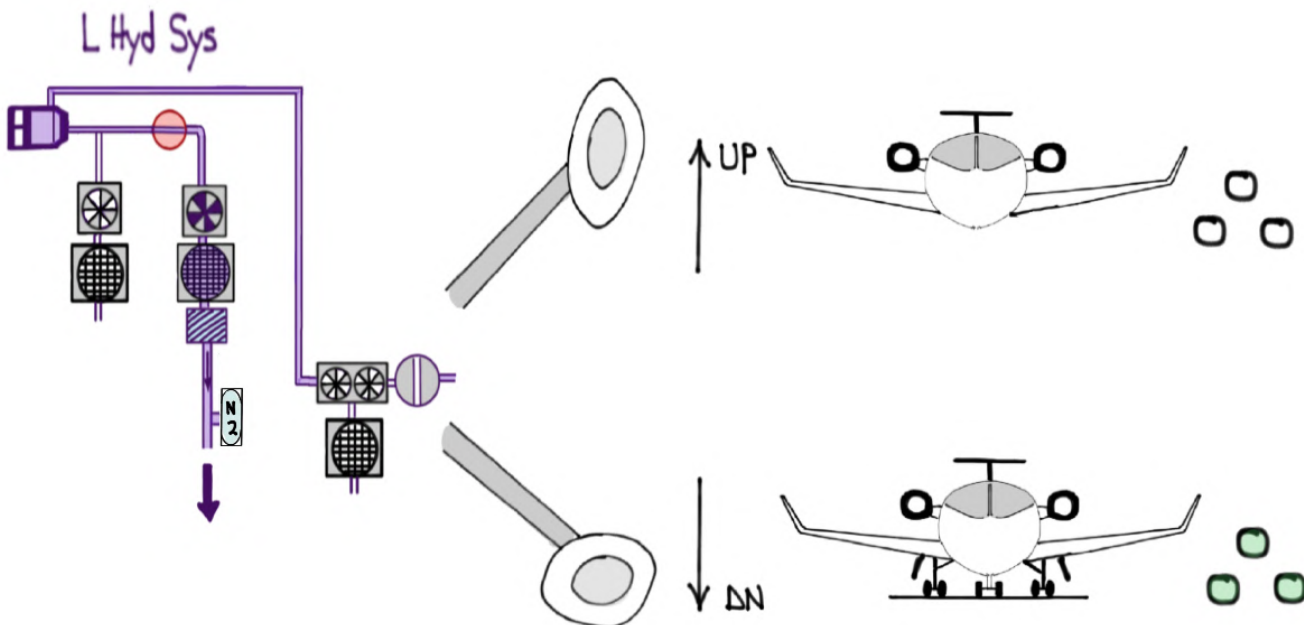


G550

LANDING GEAR & BRAKES SYSTEM

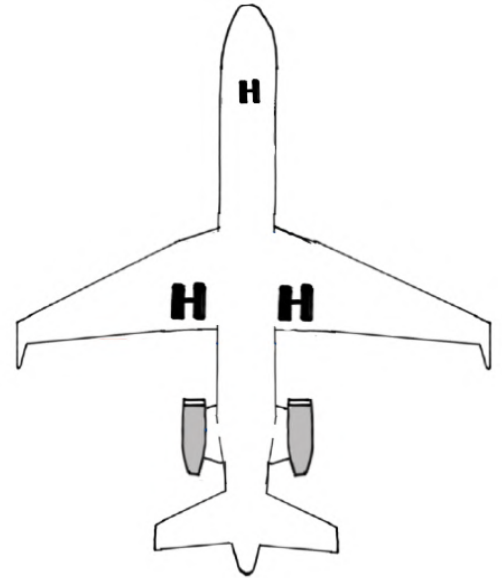
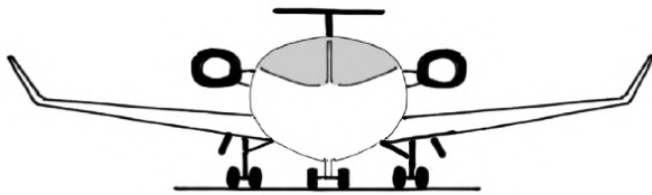
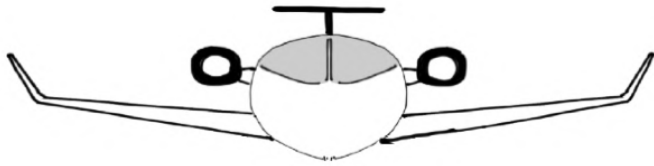
L
ESS
DC

R
MAIN
DC

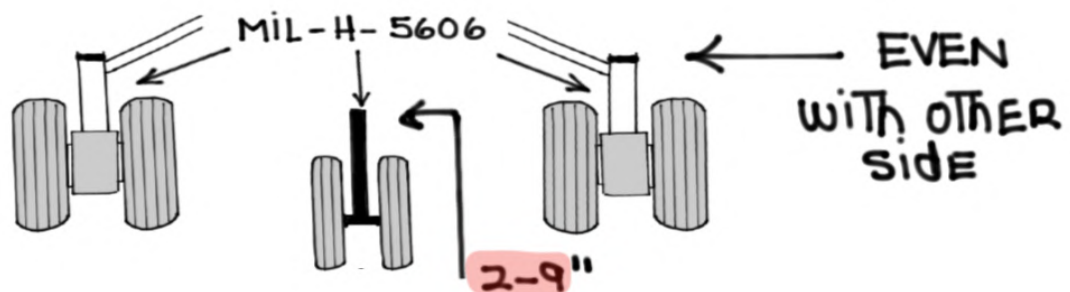


For study purposes only

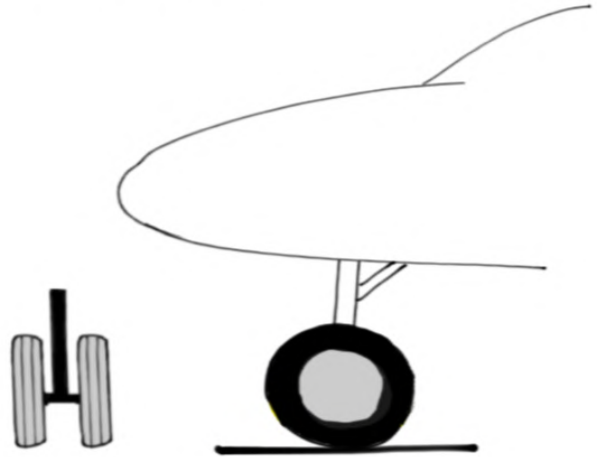
- THE G550 HAS A FULLY RETRACTABLE, TRICYCLE-TYPE LANDING GEAR



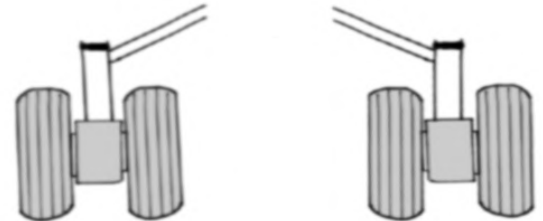
- EACH GEAR INCORPORATES A CONVENTIONAL OLEO-PNEUMATIC SHOCK STRUT WITH DUAL WHEELS AND TIRES
- SHOCK STRUTS ARE FILLED WITH MIL-H-5606 HYDRAULIC FLUID AND ARE PRESSURIZED WITH DRY NITROGEN
- STRUT EXTENSION



- ONE (1) SET of Two (2) NOSEWHEEL TIRES
- RATED AT: 225 mph
- TIRE PRESSURE: 136 psi
- TIRE WEIGHT: 20 pounds



- Two (2) SETS of Two (2) MAIN TIRES EACH
- RATED AT: 225 mph
- TIRE PRESSURE: 199 - 207 (MIN/MAX)
- TIRE WEIGHT: 82 pounds

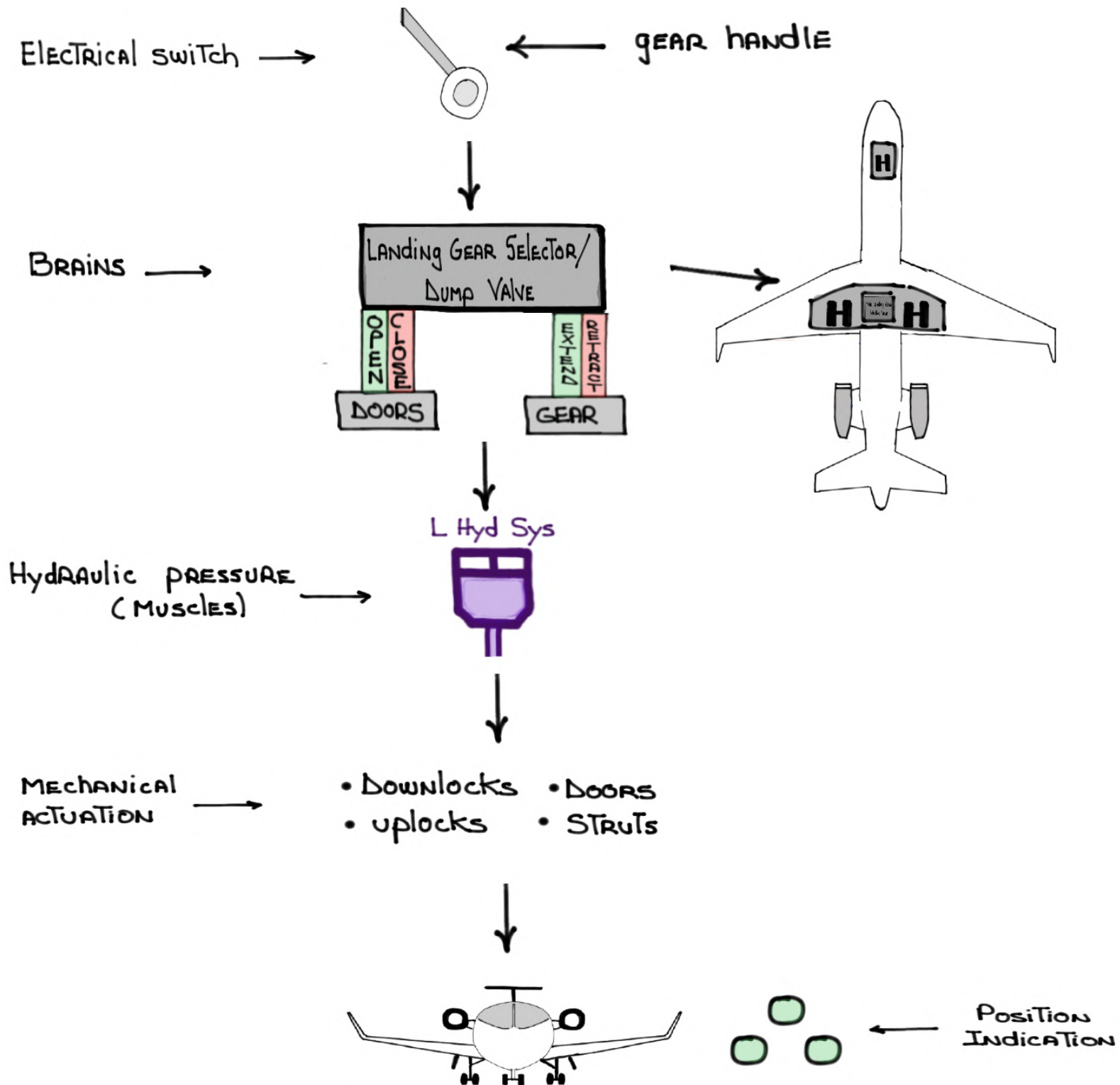


- WHEELS: FOUR (4) fusible plugs (MELT AT 390°F) TO RELEASE TIRE PRESSURE if THE WHEEL OVERHEATS

ONE (1) SAFETY plug TO DEFLATE THE TIRE if INTERNAL PRESSURE EXCEEDS 412.5 ± 37.5 psi

EACH OF THE FOUR (4) MAIN GEAR WHEELS HAS INDIVIDUAL BRAKING VIA A BRAKE-BY-WIRE SYSTEM WITH ANTI-SKID PROTECTION DOWN TO TEN (10) KNOTS

- The LANDING GEAR SELECTOR/DUMP VALVE IS THE BRAINS OF THE SYSTEM. IT IS LOCATED IN THE GEAR WHEEL WELL AREA IN THE CENTER POST



- EXTENSION AND RETRACTION REQUIRES:

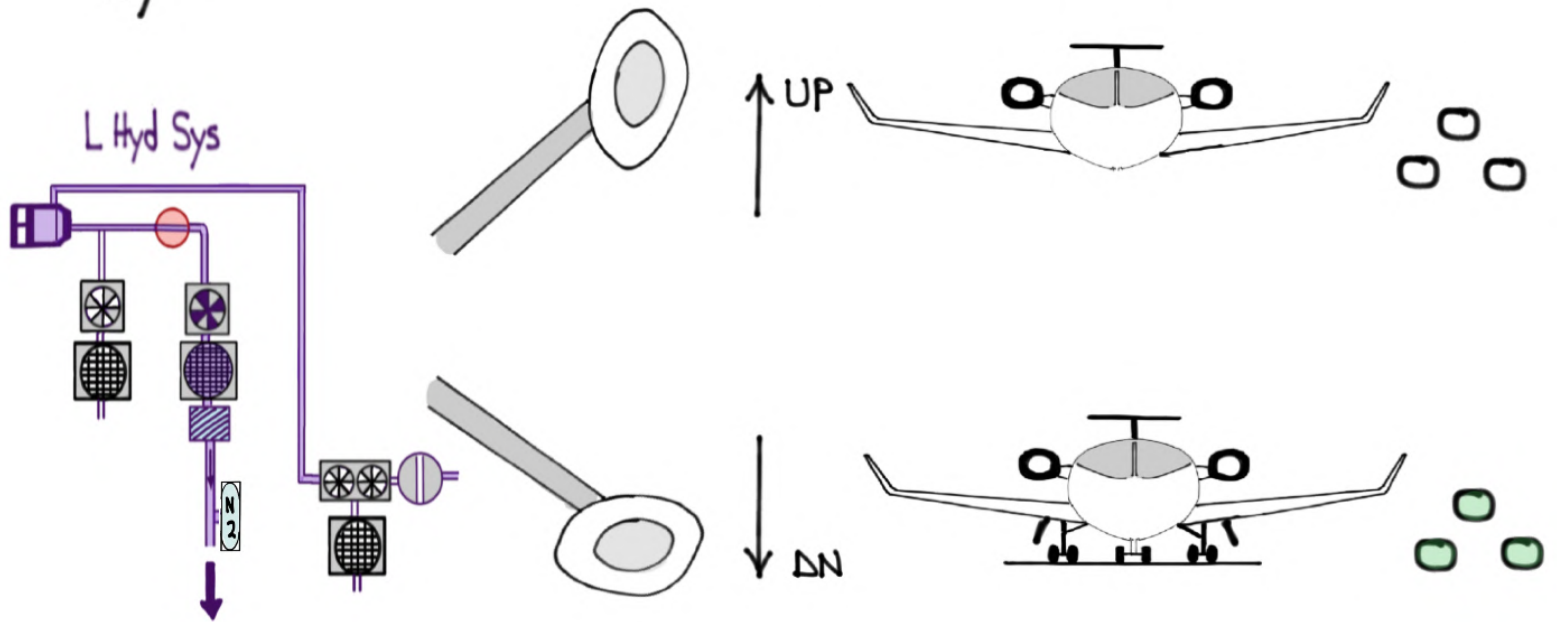
① ELECTRICAL POWER TO OPERATE



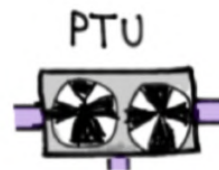
② HYDRAULIC POWER TO ACTUATE

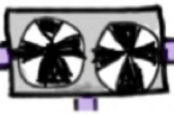


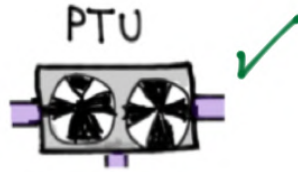
- GEAR RETRACTION AND EXTENSION IS NORMALLY PROVIDED BY:



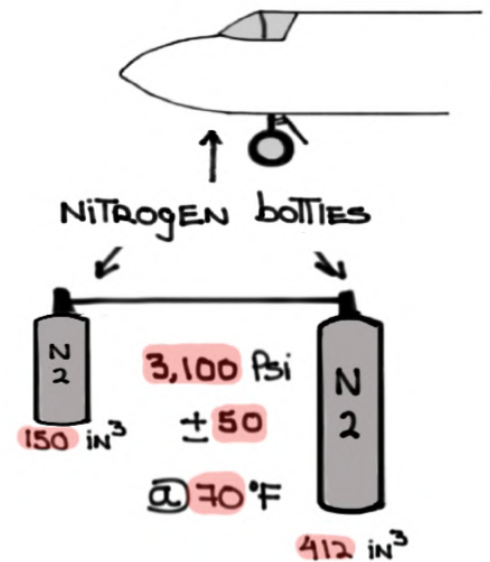
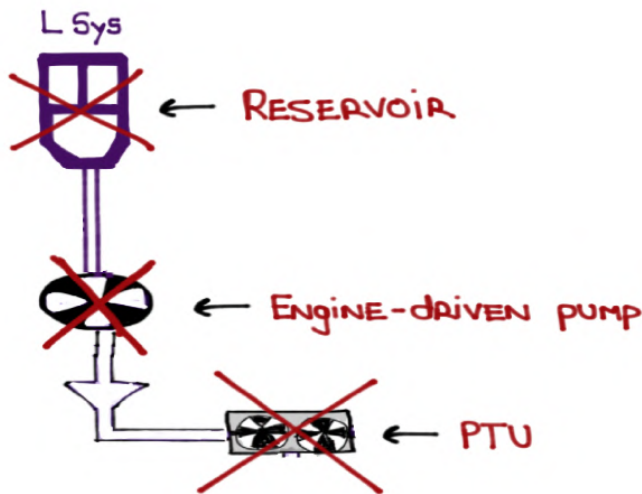
- IN THE EVENT OF A FAILURE OF THE ENGINE-DRIVEN HYDRAULIC PUMP THE GEAR CAN BE EXTENDED OR RETRACTED USING THE:



-  Helps RETRACT THE LANDING GEAR following LEFT ENGINE FAILURE AFTER V1 (REGULATORY PURPOSE)




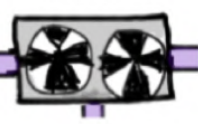
- IN THE EVENT OF A TOTAL FAILURE OF THE LEFT HYDRAULIC SYSTEM THE LANDING GEAR CAN BE EXTENDED VIA TWO (2) NITROGEN BOTTLES LOCATED IN THE NOSE GEAR WHEELWELL



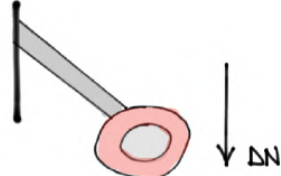
- THE ALTERNATE GEAR EXTENSION SYSTEM PORTS HIGH PRESSURE NITROGEN TO THE GEAR EXTENSION SYSTEM TO EXTEND THE GEAR. THE NITROGEN REPOSITIONS THE NOSE GEAR AND MAIN GEAR DUMP VALVES TO A dump position

NORMAL

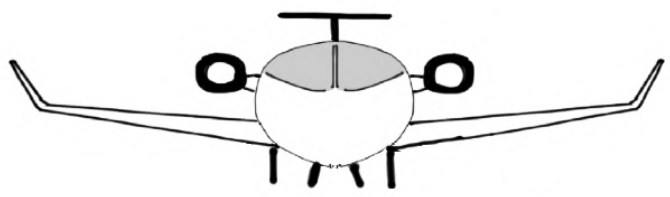
LANDING GEAR EXTENSION

① L
ESS
DC R
MAIN
DC AND  OR  AVAILABLE

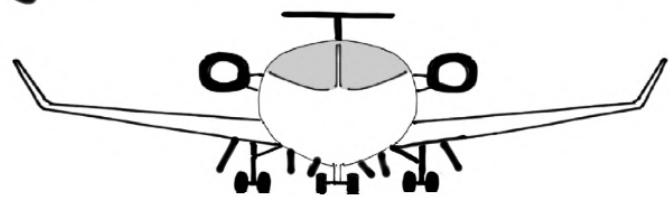
② $\leq V_{Lo}$ (225 KCAS / 0.70 MT)

③  GEAR HANDLE (ELECTRICAL SWITCH) SELECTED DOWN (ILLUMINATES ●)

④ GEAR DOORS OPEN FULLY

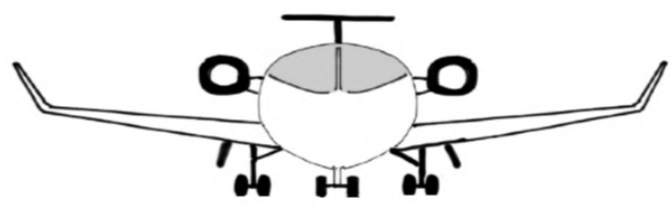


⑤ LANDING GEAR EXTENDS AND LOCKS

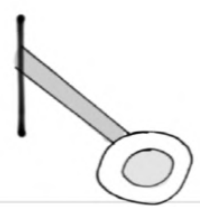


⑥ THREE GREEN  (DOWN AND LOCKED)

⑦ LANDING GEAR DOORS CLOSE



⑧ GEAR HANDLE LIGHT EXTINGUISHES

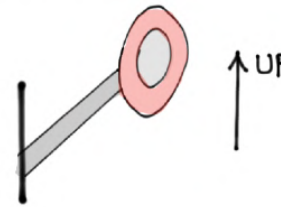


NORMAL

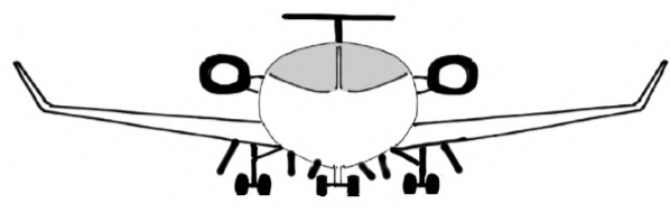
Landing gear RETRACTION

① L
ESS
DC R
MAIN
DC AND L Hyd Sys OR PTU AVAILABLE

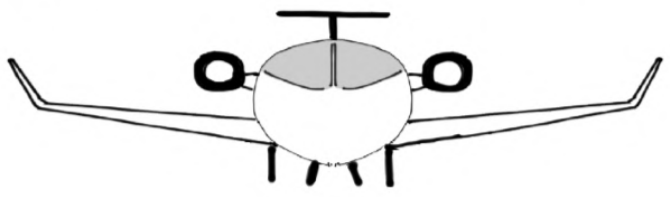
② $\leq V_{Lo}$ (225 KCAS / 0.70 MT)

③  ↑ UP GEAR HANDLE (ELECTRICAL SWITCH) SELECTED UP (ILLUMINATES ●)

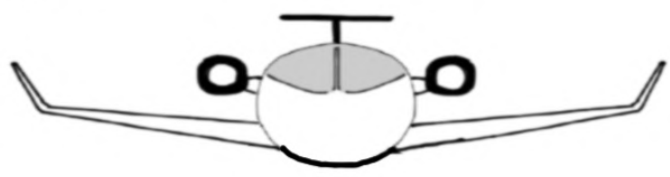
④ GEAR DOORS OPEN FULLY

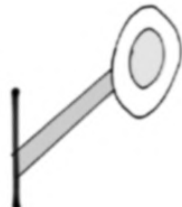


⑤ LANDING GEAR RETRACTS INTO THE UPLOCKS



⑥ LANDING GEAR DOORS CLOSE

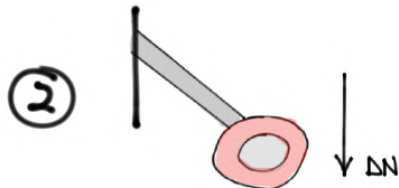


⑦ GEAR HANDLE LIGHT EXTINGUISHES 

ALTERNATE

LANDING GEAR EXTENSION (NITROGEN)

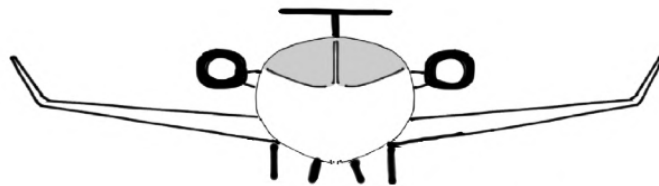
① $\leq V_{LO}$ (175 KCAS)



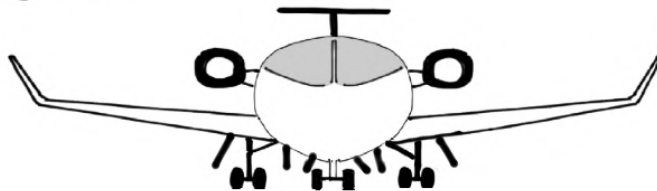
GEAR HANDLE (ELECTRICAL SWITCH)
SELECTED DOWN (ILLUMINATES ●)

③ **EMER Ldg GEAR** Pull EMER LANDING GEAR T-HANDLE

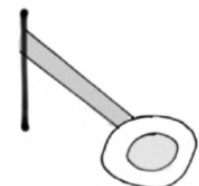
④ GEAR DOORS OPEN FULLY AND REMAIN OPEN



⑤ LANDING GEAR EXTENDS AND LOCKS



⑥ THREE GREEN  (DOWN AND LOCKED)

⑦ GEAR HANDLE LIGHT EXTINGUISHES 

⑧ LANDING GEAR DOORS REMAIN OPEN

LANDING GEAR WARNINGS

< 500' AGL
AND

< 190 KCAS



"TOO LOW, GEAR"

VOICE
ORIDE



= SILENCES AURAL WARNING

≤ 345' AGL -
AND
PLA ≤ 5°



GEAR UNSAFE
WARNING HORN
will SOUND
(KLAXON TONE)

HORN
SILENCE



= SILENCES WARNING HORN

flaps > 22°



GEAR UNSAFE
WARNING HORN
will SOUND
(KLAXON TONE)

HORN
SILENCE



= Will NOT SILENCE
WARNING HORN



HORN
SILENCE



=

- WOW switches COMPRESSED
- ADS INDICATES < 60 KTS
- GEAR HANDLE IN THE RETRACT POSITION

LIMITATIONS

MAXIMUM ALTITUDE TO OPERATE gear OR fly with the gear extended: **20,000' MSL** ↓

T-handle

EMER LG GEAR

VLO
175 KCAS



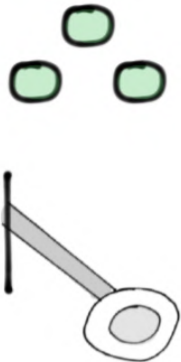
VLO
225 KCAS
0.70 MT



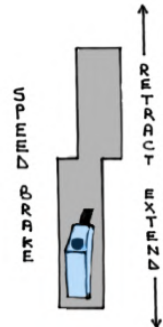
VLE
250 KCAS
0.70 MT



SPEED BRAKES AND GEAR down in flight



prohibited



MAXIMUM TIRE SPEED: **195** KNOTS (ground speed)



NOSE WHEEL STEERING SYSTEM

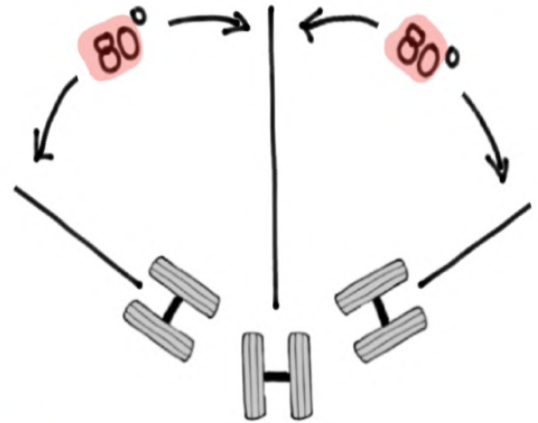
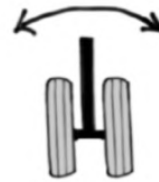
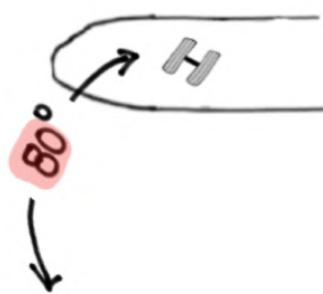
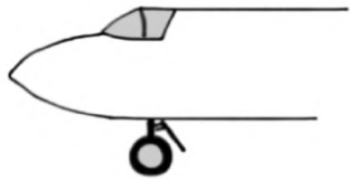


ELECTRICALLY-CONTROLLED

AND

HYDRAULICALLY-DRIVEN

by a STEER-by-WIRE SYSTEM

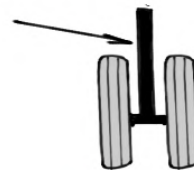


NOSE WHEEL STEERING (NWS): $80^\circ (\pm 2^\circ)$

NWS OVERTRAVEL INDICATOR: $\geq 84^\circ$



NWS OVERTRAVEL INDICATOR



← NOSE WHEEL

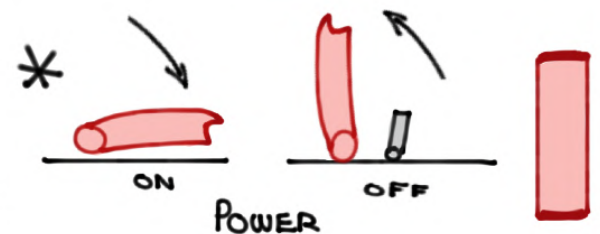
Rudder pedals: LEFT 7° / RIGHT 7°

Rudder pedals (NWS failure) LEFT 16° / RIGHT 16°

Rudder pedal input + NWS = NOSE WHEEL DEFLECTION

NWS = RED GUARDED SWITCH

* "Clunk" = NWS VALVE OPENING



WOW Switch System

The Weight-On-Wheels (WOW) switch system provides:

- IN-AIR
- ON-GROUND

SENSING FOR AIRCRAFT COMPONENTS THAT OPERATE ONLY IN SPECIFIC REGIMES, SUCH AS:

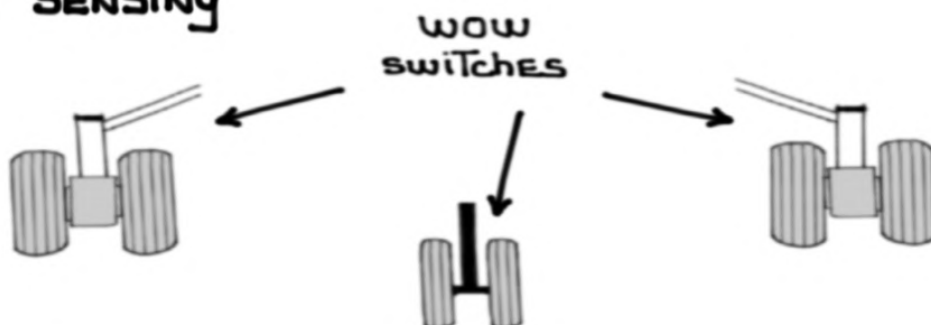
- ENGINE THRUST REVERSERS
- GROUND SPOILERS
- NOSE WHEEL STEERING

REQUIRE ON-GROUND WOW signal for operation

- WEATHER RADAR
- TCAS
- CABIN WINDOW HEAT
- LANDING GEAR

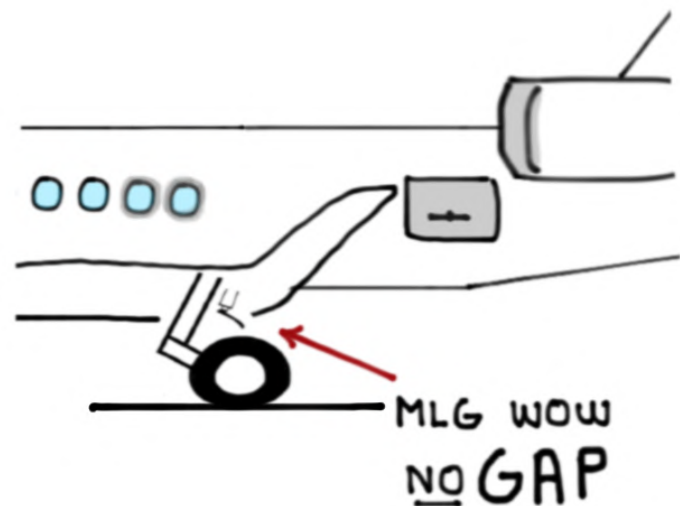
REQUIRE IN-AIR WOW signal for operation

- THREE (3) WOW switches, ONE (1) ON EACH gear, provide sensing



- MAIN LANDING GEAR (MLG) WOW SWITCHES

- MLG WOW SWITCHES HAVE A ROLLER ON A CAM. THE CAM ROTATES TO A LOW POINT AFTER TAKEOFF WHICH CAUSES THE SWITCH TO EXTEND
- THE MLG WOW SWITCHES "MAKE" ON-GROUND. THEY PHYSICALLY MAKE CONTACT
- DURING THE EXTERIOR PRE-FLIGHT INSPECTION THE CREW MUST CONFIRM THAT THERE IS NO GAP BETWEEN THE ROLLER AND THE CAM



- Nose Landing Gear (NLG) WOW Switch

- The NLG WOW switch is a microswitch that is either COMPRESSED OR NOT

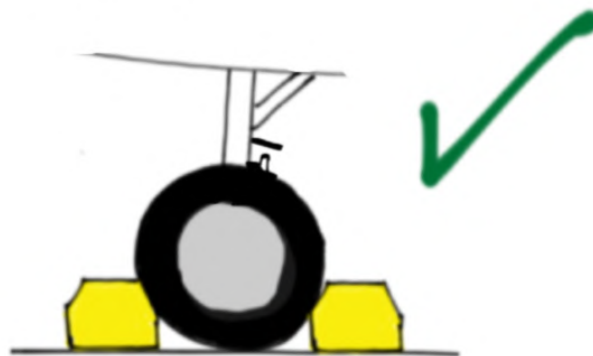
AIR mode



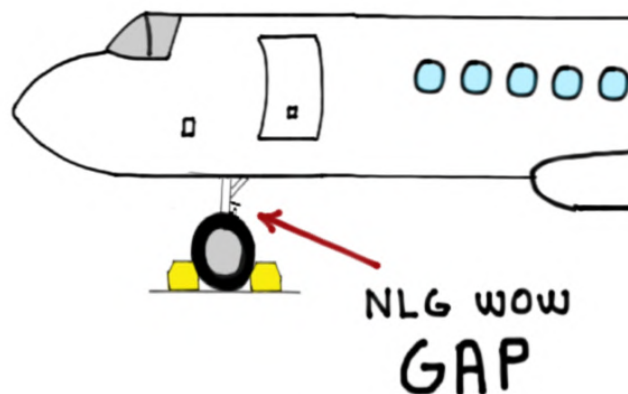
GROUND mode

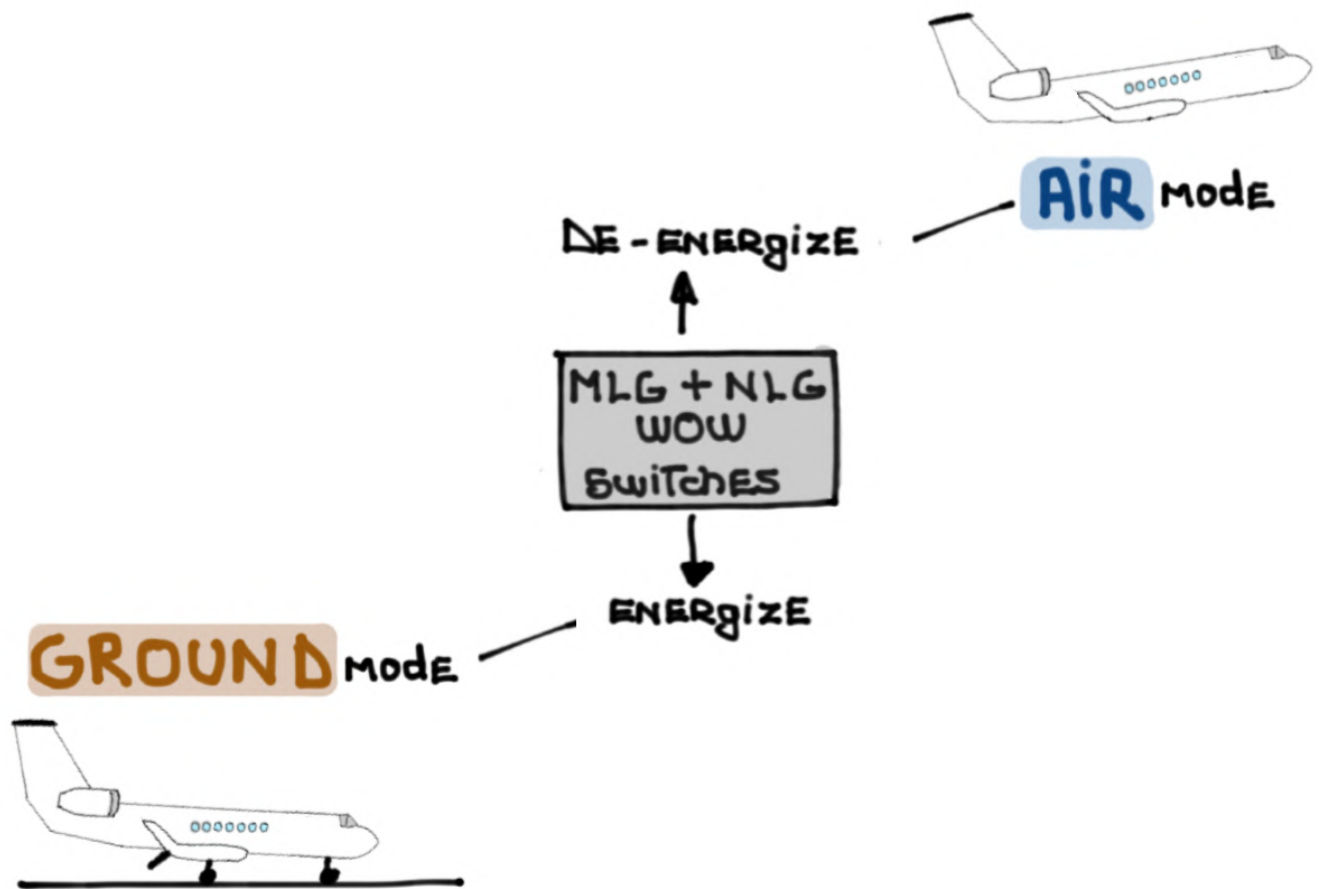


- The NLG WOW switch "BREAKS" ON-GROUND. IT DOES NOT MAKE CONTACT

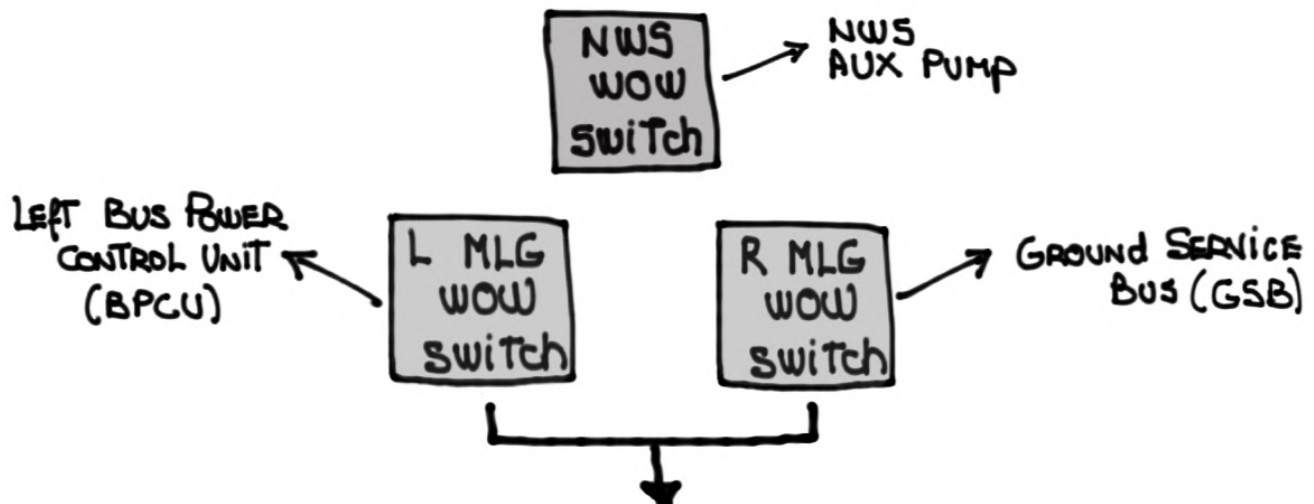


- DURING THE EXTERIOR PRE-flight INSPECTION THE CREW MUST CONFIRM THAT THERE IS A GAP





Dedicated WOW signal outputs:



- ON-side BRAKE CONTROL AND INDICATION
- ON-side THRUST REVERSER
- GROUND SPOILERS
- COMBINED WOW (THROUGH MAU #1 AND 2)

COMBINED WOW SIGNAL

COMBINED
WOW
SIGNAL



COMBINED
WOW
SIGNAL

AIR mode

AIR mode

AIR mode

=

AIR mode

L MLG
WOW
switch

+

R MLG
WOW
switch

AIR mode

=

GROUND mode

L MLG
WOW
switch

+

R MLG
WOW
switch

L MLG
WOW
switch

+

R MLG
WOW
switch

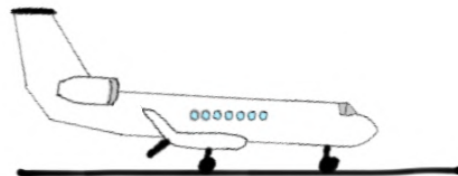
GROUND mode

=

GROUND mode

COMBINED
WOW
SIGNAL

GROUND mode



WOW FAULT WARNINGS



SPEED < 50 KTS

=

WOW FAULT CAS MESSAGE



RADAR ALTITUDE > 147.5 FEET

=

WOW FAULT CAS MESSAGE



COMBINED WOW DOES NOT HAVE ANYTHING TO DO WITH THE GROUND SPOILERS

COMBINED WOW DOES NOT PREVENT THE GROUND SPOILERS FROM DEPLOYING IN THE EVENT OF A **WOW FAULT**

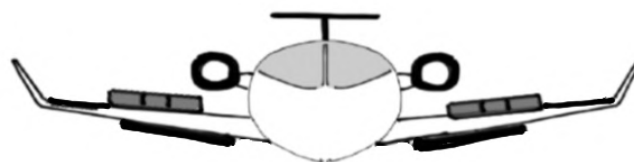
COMBINED WOW SIMPLY ADVISES THE CREW THAT THERE IS A PROBLEM. THEREFORE IF:

- ① **WOW FAULT** CAS MESSAGE AFTER TAKEOFF



- ② DISARM THE GROUND SPOILERS BEFORE RETARDING THE THRUST LEVERS TO IDLE

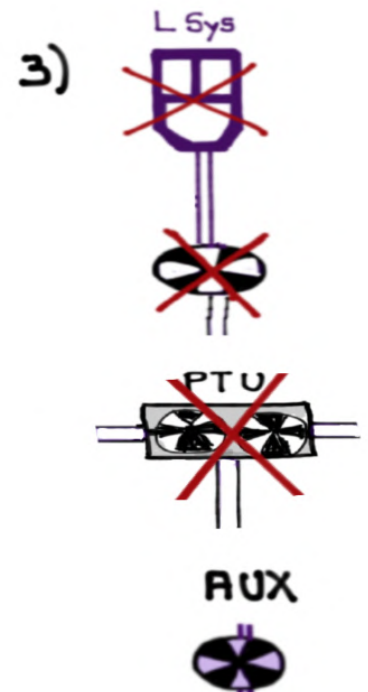
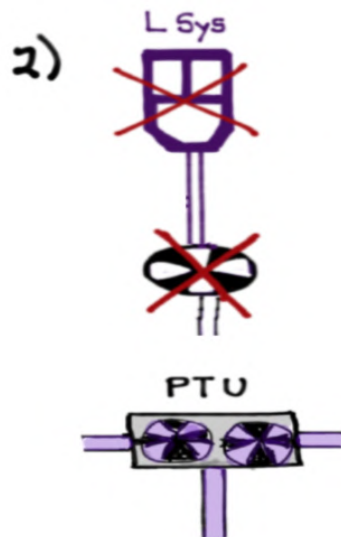
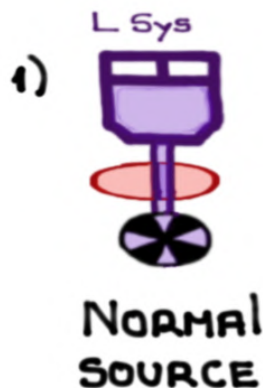
OTHERWISE THE GROUND SPOILERS, THREE (3) PANELS PER WING, WILL DEPLOY, DESTROY ALL LIFT... AND KILL YOU!



BRAKES

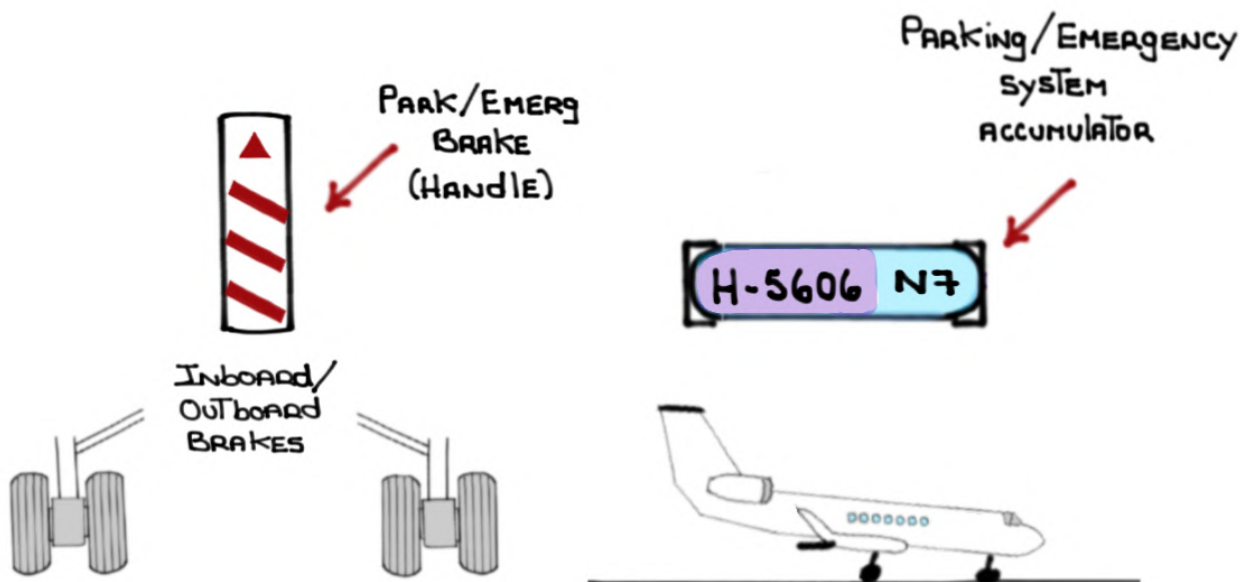
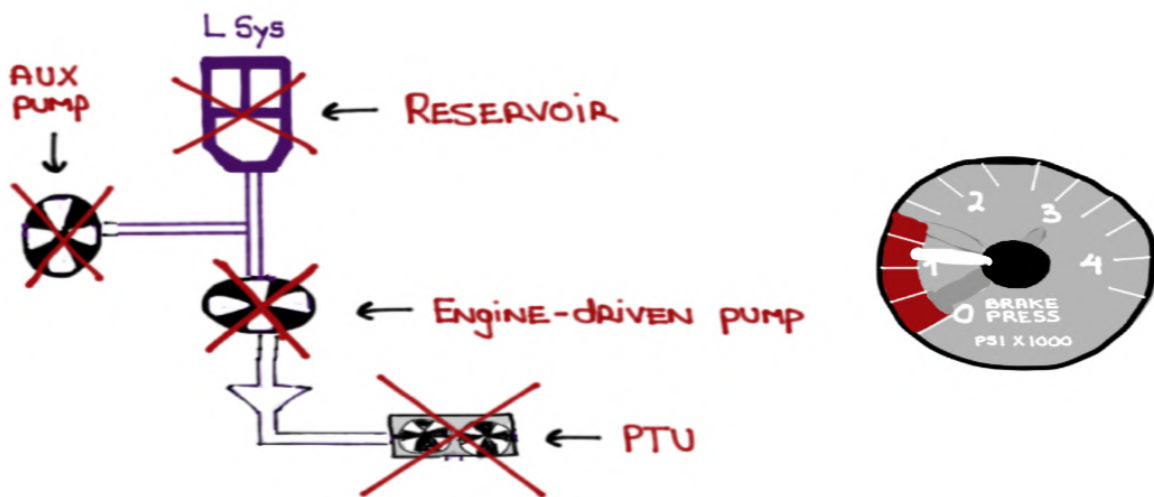
The main landing gear brakes are air-cooled, multiple carbon-fiber discs with anti-skid protection

- Overheat protection for tires and wheels is provided by fusible plugs in the wheels that melt, releasing tire pressure, if high temperature thresholds are exceeded
- A Brake Temperature Monitoring System (BTMS) monitors and displays brake temperatures
- Hydraulic pressure (3,000 psi) is provided by:

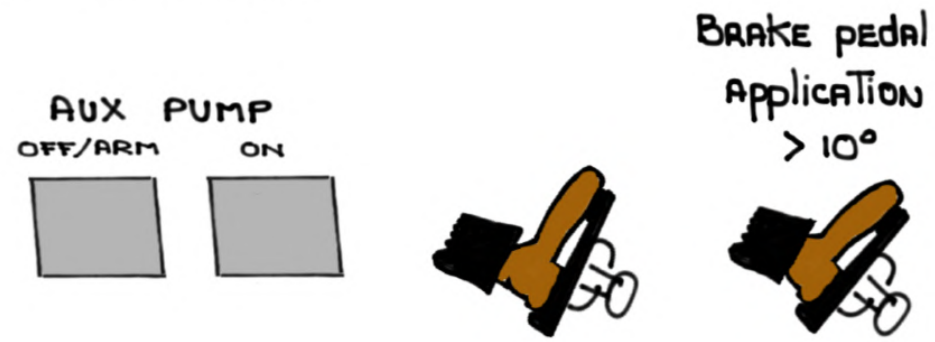


- If no hydraulic pressure/fluid is available from The **L** Hydraulic System:

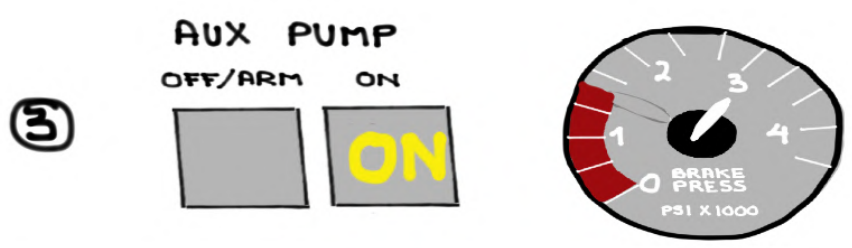
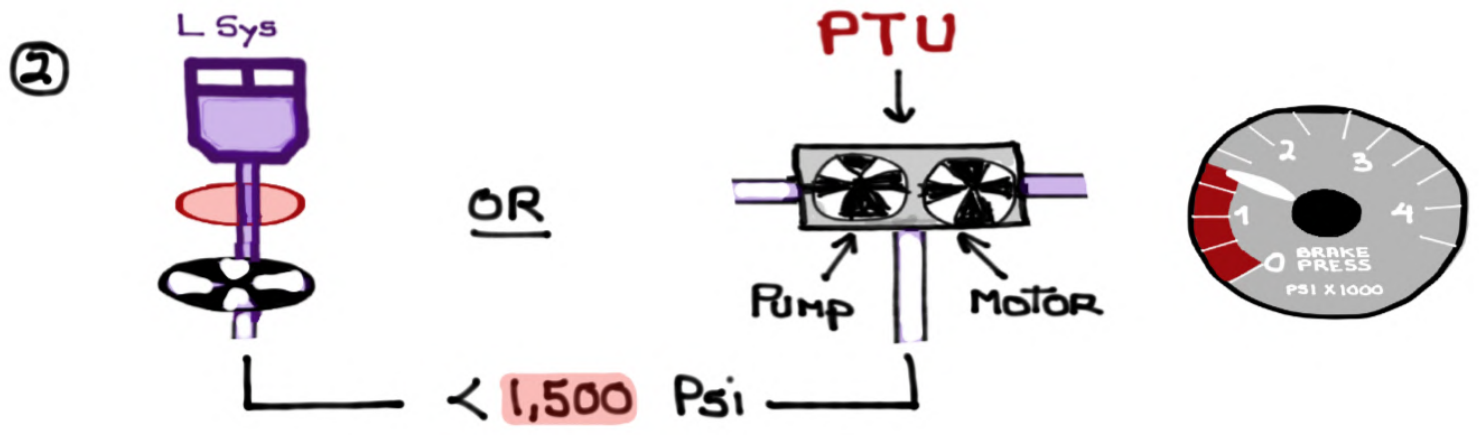
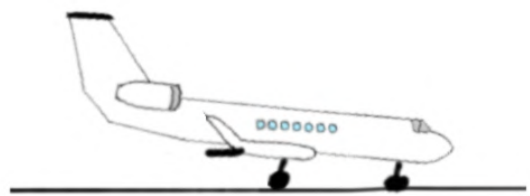
- ACCUMULATOR PRESSURE FROM THE PARKING/EMERGENCY BRAKE SYSTEM will provide **5** To **6** BRAKE APPLICATIONS
- BRAKING is APPLIED SIMULTANEOUSLY TO ALL FOUR **(4)** WHEEL BRAKES
- NO ANTI-SKID PROTECTION CAPABILITY



- If The BRAKE PEDALS ARE applied ($> 10^\circ$) AND LEFT HYDRAULIC SYSTEM PRESSURE IS $< 1,500$ Psi THE AUX PUMP AUTO LATCH FEATURE WILL COMMAND THE AUX PUMP, IF ARMED, TO COME **ON**



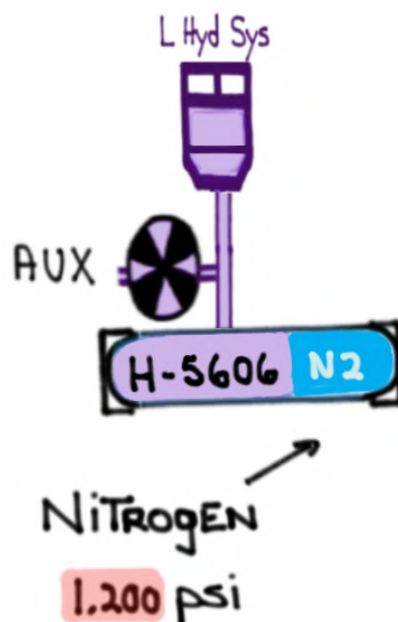
① WOW **GROUND** AND BRAKE PEDAL Application $> 10^\circ$



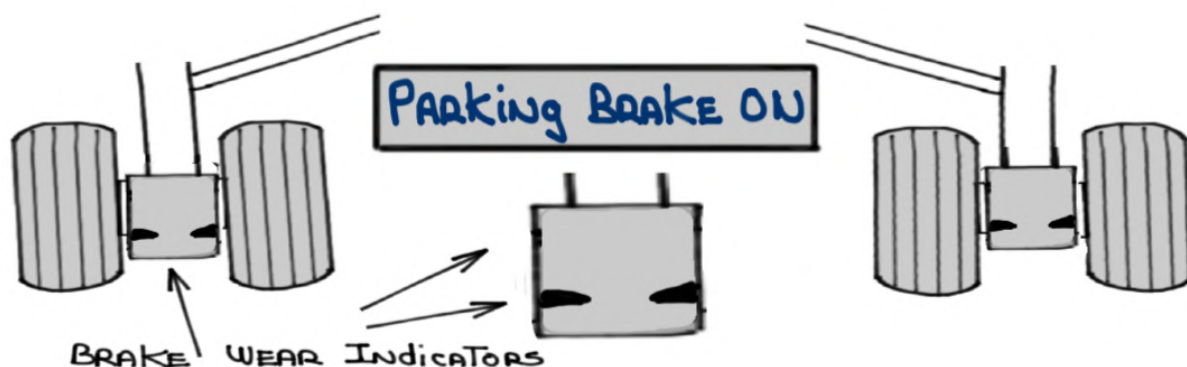
- PARKING BRAKE SYSTEM

THE PARKING BRAKE SYSTEM HAS AN ACCUMULATOR PRE-CHARGED TO 1,200 psi WITH NITROGEN AND HYDRAULICALLY CHARGED TO 3,000 psi

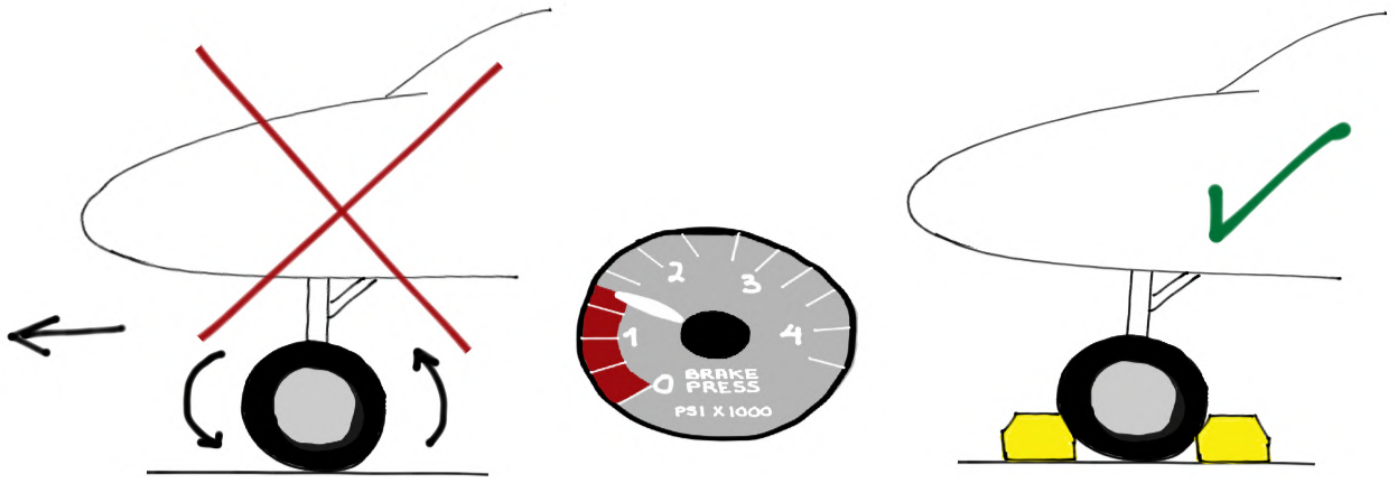
Hydraulically by:
charged
(3,000 psi)



PARKING BRAKE MUST BE SET PRIOR TO CHECKING THE BRAKE WEAR INDICATORS - "LIFE REMAINING"
(Two (2) in the front and Two (2) in the rear)



PARKING BRAKE ACCUMULATOR PRESSURE WILL DECREASE CONTINUOUSLY OVER A SHORT TIME. ALWAYS CHOCK AIRCRAFT UNTIL READY FOR ENGINE START. OTHERWISE IT MAY ROLL... AWAY



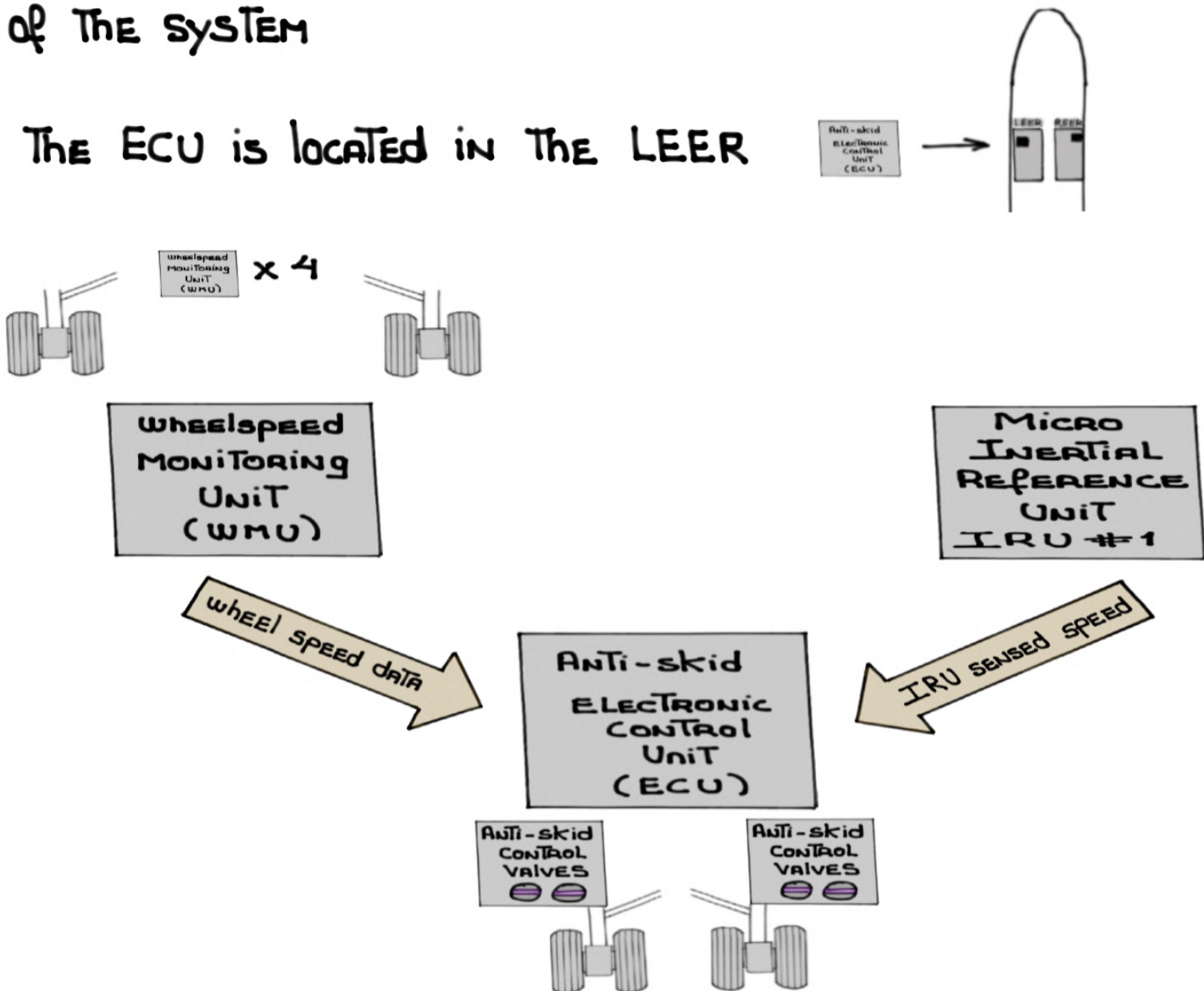
ANTI-skid PROTECTION

ANTI-skid PROTECTION FOR THE MAIN LANDING GEAR BRAKES IS PROVIDED DOWN TO TEN (10) KNOTS

BELOW THIS SPEED THE MAIN WHEELS BRAKES CAN BE LOCKED IN ORDER TO ALLOW TIGHT TURNS WHILE TAXIING

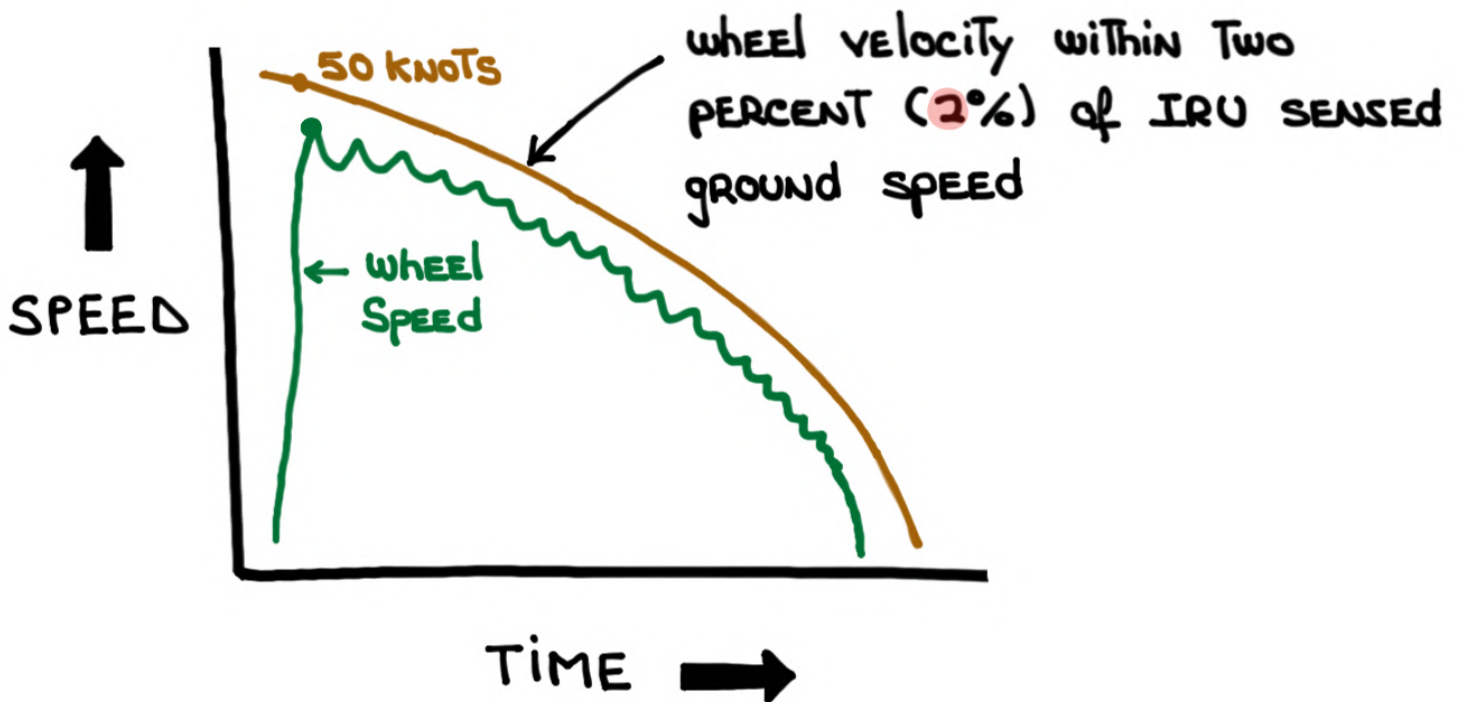
THE ANTI-skid ELECTRONIC CONTROL UNIT (ECU) IS THE BRAINS OF THE SYSTEM

THE ECU IS LOCATED IN THE LEER



ANTI-skid
ELECTRONIC
CONTROL
UNIT
(ECU)

THE ENDEAVORS TO KEEP WHEEL ROTATION VELOCITY WITHIN TWO PERCENT (2%) OF IRU SENSED GROUND SPEED



IRU # 1: OUTBOARD
IRU # 2: INBOARD

TOUCHDOWN PROTECTION: PREVENTS LANDING WITH BRAKES ON

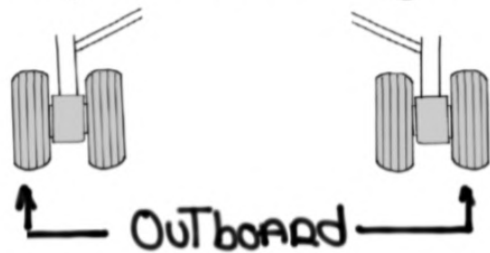
BRAKES AVAILABLE { WOW GROUND + 5 SECONDS, OR
WHEEL SPEED > 50 KTS

LOCKED WHEEL PROTECTION: COMPARES WHEEL SPEEDS

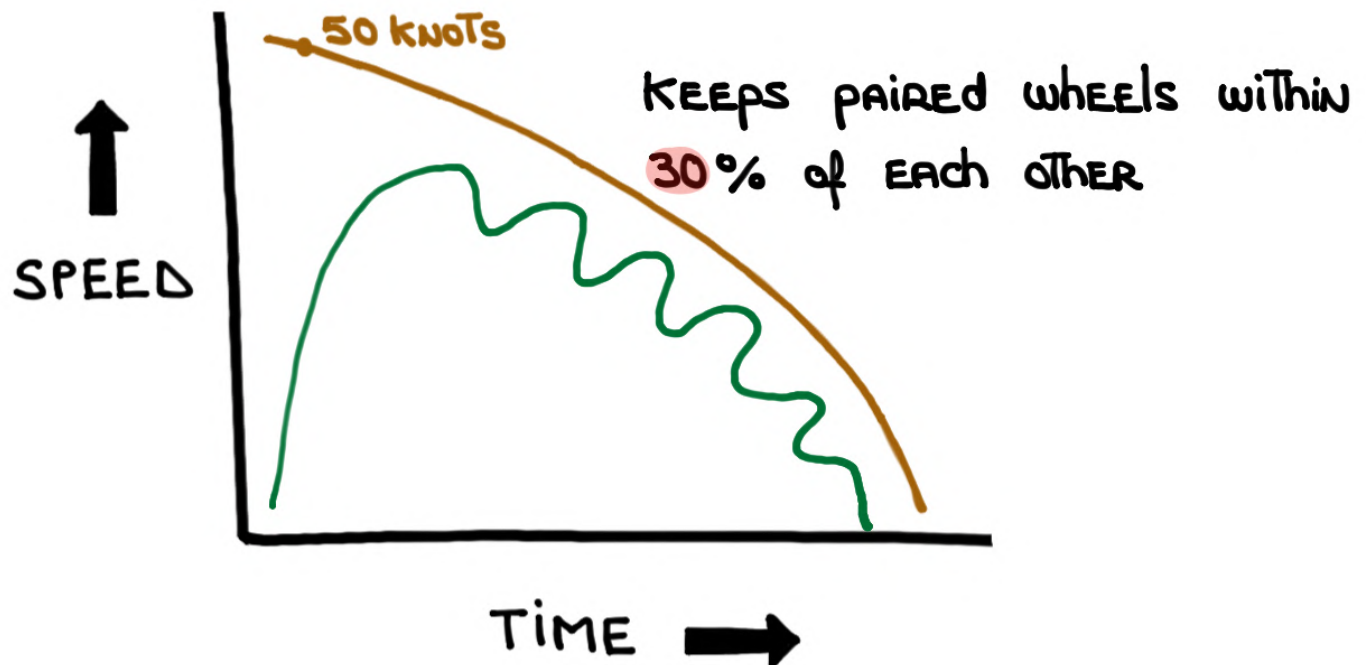
LEFT VERSUS RIGHT



LEFT VERSUS RIGHT



if **30%** < ITS PAIRED WHEEL = BRAKE PRESSURE RELEASED



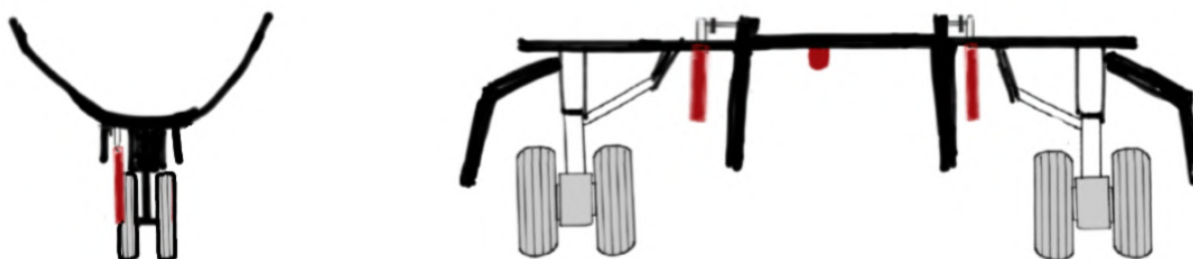
WHEEL SPIN DOWN: DECELERATES MAIN GEAR WHEELS PRIOR TO ENTERING THE WHEELWELLS WITH A THREE (3) SECOND BRAKE APPLICATION. IF IT FAILS A **WHEEL DESPIN FAIL** CAS MESSAGE ALERTS THE CREW

Safety Pins (6)


Each pin has a "REMOVE BEFORE flight" STREAMER

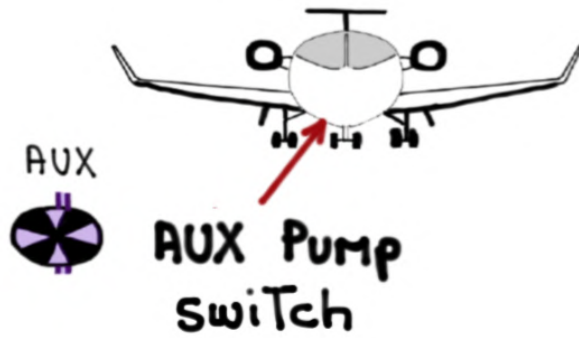


- THREE (3) GEAR PINS ARE INSTALLED AS PART OF THE Post-flight inspection. The pins MUST ALSO BE INSTALLED PRIOR TO TOWING. PINS MUST BE REMOVED FOR flight



Both pilots should CONFIRM ALL PINS HAVE BEEN REMOVED; if NOT, you'll GET TO RUN THE QRH'S "ATTEMPTED LANDING GEAR RETRACTION WITH SAFETY PINS INSTALLED."

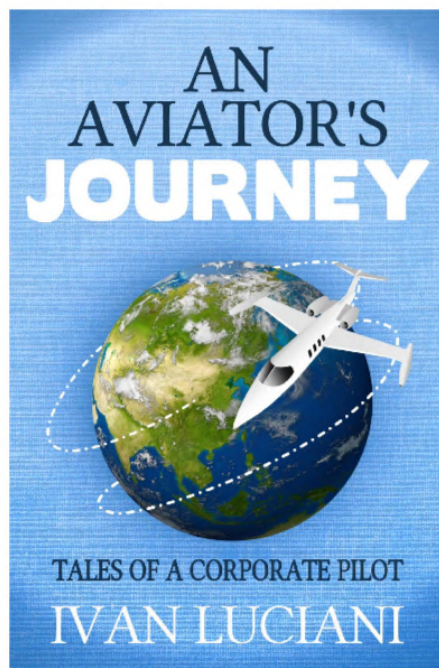
The  pump is used To open The gear doors



REMINDER: these system notes are intended for study purposes only. Always refer to official Gulfstream manuals and other approved references when operating your aircraft.

NOTE: these system notes are updated from time to time and what is posted on Code450.com will always be the most recent version.

Questions, comments or errors...please do send me an email:
ivan@code7700.com



Thank you!