Approved by
the approvals list

TEMPORAL REVISION No. 1

of the Maintenance Manual of
TB3-117VMA, TB3-117BMA series 02 engines (078.00.5800-04РЭ)
and of Bulletin No. К78-029БЭ/БД (Н78М-130БЭ/БД)

I. Content of the temporal revision

1. The temporal revision is referred to TB3-117BMA, TB3-117BMA series 02 engines installed on the helicopters of Ka-32 type which perform works with the external sling at conditions of multiply repeated lifts of heavy loads.
2. The temporal revision has been developed in connection with the change of the procedure to calculate the engine operating time in cycles.
3. The temporal revision has been developed in connection with the change of the schedule of the compressor turbine replacement and in connection with the schedule of the fuel manifold replacement.
4. The temporal revision has been developed due to the necessity to flush the engine flow section during postflight preparation (for engines operated as part of the helicopters to fight fires).
5. The temporal revision has been developed due to the necessity to analyze the engine operation using the aircraft recorder.
6. The temporal revision has been developed due to the necessity to evaluate the engine technical condition.

II. The engine service life and service time in section 005 of the maintenance manual (MM)

The engine service life and service time is specified on page 2 (revision of «Nov 25/09») of subsection 005.10.00 enclosed to bulletin No. 200.0.0.0461.04 [К78-040 БЭ (Н78М-135 БЭ)] approved by the AR of IAC and put into effect by the Aviation authorities (Appendix).

III Instruction on the validity period and the procedure to implement the Temporal Revision

The temporal revision is to be effective within 12 months since the date of its approval and is to be printed on color paper. The pages of the temporal revision are to be pasted before the revised pages of the MM without their removal.

The following are the MM pages introduced by Temporal revision No. 1.

005-1

To be introduced before pages 1, 2, 005.00.00

Page 2, para 8 from top.

It is necessary to multiply the operating time in cycles by factor 1.2 for engines installed on the helicopters operated with the external sling at conditions of multiply repeated lifts of heavy loads.

Note. – By multiply repeated lifts of heavy loads we mean a lift of any load with the external sling of the helicopter at a rate of more than 4 times per hour.

The wording of paras 8 and 9 should not be considered.

005-1

To be introduced before pages 1, 2, 005.20.10

No.	Nomenclature and content	Types of preparation for flights				Book of the MM, section, subsection, item, TC No.
		preliminary	preflight	for repeated flight	postflight	
1	2	3	4	5	6	7
13	Engine test	–	+	–	–	Book 1 072.00.00 TC No. 506
14	Flushing and emulsification of the engine flow section NOTE. The work is to be done in operation at conditions: - over see or salty lake; - at the distance of up to 5 km from seashore or salty lake; - tropical climate (with humidity 80 %); - on the helicopter with the external sling for firefighting (only flushing is to be done).	–	–	–	+	Book 1 072.00.00 TC No. 308, 309

To be introduced before page 1, 005.20.20

ENGINE – SCHEDULED WORKS

(scheduled maintenance)

Task No.	Nomenclature and content of works	Schedule in hours	Book of the MM, section, subsection, item, TC No.
1	2	3	4
1.	Measurement of the wear of the compressor rotor stage one blades – if the wear is up to 1 mm – if the wear is from 1 to 1.5 mm – if the wear is from 1.5 to 2 mm NOTE. If the wear is 1.8 mm and more – not less than in 20 takeoffs-landings.	100 (50)* 50 (25)* 25 (10)*	Book 1 072.30.00 TC N. 202
1a	Analysis of engine operational parameters with reference to flight data recorder records	50	Book 3 072.00.00 TC N. 610

005-1

To be introduced before pages 3, 4, 005.20.20

Task No.	Nomenclature and content of works	Schedule in hours	Book of the MM, section, subsection, item, TC No.
1	2	3	4
25	Inspection of the engine flow section	100	book 1 072.00.00 TC No. 608
26	Inspection of the technical condition of the external horizontal shaft (EHS)	300 (beginning from the operating time of 600 hours)	book 1 072.60.00 TC No. 202
27	Engine technical condition evaluation	300	Annex No. 5 of bulletin No. K78-029 БЭ/БД (H78M-130 БЭ/БД)
28	Check of the engine "hot section" condition with replacement of the compressor turbine with the NGV2 and the fuel manifold. NOTE. Flame tube, NGV1 and 3 are replaced depending on their technical condition	750*	Annex No. 4 of bulletin No. K78-029 БЭ/БД (H78M-130 БЭ/БД)

The decision to put off the time (operating time) to replace the compressor turbine with the NGV2 and the fuel manifold can be made by the Designer (the Producer) considering the results of the engine hot section inspection.

072-1

To be introduced before pages 801/802, 072.00.00

ENGINE – INSPECTION AND CHECK

Task card No. 610 "Analysis of engine operational parameters with reference to flight data recorder records" is to be introduced in book 3 in addition to the task cards in book1.

To M.S.	**TASK CARD No.** 610	Pages
M.S. item	**Procedure:** Analysis of engine operational parameters with reference to flight data recorder records	

Operations and technical requirements (T.R.)	Corrective actions	Checked by
1. Make decoding of recorded analog signals of engine operation: a) compressor turbine inlet gas temperature; b) gas generator rotor rotational speed; c) main rotors rotational speed. The records as per items a), b) should be decoded for both left and right engines of the power plant. Decoding of record as per Paras (a) and (b) should not exceed maximum permissible parameters in Table 4, while values Para (c) should not exceed those specified in 2.3.8 and 2.3.9, "Basic Operational Limitations", Section 072.00.00, Book1. 2. Make decoding of records of outside condition parameters (barometric altitude, outside air temperature) and collective pitch of rotors. 3. Rotational speed of the gas generator rotor as per Para 1(b), with due account for decoding of records as per Para 2, should comply with the Graph of Figure 6 (072.00.00, Book3), in this case conversion of the barometric altitude to pressure expressed in mm of Hg should be done in compliance with Flight Manual. 4. If the values of the engine operational parameters deviate from the values established in MM, than the decision on the further operation is to be made by the Designer (Manufacturer) of the engine.		

IV. Temporal revision to bulletin No. К78-029БЭ/БЛ (Н78М-130БЭ/БЛ)

The following are the revisions temporally introduced in the bulletin with indication "there is/are – there should be".

No.	Section, pages of bulletin	Content	
		there is/are	there should be
1	Title sheet	On the operation method of the engines engaged in logging at conditions when heavy cargoes are repeatedly lifted by Ka and Mi helicopters.	On the operation method of the engines installed on the helicopters of Ka type operated with the external sling at conditions when heavy loads are repeatedly lifted.
2	**Page 2 of 17** Introduction 1 para from top	…on Ka and Mi helicopters engaged in logging and at conditions …	…on Ka helicopters operated with the external sling at conditions …
3	2 para from top	(10 times and more during one flight time)	(more than 4 times per hour)
4	3 para from top	… cycles operation time of the engine engaged in logging and at conditions …	… in cycles when the helicopter is operated with the external sling at conditions …
5	4 para from top	Works on evaluation of the technical condition and local …	Works on the local overhaul of the engine hot section (including replacement of the compressor turbine and the fuel manifold) are to be performed…
6	After 5 para	Note. Works on first …	To be cancelled
7	Last para	…cycle operating time engaged in logging and at conditions …	… in cycles when the helicopter is operated with the external sling at conditions …
8	Sequence of works. Wording of 2.1	Beginning from 300 hours of operating time … and evaluate the engine technical condition.	After the unscheduled inspection of the engine flow section as per the form close to the 25-hour scheduled maintenance works it is necessary to make further flow section inspection and the technical condition evaluation in every 100 hours of the operating time.

No.	Section, pages of bulletin	Content	
		there is/are	there should be
9	Wording of 2.2	Every 500^{-100} hours ... it is nccessary to replace the compressor turbine. (Appendix 5, item 2.14 and Appendix 4)	In every 750 hours of the engine operating time it is necessary to replace the compressor turbine and the fuel manifold. (Appendix 5, item 2.14 and Appendix 4)
10	**Pages 3 of 17** Wording of 2.4	...section and the compressor turbine replacement ...	... section, replacement of the compressor turbine and the fuel manifold ...
11	Wording of 2.5	It is necessary ... $N_c = \tau$	To be cancelled
12	4	4.3 Replacement of the compressor turbine - 192 men/hours 4.8 *unavailable* 4.9 *unavailable*	4.3 replacement of the compressor turbine and the fuel manifold - 270 man/hours. 4.8 inspection of the EHS – 6 man/hour. 4.9 replacement of the EHS – 8 man/hour.
13	**Pages 4 of 17**	6.3 ... the compressor turbine replaced ... and the compressor turbine replacement.	6.3 ... the compressor turbine and the fuel manifold replaced ... the compressor turbine and the fuel manifold.
14	7 2 line from top	After replacement of the compressor turbine...	After replacement of the compressor turbine, fuel manifold...
15	9	9.2 in logbooks of the engines engaged in logging and at conditions... 3) in section 13... on replacement of the compressor turbine ... the compressor turbine replacement.	9.2 In logbooks of the engines as part of helicopters working with the external sling at conditions ... 3) in section 13... on replacement of the compressor turbine, the fuel manifold ... replacement of the compressor turbine and the fuel manifold.
16	**Pages 5 of 17** Annex 1 4 line from top	... performed works on the engine technical condition evaluation	Works on replacement of the compressor turbine and the engine fuel manifold were performed.
17	**Pages 6 of 17** Annex 1	3.18 Replacement of the compressor turbine	3.18 Replacement of the compressor turbine and the fuel manifold
18	**Pages 8 of 17** Annex 1	14 Time of full stop of the gas generator, s...≥ 50	14 Time of full stop of the gas generator, s...≥ 40
19	**Pages 11 of 17** Annex 4	Procedure of replacement of the compressor turbine... Note: Full procedure ...on replacement of the compressor turbine and damaged...	Procedure of replacement of the compressor turbine, fuel manifold and... Note: Full procedure ...on replacement of the compressor turbine, the fuel manifold and damaged...

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Section, pages of bulletin</th><th colspan="2">Content</th></tr>
<tr><th>there is/are</th><th>there should be</th></tr>
<tr><td>20</td><td><u>Pages 12 of 17</u>
Annex 5
TC No. 609
Section
072.00.00</td><td>1.1 Works on assessment…on the helicopters being in operation at logging and at conditions …starting from the moment when the engine accumulates 300 operating and further each 100 hours
2 List of works…

Unavailable</td><td>1.1 Works on evaluation…on helicopters operated with the external sling at conditions …to be performed in every 100 hours of the operating time

2 List of works …
Perform the scheduled works as per section 005.20.20.
During the technical condition evaluation it is necessary to perform items 2.3.3; 2.4; 2.7; 2.9; 2.11-2.13; 2.15; 2.17</td></tr>
<tr><td>21</td><td><u>Pages 15 of 17</u></td><td>2.14 After each 500⁻¹⁰⁰ engine operating hours replace the compressor turbine.</td><td>2.14 Replace the compressor turbine and the fuel manifold in every 750 hours of the engine operating time</td></tr>
<tr><td>22</td><td><u>Pages 16 of 17</u></td><td>Table of the steps for the vertical flexible shaft
Column: “shaft step”<table><tr><th>Shaft step</th></tr><tr><td>Change for the other step to provide 2 or 3 version of installation</td></tr><tr><td>0780299130-02</td></tr><tr><td>0780299130-03</td></tr><tr><td>0780299130-04</td></tr><tr><td>0780299130-02</td></tr><tr><td>0780299130-03</td></tr><tr><td>0780299130-04</td></tr><tr><td>Change for the other step to provide 2 or 3 version of installation</td></tr></table></td><td>Table of the steps for the vertical flexible shaft
Column: “shaft step”<table><tr><th colspan="4">Shaft step</th></tr><tr><td colspan="4">Change for the other step to provide 2 or 3 version of installation</td></tr><tr><td>0780299130-02</td><td>185 mm</td><td>0780299560</td><td>185 mm</td></tr><tr><td>-03</td><td>187.5 mm</td><td>-01</td><td>187.5 mm</td></tr><tr><td>-04</td><td>189.5 mm</td><td>-02</td><td>189.5 mm</td></tr><tr><td>0780299130-02</td><td>185 mm</td><td>0780299560</td><td>185 mm</td></tr><tr><td>-03</td><td>187.5 mm</td><td>01</td><td>187.5 mm</td></tr><tr><td>-04</td><td>189.5 mm</td><td>-02</td><td>189.5 mm</td></tr><tr><td colspan="4">Change for the other step to provide 2 or 3 version of installation</td></tr></table></td></tr>
</table>

The temporal revision to the bulletin is to be introduced to the text of the bulletin by filling of the revised text with a correction fluid of white color and the following introduction of the new text in the column “there should be”. Register temporal revision No.1 in the temporal revision sheets of sections 005.00.00 and 072.00.00 of book 3.

Appendix

ENGINE – SERVICE LIVES AND CALENDAR TIMES

The values of service lives and calendar times of the engine are presented in Table 1.

The engine accessories are operated within the service lives and calendar times established for the engine in general.

SLL (in hours or cycles) is a total operation expressed in hours or cycles or a total calendar time of operation recorded after which the product operation shall be stopped independently of its condition.

The SLFO (in hours/ cycles), CTFO (in years) is a total operation expressed in hours or cycles or total calendar time of the product operation and/ or storage allowed before the first overhaul.

The SLBO (in hours/ cycles), CTBO (in years) is total operation expressed in hours or cycles or total calendar time of the product operation and/ or storage allowed between the successive overhauls.

NOTES:

1. SLFO and SLBO are composite parts of SLL.
2. CT is calculated from the moment of the engine Log Book issue or overhaul.

SERVICE LIVES AND CALENDAR TIMES

Table 1

Nos	Description	Description or Drg. No.	To first overhaul			Between overhauls			Limit (SSL)	
			SLFO		CTFO	SLFO		CTBO		
			hours	cycles	years	hours	cycles	years	hours	cycles
1	Engine in general (except main parts as per items. 2…4)	а) TB3-117BMA	2000	2000	10	1500	1500	10	7500	7500
		б) TB3-117BMA series 2	2000	2000	10	1500	1500	10	7500	7500
2	Compressor disks: drum	0780139140	–	–	–	–	–	–	9500	9500
3	Turbine disks:									
	- disk I	0780410439	–	–	–	–	–	–	7500	7500
	- disk I	0780410521	–	–	–	–	–	–	7500	7500
	- disk II	0780419018	–	–	–	–	–	–	7500	7500
	- disk III	0780420293	–	–	–	–	–	–	8000	8000
	- diskIV	0780429023	–	–	–	–	–	–	8000	8000
4	Cover disks of turbines:									
	- disk I	0780419016	–	–	–	–	–	–	5000	5000
	- disk II	0780410449	–	–	–	–	–	–	2000	2000
	- disk II	0780410518	–	–	–	–	–	–	2000	2000
	- disk III	0780410451	–	–	–	–	–	–	2000	2000
	- disk III	0780410519	–	–	–	–	–	–	2000	2000
	- disk IV	0780410452	–	–	–	–	–	–	8500	8500

Notes:
1. In accordance with Change Notice ИИ 78-30446 ¼…4/4 the limiting total service life of 6500 hours/ 6500 cycles has been established for cover disks I (0780419016) manufactured and overhauled since 01.07.2005.
2. Disk 1 (0780410521) and cover disks: II (0780410518) and III (0780410519) are used only as a set.
3. Specific values of the service life to the 1st overhaul, SLBO, limit SLL are specified in the Log Book in accordance with the contract.

RECORD OF TEMPORAL REVISIONS

Rev. No.	Section, subsection, subject	No. of page			Authority No.	Transmittal letter reference No. and date	By	Date
		revised	added	deleted				
1	005.00.00	2			Temp. rev. No.1			
	005.20.10	2						
	005.20.20	1,4						

MAINTENANCE MANUAL

RECORD OF TEMPORAL REVISIONS

Rev. No.	Section, subsection, subject	No. of page			Authority No.	Transmittal letter reference No. and date	By	Date
		revised	added	deleted				
1	072.00.00		5,6		Temp. rev. No.1			