

pressure

# JOFRA™

**Pneumatic and hydraulic models**

**Ranges from vacuum to 1,000 bar /  
15,000 psi**

**Models available as comparators  
with included test gauge(s)**

**Economical, easy-to-use, meet most  
testing applications**

**Pumps offer advanced features such  
as vernier valves**

**Options and accessories that include  
alternate o-ring materials, fittings,  
and reservoirs**

ISO 9001 Manufacturer

## Pressure Sources

# Pneumatic, hydraulic and vacuum

### PRODUCT DESCRIPTION

AMETEK offers the user several solutions for pressure generation. This line spans from a small pneumatic “bicycle” style pump to a hydraulic pump that generates up to 1,000 bar (15,000 psi). These are durable pumps with features such as vernier valves, vent valves, manifold connections, swivel fittings, and optional O-ring materials and fittings making the pumps flexible to meet your calibration and testing applications.

There are models for use with most media: both pneumatic and hydraulic models.



### Pumps as part of ready-to-use pressure systems

All pumps from AMETEK are offered as part of a complete ready-to-use pressure system together with the JOFRA DPC-500, APC, CPC and IPI calibrators, which are as standard delivered in a carrying case, including pump, hose, set of fittings, batteries, test leads, user manual, and a traceable calibration certificate. For all pressure systems, the pump and the indicator are separate systems. Therefore, a replacement of the pump does not mean that the complete system has to be sent in for repair. Maintenance of the instrument is also made easy. Recalibration of the unit can be performed locally with an accurate pressure reference: No need to send the unit back to the manufacturer for recalibration. If a factory calibration is required, the pump and indicator are independent and only the indicator needs to be returned.

Find more information about JOFRA pressure calibrators at [www.jofra.com](http://www.jofra.com)

**AMETEK®**  
CALIBRATION INSTRUMENTS

Pump model	T-811	T-811-M	T-965	T-975	T-960	T-810	T-810-M	T-970	T-620
<b>Pump spec.</b>									
<b>Pressure range</b>									
Vacuum	X	X							
Vacuum to 2 bar / 30 psi			X						
Vacuum to 40 bar / 580 psi				X					
0 to 2 bar / 30 psi					X				
0 to 14 bar / 200 psi						X	X		
0 to 40 bar / 580 psi								X	
0 to 200 bar / 3,000 psi									X
0 to 350 bar / 5,000 psi									
0 to 700 bar / 10,000 psi									
0 to 1,000 bar / 15,000 psi									
<b>Technology, features and design</b>									
Type	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Hydraulic
Test medium	Air	Air	Air	Air	Air	Air	Air	Air	Oil
Reservoir capacity	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	200 cl / 0.5 pint
Operation	Bicycle-pump	Bicycle-pump	Scissor	Scissor	Scissor	Bicycle-pump	Bicycle-pump	Scissor	Pistol-grip
"O" rings	Buna-N	Buna-N	Buna-N	Buna-N	Buna-N	Buna-N	Buna-N	Buna-N	Buna-N
Wetted parts	Delrin and stainless steel	Delrin and stainless steel	Anodized aluminum, nickel-plated brass, stainless steel, nylon	Anodized aluminum, nickel-plated brass, stainless steel, nylon	Anodized aluminum, nickel-plated brass, stainless steel, nylon	Delrin and stainless steel	Delrin and stainless steel	Anodized aluminum, nickel-plated brass, stainless steel, nylon	Aluminum, brass, stainless steel, and Lexan®
Test connections	1/8" NPT female termination	1/8" BSP female termination	0.6 m / 24 in hose with 1/4" BSP and NPT female terminations	0.6 m / 24 in hose with 1/4" BSP and NPT female terminations	0.6 m / 24 in hose with 1/4" BSP and NPT female terminations	1/8" NPT female termination	1/8" BSP female termination	0.6 m / 24 in hose with 1/4" BSP and NPT female terminations	0.6 m / 24 in hose with 1/4" BSP and NPT female terminations
Size	15.2x10.2x30.5 cm / 6x4x12 in	15.2x10.2x30.5 cm / 6x4x12 in	21.6x12.1x6.2 cm / 8.5x4.8x2.4 in	21.6x12.1x6.2 cm / 8.5x4.8x2.4 in	21.6x12.1x6.2 cm / 8.5x4.8x2.4 in	15.2x10.2x 30.5 cm / 6x4x12 in	15.2x10.2x 30.5 cm / 6x4x12 in	21.6x12.1x6.2 cm / 8.5x4.8x2.4 in	21.6x12.1x6.2 cm / 8.5x4.8x2.4 in
Weight	1.4 kg / 3.0 lb	1.4 kg / 3.0 lb	1.4 kg / 3.0 lb	1.4 kg / 3.0 lb	1.4 kg / 3.0 lb	1.4 kg / 3.0 lb	1.4 kg / 3.0 lb	1.4 kg / 3.0 lb	1.4 kg / 3.0 lb
<b>Calibration system</b>									
JOFRA DPC-500, APC and IPI	N/A	N/A	N/A	System B	System A	N/A	N/A	System A	System C
JOFRA CPC	N/A	N/A	N/A	System B	System A	N/A	N/A	System A	N/A
<b>Ordering</b>									
Order number	T-811	T-811-M	T-965	T-975	T-960	T-810	T-810-M	T-970	T-620

### MODEL T-620 / T-620H



**Model T-620** hydraulic pressure pump is small, lightweight and portable. The T-620 features a transparent reservoir to easy

view of the test fluid. The pump is compatible with petroleum-based oils or hydraulic fluids. The reference gauge is mounted on the body manifold with a swivel fitting for easy viewing. A vernier adjustment allows for precisely control pressure. A vent valve is provided for quick and positive shut-off and pressure release. The pump is equipped with a 0.6 m (24 in) rubber hose with 1/4 in NPT connector and 1/4 in BSP adapter for connecting to the instrument-under-test.

### MODEL T-810 / T-811



**Model T-810** pneumatic pressure pump is an economical and lightweight pump. The pump has a T-fitting allowing for connection to

the 1/8 in NPT threads and the 1/8 BSP threads on the T-810M model. The body is flat on one side preventing it from rolling and offers features such as a fine control vernier and a thumbscrew for rapid or gradual pressure release.

**Model T-811** vacuum pump is similar to the T-810 except it is designed to generate vacuum from 0 to -0.9 bar / 13 psi. It is available with metric threads in the T-811M model.

### MODEL T-960 / T-965 / T-970 / T-975



**Model T-960** pneumatic pressure pump features an extended range vernier adjustment for precisely controlling pump pressure

and comfortable pistol grip handle.

**Model T-970** pneumatic pressure pump is similar to the T-960, but generate pressure up to 40 bar (580 psi).

**Model T-965 / T-975** pneumatic pressure pump features both vacuum and pressure generation. A button (valve) makes it easy to switch from vacuum to pressure measurements. Built-in release valve, vernier valve for fine adjustment and dual pressure output enable safe and simple operation. The unit offers both metric and imperial threads on the reference connection and the hose.

T-620-H	65-P016	65-P017	65-P014	T-1	T-1/EPT	T-1/VITON	T-1/OIL	T-1/OIL/EPT	T-1/OIL/VITON
X	X	X							
			X						
				X	X	X	X	X	X
Hydraulic	Hydraulic	Hydraulic	Hydraulic	Hydraulic	Hydraulic	Hydraulic	Hydraulic	Hydraulic	Hydraulic
Oil	Oil	Water	Oil	Water	Water	Water	Oil	Oil	Oil
200 cl / 0.5 pint	N/A	N/A	N/A	1.23 l / 75 in <sup>3</sup>	1.23 l / 75 in <sup>3</sup>	1.23 l / 75 in <sup>3</sup>	1.23 l / 75 in <sup>3</sup>	1.23 l / 75 in <sup>3</sup>	1.23 l / 75 in <sup>3</sup>
Pistol-grip	Screw pump	Screw pump	Jack pump	Jack pump	Jack pump	Jack pump	Jack pump	Jack pump	Jack pump
Buna-N	Buna-N	Buna-N	Buna-N	Buna-N	EPT	Viton	Buna-N	EPT	Viton
Aluminum, brass, stainless steel, and Lexan®	Aluminum, brass, stainless steel	Aluminum, brass, stainless steel	Aluminum, brass, stainless steel	300 series stainless steel, monel	300 series stainless steel, monel	300 series stainless steel, monel	300 series stainless steel, monel	300 series stainless steel, monel	300 series stainless steel, monel
0.6 m / 24 in hose with 1/4" BSP and NPT female terminations	4 x 1/4" BSP female	4 x 1/4" BSP female	4 x 1/4" BSP female	1/4" and 1/2" BSP terminations; 1/4" and 1/2" PT female terminations	1/4" and 1/2" BSP terminations; 1/4" and 1/2" PT female terminations	1/4" and 1/2" BSP terminations; 1/4" and 1/2" PT female terminations	1/4" and 1/2" BSP terminations; 1/4" and 1/2" PT female terminations	1/4" and 1/2" BSP terminations; 1/4" and 1/2" PT female terminations	1/4" and 1/2" BSP terminations; 1/4" and 1/2" PT female terminations
21.6x12.1x6.2 cm / 8.5x4.8x2.4 in	36.6x19.5x10.5 cm / 14.4x7.7x4.1 in	36.6x19.5x10.5 cm / 14.4x7.7x4.1 in	36.5x20.0x14.2 cm / 14.4x7.9x5.6 in	79.4x22.9x50.8 cm / 31.3x9x20 in	79.4x22.9x50.8 cm / 31.3x9x20 in	79.4x22.9x50.8 cm / 31.3x9x20 in	79.4x22.9x50.8 cm / 31.3x9x20 in	79.4x22.9x50.8 cm / 31.3x9x20 in	79.4x22.9x50.8 cm / 31.3x9x20 in
1.4 kg / 3.0 lb	3.7 kg / 8.2 lbs	3.7 kg / 8.2 lbs	5.3 kg / 11.6 lbs	9.1 kg / 20 lbs	9.1 kg / 20 lbs	9.1 kg / 20 lbs	9.1 kg / 20 lbs	9.1 kg / 20 lbs	9.1 kg / 20 lbs
System C	System D	System D	System E	System F	System F	System F	System F	System F	System F
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
T-620H	65-P016	65-P017	65-P014	T-1	T-1/EPT	T-1/VITON	T-1/OIL	T-1/OIL/EPT	T-1/OIL/VITON

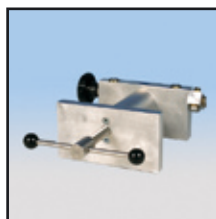
**MODEL P014**



**Model P014** hydraulic pump is designed for high pressure oil applications. The small size and light weight make it a sensible, rugged,

and portable solution. The pump has a 4 pressure output manifold similar to the JOFRA screw pump. Fine adjustment vernier valve and fittings are optional. Standard thread connections are 1/4 in BSP and adapters are available.

**MODEL P016 / P017**



**Model P016 and P017** screw pump are designed for easy and controlled generation of high pressure. The screw pump has

a 4-output manifold, fine adjustment, vernier valve, liquid reservoir, and fittings are optional. The screw pump may be delivered for hydraulic oil or water. Standard thread connections are 1/4 in BSP and adapters are available.

**MODEL TYPE T**



**Model type T** pump is designed for high pressure applications and may be ordered with either oil or a water/alcohol mixture as the

pressure medium. There are three available seal packages for the system: Buna-N, Viton®, and EPT.<sup>1)</sup> The Type T pump features a dual pressure output manifold, fine adjustment vernier valve, relief valve, and dual volume control for rapid pressure increase at lower pressures and easier pumping at higher pressures.

1) Customer must verify compatibility of seals and pump materials with pressure medium. Viton is a registered trademark.

## ACCESSORIES FOR PNEUMATIC PUMPS

75P014	Service kit for T-960 pump
75P015	Service kit for T-965 pump
75P016	Service kit for T-970 pump
75P017	Service kit for T-975 pump
T-733-2	Pressure hose for T-960/965/970/975, 0.6 meter std.
T-733-3	Pressure hose for T-960/965/970/975, 0.5 meter
T-733-4	Pressure hose for T-960/965/970/975, 1.0 meter
T-733-5	Pressure hose for T-960/965/970/975, 2.0 meter
T-733-6	Pressure hose for T-960/965/970/975, 5.0 meter

## ACCESSORIES FOR HYDRAULIC PUMPS

T-649	Pressure hose for T-620/T-620H pumps
T-656	Service kit for T-620 and T-620H pumps
60P016	Packing set for screw pump oil part no. 65-P016
60P017	Packing set for screw pump water part no. 65-P017
60P014	Packing set for Jack pump part no. 65-P014
60P013	Vernier valve fine adjustment for 65-P014/016/17
T-250	Service kit for T pump with Buna N O-rings
T-559	Service kit for T pump with VITON N O-rings
T-326	Service kit for T pump with EPT O-rings
MGAAA/QT	Oil for T-620 & T-1 pump AAA OIL in 1-QUART CAN
MGAAA/GL	Oil for T-620 & T-1 pump AAA OIL in 1-GALLON CAN

## COMPATIBLE JOFRA INSTRUMENTS

The pumps can be used as part of a complete ready-to-use pressure systems with the following JOFRA instruments:

- JOFRA DPC-500 series, spec. sheet no. SS-CP-2182
- JOFRA APC series, spec. sheet no. SS-CP-2181
- JOFRA CPC series, spec. sheet no. SS-CP-2180
- JOFRA IPI series, spec. sheet no. SS-CP-2179

Find the above-mentioned specification sheets at [www.jofra.com](http://www.jofra.com)



**AMETEK Calibration Instruments** is one of the world's leading manufacturers and developers of calibration instruments for temperature, pressure and process signals as well as for temperature sensors both from a commercial and a technological point of view.

**JOFRA Temperature Instruments**  
Portable precision thermometers. Dry-block and liquid bath calibrators: 4 series, with more than 25 models and temperature ranges from -90° to 1205°C / -130° to 2200°F. All featuring speed, portability, accuracy and advanced documenting functions with JOFRACAL calibration software.

**JOFRA Pressure Instruments**  
Convenient electronic systems ranging from -1 to 1000 bar (25 inHg to 14,500 psi) - multiple choices of pressure ranges, pumps and accuracies, fully temperature-compensated for problem-free and accurate field use.

**JOFRA Signal Instruments**  
Process signal measurement and simulation for easy control loop calibration and measurement tasks - from handheld field instruments to laboratory reference level bench top instruments.

**JOFRA / JF Marine Instruments**  
A complete range of calibration equipment for temperature, pressure and signal, approved for marine use.

**FP Temperature Sensors**  
A complete range of temperature sensors for industrial and marine use.

**M&G Pressure Testers**  
Pneumatic floating-ball or hydraulic piston dead weight testers with accuracies to 0.015% of reading.

**M&G Pumps**  
Pressure generators from small pneumatic "bicycle" style pumps to hydraulic pumps generating up to 1,000 bar (15,000 psi).

*...because calibration is  
a matter of confidence*

**AMETEK**<sup>®</sup>  
CALIBRATION INSTRUMENTS



**www.A-A.co.kr**  
Tel:031-704-2401 Fax:031-704-2421 E-mail:aaa@a-a.co.kr  
전기전자 반도체 대기환경 물리물성 수질 이화학 비파괴 전문회사