Type ACE95jr Tank Blanketing Valve

Introduction

WARNING

Failure to follow these instructions or to properly install and maintain this equipment could result in an explosion, fire and/or chemical contamination causing property damage and personal injury or death.

Fisher® Tank blanketing valves must be installed, operated and maintained in accordance with federal, state and local codes, rules and regulations and Emerson Process Management Regulator Technologies, Inc. (Emerson™) instructions.

If the valve vents gas or a leak develops in the system, service to the unit may be required. Failure to correct trouble could result in a hazardous condition.

Installation, operation and maintenance procedures performed by unqualified personnel may result in improper adjustment and unsafe operation. Either condition may result in equipment damage or personal injury. Use qualified personnel when installing, operating and maintaining the Type ACE95jr Tank Blanketing Valve.

Scope of the Manual

This Instruction Manual provides installation, startup and maintenance procedures for the Type ACE95jr tank blanketing valve. See Figure 1.

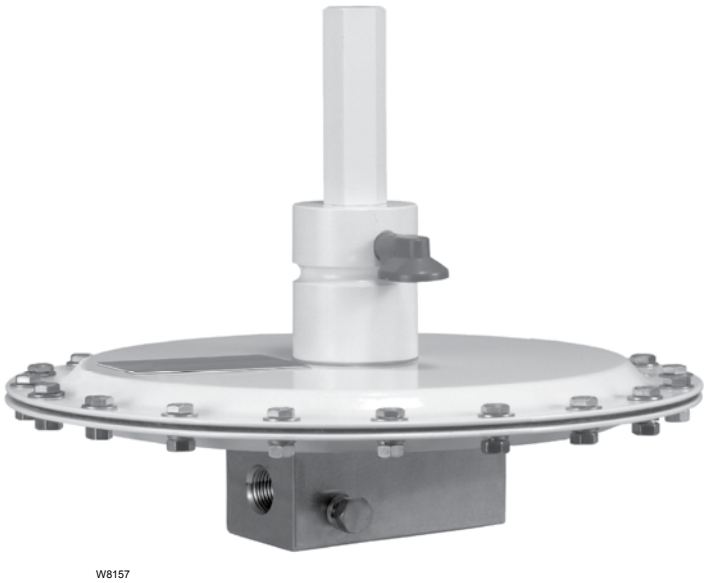

Figure 1. *Type ACE95jr Tank Blanketing Valve*

Product Description

The Type ACE95jr tank blanketing valve is an extension of the Type ACE95 tank blanketing valve and is intended to handle lesser flows on gas blanketing systems. The valve prevents a stored product from vaporizing into the atmosphere, reduces product combustibility and prevents oxidation or contamination of the product by reducing its exposure to air. The Type ACE95jr maintains a slightly positive pressure and thereby reduces the possibility of tank wall collapse during pump out operations.

D102774X012

Specifications

This section lists the specifications and ratings for the Type ACE95jr tank blanketing valve. Factory specifications are stamped on a nameplate fastened to the actuator of the valve.

Sizes and End Connection Styles
1/2 NPT
1 x 1/2 NPT
1 NPT
NPS 1/2 / DN 15, CL150 RF
NPS 1 / DN 25, CL150 RF
NPS 1 x 1/2 / DN 25 x 15, CL150 RF
NPS 1 / DN 25, Sanitary Flange

Maximum Operating Inlet Pressure(1)
200 psig / 13.8 bar

Maximum Emergency Outlet (Casing) Pressure(1)
20 psig / 1.4 bar

Maximum Operating Control Pressure(1)
1.5 psig / 0.10 bar

Control Pressure Ranges(1)
-5 in. w.c. to 1.5 psig /
-12 mbar to 0.10 bar in six ranges
See Table 1

Pressure Registration
External

Main Valve Flow Characteristic
Linear

Flow Coefficients for Relief Valve Sizing
(110% of rated C_v)
C_v 0.2 use C_v 0.22
C_v 0.4 use C_v 0.44

IEC Sizing Coefficients
X_t: 0.655
F_d: 0.86
F_l: 0.89

Temperature Capabilities(1)
Nitrile (NBR):
-20 to 180°F / -29 to 82°C

Fluorocarbon (FKM):
0 to 212°F / -18 to 100°C

Ethylenepropylene (EPDM-FDA):
-20 to 212°F / -29 to 100°C

Perfluoroelastomer (FFKM):
-20 to 212°F / -29 to 100°C

Approximate Weight (with all accessories)
30 lbs / 14 kg

1. The pressure/temperature limits in this Instruction Manual and any applicable standard or code limitation should not be exceeded.

Table 1. *Control Pressure Ranges*

CONTROL PRESSURE RANGE		SPRING RANGE	SPRING MATERIAL	SPRING FREE LENGTH		SPRING WIRE DIAMETER	
In. w.c.	mbar			In.	mm	In.	mm
-5 to -0.5	-12 to -1	GC220701X22	Stainless Steel	2.75 0.88	69.9 22.4(1)	0.080 0.085	2.03 2.16(1)
-1 to 1	-2 to 2	GC220701X22	Stainless Steel	2.75 1.60	69.9 40.6(1)	0.080 0.065	2.03 1.65(1)
0.5 to 5 4 to 10 8 to 15 0.5 to 1.5 psig	1 to 12 10 to 25 20 to 37 0.03 to 0.10 bar	GC220701X22 GC220702X22 GC220703X22 GC220708X22	Stainless Steel Stainless Steel Stainless Steel Stainless Steel	2.75 2.00 2.00 2.75	69.6 50.8 50.8 69.6	0.080 0.112 0.125 0.225	2.03 2.85 3.18 5.72

1. The second spring is located under the diaphragm assembly.

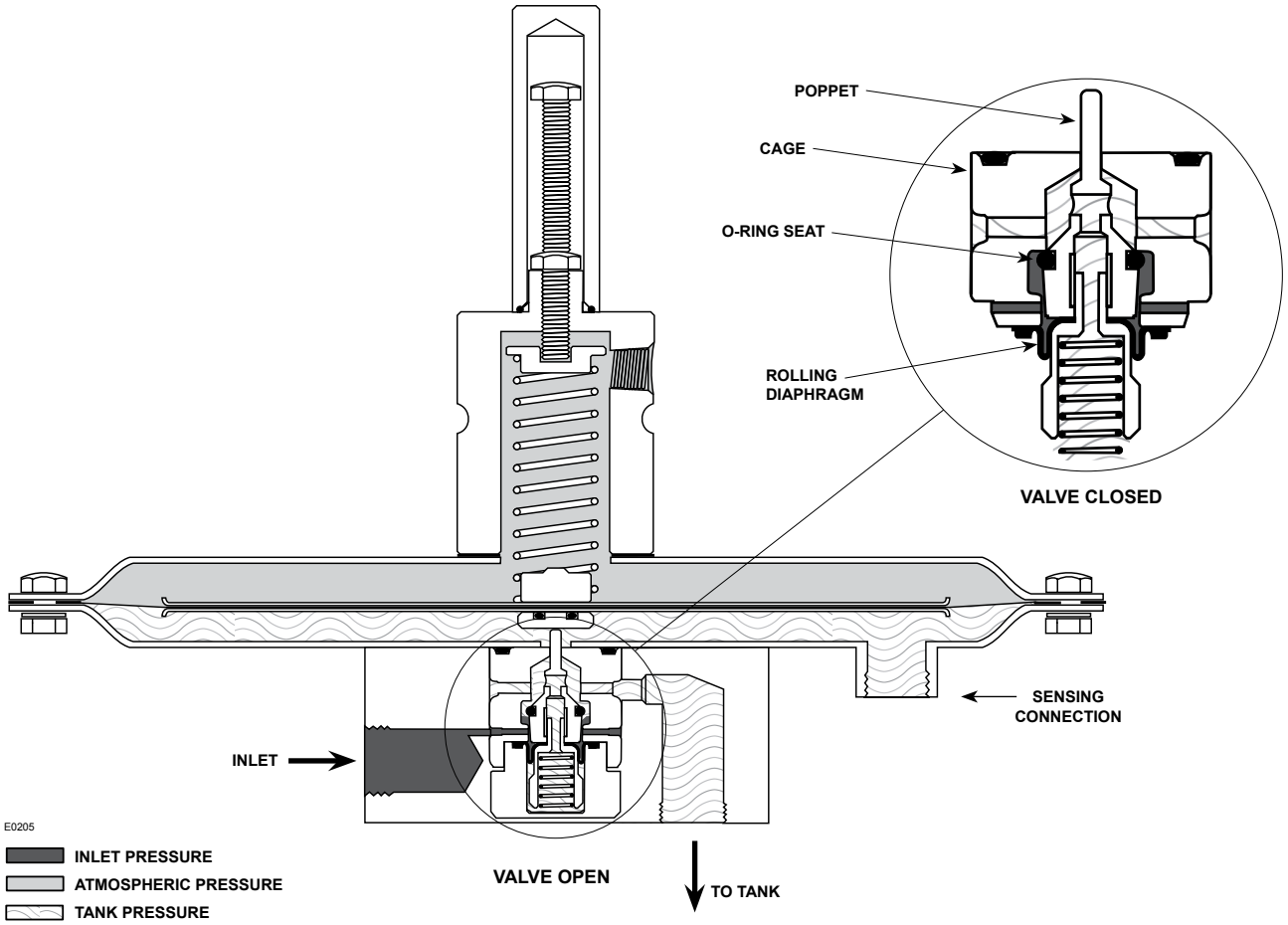

Figure 2. *Type ACE95jr Operational Schematic*

Principle of Operation

The Type ACE95jr tank blanketing valve controls the vapor space pressure over a stored liquid. When liquid is pumped out of the tank or vapors in the tank condense, the pressure in the tank decreases. Tank pressure is sensed by the large actuator diaphragm. When tank pressure is less than the valve set pressure, spring force moves the actuator diaphragm downward.

When the actuator moves downward, it pushes open the valve plug which allows flow in to the tank (See Figure 2). When pressure in the tank increases above the setpoint, the large actuator diaphragm is pushed upward, allowing the valve plug to close.

The valve plug is balanced (inlet pressure equal upward and downward force on these components); therefore, the outlet (control) pressure of the unit is not affected by fluctuating inlet pressure.

Installation

WARNING

Personal injury, equipment damage or leakage due to escaping accumulated gas or bursting of pressure-containing parts may result if this gas blanketing system is over pressured or installed where service conditions could exceed the limits given in the Specifications section and on the appropriate nameplate or where conditions exceed any ratings of the adjacent piping or piping connections.

To avoid such injury or damage, provide pressure-relieving or pressure-limiting devices (as required by Title 49, Part 192, of the U.S. Code of Federal Regulations, by the National Fuel Gas Code Title 54

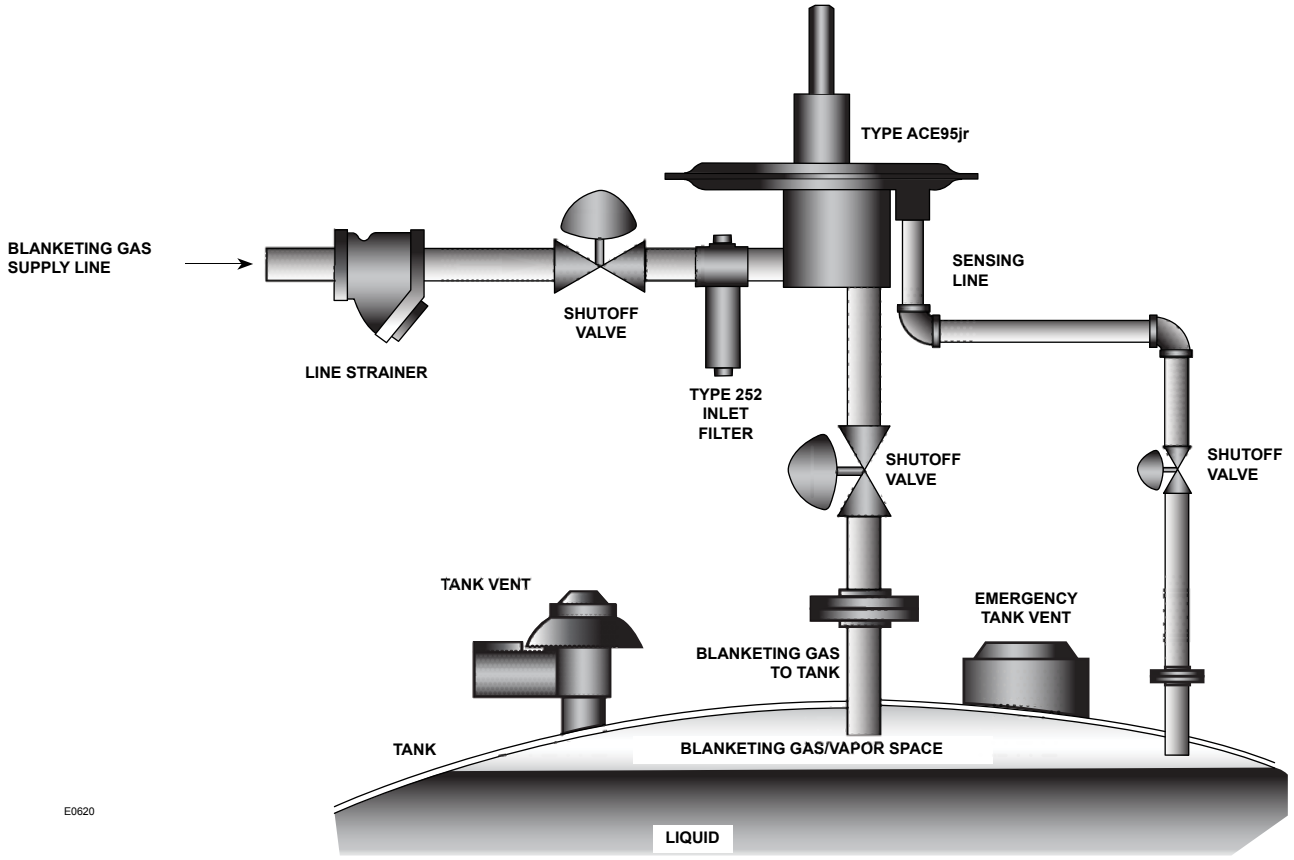

Figure 3. *Type ACE95jr Tank Blanketing Valve Installation*

of the National Fire Codes of the National Fire Protection Agency or by other applicable codes) to prevent service conditions from exceeding those limits.

Additionally, physical damage to the tank blanketing system could result in personal injury and property damage due to escaping accumulated gas. To avoid such injury and damage, install the tank blanketing valve in a safe location.

This Type ACE95jr tank blanketing valve was assembled and preset to the customer specified pressure and setpoint. The control pressure range of the valve is stamped on the nameplate fastened to the upper actuator case. The gas blanketing setpoint is the only adjustable feature on this unit.

1. Get a qualified personnel when installing, operating, and maintaining valves. Before installing, inspect the valve and tubing for any shipment damage or foreign material that may have collected. Make certain the body interior is clean and the pipelines are free of foreign material. Apply pipe compound only to the male pipe threads with a screwed body or use suitable line gaskets and good bolting practices with a flanged body.
2. Inspect the nameplate on the upper actuator case. It displays the model number, serial number, a blanketing gas supply pressure range, the maximum inlet pressure, set pressure and C_V value. These must agree with the system that you are blanketing. The serial number will be needed in any communication with your local Sales Office.
3. Clean the gas blanketing supply lines of all dirt and foreign material before connecting them to the Type ACE95jr tank blanketing valve.
4. The valve must be mounted so the actuator case is horizontal, as shown in Figure 3. The valve should be mounted above the tank. Three connections are required: a) blanketing gas supply to valve, b) valve outlet to tank and c) sensing line to tank.

Piping Considerations

Note

Piping lengths are best when they are kept short with a minimum number of elbows and fittings.

Inlet Piping

CAUTION

Undersized piping may inadequately deliver blanketing gas at the specified inlet pressure under full flow conditions. This may result in unacceptable performance under high demand conditions.

The blanketing gas supply line should be equipped with a Number 100 mesh strainer to remove dirt and pipe scale. Inlet piping must be sized to adequately deliver blanketing gas at the specified inlet pressure under full flow conditions.

Outlet Piping

CAUTION

Unnecessarily long or restricted outlet piping may result in poor setpoint control.

Valve outlet is piped into the tank vapor space. Outlet piping must be full size and self-draining to the tank. The valve should be situated above and as close as possible to the tank vapor space for best performance.

Sensing Line

The sensing line should be 1/2 in. / 13 mm tubing or pipe, must slope toward the tank and should not contain low points (or traps) that could catch liquid. The sensing line must enter the tank above the liquid level at a point that senses the vapor space pressure and is free from turbulence associated with tank nozzles or vents.

Note

Best control is obtained when both connections to the tank are separate. If the tank has only one available nozzle, contact Emerson™. for alternate methods of installation. A single array manifold is available for such situations.

Gauges and Shutoff Valves

Inlet gas shutoff valves are desirable for servicing. If this Type ACE95jr tank blanketing valve was not ordered with an inlet pressure gauge, it is advisable to install a gauge between the inlet shutoff valve and the blanketing valve.

Note

Safety considerations may dictate full port shutoff valves between the tank and blanketing valve and at the valve inlet.

Startup, Adjustment and Shutdown

Note

Tank vents and safety relief valves must be in place and operating.

Startup

CAUTION

Always open the outlet valve before the inlet valve. Operation in the reverse order could result in inlet pressure being applied to the actuator casing, potentially damaging it.

1. Open shutoff valves between the blanketing valve and the tank (both sensing and outlet). See Figure 3.
2. Slowly open the supply line shutoff valve (to the blanketing valve) and leave it fully open.
3. Monitor the tank vapor space pressure.

Adjustment

The setpoint of this unit is factory set. Adjustments should be made in small increments while the unit is supplying gas to the tank. To change the setpoint:

1. Remove the actuator cap (key 1) from the top of the spring case (key 7). See Figure 4.
2. Loosen the lock nut (key 3) and turn the adjusting screw (key 2) clockwise to raise the setpoint. (Turning the screw counter-clockwise lowers the setpoint.)
3. Observe the effects of the change.
4. When the adjustment is complete, tighten the lock nut (key 3) and replace the actuator cap (key 1).

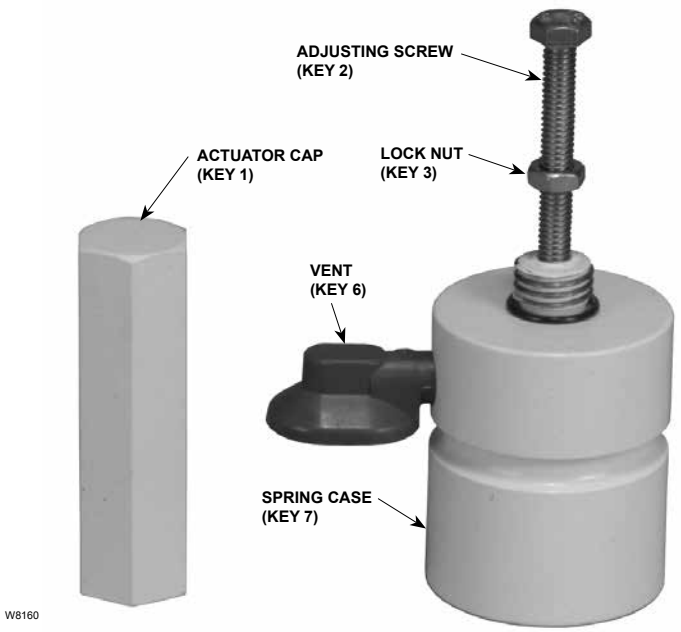

Figure 4. *Spring Case, Adjusting Screw and Actuator Cap*

Shutdown

Installation arrangements vary, but in any installation it is important to open and close valves slowly. When shutting down the system, close the upstream supply shutoff valve first. Refer to Figure 3.

Maintenance

Valve parts are subject to normal wear and must be inspected and replaced as necessary. The frequency of inspection and replacement of parts depends on the severity of service conditions and the requirements of local, state and federal regulations. Due to the care Emerson™ takes in meeting all manufacturing requirements, use only replacement parts manufactured or furnished by Emerson.

All O-rings, gaskets and seals should be lubricated with a good grade of general purpose lubricant and installed gently rather than forced into position. Approved lubricant, sealants and adhesive are as follows:

Lubricant: Dow Corning® 111

Sealant: Loctite® PST #592, Teflon® Tape

Adhesive: Loctite® #222

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Loctite® is a mark owned of Henkel Corporation.
Teflon® is a mark owned of E.I. du Pont de Nemours and Co.

Be certain that nameplates are updated to accurately indicate any field changes in equipment, materials, service conditions or pressure settings.

Monthly Maintenance

1. Visually inspect the unit to ensure tight connections, tight seals and safe operation.
2. Observe the blanketing pressure.
3. Inspect the inlet pressure for the proper pressure (stamped on the valve nameplate).

Annual Maintenance

1. Visually inspect the unit to ensure tight connections, tight seals and safe operation.
2. Observe the blanketing pressure.
3. Inspect the inlet pressure for the proper pressure (stamped on the valve nameplate).
4. Visually inspect valve for any external damage.
5. If there is evidence of leakage or unstable internal motion, a rebuild with seal replacement and re-lubrication may be in order.

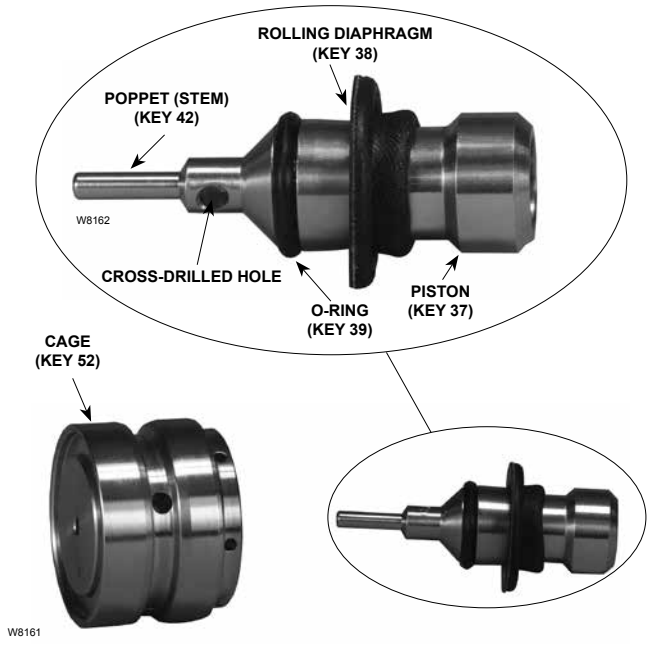

Figure 5. *Cage Assembly*

Disassembly and Assembly

CAUTION

Before removing the valve from the line, ensure that it is isolated from the gas supply pressure and that all pressure has been released from the valve. (The drain on the inlet filter is convenient to bleed off gas.) All tank connections must be closed or sealed in accordance with your plant's operating and safety procedures. If installed, electrical connections to the explosion proof switch must be deactivated before opening the enclosure or disconnecting the wiring (in accordance with codes and safety practices).

It is recommended that all seals and diaphragms be replaced as a matter of good practice whenever a valve is disassembled and re-assembled. Parts kits are available through your local Sales Office.

Note

When ordering parts, have your model number, serial number and control pressure range. Valve information is on the nameplate (attached to the upper actuator case).

When performing disassembly or re-assembly operations, refer to Figure 6 for key numbers (unless otherwise directed).

Disassembly

WARNING

To avoid personal injury resulting from sudden release of pressure, isolate the valve from all pressure and cautiously release trapped pressure from the valve before attempting disassembly.

Actuator/Diaphragm Disassembly

1. Remove the actuator cap (key 1) and the spring load by unthreading the adjusting screw (key 2). See Figure 4.
2. Unthread the hex-head screws (key 29) and remove the lock washers (key 28) and nuts (key 31) from the upper and lower actuator cases (keys 33 and 30). Refer to Figure 6.
3. Lift the upper actuator case (key 33) from the lower actuator case (key 30).
4. If it is necessary to replace the gasket (key 9), remove the spring case (key 7) and spring case gasket from the upper actuator case (key 33).

5. Remove the range spring (key 8) and spring seat (key 5). A lower range spring (key 162) is used for negative pressure values only.
6. Disassemble the main diaphragm (key 11) by unthreading the diaphragm retaining nut (key 13) from the diaphragm bolt (key 15).
7. Remove the upper and lower diaphragm plates (keys 10 and 48) and the diaphragm (key 11). [The diaphragm gasket (key 12) sits on top of the diaphragm.] In cases where the pressure range is positive, the upper diaphragm plate is larger than the lower diaphragm plate.
8. Remove the internal body hex-head screws and lock washers (keys 29 and 28) that attach the lower actuator case (key 30) to the body (key 18).
9. Remove the lower actuator case (key 30) and the actuator gasket (key 27).

Cage Disassembly

CAUTION

Use soft-jawed pliers to restrain the piston (key 37) without damaging it. Do not hold the poppet (key 42) by the small stem.

1. Remove the cage (key 52) from the body (key 18) by slowly applying low pressure shop air [approximate 20 psig (1.4 bar)] at the inlet of the body. Use your hand to safely catch the cage as it is removed from the body.
2. Remove the pilot valve from the cage (key 52) by pressing on the poppet (key 42) stem.
3. To unscrew the piston (key 37) from the poppet (key 42), insert a small drill bit into the cross-drilled holes on the poppet to turn and loosen. Unthread the poppet from the piston and remove the rolling diaphragm (key 38).

Assembly

When assembling the Type ACE95jr tank blanketing valve, clean all parts, inspect for unusual wear, lightly lubricate all O-rings and the groove that locates the rolling diaphragm bead. See Figure 6.

Cage Sub-Assembly

1. Install the internal O-rings (key 16) into the body (key 18).
2. Place the rolling diaphragm (key 38) over the threaded portion of the piston (key 37). Use caution not to place the rolling diaphragm upside down (refer to Figure 6 detail). Apply Loctite® #222 to the piston threads. Thread the poppet (key 42) onto the piston. Use soft-jawed pliers to hold the piston. Insert a small drill bit into the cross-drilled holes on the poppet (key 42) to turn and tighten.
3. Install the O-ring (key 39) onto the poppet (key 42).
4. Lightly lubricate the piston (key 37).
5. Place the pilot sub-assembly into the cage (key 52). See Figure 5.

Main Valve Sub-Assembly

1. Place the spring (key 36) in the body (key 18) cavity.
2. Insert the cage (key 52) and main valve sub-assembly into the body (key 18) cavity.

Note

Ensure that the rolling diaphragm bead is positioned so that it sits in the groove of the body (see Figure 6). If it does not, the rolling diaphragm was installed upside-down in Cage Sub-Assembly step 2.

3. Press the body (key 18) and cage (key 52) together to engage the rolling diaphragm bead into the groove. Press and release the stem. It should freely move up and down. If it does not, repeat the procedure to this point to determine the cause.

Diaphragm/Actuator Sub-Assembly

1. Place an O-ring (key 41) onto the cage (key 52) and the gasket (key 27) onto the body (key 18).
2. Place the lower actuator case (key 30) onto the body (key 18).
3. To attach the lower actuator case (key 30) to the body (key 18), install hex-head screws (key 29) with lock washers (key 28). Tighten all uniformly.

4. Place an O-ring (key 14) into the groove of the diaphragm bolt (key 15).
5. Build the diaphragm sub-assembly with the diaphragm (key 11) and two diaphragm plates (keys 10 and 48). Fasten the plates together with the diaphragm bolt (key 15) and the diaphragm retaining nut (key 13). Apply Loctite® #222 to the diaphragm bolt.

Note

In cases where the pressure range is positive, the upper diaphragm plate (key 10) is larger than the lower diaphragm plate (key 48). See Figure 6.

6. If you are using a negative spring range, install the lower range spring (key 162) into the lower actuator case (key 30).
7. Place the diaphragm sub-assembly into the lower actuator case (key 30) with the diaphragm retaining nut (key 13) on top. Take care not to install upside down.
8. Align the holes of the diaphragm (key 11) to the lower actuator case (key 30).
9. Place the diaphragm gasket (key 12) on top of the diaphragm (key 11).
10. Place the range spring (key 8) over the diaphragm retaining nut (key 13). Place the spring seat (key 5) onto the spring.
11. Place the spring case gasket (key 9) between the spring case (key 7) and the upper actuator case (key 33) before attaching the spring case to the upper actuator case. Attach the spring case to the upper actuator case using hex-head screws (key 29).
12. Place the upper actuator case (key 33) over the range spring (key 8) and lower actuator case (key 30).
13. Install hex-head screws (key 29) with lock washers (key 28) and nuts (key 31) into the upper and lower actuator cases (keys 33 and 30).
14. Tighten all hex-head screws (key 29) in a criss-cross pattern.
15. Thread the range spring adjusting screw (key 2) in about half-way.
16. Reinstall the valve according to the instructions in the Installation section.
17. Adjust the setpoint (refer to Adjustment section).
18. Thread the actuator cap (key 1) into place on top of the spring case (key 7).

Parts Ordering

Each Type ACE95jr Tank Blanketing valve is assigned a serial number which can be found on the nameplate on the main valve actuator. Refer to this number when contacting your local Sales Office for assistance or when ordering replacement parts. When ordering a replacement part, be sure to reference the key number or each needed part and include the complete 11-character part number from the following parts list.

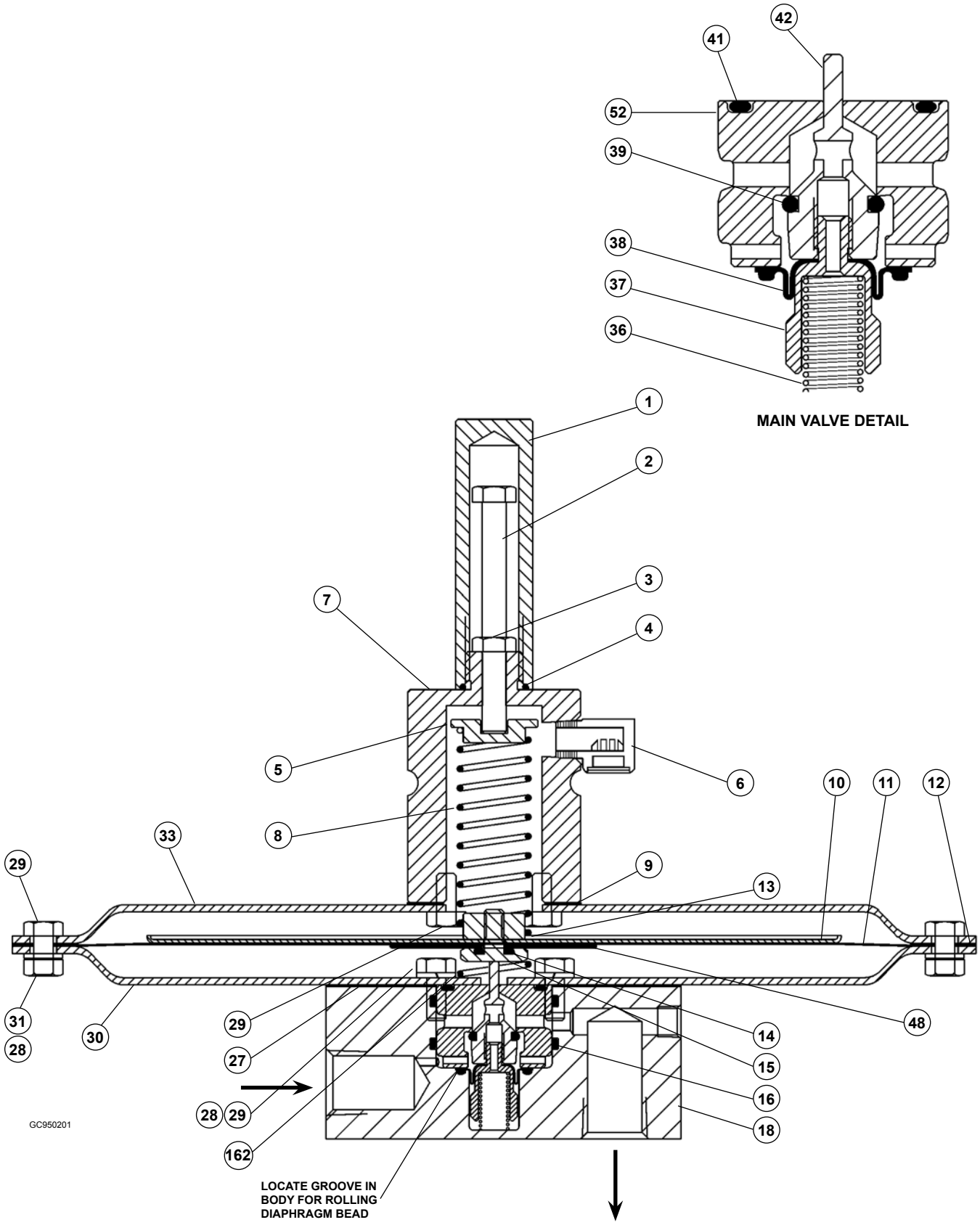

Figure 6. *Type ACE95jr Tank Blanketing Valve Assembly*

Parts List

Key	Description	Part Number
1	Cap	
	Stainless Steel	GC053301X02
	Steel	GC053301X32
2	Adjusting Screw	
	0.5 to 5 in. w.c. / 1 to 12 mbar	GC060216X12
	4 to 10 in. w.c. / 10 to 25 mbar	GC060216X12
	8 to 15 in. w.c. / 20 to 37 mbar	GC060216X12
	0.5 to 1.5 psi / 0.03 to 0.10 bar	GC060221X12
	-1.0 to 1.0 in. w.c. / -2 to 2 mbar	GC060216X12
	-5 to -0.5 in. w.c. / -12 to 1 mbar	GC060216X12
3	Lock Nut	
	0.5 to 5 in. w.c. / 1 to 12 mbar	GC060313X02
	4 to 10 in. w.c. / 10 to 25 mbar	GC060313X02
	8 to 15 in. w.c. / 20 to 37 mbar	GC060313X02
	0.5 to 1.5 psi / 0.03 to 0.10 bar	GC060313X02
	-1.0 to 1.0 in. w.c. / -2 to 2 mbar	GC060313X02
	-5 to -0.5 in. w.c. / -12 to -1 mbar	GC060313X02
4*	O-ring	
	Nitrile (NBR)	1F463606992
	Ethylenepropylene (EPDM)/FDA	1F4636X0082
	Fluorocarbon (FKM)	1N571406382
	Perfluoroelastomer (FFKM)	1F4636X0052
5	Spring Seat	
	0.5 to 5 in. w.c. / 1 to 12 mbar	GC050502X02
	4 to 10 in. w.c. / 10 to 25 mbar	GC050502X02
	8 to 15 in. w.c. / 20 to 37 mbar	GC050501X02
	0.5 to 1.5 psig / 0.03 to 0.10 bar	GC050501X02
	-1.0 to 1.0 in. w.c. / -2 to 2 mbar	GC050501X02
	-5 to -0.5 in. w.c. / -12 to -1 mbar	GC050501X02
6	Vent (Type Y602-A12)	27A5516A012
7	Spring Case	
	Stainless Steel	GC053101X02
	Steel	GC053101X32
8	Range Spring	
	0.5 to 5 in. w.c. / 1 to 12 mbar	GC220701X22
	4 to 10 in. w.c. / 10 to 25 mbar	GC220702X22
	8 to 15 in. w.c. / 20 to 37 mbar	GC220703X22
	0.5 to 1.5 psi / 0.03 to 0.10 bar	GC220708X22
	-1.0 to 1.0 in. w.c. / -2 to 2 mbar	GC220701X22
	-5 to -0.5 in. w.c. / -12 to -1 mbar	GC220701X22
9*	Gasket (spring tower)	GC070428X02
10	Diaphragm Plate (upper)	GC260104X02
11*	Diaphragm (main) - FEP	GC070234X72
12*	Gasket (actuator)	GC070427X02
13	Diaphragm Retaining Nut	
	0.5 to 5 in. w.c. / 1 to 12 mbar	GC053215X02
	4 to 10 in. w.c. / 10 to 25 mbar	GC053215X02
	8 to 15 in. w.c. / 20 to 37 mbar	GC053215X02
	0.5 to 1.5 psi / 0.03 to 0.10 bar	GC053215X02
	-1.0 to 1.0 in. w.c. / -2 to 2 mbar	GC053215X02
	-5 to -0.5 in. w.c. / -12 to -1 mbar	GC053215X02
14*	O-ring	
	Nitrile (NBR)	GC070173X02
	Ethylenepropylene (EPDM)/FDA	GC070173X52
	Fluorocarbon (FKM)	GC070173X12
	Perfluoroelastomer (FFKM)	GC070173X62
15	Diaphragm Bolt	GC053210X02

Key	Description	Part Number
16*	O-ring (2 required)	
	Nitrile (NBR)	1F115306992
	Ethylenepropylene (EPDM)/FDA	1F1153X0062
	Fluorocarbon (FKM)	1F1153X0022
	Perfluoroelastomber (FFKM)	1F1153X0032
18	Body (C_V 0.2)	
	1/2 NPT	GC052930X02
	NPS 1/2 / DN 15, CL150 RF	GC052930X02
	1 NPT	GC052930X02
	NPS 1 / DN 25, CL150 RF	GC052930X02
	NPS 1/2 x 1 / DN 15 x 25, CL150 RF	GC052930X02
	NPS 1 / DN 25, Sanitary Flange	GC052930X02
	1/2 x 1 NPT	GC052930X02
	Body (C_V 0.4)	
	1/2 NPT	GC052907X02
	NPS 1/2 / DN 15, CL150 RF	GC052907X02
	1 NPT	GC052907X02
	NPS 1 / DN 25, CL150 RF	GC052907X02
	NPS 1/2 x 1 / DN 15 x 25, CL150 RF	GC052907X02
	NPS 1 / DN 25, Sanitary Flange	GC052907X02
	1/2 x 1 NPT	GC052907X02
27*	Gasket (bonnet/actuator)	GC070429X32
28	Lock Washer (24 required)	GC060906X02
29	Hex Head Machine Screw (28 required)	GC060220X02
30	Actuator Case (lower)	
	Stainless Steel	GC260105X02
	Steel	GC260105X32
31	Hex Nut (20 required)	1A3457K0012
33	Actuator Case (upper)	
	Stainless Steel	GC260102X02
	Steel	GC260102X12
36	Spring (cage)	GC220707X22
37	Piston	GC053202X02
38*	Rolling Diaphragm	
	Nitrile (NBR)	GC071101X02
	Ethylenepropylene (EPDM)/FDA	GC071101X22
	Fluorocarbon (FKM)	GC071101X12
	Perfluoroelastomer (FFKM)	GC071101X32
39*	O-ring	
	Nitrile (NBR)	1D2888X0032
	Ethylenepropylene (EPDM)/FDA	1D2888X0042
	Fluorocarbon (FKM)	1D2888X0052
	Perfluoroelastomer (FFKM)	1D2888X0022
41*	O-ring	
	Nitrile (NBR)	10A0042X052
	Ethylenepropylene (EPDM)/FDA	10A0042X072
	Fluorocarbon (FKM)	10A0042X012
	Perfluoroelastomer (FFKM)	10A0042X062
42	Pilot (poppet)	GC053201X02
48	Diaphragm Plate (lower)	
	Positive Spring Range	
	(3 in. / 76 mm - diameter)	GC260113X02
	Negative Spring Range	
	(9 in. / 229 mm - diameter)	GE00606X012
52	Cage	GC053003X02
162	Lower Range Spring	
	[negative pressure range only, used with upper spring (key 8)]	
	-1.0 to 1.0 in. w.c. / -2 to 2 mbar	GC220717X22
	-5 to -0.5 in. w.c. / -12 to -1 mbar	GC220710X22

*Recommended Spare Part

Type ACE95JR

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