

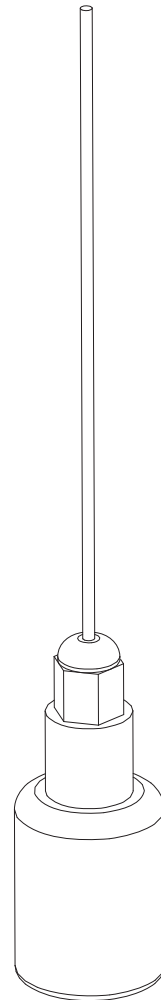


S404 UNIVERSAL LIQUID SENSOR

INSTALL GUIDE

000-0317 r3

SENSOR MODEL
S404



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For technical support, please contact:

Franklin Electric Technical Support
Web: franklinfueling.com/support-center
Tel: +1 800 984 6266

For additional questions and concerns, please contact:

Franklin Electric
3760 Marsh Rd
Madison, WI 53718 USA
Web: franklinfueling.com
Tel: USA & Canada +1 800 225 9787 • Tel: UK +44 (0) 1473 243300
Tel: Mex 001 800 738 7610 • Tel: DE +49 6571 105 380 • Tel: CN +86 10 8565 4566

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CONVENTIONS USED IN THIS DOCUMENT

This document includes safety precautions and other important information presented in the following format:

NOTE: This provides helpful supplementary information.

IMPORTANT: This provides important supplementary information and instructions to avoid damaging hardware or a potential hazard.

▲ CAUTION: This indicates a potentially hazardous situation that could result in minor or moderate injury if not avoided. This may also be used to alert against unsafe practices.

▲ WARNING: This indicates a potentially hazardous situation that could result in severe injury or death if not avoided.

▲ DANGER: This indicates an imminently hazardous situation that will result in death if not avoided.

OPERATING PRECAUTIONS

Franklin Electric equipment is designed to be installed in areas where volatile liquids such as gasoline and diesel fuel are present. Working in such a hazardous environment presents a risk of severe injury or death if you do not follow standard industry practices and the instructions in this document. Before working with or installing the equipment covered in this document, or any related equipment, read this entire document, particularly the following precautions:

IMPORTANT: To help prevent spillage from an underground storage tank, make sure the delivery equipment is well-maintained, that there is a proper connection, and that the fill adaptor is tight. Delivery personnel should inspect delivery elbows and hoses for damage and missing parts.

▲ CAUTION: Use only original Franklin Electric parts. Substituting non-Franklin Electric parts could cause the device to fail, which could create a hazardous condition and/or harm the environment.

▲ WARNING: Follow all codes that govern the installation and service of this product and the entire system. Always lock out and tag electrical circuit breakers while installing or servicing this equipment and related equipment. A potentially lethal electrical shock hazard and the possibility of an explosion or fire from a spark can result if the electrical circuit breakers are accidentally turned on while installing or servicing this product. Refer to this document (and documentation for related equipment) for complete installation and safety information.

▲ WARNING: Before entering a containment sump, check for the presence of hydrocarbon vapors. Inhaling these vapors may cause dizziness/unconsciousness, and if ignited, can explode causing serious injury or death. Containment sumps are designed to trap hazardous liquid spills and prevent environmental contamination, so they can accumulate dangerous amounts of hydrocarbon vapors. Check the atmosphere in the sump regularly while work is in process. If vapors reach unsafe levels, exit the sump and ventilate it with fresh air before resuming work. Always have another person standing by for assistance.

▲ WARNING: Follow all federal, state, and local laws governing the installation of this product and its associated systems. When no other regulations apply, follow NFPA codes 30, 30A, and 70 from the National Fire Protection Association. Failure to follow these codes could result in severe injury, death, serious property damage, and/or environmental contamination.

▲ WARNING: Always secure the work area from moving vehicles. The equipment in this document is usually mounted underground, so reduced visibility puts service personnel working on it in danger from moving vehicles that enter the work area. To help prevent this safety hazard, secure the area by using a service truck or other vehicle to block access to the work area.

▲ DANGER: Inspect the installation location for potential ignition sources such as flames, sparks, radio waves, ionizing radiation, and ultrasound sonic waves. If any potential ignition sources are identified, implement proper safety measures.

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1 Introduction

1.1 Documentation

- This document contains the procedure and related information for installing a S404 Universal Liquid Sensor. The content herein is intended for personnel who are qualified (certified) in the installation of the S404.
- Instructions of this document are in English. All other language versions are translations of this original document.
- Information given in this document is provided as a guide only.
 - The Illustrations depict a typical setup and are for instruction and description purposes only.
 - It is the installer's responsibility to ensure that correct and safe procedures are followed at the worksite.
- This document and related documents are available from Franklin Electric at www.franklinfueling.com.

1.1.1 Symbol Legend

	Wear Protective Headwear		Wear Eye Protection
	Wear Protective Clothing		Wear High-Visibility Clothing
	Wear Protective Gloves		Wear Safety Footwear
	Refer to instruction guide		Ventilate Before & During Entering
	Ensure Continuous Ventilation		Connect an earth terminal to the ground
	Lockout/Tagout Electrical Equipment		
	Disconnect main plug from electrical outlet		
	Disconnect before carrying out maintenance or repair		
	General Warning		Warning: Industrial vehicles
	Warning: Electricity		Warning: Flammable Material
	No open flame; Fire, open ignition source and smoking prohibited		

2 Safety/Security

2.1 General Safety Information

- Procedures in this document are only to be performed by people qualified and certified to perform them.
- Personnel working on or with energized equipment must be authorized by relevant regulatory bodies to carry out such work and must have the appropriate training. Check with your employer and relevant regulatory body's rules for working with energized equipment.
- Obey all local laws, rules, regulations, and instructions in this document. In case of inconsistency or contradiction between information contained in this document and any laws, rules and regulations, obey the stricter of the two.
- Keep unqualified personnel at a safe distance during installation.
- If it is necessary to remove safety/security devices, immediately reinstall the safety/security devices after completing the work.

2.2 Documentation Availability

- Site Owner/Operator – Save this guide for future use, and make sure to provide it to anyone who services this equipment.
- Always reference the guide(s) that came with the equipment for a complete list of installation and safety precautions. The most current Franklin Electric documentation can be found online at www.franklinfueling.com.

2.3 Hazard Assessment

Prior to beginning work and prior to recommencing work after leaving and returning to the worksite, a worksite, *pre-job hazard assessment* must be performed to identify safety and environmental needs. At a minimum, this hazard assessment should:

- Identify possible hazards and risks.
- Identify the safety needs of the job.
- Identify the correct procedures, practices and equipment.
- Eliminate unsafe conditions and actions from the worksite.
- Identify the need for personal protective equipment.
- Inspect equipment before use.
- Confirm sheaths of all cables are secured and undamaged.
- Confirm plugs and connectors are properly connected and serviceable.
- Perform ongoing risk assessment during the project

2.4 Required Personal Protective Equipment (PPEs)

These PPEs are required during all phases of installation.



Wear Protective Clothing



Wear Eye Protection



Wear High-Visibility Clothing



Wear Protective Gloves



Wear Protective Headwear



Wear Safety Footwear

3 Pre-Installation Overview

3.1 Upon Receipt of Item(s)

- Verify all items are in accordance with the order.
- Check all items for damage.
- If any item shows damage or is not in accordance with the order, inform Franklin Electric *immediately*.
- Remove the packaging material.
 - Follow all local laws, rules and regulations regarding disposal of discarded parts, packaging material or items and any subsequent components.

3.2 Technical Overview

The S404 liquid sensor is a component of the DC404 Dispensing Cutoff System and is used to detect the presence of a liquid in the normally dry Class 1, Division 1, Group D Hazardous Areas. The sensor is supplied with a QUICKON connector and 25' of cable. The S404 liquid sensor uses magnetic-float/reed-switch technology (the sensor must be suspended vertically so the float can rise freely with the level of a liquid).

When the float rises more than ½", the magnetically sensitive reed switch will open. The open circuit is then recognized by the 404-4 controller which shuts down power to the submersible turbine pump (STP) or dispenser.

3.2.1 Required Tools

- Wire Cutter

4

Installation



⚠ WARNING:

- Conduits must have EYS seal fittings installed in accordance with NFPA 70 (National Electric Code) and NFPA 30A (Automotive and Marine Service Station Code). *Failure to seal conduits in accordance with NFPA 70, and NFPA 30A could allow flammable vapors to travel through the conduit in the ATG console. An explosion could result causing serious injury, property loss, or death.*
- Make sure all power to the ATG console is turned off, tagged, and locked-out at the power panel before doing any maintenance or installation work at the ATG console.

⚠ CAUTION: Install field wiring, junction boxes, CableTight™ (or other code-approved conduit), and EYS seal fittings per the National Electrical Code (NEC) and all other codes governing the installation of these products. *Seal all threaded fittings and conduit threads to produce a weatherproof seal during installation/maintenance.*

IMPORTANT:

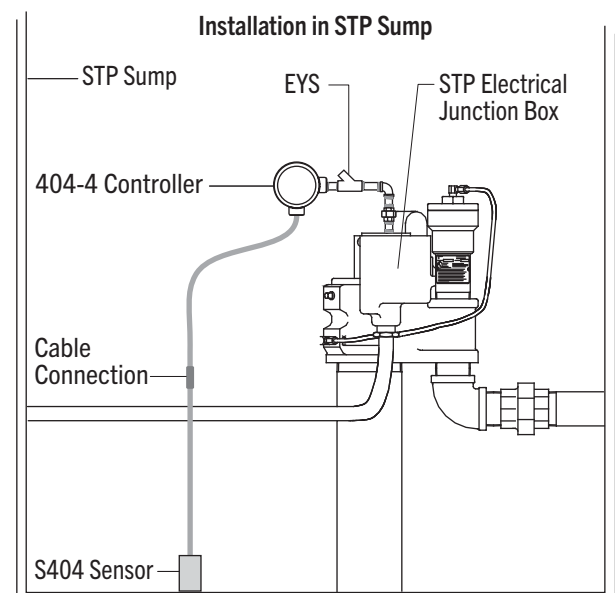
- SENSITIVE INSTRUMENT. When installing this sensor, carefully lower it into position and DO NOT DROP it into the sump or tank.
- It is the installer's responsibility to comply with all applicable federal, state and local codes. Failure to do so may create an environmental hazard.

NOTE: When the installation is complete, make sure this guide is left with the service station owner or operator.

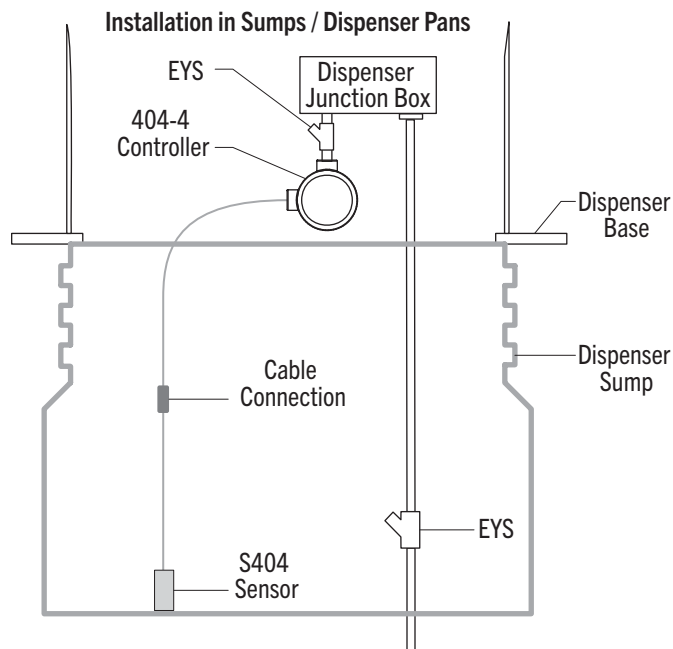
4.1 Install Instructions

4.1.1 Install Sequence

1. Perform a facility /worksite approved Lockout/Tagout procedure for the circuit breakers connected to the ATG console (de-energize).
2. Install the 404-4 controller in accordance with its installation instructions.



3. Using the supplied QUICKON connector, connect the 404-4 to the S404 Liquid Sensor as shown in § 4.2.1.
 - a. Insert the S404 cable through one end of the connector.
 - b. Pull the RED or WHITE wire from the S404 into the WHITE slot on the connector.
 - c. Pull the BLACK wire from the S404 into the BLACK slot on the connector.
 - d. Trim the wire back to the body of the connector.
 - e. Repeat this process with the cable from the 404-4.
4. Assemble the connector.
5. Test the sensor – verify that the system shuts down power (refer to Testing the S404 in § 4.2).
6. Lower the sensor to the bottom of the STP sump, dispenser pan or tank interstitial, ensuring that the sensor remains vertical so that the float can rise freely with the level of any liquid.



4.2 Testing the S404

WARNING: Ensure power to the STP or dispenser is off after testing, before lowering the sensor back into position.

Turn the sensor so the bottom faces upward to activate the float and verify the shutdown of the STP or dispenser. *Test the sensor for proper operation immediately before lowering into containment space after installation, and at least once annually.*

4.2.1 Electrical Wiring

NOTE:

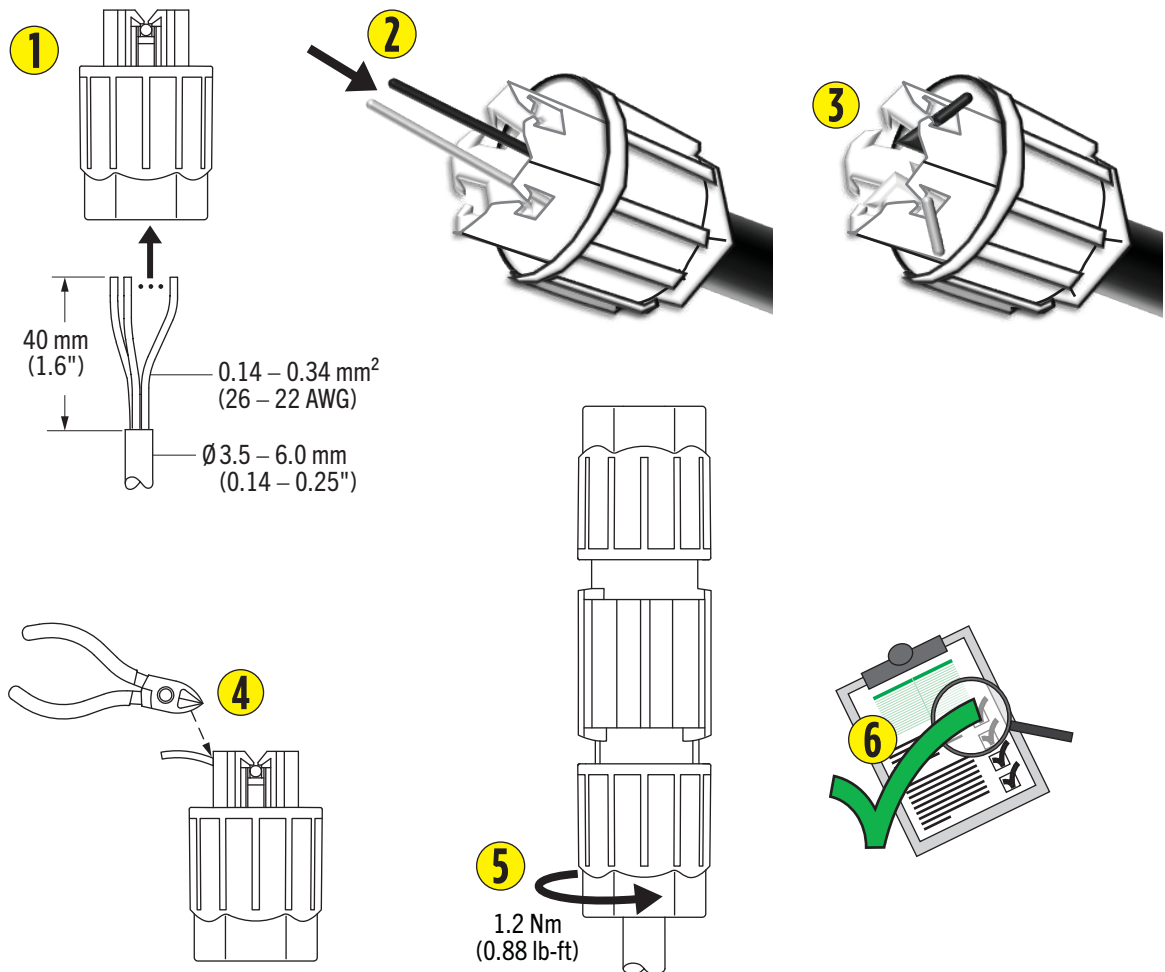
- The connectors ship with the units but are not connected to either the controller or sensor. The installer must make up both ends of the connection once both components are installed.
- Ensure that the wires on the top and bottom are connected to the same pin number.

Procedure

1. Prepare wires by removing cable covering 1.6" (40 mm) from the end.

NOTE: Do not strip the wire insulation.

2. Insert the wires into the connector.
3. Bend the wires over clips as shown.
4. Trim the wires so they don't protrude past the clips.
5. Insert the connector into the plug *and twist it to lock*.
6. Test the unit.





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