



Valve Concepts, Inc.
ISO Registered Company

Model 1088

Vacu-Gard Blanketing Valve

SECTION I

I. DESCRIPTION AND SCOPE

The Model 1088 Vacu-Gard is a tank blanketing valve intended for installation on top of small storage tanks. The standard valve comes with FNPT connections. Flanges may be attached by adding nipples. Valve bodies with welded flanges may be ordered from the factory. There are three styles of the Model 1088 this

IOM will cover: internal sensing, integral dip-tube, and remote sensing. The functionality of the unit will be the same regardless of the sensing style. Please refer to the applicable drawings in the back of this IOM manual for recommended installation schematics.

SECTION II

II. PRIOR TO INSTALLATION

It is always good practice to clean out blanket gas supply lines prior to valve installation to get rid of dirt, sand, loose scales and other foreign particles trapped in the piping. This is particularly true for new tanks and/or new piping. One way to accomplish this is to blow out the lines from the supply side up to the connection to the Vacu-Gard inlet.



CAUTION

Follow your company's safety procedures to avoid injury to personnel or damage to equipment.

SECTION III

III. INSTALLATION

It is always good practice to install a main line filter upstream of any tank blanketing valve. The element should be approximately 5-40 microns with a flow capacity equal to or greater than that of the Vacu-Gard.

The valve should be installed in the normal upright position. The inlet is horizontal and the outlet is vertical downward. There is an optional horizontal outlet for remote sensing valves. This option is not available for the integral dip-tube design. All outlet piping from the valve body to the vessel must be as large or larger than the outlet port in the body. Keep piping as short as possible for best valve performance.

For Internal Sensing:

Pipe as recommended above. Note that internal sensing yields only 25% of full capacity.

For Remote Sensing:

The sense line should be a 1/2" O.D. tube (or larger) and the length should not exceed fifteen feet. Longer lengths may be used with larger diameter sense lines. The sense line should slope downward from the valve to the tank to allow condensate, if any, to drain back into the tank. (The sense port is the port on the side of the body marked with an "S". A "tee" may be added to the sense port for gauging pressure in the vessel.

For Dip-Tube Sensing:

The integral dip-tube line must protrude into the tank at least 6" below the roof. **NOTE:** The port at the end of the main valve body opposite the inlet is not a sense port. (This port should not be used for pressure gauging since the pressure at this point may be higher than the maximum tank pressure and may cause damage to the gauge.) This port is an optional horizontal outlet for remote sensing valve type.

NOTE: The sense chamber is not a dead-ended chamber. In addition to the flow when the valve is open, there is also a very small flow from the valve into the vessel through the sense connection. Therefore the sense tube must be large enough so that the flow will not be restricted. Premature closing of the valve may occur if excess pressure builds up in the sense chamber due to a sense line that is too small.

 **CAUTION**
A pressure/vacuum relieving device large enough to vent excess pressure and to serve as an emergency vacuum breaker must be installed to protect the tank.

 **CAUTION**
DO NOT overtighten threaded connections since damage or breakage may result. Use teflon tape and/or anti-seize compound on pipe thread joints.

SECTION IV

IV. START-UP

Operation of the Model 1088 is automatic once the set pressure has been set. (The set pressure is usually bench-set at the factory prior to shipment.) **NOTE:** The set pressure is defined as the pressure at which the valve should be fully closed on increasing tank pressure.

Refer to applicable drawing dependent on sensing style. Temporarily keep valve A closed. Use an appropriate pressure indicating instrument for G2 to measure the pressure in the vessel.

For external sensing open valves C and E, then valve B. For internal sensing open valve B. For integral dip-tube proceed to the next step.

Now very slowly open valve A while watching gauge G2. NEVER SLAM OPEN VALVE A! The Vacu-Gard should close when the tank pressure reaches the set

pressure. To adjust the set pressure, remove the hex cap at the top of the valve and loosen the jam nut around the adjusting screw. Clockwise rotation of the adjusting screw will increase the set pressure. Counter clockwise will decrease the pressure provided there is a manual valve to vent the excess pressure. Do not set the set pressure beyond the nameplate range. Tighten the jam nut after adjustments are made and replace the hex cap.

In the event that the adjusting screw is backed off without compressing the spring, intentionally or unintentionally, the valve will begin to open when the tank pressure reaches about 1" w.c. vacuum.

 **CAUTION**
DO NOT exceed the maximum inlet pressure on the nameplate.

SECTION V

V. SHUT-DOWN


To shutdown the Vacu-Gard, reverse start-up procedure and bleed off trapped pressure before disassembly.

SECTION VI

VI. MAINTENANCE

The Model 1088 should be periodically actuated and all sliding surfaces and seals lubricated to ensure smoothness of operation. The frequency required depends on the severity of the service conditions. At least once a year is recommended.

To disassemble the valve, refer to the appropriate drawings.

 **CAUTION**
If the valve must be disassembled for any reason, first make sure all pressure to the valve is blocked and pressure trapped in the valve is vented safely. Refer to your company procedure for any special precautions when handling toxic or other hazardous materials.

The working components within the valve body may be removed without the need to take apart the diaphragm case. To remove the body internals, simply remove the item 032 body plug. Be careful not to drop any components. The item 025 spring could dislodge the item 020 spindle during removal.

To disassemble the diaphragm case, relax the compressed spring by first unscrewing the item 001 cap, then loosen the item 003 jam nut and back off the item 002 adjusting screw. The ring of nuts and bolts around the periphery can now be removed.

Replace all parts that show signs of damage or excessive wear. When a part is replaced, make sure the material is suitable for the service, especially elastomeric components. If an o-ring needs to be replaced, be sure to use the correct size and material (see the paragraph on Soft Goods Kits). Prior to reassembly, make sure all parts are clean and free of contamination and seating surfaces are free of deep scratches.

Reassemble in reverse order of disassembly. Use teflon tape and/or anti-seize compound on tapered pipe thread joints. Use lubricant sparingly on other screw threads. **DO NOT** overtighten threaded connections since damage or breakage may result. Very lightly lubricate all o-rings with a lubricant that is compatible with the service. Sealing surfaces of gaskets and diaphragms may also be lubricated. Assemble with special attention to the following:

DIAPHRAGM CASE: Use one piece of item 027 body gasket. Be sure the item 017 center bolt is installed with the threaded end up. There is one item 018 bolt gasket used between the center bolt and the lower item 016 support plate as shown on the drawing. There is also an identical gasket used between the upper surface of the item 013 sense diaphragm and the bottom side of the upper item 016 support plate. This is to ensure a tight squeeze on both sides of the sense diaphragm to effect a tight seal. Item 014 ring gasket is always installed on the top side of the sense diaphragm. Item 033 washers are used to center the lower end of the spring. It may sometimes be necessary to “thread” the spring onto the washer or onto the item 006 spring button. You will find that turning the end of the spring in one direction against the spring button or washers will tend to close the coils and make installation more difficult. However, turning the spring in the opposite direction will tend to open the coils for easier installation.

BODY INTERNALS: Before installation, be sure item 023 o-ring is placed around the groove adjacent to the threads on the item 032 body plug. Item 021 o-ring (smaller than item 022 o-ring) is placed around the outside internal groove at the lower end of the spindle.

ITEMS 021 AND 022 ARE SPECIAL O-RINGS AND MUST BE ORDERED FROM THE FACTORY.

If the valve body is installed and in the normal upright position, stack the components on the body plug as follows: insert item 025 return spring into the center cavity of item 032 body plug. Insert item 024 guide pin inside the return spring. Place item 020 spindle over the return spring with the small diameter tip pointing up. Place the item 019 strainer around the spacer. Now slowly and carefully insert the stack into the body cavity, allowing the components to align themselves before threading on the body plug. Tighten until snug to bottom of the spacer.

If the valve body is on a work bench, turn the body upside down and install the internals as follows: insert the item 020 spindle into the body with the small diameter tip first. Insert the item 026 spacer and let it bottom in the body. Insert the item 019 strainer around the spacer. Insert item 025 return spring into the spindle cavity. Insert item 024 guide pin into the spring. Place the center cavity of item 032 body plug over the spring and slowly and carefully push against the spring to thread on the body plug. Tighten until snug.

After the valve has been completely reassembled, it may be installed and put into operation as outlined above. If the valve will not shut off tight, check for dirt or other foreign particles on the o-rings or seating surfaces. Also check to make sure the body internals have not been damaged by being forced into place.

ORDERING INFORMATION

NEW REPLACEMENT UNIT vs PARTS "KIT" FOR FIELD REPAIR

To obtain a quotation or place an order, please retrieve the Serial Number and Product Code that was stamped on the metal name plate and attached to the unit. This information can also be found on the Bill of Material ("BOM"), a parts list that was provided when unit was originally shipped. (Serial Number typically 6 digits).

NEW REPLACEMENT UNIT:

Contact your local Cashco, Inc., Sales Representative with the Serial Number, Product code and the pressure/vacuum settings. With this information they can provide a quotation for a new unit including a complete description, price and availability.



CAUTION

Do not attempt to alter the original construction of any unit without assistance and approval from the factory. All purposed changes will require a new name plate with appropriate ratings and new product code to accommodate the recommended part(s) changes.

PARTS "KIT" for FIELD REPAIR:

Contact your local Cashco, Inc., Sales Representative with the Serial Number and Product code. Identify the parts and the quantity required to repair the unit from the "BOM" sheet that was provided when unit was originally shipped.

NOTE: *Those part numbers that have a quantity indicated under "Spare Parts" in column "A" reflect minimum parts required for inspection and rebuild, - "Soft Goods Kit". Those in column "B" include minimum trim replacement parts needed plus those "Soft Goods" parts from column "A".*

If the "BOM" is not available, refer to the cross-sectional drawings included in this manual for part identification and selection.

A Local Sales Representative will provide quotation for appropriate Kit Number, Price and Availability.

SECTION VII

VII. TROUBLE SHOOTING GUIDE

1. Vacu-Gard will not open.

Possible Cause	Remedy
A. Incorrect sense line connection.	A1. Check sense line and be sure it is connected from the sense port on the Vacu-Gard to the tank. A2. Check sense line and shut-off valve for size and configuration to prevent pressure drops and trapped condensate.
B. Sense line is clogged.	B1. Check sense line and sense port for blockage.
C. Improper inlet and/or outlet connection.	C1. Check and be sure supply line is connected to inlet of Vacu-Gard and outlet of Vacu-Gard is connected to tank, making sure it is not reversed.
D. Loss of supply pressure.	D1. Check supply pressure and see that it is within the range stated on nameplate.

2. Vacu-Gard will not close.

Possible Cause	Remedy
A. Sense line not installed.	A1. Check that the sense line is properly connected.
B. Vacu-Gard set pressure is higher than or too close to the set pressure of the pressure relieving devices.	B1. Check settings of valves and adjust if needed. The pressure relieving devices must be set higher than the Vacu-Gard setting. The greater the spread the better.
C. Blanket gas is escaping from opening in tank.	C1. Be sure all openings such as pressure relieving devices, gauge hatches, etc. are closed and working properly.
D. Malfunction of pressure relieving devices.	D1. Check operation of pressure relieving devices.
E. Blanket gas is escaping from faulty piping or connections.	E1. Check all piping and connections for tightness.
F. Foreign particles trapped in Vacu-Gard.	F1. Check Vacu-Gard for dirt and debris. (See Maintenance Section for disassembly and reassembly.)
H. Vacu-Gard has loose connections.	H1. Check and make sure all Vacu-Gard connections are tight.

3. Vacu-Gard cycles rapidly.

Possible Cause	Remedy
A. Shut-off valve at outlet is restricting flow.	A1. Be sure shut-off valve at outlet is full bore or larger.
B. Vacu-Gard set pressure too close to the set pressure of the pressure relieving devices.	B1. Check settings of valves and adjust if needed. The pressure relieving devices must be set higher than the Vacu-Gard.
C. Sense or flow line pipe is undersized.	C1. Check all piping connected to Vacu-Gard for size and configuration to prevent pressure drops and trapped condensate.

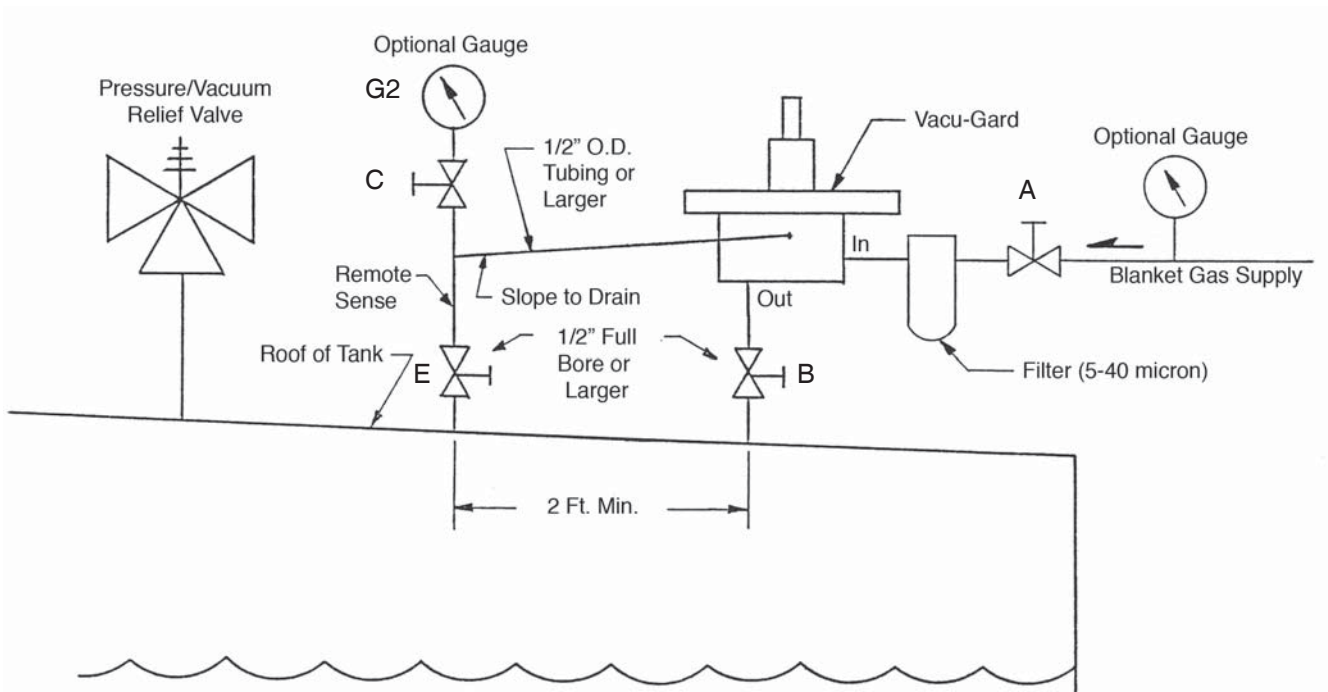
4. Vacu-Gard closes but will not shut-off tight.

Possible Cause	Remedy
A. Worn o-rings or seat surfaces.	A1. Replace worn parts. (See Maintenance Section for disassembly and reassembly.)
B. Foreign particles on o-rings or seat surfaces.	B1. Clean and lubricate parts. (See Maintenance Section for disassembly and reassembly.)
C. Loose connections on Vacu-Gard.	C1. Check all connections for tightness.

Recommended Installation - Remote Sensing

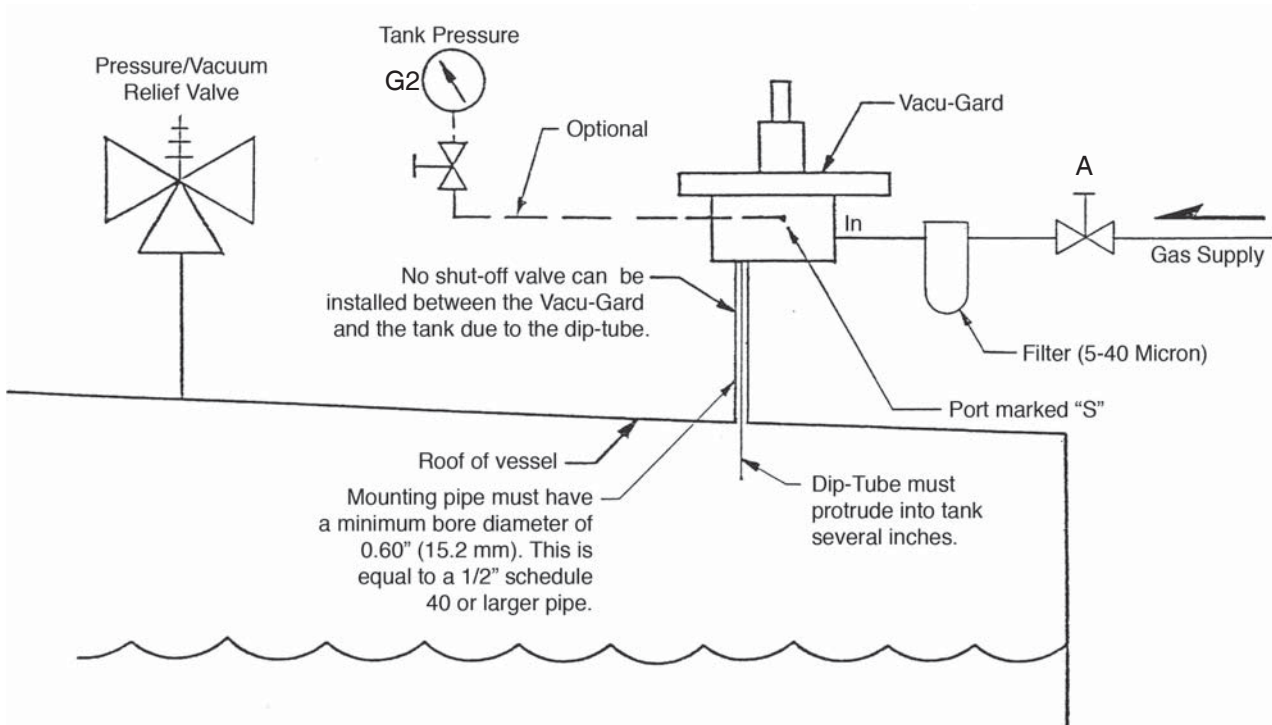
Model 1088 Vacu-Gard

It is recommended that the Vacu-Gard be installed approximately one foot above the seat of the relief valve to avoid getting liquid into the Vacu-Gard if the tank is overfilled

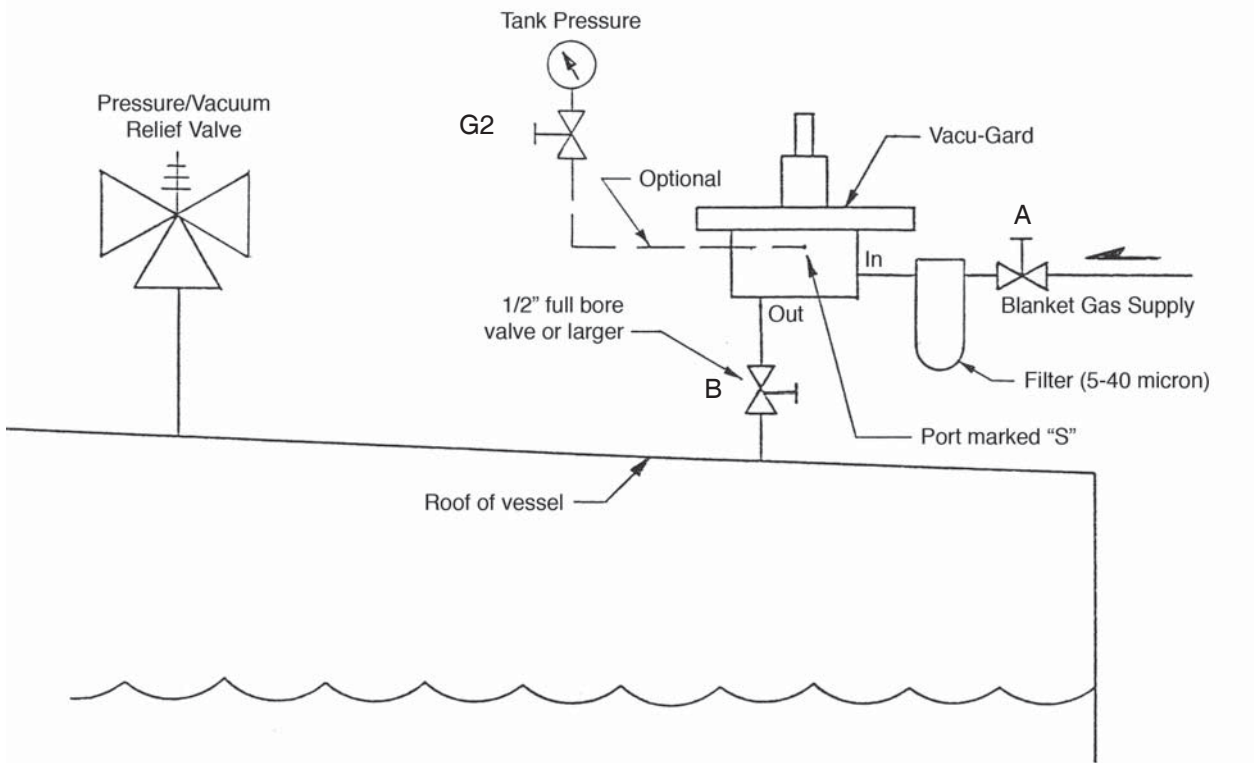


Installation - with Integral Dip-Tube Sensing

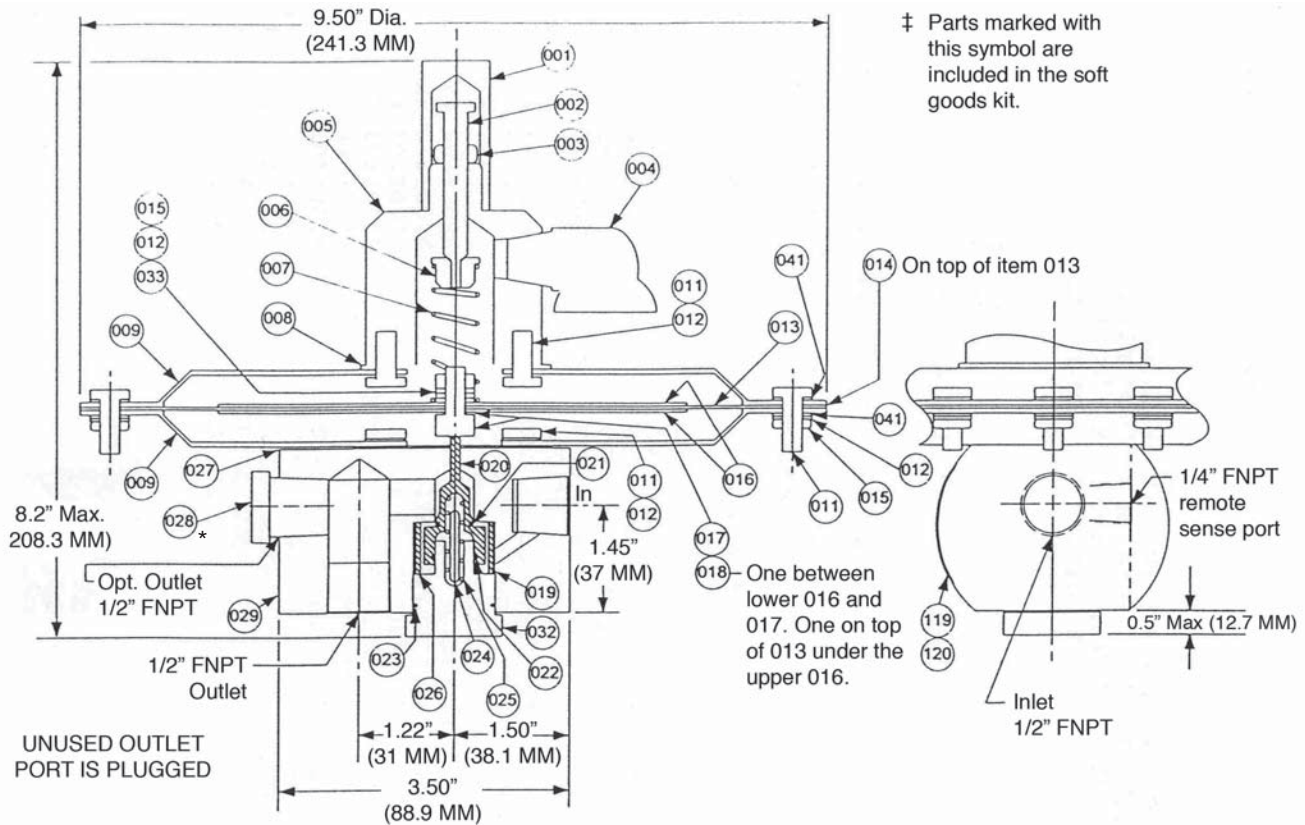
Model 1088 Vacu-Gard



Installation - with Internal Sensing Model 1088 Vacu-Gard



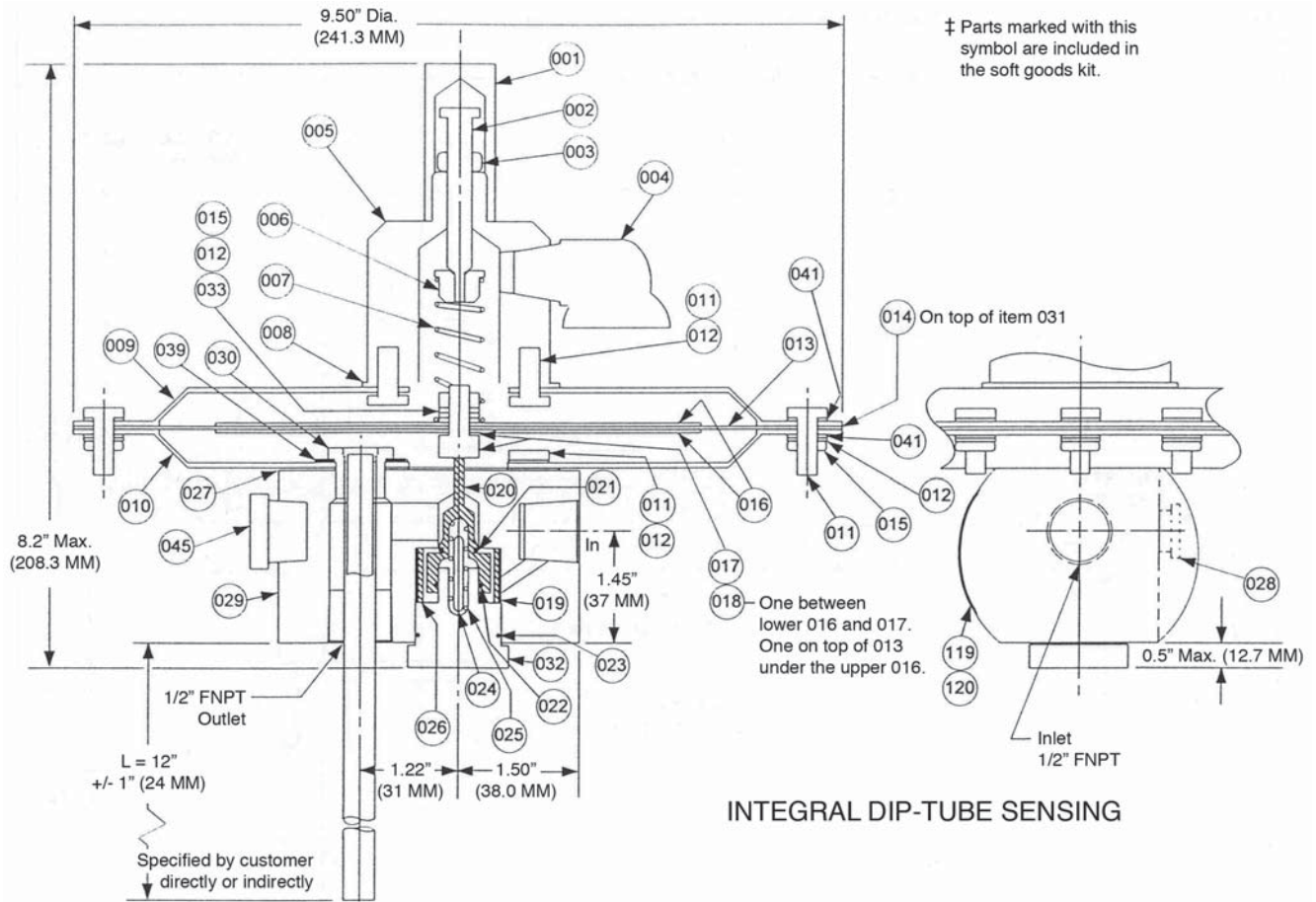
Model 1088 Vacu-Gard Tank Blanketing Valve with Remote Sensing



* If Purge is specified omit item 028.

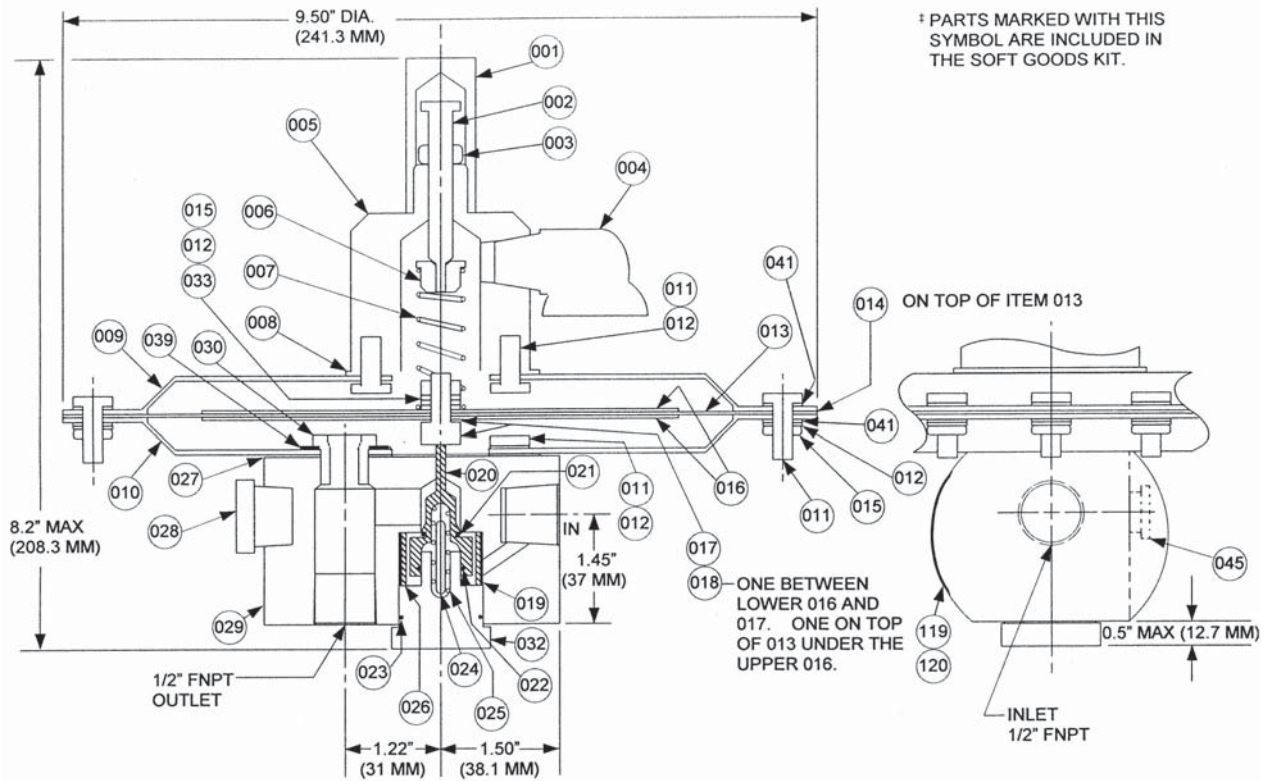
ITEM NO.	QUANTITY	PART NAME	ITEM NO.	QUANTITY	PART NAME
001	1	Cap	019	1	Strainer
002	1	Adjusting Screw	020	1	Spindle
003	1	Jam Nut	021	1	O-Ring †
004	1	Vent	022	1	O-Ring †
005	1	Spring Bonnet	023	1	O-Ring †
006	1	Spring Button	024	1	Guide Pin
007	1	Set Pressure Spring	025	1	Return Spring
008	1	Gasket †	026	1	Spacer
009	2	Diaphragm Case	027	1	Body Gasket †
011	24	Bolt	028	1	Pipe Plug
012	25	Lockwasher	029	1	Body
013	1	Sense Diaphragm †	032	1	Body Plug
014	1	Ring Gasket †	033	2	Washer
015	17	Nut	041	32	Washer-Flat
016	2	Support Plate	119	1	Nameplate
017	1	Center Bolt	120	2	Drive Screw
018	2	Bolt Gasket			

Model 1088 Vacu-Gard with Integral Dip-Tube Sensing



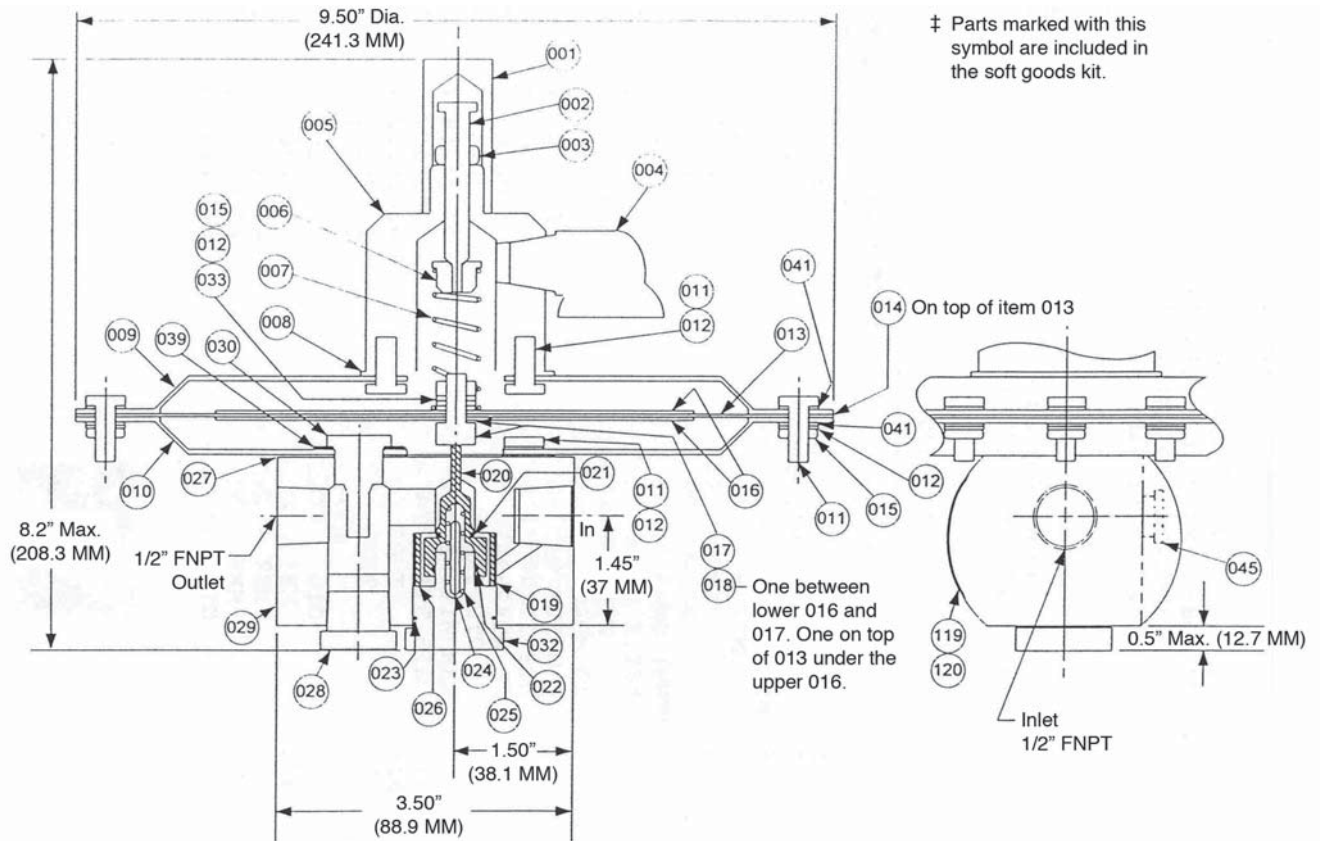
ITEM NO.	QUANTITY	PART NAME	ITEM NO.	QUANTITY	PART NAME
001	1	Cap	019	1	Strainer
002	1	Adjusting Screw	020	1	Spindle
003	1	Jam Nut	021	1	O-Ring ‡
004	1	Vent	022	1	O-Ring ‡
005	1	Spring Bonnet	023	1	O-Ring ‡
006	1	Spring Button	024	1	Guide Pin
007	1	Set Pressure Spring	025	1	Return Spring
008	1	Gasket ‡	026	1	Spacer
009	1	Upper Diaphragm Case	027	1	Body Gasket ‡
010	1	Lower Diaphragm Case	028	1	Pipe Plug
011	24	Bolt	029	1	Body
012	25	Lockwasher	030	1	Dip-Tube Assembly
013	1	Sense Diaphragm ‡	032	1	Body Plug
014	1	Ring Gasket ‡	033	2	Washer
015	17	Nut	039	1	Belleville Washer
016	2	Support Plate	041	32	Washer-Flat
017	1	Center Bolt	045	1	Pipe Plug
018	2	Bolt Gasket ‡	119	1	Nameplate
			120	2	Drive Screw

Model 1088 Vacu-Gard with Internal Sensing (Vertical Outlet Model)



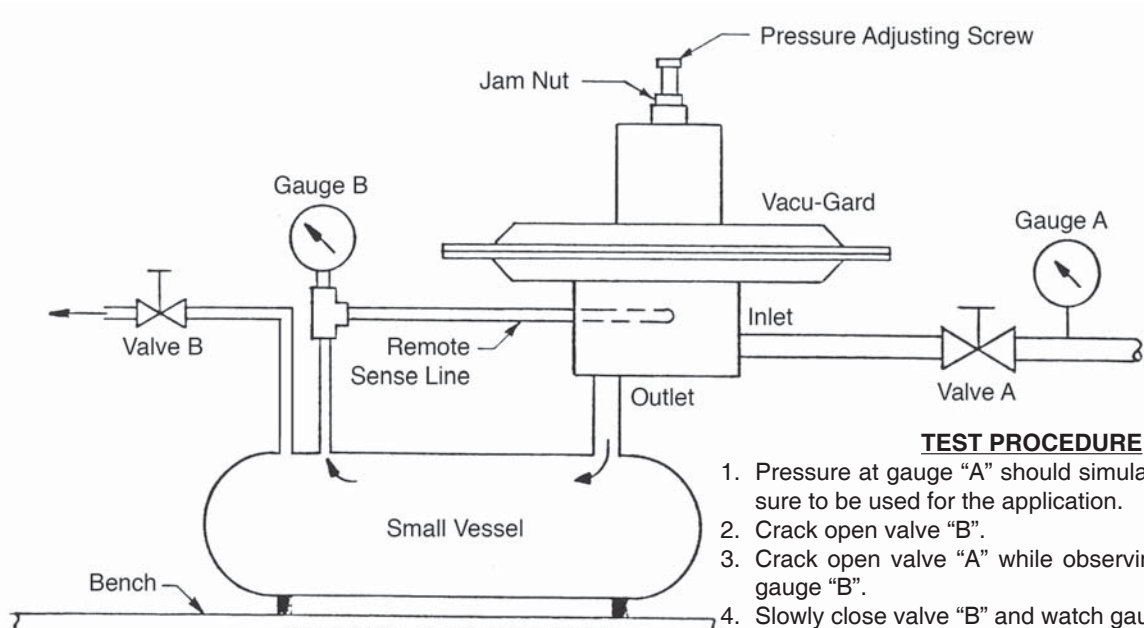
ITEM NO.	QUANTITY	PART NAME	ITEM NO.	QUANTITY	PART NAME
001	1	Cap	019	1	Strainer
002	1	Adjusting Screw	020	1	Spindle
003	1	Jam Nut	021	1	O-Ring ‡
004	1	Vent	022	1	O-Ring ‡
005	1	Spring Bonnet	023	1	O-Ring ‡
006	1	Spring Button	024	1	Guide Pin
007	1	Set Pressure Spring	025	1	Return Spring
008	1	Gasket ‡	026	1	Spacer
009	1	Upper Diaphragm Case	027	1	Body Gasket ‡
010	1	Lower Diaphragm Case	028	1	Pipe Plug
011	24	Bolt	029	1	Body
012	25	Lockwasher	030	1	Sense Bushing with Tube
013	1	Sense Diaphragm ‡	032	1	Body Plug
014	1	Ring Gasket ‡	033	2	Washer
015	17	Nut	039	1	Belleville Washer
016	2	Support Plate	041	32	Washer-Flat
017	1	Center Bolt	045	1	Pipe Plug
018	2	Bolt Gasket ‡	119	1	Nameplate
			120	2	Drive Screw

Model 1088 Vacu-Gard with Internal Sensing (Horizontal Outlet Model)



ITEM NO.	QUANTITY	PART NAME	ITEM NO.	QUANTITY	PART NAME
001	1	Cap	019	1	Strainer
002	1	Adjusting Screw	020	1	Spindle
003	1	Jam Nut	021	1	O-Ring ‡
004	1	Vent	022	1	O-Ring ‡
005	1	Spring Bonnet	023	1	O-Ring ‡
006	1	Spring Button	024	1	Guide Pin
007	1	Set Pressure Spring	025	1	Return Spring
008	1	Gasket ‡	026	1	Spacer
009	1	Upper Diaphragm Case	027	1	Body Gasket ‡
010	1	Lower Diaphragm Case	028	1	Pipe Plug
011	24	Bolt	029	1	Body
012	25	Lockwasher	030	1	Sense Bushing with Tube
013	1	Sense Diaphragm ‡	032	1	Body Plug
014	1	Ring Gasket ‡	033	2	Washer
015	17	Nut	039	1	Belleville Washer
016	2	Support Plate	041	32	Washer-Flat
017	1	Center Bolt	045	1	Pipe Plug
018	2	Bolt Gasket ‡	119	1	Nameplate
			120	2	Drive Screw

Model 1088 Tank Blanketing Valve with Remote Sensing (Bench Testing)



CAUTION! For Safety reasons,
The vessel and all piping must be rated
for the maximum air supply pressure.

TEST PROCEDURE

1. Pressure at gauge "A" should simulate the actual pressure to be used for the application.
2. Crack open valve "B".
3. Crack open valve "A" while observing the pressure at gauge "B".
4. Slowly close valve "B" and watch gauge "B". If the pressure at gauge "B" is lower than desired, loosen the jam nut and increase outlet pressure. If the gauge "B" pressure is higher than desired, crack open valve "B" and back off the adjusting screw (counter clockwise) until the desired pressure is reached. Tighten the jam nut.
5. Open and close valve "B" a few times to insure proper setting and operation.