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Solenoid Operated Block Valves Installation and Parts A2800 Series



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Publication Updates and Translations

The most current English versions of all Liquid Controls publications are available on our web site, It is the responsibility of the local distributor to provide the most current version of LC manuals, instructions, and specification sheets in the required language of the country, or the language of the end user to which the products are shipping. If there are questions about the language of any LC manuals, instructions, or specification sheets, please contact your local distributor.

Be Prepared

! WARNING

- Before using this product, read and understand the instructions.
- All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of equipment and/or systems in accordance with all applicable codes and ordinances.
- When handling electronic components and boards, always use proper Electrostatic Discharge (ESD) equipment and follow the proper procedures
- Make sure that all necessary safety precautions have been taken.
- Provide for proper ventilation, temperature control, fire prevention, evacuation, and fire management.
- Provide easy access to the appropriate fire extinguishers for your product.
- Consult with your local fire department, state, and local codes to ensure adequate preparation.
- Read this manual as well as all the literature provided in your owner's packet.
- Save these instructions for future reference.
- Failure to follow the instructions set forth in this publication could result in property damage, personal injury, or death from fire and/or explosion, or other hazards that may be associated with this type of equipment.

Safely Evacuate Piping System

! WARNING

Before disassembly of any meter or accessory component:

ALL INTERNAL PRESSURES MUST BE RELIEVED AND ALL LIQUID DRAINED FROM THE SYSTEM IN ACCORDANCE WITH ALL APPLICABLE PROCEDURES.

-Pressure must be 0 (zero) psi.

-Close all liquid and vapor lines between the meter and liquid source.

Failure to follow this warning could result in property damage, personal injury, or death from fire and/or explosion, or other hazards that may be associated with this type of equipment.

Observe National and Local Codes

! WARNING

Power, input, and output (I/O) wiring must be in accordance with the area classification for which it is used. This may require using connections or other adaptations in accordance with the requirements of the authority having jurisdiction.

WARNING: Explosion Hazard -

- Substitution of components may impair suitability for Class I, Division 2 applications.
- When in hazardous locations, turn power OFF before replacing or wiring modules.
- Do NOT disconnect equipment unless power has been switched OFF or the area is known to be Non-Hazardous.

A2800 Series Block Valve Overview

The Liquid Controls A2800 Series Solenoid Operated Block Valves are designed for use with LectroCount electronic registers. Four models are available:

A2843

Single-stage valve with overmolded, soft-seat piston; braided metal solenoid hoses and a 3-way solenoid (Model 82102 or 82102-24); used in LPG applications.

Metallurgical and seal material changes may be needed for other applications (example: methanol). Consult factory if your application is not listed in the descriptions of A2800 series solenoid operated block valves shown here.

A2859-11

Two-stage preset version incorporates a 2-way, "bypass" solenoid added to

the A2843 valve for precise "0" shut-off and to prevent hydraulic shock. The A2859-11 two-stage, solenoid operated block valve is used for LPG applications.

A2847-11

Single-stage valve with overmolded, soft-seat piston; flared copper solenoid tubing; and a 3-way solenoid. Used for refined fuels applications where a single stage, solenoid operated block valve function is required.

A2848-11

Two-stage preset version incorporates a 2-way, "bypass" solenoid added to the A2847-11 valve for precise "0" shut-off and hydraulic shock prevention. The A2848-11 two-stage, solenoid operated block valve is used for refined fuels applications.

SPECIFICATIONS

<p>Specifications</p> <p>Temperature Range • -40 to 160 °F (-40 to 71 °C)</p>	<p>Materials of Construction</p> <p>Main valve body and bonnet/cap</p> <ul style="list-style-type: none"> • A3560 anodized aluminum <p>Main valve internal trim</p> <ul style="list-style-type: none"> • Anodized aluminum, brass, plated steel <p>Elastomers</p> <p>Valve diaphragm and O-ring seals standard</p> <ul style="list-style-type: none"> • Buna-N UL approved
<p>Pressure Rating</p> <p>LPG</p> <p>Maximum non-shock working pressure</p> <ul style="list-style-type: none"> • 350 PSI (24 BAR) <p>Maximum differential pressure</p> <ul style="list-style-type: none"> • 125 PSI (86 BAR) 	<p>Solenoids Output</p> <p>Voltage 10.2 to 27.2 VDC</p> <p>Current 1 A maximum</p> <p>Regulatory Explosion-proof, UL approved for NEMA 7 requirements for Class I, Division 2, Group C and D hazardous locations</p>
<p>Refined Fuels</p> <p>Maximum non-shock working pressure</p> <ul style="list-style-type: none"> • 150 PSI (10 BAR) <p>Maximum differential pressure</p> <ul style="list-style-type: none"> • 100 PSI (69 BAR) 	<p>MODEL FLOWRATES AND PRESSURE RATINGS</p> <p>A2843</p> <ul style="list-style-type: none"> • 200 GPM (757 LPM) • 350 PSI (24 BAR)
<p>A2859-11</p> <ul style="list-style-type: none"> • 200 GPM (757 LPM) • 350 PSI (24 BAR) 	<p>A2847-11</p> <ul style="list-style-type: none"> • 200 GPM (757 LPM) • 150 PSI (10 BAR)
<p>A2859-11</p> <ul style="list-style-type: none"> • 200 GPM (757 LPM) • 350 PSI (24 BAR) 	<p>A2848-11</p> <ul style="list-style-type: none"> • 200 GPM (757 LPM) • 150 PSI (10 BAR)

New Installations

When ordered with a new meter, the A2800 Series solenoid operated block valves are mounted to the meter at the factory. The valve solenoids are prewired to the LectroCount electronic register and optical or vapor eliminators (if included in system) at the factory. Connect the system piping to the 2" NPT flange on the outlet side of the block valve.



M-7 Flowmeter with block valve (no solenoids), optical vapor eliminator, strainer, and LectroCount LCR-II

Retrofit Installations

Depending on the existing configuration, adding a block valve may require modification of the outlet piping. After the internal pressure is relieved from the system, the outlet line can be disconnected from the mechanical valve being replaced. The new valve assembly can then be connected to the outlet side of the positive displacement meter. Use the four bolts and washers to fasten the valve assembly to the meter. The valve has an arrow showing the direction of flow. Ensure that the valve is properly oriented. Tighten the bolts in a crossing pattern. Once this is complete, the outlet piping may be reconnected to the outlet side of the differential preset valve. The valve outlet fitting is 2" NPT. Wiring instructions for each of the models is covered on pages 6-9.

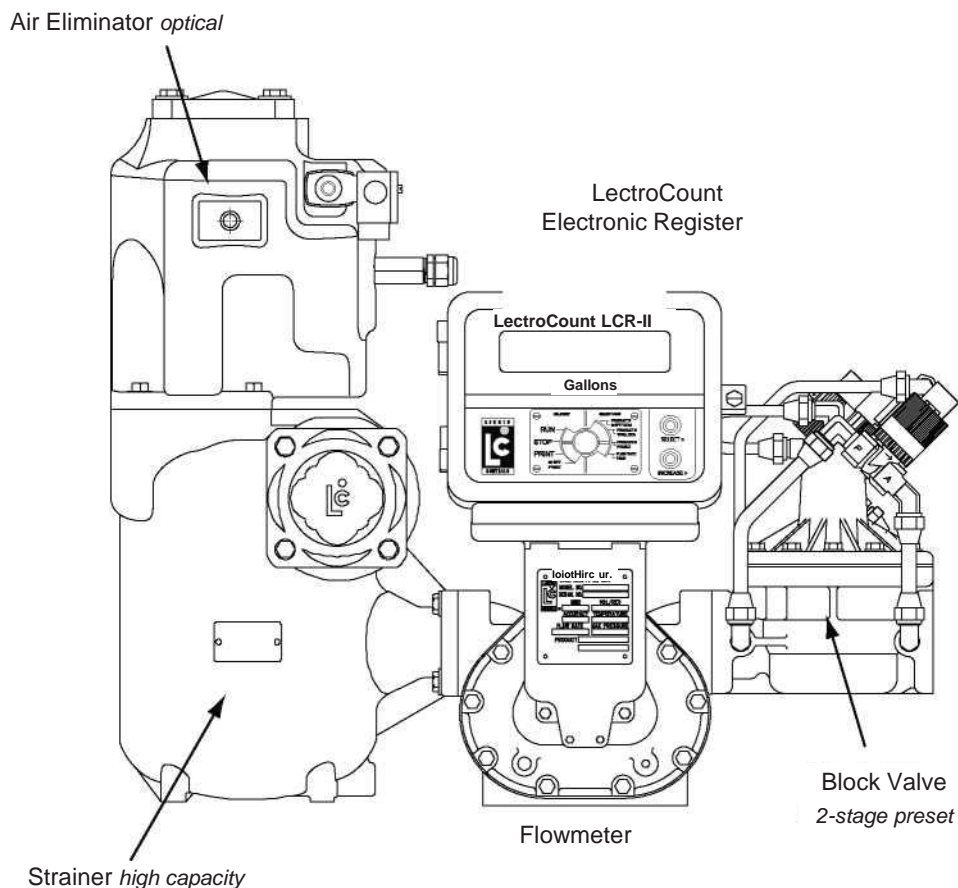
! WARNING

Before disassembly of any meter or accessory component:

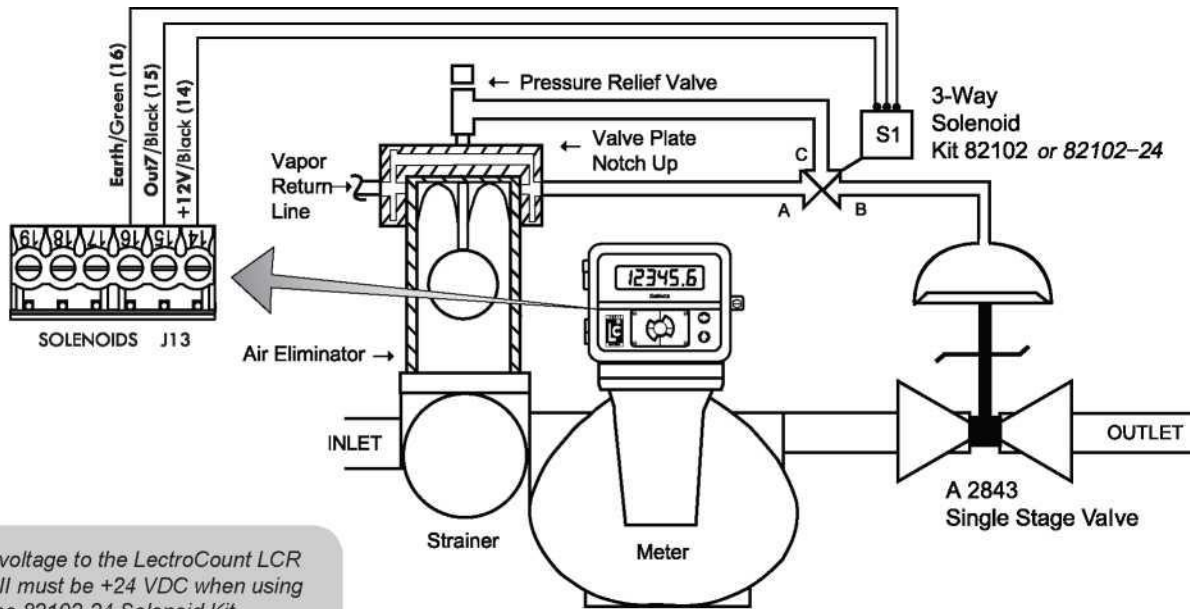
ALL INTERNAL PRESSURES MUST BE RELIEVED AND ALL LIQUID DRAINED FROM THE SYSTEM IN ACCORDANCE WITH ALL APPLICABLE PROCEDURES.

- Pressure must be 0 (zero) psi.
- Close all liquid and vapor lines between the meter and liquid source.

Failure to follow this warning could result in property damage, personal injury, or death from fire and/or explosion, or other hazards that may be associated with this type of equipment.

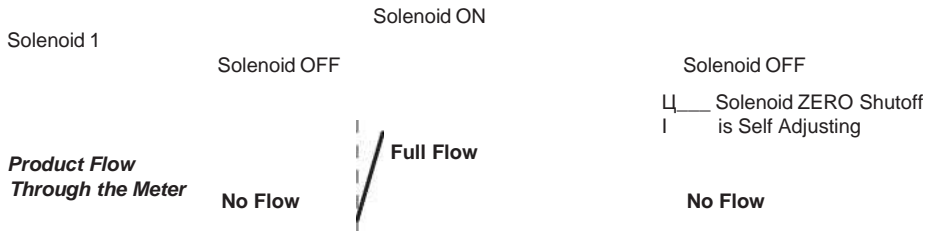


A2843 VALVE - SINGLE-STAGE LPG APPLICATIONS



Supply voltage to the LectroCount LCR or LCR-II must be +24 VDC when using the 82102-24 Solenoid Kit.

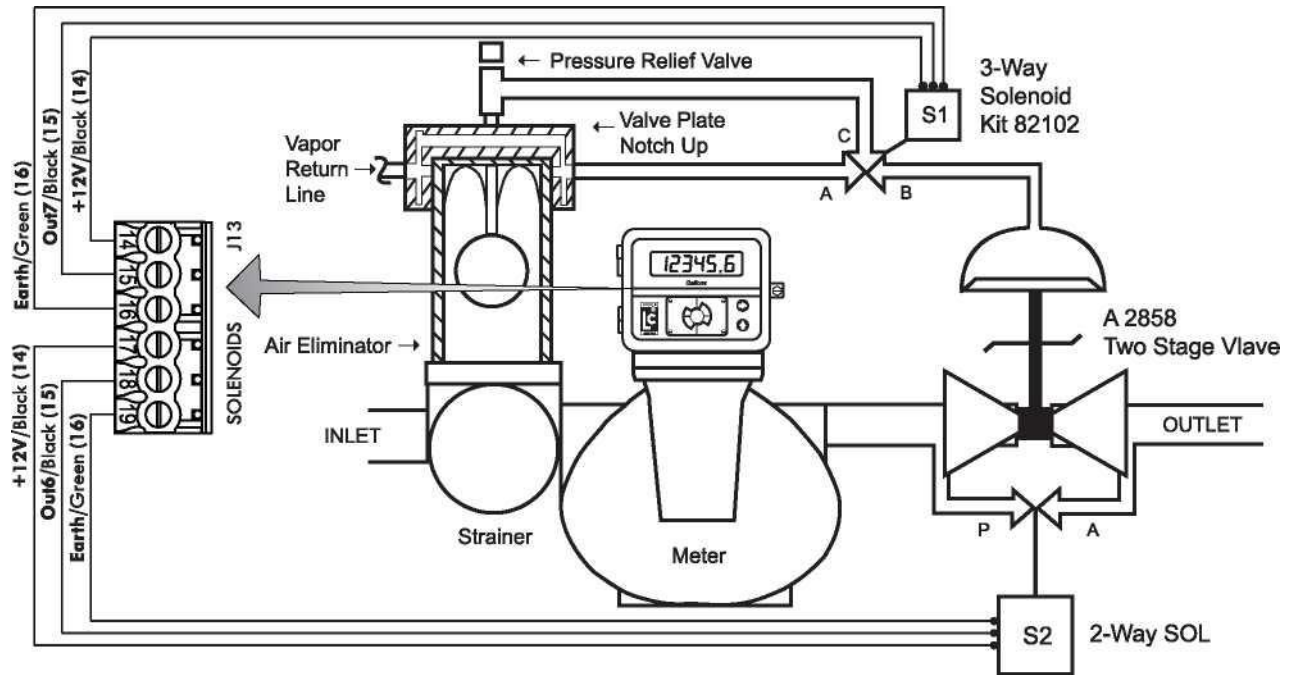
ELECTRICAL SEQUENCING



! WARNING

** SOLENOID WARNING: The earth ground to the green screw on the solenoid terminal block is not essential for the operation of the device. In a truck application the solenoid is automatically grounded to the truck chassis via the liquid carrying piping. Check any applicable electrical codes to comply with proper grounding procedures.

TWO-STAGE LPG APPLICATIONS - A2859-11 VALVE



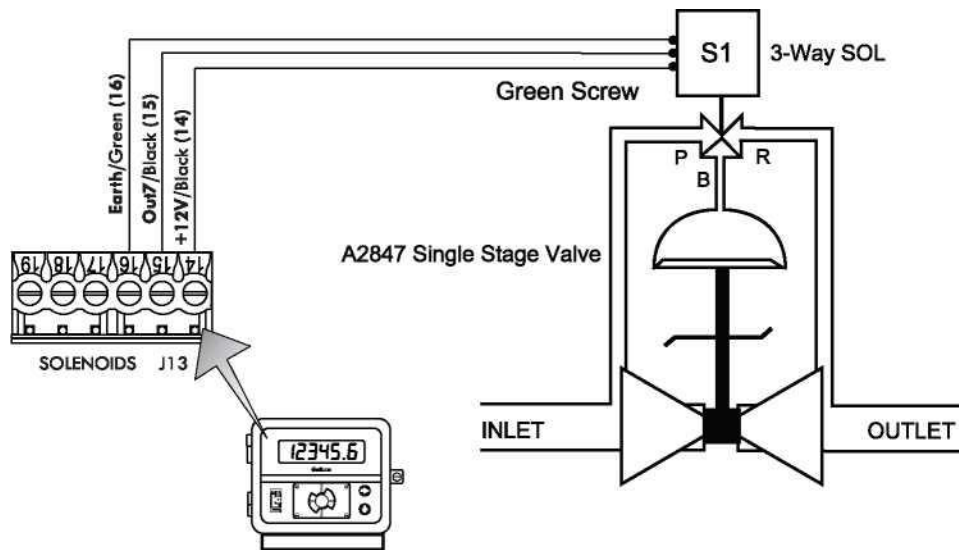
ELECTRICAL SEQUENCING

LectroCount LCR & LectroCount LCR-II™	Solenoid 1	Solenoid OFF	Solenoid ON	Solenoid OFF
	Solenoid 2	Solenoid OFF	Solenoid ON	Solenoid OFF
				Solenoid ZERO Shutoff is Self Adjusting
	<i>Product Flow Through the Meter</i> No Flow	Full Flow	Dwell Flow	No Flow

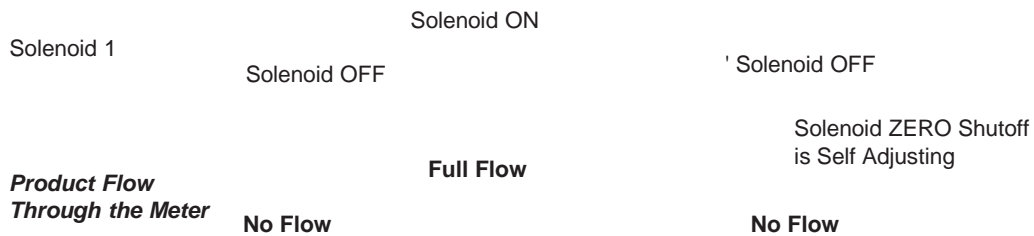
! WARNING

** SOLENOID WARNING: The earth ground to the green screw on the solenoid terminal block is not essential for the operation of the device. In a truck application the solenoid is automatically grounded to the truck chassis via the liquid carrying piping. Check any applicable electrical codes to comply with proper grounding procedures.

A2847-11 VALVE - SINGLE-STAGE REFINED FUEL APPLICATIONS



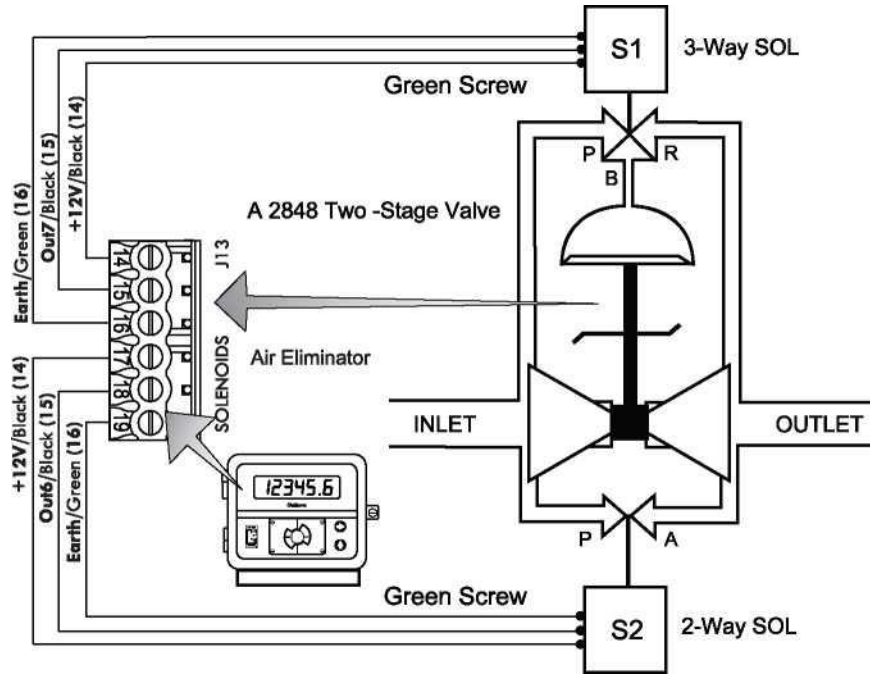
ELECTRICAL SEQUENCING



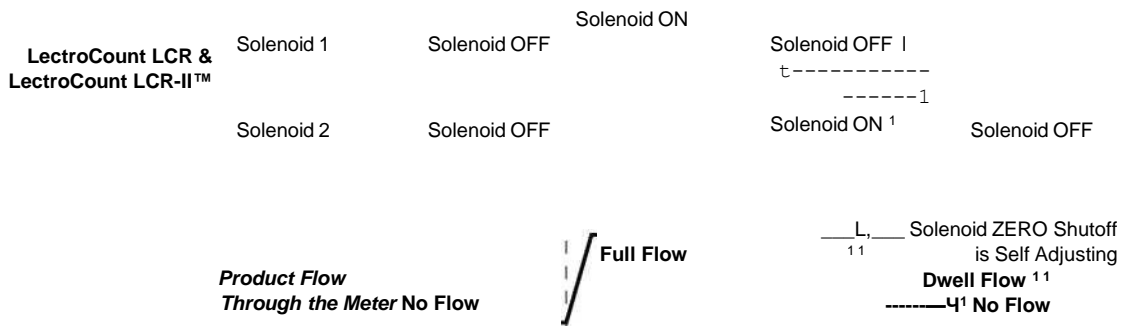
! WARNING

** SOLENOID WARNING: The earth ground to the green screw on the solenoid terminal block is not essential for the operation of the device. In a truck application the solenoid is automatically grounded to the truck chassis via the liquid carrying piping. Check any applicable electrical codes to comply with proper grounding procedures.

TWO-STAGE REFINED FUEL APPLICATIONS - A2848-11 VALVES



ELECTRICAL SEQUENCING



! WARNING

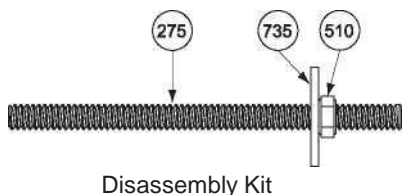
** SOLENOID WARNING: The earth ground to the green screw on the solenoid terminal block is not essential for the operation of the device. In a truck application the solenoid is automatically grounded to the truck chassis via the liquid carrying piping. Check any applicable electrical codes to comply with proper grounding procedures.

DISASSEMBLY - DISASSEMBLY KIT

The Block Valve Disassembly Kit is used to disassemble A2800 Series block valves. The kit includes a nut, washer, and threaded rod. Together, the kit items screw down through the top opening of the block valve into a stand-off inside the valve. As the kit screws into the stand-off, it compresses the compression spring inside the valve, freeing the valve cover from the compression spring's pressure and allowing the twelve valve cover screws to be removed easily.

To remove the cover from the block valve:

1. Safely drain all liquid from the meter system (and all piping). See *warning below*.
2. Remove any plumbing from the hole at the top of the valve cover.
3. Insert the threaded rod into the hole and screw it into the stand-off inside the valve.
4. Slide the washer over the threaded rod.
5. Screw nut onto the threaded rod until it is flush with the top of the cover.
6. Remove screws from valve cover.
7. Slowly loosen the nut until the cover can be removed.



Safely Evacuate Piping System

! WARNING

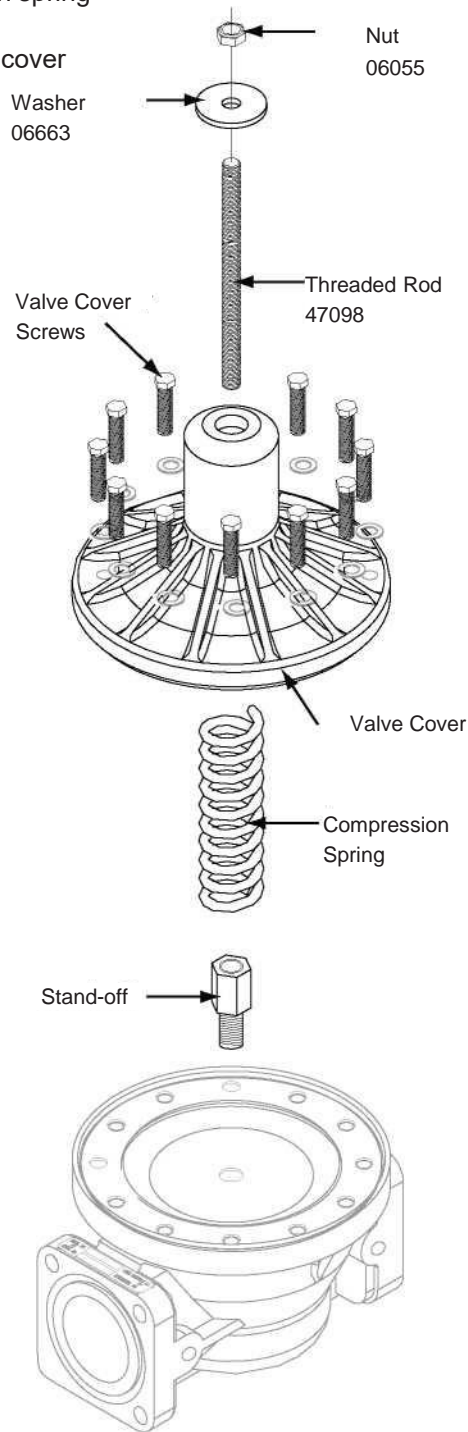
Before disassembly of any meter or accessory component:

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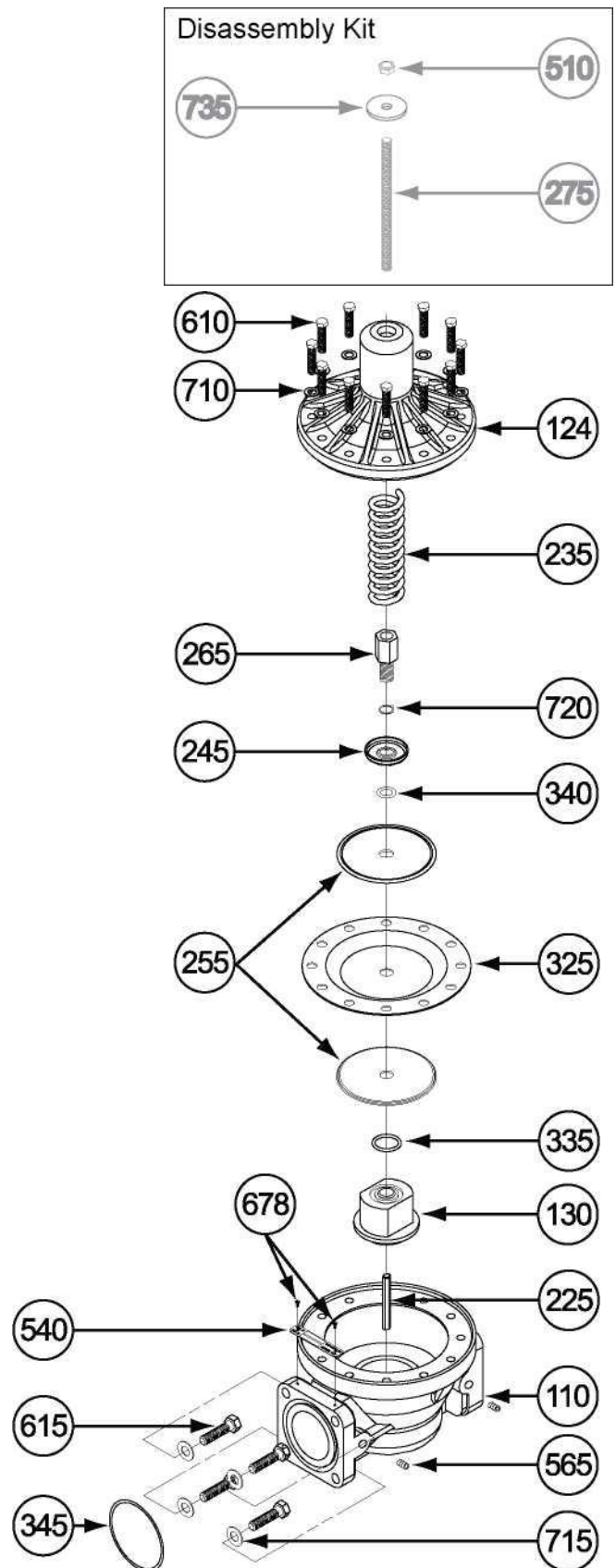
ILLUSTRATED PARTS BREAKDOWN - A2843 VALVE ASS'Y

A2843 Valve Assembly

Items specific to the 49971 and 501339 assemblies are indicated as such.

Item #	Part #	Description
110	47096	Valve Housing Assembly
124	47302	Valve Cover
130	49947	Piston
225	N/S*	Piston Guide Shaft (Part of 47096 Assembly)
235	47305	Compression Spring [A2843, 501339 only]
	49970	Compression Spring [49971 only]
245	47307	Spring Retainer
255	47308	Back-up Plate (2)
265	47309	Stand-off
275	47098	Rod Assembly
325	502078	Diaphragm
335	06856	Buna-N O-Ring
340	07900	Buna-N O-Ring
345	07838	Buna-N O-Ring
510	06055	Nut
540	N/S	Nameplate
565	04759	Pipe Plug (4)
610	04655	Screw (12)
615	06851	Screw (4)
678	00306S	Screw (2)
710	09360	Flat Washer (12)
715	04498	Flat Washer (4)
720	06070	Lock Washer
735	06663	Flat Washer

*N/S = Not for Sale

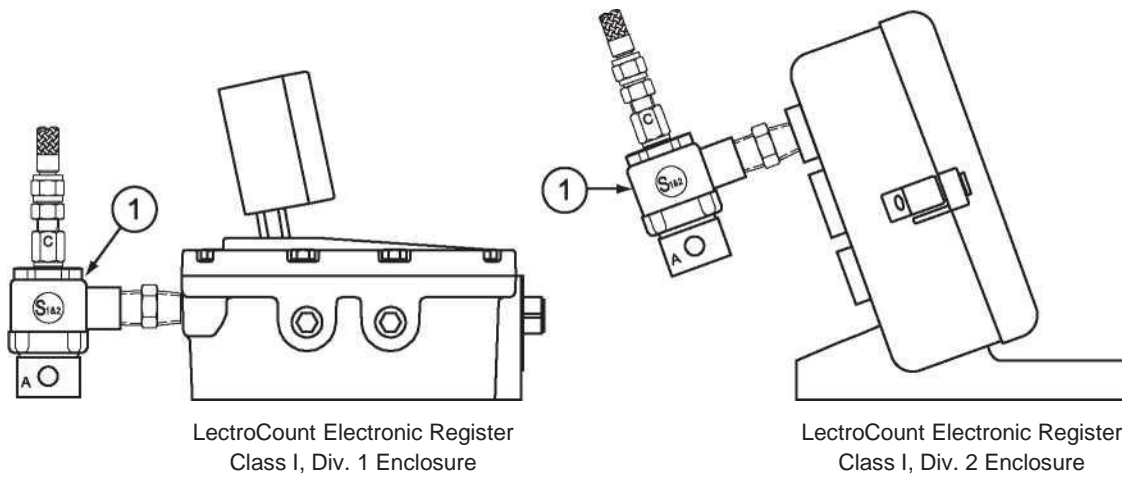
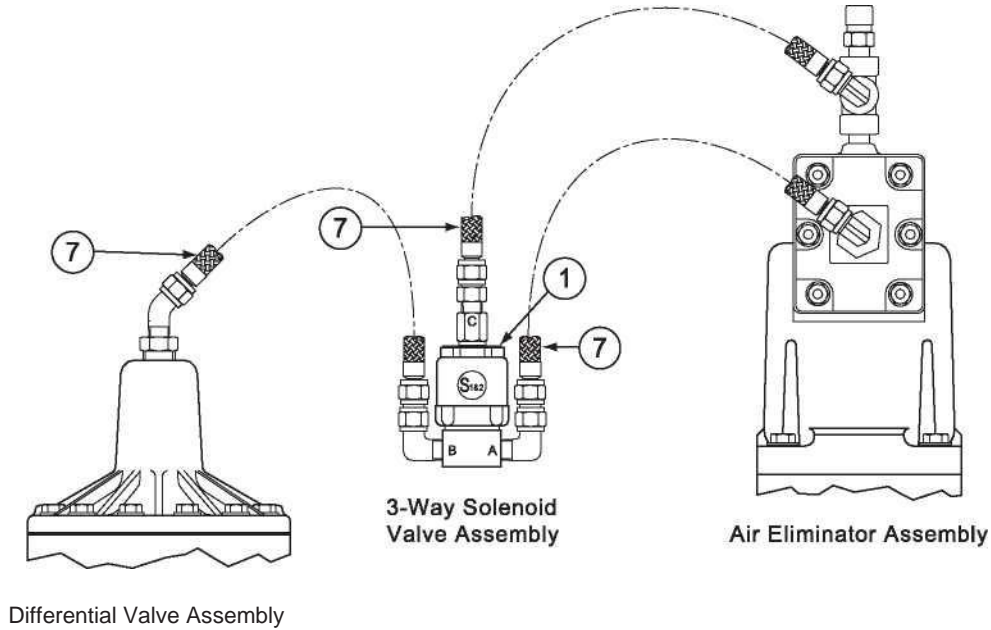


ILLUSTRATED PARTS BREAKDOWN - 82102 & 82102-24 SOLENOID KIT

82102 & 82102-24 Solenoid Kit

These two items are used with model A2843 in LPG applications.

Item #	Part #	Description
1	81527	3-way Solenoid Valve Assembly +12 VDC for use with 82102
	81554	3-way Solenoid Valve Assembly +24 VDC for use with 82102-24
7	81585	Hose Assembly Not available for NH3 applications



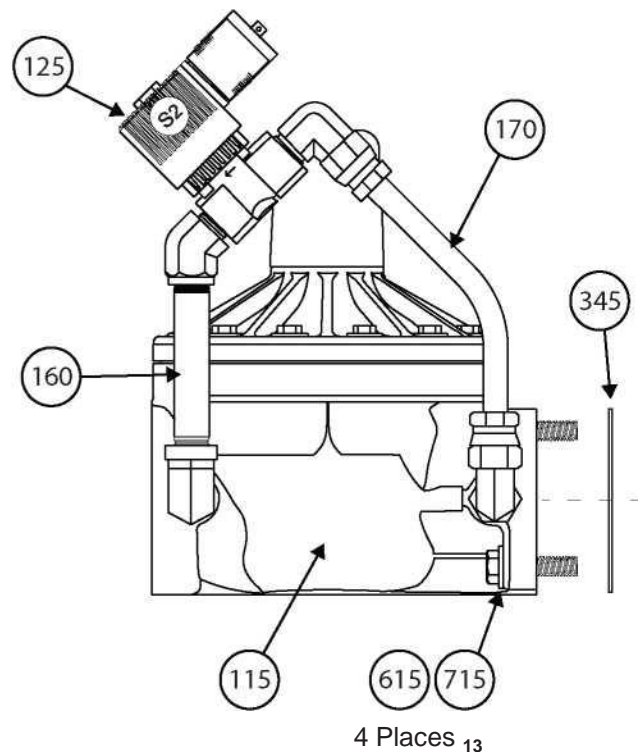
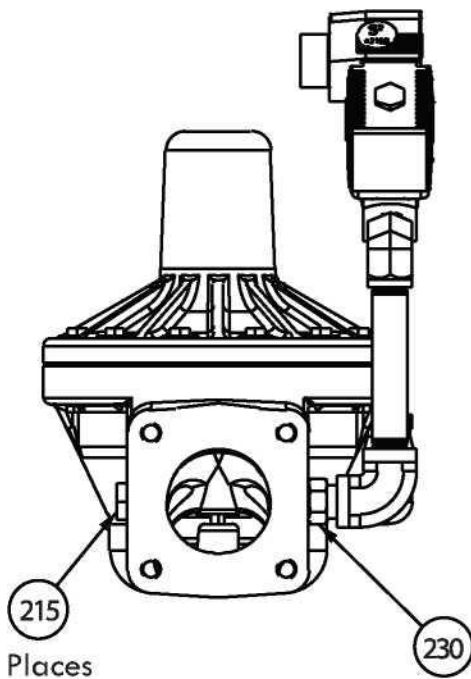
A2859-11 TWO-STAGE VALVE - ILLUSTRATED PARTS BREAKDOWN

A2859-11 Two-Stage Valve		
Item #	Part #	Description
115	501339	Block Valve Assembly See page 11 for 501339 breakdown
125	501536	2-way Solenoid Valve
160	09413	Pipe Nipple
170	501535	Hose Assembly
215	N/S*	Pipe Plug (2)
220	N/S	Male Elbow (2)
230	N/S	Pipe Nipple
235	09414	Pipe Elbow
240	09412	Male Elbow
245	09411	Expander/Adapter
275	47098	Rod Assembly
345	07838	Buna-N O-Ring
510	06055	Nut
615	06851	Screw (4)
715	04498	Flat Washer (4)
735	06663	Flat Washer

*N/S = Not for Sale

A2859-11 LPG Two-Stage Valve Kits

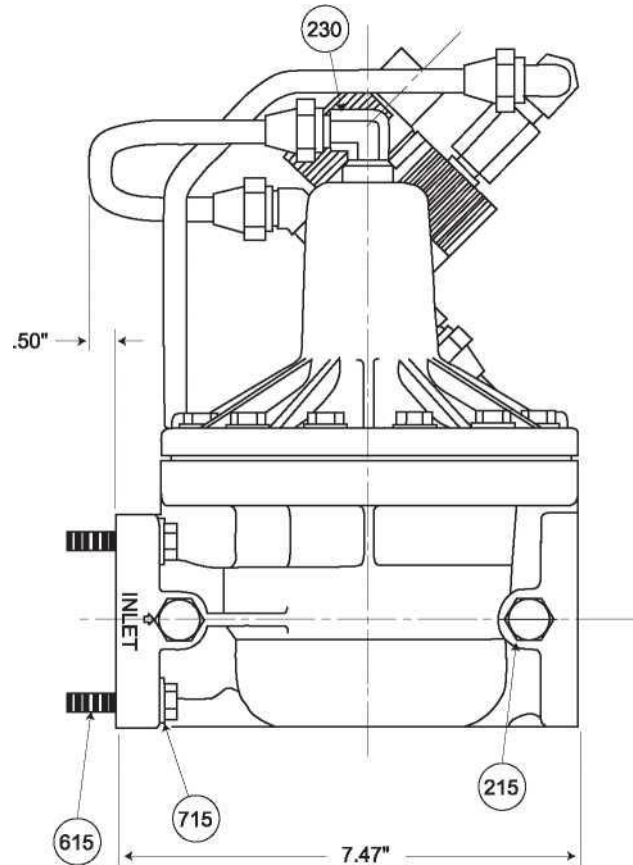
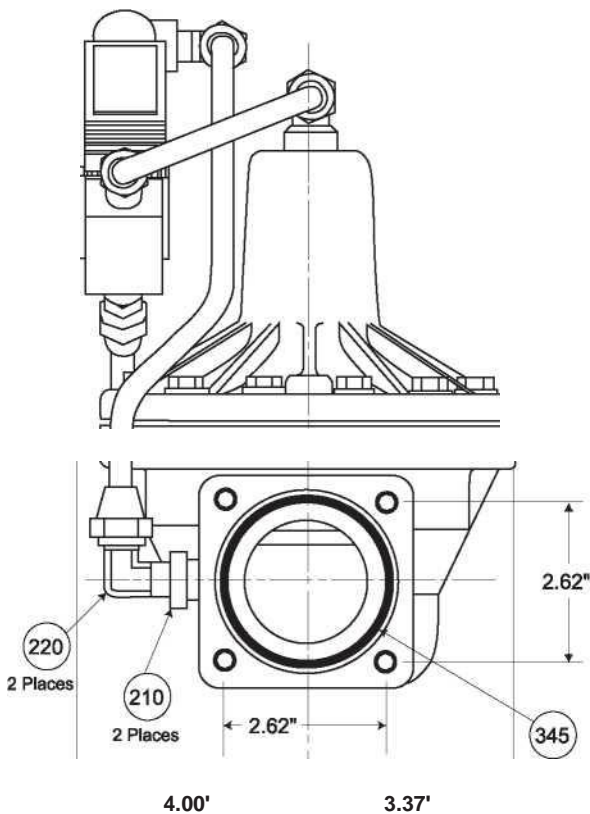
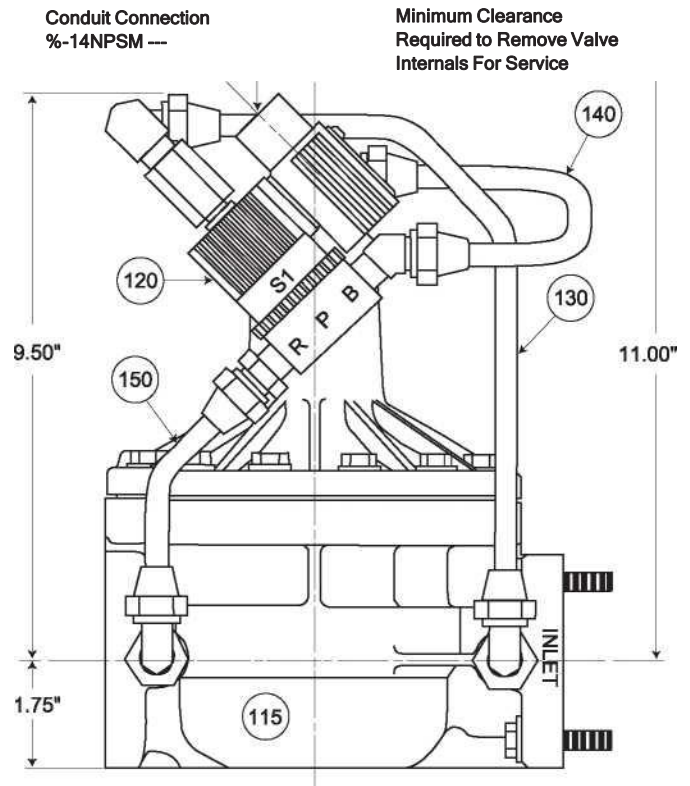
The A2859-11 LPG Two-Stage Valve comes with the following kits:
82584 S1 Solenoid Kit (3-way solenoid with brass fittings and hoses)
3-way Solenoid Valve Assembly can be ordered as a single part as Part Number 81868
81859 Two-Stage Cable Kit.



ILLUSTRATED PARTS BREAKDOWN - A2847-11 SINGLE STAGE VALVE

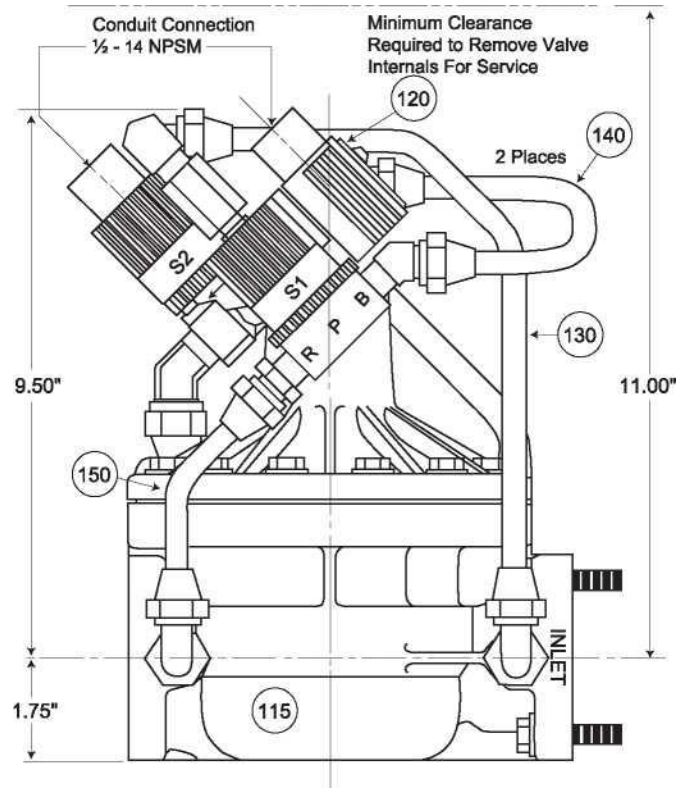
A2847-11 Single Stage Valve		
Item #	Part #	Description
115	49971	Block Valve Assembly See page 11 for 49971 breakdown
120	49986	3-way Solenoid Valve Assy.
130	49975	Tubeline Assembly
140	49976	Tubeline Assembly
150	49977	Tubeline Assembly
210	N/S*	Pipe Thread Reducer (2)
215	N/S	Pipe Plug (2)
220	N/S	Male Elbow (2)
230	N/S	Male Elbow
345	07838	Buna-N O-Ring
615	06851	Screw (4)
715	04498	Flat Washer (4)

*N/S = Not for Sale

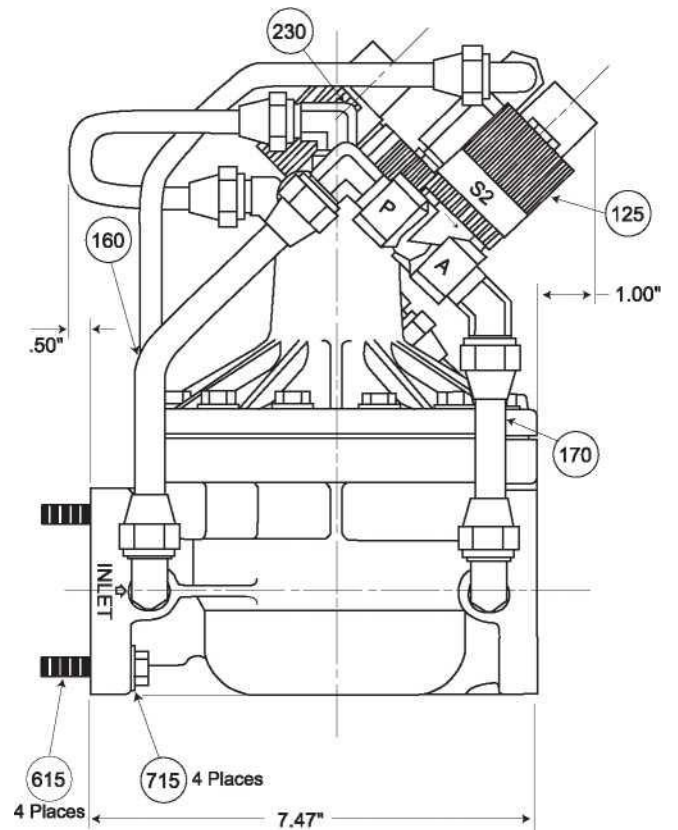
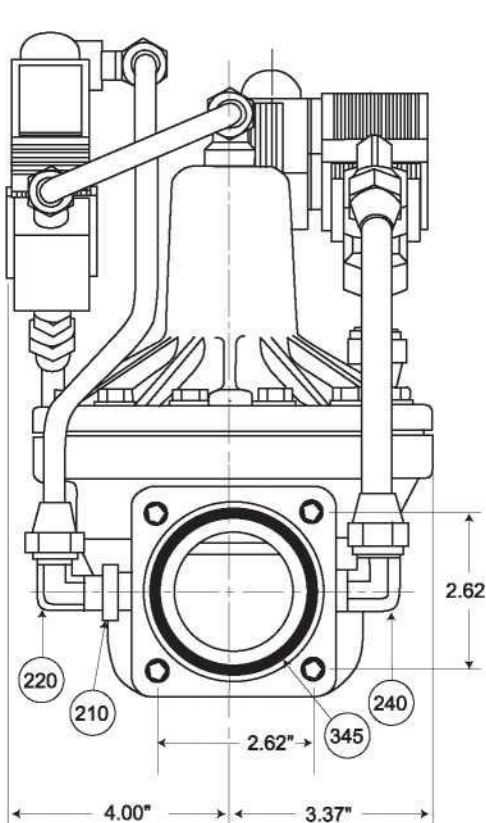


A2848-11 TWO STAGE VALVE - ILLUSTRATED PARTS BREAKDOWN

A2848-11 Two-Stage Valve		
Item #	Part #	Description
115	49971	Block Valve Assembly See page 11 for 49971 breakdown
120	49980	3-way Solenoid Valve
125	49981	2-way Solenoid Valve
130	49975	Tubeline Assembly
140	49976	Tubeline Assembly
150	49977	Tubeline Assembly
160	49978	Tubeline Assembly
170	49979	Tubeline Assembly
210	N/S*	Pipe Thread Reducer (2)
220	N/S	Male Elbow (2)
230	N/S	Male Elbow
240	N/S	Male Elbow (2)
345	07838	Buna-N O-Ring
615	06851	Screw (4)
715	04498	Flat Washer (4)



*N/S = Not for Sale



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