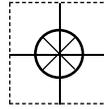


MADE IN  
**USA**



# User's Guide



Shop online at

**omega.com<sup>®</sup>**

Ω OMEGA<sup>®</sup>

[omega.com](http://omega.com)

e-mail: [info@omega.com](mailto:info@omega.com)

For latest product manuals:  
[omegamanual.info](http://omegamanual.info)

**ISO 9001**

CERTIFIED  
CORPORATE QUALITY

STAMFORD, CT

**ISO 9001**

CERTIFIED  
CORPORATE QUALITY

MANCHESTER, UK

# PSW-700 SERIES Pressure Switches



OMEGAnet® Online Service  
omega.com

Internet e-mail  
info@omega.com

### Servicing North America:

**U.S.A.:**  
ISO 9001 Certified  
One Omega Drive, P.O. Box 4047  
Stamford, CT 06907-0047  
TEL: (203) 359-1660  
FAX: (203) 359-7700  
e-mail: info@omega.com

**Canada:**  
976 Bergar  
Laval (Quebec) H7L 5A1, Canada  
TEL: (514) 856-6928  
FAX: (514) 856-6886  
e-mail: info@omega.ca

### For immediate technical or application assistance:

**U.S.A. and Canada:** Sales Service: 1-800-826-6342/1-800-TC-OMEGA®  
Customer Service: 1-800-622-2378/1-800-622-BEST®  
Engineering Service: 1-800-872-9436/1-800-USA-WHEN®

**Mexico:**  
En Español: (001) 203-359-7803  
e-mail: espanol@omega.com  
FAX: (001) 203-359-7807  
info@omega.com.mx

### Servicing Europe:

**Czech Republic:** Frystatska 184, 733 01 Karviná, Czech Republic  
TEL: +420 (0)59 6311899  
FAX: +420 (0)59 6311114  
Toll Free: 0800-1-66342  
e-mail: info@omegashop.cz

**Germany/Austria:** Daimlerstrasse 26, D-75392 Deckenpfronn, Germany  
TEL: +49 (0)7056 9398-0  
FAX: +49 (0)7056 9398-29  
Toll Free in Germany: 0800 639 7678  
e-mail: info@omega.de

**United Kingdom:**  
ISO 9001 Certified  
One Omega Drive, River Bend Technology Centre  
Northbank, Irlam, Manchester  
M44 5BD United Kingdom  
TEL: +44 (0)161 777 6611  
FAX: +44 (0)161 777 6622  
Toll Free in United Kingdom: 0800-488-488  
e-mail: sales@omega.co.uk

---

It is the policy of OMEGA Engineering, Inc. to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

**WARNING:** These products are not designed for use in, and should not be used for, human applications.

# PSW-700 Series Explosion-Proof Pressure Switches

## Part Numbers:

PSW-701-717

PSW-721-726

PSW-731-735

Please read all instructional literature carefully and thoroughly before starting.

## GENERAL

 MISUSE OF THIS PRODUCT MAY CAUSE EXPLOSION AND PERSONAL INJURY. THESE INSTRUCTIONS MUST BE THOROUGHLY READ AND UNDERSTOOD BEFORE UNIT IS INSTALLED.

 THIS EQUIPMENT IS SUITABLE FOR USE IN CLASS I, DIVISIONS 1 & 2, GROUPS B, C AND D; CLASS II, DIVISIONS 1 & 2, GROUPS E, F AND G; CLASS III; OR NON-HAZARDOUS LOCATIONS ONLY.

 BEFORE INSTALLING, CHECK THE SENSOR MODEL SELECTED FOR COMPATIBILITY TO THE PROCESS MEDIA IN CONTACT WITH THE SENSOR AND WETTED PARTS.

 PROOF PRESSURE\* LIMITS STATED IN THE LITERATURE AND ON NAMEPLATES MUST NEVER BE EXCEEDED, EVEN BY SURGES IN THE SYSTEM. OCCASIONAL OPERATION OF UNIT UP TO MAXIMUM PRESSURE IS ACCEPTABLE (E.G., START-UP, TESTING). CONTINUOUS OPERATION SHOULD NOT EXCEED THE DESIGNATED OVER RANGE PRESSURE.

\*Proof Pressure: The maximum pressure to which a pressure sensor may be occasionally subjected, which causes no permanent damage (e.g., start-up testing). The unit may require re-gapping.

 THESE PRODUCTS DO NOT HAVE ANY FIELD REPLACEABLE PARTS. ANY SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 1.

 TO PREVENT IGNITION OF HAZARDOUS ATMOSPHERES, DISCONNECT SUPPLY CIRCUITS BEFORE OPENING. KEEP COVER TIGHT WHILE CIRCUITS ALIVE.

The PSW-700 Series pressure switches are actuated when a bellows, diaphragm or piston sensor responds to a pressure change. This response at a pre-determined set point(s) actuates a SPDT or dual SPDT snap-acting microswitch(es), which convert the pressure signal into an electrical signal. Switch set point(s) may be varied by turning the internal adjustment hex (PSW-721-726, 731-735 models) or the external knob and pointer (PSW-701-717 models) according to the procedures outlined.

## Part I - Installation

### Tools Needed

Screwdriver  
Adjustable Wrench to 1-1/2"

## MOUNTING

 TO PREVENT IGNITION, SEAL ALL CONDUIT RUNS WITHIN 18 INCHES OF ENCLOSURE.

 ALWAYS HOLD A WRENCH ON THE PRESSURE HOUSING HEX WHEN MOUNTING UNIT. DO NOT TIGHTEN BY TURNING ENCLOSURE. THIS WILL DAMAGE SENSOR AND WEAKEN SOLDER OR WELDED JOINTS.

 INSTALL UNITS WHERE SHOCK, VIBRATION AND TEMPERATURE FLUCTUATIONS ARE MINIMAL. MOUNT UNIT TO PREVENT MOISTURE FROM ENTERING THE ENCLOSURE. IT IS IMPERATIVE TO USE PROPERLY RATED EXPLOSION-PROOF SEALING FITTINGS FOR ELECTRICAL WIRE ENTRY. DO NOT MOUNT UNIT IN AMBIENT TEMPERATURES LOWER THAN -40°F (-40°C) OR HIGHER THAN 160°F (71°C).

 PSW-721-726, 731-735 ENCLOSURES ARE PROVIDED WITH TWO 3/4" NPT ELECTRICAL CONDUIT OPENINGS, EITHER OF WHICH OR BOTH CAN BE USED DURING INSTALLATION. A 3/4" EXPLOSION PROOF PLUG IS PROVIDED FOR PROPERLY SEALING THE UNUSED CONDUIT OPENING. THE EXPLOSION PROOF PLUG MUST BE PROPERLY SEALED DURING PRODUCT INSTALLATION.

### Models PSW-701-717, 721-726, 731-735

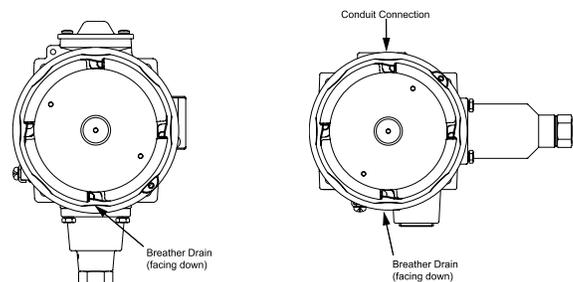


Figure 1a:  
PSW-701-717

Figure 1b  
PSW-721-726, 731-735

Mount controls vertically (pressure connection facing down, see Figure 1a) or horizontally (see Figure 1b). Control may be surface mounted via the four 1/4" screw holes on the enclosure or mounting bracket. It can also be mounted directly to a rigid pipe using the pressure connection.

## WIRING



SUPPLY LEADWIRES MUST BE RATED 75°C MINIMUM COPPER CONDUCTOR ONLY.



DISCONNECT ALL SUPPLY CIRCUITS BEFORE WIRING UNIT. WIRE UNITS ACCORDING TO NATIONAL AND LOCAL ELECTRICAL CODES. MAXIMUM RECOMMENDED WIRE SIZE IS 14 AWG. THE RECOMMENDED TIGHTENING TORQUE FOR FIELD WIRING TERMINALS IS 7 TO 17 IN-LBS.



ELECTRICAL RATINGS STATED IN LITERATURE AND ON NAME-PLATES MUST NOT BE EXCEEDED—OVERLOAD ON A SWITCH CAN CAUSE FAILURE ON THE FIRST CYCLE.



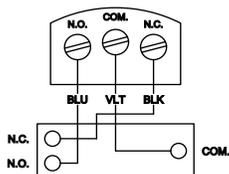
TO PREVENT SEIZURE OF ENCLOSURE COVER, DO NOT REMOVE LUBRICANT. THREADS SHOULD ALSO BE FREE OF DIRT, ETC.



THE EXTERNAL GROUNDING TERMINAL IS NOT TO BE USED AS THE PRIMARY EQUIPMENT GROUNDING TERMINAL. THE INTERNAL GROUNDING TERMINAL SHALL BE USED AS THE PRIMARY EQUIPMENT GROUNDING MEANS AND THE EXTERNAL GROUNDING TERMINAL IS ONLY FOR A SUPPLEMENTAL (SECONDARY) GROUNDING CONNECTION WHERE LOCAL AUTHORITIES PERMIT OR REQUIRE SUCH A CONNECTION.

Remove cover and wire control (See Figure 2). Replace cover and hand tighten to fully engage cover O-ring.

Models PSW-721-726, 731-735



Use 75°C copper conductors only. Recommend tightening torque for field wiring terminals is 7-17 in-lbs.

Models PSW-701-717

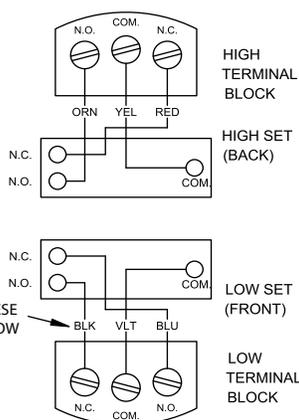


Figure 2

## Part II - Adjustments

### Tools Needed

Screwdriver  
5/8" Open End Wrench  
5/64" Allen Wrench



AFTER COMPLETING ADJUSTMENTS ON TYPES PSW-701-717, BE SURE TO RE-INSTALL ADJUSTMENT COVER. DO NOT OVER TIGHTEN COVER SCREWS.

For set point adjustment and gapping, connect control to a calibrated pressure source.

### Models PSW-721-726, 731-735 (See Figure 3)

Remove cover. Loosen phillips screw adjustment lock. Adjust set point by turning 5/8" hex adjustment screw clockwise (left) to raise set point, or counterclockwise (right) to lower set point. Secure adjustment screw by tightening adjustment lock.

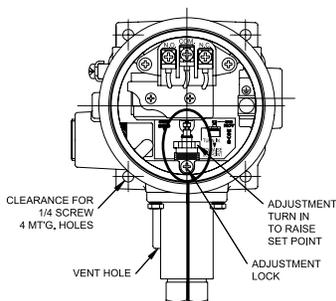
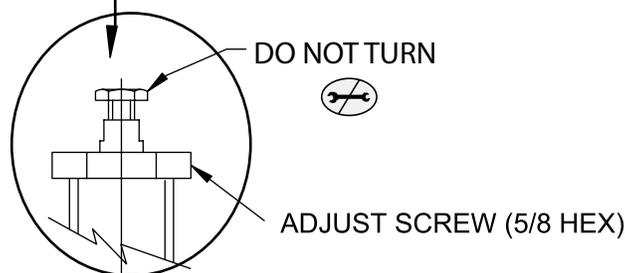


Figure 3



### Models PSW-701-717

Individual microswitches may be set together or apart by up to 100% of range. When not set together, the front (Low) microswitch can not be set higher than the rear (High) microswitch (See figure 2 for switch layout). Turning external knobs will increase or decrease each switch setting independently.

### Re-Gapping Procedure For PSW-721-726, 731-735

### Tools Needed

5/8" Open End Wrench  
3/16" Open End Wrench (2)



GAPPING IS FACTORY-SET AND CRITICAL TO THE FUNCTION OF THE SWITCH. THIS PROCEDURE SHOULD ONLY BE PERFORMED IF THE PLUNGER HAS ACCIDENTALLY BEEN ADJUSTED.

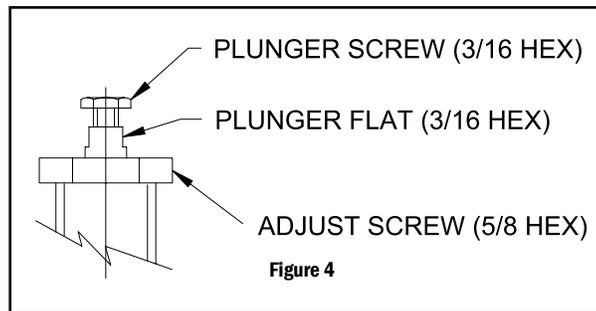
- 1) Loosen adjustment lock.
- 2) Turn 5/8" hex adjustment screw clockwise (left), to approximately midrange. This puts a load on the sensor and exposes the plunger flats. (See Figure 4).
- 3) Using a 3/16" wrench on the plunger flats and a 3/16" wrench on the plunger hex screw, turn hex counter clockwise (right) from plunger until micro-switch actuates. If microswitch has already actuated, turn plunger hex screw clockwise (left) until microswitch deactuates.
- 4) Continue per following instructions, depending on model.

### PSW-721-726

Turn hex clockwise (left) an additional 1-1/2 flats from this point. This will provide a 5-9 mil gap.

### PSW-731-735

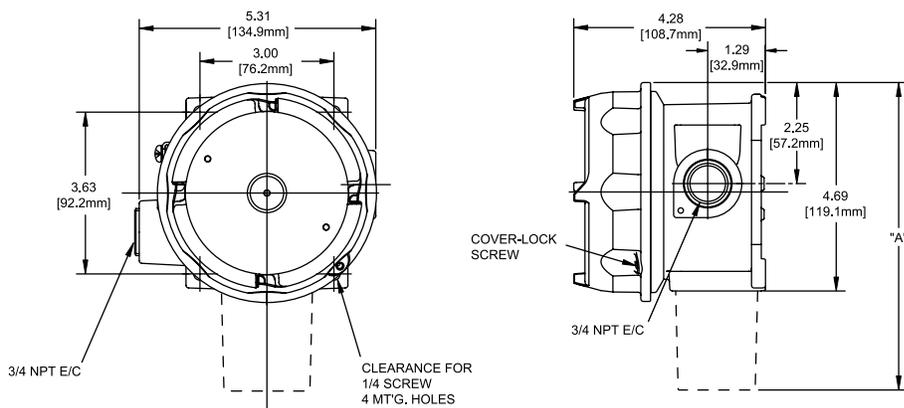
Turn hex clockwise (left) 1 flat from this point. This will provide a 4-7 mil gap.



## Dimensions

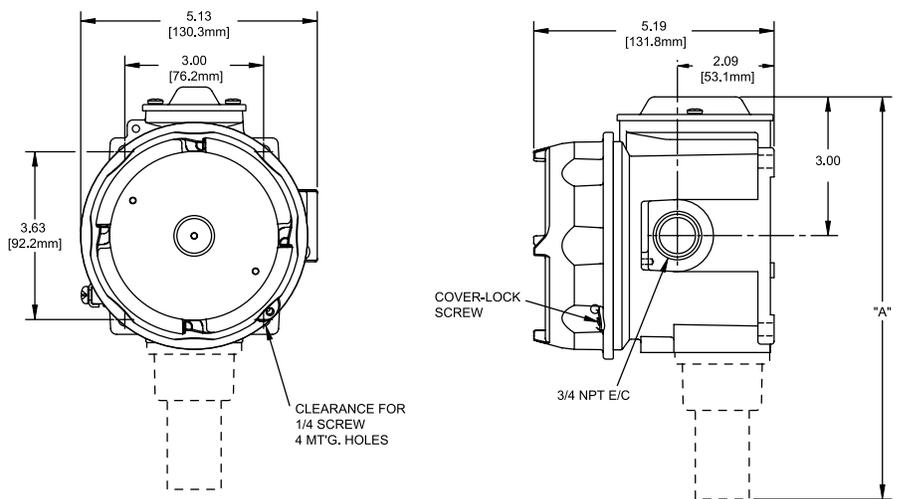
### Internal Set Point Adjustment PSW-721-726, 731-735

Models	Dimension A		NPT
	Inches	mm	
<b>Pressure</b>			
PSW-731-735	7.44	189.0	1/2
PSW-721-726	8.84	224.5	1/2

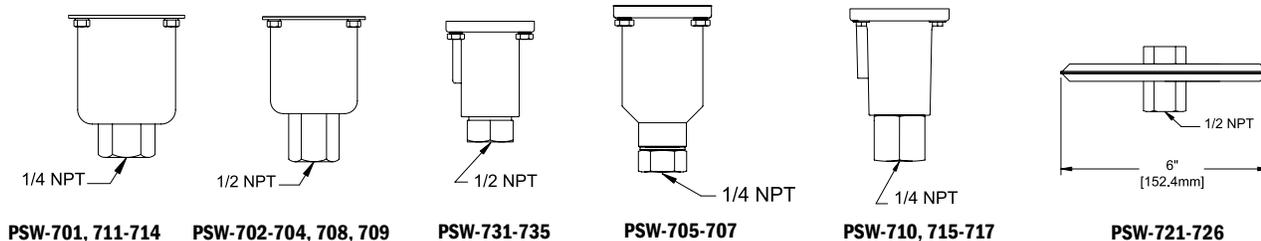


### External Set Point Adjustment PSW-701-717

Models	Dimension A		NPT
	Inches	mm	
<b>Pressure</b>			
PSW-701, 711-714	8.09	205.5	1/4
PSW-702-704, 708-709	8.50	215.9	1/2
PSW-705-707	7.81	194.4	1/4
PSW-710	8.75	222.3	1/4
PSW-715-717	8.31	211.1	1/4



## Pressure Connections



PSW-701, 711-714

PSW-702-704, 708, 709

PSW-731-735

PSW-705-707

PSW-710, 715-717

PSW-721-726

## WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

**OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.**

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

## RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

OMEGA is a registered trademark of OMEGA ENGINEERING, INC.

© Copyright 2008 OMEGA ENGINEERING, INC. All rights reserved. This document may not be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine-readable form, in whole or in part, without the prior written consent of OMEGA ENGINEERING, INC.

# Where Do I Find Everything I Need for Process Measurement and Control? **OMEGA...Of Course!** *Shop online at [omega.com](http://omega.com)<sup>SM</sup>*

## **TEMPERATURE**

- Thermocouple, RTD & Thermistor Probes, Connectors, Panels & Assemblies
- Wire: Thermocouple, RTD & Thermistor
- Calibrators & Ice Point References
- Recorders, Controllers & Process Monitors
- Infrared Pyrometers

## **PRESSURE, STRAIN AND FORCE**

- Transducers & Strain Gages
- Load Cells & Pressure Gages
- Displacement Transducers
- Instrumentation & Accessories

## **FLOW/LEVEL**

- Rotameters, Gas Mass Flowmeters & Flow Computers
- Air Velocity Indicators
- Turbine/Paddlewheel Systems
- Totalizers & Batch Controllers

## **pH/CONDUCTIVITY**

- pH Electrodes, Testers & Accessories
- Benchtop/Laboratory Meters
- Controllers, Calibrators, Simulators & Pumps
- Industrial pH & Conductivity Equipment

## **DATA ACQUISITION**

- Data Acquisition & Engineering Software
- Communications-Based Acquisition Systems
- Plug-in Cards for Apple, IBM & Compatibles
- Datalogging Systems
- Recorders, Printers & Plotters

## **HEATERS**

- Heating Cable
- Cartridge & Strip Heaters
- Immersion & Band Heaters
- Flexible Heaters
- Laboratory Heaters

## **ENVIRONMENTAL MONITORING AND CONTROL**

- Metering & Control Instrumentation
- Refractometers
- Pumps & Tubing
- Air, Soil & Water Monitors
- Industrial Water & Wastewater Treatment
- pH, Conductivity & Dissolved Oxygen Instruments

M1102/0708

IMPSW700-02