

# T-xxx Transducer Assembly Upgrade Kit Instructions

For Rosemount™ Gas Ultrasonic Meters

## Safety and approval information

This Rosemount product complies with all applicable European directives when properly installed in accordance with the instructions in this manual. Refer to the EU Declaration of Conformity for directives that apply to this product. The EU Declaration of Conformity, with all applicable European directives, and the complete ATEX installation drawings and instructions are available on the Internet at [Emerson.com](http://Emerson.com) or through your local Emerson support center.

Information affixed to equipment that complies with the Pressure Equipment Directive can be found on the Internet at [Emerson.com](http://Emerson.com).

For hazardous installations in Europe, refer to standard EN 60079-14 if national standards do not apply.

## Other information

Full product specifications can be found in the product data sheet. Troubleshooting information can be found in the user manual.

Product data sheets and manuals are available on the Emerson website at [Emerson.com](http://Emerson.com).

## Return policy

Follow Emerson procedures when returning equipment.

These procedures ensure legal compliance with government transportation agencies and help provide a safe working environment for Emerson employees. Emerson will not accept your returned equipment if you fail to follow Emerson procedures. Return procedures and forms are available on our website at [Emerson.com](http://Emerson.com), or by phoning the Emerson Customer Service department.

## Emerson Flow customer service

Email:

- Worldwide: [flow.support@emerson.com](mailto:flow.support@emerson.com)
- Asia-Pacific: [APflow.support@emerson.com](mailto:APflow.support@emerson.com)

Telephone:

| North and South America |                     | Europe and Middle East |                     | Asia Pacific |                  |
|-------------------------|---------------------|------------------------|---------------------|--------------|------------------|
| United States           | 800 522 6277        | U.K.                   | 0870 240 1978       | Australia    | 800 158 727      |
| Canada                  | +1 303 527 5200     | The Netherlands        | +31 (0) 704 136 666 | New Zealand  | 099 128 804      |
| Mexico                  | +41 (0) 41 7686 111 | France                 | 0800 917 901        | India        | 800 440 1468     |
| Argentina               | +54 11 4837 7000    | Germany                | 0800 182 5347       | Pakistan     | 888 550 2682     |
| Brazil                  | +55 15 3413 8000    | Italy                  | 8008 77334          | China        | +86 21 2892 9000 |
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|                         |                     | Russia/CIS             | +7 495 981 9811     | South Korea  | +82 2 3438 4600  |
|                         |                     | Egypt                  | 0800 000 0015       | Singapore    | +65 6 777 8211   |
|                         |                     | Oman                   | 800 70101           | Thailand     | 001 800 441 6426 |
|                         |                     | Qatar                  | 431 0044            | Malaysia     | 800 814 008      |
|                         |                     | Kuwait                 | 663 299 01          |              |                  |
|                         |                     | South Africa           | 800 991 390         |              |                  |
|                         |                     | Saudi Arabia           | 800 844 9564        |              |                  |
|                         |                     | UAE                    | 800 0444 0684       |              |                  |

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# Part I Plan



# 1 Introduction

## 1.1 General information of this document

Welcome to the Rosemount 3410 and Mark III Series Ultrasonic meter upgrade manual for T-xxx transducers.

This manual has been designed to provide you with a step-by-step set of instructions for upgrading a Rosemount Gas Ultrasonic meter with T-xxx series transducers.

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### NOTICE

Please read [Before you begin](#) to ensure you have all the components necessary to perform the upgrade before taking the meter out of service.

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## 1.2 Before you begin

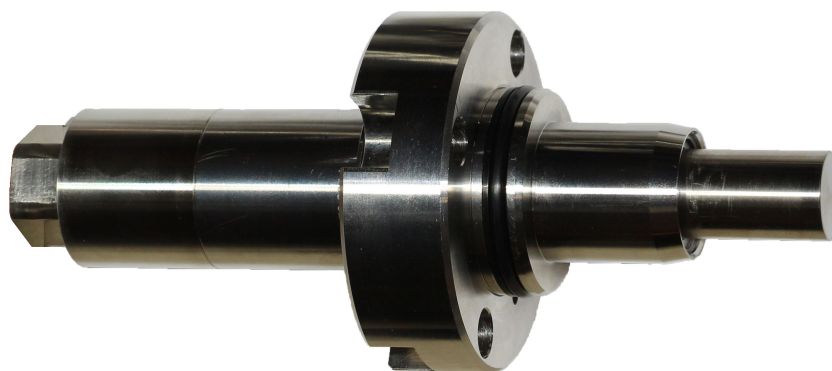
This section shows all the parts and tools required to perform the upgrade. Ensure that all these items are available before taking the meter out of service.

### 1.2.1 Required parts

Ensure that you have received the T-xxx Series upgrade kit.

The kit will include:

1. Assembled T-xxx transducer assemblies.



2. Hard copy of a *Zero Flow Calibration* report including the lengths and serial numbers of all the components of the T-xxx transducer assemblies.
3. USB flash drive containing:
  - a. Electronic copy of the Microsoft® Excel *Zero Flow Calibration* report, which can be imported into the Transducer Swap-Out wizard in MeterLink™ and written into the meter's configuration to eliminate manual entry of these values.
  - b. Latest production firmware for Mark III electronics and 3410 electronics.
  - c. MeterLink personal computer (PC) software installation file that supports T-xxx transducers.

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**Note**

The T-xxx upgrade kits only work with ANSI 1500 and lower pressure class meters designed for M, P, J, K, Y, or Z mounts. This nomenclature is marked on the side of the mount itself (for example, J00, J25, J50, J75). If the mounts are marked with another letter (for example, Q or U), then the upgrade kit will not work for the meter. Contact Emerson Customer Support for other options.

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## 1.2.2 Required tools and supplies

1. Torque wrench adjustable to 35 ft.-lbs. for meters with 3/8" diameter mount bolts (i.e., meters with M, J, K, Y, Z mounts). 55 ft.-lbs. for meters with 5/8" diameter mount bolts (i.e., meters with P mounts)
2. 5/16" hex bit socket for torque wrench for meters with 3/8" diameter mount bolts (i.e., meters with M, J, K, Y, Z mounts). 1/2" hex bit socket for meters with 5/8" diameter mount bolts (i.e., meters with P mounts).
3. Ethernet or serial cable for connecting a laptop with MeterLink to the meter
4. Molykote 111 or similar O-ring lubricant

## 1.2.3 Before removing the meter from service

**Procedure**

1. Install the latest version of MeterLink on your computer.

The latest version at the time the upgrade kit was assembled is on the included USB flash drive.

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**Note**

The MeterLink installation program is available for download from the Emerson website: [emerson.com/en-us/catalog/meterlink](http://emerson.com/en-us/catalog/meterlink).

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**Note**

MeterLink versions starting with 1.60 support T-XXX transducers.

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2. Make sure you can connect MeterLink to the meter.
3. Check the firmware version in the meter using the *Meter Information* dialog under the **Meter** drop-down list. The minimum firmware versions supported are noted below. Emerson recommends if the USB flash drive contains a more recent firmware version, upgrade the meter to the latest version before proceeding.
  - a) For Mark III electronics, version 1.82 or later firmware supports T-xxx transducers.
  - b) For 3410 electronics, version 1.42 or later firmware supports T-xxx transducers.
4. Using **Edit/Compare Configuration** from the **Tools** drop-down list, read and save the configuration to file.
5. Using **Maintenance Log**, take a two-minute maintenance log to have a record how the meter was performing prior to the upgrade.
6. Open the Transducer Swap-Out wizard from the **Tools** drop-down list.
  - If you receive the message: `This meter supports the Transducer Swap-Out using zero flow calibration, but it has not previously been entered`, you need to make sure you have the meter housing lengths for each chord of the meter body.



The meter housing lengths for the body are stamped on a metal tag (values are labeled *BODY FACE TO FACE*) attached to the meter body and can also be obtained from an original *Zero Flow* report that was generated when the meter was first assembled.

**Figure 1-1: Metrology tag**

The diagram shows a rectangular metal tag with rounded corners and four small circles at the corners. The tag contains the following information:

- Top left: SERIAL NUMBER [ ]
- Top right: BE-20061 H
- Center: BODY FACE TO FACE X
- Below the center: CHORD A [ ] [ ]
- Below CHORD A: CHORD B [ ] [ ]
- Below CHORD B: CHORD C [ ] [ ]
- Bottom left: CHORD D [ ] [ ]

If you cannot get the values from the tag and you do not have the original *Zero Flow* report or *CMM* report, contact Customer Service, and they can provide this information for you.

**Important**

Make sure to have the meter body serial number available before contacting support.

- If you did not receive the message above when opening the Transducer Swap-Out wizard, make sure the meter housing chord lengths are not zero in the dialog, or you will need to locate the meter housing chord lengths.
7. Once you have this information, you can proceed with the upgrade.



# Part II

# Upgrade



## 2 Removing the T-xx transducers

### 2.1 Remove the meter from service

#### Procedure

1. Follow all company procedures and safe practices to remove the meter from service. The meter must be fully vented to the atmosphere prior to proceeding with the next section.
2. While the transducer cabling is all intrinsically safe, it is still recommended to remove power from the meter before beginning the upgrade as an additional level of safety.

 **WARNING**

Fluid contents may be under pressure.  
When the meter is under pressure, DO NOT attempt to remove or adjust the transducer holder.

Attempting to do so may release pressurized gas or fluid, resulting in serious injury or equipment damage.

 **CAUTION**

Escaping gases or fluids hazard  
The purchaser of the meter is responsible for the selection of Rosemount components/seals and materials compatible with the chemical properties of gas flow measurement.

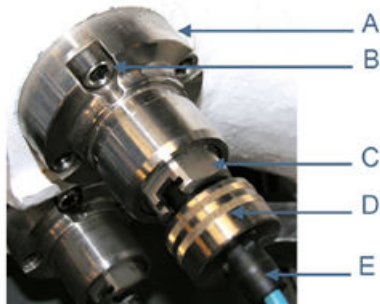
Failure to select the suitable meter component/seals may cause escaping gases or liquids, resulting in injury or equipment damage.

## 2.2 Remove the T-xx transducers

### Procedure

1. Remove the transducer cables from the back of the transducers.
  - For meters with standard chordsets, unthread the cable nut by hand and remove the transducer chordset.

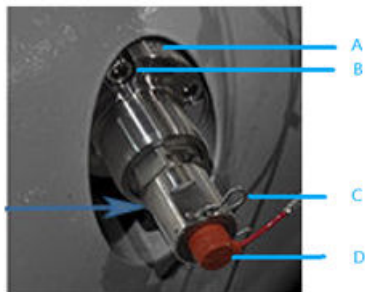
**Figure 2-1: Transducer assembly with standard chordset**



- A. *Transducer mount*
- B. *Mount bolt*
- C. *T-slot transducer holder*
- D. *Cable nut*
- E. *Chordset*

- For meters with red mini chordsets, remove the transducer chordset by removing the two hitch pins securing it to the back of the transducer. Once the hitch pins are removed, pull the chordset away from the transducer.

**Figure 2-2: Transducer assembly with red mini chordset**



- A. *Transducer mount*
- B. *Mount bolt*
- C. *Hitch pin*
- D. *Chordset*

2. Use the appropriate Allen wrench to remove the four to six mount bolts holding each mount in place. Keep the bolts clean and together because they are used to attach the new T-xxx transducers to the meter body.
3. Pull all the transducer assemblies off the meter body and set them aside.

4. Use a cloth to wipe out the transducer ports, especially the surface to which the transducer mount O-ring mated. Visually check the ports to make sure they are free of debris as well. Clean as needed.





## 3 Installing the T-xxx transducers and checkout

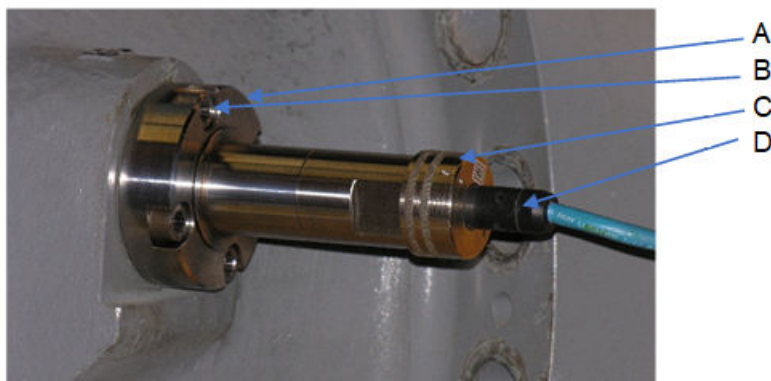
### 3.1 Install the T-xxx transducers

#### Procedure

1. Take the T-xxx transducer assemblies and apply a thin layer of Molykote 111 or other similar O-ring lubricant. One at a time, install the transducer assemblies in the correct transducer port.

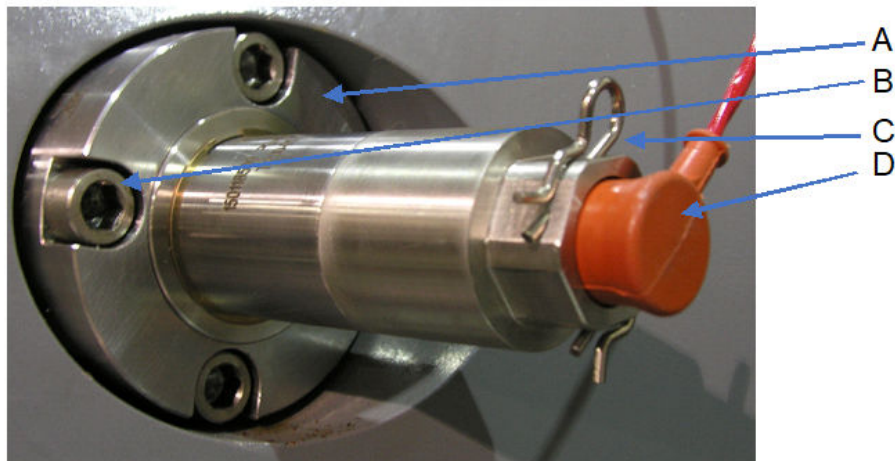
The *Zero Flow* report provided with the kit will show the port location (for example, A1, B2, ...) for each transducer assembly. The serial number on the side of the stalk can be compared to the serial number listed on the *Zero Flow* report to know which assembly you are installing and into which port location.

**Figure 3-1: Installed transducer assembly with standard chordset**



- A. Transducer assembly
- B. Mount bolt
- C. Cable nut
- D. Chordset

Figure 3-2: Installed transducer assembly with red mini chordset



- A. Transducer assembly
- B. Mount bolt
- C. Hitch pin
- D. Chordset

2. Use the mount bolts to attach the T-xxx transducer assemblies to the meter body. Tighten 3/8" diameter mount bolts to 35 ft.-lbs. and 5/8" diameter mount bolts to 55 ft.-lbs. in a crisscross pattern so they are tightened evenly.
3. Attach the transducer cables to the back of each transducer with the reverse steps taken to remove them from the old transducer assemblies.

## 3.2 Configure the meter

### Procedure

1. If power was removed from the meter, ensure the environment is safe and reapply power to the meter.
2. Connect to the meter using MeterLink.
3. Open the Transducer Swap-Out wizard from the **Tools** drop-down list.

### Note

If you receive a message that This meter supports the Transducer Swap-Out using zero flow calibration..., click **Yes** to use this newer version of the wizard.

4. While in the Transducer Swap-Out wizard, change the Transducer type selection to the appropriate transducer type (for example, T-200). This will clear out the fields for the components being exchanged.
5. Click **Open** and select the Microsoft Excel *Zero Flow* report on the provided USB flash drive to import all the new component lengths and serial numbers for the new T-xxx transducer assemblies. Alternatively, you can manually enter all the values from the hard copy of the *Zero Flow* report.

6. If the Meter Housing fields are zero, you need to enter these values from the metrology tag attached to the meter body, or from an original zero flow report for the meter.
7. Click **Write** to write these new parameters to the meter electronics.
8. Click **Export** to create and save a new Excel report with all the new parameters and existing parameters from the meter.
9. Close the Transducer Swap-Out wizard.

## 3.3 Return the meter to service and checkout

### Procedure

1. Follow all company procedures and safe practices to reapply pressure to the meter. This should include at a minimum a soapy water leak test between the meter body and the T-xxx transducer assemblies to ensure the new O-rings are sealing properly and not damaged during installation.
2. Use the **Meter Monitor** dialog to ensure all chords are acquired and meter performance is good. If there are any yellow or red lights, click **Check Status** to view the errors and troubleshoot any problems.

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### Note

Chordal SOS spread may still be high until the meter is under flowing conditions and thermal equilibrium has been achieved.

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3. If flow is not applied, apply flow to the meter if possible and verify meter performance remains good.
4. Using **Maintenance Logs**, take a two-minute maintenance log to have a record of how the meter was performing after the upgrade.

For more information: [Emerson.com/global](https://emerson.com/global)

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