



Operating manual (Translation)

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Hydraulic hand test pumps

Types ICP 700.3 and ICP 1000.2



Please keep this operating manual for future reference.
If the appliance is resold, please provide the operating manual along with it.

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0 About this operating manual

- The operating manual is aimed at specialists and semi-skilled personnel.
- Before each step, read through the relevant advice carefully and keep to the specified order.
- Thoroughly read and understand the information in the section “Safety instructions”.

If you have any problems or questions, please contact your supplier or contact us directly at:

ICS Schneider Messtechnik GmbH
Briesestraße 59
D-16562 Hohen Neuendorf / OT Bergfelde

Tel.: 03303 / 504066
Fax: 03303 / 504068

info@ics-schneider.de
www.ics-schneider.de

Hazard signs and other symbols used:



WARNING! / CAUTION! Risk of injury!

This sign indicates dangers that cause personal injuries that can lead to health defects or cause considerable damage to property.



CAUTION! Crushing hazard!

This sign indicates dangers which could result in the crushing of fingers or hands.



CAUTION! Risk of injury in the case of excessive pressure!

This sign indicates dangers which could arise from excessive pressure in a piece of equipment.



CAUTION! Material damage!

This sign indicates actions which could lead to possible damage to material or environmental damage.



ADHERE TO OPERATING MANUAL!



Pay attention to and comply with information that is marked with this symbol.



Follow the specified instructions and steps. Adhere to the given order.



NOTICE!

This symbol indicates important notices, tips or information.



Check the specified points or notices.



Reference to another section, document or source.



Item

1 Device description

The hand pump creates positive pressure for the inspection, adjustment or calibration of pressure-measuring devices (pressure gauges) of all kinds.

The hand pump can be used for test items directly on location, thanks to its light weight and compact design.

The hand pump and the pressure hose have MINIMESS® connections.

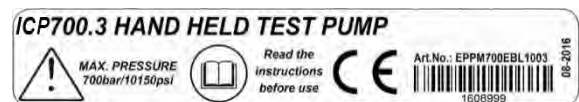
When the hand pump is used, it needs to be connected to a reference gauge and to the test item.



Type plate and label:

You find the type plate on the lower pump body. It includes the essential technical data and instructions.

An additional indication of the maximum allowable hand pump pressure is located on the upper pump body (Example → Fig.).



1.1 Delivery, unpacking and accessories

All units have been carefully checked for their operational reliability before shipment.

- ☐ Immediately after receipt, please check the outer packaging for damages or any signs of improper handling.
- ☐ Report any possible damages to the forwarder and your responsible sales representative. In such a case, state a description of the defect, the type and the serial number of the device.
Report any in-transit damage immediately. Damage reported at a later date shall not be recognized.

Unpacking:

- ☞ Carefully unpack the unit to prevent any damage.
- ☞ Check the completeness of the delivery based on the delivery note.

Scope of delivery:

- ☐ 1x Hand pump according to the order data.
- ☐ 1x Pressure hose.
- ☐ 1x Operation manual.
- ☐ Packaging (if applicable).
- ☐ Accessories as ordered (if applicable).



OEM-Ausführung

**IMPORTANT!**

- ↪ Use the type plate to check if the delivered unit corresponds to your order.
- ↪ In particular, for devices with electrical components, check to see if the correct power supply voltage is specified.

Accessories (optional):

Transportation cases, MINIMESS[®]-adapter, adapter sets, seal sets and reference gauges can be ordered as accessories.

- **Transportation case:**
The transportation case provides optimal protection for the hand pump and other accessories with its tight-fitting rigid foam inlay.
A document compartment is located in the lid behind the burl foam inlay.
- **MINIMESS[®] Adapter.**
- **Filling bottle.**
- **Adapter set:**
The adapter set comprises 12 adapters for all common pressure connections with or without pins.
- **Seal set:**
The seal set contains flat seals made of plastic and O-rings for all common pressure connections.
- **Replacement pressure hose with seals:**
The pressure hose is available separately as a replacement part with the necessary seals.

1.2 Intended use

The hand pump can only be used for generating pressure in low-volume measuring devices. The device is only designed for use with hydraulic oil or demineralised water, other media will result in damage to the hand pump.

The hand pump may not be attached to external pressure sources.

**WARNING! No safety component!**

The hand pump is not safety component in accordance with Directive 2006/42/EC (Machine Directive).

✚ Never use the hand pump as a safety component.

The operational safety of the device supplied is only guaranteed by intended use. The specified limits (→ § 9: "Technical data") may under no circumstances be exceeded.

**CAUTION! No pressure build-up at too high viscosity!**

If the viscosity of the hydraulic oil (variety, temperature) is too high, the function of the hand pump is not guaranteed. A pressure build-up is not possible.

✚ Pay attention to the recommended viscosity of 11 cSt (maximum of 22 cSt at 15...60 °C).

**CAUTION! Risk of injury or material damage!**

By connecting the hand pump, the measuring device is hydraulically connected to the hand pump. If the pressure relief valve is opened, a compressed medium can flow through the pressure hose into the hand pump's storage container. At sufficiently large volumes, the reservoir may overflow.

✚ Never connect the hand pump directly to the hydraulic system with large volumes (construction machines, etc.) or an aggressive medium (such as brake liquid).

Before ordering and installation, check that the hand pump is suitable for your applications.

1.3 Exclusion of liability

We accept no liability for any damage or malfunctions resulting from incorrect installation, in-appropriate use of the device or failure to follow the instructions in this operating manual.

2 Safety instructions



Before you install the hand pump, read through this operating manual carefully. If the instructions contained within it are not followed, in particular the safety guidelines, this could result in danger for people, the environment, and the device and the system it is connected to.

The hand pump corresponds with state-of-the-art technology. This concerns the accuracy, the operating mode and the safe operation of the device.

In order to guarantee that the device operates safely, the operator must act competently and be conscious of safety issues.

ICS provides support for the use of its products either personally or via relevant literature. The customer verifies that our product is fit for purpose based on our technical information. The customer performs customer - and application-specific tests to ensure that the product is suitable for the intended use. With this verification all hazards and risks are transferred to our customers; our warranty is not valid.

Qualified personnel:

- ⚠ The personnel who are charged for the installation and operation of the hand pump must hold a relevant qualification. This can be based on training or relevant tuition.
The personnel must be aware of this operating manual and have access to it at all times.

General safety instructions:

- ⚠ In all work, the existing national regulations for accident prevention and safety in the workplace must be complied with. Any internal regulations of the operator must also be complied with, even if these are not mentioned in this manual.
- ⚠ Never use the hand pump together with an external pressure source. Do not attach an external pressure generator to the hand pump.
- ⚠ Do not use brake liquid or other aggressive media.
- ⚠ Hydraulic oils may cause irritation in case of skin contact.
 - Take suitable protective measures to avoid skin contact.
 - Observe the manufacturer's operating manual or the safety data sheet.
- ⚠ Do not remove any attached components (test item, pressure hose, reference gauge) when the hand pump is under pressure:
 - ⚠ ➤ Open the pressure relief valve before removing any of the components.
- ⚠ Do not use Teflon tape to seal the pressure connections. Surplus Teflon tape can enter the hand pump and damage it.
- ⚠ ➤ Only use adapters and seals that are available as accessories.
- ⚠ Non-pressurised storage: Only store the hand pump with the pressure relief valve open. This ensures that no pressure can be built up by unintentional pumping movements.
- ⚠ Avoid external force of all kinds towards the hand pump and its operating elements.
- ⚠ Do not use the hand pump if it is damaged or defective.

Special safety instructions:

Warnings that are specifically relevant to individual operating procedures or activities can be found at the beginning of the relevant sections of this operating manual.

3 Construction and function

Connections:

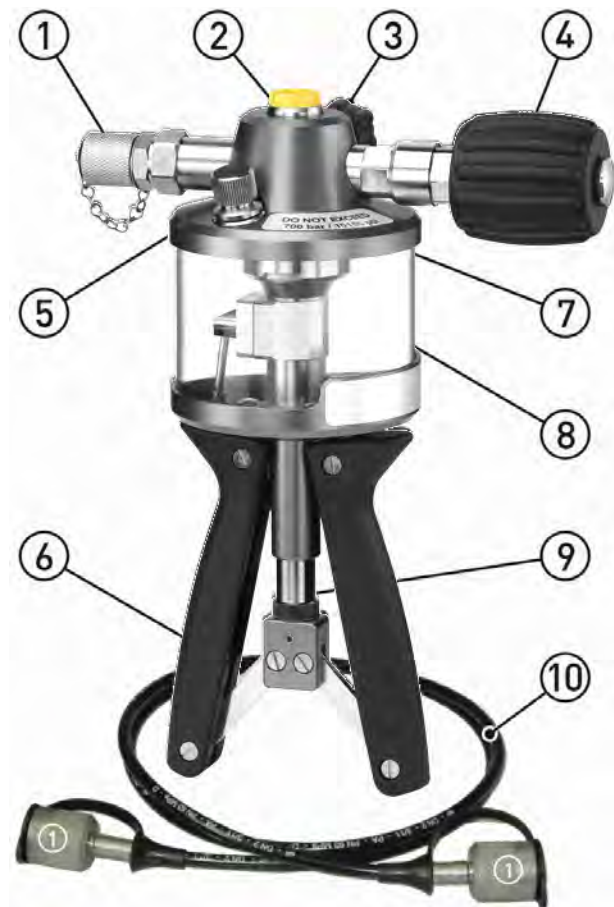
- ① MINIMESS® connection pressure hose.
- ② Connector reference gauge.

Operating elements:

- ③ Pressure relief valve (rotary knob).
- ④ Fine adjustment valve (hand wheel).
- ⑤ Seal reservoir with safety valve.
- ⑥ Hand grips.

Main components:

- ⑦ Upper and lower pump body.
- ⑧ Reservoir with suction and relief outlets.
- ⑨ Piston rod with internal spring.
- ⑩ Pressure hose with MINIMESS® connection.



Function:

The reference and the test sample or the pressure device to be tested (hereafter "test sample") are connected to the hand pump.

Pumping is carried out by repeatedly pushing the hand grips together. An internal spring returns the hand grips to their start position..

The pumping movements are transferred to the pistons in the pump body via the push rods. The hydraulic liquid is then suctioned from the storage container and pressed through valves to the test item.

In the case of correct ventilation, this quickly leads to an increase in pressure. The construction of the hand pump means that the same pressure is generated for the test item as for the reference test gauge.

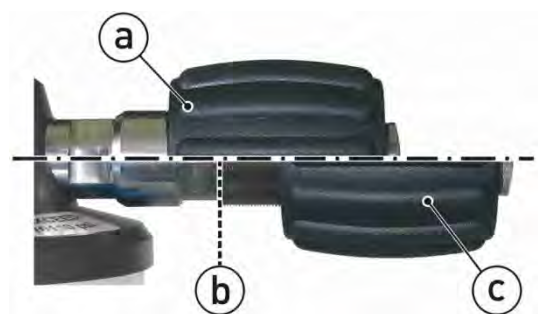
The pressure is set to the necessary value using the fine adjustment valve.

The hand wheel has a wide adjustment range from "pump body stop collar " ① to "external stop" ③.

For storage and transport, the hand wheel should be placed in position ②.

With the pressure relief valve, the pressure can be relieved into the reservoir.

For the assessment of the test sample, the pressure displayed on the reference manometer is compared with the measurement value.



3.1 Important notes on pressure fluctuations

It is completely normal that the pressure is not constant from the start. In the event of changes to the pressure in the measurement device, it always lasts a few minutes until the pressure stabilises.

This is influenced by a variety of factors. The most important influence factors are:

- **Poor ventilation:**
If there is still air in the measurement device, the pressure build-up lasts significantly longer. Moreover, there is a fall-off in pressure over a limited period due to diffusion processes.
- **Mechanical characteristics of the pressure hose:**
Bending or rolling up the pressure hose causes a reduction in the volume and thus leads to an increase in pressure.
At high pressure, the pressure hose extends. Furthermore, enclosed air can be diffused through the pressure hose. In both cases, a drop in pressure results.
- **Temperature influence:**
Temperature changes lead to a change in volume in the measurement device and therefore to changes in pressure. The smaller the volume is, the greater the change in pressure.
- **Settling times of reference and test sample:**
Observe the required waiting times after the reference and test sample have been switched on. More information on this can be found in the corresponding operating manual.

4 Commissioning with ventilation

CAUTION! Risk of injury in case of damage.

Visual inspection required before use.



Damage to the device or its attachments can result in component failure and injuries when the equipment is under pressure.

- ☞ Check the hand pump carefully for damage.
- ☞ Never use the hand pump if you have found any damage. Return the device immediately to the manufacturer for repair.

In order for the hand pump to be operated, it is vital that its connections with the reference gauge and the test item are pressure-resistant.

Furthermore, for the best measurement procedure possible, sufficient and correct ventilation of the measurement device is required. Only then can you reduce the pressure fluctuations (→ § 3.1) to a minimum.



CAUTION! Material damage!

The test sample, the adapter and the seal must be free from impurities. If impurities enter the hand pump through the pressure hose, this may be damaged.



Maximum torque of the pressure connections!

Reference:	25 Nm
Test item:	25 Nm

Carry out the following steps* for the commissioning and ventilation of the hand pump. For this, note also the warnings in section § 5.1 "Generating pressure".

- ☞ 1. Fill the storage container to approximately two-thirds capacity with the required hydraulic liquid.
- ☞ 2. Open the pressure relief valve by turning counter-clockwise.
- ☞ 3. Turn the reference manometer with matching seal in the hand pump's connection (G 1/4).
IMPORTANT! Do not tighten the reference yet!
- ☞ 4. Carefully pump until the hydraulic liquid escapes at the connection and the piston system has been ventilated.
- ☞ 5. Only then should you tighten the reference.
- ☞ 6. Pump 5...10 times to ventilate the ventilation channels.
- ☞ 7. Turn the pressure relief valve counter-clockwise until it is firmly closed.

* The steps 1 up to 5 are only required for the first commissioning or during removal of the reference.

- 8. Connect the pressure hose to the hand pump's MINIMESS® connection, and tighten the connection.
- 9. Tightly screw the MINIMESS® adapter on the pressure hose.
- 10. Select the suitable adapters and seals for the test item's connection.
- 11. Screw the adapter for the test sample onto the MINIMESS® adapter.
- 12. Turn the test sample with seal in the adapter.
IMPORTANT! Do not yet tighten the test item!
- 13. Now pump until the hydraulic liquid escapes at the test sample's connection. The pressure hose and the test sample connection are now ventilated.

IMPORTANT! Demineralised water!



During the quality inspection of the hand pump, a functional test is carried out with demineralised water. The reservoir may therefore contain residues of this liquid.

- Check the compatibility with your application and remove the residue using appropriate measures (e.g. rinsing out with the hydraulic liquid).

5 Handling

Adhere to the following safety instructions when operating the hand pump:



CAUTION! Crushing hazard!

During the pumping procedure ensure that fingers or other body parts are kept away from the area between the hand grips and the piston rod.



CAUTION! Material damage to valve stop!

If put under too much strain the stop and the hand pump will be damaged.

- Only continue to tighten the valves (the fine adjustment and pressure relief valves) by hand, once the stop has been reached.

Before creating pressure consider:

Before you create pressure with the hand pump you should check for the following requirements:

- ☐ The reference gauge is connected to the hand pump.
- ☐ The test item is joined to the pressure hose with the correct adapters and seals.
- ☐ All pressure connections are correctly in place, so that they resist pressure.
- ☐ The hand pump, the pressure hose and the test sample have been properly ventilated (→ § 4).

5.1 Generating pressure

After the commissioning with ventilation, pressure can be created with the hand pump. With increasing back-pressure in the system, the pumping process becomes more and more difficult.

WARNING! There is a risk of injury if the maximum pressure is exceeded!



Note the maximum permitted pressures of the individual components in the measurement device. If the limit values are exceeded, it may lead to material damage and injuries.

⚠ Do not continue to pump under any circumstances if the maximum permitted pressure has been reached or an exceeded measuring range is displayed.

CAUTION! Material damage to test item!



Adhere to the maximum pressure of the test item!

Only create an admission pressure with the hand grips that is lesser than the necessary testing pressure. Following this carefully increase the pressure using the fine adjustment valve.

Notes on operation

Please observe the following notes concerning the operation of the hand pump:

- Ensure that no air is suctioned during the pumping process.
 - To ensure that this does not occur, hold the hand pump at a slight angle so that the suction nozzles are always surrounded by hydraulic liquid.
- Ensure that there is sufficient hydraulic liquid in the reservoir.
 - If necessary, refill the hydraulic liquid. This must also be ensured during depressurisation (→ § 5.3).
- For small hydraulic volumes and well-ventilated systems, a higher pressure is already built up with a few movements of the pump.
 - Ensure that the maximum permitted pressure is not exceeded.
- From approximately 400...500 bar, a lot of strength is required for pumping from the initial position of the handles.
 - Increase the pressure using the fine adjustment valve and note the following tip.



TIP! At high pressures, open the handle only lightly.



The handles can be compressed more easily the further the handles are closed. In this way, you can create high pressures more easily and meter the pressure better.

⚠ The higher the pressure is, the less you should open the handles. In the event of high pressures, avoid the initial position of the handles.

Hand pump operation

- ① Switch on reference gauge and test item (if necessary).
- ② Close pressure relief valve:
 - Turn the knob of the valve in a clockwise direction until the stop is reached.
- ③ Create pressure:
 - Push the hand grips together: The pressure is built up.
 - Repeat the pumping movements until the necessary testing pressure has roughly been reached.
- ④ Adjust the testing pressure. The necessary testing pressure is precisely adjusted with the fine adjustment valve:
 - Turn the hand wheel in a clockwise direction to increase the pressure.
 - Turn the hand wheel of the valve in an anti-clockwise direction to reduce the pressure.
 - Set the necessary testing pressure by turning the wheel as needed.
- ⑤ Releasing pressure: Turn the pressure relief valve knob 1-2 rotations in an anti-clockwise direction and wait until there is no longer any positive pressure.



Adjusting pressure with the fine adjustment valve:

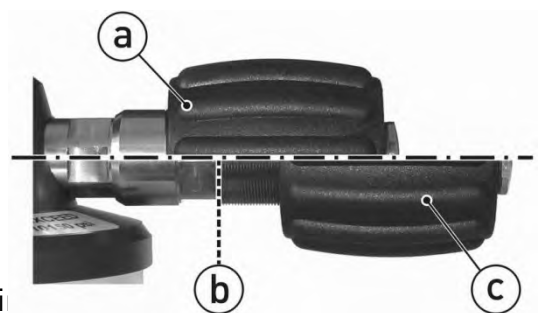
Alternatively, you can increase and decrease the pressure with the fine adjustment valve.

Increase pressure:

- Turn the hand wheel in a clockwise direction in the direction of the 'pump body stop collar' (a).

Decrease pressure:

- Turn the hand wheel counterclockwise toward "external stop" (c).



Depending on the pressure of the test item and the settings, the pressure can be achieved quite easily.



FINE ADJUSTMENT VALVE

When it is not under pressure the fine adjustment valve moves very freely. The wide hand wheel of the fine adjustment valve can be moved into the needed position very easily using with the palm of the hand.

5.2 Pressure measurements

For adjustments, calibrations or an inspection of accuracy, it is vital that the test item and the reference have the same pressure.

The pressure needed for the test points is built up and adjusted with the hand pump (→ § 5.1).



Wait for pressure stabilisation!

After changes in the pressure, it takes a few minutes for the pressure in the measurement device to stabilise (→ § 3.1).

☞ Wait approximately 3...5 min before you begin taking measurements.

The necessary procedures for measuring pressure are configured by the operator.

Carrying out the pressure measurements:

- Carry out the necessary tests and measurements.
- Document your results.

5.3 Releasing pressure

Once the pressure measurements have been completed, the positive pressure in the hand pump, the test item and in the pressure hose need to be brought into balance.



CAUTION! Risk of injury through excessive pressure!

Do not remove any connected components (test item, pressure hose, reference gauge) if the hand pump is under pressure.

☞ Open the pressure relief valve before removing any of the components.

☞ Hold the hand pump so that no liquid is present at the cap of the reservoir.

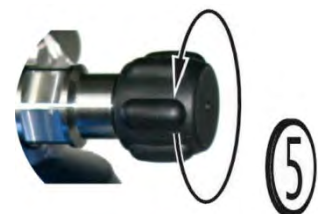
Otherwise liquid may be forced out through the safety valve in the cap.

☞ Releasing pressure: Turn the pressure relief valve knob ⑤ 2-3 rotations in an anti-clockwise direction and wait until there is no longer any positive pressure.

☞ Remove the test item with adapters and seals from the pressure hose.

☞ Put the hand pump away along with any accessories which have been used.

(→ § 7: 'Maintenance / cleaning, storage and transportation')



IMPORTANT! Do not release the pressure without supervision!

When relieving the pressure, hydraulic liquid flows from the measurement device into the reservoir. Pressure equalisation in the reservoir occurs through the safety valve in the seal.

In the event of large-volume measurement devices or if hydraulic liquid has been refilled during pressure generation, liquid can leak through the safety valve.

☞ Carefully drain the pressure and note the fill level in the reservoir.

6 Problems

CAUTION! Material damage!



The hand pump cannot be repaired by the operator! In the case of a defect, the appliance must be sent back to the manufacturer for repair.

✎ Never open up the hand pump and / or carry out any repairs yourself.

The following table details what problems you can solve yourself and how to solve them.

Problem	Possible cause	Remedy
Pressure cannot be built up.	Defective / incorrect seal.	Check seal (size / material / wear).
	Seal incorrectly positioned.	Check positioning of seal.
	Pressure relief valve open.	Close pressure relief valve.
No further increase of pressure is possible	Air was sucked in during pressure generation.	Open pressure relief valve so that the air can be rinsed out of the piston system. Ensure the correct position of the hand pump during pressure generation.
Pressure fades (unstable).	Leakage in the test item.	Check connections.
		Check positioning of seals.
Pumping stroke stiff.	High counter pressure in the test item.	Increase the pressure with the hand wheel of the fine adjustment valve.

If you are unable to remedy any particular problems, then immediately disconnect the hand pump.

Contact your supplier or directly to ICS. Please send the device for repair with a brief description of the problem, the environmental conditions and the length of time the device was operational before the problem occurred.

6.1 Return shipment to the manufacturer

Due to legal requirements placed on environmental protection and occupational safety and health and to maintain the health and safety of our employees, all units returned to ICS for repair must be free of toxins and hazardous substances. That also applies to cavities in the devices. If necessary, the customer must neutralise or purge the unit before return to ICS.

Costs incurred due to inadequate cleaning of the device and possible costs for disposal and/or personal injuries will be billed to the operating company.

WARNING! Risk of injury due to insufficient cleaning!



The operating company is responsible for all damages and harm of any kind, in particular physical injuries (e.g. caustic burns or toxic contaminations), decontamination measures, disposal etc. that can be attributed to insufficient cleaning of the measuring instrument.

✎ Comply with the instructions below before returning the unit.

The following measures must be taken before you send the unit to ICS for repair:

- ✚ Clean the device thoroughly. This is of extreme importance if the medium is hazardous to health, i.e. caustic, toxic, carcinogenic or radioactive etc.
- ✚ Remove all residues of the media and pay special attention to sealing grooves and slits.
- ✚ Attach a note describing the malfunction, state the application field and the chemical/physical properties of the media.
- ✚ Please follow the instructions on the procedure for sending returns which are on our website (www.ics-schneider.com) and please specify a point of contact in case our service department has any questions.

The customer must confirm that the measures were taken by filling out the declaration of decontamination. It can be found on our website as a download:

7 Maintenance / cleaning, storage and transportation

Maintenance:

No maintenance is required for the hand pump and it cannot be repaired by the operator either. In the case of a defect the appliance must be sent back to the manufacturer for repair.

- ✚ Check the seals and O-rings for fractures and wear before use.
- ✚ Replace defective or worn seals and O-rings.
- ✚ Visually inspect the hand pump and its components for damage.
The inspection interval depends on the frequency of use, but at least once a year.



RECOMMENDATION!

Do not use gaskets, seals and hydraulic hoses made from rubber, silicone or plastic longer than 6 years.

- ✚ Observe the corresponding instructions in the manufacturer's product documents.

Cleaning:

Clean the hand pump with a dry or slightly damp lint-free cloth.

Do not use sharp objects or aggressive cleaning agents to clean the pump. Avoid contact with aggressive media.

Storage and transportation:

For storage and transportation we recommend our transportation case, which is available as an accessory.

The tight-fitting rigid foam inlay offers optimum protection for the hand pump with pressure hose and accessories.



REFERENCE GAUGE

The common reference models fit into the gaps in the transportation case and do not need to be removed.

Before storage, we recommend that you consider the following points:

- ☐ Clean the hand pump and the accessories.
- ☐ Turn the fine adjustment valve in a clockwise direction until the thread is no longer visible (→ illustration).
- ☐ Open the pressure relief valve.



Important storage information!



- Do not store under pressure:

Only store the hand pump with the pressure relief valve open. This ensures that no pressure can be built up by unintentional pumping movements.

- Openings facing up:

Ensure that the caps of the supply container and the refill bottle are properly closed and facing up when these items are stored.

8 Disassembly and disposal



CAUTION! Risk of injury!

Never remove the device from a measurement set up in operation.

✚ Make sure that the measurement set up is shut down professionally.

Before disassembly:

Prior to disassembly, ensure that

- ☐ the measurement set up is switched off and is in a safe and de-energised state.
- ☐ the measurement set up is depressurised and has cooled down.

Disassembly:

- ✚ Remove the reference gauge and the test item.
- ✚ Drain the hand pump if there is still medium in the reservoir.

Disposal hand pump:



IMPORTANT! No household waste!

The hand pump consists of various different materials. It should not be disposed of with household waste.

- ✚ Take the hand pump to your local recycling plant

or

- ✚ send the hand pump back to your supplier or to ICS.



Disposal hydraulic oil:

IMPORTANT!

Dispose of the hydraulic oil in accordance with the Technical Safety Data Sheet.

9 Technical data

Type	ICP 700.3	ICP 1000.2
Pressure range:		
- Positive pressure	0...700 bar	0...1000 bar
Medium:		
Demineralised water	0...60 °C (not freezing)	
- Temperature range		
Hydraulic oil	-10...60 °C (not freezing) *1 11 cSt (recommend) • maximum 22 cSt (10...60 °C)	
- Temperature range		
- Viscosity		
Connection:		
- Reference	G¼	
- Test item	G¼ with quick coupling and pressure hose (1m)	G¼ with quick coupling and high pressure hose (1m), 1000 bar
Dimensions:		
	~ 255 x 225 x 85 mm	
Weight:		
	~ 1,7 kg	~ 1,9 kg

*1 Observe the instructions on the manufacturer's data sheet for the hydraulic oil that is used.

10 EC Declaration of Conformity



Sensors and Measuring Instruments



Flow Measuring Instruments



Test and Calibration Instruments