

**ANNEX - A TO**  
**BOF TENDER NO 23.27.0000.167.169.3256105.23.24**  
**DATED 07 OCTOBER 2023**

**SPECIFICATION OF PERCUSSION CAP & DETONATOR CUP FOR HE FUZE OF GRENADE HAND**  
**ARGES-84 BD HE**

<b>Ser</b>	<b>Nomenclature &amp; Specification</b>	<b>A/U</b>	<b>Qty</b>
1.	<p>Percussion Cap : <b>As per attached drawing.</b></p> <p><b>Condition:</b></p> <ol style="list-style-type: none"> <li>1. Must be compatible with HE Fuze of Grenade Hand Arges 84-BD HE.</li> <li>2. The Bidder / supplier will assemble at least 5000 Fuze by our existing Fuze assembly plant at BOF site.</li> <li>3. The bidder should submit complete drawing of the Percussion Cap with all dimensions of all components with the offer.</li> <li>4. Detail composition of the Percussion Cap filling should be given with the offer.</li> <li>5. Inspection procedure in English and 3 sets of gauge for inspection of Percussion Cap to be supplied with the store.</li> <li>6. Suitability certificate to the effect that the offered stores would be brand new, free from impurities, suitable for use with Grenade Hand Arges-84, BD HE and suitable for use in tropical climate to be submitted by manufacturer with the stores.</li> <li>7. Certificate of year of manufacture from manufacturer to be supplied with the store.</li> <li>8. Safe storage certificate from the manufacturer of offered Percussion Cap to the effect that the stores should be safe in storage, transportation and should not cause health hazard to the user to be submitted with the stores.</li> <li>9. Shelf life of 15 (Fifteen) years from the date of manufacture of the components and the filling to be submitted by the supplier.</li> <li>10. Shelf life certificate of offered Percussion Cap from the manufacturer to be submitted with the supply of stores.</li> </ol>	No	4,00,000

Ser	Nomenclature & Specification	A/U	Qty
2.	<p><b>Detonator Cup: As per attached drawing</b></p> <p><b>Condition:</b></p> <ol style="list-style-type: none"> <li>1. Must be compatible with HE Fuze of Grenade Hand Arges 84-BD HE.</li> <li>2. The Bidder / supplier will assemble at least 5000 Fuze by our existing Fuze assembly plant at BOF site.</li> <li>3. The bidder should submit complete drawing of the Detonator Cup with all dimensions of all components with the offer.</li> <li>4. Detail composition of the Detonator Cup filling should be given with the offer.</li> <li>5. Inspection procedure in English and 3 sets of gauge for inspection of Detonator Cup to be supplied with the store.</li> <li>6. Suitability certificate to the effect that the offered stores would be brand new, free from impurities, suitable for use with Grenade Hand Arges-84, BD HE and suitable for use in tropical climate to be submitted by manufacturer with the stores.</li> <li>7. Certificate of year of manufacture from manufacturer to be supplied with the store.</li> <li>8. Safe storage certificate from the manufacturer of offered Detonator Cup to the effect that the stores should be safe in storage, transportation and should not cause health hazard to the user to be submitted with the stores.</li> <li>9. Shelf life of 15 (Fifteen) years from the date of manufacture of the components and the filling to be submitted by the supplier.</li> <li>10. Shelf life certificate of offered Detonator Cup from the manufacturer to be submitted with the supply of stores.</li> </ol>	No	4,00,000
	<p><b><u>Condition:</u></b></p> <ol style="list-style-type: none"> <li>a. <b>Country of Origin : Austria, Serbia, Pakistan, Bosnia &amp; Herzegovina, UK, USA, Canada, Australia, France, Germany, Turkiye, Italy and Poland.</b></li> <li>b. Name of Principal : To be mentioned.</li> <li>c. Name of Manufacturer : To be mentioned.</li> <li>d. <b>All Items are treated as a package and offer to be submitted as package.</b></li> <li>e. Port of Shipment : Country of Manufacturer.</li> <li>f. Offer Validity : 180 days from tender opening date.</li> <li>g. <b><u>Pre-Shipment Inspection:</u></b> <ol style="list-style-type: none"> <li>i. 3 (Three) members {2 (Two) members from BOF &amp; 1 (One) member from IA&amp;E} for a period of 5 (Five) workings days (Excluding journey period).</li> <li>ii. Supplier must submit detail plan of PSI (Modus Operandi).</li> <li>iii. Supplier must also mention PSI cost to be borne by them at their end.</li> <li>iv. If PSI is not carried out by the buyer due to any reason, then the Quality Assurance Certificate (QAC) original hard copy signed by the appropriate authority of the Quality Control Department of the manufacturer as per Annex L will have to be submitted at BOF end for obtaining Shipment Clearance.</li> </ol> </li> </ol>		

### **Terms & Conditions**

Supplier must mention their compliance on the following mentioned points :

1. A principal/manufacturer can submit **only one offer through one local agent** for any individual item. Offers through multiple local agents by same principle/manufacturer will be **treated as rejected**.
2. To ensure unhindered LC handling the principal must provide a certificate to confirm that their LC operating bank has RMA (Relationship Management Agreement) with the local scheduled Banks of Bangladesh

3. Supplier must **clearly mention** (in the technical offer) that as principal/manufacturer they poses necessary **export permit** from the concern ministry or **chamber of commerce** of their country. They must also submit a certificate in this regards as per the attached specimen format at Annex K.
4. Before signing the contract, foreign currency Performance Guarantee @ 10% of total LC value is to be submitted by the Principal in favour of Commandant, Bangladesh Ordnance Factories, Gazipur Cantonment, Gazipur through any scheduled Bank located in Bangladesh (As per the format at Annex H).
5. A separate **certificate should be provided** by the principal **originally signed** (Computerized or digitally edited signature will not be accepted) stating that they are aware of the requirement of the PG and if the contract is awarded they will be bound to provide the PG as per the format at Annex J, **otherwise administrative action will be taken against the principal and local agent.**
6. The stores should be supplied to BOF at **supplier's cost.**
7. If the supplier fails to deliver the stores within the stipulated period, the followings will be applicable:
  - a. Cancel the contract and/or,
  - b. Decision at the discretion of BOF.
8. Inspectorate is the authority in all matters pertaining to Inspection. Any verdict by the inspectors regarding rejection, acceptance, and /or deviation of machine involving price reduction will be treated as final and will not be subject to arbitration.
9. The Supplier must submit the following **attested documents** with the schedule :
  - a. **Trade License**
  - b. **Tin Certificate**
  - c. **Up to date VAT Registration certificate.**

**GENERAL REQUIREMENTS AND OTHER TERMS AND CONDITIONS FOR PERCUSSION CAP**  
**FOR HE FUZE OF GRENADE HAND ARGES-84 BD HE**

1. **General Requirements.**

- a. The store must be suitable for use in tropical climate. Certificate should be provided to this effect by the manufacturer along with the offer and stores.
- b. The year of manufacture of the store should be current year i.e contracted calendar year. Certificate should be provided to this effect by the manufacturer along with the offer and stores.
- c. The stores should be safe in storage, transportation etc and should not cause any health hazard. Certificate should be provided to this effect by the manufacturer along with the offer and stores.
- d. Guarantee Certificate for supply of stores as per offer to be provided by the manufacturer along with the offer and stores.
- e. Warranty and Shelf Life Certificate by the manufacturer as mentioned below should be furnished along with the offer and stores.
  - (i) **Warranty Certificate.** The supplied store must be brand new, free from all defects, good surface finished and that in the event of any shortage, defects/damages being found after inspection the stores should be replaced by the supplier at their own cost within 90 (Ninety) days of the case arises. The warranty period of the store will be 12 (Twelve) months from the date of issue of "Inspection Note" by IA&E (Final Acceptance).
  - (ii) **Shelf Life Certificate.** The Shelf Life of the Percussion Cap will be 15 (Fifteen) years from the date of manufacture. If the Percussion Cap is found defective within the shelf life, the Percussion Cap must be replaced by the supplier at their own cost within 6 (Six) months as the case arises.
- f. Packing Material to be such that it will not be affected by rust, damp, insects, fungus or any other harmful material during storage up to the shelf life. Certificate should be provided to this effect by the manufacturer along with the offer and stores.
- g. Maximum quantity of store in one lot is 50,000 nos.
- h. All markings and other details should be in English Language.
- j. All certificates and letters of authorization should be original and in English Language.
- k. Quality Control and Inspection Certificate by the manufacturer must be provided along with the offer and stores.
- l. IA&E will issue final Inspection Report within one month after receipt the stores at Consignee's end provided the Visual Inspection and Test Firing is satisfactory and the case of clarification/replacement, if any is settled as per Visual Inspection and Test Firing report are completed within the time (1 Month). Part Inspection Note will not be issued.

2. **Technical Specification.** The stores should be supplied as per drawing (Annex D).

3. **Catalogue/Brochure.** Original Catalogue/Brochure having technical information in English Language should be provided by the manufacturer along with the offer. Laminated/Computer Printed Catalogue/Brochure is not acceptable. Chemical composition of the stores should be mentioned in the offer.

4. **Quality Inspection and Test Criteria by manufacturer.** Detail of quality inspection and test criteria done by manufacturer for the components in factory side should be provided along with the offer.

5. **Packing.**

- a. As per international packing procedure of the factory standard.
- b. A Packing List/Note showing lot details and number of box against each lot should be furnished in each box.
- c. The stores are to be securely packed with sea worthy packing and clearly marked for safe transit by air/sea/road/rail. The box/package should have suitable means for holding by hands and should be easy to handle for storage and transportation.

6. **Marking on the Packing Box.**

- a. Following marking to be stenciled on the top of the boxes:
- (i). Consignee: Commandant, Bangladesh Ordnance Factories, Gazipur Cantonment, Bangladesh.
  - (ii) Contract number & dt: .....
  - (iii) Package number: 01/100, 02/100 and so on.
- b. Following marking to be stenciled on the front side of the box :
- (i) Number of stores packed.
  - (ii) Full nomenclature of the store.
  - (iii) Lot number & year of manufacturer, and factory code.
  - (iv) Govt explosive group (To be shown within a red circle).
  - (v) Dimension of the box.
  - (vi) Net weight of the store.
  - (vii) Gross weight of the box.
  - (viii) Safety distance category.
  - (ix) International Maritime Dangerous Goods (IMDG) Code with Explosion symbol.
  - (x) United Nation (UN) Number.
  - (xi) Country of Origin.

7. **Environmental Condition.**

- a. Storage temperature range : 0°C to +50°C.
- b. Storage humidity minimum : 95%.
- c. Operating temperature range : -5°C to +55°C.
- d. Operating humidity minimum : 95%.

8. **Pre-shipment Inspection (PSI).**

**a. PSI will be carried out at manufacturer's factory at the discretion of Purchaser. Air ticket, food, accommodation, medical and pocket money of PSI Team members will be borne by the Supplier.**

b. PSI will be carried out jointly by BOF and Inspectorate of Armaments & Explosive (IA&E) at the discretion of BOF authority. The team may be comprised of 3 (Three) members {2 (Two) members from BOF & 1 (One) member from IA&E} for a period of 5 (Five) working days excluding journey period. **Air ticket, food, accommodation, medical, pocket money of PSI team members, all internal movement arrangement and cost related to the inspection will be borne by the Supplier.** Supplier should inform about the date of PSI at least 8 (Eight) weeks to 15 (Fifteen) weeks (in respect of time required for obtaining visa of respective country) prior to the exact date of carrying out of PSI.

c. The PSI will be carried out at manufacturer's factory premises/plant. PSI should include visual inspection/checking of physical dimension, laboratory and functional test of the item, inspection of production line of same type of Percussion Cap. PSI Team will check all the parameters of the items as per technical requirements of the contract. All the equipment required for PSI team will be provided by the supplier.

d. PSI team will accept the stores provisionally, if the stores are found as per contractual requirement. PSI report will be vetted by both the vetting committee of BOF and IA&E.

e. If any deficiency/discrepancy found during vetting of PSI report, then deficiency/discrepancy items will be filled up or rectified by the supplier and will forward completion certificate to BOF. Then shipment clearance will be given by BOF. After necessary rectification 2<sup>nd</sup> PSI may be held, if deficiency/discrepancy items are major in nature. In that case supplier will bear all PSI cost including Daily Allowance (DA) of the PSI team members.

f. If the PSI is not carried out due to any reason of purchaser side then the Quality Assurance Certificate of "Quality Assurance Department" of the manufacturer will be considered as PSI report. In this case 60% payment will be made after shipment. Rest 40% payment will be made after satisfactory post shipment inspection report at BOF site. If the PSI cannot be carried out due to any reason of seller/supplier side then the QAC may be accepted but 100% payment will be made after final acceptance of the stores by purchaser's inspecting authority. If the stores are rejected during Post-shipment inspection, the stores will be replaced by the supplier at their own cost.

g. The PSI team will carry 200 nos Base Corpus (Without the Filling of Delay Element) from BOF for the suitability test in manufacturer factory. If PSI not carried out then 200 nos Base Corpus (Without the Filling of Delay Element) from BOF will be handed over to local agent to send to the manufacturer at their own responsibility and cost for suitability test in the manufacturer factory.

h. **QAC Related Original Documents/Certificates:** Following original documents/certificates are to be furnished with the QAC. All test/Inspection result/results which was/were conducted by the quality control department of manufacturer to be furnished including the following:

- (1) Certificate of country of origin.
- (2) Certificate of country of manufacture/assembly.
- (3) Certificate of year of production.
- (4) Certificate of warranty/guaranty as specified in the contract.
- (5) Certificate of quality assurance and genuineness.
- (6) Buy back certificate.
- (7) Functionality test certificate and test firing certificate for fulfillment the technical specification as per contract.
- (8) Laboratory test certificate for fulfillment of the technical specification as per contract.
- (9) Environmental suitability certificate (suitability for tropical climate, humidity tolerance, operating temperature, storage temperature, salinity resistance) for fulfillment the technical specification as per contract.
- (10) Packing list as per contract.
- (11) All other certificates as mentioned in the contract and any other as deemed necessary.

h. All documents/certificates will be original and duly signed and stamped.

9. **Pre-Shipment Inspection (PSI) Requirement.**

a. Functional test (Internal Proof Test Firing) of Percussion Cap should be carried out by the PSI team during PSI. Total 255x Percussion Cap (each lot) for functional test during PSI should be supplied by the supplier at free of cost.

b. Following test should be conducted by the supplier at the time of PSI for each lot of 50,000 nos (Percussion Cap):

Ser	Sort of Examination	Sample Size	Way of Conduction	Remarks
1.	Dimension checking and appearance	90 nos	Dimension checking according to drawing and visual appearance checking (brand new, rust/dirt free, fresh, spot/mark free etc).	All should be as per requirement
2.	Checking of the airtight/hermetic in assembly with Delay element	15 nos	Shocking in water with normal temperature on deepness 150 mm in duration of 2 minutes.	All should be fired
3.	Checking of the resistance on the high humidity in assembly with Delay element	15 nos	In hermetic sealed desicator with pure water (100% relative humidity) for 24 hours.	
4.	Checking of the abrupt influences of temperature changes in assembly with Delay element	15 nos	In climate chambers according to procedure, 3 cycles by 8 hours (+50°C, -30°C)	
5.	Exposure to extremes of temperature -30°C in assembly with Delay element	15 nos	Tempering at -30°C according to procedure for a period of 24±2 hours	

Ser	Sort of Examination	Sample Size	Way of Conduction	Remarks
6.	Exposure to ambient of temperature +21°C in assembly with Delay element	15 nos	Tempering at 21±1°C for a period of 8 hours	
7.	Exposure to extremes of temperature +50°C in assembly with Delay element	15 nos	Tempering at +50°C according to procedure for a period of 24±2 hours	
8.	Sensitivity test	15 nos	<u>Weight ball-55 gm, Height of dropping-300 mm</u> A weight of 55 gm ball to be dropped from a height of 300 mm on the Percussion Cap. All Percussion Caps must function. If one fails, the test will be repeated with equal number (15 pcs) of Percussion Caps. One failure in the retest will reject the Percussion Cap lot under test.	As per test
		15 nos	<u>Weight Ball-55 gm, Height of Dropping-55 mm</u> A weight of 55 gm ball to the dropped from a height of 55 mm on the Percussion Cap. No Percussion Caps should function. If one functions the test will be repeated with equal number (15 pcs) of Percussion Caps. One failure in the retest will reject the Percussion Cap lot under test.	
<b>Total</b>		<b>210 nos</b>	+30 nos for the retest (if required)	

c. Besides that any other test manufacturer wants to conduct as per factory standard and quality at the time of PSI. Required Percussion Cap and other components as deemed necessary will be provided by supplier free of cost for test firing.

#### 10. Post-Shipment Inspection Requirement.

a. Necessary Base Corpus with Delay Element should be provided by the supplier, with which Fuze will be manufactured and Post Shipment Inspection will be done as BOF standard given below:

##### Complete Fuze testing procedure (per lot 50,000 nos)

Ser	Name of Test	Duration of Immersion	Fuze Quantity	Remarks
1.	Room temperature test	-	20 nos	If one Fuze blinds/misfires, the test will be repeated with equal 20 nos of Fuzes. There must be no failure in the retest.
2.	+60°C temperature test	Min 3 hours or max 8 hours	10 nos	If one Fuze blinds/misfires, the test will be repeated with equal 10 nos of Fuzes. There must be no failure in the retest.
3.	-30°C temperature test	Min 3 hours or max 8 hours	10 nos	
4.	Thermal shock test (+60°C - 30°C +60°C)	Min 3 hours or max 9 Hours	5 nos	If one Fuze blinds/misfires, the test will be repeated with equal 5 nos of Fuzes. There must be no failure in the retest.
5.	Drop test	From 2 meter height	5 nos	There must not be any detonation when dropped. One failure will reject the whole lot of Fuze.
6.	Water proofness test	60 mins	1 no	If one Fuze fails the test will be repeated with 05 nos of Fuzes. There must be no failure in the retest.
7.	Lead plate test	Lead plate with 5 mm thickness	1 no	
8.	Functional test	-	15 nos	15 nos complete Fuze will be fired with Grenade Hand Arges-84. If fails 1 <sup>st</sup> time as per BOF standard, the test will be repeated with equal 15 nos of complete Fuzes. There must be no failure in the retest.
<b>Total=</b>			<b>67 nos</b>	+70 nos for the retest (if required)

- b. **Compatibility test.** 15 nos supplied items from each lot will be assembled with BOF produced Base Corpus with Delay Element to see the compatibility. The supplied items should be compatible.
- c. Following items should be given free of cost by the supplier for functional test during post shipment inspection:
- (1) Base corpus with delay element: 140 nos for each lot of Percussion Cap.
  - (2) Percussion Cap: 155 nos for each lot.
- d. The supplied items should pass post shipment test mentioned above for final acceptance.
11. **Technical Manual.** 3xCopies of Technical Manual of Percussion Cap containing storage, inspection and maintenance to be provided by the supplier at free of cost. Technical Manual should contain detail description of the Percussion Cap in English Language.
12. **Authority Holding Sealed Particulars.** CI, IA&E, Gazipur Cantonment.
13. **Inspection Authority.** CI, IA&E, Gazipur Cantonment or authorized representative.
14. **Part-Shipment.** Part-shipment is allowed if PSI cannot be carried out and goods are send basing on QAC.
- a. 1st shipment : 50% of total quantity.
  - b. 2nd shipment : Rest 50% quantity.
15. **Part Payment.** Part payment is allowed if PSI cannot be carried out and goods are send basing on QAC. Payment will be made as per above mentioned clause 8.f.
16. **Transshipment.** Transshipment is not allowed.
17. **Inspection Certificate.** Final Inspection Certificate from the manufacturer should be provided along with the store by the supplier.
18. **Country of Origin.** Austria, Serbia, Pakistan, Bosnia & Herzegovina, UK, USA, Canada, Australia, France, Germany, Turkiye, Italy and Poland.



**GENERAL REQUIREMENTS AND OTHER TERMS AND CONDITIONS FOR DETONATOR CUP FOR HE FUZE OF GRENADE HAND ARGES-84 BD HE****1. General Requirements.**

- a. The store must be suitable for use in tropical climate. Certificate should be provided to this effect by the manufacturer along with the offer and stores.
- b. The year of manufacture of the store should be current year i.e contracted calendar year. Certificate should be provided to this effect by the manufacturer along with the offer and stores.
- c. The stores should be safe in storage, transportation etc and should not cause any health hazard. Certificate should be provided to this effect by the manufacturer along with the offer and stores.
- d. Guarantee Certificate for supply of stores as per offer to be provided by the manufacturer along with the offer and stores.
- e. Warranty and Shelf Life Certificate by the manufacturer as mentioned below should be furnished along with the offer and stores.
  - (i) **Warranty Certificate.** The supplied store must be brand new, free from all defects, good surface finished and that in the event of any shortage, defects/damages being found after inspection the stores should be replaced by the supplier at their own cost within 90 (Ninety) days of the case arises. The warranty period of the store will be 12 (Twelve) months from the date of issue of "Inspection Note" by IA&E (Final Acceptance).
  - (ii) **Shelf Life Certificate.** The Shelf Life of the Detonator Cup will be 15 (Fifteen) years from the date of manufacture. If the Detonator Cup is found defective within the shelf life, the Detonator Cup must be replaced by the supplier at their own cost within 6 (Six) months as the case arises.
- f. Packing Material to be such that it will not be affected by rust, damp, insects, fungus or any other harmful material during storage up to the shelf life. Certificate should be provided to this effect by the manufacturer along with the offer and stores.
- g. Maximum quantity of store in one lot is 50,000 nos.
- h. All markings and other details should be in English Language.
- j. All certificates and letters of authorization should be original and in English Language.
- k. Quality Control and Inspection Certificate by the manufacturer must be provided along with the offer stores.
- l. IA&E will issue final Inspection Report within one month after receipt the stores at Consignee's end provided the Visual Inspection and Test Firing is satisfactory and the case of clarification/replacement, if any is settled as per Visual Inspection and Test Firing report are completed within the time (1 Month). Part Inspection Note will not be issued.

2. **Technical Specification.** The stores should be supplied as per drawing (Annex E).

3. **Catalogue/Brochure.** Original Catalogue/Brochure having technical information in English Language should be provided by the manufacturer along with the offer. Laminated/Computer Printed Catalogue/Brochure is not acceptable. Chemical composition of the stores should be mentioned in the offer.

4. **Quality Inspection and Test Criteria by manufacturer.** Detail of quality inspection and test criteria done by manufacturer for the components in factory side should be provided along with the offer.

5. **Packing.**

- a. As per international packing procedure of the factory standard.
- b. A Packing List/Note showing lot details and number of box against each lot should be furnished in each box.
- c. The stores are to be securely packed with sea worthy packing and clearly marked for safe transit by air/sea/road/rail. The box/package should have suitable means for holding by hands and should be easy to handle for storage and transportation.

6. **Marking on the Packing Box.**

- a. Following marking to be stenciled on the top of the boxes:
  - (i). Consignee: Commandant, Bangladesh Ordnance Factories, Gazipur Cantonment, Bangladesh.
  - (ii) Contract number & dt: .....
  - (iii) Package number: 01/100, 02/100 and so on.
- b. Following marking to be stenciled on the front side of the box :
  - (i) Number of stores packed.
  - (ii) Full nomenclature of the store.
  - (iii) Lot number & year of manufacturer, and factory code.
  - (iv) Govt explosive group (To be shown within a red circle).
  - (v) Dimension of the box.
  - (vi) Net weight of the store.
  - (vii) Gross weight of the box.
  - (viii) Safety distance category.
  - (ix) International Maritime Dangerous Goods (IMDG) Code with Explosion symbol.
  - (x) United Nation (UN) Number.
  - (xi) Country of Origin.

7. **Environmental Condition.**

- a. Storage temperature range : 0°C to +50°C.
- b. Storage humidity minimum : 95%.
- c. Operating temperature range : -5°C to +55°C.
- d. Operating humidity minimum : 95%.

8. **Pre-shipment Inspection (PSI).**

- a. **PSI will be carried out at manufacturer's factory at the discretion of Purchaser. Air ticket, food, accommodation, medical and pocket money of PSI Team members will be borne by the Supplier.**
- b. PSI will be carried out jointly by BOF and Inspectorate of Armaments & Explosive (IA&E) at the discretion of BOF authority. The team may be comprised of 3(Three) members {2 (Two) members from BOF & 1(One) member from IA&E} for a period of 5(Five) working days excluding journey period. **Air ticket, food, accommodation, medical, pocket money of PSI team members, all internal movement arrangement and cost related to the inspection will be borne by the Supplier.** Supplier should inform about the date of PSI at least 8 (Eight) weeks to 15 (Fifteen) weeks (in respect of time required for obtaining visa of respective country) prior to the exact date of carrying out of PSI.
- c. PSI will be carried out at manufacturer's factory premises/plant. PSI should include visual inspection/checking of physical dimension, laboratory and functional test of the item, inspection of production line of same type of Detonator Cup. PSI Team will check all the parameters of the items as per technical requirements of the contract. All the equipment required for PSI team will be provided by the supplier.
- d. PSI team will accept the stores provisionally, if the stores are found as per contractual requirement. PSI report will be vetted by both the vetting committee of BOF and IA&E.
- e. If any deficiency/discrepancy found during vetting of PSI report, then deficiency/discrepancy items will be filled up or rectified by the supplier and will forward completion certificate to BOF. Then shipment clearance will be given by BOF. After necessary rectification 2<sup>nd</sup> PSI may be held, if deficiency/discrepancy items are major in nature. In that case supplier will bear all PSI cost including Daily Allowance (DA) of the PSI team members.

f. If the PSI is not carried out due to any reason of purchaser side then the Quality Assurance Certificate of "Quality Assurance Department" of the manufacturer will be considered as PSI report. In this case 60% payment will be made after shipment. Rest 40% payment will be made after satisfactory post shipment inspection report at BOF site. If the PSI cannot be carried out due to any reason of seller/supplier side then the QAC may be accepted but 100% payment will be made after final acceptance of the stores by purchaser's inspecting authority. If the stores are rejected during Post-shipment inspection, the stores will be replaced by the supplier at their own cost.

g. The PSI team will carry 200 nos Base Corpus (without the filling of delay element) from BOF for the suitability test in manufacturer factory. If PSI not carried out then 200 nos Base Corpus (without the filling of delay element) from BOF will be handed over to local agent to send to manufacturer at their own responsibility and cost for suitability test in the manufacturer factory.

h. **QAC Related Original Documents/Certificates:** Following original documents/certificates are to be furnished with the QAC. All test/Inspection result/results which was/were conducted by the quality control department of manufacturer to be furnished including the following:

- (1) Certificate of country of origin.
- (2) Certificate of country of manufacture/assembly.
- (3) Certificate of year of production.
- (4) Certificate of warranty/guaranty as specified in the contract.
- (5) Certificate of quality assurance and genuineness.
- (6) Buy back certificate.
- (7) Functionality test certificate and test firing certificate for fulfillment the technical specification as per contract.
- (8) Laboratory test certificate for fulfillment of the technical specification as per contract.
- (9) Environmental suitability certificate (suitability for tropical climate, humidity tolerance, operating temperature, storage temperature, salinity resistance) for fulfillment the technical specification as per contract.
- (10) Packing list as per contract.
- (11) All other certificates as mentioned in the contract and any other as deemed necessary.

h. All documents/certificates will be original and duly signed and stamped.

9. **Pre-shipment Inspection (PSI) Requirement.**

a. Functional test (Internal Proof Test Firing) of Detonator Cup should be carried out by the Pre Shipment Inspection team during PSI. 225xDetonator Cup (each lot) and other components for functional test should be supplied by the supplier at free of cost.

b. Following test should be conducted by the supplier at the time of PSI for each lot of 50,000 nos (Detonator Cup):

Ser	Sort of Examination	Sample Size	Way of Conduction	Remarks
1.	Dimension checking and appearance	90 nos	Dimension checking according to drawing and visual appearance checking (brand new, rust/dirt free, fresh, spot/mark free etc)	All should be as per requirement
2.	Checking of the airtight / hermetic <b>in complete Fuze assembly</b>	15 nos	Shocking in water with normal temperature on deepness 150 mm in duration of 02 minutes.	All should be fired
3.	Checking of the resistance on the high humidity <b>in complete Fuze assembly</b>	15 nos	In hermetic sealed desicator with pure water (100% relative humidity) for 24 hours.	
4.	Checking of the abrupt influences of temperature changes <b>in complete Fuze assembly</b>	15 nos	In climate chambers according to procedure, 3 cycles by 8 hours (+50°C, -30°C)	
5.	Exposure to extremes of temperature -30°C <b>in complete Fuze assembly</b>	15 nos	Tempering at -30°C according to procedure for a period of 24±2 hours	

Ser	Sort of Examination	Sample Size	Way of Conduction	Remarks
6.	Exposure to ambient of temperature +21°C in complete Fuze assembly	15 nos	Tempering at 21±1°C for a period of 8 hours	
7.	Exposure to extremes of temperature +50°C in complete Fuze assembly	15 nos	Tempering at +50°C according to procedure for a period of 24 ±2 hours	
	<b>Total =</b>	<b>180 nos</b>	+30 nos for the retest (if required)	

c. Besides that any other test manufacturer wants to conduct as per factory standard and quality at the time of PSI. Required Detonator Cup and other components as deemed necessary will be provided by supplier free of cost for test firing.

10. **Post-shipment Inspection Requirement.**

a. Necessary Base Corpus with Delay Element and Percussion Cap should be provided by the supplier, with which Fuze will be manufactured and Post Shipment Inspection will be done as BOF standard given below:

**Complete fuze testing procedure (per lot 50,000 nos)**

Ser	Name of Test	Duration of Immersion	Fuze Quantity	Remarks
1.	Room temperature test	-	20 nos	If one Fuze blinds/misfires, the test will be repeated with equal 20 nos of Fuzes. There must be no failure in the retest.
2.	+60°C temperature test	Min 3 hours or max 8 hours	10 nos	If one Fuze blinds/misfires, the test will be repeated with equal 10 nos of Fuzes. There must be no failure in the retest.
3.	-30°C temperature test	Min 3 hours or max 8 hours	10 nos	
4.	Thermal shock test (+60°C - 30°C +60°C)	Min 3 hours or max 9 Hours	5 nos	If one Fuze blinds/misfires, the test will be repeated with equal 05 nos of Fuzes. There must be no failure in the retest.
5.	Drop test	From 2 meter height	5 nos	There must not be any detonation when dropped. One failure will reject the whole lot of Fuze.
6.	Water proofness test	60 mins	1 nos	If one Fuze fails the test will be repeated with 05 nos of Fuzes. There must be no failure in the retest.
7.	Lead plate test	Lead plate with 05 mm thickness	1 nos	
8.	Functional test	-	15 nos	15 nos complete Fuze will be fired with Grenade Hand Arges-84. If fails 1 <sup>st</sup> time as per BOF standard, the test will be repeated with equal 15 nos of complete Fuzes. There must be no failure in the retest.
	<b>Total=</b>		<b>67 nos</b>	+70 nos for the retest (if required)

b. **Compatibility test.** 15 nos supplied items from each lot will be assembled with BOF produced Base Corpus with Delay Element to see the compatibility. The supplied items should be compatible.

c. Following items should be given free of cost by the supplier for functional test during post shipment inspection:

- (1) Base corpus with delay element: 140 nos for each lot of Detonator Cup.
- (2) Percussion Cap: 155 nos for each lot of Detonator Cup.
- (3) Detonator Cup: 155 nos for each lot.

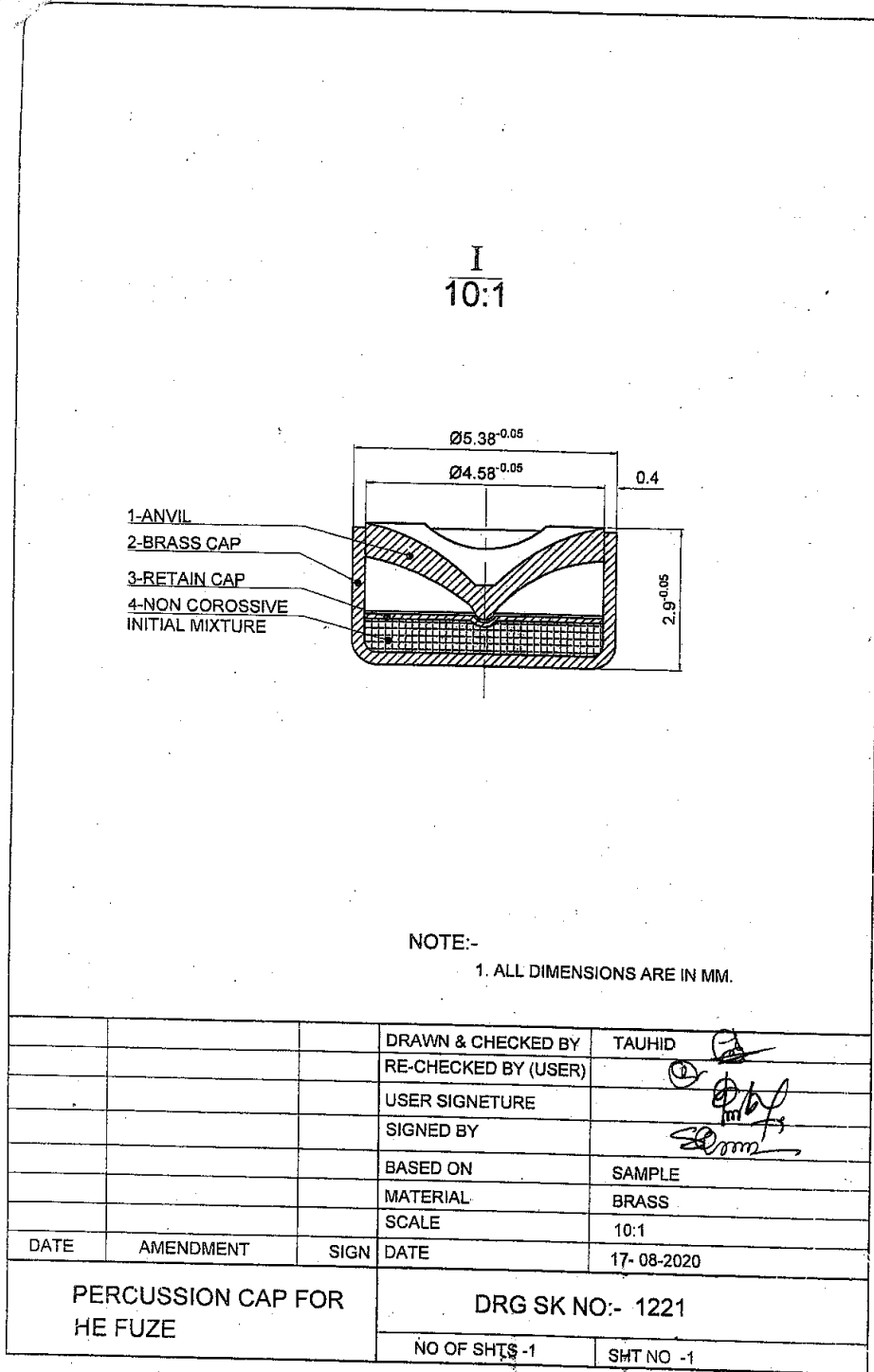
d. The supplied items should pass post shipment test mentioned above for final acceptance.

11. **Technical Manual.** 3xCopies of Technical Manual of Detonator Cup containing storage, inspection and maintenance to be provided by the supplier at free of cost. Technical Manual should contain detail description of the Detonator Cup in English Language.

12. **Authority Holding Sealed Particulars.** CI, IA&E, Gazipur Cantonment.

13. **Inspection Authority.** CI, IA&E, Gazipur Cantonment or authorized representative.

14. **Part-Shipment.** Part-shipment is allowed if PSI cannot be carried out and goods are send basing on QAC.
  - a. 1st shipment : 50% of total quantity.
  - b. 2nd shipment : Rest 50% quantity.
15. **Part Payment.** Part payment is allowed if PSI cannot be carried out and goods are send basing on QAC. Payment will be made as per above mentioned clause 8.f.
15. **Transshipment.** Transshipment is not allowed.
16. **Inspection Certificate.** Final Inspection Certificate from the manufacturer should be provided along with the store by the supplier.
17. **Country of Origin.** Austria, Serbia, Pakistan, Bosnia & Herzegovina, UK, USA, Canada, Australia, France, Germany, Turkiye, Italy and Poland.



**ANNEX- E TO  
BOF TENDER NO 23.27.0000.167.169.3256105.23.24  
DATED 07 OCTOBER 2023**

