DOUBLE WIRE LED DOME LIGHT

TECHNICAL SPECIFICATIONS

CVRDE/SV-ELEC/LED/01

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The present technical specifications pertain to double wire LED dome light which is used for internal illumination of special purpose vehicles.

1. TECHNICAL REQUIREMENTS

The LED dome light should conform to the requirements of present technical specifications and set of design documents.

1.1 Main parameters and dimensions

LED version lights – LED cluster lamp of LEDS not less than 42 Nos. mounted on PCB. Single LED having 11000-13000 MCD emitting colour white, viewing angle 50, operating voltage 27^{+2}_{-5} V DC with reverse polarity protection.

1.1.1 Main parameters of LED dome light should conform to the values given in Table 1.

Table-1

Type	Voltage	Power W	Light filter	Axial candle Power cd/m^2
LED	22 - 29V DC	10	Clear white In Glass C3C-5	10 (Min)

1.1.2. Overall and mounting dimensions and weight of the LED dome light should correspond to the data given in Fig.1-2.

1.2. Characteristics

1.2.1. The LED dome light should function reliably work in the range of Ambient temperature from -50°C to +70°C

1.2.2. The LED dome light should be serviceable at relative humidity up to 98% at ambient temperature +35°C

1.2.3. The LED dome light should be resistant to cyclic effect of temperature from -50°C to +70°C.

1.2.4. The LED dome light should be resistant to the effect of dew and frost.

1.2.5. The LED dome light should be vibration resistant to the effect of vibration loads as per the following rates.

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Frequency Range Hz	Amplitude Values	
	Acceleration m/s^2(g)	Displacement mm
From 10 - 20	9.8 - 19.6 (1.0 - 2.0)	2.0
Over 20 - 30	19.6 - 39.2 (2.0 - 4.0)	1.2
Over 30 - 40	39.2 (4.0)	0.6
Over 40 - 50	39.2 - 58.8 (6.0)	0.6
Over 50 - 60	58.8 (6.0)	Corresponds to the acceleration
Over 60 - 80		
Over 80 - 100		
Over100- 120		

Note: Checking is carried out by one of the methods of acceleration and displacement.

1.2.6. The LED dome light should be impact-resistant when tested at the rate of 80 impacts/min with acceleration 147m/s^2 (15 g)

1.2.7. The LED dome light should not have design elements and assembly parts i.e. with resonance frequency up to 40Hz

1.2.8. Electric insulation resistance for current carrying parts of LED dome light should not be less than:

a) 20 M ohm at ambient temperature +25° ±10° C with relative humidity 45 to 80 %

b) 1M ohm immediately after keeping in moisture chamber for 5 days (relative humidity of air up to 98% at ambient temperature 35° C)

c) Electric Insulation of LED dome light should withstand A.C. test of 500V with frequency 50Hz for one minute without breakdown.

1.2.9. Coating should ensure necessary corrosion resistance of plate and assembly units of LED dome light while in use and while storing for the entire duration of guaranteed service life.

1.2.10. The plastic components should not have cracks, bulging, metallic embedment's and should not be separated in to layers. Traces of flashes should be thoroughly dressed.

1.2.11. Welding should be strong and of good quality, burns are not permitted.

1.2.12. Soldering of parts should be acid-free.

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1.2.13. Design of LED dome light should ensure reliable joints of removable parts avoiding the possibility of their falling while in use; the glass may be fitted in the ring by hand. The glass should not shake and requisite gasket should be provided.

1.2.14. Components and assembly units should be interchangeable.

1.2.15. Materials and semi-finished items used for the manufacture of the LED dome light should correspond to the standards or technical specifications pertaining to them.

1.2.16. The LED dome light should be serviceable even after the effect of pour of oil, petrol, kerosene, diesel and low freezing coolants.

1.2.17. The LED dome light should withstand without damaging shot time switching under a voltage equal to 120% of the rated one for 10 seconds.

1.3. Completing set.

1.3.1. The LED dome lights are supplied with suitable white LEDs (42 Nos).

1.4. Marking

1.4.1. The LED dome light should have markings of (i) year of manufacture (ii) quality inspection stamp (iii) Trade mark of manufacture (iv) Type of LED dome light and (v) Specification No..

2. ACCEPTANCE RULES

2.1. The LED dome light should be subjected to the acceptance, periodical and type tests. If, it is detected during the acceptance tests , that the LED dome light does not correspond to requirements of the present technical specifications in respect of even one point or if one or more points are rejected during tests, then the entire batch is rejected and return to the manufacturer for elimination of defects and rechecking or replacement.

2.2. Acceptance tests should be carried out in the sequence shown in

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Table - 2

Name of the test	Points in technical specification		Quantity of LED Dome lights to be tested
	Requirements	Methods	
1 Visual Inspection	1.2.11, 1.2.12, 1.2.14, 1.3.1 & 1.4.1	3.1	100%
2 Measurement of Axial Candle Power	1.1.1	3.2	3% from a batch, but not less than 5 pcs.
3 Checking of Insulation resistance	1.2.8.	3.11	3% from a batch, but not less than 5 pcs.

All the acceptance tests are carried out on double the number of LED dome lights in case of repeated tests of rejected batch.

2.3. If LED dome lights do not correspond to the requirements of the present technical specifications during the repeated tests, then the entire batch is rejected finally. A combined agreement with the customer can be made regarding the rejected batch and the fitness of the separate assembly units and components.

2.4. A document explaining the causes for defects, methods of the elimination and retesting of the rejected batch also should be enclosed with presentation document.

2.5. Periodical tests should be carried out once in a year for 5 LED dome lights from the accepted batch as per the sequence given in Table-3.

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Table - 3.

Type of test	Points in technical specification	
	Requirements	Methods
Visual Inspection	1.2.11, 1.2.12, 1.2.14, 1.3.1 & 1.4.1.	3.1
Measurement of Axial Candle Power	1.1.1	3.2 (as per Drawing)
Checking of Weight	1.1.2.	3.3.
Checking of Overall and mounting dimensions	1.1.2.	As per Drg.
Cold resistance test	1.2.1, 1.2.8a.	3.5.
Heat resistance test	1.2.1, 1.2.8a.	3.5.
Moisture resistance test	1.2.2, 1.2.8b.	3.6.
Checking the resistance to cyclic effect of temperature	1.2.3.	3.7.
Test for the effect of dew and frost	1.2.4.	3.8.
Test for vibration and impact resistance	1.2.5, 1.2.6.	3.9..
Test for detecting resonance frequencies	1.2.7.	3.10.
Checking of insulation resistance	1.2.8 (a, b).	3.11.
Checking of electric strength of insulation	1.2.9.	3.11.
Checking of electro plating	1.2.10.	3.12.
Checking of interchangeability	1.2.15.	3.13.

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2.6. If, it is detected during the periodical tests, that any one of the LED dome lights do not comply with any requirement of the present technical specifications, then all the accepted batches should be immediately rejected and the detected defects should be eliminated.

2.7. After eliminating the detected defects, the periodical tests are carried out on double the quantity of dome lights.

2.8. If LED dome lights do not comply with the requirements of the present technical specification during the repeated tests, then the entire accepted and submitted batches are returned to the manufacturer for elimination of the detected defects.

2.9. Type tests should be carried out partially or completely when the design materials and manufacturing technology are changed, which effect quality, reliability, parameters and characteristics of the dome lights.

3. TESTING METHODS

3.1. Compliance of LED dome lights with the sample with respect to appearance, finishing, quality of assembly, presence of markings are checked during the visual inspection. Overall dimensions are checked with vernier calipers for compliance with the dimensions given in Annexure-1.

3.2. Axial candle power is measured as per GOST 17677-79.

3.3. Weight of the LED dome light is checked with balance. Weight would not exceed the value given in Fig.1-2 of Annexure-1.

3.4. During the cold resistance test, the LED dome lights are placed in a cold chamber at -50° C for 4 hrs. Then the LED dome lights are checked for a short period (1-2 min), after which temperature in the chamber is increased up to normal temperature and LED dome lights are held for 3 hrs. Afterwards the LED dome lights are removed from the chamber and visually checked. Insulation resistance of LED dome lights and their working are also checked. These tests are carried out not later than 2-3 min after removing from the chamber.

3.5. Heat resistance test of the LED dome lights is carried by placing them in heat chamber connected to normal voltage. Temperature of the chamber is 70° C. After holding for 4 hrs the LED dome lights are removed from the chamber and within 5 min insulation resistance is checked which should comply with 1.2.8a.

3.6 Moisture resistance test of the LED dome lights is carried out by holding them in humidity chamber with relative humidity of air 95±3% and ambient temperature 25±10°C for 5 days. The LED dome lights are kept on mesh support stand above the water level with all their

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covers, caps and seals. The LED dome lights are checked visually and for their working capacity. Insulation resistance is also checked.

3.7 Before testing the resistance to cyclic effect of temperature, insulation resistance of the LED dome lights is checked. The LED dome lights, in switched off condition, are subjected to three subsequent temperature cycles. Each cycle consists of the following: The LED dome lights are placed first in cold chamber at -50°C for 4 hrs and then in heat chamber at +70°C for 4 hrs. Holding time is counted from the time the given temperature is attained by the LED dome lights. After completing the first cycle, the LED dome lights are held in normal condition for 4 hrs and then the LED dome lights and the components are visually checked. Its insulation resistance is also checked.

3.8. In order to check the resistance of LED dome lights to dew and frost, they are placed in cold chamber at -20 ± 5° C for 2 hrs in switched off condition. The LED dome lights are removed from the chamber and in normal climatic conditions, they are attached on. The LED dome lights serviceable under the effect of dew and frost.

3.9. The LED dome lights are fixed on the stand in the same way as they are fixed on the vehicle and tested for vibration-resistance. The test is carried out when the lights are on under the conditions specified in cl. 1.2.5 of the present technical specifications. Testing time under each frequency range should be 2 hrs. Similarly, impact resistance test is carried out as per cl.1.2.6 of the present technical specifications for 2 hrs. The LED dome lights are considered to have passed the tests, if no cracks and chips are observed and they comply with requirements of cl."1.2.5, 1.2.6" of the present technical specifications.

3.10. Absence of resonance is tested after fixing the LED dome lights in the stand in switched off condition. The test is carried out in three mutually perpendicular directions given in Table-4. Test time at each frequency is 2 min.

Table - 4

Frequency Range Hz	Amplitude Value mm
From 5 to 10	0.5 - 0.8
Over 10 to 20	0.5 - 0.8
Over 20 to 25	0.5 - 0.8
Over 25 to 40	0.3

The LED dome lights are considered to have passed the tests, if resonance of their design elements and assembly units is absent or if amplitude of any element or unit does not exceed

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twice the amplitude of point of fixation and if no loose joints of assembly units and parts, no cracks and chips are observed.

3.11. Electric resistance and electric strength of insulation of the LED dome lights are tested as per GOST 17677-79

3.12. Strength and adhesion of the electro plating is checked by scratching method as per GOST 9.302-79.

3.13. Interchangeability of the components and assembly units is checked by assembling LED dome lights with randomly selected components and assembly units. In this case assembly should be done without any additional adjustment.

4. STORAGE

4.1 The LED dome light should preserve as per GOST 15150 – 69 and have guaranteed storage period till putting to service is 3 - 5 years.

5. GUARANTEE

5.1. The LED dome light should correspond to the requirements of present technical specifications on adherence by the customer to the rules of operation, use and storage, stipulated in the present specification. Guaranteed life is 500 working hours (continuous) on the vehicle.

6. SAFETY PRECAUTIONS

6.1. LED PCB and Regulator PCB should be replaced in switched-off condition.

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DOUBLE WIRE DOMELIGHT OF LED TYPE CERTIFICATE

1. **Purpose :**

Double wire LED Dome light is used for Special Purpose Vehicle and is designed for general inside lighting.

2. **Technical Data:**

Voltage	:	28V DC (Max) LED Version
Type	:	White Color LED' s mounted on Printed Circuit Board
Power	:	10Watts.
Axial limit of light	:	10 Cd (minimum)
Light filter	:	made of Glass C3C-5
Exposed equipment working condition	:	Temp. From -50°C to + 70 °C
Relative Humidity	:	95±3% at a temperature of 20 ± 5 °C

3. **Equipment :**

LED dome light assembly consists of Body-7, Ring-3, Glass cap-4, Switch-2, Adopter-5 and Double shock absorber-1 as per Fig.

Reflector:

No specific reflector is provided in the assembly since rich LED provided with self focus arrangement of light emission.

The dome light assembly is provided with toggle switch to enable ON/OFF of the LED dome light. It is also provided with a terminal block to terminate power supply wires. The glass ring along with rubber gasket is fastened to the base assembly with three screws. The LED dome light fixed in the vehicle through the shock absorber arrangement.

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4. **Technical Requirements:**

During operation, it is necessary to take care of Glass caps, contact terminals, varnish paint coating and reliability of fastening of ring.

5. **Instructions for Storage and Transportation:**

LED dome lights should be stored in manufacturer's packages in closed or other premises with normal ventilation without any artificial control of climatic conditions where the fluctuation of temperature and RH is comparatively less than open air.

LED dome lights placed in cases may be transported by any means of Transportation. During Transportations cases with LED dome lights should be protected from atmospheric precipitations and mechanical damage.

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STOWAGE:

1. Dimension 'S' given for reference.
2. The label of export version should be glued with dextrine GOST 6034 - 71.
3. In case of export version, the box should be painted either gray or dark gray enamel XB - 1100 GOST 6993 - 79 IV ЖІ or X6 - 124 GOST 10144 - 74 gray.
4. Box should be marked as per GOST 14192 -77
   (a) Manipulation signs N1, N3, N11 & N13 only for tropical countries-of height 64mm.
   (b) Main notifications : Number of packages, Packages in a batch, Serial number of the package, Name of Consignee, point of destination, reloading place-of height 30mm
   (c) Additional description of transporting organization-of height 80mm. Name of the consigner, Name of destination point indicating Railway station name, - of height 10mm.
   (d) Informative indication :

   Gross weight - ,

   Nett weight - of 10mm height.
5. Additional requirements of marking of boxes for export version should be as per GOST 14192 - 77
6. For internal Soviet supply transportation may be carried out in countries without packing in to boxes.
7. When sending to tropical country, paint box with gray colour enamel XB - 124, GOST 10144 - 74 IV ЖІ.

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ANNEXURE

OVERALL AND MOUNTING DIMENSIONS
AND SIZE OF LED DOME LIGHT

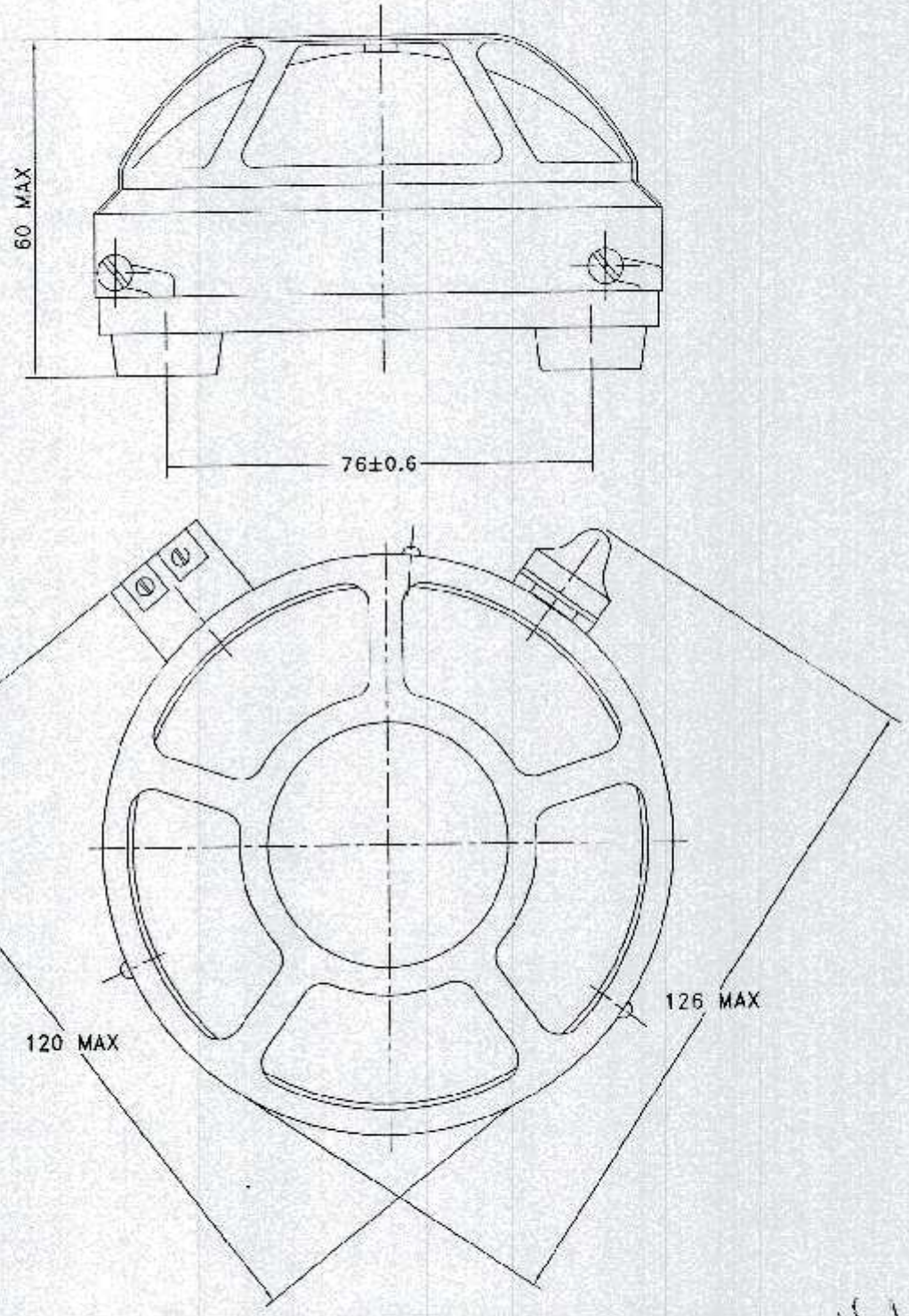


FIG.1 DOUBLE WIRE LED DOME LIGHT

TY 16-535-743-73

REF No.	DESIGNATION	DESCRIPTION	DS CAT NUMBER	US EQUIVALENT	QTY	REMARKS
		LIST OF DOCUMENTS				
	CVR225--Cb1000Cb	DOUBLE WIRE LED DOME LIGHT				
	CVRDE/SV-ELEC/LED/01	TECHNICAL SPECIFICATIONS				
	CVR225-CP 1000	LIST OF COMMERCIAL ITEMS				
		ASSEMBLY UNITS				
1	CVR225-Cb1001	BODY (ASS. DRG)			1	
		PARTS				
2	CVR225-1010	CAP			1	
3	CVR225-1011	RING			1	
4		GASKET			1	IIT-37
		SETS				
	CVR225-Cb1004	STOWAGE				

USED ON CVR225-Cb1000Cb

DC[I] No.&DATE	ISSUE	NATURE

DRN	CHD	APD	DATE
H.N. Thulasi	S. Saravanan	K. Arunmozhi	15.03.13

DRG No.
CVR225-Cb1000

DS CAT.No.

TITLE	SHT	SHTS
DOUBLE WIRE LED DOME LIGHT	1	1

COMBAT VEHICLES RESEARCH AND DEVELOPMENT ESTABLISHMENT

CAD FILE NAME: IL-CVR225-Cb1000 A3

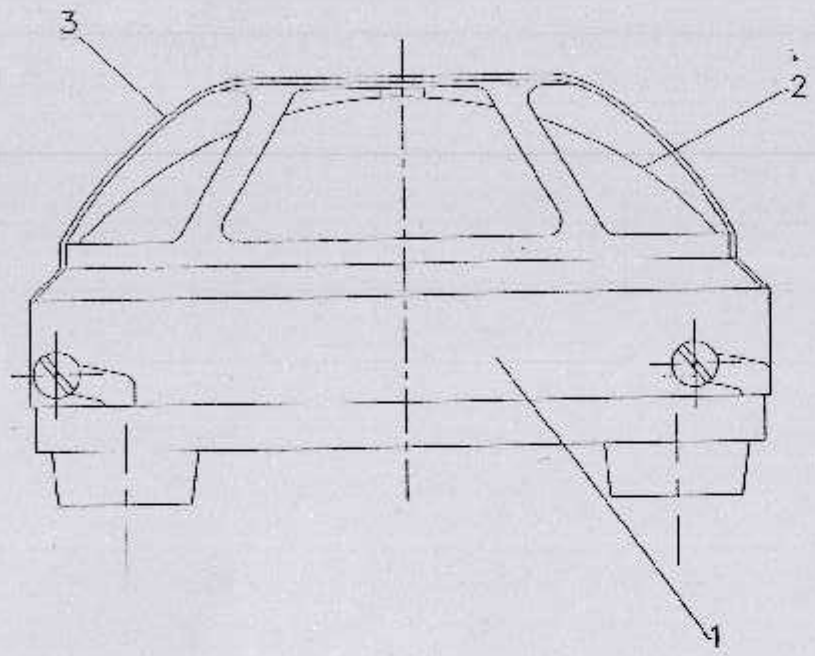
OLD REF.ЗДБ.529.163

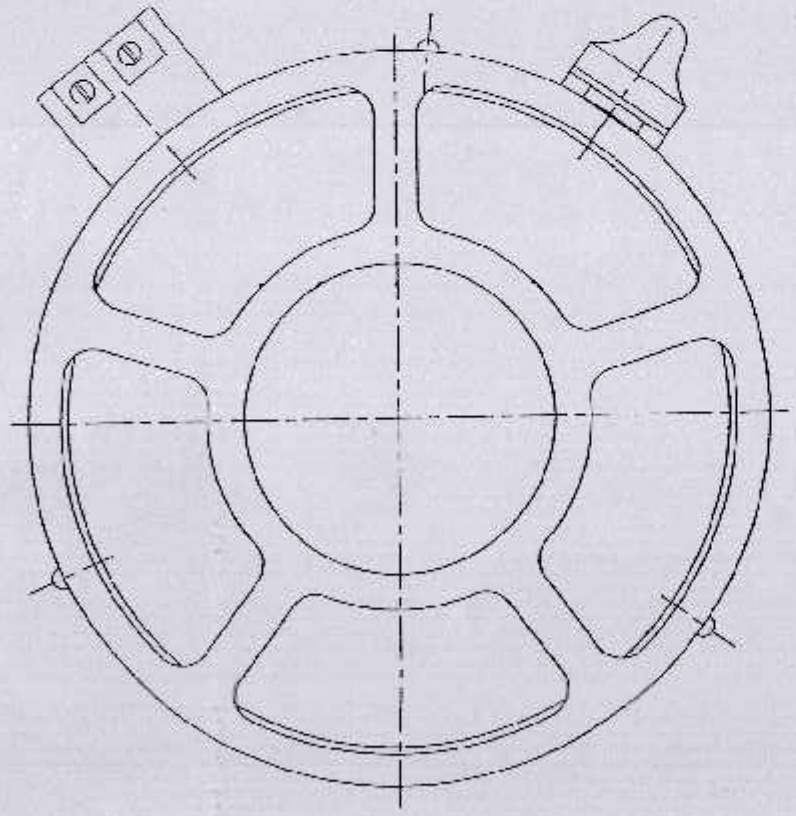
CVR225-Cb1000Cb

CLASS OF DEVIATION	UP TO 10 ANGULAR DEGREE	UP TO 10 LINEAR mm per 100mm	OVER 10 TO 50 DEGREE	OVER 10 TO 50 mm per 100mm	OVER 50 TO 120 DEGREE	OVER 50 TO 120 mm per 100mm	OVER 120 DEGREE	OVER 120 mm per 100mm
FINE & MEDIUM	±1°	±1.8	±30'	±0.9	±20'	±0.6	±10'	±0.3
COARSE	±1°30'	±2.6	±50'	±1.5	±25'	±0.7	±15'	±0.4
EXTRA COARSE	±3°	±5.2	±2°	±3.5	±1°	±1.8	±30'	±0.9

CLASS OF DEVIATION	LINEAR DIMNS 0.5–03	03–06	06–30	30–120	120–315	315–1000	1000–2000
FINE	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5
M-DIUM	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2
COARSE	±0.2	±0.3	±0.5	±0.8	±1.2	±2	±3
EXTRA COARSE	±0.5	±1	±1.5	±2	±3	±4	±5

CLASS OF DEVIATION RADII CHAMF	0.5–03	03–06	06–30	30–120	120–315
FINE & MEDIUM	±0.2	±0.5	±1	±2	±4
COARSE & EX-COARSE	±0.2	±1	±2	±4	±8





ROUGHNESS SYMBOL					
ROUGHNESS VALUE	25–50	6.3–25	0.8–6.3	0.1–0.8	< 0.1

MATL:–		ISSUE	AMENDMENTS
DRN. H.N. Thulasiammal	DIMENSIONS IN mm.	Est.Wt:– 0.370	
CHD. S. Saravanan	DRG. NOT TO BE SCALED	STAMP PART No. & MANUFACTURER'S NAME & YEAR AT #	
PASSED. K. Arunmozhi	SCALE: 1:1	REMOVE ALL BURRS	
APPROVED.	DATE: 31.12.12	USED ON –	

TITLE
DOUBLE WIRE LED DOME LIGHT

DRG. NO.
CVR225–Cb1000Cb

COMBAT VEHICLES RESEARCH & DEVELOPMENT ESTABLISHMENT

CAD FILE NAME: CVR225-Cb1000Cb A3

BASED ON: ЗДБ.529.163СБ

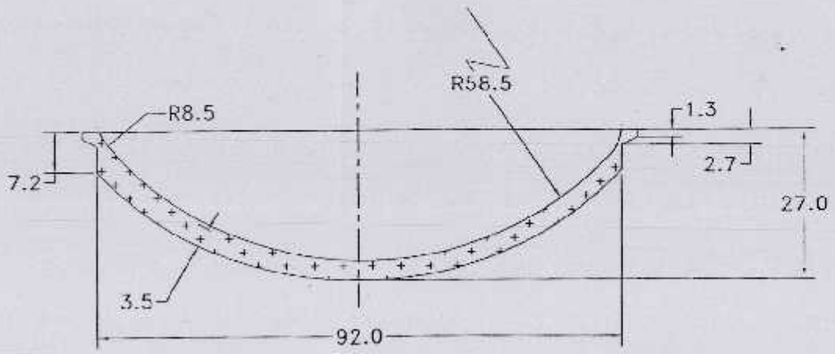
TS214

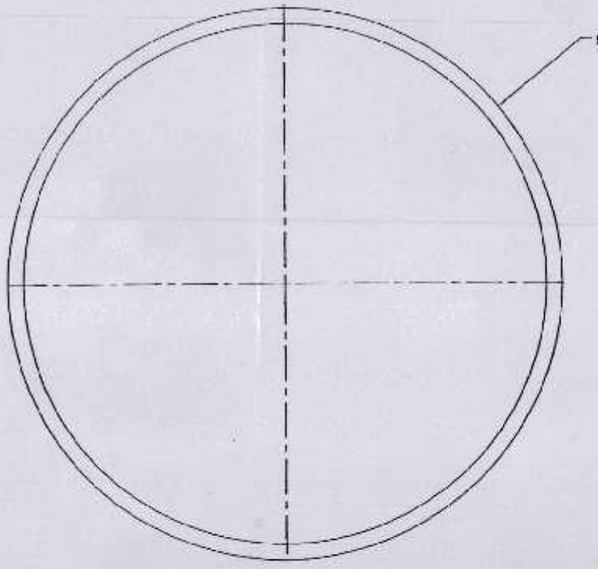
CVR225-1010

CLASS OF DEVIATION \ ANGLE	UP TO 10		OVER TO 50		OVER 50 TO 120		OVER 120	
	DEGREE	mm per 100mm	DEGREE	mm per 100mm	DEGREE	mm per 100mm	DEGREE	mm per
FINE & MEDIUM	±1°	±1.8	±30'	±3.9	±20'	±0.6	±10'	±0.3
COARSE	±1°30'	±2.6	±50'	±1.5	±25'	±0.7	±15'	±0.4
EXTRA COARSE	±3°	±5.2	±2°	±3.5	±1°	±1.8	±30'	±0.9

CLASS OF DEVIATION \ LINEAR DIMNS	0.5-03	03-06	06-30	30-120	120-315	315-1000	1000-2000
FINE	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5
MEDIUM	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2
COARSE	--	±0.2	±0.5	±0.8	±1.2	±2	±3
EXTRA COARSE	--	±0.5	±1	±1.5	±2	±3	±4

CLASS OF DEVIATION \ RADII-CHAMF	0.5-03	03-06	06-30	30-120	120-315
FINE & MEDIUM	±0.2	±0.5	±1	±2	±4
COARSE & EX-COARSE	±0.2	±1	±2	±4	±8





NOTE:-

MATL :

BASED ON: DOME LIGHT IIMB-71 TY 16-535-743-73

ROUGHNESS SYMBOL						
ROUGHNESS VALUE	25-50	6.3-25	0.8-6.3	0.1-0.8	< 0.1	ISSUE / AMENDMENTS
MATL:- ---						Est.Wt:-
DRN. HN. Thulasiammal	DIMENSIONS IN mm.					STAMP PART No. & MANUFACTURER'S NAME & YEAR AT #
CHD. S. Saravanan	DRG. NOT TO BE SCALED					REMOVE ALL BURRS
PASSED. K. Arunmozhi	SCALE: 1:1					USED ON CVR225-1000
APPROVED.	DATE: 31.12.12					DRG. NO. CVR225-1010
TITLE: CAP						
COMBAT VEHICLES RESEARCH & DEVELOPMENT ESTABLISHMENT						

CAD FILE NAME: 82-xxxx

A3

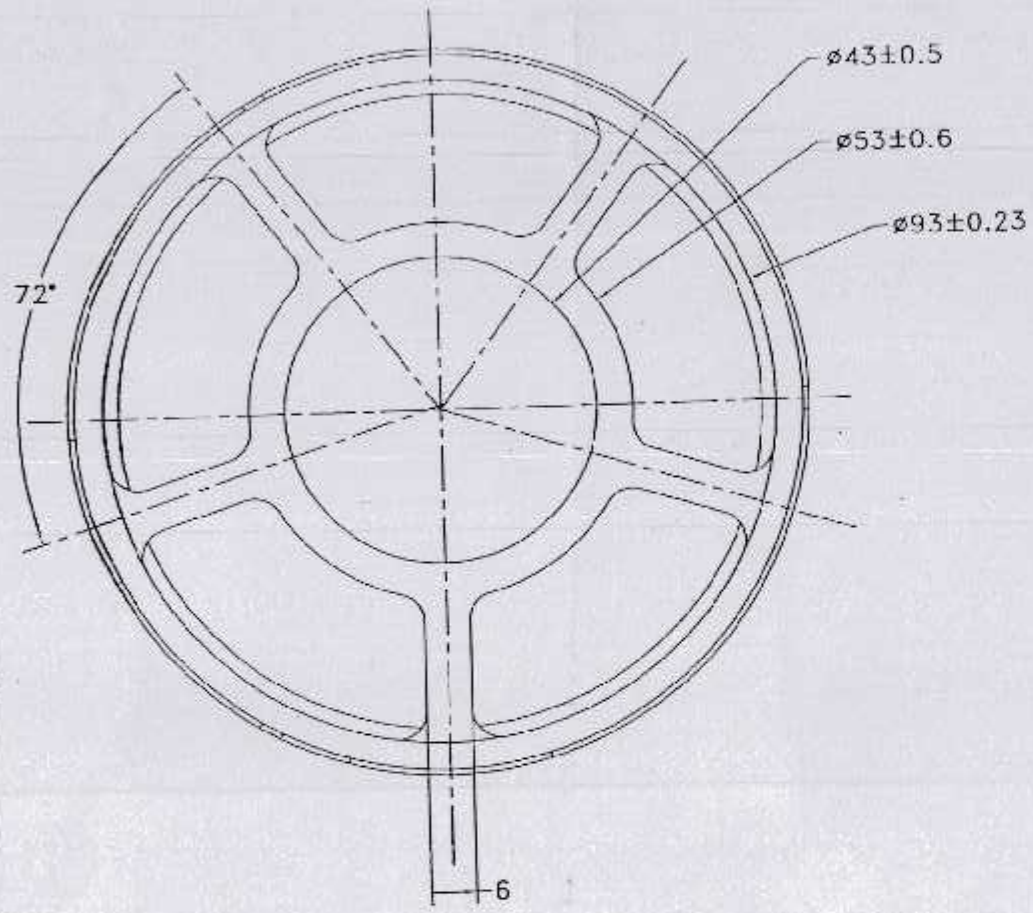
CVR225-1011

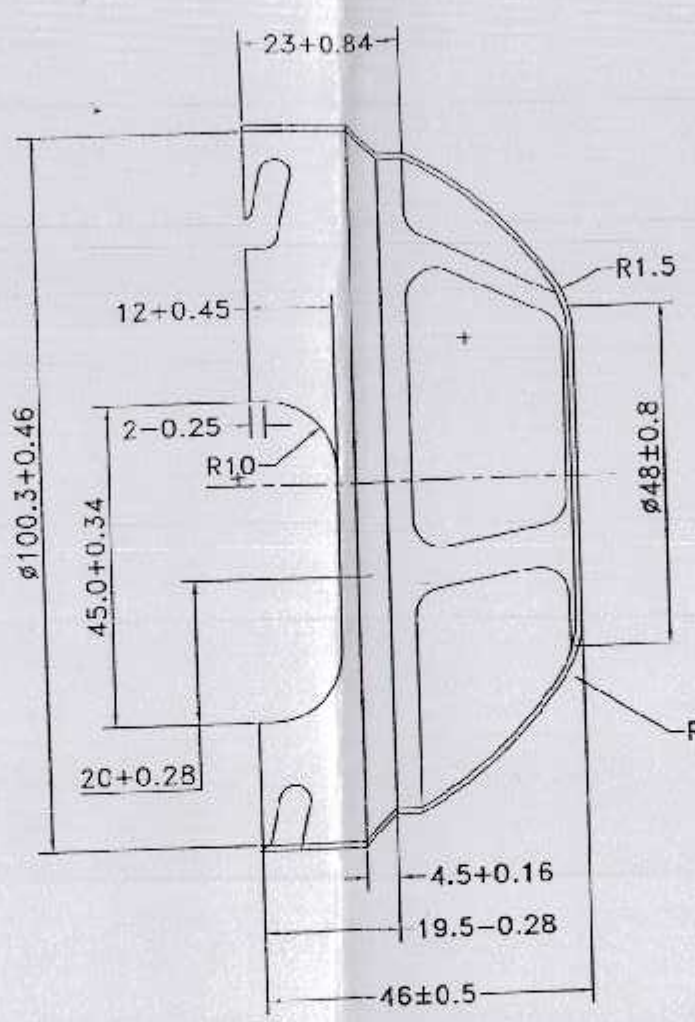
**

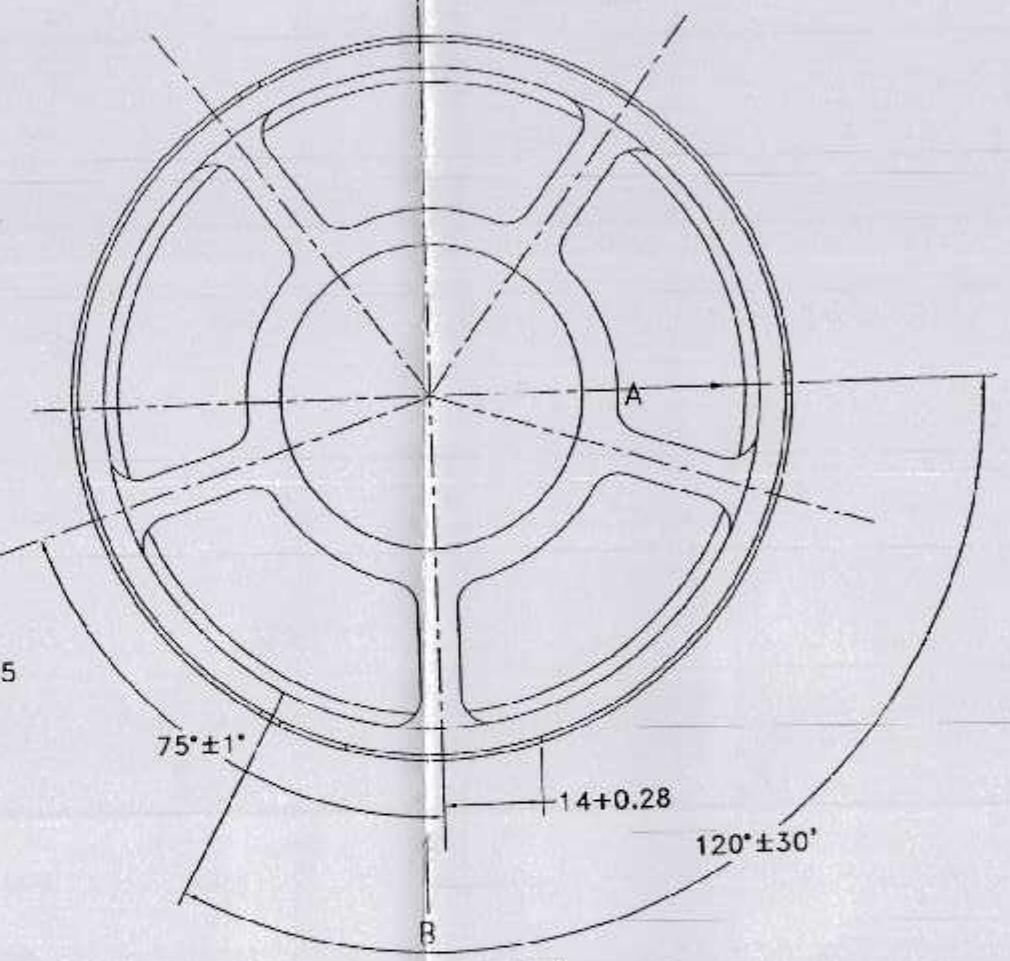
ANGLE	UP TO 10		OVER TO 50		OVER 50 TO 120		OVER 120		CLASS OF DEVIATION
CLASS OF DEVIATION	DEGREE	mm per 100mm	DEGREE	mm per 100mm	DEGREE	mm per 100mm	DEGREE	mm per	
FINE & MEDIUM	±1°	±1.8	±30'	±0.9	±20'	±0.6	±10'	±0.3	FINE
COARSE	±1°30'	±2.6	±50	±1.5	±25'	±0.7	±15'	±0.4	MEDIUM ✓
EXTRA COARSE	±3°	±5.2	±2°	±3.5	±1°	±1.8	±30'	±0.9	COARSE
									EXTRA COARSE

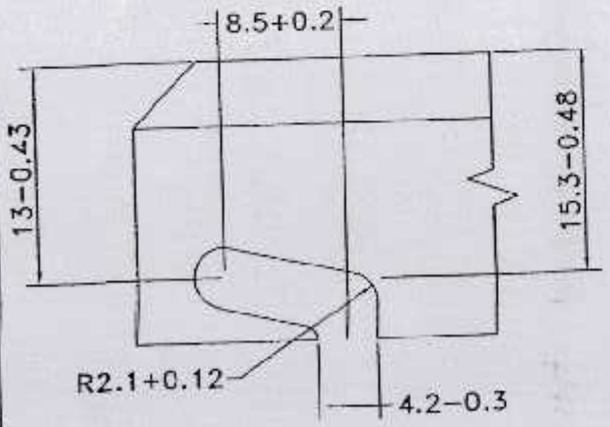
LINEAR DIMNS	0.5-03	03-06	06-30	30-120	120-315	315-1000	1000-2000
FINE	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5
MEDIUM ✓	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2
COARSE	-	±0.2	±0.5	±0.8	±1.2	±2	±3
EXTRA COARSE	-	±0.5	±1	±1.5	±2	±3	±4

CLASS OF DEVIATION / RADII-CHAMF	0.5-03	03-06	06-30	30-120	120-315
FINE & MEDIUM	±0.2	±0.5	±1	±2	±4
COARSE & EX-COARSE ✓	±0.2	±1	±2	±4	±8

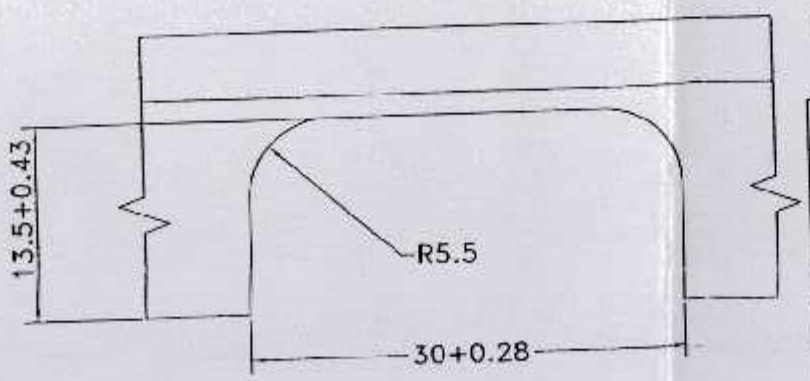








VIEW-A REVOLVED



VIEW-B REVOLVED

DESIGNATION	COATINGS
6755-82-xxx	ZINC COATING 3 MICRONS THICK
6755-82-xx-01	PHOSPHOTIZED ENAMEL GREY COLOUR ПФ-115 GOST 6465-76, IIIЖ$_2$

ROUGHNESS SYMBOL					
ROUGHNESS VALUE	25-50	6.3-25	0.8-6.3	0.1-0.8	< 0.1

MAIL:- REFER DETAILS

DRN. H.N. Thulasiammal
CHD. S. Saravanan
PASSED. K. Arunmozhi
APPROVED

DIMENSIONS IN mm.
DRG. NOT TO BE SCALED
SCALE: 1:1
DATE 31.12.12

TITLE
RING

ISSUE	AMENDMENTS
	Est.Wt:-
	STAMP PART No. & MANUFACTURER'S NAME & YEAR AT #
	REMOVE ALL BURRS
	USED ON CVR225-1000Cb
	DRG. NO. CVR225-1011

COMBAT VEHICLES RESEARCH & DEVELOPMENT ESTABLISHMENT

CAD FILE NAME: CVR225-1011Cb A3

BASED ON: ВДБ-336-835-1

TECHNICAL CONDITIONS

1. UNSPECIFIED DEVIATIONS ARE AS PER IS: 2102-1982 (COARSE)**

REF No.	DESIGNATION	DESCRIPTION	DS CAT NUMBER	I.S EQUIVALENT	QTY	REMARKS	USED ON CVR225-Cb1000Cb
		LIST OF DOCUMENTS					
	CVR225 CE1001Cb	BODY (ASSEMBLY DRAWING)					
		ASSEMBLY UNITS					
1	CVR225 CE1002	BODY			1		
2	CVR225-CE1003	ASSY.LED UNIT			1		
		PARTS					
5	CVR225-1012	ADAPTER			1		
6	CVR225-1013	BUSH			2		
7	CVR225-1014	REINFORCED BUSH			2		
8		RUBBER BOOT			1		
9	CVR225-1016	WASHER			1		
10	8DB-379-004	PROTECTOR			1		
11		JUMPER			1		
12		JUMPER			1		
13		JUMPER			1		
11							
15	CVR225-1018	ADAPTER CONTACT			2		
16	CVR225-1019	NUT			1		
		STANDARD ITEMS					
		SCREW					
		COST 17473-72					
20		M3x6.32.H3			2		
21		M3x6.48.013			2		
22		M3x8.32.H3			2		
23		M4x6.48.013			3		
24		M3x10.48.013			1		

LD REF.675-88-Cb116

DC[I] No. & DATE	ISSUE	NATURE

DRN	CHD	APD	DATE
H.N. Thulari	S. Saravanan	K. Arunmozhi	15.03.13

DRG.No. CVR225-Cb1001

DS CAT.No.

TITLE BODY (ASSY.DRAWING)

SHT	SHTS
1	2

COMBAT VEHICLES RESEARCH AND DEVELOPMENT ESTABLISHMENT

REF No.	DESIGNATION	DESCRIPTION	DS CAT NUMBER	I.S EQUIVALENT	QTY	REMARKS
		LIST OF DOCUMENTS				
	CVR225-Cb1001Cb	BODY (ASSEMBLY DRAWING)				
		STANDARD ITEMS				
		WASHER				
		GOST 10450-78				
25		3.32.113W			5	
		NUT				
		GOST 5916-70				
30		2M3.32.H3			1	
		MISCELENEOUS ITEMS				
35		SWITCH			1	
		TY YCO 360 049				
		TB-2-1				
36		NUT M12			2	OTTB-2-1
37		WASHER 12.5 X18			1	OTTB-2-1

USED ON CVR225-Cb1000Cb

DC(I) No.&DATE	ISSUE	NATURE	
DRN	CHD	APD	DATE
H.N.Thulasi	S.Saravanan	K.Arunmozhi	15.03.13

DRG.No. CVR225-Cb1001

DS CAT.No.

TITLE BODY (ASSY.DRAWING)

SHT	SHTS
2	2

COMBAT VEHICLES RESEARCH AND DEVELOPMENT ESTABLISHMENT

T-SDIY

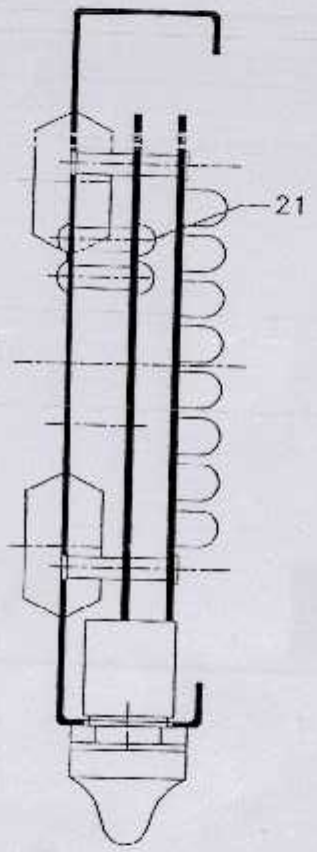
LD REF.

CVR225-Cb1001Cb

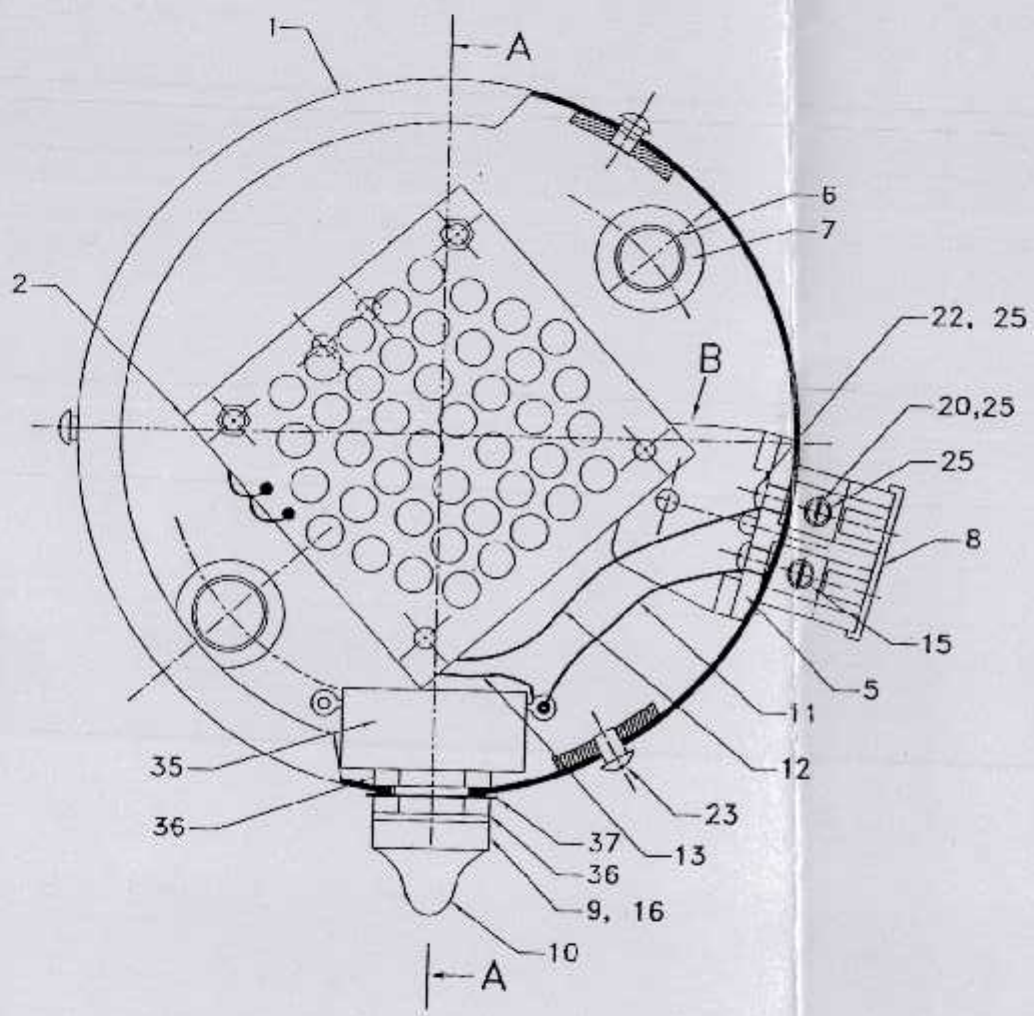
CLASS OF DEVIATION / ANGLE	UP TO 10 DEGREE	UP TO 10 mm per 100mm	OVER 10 TO 50 DEGREE	OVER 10 TO 50 mm per 100mm	OVER 50 TO 120 DEGREE	OVER 50 TO 120 mm per 100mm	OVER 120 DEGREE	OVER 120 mm per
FINE & MEDIUM	±''	±1.8	+30'	±0.9	±20'	±0.6	±10'	±0.3
COARSE	±1°30'	±2.6	±50'	±1.5	±25'	±0.7	±15'	±0.4
EXTRA COARSE	±3'	±5.2	±2'	±3.5	±1'	±1.8	±30'	±0.9

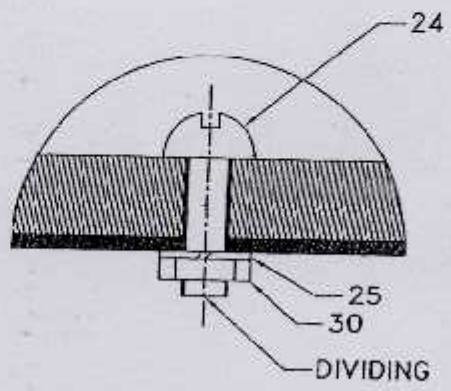
CLASS OF DEVIATION / LINEAR DIMNS	0.5-03	03-06	06-30	30-120	120-315	315-1000	1000-2000
FINE	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5
MEDIUM	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2
COARSE		±0.2	±0.5	±0.8	±1.2	±2	±3
EXTRA COARSE	–	±0.5	±1	±1.5	±2	±3	±4

CLASS OF DEVIATION / RADII-CHAMF	0.5-03	03-06	06-30	30-120	120-315
FINE & MEDIUM	±0.2	±0.5	±1	±2	±4
COARSE & EX-COARSE	±0.2	±1	±2	±4	±8



SECTION – AA





VIEW-B REVOLVED

TECHNICAL CONDITIONS

1. UNRIVET
2. SOLDER IN THE FORM OF PIC TO GOST 21930-76 AND BARS OF BIGGER DIA AS PER GOST 21931-76 CAN BE USED.
3. AFTER SPLITING (DIVIDING) SCREW REF. 24 SHOULD BE POINTED HY-5123 PAINT TO GOST 7462-73 SOLDERING (SEE TABLE)

DESIGNATION	SOLDER
CVR225-Cb1001Cb	ПК 10 TIN, ANTIMONY SOLDER 30.2 TO GOST 81930-96

BASED ON: 5ДВ.002.007

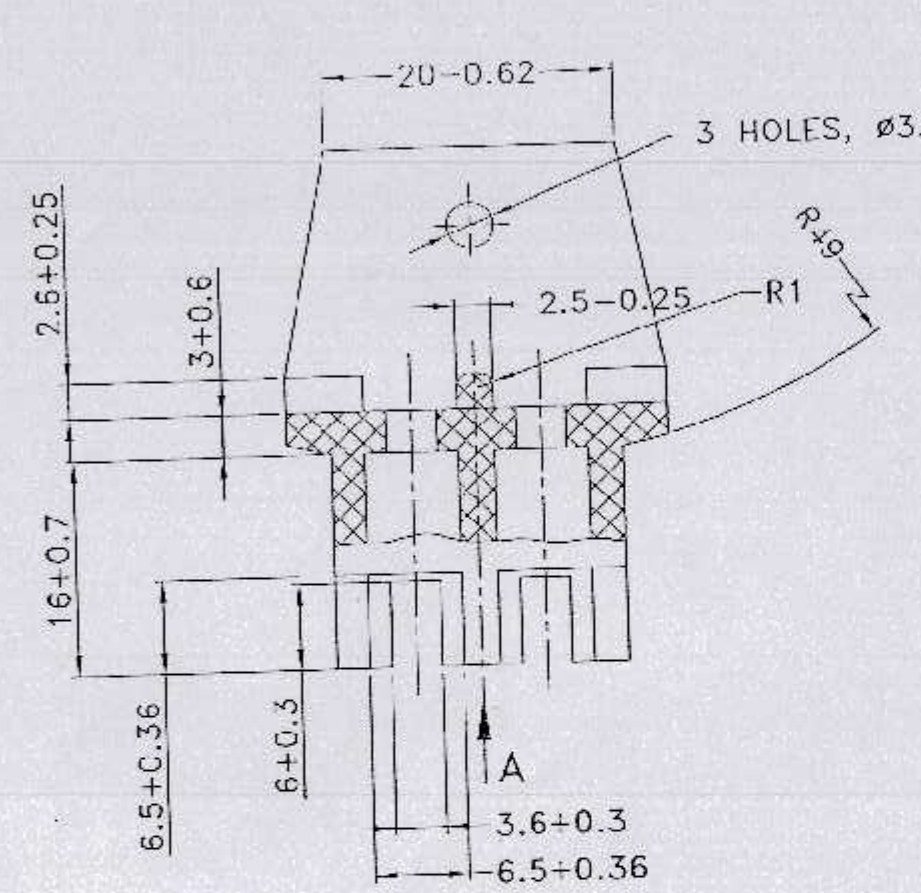
ROUGHNESS SYMBOL						ISSUE	AMENDMENTS
ROUGHNESS VALUE	25-50	6.3-25	0.8-6.3	0.1-0.8	< 0.1		
MATL:- ---						Est.Wt:-	
DRN. H.N. Thulasiammal	DIMENSIONS IN mm.					STAMP PART No. & MANUFACTURER'S NAME & YEAR AT #	
CHD. S. Saravanan	DRG. NOT TO BE SCALED					REMOVE ALL BURRS	
PASSED. K. Arunmozhi	SCALE: 1:1					USED ON	
APPROVED.	DATE: 31.12.12					CVR225-Cb1000Cb	
TITLE: BODY (Assembly Drg.)						DRG. NO. CVR225-Cb1001Cb	
COMBAT VEHICLES RESEARCH & DEVELOPMENT ESTABLISHMENT							

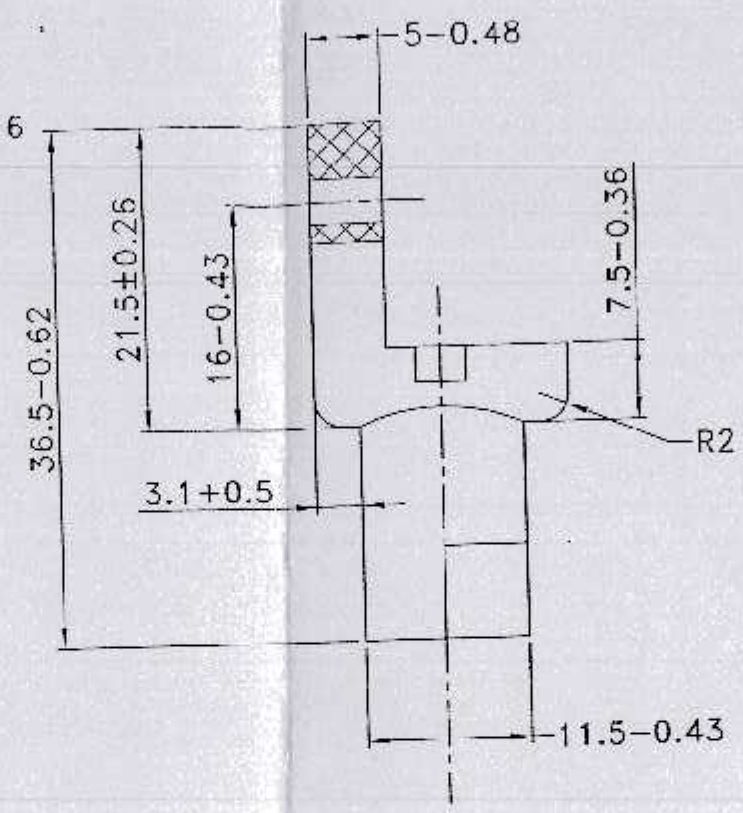
CVR225-1012

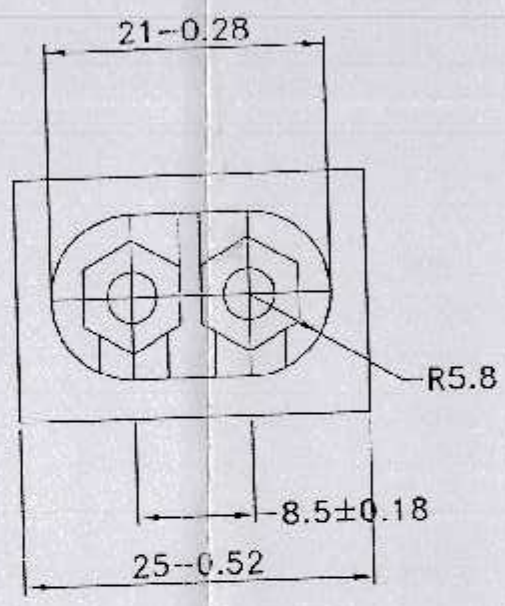
CLASS OF DEVIATION ANGLE	UP TO 10 DEGREE	UP TO 10 mm per 100mm	OVER 10 TO 50 DEGREE	OVER 10 TO 50 mm per 100mm	OVER 50 TO 120 DEGREE	OVER 50 TO 120 mm per 100mm	OVER 120 DEGREE	OVER 120 mm per 100mm
FINE & MEDIUM	±1°	±1.8	±30'	±0.9	±20'	±0.6	±10'	±0.3
COARSE	±1°30'	±2.6	±50'	±1.5	±25'	±0.7	±15'	±0.4
EXTRA COARSE	±3°	±5.2	1.2°	±3.5	±1°	±1.6	±30'	±0.9

CLASS OF DEVIATION LINEAR DIMS	0.5-03	03-06	06-30	30-120	120-315	315-1000	1000-2000
FINE	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5
MEDIUM	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2
COARSE	-	±0.2	±0.5	±0.8	±1.2	±2	±3
EXTRA COARSE	-	±0.5	±1	±1.5	±2	±3	±4

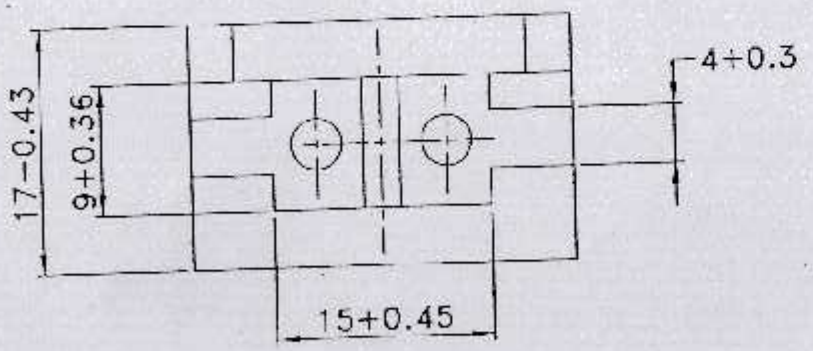
CLASS OF DEVIATION RADII-CHAMF	0.5-03	03-06	06-30	30-120	120-315
FINE & MEDIUM	±0.2	±0.5	±1	±2	±4
COARSE & EX-COARSE	±0.2	±1	±2	±4	±8







VIEW-A



MATL:- *** PHENOPLAST 03-010-02 GOST:5689-79

TECHNICAL CONDITIONS

1. SURFACE FINISHING IN PLACES OF DRESSING THE FINS IS Rz 80
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSTIONS ARE ± JT14/2

ROUGHNESS SYMBOL	~	▽	▽▽	▽▽▽	▽▽▽
ROUGHNESS VALUE	25-50	6.3-25	0.8-5.3	0.1-0.8	< 0.1

ISSUE	AMENDMENTS

Est.Wt: 0.0057 Kg.

MATL:- ***

STAMP PART No. & MANUFACTURER'S NAME & YEAR AT #

DRN. H.N. Thulasiammal	DIMENSIONS IN mm.
CHD. S. Saravanan	DRG. NOT TO BE SCALED
PASSED. K. Arunmozhi	SCALE: 2:1
APPROVED.	DATE: 31.12.12

REMOVE ALL BURRS

USED ON CVR225-Cb1001Cb

DRG. NO. CVR225-1012

TITLE ADAPTER

COMBAT VEHICLES RESEARCH & DEVELOPMENT ESTABLISHMENT

CAD FILE NAME: CVR225-1012 A3

BASED ON :- DRG. NO. 8д6.143.001

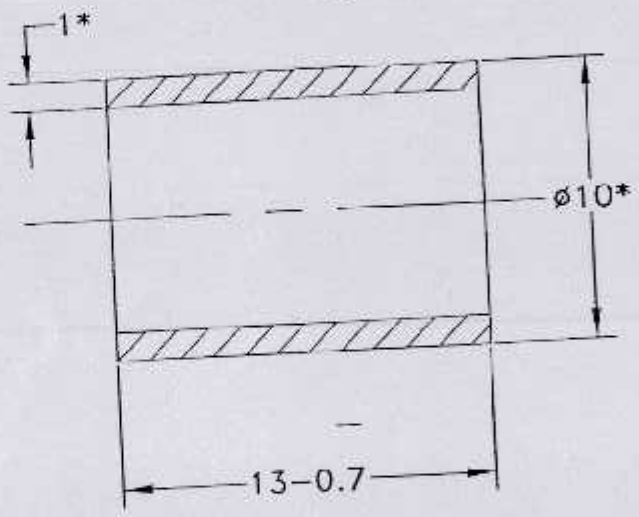
CVR225-1013

**

ANGLE / CLASS OF DEVIATION	UP TO 10		OVER TO 50		OVER 50 TO 120		OVER 120	
	DEGREE	mm per 100mm	DEGREE	mm per 100mm	DEGREE	mm per 100mm	DEGREE	mm per
FINE & MEDIUM	±1°	±1.8	±30'	±0.9	±20'	±0.6	±10'	±0.3
COARSE	±1°30'	±2.6	±50'	±1.5	±25'	±0.7	±15'	±0.4
EXTRA COARSE	±3'	±5.2	±2°	±3.5	±1°	±1.8	±30'	±0.9

LINEAR DIMNS / CLASS OF DEVIATION	0.5-03	03-06	06-30	30-120	120-315	315-1000	1000-2000
FINE	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5
MEDIUM	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2
COARSE	-	±0.2	±0.5	±0.8	±1.2	±2	±3
EXTRA COARSE	-	±0.5	±1	±1.5	±2	±3	±4

CLASS OF DEVIATION / RADII-CHAMF	0.5-03	03-06	06-30	30-120	120-315
FINE & MEDIUM	±0.2	±0.5	±1	±2	±4
COARSE & EX-COARSE	±0.2	±1	±2	±4	±8



DESIGNATION	COATING
CVR225-1013	ZINC,6 MICRONS THICK

*DIMENSION IS GIVEN FOR REFERENCE.

ISSUE

ROUGHNESS SYMBOL	~	▽	▽▽	▽▽▽	▽▽▽▽
ROUGHNESS VALUE	25-50	6.3-25	0.8-6.3	0.1-0.8	< 0.1

MATL:- PIPE Mx1.200KP GOST 10704-63

DRN. H.N.Thulasiammal
CHD. S.Saravanan
PASSED. K.Arunmozhi
APPROVED.

DIMENSIONS IN mm.
DRG. NOT TO BE SCALED
SCALE: 2:1
DATE: 08.01.13

TITLE
BUSH

COMBAT VEHICLES RESEARCH & DEVELOPMENT ESTABLISHMENT

ISSUE	AMENDMENTS
Est.Wt:-	
STAMP PART No. & MANUFACTURER'S NAME & YEAR AT #	
REMOVE ALL BURRS	
USED ON CVR225-Cb1001Cb	
DRG. NO. CVR225-1013	

CAD FILE NAME: CVR225-1013 A3

ДРГ.No.:- 8ДБ.210.118

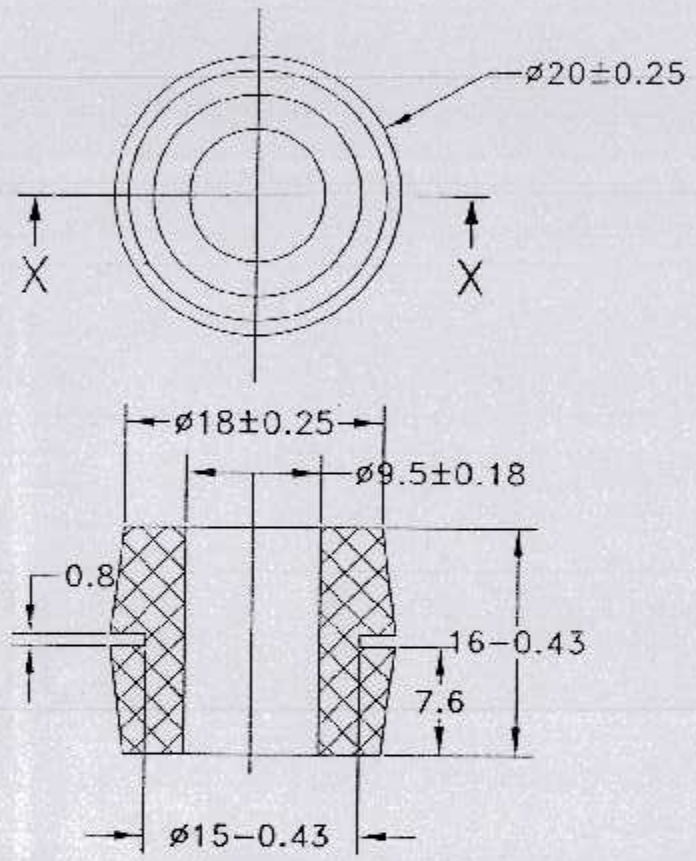
CVR225-1014

CLASS OF DEVIATION / ANGLE	UP TO 10		OVER 10 TO 50		OVER 50 TO 120		OVER 120	
	D. GREE	mm per 100mm	DEGREE	mm per 100mm	DEGREE	mm per 100mm	DEGREE	mm per
FINE & MEDIUM	±1°	±1.8	±30'	±0.9	±20'	±0.6	±10'	±0.3
COARSE	±1°30'	±2.6	±50'	±1.5	±25'	±0.7	±15'	±0.4
EXTRA COARSE	±3°	±5.2	±2°	±3.5	±1°	±1.8	±30'	±0.9

** ✓

CLASS OF DEVIATION / LINEAR DIMNS	0.5-3	3-6	6-30	30-120	120-315	315-1000	1000-2000
FINE	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5
MEDIUM ✓	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2
COARSE	-	±0.2	±0.5	±0.8	±1.2	±2	±3
EXTRA COARSE	-	±0.5	±1	±1.5	±2	±3	±4

CLASS OF DEVIATION / RADII-CHAMF	0.5-03	03-06	06-30	30-120	120-315
FINE & MEDIUM	±0.2	±0.5	±1	±2	±4
✓ COARSE & EX-COARSE	±0.2	±1	±2	±4	±8



SECTION- XX

TECHNICAL CONDITIONS

1. ROUGHNESS OF SURFACES IS ENSURED BY FORMING SURFACES OF DIE MACHINED NOT BELOW 0.32
2. RISING AND DEBTH NOT EXCEEDING 0.3mm.
3. PROJECTION OF EDGES (OR) BLUNTNESS ALONG THE JOINT PLACES OF DIE SHOULD NOT EXCEED 0.3 mm.
4. UNSPECIFIED DEVIATION LIMITS OF DIMENSIONS ARE AS PER I.S: 2102 (1982) CORSE **

IS 2014

ROUGHNESS SYMBOL	~	▽	▽▽	▽▽▽	▽▽▽▽
ROUGHNESS VALUE	25-50	6.3-25	0.8-6.3	0.1-0.8	< 0.1

ISSUE	AMENDMENTS

MATL:- RUBBER GOST 6215-75	Est.Wt:-
DRN. H.N.Thulasiammal / DIMENSIONS IN mm.	STAMP PART No. & MANUFACTURER'S NAME & YEAR AT #
CHD. S.Saravanan / DRG. NOT TO BE SCALED	REMOVE ALL BURRS
PASSED. K.Arunmozhi / SCALE: 2:1	USED ON CVR225-Cb1001Cb
APPROVED. / DATE: 08.01.13	DRG. NO. CVR225-1014

TITLE

REINFORCED BUSH

COMBAT VEHICLES RESEARCH & DEVELOPMENT ESTABLISHMENT

CAD FILE NAME: CVR225-1014 A3

REF.DRG.No.:- 8,ДБ.211.646

CVR225-1020

ANGL. / CLASS OF DEVIATION	UP TO 10		OVER 10 TO 50		OVER 50 TO 120		OVER 120	
	DEGREE	mm per 100mm	DEGREE	mm per 100mm	DEGREE	mm per 100mm	DEGREE	mm per
FINE & MEDIUM	±1°	±1.8	±30'	±0.9	±20'	±0.6	±10'	±0.3
COARSE	±1°30'	±2.6	±50'	±1.5	±25'	±0.7	±15'	±0.4
EXTRA COARSE	±3°	±5.2	±2°	±3.5	±1°	±1.8	±30'	±0.9

LINEAR DIMNS / CLASS OF DEVIATION	0.5 - 03	03 - 06	06 - 30	30 - 120	120 - 315	315 - 1000	1000 - 2000
FINE	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5
MEDIUM	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2
COARSE	-	±0.2	±0.3	±0.8	±1.2	±2	±3
EXTRA COARSE	-	±0.5	±1	±1.5	±2	±3	±4

RADII CHAMF / CLASS OF DEVIATION	0.5 - 03	03 - 06	06 - 30	30 - 120	120 - 315
FINE & MEDIUM	±0.2	±0.5	±1	±2	±4
COARSE & EX COARSE	±0.2	±1	±2	±4	±8

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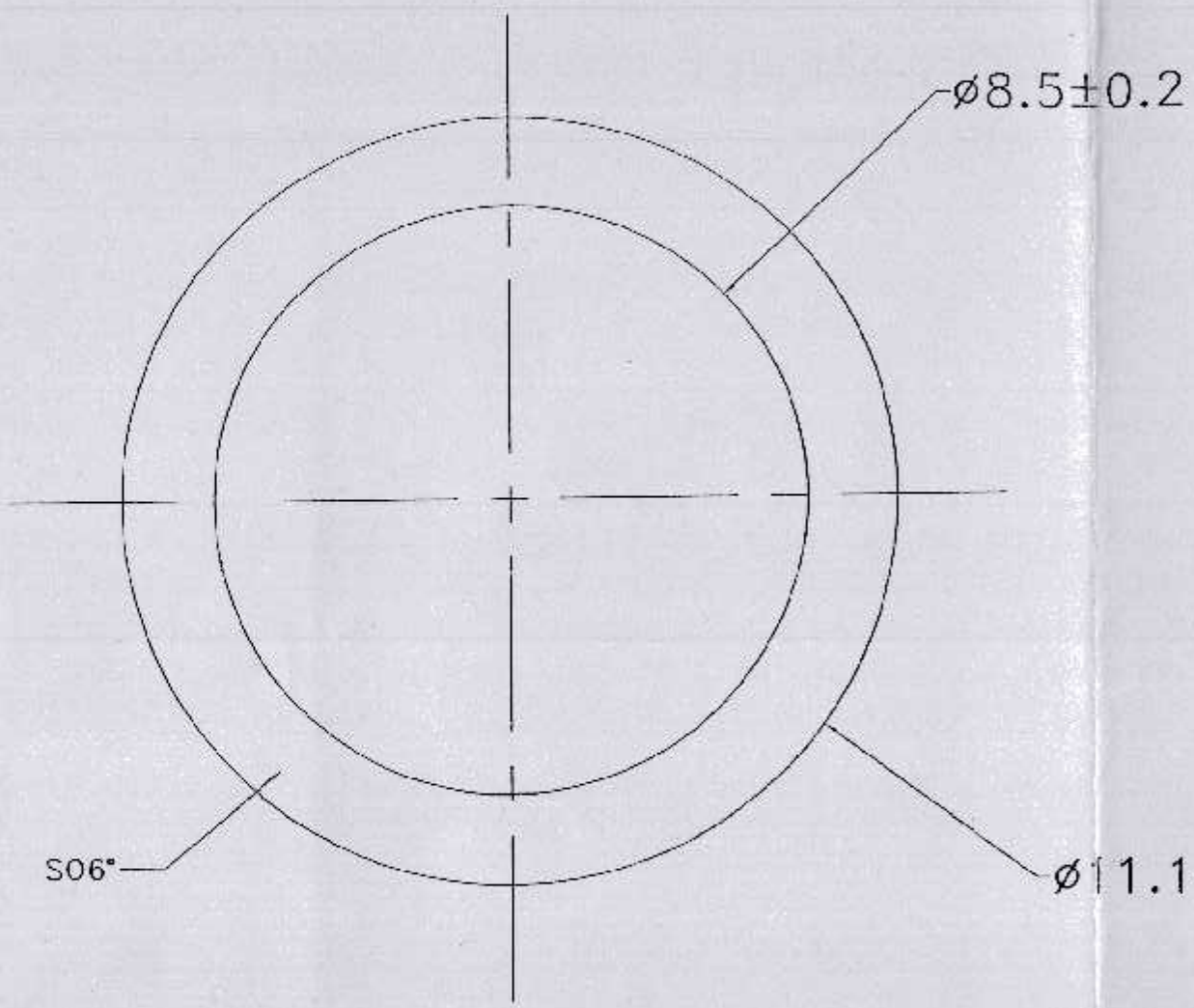


DESIGNATION	COATING
CVR225-1016	ZINC,6 MICRONS THICK CHROMATIZED.

*DIMENSION IS GIVEN FOR REFERENCE.

ROUGHNESS SYMBOL					
ROUGHNESS VALUE	25-50	6.3-25	0.8-6.3	0.1-0.8	< 0.1

MATL:- TAPE 10PS-M-HT-2-0-0.6 GOST 503-71			Est.Wt:- 0.0004
DRN. H.N.Thulasiammal	DIMENSIONS IN mm.		STAMP PART No. & MANUFACTURER'S NAME & YEAR AT #
CHD. S.Saravanan	DRG. NOT TO BE SCALED		REMOVE ALL BURRS
PASSED. K.Arunmozhi	SCALE: 2:1		USED ON CVR225-Cb1001Cb
APPROVED.	DATE: 08.01.13		DRG. NO. CVR225-1016
TITLE WASHER			

COMBAT VEHICLES RESEARCH & DEVELOPMENT ESTABLISHMENT

CAD FILE NAME: CVR225-1016 A3

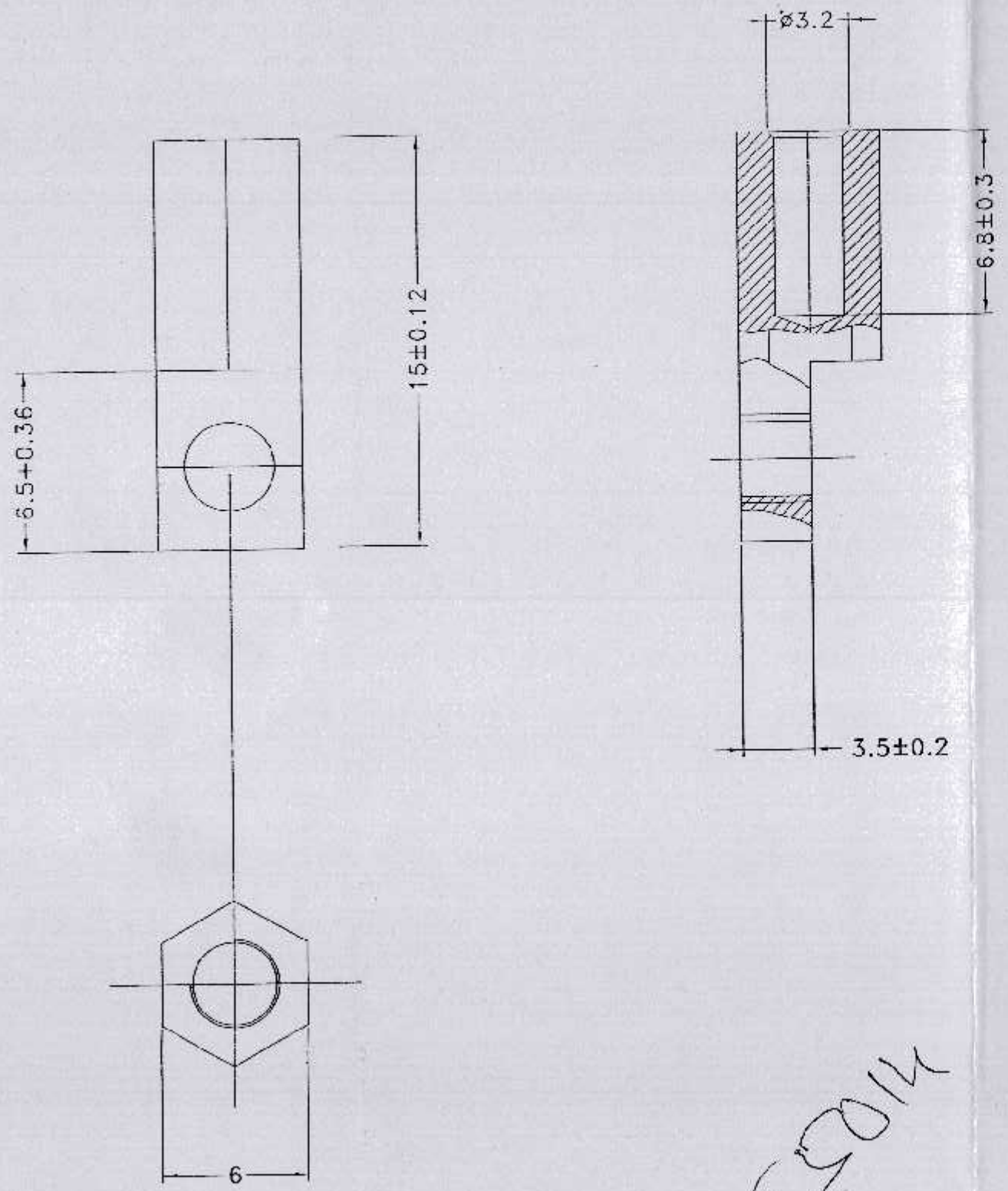
REF.DRG.No.:- 8ДБ.917.000

CVR225-1018

ANGLE CLASS OF DEVIATION	UP TO 10 DEGREE	UP TO 10 mm per 100mm	OVER 10 TO 50 DEGREE	OVER 10 TO 50 mm per 100mm	OVER 50 TO 120 DEGREE	OVER 50 TO 120 mm per 100mm	OVER 120 DEGREE	OVER 120 mm per 100mm
FINE & MEDIUM	±1°	±1.8	±30'	±0.9	±20'	±0.5	±10'	±0.3
COARSE	±1°30'	±2.6	±50'	±1.5	±25'	±0.7	±15'	±0.4
EXTRA COARSE	±3°	±5.2	±2°	±3.5	±1°	±1.8	±30'	±0.9

LINEAR DIMS CLASS OF DEVIATION	0.5-0.6	0.6-3	3-6	6-30	30-120	120-315	315-1000	1000-2000
FINE	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5	
MEDIUM	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	
COARSE	-	±0.2	±0.5	±0.8	±1.2	±2	±3	
EXTRA COARSE	-	±0.5	±1	±1.5	±2	±3	±4	

EDGE-CHAMF CLASS OF DEVIATION	0.5-3	3-6	6-30	30-120	120-315
FINE & MEDIUM	±0.2	±0.5	±1	±2	±4
COARSE & EX-COARSE	±0.2	±1	±2	±4	±8



TECHNICAL CONDITIONS

1 COATING:- ANOD COATING OXIDATION

2 UNSPECIFIED DEVIATION LIMITS OF DIMENSIONS ARE AS PER CM7

3 *DIMENSION IS FOR REFERENCE

ROUGHNESS SYMBOL					
ROUGHNESS VALUE	25-50	6.3-25	0.8-6.3	0.1-0.8	< 0.1

MATL:- ROD, Д1ТКР 16Н x2000 GOST 21488-76

DRN. H.N.Thulasiammal

CHD. S.Saravanan

PASSED. K.Arunmozhi

APPROVED.

DIMENSIONS IN mm.

DRG. NOT TO BE SCALED

SCALE: 5:1

DATE: 08.01.13

TITLE

ADAPTER CONTACT

COMBAT VEHICLES RESEARCH & DEVELOPMENT ESTABLISHMENT

ISSUE	AMENDMENTS

Est.Wt:-

STAMP PART No. & MANUFACTURER'S NAME & YEAR AT #

REMOVE ALL BURRS

USED ON

CVR225-Cb1001Cb

DRG. NO.

CVR225-1018

CAD FILE NAME: CVR225-1018

A3

REF.DRG.No.:- 8ДБ.551.520

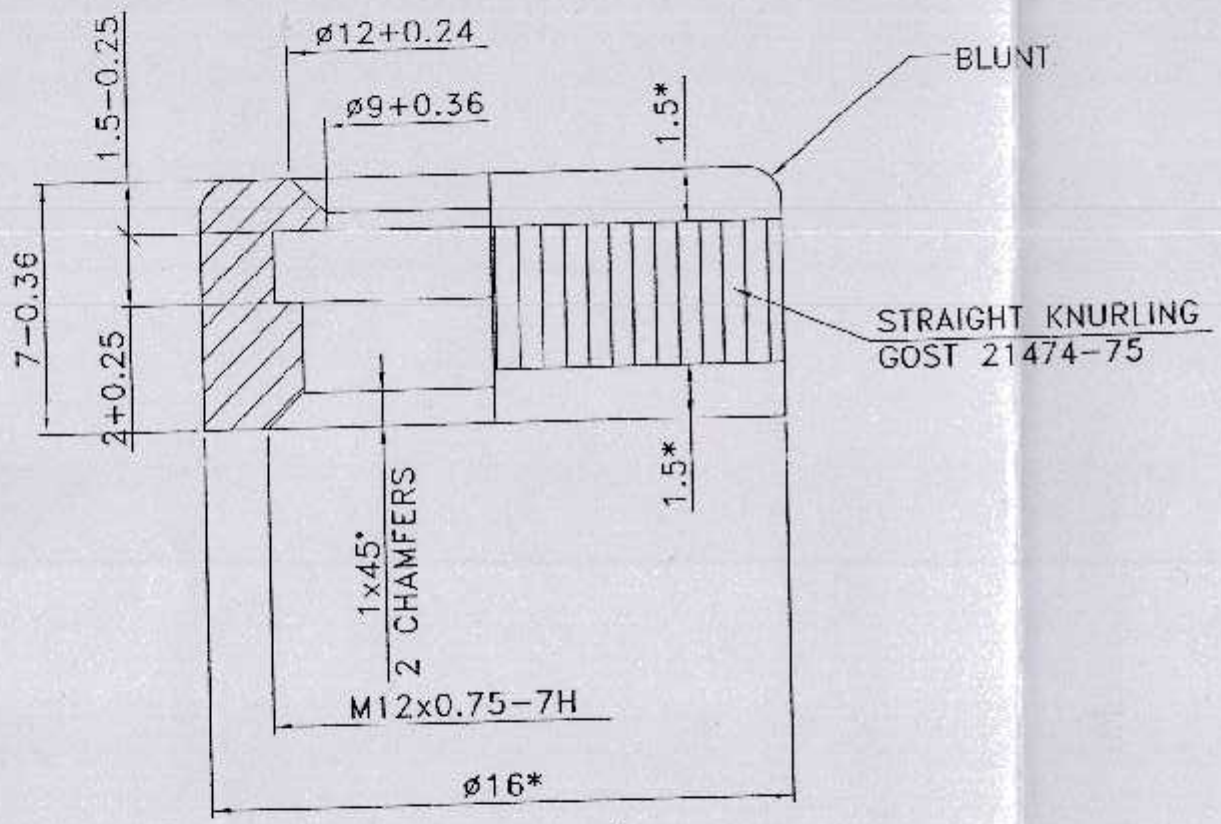
CVR225-1019

CLASS OF DEVIATION	ANGLE UP TO 10 DEGREE	ANGLE UP TO 10 mm per 100mm	OVER 10 TO 50 DEGREE	OVER 10 TO 50 mm per 100mm	OVER 50 TO 120 DEGREE	OVER 50 TO 120 mm per 100mm	OVER 120 DEGREE	OVER 120 mm per 100mm
FINE & MEDIUM	±1°	±1.8	±30'	±0.9	±20'	±0.6	±10'	±0.3
COARSE	±1°30'	±2.6	±50'	±1.5	±25'	±0.7	±15'	±0.4
EXTRA COARSE	±3°	±5.2	±2°	±3.5	±1°	±1.8	±30'	±0.9

CLASS OF DEVIATION	LINEAR DIMS 0.5-03	03-06	06-30	30-120	120-315	315-1000	1000-2000
FINE	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5
MEDIUM	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2
COARSE	-	±0.2	±0.5	±0.8	±1.2	±2	±3
EXTRA COARSE	-	±0.5	±1	±1.5	±2	±3	±4

CLASS OF DEVIATION	RADII-CHAMF 0.5-03	03-06	06-30	30-120	120-315
FINE & MEDIUM	±0.2	±0.5	±1	±2	±4
COARSE & EX-COARSE	±0.2	±1	±2	±4	±6

**



TECHNICAL CONDITIONS

1 COATING:- ANOD COATING OXIDATION

2 UNSPECIFIED DEVIATION LIMITS OF DIMENSIONS ARE AS PER CM7

3 *DIMENSION IS FOR REFERENCE

15/01/14

ROUGHNESS SYMBOL	~	▽	▽▽	▽▽▽	▽▽▽▽
ROUGHNESS VALUE	25-50	6.3-25	0.8-6.3	0.1-0.8	< 0.1

ISSUE	AMENDMENTS
Est.Wt:-	0.0647
STAMP PART No. & MANUFACTURER'S NAME & YEAR AT	If
REMOVE ALL BURRS	
USED ON	CVR225-Cb1001Cb
DRG. NO.	CVR225-1019

MATL:- ROD, Д1ТКР 16H x2000 GOST 21488-76

DRN. H.N. Thulasiammal | DIMENSIONS IN mm.

CHD. S. Saravanan | DRG. NOT TO BE SCALED

PASSED. K. Arunmozhi | SCALE: 2:1

APPROVED. | DATE: 08.01.13

TITLE

NUT

COMBAT VEHICLES RESEARCH & DEVELOPMENT ESTABLISHMENT

CAD FILE NAME: CVR225-1019 A3

REF.DRG.No.:- 8ДБ.947.000

REF No.	DESIGNATION	DESCRIPTION	DS CAT NUMBER	US EQUIVALENT	QTY	REMARKS
		TECHNICAL DOCUMENTS				
	CVR225 Cb1002Cb	BODY (ASSY.DRAWING)				
		TECHNICAL PAPERS				
		PARTS				
1	CVR225-1009	BODY			1	
2	CVR225-1020	RHOMBUS			3	IT-37

USED ON CVR225-Cb1001Cb

OLD REF. 5D6.002.006

ISSUE

DC[N] No.&DATE	ISSUE	NATURE

DRN	CHD	APD	DATE
H.N. Thulasi	S. Saravanan	K. Arumugam	15.03.13

DRG.No. CVR225-Cb1002

DS CAT No.

TITLE BODY (ASSEMBLY DRAWING)

SHT	SHTS
1	1

COMBAT VEHICLES RESEARCH AND DEVELOPMENT ESTABLISHMENT

CAD FILE NAME: CVR225-Cb1002Cb A3

CVR225 -Cb1002Cb

CLASS OF DEVIATION / ANGLE	UP TO 10		OVER TO 50		OVER 50 TO 120		OVER 120	
	DEGREE	mm per 100mm	DEGREE	mm per 100mm	DEGREE	mm per 100mm	DEGREE	mm per
FINE & MEDIUM	±1°	±1.8	±30'	±0.9	±20'	±0.6	±10'	±0.3
COARSE	±1°30'	±2.6	±60'	±1.5	±25'	±0.7	±15'	±0.4
EXTRA COARSE	±3°	±5.2	±2°	±3.5	±1°	±1.8	±30'	±0.9

CLASS OF DEVIATION / LINEAR DIMS	0.5-03	03-06	06-30	30-120	120-315	315-1000	1000-2000
FINE	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5
MEDIUM	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2
COARSE	--	±0.2	±0.5	±0.8	±1.2	±2	±3
EXTRA COARSE	--	±0.5	±1	±1.5	±2	±3	±4

CLASS OF DEVIATION / RADII+CHAMF	0.5-03	03-06	06-30	30-120	120-315
FINE & MEDIUM	±0.2	±0.5	±1	±2	±4
COARSE & EX-COARSE	±0.2	±1	±2	±4	±8

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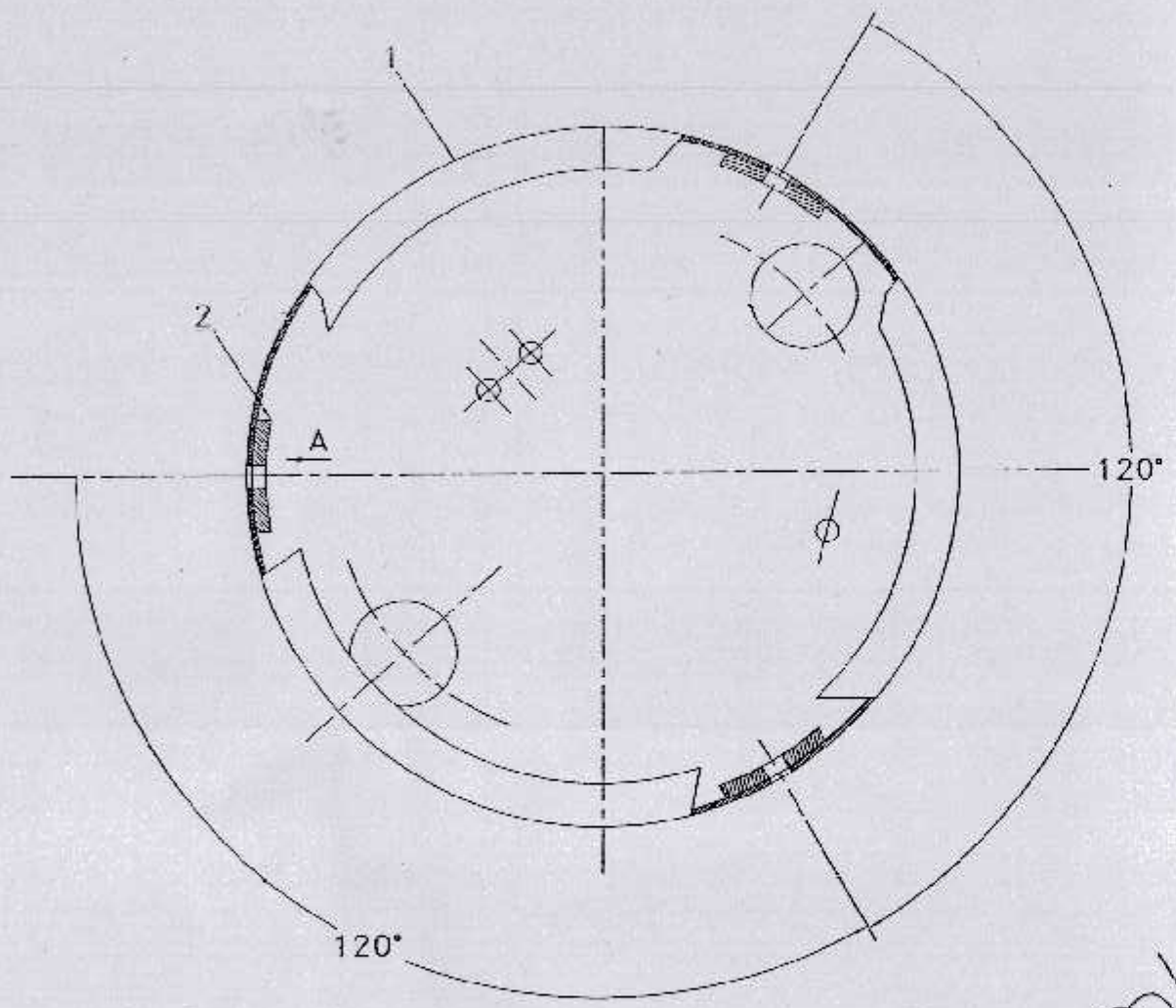
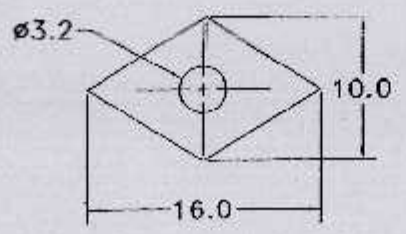


VIEW–A



ISSUE

ROUGHNESS SYMBOL						ISSUE	AMENDMENTS
ROUGHNESS VALUE	25–50	6.3–25	0.8–6.3	0.1–0.8	< 0.1		
MATL:– BAND 10–M–HT2–0–K1 GOST						Est.Wt:–	
DRN. H.N.Thulasiammal	DIMENSIONS IN mm.					STAMP PART No. & MANUFACTURER'S NAME & YEAR AT #	
CHD. S.Saravanan	DRG. NOT TO BE SCALED					REMOVE ALL BURRS	
PASSED. K.Arunmozhi	SCALE: 1:1					USED ON CVR225–Cb1001Cb	
APPROVED.	DATE: 31.12.12					DRG. NO. CVR225–Cb1002Cb	
TITLE BODY (ASSEMBLY DRG.)							
COMBAT VEHICLES RESEARCH & DEVELOPMENT ESTABLISHMENT							

REF:– 5ДБ.002.006СБ

CAD FILE NAME: CVR225–1009 A3

CVR225-1009

CLASS OF DEVIATION / ANGLE	UP TO 10 DEGREE	UP TO 10 mm per 100mm	OVER 10 TO 50 DEGREE	OVER 10 TO 50 mm per 100mm	OVER 50 TO 120 DEGREE	OVER 50 TO 120 mm per 100mm	OVER 120 DEGREE	OVER 120 mm per
FINE & MEDIUM	±1°	±1.8	±30'	±0.9	±20'	±0.6	±10'	±0.3
COARSE	±1°30'	±2.6	±50'	±1.5	±25'	±0.7	±15'	±0.4
EXTRA COARSE	±3'	±5.2	±2°	±3.5	±1°	±1.8	±30'	±0.9

CLASS OF DEVIATION / LINEAR DIMNS	0.5-03	03-06	06-30	30-120	120-315	315-1000	1000-2000
FINE	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5
MEDIUM	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2
COARSE	–	±0.2	±0.5	±0.8	±1.2	±2	±3
EXTRA COARSE	–	±0.5	±1	±1.5	±2	±3	±4

CLASS OF DEVIATION / RADII-CHAMF	0.5-03	03-06	06-30	30-120	120-315
FINE & MEDIUM	±0.2	±0.5	±1	±2	±4
COARSE & EX-COARSE	±0.2	±1	±2	±4	±8

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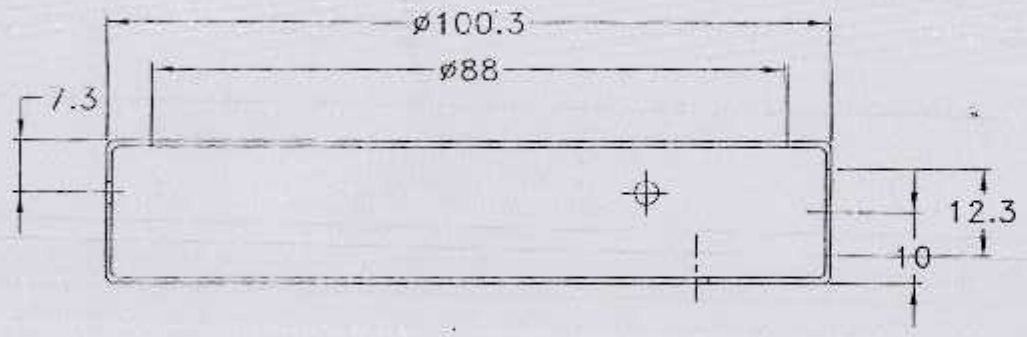
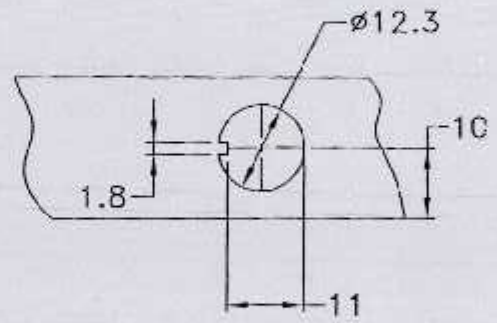
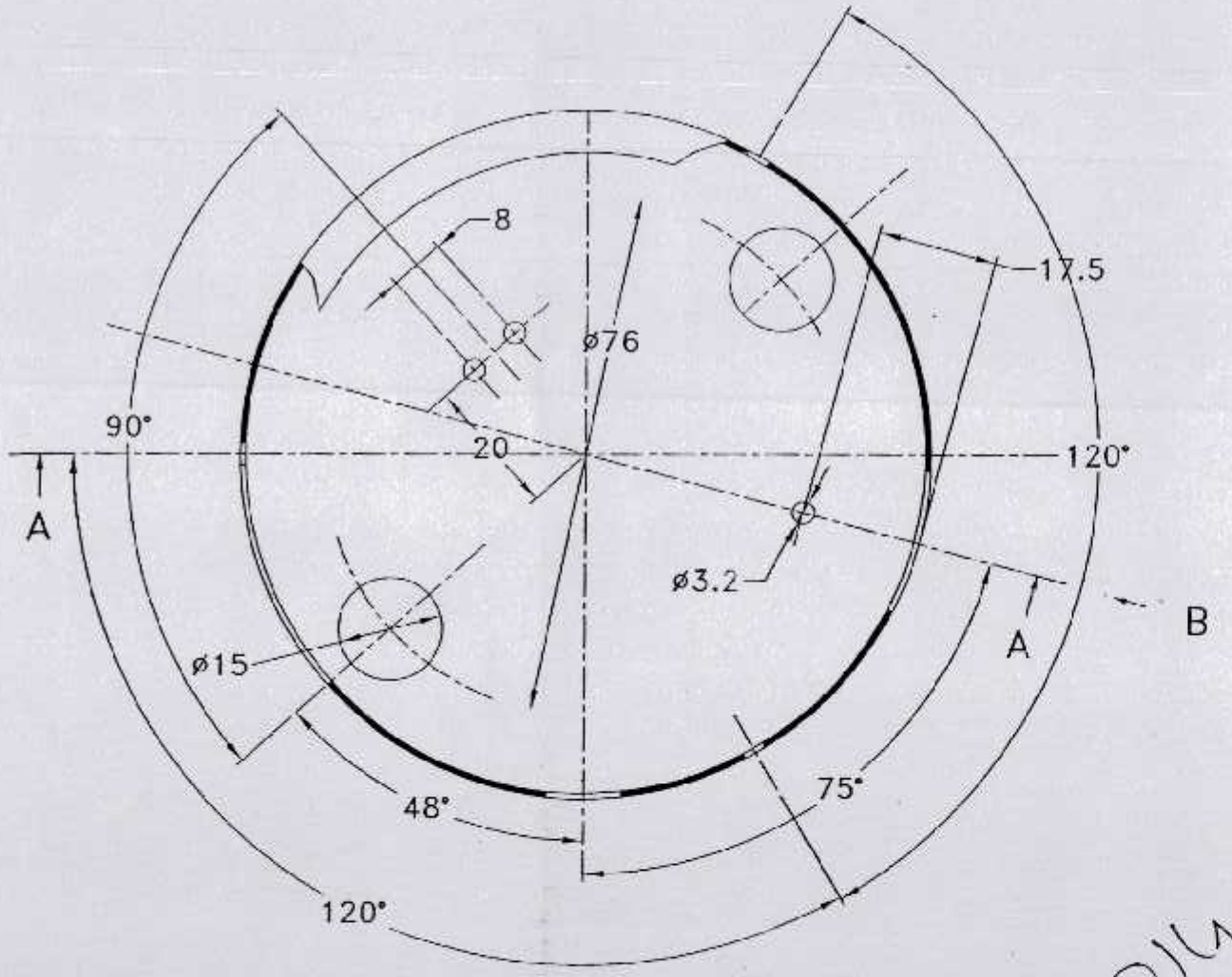
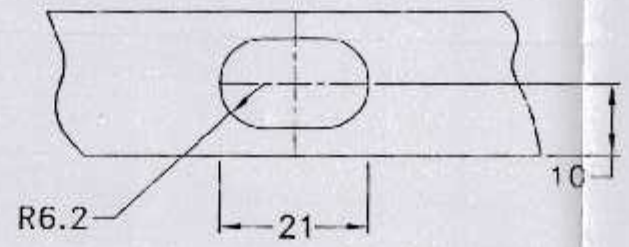




VIEW – A





VIEW – B

ROUGHNESS SYMBOL						ISSUE	AMENDMENTS
ROUGHNESS VALUE	25–50	6.3–25	0.8–6.3	0.1–0.8	< 0.1		
MATL:– BAND 10–M–HT2–0–K1 GOST						Est.Wt:–	
DRN. H.N.Thulasiammal	DIMENSIONS IN mm.					STAMP PART No. & MANUFACTURER'S NAME & YEAR AT #	
CHD. S.Saravanan	DRG. NOT TO BE SCALED					REMOVE ALL BURRS	
PASSED. K.Arunmozhi	SCALE: 1:1					USED ON	
APPROVED.	DATE: 31.12.12					CVR225–Cb1002Cb	
TITLE	BODY					DRG. NO.	CVR225–1009

COMBAT VEHICLES RESEARCH & DEVELOPMENT ESTABLISHMENT

CAD FILE NAME: CVR225-1009 A3

REF:– CDE

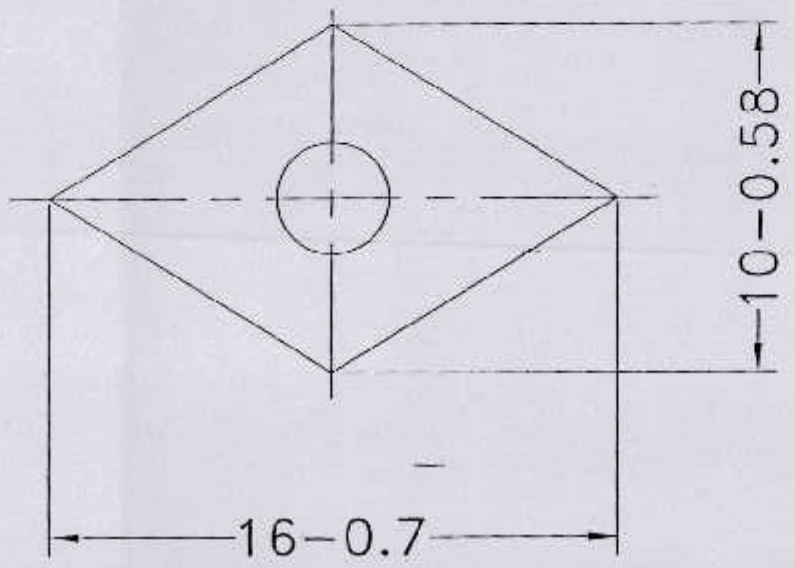
CVR225-1020

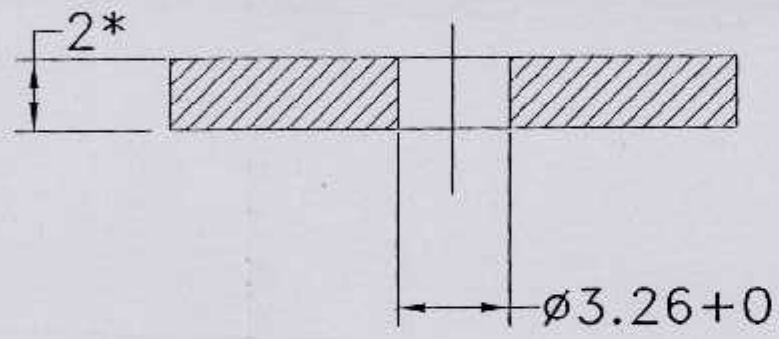
ANGLE / CLASS OF DEVIATION	UP TO 10 DEGREE	UP TO 10 mm per 100mm	OVER 10 50 DEGREE	OVER 10 50 mm per 100mm	OVER 50 TO 120 DEGREE	OVER 50 TO 120 mm per 100mm	OVER 120 DEGREE	OVER 120 mm per
FINE & MEDIUM	±1'	±1.8	±30'	±0.9	±20'	±0.6	±10'	±0.3
COARSE	±1'30'	±2.6	±50'	±1.5	±25'	±0.7	±15'	±0.4
EXTRA COARSE	±3'	±5.2	±2'	±3.5	±1'	±1.8	±30'	±0.9

LINEAR DIMNS / CLASS OF DEVIATION	0.5–03	03–06	06–30	30–120	120–315	315–1000	000–2000
FINE	±0.05	±0.05	±0.1	±0.1.5	±0.2	±0.3	±0.5
MEDIUM	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2
COARSE	–	±0.2	±0.5	±0.8	±1.2	±2	±3
EXTRA COARSE	–	±0.5	±1	±1.5	±2	±3	±4

RADII–CHAMF / CLASS OF DEVIATION	0.5–03	03–06	06–30	30–120	120–315
FINE & MEDIUM	±0.2	±0.5	±1	±2	±4
COARSE & EX-COARSE	±0.2	±1	±2	±4	±8

**





* DIMENSION FOR REFERENCE

ISSUE 4

REF.DRG.No.:- ДIIII01-03

ROUGHNESS SYMBOL	~	▽	▽▽	▽▽▽	▽▽▽	ISSUE / AMENDMENTS
ROUGHNESS VALUE	25–50	6.3–25	0.8–6.3	0.1–0.8	< 0.1	
MATL:- BAND 10-M-HT-4-0-2 GOST 503-71						Est.Wt:- 0.0012
DRN. H.N.Thulasiammal	DIMENSIONS IN mm.					STAMP PART No. & MANUFACTURER'S NAME & YEAR AT #
CHD. S.Saravanan	DRG. NOT TO BE SCALED					REMOVE ALL BURRS
PASSED. K.Arunmozhi	SCALE: 5:1					USED ON 1002 CVR225-Cb1001Cb
APPROVED.	DATE: 08.01.13					DRG. NO. CVR225-1020
TITLE: RHOMPAS						

COMBAT VEHICLES RESEARCH & DEVELOPMENT ESTABLISHMENT

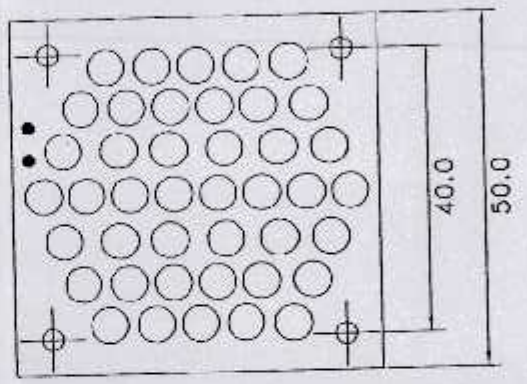
CAD FILE NAME: CVR225-1020 A3

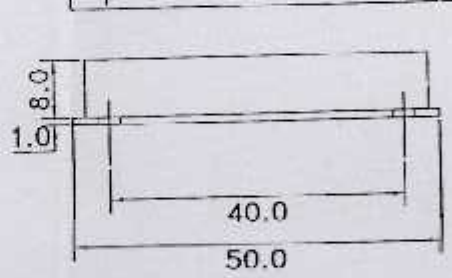
CVR225-Cb1003Cb

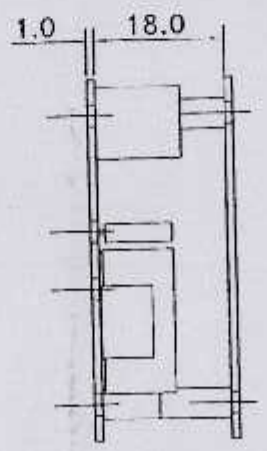
CLASS OF DEVIATION / ANGLE	UP TO 10 DEGREE	UP TO 10 mm per 100mm	OVER 10 TO 50 DEGREE	OVER 10 TO 50 mm per 100mm	OVER 50 TO 120 DEGREE	OVER 50 TO 120 mm per 100mm	OVER 120 DEGREE	OVER 120 mm per
FINE & MEDIUM	±1°	±1.8	±30'	±0.9	±20'	±0.6	±10'	±0.3
COARSE	±1°30'	±2.6	±50'	±1.5	±25'	±0.7	±15'	±0.4
EXTRA COARSE	±3'	±5.2	±2'	±3.5	±1°	±1.8	±30'	±0.9

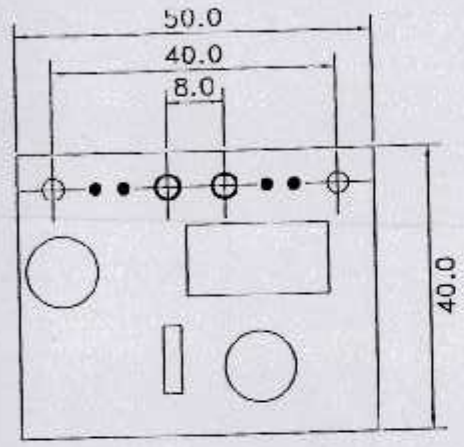
CLASS OF DEVIATION / LINEAR DIMS	0.5-03	03-06	06-30	30-120	120-315	315-1000	1000-2000
FINE	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5
MEDIUM	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2
COARSE	-	±0.2	±0.5	±0.8	±1.2	±2	±3
EXTRA COARSE	-	±0.5	±1	±1.5	±2	±3	±4

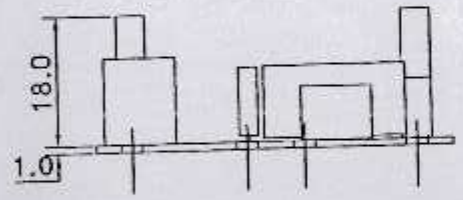
CLASS OF DEVIATION / RADII-CHAMF	0.5-03	03-06	06-30	30-120	120-315
FINE & MEDIUM	±0.2	±0.5	±1	±2	±4
COARSE & EX-COARSE	±0.2	±1	±2	±4	±8











ROUGHNESS SYMBOL					
ROUGHNESS VALUE	25-50	6.3-25	0.8-6.3	0.1-0.8	< 0.1

MATL:- ---			Est.Wt:-
DRN. H.N. Thulasiammal	DIMENSIONS IN mm.		STAMP PART No. & MANUFACTURER'S NAME & YEAR AT #
CHD. S. Saravanan	DRG. NOT TO BE SCALED		REMOVE ALL BURRS
PASSED. K. Arunmozhi		SCALE: 1:1	USED ON CVR225-Cb1000Cb
APPROVED.		DATE: 15.03.13	DRG. NO. CVR225-Cb1003Cb
TITLE ASSY LED UNIT			

ISSUE	AMENDMENTS

COMBAT VEHICLES RESEARCH & DEVELOPMENT ESTABLISHMENT

CAD FILE NAME: CVR225 Cb1003Cb

A3