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SD40
Rev 17
June 2012
Supersedes Rev 16

Model 40 Nullmatic Pressure Regulators

INTRODUCTION

The Model 40 Nullmatic® Pressure Regulator, shown below, uses the null-balance principle, which holds the output pressure constant regardless of wide changes in flow or supply pressure. Each regulator is in essence a self-contained pressure controller.

This instruction has five major sections: Introduction, Installation, Principle of Operation, Maintenance, and Parts List.

Model Designation

Model Series
40

Options

A	Air Loaded
E	Tapped Exhaust
X	Without safety release (ranges 2, 7, 15, 30, and 50 only)
-	(no letter) Standard

Range

2	1"H_2O to 50"H_2O
7	6"H_2O to 200"H_2O
15	0.5 to 15 psig
30	1 to 30 psig
50	1 to 50 psig
100	1.5 to 100 psig
200	3 to 200 psig
300	7 to 300 psig
450	15 to 450 psig

40 A 15 Sample Model Number



General Specifications

Model Number	Range in PSIG[1]	Supply Pressure (PSIG)			Notes
		Recommended	Maximum	Minimum[2]	
40-2	0.1 to 2[3]	10	25	5 psi above highest output setting to be used	(1) Range limits with recommended supply.
40-7	0.25 to 7[4]	50	100		(2) Minimum supply value for Regulator operation. Performance will be improved by increasing the supply pressure above the minimum value.
40-15	0.5 to 15	75	150		
40-30	1 to 30	120	150	10 psi above highest output setting to be used	
40-50	1 to 50	120	150		
40-100	1.5 to 100	150	500		
40-200	3 to 200	250	500	20 psi above highest output setting to be used	
40-300	7 to 300	350	500		(3) 1"H_2O to 50"H_2O.
40-450	15 to 450	500	500		(4) 6"H_2O to 200"H_2O.

Maximum air loading pressure (air loaded models) ..... 100 psig
Ambient temperature limits .....-40°F to 180°F (-40°C to 82°C)
Flow Capacity.....See Figure 1
Air Capacity.....See Figure 2[1]

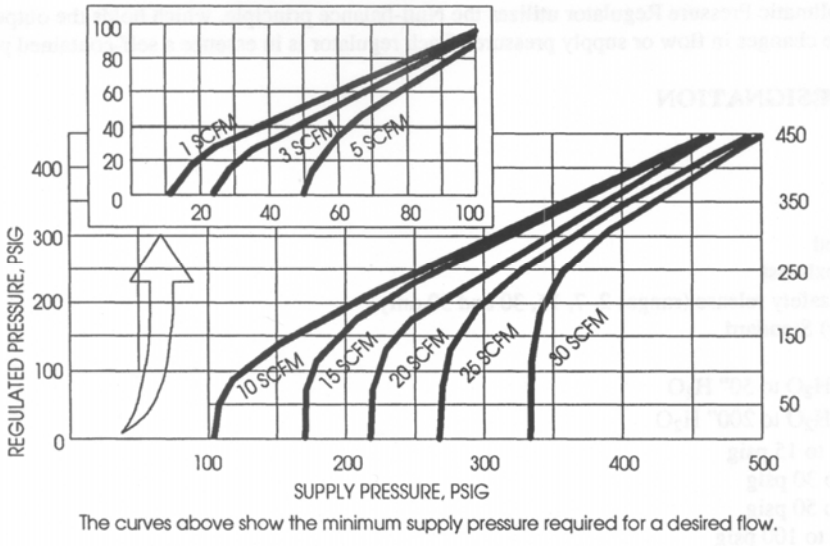


Figure 1 Maximum Air Flow, SCFM Delivered

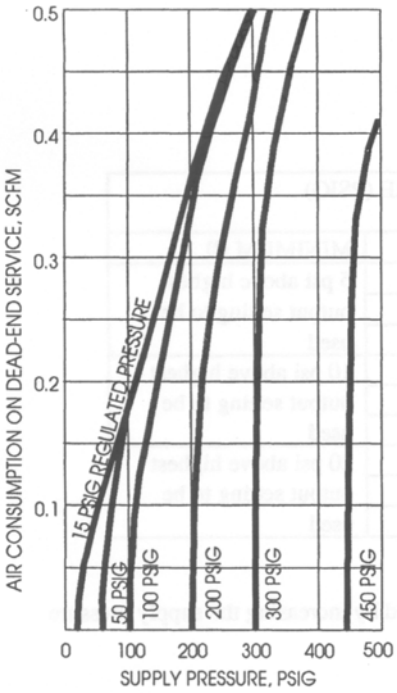


Figure 2 Air Consumption

INSTALLATION

Mounting Considerations

Refer to Figure 3 for mounting dimensions. The regulator may be mounted in any position in a reasonably vibration-free location. Regulators are intended for panel mounting on panels of 1/4" maximum thickness. If wall mounting is desired, order Mounting Bracket part number 2932-19 and install as shown in Figure 3.

CAUTION

Exceeding the ambient air temperature limits can adversely affect performance and may cause damage.

Pneumatic Connections

All connections are 1/4" (except for the optional tapped exhaust connection) as shown in Figure 3. Recommended piping to the regulator is 1/4" O.D. tubing, although any scale free piping may be used.

1. Blow out all piping before any connections are made to prevent dirt or chips from entering the regulator.
2. Use pipe sealant sparingly, and then only on the male threads. A non-hardening sealant is strongly recommended.
3. Connect the regulator to a source of clean, dry, oil-free instrument air. See Instrument Air Requirements.

CAUTION

Pressure in excess of the maximum value, listed in General Specifications, to the supply or air loading connection may cause damage.

[1] The Nullmatic regulator bleeds only the amount of air which passes through the pilot nozzle when there is no demand for output flow. The exhaust port starts to close as soon as the flow of regulated air to the output is increased and it closes completely before the pilot-plunger valve opens. Full pilot flow is then delivered to the output.

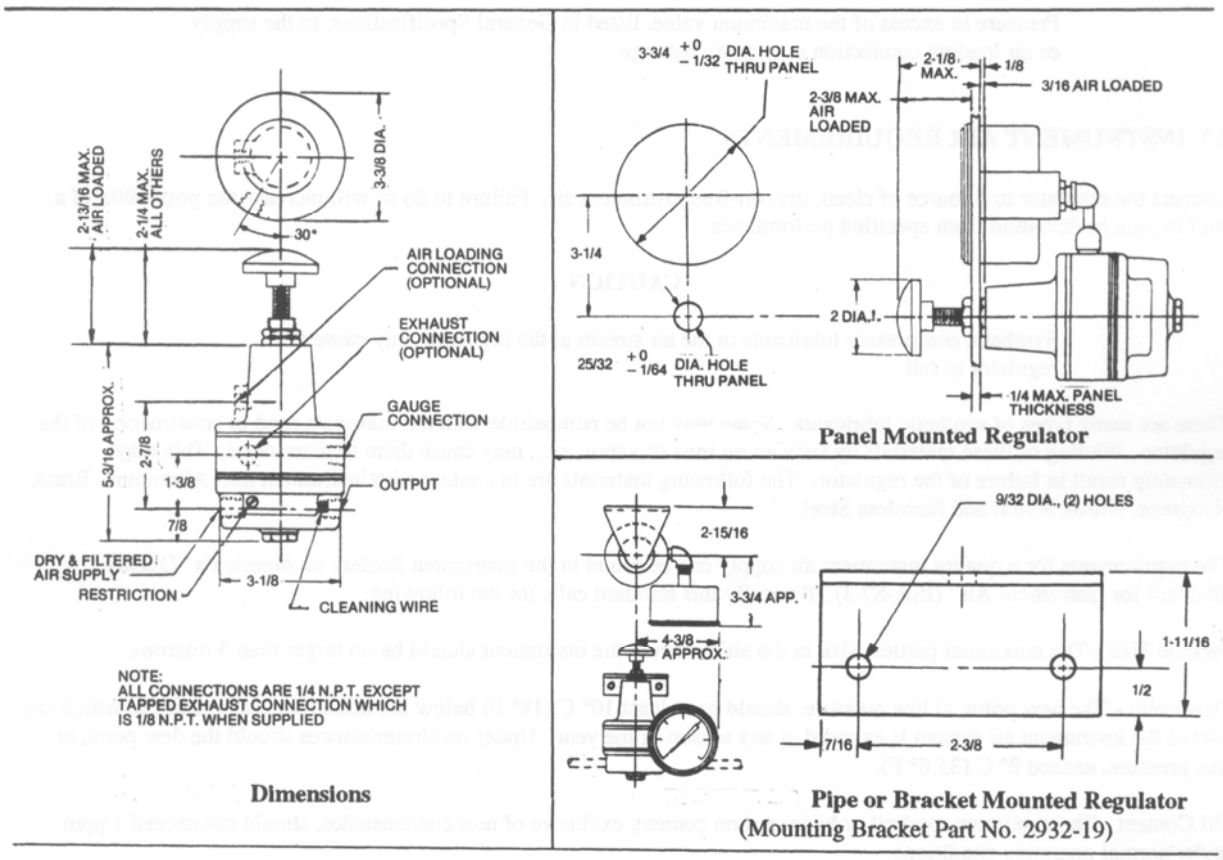


Figure 3 Dimensions and Mounting

Table 1 Metric Conversions

Metric Conversions					
Inches	**Millimeter**	**Inches**	**Millimeters**	**Inches**	**Millimeters**
1/64	0.3	7/8	22.2	2-15/16	74.6
1/32	0.7	1-3/8	34.9	3-1/8	79.3
1/8	3.1	1-11/16	42.8	3-1/4	82.5
3/16	4.7	2	50.8	3-3/8	85.7
1/4	6.3	2-1/8	53.9	3-3/4	95.2
9/32	7.1	2-1/4	57.1	4-3/8	111.1
7/16	11.1	2-3/8	60.3	5-3/16	131/7
1/2	12.7	2-13/16	71.4		
25/32	19.8	2-7/8	73.0		

INSTRUMENT AIR REQUIREMENTS

Connect the regulator to a source of clean, dry, oil-free instrument air. Failure to do so will increase the possibility of a malfunction or deviation from specified performance.

CAUTION

Use of process fluids other than instrument air is not recommended. No claim is made as to the suitability of this product for use with other process fluids, such as hazardous gases, except as listed on the appropriate certificate. Non-approved instruments are suitable for use with instrument air only. Optional features and modifications such as tapped exhaust do not imply suitability for use with hazardous gases except as listed on the approval certificate.

CAUTION

Synthetic compressor lubricants in the air stream at the regulator may cause the regulator to fail.

There are many types of synthetic lubricants. Some may not be compatible with the materials used in construction of the regulator. Wetting of these materials by such an oil mist or vapor, etc.; may cause them to deteriorate. This may ultimately result in failure of the regulator. The following materials are in contact with instrument air: Aluminum, Brass, Neoprene, Nitrile, Nylon and Stainless Steel.

The requirements for a quality instrument air supply can be found in the Instrument Society of America's "Quality Standard for Instrument Air" (ISA-S7.3). Basically this standard calls for the following:

Particle Size - The maximum particle size in the air stream at the instrument should be no larger than 3 microns.

Dew Point - The dew point, at line pressure, should be at least 10° C (18° F) below the minimum temperature to which any part of the instrument air system is exposed at any season of the year. Under no circumstances should the dew point, at line pressure, exceed 2° C (35.6° F).

Oil Content - The maximum total oil or hydrocarbon content, exclusive of non-condensables, should not exceed 1 ppm under normal operating conditions.

PRINCIPLE OF OPERATION

A fine-turn, precision screw is used to manually load the range spring which sets the regulated pressure. When the adjusting knob, see Figure 4, is turned clockwise, the increased spring force is exerted on the top diaphragm assembly which decreases the nozzle clearance and increases the pilot pressure. The source for pilot pressure is supply air flowing to the pilot pressure chamber through the restriction screw. The increased pilot pressure forces the exhaust diaphragm assembly downward, closing the exhaust port, contacting and moving the valve plunger and thereby opening the supply port. This increases the regulated output which also feeds back to the top diaphragm assembly. The regulator locks-up or throttles at the new output value when the feedback force of the top diaphragm assembly equals the range spring force.

A safety release valve is incorporated in the top diaphragm assembly of the -2 through -50 models. The safety release operates if the regulated pressure becomes 3 to 5 psig more than the set pressure. It exhausts air through the atmospheric vent in the top housing. An over-pressure causes the diaphragm to move upward, opening the safety release valve when the valve motion is stopped by the stripper plate.

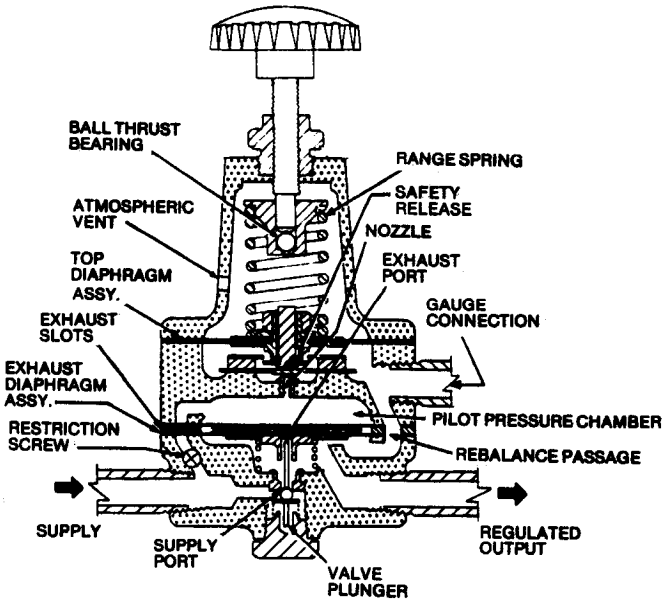


Figure 4 Schematic

MAINTENANCE

Most problems associated with pneumatic instruments can be prevented by providing clean, dry, oil-free instrument quality air as described in Installation, Instrument Air Requirements. No routine maintenance procedures are recommended if these requirements are observed.

Lubricating the Adjusting Screw

An occasional application of light grease to the adjusting screw threads will facilitate easy turning of the adjusting knob, especially in the high-pressure models.

Cleaning the Restriction Screw

1. Turn off the supply air.
2. Remove restriction screw from bottom forging.
3. Remove the knurled cleaning wire located near the output port and run it through the orifice at the tip of the restriction screw. In stubborn cases, the screw can be soaked in solvent to dissolve the blockage. Examine the O-ring for damage and cleanliness.
4. Re-install the screw and tighten it securely.

Cleaning the Valve Plunger

1. Turn off supply air.
2. Carefully remove retaining nut on bottom forging. The valve plunger and plunger spring will drop out when this nut is removed; be careful not to lose them. The valve plunger must be clean on both the ball and tapered-end surfaces. If necessary, use a non-abrasive solvent.
3. Clean supply and exhaust seats in the regulator. The supply seat is readily accessible; the exhaust seat can be reached using a tobacco pipe cleaner. Here again, use non-abrasive solvents.
4. Re-install parts; see the parts list for part orientation. Tighten the retaining nut securely.

Troubleshooting

Refer to Table 2 on the next page to troubleshoot the regulator.

Table 2 Model 40 Troubleshooting

SYMPTOM	CAUSE	REMEDY
No output	No air supply	Turn on supply air
	Clogged restriction screw	Remove and clean
Output cannot be increased to full value	Supply air setting too low	Raise to recommended value
	Valve plunger being held open on exhaust seat by a chip (pipe scale, etc.) usually detected by a heavy exhaust	Remove valve plunger and clean its seats.
	Clogged restriction screw	Remove and clean
Sluggish output response to increased setting	Output flow excessive for air supply setting	Raise supply pressure
	Output flow exceeds specification	Consult factory
	Partially clogged restriction screw	Remove and clean
Output at full valve, or more, and cannot be decreased	Regulator piped backwards. Detected by an excessively heavy exhaust.	Re-pipe the regulator. Direction of flow is shown by arrow on bottom forging.
	Loose restriction screw	Tighten securely
	External exhaust port blocked	Remove obstruction
	Internal exhaust port clogged	Remove valve plunger and clean exhaust seat port.
Output cannot be deceased to minimum value	Supply pressure too high	Reduce to recommended value
	Loose restriction screw	Tighten securely
	Valve plunger being held open on exhaust seat by a chip (pipe dope, Teflon tape, thread shaving, pipe scale, etc.)	Remove valve plunger and clean its seats.
	Heavy carbon or carbon/oil build-up on nozzle seat	Disassembly regulator and clean exhaust seat.
	Damaged supply seat	Install new bottom forging

Disassembling the Regulator

Before disassembling, back-off the adjusting knob to relieve spring tension. Also, make a diagonal mark across all mating parts to provide easier alignment of parts during reassembly. To disassemble the regulator, refer to the parts list drawings for part location and remove the body screws.

Assembling the Regulator

The exhaust diaphragm assembly and exhaust ring must be positioned so that none of the holes on the bottom forging are blocked. The three external holes on the exhaust ring line up under the gauge connection – see Figure 3 for orientation with respect to the supply and output ports.

The center housing must be positioned to allow pilot and rebalance air to flow to the proper chambers: pilot air to the bottom cavity of the center housing, and rebalance air to the top cavity. See Figure 3 for orientation of the gauge connection with respect to the supply and output ports.

The nozzle seat assembly must be installed with its smooth finish seat facing down to the nozzle. The safety release valve (where applicable) must be positioned on the nozzle seat assembly before the stripper plate is installed. Center the nozzle seat assembly over the nozzle before tightening its retaining screws.

The top diaphragm assembly and the top casting can be located in any position. Generally, the nameplate on the casting lines up over the gauge connection.

Changing the Range

The range of any Model 40 regulator may be changed by replacing the range spring, differential spring, the upper diaphragm assembly, and other parts as noted in the parts list.

Replacing Parts

Refer to the parts list(s) at the back of this instruction when performing maintenance on a Model 40. A parts list provides a list of replacement parts and an exploded view of the regulator.

Service kits containing spare and replacement parts are available from Siemens. See the Customer/Product Support section to contact Siemens. Refer to the Parts List section for kits and recommended on-hand spare parts.

Customer/Product Support

This section provides the Siemens public Internet site address, e-mail address, telephone numbers, and related information for customers to access Siemens product support.

When contacting Siemens for support:

- Please have complete product information at hand:
    - For hardware, this information is provided on the product nameplate (part number or model number, serial number, and/or version).
    - For most software, this information is given in the Help > About screen.
- If there is a problem with product operation:
    - Is the problem intermittent or repeatable? What symptoms have been observed?
    - What steps, configuration changes, loop modifications, etc. were performed before the problem occurred?
    - What status messages, error messages, or LED indications are displayed?
    - What troubleshooting steps have been performed?
    - Is the installation environment (e.g. temperature, humidity) within the product's specified operating parameters? For software, does the PC meet or exceed the minimum requirements (e.g. processor, memory, operating system)?
- A current copy of the product Service Instruction, User's Manual, or other technical literature should be at hand. The Siemens public Internet site (see the table) has current revisions of technical literature, in Portable Document Format, for downloading.
- To send an instrument to Siemens for repair, request a Return Material Authorization (RMA).

IMPORTANT

An instrument must be thoroughly cleaned (decontaminated) to remove any process materials, hazardous materials, or blood born pathogens prior to return for repair. Read and complete the Siemens RMA form(s).

For support and the location of your local Siemens representative, refer to the table below for the URL of the Process Instrumentation (PI) portion of the Siemens public Internet site. Once at the site, click **Support** in the right column and then **Product Support**. Next select the type of support desired: sales, technical (see the table below), documentation, or software.

Online Support Request	http://www.siemens.com/automation/support-request
Technical Support	1-800-333-7421; 8 a.m. to 4:45 p.m. eastern time, Monday through Friday (except holidays)
Customer Service & Returns	1-800-365-8766 (warranty and non-warranty)
Public Internet Site	http://www.usa.siemens.com/pi
Technical Publications in PDF	Click the above link to go to the Siemens Internet site and then click **Process Instrumentation**. In the column to the right, click **Support** > **Manuals**. In the column to the left, select the product line (e.g. Pressure or Temperature or Controllers) to open navigation and search panes. Note: Navigation may change as the site evolves.

Warranty

The sales contract contains the entire obligation of Siemens. The warranty contained in the contract between the parties is the sole warranty of Siemens. Any statements continued herein do not create new warranties or modify the existing warranty.

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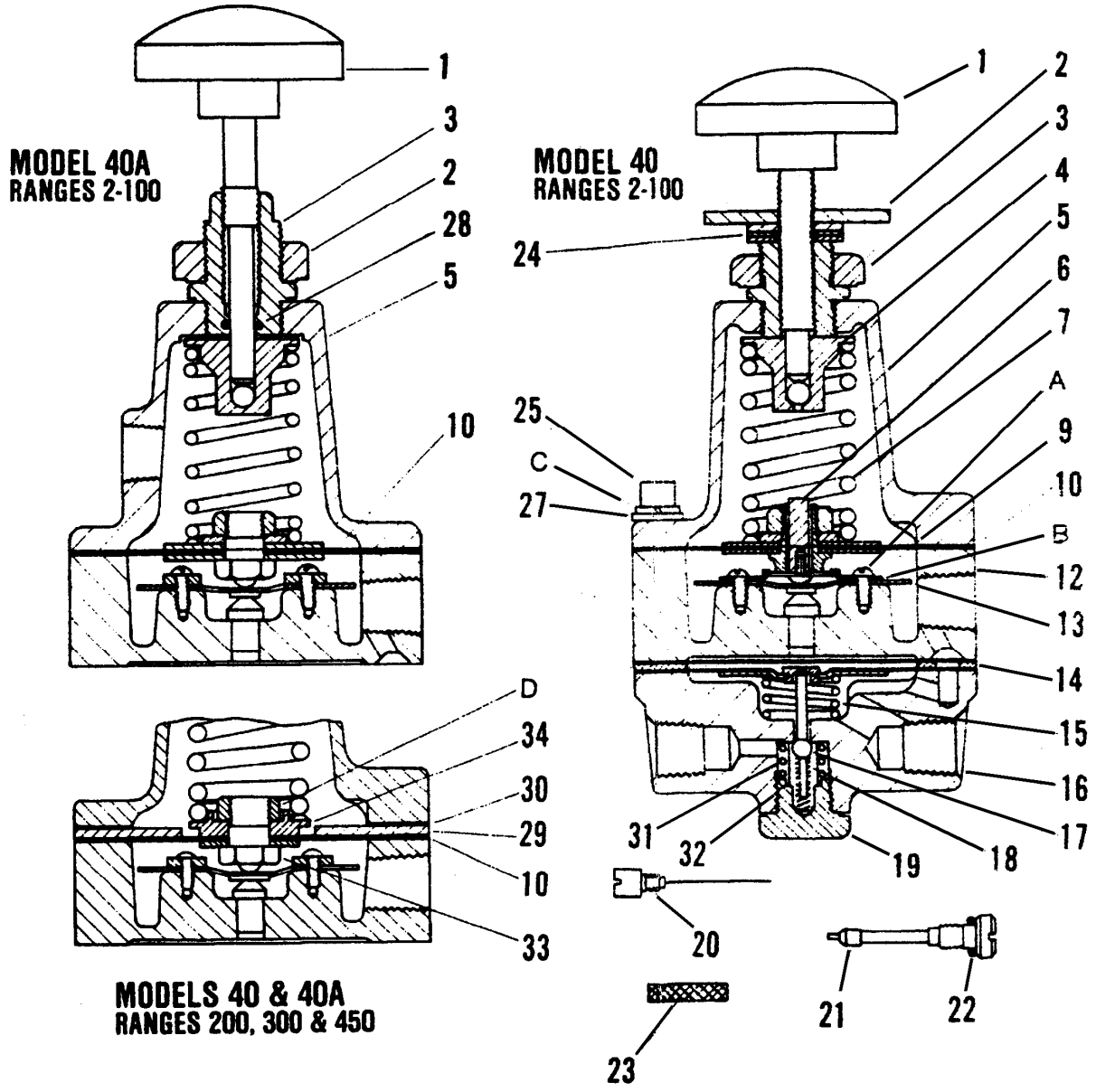
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PARTS LIST

Siemens Nullmatic® Pressure Regulator, Models 40, 40A, and 40X

Drawing 2155-51PL
1/96 Supersedes 12/87



IMPORTANT

Service Parts Kits are available for servicing the instrument. See the Service Parts Kits section of this instruction. Contact Siemens for currently available kits; refer to the Product Support section of this instruction. Some parts in this Parts List may not be available for separate purchase.

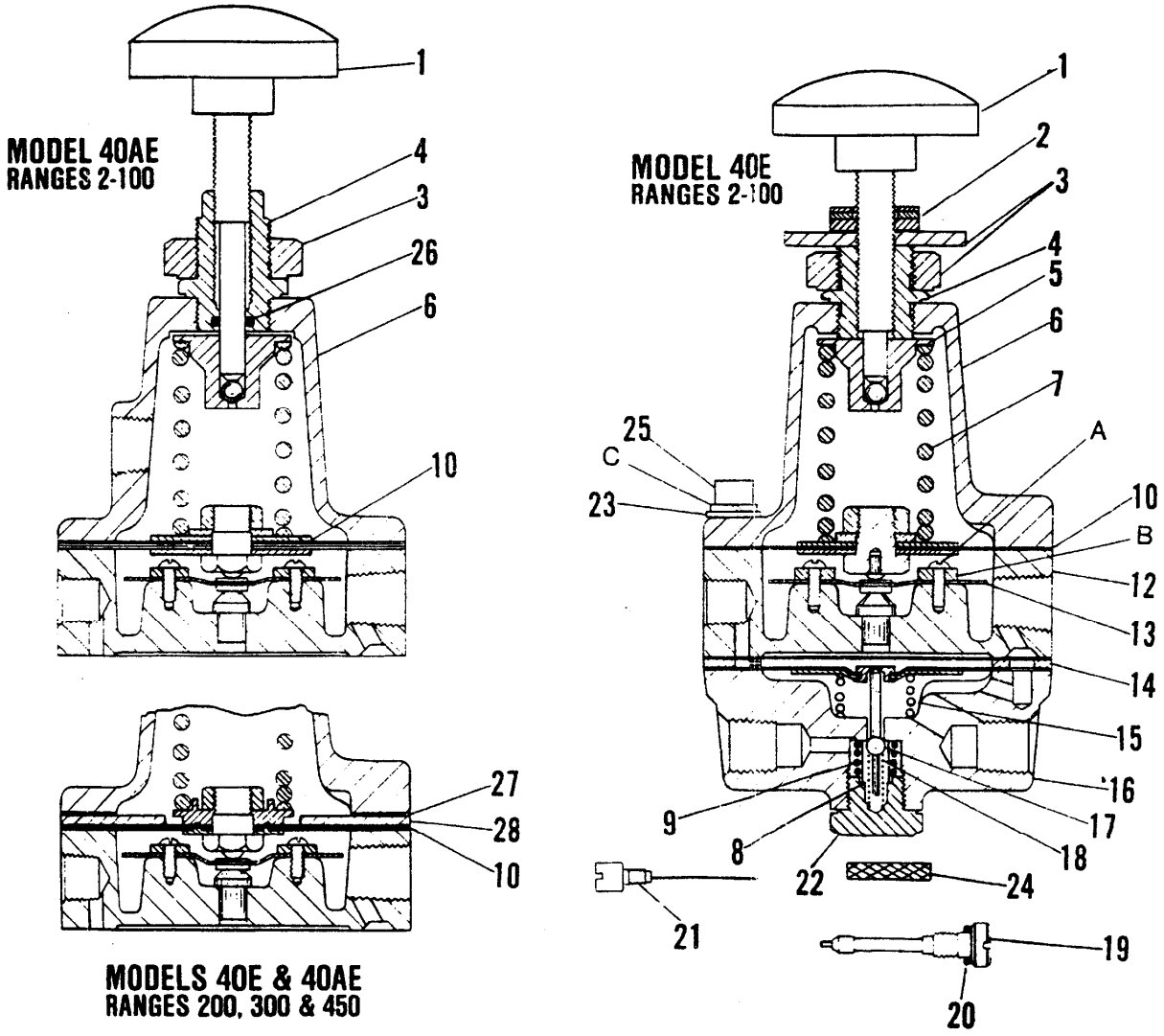
Item	Part No.	Description	QUANTITY REQUIRED 40 & 40X Range 2 to 50 (X)	100	200 300	450	40A Range 7 to 50	100	200 300	450
1a	1447-22	Adj. Knob	1	1	1	1	-	-	-	-
1b	3179-4	Adj. Knob	-	-	-	-	1	1	1	1
2a	1447-41	Locknut	1	1	1	1	-	-	-	-
2b	3603-14	Mtg. Nut	1	1	1	1	1	1	1	1
2c	3603-5	Locknut (Opt.)	-	-	-	-	-	-	-	-
3a	2155-165	Bushing	1	1	1	1	-	-	-	-
3b	3494-4	Bushing	-	-	-	-	1	1	1	1
4	1447-24	Spring Seat	1	1	1	1	1	1	1	1
5a	2155-85	Top Casting	1	1	1	1	-	-	-	-
5b	4557-11	Top Casting	-	-	-	-	1	1	1	1
6	2155-62	Safety Rel. Valve (Except X Models)	1	-	-	-	-	-	-	-
7a	1938-1	Spring (White - 2 psi)	1	-	-	-	-	-	-	-
7b	2155-67	Spring (Gray - 7 psi)	1	-	-	-	1	-	-	-
7c	572-37	Spring (Blue -15 psi)	1	-	-	-	1	-	-	-
7d	572-36	Spring (Red - 30 psi)	1	-	-	-	1	-	-	-
7e	2155-22	Spring (Brown - 50 psi)	1	-	-	-	1	-	-	-
7f	2155-23	Spring (Green - 100, 300, & 450 psi)	-	1	1	1	-	1	1	1
7g	2155-90	Spring (Black - 200 psi only)	-	-	1	-	-	-	1	-
9	572-51	Stripper Plate	1	-	-	-	-	-	-	-
*10a	2155-71	Top Diaph. Assy. (Except X Models)	1	-	-	-	-	-	-	-
*10b	1977-4	Top Diaph. Assy. (X Models)	1	1	-	-	1	1	-	-
*10c	3827-13	Top Diaph. Assy. (200 & 300 psi.)	-	-	1	-	-	-	1	-
*10d	2155-189	Top Diaph. Assy. (450 psi.)	-	-	-	1	-	-	-	1
12	2155-242	Ctr. Casting & Nozzle Assy.	1	1	1	1	1	1	1	1
13	1447-11	Nozzle Seat	1	1	1	1	1	1	1	1
*14a	1447-3	Exhaust Diaph.	1	-	-	-	1	-	-	-
*14b	1447-96	Exhaust Diaph.	-	1	1	1	-	1	1	1
*15a	1033-2	Diff. Spring (Blue - 7 & 15 psi)	1	-	-	-	1	-	-	-
*15b	1447-13	Diff. Spring (White - 30, 50 & 100 psi)	1	1	-	-	1	1	-	-
*15c	1518-5	Diff. Spring (Black)	-	-	1	1	-	-	1	1
15d	8665-10	Diff. Spring (2 psi)	1	-	-	-	1	-	-	-
16	10803-36	Bottom Forging	1	1	1	1	1	1	1	1
*17	2155-3	Valve Plunger	1	1	1	1	1	1	1	1
*18	2155-7	Valve Spring	1	1	1	1	1	1	1	1
*19	10342-25	Retaining Nut	1	1	1	1	1	1	1	1
*20	1033-22	Cleaning Wire	1	1	1	1	1	1	1	1
*21	10792-10	Restriction Screw (Incl. Items 22 & 23)	1	1	1	1	1	1	1	1
*22	2936-154	"O" Ring	1	1	1	1	1	1	1	1
23	111-20	Filter Screen	1	1	1	1	1	1	1	1
24a	1977-16	Spacer 3/32 Thick	-	-	+	+	-	-	+	+
24b	1977-20	Spacer 3/64 Thick	-	-	+	+	-	-	+	+
24c	3603-4	Jam Nut 1/4 Thick	-	-	+	+	-	-	+	+
25a	1-3645	1/4-20 x 1-7/8 Lg. Fill. Hd.	6	6	-	-	-	-	-	-
25b	1-3675	1/4-20 x 2 Lg. Fill. Hd.	-	-	6	6	6	-	-	-
25c	1-3735	1/4-20 x 2-1/4 Lg. Fill. Hd.	-	-	-	-	-	-	6	6
25d	1-3715	1/4-20 x 2-1/8 Lg. Fill. Hd.	-	-	-	-	-	6	-	-
27	118-36	Washer	-	6	6	6	-	6	6	6
*28	2938-1	"O" Ring	-	-	-	-	1	1	1	1
29a	2155-111	Diaphragm Ring (200 & 300 psi)	-	-	1	-	-	-	1	-
29b	2155-191	Diaphragm Ring (450 psi)	-	-	-	1	-	-	-	1
*30	4557-4	Gasket	-	-	-	-	-	-	1	1
31	10342-26	Spring	1	1	1	1	1	1	1	1
32	10342-27	Pilot Screen	1	1	1	1	1	1	1	1
33	2155-194	Seat Screw	-	-	-	1	-	-	-	1
34	2155-190	Spring Seat	-	-	-	1	-	-	-	1
A	1-6580	4-40 x 3/8 Lg. Pan. Hd. Type "F"	2	2	2	2	2	2	2	2
B	1-7435	#6 Flatwasher	-	2	2	2	-	2	2	2
C	1-7303	1/4" Lockwasher	6	6	6	6	6	6	6	6
D	1-7761	1/4-28 Hex Jam Nut	-	-	1	1	-	-	1	1

* Recommended On-Hand Spare Parts. Always Specify Range, Serial No., or Other Nameplate Information When Ordering Spare Parts.
+ As Required

PARTS LIST

Siemens Nullmatic® Pressure Regulator, Models 40E and 40AE

Drawing 3827PL
1/96 Supersedes 12/87



IMPORTANT

Service Parts Kits are available for servicing the instrument. See the Service Parts Kits section of this instruction. Contact Siemens for currently available kits; refer to the Customer/Product Support section of this instruction. Some parts in this Parts List may not be available for separate purchase.

Item	Part No.	Description	QUANTITY REQUIRED 40E Range 2 to 250	100	200, 300	450	40AE Range 2 to 250	100	200, 300	450
1a	1447-22	Adj. Knob	1	1	1	1	-	-	-	-
1b	3179-4	Adj. Knob	-	-	-	-	1	1	1	1
2a	1977-16	Spacer 3/32 Thick	-	-	1	1	-	-	-	-
2b	1977-20	Spacer 3/64 Thick	-	-	1	1	-	-	-	-
2c	3603-5	Jam Nut	-	-	1	1	-	-	-	-
3a	1447-41	Locknut (Model 40E2 only)	1	-	-	-	-	-	-	-
3b	3603-14	Mtg. Nut	1	1	1	1	1	1	1	1
4a	2155-165	Bushing	1	1	1	1	-	-	-	-
4b	3494-4	Bushing	-	-	-	-	1	1	1	1
5	1447-24	Spring Seat	1	1	1	1	1	1	1	1
6a	3827-7	Top Casting	-	1	-	-	-	-	-	-
6b	2155-85	Top Casting	1	-	1	1	-	-	-	-
6c	4557-11	Top Casting	-	-	-	-	1	1	1	1
7a	1938-1	Spring (White - 2 psi)	1	-	-	-	1	-	-	-
7b	2155-67	Spring (Gray - 7 psi)	1	-	-	-	1	-	-	-
7c	572-37	Spring (Blue -15 psi)	1	-	-	-	1	-	-	-
7d	572-36	Spring (Red - 30 psi)	1	-	-	-	1	-	-	-
7e	2155-22	Spring (Brown - 50 psi)	1	-	-	-	1	-	-	-
7f	2155-23	Spring (Green - 100, 300, & 450 psi)	-	1	1	1	-	1	1	1
7g	2155-90	Spring (Black - 200 psi only)	-	-	1	-	-	-	1	-
8	10342-27	Pilot Screen	1	1	1	1	1	1	1	1
9	10342-26	Compression Spring	1	1	1	1	1	1	1	1
*10a	1977-4	Top Diaph. Assy.	1	1	-	-	1	1	-	-
*10b	3827-13	Top Diaph. Assy. (200 & 300 psi)	-	-	1	-	-	-	1	-
10c	2155-189	Diaphragm	-	-	-	1	-	-	-	1
10d	2155-190	Spring Seat	-	-	-	1	-	-	-	1
10e	1-7758	1/4-28 Hex Nut	-	-	-	1	-	-	-	1
10f	2155-194	Nozzle Seat Screw	-	-	-	1	-	-	-	1
12	3827-36	Ctr. Casting & Nozzle Assy.	1	1	1	1	1	1	1	1
13	1447-11	Nozzle Seat	1	1	1	1	1	1	1	1
*14a	3683-3	Exhaust Diaph.	1	-	-	-	1	-	-	-
*14b	1447-97	Exhaust Diaph	-	1	1	1	-	1	1	1
*15a	1033-2	Diff. Spring (Blue - 7 & 15 psi)	1	-	-	-	1	-	-	-
*15b	1447-13	Diff. Spring (White - 30, 50 & 100 psi)	1	1	-	-	1	1	-	-
*15c	1518-5	Diff. Spring (Black - 200, 300 & 450 psi)	-	-	1	1	-	-	1	1
*15d	8665-10	Diff. Spring (2 psi)	1	-	-	-	1	-	-	-
16	10803-36	Bottom Forging	1	1	1	1	1	1	1	1
*17	2155-3	Valve Plunger	1	1	1	1	1	1	1	1
*18	2155-7	Valve Spring	1	1	1	1	1	1	1	1
*19	10792-10	Restriction Screw (Incl. Items20 & 24)	1	1	1	1	1	1	1	1
*20	2938-154	"O" Ring	1	1	1	1	1	1	1	1
*21	1033-22	Cleaning Wire	1	1	1	1	1	1	1	1
*22	10342-25	Retaining Nut	1	1	1	1	1	1	1	1
23	118-36	Washer	-	6	6	6	-	6	6	6
24	111-20	Filter Screen	1	1	1	1	1	1	1	1
25a	1-3645	1/4-20 x 1-7/8 Lg. Fill. Hd.	6	-	-	-	-	-	-	-
25b	1-3675	1/4-20 x 2 Lg. Fill. Hd.	-	6	6	6	6	-	-	-
25c	1-3715	1/4-20 x 2-1/8 Lg. Fill. Hd.	-	-	-	-	-	6	-	-
25d	1-3735	1/4-20 x 2-1/4 Lg. Fill. Hd.	-	-	-	-	-	-	6	6
*26	2938-1	"O" Ring	-	-	-	-	1	1	1	1
*27	4557-4	Gasket	-	-	-	-	-	-	1	1
28a	2155-111	Diaphragm Ring (200 & 300 psi)	-	-	1	-	-	-	1	-
28b	2155-191	Diaphragm Ring (450 psi)	-	-	-	1	-	-	-	1
A	1-6580	4-40 x 3/8 Lg. Pan. Hd. Type "F"	2	2	2	2	2	2	2	2
B	1-7435	#6 Flatwasher	2	2	2	2	2	2	2	2
C	1-7303	1/4" Lockwasher	6	6	6	6	6	6	6	6

* Recommended On-Hand Spare Parts Always Specify Range, Serial No., or Other Nameplate Information When Ordering Spare Parts.

SERVICE PARTS KITS

Listed below are the kits available at the time of publication of this instruction. Order the kit(s) needed to service the regulator model at hand. In addition to the parts listed, some kits include a parts list drawing or other instructions.

For Model(s), Kit Name, Part Number	Kit Contents	Quantity
All, Valve Plunger Kit, 2155-272	Plunger	1
	Plunger Spring	1
40H50, Diaphragm/Misc. Parts Kit, 7298-100	Diaphragm	1
	Top Diaphragm Assembly	1
	O-ring	1
	Diaphragm Assembly 40H-	1
	Plunger Assembly	1
40H100, Diaphragm/Misc. Parts Kit, 7298-101	Diaphragm	1
	Top Diaphragm Assembly	1
	O-ring	1
	Diaphragm Assembly 40H-	1
	Plunger Assembly	1
40 (X/A/E), Spare Parts Kit, 7298-102	Cleaning Wire	2
	Retaining Screw	2
	Pilot Screen	2
	Restriction Screw	2
40-2/7/15/30/50, Diaphragm/SR Kit, 7298-103	Bottom Diaphragm Assembly	1
	Top Diaphragm Assembly	1
	Safety Release Assembly	1
40E2/7/15/30/50, Diaphragm Kit, 7298-104	Top Diaphragm Assembly	1
	Diaphragm Assembly	1
40A2/7/15/30/50, Diaphragm/O-ring Kit, 7298-105	Bottom Diaphragm Assembly	1
	Top Diaphragm Assembly	1
	O-ring	1
40-100 (X/A), Diaphragm/Gasket Kit, 7298-106	Diaphragm	1
	Top Diaphragm Assembly	1
	O-ring	1
	Gasket	1
40-100 (E), Diaphragm/Gasket Kit, 7298-107	Diaphragm Assembly	1
	Top Diaphragm Assembly	1
40-200/300(X/A), Diaphragm/Gasket Kit, 7298-108	Diaphragm	1
	O-ring	1
	Diaphragm Assembly	1
	Gasket	1
40AE/E200/300, Diaphragm/Gasket Kit, 7298-109	Diaphragm Assembly	2
	O-ring	1
	Gasket	1

For Model(s), Kit Name, Part Number	Kit Contents	Quantity
40-450 (X/A), Diaphragm/Gasket Kit, 7298-110	Diaphragm	2
	O-ring	1
	Gasket	1
40-450 (E), Diaphragm/Gasket Kit, 7298-111	Diaphragm Assembly	2
	O-ring	1
	Gasket	1
All, Range Spring Kit (2, 7, 15, 30, & 50 psi), 7298-112	Range Spring (Qty 3 of each)	15
All, Range Spring Kit (100 psi & greater), 7298-113	Range Spring (Qty 4 of each)	8
40H100, Minimum Overhaul Kit, 7298-114	Restriction Screw	1
	Diaphragm	1
	Top Diaphragm Assembly	1
	O-ring	1
	O-ring	1
	Diaphragm Spacer	1
	Diaphragm Assembly, Model 40H-	1
All, Adjusting Knob Assembly, 1447-22	---	1
All, Top Casing, 4557-11	---	1
All, Bushing, 3494-4	---	1
All, Bottom Forging, 10803-36	---	1
40-2, Locknut, 1447-41	---	1
All, Range Spring (White 2 psi), 1938-1	---	1
All, Range Spring (Gray 7 psi), 2155-67	---	1
All, Range Spring (Blue 15 psi), 572-37	---	1
All, Range Spring (Red 30 psi), 572-36	---	1
All, Range Spring (Brown 50 psi), 2155-22	---	1
All, Range Spring (Green 100, 300, & 450 psi), 2155-23	---	1
All, Range Spring (Black 200 psi), 2155-90	---	1

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