



## IWAKI AMERICA MAGNETIC DRIVE AQUARIUM PUMPS OPERATING INSTRUCTIONS

### INSTALLATION:

1. Remove plywood base and secure the pump to the floor or platform by bolting down the baseplate using all four bolt holes provided.
  - A. If unable to bolt down the baseplate, place pump on a 1 inch thick foam pad to absorb vibration.
2. Check power source for proper voltage and phase. Plug the pump power cord into a switched, grounded outlet or hardwire into a properly grounded circuit. Use appropriate wiring materials and abide by all local and national standards for electrical codes.
  - A. The MD series pumps do not include plug. Install grounded, three prong plug ( not supplied ) in accordance to plug manufacture's instructions.
3. For optimal performance always install pump below the tank or sump.
4. Connect the inlet and outlet fittings of the pump with the appropriate size tubing or pipe connections.
  - A. For tubing connections, use standard hose clamps to secure tubing. **DO NOT OVER TIGHTEN**
  - B. For pipe thread connections, use pipe tape to insure a good seal. **DO NOT OVER TIGHTEN.**
  - C. For convenient disconnection of pumps installed with rigid pipe, install unions near both inlet and outlet connections.
  - D. All MD and WMD Series "Hi Flow" pump discharge ports are angled at approximately 30° off center. Flexible tubing is recommended for installing these pumps.
  - E. Connection port horizontal to the baseplate is the inlet side.
5. **DO NOT OPERATE PUMP DRY!**
  - A. Centrifugal pumps **DO NOT** have suction lift ability. Pumps should be installed below the tank or sump, with minimal obstruction between the tank and pump, allowing the water to be gravity fed to the pump.
  - B. All centrifugal pumps, when put in operation, must be primed with liquid unless the pump is installed below the level of the liquid and is provided with true flooded suction.
  - C. To prime, pour liquid into the outlet tubing or piping and allow it to fill the pumping chamber. The pump will normally prime with less effort when foot valve is installed at the end of the suction line; this will also eliminate the need to re-prime each time the pump is turned off.
6. With inlet and outlet valves open, the pump can be started. The pump flow rate can be regulated by a valve on the discharge side. If flexible tubing is used, a simple tubing clamp can be employed to restrict flow. **DO NOT RESTRICT SUCTION.**

## OPERATING TIPS

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- A. If the pump is left idle for extended periods, flush the pump with water to prevent crystallization of the fluid inside the pump chamber.
- B. If the fluid to be pumped contains suspended solids, install a strainer in the suction plumbing, periodically inspect the suction strainer and remove any built-up debris.
- C. A filtration system should be used to prevent algae build-up in the liquid end. Please contact your local aquarium dealer for recommendations on the proper filtration system.
- D. The impeller may decouple from the drive magnet for various reasons. The most common reason is algae build-up in the liquid end. This is usually indicated by initial pumping, then a complete cut off of flow. Turn off the power to the motor, allow it to stop rotating, then start it again. If the problem recurs, check for algae build-up. See Maintenance below.
- E. Water being pumped through the liquid end may generate noise. By slowly reducing the flow (see above) you can reduce the noise. **Note:** Flow should not be reduced by more than half the rated output of the pump.
- F. If pump is installed below the tank, make sure the pump is well ventilated. Heat generated by the motor will rise and may cause the water temperature to increase.
- G. Some pumps may require the use of a chiller to regulate water temperature. Water temperature rise is proportional to the flow rate, therefore our larger aquarium pumps may require a chiller. If you experience an unexpected temperature rise please contact your local aquarium dealer for recommendations.
- H. Please note the motor surface temperature may feel hot to the touch. This is NORMAL and is NOT A CAUSE FOR CONCERN. As an additional safety feature, all Iwaki America pumps are equipped with a thermal protection device which will automatically shut the pump off in the unlikely event it reaches a critical temperature. For more details please contact Iwaki America or your local aquarium dealer.

## MAINTENANCE

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- 1. Periodic cleaning of the liquid end may be necessary. If you notice a drop in pump performance; e.g. reduced flow rate, then the liquid end should be inspected for algae or calcium build-up. To clean the liquid end follow these instructions.
    - A. Remove the bolts securing the liquid end to motor bracket (Item #1 of exploded view).
    - B. Remove Items 2 – 5 and visually inspect. If build-up is present, soak parts in vinegar and wipe with a cloth or toothbrush if necessary.
    - C. Check impeller spindle (Item #4) and make sure the center hole is not clogged. You should be able to look straight through the center of the spindle.
    - D. After cleaning each component, reassemble.
- REASSEMBLY**
- A. Place o-ring (Item #3) in groove of the rear casing (Item #5).
  - B. Place rear casing on motor bracket, ensuring the holes line up with the motor bracket holes.
  - C. Install impeller with the spindle seated in the rear casing bearing.
  - D. Align front casing (Item #2) bolt holes with rear casing and bolt to motor making sure the o-ring is not pinched.
- 2. Pump should be installed in a dry, well ventilated area. Periodically check to see if any rust or calcium build-up is present. If so wipe motor with a cloth to prevent further damage. If rust or calcium build-up is present, either move the pump to a more suitable location or wipe motor on a regular basis to ensure further damage does not occur.

## Commonly asked Aquarium Pump Questions

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### **Can I run these pumps dry?**

No, No, No, Never. These pumps rely upon a liquid medium to lubricate the internal bearings. Without fluid in the liquid end, the ceramic and plastic parts rub together while rotating 3000 times a minute. Within a matter of minutes you will cause severe damage to your pump.

### **What is the difference between MD and WMD?**

MD stands for Mag-Drive. WMD stands for Walchem Mag-Drive. In an effort to lower the cost of the MD pump that uses a Japanese motor, Walchem developed the WMD series. The Japanese motor and cast aluminum adapter bracket were replaced by a domestic (Fasco) motor and a polypropylene adapter bracket. A WMD will match the Hydraulics for the MD series but will typically be a little bit longer in length.

### **How long will my pump last?**

This question is the equivalent of "How long will you live?" There are many factors that decide both of these questions including care, work performed and accidents. We do warranty our pumps for one year, parts and workmanship. Typically, a MD/WMD pump in an aquarium application will last three to four years. Many of our customers enjoy 5+ years of service. Visit our web-site for customer testimonials.

### **Do you offer a submersible pump?**

No. None of our MD/WMD pumps can be submersed.

### **My pump seems to be running hot?**

The WMD series runs slightly hotter than the MD series. A rule of thumb is that the pump should be moderately hot to the touch but you should be able to hold your hand on it for about 3 seconds. All MD/WMD pumps are thermally protected to shut off in the unlikely event the pump reaches a critical temperature. Once cooled, the pump will restart automatically.

### **What are the materials in contact with the fluid?**

For the MD/WMD series the liquid end is glass filled polypropylene including an encapsulated inner magnet. The spindle is alumina ceramic and the bearings are Rulon (a fluoroplastic/ carbon mix).

### **Can the pump pass solids such as rocks, sand and dirt?**

The pump is limited in its solids handling to objects about the diameter of a human hair. In general, that is a fine sand or silt like material. Solids should never exceed 5% by volume in your water. Excessive solid will wear the pump's bearings over time and cause premature failures.

### **What type of motors do you use and can I buy them elsewhere?**

For our MD-6 through (W)MD-30 series, the motor type is Totally Enclosed Non-Ventilated (TENV). For our (W)MD-40 and above, the motor is Totally Enclosed Fan Cooled (TEFC). We custom manufacture all of these motors so they are specific to our product only. You can not purchase them elsewhere.

### **What is the minimum flow of the pump?**

For pumps with a flow rating up to 10 GPM we recommend ¼ GPM. Pumps with a flow over 10 GPM we recommend ½ GPM. Keep in mind that the lower the flows through the liquid end the more heat that will be transmitted into the fluid from the bearings.

### **Can I mount these pumps vertically?**

We recommend horizontal mounting but vertical mounting can be utilized up to size 40. A heads up position is preferred. Always be sure that flooded suction conditions exist when mounting the pump vertically.

### **Can I use these pumps outdoors?**

Yes. We recommend that they be enclosed in a vented cabinet since the motors are not washdown duty and should not be exposed to rain. Keep in mind that if the fluid freezes within the pump it can crack the plastic components easily.

**Model Identification Guide:**

MD/WMD -30 R L X T – 115 NL		
1      2 3 4 5 6      7 8		
Pump Series	1	MD with Iwaki motor, WMD with domestic motor
Pump Size	2	6, 10, 15, 20, 30, 40, 55, 70, 100
Spindle Type	3	R = rotating spindle
Motor	4	L = Motor has UL recognition (WMD series)
Impeller Type	5	X (Hi flow – Sizes 20,30,40)
		No letter (Pressure Pump – Sizes 20, 30, 40)
Connection	6	Hose Barb (no letter), Male NPT (T)
Motor Voltage	7	115 = 115 Volts, 220 = 220 Volts
Motor	8	NL = Motor has UL recognition (MD series)

Model	Connections Tube-NPT (inches)	HP Rating	Watts @ Max Flow	GPH @ 1 ft	GPH @ 6 FT	Shut Off (Feet)
WMD-15R(T)	1/2 - 1/2	1/75	39	270	120	11.1
WMD-20R(T)	5/8 - 3/4	1/38	45	480	360	14.1
WMD-20RX(T)	1 - 1	1/38	41	780	360	8.2
WMD-30R(T)	3/4 - 3/4	1/16	62	570	450	17.7
WMD-30RX(T)	1 - 1	1/16	40	1080	900	13.5
WMD-40R(T)	3/4 - 3/4	1/12	148	810.0	690	21.3
WMD-40RX(T)	1 - 1	1/12	113	1320	1020	15.4
MD-15R(T)	1/2 - 1/2	1/75	33	270	120	11.1
MD-20R(T)	5/8 - 3/4	1/38	42	480	360	14.1
MD-20RX(T)	1 - 1	1/38	43	780	360	8.2
MD-30R(T)	3/4 - 3/4	1/16	69	570	450	17.7
MD-30RX(T)	1 - 1	1/16	80	1080	900	13.5
MD-40R(T)	3/4 - 3/4	1/12	102	810	690	21.3
MD-40RX(T)	1 - 1	1/12	102	1320	1020	15.4
MD-55R(T)	1 - 1	1/9	176	1080	960	26.9
MD-70R(T)	1 - 1	1/4	287	1650	1440	31.8
MD-100R(T)	1 - 1	1/3	375	2100	1860	39.0