Rosemount 5300 and 5400 Series Terminal Compartment Spare Part Instruction

INTRODUCTION

This instruction is a supplement to the Rosemount 5300 Series Reference Manual (Document No. 00809-0100-4530) and the Rosemount 5400 Series Reference Manual (Document No. 00809-0100-4026). It describes how to exchange the Terminal Block, the EMC Board, and the Barrier Board on a Rosemount 5300 and 5400 Series transmitter.

NOTE
This instruction is valid for Transmitter Heads with a manufacturing date of September 2006, and later. For Part Number references, see “Part Number References” on page S-19.
This instruction is not valid for Product Certification model code E4, or Option model code QS.

NOTE
The exchange of Terminal Block, EMC Board, or Barrier Board must be documented! This includes stating the serial number of the instrument, date of exchange, type of exchange, and service technician.

Tools

The following tools are needed:

- A 50 mm wrench (Rosemount 5300 Series) or a 60 mm wrench (Rosemount 5400 Series) is used to unscrew the nut when removing the transmitter head
- A screw driver is used to disconnect the cables
- Plastic bag or cloth for antenna and tank seal protection
- Wrench for removing cable glands

SAFETY MESSAGES

Procedures and instructions in this section may require special precautions to ensure the safety of the personnel performing the operations. Information that raises potential safety issues is indicated by a warning symbol (⚠). Please refer to the following safety messages before performing an operation preceded by this symbol.

⚠WARNING

Failure to follow safe installation and service guidelines could result in death or serious injury

- Make sure the transmitter is installed by qualified personnel and in accordance with applicable code of practice. The transmitter may only be maintained and repaired by qualified personnel. The applicable standards and legal requirements as well as any product certificates have to be observed. Only original spare parts may be used.
- Use the equipment only as specified in the Rosemount 5300 Series Reference Manual (Document No. 00809-0100-4530), the Rosemount 5400 Series Reference Manual (Document No. 00809-0100-4026), and in this Manual Supplement. Failure to do so may impair the protection provided by the equipment.
- Do not perform any services other than those contained in this manual unless you are qualified.

Explosions could result in death or serious injury

- Verify that the operating environment of the transmitter is consistent with the appropriate hazardous locations specifications.
- To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.
- Before connecting a HART® or FOUNDATION™ fieldbus based communicator in an explosive atmosphere, make sure the instruments in the loop are installed in accordance with intrinsically safe or non-incendive field wiring practices.
- To avoid process leaks, only use o-rings designed to seal with the corresponding flange adapter.

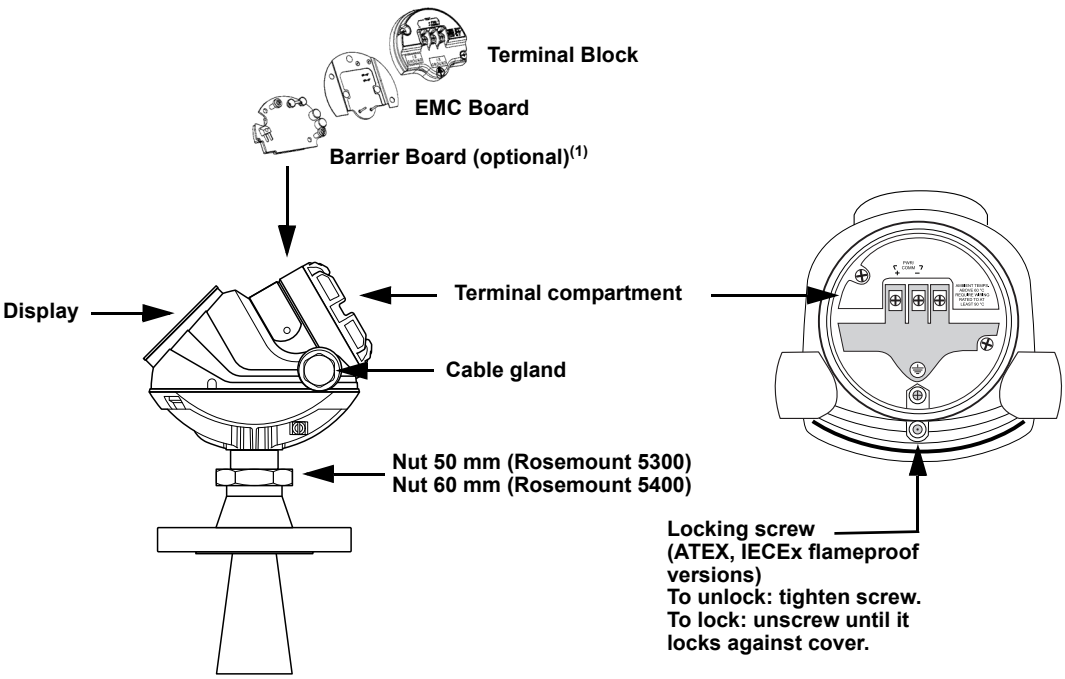
Electrical shock can result in death or serious injury

- Avoid contact with the leads and terminals. High voltage that may be present on leads can cause electrical shock.
- Make sure the main power to the Rosemount 5300 Series transmitter or Rosemount 5400 Series transmitter is off and the lines to any other external power source are disconnected or not powered while wiring the transmitter.

Probes with non-conducting surfaces

- Probes covered with plastic and/or with plastic discs may generate an ignition-capable level of electrostatic charge under certain extreme conditions. Therefore, when the probe is used in a potentially explosive atmosphere, appropriate measures must be taken to prevent electrostatic discharge.

OVERVIEW



Exchange Procedure Summary

NOTE
Before starting the exchange procedure read and follow the Safety Messages on page S-2.

Use the following procedure to exchange a Terminal Block, and/or an EMC Board, or Barrier Board:

1. Do not remove the instrument cover in explosive environments if the circuit is live. Disconnect/shut off the electrical power to transmitter head and then open the instrument cover. Disconnect the wiring, pull the cables out through the glands, and bring the transmitter head to a suitable location for maintenance work. See *"Removing the Transmitter Head" on page S-4*.
2. Exchange the Terminal Block, see *"Exchanging the Terminal Block" on page S-6*.
3. Exchange the EMC Board, see *"Exchanging the EMC Board - Transmitter Without a Barrier Board" on page S-9*.
   If the transmitter is equipped with a Barrier Board(1), see *"Exchanging the EMC Board - Transmitter With a Barrier Board" on page S-12*.
   To exchange the Barrier Board, see *"Exchanging the Barrier Board" on page S-15.*
4. Place the transmitter head on the tank seal and make sure that the nut is properly tightened.
5. Connect the wires.
6. Tighten the cover to the terminal compartment.
7. Power up the transmitter.
8. Verify proper operation.

(1) This instruction is valid for Product Certification model codes E1, E2, E3, E5, E6, E7, KA, KB, KC, and KD.

EXCHANGE PROCEDURE

This section describes the different steps to exchange the *Terminal Block* and/or the *EMC Board*, or the *Barrier Board* on a Rosemount 5300 or Rosemount 5400 Series transmitter.

1. *Removing the Transmitter Head* section describes how to disconnect wiring and remove the transmitter head from the antenna.

2. *Exchanging the Terminal Block* section describes how to remove and replace the Terminal Block.

3. *Exchanging the EMC Board - Transmitter Without a Barrier Board* describes how to remove and replace the EMC Board.

4. *Exchanging the EMC Board - Transmitter Without a Barrier Board* describes how to remove and replace the EMC Board on a transmitter with a Barrier Board.

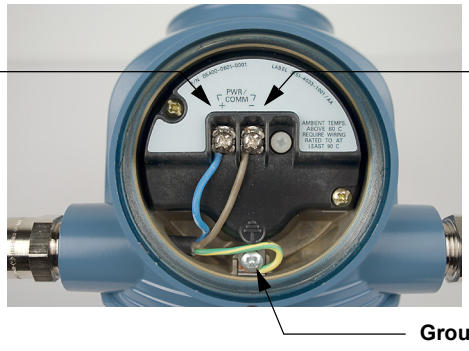
5. *Exchanging the Barrier Board* section describes how to remove and replace the Barrier Board.

Removing the Transmitter Head

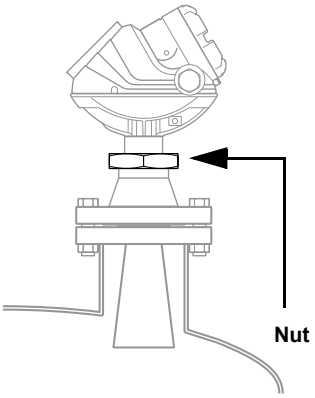
⚠

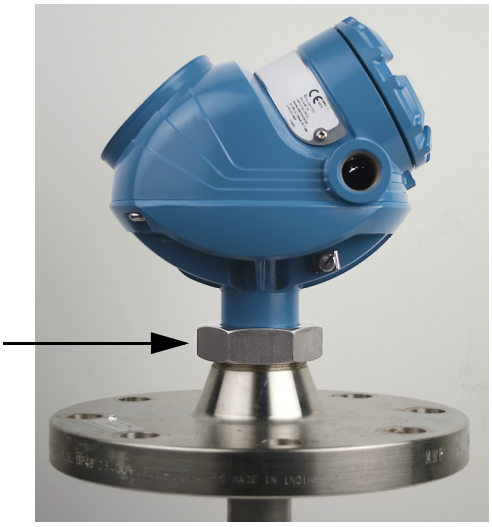
1. Disconnect the power supply. All power to the transmitter is supplied over the signal wiring.
2. For ATEX, IECEx, and NEPSI installations, unlock the locking screw (tighten screw) and remove the cover. Do not remove the cover in explosive atmospheres when the circuit is live.

3. Make a note which cables are connected to the plus (+), minus (-), and ground terminals, and disconnect the cables using a screw driver.
4. Pull the cables out through the cable gland/conduit.



5. Loosen the nut using a wrench.

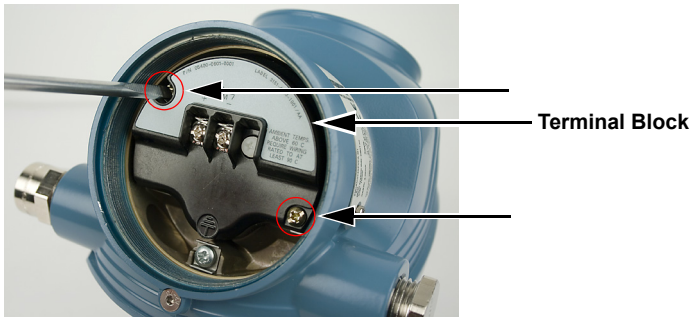




6. Lift the transmitter head away from the tank seal. Cover the tank seal with a plastic bag or cloth to protect the exposed parts from dust, rain, moisture etc. during the exchange procedure.
7. Bring the transmitter head to a suitable location for maintenance work and continue with exchanging the Terminal Block, EMC Board, or Barrier Board. Make sure to follow proper protection procedures in order to avoid damage from Electrostatic Discharges (ESD).

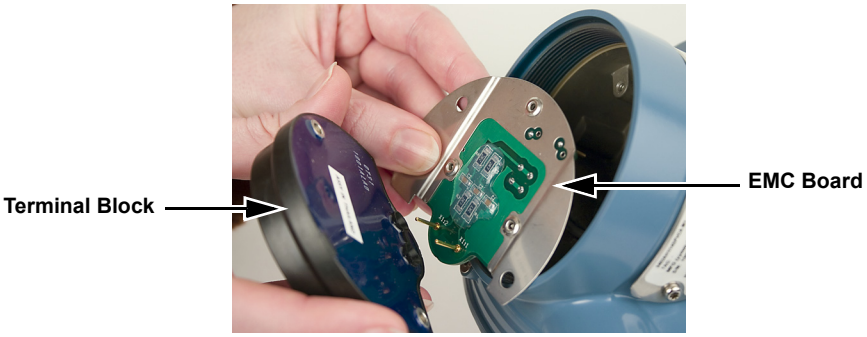
Exchanging the Terminal Block ⚠

1. Remove the two screws that hold the Terminal Block.

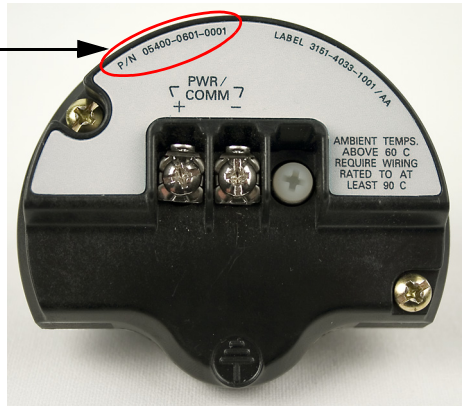


2. Pull the Terminal Block out of the compartment.

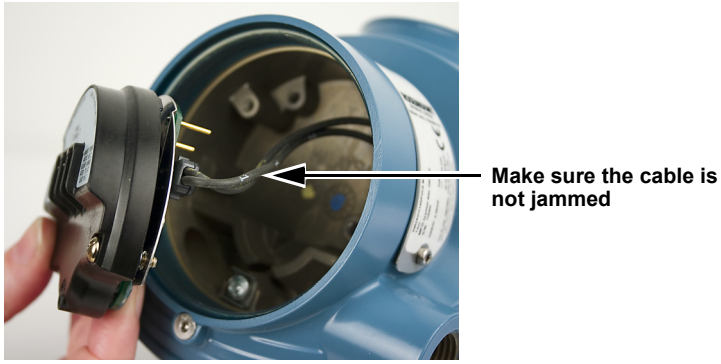
3. Separate the Terminal Block from the EMC Board. If the transmitter is equipped with the optional Barrier Board, the Terminal Block may be separated from the EMC Board when it is pulled out of the compartment.



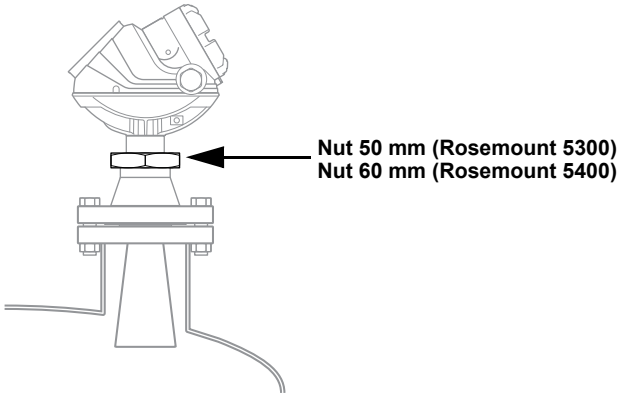
4. Verify that the Part Number of the new Terminal Block is correct, see “Part Number References” on page S-19.



5. Attach the new Terminal Block to the EMC Board.
6. Insert the Terminal Block with the EMC Board into the compartment, making sure that the cable to the EMC Board is not jammed inside the terminal compartment. Tip: rotate the Terminal Block/EMC Board 360° counterclockwise before inserting into the compartment.



7. Secure the Terminal Block/EMC Board with the two screws. Tighten by hand.
8. Remove the cover from the tank seal. Mount the transmitter head on the tank seal and make sure the nut is properly tightened.



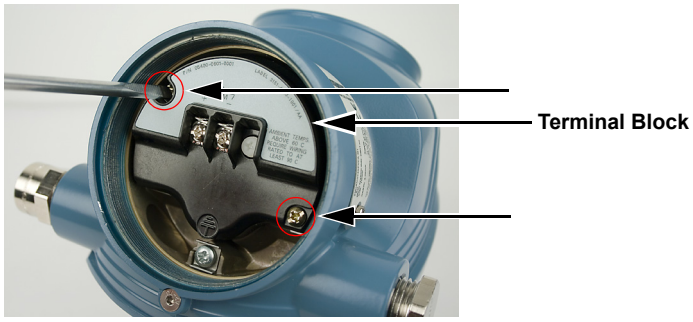
9. Connect the signal wires and grounding.
10. Tighten the cover to the terminal compartment and tighten the cable glands, making sure that the cover is secured to meet explosion-proof requirements. For ATEX, IECEx, and NEPSI installations, lock the cover with the locking screw. See “Overview” on page S-3.
11. Power up the transmitter and verify proper operation.

Exchanging the EMC Board - Transmitter Without a Barrier Board

This section describes changing the EMC Board for Rosemount 5300 and Rosemount 5400 Series transmitters without a Barrier Board. See *"Exchanging the EMC Board - Transmitter With a Barrier Board" on page S-12* if the transmitter is equipped with a Barrier Board.

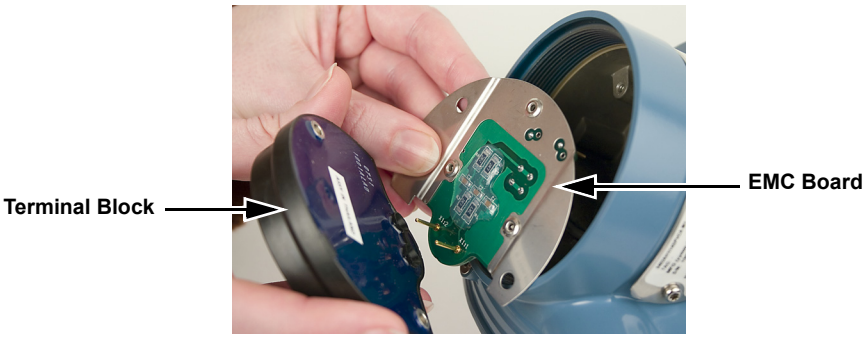
To change the EMC Board:

1. Remove the transmitter head (see *"Removing the Transmitter Head" on page S-4*).
2. Remove the two screws that hold the Terminal Block.

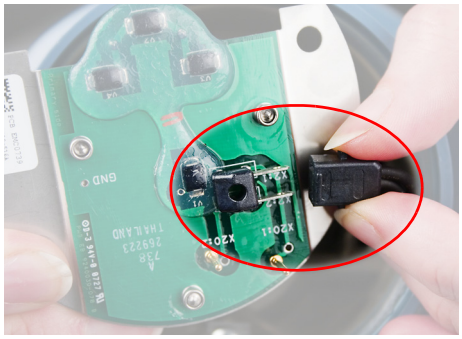


3. Pull the Terminal Block and the EMC Board out of the compartment.

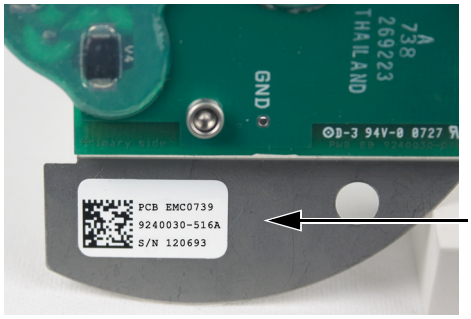
4. Separate the Terminal Block from the EMC Board.



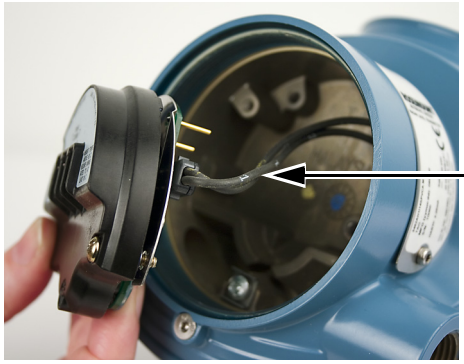
5. Disconnect the cable from the connector on the back of the EMC Board.



6. Verify that the Part Number of the EMC board is correct. See “Part Number References” on page S-19.

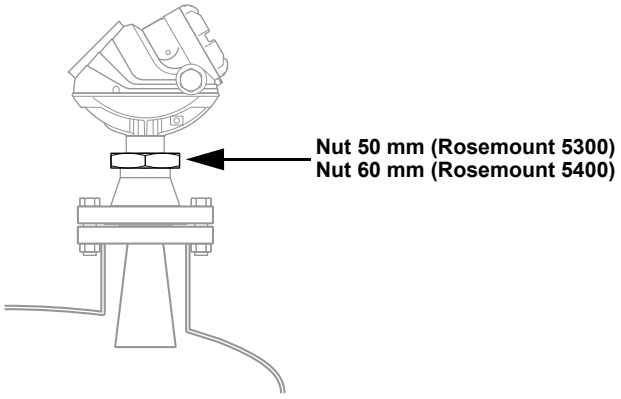


7. Connect the cable to the new EMC Board.
8. Attach the Terminal Block to the new EMC Board and insert them into the compartment, making sure that the cable to the EMC Board is not jammed inside the terminal compartment. Tip: rotate the Terminal Block 360 degrees counterclockwise before inserting into the compartment.



9. Secure the Terminal Block/EMC Board with the two screws. Tighten by hand.

10. Remove the cover from the tank seal. Mount the transmitter head on the antenna and make sure the nut is properly tightened.



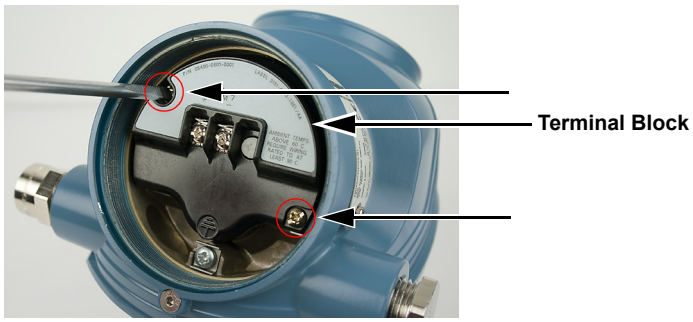
11. Open the terminal compartment and connect signal wires and grounding.
12. Tighten the cover to the terminal compartment and tighten the cable glands, making sure that the cover is secured to meet explosion-proof requirements. For ATEX, IECEx, and NEPSI installations, lock the cover with the locking screw. See “Overview” on page S-3.
13. Power up the transmitter and verify proper operation.

Exchanging the EMC Board - Transmitter With a Barrier Board

This section describes how to change the EMC Board for Rosemount 5300 and Rosemount 5400 Series transmitters with a Barrier Board(1). See section *"Exchanging the EMC Board - Transmitter Without a Barrier Board" on page S-9* if the transmitter has no Barrier Board.

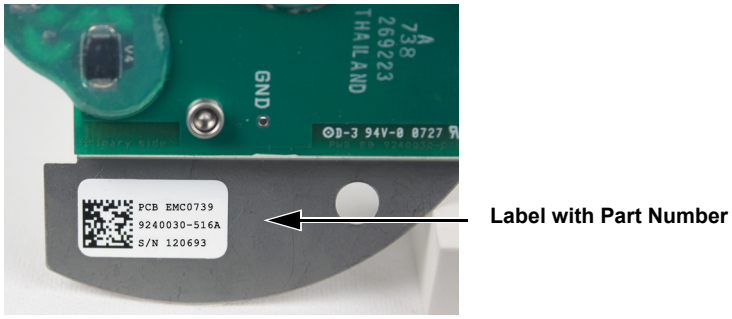
To change the EMC Board do the following:

1. Remove the transmitter head (see *"Removing the Transmitter Head" on page S-4*).
2. Remove the two screws that hold the Terminal Block.



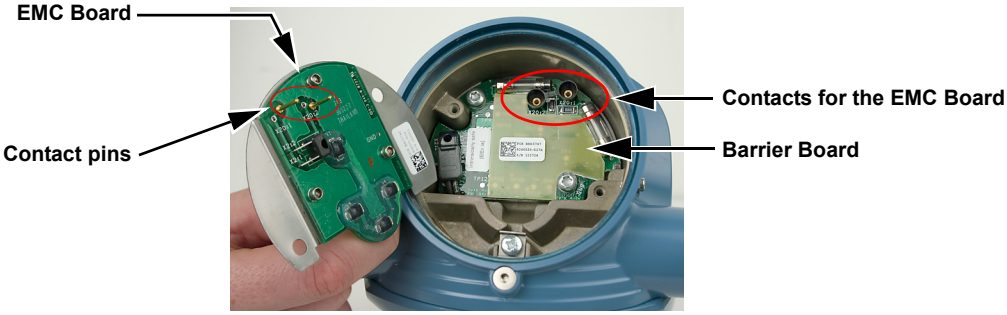
3. Pull the Terminal Block and the EMC Board out of the compartment.

4. Verify the Part Number of the new EMC Board, see "Part Number References" on page S-19.

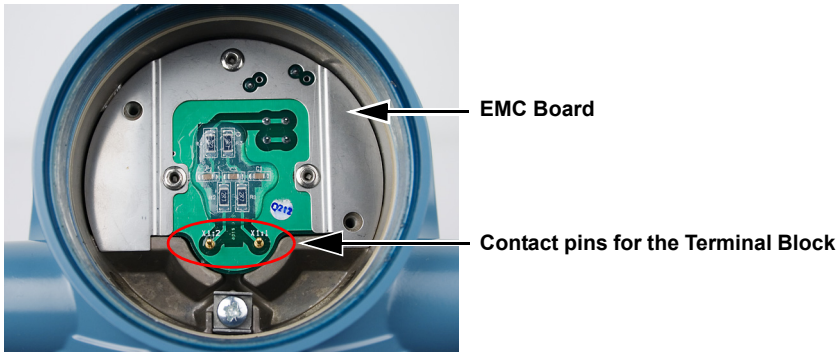


(1) *This instruction is valid for Product Certification model codes E1, E2, E3, E5, E6, E7, KA, KB, KC, and KD.*

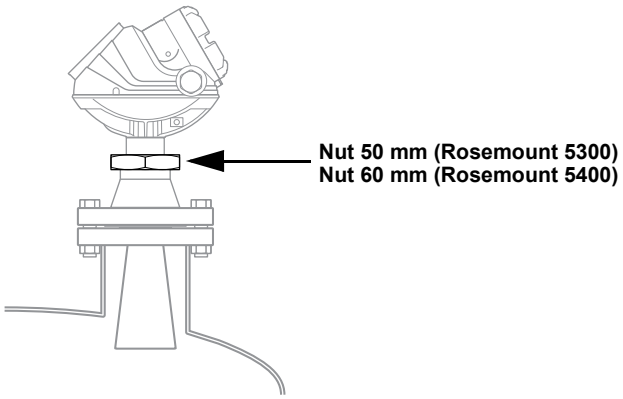
5. Insert the EMC Board gently into the compartment ensuring that the contact pins are properly attached to the Barrier Board.



6. Insert the Terminal Block into the compartment.

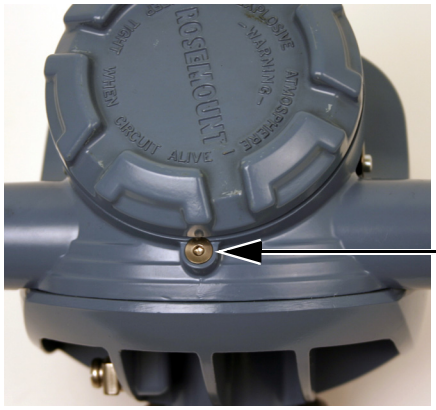


7. Make sure that the Terminal Block is properly attached to the contact pins on the EMC Board.
8. Secure the Terminal Block/EMC Board with the two screws. Tighten by hand.
9. Remove the cover from the tank seal. Mount the transmitter head on the tank seal and make sure the nut is properly tightened.



10. Connect signal wires and grounding.

11. Tighten the cover to the terminal compartment and tighten the cable glands, making sure that the cover is secured to meet explosion-proof requirements. For ATEX, IECEx, and NEPSI installations, lock the cover with the locking screw.



Locking Screw.
To lock: unscrew until it locks against cover.

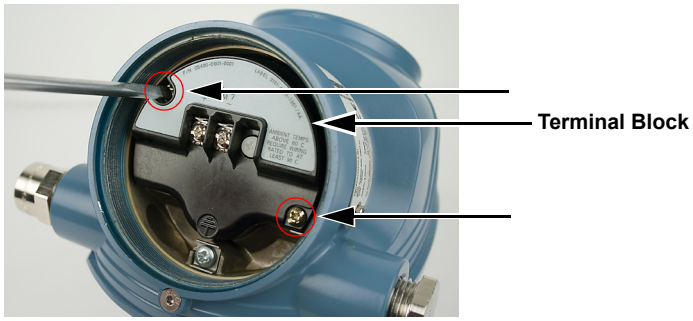
12. Power up the transmitter and verify proper operation.

Exchanging the Barrier Board

This section describes how to change the Barrier Board for Rosemount 5300 and Rosemount 5400 Series transmitters(1).

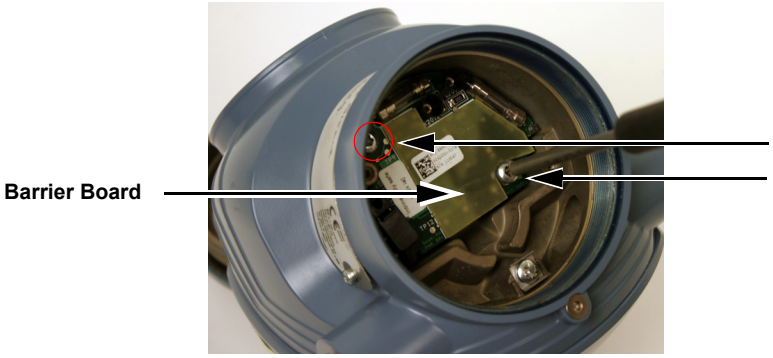
To change the Barrier Board do the following:

1. Remove the transmitter head (see *"Removing the Transmitter Head" on page S-4*).
2. Remove the two screws that hold the Terminal Block.



3. Pull the Terminal Block and the EMC Board out of the compartment.

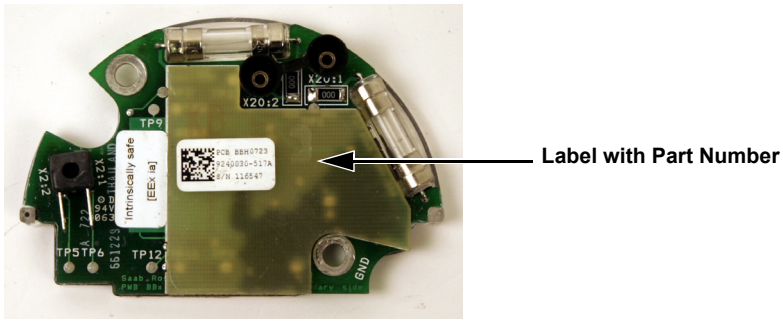
4. Remove the two screws that hold the Barrier Board.



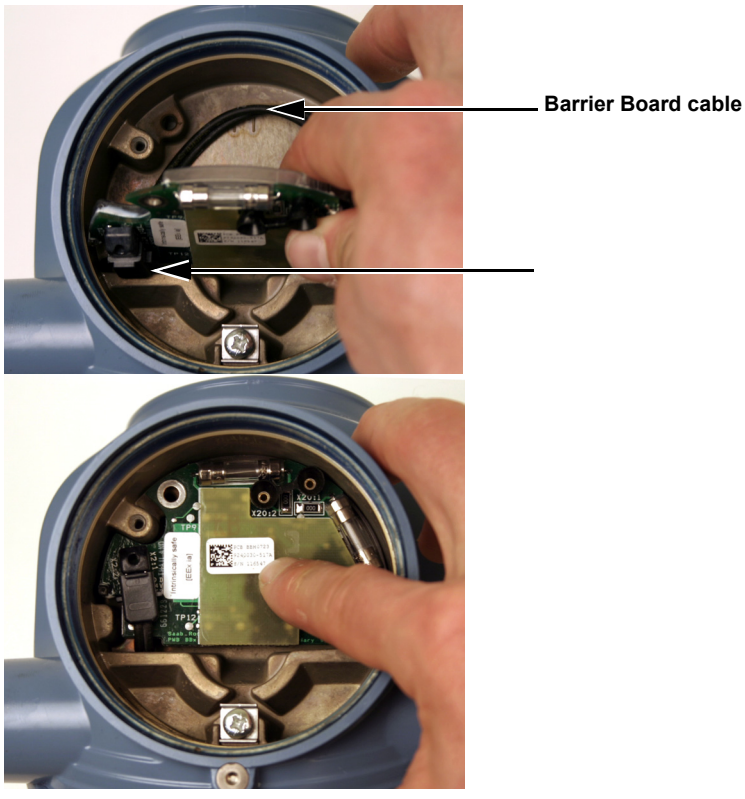
(1) *This instruction is valid for Product Certification model codes E1, E2, E3, E5, E6, E7, KA, KB, KC, and KD.*

5. Disconnect the cable from the Barrier Board.

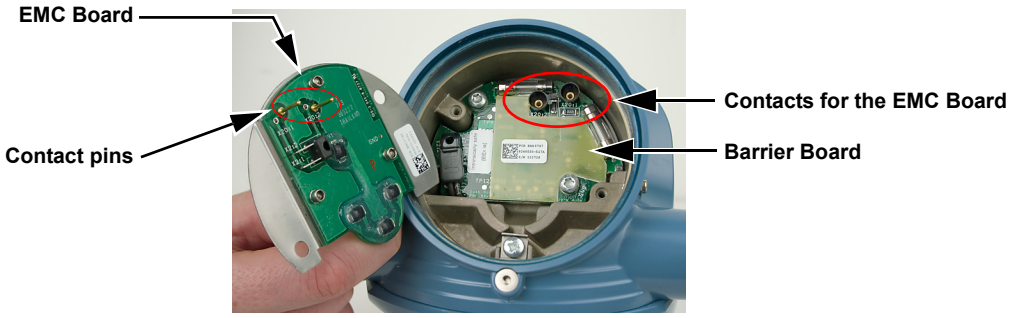
6. Verify that the Part Number of the Barrier Board is correct, see “Part Number References” on page S-19.



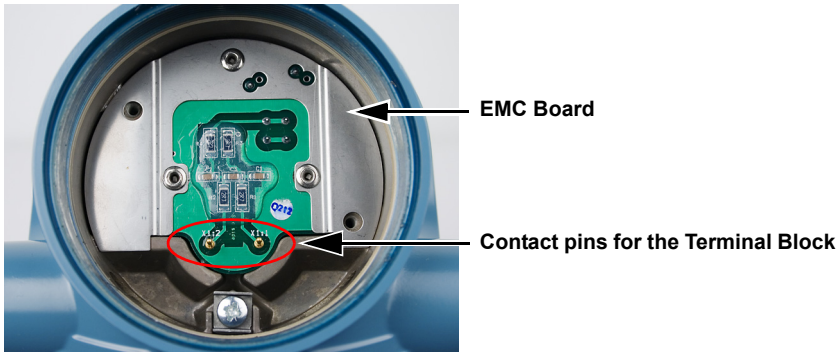
7. Connect the Barrier Board cable to the new Barrier Board. It will only fit in the correct polarity. Make sure the Barrier Board cable is correctly routed and not jammed.



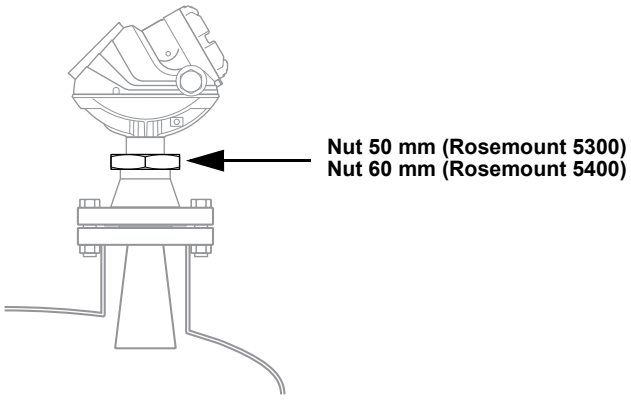
8. Tighten the screws. The two screws connect the Barrier Board to ground and are critical for the assembly to be explosionproof/flameproof. Make sure the screws are fully tightened.
9. Insert the EMC Board gently into the compartment ensuring that the contact pins are properly attached to the Barrier Board.



10. Insert the Terminal Block into the compartment.

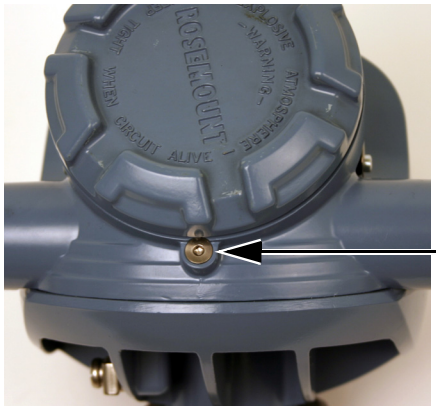


11. Make sure that the Terminal Block is properly attached to the contact pins on the EMC Board.
12. Secure the Terminal Block/EMC Board with the two screws. Tighten by hand.
13. Remove the cover from the tank seal. Mount the transmitter head on the tank seal and make sure the nut is properly tightened.



14. Connect signal wires and grounding.

15. Tighten the cover to the terminal compartment and tighten the cable glands, making sure that the cover is secured to meet explosion-proof requirements. For ATEX, IECEx, and NEPSI installations, lock the cover with the locking screw.



Locking Screw
To lock: unscrew until it locks against cover.

16. Power up the transmitter and verify proper operation.

PART NUMBER REFERENCES

For verification of the Part Number of the EMC Board, Barrier Board, or Terminal Block, use the table below.

	Previously used Part Number	New Part Number
EMC Board	9240030-516	9240030-529
EMC Board FOUNDATION Fieldbus	N/A	9240030-549
Barrier Board	9240030-517	9240030-544
Terminal Block HART Std.(1)	05400-0601-0001	05400-7004-0001
Terminal Block HART Transient	05400-0601-0002	05400-7004-0006
Terminal Block FOUNDATION Fieldbus Std.(1)	05400-0601-0003	05400-7004-0003
Terminal Block FOUNDATION Fieldbus Transient(1)	05400-0601-0004	05400-7004-0004
Terminal Block FISCO(1)	05400-0601-0005	05400-7004-0005

(1) For a transition period, both part numbers are valid and will be delivered from factory. Parts with "Previously used Part Number" and parts with "New Part Number" are identical; the only change is in label design.

Rosemount 5300 and 5400 Series

Manual Supplement
00809-0200-4026, Rev BB
March 2011

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00809-0200-4026 Rev BB, 03/11

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