



**Monarch Token/Coin System
on the
Northstar Pressure Washer
Model M15730D/MCS
&
Model M157303D/MCS**

**INSTALLATION, OPERATION &
MAINTENANCE MANUAL
KEEP SAFE FOR FUTURE REFERENCE**

Thank you for purchasing a token/coin operated pressure washer. Monarch selected Northstar units as being the most appropriate unit for long life, dependability, and a top performing machine. Take time now to read through this manual so you better understand the machine's operation, maintenance, and safety precautions. Everyone who operates this unit should understand basic operations and safety precautions. Signage is available to instruct users. The time you take to fully understand the proper installation, maintenance and use of the machine will prolong its service life, and assure you of trouble free operation. We reserve the right to update designs and/or change the specifications at any time without incurring any obligation to install them on units previously sold.

QUICK FACTS

- | | |
|--------------------|---|
| PUMP OIL | Pump is shipped with oil. Remove shipping seal from the plug and check pump oil level before starting. Use SAE 30 NON DETERGENT pump oil ONLY. |
| WATER | Make sure your water flow is 20% higher than the pressure washer's flow rate. Make sure your water is clean and particle free.
NEVER RUN THE PUMP WITH WATER OFF
OR DISCONNECTED!! |
| STORAGE | Do not allow water to freeze in the pump, hose, or spray gun. |
| SPRAYING | Unit does not have an injector. Do not introduce chemicals to the pump, except for RV antifreeze when winterizing. |
| Maintenance | Oil change after 1st 50 hours, then every 3 months or 500 hours. |

READ AND UNDERSTAND ALL MANUALS BEFORE OPERATING

ITEM NUMBER _____

SERIAL NUMBER _____

TABLE OF CONTENTS

Important Safety Instructions	2	Electrical & Wiring	6
Grounding Instructions	2	Plumbing & Winterizing	7
Hardware and Installation	3	Timer settings & Data	8-9
Preparation for Operations	4	Added Questions	10
Operating Instructions	5		

IMPORTANT SAFETY INSTRUCTIONS ! READ CAREFULLY BEFORE USING THIS UNIT !

WARNING ! -Risk of injection or injury to persons. Do NOT Direct the Discharge Stream at persons or animals. Do NOT use if there is evidence of damage to the hose. DO NOT use in flammable environment. DO NOT use to pump flammable liquids.

CAUTION ! - Gun has a recoil !! Hold with both hands ! Direct initial stream away from persons and equipment !

WARNING ! -When using this product, basic safety precautions should always be followed. Read and Heed the following carefully :

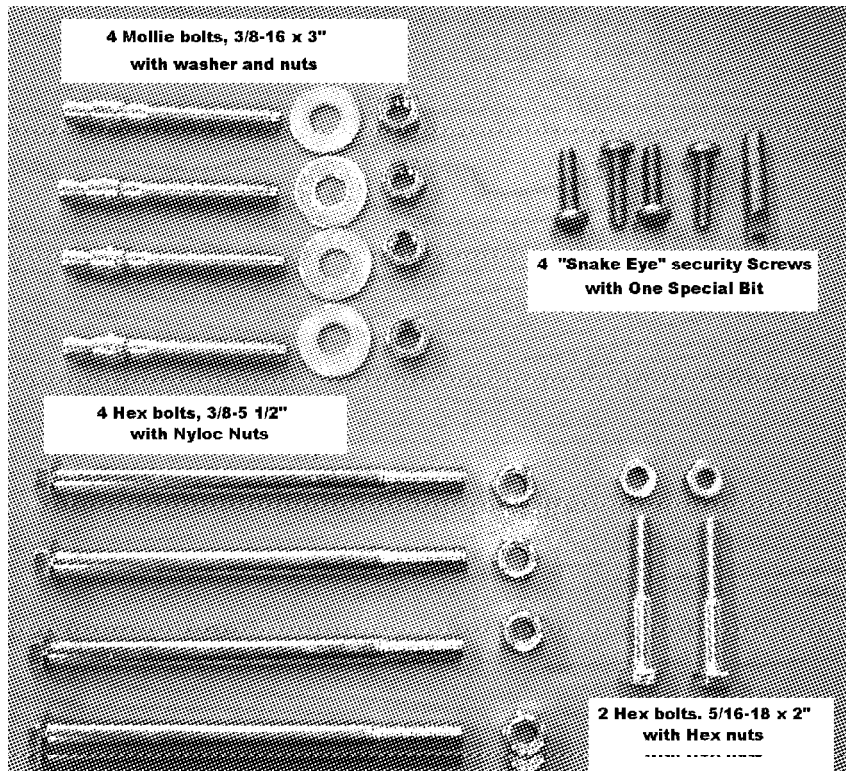
- 1.) Read all instructions before using this product.
- 2.) To reduce the risk of injury, close supervision is necessary. Do not allow children or impaired persons to use this product. Always bleed hoses, and disconnect hoses and electrical supply before servicing any part of the washer.
- 3.) Know how to stop the product and bleed pressure quickly. Be familiar with the controls.
- 4.) Stay alert! Watch what you are doing !
- 5.) Do not operate this unit when fatigued, or while impaired by drugs or alcohol. Never smoke while operating the unit.
- 6.) Keep operating area clear of all other persons.
- 7.) Do NOT overreach or stand on unstable support. Keep good footing and balance at all times. Wear footwear capable of maintain good grip on wet surfaces. Do not place the machine on soft or unstable surfaces.
- 8.) Follow maintenance instructions specified in all manuals. Do not run the machine without sufficient lubrication or sufficient water flow to keep the pump cool.
- 9.) This device uses only clean water under high pressure to clean. Do not introduce any chemicals into the pump.
- 10.) Wear safety glasses and/or face protection, gloves, & appropriate clothing when using.
- 11.) Do not attempt to move the machine by pulling on the hose ! Do not use the machine to support other items. Do not stand on the machine.
- 12.) Never try to secure the trigger on the gun in the open position. This is a safety feature and to defeat it is dangerous. This is a VERY HIGH PRESSURE STREAM. The stream can cause severe damage! It can cause injury to others or the operator if not respected.
- 13.) DO NOT ATTEMPT TO CLEAN THE MACHINE WITH ITS OWN SPRAY ! Cleaning should be done with clean damp cloths, and with electric turned OFF.
- 14.) DO NOT ADJUST PRESSURE RELIEF VALVE.
- 15.) DO NOT SUBSTITUTE ANY HOSES OR ACCESSORIES FOR ANY WITH A LESSER PRESSURE RATING! Be sure all components meet or exceed the units rating.
- 16.) Adjustments to the Coin Operated Timer MUST be done with the power OFF. Do not remove or re-install the coin mechanism without first disconnecting the power. Damage may occur to persons or to the timer if this is not done.

GROUNDING INSTRUCTIONS

This product MUST be connected to a grounded, metal, permanent wiring system. The circuit must be GFI protected. All wiring must be installed to code by a licensed electrician.

SAVE THESE INSTRUCTIONS

HARDWARE BAG CONTAINS:



4 each
"Snake Eye"
Security Screws
with special Hex Drive Bit.
(secures cover to unit)

4 each
Mollie bolts with
washers and nuts
(secures base to concrete)

4 each
Hex bolts 3/8-18 x 5 1/2" long
with nuts
(secures unit to base)

Two each
5/16-18 x 2" Hex bolts
with nuts
(secures wand holster to the unit)

INSTALLATION INSTRUCTIONS

Remove outer walls of crate (if unit includes stand, remove and set aside)

The unit is mounted to the skid with two mounting bolts. Remove the two bolts and nuts.

Selecting the operating location.

**A solid surface, convenient for the user. Adequate drainage.
Proper water supply and Electrical supply**

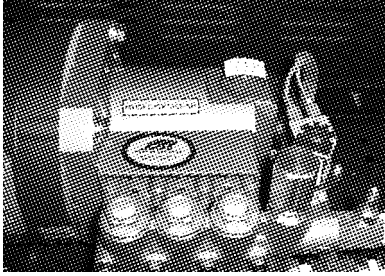
It is important that the unit be level. Both from side to side and front to rear. Otherwise your token/coin acceptor will not function properly.

1. If using the stand, secure it to a firm solid surface, using the mollies provided. Make it level! If you are not using the stand, make certain the mounting surface is level. And SECURE the unit firmly. The unit MUST be mounted only from the bottom surface. Do not attempt to mount from the rear. Allow proper clearance for electrical and water hook-up and service.

2. Mounting the unit to the stand. Line up holes on stand to the holes in the bottom plate. Place the unit on the stand, with the timer unit to the left. From the bottom, put the FOUR mounting bolts through the bottom plate and into the pressure washer. Secure from the inside with the nuts provided. Be sure nuts are INSIDE to prevent unit from being removed by theft.

PREPARATION FOR OPERATION

**Open Cabinet - Remove the label from the oil fill / vent cap on the pump.
Check the sight glass to be certain no oil was lost in transit.**



**See Sight
Glass Location
at bottom
illustration**

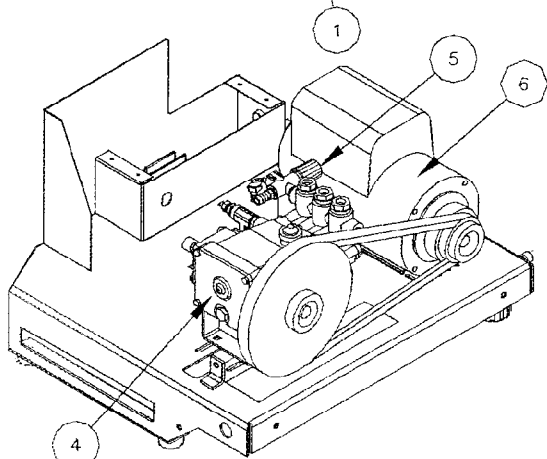
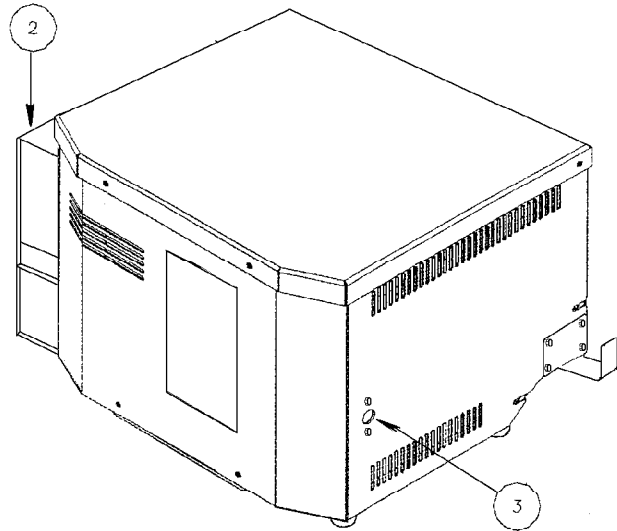
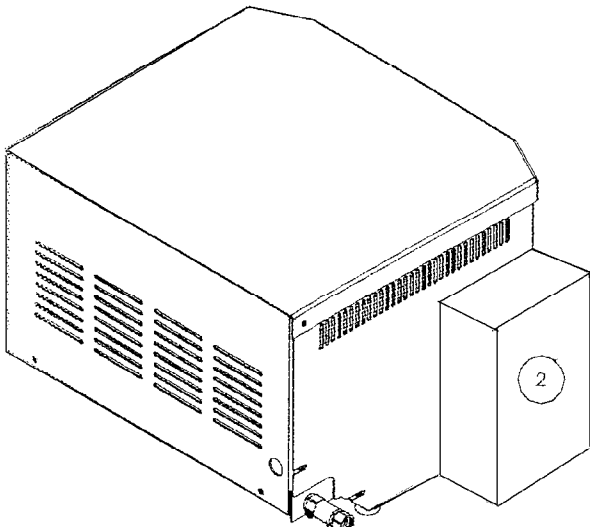


**115 Volt
Pump**

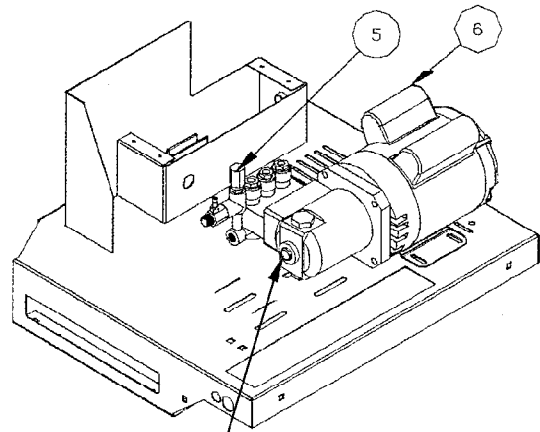
**230 Volt
Pump**

Ref #	Description
1	Inlet/Filter
2	Token/Coin Timer
3	High Pressure Outlet

Ref #	Description
4	Pump
5	Unloader
6	Motor



**Belt Drive 5 Hp Motor
230 VAC 60 Hz
3000 PSI Output**



**Direct Drive 2 Hp Motor
115 VAC 60 Hz
2000 PSI Output**

Operating Instructions

**It is important for the Operator to understand
All aspects of the unit and its needs.
READ THE MANUAL COMPLETELY!**

I. SET UP

- A.) Position unit for easy access to all controls and the wand.
- B.) Position & secure unit to a solid surface, level to within 3 degrees side-to-side & front to rear.
- C.) Make sure ambient lighting is sufficient for comfortable use. Add artificial light if necessary.
- D.) Regularly check hoses, fitting, wand, trigger gun and all electrical fittings for signs of wear, cracks, loose ness or vandalism. Replace as necessary.
- E.) Check and clean nozzle orifice regularly.
- F.) Check and clean inlet filter screen regularly.
- G.) Read the entire manual and understand how the unit functions.
- H.) Regularly check and maintain proper oil levels in the pump.

II. CHECK YOUR WATER SUPPLY

- A.) Make sure your water supply is clean. Debris can cause excess pump wear, clog nozzles, and reduce performance.
- B.) An insufficient water supply will damage your pump. Make sure the water supply is steady and is 20% over the rated flow of the pump. Use a stopwatch and a five gallon bucket to time how long it takes to fill it with a hose at the the point where the pressure washer is to be connected.

Example: If the rated flow for your pump is 3 Gallon per Minute (GPM)
Then required flow = $3 \times 1.20 = 3.6 \text{ GPM}$
 $5 \text{ gallon} / 3.6 \text{ gpm} = 1.39 \text{ minutes}$
 $1.39 \text{ minutes} \times 60 \text{ second to the minute} = 83 \text{ seconds total}$
Therefore, you must be able to fill a 5 gallon bucket
in 83 seconds or less to assure adequate water supply.

- C.) The supply side must have a diameter of at least 5/8"
- D.) Never use a reservoir tank as a water source. The pressure washer is designed to work with pressurized water, and gravity feed will not suffice. Sucking from a tank may cause cavitation in the pump and damage it. However, the water supply pressure should not exceed 115 PSI.
- E.) To avoid fracture from vibration, the inlet water supply should be through a flex fitting, not rigid pipe.
- F.) NEVER EVER use the unit to pump for any liquids other than water!!
- G.) DO NOT EVER try to pump any flammable liquids or solvents!!

III. TO START

**DANGER!! DO NOT POINT THE SPRAY WAND AT YOUR SELF OR ANY OTHER PERSON.
SEVERE BODY DAMAGE MAY RESULT FROM WATER UNDER HIGH PRESSURE
WARNING! WEAR EYE, HAND, FOOT AND SKIN PROTECTION!!**

HIGH WATER PRESSURE MAY DISLODGE PARTICLES AT HIGH VELOCITY!

IMPORTANT: THE WATER MUST BE TURNED ON BEFORE STARTING THE UNIT TO AVOID DAMAGE TO THE PUMP. RUNNING THE PUMP DRY WILL DO DAMAGE AND VOID THE WARRANTY.

- 1) Make certain water is on.
- 2) Insert token(s) or coin(s)
- 3) Have wand pointed away from yourself or others nearby and squeeze trigger to purge any air from the system.
- 4) Direct stream toward the item to be cleaned. Approach at an angle and sweep the wand to direct the stream. Be aware of your surroundings. Never direct the stream toward an area in which others are standing.

ELECTRICAL

Units are supplied with a seal-tite connector at the rear left of the unit. However, power may be introduced through a knockout in the bottom of the unit. This unit is exposed to the elements so extra care should be given to a proper, safe installation. The unit should be wired by an electrician familiar with local codes and requirements. Unit should be on its own circuit, with GFI protection.

120 Units will require 20 Amp dedicated service

230 Units will require 30 Amp dedicated service

ALL Units are SINGLE PHASE - 60 Hz

WIRING

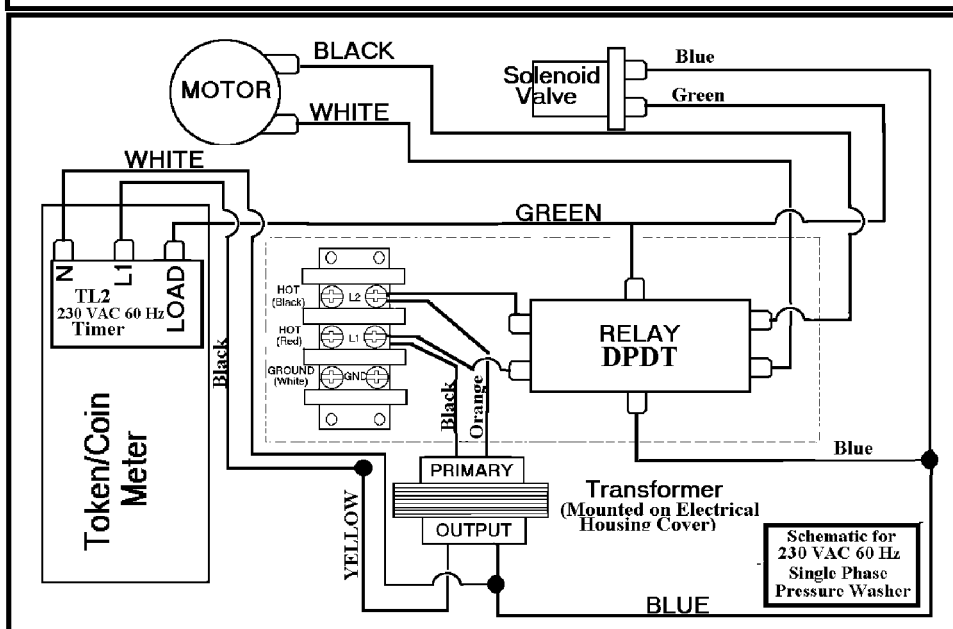
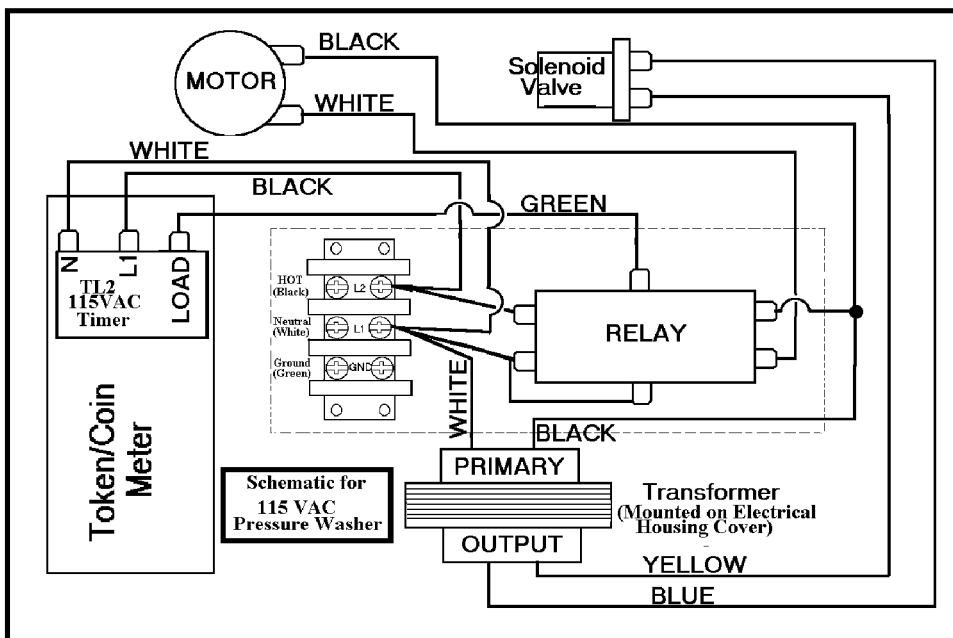
Using the security wrench provided, remove the four "snake eye" security screws and remove the roof of the unit. Inside you will see the electrical housing. Remove the cover. Introduce your power cord through the strain relief.

Size and type of wire:

The figures below show the terminal block in the electrical housing, with the cover removed. The incoming power cord is to be furnished by the installer. Like color is to be attached across the terminal block with like color.

Power may be introduced from the bottom of the unit. Switch the knockout cover with the strain relief when doing this.

When all internal wiring is complete. Reattach the electrical housing cover. Re-install the roof with the security screws, using tool provided. Retain the tool for any future service requirements, such as oil changes and other maintenance.



PLUMBING INSTRUCTION

**Connect with 5/8" or larger hose. Do not use rigid connector.
Disconnect and drain for winterization (see below)**

**Location of unit should be where drainage is adequate to control runoff
and with proper catch basin .**

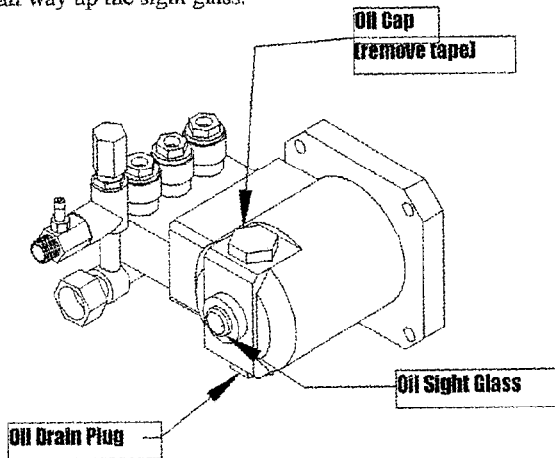
**Check with local authorities on limitations on such
waste water and its disposal.**

**IMPORTANT - DO NOT RUN THE PUMP WITH WATER
TURNED OFF OR DISCONNECTED!!**

Changing The Pump Oil

Change oil after first 50 hours, then every 3 months or 500 hours

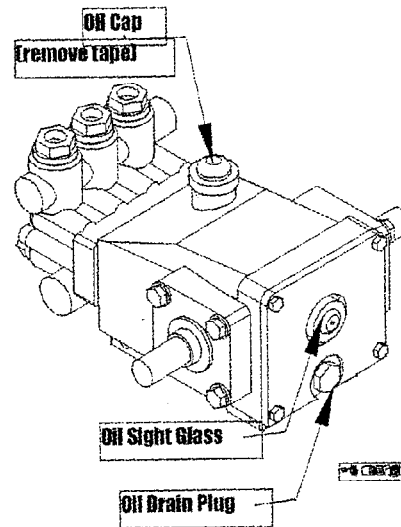
- 1) Remove oil drain plug
- 2) Drain pump oil
- 3) Replace oil drain plug
- 4) Fill pump with Cat Item# 22158 pump oil.
- 5) Fill half way up the sight glass.



Quantities Of Fluid

Pump	Type of Fluid	QTY
Cat 2DX15ES	SAE 30**	8.5oz (0.25L)
CAT 5CP3120	SAE 30**	17.0oz (0.41L)

**Non-Detergent Oil (order Cat Item# 22158 pump oil.)



WINTERIZING

Items needed:

12" piece of garden hose or equivalent, funnel, and RV antifreeze (approximately 6 oz.)

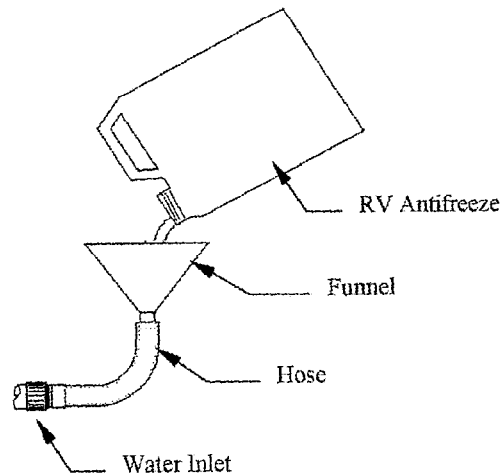
TURN OFF WATER. Trigger the wand to release any pressure and remove high pressure hose and wand from the unit. Drain and store hose.

Attach hose to INLET with funnel as illustrated. Pour RV Antifreeze into funnel, turn on the motor until antifreeze come out of the outlet. Turn off motor.

Turn off power for the winter.

Flush unit when restarting in the spring.

IMPORTANT - OTHER THAN WINTERIZING, DO NOT START THE PUMP WITH WATER DISCONNECTED OR OFF!!



VENDING TIMER 20-TL2-23S-2564A-6

24 VAC - 1 Minute Interval

Blank = OFF (down) Black Square = ON (up)

Description of Functions and Time Settings

TIME INTERVALS - SWITCHES 1 - to - 5
 Combinations of the switches in the off/on positions as indicated allow time settings from 1 minute per coin or token up to 32 minutes per coin or token. Note that a switch in the off position still represents a value. For example, if all of the switches from 1 to 5 are in the off position, it represents 1 minute.

Example of a typical setting might be 4 quarters to run for 20 minutes and the alarm is to go off when only 1 minute remains. Then the time/warning/coins-to-start settings would be:

- Switch 1 - On
- Switch 2 - On
- Switch 3 - Off
- Switch 4 - Off
- Switch 5 - On
- Switch 6 - On
- Switch 7 - Off
- Switch 8 - On
- Switch 9 - On
- Switch 10 - Off

When using coins, the alarm alerts the user that time is near expiration. In the example here, after 19 minutes the alarm will sound. The user has the options of finishing their task before the unit shuts down, or insert additional coins to extend the time. In this case each coin will add another 5 minutes to the total time remaining. The alarm will shut off, but will go off again when only 1 minute of time remains, and will remain on until the unit shuts off. To give added warning, you may select to have switch 7 on and 6 off, for 90 seconds, or both switches on for 2 minutes warning.

If you are using 1 Token to control the entire cycle, then Switches 8, 9 & 10 are off. Set the time for the desired TOTAL time to run. The alarm alerts the user that time is near expiration so they may complete their task before the unit shuts off.

VALUE	Switch number									
	1	2	3	4	5	6	7	8	9	10
TIME INTERVAL (per coin/token)										
1 Minute										
2 Minute	■									
3 Minute		■								
4 Minute	■	■								
5 Minute			■							
6 Minute	■		■							
7 Minute		■	■							
8 Minute	■	■	■							
9 Minute				■						
10 Minute	■			■						
11 Minute		■		■						
12 Minute	■	■		■						
13 Minute			■	■						
14 Minute	■		■	■						
15 Minute		■	■	■						
16 Minute	■	■	■	■						
17 Minute					■					
18 Minute	■				■					
19 Minute		■			■					
20 Minute	■	■			■					
21 Minute			■		■					
22 Minute	■		■		■					
23 Minute		■	■		■					
24 Minute	■	■	■		■					
25 Minute				■	■					
26 Minute	■			■	■					
27 Minute		■		■	■					
28 Minute	■	■		■	■					
29 Minute			■	■	■					
30 Minute	■		■	■	■					
31 Minute		■	■	■	■					
32 Minute	■	■	■	■	■					
Warning Cycle Time										
30 Second										
60 Second						■				
90 Second							■			
120 Second						■	■			
Number of Coins or Tokens to Start										
1 Coin/token										
2 Coin/token								■		
3 Coin/token									■	
4 Coin/token								■	■	
5 Coin/token										■
6 Coin/token								■		■
7 Coin token									■	■
8 Coin/token								■	■	■
	1	2	3	4	5	6	7	8	9	10

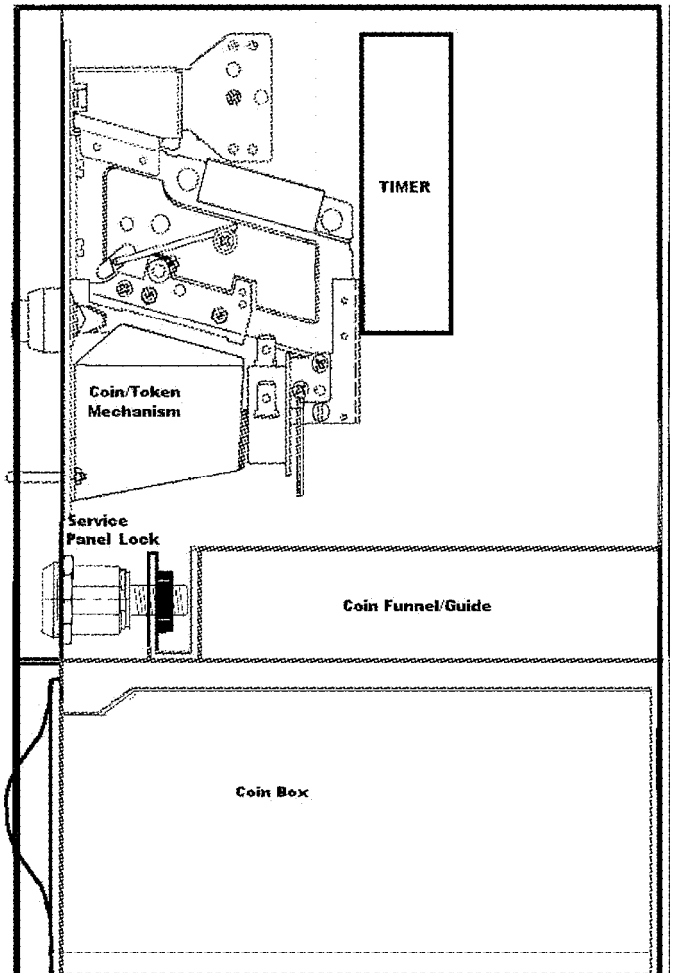
THE TOKEN OR COIN OPERATED TIMER BEFORE OPENING THE UNIT MAKE CERTAIN ALL POWER IS OFF!!

To access the timer in the HM 6 - remove service door lock by unscrewing it. Remove it and the lock plate. The face plate that is supporting the coin mechanism, and the timer will slide down about 1/2" and then may be pulled out. To reassemble, Slide the coin mechanism panel in, and push it back up. Hold it in place while re-installing the lock plate and service door lock. Make certain the lock is well seated but do not overtighten. Turn lock back to proper position to withdraw the key.

The timer is attached to the rear of the token/coin acceptor. Your pressure washer is already wired and ready to use. But YOU will determine time and coins-to-start settings on your timer during installation. These settings may be changed as necessary in the future so retain these instructions to refer to at that time. See Next Page for setting tables.

DO NOT OPEN THE UNIT WITHOUT DISCONNECTING THE POWER.

Damage to you or to the unit may occur if any accidental shorts are created.



OTHER APPLICATIONS

Timers are available to control other electrical devices. They come in a choice of voltages, 24 VAC or 110 VAC. And a wide selection of time ranges. They are used to control:

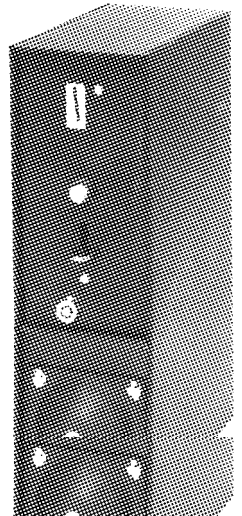
- Showers
- Pumpouts
- Recreational Lighting

and many other devices that are not normally coin or token operated.

Call us to discuss any applications you may be considering.

Other token designs for different applications are available too.

Call for information on how these may be applied to your particular situation.



SOME ADDED FREQUENTLY ASKED QUESTIONS

Q: Why a token operated pressure washer?

A: Aside from the fact that most boat owners take great pride in their boats, the thorough washing of the boat and trailer as it is pulled from the water minimizes the spread of invasive species from one body of water to the next. This may seem a small thing, but protection of water ways is becoming a serious issue. We encourage you to check out Protectyourwaters.net

Q: I do not wish to charge my customers for use of the pressure washer, after all, they paid their dock fees or launching fees. Why should I use a Token or Coin Operated pressure washer?

A: Providing a pressure washer is an important part of your service to the customer. However, too often the service is abused. Water is wasted. Or someone who is not a client is using your facilities which you intended for your clients. By using tokens, you have not charged your customer for the service, but you have limited how long the washer runs, and how often they use it. You might supply each boater with a token when they come to launch, or once each month. Or you may charge some modest sum for the token. Or a combination, that is you furnish tokens at no charge to clients, but charge anyone else who may come along. That is the whole point. YOU control WHO and HOW OFTEN they may use the device. But the big thing is that you have minimized the waste of your water, and the amount of time the unit is used. Clients at Marinas may be experienced boaters, sensitive to conservation and environmental issues, or they may be the occasional boater who is not aware that providing the nicer amenities of civilization in a remote location can be costly.

Q: Why tokens in a pressure washer?

A: Tokens offer pricing flexibility. They are worth what YOU say they are worth. You may choose to offer them free to paid members of your facility, and outsiders will pay what you determine to be fair. Or you may choose to charge everyone who asks. The key point is YOU control who uses the units. An additional factor is security. Tokens eliminate the use of coins in the timers, so there are no funds in the units to tempt vandals and thieves. For unattended facilities, there are changers available that accept bills and vend tokens. The changers can be situated in well lighted protected areas to vend tokens as needed.

Q: These timers are very nice. On what other applications might they be used?

A: Meter housing and timers have been used on recreational lighting for tennis courts, picnic areas, etc. They are used on sanitary pumpouts, and many other electrical devices. They are offered in several different combinations of features, voltages and time ranges.

Q: Are any timers available with bill validators?

A: We do not incorporate bill validators for number of reasons. First is the cost. Bill validators would require a totally different timer. A quality bill validator is expensive. Such a unit would soon exceed \$1000 each, just for the timing controls. Secondly, the application for most timers is usually in environmentally difficult areas. Validators are optical in nature, so wind, rain, & sudden temperature changes can interfere with their working properly. Thirdly, Bill validators require REGULAR maintenance. Most of our units are put in place and then ignored, so we make them as tough as possible. The attention that bill validators require under such circumstances would soon lead to failure of the unit. Fourthly, the attraction of that many bills, in what is usually a remote location, can tempt those with diminished ethical standards. It is better to use tokens or coins and collect on a regular basis.