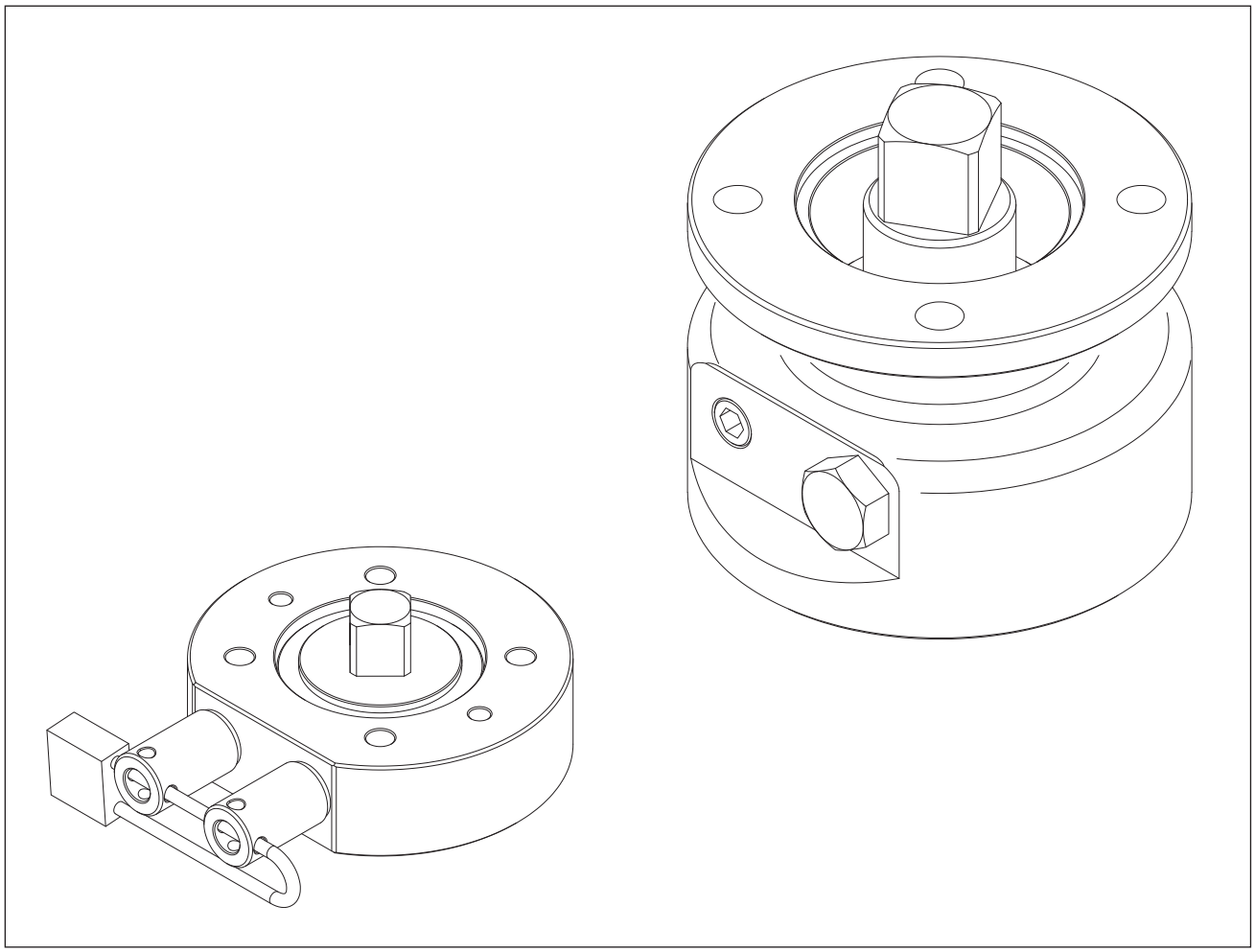
MOUNTING AND OPERATING INSTRUCTIONS

EB AT-BS-LS-PS EN

Original instructions



BLOCK AND SAFETY LOCK-OUT SYSTEM

PARTIAL STROKE SYSTEM BLOCK

Complementary part for Rack and Pinion and Scotch Yoke actuators

Edition April 2023

Note on these mounting and operating instructions

These mounting and operating instructions assist you in mounting and operating the device safely. The instructions are binding for handling AIR TORQUE devices. The images shown in these instructions are for illustration purposes only. The actual product may vary.

➔ For the safe and proper use of these instructions, read them carefully and keep them for later reference.

➔ If you have any questions about these instructions, contact AIR TORQUE's After-sales Service Department (aftersales@airtorque.it).

The mounting and operating instructions for the devices are included in the scope of delivery. The latest documentation is available on our website at ***www.airtorque.it***

Definition of signal words

⚠ DANGER

Hazardous situations which, if not avoided, will result in death or serious injury

⚠ WARNING

Hazardous situations which, if not avoided, could result in death or serious injury

NOTICE

Property damage message or malfunction

Note

Additional information

Tip

Recommended action

1 Safety instructions and measures

Intended use

The AIR TORQUE Blocks can be used on any 90° part-turn actuators, after verification of compatibility of technical property.

The AIR TORQUE Blocks designed for the part-turn valves in both indoor and outdoor applications.

The Blocks are available in two version:

- Block and Safety Lock-out System (BS-LS-xx) permits to lock the valve in specific cases, despite the fail action of the actuator.

- Partial Stroke System Block (BS-PS-xx) permits to perform, in specific cases, the partial stroke test (PST).

The Block system is designed to operate under exactly defined conditions (e.g. maximum output torque). Therefore, operators must ensure that the Block is only used in operating conditions that meet the specifications used for sizing.

In case operators intend to use the Block in other applications or conditions than specified, contact AIR TORQUE.

AIR TORQUE does not assume any liability for damage resulting from the failure to use the device for its intended purpose or for damage caused by external forces or any other external factors.

➔ Refer to the technical data sheet for limits and fields of application as well as possible uses.

Reasonably foreseeable misuse

⚠ WARNING

Risk of failure of the safety function.

➔ *it is user responsability to verify if the actuator is equipped with device or complementary parts (e.g., lock-out system, partial stroke system) that cannot permit to perform the requested safety function.*

➔ *The actuator SIL capability may be invalidated*

The Block is not suitable for the following applications:

– Use outside the limits defined during sizing and by the technical data.

– Use outside the limits defined by the accessories connected to the actuator.

Furthermore, the following activities do not comply with the intended use:

– Use of non-original spare parts.

– Performing service and repair work not described in these instructions.

Qualifications of operating personnel

The Block must be mounted, started up, serviced and repaired by fully trained and qualified personnel only; the accepted industry codes and practices are to be observed. According to these mounting and operating instructions, trained personnel refers to individuals who are able to judge the work they are assigned to and recognize possible hazards due to their specialized training, their knowledge and experience as well as their knowledge of the applicable standards.

Personal protective equipment

We recommend wearing the following personal protective equipment when handling the AIR TORQUE Block:

– Protective gloves and safety footwear when mounting or removing the Block system.

– Eye protection and hearing protection while the actuator with system is operating.

➔ Check with the plant operator for details on further protective equipment.

Revisions and other modifications

Revisions, conversions or other modifications of the product are not authorized by AIR TORQUE. They are performed at the user's own risk and may lead to safety hazards, for example. Furthermore, the product may no longer meet the requirements for its intended use.

Safety devices

The AIR TORQUE Block do not have any special safety equipment.

Warning against residual hazards

To avoid personal injury or property damage, plant operators and operating personnel must prevent hazards that could be caused in the Block mounted on the actuator by the signal pressure, stored spring energy or moving parts by taking appropriate precautions. They must observe all hazard statements, warning and caution notes in these mounting and operating instructions.

Responsibilities of the operator

The operator is responsible for proper operation and compliance with the safety regulations. Operators are obliged to provide these mounting and operating instructions as well as the referenced documents to the operating personnel and to instruct them in proper operation.

Furthermore, the operator must ensure that operating personnel or third persons are not exposed to any danger.

These instructions should not supersede or replace any customer's plant safety or work procedures. If a conflict arises between these instructions and the customer's procedures, the differences should be resolved in writing between an authorized end user's representative and an authorized AIR TORQUE representative.

Responsibilities of operating personnel

Operating personnel must read and understand these mounting and operating instructions as well as the referenced documents and observe the specified hazard statements, warnings and caution notes. Furthermore, the operating personnel must be familiar with the applicable health, safety and accident prevention regulations and comply with them.

Referenced standards and regulations

– AIR TORQUE actuators equiped with Block system can be used in hazardous area according to the European Atex directive 2014/34/EU and U.K. Regulation S.I. 2016 No. 1107 (as amended). Before using the actuators with Block system in potentially explosive atmosphere areas, verify the compliance with the required ATEX classification.

➔ Refer to the ATEX / UKCA safety instructions.

Referenced documentation

The further documents apply in addition to these mounting and operating instructions:

– Mounting and operating instructions for the AIR TORQUE actuators,
– Mounting and operating instructions for the valve, available from the valve manufacturer,
– Mounting and operating instructions for control and signal devices (positioner, solenoid valve, etc.) available from devices manufacturer,
– ATEX safety manual,
– SIL safety manual for use in safety-instrumented systems.

1.1 Notes on possible severe personal injury

⚠ DANGER

Risk of severe personal injury due to suspended loads falling.

➔ *Stay far from suspended or moving loads.*
➔ *Close off and secure the transport paths.*

1.2 Notes on possible personal injury

⚠ WARNING

Risk of lifting equipment tipping over and risk of damage to lifting accessories due to exceeding the rated lifting capacity.

➔ *Use only approved lifting equipment and accessories whose maximum lifting capacity is higher than the actuator weight (including the packaging, if applicable).*

Crush hazard arising from moving parts.

The Block and the valve assembly contains moving parts, which can injure hands or fingers.

➔ *Do not touch or insert hands or finger into moving parts.*
➔ *Before remove the Block from the actuator disconnect all pneumatic / hydraulic / electrical supplies and discharge the pressure from the actuator.*

Risk of personal injury through incorrect operation, use or installation as a result of information on the Block being illegible.

Over time, markings, labels and nameplates on the Block may become covered with dirt or become illegible in some other way. As a result, hazards may go unnoticed and the necessary instructions not followed. There is a risk of personal injury.

➔ *Keep all relevant markings and inscriptions on the device in a constantly legible status.*
➔ *Immediately renew damaged, missing or incorrect nameplates or labels.*

1.3 Notes on possible property damage

❗ NOTICE

Risk of Block damage due to incorrectly attached slings.

➔ *Do not attach load-bearing slings to the travel stop.*

Risk of Block damage due to the use of inappropriate tools.

Certain tools are required to work on the actuator.

➔ *Do not use damaged tools. Refer to section 15.1 'Tools'.*

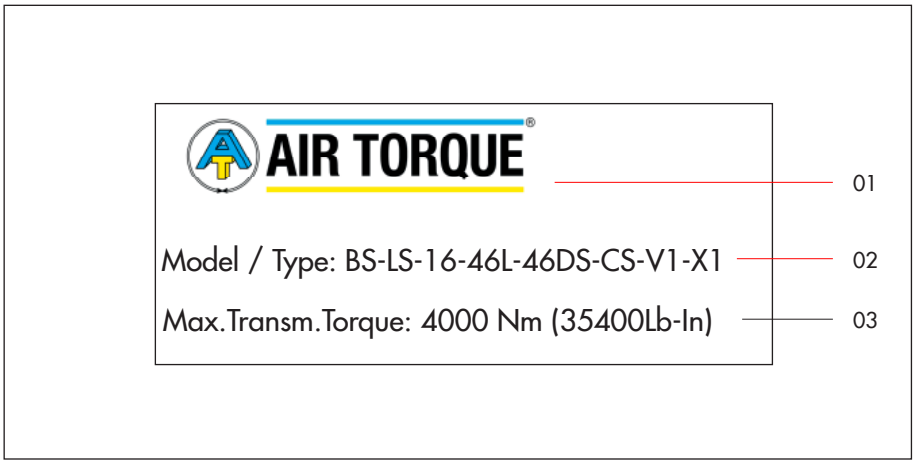
Risk of Block damage due to excessively high or low tightening torques.

Observe the specified torques on tightening Block components (bolts and nuts). Excessive tightening torques lead to parts wearing out quicker. Parts that are not tightened enough may loosen.

➔ *Refer to section 15.2 'Tightening torques'.*

2 Markings on the device

2.1 Block label sample



Position	Description
01	Manufacturer name and trade mark
02	Block Model and Type
03	Max. transmissible Torque in Nm (Lb-In)

IDENTIFICATION CODE:

Block and Safety Lock-out Model	Partial Stroke System Block Model	Max. Transmissible Torque
BS-LS-07	BS-PS-07	250 Nm (2213 Lb-In)
BS-LS-10	BS-PS-10	500 Nm (4425 Lb-In)
BS-LS-12	BS-PS-12	1000 Nm (8850 Lb-In)
BS-LS-14	BS-PS-14	2000 Nm (17700 Lb-In)
BS-LS-16	BS-PS-16	4000 Nm (35400 Lb-In)
BS-LS-25	BS-PS-25	8000 Nm (70800 Lb-In)

➔ Refer to Mounting and operating instructions EB AT-RP-4GU.
➔ Refer to Mounting and operating instructions EB AT-HD/HDC.
➔ For other information refer to related T.D.S. Block and Safety Lock-out / Partial Stroke System Block.

3 Design and principle of operation

The AIR TORQUE Block And Safety Lock-Out System allows the valve to be manually and physically locked in either the open or closed position. This allows personnel to work on the system without jeopardizing their safety or the safety of other persons in the area. It prevents the valve from accidentally being operated by a computer or from a remote location.
The Safety system integrated also allow to avoid any kind of tampering.

The AIR TORQUE Partial Stroke System Block permits to make a partial stroke test while the valve is online without impacting to the process.
During the partial stroke test, the valve is stroked a portion of its total travel to verify it is not stuck and to uncover other dangerous failures. It exercises the valve to verify it will operate and move in the case of demand.

The AIR TORQUE Block And Safety Lock-Out System and Partial Stroke System Block should be mounted on actuators with single-acting or double-acting configuration in both the RP and SY versions.

1. BLOCK AND SAFETY LOCK-OUT SYSTEM

Refer to Fig. 3-1.

The Spring Return Actuator is not powered the Blocking Screw (B06) not engaged and rotation is allowed pressurized the actuator.

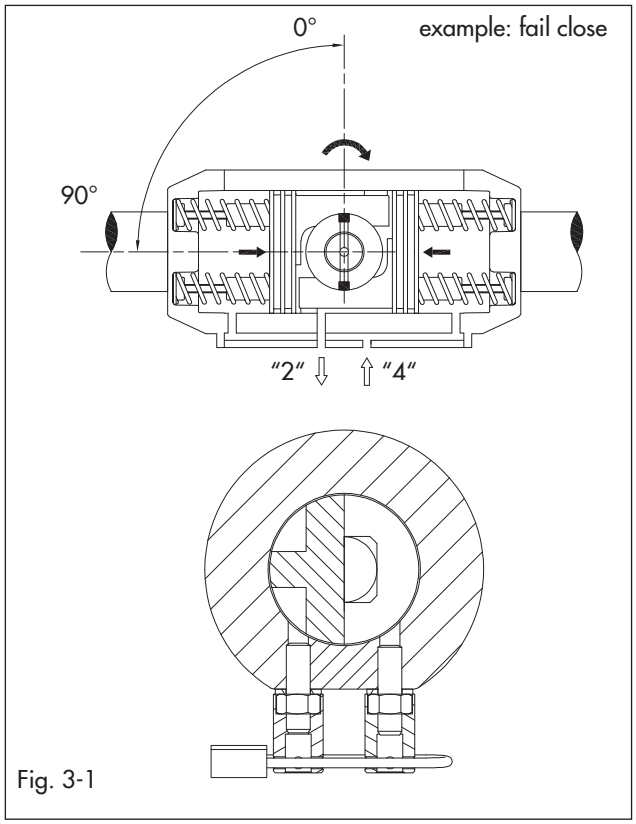


Fig. 3-1

Refer to Fig. 3-2

The Actuator is pressurized and rotates, bringing the Block and safety lock-out system to the locked position.

Refer to Fig. 3-3

When the actuator is pressurized, engaged the blocking screw (B06) the block is activated which in the event of a power failure does not allow the rotation of the actuator, keeping it in a position.

When the intervention is over, after activating the actuator power supply, the blockage is deactivated removed the blocking screw (B06) and the valve can be returned to normal operation.

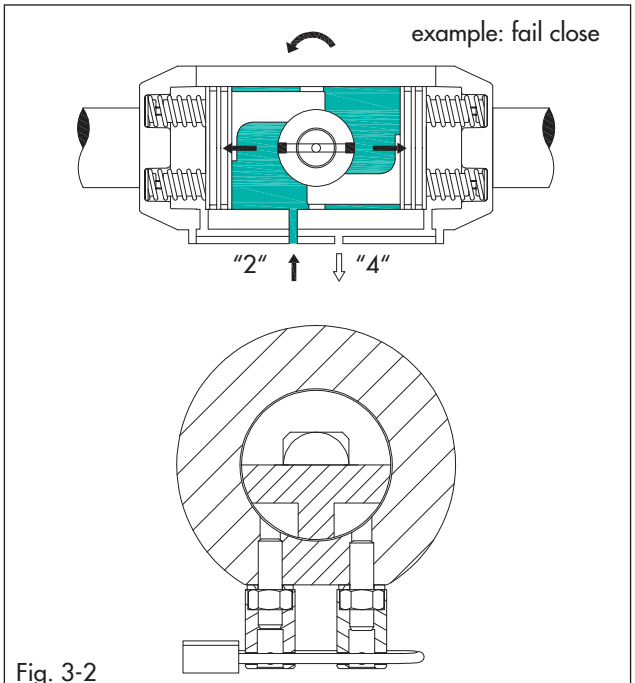


Fig. 3-2

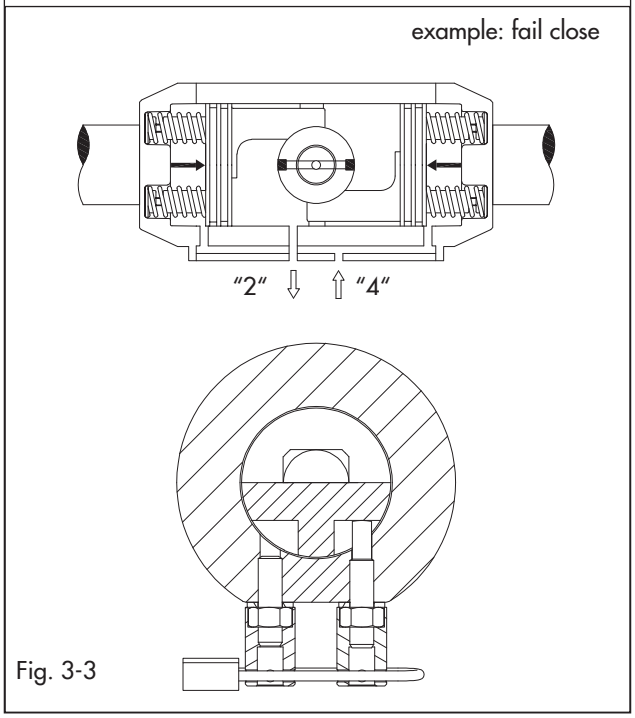


Fig. 3-3

2. PARTIAL STROKE SYSTEM BLOCK

Refer to Fig. 3-4.

The Spring Return Actuator is not powered the Blocking Screw (P07) not engaged and rotation is allowed pressurized the actuator

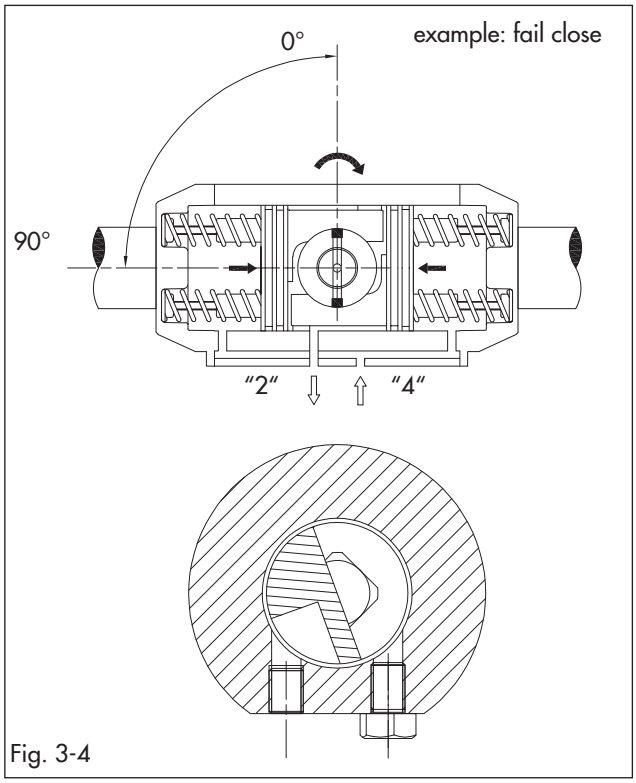


Fig. 3-4

Refer to Fig. 3-5

The Actuator is pressurized and rotates at 90° rotation, bringing the partial stroke system block to the test PST position.

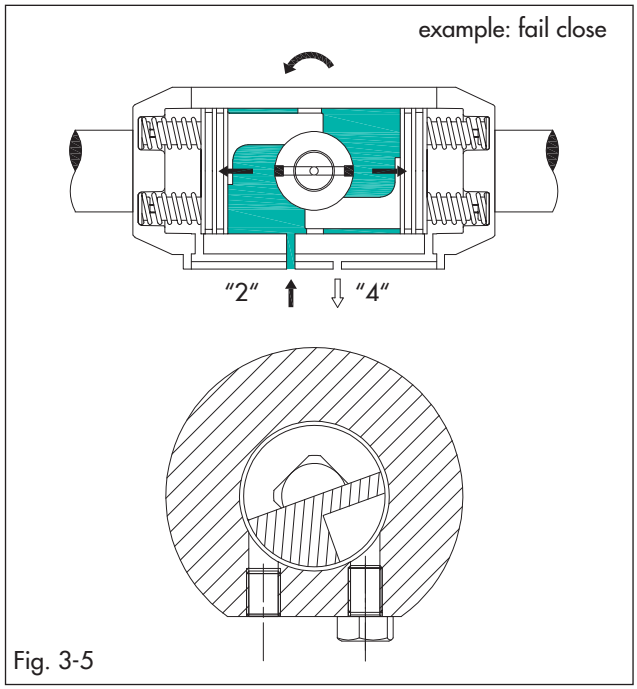


Fig. 3-5

Refer to Fig. 3-6

When the actuator is pressurized, inserting the Blocking Screw (P07) activates the lock, which in case of actuator power failure allows partial rotation to test the correct movement of the valve.

At the end of the test, after activating the actuator power supply, the Blockins Screw (P07) is removed and the valve can return to normal operation.

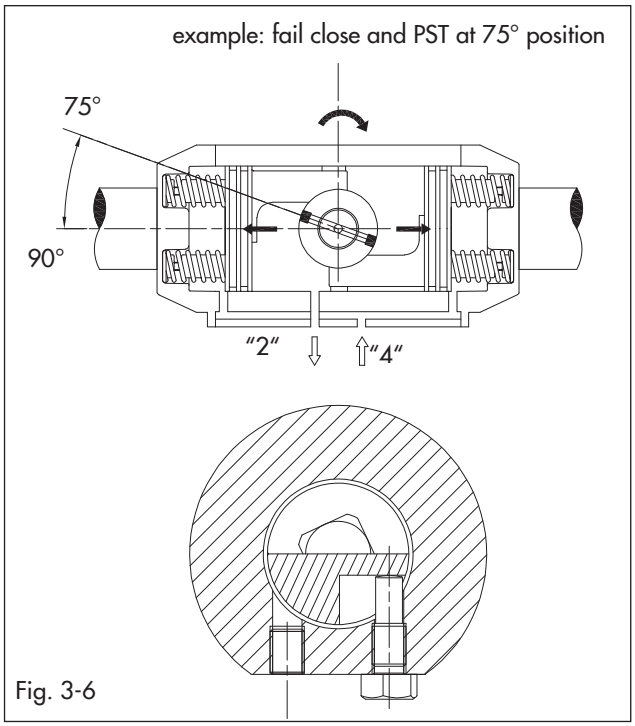


Fig. 3-6

3.1 Direction of action and fail position

The standard rotating direction for the actuators with Block is clockwise to close.

In case of pressure, power or signal failure the springs drive the actuator with Block in the fail position that can be FAIL OPEN or FAIL CLOSE.

BLOCK AND SAFETY LOCK-OUT SYSTEM

Refer to Fig. 3-7

The Block, when the Blocking Screw is not engaged, does not affect actuator stroke adjustment, which remains constrained to the type of actuator mounted on the Block.

The Block position can be used at 0° or 90° position according to the block position required.

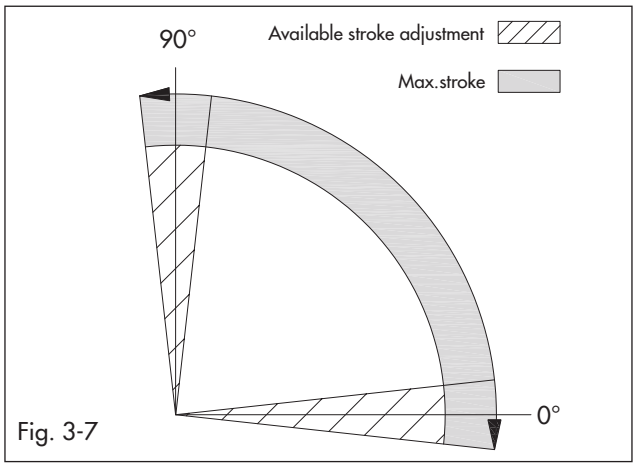


Fig. 3-7

PARTIAL STROKE SYSTEM BLOCK

Refer to Fig. 3-8

The Block, when the Blocking Screw is not engaged, does not affect actuator stroke adjustment, which remains constrained to the type of actuator mounted on the Block.

The PST rotation is defined to costumer.

Example: PST at 75°position in fail close rotatio

The rotation allowed with the PST is 15° cannot be adjusted and the stop will be fissed at 75° in CW rotation.

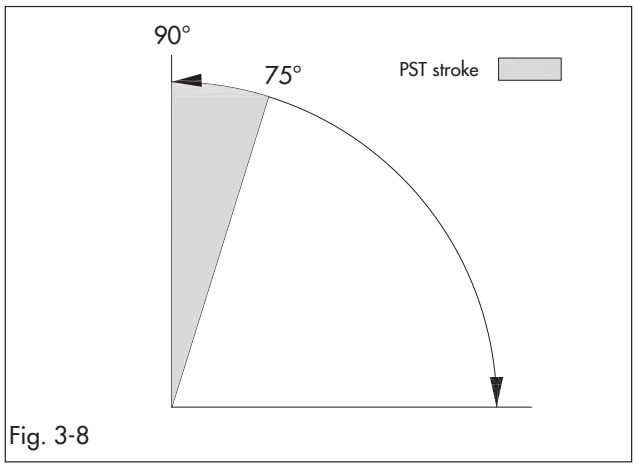


Fig. 3-8

Note

If the actuator is controlled by a control system the FAIL position may be different from FAIL OPEN or FAIL CLOSE.

➔ Refer to Mounting and operating instructions EB AT-RP-4GU.

➔ Refer to Mounting and operating instructions EB AT-HD/HDC.

3.2 Complementary / accessory parts

➔ Refer to Mounting and operating instructions EB AT-RP-4GU.

➔ Refer to Mounting and operating instructions EB AT-HD/HDC.

3.3 Technical data

The label provides information on the Block configuration.

➔ Refer to section 2.1 'Block label sample'.

➔ Refer to Mounting and operating instructions EB AT-RP-4GU.

➔ Refer to Mounting and operating instructions EB AT-HD/HDC.

4 Shipment and on-site transport

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

4.1 Accepting the delivered goods

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

4.2 Removing the packaging

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

4.3 Transporting and lifting the Block

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

4.3.1 Transporting the Block

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

4.3.2 Lifting the Block

Observe the ruling regulations corcerning the lifting operations.

To mount large blocks onto the valve, use lifting equipment (e.g. crane or forklift) to lift it.

Do not drill extra holes into the Block.

Do not use the actuator lifting points to lift the actuator, Block and valve assembly.

Use appropriate tackles and slings to lift the Block.

➔ Refer to technical data sheet for the actuator weight.

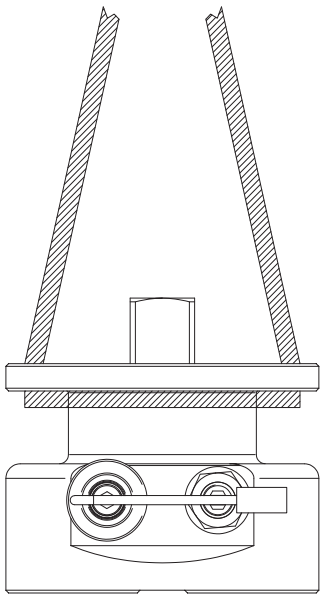


Fig. 4-1

Lifting instructions

– Secure slings on the object to be transported against slipping.

– Make sure the slings can be removed from the Block once it has been mounted on the valve.

– Prevent the Block from tilting or tipping.

– Do not leave loads suspended when interrupting work for longer periods of time.

– Use a hook with safety latch to secure the slings from slipping during lifting and transporting.

– For RP models bigger than AT651U two threaded holes are available to lift the actuator with block by means of eyebolts or similar components as shown in Fig. 4-2.

For the full SY series, use hooks and chains as indicated in the actuator operation and maintenance manual

Do not lift the actuator with Block and valve assembly from these lifting points.

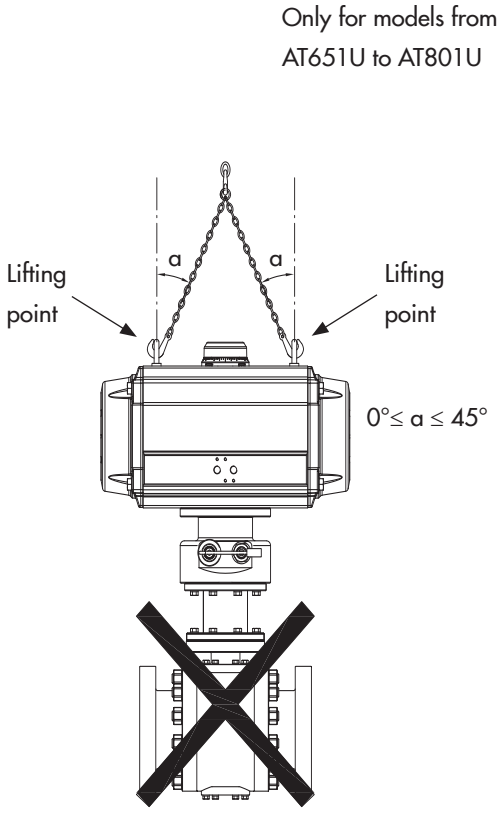


Fig. 4-2

4.4 Storing the Block system

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

5 Mounting and assembly

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

5.1 Preparation for installation

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

5.2 Control and signal devices assembly

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

5.3 Mounting the actuator over the Block

⚠ WARNING

Crush hazard arising from moving parts.

The actuator and the valve assembly contains moving parts, which can injure hands or fingers.

➔ *Do not touch or insert hands or finger into moving parts.*

➔ *Before starting any work on the actuator disconnect all pneumatic / hydraulic / electrical supplies and discharge the pressure from the actuator.*

➔ *Do not impede the movement of the pinion and the pistons by inserting objects into the actuator.*

⚠ WARNING

Risk of damage and malfunction due to torque limit violation.

Considering the maximum actuator output torque, the maximum air supply pressure and the maximum valve torque, according to ISO 5211, the actuator maximum transmissible output torque must not exceed the torque limit in relation to the available ISO flange and the drive shaft connection.

➔ *Refer to section 2 'Markings on the device' for nameplate details.*

❗ NOTICE

Risk of actuator damage due to excessively high or low tightening torques.

Observe the specified torques on tightening actuator components (bolts and nuts). Excessive tightening torques lead to parts wearing out quicker. Parts that are not tightened enough may loosen.

➔ *Refer to section 15.2 'Tightening torques'.*

Before mounting the Block over the valve, make sure the following conditions are met:

– The Block is not damaged.

– The type designation, the output torque (etc.).

Refer to 'Markings on the device' in section 2 for label details.

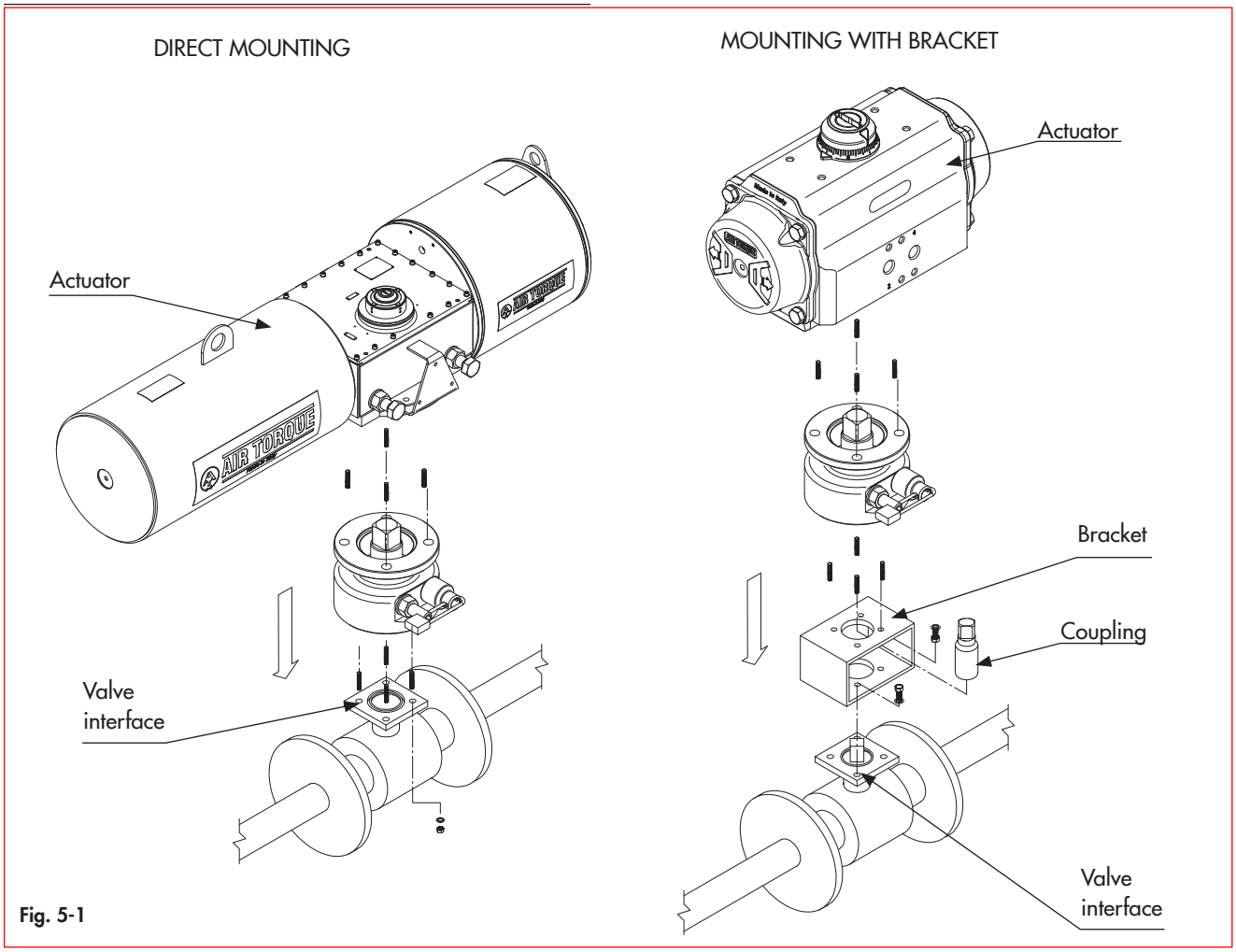


Fig. 5-1

– Check compatibility of the valve stem to the Block bore. The length, size and configurations must match.

– Check compatibility of Block, valve and bracket bolting pattern.

– Before fitting the Block over the valve, make sure that the Block, the Actuator and the valve are correctly oriented, with reference to the rotation direction and fail action required.

– When fitting accessories over the actuators, assemble them in such a way that the emergency controls are easily accessible for emergency manual operation.

Refer to Fig. 5-1 and proceed as follows to mount the Block over the valve:

1. Disconnect any electrical/pneumatic/hydraulic power supply.
2. Lay out the necessary material and tools to have them ready during mounting.
3. The actuator is supplied in the fail position (for single-acting), so drive the Block and the valve in the right position as per the actuator fail position.
4. Assemble the actuator over block
5. Fix the screws between the actuator and block apply the correct tightening torque as per ISO 5211.
6. Check the rotation actuator is correct with block fixed
7. Clean the Block bore and the bottom flange
8. Place the bracket, if any, over the valve flange, tighten all bolts and nuts and apply the correct tightening torque.
9. Assemble the coupling at first into the valve stem before the assembly of the Block.
10. Lift the Actuator with Block.
11. Align the valve stem/coupling to the Block's bore.
12. Carefully lower the Block with Actuator and engage the valve stem/coupling into the Block's bore without forcing and drivingthe Block into the position only with the weight of the Block itself.
13. Fix the Block over the valve flange/bracket with the connection bolts.
14. Tighten the connection bolts at the correct tightening torque as per ISO 5211.

⚠ WARNING

Risk of personal injury due to preloaded and compressed springs.

End caps are under tension due to compressed springs. Furthermore incorrect spring cartidges disassembly could result in serious injury.

➔ *Before starting any work on the actuator disconnect all pneumatic / hydraulic / electrical supplies and discharge the pressure from the actuator.*

➔ *Make sure that the actuator is in the closed position (0°).*

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

6 Start-up

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

7 Operation

The work described in this section is only to be performed by fully trained and qualified personnel.

Before proceeding, read the std manual of the actuator carefully.

⚠ WARNING

Crush hazard arising from moving parts.

The Block and the valve assembly contains moving parts, which can injure hands or fingers.

➔ *Do not touch or insert hands or finger into moving parts.*

⚠ WARNING

Risk of personal injury through incorrect operation, use or installation as a result of information on the actuator being illegible.

Over time, markings, labels and nameplates may become covered with dirt or become illegible in some other way. As a result, hazards may go unnoticed and the necessary instructions not followed. There is a risk of personal injury.

➔ *Keep all relevant markings and inscriptions on the device in a constantly legible state.*

➔ Immediately renew damaged, missing or incorrect nameplates or labels.

➔ Refer to section 3 “Design and principle of operation” for the function details.

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD.

BLOCK AND SAFETY LOCK-OUT SYSTEM OPERATION

Refer to Fig. 7-1

With powered actuator:
Open the pad lock (B09) with the appropriate key and remo-

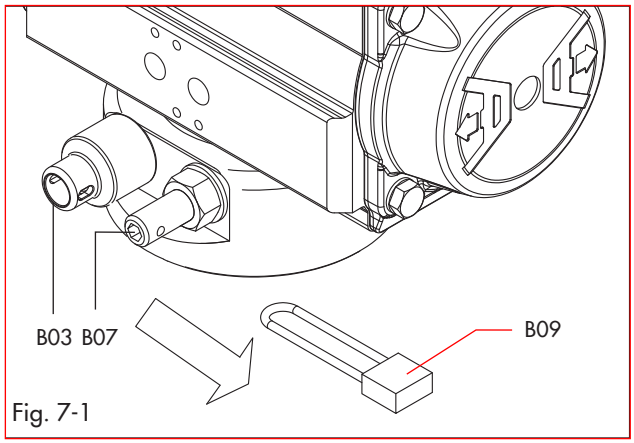


Fig. 7-1

ve it from both the slot present in the safety cover (B03) and from the hole in the plug (B07).

Refer to Fig. 7-2

Unscrew the safety cover (B03) from the screw (B08)
Remove nut (B04), washer (B05) and screw (B08) from body (B01).

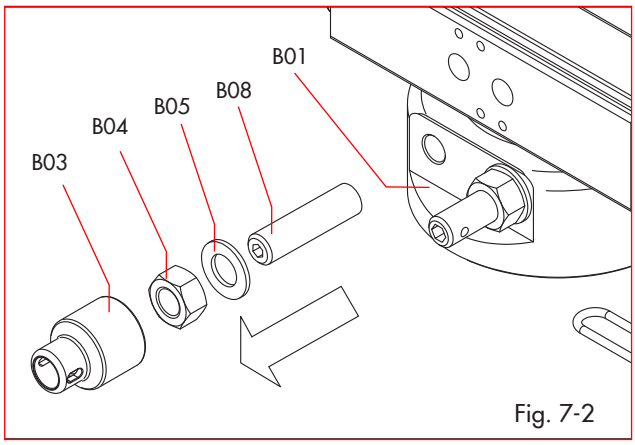


Fig. 7-2

Refer to Fig. 7-3

Insert the blocking screw (B06) into the body until it stops.
Then place the washer (B05), tightenin the nut (B04) up to the stop and the safety cover (B03)

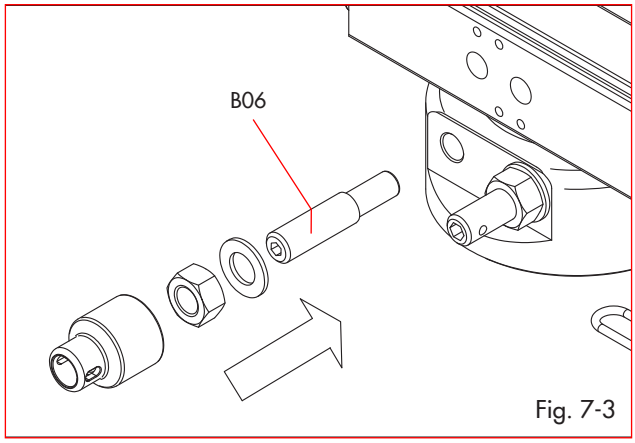


Fig. 7-3

Refer to Fig. 7-4

Insert the padlock (B09) in the appropriate holes for the safety cover (B03) and cap (B07).
Secure the lock by closing the lock and removing the respective key.

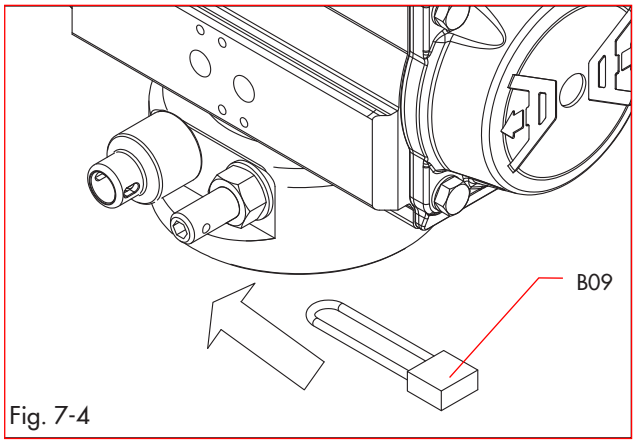


Fig. 7-4

Refer to Fig. 7-5

Remove power from the actuator ensuring no rotation occurs.

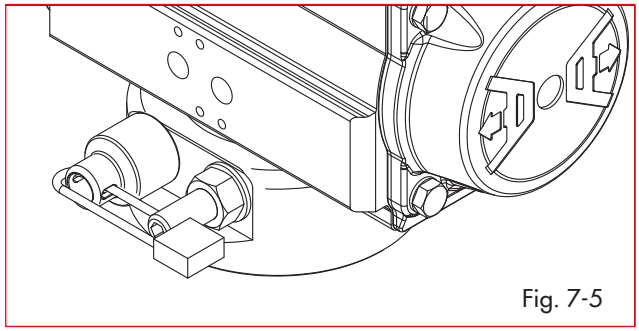


Fig. 7-5

At the end of the operation, to return to the starting conditions, power the actuator again and repeat the operations described in Figure 7-1 to 7-5 by replacing the Blocking screw (B06) with the screw (B08)

PARTIAL STROKE OPERATION

Refer to Fig. 7-6

With powered actuator:
Unscrew the screw (P05) from the body (P01).

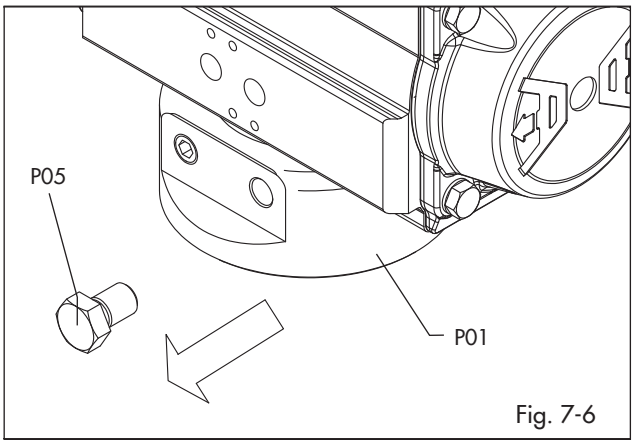


Fig. 7-6

Refer to Fig. 7-7

Completely screw in the Blocking screw (P07) inside the body (P01) until completely tightened.

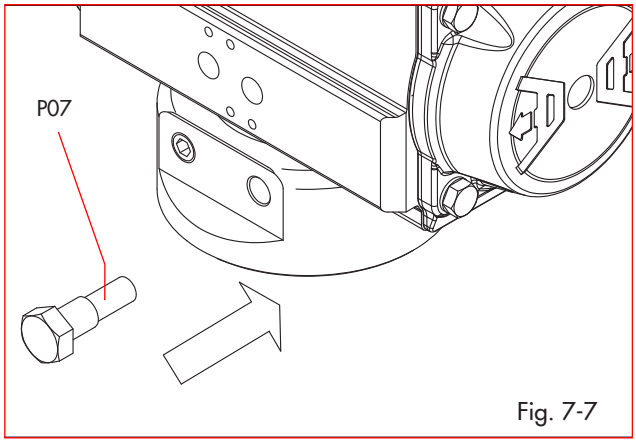


Fig. 7-7

Refer to Fig. 7-8

Remove power and check the actuator will rotate to the partial stroke position to 75°

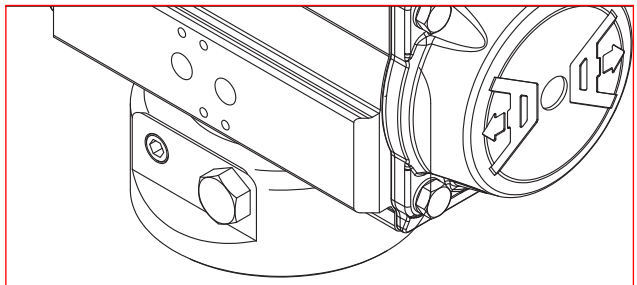


Fig. 7-8

At the end of the operation, to return to the starting conditions, power the actuator again and repeat the operations described in Figure 7-6 to 7-8 by replacing the Blocking screw (P07) with the screw (P05)

8 Malfunctions

The work described in this section is only to be performed by fully trained and qualified personnel.

8.1 Troubleshooting

Malfunction	Possible reasons	Reccomended action
Uneven rotation	Worn components	Disassemble the Block, inspect and replace the worn/damaged components.
	Faulty valve and/or Actuator	In case of Block mounted over the valve, check the valve and actuator documentation and contact the manufacturer.
Incomplete rotation	Incorrect stroke adjustment	Follow the indications in section 7 for correct stroke adjustment.
	Foreign object left inside	Disassemble the Block, inspect and remove any foreign object.
	Incorrect assembly	Disassemble and reassemble the Block correctly.
	Faulty valve and/or Actuator	In case of Block mounted over the valve, check the valve and actuator documentation and contact the manufacturer.
	Worn components	Disassemble the Block, inspect and replace the worn/damaged components.
	Wrong coupling positioning	check that the contact surfaces with locking screw and pst screw are correctly oriented. Follow the indications in section 7
Loss of power	Faulty valve and/or Actuator	In case of Block mounted over the valve, check the valve and actuator documentation and contact the manufacturer.

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

Note

Contact AIR TORQUE after-sales service (aftersales@airtorque.it) for malfunctions not listed in the table.

8.2 Emergency action

The plant operator is responsible for emergency action to be taken in the plant.

9 Service

The work described in this section is only to be performed by fully trained and qualified personnel.

Before proceeding, read the std manual of the actuator carefully.

⚠ WARNING

Crush hazard arising from moving parts.

The Block and the valve assembly contains moving parts, which can injure hands or fingers.

➔ *Do not touch or insert hands or finger into moving parts.*

⚠ WARNING

Risk of personal injury through incorrect operation, use or installation as a result of information on the actuator being illegible.

Over time, markings, labels and nameplates may become covered with dirt or become illegible in some other way. As a result, hazards may go unnoticed and the necessary instructions not followed. There is a risk of personal injury.

➔ *Keep all relevant markings and inscriptions on the device in a constantly legible state.*

➔ Immediately renew damaged, missing or incorrect nameplates or labels.

➔ Refer to section 3 “Design and principle of operation” for the function details.

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

! *NOTICE*

Risk of Block damage due to excessively high or low tightening torques.

Respect the specified torques on tightening Block components (bolts and nuts). Excessive tightening torques lead to parts wearing out quicker. Parts that are not tightened enough may loosen.

➔ *Respect the specified tightening torques in section 15.2.*

i *Note*

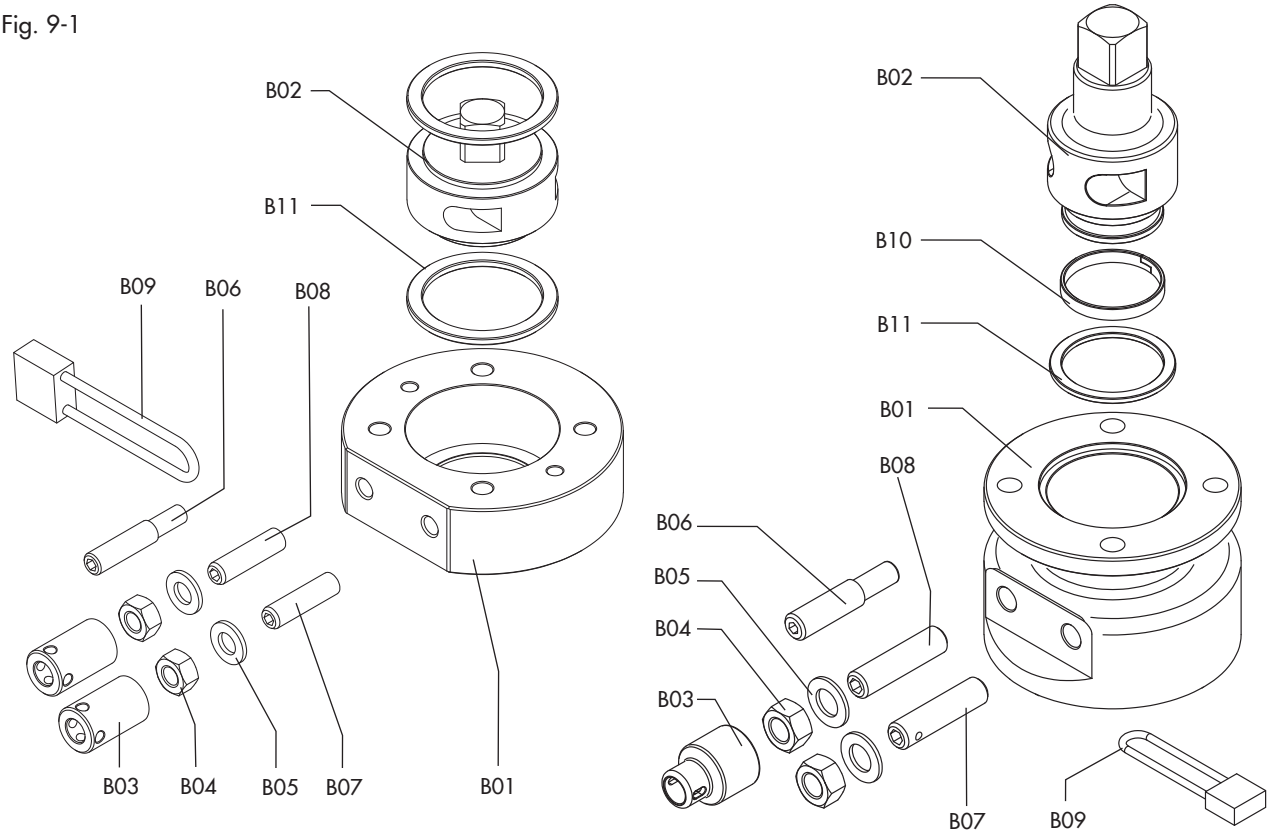
– *The product warranty becomes void if service or repair work not described in these instructions is performed without prior agreement by AIR TORQUE’s After-sales Service.*

– *Only use original spare parts by AIR TORQUE, which comply with the original specifications.*

9.1 Part List

BLOCK AND SAFETY LOCK-OUT SYSTEM

Fig. 9-1



PARTIAL STROKE SYSTEM BLOCK

Fig. 9-2

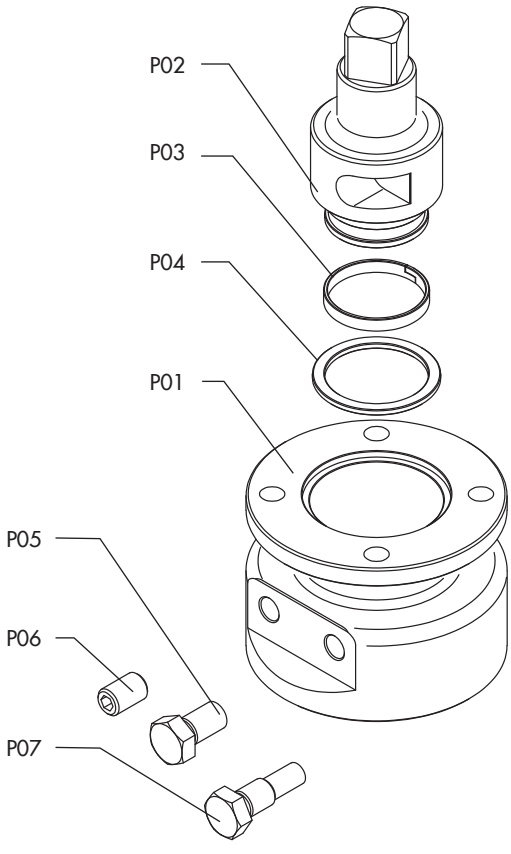


Table 9-1 COMPONENTS BLOCK AND SAFETY LOCK-OUT SYSTEM

PART N°	DESCRIPTION	ISO FLANGE F07 AND F10		ISO FLANGE F12 UP TO F25	
		UNIT Q.TY	MATERIAL	UNIT Q.TY	MATERIAL
B01	Body	1	Painted Carbon Steel (C4/C5) corrosion resistance according to ISO 12944	1	Painted Carbon Steel (C4/C5) corrosion resistance according to ISO 12944
B02	Coupling	1	Stainless Steel	1	Stainless Steel from F12 up to F16
					Coated Carbon Steel form F25 up to F40
B03	Safety Cover	2	Stainless Steel	1	Stainless Steel
B04	Nut	2	Stainless Steel	2	Stainless Steel
B05	Washer	2	Stainless Steel	2	Stainless Steel
B06	Blocking Screw	1	Stainless Steel	1	Stainless Steel
B07	Plug	2	Stainless Steel	2	Stainless Steel
B08	Screw	1	Stainless Steel	1	Stainless Steel
B09	Pad Lock	1	Carbon Steel / Brass	1	Carbon Steel / Brass
B10	Bearing	NA	Not Applicable	1	High-grade polymers
B11	Thrust Bearing	2	High-grade polymers	1	High-grade polymers

Table 9-2 COMPONENTS PARTIAL STROKE SYSTEM BLOCK

PART N°	DESCRIPTION	ISO FLANGE F07 AND F10		ISO FLANGE F12 UP TO F25
		UNIT Q.TY	MATERIAL	MATERIAL
P01	Body	1	Painted Carbon Steel (C4/C5) corrosion resistance according to ISO 12944	Painted Carbon Steel (C4/C5) corrosion resistance according to ISO 12944
P02	Coupling	1	Stainless Steel	Stainless Steel from F12 up to F16
				Coated Carbon Steel from F25 up to F40
P03	Bearing	1	Stainless Steel	Stainless Steel
P04	Thrust Bearing	1	Stainless Steel	Stainless Steel
P05	Screw	1	Stainless Steel	Stainless Steel
P06	Plug	1	Stainless Steel	Stainless Steel
P07	Blocking Screw	1	Stainless Steel	Stainless Steel

NOTICE

For components not included in this Part List, see the instructions manual for standard actuators EB AT-RP-4GU and EB AT-HD/HDC.

In case of special actuator function / feature refer to the corresponding instruction

9.2 Disassembly

NOTICE

➔ Refer to the Fig. 9-1 and Table 9-1 for parts list.

➔ Refer to the Fig. 9-2 and Table 9-2 for parts list.

9.3 Service operations

With the information given below, AIR TORQUE provides the end user with all the required information necessary for service

Under normal conditions, the Block requires only periodic observation to ensure proper operation.

However, due to critical working conditions and a natural components ageing effect even if properly stored, a preventive service program is essential to ensure good performance, safe operation and an extended life.

Inspect and clean every single component.

Inspect, clean and replace bolts and nuts, if needed.

Discard and replace the damaged soft components available in the spare parts kit.

9.4 Mounting the Block over the valve

➔ Refer to the Section 5.3 'Mounting the actuator over the valve'

10 Decomissioning

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

11 Removal

The work described in this section is only to be performed by fully trained and qualified personnel only.

Before removing from the valve, make sure the actuator with Block is put out of operation.

Refer to section 10 'Decomissioning'.

Before proceeding, read the std manual of the actuator carefully.

⚠ DANGER

Risk of bursting due to incorrect opening of pressurized equipment or components.

Pneumatic actuators are pressure equipment that may burst when handled incorrectly. Flying projectile fragments or components can cause serious injury or even death. Before working on the actuator:

➔ *Before starting any work on the actuator disconnect all pneumatic / hydraulic / electrical supplies and discharge the pressure from the actuator.*

⚠ WARNING

Risk of personal injury during actuator air exhaust.

In case of pneumatic version the actuator is operated with air. As a result, air is exhausted during operation.

➔ *Wear eye and hearing protection when working near the actuator.*

⚠ WARNING

Crush hazard arising from moving parts.

The actuator with Block and the valve assembly contains moving parts, which can injure hands or fingers.

➔ *Do not touch or insert hands or finger into moving parts.*

➔ *Before starting any work on the actuator disconnect all pneumatic / hydraulic / electrical supplies and discharge the pressure from the actuator.*

➔ *Do not impede the movement of the pinion and the pistons by inserting objects into the actuator.*

Proceed as follows to remove the actuator with Block from the valve referring to Fig. 11-1, making sure to not expose the plant to any risk:

1. Disconnect any electrical/pneumatic/hydraulic power supply from the actuators and make sure the actuator itself is depressurized.
2. Disconnect all electrical wirings of the control or signal devices, if any.

➔ Refer to the control or signal devices documentation for safe disassembly.

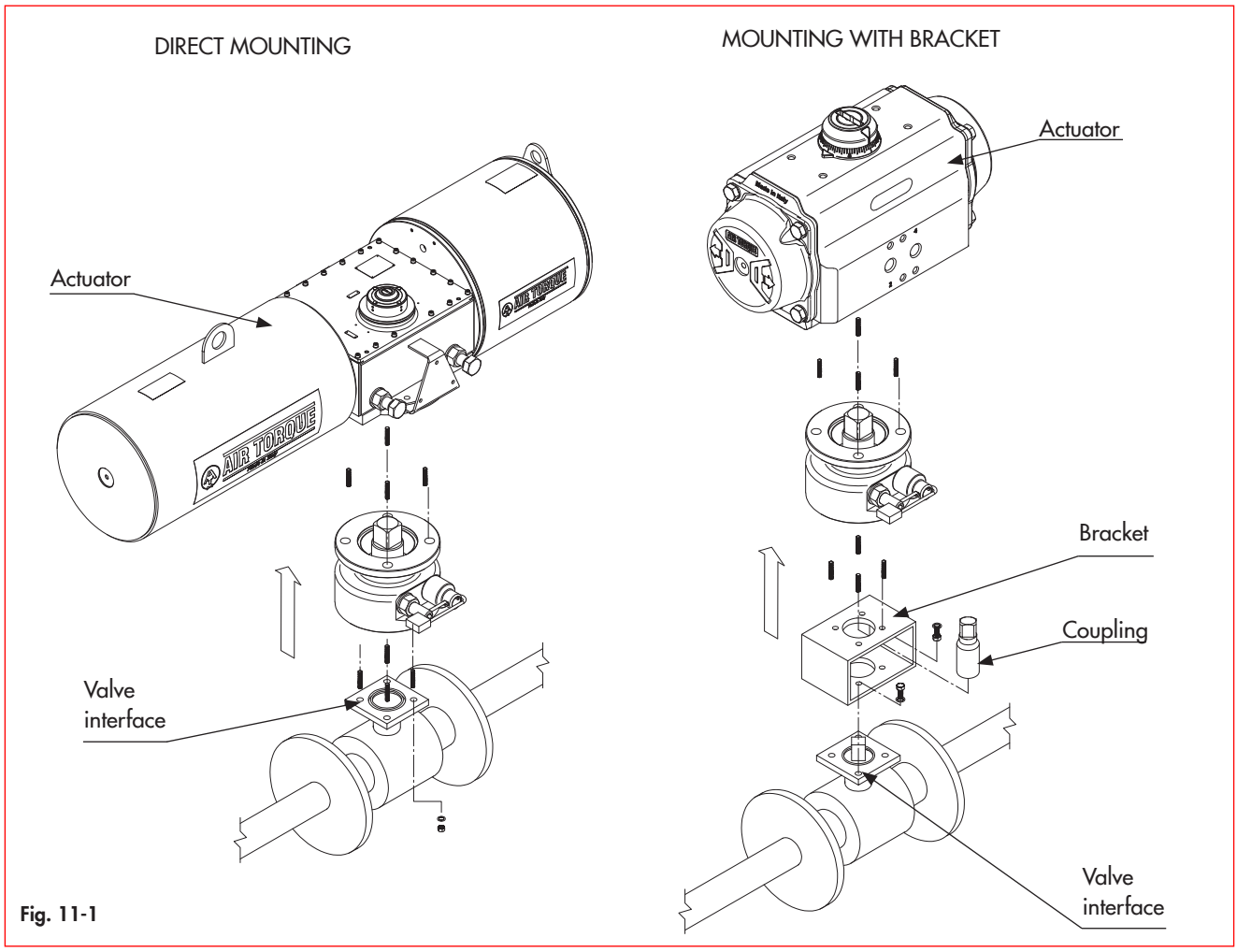


Fig. 11-1

3. Remove the bolts and nuts from the valve flange and remove the actuator with Block from the valve. Refer to the ISO 5211 for correct tightening torques.
4. Remove the coupling.
5. Remove the bracket from the Block, if any.
6. Remove the Block from the Actuator.

12 Repairs

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

13 Disposal

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

14 Certificates

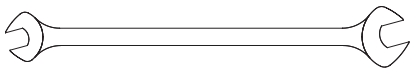
➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

15 Annex

15.1 Tools

15.1.1 Tools list

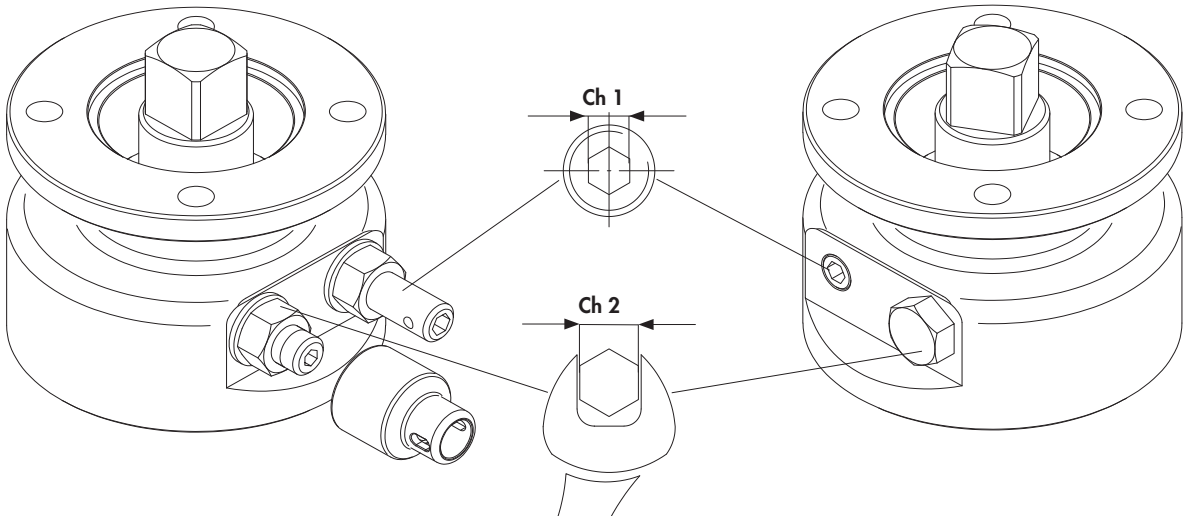
– WRENCH



– ALLEN KEY

15.1.2 Tools dimensions

– Blocking Screws (B06-P07), Plug (B07-P06), Screws (B08-P05) and nuts (B04).



BS-LS MODEL	Ch 1 (mm)	Ch 2 (mm)
BS-LS-07	6	19
BS-LS-10	6	19
BS-LS-12	8	24
BS-LS-14	8/10	30
BS-LS-16	12	36
BS-LS-25	14	46

BS-PS MODEL	Ch 1 (mm)	Ch 2 (mm)
BS-PS-07	6	19
BS-PS-10	6	19
BS-PS-12	8	24
BS-PS-14	10	30
BS-PS-16	12	36
BS-PS-25	14	46

15.2 Tightening torques

– All the tightening torques are intended in Nm.
– Tightening torque tolerance: ±10%.
– The tightening torques are based on a friction coefficient of 0.12 with a lubricated fixing elements (bolts or nuts) threads.
– After long operating times or use at temperatures above 80°C, the breakaway torque may be significantly higher.

Table 15-1: Screw (P05,P07)

BS-LS MODEL BS-PS MODEL	THREAD	TIGHTENING TORQUE (Nm)
BS-LS-07 BS-PS-07	M12	60 ÷ 64
BS-LS-10 BS-PS-10		
BS-LS-12 BS-PS-12	M16	150 ÷ 160
BS-LS-14 BS-PS-14	M20	160 ÷ 170
BS-LS-16 BS-PS-16	M24	270 ÷ 290
BS-PS-25 BS-PS-25	M30	540 ÷ 570

Table 15-2: Nut (B04)

BS-LS MODEL BS-PS MODEL	THREAD	TIGHTENING TORQUE (Nm)
BS-LS-07 BS-PS-07	M12	60 ÷ 64
BS-LS-10 BS-PS-10		
BS-LS-12 BS-PS-12	M16	150 ÷ 160
BS-LS-14 BS-PS-14	M20	290 ÷ 310
BS-LS-16 BS-PS-16	M24	235 ÷ 250
BS-PS-25 BS-PS-25	M30	470 ÷ 500

15.3 Lubricants

➔ Refer to Mounting and operating instructions EB AT-RP-4GU and EB AT-HD/HDC.

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2023-04-28 · English