

User's Manual 91061 Hydraulic Pressure Pump

Thank you for purchasing the 91061 Hydraulic Pressure Pump. This user's manual primarily explains the handling precautions and basic operations of the 91061. To ensure correct use, please read this manual thoroughly before beginning operation.

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

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YOKOGAWA
Yokogawa Test & Measurement Corporation

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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 continuing improvements to the instrument's performance and functionality. The figures given in this manual may differ from the actual indication.
- Every effect 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.

Sales in Each Country or Region

Authorized Representative in the EEA

Yokogawa Europe B.V. is the authorized representative of Yokogawa Test & Measurement Corporation for this product in the EEA. (EEA: European Economic Area)
To contact Yokogawa Europe B.V., see the separate list of worldwide contacts, PIM 113-01Z2.

Safety Precautions

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

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 following symbols are used on this instrument and in this manual.



Handle with Care.
Refer to the user's manual or service manual.
This symbol appears on dangerous locations on the instrument which require special instructions for proper handling or use.



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 cause 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.

Be Sure to Read the Pressure Meter User's Manual

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

Check the Operating Environment

WARNING

- This product is a pump for the pressure calibrator. Do not use for any other purpose.
- Do not use the product if there is a problem with its physical appearance.
- This product is manufactured in accordance with Sound Engineering Practice (SEP).
- Be sure to check the measurement environment and conditions. If you are using the product 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 (DUT). Do not generate pressure exceeding the maximum working pressure (M.W.P).
- Removing tubing when there is remaining pressure is extremely dangerous. Safely release the pressure before removing tubing (connector, hose, etc.) from the pressure pump.
- This instrument is **not** explosion-proof. Do not use the instrument in the presence of flammable gases or vapors. Doing so is extremely dangerous.

Do use the product in:

- 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

Note

After use, store the pressure pump in the hand pump case or in a safe place.

1. Specifications

Model 91061: Hydraulic Pressure Pump

Pressurized media	Liquid
Pressure generation range	0 to 70 MPa
M. W. P (Maximum working pressure)	70 MPa

Operating temperature range: 0 to 50°C
Port: 1/4" FNPT, 1/4" FNPT
Weight: Approx. 700 g
Dimensions: Approx. 258×153×62 mm

Name	Model	Note
Hydraulic pressure pump kit	91060	Hand pump (91061), Connector set (91062), Case (93053)
Hydraulic pressure pump	91061	0 to 70 MPa
Connector set (hydraulic pressure pump)	91062	Connector set for the 91061 (High-pressure hose *1, Quick adapter *1, Conversion adapter *1, Sealing tape, and Hex wrench)
Case (for 91056 and 91061)	93053	Case for the 91061 and 91062 (same as the case for the pneumatic pressure pumps 91056 and 91057)

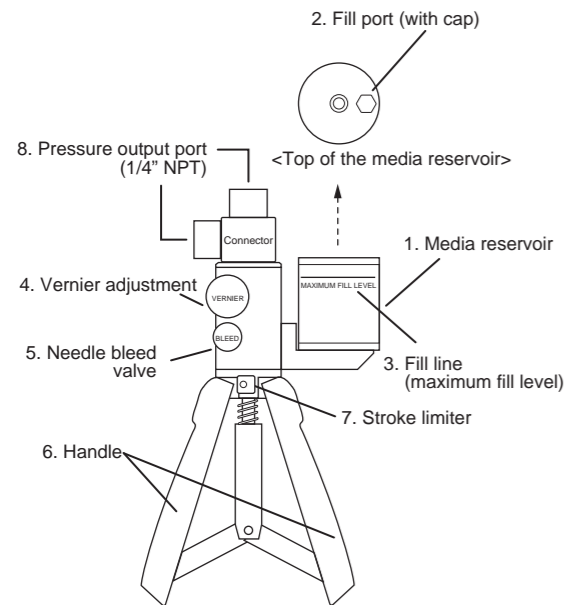
*1: The maximum working pressure (M.W.P) of the high-pressure hose, quick adapter, and conversion adapter is 70 MPa.

Note

If you require high airtightness or high withstand pressure, use a connector with a ferrule or sleeve, not the supplied the high-pressure hose or quick adapter. Use a hose that can withstand the pressure that you will generate.

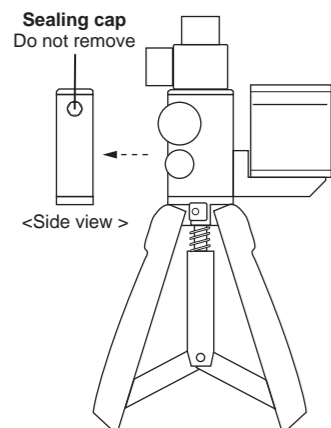
2. Components

Name	Description
1. Media reservoir	Fill the reservoir with media (pressure media such as distilled water).
2. Fill port	A port for filling (draining) media. It has a cap.
3. Fill line (MAXIMUM FILL LEVEL)	Do not fill above this line.
4. Vernier adjustment	Used to "fine tune" the pressure to the target value.
5. Needle bleed valve	Close to generate pressure. Open to release pressure.
6. Handle	Operate (squeeze) the handle to generate pressure.
7. Stroke limiter	Controls the handle stroke. Push (release) the limiter while squeezing the handle. Prime mode: Allows the maximum amount of handle movement Pump mode: Limits the amount of handle movement
8. Pressure output port (1/4" NPT)	Port for outputting pressure. Connect a connector. (for connecting the standard pressure meter and the calibration target)



CAUTION

Do not remove the side sealing cap.



3. Operating Instructions

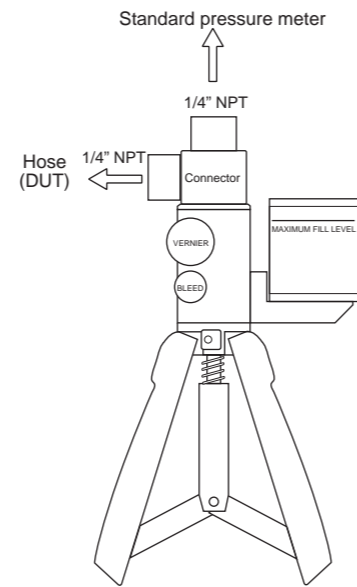
3.1 Handling Precautions

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 meter (monitor).

3.2 Connecting Connectors

CAUTION

- Use connectors appropriate for 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 leakage, you must tighten the connector or quick adapter firmly. 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 meter.)

3.3 Generating Pressure

WARNING

- Remove tubing and wiring from the calibration target before carrying out the procedure.
- Only connect to this pressure pump. Do not connect to another high pressure source.
- Be sure to observe all safety precautions to avoid injury and damage to the device under test (DUT).

CAUTION

- For the liquid (pressure medium), use distilled water or clean oil (up to hydraulic oil 100 (30W)). Select a media type that is suitable for the device under test (DUT) and the pressure pump.
- The reservoir seal is made of fluorocarbon and nonmetallic plastic. Do not use highly viscous oil (higher than 30W).
- Hydrocarbon fluids should never be used in oxygen service test device.
- High pressure gases is extremely dangerous. "Prime" the test system to minimize air introduced into the DUT.
- Use connectors and hoses appropriate for the source pressure value.

Note

We recommend that the user keep a record of the kind of media being used (was used previously). (records of use, cleaning, etc.)

[Procedure]

- Connect the standard pressure meter. Open the hose that will be connected to the DUT (for "priming").
- Remove the cap from **the fill port**. Fill the media reservoir 1/2 (50%) to 2/3 full, and close the cap.
 - Be sure to fill the reservoir at least half way full to prevent intrusion of air.
 - Do not exceed the fill line (maximum fill level).
 - Minimize load capacity.
- Adjust **the vernier adjustment** to the mid position.
- Close **the needle bleed valve**.
- While squeezing **the handle**, push **the stroke meter** into prime mode.
 - Prime mode: Mode that allows the maximum amount of handle movement
- Open the hose that will be connected to the DUT, and squeeze the handle to beginning the priming process.
 - Priming: The act of squeezing the handle until media fills the hose all the way to the end to prevent the intrusion of air
- (Using full stroke on the handle removes air in the pump and hose.) After checking that the media has filled the hose all the way to the end, connect the hose to the DUT.
- Apply pressure (squeeze the handle) just enough so that you can verify a sharp rise in pressure on the standard pressure meter.
 - (You can feel the pressure changing through the handle that you are squeezing.)
 - While squeezing **the handle**, push **the stroke limiter** to switch to pump mode.
 - Pump mode: Mode in which the amount of handle movement is limited
- If you do not apply the stroke limiter at the appropriate timing, you may not be able to generate pressure up to the specifications. After applying sudden pressure, if you remove your hand from the handle before applying the stroke limiter, it will be difficult to operate the handle the next time. If this happens, loosen the needle bleed valve to release some of the pressure, close the needle bleed valve, and apply pressure (operate the handle) again.
- Check that **the needle valve** is closed.
- Squeeze **the handle** to apply pressure near the target pressure.
- Adjust **the vernier adjustment** to "fine tune" the pressure to the target value.

Note

Priming may require you to squeeze the handle numerous times depending on the connected load capacity (media capacity). If the volume is large, prime many times.

3.4 Releasing Pressure

WARNING

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

After generating pressure, carefully open the needle valve to release the pressure. (The media will turn to the reservoir.) Make sure that the media does not overflow from the reservoir. When you are finished, drain the media from the reservoir.

Note

After use, store the pressure pump in the hand pump case or in a safe place. We recommend that you clean the reservoir before storing it.

4. Cleaning

After use (calibration), clean the media reservoir. Clean it in way that is appropriate for the liquid (pressure medium) that you used.

5. Troubleshooting

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

- Check that the media reservoir cap is closed.
- Check that the needle valve is closed.
- Check the thread specifications of the connection port. Check that the connection is secure (use seal tape or other measures).
- Check that the stroke limiter is being used adequately.

CAUTION

If you cannot determine the cause, continuing with the procedure is dangerous. Stop immediately. If the product does not work properly, contact your nearest YOKOGAWA dealer.