Operating Instructions

## Hand Test Pumps

# CPP30

# CPP700-H

KT-205 05/15

WIKA
Part of your business

# Operating Instructions Hand Test Pumps

## Contents



**Information**
**This symbol provides you with information, notes and tips.**

**Warning!**
**This symbol warns you against actions that can cause injury to people or damage to the instrument.**

## 1. General

### 1.1 General Instructions & Warranty

In the following chapters detailed information on the CPP30 and CPP700-H hand test pump and its proper use can be found.
Should you require further information, or should there be problems which are not dealt within detail in the operating instructions, please contact the address below:

**3D Instruments, LP**
2900 East White Star Ave.
Anaheim, CA 92806
U.S.A
Tel: 714-399-9200
Fax: 714-409-3371
E-Mail: cs@3dinstruments.com

3D INSTRUMENTS, LP ("3D") hereby warrants to the original purchaser of any 3D Hand Pump that it will be free from defects in material and workmanship under normal use and service for a period of two (2) years from the date of delivery to the purchaser (the "Warranty Period"). No other express warranty is given and no other affirmation of 3D or any of its agents, representatives or dealers, by words or actions, shall constitutes a warranty or the assumption by 3D of any liability or obligation.

The obligation of 3D under this warranty is limited to repairing or replacing as the company may elect any product that proves in the company's judgment to be defective in material or workmanship within the Warranty Period. 3D will repair or replace the defective product free of charge to the original purchaser, provided the product is returned and received by 3D at 2900 East White Star Avenue, Anaheim, California 92806 during the Warranty Period with all transportation charges prepaid. 3D shall have no obligation or liability extending beyond that of repair or replacement as stated above, and without any limitation of the foregoing, 3D shall have no obligation or liability to the purchaser for any direct or consequential damages or loss of profits. Repaired products shall be warranted for the unexpired portion of the original Warranty Period only.

This warranty shall not apply to any product or part which has been subjected to use in excess of applicable 3D specifications, use in violation of any special conditions noted on the product, disassembly, misuse, or negligence in handling or extensive testing, nor does it apply to replacement of damaged parts resulting from chemical or media contamination.

By acceptance of the 3D product, the purchaser agrees that: (1) the foregoing express warranty of repair and replacement is the exclusive and only warranty to pass with such product or part; (2) the purchaser has not relied on the skill or judgment of 3D in selecting any such product or part for any particular purpose or need of the purchaser; and (3) THE FOREGOING EXPRESS WARRANTY IS IN PLACE OF AND IN LIEU OF ALL IMPLIED WARRANTIES, INCLUDING THOSE FOR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY EXPRESSLY DISCLAIMED.

Duplication of this manual in whole or in part is prohibited.

### 1.2 Safety instructions

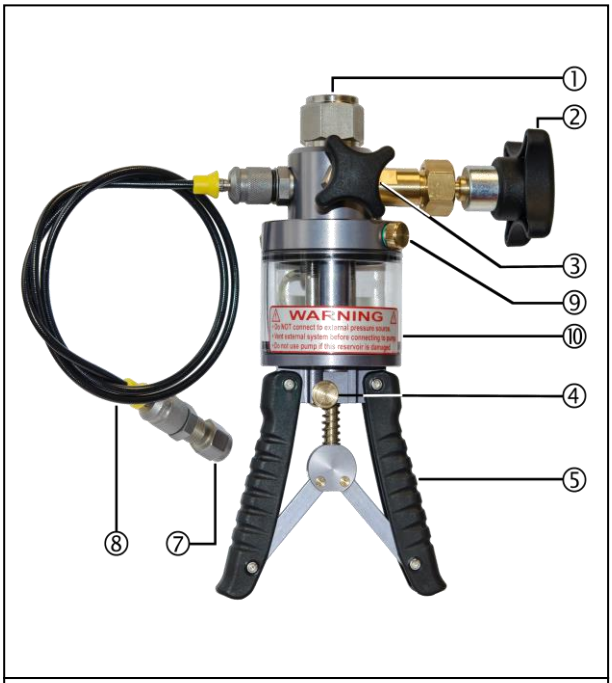
**Read these operating instructions carefully prior to operating the pneumatic hand test pump CPP30 or hydraulic hand test pump CPP700-H. The pressure inside these pumps can be extremely high. Ensure that all pressure connections have been established correctly.**

## 2. Product descriptions

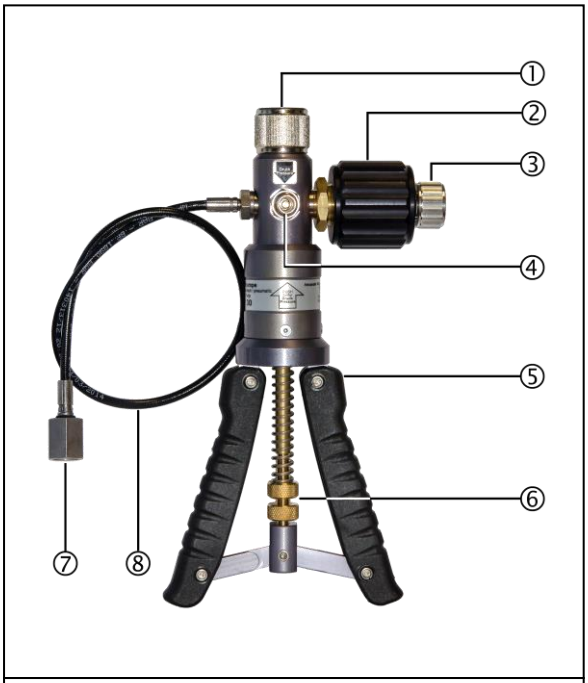
The CPP30 and CPP700-H hand test pumps are used to generate pressure for checking, adjusting and calibrating mechanical and electronic pressure measuring instruments by comparative measurements. These pressure tests may be carried out in laboratories, workshops or on site at the measuring point.

If the instrument to be tested and a sufficiently accurate reference measuring instrument are connected up to the test pump, the same pressure is applied to the two measuring instruments when the pump is operated. By comparing the two measure valves at random pressure values, the accuracy can be verified or the instrument under test can be adjusted.

Despite their compact dimensions, the hand test pumps CPP30 and CPP700-H are easy to operate and allow for exact generation of the required test pressures. The pumps are fitted with a fine adjustment valve for the precise adjustment of pressures. The reference instrument is screwed directly on the top of the pump and the unit under test is connected by means of the pressure hose incorporating a 1/4" NPT female thread, contained in the scope of delivery.




Model: CPP700-H Hydraulic Hand Pump




Model: CPP30 Pneumatic Hand Pump

1. Pressure Connector for reference instrument G ½“ female, freely rotating with ¼” NPT reducing adapter (both models)
2. Fine Adjustment Valve (both models)
3. Pressure Relief Valve (both models)
4. Pressure/Vacuum Change-Over-Switch(CPP30) or Pressure/Bleed Switch (CPP700-H)
5. Ergonomic Handles (both models)
6. Adjustable knurled nut for the adjustment of the delivery rate of the pump provides overpressure protection (CPP30 only)
7. Pressure Connection for test specimen, ¼“ NPT female, freely rotating (both models)
8. Flexible tube for test item connection, length 0.5 M (CPP30) or 1 M (CPP700-H)
9. Fill Plug for Fluid Reservoir (CPP700H)
10. Fluid Reservoir: distilled water recommended (CPP700-H)

## 3. Mounting instructions

■ The reference instrument is fitted to the upper side of the hand test pump CPP30 or CPP700-H. The reference instrument is sealed to the ¼" NPT Fitting using Teflon Tape. This Fitting connects to each of the Hand Pumps by an integral O-Ring sealing gasket (1). The maximum torque is 15 Nm for this connection.

■ The unit under test is mounted to the end of the flexible test hose using ¼" NPT Female Fitting Adapter attached to the Hose (7).

**Never apply external pressure to the CPP30 and CPP700-H. Do not connect to external pressure sources.**

■ All O-ring and quick connections should be tightened to a maximum torque of 15 Nm. Do not use any Teflon Tape on any of the O-ring Sealing Connections.

Tip: It is possible to connect the test specimen directly to the pumps. After disconnecting the hose connector, there is a 1/4" BSP female thread at the side of the pump body.

■ **For the CPP700-H Only:** Open the filling plug (9) of the liquid reservoir (10) and fill with a suitable fluid: **Pure** C**lean Water free of calcium-carbonate / scale is recommended. Mineral oil based hydraulic fluid can also be used.** Fill the liquid reservoir (10) approximately 1/3 full.

## 4. Operation of Hand Pumps

### 4.1 CPP700-H Operation

■ Make sure, the CPP700-H is in priming position. If necessary, press the Pressure/Bleed Switch (4).

Pressure/Bleed Switch (4)

Handles in position for: -Priming- -High Pressure Generation-

■ Make sure that the Pressure Relief Valve (3) is open.

■ Turn the vernier Fine Adjustment Valve (2) counter-clockwise fully out (smooth “stop” can be felt)

■ Turn the Pressure Relief Valve (3) clockwise until the vent is closed.

■ Press the Ergonomic Handles (5) back and forth for priming, until the handles become difficult to press fully together anymore due to the generated pressure. Depending on the total volume of the calibration setup, this can be 3000 to 6000 psi / 200 to 400 bar.

■ Keep the Ergonomic Handles (5) pressed together and press in the Pressure/Bleed Switch (4). The Ergonomic Handles (5) are now in “High Pressure” position.

NOTE: if the generated priming pressure is too high and, as a result, it is no longer possible to press the Ergonomic Handles (5) fully together, please open the Pressure Relief Valve (3) (turn counter-clockwise) and try it again.

■ Operate the Ergonomic Handles (5) until the required pressure is nearly achieved, but not more than 9000 psi. Higher pressure can be achieved by turning the Fine Adjustment Valve (2) clockwise.

NOTE: After increasing the pressure, the reading may slightly drop again for about 30 seconds, which is caused by thermodynamic effects, the tube connection and the sealing gaskets and also the compression of dissolved air in the Water Media. If the pressure drop does not come to a standstill, check the measuring circuit for tightness.

■ Dropping Pressure can be achieved by turning the Fine Adjustment Valve (2) counter clockwise first or by carefully opening the Pressure Relief Valve (3) to bleed the pressure to the desired reading.

NOTE: For releasing the pressure please turn the Pressure Relief Valve (3) only 1 revolution counter-clockwise. Afterwards close it again by turning clockwise.

■ Drop the pressure completely by turning the Pressure Relief Valve (3) counter clockwise until all pressure is bled from the system.

**Remove the reference instrument or the test specimen only when the Pressure Relief Valve (3) is open and no pressure is in the test pump any more.**

## 4.2 CPP30 Pressure Operation

■ Make sure that the Pressure Relief Valve (3) is open.

■ **C**heck whether the Change-Over Switch (4) is correctly set for pressure (see the sticker on the pump). If the switch needs to be changed you can use a ball point pen or the end of a screwdriver to press the switch. The guard is included to prevent accidental or unintentional activation during operation.

**Never press the Pressure/Vacuum Change-Over-Switch when the pump is pressurized or under vacuum. Make sure the Pressure Relief Valve (3) is open before changing the switch position.**

■ Turn the Fine Adjustment Valve (2) counter-clockwise fully out (smooth “stop” can be felt).

■ Turn the Pressure Relief Valve (3) clockwise until it is closed. There is no hard “stop”. Please do not force.

■ Press the Ergonomic Handles (5) until the approximate pressure has been reached up to a maximum pressure of 290 to 360 psi (20 to 25 bar).

■ Turn the Fine Adjustment Valve (2) clockwise to increase pressure or counter clockwise to decrease pressure until you reach the desired pressure on your reference instrument..

If you started with the Fine Adjustment Valve (2) fully out you should be able to achieve 500 to 580 psi (depending on the volume of your test setup) by moving the Fine Adjustment Valve (2) clockwise.

■ Reducing the pressure is achieved by turning the Fine Adjustment Valve (2) counter clockwise or by carefully opening the Pressure Relief Valve (3) counter clockwise.

NOTE: After increasing the pressure, the reading may slightly drop again for about 30 seconds, which is caused by thermodynamic effects, the tube connection and the sealing gaskets. If the pressure drop does not come to a standstill, check the measuring circuit for tightness.

■ Drop the pressure completely by turning the relief valve (3) counter clockwise until all pressure is bled from the system.

**Remove the reference instrument or the test specimen only when the Pressure Relief Valve (3) is open and no pressure is in the test pump any more.**

## 4.3 CPP30 Vacuum Operation

■ Make sure that the Pressure Relief Valve (3) is open.

■ **C**heck whether the Change-Over Switch (4) is correctly set for vacuum (see the sticker on the pump). If the switch needs to be changed you can use a ball point pen or the end of a screwdriver to press the switch. The guard is included to prevent accidental or unintentional activation during operation.

**Never press the Pressure/Vacuum Change-Over-Switch when the pump is pressurized or under vacuum. Make sure the Pressure Relief Valve (3) is open before changing the switch position.**

■ Turn the Fine Adjustment Valve (2) clockwise to the end (smooth “stop” can be felt).

■ Turn the Pressure Relief Valve (3) clockwise until it is closed. There is no hard “stop”. Please do not force.

■ Press the Ergonomic Handles (5) until the approximate vacuum has been reached down to a maximum of -13 psig (-26 in/Hg or -0.9 bar).

■ Turn the Fine Adjustment Valve (2) counter clockwise to increase vacuum or clockwise to increase pressure until you reach the desired pressure on your reference instrument (up to -13.77 psig or -0.95 bar).

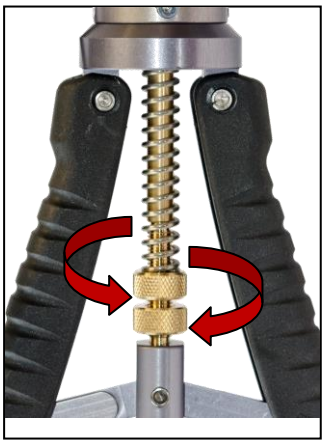
■ Lowering the vacuum is achieved by turning the Fine Adjustment Valve (2) clockwise or by carefully opening the Pressure Relief Valve (3) counter clockwise.

NOTE: After increasing the vacuum, the reading may slightly drop again for about 30 seconds, which is caused by thermodynamic effects, the tube connection and the sealing gaskets. If the vacuum drop does not come to a standstill, check the measuring circuit for tightness.

■ Remove the vacuum completely by turning the relief valve (3) counter clockwise until all vacuum is bled from the system.

**Remove the reference instrument or the test specimen only when the Pressure Relief Valve (3) is open and no vacuum is in the test pump any more.**

NOTE: For maximum performance of the CPP30 Hand Pump, please make sure the Adjustable Knurled Nut (6) is adjusted to such a position that the spring above the nut has some clearance.
If you operate with a small reference pressure range you can reduce the performance of the pump by turning the Adjustable Knurled Nut (6) clockwise (upwards). This reduces the pressure you get with every stroke of the handles. After you are finished, turn the Adjustable Knurled Nut (6) counter clockwise (downward) to achieve maximum performance again.



## 5. Maintenance instructions

Prior to connecting the reference instrument and the test specimen, the sealing gasket in the two connectors should be checked for correct position and wear, and should be replaced, if and when necessary.

A service kit consisting of spare sealing gaskets and O-Rings is available as an accessory for each Hand Pump Model.

**CPP700-H: It is only allowed to clean the liquid reservoir with water or mild detergents. Use of alcohol, ethyl alcohol (spirit), acetone or benzol can cause crack formations to arise in the material of the reservoir and the reservoir can be damaged.**

**CPP30: Do not allow the pump to come in contact with Fluids or Aggressive media. Use air only**

## 6. Troubleshooting

■ If the pressure or vacuum cannot be generated correctly or if the set pressure or vacuum does not stay stable, this is likely caused by incorrectly positioned or selected sealing gaskets. Please also check whether any adapters used on the test specimen have been tightened sufficiently to eliminate leaks.

■ Before assuming there is a leak in the hand test pump, check if the Pressure Relief Valve (3) is closed.

■ For the CPP30 Hand Pump Only, check if the Pressure/Vacuum Change-Over Switch (4) is correctly positioned and in not floating in the center position.

■ If the test pump has not been used for a longer period of time, the first pressurization may be somewhat sluggish. This effect will typically disappear during further operation.

■ By no means apply any force to the operating elements of the hand test pump.

**Never connect an external pressure supply system to the CPP30 Pneumatic or CPP700-H Hydraulic Hand Pumps.**

## 7. Specifications

| Hand Pump Specifications: | CPP700-H Hydraulic | CPP30 Pneumatic |
|---|---|---|
| **Pressure range:** | 0 to 10,000 psi (0 to 700 bar) | -13.75 to 500 psi (-0.95 to 35 bar) |
| **Medium:** | Clean Mineral Free Water or Hydraulic Oil | Air |
| **Pressure Connections:** | | |
| **-For Reference Instrument:** | G ½" Female Thread, Rotating. | G ½" Female Thread, Rotating. |
| | With ¼" NPT Female Thread Adapter | With ¼" NPT Female Thread Adapter |
| **-For Test Specimen:** | ¼" NPT Female Adapter | ¼" NPT Female Adapter |
| **-Hose Length:** | 40" (1 M) Long Hose | 20" (.5 M) Long Hose |
| **Fine Adjustment:** | Fine Adjustment Vernier Valve | Fine Adjustment Vernier Valve |
| **Liquid Reservoir:** | 200 $cm^3$ | N/A |
| **Material Used:** | Anodized Aluminum, Brass | Anodized Aluminum, Brass |
| | Stainless Steel, Plastic | Stainless Steel, Plastic |
| **Sealing Gaskets** | FKM and NBR (standard) | FKM and NBR (standard) |
| **Dimensions** (L) X (W) X (H) | 11.02" X 6.70" X 4.72" | 8.66" X 4.13" X 2.48" |
| | 280mm X 170mm X 120mm | 220mm X 105mm X 63mm |
| **Weight** | 4.19 Lbs | 1.64 Lbs |
| | 1.9 kg | 1.9 kg |

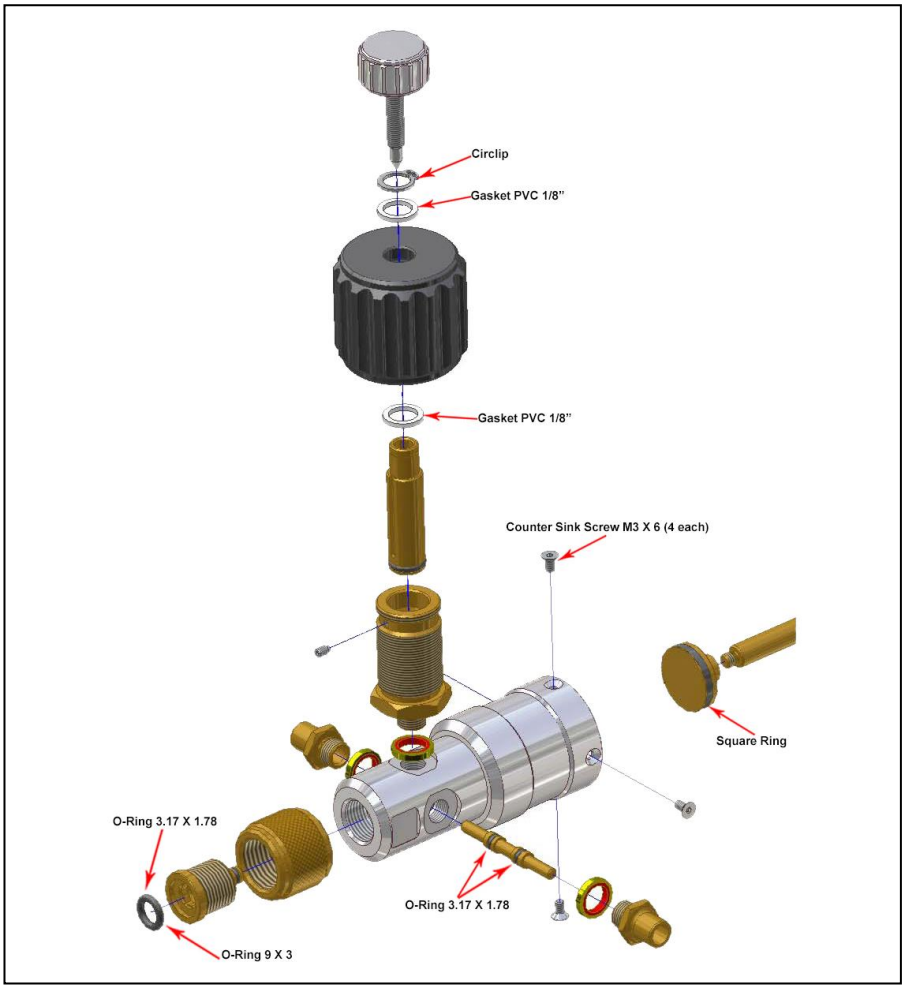
## 8. Order Information / Accessories

| Description: | Order No. |
|---|---|
| CPP700-H Hydraulic Hand Pump 0 to 10,000 psi Range, Medium: Clean Water (free of calcium-carbonate / scale) or Hydraulic Oil. Includes ¼" NPT Female Gauge Fitting, 40" Length (1 M) Hose with ¼" NPT Female Test Fitting. Gauge is Not Included. | 14124909 |
| CPP30 Pneumatic Hand Pump -13.75 psi vacuum to 500 psi Range, Medium: Air. Includes ¼" NPT Female Gauge Fitting, 20" Length (.5 M) Hose with ¼" NPT Female Test Fitting. Gauge is Not Included. | 14124906 |

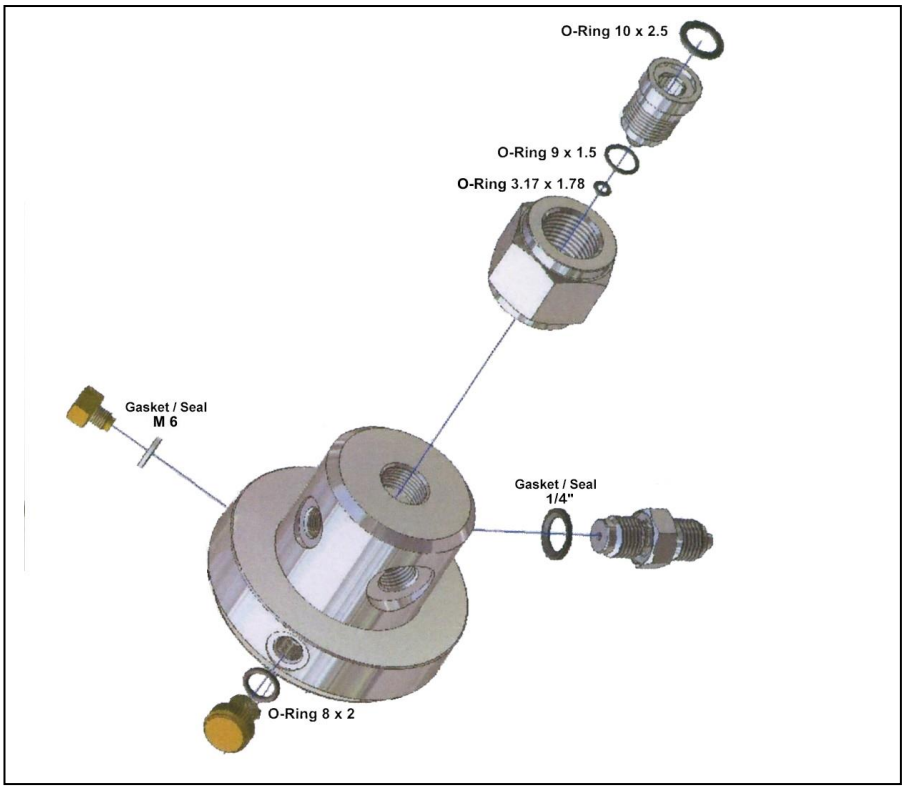
| | |
|---|---|
| Plastic case with foams for CPP700-H<br>dimensions in mm: (W/H/T) 440 x 370 x 140 | 13001965 |
| Plastic case with foams for CPP30<br>dimensions in mm: (W/H/T) 395 x 295 x 106 | 12139573 |
| Set of adapters and set of seals „BSP" for test item connection G 1/4" male on G 1/8", G 3/8" and G 1/2" female | 12139689 |
| Set of adapters and set of seals „metric" for test item connection G 1/4" male on M 12 x 1.5, M 20 x 1.5 and Minimess® | 12140422 |
| Set of adapters and set of seals „NPT" for test item connection G 1/4" male on 1/8" NPT, 1/4" NPT, 3/8" NPT and 1/2" NPT female | 12139701 |
| Service kit of sealing gaskets and O-rings<br>for hand test pump CPP700-H Hydraulic Hand Pump | 13001442 |
| Service kit of sealing gaskets and O-rings<br>for hand test pump CPP30 Pneumatic Hand Pump | 12139786 |
| Replacement hose for CPP700-H, length 1 m | 13001434 |
| Replacement hose for CPP30, length .5 m | 12605884 |

## 9. Service Kit Assembly Instructions

Service Kit P/N 12139786
for CPP30
Pneumatic Hand Pump




Service Kit P/N 13001442
for CPP700-H
Hydraulic Hand Pump




2900 East White Star Ave.
Anaheim, CA 92806 U.S.A.
Phone: 714-399-9200 Fax: 714-409-3371
E-mail: cs@3dinstruments.com
Web: http://www.3dinstruments.com