

125/200/260/400 CRACK PRO HEATED HOSE

Service Manual August 2019



Contact Information

HEADQUARTERS:

2520 South Campbell Street

Sandusky, Ohio 44870

Phone: 1-800-326-1994

Fax: 419-626-5477

E-mail: info@thorworks.com



Parts Ordering

CONTACT INFORMATION:

2520 South Campbell Street

Sandusky, Ohio 44870

Phone: 800-326-1994/419-626-4375

Fax: 419-626-0842

E-mail: mikeb@thorworks.com

Parts Supervisor: Michael Bechtel

INFORMATION

Please provide as much of the following if available:

- Customer Name
- Complete Shipping Address
- Attention to:
- Phone Number
- Part Number & Description
- Equipment Model #
- Equipment Serial #
- Shipping Method/Date Required
- PO# (if necessary)
- Quantity & Price
- Kubota Model Number

Wear Items

- Wear items are not covered under ThorWorks limited warranty. A wear item is defined as, but not limited to: material, pump, crack fill-in tips, tires, etc.
- Note: All engine warranties are covered through the engine manufacturer. If you need information for the engine manufacturer please contact a Kubota representative.

Parts Warranty

ThorWorks warrants parts purchased through ThorWorks for one year from purchase **

**If the part is found to be within one year of purchase and has not been abused or modified, a credit will be issued to the customer's account or credit card.



Return Authorization

- If a part fails to function within the first year of purchase, a <u>RETURN</u> <u>AUTHORIZATION</u> number must be obtained.
- Please contact ThorWorks Parts
 Department to obtain the needed
 R.A. number.
- Note: If the part has a serial number associated with it, this must be furnished to the parts department and included with the shipped item.
- The customer will then be Emailed or faxed an RA form with all instructions to return the item to ThorWorks.

ThorWorks Returned Goods Authorization Form

	Date	
Customer Name	Account	
Address		
	Fax Number	
Contact Name		
Product Description		
Product / Model #		
VIN / Serial / Batch		
Purchase Date		
Date of Failure		
copy of this form. If yo	e required for review and should be e-mailed to returns@thorworks.co our return is authorized, a returned goods authorization number will be ng instructions. <u>Please email the completed form to returns@thorworks</u>	e-mailed to you
	FOR THORWORKS USE ONLY	
Authorization Number	Date	
Call Tag Issued (Y/N)		
Method of Shipping	Field Destroy (Y/N)	
Contact Person		
Received by	Date Received	
Item Number		
Quantity		
Sealer Department	Restock Fee (Y/N)	
	Restock Fee (Y/N)	
Color Department	Restock Fee (Y/N) Approved By	
	Approved By	
Color Department	Approved By	
Color Department Stock Room	Approved By	

Located in Appendix

Return Parts

- The same procedure should be followed if a customer has purchased a part but it is no longer needed.
- If the part is returned within 30 days of purchase, no restocking fee is applied.
- If a part is returned after 30 days of purchase, a 15% restocking fee will be charged.

Note: Kits are sold as a whole, you may not return unused parts out of a kit for credit.





Technical Assistance

Contact Information:

2520 South Campbell Street

Sandusky, Ohio 44870

Phone: 1-800-326-1994

Fax: 419-626-5477

E-mail: <u>info@thorworks.com</u>

	111010501105, 11101
Purchased by	Model NO
Company Namo	Sorial NO

Company Name _____ Serial NO. _____ Address _____ Acceptance Date _____

ThorWorks Industries, Inc.

City ______ State____ Zip ____

CORRESPONDENCE

All Correspondence regarding this equipment, as well as general correspondence should be addressed to:

ThorWorks Industries, Inc.

PO Box 2277

Sandusky, OH 44870

In referring to the equipment, kindly state the Model Number, Serial Number and any part number involved





Warranty Information

- Limited Warranty
- Product Registration
- Authorized SealMaster Representative Only!

SealMaster® LIMITED WARRANTY

SealMaster warrants that its products are of quality material and workmanship. SealMaster agrees to replace, within a period of one (1) year from date of delivery, or at its option, repair, without charge, any part of their manufacture which proved defective. The repair or replacement will be free of charge F.O.B. Sandusky, Ohio, proving the damaged part or parts are returned, freight prepaid, to SealMaster and investigation show such repair or replacement is made necessary by an inherent defect of material or workmanship.

It is hereby understood that engines, motors, pumps, or other components purchased by SealMaster for use on its equipment are not warranted by SealMaster and are sold only with the standard warranty of the manufacturer of that component.

SealMaster will make no allowances for repairs or alterations completed by outside sources unless authorization is in writing and approved by an authorized SealMaster representative.

Any claims for defective material or workmanship must be made prior to the expiration of thirty (30) days from the date failure occurs, and in all cases prior to the expiration of the warranty period of one (1) year. It is the intent of this paragraph to limit SealMaster's liability solely to the cost of replacement parts, F.O.B. factory, or at the option of SealMaster to repair of the defective part or parts. No allowances for damages, lost time, or any other claim will be recognized.

This warranty is null and void if other than genuine SealMaster parts are used.

SealMaster is constantly striving to improve their products. Changes in design and improvement will be made whenever the manufacturer believes the efficiency of the product will be improved, without incurring any obligation to incorporate such improvements in any machines which have been shipped or are in service.

In an effort to continue to improve product quality, SealMaster reserves the right to change specifications without notice.

Any modification or alteration of this machine without prior approval of the manufacturer may void this warranty.



Where to find product information:

- Owner's Manual
- Website: https://sealmaster.net/







PO Box 2277 • Sandusky, Ohio 44870 • 419-626-4375 sealmaster.net



Questions?



- A manual is furnished with each new CrackPro Heated Hose Machine.
- The manual will help your machine operators learn to run the melter applicator properly and understand its mechanical functions for the trouble-free operation.



Operating Instructions – Diesel Fuel Burner

DC Controller

Located in Appendix

Burner Parts
Identification

- 1. Blower Motor
- 2. Blower Wheel
- 3. Fuel Pump
- 4. Pump Coupling
- 5. Coil 12-Volt
- 6. Ignition Coil
- 7. Electrode Assembly
- 8. Cad Cell
- 9. DC Controller



Part Number: P662A009

Burner Parts – Blower Motor

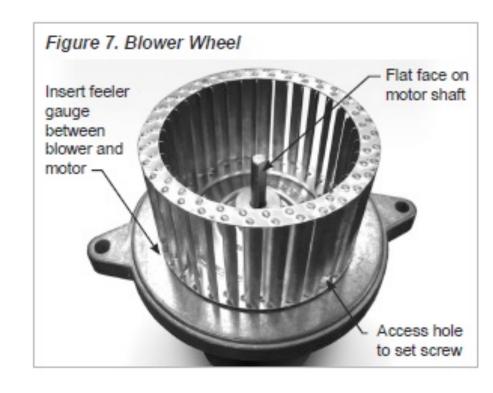
- DC motor. These are highly reliable and this type of motor has been in use for more than 25 years.
- If the motor does not spin, check to see if it is binding.
- The motor will require replacement if it will not spin with the proper voltage (11-16) being present at the input connection.
- Replacement is required if the current draw on the free-running pump exceeds 10% of the rated current (11.5) amps.



Part Number: P622A044 Motor Kit

Burner Parts – Blower Wheel

- Provide air needed for proper combustion.
- The blower wheel is attached to the blower motor shaft.
- If a replacement is needed, be sure to disconnect all power to the burner and disconnect the blower motor.
- Loosen the set screw and slide the old blower wheel off the shaft.
- Reinstall the new wheel using .030" (1/32") feeler gauge between the blower wheel and the housing.
- Tighten the set screw.



Part Number: P622A046

Burner Parts – Fuel Pump

- Pressurizes the fuel for proper combustion.
- Always bleed the fuel pump if the unit has run out of fuel.
- If replacing lines, always use flared fittings. Lines and fittings must be air tight.
- DO NOT USE TEFLON TAPE OR COMPRESSION FITTINGS
- Set pressure to 135 psi.



Part Numbers: P622A011 (old style) P622A051

Burner Parts – Pump Coupling

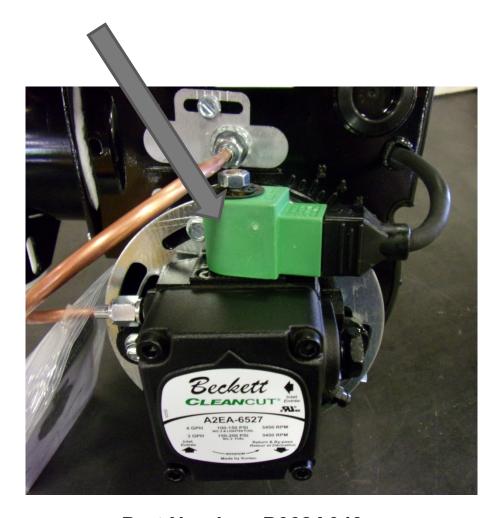
- Fuel Pump Coupling comes with both 5/16" and ½" ends. The coupling connects the blower motor to the fuel pump and is located inside the blower wheel. (Pump coupling should be checked every 500 hours while doing HTO change).
- Coupling is worn out when the flat becomes rounded.





Burner Parts – Colt 12-Volt

- The solenoid is made of wire coiled around a spring-loaded piston. Without power, the piston is in the normally closed position (will not allow fuel to pass).
- When energized, the coiled wire creates a magnetic field that will retract the piston (and plunger) allowing fuel to flow.
- Testing requires an OHM meter.
 - Low resistance = good coil
 - Open Circuit = replace

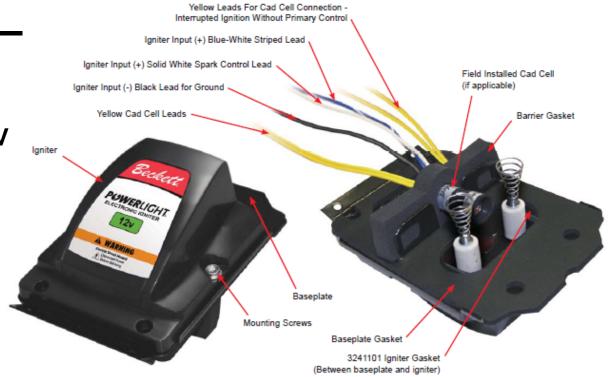


Part Number: P662A043

Burner Parts – Ignition Coil

Beckett Power Light 12V

- Wiring for new a style
- Yellow wires not used (must be capped separately).
- White and blue connect together.
- Black is ground.



Part Number: P622A015 Located in Appendix

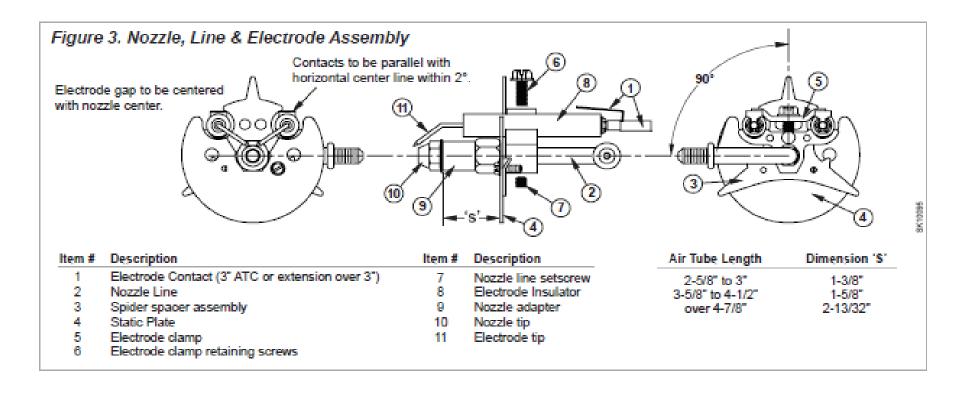
Burner Parts – Ignition Coil

Beckett Power Light 12V

- Transforms the systems voltage (12 volts) into the very high voltage needed to create an electrical spark. (20KVpk 25mA)
- It does not require any adjustments beyond making sure the springs and the electrodes make solid contact in the closed position.
- A simple check is to, supply voltage to the inputs and check or listen for arc across the ignitor.

Burner Parts – Electrode Assembly

Nozzle, Line & Electrode Assembly



Burner Parts - Cad Cell

- Cadmium Sulfide Cell is used to sense the presence of a flame.
- In darkness the cell has a very high resistance and does not allow current flow.
- The controller must have a high resistance before attempting to light. It will not attempt to light if it thinks there is already a flame on.
- In the presence of visible light, it has a very low resistance (300-1000dohms) allowing current to flow (resistance over 1600 ohms signals a problem).
- Once the burner is lit, the Cad Cell must maintain a very low resistance indicating light. If there is no light, the controller will cut the burner circuit to prevent fuel from continuing to spray.



Beckett Part Number: 596101 1808

Burner Parts – DC Controller

- "Brain" for the burner assembly. Allows for safe operation.
- Works with the Cad Cell Flame sensor to control the burner motor, ignitor, and fuel solenoid valve.
- Programmed to have "valve on" and "motor off" delays, limited restarts, lockouts to prevent starts unless all operating conditions are met.
- 11 second pre-purge
- 4 minute post-purge
- Lockout feature



Part Number: P622A010

Repair & Maintenance

To perform the work listed on the following slides...

- Need basic hand tools
- Need a multi-meter capable of measuring volts, ohms, and amps
- Pressure gauge, 0-200 PSI



Diesel Fuel Burner

The Burner Does not Run/Light

- A. Check the voltage at the battery, it needs to be at least 12.5 volts. If not, replace the battery.
- B. Fuel ran out.

Caution: Catch all fuel in bucket and dispose of properly.

The fuel pump on the burner needs to be purged of air.

- 1. Turn no burner
- 2. Fan starts
- 3. Open bleeder one full turn
- 4. The strong stream will come out (if no, see step C)
- 5. Close bleeder
- No diesel flows out of the bleeder.

The coupler must be inspected.

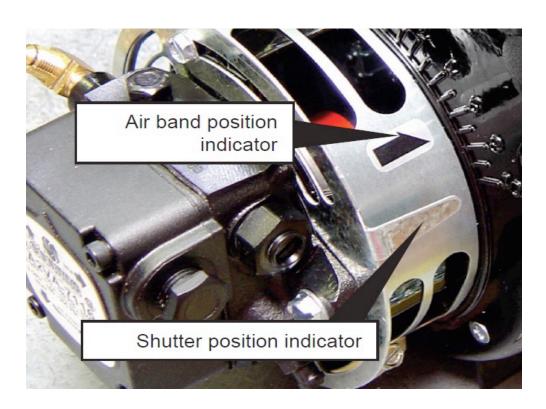
1. Replace coupler

Bleeder



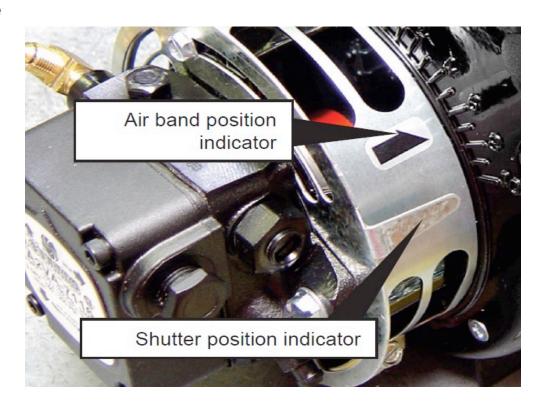
Air Shutter Setting

- Loosen screw
- Adjust shutter to appropriate setting by machine model
- Tighten screw



Air Band Setting

- Loosen the screw on band
- Adjust band to the appropriate setting by machine model
- Tighten screw



Electrode Removal

- A. Loosen electrode nut on the left side of the housing
- B. Remove igniter housing mounting screws
 - Lift housing to expose electrode assembly
 - Remove fuel line fitting
- C. Carefully slide the electrode assembly out
 - Replace with a new assembly

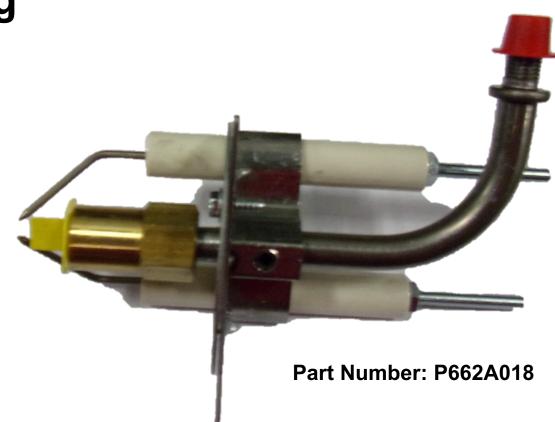






Electrode Troubleshooting

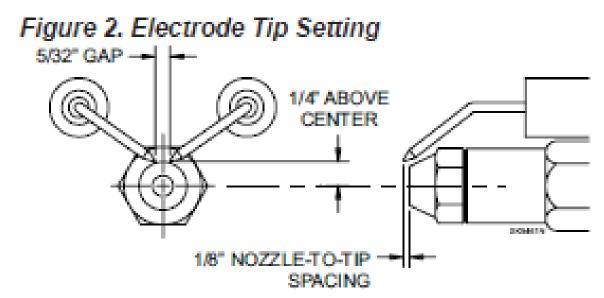
- Replace the electrode if the ceramic insulator of the electrode is cracked or chipped
- Replace the electrode if tips are rounded
- Adjust electrode tips (See Electrode Adjustments)



Electrode Assembly

Electrode Tip Setting

- Carries the spark out to the nozzle.
- Assembly contains the nozzle adaptor which houses the nozzle tip.
- Care must be taken to ensure the proper gap is in place between electrodes and nozzle.
- "Z" dimension Gap between nozzle and head must be properly adjusted. Check your manual for proper settings.



Replacing Pump Coupling

- Remove bolts on motor flange with 3/8" wrench
- Remove coupling (located inside of fan wheel)
- Slide off shaft
- Replace with new coupling







Bench Test DC Controller

- 1. Attach cad cell wires to DC controller and cover Cad Cell (no light)
- 2. Attach the black wire to the negative battery terminal
- 3. Attach the red wire to the positive battery terminal
- 4. Attach white (Enable) wire to the positive battery terminal to start the test
 - Orange (Blower Motor) wire should have 12V DC FIRST 15 seconds
 - Blue (Igniter) wire should have 12V DC FIRST 15-seconds
 - Purple (Fuel Solenoid) wire should have 12V DC AFTER 15 second delay, remove the cover on the eye so it can see light
- 5. After 15 second delay remove the cover from Cad Cell, the voltage should register on the orange, blue, and purple wires
 - Orange (Blower Motor)wire should maintain 12V DC
 - Blue (Igniter) wire should LOSE voltage/turn off
 - Purple (Fuel Solenoid) wire should maintain 12V DC

Cad Cell (Flame Eye)

- Clean Cad Cell with a cloth
- Check for any defects on the face of Cad Cell
- Check for continuity from post to post
- Cover the eye no continuity
- Place the eye in light continuity, if no continuity replace the cad cell



Part Number: P662A014

Fuel Solenoid Troubleshooting

- Remove cord set
- Check the ohms between terminals
- If the ohm reading is between 15-25 ohms coil is good
- If the meter indicates an open circuit, replace the fuel solenoid

Ignition Coil Troubleshooting

- Make sure the burner is off
- Make sure the power to the burner is off
- With the igniter grounded to the burner, spring to spring resistance should be 480-580 ohms
- The igniter should be replaced if;
 - The meter indicates an open circuit
 - Or the spring to spring resistance exceeds the 480-580 ohm range by 10% (over 600 ohms)

Burner Troubleshooting

FUEL NOT IGNITING

- Check air shutter adjustment. Too much air may prevent the spark from reaching the fuel spray
- The igniter system may have failed to supply an adequate arc to ignite the fuel. Check to ensure the continuous voltage of 11 to 15 volts DC during the ignition cycle
- Check the electrodes for wear and damage. Ensure the electrodes have the proper gap

MOTOR NOT OPERATING

- Check to make sure that the pump and motor shaft can turn freely without binding
- Check voltage at the motor to ensure that the motor is getting a signal to start

Burner Troubleshooting

- FLUCTUATING OR NO PUMP PRESSURE
 - Check motor rotational speed. Low RPM will cause erratic or no pump pressure
 - Check for a broken or worn motor coupling
 - Check that the pump turns freely
 - Check for fuel froth at the bleed point
 - Check voltage at the motor
 - Check for fuel contamination or partially clogged fuel filter

Burner Troubleshooting

- Burner lights but goes out after 15 seconds...
 - Faulty Cad Cell
 - Broken or loose Cad Cell sensor wires, receptacle
 - Faulty DC Controller
- Burner lights but will not re-light...
 - Bad connection at the battery
 - Broken or loose wires
 - Faulty DC Controller
 - Alternator not charging at 14 volts
 - Faulty 12 volt battery

- Excessive Smoke from Burner Exhaust
 - Air vent setting is incorrect
 - Blower motor is not turning at the correct speed
 - Alternator not charging at 14 volts
 - Faulty 12 volt battery



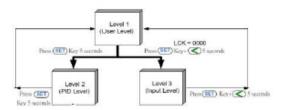
Temperature Controller Digital PID Controller FY400-101000

Located in Appendix

Temperature Control Settings J1 - All Crack Pro Units

(After March 1st 2019) (HTO, Material, Hose)

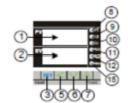
Operation levels Levels diagram



Primary display on controllers J1 or J2 shows your temperatures of HTO, Material & Hose.

To change temperature settings:

- -Press left arrow key to get the digits to blink or flash
- -Then use any arrow to adjust temperature desired
 - -HTO temp: 475 degrees
 - -Material: 375 degrees
 - -Hose: 350 degrees
- -When complete, push the set button again

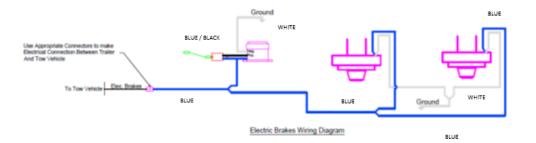


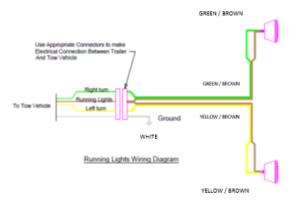
Parts Description:

SYMBOL	NAME		FUNCTION
PV	1	Measured value	Displays PV or various parameter symbols
		(PV) display	(Red)
sv	2	Set value	Displays SV or various parameter set values
		(SV) display	(Green)
SET	3	Set key	Used for parameter calling up and set value
			registration
A/M	4	Auto/Manual key	Switches between Auto(PID) output mode and
			Manual output mode.
_	(3)	Shift key	Shift digits when settings are changed
٧	(6)	Down key	Decrease numbers (-1000,-100,-10,-1)
		*Program hold	* Program hold (Programmable controller)
٨	7	Up key	Decrease numbers (+1000,+100,+10,+1)
		*Program run	* Program run (Programmable controller)
OUT1	(8)	OUT1 lamp	Lights when OUT1 is activated (Green)
OUT2	(9)	OUT2 lamp	Lights when OUT2 is activated (Green)
AT	(10)	Auto tuning lamp	Lights when Auto tuning is activated (Orange)
AL1	111	Alarm 1 lamp	Lights when Alarm 1 is activated (Red)
AL2	(12)	Alarm 2 lamp	Lights when Alarm 2 is activated (Red)
AL3	(13)	Alarm 3 lamp	Lights when Alarm 3 is activated (Red)
PRO	(19)	*Program running	*Flashes when program is running
		lamp	(Programmable controller) .

Wiring Diagrams

Electric Brakes & Running Lights







Wiring Diagrams Key Switch

Figure 1 shows a jumper installed between "SW1 and SW2." SWICHGAGE® instruments are normally open. This is not a Closed Loop™ circuit.

Figure 1

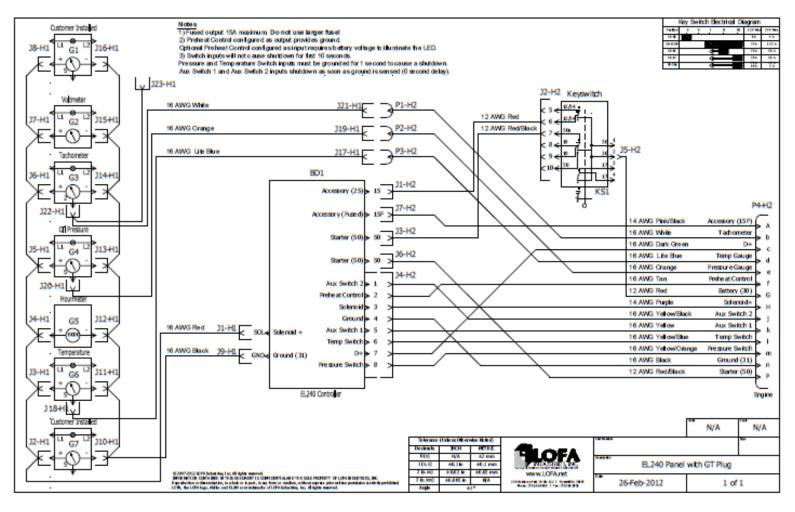
518PH / 518APH / 518E

Tenergized To Shutdown
Solenold Operator*

To Shutdown
Fiel Valve or De-energized To Shutdown
Fiel Valve or Solenold Operator In Shutdown
Solenold Operator In Shutdown
Fiel Valve or Operator In Shutdown
Solenold In Shutdown
Solenold Operator In Shutdown
Solenold In Shutdown
Sole

- * In-Line Fase should be removed on "energized" to shutdown configurations.
- ** Applies to 518APH model.

Installed on models prior to 2017



See Appendix for larger size print



Panel Troubleshooting

Panel does not perform self-test

Possible Cause	Possible Remedy
Tripped overcurrent protection	Correct fault, replace or reset overcurrent protection
Faulty connection to battery	Correct battery connections (see Battery Circuit Requirements above)

Panel performs normal self-test, engine cranks, runs and shuts down

Possible Cause	Possible Remedy
Only Battery LED illuminated	Correct battery charge failure (see Battery not charging above)
Only Oil Pressure LED	Correct low oil pressure condition or faulty switch, correct wiring fault
Illuminated	
Only Temperature LED	Correct overheating condition or faulty switch, correct wiring fault
Illuminated	
Only Aux LED Illuminated	Correct fault condition (i.e. v-belt, coolant level) or faulty switch, correct wiring fault
All normally closed shutdowns illuminate for one second (panel reset)	Add suppressor diodes, protect from nearby lightning strikes, shield induced spikes from other equipment, add electric motor control relay

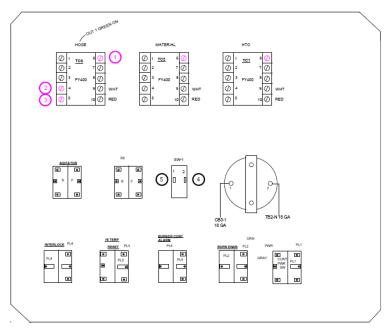
Installed on models after 2017 Lofa EL 240

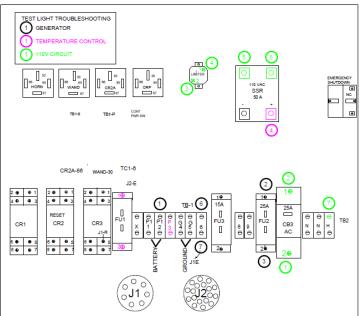


Wiring Diagrams

Control Panel-Heated Hose Wiring

HEATED HOSE CIRCUIT WIRING DIAGRAM





Control Panel-Heated Hose Wiring (drawings Located in Appendix)



Wiring Diagrams

Control Panel-Heated Hose Wiring

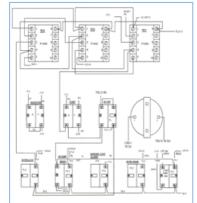
Temperature Controller

Digital PID Controller FY400-101000

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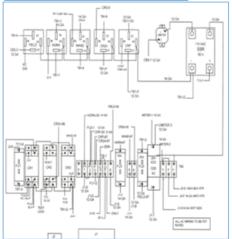
WIRING DIAGRAMS

TEMPERATURE CONTROL BOX



TERMINALS:

- U YELLOW 14 GA. TO BURNER
- P1 RED 10 GA. TO MOTOR
- N BLACK 10 GA. TO MOTOR
- G BLACK 12 GA. TO BURNER
- B RED 12 GA. TO BURNER
- D WHITE 14 GA. TO BURNER
- NOTE: RUN BATTERY DIRECTLY TO BURNER





Hydraulics



Part Number: P601A042



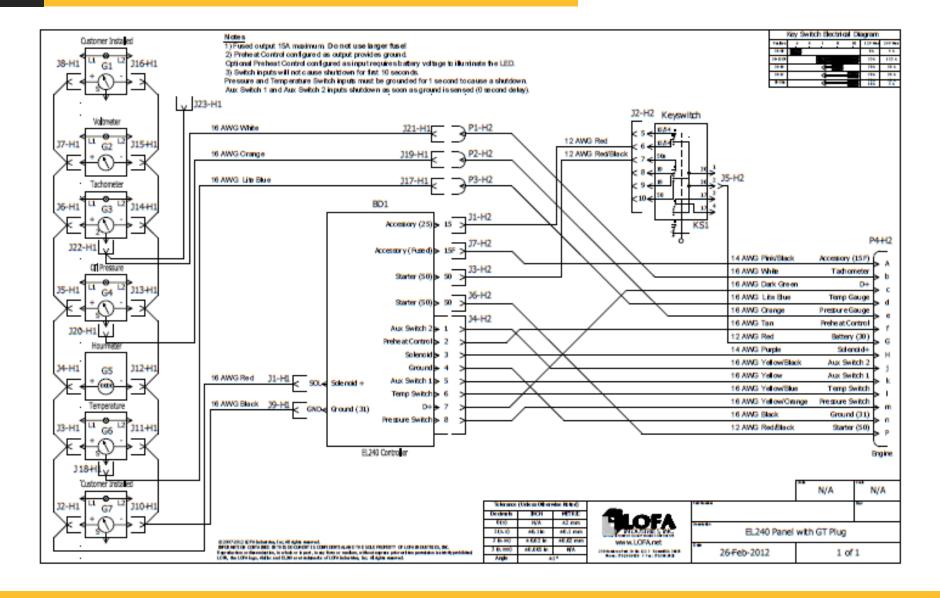
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Hydraulics





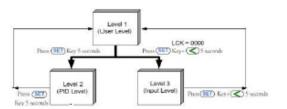


Temperature Controller Settings (J₁/J₂)

Temperature Control Settings J1 - All Crack Pro Units

(After March 1st 2019) (HTO, Material, Hose)

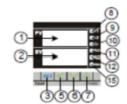
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		lamp	(Programmable controller) .

Heated Hose Wiring

