pressure

JOFRA calibration

Industrial Pressure Indicator

IPI Mk. II

Intrinsically safe

» Wide pressure range

IPI015G	1 bar / 15 psi
IPI030C	2 bar / 30 psi
IPI100A	7 bar absolute / 100 psi
IPI100C	7 bar / 100 psi
IPI300C	21 bar / 300 psi
IPI500C	35 bar / 500 psi
IPI01KG	70 bar / 1,000 psi
IPI02KG	140 bar / 2,000 psi
IPI03KG	200 bar / 3,000 psi
IPI05KG	350 bar / 5,000 psi
IPI10KG	700 bar / 10,000 psi

» High accuracy
±0.05% of F.S. for positive pressure. Vacuum calibration to 35 bar / 300 psi. Compound ranges are indicated with “C” in type number

» A true field indicator
Lightweight and portable with full tempera - ture compensation, long battery life and large display for easy visibility

» IPILOG Data logging
Comprehensive data logging facilities. Log pressure and temperature data, triggered by time or threshold (option)

» Complete marine program
Part of a complete program of marine approved temperature, pressure and signal calibrators; including temperature sensors

» ATEX and CSA certification
The IPI Indicator is ATEX and CSA certified and designed for use in potentially explosive environments

C SA US

Ex

ISO 9001 Manufacturer

Specification Sheet
SS-IPI Mk. II

The JOFRA IPI Mk. II brings together the ease of an analog gauge with the accuracy and easy-to-read display of a digital calibrator.

IPI Mk. II is ATEX and CSA certified for use in potentially explosive environments such as oil refineries, chemical plants and offshore platforms, where flammable gases are used or stored.

This series is designed to meet your pressure measurement application needs and make your work easier. The IPI offers 18 different pressure units, long battery life, high accuracy and serial communications. The accuracy of the IPI Mk. II rivals high-end pressure calibrators and is temperature compensated for workshop use or in process applications.

Combined with IPILOG, you get a high-performance solution for pressure data logging applications. Whether you need to log data on one IPI or many, IPILOG is easy to use and is a low-cost application that can handle all of your requirements. IPILOG configures the gauge to operate in ad-hoc mode (field configuration) or download mode (computer configuration) for complete flexibility in configuring your data logging applications.

The IPI Mk. II is available as an indicator or in one of six test-ready systems that are complete and equipped to meet your pressure measuring or testing needs.

JOFRA calibration

Easy setup

Setup of the IPI Mk. II is fast and straight forward, through a menu-driven display. With minimal text and intuitive functions, the unit is simple enough to be used anywhere in the world, without the need for multilingual displays.

The CONFIG key is used in conjunction with the▲ and ▼ functions above the ZERO and MAX/MIN keys to select and change different functions.

You can set one of 20 engineering units, change the auto-shutoff function setting, display the actual battery voltage, display the actual temperature (in °C or °F), turn the dampening on or off, change the sample rate and set the Tare value. In addition to the 20 available engineering units on the IPI Mk. II, you can create your own unit to meet your measurement needs.

Easy-to-read display

The large, 5 1/2 digit, 0.65 in (1.65 cm) character display is large and easy-to-read, even from a distance. Icons indicate battery life and engineering units and a bar graph shows the percentage of scale reading. All of this information can be read in low light with the use of the backlight.

Auto-shutoff

The IPI Mk. II is delivered with the auto-shutoff active and set to 30 minutes. This feature can be reduced to 1 minute in 1 minute increments. This can be completely turned off in cases where a constant reading is necessary.

Serial communications

The IPI Mk. II has a serial port that is accessible though the back of the case. This feature uses standard ASCII commands to allow for extraction of data from the IPI Mk. II while taking readings. This requires the optional serial cable.

Hazardous location information / approvals

The standard in the European Union has been set with the 9/94/EC Directive, commonly called ATEX ("Atmosphères Explosibles," French for explosive atmospheres).

The JOFRA IPI Mk. II is ATEX approved by KEMA as complying with the Essential Health and Safety Requirements related to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II in the directive, and with the following rating: II 3 G EEx nA IIB T6 (Ta=–10°C to +55°C).

The IPI Mk. II is also certified by CSA as conforming to relevant Canadian and USA standards with the following rating: Class 1, Div. 2, Groups A-D

See the definitions regarding hazardous locations in NFPA 70, Article 500 or CSA C22.1 Section 18. NFPA 70, Article 500 and CSA C22.1 Section 18.

Field recalibration

The IPI Mk. II does not need to be returned to the factory for calibration. If you have a reliable and accurate pressure reference or a local laboratory, you may recalibrate the unit locally. This feature is password protected.

Sampling rate

The IPI Mk. II sampling rate is user selectable. If you want to capture fast system transients, the unit can take a reading 10 times per second. Conversely, you may want to conserve battery life and only need periodic samples. This works well for in process and panel mounted applications. You can also choose the accepted instrument sampling rate of three samples per second.

Damping adjustment

The damping function can be turned on or off. This allows for readings to be integrated, which accounts for momentary changes such as those from pulsing sources.

Tare

Beyond zeroing the unit, you may have to account for residual pressure. The Tare feature allows you to take care of that error and prevent the manual calculation of the difference. This can be used in combination with the custom engineering units to make the level measurements easier.

Temperature display and compensation

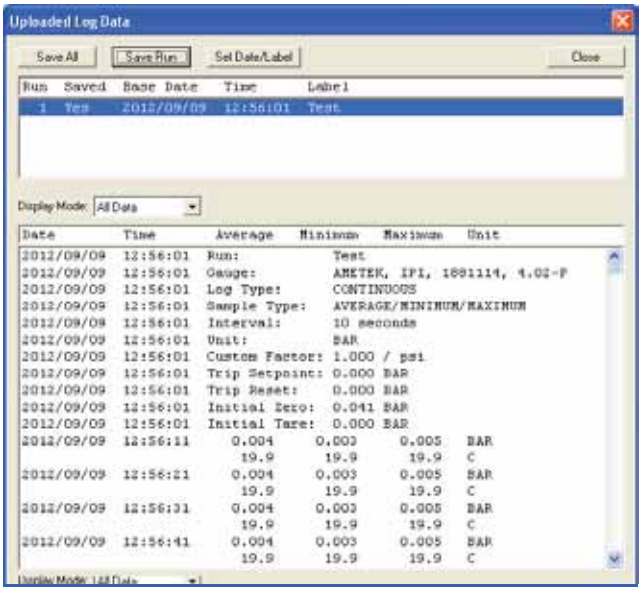
Because the IPI Mk. II is designed for in-process tasks, temperature compensation is included to make the job easier. This allows the unit to maintain accuracy over the measurement range. The measured temperature may be checked from the keypad.

JOFRA calibration

JOFRACAL
Calibration Software

JOFRACAL ensures easy calibration of RTD´s, thermocouples, transmitters, thermo switches, pressure gauges and pressure switches. JOFRACAL can be used with all JOFRA calibration instruments. When used with ASM-800 signal multi scanner, JOFRACAL can perform a simultaneous semi-automatic calibration on up to 24 pressure and/or temperature devices under test in any combination.

JOFRACAL software controls the complete calibration procedure, stores the results and provides a calibration audit trail through hard-copy certificates. All calibration data is stored for each sensor to monitor drift and optimize recalibration intervals. A scheduler feature allows planning of future calibrations.



IPILOG
Data logging software (Order Number 128494)

IPILOG is a high-performance solution for pressure data logging applications. Whether you need to log data from a single IPI Mk.II or many, IPILOG is a cost-effective application that can handle all your needs.

Using the download mode allows a wide range of configuration settings, including:

- Multiple interval selection options from 1 sec to 1 hour
- Data logging runs can range from a few seconds to several weeks
- Ambient temperature can be logged along with pressure for leak testing applications
- Four types of data capture mode allow you to log either all data or only the points you're interested in
  - o Continuous (log all data at predefined intervals)
  - o Data high (log data only when it rises above a preset value)
  - o Data low (log data only when it falls below a preset value)
  - o Delta trip (for detecting noise or transients in the pressure signal)
- Number of data points to record (maximum of 8500)
- Type of data .Interval end .Average .Minimum .Maximum .Median Average/Minimum/Maximum

When set to demand mode, you can easily set up and start data logging in the field using the keypad. The IPI Mk. II is very flexible and supports multiple data sets that can be mixed between demand mode and download mode. Connection is done via a RS232 / USB converter and allows IPILOG to retrieve the data and store it on your computer in a variety of formats:

- Plain ASCII text (.TXT)
- Comma delimited text (.CSV)
- Microsoft™ Excel™ Spreadsheet (requires Excel 2002 or later)
- Microsoft Excel Spreadsheet with template formatting (sample templates come with the IPILOG application and you can create your own to meet your specific requirements)

The data you get is reliable, accurate and easy to acquire and manage for a variety of applications, for example:

- Hydrostatic pressure testing
- Leak detection
- Transient pressure spike detection
- Well head pressure monitoring
- District heating systems
- Gas distribution
- Fresh water supply
- Wastewater treatment
- And many others…

IPILOG delivery (Order Number 128494):

- CD with IPILOG program
- Spreadsheet templates
- Drivers and manual.
- RS232 cable, and USB to RS232 converter

JOFRA calibration

FUNCTIONAL SPECIFICATIONS

Pressure; compound ranges

bar ..... -0.82 to 2, 7, 21 or 35
psi ..... -12 to 30, 100, 300 or 500

Pressure; gauge ranges

bar ..... 0 to 1, 70, 140, 200, 350 or 700
psi ..... 0 to 12, 1,000, 2,000, 5,000 or 10,000

Pressure; absolute ranges

bara ..... 0.07 to 7
psia ..... 1 to 100

Engineering units

User defined ..... One user-definable unit
User selectable ..... 20 units

(PSI, Bar, kg/cm2, inH $_2$O (4°C, 20°C or 60°F), ftH $_2$O (4°C, 20°C or 60°F), mmH $_2$O (4°C and 20°C), cmH $_2$O (4°C and 20°C), mH $_2$O (4°C and 20°C), KPa, mBAR, inHg, mmHg, Torr)

Not all units are available in all ranges.

Pressure accuracy

Pressure ..... ±0.05% F.S.
Full temperature compensation ..... 0 to 50°C / 32 to 122°F
Vacuum (100, 300, 500 psi indicator/
7, 21, 35 bar indicator) ..... ±0.25% F.S.
Vacuum (30 psi indicator/2 bar indicator) ..... ±0.1% F.S.

F.S. (full scale) is the numerical value of the positive pressure range. Accuracy includes hysteresis, nonlinearity, repeatability, reference standard uncertainty and 1 year typical long-term stability operated inside the rated temperature span and pressure range.
Requiring frequently zeroing (Gauge/diff.) or entering of reference pressure (Absolute).
Pressure accuracy ambient temp. (0 to 50°C / 32 to 122°F).

Serial communication interface

Connector ..... Stereo jack
Serial ..... 0-3 VDC, 9600 baud, 8 data, no parity, 1 stop
Protocol ..... ASCII command language

Media compatibility

Liquid and gas compatible with 316 stainless steel.

Environmetal

Storage temperature ..... -20 to 70°C / -4 to 158°F
Operating temperature ..... -10 to 55°C / -14 to 131°F

Pressure connection

All ranges ..... 1/4" NPT male

Adapter to 1/4" BSP male are included as standard.

Pressure overload

1 to 35 bar / 15 to 500 psi ..... 3X range
70 to 350 bar / 1,000 to 5,000 psi ..... 2X range
700 bar / 10,000 psi ..... 1.5X range
Overload alarm ..... OL on display
Overload alarm range ..... 1.2X range

Display

Display ..... Backlight, blue
Display resolution ..... 5 digit floating decimal
Bar graph ..... 20 segment, 0 to 100%
Display indicators ..... Engineering units icon
..... Low battery indication icon
..... Battery life indication utilizing bar graph
..... Measured temperature display
Display update ..... Twice per second

Power supply

Battery ..... (3) AA Alkaline
Battery life ..... 1500 operational hours without backlight
Battery life ..... 2000 operational hours without backlight
..... at low sampling rate
Battery life ..... 150 operational hours with backlight
Low battery indicator ..... at 3 VDC

Instrument dimensions

Indicator LxWxH ..... 125 x 111 x 38 mm / 4.9 x 4.4 x 1.5 in
Indicator weight (including battery) ..... 1.6 lb / 0.7 kg
Input port ..... 1/4" NPT Male

Shipping dimensions

Indicator LxWxH ..... 250 x 160 x 100 mm / 9.8 x 6.3 x 3.9 in
Indicator weight ..... 1.8 lb / 0.8 kg

Instrument case

Rating ..... NEMA 4/IP65

Approvals - IPI Mk. II system

CE Conformity EN61326
..... EN60079-0: 2009, EN60079-15:2005

Ex approvals - IPI Mk. II indicator only

CSA ..... Class 1, Div. 2, Groups A-D
ATEX ..... II 3 G EEx nA IIB T6 (Ta=–10°C... +55°C)

JOFRA IPI Mk. II PRESSURE RANGES

This table shows the resolutions that can be obtained by the IPI Mk. II throughout all engineering units.

Resolution obtained by the IPI indicator	IPI30C Vacuum to 30 psi Vacuum to 2 bar		IPI100A / IPI100C Vacuum to 100 psi Vacuum to 7 bar		IPI300C Vacuum to 300 psi Vacuum to 21 bar		IPI500C Vacuum to 500 psi Vacuum to 35 bar	
Imperial ranges								
psi	-12.000	30.000	-12.00	100.00	-12.00	300.00	-12.00	500.00
inH_2O@4°C	-332.17	830.42	-332.2	2768.1	-332.2	8304.2	-332	13840
inH_2O@20°C	-332.76	831.89	-332.7	2773.0	-332.7	8318.9	-333	13865
inH_2O@60°F	-332.50	831.24	-332.5	2770.8	-332.5	8312.4	-332	13854
ftH_2O@4°C	-27.681	69.202	-27.68	230.67	-27.68	692.02	-27.7	1153.4
ftH_2O@20°C	-27.730	69.324	-27.73	231.08	-27.73	693.24	-27.7	1155.4
ftH_2O@60°C	-27.708	69.270	-27.71	230.90	-27.71	692.70	-27.7	1154.5
inHg@0°C	-24.432	61.081	-24.43	203.60	-24.43	610.81	-24.4	1018.0
Torr	-620.6	1551.5	-620.6	5171.5	-620	15514	-621	25858
Metric ranges								
bar	-0.8300	2.0000	-0.8300	7.0000	-0.8300	21.000	-0.830	35.000
mbar	-830.0	2000.0	-830.0	7000.0	-830	21000	-830	35000
kPa	-83.00	200.00	-83.00	700.00	-83.0	2100.0	-83.0	3500.0
kg/cm ^{2}	-0.8464	2.0394	-0.8464	7.1380	-0.846	21.414	-0.846	35.690
cmH_2O@4°C	-846.4	2039.5	-846.4	7138.2	-846	21415	-846	35691
cmH_2O@20°C	-847.9	2043.1	-847.9	7150.8	-847	21452	-848	35754
mH_2O@4°C	-8.464	20.395	-8.464	71.382	-8.46	214.15	-8.46	356.91
mH_2O@20°C	-8.479	20.431	-8.479	71.508	-8.48	214.52	-8.48	357.54
mmHg@0°C	-622.6	1500.1	-622.6	5250.4	-622	15751	-623	26252

Resolution obtained by the IPI indicator	IPI015G 0 to 15 psi 0 to 1 bar	IPI01KG 0 to 1,000 psi 0 to 70 bar	IPI02KG 0 to 2,000 psi 0 to 140 bar	IPI03KG 0 to 3,000 psi 0 to 200 bar	IPI05KG 0 to 5,000 psi 0 to 350 bar	IPI10KG 0 to 10,000 psi 0 to 700 bar
Imperial ranges						
psi	15.000	1000.0	2000.0	3000.0	5000.0	10000
inH_2O@4°C	415.21	27681	55361	83042	N/A	N/A
inH_2O@20°C	415.95	27730	55459	83189	N/A	N/A
inH_2O@60°F	415.62	27708	55416	83124	N/A	N/A
ftH_2O@4°C	34.601	2306.7	4613.5	6920.2	11534	23067
ftH_2O@20°C	34.662	2310.8	4621.6	6932.4	11554	23108
ftH_2O@60°C	34.635	2309.0	4618.0	6927.0	11545	23090
inHg@0°C	30.540	2036.0	4072.1	6108.1	10180	20360
Torr	775.73	51715	N/A	N/A	N/A	N/A
Metric ranges						
bar	1.0000	70.000	140.00	200.00	350.00	700.00
mbar	1000.0	70000	N/A	N/A	N/A	N/A
kPa	100.00	7000.0	14000	20000	35000	70000
kg/cm ^{2}	1.0197	71.380	142.76	203.94	356.90	713.80
cmH_2O@4°C	1019.7	71382	N/A	N/A	N/A	N/A
cmH_2O@20°C	1021.5	71508	N/A	N/A	N/A	N/A
mH_2O@4°C	10.197	713.82	1427.6	2039.5	3569.1	7138.2
mH_2O@20°C	10.215	715.08	1430.2	2043.1	3575.4	7150.8
mmHg@0°C	750.06	52504	N/A	N/A	N/A	N/A

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JOFRA calibration

IPI Mk. II, System A

- T-960, 0 to 2 bar (0 to 30 psi)
- T-970, 0 to 40 bar (0 to 580 psi)

This system includes the IPI Mk. II together with one pneumatic hand pump: T-960 or T-970. System A is an easy-to-use single-hand operated pressure system.

The system comes in a carrying case with cut-outs for fittings, hose, Teflon tape, and the complete assembled unit.

A special quick connector between the pump and the unit makes it possible to separate the system in seconds and swivel the calibrator for easy viewing.

The IPI Mk. II used in System A is delivered calibrated in both pressure and vacuum.

T-960 and T-970 pump for system A

Both the T-960 and T-970 feature an extended range volume adjuster for precise control of the pump pressure and a comfortable pistol grip handle.

Test medium ..... Air
Operation ..... Scissor
"O"-rings ..... Buna-N
Wetted parts ..... Aluminum, brass, stainless steel, nylon, Nylatron GS
Connection to test object ..... Hose 0.6 m/24 in with 1/4" BSP and NPT female terminations
Size ..... 21.6x12.1x6.2 cm / 8.5x4.8x2.4 in
Total system weight ..... 5.5 kg / 12.2 lb

Accessories

- Pressure hose for T-960/970, 0.5, 1.0, 2.0 or 5.0 meter
- Set of BSP female fittings, Teflon tape, packings
- Set of NPT female fittings, Teflon tape, packings
- Connections for APM-H pressure modules
- Fitting for APM-H pressure module

IPI Mk. II , System B

- T-965, -0.65 to 2 bar (30 psi)
- T-975, -0.91 to 40 bar (580 psi)

This system includes the dual function pneumatic hand pump: T-965 or T-975 that can calibrate both vacuum and pressure applications by the push of one button.

The system comes in a carrying case with cut-outs for fittings, hose, Teflon tape, and the complete assembled unit.

A special quick connector between the pump and the unit makes it possible to separate the system in seconds and swivel the calibrator for easy viewing.

T-965 and T-975 pump for system B

Both the T-965 and T-975 feature vacuum as well as pressure generation. A quick switch (valve) makes it easy to move between the two. A built-in release valve, volume adjuster for fine adjustment and dual pressure output enable a safe and simple operation. The unit offers both metric and imperial threads on the reference connection and the hose.

Test medium ..... Air
Operation ..... Scissor
"O"-rings ..... Buna-N
Wetted parts ..... Aluminum, brass, stainless steel, nylon, Nylatron GS
Connection to test object ..... Hose 0.6 m/24 in with 1/4" BSP and NPT female terminations
Size ..... 21.6x12.1x6.2 cm / 8.5x4.8x2.4 in
Total system weight ..... 5.5 kg / 12.2 lb

Accessories

- Pressure hose for T-960/970, 0.5, 1.0, 2.0 or 5.0 meter
- Set of BSP female fittings, Teflon tape, packings
- Set of NPT female fittings, Teflon tape, packings
- Connections for APM-H pressure modules
- Fitting for APM-H pressure module

IPI Mk. II , System C

- T-620, 0 to 200 bar (3,000 psi)
- T-620H, 0 to 350 bar (5,000 psi)

This system consists of an IPI Mk. II together with a hydraulic, high pressure hand pump T-620 or T-620H featuring an oil reservoir to prime the system.

System C is an easy-to-use single-hand operated calibration system. The system includes release valve and volume adjuster for fine adjustment to enable a safe and simple operation of the pump.

The system comes in a carrying case with cut-outs for fittings, hose, Teflon tape, and the complete assembled unit.

Easy and fast connection between pump and calibrator makes it easy to use the pressure calibrator separately for other pressure test jobs.

T-620 and T-620H pump for system C

The T-620 and T-620H are specially designed for high-pressure applications. They have a built-in reservoir, vent valve, and volume adjuster for fine adjustment. The pump has a dual pressure output - one for the test object and one for the IPI Mk. II.

Test medium ..... Oil
Operation ..... Scissor
Reservoir capacity ..... 200 ml / 0.42 pint
Operation ..... Pistol-grip
"O"-rings ..... Buna-N
Wetted parts ..... Aluminum, brass, stainless steel, Lexan
Connection to test object ..... Hose 0.6 m/24 in with 1/4" BSP and NPT female terminations
Size ..... 21.6x12.1x6.2 cm / 8.5x4.8x2.4 in
Total system weight ..... 5.5 kg / 12.2 lb

Accessories

- Pressure hose for T-620/T-620H pumps
- 1 m or 2 m hose with 1/4" BSP female termination, Max. pressure 350 bar (5,000 psi)
- AAA oil in qt. or gal. can
- Connections for APM-H pressure module
- Fitting 1/8" NPT male to 1/4" NPT male
- Fitting 1/8" NPT male to 1/8" NPT male

IPI Mk. II , System D

- DOX/0 to 350 bar (5,000 psi) oil
- DWX/0 to 350 bar (5,000 psi) water

This system consists of an IPI Mk. II with a hydraulic, high-pressure screw pump.

The system is easy-to-use; place the pump on a flat surface and turn the handle to generate pressure. The system includes a 4-connection manifold for the test device, and optional fine adjustment volume adjuster, and reservoir for extra oil or water.

The system comes in a carrying case with cut-outs for fittings, hose, Teflon tape, and the complete assembled unit.

Spindle pump for system D

The spindle pump is designed for easy generation of high pressure. Fine adjustment, extra fine volume adjuster, liquid reservoir, and fittings are optional. Spindle pumps may be delivered for 2 different test media: hydraulic oil or water.

Test medium	Hydraulic oil, water
Operation	Spindle pump
Reservoir capacity	250 ml / 0.53 pint
"O"-rings	Buna-N
Wetted parts	Aluminum, brass, stainless steel
Connection to test object	4 x 1/4" BSP female
Size	36.6x19.5x10.5 cm / 14.4x7.7x4.1 in
Total system weight	11 kg / 24.3 lb

Accessories

- Extra fine adjuster, volume adjuster
- Reservoir set with seals, valve and bonded seal
- 1 or 2 m pressure hose (Max. 350 bar / 5,000 psi)[1]
- 1.5 or 5 m pressure hose (Max. 700 bar/10,000psi)[1]
- Extension tube 120 mm (Max. 350 bar/5.000 psi)[1]
- Quick connector set, female 1/4" BSP to 1/4" BSP
- Fitting 1/4" BSP male to 1/4" NPT female
- Fitting 1/8" NPT male to 1/4" NPT male
- Fitting 1/8" NPT male to 1/4" BSP female

[1] 1/4" BSP female to 1/4" BSP male

IPI Mk. II, System E

- EXX/0 to 700 bar (10,000 psi)

This system consists of an IPI Mk. II together with a rugged, hydraulic, high pressure pump.

The system is easy-to-use and the hydraulic pump makes it very easy to prime the system. The system includes a 4-connection output manifold for two test devices and a fine adjustment volume adjuster is standard.

The system comes in a carrying case with cut-outs for fittings, hose, Teflon tape, and the complete assembled unit.

Easy and fast connection between pump and calibrator makes it easy to use the pressure calibrator separately for other pressure test jobs.

High pressure hydraulic oil pump for system E

The pump is designed for high-pressure applications.

Test medium	Oil
Operation	Jack pump
Reservoir capacity	500 ml / 1 pint
"O"-rings	Buna-N
Wetted parts	Aluminum, brass, stainless steel
Connection to test object	4 x 1/4" BSP female
Size	36.5x20.0x14.2 cm / 14.4x7.9x5.6 in
Total system weight	13 kg / 28.7 lb

Accessories

- 1.5 or 5 m pressure hose, (Max. 700 bar/10,000 psi)[1]
- Quick connector set, female 1/4"BSP to 1/4" BSP
- Connections for APM-H
- Fitting 1/4" BSP male to 1/4" NPT female
- Fitting 1/8" NPT male to 1/4" NPT male
- Fitting 1/8" NPT male to 1/4" BSP female for APM-H pressure module with Jack-pump alone

[1] 1/4" BSP female to 1/4" BSP male

IPI Mk. II , System F

- FOx/0 to 700 bar (10,000 psi) oil
- FWx/0 to 700 bar (10,000 psi) water

System F is an easy-to-use calibration system. The hydraulic pump makes it very easy to prime the system and contains 1.23 l of liquid.

The system includes a dual pressure output manifold for two test devices, a volume adjuster for fine adjustment and, dual volume control for rapid pressure.

The system comes in a carrying case with cut-outs for fittings, hose, Teflon tape, and the complete assembled unit.

The pump is designed for high-pressure applications up to 15,000 psi (1,000 bar). The system can be ordered with either oil or a water/alcohol mixture as pressure medium. There are three available seal packages for the system: Buna-N, Viton®, and EPT.

Hydraulic pump for system F

The Type T pump features a dual pressure output mani - fold, volume adjuster (up to 200 bar / 2,900 psi), relief valve and dual volume control for rapid pressure increase at lower pressures and easier pumping at higher pressures.

Test medium	Hydraulic oil, water
Operation	Jack pump
Reservoir capacity	1.23 l / 2.6 pint
"O"-rings	Buna-N (standard) or EPT/Viton (Optional)
Wetted parts	Stainless steel, Monel
Connection to test object	1/4" and 1/2" BSP teminations 1/4" and 1/2" PT female terminations
Size	79.4x22.9x50.8 cm / 31.3x9x20 in
Total system weight	18 kg / 39.7 lbs

Accessories

- 1.5 or 5 m pressure hose (Max. 700 bar/10,000 psi)[1]
- AAA oil in qt. or gal. can
- Connections for APM-H pressure modules
- Union Body 1/4" NPT female for manifold pump T
- Fitting 1/8" NPT male to 1/4" NPT male

[1] 1/4" BSP female to 1/4" BSP male

ORDERING INFORMATION

Order number						Description
IPI						Type
	Mk. II					Model
	NONE					No calibrator, pressure system only
						Calibrated pressure range
		015G				0 to 1 barg / 15 psig
		030C				-0.82 to 2 barg / 30 psig
		100A				0.07 to 7 bara / 100 psia
		100C				-0.82 to 7 barg / 100 psig
		300C				-0.82 to 21 barg / 300 psig
		500C				-0.82 to 35 barg / 500 psig
		01KG				0 to 70 barg / 1,000 psig
		02KG				0 to 140 barg / 2,000 psig
		03KG				0 to 200 barg / 3,000 psig
		05KG				0 to 350 barg / 5,000 psig
		10KG				0 to 700 barg / 10,000 psig
						Calibration certificate
			G			NIST traceable calibration certificate
						Accessories (Optional)
				B		Battery pack, 3 x rechargeable AA batteries and multi voltage charger
						Pressure system
					IND	Calibrator only
					AXX	Syst. A, T-960 pump, up to 2 bar/30 psi
					AHX	Syst. A, T-970 pump, up to 35 bar/500 psi
					BXX	Syst. B, T-965 pump, up to 2 bar/30 psi
					BHX	Syst. B, T-975 pump, up to 35 bar/500 psi
					CXX	Syst. C, T-620 pump, up to 200 bar/2,900 psi OIL
					CHX	Syst. C, T-620H pump, up to 350 bar/5,000 psi OIL
					DOX	Syst. D, 65-P016 pump, up to 350 bar/5,000 psi OIL
					DWX	Syst. D, 65-P017 pump, up to 350 bar/5,000 psi WATER
					EXX	Syst. E, 65-P014 pump, up to 700 bar/10,000 psi OIL
					FWB	Syst. F, T-1 pump, up to 700 bar/10,000 psi WATER/Buna-N
					FWV	Syst. F, T-1 pump, up to 700 bar/10,000 psi WATER/VITON
					FWE	Syst. F, T-1 pump, up to 700 bar/10,000 psi WATER/EPT
					FOB	Syst. F, T-1 pump, up to 700 bar/10,000 psi OIL
					FOV	Syst. F, T-1 pump, up to 700 bar/10,000 psi OIL/VITON
					FOE	Syst. F, T-1 pump, up to 700 bar/10,000 psi OIL/EPT
						Sample order number
IPI	Mk. II	300C	G	B	BXX	IPI Mk. II, -0.82 to 21 bar / 300 psi, NIST traceable certificate, rechargeable battery pack, pressure system B, alu case with T-965 pump and accessories

STANDARD DELIVERY

- IPI Mk. II indicator
- Calibration certification performance traceable to NIST
- Three AA batteries
- Adapter to 1/4" BSP male
- User manual
- Protective rubber boot

AMETEK Test & Calibration Instruments
A business unit of AMETEK Measurement & Calibration Technologies Division offering the following industry leading brands for test and calibration instrumentation.

JOFRA Calibration Instruments
Temperature Calibrators
Portable dry-block calibrators, precision thermometers and liquid baths. Temperature ranges from -90°C(-130°F) to 1205°C(2200°F). Temperature sensors for industrial and marine use.
Pressure Calibrators
Convenient electronic systems ranging from -25 mbar to 1000 bar - fully temperature-compensated for problem-free and accurate field use.
Signal Instruments
Process signal measurement and simulation for easy control loop calibration and measurement tasks.

M&G Pressure Testers & Pumps
Pneumatic floating-ball or hydraulic piston dead weight testers with accuracies to 0.015% of reading. Pressure generators delivering up to 1,000 bar.

Lloyd Instruments
Materials testing machines and software from Lloyd Instruments guarantees expert materials testing solutions. The comprehensive program also covers Texture Analysers to perform rapid, general food testing and detailed texture analysis on a diverse range of foods and cosmetics.

Davenport Polymer Test Equipment
Allows measurement and characterization of moisture-sensitive PET polymers and polymer density.

Chatillon Force Measurement
The hand held force gauges and motorized testers have earned their reputation for quality, reliability and accuracy and they represent the de facto standard for force measurement.

Newage Testing Instruments
Hardness testers, durometers, optical systems and software for data acquisition and analysis.