UKRINMASH

AIRCRAFT ENGINEERING AND MAINTENANCE

UkrOboronProm
Ukrainian Defence Industry

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UKRINMASH - 25 YEARS AT THE INTERNATIONAL MARKET

The State Self-Supporting Foreign Trade and Investment Firm «Ukrinmash» which is the participant of the State Concern “UkrOboronProm”, operates at the international market since 1991.
The aim of the Firm is to implement the interests of Ukraine in the field of military-technical cooperation with foreign partners. Ukrinmash has built reliable business connections with countries from every part of the world. The key mission is service excellence, reliability and client satisfaction.

«UKRINMASH» OFFERS:

- Export of weapons and military products in the field of armored military vehicles, aircraft engineering, shipbuilding industry, radar location and air defence, as well as rocket artillery weapons and munitions.
- Transfer of technologies and know-how, including the development of military factories and MRO centers.
- Maintenance, repair / overhaul and upgrade of military equipment.
- Training of foreign military personnel.
- Import of weapons and military products to Ukrainian Army and all other military and defence structures.
- R&D, investment and other partnership opportunities.
- Utilization, demilitarization of the old military equipment and demining of the territory.
- Marketing, advertising and intermediary services.

AIRCRAFT ENGINEERING AND MAINTENANCE
AIRCRAFT

For the last few years Ukrainian Defence Industry has been in the stage of transformation into a highly effective structure. This process is taking place due to new technologies, products, innovations, efficient management and top-professionals who have come into this field. Today we are offering the new armament business culture, client – orientation, flexibility and personal approach.

We represent Ukrainian enterprises of the State Concern «Ukroboronprom» which employ more than 80 thousand people, and the products of other Ukrainian enterprises. Ukraine is a reliable partner and exports the defence products to many countries of the world. The potential of development of Ukrainian Military Industrial Complex are tremendous ones and it is only the beginning of their realization and prospects.

We offer the widest product range in the fields of aviation, armor, radio, artillery as well as ship building and rocket industry, etc.

Ukraine makes part of prestigious club of the countries which has mastered the closed cycle in aircraft building, radio intelligence and radio-electronic warfare, and Ukrainian export potential is among the best 10 in the world.

The SE “Ukrinmash” is a unique specexporter and integrator which makes an important part of the Ukrainian Military Industrial Complex and which is honored to be your reliable partner. We are proud that the SE “Ukrinmash” is one of the most experienced and one of the biggest export-import companies of Ukraine which has been working in the armament and military hardware market for more than 25 years.

We present you our products range as well as services in repairing, upgrading, joint promotion of products and cooperation in military markets. The SE “Ukrinmash” is not only reacting to the state of the market but initiates trends in the world market. Today, the SE “Ukrinmash” is making a new history of the military industry of Ukraine.

MEDIUM MILITARY
TRANSPORT AIRCRAFT

AN-26

AN-26 Medium military transport aircraft is equipped with a big cargo door, lowering cargo ramp, mechanization facilities for handling and is intended to transport cargos, military equipment, personnel, wounded and ill persons, as well as for air landing of personnel and military equipment.

MAIN PERFORMANCE DATA	
Modification	An-26
Wing span, m	29.20
Length, m	23.80
Height, m	8.58
Wing area, m^2	74.98
WEIGHT, M	
Max takeoff	23 800
Empty	15 020
Internal fuel, kg	2760
POWER	
- main, e.hp	2 x 820

Take-off weight, max, kg	Engine	Crew	Service ceiling, m	Cruising speed, km/h	Operating range, km
24 000	2 x AI-24VT	3	7500	400	850

SHORT TAKE-OFF/LANDING
MILITARY TRANSPORT AIRCRAFT

AN-77

MAIN PERFORMANCE DATA	
Low fuel consumption, kg/h	4400
Range, km	Up to 6600
RUNWAY LENGTH	
Normal/ Concrete, m	1500-1800
Short/Unpaved, m	700
DIMENSIONS	
Overall length, m	40.73
Overall height, m	16.38
Wing span, m	44.06
Engines	4 x D-27 of 1400 ehp each

AN-77 developed and featured with the following:

- Short take-off and landing at the airfields of 600-800 m length
- Transportation of all the types of military vehicles, engineering machinery, and helicopters
- Airdropping of paratroopers, vehicles, cargo and maintenance items
- Transportation of more than 300 soldiers
- Versatile work horse for humanitarian missions; airdrop of emergency supplies
- Transportation of large-sizes cargoes
- Troop transportation (including UN Peace keeping)
- Possible different modifications

Overload payload, kg	Engines	Cruise altitude, m	Cruise speed, km/h	Cargo compartment volumes' comparison, m^3
47 000	4 X D-27	9 000-12 000	750-800	400

FIRE-FIGHTING AIRCRAFT

AN-32P

Intended for fire-fighting by draining of fire-fighting liquids, delivery to places of inflammation and pinpoint dropping of smoke-jumpers and special equipment, transportation of fire-fighting equipment to fire sites. In the absence of fires, a possibility of conversion of the aircraft in conditions of an airfield into a transport version is provided for.

MAIN PERFORMANCE DATA	
Flight radius with full quantity of liquid and survival kit for 30 minutes, km	330
Minimum flight speed when draining liquid, km/h	220–240
Total volume of liquid, t, dropped for 1hour of work with a flight range of:	
- 15 km	32
- 150 km	16
- 300 km	8
Required runway length (ISA, H=0), m	1 950
Number of smoke-jumpers with special equipment, persons	27–30
Engines, power, kW (h.p.)	2x3 800 (5 184)

Take-off weight, kg	Engine	Crew	Cruising speed, km/h	Ferry range, km
2 970	AI-20D SER. 5E	3-4	500	1700

LIGHT MULTI-PURPOSE TRANSPORT AIRCRAFT

AN-132

Light multi-purpose transport aircraft An-132 is designed for transportation of troops, light vehicles, paratroops and cargo airdropping, as well as for transportation of wounded on the stretchers.

MAIN PERFORMANCE DATA	
Max. take-off weight, kg	28500
Operational temperature (at sea level)	-55°… +50°
DIMENSIONS	
Length	24440
Width (with wings)	29200
Height	8890
AIRCRAFT SERVICE LIFE	
- hours	40000
- flights	25000
- years	40
Engines, max. power (SLS), shp	2 x 5071

Maximum payload, kg	Engine	Crew	Max. cruising altitude, m	Max. cruising speed, km/h	Range with max. payload, km
9200	PW150A	2	9000	550	1400

AIRCRAFT FAMILY

AN-148

An-148 aircraft family is intended for carrying 68-85 passengers over the range of up to 4 500 km. The aircraft can be delivered in various interior layouts.

MAIN PERFORMANCE DATA

	AN-148-100A	AN-148-100B	AN-148-100E
Max. passenger capacity, pax (seat pitch)	-	85 (30")	-
Max. payload, t	-	9,0	-
Service range, km, with 75 pax (32", economy class)	2 100	3 500	4 400
Cruising flight speed, km/h	-	800-870	-
Cruising flight altitude, m (feet)	-	up to 12 200 (40 000)	-
Max. take-off weight, kg	38 550	41 550	43 700
Operational temperature (at ground), °C	-	-55….+45	-
Take-off length required (concrete), m	1 600	1 800*	1 885
ICAO Landing Category	-	II (III A)	-
Aircraft noise level	-	Chapter IV	-
Fuel flow rate, kg/hr	1 550	1 600	1 650
AIRCRAFT SERVICE LIFE:			
- hours	80 000	80 000	80 000
- flights	60 000	40 000	30 000

**1 600 at set-up FADEC engines on An-148-100E*

MAIN PERFORMANCE DATA

SERVICE RANGE, KM	
- with 99 seats single-class layout	2 500
- with 86 seats two-class layout	3 100
Required length of concrete runway, m	2 000
Airfield elevation above sea-level, m	4 100
ICAO Landing Category	III A
Aircraft noise level	Chapter IV
AIRCRAFT SERVICE LIFE:	
- hours	80 000
- flights	30 000
Engines, power (H-0, MSA), kgf	2 x 6 830
APU, type	AI-450-MS
AIRCRAFT'S FEATURES:	
Low DOC	
The most specious compartment in its class	
Comfortable passenger seats	
Low noise and vibration levels	
Modern entertainment system	
Entrance stairs/door in the front part of the fuselage	
Compliance with ecological requirements	

REGIONAL PASSENGER AIRCRAFT

AN-158

The regional passenger aircraft An-158 is an aircraft being designed for regional and short-haul air routes, which meets all requirements of airlines: profitability, comfort, ecology and reliability.

Max. passenger capacity, pax	Engine	Cruising flight altitude, m	Max. cruising speed, km/h
99	D436-148	11600	870

CARGO MULTIPURPOSE AIRCRAFT

AN-178

Cargo multipurpose aircraft An-178 is advanced cargo aircraft for civil and military tasks intended for transportation of troops with combat vehicles and armaments, airdropping of paratroops, vehicles, cargoes and maintenance items, aeromedical transport of sick and injured persons, participation in special and humanitarian missions, transportation of civil-purpose cargoes, IATA containers and pallets, engineering vehicles on regular and charter routes, as well as for transportation of ISO 6 m. containers.

MAIN PERFORMANCE DATA	
Length of cargo compartment with cargo ramp	16.65 m
Floor area with cargo ramp	40 m^2
CARRYING OF PEOPLE	
90 soldiers	
70 paratroops	
48 wounded on the stretchers +15 on the seats +4 medics	
PRACTICAL RANGE WITH CARGO, KM	
- 18 t	1 000
- 15 t	2 000
- 13.5 t	2 600
- 10 t	4 000
- 5 t	4 700
- without cargo (ferry flight)	5 500
RW length	2 500
Engines, take-off / ARP thrust, tf	7.7 / 8.4

Maximum payload, t	Engine	Crew	Max. altitude, m	Max. cruising speed, km/h	Cargo cabin volume with cargo ramp, m^3
18	D436-148FM	2+1	12 200	825	125

OVERHAUL

MAIN PERFORMANCE DATA	
Modification	IL-76TD
Wing span, m	50.50
Length, m	46.59
Height, m	14.76
Wings area, m^2	300.0
WEIGHT, KG	
- operating	89 500
- maximum take-off	190 000
- fuel	114 600
Engine, thrust, kgs	4 x 12 000
Maximum speed, km/h	850
Ferry range, km	10 000
Payload	140 soldiers or 128 paratroops

HEAVY TRANSPORT AIRCRAFT

IL-76

Heavy transport aircraft IL-76 is designed for carrying of cargoes, air-dropping and air-landing of personnel and equipment, as well as transportation of wounded and ill personnel. The IL-76 has pressurized cabin, lowerable loading ramp, two pull cargo winches, four electric hoists, and four ramp extensions. It is also available a fire-fighting version of the aircraft, which is capable to carry up to 44 tones of water.

Maximum take-off, kg	Engine	Crew	Service ceiling, m	Cruising speed, km/h	Operating range, km
190 000	4 x D-30KP-2	7	12 000	750-850	7 300

OVERHAUL

AERIAL REFUELLING TANKER

IL-78

The IL-78 enables to carry out missions for delivering of attacks against long-distance strategical objects or opposition to enemy's offensive means, as it is designed for in-flight refueling of heavy bombers, basic patrol aircraft, airborne early warning aircraft and tactical aircraft. The IL-78 performs simultaneous refueling of one heavy bomber and two Su-24 type aircrafts. It can also be used as a ground fuel-servicing aircraft and as a transport aircraft.

MAIN PERFORMANCE DATA	
Modification	IL-78
Wing span, m	50.50
Length, m	46.59
Height, m	14.76
Wings area, m^2	300.0
WEIGHT, KG	
- empty	40 000
- maximum take-off	190 000
- internal fuel, l	82 000
Engine, thrust, kgs	4 x 12 300
Maximum speed, km/h	850
Speed for refueling, km/h	400-600
Ferry range, km	9 500
USEFUL PAYLOAD	
Maximum	65 000 kg fuel
Normal	Wings tanks – 14 800 kg, Fuselage tanks – 28 000 kg

Maximum take-off, kg	Engine	Crew	Service ceiling, m	Cruising speed, km/h	Operating range, km
190 000	4 x D-30KP-2	6	12 000	800	7 300

UPGRADE

OVERHAUL

FIGHTER

MIG-21

MiG-21 front-line fighter is intended to destroy aerial targets day and night in normal and adverse meteorological conditions, as well as to defeat ground objects by unguided means of destruction in visibility conditions. MiG-21BIS is the most advanced modification with upgraded wing, integral fuel tanks, TRDF R-25-300 engine, advanced onboard equipment, increased nomenclature of onboard armament, improved maneuverable and acceleration characteristics.

MAIN PERFORMANCE DATA	
Modification	MiG-21 BIS
Wing span, m	7.15
Length, m	14.9
Height, m	4.71
Wing area, m^2	23.00
WEIGHT, KG	
- empty	5 450
- normal takeoff	8 725
- internal fuel, kg	2 030
Thrust, kgs	1 x 6175
Ferry operation range, km	1 460
Maximum g-load	7.0
ARMAMENT	
Two guided missiles air-to-air K-13, aircraft rocket pods of 57 mm and 240 mm calibers, free-falling training and live bombs of different types in two hard points of the external suspensions.	

Max take-off, kg	Engine	Crew	Service ceiling, m	Maximum speed, km/h	Operating range, km
10 400	R25-300	1	17 500	2 175	500

OVERHAUL

FIGHTER

MIG-23

MiG-23 is all-weather multifunctional and effective front-line tactical fighter with a variable-sweep wing. It is intended to intercept all types of aerial targets, to detect and destroy ships, small-sized ground and radio emitting targets day and night, as well as to defeat ground objects by unguided means of destruction in visibility conditions. Wing sweep in maneuverable position is changed from 45° to 33°. The aircraft is also equipped with a system of passive self-defense.

MAIN PERFORMANCE DATA	
Modification	MiG-23M
WING SPAN, M	
- minimum	7.78
- maximum	13.97
Length, m	16.70
Height, m	5.77
WING AREA, M²	
- minimum	34.16
- maximum	37.27
WEIGHT, KG	
- normal take-off	15 750
- empty	11 000
- fuel	3 700
THRUST, KGF	
- afterburning	12 500
- non-afterburning	8 000
ARMAMENT	
One 23 mm gun GSh-23L (200 cartridges); Ammunition load – 2000 kg in 5 hard points of the external load (max – 4500 kg); 2 air-to-air middle range guided missiles R-24R and 4 air-to-air short range guided missiles R-60 or 2 x R-73; 1 guided missile Kh-23; unguided rockets blocks of 57 mm or 80 mm caliber, aerial bombs of 100-500 kg; caliber, gun pods UPK-23-250	

Max take-off, kg	Turbojet engine	Crew	Service ceiling, m	Maximum speed, km/h
20 670	R-29-300	1	17 500	2 445

OVERHAUL

FIGHTER-BOMBER

MIG-27

MiG-27 fighter-bomber is intended to defeat fixed and mobile targets (including small-sized and high-strength ones) at extreme low, low and medium altitudes in visibility conditions, to strike operating ground radars by guided missiles, as well as to destroy aerial targets in visibility conditions.

MAIN PERFORMANCE DATA	
Modification	MiG-27M
WING SPAN, M	
- minimum	7.78
- maximum	13.97
Length, m	17.18
Height, m	5.00
WING AREA, M²	
- minimum	34.16
- maximum	37.27
WEIGHT, KG	
- empty	11 600
- normal take-off	18 100
- fuel	3 970
THRUST, KGF	
- afterburning	11 500
- non-afterburning	8 000
ARMAMENT	
30 mm 6-barrel gun GSh-6-30A (250 cartridges); Ammunition load – 4000 kg in seven hard points of the suspension: Short range air-to-air guided missiles R-60,air-to-ground guided missiles Kh-23M, Kh-25, Kh-25ML and MR, Kh-29L and T, anti-radar missile Kh-27PS or Kh-25MP; Rocket S-5, S-8, S-13 or S-24, aerial bombs – up to 8 x FAB-500 (nuclear bombs load is possible of 10-30 kt), antirunway bomb BetAB-250 and BetAB-500, AP-bomb.	

Max take-off, kg	Turbojet engine	Crew	Service ceiling, m	Max speed, km/h	Operating range, km
20 670	R-29B-300	1	15 500	1 810	800

UPGRADE

OVERHAUL

FIGHTER

MIG-29

MiG-29 extremely effective front-line fighter is intended to gain air superiority and to cover troops and rear objects from air strikes, to counterforce enemy air reconnaissance day and night in normal and adverse meteorological conditions, to defeat mobile and fixed ground and sea targets by missile-bomb armament, as well as by unguided means of destruction.

MAIN PERFORMANCE DATA

Modification	MiG-29
Wing span, m	11.36
Length, m	17.42
Height, m	4.73
WEIGHT, KG	
- empty	10 800
- normal	15 300
THRUST, KGF	
- afterburning	8 340
- non-afterburning	5 040
OPERATING RANGE, KM	
- at low altitude	680
- at high altitude	1 410
Structural limit	9
ARMAMENT	
One 30-mm gun GSh-301 (150 rounds). Combat load - 2000 kg on six underwing hardpoints. Up to 6 close air combat missiles R-73 or R-60M. Bombs 250- or 500-kg, pod KMGU-2, ZB-500. 80 unguided air missile S-8 in blocks B-8M1 and 4 unguided air missiles S-24B. 2 pods UPK-23-250	
UPGRADE	
Recognition range of targets is increased up to 30%	
Flying in the international routes with using VOR / DME ranges is provided	
Injection accuracy in target point with deviation not more than 25 m by using satellite navigation system CH-3307 is provided	
Improving of built-in control devices and parameters of flight data	
MiG-29MU1 was included in the inventory for Armed Forces of Ukraine in 2009	

Max take-off, kg	Turbojet engine	Crew	Service ceiling, m	Maximum speed, km/h	Operating range, km
17 700	2 x RD-33	1	18 000	2 450	650

OVERHAUL

FIGHTER-BOMBER

SU-22

Su-22 fighter-bomber with a variable-geometry wings is intended to defeat ground and aerial targets of enemy, to support ground troops, to deliver tactical air reconnaissance day and night in normal and adverse meteorological conditions.

MAIN PERFORMANCE DATA

Modification	Su-22M3
WING SPAN, M	
- minimum	10.03
- maximum	13.7
Length, m	19.02
Height, m	4.97
WING AREA, M²	
- minimum	34.45
- maximum	38.49
WEIGHT, KG	
- empty	12 161
- maximum take-off	19 630
- fuel (internal)	3 770
- fuel (external fuel tank)	2 875
Thrust, kgf	11 200
ARMAMENT	
Two 30 mm guns NR-30 (80 rounds per gun);	
Combat load - 4070 kg on 12 hardpoints;	
Air-to-air guided missile R-60;	
Surface-to-air guided missile X-28, X-27PS, X-25ML, X-58U, X-29T;	
Free fall bombs up to 500 kg;	
Multipurpose air bomb KAB-500Kr and KAB-500T;	

Max take-off, kg	Turbojet engine	Crew	Service ceiling, m	Max speed, km/h	Operating range, km
19 630	AL-21F3S	1	15 250	2 230	400-600

OVERHAUL

BOMBER

SU-24

Su-24 strike front-line bomber is intended to breakthrough effectively the enemy air defense and to to gain air superiority in any meteorological conditions, day and night, in tactical and operative-tactical depth.

MAIN PERFORMANCE DATA	
Modification	Su-24M
WING SPAN, M	
- minimum	10.37
- maximum	17.64
Length, m	24.59
Height, m	6.19
WEIGHT, KG	
- empty	22 300
- normal take-off	35 910
- fuel (internal)	9 800
- fuel (external fuel tank)	6 590
Thrust, kgf	11 200
ARMAMENT	
One in-built 23 mm gun GSh-6-23M with 500 rounds;	
Guided and correcting air-to-surface armament; air bombs;	
Rockets;	
Air-to-air guided missile armament (up to2 missiles R-60 or R-60M)	

Max take-off, kg	Engine	Crew	Service ceiling, m	Maximum speed, km/h	Operating range, km
39 700	AL-21F3-3A	2	18 000	1 550	390-570

UPGRADE

OVERHAUL

ATTACK AIRCRAFT

SU-25

Su-25 attack aircraft is intended to support directly troops, to destroy group and single small-sized ground objects, to mine from air and to defeat low speed aerial targets in visibility conditions, day and night at strong fire countermeasure of enemy. It features high level of combat survivability and manoeuverability.

MAIN PERFORMANCE DATA	
Modification	Su-25M1K
UPGRADE	
Accuracy of shooting by rockets is increased up to 30%	
Mode of navigational bombing in forward flight and from nosing-up is provided	
Effectiveness of aircraft protection from missile attack with homing head is improved	
Injection accuracy in target point with deviation not more than 25 m by using satellite navigation systems as “GLONAS” and “GPS NAVSTAR CH-3307” is increased	
Landing approach and landing on unequipped airdrome according to known coordinates of airdrome check point is available	
Target tracking with keeping of coordinates is provided	
Flying in no-signal mode (without using of radio aids which operate for emittance) is enhanced	
Operating with secondary radars ATC RBS in the AC and A modes is available	
Flying in the international routes with using VOR / DME ranges is provided	
Instrument landing approach by using ILS/DME ranges is available	
Recording of parametric, binary, digital and audio information flight data recorder in real time scale is available	

Maximum take-off, kg	Engine	Crew	Max speed at altitude, km/h	Service ceiling, m	Operating range, km
17 600	2 x TRD R-195SH	1	870	7 000	1 850

UPGRADE

OVERHAUL

MULTIPURPOSE FIGHTER

SU-27

Su-27 multipurpose fighter is intended to gain air superiority, to cover its ground troops from enemy air strikes and air reconnaissance. It is capable to defeat ground targets by guided and unguided missile-bomb armament day and night, in in normal and adverse meteorological conditions, as well as to fulfill air reconnaissance.

MAIN PERFORMANCE DATA		
Modification	Su-27P	Su-27UB
Length, m	21.935	
Wing length, m	14.698	
Height, m	5.932	6.537
Weight of empty aircraft, kg	16 300	17 500
Service ceiling, m	18 500	17 250
UPGRADE		
Recognition range of air targets is increased up to 30%		
Injection accuracy in target point with deviation not more than 25 m by using satellite navigation systems as “GLONAS” and “GPS NAVSTAR CH-3307-02” is increased		
Landing approach and landing on unequipped airdrome according to known coordinates of airdrome check point is available		
Target tracking with keeping of coordinates is provided		
Flying in no-signal mode (without using of radio aids which operate for emittance) is enhanced		
Flying in the international routes with using VOR / DME ranges is provided		
Instrument landing approach by using ILS/DME ranges is available		
Operating with secondary radars ATC RBS in the AC and A modes is available		
Recording of parametric, binary, digital, video and audio data on flight data recorder in real time scale is available		

SU-27P

Max take-off, kg	Crew	Max speed, km/h	Engine
30 000	1	2 500 (2.35M)	2 x AL-31F

SU-27UB

Max take-off, kg	Crew	Max speed, km/h
35 000	2	2 125 (2.0M)

UPGRADE

OVERHAUL

TRAINING AIRCRAFT

L-39

The L-39 aircraft is intended for training of trainees and maintaining of flying skills.

UPGRADE
UPGRADE OF AIRCRAFT L-39C TO L-39M1 VERSION
With improved L-39C aircraft flying performance due to upgrade of engine AI-25TL, extended list of recorded data, increased operation speed of flight data recorder.
UPGRADE OF AIRCRAFT L-39C TO L-39M VERSION
The main purpose of this upgrade is to create combat aircrafts MiG-29 and Su-27 “simulator” distinguishing this upgrade from other versions. For this purpose, the onboard training complex (BTK-39) is installed and at the same time the aircraft performance data has been improved.
UPGRADE OF JET TRAINER L-39 FOR AEROBATIC TEAM
It provides implementation of demilitarization of aircraft, attainment of avionics functional compatibility with standard requirements of ICAO, improvement of cockpit ergonomics providing priority of control for pilot in front cockpit.
High quality repair of aircraft systems aggregates, upgrade of AI-25TL engine to AI-25TLSh version

Aircraft weight, kg	Engine	Crew	Max speed, km/h	Maximum flight altitude, m	Operating range, km
3 500	AI-25TLSH	2	785	11 500	980

LIGHT HELICOPTER

KT-112 «KADET»

Helicopters KT 112 – are unique light helicopters with two engines. It allows flights in the city, sea, forest arrays. Twin engines helicopters usually classified as middle helicopters and cost in 10 times more than KT-112

MAIN PERFORMANCE DATA

Crew	1/2
Capacity	4
Cruise speed	151 km/h
Never exceed speed	200 km/h
Service ceiling	4000 m
Rotor diameter	8,21 m
Length	9,38 m
Length (Fuselage)	6,95 m
Width	1,30 m
Height	2,47 m
Empty weight	524 kg
Max. takeoff weight	925 kg
Power plant	2 x Rotax 912
Power, kWt	2 x 100
Range	800 kg

Takeoff weight, kg	Engine	Crew	Service ceiling, m	Maximum speed, km/h	Weight of empty helicopter, kg
925	ROTAX 912	1 PILOT	4 000	200	524

UPGRADE
OVERHAUL

MAIN PERFORMANCE DATA

Modification	Mi-2
WEIGHT, KG	
- empty	2 372
- normal take-off	3 500
- maximum take-off	3 659
- fuel (internal), l	600
- fuel (Auxiliary tank), l	238
Engine, power, kW	2 x 298
Cruising speed, km/h	194
OPERATING RANGE, KM	
- normal	580
- with maximum load	340
- with auxiliary tank	790
Climbing capacity, m/min	270
Static ceiling, m	2 000
Payload	10 passengers or up to 8 soldiers
UPGRADE	
Installation of enhanced-blast engines AI-450M	
Upgrade of fuel system by using volume-plus external fuel tanks	
Upgrade of fuselage and cowl aerodynamics	
Space saving of partial-freight cockpit	
Installation of tail door	
Installation of cutting-edge navigation system which meets the ICAO requirements	

LIGHT HELICOPTER

MI-2

Light helicopter Mi-2 is designed for troops fire support by means of organic weapons, transportation of personnel in the cargo cabin, carrying out of air reconnaissance, participation in search-and-rescue and evacuation missions. The Mi-2 is capable to carry out command and staff functions.

Maximum take-off, kg	Engine	Crew	Service ceiling, m	Maximum speed, km/h	Operating range with max. payload, km
3 659	2 x GTD-350	1	4 000	210	340

UPGRADE

OVERHAUL

MULTIPURPOSE HELICOPTER

MI-8

Multipurpose helicopter Mi-8 is designed to engage light-armored equipment and manpower of the enemy by means of organic weapons, carry out fire support, air reconnaissance, air-landing of strategical and tactical troops, search-and-rescue missions, evacuation of ill and wounded personnel, transportation of cargoes in cargo hold and on slings. Jammer and Air Command Post are also available among modifications of the helicopter.

MAIN PERFORMANCE DATA	
Modification	Mi-8MTV
WEIGHT, KG	
- empty	7 381
- normal take-off	11 100
- maximum take-off	13 000
Engine, power, kW	2 x 1 639
Cruising speed, km/h	230
Climbing capacity, m/min	540
Static ceiling, m	3 980
Payload	up to 24 passengers or 12 stretchers with accompanying persons or 4000 kg of freight in cabin or 4000 kg on hook
UPGRADE	
2 MFD in the cockpits	
SIGMA 95L navigational system	
Mercator digital map generator	
Interface & mission computer	
OLOSP 410 observation-sighting station	
Beam-rider missile	
ASP-17VPM digital sight	
VS-1500 audio & video digital recorder	
BUR-4-1 flight data recorder	
“Adros” KT-01AB optoelectronic suppression station Adaptation of the helicopter's internal and external lightning system for NVG	

Maximum take-off, kg	Engine	Crew	Service ceiling, m	Maximum speed, km/h	Operating range, km
13 000	2 x TV3-117VM	2-3	6 000	250	500

UPGRADE

OVERHAUL

COMBAT HELICOPTER

MI-24

Combat helicopter Mi-24 is designed to engage at an enemy’s forward edge and tactical depth the heavy- and light-armored equipment of the enemy, manpower in combat formations and strong points, positions of antitank artillery and tactical missiles, radar posts, air defense means, troops control forward points, as well as combat and transport helicopters of the enemy in the air and on the ground. Mi-24V is equipped with 12.7 mm machine gun YaKB-12.7, Mi-24P is equipped with 30 mm automatic gun GSh-2-30.

MAIN PERFORMANCE DATA	
Modification	Mi-24P
WEIGHT, KG	
- empty	8 500
- normal take-off	11 200
- maximum take-off	11 500
- internal fuel, kg	1 500 + available 1 000
Engine, power, kW	2 x 2 225
Cruising speed, km/h	264
Ferry range, km	1 000
Static ceiling, m	2 000
Payload	up to 8 soldiers or 4 litter or 1 500 kg freight (maximum 2 400 kg) or 2 000 kg on hook
UPGRADE	
TV3-117VMA-SBM1V engines	
SIGMA 95L navigational system	
Mercator digital map generator	
Interface & mission computer	
OLOSP 410 observation-sighting station	
Beam-rider missile	
ASP-17VPM digital sight	
VS-1500 audio & video digital recorder	
BUR-4-1 flight data recorder	
“Adros” KT-01AB optoelectronic suppression station Adaptation of the helicopter’s internal and external lightning system for NVG	

Maximum take-off, kg	Engine	Crew	Service ceiling, m	Maximum speed, km/h	Combat range, km
11 500	2 x TV3-117VMA	2-3	4 500	320	595

TACTICAL MULTIFUNCTIONAL UNMANNED AIRCRAFT SYSTEM

FURIA

Multifunctional unmanned aircraft system, designed for target acquisition and adjusting of artillery fire.
FURIA can work at the depth of 30 km., it has a fly time of more than 2 hours and can withstand the wind blast of up to 15m/s. Launching: elastic catapult.
Landing: semiautomatic.
Information saving: onboard memory card (HD quality); ground station memory (standard quality)

MAIN PERFORMANCE DATA	
Flight time, min	120
Speed, km/h	65-100
Take-off weight, kg	4.5
Payload weight, kg	1.2
Maximal altitude, m	up to 2 500
Maximal flying distance, km	more than 100
Operating range, km	more than 30
Payload	Gyrostabilized Daylight HD Camera with 30x optical zoom; Gyrostabilized Night Vision System (Flir Tau 2 based)

UNMANNED AERIAL VEHICLE

SPECTATOR

The system consists of: 1-3 drones, ground station, radio control panel, plug-in battery kit, antennas, backpack.
Key Competitive advantages:
- Easy to transport, the optimum size when folded into back pack (1300x400x200mm)
- The minimum time for preparation for launch of a disassembled state (up to 2 minutes)
- Low noise and visibility
- Optimal ratio of payload weight to unit weight
- The high aerodynamic qualities

MAIN PERFORMANCE DATA	
Flight time, min	up to 120
Speed, km/h	40-120
Take-off weight, kg	5.5
Payload weight, kg	2
Maximal altitude, m	2 000
Operating range, km	20
Type of control	automatic, semi-automatic, manual

UNMANNED AERIAL VEHICLE

APUS 1505

APUS – 1505 Reconnaissance and artillery fire control UAV is designed for real-time video data transmitting under radio-electronic warfare conditions.

MAIN PERFORMANCE DATA	
Dimensions, mm	2 992x862x326
Flight time, min	more than 120
Speed, km/h	60-120
Maximal altitude, m	2 000
Maximal flying distance, km	120
Control	Autopilot; encrypted correction of the mission during flight
Landing	Parachute
Weight, kg	10

UNMANNED AERIAL VEHICLE

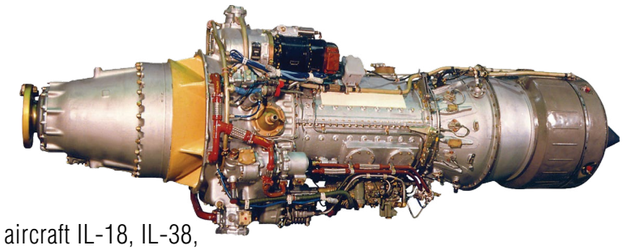
APUS 1507

APUS – 1507 is a complex designed for real-time video data transmitting and precise determination of objects' coordinates.

MAIN PERFORMANCE DATA	
Dimensions, mm	700x2 120x200
Flight time, min	90
Speed, km/h	50-100
Maximal altitude, m	1 500
Maximal flying distance, km	100
Control	Autopilot; encrypted correction of the mission during flight
Landing	Parachute
Weight, kg	4.5

ENGINE

AI-20



This engine is designed for installation on aircraft IL-18, IL-38, An-8, An-12, An-32, An-32V-200, Be-12 and their versions, which service medium- and long-range routes (up to 6 500 km).

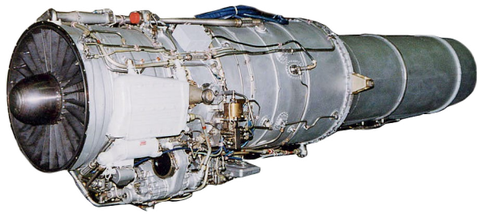
MAIN PERFORMANCE DATA

Engine	AI-20K	AI-20M	AI-20D, Series 4	AI-20D, Series 5	AI-20D, Series 5M
Take-off power (SLS, ISA)					
Equivalent power, eq.h.p. (eq.kW)	4 000 (2 941)	4 250 (3 125)	5 180 (3 809)	5 180 (3 809)	4 750 (3 493)
Specific fuel consumption, kg/eq.hp.•h (kg/eq.kW•h)	0,270 (0,367)	0,239 (0,325)	0,227 (0,309)	0,227 (0,309)	0,230 (0,313)
Cruise power, (H=8 000 m; Mfl =0,57; ISA)					
Equivalent power, eq.h.p. (eqkW)	2 490 (1 844)	2 700 (1 986)	2 990 (2 214)	2 725 (2 004)	2 725 (2 004)
Specific fuel consumption, kg/eq.hp.•h (kg/eq.kW•h)	0,210 (0,286)	0,197 (0,268)	0,196 (0,266)	0,199 (0,271)	0,199 (0,271)
Engine dry weight, kg	1 080	1 040	1 040	1 040	1 040

TUBRBOFAN AERO ENGINE

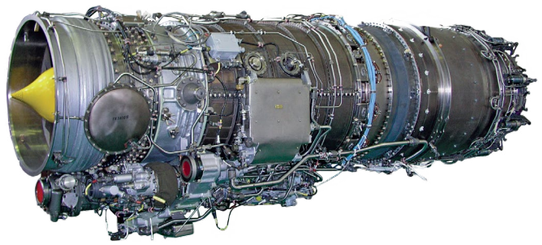
AI-25TLSH

This turbofan is a version of the AI-25TL engine mounted in the trainer aircrafts.



MAIN PERFORMANCE DATA

Engine	Combat	Training
Maximum power condition (H=0, M=0, ISA)		
Thrust, kgf (kN)	1 850 (1 815)	1 720 (1 687)
SFC, kg/(kgf•h) (kg/kN•h)	0.61 (62.18)	0.575 (58.6)
Maximum power condition (H=0; M=0,6; ISA+15 °C)		
Thrust, kgf (kN)	1 250 (12.26)	1 100 (10.79)
Cruise power condition (H=6 km; M=0,483; ISA)		
Thrust, kgf (kN)	515 (5.05)	515 (5.05)
SFC, kg/(kgf•h) (kg/kN•h)	0.79 (80.6)	0.79 (80.6)
Acceleration time, s	max 6	max 6
Dry weight, kg	350	350



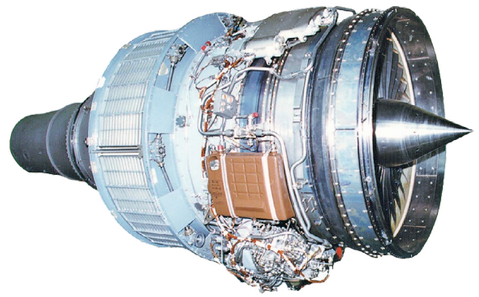
TURBOFAN AERO ENGINE

AI-222-25F

The engine has been optimized to be operated on up-to-date trainers and complies with strict requirements for the engines of this class.

MAIN PERFORMANCE DATA

Full afterburner thrust rating (SLS, ISA, yinl=1,0)	
Thrust, kgf (flat rated to ISA+15°C), not less	4 200
SFC, kg/kgf•h, not more	1.9
(H=11 000 m; Mfl=1.4; ISA; yinl=0,97)	
Thrust, kgf	2 760
Max thrust rating (SLS, ISA, yinl=1,0)	
Thrust, kgf	2 500
SFC, kg/kgf•h, not more	0.66
Pressure ratio	15.43
By-pass ratio	1.18
Maximum TIT, K	1 471
Fan diameter, mm	624
Weight, dry (to State Standard 17106-90), kg, not more	560



TURBOFAN AERO ENGINE

D-436-148

It is intended for installation on the An-178 short-distance military transport aircraft and regional An-148, An-158 passenger aircrafts. The engine complies with both effective and future ICAO requirements for aircraft engine noise and emission performances.

Main advantages of the engine:

- Low specific fuel consumption and low weight-to-thrust ratio;
- Low levels of emission and noise;
- Universal mount for installing the engine on various airplanes in underwing or overwing, fuselage or side positions without changing the engine design

MAIN PERFORMANCE DATA

ACS setting variant	S-R short-range aircraft	L-R long-range aircraft
Maximum emergency power rating (H=0, MFL=0, ISA)		
Thrust, kgf (kN)	7 280 (71.42)	7 690 (75.44)
Take-off rating (PAMB=760 mm Hg, MFL=0)		
Thrust, kgf (kN)	6 570 (64.45)	7 010 (68.76)
Specific fuel consumption, kg/kgf•h(kg/kN•h)	0.351 (35.77)	0.351 (35.77)
Maximum cruise rating (H=11 000 m, MFL=0.75, ISA +10°C)		
Thrust, kgf (kN)	1 560 (15.30)	1 560 (15.30)
Specific fuel consumption, kg/kgf•h(kg/kN•h)	0.60 (61.16)	0.60 (61.16)
Weight, kg	1 400	1 400

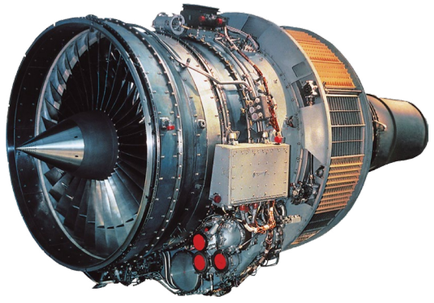
ENGINE

D-436T1

The D-436T1 engine is intended to power short-haul and medium-haul airliners and other highly efficient passenger and cargo aircraft. The engine complies with both effective and future ICAO requirements for aircraft engine noise and emission performances.

Main advantages of the engine:

- Low specific fuel consumption and low weight-to-thrust ratio;
- Low levels of emission and noise;
- Low operating costs at long service life.



MAIN PERFORMANCE DATA

Take-off power (SLS, ISA +15 °C, PAMB=730mmHg)	
Thrust, kgf (kN)	7 500 (73.57)
Specific fuel consumption, kg/kgf•h (kg/kN•h)	0.370 (37.72)
Maximum cruise power (H=11 000m, Mfl=0.75, ISA)	
Thrust, kgf (kN)	1 500 (14.71)
Specific fuel consumption, kg/kgf•h (kg/kN•h)	0.608 (61.97)
Weight, dry, kg	1 450

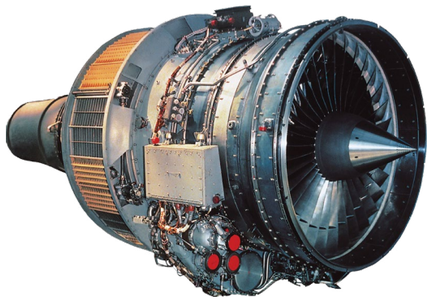
ENGINE

D-436TP

It is designed to power the passenger aircrafts. The engine complies with both effective and future ICAO requirements for aircraft engine noise and emission parameters.

Main advantages of the engine:

- Low SFC and low weight-to-thrust ratio;
- Low noise and emissions;
- Steady operation in event of sudden airflow temperature inversions at engine inlet when fighting forest fires;
- Operability in maritime conditions.



MAIN PERFORMANCE DATA

Take-off power (SLS, ISA+15°C, PAMB=730 mm Hg)	
Thrust, kgf (kN)	7 500 (73.57)
SFC, kg/kgf•h (kg/kN•h)	0.370 (37.72)
Maximum cruise power (H=8 000 m, Mfl=0,6; ISA)	
Thrust, kgf (kN)	1 920 (18.83)
SFC, kg/kgf•h (kg/kN•h)	0.581 (59.22)
Maximum cruise power (H=450 m, Mfl=0.35, ISA)	
Thrust, kgf (kN)	1 300 (12.75)
SFC, kg/kgf•h (kg/kN•h)	0.650 (66.25)
Weight, dry, kg	1 450

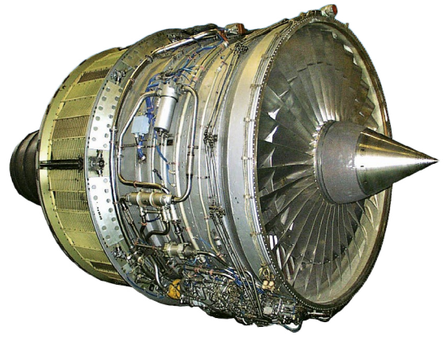
TURBOFAN AERO ENGINE

D-18T SER. 3

The D-18T series 3 is used to power the An-124, An-124-100 RUSLAN and An-225 MRIYA ramp-equipped heavy cargo and passenger aircrafts. The engine is equipped with an efficient thrust reverser mounted in fan duct. The engine's module design together with efficient component condition diagnostics means provides possibility of on condition operation without plant overhauls.

Main advantages of the engine:

- high take-off thrust;
- low specific fuel consumption;
- low noise and pollutant emission levels (comply with ICAO standards).



MAIN PERFORMANCE DATA

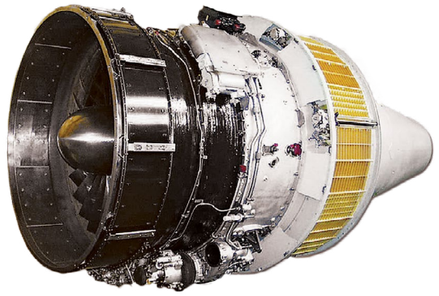
Take-off power (SLS, ISA)	
Thrust, kgf (kN)	23 430 (229.85)
Maintained up to tAMB, °C	+28
Maximum cruise power (H=11 000 m, Mfl=0.75, ISA)	
Thrust, kgf (kN)	4 860 (47.68)
Specific fuel consumption, kg/kgf•h (kg/N•h)	0.546 (0.0557)
Weight, dry, kg	4 100

ENGINE

D-36

SERIES 1, 2A, 3A, 4A

The D-36 series 1, turbofan engines are installed in passenger airplanes. The D-36 series 2A, 3A turbofan engines – to be installed on passenger-transport airplanes (the Yak-42, An-74 aircrafts). The D-36 Series 4A engines are designed to be installed on the civil, cargo and passenger airplanes (the An-74TK-300 aircraft). Easy maintenance and possibility of comprehensive operational diagnostics of the engine on wing bring about reliable engine on-condition operation.

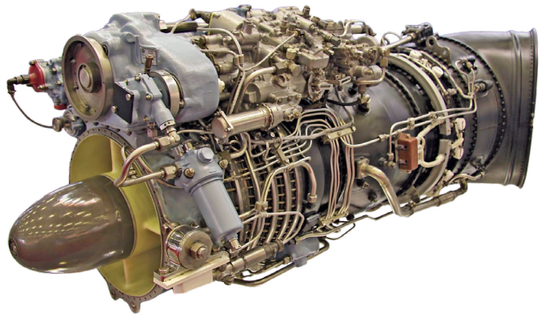


MAIN PERFORMANCE DATA

Series	1	2A	3A	4A
Take-off power condition (SLS, ISA):				
Thrust, kgf	6 500	6 500	6 500	6 500
SFC, kg/kgf•h	0,365	0,365	0,365	0,365
Cruise power condition (H = 8 000 m, Mfl = 0.75, ISA):				
Thrust, kgf	1 600	1 600	1 600	1 600
SFC, kg/kgf•h	0,650	0,650	0,630	0,630
Weight, dry, kg	1 124	1 124	1 124	1 130

ENGINE

TV3-117VMA



The TV3-117VMA turboshaft engine is used to power on civil helicopters. It is one of the world`s best engines as regards its fuel efficiency and weight performances. High-tech development and perfect mass-production process have ensured the engine`s superior reliability and extensive service life.

Main advantages of the engine:

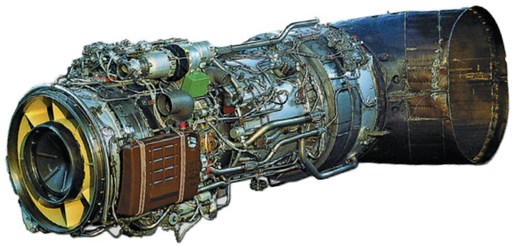
- low specific fuel consumption;
- low weight-to-power ratio;
- steady operation in harsh dust and smoke conditions;
- possibility of long-time operation in maritime conditions.

MAIN PERFORMANCE DATA

2.5- minute power rating, with one engine inoperative (OEI) (SLS, ISA)	
Power, shp (kW)	2 400 (1765)
30- minute power rating, with one engine inoperative (OEI) (SLS, ISA)	
Power, shp (kW)	2 200 (1618)
SFC, kg/hp•h (kg/kW•h)	0.210 (0.286)
Cruise power condition (SLS, ISA):	
Power, shp (kW)	1 500 (1103)
Weight, dry, kg	294

ENGINE

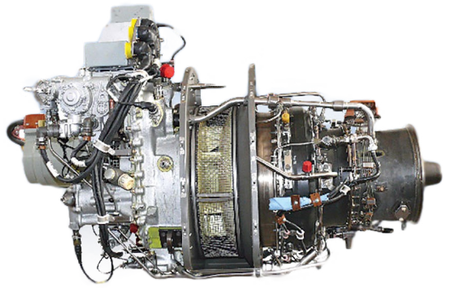
D-136, D-136 SER. 1



The D-136 and D-136 series 1, turboshaft engines are used to power the Mi-26 and Mi-26T helicopters. Perfect design and highly developed production ensure the engine`s quality and reliability. The engine has Type Certificate. Easy maintenance and high repairability are ensured by a modular design of the engine.

MAIN PERFORMANCE DATA

Maximum take-off power conditions (SLS, ISA)	
Power, shp (kW)	11 400 (8 382)
SFC, kg/hp•h (kg/kW•h)	0.194 (0.263)
Cruise power conditions (H=4600 m, Mfl=0,13; ISA)	
Power, shp (kW)	6 100 (4 486)
SFC, kg/hp•h (kg/kW•h)	0.230 (0.312)
Weight, dry, kg	1 077



MAIN PERFORMANCE DATA

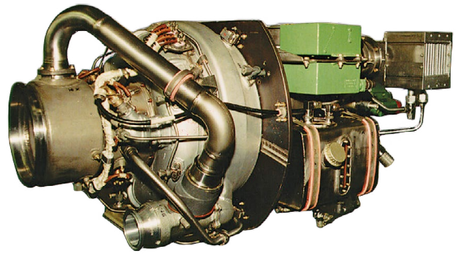
ACS setting variant	AI-450M*	AI-450M1**
30-min OEI rating (M=0, Hfl=0):	to +40°C	to +30°C
Power, hp	400***	465***
Take-off rating (M=0, Hfl=0):	to +30°C	to +15°C
Power, hp	400	465
SFC, kg/kgf•h	0,28	0,27
Cruise rating (M=0, Hfl=0, ISA+15°C):		
Power, hp	285	300
SFC, kg/kgf•h	0,32	0,31
Weight, dry, kg	115	115

* Rearward power output version.
** Forward power output version.
*** Depending on Automatic Control System adjustment version.

ENGINE

AI-450M

The AI-450M engine is designed to power civil helicopters (Mi-2M, MSB-2, Rusmas) and has a two-rotor design consisting of a gas generator rotor and free turbine rotor. The engine consists of reduction gear with accessory gearbox built in the same casing; gas generator containing inlet section, compressor, combustion chamber and compressor turbine; free turbine with its shaft.



MAIN PERFORMANCE DATA

(SLS, ISA+30°C):	
AC aircraft electric system power supply, kV•A	16
Bleed air flow, kg/s	0.47
Bleed air pressure, kgf/cm^2	4.0
Bleed air temperature, °C	190
Fuel consumption, kg/h, max	92
Weight, kg	112

GAS-TURBINE ENGINE

AI9-3B

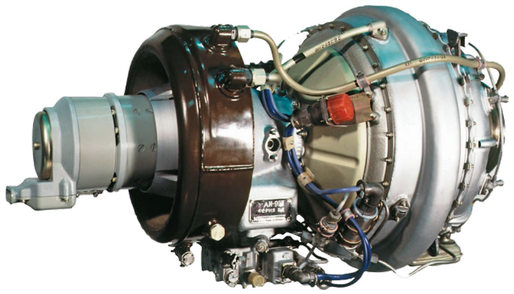
AI9-3B auxiliary gas-turbine engine is designed for the civil airplanes and helicopters.

The gas-turbine engine has been developed on the background of experience in manufacturing the AI-9 base gas-turbine engine. The gas-turbine engine is used for starting aircraft propulsion engines and conditioning crew cabin and passenger compartment together with powering airborne electric equipment.

ENGINE

AI-9V, AI-9V SER. 1

The unit is used as a ground and in-flight power source effecting supply of compressed air to the starting system of the helicopter engines and electric power to the helicopter mains when checking the helicopter electrical and radio equipment. Installed on the Mi-8 (Mi-8AMT, Mi-8MTV, Mi-17, Mi-171, Mi-172), Mi-24 (Mi-35), Mi-28 helicopters.



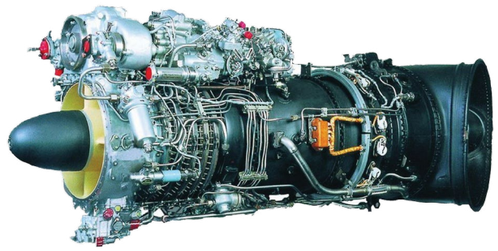
MAIN PERFORMANCE DATA

Specification	AI-9V	AI-9V series 1
Rated rotational speed, RPM	3 6750+475	3 6750+475
Air bleeds, kg/s	0.4	0.4
Bleed air total pressure, MPa, min	0.29	0.31
Bleed air temperature, K	433	433
Power across generator terminals, kw	3	3; 4.5
Fuel consumption, kg/h, max	75	76
Weigh, dry, kg, max (without generator)	57	57
Combined mode of power generation and air bleeding	N/A	AV
Mode of cabin air conditioning	N/A	AV

ENGINE

VK-2500

This engine is used to power the Mi-28N and Ka-52 helicopters, as well as upgrade the Mi-14, Mi-17, Mi-24, Mi-28, Ka-32, Ka-50 and Ka-50-2 helicopters. The turboshaft is a higher-power upgraded version of widely known TV3-117VMA turboshaft. It is one of the best turboshaft engines in the world as regarding its fuel efficiency and weight performances. Profound experience in mass-producing and operating the base engine along with applying an up-to-date control system have enabled to improve operating performances and ensure high dependability and extensive service life.



MAIN PERFORMANCE DATA

2.5-minute power rating, with one engine inoperative (OEI) (SLS, ISA +15°C)	
Power, shp (kW)	2 700 (1 985)
Take-off power condition (SLS, ISA +15°C)	
Power, shp (kW)	2 000* (1 470) ... 2 400 (1 764)
SFC, kg/hp•h (kg/kW•h)	0.220 (0.299) ... 0.210 (0.286)
Cruise power condition (SLS, ISA +150C)	
Power, shp (kW)	1 500 (1 103) ... 1 750 (1 287)
Weight, dry, kg	295

*System of engine automatic control gives the possibility of adjusting the take-off power as follows: 2,400; 2,200 and 2,000 hp (depending on the engine application).

MAIN PERFORMANCE DATA

Helicopter protection probability	0.7 – 0.8
Time needed to divert a missile from its course	0.5 – 0.8 sec
Spectral range of radiation	1.8 – 5.5 μm
Power supply:	
- three-phase	208VAC, 400 Hz
- single-phase	115 VAC, 400 Hz
Direct current	27 VDC
Protection zone	circled in azimuth +20°…-30° in elevation
Weight, kg	up to 26 kg

INFRARED COUNTERMEASURE STATION

«ADROS» KT-01AVE

IRCM station «Adros» KT-01AVE is intended for active and effective protection of helicopters against guided missiles equipped with infrared homing heads of different types. «Adros» KT-01AVE active jammer is capable to suppress infrared homing heads with counter-countermeasure systems (CCM) for all modulation (APM, FPM, PLM). The KT-01AVE is designed for installing on Mi-24, Mi-8, Mi-17 helicopters, etc.

MAIN PERFORMANCE DATA

Aircraft protection probability	0.7 – 0.8
Time needed to divert a Stinger-type missile from its course	0.5 – 0.8 sec
Spectral range of radiation	1,8 – 5,5 mcm
Airborne line-operated	
Single-phase	115 V, 400 Hz
Direct voltage	27 V
Protection zone	circled in azimuth
Weight, kg	up to 35 kg

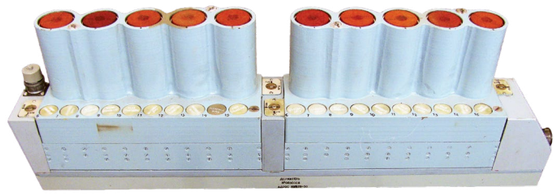
INFRARED COUNTERMEASURE STATION

«ADROS» KT-03UE

IRCM station «Adros» KT-03UE is intended for active protection of airplanes with two turbojet engines and helicopters against guided missiles equipped with infrared homing heads. The station «Adros» KT-03UE is capable to suppress infrared homing heads with heightened noise immunity for other types of modulation (FPM and PLM). The «Adros» KT-03UE is designed for installing on An-26, An-32 airplanes and helicopters. Two stations «Adros» KT-03UE in special containers jointly flare dispenser «Adros» KUV 26-50E and «Adros» AV-26V are installed on airplane

COMBINED FLARE DISPENSER

«ADROS» KUV 26-50



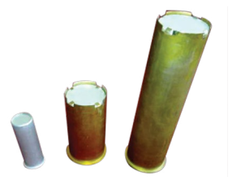
«Adros» KUV 26-50 flare dispenser is intended for locating and dispensing 26 mm and 50 mm caliber chaff decoys and flares to protect aircraft against guided missiles. Salvos of two caliber flares with specially calculated periods provide an approaching missiles false information about target location to lead them away from the attack trajectory. «Adros» KUV 2650 can be applied on all flight stages in manual or automatic modes. The flare dispenser can be installed on any aircraft type.

MAIN PERFORMANCE DATA

Flare caliber	26 mm and 50 mm
One holder flare number	20 of 26 mm 10 of 50 mm
Holder number, controlled by one control unit	2N or 3N, when N = 1…10
Readiness time	30 s
Power supply	+ 27 VDC
Power consumption	up to 250 W
Built-in-test	

FLARES

«ADROS» PIK-26, PIK-50, PIK-50V



«Adros» PIK type flares of 26 mm and 50 mm caliber are used to protect aircrafts, helicopters and airplanes against any guided missiles equipped with infrared seekers. Flares create false infrared targets and drag approached missiles to the distance safe for protected aircraft. «Adros» PIK type flares can be deployed on the aircraft equipped with the dispensers such as «Adros» KUV 26-50; ASO-2V; KDS-50; UV-26; «Adros» AV-26V and analogies.

MAIN PERFORMANCE DATA

Flare type	PIK-26	PIK-50	PIK-50V
Caliber, mm	26,6	50,2	50,2
Length, mm	85	200	105
Weight, kg	0,09	0,85	0,45
Ejection velocity, m/s	30±5	30±5	30±5
Burning time, s	4-6	6-8	4-6
Operational temperature, °C	±50	±50	±50

AIRCRAFT ENGINEERING AND MAINTENANCE
PROTECTION AND SURVIVABILITY ENHANCEMENT EQUIPMENT

MULTIFUNCTION COUNTERMEASURE POD

«ADROS» T-32C

MAIN PERFORMANCE DATA

Length, m	not more than 2.6
Width, m	not more than 0.4
Height, m	not more than 0.8
Weight without flares, kg	not more than 190
Weight with flares, kg	not more than 250

Multifunction countermeasure pod (MCP) «Adros» T-32C is intended for active protection of airplanes with turboprop engines of An-26, An-32 type as well as similar class airplanes against guided missiles equipped with infrared homing heads.

One airplane can be equipped with two «Adros» T-32C pods, installed on both left and right airplane side on the regular mounting points.

FLARE DISPENSER

«ADROS» AV-26V

MAIN PERFORMANCE DATA

Chaff and flare caliber	26 mm
Flare quantity in one cartridge	32
Cartridge amount	2N or 3N, where N = 1 … 10
Readiness time	30 sec
Power supplies	27 VDC
Power consumption	200 W
Operating modes	manual, automatic, BIT

Chaff and flare dispenser «Adros» AV-26V is intended for aircraft protection against guided missiles by ejection of false targets flare in infrared band and chaff decoys in radio band wavelength.

Flare salvos create complicated spatial-energetic conditions aside of the aircraft, which provide attack failure.

ENGINE EXHAUST SHIELDS

«ADROS» ASH-01V

Engine Exhaust Shields (EES) «Adros» ASh-01V are intended for reduce of infrared visibility of Mi-8, Mi-35 type helicopters of all modifications, equipped with turboshaft TV3-117 type engines with the purpose to decrease IR guided missile attack probability.

MAIN PERFORMANCE DATA

Design	Multi-loop ejector with changeable geometry
IR emission suppression level in 3-5 μm band	4-5
Free turbine power losses	up to 2-3%
Weight	up to 35 kg

Aerodynamic drag does not exceed value of original EES

OPTICAL-ELECTRONIC SUPPRESSION STATION

«ADROS» KT-02 ASE

It is intended for high-effective active protection of aircraft with two turboprop engines against guided missiles with infrared homing heads of various types. The item consists of the emitter unit and control panel. It may be installed on An-24, An-26, An-30, An- 32, An-140 aircrafts and Mi-8, Mi-17, Mi-24 helicopters of all modifications. It is placed in aircraft 2 pcs in a number in special containers.

MAIN PERFORMANCE DATA

Aircraft protection probability	0.7 – 0.8
Capture total stoppage time, s	0.5–0.8
Operating frequency band, μm	1.8–5.5
Aircraft airborne power supply voltage, alternating current, V, Hz:	
single phase	115, 400
direct current, V	27
Power, kW	4
Weight, kg, not more than	35
Protection zone, deg	360

GUIDED MISSILES

R-27

Medium range missile R-27 is intended for interception and destruction of piloted and non-piloted aircraft, as well as cruise missiles in long range and close manoeuvring air combat. It is a part of armament of MiG and Su types of aircraft.

MAIN PERFORMANCE DATA

Model	R-27RE	R-27R	R-27TE	R-27T
Weight, kg	350	253	343	245
Length, m	4.7	4	4.5	3.7
Caliber, m	0.23			
Engine diameter, m	0.26	0.23	0.26	0.23
Wings span, m	0.8	0.77	0.8	0.77
Rudders span, m	0.97			
Launch altitude, km, not more than	27	25	30	24
Launch range, km				
- maximum (forward hemisphere)	95	60	90	50
- minimum (rear hemisphere)	0.5			
Maximum acceleration, g	8			
Warhead weight, kg	39			
Guidance system	semi-active, radar head with radio correction infrared head			

GUIDED "AIR-TO-AIR" MISSILE

R-60

Guided "air-to-air" missile R-60 of short range is intended to defeat air targets which shed caloric energy (during operating of aircraft engine). The missile is designed according to canard plan.
R-60 is equipped with infrared homing head "Komar". Target-destruction probability by means of one missile R-60 – 0,9. Actuation range - 5 m. R-60 is to apply from launcher APU-60-1 and APU-60-2. Delivery aircrafts: MiG-21, MiG -23M, MiG -25PD, MiG -29, MiG -29C, MiG -31, Su-22, Su -24M, Su-25T, Mi-35, Mi-8MTV.

MAIN PERFORMANCE DATA

Modification	R-60	R-60M
Range, max, km	7	10
Range, min, km	0,2-0,25	
Diapason of altitude usage, km	0,03-20	
Length of missile, mm	2096	2138
All-up-weight, kg	43,5	44
Speed, max	2,5	
Warhead, type	Rod warhead	
Warhead, weight, kg	3 (2,7)	3,5

AERODYNAMIC GUIDANCE SECTION FOR BOMBS

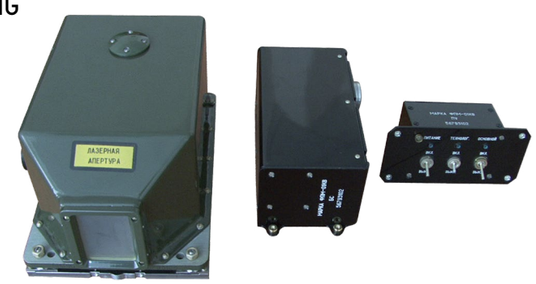
«ADROS» BAU-01KT

«Adros» BAU-01KT aerodynamic guidance section is used to increase the effectiveness of aviation bombs combat application against stationary and low-dimension targets. It is designed for bombs of 200 lb (≈100 kg), 500 lb (≈250 kg) and 1000 lb (≈500 kg) caliber.

MAIN PERFORMANCE DATA	
Applicable altitude	from 500 to 6000 m
Readiness time	not more than 3 s
Continuous working time in autonomous flight	not less than 60 s
Guidance system onboard continuous working time	4 hours
Power supply	DC: 5 V and 27 V
Operating condition:	
Temperature	from -50°C to +70°C
Pressure	up to 15 mm Hg
Altitude drop	up to 9000 m
Weight	depends on design solution (up to 10 kg)

LASER SYSTEM FOR SIGHT MARK FORMING

«ADROS» FPM-01KV

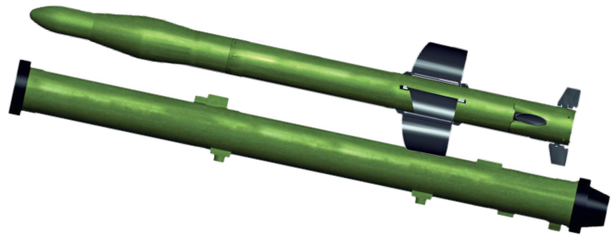


Laser system for sight mark forming FPM-01KV allows operative combat application of helicopter unguided weapon in dark conditions. It forms laser beam with sight mark at the beam end directly on the ground target. Beam and sight mark can be visible only through the pilot's NVG.
FPM-01KV system is designed to install on Mi-8, Mi-17, Mi-171, Mi-24, Mi-35, Mi-2 and other gunships.

MAIN PERFORMANCE DATA	
Laser beam angular velocity	up to 20 deg/s
Beam deviation angles, azimuth	± 12°
Beam deviation angles, elevation	from – 30° to +6°
Beam positioning accuracy	not worse than 1.5 mrad
Power supply	27 VDC, 40W 36 VAC, 400 Hz, 70VA
Readiness time	up to 3 min
Weight	up to 5 kg

HELICOPTER ANTITANK MISSILE SYSTEM

BARIER-V



It is intended to defeat stationary and moving modern armoured targets with combined, carried or monolithic armour including ERA and also pinpoint targets like weapon emplacement, tank in trench, light-armoured objects and helicopters. System consists of the antitank guided missile in a transport-launching container and laser control channel in an optical-aiming station.

MAIN PERFORMANCE DATA	
Maximum range, m	7 500
Guidance system	automatic by laser beam with target TV-thermal imaging autotracking
Weight of missile in container, kg	43
Missile caliber, mm	130
Container length, mm	1 917
Warhead type	tandem hollow-charge
Armour penetration, mm, not less than	800
ERA penetration	provided
Target hit probability by one missile	0.7 – 0.85

AIRCRAFT ROCKET

AR-8

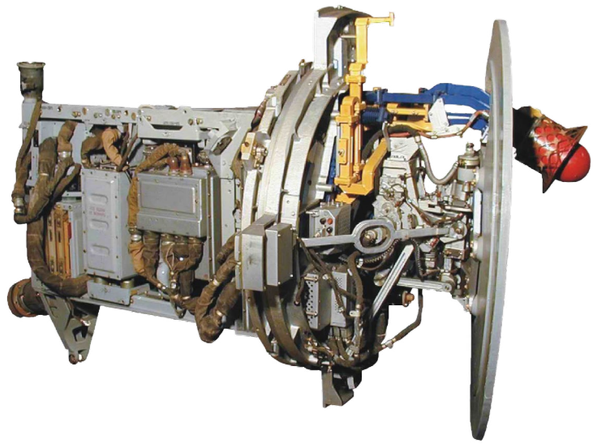
It is intended for firing from B8M and B8V20 rocket pods which are the constituent part of rocket armament of aircrafts like Su-22, Su-24, Su-25, Su-27, MiG-23, MiG-27, MiG-29 and helicopters like Mi-8, Mi-24, Mi-28, as well as for destruction of various types of ground-based targets (tanks, self-propelled artillery launchers, APC, missile launchers, radar stations, aircrafts on the ground, ammunition depots, special trains, manpower).

MAIN PERFORMANCE DATA	
Calibre, mm	80
Length, mm	1 586
Weight, kg	12.5
Warhead	hollow-charge and fragmentation type
Weight, kg	4.3
Damage effect	armour penetration, mm, not less than - 400
Number of fragments, pcs., not less than	500
Range of firing, m	1 200 – 4 000

RADAR SIGHTING SYSTEM

N001

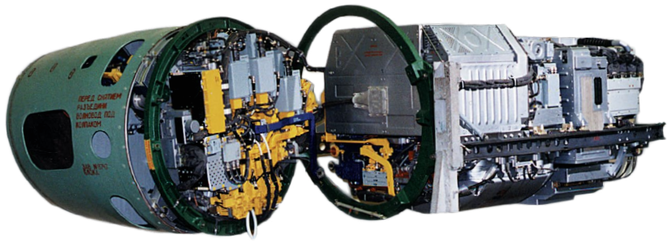
It is designed for operation in weapon control systems of Su-27, Su-30, Su-30MK aircrafts.



RADAR SIGHTING SYSTEM

N019

It is designed to operate as part of the weapon control system in the MiG-29 aircraft.



MAIN PERFORMANCE DATA

Transmitter output pulse power at any carrier frequency in the HRF and MRF Scanning mode, kW:	
- minimal	2.4
- maximal	7.8
Number of carrier frequencies in the Scanning mode	7.8
Transmitter output peak power at any carrier frequency in the Illumination mode, kW:	
- minimal	0.45
- maximal	2.16
Number of carrier frequencies in the Illumination mode	10
Number of repetition frequencies	8

MAIN PERFORMANCE DATA

Operation range, km	2.5-10
Flying speed, max, m/s	870
Flying speed of delivery vehicle, km/hrs	600-1 250
Firing altitude, km	0.05-5
Length of missile, mm	3 705-3 750

TACTICAL AIR-TO-SURFACE MISSILE

KH-25ML

Tactical air-to-surface missile Kh-25ML (AS-10 “Karen”) with laser homing head is intended for defeat of low-sized movable and unmovable ground targets as radars and launches of antiaircraft guided missile, aircrafts on the ground, etc. Warhead - high-explosive fragmentation. Delivery aircrafts: MiG-23, MiG-27, MiG-29, Su-22, Su-24, Su-25, Su-35, helicopters.

MAIN PERFORMANCE DATA

Operation range, km	2.5-10
Flying speed, max, m/s	850-920
Flying speed of delivery vehicle, km/hrs	600-1250
Firing altitude, km	0.05-10
Length of missile, mm	4294

ANTI-RADAR MISSILE

KH-25MP

Anti-radar missile Kh-25MP (AS-12 “Kegler”) with passive radar homing head is designed for high-accurate defeat of air defense control systems of enemy including radars of anti-aircraft missile system “Hawk”, “Improved Hawk”, “Nike Hercules”. Warhead - high-explosive fragmentation. Operation range – anti-radar. Delivery aircrafts: MiG-23, MiG-27, Su-22, Su-24, Su-25, MiG-29.

AUTOMATIC GUN

GSH-23L

Automatic gun GSh-23L is intended for shooting by means of 23 mm rounds at ground and air targets form objects both when on move (aircrafts), as well as on stationary position (APC, etc.).
Delivery aircrafts: MiG-21, MiG-23, Su-7, Su-15, Su-22,Su-25,
IL-76M, L-39, Tu-22,
An-72, Tu-95, Tu-142, Mi-24,
Mi-35, Ka-25, Ka-29, Mi-8.

MAIN PERFORMANCE DATA

Dimensions, mm	1400x165x168
Weight of rounds, g	174
Weight of cartridges, g	325
Weight of gun, kg	50.5
Calibre, mm	23
Quantity of barrels	2
Ammunition capacity, bullets	150—2500
Rate of fire, rds/min	3000-3400
Muzzle velocity, m/sec	700

GUN POD

UPK-23-250

Gun pod UPK-23-250 with automatic gun GSh-23L is intended for siting, transportation and shooting at air and ground targets (manpower, light armoured targets as aircrafts, automobile vehicles, radars, ets.).
Delivery aircrafts: MiG-21, MiG-23, Su-22, helicopters: Mi-24, Mi-8, Mi-17 of each modifications.

MAIN PERFORMANCE DATA

Armament	23 mm automatic gun GSh-23L
Ammunition capacity	250 rounds
Weight, kg	
- fully-loaded pod	218
- automatic gun with ammunition	145
- empty pod	70
Length, mm, without gun	2 990
Width, mm	340
Height, mm	400
Service life	25 years, 6 000 shots

HELMET-MOUNTED TARGET DESIGNATION SYSTEM

SURA

The SURA helmet-mounted target designation system is intended for quick aiming of guided weapon and viewing systems at visual targets by pilot's head turn without aircraft course change.
The upgraded version of the SURA HMTDS – the SURA-I is intended for aiming and flight information displaying in the pilot's field-of-view. The new and serial helmet mounted units are identical by form, weight and dimensions, attaching-mechanical and electrical parameters.

MAIN PERFORMANCE DATA

Targeting range, deg	
- in azimuth	from +70 to –70
- in elevation	from +65 to –35
Targeting accuracy (RMS), mrad	not more than 3
Output data format	meets the ARINC-429 or MIL-STD-1553B
Weight, kg	
- of total set	6
- of helmet mounted system with cable	0.39
Power consumption, V, Hz, W	115, 400, 150

ROCKET PODS

B8V20-A, B8M1

Rocket pods B8V20-A and B8M1 are intended for siting, transportation and air-to-ground shooting by means of rockets RS-8 (S-8)-type.
Rocket pod B8V20-A –is the pod designed for helicopters (Mi-24, Mi-8 of any modifications, etc.).
Rocket pod B8M1 – is the pod designed for aircrafts (Su-25, Su-17, MiG-23 of any modifications, etc.).

MAIN PERFORMANCE DATA

Type	B8V20-A	B8M1
Quantity of tubes, pcs.	20	20
Calibre, mm	80	80
Pod management	electrical	electrical
Weight of pod withoit rockets S-8-type	100	150
Weight of loaded pod, kg	342	395
Dimensions, mm	1 793x521x578	2 760x520x594

FRAGMENTATION BOMB

OFAB-100-120

Fragmentation bomb OFAB-100-120 is designed to defeat light armoured and sitting equipment, military industrial facilities and manpower. It is used at the height 500 – 1500 m at the speed 500 – 1500 km/hrs.
Delivery aircrafts: aircrafts of each modifications.

MAIN PERFORMANCE DATA	
Calibre, mm	100
Length, mm	1 065
Diameter, mm	273
Weight of bomb, kg	123
War-head	high-explosive fragmentation
Weight of war-head, kg	46

MOBILE COMPLEX

MK-9.12

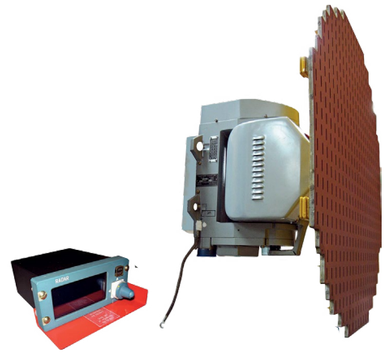
In the process of upgrade of the Complex, the overhaul and calibration are carried out, new service and life time are established. The upgraded equipment was certified and allowed to use when overhaul and operation of the aircraft MiG-29 of Ukrainian Air Forces. Upgrade of MK-9.12 is an effectiveness and efficiency.

EFFECT:
New automation level of serviceability control of aircraft MiG-29 systems
Easy to work with the systems' check programs (work in an interactive mode)
Possibility of making up a new test programs, simplicity of making alterations in test programs
Possibility to check up aircraft MiG-20 type of all modifications
Storage, processing and analysis of information about tests of aircraft MiG-29
Obtaining of object check-up documentation of high quality level
Possibility of self-control and metrological control of AKRS equipment as to specially developed programs
Serviceability, high reliability

ONBOARD METEO-NAVIGATION RADAR STATIONS

BURAN-A

It is inteded to provide: navigation ground survey; detection of meteorological formations dangerous for flight, including turbulent zones and oncoming aircrafts; analysis and display of the vertical profile meteo-objects.

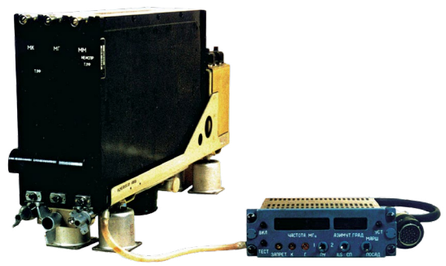


MAIN PERFORMANCE DATA	
Carrier frequency, MHz	9 345
Pulse power, kW	5
Beam width, degree	4/6x10
Antenna gain, dB	33/27
Power supply:	
- on 27 V power system	70 W; 1,5 A
- on 115 V, 400 Hz power system	80 W; 0,7 A

ONBOARD INTEGRATED NAVIGATION AND LANDING EQUIPMENT

KURS-93M

The Equipment provides aircrafts navigation by radio beacons of VOR system, pre-landing maneuvers and approach landing by ILS and SP-50 radio beacons, as well as marker radio beacons fly by signaling. The Equipment comprises radio receiving block RRB on damper frame and control panel CP.



MAIN PERFORMANCE DATA	
Radio receiving block RRB:	
Overall dimensions	200x94, 5x368 mm (1,5 K) (without frame)
Weight	4,7 kg (without frame)
Weight with the frame	6,3 kg
Power consumption	30 W from the onboard 27 V power system
Ventilator supply from the onboard power system	115 V, 400 Hz
Pulse duration	0.3-1.0 mcs
Overall dimensions	155x48x145 mm
Weight	1 kg
Power consumptionw	10 W from the onboard 27 V power system

CLOSE NAVIGATION AND LANDING EQUIPMENT

BEEP-M

Equipment is designed for automatic transmission of the aircraft direction and distance data relative to a ground-based radar station. In the “landing” mode it provides landing approach and generates signals of deviation from the equisignal area of course and glissade, and slant range distance to a landing beacon.

MAIN PERFORMANCE DATA

Range at 10,000 m altitude	≥ 350 km
Directional reading error	±0,125 grades
Distance reading error	±(250±0.05%D) m

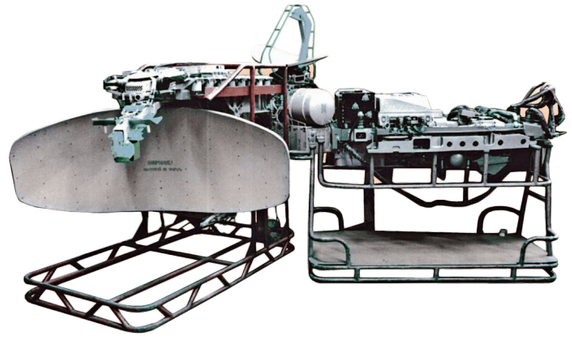
TRAFFIC COLLISION AVOIDANCE SYSTEM

SPS-2000

“SPS-2000” Traffic Collision Avoidance System is designed to provide safe separation between aircrafts if path forecast shows the probability of a collision and simultaneously minimize the deviation from the prescribed flight parameters.

MAIN PERFORMANCE DATA

Transponder characteristics at TCAS mode:	
frequency	1 030±0,01 MHz
Max power	55,0 dBm
Transponder characteristics at S mode:	
frequency	1 090±3 MHz
Max power	52,0 dBm



MAIN PERFORMANCE DATA

Power supply:	three phase, 200V, 400Hz
Power supply:	direct current, 27V
Weight	not more than 837 kg
Power consumption, not more than:	
- in 200 V, 400 Hz circuit, V	7 800
- in 27 V circuit, W	3 100

SIGHTING-NAVIGATION SYSTEM

PNS-24M

Sighting-navigation system PNS-24M is installed on SU-24M aircraft and provides solution of following complex tasks:

- automatic flight as per set programmed and strategical itinerary points with correction of current position;
- detection of objects and aimed pointing of all kinds of aviation armament on ground (hidden and open), air and water-surface targets;
- safe fly-around at the altitudes from 50 to 600 m automatic and semi-automatic modes.

EARLY TERRAIN AWARENESS AND WARNING SYSTEM

SRPPZ-2000

SRPPZ-2000 corresponds to ICAO requirements and intended for opportune awareness of the equipage about getting into a situation, the progress of which could lead to unpremeditated clash of the air board with surface or false barrier.

AIRCRAFT TRANSPONDER

A-511

Device is designed to work with secondary air traffic control radar systems of ATC and RBS standards. It transmits information automatically on their request about the aircraft tail number, altitude, fuel load, a signal of plane selection from the group, «Alarm» signal, landing gear extension signal.

MAIN PERFORMANCE DATA

Transmitter pulse power:	300…800 W
Receiver sensibility:	
RBS mode	minus (84±4) dB/Wт
ATC mode at 837,5 MHz	minus (66±4) dB/Wт
ATC mode at 1030 MHz	minus (104±4) dB/Wт
Transmitting frequency:	
ATC and RBC mode	(740±2) MHz
A and AC mode	(1090±3) MHz

AIRCRAFT TRANSPONDER

SO-72M

It is designed for operation with secondary ATC RBS radar systems as well under the UVD standard while flying in the Commonwealth of Independent States airspace.

MAIN PERFORMANCE DATA

Sensitivity of the receiver:	
in RSP mode	minus (84±4) dB/W
in UVD mode at 837.5 MHz frequency	minus (66±4) dB/W
in UVD mode at 1,030 MHz frequency	minus (104±4) dB/W
Frequency of the transmitter:	
in UVD, RSP modes	(740±2) MHz
in A and AS modes	(1.090±3) MHz
Impulse power of the transmitter	300…800 W

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