

ILUK-Plus – Series (2005 – today)

Troubleshooting: ILUK+ with square circuit board

<u>Table of content:</u>	<u>Page</u>
1) Gate overview and connector setup.....	2
2) Gate is not lowering down.....	3
3) Gate is not sliding out.....	4
4) Gate is not auto tilting down at ground level.....	5
5) Gate is not tilting up at ground level.....	6
6) Gate is not lifting up.....	7
7) Gate is not sliding in.....	8
8) Electrical schematic.....	9
9) Hydraulic schematic.....	10-12

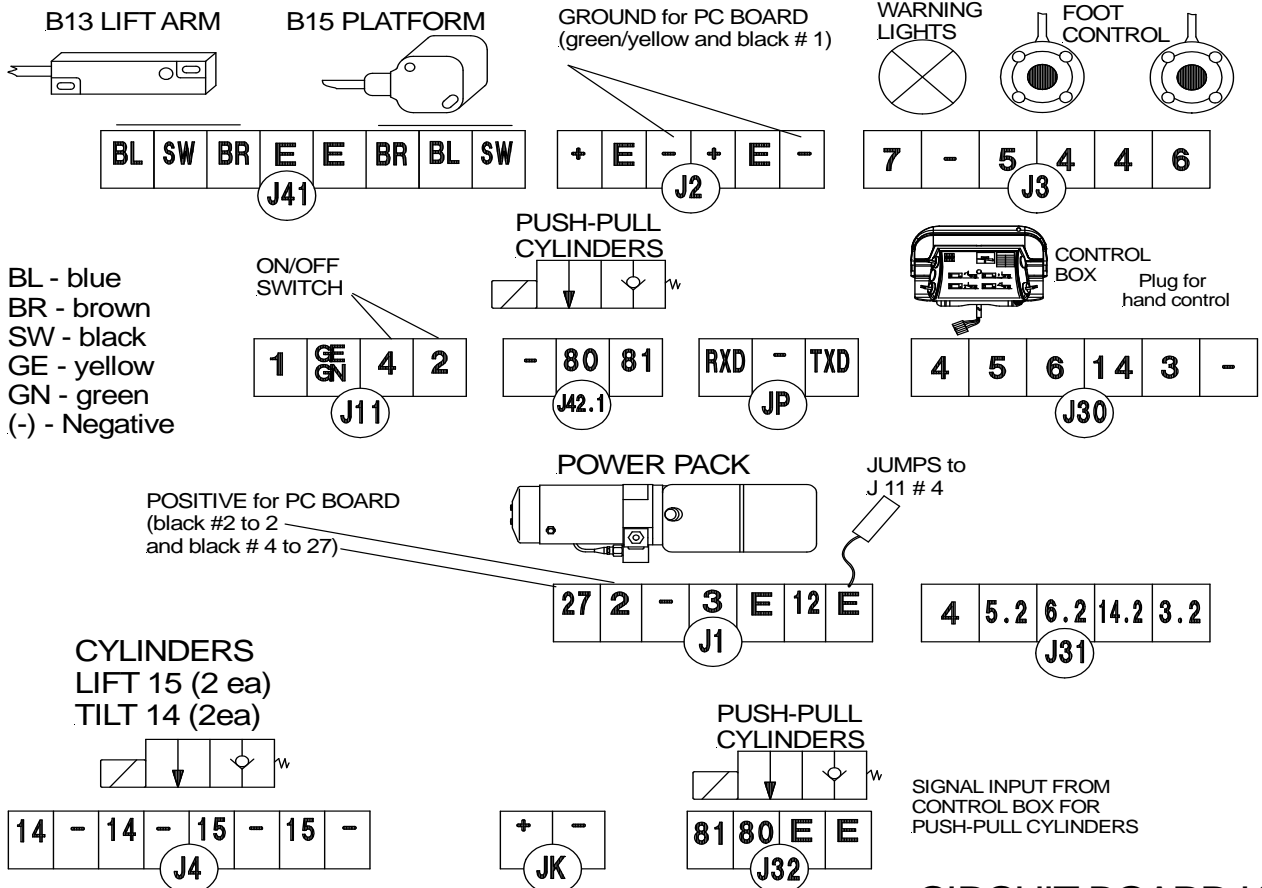
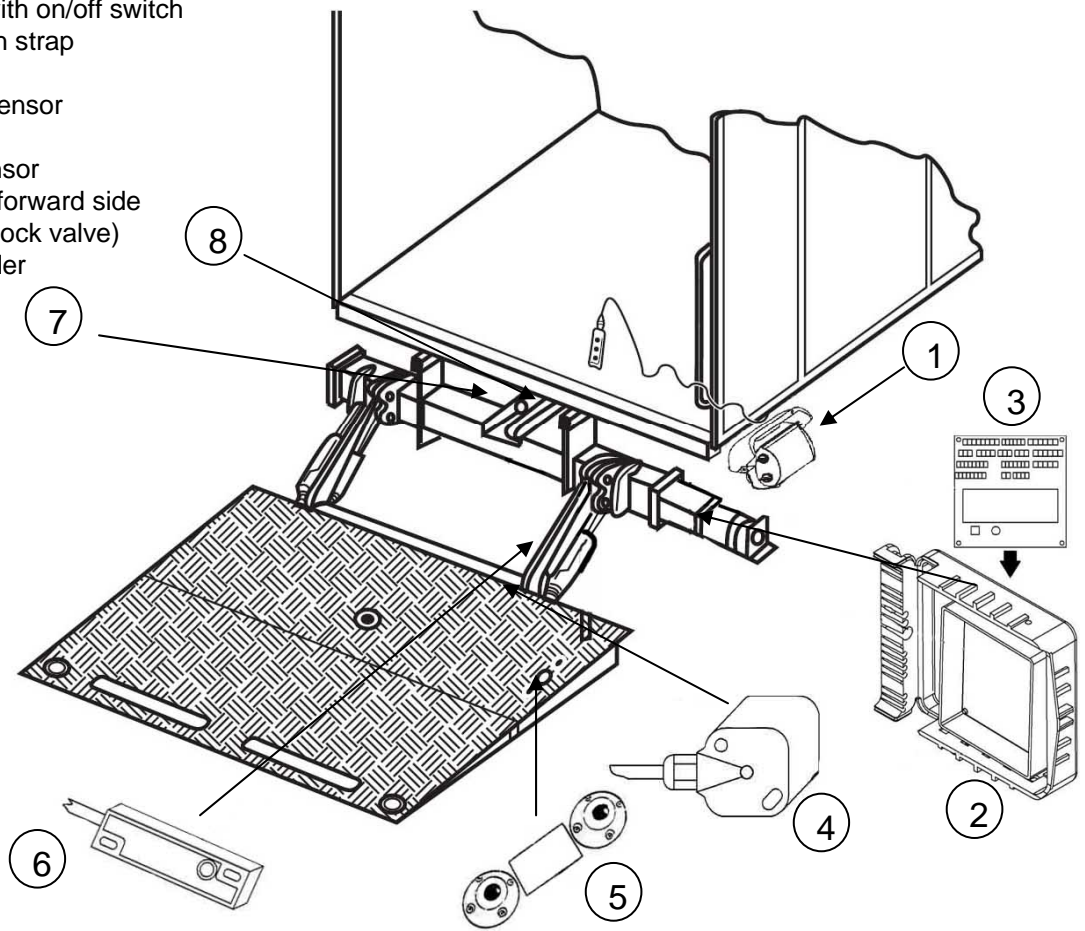
Tools needed:

- 1.) Voltmeter
- 2.) Test light
- 3.) 8" jumper cable (16ga. or smaller)
- 4.) Screw driver flat head and 13mm (1/2") wrench
- 5.) Small Phillips screwdriver

*****MAKE SURE YOUR BATTERIES ARE FULLY CHARGED
AND IN GOOD CONDITION*****

Gate overview and connector setup

- 1) Control panel with on/off switch
- 2) Rubber cap with strap
- 3) Circuit board
- 4) B-15 platform sensor
- 5) Foot control
- 6) B-13 liftarm sensor
- 7) Valve block on forward side of mount tube (lock valve)
- 8) Push-pull cylinder



CIRCUIT BOARD K+



1) GATE IS NOT LOWERING DOWN



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1.1) Check Battery Power

- Check resettable Circuit Breaker on top of batteries → Push Reset Tab back, if popped out.
- Check condition of ground cable on driver side attached to gate frame and trailer/truck body.**
- Check fuse on top of batteries (qty 1)
at pump & motor inside the main tube on passenger side at circuit board (qty 2) behind rubber cover
- Check power on board between J-11 #4 and "Masse" with voltmeter by turning the lift up knob and hold for 10 sec with gate in stored position (DEADHEAD GATE)
(above 10 Volt is necessary for proper use of lift gate) → less than 10V; → See e)
- Test for charged batteries and a solid working truck/trailer charging system
- Check Ground connection from front of trailer/truck to batteries and lift gate. Check for tight connections

1.2) Gate is not lowering but lifting and sliding

- If liftgate has not been used and stored under the trailer and all other functions except for lowering are working the pins and bearings might be frozen. While activating the switches and lowering the gate, pry down the platform or place a load not to exceed the capacity of the gate on the platform.
→ If the gate is now lowering, your pins are frozen and needs cleaning and lubrication

1.3) Check for short in optional equipment

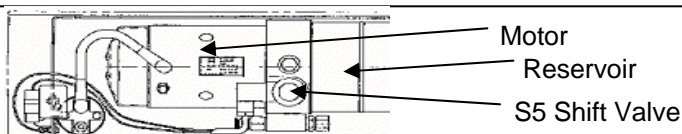
- Unplug J-3 (Lights and f/c), J-41 (B-13 and B-15 Sensors, will loose tilt up)
Keep the connectors unplugged (gate also operates without plugs connected)
- Unplug J-1 (Main power), wait 10 seconds and plug J-1 back to the board (Resetting the board)
- Plug each connector back one at a time and check functions of gate after plugging in each

1.4) Check voltage supply to release valves on lift cylinder

- Check voltage between Ground JK #(-) and J4 #15 (release valves S1 & S2 at lift cylinders) and J1 #12 (Lock valve S11 and shift valve S5) while turning the lowering knob
No voltage → check for bad knob or loose wire at control panel
- Listen for clicking of the release valves at the lift cylinders (inner cylinders)
→ If valves are not clicking → check wire for damaged spots or loose connections

1.5) Gate is lowering down very slowly → S5 at pump not engaged

- Check Voltage at J1 #12 and Ground JK #(-) while turning knob to engage the shift valve at the pump and motor inside the main tube
- Override the shift valve by pushing down the center brass pin with small Phillips screwdriver while turning the down knob
→ Gate will lower down → check the valve and look for damaged wire or loose connections





2) GATE DOES NOT SLIDE OUT



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2.1) Check Battery Power

- Check resettable Circuit Breaker on top of batteries → Push Reset Tab back in, if popped out
- Check condition of ground cable on driver side attached to gate frame and trailer/truck body.**
- Check fuse on top of batteries (qty 1),
at pump & motor inside the main tube on passenger side at circuit board (qty 2) behind rubber cover
- Test for charged batteries and a solid working truck/trailer charging system
- Check power on board between J-11 #4 and JK #(-) with voltmeter
- Check Ground connection from front of trailer/truck to batteries and lift gate. Check for tight connections

2.2) Check for short in optional equipment

- Unplug J-3 (Lights and f/c), J-41 (B-13 and B-15 Sensors, will loose tilt up)
Keep the connectors unplugged (gate will operate without plugs connected)
- Unplug J-1 (Main power), wait 10 seconds and plug J-1 back to the board (Resetting the board)
- Plug each connector back, one at a time and check functions of gate after plugging in each

2.3) Check voltage supply to release valve for push-pull cylinder

- Check voltage at J-32 #81 and J-42 #81 to Ground JK #(-) while turning the slide out knob for opening up the lock valve S8 for the P-P cylinder. No Voltage → check for bad knob or loose wire in control box
- Listen for clicking of the release valve for the P-P cylinders (at valve block on mount frame)
- If valve is not clicking → check wire for damaged spots, loose connections or a bad valve

2.4) Check motor solenoid power

- Check voltage at J-1 #3 and Ground JK #(-) while turning knob to engage motor solenoid
No voltage → board might be damaged
- Check voltage at small motor solenoid studs and Ground JK #(-) while turning knob and
listen for clicking of the motor solenoid – no voltage or clicking → check wire to motor solenoid
- Check for voltage across the small motor solenoid studs with test light while turning knob
See a light → power is reaching solenoid.
- Check for main power at the big solenoid studs, one has voltage; if not check connections to battery
or popped tab at circuit breaker
- Check both big solenoid studs for voltage while turning the slide out knob → if not → solenoid is bad
- Jump large terminals at motor solenoid
 - If motor runs → motor solenoid is bad
 - If motor does not run → Bad motor or bad ground (check for loose hanging cable on driver side)
 - Tap on motor → motor starts running – bad brushes



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3) GATE IS NOT AUTO TILTING AT GROUND LEVEL



3.1) Check Battery Power

- a) Check resettable Circuit Breaker on top of batteries → Push Reset Tab back in, if popped out
- b) Check condition of ground cable on driver side attached to gate frame and trailer/truck body.**
- c) Check fuse on top of batteries (qty 1),
at pump & motor inside the main tube on passenger side at circuit board (qty 2) behind rubber cover
- d) Test for charged batteries and a solid working truck/trailer charging system
- e) Check power on board between J-11 #4 and JK #(-) with voltmeter
- f) Check Ground connection from front of trailer/truck to batteries and lift gate. Check for tight connections

3.2) Check adjustment of auto-tilt sensor B-13

- a) Check the position of the B-13 Sensor on the inside of the passenger side lift arm
→ Sensor has to be in a horizontal position when gate is 8"-10" above ground, wire pointing towards front of trailer/truck
- b) Check if the outer J41 Plug is loose (color sequence = blue, black, brown)

3.3) Check function of control box or hand control

- a) Check voltage at J30 #4 to Ground JK #(-) for power supply of the control box
- b) Check voltage at J30 #6(lower) to Ground JK #(-) for lowering signal
→ Signal on J30 #6 → control box is ok; if no signal check for damaged wire or loose connectors inside control box or damaged turn knob

3.4) Check voltage supply to release valves on tilt cylinder

- a) Check voltage at J41 #(BLACK)(B-13) to Ground JK #(-) → always 12V
- b) Check voltage at J41 #(BLUE)(B-13) to Ground JK #(-) while platform is on ground → 12V
→ No voltage on BLUE → Look for damaged spots or loose connection or B-13 is bad
- c) Check voltage at J4 #14 to Ground JK #(-) while turning the lowering knob when gate is on ground for opening up the release valves at the tilt cylinders for auto tilt
- d) Listen for clicking of the release valves at the tilt cylinder (outer cylinders)
→ If valves are not clicking → check wire for damaged spots or loose connections
- e) Jump J-11 #2 to J4 #14 for about 8-10 min – if coils on tilt cylinders are cold, look for broken wire



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4) GATE IS NOT TILTING UP AT GROUND



4.1) Check Battery Power

- Check resettable Circuit Breaker on top of batteries → Push Reset Tab back in, if popped out
- Check condition of ground cable on driver side attached to gate frame and trailer/truck body.**
- Check fuse on top of batteries (qty 1),
at pump & motor inside the main tube on passenger side at circuit board (qty 2) behind rubber cover
- Test for charged batteries and a solid working truck/trailer charging system
- Check power on board between J-11 #4 and JK #(-) with voltmeter
- Check Ground connection from front of trailer/truck to batteries and lift gate. Check for tight connections

4.2) Check function of B-15 Sensor

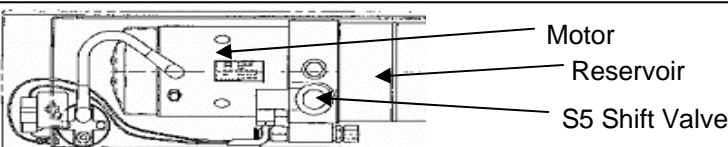
- Check voltage at J41 #(BLACK)(B-15) to Ground JK #(-) → always 12V
- Check voltage at J41 #(BLUE)(B-15) to Ground JK #(-) while platform is on ground → 4.3V
→ Less than 4 Volts, check position of B-15 sensor
→ No voltage on BLUE → Look for damaged spots or loose connection or B-15 is bad
→ Jump BLUE to BLACK → Gate tilts up at ground level, does not stop automatically

4.3) Check motor solenoid power to run the motor

- Check voltage at J-1 #3 to Ground JK #(-) while turning lift knob to engage motor solenoid
- Check for voltage at one of the small motor solenoid studs and Ground JK #(-) while turning knob and listen for clicking of the motor solenoid – no voltage or clicking → check wire to motor solenoid
- Check for voltage across the small motor solenoid studs with test light while turning knob
→ See a light → power is reaching solenoid.
- Check for main power at the big solenoid studs, one has voltage; if not check connections to battery
- Check both big solenoid studs for voltage while turning the opening knob → if not → solenoid is bad
- Jump large terminals at motor solenoid
 - If motor runs → motor solenoid is bad
 - If motor does not run → Bad motor or bad ground (check for loose wire, hanging on driver side)
 - Tap on motor → motor starts running – bad brushes

4.4) Check function of shift valve S5 at pump & motor

- Check voltage at J1 #12 and Ground JK #(-) while turning knob to engage the shift valve S5 at the pump and Motor inside the main tube
- While turning the knob to make the motor run, override shift valve by pushing down the center brass pin with small Phillips screwdriver → Gate will tilt up,
if not → check the valve





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5) GATE IS NOT LIFTING UP



5.1) Check Battery Power

- Check resettable Circuit Breaker on top of batteries → Push Reset Tab back in, if popped out
- Check condition of ground cable on driver side attached to gate frame and trailer/truck body.**
- Check fuse on top of batteries (qty 1),
at pump & motor inside the main tube on passenger side at circuit board (qty 2) behind rubber cover
- Test for charged batteries and a solid working truck/trailer charging system
- Check power on board between J-11 #4 and JK #(-) with voltmeter
- Check Ground connection from front of trailer/truck to batteries and lift gate. Check for tight connections

5.2) Check function of control box

- Check voltage at J30 #4 to Ground JK #(-) for power supply of the control box
- Check voltage at J30 #5(lift) to Ground JK #(-) for lifting signal
→ Signal on J30 #5 → control box is ok; if no signal check for damaged wire or loose connectors inside control box or damaged turn knob

5.3) Check for short in optional equipment

- Unplug J-3(Lights and foot control), J-41(B-13 and B-15 Sensors, loose tilt up) Keep the connectors unplugged (gate also operates without plugs connected)
- Unplug J-1 (Main power), wait 10 seconds and plug J-1 back to the board (Resetting the board)
- Plug each connector back one at a time and check functions of gate after plugging in each.

5.4) Check motor solenoid power to run the motor

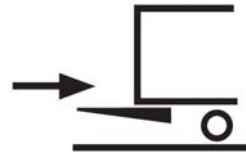
- Check for voltage at J-1 #3 to Ground JK #(-) to engage motor solenoid while turning lift knob
- Check for voltage at one of the small motor solenoid studs to Ground JK #(-) while turning knob and listen for clicking of the motor solenoid – no voltage or clicking → check wire to motor solenoid
- Check voltage across the small motor solenoid terminals (#3 and -) with test light while turning knob
See a light → power is reaching solenoid
- Check for main power at the large solenoid studs one has voltage; if not check connections to battery
- Check both big solenoid studs for voltage while turning the up knob → if not → solenoid is bad
- Jump large terminals at motor solenoid
 - If motor runs → motor solenoid is bad
 - If motor does not run → Bad motor or bad ground (check for loose wire, hanging on driver side)
 - Tap on motor → motor starts running – bad brushes

5.5) Check voltage supply to release valves on lift cylinder

- Check voltage between Ground JK #(-) and J4 #15 (release valves S1 & S2 at lift cylinders) while turning the lifting knob
No voltage → check for bad knob or loose wire at control panel
- Listen for clicking of the release valves at the lift cylinder (inner cylinders)
→ If valves are not clicking → check wire for damaged spots or loose connections
- Jump J-11 #2 to J4 #15 for about 8-10 min – if coils on lift cylinders are cold, look for broken wire



6) GATE IS NOT SLIDE IN



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6.1) Check Battery Power

- Check resettable Circuit Breaker on top of batteries → Push Reset Tab back in, if popped out
- Check condition of ground cable on driver side attached to gate frame and trailer/truck body.**
- Check fuse on top of batteries (qty 1)
at pump & motor inside the main tube on passenger side at circuit board (qty 2) behind rubber cover
- Start truck and run engine in fast idle for charging the battery
→ if liftgate start working, recharge batteries → test batteries and truck charging system
- Check power on board between J-11 #4 and JK #(-) with voltmeter by turning the up-function knob and hold for 10 sec with gate in stored position (DEADHEAD GATE)
(above 10 Volt is necessary for proper use of liftgate) → less than 10V → See f)
- Test for charged batteries and a solid working truck/trailer charging system

6.2) Check for short in optional equipment

- Unplug J-3 (Lights and foot control), J-41(B-13 and B-15 Sensors, loose tilt up)
Keep the connectors unplugged (gate will operate without plugs connected)
- Unplug J-1 (Main power), wait 10 seconds and plug J-1 back to the board (Resetting the board)
- Plug each connector back, one at a time and check functions of gate after plugging in each

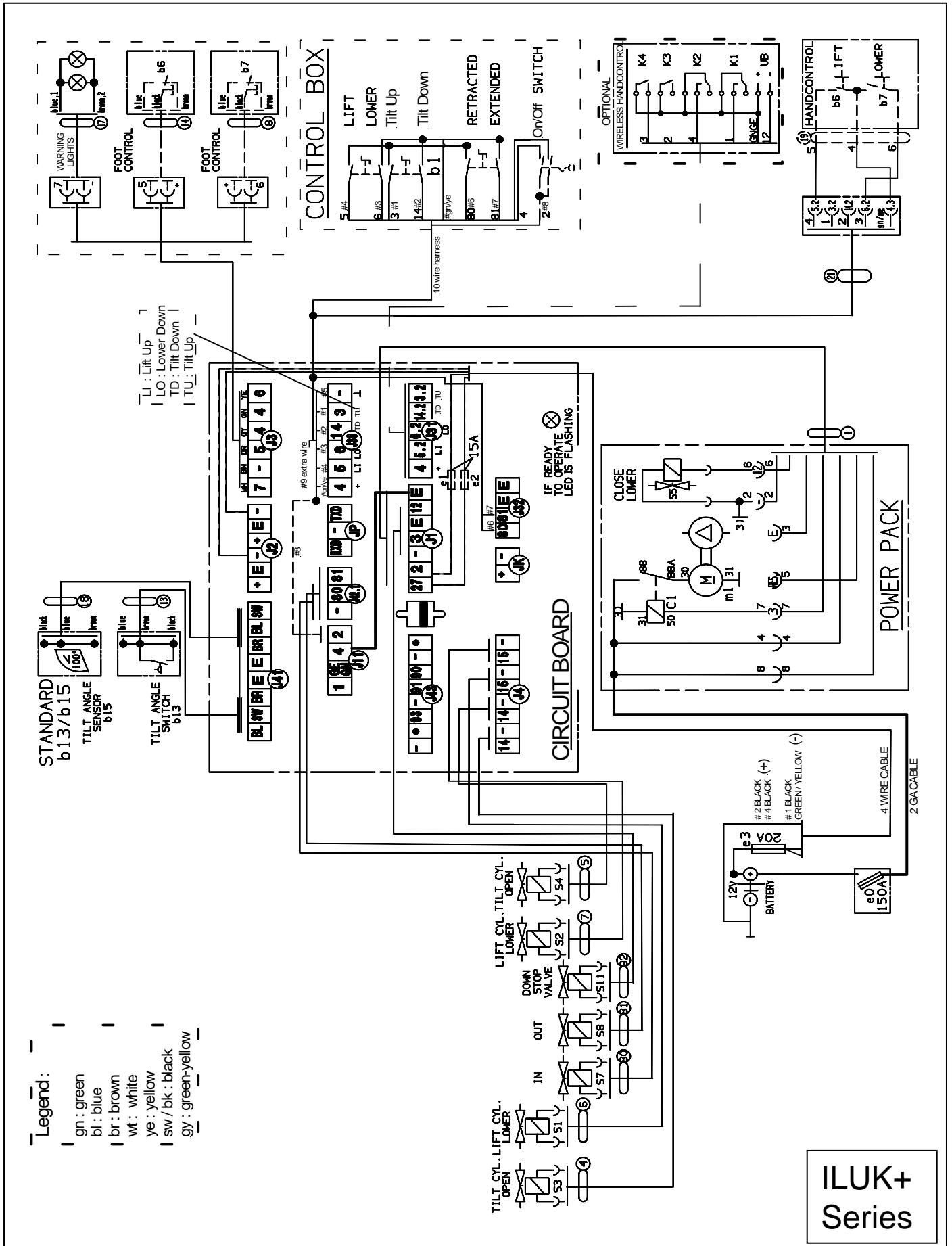
6.3) Check function of control box

- Check voltage at J-32 #80 and J-42 #80 Ground JK #(-) while turning the slide in knob for opening up the lock valve S7 for the P-P cylinder. No Voltage → check for bad knob or loose wire in control box
- Listen for clicking of the lock valve for the P-P cylinders (at valve block on mount frame)
- If valve is not clicking → check wire for damaged spots, loose connections or a bad valve

6.4) Check motor solenoid power to run the motor

- Check voltage at J-1 #3 and Ground JK #(-) to engage motor solenoid while turning lift knob
- Check voltage at one of the small motor solenoid studs and Ground JK #(-) while turning knob and listen for clicking of the motor solenoid – no voltage or clicking → check wire to motor solenoid
- Check voltage across the small motor solenoid terminals with test light while turning knob
See a light → power is reaching solenoid
- Check main power at the large solenoid studs, one has voltage; if not check connections to battery
- Check both big solenoid studs for voltage while turning the opening knob → if not → solenoid is bad
- Jump large terminals at motor solenoid
 - If motor runs → motor solenoid is bad
 - If motor does not run → Bad motor or bad ground
 - Tap on motor → motor starts running – bad brushes

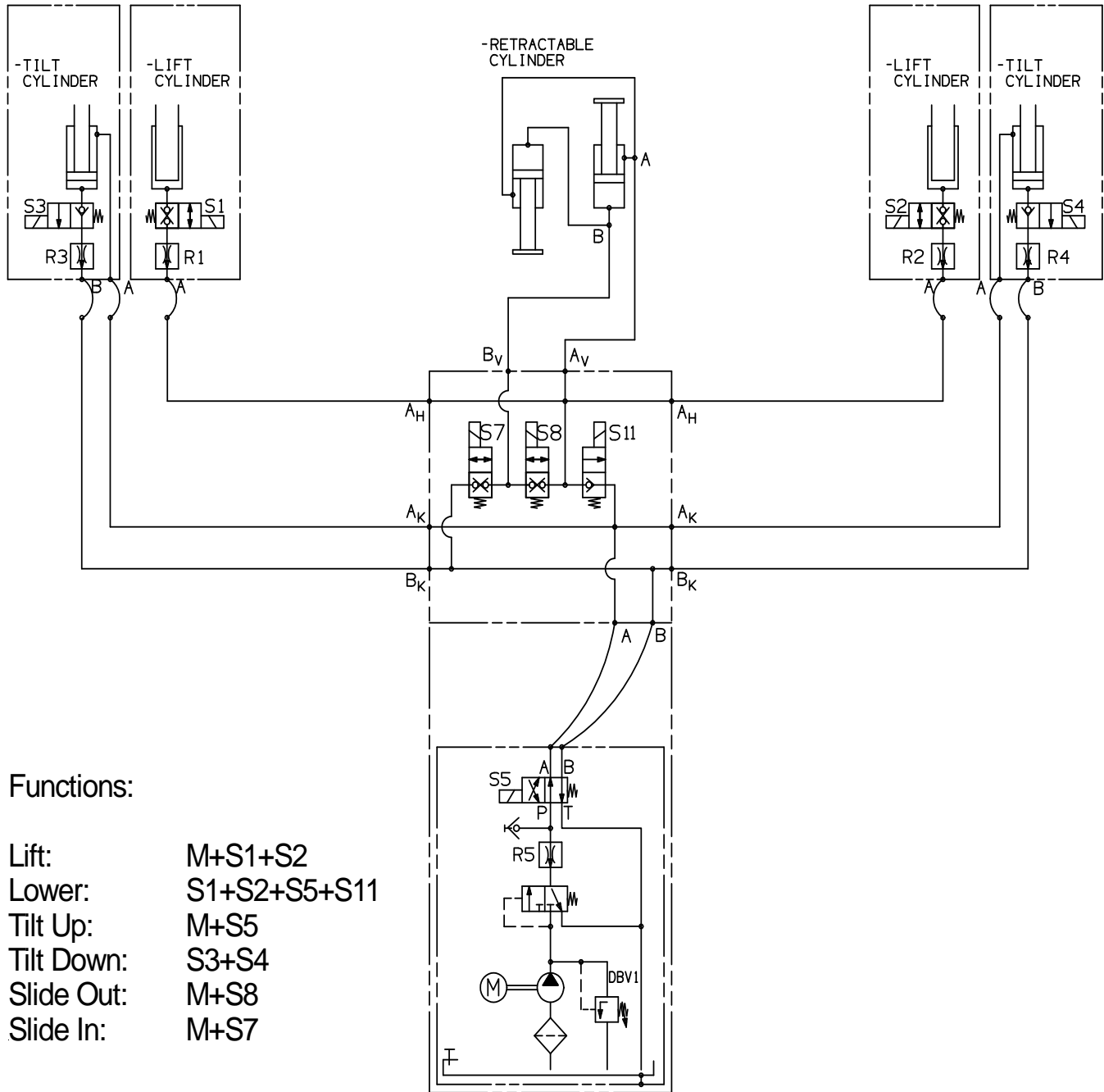
Electrical schematic



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Hydraulic schematic

3-Valve-Setup



S1, S2 on lift cylinder and S7, S8 on push pull valve block are double acting release valves: They have to be activated for fluid to go through them in either direction

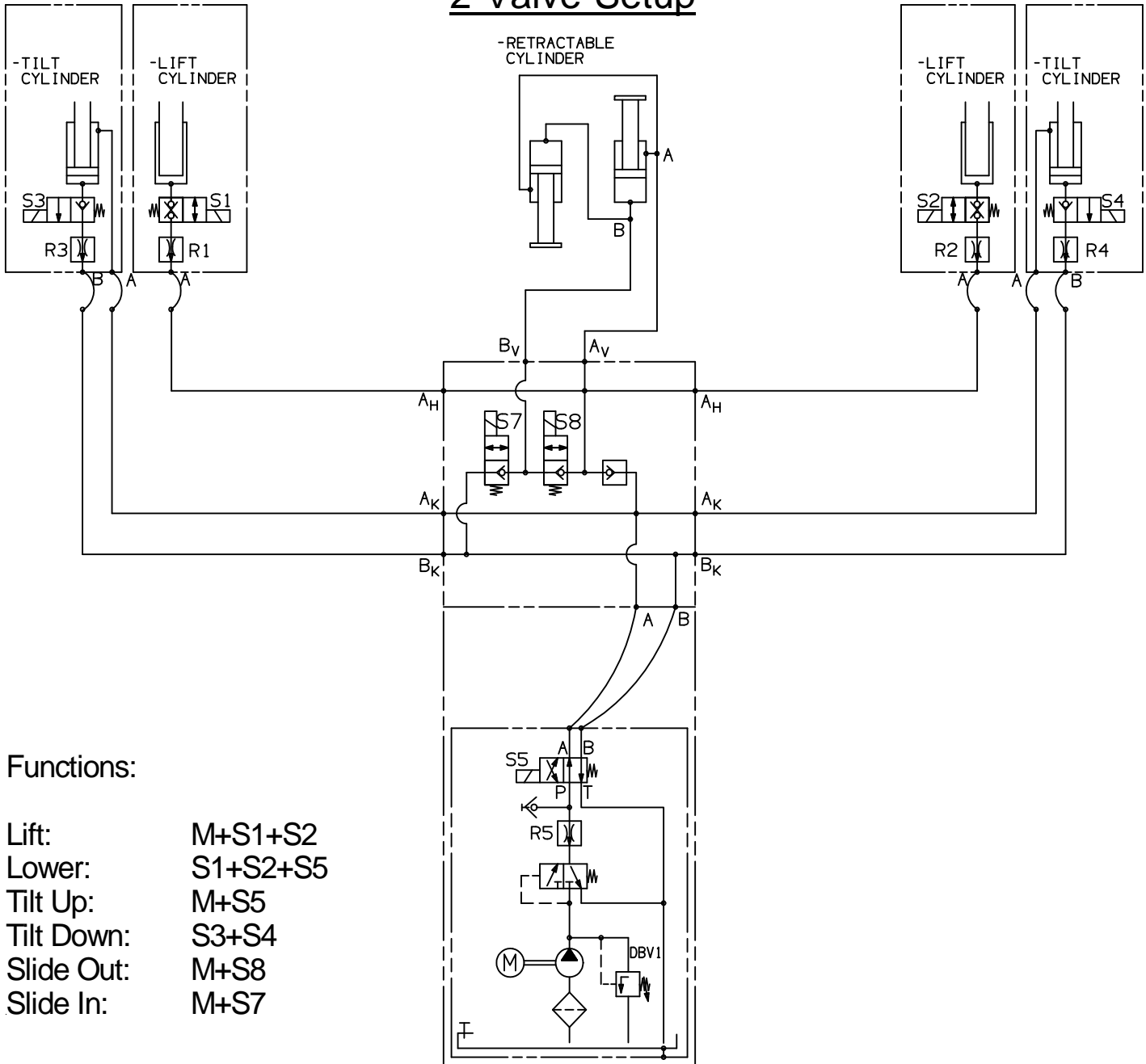
To slide out S8 is activated to allow fluid to both sides of retractable cylinders

To slide in S7 is activated to allow fluid to piston rod side of retractable cylinders

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Hydraulic schematic

2-Valve-Setup



Functions:

Lift: M+S1+S2
 Lower: S1+S2+S5
 Tilt Up: M+S5
 Tilt Down: S3+S4
 Slide Out: M+S8
 Slide In: M+S7

S1, S2 on lift cylinder are double acting release valves:
They have to be activated for fluid to go through them in either direction

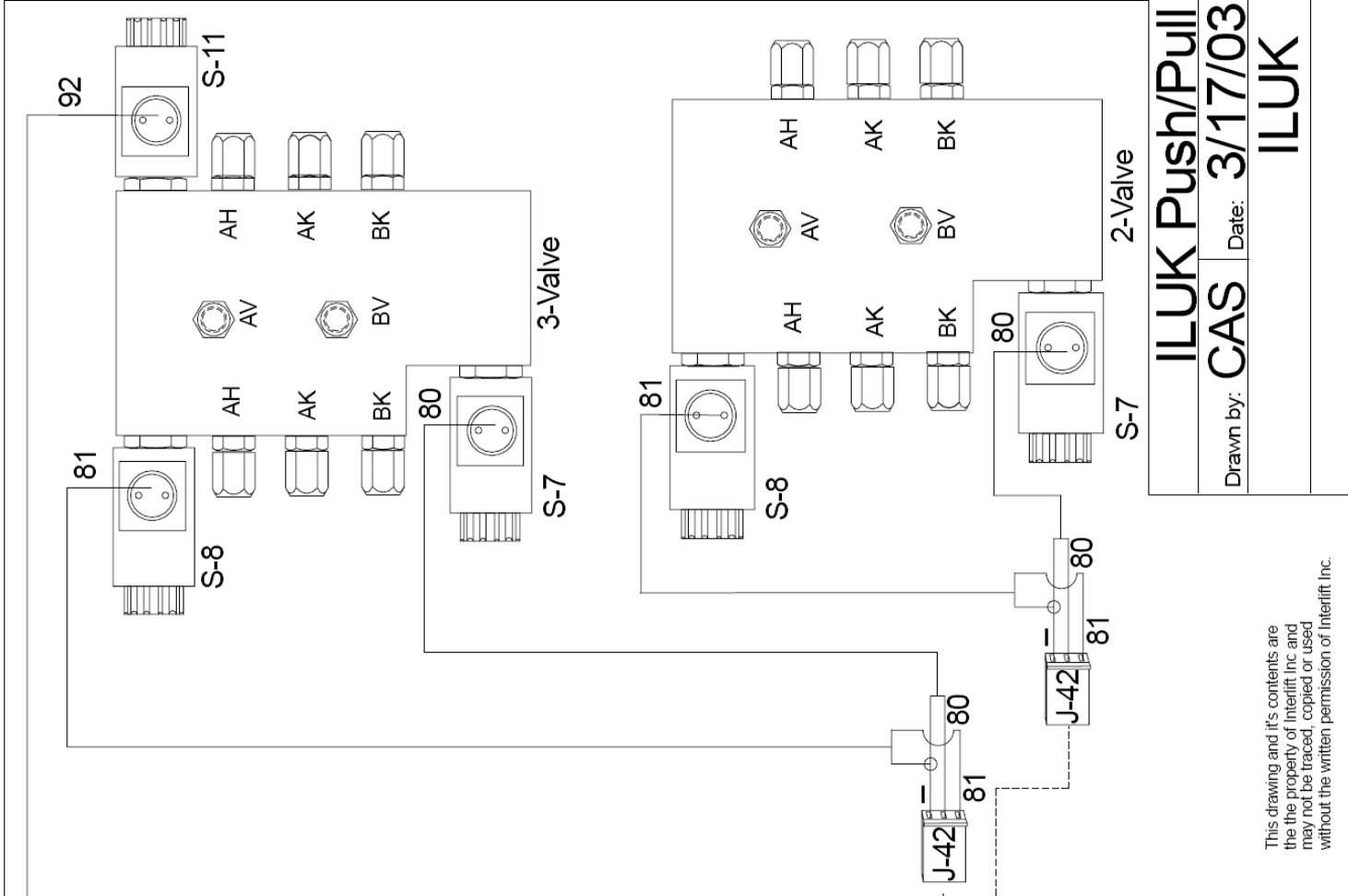
S3 and S4= release valve for tilt down function
R1 and R2= flow restrictor located inside hose adaptor on lift cylinder
R3 and R4= flow restrictor located inside hose adaptor on tilt cylinder

To slide out S8 is activated to allow fluid to both sides of retractable cylinders
To slide in S7 is activated to allow fluid to piston rod side of retractable cylinders

R5= resistor valve located in power pack
Flow divider gets activated when fluid is going back into power pack
If flow divider is loose or hanging up - the fluid is circulated back into tank

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3-Valve Part Numbers	S-8 & S-7 Double Locking P-1284466 S-11 Single Locking P-67282345 S-11 Opens When Lowering, Lift Cylinder Return Line
2-Valve Part Numbers	S-8 & S-7 Single Locking P-67282345
Hydraulic Ports	AV-Push/Pull In BV-Push/Pull Out AH-Lift Cylinder AK-Tilt Cylinder Down BK-Tilt Cylinder Up Push/Pull Cylinder Out S-7 - Closed S-8 - Open Push/Pull Cylinder In S-7 - Open S-8 - Closed



ILUK Push/Pull Valving

Drawn by: **CAS** Date: **3/17/03** Rev Date:

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