

SERVICE BULLETIN 99 MANDATORY

SUBJECT: LANDING GEAR ELECTRICAL SYSTEM WIRING CHANGE

APPLICATION: All Glasair III Aircraft constructed before publication of Revision H of the Instruction Manuals (to be published 7/01/91).

DESCRIPTION: In the landing gear electrical system as described in the Instruction Manuals, all three terminals of the side brace (or drag brace) microswitch are wired in parallel with the corresponding terminals of the hydraulic actuator microswitch for each gear strut. (Refer to the wiring schematics on pages G-277 and G-306.) The service history of this wiring has exposed a couple of problems. First, for part of the landing gear extension and retraction cycles, when one of the two switches for the gear strut has actuated but the other hasn't, both the green and the red light for that strut will be on simultaneously. This is more confusing than dangerous, although the ambiguous indication could complicate trouble-shooting a gear problem during flight. Also, when troubleshooting a misadjusted downlock microswitch, since the NO (normally open) sides of the side brace and hydraulic actuator microswitches are in parallel, all three green lights will remain on along with all of the red lights and the pump, therefore not giving a clear indication of which strut has the misadjusted switch. A second, potentially more serious problem could occur if a connection to the COM (common) terminal of one of the switches were to fail. In this case (as happened on our prototype), there would be a green light, indicating gear down, and the hydraulic pump would shut off prematurely, not completing the gear extension cycle to achieve down pressure. (Fortunately, we were able to land normally, avoiding a costly repair.) Remember to always check for adequate gear down pressure at the gauge when landing.


SOLUTION: We have revised the landing gear electrical system to connect the COM (common) and NO (normally open) terminals of the hydraulic actuator and side or drag brace microswitches of each gear strut in series, and the NC (normally closed) terminals in parallel, as shown in the accompanying revised landing gear electrical system wiring schematic. With this wiring system, the green light for each strut will remain off until both switches in the series circuit have been actuated; then the green light will illuminate. Also, with this system, if a connection to the COM terminal of one of the switches were to fail, a green light would not illuminate after the pump and the red transit light turned off. In this case, the pilot would be aware of a possible problem and should request visual confirmation of gear extension from a person on the ground or from another aircraft in flight. (On our prototype we mounted a small convex mirror on the left wing tip to visually verify gear extension; see the picture in Newsletter #36, page 450.) Alerted to a possible problem, the pilot should also verify adequate pressure in the extension system by consulting the pressure gauge and could use the hand pump to build pressure, if necessary.

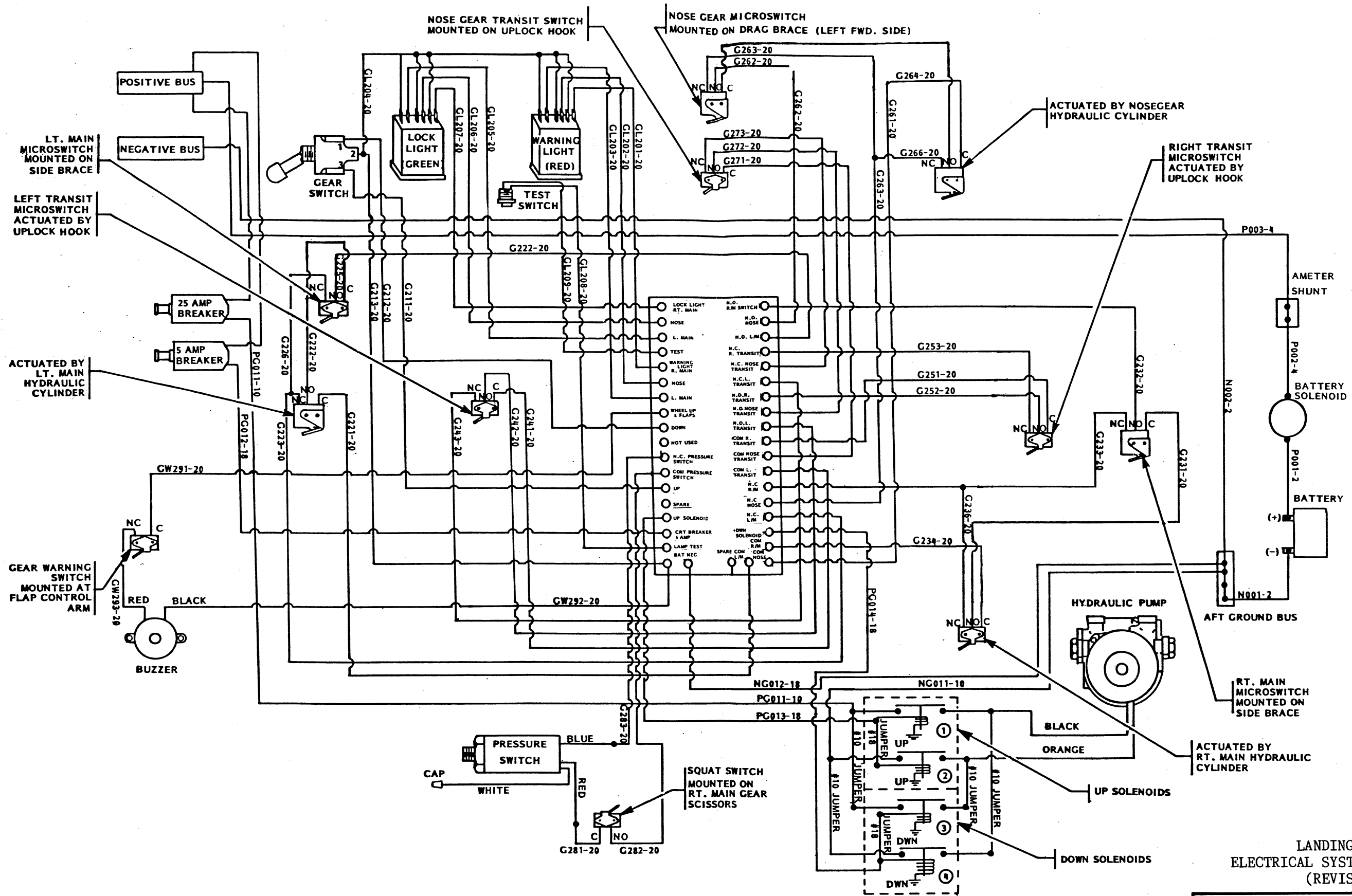

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Also included with this service bulletin are simplified schematics showing the positions of the various switches in the circuit for one gear strut during different phases of the landing gear extension and retraction cycles; similar circuits exist for each of the other two struts and all three circuits are wired in parallel to the UP and DOWN relays on the PC board. These schematics are supplied for your use in trouble-shooting landing gear electrical system problems. Study the enclosed complete electrical system schematic and the PC board schematic on page G-306 of the Instruction Manuals to enhance your understanding of these trouble-shooting schematics. If a 3-wire pump is used, refer to figure (H-22) on page H-39 of the Appendices section.

NOTE: High intensity lamps are also now available for the annunciator lights. The part numbers are 210-0070-001 for the 14 volt lamps and 210-0017-001 for the 28 volt lamps.

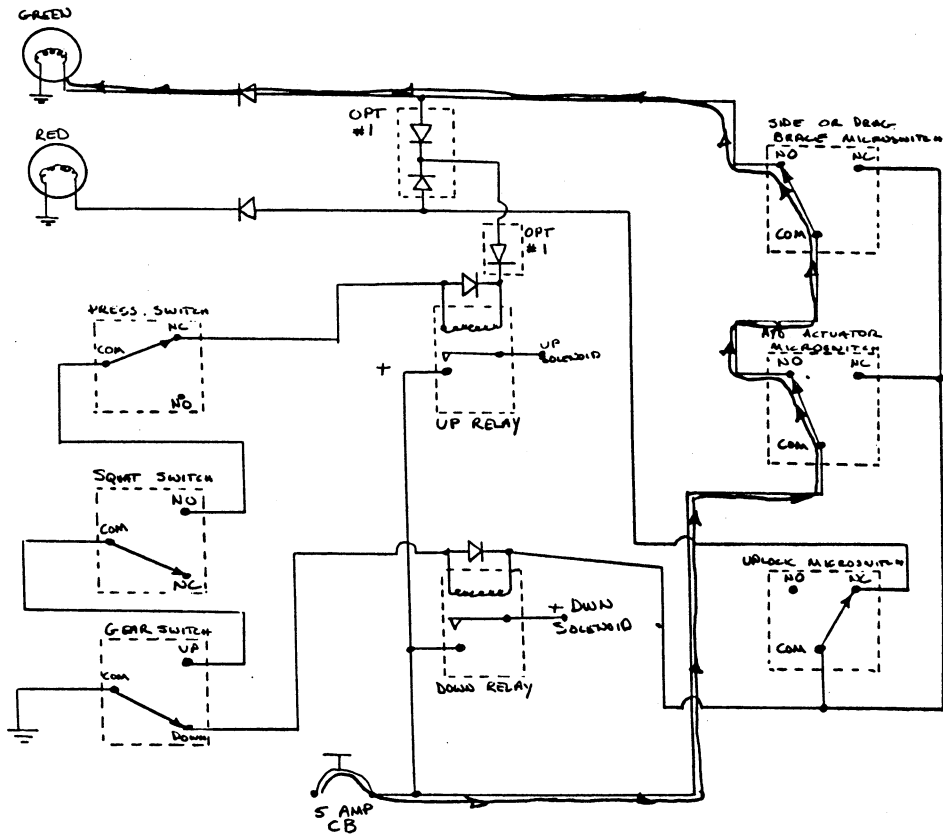
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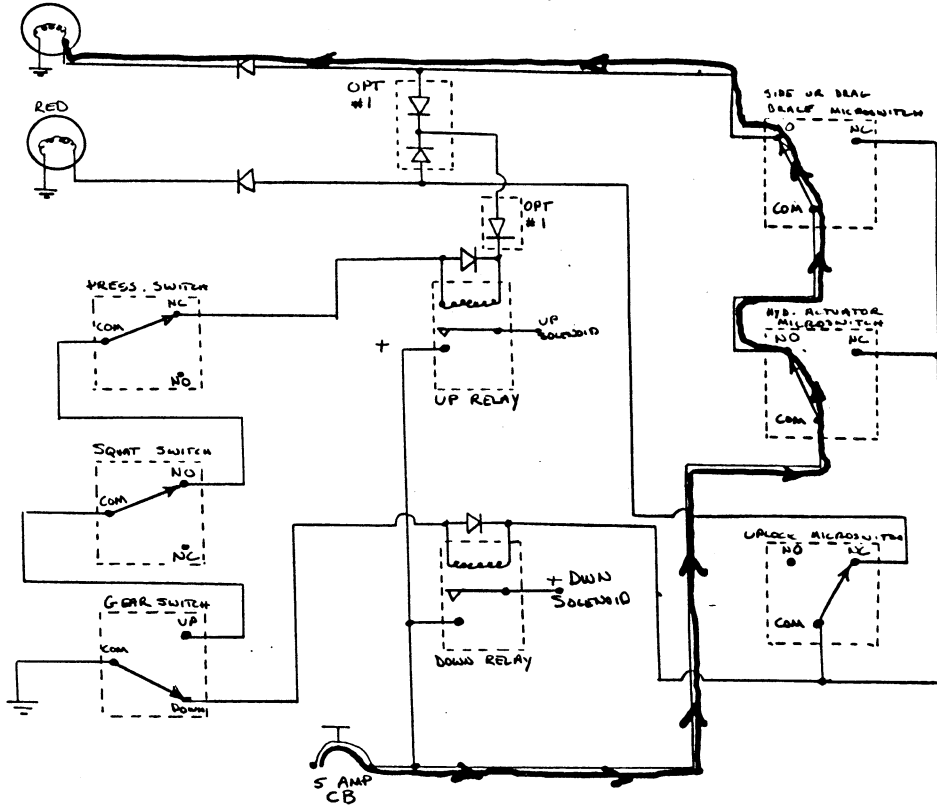
LANDING GEAR
ELECTRICAL SYSTEM SCHEMATIC
(REVISED)



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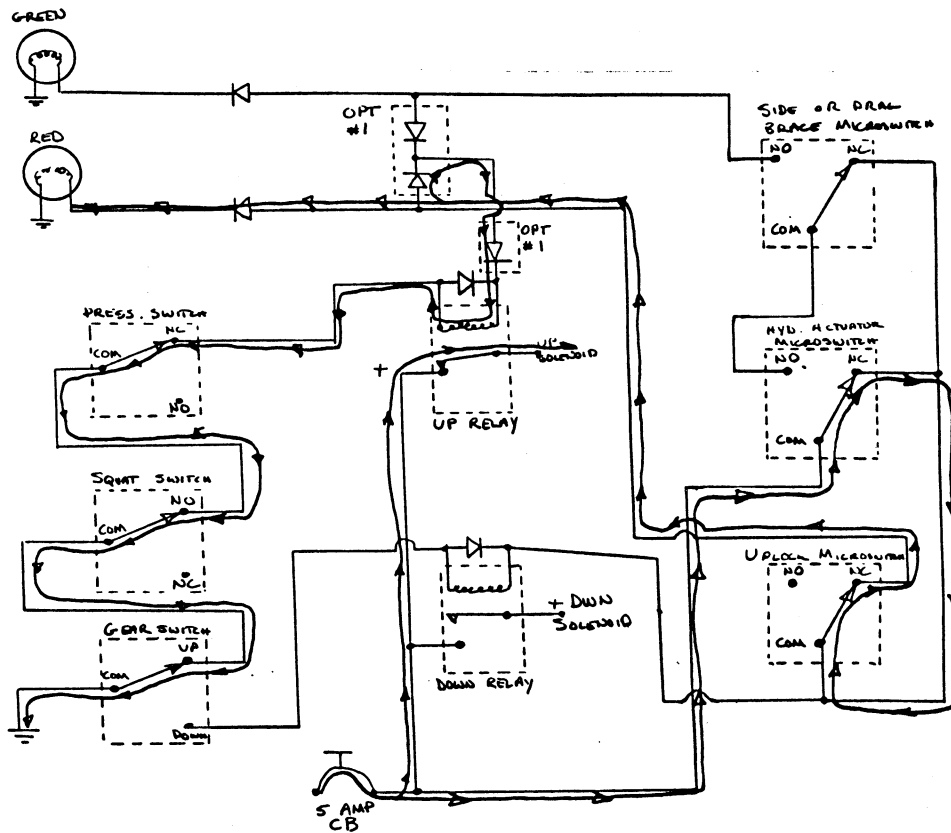
GREEN LANDING GEAR DOWN AND LOCKED, AIRCRAFT ON GROUND



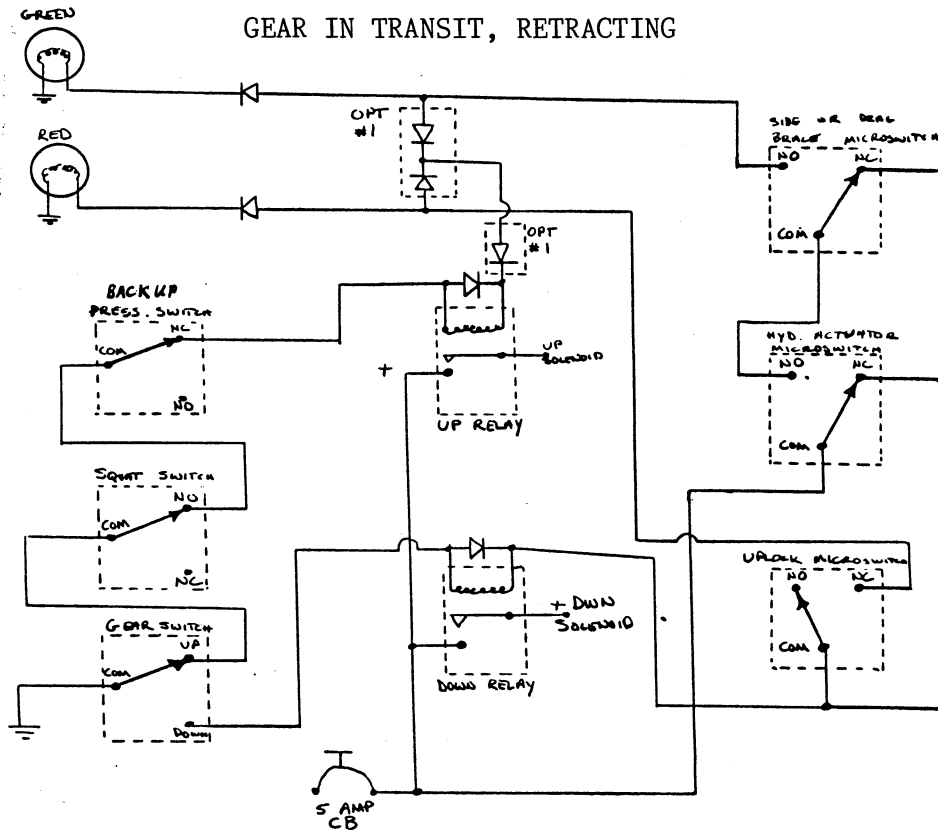
LANDING GEAR DOWN AND LOCKED, AIRCRAFT AIRBORN

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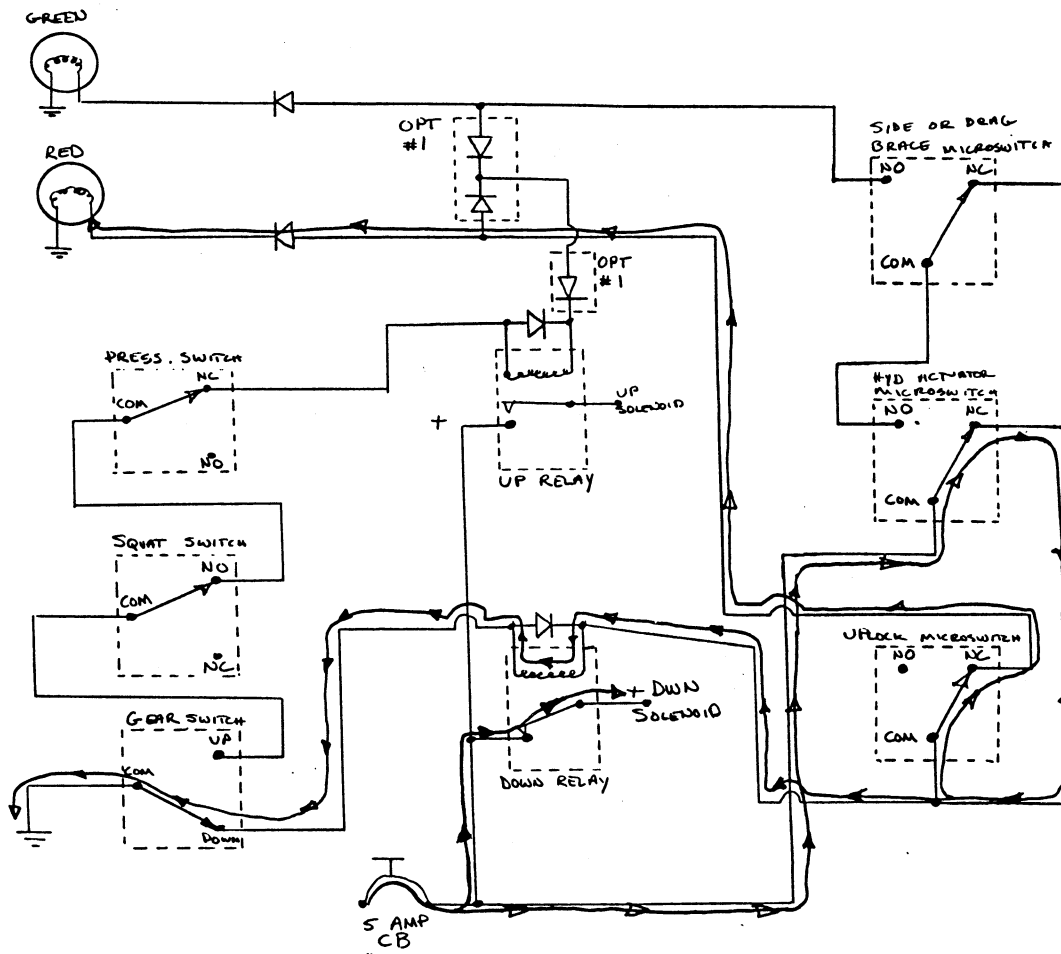
GEAR IN TRANSIT, RETRACTING



LANDING GEAR UP AND LOCKED



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GEAR IN TRANSIT, EXTENDING


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