

# Coriolis Meter Kit

310696 rev.C

## Part No. 234563

*2300 psi (16 MPa, 160 bar) Maximum Working Pressure*



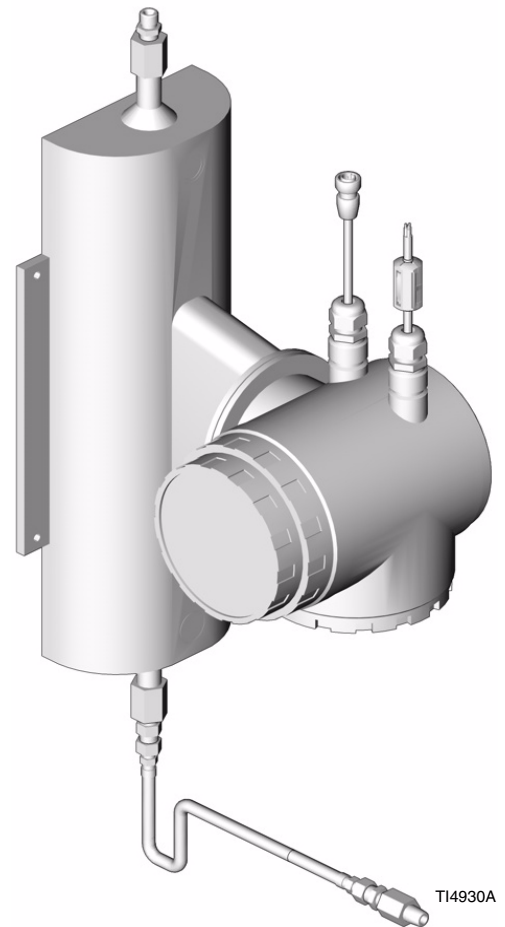
### Important Safety Instructions

Read all warnings and instructions in this manual.  
Save these instructions.



**For use with ProMix™ II, ProMix™ Auto, and ProControl proportioners in a non-hazardous environment only.**

If a Coriolis meter is installed on one of these three proportioners, the entire system is no longer approved for a hazardous environment.





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# Manual Conventions

**WARNING**



Hazard Symbol


**WARNING:** a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Warnings in the instructions usually include a symbol indicating the hazard. Read the general **Warnings** section for additional safety information.

**CAUTION**






**CAUTION:** a potentially hazardous situation which, if not avoided, may result in property damage or destruction of equipment.

**Note**

 Additional helpful information.

# Warnings

The following warnings include general safety information for this equipment. More specific warnings are included in the text where applicable.

 <b>WARNING</b>	
	<p><b>FIRE AND EXPLOSION HAZARD</b></p> <p>Flammable fumes, such as solvent and paint fumes, in <b>work area</b> can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> <li>• Use equipment only in well ventilated area.</li> <li>• Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).</li> <li>• Keep work area free of debris, including solvent, rags and gasoline.</li> <li>• Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.</li> <li>• Ground equipment and conductive objects in work area. See <b>Grounding</b> instructions.</li> <li>• Use only grounded hoses.</li> <li>• Hold gun firmly to side of grounded pail when triggering into pail.</li> <li>• If there is static sparking or you feel a shock, <b>stop operation immediately</b>. Do not use equipment until you identify and correct the problem.</li> </ul>
	<p><b>ELECTRIC SHOCK HAZARD</b></p> <p>Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> <li>• Turn off and disconnect power at main switch before disconnecting any cables and before servicing equipment.</li> <li>• Connect only to grounded power source.</li> <li>• All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.</li> </ul>
	<p><b>SKIN INJECTION HAZARD</b></p> <p>High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. <b>Get immediate surgical treatment.</b></p> <ul style="list-style-type: none"> <li>• Do not point gun at anyone or at any part of the body.</li> <li>• Do not put your hand over the spray tip.</li> <li>• Do not stop or deflect leaks with your hand, body, glove, or rag.</li> <li>• Follow <b>Pressure Relief Procedure</b> in this manual, when you stop spraying and before cleaning, checking, or servicing equipment.</li> </ul>
	<p><b>EQUIPMENT MISUSE HAZARD</b></p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> <li>• Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See <b>Technical Data</b> in all equipment manuals.</li> <li>• Use fluids and solvents that are compatible with equipment wetted parts. See <b>Technical Data</b> in all equipment manuals. Read fluid and solvent manufacturer's warnings.</li> <li>• Check equipment daily. Repair or replace worn or damaged parts immediately.</li> <li>• Do not alter or modify equipment.</li> <li>• For professional use only.</li> <li>• Use equipment only for its intended purpose. Call your Graco distributor for information.</li> <li>• Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.</li> <li>• Do not use hoses to pull equipment.</li> <li>• Comply with all applicable safety regulations.</li> </ul>

**WARNING****TOXIC FLUID OR FUMES HAZARD**

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read MSDS's to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.

# Installation

**CAUTION**

To avoid damaging electrical components, keep liquids away from the meter sensor.

## Overview

The Endress+Hauser Promass<sup>®</sup> 80A flow meter provides a configurable and highly accurate means of measuring fluid flow. It uses the Coriolis principle to measure mass flow and fluid density and also measures fluid temperature, using an integrated temperature sensor.

This manual provides information for using the Endress+Hauser Promass<sup>®</sup> 80A flow meter with the Graco ProMix<sup>™</sup> II, ProMix<sup>™</sup> Auto, and ProControl proportioners. See the Promass<sup>®</sup> 80A manual provided by Endress+Hauser for further meter instructions.

## Installation Requirements

### Fluid Supply

- Avoid having solids enter the flow meter. Thoroughly flush fluid supply lines before installing the meter.
- Do not allow sealing tape to overlap inside pipe connections.
- Use an adequately-sized fluid line with a minimal number of restrictions (valves or bends) to avoid turbulence and cavitation.

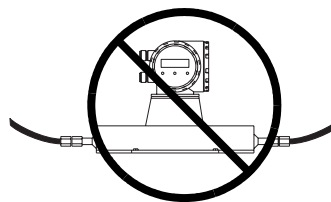
### Location

- The meter measures the flow at the location it is installed, so install the flow meter as close as possible to the proportioner component A or B dispense valve.
- The meter must be located within 50 ft. (15.2 m) of the EasyKey<sup>™</sup> display and as close to the proportioner fluid panel as possible. FIG. 5, page 7.

### Mounting

**CAUTION**

The bare meter weighs 33 lb (15 kg). Make sure the meter is properly supported to avoid stress on the fluid connections.




TI0850A

No special fittings or brackets are required. External vibration will not affect meter accuracy.



The transmitter housing, with the display, can be rotated for better viewing. See the Endress+Hauser Promass<sup>®</sup> 80A Operating Instruction Manual for details.

## Vertical Mounting

 Do not mount the meter so the fluid line runs horizontally across the vertical mounting surface.



### Fluid Flow Upward - preferred method

Mounting so fluid flow is upward through the meter is preferred as this allows solids to settle out and air to rise away from metering tube. FIG. 1.

Install the check valve provided at the meter inlet to minimize pulsation and backflow from the fluid supply.

### Fluid Flow Downward

If this method is used, you must install the check valve provided at the meter outlet to prevent fluid from sinking down through the meter.

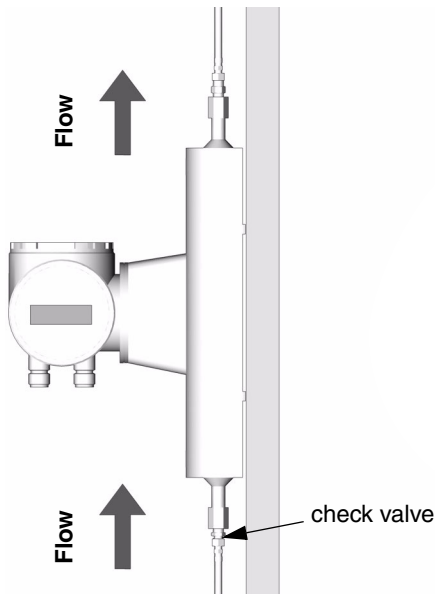


FIG. 1

## Horizontal Mounting

The meter transmitter must be either above or below the fluid line to ensure that solids do not collect and air does not become trapped in metering tube. FIG. 2.

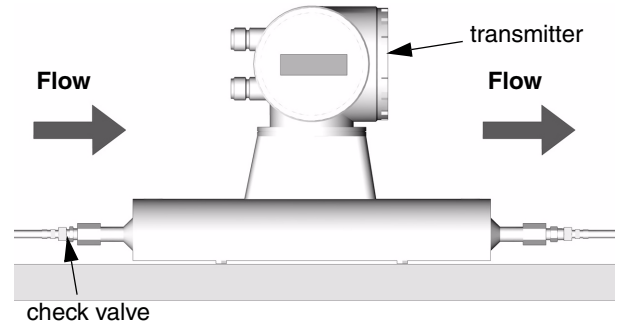


FIG. 2

## Fluid Line Connection

### WARNING




Check hoses, tubes, and couplings daily. Tighten connections before operating. Replace worn or damaged parts immediately. See page 3.

Connect the fluid supply line to the meter inlet.

Connect the fluid hose from the meter outlet to the appropriate component A or B dispense valve.

# Power Supply Installation

**WARNING**



Do not operate proportioner with equipment enclosure doors/covers open. Disconnect power source before servicing or electrically wiring. See page 3.

1. Turn proportioner power off and disconnect power source.
2. Open the EasyKey™ enclosure with its key.
3. Knock out the 2 prepared holes in the top of the EasyKey™ enclosure.
4. Apply the A and B labels as shown in FIG. 3.

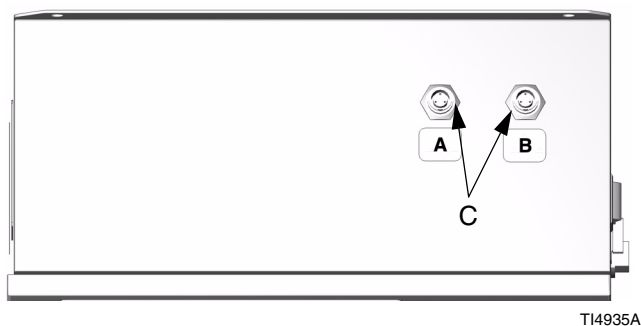


FIG. 3

5. Install DIN rail (16), using 2 screws (10). FIG. 4.
6. Install power supply (13) on DIN rail (16) with input/output connectors facing up.
7. Install DIN rail end blocks (11) to prevent power supply from moving.

## Cable Connections

### Power Harnesses and Cables

1. Connect line power supply harness (15) between power supply circuit board (N) and power supply input (P). FIG. 4.

2. Connect the harness (15) ground wire ferrule to ground terminal (Q).
3. Install the 2 bulkhead connectors [C - included with power supply harness (12)] in the knock out holes. FIG. 3.
4. Plug the harness (12) connector into the power supply output (R). FIG. 4.
5. Connect the harness (12) ground wire ferrule to the ground terminal (M).
6. Close and lock the EasyKey™ door.
7. Connect the power cable (3) to the appropriate bulkhead connector (C) on top of the EasyKey™ enclosure. FIG. 5.

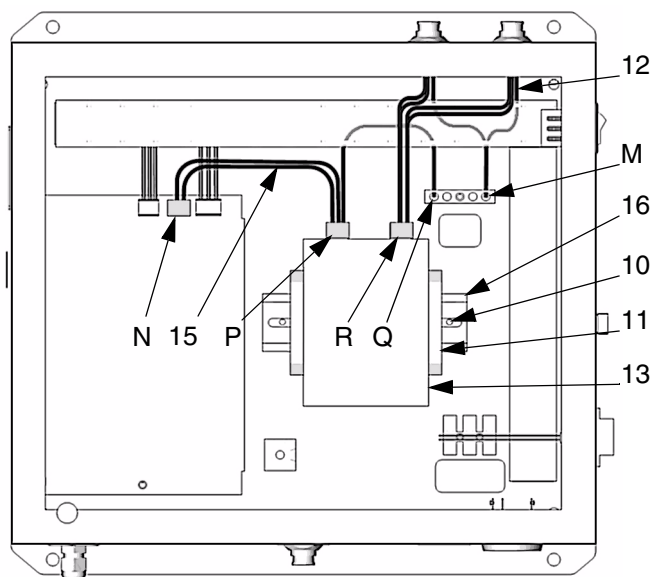


FIG. 4

### Meter Signal Cable

1. Route the 10 ft. (3 m) signal cable (4) through the proportioner fluid panel hole (J) and into the enclosure through the strain relief (GG). FIG. 5. Leave enough slack in the cable so the enclosure (K) can be raised for service.
2. See FIG. 5 for electrical connections.

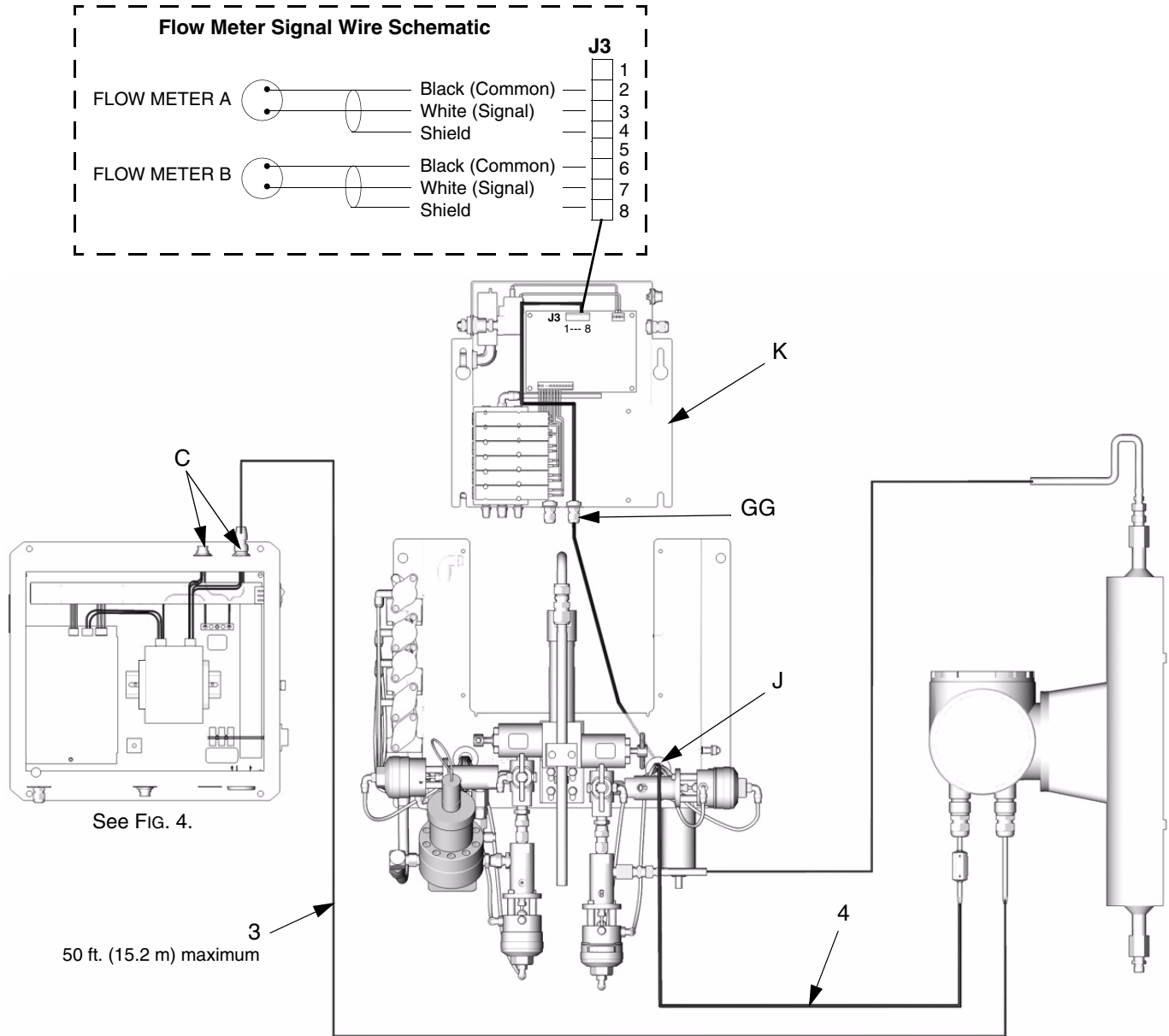


FIG. 5

## Power and Signal Cable Connections to Meter

The power cable (3) and signal cable (4) are factory assembled to the meter. If cables need servicing or replacement, see FIG. 6 to connect to meter.

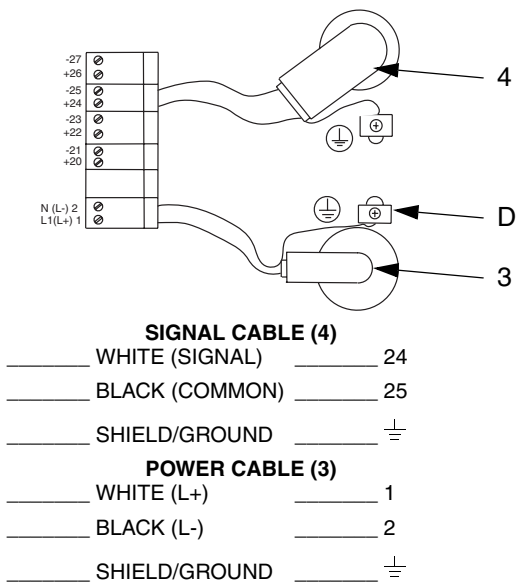






FIG. 6

## Grounding

**WARNING**

Your system must be grounded. Never use the flow meter with an electrostatic gun isolation system. Read warnings, page 3.

### Flow Meter Sensor

Ground the flow meter sensor by connecting a ground wire between the ground lug (D) and true earth ground. FIG. 6.

Have a qualified electrician check resistance between the flow meter sensor and a true earth ground. If resistance is greater than 1 ohm, a different ground site may be required. Do not operate until the problem is corrected.

### Meter Fluid Manifold

Ground the meter fluid housing, using one of the following options:

- Connect the conductive fluid hose to the meter inlet and outlet.
- Connect a ground wire to the meter mounting holes.

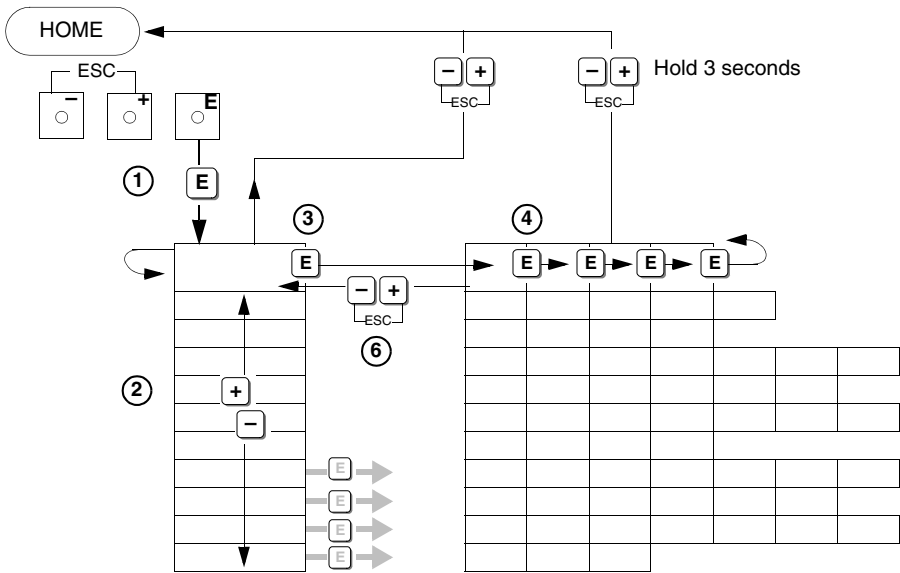


FIG. 7: Group and Function Navigation

**NOTE:**  
① numbers represent steps of **Basic Installation Settings** procedure, page 9.

# Operation

## Start Up

When all electrical and fluid connections are complete, reconnect the power source to the EasyKey™ Display, and turn it on.



See ProMix™ II, ProMix™ Auto, and ProControl Operation manuals for operating instructions for each specific proportioner.

## Pressure Relief Procedure



### WARNING



Follow **Pressure Relief Procedure** when you stop spraying and before cleaning, checking, servicing, or transporting equipment. Read warnings, page 3.

1. Turn off the fluid supply to the meter.
2. Follow the **Pressure Relief Procedure** in the operation manuals.

### CAUTION

Do not service the electronic sensor. Return it to your Graco distributor for service.

## Using Promass® 80A with Proportioner System

### Basic Installation Settings

The function matrix consists of groups which have a set of related functions. See page 11.

### To access groups and functions:

(Refer to FIG. 7.)

1. From HOME, press **E** to enter function matrix and access Group options.
2. To scroll from one Group to the next or previous Group, press **+** or **-**.
3. To select the Group and access its Functions, press **E**.
4. To scroll through Functions, press **E**.
5. To select a Function, press **+** or **-**.



To enable meter programming, you need to enter the access code. The factory setting is 80. See the Endress+Hauser manual to change the access code.

6. To exit the function matrix one level at a time, press **+** and **-** together.



Pressing and holding **+** and **-** together for more than 3 seconds will return you to HOME.

For additional Promass® 80A instructions, see the Endress+Hauser manuals shipped with the meter, or access the manuals online at [www.endress.com](http://www.endress.com).

See the ProMix™ II, ProMix™ Auto, and ProControl Operation manuals for additional information on using the Coriolis meter with each specific proportioner.

**! IMPORTANT:** Enter the correct K-factor (pulse value function in TABLE 1, page 10) and calibrate the meter before operating the proportioner.

## Measuring values

The following are the recommended settings for using the meter with the proportioner. If a value is not mentioned, use the default Endress+Hauser setting.

**Table 1: Values to use with Proportioner**

Group	Function	Value
System Units	Volume Flow	cc/m*
	Unit Volume	cc
User Interface	Assign Line 1	Volume Flow
	Assign Line 2	Totalizer 1 or Operation/System Condition (user's choice)
Totalizer 1	Assign Totalizer	Volume Flow
	Reset Total	Yes
Current Output 1	Assign Current	Off
Pulse/Freq. Output	Operation Mode	Pulse
	Assign Pulse	Volume Flow
	Pulse Value (K-Factor)	0.020 cc/pulse for Low Flow applications (20-500 cc/min.)
		0.061 cc/pulse for Medium Flow applications (500-1500 cc/min.)
		0.150 cc/pulse for High Flow applications (1500-3800 cc/min.)
	Pulse Width	1.00 ms
	Pulse Value	1.00 ms
	Output Signal	Passive/Positive
Process Parameter	Assign LF-Cut Off	Volume Flow
	On-Val. FL-Cut Off	5.00 cc/min. for Low Flow applications (20-500 cc/min.)
		30 cc/min. for Medium & High Flow applications (500-3800 cc/min.)

\* When changing a value, use **+** or **-** keys to toggle through available selections. Use Enter **E** key to select and save each value. Only the value flashing can be selected; you may have to select and press **E** for each digit or unit to move to the next digit/unit.

## Function Matrix

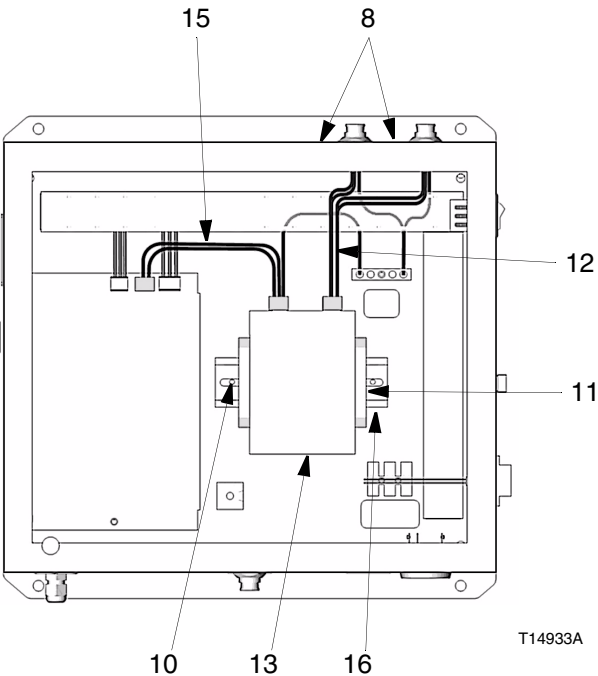
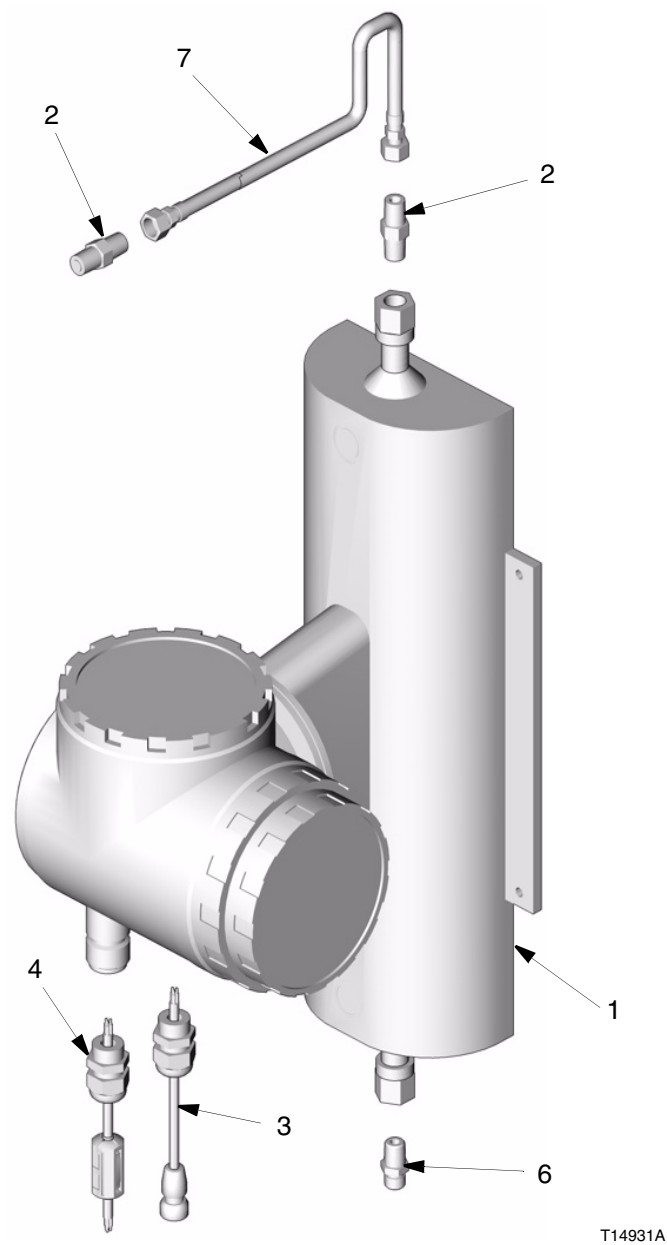
The Function Matrix, page 11, shows all the Promass® 80A setting values available. The bold values are the minimum settings required to use the Promass® 80A Coriolis Meter with the Graco proportioning system.

## Function Matrix

[illegible]

# Parts

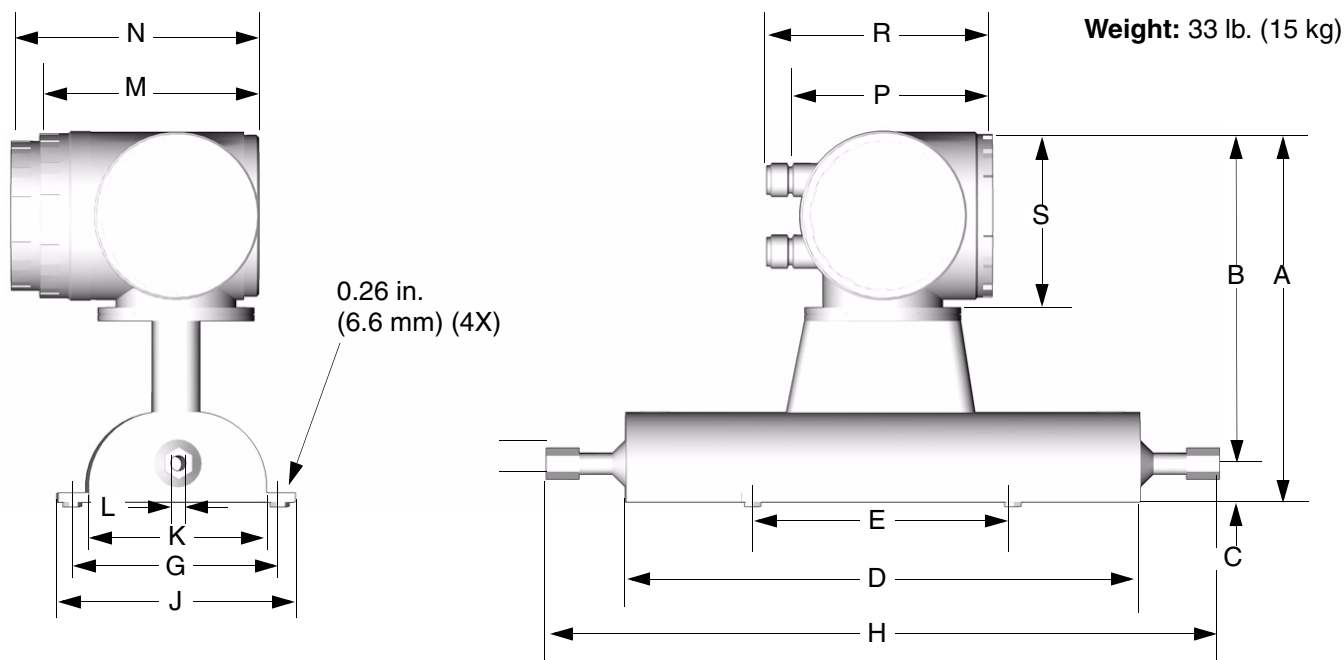
Part No. 234563



Ref. No.	Part No.	Description	Qty.
1	15D135	Coriolis Flow Meter	1
2	166846	Adapter, 1/4 npt x 1/4 npsm	2
3	234455	Power Cable; 50 ft. (15.24 m)	1
4	234454	Signal Cable; 10 ft. (3.1 m)	1
6	501867	Check Valve; 1/4-18 npt	1
7	206966	Hose; 1.5 ft. (.46 m), 1/4-18 npsm	1
8	15D580	Labels, A and B	1

Ref. No.	Part No.	Description	Qty.
10	110637	Screw, machine; #10-24 UNC x .375 in.	2
11	112446	Clamp End Block	2
12	15E135	Harness, power supply	1
13	117782	Power Supply	1
15	15E136	Harness, line power supply	1
16	514014	Din Rail, .41 ft.	1

# Dimensions



**Dimensions - inches (mm)**

A	B	C	D	E	F	G	H
12.4 (315)	11.14 (283)	1.26 (32)	17.13 (435)	8.66 (220)	SW 11/16"	6.89 (175)	19.57 (497)
J	K	L	M	N	P	R	S
7.68 (195)	5.91 (150)	.14 (3.5)	8.19 (207)	8.94 (227)	6.61 (168)	7.36 (187)	6.3 (160)

## Technical Data

Maximum Fluid Working Pressure	2300 psi (16 MPa, 160 bar)
Fluid wetted parts	
Meter	1.4539/904L stainless steel alloy C-22 2.4602/N 06022
Hose and Fittings	303, 304 stainless steel, PTFE
Fluid Temperature Range*	41-122° F (5-50° C)
Maximum Ambient Temperature*	122° F (50° C)
Flow Meter Inlet/Outlet	4-VCO-4 Face Seal
Power and Signal Cable Entry	1/2 npt strain relief
Resolution	settable 0.020-0.150 cc/pulse
Accuracy	see Endress+Hauser manual
Supply Voltage	24 VDC

\* When used with ProMix™ II, ProMix™ Auto, or ProControl systems. See Endress+Hauser meter manual for additional information.

\*\* Promass® is a registered trademark of Endress+Hauser.

# Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

**THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

**GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO.** These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

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# Graco Information

**TO PLACE AN ORDER**, contact your Graco distributor or call to identify the nearest distributor.

**Phone:** 612-623-6921 **or Toll Free:** 1-800-328-0211, **Fax:** 612-378-3505

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