

RESTRICTED

CERTIFICATE

Certified that the specification No. VFJ/R&D/LA/SP/BPV/GLASS/SML(4X4) for bullet proof glasses for the bullet proofed SML (4X4) has been created on 14th June 2019. It contains 07 pages and they have been serially numbered from serial No. 01 to 07.



(J.P. SINGH)

**JOINT GENERAL MANAGER
VEHICLE FACTORY, JABALPUR**

BULLET PROOF GLASSES FOR BP SML (4X4)

01. SCOPE:

This specification pertains to supply of 50mm thick splinter proof bullet proof glass for BP SML (4X4) vehicle.

02. PROTECTION:

Bullet proof glass of 50mm +1mm thick (fitted with rubber beading) should provide protection against 7.62 SLR, Nato Ball ammunition with muzzle velocity 838 +8 meters per second (approx) from a distance of 10 meters.

03. MATERIAL CONDITION:

- i. All glasses should be made by using minimum 4mm thick silicon coated, optical quality, scratch proof poly carbonate sheets, Certificate from original manufacturer of poly carbonate sheet with batch number etc, should be furnished by the supplier. The glasses should be splinter proof.
- ii. No water, air or dust layers should form inside the glass and for the same, the manufacturer/supplier is required to furnish three years guarantee.
- iii. The glasses should be free from defects such as cracks, pock marks, sand/silicon marks, scratches, visual distortions, dust particles, trapped moisture etc, on inner/outer surface of all layers.
- iv. The bullet proof glasses shall be fixed in the frames and fitted on the vehicle strictly as per manufacturer's specifications/advice at Vehicle Factory Jabalpur. In spite of this, if the glass develop cracks within a period of 3 years from the date of purchases, the manufacturer shall be liable to give free replacement.

04. TRANSPERANCY:

The Bullet proof glass should be fully transparent without any colour tint. The refractive index of the glass should provide distortion-free single image visual characteristic.

BULLET PROOF GLASSES FOR BP SML (4X4)

05. INSPECTION:

- i. By Sr. GM/VFJ or his authorised representative at VFJ for dimensional, visual, fitment of rubber beading on the glass and for ballistic test.
- ii. One sample of bullet proof glass of size 500mmx500mm should be supplied free of cost along with each lot of 10 sets or part there off. The sample should be true representative of bulk in respect of material, thickness and the manufacturing process. This sample will be ballistic tested at Vehicle factory Jabalpur end. (Manufactures representative can be allowed to be present during ballistic test on request, if required) If the sample fails in ballistic test, the entire lot supplies will be rejected at the cost of supplier.
- iii. The sample should withstand 3 rounds of fire at minimum distance of 120 mm from each other.
- iv. The supplier should furnish test certificate with each lot of bullet proof glasses clearly indicating the tests carried out and a certificate of guarantee that bullet proof glass will withstand fire from the weapons as stipulated in para 2 and 5(iii).
- v. If the bullet as specified in para 2, penetrates the sample and passes through the full thickness of the glass causing a through hole, it will be considered as a failure of bullet proof glass.
- vi. If the bullet shatters the glass and lodges inside, without coming out of it and causing a hole on front hit surface, it will be considered acceptable. However, if the glass film on the back side/opposite surface shatters, it will be considered as failure of the bullet proof glass.
- vii. As regard presence of scratches, lint, black spot, interlayer defects and cracks in the bullet proof glasses, it will be inspected as per IS 2553 (part-2)-1992-para 5.1.5.
- viii. The bullet proof glasses should be free from the presence of virtual scratches arising due to lack of process control.

BULLET PROOF GLASSES FOR BP SML (4X4)

6. RUBBER BEADING:

i. Rubber beading to be supplied by the firm along with bullet proof glasses. For wind shield glass (Drg No. LA/BPV/SML/GLASS/001), driver co-driver glasses (Drg No. LA/BPV/SML/GLASS/002), side glasses (Drg No. LA/BPV/SML/GLASS/003), and rear glasses (Drg No. LA/BPV/SML/GLASS/004) along with rubber beading to be supplied by firm as shown in bullet proof glass drawings. Drawings referred herein form an integral part of this specification.

ii. All bullet proof glasses including wind shield glass should be supplied with rubber beading having not more than one joint in assembled condition.

Rubber Details:

- a) Type of Rubber : Neoprene/EPDS
- b) Shore hardness : 65 + 5 at the time of receipt
- c) Tensile strength : 70 + 5 kg/Sq.Cm.
- d) Elongation : 300% + 10 min.
- e) Poly content : 60% min.

7. PACKING:

Glasses are to be packed for safe transportation. Any damage during transportation will be at the cost of the supplier.

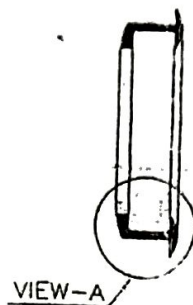
8. GENERAL:

1. Sr. GM/VFJ reserve the right to randomly select a test from the bulk at any point of time for ballistic test and reject the complete lot if this random sample fails even if the original sample was found acceptable during the ballistic test.

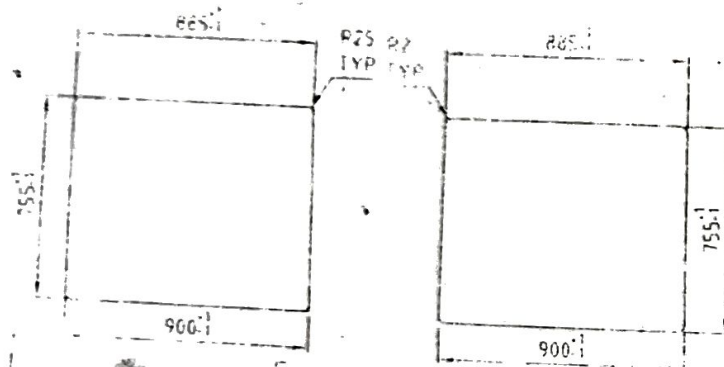
2. In case the lot is found acceptable on ballistic testing, the expended piece has to be replenished by the supplier free of cost to make good the set.

3. The supplier must fix his monogram and indicate serial No. & year of the manufacture of each glass to ensure traceability.

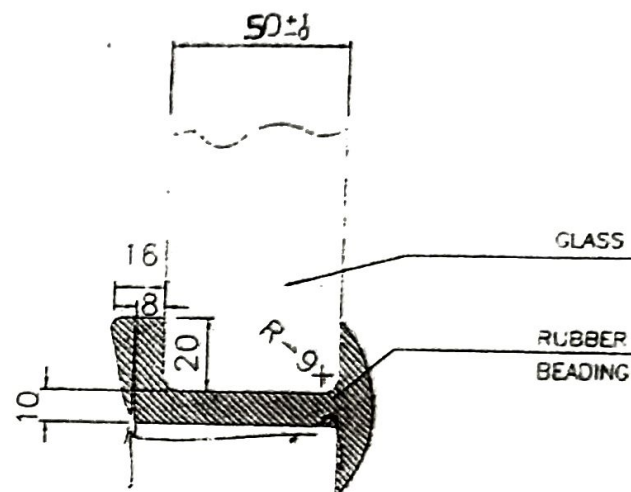
ASSEMBLY DRAWING OF
• GLASS WITH RUBBER BEADING



VIEW-A

 -50 ± 1

R10
TYP



ENLARGED VIEW-A

CLASS DRAWING

4012

- 1 ALL DIMENSIONS ARE IN MM
- 2 TOLERANCE ON UNSPECIFIED DIMENSIONS ARE ± 1 mm.
- 3 REFER SPECIFICATION NO VVJ 14D/LA/SP/BPV/GU
- 4 GLASS SHOULD GIVE NIL LEVEL 4 PROTECTION AGAINST 762 SLR FROM 10 METRE DISTANCE
- 5 GLASS SHOULD BE SPUNTER PROOF TYPE
- 6 GLASS TO BE SUPPLIED WITH MOUNTED RUBBER FACING FITTED WITH THE GLASS

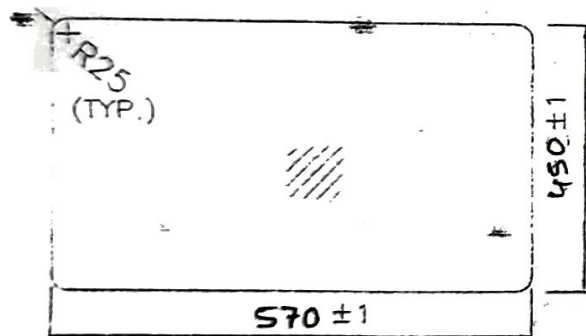
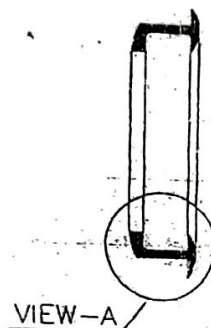
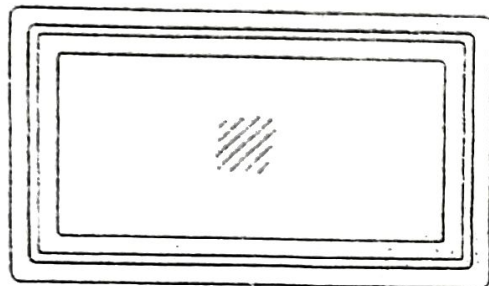
dtd 14/06/19

ITEM			DESCRIPTION			NO. OFF	MAT	STD.	QUANTITY/VEH. = 02 NO.			
INDEX			ALTERATION			DATE		SIGN.	SIZE / WT	REMARKS		
DIM ^{mm}	TOL	WIND SHIELD BULLET PROOF GLASS WITH RUBBER BEADING FOR SML (174)							yes	174		
0-30	±0.1								OKD	APPD		
30-250	±0.2								REF ORG. NO.		1:1 SCALE	
250-800	±0.3								MACHINE			
800-2000	±0.5										1:1 SHTS	
±2000	±0.8											
GEN. TOL.		V D O							VEHICLE FACTORY JABALPUR			
									ORG. NO. LA / BPI / SML			

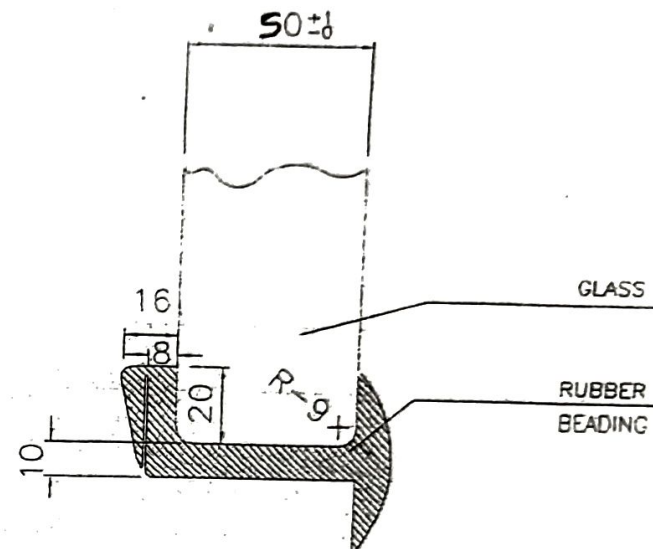
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REF NO. LA/BPV/SML/GLASS/002

ASSEMBLY DRAWING OF
GLASS WITH RUBBER BEADING



GLASS DRAWING



ENLARGED VIEW-A

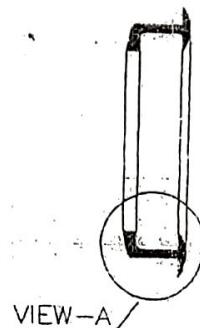
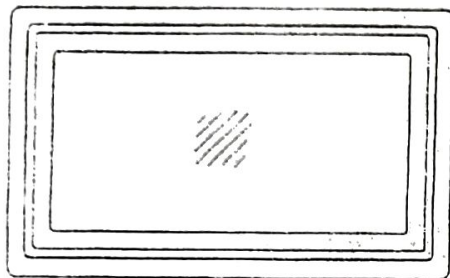
NOTE:

1. ALL DIMENSIONS ARE IN MM.
2. TOLERANCE ON UNSPECIFIED DIMENSIONS ARE ± 1 mm.
3. REFER SPECIFICATION NO: VFJ/R4D/LA/SP/BPV/GLASS/SML(4TY)
and 14/06/19
4. GLASS SHOULD GIVE NIJ LEVEL III PROTECTION AGAINST 7.62 SLR FROM 10 MTRS. DISTANCE.
5. GLASS SHOULD BE SPLINTER PROOF TYPE.
6. GLASS TO BE SUPPLIED WITH MOULDED RUBBER BEADING FITTED WITH THE GLASS.

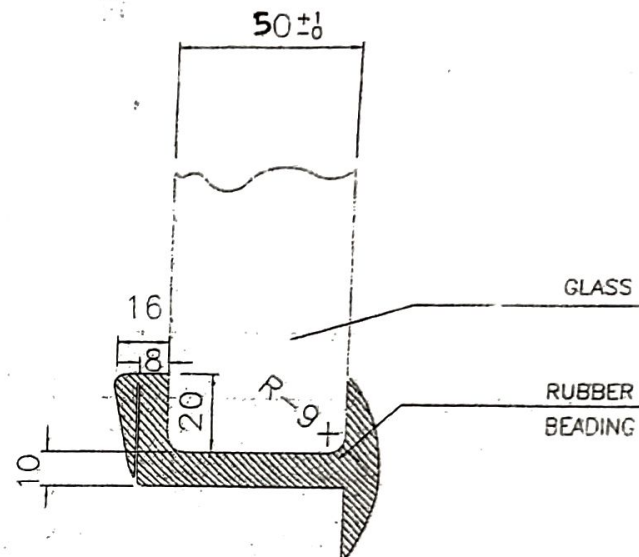
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ITEM	DESCRIPTION	NO. OFF	MAT.	STD.	SIZE / WT.	REMARKS	
INDEX	ALTERATION	DATE	SIGN.		CHKD.	APPD.	
DIM.	TOL.						
0-30	± 0.1						
30-250	± 0.2						
250-800	± 0.3						
800-2000	± 0.5						
>2000	± 0.8						
	GEN. TOL.						
V. D. O.	VEHICLE FACTORY JABALPUR				DRG. NO. - LA/BPV/SML/GLASS/002		

DRG. NO. LA/BPV/SML/GLASS/003

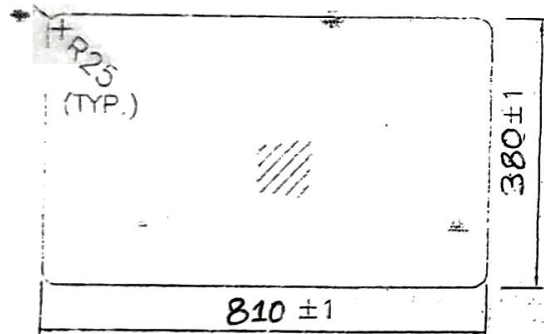
ASSEMBLY DRAWING OF
GLASS WITH RUBBER BEADING



VIEW-A



ENLARGED VIEW-A



GLASS DRAWING

NOTE:

1. ALL DIMENSIONS ARE IN MM.
2. TOLERANCE ON UNSPECIFIED DIMENSIONS ARE ± 1 mm.
3. REFER SPECIFICATION NO: VFJ/R4D/LA/SP/BPV/GLASS/SML(1x4)
4. GLASS SHOULD GIVE NJ LEVEL III PROTECTION AGAINST 7.62 SLR FROM 10 MTRS. DISTANCE.
5. GLASS SHOULD BE SPLINTER PROOF TYPE.
6. GLASS TO BE SUPPLIED WITH MOULDED RUBBER BEADING FITTED WITH THE GLASS.

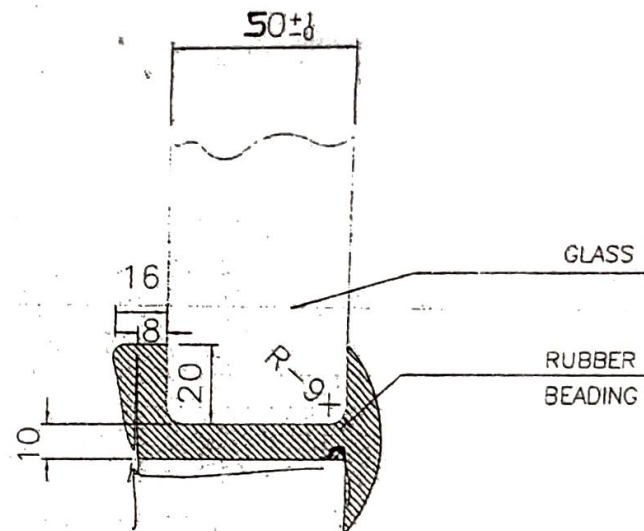
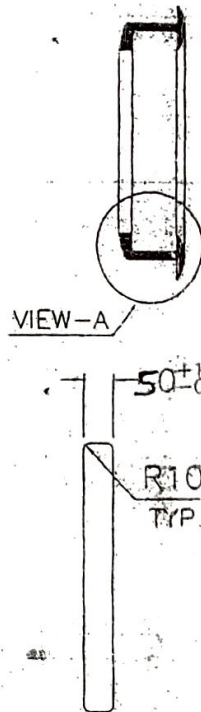
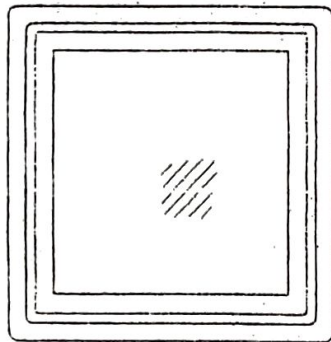
4/14/06/19

						QUANTITY/VEH. = 04 NO.	
ITEM	DESCRIPTION	NO. OFF	MAT.	STD.	SIZE / WT.	REMARKS	
INDEX	ALTERATION	DATE	SIGN.	DRG. CKD.	APPD.		
DIM.	TOL.	BULLET PROOF GLASS SIDES WITH RUBBER BEADING FOR SML(1x4)				REF. DRG. NO.	1:1 SCALE
0-30	±0.1						
30-250	±0.2						
250-800	±0.3					MACHINE	
800-2000	±0.5						
>2000	±0.8						1/1 SHTS.
GEN. TOL.							
V. D. O.	VEHICLE FACTORY JABALPUR					DRG. NO. - LA/BPV/SML/GLASS/003	

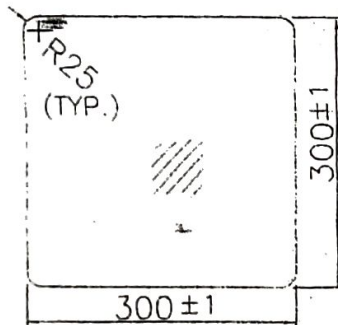
DRG.NO.- LA BAV SML GLASS 004

ASSEMBLY DRAWING OF

• GLASS WITH RUBBER BEADING



ENLARGED VIEW-A



GLASS DRAWING

NOTE:

1. ALL DIMENSIONS ARE IN MM.
2. TOLERANCE ON UNSPECIFIED DIMENSIONS ARE ± 1 mm.
3. REFER SPECIFICATION NO: VFJ/R4D/LA/SPI BPV/GU
4. GLASS SHOULD GIVE NIJ LEVEL III PROTECTION AGAINST 7.62 SLR FROM 10 MTRS. DISTANCE.
5. GLASS SHOULD BE SPLINTER PROOF TYPE.
6. GLASS TO BE SUPPLIED WITH MOULDED RUBBER BEADING FITTED WITH THE GLASS.

						QUANTITY/VEH. = 02 NO.	
ITEM	DESCRIPTION		NO. OFF	MAT.	STD.	SIZE / WT	REMARKS
INDEX	ALTERATION			DATE	SIGN.	QTY. CKD.	APPD.
DIMS. TOL.	BULLET PROOF GLASS REAR WITH RUBBER BEADING FOR -S.M.L. (HY)					REF DRG. NO.	1:1 SCALE
0-30" ±0.1							
30-250" ±0.2							
250-800" ±0.3							
800-2000 ±0.5							
>2000 ±0.8						MACHINE	
GEN. TOL.							1/1 SHTS.
V. D. O.	VEHICLE FACTORY JABALPUR					DRG. NO. LA/BA/SML/GLASS/004	