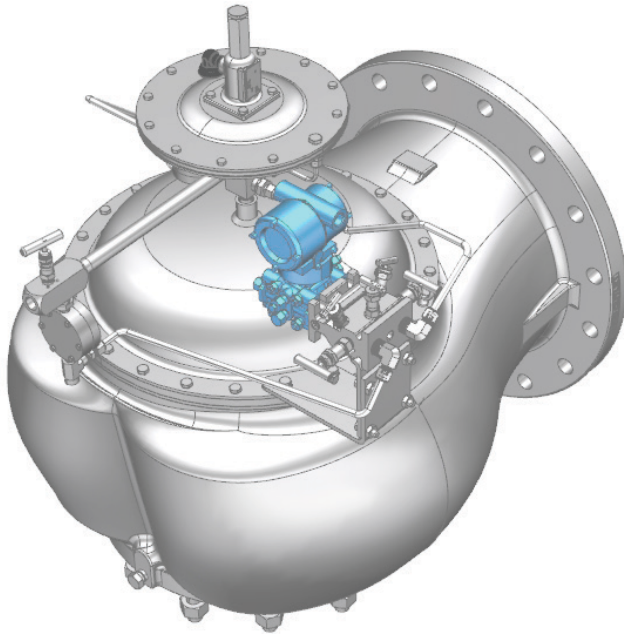




# ANDERSON GREENWOOD PILOT-OPERATED RELIEF VALVES

## INSTALLATION INSTRUCTIONS

Before installation, these instructions must be read carefully and understood. This installation instruction provides guidelines on how to install differential pressure transmitter on pilot-operated relief valves.



The 3051SMV or 2051CD is used to monitor the opening and closing of Anderson Greenwood pilot-operated relief valves by monitoring the differential pressure across dome and inlet. The 3051SMV measures the static pressure in addition to the differential pressure.

The transmitter periodically reads the pressure and transmits that data over a wireless or wired network.

This procedure provides general installation guidelines of above transmitters on pilot-operated relief valves. For selection, calibration and commissioning of these transmitters, refer to its product data sheet and reference manual.

### WARNING

*The installation and operation instructions for the specific pilot-operated relief valve and the product data sheet and reference manual of the transmitter should be fully read and understood before installation of these transmitters. All safety precautions listed should be followed.*

*Read this manual before working with the product. For personal and system safety, and for optimum product performance, make sure you thoroughly understand the contents before installing, using, or maintaining this product.*

*Failure to do so may result in injury to personnel or cause damage to the equipment.*

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### 1 INTRODUCTION

#### 1.1 Guidelines

#### NOTICE

Refer to Rosemount™ 3051SMV or 2051CD reference manual for any difficulties with device or calibration.

This document provides guidelines on installation of Rosemount™ 3051SMV multivariable static and differential pressure transmitter (Measurement Type 2) or 2051CD differential pressure transmitter on Anderson Greenwood low pressure and high pressure pilot-operated relief valves. The low pressure pilot-operated pressure relief valves (low pressure pilot-operated valve) considered here are Series 90 and 9000 and high pressure pilot-operated pressure relief valves (high pressure pilot-operated valve) are Series 200, 400, 500 and 800.

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### 1.2 Safety precautions

The protection and safety of equipment, property and personnel depends on the proper operation of the pressure relief valves described in this manual. All Emerson pressure relief valves should be kept in proper working condition in accordance with the manufacturer's written instructions. Periodic testing and maintenance by the user of this equipment is essential for reliable and safe valve operation.

All installation, maintenance, adjustment, repair and testing performed on pressure relief valves should be done by qualified technicians having the necessary skills and training adequate to perform such work. All applicable Codes and Standards, governing regulations and authorities should be adhered to when performing pressure relief valve repair. No repair, assembly, adjustment or testing performed by other than Emerson or its authorized assemblers and representatives shall be covered by the warranty extended by Emerson to its customers. The user should use only original, factory supplied OEM parts in any maintenance or repair activity involving this product.

#### SAFETY FIRST

To reduce the risk during installation:

- Comply with all guidelines provided for the products, in this manual, and in any local and national codes that apply to the products.
- Do not allow untrained personnel to work on the products.
- Use Emerson parts and work procedures specified in this manual.

#### WARNING

Sudden release of pressure may result if the valve assembly is installed where service conditions could exceed the limits on the appropriate nameplates. Never use this equipment for any purpose other than its intended use.

This manual is provided as a general guide for the assembly or retrofit on the pressure relief valves described herein. It is not possible to describe all configurations or variations with such equipment. The user is advised to contact Emerson or its authorized assemblers and representatives for assistance in situations that are not adequately covered or described in this manual.

Failure to do so may result in injury to personnel or cause damage to the equipment.

#### WARNING

Before performing any maintenance operations:

- Do not remove any component from the valve while the valve is still pressurized.
- Always wear protective gloves, clothing, and eyewear when performing any maintenance operations to avoid personal injury.
- Adhere to all safety standards and best practices for operating the equipment.
- Use bypass valves or completely shut off the process to isolate the valve from process pressure. Relieve process pressure on both sides of the valve. Drain the process media from both sides of the valve.
- Use lock-out procedures to be sure that the above measures stay in effect while you work on the equipment.
- The valve may contain process media that are pressurized, even when the valve has been removed from the process.
- Check with your process or safety engineer for any additional measures that must be taken to protect against process media.

Failure to do so may result in injury to personnel or cause damage to the equipment.

The escape of process media indicates that the valve has NOT been properly vent, or process pressure is trapped in the valve body, pilot, tubing and/or accessories. Check with your process or safety engineer for any additional measures that must be taken to protect against process media. Never attempt to remove the pressure relief valve from a system that is pressurized. Never adjust or perform maintenance on the pressure relief valve while in service unless the valve is isolated from the system pressure. If not properly isolated from the system pressure, the pressure relief valve may inadvertently open resulting in serious injury. Remove the pressure relief valve prior to performing any pressure testing of the system.

#### CAUTION

When the pressure relief valve is under pressure never place any part of your body near to the outlet/exhaust of the valve. Failure to do so may result in injury to personnel or cause damage to the equipment.

This product is intended for a specific temperature range and other application specifications.

Failure to adhere to these specifications could result in the malfunction of the product, property damage, or personal injury.

The safety of lives and property often depends on the proper operation of the pressure relief valve. The valve must be maintained according to appropriate instructions and must be periodically tested and reconditioned to ensure correct function.

#### WARNING

Use only genuine Emerson replacement parts. Components that are not supplied by Emerson should not, under any circumstances, be used. Use of components not supplied by Emerson may void your warranty, might adversely affect the performance of the instrument and could cause personal injury or property damage.

Failure to do so may result in injury to personnel or cause damage to the equipment.

#### NOTICE

Contact your Emerson sales office for replacement parts.

Before installation, the Installation and Operational Safety Instructions should be fully read and understood. These Instructions may be requested from the factory or are available at Emerson.com.

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### 2 INSTALLATION

#### CAUTION

When the pressure relief valve is under pressure never place any part of your body near to the outlet/exhaust of the valve. Never use this equipment for any purpose other than its intended use.

Failure to do so may result in injury to personnel or cause damage to the equipment.

Ensure the transmitter selected is rated for the pressure and temperature seen by the valve. Figures 2-1 and 2-2 show the transmitter schematic on high and low pressure pilot-operated valves respectively and identify the key components that are relevant to perform this installation. Figure 2-1 shows a sample configuration for Series 400 with internal sense and pilot exhausting to atmosphere. Figure 2-2 shows a sample configuration for Type 9300 with field test, pilot exhaust to atmosphere and internal sense.

#### WARNING

If the process media starts to escape from the valve or pilot, stop immediately!

Failure to do so may result in injury to personnel or cause damage to the equipment.

Use only genuine Emerson replacement parts. Components that are not supplied by Emerson should not, under any circumstances, be used in any Emerson instrument.

Use of components not supplied by Emerson may void your warranty, might adversely affect the performance of the instrument and could cause personal injury or property damage.

Failure to do so may result in injury to personnel or cause damage to the equipment.

#### NOTICE

The figures are illustrative, the actual configuration will vary depending on pilot type, accessory, and main valve size and type.

#### CAUTION

Individuals who handle products exposed to a hazardous substance can avoid injury if they are informed of and understand the hazard. The product being returned will require a copy of the required material safety data sheet (msds) for each substance must be included with the returned goods.

1. Installation of transmitter requires a special kit comprising of close tee (only for low pressure pilot-operated valve), mounting bracket(s) and bolting.

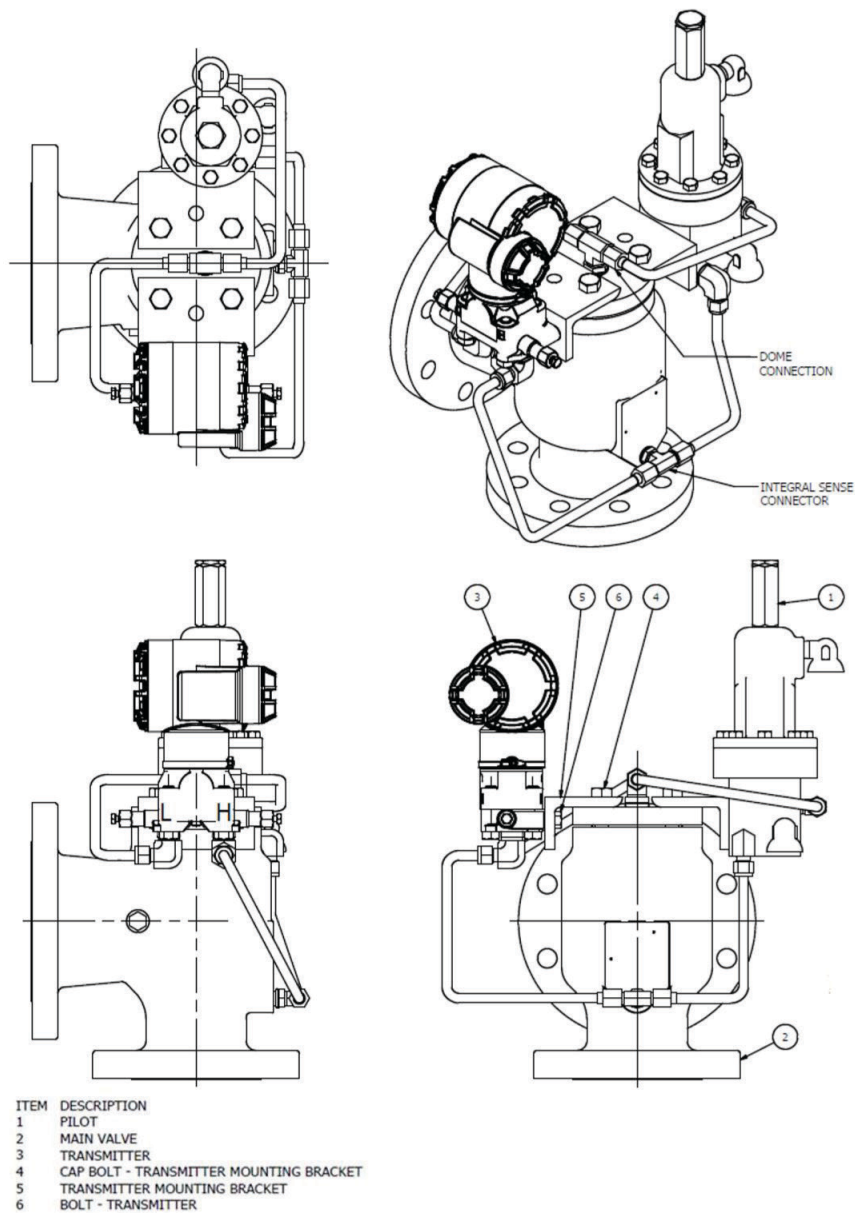


FIGURE 2-1 HIGH PRESSURE PILOT-OPERATED VALVE CONFIGURATION WITH TRANSMITTER

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### NOTICE

Some high pressure pilot-operated valves may not require new cap bolts. For valves with different accessories or requiring transmitter manifolds contact factory.

- Remove the standard cap bolts where the transmitter bracket needs to be mounted, and if applicable, where existing bracket needs to be changed. Assemble the mounting bracket and the cap bolts provided in the kit. Mount the transmitter to the bracket using transmitter mounting bolts. Tube fittings will need to be changed as required.

### WARNING

When the pressure relief valve is under pressure never place any part of your body near to the outlet/exhaust of the valve.

Never use this equipment for any purpose other than its intended use.

Failure to do so may result in injury to personnel or cause damage to the equipment.

The differential pressure transmitter has two ports identified as H and L. The H stands for high side needs to be tubed to the integral sense connection and L which is the low side needs to be tubed to the dome connection.

### WARNING

Installation of this transmitter in an explosive environment must be in accordance with the appropriate local, national, and international standards, codes, and practices. Please review the approvals section of the Rosemount 2051 reference manual for any restrictions associated with a safe installation.

- Before connecting a field communicator in an explosive atmosphere, ensure the instruments in the loop are installed in accordance with intrinsically safe or non-incendive field wiring practices.
- In an explosion-proof/flameproof installation, do not remove the transmitter covers when power is applied to the unit. Process leaks may cause harm or result in death.
- Install and tighten process connectors before applying pressure. Electrical shock can result in death or serious injury.
- Avoid contact with the leads and terminals. High voltage that may be present on leads can cause electrical shock.

Failure to do so may result in injury to personnel or cause damage to the equipment.

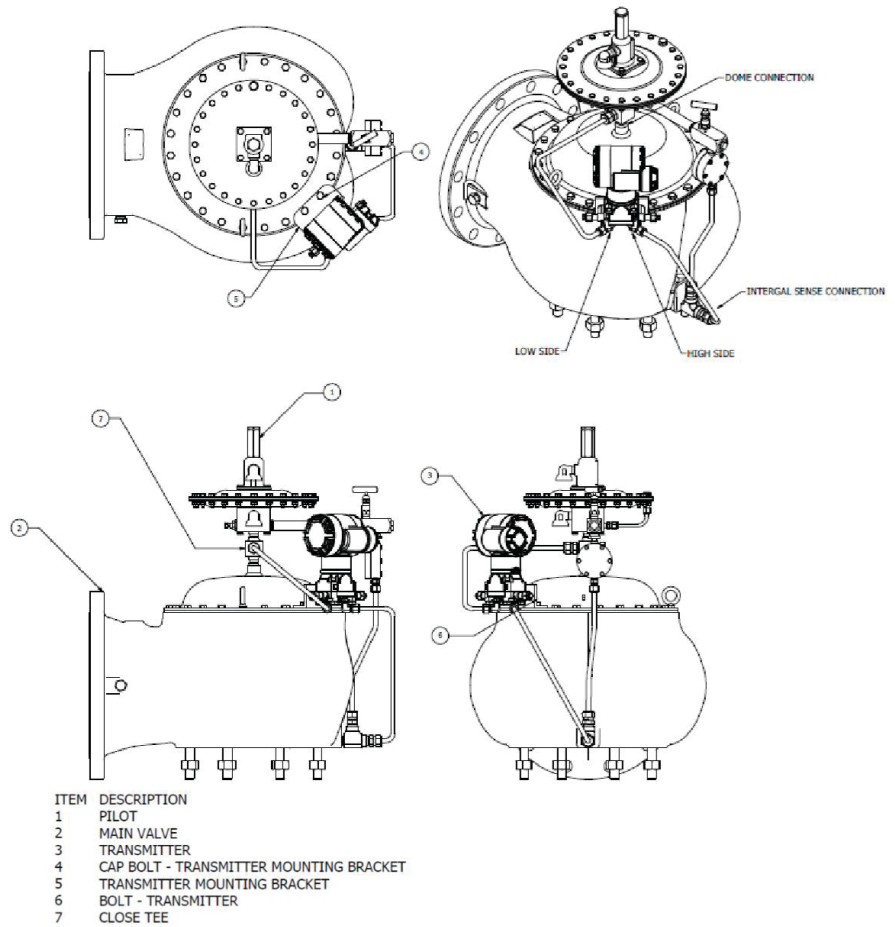


FIGURE 2-2 LOW PRESSURE PILOT-OPERATED VALVE CONFIGURATION WITH TRANSMITTER

# ANDERSON GREENWOOD PILOT-OPERATED RELIEF VALVES

## INSTALLATION INSTRUCTIONS

### WARNING

Process leaks could result

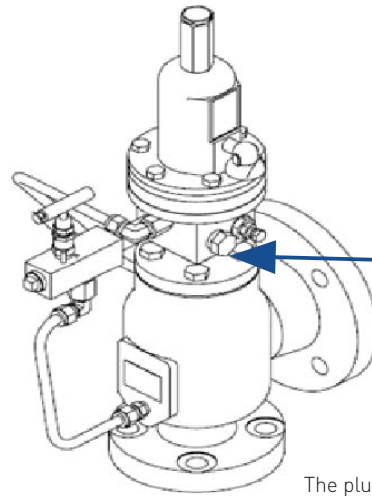
- Install and tighten all four flange bolts before applying pressure.
- Do not attempt to loosen or remove flange bolts while the transmitter is in service.
- Replacement equipment or spare parts not approved by Emerson for use as spare parts could reduce the pressure retaining capabilities of the transmitter and may render the instrument dangerous.
- Use only bolts supplied or sold by Emerson as spare parts. Improper assembly of manifolds to traditional flange can damage sensor module.
- For safe assembly of manifold to traditional flange, bolts must break back plane of flange web (i.e., Bolt hole) but must not contact sensor module housing.

Failure to do so may result in injury to personnel or cause damage to the equipment.

### CAUTION

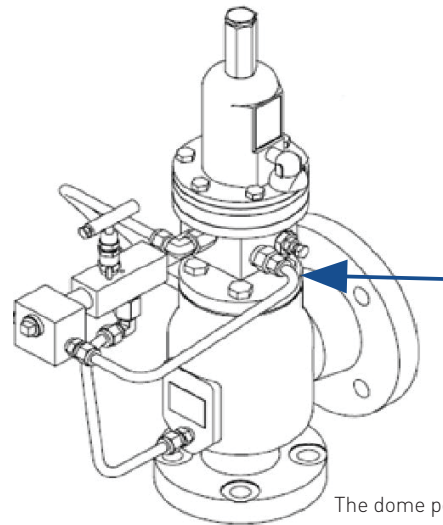
Interfering or blocking the atmospheric reference port will cause the transmitter to output erroneous pressure values.

- a. Figures 2-1 and 2-2 show "integral sense" type, where the pilot sense line is connected to main valve inlet in order to sense supply pressure. For valves that are of Remote Sense type, the "integral sense connector" shown in the figures will be plugged. For this conversion, remove this plug and tube to transmitter's High side.
- b. For high pressure pilot-operated valves, convert tubing connectors that are at the integral sense connector (if valve is integral sense type) and dome connections to tee fittings, and tube the transmitter.
- c. The 500 Series valve does not have a tubed "dome line" connecting main valve and pilot and is instead directly connected using the mounting nipple.
  - i. For 500 Series valves without accessories, or with a field test (without indicator), this port is originally plugged as shown in Figure 2-3. For the conversion, remove plug and connect to transmitter Low side.
  - ii. For 500 Series valves with field test with indicator or backflow preventer, the dome port will be originally connected similar to Figure 2-4. For the conversion, change this to a tee fitting and connect to transmitter Low side.



The plug on dome port is indicated

FIGURE 2-3 500 SERIES HIGH PRESSURE PILOT-OPERATED VALVE WITH FIELD TEST (WITHOUT INDICATOR)



The dome port's tube fitting is indicated.

FIGURE 2-4 500 SERIES HIGH PRESSURE PILOT OPERATED VALVE WITH FIELD TEST WITH INDICATOR

- d. For low pressure pilot-operated valves, convert connector at integral sense port (if valve is integral sense type) to Branch Tee. Remove pilot, replace standard pipe nipple with a Close Tee. Close Tee comes standard on valves with back flow preventer accessory. Assemble the pilot on Close Tee and tube the transmitter as shown in Figure 2-2.
3. Perform leakage check and functional testing as instructed in the installation and operation manual of the relief valve.

### 3 TRANSMITTER CONFIGURATION

To configure transmitter update rate, trimming, alert options, unit of measure and other selection consult its reference manual.

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