1. INTRODUCTION

The nosewheel steering system provides directional control of the airplane on the ground for taxi, take-off and landing operations.

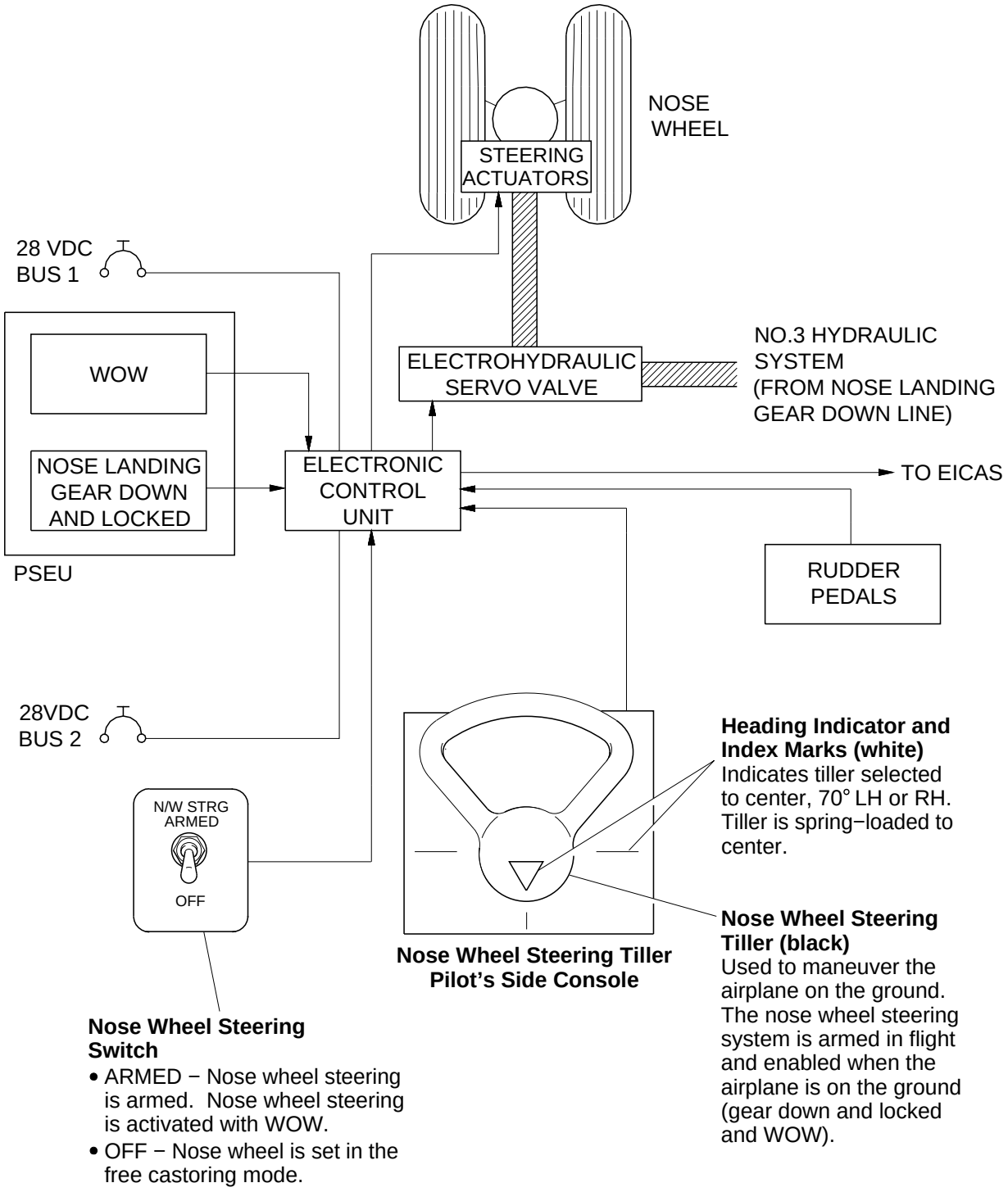
The nosewheel steering system is controlled by a steering Electronic Control Unit (ECU) and powered by hydraulic system No. 3. It is a steer-by-wire system which is electrically controlled and hydraulically actuated through dual steering actuators on the nose landing gear. The nosewheel steering system is controlled by a switch labeled N/W STRG, ARMED/OFF located on the pilot left side panel. Selecting the switch to the ARMED position arms the ECU and powered steering, using the steering tiller.

The ECU controls the nosewheel position based on inputs from either the steering tiller on the pilot side console, or from the rudder pedals. Steering commands are processed by the ECU which controls the electro-hydraulic servo valve to modulate hydraulic pressure to the steering actuators. The steering tiller turns the nosewheel up to 70 degrees either side of centre, and is intended for low speed taxiing. Steering with the rudder pedals is limited to 7 degrees either side of centre and is intended for high speed taxi,and take-off and landing rolls. Nosewheel position feedback is sent to the ECU from two position transducers mounted on the steering actuators.

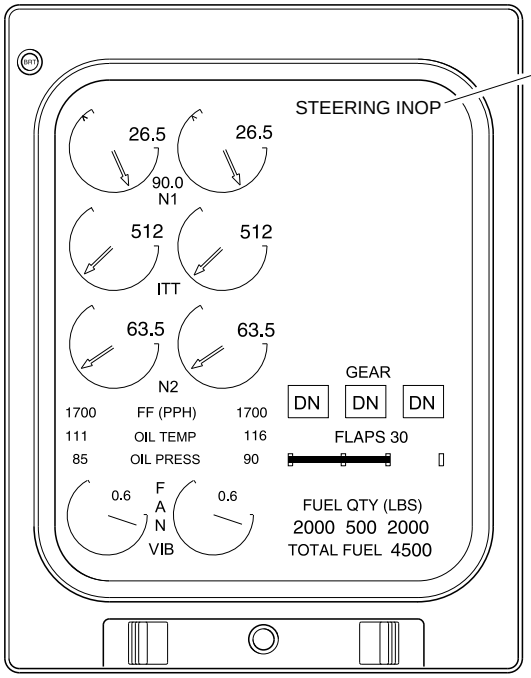
After take-off, the steering control unit generates a straight ahead command, which centers the nose wheel prior to landing gear retraction. A centering cam on the nosewheel strut maintains the nosewheel centre position when hydraulic power is shut down.

If a failure is detected by the ECU or hydraulic system No. 3 is lost, the system will revert to a shimmy-damping mode which allows free-castoring of the nosewheel. The pilot can then maintain ground directional control through differential braking and differential thrust.

The steering ECU continuously monitors the nosewheel steering system, and any detected faults will be displayed as a **STEERING INOP** caution message on the EICAS primary page. Fault detection will result in steering system shutdown which will revert the system to shimmy-damping mode.



Nosewheel Steering System – Schematic
Figure 32−51−1



Primary Page

STEERING INOP
Caution (amber)
Indicates that the steering system has failed and reverted to free castoring mode.

NOTE

If the STEERING INOP message is displayed with the system selected off, this indicates that the steering SOV has failed (stuck) open. The N/W STRG must be selected on to enable centering of the nosewheel.

Nosewheel Steering System – EICAS Messages
Figure 32−51−2

A. System Circuit Breakers

System	Sub-System	CB Name	Bus	CBP	Location
Nosewheel Steering	Electronic Control Unit	NOSE STEER	DC BUS 1	1	F8
			DC BUS 2	2	F8