DIAGNOSTIC FLOW CHART FOR E-57 & E-60 ELECTRO LIFT® UNITS WITH TOUCH PAD

These charts are intended to be used as an aid in diagnosing problems on the Electro Lift® units. They are not a substitute for factory training and experience. Be certain to read the General Information and Testing Tips sections before attempting any troubleshooting.

IMPORTANT: Maintenance and repairs must be performed with the moldboard on the ground.

General Information

Before any troubleshooting is started, make certain the following conditions are met.
1. The moldboard is pointing straight ahead. This can often be done by coupling the left cylinder into the right cylinder and pushing the moldboard by hand.
2. The power angling cylinders must be installed correctly on to the A-frame. The left cylinder (Driver’s side) has a hose attached with a male half of a coupler at the end; the right cylinder (Passenger side) has a hose attached with a female half of a coupler at the end.
3. The solenoid coils must be on their proper valve. (See drawing below).

TESTING TIPS

Many tests do not require removing the Electro Lift® unit from the vehicle. However, more thorough testing can be performed using the Meyer Test Stand which allows direct pressure and amperage readings.

1. Using a screwdriver or other small tool to check for magnetism of the solenoid coils “A”, “B” and “C”. Place the tool on the nut securing the coil and have an assistant operate the switch. You should feel strong magnetic attraction.
2. Use a test light or volt meter to determine whether there is power at the harness or switch.
3. When determining AMP draw of the motor, always obtain the highest value possible, i.e, at maximum raise or maximum angle with motor running.
4. Proper rotation for the 4-1/2” motor (Fenner/Iskra) is clockwise by looking at the motor shaft from the bottom of the motor.
5. The pump shaft of a good pump can be turned smoothly using two fingers. If it can’t be turn easily, the pump is too tight and must be replaced.
6. Pump pressure can be measured at an angle hose (note pressure at full angle) or in the pressure filter port (an adaptor is necessary for the filter port).
7. Flush the complete system including unit, hoses and power angling rams with a non wax (Napthenic) oil / cleaner. If kerosene (Paraffinic) is used to flush the system, the system must be flushed again to remove any kerosene with a (Napthenic) based oil / cleaner that is wax free.

The current 22154 Electro-Touch Control has been redesigned. The Touch Pad now has raised buttons and its circuitry has been changed from analog to digital, functions have not changed. For troubleshooting for power at the solenoids do not disconnect wires. To check for power, prick the wire through the insulation for testing. The Electro-Touch Control knows when a short or an open connection occurs and will go into overload mode for the function being activated. To reset the Touch Pad turn the switch on and off. The Electro-Touch Control will not operate if not wired properly as per the installation instructions (1-690 & 1-759).

E-60 & E-60H

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E-57 & E-57H
SNOW PLOW WILL NOT RAISE

Does the Motor Operate?
- YES
  - Is there power going to the motor?
    - YES
      - Does motor run when 12 volts is applied?
        - YES
          - Can the pump shaft turn by hand?
            - YES
              - Replace pump.
            - NO
              - Add M-1 Fluid
          - NO
            - Replace Pump.
        - NO
          - "A" Valve stuck in the open position?
            - YES
              - Clean or Replace "A" Valve. Retest. Does snow plow raise?
            - NO
              - Disassemble unit. Clean or Replace O-rings, Cylinder Piston assembly. Look for blockage in Sump Casting passages.
        - NO
          - Is the fluid level 1-1/2" below filler hole?
            - YES
              - Replace Pump.
            - NO
              - ADD M-1 Fluid

Does the snow plow angle to the left instead of raising?
- YES
  - Does the snow plow angle when the Angle Switch is activated?
    - YES
      - Is there pressure (or flow) at the Filter port?
        - YES
          - Are the Filters Clogged?
            - YES
              - Clean or Replace Filters.
            - NO
              - Replace Pump.
        - NO
          - Disassemble unit. Check Pump relief pressure be adjusted to 2000 P.S.I.
            - YES
              - Replace the Pump.
            - NO
              - Replace "B" Coil.
    - NO
      - Is the Motor turning the proper direction?
        - YES
          - Replace the Motor.
        - NO
          - Check Brushes for proper installation or replace motor.

Does the "B" Coil (Red Wire) have magnetism?
- YES
  - Are the "B" Valve O-Rings in good condition?
    - YES
      - Replace O-Rings.
    - NO
      - Replace P.A. Block with E-46 plate and retest. Does snow plow raise now?
        - YES
          - Replace P.A. Block.
        - NO
          - Replace P.A. Block.
- NO
  - Replace Pump.

Is there power to the "B" Coil (Red Wire) at Harness?
- YES
  - Is there power leaving the switch at the red wire?
    - YES
      - Are wires in molded connector making contact with the switch?
        - YES
          - Replace Touch Pad.
        - NO
          - Replace Wiring Harness.
    - NO
      - Replace "B" Coil.
  - NO
    - Replace Wiring Harness.

Is Battery Charged?
- YES
  - Charge Battery. Clean and tighten all electrical connections.
- NO

Are all electrical connections clean and tight?
- YES
  - Remove motor. Inspect Motor - Armature, Brushes Repair or Replace Motor as necessary.
- NO
  - Charge Battery - Clean and tighten all electrical connections.
SNOW PLOW LEAKS DOWN

- Does the snow plow drop straight down?
  - NO
  - Does the snow plow drop and angle to the left?
    - YES
      - Replace "B" Check Valve
      - Does it now hold?
        - NO
        - Replace "B" Valve
        - Does it now hold?
          - NO
          - Replace Sump Base
      - NO
    - NO
      - Replace O-Rings
      - Replace "A" Valve
  - YES
    - Replace Sump Base

- Are "A" Valve O-rings in good condition? Does "A" Valve stem move freely?
  - NO
    - Replace O-Rings
    - Replace "A" Valve
  - YES
    - Dissasemble unit
    - Inspect O-Rings,Cylinder, Piston Assembly.
    - Does it hold now?
      - NO
      - Replace Sump Base
  - NO
    - Dissasemble unit
    - Inspect O-Rings,Cylinder, Piston Assembly.
    - Does it hold now?
      - Replace Sump Base

SNOW PLOW WILL NOT LOWER

- Does "A" Coil (Black Wire) have magnetism?
  - NO
    - Replace "A" Valve
    - Does it now lower?
      - NO
        - Replace "A" Coil
        - Does it now lower?
          - NO
            - Check for a clogged filter or a blocked passageway. (Lower Adj. Screw)
        - YES
          - Replace Touch Pad
    - YES
      - Replace "A" Coil
      - Check for Bent or Seized Ram Assembly.
  - YES
    - Replace Harness
    - Is the Touchpad plugged in completely?
      - YES
        - Replace Touch Pad
      - NO
        - Replace Harness
        - Is there power to the "A" Coil (Black Wire) at harness?
          - NO
            - Replace Harness
            - Is there power leaving the switch at the Black Wire?
              - NO
                - Replace Harness
                - Is Fuse OK?
                  - YES
                    - Replace the fuse - Check for short in harness, "A" Coil, Plug connections.
                  - NO
                    - Replace Harness
              - YES
                - Replace Harness
                - Is the Touchpad plugged in completely?
SNOW PLOW WILL NOT ANGLE LEFT

1. Can the snow plow raise?
   - Yes → See the Raise Flow Chart Section
   - No → Is the Touchpad plugged in completely?
     - Yes → Replace Touch Pad
     - No → Replace Harness

2. Does the motor run when angle switch is pushed?
   - Yes → Does the snow plow angle to the right and left if not allowed to travel to extreme angled position?
     - Yes → Relieve the interference between the Sector and A-Frame.
     - No → Does pressure remain in angle hose when the motor is not running?
       - Yes → Temporarily put 1/2" blocks between the Sector and A-Frame stops. Will the snow plow now angle?
         - Yes → Weld 1-1/2" x 1-1/2" x 1/2" spacers to the A-Frame stops.
         - No → Replace both the Coupler sets and/or clean or replace the "C" Valve.
       - No → If one hose is stiff inspect the A-Frame for binding. Replace Coupler sets.

3. Does the snow plow raise instead of angling left?
   - Yes → Clean or replace the "B" Valve. Retest
   - No → Clean or replace the "C" Valve. Retest

4. Is the ampere draw less than 100 amps while trying to angle the snow plow?
   - Yes → Relieve the interference between the Sector and A-Frame.
   - No → Replace both the Coupler sets and/or clean or replace the "C" Valve.

5. Does the snow plow angle to the right the angle left switch is pushed?
   - Yes → Replace Piston
   - No → Is the Pilot piston in good condition? worn/sloppy or missing?
     - Yes → Clean or replace the "C" Valve. Retest
     - No → Replace the P.A. Block

6. Is there power to the motor solenoid? (White Wire)
   - Yes → Is there power leaving the switch?
     - Yes → Replace harness
     - No → Replace Touch Pad
   - No → Is the Touchpad plugged in completely?
     - Yes → Replace Touch Pad
     - No → Replace Harness

7. Does the snow plow raise instead of angling left?
   - Yes → Clean or replace the "B" Valve. Retest
   - No → Clean or replace the "C" Valve. Retest

8. Does the snow plow angle to the right the angle left switch is pushed?
   - Yes → Replace Piston
   - No → Is the Pilot piston in good condition? worn/sloppy or missing?
     - Yes → Clean or replace the "C" Valve. Retest
     - No → Replace the P.A. Block

9. Is the Pilot piston in good condition? worn/sloppy or missing?
   - Yes → Clean or replace the "C" Valve. Retest
   - No → Replace the P.A. Block

10. Does the snow plow raise instead of angling left?
    - Yes → Clean or replace the "B" Valve. Retest
    - No → Clean or replace the "C" Valve. Retest
SNOW PLOW WILL NOT ANGLE RIGHT

Can the snow plow 
Raise?

NO

See the Raise 
Flow Chart 
Section

YES

Does the motor run 
when angle switch 
is pushed?

NO

· Is there power to 
the motor solenoid? 
(White Wire)

YES

Replace Harness

NO

· Is there power 
leaving the switch?

YES

Replace Touch Pad

NO

· Are the wires in 
molded connector 
making contact with 
the switch?

YES

Replace Harness

NO

· Is there power to 
the "C" Coil? 
(Green wire at harness)

YES

Replace Touch Pad

NO

· Is there power 
leaving the switch?

YES

Replace Harness

NO

· Are the wires in 
molded connector 
making contact with 
the switch?

YES

Replace Touch Pad

NO

· Are "C" Valve 
O-Rings in good 
condition?

YES

Replace O-Rings

NO

Clean or replace 
the Coupler sets and/or 
clean or replace the 
"C" Valve.

YES

Does the snow plow 
raise instead of 
angling left?

NO

Clean or replace the 
"B" Valve. 
Retest

YES

Can the snow plow 
age to the Left?

NO

Does the "C" Coil 
have magnetism? 
(Green Wire)

YES

Replace the 
"C" Coil. 
Retest

NO

· Replace the 
P.A. Block

YES

Does the snow plow 
now angle?

NO

Clean or replace 
the Crossover Relief.
**SNOW PLOW WILL NOT HOLD ANGLE**

- Are the Rams mushy? Can you push the moldboard 6” to 8” by hand?
  - NO: Bleed air from the system and snug up gland nuts. Check couplers and fittings for leaks.
  - YES: Does the moldboard hold left angle & release from right angle?
- Are the "C" Valve O-Rings in poor condition?
  - NO: Is Crossover Relief set at 3800 ± 400 P.S.I.? Are Crossover O-Rings in good condition?
  - YES: Replace O-Rings
  - NO: Replace the P.A. Block
- Does the moldboard hold left angle & release from right angle?
  - YES: Inspect "C" Valve O-rings. Change if necessary. Does snow plow now angle?
  - NO: Change Pilot Check Ball and Seat. does snowplow now hold?
- Inspect Crossover Relief. (Rebuild or Replace) Does snow plow now hold angle?
  - NO: Set Crossover Relief to 3800 ± 400 P.S.I. Replace Crossover O-Rings or complete Crossover.