

PART III
SYSTEMS

RUDDER TRIM SYSTEM -- A rudder trim control knob, labeled RUDDER TRIM, is mounted to the left of the console, below the lower edge of the instrument panel, and provides manual control of trim around the vertical axis. Rotation of the knob clockwise will yaw the aircraft to the right, opposite rotation will yaw the aircraft to the left. A scale is incorporated to the right of the knob to indicate direction of trim.

WING FLAPS -- The wing flaps are electrically operated by a flap motor located under the rear seat floor assembly. Flap position is controlled by a switch labeled WING FLAPS and is mounted directly to the right of the accessory electrical switches. Flap position is electrically indicated by a gage mounted above, and to the right of, the flap switch.

To extend the wing flaps, the wing flap switch must be depressed and held DOWN until the desired degree of extension is reached by pilot reference to the flap position indicator. After the desired flap extension is obtained, releasing the switch allows it to return to the center OFF position. When flap retraction is necessary, place the switch UP. The switch will remain in the UP position without manual assistance due to an over-center design within the switch. With the flaps extended in flight, placing the flap switch UP will retract the flaps in approximately 6 seconds. Gradual flap retraction can be accomplished by intermittent operation of the flap switch to UP. Normal full flap extension in flight will require approximately 9 seconds. After the flaps reach maximum extension or retraction, limit switches will automatically shut off the flap motor; however, when the flaps reach the fully retracted position, the wing flap switch should be manually returned to the center-off position. An additional limit switch is installed on the flap motor drive to activate the gear warning system when flaps are extended 25 degrees or more with the landing gear retracted.

For further flight controls information refer to the Maintenance Manual.

HYDRAULIC SYSTEMS

LANDING GEAR EXTENSION/RETRACTION SYSTEM -- Refer to Figure 3-1. The hydraulic power supply is an integrated pack containing an electric motor-driven hydraulic pump, reservoir, pressure control and thermal relief valves. The power pack is located in the left forward area of the fuselage tailcone. A landing gear selector switch, mounted on the instrument panel, controls the direction of fluid flow from the pump to permit gear retraction or extension. A hydraulic manifold serves as the mounting base for attaching the power pack to the airframe.

When the landing gear selector switch is pulled out slightly to clear a detent, and placed in the UP position, the hydraulic pump is energized and hydraulic fluid is directed to the up port of each gear actuating cylinder to retract the gear. Fluid on the opposite side of the cylinder piston flows back through the manifold into the power pack. When all three gears are retracted, a hydraulic actuating switch, located adjacent to each actuating cylinder, de-energizes the hydraulic pump. Any loss of hydraulic pressure which allows any gear to partially extend is sensed by the respective gear uplock position switch and the hydraulic pump is energized and the gear is retracted.

When the landing gear selector switch is placed in the DOWN position, the hydraulic pump is energized and hydraulic fluid is directed to the down port of each actuating cylinder to extend the gear. When all three gears are extended and locked, piston-operated switches on each actuating cylinder engage, and the hydraulic actuating switches de-energize the hydraulic pump.

Emergency gear extension is accomplished by manually actuating the emergency extension valve, located on the left side of the console. When actuated, this valve bypasses fluid from the upside of each gear actuating cylinder to the power pack fluid reservoir. The gears then drop by gravity, assisted by the emergency extension springs.

POSITION INDICATOR LIGHTS AND GEAR WARNING LIGHT -- Three green indicator lights, mounted directly above the landing gear position handle, provide an electrical indication that nose and main gears are down and locked. These gear down lights are the "press-to-test" type.

A red GEAR WARN light is installed in the glareshield surface to indicate that the gear is not fully up, or not down and locked. Gear up is indicated by the GEAR WARN and all position lights being out.

As a reminder that the gear is retracted, the gear warning bell will actuate whenever the throttle is retarded below approximately 14 inches of manifold pressure (Master Switch - ON) with the gear retracted, or flaps extended 25 degrees or more with the gear retracted. On some airplanes, a red GEAR WARN light will also illuminate when the gear warning bell is actuated.