RUSSIAN HELICOPTERS

COMBAT HELICOPTER

Mi-28NE

- engines power 2 x 2 200 h.p.
- maximum take-off weight 12 100 kg
- ferry range 1 087 km
- maximum speed 280 km/h
- crew: 2 persons
- service ceiling 5 650 m

EVOLUTION

The concept of the Mi-28N combat helicopter (export version - Mi-28NE) has had many upgrades during its inception and development.
The helicopter was developed as a specialized highly manoeuvrable rotor wing attack helicopter, designed as a “sky platform for the installation of various armaments”. The use as a troop transport helicopter has not yet been considered.

1976

The Mi-28 design was finalised. The technical specifications from the Mil Moscow Helicopter Plant had been approved by the Russian Ministry of Defense.

1987

Based on results of state tests, the Mi-28A – an upgraded version – was manufactured at Mil Moscow Helicopter Plant in 1987. During the Mi-28A state tests, both designers and customers revealed that the helicopter equipment had become obsolescent. In view of this, it was decided to stop development of the Mi-28A and concentrate all efforts on the Mi-28N - an all-weather and round-the-clock helicopter, with a new integrated complex of Vth-generation airborne equipment.

1996

On November 14, 1996 the Mi-28N performed its first flight.

2002

In 2002 the Russian Air Force Command accepted the Mi-28N as a future principal helicopter. In the following year Mr. Vladimir Putin, Russian President, signed an Order for the Mi-28N to be a Russian main attack helicopter, this led to the beginning of serial production of the helicopter.

2009

On October 15, 2009 Mr. Dmitry Medvedev, Russian President, signed an Order for the Mi-28N to be put on inventory by the Russian Armed Forces.

2013

On November 22, 2013 the combat helicopter Mi-28N was taken in the inventory of the Russian Armed Forces as per the Order signed by Mr. Sergey Shoygu, Russian Minister of Defense.

DESCRIPTION OF Mi-28NE HELICOPTER

The design of the Mi-28NE was based on the experience and combat application of Mi-35 type helicopters and other similar type foreign helicopters.

The fuselage of the Mi-28NE consists of the nose and central parts as well as the tail boom and tail rotor pylon. The cockpit is in the nose fuselage part, it comprises of two armored sections. The cockpit is a tandem type, pressurized, ventilation-type with an air conditioning system and armour protection.

The helicopter crew comprises of a Pilot and Pilot-Operator. The Mi28NE is resistant to adverse weather conditions, it can be adapted to the newest equipment and armament systems.

The Mi-28NE is highly agile and capable of advanced aerobatics. For example, lazy eight, S-turn, spiral, combat turn, zoom.

The Mi-28NE has a high combat survivability, operating and technical characteristics and up-to-date protection and countermeasures.

The Mi-28NE has a low noise level to avoid ground based weapons. This makes it capable of effective combat missions.

A specific feature of Mi-28NE is a minimum acoustic signature to be detected by enemy's Air Defence which enables effective combat mission accomplishment.

The helicopter is a typical single-main-rotor aircraft and fitted out with two VK-2500-02 turbo shaft engines.

At present, the Mi-28NE is being produced with dual-control system; it can be used for training of students in Military School and military Pilots. The helicopter maintains all the features of an attack helicopter.

The mechanical dual-control system is a key distinctive feature of the helicopter, it allows control of the helicopter both from the Pilot cabin and Pilot-Operator (Instructor). The cockpit has been enlarged, the upper canopy part has been widened energy absorbing seats with a new parachute system have been installed.

THE MI-28NE SURVIVABILITY

The Mi-28NE high combat survivability in an enemy intensive air defense environment is provided by:

· protection of fuel tanks against explosion and fuel leak if hit by bullets and fragments (main fuel tanks are filled with polyurethane foam and installed into protected containers)

· redundancy of most vital systems

· spacing of the VK-2500-02 engines along the fuselage boards and protection of the main gearbox reducing the possibility of destruction. The helicopter is also capable of flying with one engine operated with automatic output to maximum power in case of the failure or damage to one engine

THE COUNTERMEASURE COMPLEX
radar alarm system
laser alarm system
missile warning system
laser warning unified airborne equipment
control device
flare dispenser
exhaust-heat shields (EHS) (intended for protecting helicopter against missiles with heat homing warheads)

COCKPIT ARMOURING

To provide crew survivability when accomplishing combat missions the Mi28NE cockpit and main aggregates are armoured.

THE MAIN ELEMENTS OF ARMOUR-PLATING
multi-layer armoured glass of the Pilot's and Pilot-Operator's cabin
armoured partition wall between the crew members minimizes possibility of simultaneous injury of both crew members;
armoured plates on the Pilot's and Pilot-Operator's door
ceramic plates in the crew cockpit

CREW SURVIVAL EQUIPMENT

At flight altitudes over 100 m, crew rescue by means of a parachute is provided by an emergency evacuation system. It is activated by the Pilot and Pilot-Operator separately. The doors and side windows are fitted with emergency release mechanisms. Protection of the crew during an emergency landing is provided by the following:

· gas - liquid shock absorber with stepped characteristics, it is made in one aggregate with an emergency shock absorber, located in main landing gear struts

· the crew seats are fitted with shock absorbers with working travel of 220 mm during an emergency landing

· automatic arrest of crew waist and shoulder harnesses in case of emergency landing

In this instance the crew members' harness restraint system is being activated first. Energy-intensive and special energy absorbing seats absorb the impact force.

INTEGRATED COMPLEX OF AIRBORNE RADIO ELECTRONIC EQUIPMENT (BREO)

The Mi-28NE is equipped with a newly integrated complex of airborne radio electronic equipment (BREO) designed on the basis of modern technologies.

The flight navigation system provides automatic enroute flying as well as determining of the helicopter current coordinates (position).

THE BREO COMPLEX IS DESIGNED TO SOLVE THE FOLLOWING TASKS:

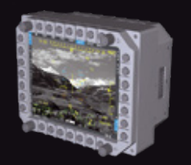
· search, detection and identification of ground and air targets
· identification of targets coordinates, display of target detection
· choice of armament type for target destruction and provision of armament use
· data receipt on helicopter threat, choice and use of protection means
· use of communication means complex
· automated control of system parameters, aggregates, equipment of the helicopter

THE BREO COMPLEX PROVIDES THE FOLLOWING WHEN ACCOMPLISHING MISSIONS:

· possibility of round-the-clock and all-weather armament use
· stabilization of altitude-speed parameters
· group combat application of helicopters with targets distribution between them
· target data exchange between helicopters and air/ground command posts

ROUND-THE-CLOCK ALL-WEATHER COMBAT APPLICATION

For ensuring round-the-clock and all-weather mission accomplishment, the Mi-28NE is fitted with::



AIRBORNE RADAR STATION

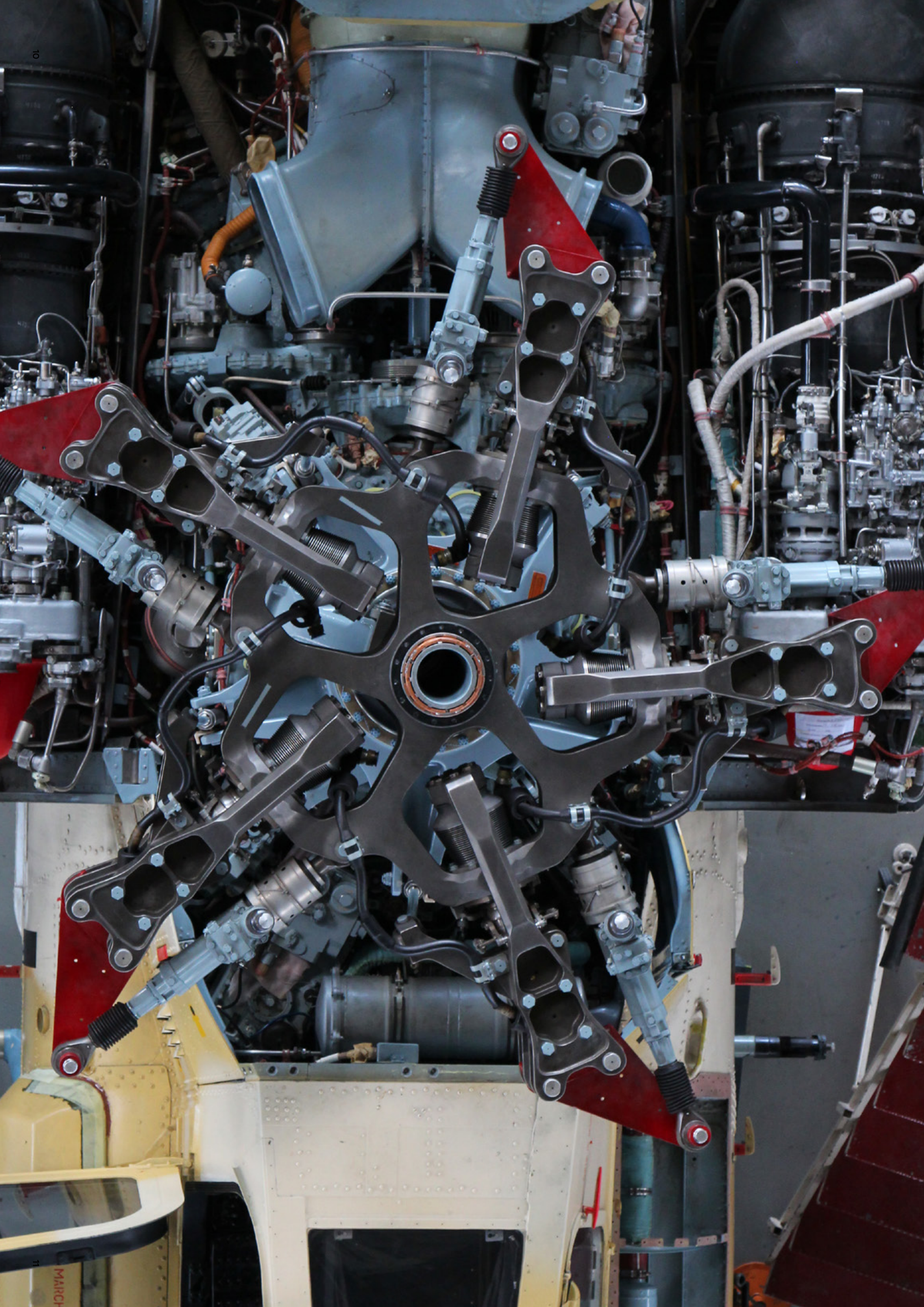
NIGHT VISION GOGGLES

MULTIFUNCTIONAL COLOUR DISPLAYS

HIGH-ACCURACY LASER INERTIAL NAVIGATION SYSTEM

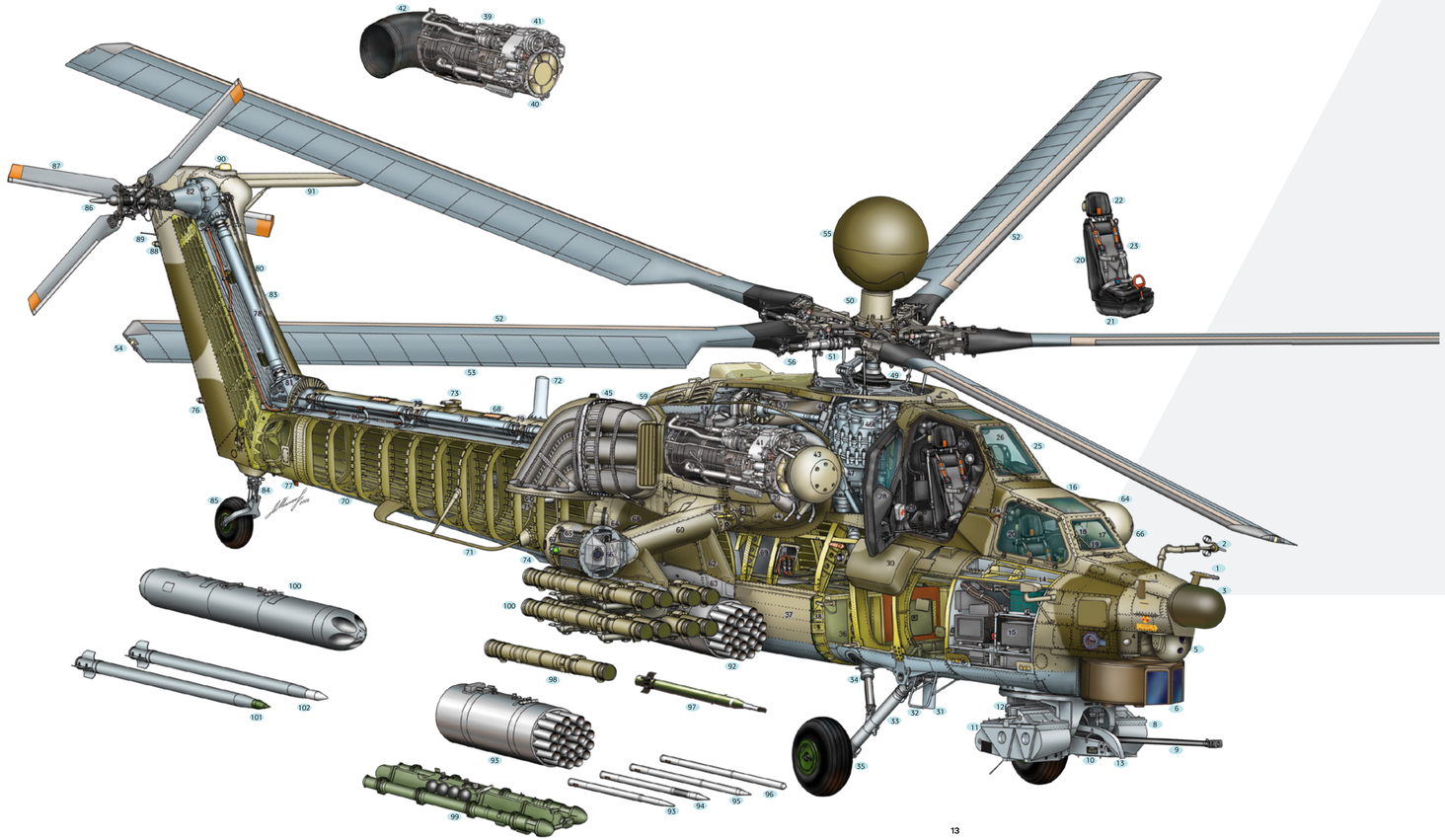
ROUND-THE-CLOCK OBSERVATION SIGHTING STATION

PILOT'S ROUND-THE-CLOCK THERMAL IMAGING FLIGHT SYSTEM


MARCH

Mi-28NE

1. Pitot tube
2. Velocity-vector transmitter
3. Command transmitting antenna
4. L-150-28 Antenna
5. Pilot's surveillance station
6. Operator-navigator's surveillance/targeting station
7. Search-landing light
8. Gimbaled turret gun
9. 30 mm 2A42 gun
10. 2A42 gun mount
11. 30 mm ammunition box
12. Ammunition feed chute
13. Empty-cartridge discharge chute
14. 1L229IV Antenna
15. Avionics bay in the nose compartment
16. Operator-navigator's cockpit
17. Navigator's windscreen (armoured)
18. Windscreen wiper
19. Navigator's instrument panel
20. Pilot's seat
21. Seat pan accommodating parachute and survival kit
22. Adjustable headrest
23. Harness
24. Navigator's emergency exit
25. Pilot's cockpit
26. Pilot's head-up display
27. Pilot's instrument board
28. Pilot's cockpit door
29. Medicine chest
30. Ballonet's cover of pilot
31. Tactical radio antenna
32. Boarding rung
33. Mainwheel shock absorber strut
34. Hydraulic-and-pneumatic shock strut
35. Main shock strut wheel
36. Pullout boarding step
37. Self-sealing fuel cells
38. Fuel cell protective plating
39. VK-2500-02 turboshaft engine
40. Engine air inlet section
41. Accessory drive assembly
42. Exhaust nozzle
43. Dust Protection Unit
44. Dust separator outlet of DPU
45. Exhaust-heat suppressor
46. Main gearbox
47. Gearbox mounting frame
48. Combined- aggregates of control system
49. Swash plate of mail-rotor
50. Main rotor hub
51. Hydraulic damper
52. Main-rotor blade
53. Trimming tabs
54. Back light
55. On-board radar station
56. Blank of tube of fan's access tunnel
57. Fan
58. Radiators of cooling system
59. AI-9V auxiliary power unit
60. Outer wing of helicopter
61. Fuel line from drop tanks
62. Pylon for store rack fixation
63. DB3-UB external store rack
64. Pod for special equipment
65. UV-26 chaff and flare launcher
66. Laser warner
67. Navigation light (green)
68. Formation lights
69. Compartment of radioelectronic equipment
70. Tail boom
71. SW radio antenna
72. Communication radio antenna
73. Satellite antenna
74. High-frequency DISS-32-28 unit
75. Signal-flare launcher
76. L-150-28 item Antenna
77. IFF antenna
78. Tail shaft
79. Tail shaft support
80. Control cable of tail rotor and stabilizer
81. Intermediate gearbox
82. Tail gearbox
83. Tail pylon
84. Tail landing gear support
85. Wheel of tail landing gear support
86. X-shaped tail-rotor hub
87. Tail-rotor blade
88. Navigation light (white)
89. Static-electricity discharger
90. Lamp warning beacon
91. Stabilizer
92. B8V20-A rocket pack
93. S-8M unguided aviation missile
94. S-8D unguided aviation missile
95. S-8B unguided aviation missile
96. S-8KOM unguided aviation missile
97. 9M120 "Ataka" anti-tank guided missile
98. Transport-launcher container of 9M120 "Ataka" anti-tank guided missile
99. Universal launching module for two supersonic homing missiles Igla, air-to-air type
100. B13L1 rocket pack
101. S-13D unguided aviation missile
102. S-13OF unguided aviation missile



VERSIONS OF MI-28NE HELICOPTER APPLICATION

At present the Mi-28NE is used for accomplishing the following tasks:

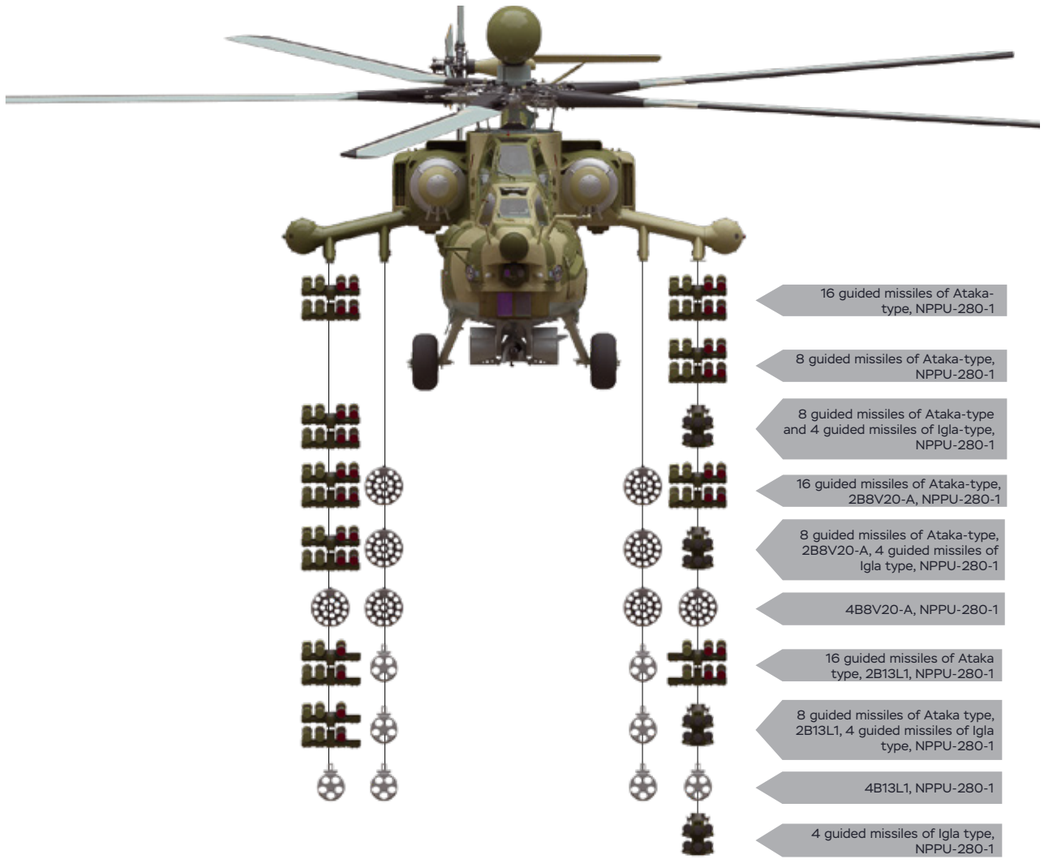
- search and destruction of armoured vehicles, single and group targets, artillery and battle anti-aircraft defense means
- fighting enemy low-speed aircraft
- aircraft reconnaissance and target detection when accomplishing combat missions
- aircraft support of land forces on the battlefield and destruction of enemy manpower
- surveillance of dangerous regions and fighting against enemy tactical airborne assault
- training of air cadets from military schools and improvement of flight proficiency of the helicopter crew

The Mi-28NE helicopter is capable of performing all the assigned tasks day and night in standard and adverse weather conditions.

HELICOPTER ARMAMENT

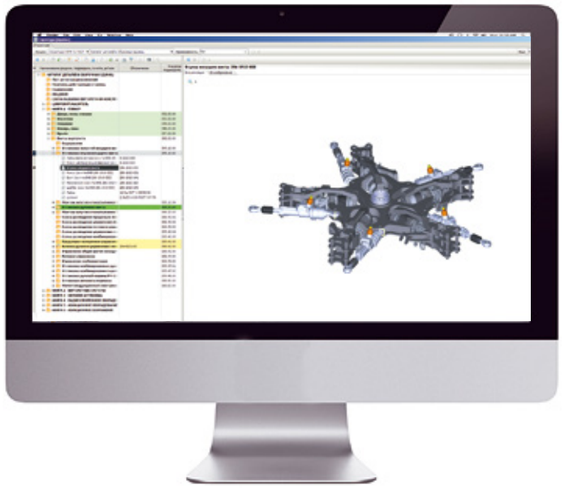
ARMAMENT TYPE	
Guided missiles	Complex with Ataka missiles of 130 mm caliber (16 missiles)
Unguided rockets	Up to 4 B8V20-A units with unguided aviation rockets of S-8 type of 80 mm caliber, 20 rockets in a unit; Up to 4 B13L1 units with unguided aviation rockets of S-13 type of 122 mm, 5 rockets in a unit
Built-in gun armament	NPPU-280-1 non-removable flexible gun unit housing 2A42-2 gun of 30 mm caliber and ammunition load of 250 rounds
Guided missiles of air-to-air type	Set of 9S846 control and launch modules, up to 4 Igla missiles of 72 mm caliber

ARMAMENT VERSIONS OF Mi-28NE HELICOPTER



TYPE OF WEAPONS	DESIGNATION
Ataka guided missiles with tandem hollow charge warhead	Destruction of armoured vehicles as well as ones equipped with ERA
Ataka guided missiles with high-explosive volumetric detonating warhead	Destruction of pillboxes of bunker type and enemy manpower sheltered in fortifications or protective constructions prepared for defence, destruction of light-armoured and unarmoured vehicles (static airplanes, helicopters and cars)
Unguided aviation rockets of S-13 type	Destruction of horizontal and area (group) unarmoured and lightly-armoured ground targets
Unguided aviation rockets of S-8 type	Destruction of horizontal and area (group) unarmored and light-armored ground targets
2A42-2 gun of 30 mm caliber	Destruction of light-armoured and unarmoured ground targets, enemy manpower and air targets
Igla (9M342) guided missiles	Fighting against air targets in day and night conditions of direct optical visibility

ON-LINE INTERACTIVE AIRCRAFT MAINTENANCE AND OPERATION MANUALS



IT-technologies are intensively used for the production and operation of the Mi-28NE helicopter. On-line interactive aircraft maintenance and operation manuals have been developed and put into practice.

THE LATTER INCLUDES:

- Flight Manual;
- Maintenance Schedule and Task Cards of Pre-flight Checks and Scheduled Maintenance
- Helicopter and Vendor Items Maintenance Manuals
- Maintenance Schedule of Vendor Items
- Weight and Balance Manual
- Parts and Assembly Units Catalogue
- Catalogue of Ground Support Equipment, Ground Test Equipment and Tools
- Wiring Diagram Manual
- Vendor Items Spare Parts Catalogue

APPLICATION OF ON-LINE INTERACTIVE MANUALS PROVIDES FOR:

- time-saving in the sourcing of spare parts
- simplification of ground and maintenance personnel training in helicopter design and operation particularities
- prompt data receipt about scope of maintenance, as well as about required tools and materials
- visualizing of maintenance operations to be carried out on aircraft

TACTICAL AND TECHNICAL CHARACTERISTICS

ENGINE	
2 x VK-2500-02	
Take-off power, hp	2 x 2 200

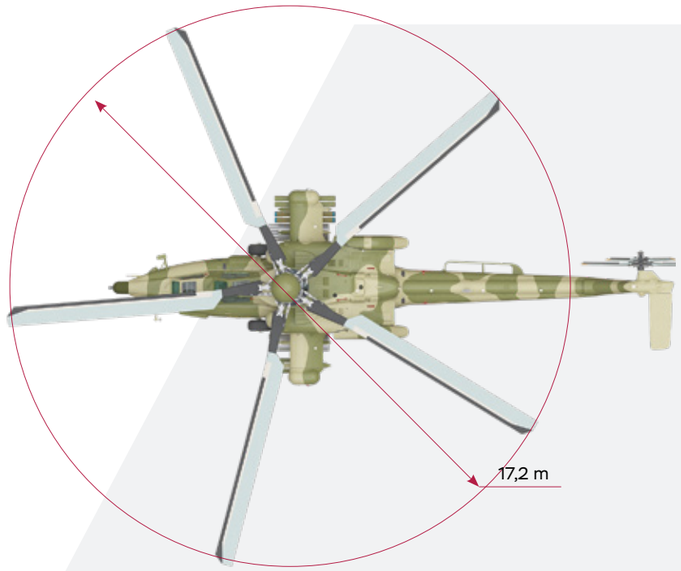
TAKE-OFF WEIGHT	
Normal, kg	10 900
Maximum, kg	12 100
Ferry version, kg	12 140

SPEED	
Max, km/h	280*
Cruise, km/h	230

CEILING	
Hovering, m	3 200
Service, m	5 650

FLIGHT RANGE	
Normal, km	up to 414*
Ferry, km	up to 1 008*

* Depending on peculiarities of helicopter configuration with equipment as per requirements of a separate customer (with dual or single control), variants of air weapons suspension, rates of speeds, altitudes, flight ranges, and also weights and other helicopter performance can differ from those indicated in the Advertising certificate up to ± 10-15%



RUSSIAN HELICOPTERS | ROSTVERTOL

Russian Helicopters JSC
29-141, Vereyskaya st.,121357,
Moscow

Tel: +7 495 627 55 45
Fax: + 7 495 663 22 10

www.russianhelicopters.aero
info@rus-helicopters.com