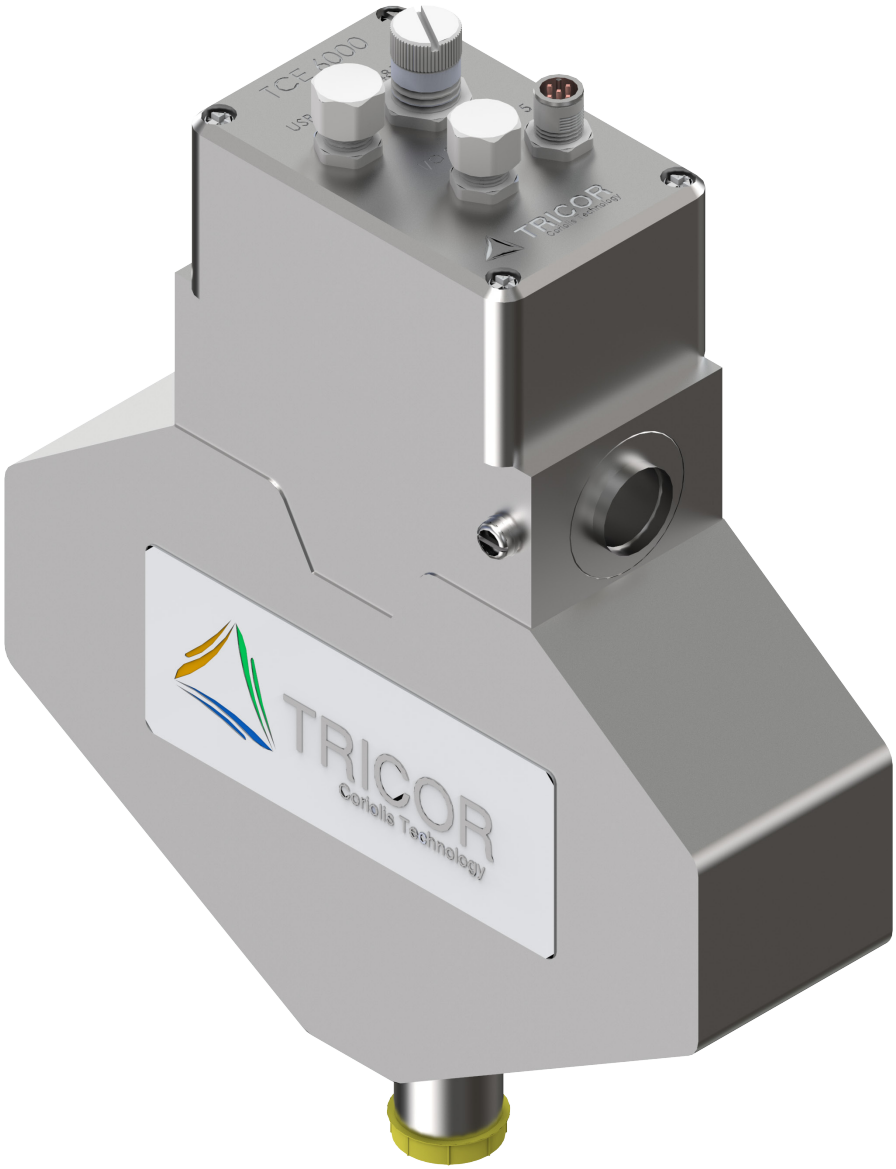
Binks®

SERVICE GUIDE EN

77-3150



Binks

IntelliFlow™ Coriolis Flow Meter

For additional information or copies of your service manual, please visit us online at:

binks.com/en/library

Or use this QR code with your mobile device:

RF2+

RM2

Obey local or municipal regulations for product recycling and disposal.

ABOUT THIS MANUAL

ITS PURPOSE

The purpose of this manual is to help you get the most value from your IntelliFlow™ Coriolis flow meter. It can help you install, operate, maintain, and repair your equipment. It provides information and procedures for routine maintenance and servicing and offers diagnostic and repair procedures to follow when trouble occurs.

ITS CONTENTS

This manual is divided into chapters, each of which is divided into consecutively numbered sections.

Pages with images will have paragraphs and sentences with callout numbers that refer to their respective images, steps, and parts. Images are numbered for clarity.

Procedures, once described in the text, are not normally repeated. When it is necessary to refer to another chapter or section, the reference will be given as chapter and section number.

Chapter 02. Table of Contents.

Chapter 03. Safety–Safety, hazard, and warning rules.

Chapter 04. Product Overview—Provides a description of the product and technical specifications.

Chapter 05. Installation—Includes kit parts and installation instructions for RF2, RF2+, and medium- and low-pressure RM2 machines.

Chapter 06. Intrinsically Safe Operation—Operation in hazardous environments.

Chapter 07. Operation, Servicing, and Maintenance—Principles of operation, equipment calibration, servicing, inspection, and maintenance recommendations.

Chapter 08. Manual Change Summary–The revisions and changes made to this manual.

Chapter 09. Warranty–Your equipment’s warranty.

WHO SHOULD USE THIS GUIDE

This guide is intended for users with different levels of knowledge and experience with this system:

Installers: The person(s) who will locate and install this equipment.

Users: The person(s) who will learn how to operate this equipment.

Servicers: The person(s) who will service and maintain this equipment.

This guide assumes all persons who will install, use, operate, and service this equipment have some knowledge of the product and its operating system.

MANUAL DISCLAIMER

All current and applicable certifications shown in this manual confirm Binks' adherence to the strict standards met to obtain the required regulatory compliances.

This manual was prepared with the most accurate information current at the time of publishing. Binks does not accept responsibility for errors in, or omissions from, the information contained herein.

Please contact your distributor or Binks Customer Service for additional service information and assistance.

CORIOLIS FLOW METER RELATED MANUALS & PUBLICATIONS	
Part Number	Description
77-3152-1	RF2 Installation Manual
77-3152-3	RF2 Service Guide
77-3152-4	RF2 Kit Instructions and Spare Parts
77-3165-1	RF2+ Installation Manual
77-3165-3	RF2+ Service Guide
77-3165-4	RF2+ Kit Instructions and Spare Parts
77-3153-1	RM2 Installation Manual
77-3153-3	RM2 Service Guide
77-3153-4	RM2 Kit Instructions and Spare Parts

02. CONTENTS

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03 SAFETY

03.1 SAFETY PRECAUTIONS

Before the operation, maintenance, or servicing of this Binks system; fully read and understand all technical and safety literature for your product. This manual contains information that is important for you to know and understand.

This information relates to USER SAFETY and the PREVENTION OF EQUIPMENT PROBLEMS.

To help you understand this information, we use recognizable ANSI Z535 and ISO warning boxes and symbols throughout this manual. Please obey these safety sections.

⚠ DANGER

DANGER!: Indicates a hazardous situation that, if not avoided, will result in death or severe injury.

⚠ WARNING

WARNING!: Indicates a hazardous situation that, if not avoided, could result in death or severe injury.

⚠ CAUTION

Caution!: Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury, or equipment damage.

NOTICE

Notice: Indicates information considered important but not hazard related.

SAFETY

Safety: Indicates a type of safety instruction, or a separate panel on a safety placard, where specific safety-related instructions or procedures are described.

Careful study and continued use of this manual will provide a better understanding of the equipment functions and procedures.

This understanding will result in improved operation, efficiency, and longer, trouble-free service with faster and easier troubleshooting. If you need the necessary safety literature for your specific system, contact your local Binks representative or Binks directly.

NOTICE

This manual lists standard specifications and service procedures. Differences can occur between this literature and your equipment.

Differences in local or municipal codes, manufacturer or plant requirements, material delivery requirements, and more can make variations unpreventable. To find these differences, compare this manual to your system installation drawings and other applicable Binks equipment manuals.

⚠ WARNING

The user MUST read and be familiar with the Safety Section in this manual and the safety literature therein identified.

Only trained personnel can operate this equipment.

All personnel who operate, clean, or maintain this equipment MUST fully read and understand this manual! To operate and service the equipment, follow all WARNINGS and safety requirements.

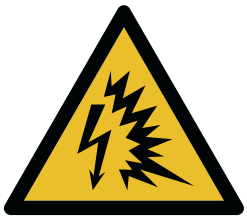
The user must be aware of and adhere to ALL local building and fire codes and ordinances, as well as NFPA 33 AND EN 16985 SAFETY STANDARDS, LATEST EDITION, or applicable country safety standards, before the installation, operation, or servicing of this equipment.

⚠ WARNING

The hazards shown on the pages that follow can occur during the normal use of this Binks equipment, but not all listed hazards will be applicable to your product model or equipment.

Repairs may only be performed by personnel authorized by Binks.

AREAS Indicate possible hazard occurrences.	HAZARDS Indicate possible hazards.	SAFEGUARDS Prevention of possible hazards.
Spray Areas  	**Fire Hazards** Improper or unsatisfactory operation and maintenance procedures will cause a fire hazard. If the safety interlocks are disabled during operation, protection against accidental arcing is shut off and can cause a fire or explosion. Frequent Power Supply or Controller shutdown identifies a problem in the system. For this occurrence, a correction will be necessary	Fire extinguishing equipment must be present in the spray area. Periodically run a test to make sure the equipment stays usable. Keep spray areas clean to prevent the build-up of combustible residues. Do not smoke in the spray area. The high voltage supplied to the atomizer must be turned off before the equipment is cleaned, flushed or maintained. Spray booth ventilation must be kept at the rates as set by NFPA-33, OSHA, country, local, and municipal codes. If flammable or combustible solvents are used to clean the equipment, ventilate the area. Prevent electrostatic arcing. Maintain spark-safe work distance between the parts that get coated and the applicator. A span of one inch for every 10KV of the output voltage is necessary. Do an equipment test only in areas free of combustible material. The test may necessitate the high voltage to be on, but only as instructed. Non-factory replacement parts or unauthorized equipment modifications can cause a fire or injury. The key switch bypass is used only during setup operation. Do no production work with disabled safety interlocks. Set up and operate the paint procedure and equipment under NFPA-33, NEC, OSHA, local, municipal, country, and European Health and Safety Norms.

AREAS Indicate possible hazard occurrences.	**HAZARDS** Indicate possible hazards.	**SAFEGUARDS** Prevention of possible hazards.
Spray Areas  	**Explosion Hazard** Improper or unsatisfactory operation and maintenance procedures will cause a fire or explosion hazard. If the safety interlocks are disabled during operation, protection against accidental arcing is shut off and can cause a fire or explosion. Frequent Power Supply or Controller shutdown identifies a problem in the system. For this occurrence, a correction will be necessary.	Prevent electrostatic arcing. Maintain spark-safe work distance between the parts that get coated and the applicator. A span of one inch for every 10KV of output voltage is necessary. Unless specifically approved for use in hazardous locations, put all electrical equipment outside of Class I or II, Division 1 or 2 hazardous areas in accordance with NFPA-33, or outside of Zone 2 or Zone 22 in accordance with EN standards. If equipped, set the current overload sensitivity as described in the related section of the equipment manual. If incorrectly set, the current overload sensitivity for protection against accidental arcing is turned off and can cause a fire or explosion. Frequent power supply shutdown indicates a problem in the system, which requires correction. Always turn off the control panel power before the system is flushed, cleaned, or servicing the spray system equipment. Make sure no objects are within the spark-safe work distance before the high voltage is turned on. The control panel must interlock with the ventilation system and conveyor in accordance with NFPA-33, EN 50176. Fire extinguishing equipment must be present in the spray area. Periodically run a test to make sure the equipment stays usable. Do an equipment test only in areas free of combustible material.
General Use and Maintenance 	Improper or unsatisfactory operation and maintenance procedures will cause a fire hazard. Personnel must be correctly trained in the operation and maintenance of this equipment.	Train all personnel in accordance with the requirements of NFPA-33, EN 60079-0. Before equipment operation, personnel must read and understand these instructions and safety precautions. Obey appropriate local, municipal, state, and national codes governing ventilation, fire protection, operation maintenance, and housekeeping. Reference OSHA, NFPA-33, EN Norms, and your insurance company requirements.

AREAS Indicate possible hazard occurrences.	HAZARDS Indicate possible hazards.	SAFEGUARDS Prevention of possible hazards.
Spray Area High Voltage Equipment    	**Electrical Discharge** This equipment contains a high-voltage device that can cause an electrostatic induction on ungrounded objects. This electrical charge is capable of igniting coating materials. Insufficient ground will cause a spark hazard. A spark can ignite many coating materials and cause a fire or explosion.	Operators in the spray area and the parts to be sprayed must be sufficiently grounded. All conductive objects inside the spray area must be grounded. Hold the parts that get sprayed on conveyors or hangers that are correctly grounded. The resistance between the parts and the earth-ground must not be more than 1 MΩ. Refer to: NFPA-33. Before the equipment is operated, ground all operators. They cannot wear rubber-soled insulated shoes. Wear ground straps on wrists or legs for sufficient ground contact. Operators must not wear or carry ungrounded metal objects. When used, operators must make complete contact with the applicator handle and electrostatic gun. Use conductive gloves or gloves with the palm section cut out. Operators must wear grounded footwear. **NOTE: REFER TO NFPA-33 OR SPECIFIC COUNTRY SAFETY CODES FOR GUIDANCE TO CORRECTLY GROUND THE OPERATOR.** Except for objects needed for the high-voltage process, all electrically conductive objects in the spray area are to be grounded. Supply a grounded conductive floor in the spray area. Always turn off the applicator voltage before the system is flushed, cleaned, or when servicing the spray system equipment. Unless specifically approved for use in hazardous locations, put all electrical equipment outside of Class I or II, Division 1 or 2 hazardous areas in accordance with NFPA-33, or outside of Zone 2 or Zone 22 in accordance with EN standards. Do not install an applicator into a fluid system if the solvent supply is ungrounded. Do not touch an energized applicator electrode.

AREAS Indicate possible hazard occurrences.	**HAZARDS** Indicate possible hazards.	**SAFEGUARDS** Prevention of possible hazards.
Spray Areas 	**Toxic Fluid or Fumes** Toxic fluids or fumes can cause severe injury or death if splashed in the eyes or on the skin, or if inhaled or swallowed.	Read the Safety Data Sheet (SDS) for instructions to know and understand how to handle the specific hazards of the fluids used, and the effects of long-term exposure. During the spray, clean, or servicing of equipment, or when in the work area, keep the work area fully ventilated. Always wear personal protective equipment (PPE) when in the work area or during equipment operation. Refer to the Personal Protective Equipment warnings in this manual. Store hazardous fluid in approved containers and refer to local, municipal, state, and national codes governing the disposal of hazardous fluids.
Spray Area and Equipment Use 	High-pressure fluid sprayed from the gun, hose fittings, or ruptured/damaged components can pierce the skin. While this injury can appear as cut skin, this is a severe injury that can result in the amputation of the affected area.	Do not point or operate the spray gun at the body part of a person. Do not put your hand or fingers over the gun fluid nozzle or fittings in the hose or Proportioner. Do not try to stop or deflect leaks with your hand, glove, body, or shop rag. Do not “blowback” fluid, as the equipment is not an air spray system. Relieve pressure in the supply hoses, Proportioner, and QuickHeat™ hose before the equipment is inspected, cleaned, or serviced. Use the lowest possible pressure to recirculate, purge, or troubleshoot the equipment. Examine the hoses, couplings, and fittings every day. Service or immediately replace parts that leak, are worn, or are damaged. Replace high-pressure hose sections. They cannot be recoupled or serviced.

AREAS Indicate possible hazard occurrences.	HAZARDS Indicate possible hazards.	SAFEGUARDS Prevention of possible hazards.
Equipment and Fluids 	**Skin and Clothing Burns** Equipment surfaces and fluids can become very hot during operation.	Do not touch hot fluid or equipment during operation. Do not let clothing touch the equipment during operation or immediately after the equipment is stopped. Let the equipment fully cool before the examination or servicing of the component.
Pressurized Aluminum Parts    	The use of certain solvents and chemicals can cause equipment damage and severe personal injury.	Do not use 1,1,1-trichloroethane, methylene chloride or other halogenated hydrocarbon solvents or fluids that contain such solvents. These solvents can cause a severe chemical reaction and equipment rupture that results in equipment and property damage, serious bodily injury, or death.

AREAS Indicate possible hazard occurrences.	**HAZARDS** Indicate possible hazards.	**SAFEGUARDS** Prevention of possible hazards.
Spray Areas 	**Do Not Touch** The effect of paint flow rates and formulations on the quality of atomization can cause the turbines to rotate at high speeds.	Do not use a rag or gloved hand against the bell edge to stop or slow down a bell during rotation. Do not try to clean the bell edge during rotation.

⚠ CAUTION

Only operate the equipment after you have read this section.

03.2 ADDITIONAL SAFETY INFORMATION

The IntelliFlow has an emergency stop (E-Stop) pushbutton on the main operator panel. During an emergency, all operations for the IntelliFlow will halt when the E-Stop is engaged. The operator must disengage the E-Stop and reset the system to recover from this state.

Observe all local or municipal safety measures and wear approved protective equipment when servicing this equipment. Clean all spilled chemicals and materials and do all work in a clean and organized environment to prevent personal injury and equipment damage.

⚠ DANGER

To prevent injury or electrocution while the system is under power, do not contact, disconnect, or manipulate electrical connections or devices. The main disconnect on the right side of the controller can be locked out. Follow the proper Lockout–Tagout (LOTO) procedures for internal controller electrical work.

Only qualified electrical personnel can perform the work if diagnosis and troubleshooting are not possible during working conditions.

⚠ WARNING

To prevent possible chemical spillage when personnel are not on site, air and fluid supplies for the equipment must be disabled when the equipment idles for an extended period, such as an end-of-day shutdown.

NOTICE

During the initial commission of the equipment and at periodic times throughout equipment life, visually examine all fluid fittings for leaks.

Periodically, it is necessary to visually examine all pieces of this equipment for signs of noticeable degradation due to chemicals or other conditions in the equipment’s environment.

SAFETY

Obey local or municipal regulations that require installed fire suppression for equipment operation.

If the operation of this equipment, sensors, switches, or other ancillary equipment occurs in the presence of flammable gases and vapors, connect this equipment through intrinsic-safe or Zener barriers. Classify them as a "simple apparatus" or approve them for use in these areas.

04 CORIOLIS FLOW METER OVERVIEW

The standard Coriolis flow meter delivers precise measurement and monitoring of fluid flows. The flow meter uses the Coriolis effect to provide industry-leading accuracy without the need for moving parts, surpassing the performance of many traditional flow meters.

04.1 FLOW RATE ACCURACY

The Coriolis flow meter achieves a mass flow accuracy of ±0.1% when calibrated at or near expected flow rates. Even with dynamic flow changes, the system maintains exceptional reliability, making it ideal for high-demand applications such as robotic or automated systems.

04.2 SPECIFICATIONS

310-3400-6 CORIOLIS FLOW METER OPERATION SPECIFICATIONS	
Flow Rate	10 - 10,833 cc/min (material dependent)
Accuracy	±0.1% (mass flow), ±1.0 kg/m3 (density)
Max Working Pressure	200 bar (2,900 psi) @ 100°F (37.77°C)
Temperature	-40°F - 212°F (-40°C - 100°C)
Signal Output	Analog 4-20 mA, Frequency, RS485 Modbus RTU
Power	24 VDC

310-3400-6 CORIOLIS FLOW METER MATERIALS SPECIFICATIONS	
Body	316L stainless steel/DIN 1.4404
Flow Tubes	316L stainless steel/DIN 1.4404
Housing Material	Die-cast aluminum (uncoated)
Connections	1/2" internal threads/8T-6 NPS adapters
Weight	Approximately 4.4 lbs (2.0 kg)

NOTICE

The Coriolis decreases the machine pressure rating to 2,900 psi.

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05 INSTALLATION

Before installing the Coriolis flow meter into your machine, ensure the power is turned off.

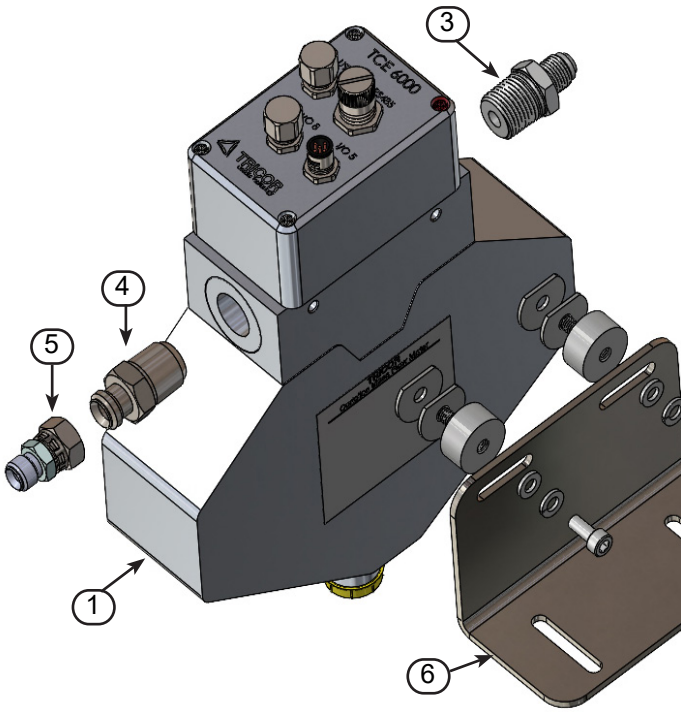
05.1 RF2 AND RF2+ INSTALLATION

05.1.1 RF2 AND RF2+ CORIOLIS KIT

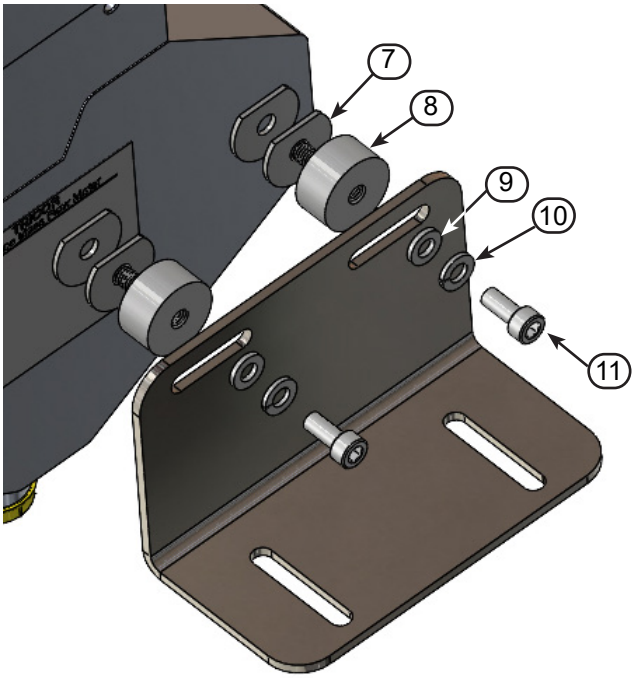
The standard Coriolis flow meter kit (310-3400-6) comes pre-assembled for ease of installation.

The kit includes:

1. 310-4205 - Standard Coriolis meter
2. 310-4201 - Programming cable (not shown)
3. 20-7012 - 1/2 NPT (M) X 3/8 JIC (M), SS
4. 8T-6 - 1/2" NPT (M) X 3/8" NPS (M)
5. 6SN-4 - 3/8" NPS (F) X 1/4" NPS (M)
6. 310-2805 - Coriolis mounting bracket



7. 20-7073 - Washer, clipped, 3/8" ID
8. 20-7071 - Vibration isolator, M6
9. 20-7035 - Flat washer, M6, 18-8
10. 20-7034 - Lock washer, M6, 18-8
11. 20-7041 - Socket head cap screws, M6, 14mm, 18-8



05.1.2 RF2 AND RF2+ CORIOLIS GENERAL ASSEMBLY

⚠ WARNING

Do not place the flow meter cables closer than 12 inches to noise generation devices, including large electric motors, fluorescent lighting, transformers, ballasts, and other such electric devices.

Installing the Coriolis kit in the RF2 and RF2+ requires a fluid module panel specifically designed for Coriolis flow meters. The RF2+ Coriolis Upgrade Kit (310-3303-6) is available for those wishing to upgrade an existing flow meter to a Coriolis flow meter.

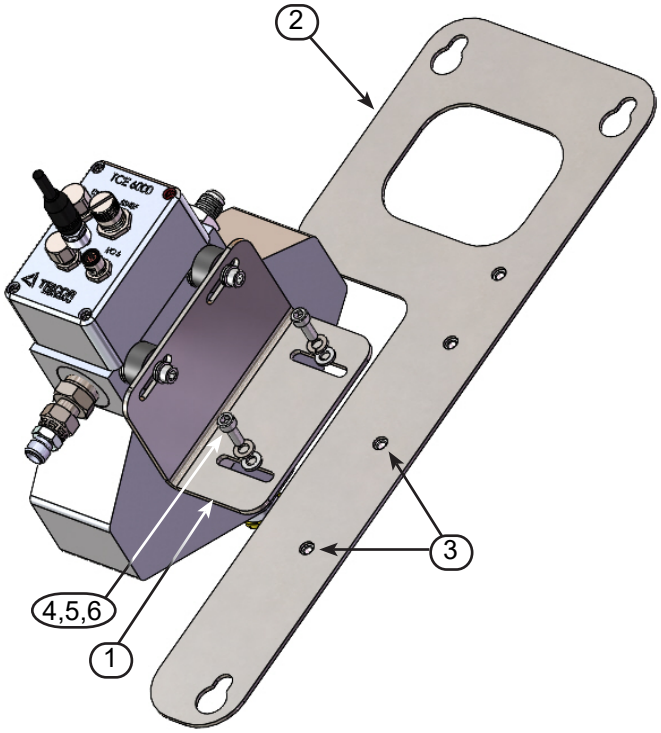
This kit includes the Coriolis flow meter, fluid module panel, and mounting hardware.

NOTICE

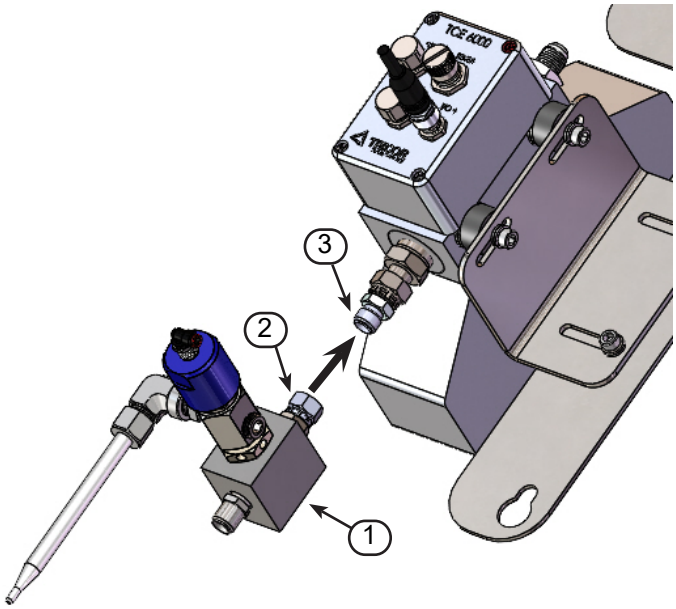
The RF2+ Coriolis Upgrade Kit does not include regulators and calibration blocks.

To assemble the flow meter:

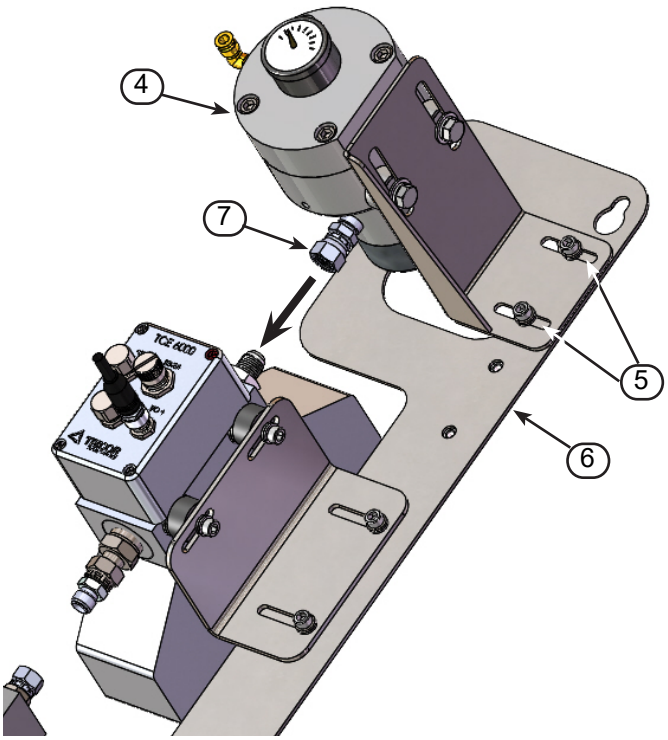
1. Place the mounting bracket (1) onto the fluid module panel (2).
2. Align the vertical openings of the mounting bracket with the holes on the fluid module panel (3).
3. Insert a socket head cap screw (SHCS) (4) first into a washer (5) and then into a tooth washer (6). Repeat with a second SHCS.
4. Insert the SHCS with washers through the openings in the mounting bracket and holes in the fluid panels.
5. Tighten the SHCS, adjusting as needed.



6. To install a calibration block (1) with the Coriolis flow meter, follow these steps:
   a. Place the calibration block adapter (2) over the flow meter fitting (3).
   b. Tighten the nut on the calibration block adapter until snug.



7. To install an MVR fluid regulator (4) with the Coriolis flow meter, follow these steps:
   a. Using the fasteners from the MVR assembly (5), connect the MVR to the fluid module panel (6).
   b. Replace the MVR adapter with 3/8 JIC (M) X 3/8 JIC (F) (7).
   c. Attach the MVR to the flow meter via the 1/2 NPT (M) X 3/8 JIC (M), SS.

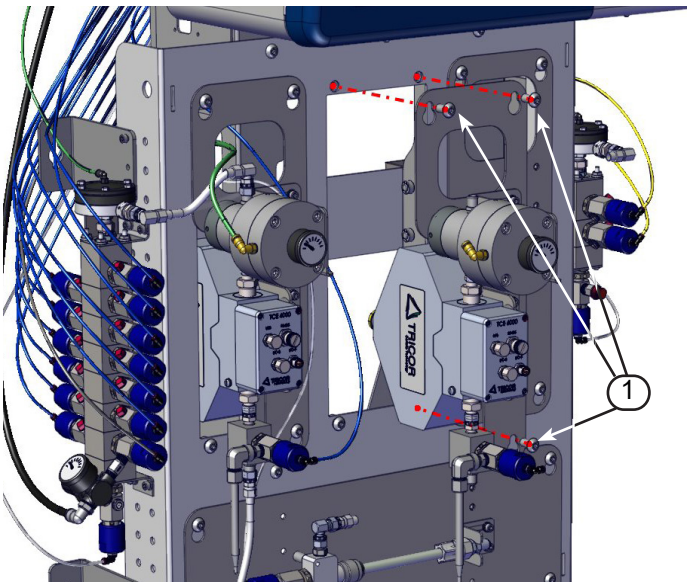


05.1.3 RF2 AND RF2+ CORIOLIS GENERAL INSTALLATION

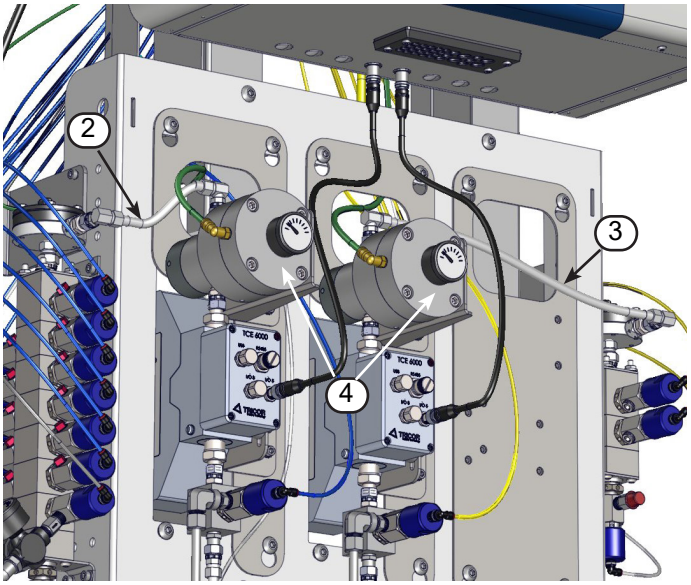
To install the Coriolis fluid module panel:

1. Secure the panel to the RF2 or RF2+ system using the designated mounting holes and the M10 fasteners included with the RF2 or RF2+ (1).

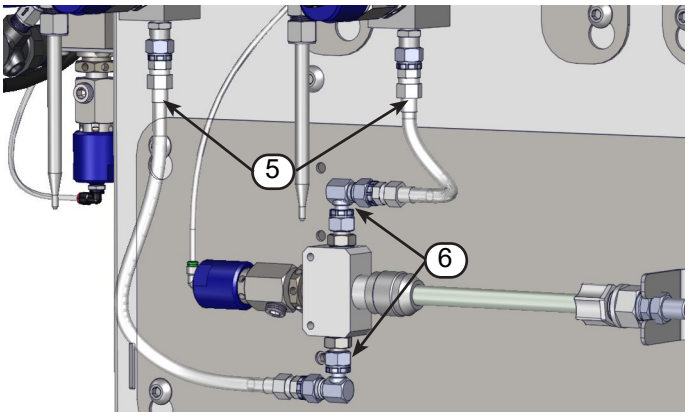
   The Coriolis module can be installed in channels 1 and/or 3.



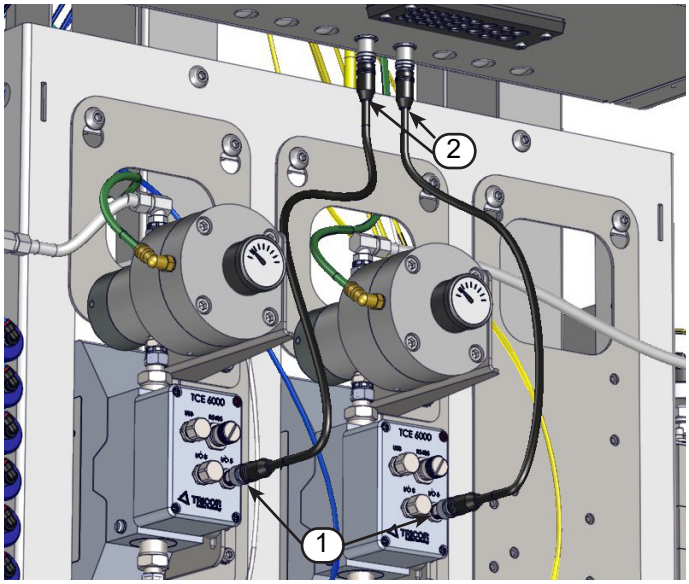
2. Attach the hose from the color stack (2) and catalyst stack (3) to the top of the MVR fluid regulator(s) (4).



3. Connect the fluid panel outlet hose(s) (5) to the mix block check valves (6).

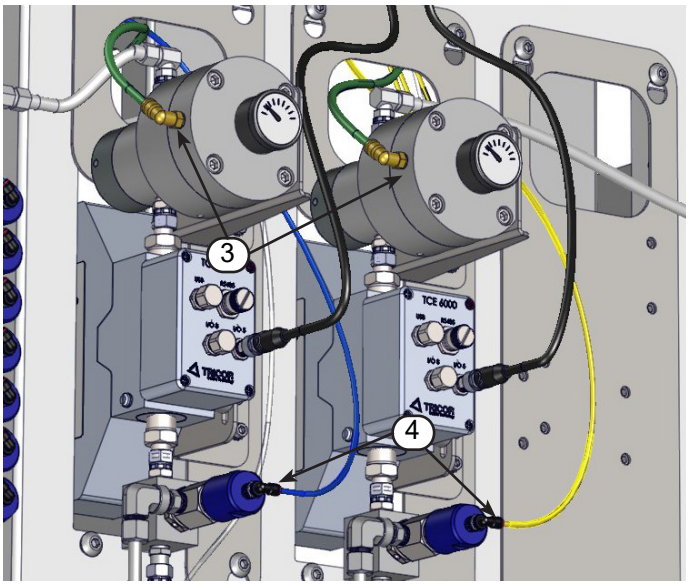


4. Install the wired flow meter connection cable.
   a. Attach the cable to the port on the Coriolis flow meter(s) (1).
   b. Attach the cable(s) to the controller (2).



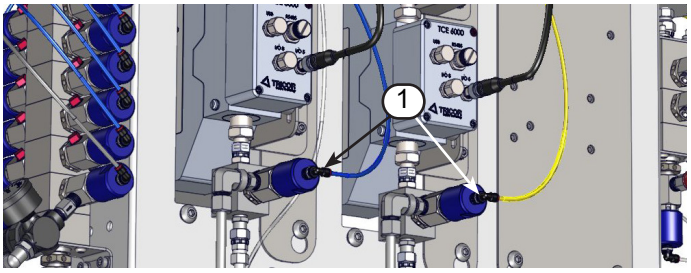
5. Insert pneumatic tubing into the inlets of the calibration block(s) (3) and fluid regulator(s) (4).
6. The programming cable (not shown) is needed only for initial setup or setting customization.

   The flow meter is preconfigured in the factory. Refer to the instruction manual supplied by the manufacturer of your programming cable for more installation steps.

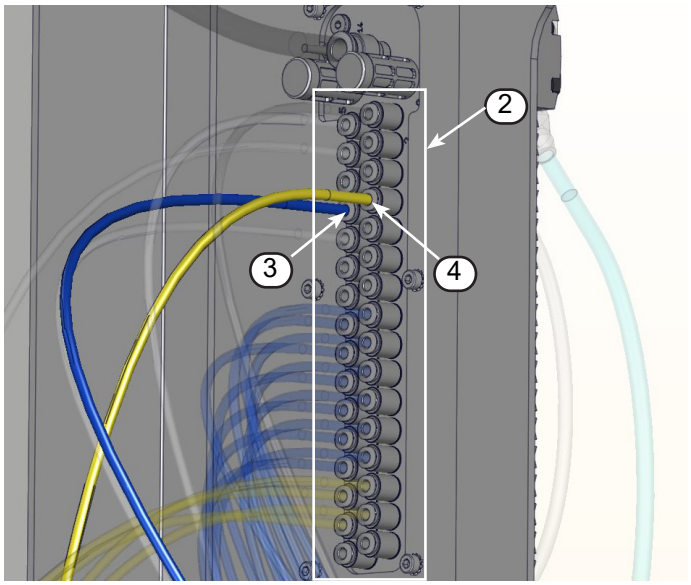


05.1.4 RF2 AND RF2+ CORIOLIS PNEUMATIC CONNECTIONS

1. Locate the pneumatic tubing connection on the calibration blocks (1).

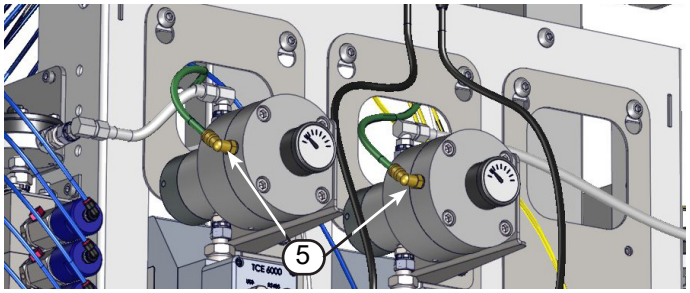


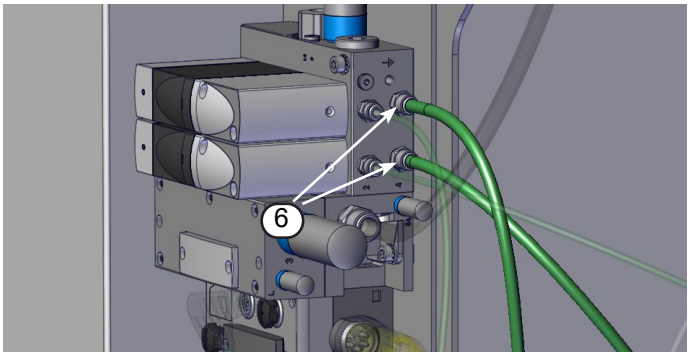
2. Connect tubing to ports in the solenoid manifold (2). Ports are numbered sequentially from left to right starting at 0 in the top left corner.
   a. The blue tubing is for resin modules. Connect the blue tubing to port 7 (3).
   b. The yellow tubing is for catalyst modules. Connect the yellow tubing to port 8 (4).



3. For automatic units, route the 1/4 inch green pneumatic tubing from the fluid regulator(s) (5) to the VTEM regulator ports (6).

   The top regulator port is designated for resin, and the bottom port is designated for catalyst.





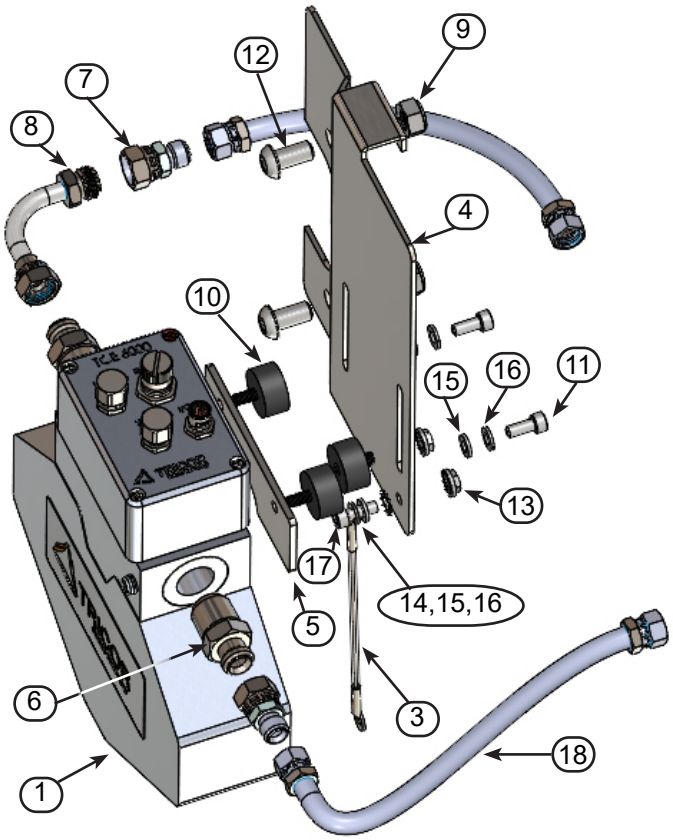
05.2 RM2 MEDIUM PRESSURE (MP) INSTALLATION

05.2.1 RM2 MP CORIOLIS KIT

The medium-pressure (MP) RM2 Coriolis flow meter kit (240-5402) comes pre-assembled for ease of installation.

The kit includes:

1. 310-4205 - Standard Coriolis meter
2. 310-4201 - Programming cable (not shown)
3. 310-4141 - Ground strap for back panel
4. 240-5404 - Meter, Coriolis, bracket
5. 240-5403 - Meter, Coriolis, spacer
6. 8T-6 - 1/2 inch NPT (M) X 3/8 inch NPS (M)
7. 6SN-4 - 3/8 inch NPS (F) X 1/4 inch NPS (M)
8. SSL6-6SN-90 - Fitting, SS, 3/8 inch NPSM X 3/8 inch NPSF sweep 90°
9. 20-7085 - Nylon-insert locknut, zinc-plated
10. 20-7071 - Vibration isolator, M6
11. 20-7041 - SHCS, M6, 14mm, 18-8
12. 20-7040 - Button head hex drive, M10 X 1.5
13. 20-7037 - Serrated flange locknut, M6 X 1
14. 20-7036 - Tooth washer, M6, 18-8
15. 20-7035 - Flat washer, M6, 18-8
16. 20-7034 - Lock washer, M6, 18-8
17. 20-7033 - SHCS, M6 X 1, 16mm LG, 18-8
18. PDHC-04-KK-012 - 1/4 NOMID X 12 IN OAL W-4SS FNPS



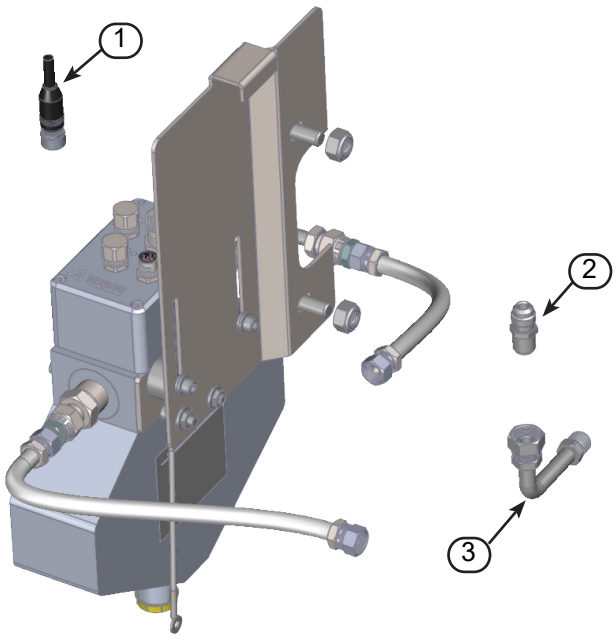
05.2.2 RM2 MP CORIOLIS GENERAL INSTALLATION

⚠ WARNING

Do not place the flow meter cables closer than 12 inches to noise generation devices, including large electric motors, fluorescent lighting, transformers, ballasts, and other such electric devices.

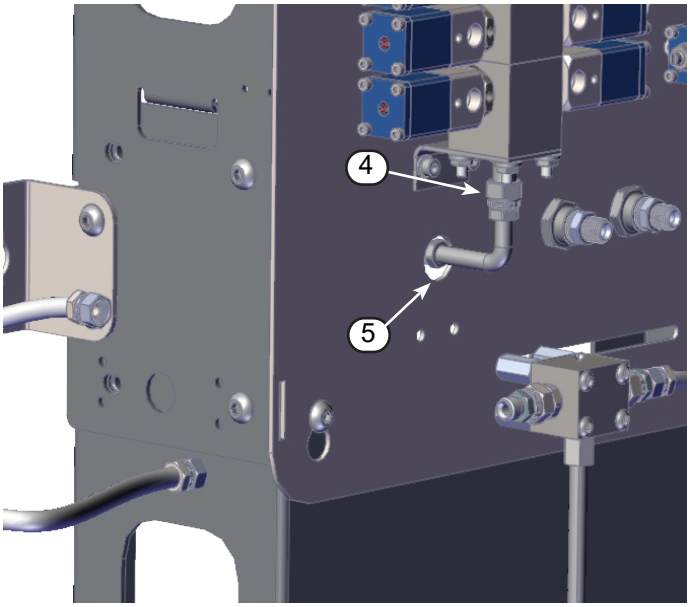
Prepare the following components before installing the flow meter:

- 240-5188 (2M) or 240-5187 (2M 90°) - RM2 communication cable (1)
- 4-6JIC JIC X NPS fitting (2)
- SSL-4SN-90 - 90° 3/8" NPS swivel X 3/8" NPS (3)

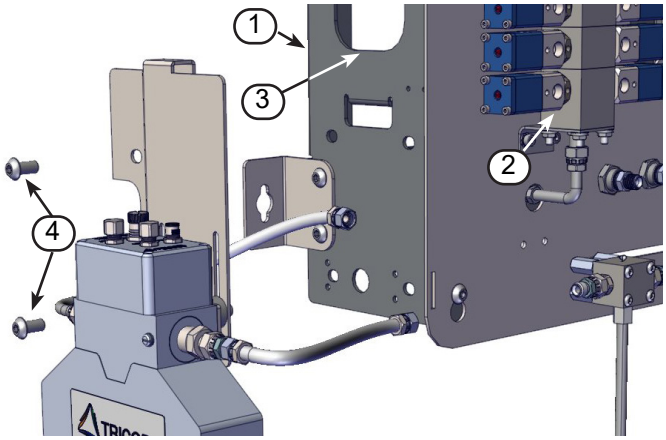


To install the standard Coriolis flow meter onto the MP RM2:

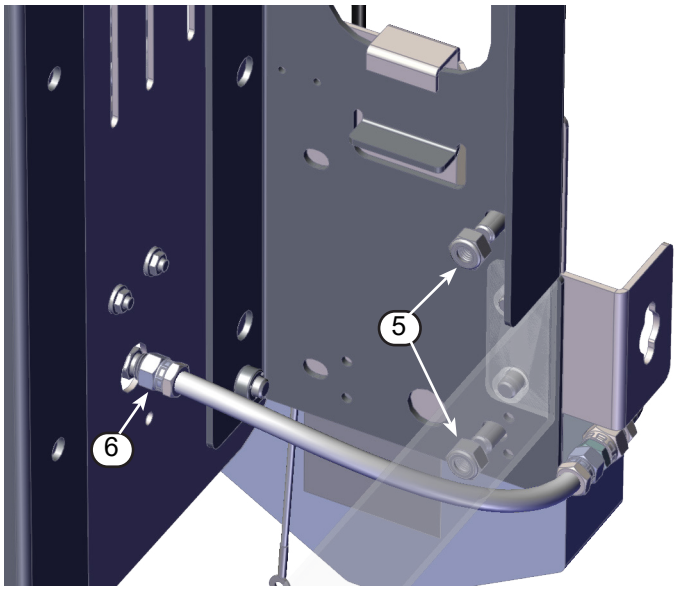
1. Prepare connection with the MP RM2 color stack.
   a. Install the 4-6JIC fitting into the color stack.
   b. Tighten it to the recommended torque of 16–18 ft/lbs (22–26 Nm).
   c. Once the fitting is secure, thread the swivel nut elbow onto the JIC fitting (4). Do not tighten.
   d. Orient the elbow to face inward toward the panel's opening hole (5).
   e. Tighten the elbow snugly to ensure a secure fit.



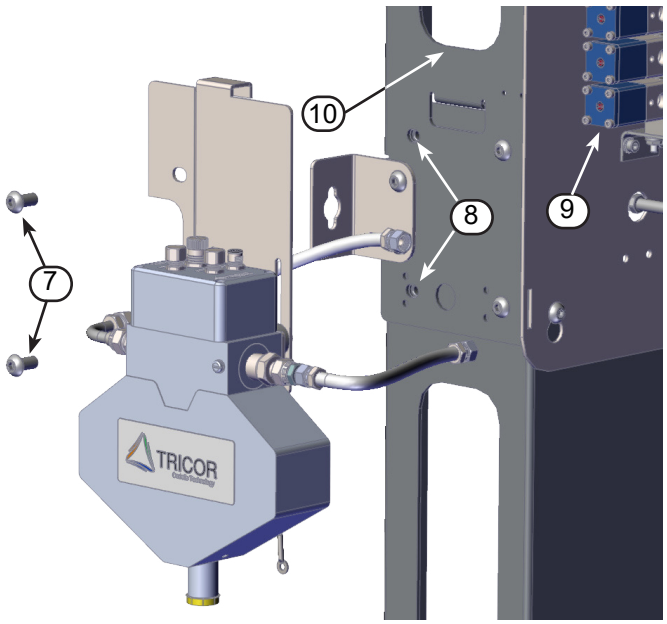
2. For wall-mounted units:
   a. Mount the Coriolis assembly onto the resin side of the MP RM2 (1). This is the side closest to the color stack (2).
   b. Hook the mounting bracket onto the bottom of the frame's entry (3).
   c. Secure the bracket to the frame with the M10 screws supplied in the kit (4).



   d. Tighten the screws using the nylon locknuts supplied in the kit (5).
   e. Route the inlet hose around the frame and connect it to the 3/8" NPS elbow from the color stack, which extends into the back of the panel (6). Ensure the connection is snug.

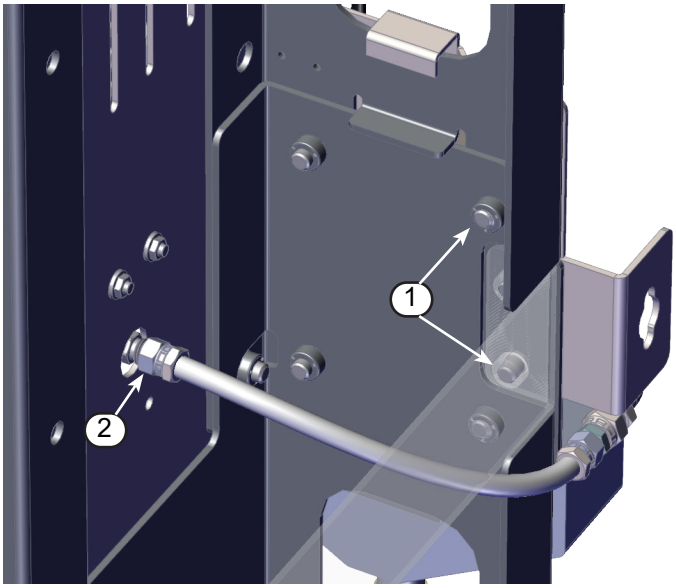


3. For free-standing units:
   a. Remove the top left and bottom left M10 screws (7) from their holes in the resin side of the MP RM2 (8). This is the side closest to the color stack (9).
   b. Mount the Coriolis assembly onto the machine.
   c. Hook the bracket onto the bottom of the frame's entry area (10).

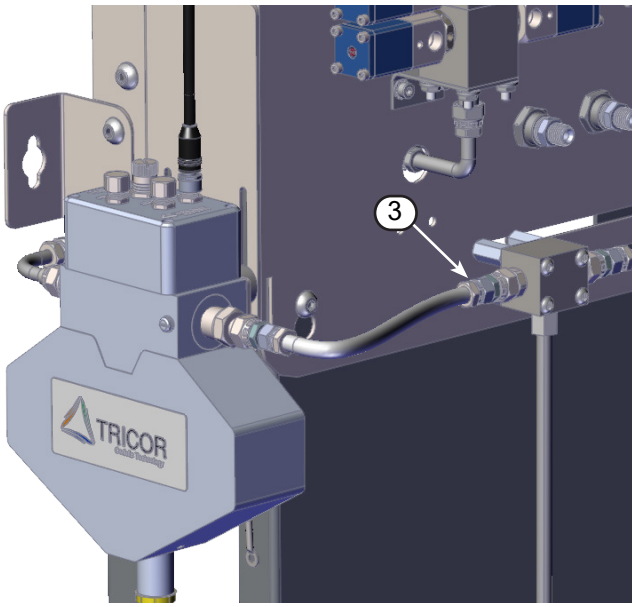


d. Reinstall the screws and tighten them with the frame's Keps nuts to secure the assembly (1).

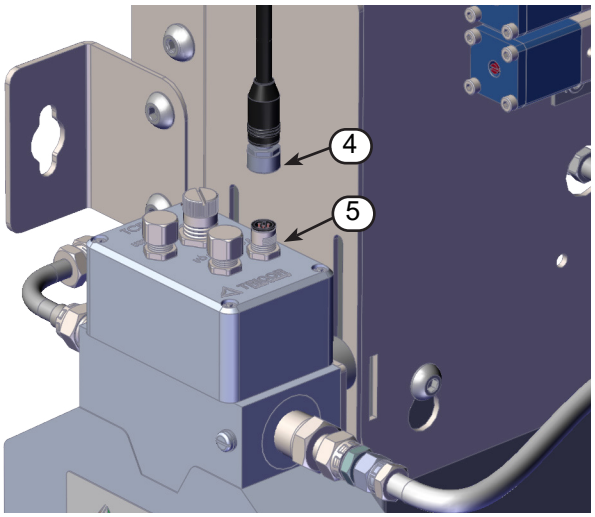
e. Route the inlet hose around the frame and connect it to the 3/8" NPS elbow from the color stack, which extends into the back of the panel (2). Ensure the connection is snug.



4. Attach the outlet hose to the A-side check valve of the mixing block (3).
5. Tighten it snugly.

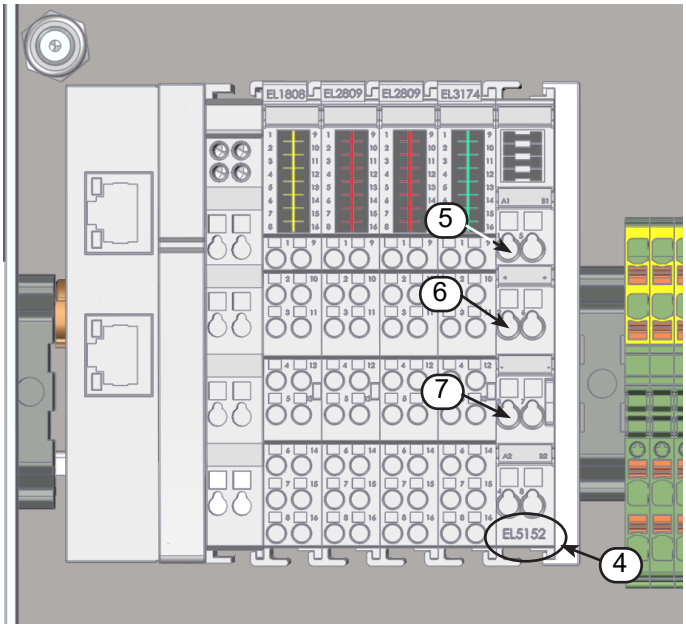


6. Connect the M12 cable (4) to the Coriolis flow meter (5).



7. The Coriolis meter can use the same cable and internal connections to the previous flow meter.
8. Ensure the cable wires are inserted into the EL5152 EtherCAT (4) as follows:
   a. Insert the black wire into inlet 1 (5).
   b. Insert the brown wire into inlet 2 (6).
   c. Insert the blue wire into inlet 3 for channel A (7).
   d. Ensure all connections are secure for accurate operation.
9. Remove the white wire of the cable from the I/O block and cap it off. This will prevent the wire from creating a short circuit in another location.
10. The programming cable (not shown) is needed only for initial setup or setting customization.

    Refer to the instruction manual supplied by the manufacturer of your programming cable for more installation steps.



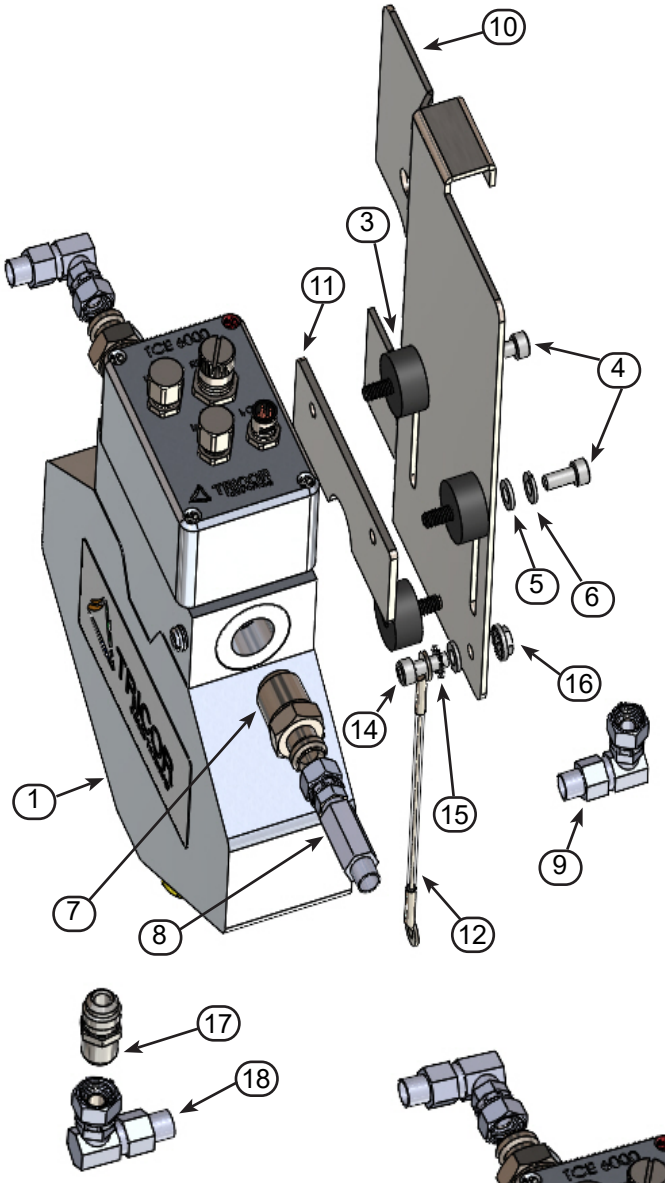
05.3 RM2 LOW PRESSURE (LP) INSTALLATION

05.3.1 RM2 LP CORIOLIS KIT

The low-pressure (LP) RM2 Coriolis flow meter kit (240-5401) comes partially pre-assembled for ease of installation.

The kit includes:

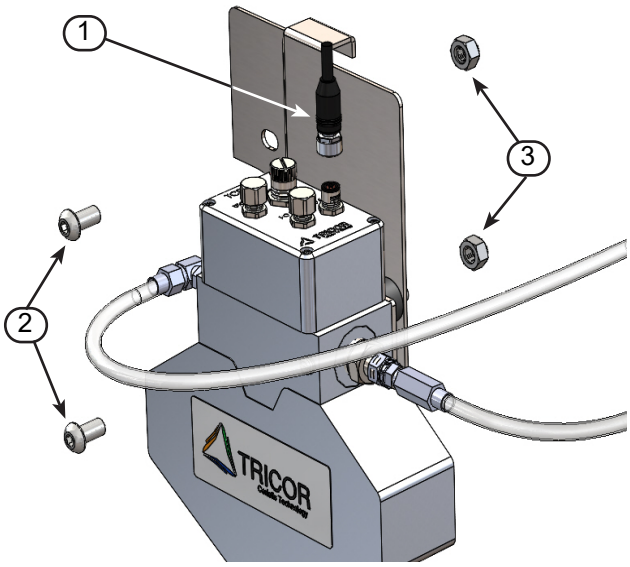
1. 310-4205 - Meter, Coriolis, standard
2. 310-4201 - Programming cable (not shown)
3. 20-7071 - Vibration isolator, M6
4. 20-7041 - SHCS, M6, 14mm, 18-8
5. 20-7035 - Flat washer, M6, 18-8
6. 20-7034 - Lock washer, M6, 18-8
7. 8T-6 - 1/2" NPT (M) X 3/8" NPS (M)
8. 1438-SS-T - 3/8" OD X 1/4" ID x 3/8" NPS (F)
9. 1438-SS-90-T - Hose fitting, 3/8" OD X 1/4" 90°
10. 240-5404 - Meter, Coriolis, bracket
11. 240-5403 - Meter, Coriolis, spacer
12. FEP-0604 - 38–50 cm 3/8" OD X 1/4" ID Teflon tubing (not shown)
13. FEP-0604 - 50–58 cm 3/8" OD X 1/4" ID Teflon tubing (not shown)
14. 20-7033 - SHCS, M6 X 1, 16mm LG, 18-8
15. 20-7036 - Tooth washer, M6, 18-8
16. 20-7037 - Serrated flange locknut, M6 X 1M
17. 4-6JIC 1/4" NPS (M) X 3/8" AN fitting
18. 1414-SS-90-T - Hose fitting, 3/8" OD X 1/4" ID 90°



05.3.2 RM2 LP CORIOLIS GENERAL INSTALLATION

⚠ WARNING

Do not place the flow meter cables closer than 12" to noise generation devices, including large electric motors, fluorescent lighting, transformers, ballasts, and other such electric devices.

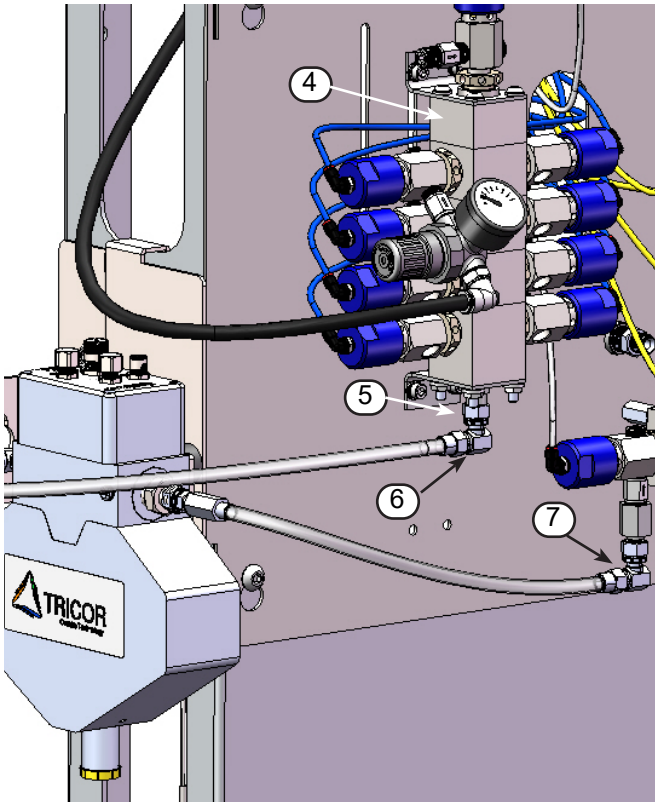


Prepare the following components before installing the flow meter:

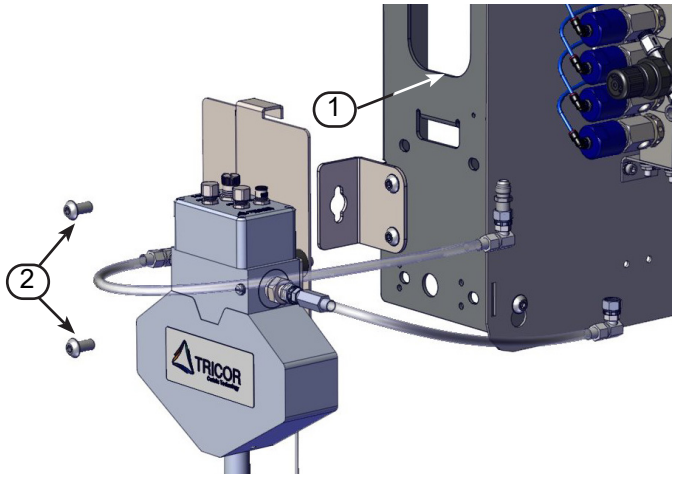
- 240-5188 (2M) or 240-5187 (2M 90°) - Communication cable (1)
- 20-7040 - 2 M10 X 1.5 screws (2)
- For wall mounted units: 2 nylon locknuts (3) (20-7085)
- 17 mm wrench

To install the Coriolis flow meter into the LP RM2:

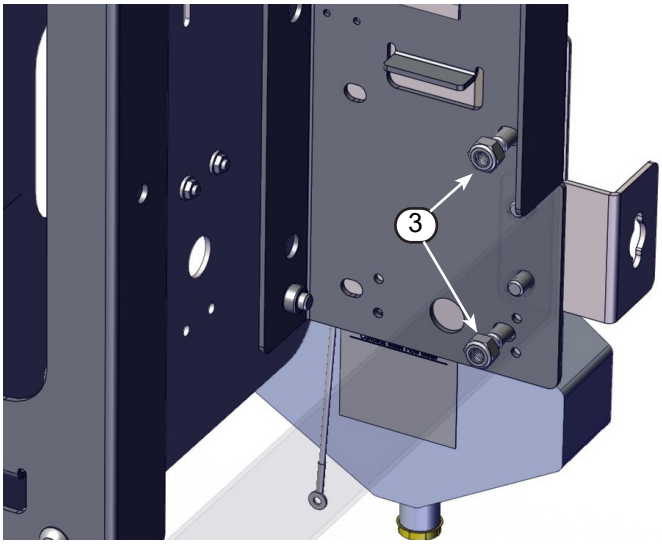
1. Remove any pre-existing fittings on the bottom of the color stack (4).
2. Install the 4-6JIC 1/4 inch NPS (M) X 3/8 inch AN fitting into the port at the bottom of the color stack (5).
3. Tighten to the recommended torque of 16–19 feet/pounds (22–26 Nm).
4. Attach the 3/8 inch OD X 1/4 inch ID hose fitting snuggly to the JIC fitting, orienting its opening toward the Coriolis meter (6).
5. Attach the 3/8 inch OD X 1/4 inch hose fitting snuggly to the check valve of the mix block (7). Ensure the inlet is oriented toward the Coriolis meter.



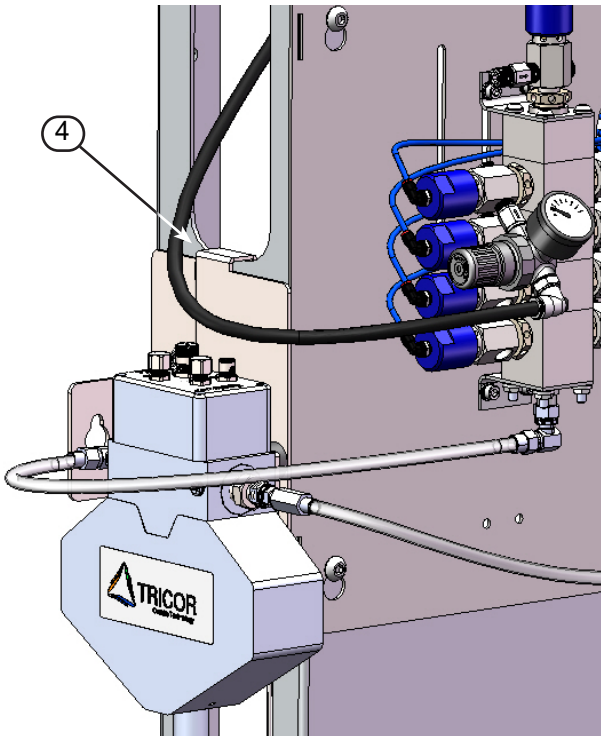
6. For wall mounted units:
   a. Hook the bracket onto the bottom of the frame's entry area (1).
   b. Secure the bracket with the supplied M10 screws (2).



   c. Tighten the screws with the supplied nylon locknuts on the opposite side (3).

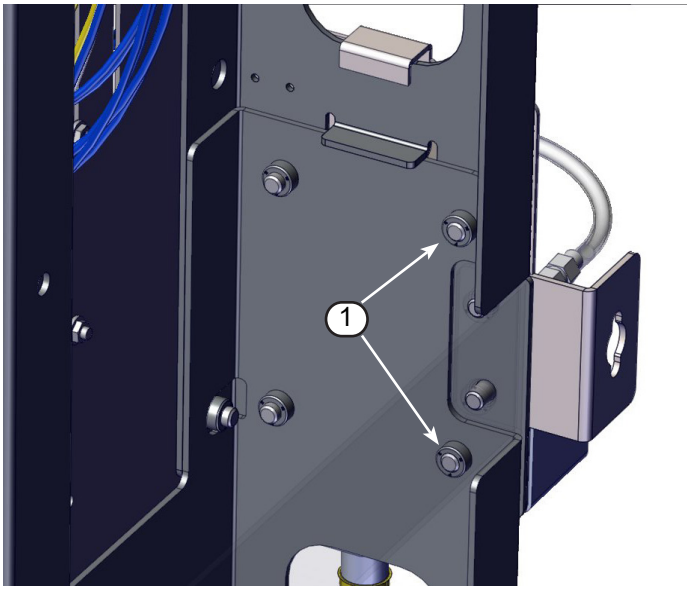


7. For free-standing units:
   a. Remove the left top and bottom M10 screws.
   b. Hook the bracket onto the bottom of the frame's entry area (4).



c. Reinstall the screws.

d. Tighten the screws with the frame's Keps nuts (1) to secure the assembly.



8. Install inlet hose.

a. Locate the 38-50 cm Teflon tubing (3/8 inch OD X 1/4 inch ID tubing, FEP-0604). If necessary, cut the tubing to ensure a flat, smooth end.

b. Insert the tubing into the inlet elbow of the Coriolis meter (2).

c. Hand-tighten the nut on the inlet hose.

d. Using the 17 mm wrench, tighten the nut an additional 1 1/4 turns to ensure a proper seal.

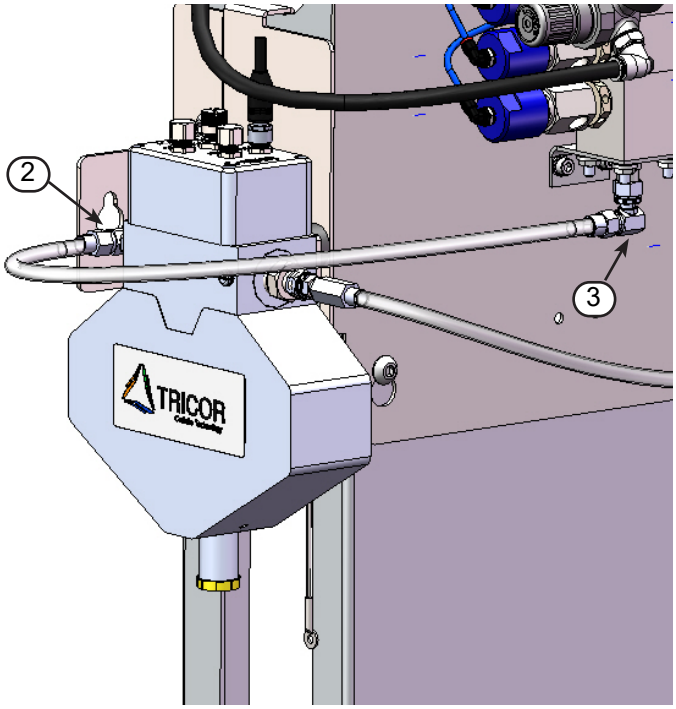
e. Route the tubing from the Coriolis inlet elbow to the color stack elbow fitting (3). Leave an extra inch of tubing to ensure a proper fit.

f. Ensure the end of the tubing is cut flat.

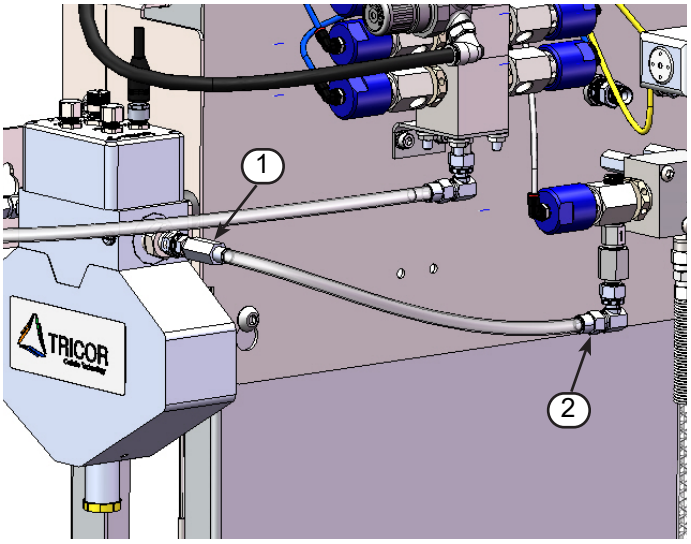
g. Fully insert the tubing into the color stack inlet elbow.

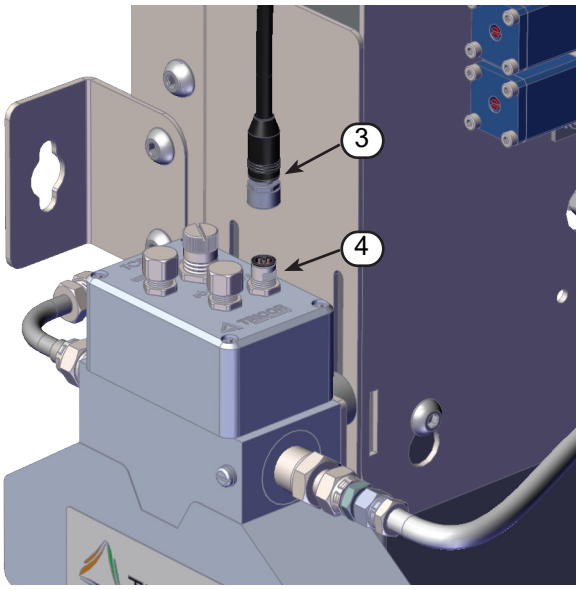
h. Hand-tighten the nut on the inlet hose.

i. Using the wrench, tighten the nut an additional 1 1/4 turns to ensure a proper seal.



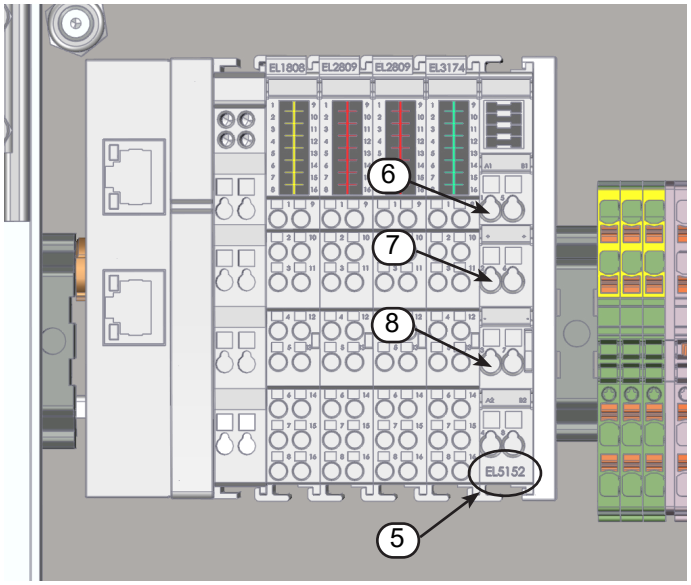
9. Install outlet hose.
   a. Locate the 50-58 cm Teflon tubing (3/8" OD X 1/4" ID tubing, FEP-0604). If necessary, cut the tubing to ensure a flat smooth end.
   b. Insert the tubing into the Coriolis meter outlet (1).
   c. Hand-tighten the nut on the outlet hose.
   d. Using the wrench, tighten the nut an additional 1 1/4 turns to ensure a proper seal.
   e. Route the tubing from the Coriolis outlet to the mix block compression elbow (2). Leave an extra inch of tubing to ensure a proper fit.
   f. Ensure the end of the tubing is cut flat.
   g. Fully insert the tubing into the mix block compression elbow.
   h. Hand-tighten the nut on the outlet hose.
   i. Using the wrench, tighten the nut an additional 1 1/4 turns to ensure a proper seal.
10. Check connections and tubing to ensure leak-free operation.
    a. Ensure all connections are tight and secure.
    b. Check tubing for kinks or obstructions.
    c. Confirm all fittings are properly aligned.
11. Connect the M12 cable (3) to the Coriolis flow meter (4).
12. The Coriolis meter can use the same cable and internal connections to the previous flow meter.





13. Ensure the cable wires are inserted into the EL5152 EtherCAT (5) as follows:
    a. Insert the black wire into inlet 1 (6).
    b. Insert the brown wire into inlet 2 (7).
    c. Insert the blue wire into inlet 3 for channel A (8).
    d. Ensure all connections are secure for accurate operation.
14. Remove the white wire of the cable from the I/O block and cap it off. This will prevent the wire from creating a short circuit in another location.
15. The programming cable (not shown) is needed only for initial setup or setting customization.

    Refer to the instruction manual supplied by the manufacturer of your programming cable for more installation steps.



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06 OPERATION IN HAZARDOUS ENVIRONMENTS

The standard Coriolis flow meter is designed for operation in Class 1, Division 2 (ATEX Zone 2) hazardous areas. Do not install the Coriolis flow meter in Class 1, Division 1 (ATEX Zone 1 or 0) hazardous areas.

When installing in hazardous environments, ensure strict adherence to Class 1, Division 2 (ATEX Zone 2) safety standards. This includes proper grounding, shielded cable usage, and compliance with operational temperature and pressure limits to maintain safety and performance integrity.

⚠ WARNING

Do not install the Coriolis meter in Class 1, Division 1 (ATEX Zone 1 or 0) hazardous areas.

⚠ WARNING

Ensure strict adherence to Class 1, Division 2 (ATEX Zone 2) safety standards when installing in hazardous environments.

⚠ CAUTION

Coriolis flow meters are not suitable for outdoor installation.

NOTICE

Ensure the process pressure, media temperature, and ambient temperature do not exceed or fall below the value ranges specified on the type plate/device label.

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07 OPERATION, SERVICING, AND MAINTENANCE

07.1 PRINCIPLE OF OPERATION

Coriolis flow meters operate on the principle of the Coriolis effect, where fluid flow through vibrating tubes generates measurable deflections proportional to the mass flow rate.

These deflections are detected by sensors, which send signals to the controller. The controller processes these signals to calculate mass flow, density, and temperature with high precision.

07.2 CALIBRATION ROUTINE

For applications requiring regular inspection or calibration, adhere to the relevant national standards and regulations.

NOTICE

Shorten inspection and calibration intervals when using abrasive or fouling media.

07.3 SERVICING

The Coriolis flow meter does not contain parts that can be exchanged or repaired by the user.

Please contact Binks in case of a malfunction.

⚠ WARNING

Explosion hazard. Repairing explosion-protected devices is prohibited. Repair work may only be carried out by personnel authorized by the manufacturer.

07.4 MAINTENANCE

The Coriolis flow meter does not require regular maintenance.

07.4.1 CLEANING

To clean the housing:

1. Moisten a cloth with water.
2. Apply a mild cleaning agent to the cloth.
3. Clean the outside of the housing, including the labeling and display window.

⚠ CAUTION

Do not use aggressive cleaning agents or solvents, such as acetone, to clean the flow meter housing. Aggressive cleaning agents or solvents may damage the plastic parts or painted surfaces of the flow meter, and the labeling may become illegible.

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MANUAL CHANGE SUMMARY		
Date	Description	Version
04/2025	Initial Release.	R1.0

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WARRANTY POLICY

This product is covered by Binks' materials and workmanship limited warranty.

The use of parts or accessories from sources other than Binks will void all warranties. Failure to follow reasonable maintenance guidance provided can invalidate the warranty.

For specific warranty information, please contact Binks.

For technical assistance or to locate an authorized distributor, contact one of our international sales and customer support locations listed below.

REGION	BINKS CONTACT
Americas	Tel: 1-800-992-4657
Europe, Africa, Middle East	Tel: +4401202571111
India	marketingroa@binks.com
China	Tel: +862133730108
Korea	Tel: +82313663303
Japan	Tel: +81457856421
Australia	Tel: +61085257555

WARRANTY PAGE

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