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## Moonshan MS-ZN-20

# Moonshan MS-ZN-20 Instant Hot Water Recirculating Pump User Manual

Model: MS-ZN-20

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## 1. INTRODUCTION

This manual provides comprehensive instructions for the installation, operation, and maintenance of your Moonshan MS-ZN-20 Instant Hot Water Recirculating Pump. This system is designed to deliver hot water quickly to your faucets, reducing water waste and wait times. Please read this manual thoroughly before installation and use to ensure safe and efficient operation.

## 2. SAFETY INFORMATION

### Important Safety Instructions:

- Read all instructions before installing or operating the pump.
- This recirculating pump is designed for indoor use only with standard tank water heaters. It is **not compatible** with tankless water heaters.
- Ensure the power supply matches the specifications (110 Volts).
- Installation should be performed by a qualified professional if you are not experienced with plumbing and electrical work.
- Always disconnect power before performing any service or maintenance.
- Do not operate the pump if it has been damaged.
- Keep children and pets away from the installation area.

## 3. PACKAGE CONTENTS

The Moonshan MS-ZN-20 Instant Hot Water Recirculating Pump system includes the following components:

- Recirculating Pump with Timer
- 304 Stainless Steel Sensor Valve

- 20-inch PEX Food Grade Supply Lines (3/8" Comp x 1/2" FIP)
- 1/2" FIP to 3/8" OD Adapters
- Teflon Tape
- Pipe Clamps with Self-Tapping Screws
- Silicone O-Rings

# 20" LONGER PEX FAUCET SUPPLY LINES

3/8 Comp x 1/2 FIP



**Lead Free**



**Non-Toxic**



**No Off-smell**

- PEX food grade inner hose  
No off-smell  
Food grade safety

- Stainless Steel Braid  
Explosion-proof  
Flexible



**Image 3.1:** All components included in the Moonshan Instant Hot Water Recirculating Pump kit. This includes the pump, sensor valve, PEX supply lines, adapters, Teflon tape, pipe clamps, and O-rings.



Image 3.2: Comparison highlighting the 20-inch PEX food-grade supply lines provided with the Moonshan system, emphasizing their longer length and non-toxic material compared to other options.



Image 3.3: Visual comparison of the Moonshan 304 Stainless Steel Sensor Valve with a removable filter screen and a 104°F set temperature, contrasted with a plastic sensor valve from another brand.

## 4. SETUP & INSTALLATION

The recirculating pump system is designed for straightforward installation. Follow these steps carefully:

### 4.1. System Overview



**Image 4.1:** Diagram illustrating the typical installation of the recirculating pump on the hot water outlet of a tank water heater and the bypass sensor valve under the sink.

The pump is installed on the hot water outlet of your tank water heater. The sensor valve is installed under the sink at the fixture furthest from the water heater. This creates a loop for hot water circulation.

## 4.2. Installation Steps

- 1. Turn off Water and Power:** Locate your water heater and turn off both the main water supply and the power to the water heater.
- 2. Drain Hot Water Line:** Open a hot water faucet in your home to relieve pressure and drain some hot water from the lines.
- 3. Install Recirculating Pump:**
  - Connect the recirculating pump to the hot water outlet of your tank water heater. Ensure all connections are secure and sealed with Teflon tape.
  - The pump should be installed in an accessible location.
- 4. Install Sensor Valve:**
  - At the faucet furthest from the water heater, locate the hot and cold water supply lines under the sink.
  - Install the 304 Stainless Steel Sensor Valve between the hot and cold water supply lines using the provided PEX supply lines and adapters. The valve is designed to allow hot water to circulate back to the water heater via the cold water line when the temperature drops below 104°F.
  - Ensure the flow direction indicated on the valve (HOT → COLD) is correct.
- 5. Secure Components:** Use the provided pipe clamps and self-tapping screws to secure the PEX supply lines and other components as needed, preventing movement and strain.
- 6. Restore Water and Power:** Once all connections are secure and checked for leaks, slowly turn on the main water supply. Bleed air from the system by opening hot water faucets until water flows smoothly. Finally, restore power to the water heater and the recirculating pump.

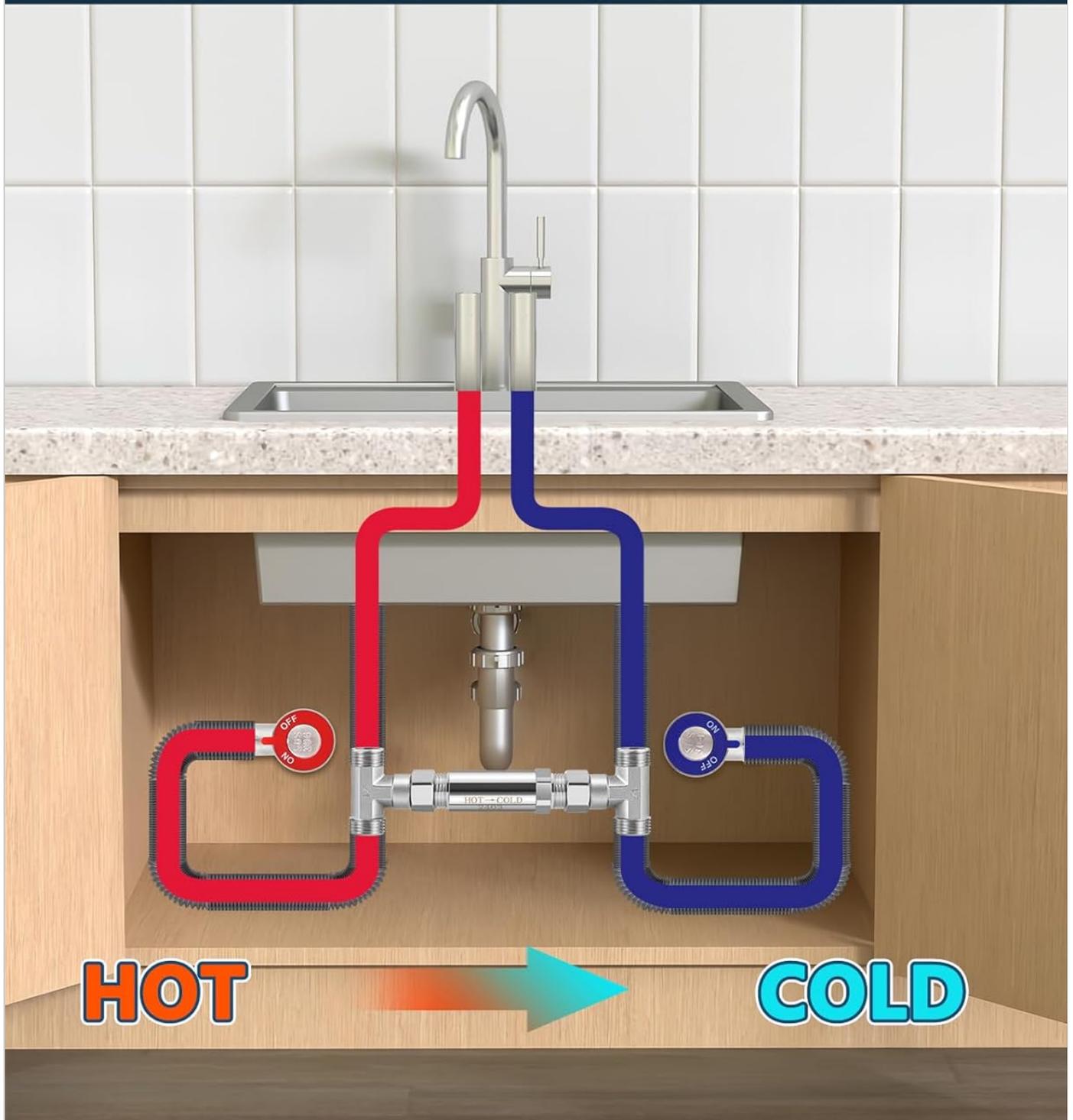
# THREE MODES CONTROL

Freely change the pump mode as your different requirements



**Image 4.2:** Diagram illustrating the thermal bypass technology of the one-way sensor valve, showing how hot water is directed to the cold water line for recirculation without affecting the cold water faucet.

# EASY TO INSTALL



**Image 4.3:** Simplified diagram showing the hot and cold water lines under a sink with the sensor valve installed, indicating the ease of installation.

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**Video 4.1:** An official Moonshan video demonstrating the installation process and features of the Hot Water Recirculating Pump with Timer. This video provides a visual guide to the setup.

## 5. OPERATING INSTRUCTIONS

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The Moonshan recirculating pump features a programmable timer for efficient operation.

## 5.1. Timer Control

# PROGRAMMABLE TIMER CONTROL

Instant hot water at any time



Cook



Take a shower

Point to the current time  
Example: 9:00

Timer Mode



**WARNING**  
Don't let the machine run without water for a long time, or the machine will overheat and stop working. If the machine stops working, please stop using it immediately. The pressure of the water pump will increase when the machine is running. If the pressure is too high, please stop using it immediately. If the pressure is too low, please stop using it immediately. If the pressure is too high, please stop using it immediately. If the pressure is too low, please stop using it immediately.

**Moonsan**  
**HOT WATER CIRCULATION PUMP**  
110V/60Hz  
12μF  
IP 44  
TF 110  
Max: 1.0MPa  
Q max | H max  
10GPM | 21FT  
Class F  
NSF/ANSI 61&372  
NSF  
CE

# 24H

**Image 5.1:** Close-up of the programmable timer on the recirculating pump, showing how to set the current time and timer mode for scheduled hot water delivery.

The integrated timer allows you to schedule the pump's operation to align with your hot water usage patterns. This ensures hot water is available when needed, reducing energy consumption during off-peak hours.

- **Setting Current Time:** Rotate the outer dial to align the current time with the arrow indicator.
- **Setting Programmed Cycles:** Use the small pins around the dial to set ON/OFF periods. Push pins outwards for ON, inwards for OFF. Each pin typically represents 15 minutes.

## 5.2. Operating Modes



**Image 5.2:** Illustration of the three operating modes: Always On, Timer Mode, and Always Off, allowing users to select based on their needs.

The pump typically offers three modes of operation:

- **Always On:** The pump runs continuously, providing instant hot water at all times. This mode consumes more energy.
- **Timer Mode:** The pump operates according to the schedule set on the programmable timer. This is the recommended mode for energy efficiency.
- **Always Off:** The pump remains off. Hot water will only be available after the traditional wait time.

Select the desired mode using the switch or dial on the pump unit.

## 6. MAINTENANCE

Regular maintenance ensures the longevity and efficient operation of your recirculating pump system.

### 6.1. Sensor Valve Filter Screen Cleaning

## REPLACEABLE FILTER SCREEN

The filter screen on the hot water port of the sensor valve can effectively block impurities and particles in the water, preventing the sensor valve from clogging and reducing maintenance costs.



**Image 6.1:** Diagram showing the replaceable filter screen within the sensor valve, designed to block impurities and prevent clogging. The 304 Stainless Steel Sensor Valve includes a replaceable filter screen on the hot water port. This screen prevents impurities and particles from entering and clogging the valve.

- **Frequency:** Inspect and clean the filter screen every 6-12 months, or more frequently if you notice reduced hot water flow or increased noise from the valve.
- **Procedure:**
  1. Turn off the water supply to the sensor valve.
  2. Carefully disconnect the hot water line from the sensor valve.
  3. Remove the filter screen.
  4. Rinse the screen under running water to remove any debris. For stubborn deposits, a soft brush may be used.
  5. Reinsert the clean filter screen and reconnect the hot water line.
  6. Slowly restore the water supply and check for leaks.

## 6.2. General Inspection

- Periodically check all connections for leaks.
- Ensure the pump unit is free from dust and debris.
- Listen for unusual noises during operation, which may indicate a problem.

## 7. TROUBLESHOOTING

Refer to the table below for common issues and their solutions.

Problem	Possible Cause	Solution
No hot water or long wait times.	<ul style="list-style-type: none"><li>• Pump not powered.</li><li>• Timer set incorrectly.</li><li>• Sensor valve clogged or malfunctioning.</li><li>• Air in the system.</li></ul>	<ul style="list-style-type: none"><li>• Check power connection and circuit breaker.</li><li>• Verify timer settings (Always On or correct Timer Mode schedule).</li><li>• Clean sensor valve filter screen (refer to Maintenance section).</li><li>• Bleed air from hot water lines by opening faucets.</li></ul>

Problem	Possible Cause	Solution
Unusual noise from sensor valve.	<ul style="list-style-type: none"> <li>• Debris in sensor valve.</li> <li>• Improper installation.</li> </ul>	<ul style="list-style-type: none"> <li>• Clean sensor valve filter screen.</li> <li>• Ensure valve is installed correctly and securely.</li> </ul>
Cold water line becomes warm.	<ul style="list-style-type: none"> <li>• Sensor valve not closing properly.</li> </ul>	<ul style="list-style-type: none"> <li>• Inspect sensor valve for debris or malfunction. Consider replacement if issue persists.</li> </ul>
Pump not running.	<ul style="list-style-type: none"> <li>• No power.</li> <li>• Pump motor failure.</li> <li>• Timer set to "Always Off" or outside programmed time.</li> </ul>	<ul style="list-style-type: none"> <li>• Check power supply and connections.</li> <li>• Contact customer support if motor failure is suspected.</li> <li>• Adjust timer settings.</li> </ul>

Your browser does not support the video tag.

**Video 7.1:** A user-submitted video demonstrating a noisy remote sensor valve. This video highlights a potential issue that may require troubleshooting or replacement of the sensor valve.

## 8. SPECIFICATIONS

Feature	Detail
Model Number	MS-ZN-20
Brand	Moonshan
Material	Stainless Steel (Pump Head, Sensor Valve)
Product Dimensions	7"L x 5"W x 6"H
Power Source	Corded Electric
Item Weight	6 Pounds
Maximum Flow Rate	8.4 Gallons Per Minute
Maximum Lifting Height	21.6 Feet
Voltage	110 Volts
Wattage	100 Watts
Sensor Valve Set Temperature	104°F (40°C)
PEX Supply Lines Length	20 inches

## 9. WARRANTY INFORMATION

The Moonshan MS-ZN-20 Instant Hot Water Recirculating Pump comes with a **one-year warranty** from the date of purchase, covering defects in materials and workmanship under normal use. This warranty does not cover damage caused by improper installation, misuse, abuse, accident, or unauthorized repairs.

For warranty claims, please retain your proof of purchase and contact Moonshan customer support.

## 10. CUSTOMER SUPPORT

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If you have any questions, require technical assistance, or need to report an issue with your Moonshan recirculating pump, please contact our customer support team. Refer to the contact information provided with your product packaging or visit the official Moonshan website for support details.

When contacting support, please have your model number (MS-ZN-20) and purchase date available.

