



Model SR9 Automatic Switchover

Installation, Operation & Maintenance

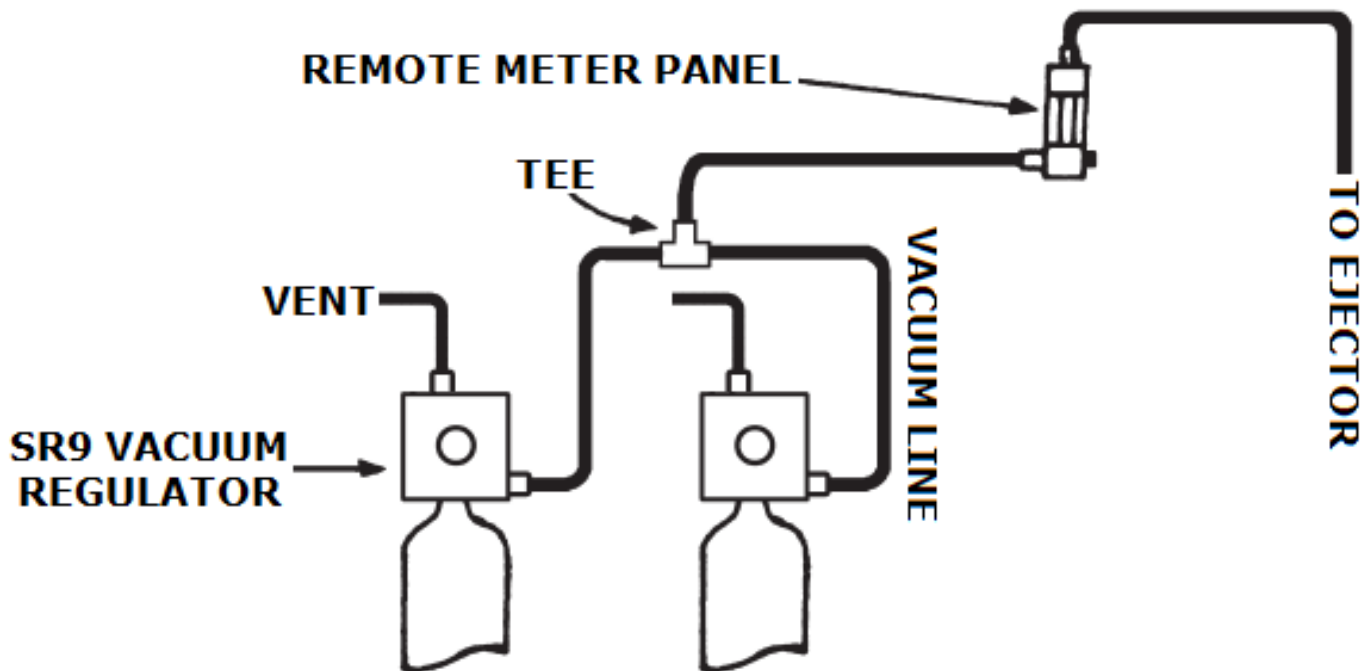
General: The Archer Instruments Model SR9 Automatic Switchover vacuum regulator is designed for use in pairs, with one unit connected to an on-line gas cylinder / gas source and the other connected to a standby cylinder / gas source. The SR9 can also be used in the same way with multiple units connected to multiple standby gas sources.

Safety: When working with chlorine, always use caution and follow applicable safety procedures. General safety considerations:

- * Store Chlorine separately from Ammonia.
- * When using chlorine, avoid locations that expose the cylinder and equipment to direct sunlight.
- * Do not apply heater or heat source directly to chlorine cylinders.
- * 150lb (upright) cylinders: Always keep cylinders upright and ensure the steel valve cap is in place when moving cylinders. Once cylinder is in place, a safety chain should be used to secure the cylinder.
- * Ton Containers: Use appropriate handling equipment when moving ton containers. When readying ton container for use, ensure valves are aligned vertically. The top valve accesses gaseous chlorine and the bottom valve accesses liquid chlorine. The bottom valve should never be touched unless your system employs a chlorine heat exchanger (evaporator) designed expressly for use with liquid chlorine. When drawing gas from ton containers an appropriate ton container adapter & drip leg must be used (also available from Archer Instruments).

Installing the Model SR9:

- 1) Carefully inspect the cylinder valve outlet surfaces and vacuum regulator inlet capsule surfaces for damage or debris prior to installation.
- 2) Note that the inlet port on the SR9 regulator ships with a filter cartridge installed. Do not remove this filter, as doing so will bring on maintenance requirements.
- 3) Always use a new lead gasket when connecting the vacuum regulator to a chlorine cylinder valve.
- 4) Holding the SR9 vacuum regulator upright, settle it over the cylinder valve and fit the inlet capsule into the cylinder valve outlet port.
- 5) Using a 3/8" wrench, tighten the yoke assembly "half-dog" set screw so that the lead gasket is crushed between the valve and the inlet capsule.
- 6) Connect the vent and vacuum tubing to the SR9 regulator (these are labeled). Vacuum tubing should be connected to a tee fitting, which connects the two vacuum regulators and the remote meter panel. See figure below:



NOTE: Vent tubing should always be connected and run to a safe location (outside of any building). A vent bug cap (provided with every Archer Instruments vacuum regulator) should be fitted over the end of vent tubing to prevent insects from entering the equipment.

Operating the Model SR9:

- 1) Prior to placing the SR9 vacuum regulator into operation, it is important to carefully test the lead gasket seal. A small squeeze bottle (provided with every Archer Instruments vacuum regulator) should be partially filled with ammonia. Squeezing the bottle allows the ammonia fumes to be used to test for chlorine leaks. A leak is detected by a visible light gray / white gas cloud when the two fumes interact. To test for leaks, open the cylinder valve ¼ turn and then close immediately. This pressurizes the lead gasket seal but ensures the full cylinder of chlorine is isolated during leak testing. Use ammonia fumes around the cylinder valve and lead gasket to check for any signs of leaking gas. If a leak is found, this must be addressed before placing the unit into operation.
- 2) After confirming no leaks exist, open the chlorine cylinder valve 1/3 of a turn. This is fully open and there is no need to open the valve further.
- 3) If the Model SR9 being placed into operation is meant to be the on-line unit (cylinder being used first), no further action is needed.
- 4) If the SR9 being placed into operation is meant to be the standby unit, turn the reset knob 2 to 2-1/4 turns counter clockwise to engage the automatic switchover detent. Then immediately turn the knob clockwise until it rests flush against the body of the SR9 regulator.
- 5) The indicator screw should protrude as shown on the label, indicating the unit is in standby. The regulator will now not allow gas to be fed until the on-line gas source is depleted, at which time it will automatically switch into operation.

Maintaining the SR9:

Recommended Maintenance Frequency: Archer Instruments recommends yearly routine maintenance of the SR9 vacuum regulator.

-Refer to the following parts diagram when performing maintenance on the SR9.

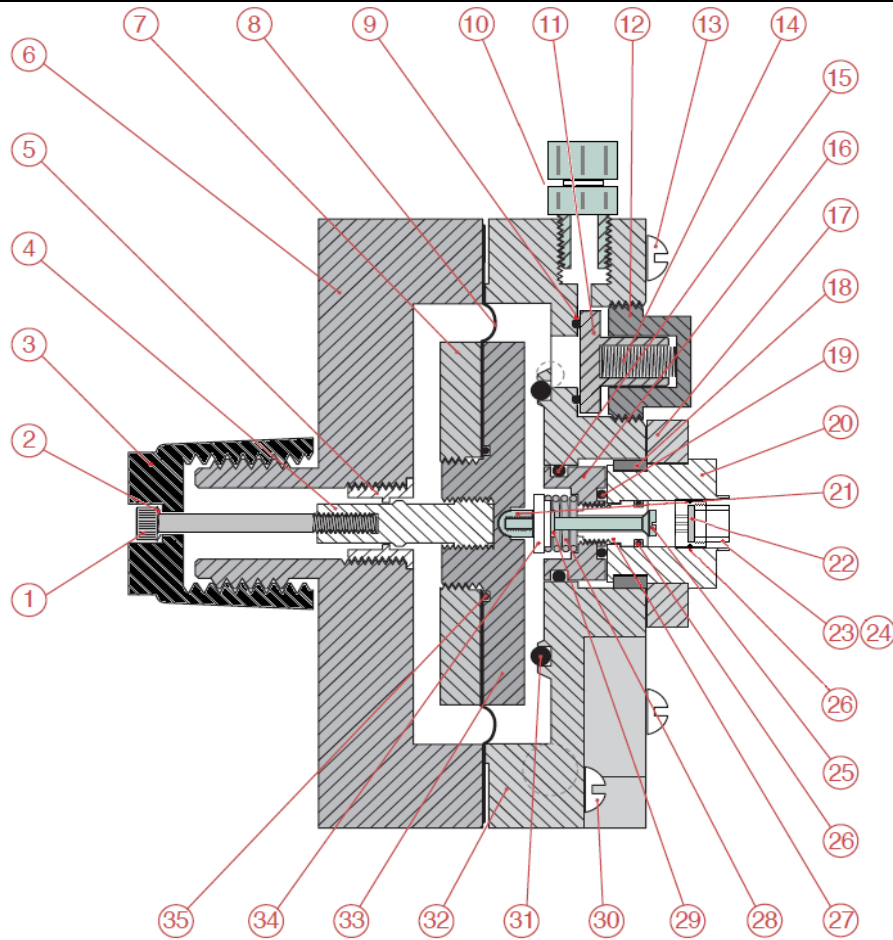
***IMPORTANT NOTE:**

The VRA-511 reset screw and the VRA-546 reset pin have **LEFT HANDED THREADS**. The VRA-546 reset pin also has left-handed threads where it is connected to the VRA-547 diaphragm back plate.

- 1) To disassemble the SR9, first make sure the unit is in the feed position (not in standby).
- 2) Next unscrew the VRA-511 reset screw (clockwise to unscrew). Then remove the VRA-541 reset knob.
- 3) Remove the two BTA-125 yoke screws and pull the yoke & inlet assembly out of the back of the vacuum regulator.

- 4) Remove the BTA-124 and BTA-129 body screws and separate the SR9 front and back bodies. The diaphragm assembly can then be removed.
- 5) The reset pin VRA-546 can be unscrewed if necessary (**left-hand threads**) from the diaphragm assembly using a pair of pliers, being careful to only grab the smooth part of the pin. This part has a raised ring, which must not be marred.
- 6) The diaphragm back plate VRA-547 and diaphragm front plate are threaded together using standard right-hand thread and can often be unscrewed by hand. If they will not unscrew, it may be necessary to use a vice and / or channel locks.
- 7) The vent (relief) valve assembly can be unscrewed from the back body for service.
- 8) Whenever routine maintenance is being performed, all parts should be thoroughly cleaned. It is recommended that all o-rings be replaced. Replacing the VRA-546 reset pin is only necessary if the SR9 will not remain in the standby position. This part has left-hand threads and must be fully screwed in until it bottoms out.
- 9) When reassembling, new o-rings should be given a thin film of the Fluorolube grease.
- 10) The inlet assembly is a critical component of the SR9 and improper handling or reassembly can result in dangerous leakage of chlorine gas. **Archer Instruments recommends only trained personnel or those familiar with vacuum regulator maintenance service the inlet assembly.** To service the inlet assembly:
 - a. Remove the inlet assembly from the yoke plate by sliding the VRA-142 retainer clip off of the inlet capsule.
 - b. Remove the inlet filter from the inlet capsule. The inlet filter cartridge (FCA-1 & FCA-2 used for 250 PPD and below) can be removed using the tool provided of by any ¼-20 threaded bolt or screw. The SR9 body screws and yoke screws are also ¼-20 thread. Unscrew the FCA-2 from the FCA-1 and replace the filter. For 500 PPD, a silver screen & filter floss are used.
 - c. The inlet assembly can now be disassembled by using a small flathead screwdriver to unscrew the inlet valve (VRA-112) from the vent plug (VRA-111). Be careful when disassembling as the inlet assembly is under spring tension and small parts could be lost.
 - d. Once the inlet valve, vent plug, spring, spring holder and spring retainer are removed, the seal plug (VRA-182) and inlet capsule (VRA-141) can be unscrewed.
 - e. The inlet valve seat (VRA-110) can be removed by pressing it up and through the inlet capsule. The inlet valve seat is a maintenance part and once removed should never be reused.
 - f. Carefully clean the inlet capsule, seal plug, inlet valve stem, vent plug, spring holder, spring retainer and spring. NOTE: The VRA-112 inlet valve stem must be cleaned using a non-abrasive cloth (or Scotch-Brite pad).
 - g. Using a new inlet valve seat and new o-rings (with a thin film of the grease provided on each o-ring), reassemble the inlet assembly in reverse order.

-Should you have any questions during maintenance of your SR9 vacuum regulator, please contact your local service provider or Archer Instruments for support.

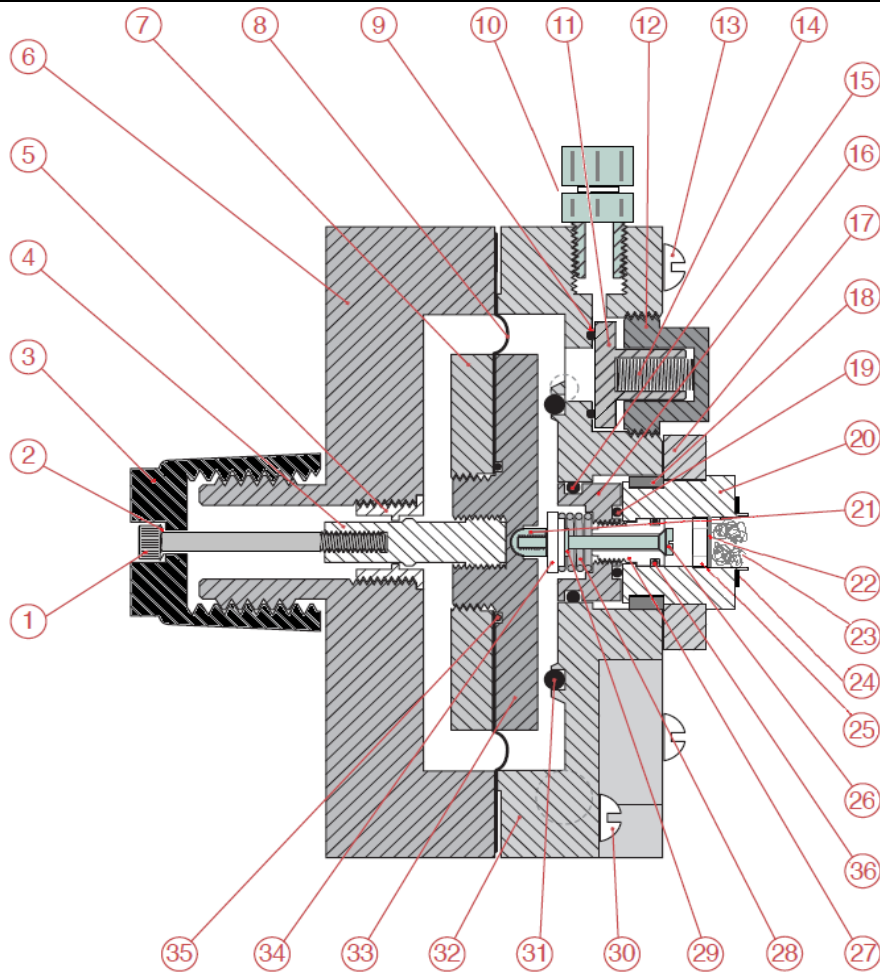


Item#	Qty.	Part #	Description	Item#	Qty.	Part #	Description
1	1	BTA-511	#10-24 x 2" reset screw	19	1	OA-VIT-112	O-Ring
2	1	RSW-9	Reset Screw Washer	20	1	VRA-141	Inlet Capsule
3	1	VRA-541	Reset Knob	21	1	VRA-111	Vent Plug
4	1	VRA-546	Reset Pin	22	1	VRA-5010	Filter Membrane (100PPD)
					1	VRA-102	Silver Screen (250 PPD)
					1	VRA-455	Filter Floss (250 PPD)
5	1	VRA-545	Reset Collar	23	1	FCA-1	Filter Cartridge Base
6	1	VRA-555	Front Body	24	1	FCA-2	Filter Cartridge Body
7	1	VRA-269	Diaphragm Front Plate	25	1	VRA-112	Inlet Valve Stem
8	2	DIA-106	SR9 Diaphragm	26	2	OA-VIT-011	O-Ring
9	1	OA-CEM-207	O-Ring	27	1	VRA-110	Inlet Valve Seat
10	1	TCA-64	Vent Tube Connector	28	1	SPA-104	Inlet Spring
11	1	VRA-521	Vent Seat	29	1	VRA-113	Inlet Spring Holder
12	1	VRA-522	Vent Cap	30	1	BTA-123	¼-20 x 1-1/2" Screw
13	5	BTA-129	¼-20 x 2-1/4" Screw	31	1	OA-VIT-331	O-Ring
14	1	SPA-520	Spring (vent)	32	1	VRA-556-XXX	Back Body
						250 / 500	250 PPD / 500 PPD
15	1	OA-VIT-212	O-Ring	33	1	VRA-547	Diaphragm Back Plate
16	1	VRA-182	Seal Plug	34	1	VRA-183	Spring Retainer
17	1	VRA-346	Yoke Assembly	35	1	OA-VIT-126	O-Ring
18	1	VRA-142	Retainer Clip	Not Shown-2		BTA-125	¼-20 x 2-3/4" Yoke Screw

Notes: Vacuum Tube Connector (not shown) supplied as follows: 3/8" tubing for 100 PPD & below, ½" tubing for 250 PPD and 5/8" tubing for 500 PPD. Tap size is ¼" NPT for 100 PPD & 250 PPD / ½" NPT for 500 PPD.



Date: Nov 2016
Drawing Number: SR9



Item#	Qty.	Part #	Description	Item#	Qty.	Part #	Description
1	1	BTA-511	#10-24 x 2" reset screw	19	1	OA-VIT-112	O-Ring
2	1	RSW-9	Reset Screw Washer	20	1	VRA-141	Inlet Capsule
3	1	VRA-541	Reset Knob	21	1	VRA-111	Vent Plug
4	1	VRA-546	Reset Pin	22	1	VRA-101	Inlet Screen
5	1	VRA-545	Reset Collar	23	1	VRA-455	Filter Floss
6	1	VRA-555	Front Body	24	1	LGA-100	Lead Gasket
7	1	VRA-269	Diaphragm Front Plate	25	1	VRA-184	Filter Stop
8	2	DIA-106	SR9 Diaphragm	26	1	VRA-112	Inlet Valve Stem
9	1	OA-CEM-207	O-Ring	27	1	VRA-110	Inlet Valve Seat
10	1	TCA-64	Vent Tube Connector	28	1	SPA-104	Inlet Spring
11	1	VRA-521	Vent Seat	29	1	VRA-113	Inlet Spring Holder
12	1	VRA-522	Vent Cap	30	1	BTA-123	¼-20 x 1-1/2" Screw
13	5	BTA-129	¼-20 x 2-1/4" Screw	31	1	OA-VIT-331	O-Ring
14	1	SPA-520	Spring (vent)	32	1	VRA-556-500	Back Body 500 PPD
15	1	OA-VIT-212	O-Ring	33	1	VRA-547	Diaphragm Back Plate
16	1	VRA-182	Seal Plug	34	1	VRA-183	Spring Retainer
17	1	VRA-346	Yoke Assembly	35	1	OA-VIT-126	O-Ring
18	1	VRA-142	Retainer Clip	36	1	OA-VIT-011	O-Ring

Notes: Vacuum Tube Connector (not shown) supplied as follows: 5/8" tubing for 500 PPD. Tap size is ½" NPT for 500 PPD. Vent tube connector for 3/8" tubing.

Not Shown-2 BTA-125 ¼-20 x 2-3/4" Yoke Screw



Date: July 2014
Drawing Number: SR9-500