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DO NOT USE FOR REAL WORLD AVIATION!

DA40NG
Flight Operations Manual

Revision 1.0
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VATSIM SCANDINAVIA

CONTENT

SECTION 1 - INTRODUCTION

This document has been prepared for Vatsim Scandinavian Pilot Training Department (shortened VSPTD) use and should not be shared or used in other then VSPTD staff and students. NEVER USE THIS DOCUMENT OR ANY OTHER VSPTD DOCUMENT FOR ANY PURPOSE OTHER THAN SIMULATING FLIGHT IN A SIMULATOR!

SECTION 2 - LIMITATIONS

AUTOPILOT GFC700

Autopilot need to be off for takeoff
Maximum speed for operation: 165 KIAS
Minimum speed for operation: 70 KIAS
Minimum altitude for operation other than approach: 800ft
Minimum altitude for operation for approach: 200ft

TAXI

Maximum taxi speeds:
10kt GS on turn
15kt GS on straight
25kt GS on runway

SECTION 3 - STANDARD OPERATING PROCEDURES

GENERAL

In our training organisation, SOPs are the backbone of our commitment to excellence in aviation training. They establish a foundation of safety, consistency, and standardisation while allowing us to design and deliver high-quality training programs. By adhering to these SOPs, we empower our students to create a safe and conducive learning environment, equip our students with the skills and knowledge they need for success, and ensure our organisation remains at the forefront of aviation education.

FLOW PROCEDURE

The flow procedure employs a "do and verify" method for completing checklists. All procedures for the DA 40 NG aircraft are performed in a systematic flow pattern. This pattern represents a predetermined path that the pilot follows in the cockpit, with each pattern associated with a specific flight phase. Most of the items in the flow procedure are also listed in the expanded checklist. These items and their conditions are memorised and executed without the immediate need for reference to a checklist.

In contrast to a "read and do" checklist, where each item and its associated action are announced, flow pattern items are completed silently.

The normal checklist, following the flow pattern, is completed audibly, similar to a "read and do" checklist. The flow procedure is initiated when the specific flight phase requires it.

MANIPULATING BUTTONS AND SWITCHES

The only exceptions to above are during school flights or when making changes such as flipping a switch, in which case the pilot verbally states the action being performed.

TAKEOFF

Takeoff should be done according to the SECTION 5 profile image.

POWER REDACTION

Power reduction to 92% should be done after passing 1000 ft AGL because maximum power is limited to 5 min use at the time.

TRAFFIC CIRCUIT

In circuit speed should be around 90 KIAS which means around 30-40% of power.

APPROACH

Aircraft should be stabilised at 200 ft AGL in traffic circuit and 1000 ft AGL in IFR operations.

USAGE OF LIGHTS

STROBE LIGHT:

Strobe light is an indication of engine running and should be ON prior engine start. It should be switched OFF during shutdown flow.

TAXI LIGHT:

Taxi light should be switched on during taxi and lining up to the runway. Taxi light should be switched OFF when being stopped.
After departure taxi light should be switched OFF after passing power reduction altitude of 1000 ft AGL.
During approach taxi light should be switched ON after landing or touch and go clearance is received.

LANDING LIGHT:

After takeoff clearance has been received landing light should be switched ON and used until reaching cruising level. Landing light should be switched back on when leaving cruising level.
After landing light should be switched OFF after vacation off the runway.

POSITION LIGHT:

Position lights should be switched ON prior to engine start and be ON until engine is shut down and then switched OFF.

BEFORE STARTING ENGINE

ALL NECESSARY SOFTWARE.....OPENED

VATSIM.....CONECTED

FLIGHT PLAN.....FILLED

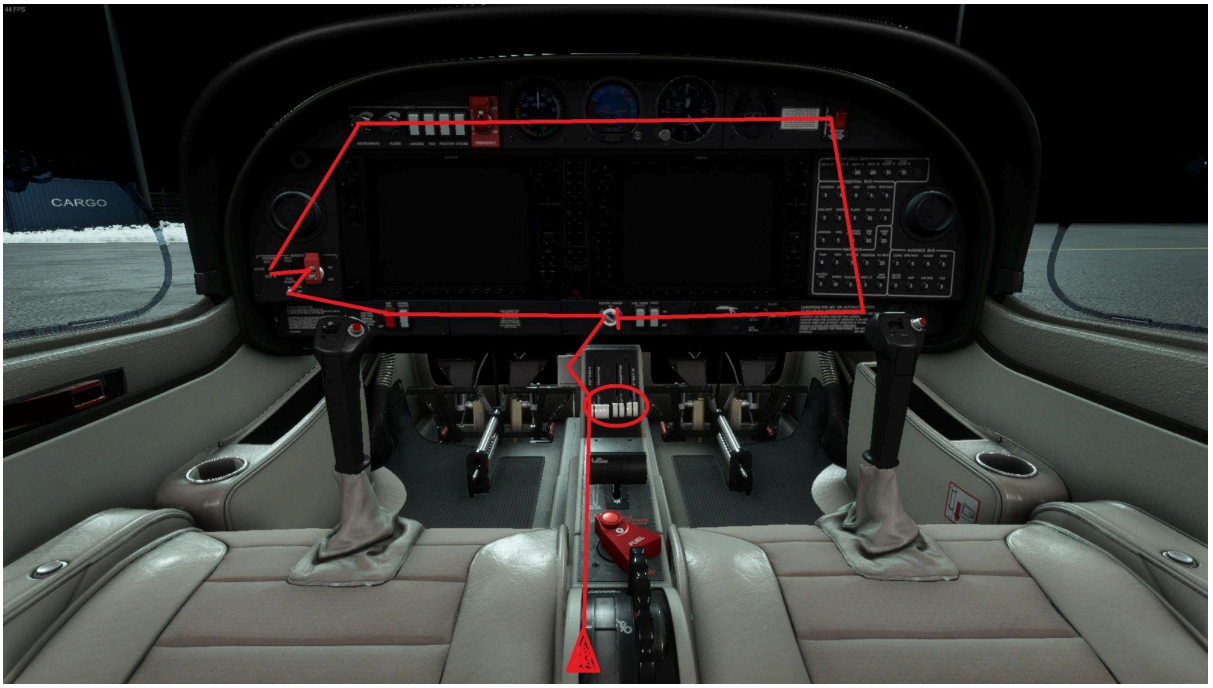
CREW AND EMERGENCY BRIEFING.....COMPLETE

Go through the crew briefing and emergency procedures as necessary.

COCKPIT PREPARATION

YOUR CONTROLS .....CONNECTED AND SYNCED

BEFORE ENGINE START FLOW



PITCH TRIM .....SET FOR TAKEOFF

FUEL VALVE..... NORMAL

POWER LEVER..... IDLE

PARKING BRAKE.....ON

HEATER & DEFROSTER ..... OFF

ALTERNATE AIR.....CLOSED

ELECTRIC MASTER .....OFF

AVIONICS MASTER..... OFF

ESSENTIAL BUS..... OFF

FUEL PUMPS..... OFF

ENGINE MASTER ..... OFF

VOTER SWITCH ..... AUTO

LIGHTS..... OFF

EMERGENCY SWITCH..... OFF AND GUARDED

ELT..... ARMED

CIRCUIT BREAKERS..... CHECK IN

FLAPS ..... UP

PITOT HEAT..... OFF

FUEL TRANSFER PUMP ..... OFF

ELECTRIC MASTER .....ON

G1000..... SET

Check that the navigation database is current. Check that fuel quantity is set accordingly both on sim settings and instruments. Check that the fuel temperature is in the green range.

STROBE LIGHT.....ON

POSITION LIGHTS.....ON

“Before starting engine checklist”, “Before starting engine checklist completed”

STARTING ENGINE FLOW

PROPELLER AREA..... CLEAR

“Propeller area clear”, “Engine master on”

ENGINE MASTER ..... ON

ENGINE GLOW.....ON, THEN OFF

“Glow on – Glow off”, “No Glow”, “Starting engine”

STARTER.....START

OIL PRESSURE..... NORMAL WITHIN 3 SECS

“Oil pressure checked”

RPM.....CHECKED 710 +/- 30 AND SET

“RPM checked”

VOLTS AND AMPS.....NORMAL

“Amps checked”

ENGINE INSTRUMENTS ..... CHECKED

“Engine instruments checked”

AFTER STARTING ENGINE FLOW

PITOT HEAT.....ON, THEN OFF

AVIONICS MASTER..... ON

FLOOD AND INSTRUMENT LIGHTS .....ON AS REQUIRED

CIRCUIT BREAKERS..... CHECK IN

FLAPS .....FULL TRAVEL CHECK, THEN T/O

HEATER AND DEFROSTER .....SET

AUDIO PANEL AND FREQUENCIES.....SET

ATIS .....RECEIVE

ALTIMETERS (2).....SET

“QNH XXXX, XXX ft”, “QNH XXXX, XXX ft”

CLEARANCE..... REQUEST

FMS/G1000.....SET

HDG/ALT/SPEED BUGS.....SET

XPDR/DME/HSI/BEARING POINTERS/NAV/COM .....SET

AUTOPILOT .....CHECK

“Autopilot On” “Roll, Autopilot, Pitch Green, Alts White” “Autopilot Off” “Flight director off”

TAXIING AND TAKEOFF BRIEFING.....PERFORM

“After starting engine checklist”, “After starting engine checklist completed”

TAXIING FLOW

TAXI CLEARANCE ..... REQUEST

CLEARANCE LIMIT..... CHECKED

“Holding X, Runway XX”

TAXI AREA ..... CLEAR

“Clear left / right”, “Stop”

TAXI LIGHT..... ON

PARKING BRAKE ..... DISENGAGE

BRAKES..... CHECKED

“Brakes”

STEERING ..... CHECKED

“Steering”

TURN RATE AND SLIP/SKID INDICATOR ..... CHECKED

“Turning, skidding”

STANDBY HORIZON..... CHECK ALIGNING

FLIGHT INSTRUMENTS ..... CHECKED

“Speed zero, wings level, QNH XXXX, XXX feet, vertical speed zero, headings checked”

“Flight instruments checked”, Instructor: “Cross Checked”

PARKING BRAKE ..... ON

TAXI LIGHT..... OFF

BEFORE TAKEOFF FLOW

PITCH TRIM..... SET FOR TAKE-OFF

POWER LEVER .....IDLE

FLIGHT CONTROLS .....FREE AND CORRECT

Student: “Flight controls check!” Instructor: “Go ahead!” “Flight controls, full up, full down, neutral, full left, full right, neutral”

FLAPS ..... T/O

ENGINE INSTRUMENTS .....CHECK

VOTER SWITCH .....A, AUTO, (B, AUTO)

“Voter check!, ECU A, AUTO, (B, AUTO)!”

ECU TEST..... PRESS AND HOLD

“E C U test!”

ECU A/B FAIL MESSAGES..... ON

“ECU A fail!, ECU B fail!”

2X PROP CYCLING 2 TIMES .....RPM ABOVE 1800

“RPM 1800 once and twice!” “RPM 1800 once and twice!”

ECU A/B FAIL MESSAGES..... OFF

ECU TEST BUTTON..... RELEASE

“E C U test completed!”

FUEL PUMPS ..... ON

TAKEOFF BRIEFING CONFIRMATION.....COMPLETED

AVAILABLE POWER .....DETERMINE

TRANSPONDER.....VERIFY

FUEL QUANTITY .....CHECK

MFD..... FPL / MAP PAGE

ALTERNATE AIR..... OPEN/CLOSED

“Before takeoff checklist”, “Before takeoff checklist completed”

LINE UP FLOW

“Confirm cleared to line up runway xx”, Instructor: “Confirmed”

TAXI LIGHT..... ON

PARKING BRAKE ..... RELEASE

ICE PROTECTION ..... A/R

“Ice protection” -.”Pitot heat ON!” / “Alternate air CLOSED/OPEN!”

RUNWAY AND HEADING ..... CHECKED

“Runway XX verified, Heading xxx” Instructor: “Checked”

TAKEOFF FLOW LANDING LIGHT.....WHEN T/O CLEARANCE RECEIVED - ON

TIMING..... START

“Takeoff!”

POWER LEVEL..... FULL FORWARD

ENGINE INSTRUMENTS .....GREEN

“Power set”, “50”, Instructor: “Checked”

AT VR KIAS.....ROTATE GENTLY APPROX +7.5 ANU

“Rotate”

INITIAL CLIMB SPEED.....72 KIAS

CLIMB FLOW

FLAPS .....UP

“Speed checked, flaps up”

SPEED.....88 KIAS

POWER.....SET

“Climb power”

TAXI LIGHT..... OFF

FUEL PUMPS ..... OFF

ALTIMETERS (2).....SET

“Altimeters, standard passing FL xx, now”, Instructor: “Checked” “One to go”, Instructor: “Checked”

LANDING LIGHT ..... A/R

ICE PROTECTION .....PITOT ON / ALTN AIR A/R

“Climb checklist”, “Climb checklist completed”

CRUISE FLOW

“Cruise power”

NAV AND COM FREQUENCIES..... MANAGE

FUEL TRANSFER .....USE A/R

ATIS .....RECEIVE

APPROACH BRIEFING..... PERFORMED

DESCENT FLOW

LANDING LIGHT ..... ON

ALTIMETERS.....SET

“Altimeters, QNH XXXX, passing xxxx ft, now”, Instructor: “Checked”

PARKING BRAKE .....CHECK

ICE PROTECTION .....PITOT ON / ALTN AIR A/R

APPROACH FLOW

FUEL PUMPS ..... ON

NAV AIDS .....SET

FUEL TRANSFER .....USE A/R

“Approach checklist”, “Approach checklist completed”

BEFORE LANDING FLOW

TAXI LIGHT.....WHEN CLEARED TO LAND – ON

AUTOPILOT ..... OFF

FLAPS ..... SET FOR LANDING

“Final check”, “Flaps Set”, “Stabilized” “Go around”, “Flaps”, “Speed checked, flaps up”

INSTRUMENT CIRCUIT - CLIMB

FLAPS ..... UP

FUEL PUMPS .....ON

“Instrument circuit – CLIMB checklist“ “– Completed”

INSTRUMENT CIRCUIT - APPROACH

APPROACH BRIEFING CONFIRMATION .....PERFORM

“Instrument circuit – APPROACH checklist” “– Completed”

AFTER LANDING FLOW

FLAPS .....UP

PITOT HEAT..... OFF

ALTERNATE AIR..... CLOSED

FUEL PUMPS ..... OFF

LANDING LIGHT ..... OFF

ELT TRANSMIT LIGHT.....OUT

POWER FOR TAXI.....MAX 10% OR 3 MIN COOLING

PARKING FLOW

FUEL QUANTITY .....CHECK

TRANSPONDER .....SQUAWK 2000

“Parking checklist”, “Parking checklist completed”

ENGINE SHUT DOWN FLOW

ENGINE COOLING.....PERFORMED

HEATER AND DEFROSTER ..... OFF

AVIONICS MASTER..... OFF

ENGINE MASTER ..... OFF

LIGHTS MAP READING LIGHTS ..... OFF

ELECTRIC MASTER ..... OFF

“Engine shutdown checklist”, “Engine shutdown checklist completed”

SECTION 4 - BRIEFINGS

BRIEFING FOR VFR FLIGHT

BEFORE STARTUP

Crew briefing

Determine the objectives for the flight. e.g. “Flight to Training Area, Mission to practise straight and level flight as well as coordinated turns” or “Training flight in TC intention to do landings in different configurations” or “XC flight to EFTU with practice of low level navigation”.

Determination of crew duties

Determination of crew duties and announcement of them e.g. "In the event of an emergency, I will assume control of the aircraft, with the instructor observing and providing assistance as needed." or if the training has just begun "In the event of an emergency, the instructor will assume control by stating 'My controls,' and I will provide assistance as needed."

Emergency drill

Complete the emergency brief from QRH by the heart.

TAXI AND TAKEOFF BRIEFING

A taxi and takeoff briefing is conducted prior to initiating taxi for takeoff. This enables the pilot to review the taxi and takeoff procedures, allowing for the assessment of necessary actions.

It should contain and use:

- Type and reg
- Miscellaneous items such as TOW, ref speeds, NOTAMS, Weather
- Fuel check from OFP and MFD
- Flight plan set in MFD
- Rad Nav aids
- Emergency escape e.g. in case of emergency landing in front sector

Example
“Okey we are operating today DA40 reg OH-DPA TOW today is 1215 kg and no affecting NOTAMS”
“We are now at apron X and expecting taxi róute via X and Y to holding point XY for RWY01”

“Taxiways and runways are dry and good braking actions”
“Intersection departure with rotation speed 65 KIAS initial climb Vx 72 KIAS FLAPS UP after passing 800ft. Climb using Vy 88 KIAS”
“After departure following ATC instructions to TA TP70 after power reduction at 1400 ft we continue using cruise climb speed of 100 KIAS”
“In case engine failure i will land on the remaining runway OR front sector” Threats? Questions?

APPROACH BRIEFING

The objective of an approach briefing is to prepare the crew for the execution of the intended approach procedure.

It should contain and use:

- Miscellaneous items such as NOTAMS, Weather
- Fuel check from OFP and MFD
- Flight plan set in MFD and TOD
- Rad Nav aids
- In case of go around

Example arriving form XC:
“Contact EFHK TWR before entering TMA on 118.600.”
“EFHK TMA inbound VIA LINTU at 1000 ft QNH 1000, TC height of 1000ft AD elevation 180 ft. Join with left turn to the right downwind of RWY22R.”

Example arriving from TA:
“From training area TP70, after freq change to 118.7. We descend to 1500 ft and via LIMPU we fly south of the AD and join left downwind to runway 24 via right turn, TC altitude is 1000ft.”

Continue:
“Landing on RWY 22R, Runway is dry. Wind is from 220/6 knots so no cross wind. Landing with flaps T/O. Estimated landing mass 1170 kg approach speed 74 KIAS. We expect to vacate the runway to the right side and we expect a taxi route via X and X to apron X.” “NAV is set for HEL VOR 114.20 and COM2 is set for unicom frequency 122.8.”
“In case of go around we do another circuit to the left” Threats? Questions?

BRIEFING FOR IFR FLIGHT

TBA

SECTION 5 - PROFILE IMAGES

TAKEOFF PROFILE