



CHALLENGER 350

BD-100-1A10

OXYGEN

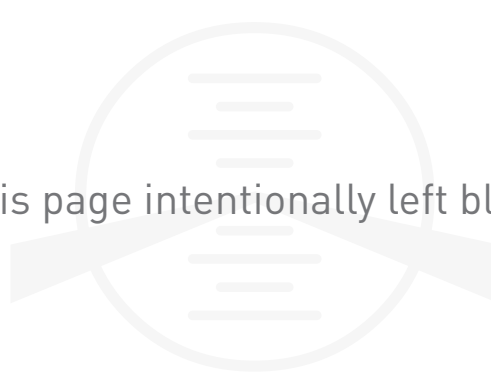
STUDY GUIDE · CARD SYSTEM

A flashcard-style reference for the CL350 supplemental oxygen system. Covers crew quick-donning masks, automatic passenger mask deployment, therapeutic oxygen, EPAV operation, and servicing limits — all grounded in the REVISED source.

ATA 35 · OXYGEN

Section OXY · Revision: Original

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01

FIVE THINGS YOU MUST KNOW

The five highest-value facts for the oral. Memorize numbers cold.

14,500 ft $\pm$ 500 ft

Auto pax mask deploy — cabin altitude trigger

77 / 115 cu ft

Two O₂ cylinders (Cyl 1 / Cyl 2) — both feed shared manifold

700 liters

Minimum quantity for dispatch (amber below 700 L)

40,000 ft

Max cabin altitude — crew and passenger masks NOT approved above

OFF · AUTO ·
DEPLOY

Three positions of the PAX OXYGEN switch

TIP Two baseline numbers: 14,500 ft $\pm$ 500 ft for passenger-mask auto-deploy and 700 liters for dispatch minimum. The cards drill the rest of the oxygen system.



02

SYSTEM OVERVIEW · STUDY CARDS

High-level architecture: two cylinders, one EPAV, two circuits — crew and passenger.

SYSTEM PURPOSE

What does the O2 system do?

- Supplemental O2 during cabin depressurization
- Emergency O2 for smoke / fume protection
- Therapeutic O2 capability (independent circuit)

CYLINDER COUNT & LOCATION

How many cylinders, and where?

- Two composite cylinders with integrated regulators
- Both located in the Lavatory
- Manual on/off toggle valve on each cylinder

CYLINDER SIZES

What are the two cylinder capacities?

- Cylinder 1: 77 cu ft (2,183 liters)
- Cylinder 2: 115 cu ft (3,256 liters)
- Each fitted with a pressure reducing regulator
- Both cylinders feed a shared manifold supplying both crew and passenger circuits. The FCOM does not assign one cylinder to crew and the other to pax.

EPAV

What is the EPAV and what does it do?

- Electrical Pneumatic Actuating Valve
- Controls O2 availability to entire distribution system
- Provides auto or manual mode; feeds EICAS tempcompensated pressure

SERVICE PANEL

Where is the oxygen service panel?

- Right side of fuselage, forward of right engine
- Contains filler valve and pressure gauge
- Green disk above panel — ruptures on overboard discharge

PRESSURE MONITORING

How is system pressure displayed?

- Temp/pressure transducer monitors system
- EPAV generates temperature-compensated signal
- EICAS converts pressure to liters for display

CREW OXYGEN · STUDY CARDS

EROS quick-donning masks — three modes, not approved above 40,000 feet cabin altitude.

QUICK-DONNING MASKS

Type, quantity, and stowage?

- Two EROS quick-donning masks for flight crew
- Stowage containers behind crew stations
- Integrated regulator; audio comms maintained

MASK MODES

What are the three regulator positions?

- NORMAL — diluted demand oxygen
- 100% — pure oxygen on demand
- EMERGENCY — positive pressure oxygen

CABIN ALTITUDE ABOVE 35,000 FT RULE

What changes when cabin altitude exceeds 35,000 ft?

- Mask supplies pure O2 at constant flow
- Applies regardless of knob position
- Not approved for use above 40,000 feet cabin altitude

SMOKE GOGGLES

Goggles — purpose and design?

- Provided for both flight crew members
- Designed for use with EROS masks
- Equipped with vent valve; smoke and toxic gas protection

PBE

Portable Breathing Equipment — location?

- One PBE container provided behind pilot's station on bulkhead
- Near floor level for accessibility
- A second PBE is also located in the lavatory



04

PASSENGER OXYGEN · STUDY CARDS

Drop-out boxes deploy automatically at 14,500 ft $\pm$ 500 ft — the green chamber on the reservoir bag inflates when O₂ flows to the mask.

AUTO DEPLOYMENT

When and how do pax masks deploy automatically?

- Cabin altitude exceeds 14,500 ft $\pm$ 500 ft
- PAX OXYGEN switch must be in AUTO
- EPAV commands deployment; cannot be reset in flight

MANUAL DEPLOYMENT

How to manually deploy pax masks?

- PAX OXYGEN switch to DEPLOY (guarded — PULL UP to move)
- Overrides automatic system; immediate mask presentation
- Allows dispatch with AUTO mode inoperative

PAX MASK FEATURES

What do the passenger masks look like / do?

- Gaseous supply; green chamber on reservoir bag inflates when oxygen flows to the mask
- Automatically presented when deployed
- Duration per O₂ tables; 10 min minimum (14 CFR §91.211) [regulatory requirement]

PAX MASK LIMIT

Any altitude restriction for pax masks?

- Prolonged use with cabin above FL250 not recommended
- Not approved for use above 40,000 feet cabin altitude
- Duration determined by O₂ tables and max pax load

DROP-OUT BOXES

How are pax O₂ masks distributed?

- Drop-out boxes located throughout cabin
- Automatic deployment mechanism
- Connected to main O₂ distribution lines

05

THERAPEUTIC OXYGEN · STUDY CARDS

Separate circuit — independent from emergency system.

THERAPEUTIC CIRCUIT

How is therapeutic O₂ separate?

- Dedicated outlets in cabin
- Independent control from emergency system
- Medical-grade oxygen delivery

PAX OXY SWITCH

Switch positions and normal setting?

- Three positions: OFF / AUTO / DEPLOY
- AUTO for normal operations
- DEPLOY is guarded — PULL UP on switch to move it to DEPLOY

PAX OXY SWITCH — OFF

What happens in OFF?

- PAX OXYGEN OFF status message appears
- EPAV closes passenger oxygen circuit
- Auto deployment will not function

EPAV & DISTRIBUTION - STUDY CARDS

EPAV is the gateway — controls both crew and passenger circuits separately.

EPAV FUNCTION

What does the EPAV control?

- Controls O2 availability to distribution system
- Auto or manual mode selection
- Controls crew and passenger circuits separately

EPAV — EICAS LINK

How does EPAV interact with EICAS?

- Receives temp/pressure from transducer
- Generates temperature-compensated pressure signal
- Provides system info to EICAS for liter display

QUANTITY DISPLAY

How is O2 quantity shown on EICAS?

- Displayed in liters (temperature-compensated)
- Shown on EICAS and SUMMARY pages
- Turns amber when quantity drops below 700 liters

PROTECTION

What automatic protections exist?

- High-pressure relief valve on high-pressure line
- Reduced pressure relief valve on low-pressure line
- Over-pressure relief automatic; temperature compensation active



07

MONITORING & SERVICING - STUDY CARDS

Servicing is a maintenance function only; follow AMM. No oil or grease near O2.

PRE-FLIGHT CHECK

What to verify before flight?

- Minimum 700 liters for dispatch
- PAX OXYGEN switch in AUTO
- Crew masks accessible and stowed

IN-FLIGHT MONITORING

What to monitor in flight?

- Monitor O2 quantity on EICAS
- System operates automatically in AUTO
- Quantity decreases only when oxygen is used

SERVICING

How is the system replenished?

- Maintenance function only — use AMM procedures
- Service panel on right side of fuselage
- Verify proper pressure after servicing

OVERBOARD DISCHARGE INDICATOR

What shows an overboard discharge?

- Green disk above service panel
- Ruptures if system discharges overboard
- Requires investigation if disk is missing

SAFETY PRECAUTIONS

Servicing safety rules?

- No oil or grease near oxygen equipment
- Use only approved equipment
- Verify adequate area ventilation before servicing

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OXYGEN SYSTEM — ONE-MINUTE RECAP

- Two cylinders (77 cu ft + 115 cu ft) in the Lavatory supply crew and passengers
- EPAV controls both circuits; auto-deploys pax masks at 14,500 ft ±500 ft cabin altitude
- PAX switch: AUTO (normal) · DEPLOY (guarded, PULL UP) · OFF (posts PAX OXYGEN OFF status)
- Crew masks: NORMAL / 100% / EMERGENCY — positive pressure in EMERGENCY mode
- Cabin altitude above 35,000 ft: constant pure O2 regardless of knob position. NOT approved above 40,000 feet cabin altitude
- Dispatch minimum: 700 liters (EICAS turns amber at this level)
- Overboard discharge: green disk above service panel — missing disk = investigate

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ABNORMAL OPERATIONS · STUDY CARDS

Manual deployment, low quantity, and deployment failures.

MANUAL DEPLOY — WHEN

When should crew manually deploy pax masks?

- Smoke or fumes in cabin
- Auto deployment failure
- Cabin altitude above 14,000 ft without deployment

MANUAL DEPLOY — HOW

Procedure for manual deployment?

- PAX OXYGEN switch to DEPLOY
- Verify mask deployment; make passenger announcement
- Monitor oxygen quantity

LOW QUANTITY

Actions for low O2 quantity?

- Plan immediate descent
- Consider nearest suitable airport
- Monitor remaining quantity; brief crew

DEPLOYMENT FAILURE

Auto deployment fails — what next?

- Use manual DEPLOY switch
- If unsuccessful, consider emergency descent
- Brief passengers; prepare for possible emergency



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EICAS - CAUTION

CAUTION MESSAGES

Timely crew awareness/action needed

Message	Meaning	Inhibits
OXYGEN QUANTITY LOW	O2 quantity below dispatch minimum — plan descent/divert [TO/LAND inhibit]	TO/LAND
OXYGEN VALVE CLOSED	The OXYGEN BOTTLE VALVE is closed, OR there is a miscompare in the number of bottles installed vs. the number of bottles selected on the EPAV unit [TO/LAND inhibit]	TO/LAND
PAX OXYGEN AUTO FAIL	Automatic passenger mask deployment inoperative — use manual DEPLOY [TO/LAND inhibit]	TO/LAND

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EICAS - STATUS

STATUS MESSAGES

Information only - no crew action required

Message	Meaning	Inhibits
PAX OXYGEN ON	Passenger oxygen masks deployed (auto or manual)	
PAX OXYGEN OFF	PAX OXYGEN switch selected to OFF position	—

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QUICK RECALL - NUMBERS GRID

Cover the labels and recite the number; reverse and recite the label.
Repeat until automatic.

14,500 ft Auto-deploy altitude	±500 ft Deploy altitude tolerance	77 cu ft Cylinder 1	115 cu ft Cylinder 2
700 L Dispatch minimum	700 L EICAS amber threshold	2,183 L Cyl 1 (liters)	3,256 L Cyl 2 (liters)
Cab Alt 40,000 ft Max approved altitude	Cabin Alt 35,000 ft Constant flow threshold	FL250 Prolonged pax use caution	10 min Pax O2 min duration
3 Crew mask modes	2 Crew masks (crew count)	OFF/AUTO/ DEPLOY PAX switch positions	2 PBE Portable Breathing Equipment (1 flight deck, 1 lavatory)

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