MMR32

Instruction Manual for

Operation & Maintenance

IB International

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Contents

Introduction

Thank you for purchasing a Mini Micro Rain MMR25 travelling sprinkler system. Please read this manual carefully before operation in order to become familiar with all components and their function. Safety is the main priority and failure to follow these instructions may cause serious injury. IB International Pty Ltd is not responsible for machine failure or personal injury if these procedures and operation instructions are not followed.

⚠ Caution ⚠

- **Do not operate your Micro Rain Irrigator without a serious overview of this manual**
- **Keep children and unauthorized people away from Irrigator**
- **Never allow children access to use the Irrigator**

- **Use caution when disconnecting couplings**

When the Irrigator shut-off valve activates, the supply hose remains pressurized at the end of the run. First, relieve the pressure with the relief valve, then disconnect the supply hose.

- **Use caution with the sprinkler heads**

Pressurized water from the sprinkler head could cause serious damage to people or objects.

- **Use caution during transport**

Irrigators are not made for public transit. Do not exceed 7mph on flat roads, or 2 mph on steep inclines.

- **Never service the Irrigator when it is in operation**

Before servicing, stop the Irrigator and disconnect the supply line. All safety guards and shields must be in place while operating the Irrigator.

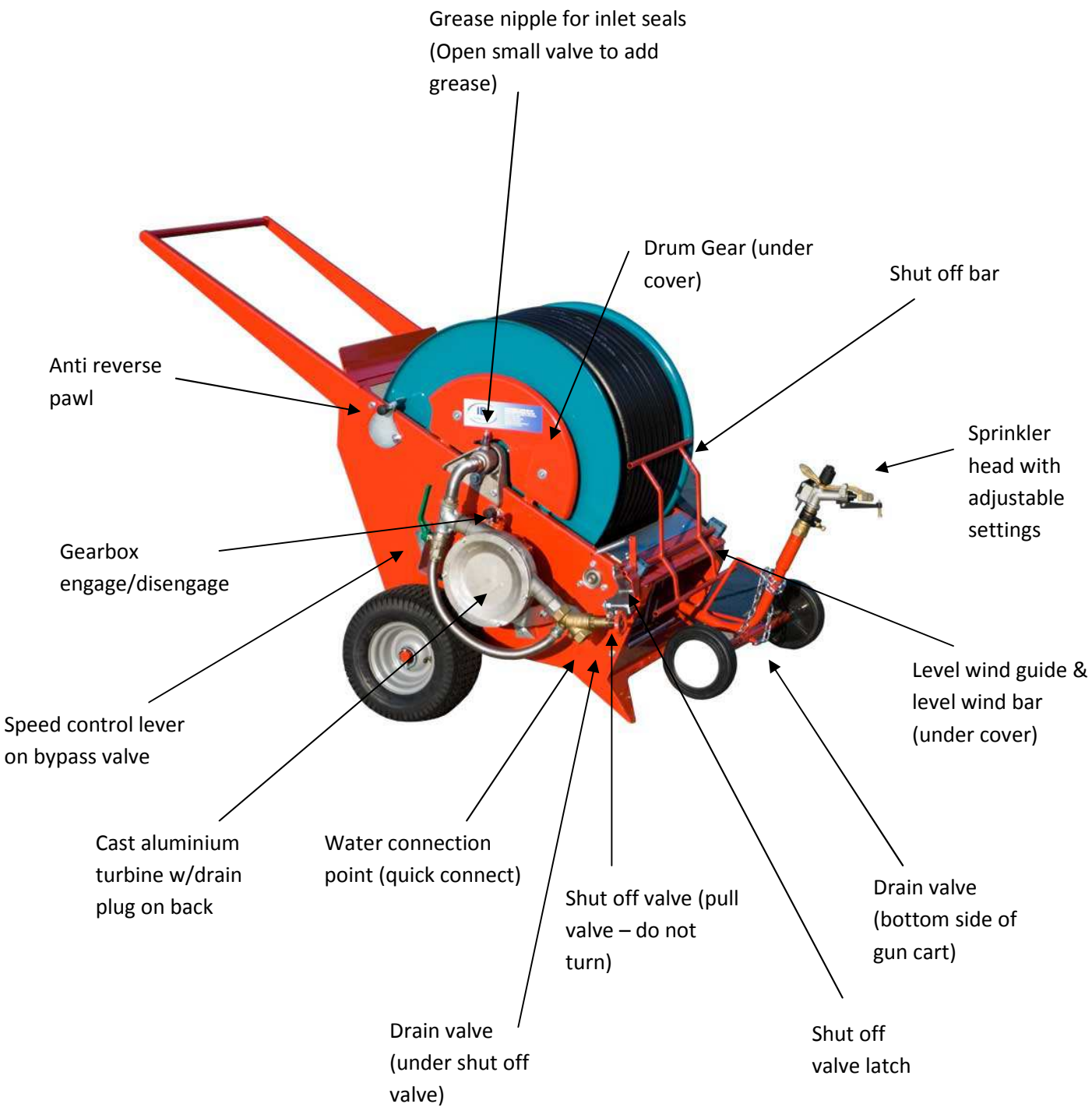
- **Beware of power lines**

Irrigation water should never contact power lines or any other power source. Never let any part of the Irrigator or any irrigation pipe get in contact with power source.

Identification Data

The identification plate includes the model and serial number for your machine.

Machine Controls & Components



Conditions For Machine Operation

The MMR32 is designed for clean water suitable for irrigation. The machine is not designed for water that includes large pieces of debris or slurry/wastewater conditions.

Start Up Procedure/Operation

1) Push the machine to the desired location. Position the machine with the sprinkler cart facing the direction to be irrigated. Insure that the machine is sitting level in order for the tube to wrap properly.

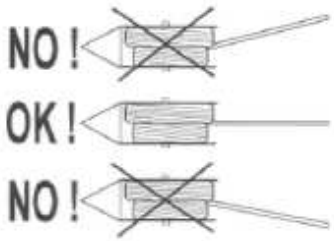
2) Place the gearbox engage/disengage lever in the neutral position to prepare for hose pull out.

3) Move anti-reverse lever to the disengage position as shown.

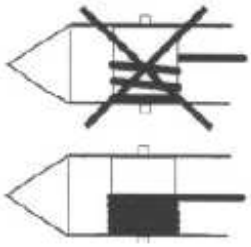
4) After steps 2 and 3 have been performed, the sprinkler cart can be pulled out. The cart may be pulled out by hand or by connecting the cart chain to a small garden tractor or ATV.

IMPORTANT: ALWAYS PULL CART OUT STRAIGHT AND AT A SLOW STEADY SPEED (ABOUT THE PACE OF A WALK). LEAVE 1-2 WRAPS ON THE DRUM TO KEEP FROM PULLING HOSE OFF THE DRUM.

****IMPORTANT: ALWAYS PULL CART OUT STRAIGHT AND TIGHTEN LOOSE WRAPS BEFORE START UP!**

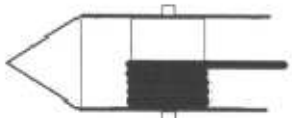


Always Pull Tube Out Straight!



Keep Wraps Tight!

5) Move anti-reverse lever to the engage position as shown. Ratchet the drum by hand to remove any loose coils remaining on the drum. Any coils remaining on the drum should be packed over to the edge of the drum and tight!



Keep remaining wraps tight!!

6) Attach supply hose provided to the inlet of the machine and lock into place as shown.

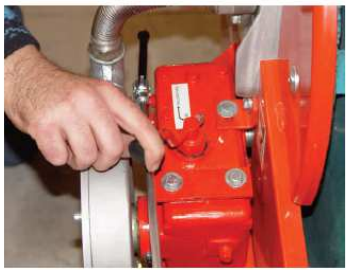
IMPORTANT: MAKE SURE SUPPLY HOSE IS CLEAN AND FREE OF FOREIGN OBJECTS THAT WOULD PLUG THE TURBINE SYSTEM OR SHUT OFF VALVE!

7) Open shut off valve by pulling the valve handle and latching into the open position.

IMPORTANT: PULL VALVE, DO NOT TURN!

NOTE: DO NOT PULL VALVE OPEN UNDER PRESSURE. OPENING UNDER PRESSURE WILL DAMAGE VALVE!

VALVE SHOWN IN OPEN, LATCHED POSITION



8) Turn on the water source to the MMR32. The sprinkler equipped with the MMR32 can be set to water a full circle pattern or any part of a circle. It is generally recommended to water a three-quarter circle pattern behind the cart, away from the direction of travel. Next engage the gearbox lever to the run position.

9) Adjust the speed of cart retraction by moving the bypass lever or speed control lever in the direction shown by the arrow. Closing this valve will increase retraction speed and opening the bypass valve will slow down the retraction speed

10) Once the speed is set, the MMR32 will automatically roll the tube on the drum and stop at the end of the run utilizing the shut off valve.

Troubleshooting

1) PROBLEM: NO WATER AT THE SPRINKLER

SOLUTION:
1. Make sure shut off valve is open.
2. Potential blockage – clean inlet hose /sprinkler nozzle.
3. Potential blockage – check/clean turbine

2) PROBLEM: MACHINE WILL NOT ROLL UP

SOLUTION:
1. Make sure gearbox is in the engaged or run position.
2. Turbine bypass valve (speed control valve) is opened too far. Close valve to increase speed.
3. Turbine impeller not turning—open turbine housing and check for obstructions

3) PROBLEM: MACHINE STOPPED DURING RETRACTION

SOLUTION:
1. Water flow stopped or was lowered during retraction, causing the turbine to stall. Simply turn the bypass valve closed to start retraction once again and adjust speed as needed.
2. The machine's mis-wrap safety shut down the retraction. Put the gearbox in neutral, disengage the anti-reverse lever and pull the tube out all the way again. The level wind timing may have been interrupted by too many loose wraps on the machine. This is corrected by starting over and making sure the level wind guide is lined up correctly. Call your Micro Rain servicing dealer with any questions regarding machine timing.

Winterization

MMR 32

1. Disconnect supply hose.

2. Open and leave shut off valve in run position as shown by the white arrow.

3. It is recommended to disconnect the flex bypass line at the location indicated in the highlighted circle at the right.

4. Speed control valve handle must be in the open position as shown by the blue arrow to allow water above valve to escape.

5. Remove drain plug and allow water in lower portion of the turbine to drain as shown by red arrow.

6. Drain gun cart by removing plug located on the underneath side of the cart. Indicated by black arrow below..

Guncart drain location on MMR 25 and MMR 32

Performance Chart

IB International Pty Ltd HARD HOSE PERFORMANCE CHART

Mar-12

MODEL : MMR 25 / 50 mt.

Nozzle SIZE	Nozzle Pressure	Sprinkler RADIUS	WETTED WIDTH MAX	IRRIGATOR INLET PRESSURE	FLOW RATE	Travel speed of the Irrigator mm = Application rate per irrigated run					
						30 M / HR		20 M / HR		10 M / HR	
mm	bar	mets	mt	bar	Lt / Min	mm		mm		mm	
4	1.5	11.0	22	2.2	12	1.1		1.7		3.3	
	2.0	12.0	24	2.7	14	1.2		1.8		3.5	
	3.0	13.0	26	3.7	17	1.3		2.0		3.9	
5	1.5	12.0	24	2.3	20	1.7		2.5		5.0	
	2.0	13.0	26	2.8	22	1.7		2.6		5.1	
	3.0	14.0	28	3.8	27	1.9		2.9		5.8	
6	2.0	14.0	28	3.0	32	2.3		3.5		6.9	
	3.0	15.0	30	4.0	39	2.6		3.9		7.8	

MODEL : MMR 32 / 70 mt.

Nozzle SIZE	Nozzle Pressure	Sprinkler RADIUS	WETTED WIDTH MAX	IRRIGATOR INLET PRESSURE	FLOW RATE	Travel speed of the Irrigator mm = Application rate per irrigated run					
						30 M / HR		20 M / HR		10 M / HR	
mm	bar	mets	mt	bar	Lt / Min	mm		mm		mm	
6	2.0	14.5	29	3.0	32	2.2		3.3		6.6	
	3.0	16.5	33	4.2	39	2.4		3.6		7.1	
	4.0	17.5	35	5.3	45	2.6		3.9		7.7	
7	2.0	15.0	30	3.3	42	2.8		4.2		8.4	
	3.0	17.0	34	4.6	52	3.1		4.6		9.2	
	4.0	18.5	37	5.8	60	3.2		4.9		9.7	
8	2.0	17.0	34	3.9	57	3.4		5.1		10.1	
	3.0	19.0	38	5.0	69	3.6		5.5		10.9	
	4.0	20.5	41	6.0	80	3.9		5.9		11.7	

N.B. These tables are merely indicative because they have been worked out through a mathematical formula and according to average working conditions .
Consequently IB International decline any responsibilities deriving from their application .

MMR32 Maintenance Schedule

Inlet seals: Grease inlet seals every 100 hours.
Drum gear: Grease drum gear every 100 hours.
Level Wind: Grease level wind every 100 hours, replace level wind knife every 1000 hours

Gearbox: Change gearbox oil once a season with 80W/90 gear oil.

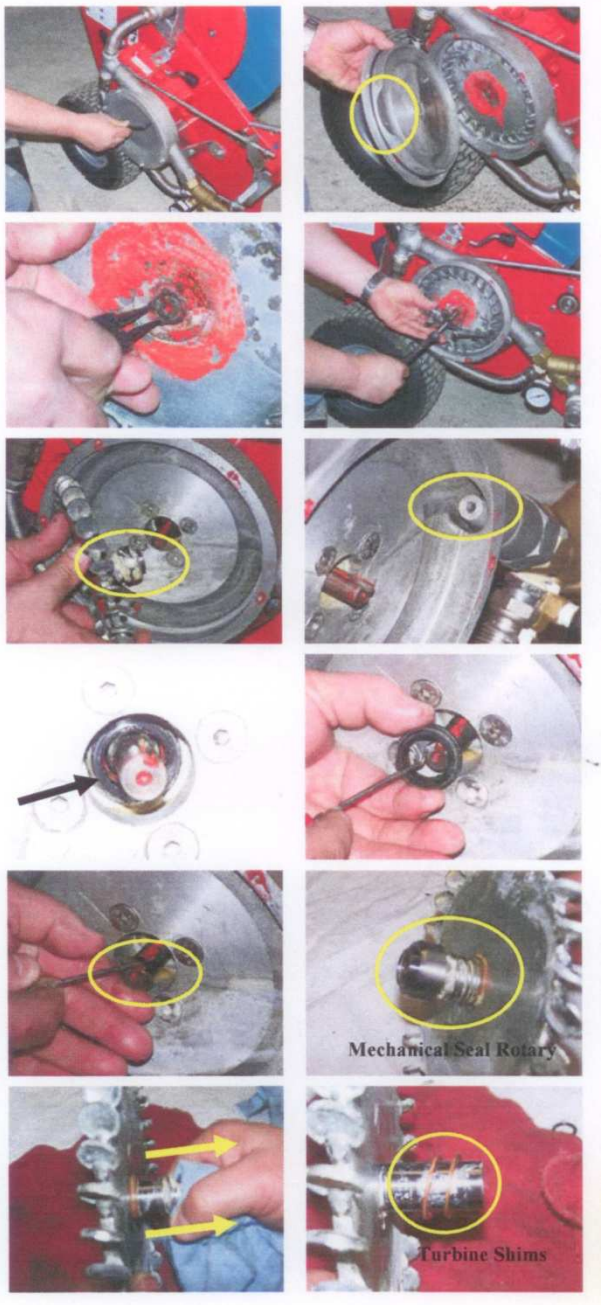
Replacing Turbine Mechanical Seal

1. Remove bolts in outer turbine cover bolts with a 5mm allen key. Remove the outer turbine cover. Note the location of the machined portion of the inside lip of the housing so that it can be re-installed in the same location.

2. Remove snap ring holding impeller in place on shaft as shown in left image. Impeller is now ready to be removed. It is best to utilize a gear puller to remove the impeller. Be careful not to damage the outer fins of the impeller. Apply a small amount of pressure with the gear puller and the impeller should slide off the shaft. Be sure not to lose the shaft key as it will be needed for re-installing the impeller.

3. Left image shows impeller being removed. A chrome sleeve is built into the back side of the impeller that the mechanical seal rides on. Note also in the left image that the seal rotary and spring will be removed with the impeller. We want to note that after removing the impeller, the tip of the turbine nozzle may be viewed as shown by the yellow circle in the right image.

4. After the impeller has been removed, the mechanical seal seat must now be removed. The arrow in the left image shows the position of the seal seat as it sits in the housing. A seal pick may be used to remove the carbon seal seat as shown in the right image.



5. An o-ring seal that rides on the gearbox shaft must also be removed as shown in the left image. After the seal seat and 0o-ring have been removed form the back turbine housing in step 4, locate the turbine impeller with the seal head rotary still attached as show in the right image.

6. Seal head rotary may now be removed from the shaft as shown in the left image.

Important: The MMR32 turbine will have 1 or more turbine impeller shims as shown in the right image, to apply the correct amount of pressure to the mechanical seal. Make sure that these are not misplaced and are present upon re-assembly.

7. To review seal components: Left image shows o-ring seal, seal seat, and seal rotary. Right image shows the machined groove in the end of the chrome sleeve attached to the turbine impeller. This is where the o-ring seal sits when it is installed on the gearbox shaft. The MMR32 turbine includes the mechanical as 1 seal point and the o-ring seal as the 2nd seal point to prevent water leakage around the gearbox shaft.

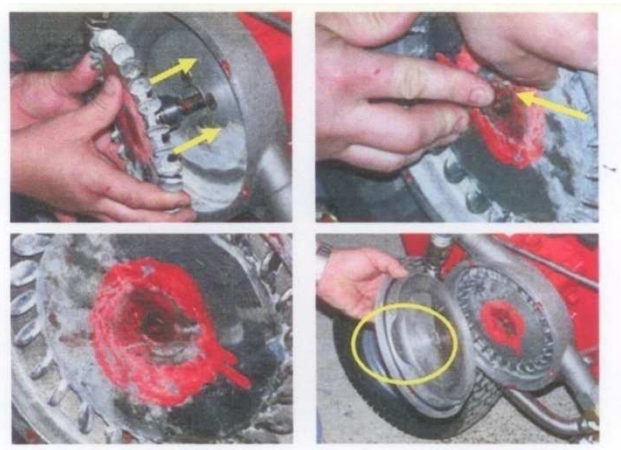
8. To begin reassembling the mechanical seal set, start by making sure the turbine shim(s) are in place on the chrome sleeve as shown in left image. Begin installing the mechanical seal rotary and spring as shown in right image. The seal rotary has a rubber boot or o-ring inside the seal head. A small amount of glycerine is recommended to allow the head with the rubber boot to slide easily onto the chrome shaft.

9. Install o-ring seal on shaft as shown in left image and slide completely onto the gearbox shaft. Next the seal seat must be installed by using a hollow end wooden dowel as shown in the right image. This tool prevents damage to the delicate carbon face of the seal seat. Install the seal seat completely to the back of the shaft and insert the seal seat into the machined pocket of the back aluminium housing. *SEE NOTE BELOW

Important: When installing mechanical seals, it is important to protect the integrity of the seal, The seal seat has a very delicate, smooth face on which the seal rotary head rides and rotates. Try to avoid touching this seal face with your fingers when installing. It is also important not to install the seal seat backwards with the smooth face towards the back. The seal seat will normally have a dull side which includes an o-ring mount that is the back of the seal seat and this side must be installed into the machined pocket of the housing. The smooth face will be looking towards you, thus the need to use the hollow end wooden of plastic dowel for installation. A small amount of glycerine may also be applied to the o-ring mount so it easily slides into the pocket. Do not use oil or grease!

10. Impeller with seal rotary and shims attached is now ready to be installed back onto the gearbox shaft as shown in left image. Key must be inserted back into keyway slot with the square side in the gearbox shaft and the sloped side of the key inserted into the impeller keyway.

11. Install snap ring back onto the end of the shaft and make sure that the snap ring is properly seated in the groove.



Position housing groove correctly when re-installing cover

Repeat step 1 in reverse order to re-install turbine cover.

Replacing Drum Inlet Seals

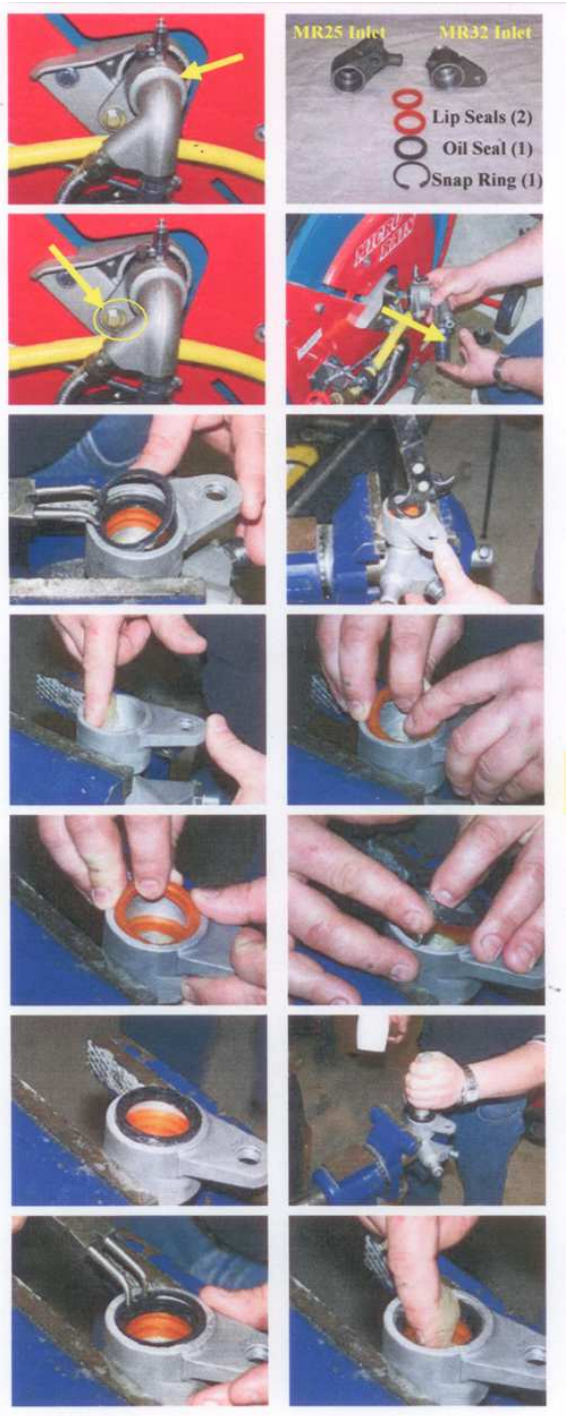
1. The MMR25 and MMR32 have different inlet fittings but the same seal set components. Inlet seals are housed in the cast aluminium inlet fitting as shown in left image. The components are listed in the right image showing each inlet fitting, 2 lip seals (orange), 1 oil seal (black), and a snap ring to hold the seals in place.

2. The inlet fitting is held in place by a single bolt through the inlet casting and into the side of the machine's frame. To remove the inlet elbow, loosen and remove the bolt shown in the left image. The inlet fitting may then be removed by hand as shown in right image.

3. Remove snap ring as first, as shown in left image. Black oil seal may then be removed, followed by the 2 orange lip seals next as shown in right image. Inlet housing may then be cleaned and all old grease removed for a clean, dirt free environment for the new seals.

4. Apply a small amount of new grease into the inlet fitting and work it around the insie wall of the fitting so that the seals will slide easily into place. **The two orange lip seals will be inserted first.** Begin with the first seal and push it into the seal pocket until it is firmly in place at the bottom.

   Important: The seal lip must face down and the smooth side of the seal will be facing towards you when installing.

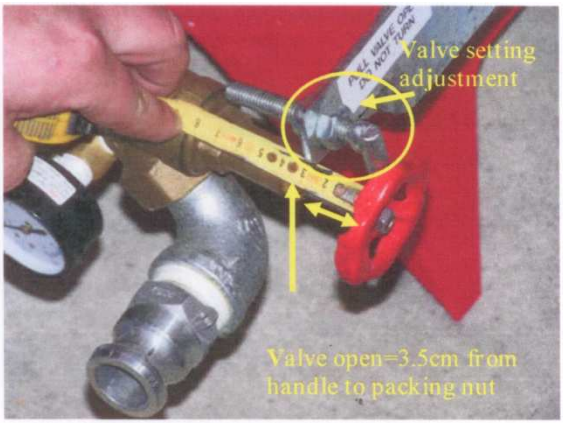


5. The second orange lip seal may be inserted in the same manner as the previous step. Push the seal firmly into place. The black oil seal is the last seal to be inserted into the fitting. Before inserting this seal, apply more lubricant or grease to the outside of the seal for ease of insertion as shown in right image.

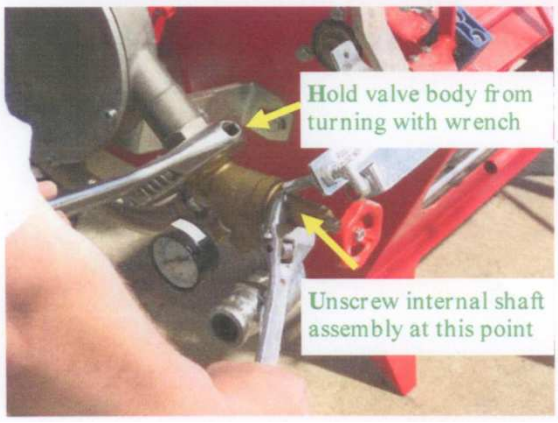
6. With the seal lubricated and centred, use a seal punch and lightly tap the seal downward into place as shown in the right image. The top smooth face of the black oil seal should be sitting just under the snap ring groove when fully in place.

7. The last steps include installing the snap ring so that the seals are held in place as shown in left image. When finished installing the snap ring, take a liberal amount of grease and work it into the seal set to form a grease pack inside the inlet fitting. To re-install the inlet elbow onto the machine, reverse step 2 and secure the fitting into place.

Shut Off Valve Components Removal



Proper setting of the shut off valve should be 3.5cm from the handle to the packing nut (where the shaft enters the valve body) when valve is in the open position. This setting will ensure that the plunger on the end of the valve shaft is sitting in the stream of incoming water flow and will allow the water to assist with pushing the plunger shut when the valve is tripped. This will be set when the machine leaves our facility, but may need to be re-set as some point-usually when the shut off valve is replaced.



To perform maintenance on the MMR25 and MMR32 shut off valves, the internal components may be removed without taking the entire valve body loos from the rest of the inlet plumbing on the machine. First, with one adjustable open end wrench in your left hand, brace the valve body from turning. Next, with the other wrench, unscrew the valve shaft and internal component assembly as shown in above left image. The internal shaft assembly may be removed for inspection as shown in above right image without removing any other fittings.

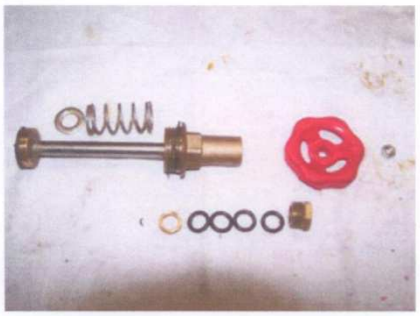
1. To disassemble the shaft assembly, first remove the handle nut as shown in left image. Handle may now be removed and set aside as shown in right image.

2. Valve shaft may now be removed out the opposite end of the brass barrel as shown in image. The stainless valve stem with plunger and stainless spring and washer are shown in right image. Notice that the plunger has a rubber material on the end that is held on with a small washer and nut. In the event that an end user opens this valve with pressure against it, it can cause a tear in the rubber and valve will not seal properly.

3. The packing nut on the end of the brass barrel may now be removed as shown in both images to the left. This packing nut sets the tension on the packing o-rings. You want to tighten this nut so there are no leaks around the valve stem, but do not over tighten so that the valve stem is not sliding in and out freely.

4. After the packing nut has been removed, the packing o-rings may be removed and inspected or replaced. The packing assembly consists of a brass spacer and 4 packing o-rings. Please note that some machines may have a fibre packing. It is recommended to replace this fibre packing with the o'ring set to allow the valve to operate in a more consistent manner.

Steps may be repeated in reverse order to assemble the valve.



Shut Off Valve Components