

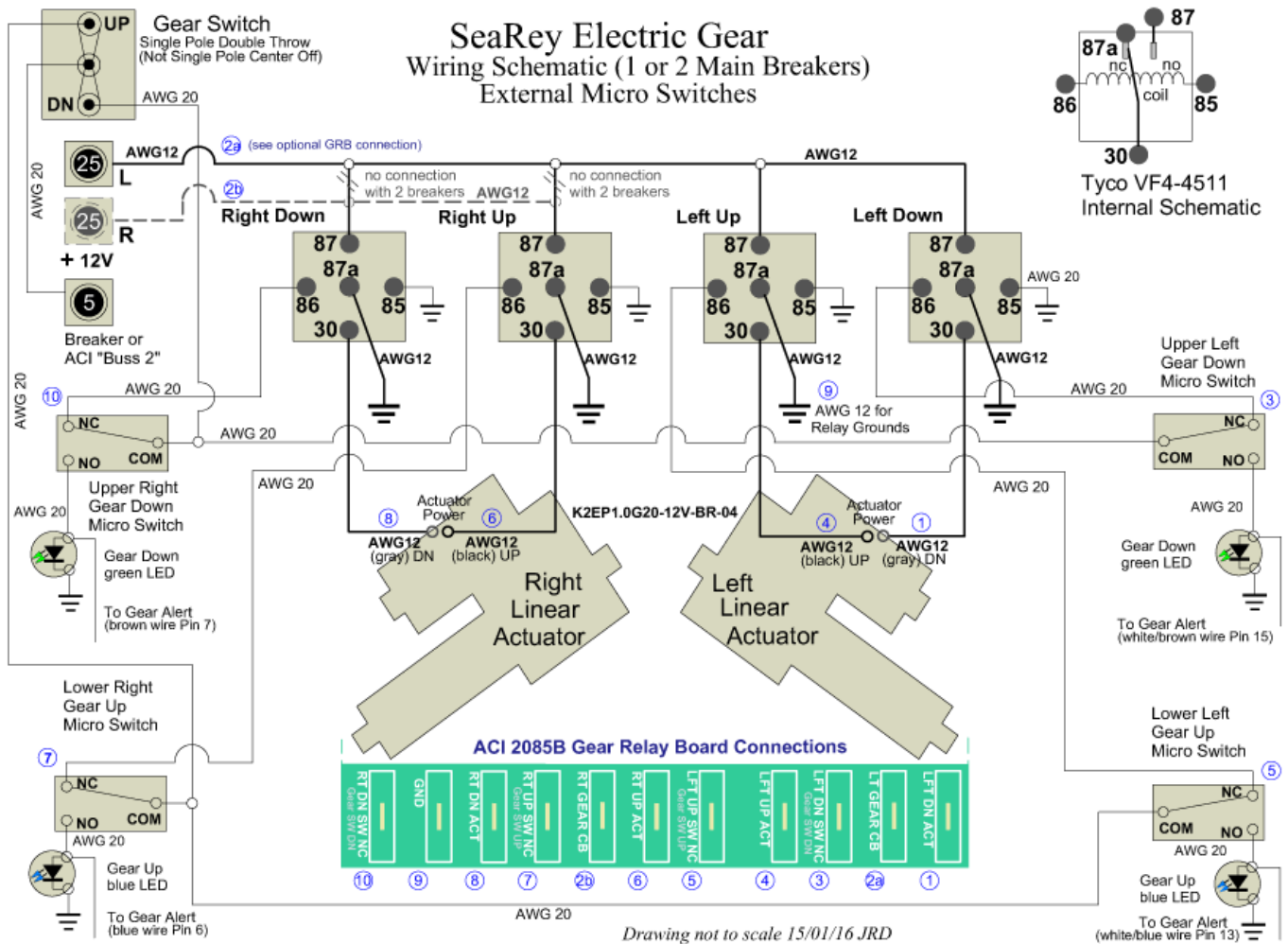
2085B Gear Relay Interface Board Installation Instructions

The 2085B Gear Relay Interface Board “GRB” provides the interconnect wiring for the traditional four landing gear relays used on SeaRey aircraft. It is designed to provide an easy and reliable way of interconnecting the VF4-4511 or Bosch relays. This new Board can be used in installations using either **one** or **two Main Circuit Breakers** and either linear actuators using **external micro switches**, or **internal adjustable limit switches with 12v “end of travel outputs”**.

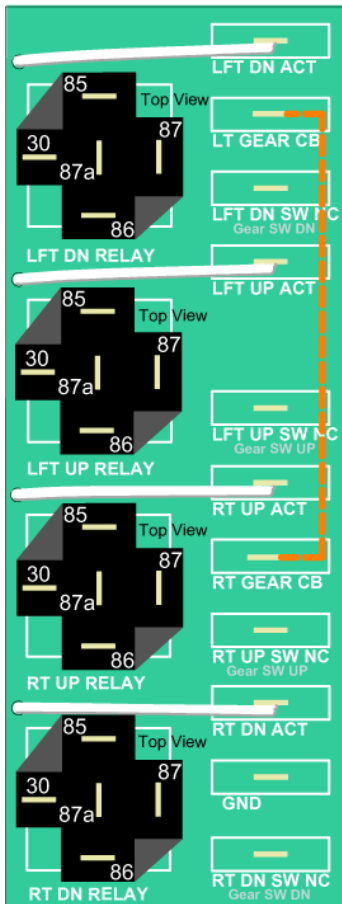
Actuators with External Micro Switches (single or 2 main breakers)

(Actuators with End of Travel Outputs, go to Page 3)

1. **Assembling the Board** Board assembly requires four VF4-4511 gear relays, or similar (not included with the GRB.) Some force will be required installing each relay into its GRB socket. To prevent damage, support the back of the board under the socket when inserting the relay.
2. **Mounting the Board** Locate the area where you will mount the assembly. Drill 4 holes using the relay mounting tabs as templates. Secure the relays to the structure.
3. **Relay Power Connections** Connect either a single, or two, 25 amp gear circuit breakers to GRB spade Terminals 2a and 2b using #12 wire(s) If you are using only one 25 amp gear breaker, use a **#12 wire jumper** between 2a and 2b. The GRB Terminal 9 ground connection also uses #12 wire to the #4 harness ground cable at the bulkhead. Power the **left actuator** with #12 wire from **GRB Terminals 1 to actuator (gray)** and **4 to actuator (black)**. Power the **right actuator** with #12 wire from **GRB Terminals 6 to actuator (black)** and **8 to actuator (gray)**. (see page 2 schematics)
4. **Actuator Control Power** Actuator control circuitry uses #20 wire protected by a 5 amp fuse, circuit breaker or ACI “Buss 2”. Connect 12v “control power” to the center connection of the **gear position switch** (not supplied). **Do not use a Gear Switch with a “center off” position.**
 - a. Connect the **UP** terminal of the **gear position switch** to the **COM** terminal of the **right and left “Gear Up” micro switches**”.
 - b. Connect the **DN** terminal of the **gear position switch** to the **COM** terminal of the **right and left “gear down” micro switches**.
 - c. Connect **GRB Terminals: 3 to NC of Left “Gear Down” micro switch; 5 to NC of Left “Gear Up” micro switch; 7 to NC of Right “Gear Up” micro switch; 10 to NC of Right “Gear Down” micro switch.**
5. **Gear Position Lights** Gear lights also use #20 wire protected by the control power circuitry.
 - a. Connect the **right “Gear Up” micro switch NO** terminal to the **right “Gear Up” (blue) position light anode**.
 - b. Connect the **right “Gear Down” micro switch NO** terminal to the **right “Gear Down” (green) position light anode**.
 - c. Connect the **left “Gear Up” micro switch NO** terminal to the **left “Gear Up” (blue) position light anode**.
 - d. Connect the **left “Gear Down” micro switch NO** terminal to the **left “Gear Down” (green) position light anode**.



2085B GEAR RELAY BOARD TERMINALS For External Micro Switches

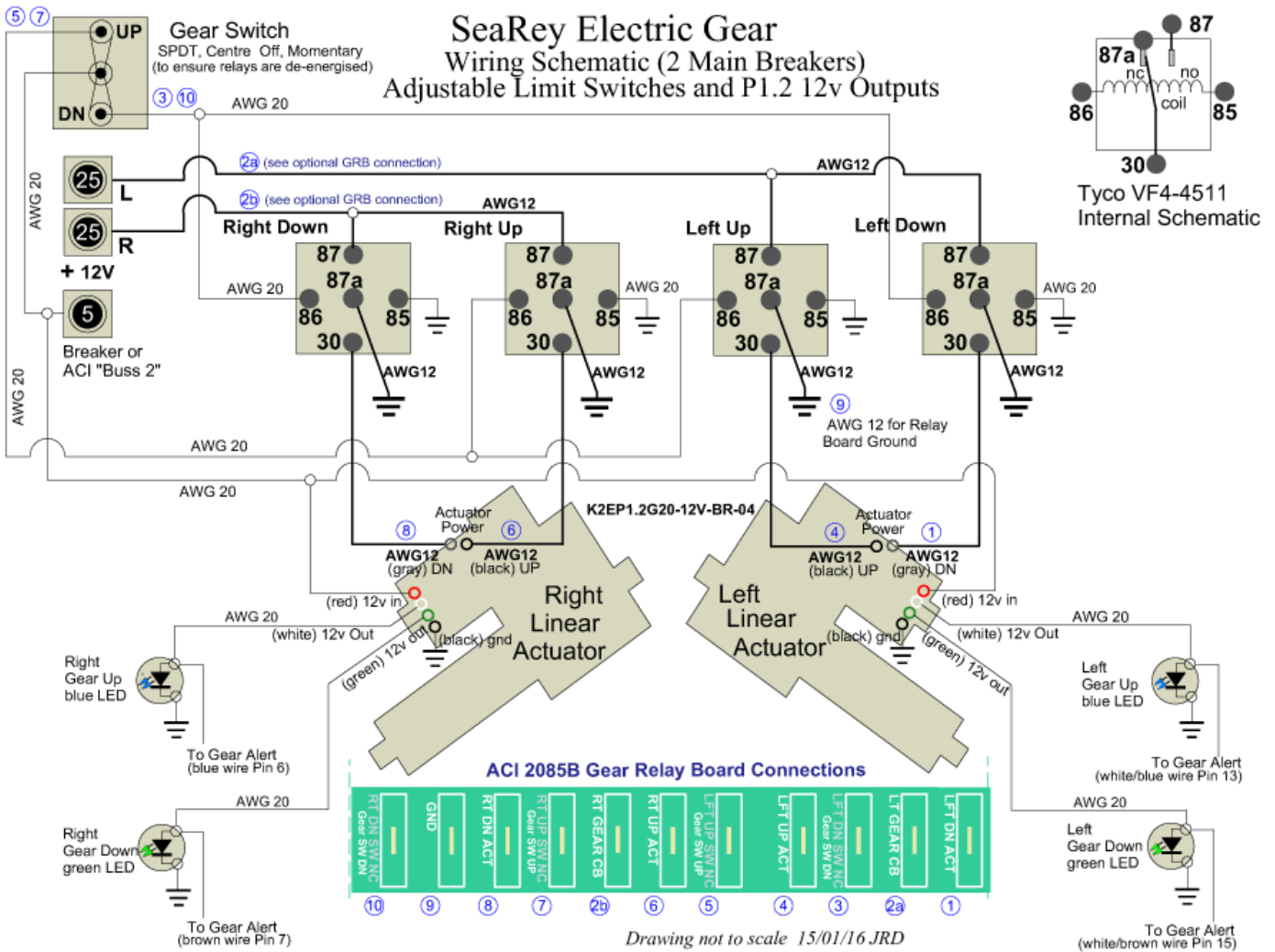


- ① #12 Connect to Left Actuator DOWN Terminal
- ②a #12 Connect to Left Gear Breaker
(For one breaker, add #12 jumper across 2a and 2B)
- ③ #20 Connect to Left Gear DOWN Switch NC
- ④ #12 Connect to Left Actuator UP Terminal
- ⑤ #20 Connect to Left Gear UP Switch NC
- ⑥ #12 Connect to Right Actuator UP Terminal
- ②b #12 Connect to Right Gear Breaker
(For one breaker, add #12 jumper across 2a and 2b)
- ⑦ #20 Connect to Right Gear UP Switch NC
- ⑧ #12 Connect to Right Actuator DOWN Terminal
- ⑨ #12 Connect to Battery Ground Cable
- ⑩ #20 Connect to Right Gear DOWN Switch NC

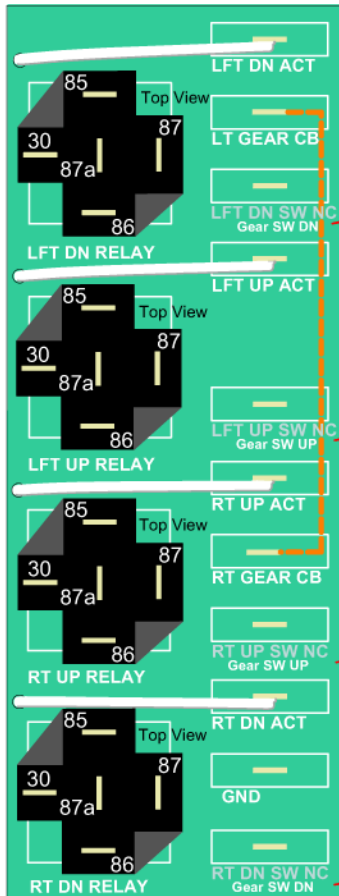
Actuators with End of Travel Outputs (single or 2 main breakers)

- 1. Board Terminal Labeling** The new 2085B Gear Relay Board was designed to use one or two breakers with the traditional external micro switch control. PA has recently adopted K2 Actuators with adjustable limit switches but without “end of travel outputs”. The GRB works well with both actuator installations but the Adjustable Limit Switch with “End of Travel Output” has different wiring. **The green GRB drawings** on pages 2 and 4 show the **correct terminal labeling** for their respective installations. Please rely on the drawings and **use alternate “Gear Switch” labels on board.**
- 2. Assembling the Board** Board assembly requires four VF4-4511 gear relays, or similar (not included with the GRB.) Some force will be required installing each relay into its GRB socket. To prevent damage, support the back of the board under the socket when inserting the relay.
- 3. Mounting the Board** Locate the area where you will mount the assembly. Drill 4 holes using the relay mounting tabs as templates. Secure the relays to the structure.
- 4. Relay Power Connections** (End of Travel Output Schematics are on page 4.)
Connect either a single, or two, 25 amp gear circuit breakers to GRB spade Terminals 2a and 2b using #12 wire(s) If you are using only one 25 amp gear breaker, use a **#12 wire jumper** between 2a and 2b. The GRB Terminal 9 ground connection also uses #12 wire to the #4 harness ground cable at the bulkhead. Power the **left actuator** with #12 wire from **GRB Terminals 1 to actuator (gray)** and **4 to actuator (black)**. Power the **right actuator** with #12 wire from **GRB Terminals 6 to actuator (black)** and **8 to actuator (gray)**.
- 5. Actuator Control Power** Actuator control circuitry uses #20 wire protected by a 5 amp fuse, circuit breaker or ACI “Buss 2”. Connect 12v “control power” to the center connection of the **gear position switch** (not supplied). In order to ensure that relays can be de-energized when the gear limit switches stop the actuators, this switch should be Single Pull, Double Throw, with **Center “Off” position.**
 - a. Connect the **UP** terminal of the **gear position switch** to **GRB Terminals 5 and 7.**
 - b. Connect the **DN** terminal of the **gear position switch** to **GRB Terminals 3 and 10.**
 - c. On both Actuators, connect 12v “control power” to the **actuator limit switch power input (red).**
 - d. On both actuators, connect the **actuator limit switch ground (black)** to a convenient Bulkhead ground.
- 6. Gear Position Lights** Gear lights also use #20 wire protected by the control power circuitry.
 - a. Connect the **right linear actuator limit switch output (white)** to the **right “Gear Up” (blue) position light** anode.
 - b. Connect the **right linear actuator limit switch output (green)** to the **right “Gear Down” (green) position light** anode.
 - c. Connect the **left linear actuator limit switch output (white)** to the **left “Gear Up” (blue) position light** anode.
 - d. Connect the **left linear actuator limit switch output (green)** to the **left “Gear Down” (green) position light** anode.

SeaRey Electric Gear Wiring Schematic (2 Main Breakers) Adjustable Limit Switches and P1.2 12v Outputs



2085B GEAR RELAY BOARD TERMINALS For End of Travel Outputs



- ① #12 Connect to Left Actuator DOWN Terminal
- ②a #12 Connect to Left Gear Breaker
(For one breaker, add #12 jumper across 2a and 2B)
- ③ #20 Connect to Gear Switch DOWN Terminal
- ④ #12 Connect to Left Actuator UP Terminal
- ⑤ #20 Connect to Gear Switch UP Terminal
- ⑥ #12 Connect to Right Actuator UP Terminal
- ②b #12 Connect to Right Gear Breaker
(For one breaker, add #12 jumper across 2a and 2b)
- ⑦ #20 Connect to Gear Switch UP Terminal
- ⑧ #12 Connect to Right Actuator DOWN Terminal
- ⑨ #12 Connect to Battery Ground Cable
- ⑩ #20 Connect to Gear Switch DOWN Terminal