# **KIT INSTALLATION INSTRUCTION**

KIT PN TGX:16152-922, Rotary KIT PN TGX:16152-932, Short Stroke Linear KIT PN TGX:16152-942, Long Stroke Linear **15900-785** Rev 1

July 2011

# SITRANS VP300 Valve Positioner Manifolds

This publication provides installation instructions for three Siemens VP300 Manifold models for use with a Siemens SIPART VP300 valve positioner. Rotary, short stroke linear, and long stroke linear manifold installations are shown in Figures 1, 2, and 3 respectively. Each is discussed in a separate installation section in this publication.

A VP300 manifold is a central component of a valve positioning system installation. Typically the system consists of the following components:

- 1. A VP300 valve positioner, the selected manifold kit, and a rotary or linear valve actuator.
- 2. A positioner mounting bracket kit that fastens the manifold to the actuator and couples the actuator shaft (stem) to the manifold's feedback magnet. Siemens mounting kits are available for most installations.
- 3. Pneumatic piping between the manifold process connections and the valve actuator, and between the manifold and a source of instrument air.

### **Rotary Manifold Kit**

A rotary manifold is attached to an actuator with a mounting bracket kit. The rotary feedback magnet is attached to the actuator shaft by the standoff, shown in Figure 1. Two screws secure the VP300 Valve Positioner to the manifold.



FIGURE 1 – Rotary Manifold Installation

# Short Stroke Linear Kit

The short stroke linear manifold is attached to a short stroke actuator using a mounting bracket kit. The magnet is fastened to the actuator shaft and moves linearly beneath the VP300. As shown in the left image in Figure 2, the magnet moves toward and away from you, the reader.



FIGURE 2 – Short Stroke [ $\leq$  2.36" (60mm)] Linear Installation

# Long Stroke Linear Manifold Kit

As with the previous kit, this manifold attaches to a linear actuator by means of a bracket kit. Here, however, the linear movement of the actuator stem is converted to a rotary motion by the feedback linkage, which includes the lever and magnet shown in Figure 3. This figure also shows the optional Iso-Loc<sup>™</sup> manifold.



### FIGURE 3 – Long Stroke Linear Manifold Installation, Shown with Optional Iso-Loc™ Manifold

# PARTS LISTS

Rotary Manifold Kit – PN TGX:16152-922; see Figure 1

Description	Quantity
6DR6003-2P Rotary Magnet Kit	1
Magnet Standoff	1
Manifold Assembly	1
Instruction	1

Short Stroke Linear Manifold Kit – PN TGX:16152-932; see Figure 2

Description	Quantity
6DR6003-1P Magnet Kit	1
(includes linear magnet, spacer block,	
M4x20 mounting screws)	
Manifold Assembly	1
Instruction	1

Long Stroke Linear Manifold Kit – PN TGX:16152-942

Description	Quantity
Manifold Assembly*	1
Standoff Plate	1
Feedback Lever Kit (TGX:16152-716)	1
Instruction	1

\* Typically includes factory installed magnet, weather seal disc and O-ring.

### INSTALLATION

Three installation procedures follow, one each for the rotary, short stroke linear, and long stroke linear manifolds. Refer to the desired procedure and to the positioner and actuator installation instructions while performing the installation. The current revision of the positioner instruction<sup>1</sup> is available for download at the Siemens Internet site. See Customer/Product Support later in this Instruction for a link.

Siemens positioner mounting bracket kits and feedback kits are available for many installations and are highly recommended. They provide the mechanical accuracy and rigidity required for a successful installation at minimal cost. The following installation procedures assume the use of Siemens kits.

<sup>&</sup>lt;sup>1</sup> SITRANS VP300 Electropneumatic Positioners, Operating Instructions, P/N A5E01258666-xx

Before beginning an installation, note the following cautions.

Do not apply supply pressure to the actuator or the valve positioner during the installation process. Applying supply pressure before the equipment is properly mounted could cause unexpected movement that could lead to personal injury or equipment damage.

|--|

Do not exceed the maximum actuator and valve positioner air pressures stated in the manufacturer's literature. Exceeding these ratings could cause personal injury or equipment damage.

# **Rotary Manifold Kit Installation**

- 1. Screw the magnet standoff onto the rotary magnet.
- 2. Screw the magnet/standoff assembly into the actuator shaft. See Figures 1 and 4.



FIGURE 4 – Rotary Magnet Installation Dimensions

- 3. Fasten the rotary manifold to the actuator with a mounting bracket and appropriate hardware. The length of the magnet standoff is optimized for NAMUR actuators allowing the use of standard Siemens NAMUR brackets. See Figure 5 for the locations of mounting holes. Adjust the positions of the magnet and the rotary manifold so the magnet is positioned in the center of the provided hole in the rotary manifold and just below (≤ .118") the manifold surface. See Figure 4.
- 4. Remove the yellow storage seal covering three (3) holes from the manifold.
- 5. Attach the VP300 to the manifold with the two M6 X 60 screws supplied with the VP300. Use a 5mm hex wrench to tighten the screws to 8 Nm (71 lbf. in).
- 6. Remove three (3) red plastic pipe plugs from the manifold assembly.

7. Pipe the manifold. For a single-acting actuator, pipe the Y1 port to the actuator and install a pipe plug in the Y2 port. For a double-acting actuator pipe the Y1 and Y2 ports. Pipe the PZ port to the instrument air supply source. Refer to Pneumatic Connections below.



### FIGURE 5 – Rotary and Long Stroke Linear Manifolds, Mounting Hole Locations

### Short Stroke Linear Manifold Kit Installation

- 1. Loosely fasten the magnet to the actuator shaft with the supplied spacer block (as needed), bracket and hardware. See Figures 2 and 6 for magnet position relative to the VP300.
- 2. Fasten the short stroke linear manifold to the actuator using a bracket and appropriate hardware. Adjust the positions of the linear magnet and the manifold to locate the magnet dimensionally as shown in Figures 2 and 6.

#### IMPORTANT

The magnet must remain within the extents of the positioner throughout its range of travel. See Figure 6 for maximum range of magnet travel.

- 3. Remove the yellow storage seal covering three (3) holes from the manifold.
- 4. Attach the VP300 to the manifold with the two M6 X 60 screws supplied with the VP300. Use a 5mm hex wrench to tighten the screws to 8 Nm (71 lbf. in). Refer to Figure 2 and check magnet position relative to the VP300; adjust as necessary.
- 5. Remove three (3) red plastic pipe plugs from the manifold assembly.
- 6. Pipe the manifold. For a single-acting actuator, pipe the Y1 port to the actuator and install a pipe plug in the Y2 port. For a double-acting actuator pipe the Y1 and Y2 ports. Pipe the PZ port to the instrument air supply source. Refer to Pneumatic Connections below.



FIGURE 6 – Short Stroke Manifold, Mounting Hole Locations

# Long Stroke Linear Manifold Kit Installation

- 1. The manifold has two mounting hole patterns: one for M6 hardware and one for M8. See Figure 5. Select the hole pattern and attach the mounting bracket to the manifold using the supplied hardware as follows.
  - M6 Hole Pattern: Place the standoff plate against the manifold with the magnet shaft extending through the large hole in the plate; see Figure 7. Fasten the standoff plate and manifold to the mounting plate.
  - M8 Hole Pattern: Fasten the mounting plate directly to the manifold.
- 2. Install the feedback linkage components.
  - 1) Fasten the feedback lever to the linear adapter using the supplied lockwasher and nut.
  - 2) Attach the linear adapter to the magnet shaft. Tighten the adapter setscrew on the magnet shaft flat.
  - 3) Attach the feedback pin to the actuator stem.
- 3. Fasten the manifold/mounting plate assembly to the actuator and insert the feedback pin into the feedback lever slot. Before tightening mounting hardware:
  - 1) Adjust the manifold and mounting bracket locations so the lever is approximately perpendicular to the actuator stem at mid-stroke and the total swing of the lever is approximately 90-degrees.
  - 2) Shorten the feedback pin as necessary. Remove and cut the feedback pin so that it extends beyond the feedback lever by at least 1/8-inch. Bevel the end of the pin slightly to ease inserting into the feedback lever slot. Do not score the pin where it rides in the lever slot.
- 4. Remove the yellow storage seal covering three (3) holes from the manifold.
- 5. Attach the VP300 to the manifold with the two M6 X 60 screws supplied with the VP300. Use a 5mm hex wrench to tighten the screws to 8 Nm (71 lbf. in).
- 6. Remove three (3) red plastic pipe plugs from the manifold assembly.
- 7. Pipe the manifold. For a single-acting actuator, pipe the Y1 port to the actuator and install a pipe plug in the Y2 port. For a double-acting actuator pipe the Y1 and Y2 ports. Pipe the PZ port to the instrument air supply source. Refer to Pneumatic Connections below.



FIGURE 7 – Long Stroke Linear Manifold

# **Manifold Pneumatic Connections**

All connections are 1/4" N.P.T. except the gauge connections, which are 1/8" N.P.T. The recommended piping for the positioner is 1/4" O.D. tubing, although any scale-free piping may be used. When making pneumatic connections:

- 1. Blow out all piping before making connections to prevent dirt, chips, etc., from entering the positioner.
- 2. Use pipe sealant sparingly, and only on the male threads. A non-hardening sealant is strongly recommended.
- 3. Connect the positioner to a source of clean, dry, oil-free instrument air. See Instrument Air Requirements above.



Pressure in excess of 116 psig to any connection may cause damage.

# Instrument Air Requirements

Clean, dry, oil-free instrument air or nitrogen is required. Failure to provide this will increase the possibility of a malfunction or deviation from specified performance.



Use of process fluids other than instrument air or nitrogen is not recommended. No claim is made as to the suitability of this product for use with other process fluids, such as hazardous gases, except as listed on the appropriate certificate. Non-approved instruments are suitable for use with instrument air or nitrogen only. Optional features and modifications such as tapped exhaust do not imply suitability for use with hazardous gases except as listed on the approval certificate.

There are many types of synthetic compressor lubricants. Some may not be compatible with the materials used in construction of the instrument. Wetting of these materials by such an oil mist or vapor, etc., may cause them to deteriorate. This may ultimately result in failure of the instrument. The following materials are in contact with instrument air: aluminum, brass, bronze, Buna-N, and stainless steel.



Synthetic compressor lubricants in the instrument air may cause deterioration of some components/materials resulting in instrument failure.

The requirements for a quality instrument air supply can be found in the Instrument Society of America's "Quality Standard for Instrument Air" (ISA-S7.3). Basically, this standard calls for the following:

Particle Size — Maximum particle size in the air stream at the instrument should be no larger than 3 microns.

Dew Point — The dew point, at line pressure, should be at least  $10^{\circ}$ C ( $18^{\circ}$ F) below the minimum temperature to which any part of the instrument air system is exposed at any season of the year. Under no circumstances should the dew point, at line pressure, exceed  $2^{\circ}$ C ( $35.6^{\circ}$ F).

Oil Content — Maximum total oil or hydrocarbon content, exclusive of non-condensables, should not exceed 1 ppm under normal operating conditions.

#### CUSTOMER/PRODUCT SUPPORT

For support and the location of your local Siemens representative, refer to the table below for the URL of the Process Instrumentation (PI) portion of the Siemens public Internet site. Once at the site, click **Support** in the right column and then **Product Support**. Next select the type of support desired: sales, technical (see the table below), documentation, or software.

Online Support Request	http://www.siemens.com/automation/support-request
Technical Support	1-800-333-7421; 8 a.m. to 4:45 p.m. eastern time, Monday through Friday (except holidays)
Customer Service & Returns	1-800-365-8766 (warranty and non-warranty)
Public Internet Site	http://www.usa.siemens.com/pi
Technical Publications in PDF	Click the above link to go to the PI home page. Click <b>Support</b> and then <b>Manuals</b> and then, under "Additional Manuals," select the product line (e.g. Control Solutions)

All product designations may be trademarks or product names of Siemens Industry, Inc. or other supplier companies whose use by third parties for their own purposes could violate the rights of the owners.

Siemens Industry, Inc. assumes no liability for errors or omissions in this document or for the application and use of information in this document. The information herein is subject to change without notice.

Procedures in this document have been reviewed for compliance with applicable approval agency requirements and are considered sound practice. Neither Siemens Industry, Inc. nor these agencies are responsible for product uses not included in the approval certification(s) or for repairs or modifications made by the user.