

Model 8601 Pressure Regulator



Model 8601 Pressure Regulator

Essential Instructions

Read this page before proceeding!

Brooks Instrument designs, manufactures and tests its products to meet many national and international standards. Because these instruments are sophisticated technical products, you must properly install, use and maintain them to ensure they continue to operate within their normal specifications. The following instructions must be adhered to and integrated into your safety program when installing, using and maintaining Brooks Products.

- Read all instructions prior to installing, operating and servicing the product. If this instruction manual is not the correct manual, please see back cover for local sales office contact information. Save this instruction manual for future reference.
- If you do not understand any of the instructions, contact your Brooks Instrument representative for clarification.
- Follow all warnings, cautions and instructions marked on and supplied with the product.
- Inform and educate your personnel in the proper installation, operation and maintenance of the product.
- Install your equipment as specified in the installation instructions of the appropriate instruction manual and per applicable local and national codes. Connect all products to the proper electrical and pressure sources.
- To ensure proper performance, use qualified personnel to install, operate, update, program and maintain the product.
- When replacement parts are required, ensure that qualified people use replacement parts specified by Brooks Instrument. Unauthorized parts and procedures can affect the product's performance and place the safe operation of your process at risk. Look-alike substitutions may result in fire, electrical hazards or improper operation.
- Ensure that all equipment doors are closed and protective covers are in place, except when maintenance is being performed by qualified persons, to prevent electrical shock and personal injury.

Pressure Equipment Directive (PED)

All pressure equipment with an internal pressure greater than 0.5 bar (g) and a size larger than 25mm or 1" (inch) falls under the Pressure Equipment Directive (PED). The Directive is applicable within the European Economic Area (EU plus Norway, Iceland and Liechtenstein). Pressure equipment can be traded freely within this area once the PED has been complied with.

- Section 1 of this manual contains important safety and operating instructions related to the PED directive.
- Meters described in this manual are in compliance with EN directive 97/23/EC module H *Conformity Assessment*.
- All Brooks Instrument Flowmeters fall under fluid group 1.
- Meters larger than 25mm or 1" (inch) are in compliance with category I, II, III of PED.
- Meters of 25mm or 1" (inch) or smaller are Sound Engineering Practice (SEP).

Installation and Operation Manual

X-PR-8601-eng

Part Number: 541B099AAG

December, 2008

Model 8601 Pressure Regulator

Dear Customer,

We appreciate this opportunity to service your flow measurement and control requirements with a Brooks Instrument device. Every day, flow customers all over the world turn to Brooks Instrument for solutions to their gas and liquid low-flow applications. Brooks provides an array of flow measurement and control products for various industries from biopharmaceuticals, oil and gas, fuel cell research and chemicals, to medical devices, analytical instrumentation, semiconductor manufacturing, and more.

The Brooks product you have just received is of the highest quality available, offering superior performance, reliability and value to the user. It is designed with the ever changing process conditions, accuracy requirements and hostile process environments in mind to provide you with a lifetime of dependable service.

We recommend that you read this manual in its entirety. Should you require any additional information concerning Brooks products and services, please contact your local Brooks Sales and Service Office listed on the back cover of this manual or visit www.BrooksInstrument.com

Yours sincerely,

Brooks Instrument

Model 8601 Pressure Regulator

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<u>Paragraph Number</u>	<u>Page Number</u>
Introduction Section 1	
1-1 Description	1-1
1-2 Specifications	1-1
Installation Section 2	
2-1 General	2-1
2-2 Receipt of Equipment	2-1
2-3 Recommended Storage Practice	2-1
2-4 Return Shipment	2-2
2-5 Transit Precautions	2-2
2-6 Removal from Storage	2-2
2-7 Installation	2-2
2-8 Panel Mounting	2-3
Operation Section 3	
3-1 Operating Precaution	3-1
3-2 Operation	3-1
Maintenance Section 4	
4-1 Maintenance	4-1
4-2 Filter Replacement	4-1
Warranty, Local Sales/Service Contact Information	Back Cover

FIGURES

<u>Figure Number</u>	<u>Page Number</u>
1-1 Dimensions	1-2
4-1 Filter Replacement	4-2

TABLES

<u>Table Number</u>	<u>Page Number</u>
4-1 Replacement Parts	4-2

Model 8601 Pressure Regulator

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1-1 Description

Brooks 8601 Regulators are high precision supply pressure regulators which are direct acting, non-relieving units that provide bubble tight shut-off on helium at 100 psi.

Compact and economical, these units are assembled in a “clean room” environment and are tested under simulated operating conditions.

1-2 Specifications

WARNING

Do not operate this instrument in excess of the specifications listed in this manual. Failure to heed this warning can result in serious personal injury and/or damage to the equipment.

Maximum Inlet Pressure:

250 psi

Output:

(psi) 1-10, 0-30, 0-60, 0-100, 0-150, 0-200

Capacity:

The pressure regulator is ideal for flow rates up to 1,000 sccm

Maximum Working Temperature:

Standard: 0 to 140°F (-18 to 60°C)

Optional: 0 to 350°F (-18 to 170°C)*

Fluids Used:

UL Listed for Air, Argon, Helium, Hydrogen, Krypton, Neon, Nitrogen, Oxygen and Xenon

Connections:

Standard: 1/8" NPT integral

Optional Adaptors: 1/8" Compression*, 1/4" Compression*, 1/4" NPT*, 1/4" ID hose*

Optional Equipment:

Model 1391 Filter (2 micron)*

* indicates that regulators with these options are not UL listed.

Model 8601 Pressure Regulator

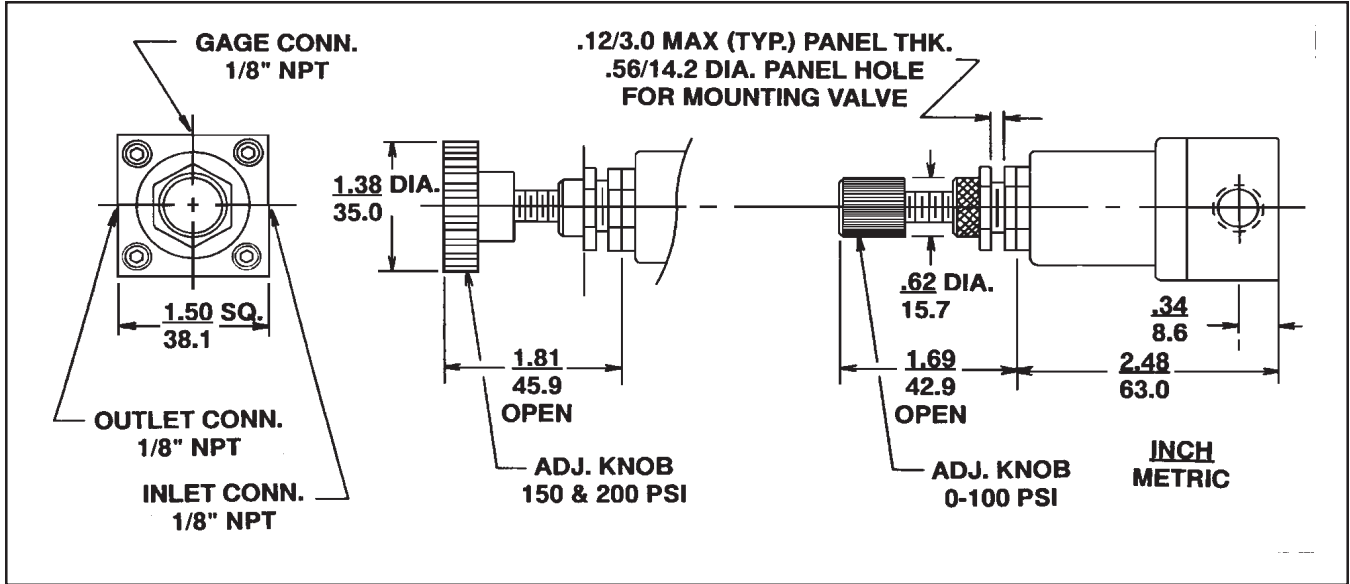


Figure 1-1 Dimensions

Model 8601 Pressure Regulator

2-1 General

This section contains the procedures for the receipt and installation of the instrument. Do not attempt to start the system until the instrument has been permanently installed. It is extremely important that the start-up procedures be followed in the exact sequence presented.

2-2 Receipt of Equipment

When the instrument is received, the outside packing case should be checked for damage incurred during shipment. If the packing case is damaged, the local carrier should be notified at once regarding his liability. A report should be submitted to your nearest Product Service Department.

Brooks Instrument

407 W. Vine Street
P.O. Box 903
Hatfield, PA 19440 USA
Toll Free (888) 554-FLOW (3569)
Tel (215) 362-3700
Fax (215) 362-3745
E-mail: BrooksAm@BrooksInstrument.com
www.BrooksInstrument.com

Brooks Instrument

Neonstraat 3
6718 WX Ede, Netherlands
P.O. Box 428
6710 BK Ede, Netherlands
Tel 31-318-549-300
Fax 31-318-549-309
E-mail: BrooksEu@BrooksInstrument.com

Brooks Instrument

1-4-4 Kitasuna Koto-Ku
Tokyo, 136-0073 Japan
Tel 011-81-3-5633-7100
Fax 011-81-3-5633-7101
Email: BrooksAs@BrooksInstrument.com

Remove the envelope containing the packing list. Carefully remove the instrument from the packing case. Make sure spare parts are not discarded with the packing materials. Inspect for damaged or missing parts.

2-3 Recommended Storage Practice

If intermediate or long-term storage of equipment is required, it is recommended that the equipment be stored in accordance with the following:

- a. Within the original shipping container.
- b. Stored in a sheltered area, preferably a warm, dry, heated warehouse.
- c. 32°C (90°F) maximum, 45°F (7°C) minimum.
- d. Relative humidity 45% nominal, 60% maximum, 25% minimum.
Upon removal from storage a visual inspection should be conducted to verify the condition of equipment is "as received".

Model 8601 Pressure Regulator

2-4 Return Shipment

Prior to returning any instrument to the factory, contact your nearest Brooks location for a Return Materials Authorization Number (RMA#). This can be obtained from one of the following locations:

Brooks Instrument

407 W. Vine Street
P.O. Box 903
Hatfield, PA 19440 USA
Toll Free (888) 554-FLOW (3569)
Tel (215) 362-3700
Fax (215) 362-3745
E-mail: BrooksAm@BrooksInstrument.com
www.BrooksInstrument.com

Brooks Instrument

Neonstraat 3
6718 WX Ede, Netherlands
P.O. Box 428
6710 BK Ede, Netherlands
Tel 31-318-549-300
Fax 31-318-549-309
E-mail: BrooksEu@BrooksInstrument.com

Brooks Instrument

1-4-4 Kitasuna Koto-Ku
Tokyo, 136-0073 Japan
Tel 011-81-3-5633-7100
Fax 011-81-3-5633-7101
Email: BrooksAs@BrooksInstrument.com

Any instrument returned to Brooks requires completion of Form RPR003-1, Brooks Instrument Decontamination Statement, as well as, a Material Safety Data Sheet (MSDS) for the fluid(s) used in the instrument. This is required before any Brooks Personnel can begin processing. Copies of the form can be obtained from any Brooks Instrument location listed above.

2-5 Transit Precautions

To safeguard against damage during transit, transport the instrument to the installation site in the same container used for transportation from the factory if circumstances permit.

2-6 Removal from Storage

Upon removal from storage, a visual inspection should be conducted to verify the condition of the equipment is "as received." If the equipment has been in storage in conditions in excess of those recommended (See Section 2-3), the device should be subjected to a pneumatic pressure test in accordance with applicable vessel codes.

2-7 Installation

The regulator may be installed in any attitude. Inlet and outlet connection piping should be rigidly supported to prevent undue strain on the regulator body. A good quality sealant that is compatible with the gases involved should be used on NPT connections.

Model 8601 Pressure Regulator

Extreme care must be exercised to prevent any solids from entering the regulator. It is recommended that a Brooks Model 1391 Filter or equivalent be used on the regulator input to protect it from any foreign matter in the flow stream.

2-8 Panel Mounting

A single 9/16" diameter panel hole is required for panel mounting the regulator. For front panel mounting, remove the regulator knob, the knurled packing nut, and one panel nut. Insert the regulator stem in the panel opening. Replace and tighten the panel nut, packing nut, and knob. Do not over-tighten the knurled packing nut.

WARNING

Do not apply pressure to the valve until the bonnet nut has been completely tightened. Failure to heed this warning can result in serious personal injury and/or damage to the equipment.

Model 8601 Pressure Regulator

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3-1 Operating Precaution

⚠ WARNING

Do not operate the instrument in excess of temperature and pressure ratings. Serious injury and/or damage to the instrument could result.


3-2 Operation

Before placing the regulator in operation, make sure all gas connections are tight. For initial start-up, the supply pressure should not exceed 75 psi and may afterward be increased to operating level. Supply pressure must never exceed 250 psi. If a flowmeter is desired for rate indication, it should be installed on the downstream side of the regulator.

Model 8601 Pressure Regulator

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4-1 Maintenance

	⚠ WARNING
METER/CONTROLLER SEAL COMPATIBILITY	
<p>Products in this manual may contain metal or elastomeric seals, gaskets, O-rings or valve seats. It is the "user's" responsibility to select materials that are compatible with their process and process conditions. Using materials that are not compatible with the process or process conditions could result in the Meter or Controller leaking process fluid outside the pressure boundary of the device, resulting in personnel injury or death.</p>	
<p>It is recommended that the user check the Meter or Controller on a regular schedule to ensure that it is leak free as both metal and elastomeric seals, gaskets, O-rings and valve seats may change with age, exposure to process fluid, temperature, and /or pressure.</p>	

The Brooks 8601 Regulator requires no maintenance when installed in a dirt-free flow line. Except for filter replacement, repair or disassembly of the regulator in the field is not recommended (see Filter Replacement). The regulator parts are ultrasonically cleaned and clean-room assembled for trouble-free operation. Do not attempt to clean the regulator by flushing with solvent or air.

Should the regulator become inoperative, it should be returned to the factory for repair or replacement. If the unit is disassembled in the field, the warranty is voided and no credit will be issued by the factory.

4-1 Filter Replacement

Filter Removal:

Using a thin screwdriver or a pair of tweezers, rotate the filter 180° by pushing on the edge (See Figure 4-1). Remove the filter and filter retainer.

Filter Installation:

Locate the filter element into the retainer as shown. Place the filter assembly into the inlet cavity of the regulator body. Use tool P/N 908-Z-060EAA or a 0.305 diameter rod to press the assembly completely into the body cavity, ensuring that the filter elements remains seated in the retainer.

Model 8601 Pressure Regulator

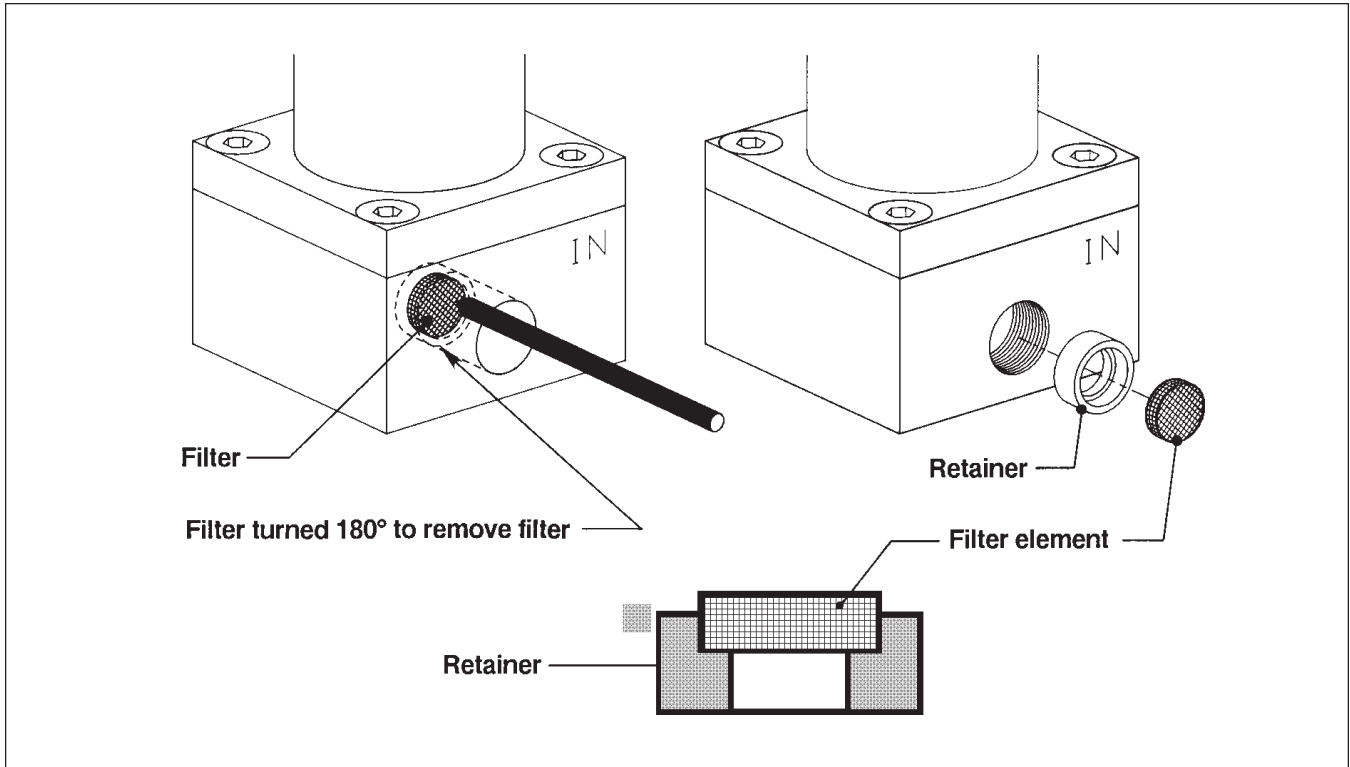


Figure 4-1 Filter Replacement

Table 4-1 Replacement Parts

Description	Part Number
Filter Element, 40 micron	306Z223BNA
Filter Retainer, Buna-N	715Z224SUA
Filter Retainer, Viton-A™	715Z224QTA
Installation Tool	908-Z-060-EAA

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Model 8601 Pressure Regulator

LIMITED WARRANTY

Seller warrants that the Goods manufactured by Seller will be free from defects in materials or workmanship under normal use and service and that the Software will execute the programming instructions provided by Seller until the expiration of the earlier of twelve (12) months from the date of initial installation or eighteen (18) months from the date of shipment by Seller. Products purchased by Seller from a third party for resale to Buyer ("Resale Products") shall carry only the warranty extended by the original manufacturer.

All replacements or repairs necessitated by inadequate preventive maintenance, or by normal wear and usage, or by fault of Buyer, or by unsuitable power sources or by attack or deterioration under unsuitable environmental conditions, or by abuse, accident, alteration, misuse, improper installation, modification, repair, storage or handling, or any other cause not the fault of Seller are not covered by this limited warranty, and shall be at Buyer's expense.

Goods repaired and parts replaced during the warranty period shall be in warranty for the remainder of the original warranty period or ninety (90) days, whichever is longer. This limited warranty is the only warranty made by Seller and can be amended only in a writing signed by an authorized representative of Seller.

BROOKS SERVICE AND SUPPORT

Brooks is committed to assuring all of our customers receive the ideal flow solution for their application, along with outstanding service and support to back it up. We operate first class repair facilities located around the world to provide rapid response and support. Each location utilizes primary standard calibration equipment to ensure accuracy and reliability for repairs and recalibration and is certified by our local Weights and Measures Authorities and traceable to the relevant International Standards.

Visit www.BrooksInstrument.com to locate the service location nearest to you.

START-UP SERVICE AND IN-SITU CALIBRATION

Brooks Instrument can provide start-up service prior to operation when required.

For some process applications, where ISO-9001 Quality Certification is important, it is mandatory to verify and/or (re)calibrate the products periodically. In many cases this service can be provided under in-situ conditions, and the results will be traceable to the relevant international quality standards.

CUSTOMER SEMINARS AND TRAINING

Brooks Instrument can provide customer seminars and dedicated training to engineers, end users and maintenance persons.

Please contact your nearest sales representative for more details.

HELP DESK

In case you need technical assistance:

- Americas ☎ 1-888-554-FLOW
- Europe ☎ +(31) 318 549 290 Within Netherlands ☎ 0318 549 290
- Asia ☎ +011-81-3-5633-7100

Due to Brooks Instrument's commitment to continuous improvement of our products, all specifications are subject to change without notice.

TRADEMARKS

Brooks Brooks Instrument, LLC
Viton DuPont Performance Elastomers



Brooks Instrument
407 West Vine Street
P.O. Box 903
Hatfield, PA 19440-0903 USA
T (215) 362-3700
F (215) 362-3745
E-Mail BrooksAm@BrooksInstrument.com
www.BrooksInstrument.com

Brooks Instrument
Neonstraat 3
6718 WX Ede, Netherlands
T 31-318-549-300
F 31-318-549-309
E-Mail BrooksEu@BrooksInstrument.com

Brooks Instrument
1-4-4 Kitasuna Koto-Ku
Tokyo, 136-0073 Japan
T 011-81-3-5633-7100
F 011-81-3-5633-7101
E-Mail BrooksAs@BrooksInstrument.com

