

EXPERIENCE AIMED AT THE FUTURE



ANTONOV-178

CARGO MULTIPURPOSE AIRCRAFT

ANTONOV team is glad to present to the international aviation community new AN-178 transport that performed its maiden flight on May 7, 2015. This is another triumph of engineers, workers and test pilots of our enterprise and our partners all over the world.

Today ANTONOV performs the aircraft tests, establishes its series production and organizes its support while operation.

We are sure that we can create an optimal aircraft to effectively perform tasks of army logistics, and at the same time – to use it as a commercial aircraft.



photo: V.Koba

The AN-148/-158/-178 family

AN-158 –

regional passenger aircraft
(2010, up to 99 passengers)



AN-148 –

regional passenger aircraft
(2004, up to 89 passengers)



AN-178 –

cargo multipurpose aircraft
(2015, cargo capacity
up to 18 t)



AN-148-300MP –

maritime patrol
(under development)

AN-148-300 –

business jet with increased flight range
(under development, 12-14 passengers)

AN-178 transport was created taking into account all modern requirements to civil and military transport. It is intended to fulfill the following tasks:

- transportation of civil-purpose cargoes, IATA and sea containers and pallets, engineering vehicles at regular and charter routes;
- participation in special and humanitarian missions;
- aeromedical transportation of sick and injured persons;
- transportation of troops with light vehicles and armaments;
- airdropping of paratroops, vehicles, cargoes and maintenance items.

AN-178 is intended to replace AN-12 and C-160 and provides with the following:

- full replacement through dimensions and cargo capacity;
- maximum efficiency owing to superiority by all flight and technical characteristics;
- reduction of operating cost owing to installation of two turbojets instead of four or two turboprops;
- correspondance to all modern requirements and standards due to airborne equipment and avionics of a new generation.



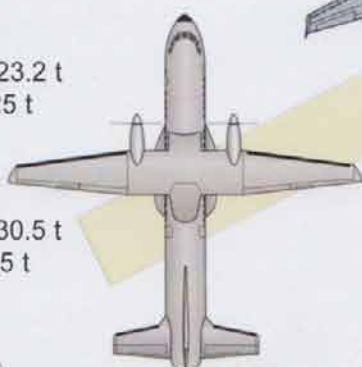
AN-178 position among transport aircraft

C-295

MTOW = 23.2 t
MPL = 9.25 t

C-27J

MTOW = 30.5 t
MPL = 11.5 t

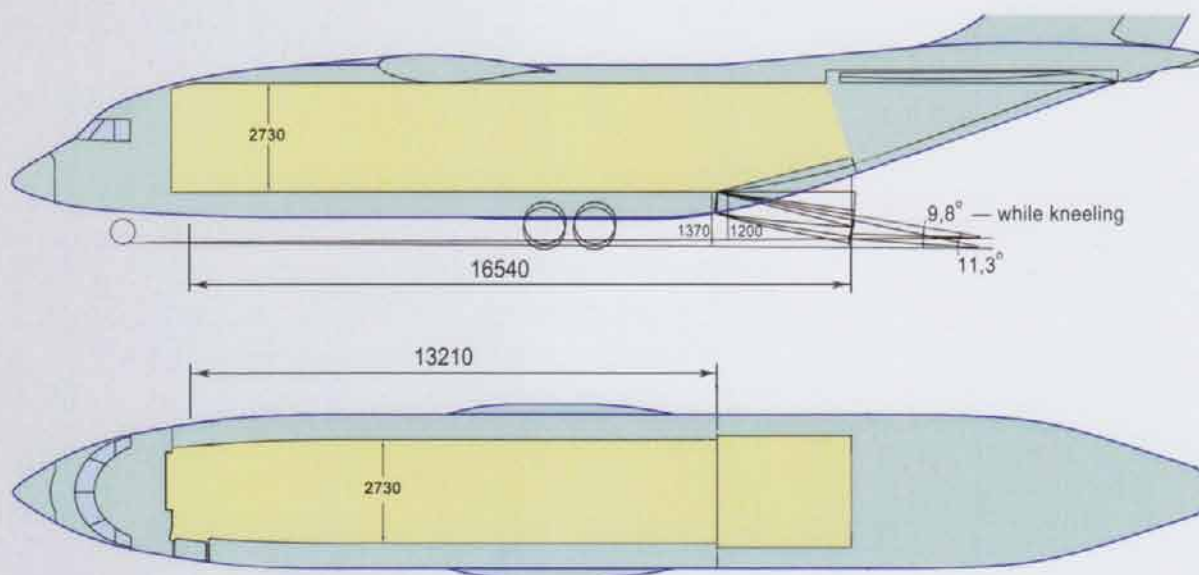
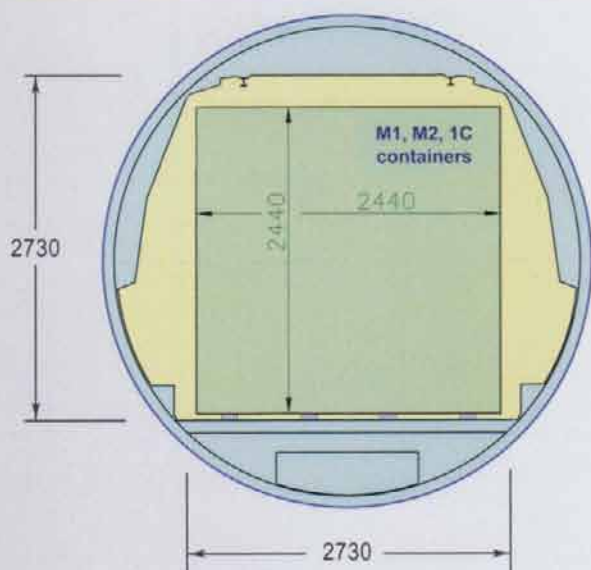


AN-178

MTOW = 52.4 t
MPL = 16-18 t

C-130J-30

MTOW = 79.4 t
MPL = 20.07 t



Floor area: - with cargo ramp 58.5 m²
 - without cargo ramp 39 m²

Cabin volume: - with cargo ramp 167 m³
 - without cargo ramp 122 m³

AN-178 cargo compartment dimensions enable to transport a wide range of general cargoes, including sea containers, military and humanitarian cargoes. The aircraft is equipped with a main landing gear kneeling system intended to simplify loading of the vehicles into the cargo compartment. Due to capabilities of onboard loading complex (option) AN-178 can perform autonomous cargo loading/unloading while additional ground handling equipment is not required.

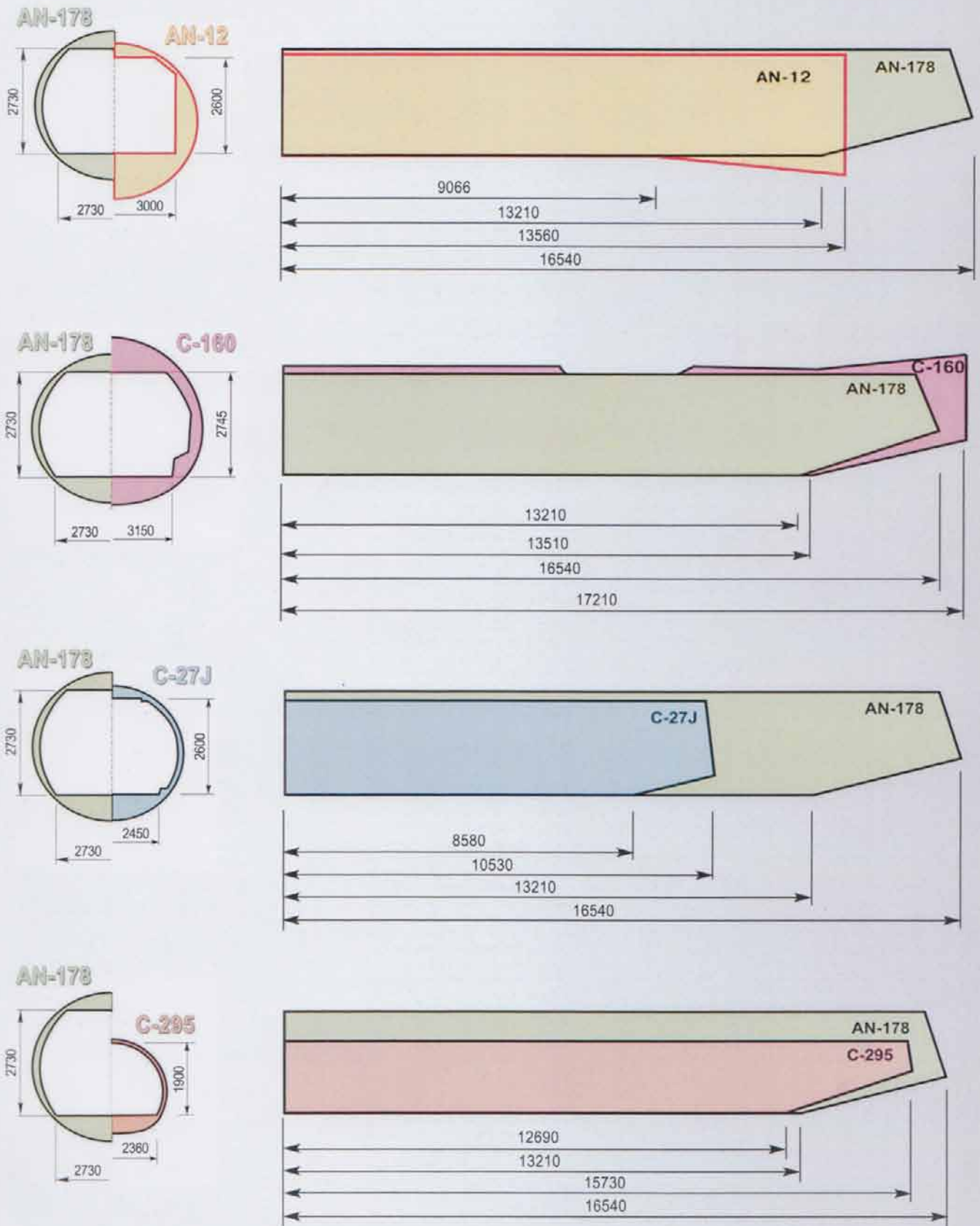
Loading/unloading complex includes:

- 2 electric winches with tractive force of 1000 kgf for loading of non-self-propelled wheeled cargoes;
- roller track equipment ensuring loading and unloading of cargoes, their placing at pallets and in containers;
- 2 overhead cranes with lifting capacity of 8000 kgf (suggested to a customer as an option).

The aerial delivery system enables to carry out the following:

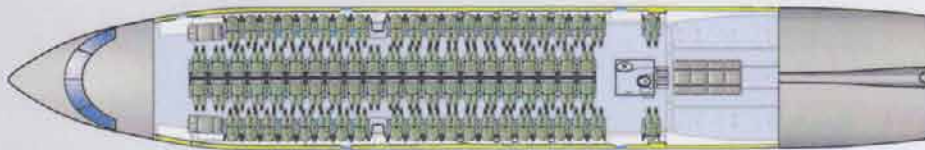
- single, groupe and serial airdropping of cargoes, as well as airmission landing;
- transportation of troops and their paratropping through the cargo hatch and fuselage doors in two groups (option) or through the cargo hatch in one group;

AN-178 enables to perform air dropping of monocargoes weighting up to 7.5 t.

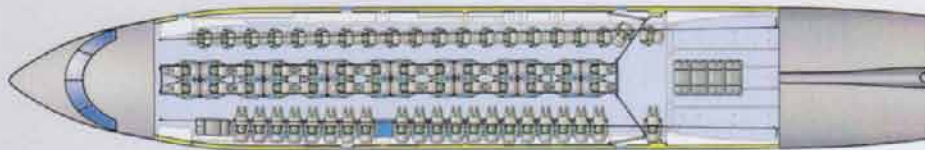


Optimal dimensions of a cargo compartment and modern loading/unloading equipment enable the aircraft to efficiently perform the whole range of transport tasks.

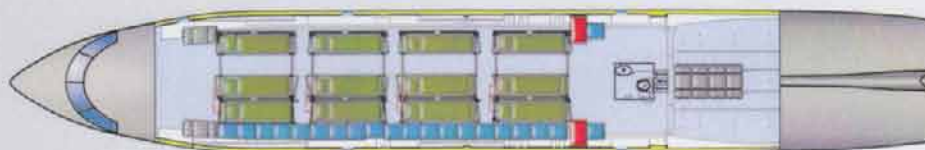
Transport capabilities: transportation of personnel



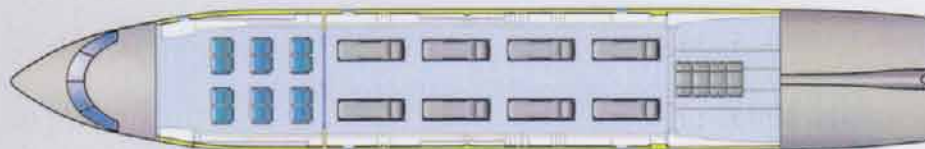
90 soldiers



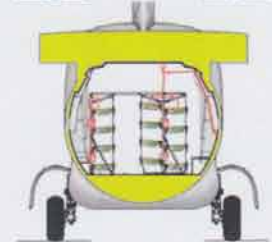
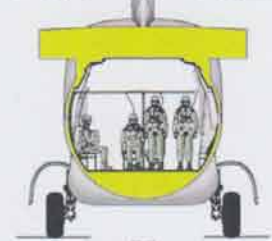
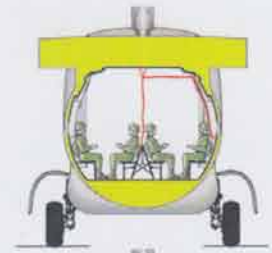
70 paratroops



48 wounded on stretchers + 15 at the seats



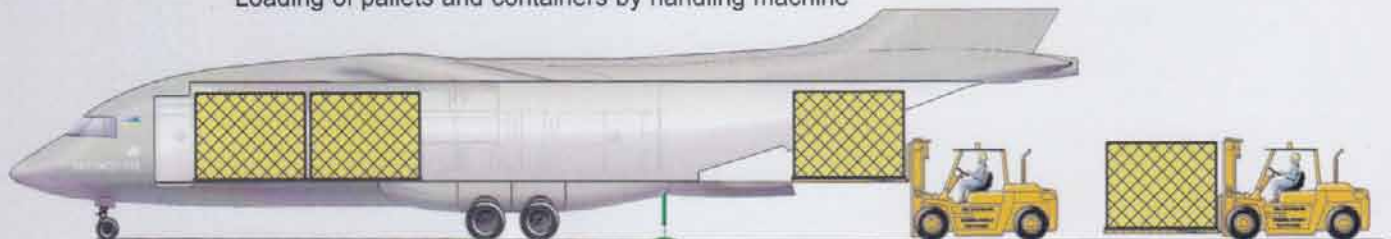
8 medical modules and 12 attendants



Loading variants



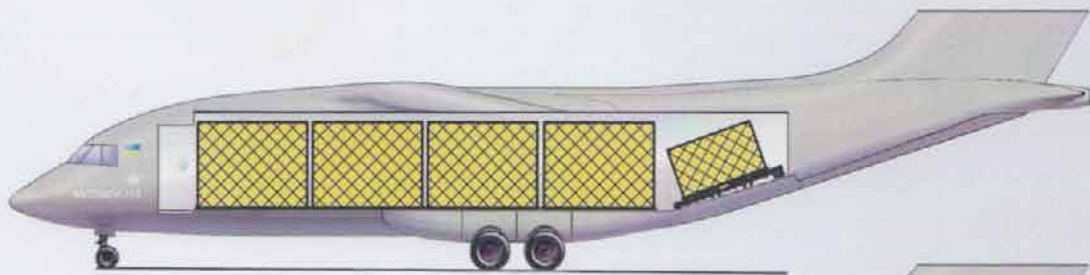
Loading of pallets and containers by handling machine



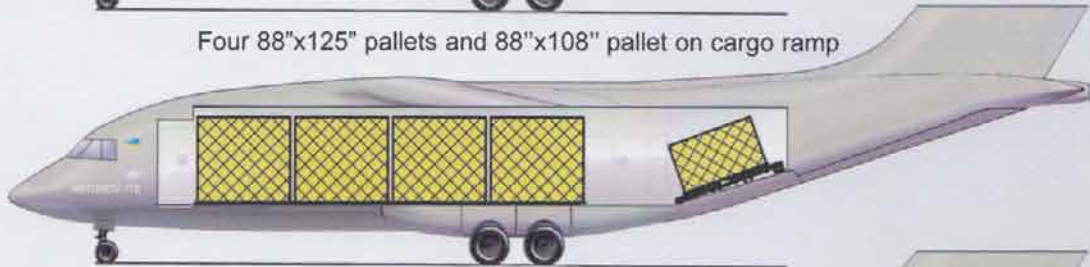
Loading by forklift



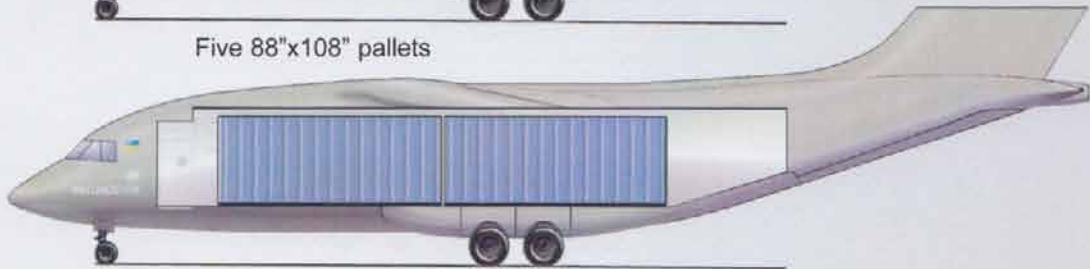
Loading the turbojet engine by upper handling equipment (option), max. cargo weight up to 8 t



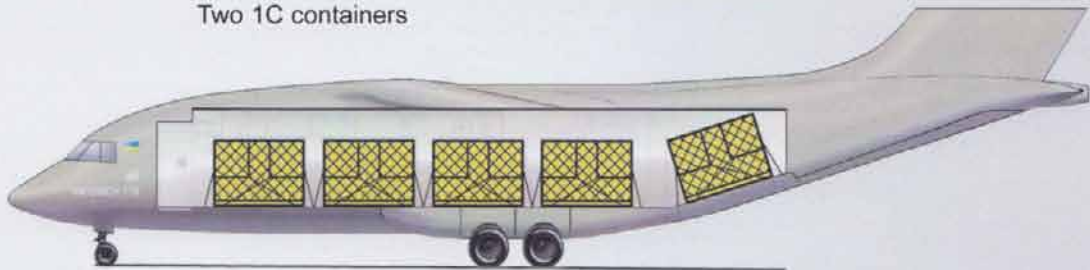
Four 88"x125" pallets and 88"x108" pallet on cargo ramp



Five 88"x108" pallets



Two 1C containers



Cargo in bulks under a net

Carriage:	Items	Weight, t
Soldiers, pers.	90	10.8
Paratroopers, pers.	70	8.3
Wounded at the stretchers + at seats, pers.	48+15	6.0
Containers, inch (m):		
M1 96" x 96" x 125" (2.438x2.438x3.175)	4	18.0*
M2 96" x 96" x 238.5" (2.438x2.438x6.058)	2	18.0
M3 88" x 96" x 125" (2.235x2.438x3.175)	4	18.0
1D 96" x 96" x 117.8" (2.438x2.438x2.991)	2	18.0
1C 96" x 96" x 238.5" (2.438x2.438x6.058)	2	18.0
Pallets, inch (m)		
88" x 108" (2.235x2.743)	5	18.0
88" x 125" (2.235x3.175)	4	18.0
96" x 125" (2.438x3.175)	4	18.0
96" x 238.5" (2.438x6.058)	2	18.0

* For commercial application max. payload is up to 16 t



FMTV A1RM 1088A1, cargo weight 8 t



FMTV A1RM 1085A1, cargo weight 10 t



PANDUR 6x6, cargo weight 16,5 t



PANDUR IFV, cargo weight 16,5 t

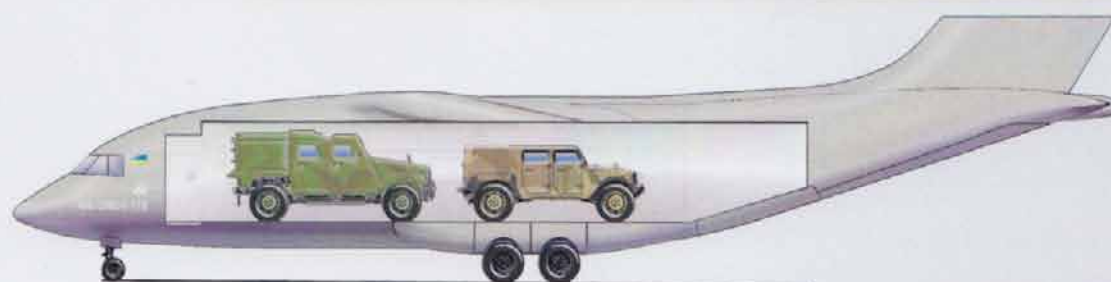


PANDUR ARFSV, cargo weight 16,5 t

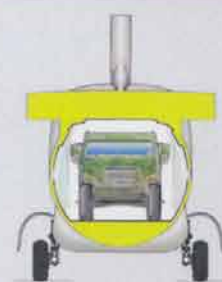


PIRANHA III C 8x8, cargo weight 13,5 t

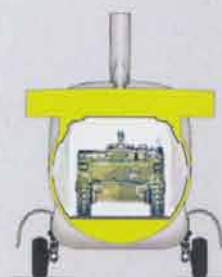




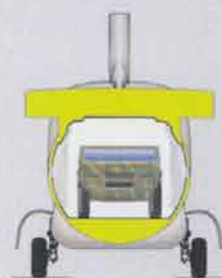
EAGLE IV 4x4 + SHERPA 2 4x4, cargo weight 17 t



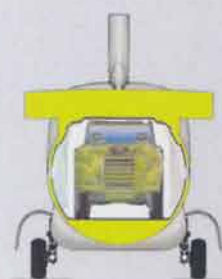
M113A-3 + GAZ 66, cargo weight 15 t



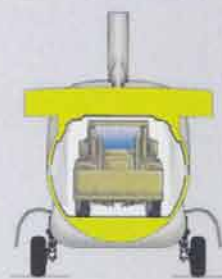
KMW F2, cargo weight 15 t



BUSHMASTER, cargo weight 15 t

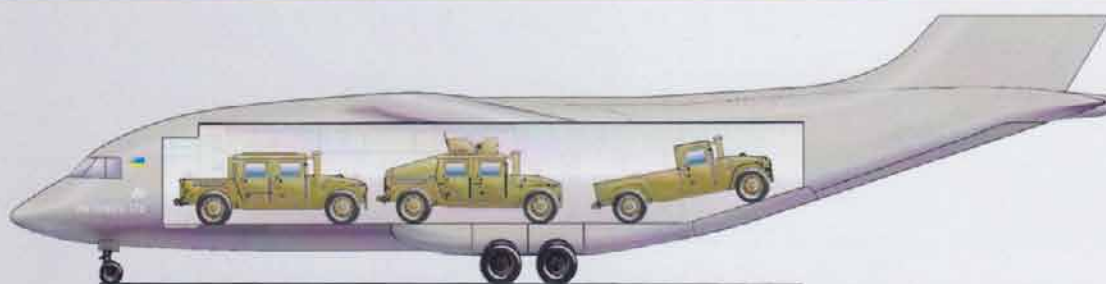


High mobility engineering vehicle, cargo weight 12 t



BARS 8 and BARS 6, cargo weight 16 t





HMMWV M1165A1, M1167A1, M1152A1, cargo weight 18 t



2 x DOZOR-B, cargo weight 17 t



DURO III P 6x6, cargo weight 13 t



HEMTT M983A2, cargo weight 17,6 t



M977A2 Cargo Truck, cargo weight 16,4 t



Engineering vehicle TL100, cargo weight 12 t

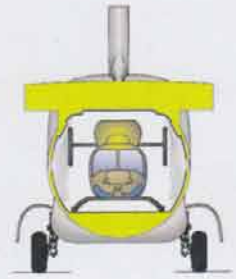




Bell 412 helicopter, cargo weight 3 t



Bell 427 helicopter, cargo weight 2 t



Bell 407 helicopter, cargo weight 1,3 t



Bell 206B helicopter, cargo weight 1 t

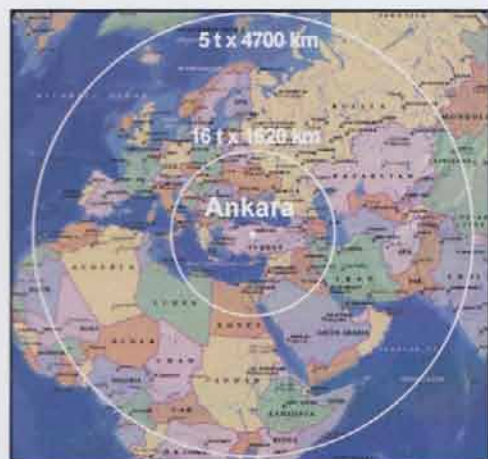


3 x D-30 cannon, cargo weight 15 t



2 x motor boat, cargo weight 3 t





- from Ankara



from Astana -



- from Berlin



from Beijing -



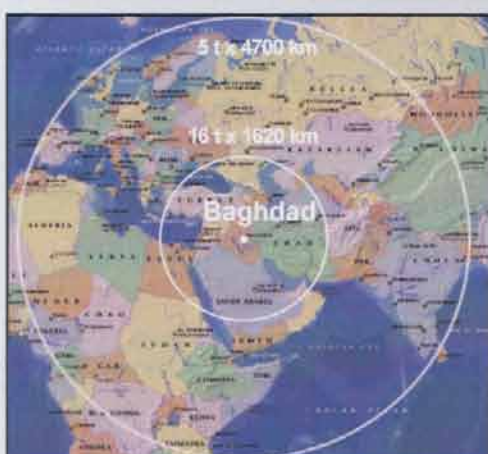
- from Baku



from Bogota -



- from New-Delhi



from Baghdad -

Operation envelope

Operation at runways with artificial pavement under the following conditions:

- aerodromes of I, II classes and IIIA optionally;
- coefficient of friction $\mu \geq 0.3$;
- dry runway;
- damp runway;
- wet runway without ditch-water areas or with ditch-water areas up to 10 mm deep at square less than 50% of the runway area;
- hoar-frost-covered runway;
- runway covered with slush up to 15 mm thick;
- runway covered with dry snow not more than 50 mm thick;
- runway covered with wet snow not more than 15 mm thick.

Operation at unpaved runways under the following conditions:

- ground solidity at unpaved runway and taxiway not less 7.5 kg/cm^2 ;
- dry runway.

Avionics

The flight, navigation and radio communication equipment is compliant with current and future ICAO recommendations and EUROCONTROL requirements, including:

- precise navigation in accordance with RNP-5 and RNP-1;
- flying in RVSM zones;
- automated flight planning with navigation database;
- flights in automatic mode by SID, STAR, APPROACH, MISSED APPROACH standard schemes;
- IIIA Landing Category;
- terrain Awareness and Warning System;
- Traffic Collision Avoidance System;
- detection of wind shear;
- radio communication within 8.33 kHz channel spacing;
- two-way communication within HF range;
- recording of the crew members' conversation during two hours.

Powerplant

AN-178 is equipped with two D-436-148FM engines (takeoff thrust 75.51 kN each).

The engine is equipped with FADEC. The engine life period is 80,000 flight hours and 40,000 cycles with on-condition maintenance.

AN-178 is equipped with TA-18-100 APU.

The APU life period is 16,000 flight hours and 32,000 cycles.

Limits:

1. The airfield elevation over the sea level from -300 to 4100 m.
2. The environment air temperature from -55 °C to +50 °C.
3. Wind speed limits:
 - headwind 30 m/c;
 - tailwind 5 m/c;
 - crosswind 30 m/c;
 - while taxiing and towing (from all directions) 30 m/s;
 - max flight altitude 12.200 m.
 - $M_{\max} = 0.85$.



During the whole period of aircraft operation ANTONOV Company provides its after-sale support.

Basing on contract conditions ANTONOV will render the following product support services:

Design authority follow-on support of aircraft operations: specialists of the Information Center for Customer Support provide Customer's representatives with services of round the clock (24/7/365) information and technical support of Customer's aircraft operations.

Information support: Customer's representatives are provided with authorized remote access to technical publications at the ANTONOV website.

Logistic support of the aircraft operated by the Customer by means of supplying the required components, their repair and return to service.

Training and periodic retraining of Customer's flight, engineering and maintenance personnel:

- theoretical training in equipped classes;
- practical training at ANTONOV and Customer's aircraft;
- flight personnel training at ANTONOV simulators, including D level simulators.

Maintenance of Customer's aircraft:

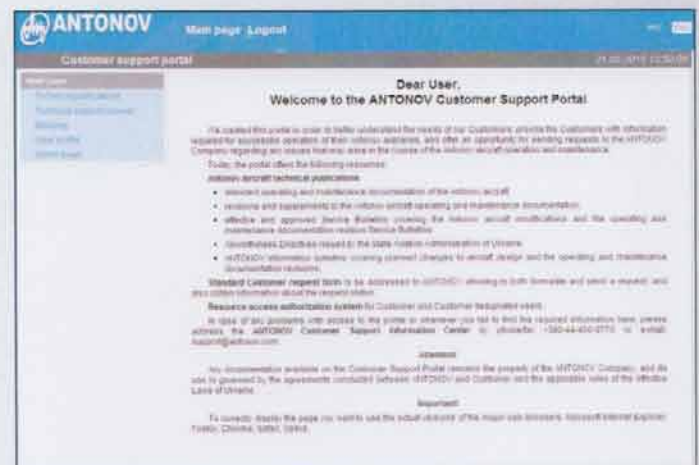
- on production facilities, approved by Part-145 organization on ANTONOV maintenance;
- within certified service centers;
- at places of aircraft deployment by certified ANTONOV personnel.

Modifications to Customer's aircraft according to service bulletins, developed by ANTONOV Company.

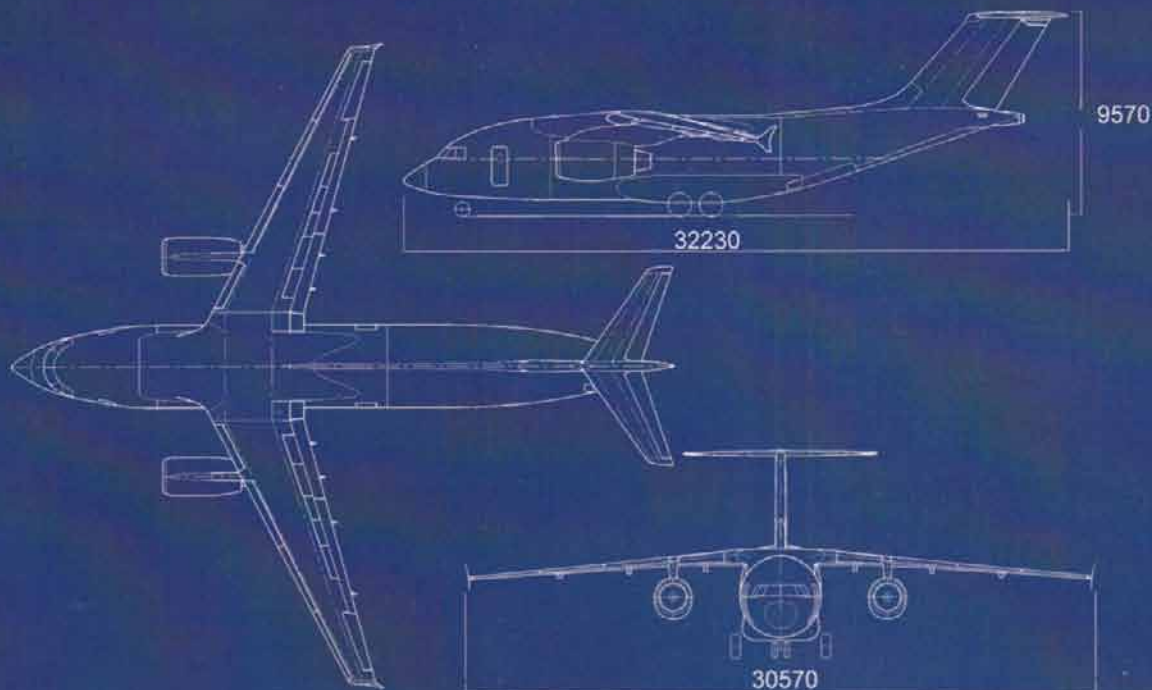
Reconditioning repair of Customer's aircraft by efforts of ANTONOV Company at their home bases or at the location in case of emergency.

Maintenance program development of aircraft according to Customer's requirements.

Check	Time interval
Line maintenance	
E Check	At least once every two days (48 hours)
W Check	Once every 15-20 days
Base (periodic) maintenance	
A Check	750 hours
C Check	36 months (about 7500 hours)
Periodic maintenance for airframe and critical parts of airframe	
SA Check	Every 300 landings or 6 months
SC Check	Every 36 months or 3000 landings

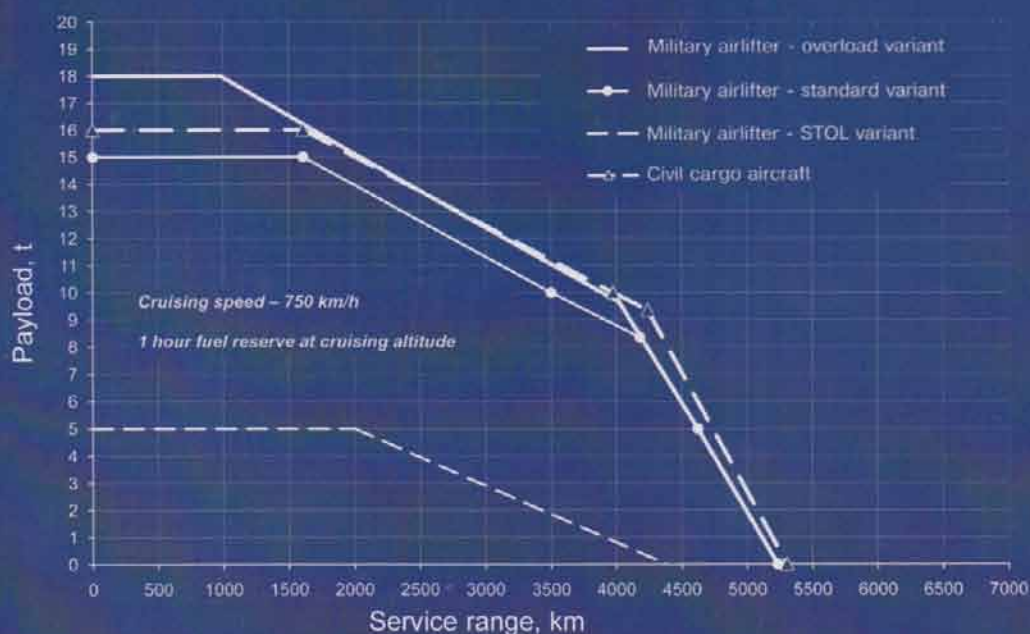


Aircraft assigned service life:	Number of landings	– 30,000
	Flight hours	– 60,000
	Service life	– 30 years



Operational conditions	Civil Aircraft	Military Airlifter		
	Ordinary runway	Ordinary runway	STOL	STOL
Max. Payload, t	16.0	15.0	18.0 (overload)	7.0
Max. Cruising Speed, km/h	825			
Max. Altitude, m	12 200			
Practical range with cargo, km				
- 18 t		-	990	-
- 15 t (16 t for civil aircraft)	1 620	1 610	2 040	-
- 10 t	3 950	3 500	3 890	-
- 5 t	4 700	4 620	4 620	2 000
- ferry range	5 300	5 230	5 230	4 380
T/O field length	2 500	2 350	2 500	915
Engines: - type	D436-148FM			
- takeoff/APR thrust, kN	75.51 / 88.66			

Payload-range diagram of AN-178 aircraft



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