User's Manual 91071

Low Pressure Hand Pump

Thank you for purchasing the 91071 low pressure hand pump. This user's manual primarily explains the handling precautions and basic operations of the 91071.

To ensure correct use, please read this manual thoroughly before beginning operation.

The contents of this manual are subject to change without prior notice as a result of improvements to the product's performance and functionality. Refer to our website to view our latest manuals.

> Store this manual in an easily accessible place for quick reference.

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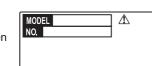
IM 91071-01EN

1st Edition: October 2023 Yokogawa Test & Measurement Corporation



MODEL: 91071

The model name given on the name plate on the hand pump.



The following manuals, including this one, are provided as manuals for the 91071. Please read all manuals.

IM 91071-01EN: User's manual (this manual) IM 91071-02EN: User's manual 91071, 91075

AVERTISSEMENT and ATTENTION (French)

For products whose suffix code contains "Z," an exclusive manual may be included. Please read it along with the standard manual.

Contact information of Yokogawa offices worldwide is provided on the following sheet.

PIM 113-01Z2: Inquiries List of worldwide contacts

Notice Regarding This Manual

- The contents of this manual are subject to change without prior notice as a result of improvements to the product's performance and functionality.
- Refer to our website to view our latest manuals.
- Every effort has been made in the preparation of this manual to ensure the accuracy of its contents.
- However, should you have any questions or find any errors, please contact your nearest YOKOGAWA dealer.
- · Copying or reproducing all or any part of the contents of this manual without the permission of YOKOGAWA is strictly prohibited.

Safety Precautions

This product is designed to be used by a person with specialized

The general safety precautions described herein must be observed during all phases of operation. If the instrument is used in a manner not specified in this manual, the protection provided by the instrument may be impaired.

This manual is an essential part of the product; keep it a safe place for future reference.

YOKOGAWA assumes no liability for the customer's failure to comply with these requirements.

The notes and cautions in this manual are categorized using the following symbols.



Improper handling or use can lead to injury to the user or damage to the instrument. This symbol appears on the instrument to indicate that the user must refer to the user's manual for special instructions.

The same symbol appears in the corresponding place in the user's manual to identify those instructions. In the manual, the symbol is used in conjunction with the word "WARNING" or "CAUTION."

WARNING

Calls attention to actions or conditions that could cause serious or fatal injury to the user, and precautions that can be taken to prevent such occurrences.



CAUTION

Calls attention to actions or conditions that could cause light injury to the user or damage to the instrument or user's data, and precautions that can be taken to prevent such occurrences.

Note

Calls attention to information that is important for the proper operation of the instrument.

The following symbols are used on this instrument.



Handle with care. Refer to the user's manual. This symbol appears on dangerous locations on the instrument which require special instructions for proper handling or use. The same symbol appears in the corresponding place in the manual to identify those instructions.

Be Sure to Read the pressure meter manual.

If you are going to use this product in combination with a pressure meter (standard pressure gauge/monitor), be sure to read the pressure meter manual, and use the instruments correctly.

Check the Operating Environment



⚠ WARNING

- This pump is used in combination with a pressure meter, pressure calibrator, and the like.
- Use this instrument only for this purpose.
- Do not use the instrument if there is a problem with its physical appearance.
- · Be sure to check the measurement environment and conditions. If you are using the instrument in an environment in which supervision by a certified person is required by law or other ordinance, be sure to perform measurements in accordance with appropriate safety management standards.
- · Use tubing (connector, hose, etc.) that can withstand the pressure to be generated.
- · Make sure that air does not leak from the tubing (connector, hose, etc.) connections.
- If a connection comes loose or if air leaks under high pressure, it can endanger the user or the surrounding instruments.
- Do not apply pressure exceeding the maximum allowable pressure of the device under test (calibration). Do not generate pressure exceeding the maximum working pressure (M. W. P) of this instrument.
- · Removing tubing when there is remaining pressure is extremely dangerous.
- Safely release the pressure before removing tubing (connector, hose, etc.) from the instruments.
- This instrument is not explosion-proof.
- Do not use the instrument in the presence of flammable gases or vapors. Doing so is extremely dangerous.
- Only qualified YOKOGAWA personnel may disassemble or modify the instrument. (For the valve cleaning procedure, see chapter 4, [Cleaning Procedure].)
- Repairing or modifying the instrument yourself is extremely dangerous. For inspection and adjustment, contact your nearest YOKOGAWA dealer.

Do use the product:

- In direct sunlight or near heat sources
- · In an environment that is subject to large levels of mechanical vibration
- · Near noise sources, such as high-voltage equipment or power source
- · Near strong magnetic field sources
- In an environment with excessive amounts of soot, grease, dust, or corrosive gas
- · In an environment where ignition or explosion may occur, such as where flammable gas is present
- In a location where foreign matter (water, oil, etc.) may be mixed in

Note

- · After use, store the pressure pump in the hand pump case or in a safe place.
- · When opening the case for the hand pump, face the label side up (top side).

1. Specifications

Weight:

Model 91071: Low Pressure Hand Pump

Pressurized media	Air
Pressure generation range	-83 kPa to 700 kPa
Maximum working pressure (M. W. P)	1000 kPa

Operating temperature range: 0 to 50°C

Connection port: Rc1/4 female thread, Rc1/8 female thread

Dimensions: Approx. 96×172×50 mm

(with the vernier adjustment and the pressure

release valve closed) Approx. 540 g

Name Model Note **91070** Low pressure hand pump (91071), Low pressure hand Case (93054). pump kit Connector set (91053) 91071 -83 kPa to 700 kPa Low pressure hand pump 91053 Connector set for 91071.91075 Connector set

> (seal tape, flexible hose*1, quick adapter*2, Rc1/8 sealing cap, hexagonal wrench, NPT adapter [R1/8 male thread-1/8NPT female thread]. NPT adapter [R1/4 male thread-1/4NPT female thread])

Case	93054	For storing 91075 and 91053
(for 91071/91075)		(common to 91071 and 91075)

*1: The flexible hose's maximum working pressure is 2 MPa.

Note

If you require high airtightness or high withstand pressure, use a connector with a ferrule or sleeve, not the supplied quick adapter or the flexible hose

Use hoses that can withstand the pressure that you will generate.

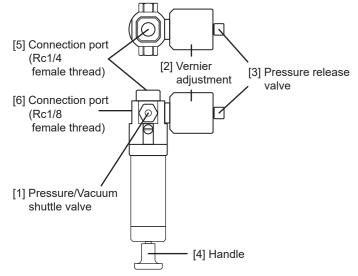
Replacement valve set 91045 Common to 91071 and 91075

^{*2:} The guick adapter's maximum working pressure is 1 MPa. The guick adapter has a 1/8NPT male thread. When using the quick adapter, be sure to use the supplied NPT adapter.

2. Components

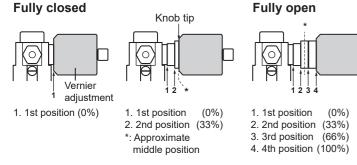
2.1 Names and Functions

Name	Description			
[1] Pressure/Vacuum shuttle valve	Press the shuttle valve (or return it) to switch between pressure and vacuum. Pressure: PRESSURE Vacuum: VACUUM			
[2] Vernier adjustment	Pressure can be fine-tuned by turning the knob. See section 2.2, "Vernier Adjustment."			
[3] Pressure release valve	Close when generating pressure. (Turn clockwise.) Open to release pressure. (Turn counterclockwise.)			
[4] Handle	Operate (push) the handle to generate pressure.			
[5] Connection port (Rc1/4 female thread)	Port for outputting pressure. Connect the calibration target (connector) and the like to this port.			
[6] Connection port (Rc1/8 female thread)	Port for outputting pressure. Connect the standard pressure meter (hose) and the like. If you are not using this port, close it with the Rc1/8 sealing cap.			



2.2 Vernier Adjustment

Pressure can be fine-tuned by turning the vernier adjustment knob. On the inside of the vernier adjustment knob, there is a division scale (4 equally spaced positions) for the entire adjustment range.



If the knob tip is between the 2nd and 3rd positions. it is approximately in the middle* of the adjustable range and can be used as a guide to the adjustable range.

3. Operating Instructions

3.1 Handling Precautions

Be sure to check the operating environment (safety). Before use, be sure to check that connectors are secure,

that there are no intrusion of foreign substances, and that there are no damages. In addition, use the same thread specifications for all connectors. Perform preliminary pressure tests on tubing and other parts of the system.

If you are applying pressure using a hand pump, be sure to monitor the pressure with a standard pressure gauge (monitor). When transporting or handling this instrument, do not drop or otherwise subject it to shock.

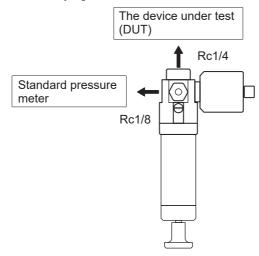
3.2 Connecting Connectors



⚠ CAUTION

- · Use connectors compatible with the thread specifications of the device under test (DUT) and tubing. Otherwise, leakage and damage to threads may result.
- · Apply appropriate seal tape to the connecting surface of the connector.

[Connection example]



■ Using Two Wrenches

To prevent leaks, the thread adapter or quick adapter must be securely fastened. Using a wrench only on the connector side may break the pressure pump.

Use two wrenches to prevent force from being applied to the pressure pump. (The same applies when you connect a connector to the standard pressure gauge.)

3.3 Generating Pressure

WARNING

- Remove tubing and wiring from the DUT before carrying out the procedure.
- Do not connect to any pressure source other than this instrument.
- · Be sure to observe all safety precautions to avoid injury and damage to the DUT.

CAUTION

- To prevent damage to this pressure pump, use your hand to tighten the pressure release valve.
- · Use connectors and hoses appropriate for the source pressure.
- · Operate the Pressure/vacuum shuttle valve when releasing to atmosphere.

[Procedure]

- (1) Connect the standard pressure meter and the DUT.
- (2) Turn the pressure release valve [3] clockwise to close it.
- (3) Using a small screwdriver or other tool, push the pressure/vacuum shuttle valve [1] to specify pressure or vacuum
- (4) Push the handle [4] (operate the handle) to apply pressure near the target pressure. (Operate the handle while monitoring the standard pressure
- (5) Turn the vernier adjustment [2] to "fine tune" the pressure to the target value.

When pressure is being generated:

Turn clockwise to increase: turn counterclockwise to decrease When vacuum is being generated:

Turn counterclockwise to decrease (toward vacuum)

(6) To decrease (release) pressure,

turn the pressure release valve [3] counterclockwise.

Note

The vernier adjustment can be turned about 20 times counterclockwise (decreasing pressure) from the maximum position. If it feels heavy to turn, stop turning it. Turning it by force can cause damage.

3.4 Releasing Pressure



⚠ WARNING

To prevent accidents, safely return the pressure to zero (release to atmosphere) before removing the connector and hose.

After use, turn the pressure release valve [3] counterclockwise to release (release to atmosphere) the pressure.

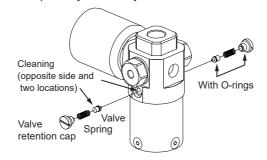
Note

- · After use, store the pressure pump in the hand pump case or in a safe place.
- To prevent misplacing the Rc1/8 sealing cap, we recommend that you attach the cap when storing the pressure pump.

4. Cleaning the Valve

Malfunctions in hand pump operation may be caused by contamination of the hand pump or internal valve assembly. When cleaning the valve assembly, follow the procedure below to clean and check the valve assembly.

If the valve does not operate properly after cleaning, or if it needs to be replaced due to deterioration of the O-ring or spring, we recommend purchasing a replacement valve set (91045), which is sold separately. Contact your nearest YOKOGAWA dealer.



[Cleaning procedure]

- (1) Use a flat-blade screwdriver (tip thickness 0.7 mm or less) to remove the valve retention caps located under the pressure/ vacuum shuttle valve (two locations).
- (2) Remove the springs and valves (with O-rings).
- (3) Clean the valve and the area that contained the valve using a cotton swab dipped in alcohol or similar solution. (Repeat the cleaning process several times with a new cotton swab until the dirt is gone. Keep it clean until installation.)
- (4) Operate the handle several times to check for contamination.
- (5) Clean O-rings (both for retaining caps and valves) with alcohol
- (6) Check that the springs are in proper condition. (Normally, the spring length in the released state is about 8.6 mm.)
- (7) Install the cleaned valves O-rings (with the cleaned O-rings facing inward) and then the springs.
- (8) Place the retaining caps (with O-rings attached) on the hand pump (in two places) and tighten the retaining caps. (The proper tightening torque is 0.7 N·m.)
- (9) Close the pressure release valve, and operate the hand pump to at least 50% of its generating capacity.
- (10) Repeat the operation in step 9 several times while releasing the pressure and confirming normal operation.



CAUTION

It is dangerous to continue work if the cause cannot be determined. Stop immediately.

If the product does not work properly, contact your nearest YOKOGAWA dealer.

5. Troubleshooting

If you cannot increase the pressure with the hand pump (if the pressure decreases), check the following.

- · Check that the pressure release valve is closed.
- · Check that the position of the pressure/vacuum shuttle valve is proper.
- · Make sure that the connector and connection port thread specifications match.
- Check that the connection is secure (properly use seal tape or other measures).
- · Ensure that cleaning is properly carried out according to the above procedure.