FLUKE®

713

Pressure Calibrator

Instruction Sheet

Introduction

Fluke Model 713 30G and 713 100G Pressure Calibrators (hereafter called “calibrator”) calibrate P/I (pressure to current) transmitters, or measure pressure or current. The calibrator simultaneously displays pressure and current measurements. Full scale pressure input is as follows:

- Model 713 30G: 30 psi (206.85 kPa, 2.0685 bar)
- Model 713 100G: 100 psi (689.5 kPa, 6.895 bar)

The calibrator measures and displays current up to 24 mA, and the pressure applied to the 1/8-inch NPT pressure fitting. The calibrator measures pressure in the units shown in the next table.

Your calibrator is supplied with a Flex-Stand™ holster, an installed 9 V alkaline battery, one set of TL75 test leads, one set of AC70A alligator clips, and this instruction sheet.

If the calibrator is damaged or something is missing, contact the place of purchase immediately. Contact your Fluke distributor for information about accessories. See “How to Contact Fluke.” To order replacement parts or spares, see “Replacement Parts.”

PN 650298 August 1997 Rev. 1, 10/97

Pressure Range and Resolution

Displayed Pressure Units	Model 713 30G Range and Resolution	Model 713 100G Range and Resolution
psi	30.000 psi	100.00 psi
inH_2O at 4°C	830.4 inH_2O	2768.0 inH_2O
inH_2O at 20°C	831.9 inH_2O	2772.9 inH_2O
cmH_2O at 4°C,	2109.0 cmH_2O	7030 cmH_2O
cmH_2O at 20°C	2113.0 cmH_2O	7043 cmH_2O
bar	2.0685 bar	6.895 bar
mbar	2068.5 mbar	6895 mbar
kPa	206.85 kPa	689.5 kPa
inHg	61.080 inHg	203.6 inHg
mmHg	1551.3 mmHg	5171 mmHg
kg/cm^2	2.1090 kg/cm^2	7.030 kg/cm^2

Safety Information

Use the calibrator only as specified in this instruction sheet, otherwise the protection provided by the calibrator may be impaired.

A **Warning** identifies conditions and actions that pose hazard(s) to the user; a **Caution** identifies conditions and actions that may damage the calibrator or the equipment under test.

⚠ Warning

To avoid possible electric shock or personal injury:

- **Never apply more than 30 V between the mA terminals, or between either of the mA terminals and earth ground.**

- **Remove the test leads from the calibrator before you open the battery door.**
- **Make sure the battery door is closed and latched before you operate the calibrator.**
- **Do not operate the calibrator if it is damaged.**
- **Do not operate the calibrator around explosive gas, vapor, or dust.**
- **To avoid a violent release of pressure in a pressurized system, shut off the valve and slowly bleed off the pressure before you attach or detach the calibrator pressure fitting to the pressure line.**
- **When servicing the calibrator, use only specified replacement parts**

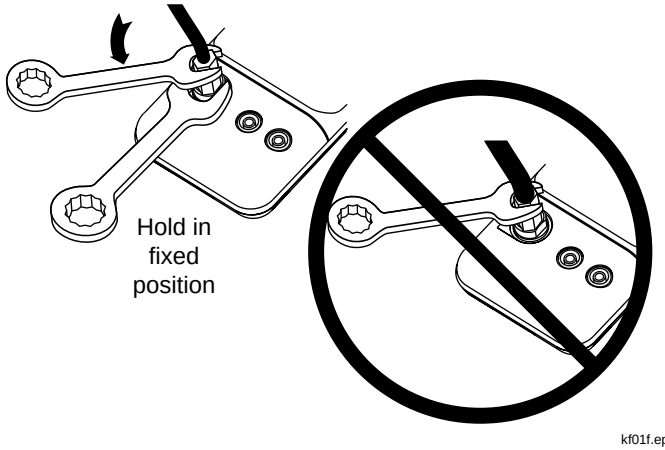
Caution

To avoid overpressure damage, do not apply pressure that exceeds the following:

- **Model 713 30G: 3X top of range (90 psi, 620 kPa, 6.2 bar)**
- **Model 713 100G: 2X top of range (200 psi, 1380 kPa, 13.8 bar)**

To avoid corrosion in the pressure sensor, use the calibrator only with media compatible with glass, ceramic, silicon, RTV, type 316 stainless steel, and nickel.

To avoid mechanically damaging the calibrator, do not apply torque between the pressure fitting and the calibrator case. See the figure for the proper use of tools.



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Explanation of International Symbols

The symbols in the table below are used on the calibrator or in this instruction sheet.

International Symbols

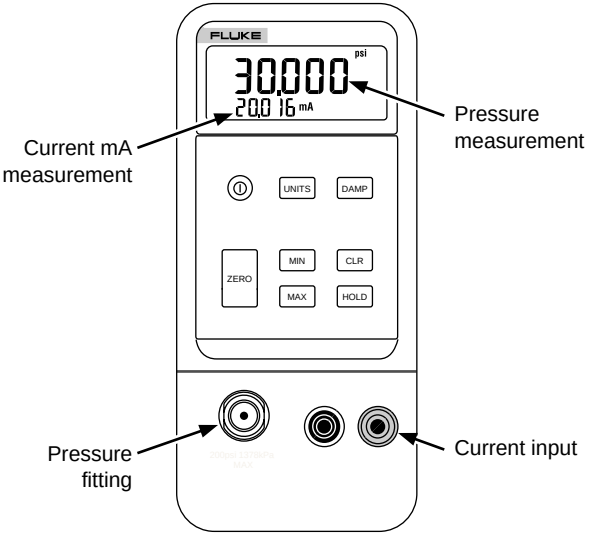
Symbol	Meaning
⏚	Earth ground
⊣▭⊢	Fuse
▮+	Battery
⚠	Refer to this instruction sheet for information about this feature.
⧈	Double insulated
SP	Conforms to relevant Canadian Standards Association directives.
CE	Conforms to European Union directives

Getting Acquainted with the Calibrator

Press the green ⏻ pushbutton to turn the calibrator on and off. The calibrator displays pressure and current measurements simultaneously. See the figure below.

The upper part of the display shows the gage pressure applied to the pressure fitting. Press UNITS to select a different pressure unit. When you cycle the power off and on, the calibrator retains the pressure unit you last used.

The lower part of the display shows the current (up to 24 mA) applied to the current (mA) inputs. The current inputs are fused with a 0.125 A, 250 V fast fuse (Littelfuse type 2AG).



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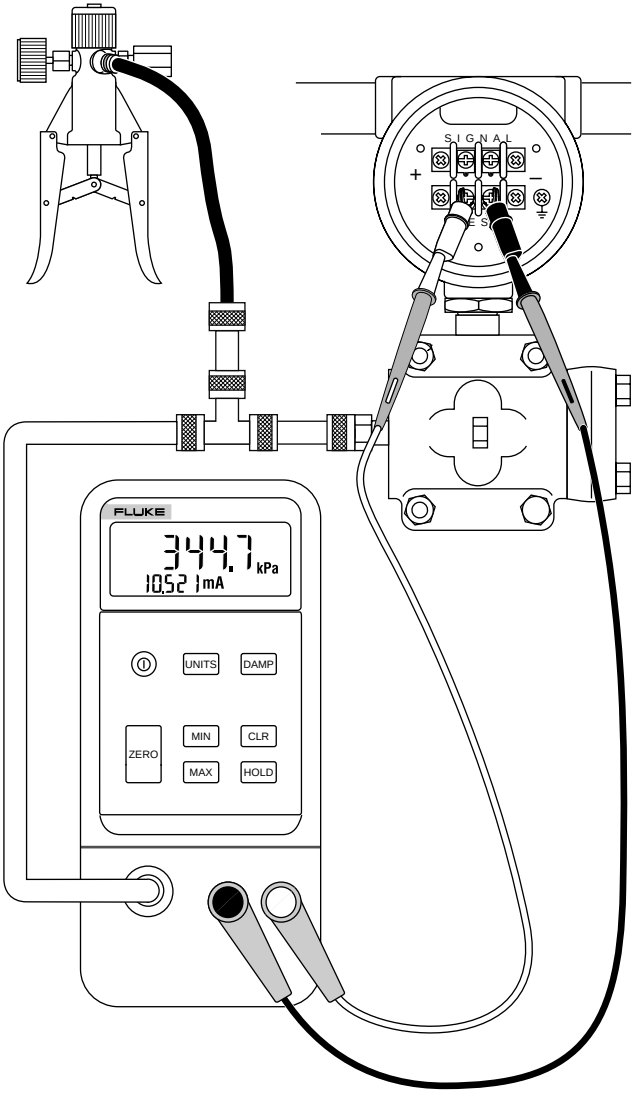
Pushbutton Functions

Pushbutton	Function
UNITS	Selects a different pressure unit.
DAMP	Turns pressure reading damping on and off. With damping on, the display does not update as quickly.
ZERO	Press this to zero the pressure display. Vent the pressure fitting on the calibrator to atmosphere before you press this pushbutton.
MIN	Press and hold to read the minimum pressure and current readings since the power was turned on or CLR was pressed.
CLR	Press to clear the MIN and MAX memories.
MAX	Press and hold to read the maximum pressure and current readings the power was turned on or CLR was pressed.
HOLD	Press HOLD to freeze the display. The **HOLD** symbol appears on the display. Press HOLD again to resume normal operation.

Calibrating a P/I Transmitter

To calibrate a P/I (pressure to current) transmitter, you apply a pressure to the transmitter and measure the transmitter's current loop output. Connect the calibrator to the transmitter as shown in the figure.


SIGNAL
+
–
FLUKE
344.7 kPa
10.52 mA
UNITS
DAMP
ZERO
MIN
CLR
MAX
HOLD

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Maintenance

For maintenance procedures not described in this instruction sheet, or if the calibrator needs repair, contact a Fluke Service Center.

In Case of Difficulty

- Check the battery, test leads, and pressure tubing. Replace as necessary.
- Review this instruction sheet to make sure you are using the calibrator correctly.

If the calibrator needs repair, and the calibrator is under warranty, see the warranty statement for terms. If the warranty has lapsed, the calibrator will be repaired and returned for a fixed fee.

Cleaning

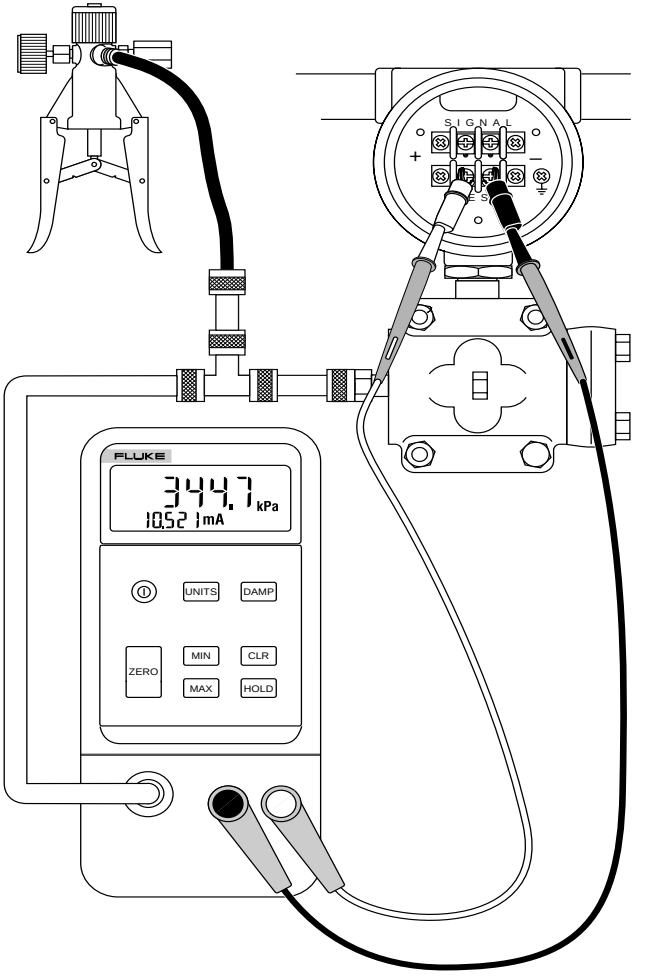
Periodically wipe the case with a damp cloth and detergent; do not use abrasives or solvents.

Calibration

Calibrate your calibrator once a year to ensure that it performs according to its specifications. A calibration manual is available (PN 686540). Call 1-800-526-4731 from the USA and Canada. In other countries, contact a Fluke Service Center.

Replacing the Battery

When the symbol appears on the display, replace the battery with a 9 V alkaline battery.



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Replacing the Fuse

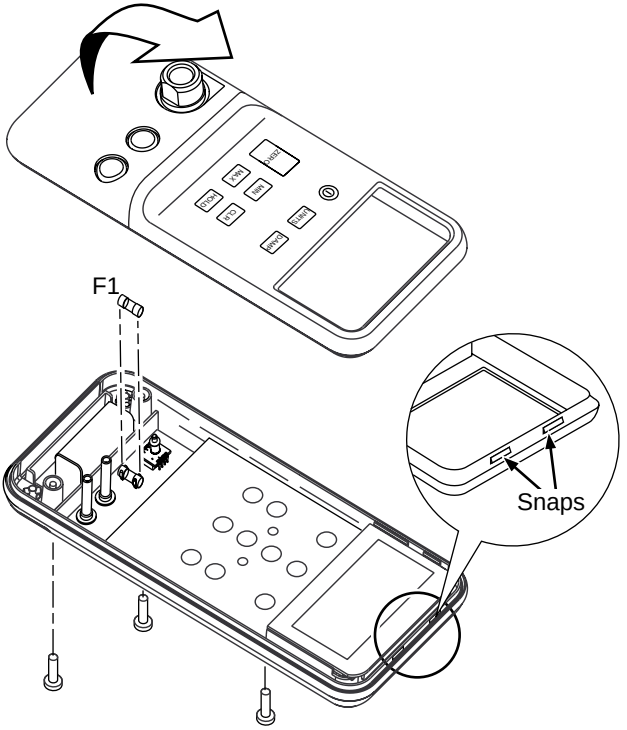
⚠ Warning

To avoid personal injury or damage to the calibrator, use only a 0.125A 250V fast fuse, Littelfuse® 2AG.

Fuse F1 is probably blown if the mA measurement display reading does not respond to current applied to the current (mA) inputs.

Replace the fuse as follows:

1. Remove the test leads and turn the calibrator off.
2. Remove the battery door.
3. Remove the three Phillips-head screws from the case bottom and turn the case over.
4. Gently lift the top cover from the end nearest the current (mA) inputs until it unsnaps from the bottom cover.
5. Replace the fuse with a 0.125 A 250 V fast fuse, Littelfuse® type 2AG.
6. Carefully fit the case top and circuit board assembly together, making sure that the O-ring is properly seated between the pressure sensor and the pressure fitting on the case top. Fit the case bottom onto the case top, engaging the two snaps near the display end of the case. Reinstall the three screws.
7. Replace the battery door.



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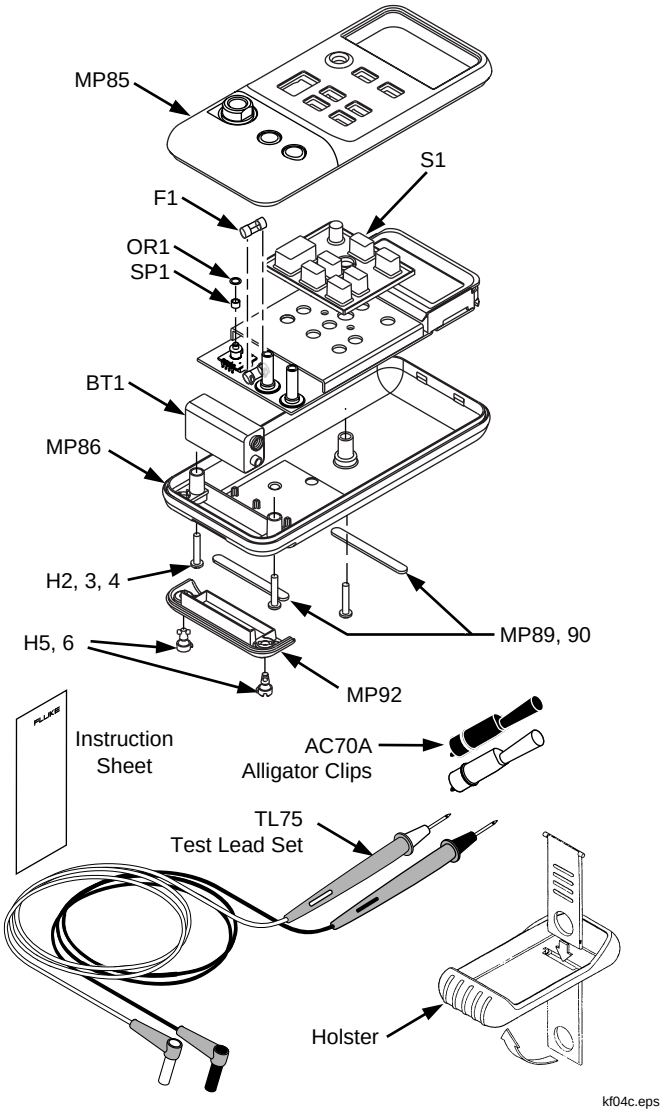
Replacement Parts and Accessories

Replacement Parts

Item	Description	Part or model no.	Qty.
BT1	9V battery, ANSI/NEDA 1604A or IEC 6LR61	614487	1
CG81Y	Holster, Yellow	CG81Y	1
⚠ F1	Fuse, 125 mA, 250V fast	686527	1
MP85	713 30G case top	620218	1
MP85	713 100G case top	620226	1
MP86	Case bottom	620168	1
H2, 3, 4	Case screw	832246	3
MP89, 90	Non-skid foot	824466	2
OR1	O-ring for pressure input	146688	1
SP1	Spacer for pressure input	687449	
MP92	Battery door	619947	1
H5, 6	Battery door fasteners	948609	2
S1	Keypad	687068	1
TL75	Test lead set	TL75	1
AC70A	Alligator clips	AC70A	1
–	713 Instruction Sheet	650298	1
TL20	Industrial test lead set	TL20	Option
–	71X Series Calibration Manual	686540	Option


MP85
S1
F1
OR1
SP1
BT1
MP86
H2, 3, 4
MP89, 90
H5, 6
MP92
FLUKE
Instruction Sheet
AC70A
Alligator Clips
TL75
Test Lead Set
Holster

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Specifications

Specifications are based on a one year calibration cycle and apply for ambient temperature from +18 °C to +28 °C unless stated otherwise. “Counts” are the number of increments or decrements of the least significant digit.

Pressure Input, 713 30G

Range	Accuracy
30 psi (206.85 kPa)	±0.05% of range
Maximum nondestructive pressure: 3X top of range (90 psi, 620 kPa, 6.2 bar) *Temperature coefficient: 0.01% of range per °C for temperature ranges -10 °C to 18 °C and 28 °C to 55 °C*	

Pressure Input, 713 100G

Range	Accuracy
100 psi (689.5 kPa)	±0.05% of range
Maximum nondestructive pressure: 2X top of range (200 psi, 1380 kPa, 13.8 bar) *Temperature coefficient: 0.01% of range per °C for temperature ranges -10 °C to 18 °C and 28 °C to 55 °C*	

DC mA Input, 713 30G and 713 100G

Range	Resolution	Accuracy, ±(% of Reading + Counts)
24 mA	0.001 mA	0.025 + 1
Overload protection: 125 mA, 250V fast acting fuse *Temperature coefficient: 0.005% of range per °C for temperature ranges -10 °C to 18 °C and 28 °C to 55 °C*		

General Specifications

Maximum voltage applied between either mA terminal and earth ground or between the mA terminals: 30 V

Storage temperature: -40°C to 60°C

Operating temperature: -10°C to 55°C

Operating altitude: 3000 meters maximum

Relative humidity: 95% up to 30°C, 75% up to 40°C, 45% up to 50°C, and 35% up to 55°C

Vibration: Random 2 g, 5 Hz to 500 Hz

Shock: 1 meter drop test

Safety: Certified as compliant to CAN/CSA C22.2 No. 1010.1:1992. Complies with ANSI/ISA S82.01-1994.

Power requirements: Single 9 V battery (ANSI/NEDA 1604A or IEC 6LR61)

Size: 32 mm H x 87 mm W x 187 mm L (1.25 in H x 3.41 in W x 7.35 in L);

With holster and Flex-Stand: 52 mm H x 98 mm W x 201 mm L (2.06 in H x 3.86 in W x 7.93 in L)

Weight: 369 g (13 oz);
With holster and Flex-Stand: 624 g (22 oz)

How to Contact Fluke

To order accessories, receive operating assistance, or get the location of the nearest Fluke distributor or Service Center, call:

1-800-44FLUKE (1-800-443-5853) in U.S.A. and Canada

+31-402-678-200 in Europe

+1-425-356-5500 from other countries

Address correspondence to:

Fluke Corporation P.O. Box 9090, Everett, WA 98206-9090 USA	Fluke Europe B.V. P.O. Box 1186, 5602 BD Eindhoven The Netherlands

Visit us on the World Wide Web at: **www.fluke.com**

LIMITED WARRANTY & LIMITATION OF LIABILITY

This Fluke product will be free from defects in material and workmanship for three years from the date of purchase. This warranty does not cover fuses, disposable batteries or damage from accident, neglect, misuse or abnormal conditions of operation or handling. Resellers are not authorized to extend any other warranty on Fluke's behalf. To obtain service during the warranty period, send your defective calibrator to the nearest Fluke Authorized Service Center with a description of the problem.

THIS WARRANTY IS YOUR ONLY REMEDY. NO OTHER WARRANTIES, SUCH AS FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSED OR IMPLIED. FLUKE IS NOT LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, ARISING FROM ANY CAUSE OR THEORY. Since some states or countries do not allow the exclusion or limitation of an implied warranty or of incidental or consequential damages, this limitation of liability may not apply to you.