

QUANTM™ Leak Sensors

3A8861E

EN

For detecting leaks in QUANTM pumps. For professional use only.



Important Safety Instructions

Read all warnings and instructions in this manual and related system manuals before using or servicing the equipment. Save these instructions.

NOTICE

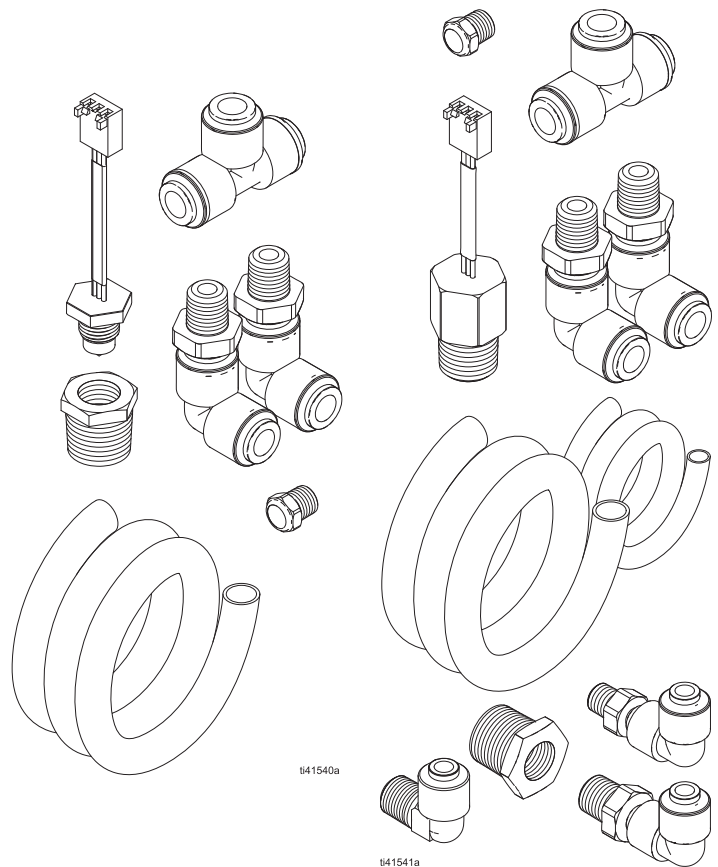
Diaphragm access ports must not be open in explosive atmospheres. Pumps used in explosive atmospheres must have installed either plugs 128658 or Leak Sensor Kit 25F109.

Kit for pumps certified for use in Ordinary Locations

Kit No.	Kits include:
25F108	1 level switch sensor 1 reducer fitting 2 elbow swivels (1/4 in. NPT; 3/8 in. hose port) 1 tee union 1 hose (30 in. long, 3/8 in. outer diameter) 1 breather

Kit for pumps certified for use in Explosive Atmospheres or Hazardous (Classified) Locations

Kit No.	Kits include:
25F109	1 level switch sensor 2 elbow swivels (1/4 in. NPT; 3/8 in. hose port) 1 tee union 1 hose (30 in. long, 3/8 in. outer diameter) 1 breather <i>(For shipping purposes only. Discard.)</i> 1 elbow swivel (1/4 in. NPT; 1/4 in. hose port) 1 elbow swivel (1/8 in. NPT) 1 hose (20 in. long, 1/4 in. outer diameter) 1 pipe bushing



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Related Manuals

English Manual Number	Description	Reference
3A7637	QUANTM Electric Motor, Repair-Parts	Motor Manual
3A8572	QUANTM Pumps, Instructions, Industrial Models	Pump Manual
3A9286	QUANTM Pumps, Instructions, Hygienic Models	Pump Manual
3A8946	QUANTM Pumps, Parts, Industrial Models	Parts Manual
3A9287	QUANTM Pumps, Parts, Hygienic Models	Parts Manual

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 WARNING	
    	FIRE AND EXPLOSION HAZARD Flammable fumes, such as solvent and paint fumes, in work area can ignite or explode. Paint or solvent flowing through the equipment can cause static sparking. To help prevent fire and explosion: - Use equipment only in well-ventilated area. - Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static sparking). - Ground all equipment in the work area. See Grounding instructions in your pump manual. - Keep work area free of debris, including solvent, rags and gasoline. - Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present. - Use only conductive grounded fluid lines. Stop operation immediately if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem. - Keep a working fire extinguisher in the work area. Static charge may build up on plastic parts during cleaning and could discharge and ignite flammable vapors. To help prevent fire and explosion: - Clean plastic parts only in well-ventilated area. - Do not clean with a dry cloth.



WARNING



ELECTRIC SHOCK HAZARD

Explosive Atmospheres or Hazardous (Classified) Locations Pumps (hard wired for permanent connection):

This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.

- Turn off and disconnect power at main switch before disconnecting any cables and before servicing or installing equipment.
- Connect only to grounded power source.
- All electrical wiring and repairs must be done by a qualified electrician and comply with all local codes and regulations.
- Do not expose to rain. Store indoors.

Ordinary Locations Pumps (cord and plug connection)

This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.

- Turn off and disconnect power cord before servicing equipment.
- Connect only to grounded electrical outlets.
- Only use 3-wire extension cords for 2-phase models. Only use 4-wire extension cords for 3-phase models.
- Ensure ground prongs are intact on power and extension cords.
- Do not expose to rain. Store indoors.
- Wait five minutes after disconnecting power cord before servicing.



PRESSURIZED EQUIPMENT HAZARD

Fluid from the equipment, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.

- Follow the **Pressure Relief Procedure** in your pump manual when you stop spraying/dispensing and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check fluid lines and connections daily. Replace worn or damaged parts immediately.



WARNING



EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) from distributor or retailer.
- Turn off all equipment and follow the **Pressure Relief Procedure** in your pump manual when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route fluid lines, cords, and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over-bend fluid lines, cords, or cables. Do not use fluid lines, cords, or cables to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.



BURN HAZARD

Equipment surfaces and fluid that is heated can become very hot during operation. To avoid severe burns:

- Do not touch hot fluid or equipment.



PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

Overview

The leak sensor monitors the equipment for diaphragm rupture or other leaks in the equipment. If the sensor detects a leak, the LED indicator on the pump will flash and the pump will stop.

Component Identification

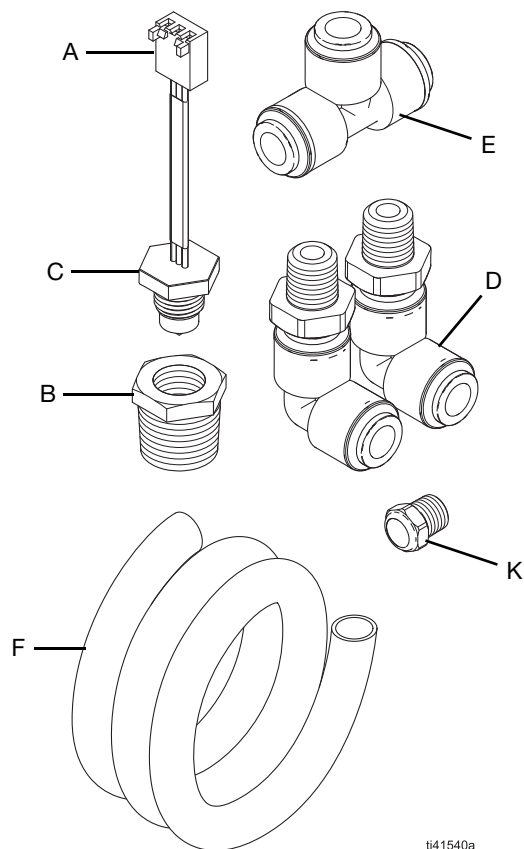


FIG. 1: Leak Sensor Kit for Pumps Certified for Use in Ordinary Locations

Key:

- A** Leak sensor wire
- B*** Reducer fitting
- C** Leak sensor
- D** Fitting, elbow swivel (1/4 in. NPT; 3/8 in. hose port)
- E** Tee union
- F** Hose (3/8 in. outer diameter)
- G[‡]** Fitting, elbow swivel (1/8 in. NPT)
- H[‡]** Hose (1/4 in. outer diameter)
- J[‡]** Fitting, pipe bushing
- K*** Fitting, breather
- N[‡]** Fitting, elbow swivel (1/4 in. NPT; 1/4 in. hose port)
- U[‡]** Fitting, elbow (1/4 in. NPT; 1/4 in. hose port)

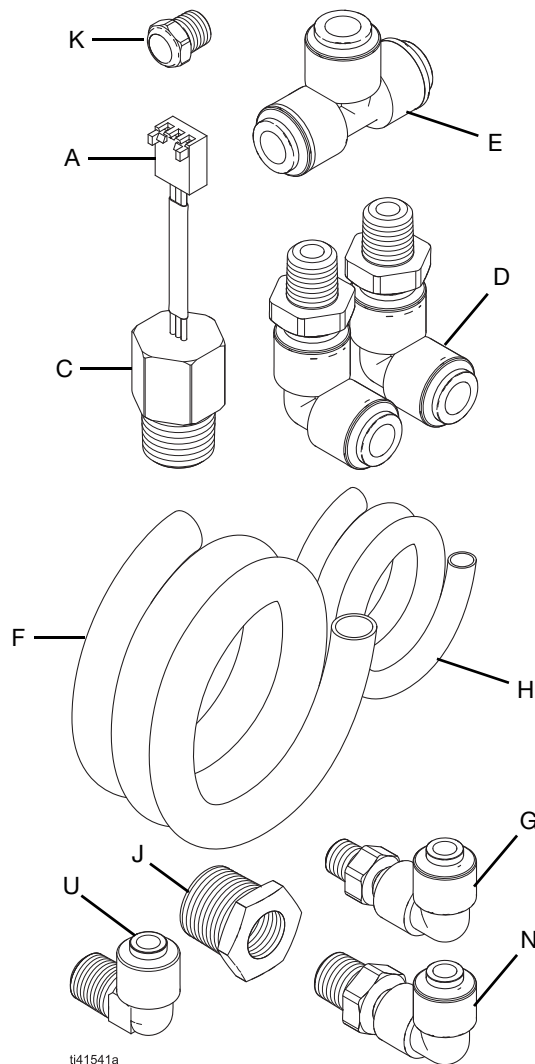


FIG. 2: Leak Sensor Kit for Pumps Certified for Use in Explosive Atmospheres or Hazardous (Classified) Locations

- * Only for pumps certified for use in Ordinary Locations.
- ♦ Discard for pumps certified for use in Explosive Atmospheres or Hazardous (Classified) Locations.
- ‡ Only for pumps certified for use in Explosive Atmospheres or Hazardous (Classified) Locations.

Installation

				
To avoid injury from fire, explosion, or electric shock, all electrical wiring must be done by a qualified electrician and comply with all local codes and regulations. To prevent electric shock, turn off the pump and disconnect from power before performing any service or repair procedure.				

				
To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, relieve the pressure when you stop operating and before cleaning, checking, or servicing the equipment. Follow the Pressure Relief Procedure in your related pump manual. See Related Manuals, page 2. Perform Prepare the Pump, page 7, before performing any service or repair.				

Prepare the Pump

				
Pumps Certified for Use in Explosive Atmospheres or Hazardous (Classified) Locations: To avoid injury from fire and explosion, move the equipment to a non-explosive or non-hazardous location before performing any service or repair to the equipment.				

Always complete the following procedure before performing any service or repair to the equipment.

1. Relieve the pressure. Follow the **Pressure Relief Procedure** in your related pump manual. See **Related Manuals**, page 2.
2. Verify that the pump is turned off and power to the system is disconnected before performing any service or repair procedure.

Install the Leak Sensor

See FIG. 3–FIG. 4.

Required Tools:

- 7/8 in. open-end wrench
- 3/8 in. hex wrench
- 3/4 in. open-end wrench (for pumps certified for use in Ordinary Locations only)

				
To avoid injury from electric shock, all electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.				

Remove the Leak Sensor

If a leak sensor is currently installed, remove the current leak sensor before installing the new leak sensor.

1. Follow **Prepare the Pump**, page 7.
2. Remove the control cover. See your related motor manual. See **Related Manuals**, page 2.
3. Disconnect the leak sensor wire (A) from the port in the control housing (S). See **Electrical Schematics**, page 13.
4. **Pumps Certified for Use in Ordinary Locations only:** Loosen the fitting (B) behind the leak sensor (C).

NOTICE

To avoid damage to the control board, ensure that fluid does not contact electrical components in the control housing.

5. Remove the leak sensor (C) assembly and reducer fitting (B, if applicable) from the control housing (S).

NOTE: Ensure there is no fluid in the leak sensor or in the control housing.

6. **Pumps Certified for Use in Ordinary Locations only:** Disconnect the fitting (B) from the leak sensor (C).
7. Disconnect the hoses (F, H, if applicable) and fittings (D, J, if applicable, K, if applicable, N, if applicable) from the pump.
8. Inspect for wear or damage. Replace as necessary.

Install the Leak Sensor

1. Follow **Prepare the Pump**, page 7.
2. Remove the control cover. See your related motor manual. See **Related Manuals**, page 2.
3. If installing a leak sensor for the first time, remove the plug (T).
4. Turn the switch for the leak sensor to the ON position. See **Electrical Schematics**, page 13.
5. Apply a watertight thread sealant to the threads on the leak sensor (C).

NOTE: To ensure a watertight seal, apply Loctite 425 Assure™ thread sealant to the threads on the leak sensor (C).

6. **Pumps Certified for Use in Ordinary Locations only:** Install the leak sensor (C) to the reducer fitting (B).
7. **Pumps Certified for Use in Ordinary Locations only:** Apply a watertight thread sealant to the threads on the reducer fitting (B).

NOTE: To ensure a watertight seal, apply Loctite 425 Assure™ thread sealant to the threads on the reducer fitting (B).

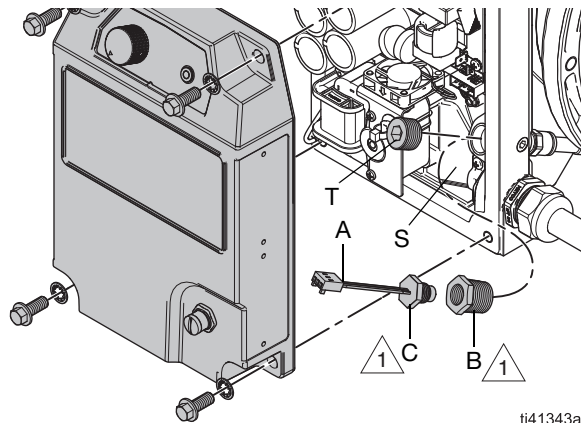
8. Install the leak sensor (C) assembly to the control housing (S).

NOTICE

Ensure that the leak sensor is installed tightly so that fluid cannot enter the control housing. Do not overtighten. Excessive tightening could strip the leak sensor threads.

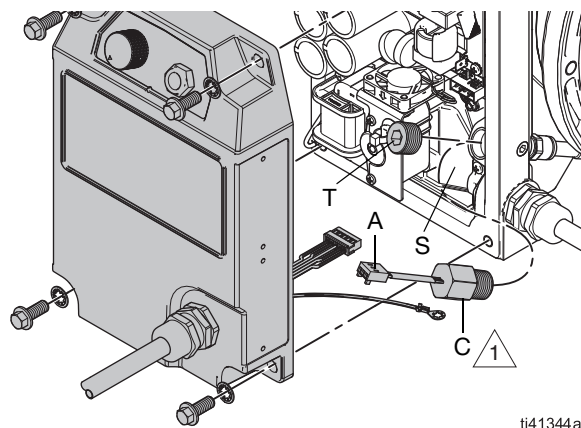
After reassembly, allow the thread sealant to cure for 12 hours, or per instructions of the manufacturer, prior to operating the system.

9. **Pumps Certified for Use in Ordinary Locations only:** Securely tighten the reducer fitting (B) behind the leak sensor (C).
 10. Connect the leak sensor wire (A) to the port in the control housing (S). See **Electrical Schematics**, page 13.
- NOTE:** Ensure the switch for the leak sensor is turned to ON.
11. Install the control cover. See your related motor manual. See **Related Manuals**, page 2.
 12. Connect the hoses and fittings to the pump. Follow **Install Hoses and Fittings**, starting on page 9.



- 1 Apply Loctite 425 Assure™ thread sealant to the threads.

FIG. 3: Leak Sensor, Pumps Certified for Use in Ordinary Locations



- 1 Apply Loctite 425 Assure™ thread sealant to the threads.

FIG. 4: Leak Sensor, Pumps Certified for Use in Explosive Atmospheres or Hazardous (Classified) Locations

Install Hoses and Fittings

Required Tools:

- 3/16 in. hex wrench (for all models)
- 12 mm open-end wrench (for pumps certified for use in Ordinary Locations only)

For pumps certified for use in Explosive Atmospheres or Hazardous (Classified) Locations only:

- 3/8 in. hex wrench
- 10 mm socket wrench
- 9/16 in. open-end wrench
- 11/16 in. open-end wrench
- 13/16 in. open-end wrench
- 9/32 in. open-end wrench
- 1 in. open-end wrench

Prepare Equipment for Hoses and Fittings

				
Pumps Certified for Use in Explosive Atmospheres or Hazardous (Classified) Locations: To avoid injury from fire and explosion, move the equipment to a non-explosive or non-hazardous location before removing plugs (K1, L, M, N1).				

Complete the following procedure before installing leak sensor hoses and fittings for the first time.

1. Follow **Prepare the Pump**, page 7.
2. **Pumps Certified for Use in Explosive Atmospheres or Hazardous (Classified) Locations only:** Remove the fasteners (P) and plate (R). See FIG. 5.

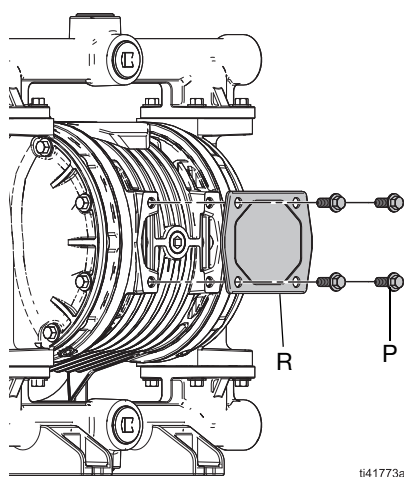


FIG. 5: Remove Fasteners and Plate, Pumps Certified for Use in Explosive Atmospheres or Hazardous (Classified) Locations only

				
Pumps Certified for Use in Explosive Atmospheres or Hazardous (Classified) Locations: To avoid injury from fire and explosion, do not expose internal parts of the pump to an explosive or hazardous (classified) atmosphere. Move the equipment to a non-explosive or non-hazardous location before removing plugs. Only remove the plugs (K1, L, M, N1) if replacing the port space with a leak sensor system. Do not leave the ports open to the atmosphere.				

3. **Pumps Certified for Use in Ordinary Locations:** Remove plugs (K1, L).

Pumps Certified for Use in Explosive Atmospheres or Hazardous (Classified) Locations: Remove plugs (K1, L, M, N1).

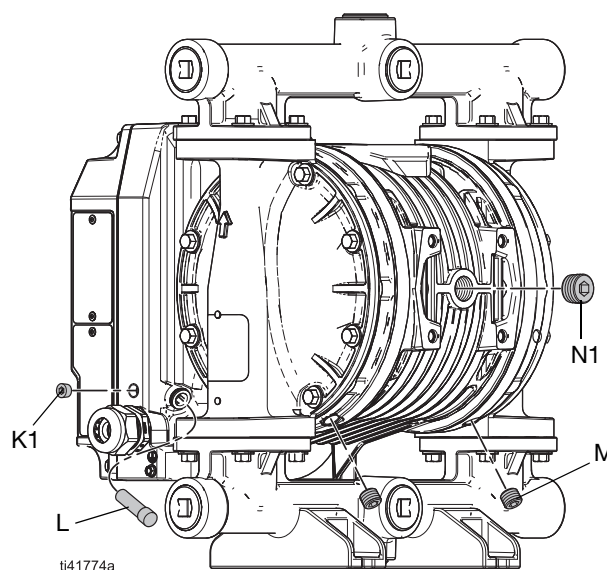


FIG. 6: Remove Plugs, Industrial Model Shown

Connect the Hoses and Fittings for Pumps Certified for Use in Ordinary Locations

See FIG. 1 and FIG. 7.

NOTICE

Firmly tighten all connections to avoid leaks and damage to equipment parts.

1. Follow **Prepare Equipment for Hoses and Fittings**, page 9.
2. Cut the length of the hose (F) into three segments (F1 and F2). See **Hose Cut Lengths**, page 12. See FIG. 7.
 - a. Cut one long length of hose for F1.
 - b. Cut two short lengths of hose for F2.
3. Install each elbow fitting (D) into the bottom ports (M1).

NOTE: Apply thread sealant to the threads of the elbow fittings (D).

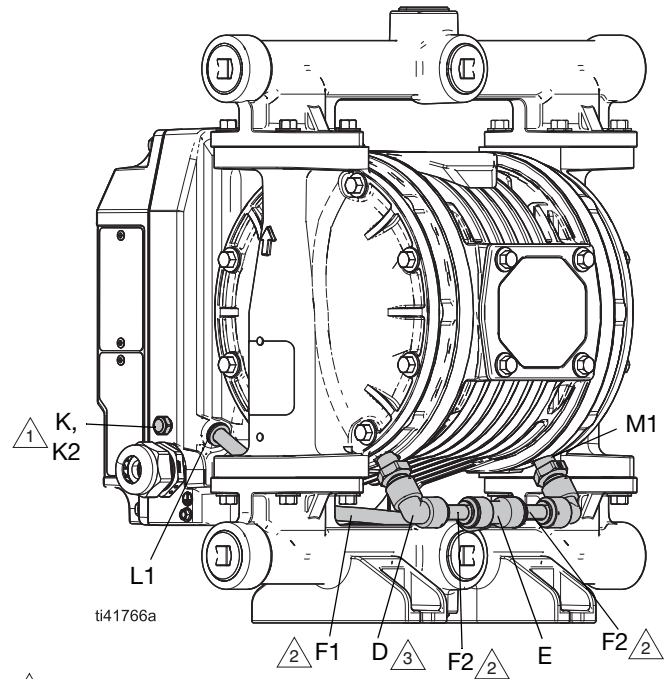
4. Connect one end of each short length of hose (F2) to an elbow fitting (D).
5. Connect the open end of each short lengths of hose (F2) on each side of the tee union (E).
6. Connect the long length of hose (F1) to the center port of the tee union (E).
7. Connect the open end of the long length of hose (F1) to the quick connect port (L1).
8. Install a breather fitting (K) in the side port (K2).

NOTE: The side port (K2) must be able to breathe for the leak sensor to work properly.

9. Firmly tighten all connections.

NOTICE

To avoid leaks and damage to equipment parts, ensure the hoses are fully seated in the fittings.



1. Ensure the side port (K2) can breathe.
2. Cut as needed. See **Hose Cut Lengths**, page 12.
3. Apply thread sealant to threads.

FIG. 7: Typical Installation for Leak Sensor Hoses and Fittings for Pumps Certified for Use in Ordinary Locations, Industrial Pump Shown

Connect the Hoses and Fittings for Pumps Certified for Use in Explosive Atmospheres or Hazardous (Classified) Locations

See FIG. 2 and FIG. 8.

NOTICE

Firmly tighten all connections to avoid leaks and damage to equipment parts.

1. Follow **Prepare Equipment for Hoses and Fittings**, page 9.
2. Cut the length of the hose (F) into three segments (F1 and F2). See **Hose Cut Lengths**, page 12. See FIG. 8 .
 - a. Cut one long length of hose for F1.
 - b. Cut two short lengths of hose for F2.
3. Install each elbow fitting (D) into the bottom ports (M1).

NOTE: Apply thread sealant to the threads of the elbow fittings (D).

4. Connect one end of each short length of hose (F2) to an elbow fitting (D).
5. Connect the open end of each short lengths of hose (F2) on each side of the tee union (E).
6. Connect the long length of hose (F1) to the center port of the tee union (E).
7. Connect the open end of the long length of hose (F1) to the quick connect port (L1).
8. Install an elbow fitting (G) in the side port (K2).

NOTE: Apply thread sealant to the threads of the elbow fitting (G).



To avoid injury from fire and explosion, ensure the system is sealed with a connection between the side port (K2) and the center section port (N2).

9. Connect one end of the hose (H) to the elbow fitting (G).
10. Connect an elbow fitting (N) or (U) to the bushing fitting (J).

NOTE: Apply thread sealant to the threads of the elbow fitting (N).

NOTE: In applications utilizing pump mounted to swivel stand, use shorter elbow fitting (U) threaded into bushing fitting (J).

11. Install the bushing fitting (J) assembly to the center section port (N2).

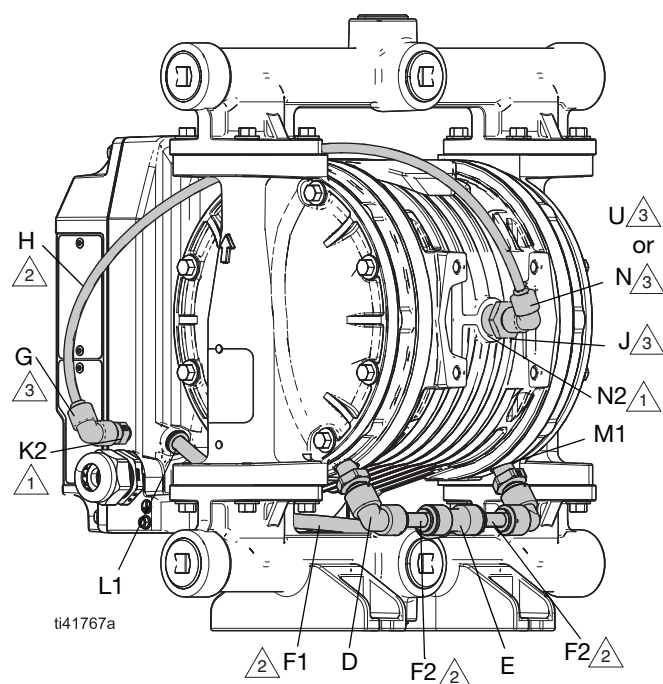
NOTE: Apply thread sealant to the threads of the bushing fitting (J).

12. Connect the other end of the hose (H) to the elbow fitting (N) or (U).

13. Firmly tighten all connections.

NOTICE

Firmly tighten all connections to avoid leaks and damage to equipment parts.



1 Ensure the side port (K2) and center section port (N2) are connected and sealed.

2 Cut as needed. See **Hose Cut Lengths**, page 12.

3 Apply thread sealant to threads.

FIG. 8: Typical Installation for Leak Sensor Hoses and Fittings for Pumps Certified for Use in Explosive Atmospheres or Hazardous (Classified) Locations, Industrial Pump Shown

Hose Cut Lengths

Trim the hose length using a perpendicular (square) cut.
See FIG. 7 and FIG. 8.

1. Cut one long length of hose for F1.
2. Cut two short lengths of hose for F2.

Pump Configuration			Hose (F1)		Hose (F2)	
			in.	cm	in.	cm
QT (Industrial)	C		8-5/8	21.9	2-1/2	6.35
	D		9-3/8	23.8	2-1/4	5.72
	E		9-1/8	23.2	2-1/2	6.35
QH (Hygienic)	C	Food Grade	11-1/8	28.3	2	5
		Other	12-1/8	30.8	2	5
	D	Food Grade	9-1/4	23.5	2-5/8	6.67
		Other	10	25.4	4	10.16
	E		9-1/8*	23.2*	2-3/4	7

* Cut lengths may vary. Verify the distance between fittings and cut accordingly.

Test the Leak Sensor

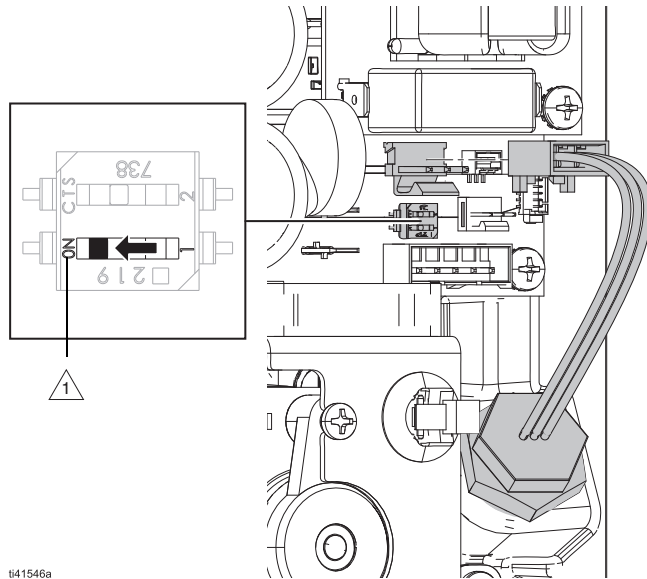
1. Ensure that the pump is properly installed and set up for operation. See your related pump manual. See **Related Manuals**, page 2.
2. Start the pump to verify that the leak sensor is properly working. See your related pump manual. See **Related Manuals**, page 2.

NOTE: If the leak sensor is not properly installed or working, the LED indicator on the pump will flash or the pump will not start.

NOTE: If a leak is detected by the sensor, the LED indicator on the pump will flash.

Electrical Schematics

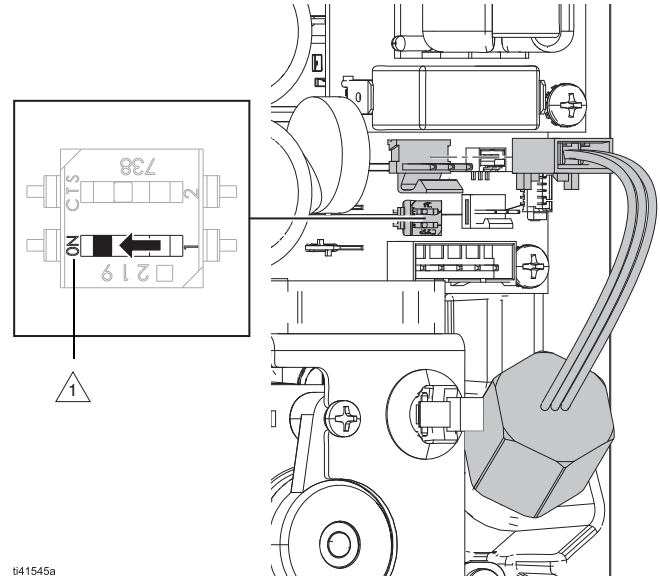
1 Ensure the switch for the leak sensor is turned to ON.



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FIG. 9: Leak Sensor Connection for Pumps Certified for Use in Ordinary Locations

1 Ensure the switch for the leak sensor is turned to ON.



t41545a

FIG. 10: Leak Sensor Connection for Pumps Certified for Use in Explosive Atmospheres or Hazardous (Classified) Locations

Technical Specifications

QUANTM Leak Sensor		
	US	Metric
Operating temperature range		
Ordinary Locations	-13° to 176°F	-25° to 80°C
Explosive Atmospheres or Hazardous (Classified) Locations	-40° to 257°F	-40° to 125°C

California Proposition 65

CALIFORNIA RESIDENTS

⚠ WARNING: Cancer and reproductive harm – www.P65warnings.ca.gov.

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

For the latest information about Graco products, visit www.graco.com.

For patent information, see www.graco.com/patents.

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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Graco reserves the right to make changes at any time without notice.*

Original instructions. This manual contains English. MM 3A8861E

Graco Headquarters: Minneapolis

International Offices: Belgium, China, Japan, Korea

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