TITAN®

OPERATING MANUAL

HELIX™

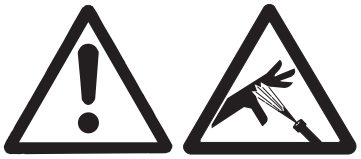
SUREFIRE™ DUAL HEATED HOSE ASSEMBLY

Models:
0521234 **(200')**
0521236 **(100')**

0620 • Form No. 0153697F

Warning!

Attention: Danger of injury by injection!
Airless units develop extremely high spraying pressures.



1

Never put your fingers, hands or any other parts of the body into the spray jet!

Never point the spray gun at yourself, other persons or animals.

Never use the spray gun without safety guard.

Do not treat a spraying injury as a harmless cut. In case of injury to the skin through coating materials or solvents, consult a doctor immediately for quick and expert treatment. Inform the doctor about the coating material or solvent used.

2

The operating instructions state that the following points must always be observed before starting up:

1. Faulty units must not be used.
2. Secure spray gun using the safety catch on the trigger.
3. Ensure that the unit is properly earthed.
4. Check allowable operating pressure of high-pressure hose set and spray gun.
5. Check all connections for leaks.

3

The instructions regarding regular cleaning and maintenance of the unit must be strictly observed.

Before any work is done on the unit or for every break in work the following rules must be observed:

1. Release the pressure from spray gun and hose.
2. Secure the spray gun using the safety catch on the trigger.
3. Switch off unit.
4. Unplug the power cord from the unit.

Be safety conscious!

1 SAFETY REGULATIONS

1.1 EXPLANATION OF SYMBOLS USED

This manual contains information that must be read and understood before using the equipment. When you come to an area that has one of the following symbols, pay particular attention and make certain to heed the safeguard.

→ This symbol indicates a potential hazard that may cause serious injury or loss of life. Important safety information will follow.

→ This symbol indicates a potential hazard to you or to the equipment. Important information that tells how to prevent damage to the equipment or how to avoid causes of minor injuries will follow.

→ Danger of skin injection

→ Danger of fire from solvent and spray fumes

→ Danger of explosion from solvent, spray fumes and incompatible materials

→ Danger of injury from inhalation of harmful vapors

→ Danger of injury from burns

→ Danger of injury from electric shock

→ Notes give important information which should be given special attention.

HAZARD: INJECTION INJURY

Attention: Danger of injury by injection! A high pressure stream produced by this equipment can pierce the skin and underlying tissues, leading to serious injury and possible amputation.

Do not treat a spraying injury as a harmless cut. In case of injury to the skin through coating materials or solvents, consult a doctor immediately for quick and expert treatment. Inform the doctor about the coating material or solvent used.

PREVENTION:

- NEVER aim the gun at any part of the body.
- NEVER allow any part of the body to touch the fluid stream. DO NOT allow body to touch a leak in the fluid hose.
- NEVER put your hand in front of the gun. Gloves will not provide protection against an injection injury.
- ALWAYS lock the gun trigger, shut the fluid pump off and release all pressure before servicing, cleaning the tip guard, changing tips, or leaving unattended. Pressure will not be released by turning off the engine. The PRIME/SPRAY valve(s) or pressure bleed valve must be turned to their appropriate positions to relieve system pressure.
- All accessories must be rated at or above the maximum operating pressure range of the sprayer. This includes guns, extensions, and hose.

HAZARD: EXPLOSION OR FIRE

Solvent and material fumes can explode or ignite. Severe injury and/or property damage can occur.

PREVENTION:

- Do not use materials with a flashpoint below 38° C (100° F). Flashpoint is the temperature at which a fluid can produce enough vapors to ignite.
- Do not use a material or solvent containing halogenated hydrocarbons. Such as chlorine, bleach mildewcide, methylene chloride and trichloroethane. They are not compatible with aluminum. Contact the coating supplier about compatibility of material with aluminum.
- Do not use the unit in work places which are covered by the explosion protection regulations.
- Provide extensive exhaust and fresh air introduction to keep the air within the spray area free from accumulation of flammable vapors.

- Avoid all ignition sources such as static electricity sparks, electrical appliances, flames, pilot lights, hot objects, and sparks from connecting and disconnecting power cords or working light switches.
- Do not smoke in spray area.
- Place sprayer sufficient distance from the spray object in a well ventilated area. Flammable vapors are often heavier than air. Floor area must be extremely well ventilated. The pump contains arcing parts that emit sparks and can ignite vapors.
- The equipment and objects in and around the spray area must be properly grounded to prevent static sparks.
- Use only conductive or earthed high pressure fluid hose. Gun must be earthed through hose connections.
- Power cord must be connected to a grounded circuit (electric units only).
- Follow material and solvent manufacturer's warnings and instructions. Be familiar with the coating material's SDS sheet and technical information to ensure safe use.
- Use lowest possible pressure to flush equipment.
- When cleaning the unit with solvents, the solvent should never be sprayed or pumped back into a container with a small opening (bunghole). An explosive gas/air mixture can arise. The container must be earthed.

HAZARD: HAZARDOUS VAPORS

Solvents and other materials can be harmful if inhaled or come in contact with body. Vapors can cause severe nausea, fainting, or poisoning.

PREVENTION:

- Wear respiratory protection when spraying. Read all instructions supplied with the mask to be sure it will provide the necessary protection.
- All local regulations regarding protection against hazardous vapors must be observed.
- Wear protective eyewear.
- Protective clothing, gloves and possibly skin protection cream are necessary for the protection of the skin. Observe the regulations of the manufacturer concerning coating materials, solvents and cleaning agents in preparation, processing and cleaning units.

HAZARD: BURN HAZARD

Certain components of the equipment are heated and become hot during operation.

PREVENTION:

- To avoid severe burns and injury, do not touch heated fluid or equipment. Wait until the equipment has completely cooled.

HAZARD: THERMAL EXPANSION

Heated fluids, when in confined areas such as spray hoses, can create a rapid rise in pressure due to thermal expansion. Over-pressurization can lead to a rupture and serious injury.

PREVENTION:

- Before each use, check all hoses for cuts, leaks, abrasion or bulging of cover. Check for damage or movement of couplings. Immediately replace the hose if any of these conditions exist. Never repair a spray hose. Replace it with another earthed high-pressure hose.

HAZARD: HIGH PRESSURE HOSE

The spray hose can develop leaks from wear, kinking and abuse. A leak can inject material into the skin. Inspect the hose before each use.

PREVENTION:

- High-pressure hoses must be checked thoroughly before they are used.
- Replace any damaged high-pressure hose immediately.
- Never repair defective high-pressure hoses yourself!
- Avoid sharp bends and folds: the smallest bending radius is about 20 cm.
- Do not drive over the high-pressure hose. Protect against sharp objects and edges.
- Never pull on the high-pressure hose to move the device.
- Do not twist the high-pressure hose.
- Use only compatible cleaning solutions.
- Lay the high-pressure hose in such a way as to ensure that it cannot be tripped over.

i	Only use approved original-high-pressure hoses in order to ensure functionality, safety and durability.

HAZARD: GENERAL

This product can cause severe injury or property damage.

PREVENTION:

- Follow all appropriate local, state, and national codes governing ventilation, fire prevention, and operation.
- Pulling the trigger causes a recoil force to the hand that is holding the spray gun. The recoil force of the spray gun is particularly powerful when a high pressure has been set on the airless pump. When cleaning, set the pressure control to the lowest pressure.
- Use only manufacturer authorized parts. User assumes all risks and liabilities when using parts that do not meet the minimum specifications and safety devices of the pump manufacturer.
- ALWAYS follow the material manufacturer's instructions for safe handling of paint and solvents.
- Clean up all material and solvent spills immediately to prevent slip hazard.
- Never leave this equipment unattended. Keep away from children or anyone not familiar with the operation of airless equipment.
- Device weighs in excess of 36 kg. Three-person lift is required.
- The device and all related liquids (i.e. hydraulic oil) must be disposed of in an environmentally friendly way.

1.2 ISOCYANATE (ISO) CONDITIONS

Important Information Regarding Two-Component Material. Read before using the equipment.

ISOCYANATE (ISO) CONDITIONS

- Use only Methyldiisocyanates (MDI).
- Spraying materials that contain isocyanates (ISO) creates mists, vapors and atomized particulates that are potentially harmful.
- Be familiar with the spray material's SDS in order to understand specific hazards and necessary precautions that are related to the use of spray materials containing isocyanates.
- Provide extensive exhaust and fresh air introduction to keep the air within the spray area free from harmful isocyanate vapors. If sufficient ventilation is not available, a supplied-air respirator must be available to everyone in the work area.
- **AVOID ANY BARE-SKIN CONTACT WITH ISOCYANATES.** To prevent contact with isocyanates, all persons located within the spray area must be wearing the appropriate protective equipment, including chemically impermeable gloves, boots, aprons and goggles.

MATERIAL IGNITION

- Some materials may become self-igniting if applied too thickly. Read material manufacturer's warnings and material SDS.

KEEP SPRAY COMPONENTS SEPARATE

- Cross-contamination of individual spray materials can result in cured material in fluid lines which can cause severe injury and/or damage to the equipment.
- To prevent cross-contamination of the equipment wetted parts, **NEVER** interchange Component A (isocyanate) parts with Component B (resin) parts.

MOISTURE SENSITIVITY

Isocyanates (ISO) are catalysts used in two-component foam and polyurea coatings. ISO will react with moisture (such as humidity) to form small, hard abrasive crystals. These crystals will then contaminate the fluid. Eventually a film will form on the fluid surface and the ISO will begin to gel, increasing in viscosity. Fluid contaminated with partially cured ISO , if used, will reduce spray performance and the overall life of the component wetted parts.

i	The amount of film formation and the rate of crystalization varies depending upon the blend of ISO, the humidity and the temperature.

PREVENTION:

- Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. NEVER store ISO in an open container.
- Use ONLY the moisture-proof hoses specifically designed for ISO that are supplied with your system. If new hoses need to be ordered, contact Titan Technical Service.
- Never flush reclaimed solvents through the system. Reclaimed solvents can contain moisture. Always keep solvent containers closed when not being used to prevent moisture contamination.
- Never use solvent on one side if it has been contaminated from the other side.
- Always lubricate threaded parts with ISO pump oil or grease when reassembling.
- Always circulate a hose and pump that contains ISO at least once a week to prevent the ISO from crystalizing.

CHANGING MATERIALS

- When changing spray materials, thoroughly flush the equipment multiple times to ensure that it is fully clean.
- Always clean the fluid inlet strainers after flushing.
- Check with your material manufacturer for chemical compatibility.
- Most materials use ISO with Component A, but some use ISO with Component B.
- Epoxies often have amines (hardener) with Component B. Polyureas often have amines with Component B (resin).

FOAM RESINS WITH 245FA BLOWING AGENT

Some blowing agents will froth at temperatures above 90° F (33°C) when not under pressure, especially if agitated. To reduce frothing, minimize preheating in a circulation system.

1.3 ELECTRIC SAFETY

Electric models must be earthed. In the event of an electrical short circuit, earthing reduces the risk of electric shock by providing an escape wire for the electric current. Connection to the mains only through a special feed point, e.g. through an error protection insallation with INF < 30 mA.

	DANGER — Work or repairs at the electrical equipment may only be carried out by a skilled electrician. No liability is assumed for incorrect installation. Switch the unit off. Before all repair work, unplug the power plug from the outlet.
	Danger of short-circuits caused by water ingressing into the electrical equipment. Never spray down the unit with high-pressure or high-pressure steam cleaners.

OPERATING TEMPERATURE

This equipment will operate correctly in its intended ambient, at a minimum between +10°C and +40°C.

RELATIVE HUMIDITY

The equipment will operate correctly within an environment at 50% RH, +40°C. Higher RH may be allowed at lower temperatures.

Measures shall be taken by the Purchaser to avoid the harmful effects of occasional condensation.

ALTITUDE

This equipment will operate correctly up to 2100 m above mean sea level.

TRANSPORTATION AND STORAGE

This equipment will withstand, or has been protected against, transportation and storage temperatures of -25°C to +55°C and for short periods up to +70°C.

It has been packaged to prevent damage from the effects of normal humidity, vibration and shock.

2 GENERAL DESCRIPTION

	ELECTRIC SHOCK HAZARD. The Surefire™ Dual Heated Hose Assembly contains electrical parts. Do not submerge into any liquids.

The TITAN Helix Surefire™ Dual Heated Hose Assembly is for use exclusively on the TITAN Helix Plural Component System. The Surefire™ Dual Heated Hose Assembly contains the following elements:

- "A" (ISO) side fluid hose (marked with red) with internal heating element
- "B" (Resin) side fluid hose (marked with blue) with internal heating element
- Air hose to connect the spray gun to the compressed air source
- Temperature / pressure sensor installed approximately 36 inches from the end of each fluid hose
- "A" and "B" side non-heated whip hoses (1 m length) for increased mobility
- Foam insulation to prevent heat loss
- A vecro-secured shround that runs the length of the entire hose assembly

2.1 HOSE PROCESS

An internal heating element located within each hose maintains the temperature of the spray fluid as it travels to the spray gun. The temperature of the heating element is determined by the Surefire™ heated hose settings on the Helix LP control panel.

The temperature and pressure of each fluid component are monitored by sensors located 8 feet (8') from the end of each hose and are displayed on the Helix LP control panel.

An eight-foot (8') length of non-heated "whip" hose is installed on the end of each Surefire™ heated hose for increased mobility.

All components of the Surefire™ heated hose assembly are wrapped in a 5 mm foam insulation to prevent heat loss, and then encased within a velcro-secured shroud that runs the entire length of the hose assembly.

3 COMPONENT DESCRIPTION

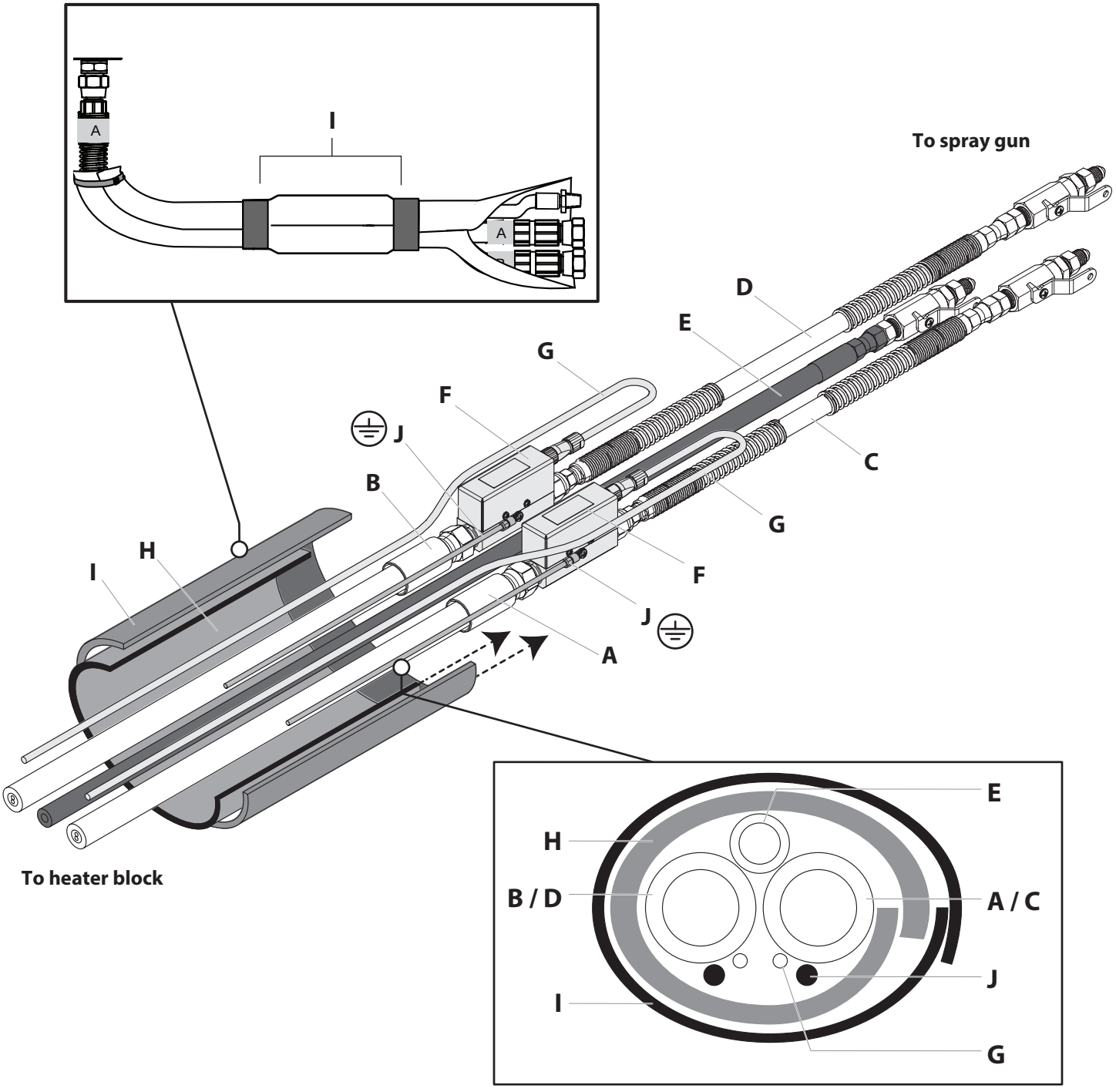
3.1 COMPONENT DIAGRAM*

ITEM	DESCRIPTION	FUNCTION	LENGTH(S)
A	Fluid Hose - "A" side (ISO)	The "A" side fluid hose typically carries the the ISO or activator material from Component Pump A to the spray gun. The "A" side fluid hose is marked with red.	100' or 200'
B	Fluid Hose - "B" side (resin)	The "B" side fluid hose typically carries the resin or hardener material from Component Pump B to the spray gun. The "B" side fluid hose is marked with blue.	100' or 200'
C	Whip Hose - "A" side	Connects the "A" (isocyanate) side fluid hose to the spray gun.	8'
D	Whip Hose - "B" side	Connects the "B" (resin) side fluid hose to the spray gun.	8'
E	Air supply hose	Connects the spray gun to the separate air supply.	100' or 200'
F	Heat / Pressure sensor	Each fluid hose comes installed with a heat / pressure sensor that gives the temperature and pressure reading of each fluid component. The sensors are connected to the heat controls on the control panel by the cable assemblies (see item G).	N/A
G	Cable assembly	Connects the two temperature sensors in the heated hoses to the control panel heat controls.	Entire length from main assembly to the heat sensors
H	Insulation	The insulation prevents heat loss in the spray material as it travels through the hoses.	Entire length of hose assembly
I	Sheathing	The velcro-secured sheathing wraps all of the elements of the Helix Surefire™ Dual Heated Hose Assembly together. An approximately 17" length of sheathing with a slightly larger diameter surrounds and heat sensors. It is secured to the main sheathing with tape.	Entire length of hose assembly
J	Heat sensor ground wires	Ensures that the entire Surefire™ dual heated hose assembly remains grounded.	100' or 200'

* Hose and cord lengths not shown to scale

3.2 HOSE DESCRIPTION

Attention	The Helix LP System comes with the Surefire™ Dual Heated Hose Assembly already assembled to the main unit. Attempts to remove the hose assemblies from the unit should only be done when a fluid hose needs to be replaced. If a fluid hose needs to be replaced, follow the instructions in Section 5.



4 OPERATION

The maximum operating temperature of the Surefire™ Dual Heated Hose Assembly is 120ºF (49ºC). Do not exceed 120ºF (49ºC) when heating spray fluids.

Heated fluids inside the confines of a fluid hose can create a rapid rise in pressure due to thermal expansion. Over-pressurization can result in a serious skin injection injury due to a hose rupture. During heating, any excess pressure will be relieved through the pressure relief valves located under the main unit.

4.1 CHECK FOR LEAKS

Attention

During use, make sure the hose is properly supported in order to avoid strain due to excessive bending, sharp edges or excessive weight.

1. In the Helix LP instruction manual, perform all steps located in the Setup section (section 5.):
   - 5.1 Locate the system
   - 5.2 Connect the material supply hoses
   - 5.3 Connect the air supply
   - 5.4 Connect the heated hoses
   - 5.5 Connect the electrical cord
   - 5.6 Ground the system
   - 5.7 Lubricate the component pumps
2. Prime the system by following the Startup (section 6.1) steps in the Helix LP manual.
3. Once the fluid hoses have been purged of any remaining air, check the hoses at the following locations for leaks:
   a) Check the connections at the spray gun
   b) Check the connections at the fluid section
   c) Unwrap the velcro sheathing at the fluid hose / whip hose connction, approximately 1 m from the spray gun

If a leak exists at any of these connections, follow the Pressure Relief Procedure (section 6.4) in the Helix LP instruction manual, tighten the connections and then re-prime the system to ensure there are no leaks.

4. When it is determined that there are no leaks, the system is ready to use. Follow remaining "Operation" instruction in the Helix LP instruction manual.

If a leak in the body of a fluid hose is discovered, immediately shut down the system and replace the fluid hose. NEVER operate the system with a damaged fluid hose.

5 FLUID HOSE REPLACEMENT

If a rupture has been found in one of the spray hoses, it needs to be replaced. NEVER operate the system with a damaged fluid hose. NEVER attempt to repair a damaged hose, it needs to be replaced.

5.1 REPLACING THE FLUID HOSE

1. Immediately relieve pressure to the damaged spray hose. Follow "Pressure Relief Procedure", section 6.4 in the Helix LP instruction manual.
2. Shut off all electrical power to the system (see Helix Plural Component instruction manual, section 7.).
3. Uncoil the hose. Open up the velcro sheathing down the entire length of the Surefire™ dual heated hose assembly.
4. Disconnect the heat sensor (Fig. 3, item 1) of the damaged hose from the cable assembly (2). Using a wrench, loosen the hose nut (3) and remove the heat sensor from the hose.

   IMPORTANT: NEVER apply any pressure to the top cover of the heat sensor housing (1a) with a wrench or pliers. Pressure should be applied to the bottom of the heat sensor housing (1b) only.

   Pull the heat sensor probe (5) from the interior of the hose.

   If replacing the whip hose also, loosen the whip hose nut (4) and remove the heat sensor from the whip hose.

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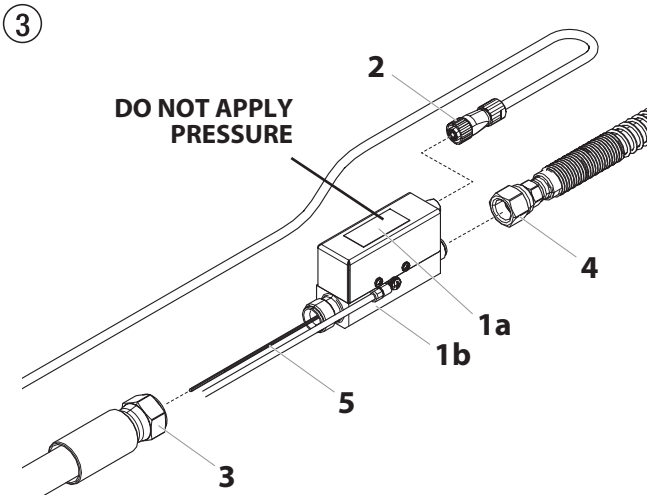

5. At the main unit, remove the screws that secure the front panel (Fig. 4, item 1).

i	Component pump B has been removed from the graphic below for purposes of clarity. The entire Component Pump does not have to be removed in order to replace the fluid hose.

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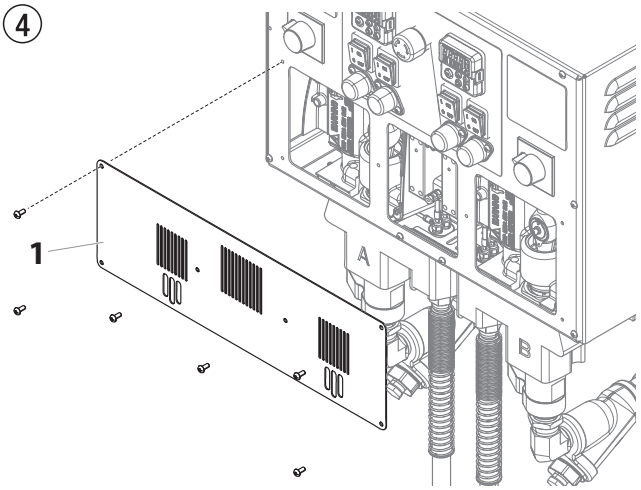


6. Disconnect the hose wiring.

a. Remove the nuts on the grounding peg (fig. 5, item 1) and remove the grounding wire for the hose that is being replaced.

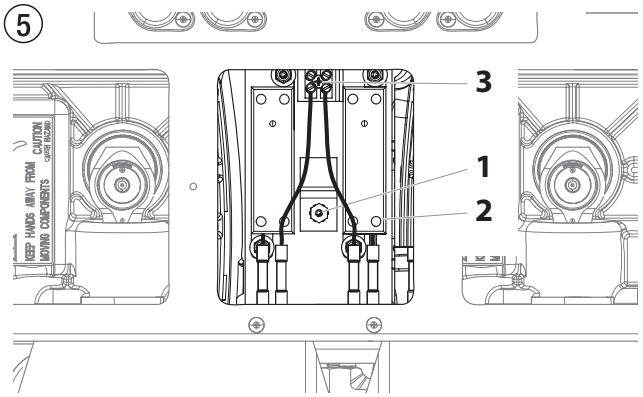
b. Using a small screwdriver, loosen (but do not completely remove) the two screws on the bottom of the relay (2) of the hose that is being replaced.

c. Pull the wiring out of the relay.

d. Using a small screwdriver, loosen the screw from the terminal block (3).

e. Remove the wire from the terminal block.

⑤



7. Remove the retaining ring (Fig. 6, item 1) from underneath the fluid section that secures the hose to the fluid section.

8. Carefully pull the hose head (2) down off of the fluid section.

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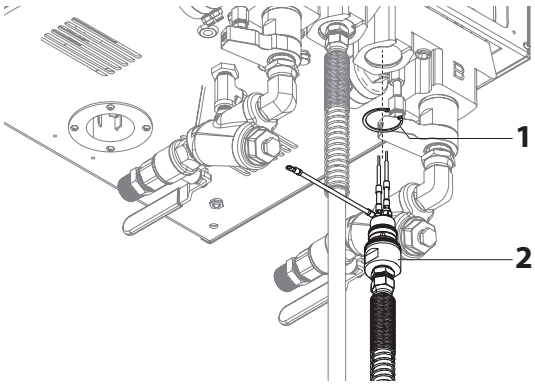


9. On the new hose assembly, run the electrical wires up through the housing in the fluid section where the hose assembly connects, followed by the hose head.

i	The flat side of the hose head should be aligned with the housing in order to allow it to be inserted.
i	Once the O-rings on the hose head (2) start to come into contact with the fluid section, the hose head will become very difficult to push securely into place. A large adjustable pliers can be used to squeeze the hose head into position.

10. Reinstall the retaining ring up into the fluid section to secure the hose assembly.

11. Reconnect the wiring on the new hose head.

a. Insert the end of each bare wire into a slot underneath the relay. Each wire should be in its own slot.

b. Secure the wires by tightening the screws loosened in step 8b, above.

c. Attach the other wire to the terminal block. Tighten the screw to secure.

c. Replace the green grounding wire on the grounding peg and secure with the nut.

12. Insert the heat / pressure sensor probe into the new hose. Reconnect the sensor to the new hose and tighten the hose nut (Fig. 3, item 3). Reattach the sensor to the cable assembly (2).

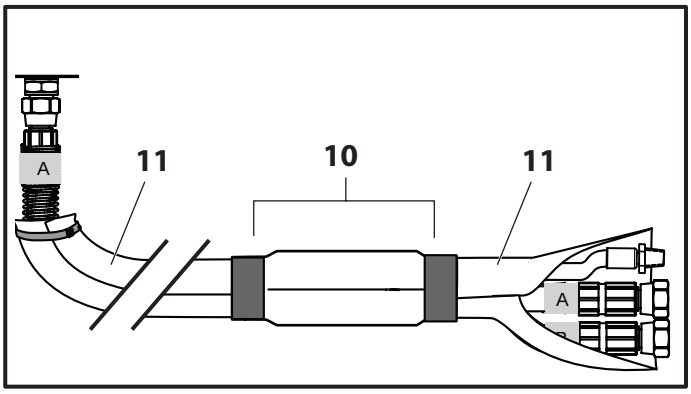
If you disconnected the whip hose from the heat sensor, reinstall and secure by tightening the whip hose nut (4).

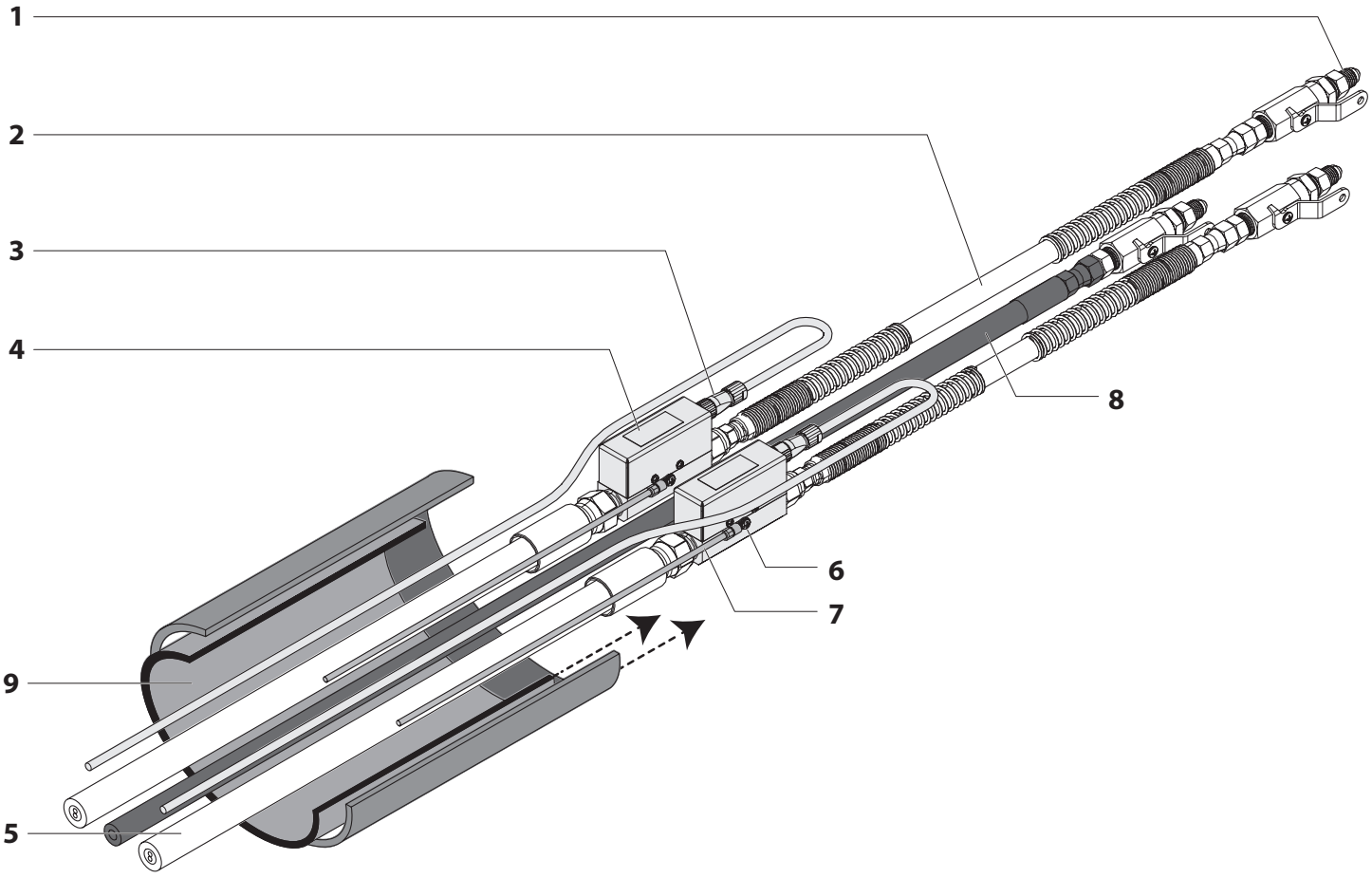
13. Replace the front panel. Secure with the six screws.

14. Restart the system. Follow "Startup" (section 6.1) steps in the Helix LP instruction manual.

15. Once the new hose has been checked for leaks, re-secure the velcro sheathing around the entire hose assembly.

SUREFIRE™ DUAL HEATED HOSE ASSEMBLY





Pos.	Helix LP A	Helix LP B	Description
1	0153979	0153979	Ball valve assembly (3)
2	0138983	0138982	Whip hose
3	0522115A	0522113A	Cable assembly, 203′
	0522119A	0522120A	Cable assembly, 103′
4	2409162A	2409162A	Temperature / pressure sensor assembly
5	0138973	0138974	Heated hose assembly, 200′
	0138021	0138023	Heated hose assembly, 100′
6	2403112	2403112	Ground screw
7	0138678A	0138678A	Ground wire, 205′
	0522130A	0522130A	Ground wire, 105′
8	0153497A		Air hose, 209′
	0153598A		Air hose, 109′
9	0138681A		Insulation, 50′
10	0153330A		Hose shroud, 25′ x 2.5″
11	0153329A		Hose shroud, 150′ x 2″

WARRANTY

Titan Tool, Inc., ("Titan") warrants that at the time of delivery to the original purchaser for use ("End User"), the equipment covered by this warranty is free from defects in material and workmanship.

SYSTEM WARRANTY:

Two Year (24 months) Manufacturer's Defects:

With the exception of any special, limited, or extended warranty published by Titan, Titan's obligation under this warranty is limited to replacing or repairing without charge those parts which, to Titan's reasonable satisfaction, are shown to be defective within twenty-four (24) months after sale to the End User. This warranty applies only when the unit is installed and operated in accordance with the recommendations and instructions of Titan.

This warranty does not apply in the case of damage or wear caused by abrasion, corrosion or misuse, negligence, accident, faulty installation, substitution of non-Titan component parts, or tampering with the unit in a manner to impair normal operation. This warranty excludes normal wear items and consumables such as, filters, piston, packings, tips, etc.

HELIX MOTOR WARRANTY:

Four Year (48 months) Manufacturer's Defects:

With the exception of any special, limited, or extended warranty published by Titan, Titan's obligation under this warranty is limited to replacing or repairing without charge the Helix Motors, to Titan's reasonable satisfaction, are shown to be defective within forty-eight (48) months after sale to the End User. This warranty applies only when the unit is installed and operated in accordance with the recommendations and instructions of Titan.

This warranty does not apply in the case of damage or wear caused by abrasion, corrosion or misuse, negligence, accident, faulty installation, substitution of non-Titan component parts, or tampering with the unit in a manner to impair normal operation.

Defective parts are to be returned to an authorized Titan sales/service outlet. All transportation charges, including return to the factory, if necessary, are to be borne and prepaid by the End User. Repaired or replaced equipment will be returned to the End User transportation prepaid.

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