IMI STI

# FTC – FasTrak Compact

## INSTRUCTION MANUAL 4049

Engineering
GREAT Solutions

IMI Critical Engineering

FasTrak COMPACT POSITIONER

PT

| Date | Revision | Description | Compiled | Approved |
|---|---|---|---|---|
| *03/03/2021* | *04* | *Revised connections at page 6* | *S. Kurti* | *N. Zenoni* |
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# INDEX

# 1 GENERAL INFORMATION

## 1.1 General Warnings

| | |
|---|---|
| **Important**  | **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.**<br>**This Instruction Manual is realized in accordance with the Directive 2006/42/CE.** |

## 1.2 Generalities

STI S.r.l. products are conceived, manufactured and controlled according to the Quality management System in compliance with EN ISO 9001 International Standard.

## 1.3 Manufacturer

With respect to Machinery Directive 2006/42/EC, the Manufacturer of the described FasTrak Compact is STI S.r.l. as specified on the label.

STI S.r.l. Via Dei Caravaggi 15
24040 Levate (BG) Italy
Tel. +39 035 2928.2
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## 1.4 Terms and conditions

STI S.r.l. guarantees each single product to be free from defects and to conform to current goods specifications. The warranty period is one year from the date of installation by the first user, or eighteen months from the date of shipment to the first user, whichever occurs first.
The warranty does not cover special products or components not covered by warranty in their turn by subcontractors. No warranty is given for products which have been subject to improper storage, improper installation, misuse, corrosion, or which have been modified or repaired by unauthorised personnel: it is not advisable that customer or end users modify the device characteristics.

## 1.5 Manufacturer's liability

STI S.r.l. declines all liability in the event of:

- use of the device in contravention of local safety at work legislation;
- incorrect installation, incorrect maintenance, disregard or incorrect application of the instructions provided on the FTC nameplate and in this manual;
- modifications or repairs without STI S.r.l. authorisation;
- work done on the unit by unqualified or unsuitable operators.

It is operators' responsibility to comply with all applicable safety rules and to ensure that the local health and safety regulations are adhered to. Depending on the specific working conditions, additional precautions may be requested.
Please inform STI S.r.l. urgently if you face unsafe situations not described in this Instruction Manual.

## 1.6 Applicable Standards and Directives

| | |
|---|---|
| - EN ISO 12100:2010 | Safety of machinery - General principles for design - Risk assessment and risk reduction |
| - 2006/42/EC | Machinery Directive |
| - 2014/68/UE | Pressure Equipment Directive (PED) |
| - 2006/95/EC | Directive for Low Voltage Equipment (LV) |
| - 2004/108/EC | Directive relating to the Electromagnetic Compatibility (EMC) |
| - 2014/34/CE | Equipment used in potentially explosive atmospheres (ATEX) |

## 1.7 Symbology used

| **Important** | **Be careful where these symbols are shown, they indicate a potentially hazardous situation and they warn that if the steps are not properly performed, may result causing serious injury, death or long-term risks to the health of exposed persons** |
|---|---|

GENERAL DANGER

DANGER POWER SUPPLY

CRUSHING HAZARD

| **Important** | **The operators shall adopt the safety precautions required by the country where the product is installed.**<br>**The operators shall also adopt the following precautions.** |
|---|---|

Must wear protective clothing

Must wear protective gloves

Must wear protective footwear

Must wear protective helmet

Must wear protective glasses

Must wear earplugs

# 2 DEVICE DESCRIPTION

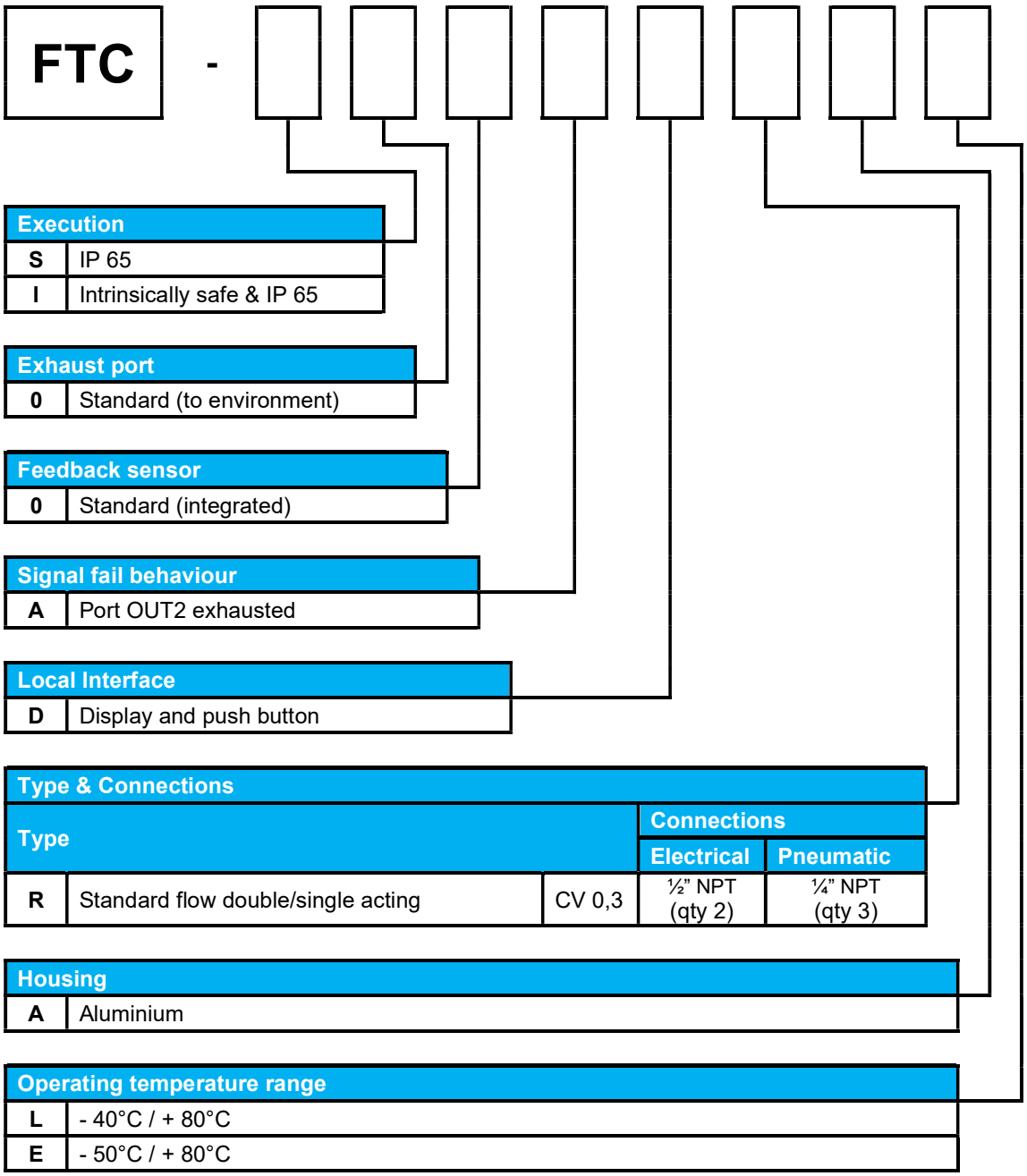
## 2.1 General Description

The FasTrak Compact smart positioner is a digital-pneumatic valve controller:

- excellent dynamic performance;
- high precision;
- configuration and calibration through HART, serial cable handheld device, local display and push buttons;
- self-calibration;
- compatible with double and single acting actuators, with/without spring, piston or diaphragm;
- auto tuning on control stroking time applications from 0.5 sec to 100 sec;
- control and PID parameter independently adjustable for open and close;
- stroking time user independently adjustable to open and to close;
- travel limit position independently user adjustable to open and to close up to 50% of stroke;
- tight shut off position to open and to close independently adjustable;
- pressure shut off to open and to close independently adjustable;
- travel characterization linear user adjustable 16 point;
- visualization of selected characterization curve with limit and shut off by Remote Control;
- analog output 4-20mA position;
- power/signal safety fail position mechanically configured (not software adjustable).

Figure 1 – FasTrak Compact smart positioner

## 2.2 Coding Description




| Execution | |
|---|---|
| S | IP 65 |
| I | Intrinsically safe & IP 65 |

| Exhaust port | |
|---|---|
| 0 | Standard (to environment) |

| Feedback sensor | |
|---|---|
| 0 | Standard (integrated) |

| Signal fail behaviour | |
|---|---|
| A | Port OUT2 exhausted |

| Local Interface | |
|---|---|
| D | Display and push button |

| Type & Connections | | | | |
|---|---|---|---|---|
| Type | | | Connections | |
| | | | Electrical | Pneumatic |
| R | Standard flow double/single acting | CV 0,3 | ½" NPT (qty 2) | ¼" NPT (qty 3) |

| Housing | |
|---|---|
| A | Aluminium |

| Operating temperature range | |
|---|---|
| L | - 40°C / + 80°C |
| E | - 50°C / + 80°C |

| Options | |
|---|---|
| +3M | Quantity 2 SS316 pressure gauges on actuator side ports (OUT1, OUT2)<br>Quantity 1 SS316 pressure gauges on supply port (IN) |
| +M20 | Quantity 2 adapter for electrical connection M20x1,5 |
| +Pack1 | Software implementation with Valve Signature, Step Response, Pressure Fall Back |
| +TTL | Cable for high speed transfer data |
| +SSP | Quantity 1 SS316 plug for filter group |

NOTES:

- See section 3 “Technical Data” for Standard executions and more details.
- Special executions to be confirmed by IMI STI according to specific requirements.
- If +3M not required, quantity 3 pressure gauges SS304 always included.

# 3 TECHNICAL DATA

| Mechanical info | Pneumatic info |
|---|---|
| - Material: Aluminum casing with stainless steel feedback shaft<br>- Weight: 2.3 kg<br>- Mechanical linkage: VDE/VDI 3845<br>- Min feedback shaft rotation for total stroke: 30°<br>- Max feedback shaft rotation for total stroke: 115° | - Connections:<br>  - 1/4" NPT female, quantity 3<br>  - M6 female, quantity 1<br>- Motive fluid:<br>  - instrument air (1)<br>  - nitrogen<br>  - natural gas<br>- Max supply pressure: 10.4 bar<br>- Operating pressure range:<br>  - FTC-S: 2.5÷10 bar<br>  - FTC-I: 2.5÷10 bar (2.5÷7 bar with natural gas) |
| **Electrical info** | **Environmental conditions** |
| - Connections:<br>  - ½" NPT female, quantity 2<br>- Signal input:<br>  - 2 wires<br>  - 4÷20 mA (min 3.5 mA)<br>  - 10÷30 VDC<br>  - 500 Ω<br>- Analog Output:<br>  - 4÷20 mA DC<br>  - 10÷26.5 V passive loop | - Operating temperature range: -40°C/+80°C (4)<br>- Extended operating temperature range: -50°C/+80°C(4)<br>- Storage temperature range: -40°C/+80°C (4)<br>- IP65 protection<br>- Humidity up to 100%<br>- Vibrations up to 2g (ISA-S75.13) |
| **Control data (2)** | **Performance data** |
| - Control parameter individually configurable for each movement direction<br>- Configurable single or double acting<br>- Settable characteristic curve<br>- Settable cut off stroke limits | - Hysteresis + Deadband: ±0.15 %<br>- Repeatability: ±0.15 %<br>- Sensitivity: ±0.10 %<br>- Linearity: ±0.3 %<br>- Stroke deviation: ≤ 0.3 % each 10°C<br>- Flow capability: 23.5 $Nm^3/h$ @ 6 bar (Cv 0.3)<br>- Air Consumption: < 0.7 $Nm^3/h$ @ 4 bar |
| **Certificates (3)** | **Communications** |
| - Ex ia IIC T4 Gb / Ex ia IIC T5 Gb<br>- ATEX 2014/34/EU | - High Speed transfer data TTLRS232<br>- HART protocol capable |

(1) Use instrument air free from oil, water and dust according to ISO 8573-1 class 3 and with particle size ≤ 5 µm.
The maximum value of the pressure dew point shall be 10 °C lower than the operating temperature.
(2) See Software Manual 4050 for more details.
(3) See Safety Manual 9031, IECEX Certificate of Conformity IECEx EUT 18.0031X and Certificate EPT 19 ATEX 3165 X.
(4) Display visible between -20°C and +45°C.

# 4 LABEL

Every FTC smart positioner is provided with a label contains the main operating conditions and serial number. The label may change if the FTC smart positioner is sold with reference to a Certificate of product and/or system issued by Notified Body Exterior or Certificate of Conformity issued by STI S.r.l. See Safety Manual 9031 for more details.


Figure 2 – FTC standard label

| Warning | |
|---|---|
|  | **It is severely forbidden to use the FTC positioner under conditions other than those provided on the label.** |

| Important | |
|---|---|
|  | **It is forbidden to modify the information and the marks without previous written authorization by STI S.r.l.**<br>**Do not remove the label and/or replace with another label.** |

| Warning | |
|---|---|
|  | **Always observe the specifications and special requirements for your positioner stipulated in the applicable certificate.** |

# 5 INSTALLATION

| Warning | |
|---|---|
|  | **The software control parameters of the FTC smart positioner can be altered only by skilled operators. Incorrect settings may lead to personnel injury and/or property damage.** |

| Important | |
|---|---|
|  | **Not performing the following procedures will invalidate the product warranty.** |

## 5.1 Transport

| Important | |
|---|---|
|  | **The lifting and handling should be made by qualified staff and in compliance with the laws and provisions in force.** |

## 5.2 Reception

- check that the model corresponds with that of order confirmation;
- check that the FTC smart positioner has not been damaged during transport.

## 5.3 Storage

FTC smart positioner leaves the factory in perfect conditions. Performances of each unit are guaranteed by tests and data reported on the specific. To maintain these conditions until the FTC is installed on site, proper attention must be observed for preservation during the storage period.
If the FTC needs storage, before installation follow these steps:

- place it on a wood surface pallet or on metallic support, thus it is not in direct contact with the ground, and packed with appropriate covering;
- place it in a dry and clean place and take all necessary measures to avoid contact with dust, dirt, humidity, corrosive gases or vapours;
- make sure that connection protections and/or covers will not be removed during the storage;
- keep the BR protected from direct weather conditions;
- if stored outdoor, replace plastic plugs on pneumatic connections with metal plugs that guarantee perfect tightness.

## 5.4 Requirements of Stability

Concerning the requirement of stability during installation and disassembling, it is possible to refer to the next chapters 5.6 and 5.7.

## 5.5 Documents and dimensional drawings

Pneumatic diagrams, wiring diagrams and dimensional drawings are furnished with document accompanying the actuator.

## 5.6 Installation

| Warning | |
|---|---|
|  | **Before proceeding with any Installation, the following instructions must be respected:**<br>- **Always wear protective clothing, gloves, and eyewear to prevent personal injury;**<br>- **Check with your process or safety engineer for any additional measures that must be taken to protect against process media.** |

### *5.6.1 Checks to perform before installation*

- the pneumatic and electric port must be protected by plastic plugs until the installation phase;
- the supply circuit must be protected to prevent that the voltage, or the current exceed the stated limits;
- the equipment must be provided with cable entries and filler plugs certified according to the required certification.

### *5.6.2 FTC mounting on actuator*

- remove the protection plastic plugs;
- mount the FTC smart positioner on the actuator by using the provided kit (typically the FTC smart positioner can be mount on the actuator yoke or on the actuator top);
- the linkage must be able to generate a rotation angle between 30° and 120° during the full actuator stroke. There are no mechanical stops on to the FTC shaft, thus there is no chance to damage the FTC shaft by its over-rotation. An index shows the correct shaft orientation;
- Backlashes, linearity errors and elasticity of feedback linkage could affect the FTC smart positioner performance.

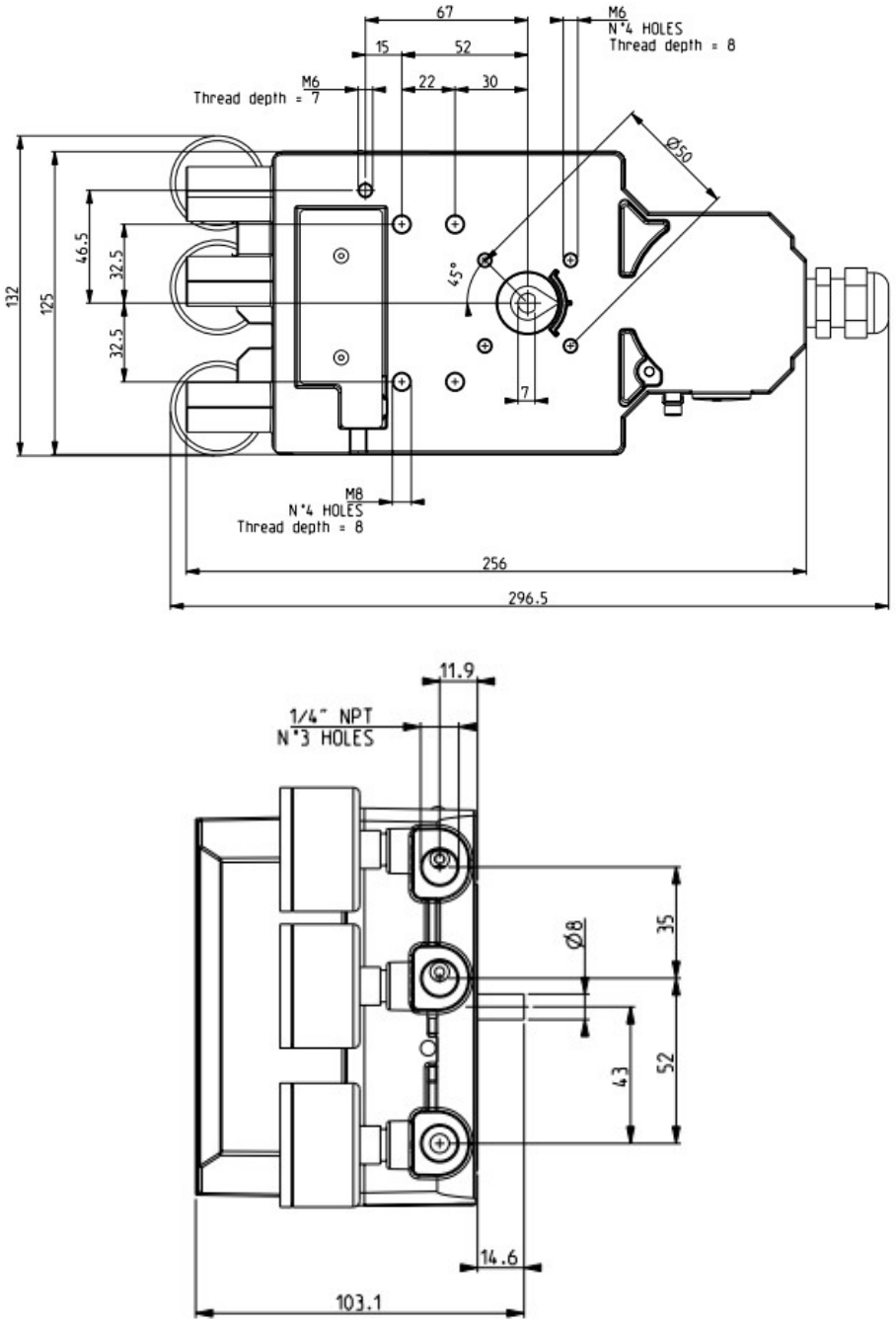



Figure 3 – FTC main dimensions

### *5.6.3 Grounding connection*

| Warning | |
|---|---|
|  | **The FTC smart positioner shall have a proper earthing connection.** |

The use of a ground strap between the FTC smart positioner housing and a suitable earthed point is required. A proper connection could be done by the screw threaded in the FTC housing, as shown in the following picture as eartling connection.

### *5.6.4 Pneumatic connections*

| Warning | |
|---|---|
|  | **Check that the values of pneumatic supply available are compatible with those reported on the label of the FTC smart positioner. User must consider and take all precautions to avoid that pressurized parts are not used out of specified range and to avoid exposure to fire.** |

| Important | |
|---|---|
|  | **For easier maintenance, it is recommended to install a filter with 5 µm cartridge and shut-off valve on the supply connection.** |

It is recommended to follow these steps:

- the pressure line pipe shall be sized to avoid significant pressure drop during the actuator stroke;
- the piping between FTC smart positioner and actuator has to be ¼" and shorter as possible;
- during piping connection, be careful to keep clean the internal side of piping and fittings, free from threaded sealing material or any other contaminants;
- the FTC smart positioner is suitable for single acting actuators and double acting actuators (with or without spring):
    - for double acting actuators (without spring):
        i. Port IN must be connected to the supply line;
        ii. Port OUT2 (or M6 thread hole) must be connected to the actuator chamber that has to vent at signal fail position (no power);
        iii. Port OUT1 must be connected to the actuator chamber that has to be pressurized at signal fail position (no power);
    - for double acting actuators (with spring):
        i. Port IN must be connected to the supply line;
        ii. Port OUT2 (or M6 thread hole) must be connected to the actuator chamber that has to vent at signal fail position (no power);
        iii. Port OUT1 must be connected to the actuator chamber that has to be pressurized at signal fail position (no power);
    - for single acting actuators:
        i. Port IN must be connected to the supply line;
        ii. Port OUT2 (or M6 thread hole) must be connected to the actuator chamber that has to vent at signal fail position (no power);
        iii. Port OUT1 must be plugged with tight plug suitable for the pressure rating and area classification;

- no load or bending moment are allowed on pneumatic connection;
- the supply pressure must be lower than actuator design pressure;
- to check the correct mounting of the pneumatic connections, pressurize the FTC smart positioner without any power signal and check if the actuator moves to the 0% signal position.

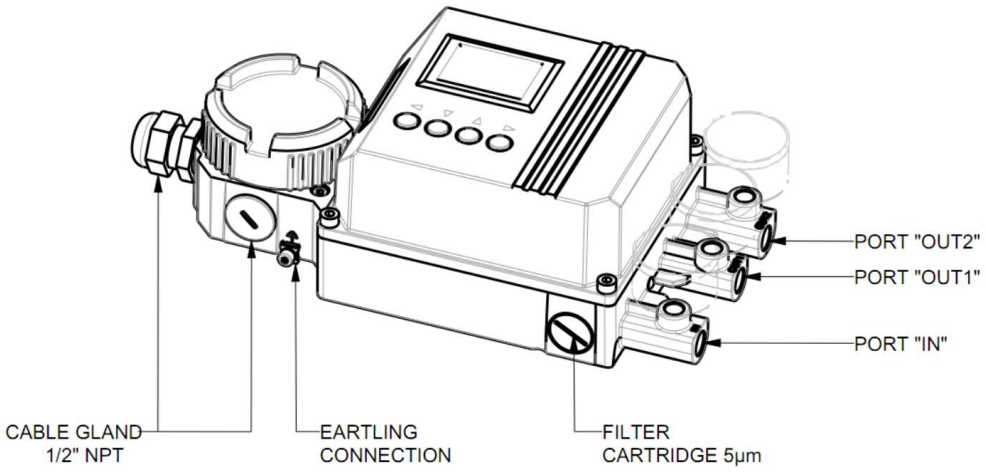


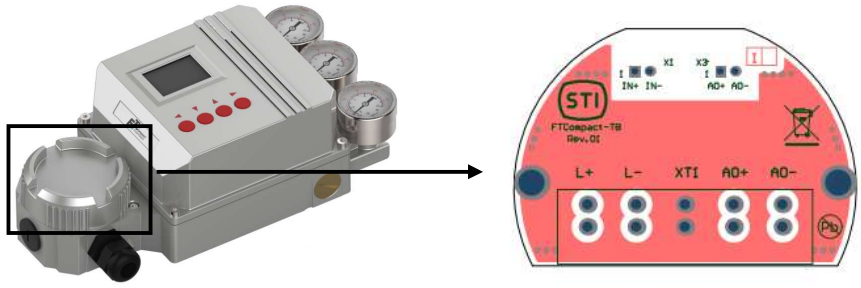

Figure 4 – FTC main connections

### *5.6.5 Electrical connections*

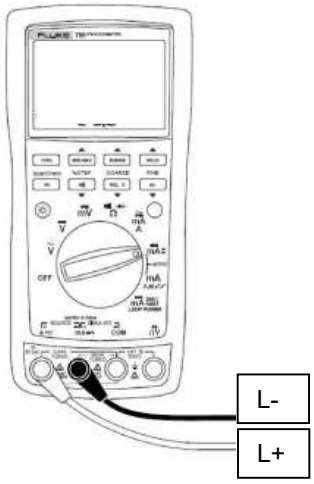
It is recommended to follow these steps:

- use shielded cables during the installation of the FTC smart positioner;
- observe ESD precautions during the handling of the electrical cables and connections inside the FTC smart positioner;
- use an earthed wrist strap during the operations;
- the electrical connections must be done according to diagram and label;
- the signal current circuit and the input and output circuitry must meet the explosion protection requirements stipulated in the certificates;
- close the lids during normal operation.

For Intrinsically Safe design details (FTC-I), see related Safety Manual 9031.




4-20 mA IN




4-20 mA OUT


Figure 5 – FTC electrical connection

### *5.6.6 Self-tuning guide*

| Warning | |
|---|---|
|  | **The actuator will move during the self-tuning.** |

Follow these steps using the display buttons (ENT, DOWN, UP, ESC):

- turn on the FTC smart positioner;
- push any button and then enter the password (ENT-UP-DOWN-UP-DOWN);
- select set-up from main menu;
- select operating mode menu from set-up menu;
- select “Out svc” in the operating mode menu;
- come back to set-up menu;
- select actuator menu from set-up menu;
- chose the actuator type;
- come back to main menu;
- select calibration menu from main menu;
- select full self-tuning menu from calibration menu;
- start the self-tuning.

See Fig.7 for more details.

It is also possible to have the benefit of high-speed connection on the electronic board (restricted to use in a non-hazardous area) following the indications below:

- remove the cover by removing the #4 M5 screws;
- only the STI “FTx positioner connection cable” can be used to connect the FTC to the laptop;
- the laptop used must be powered from battery or by a power supply unit in compliance with IEC 60950-1, with Maximum Output Voltage (Um) ≤ 30V;
- see Instruction Manual 4050 for more details about the FTC remote control;
- when the High-speed connection is not required, remove the “FTx positioner connection cable” and mount the FTC cover by #4 M5 screws (tightening torque = 4Nm).

For Intrinsically Safe design details (FTC-I), see related Safety Manual 9031.

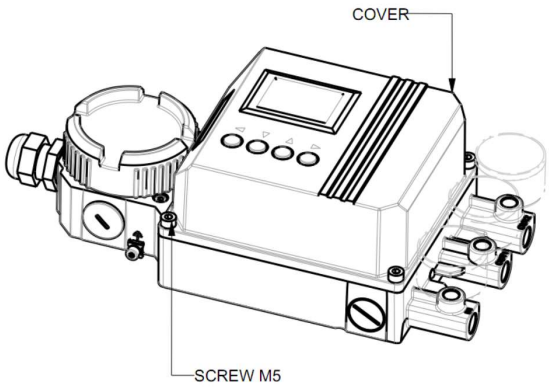



Figure 6 – FTC cover

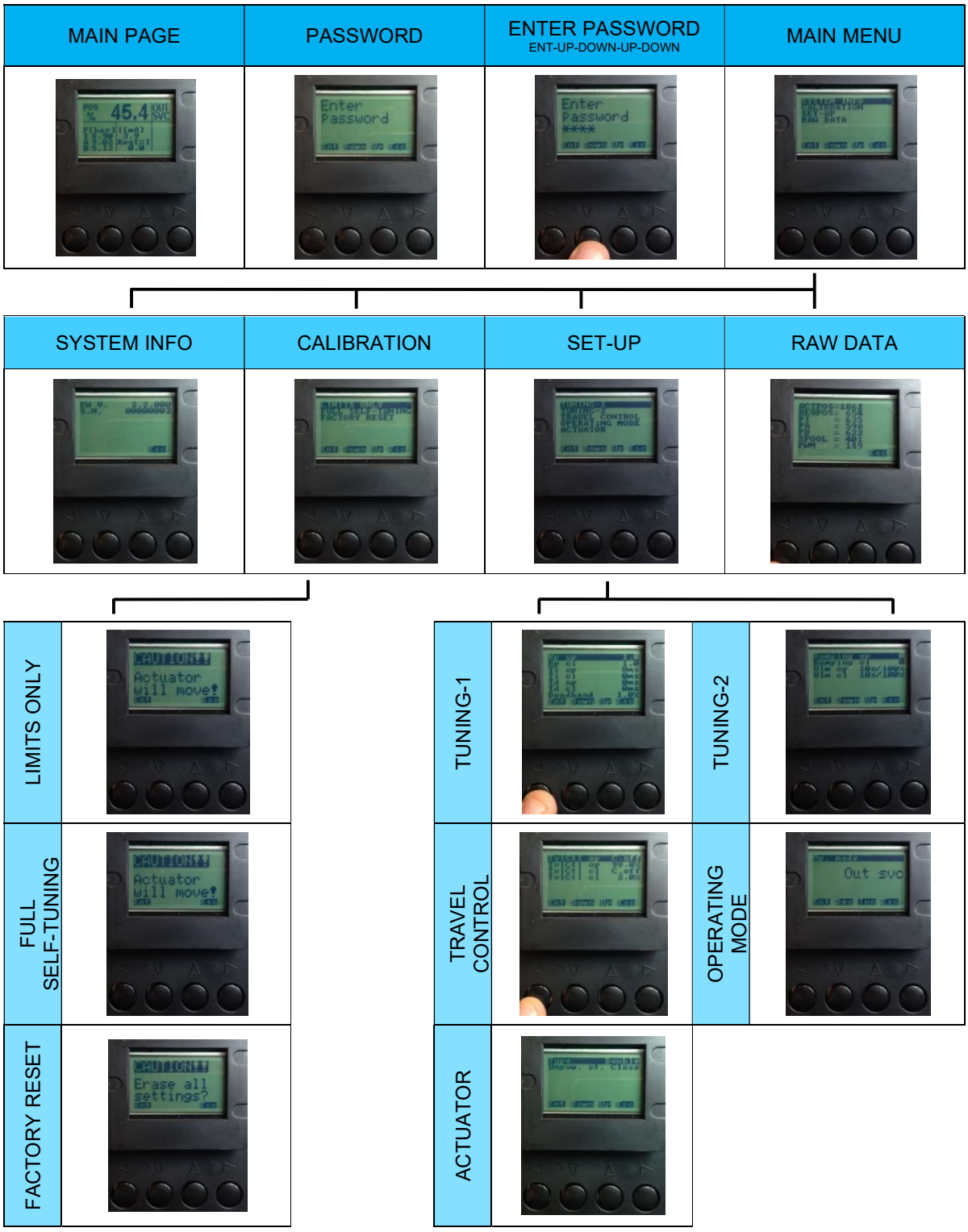



Figure 7 – Complete display tree

## 5.7 Disassembling

| Warning | |
|---|---|
|  | **Before starting the disassembly operations, it is mandatory to disconnect the pneumatic power and exhaust the BR. Cylinder chambers, pipes, fittings and accessories must not be under pressure. The staff must be qualified for the required operation.** |

# 6 OPERATION AND USE

| | |
|---|---|
| **Warning**  | **It is severely forbidden to use the FTC smart positioner for purpose or application other than those for which it was designed and here specified.** |

| | |
|---|---|
| **Warning**  | **Make sure that:**<br>- **observe the common safety regulations and the accident prevention rules of the H&S organizations;**<br>- **observe the safety regulations for the pneumatic actuator used;**<br>- **observe the safety regulations for the installation and operation of electrical systems;**<br>- **observe the electrical specifications reported in this instruction manual and in the documents accompanying the FTC smart positioner;**<br>- **for the electrical installation of explosion-protected devices, observe all standards, regulations and directives governing explosion protection and applicable for the construction and use of explosion-protected systems, the directives for explosion protection and the special requirements and specifications for your devices;**<br>- **this product is not intended for use in life support systems.** |

## 6.1 Operation description

The FTC smart positioner is an electro-pneumatic positioner designed with an integrated spool able to send the motive fluid from port “IN” to port “OUT1” or “OUT2”. The air coming inside the positioner from the port “IN” is filtered. An electronic board manage the spool relying on the input signal, the spool position and the actuator position. The actuator position is measured by a potentiometer connected to the actuator moving parts.

## 6.2 Intended use

The FTC smart positioner is an electro-pneumatic positioner designed to being mounted on actuators to control the valve opening /closing in response to an input signal of 4-20 mA.

## 6.3 Reasonably foreseeable misuse

A short list of reasonably foreseeable misuse:

- installation in ambient with not planned conditions: i.e. climatic conditions different from the specified conditions.
- insert incorrect fluid into the system;
- supply pressure out of required range.

## 6.4 Operating limits

| Warning | |
|---|---|
|  | **It is severely forbidden to use the FTC out of the operating limits reported on its label or in the documents accompanying the FTC.** |

See Section 3 for general operating conditions and Section 4 for FTC label.

## 6.5 Residual Risks

| Warning | |
|---|---|
|  | **The FTC has parts under pressure and it is electrically connected. Use the due caution. Use individual protections provided for by the laws and provisions in force.** |

- Risk due to movements of loads during mounting phase.
- Crushing during assemblage servicing.
- Extreme metal temperature at high or very low values as consequence of ambient temperature as to be considered as a risk of person injury in case of contact.
- Emissions of hazardous substances where natural gas is used as motive energy.

# 7 INSTRUCTION FOR THE OPERATORS

| | |
|---|---|
| **Warning**  | **The following instructions must be respected:**<br>- **operations must be carried out only by skilled operators who have the required qualification and have read and understood this instruction manual. These operators shall be sufficiently trained and experienced and they shall know the relevant standards and regulations to be able to judge their assigned tasks and recognize potential hazards. Only qualified operators who have the required certificates are authorized to work on explosion-protected devices.**<br>- **always wear protective clothing, gloves, and eyewear to prevent personal injury. Check with your process or safety engineer for any additional measures that must be taken to protect against process media.** |

| | |
|---|---|
| **Important**  | **Any repair works other than the operations outlines in this Instruction Manual is allowed only if STI S.r.l. authorises it.** |

During the start-up of the FTC smart positioner:

- check that the pressure and quality of the supply fluid (filtering degree, dehydration, etcetera) are as prescribed;
- check if the operating condition are as prescribed;
- check if the FTC is correctly mounted;
- check that there is no leak of the pneumatic connections. If necessary, tighten the nuts of the pipe fittings;
- remove all rust on the FTC surfaces;
- perform a complete functional test of the entire system where the FTC is mounted.

# 8 MAINTENANCE

## 8.1 Periodic Inspections

| Warning | |
|---|---|
|  | **Take care that a build-up of dust or dirt on the FTC can inhibit cooling and contribute to increase surface temperature. The user should plan and provide for a periodic cleaning / maintenance program that will maintain the external surface of the FTC free from excessive layer of dust. Operation and maintenance shall be carried out by skilled staff.** |

## 8.2 Special maintenance

Under normal condition the FTC doesn't need special maintenance. In case of special maintenance send back the device to STI S.r.l. for any repairing and functional test.

## 8.3 Repairs

Repairs must not be carried out. When needed send back the device to STI S.r.l for any repairing and functional test.

## 8.4 Reassembling

Disassembling must not be carried out. When needed send back the device to STI S.r.l for any repairing and functional test.

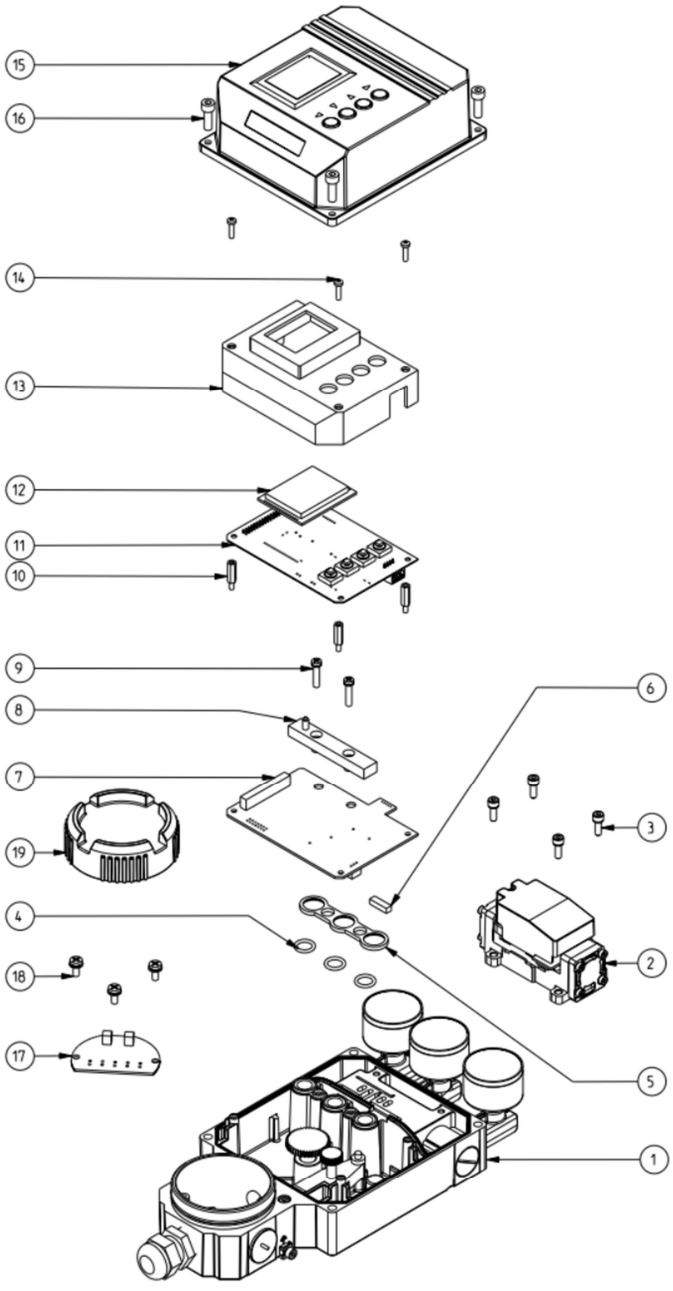
## 8.5 Mechanism Lubrication

| Important | |
|---|---|
|  | **FTC does not need lubrication during Its life.** |

# 9 PARTS LIST GENERAL ASSEMBLY

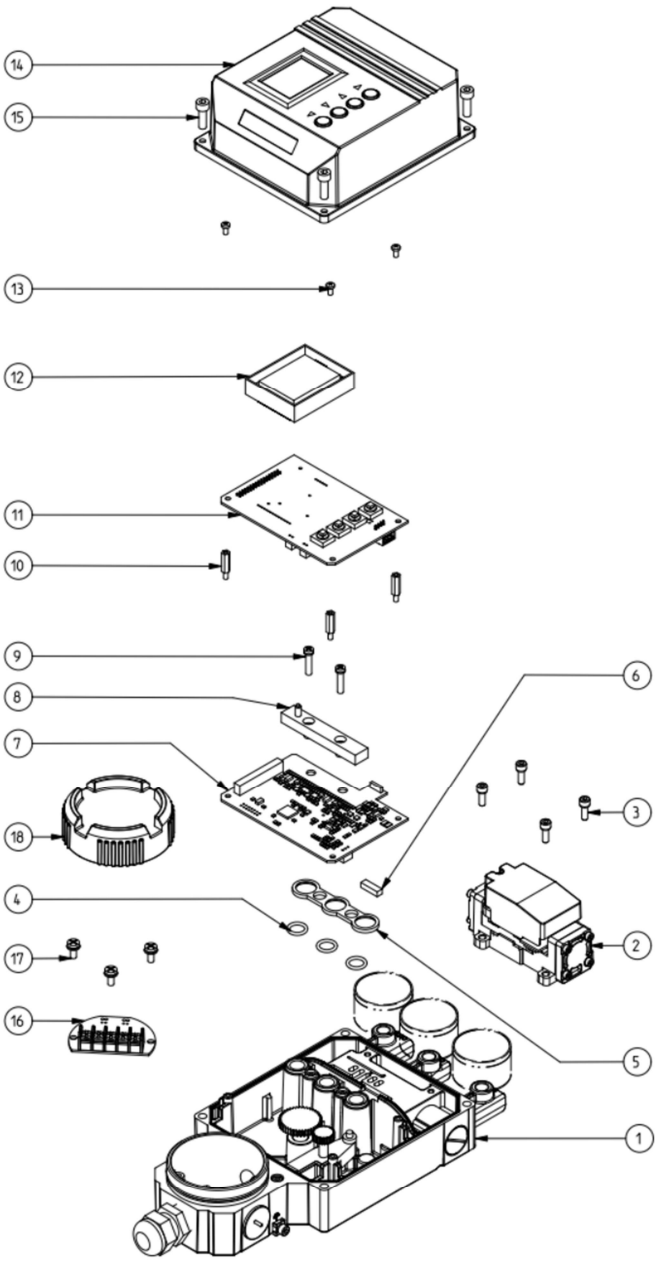
## 9.1 FTC assembly – FTC-S

| N° | Qty | Description |
|---|---|---|
| 1 | 1 | Body assembly |
| 2 | 1 | Pneumatic assembly |
| 3 | 4 | Screw M4x12 & washer |
| 4 | 3 | Electric board O-ring |
| 5 | 1 | Electric support 1 |
| 6 | 1 | Electric gasket |
| 7 | 1 | Electronic board - up |
| 8 | 1 | Electric support 2 |
| 9 | 2 | Screw M4x18 & washer |
| 10 | 3 | Spacer |
| 11 | 1 | Electronic board - power |
| 12 | 1 | Electronic bard - display |
| 13 | 1 | Electric board cover |
| 14 | 3 | Screw M3x12 |
| 15 | 1 | Cover1 assembly |
| 16 | 4 | Screw M5x16 |
| 17 | 1 | Electronic board - tb |
| 18 | 3 | Screw M4x10 & washer |
| 19 | 1 | Cover2 |



## 9.2 FTC assembly – FTC-I

| N° | Qty | Description |
|---|---|---|
| 1 | 1 | Body assembly |
| 2 | 1 | Pneumatic assembly |
| 3 | 4 | Screw M4x12 & washer |
| 4 | 3 | Electric board O-ring |
| 5 | 1 | Electric support 1 |
| 6 | 1 | Electric gasket |
| 7 | 1 | Electronic board - up |
| 8 | 1 | Electric support 2 |
| 9 | 2 | Screw M4x18 & washer |
| 10 | 3 | Spacer |
| 11 | 1 | Electronic board - power |
| 12 | 1 | Electronic bard – display + cover |
| 13 | 3 | Screw M3x6 |
| 14 | 1 | Cover1 assembly |
| 15 | 4 | Screw M5x16 |
| 16 | 1 | Electronic board - tb |
| 17 | 3 | Screw M4x10 & washer |
| 18 | 1 | Cover2 |



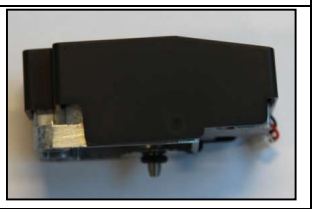
# 10 TROUBLESHOOTING

| EVENT | POSSIBLE CAUSE | REMEDY |
|---|---|---|
| FTC doesn't move the actuator | Lack of pneumatic supply | Check supply line |
| | Low supply pressure | Adjust supply pressure |
| | Internal component damaged | Call STI S.r.l. |
| Actuator opening/closing time not satisfy | Incorrect positioner calibration | Repeat the self-tuning / Call STI S.r.l. |
| | Actuator pneumatic circuit not suitable | Call STI S.r.l. |
| | Wrong actuator sizing | Call STI S.r.l. |
| Leakages from pneumatic circuit | The nuts of pipe fittings are not tightened enough | Tighten the nuts |

| Important | |
|---|---|
|  | **If another event happens or another possible cause of the above events has been detected, call STI S.r.l.** |

# 11 SPARE PARTS

Following standard spare parts and optional parts (see Model Selection) for FTC positioner.

| SPARE PARTS | | | | |
|---|---|---|---|---|
| N° | CODE | QNT (for #1 FTC) | DESCRIPTION | PICTURE |
| 1 | 162503 | 1 | Filter group:<br>5µm cartridge, plug and O-rings |  |
| 2 | 162504 | 1 | I/P group:<br>I/P converter, O-ring, screws and washers |  |
| 3 | 46061 | 3 | Pressure gauge AISI 304<br>-25/+50°C | - |

| OPTIONAL PARTS (see model selection for more details) | | | | |
|---|---|---|---|---|
| N° | CODE | QNT (for #1 FTC) | DESCRIPTION | PICTURE |
| 1 | 70489 | 3 | +3M | - |
| 2 | 46144 | 2 | +M20 | - |
| 3 | 165923 | 1 | +Pack1 | - |
| 4 | 164245 | 1 | +TTL | - |
| 5 | 168764 | 1 | +SSP | - |

| Important | |
|---|---|
|  | **I/P group replacement must be carried out only by skilled operators who have the required qualification and have read and understood this instruction manual. These operators shall be sufficiently trained and experienced. STI operators are recommended.** |

# 12 DECOMMISSIONING

| Subject | Hazardous | Recyclable | Disposal |
|---|---|---|---|
| Metals | No | Yes | Use licensed recyclers |
| Plastics | No | Yes | Use specialist recyclers |
| Rubber (seals and O-rings) | Yes | No | May require special treatment before disposal, use specialist waste disposal companies |

| | |
|---|---|
| **Warning**  | **Before starting the disassembly operations, it is mandatory to disconnect the pneumatic power and to exhaust the FTC. Cylinder chambers, pipe fittings and accessories must not be under pressure. The staff must be qualified for the required operation.** |

| | |
|---|---|
| **Warning**  | **The demolition of FTC parts should be made from specialized personnel.** |

| | |
|---|---|
| **Important**  | **In all cases check local authority regulation before disposal.** |

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