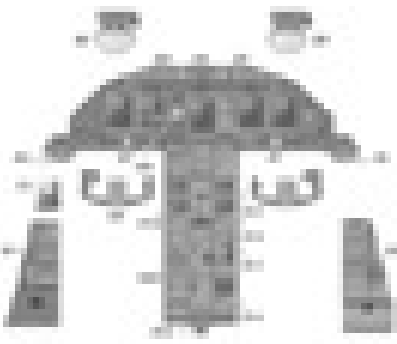
C-27J SPARTAN

This illustration depicts the Italian air force C-27J Spartan

Structure and general

1 Sideways hingeing radome – mixed composite
2 Radar mounting/forward pressure bulkhead(bird impact proof) – machined and built-up aluminium alloy
3 Avionics bay(forward) access door
4 In-flight refuelling probe attachment fitting – machined aluminium alloy
5 Down-view windows
6 Rearward sliding direct vision window/escape exit – acrylic
7 Pilot's fully adjustable seat with armrests and headrest
8 Instrument panel glareshield
9 Cockpit roof escape exit – 49 x 61cm
10 Flight observer's seat – stows behind co-pilot's seat
11 Cockpit floor – armoured
12 Nose landing gear bay – built up and machined aluminium
13 Lavatory and escape exit (54 x 91cm) – located opposite crew entry door
14 Crew entry door (1.49 x .66m) with bracing cables and spring compensation mechaniism
15 Cargo loading winch – two off
16 Crew entry door skin doubler



Instrument panel, HUD, centre console and side panel detail

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17 Fuselage structure (typical) – Z-section aluminium alloy frames, stringers and skins
18 Thermal/acoustic insulation
19 Troop seats (MIL-S-27174B) – 46 typical configuration, 60 high density
20 Cabin floor panels with tie-down and cargo handling equipment – aluminium alloy
21 Cargo hold/cabin capable of accommodating 60 combat troops, 32 NATO litters and six attendants, 12 A22 CDS bundles, three 463L and one HCU12/E pallets – 11.5t maximum load
22 Engine lower cowling – composite
23 Main landing gear sponson – aluminium alloy
24 APU (rear) firewall – corrosion resistant steel
25 Escape ladder/centre row(high density) seating support – two off
26 Cabin upper escape exits (two off) – 91 x 54cm
27 Cabin windows – six off
28 Forward mainframe – machined aluminium alloy
29 Centre mainframe – machined aluminium alloy
30 Rear mainframe – machined aluminium alloy
31 Wing-to-fuselage outer attachment fittings
32 Wing-to-fuselage inner attachment fittings
33 Three spar centre wing section with integral fuel tanks – machined and built-up aluminium alloy spars, ribs and skins
34 Engine mount/nacelle forward frame – machined titamium
35 Engine mounting struts – stainless steel
36 Engine mount/nacelle rear frame – machined titanium
37 Inboard-to-outboard wing section interface – machined aluminium alloy multi-bolt attachment frames
38 Wing front spar – machined and built up aluminium alloy
39 Wing leading edge – aluminium alloy
40 Wing centre spar – machined and built up aluminium alloy
41 Wingtip – aluminium alloy
42 Countermeasures despensor aerodynamic strake
43 Wing skin panels – aluminium alloy with riveted stringers and fuel cell access panel openings on upper skin
44 Wing rear spar – machined and built up aluminium alloy
45 Life raft stowage – both sides
46 Wing-to-fuselage aerodynamic fairing – aluminium alloy
47 Paratroop door – upward sliding
48 Pendulum arm and hook
49 Door winch and balance mechanism
50 Paratroop door tracks
51 Main landing gear (MLG) support frame – machined aluminium alloy
52 MLG attachment fittings
53 Paratroop door jump platform – retractable
54 Cargo ramp hinge – four off
55 Loading ramp – aluminium alloy
56 Ramp bumper
57 Auxiliary ground loading ramps
58 Cabin insulation blankets
59 Ramp support rod and slider
60 Observer's window and seat – both sides
61 Hinge mounted cargo door – aluminium alloy
62 Fin fillet – aluminium alloy
63 Nacelle inlet – mixed aluminium and composite
64 Cargo door latches – 10 off
65 Cargo door latch fittings
66 Fuselage-to-tailplane fairing
67 Cargo door hinges – two off
68 Tail fairing – composite
69 Two-piece two spar tailplane – aluminium alloy
70 Tailplane tip
71 Tailplane attachment fittings
72 Single-piece swept back three spar fin – aluminium alloy
73 Fin leading edge (detachable) – aluminium alloy
74 Fin tip
75 Vortex generators – fin port side only
76 Storage cabinets

Air conditioning and anti-icing

The aircraft is pressurised up to a differential pressure of 5.8 lb/in åt 9,145m.
Three 10 litre oxygen convertors and five emergency oxygen cylinders are carried

A1 Cabin and forward electronics bay environmental control system (ECS) Cooling ducting
A2 Pilot's emergency oxgen cylinder stowage
A3 Cockpit conditioned air ducting
A4 Cockpit side/window demist conditioned air ducting
A5 ECS pack air inlet
A6 ECS heat exchanger
A7 ECS exhaust
A8 Passenger (cabin) oxygen mask connector panel
A9 Oxygen convertor No1 – passenger
A10 Oxygen convertor – crew
A11 Oxygen convertor No2 – passenger
A12 Electrically heated spinner
A13 Propeller de-icing boot – electric
A14 Engine air intake anti-icing – pneumatic
A15 Wing leading edge de-icing boot – pneumatic
A16 Fin leading edge de-icing boot – pneumatic
A17 Tailplane leading edge de-icing boot – pneumatic

Flying controls

C1 Pilot's adjustable rudder pedals and brakes with partial nose wheel steering
C2 Control column with stick shaker
C3 Nose wheel steering handle
C4 Aileron/elevator primary control quadrant
C5 Lower control cable pulleys
C6 Upper control cable routing
C7 Aileron pulley and differential lever
C8 Hinge-mounted aileron – aluminium alloy
C9 Spring tab – aluminium alloy
C10 Geared trim tab – aluminium alloy
C11 Geared tab – aluminium alloy

C12 Aileron hinge – three off
C13 Single-slotted outboard flap – aluminium alloy
C14 Slot – aluminium alloy
C15 Flap track – steel
C16 Flap actuator (hydraulic) with asymmetric control system – two per flap
C17 Single-slotted inboard flap – aluminium alloy
C18 Spoilers (two per wing) – hydraulic
C19 Elevator control quadrant (hydraulic) and autopilot motor drive – electric
C20 Elevator geared tab – aluminium alloy
C21 Hinge-mounted elevator with digital Q-feel system – composite
C22 Elevator trim tab – aluminium alloy
C23 Rudder and rudder trim actuators – hydraulic
C24 Hinge-mounted rudder – aluminium alloy

Instrument Panel
D1 Multifunction control display units (MCDU) – five off
D2 Pilot's oxygen panel
D3 Warning panel
D4 Auto pilot controls
D5 Head-up display
D6 Hydraulic pressure, standby attitude indicator and flap indicator
D7 Rudder adjuster
D8 Parking brake

D14 Communications/navigation/identification management unit – CNI-MU
D15 Throttle quadrant
D16 Flight control system (FCS) panel
D17 Cursor control device
D18 Communications/navigation radio panel – CNRP
D19 Landing gear emergency release
D20 Centre console – trim, pressurisation, radar, aerial delivery, CNRP, SAMU, CNI-MU, throttle, heading/course, radio, FCS, lights, and observer's controls

Avionics and electrical
E1 Lightning discharge strips
E2 Northrop Grumman AN/APN-241 low power colour radar
E3 Glide slope antenna – three off
E4 Battery bay (24V-40Ah) – two off

E5 Countermeasures dispensers – forward
E6 MLS-DME P antenna
E7 Landing lights – two off
E8 Pitot heads (four off) – electrically heated
E9 Angle-of-attack sensor
E10 MLS-DME P antenna
E11 Windshield wipers – electric
E12 Electrically heated glass windshield
E13 Overhead electrical panel
E14 Head-up display projector and combiner
E15 OAT probe
E16 Visual ice detector probe
E17 Wing/engine inspection light
E18 Missile warning system (MWS) left-hand forward sensor
E19 Radar warning receiver (RWR) forward sensor
E20 Countermeasures dispensers – lower
E21 Radar altimeter 1 TX and RX antennas
E22 V/UHF-TACAN 1 lower antenna

E23 Radar altimetre 2 TX and RX antennas
E24 RWR omni antenna
E25 Anti-collision light
E26 V/UHF-TACAN 2 lower antenna
E27 Cabin forward avionics rack
E28 Cockpit avionics bay – port
E29 Cockpit avionics bay – starboard
E30 TCAS antenna
E31 GPS 1 and 2 antennas

E32 V/UHF-TACAN 1 upper antenna
E33 IFF upper antenna
E34 UHF SAT (SICRAL) antenna
E35 ADF 1 antenna
E36 Marker beacon antenna
E37 V/UHF DF antenna
E38 Engine driven generator (both engines) – 50/60kVA
E39 Landing lights
E40 Countermeasures dispensers – wing
E41 ELT antenna

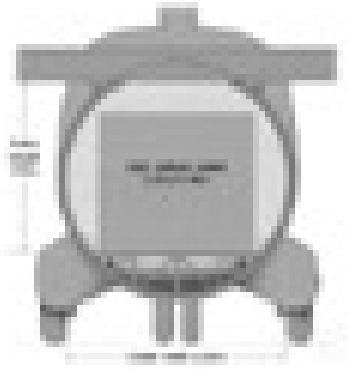
E42 Static discharge wicks
E43 IFF antenna
E44 V/UHF-TACAN 2 upper antenna
E45 ELT antenna
E46 Cabin rear avionics rack
E47 Anti-collision beacon
E48 Countermeasures dispensers – lateral
E49 VOR/LOC antenna – both sides
E50 RWR rear omni antennas – three off
E51 Countermeasures dispensers – rear
E52 MWS rear sensor – both sides
E53 MLS-DME P antennas
E54 HF antenna – both sides

D9 Landing gear lever and braking panel
D10 Trim panel
D11 Pilot's side console – headset, interphone, memory unit controls and stowage box
D12 Co-pilot's side console – headset, interphone data loader, passenger oxygen controls and stowage box
D13 Single avionics management unit – SAMU

Fuel system
Typical total fuel capacity 12,320 litres – extended range option – 13,840 litres. An onboard inert gas generating system is optional
F1 In-flight refuelling (IFR) probe
F2 IFR supply line
F3 Single point pressure refuelling/defuelling (SPR) connector – one gravity filler port is located on each tank upper surface – four off
F4 Main tank refuelling valve – electric
F5 Main fuel tank (outboard wing section) – 6,720 litres each
F6 Auxiliary fuel tank (inboard wing section) – 5,600 litres each
F7 SPR distribution lines
F8 Fuel pumps (electric) – two per fuel tank
F9 Fuel probe
F10 Fuel drain line
F11 Fuel vent and pressurisation line
F12 Fuel jettison nozzle
F13 Fuel vent tank NACA scoop

Powerplant and APU
P1 Propeller hub and counter-weights
P2 Engine air-inlet
P3 Propeller (foward) and accessory drive (rear) gearboxes – electrical generator and pump
P4 Dowty R-391-6-132-F/10 six-blade electrically de-iced propeller (4.80m diameter) – composite construction with metallic errosion-strip
P5 Engine air-cooled oil cooler (ACOC) inlet

Cabin cross section detail



P6 Engine power unit accessory drive
P7 Rolls-Royce AE2100D2 turboprop engine rated at 4,637shp with full authority digital engine control (FADEC) unit
P8 Engine air-inlet foreign object outlet
P9 Engine ACOC
P10 Engine ACOC exhaust and flap
P11 Engine exhaust nozzle
P12 APU air inlet
P13 Hamilton Sundstrand APS1000 (T-62T-46C16) APU – rated at 60kVA
P14 APU air exhaust – acoustically treated
P15 Oil and fuel drain
P16 Engine fire extinguisher bottles – one per engine and APU
P17 APU oil cooler and exhaust
P18 APU bay ventilation inlet
P19 APU bleed-air line

Undercarriage and hydraulics
The hydraulic system is divided into two independant systems operating at 206bar (3,000lb/in²). For ease of loading, the undercarriage has the ability to raise the aircraft (cargo floor) by .5m, or increase the nose attitude by 4.3°

U1 Nose landing gear (NLG) forward doors (closed while on the ground) – composite construction
U2 NLG door actuator rods – two off
U3 NLG rear doors – composite
U4 Forward retracting lever type twin-wheel oleo-pneumatic NLG (electrically controlled) – tyres 29x11-10PR
U5 Steering actuators (±65°) – hydraulically actuated rack and pinion
U6 Drag brace
U7 Rearward retracting hydraulically actuated twin-wheel main landing gear (MLG) with free-fall capability, single wheel tandem-lever type with multi-disk steel dual brakes (electronic anti-skid system) – tyres 39 x 13-18
U8 MLG lever-arm
U9 MLG chassis
U10 Shock absorber – one per leg
U11 Retraction actuator
U12 Hydraulic reservoir 1(port side) and system 2(stbd side)
U13 Cargo door actuator
U14 Cargo ramp actuator
U15 Motor pump – AC
U16 Accumulator
U17 Free-fall gas-spring assistor