



BOEING 737 NEXT GENERATION **737**

### Course overview


- Airplane General
- Air Systems
- Anti-Ice, Rain Protection
- Automatic Flight
- Electrical
- Engines, APU
- Flight Controls
- Flight Instruments and Displays
- Flight Management, Navigation
- Fuel
- Landing Gear
- Warning Systems
- Normal Operations
- Non-Normal Operations



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AIRPLANE GENERAL **737**

### Topics

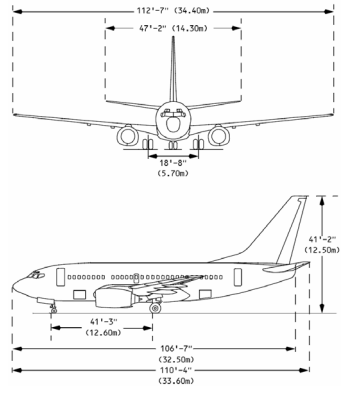
- Principal dimensions
- Technical data
- Ground maneuvering
- Flight deck overview
- Instrument panels
- Interior lighting
- Exterior lighting
- Doors
- Water system
- Oxygen
- Emergency equipment



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### Principal dimensions

Length: **33.6 m**  
Height: **12.5 m**  
Wingspan: **34.4 m**



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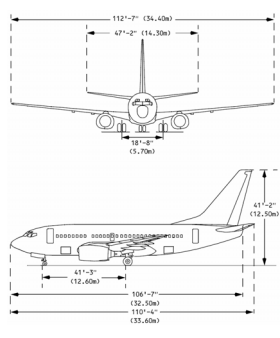
### Technical data

Series	600	700	800	900
<b>Production:</b>				
First flight	22 Jan 1998	9 Feb 1997	31 Jul 1997	3 Aug 2000
First delivery	18 Sep 1998	17 Dec 1997	22 Apr 1998	15 May 2001
Launch customer	SAS	Southwest	Hapag Lloyd	Alaska
Units produced	56	590	802	45
Still in service	56	590	802	45
On Order	12	375	382	10
Hull losses	0	0	0	0
Fatal hull losses	0	0	0	0
<b>Powerplant:</b>				
Model	CFM56-7	CFM56-7	CFM56-7	CFM56-7
Type	7B18	7B20	7B24	7B26
Static Thrust (kN)	82.0	89.0	107.0	117.3
Static Thrust (Lb)	18,500	20,600	24,200	26,300
Bypass Ratio	5.5	5.4	5.3	5.1
EGT Margin (C)	145	148	125	85
Fan tip diameter (in)	61	61	61	61

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### Technical data

	600	700	800	900
<b>Dimensions:</b>				
<b>Fuselage:</b>				
Aircraft length (m)	31.20	33.60	39.50	42.10
Fuselage length (m)	29.88	32.18	38.08	40.68
Height (m)	3.73	3.73	3.73	3.73
Width (m)	3.73	3.73	3.73	3.73
Cabin width (m)	3.53	3.53	3.53	3.53
Nose section length (m)	7.40	7.40	7.40	7.40
Tail section length (m)	8.70	8.70	8.70	8.70
Finesse Ratio	8.01	8.63	10.21	10.91
<b>Wing:</b>				
Span (m)	34.32	34.32	34.32	34.32
Gross Area (m²)	124.58	124.58	124.58	124.58
Aspect Ratio	9.45	9.45	9.45	9.45
Taper Ratio	0.159	0.159	0.159	0.159
Root Chord %	7.88	7.88	7.88	7.88
Tip Chord %	1.25	1.25	1.25	1.25
M.A.C.(m)	3.96	3.96	3.96	3.96
Dihedral (°)	6	6	6	6
¼ Chord Sweep (°)	25.02	25.02	25.02	25.02

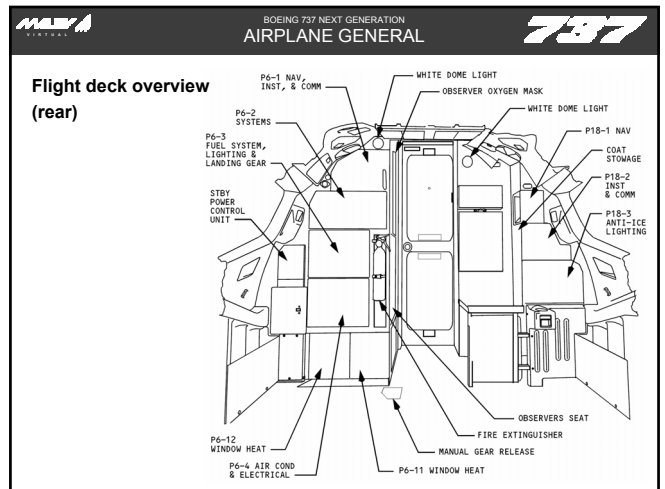
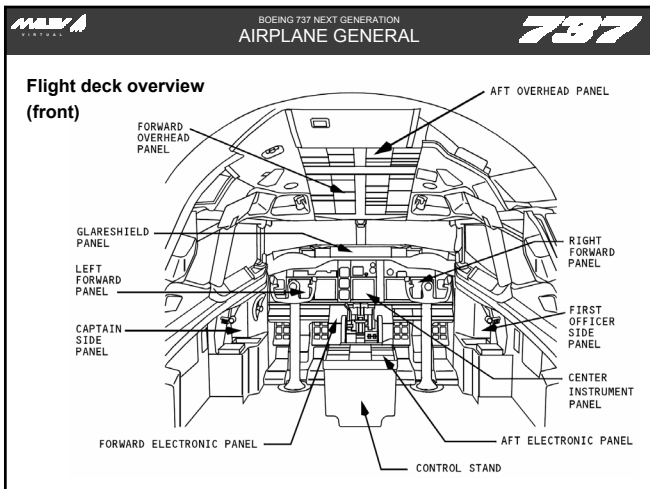
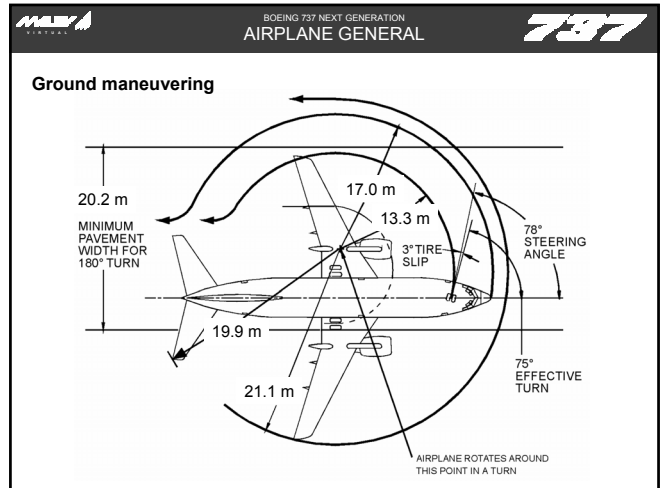


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BOEING 737 NEXT GENERATION AIRPLANE GENERAL				
737				
<b>Technical data</b>				
<b>Series</b>	<b>600</b>	<b>700</b>	<b>800</b>	<b>900</b>
Wing High Lift Devices:				
Flap Span/Wing Span	0.599	0.599	0.599	0.599
Flap Area/Wing Area	0.300	0.300	0.300	0.300
<b>Fin:</b>				
Overall Height (m)	12.6	12.6	12.6	12.6
Tail Arm (m)	6.00	6.00	6.00	6.00
Fin Area (m <sup>2</sup> )	26.44	26.44	26.44	26.44
Rudder Area (m <sup>2</sup> )	5.22	5.22	5.22	5.22
Aspect Ratio	1.91	1.91	1.91	1.91
Taper Ratio	0.271	0.271	0.271	0.271
¼ Chord Sweep (°)	35	35	35	35
Sv/S	0.186	0.186	0.186	0.186
<b>Horiz Stabilizer:</b>				
Span (m)	14.35	14.35	14.35	14.35
Tail Arm (m)	13.58	14.73	17.68	18.98
Tailplane Area (m <sup>2</sup> )	32.78	32.78	32.78	32.78
Elevators Area (m <sup>2</sup> )	6.55	6.55	6.55	6.55
<b>Series</b>	<b>600</b>	<b>700</b>	<b>800</b>	<b>900</b>
Aspect Ratio	6.16	6.16	6.16	6.16
Taper Ratio	0.203	0.203	0.203	0.203
¼ Chord Sweep (°)	30	30	30	30
Sh/S	0.260	0.260	0.260	0.260
<b>Undercarriage:</b>				
Track (m)	5.76	5.76	5.76	5.76
Wheelbase (m)		12.60	15.60	
Turning radius (m)		19.50		
No. of Nose Wheels	2	2	2	2
Nose Wheel Diameter (m)	0.686	0.686	0.686	0.686
Nose Wheel Tread Width (m)	0.197	0.197	0.197	0.197
Nose Tyre Pressure (psi)				
No. of Main Wheels	4	4	4	4
Main Wheel Diameter (m)	1.016	1.016	1.016	1.016
Main Wheel Tread Width (m)	0.368	0.368	0.368	0.368
<b>Nacelle:</b>				
Length (m)	4.70	4.70	4.70	4.70
Max Width (m)	2.06	2.06	2.06	2.06
Spanwise Location	0.282	0.282	0.282	0.282

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737				
<b>Technical data</b>				
<b>Series</b>	<b>600</b>	<b>700</b>	<b>800</b>	<b>900</b>
<b>Operational Items:</b>				
<b>Accommodation:</b>				
Max certified seating	149	149	189	189
Typical seating	145	145	180	180
No. abreast	6	6	6	6
Cabin Width	3.53	3.53	3.53	3.53
Hold volume (m <sup>3</sup> )	23.30	30.20	47.10	52.40
Volume per Passenger	0.18	0.20	0.25	0.28
<b>Weights (kg):</b>				
Max. ramp	65317	70295	79229	79242
<b>Max. take-off</b>	<b>65090</b>	<b>70068</b>	<b>79002</b>	<b>79015</b>
Max. landing	54657	58060	65320	66360
Max. zero-fuel	51482	54660	61690	62730
Fuel capacity (ltrs)	26025	26025	26025	26025
Fuel capacity (kg)	21000	21000	21000	21000
Typical DOW	36440	37585	41480	42460
Design payload	12540	14155	17955	17955
Max payload	14380	16505	20540	20240
<b>Weight Ratios:</b>				
Ops Empty/Max T/O	0.560	0.542	0.530	0.537
Payload/Max T/O	0.193	0.204	0.230	0.227
Max Fuel/Max T/O	0.320	0.300	0.266	0.264
<b>Fuel (litres):</b>				
Standard	26035	26035	26035	26035
Optional		37712	37712	
<b>Performance:</b>				
<b>Loadings:</b>				
Thrust Loading (kg/kN)	396.89	389.89	365.51	336.79
Wing Loading (kg/m <sup>2</sup> )	522.39	556.98	627.77	634.11
Thrust/Weight Ratio	0.2568	0.2615	0.2789	0.3027
<b>Take-off (m):</b>				
ISA s.l.				
ISA +20°C s.l.	1878	2042	2652	
<b>Landing (m):</b>				
ISA s.l.	1340	1415	1634	1704



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<b>Technical data</b>				
<b>Speeds (kt/Mach):</b>				
V2 F5 at MTOW				
Vref F40 at MLW				
Vmo/Mmo	340/0.82	340/0.82	340/0.82	340/0.82
<b>Long range cruise:</b>				
IAS / Mach	230/0.785	230/0.785	230/0.785	230/0.785
TAS (kt)	450	450	450	450
Ceiling (ft)	41000	41000	41000	41000
L.R. Fuel flow (kg/h)	1932	2070	2187	<2300
Range with max payload (nm)	3153	3299	2926	2726
<b>Design Parameters:</b>				
(W/S)/CLmax				
W/SCLtoST				
Fuel/pax/nm (kg)	0.0534	0.0480	0.0465	0.0409
Seat x Range (seats.nm)	421212	476353	547533	515592



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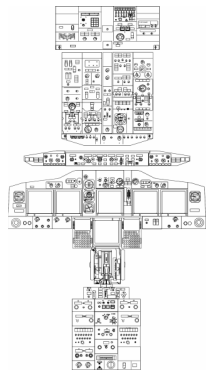
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**Flight deck overview**  
Circuit breaker panels

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**Instrument panels**

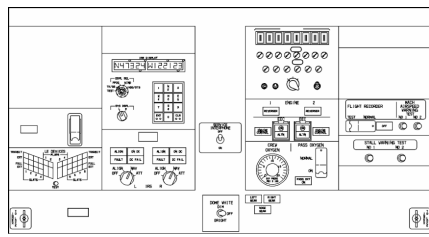



- Overhead panel  
Aft, Forward
- Glareshield panel
- Forward instrument panel  
Left, Center, Right
- Forward aisle stand
- Control stand
- Aft electronic panel
- Auxiliary panels

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**Instrument panels**  
Aft overhead panel

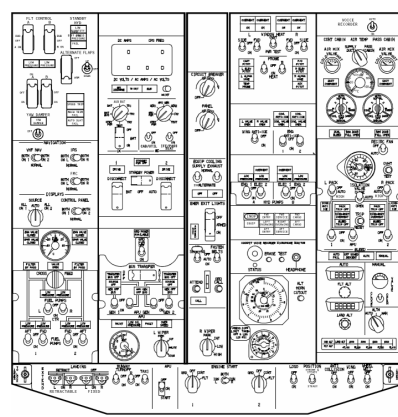
- ELT
- LE devices
- IRS
- Service interphone
- Cockpit dome light
- Obs ASP
- EEC
- Oxygen
- FDR
- MA warning test
- Stall warning test

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**Instrument panels**  
Forward overhead panel

- Flight, standby controls
- Navigation, display
- Fuel
- Exterior lights
- Electrical
- Engine start switches
- Interior lts, signs
- Equip cooling
- Passenger signs
- Rain protection
- Window, probe heat
- Anti ice
- Hydraulics
- Doors
- Cockpit voice recorder
- Pressurization
- Air conditioning



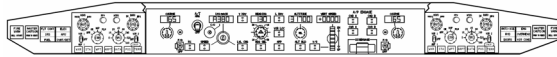

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**Instrument panels**  
Forward overhead panel



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**Instrument panels**  
Glareshield panel

- Fire warn
- Master caution w/ annunciator
- EFIS control panel
- MCP

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### Instrument panels

Left forward instrument panel

- Clock
- NWS
- Regn, SELCAL
- Below G/S ann
- DU switches
- Light test
- Spd brake ann
- Stab trim ann
- Outboard DU
- Inboard DU
- Panel lighting
- Display lighting
- Air

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### Instrument panels

Left forward instrument panel

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### Instrument panels

Center forward instrument panel

- Yaw damper
- Standby ADI
- Standby RDMI
- N1, V-speed bugs
- MFD
- Autobrake
- Anti-skid
- Flaps
- Upper DU
- Landing gear

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### Instrument panels

Center forward instrument panel

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### Instrument panels

Right forward instrument panel

- Brake pressure
- Light test
- Spd brake ann
- Below G/S ann
- DU selector
- Inboard DU
- Outboard DU
- Clock
- Regn, SELCAL
- GPWS
- Panel lighting
- Display lighting
- Air

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### Instrument panels

Right forward instrument panel

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**Instrument panels**  
Forward aisle stand

- CDU
- Lower DU

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**Instrument panels**  
Control stand

- Thrust levers
- Thrust reversers
- Engine cutoff
- TO/GA
- Stab trim cutout switches
- Stab trim indicator
- Flap
- Speedbrake
- Parking brake

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**Instrument panels**  
Control stand

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**Instrument panels**  
Aft electronic panel

- Fire warn, ext, test
- Navigation radios
- Communication radios
- ADF
- Transponder
- Cargo
- Wx radar
- ASP
- Rudder trim
- Aileron trim
- SELCAL
- Stab trim
- Cabin door
- Panel lighting
- Data printer

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**Instrument panels**  
Aft electronic panel

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**Instrument panels**  
Auxiliary panels

- Escape rope storage (C)
- Map light (E)
- Chart light (F)
- Speaker (D)
- Chart/map lights controls (I)
- Sby magnetic compass (G)
- NWS tiller (H)
- Oxygen mask panel (J)

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### Interior lighting

Flight deck lighting

- Flood and aft elec
- Map and chart lights
- Main panel lighting
- Bcg & AFDS flood

Diagram showing various lighting controls: FLOOD (BRIGHT/OFF), PANEL (BRIGHT/OFF), MAIN PANEL (BRIGHT/OFF), CIRCUIT BREAKER (BRIGHT/OFF), BACKGROUND (BRIGHT/OFF), AFDS FLOOD (BRIGHT/OFF), and DOME WHITE (DIM/BRIGHT/OFF).

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### Interior lighting

Emergency lighting

Diagram showing emergency lighting components: INTEGRAL SLIDE LIGHTING, ESCAPE SLIDE LIGHTING, EXIT LOCATOR SIGNS, PHOTOLUMINESCENT STRIP LIGHTING, EXTERIOR EMERGENCY LIGHTING, AISLE LIGHTS, and EMERGENCY EXIT SIGNS. A control panel for EMER EXIT LIGHTS is also shown with settings for NO SMOKING, FASTEN BELTS, and ATTEND.

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### Exterior lighting

Overview

Labels for exterior lights: TAXI LIGHT (white, nose gear), WING ILLUMINATION LIGHTS (white), RETRACTABLE LANDING LIGHTS (white), RUNWAY TURNOFF LIGHTS (white), FIXED LANDING LIGHTS (white), UPPER AND LOWER ANTI-COLLISION LIGHT (red strobe light), STROBE LIGHT (white), POSITION LIGHTS (red and white), LOGO LIGHT (white), and STROBE LIGHT (white).

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### Exterior lighting

Overview

3D perspective view of the aircraft showing the location of exterior lights.

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### Exterior lighting

Controls

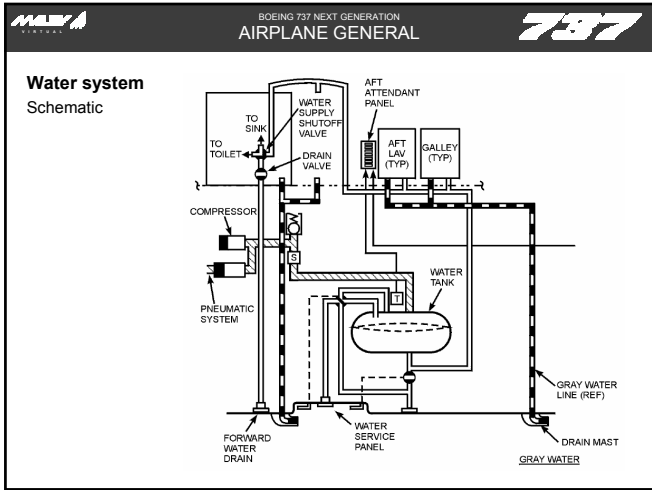
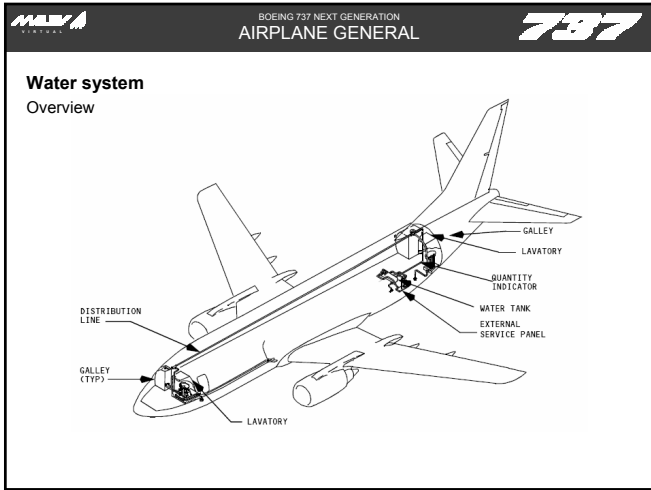
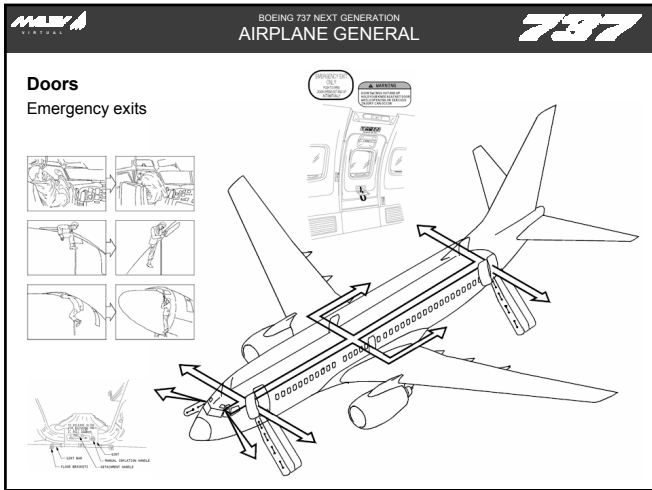
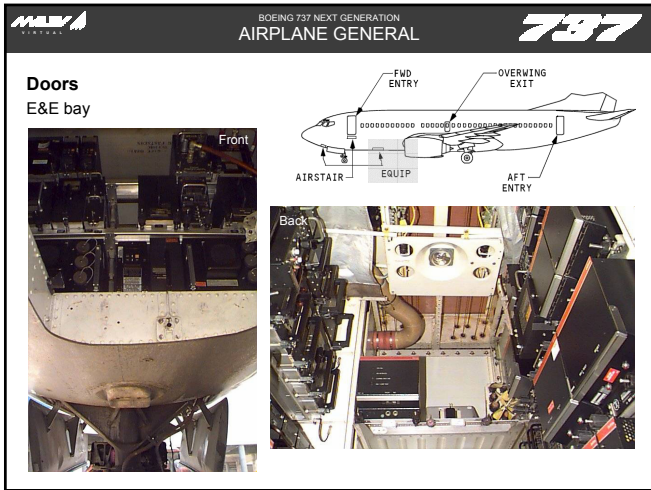
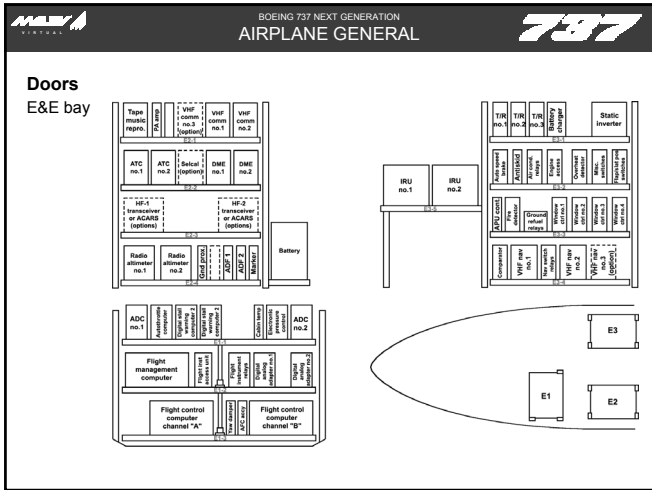
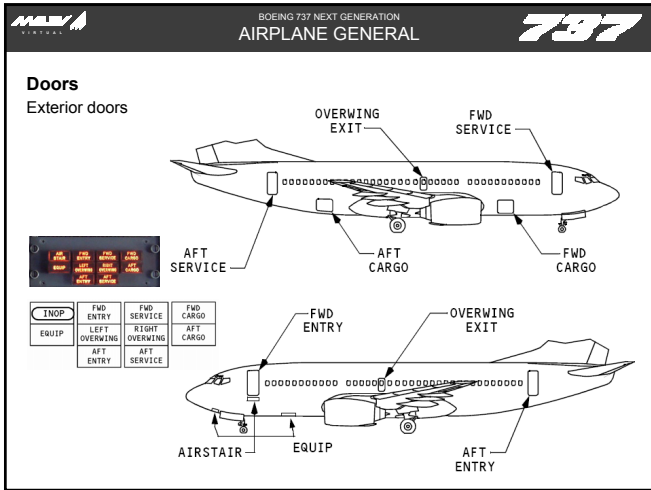
Diagram showing controls for: LANDING LIGHTS (RETRACT/OFF), RUNWAY TURNOFF (L/R ON/OFF), TAXI LIGHT (ON/OFF), LOGO LIGHT (OFF/STEADY/ON), ANTI COLLISION LIGHTS (OFF/STEADY/ON), WING LIGHTS (ON/OFF), and WHEEL WELL LIGHTS (ON/OFF).

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### Doors

Flight deck security door

Diagram showing flight deck security door components and controls: CAB DOOR LOCK, DOOR LOCK SWITCH, AFT ELECTRONICS PANEL, MIRROR, VIEWER, EMERGENCY EXIT DOOR PANELS, BLOWOUT PANEL, DOOR HANDLE AND ELECTRIC LOCK, PANEL HINGE, EMERGENCY EXIT HANDLE, and FLIGHT DECK ACCESS SYSTEM (OFF/NORM).



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## Water system Indicators & controls

**POTABLE WATER**

WATER QUANTITY INDICATOR  
PUSH - Indicates quantity of water in reservoir

WATER SYSTEM SERVICE PANEL

FILL FITTING - Used to fill tank

FILL AND OVERFLOW VALVE HANDLE  
OPEN - Enables filling or gravity draining water tank.  
CLOSED - Normal position.

TANK DRAIN VALVE HANDLE  
OPEN - Drains water from tank.  
CLOSED - Normal position.

ACCESS PANEL  
Cannot be closed unless the fill and Overflow Valve and Tank Drain Valve Handles are in the closed position.

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## Water system Lavatory

**Water SHUTOFF AND DRAIN VALVE CONTROL**  
ON - Provides water to lavatory sink, faucets and water heater (normal position).  
OFF - Stops off water to lavatory sink, faucets and water heater.  
DRAINY - Drains water overboard through respective drain fitting.

**Water HEATER LIGHT**  
ILLUMINATED - Heater operating

**Water HEATER SWITCH**  
ON - Activates the water heater.

Other components shown: LAVATORY SINK CABINET, SERVICE UNIT (SPEAKER, DOME LIGHTS), OXYGEN MASKS (2), PAPER CLIPS, PAPER TOWELS, FLUORESCENT LIGHT, MIRROR, USED RAZOR BLADES, RETURN TO SEAT SIGN, CALL BUTTON, USED TOWEL AND CUP DISPOSAL, WASH BASIN, TOILET PAPER, AUTOMATIC FIRE EXTINGUISHER (INSIDE CABINET), ROTATED 180°, ASH TRAY, SEAT COVERS, SANITARY NAPKINS, SICK BAG DISPENSER, TOILET FLUSH LEVER, TOILET SEAT BUMPER, TOILET.

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## Oxygen System schematic

Diagram illustrating the oxygen system components and flow:

- CHEMICAL OXYGEN GENERATOR
- RELEASE FIRING PIN
- GENERATOR LANYARD
- OXYGEN MASK LANYARD
- PSU
- OXYGEN MASK DOOR (COMMON OPEN)
- RESERVOIR BAG
- MASK
- DOOR LATCH MECHANISM
- OXYGEN INCLINE FLOW INDICATOR
- OXYGEN HOSE
- RESERVOIR BAG
- PSU
- CONSTANT FLOW OUTLET (4 LITER FLOW)
- CONSTANT FLOW OUTLET (2 LITER FLOW)
- ON-OFF VALVE
- PRESSURE REGULATOR
- PRESSURE GAUGE
- OXYGEN CYLINDER
- FLUCLAD
- THermal DISCHARGE PIPE
- OPEN OXYGEN CYLINDER
- 14,000 FT. BURST-RATE PRESSURE REDUCER
- ATTENDANT SEATING COMPARTMENT VALVE
- SERVICE UNITS (4 MASKS)
- SERVICE UNITS (2 MASKS)

CONDITIONS: NORMAL, HIGH PRESSURE, LOW PRESSURE, CHEMICAL OXYGEN GENERATOR (IN EACH SERVICE UNIT)

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## Oxygen Control panel

Diagram illustrating the oxygen control panel and associated equipment:

- CREW OXYGEN gauge
- PASS OXYGEN gauge
- NORMAL ON
- PASS OXY ON
- CREW OXYGEN gauge (detailed view)
- PASS OXYGEN gauge (detailed view)
- HARNES (shown inflated)
- GOGGLES
- MASK
- MICROPHONE
- REGULATOR

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## Emergency equipment Symbols

Diagram illustrating various emergency equipment symbols and their locations:

- CO<sub>2</sub> EXTINGUISHER
- WATER EXTINGUISHER
- DRY CHEMICAL EXTINGUISHER
- BCF EXTINGUISHER
- PORTABLE OXYGEN BOTTLE WITH SMOKE MASK ATTACHED
- PORTABLE OXYGEN BOTTLE WITH SMOKE MASK ATTACHED
- DISPOSABLE OXYGEN MASK
- FULL FACE OXYGEN MASK
- SMOKE HOOD
- EXIT PATH WITHOUT ESCAPE STRAP
- EXIT PATH WITH ESCAPE STRAP
- EXIT PATH WITH ESCAPE SLIDE
- LIFE RAFT
- EMERGENCY TRANSMITTER
- LIFE VEST
- PROTECTIVE GLASSES
- SMOKE GOGGLES
- CRASH AXE
- MEGAPHONE
- BATON
- HANDCUFFS
- FLASHLIGHT
- EMERGENCY MEDICAL KIT
- FIRST AID KIT
- PORTABLE EXIT LIGHT
- RESUSCITATOR

Locations: UNDER EACH PASSENGER SEAT, 1 SEAT BELT EXTENSION, EACH ATTENDANT, A = ATTENDANT SEAT, L = LAVATORY, G = GALLEY

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## Köszönöm a figyelmet!

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