

Soft Seat Fluid Pressure Regulator

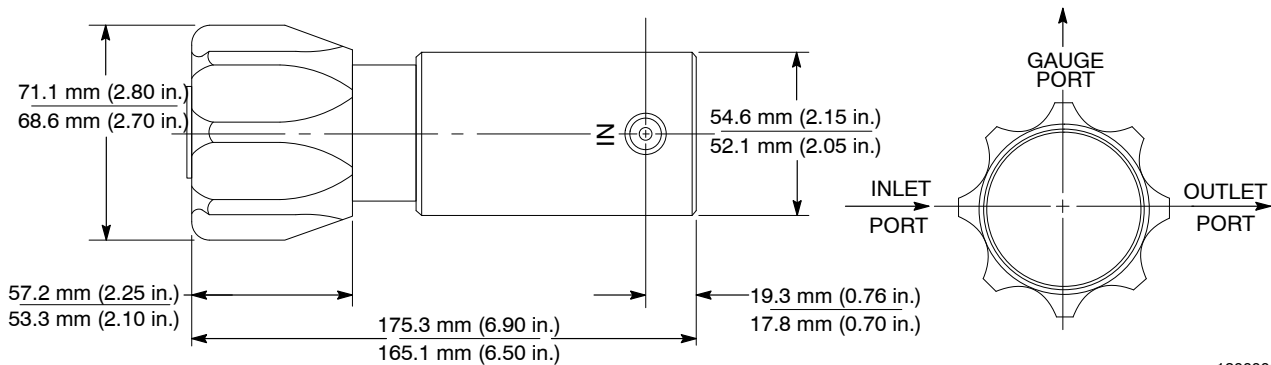
Description

The Nordson soft seat fluid pressure regulator is designed for use with nonabrasive liquid coatings. The regulator body is constructed of stainless steel with a nickel-plated brass bonnet. It is a non-venting model that regulates the fluid pressure flow out of high-pressure pumps. Use the standard Viton O-rings with Toluene, Xylene, and Butysol. Replace the Viton O-rings with Ethylene Propylene O-rings for use with Acetone or MEK.

If using abrasive materials, change the needle and seat to an optional carbide needle and seat for longer service life. The carbide needle and seat kit also includes both Viton O-rings and Ethylene Propylene O-rings for use with your specific applications.

Specifications

Maximum Inlet Pressure:	689.5 bar (10,000 psi)
Output Pressure Range:	0.69–103.5 bar (10–1,500 psi)
Inlet and Outlet Ports:	1/4-in. NPT
Weight:	2.26 kg (5 lb)
Dimensions:	See Figure 1



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Figure 1 Soft Seat Fluid Pressure Regulator Dimensions

Repair



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



WARNING: System or material pressurized. Relieve pressure before performing the following tasks. Failure to observe this warning may result in serious injury or death.

The soft seat fluid pressure regulator can be serviced while it is still connected to the line. Be sure to relieve all fluid pressure from the line before servicing the regulator.

Disassembly

1. See Figure 2. Pry off the button plug (1) from the top of the hand knob (4) using a flat-head screwdriver.
2. Using external snap-ring pliers, remove the retaining ring (2) from the adjusting screw (9). Remove the hand knob.
3. Place the regulator body (29) in a vise. Unscrew the bonnet (5) using a 1⁵/₈-in. open-end wrench. Remove the load spring (13) and the spring pad (14) from the regulator body.
4. Unscrew the set screw (12) that secures the adjusting screw assembly (9 through 11) within the bonnet (5). Remove the adjusting screw assembly, washers (6, 8), and thrust bearing (7). The washers and thrust bearing may stick to the bonnet because of the lubricant applied.
5. Pull the piston assembly (15 through 18) out of the regulator body, using pliers if necessary. Be careful not to drop the pin (20), because it is loosely placed below the piston and within the valve assembly seat retainer (21). Remove the pin.
6. Using a 1/2-in. socket wrench, unscrew the valve assembly (21 through 28) from the regulator body (29).

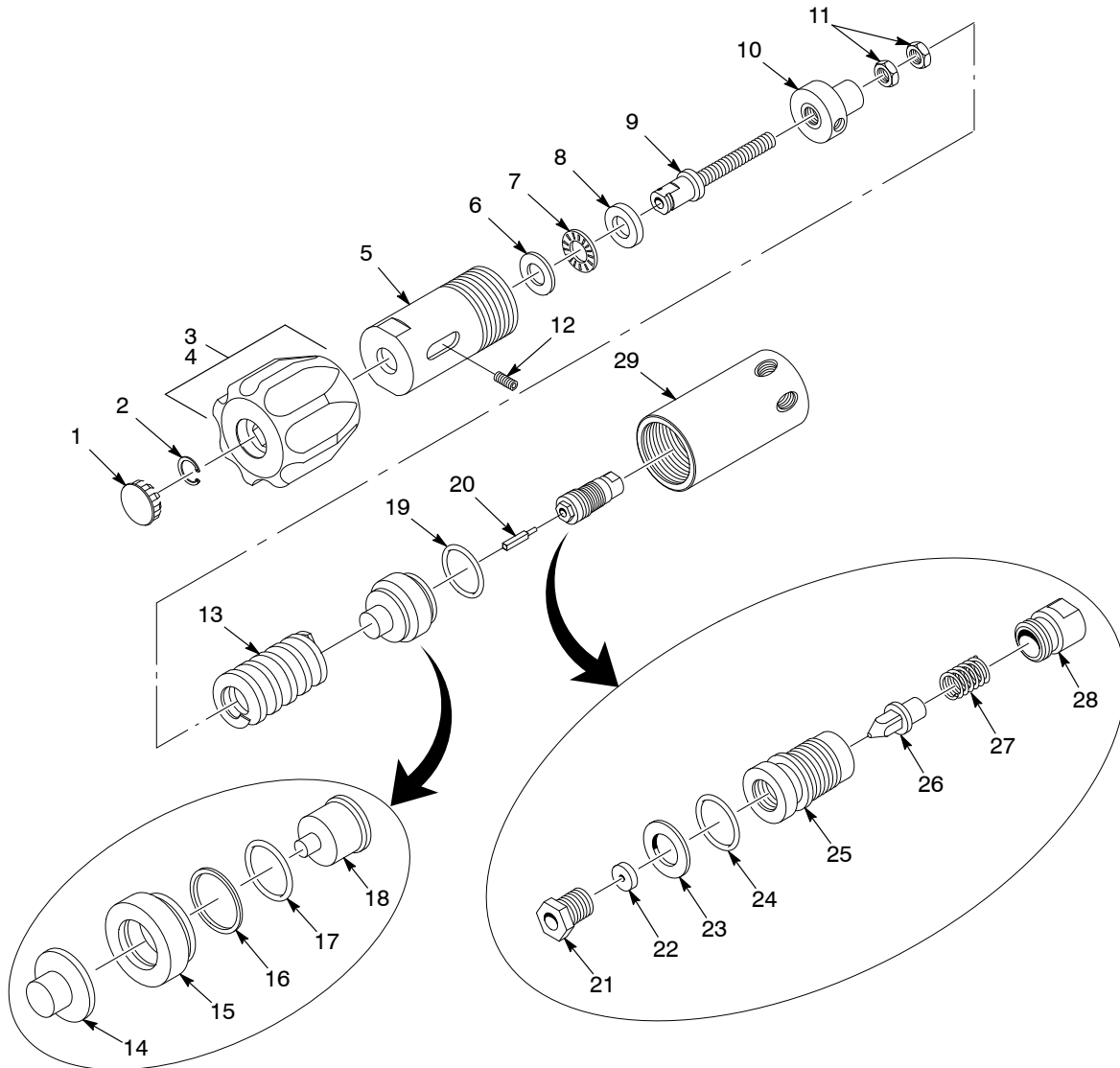
Repairing the Valve

NOTE: Be careful not to mar the surface of the valve body. Use a smooth-jawed vise or pliers with the teeth covered with a soft cloth to prevent scratching the valve body.

1. See Figure 2. Place the shoulders of the valve body (25) (where the O-rings and plastic snap ring are) into a vise.
2. The seat retainer (21) has left-hand threads. Unscrew the seat retainer using a 1/2-in. wrench.
3. Unscrew the spring retainer (28) from the bottom of the valve body (25). Remove the spring (27) and main valve (26).
4. Replace the main valve or soft seat (22), if necessary. Screw the spring retainer, spring, and main valve into the valve body until finger tight.
5. Place the valve body in the smooth-jawed vise. Screw the seat retainer into the valve body counterclockwise. Tighten the seat retainer to 19.8–22.6 N•m (175–200 in.-lb).
6. Remove the O-ring (24) and plastic snap ring (23) from the valve body. Install a new, lubricated O-ring and snap ring on the valve body.

Repairing the Piston

1. See Figure 2. Remove the spring pad (14) from the piston assembly (15 through 18), if not already removed.
2. Snap the piston (18) out from the back-up adapter (15).
3. Remove both O-rings (17, 19) and the back-up ring (16). Install new, lubricated O-rings in the back-up adapter and on the bottom rim of the back-up adapter. Install a new back-up ring in the back-up adapter.
4. Push the piston through the back-up adapter until it snaps into place.
5. Install the spring pad on the piston assembly.



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Figure 2 Exploded View of Soft Seat Fluid Pressure Regulator

- | | | |
|--------------------|---------------------|-----------------------|
| 1. Button plug | 11. Hex nuts | 21. Seat retainer |
| 2. Retaining ring | 12. Set screw | 22. Soft seat |
| 3. Label | 13. Load spring | 23. Plastic snap ring |
| 4. Hand knob | 14. Spring pad | 24. O-ring |
| 5. Bonnet | 15. Back-up adapter | 25. Valve body |
| 6. Thin washer | 16. Back-up ring | 26. Main valve |
| 7. Thrust bearing | 17. O-ring | 27. Spring |
| 8. Thick washer | 18. Piston | 28. Spring retainer |
| 9. Adjusting screw | 19. O-ring | 29. Regulator body |
| 10. Spring cap | 20. Pin | |

Repairing the Adjusting Screw

See Figure 2. Typically, you do not need to disassemble the adjusting screw assembly (9 through 11). Be sure that the threads of the screw (9) are well lubricated and that the two hex nuts (11) are tightened against each other. If they are not tight, they could vibrate loose during operation.

To tighten the adjusting screw hex nuts (11), follow these steps:

1. Turn the top nut clockwise.
2. Turn the bottom nut counterclockwise until it is no more than 2.5 cm (1 in.) from the bottom of the adjusting screw (9) threads.
3. Tighten the top nut against the bottom nut.

Assembly

1. See Figure 2. Screw the valve assembly (21 through 28) into the regulator body (29) and tighten to 11.3–12.4 N•m (100–110 in.-lb).

NOTE: Do not over-tighten the valve assembly. You might loosen the left-threaded seat retainer (21).

2. Set the pin (20) in the seat retainer (21).
3. Insert the spring pad (14) and piston assembly (15 through 18) into the regulator body (29).
4. Lubricate the thrust bearing (7) and washers (6, 8) and install them on the adjusting screw (9).
5. Insert the adjusting screw assembly (9 through 11), washers (6, 8), and thrust bearing (7) into the bonnet.
6. Align the threaded hole of the spring cap (10) to the opening in the bonnet. Tighten the set screw (12).
7. Set the load spring (13) on the spring pad (14).
8. Install the bonnet onto the regulator body (29).
9. Place the regulator body (29) into a vise and tighten the bonnet to 67.8 N•m (50 ft-lb).
10. Place the hand knob (4) and label (3) over the adjusting screw (9). Install a new retaining ring (2). Install the button plug (1).

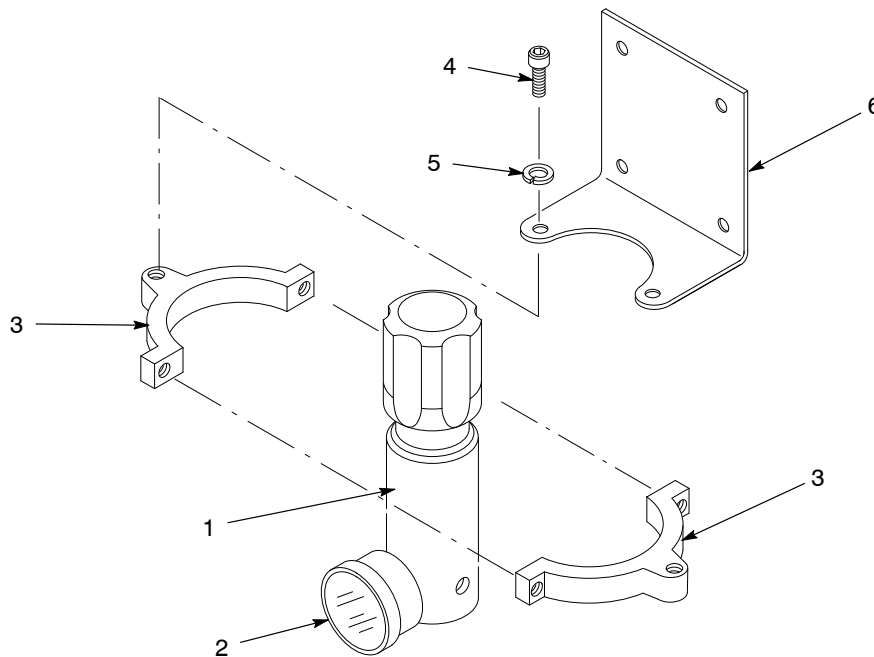
Parts

Soft Seat Fluid Pressure Regulator with Mounting

See Figure 3.

Item	Part	Description	Quantity	Note
—	243536	REGULATOR ASSEMBLY, with mounting, soft seat	1	
1	247873	• REGULATOR, pressure, fluid, soft seat	1	A
2	901265	• GAUGE, fluid, 0–140 bar (0–2000 psi)	1	
3	145393	• BRACKET, mounting	1	
4	981208	• SCREW, hex, 1/4-20 UNC x 0.625 in., zinc	2	
5	983140	• WASHER, lock, e, split, 0.250 in.	2	
6	1009071	• BRACKET, regulator, diaphragm	1	

NOTE A: If you order a regulator using this part number, you will not receive the mounting hardware.



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Figure 3 Soft Seat Fluid Pressure Regulator with Mounting

Soft Seat Fluid Pressure Regulator

See Figure 4.

Item	Part	Description	Quantity	Note
—	247873	REGULATOR, pressure, fluid, soft seat	1	
1	900768	• BUTTON, plug, 1.000 in.	1	
2	986106	• RETAINING RING, external, 62, basic	1	A
3	145354	• LABEL, hand knob, increase/decrease	1	
4	145355	• KNOB, hand, regulator	1	
5	145356	• BONNET, regulator	1	
6	983030	• WASHER, thrust, thin, pressure regulator	1	
7	145357	• BEARING, thrust	1	
8	983031	• WASHER, thrust, thick, pressure regulator	1	
9	981486	• SCREW, adjusting, non-venting	1	
10	145408	• CAP, spring, regulator	1	
11	342294	• NUT, hex, jam, $\frac{3}{8}$ -24, left-hand thread	2	
12	227414	• SCREW, socket, set, $\frac{1}{4}$ x 20 x 0.50 in. flat, zinc	1	
13	145358	• SPRING, comp, 2.080 x 1.480 in.	1	
14	145407	• PAD, spring, hard seat/soft seat	1	
15	145410	• ADAPTER, back-up, hard seat/soft seat	1	B
16	954120	• BACK-UP RING, single, 1.00-in. ID	1	A, B
17	941203	• O-RING, Viton, black, 1.000 x 1.188 in.	1	A, B
18	145359	• PISTON, regulator, hard seat/soft seat	1	B
19	941225	• O-RING, Viton, black, 1.125 x 1.313 in.	1	A, B
20	109439	• PIN, soft seat	1	
21	145361	• RETAINER, seat, soft seat regulator	1	
22	109437	• SEAT, soft	1	A
23	954043	• BACK-up ring	1	A
24	941136	• O-RING, Viton, black, 0.562 x 0.750 in.	1	A
25	145362	• BODY, valve, soft seat regulator	1	
26	109438	• VALVE, main	1	A
27	987040	• SPRING, compression, 0.630 x 0.290 OD x 0.034 in.	1	A
28	145372	• RETAINER, spring, soft seat regulator	1	
29	145360	• BODY, ported, soft seat regulator	1	
NS	901940	WRENCH, rebuild, main valve	1	C

NOTE A: These parts (or their equivalents) are included in both of these optional kits:

Kit 106379: seal/soft seat service kit with Viton O-rings

Kit 106420: seal/soft seat service kit with EPR (ethylene propylene) O-rings

B: These parts are included in the hard seat/soft seat regulator piston service kit, part 188035.

C: This part must be ordered separately.

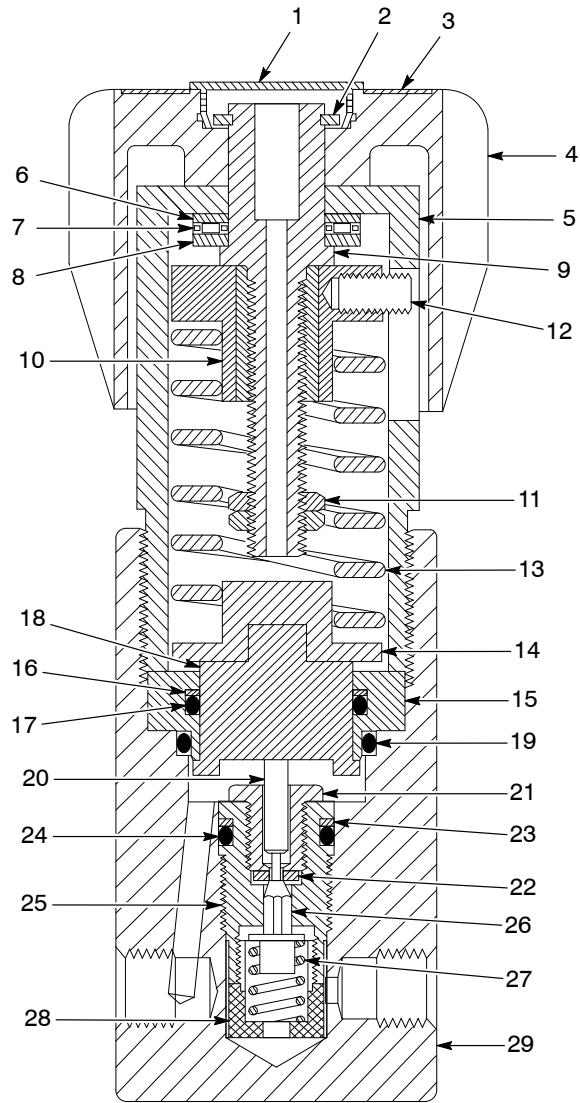


Figure 4 Soft Seat Fluid Pressure Regulator, Cutaway View

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Viton Seal and Soft Seat Service Kit

See Figure 4. This kit includes replacement seals for applications that use Toluene, Xylene, and Butysol.

Item	Part	Description	Quantity	Note
—	106379	SERVICE KIT, seal/soft seat, Viton	1	A
2	986106	• RETAINING RING, external, 62, basic	1	
16	954120	• BACK-UP RING, single, 1.00-in. ID	1	
17	941203	• O-RING, Viton, black, 1.000 x 1.188 in.	1	
19	941225	• O-RING, Viton, black, 1.125 x 1.313 in.	1	
22	109437	• SEAT, soft	1	
23	954043	• BACK-up ring	1	
24	941136	• O-RING, Viton, black, 0.562 x 0.750 in.	1	
26	109438	• VALVE, main	1	
27	987040	• SPRING, compression, 0.630 x 0.290 OD x 0.034 in.	1	

NOTE A: The O-rings in this kit are intended for use with Toluene, Xylene, and Butysol.

Ethylene Propylene Seal and Soft Seat Service Kit

See Figure 4. This kit includes replacement seals for applications that use Acetone and MEK.

Item	Part	Description	Quantity	Note
—	106420	SERVICE KIT, seal/soft seat, EPR	1	A
2	986106	• RETAINING RING, external, 62, basic	1	
16	954120	• BACK-UP RING, single, 1.00-in. ID	1	
17	941202	• O-RING, EPR, 1.000 x 1.188 x 0.094 in.	1	
19	941223	• O-RING, EPR, 1.125 x 1.313 x 0.094 in.	1	
22	109437	• Seat, soft	1	
23	954043	• BACK-UP RING	1	
24	941135	• O-RING, EPR, 0.562 x 0.750 x 0.094 in.	1	
26	109438	• VALVE, main	1	
27	987040	• SPRING, compression, 0.630 x 0.290 OD x 0.034 in.	1	

NOTE A: The O-rings in this kit are intended for use with Acetone and MEK.

Carbide Needle and Soft Seat Service Kit

This kit includes both Viton O-rings for Toluene, Tylene, and Butysol applications and Ethylene Propylene O-rings for Acetone and MEK applications.

Part	Description	Note
324784	SERVICE KIT, regulator, needle and seat, carbide	

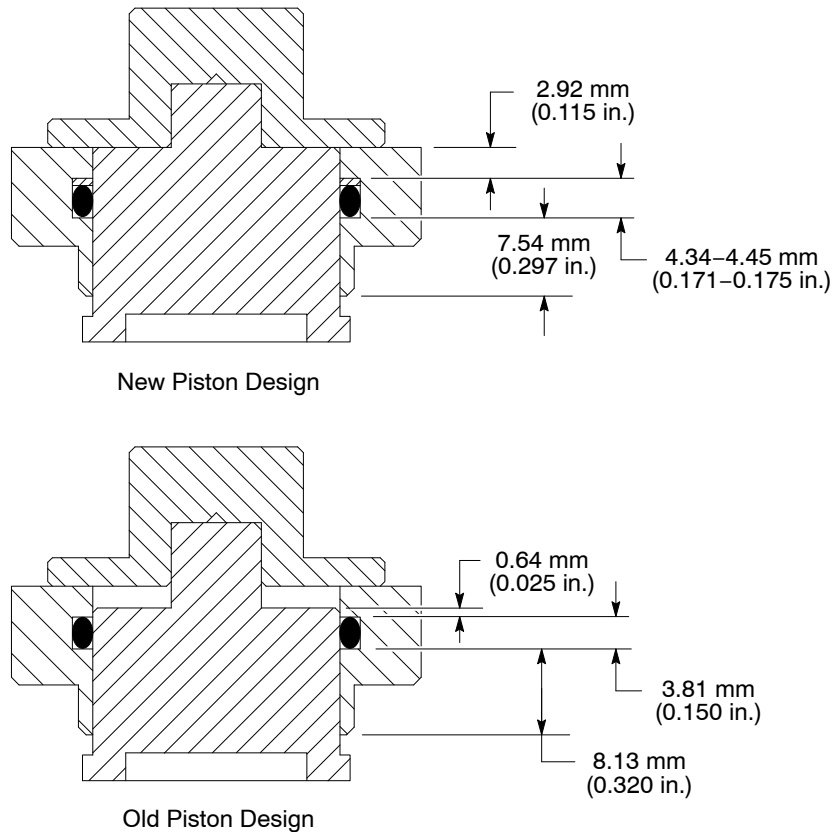
Hard Seat/Soft Seat Regulator Piston Service Kit

Order this service kit only if your regulator has the old piston design. This kit contains a replacement piston to convert your regulator to the new design.

See Figure 5 to find out if your regulator already has the new piston. If it does, you do not need this kit.

See Figure 4 to identify the item numbers in the following parts list.

Item	Part	Description	Quantity	Note
—	188035	SERVICE KIT, regulator, piston, hard seat/soft seat	1	
15	145410	• ADAPTER, back-up, hard seat/soft seat	1	
16	954120	• BACK-UP RING, single, 1.00-in. ID	1	
17	941203	• O-RING, Viton, black, 1.000 x 1.188 in.	1	
18	145359	• PISTON, regulator, hard seat/soft seat	1	
19	941225	• O-RING, Viton, black, 1.125 x 1.313 in.	1	



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Figure 5 Old and New Piston Designs

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