

## NOSE GEAR STEERING

An electrically controlled, hydraulically operated nose gear steering system is installed in the aircraft. The steering actuator is a vane type hydraulic motor on the nose gear strut. It is geared through a planetary gear train to the strut and performs both steering and damping. A bypass valve in the steer-damper manifold directs hydraulic fluid to an electrically controlled hydraulic servo valve. This valve directs fluid to the actuator which can be pressured on either side as directed. For the damping mode, the bypass valve traps the fluid in the actuator and channels it through damping orifices which absorb energy. When the control stick grip nose gear steering button is held down, with the main gear strut compressed, and the gear handle is in the down position, the system is energized and steering is commanded by rudder pedal movement. The limit of the nose gear steering system is 70° on each side of center; however, with the steering unit deenergized, the nose gear may be rotated 360° for towing or positioning the aircraft. When energized with the nose gear in any position, the nose gear will quickly return to the position commanded by the rudder pedals. The system contains a failure detection circuit which, upon detection of an electrical short or open, or intermittent outputs from system electrical components, will shut off hydraulic pressure to the system. In this event, the nose wheel reverts to a free swivel condition. When the lower UHF antenna is selected, the nose gear steering may be erratic or inoperative; therefore, the upper UHF antenna should be selected before engaging the nose gear steering.



If no response is noted or unscheduled steering commands occur with nose gear steering engaged, release the nose gear steering button and do not reengage. The aircraft should not be taxied or flown with inoperative nose gear steering, except in an emergency.

## WHEEL BRAKE SYSTEM

The main landing gear wheels are equipped with full powered brakes operated by toe action on the rudder pedals which meters utility hydraulic pressure to the brakes. The brake control valves are in the nose gear well and operate through a linkage arrangement to the rudder pedals. The brake control valves are capable of directing full utility system pressure to the wheel brakes with full pedal deflection. The amount of brake pedal force and the amount of utility pressure directed to the wheel brakes are proportional to pedal displacement. An anti-skid system is incorporated in the normal brake system to prevent wheel skid. An emergency brake system, when actuated, discharges accumulator hydraulic pressure to the brakes in the event of utility system failure. Operation of the brakes on the emergency system is identical to the normal system for the duration of the hydraulic accumulator supply. Anti-skid protection is not available on the emergency brake system. Each main landing wheel contains three fuse plugs to protect against tire explosion. If the brakes are used excessively, causing overheating of

the wheels and tires, the fuse plugs should melt and let the tire go flat before a tire explosion can occur.

## ANTI-SKID SYSTEM

The aircraft is equipped with an electrically controlled anti-skid system which prevents wheel skid. The system detects the start of a skid condition at the wheels and automatically releases the brake pressure in proportion to the severity of the skid. Use of the anti-skid system offers protection from skids, and can provide consistently shorter landing rolls for all runway conditions. The system provides positive assurance that the wheels have an opportunity to spin up at touchdown, even if inadvertent brake pressure is applied and elimination of a single wheel experiencing a gradual or stair step speed reduction due to extremely slippery conditions. The system has a fail-safe circuit that automatically reverts the system to manual braking in the event any of the electrical components of the system fail. The system is activated by placing the anti-skid control switch ON and lowering the landing gear. It may be disengaged by placing the anti-skid control switch to OFF, or by holding either emergency quick release lever depressed. An ANTI-SKID INOPERATIVE light illuminates when the system is not activated.

### NOTE

- The system does not provide full skid protection below 30 knots.
- During maximum braking on a dry runway with speed below 50 knots, a severe "BANG BANG" may be heard. This is normal for low speed operation during maximum braking and should not be interpreted as an anti-skid malfunction.
- Pulling the ARI circuit breaker, on the front cockpit left subpanel, will disconnect control power to the anti-skid system.

### Anti-Skid Control Switch

This two-position toggle switch is on the left console, front cockpit, adjacent to the oxygen quantity gage. When the switch is ON and the landing gear handle is down, power is supplied to the system. The anti-skid system may be shut off by placing the anti-skid control switch to OFF.

### Anti-Skid Inoperative Light

An ANTI-SKID INOPERATIVE light is on the left console in the front cockpit. The light illuminates any time the landing gear handle is down and the anti-skid switch is OFF, circuit continuity is not complete, or when the emergency quick release lever is held depressed. Anytime the light illuminates steady, the anti-skid system is inoperative and the control switch should be placed to OFF. If the light does not illuminate, it can only be assumed that the anti-skid circuitry is good. Anti-skid protection still may not be available due to system component failure. The master caution light does not illuminate in conjunction with the ANTI-SKID INOPERATIVE light.