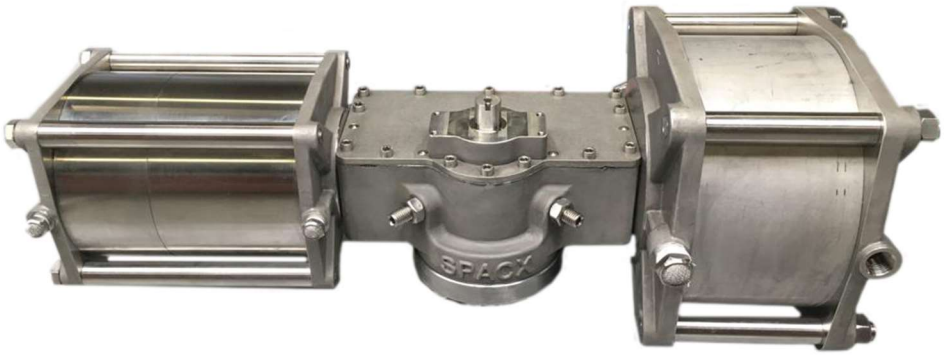
# Installation and Operating Manual for BYX series pneumatic actuators




## Read the complete manual prior to commencing the service

**Spacx Actuators & Controls**
Heinz Moormannstraat 1E, 5831 AS Boxmeer – The Netherlands
+31 (0)485-324739 – info@spacx.nl – www.spacx.nl
VAT no: NL-8520.35.184.B01 – IBAN: NL63RABO0119489147 – KvK: 562.38363

## Content:




**Spacx Actuators & Controls**
Heinz Moormannstraat 1E, 5831 AS Boxmeer – The Netherlands
+31 (0)485-324739 – info@spacx.nl – www.spacx.nl
VAT no: NL-8520.35.184.B01 – IBAN: NL63RABO0119489147 – KvK: 562.38363

## 1. Safety

Installation inspection and maintenance should be performed by qualified personnel with sufficient education, training and experience to perform these tasks.

No work should be performed in a potentially explosive environment (zoned area) without precautions to prevent the possibility of an explosive atmosphere to occur and prior verification that no explosive atmosphere is present.

All work must be performed while wearing protective clothing, goggles, footwear and gloves.

When an actuator has been exposed to temperatures above or below its designed temperature range, or pressures above its design pressure or any other potentially damaging external influence on pressure bearing parts, the actuator should be checked thoroughly and replaced if necessary.

**WARNING!**

**The spring inside the actuator is pre-compressed, and to prevent injury, opening the actuator should never be attempted without the designed solution to relieve the spring tension first.**

The actuator should be disconnected from all supply pressures before any work can commence.

## 2. Pre installation checks

Unpack the actuator and check it corresponds with the packing list.

Check for visible damage on the outside of the actuator and on the surface of the output driveshaft.

Check the functioning of the actuator by slowly opening and closing the actuator by applying the minimal amount of supply pressure to fully cycle the actuator. Operation should go smooth. Only clean instrument air should be used (Please refer to Name Tag for pressure range).

**WARNING!**

**The actuator's output shaft will be moving during the functionality check, allow the output shaft to move freely and make sure to remain sufficient personal distance.**

**Wear protective eyewear and earplugs as vented instrument air may cause excessive noise and make foreign particals airbourne.**

Check for any leaks on cylinder seams and across the piston when applying pressure to the actuator.

When there are protective plugs in place, they should be left in place until the moment of installation to prevent ingress of dirt and debris. When it is necessary to remove them to test the actuator, they should be replaced immediately when testing is done.

## 3. Installation

When purchased as a set, a valve and Spacx actuator are assembled and tested as a set and will be delivered ready to install in line after the pre installation checks.

The actuator should be lifted in such a way that the actuator body supports the weight. Most actuators can be lifted by using a sling of the correct dimension and strength wrapped around the body. When Spacx Actuators & Controls has equipped the actuator with lifting eyes, these should be used. Unless explicitly stated, the lifting eyes of the actuator are not suitable to support the added weight of the valve.

Make sure the output shaft of the actuator is in the same position as the valve stem, if necessary slowly apply supply pressure to reach the required position. For instance when installing a fail-to-close actuator to a valve that is supplied in fully open position.

**WARNING!**

**The actuator's output shaft will be moving during this installation, allow the output shaft to move freely and make sure to remain sufficient personal distance.**

**Wear protective eyewear and earplugs as vented instrument air may cause excessive noise and make foreign particals airbourne.**

Lower the actuator on top of the valve and connect the drive stem with the valve stem using the connector piece.

Ensure that the actuator is properly aligned with the valve, then tighten the nuts of the mounting set to the correct specifications.

## 4. Testing

**WARNING!**

**Prior to testing make sure that all relevant product and application data is available and necessary precautions are taken to safely execute the test with regards to Health, Safety and environment.**

The travel stops are set to the required stroke but it's advisable to test the stroke and the travel stops when the actuator is mounted on the valve. When the valve in question is equipped with travel stops, make sure the stroke of the valve is limited by the travel stops of the actuator.

**WARNING!**

**The actuator's output shaft and valve closing member will be moving during this testing, allow the output shaft to move freely and make sure to remain sufficient personal distance.**

**Wear protective eyewear and earplugs as vented instrument air may cause excessive noise and make foreign particals airbourne.**

Check the actuator for any leaks on cylinder seams and across the piston while under pressure.

## 5. Operating

A Spacx pneumatic Actuator is operated by applying pneumatic pressure to the correct cylinder inlet ports and the applied pressure should never exceed the design pressure of the actuator. The travel stops on the actuator are not to be used as a manual override, doing so may cause damage to the end stops and may results in misalignment of the valves closing member.
If the actuator is equipped with a manual override facility make sure to retract the spindle fully against its backseat prior to operating the actuator with pneumatic pressure.

**WARNING!**
**Any means of manual override facility may compromise spring return actuators fail position.**

## 6. Maintenance and inspection

There is no need for scheduled maintenance for the Spacx pneumatic Actuators as long as it is functioning correctly.

Inspect the actuator on regular intervals for functionality, external damage and operating medium leaks.

## 7. Disassembly

**WARNING!**
**The spring inside the actuator is pre-compressed, and to prevent injury, opening the actuator should never be attempted without the designed solution to relieve the spring tension first. Repair, overhaul or maintenance may be performed by onsite qualified personnel, we however advise to return the relevant actuator to Spacx Actuators & Controls.**

It's only necessary to disassemble the actuator when it's malfunctioning, leaking supply medium, a drop in performance has been observed or it's taken in to use after a long period of storage.

Contact Spacx Actuators & Controls in advance for spare parts and relevant product information.

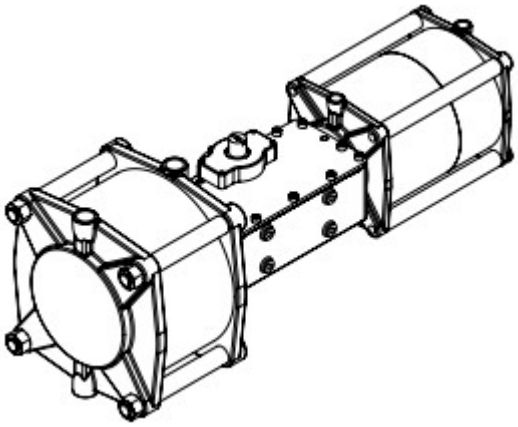
It is advisable to completely remove the actuator from the valve before attempting to disassemble it.

**WARNING!**

**Prior to disassembly make sure that all relevant product and application data is available and necessary precautions are taken to safely execute the disassembly with regards to Health, Safety and environment.**

Make sure the actuator is completely depressurized and drained from any fluids before attempting to disassemble it.

**On BYX-series rotary actuators with external tiebars:**

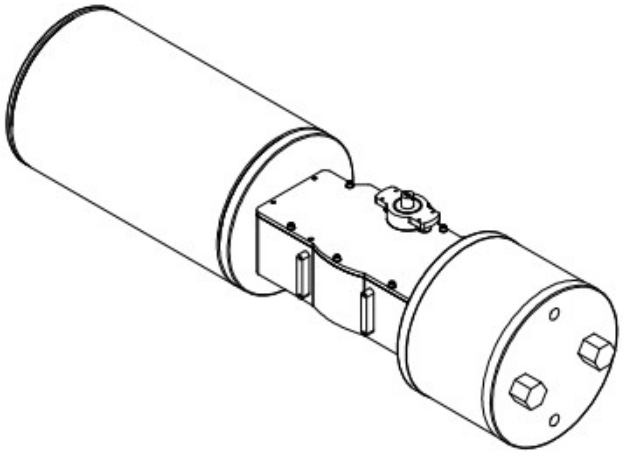


To safely relieve the tension of the spring, 50% of the tiebars along the rim of the body have to be replaced by long drawbars (supplied by Spacx Actuators & Controls on request). The safe procedure to do this is to remove one tiebar at a time and each time tighten the nut of the long drawbar until all provided longer drawbars are in place, evenly spaced along the perimeter of the actuator body.

When all the long drawbars are in place, the nuts or bolts of the remaining tiebars can be removed completely. Now the nuts of the longer drawbars can be loosened evenly until the spring inside has completely relaxed. Now the endcap of the actuator and the spring can be removed.

NOTE:
On larger sizes actuators it is recommended that this procedure is supported by an hydraulic press with sufficient stroke.

**On BYX-series rotary actuators with internal drawbars:**



It is possible to remove the lid of the actuators drive module while the spring is kept in place by retaining nuts. The spring can then be removed by evenly loosening these retaining nuts from the inside of the drive module.
The spring modules are fully welded and are therefore not serviceable.

**Spacx Actuators & Controls**
Heinz Moormannstraat 1$^{E}$, 5831 AS Boxmeer – The Netherlands
+31 (0)485-324739 – info@spacx.nl – www.spacx.nl
VAT no: NL-8520.35.184.B01 – IBAN: NL63RABO0119489147 – KvK: 562.38363

**WARNING!**

**When in doubt about the best way to disassemble your actuator, contact Spacx Actuators & Controls**

Remove the nut on top of the drive stem and carefully pull out the drive stem from the bottom.

The casing can be removed from its base by tapping the base with a plastic or rubber mallet until it can be gently pried off. Take care not to damage the O-ring mounted in the base.

The piston and can be removed by pushing or gently tapping it out of the bottom of the casing.

The travel stop and guiding bush can simply be unscrewed.

Check all the sealing and guiding rings for damage and wear and replace when necessary.

Check the inside of the casing for damage or excessive wear.

## 8. Assembly

Assembly is disassembly in reverse order.

Relevant service kits and spare parts are available on request. Service kits will include all relevant soft parts and wear parts, it will also include actuator relevant drawings, parts lists, technical data and sufficient lubricant to perform standard overhaul.

Make sure before assembly all surfaces are clean and free of debris. Also make sure that all actuator parts are cleaned and degreased properly.

All seals, guide bands and bearings should be installed in their respective groove and lubricated with the grease that is provided with the service kit. This to ensure proper assembly, sealing and functionality.

All mounting hardware shall be secured against unwanted loosening with proper locknuts, spring washers or threadlocker fluid such as Locktite 242.

## 9. Packing and storage

See our procedure: Packing, storage and handling procedure Spacx Actuators & Controls.

## 10. Disclaimer

Poor maintenance, improper use, modifications to the actuator (or its components) or using replacement parts by other brands than Spacx Actuators & Controls' affect the performance and proper operation of the actuator.

Spacx cannot be held responsible for damages that arise from failing to observe Spacx procedures.