



1227LRG

Little Pressure Regulator

General Instructions

The 1227LRG Little Pressure Regulator is used with natural gas, compressed air, and other gases. Depending on the configured model, the maximum possible inlet pressure is 2000 psi (138 bar) and the temperature limits are -40°F to 180°F (-40°C to 82°C). Please refer to the 1227LRG Product Specifications section of the SOR® 1200 Series Pressure Regulators Catalog (Form 1631) to determine your model's exact specifications. The application of your regulator shouldn't exceed any of the specified ratings.



The SOR 1227LRG Pressure Regulator doesn't include internal relief. A pressure relieving or pressure limiting device should be used to insure that the outlet pressure doesn't exceed the regulator's specifications while in service. Leakage, equipment damage, or personal injury can result from over-pressuring the regulator.

NOTE: If you suspect that a product is defective, contact the factory or the SOR® Representative in your area for a return material authorization number (RMA). This product should only be installed by trained and competent personnel.

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Design and specifications are subject to change without notice.

*For latest revision, go to **sorinc.com***



All SOR instructions, as well as applicable local, state, and federal codes and regulations should be adhered to when performing installation, operation, or maintenance of a regulator. Personal injury, equipment damage, or leakage can occur if the regulator is over-pressured or physically damaged. To avoid physical damage the regulator should be installed in a safe location. The regulator shouldn't be installed in systems that could exceed its specified pressure limits (given in the SOR 1200 Series Pressure Regulator Catalog - Form 1631). If leakage develops, then immediate service is required. Failure to remove the regulator from service immediately may create a hazardous situation.

Installation

See pages 9 and 10 for Parts List references, shown as “(25).”

NOTE: If continued operation is necessary during installation or maintenance then a three-valve bypass should be installed around the position of the regulator.

- ① Remove all packaging plugs from the regulator body inlet and outlet connections.
- ② Carefully inspect the regulator for damage or debris. The regulator's inlet and outlet connections should be cleaned and free of debris before installation.
- ③ Ensure that all piping that is to be connected to the regulator is clean of foreign matter as well.
- ④ Apply pipe joint material to the piping threads that will be connected to the regulator.
- ⑤ Shut down the process before connecting the regulator.
- ⑥ Connect the regulator so that the process flows in the direction of the arrow on the body (6).



Under certain conditions, this regulator may vent gas to the atmosphere. If operating in a hazardous process, this gas must not be allowed to accumulate and/or ignite. The user must be sure to vent the exhaust to a safe location away from any air intakes or possible ignition sources. The vent line must also be protected against clogging and condensation. Failure to safely vent hazardous gas from the regulator exhaust could result in personal injury, death, or property damage if a fire or explosion were to occur.

- ⑦ The regulator must be oriented such that the screen vent (24) is protected against clogging. If the regulator is being installed outside, position the vent facing downward to prohibit moisture and debris from falling directly into the vent. This may require the spring case (8) and/or diaphragm casing to be repositioned (7).

NOTE: Refer to Page 4 for assistance with “Rotating the Spring Case” procedure.

NOTE: Refer to Page 4 for assistance with “Adjusting the Diaphragm Casing Orientation”.



Use pressure gauges to monitor the outlet pressure of the regulator during startup and vent the downstream pressure if necessary. The presence of downstream pressure during the startup of the regulator may cause the diaphragm of the regulator to be overpressured. This condition could cause personal injury or property damage if the regulator is overpressured to the point of explosion.

- ⑧ Slowly begin flowing gas through the regulator.
- ⑨ Verify that the regulator isn't leaking from any connection points.
- ⑩ Proceed to the Calibration section.

Calibration



While calibrating the unit always use a pressure gauge to monitor the pressure.



Under normal circumstances, the outlet pressure should not exceed the output range of the spring.

- ① Remove the screw cap (25).
- ② Loosen the hexnut (30).
- ③ To increase the set point, rotate the adjusting screw (32) clockwise.
- ④ To decrease the set point, rotate the adjusting screw (32) counter-clockwise.
- ⑤ Once desired set point has been achieved, re-tighten the hexnut (30) while keeping the adjusting screw's (32) position fixed.
- ⑥ Reinstall the screw cap (25) to prevent accidental set point adjustment.

Maintenance

Regulators accumulate general wear over time and must be inspected/evaluated for the possible need to repair or replace the instrument in accordance with local, state, and federal rules and regulations. SOR offers spare parts and repair kits for customers to order and keep on hand for routine maintenance.



To avoid personal injury or equipment damage resulting from sudden release of pressure or ignition of accumulated gas, isolate the regulator from the system and bleed all of its internal pressure before attempting maintenance procedures.

ROTATING THE SPRING CASE



Before proceeding, remove the screw cap (25), loosen the locknut (30), and release all spring tension by rotating the adjusting screw (32) counter-clockwise until the spring (19) is completely relaxed.

- 1 Remove the eight casing screws (31) and rotate the spring case (8) into the desired orientation.
- 2 Insert and hand-tighten the casing screws (31) back into the spring case (8).
- 3 Rotate the adjusting screw (32) clockwise putting tension back on the range spring (19) and slack in the diaphragm (21).
- 4 Complete tightening the casing screws (31).



Tighten the eight casing screws (31) in a crisscross pattern.

- 5 Re-calibrate the regulator to the desired set point per Calibration procedure.

ADJUSTING THE DIAPHRAGM CASING ORIENTATION



Before proceeding, remove the screw cap (25), loosen the locknut (30), and add spring tension by rotating the adjusting screw (32) clockwise for 6 complete turns past the point it first contacts the upper spring seat (18). This separates the valve disk face (29) from the orifice (20) so neither becomes damaged during maintenance.

- 1 Remove the two body screws (26) that hold the body (6) and diaphragm casing (7) together.
- 2 With the body (6) and diaphragm casing (7) disconnected, reorient them to the desired position and reconnect.

NOTE: *When reassembling the body (6) and diaphragm casing (7), the pitot tube extending off the boost body (14) must be inserted into the outlet side of the regulator body (6).*

- 3 Insert the body screws (26) and tighten.
- 4 Re-calibrate the regulator to the desired set point per calibration procedure.

REPLACING THE RANGE SPRING



Before proceeding, remove the screw cap (25), loosen the locknut (30), and release all spring tension by rotating the adjusting screw (32) counter-clockwise until the spring (19) is completely relaxed.

- 1 Remove the eight casing screws (31) and separate the spring case (8) and diaphragm casing (7) exposing the range spring (19).
- 2 Remove the original range spring (19) and replace with new desired range.
- 3 Put the spring case (8) and diaphragm casing (7) back together. Insert and hand-tighten the casing screws (31) back into the spring case (8).
- 4 Rotate the adjusting screw (32) clockwise putting tension back on the spring and slack in the diaphragm (21).
- 5 Complete tightening the casing screws (31).



Tighten the eight casing screws (31) in a crisscross pattern.

- 6 Re-calibrate the regulator to the desired set point per Calibration procedure.

REPLACING THE ORIFICE



Before proceeding, remove the screw cap (25), loosen the locknut (30), and add spring tension by rotating the adjusting screw (32) clockwise for 6 complete turns past the point it first contacts the upper spring seat (18). This separates the valve disk face (29) from the orifice (20) so neither becomes damaged during maintenance.

- 1 Remove the two body screws (26) that hold the body (6) and diaphragm casing (7) together.
- 2 The orifice (20) is threaded into the body (6). Remove the worn orifice.



Before installing the replacement orifice (20) into the body (6), apply lubricant to the orifice threads.

- 3 Attach the replacement orifice (20) to the body (6) and tighten.

NOTE: *When reassembling the body (6) and diaphragm casing (7), the pitot tube extending off the boost body (14) must be inserted into the outlet side of the regulator body (6).*

- 4 Ensure the body (6) and diaphragm casing (7) are positioned correctly and then insert the body screws (26) and tighten.
- 5 Re-calibrate the regulator to the desired set point per Calibration procedure.

REPLACING THE VALVE DISK ASSEMBLY

(included in SOR Valve Disk Repair Kit)



Before proceeding, remove the screw cap (25), loosen the locknut (30), and add spring tension by rotating the adjusting screw (32) clockwise for 6 complete turns past the point it first contacts the upper spring seat (18). This separates the valve disk face (29) from the orifice (20) so neither becomes damaged during maintenance.

- 1 Remove the two body screws (26) that hold the body (6) and diaphragm casing (7) together.
- 2 The disk assembly (29) is attached to the stem (12) with a hairpin clip (27). Remove the hairpin clip and worn disk assembly.
- 3 Align the hole in the stem (12) with the hole in the replacement disk assembly (29) and secure using the hairpin clip (27).
- 4 With the body (6) and diaphragm casing (7) disconnected, reorient them to the desired position and reconnect.

NOTE: *When reassembling the body (6) and diaphragm casing (7), the pitot tube extending off the boost body (14) must be inserted into the outlet side of the regulator body (6).*

- 5 Insert the body screws (26) and tighten.
- 6 Re-calibrate the regulator to the desired set point per Calibration procedure.

REPLACING THE DIAPHRAGM

(included in SOR Valve Disk Repair Kit)



Before proceeding, remove the screw cap (25), loosen the locknut (30), and release all spring tension by rotating the adjusting screw (32) counter-clockwise until the spring (19) is completely relaxed.

- 1 Remove the eight casing screws (31) and separate the spring case (8) and diaphragm casing (7).
- 2 Tilt the diaphragm casing (7) so that the pusher post (28) slides off the lever (10) allowing the diaphragm assembly to be removed.

NOTE: *The diaphragm assembly consists of the pusher post (28), diaphragm (21), diaphragm head (16), lower spring seat (17), and hex head screw (5).*

- 3 Unscrew the hex head screw (5) from the pusher post (28) and separate them. Remove the worn diaphragm (21).
- 4 Install the replacement diaphragm (21) onto the hex head screw (5) and thread the hex head screw (5) back into the pusher post (28) until hand-tight.
- 5 Attach the underside of the pusher post (28) onto the lever (10) by hooking it into place. Rotate the diaphragm (21) until the holes in the diaphragm (21) are aligned with the holes in the spring case (8).

- ⑥ Now that the diaphragm (21) is oriented properly, remove the diaphragm assembly by unhooking the pusher post (28) from the lever (10). Complete tightening the hex head screw (5).
- ⑦ As done in step 5, re-hook the pusher post (28) back onto the lever (10) and double-check to ensure the diaphragm (21) and spring case (8) holes are still aligned.



If the diaphragm (21) and spring case (8) holes have become misaligned, undo the hex head screw (5), turn the diaphragm (21) so the holes match up again, and then re-torque the hex head screw (5) back into the pusher post (28).

- ⑧ Install the range spring (19) on top of the lower spring seat (17) and place the upper spring seat (18) atop the range spring (19).



Apply lubricant to the upper spring seat (18) before assembling with the range spring (19).

- ⑨ Place the spring case (8) back on top of the diaphragm casing (7) and ensure the location of the screen vent (24) is in the desired position.
- ⑩ Insert and hand-tighten the casing screws (31) back into the spring case (8).
- ⑪ Rotate the adjusting screw (32) clockwise putting tension back on the range spring (19) and slack in the diaphragm (21).
- ⑫ Complete tightening the casing screws (31).



Tighten the eight casing screws (31) in a crisscross pattern.

- ⑬ Re-calibrate the regulator to the desired set point per Calibration procedure.

REPLACING THE DIAPHRAGM CASING, STEM O-RING, AND STEM BACKUP O-RINGS (included in SOR Valve Disk Repair Kit)



Before proceeding, remove the screw cap (25), loosen the locknut (30), and add spring tension by rotating the adjusting screw (32) clockwise for 6 complete turns past the point it first contacts the upper spring seat (18). This separates the valve disk face (29) from the orifice (20) so neither becomes damaged during maintenance.

- ① Remove the two body screws (26) that hold the body (6) and diaphragm casing (7) together.
- ② The disk assembly (29) is attached to the stem (12) with a hairpin clip (27). Remove the hairpin clip (27) and disk assembly (29) and set aside for reassembly.

NOTE: *Removing the disk assembly (29) allows access to the stem assembly which is connected to the lever (10). The stem assembly consists of the boost body (14), stabilizer (22), stem guide (11), and stem (12).*

- ③ From the diaphragm casing (7), remove the boost body (14), stabilizer (22), and stem guide (11) and set aside for reassembly.
- ④ Disconnect the stem (12) by unhooking it from the end of the lever (10), remove it from the diaphragm casing (7) and set aside for reassembly.
- ⑤ Replace the diaphragm casing o-ring (2) which is located on the outside of the boost body (14).



Apply lubricant to the replacement diaphragm casing o-ring (2) before installing it onto the boost body (14).

- ⑥ Replace the stem o-ring (1) and stem backup o-rings (3) which are located on the stem (12).

NOTE: The main stem o-ring (1) is colored black while the stem backup o-rings (3) are colored white. The main stem o-ring (1) will be installed between the stem backup o-rings (3).



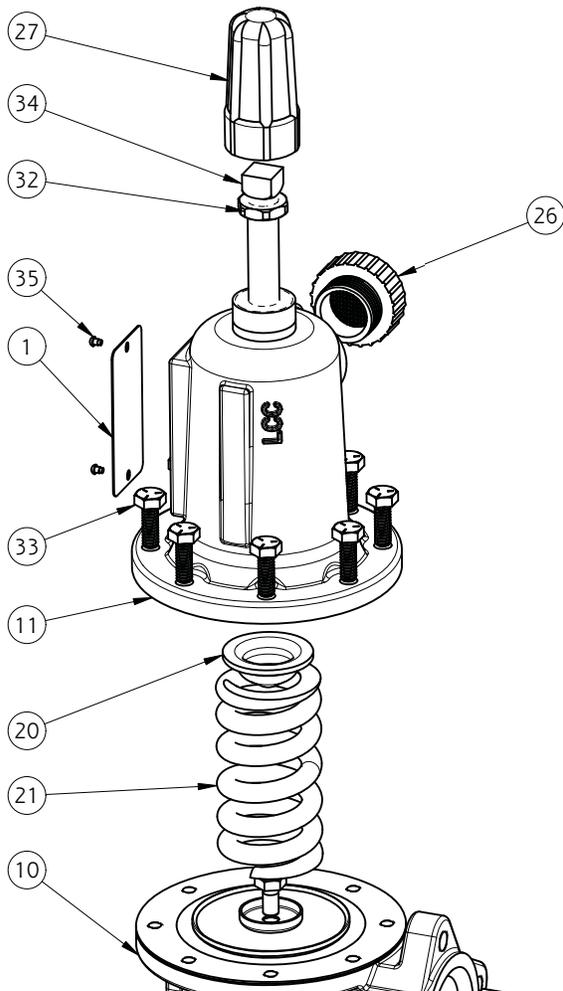
Apply lubricant to the replacement stem o-ring (1) and stem backup o-rings (3) before installing them onto the stem (12).

- ⑦ Before reinstalling the stem (12), locate the lever (10) at the bottom of the diaphragm casing (7). Lubricate the contact points of the lever (10) as well as the hooking point where the stem (12) and lever (10) connect.
- ⑧ Insert the stem (12) back into the diaphragm casing (7) and hook it back onto the lever (10).
- ⑨ Slide the stem guide (11) onto the stem (12) and insert the stem guide (12) back into the diaphragm casing (7).
- ⑩ Slide the stabilizer (22) onto the stem (12) followed by the boost body (14) and push the boost body (14) forward so that it is seated into the diaphragm casing (7).
- ⑪ Insert the end of the disk assembly (29) into the stem (12), align the holes, and secure in place using the hairpin clip (27).
- ⑫ With the body (6) and diaphragm casing (7) disconnected, reorient them to the desired position and reconnect.

NOTE: When reassembling the body (6) and diaphragm casing (7), the pitot tube extending off the boost body (14) must be inserted into the outlet side of the regulator body (6).

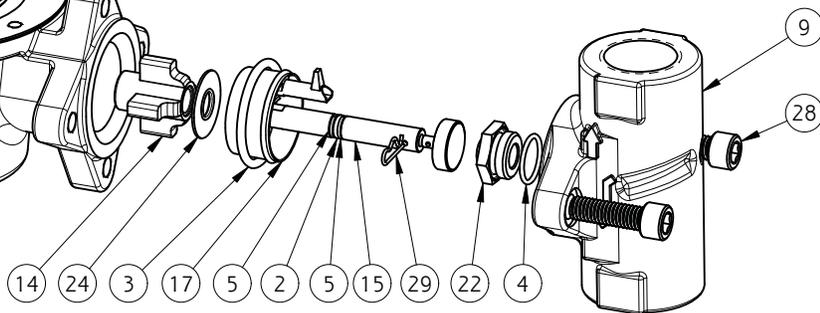
- ⑬ Insert the body screws (26) and tighten.
- ⑭ Re-calibrate the regulator to the desired set point per Calibration procedure.

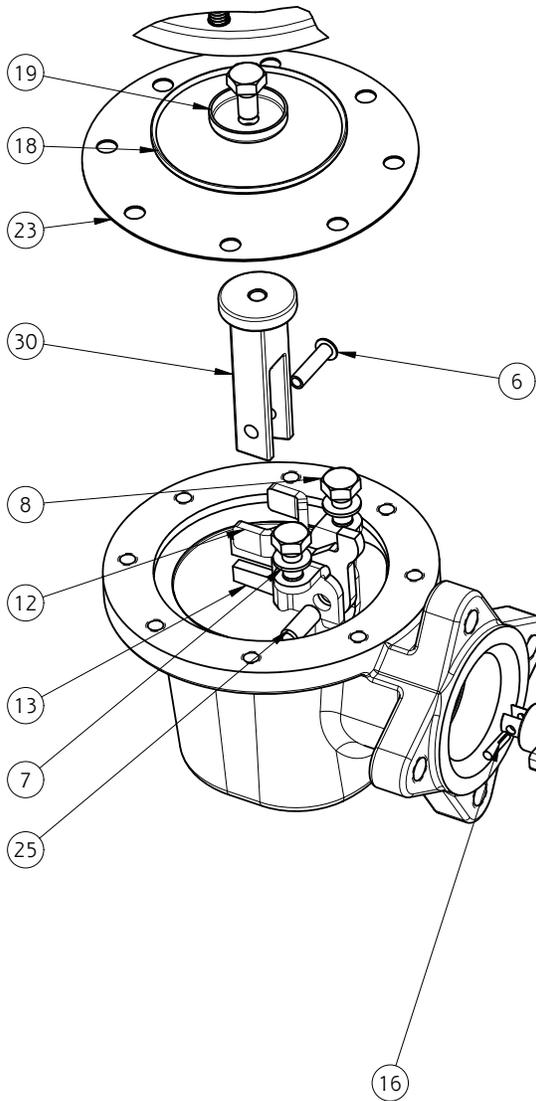
Parts List



Item	Description	Qty.
1	Nameplate	1
2*	Stem O-Ring	1
3*	Diaphragm Casing O-Ring	1
4	Orifice O-Ring	1
5*	Stem Backup O-Ring	2
9	Body	1
10	Diaphragm Casing	1
11	Spring Case	1
14	Stem Guide	1
15	Stem	1
17	Boost Body	1
20	Upper Spring Seat	1
21	Range Spring	1
22	Orifice	1
24	Stabilizer	1
26	Screen Vent Assembly	1
27	Adjusting Screw Cap	1
28	Body Screw	2
29*	Hairpin Clip	1
32	Hexnut	1
33	Casing Screw	8
34	Adjusting Screw	1
35	Rivets	2

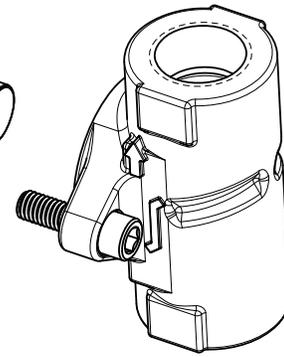
* Included with SOR Valve Disk Repair Kit





Item	Description	Qty.
6	Pusher Post Pin	1
7	Lock Washer	2
8	Hex Head Screw	3
12	Lever Retainer	1
13	Lever	1
16	Grooved Pin	1
18	Diaphragm Head	1
19	Lower Spring Seat	1
23*	Diaphragm	1
25	Lever Pin	1
30	Pusher Post	1
31*	Disk Assembly	1

* Included with SOR Valve Disk Repair Kit



Repair Kits

Orifice Replacement Kits

Material	O-Ring Material*	Size		Part No.
Aluminum	Nitrile (NBR)	3/32"	2.4 mm	6231400P
		1/8"	3.2 mm	6231401P
		3/16"	4.8 mm	6231402P
		1/4"	6.4 mm	6231403P
		3/8"	9.5 mm	6231404P
		1/2"	13 mm	6231405P
Stainless Steel		3/32"	2.4 mm	6231406P
		1/8"	3.2 mm	6231407P
		3/16"	4.8 mm	6231408P
		1/4"	6.4 mm	6231409P
		3/8"	9.5 mm	6231410P
		1/2"	13 mm	6231411P
Aluminum	Fluorocarbon (FKM)	3/32"	2.4 mm	6231412P
		1/8"	3.2 mm	6231413P
		3/16"	4.8 mm	6231414P
		1/4"	6.4 mm	6231415P
		3/8"	9.5 mm	6231416P
		1/2"	13 mm	6231417P
Stainless Steel		3/32"	2.4 mm	6231418P
		1/8"	3.2 mm	6231419P
		3/16"	4.8 mm	6231420P
		1/4"	6.4 mm	6231421P
		3/8"	9.5 mm	6231422P
		1/2"	13 mm	6231423P

*O-Ring Material will match Diaphragm Material when ordered as a complete assembled.

Replacement Springs

Color (Range)	Part No.
Yellow Spring (5-20 psig)	6231032
Green Spring (15-40 psig)	6231033
Blue Spring (35-80 psig)	6231034
Red Spring (70-150 psig)	6231035

Valve Disk Repair Kits

Materials of Construction	Part No.
NBR Disk / Aluminum Trim	6231076P
NBR Disk / Stainless Steel Trim	6231077P
Nylon Disk / Aluminum Trim	6231078P
Nylon Disk / Stainless Steel Trim	6231079P

Valve Disk Repair Kits include: Stem O-Ring and Backup O-Ring, Diaphragm Casing O-Ring, Diaphragm, Hairpin Clip, and Disk Assembly.

NOTE: The Valve Disk Repair Kits listed in this General Instructions use Nitrile (NBR) for the Diaphragm material. Repair Kits with alternative Valve Disk/Trim/Diaphragm material combinations can be provided upon request. Consult factory for details.

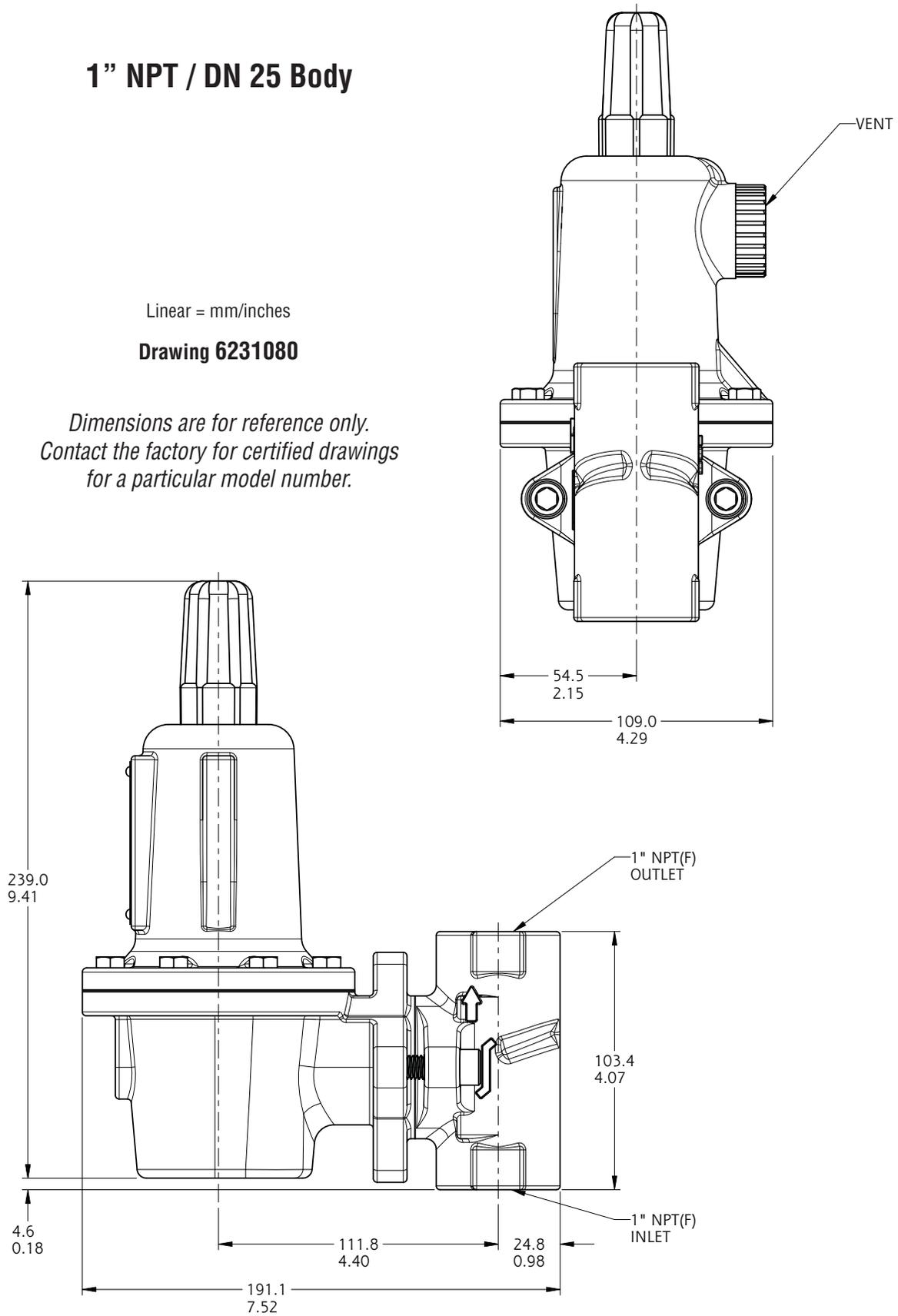
Dimensions

1" NPT / DN 25 Body

Linear = mm/inches

Drawing 6231080

*Dimensions are for reference only.
Contact the factory for certified drawings
for a particular model number.*



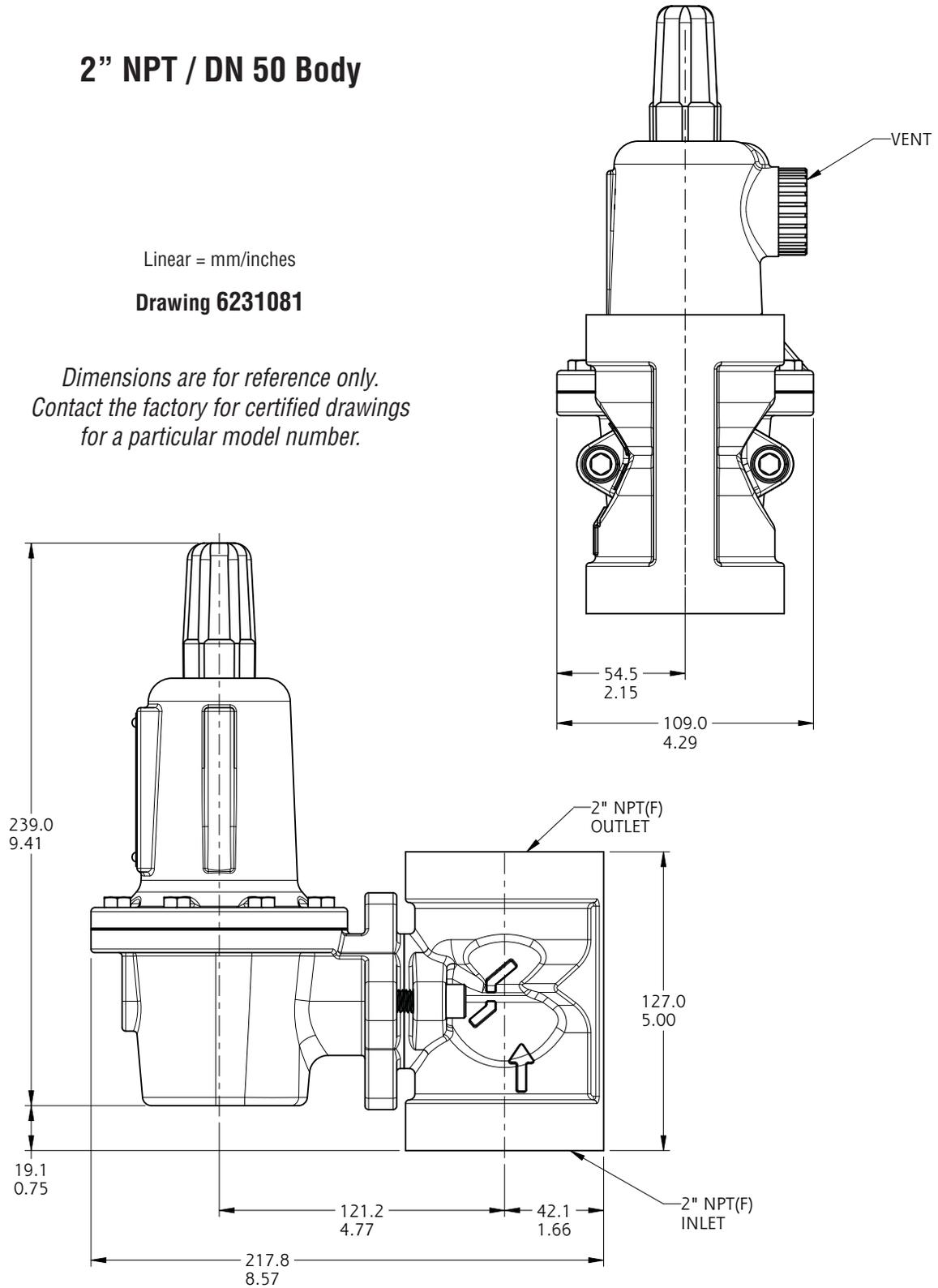
Dimensions

2" NPT / DN 50 Body

Linear = mm/inches

Drawing 6231081

*Dimensions are for reference only.
Contact the factory for certified drawings
for a particular model number.*



Troubleshooting



To avoid personal injury or equipment damage resulting from sudden release of pressure, or ignition of accumulated gas, isolate the regulator from the system and bleed all of its internal pressure before attempting troubleshooting procedures.

Symptom	Probable Cause(s)	Corrective Action(s)
Leak occurring at body, detected through performance and/or the sound of gas leaking	Unit is improperly installed	Refer to Installation procedure on page 2
Unit does not hold pressure	Set point is not adjusted properly and is set too low	Refer to Calibration procedure on page 3
No outlet pressure from unit	Set point is not adjusted properly and is set too high	Refer to Calibration procedure on page 3
	Inlet and outlet connections installed with opposite orientation relative to pipeline flow	Refer to Installation procedure on page 2. Additionally, there is an arrow marked on the 1227LRG body indicating the direction of gas flow through the regulator inlet and outlet connections.



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16/16 Registered Quality System to ISO 9001

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