

2008

Convertible Top Trouble Shooting



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Good Information to know when working on
Convertible Top Systems
8/20/2008

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The first four pages are a reprint of an article by Richard Holloway printed some 20 years ago but still applicable for our use today. The information includes personal photos of a 63 Thunderbird. Additional information includes information taken from the “Convertible Top Maintenance, Diagnosis, and Light Repair Manual put out by Ford. The intention of this compilation of information is to put it in a simple concise form so the common Thunderbird Convertible owner can service and trouble shoot top problems with their Thunderbird convertible.

TROUBLE – SHOOTING 1960-1966 THUNDERBIRD CONVERTIBLE TOPS

By Richard Holloway

If your malfunctioning electric top makes you want to blow your top—read this. The author might be able to help you fix your electrical woes in a few minutes with a few tools, by following these simple hints.

Top problems fall into three groups: 1. Electrical 2. Hydraulic: and 3. Mechanical. Electrical malfunction causes most top operating failures, simply because there are more electrical components. The “flip-top” birds build from 1961 to 1966 go through eight operations: 1. Deck Lid Unlock: 2. Deck Lid Lock: 3. Deck Lid Open: 4. Deck Lid close: 5. Tray Extend: 6. Tray Fold: 7. Top Up: 8. Top Down. Therefore, there are eight relays, one for each of these operations.

The most common problems, in order of occurrence, are: Frozen pump: Broken or maladjusted tray fold switch: Burned-out relay: Low fluid level in the pump reservoir: Worn pump “O-ring: Poor ground: and Weak battery. (Pictures of 63)



TOP DOWN – The right hinge “Down” switch is located next to the spare tire.

HOW TO GET A LOCKED TRUNK OPEN

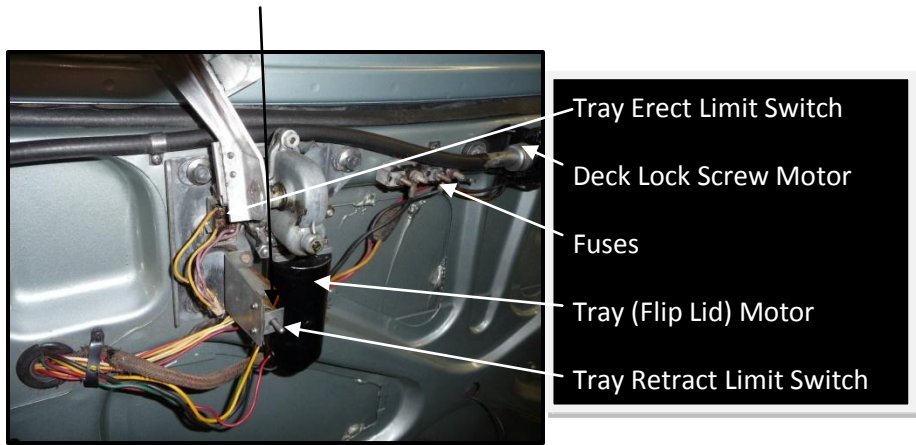
Locate the 9/16 –inch bolts forward of the rear wheels up under the wheel well area. Remove the bolts, and, using a screwdriver wrapped in cloth to prevent marring the paint, pry up the deck lid at the left forward corner until it can be raised three or four inches. Then find a chisel or screwdriver about five inches in length and wedge it the deck lid and pull it up until you can wedge a five-inch or so chisel or screwdriver under it. Return to the left corner and remove the five inch wedge and, pulling up, insert a nine inch or longer wedge. Return to the right side and, pulling up. Insert a nine or ten-inch wedge, and then do the same to the left side. This is as far as you can go without damaging the top parts.

This will now allow you to get your arm in under the deck lid to unfasten the hinge pins or bolts on the deck hinges. Sometimes these pins or bolts bind due to the stress of the wedges and it becomes necessary to remove the hydraulic lines at the pump or deck cylinders. Be sure to use plenty of rags to absorb the fluid.

Once the problem is found, refill the pump reservoir until it begins to overflow the fill hole. Then replace the cap with a screwdriver. Or can use brake, transmission, or shock absorber fluid. Tighten all fittings and run the top and deck lid up and down three or four times. Checking and refilling the reservoir each time. Air will be bled automatically from the system each time you open the reservoir plug to refill it. Do not run the top or deck lid up or down more than four times at once as this strains the battery, and solenoids and motors can become too hot and burn out.



RIGHT HINGE – The right rear deck hinge and deck “open” switch, (R) are seen here. See figure II in this article.

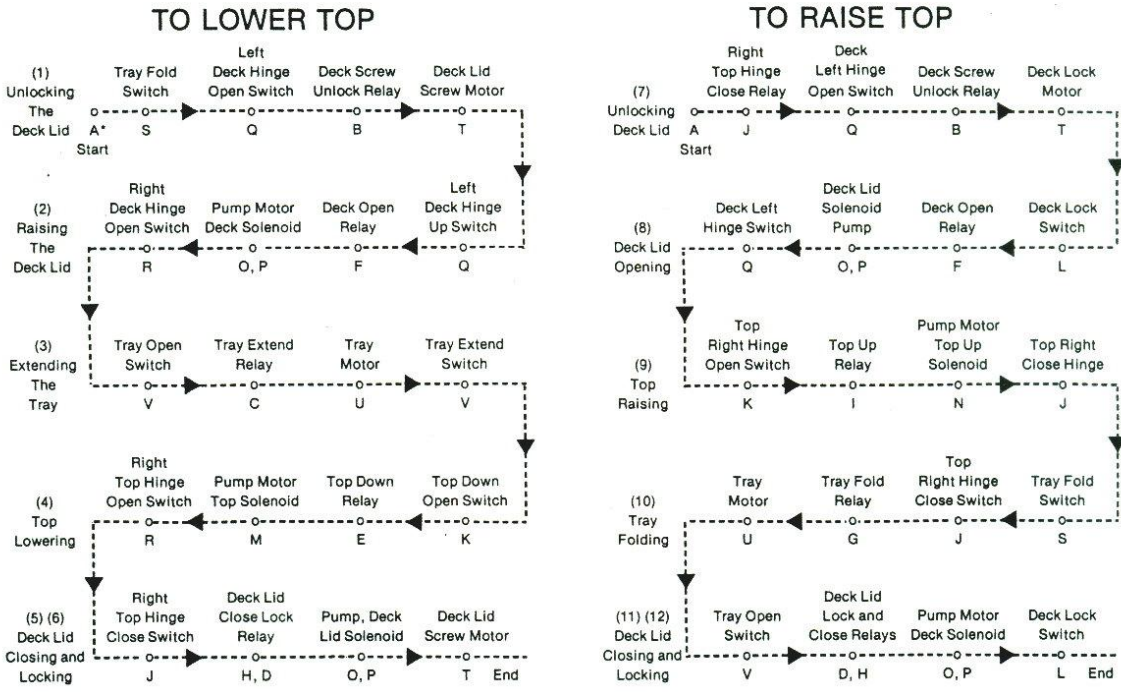


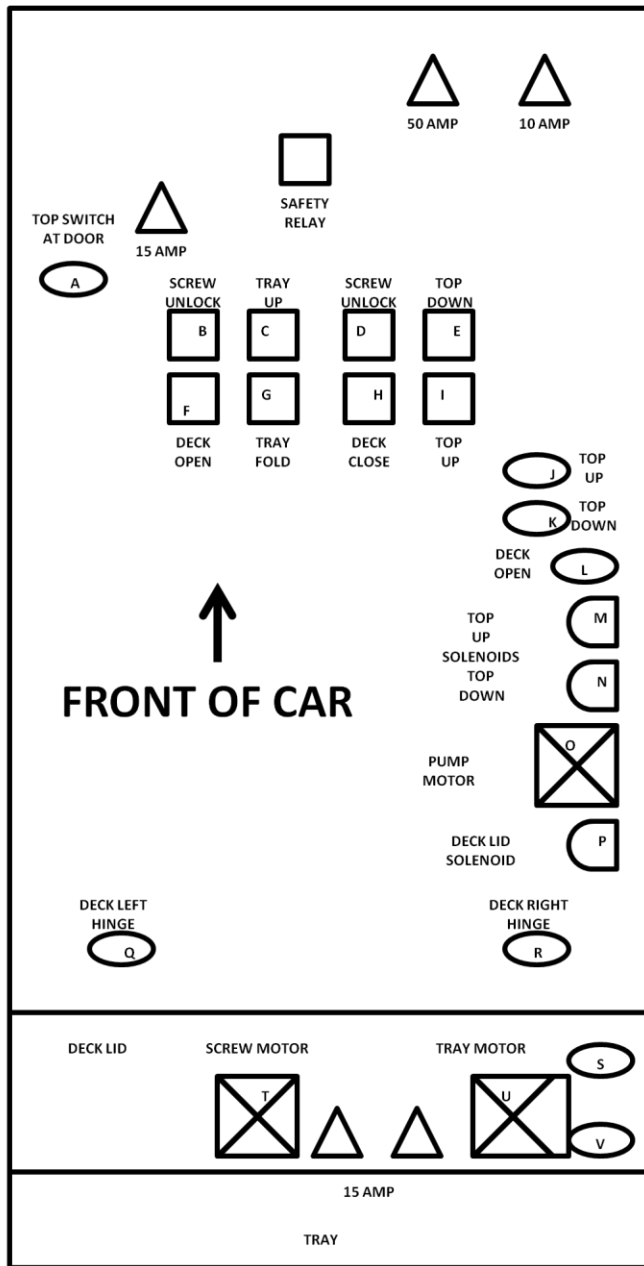
HOW TO TRACE THE ELECTRICAL CIRCUIT

Figure I

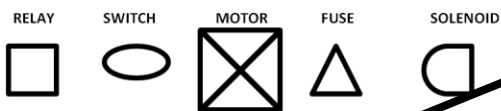
To test the circuit, use a multimeter or a circuit tester such as a pen-light. Refer to the shop manual for your model for the accurate location of switches, relays, solenoids, motors, and wiring for your particular model. The following diagram is a generalized route the current follows from the moment you press the top switch to lower the top to the moment you release it after the top has been raised:

Refer to Figure II for identification and location of alphabet letters below circuit components.





TOP VIEW OF CAR



THE CIRCUIT PROTECTORS

There are a 60-amp and 1—amp fuse at the starter solenoid, and a safety relay under the dash, just above the steering column at the firewall, there are two 15-amp fuses on top of the deck lid, near the screw motor. These protectors open when excessive current is drawn through the curcuit, to keep expensive parts from burning out.

HOW TO OPERATE THE TOP SWITCH

The top will work only in the “Park” or “Neutral” positions, with key turned to “ACC” or “START”. You may have to move the transmissiokn selector lever back and forth until contact is made at the neutral switch at the bottom of the steering column., and you have to maintain firm pressure on the top switch while the top is ooperating up and down.

MECHANICAL CHECKS TO MAKE

Be sure all joints are well lubricated. Light oil will do, Otherwise, excessive friction overloads athe pump, causing the pump to stall. Also be sure linkage, hinges, etc., are in proper alignment, or te top movement will be jerky, Hinges, screws, and arms are set to allow these parts to move forward and back., up an down, and left nd right.

Set all plunger-type switches at 0.060 of an inch gap or clearsance for best results, Otherwise the switches will open too early, too late, or not at all.

HYDRAULIC CHECKS TO MAKE

Be sure the hose fittings are tight, hoses are good and not cracked or leaking, and cylinders, pump and solenoids don’t leak. In time , a leak will show itself by soiling and discoloring the trunk mat and by a gradual worsening of the top’s movement as the system loses its fluid.

- Deck Lid Close Limit Switch
- Top Down Solenoid
- Top Up Solenoid
- Reservoir (O) in center
- Deck Lid Solenoid Valve

HOW TO REPAIR COMPONENTS

Relays: Unsolder the ground strap on the cover, bend back the crimped edges, and remove the cover. Clean the points using fine sandpaper. Test the relay by grounding the #5 terminal as marked on top, and hooking up 12 volts to the #3 and the #4 terminals. A double "click" should be heard. With a penlight tester or multimeter you should get a light and 12 volts at #1 and #2. If not, replace the relay. The deck lid lock and unlock relays have only two terminals instead of three, because they begin and end the circuit.

Pump: Disassemble and clean the pump in solvent. Check the "O" ring for flatness and replace it if it is cracked, flat, or broken. Lubricate internal parts with same fluid used in the system and assemble. Check for free movement of gears and remove any burrs.

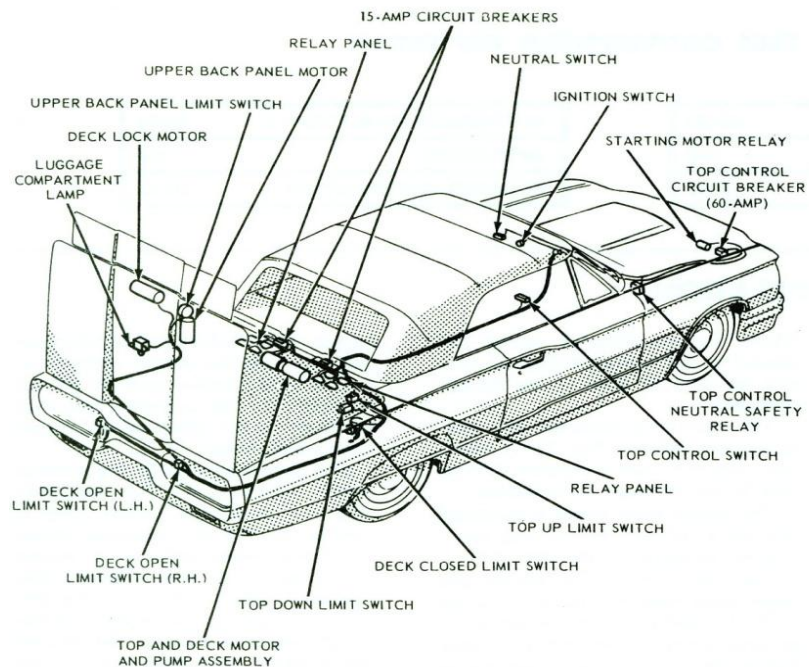
Wiring: Check for frayed or cracked insulation. Broken wires and loose terminals. Repair or replace as needed.

Switches: Be sure contacts inside the switch are mating ends are clean, unpitted and in alignment. Be sure the switch body and cover are tight. Use the sand-paper to clean the points.

Motor: Check forward and reverse by attaching 12 volts to the red and yellow wires and grounding the black wire. Disassemble the top motor and clean the commutator with silver polish. Check brushes for wear. Test amperage using ammeter and figure III specs.

Fuses: Check to see that 12 volts goes through the fuse. Disassemble and check to see if contacts are still soldered together. Resolder or replace fuse.

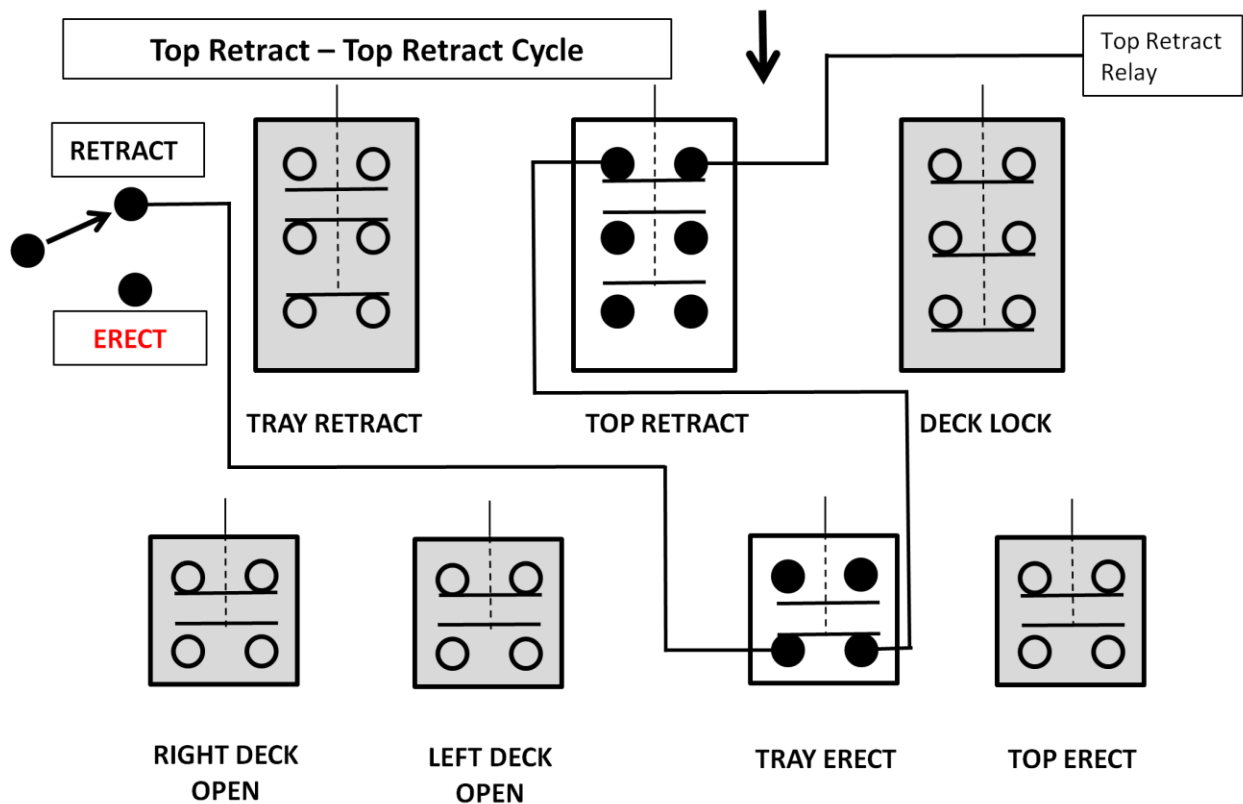
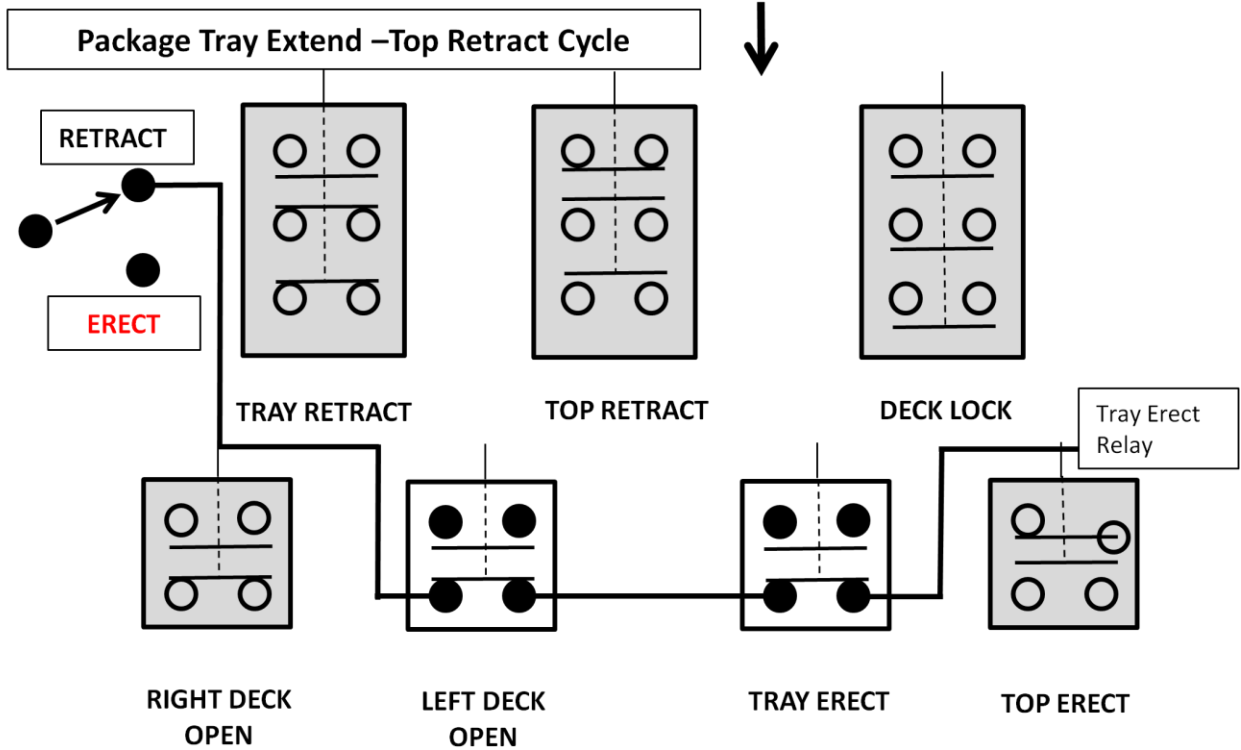
Problem	Solution
Slow Top Movement	Low fluid level. Pitted relay points, Leak in system (hole in hose, leaky pump or cylinders, Linkage binding or out of alignment. Ruptured "O" rings in pump. Weak battery, Poor ground.
Deck Lid Won't Open or Close	Pump not working. Relay's bad. Tray fold switch open. Low fluid level in pump. Deck lid solenoid inoperable.
Top Won't Raise or Lower	Pump not working. Relays bad. Tray extend switch bad. Bad left hinge switch. Insufficient pump fluid.
Tray Won't Operate, or is Uneven and Jerky in Operation	Bad relays. 15-amp circuit, breakers open. Burned-out tray motor. Excessive binding of linkage arms.
Deck Lid Won't Lock or Unlock	Bad relays. Tray fold switch open. Neutral switch at bottom of steering column bad or maladjusted. Main 50-amp circuit breaker open. Transmission selector lever not in "Neutral" or "Park" position. Switch at door console is faulty. Burned-out deck motor

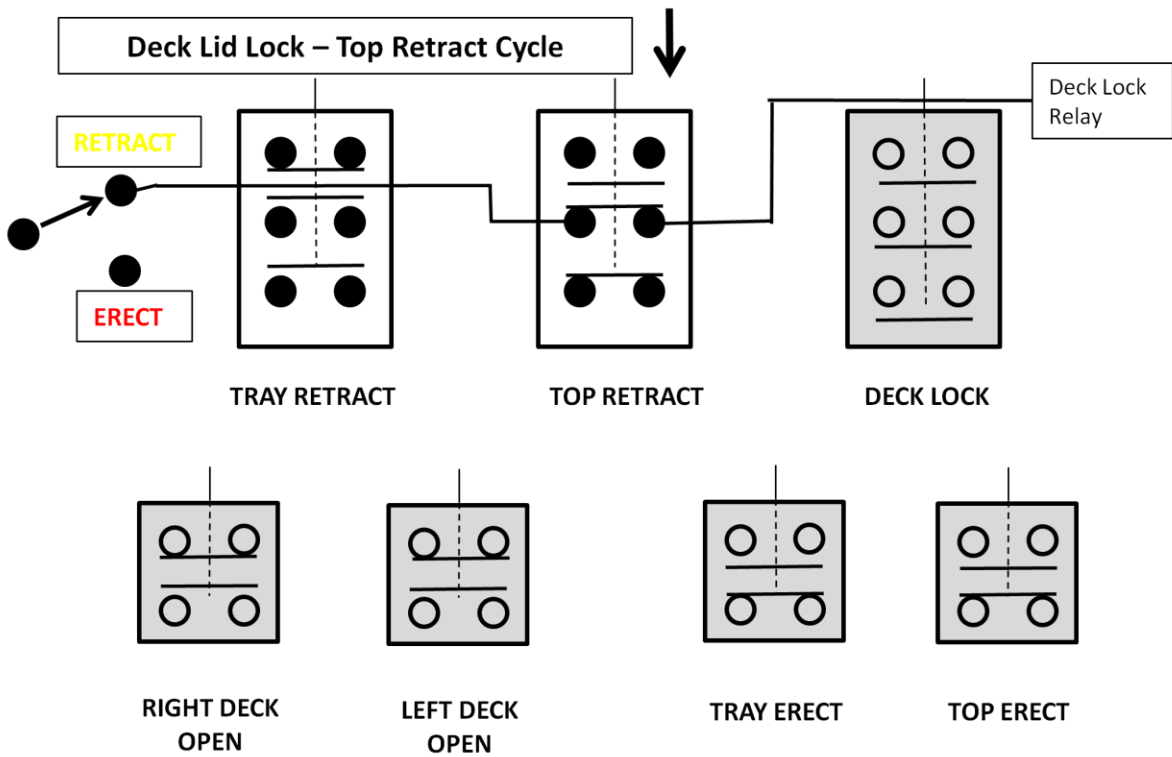
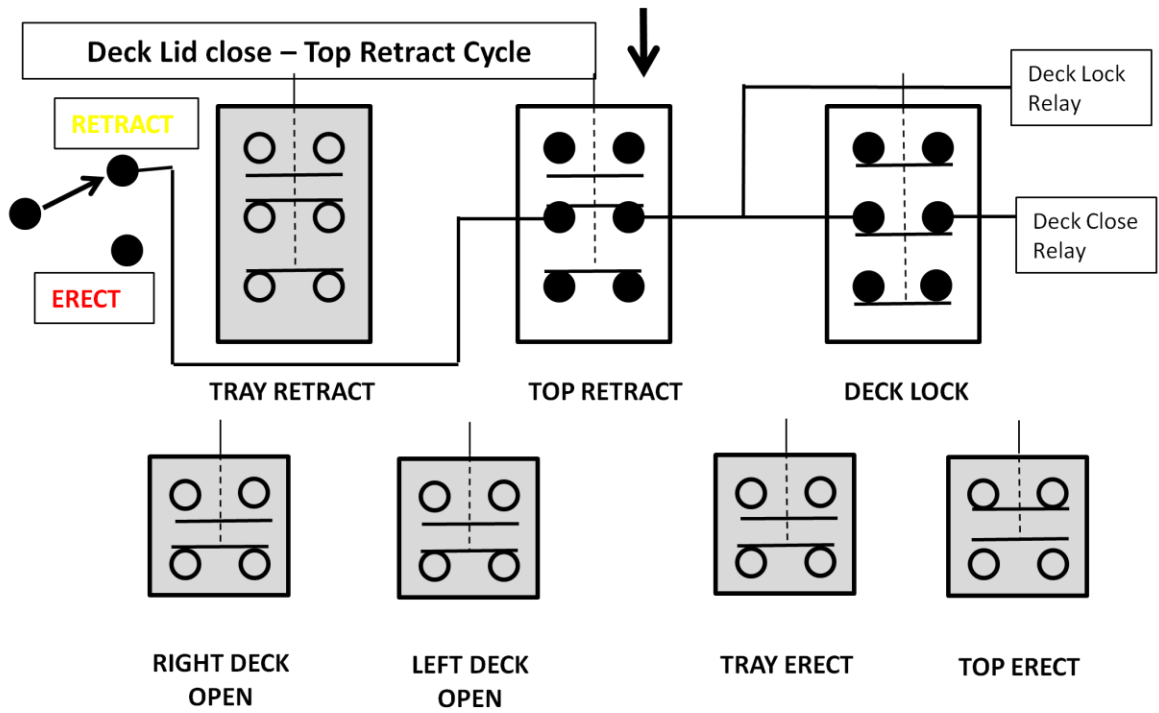


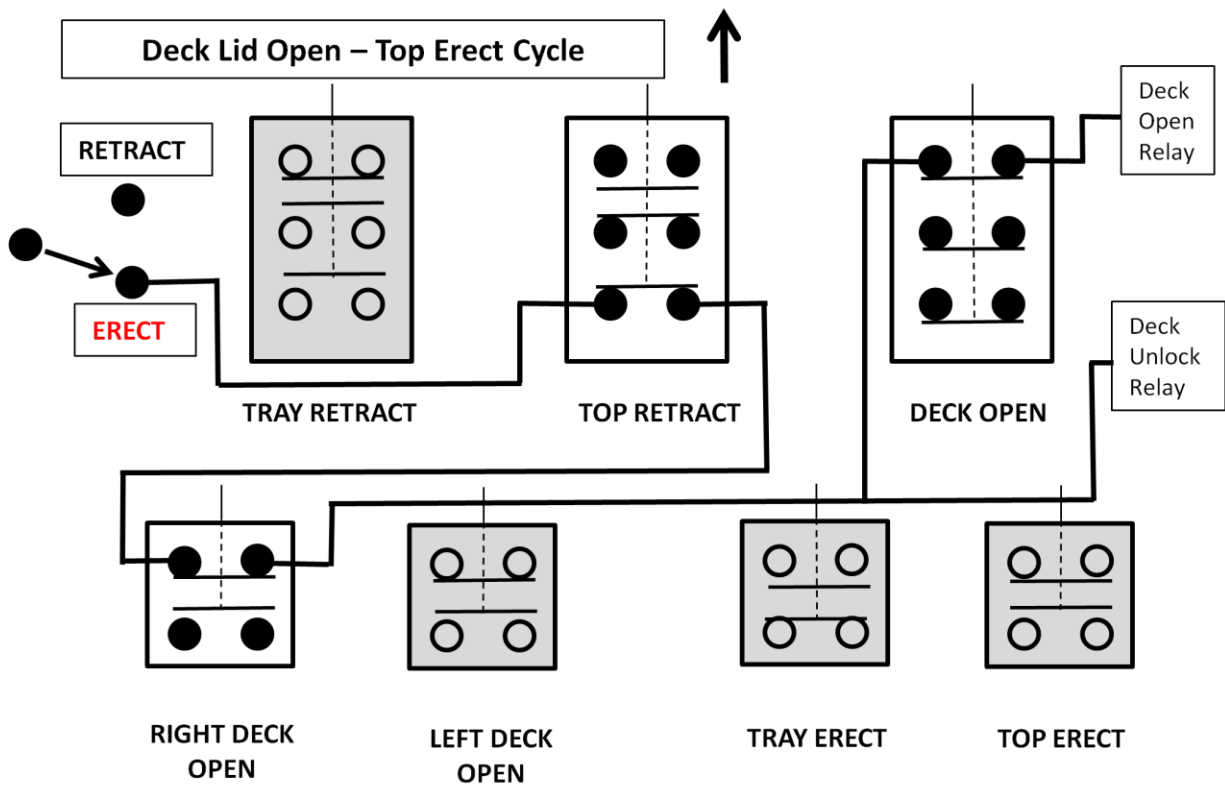
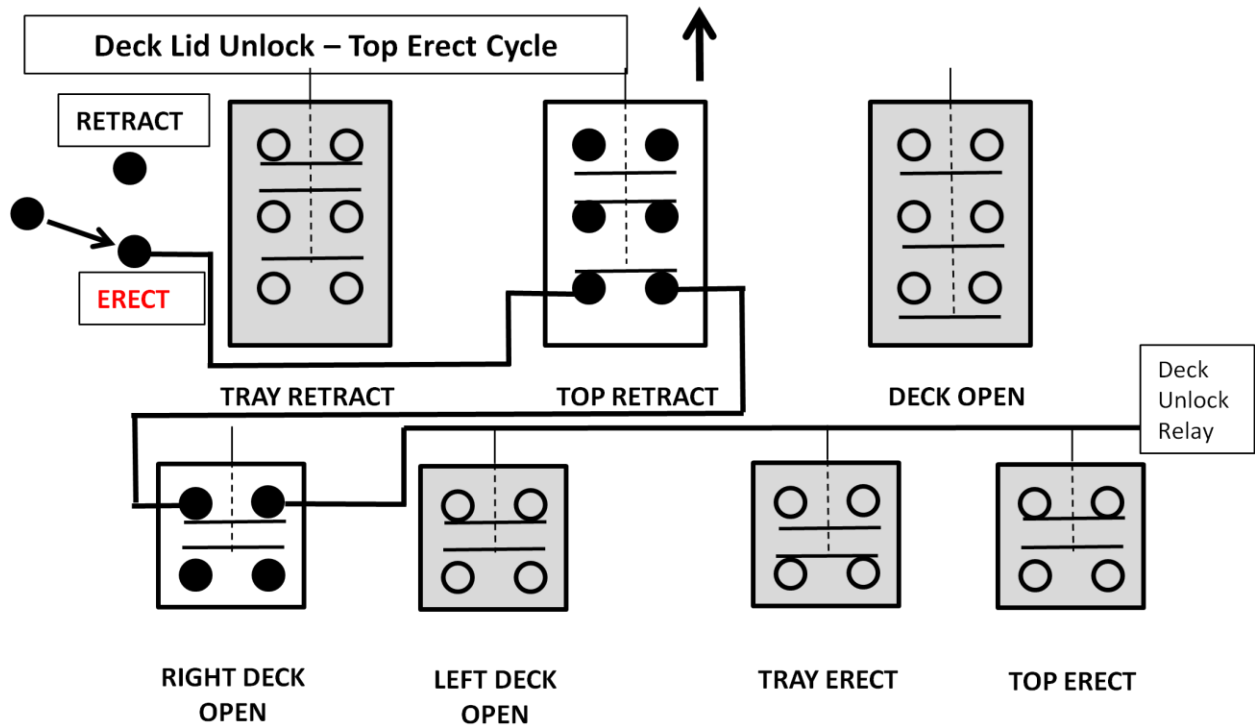
Relay Switch Positions

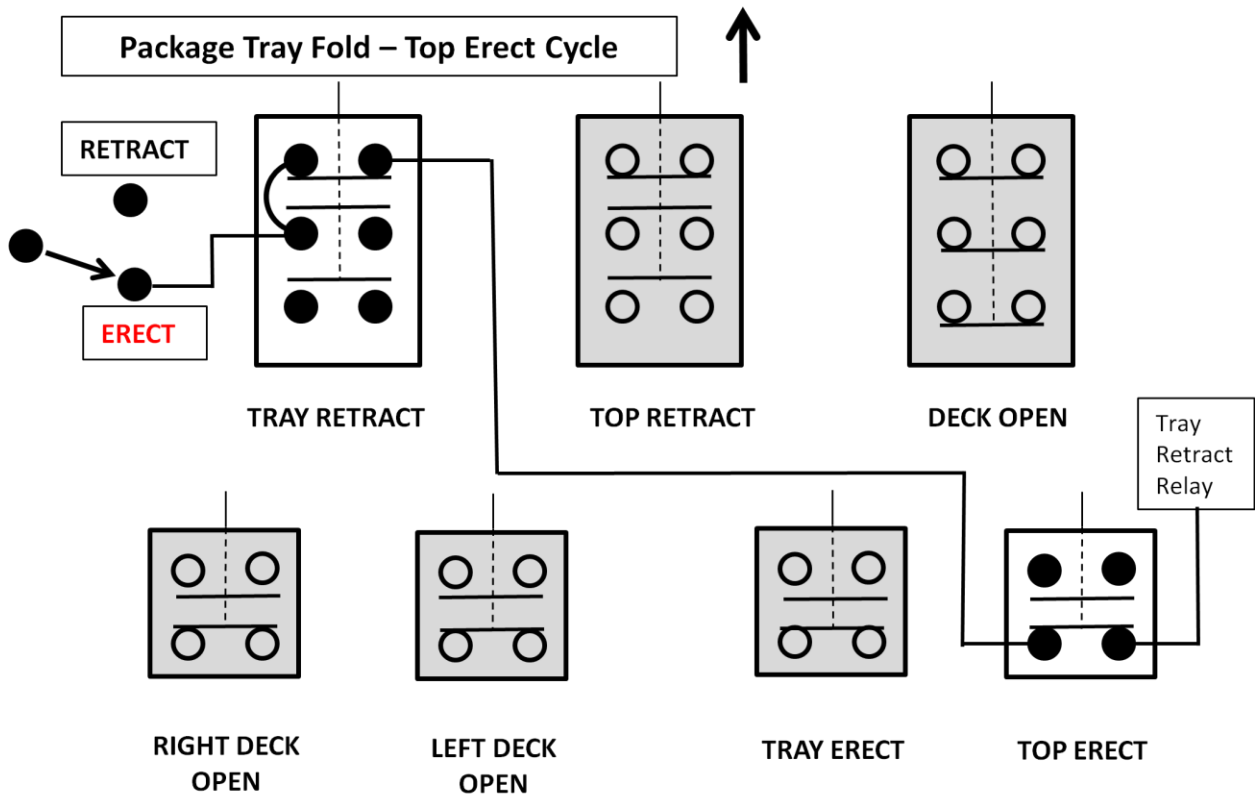
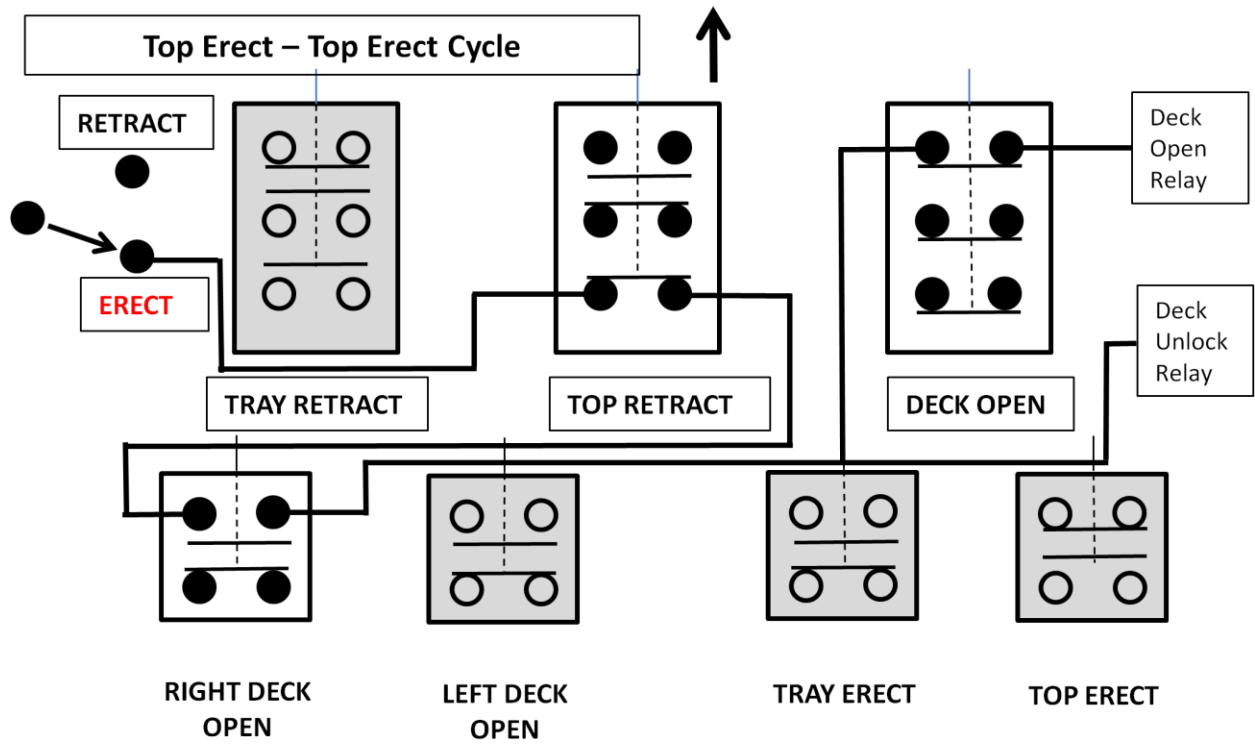
61-63 (first chapter) 64-66 (second chapter)

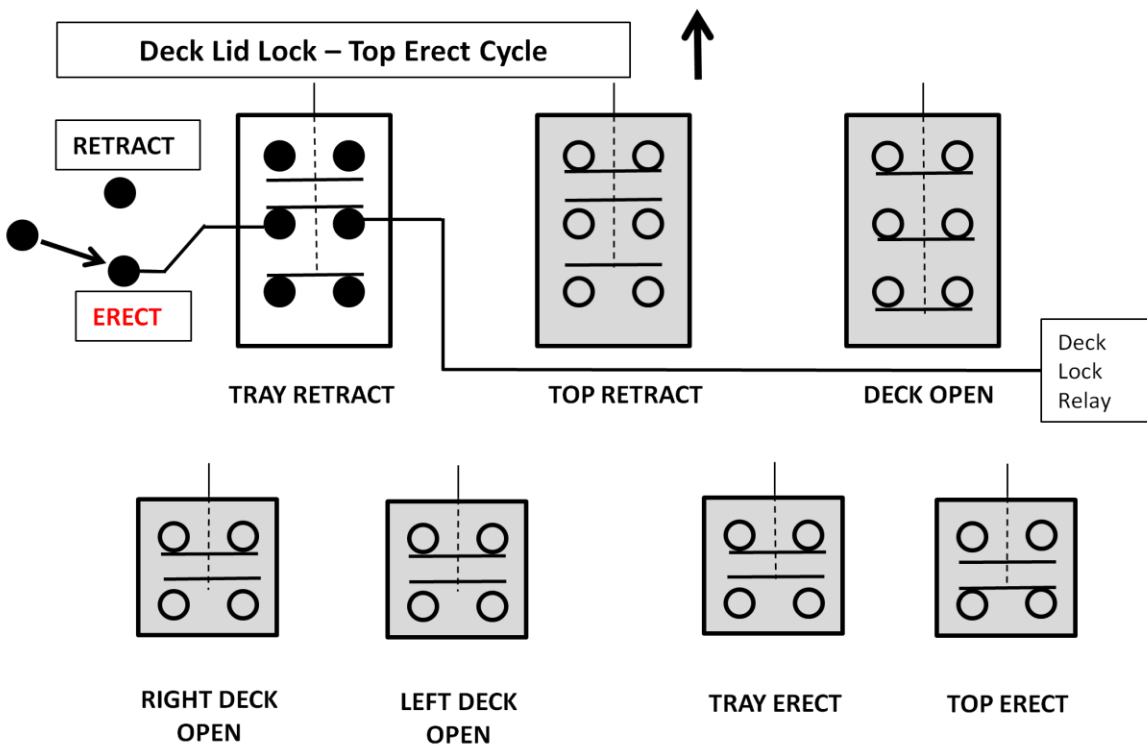
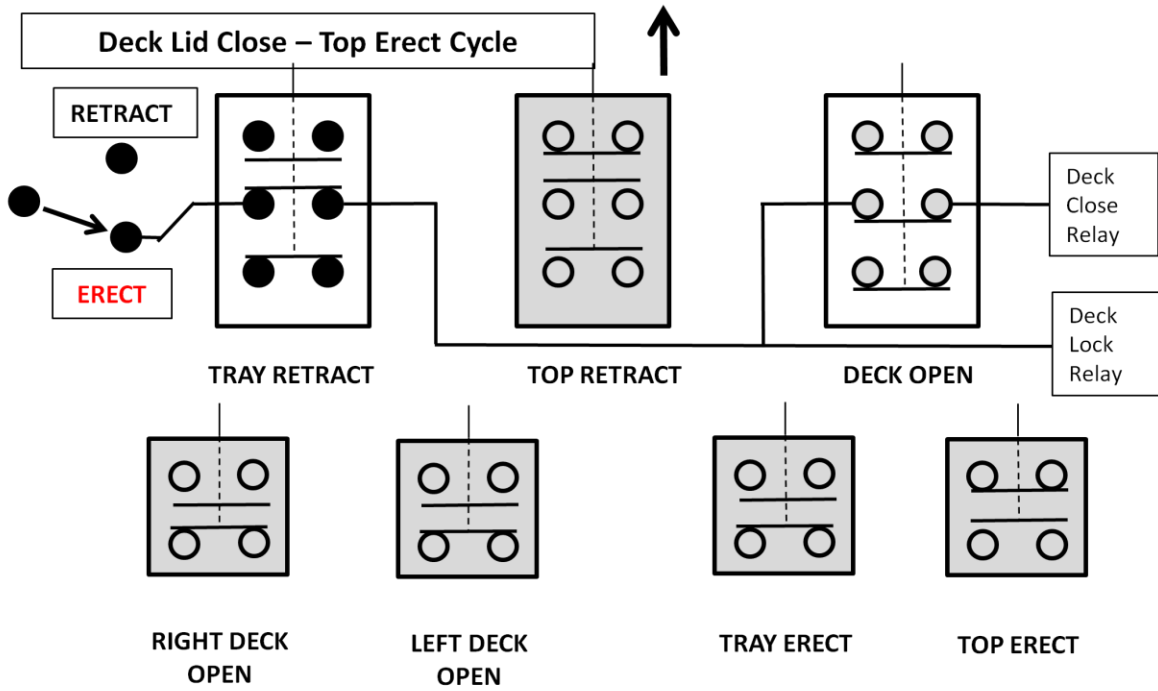
- The following pages include the limit switch positions for each of the six functions for both The Top Retract and the six functions for the Top Erect Cycle for the 1961-66 Thunderbird Convertible.
- If you are going to understand the top system you first need to know where each limit switch, relay and hydraulic component is located on your car and know it by name and relate it to the wiring and hydraulic schematic. This is not hard it just takes a little time to review there positions on the car.
- Failure of the limit switches, the relays and the hydraulic pump and solenoids are common top problems.
- Understanding them and trouble shooting them most often leads to the solution.
- There are a number of common trouble shooting techniques including using jumpers with clips, test lights and a Volt Ohm meter.





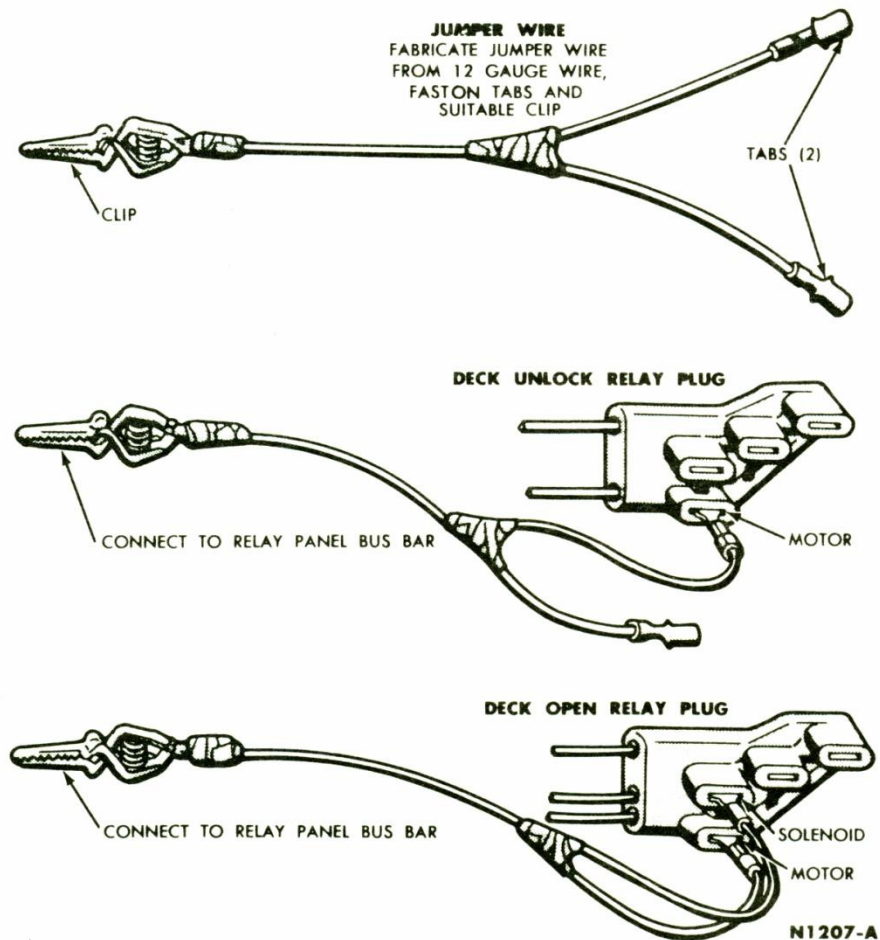




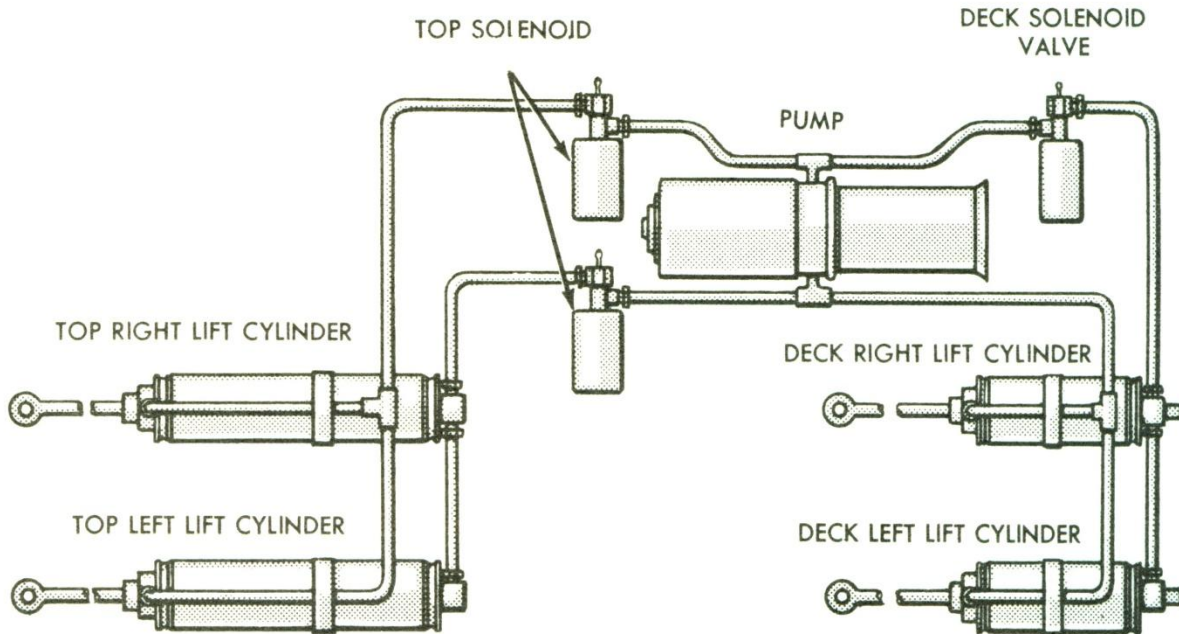


Tools that may be helpful for testing the Top System limit switches, circuits, relays and fuses are:

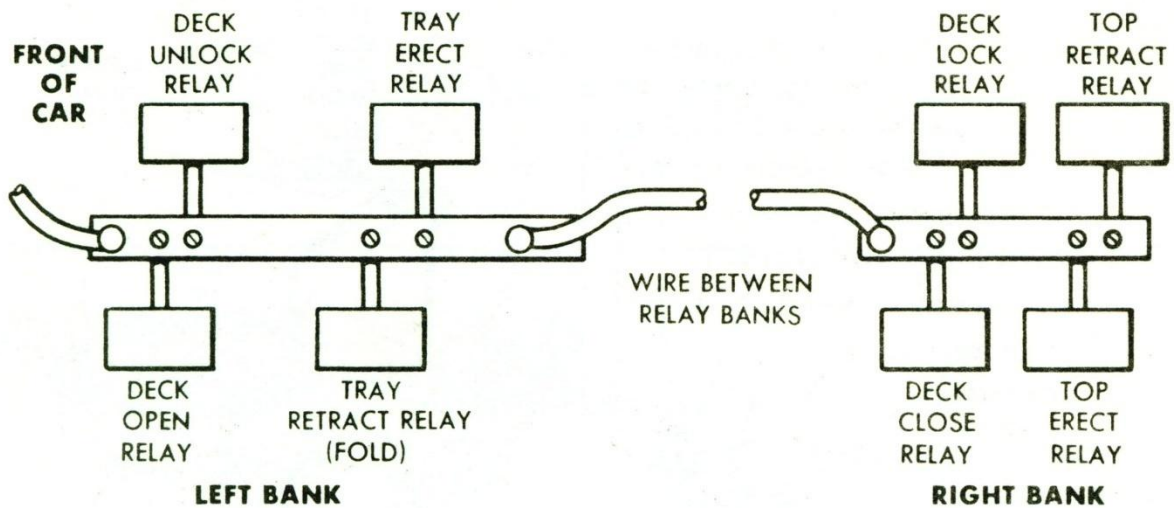
1. A single jumper wire with Alligator clips on each end.
2. A Y – Jumper, with one alligator clip and two spade connectors to push into the cap when it is removed from the relay.
 - a. Recommended in your Ford manual
 - b. Used to override the relay and make each Top function work manually
 - c. Using the double spade end will activate both the related solenoid and pump motor in the appropriate cycle requiring both functions.
3. Quality, Volt/Ohm/Continuity Meter (VOM)



Know the Position of each Hydraulic Component, each hose, and its function.



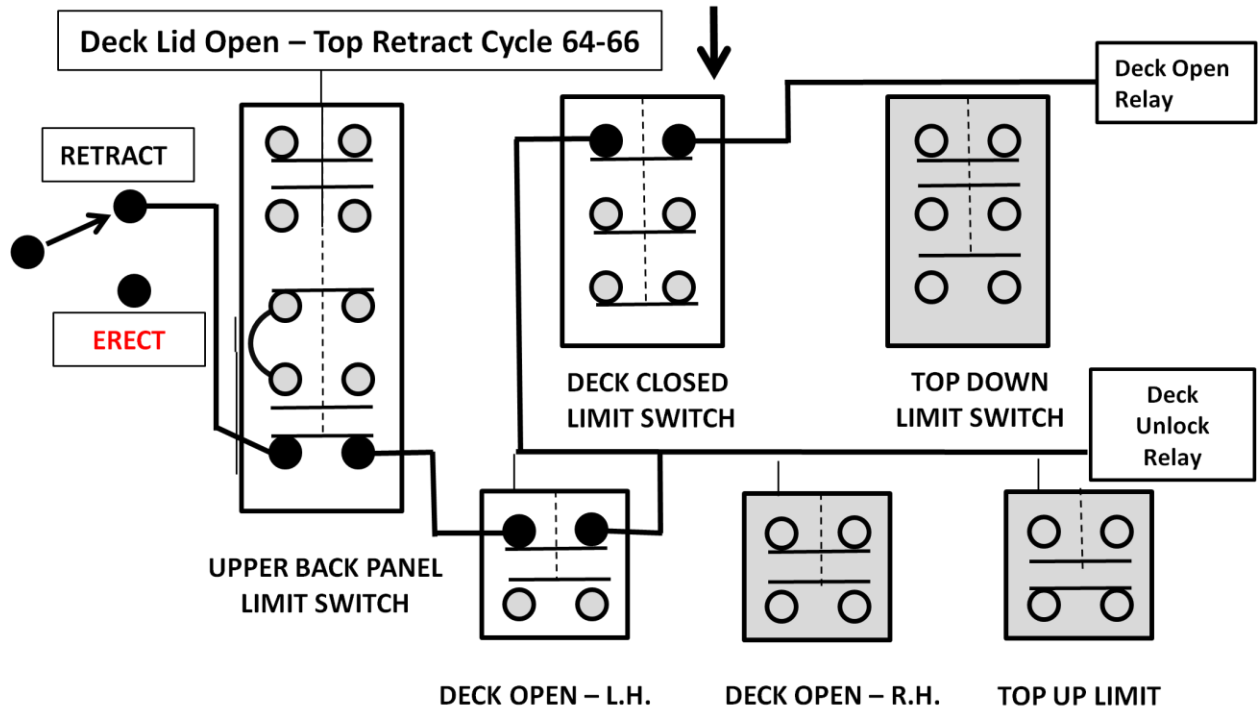
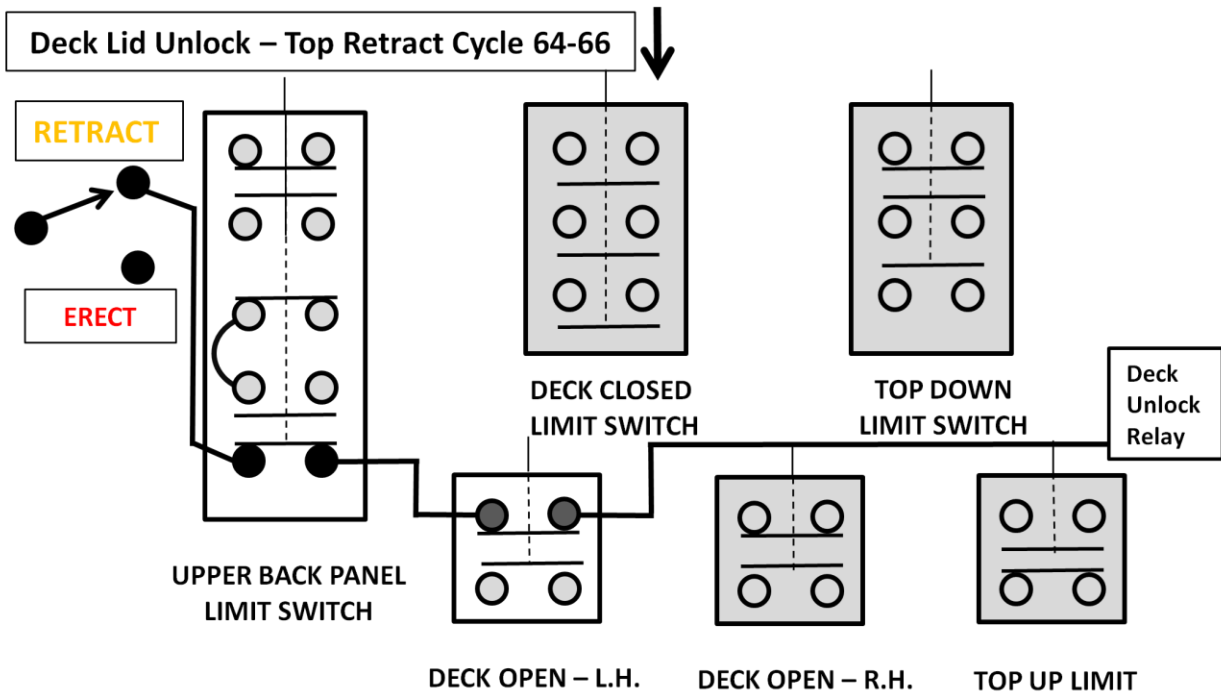
Know the position of each relay for the Top System (1961-1963)



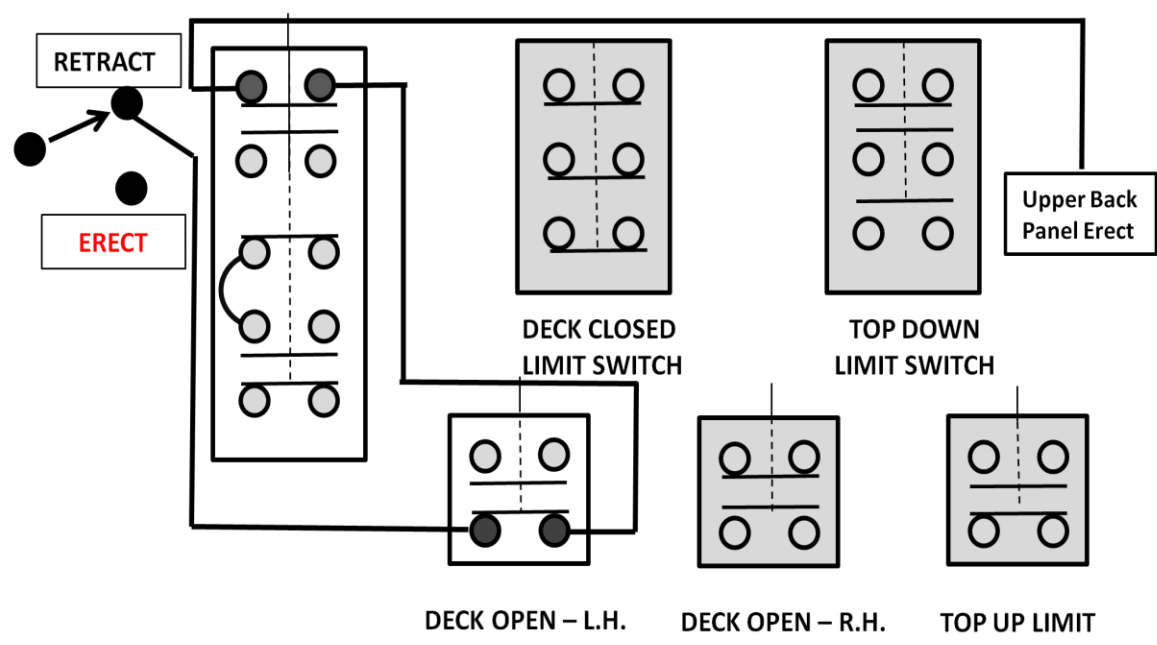
Relay Switch Positions

1964-1966 Thunderbird

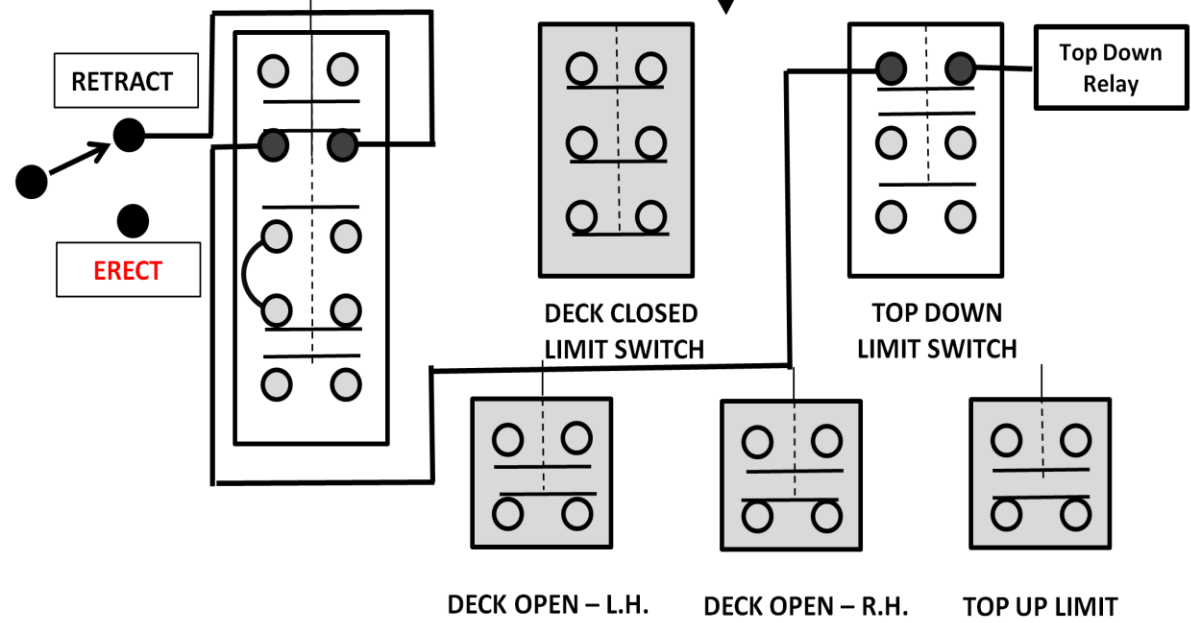
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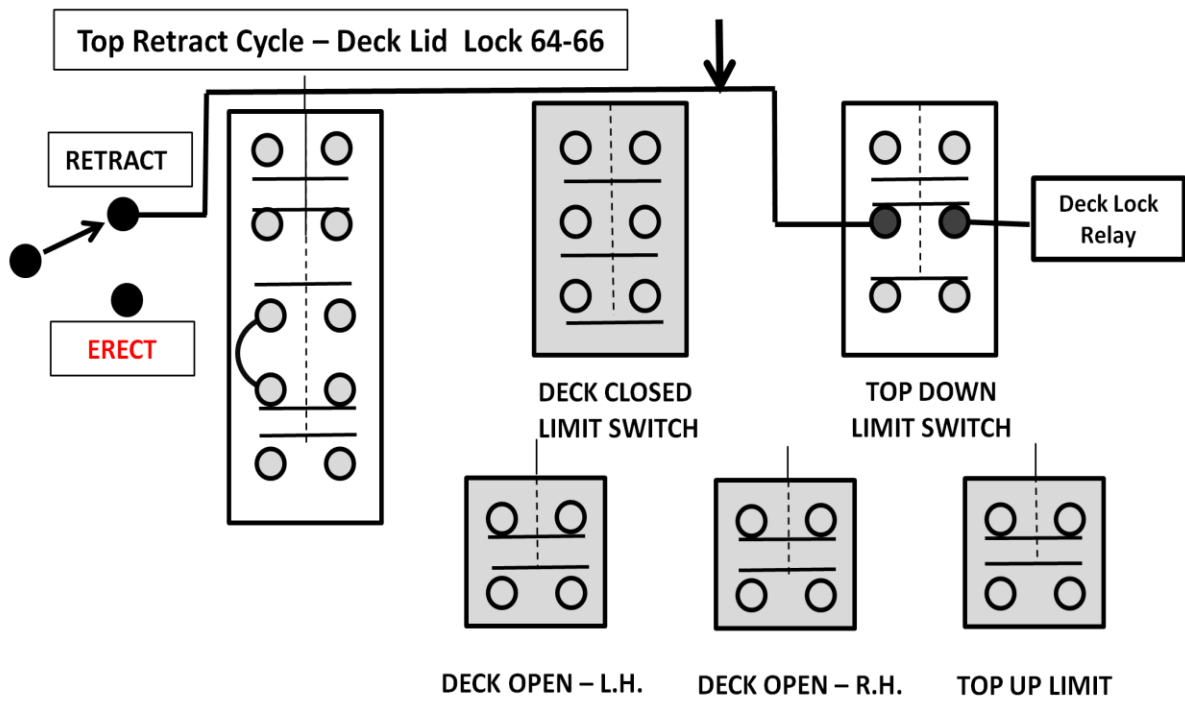
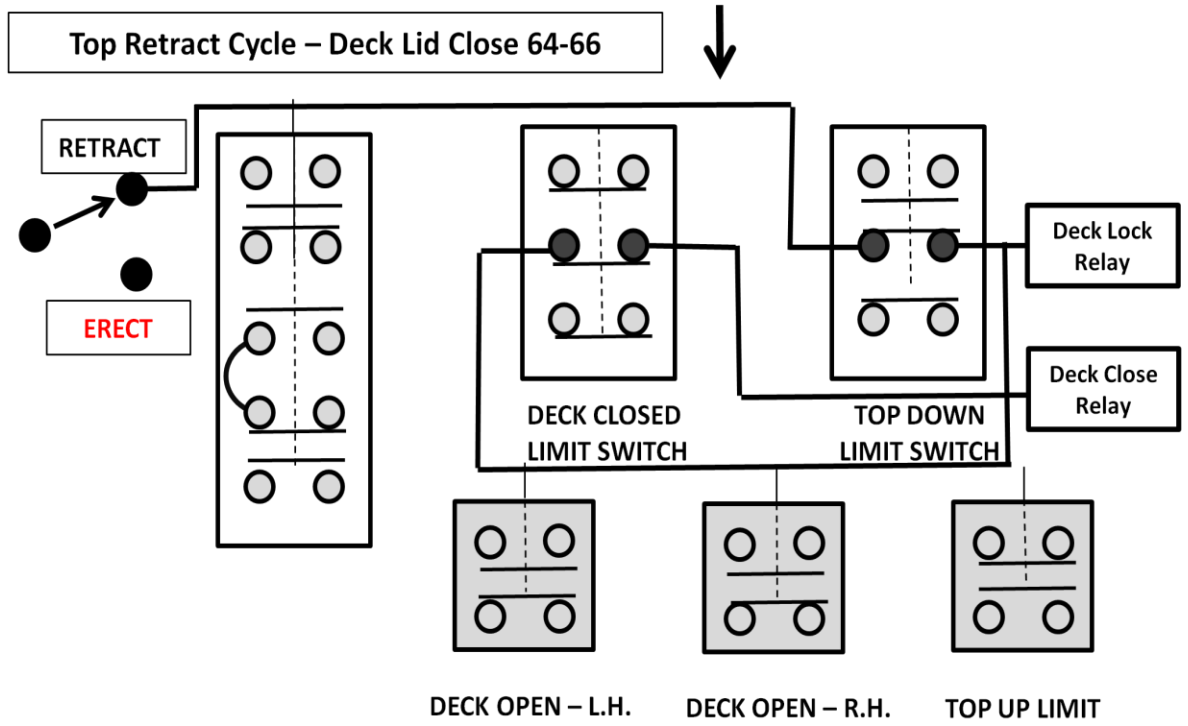


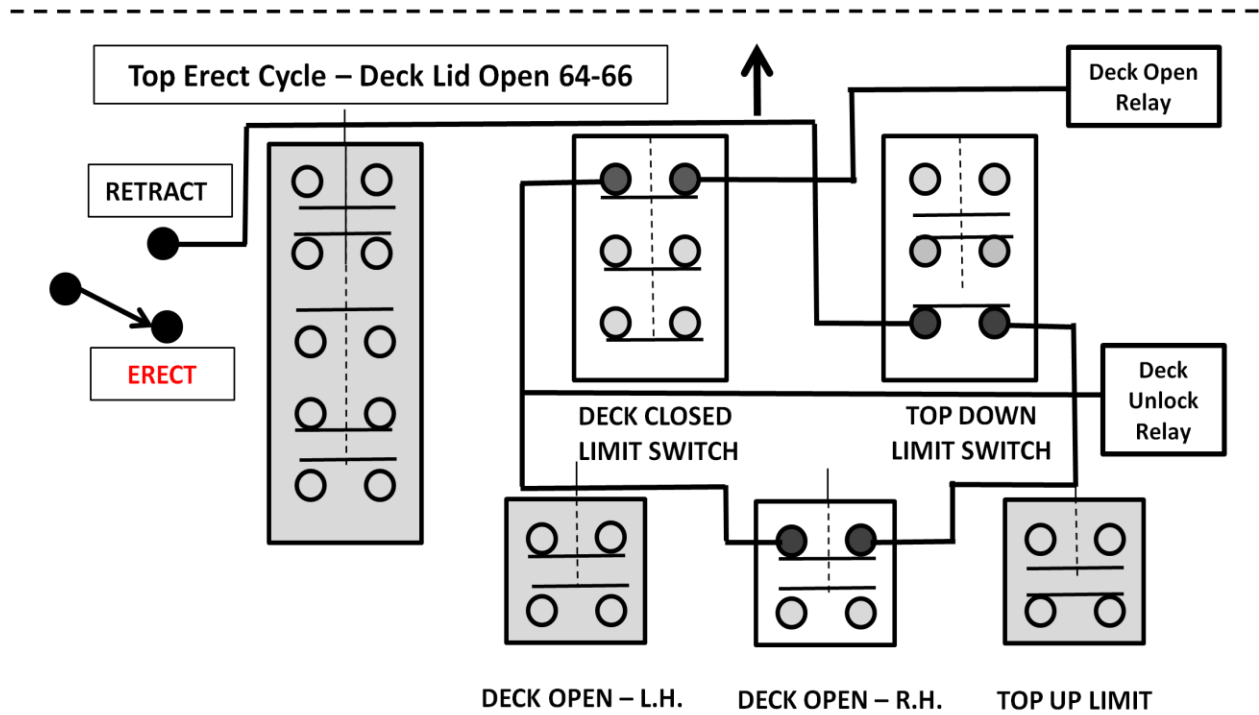
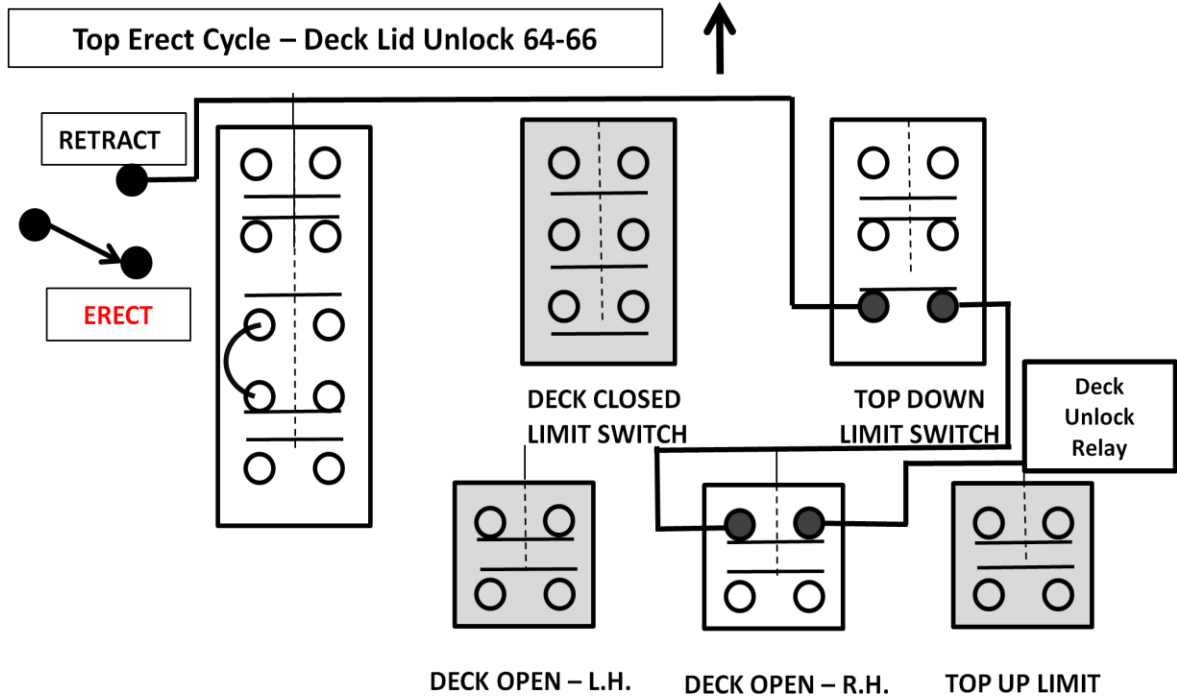
Top Retract Cycle – Upper Back Panel Erect 64-66

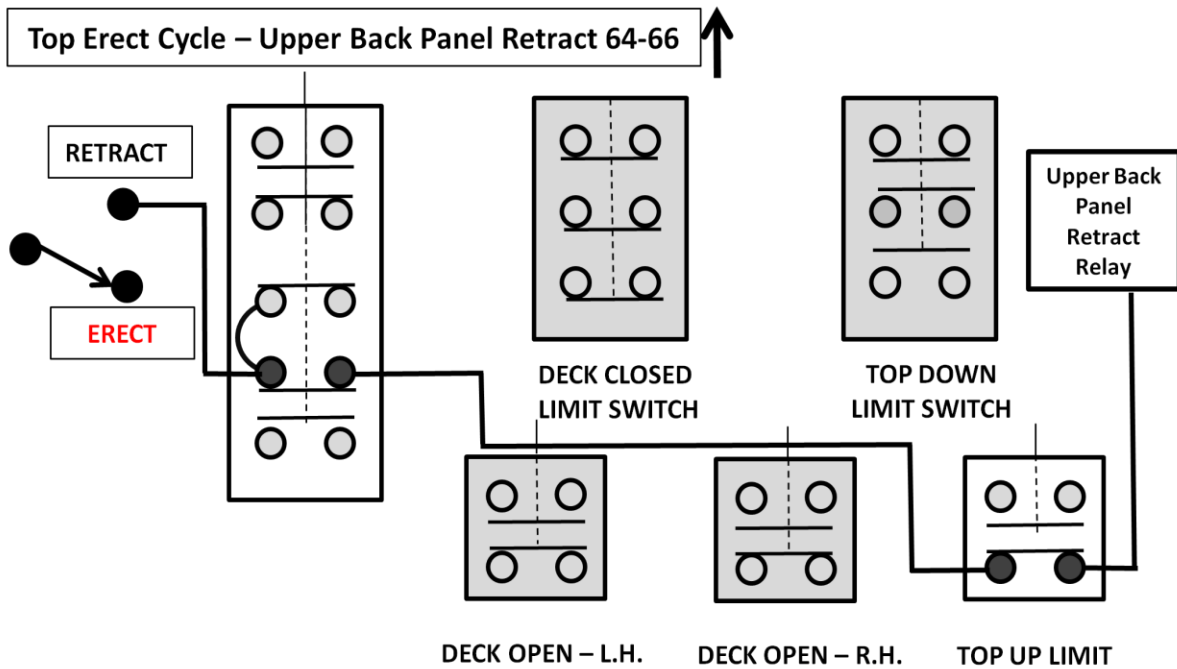
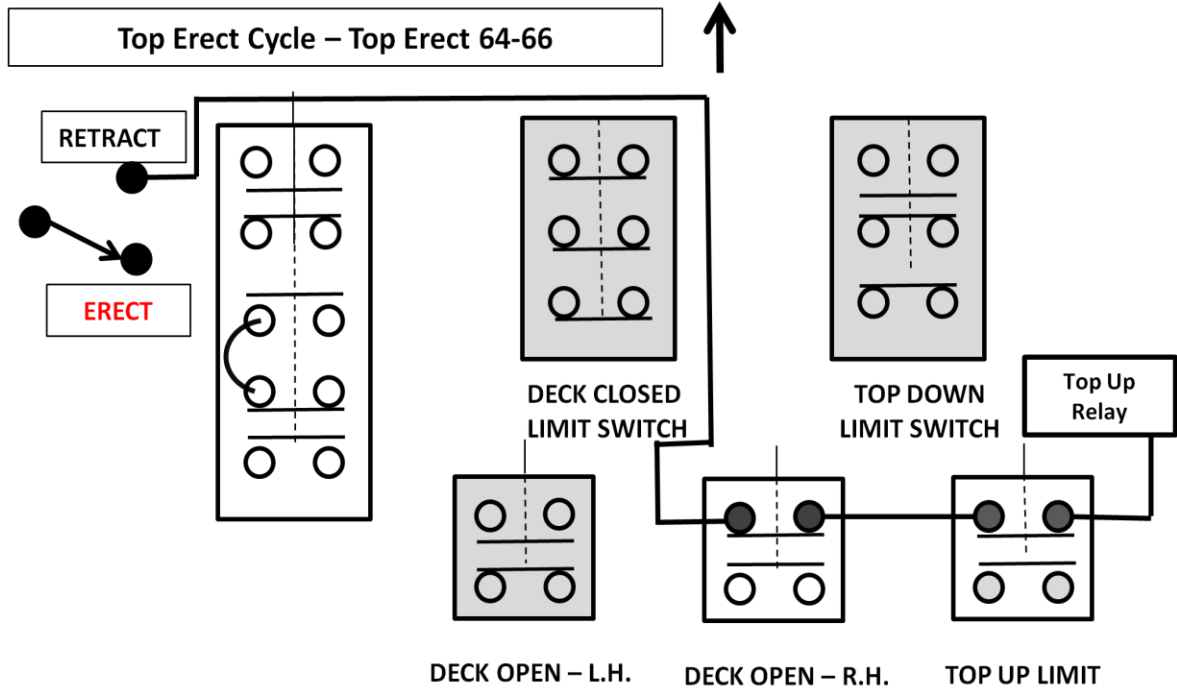


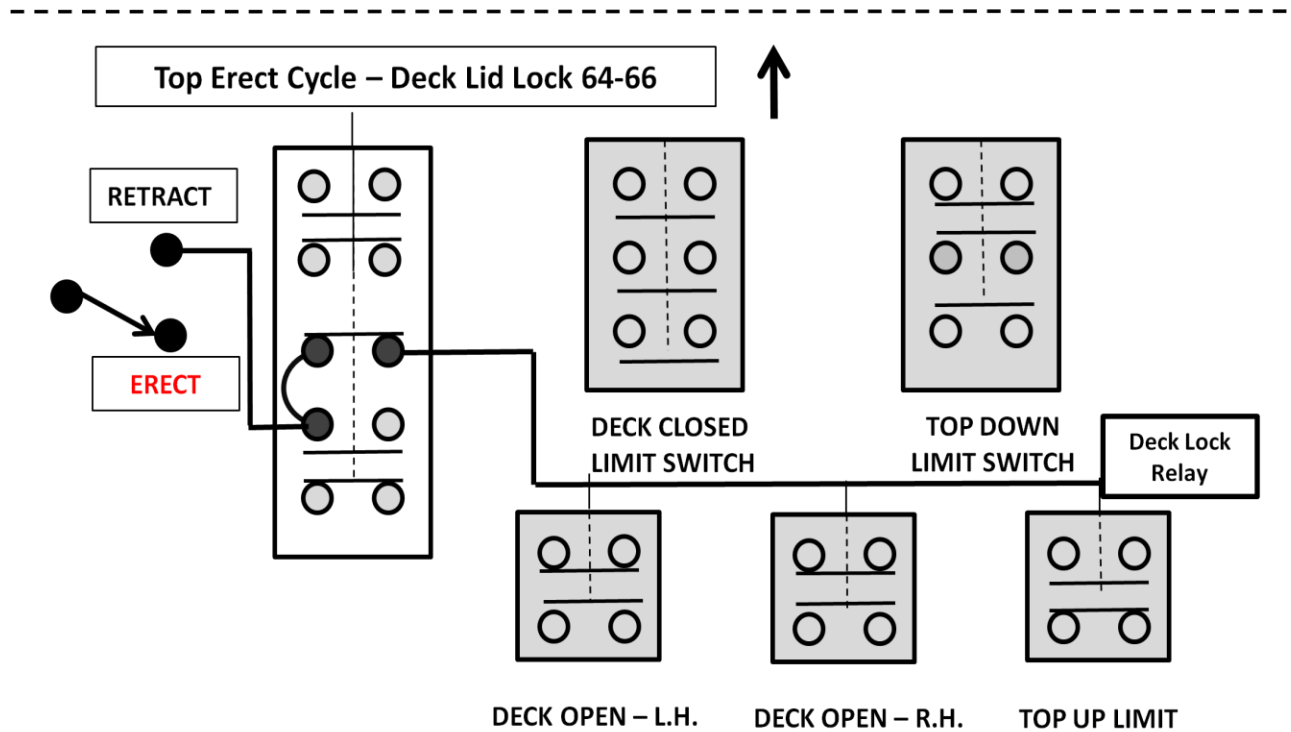
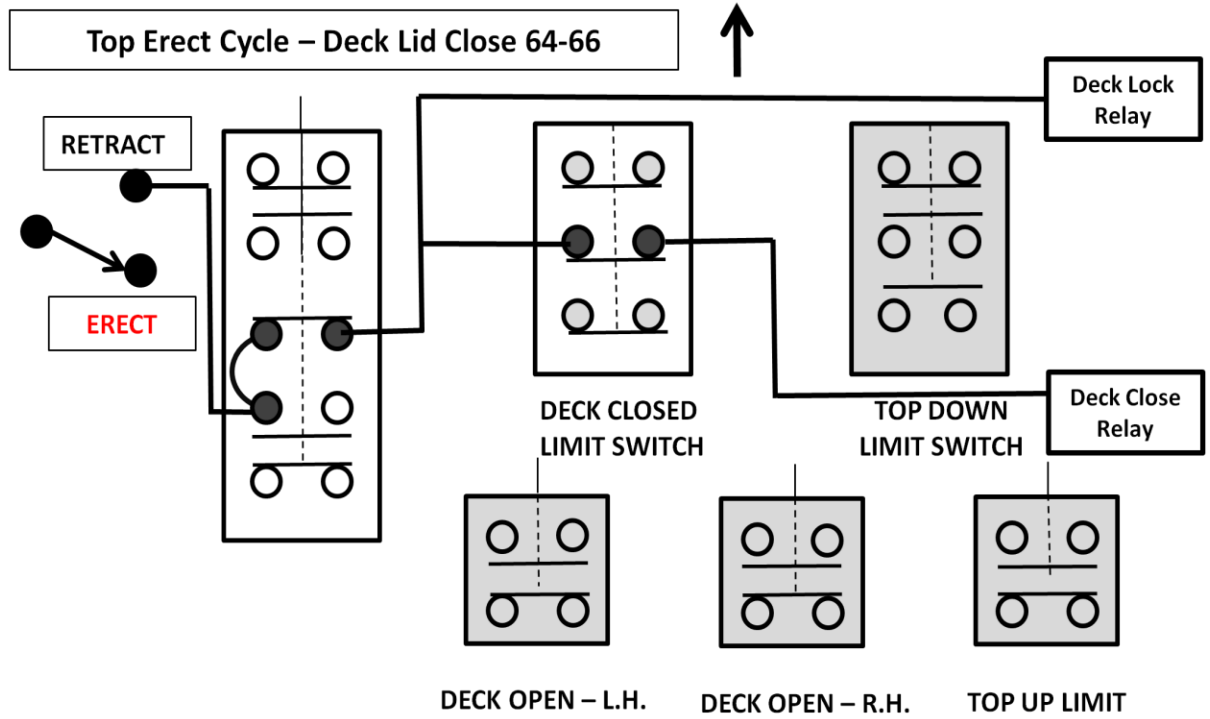
Top Retract Cycle – Top Retract 64-66

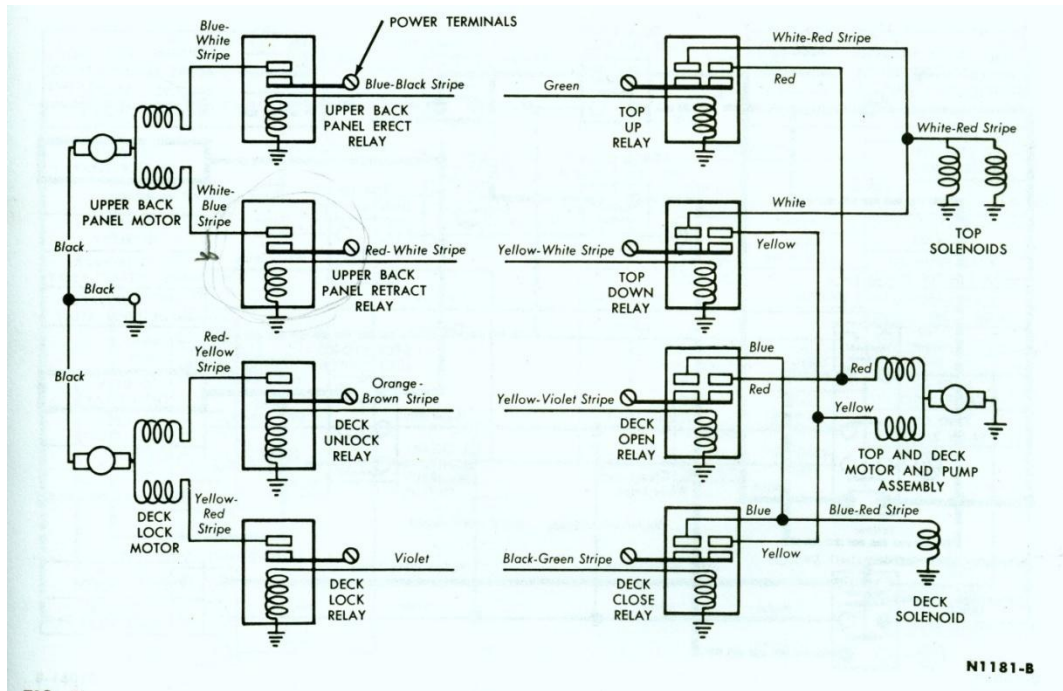












Relay connections above 64-66, Relay locations below 64-66:

