

T-600 Series Operation Manual

for T-620, T-620H, and T-620H-CPF Pressure Pumps



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Overview

INTRODUCTION

The T-600 Series hydraulic hand pump you have chosen, is an extremely effective pressure pump, and we are confident that it will live up to your expectations. Over the course of many years, we have acquired extensive knowledge of industrial precision pressure calibration. This expertise is reflected in our products, all of which are designed for daily use in an industrial environment. If you have any ideas or suggestions for ways we might improve our products, we would be very interested in hearing from you.

The T-600 Series hydraulic hand pumps, designed by Mansfield & Green, are specially designed for high pressure applications. The pumps are compatible with petroleum-based oils or hydraulic fluids.

The T-620 pump generates up to 200 bar (3000 psi). The T-620H and T-620H-CPF pumps generate up to 350 bar (5000 psi). The CPF version includes [Crystal Pressure Fittings \(CPF\)](#), which allow users to produce leak-free seals without tools or thread tape. CPF fittings also include a self-venting weep hole to help assure a safe disconnection from a pressurized system

► T-600 Series Pumps

| | Pressure Range |
|------------|--------------------|
| T-620 | 200 bar / 3000 psi |
| T-620H | 350 bar / 5000 psi |
| T-620H-CPF | 350 bar / 5000 psi |

FEATURES

The T-600 series hand pumps feature a 0.5 pint/20 cl built-in oil reservoir, vent valve and fine adjust knob. The pump has two pressure ports – one for the device under test and one for the reference indicator.

Parts Included with Pump (T-620 and T-620H)

► Reference Pressure Port (1/4" NPT Female, swivel)

No additional fittings are included for the Reference Pressure Port.

► Device Under Test Pressure Port

| Part Number | Description |
|-------------|------------------------------------------------|
| T-649 | 0.61 meter hose with 1/4" NPT Female connector |
| T-786 | 1/4" NPT Male x 1/4" BSP Female adapter |

Parts Included with Pump (T-620H-CPF)

► Reference Pressure Port (1/4" NPT Female, swivel)

No additional fittings are included for the Reference Pressure Port.

► Device Under Test Pressure Port

| Part Number | Description |
|-------------|-------------------------------|
| MPF-1/4FPT | 1/4" NPT Female to CPF Female |
| MPM-PLUG | CPF Plug |
| MPH-1 | 1.0 meter CPF Hose |



Safety Instructions

SAFETY INSTRUCTIONS

Please follow the instructions and procedures described in this manual. They are designed to help you get the most out of your pressure system and to avoid any personal injuries and/or damage to the system.

Please notice the pump comes in 2 different pressure ranges. Therefore it is very important to check the version of the pump to avoid over-pressurizing the indicator.

Note: The product liability only applies if the pressure system is subject to a manufacturing defect. This liability becomes void if the user fails to follow the maintenance instructions set out in this manual or uses unauthorized spare parts.

When using this pump:

- Avoid knocking, bumping, or dropping the pump. This can cause permanent damage.
- The pump must not be used for any purposes other than those described in this manual, or for any application other than precision pressure calibration tasks.
- The pump should only be used by TRAINED PERSONNEL.
- None of our calibration systems are cleaned or prepared for OXYGEN MEDIUMS. DO NOT USE our systems for this purpose.
- Do not disconnect any parts from the system when pressurized.

! WARNING: Do not connect any external pressure source to this system. This system is designed to test pressure measuring devices connected to the manifold only. Pressure from an external source can result in explosion of the liquid reservoir and possible personal injuries.

Generating Pressure

Follow these steps in order to operate the pump correctly. See the diagram on page 2 for reference..

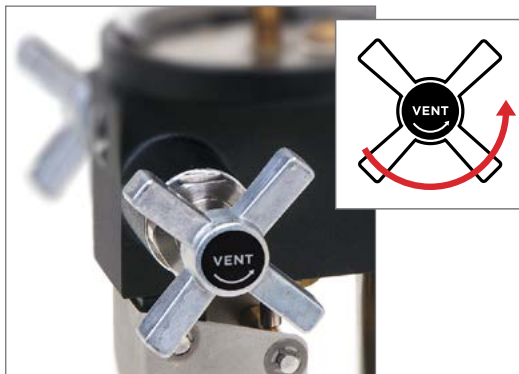
Connecting to the Pump

1 Remove the fill plug and fill the reservoir approximately 2/3 full of test fluid.

CAUTION: Do not use solvents, alcohol, or synthetic fluids that will adversely affect the operation of the pump. Please refer to the [Recommended Test Fluids section on page 8](#) for more information.

2 Connect and tighten the fill plug.

3 Turn the pressure vent valve and fine adjust knob counter-clockwise until fully open.



4 Prime the system by pumping the movable handle until air bubbles in the reservoir stop.

5 Turn the pressure vent valve clockwise until fully closed. (*Close by hand only.*)

6 Connect the reference indicator to the reference pressure port per the [connection diagrams on pages 6 and 7](#).

7 Operate the handle until the test fluid is visible at the end of the pressure hose. Pre-filling the hose will help speed the operating of the pump.

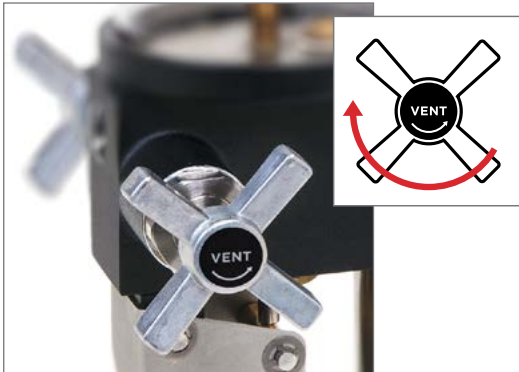
8 Connect the device-under-test to the test pressure port.

Note: If CPF Fittings are used in your pressure system remaining air can be purged by applying 10 psi or less and loosening the CPF fitting closest to the pressure device. When fluid and air escape from the CPF weep hole, that portion of the system is purged. Repeat this process for each pressure device in the pressure system which is connected to a CPF fitting.

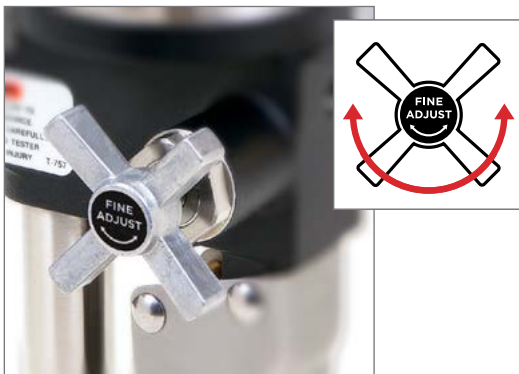
Applying Pressure

CAUTION: Ensure all fittings and devices are connected correctly and without leaks.

- 1 Ensure the device-under-test and reference indicator are powered on and are indicating pressure readings.
- 2 Turn the pressure vent valve and fine adjust knob counter-clockwise until fully open.
- 3 Zero the reference indicator.
- 4 Turn the pressure vent valve clockwise until fully closed. (*Close by hand only.*)



- 5 Operate the handle to apply pressure until the target pressure is nearly reached.
- 6 Turn the fine adjust knob to reach the target pressure, as indicated on the reference indicator. Allow time for adiabatic effect to stabilize. Turn the fine adjust knob as needed to achieve stable pressure.



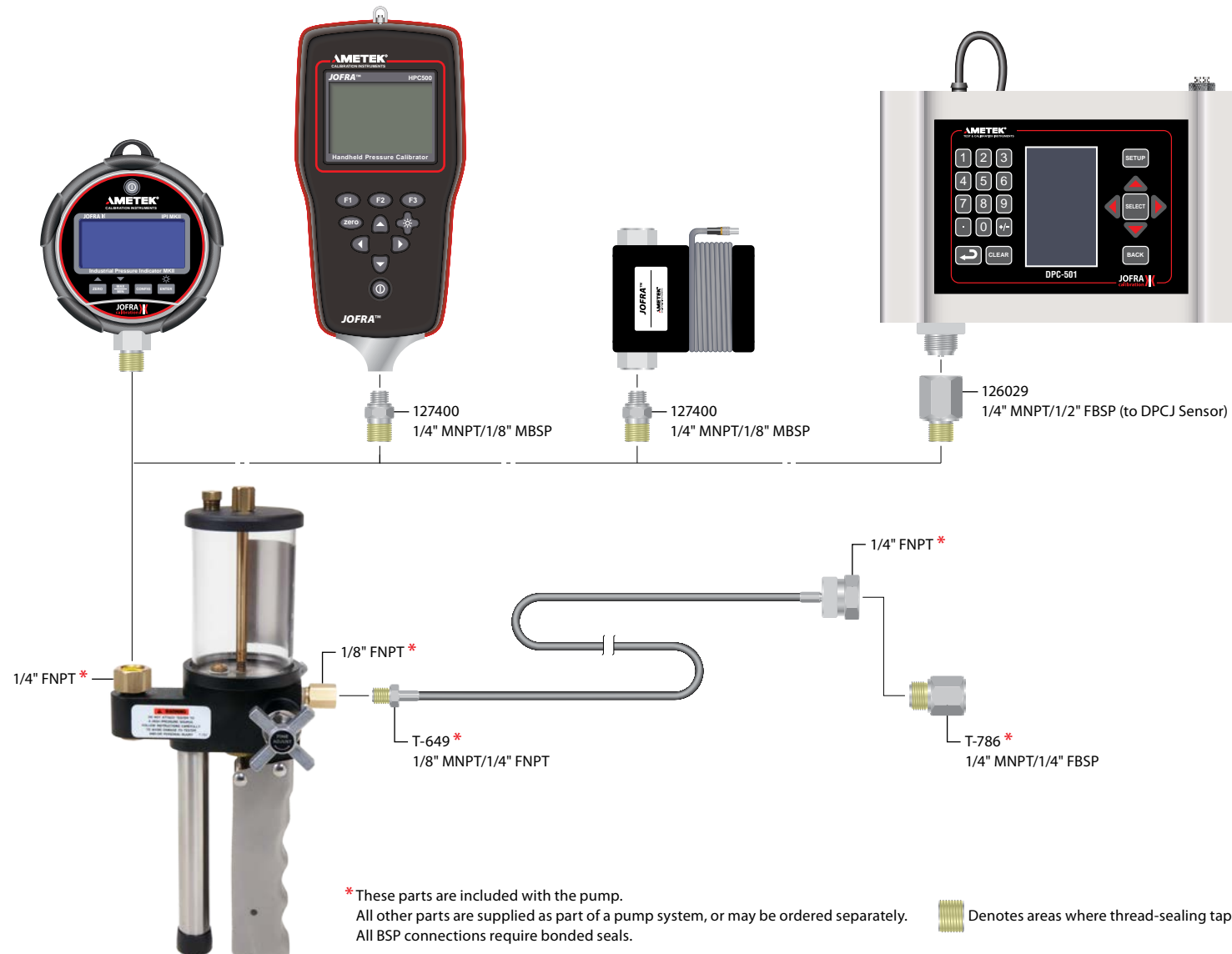
Note: When you operate with high pressure the system is extremely sensitive with regard to temperature and movements.

Disconnecting from the Pump

- 1 Release pressure by turning the vent valve counter-clockwise.
- 2 Remove the device under test.

Connection Diagrams

T-600 SERIES TO JOFRA REFERENCE INDICATORS



T-620H-CPF TO CRYSTAL REFERENCE INDICATORS



| NPT MALE | | |
|-------------------------------------------------------|--------------|------------------------------------|
| | MPF-1/8QTM | 1/8" Quick Test NPT Male |
| | MPF-1/8MPT | 1/8" NPT Male |
| | MPF-1/4QTM | 1/4" Quick Test NPT Male |
| | MPF-1/4MPT | 1/4" NPT Male |
| Additional NPT sizes available in non-CPF MP adapters | | |
| NPT FEMALE | | |
| | MPF-1/8QTF | 1/8" Quick Test NPT Female |
| | MPF-1/4QTF | 1/4" Quick Test NPT Female |
| | MPF-1/4FPT * | 1/4" NPT Female |
| | MPF-1/2QTF | 1/2" Quick Test NPT Female |
| Additional NPT sizes available in non-CPF MP adapters | | |
| BSP | | |
| | MPF-1/8BSPF | G 1/8" Female |
| | MPF-1/4BSPF | G 1/4" Female |
| | MPF-3/8BSPF | G 3/8" Female |
| | MPF-1/2BSPF | G 1/2" Female |
| TRANSMITTER | | |
| | MPF-5/16TRM | for Foxboro, Rosemount, & Yokogawa |
| | MPF-1/4TRM | for Honeywell |
| TUBE | | |
| | MPF-1/4TBM | 1/4" Tube Male |
| | MPF-3/8TBM | 3/8" Tube Male |
| | MPF-1/2TBM | 1/2" Tube Male |
| CPF | | |
| | MPF-MPF | Female to Female |
| | MPF-MPFTU | T-Union (Female) |
| | MPF-MPFBULK | Bulkhead (Female to Female) |
| | MPF-CAP | Cap |
| ADDITIONAL | | |
| | MPF-M20QTF | M20 x 1.5 Quick Test Female |
| | MPF-M20X1.5F | M20 x 1.5 Female |
| | MPF-QCN | Quick-Connect Nut |
| | MPF-AN4M | AN4 Male |

* These parts are included with the pump.
 All other parts are supplied as part of a pump system,
 or may be ordered separately.

Denotes areas where thread-sealing tape is required.

Specifications

Pressure Ranges

T-620 0 to 200 bar / 0 to 3000 psi

T-620H 0 to 350 bar / 0 to 5000 psi

T-620H-CPF 0 to 350 bar / 0 to 5000 psi

Capacity

Reservoir 0.5 pint/20 cl

Materials

T-620 and T-620H Aluminum, brass, stainless steel, Teflon, Lexan, Buna N, and Nylon.

T-620H-CPF Aluminum, brass, stainless steel, Teflon, Lexan, Buna N, Viton, and Polyamide.

Recommended Test Fluids

The following fluids are recommended for use with this pump:

- Petroleum based oils
- Hydraulic fluids

Pressure Connections

► Reference Port

T-620, T-620H..... 1/4" NPT Female.

T-620H-CPF..... 1/4" NPT Female.

► Device Under Test Port

T-620, T-620H..... 0.61 m / 24" hose with 1/4" NPT Female connector
(adapter for 1/4" BSP Female)

T-620H-CPF..... 1.0 m / 40" inch MPH-1 CPF hose with 1/4" NPT Female connector

Dimensions

Pump 280 (L) x 150 (W) x 115 (D) mm.

Weight 3 lbs / 1.4 kg

Drop Rate

Maximum 5% over 5 minutes.

Support

TROUBLESHOOTING

Unstable Pressure

- ▶ **Problem:** Pressure cannot be generated correctly, or set pressure does not remain stable.
- ▶ **Solutions:**
 - Check that all adapters and pressure fittings have been tightened sufficiently to eliminate leaks.
 - Confirm test fluid does not contain air (air in the fluid can increase adiabatic effects). Replace test fluid if necessary.
 - Replace hose (hose expansion can cause unstable pressure).

Pressure does not Increase

- ▶ **Problem:** The system fails to indicate a pressure increase after considerable pumping action of the handle.
- ▶ **Solutions:**
 - Check that all adapters and pressure fittings have been tightened sufficiently.
 - Close the pressure vent valve.
 - Pump requires service (please contact your local sales office for advice).

MAINTENANCE

Users should/must carry out the following cleaning procedures as and when required:

Exterior cleaningClean using a soft, damp cloth.

Visual InspectionMake sure that the bottom of the reservoir and the fluid does not contain contaminants or solids.

FITTING KITS AND SPARE PARTS

Service Kits

► T-620, T-620H Series

P/N: T-656 T-620, T-620H

► T-620H-CPF

P/N: T-656 T-620H-CPF

Hoses

► T-620 and T-620H

P/N: T-649 Hose. 0.61 m, 1/4" NPT Female connection.

► T-620H-CPF

P/N: MPH-1 Hose. 1.0 m, CPF MP Male connection.

P/N: MPH-1.5 Hose. 1.5 m, CPF MP Male connection.

P/N: MPH-3 Hose. 3.0 m, CPF MP Male connection.

P/N: MPH-5 Hose. 5.0 m, CPF MP Male connection.

P/N: MPH-10 Hose. 10.0 m, CPF MP Male connection.

Adapters

► T-620 and T-620H

P/N: T-786 Adapter. 1/4" BSP Female for hose connection.

P/N: 101549 Bonded Seal. For 1/2" BSP.

P/N: 60R120 Bonded Seal. For 1/4" BSP.

P/N: 127402 Bonded Seal. For 1/8" BSP.

► T-620H-CPF

Refer to the [connection diagram on page 7](#) for a complete list of adapters.

Test Fluid

► T-620, T-620H, and T-620H-CPF

P/N: MGAAA/QT . . . Hydraulic Oil. Quart.

P/N: MGAAA/GL . . . Hydraulic Oil. Gallon.

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RETURNING PRODUCT TO AMETEK

Please contact your sales representative to complete a Return Material Authorization (RMA) form and/or receive an RMA number. Return/shipping instructions will be provided with the RMA number.

WARRANTY

This instrument is warranted against defects in workmanship, material and design for one (1) year from date of delivery to the extent that AMETEK will, at its sole option, repair or replace the instrument or any part thereof which is defective, provided, however, that this warranty shall not apply to instruments subjected to tampering or, abuse, or exposed to highly corrosive conditions.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED AND AMETEK HEREBY DISCLAIMS ALL OTHER WARRANTIES, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY. AMETEK SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, ANY ANTICIPATED OR LOST PROFITS.

This warranty is voidable if the purchaser fails to follow any and all instructions, warnings or cautions in the instrument's Instruction Manual.

If a manufacturing defect is found, AMETEK will replace or repair the instrument or replace any defective part thereof without charge; however, AMETEK's obligation hereunder does not include the cost of transportation, which must be borne by the customer. AMETEK assumes no responsibility for damage in transit, and any claims for such damage should be presented to the carrier by the purchaser.



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