

MOTION CONVERTER (MC)

Motion Transducer MT

INSTRUCTION MANUAL 2051





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04	13/10/25	Added stainless steel cast design. Changed template. Added "ADDENDUM 1: Additional safety precautions" – Rev.00.	D.Pasini	R.Valoti
Revision	Date	Description	Issued by	Checked by

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1. GENERAL INFORMATION

1.1 GENERAL WARNING



This Instruction Manual is an integral part of the machine, it should be carefully read before carrying out any operation and it should be kept for future references.
The operators shall adopt the safety precautions required by the country where the product is installed.

1.2 GENERALITIES

IMI STI products are conceived, manufactured and controlled according to the Quality Control System in compliance with EN ISO 9001 International Standard.

1.3 MANUFACTURER

According to Machinery Directive 2006/42/EC, the Manufacturer of the described product is:

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Fax +39 035 2928247
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sti.support@imi-critical.com

1.4 TERMS AND CONDITIONS

IMI STI guarantees each single product to be without defects and to conform to current goods specifications. Unless otherwise stated on the purchased order, the warranty period is one year from the date of installation by the user, or eighteen months from the date of shipment to the first user, whichever occurs first. Additionally:

- The warranty does not cover products which have been subject to improper storage, improper installation, misuse, corrosion, or which have been modified or repaired by unauthorized personnel (it is not advisable that customer or end users modify the device characteristics).
- The warranty does not cover special products or components not covered by warranty in their turn by subcontractors.

1.5 MANUFACTURER'S LIABILITY

IMI STI declines all liability in the event of:

- The use of the product does not comply with local legislation on safety at work.
- Disregard or incorrect application of the instructions provided on the product label and/or in the instruction manual.
- Incorrect installation and/or use of the product.
- Modifications without STI's authorization and/or work done on the unit by unqualified or unsuitable personnel.

1.6 ABOUT THIS MANUAL

This manual is designed to thoroughly explain the functioning of the motion converter in all of its versions. The manual will provide a description of the product, as well as mounting and safety instructions.

2. DEVICE DESCRIPTION

The motion converter device STI model MC is suitable for an easy installation of a rotary positioner or position transmitter on linear actuators.

The coupling is made without radial forces on the mounted accessory.

The device is available with adjustable and changeable coupling kit to connect different positioners or accessories interfaces.

The motion converter falls under the category of Motion Transducer (MT).

2.1 COMPATIBLE POSITIONERS

The Motion Converter can be mounted in pair with several models of positioners. First and foremost, IMI STI's SHP positioner, as well as several other commercially available positioners from other brands.

2.2 OPERATING PRINCIPLE

The conversion from linear movement to rotary is made with a lever mechanism designed in order to minimize the linearity error in a simple, robust construction and eliminate all the effects on the rotary shaft due to a small rotation of the actuator shaft.

3. TECHNICAL DATA

HARDWARE	DESCRIPTION
CASE AND INTERNAL COMPONENTS	Stainless Steel CF3M
	Aluminum Alloy 2011
BEARINGS	Stainless Steel
	Steel for Bearings
TOTAL WEIGHT	<3 kg for Stainless Steel version
	<2 kg for Aluminum version
TOTAL DIMENSIONS (cam excluded)	Less than 140x120x75 [mm]
OPERATING PARAMETERS	DESCRIPTION
STROKE min. [mm]	100 mm
STROKE max. [mm]	Any
EXTENDED STROKE min. [mm]	60 mm (special solution)
WORKING TEMPERATURE min. [°C]	-55
WORKING TEMPERATURE max. [°C]	+85
EXTENDED WORKING TEMPERATURE min. [°C]	-60

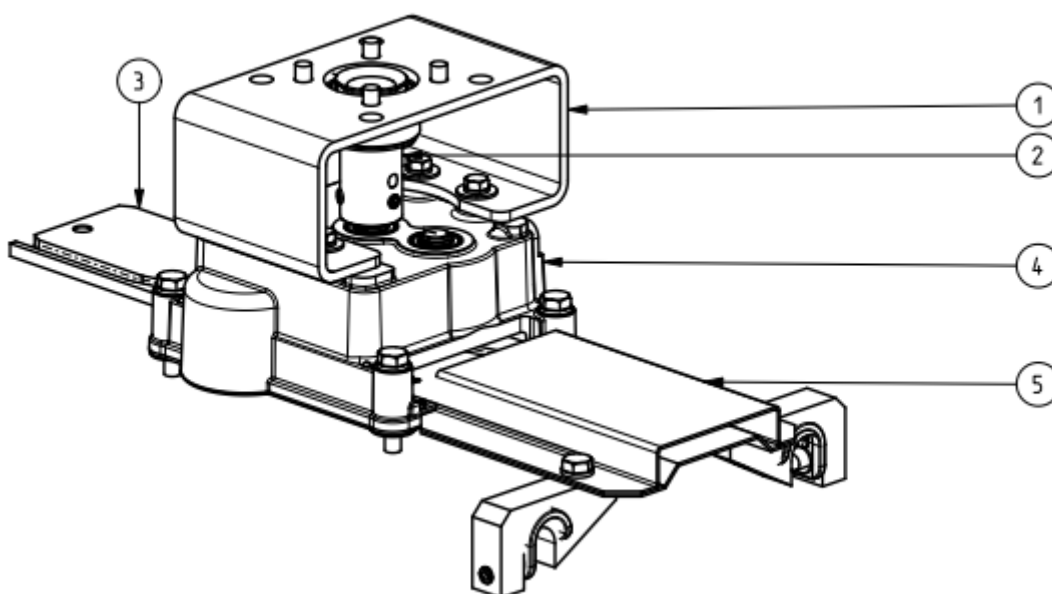
EXTENDED WORKING TEMPERATURE max. [°C]	100
REPEATIBILITY	+/- 0.2%
LINEARITY	1%
HYSTERESIS	0.2%

4. INSTALLATION

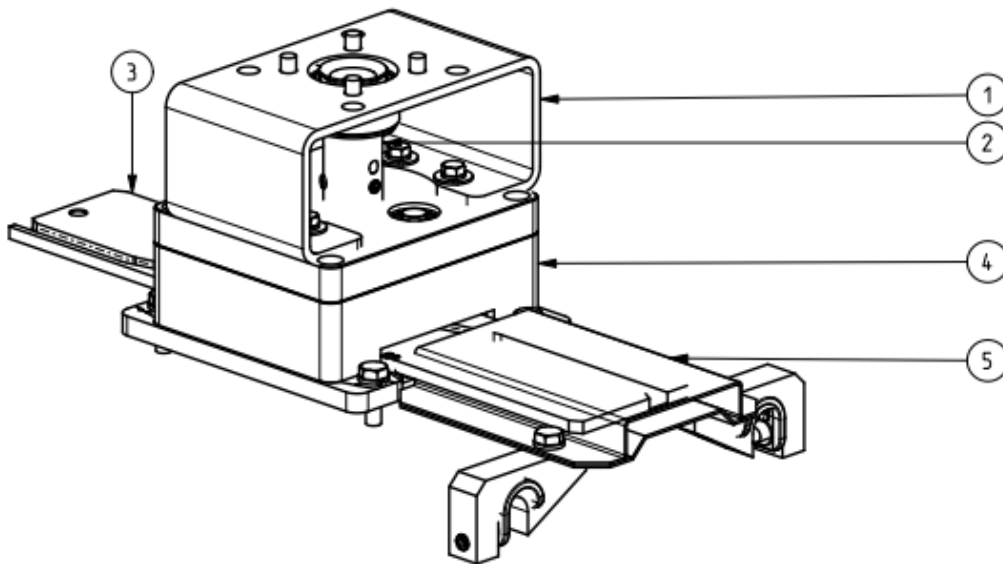
For a correct installation and functioning, the motion converter (pos.4) needs to be mounted coupled with a lever system or with additional coupling (pos.2) in order to transmit the movement to the positioner's sensor.

Additionally, a cam (pos.3) is needed to transform the movement. The cam lengths depends on the stroke of the actuator. The positioner will be mounted onto the yoke (pos.1).

- Stainless steel version:



- Aluminum version:

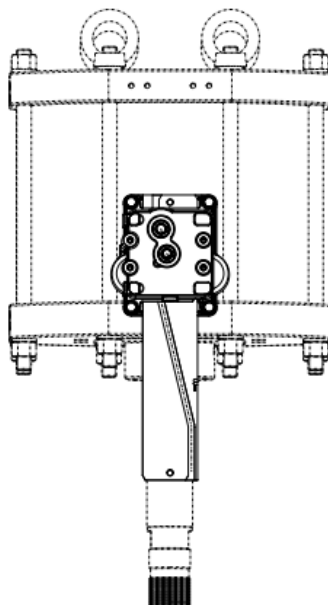


The installation process is the same for both materials.

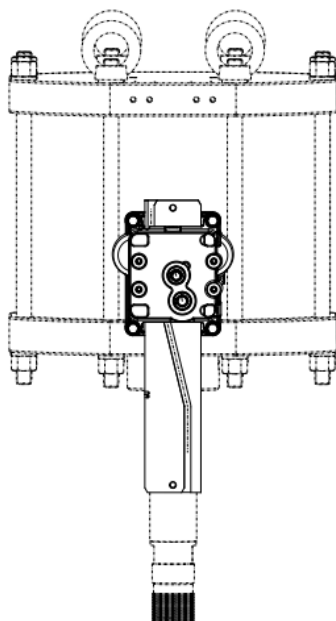
Install the positioner or accessory on the motion converter using the suitable yoke (pos.1) and stem coupling (pos.2). Different coupling kits are available based on the positioner or accessory to be used.

Install the motion converter on the actuator (the mounting direction fix the type of rotation of the shaft according to the following sketch):

- Actuator stem extending / shaft clockwise or actuator stem retracting / shaft counterclockwise:

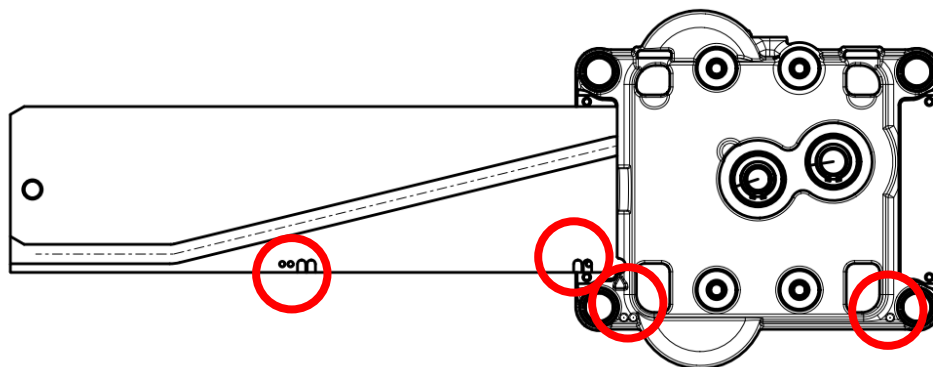


- Actuator stem extending / shaft counterclockwise or actuator stem retracting / shaft clockwise:

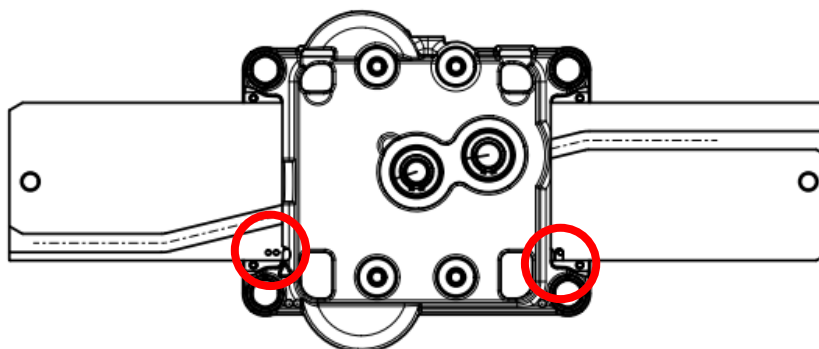


The cam must be installed correctly. To do so, the procedure is:

- Orient the cam with the sign (● and ●●) on the cam and enclosure are coincident at half stroke. Rotate the shaft and insert the cam (pos.3) into the motion converter box slit:



- Connect the cam to the actuator shaft with the two nick in correspondence of the enclosure edge at half actuator stroke:



- Secure the cam to the actuator shaft. If not secured, the cam will be expelled from the motion converter.
- Finally, if present, you can install the cam guide (pos. 5).

5. MAINTENANCE

Before any type of operation and/or maintenance is made, make sure that:

- Staff is qualified for the required operation.
- Actuator, accessories and all connected equipment are in their safety conditions.
- Air supply is disconnected.
- Power or other energy sources and signals are removed.

- Cylinder chambers and relevant connections and accessories are not under pressure.
- Actuator is free from any cinematic mechanism.

The following periodical maintenance operations are recommended, at least once an year depending on the positioner operating conditions:

- clean the leaned cam's;
- blow with compressed air inside at the motion converter box and in the cam guide, if present.

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ADDENDUM 1: ADDITIONAL SAFETY PRECAUTIONS



IMPORTANT

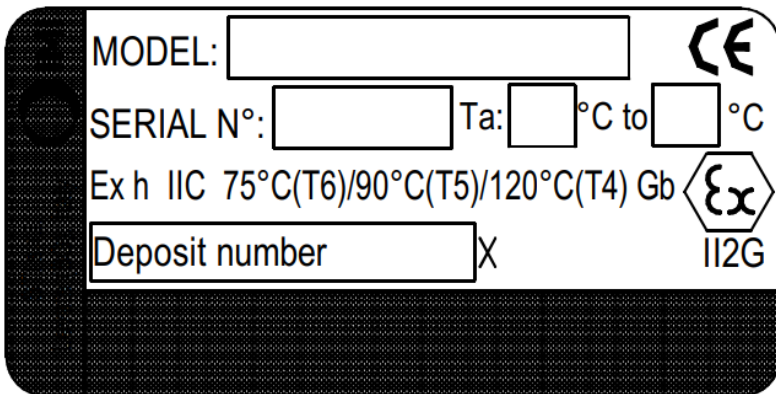


To be read, and understood, in conjunction with the rest of the manual

The Motion Converter accessory is ATEX certified under the following standards:

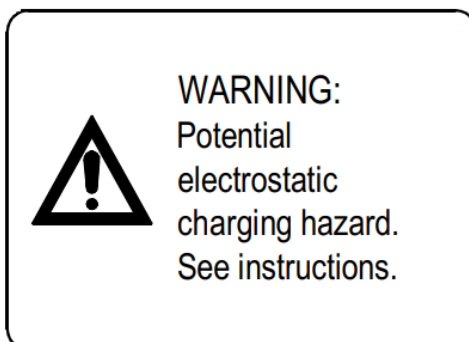
- DIRECTIVE 2014/34/UE.
- EN ISO 80079-36.
- EN ISO 80079-37.

When certified, the product will be marked with the following label (or a similar one with the same information):

Ex h IIB T4/T5/T6 Gb or Gc	Ex h IIC T4/T5/T6 Gb or Gc
	

Some residual risks are present. Therefore, it is mandatory to follow the following instruction:

- The accessory must be grounded. This can be performed in two ways:
 - Ensuring electrical continuity between the product and the actuator upon which it is mounted on. The actuator must be properly grounded.
 - If available, by using one of the available threaded holes to connect an earthing cable. The earthing cable shall be secured by employing proper means to avoid any unwanted unscrewing or rotation of the connector.
- For aluminum and stainless steel models, only if painting is requested, any charging mechanism stronger than manual rubbing must be avoided. When this must be respected, an additional label is positioned onto the casing:



- When mounting the motion converter, in any of its definitions, the speed of the actuator shall be limited to less than 0.8 m/s. This limit is imposed by the relevant standards to avoid any excessive friction between the reading shaft and the cam.

**Process
Automation**

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