

DANIEL
CONTROL VALVES
SERIES 600
2", 3", 4" AND 6" SIZES

INSTALLATION AND OPERATING INSTRUCTIONS

**DANIEL MEASUREMENT AND CONTROL, INC.
AN EMERSON PROCESS MANAGEMENT COMPANY
HOUSTON, TEXAS**

**Part Number 3-9008-560
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IMPORTANT INSTRUCTIONS

Daniel Measurement and Control, Inc. (Daniel) manufactures and tests the Daniel Control Valves Series 600 to be operated within specific flow conditions. Because these measurement instruments are sophisticated technical products, you must install, use and maintain them in accordance with Daniel's guidelines to ensure that they operate within the range specified on the equipment nameplate. The following instructions must be adhered to and integrated into your safety program when installing, using and maintaining Daniel Products, including Daniel Control Valves Series 600.

- **Read all instructions prior to installing, operating and servicing the product.** If this instruction manual is not the correct manual, call 1-713-467-6000 (24-hour response number for both Service and Sales Support) and the requested manual will be provided. Save this instruction manual for future reference.
- If you do not understand any of the instructions, contact your Daniel 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 the manufacturer. 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 personal injury.
- **ALWAYS READ AND FOLLOW THE DANIEL CONTROL VALVES SERIES 600 MANUAL AND ALL PRODUCT WARNINGS AND INSTRUCTIONS.**
- Use of this equipment for any purpose other than its intended purpose may result in property damage and/or serious personal injury or death.
- Before opening the flameproof enclosure in a flammable atmosphere, the electrical circuits must be interrupted.
- The ATEX approval applies to equipment without cable glands. When mounting the flameproof enclosure in a hazardous area, only flameproof cable glands certified to EN 50018 must be used.

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**DANIEL CONTROL VALVES
SERIES 600
INSTALLATION AND OPERATING INSTRUCTIONS**

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HOUSTON, TEXAS, U.S.A.**

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WARRANTY

1. LIMITED WARRANTY: Subject to the limitations contained in Section 2 herein and except as otherwise expressly provided herein, Daniel Measurement and Control, Inc. ("Daniel") warrants that the firmware will execute the programming instructions provided by Daniel, and that the Goods manufactured or Services provided by Daniel will be free from defects in materials or workmanship under normal use and care until the expiration of the applicable warranty period. Goods are warranted for twelve (12) months from the date of initial installation or eighteen (18) months from the date of shipment by Daniel, whichever period expires first. Consumables and Services are warranted for a period of 90 days from the date of shipment or completion of the Services. Products purchased by Daniel from a third party for resale to Buyer ("Resale Products") shall carry only the warranty extended by the original manufacturer. Buyer agrees that Daniel has no liability for Resale Products beyond making a reasonable commercial effort to arrange for procurement and shipping of the Resale Products. If Buyer discovers any warranty defects and notifies Daniel thereof in writing during the applicable warranty period, Daniel shall, at its option, promptly correct any errors that are found by Daniel in the firmware or Services, or repair or replace F.O.B. point of manufacture that portion of the Goods or firmware found by Daniel to be defective, or refund the purchase price of the defective portion of the Goods/Services. All replacements or repairs necessitated by inadequate maintenance, normal wear and usage, unsuitable power sources, unsuitable environmental conditions, accident, misuse, improper installation, modification, repair, storage or handling, or any other cause not the fault of Daniel are not covered by this limited warranty, and shall be at Buyer's expense. Daniel shall not be obligated to pay any costs or charges incurred by Buyer or any other party except as may be agreed upon in writing in advance by an authorized Daniel representative. All costs of dismantling, reinstallation and freight and the time and expenses of Daniel's personnel for site travel and diagnosis under this warranty clause shall be borne by Buyer unless accepted in writing by Daniel. 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 Daniel and can be amended only in a writing signed by an authorized representative of Daniel. Except as otherwise expressly provided in the Agreement, THERE ARE NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESSED OR IMPLIED, AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, OR ANY OTHER MATTER WITH RESPECT TO ANY OF THE GOODS OR SERVICES. **It is understood that corrosion or erosion of materials is not covered by our guarantee.**

2. LIMITATION OF REMEDY AND LIABILITY: DANIEL SHALL NOT BE LIABLE FOR DAMAGES CAUSED BY DELAY IN PERFORMANCE. THE SOLE AND EXCLUSIVE REMEDY FOR BREACH OF WARRANTY HEREUNDER SHALL BE LIMITED TO REPAIR, CORRECTION, REPLACEMENT OR REFUND OF PURCHASE PRICE UNDER THE LIMITED WARRANTY CLAUSE IN SECTION 1 HEREIN. IN NO EVENT, REGARDLESS OF THE FORM OF THE CLAIM OR CAUSE OF ACTION (WHETHER BASED IN CONTRACT, INFRINGEMENT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE), SHALL DANIEL'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXCEED THE PRICE TO BUYER OF THE SPECIFIC GOODS MANUFACTURED OR SERVICES PROVIDED BY DANIEL GIVING RISE TO THE CLAIM OR CAUSE OF ACTION. BUYER AGREES THAT IN NO EVENT SHALL DANIEL'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXTEND TO INCLUDE INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES. THE TERM "CONSEQUENTIAL DAMAGES" SHALL INCLUDE, BUT NOT BE LIMITED TO, LOSS OF ANTICIPATED PROFITS, LOSS OF USE, LOSS OF REVENUE AND COST OF CAPITAL.

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1.0 INTRODUCTION

The Daniel Division of Emerson Process Management Control Valve that you have just received is of the highest quality available, offering superior performance to the user. The control valve provides the finest degree of accuracy, and widest operating parameters available for extremely reliable flow measurement and control.

Because of the wide variety of applications for Daniel Control Valves, we have expressly designed this equipment in a single compact package to meet ever changing process conditions. Additionally, this “state-of-the-art” design has been packaged and materials selected to permit application to a variety of difficult environmental conditions.

To realize the full potential of the inherent design flexibility and ease of maintenance, may we suggest you review this manual in its entirety.

Should you need additional information concerning the Daniel Control Valve, please feel free to contact your local Daniel Division Sales Office, Representative, or our Houston facility. We are pleased to have this opportunity of serving you for your measurement and control needs.



Figure 1-1. Daniel Control Valve Series 600

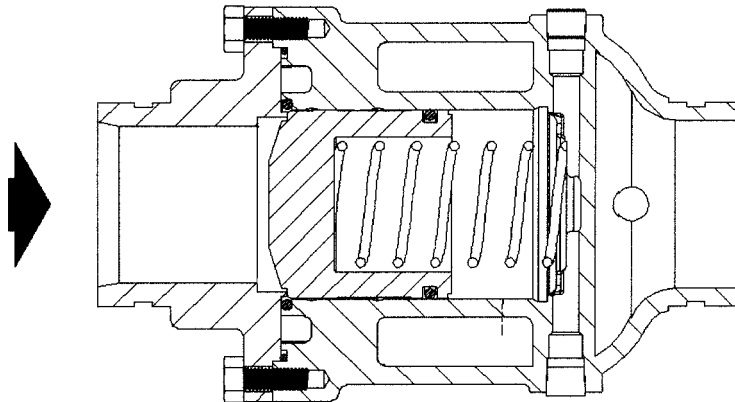


Figure 1-2. Cross Section - Daniel Control Valves Series 600

⚠ WARNING

SERIOUS PERSONAL INJURY AND/ OR MECHANICAL EQUIPMENT DAMAGE

It is recommended that this publication be read in its entirety before performing any operation, and that servicing be performed only by trained and qualified service personnel.

Failure to understand and follow these instructions could result in serious personal injury and/or damage to the equipment.

Should this equipment require repair or adjustment, contact the nearest Daniel Sales Office.

2.0 CONFIGURATION AND PARTS LISTS

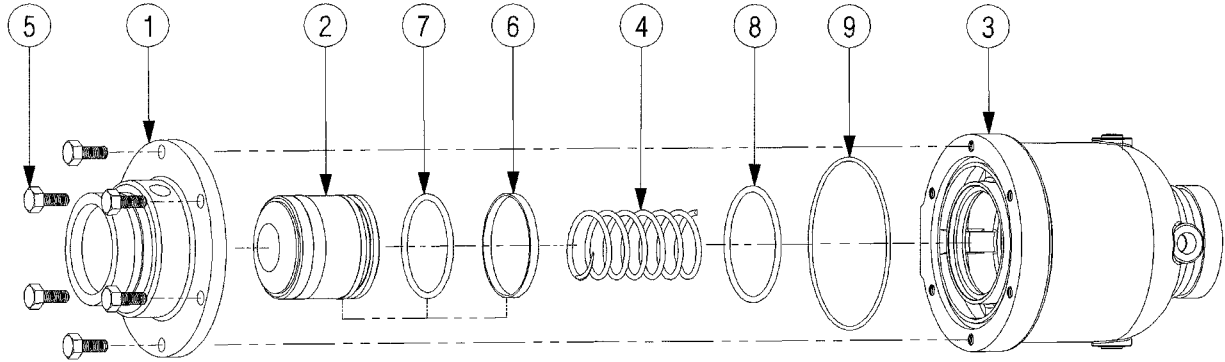


Figure 2-1. Daniel Control Valves Series 600 Exploded Assembly

2" SERIES 600 CONTROL VALVE PARTS LIST

| Item No. | Description | Qty | 720005-090 Part No. | Qty | 720105-094 Part No. |
|----------|-------------|-----|------------------------|-----|------------------------|
| 1 | Cover | 1 | 720002-090 | 1 | 720002-090 |
| 2 | Piston | 1 | 720057-110 | 1 | 720057-100 |
| 3 | Valve Body | 1 | 720001-090 | 1 | 720001-090 |
| 4 | Spring | 1 | 520029 | 1 | 520029 |
| 5 | Screw | 6 | 150745 | 6 | 150745 |
| *6 | Glyd-Ring | 1 | 157148 | - | - |
| *7 | O-Ring | 1 | 157029 | 1 | 152073-114 |
| *8 | O-Ring | 1 | 152085-022 | 1 | 152085-114 |
| *9 | O-Ring | 1 | 152077 | 1 | 152077-114 |

| O-Ring Suffix Code | |
|--------------------|---------------------------|
| No Suffix | Buna-N |
| 022 | * Viton® fluoroelastomers |
| 114 | Mil. Spec. Nitrile |

* Viton® is a registered trademark of DuPont Performance Elastomers

3" SERIES 600 CONTROL VALVE PARTS LIST

| Item No. | Description | Qty | 730005-090 Part No. | Qty | 730105-094 Part No. |
|-----------------|--------------------|------------|--------------------------------|------------|--------------------------------|
| 1 | Cover | 1 | 730002-090 | 1 | 730002-090 |
| 2 | Piston | 1 | 530057-999 | 1 | 730057-100 |
| 3 | Valve Body | 1 | 730001-090 | 1 | 730001-090 |
| 4 | Spring | 1 | 530029 | 1 | 530029 |
| 5 | Screw | 6 | 150766 | 6 | 150766 |
| *6 | Glyd-Ring | 1 | 157168 | - | - |
| *7 | O-Ring | 1 | 157097 | 1 | 152075-114 |
| *8 | O-Ring | 1 | 152100-022 | 1 | 152100-114 |
| *9 | O-Ring | 1 | 157106 | 1 | 157106-114 |

| O-Ring Suffix Code | |
|---------------------------|--------------------|
| No Suffix | Buna-N |
| 022 | Viton® |
| 114 | Mil. Spec. Nitrile |

4" SERIES 600 CONTROL VALVE PARTS LIST

| Item No. | Description | Qty | 740005-090 Part No. | Qty | 740105-094 Part No. |
|----------|-------------|-----|------------------------|-----|------------------------|
| 1 | Cover | 1 | 740002-090 | 1 | 740002-090 |
| 2 | Piston | 1 | 540057-999 | 1 | 740057-100 |
| 3 | Valve Body | 1 | 740001-090 | 1 | 740001-090 |
| 4 | Spring | 1 | 540029 | 1 | 540029 |
| 5 | Screw | 6 | 150766 | 6 | 150766 |
| *6 | Glyd-Ring | 1 | 157167 | - | - |
| *7 | O-Ring | 1 | 157096 | 1 | 152078-114 |
| *8 | O-Ring | 1 | 152080-022 | 1 | 152080-114 |
| *9 | O-Ring | 1 | 157085 | 1 | 157085-144 |

| O-Ring Suffix Code | |
|---------------------------|--------------------|
| No Suffix | Buna-N |
| 022 | Viton® |
| 114 | Mil. Spec. Nitrile |

6" SERIES 600 CONTROL VALVE PARTS LIST

| Item No. | Description | Qty | 760005-090 Part No. |
|-----------------|--------------------|------------|--------------------------------|
| 1 | Cover | 1 | 760002-090 |
| 2 | Piston | 1 | 560057-110 |
| 3 | Valve Body | 1 | 760001-090 |
| 4 | Spring | 1 | 560029 |
| 5 | Screw | 8 | 150804 |
| *6 | Glyd-Ring | 1 | 157149 |
| *7 | O-Ring | 1 | 157036 |
| *8 | O-Ring | 1 | 157003-022 |
| *9 | O-Ring | 1 | 157004 |

| O-Ring Suffix Code | |
|---------------------------|--------------------|
| No Suffix | Buna-N |
| 022 | Viton® |
| 114 | Mil. Spec. Nitrile |

3.0 ASSEMBLY/DISASSEMBLY**Service**

A regular schedule should be set up for inspection and cleaning of the basic valve. All parts should be thoroughly cleaned and all O-rings checked for nicks, cuts or wear. Any defective or doubtful O-ring should be replaced. Inspect Glyd-ring for cuts and scratches and replace if necessary.

**PERSONAL INJURY**

Follow directions carefully.

Failure to follow the directions noted below can result in personal injury.

Disassembly

- Step 1. With extreme caution depress the piston against the spring until the rectangular ports of the valve body are cleared. Use an arbor press or convenient device – **DO NOT USE HANDS.**
- Step 2. Block piston in open position by inserting suitable wedges of soft material through the port openings.
- Step 3. Cover may now be removed by taking out the screws, item 5. O-rings, item 8 and item 9 should also be removed.
- Step 4. Remove piston blocks with caution as spring exerts considerable force against the piston.
- Step 5. Piston, O-rings, item 7, Glyd-ring and spring may now be removed from the valve body. **DO NOT** remove Glyd-ring, item 6 from piston unless replacement is necessary.

Reassembly

- Step 1. Apply oil or grease to all O-rings to prevent cutting and for ease of assembly.
- Step 2. Install Glyd-ring and O-ring, item 7, on the piston.

CAUTION**MECHANICAL EQUIPMENT DAMAGE**

The Glyd-ring must be gradually worked into its position by hand being careful not to nick or scratch the surface.

Failure to understand and follow these instructions could result in valve failure.

- Step 3. Insert spring and piston in valve body and again lock the piston in the open position.
- Step 4. Insert O-rings, item 8 and item 9 and replace cover on the valve body. Remove piston blocks – AGAIN USING CAUTION.

**DANIEL MEASUREMENT AND CONTROL, INC.
INSTRUMENT DECONTAMINATION STATEMENT**

RMA Number _____
Item Being Returned _____

List all chemicals, process fluids, and gases that have come in contact with the equipment, including cleaning agents. Attach additional pages if necessary. A Material Safety Data Sheet (MSDS) is required if non-food grade products have been used with the item being returned.

| Information Required | Product 1 | Product 2 |
|---------------------------|-----------|-----------|
| Gas or chemical name | | |
| Health and safety hazards | | |
| Precautions, first aid | | |

I hereby certify the equipment being returned has been cleaned and decontaminated in accordance with good industrial practices and in compliance with OSHA and DOT regulations. This equipment poses no health or safety risk due to contamination.

Signature _____
Name (Please print) _____
Title _____
Company Name _____
Phone Number _____
Fax or TLX Number _____
Reason for Return _____

Reminder

All items being returned must be packaged separately. This decontamination statement and the MSDS sheet must be placed on the outside of the shipping container.

WARRANTY CLAIM PROCEDURES

To make a warranty claim, you, the Purchaser, must:

1. Provide Daniel with proof of the Date of Purchase and proof of the Date of Shipment of the product in question.
2. Return the product to Daniel within twelve (12) months of the date of original shipment of the product, or within eighteen (18) months of the date of original shipment of the product to destinations outside of the United States. The Purchaser must prepay any shipping charges. In addition, the Purchaser is responsible for insuring any product shipped for return, and assumes the risk of loss of the product during shipment.
3. To obtain Warranty service or to locate the nearest Daniel office, sales, or service center call (713) 827-6314, Fax (713) 827-6312 write to:

Daniel Measurement Services
11100 Brittmoore Park Drive
Houston, Texas 77041

Or contact Daniel via the following site:

www.emersonprocess.com/daniel

4. When contacting Daniel for product service, the Purchaser is asked to provide information as indicated on the following page entitled "Customer Repair Report".
5. For product returns from locations outside the United States, it will be necessary for you to obtain the import consignment address so that Daniel's customs broker can handle the importation with the U.S. Customs Service.
6. Daniel Measurement Services offers both on call and contract maintenance service designed to afford single source responsibility for all its products.
7. Daniel reserves the right to make changes at any time to any product to improve its design and to insure the best available product.

DANIEL MEASUREMENT AND CONTROL, INC.
CUSTOMER REPAIR REPORT

FOR SERVICE, COMPLETE THIS FORM, AND RETURN IT ALONG WITH THE AFFECTED EQUIPMENT TO CUSTOMER SERVICE AT THE ADDRESS INDICATED BELOW.

COMPANY NAME: _____

TECHNICAL CONTACT: _____ PHONE: _____

REPAIR P. O. #: _____ IF WARRANTY, UNIT S/N: _____

INVOICE ADDRESS: _____

SHIPPING ADDRESS: _____

RETURN SHIPPING METHOD: _____

EQUIPMENT MODEL #: _____ S/N: _____ FAILURE DATE: _____

DESCRIPTION OF PROBLEM: _____

WHAT WAS HAPPENING AT TIME OF FAILURE? _____

ADDITIONAL COMMENTS: _____

REPORT PREPARED BY: _____ TITLE: _____

IF YOU REQUIRE TECHNICAL ASSISTANCE, PLEASE FAX OR WRITE THE CUSTOMER SERVICE DEPARTMENT AT:

DANIEL FIELD SERVICES
ATTN: CUSTOMER SERVICE
11100 BRITTMOORE PARK DRIVE
HOUSTON, TEXAS 77041

PHONE: (713) 827-6314
FAX: (713) 827-6312

FOR FASTEST SERVICE CONTACT DANIEL VIA OUR WEBSITE:
www.emersonprocess.com/daniel

The sales and service offices of Daniel Measurement and Control are located throughout the United States and in major countries overseas.
Please contact Daniel Measurement Services at
11100 Brittmoore Park Drive, Houston, Texas 77041, or phone (713) 467-6000
for the location of the sales or service office nearest you.
Daniel Measurement Services offers both on-call and contract
maintenance service designed to provide single-source
responsibility for all Daniel products.

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