

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

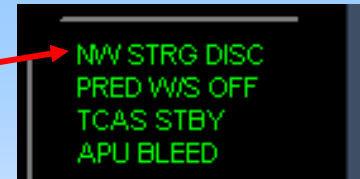
BEACON.....ON

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

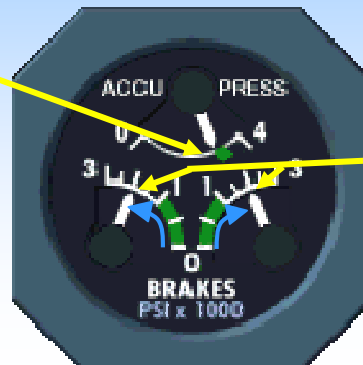
BEFORE START C/L below the line...PERFORM
ANNOUNCE....."BEFORE START C/L
COMPLETE"

GROUND CREW COMMUNICATION...ESTABLISH

➤ **CAUTION! DO NOT PERFORM** any 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 MODE SEL.....IGN/START

BLEED PRESSURE.....CHECK

ANNOUNCE....."STARTING ENGINE 2" 

MASTER SW 2.....ON

START VALVE OPENS
 N2 INCREASES
 IGNITER
 FUEL FLOW
 EGT
 N1
 OIL PRESS
 START VALVE CLOSE
 • 50% N2 CFM
 • 43% N2 IAE

.....CHECK

ENG IDLE PARAMETERS.....CHECK NORMAL 

ANNOUNCE....."STARTING ENGINE 1"

REPEAT START SEQUENCE FOR ENG 1.....

➤ Check BLEED PRESSURE on ECAM page.



ECAM ENGINE page

PF

PNF

3.a. AFTER START

ENG MODE 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

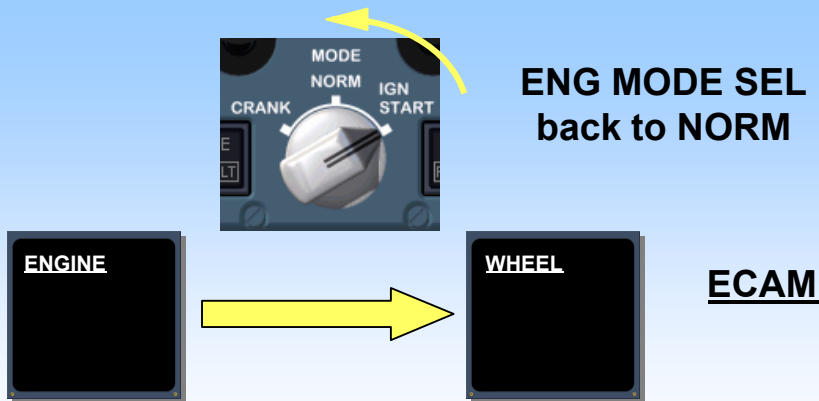
4. PITCH TRIM.....SET



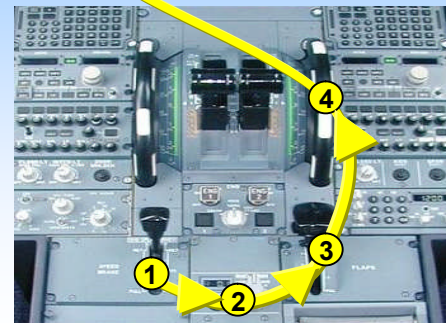
5. { ENG ANTI ICE.....AS RQRD
WING ANTI ICE.....AS RQRD



6. APU MASTER SW.....OFF



Overhead Panel



Pedestal

PF

PNF

3.b. AFTER START

AFTER START C/L

➤ Observe the ECAM MEMO: 

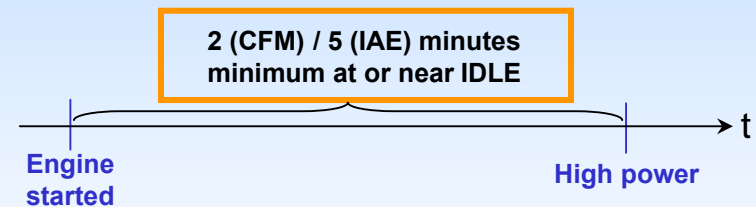
```
GND SPLRS ARMED
SEAT BELTS
NO SMOKING
```

```
PARK BRK
PRED W/S OFF
TCAS STBY
```

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



➤ To stabilize engine hot section temperature:



➤ If icing conditions : IAE :  CFM : 

PF

PNF

1.b. BEFORE START

NW STRG DISC MEMO.....CHECK



PUSHBACK/START CLEARANCE.....OBTAIN

In case of:

➤ **Pushback:**

Nose wheel steering selector bypass pin must be on tow position.

➤ **Power push by the main landing gear:**



Nose wheel steering selector should remain in normal position to steer the aircraft.

Refer to *Fcom 3.04.80*

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 

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

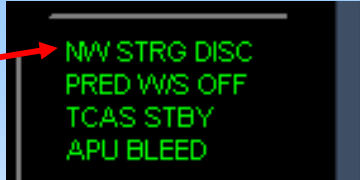
GROUND CREW COMMUNICATION...ESTABLISH

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

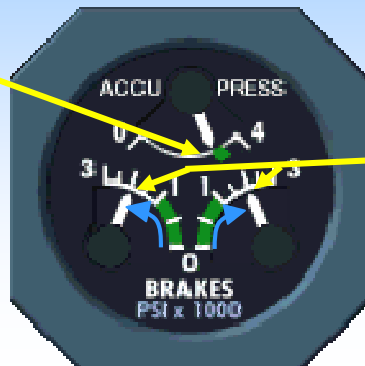
➤ If the aircraft moves despite of PARKING BRK ON, immediately release PARKING BRK handle to restore pedals braking.

ANNOUNCE....."BEFORE START C/L COMPLETE"

➤ **CAUTION! DO NOT PERFORM** any 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 MODE SEL.....IGN/START

BLEED PRESSURE.....CHECK

ANNOUNCE....."STARTING ENGINE 2" 

- **ENG 2 is started first** because it powers the **yellow hydraulic system**, which pressurizes the parking brake.
- **DO NOT TURN** the MASTER switch ON before all amber crosses (IAE, amber crosses remain on N1 and N2 until about 3.5%) and messages have disappeared on engine parameters (upper ECAM display).

**NORMAL ENGINE IDLE PARAMETERS
AT ISA SEA LEVEL** 

IAE:

EPR.....about 1.01

EGT.....about 414° C

N1.....about 21.4%

N2.....about 57.8%

FF.....about 350 kg/h (775 lb/h)

CFM:

N1.....about 19.5%

EGT.....about 390° C

N2.....about 58.5%

FF.....about 275 kg/h (600 lb/h)

PF

PNF

3.a. AFTER START

ENG MODE 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

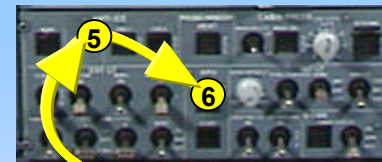
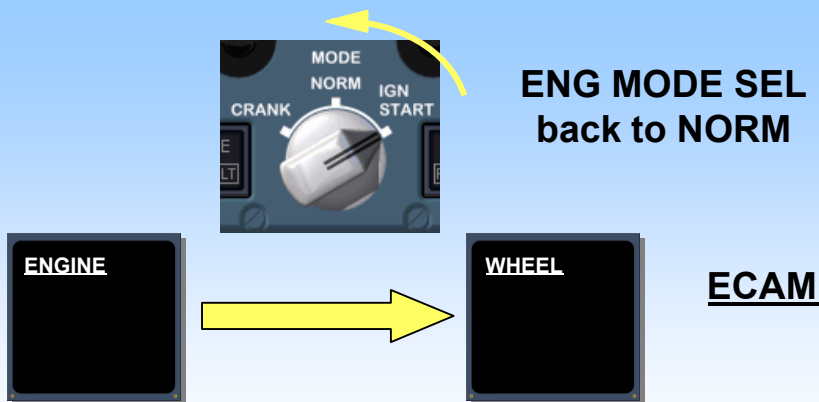
2. RUD TRIM.....RESET

3. FLAPS.....SET

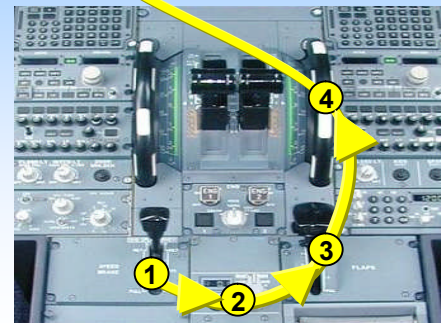
4. PITCH TRIM.....SET 

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

6. APU MASTER SW.....OFF



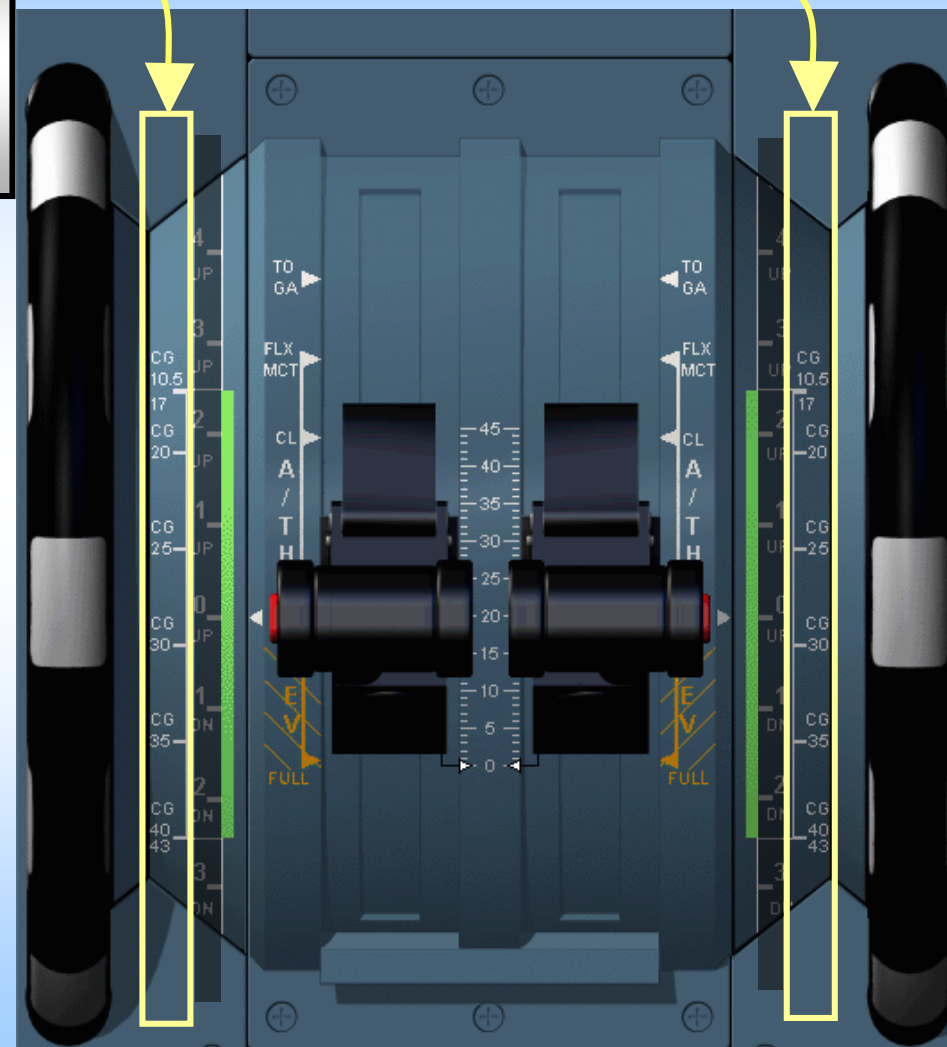
Overhead Panel



Pedestal



- Set the pitch trim position using the **Takeoff CG value** in order to avoid up/down THS position mistakes.
- 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.

PF

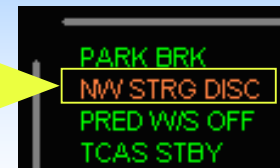
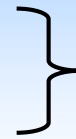
PNF

3.b. AFTER START

AFTER START C/L

➤ Observe the ECAM MEMO: 

NW STRG still disconnected
+
at least 1 engine running



PARK BRK
NW STRG DISC
PRED W/S OFF
TCAS STBY

PF

PNF

3.b. AFTER START

AFTER START C/L

• If icing conditions
&
OAT ≤ 3° C

On ground, perform PERIODIC ENGINE RUN-UP (50% N1 recommended) to centrifuge any ice from the engine's rotating parts at intervals not greater than 15 min.

AND

Take off should be preceded by a STATIC RUN-UP (50% N1 recommended) with observation of all primary parameters

• ENG ANTI ICE
ON

Continuous ignition
automatically selected

PARK BRK
IGNITION
PRED W/S OFF
TCAS STBY
ENG A. ICE

IAE :



PF

PNF

3.b. AFTER START

AFTER START C/L

- If icing conditions duration > 30 minutes
OR
significant engine vibrations

INCREASE THRUST to approximately 70% N1 for 30 seconds or as high as practical if the airport conditions do not permit it, before operating at higher thrust

Take off should be preceded by a STATIC RUN-UP (70% N1 recommended) with observation of all primary parameters

- ENG ANTI ICE
ON

Continuous ignition
automatically selected

```
PARK BRK
IGNITION
PRED W/S OFF
TCAS STBY
ENG A. ICE
```

CFM : 