

BEFORE START...
...ENGINE START...
...AFTER START



PF

PNF

1.a. BEFORE START

LOADSHEET.....CHECK

TAKEOFF DATA.....ENTER/REVISE

TAKEOFF DATA.....XCHECK

COCKPIT DOOR.....CLOSED

SEAT BELTS.....ADJUST

SEAT BELTS.....ADJUST

MCDU.....PERF TO

MCDU.....F-PLN

EXT PWR.....OFF

ORDER...."BEFORE START C/L down to the line"

BEFORE START down to the line....PERFORM

ANNOUNCE....."BEFORE START C/L
down to the line COMPLETED"

- Confirm any takeoff weight limitation.
- Ask for external power disconnection

PF

PNF

1.b. BEFORE START

NW STRG DISC MEMO.....CHECK
 WINDOWS and DOORS.....CHECK CLOSED
 THR LEVERS.....IDLE
 PARKING BRAKE ACCU PRESS.....CHECK
 PARKING BRAKE.....ON

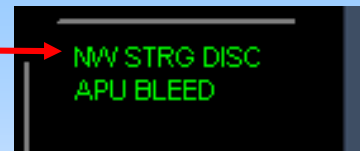
PUSHBACK/START CLEARANCE.....OBTAIN
 WINDOWS.....CHECK
 BEACON.....ON

ORDER....."BEFORE START C/L below the line"

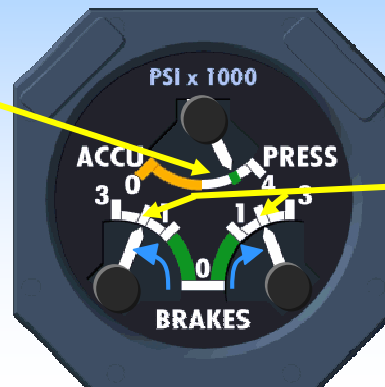
BEFORE START C/L below the line....PERFORM
 ANNOUNCE....."BEFORE START C/L
 COMPLETE"

GROUND CREW COMMUNICATION...ESTABLISH

➤ **CAUTION! DO NOT PERFORM** the pushback if **NW STRG DISC** not displayed on the ECAM MEMO to avoid damages to the nose landing gear.



The BRAKE ACCU PRESS must be in the **green band**



When PARKING BRAKE is ON:
 ➤ brake pressure is shown
 ➤ **PARK BRK MEMO** is displayed

PF


PNF

2. AUTOMATIC ENGINE START SEQUENCE

ENG START SEL.....IGN/START

BLEED PRESSURE.....CHECK

ANNOUNCE....."STARTING ENGINE 1&2" 

MASTER SW 1 then 2.....ON 

START VALVE OPENS
 N2 INCREASES (N3 for RR)
 IGNITER
 FUEL FLOW
 EGT
 N1
 OIL PRESS
 START VALVE CLOSE
 • 50% N2

} ..CHECK

ENG IDLE PARAMETERS.....CHECK NORMAL 

ANNOUNCE....."STARTING ENGINE 3&4"

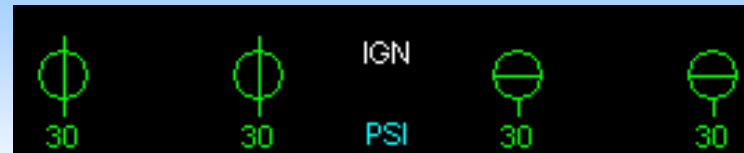
REPEAT START SEQUENCE FOR ENG 3&4.....

Start ENG 3 & 4 ONCE

AVAIL is displayed for both ENG 1 & ENG 2



ECAM ENGINE page



➤ Check BLEED PRESSURE on ECAM page.

3.a. AFTER START

ENG START SEL.....NORM

----- End of START sequence : Signal for PNF actions -----

APU BLEED.....OFF 

ECAM STATUS.....CHECK

ECAM DOOR PAGE.....CHECK

ANNOUNCE....."CLEAR TO DISCONNECT"

1. GND SPLRS.....ARM

2. RUD TRIM.....RESET

3. FLAPS.....SET

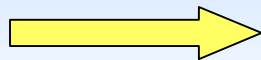
4. PITCH TRIM.....SET 

5. { ENG ANTI ICE.....AS RQRD 
WING ANTI ICE.....AS RQRD

6. APU MASTER SW.....OFF



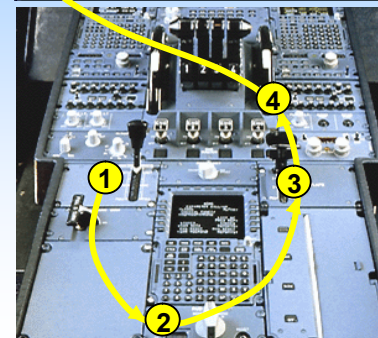
ENG START SEL
back to NORM



ECAM



Overhead
Panel



Pedestal

PF

PNF

3.b. AFTER START

NWS TOWING FAULT LT extinguished...CHECK 

AFTER START C/L

➤ Observe the ECAM MEMO: 

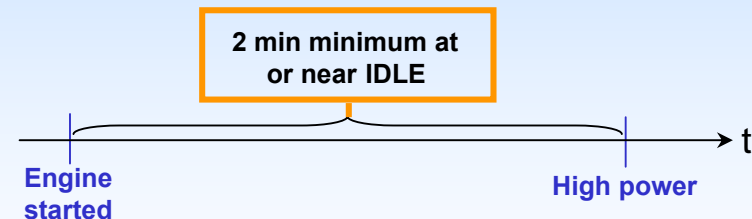
```
SEAT BELTS  
NO SMOKING  
GND SPLRS ARMED
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```
PARK BRK  
TCAS STBY  
PRED WWS OFF
```

```
T.O SIGNS ON  
CABIN READY  
SPLRS ARMED  
FLAPS T.O  
AUTO BRK ..... MAX  
T.O CONFIG ..... TEST
```



➤ To stabilize engine hot section temperature:



➤ If icing conditions : 

PF

PNF

2. AUTOMATIC ENGINE START SEQUENCE

ENG START SEL.....IGN/START

BLEED PRESSURE.....CHECK

ANNOUNCE....."STARTING ENGINE 1&2" 

- **ENG 2** powers the **blue hydraulic system**, which pressurizes the parking brake.
- **DO NOT SET** the MASTER switch ON before all amber crosses and messages have disappeared on engine parameters (upper ECAM display).

PF

PNF

2. AUTOMATIC ENGINE START SEQUENCE

ENG START SEL.....IGN/START

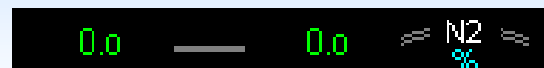
BLEED PRESSURE.....CHECK

ANNOUNCE....."STARTING ENGINE 1&2" 

MASTER SW 1 then 2.....ON 

➤ Each pilot monitors one engine.

➤ Engine 1 & 2 start sequence :



ENG 1 MASTER switch ON



ENG 2 MASTER switch ON

Permits correct operation of the NO Break Power Transfer

PF

PNF

2. AUTOMATIC ENGINE START SEQUENCE

ENG START SEL.....IGN/START

BLEED PRESSURE.....CHECK

ANNOUNCE....."STARTING ENGINE 1&2" 

MASTER SW 1 then 2.....ON 

START VALVE OPENS

N2 INCREASES (N3 for RR)

IGNITER

FUEL FLOW

EGT

N1

OIL PRESS

START VALVE CLOSE

• 50% N2

..CHECK

ENG IDLE PARAMETERS.....CHECK NORMAL 

ANNOUNCE....."STARTING ENGINE 3&4"

REPEAT START SEQUENCE FOR ENG 3&4.....

NORMAL ENGINE IDLE PARAMETERS AT ISA SEA LEVEL

N1.....about 20%

EGT.....about 400° C

N2.....about 60%

FF.....about 300 kg/h (660 lb/h)

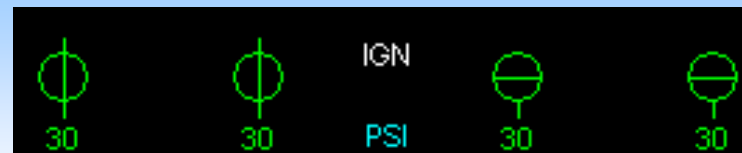
Start ENG 3 & 4 ONCE

AVAIL is displayed for
both ENG 1 & ENG 2



ECAM ENGINE page

➤ Check BLEED PRESSURE on ECAM page.



3.a. AFTER START

ENG START SEL.....NORM

----- End of START sequence : Signal for PNF actions -----

APU BLEED.....OFF 

➤ Turn APU BLEED OFF just after engine start to avoid ingesting engine exhaust gases.

ECAM STATUS.....CHECK

ECAM DOOR PAGE.....CHECK

ANNOUNCE....."CLEAR TO DISCONNECT"

1. GND SPLRS.....ARM

2. RUD TRIM.....RESET

3. FLAPS.....SET

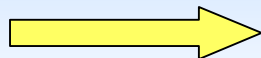
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5. { ENG ANTI ICE.....AS RQRD 
WING ANTI ICE.....AS RQRD

6. APU MASTER SW.....OFF



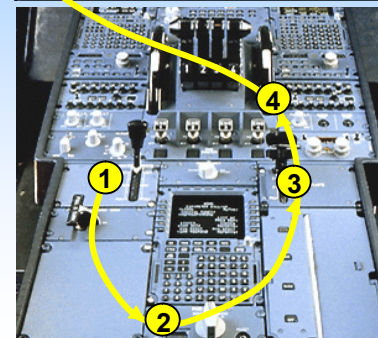
ENG START SEL
back to NORM



ECAM



Overhead Panel



Pedestal

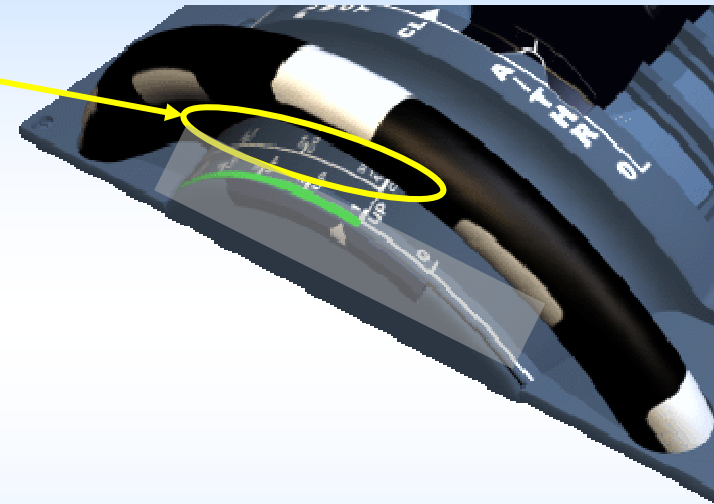


➤ Set Takeoff CG on the pitch trim wheel

➤ For this purpose, use the actual CG indicated on the ECAM :

TAT +17 °C		GW 179840 KG
SAT +14 °C	13 H 28	GWCG 29.0 %

➤ The Takeoff CG value must be within the **green band** limits.



WHEN ARE ENG & WING ANTI ICE REQUIRED ?



Engine anti-ice

OAT or TAT $\leq 10^{\circ}$ C with visible moisture in the air, standing water, slush, ice or snow on the taxiways or runways

ICING
CONDITIONS
expected

ENG ANTI ICE
must be ON

Wing anti-ice

Prevent ice formation

OR

Ice accumulation on the wing leading edges

OR

Ice accumulation on the visual ice indicator or on the windshield wipers

WING ANTI ICE
recommended

CAUTION! In icing conditions, minimise flight duration with the slats extended.

3.b. AFTER START

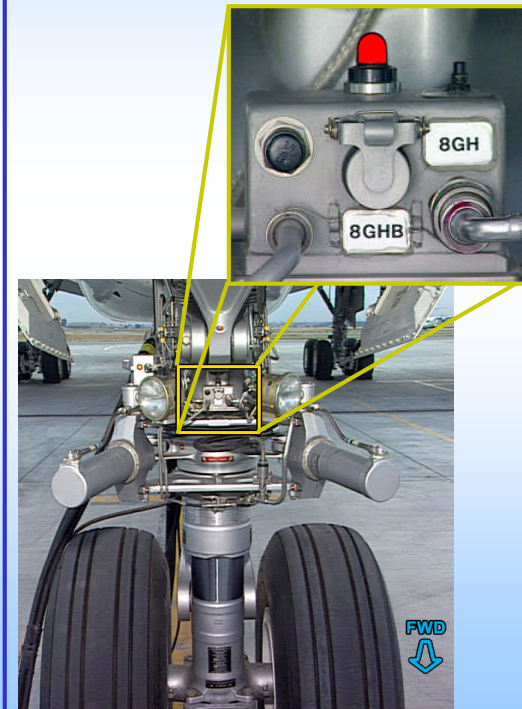
NWS TOWING FAULT LT extinguished...CHECK 

If nosewheel steering has exceeded 93°



NO GO
Maintenance action required

Illumination of the red oversteer warning light



PF

PNF

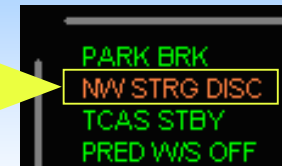
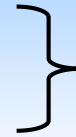
3.b. AFTER START

NWS TOWING FAULT LT extinguished...CHECK 

AFTER START C/L

➤ Observe the ECAM MEMO: 

NW STRG still disconnected
+
at least 1 engine running



PF

PNF

3.b. AFTER START

NWS TOWING FAULT LT extinguished...CHECK 

AFTER START C/L

- If icing conditions > 30min
OR
Significant engine vibration



On ground, perform an ENGINE RUN-UP (70% N1 minimum) for approximately 15 sec prior to higher thrust in order to centrifuge any ice from the engine's rotating parts

➤ If icing conditions : 