



QTY	REMARKS	DESCRIPTION	DESIGNATION
		<u>TECHNICAL PAPERS</u>	
		Assembly drawing	MB 60-05-00 CB
		<u>Standard articles</u>	
1		Brush MFC 5 GOST 2332-75	
	1		
2		Lug 4φ Γ2-1.5 GOST 12232-6-76	
	1		
		<u>MATERIAL</u>	
3		Wire ПЩ-1.5 GOST 9125-74	
	102MM		
4		Tube ТК - 3 GOST 10699-72	
	6MM		

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	M. VASU	<b>MB 60-05-00</b>
CONTROLLED	<i>M. Vasu</i>	<b>BRUSH</b>
<b>CONTROLLERATE OF INSPECTION (ICV)</b>	<b>TYPE K1-7</b>	<b>87/140</b>
(33)		





REF. NO.	ZONE	DESIGNATION	DESCRIPTION	QTY	REMARKS
			<b>STANDARD ARTICLES</b>		
22			Screw M4-6g x 8.36.016 GOST 17473-72.	4	8X-1541
23			Screw M4-6g x 10.36.016 GOST 17473-72.	8	8X-1548
24			Screw M4-6g x 12.36.016 GOST 17475-72.	4	X1-10556
25			Screw M6 x 22.36.016 GOST 17475-72.	6	X1-10750
26			Washer 4 65Г 06 GOST 6402-70.	8	X-1012
27			Washer 5 65Г 06 GOST 6402-70.	2	X-4001
28			Washer 8 65Г 06 GOST 6402-70.	1	X-4069
29			Plug WPG 20 n2 ЭW6 ГЕО 364 108 TY.	1	

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 (CPV)

**MBn 2-000**  
**ELECTRIC MOTOR**  
**MBn 2**

**REMARKS**  
 SHT 3 PITS 4



FORMAT	ZONE	REF. NO.	DESIGNATION	DESCRIPTION	QTY	REMARKS
				<u>ENTERPRISE DOCUMENTS.</u>		
			И - 225-68.	Preparation of grease for <i>h...</i> Instruction.		
			И - 252-78.	Technical instruction.		
				<u>BRANCH DOCUMENTS.</u>		
			OCT 3-1928-73.	Coating of varnish paints. Classification selection and designation.		
			OCT 3-4227-79.	Casting with non-ferrous alloys General Technical specifications		
			OST 6-05-66-78.	Cotton cloths and asbestos, impregnated with phenylformaldehyde resins and varnishes. Technical specifications.		
			OST 16 0.505.001-80.	Copper wires of circular cross-section with enamel insulations on the basis of polyethers. Technical specifications.		
			ГЕО. 364.108 ТУ.	Plug connectors of cylindrical type, WPF. Particular Technical Specifications.		
			ТУ 005 216-75.	Technical rubberised articles, plates and rubber mixes for the special machines and engines to them.		

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**MBn 2.000 BA**

**ELECTRIC MOTOR  
MBn-2  
LIST OF ref documents**

WEIGHT	SCALE
SHT 1	SHTS 9
1.5/100	

DESIGNATION	DESCRIPTION	TYPE
TY6-10-866-75.	Varnish Bп-725, Bп-725Г, enamel Bп-725, aluminium colour.	
TY6-10-1290-78.	Varnish HU-286, black Technical Specifications.	
TY6-10-1314-77.	Resine MA-0121.	
TY14-4-823-77.	Carbon steel spring wire, Technical Specifications.	
TY16-503.124-73.	Compact film-glass-fabric. Technical Specifications.	
TY16-505.967-77.	Wire of hyper sensitive bending for automotive electrical equipment. Technical Specifications.	
TY38.005.838-70.	Rubberised parts and plates for aviation equipment. Technical Specifications.	
TY48-1-210-74.	Soldering wire, grade nCp K0 Mr 3.	

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CONTROLLERATE OF INSPECTION (ICV)			SHT 2 SHTS 9
			116/1106



DESIGNATION.	DESCRIPTION.	QTY.	REMARKS.
HO.010.007.	Types and marks of inscriptions on items. Traces, dimensions and tolerances.		
	<u>REPUBLIC DOCUMENTS.</u>		
TY17PC1CP 44-5873-77.	Cable grip cord, electro-technical of mark AC 34 (B). Made of glass thread. Technical Specifications.		
	<u>STATE DOCUMENTS.</u>		
GOST 397-79.	Cotter pins, Technical Specifications.		
GOST 860-75.	Tin.		
GOST 931-78.	Brass sheets and strips. Technical Specifications.		
GOST 1050-74.	Structural fine carbon steel.		

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**MBn2-000 BA**  
**ELECTRIC MOTOR MBn-2**  
*List of Ref. Documents*

**WEIGHT SCALE**  
 SHT 3 PITS 9  
 47/146

DESIGNATION.	DESCRIPTION.	QTY	REMARKS.
GOST 1412-70.	Grey iron casting.		
GOST 1414-75.	Structural steel of improved and highly improved quality for cutting.		
GOST 1759-70.	Bolts, screws, studs and nuts. Technical Specifications.		
GOST 2060-73.	Brass bars.		
GOST 2196-75.	Commutator micanite insulator. Technical Specifications.		
GOST 2214-78.	Electro insulating varnish cloth. Technical Specifications.		
GOST 2283-79.	Cold rolled band made of spring steel. Technical Specifications.		
GOST 2332-75.	Brushes for electrical motors.		
GOST 2685-75.	Aluminium and tin alloys. Marks, technical requirements and testing methods.		
2185			D. 571

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<b>CHECKED</b>	<i>M/Vas...</i>	<b>ELECTRIC MOTOR MBn-2</b>	<b>WEIGHT SCALE</b>
<b>CONTROLLERATE OF INSPECTION (ICV)</b>		<b>List of Ref. Documents</b>	SHEET 4 OF 9
			48/146

DESIGNATION	DESCRIPTION	QTY	REMARKS
GOST 2695-71.	Plywood sheets.		
GOST 2824-75.	Electro insulating board.		
GOST 3325-55.	Ball and tapered roller bearings. Fits		
GOST 3568-70.	Copper profile for the commutators of electric motors.		
GOST 4268-75.	Mica tape. Technical Specifications.		
GOST 4514-78.	Tape for electric industry. Technical Specifications.		
GOST 6244-70.	Electric insulating <sup>varnish</sup> impregnating of marks ET-980 , ET-988.		
GOST 6267-74.	Lubricant UMATIM-201.		
GOST 6309-73.	Cotton sewing threads.		
			D. 571

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**MBn 2-000 B A**  
**ELECTRIC MOTOR**  
**MBn-2**  
*List of Ref. documents*

WEIGHT SCALE  
 5 - 9  
 49/1116



DESIGNATION.	DESCRIPTION.	QTY	REMARKS
GOST 9754-76.	Enamel Mn-12 of different colours.		
GOST 10144-74.	Enamel XB-124 of different colours and XB-125.		
GOST 10156-78.	Vernished glass cloth for insulation. Technical Specifications.		
GOST 10299-68.	Rivet with semicircular head of standard accuracy, dimensions.		
GOST 10699-72.	Electro insulating varnish, tubes made of fibre glass.		
GOST 12232.6-76.	Lug for electric motor brushes. Design and dimensions.		
GOST 12707-77.	Phosphatizing primers. Technical Specifications.		
GOST 13489-79.	Sealant, grade Y-30M and YT-31. Technical Specifications.		
GOST 14034-74.	Central holes, dimensions.		
GOST 15152-69.	Rubberised technical articles for tropical regions. General technical requirements.		

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CONTROLLERATE OF INSPECTION (ICV)

ELECTRIC MOTOR MBn2  
List of Ref documents

WEIGHT SCALE

SHT 7 PNTS 9

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FORMAT	ZONE	REF. NO.	DESIGNATION	DESCRIPTION
			GOST 16513-75.	Winding wires with cotton insulations. Technical Specifications.
			GOST 16523-70.	Carbon steel sheet of high grade and ordinary grade for general use.
			GOST 17473-72.	Button head screws(Standard accuracy). Design and dimensions.
			GOST 17475-72.	Button head screws(Standard accuracy). Design and dimensions.
			GOST 18251-72.	Adhesive band on fabric base.
			GOST 19904-74.	Cold rolled steel sheet. Size range.
			GOST 20437-75.	Mould material AF-4.
			GOST 21427.3-75.	Electro technical hot rolled thin steel sheet.
			GOST 21474-75.	Straight and cross knurling Shape and basic dimensions.

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CONTROLLERATE OF INSPECTION (ICV)			SHT. 8 PPTS 9
			52/146

DESIGNATION.

DESCRIPTION.

GOST 21930-76.

Soldering-tin-lead casted  
in pigs.

Technical Specifications.

GOST 23436-79.

Cable insulating paper for  
insulation of power cables  
with voltage upto 35 KV  
inclusively.

Technical Specifications.

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ELECTRIC MOTOR MBn-2  
List of Ref documents

SHT 9 SHTS 9

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DESIGNATION	DESCRIPTION	PARENT UNIT	REMARKS
DOCUMENTS			
МВП 000 ТУ	SPECIFICATION		
МВП 000 ПС	CERTIFICATE		
МВП 2. 02 ГЧ	ELECTRIC MOTOR		
	OUT LINE DRAWING		
МВП 2. 00. 01 ЭЗ	ELECTRIC MOTOR МВП 2		
	SCHEMATIC DIAGRAM		
МВП 2. 000 ВС	PARTS LIST		
МВП 2. 000 ВД	LIST OF REF DOCUMENTS		
ASSY. DRAWINGS			
МВП 2 - 000	ELECTRIC MOTOR МВП 2	675-38-СБЗ	
МВП 1 - 14 - 00	LEAD	МВП 2 - 000	
МВП 2 - 010	COMMUTATOR	МВП 2. 16. 00	
МВП 2. 020	SHUNT COILS	МВП 2. 030	
МВП 2. 030	SHUNT & SERIES COILS	МВП 2. 04. 00	
МВП 2. 02. 00	BODY	МВП 2. 03. 00	
МВП 2. 03. 00	BODY WITH ANGLE PIECE	МВП 2. 04. 00	
МВП 2. 04. 00	BODY	МВП 2. 000	
МВП 2. 05. 00	BRUSH ARM	МВП 2. 000	
МВП 2. 10. 00	SHAFT WITH IRON ARMATURE	МВП 2. 16. 00	
МВП 2 11. 00	COVER FROM THE SIDE OF DRIVE	МВП 2. 000	
МВП 2. 14. 00	BRUSH HOLDER	МВП 2. 05. 00	
МВП 2. 15. 00	SEALING RING	МВП 2. 1. 00	
APPROVED	<i>[Signature]</i>	<b>МВП 2. 000 СП</b> ELECTRIC MOTOR МВП 2	
CHECKED	<i>[Signature]</i>		
<b>CONTROLLERATE OF QUALITY ASSURANCE (ICV)</b>		<b>SH 1 SH 7</b> 1 OF 146	<i>[Signature]</i>

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DESIGNATION	DESCRIPTION	PARENT UNIT	REMARKS
MBП2.06.00	ARMATURE	MBП2.000	
MB60.05.00	BRUSH TYPE K1-7	MBП2.000	
Ba6.170.002	COVER FROM THE	MBП2.000	
	SIDE OF COMMUTATOR		
	PARTS		
MBП2.002	COVER FROM THE	Ba6.170.002	
	SIDE OF COMMUTATOR		
MBП2.00.02	STAND	MBП2.000	
MBП2.003	GASKET	MBП2.16.00	
MBП1.00.04	RING	MBП2.000	
MBП2.005	BOLT	MBП2.000	
MBП2.00.05	WASHER	MBП2.000	
MBП2.00.06	UNION	MBП2.000	
MBП2.008	GASKET	MBП2.04.00	
MBП1.00.09	GASKET	MBП2.000	
MB55.01.02	INSULATION OF SLOT	MBП2.16.00	
MBП2.01.03	WASHER	Ba6.170.002	
MB55.01.03	WEDGE OF SLOT	MBП2.16.00	
MBП4.120	GASKET	MBП2.000	
MB63-124	RING	MBП2.000	
1-ЦГБ-132	LUG	MBП2.030	
MBП2.02.02	LUG	MBП2.02.00	
X-2614	KEY	MBП2.000	
MBП2.03.03	ANGLE PIECE	MBП2.03.00	
MH1-03-03	SPRING	MBП2.05.00	

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CONTROLLERATE OF  
QUALITY ASSURANCE  
(ICV)

ELECTRIC MOTOR  
MBП2

SHEET 2 OF 7  
2 OF 146

DESIGNATION	DESCRIPTION	PARENT UNIT	REMARKS
MBП2.04.01	POLE	MBП2.04.00	
MBП1.04.03	WASHER	MBП2.11.00	
MBП1.04.05	SPIRAL RING SHAPED	MBП2.11.00	
	SPRING FOR RUBBER		
	SEALING RING		
MBП2.05.01	BRUSH ARM	MBП2.05.00	
8x-525	RIVET	MBП2.05.00	
MB 60.07.04	IRON SHEET OF ARMATURE	MBП2.10.00	
MB 60.07.05	EXTREEM INSULATING SHEET	MBП2.10.00	
MB 60.07.06	WASHER	MBП2.10.00	
MB 60.07.07	WASHER OF ARMATURE	MBП2.10.00	
MB 60.08.01	PLATE COMMUTATOR	MBП2.010.	
MB 60.08.02	INSULATION PLATE	MBП2.010	
MEП2.09.01	INSULATION OF FRONT PARTS	MBП2.16.00	
MBП2.10.02	SHAFT	MBП2.10.00	
MBП2.11.01 ✓	COVER FROM THE SIDE	MBП2.11.00	
	OF DRIVE		
MBП2.14.01	AXLE	MBП2.14.00	
MBП2.15.01	REIN FORCING RING	MBП2.15.00	
MBП2.16.01	WASHER	MBП2.16.00	
MB177.31	WASHER OF THE BEARING	MBП2.11.00	
Ba 8.040.000	COVER	MBП2.000	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>VETTED</b>  <b>29 NOV 2007</b>  <i>[Signature]</i>  <b>TESTED-CELL</b> </div>
ГA-10-326	WASHER	MBП2.16.00	
7x-4081	SCREW M4 7g 6g X8.	MBП2.11.00	
	36. GOST 17475-72	Ba 6.170.002 -	
8x-1497	WASHER	MBП2.000	

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**MBП2.000CP**

CONTROLLERATE OF  
QUALITY ASSURANCE  
(ICV)

ELECTRIC MOTOR  
MBП2

SHT 3 SHES 7

3 OF 146

DESIGNATION	DESCRIPTION	PARENT UNIT	REMARKS
8x-1541	SCREW M4-7g6g X8.36 GOST 17473-72	MBП2.000	
8x-1548	SCREW M4-7g6g X10.36 D16, GOST 17473-72	MBП2.000	
X-1012	WASHER 4.65Г * GOST 6402-70	MBП2.000	
X-4001	WASHER 5.65Г * GOST 6402-70	MBП2.000	
X-4069	WASHER 8.65Г * GOST 6402-70	MBП2.000	
X1-10097 u	BOLT	MBП2.000	
X1-10556	SCREW M4-7g6g X12.36, GOST 17475-72	MBП2.000	
X1-10750	SCREW M6 X22.36 * GOST 17475-72	MBП2.000	
X1-10965	SCREW	MBП2.04.00	
X2-10630	NUT	MBП2.000	
X3-10588	WASHER	MBП2.05.00	
X6-10890	RIVET 3X12.01 GOST 10299-68	MBП2-03-00	
X7-10661	LUG	MBП1-14-00	
X9-10-81	SPLIT PIN 1.6X12. D16 GOST 397-79	MBП2.05.00	
X9-10945	TRANSPORTING CAP D16S	MBП2.000	

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**MBП2.000СП**

CONTROLLERATE OF  
 QUALITY ASSURANCE  
 (ICV)

ELECTRIC MOTOR  
 MBП2

SHT 4 SHTS 7  
 4 OF 146

DESIGNATION	DESCRIPTION	PARENT UNIT	REMARKS
	<u>STANDARD ITEMS</u>		
-	PLUG WPT 20 P2 JW6 ГЕО 364 108 TY	МВП2-000	
-	GLASS VARNISHED CLOTH ЛСКЛ-155-0.15 X15, GOST 10156-78	МВП2-000	
-	WIRE ПБЭ 2.12 GOST 16513-79	МВП1-14-00	
-	TUBE I ТЭС-3 GOST 10699-72	МВП1-14-00 МВП2.030 МВП2.020	
-	THREAD, IN 12 FOLDS, OF HIGH STRENGTH, GLOSSY GOST 6309-73	МВП1-14-00	
-	PRESS MATERIAL, АГ-4С, GOST 20437-75	МВП2-010	
-	WIRE ПЭТВ-2, 0.5 OST 16.0.505.001-80	МВП2-020	
-	WIRE ПО Г00 1.5 TY 16-505.967-77	МВП2.020	
-	VARNISHED CLOTH ПXM-105 0.17, WIDTH 15±1, GOST 2214-78	МВП2.020	<div style="border: 2px solid black; padding: 5px;"> <p><b>VETTED</b></p> <p>29 NOV 2007</p> <p><i>[Signature]</i></p> <p>INVESTIG-CELL</p> </div>
-	VARNISHED CLOTH ПXM-105 0.17, WIDTH 25±1, GOST 2214-78	МВП2.020	

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CONTROLLERATE OF  
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(ICV)

ELECTRIC MOTOR  
МВП2

SHT 5 SHTS 7  
5 OF 146

DESIGNATION	DESCRIPTION	PARENT UNIT	REMARKS
-	WIRE ПЛ 0.75 GOST 9125-74	МВП2.020	
-	TAPE A-20 GOST 18251-72	МВП2.020 МВП2.16.00	
-	PAPER K-120, WDT H 20 GOST 23436-79	МВП2.020	
-	WIRE ПБФ-2.12 GOST 16513-79	МВП2.030	
-	TAPE M-20-48, grade 1 GOST 4514-78	МВП2.030 МВП2.16.00	
-	THREADS, GLARING WHITE OR BLACK "SPECIALLY STRENGTHENED" FOLD IN 12 GOST 6309-73	МВП2.030	
-	STEEL 10 GOST 1050-74	МВП2.030	
-	RIVET 3x12.01.016 GOST 10299-68	МВП2.03.00	
-	COTTER PIN 1.6x 12.016 GOST 397-79	МВП2.05.00	
-	BEARING 80204 GOST 7242-70	МВП2.11.00	<div style="border: 2px solid black; padding: 5px; text-align: center;"> <b>VETTED</b>  <b>29 NOV 2007</b>  <i>For</i>  <b>JWM/STD-CELL</b> </div>
JCS	ALUMINIUM ALLOY AЛ2, GOST 2685-75	МВП2.14.00	

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**МВП2.000СП**

**CONTROLLERATE OF  
QUALITY ASSURANCE  
(ICV)**

**ELECTRIC MOTOR  
МВП2**

SHT 6	SHTS 7
6 OF 146	

DESIGNATION	DESCRIPTION	PARENT UNIT	REMARKS
-	RUBBER 3825 TY 005.210-75	MBП2 - 15.00	
-	WIRE ПСР 1.81MM GOST 7019-71	MBП2 - 16.00	
-	THREAD IN 12 FOLDS "SPECIALLY HARDEN"00 GLAZY WHITE, GOST 6309-73	MBП2 - 16.00	
-	CORD-INSULATING TUBE, TY 17 PCΦCP 44-5873-77	MBП2 - 16.00	
-	VARNISHED GLASS CLOTH ЛСБ-120/130 0.15 GOST 10156-78	MBП2 - 16.00	
-	BRUSH МГС 5 GOST 2332-75	MB60.05.00	
-	LUG 4Φ Г2-1.5 GOST 12232.6-76	MB60.05.00	
-	WIRE ЛШ-1.5 GOST 9125-74	MB60.05.00	
-	TUBE ТКС-3 GOST 10699-72	MB60.05.00	
-	BEARING 80203 GOST 7242-70	BA6.170.002	

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QUALITY ASSURANCE  
(ICV)

MBП2.000CP

ELECTRIC MOTOR  
MBП2

SHT 7 SHTS 7

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QTY	REMARKS	DESCRIPTION	DESIGNATION
		<u>TECHNICAL PAPERS.</u>	
24		Assembly drawing.	MBn 2-02-00CB.
		<u>PARTS.</u>	
11	1	Lug.	MBn 2-02-02.
		<u>MATERIALS.</u>	
	2	Steel 10 GOST 1050-74.	

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APPROVED	M. VASU	MBn2-02-00	
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CONTROLLERATE OF INSPECTION (ICV) (15)			SHT 1 (MTS 1)
			681/100

QTY	DESIGNATION	DESCRIPTION	QTY	REMARKS
		<u>TECHNICAL PAPERS.</u>		
12.	MBn 2-03-00CB.	Assembly drawing.		
		<u>ASSEMBLY UNITS.</u>		
11.	1 MBn 2-02-00.	Body.	1	
		<u>PARTS.</u>		
12.	2 MBn 2-03-01.	Angle piece.	2	
		<u>STANDARD ARTICLES.</u>		
		Rivet 3 x 12.01.016		
	3.	GOST 10299-68.	4	X6=10890

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CONTROLLED	DESIGNED	<b>MBn 2-03-00</b>	
	<i>M.L. [Signature]</i>	<b>BODY WITH ANGLE PIECES</b>	WEIGHT SCALE
CONTROLLERATE OF INSPECTION	(17)		SHT 1 SHTS 1
			70 / 146



DESIGNATION.		DESCRIPTION.	QTY	REMARKS
		<u>TECHNICAL PAPERS.</u>		
13.	MBn 2-04-00CB.	Assembly drawing.		
		<u>ASSEMBLY UNITS.</u>		
11.	1. MBn 2.030.	Shunt and series coils.	1	
11.	2. MBn 2-03-00.	Body with angle pieces.	1	
		<u>PARTS.</u>		
11.	3. MBn 2.008.	Gasket.	2	
12.	4. MBn 2-04-01.	Pole.	4.	
11.	5. X1-10965.	Screw.	8	

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D.571

APPROVED	M. YAO	<b>MBN 2-04-00</b>	
CHECKED	<i>M. Yao</i>	<b>BODY</b>	WEIGHT SCALE
CONTROLLED DATE OF INSPECTION (ICV)			SHT 1 SNTS 1
		(19)	72/146



NO.	QTY	DESIGNATION	DESCRIPTION	QTY	REMARKS
			<u>TECHNICAL PAPERS.</u>		
13.		MBn2.010 CB.	Assembly drawings.		
			<u>PARTS.</u>		
11.	1.	MB 60-08-01.	Commutator plate.	27	
11.	2.	MB 60-08-02.	Insulation plate.	27	Selection see item
11.	3.	MB 60-08-02-01.	Insulation plate.	27	-Do-
11.	4.	MB 60-08-02-02.	Insulation plate.	27	-Do-
			<u>MATERIALS.</u>		
	5.		Press-material, Al-4C GOST 20437-75.	80	

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APPROVED	M. VASU	<b>MBn 2-010</b>
CHECKED	M. Vasu	
<b>CONTROLLERATE OF INSPECTION (CV)</b>		<b>COMMUTATOR</b>
A (B) (B)		1 60/116



	DESIGNATION.	DESCRIPTION.	QTY	REMARKS
		<u>TECHNICAL PAPERS.</u>		
11.	MBn 2-11-00CB.	Assembly drawing.		
		<u>ASSEMBLY UNITS.</u>		
22	1. MBn 2-15-00.	Sealing ring	1	
		<u>PARTS.</u>		
24.	2. MBn 2-11-01. ✓	Cover from the side of drive.	1	
11	3. MB-177-31.	Washer of the bearing.	1	
11.	4. MBn 1-04-03.	Washer.	1	
12.	5. MBn 1-04-05.	spiral spring shaped Spring for Rubber sealing Ring.	1	
		<u>STANDARD ARTICLES.</u>		
6.	<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p><b>VETTED</b></p> <p>29 NOV 2007</p> <p>JWM/STO CELL</p> </div>	Screw M4-6g x 8.36.016	4	7X-4081
		GOST 17475-72.		
7.		Bearing 80204	1	D.57L
		GOST 7242-70.		

APPROVED	M. V. S. U.	<b>MBn 2-11-00</b>	
CHECKED	<i>M. V. S. U.</i>	<b>COVER FROM THE SIDE OF DRIVE</b>	WEIGHT SCALE
<b>CONTROLLERATE OF INSPECTION (ICV) (25)</b>			SIT 1 SITS 1
		78	

QTY	DESIGNATION	DESCRIPTION	QTY	REMARKS
		<u>TECHNICAL PAPERS.</u>		
12.	MBn 2-14-00CB.	Assembly drawing.		
		<u>PARTS.</u>		
11.	1 MBn 2-14-01.	Axle.	1	
		<u>MATERIALS.</u>		
2.		Aluminium alloy AN2 GOST 2685-75.	7.5	2

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APPROVED	<b>MBn 2-14-00</b>			
CHECKED		<b>BRUSH HOLDER</b>		
CONTROLLERATE OF INSPECTION (27)		WEIGHT	SCALE	
		SHT 1	SMTS 1	
		80/146		

QTY	REMARKS	DESCRIPTION	DESIGNATION
		<u>TECHNICAL PAPERS</u>	
22.		Assembly drawing.	MBn 2-15-00CB.
		<u>PARTS</u>	
11.	1	Reinforcing ring.	MBn 2-15-01.
		<u>MATERIAL</u>	
2.		Rubber 3825 TY 005.216-75.	
	7		

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<b>APPROVED</b>		<b>MBn 2-15-00</b>						
<b>CHECKED</b>	<i>NSC/palme</i>							
<b>CONTROLLERATE OF INSPECTION</b> (29)	<b>SEALING RING</b>	<table border="1" style="width: 100%;"> <tr> <td>WEIGHT</td> <td>SCALE</td> </tr> <tr> <td>SHT 1</td> <td>SHTS 1</td> </tr> <tr> <td colspan="2" style="text-align: center;">82/146</td> </tr> </table>	WEIGHT	SCALE	SHT 1	SHTS 1	82/146	
	WEIGHT	SCALE						
SHT 1	SHTS 1							
82/146								

QTY	REMARKS	DESCRIPTION	DESIGNATION
		<u>TECHNICAL PAPERS</u>	
22.		Assembly drawing.	MBn 2-16-00 CB.
		<u>ASSEMBLY UNITS</u>	
11.	1.	Commutator.	MBn 2.010.
11.	2.	Shaft with armature iron.	MBn 2-10-00.
		<u>PARTS</u>	
11.	3.	Gasket.	MBn 2.003.
11.	4.	Insulation on front parts	MBn 2-09-01.
11.	5.	Washer.	MBn 2-16-01.
11.	6.	Washer.	GA-10-326.
11.	7.	Insulation of slot.	MB 55-01-02.
11.	8.	Wedge of slot	MB 55-01-03.
		<u>MATERIAL</u>	
9.		Wire nCB 1,81MM GOST 7019-71.	29 M
10.		Tape A-20 GOST 18251-72.	200 MM
11.		Tape M-20-48, type 1 GOST 4514-78.	300 MM

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6.

APPROVAL	M. YASU	<b>MBn 2-16-00</b>	
FIELD	Militsky		
CONTROLERATE OF INSPECTION (ICV)		<b>ARMATURE</b>	
		WEIGHT	SCALE
(31)		SHT 1	SHTS 2
		84/146	



DESIGNATION	DESCRIPTION	QTY	REMARKS
12.	Thread in 12 folds "Specially harden" 00 glazy white, GOST6309F73	750	MM
13.	Cord -insulating tube TY 17 PCΦCP 44-5873-77	200	MM
14.	Varnished glass cloth ACB-120/130 0.15 GOST 10156-78	1	M

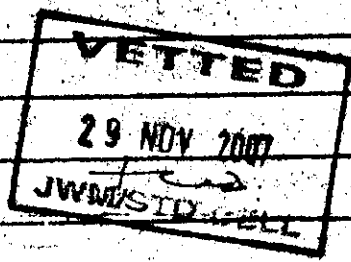
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APPROVED	<b>MBN 2-16-00</b>				
INSPECTED	<b>ARMATURE</b>	WEIGHT	SCALE		
CONTROLLERATE OF INSPECTION. (ICV)		SHT 2	SHTS 2	85/146	

QTY	REMARKS	DESCRIPTION	DESIGNATION
		<u>TECHNICAL PAPERS</u>	
22		Assembly drawing	MBn 2020 CB.
		<u>MATERIALS</u>	
1		Wire n3TB- 2 0.5 OCT 16.0.505.001-80.	
			510
2		Wire n0 T00 1.5 TY 16-505.967-77.	
			950MM
3		Varnished cloth nxM-105 0.17, GOST2214-78. Width 15±1.	
			4.8M
4		Varnished cloth nxM-105 0.17 GOST2214-78 Width 25±1.	
			0.2M
			
			D.571

APPROVED BY	M. VASU	<b>MBn2-020</b>	
CHECKED	<i>M. Vasu</i>	<b>SHUNT COILS</b>	WEIGHT SCALE
<b>CONTROLLERATE OF INSPECTION (ICV)</b> (11)			SHT 1
			62/11/16

NO.	DESIGNATION.	DESCRIPTION.	QTY	REMARKS
5.		Varnish cloth nxM-105 0.17, GOST2214-78 Width 15±1.	0.1M	
6.		Wire nW, 0.75 GOST 9125-74.	0.33M	
7.		Tape A 20 GOST 18251-72.	1.6M	
8.		Tube T3C 3 GOST 10699-72.	0.29M	
9.		Paper K-120 GOST 23436-79 Width 20.	0.04M.	

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RECEIVED	M VASU	<b>MBN2-020</b>	
CHECKED		<b>SHUNT COILS</b>	<b>SHT 2</b>
<b>CONTROLLERATE OF INSPECTION (ICV)</b>			<b>ENTS 2</b>
			631146





SECRET/CLASSIFIED

NUMBER 110 000 AC

SHEET 1 OF 3

SUPERSEDES.

I-569

ALBUM No-26

TECHNICAL DOCUMENTS FOR

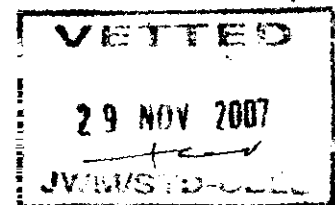
ARTICLE 84/08487A-03-16-40007

PASS PORT MBП-2

ELECTRIC MOTOR MBП-2

CERTIFICATE

MBП-000AC



CONTROLLERATE OF INSPECTION  
(INFANTRY COMBAT VEHICLES)  
SECUNDERABAD

39/146 *12*

1. BASIC TECHNICAL DATA AND CHARACTERISTICS

- 1 Rated voltage - 27 V D.C
- 2. Nominal power - 300 Watts
- 3. Rotational speed - 3400 <sup>f</sup> /min
- 4. Armature rated current - 23,5A
- 5. Design - Waterproof
- 6. Working conditions - Continuous while immersion of drive in water till face of Body.
- 7. Circuit diagram - Double wire
- 8. Mass - 9.4 kg
- 9. Silver content - 0,08424 gram

2. DELIVERY SET

- 2.1 Electric motor - 1 piece
- 2.2 Certificate - 1 piece

3 ACCEPTANCE CERTIFICATE

Electric motor conforms to specifications MB.00074 and acknowledged fit for use

TIB (dept) \_\_\_\_\_  
Customer's Representative \_\_\_\_\_

4. GUARANTEE OBLIGATIONS

Guarantee period of electromotor is 500 motor hours of operation of main engine. In 6000 or 10000 hrs of use in conformity with guarantee life on section.

Storage life of electromotors preserved as per section 74, at user of storehouses should not exceed 3 years while packaging to sealed covers as per OCY 23-2007-4 more than 6 years

Remarks: Electromotor is not sealed



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5 INFORMATION ABOUT PRESERVATION

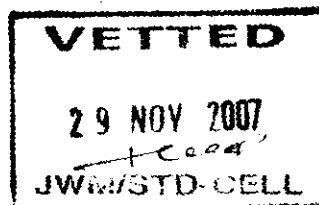
ELECTROMOTOR IS Preserved with oil K - 17 COST 10877-7  
FOR INTERPLANT SHIFTING WITH OIL K - 17 for Storage at  
store houses; in sealed cover for along times storage at  
store houses cover for along times storage at store houses  
 ( cross-out which are not necessary )

Preservation period 0.5 ; 5 ; 8 Years  
 (Crosscut which are not necessary)

Preservation date \_\_\_\_\_  
 TIB (dept) \_\_\_\_\_

Remarks: In future working corrections in the  
 certificates issued by typographic process, should  
 be agreed by customer's Representative.

- xx -



*Handwritten signature*  
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I-570

ALBUM NO : 27  
 TECHNICAL PAPERS FOR  
 ARTICLE F  
 84/0848711-03-75-40007  
 TECHNICAL SPECIFICATIONS:  
 O.F.P.H.NO: I-570

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 J.WINSTONCELL

TRANSLATED	ED RHINE	<i>[Signature]</i>		Ordnance Factory Project Hyderabad.
AUTHENTICATED	DOLCOV			
TYPED	T. GIERI	<i>[Signature]</i>	25 85	APPROVED <i>[Signature]</i>
EDITED	<i>[Signature]</i>	<i>[Signature]</i>		
	NAME	DESIGN.	DATE	

Ordnance Factory  
Project  
Hyderabad.

I 570

NUMBER... MB/7/000... Ty

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ELECTRIC MOTORS MB/7  
TECHNICAL SPECIFICATIONS  
MB/7 .000 Ty

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*[Signature]*  
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Present technical specifications refers to compound excitation DC electric motor MB7 herein after referred to as electric motor meant for driving water pumps.

Designation of electric motor while ordering:  
Electric motor MB7 -2, MB7 .000 Ty.

### 1. TECHNICAL SPECIFICATIONS: REQUIREMENTS.

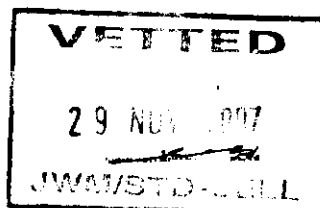
Electric motor should correspond to the requirements of present technical specifications set of papers in compliance with the specifications and O ST B3.1164.72.

All completing articles and materials used for manufacturing motor should correspond to the effective standards and technical specifications for them.

#### 1.1 BASIC PARAMETERS AND DIMENSIONS:

1.1.1 Electric motor should have the following basic parameters:

- |                                      |   |
|--------------------------------------|---|
| a) Rated voltage                     | -27V DC   |
| b) Rated power                       | -300W;  |
| c) Rated <sup>rotational</sup> speed | -3400RPM  |
| d) Mode of operation                 | -Continuous Upto 1.5hrs<br>which driving part is<br>dipped in water to<br>face of body. |
| e) Connection diagram                |   |
| f) Design                            | -Double-wire;   |
| g) Working position                  | -Water proof;<br>-Vertical with out<br>put end of shaft<br>down wards.                  |



- h) Rated torque - 0.085 kgf.M.
- i) Direction of rotation of shaft - Clock wise
- j) Weight, max. . 9.4 kg.

1.1.2 Over all dimensions of electric motor are as per drawing MB7 - 0274

1.2 CHARACTERISTICS:

1.2.1 Overall dimensions, mounting dimensions and appearance of electric motor should correspond to drawing MB7 - 0274 and set of papers in accordance with the specifications MB7 2-000.

1.2.2 Electric motor should with stand test at a rational speed of 6000 RPM for 2 minutes without damages and residual deformation.

1.2.3 Electric motor should:

- a) Consume current not exceeding 10A and generate rational speed not exceeding 5000RPM at a voltage of during 27V, ideal run;
- b) Have clock wise rotation of shaft;
- c) Consume current not exceeding 23.5 A at rated voltage and rated power and has rational speed of atleast 3400RPM.
- d) Have commutator over heating of not more than 130°C at rated voltage and rated power when the driving part of electric motor is dipped in water to the face of body same commutator over heating temperature is allowed after one <sup>hour</sup> of idle run of electric motor without dipping into water.

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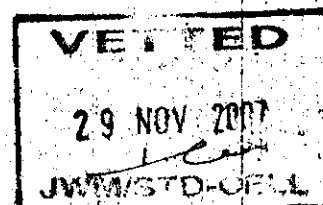


1.2.12 Electric motor should withstand 100 hours of running during bench test in order to ensure the service life of 1000 operating hours.

1.3 Completeness of set.

1.3.1 Set includes

- a) Electric motor
- b) Certificate.



1.4 MARKING:

1.4.1 Marking of electric motor should be carried out in compliance with the set of papers as per specification MB7 2.000.

1.5 PACKING:

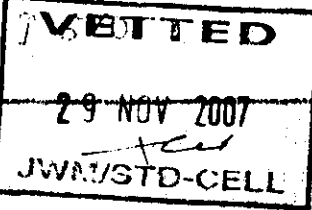
1.5.1 Packing and preservation of electric motor are carried out in compliance with the requirements of OST B3-1164-72 and with effective packing drawing.

Preservation of articles supplied as spare parts, is carried out considering the requirements of OST B3-2381-74.

2. ACCEPTANCE RULES:

2.1 Present technical specifications OST BB-1164-72 and sets of papers in compliance with specifications MB7 2.000 are the basic documents for manufacturing testing and acceptance of electric motor.

Each motor should undergo technological rev-up at idle run for a period of 30 minutes.



2.2 All the trade articles should be checked by incoming TID before installing in electric motor. Scope and method of incoming control are set by agreement with customer's representative.

2.3 Testing of electric motor is sub divided into approval, periodical and type tests.

2.4 Each motor is subjected to approval test in scope and procedure as per table 1.

Electric motors are <sup>subjected</sup> subjected for acceptance by batches containing 30 to 60 pieces.

2.5 Conduct the periodical test twice in a year on two samples in scope and procedure given in table 1.

2.6 Type tests are conducted when it is necessary to check electric motor for compliance with the requirements of present technical specifications, in case of basic changes in diagram, design or manufacturing technology of motor, affecting operating properties; when the service life of electric motor is to be checked and measures approved for eliminating the defects are to be taken; and also for initial batches of full-scale production.

Necessity to conduct type tests including service life test is determined and approved by manufacturer and customer's representative in scope sufficient for checking the effectiveness of taken measures or service life according to the test programme, guided by the types of tests given in table 1.

Table:1

Types of tests and checks	Item number		Category test		
	Require ments	Procedure	Appro -val test	Perio -dical test	Type test
1. Checking for completeness of set and conformity with drawing	1.2.1	3.2	+	+	+
2. Test at higher rotational speed	1.2.2	3.3	+	+	+
3. Checking of functional parameters					
a) Checking of no-load current	1.2.3a	3.4a	+	+	+
b) Checking of correctness of direction of rotation of shaft	1.2.3a	3.4a	+	+	+
c) Checking of rated parameters	1.2.3	3.4	+	+	+
d) Checkings of over heating of commutator	1.2.3	3.4	-	+	+
4. Insulation resistance test:					
q) under normal climatic conditons	1.2.4	3.5	+	+	+
b) Under increased temperature conditions	1.2.4	3.5	-	+	+
c) Under increased humidity conditions	1.2.4	3.5	-	+	+

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1	2	3	4	5	6
5. Testing for dielectric strength	1.2.5	3.6	+	+	+
6. Testing for water resistance	1.2.10	3.7	+	+	+
7. Testing for interchangeability	1.2.6	3.8	+	+	+
8. Testing for absence of design members and assembly units with resonance frequency in electric motor	1.2.7	3.9	-	-	+
9. Testing for effect of increased relative humidity	1.2.9	3.10	-	+	+
10. Testing for effect of increased ambient air temperature	1.2.9	3.12	-	+	+
11. Testing for effect of lower ambient air temperature	1.2.9	3.11	-	+	+
12. Testing for resistance effect of frost and dew	1.2.9	3.13	-	-	+
13. Testing for effect of sea (salty) fog	1.2.9	3.14	-	+	+
14. Testing for effect of cyclic changes of temperature	1.2.9	3.15	-	+	+

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1	2	3	4	5	6
15. Vibrant strength test	1.2.9	3.16	-	+	+
16. Impact strength test	1.2.9	3.17	-	+	+
17. Testing for effect of <del>max(x)ty)xx</del> atmospheric pressure reduced:					
a) down to 460mm Hg	1.2.9	3.18	-	-	+
b) down to 170 mm Hg	1.2.9	3.18	-	-	+
18. Testing for guarantee life	1.2.11	3.19	-	+	+
19. Service life test	1.2.12	3.20	-	-	+
20. Testing for effect of single impacts	1.2.9	3.21	-	-	+
21. Testing for effect of fumes of antifreeze and fules and oils	1.2.9	3.22	-	-	+
22. Testing for effect of $\gamma$ and $\beta$ back ground	1.2.9	3.23	-	-	+
2.3 Testing for radio interference level:	1.2.8	3.24	-	-	+

Designations  $\gamma$  +  $\beta$  tests conducted  
 $\gamma$  -  $\beta$  tests not conducted.

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- REMARKS:
1. Testing for di-electric insulation strength is to be carried out after testing insulation resistance.
  2. Sequence for conducting the vibration strength test and impact strength test is determined by procedure of testing.
  3. Checking for water resistance is carried out during periodical and type tests after guaranteed life test.

### 3. TEST METHODS:

- 3.1 All tests are conducted at normal climatic conditions except those where the climatic conditions are specially mentioned.

Characteristics of normal climatic conditions:

- a) Temperature of ambient air -  $+25$  to  $\pm 10^{\circ}\text{C}$
- b) Relative humidity of air - 45 to 80% *mm.*
- c) Atmospheric pressure - 630 to 800 *mm.*

NOTE: Relative humidity should not exceed 70% at a temperature of more than  $30^{\circ}\text{C}$ .

Instrumentation should have accuracy class not below 1.

- 3.2 Check visually the completeness <sup>of</sup> set of electric motor, conformity with the requirements of drawings, quality of assembly external finish and absence of loose fasteners and check the mounting and overall dimensions with the help of instrumentation.

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Technological running is carried out at 27V under no load.

3.3 Test the motor at higher rotational speed under no load by changing the supply voltage.

Measure the rotational speed by stroboscope. Read the time from the moment when the present rotational speed is attained.

Electric motor is considered to have passed the test if it meets the requirements of item 1.2.2 of present technical specifications.

3.4 Carry out checking of functional parameters of electric motor in the following manner:

a) Check the no-load current of motor after it runs for 5 to 6 sec under no load at 27Vots.

Electric motor is considered to have passed the test if it meets the requirements of item 1.2.3 a of present technical specifications.

b) Check the proper direction of rotation of shaft simultaneously with the no-load current check.

Electric motor is considered to have passed the test, ~~is~~ if satisfied the requirements of item 1.2.3 d of present technical specifications.

c) Check the rated parameters of electric motor on ~~break~~ test set (\*under load) ensuring a torque of 0.085kgf.m. at a rotational speed of 3400 RPM after 30 minutes of operation at no-load.

Apply a breaking torque of 0.085 kgf.m (torque 0.085 kgf.m corresponds to rated power 300W) to the -

to the motor and after 1 minute of operation of electric motor at rated voltage and torque 0.035 kgf.m. measure consumed current and rotational speed.

Electric motor is considered to have passed the test if it meets the requirements of item 1.2.3d of present technical specifications.

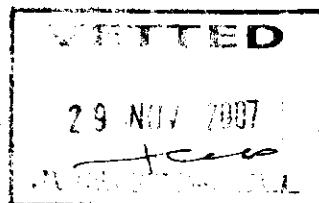
d) Measure the overheating of commutator with thermocouple by extrapolation of cooling curve to the time of disengagement in correspondance with GOST 11828-75, After running the electric motor for 1.5 hrs under rated voltage and with rated power while the driving part of motor to the face of body of electric motor is dipped in water having a temperature not exceeding 25°C or after running the motor for 1 hr at no-load under rated voltage.

To take measurement, thermocouple is brought to the commutator through a hole in the body of electric motor used for the plug connector.

Electric motor is considered to have passed the test if it is satisfied the requirements of item 1.2.3d of present technical specifications.

NOTE: Check parameters as per item 3.4d after all the tests.

3.5 Insulation resistance test is carried out by 500V- DC megohmmeter. Measure the insulation resistance between the body of electric motor and any contact of the plug connector,



Electric motor is considered to have passed the test if the measured insulation resistance value corresponds to the requirements of item 1.2.4 of present technical specifications (for respective test conditions).

3.6 Check the dielectric insulation strength at high-voltage test set having power of atleast 0.5KVA by feeding a full testing voltage for 1 minute.

Testing voltage is applied between the body and any contact of the plug connector.

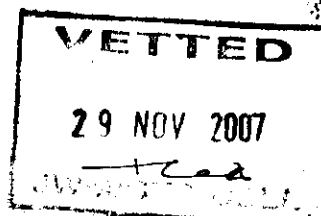
Electric motor is considered to have passed the test, if during the check breakdown or surface flash-over did not occur.

NOTE:1. It is allowed to reduce the time keeping insulation under a voltage to 1 sec by simultaneously increasing the test voltage upto 625 V (effective value)

2. In case of subsequent checks of electric motor before installation in vehicle testing voltage is fixed by 80% from rated value preset by the requirements of present technical specifications.

3.7 Water resistance test:

a) Dip the motor at switched-off and cold conditions in a tank filled with water having ambient air temperature for 1.5 minutes when acceptance test is conducted. Before immersing, dry air is forced through union into the motor for five minutes to obtain gauge pressure of  $0.25 \pm 0.05$  atm.





meets the requirements set forth in items of acceptance test of present technical specifications after their substitution.

NOTE: Check as per item 3.8 is carried out before setting parts of electric motor on sealent.

3.9 Testing for the absence of resonance of members is carried out during type test after visual inspection. Electric motor in switched-off conditions is fixed to the plat-form of vibration stand.

Test the motor in two mutually perpendicular positions in one of which the shaft of electric motor is positioned horizontally, in the other one vertically with out-put end of the shaft downwards as per the standards of table 2 while smoothly changing the vibrator frequency in each sub range.

Table 2

Frequency, subranges Hz	Amplitude value	
	Acceleration, g	Displacement, mm
from 5 upto 10	0.05-0.30	
above 10 upto 20	0.30-1.00	0.5-0.8
above 20 upto 25	1.00-2.00	
above 25 upto 40	2.00	0.3

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NOTE: Check is carried out by one of the following methods, by acceleration or displacement.

Time for passing each subrange should be sufficient to detect the resonance, but it should not exceed the 2 minutes. Check the absence of resonance of members and assembly units of electric motor visually or with the help of devices during the test.

Electric motor is considered to have passed the test, if there is no resonance of members or assembly units in the range of the above-mentioned frequencies, and if no mechanical damages is detected during visual inspection.

3.10 While testing the electric motor for the effect of increased relative humidity the motor with preserved out-put end of shaft (in switched-off conditions) is placed in constant-humidity cabinet with relative air humidity of 93 to 97% and temperature of 20 to 25°C and kept in it for 5 days.

The humidity may be increased upto 98% and temperature upto plus 35°C, due to the fluctuations of ambient air temperature and the modes of operation of equipment used.

Not later than 3 min cabinet after removing the electric motor from constant humidity check:

- a) Insulation resistance as per the procedure of item 2.5 of present technical specifications.
- b) Parameters as per procedure of item 3.4 of present technical specifications.

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c). Absence of corrosion, except locating surfaces, anticorrosive protection of which has not been provided with the drawings.

d). Condition of paint and varnish coatings.

Y. After keeping the electric motor for 24 hrs at normal climatic conditions check the insulation resistance and also di-electric insulation strength as per procedure of item 3.5 3.6 of present technical specifications.

Electric motor is considered to have passed the test if the parameters and insulation resistance correspond to the requirements of items 1.2.3 and 1.2.4 of present technical specifications; there are no separations of paint and varnish coatings and corrosion traces and if di-electric strength and insulation resistance corresponds to requirements of items 1.2.4a and 1.2.5 of present technical specifications after keeping the electric motor at normal climatic conditions.

3.11 Electric motor in switched-off condition is placed inside the cold chamber temperature of which is brought down to minus  $50^{\circ}\text{C}$  and maintained with an accuracy of  $\pm 3^{\circ}\text{C}$  while testing for the effect of lower ambient air temperature.

Electric motor is kept in the chamber for 4 hrs after attaining the above-mentioned temperature, after which the current consumption is checked as per the procedure of item 3.4C of present technical specifications in the chamber or not later than 3 minutes after removing from the chambers in the normal climatic conditions, in this case, electric motor itself should start to rotate and run at the prescribed duty not later than 3 minutes after

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switching on the motor at the rated voltage and rated power. Check the electric motor for water resistance as per procedure of item 3.7a of present technical specifications after keeping it at normal climatic conditions for 4 hrs.

Electric motor is considered to have passed the test, if the current consumption does not exceed 22.5 and continuous or periodical flow of air bubbles is not observed while checking the motor for water resistance.

REMARK: It is allowed to place the electric motor in cold chamber, temperature of which is brought to  $-50^{\circ}\text{C}$  before hand. In so doing electric motor is kept in the chamber for 4.5 hrs.

3.12 Set the hot chamber temperature to  $+50^{\circ}\text{C}$  and maintain it with an accuracy of  $\pm 3^{\circ}\text{C}$  while testing for the effect of higher ambient air temperature.

Keep the electric motor in the hot chamber under idle chamber condition for 3 hrs and then run it at no-load for 1 hr at 27V. This done, the electric motor is removed from hot chamber and not later than 3 min after this the motor is checked by switching it on three times at rated voltage as per the procedure of item 3.4C of present technical specifications. In so doing, the electric motor current is checked.

Electric motor is considered to have passed the test, if it is serviceable after three switchings on and consumes a current not exceeding 23.5A.

3.13 Electric motor in switched-off condition is placed in the cold chamber and kept in it at a temperature of  $-20\pm 5^{\circ}\text{C}$  for 2 hrs. While testing for the effects of frost and dew.

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This done, the electric motor is removed from the chamber, placed in normal climatic conditions and run at no load at a voltage of 27V. for 1 hr in so doing, measure current consumption. Immediately after switching on and every 30 minutes under the conditions of formation of frost and dew. As per procedure of item 2.4C of present technical specifications.

Electric motor is considered to have passed <sup>the</sup> test, if during the <sup>time</sup> of holding in normal climatic conditions after removal from cold chamber while testing as per procedure of item, 3.4C of present technical specifications it consumes a current not exceeding 23.5A.

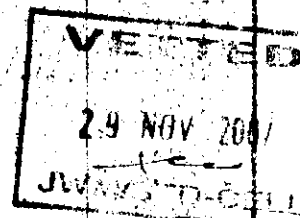
3.14

Electric motor with preserved end of the shaft, is placed in the chamber, the temperature of which is set to 27-30°C while testing for effect of sea (salty) fog, and subjected to effect of salty fog. Conduct visual inspection for the absence of damaged paint- and -varnish coatings before placing the motor in the chamber.

Electric motor is arranged in the chamber so that during testing splashes of solution and also drops from ceiling, walls and suspension system do not fall on it.

Sprayer salt solution which is prepared by dissolving sodium chloride in distilled water as per GOST 4233-77 in amounts of 3363 g/l by using fog is created by spraying centrifugal aerosol apparatus. Fog should possess a degree of dispersion of 1 to 10 microns (95% of drops) and water content of 2 to 3 g/m<sup>3</sup>.

Spray the solution for 15 minutes, every 45 min. Total testing time is 2 days. Duration of test is taken from the moment of first spraying of solution.



After the completion of the test the motor is cleaned with a <sup>wash</sup> after soaked in distilled water after which it is dried for 1 hr at temperature  $+55 \pm 2^{\circ}\text{C}$  cooled subsequently and then subjected to visual inspection.

Electric motor is considered to have passed the test if there are no traces of corrosion of base metal and damage to paint-and -varnish coatings

3.15 Electric motor in switched-off condition is subjected to three cyclic temperature changes, followed one after the other continuously while testing for resistance to cyclic temperature changes.

Each cycle is carried out in the following way:

Electric motor is placed in the cold chamber, the temperature of which is set upto  $-50^{\circ}\text{C}$  before hand and kept at this temperature for 4 hrs.

Electric motor is transferred immediately from cold chamber to hot chamber having temperature  $65^{\circ}\text{C}$  and kept in it at this temperature for 4 hrs.

Holding time in hot and cold chambers is counted from the moment of attaining the given air temperature in the chamber after loading the electric motor.

Electric motor is removed from hot chamber after the completion of last cycle of testing and is kept under normal climatic conditions for 4 hrs.

This done, motor is visually inspected, checked for serviceability as per procedure of item 1.2.3 to present technical specifications.

The electric motor is considered to have passed

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the test if its parameters meet the requirements of item 1.2.3c of present technical specifications.

NOTE: It is allowed to carry out the test for resistance to cyclic temperature changes in one chamber with the rate of temperature changes of at least 0.5°C per minute.

3.16 Vibration strength test of electric motor is carried out when it is switched off. Conduct visual inspection of motor before testing.

Electric motor is mounted on the vibration stand with single-component <sup>vertical</sup> vibration in vertical position with output end of shaft downwards and subjected to tests by methods of fixed frequency as per standards given in table 3.

Table.3

Fixed frequency	Amplitude value		Total testing time, h
	Acceleration, G	Displacement	
10	1.0	2.0	3.0
20	2.0	1.0	9.0
30	3.0	0.8	6.0
40		0.6	4.5
50		0.4	
60	4.0	0.3	
80		corresponds to acceleration	1.5
100			
120			

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NOTE: Test is performed by one of the methods:  
As per acceleration or displacement.

Vibration strength test is conducted simultaneously with guaranteed life test under the following conditions:  
1/4 of total vibration time before the guaranteed life, test, 1/2 of total vibration time in the middle of vibration test and 1/4 of total vibration time after guaranteed life test.

Carry out visual inspection after testing and check parameters as per procedure of items 3.4a and 3.4c of present technical specifications

Electric motor is considered to have passed the test if during visual inspection of mechanical damages is detected and parameters correspond to the requirements of items 1.2.3a, 1.2.3c of present technical specifications.

3.17 Impact strength test of electric motor is conducted in switched-off condition in the middle of the guaranteed life test. Carry out its visual inspection before testing.

Electric motor is set on the stand in vertical position with output end of shaft downwards and is subjected to impacts as per standards given in table.4

Table.4

Acceleration, g	Duration, ms	Total number of impacts	Number of impacts per minute.
15	from 10 to 15	2000	upto 100

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After testing carry out visual inspection <sup>and</sup> check parameters as per procedure of ~~items~~ <sup>items</sup> 3.4a 3.4c of present technical specifications.

Electric motor is considered to have passed the test if during visual inspection mechanical damages is not detected, and parameters correspond to the requirements of items 1.2.3a, 1.2.3c of present technical specifications.

3.18 Testing <sup>for</sup> effect of lower atmospheric pressure is carried out in pressure chamber at a emperature of +25 ±10°c.

Carry out visual inspection before testing, and check the parameters of electric motor as per procedure of item 2.4c of present technical specifications.

Electric motor is placed in pressure chamber, and pressure in it is brought down to 460 MM Hg After which motor is switched on at idle run for 30 minutes at 29V. This done, the electric motor is removed from pressure chamber and the checking of parameters is carried out as per procedure of item 3.4c of present technical specifications. After this pressure of 170mm Hg is set <sup>in</sup> the pressure chamber and electric motor in switched-off condition is kept in it under these conditions for 2 hrs. Then pressure in the chamber is gradually raised to the normal one, electric motor is removed rom chamber, visual inspection of it is carried out <sup>and</sup> parameters are checked as per procedure of item 3.4a of present technical specifications.

Electric motor is considered to have passed the test, if its parameters correspond to requirements of item 1.2.3a of present technical specifications.

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Electric motor is considered to have passed the test, if its parameters correspond to requirements of item 1.2.3a of present technical specifications.

3.19 Gauranteed life test is carried out with water pump as per drawing 432.83.011 Cd 3. or 54.83.78cd A.

Electric motor with water pump and additional hydraulic resistance of 0.5 atm is switched on at a voltage of 27V for 60hrs. at a voltage of 27V and 29V for 20 hrs sespectively. Electric motor is operated by cycles with a duration of 5 hrs. Interval between cycles is till the electric motor cools completely. Driving part of electric motor is dipped in water having temp not exceeding 25<sup>o</sup>c to the face of body.

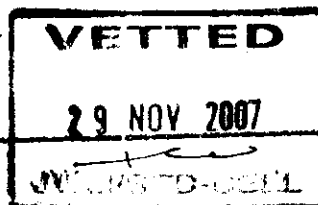
Run the electric motor for 1 hr at 27V after gauranteed life test.

Visual inspection and checking of parameters, as per procedure of item 3.4a 3.4c of present technical specifications are carried out after gauranteed life test.

Electric motor is considered to have passed the test. <sup>It</sup> retains serviceability and parameters meet the requirements of items 1.2.3a 1.2.3c of present technical specifications.

3.20 Test the <sup>electric</sup> electric motor for service <sup>life</sup> as per procedure of item 2.16, and 3.19 of present technical specifications.

Electric motor is considered to have passed the test for service life if it retains serviceability after testing additionally for 30 minutes.



NOTE: Number of hours of guaranteed life test is counted for service life test.

3.21 Compliance of electric motor and its installation with the requirements for resistance to single impacts with greater accelerations is to be confirmed by full-scale tests on vehicle with the combined report being made.

3.22 Before working out the procedures of bench test for effect of fumes of antifreeze and fuels and oils compliance of electric motor with these requirements to be confirmed by full-scale tests on the main article with combined report being made.

3.23 Testing for effect of  $\gamma$  and  $h$  background not carried out. Compliance with given item of requirements is ensured by the electric motor design.

3.24 Compliance of electric motors with the requirements of item 1.2.3 of present technical specifications is confirmed by full-scale test on the main article, with the combined test report being made.

#### 4. TRANSPORTATION AND STORAGE:

4.1 Packed electric motors be transported by any type of transport which ensures protection against atmospheric precipitation and mechanical damage.

4.2 Storage of electric motor is to be carried out in correspondance with the requirements of OST B 3-1164-72 and OST B3-3381-74.

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### 5. OPERATING (USAGE) INSTRUCTIONS:

5.1 Electric motor should be used under conditions and modes corresponding to the requirements of present technical specifications.

5.2 Electric motor should be used with its the driving part being dipped to the face of body in water.

Motor is allowed to run idle without dipping for atleast 1 hr:

5.3 Electric motor should be used in compliance with GOST 2.117-71.

5.4 Servicing during operation<sup>iv</sup> is in conformity with the requirements of operating instructions of vehicle.

### 6. SUPPLIER'S GUARANTEE

6.1 Electric motor should be accepted by technical inspection department of manufacturing plant.

Supplier guarantees the conformity of electric motor with the requirements of present technical specifications and trouble-free operation provided that user observes conditions of operation, transportation and storage which are set with the technical specifications.

Guarantee period is set as 500 operating hours of main engine for 6000 to 8000km of running in conformity with the guarantee of vehicle.

Guarantee storage life of electric motors, preserved in consideration with OST B3-2381-74 in customer's store houses should not exceed 5 years; or while 8 years while packed in sealed covers as per-

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LIST OF APPENDICES:

1. List of documents to which reference is made in technical specifications.
2. Electric motor MB11-2 but line drg. MB1102. TY

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Appendix

LIST OF  
DOCUMENTS TO WHICH REFERENCE IS MADE IN  
TECHNICAL SPECIFICATIONS:

Nomenclature of document	Designation of document	Number of pages of technical specifications at which documents reference is given:
1. Procedure of approving using of commercial article	GOST 2.117-71	26
2. Electric/driven machines common testing methos.	GOST 11828-75	13
3. Reagents sodium chloride technical specifications	GOST 4233-77	20
4. Assembly units and parts of tracked vehicles. Methods and means of preservation	OCT B3-2381-74	5.26.27
6. Electrical equipment of special ransport vehicles	OCT B3-1164-72	2.45.5a,26

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