

DASH 8 Q400 EASY FLYING GUIDE

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Majestic Software Dash 8 Q400 Pilot Edition

Version 1.008, Hot Fix 1

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2D Windows:

SHIFT+5: FMS
SHIFT+6: ARCDU

Aircraft Doors:

SHIFT+E Main Door
SHIFT+E 2 L/H AFT Baggage Door
SHIFT+E 3 L/H AFT Pax Door
SHIFT+E 4 R/H Doors (FWD Baggage and AFT Pax)

Notes:

- Ref speeds and indicative power settings used in this guide are valid for the fuel and pax load as mentioned in the chapter
SIMULATOR PREPARATION
- Fuel consumption: Approx. 2500 lbs/hr
- Takeoff run at MTOW: 1400m
- Max. range: Approx. 1400 nm
- ICAO Code: DH8D
- Category: C

SIMULATOR PREPARATION

- Situation Setup
- Place default Cessna 172 cold & dark at gate
 - Change aircraft to Dash 8 Q400 (> A/C is not cold & dark, initial settings are already made like in tutorial flight)
 - Open FMS window, switch ON if necessary, accept present position, request GPU (DATA > SERVICES)
 - Open Main Door (Shift+E)

Load, Fuel,
V-Speeds

Q400 Control Panel, Weight & Balance

- Enter pax data: OA:14, OB:14, OC:19, OD:10
- Enter baggage data: FWD:200, AFT: 1500
- Enter fuel data: T/O: 6000 (for up to 2 hrs)
TRIP: 2500 x (hrs of flight)
- Press CALCULATE, check with trim envelope
- Press SEND DATA TO FLIGHTSIM
(Note: T/O Mass with above data: 58995 lbs)
- Determine V-speeds for T/O Mass from tables
Note: Following speeds for the above data:
 - V1/VR (Flaps 5, sea level): 124
 - V2 (Flaps 5, sea level): 127
 - V FRI (Flap 5 Retraction Initiation): 137
 - V CLMB (Final T/O Speed): 148

COCKPIT PREPARATION

- Control Yoke
- Remove (mouse button at bottom of yoke)
- Overhead Panel
- DC Panel: Batteries ON, Main Bus Tie ON, External Power ON
 - Air Cond: Bleeds ON, Recirc ON
 - Exterior Lights: POSN ON, all other OFF
 - Seat Belts/No Smoking Signs: ON
- Flight Deck Lights
- AS REQUIRED (see System Manual, page 71)

- L/H Main Panel
 - Speed Bugs V1:124, VR:124, V2:127
 - Baro Set: Actual QNH
 - DH/MDA: Decision Height or Minimum Descent Altitude of Destination
- Parking Brake
 - SET
- Power Levers
 - DISC
- Condition Levers
 - FUEL OFF
- Contr. Lock Lever
 - SET
- ARCDUs
 - ON>BOTH – Set frequencies AS REQUIRED
- FMS Mass/Fuel
 - FMS FUEL page: Insert ZFW (50995 lbs) and FUEL for tank 1/2 (3000 lbs each)
- FMS Flight Plan
 - INSERT (see separate FMS part at the end of this guide)

BEFORE ENGINE START

- Doors
 - CLOSE (Shift+E for Main Door)
- Overhead Panel
 - Exterior Lights: ACOL RED
- FMS
 - If pushback required:
 - Cancel GPU (DATA > SERVICES)
 - Initiate pushback sequence (DATA > SERVICES)

ENGINE START

- Overhead Panel
 - Ignit. Panel:
 - Ignition 2: NORM
 - Select Switch: 2 (right position)
 - Start Button: PUSH
- Condition Lever 2
 - START & FEATHER (with throttle quadrant, in order to keep quadrant and simulation aligned)
- Overhead Panel
 - When Engine 2 at approx. 200 rpm:
 - Ignit. Panel:
 - Ignition 1: NORM
 - Select Switch: 1 (left position)
 - Start Button: PUSH
- Condition Lever 1
 - START & FEATHER

- Wait for Engine 1 reaching approx 200 rpm:
- Condition Levers
 - Both MAX (> engines spool up to 660 RPM, GPU disconnects/disappears)

AFTER ENGINE START

- L/H Main Panel
 - Spoilers TAXI (under glareshield)
- Ctr Main Panel
 - PTU ON (below Ldg Gear Lever)
 - Stby Hydr Pump ON (below Ldg Gear Lever)
 - Aux Fuel Pumps ON (below Eng Display)
 - Autofeather ON (below Eng Display)
- R/H Main Panel
 - Anti Skid ON (under right corner of glare shield)
- Overhead Panel
 - External Power OFF
 - Main Bus Tie OFF
 - Windshield Panel (if windows misted): WARM UP, Plt Side Wdo/Ht ON
 - Pitot Static / Probe Heaters ON
 - Exterior Lights: TAXI ON
- AFT Pedestal
 - ESCP: If required, switch MFD2 display to NAV
- FWD Pedestal
 - EFCP1 FORMAT button: Select MFD1 screen format (<2 sec) and Nav displ. source (>2 sec)
 - EFCP1: Toggle WX/TERR button to select MFD1 overlay (WX-TERR-NONE)
 - Note: Still WX OFF in upper left corner, since WX Radar not yet switched ON
 - EFCP2: If MFD2 overlay required: Toggle WX/TERR button to select MFD2 overlay
- AP Preparation
 - Select Nav Source FMS1
 - Select HDG and set departure RWY heading
 - Set initial climb altitude and select ALT SEL
 - Engage Yaw Damper YD
 - Press TO/GA Button at Power Lever handle
 - Check PFD: "GA, ALTSEL, HDG SEL"
- Flaps
 - 5° (Check flap position indication on MFD2)
- Trim
 - Within white TO Range (Indicator on Pedestal)

- | | |
|--------------|--|
| Controls | - Check full travel |
| AFT Pedestal | - If required: WX Radar ON and Mode WX (1 min warmup) > WX overlay on MFD1/2 available when airborne, if selected on EFCP1/2 |

TAXI

- | | |
|------------------|--|
| Pilot Side Cons. | - Steering ON |
| Parking Brake | - RELEASE |
| Power Lever | - AS REQUIRED (within Ground Range, watch indication "12" under glareshield) |

LINEUP

- | | |
|-------------------|---|
| ARCDU | - XPDR to ON ALT (press LSK8 for 2 sec) |
| FMS – NAV page | - Check first waypoint correctly selected |
| ND / PFD | - Check RWY HDG and Altitude Pre-selection |
| Overhead Panel | - Exterior Lights: TAXI OFF, LANDG ON, ACOL WHITE |
| | - Windshield Heat: NORM |
| | - AirCond: - Bleed Flow MIN |
| | - Bleed 1 and 2: OFF |
| L/H Main Panel | - Spoilers FLIGHT (under glareshield) |
| Warnings Panel | - Check: No warnings left |
| Contr. Lock Lever | - RELEASE |

TAKEOFF AND CLIMB TO 1000 FT AGL

- | | |
|--------------|--|
| Power Levers | - RATING |
| Control Yoke | - At VR (124 with Flaps 5°): slowly rotate to 9° |
| Keyboard | - When positive climb: GEAR UP (key „G“) |
| Control Yoke | - maintain V2+10 (137) until passing 1000 ft |

CLIMB (FROM 1000 FT AGL)

- | | |
|------------------|---|
| AP Panel | - Engage AP (HDG SEL should be active) |
| | - Select IAS, set target speed 180 (Pitch Wheel) |
| | - Press NAV to activate LNAV |
| Flaps | - RETRACT when passing 150 kts |
| Condition Levers | - Set to 900 rpm (at 150 kts) |
| Overhead Panel | - AirCond: - Bleed Flow MAX |
| | - Bleed 1 and 2: ON |
| | - Ext Lights: - Landing: OFF |
| | In case of ICE DETECTED on Engine Display: |
| | - Ice Protect: - Airframe Mode Select SLOW |
| | - Props ON |
| | - Ref Speeds ON |
| Ctr Main Panel | - PTU OFF (below Ldg Gear Lever) |
| | - Stby Hydr Pump OFF (below Ldg Gear Lever) |
| | - Aux Fuel Pumps OFF (below Eng Display) |
| | - Autofeather OFF (below Eng Display) |
| L/H Main Panel | - Altimeter: SET to 1013 at Transition Altitude |

CRUISE

- | | |
|------------------|---|
| Condition Levers | - Set to 850 rpm |
| Overhead Panel | - Seat Belt Signs: OFF |
| Power Levers | - Set to establish and maintain required IAS, e.g.: |
| | - 15000 ft, 250 IAS: 62 % Torque |
| | - 20000 ft, 240 IAS: 61 % Torque |
| | - 25000 ft, 230 IAS: 61 % Torque |
| | (see table on page 48 of Delivery Tutorial) |

DESCENT PREPARATION

- | | |
|---------------|--|
| FMS VNAV Page | - Press LSK3 and select WP to descend to |
| | - Enter target altitude and target V/S (-1800) (ENTER > insert target Alt value > ENTER) |
| | - Press ENTER > VNAV Path data shown, TOD shown as circle on flight path in Nav Display |

- AP Panel 2 minutes before TOD (when magenta VNAV path bar appears in PFD):
- Select ALTSEL and set target altitude
 - ARM VNAV (> will become active at TOD)

DESCENT

- AP Panel Only if VNAV not used:
- Select VS
 - Adjust Pitch Wheel to –1800 fpm
 - Check ALT SEL selected and target Alt correct
- Power Levers - ADJUST to maintain 240 kts (approx. FLIGHT IDLE)
- Overhead Panel - Seat Belt Signs: ON
- Ice Protect: AS REQUIRED
- ARCDU - NAV 1: Tune ILS frequency (only if not auto tuned later by FMS, see APPROACH)
- FWD Pedestal - EFCP1 FORMAT button: Select VOR1 as Nav display source (press FORMAT key >2 sec)
- AP Panel - Set COURSE to final Approach Course
- FWD Pedestal - EFCP1 FORMAT button: Select FMS1 as Nav display source (press FORMAT key >2 sec)
- L/H Main Panel - Altimeter: Set Dest. QNH at Transition Level

APPROACH

- Ctr Main Panel - GPWS Flaps Sel. 15 (below Ldg Gear Lever)
- PTU ON (below Ldg Gear Lever)
 - Stby Hydr Pump ON (below Ldg Gear Lever)
 - Aux Fuel Pumps ON (below Eng Display)
 - Autofeather ON (below Eng Display)
- Overhead Panel - Ext Lights: - Landing: ON
- AirCond: - Bleed Flow MIN
 - Bleed 1 and 2: OFF

If no icing conditions:

- Ice Protect: - Airframe Mode Select OFF
- Props OFF
- Ref Speeds OFF

- FMS - NAV Page: ARM APPR, then TUNE APPR (> Check ILS frequency on PFD/ARCDU)
- Note: Don't arm too early, because holdings may be removed from flight plan!

- Speed - 220 (approx. 33% Torque at 3000 ft)

Before intercepting Localizer:

- AP Panel - Set HDG to actual heading
- Select HDG SEL Mode
- Note: HDG during VNAV descent cancels VNAV (> Reversion to PITCH HOLD)
- Set NAV SOURCE to NAV1

When Localizer Bar on PFD starts to move:

- AP Panel - Select APPR Mode
- Power Levers - Reduce speed below 200
- Flaps / Ldg Gear - Flaps 5° at 200
- Flaps 10° and LDG GEAR at 180
 - Flaps 15° for final approach (130)

At 1000 ft AGL:

- Condition Levers - MAX (Supports speed reduction in IDLE!)
- Autopilot - Disengage
- Power Levers - Maintain 130 IAS with Flaps 15° (approx. 16% Torque required for 3° glideslope)

TOUCHDOWN

- Power Lever - FLT IDLE when Main Gear on ground (not before!)
- DISC when Nose Gear on Ground (> braking)
 - REVERSER (F2) if required (> strong braking!)

TAXI

L/H Main Panel	- Spoilers TAXI (under glareshield)
Flaps	- RETRACT
Contr Lock Lever	- SET
Overhead Panel	- Ext Lights: - ACOL: Red - Taxi: ON - Landing: OFF - AirCond: - Bleed Flow MAX - Bleed 1 and 2: ON - DC Panel: Main Bus Tie ON - Pitot Static / Probe Heaters OFF
AFT Pedestal	- WX Radar OFF
AP Panel	- Yaw Damper YD OFF
R/H Main Panel	- Anti Skid OFF (under right glare shield)
Ctr Main Panel	- Aux Fuel Pumps OFF (below Eng Display)

AT PARKING POSITION

Parking Brake	- SET
Condition Levers	- START & FEATHER
Ctr Main Panel	- PTU OFF (below Ldg Gear Lever) - Stby Hydr Pump OFF (below Ldg Gear Lever)
FMS	- Check indicated flight time and fuel consumption - Request GPU (DATA > SERVICES)
Overhead Panel	- External Power ON
Condition Levers	- FUEL OFF
Overhead Panel	- Exterior Lights: Taxi OFF, ACOL OFF - Windshield Panel: All switches OFF - Seat Belt Sign: OFF - Air Cond: Bleeds OFF, Recirc OFF, Bleed Mode NORM - DC Panel: Main Bus Tie OFF
Main Door	- OPEN (SHIFT+E)

BASIC FMS FUNCTIONS

Route Entry on FPL Page

- Insertion of airports / waypoints:
Insert name of airport / waypoint, then press ENTER
- Insertion of new waypoint between two existing ones:
Select waypoint prior to which the new WP shall be inserted, then type name of new waypoint and press ENTER
(> old waypoint is shifted one row downwards)
- Insertion of airway segments:
 - Select LSK under WP where the segment shall start
 - Press key LIST
 - Select LSK 2 (Airway) > list of airways is shown
 - Type number of desired airway and press ENTER
> List of available target waypoints on this airway is shown (possibly more than one page > then scroll with NEXT / PREV)
 - Type number of desired target WP on airway and press ENTER > Airway segment with all WPs is inserted in the FPL
- Delete waypoint: Select waypoint, then press LSK DEL

SIDs / Transitions

- Press MENU key and select DEPART
(> Airport is selected automatically if FPL starts with an airport, and list of available RWYs is shown)
- Type list number of selected RWY and press ENTER
(> List of available SIDs is shown)
- Type list number of selected SID and press ENTER
(> List of available Transitions is shown, if applicable)
- Type list number of selected Transition (if applicable) and press ENTER or LSK 5 > SID/Transition is inserted in FPL, with a flashing NO LINK at the end.
- Check proper link between SID/Trans and Route, then delete the NO LINK

STARs / IAPs (Instrumental Approach Procedures)

- Press MENU key and select ARRIVE
(> Airport is selected automatically if FPL ends with an airport, and list of available RWYs is shown)
- Type list number of selected RWY and press ENTER
(> List of available STARs is shown)

Note: If no STAR is required, cursor can be moved directly to the APPR field

- Type list number of selected STAR and press ENTER
(> List of available Transitions is shown, if applicable)
- Type list number of selected Transition (if applicable) and press ENTER
(> List of available Approaches is shown)
- Type list number of selected APPR
- Key ENTER or LSK FPL insert the Trans/STAR/APPR in the FPL, with flashing NO LINK between the segments.
- Check proper link between the route and the STAR / Trans, then delete the related NO LINK entries. NO LINK before APPR segment should remain until ATC approach clearance.

Note: NO LINK in front of the Missed Approach is removed automatically in case MISSED APPR is selected on the NAV page or if TO/GA Button on Power Lever is pressed while APPR is active.

DTO Page

- Enter waypoint to fly to (select relevant number from FPL list or type ICAO name of waypoint) and press LSK ENTER
- If a specific turn direction (left/right) is required, the relevant LSK has to be pressed prior to ENTER.
- If a WP from the FPL list was selected, the A/C will turn immediately after ENTER, if an ICAO name was entered, a page will appear where this WP needs to be accepted.

HOLDINGS

Define Holding:

- Select NAV page and press LSK MNVR
- Press LSK HOLDING DEFINITION
- Insert holding point (type number of WP from FPL list or type ICAO name of WP)
- Insert holding parameters (course and time or distance)
(time: 10 = 1.0 minute; distance: 50 = 5.0 miles)
- Press LSK ARM HOLDING
> Holding is activated (pattern is shown on MFD)

Remove Holding (before it was flown):

- Delete the relevant (HOLD) entry from FPL.

Note: DISARM HOLD on the MANEUVER page does not work! If DISARM is pressed, the holding will be flown anyway and there is no PROCEED offered to leave the holding.

Leave Holding:

- Press LSK PROCEED on the MANEUVER page > A/C will leave the holding when the current pattern is terminated.

Note: If PROCEED is not offered on the MANEUVER page, the holding should be left by a DTO to the Hold Fix, inserted during the inbound leg.

VNAV TO (Descent only) - see Page 124 of System Description

- Enter the required altitude (Alt Restriction) in FPL for the waypoint to descend to.
- On VNAV page select VTO
- Type number of waypoint to descend to and press ENTER
- Activate VNAV on AP panel.

LNAV HDG Mode - see Page 120 of System Description

- On NAV page select HDG
- Type required heading and press ENTER

Note: If the selected heading points to an active (red) FPL leg: INTERCEPT is offered on the NAV page. If INTERCEPT is activated, the plane will continue to fly the selected HDG and resume the FPL when intercepting the active leg.