

Water Motor Alarm**MODEL: NX010****GENERAL DESCRIPTION**

Model NX010 Water Motor Alarm is a mechanical device actuated by a flow of water. It is designed to sound a continuous alarm while a sprinkler system operates. Model NX010 Water Motor Alarm can be used in conjunction with Waterflow Detecting Valves such as alarm check valves, dry pipe valves, deluge valves, and preaction valves to sound a local alarm. And an alarm is required component of every sprinkler system having more than 20 sprinklers.

Model NX010 Water Motor Alarm is suitable for mounting to any type of rigid wall and can accommodate a wall thickness range of 2 to 18 inches (50 to 450 mm).

Model NX010 Water Motor Alarm utilizes a lightweight impeller design that can produce a high sound pressure level. The Gong, Gong Support, and Water Motor House are made from corrosion resistant aluminum alloys. The polymer Drive Shaft Coupling does not require lubrication, and the Gong is closely fitted to the Gong Support to eliminate the need for a separate cover.

TECHNICAL SPECIFICATIONS

Model	NX010
Working Water Pressure Range	5 to 175 psig / 0.035 to 1.2 MPa (0.35 to 12 bar)
Shipping Weight	11 lbs / 5 kg
Alarm Line Inlet	NPT3/4 or Rc3/4*
Drain Outlet	NPT1 or Rc1
Required Accessories	Y-Strainer: 3/4", 20 mesh screen
Listings and Approvals	UL (United States)

*The pipe threads connections accord with ISO7/1.

SOUND PRESSURE LEVELS

Model NX010 Water Motor Alarm can produce a distinctive sound at all working water pressure range.

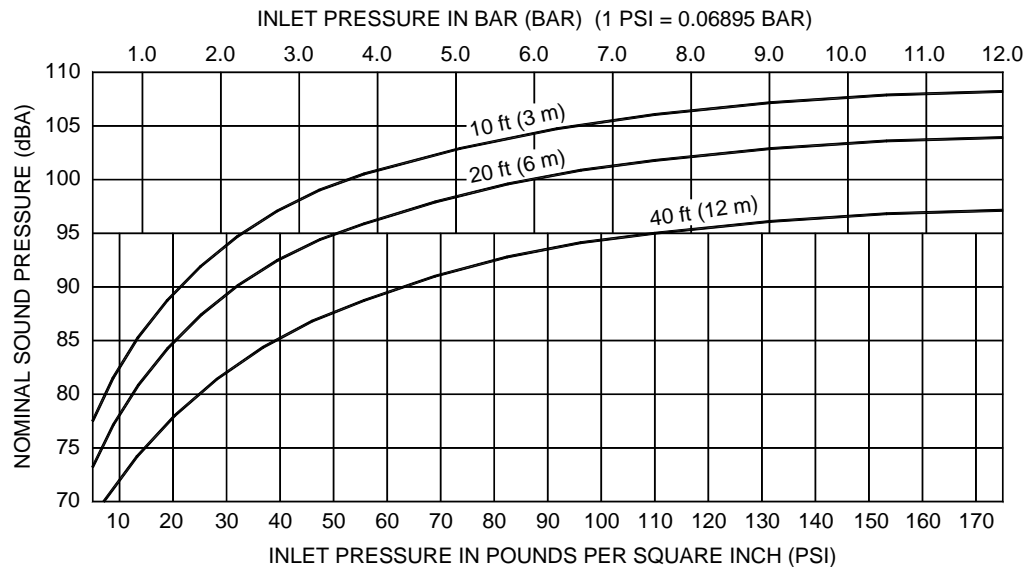
Typical sound pressure levels that can be transmitted by the NX010 Water Motor Alarm are illustrated in Figure 1.

OPERATION

When a Waterflow Detecting Valve, such as alarm check, dry pipe, deluge and preaction valve, is activated, water flows from the alarm outlet of the Waterflow Detecting Device, through the 3/4" (20 mm) Strainer and alarm line piping, into the Alarm Line Inlet of the Water Motor. From the inlet, the water flows through an Orifice that restricts the flow into a pressurized stream directed onto the Impeller. The water stream impinges on the Impeller and turns the Impeller and Drive Shaft, causing the Striker Arm to rotate. With each rotation, the free-swinging Striker hits the Gong, producing a continuous alarm. After passing through the Water Motor, the water is discharged through a 1" (25 mm) Drain Outlet in the bottom of the Impeller House. The discharged water must be piped through the wall to atmosphere or to a suitable open drain. A minimum of 5 psig (0.035 MPa) is required at the Orifice to cause a continuous alarm. The Water Motor Alarm produces the required sound pressure levels output.

The alarm will sound as long as water is flowing into the system, and may be silenced by closing the alarm control valve provided in the trim of the Waterflow Detecting Valve.

The Water Motor Alarm does not have to be reset after an operation. However, if the alarm was silenced during operation, the alarm control valve must be reopened after the fire protection system is restored to service.



- NOTES: 1. Test performed with background sound pressure level of 55 dBA.
2. Model NX010 Water Motor Alarm was mounted 10 feet (3 m) above ground level on 8 inch (200 mm) thick concrete block wall.
3. The microphone is to be located at a distance of 10 feet (3 m), 20 feet (6 m) and 40 feet (12 m) from the Gong and positioned to receive the maximum sound level produced by the device.

Figure 1: Typical Sound Pressure Levels In Front Of Model NX010 Water Motor Alarm

PRODUCT DESCRIPTION

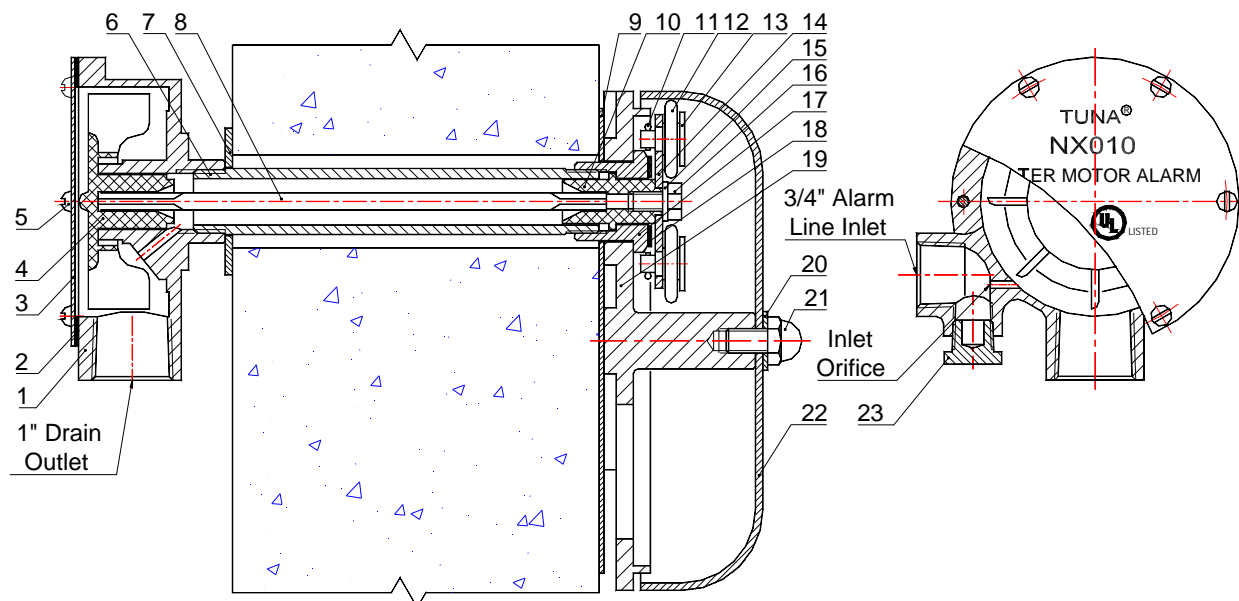


Figure 2: Model NX010 Water Motor Alarm Assembly

PARTS

No.	Part Name	Qty.	Part No.	Material	Remarks
1	House	1	0121 1100 0001	Cast Aluminum: A13600	
2	Cover Plate Gasket	1	0121 1100 0002	Cellulose / Chloroprene	
3	Cover Plate	1	0121 1100 0003	Aluminum: 2017	
4	Impeller	1	0121 1100 0004	Delrin	
5	Round-Head Screw	6	M5X10	Steel, Zinc Plated	
6	Drive Shaft Sleeve	1	0121 1100 0005	3/4" Pipe, Galvanized Steel	Specify Length Adept Wall Thickness
7	Support Washer	1	0121 1100 0006	Galvanized Steel: G10080	
8	Drive Shaft	1	0121 1100 0007	Aluminum: 2017	Specify Length Adept Wall Thickness
9	Closure Plate	1	0121 1100 0008	Galvanized Steel: G10080	Order Separately
10	Drive Shaft Coupling	1	0121 1100 0009	Lubricomp 189 Ryton	
11	Cotter Pin	2	2X12	Steel, Zinc Plated	
12	Striker	2	0121 1100 0010	Canvas Phenolic	
13	Striker Pin	2	0121 1100 0011	Aluminum: 2017	
14	Striker Arm	1	0121 1100 0012	Aluminum: 2017	
15	Flat Washer	1	8	S302	
16	Hex-Head Bolt	1	M8X12	Steel, Zinc Plated	
17	Sleeve Coupling	1	0121 1100 0013	Brass: C37710	
18	Coupling Spacer	1	0121 1100 0014	Lubricomp 189 Ryton	
19	Gong Support	1	0121 1100 0015	Cast Aluminum: A13600	
20	Set Bolt Washer	1	0121 1100 0017	Lubricomp 189 Ryton	
21	Set Bolt	1	0121 1100 0018	Steel, Chrome Plated	
22	Gong	1	0121 1100 0016	Aluminum: 2017	
23	Sump Plug	1	0121 1100 0019	Brass: C37710	

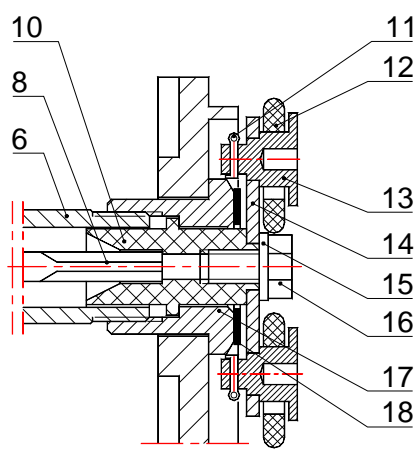


Figure 3: Cross-section View of Striker

FEATURES

1. The Water Motor Alarm package includes a Drive Shaft 20-1/16" (510 mm) long for walls 18" (458 mm). A special Drive Shaft length is

available for other thickness of walls.

2. The Water Motor Alarm package includes a Drive Shaft Sleeve 18-9/16" (471.5 mm) long for walls 18" (458 mm). A special Drive Shaft Sleeve length is available for other thickness of walls.
3. The package includes the required 3/4" Strainer for installation on the alarm line.

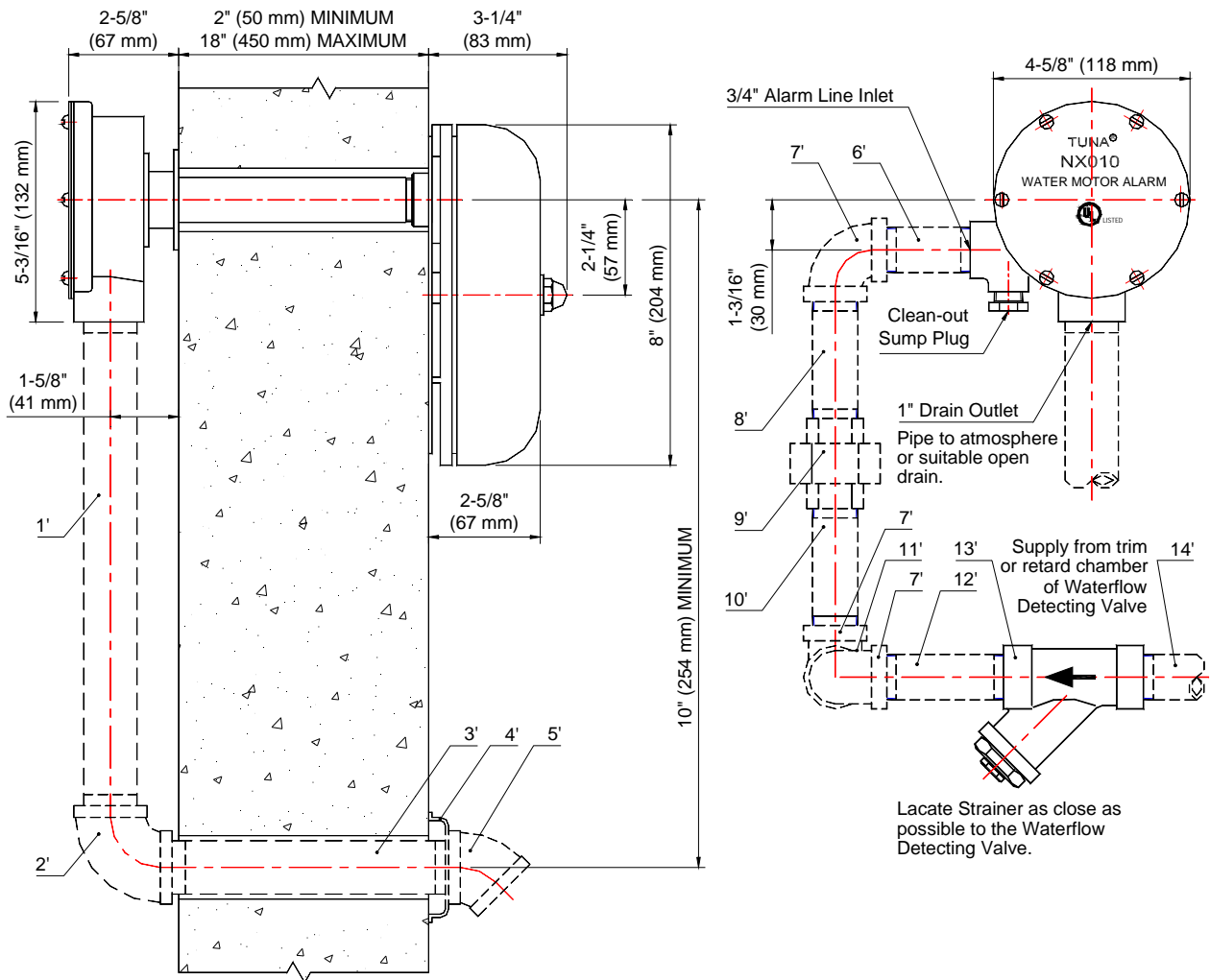
OPTIONAL ACCESSORIES

ORDER SEPARATELY

☐ Closure Plate

The Closure Plate is required when the Model NX010 Water Motor Alarm Gong is mounted on an irregularly surfaced wall. It serves to prevent birds from entering the inside of the Gong. The Closure Plate also serves as a mounting plate for sheet metal walls.

TRIM DESCRIPTION



- NOTES: 1. All installation dimensions are shown at nominal value. All dimensions are in inches and (mm).
2. All trim components are galvanized.
3. Pipe shown in dashed is not included with the standard package of Water Motor Alarm.

Figure 4: Typical Trim Installation of Model NX010 Water Motor Alarm

BILL OF MATERIALS

No.	Description	Qty.	Remarks	No.	Description	Qty.	Remarks
1'	Nipple 1"	1	Galvanized Steel or Brass Pipe	8'	Nipple 3/4"	1	Galvanized Steel
2'	90° Elbow 1"	1	Galvanized Steel	9'	Union 3/4"	1	Galvanized Steel
3'	Nipple 1"	1	Galvanized Steel Pipe	10'	Nipple 3/4"	1	Galvanized Steel
4'	Wall Plate	1	Galvanized Steel	11'	Nipple 3/4"	1	Galvanized Steel
5'	45° Elbow 1"	1	Galvanized Steel	12'	Nipple 3/4"	1	Galvanized Steel
6'	Nipple 3/4"	1	Galvanized Steel or Brass Pipe	13'	Y-Strainer 3/4"	1	20 mesh screen NPT Thread PSN 0121 1100 01 ISO Thread PSN 0121 1200 01
7'	90° Elbow 3/4"	3	Galvanized Steel	14'	Nipple 3/4"	1	Galvanized Steel

DESIGN CRITERIA

The Model NX010 Water Motor Alarm must be used in accordance with the following design criteria:

1. The Y-Strainer is to be located at the alarm outlet of the Waterflow Detecting Valve trim, as close as possible to the alarm outlet of the valve being monitored for water flow (or outlet of the retard chamber if used). The location must be easily accessible for cleaning.

2. The Water Motor Alarm must only be mounted to a rigid wall surface, which will not permit the Striker / Gong Support to loosen and fall out of alignment.

3. In order to obtain the highest possible sound level, the Water Motor Alarm should be located as close as possible to the Waterflow Detecting Valve. However, any distance and elevation may be used provided that the minimum desired residual pressure, ref. Figure 1, is provided at the inlet to the water motor. The location must be easily accessible for clearing.

4. The alarm line piping from the alarm outlet of the Waterflow Detecting Valve trim to the Water Motor Alarm must be 3/4" size throughout and it must be galvanized steel, brass, or other suitable corrosion resistant material.

5. The alarm line piping must be positioned such that it can be drained back to the Waterflow Detecting Valve trim.

6. The Pipe Plug is to be located vertically below the Alarm Line Inlet to the Water Motor Alarm. It is used for cleaning out all debris (contaminants, dirt and mineral deposits).

7. Piping from the Water Motor Drain Outlet must be a minimum of 1" in size throughout and directed to an open drain, in order to ensure proper drainage for obtaining the maximum sound pressure level.

NOTES

The Water Motor Alarm Drain may be connected to the main drain of a Waterflow Detecting Valve if a non-spring loaded swing type check valve is installed in a horizontal portion of the Water Motor Alarm drain piping (before its connection to the main drain).

8. In order to minimize the staining which can be created by drain water, it is recommended that the drain piping from the Water Motor be galvanized steel, brass or other suitable corrosion resistant material.

9. Drain water must be directed such that there will be no accidental damage to property or danger to persons when the alarm is operating or thereafter.

10. The alarm line drain (at the Waterflow Detecting Valve) must be maintained at a minimum temperature of 40°F / 4°C.

11. A single Water Motor Alarm may be connected to the alarm lines from a maximum of three separate fire protection systems. However, when two or three alarm lines are interconnected, each alarm line must be provided with a 3/4" Y-Strainer and a 3/4" Check Valve with 3/32" orifice. The strainers must be located at the alarm outlet in the trim of each of the Waterflow Detecting Valves. The check valves must be located between each strainer and the interconnection with the alarm line from another system.

INSTALLATION**WARNING**

Model NX010 Water Motor Alarms described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the NFPA, in addition to the standards of any other authorities having jurisdictions. Failure to do so may impair the integrity of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or manufacturer should be contacted relative to any questions.

1. Mark the through-wall locations for the centerlines of the Drive Shaft Sleeve and Drain Outlet. The Drain Outlet must be located at least 10" (254 mm) below the Drive Shaft Sleeve, see Figure 4.

2. Cut 1-1/2" (38 mm) (1-7/16" (36.5 mm)

minimum to 1-5/8"(41.3 mm) maximum) diameter hole in the building wall at both locations to accommodate the 3/4"(20 mm) galvanized spacer pipe. The hole through the wall must be level or pitched slightly downward toward the Water Motor.

3. Measure the wall thickness.

4. Cut the non-threaded end of the Drive Shaft Sleeve to a length equal to that of the wall thickness plus 9/16"(14.3 mm). Thread the cut end.

5. Cut the Drive Shaft to a length equal to the wall thickness plus 2-1/16"(52.8 mm). File off all burrs from the cut end of the Drive Shaft and insert the Drive Shaft into the hole of the Drive Shaft Coupling.

6. Slide the Drive Shaft Sleeve over the Drive Shaft and thread the end of the Drive Shaft Sleeve into the Sleeve Coupling.

7. Slide the Closure Plate (if used), over the end of the Drive Shaft Sleeve, up to the back of the Gong.

8. Position the Gong Support assembly on the exterior wall surface by sliding the free threaded end of the Drive Shaft Sleeve into the hole from outside the building.

9. On the inside surface of the wall, slide the Support Washer provided, over the threaded end of the Drive Shaft Sleeve.

10. Remove the plastic thread protectors from the threaded openings in the Houser of the Water Motor (if had).

11. Attach the Water Motor assembly by threading the House onto the threaded end of the Drive Shaft Sleeve. Then the Drive Shaft slide into position of Impeller as the House is threaded onto the Drive Shaft Sleeve. Tighten the threaded into the House hand tight plus 1/8 turn. When the assembly is properly tightened, the Water Motor should be positioned with the 1" (25 mm) Drain Outlet facing downward and the 3/4" (20 mm) Alarm Line Inlet horizontal. See Figures 4.

NOTES

Use pipe thread sealant sparingly on male threads only.

12. Remove the Gong and rotate the Strikers by hand and verify that them rotate freely

(without any sign of binding). If not, make the necessary adjustments. Then reinstall the Gong.

13. With galvanized, brass or other approved corrosion resistant piping, not less than 3/4" (20 mm) diameter, connect the water motor inlet to the alarm outlet of the Waterflow Detecting Valve. A 3/4" (20 mm) Strainer (included) is required on the alarm line as close as possible to the alarm outlet of the Waterflow Detecting Valve or inlet of the retard chamber if used. The location must be easily accessible for cleaning.

14. The drain outlet of the impeller House must discharge to an open drain. Care shall be taken to keep the drain line clean at all times.

NOTES

A water motor drain line that has too many fittings, and / or has a very short length of pipe between the 1"(25 mm) outlet and the first elbow in the water motor drain pipe, and / or is very long, may result in slow drainage and reduced water motor speed. This condition can be corrected by increasing the drain pipe diameter, increasing the length of pipe to the first elbow, and / or pitching the pipe toward the discharge location.

15. Test the Water Motor Alarm by opening the alarm test valve in the trim of the Waterflow Detecting Valve. The alarm must be clear and steady. If not, make the necessary adjustments.

NOTES

Testing of the Water Motor Alarm may result in operation of other associated alarms. Thus, notification must be given to the owner and the fire department, central control station, or other signal station to which the alarms are connected.

MAINTENANCE

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the NFPA, in addition to the standards of any authority having jurisdiction. The installing contractor or manufacturer should be contacted relative to any questions.

It is recommended that Water Motor Alarm be inspected, tested, and maintained by a qualified Inspection Service.

The Model NX010 Water Motor Alarm does not require any regularly scheduled maintenance. Rotating parts do not require lubrication. For minimum maintenance and inspection requirements, refer to the NFPA that describes care and maintenance of sprinkler systems. In addition, the Authority Having Jurisdiction may have additional maintenance, testing and inspection requirements that must be followed. **ANY IMPAIRMENT MUST BE IMMEDIATELY CORRECTED.**

It is recommended that Water Motor Alarm be periodically operated. At regular intervals, examine and test the Water Motor to ensure that the Inlet Orifice, drain line and Sump are clean and free of obstruction, and that the alarm functions properly. Also, at regular intervals and before disassembly of the Water Motor, clean and inspect the Alarm Line Strainer located at the alarm outlet of the Waterflow Detecting Valve, or the outlet of the retard chamber if used.

NOTES

Testing of the Water Motor Alarm may result in operation of other associated alarms. Thus, notification must be given to the owner and the fire department, central control station, or other signal station to which the alarms are connected.

If the alarm was silenced during operation, the alarm control valve must be reopened immediately after the fire protection system is restored to service.

The inspection should be made quarterly or more frequently, as may be necessary in the case of locations subject to vandalism. The Y-Strainer and Sump are to be cleaned out after each operation of the Water Motor Alarm and after the alarm line piping has been drained.

*If necessary, the Water Motor Alarm should be disassembled for maintenance. Before proceeding with disassembly of the Water Motor Alarm, notify the Authority Having Jurisdiction and occupants of the area covered by the system affected. Take all appropriate precautions. **THE WATER MOTOR ALARM WILL BE DISABLED DURING DISASSEMBLY.***

WATER MOTOR DISASSEMBLY

1. Isolate the Water Motor Alarm by closing the alarm line valve in the trim of the Waterflow Detecting Valve (Refer to appropriate technical data for the system used).
2. Remove the Sump Plug.
3. Remove all Round-Head Screws (M5X10), from the water motor Cover Plate.
4. Separate the Cover Plate and the Cover Plate Gasket from the House.
5. Remove the Impeller. Inspect and if necessary, carefully clean the Inlet Orifice in the House, with a wire or pipe cleaner brush. Flush the Inlet Orifice way and drain line with water or compressed air.

WATER MOTOR RE-ASSEMBLY

1. Reinstall the Sump Plug.
2. Reinstall the Impeller.
3. Replace Cover Plate Gasket, and attach Cover Plate, by using Round-Head Screws (M5X10).
4. Open the alarm line valve.
5. Test the Water Motor Alarm.
6. When test is complete and Water Motor Alarm operation is satisfactory, place the alarm line valve in the proper "alarm" position. Reset and return the affected systems to service.

ORDERING PROCEDURE

A Product Symbol Number (PSN) shall be specified when ordering the products.

Contact your local distributor for availability.

STANDARD ORDER NX010 WATER MOTOR ALARM:

Standard NX010 Water Motor Alarm Specify: Model NX010 Water Motor Alarm with (specify connection style), PSN (specify as follows).

PSN 0121 1 X₁ 00

X ₁	Connection Style
1	Alarm Line Inlet NPT3/4 Drain Outlet NPT1
2	Alarm Line Inlet Rc3/4 Drain Outlet Rc1

ACCESSORIES:

Order the following accessories, as applicable:
Y-Strainer with NPT3/4 connection style (the standard package already includes a required 3/4" Y-Strainer)

.....**PSN 0121 1100 01**

Y-Strainer with Rc3/4 connection style (the standard package already includes a required 3/4" Y-Strainer)

.....**PSN 0121 1200 01**

Closure Plate (required for the Alarm Gong mounted on irregularly surfaced wall or sheet metal wall)

.....**PSN 0121 1100
0008**

CONVERSION TABLE

Name of Unit	Unit Symbol	Conversion Factor
Millimeter	mm	1 in.=25.4 mm
Square meter	m ²	1 ft ² =0.0929 m ²
Liter	L	1 gal=3.785 L
Cubic decimeter	dm ³	1 gal=3.785 dm ³
Cubic meter	m ³	1 ft ³ =0.0283 m ³
Kilogram	kg	1 lb=16 ozs.=0.4536 kg
Kilograms per cubic meter	Kg/m ³	1 lb/ft ³ =16.0183kg/m ³
Pascal	Pa	1 psi=6895 Pa
Bar	bar	1 psi=0.0689 bar
Newton meter	N·m	1 ft·lbs=1.355 N·m

! WARNING

This product must be installed by an experienced, trained installer, in accordance with the instructions provided with each valve. These instructions contain important information.

Failure to follow these instructions may result in serious personal injury, property damage, or valve leakage. We reserve the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

If you have any questions about the safe installation and use of this device, contact Nanjing Fire Protection Technology Co., Ltd. P.C.211112, 599 Zhushan Road, Jiangning District, Nanjing, R. P.China