



I'M AERO

Mi-171E Technical proposal

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1. GENERAL DATA Mi-8/17



Mi-171E helicopter is an advanced version of world-famous Mi-8 helicopter. More than 12000 of Mi-8/17 helicopters were produced, around 4000 among them were exported. At present Mi-8/17 helicopters are operated in more than 80 countries worldwide. Total flying hours for these helicopters exceed 35 million.

Design, useable materials, documentation, manufacturing procedure and performances of the helicopter ensure its safe operation.

The helicopter is being used in all climate conditions: a land, a sea, in any microclimatic area including marine, tropical and cold types of climate, under the influence of maritime fog and sea water.

The helicopter can be operated within outside temperature from minus 50°C to plus 50°C and at relative humidity up to 100%.

Mi-171E helicopter in transport configuration is designed for:

- carriage:
 - cargo carriage inside the cargo cabin and on external sling up to 4 000 kg;
 - carriage of passengers (up to 34) on folding seats;
- search-and-rescue operations (SAR);
- patrolling (optional equipment is needed);
- firefighting (optional equipment is needed);
- medevac operations (optional equipment is needed);

2. DELIVERY PERIOD

Delivery date: 2021-2022

Delivery terms: FCA Incoterms 2010 Ulan-Ude

2.2 Warranties for the helicopter and equipment

I'M AERO LLC guarantees that the quality of the helicopter and equipment complies with the current global standards and technical conditions for the manufacturing of the Mi-171E helicopters.

The warranty period under this proposal is as follows:

- for the helicopter – 12 (twelve) months or 300 (three hundred) flight hours from the date of signing the Acceptance Report for the helicopter, whichever is earlier;
- or the helicopter equipment – 12 (twelve) months from the date of signing the Acceptance Report for Goods;

The warranty for the helicopter and its components may be extended up to 2 years/600 hours at extra charge.

The service life of the helicopter on the moment of delivery may include the service life spent on acceptance procedures and certification procedures in Customers' country.

The subsequent warranty service may be offered at extra charge.

2.3 Miscellaneous

Information indicated in this proposal is confidential and shall not be disclosed to third parties.

Operation and certification regulations and requirements set forth by the aviation authorities of the country of the customer may result in the installation of obligatory equipment not specified in this commercial proposal.

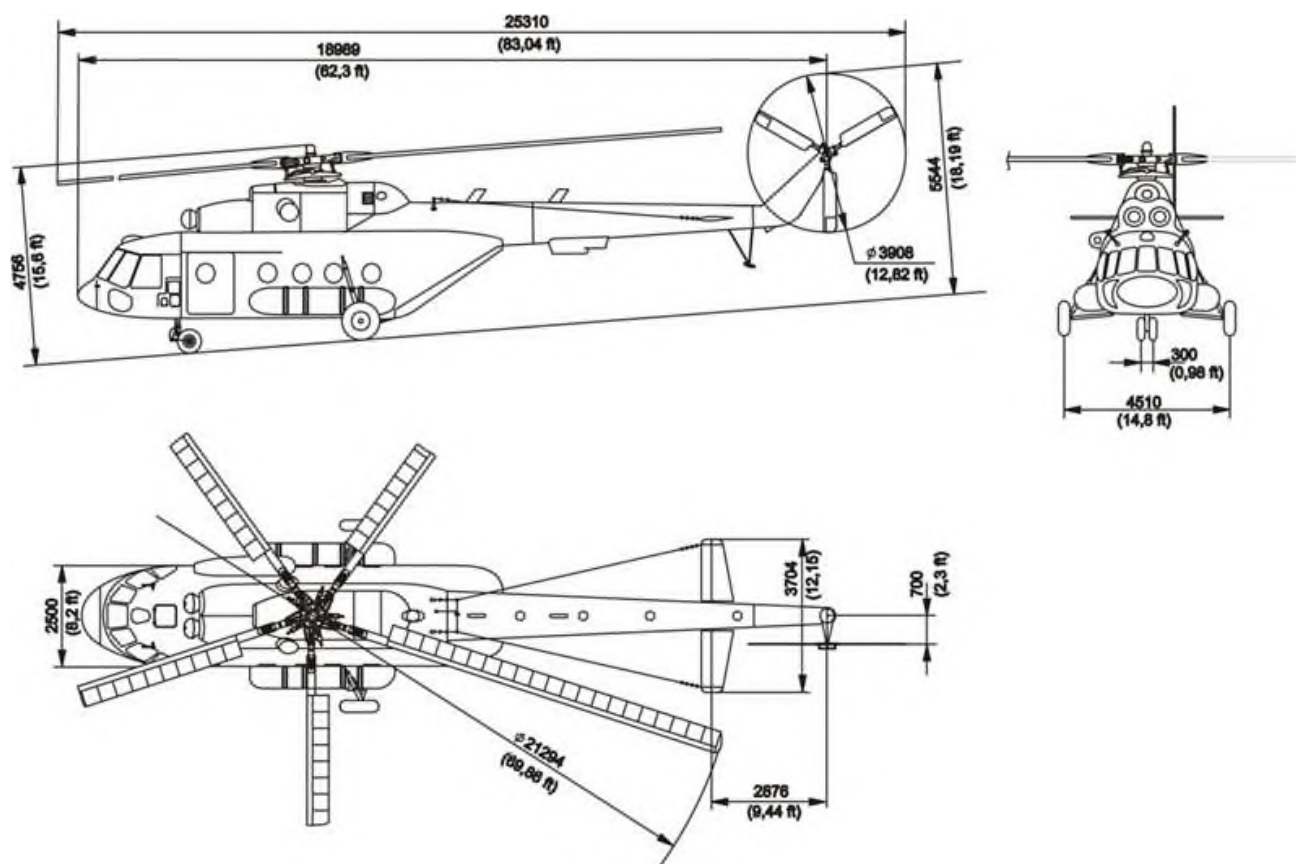
I'm AERO LLC is ready to provide any additional information, which may be required to consider this proposal and hold negotiations on the delivery terms and conditions.



3. MAIN PERFORMANCES

1. Helicopter performances

1. Takeoff weight:	
• maximum	13,000 kg
• normal	11,100 kg
2. Passenger cabin dimensions:	
• length	5.34 m
• width	2.34 m
• height	1.8 m
• usable area	12.5 m ²
• usable volume	23 m ³
3. Ceiling without ground effect (anti-ice system off)	
• with normal takeoff weight	3,980 m
4. Service ceiling:	
• with normal takeoff weight	6,000 m
• with maximum takeoff weight	4,800 m
5. Range with 30 minutes guarantee fuel supply and maximum takeoff weight:	
• with main fuel tanks	610 km
• with one additional internal fuel tank	815 km
• with two additional external fuel tanks	1065 km
6. Maximum speed:	
• with takeoff weight no less than 11,100 kg	250 km/h
• with takeoff weight no more than 11,100 kg	230 km/h
7. Cruise speed:	
• with takeoff weight no less than 11,100 kg	230 km/h
• with takeoff weight no more than 11,100 kg	215 km/h
8. Engine power:	
• emergency	2 x 2,200 hp
• takeoff	2 x 2,000 hp
• nominal	2 x 1,700 hp
• cruise	2 x 1,500 hp

3.2 Dimensions (standard configuration map)

3.3 Equipment installed on Mi-171E
Safir 5K/G MI

Right extended sliding door


Ramp (with hatch)



Cockpit adaptation for using NVG



External sling



SLG-300 Hoist



Cockpit armor



Exhaust shields



4. MI-171E CONFIGURATION
1. List of main components of Mi-171E helicopter

№	Designation	Description	Unit	Q-ty
1. Power plant, rotors and transmission				
1.1	TB3-117BM cep.02	Engine	pc	2
1.2	SAFIR 5K/G MI	Auxiliary power unit	set	1
1.3	8AMT-6820-00-01/02	Dust protection device	set	1
1.4	BP-14	Main gearbox	pc	1
1.5	8M-1515-000	Intermediate gearbox	pc	1
1.6	8M-1517-000	Tail gearbox	pc	1
1.7	8M-1516-000	Tail rotor drive shaft	pc	1
1.8	8A-6311-00 cep.4	Fan	pc	1
1.9	8A-6314-00	Fan drive shaft	pc	1
1.10	8-1930-000 cep.02	Main rotor hub	pc	1
1.11	8-1950-000	Swash plate	pc	1
1.12	8AT-2710-00	Main rotor blades (5 pc)	set	1
1.13	246-3904-000 cep.01	Tail rotor	pc	1
1.14	8AMT-1250-00	Vibration damper	pc	1
2. Fuel and oil systems				
2.1	ЭЦН91С	Electrically driven centrifugal pump	pc	2
2.2	463Б	Electrically driven centrifugal pump	pc	1
2.3	766300A-1-T	Floating regulating valve	pc	1
2.4	768600MA	Shutoff valve	pc	5
2.5	610200 A	Electric magnet valve	pc	2
2.6	637000	Bypass cock	pc	1
2.7	633630	Shutoff valve	pc	1
2.8	601100-1	Drain valve	pc	2
2.9	636700A	Drain valve	pc	4
2.10	5349Т	Oil-air cooler unit	pc	2
3. Control and hydraulic system				
3.1	КАУ-115АМ	Combination control hydraulic actuator	pc	4
3.2	8Д2.966.017-2	Hydraulic filter	pc	2
3.3	ФГ11БН	Hydraulic fine filter	pc	2
3.4	ЭМТ-2М	Solenoid brake	pc	3
3.5	ГА-77В	Pressure control unit	pc	2
3.6	ГА-74М/5	Two-position valve	pc	2
3.7	ГА-192Т	Electric magnet valve	pc	6
3.8	ГА172-00-2/Т	Metering device	pc	1
3.9	НШ39М	Gear pump	pc	2

3.10	OK-10A	Check valve	pc	4
3.11	ГА-59/1	Emergency supply valve	pc	1
3.12	МП-100М сер.2	Electric actuator	pc	2
3.13	ПР 15.875-2300-1-67	Chain, 67 links	pc	1
3.14	РУ-2	Handle	pc	2
3.15	СПУУ-52	Tail rotor pitch limit system	pc	1

4. Fuselage, landing gear and pneumatic system

4.1	595X185 модель 14	Tire of nose landing gear	pc	2
4.2	865X280 модель 1A	Tire of main landing gear	pc	2
4.3	8A-4101-00Б-1	Shock absorber of main landing gear	pc	1
4.4	8A-4101-00Б-2	Shock absorber of main landing gear	pc	1
4.5	8A-4201-00A	Nose landing gear lever shock strut	pc	1
4.6	АК-50Т1 сер.3	Compressor	pc	1
4.7	В8БП.000	Side view glass (RH)	pc	1
4.8	В8БП.000-01	Side view glass (LH)	pc	1
4.9	К2116	Wheel without brake for tire 595*185	pc	2
4.10	КТ97-310	Wheel for tire 865*280	pc	2
4.11	КТ97-220-1	Wheel brake	pc	1
4.12	КТ97-220-2	Wheel brake	pc	1
4.13	УП25/2	Pressure relief valve	pc	1
4.14	УПОЗ/2М	Reduction accelerator	pc	1
4.15	В24-4301-100-7	Tail leg strut	pc	1

5. Firefighting, ice-protection systems, and systems of heating and ventilation

5.1	1-4-4 хладон 114В2	Fire extinguisher	set	2
5.2	1919Т	Governing gate	pc	2
5.3	ДВ-302Т	Electric fan	pc	3
5.4	ЭВ-0,7-1640	Electric fan	pc	4
5.5	ОР1-2,0-20-30 Хладон	Hand fire extinguisher	pc	2
5.6	ССП-ФК сер.2	Fire detection system	pc	3
5.7	ТЭР-1М	Temperature governor	pc	6
5.8	АТ-8-3	Autotransformer	pc	2
5.9	ЭПК-2Т-60	Electromechanism of windshield wiper	pc	2
5.10	ПМК-21ТВ сер.3	Programming mechanism	pc	1
5.11	ТСВ36М313	Current collector	pc	1
5.12	8АТ-7420	Tail rotor current collector	pc	1
5.13	СО-121ВМ вар. "А"	Ice detector unit	pc	1
5.14	ТВ-19	Air thermometer	set	1

6. Electrical equipment units and switching equipment

6.1	ГТ40ПЧ8В	Alternator	pc	2
6.2	РМ-355Г	Mounting frame	pc	2

6.3	БРН120Т5А-3С	Voltage control unit	pc	2
6.4	БЗУНП355Г	Protection and control unit	pc	2
6.5	БТТ40БТ	Current transformer unit	pc	2
6.6	БЧФ-208	Phase-sequence unit	pc	1
6.7	ТС310С04Б	Transformer	pc	2
6.8	ТР-115/36	Reducing transformer	pc	2
6.9	ПТС-800БМ	Three-phase static converter	pc	1
6.10	СПО-9	Single-phase static converter	pc	1
6.11	АПШ-3М	Bus switch unit	pc	2
6.12	БСГО400А	Unit	pc	1
6.13	ВУ-6Б	Rectifier	set	2
6.14	ДМР-200ВУ	Integrated device	pc	2
6.15	АПД-78А	Automatic starting control	pc	1
6.16	ШРАП-500К	Ground power supply connector	pc	1
6.17	ШРАП-400-3Ф	Ground power supply connector	pc	1
6.18	ТОТ-83	Transformer	pc	1
7. Lighting equipment				
7.1	СБК	Cabin light	pc	2
7.2	СМ-3Б-1-1	Lamp	pc	1
7.3	ТР-100/2	Regulating transformer	pc	2
7.4	САС-4-9	Alarm, warning, and caution system	set	1
7.5	ПБС-1	Dome light	pc	6
7.6	П-39	Dome light	pc	16
7.7	ФР-100	Light	pc	2
7.8	БАНО-64	Navigation light	pc	2
7.9	ХС-62	Tail navigation light	pc	1
7.10	ФПП-7М	Landing and search light	pc	3
7.11	ОПС-57	Formation lights	pc	3
7.12	ТН-115-7,5	Transformer	pc	1
7.13	С-1	Siren	pc	1
7.14	7-К-991 (ЭКСП-46)	Cassette	pc	2
7.15	7-П-662К	Missile control console	pc	2
7.16	МСЛ-3А-2С	Light beacon	pc	2
8. Engine and gearboxes control instruments				
8.1	УИ1-3К (КЧ)	Indicator	pc	1
8.2	ИД-3	Inductive sensor	pc	1
8.3	ИТЭ-1Т	Tachometer	set	2
8.4	Д-1М У2	Primary converter	pc	2
8.5	ИП-21-15Н	Position indicator of moving elements	pc	1
8.6	ДС-11	Selsyn sensor	pc	1
8.7	РТ-12-6 сеп.2	Temperature probe	pc	2
8.8	П-77 вар.2	Temperature probe	pc	2
8.9	ИҚД27Да-220-780	Pressure measuring complex	pc	2
8.10	ИР-117МН	Mode indicator	set	1

8.11	ИТЭ-2Т	Tachometer	set	2
8.12	Д-2М У2	Primary converter	pc	2
8.13	2ИА-6	Dual measuring equipment	set	1
8.14	ИБ-500Е сер.2	Vibration indicator	set	1
8.15	УИЗ-3К (КЧ)	Indicator	pc	2
8.16	ИМД-8	Induction sensor	pc	2
8.17	П-2ТР	Oil temperature head	pc	3
8.18	УИЗ-6К (КЧ)	Indicator	pc	1
8.19	ИД-8	Inductive sensor	pc	1
8.20	ТУЭ-48	Multipurpose electrical resistance thermometer	pc	1

9. Control equipment of fuel, hydraulic, pneumatic, and electrical systems

9.1	СКЭС-2027Б	Fuel gauge sensor	set	1
9.2	СД-29А	Pressure switch	pc	3
9.3	МСТ-25А	Pressure switch	pc	1
9.4	МСТ-30А	Pressure switch	pc	1
9.5	МВУ-100К	Air gauge	pc	1
9.6	МА-60	Aircraft pressure gauge	pc	1
9.7	ВФ-0,4-150	Voltmeter	pc	1
9.8	В-1	Voltmeter	pc	1
9.9	А-2	Amperemeter	pc	3
9.10	АФ1-150	Amperemeter	pc	4
9.11	ТФ1-75.150/1А	Transformer	pc	3
9.12	ТФ1-25.50.100/1А	Transformer	pc	4
9.13	УИ1-100К (КЧ)	Indicator	pc	2
9.14	ИД-100	Inductive sensor	pc	2

10. Flight and navigation equipment

10.1	АП-34Б сер.2	Autopilot	set	1
10.2	6С2.553.002	Compensation sensor	pc	1
10.3	БФ-34 партия А	Filter unit	pc	1
10.4	БС-34-1	Communication unit	pc	1
10.5	ТВ-45К	Thermometer	pc	1
10.6	КЗСП	IAS controller / selector	pc	1
10.7	БСГ	Ready signal unit	pc	1
10.8	АГБ-96Д-С	Gyro horizon	pc	2
10.9	АГБ-96Р-С	Gyro horizon	pc	1
10.10	ГМК-1ГЭН	Compass system	set	1
10.11	УГР-4УК сер.3	Indicator	pc	2
10.12	КИ-13КА	Liquid magnetic compass	pc	1
10.13	БКК-18	Roll monitoring unit	pc	1
10.14	СНП-1	Power supply failure switch	pc	1
10.15	ВК-53Э-РВ	Electric cut-out switch	pc	1
10.16	ВД-10ВК 2 сер.	Altimeter	pc	2
10.17	УС-450К 2 сер. (УС-450КА 2 сер.)	Air speed indicator	pc	2

10.18	ВАР-30МК сер.4	Diaphragm-type vertical speed indicator	pc	2
10.19	ПВД-6М	Pitot-static tube	pc	2
10.20	623700-3	Static pressure valve	pc	1
10.21	АЧС-1МК	Aviation watch	pc	1
11. Control equipment				
11.1	БУР-1-2 сер.2	Flight data recorder	set	1
11.2	М11А	Unit	pc	2
11.3	МП-95+/-1,5	Accelerometer	pc	1
11.4	МП-95+3-1	Overload detector	pc	1
11.5	МУ-615А сер.1	Angular motion potentiometry detector	pc	8
11.6	ДВ-15МВ сер.2	Altitude transmitter	pc	1
11.7	ДПСМ-1	IAS sensor	pc	1
11.8	МСТВ-2,5С	Heat-resistant vibration-proof pressure switch	pc	1
12. Helicopter control equipment				
12.1	АРК-15М	Automatic direction finder	pc	1
12.2	А-037 исп.4	Radio altimeter	set	1
12.3	БМП сер.2	Mechanical adapting unit	pc	1
13. Radio communication equipment				
13.1	ПРИМА-КВ	Radio station	set	1
13.2	Орлан -85СТ	VHF radio station (principal)	set	1
13.3	СПУ-7	Aircraft intercom	set	1
13.4	АЛМАЗ-УПМ	Voice warning/reporting system	set	1
13.5	ГСШ-А-18	Headset	set	3
13.6	П-507М	Tape recorder	pc	1

4.2 List of additional equipment installed on Mi-171E helicopter*

No.	Part number	Name	UoM	Qty
1. Airframe				
1.1	8АТ-0338-1000	Right extended sliding door	set	1
1.2	171М.0700.0000.000	Ramp (with hatch 171М.0700.0400)	pc	1
1.3	171М.0200.0000.000	Modified nose part "Dolphin nose"	pc	1
1.4	171М.0385.200	Enlarged emergency hatches	pc	2
2. Fuel and oil system				
2.1	8АМТ-6102-550	Right fuel tank of increased capacity	pc	1
3. Hoisting and transportation equipment				
3.1	8АМТ.9611.000 (исп.903)	External sling with hydraulic weight scale (20 m). Additional intercom station for external load operation	set	1
3.2	СЛГ-300	Hoist for RH sliding door installation	pc	1
3.3	ТУ-80АМТ-2к	Rescue equipment for operation with SLG-300 hoist	pc	1

4. Air delivery system				
4.1	ТУ-80АМТ-2з-1.4	Folding seats, 20 seats	set	1
4.2	ТУ-80АМТ-2з-2	Centerline extra seats, 10 seats	set	1
4.3	8АТ-0325-00	Short static cable (LH side installation)	pc	1
4.4	8АМТ-0327-000-1	Long static cable (RH side installation)	pc	1
4.5	ТУ-80АМТ-2п (Раздел 1-7)	Rework for MEDEVAC equipment installation	set	1
5. Heating, ventilation and air conditioning system				
5.1	2437-02 (КО-50)	Heating and ventilation system with upper position of heater	set	1
6. Furnishing, oxygen, emergency and rescue equipment				
6.1	ККО-ЛС2	Oxygen equipment set (for crew) with KM-32AG mask and MG-2 microphone	set	3
7. Equipment for operation in night conditions				
7.1	-	Cockpit and external lighting adaptation for using of night vision goggles.	set	1
7.2	-	Cargo cabin lighting equipment adaptation for using of night vision goggles	set	1
8. Miscellaneous				
8.1	20FP25H1CT-R	"VARTA" storage battery	pc	2
9. Communication equipment and intercom system				
9.1	8А-813Ц сеп.4	Weather radar	set	1
9.2	БМС-индикатор	Multifunction system GPS/GLONASS	pc	1
9.3	КХ 165А	Instrument landing and navigation system	set	1
9.4	KI 206	VOR/LOC/Glideslope indicator	pc	1
9.5	KI 207	VOR/LOC/Glideslope indicator	pc	1
9.6	КТ 74	ATC transponder	pc	1
9.7	AD-32	Encoding altimeter	pc	1
10. Protection means				
10.1	8АМТ-6840-00-01/02	Exhaust shields	set	1
10.2	8МТ.8801.100СБ	Cowlings armor	set	1
10.3	8МТ.8801.000СБ	Cockpit armor	set	1
10.4	8АМТ-6102-6000	Main fuel tanks protection 8АМТ-6102-6000	set	1
10.5	8ТВ.6101.500	Protected service tank	pc	1

**- Upon Customer's request the helicopter can be equipped with additional options*

4.3. List of equipment supplied with helicopter

In order to provide the continuous operation helicopter is supplied with:

- individual set of equipment (1:1) for Mi-171E helicopter;
- operational-maintenance documentation set;
- additional list of spare parts and equipment can be approved separately under supply contract.

5. MAINTENANCE AND SERVICE LIFE

Technical maintenance of Mi-171E helicopter is carried out according to airframe flight hours and, subject to timely and high-quality execution of the assigned procedures, it ensures the requisite level of helicopter serviceability and availability for flights.

Maintenance Schedule (MS) is the main operational document defining the objects of servicing (systems, sub-systems and items), the listing and periodicity of procedures performed.

Maintenance schedule stipulates the following types of maintenance to be performed on the helicopter:

- line;
- periodical;
- special;
- during helicopter storage;
- seasonal.

1. Line maintenance

The line maintenance is to be executed on the helicopter parking place, provides the helicopter use for purpose specified, and includes:

- Preliminary (auxiliary) operations;
- Visual check, maintenance, and technical state monitoring operations;
- Departure and parking operations

2. Periodic maintenance (scheduled maintenance operations)

Periodic maintenance is assigned by airframe TSN in hours or after the last overhaul and it is composed of operations from the basic form F-1 to be accomplished after each (50±10) hours of helicopter's flight time and auxiliary works $\Delta F = 2, 3, 4$ and 5; a requirement for these works accomplishment is determined by helicopter's operating time after each 100, 300, 500, 1000 hours of flight time correspondingly, irrespective of an allowance permitted for the previous periodic maintenance.

A unified allowance equaling to ±10 hours of flight time is established to all works of periodic maintenance. By stage-by-stage maintenance approach it is permitted to increase allowance up to ±20 hours of flight time for the works with maintenance intervals of 100 hours and more.

For engines, aggregates and instruments maintenance is assigned by airframe flight time in hours. In the event of engine (engines) or other components replacement due to lifetime expiration or advance in schedule, there should be carried out a form of maintenance required by airframe flight time and auxiliary operations:

- directly related to engine (engines) or components replacement;
- related to inspection of airframe structure details and parts of systems' supply lines, access to which is possible only in case of removed engine or components.

Subsequent engine (engines) and other components' maintenance is performed based on maintenance forms corresponding to airframe time

To ensure failure-free operation of the helicopter in various climatic conditions, in intensive operation conditions, by performance of special missions as well as in case of lengthy time gaps between flights, a senior officer of operator's aviation engineering service is entitled to order additional works or extra periodic form of maintenance.

3. Special maintenance (unscheduled maintenance)

Special maintenance involves operations after impact of loads on the helicopter caused by abnormal operating conditions, such as:

- rough landing;
- flight in turbulent air;
- flight in storm conditions (lightning stroke);
- flight in icing conditions;
- being exposed to a hail or other stormy conditions;
- exceeding flight limits when in flight

4. In-storage maintenance

It is performed during temporary breaks in flights and consists of procedures:

- to prepare the helicopter for storage
- to service the helicopter every (30±5) days, 3 months ±10 days, (6±1) months
- to prepare the helicopter for flights after storage.

5. Seasonal maintenance

Seasonal maintenance is conducted by helicopter preparation for autumn-winter and spring-summer periods of operation.

All operations provided by the Maintenance Manual are implemented in conformance with task cards that are incorporated into Helicopter Maintenance Manual as well as maintenance procedure and storage regulations Manuals which are a part of Components operation manual.

6. Service life limits (SLL) and Time between overhaul (TBO)

Nº	Item	SLL (hours/years)	TBO (hours/years)
1	Helicopter airframe	18000/30	2000/8
2	TB3-117BM Engines	4500/-	1500/10
3	APU SAFIR	6000/-	3000/-
4	Tail drive shaft, Intermediate gearbox, Tail gearbox	6000/-	2000/8
5	Vibration damper	2500/24	1000/6
6	Swash plate	3000	1500/8
7	Main rotor hub	3000	1500/8
8	Main rotor blades	2000/7	-
9	Tail rotor	3000	1000/7
10	Tail rotor blades	1000/7	-
11	Fan	6500/-	1500/8
12	Fan drive shaft	3000/-	1500/8
13	Installation of hydraulic actuators	5500/30	2000/8
14	Hydraulic system hoses	6000/30	-

6. WARRANTY AND SERVICE MAINTENANCE

I'M AERO LLC and JSC Ulan-Ude Aviation Plant provide warranty maintenance for all manufactured helicopters within the period specified in the contract of delivery. All additional information can be provided upon customer's request.



7. ANNEX 1 MI-171E HELICOPTER PHOTOS





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