NAMUR Trip Valve IOM

General

This installation document is to be read in conjunction with the Easytork Actuator IOM.

Description / Intended Use

Easytork's NAMUR Trip Valve ("NTV") in conjunction with any double-acting positioners allows the Easytork actuators to achieve fail-safe functionality. The NTV fail-safe is for catastrophic loss of air.

Positioner Requisite

The NTV will only work with **double-acting** positioners.

In the unlikely event that a specific brand of double-acting positioner does not work, consult Easytork.

Air Supply

NTV has a minimum operating pressure of 30 psi (2 bar); maximum operating pressure of 150 psi (10 bar). Refer to the manual of Easytork actuators, and the positioner.

Operate the NTV only with clean and lubricated or non-lubricated compressed air with a quality level 5 according to ISO 8573-1. Non inert gases cannot be used. In case of lubricated compressed air, users need to dissipate the exhaust air with suitable measures. The intake may not happen from explosive atmospheres.

In fail-safe, environment air never enters NTV through vacuum associated with spring-return actuators.

Design and Operation

In normal operation, supply pressure compresses NTV spool spring, opening a direct channel between Positioner and Port 2 and Port 4 of the actuator. Simultaneously, supply pressure charges air reservoir through internal check valve, as a result the internal check valve maintains the max supply pressure.

In the event of air failure, the NTV spool spring returns, quarantining positioner to Port 2 and 4 of actuator, and releases air in reservoir to drive actuator to fail safe position.

When supply pressure is restored, the NTV automatically resets, allowing the system to return to normal operation.

NTV Temperatures Limitations

The standard temperature limits for the NTV are -20°C (-4°F) to +80°C (+176°F).

It is essential to use an air dryer for the air supply to avoid any moisture for use in sub-zero Celsius temperatures

Installation

Consult with positioner manufacturer for electrical wire installation. This document will only cover the porting between the NTV, Easytork actuator, and the positioner. *Note: To protect the NTV, install a strainer or filter, suitable for the service involved, on the inlet side as close to the valve as possible. Clean periodically depending on service conditions*

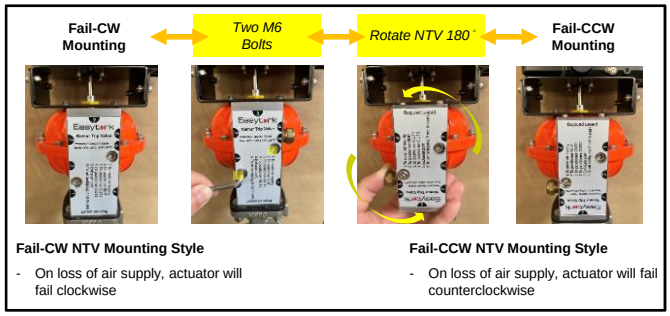
NTV Mounting Style

The orientation of the NTV relative to the actuator determines the fail-safe action of the actuator on loss of air supply. NTV mounting style is available in fail-clockwise or fail-counterclockwise.

	Actuator Movement
NTV Mounting Style	Loss of Air Supply
Fail-CW	CW
Fail-CCW	CCW

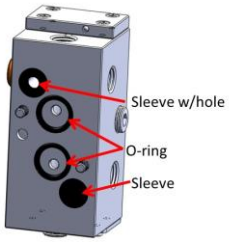
Changing NTV Mounting Style on Actuator

To change NTV mounting style, rotate NTV and install onto Easytork actuator.



Ensure that the *2x O-rings, 1x Sleeve w/ hole, and 1x sleeve* are correctly installed on the NTV (as shown on drawing) before mounting to the Easytork actuator.

Back End Facing Actuator



NTV to Positioner Relation

This section deals only with actuator fail-safe action on full loss of signal (0mA) and or loss of air supply. Refer to the positioner's manufacturer manual for instructions on setting up positioner response for normal operating circumstance (i.e. 4-20mA, 3-15psi).

The following describes the requisite piping between NTV and positioner. NTV **Port 1** is always connected to main air supply. NTV **Port 2** is always connected to the *positioner's SUP port*.

Note: Different positioner manufactures have different port designation. For example, positioner's Out 2 is sometimes referred to as Output B. For the purpose of this IOM, the positioner port that has full air supply with ***full loss of signal (0mA)*** is referred to as Out 2 or Output B. User can verify this port by applying air to positioner when the positioner is ***completely*** powered off.

Typical Fail-Safe Setup

Fail-CW With Loss of Air or Full Loss of Electrical Power

NTV: Fail-CW Mounting Style

Positioner		Connects to:
Positioner Port	Full Loss of Electric Power (0mA)	NTV Port Designation
Out 1 Output A	Zero pressure	Port 3
Out 2 Output B	Full pressure	Port 4
SUP	Supply port to positioner	Port 2

Fail-CCW With Loss of Air or Full Loss of Electrical Power

NTV: Fail-CCW Mounting Style

Positioner		Connects to:
Positioner Port	Full Loss of Electric Power (0mA)	NTV Port Designation
Out 1 Output A	Zero pressure	Port 3
Out 2 Output B	Full pressure	Port 4
SUP	Supply port to positioner	Port 2

Custom Fail-Safe Setup

Fail-CW With Loss of Air Fail-CCW With Full Loss of Electrical Power Only

NTV: Fail-CW Mounting Style

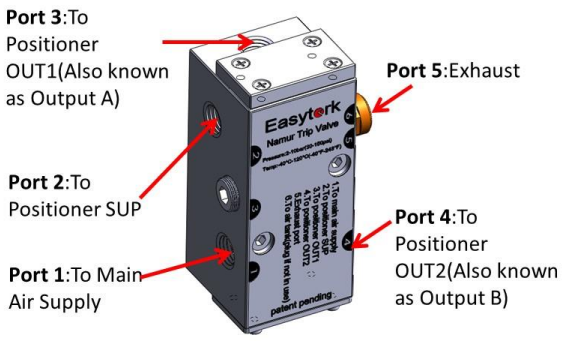
Positioner		Connects to:
Positioner Port	Full Loss of Electric Power (0mA)	NTV Port Designation
Out 1 Output A	Zero pressure	Port 4
Out 2 Output B	Full pressure	Port 3
SUP	Supply port to positioner	Port 2

Fail-CCW With Loss of Air Fail-CW With Full Loss of Electrical Power Only

NTV: Fail-CCW Mounting Style

Positioner		Connects to:
Positioner Port	Full Loss of Electric Power (0mA)	NTV Port Designation
Out 1 Output A	Zero pressure	Port 4
Out 2 Output B	Full pressure	Port 3
SUP	Supply port to positioner	Port 2

Front End Facing Away From Actuator

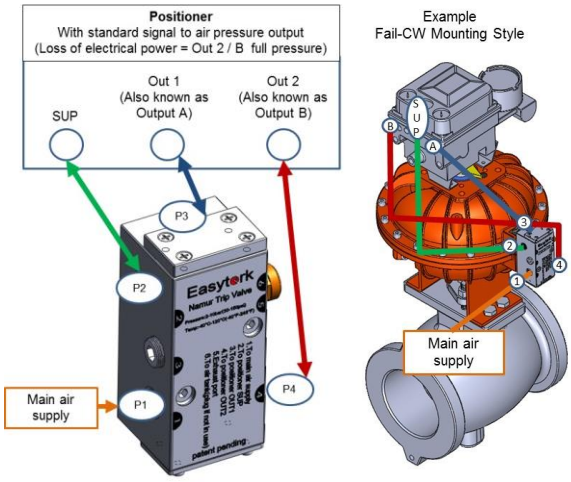


NOTE: PORT 5 MUST NOT BE BLOCKED. BLOCKAGE ON PORT 5 COULD INTEREFERE WITH FAIL-SAFE OPERATION. EASYTORK SUPPLIES FLAT MUFFLERS FOR PORT 5, BUT IN EXTREME ENVIRONMENTS WHERE BLOCKAGE COULD HAPPEN, USE CONE EXHAUST MUFFLER FOR BETTER RESULTS OR PERFORM REGULAR MAINTENANCE ON MUFFLER.

NTV to Positioner Piping Examples

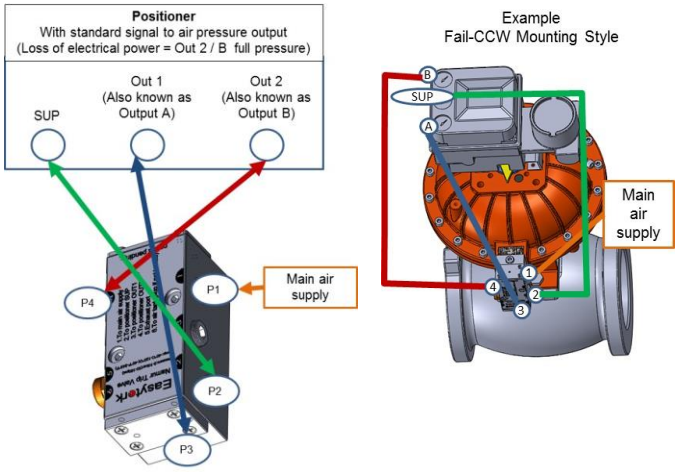
Fail-CW with Loss of Air or Full Loss of Electrical Power:

With NTV in the following orientation, with loss of air and/or signal, actuator will fail clockwise.



Fail-CCW with Loss of Air or Full Loss of Electrical Power:

With NTV in the following orientation, with loss of air and/or signal, actuator will fail counterclockwise.



Easytork is the sole warrantor of this product and is NOT affiliated or endorsed by Fisher, or any other Emerson Process Management Company

Positioner Setup

With the NTV mounting style affixed, and the NTV properly piped to the positioner, ensure that the positioner is properly setup. Refer to the positioner's manufacturer manual for instructions for desired positioner response.

Under normal operating circumstance (no air supply disruption, full signal i.e. 4-20ma or 3-15 psi) positioner would operate same as would a double acting actuator without a NTV. Under such normal operating circumstances, NTV **Port 3** and **Port 4** correspond to the following actuator rotation:

Actuator Movement (Under Normal Operating Circumstances)

NTV Mounting Style	Air to NTV Port 3	Air to NTV Port 4
Fail-CW	CCW	CW
Fail-CCW	CW	CCW

Maintenance

Provisions should be made for performing seal leakage, external leakage, and operational tests on the valve.

Caution: To prevent the possibility of a serious injury or property damage, turn off electrical power, depressurize valve, and discard vent fluid in safe area before inspecting or servicing the valve.

Preventive Maintenance

Prepare and follow a routine inspection schedule based on the media, environment and frequency of use.

The medium flowing through the NTV should be free from dirt and foreign material. Clean the valve strainer or filter as required to keep the valve free of contamination. In extreme cases, contamination will cause faulty valve operation and the valve may fail to shift.

While in service, the valve should be operated at least once a month to ensure proper operation.

Note: Easytork's warranty and liability of the NTV are voided if improper protection results in dirt inside the NTV.

High Performance Butterfly Valve

The NTV can only be used to fail-safe to close position a high performance butterfly valve when the high performance butterfly valve seat retainer is downstream. The NTV can only be used to fail-safe to open position a high performance butterfly valve when the high performance butterfly valve seat retainer is upstream. All other setup cannot be used and will void Easytork's warranty.

TWO YEAR OR TWO MILLION CYCLE WARRANTY

Note: Easytork's warranty and liability of the NTV are voided if there are damages caused by negligence, misuse, improper application, service or operation or lack of service of product.

EASYTORK offers a limited repair or replacement warranty on the NTV. Simply stated, if any of Goods fails within two years or two million cycles, whichever comes first, of delivery by Distributor, despite being properly installed, operated in accordance with industry standard operating procedures, and properly serviced and maintained, EASYTORK will repair the product, or at our option replace the unit with another of equivalent material and design in exchange for the defective unit. This warranty only applies to failures due to defective materials, workmanship, or premature wear in the Goods.

Under no circumstances will EASYTORK accept responsibility or be liable for any costs other than to repair or provide a replacement of the defective Goods. EASYTORK shall not have any liability to any customer for the loss of product, loss of profit, loss of use, or any other indirect, incidental, special or consequential damages as a result of this express limited warranty.

Actuator is designed to continuously operate within 15% of specified air pressure in either DA or FS design.

EASYTORK DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER IMPLIED WARRANTY IN CONNECTION WITH THE CUSTOMER'S PURCHASE OF ANY PRODUCT UNDER THIS AGREEMENT.