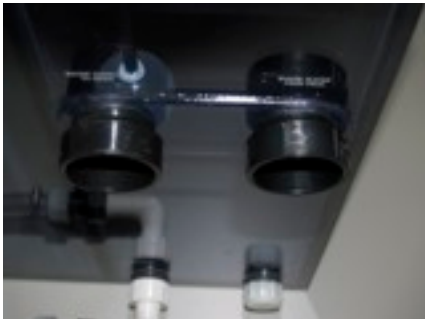
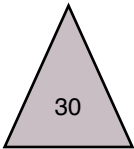
Note: If the processor is being run with the rinse tank drain valve in the open position connect the drain hose to the processor manifold or to the plumbing you run from the manifold to the water side of the Metafix Tank.

If the valve is normally left in the closed position run the drain line directly to the buildings drain.

Completing the final plumbing connections



Locate the two tank fittings in the install kit and apply teflon tape to the threads. The use of 6 - 8 turns of Teflon tape is sufficient.

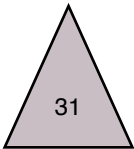


Install the tank adapters into the water tank.

When installing the adapter on the left be careful NOT to insert it so far as to interferes with the motion of the LS3 level switch.

NOTE: The two inlets are labeled “ Water Overflow to drain” and “Waste water from Proc.” **THIS IS NOT CRITICAL!**

It does not matter if the processor overflow connects to the right or left fitting or if the overflow is connected to the left or the right fitting. Use whatever fitting is the most convenient for you particular installation.



Cut and dry fit all PVC pipe before gluing!

Configure your plumbing as required to connect to the processors main drain Manifold.

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Apply Teflon tape around the threads on the drain manifold and using a 1.5" rubber 90 degree elbow connect the processors drain manifold to the PVC pipe you just connected to the Metafix water tank.

If everything fits, complete this process by gluing all of the joints with the proper PVC glue.

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Connect a 1.5" sanitary T to the other tank fitting as shown. Dry fit all connections before gluing.

Make sure the the sweep of the T is directed downwards.

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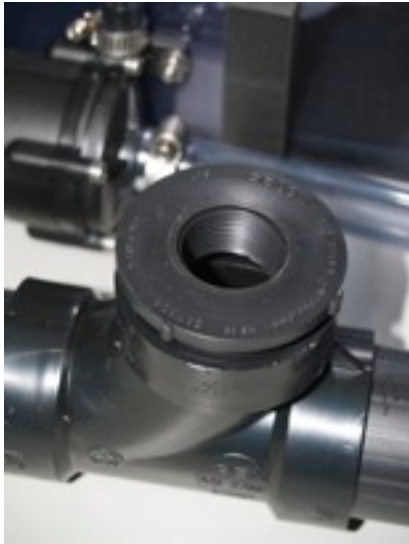
Run PVC pipe from bottom of the sanitary T to the floor and use a 90 degree elbow to direct the flow towards the floor drain.

If you have to hard plumb into the buildings drain system make sure you have enough slope from the bottom of the Sanitary T to the buildings drain for proper flow.

Note: If hard plumbing into the buildings existing drain system instead of into a floor drain it is critical that you have enough of a slope from the Metafix water tank to the connection point of the building drain system to allow proper flow.

If necessary you can turn the sanitary T as much as 90 degrees in order to achieve this.

35



Install a second sanitary T in the line leading to the buildings drain. Make sure the sweep of the elbow is pointed in the same direction as the liquid flow.

Insert a 1.5" to 3/4" threaded bushing into the T and glue into place.

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Locate the 3/4' threaded by 3/4' barb fitting from the installation kit.

Teflon tape the threads and install it in to the bushing.

37

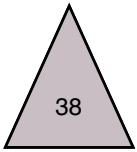


Locate the 3/4' threaded by 3/4' barb fitting from the installation kit.

Teflon tape the threads and install it in to the bushing. Cut the braided tubing that you attached to the upper half in step 19 to length and secure it to the barb with a hose clamp.

6 Installing the pH Control

6

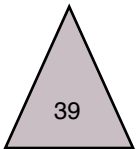


Install a 1.5" Y fitting into the line leading to the drain.

Insert a 1.5" to 3/4" threaded bushing into the T and glue into place.

Locate the 3/4" threaded by 3/4" barb fitting from the installation kit.

Teflon tape the threads and install it into the bushing. Cut the clear 3/4" tubing that you attached to the Gum Drain valve on the processor to length and secure it to the barbed fitting with a hose clamp.



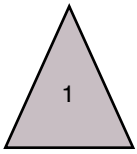
If running to an open floor drain continue the 1.5" PVC piping to the floor drain to complete the installation of the plumbing.

If you have to hard plumb into the buildings existing drain lines then do so at this point to complete the installation of the plumbing.

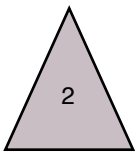
This completes the assembly of the upper and lower components, the re-plumbing of the processor, installation of the bypass valves and plumbing connections to drain.

7 Installing the pH probe

7

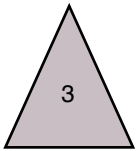


Locate the pH probe. It should be located in the fitting on the cap of the reactor.



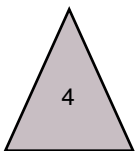
Carefully lift the pH out and remove the black protective storage cap on the bottom of the pH probe.

Caution: The cap will be filled with storage solution. Discard the solution and leave the protective cap on the shelf inside the cabinet for use in the future if required.



Place the pH Probe back into the holder on top of the reactor cap. Make sure the pH probe is fully inserted.

Locate the retaining wire attached to the side of the holder.

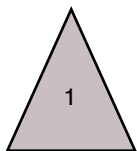


Place the retaining wire over the pH probe. Make sure that the wire from the pH probe is inside the indentation of the retaining wire.

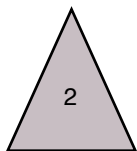
This completes the installation of the pH Probe.

8 Installing the neutralizer and Neutralizer wand

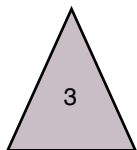
8



Locate the neutralizer wand assembly.



Install Neutralizer jug and remove large red cap.



Insert neutralizer wand into jug.

8 Installing the neutralizer and Neutralizer wand

8

4



Locate the LS4 female socket and the grey male connector located under and behind the black box.

5



Connect the Neutralizer hose to the grey fitting.

6

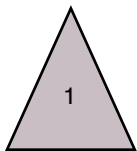


Connect the LS4 plug on the wand assembly to the LS4 connection under the black box.

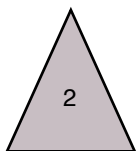
This completes the installation of the MetAid neutralizer and the neutralizer wand assembly.

9 Installing the Power Transformer

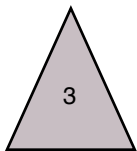
9



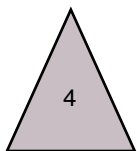
Locate the step down transformer. It is packed in a white box and is included inside the shipping box that held the lower tank assembly.



Install the transformer on the shelf behind the white communication box and route the plug for the wall outlet through the hole on the side of the unit.



Route the plug for the power supply through the hole beside the neutralizer pump.



Plug the 24 volt feed line into the power supply as shown.

Plug the power cord into the wall outlet and proceed to setting the parameters.

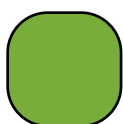
This completes the installation of the power transformer.

When the unit is first plugged in it will go through a boot up sequence. This will take a few minutes to complete. Once completed the display will alternate between TL, TN and a pH reading.

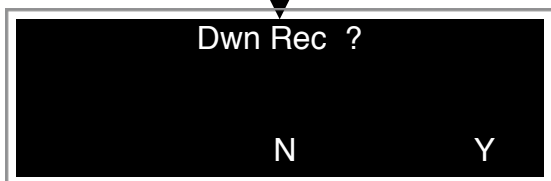
Entering the scripting Levels



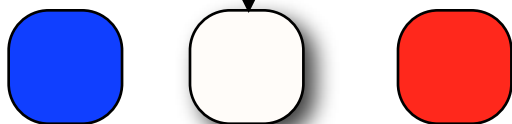
Standby Screen: This screen will flash between the TL; TN counts and a pH Reading when in standby mode.



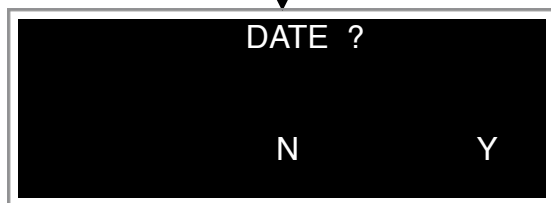
Press and hold the green button (PGM) for 10 seconds or until you hear a beep to enter the program mode.



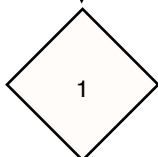
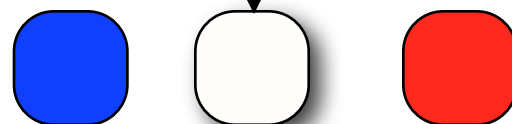
Level 1: Download record:
Used to download the recorded memory to the Metafix Ftp server or the serial port on a laptop.



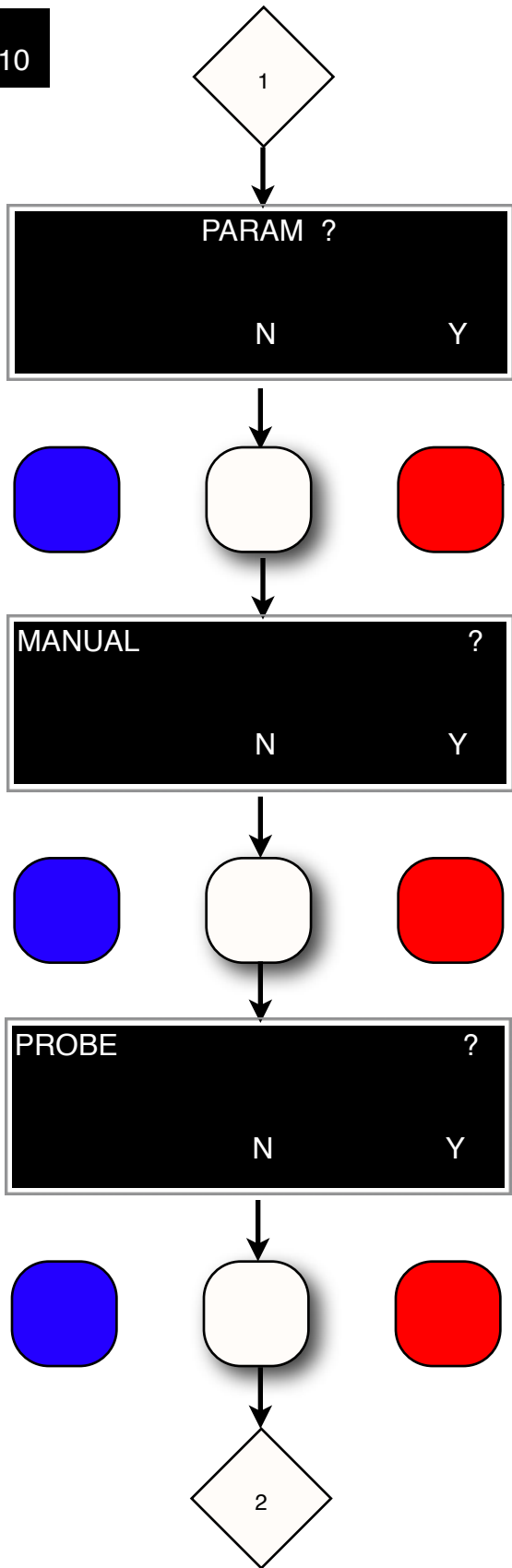
Pressing the white key will scroll you through to the next scripting level.



Level 2: Date and Time:
Used to set the date and time.



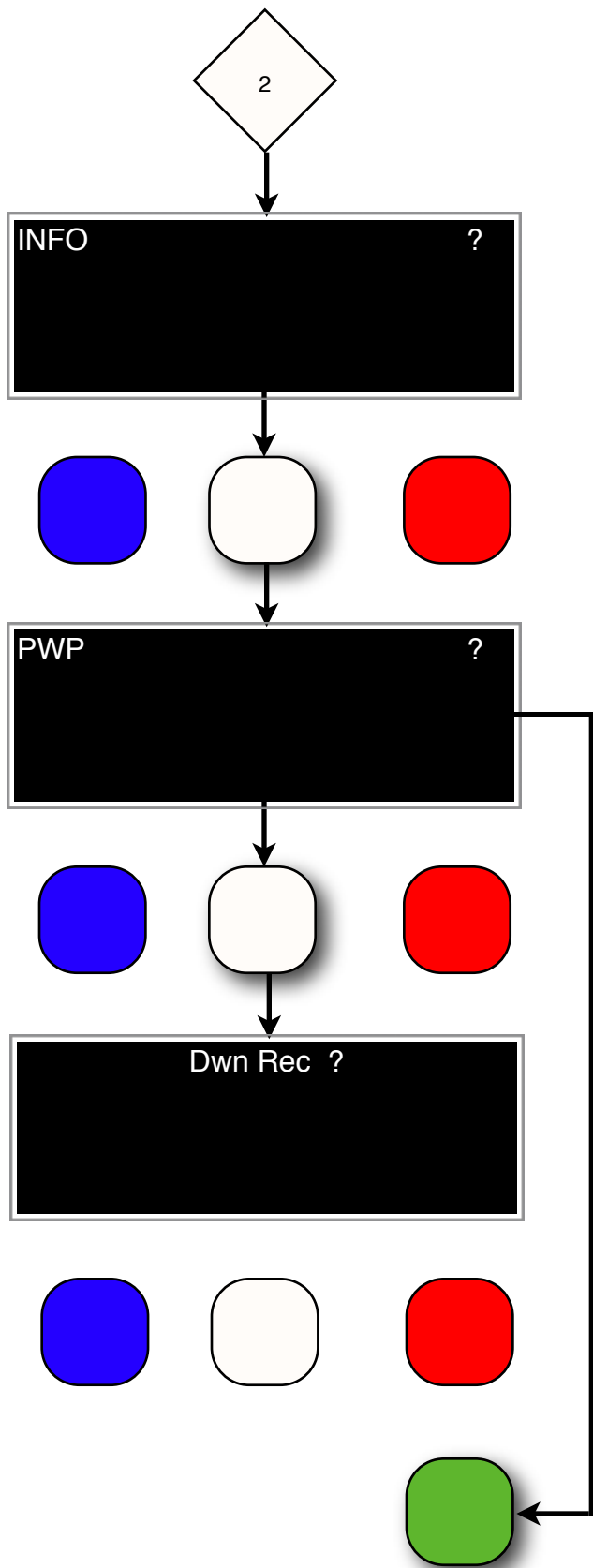
10



Level 3: Parameters:
Used to set the operating parameters for the unit.

Level 4: Manual Mode:
Used to manually activate different components for troubleshooting.

Level 5: Probe Service Mode:
Used to check and calibrate the pH probe.



Level 6: Used to display the unit type, Software version, SN and network settings.

Level 7: Pass Word Parameters
For service use only
Used to change factory specific settings and to download new software.

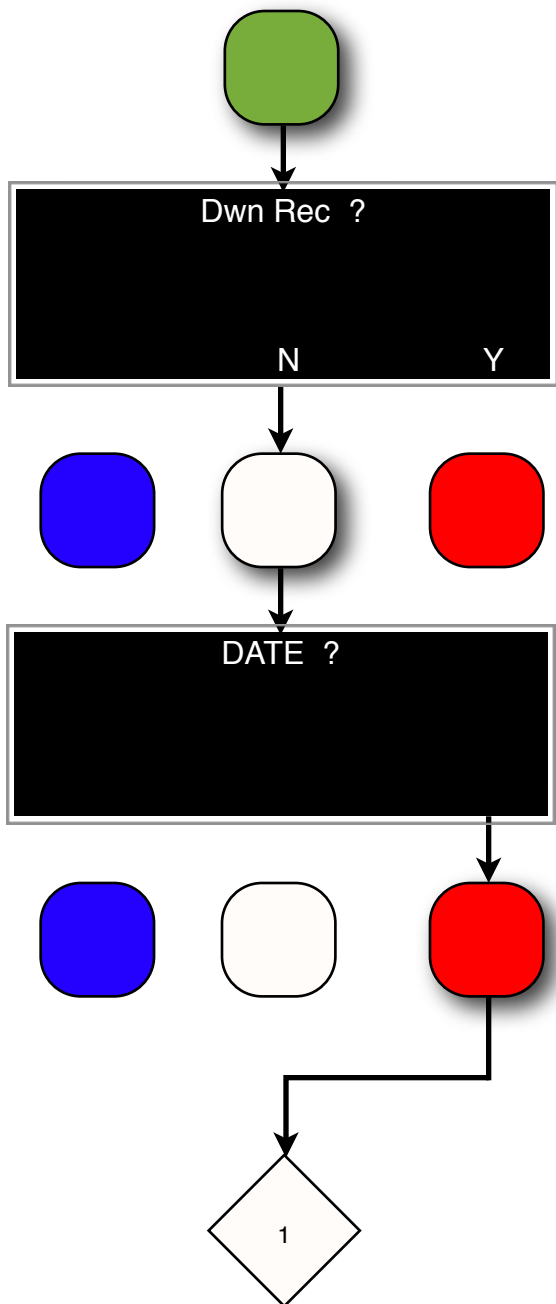
Pressing the white key will take you back to Level 1.

Pressing the green key will take you back to standby mode.

11

Setting the Date and Time

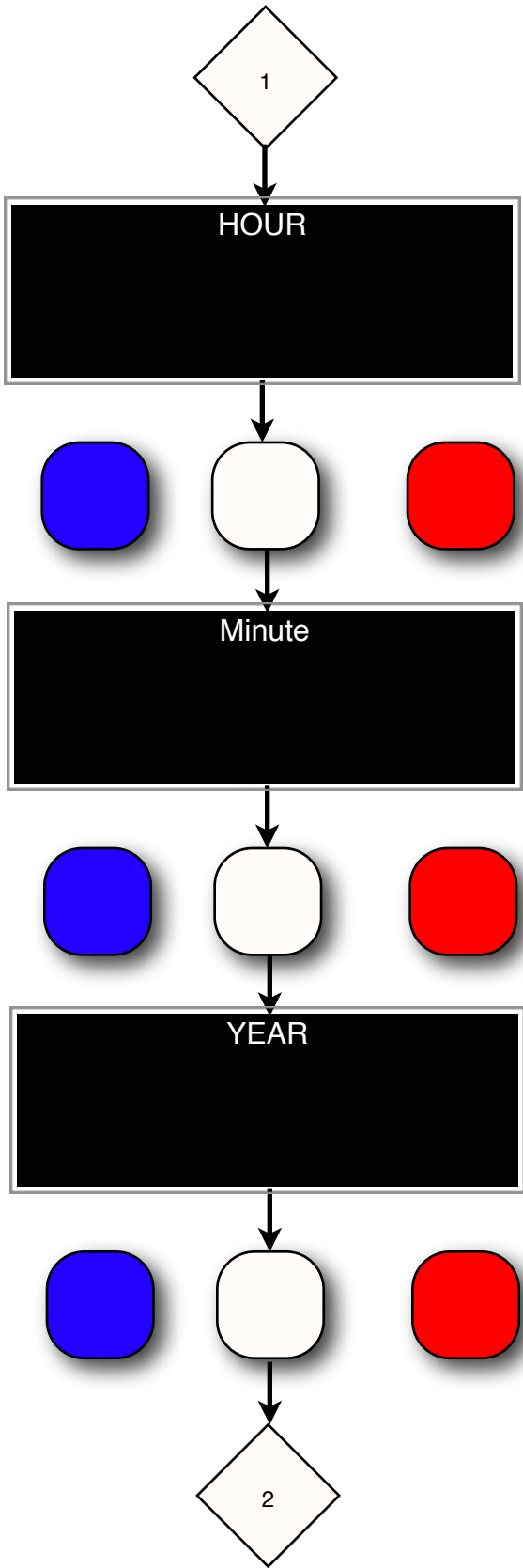
The units date and time is programed when it leaves the factory. It is set to Eastern Standard time. If you are in a different time zone, Country or want to simply verify that the settings are correct follow the instructions below.



Press and hold the Green key (PGM) for 10 seconds or until you hear a beep to enter the scripting menus.

Press the white key to enter into Level 2: Date

Press the red key to enter into the program settings for date and time.



Note: USE the Blue and Red Keys to change the settings. Once the adjustments have been made use the White key to advance to the next screen.

Press the red key to increase or press the blue key to decrease the hour setting.

When finished Press the white key to move to the minutes.

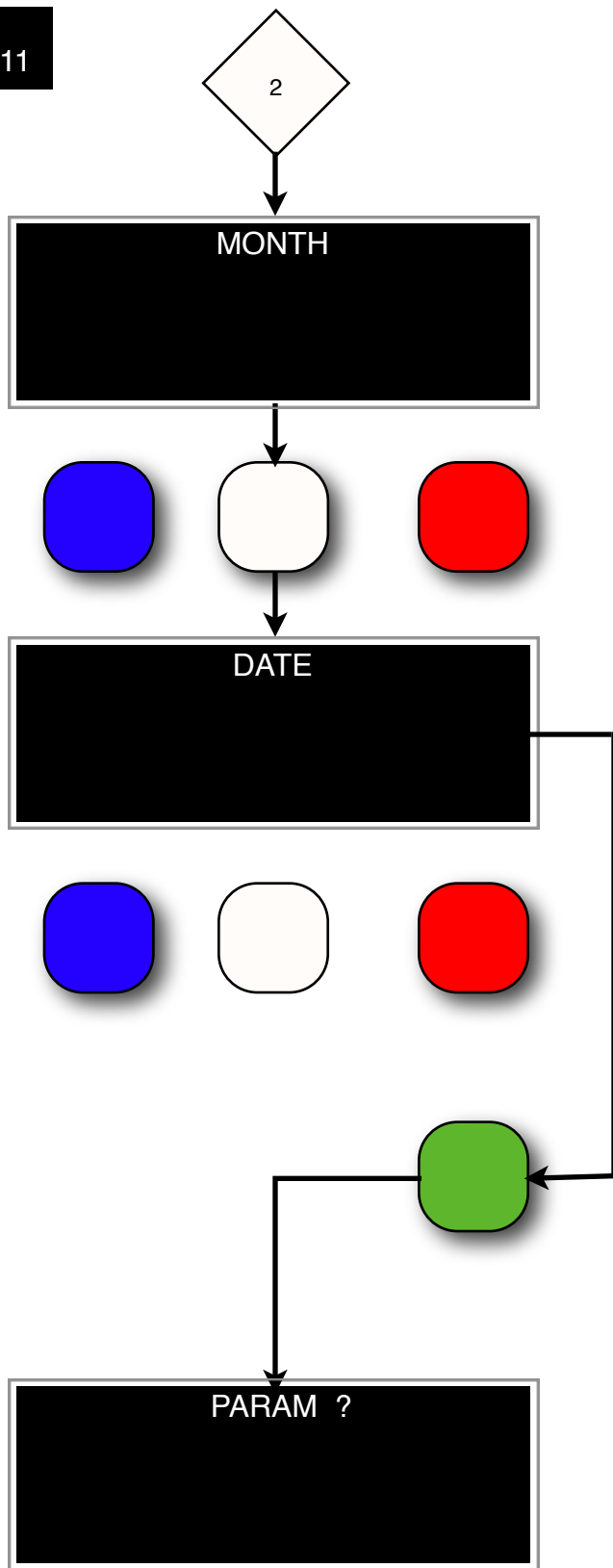
Press the red key to increase the minutes or press the blue key to decrease the minutes setting.

When finished Press the white key to move to the Year.

Press the red key to increase the year or press the blue key to decrease the year setting.

When finished Press the white key to move to the Month.

11



Press the red key to increase the month or press the blue key to decrease the month setting.

When finished Press the white key to move to the .

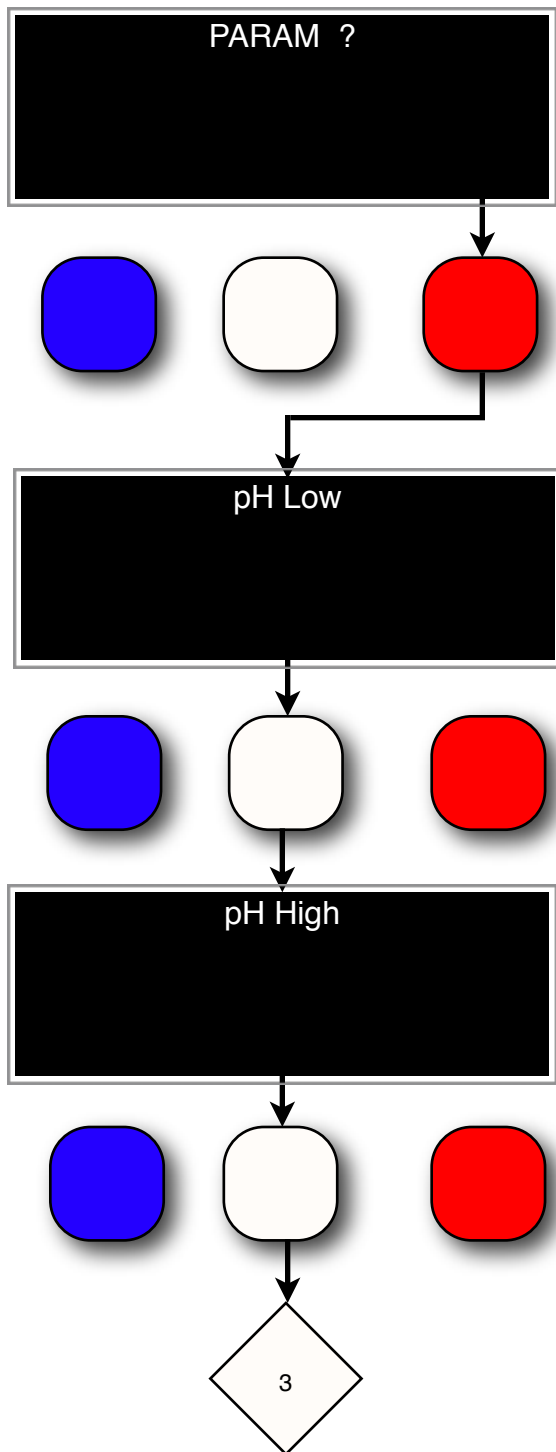
Press the red key to increase or press the blue key to decrease the day setting.

When finished Press the Green (PGM) key to move to the next scripting level, Parameters.

Note: If you press the white key at this point it will take you back to the beginning of this scripting level.

Setting the Parameters

The unit's parameters are programmed when it leaves the factory. These are factory default settings and should be checked and adjusted on the specific site requirements needed for compliance.



Press the red key to enter into the Level 3: Parameter settings.

Press the red key to increase or press the blue key to decrease the pH low setting.

The pH low setting is the lowest pH that the system will allow before a pH low alarm is sounded.

You should know what this limit is for the city you are installing the system in.

If you do not know this set it to 5.5.

Typically the limit is not lower then this.

Press the red key to increase or press the blue key to decrease the pH High setting setting.

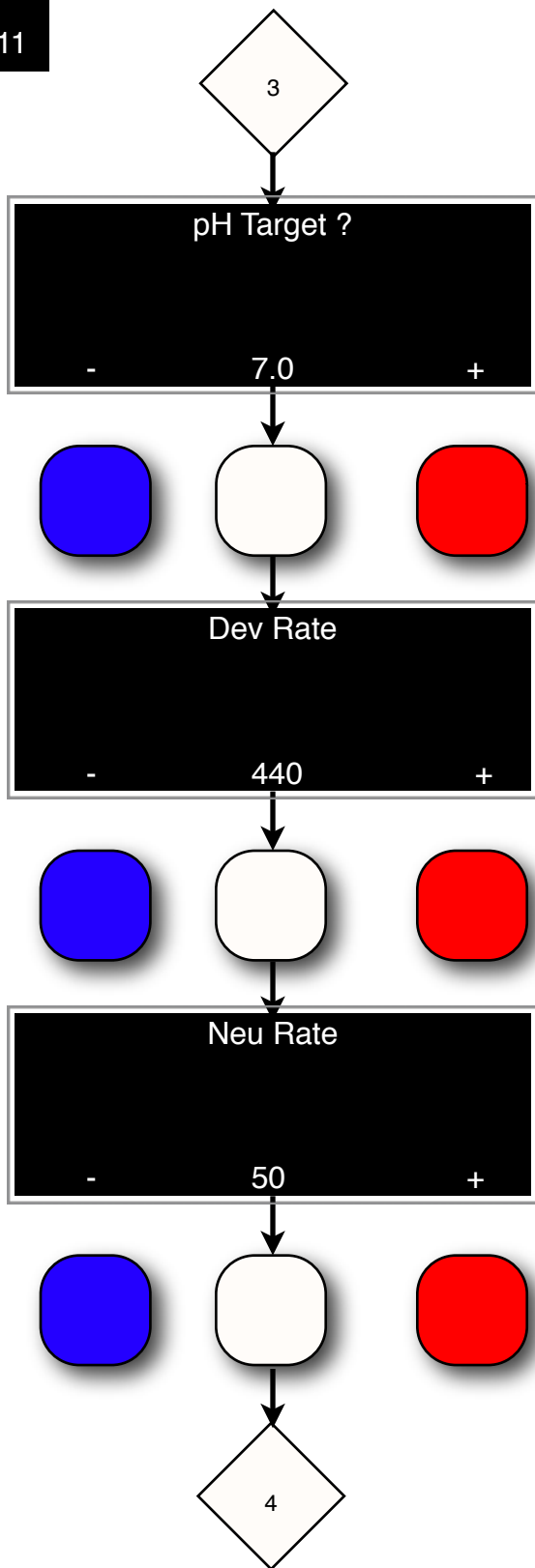
The pH High setting is the highest pH that the system will allow before a pH high alarm is sounded.

You should know what this limit is for the city you are installing the system in.

If you do not know this set it to 9.

Typically the limit is not Higher then this.

11



Press the red key to increase or press the blue key to decrease the target pH.

The target pH is the pH that the unit will try to hit when treating the developer.

The target should be set for a minimum of 1.5 points below the High pH alarm.

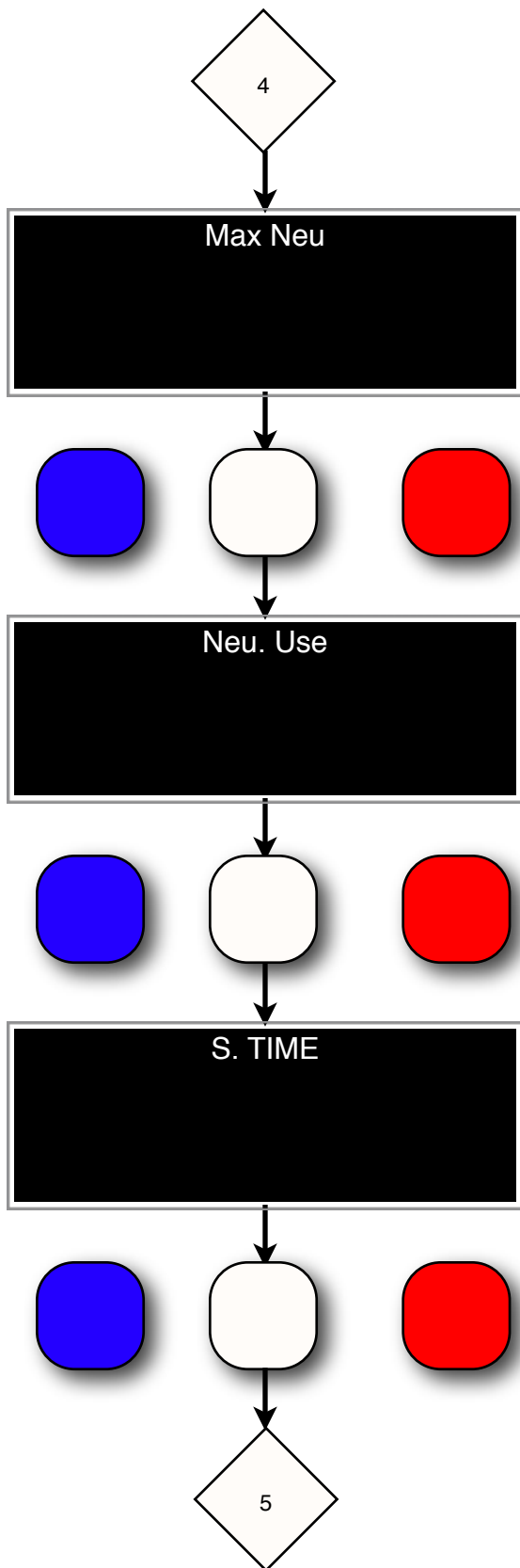
Therefore if the High ph is set for 9 then the target should be set for 7.5.

No Adjustments to this setting are required during set up!

This represents the number of c.c.'s the developer pump outputs in one minute. It is factory set and should only be adjusted if the pump motor is replaced.

No Adjustments to this setting are required during set up!

This represents the number of c.c.'s the neutralizer pump outputs in one minute. It is factory set and should only be adjusted if the pump motor is replaced.



Press the red key to increase or press the blue key to decrease the target pH.

This is the maximum neutralizer the unit can use to adjust the pH of the developer. It is factory set to 50 and should be left as is. It can be adjusted after some history is adjusted if required.

Neutralizer use. **Follow the procedure “Setting The Neutralizer use” before adjusting this setting. Complete all other steps first.**

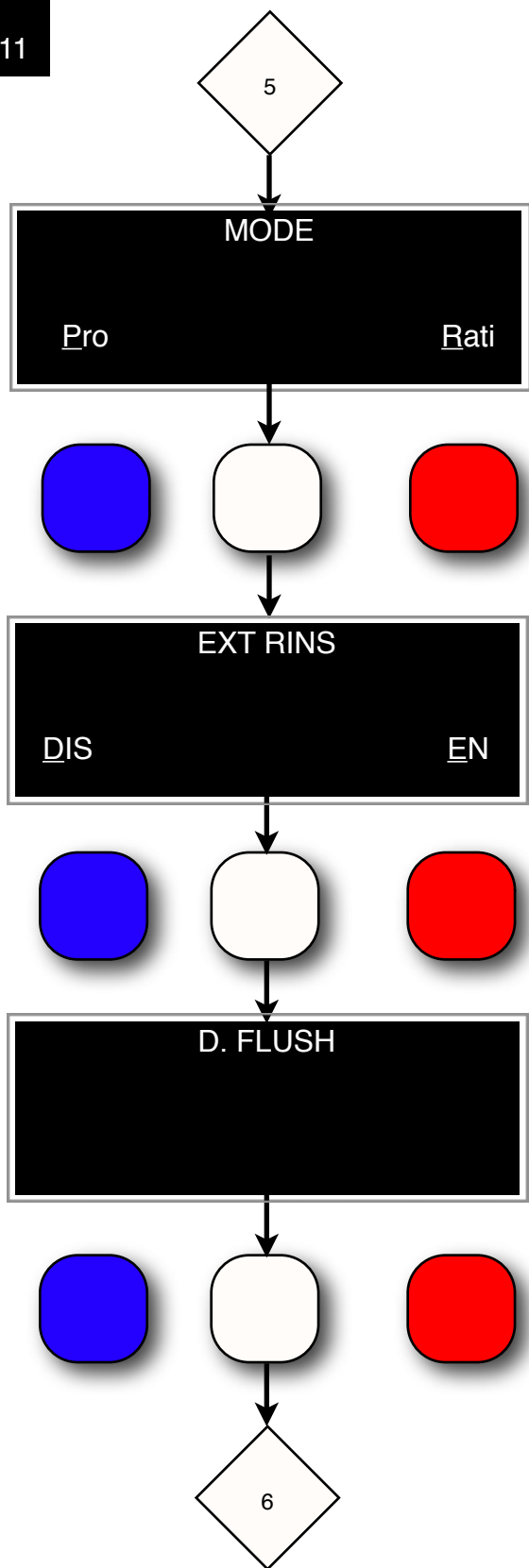
No Adjustments to this setting is required during set up!

Factory setting 04.

Sample time. Represents the number of seconds before a pH reading is averaged and then displayed on the screen.

This setting should only be changed when instructed directly by a Metafix technician.

11



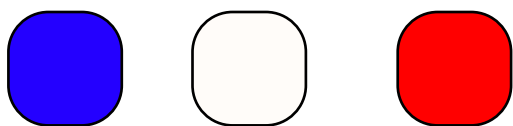
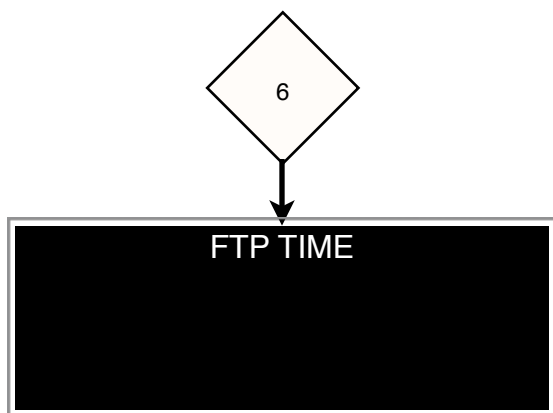
This sets the unit to run in Probe (Pro) or Ratio (Rati) driven mode. The cursor under the P indicates that the system is set to probe driven mode. To change to Ratio driven mode press the red key. To change back to Probe mode press the blue key.

The system should be set to probe mode. Ratio mode should only be used if there is an issue with the pH probe.

This setting is factory set to Disabled (Dis). It should be set to Enabled (En) once installed. This will allow the pH probe to be rinsed after every batch cycle and to use fresh water if the process water is not available.

Drain Flush. This is factory set to 25 seconds. This is the amount of time that the water solenoid is opened after a treatment cycle to rinse the pH probe and flush the drain lines with fresh water.

This setting can be increased if you see sediment forming in the reactor or drain lines over time.



Note: The unit will automatically go into standby from a scripting menu after a few minutes.

FTP Time represents the frequency that the system will send a complete download to Metafix technical support.

This frequency is over and above the downloads after each processing cycle.

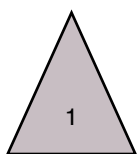
If the unit is connected to the internet this setting should be set for 24.

If the unit is NOT going to be connected to the internet then it should be set to 000

- Settings:
- 000 = Never
 - 001 = Every hour
 - 006 = Every 6 hours
 - 012 = Every 12 hours
 - 024 = Every Day
 - 168 = Every week

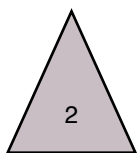
This completes the programing of the system.

Verifying the installation and unit function

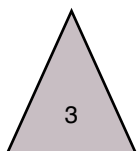


Activate the processor as many times as necessary in order to fill the water tank of the Metafix unit. Continue to run the processor once filled and check for leaks in the plumbing from the processor to the unit and from the unit to the drain. **Make sure you have good flow from the water tank to the drain.**

Fill the developer tank of the Metafix Unit. This can be done in one of three ways.



- 1) Dump the processors developer tank if the chemistry is old.
- 2) If the customer has old spent developer in containers remove the red cap on top of the lower tank and pour it in there.
- 3) Unplug the unit from the wall and let the customer process plates for several days or until the lower tank if half full. Then go back and complete the installation.

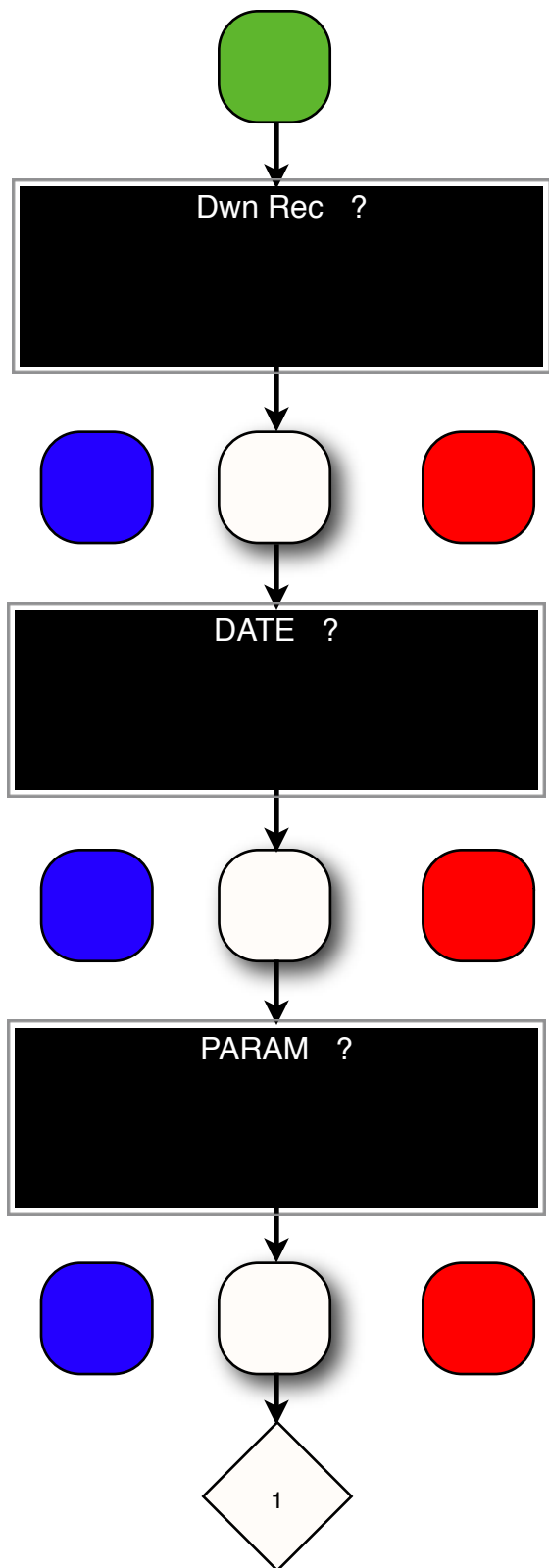


With both the water and developer tanks full proceed to Manual Scripting Level.

12 Manual Scripting Level

12

The manual scripting level is used to manually turn on components such as the developer, neutralizer, water pumps and solenoid. This is done to troubleshoot or verify the systems components during installation and servicing.

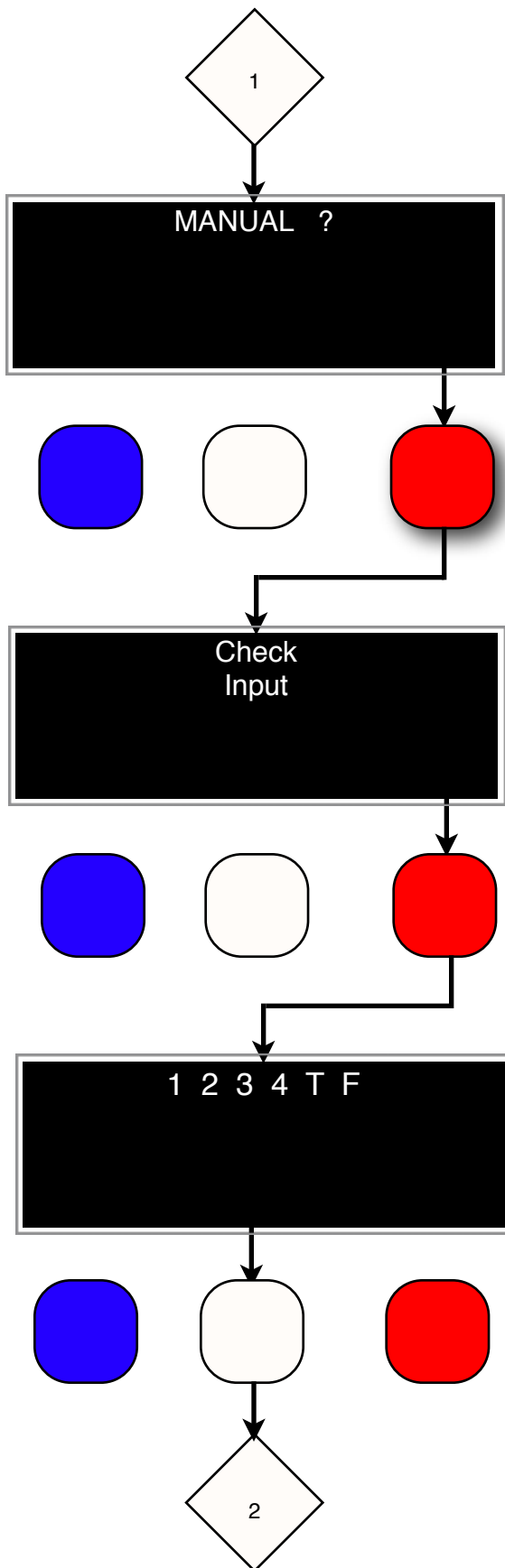


Press the green (PGM) key for 10 seconds or until you hear a beep to enter the scripting menus.

Press the white key to advance to the Date scripting level.

Press the white key to advance to the Date scripting level.

Press the white key to advance to the Parameters scripting level.



Press the red key to enter the manual scripting level.

Press the red key to check the inputs.

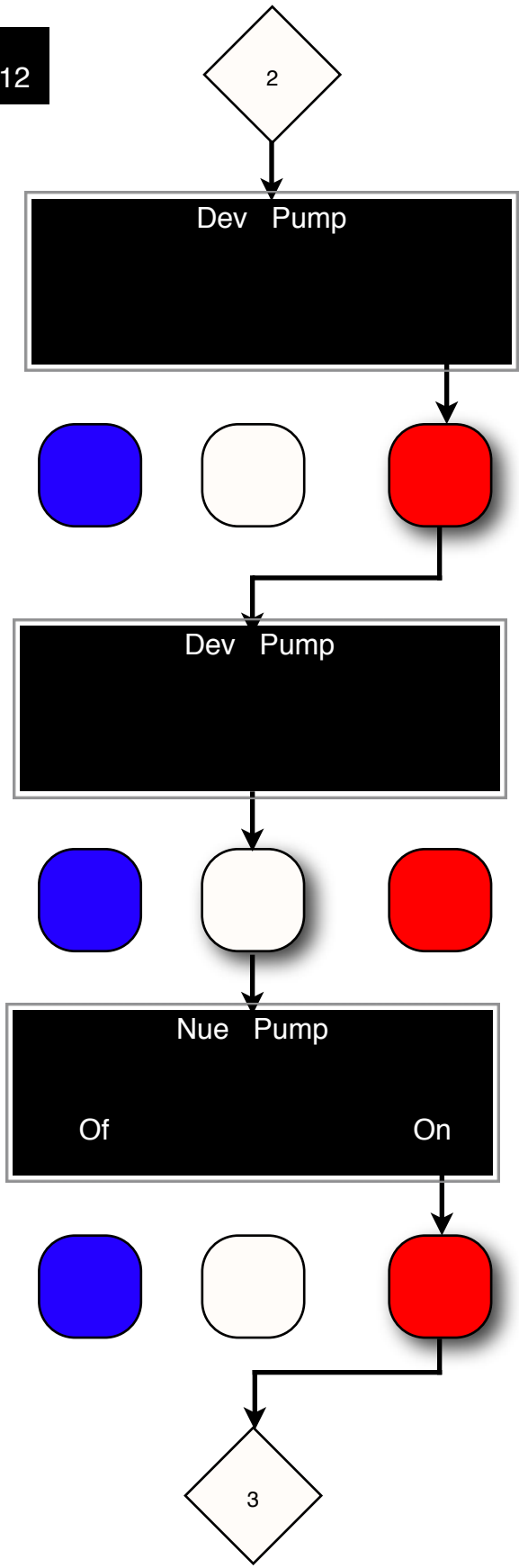
The numbers on the screen indicate the Level sensor on the unit. A star will appear below a number if the level switch is active.

- LS1 = Dev tank level switch
- LS2 = Dev tank overflow alarm
- LS3 = Water tank level switch
- LS4 = Neutralizer wand
- T = Not used
- F = Not used

Manually move LS 1, 2 and 3 and make sure that a star appears when you lift or goes out when you press down on the corresponding level sensor.

If all switches activate properly press the white key to move onto the next screen. If not check the connection or

12



Press the red key to activate the developer pump.

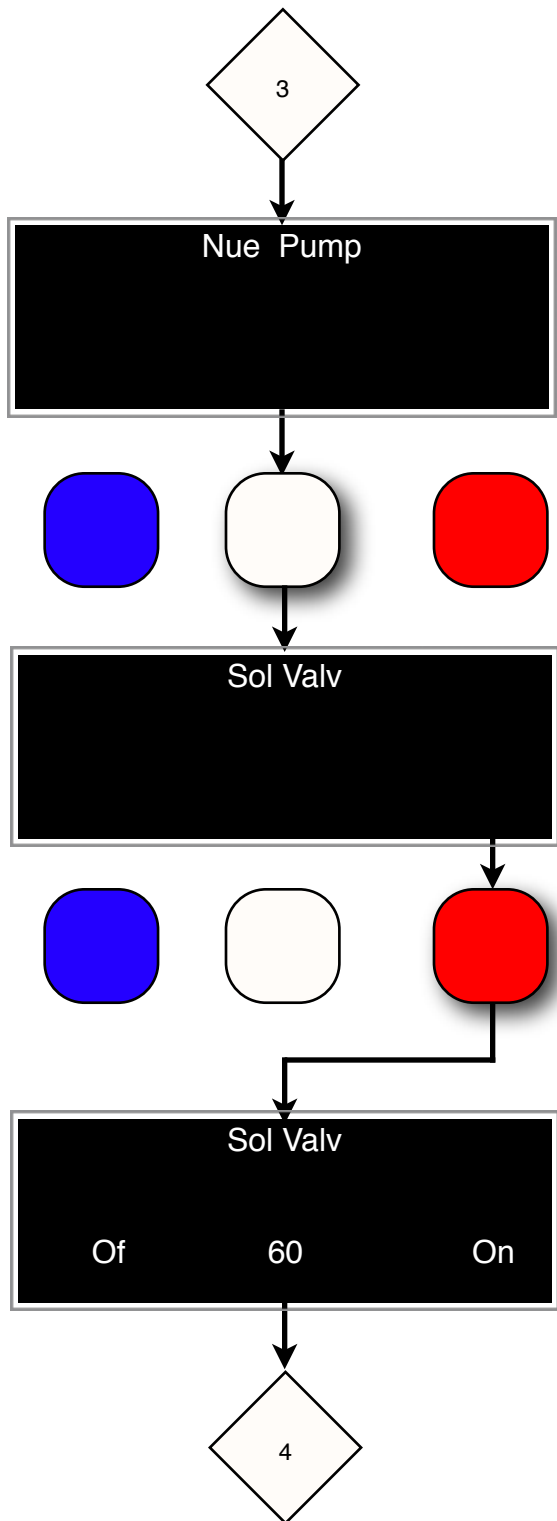
The 60 second timer will start to count down on the display and the blue developer pump will start spinning.

Cycle as many times as necessary until you see developer entering the reactor.

Use the red key to turn on the function and the blue key to turn it off or allow the 60 second countdown to reach zero. Pressing the white key will advance you to the next step.

Do NOT allow the timer to count all the way down to zero if there is no developer in the lower holding tank.

Press the red key to activate the neutralizer pump.



The 60 second timer will start to count down on the display and the clear neutralizer pump will start spinning.

Cycle as many times as necessary until you have bled all the air from the wand hose and you see neutralizer entering the reactor.

Use the red key to turn on the function and the blue key to turn it off or allow the 60 second countdown to reach zero. Pressing the white key will advance you to the next step.

Do NOT allow the timer to count all the way down to zero unless there is neutralizer wand is in the jug.

Press the red key to activate the solenoid valve.

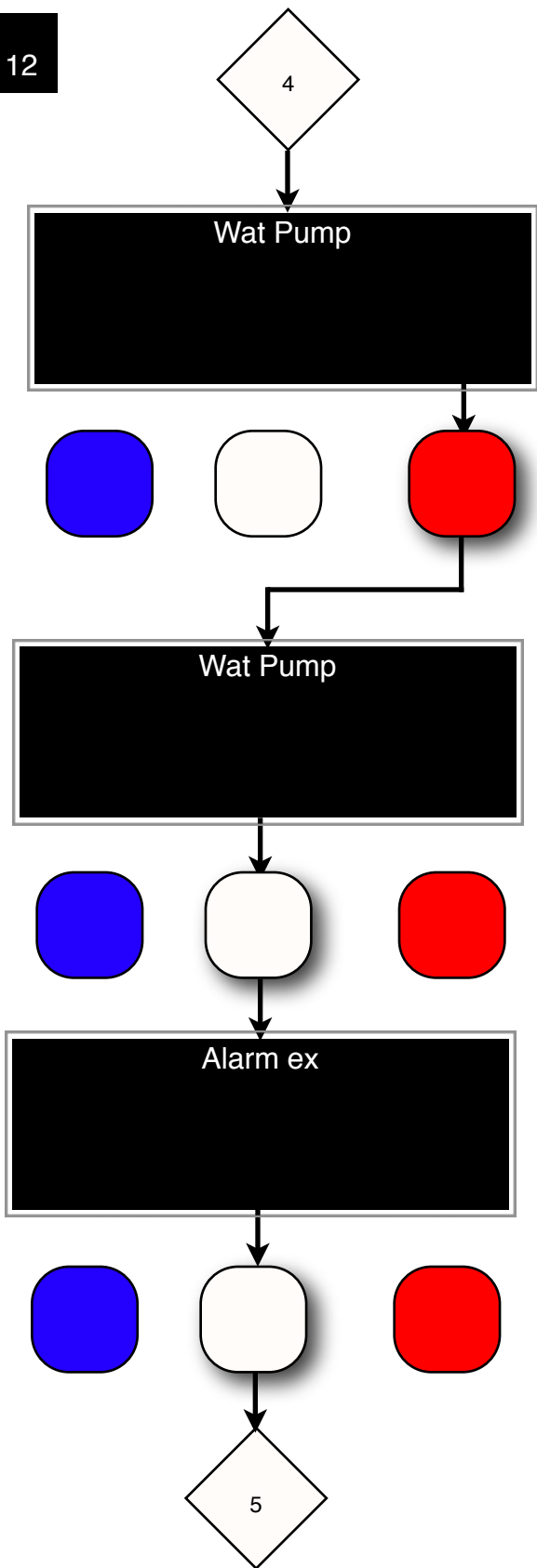
The 60 second timer will start to count down on the display and the solenoid valve will be open.

Slowly open the water supply line.

Check for leaks from the supply line, connection to the back of the unit, around the reactor and all connections leading from the unit to drain. Cycle as many times as necessary until you have finished checking for leaks.

Use the red key to turn on the function and the blue key to turn it off or allow the 60 second countdown to reach zero. Pressing the white key will advance you to the next step.

12



Press the red key to activate the Water pump.

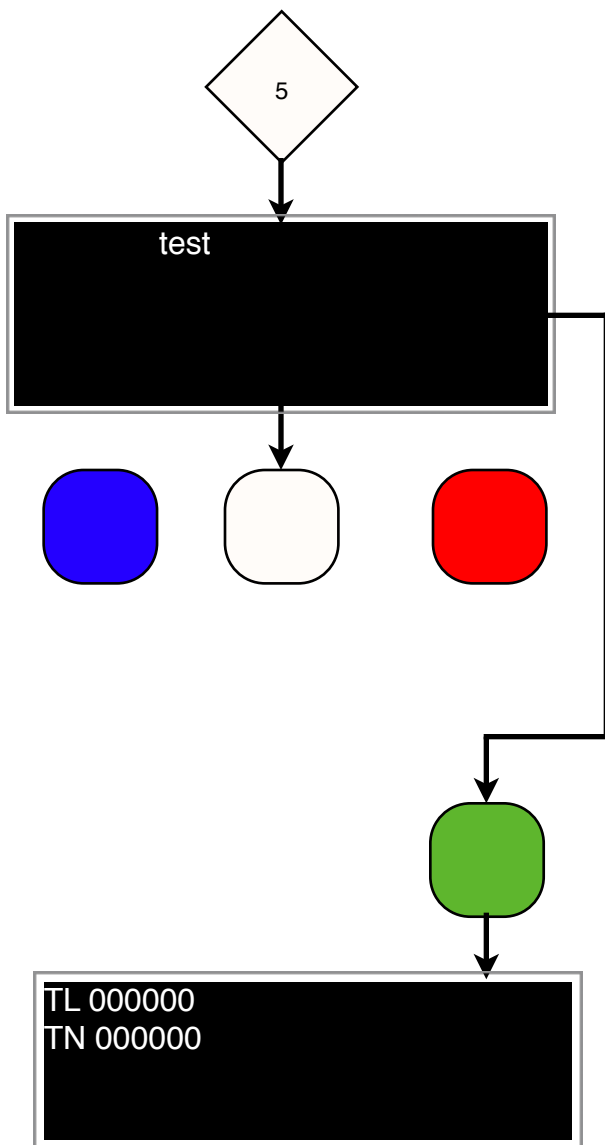
The 60 second timer will start to count down on the display and the water pump will start pumping water from the developer tank into the reactor then out to drain.

Cycle as many times as necessary until you see the water level in the lower tank dropping.

Use the red key to turn on the function and the blue key to turn it off or allow the 60 second countdown to reach zero. Pressing the white key will advance you to the next step.

Do NOT allow the timer to count all the way down to zero if there is no water in the lower holding tank.

If you have the optional external alarm connected press the red key to test it. If not press the white key to advance to the next screen.



This screen allows you to test the variable speed of the neutralizer pump. By pressing the red key you should see and hear the neutralizer (clear) pump increase. By pressing the blue key you should see and hear the neutralizer pump slow down

This is strictly for testing purposes only and does NOT need to be done during the installation process.

Press the green (PGM) key twice return to the the standby screen.

You must now proceed to the next section “Setting the Neu Use” in order to complete the last of the settings in parameters.

If you are NOT connecting to the pH Control to the internet the installation will be completed once you have established and set the “Neu Use”

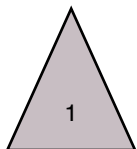
If you ARE connecting to the internet proceed to the section “ Connecting to the Internet” to complete the installation.

13

The Neu Use setting is used for two functions.

- 1) It is the starting speed that the neutralizer pump runs at when the unit starts treating waste developer.
- 2) It is the speed that the neutralizer pump will run at when the unit is put into Ratio mode and the pH probe is NOT being used.

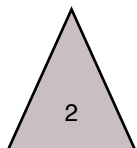
It is critical that this value be determined and set accurately. If it is not it is possible that the discharge will NOT be within the Low and High pH you programed in the parameters.



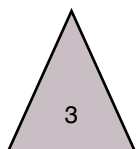
Once the unit has been installed and all of the other parameters have been set make sure that there is enough water and waste developer in the holding tanks to activate LS1 and LS3.

If there is not then add water and developer until they are activated and the unit starts to cycle.

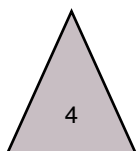
Allow the system to treat the waste for several minutes.



Watch the display as the system is treating the waste. The display will alternate between a TL, TN reading and a pH value. When the pH value is being displayed there will be a number below it. This is the neutralizer pump speed.



Once the pH reading has stabilized around the value that was entered into "pH Target" in parameters make note of the pump speed being displayed. For example, if the target pH was set for 7.5 and the pH being displayed is 7.5 record the number of the pump speed. Keep watching the display as the pH and the pump speed will fluctuate around the target, record the pump speed over several readings. You will get a feel for what the correct setting should be to obtain a pH close to the established target.



Enter the parameters scripting level and scroll through using the white key until you see "Neu USe ?" Use the blue and red keys to enter the number you determined to be the correct pump speed.

Note: It is imperative that you use only used developer for this procedure. Using an unknown solution or spent developer that could contain water from a processor dump or other source will not give you the proper setting.

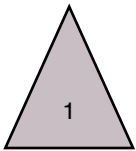
USE PURE WASTE DEVELOPER ONLY!

Metafix pH Control R4 Network requirements

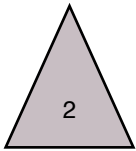
- Port speed to be set at 100MBps, half duplex (will not work at 10 and 1000MBps or full duplex).
- Data ports 20 and 21 to be open.
- 2 consecutive control ports from 10000 to 14845 to be available
- Unit's name is Metafix Device
- DHCP and DNS modes are enabled by default.

The R4 pH Control system comes pre programmed to access the internet using the DHCP protocol.

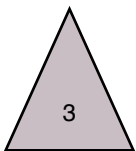
Check with the systems administrator and make sure that the node you are connecting to meets the above requirements and that it will connect using the DHCP protocol. If so then follow these instructions for connecting the unit.



Disconnect the power by unplugging the unit from the wall or removing the 24V feed to the power supply.



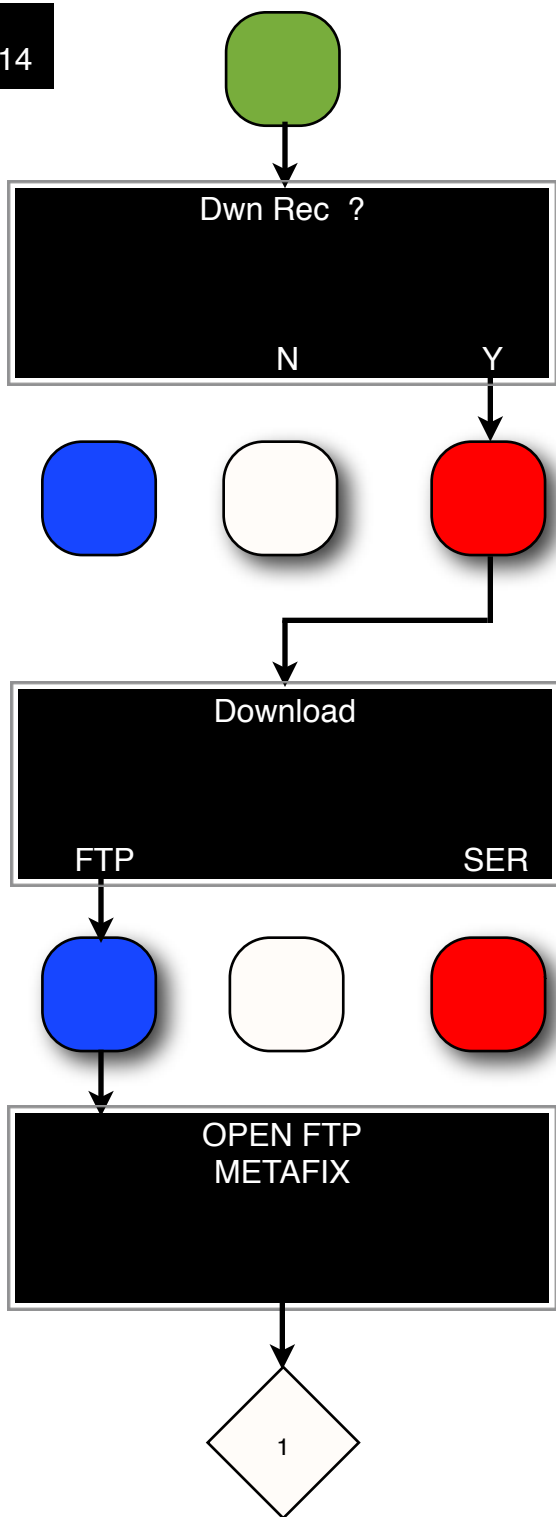
Connect the either-net cable to the port on the power supply,



Reconnect power to the unit and wait for it to go through its boot up sequence.

Follow the next steps to test your connection.

14

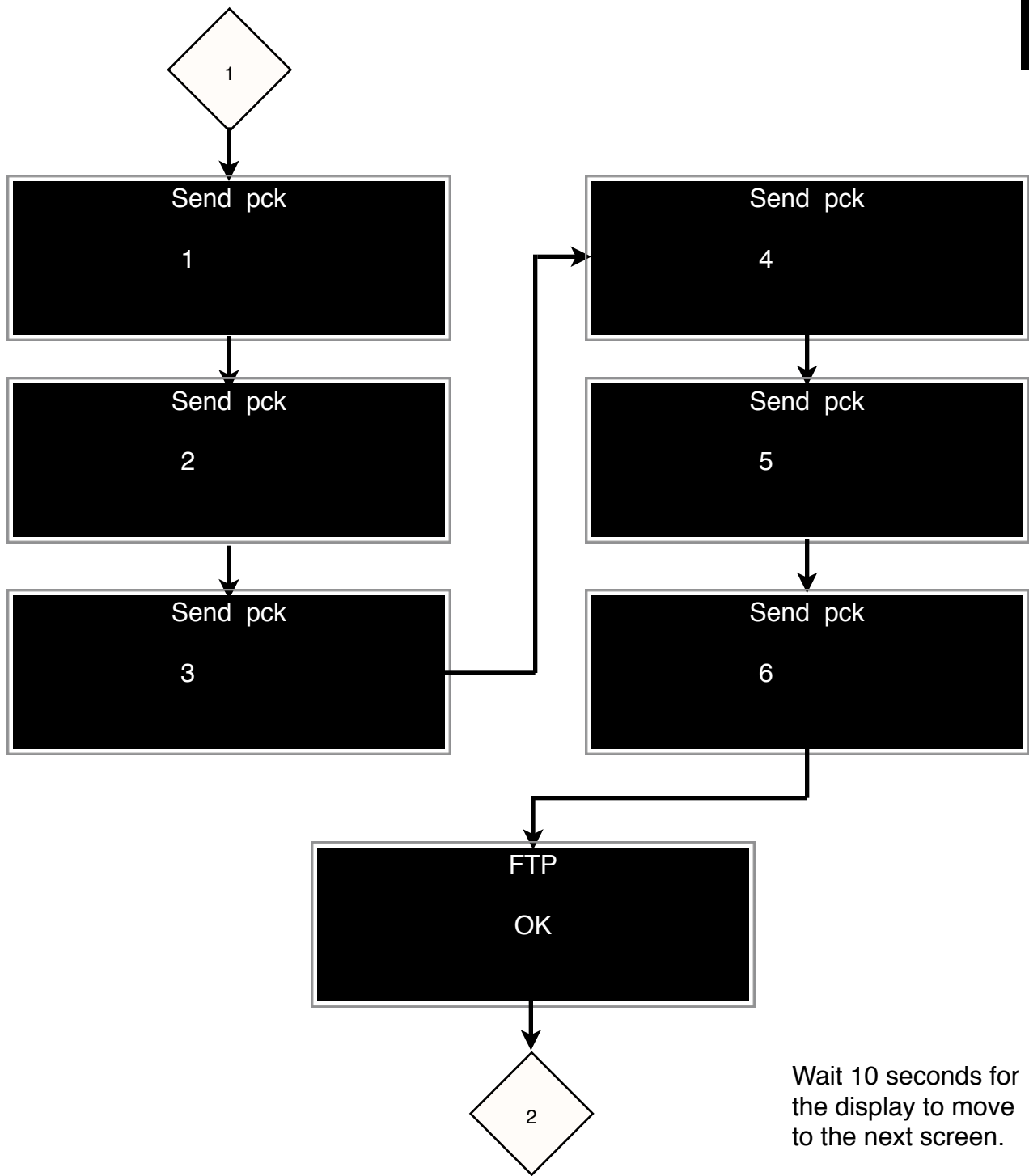


Press and hold the Green key (PGM) for 10 seconds or until you hear a beep to enter the scripting menus.

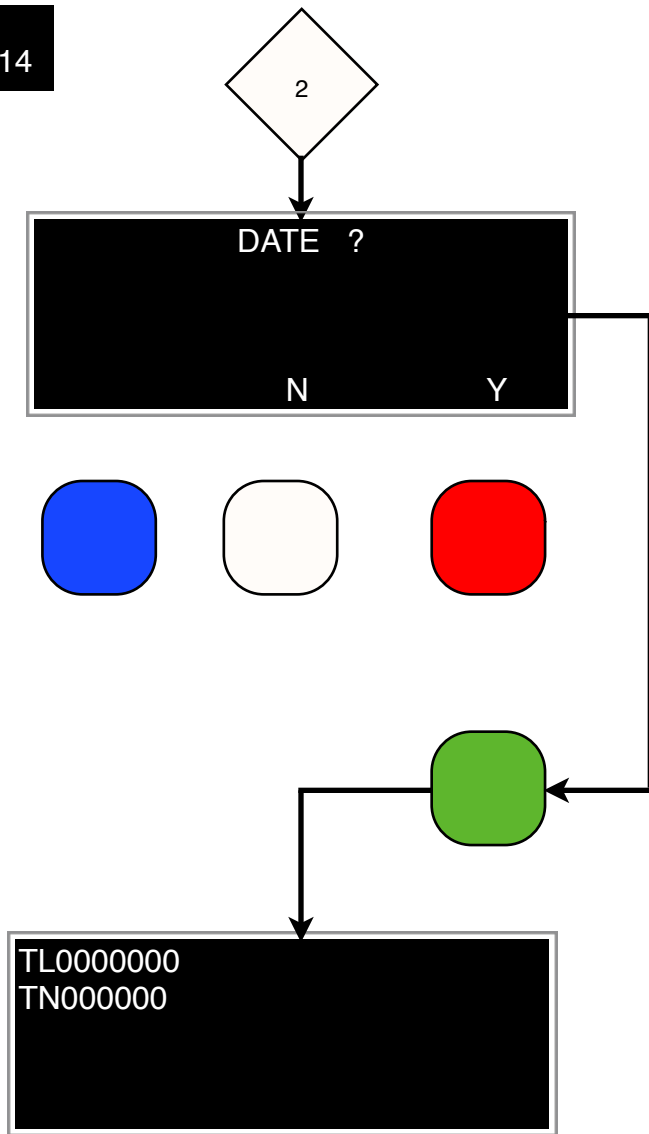
Press the red key to select yes and advance to the Download screen.

Press the blue key to select FTP and send a download file to the FTP Server.

If the connection to the internet is good you will see "Open FTP METAFIX" and the following screens.



14



Once you see the “DATE ?” screen press the green (PGM) key to exit the scripting mode and go back to the standby screen.

If you see these screens and end up with the “FTP OK” display then you have good connection and the download was transmitted and received correctly. If you do not see this sequence or you get any other message displayed after you selected “FTP” the proceed to “Troubleshooting your connection”

If the network you are connecting to does not allow DHCP and you need to program static IP addresses then proceed to the next section “Internet Programming for Static IP addresses”.

Metafix pH Control R4 Network requirements

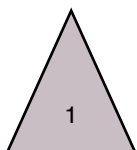
- Port speed to be set at 100MBps, half duplex (will not work at 10 and 1000MBps or full duplex).
- Data ports 20 and 21 to be open.
- 2 consecutive control ports from 10000 to 14845 to be available
- Unit's name is Metafix Device
- DHCP and DNS modes are enabled by default.

If static IP addresses have to be used follow these instructions to connect the internet and enter the necessary data.

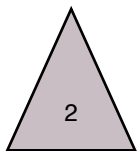
Information required to complete this procedure.

- IP address: _____
- Gateway address (Router): _____
- DNS Server address: _____

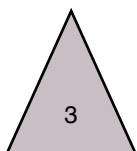
This information must be obtained from your IT administrator.



Disconnect the power by unplugging the unit from the wall or removing the 24V feed to the power supply.



Connect the ethernet cable to the port on the power supply,

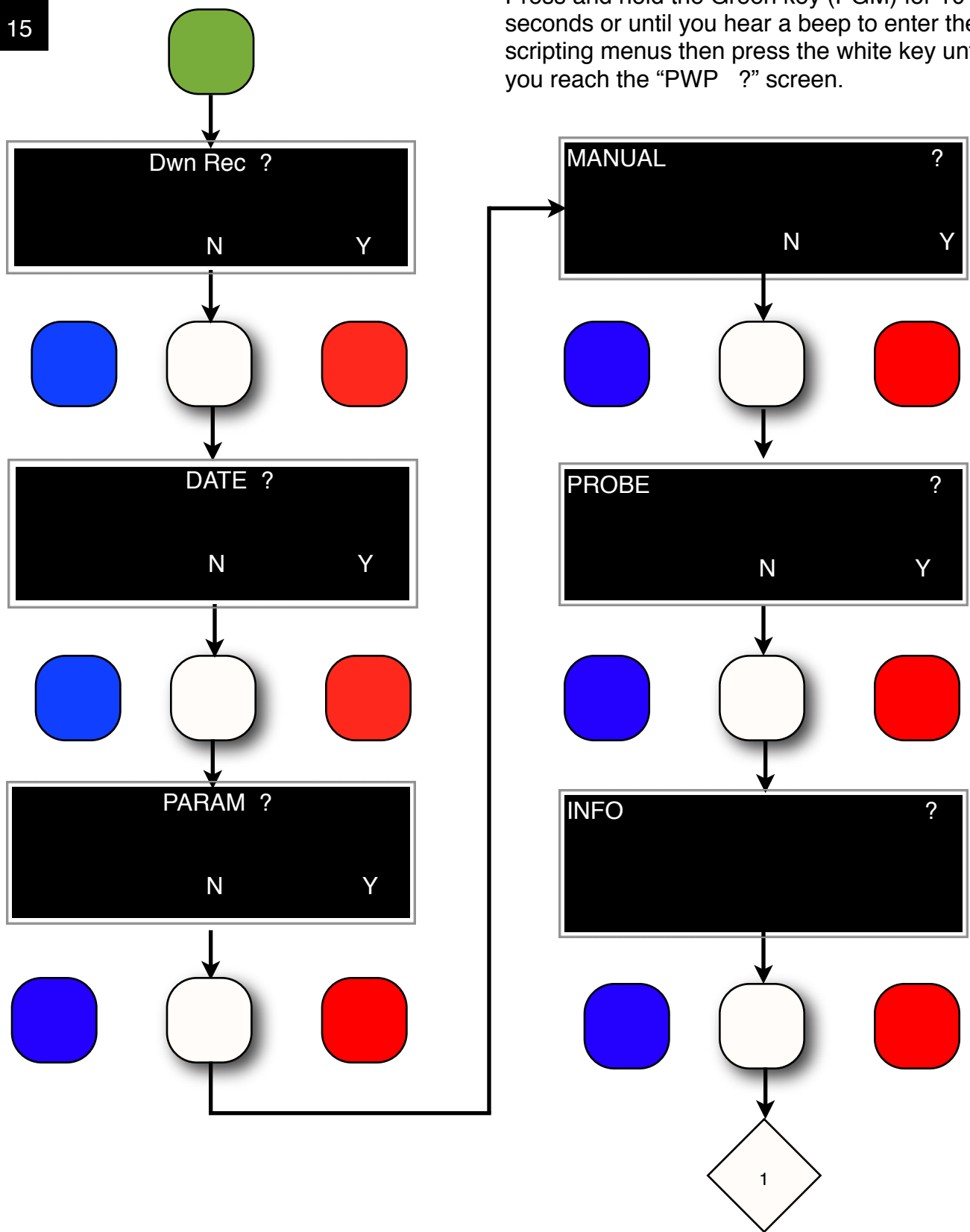


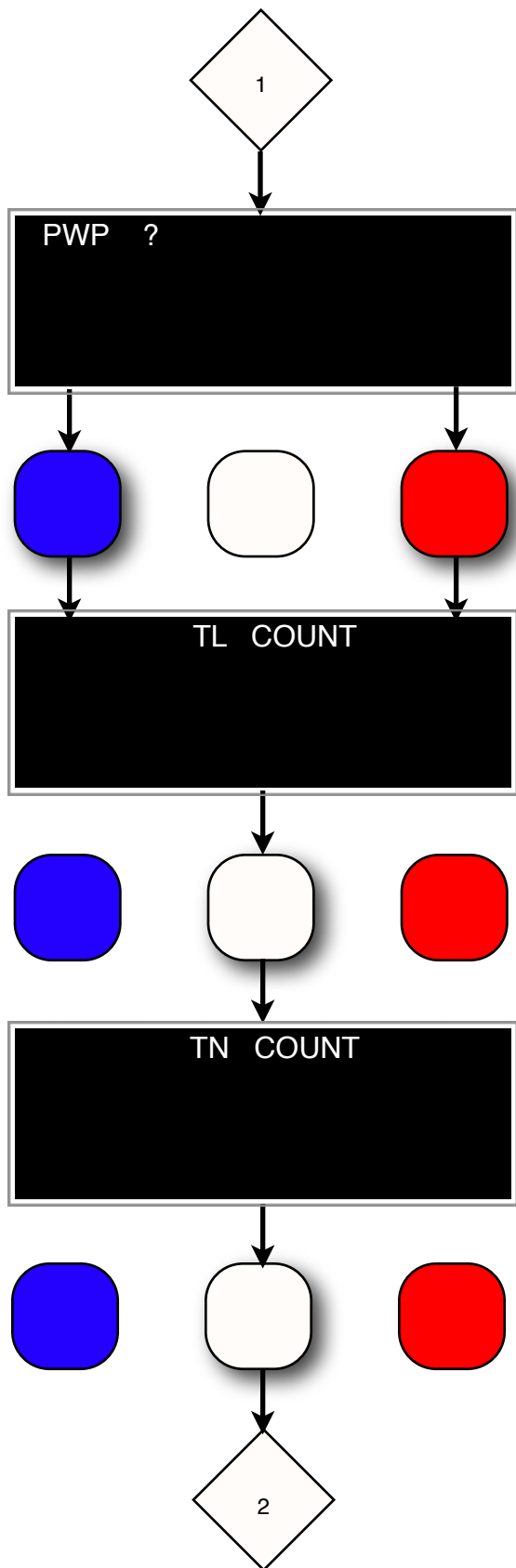
Reconnect power to the unit and wait for it to go through its boot up sequence.

Follow the next steps to program your IP data test your connection.

15

Press and hold the Green key (PGM) for 10 seconds or until you hear a beep to enter the scripting menus then press the white key until you reach the "PWP ?" screen.





To enter the PWP program you must hold down the blue and red kets at the same time for at least 10 seconds

This screen allows you to adjust the TL count that is displayed on the screen. **This should only be used when you are replacing the power supply and need to enter the count from the old head into the new one.**

To make adjustments use the blue and red keys to move the count up or down.

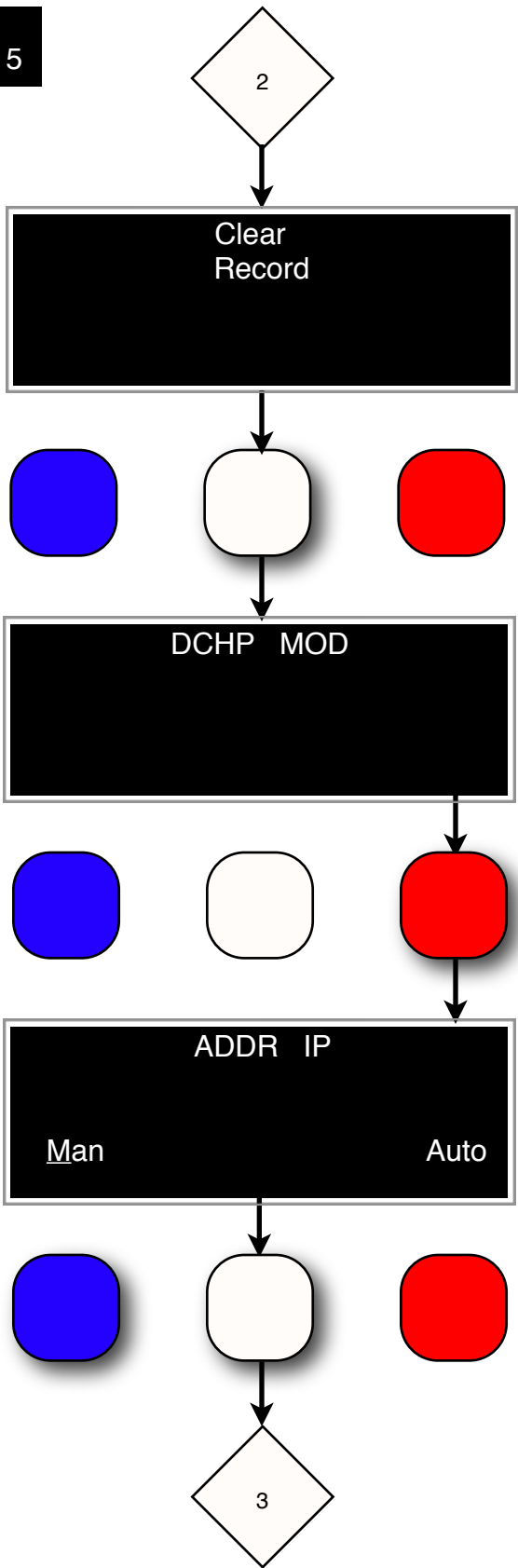
Press the white key to advance.

This screen allows you to adjust the TN count that is displayed on the screen. **This should only be used when you are replacing the power supply and need to enter the count from the old head into the new one.**

To make adjustments use the blue and red keys to move the count up or down.

Press the white key to advance.

15



This screen will allow you to erase all stored records in the system. **DO NOT SELECT THIS OPTION UNLESS INSTRUCTED TO DO SO BY METAFIX TECHNICAL SUPPORT.**

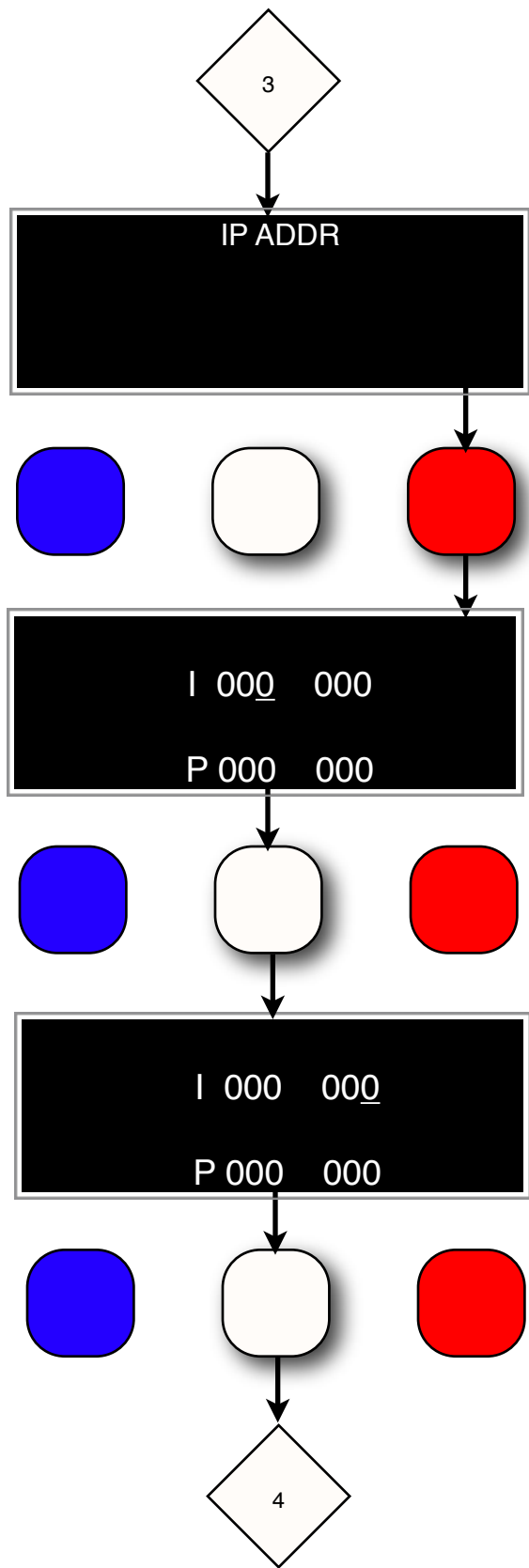
Press the white key to enter the DHCP Screen.

Press the Red Key to enter if the unit will run on Auto(DHCP) or manual (Static IP).

Use the Blue or Red key to select Manual or Auto.

To set static IP address press the Blue key and make sure the cursor is under the M.

Once selected press the white key to advance to the next screen.



Press the Red key to enter the IP Address screen.

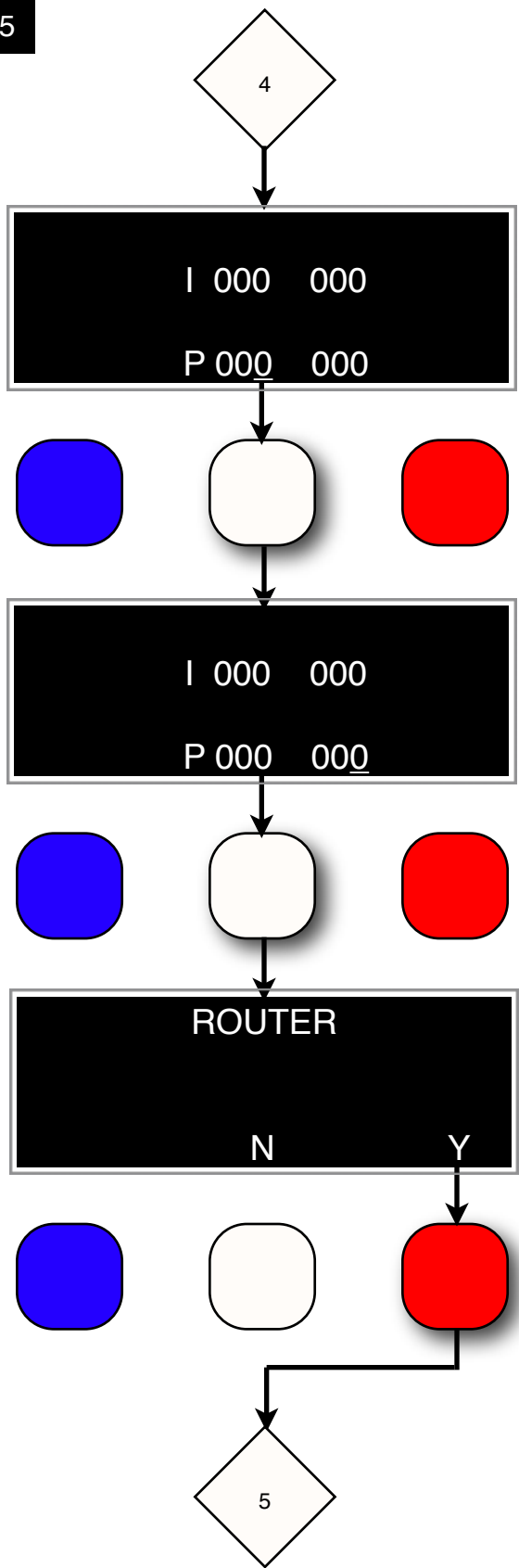
You will see a flashing cursor under the last digit of the first row of numbers. Use the Blue key to decrease the first set of three numbers or the red key to increase.

Once you have set the first three numbers press the white key to advance to the next set of three.

Using the Blue and red keys set the second set of three numbers.

Once you have finished press the white key to advance to the next set of three.

15



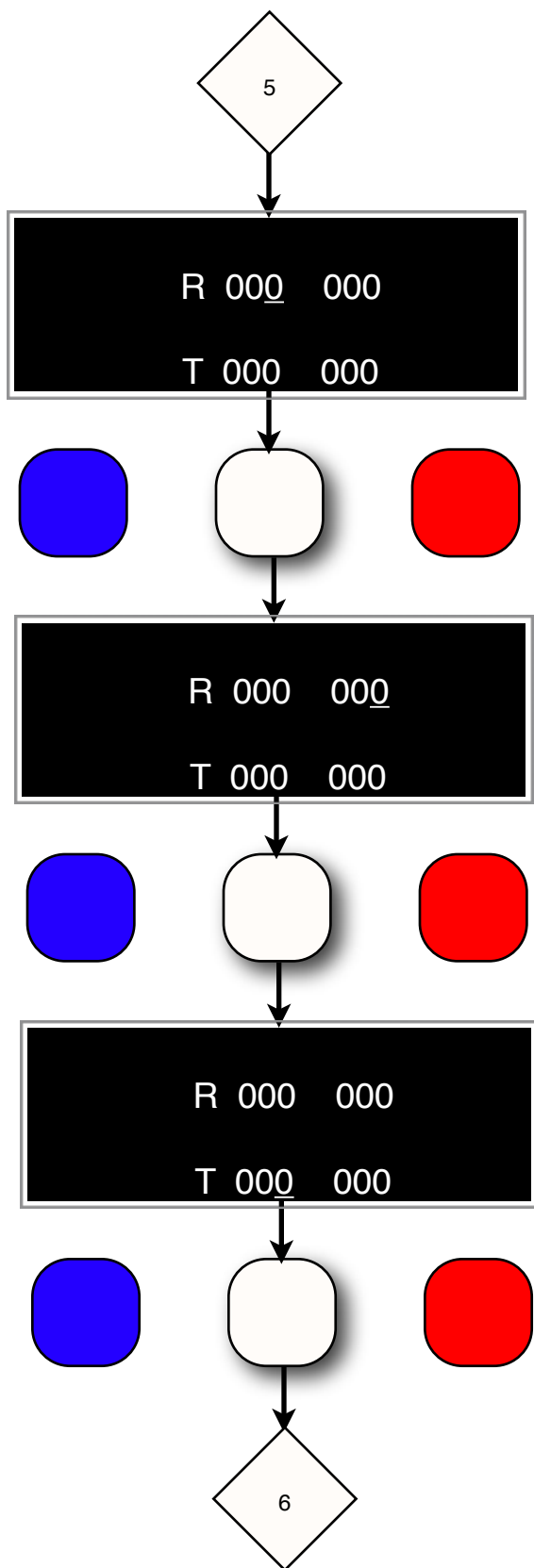
Using the Blue and red keys set the third set of three numbers.

Once you have finished press the white key to advance to the next set of three.

Using the Blue and red keys set the fourth set of fourth numbers.

Once you have finished press the white key to advance to the Router screen.

Press the red key to enter Router address screen.



Using the Blue and red keys set the first set of three numbers.

Once you have finished press the white key to advance to the next set of three.

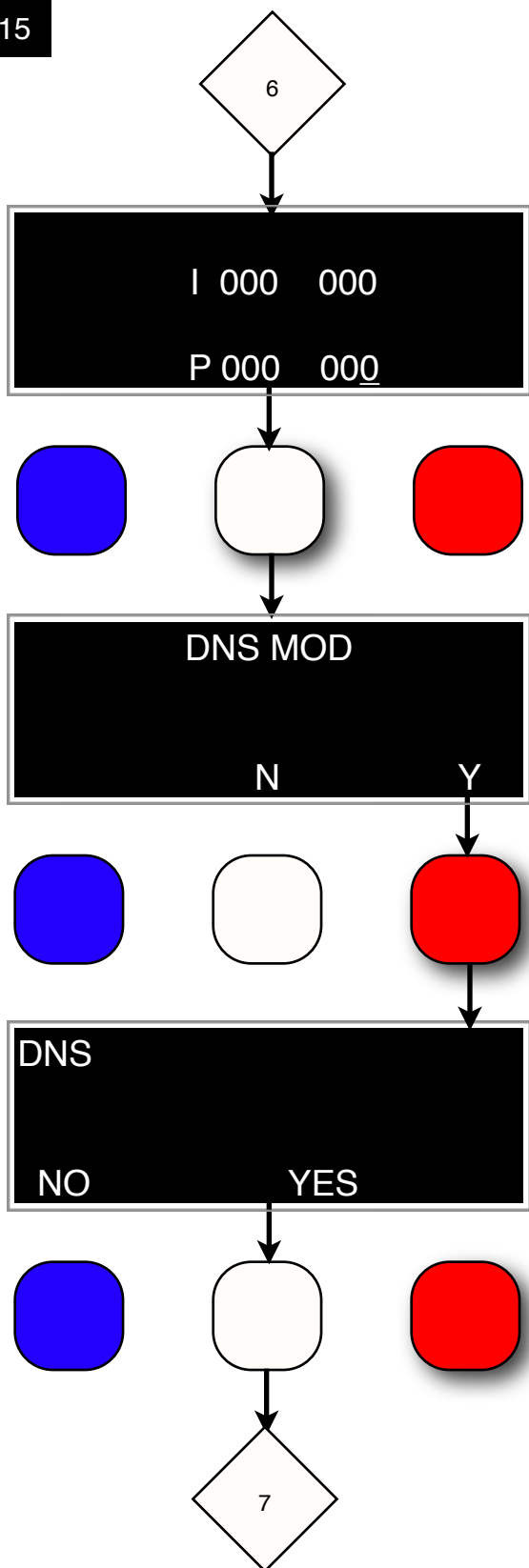
Using the Blue and red keys set the second set of three numbers.

Once you have finished press the white key to advance to the next set of three.

Using the Blue and red keys set the third set of three numbers.

Once you have finished press the white key to advance to the next set of three.

15

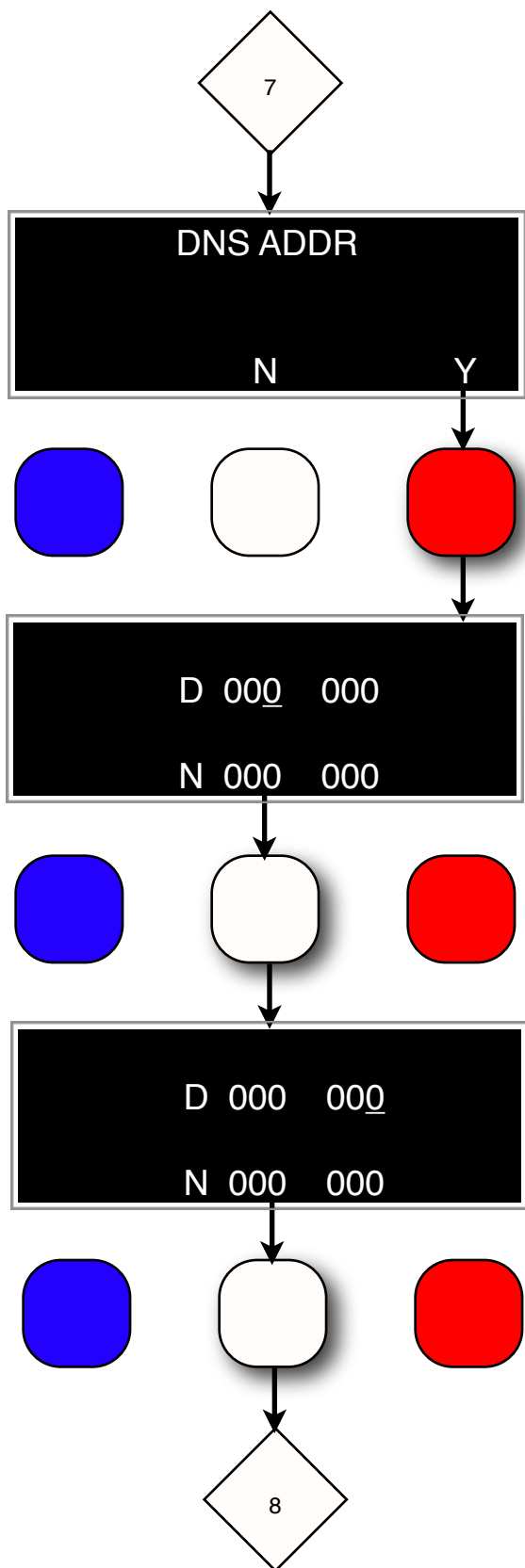


Using the Blue and red keys set the fourth set of numbers.

Once you have finished press the white key to advance to the DNS MOD screen.

Press the red key to enter the next screen.

Press the White key to confirm YES.



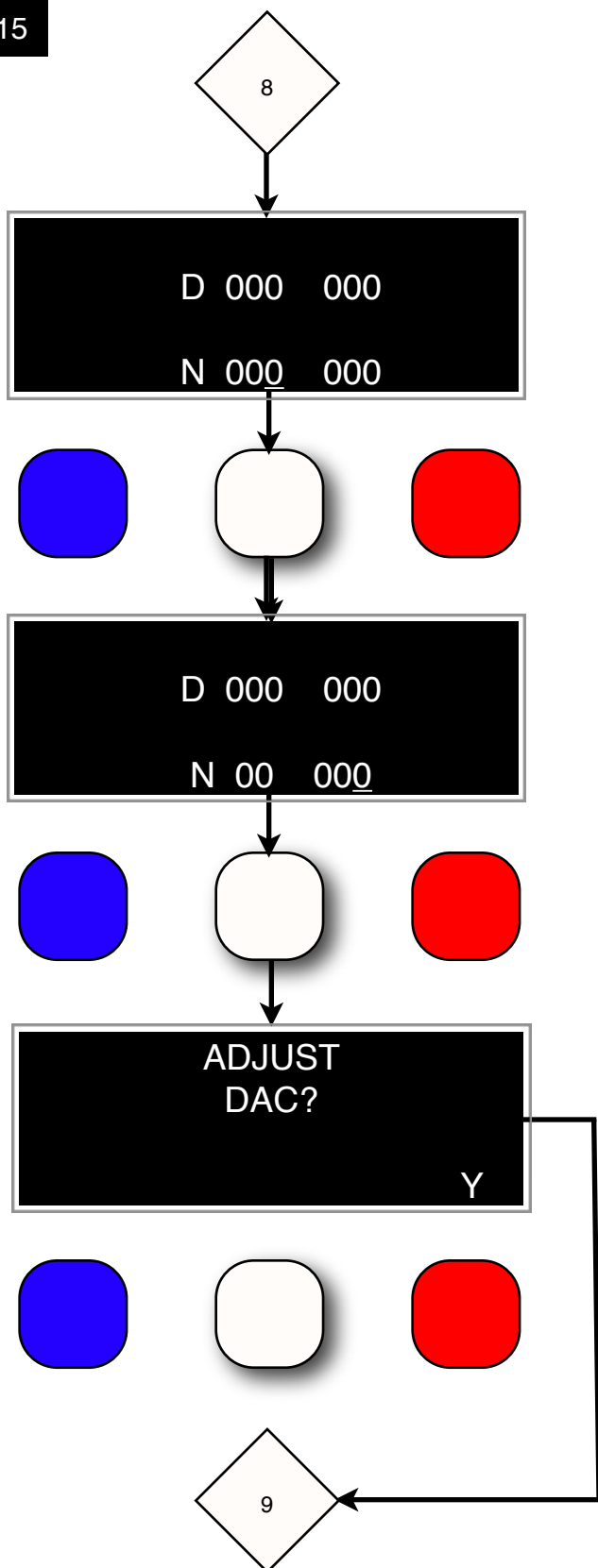
Using the Blue and red keys set the first set of three numbers.

Once you have finished press the white key to advance to the next set of three.

Using the Blue and red keys set the second set of three numbers.

Once you have finished press the white key to advance to the next set of three.

15



Using the Blue and red keys set the third set of three numbers.

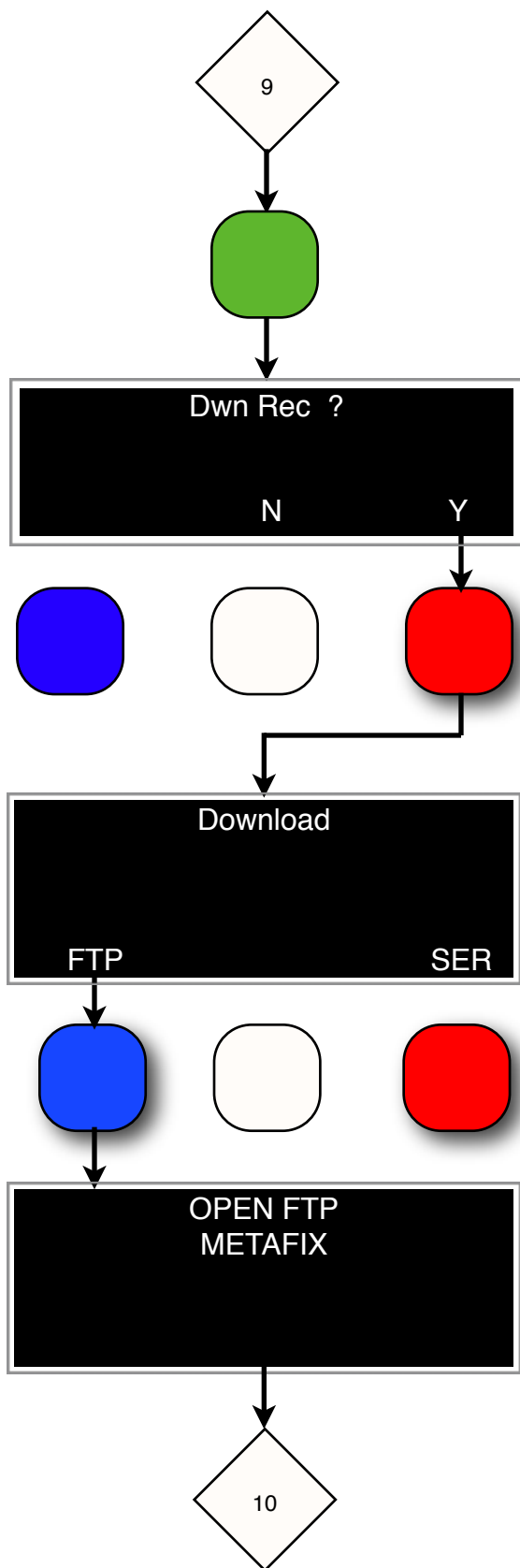
Once you have finished press the white key to advance to the next set of three.

Using the Blue and red keys set the fourth set of three numbers.

Once you have finished press the white key to advance to the next programming screen.

FACTORY ADJUSTMENT ONLY!

DO NOT SELECT THIS OPTION UNLESS INSTRUCTED TO DO SO BY METAFIX TECHNICAL SUPPORT.



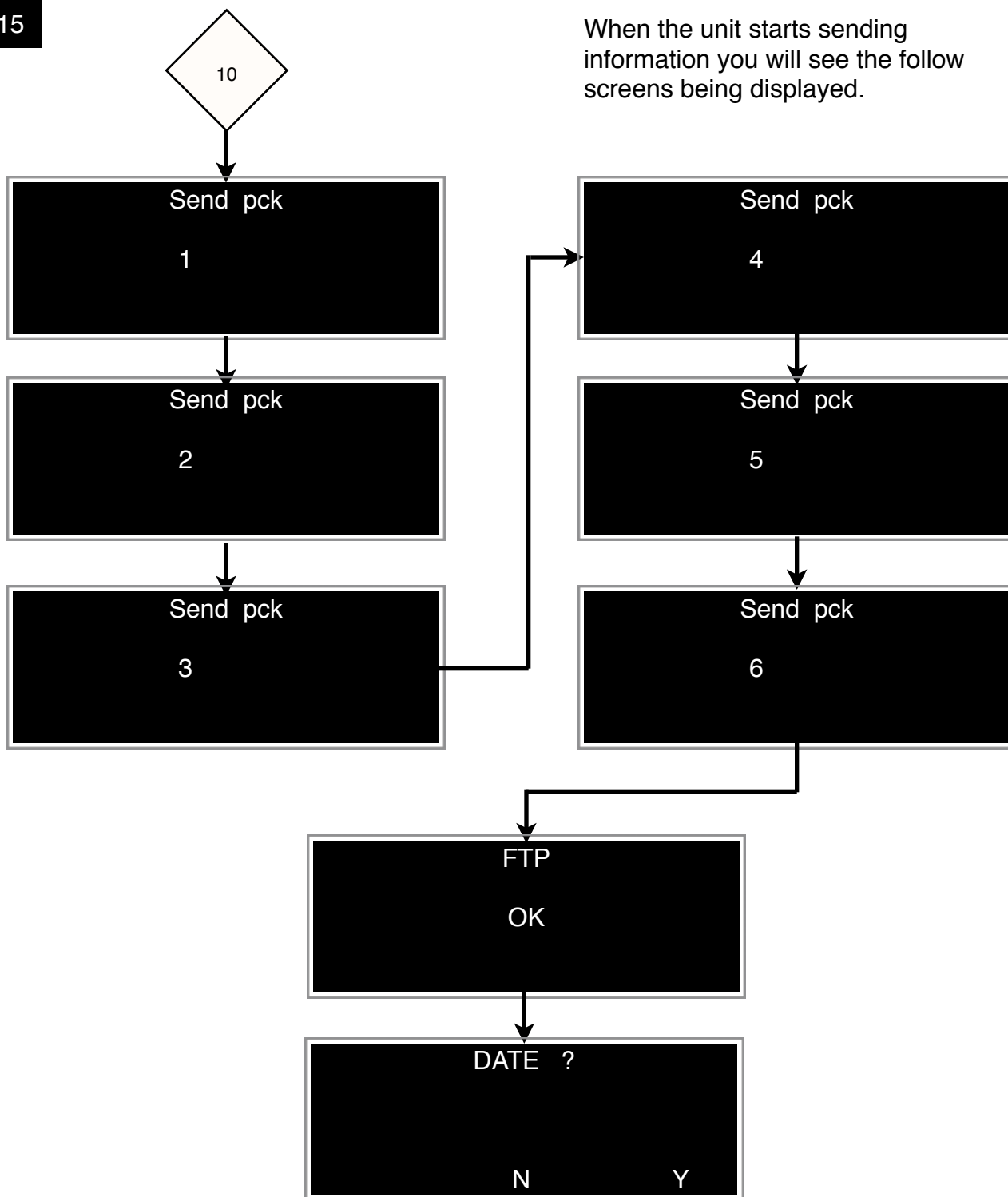
Press the Green key to get you back to the "Dwn Rec ? " Screen.

Press the Red key to select yes.

Press the Press the Blue key to send a download to the FTP server.

15

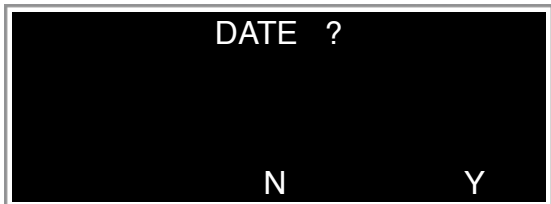
When the unit starts sending information you will see the follow screens being displayed.



If this sequence appears on the screen once you select FTP then your connection the the internet is good and the unit is communicating correctly. **Press the Green (PGM) Key to exit.**

Error messages displayed

Verify



If you are using DHCP make sure you have selected Aut in the DHCP screen.

If you are using Static IP address make sure you have selected Man in the DHCP screen and verify that your IP, Router and DNS addresses are entered correctly.



Verify that the unit is set to Man in the DHCP screen and that your IP, Router and DNS addresses are correctly set.

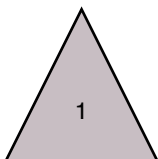
If these does not correct the error verify the address with the IT administrator to make sure they are valid.

17 In addition to downloading via FTP the R4 can also download its settings and the information from the last processing cycle directly to a laptop computer. This allows for an immediate record of the system's settings and an brief history of the units processing cycle. This ability to retrieve data from the unit's memory allows for rapid analysis of the systems functionality and quick turn around for any adjustments that might be required.

Items Required:

- Lap Top Computer (Mac or PC)
- 9-Pin standard serial cable (Pin to Pin, Male to Female) Note: a null modem cable will not work!
- A USB to Serial (RS-232 DB9) adaptor and associated software drives.
- Terminal type program loaded onto the lap top computer (Z Term is recommended for Mac and Hyper terminal is recommended for Windows).

Procedure:



Turn on computer and open your terminal program and enter the following settings. Save these settings so that you don't have to do this every time.

Service Name:

Phone Number:

Pre-dial init:

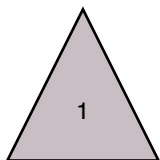
Account: Password:

Data Rate: Data Bits:

Parity: Stop Bits:

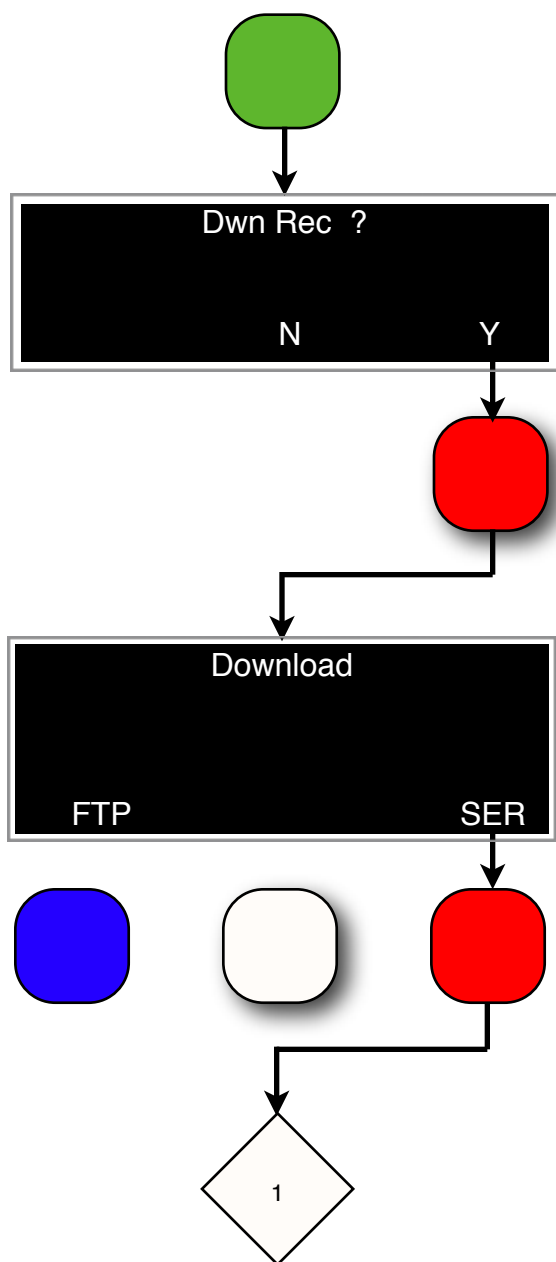
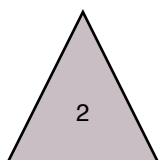
Local Echo

Flow Control: Xon/Xoff Hardware Handshake



If your computer has a serial port then connect the serial cable to the computer. If your computer uses USB then connect the Serial to USB adaptor to the serial cable and plug into the USB port of your computer.

Connect the other end to the serial cable to the serial port on the power supply.

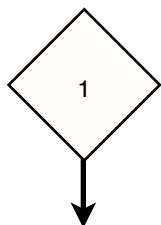


Press the green Key to enter the scripting mode.

Press the Red Key to select where you want to send the download.

Press the Red Key to send the download to your computer.

17



pH4
Soft Ver. < 2.4e >

SN < N4U101312298-07 >
Date(YY/MM/DD) < 10/04/12 >
TL < 000002 >
TN < 000000 >
pH LOW < 5.5 >
pH HIGH < 10 >
pH Target < 8.0 >
Cali. Date < 03/25 >
Last < 7.0 >
New < 7.0 >
Dev. Pump < 450 >
Neu.Pump < 72 >
MAX Neu < 71 >
Ini. Neu. < 43 >
S.Time < 4 >
Ctrl < PROBE >
Ex. Rinse < ENABLED >
Drain Time < 30 >

FTP Period < 24 >
MAC < 00:50:C2:47:87:BD >
Net Mode < DHCP >
IP < 192.168.1.201 >
Router < 192.168.1.1 >
DNS Mode < Yes >
DNS < 206.47244.137 >

Action < OPERATOR >
Ctrl < Probe >
pH < 7.8 >
DEV < 0002 >
NEU < 000 >
Rate Neu < 41 >

Download will appear on your computer.
If required save the file to your hard drive.

When you are finished downloading
simply remove the cables and press the
green key to return to the main display.

Note: Do not attempt to upload new software if you were unable to perform a download to your computer. If you are unable to obtain a download STOP. And call the Metafix support line at 1-888-636-1087 or email us at ctp@metafix.com.

Hardware and Software Requirements:

- Laptop (or desktop) computer with a serial port (RS232) and a communication program such as Hyper terminal for Windows or Z Term for the Mac. If you don't already have these, a freeware program such as Tera Term can be downloaded from, <http://www.download.com> - search for terminal communication program. Z Term can be found here as well.
- Standard serial communication cable with 9 pin male/ 9 pin female connectors. (a USB to serial adapter may be required on computers not equipped with serial ports along with the appropriate drivers). Keyspan's Model: USA-19HS is recommended.
- A text file (.s19 or .SX) from Metafix, Inc. with the updated firmware.

Computer Configuration:

- 1- Open Hyper terminal.
- 2- Choose a name and icon for the new connection.
- 3- In the "Connect to" box, choose an unused serial port such as COM1, or COM2.
- 4- Configure port settings:
 - a. Bit Rate 57600
 - b. Data bits 8
 - c. Parity none
 - d. Stop bit 1
 - e. Flow control X on/X off
- 5- Connect the communication cable between the pH Control R4 and to appropriate port (selected in step 3) on the computer.

The computer is now ready to transfer data to the pH Control.

Preparing the pH Control to receive the updated firmware:

- 1- Press and hold the PGM key for approximately 7 seconds until a beep is heard.
- 2- Press the RED key twice. This will upload data from the pH Control to the computer, confirming proper communication between the 2 units. If data from the pH Control is not displayed on the computer screen, then the communication is not properly established, verify and reconnect the cables and try again.
- 3- When the computer screen displays the pH Controls parameters, communication is confirmed and you can proceed to; Updating pH Control Firmware.

18 Software upgrade Procedure

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Updating pH Control Firmware:

- 1-Press the ENTER key on the computer 4-5 times until ENTER THE PASSWORD prompt appears.
- 2-Enter password **3668**, and ENTER.
- 3-Choose Upgrade Software from the menu.
- 4-If you are sure you want to upgrade the software, then answer Y (yes) to the question (Are you sure?). Warning: Answering Y to (Are you sure?) is irreversible and will erase the existing firmware.
- 5-Disconnect the power cord from the pH Control for 5 seconds and reconnect. At restart the following menu should appear in the Hyper terminal window.

Metafix Boot Loader

- a. Erase Flash
- b. Program Flash
- c. Start Program

?

- 3- Press “a”. The same menu will be duplicated after a few seconds, indicating the onboard flash memory has been erased.
- 4- Press “b”. The following menu will appear:

Metafix Boot Loader

- a. Erase Flash
- b. Program Flash
- c. Start Program

? b

Select file .s19

- 5- From the transfer menu of Hyper terminal, click on Send text file...
- 6- Choose the proper text file having a .S19 or .SX extension, and click Open. The download progress is indicated by a progression of stars. The download is complete when no new stars appear. The process requires a few minutes to complete.
- 7- Close Hyper terminal, remove the communication cable.
- 8- Disconnect the power cord for 5 seconds and reconnect.
- 9- The pH Control software has been upgraded.