

# Carbide Needle and Seat Service Kit

## 1. Description

The carbide needle and seat service kit modifies the Nordson soft seat and hard seat fluid pressure regulators to accommodate abrasive materials.

See Table 1 for a description of the materials used with the Viton and ethylene propylene O-rings included in the service kit. For more information, refer to *Parts*.

Table 1 Materials Used with Viton and Ethylene Propylene O-Rings

Materials		Viton O-Ring	Ethylene Propylene O-Ring
Waterborne	Toluene	X	
	Xylene	X	
	Butysol	X	
Solventborne	Acetone		X
	MEK		X

**NOTE:** To modify the soft seat regulator, purchase only the service kit. To modify the hard seat regulator, purchase the kit, the seat retainer, and the pin. Refer to *Parts* for ordering information.

**NOTE:** For easier identification, when installing this kit into a hard seat regulator, note that the hard seat carbide pin measures 19.380-mm (0.763-in.) long whereas the soft seat pin measures 20.244-mm (0.797-in.) long.

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## 2. Installation

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**WARNING:** Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.



**WARNING:** Relieve fluid pressure from the system before disassembling the regulator. Failure to relieve pressure may result in serious injury or death.

The soft seat and hard seat fluid pressure regulators can be serviced while connected to the fluid lines. Relieve all fluid pressure from the line before servicing the regulator.

### ***Regulator Disassembly***

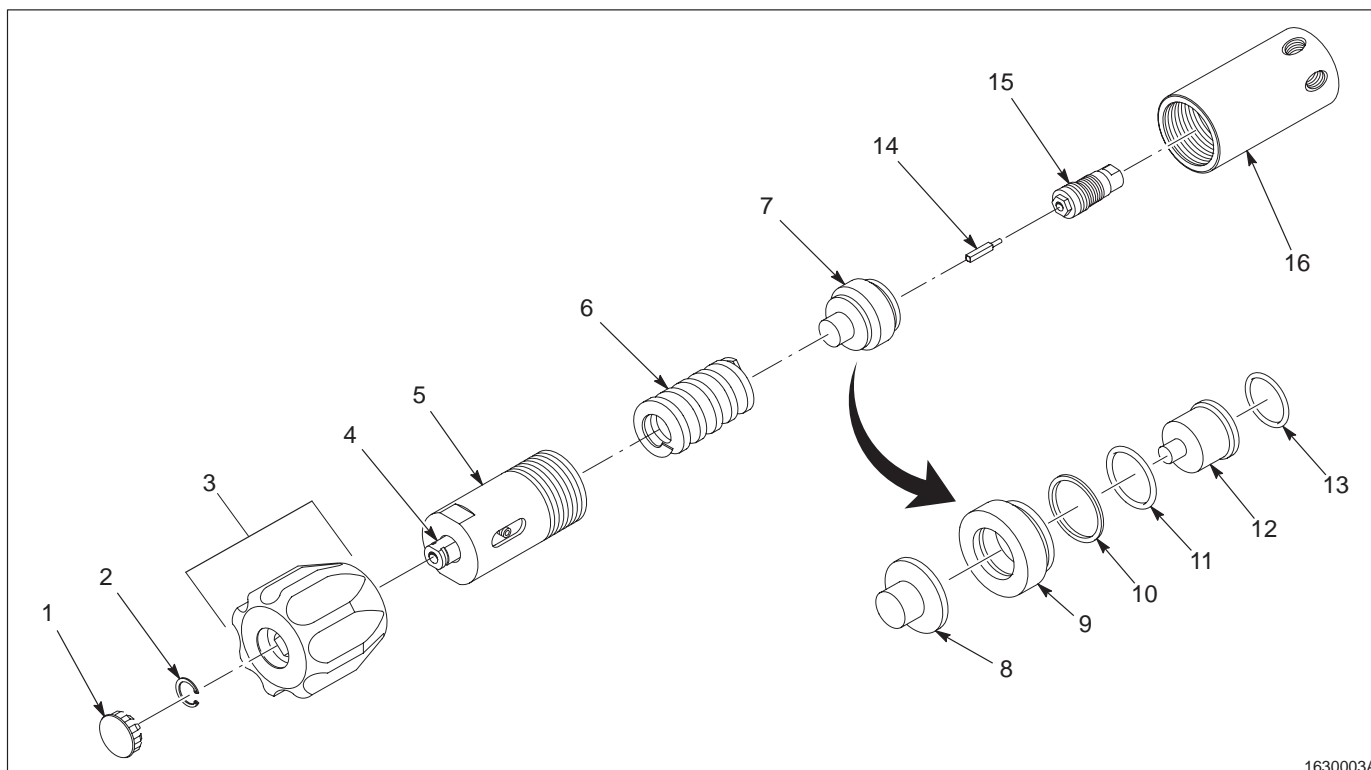
See [Figure 1](#).

Follow these steps to disassemble the regulator.

1. Pry off the button plug (1) from the top of the hand knob (3) using a flat-head screwdriver.
2. Using external snap-ring pliers, remove the retaining ring (2) from the adjusting screw (4). Remove the hand knob.
3. Place the regulator body (16) in a vise and tighten. Unscrew the bonnet (5) using a 1<sup>5</sup>/<sub>8</sub>-in. open-end wrench. Remove the load spring (6) from the regulator body.
4. Remove the spring pad (8) from the piston assembly (7).
5. Pull the piston assembly out of the regulator body, using pliers if necessary.

**NOTE:** Be careful not to lose the pin (14) because it is loosely installed in the valve assembly (15).

6. Remove the pin.
7. Disassemble the piston assembly and discard the O-rings (11, 13) and the back-up ring (10).
8. Using a  $\frac{1}{2}$ -in. socket wrench, unscrew the valve assembly from the regulator body.



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Fig. 1 Exploded View of Fluid Pressure Regulator

- |                    |                    |                    |
|--------------------|--------------------|--------------------|
| 1. Button plug     | 7. Piston assembly | 12. Piston         |
| 2. Retaining ring  | 8. Spring pad      | 13. O-ring         |
| 3. Hand knob       | 9. Back-up adapter | 14. Pin            |
| 4. Adjusting screw | 10. Back-up ring   | 15. Valve assembly |
| 5. Bonnet          | 11. O-ring         | 16. Regulator body |
| 6. Load spring     |                    |                    |

### ***Installing the Carbide Needle and Seat***

[See Figure 2.](#)

**NOTE:** Be careful not to scratch the surface of the valve body (5). If you are not using a main valve rebuild wrench, use a smooth-jawed vise, or use pliers with the teeth covered with a soft cloth to prevent scratching the valve body. Refer to the *Parts* section for ordering information on the main valve rebuild wrench.

1. The shoulders of the valve body contain an O-ring (3) and back-up ring (2). Place the shoulders of the valve body in a smooth-jawed vise or a main valve rebuild wrench.

2. Unscrew the seat retainer (1) with a  $\frac{1}{2}$ -in. wrench.

**NOTE:** The seat retainer has left-hand threads. Rotate the seat retainer clockwise to loosen it.

3. Unscrew the spring retainer (8) from the bottom of the valve body. Remove the spring (7) and needle (6).

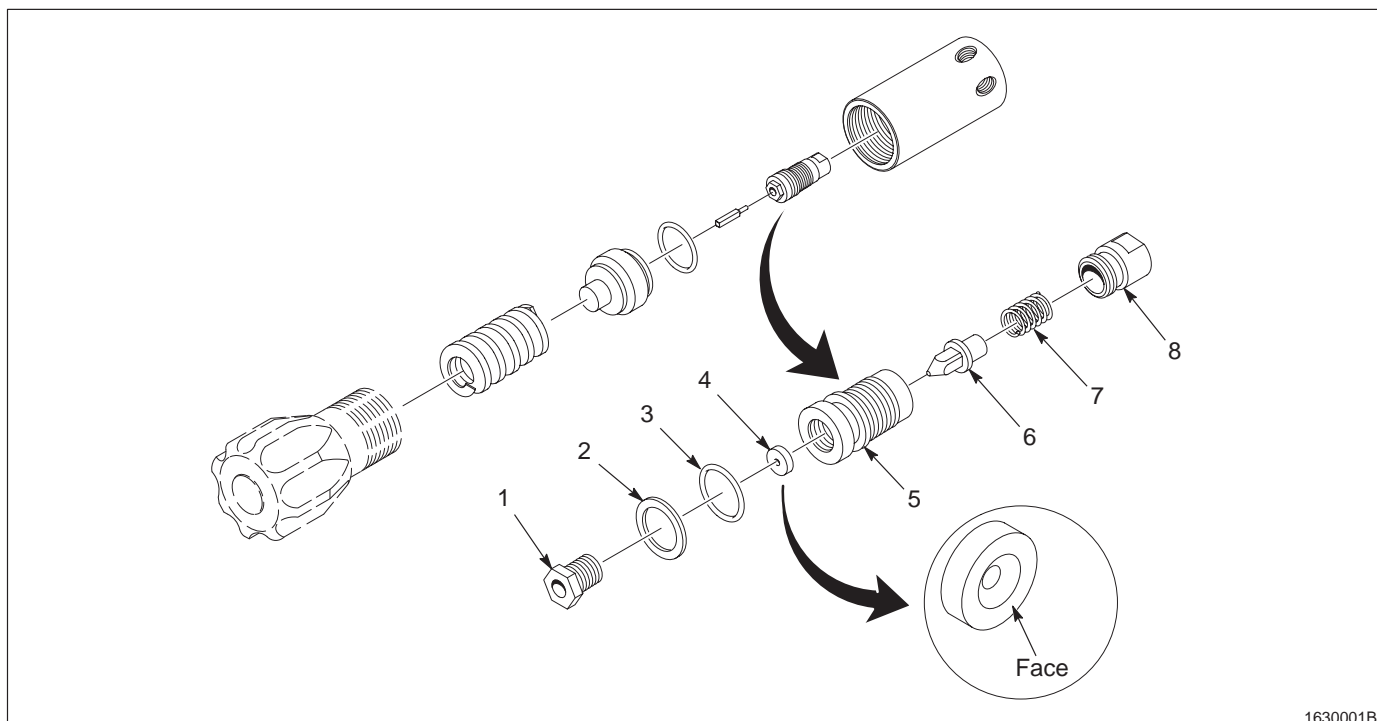
4. Remove the seat (4) from the valve body.

**NOTE:** The needle and seat are a matched set and must be replaced together.

5. Remove the new carbide seat from the kit package. Cover the face of the carbide seat with pipe adhesive.
6. Install the carbide seat, with the adhesive-covered face down, into the valve body.
7. Remove the new carbide needle from the kit package. Install the needle into the spring, then install both into the spring retainer.
8. Screw the spring retainer, spring, and needle into the valve body until finger tight.

**NOTE:** If you are installing the kit into a hard seat regulator, you must order and install a new seat retainer. Refer to *Additional Parts Required for Hard Seat Regulator* in *Parts* for ordering information.

9. Screw the seat retainer into the valve body counterclockwise. Tighten the seat retainer to 19.8–22.6 N•m (175–200 in.-lb) tight.
10. Lubricate a new Viton or ethylene propylene O-ring and a back-up ring with O-ring grease. Install them on the valve body.



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Fig. 2 Exploded View of Valve Assembly

1. Seat retainer
2. Back-up ring
3. O-ring

4. Seat
5. Valve body
6. Needle

7. Spring
8. Spring retainer

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### 3. Assembly

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See Figure 1.

Follow these steps to reassemble the regulator.

**NOTE:** Do not over-tighten the valve assembly. You might loosen the left-threaded seat retainer (See Figure 2, (1)).

1. Screw the valve assembly (15) into the regulator body (16) and tighten to 11.3–12.4 N•m (100–110 in.-lb) with a 1/2-in. socket and torque wrench.

**NOTE:** If you are using a hard seat pressure regulator, you must also order and install a new pin. Refer to *Additional Parts for Hard Seat Regulator* in *Parts*. The new soft seat pin is 20.244-mm (0.763-in.) long.

2. Install the pin (14) in the valve assembly.
3. Lubricate the new Viton or ethylene propylene O-rings (11,13) and back-up ring (10) with O-ring grease. Install them in and on the back-up adapter (9).
4. Assemble the piston assembly (8 through 12) and install it into the regulator body.
5. Set the load spring (6) on the spring pad (8).
6. Screw the bonnet (5) into the regulator body.
7. Place the regulator body into a vise and tighten the bonnet.
8. Place the hand knob (3) over the adjusting screw (4). Install the retaining ring (2). Install the button plug (1).

#### 4. Parts

Use these parts lists to order the kit, replace individual parts, and order the additional parts required for the hard seat regulator.

#### **Carbide Needle and Seat Service Kit**

**NOTE:** If installing this kit in a hard seat pressure regulator, you must also order the parts listed under *Additional Parts Required for Hard Seat Regulator* in this section.

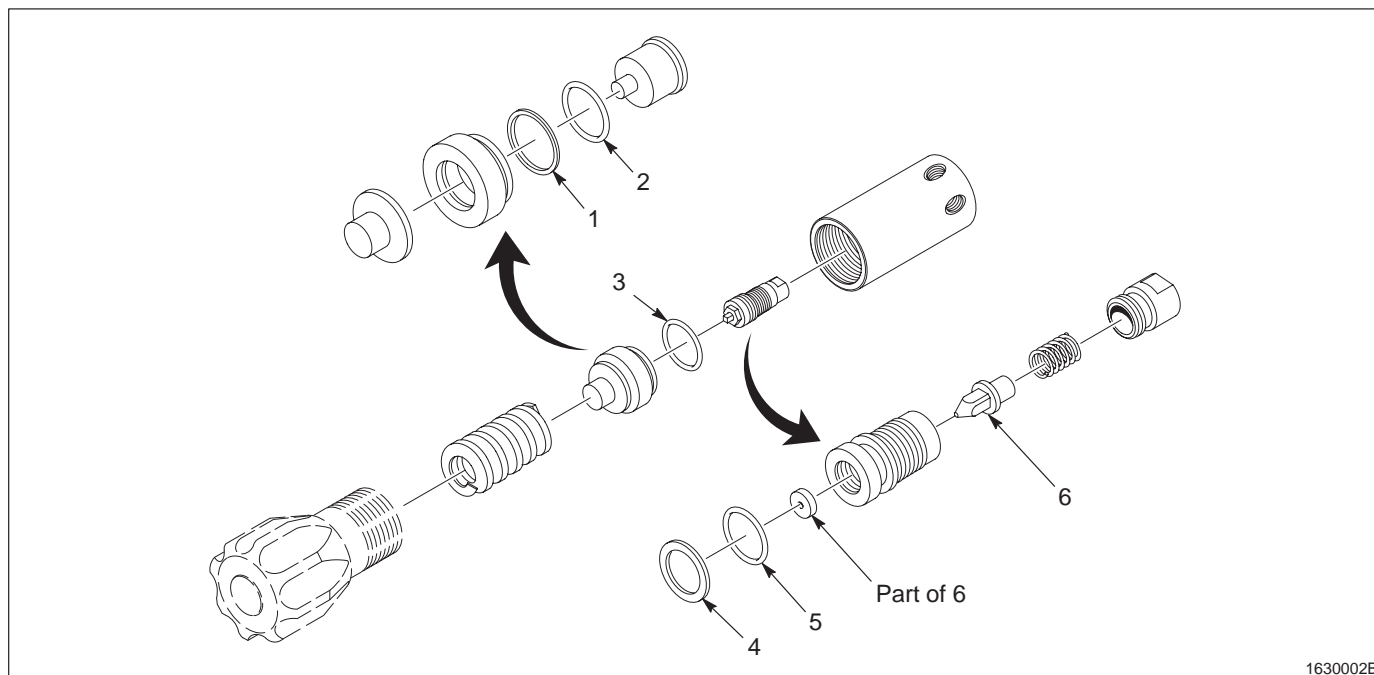
See Figure 3.

Item	Part	Description	Quantity	Note
—	324 784	Service kit, regulator, needle and seat, carbide	1	
1	954 120	• Back-up ring, single, 1.00 ID	1	
2	941 203	• O-ring, Viton, black, 1.000 x 1.188 in.	1	A
2	941 202	• O-ring, EPR, 1.000 x 1.188 x 0.094 in.	1	B
3	941 225	• O-ring, Viton, black, 1.125 x 1.313 in.	1	A
3	941 223	• O-ring, EPR, 1.125 x 1.313 x 0.094 in.	1	B
4	954 043	• Back-up ring	1	
5	941 136	• O-ring, Viton, black, 0.562 x 0.750 in.	1	A
5	941 135	• O-ring, EPR, 0.562 x 0.750 x 0.094 in.	1	B
6	-----	• Needle and seat, regulator	1	
NS	900 431	• Pipe adhesive	AR	

NOTE A: Use with waterborne materials.

B: Use with solventborne materials.

**Carbide Needle and Seat  
Service Kit** (contd)



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Fig. 3 Carbide Needle and Seat Service Kit



### Additional Parts Required for Hard Seat Regulator

See Figure 4.

If you are using a hard seat regulator, order these additional parts to install the new carbide needle and seat.

Item	Part	Description	Quantity	Note
1	109 439	Pin, soft seat	1	
2	145 361	Retainer, seat, soft seat regulator	1	

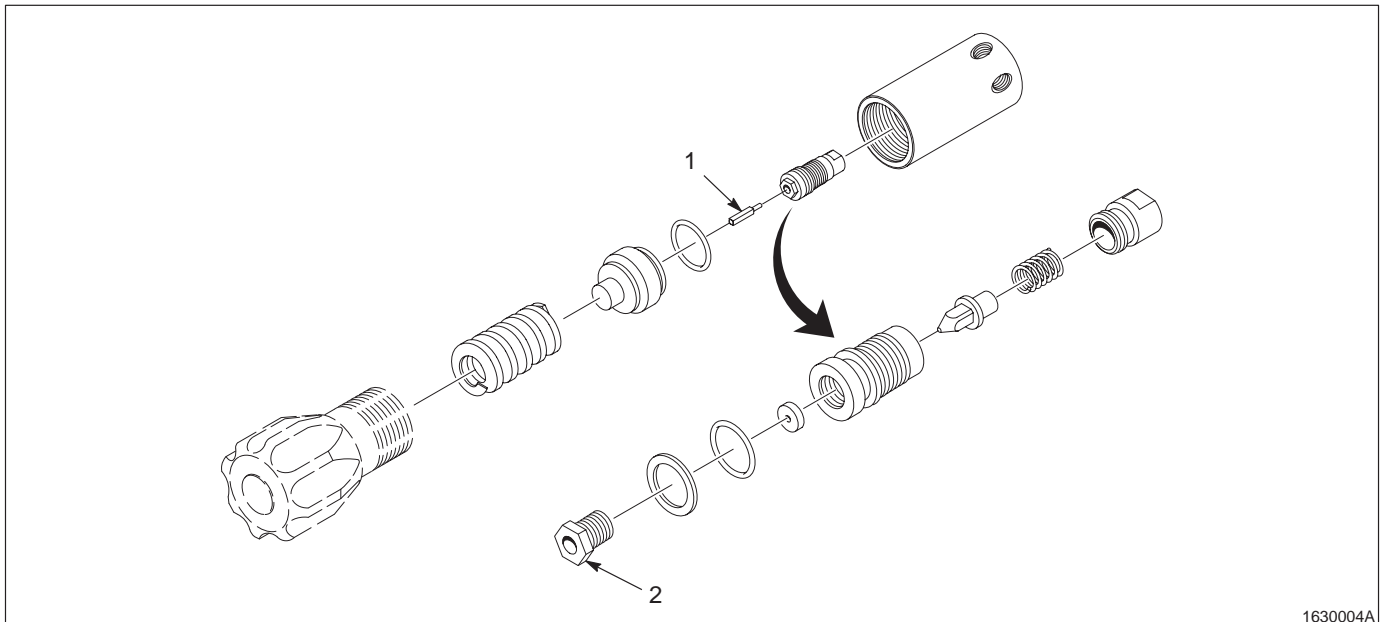


Fig. 4 Additional Parts Required for the Hard Seat Regulator

### Spare Parts

This part must be ordered separately.

Part	Description	Quantity
901 940	Wrench, rebuild, main valve	1

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