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. The “C” coil (green wire) must be next to angling fittings. The “B” coil (red wire) is located to the front of the Electro Lift® Unit. The “A” coil (black wire) is smaller and is located on the back side of the unit. (See Drawing).

**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”, “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 3” motor (American Bosch) is indicated by an arrow located on top side of the (Part # 15026) pump.
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). Note: The E-57 Electro Lift® Unit has a non adjustable pressure relief valve.
7. Flush the complete system including unit, hoses and power angling rams with a non wax (Napthenic) cleaner. If kerosene (Paraffinic) is used to flush the system, the system must be flushed again to remove any kerosene with a (Napthenic) based cleaner that is wax free.
SNOW PLOW WILL NOT RAISE

Does the Motor Operate?

YES

- Remove motor. Does motor run when 12 volts is applied?

-Inspect Motor - Armature, Brushes. Repair or Replace Motor as necessary.

-Is there power going to the motor solenoid, at White Wire?

-Replace the Motor. Solenoid.

-Replace the Wiring Harness.

-Check switch for Continuity.

-Check Wires at Molded connector.


NO

-Is there power going to the motor?

-Is Battery Charged?

-Charge Battery. Clean and tighten all electrical Connections.

-Inspect Motor - Armature, Brushes. Repair or Replace Motor as necessary.

-Is there power leaving the switch?

-Check switch for Continuity.

-Check Wires at Molded connector.

-Replace the Raise Switch.

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 the "A" Valve stuck in the open position?

YES

-Clean or Replace "A" Valve. - Retest - Does snow plow raise?

NO


-Can pump relief pressure be adjusted to 1650 ± 50 P.S.I E-46 & E-47

-Replace the Pump.

-N0

-Check for clogged strainer - Is oil getting to the pump?

-Replace the Pump.

-N0

-Clean strainer and flush the system completely.

-N0

-Does the motor armature turn tightly?

YES

-Replace the Pump.

NO

-Does the motor turn the proper direction?

NO

-Check Brushes for proper installation or replace motor.

YES

-Replace Brushes. OK?

NO

-Replace the Wiring Harness.

YES

-Is Ground Cable attached to the Negative (-) Battery Terminal?

NO

-Replace the Motor. Solenoid.

YES

-Does the "B" Coil (Red Wire) have magnetism?

YES

-Are the "B" Valve O-Rings in good Condition?

NO

-Replace O-Rings.

YES

-Clean or Replace the "B" Valve, and retest.

NO

-Replace P.A. Block with E-46 plate and retest. Does snow plow raise now?

YES

-Replace P.A. Block.

NO

-Replace Sump Base.

NO

-Replace "B" Coil.

YES

-Replace wiring harness.

YES

-Replace the Raise switch.

NO

-Is there pressure (or flow) at the Filter port?

-Check Brushes for proper installation or replace motor.

YES

-Replace the Filter.

NO

-Check for clogged strainer - Is oil getting to the pump?

-Replace the Pump.

YES

-Is the fluid level 1-1/2" below filler hole?

YES

-ADD M-1 Fluid

NO

-Does the "B" Valve (Red Wire) have magnetism?

YES

-Are the "B" Valve O-Rings in good Condition?

NO

-Replace O-Rings.

YES

-Clean or Replace the "B" Valve, and retest.

NO

-Replace P.A. Block with E-46 plate and retest. Does snow plow raise now?

YES

-Replace P.A. Block.
SNOW PLOW LEAKS DOWN

- Does the snow plow drop straight down?
  - NO
  - YES
    - Replace "B" Check Valve
    - Does it now hold?
    - NO
    - YES
      - Replace "B" Valve
      - Does it now hold?
      - NO
      - YES
        - Replace Sump Base
  - NO
    - NO
    - NO
    - NO
    - NO
    - NO

SNOW PLOW WILL NOT LOWER

- Does "A" Coil (Black Wire) have magnetism?
  - NO
  - YES
    - Replace "A" Coil
    - Replace Harness
    - NO
      - NO
        - NO
        - NO
        - NO
        - NO
        - NO
  - YES
    - Is there power to the "A" Coil (Black Wire) at harness?
      - NO
        - Replace "A" Valve
        - Does it now lower?
        - NO
          - NO
            - NO
            - NO
            - NO
            - NO
            - NO
          - YES
            - Replace Switch
        - YES
          - Replace Switch
    - YES
      - Is there power leaving the switch at the Black Wire?
        - NO
          - Are wires in molded connector making contact with the switch?
            - NO
              - Replace the fuse - Check for short in harness, "A" Coil, Switch connections.
            - YES
              - Replace Switch
SNOW PLOW WILL NOT ANGLE LEFT

Can the snow plow raise?

YES

See the Raise Flow Chart Section

NO

Does the motor run when angle switch is pushed?

YES

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

NO

Replace Harness

YES

Is there power leaving the switch?

YES

Replace Angle Switch

NO

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

YES

Replace Valve O-Rings

NO

Clean or replace the "B" Valve. Retest

YES

Clean or replace the "C" Valve. Retest

Does the snow plow raise instead of angling left?

NO

Clean or replace the "C" Valve. Retest

YES

Will the snow plow angle right & left if not allowed to travel to extreme angled position?

YES

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

NO

Relieve the interference between the Sector and A-Frame.

Does pressure remain in angle hose when the motor is not running?

YES

If both hoses are stiff inspect the Pilot Check Piston and "C" Valve for binding. Replace Coupler sets.

NO

If one hose is stiff inspect the the "C" valve for binding. Replace Coupler sets.

NO

Temporarily put 1/2" blocks between the Sector and A-Frame to limit the degree of angle. 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

Clean or replace the Crossover Relief.

Does the snow plow now angle?

YES

Clean or replace the "C" Valve.

NO

Replace the P.A. Block

YES

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

NO

Clean or replace the "B" Valve. Retest

Does the snow plow angle to the right when the angle switch is pushed left?

YES

Are the Pilot piston in good condition? (worn/sloppy or Missing)

NO

Replace Piston

YES

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

NO

Replace O-Rings

YES

Clean or replace the Crossover Relief. Does the snow plow now angle?

NO

Replace the P.A. Block

YES

Replace the "C" Valve.
SNOW PLOW WILL NOT ANGLE RIGHT

- Can the snow plow raise?
  - YES
    - Does the motor run when angle switch is pushed?
      - YES
        - Does the snow plow raise instead of angling left?
          - YES
            - Clean or replace the "B" Valve. Retest
          - NO
            - Can the snow plow angle to the Left?
              - YES
                - Does the "C" Coil have magnetism? (Green Wire)
                  - YES
                    - Replace the "C" Coil. Retest
                  - NO
                    - Are "C" Valve O-Rings in good condition?
                      - YES
                        - Clean or replace the Crossover Relief. Does the snow plow now angle?
                      - NO
                        - Replace the "C" Valve.
              - NO
                - Is there power to the motor solenoid? (White Wire)
                  - YES
                    - Replace Harness
                  - NO
                    - Is there power leaving the switch? Are the wires in molded connector making contact with the switch?
                      - YES
                        - Replace Angle Switch
                      - NO
                        - Are "C" Valve O-Rings in good condition?
                          - YES
                            - Clean or replace the Crossover Relief. Does the snow plow now angle?
                          - NO
                            - Replace both the Coupler sets and/or clean or replace the "C" Valve.

- See the Raise Flow Chart Section
  - NO
    - Is there power leaving the switch? Are the wires in molded connector making contact with the switch?
      - YES
        - Replace Angle Switch
      - NO
        - Are the "C" Valve O-Rings in good condition?
          - YES
            - Clean or replace the Crossover Relief. Does the snow plow now angle?
          - NO
            - Replace both the Coupler sets and/or clean or replace the "C" Valve.

- Does the snow plow raise instead of angling left?
  - YES
    - Does the "C" Coil have magnetism? (Green Wire)
      - YES
        - Replace the "C" Coil. Retest
      - NO
        - Is there power leaving the switch? Are the wires in molded connector making contact with the switch?
          - YES
            - Replace Angle Switch
          - NO
            - Are "C" Valve O-Rings in good condition?
              - YES
                - Clean or replace the Crossover Relief. Does the snow plow now angle?
              - NO
                - Replace both the Coupler sets and/or clean or replace the "C" Valve.

- Is there power to the motor solenoid? (White Wire)
  - NO
    - Is there power leaving the switch? Are the wires in molded connector making contact with the switch?
      - YES
        - Replace Angle Switch
      - NO
        - Are "C" Valve O-Rings in good condition?
          - YES
            - Clean or replace the Crossover Relief. Does the snow plow now angle?
          - NO
            - Replace both the Coupler sets and/or clean or replace the "C" Valve.

- Is there power leaving the switch? Are the wires in molded connector making contact with the switch?
  - YES
    - Replace Angle Switch
  - NO
    - Are "C" Valve O-Rings in good condition?
      - YES
        - Clean or replace the Crossover Relief. Does the snow plow now angle?
      - NO
        - Replace both the Coupler sets and/or clean or replace the "C" Valve.

- Is there power leaving the switch? Are the wires in molded connector making contact with the switch?
  - YES
    - Replace Angle Switch
  - NO
    - Are "C" Valve O-Rings in good condition?
      - YES
        - Clean or replace the Crossover Relief. Does the snow plow now angle?
      - NO
        - Replace both the Coupler sets and/or clean or replace the "C" Valve.

- Does the snow plow raise instead of angling left?
  - YES
    - Does the "C" Coil have magnetism? (Green Wire)
      - YES
        - Replace the "C" Coil. Retest
      - NO
        - Is there power leaving the switch? Are the wires in molded connector making contact with the switch?
          - YES
            - Replace Angle Switch
          - NO
            - Are "C" Valve O-Rings in good condition?
              - YES
                - Clean or replace the Crossover Relief. Does the snow plow now angle?
              - NO
                - Replace both the Coupler sets and/or clean or replace the "C" Valve.

- Is there power leaving the switch? Are the wires in molded connector making contact with the switch?
  - YES
    - Replace Angle Switch
  - NO
    - Are "C" Valve O-Rings in good condition?
      - YES
        - Clean or replace the Crossover Relief. Does the snow plow now angle?
      - NO
        - Replace both the Coupler sets and/or clean or replace the "C" Valve.

- Does the "C" Coil have magnetism? (Green Wire)
  - YES
    - Replace the "C" Coil. Retest
  - NO
    - Is there power leaving the switch? Are the wires in molded connector making contact with the switch?
      - YES
        - Replace Angle Switch
      - NO
        - Are "C" Valve O-Rings in good condition?
          - YES
            - Clean or replace the Crossover Relief. Does the snow plow now angle?
          - NO
            - Replace both the Coupler sets and/or clean or replace the "C" Valve.

- Is there power leaving the switch? Are the wires in molded connector making contact with the switch?
  - YES
    - Replace Angle Switch
  - NO
    - Are "C" Valve O-Rings in good condition?
      - YES
        - Clean or replace the Crossover Relief. Does the snow plow now angle?
      - NO
        - Replace both the Coupler sets and/or clean or replace the "C" Valve.

- Does the snow plow raise instead of angling left?
  - NO
    - Can the snow plow angle to the Left?
      - YES
        - Does the motor run when angle switch is pushed?
          - YES
            - Does the snow plow raise instead of angling left?
              - YES
                - Clean or replace the "B" Valve. Retest
              - NO
                - Can the snow plow angle to the Left?
                  - YES
                    - Does the "C" Coil have magnetism? (Green Wire)
                      - YES
                        - Replace the "C" Coil. Retest
                      - NO
                        - Is there power to the "C" Coil? (Green wire at harness)
                          - YES
                            - Replace the "C" Coil. Retest
                          - NO
                            - Is there power leaving the switch? Are the wires in molded connector making contact with the switch?
                              - YES
                                - Replace Angle Switch
                              - NO
                                - Are "C" Valve O-Rings in good condition?
                                  - YES
                                    - Clean or replace the Crossover Relief. Does the snow plow now angle?
                                  - NO
                                    - Replace both the Coupler sets and/or clean or replace the "C" Valve.

- See the Raise Flow Chart Section
  - NO
    - Is there power leaving the switch? Are the wires in molded connector making contact with the switch?
      - YES
        - Replace Angle Switch
      - NO
        - Are "C" Valve O-Rings in good condition?
          - YES
            - Clean or replace the Crossover Relief. Does the snow plow now angle?
          - NO
            - Replace both the Coupler sets and/or clean or replace the "C" Valve.
SNOW PLOW WILL NOT HOLD ANGLE

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