

SHO-FLOW® Flow Meter Operations

INSTRUCTIONS FOR INSTALLATION, OPERATION, AND MAINTENANCE

⚠ WARNING

Understand manual before use. Operation of this device without understanding the manual and receiving proper training is a misuse of this equipment. Obtain safety information at tft.com/serialnumber.

This equipment is intended for use by trained and qualified emergency services personnel for firefighting. All personnel using this equipment shall have completed a course of education approved by the Authority Having Jurisdiction (AHJ).

This instruction manual is intended to familiarize firefighters and maintenance personnel with the operation, servicing, and safety procedures associated with this product. This manual should be kept available to all operating and maintenance personnel.



SHO-FLOW 1
50-300 GPM

SHO-FLOW 2
LOW FLOW
100-500 GPM

SHO-FLOW 2
HIGH FLOW
500-1250 GPM



PERSONAL RESPONSIBILITY CODE

The member companies of FEMSA that provide emergency response equipment and services want responders to know and understand the following:

1. Firefighting and Emergency Response are inherently dangerous activities requiring proper training in their hazards and the use of extreme caution at all times.
2. It is your responsibility to read and understand any user's instructions, including purpose and limitations, provided with any piece of equipment you may be called upon to use.
3. It is your responsibility to know that you have been properly trained in Firefighting and /or Emergency Response and in the use, precautions, and care of any equipment you may be called upon to use.
4. It is your responsibility to be in proper physical condition and to maintain the personal skill level required to operate any equipment you may be called upon to use.
5. It is your responsibility to know that your equipment is in operable condition and has been maintained in accordance with the manufacturer's instructions.
6. Failure to follow these guidelines may result in death, burns or other severe injury.



Fire and Emergency Manufacturers and Service Association
P.O. Box 147, Lynnfield, MA 01940 • www.FEMSA.org

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1.0 MEANING OF SAFETY SIGNAL WORDS

A safety related message is identified by a safety alert symbol and a signal word to indicate the level of risk involved with a particular hazard. Per ANSI Z535.6, the definitions of the four signal words are as follows:



DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.



NOTICE is used to address practices not related to physical injury.

2.0 SAFETY

⚠️ WARNING

Equipment may be damaged if frozen while containing significant amounts of water. Such damage may be difficult to detect visually. Subsequent pressurization can lead to injury or death. Any time the equipment is subject to possible damage due to freezing, it must be tested and approved for use by qualified personnel before being considered safe for use.

⚠️ WARNING

This equipment is intended for use by trained personnel for firefighting. Use of this equipment for other purposes may involve hazards not addressed by this manual. Seek appropriate guidance and training to reduce risk of injury.

⚠️ WARNING

This device is not rated as ignition proof, explosion proof, or intrinsically safe. Use only in locations with adequate ventilation and no hazard of flammable vapor buildup.

3.0 GENERAL INFORMATION

The SHO-FLOW is a water-powered fire ground flow meter that measures the flow rate in a hose line and transmits flow data using a Bluetooth wireless connection. Data is received by a paired device and displayed using a smart phone app. The SHO-FLOW does not have a display. Flow meter power is generated whenever flow causes its turbine to rotate. Data is automatically transmitted whenever flow is present, and stops when flow stops. An arrow indicates the direction of flow.

The SHO-FLOW is intended for intermittent use with clean fire water or solutions of water and foam concentrate. It is not intended for use with pure foam concentrate, compressed air foam, hydrocarbons, or other types of liquid. Turbine bearings are subject to wear. The SHO-FLOW is not intended for continuous outdoor storage, use with heated fluids, in permanently piped installations, 24/7 wet conditions, or in extended service conditions (non-fire ground).



Figure 3.0

3.1 PART IDENTIFICATION AND TERMS

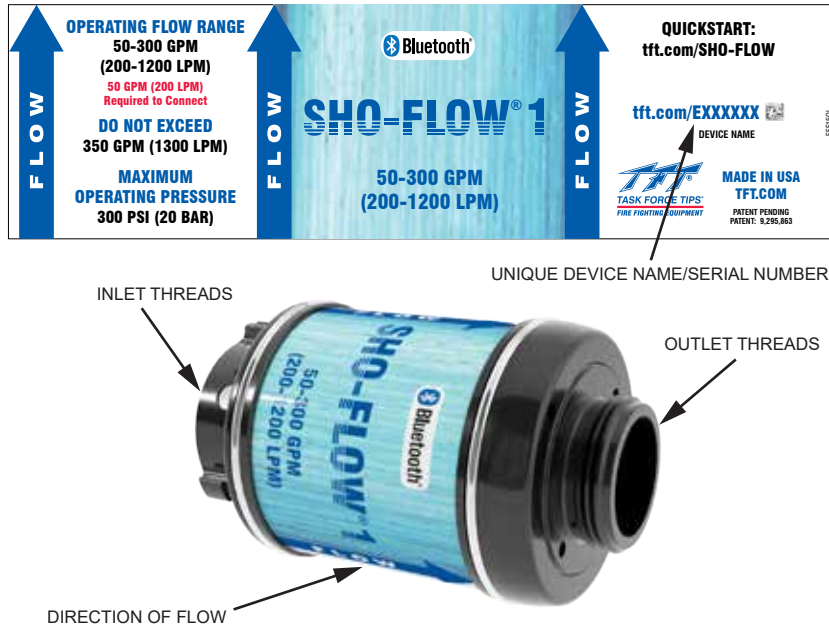


Figure 3.1

3.2 SPECIFICATIONS

3.2.1 DEVICE SPECIFICATIONS

| Model Name | SHO-FLOW 1 | SHO-FLOW 2 (Low Flow) | SHO-FLOW 2 (High Flow) |
|--|--|-----------------------------------|-------------------------------------|
| Operating Flow Range | 50-300 GPM (200-1200 LPM) | 100 - 500 GPM (400 - 2000 LPM) | 500 - 1250 GPM (2000 - 5000 LPM) |
| Maximum Flow Range | 350 GPM (1300 LPM) | 600 GPM (2300 LPM) | 1350 GPM (5200 LPM) |
| Minimum Flow Rate Required to Connect | 50 GPM (200 LPM) | 100 GPM (400 LPM) | 500 GPM (2000 LPM) |
| Waterway Diameter | 1.5" (38mm) | 2.5" (65mm) | 2.5" (65mm) |
| Flow Accuracy | +/-2.5% Full Scale | | |
| Non-recoverable Pressure Loss @ Maximum Flow | 15 PSI @ 300 GPM | 10 PSI @ 500 GPM | 10 PSI @ 1250 GPM |
| Maximum Operating Pressure | 300 PSI (20 bar) | | |
| Hydrostatic Test Pressure | 900 PSI (62 bar) | | |
| Operating Temperature - Electronics | -20-140°F (-30-60°C) | | |
| Length | 6.3" (160mm) | 7.4" (188 mm) | |
| Width | 3.9" (99mm) | 4.9" (125 mm) | |
| Weight | 2.8 lbs (1.3 kg) | 4.2 lbs (1.9 kg) | |
| Materials | Aluminum 6000 series hard anodized MIL8625 class 3 type 2, stainless steel 300 series, POM, nitrile rubber, and CPVC | | |
| IP Rating | IP65 | | |
| Power Supply | Self-powered, Water Flow Energy Harvesting | | |
| Backup Battery | CR2032 enabled in app | | |

Table 3.2.1

3.2.2 APP SPECIFICATIONS

| | |
|------------------------|--------------------------|
| Wireless Communication | Bluetooth® Version 4.1 |
| Display | SHO-FLOW Smart Phone App |
| Flow Units | GPM, L/min |
| Pressure Units | psi, bar |
| Force Units | lbf, kgf |

Table 3.2.2

3.3 COUPLINGS

The SHO-FLOW 1 is offered with standard hose threaded connections: 1.5" NH, 1.5" BSP, or 1.5" NPSH. The SHO-FLOW 2 is offered with standard hose threaded connections: 2.5" NH, 2.5" BSP, or 2.5" NPSH. Inlets are rigid female threaded couplings. Fluid is sealed using a hose gasket. Do not use thread sealant. Outlets are rigid male threads. Maximum torque 20 ft-lb (27 Nm).

CAUTION Mismatched or damaged waterway connections may cause equipment to leak or uncouple under pressure. Failure could result in injury. Equipment must be mated to matched connections

CAUTION Dissimilar metals coupled together can cause galvanic corrosion that can result in the inability to uncouple the connection, or complete loss of engagement over time. Failure could cause injury. Per NFPA 1962, if dissimilar metals are left coupled together, an anti-corrosive lubricant should be applied to the connection and the coupling should be disconnected and inspected at least quarterly.

3.4 USE WITH SALT WATER

Use with salt water is permissible provided the equipment is thoroughly cleaned with fresh water after each use. The service life of the equipment may be shortened due to the effects of corrosion, and is not covered under warranty

4.0 INSTALLATION

SHO-FLOW should be installed with the FLOW arrows on the label pointing in the direction of water flow. Published accuracy is assured when the flow meter is installed in conditions with minimal turbulence; between two lengths of hose with the same size couplings as the flow meter. Avoid locations where the flow meter or adjacent hose are used as a step.



NOTICE Turbulence can cause inaccurate readings. Installing the flow meter adjacent to turbulence causing plumbing like elbows, partially gated valves, eductors, and flat adapters is not recommended. The best accuracy is assured when the flow meter is paired between two sections of straight hose.

NOTICE Reverse installation will result in incorrect readings and will damage the device over time. Always ensure the FLOW arrows on the device point in the direction of flow.

5.0 OPERATION

A smartphone app is required to view the flow rate of the SHO-FLOW. Please download the app from either the Google Play Store or the Apple App Store before proceeding. Search SHO-FLOW in either store.



1. Create a flow greater than or equal to the minimum rated flow rate through the SHO-FLOW to turn on the device and start transmitting the Bluetooth signal.
2. If the app is not already open, find and press the SHO-FLOW app icon from your list of apps, which will launch the app.
3. Allow app to use location if prompted. (This is required for use)
4. If a Bluetooth connection has not already been set up refer to section 5.2.
5. Once a connection is established, the flow rate and SHO-FLOW pressure loss will be displayed on the Flow Display screen. (Section 5.1)

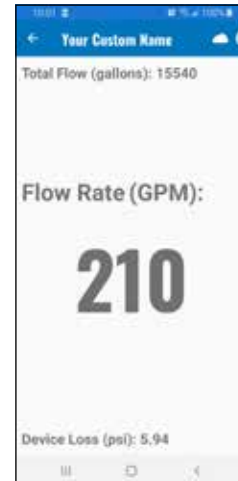


Figure 5.0

5.1 FLOW DISPLAY

The Flow Display (Figure 5.0) screen is used to notify the user of the current flow rate in the hose line in real time when a SHO-FLOW is connected. Whenever the app is opened the Home screen (Figure 5.1) will open as default. Press the Flow Display button to navigate to Flow Display Screen.



Figure 5.1

5.2 DEVICE CONNECTION

The Device Connection screen is used to connect to a SHO-FLOW. The app will remember the device it was connected to and attempt to connect to that unit. (App will only connect to one SHO-FLOW at a time).

If you wish to connect to a different SHO-FLOW, press the Disconnect button and find the device you wish to connect to in the device list. The Bluetooth connection can be released for another user to connect to the SHO-FLOW by one of the following methods:

- Press the Disconnect button on the Device Connection page
- Completely close the app

1. To access this screen press the MENU button.



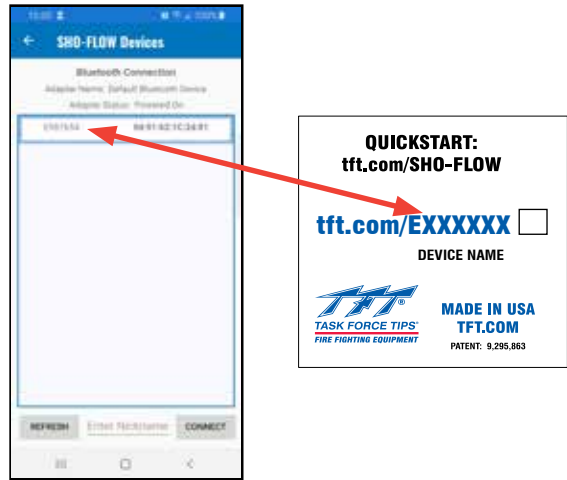
2. Then press the Device Connection button.



5.3 ESTABLISHING A BLUETOOTH CONNECTION

1. Ensure the SHO-FLOW is flowing the minimum rated flow rate to turn on the device and start transmitting the Bluetooth signal.
2. Press scan button to begin searching for SHO-FLOW.
3. Press button with the matching device name to connect.
4. Press the CONNECT button.

(the name on the SHO-FLOW will match the listed device on the screen)



5. Once communication has been checked for proper data transfer:
 - Top bar will display the Bluetooth Icon
 - The Device Name will update to the connected device

NOTE: The app will remember this device name. When the app is disconnected, it will automatically search and connect to that device if it is available. If too much time has passed a popup will display holding the SHO-FLOW information until it is dismissed. Begin flowing again and hit continue to resume flow session or cancel to disconnect.

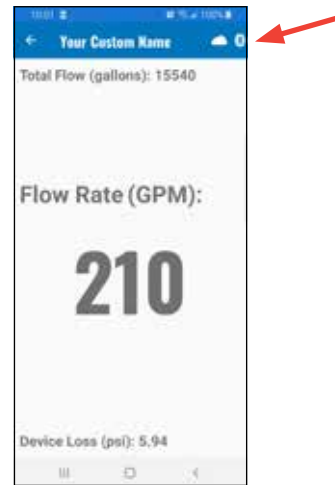


Figure 5.3

5.4 SETTINGS

The Settings screen is used to configure the app display using the desired flow units and other configuration values.

1. To return to this screen press the MENU button.
2. Then press the SETTINGS button.



Link Retain Time

Anytime you stop the flow (eg. to talk or adjust the set-up), the power stops and the Bluetooth link is broken. Typically, it should take less than 5 seconds to reconnect automatically.

If you plan to start and stop the flow often and do not wish to wait the 5 sec for the automatic reconnection to occur, it is possible to set a Link Retain Time. Doing this keeps the SHO-FLOW powered and the Bluetooth connection active when water is not flowing through the device for a short amount of time. If the link retain time is exceeded, a popup will pause the flow session. To continue the session, raise the flow higher than the device minimum and click the continue button.

Flow meters come factory equipped with a standard non-rechargeable lithium-ion battery having a 10-year storage lifespan, which can be used to extend Bluetooth connection times. The default setting for this battery is the disabled condition (Bluetooth stops immediately after flow stops). This battery can be enabled in app to allow for the Bluetooth connection to be maintained when water is not flowing.

Storage in direct sunlight or hot conditions can shorten battery life. Consult factory when battery replacement is necessary.

The current setting for Link Retain Time is displayed within the drop down selection.

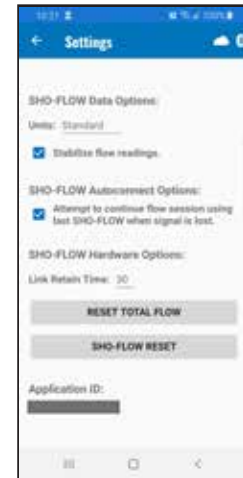


Figure 5.4

The time can be set by selecting an option from the drop down:

- 0 sec (Default)
- 10 sec
- 30 sec
- 60 sec

5.5 ESTABLISHING A REMOTE VIEWER CONNECTION

NOTE: To use this functionality, you must allow the app to use your device's location.

A remote viewer is any person that is connected to a SHO-FLOW device through the Cloud Connection. This person is able to view the flow rate of a broadcasting device up to 1/4 mile (400M) away.

To start the connection:

1. Press Remote Viewer from menu.
2. Open the Remote Viewer screen. If Internet is available (Wi-Fi or cellular) you will press the confirm button to update location and see nearby devices populate the Network Device(s) List with the Remote Discovery Name the Broadcaster selected. If scanning fails, you may need to press the Refresh button.
3. Press the button of the device you wish to connect to.
4. Once the connection is completed:
 - Return to the Flow Display screen to view the same flow rate data as the broadcasting device.
 - The Cloud icon appear.
 - The Device Name will update to the connected device.
5. To disconnect, press the DISCONNECT button.



Figure 5.5

6.0 MAINTENANCE

No maintenance is required. Calibration is not required under normal circumstances. If needed, see section 5.5. If unit becomes damaged and does not display correct data, send it back to the factory for service.



Any alterations to the product or its markings could diminish safety and constitutes a misuse of this product.

NOTICE

All replacement parts must be obtained from the manufacturer to assure proper operation of the device.

7.0 TROUBLESHOOTING

Bluetooth Connection

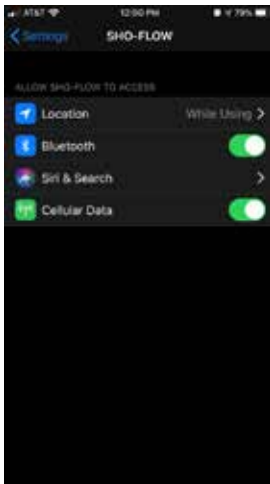
SHO-FLOW:

In a case that the SHO-FLOW device is not discoverable by the App it may be necessary to stop flowing for a period of up to one minute (depending on Link Retain Settings) to allow the SHO-FLOW to power down fully. After one minute has elapsed you can begin flowing water again and connect to the SHO-FLOW. If this does not resolve your issues ensure that you are within operating range of the SHO-FLOW and the flow is over the minimum required for the SHO-FLOW model.

App:

The SHO-FLOW App requires the user to allow the App to use the device's location and Bluetooth services. If you deny the usage of either of these services, the App may not function as it is intended. Depending on operating system, you can verify these services are enabled.

IOS: Settings > SHO-FLOW



Android: Settings > Apps > SHO-FLOW > Permissions
Also, Settings > Locations

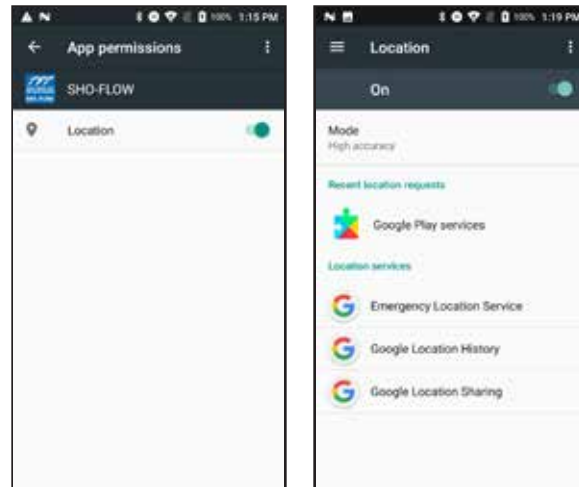


Figure 7.0

Cloud Connection

A network connection (Wi-Fi or cellular) is required for this functionality to work. Allow this App to use the network connection if requested.

Broadcaster

If the Cloud icon is present on the screen and Remote viewers are unable to find the SHO-FLOW, the Broadcaster's location may not have pulled the most current location. To correct this the broadcaster should return to the Device connection screen and press the Disconnect button. This will disconnect from the SHO-FLOW. Once the SHO-FLOW becomes available again in the device list, you may select and connect to the device. This will then pull your device location again and reconnect to the Cloud.

Remote Viewer

The Remote Viewer's location may not have pulled the most current location. To correct this, press the Disconnect Button. Then, press the Confirm or refresh button if necessary refresh to begin scanning again with the new location.

If you are still encountering any issues it may be necessary to restart the App.

If none of the above work, a restart of your device may be necessary.

8.0 WARRANTY

Task Force Tips LLC, 3701 Innovation Way, Valparaiso, Indiana 46383-9327 USA ("TFT") warrants to the original purchaser of its products ("equipment"), and to anyone to whom it is transferred, that the equipment shall be free from defects in material and workmanship during the five (5) year period from the date of purchase. TFT's obligation under this warranty is specifically limited to replacing or repairing the equipment (or its parts) which are shown by TFT's examination to be in a defective condition attributable to TFT. To qualify for this limited warranty, the claimant must return the equipment to TFT, at 3701 Innovation Way, Valparaiso, Indiana 46383-9327 USA, within a reasonable time after discovery of the defect. TFT will examine the equipment. If TFT determines that there is a defect attributable to it, TFT will correct the problem within a reasonable time. If the equipment is covered by this limited warranty, TFT will assume the expenses of repair.

If any defect attributable to TFT under this limited warranty cannot be reasonably cured by repair or replacement, TFT may elect to refund the purchase price of the equipment, less reasonable depreciation, in complete discharge of its obligations under this limited warranty. If TFT makes this election, claimant shall return the equipment to TFT free and clear of any liens and encumbrances.

This is a limited warranty. The original purchaser of the equipment, any person to whom it is transferred, and any person who is an intended or unintended beneficiary of the equipment, shall not be entitled to recover from TFT any consequential or incidental damages for injury to person and/or property resulting from any defective equipment manufactured or assembled by TFT.

It is agreed and understood that the price stated for the equipment is in part consideration for limiting TFT's liability. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above may not apply to you.

TFT shall have no obligation under this limited warranty if the equipment is, or has been, misused or neglected (including failure to provide reasonable maintenance) or if there have been accidents to the equipment or if it has been repaired or altered by someone else.

THIS IS A LIMITED EXPRESS WARRANTY ONLY. TFT EXPRESSLY DISCLAIMS WITH RESPECT TO THE EQUIPMENT ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND ALL IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. THERE IS NO WARRANTY OF ANY NATURE MADE BY TFT BEYOND THAT STATED IN THIS DOCUMENT.

This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state

9.0 OPERATION AND INSPECTION CHECKLIST

BEFORE EACH USE the device must be inspected to this checklist

1. There is no obvious damage such as missing, broken or loose parts, damaged labels, etc.
2. The waterway is clear of obstructions and the turbine is free of debris.
3. Coupling is tight and leak free.

BEFORE BEING PLACED BACK IN SERVICE, device must be inspected to this checklist;

1. There are no broken or missing parts.
2. There is no obvious damage to the device that could impair operation (e.g. dents, cracks, corrosion, or other defects).
3. The thread and gasket are in good condition.
4. The waterway is clear of obstructions and internal turbine is free of debris.
5. Device is clean and markings are legible.
6. Coupling is retightened properly.



WARNING Equipment failing any part of the checklist is unsafe for use and must have the problem corrected before use or being placed back into service. Operating equipment that has failed the checklist is a misuse of this equipment.