

#90

ayton & company

PRODUCT DEVELOPMENT ENGINEERING

**HOW LONG BEFORE YOU NOTICE ?
AND HOW MUCH WILL IT COST ?
WHEN YOU DO**

OIL PRESSURE - ZERO
BATTERY CONDITION - DISCHARGING
CANOPY - OPEN
GEAR - UP

THE 8502 AUDIO VISUAL WARNING SYSTEM

**WILL TELL YOU
RIGHT NOW - - -**



ACTUAL SIZE

This system seeks to draw attention to a warning condition that may exist in your aircraft. A red flashing light on the front panel is accompanied by a loud intermittent beep. Pressing "Defeat" will cancel the loud beep for 1 minute. Three of the four channels may be changed to suit the warning you wish to display, e.g. Fuel Off, Mixture, Flaps, Carb. Heat, etc. (labels supplied).

The compact control unit takes up little panel space (3.25 x .68) and can be mounted in any attitude. Installation kit includes the control unit, oil pressure sender, buzzer, three micro-switches, pressure sensitive labels and comprehensive installation manual.

ORDER FORM

8502 Audio Visual Warning System @ \$139.50 ea _____

California Residents Add State Tax @ \$8.37 ea _____

12 VOLT _____

24 VOLT _____

TOTAL _____

NAME _____

STREET ADDRESS _____

CITY _____

STATE _____

ZIP _____

TELEPHONE _____

#396
(\$35)

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PRODUCT DEVELOPMENT ENGINEERING



INFORMATION, USE AND INSTRUCTION MANUAL

REVISION-2

Section 1

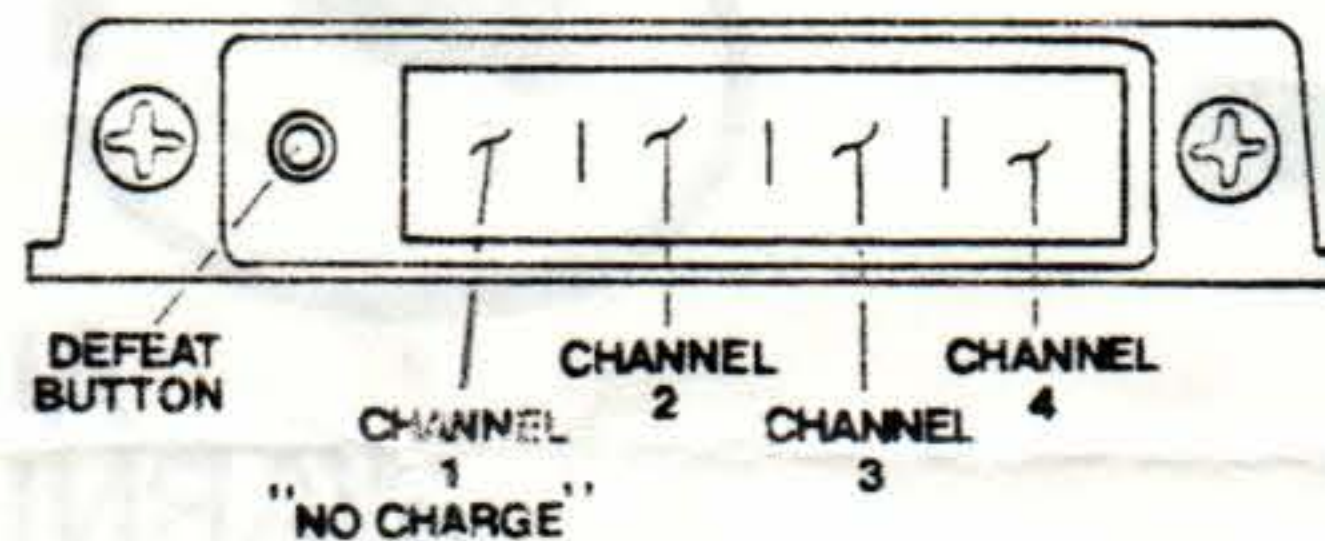
General Description

The Model 8502 Audio Visual Warning System seeks to draw a pilot's attention to an unsafe condition that may exist in his aircraft; for example, a loss of oil pressure. It can also be used to remind a pilot to perform a required function; lowering the landing gear, for example, prior to landing. The intent is to supplement existing instruments, gauges and safety devices rather than to replace them (a duplication of safeguards).

The components of this device are not certified under TSO or STC. Its use is limited to installation into homebuilt or "Experimental" category aircraft.

When installed, a warning condition results in a red flashing light on the Control Unit front panel. A clear label with white printing laid over the red panel defines the specific warning. A loud, intermittent beep accompanies the flashing light. Pressing the small "Defeat" button on the front panel will stop the buzzer for approximately one minute. Beeping will resume after one minute if the warning condition remains.

There are four individual channels that may be used for various warning purposes. Channel number one is set up to indicate a low voltage condition in the battery charging system. Channels two, three and four may be set up to indicate various other warnings depending on your choice.



Channels 2, 3 & 4 may be set up for the following warning conditions:

- Oil Press.
- Gear Up
- Canopy Open
- Mixture
- Carb Heat
- Ram Air
- Fuel Off
- Flaps

Labels, three microswitches, and an oil pressure sender are provided to permit installation of any three of these. Labels are also provided for:

- Vacuum
- Fuel Press.

Pressure senders are available for these functions at additional cost.

Other warning conditions may be used, however, you will have to create your own label. This is much easier to do than many think. Use LETRASET instant lettering, 6 point Helvetica Medium (1571) white. Apply the letters directly to the red screen in the appropriate place and cover with a piece of "invisible tape" to protect.

A piezo-electric buzzer is supplied with the installation kit. The volume given off by this buzzer is adequate for most aircraft installations, however, a more powerful buzzer may be necessary in some instances, and is available through Ayton & Co. at additional cost. Use only piezo-electric devices that require 10 through 28 volts and draw less than 100 mA.

Section 2

System Use

Remember that this system should be a duplication of other indicating systems in the aircraft. For example, having a low oil pressure warning indicator does not remove the need to have an oil pressure gauge. The principle of system duplication has been a major factor in the safety record of commercial aviation, make sure that your aircraft enjoys this advantage.

Test the system for correct function before each flight.

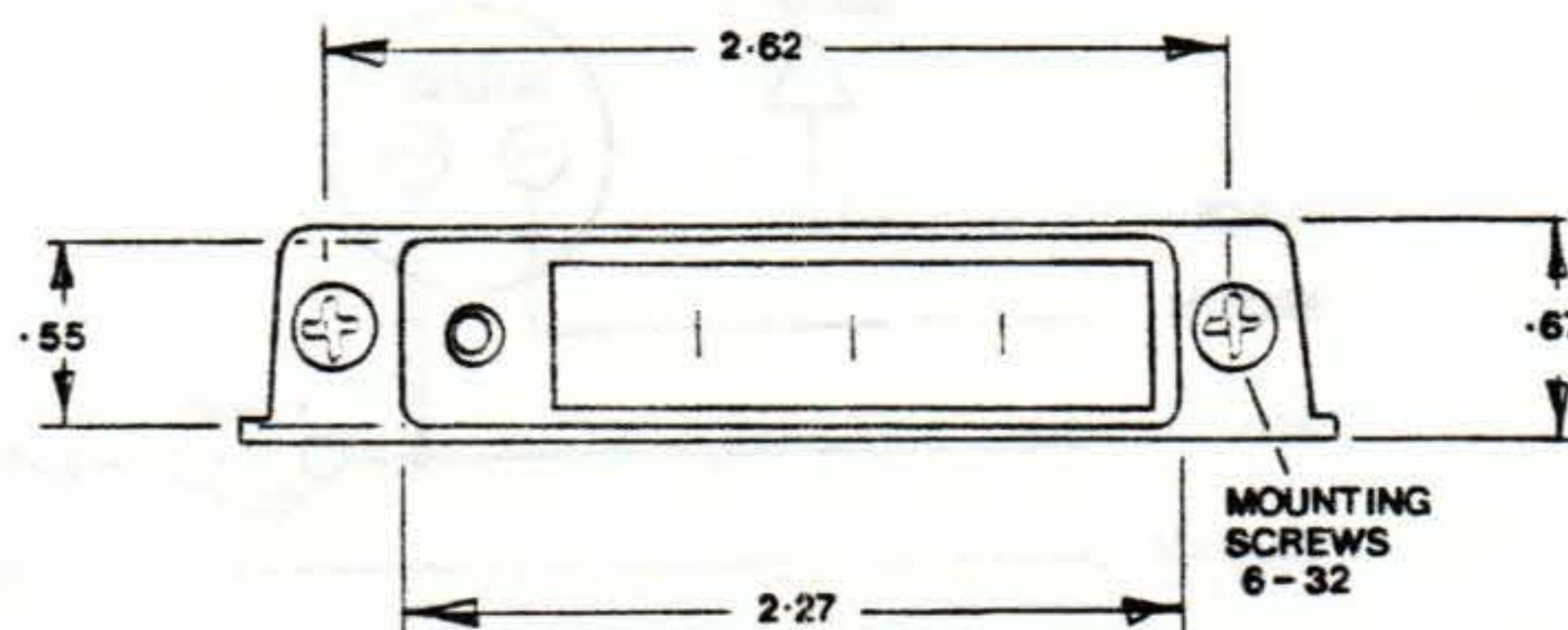
Inspect the entire system after each 25 hours of flight. Pay particular attention to possible cracks in micro switch mounting brackets, fraying or chaffing of wires, security of wire terminals and leakage of pressure senders.

Section 3

Installation

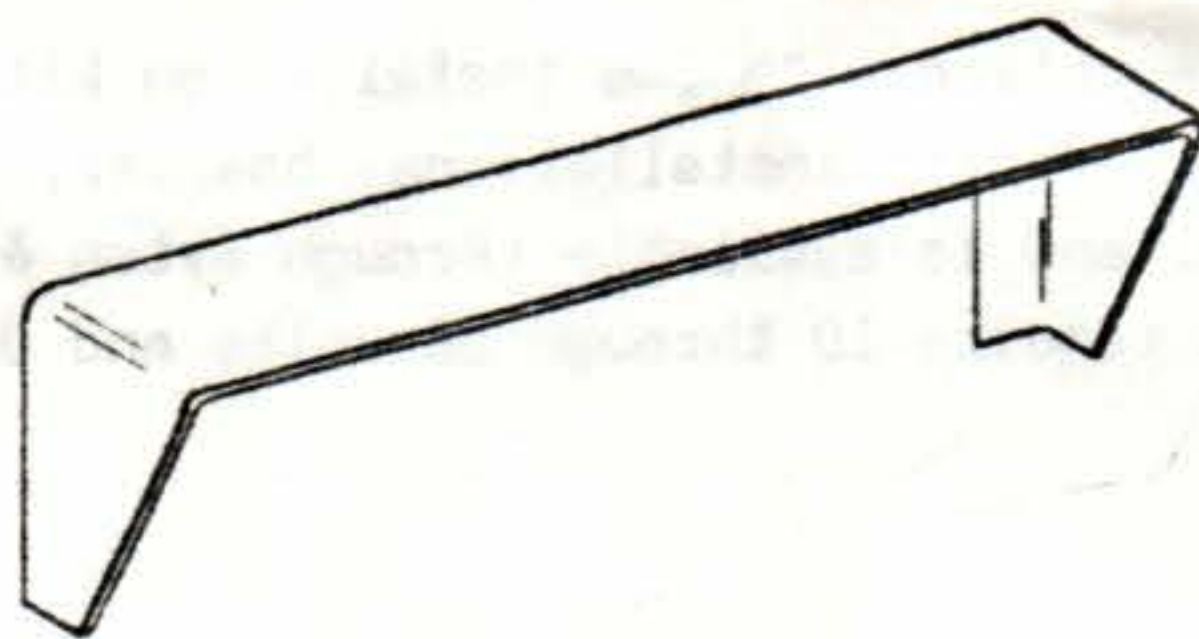
3.1 Control Unit

3.1.1 Establish the 3 functions you wish to monitor with the device in addition to the "No Charge" function. Cut out and attach the transparent labels on the red front panel.

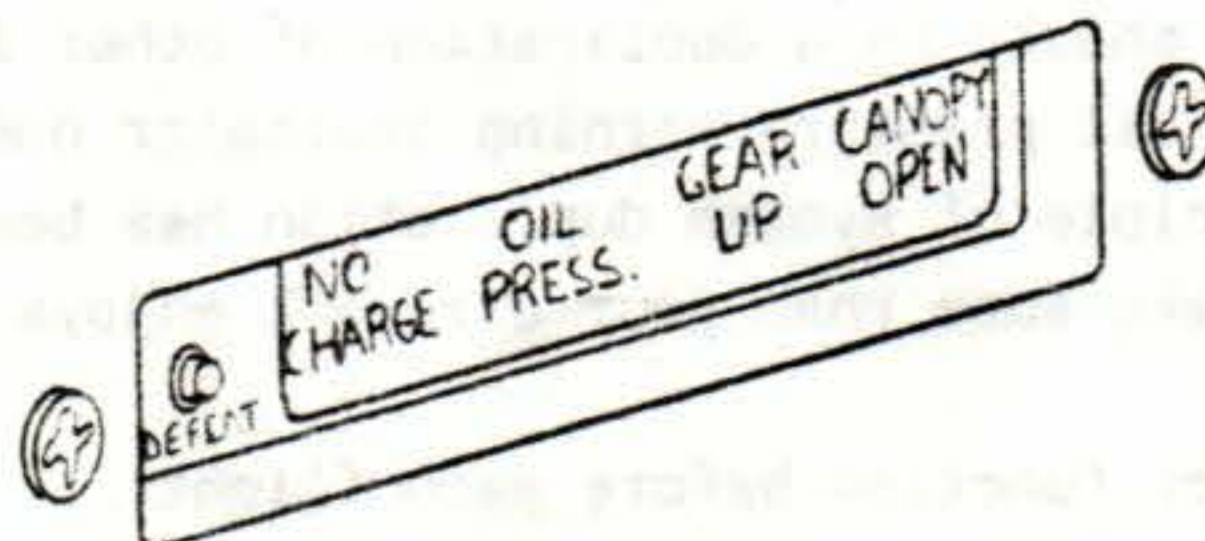


3.1.2 Selecting a location for the Control Unit should take into account the following factors:

- a) can be mounted in any attitude
- b) Locate well within the pilot's peripheral vision.
- c) Avoid a location that is subject to excessive heat or vibration.
- d) Avoid a location that is often in direct sunlight. Incandescent lamps are used in the unit to create maximum light contrast. Even so, the light will not be visible when in direct sunlight. If it is not possible to find a shaded spot on your panel, fabricate a shade;



or recess the unit behind the panel.



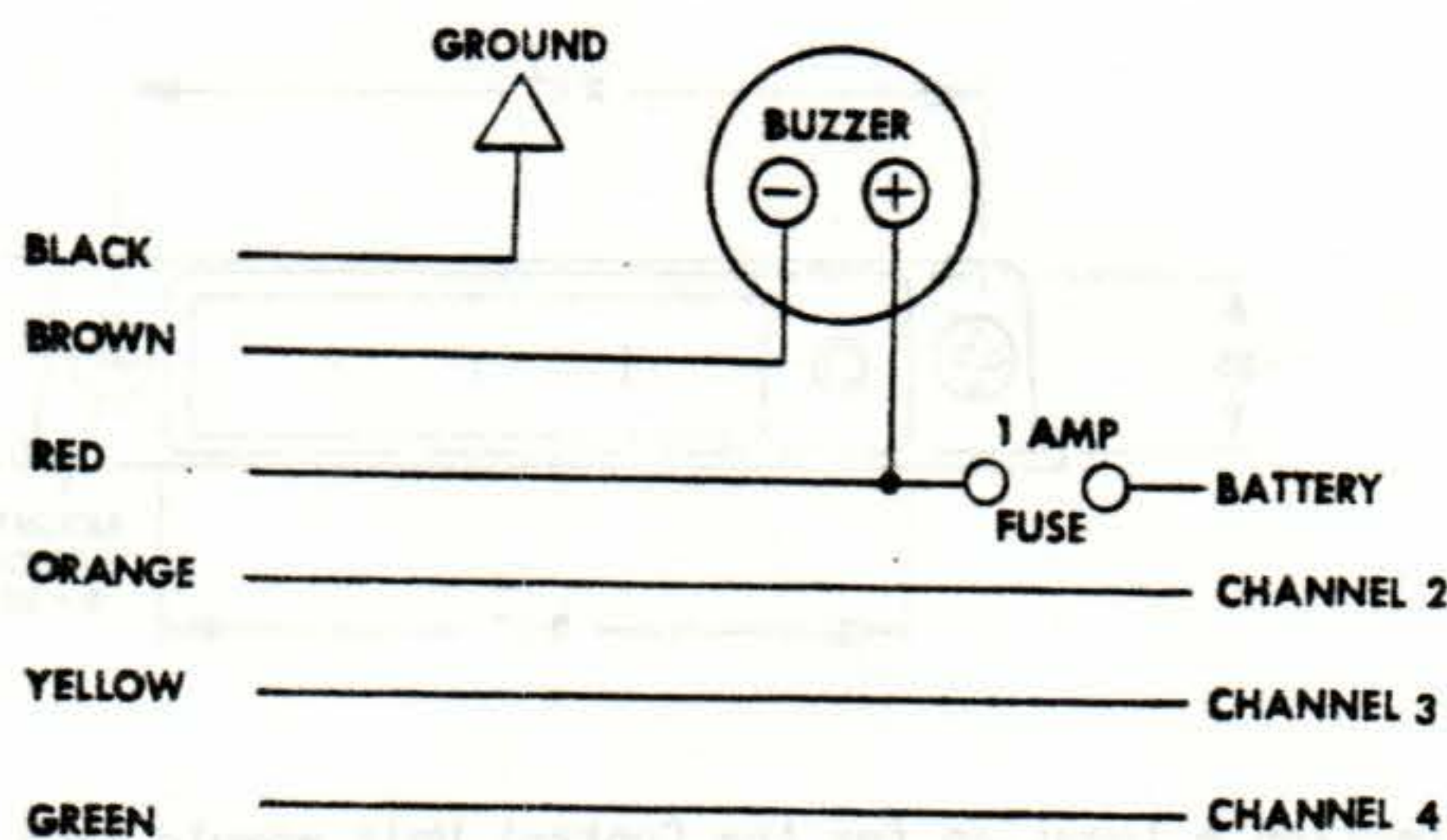
3.1.3 Cut a hole in your panel using the dimensions on the previous page and secure with the two screws supplied.

3.1.4 Electrical connections may be made to the unit using soldered or crimped connectors. Alternatively, you may attach a seven pin plug and socket to the unit to permit easy removal.

3.2 Buzzer

3.2.1 Mount the buzzer in a location that will ensure that the pilot will hear it under all operating conditions. See Section 1 for louder buzzer recommendations.

3.3 Wiring



The control unit will indicate a warning condition if the channel 2, 3 or 4 (orange, yellow or green) leads are switched to ground.

Make sure that the voltage label on the control unit is the same as required in the aircraft (12 or 24 volts).

3.4 Warning Circuits

3.4.1 Oil Pressure

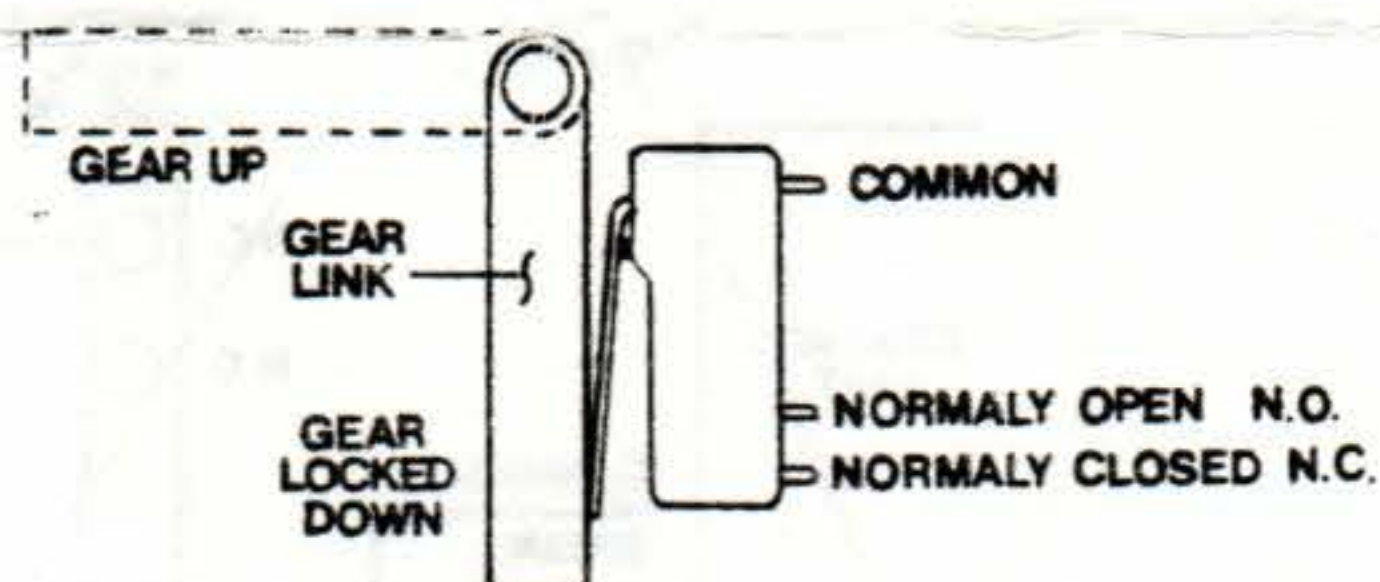
The "Oil Press." warning will sound if the engine oil pressure drops below 4 psi.

- a) Install the oil pressure sender into the engine oil pressure line. Be sure that:
 - i) The oil line has a restriction orifice to reduce the rate of oil loss in the event of sender failure.
 - ii) The sender is not placed close to the engine exhaust system.
 - iii) The sender is free to vibrate with the engine without striking the cowling.
- b) Connect the oil pressure sender terminal to the appropriate channel lead on the control unit. For example, Channel 2, Orange lead.

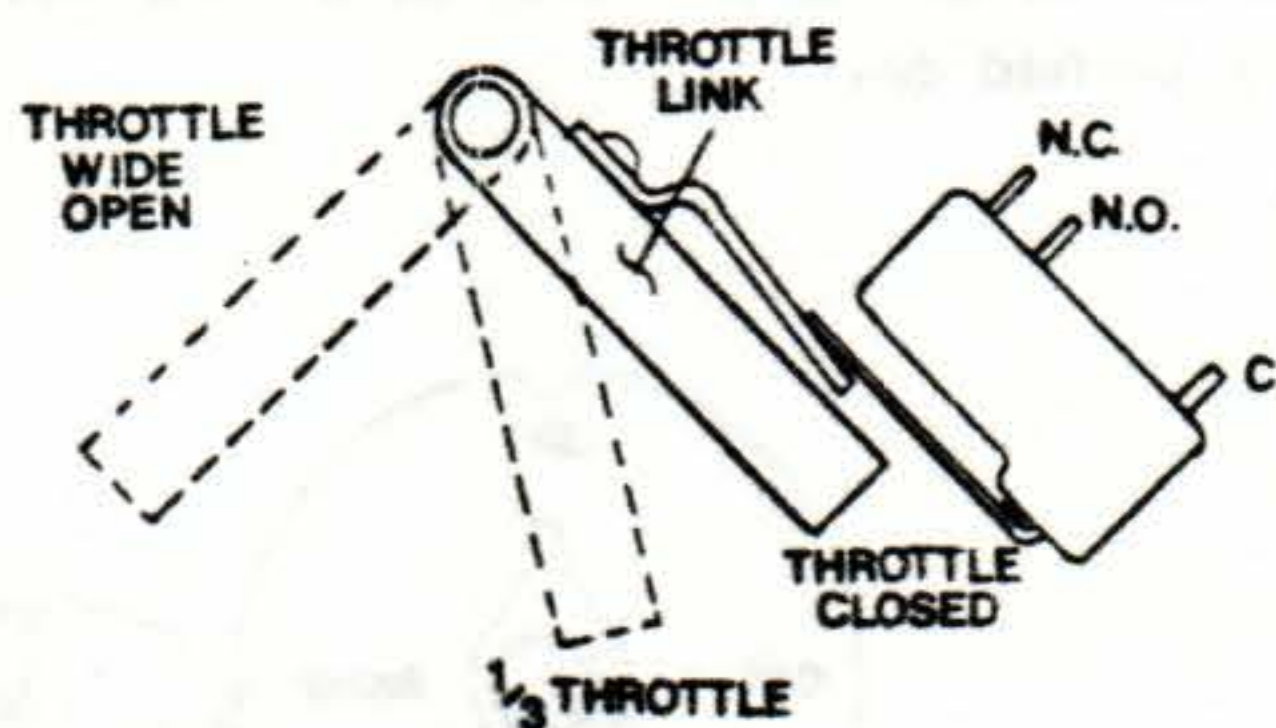
3.4.2 Gear Up

The "Gear Up" warning will sound if the throttle is closed with the landing gear still retracted.

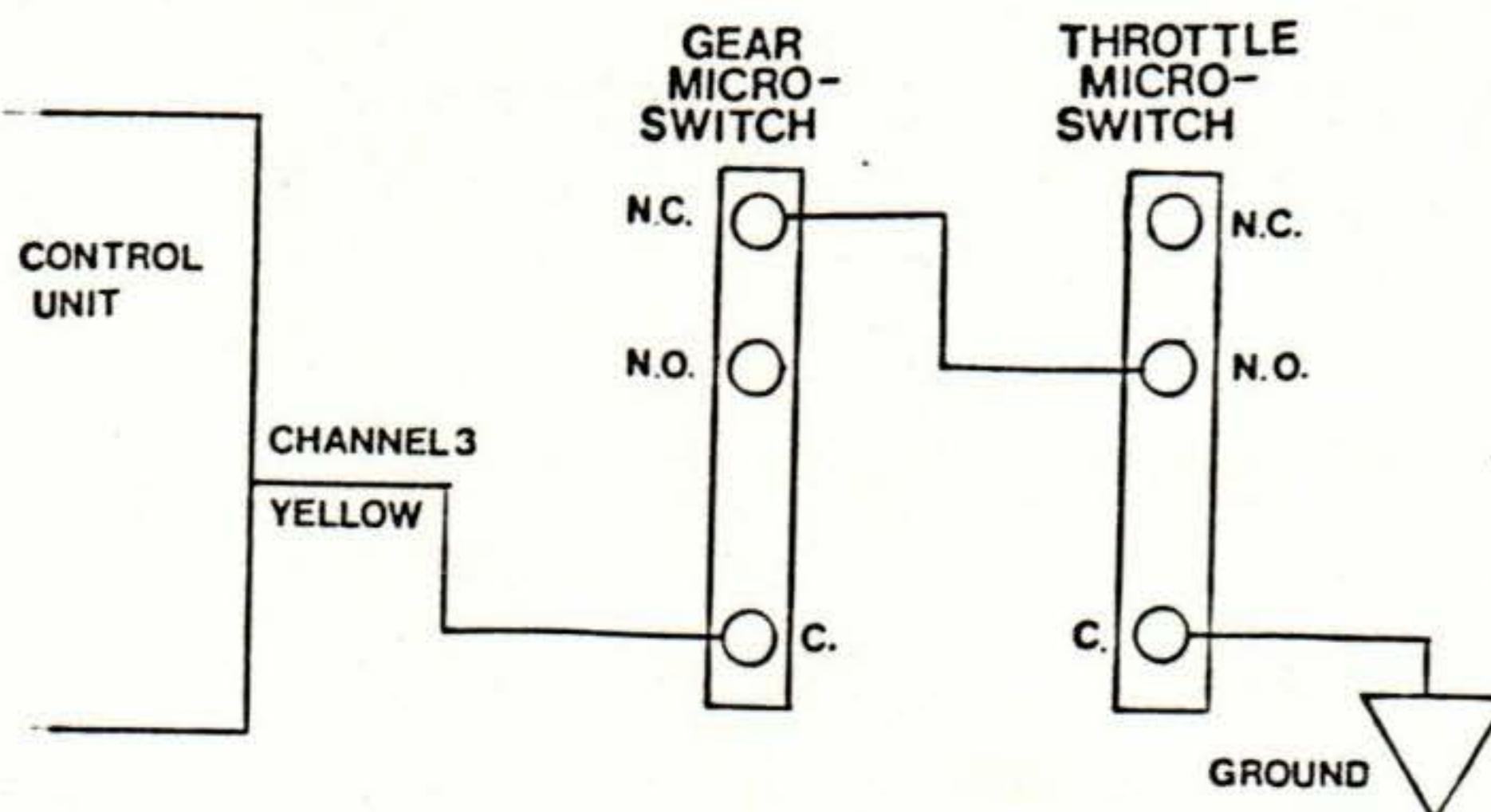
- a) Attach a microswitch to the landing gear mechanism such that the contacts open immediately the gear is in the locked down position.



- b) Attach a microswitch to the engine throttle linkage such that its contact is closed when the throttle is between 1/3 open and closed. The microswitch can be fitted at the throttle control or at the engine linkage, whichever is most convenient.



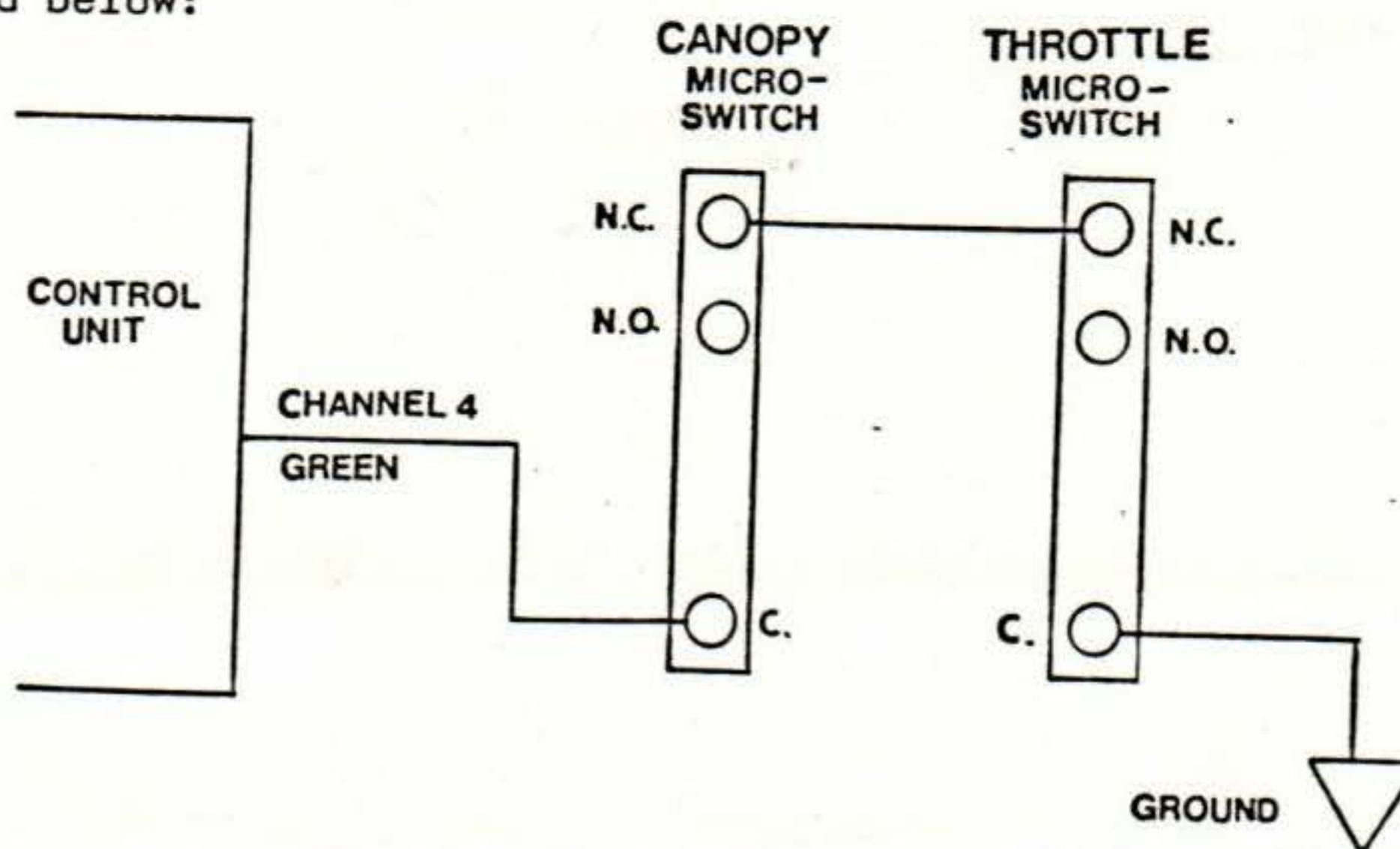
- c) Connect the microswitches to the control unit channel assigned to "Gear Up" as indicated below.



3.4.3 Canopy Open

The "Canopy Open" warning will sound if the throttle is opened with the canopy open.

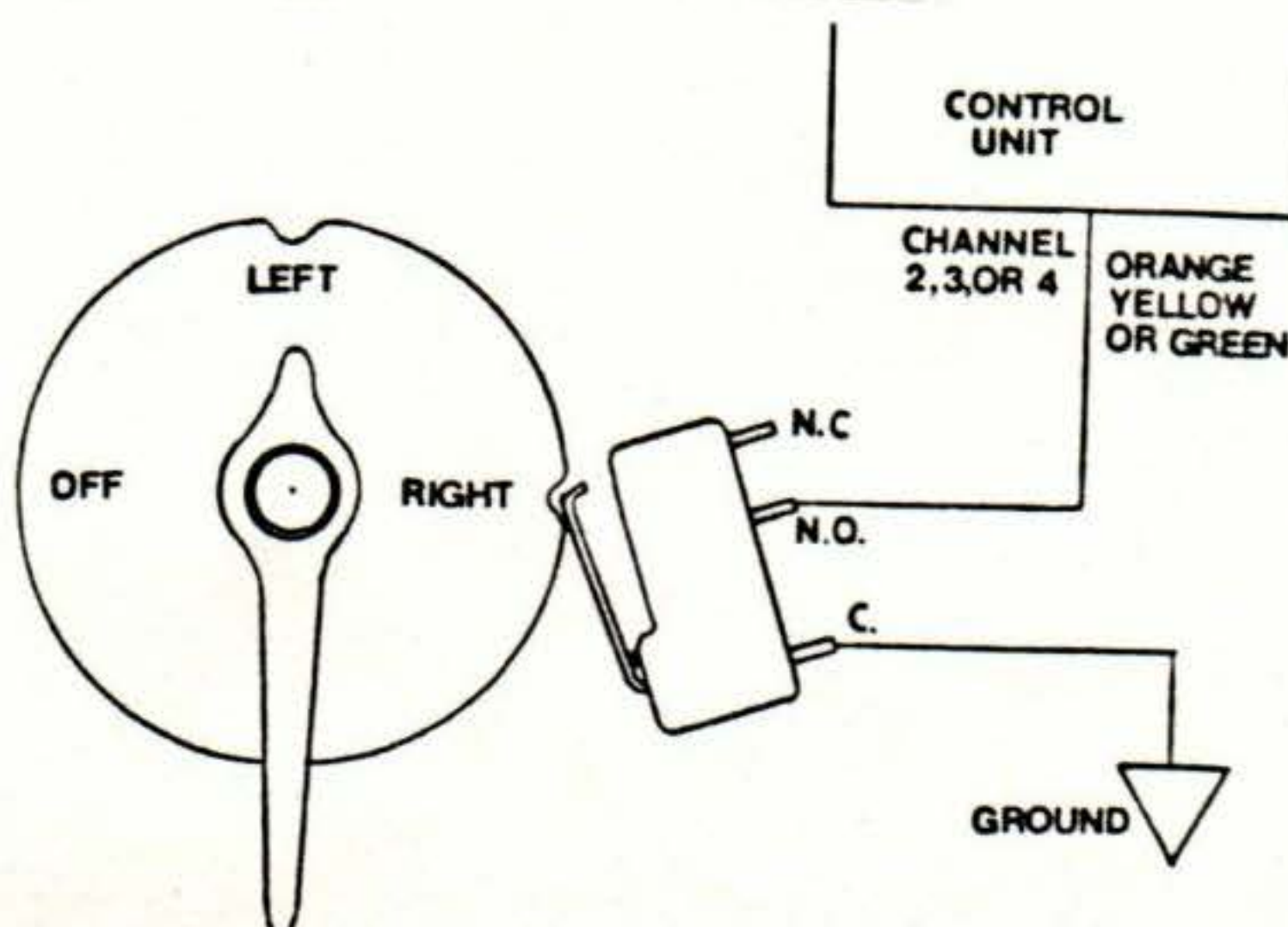
- Attach a microswitch to the canopy lock mechanism such that the contacts open as the canopy becomes locked.
- Attach a microswitch to the throttle linkage exactly as indicated in item 3.4.2b. Note that the same microswitch may be used as in the "Gear Up" set up.
- Connect the microswitches to the control unit channel assigned to "Canopy Open" as indicated below:



3.4.4 Fuel Off

The "Fuel Off" warning will be activated if the Master Switch is turned on with the fuel valve closed.

- Fabricate a cam plate to attach to and rotate with the fuel valve handle. Cut notches in the cam plate that allow the microswitch to "open" only when the fuel valve is turned on.

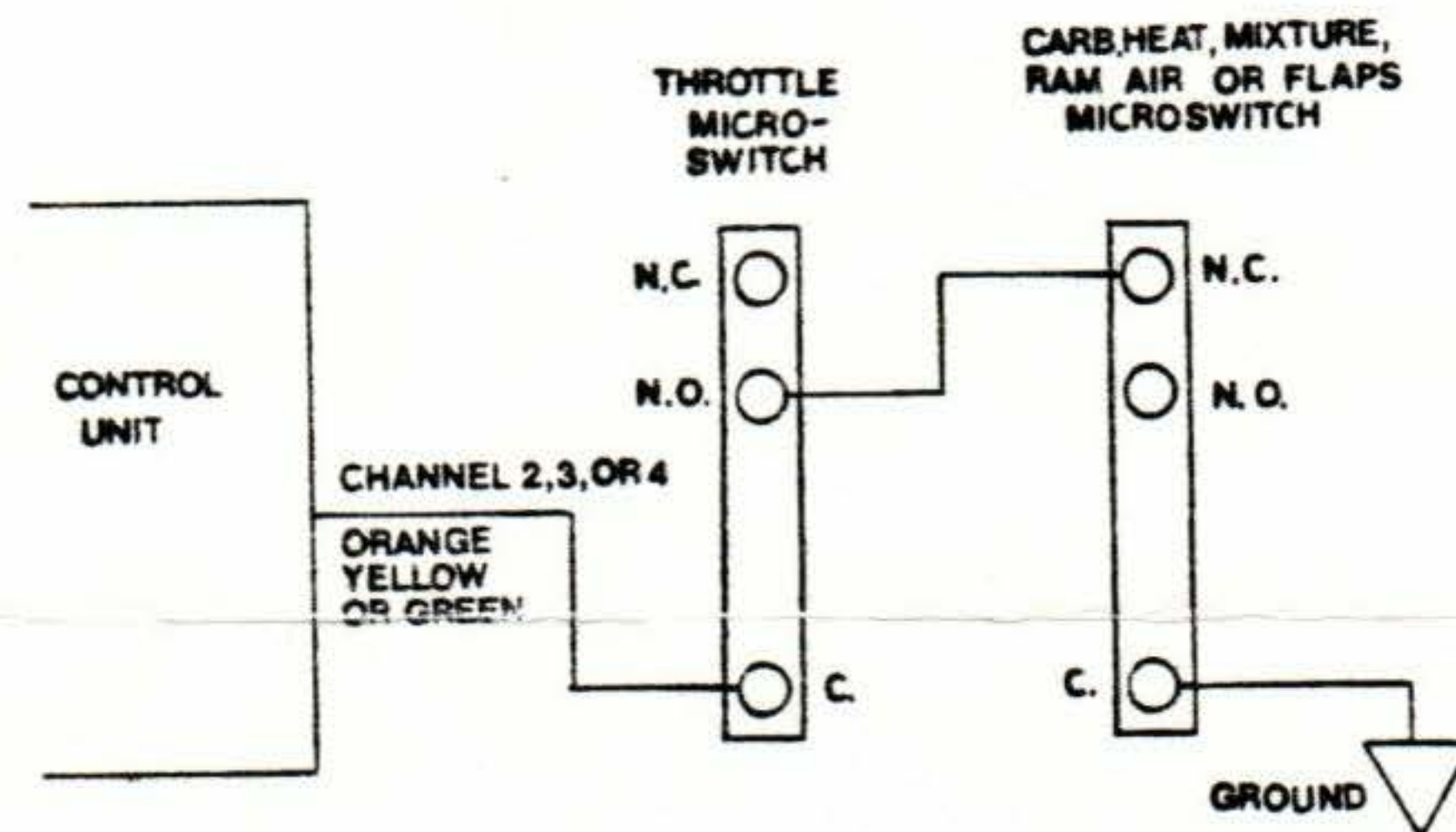


- b) Connect the microswitch terminals as indicated above.

3.4.5 Carb Heat
Mixture
Ram Air
Flaps

It may be desirable to have the above items set correctly when landing.

- a) Attach a microswitch to the desired system linkage such that the contacts are closed when the warning condition exists. For example, have the contacts of the switch closed when the Carb Heat lever is "Cold."
- b) Attach a microswitch to the throttle quadrant as described in 3.4.2b. Note that the same microswitch can be used.
- c) Connect the microswitches to the control unit as indicated below:



3.4.6 Fuel Pressure