

PN SPECIFICATION NO 09/2022



PAKISTAN NAVY SPECIFICATION 09/2022  
PROMULGATION DATE: 13 OCTOBER 2022

## **TRADE ARM BADGES FOR NI BRANCH (DRESS NO. 1 & 3)**

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**PROMULGATION ORDER**

1. This specification is hereby approved and promulgated for information, guidance and compliance by the relevant person.
2. The details contained in the specification are to be studied, interpreted and implemented with due regards to the interest of the Service.

**SUGGESTIONS FOR AMENDMENT**

1. The specification has been prepared to bring the test methods and procedures in line with up-to-date PN requirements and facilities held in Pakistan. CINS may request to amend any test requirement/ test procedure in light of the experience emanating from its inspection history, through the feedback form placed at Annex F. However, such an alteration will be effective when the amendment is promulgated by this Directorate, and will be effective on the contracts which materialize after the promulgation date of respective amendment

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**RECORD OF CHANGES/ AMENDMENT**

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(TRADE ARM BADGES FOR NI BRANCH)**

0101. **DESIGNATION**

1. Trade Arm Badges for NI Branch.

0102. **USAGE**

1. These Arm Badges will be worn by Sailors (POs and below) of NI Branch with Dress No. 1 & 3.

0103. **INTRODUCTION**

1. This specification is prepared by Directorate of Indigenous Technical Development, Karachi, to provide necessary guidance to the potential manufacturers/ suppliers of the items mentioned herein. This specification is to be used for testing and deciding upon acceptance, or otherwise, of the items mentioned. Any alteration or addition in this specification can be suggested to ITD Directorate. However, it cannot be implemented without prior approval of DNS.

2. This specification booklet includes **06 Annexes** and consists of **23 pages**, including the cover.

0104. **SCOPE**

1. This specification covers the technical/ manufacturing requirements of Trade Arm Badges for NI Branch to be used by NI Branch Sailors of Pakistan Navy. It defines and lays down the quality, standards, and details of materials, workmanship and finish. It also defines brief procedure of sampling, testing, inspection acceptance/ rejection, marking, preservation, packing and delivery etc. of the item mentioned under designation.

2. The supplier/ manufacturer shall comply in every respect with the terms of this specification and ensure that the stores under designation conform to it, in all respects.

0105. **RELATED DOCUMENTS**

1. The latest standards documents that have been referred to in this specification are:

a.	AATCC-20 A	Fiber Analysis – Qualitative.
b.	ASTM D 1874-70	Determination of Thickness of fusing
c.	ISO 105-E01	Determination Color fastness to water.
d.	ISO 105 C-10	Determination of Color Fastness to Washing.
e.	ISO 105 J03	Determination of Berger Value or CIE Value
f.	ISO 3801	Determination of weight of a fabric.
g.	ISO 7211 -1	Determination of Weave.

h.	ISO 7211-2	Number of treads per unit length.
j.	ISO 7211-5	Determination of linear density of yarn removed from fabric.

0106. **TERMS & DEFINITIONS**

1. Definitions for the terms used in this standard are given at Annex A of this specification.

0107. **TECHNICAL DETAILS OF TRADE ARM BADGES FOR NI BRANCH**

1. The technical details of Trade Arm Badges for NI Branch are mentioned at Annex B of this specification.

0108. **DRAWINGS**

1. All dimensions of drawing are given at Annex C.

0109. **MANUFACTURING GUIDELINES OF TRADE ARM BADGES FOR NI BRANCH**

1. The Arm Badges are to be manufactured as per drawing at Annex C. The texture, feel and finish shall be best of its class and to the entire satisfaction of inspector.
2. Embroidery shall be done as per drawing attached at Annex C of this specification.
3. Embroidery shall be neat, gives embossed look as per drawing attached.
4. Base fabric and buckram/ fusing shall be closely stitched to give a firm look. Buckram/ fusing should be matching with fabric and should not be visible from outside.
5. The embroidery thread should be Blue i.e. 19-3952TCX (or match with approved sample) and White with Berger value of  $160 \pm 05$  or matching with fabric.
6. Arm badge will be stitched with uniform using stitching thread (white in color, same as base fabric).

**Note:** Manufacture is liable to pay all the testing charges.

0110. **QUALITY OF WORKMANSHIP AND FINISHING**

1. The Workmanship and finish of Trade Arm Badges for NI Branch shall be equal to sealed pattern. It shall be best of its class and to the entire satisfaction of the Inspector.
2. The Trade Arm Badges for NI Branch shall conform to the sealed pattern in respect to all properties and quality defined in this specification.

0111. TESTING

1. The material shall be subjected to tests laid down in this specification at Annex B and related documents. At least three samples of Trade Arm Badges for NI Branch of each type will be required to complete all the tests mentioned at Annex B of this specification. The material may also be subjected to such tests which are deemed necessary by the inspection authority in order to determine their suitability. Inspecting Authority reserves the right to get any B/R samples tested from any reputable Laboratory other than PN. However, any test considered important by Inspecting Authority other than Annex B i.e. breaking strength & Linear Density of stitching thread, Breaking strength, Peel strength, Linear Density of main fabric etc. may also be conducted in order to check its suitability.

0112. SAMPLE SELECTION OF TRADE ARM BADGES FOR NI BRANCH FROM LOTS/ BATCHES

1. Sample quantity will depend upon lot/ batch quantity. Samples quantity will be as per Annex E (AQL) or based on 100% Inspection as here to fore depending on discretion of Inspecting Authority.

0113. TENDER SAMPLE

1. Tender sample is to be approved by TSR Committee.

2. For each contract 03 x samples of Trade Arm Badges for NI Branch of each type shall be supplied by the manufacturer at the time of tendering along with samples of materials used in manufacturing of Trade Arm Badges for NI Branch for inspection as follows:

a.	Trade Arm Badges for NI Branch	03 x Samples (each type)
b.	Base fabric	02 meter
c.	Buckram/ Fussing	02 meter
d.	Stitching/ Embroidery thread	50 gms (each)

0114. ADVANCE SAMPLE

1. Advance sample or pre-production sample, when required, shall be submitted in accordance with terms of the contract for inspection and testing as per Annex B, C and D and approved by CINS. The minimum quantities required are 03 x samples (each type) along with samples of materials used in manufacturing of Trade Arm Badges for NI Branch as mentioned above.

2. Whenever Tender, Advance or pre-production sample is not required, the suppliers/ manufacturer are advised in their own interest to submit to the Inspecting Officer or his representative an initial delivery of 01% of the contract or 03 x samples (each type) along with samples of accessories/ materials for inspection and testing.

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3. The approval of Tender, Advance or pre-production sample, authorizes the commencement of bulk production but does not relieve the suppliers/ manufacturers from compliance with all the provisions of this specification.
4. 01 x approved sample shall be properly sealed by INS and returned to the firm for guidance; rest of the approved sample shall be retained by INS for future use in bulk Inspection (if deemed necessary).
5. The pre-production sample shall be manufactured by the manufacturer with the same facilitates which will be used for manufacturing of the bulk items.
6. Firm shall provide advance sample along with quality verification reports from an accredited laboratory, whenever asked/ required by Inspecting authority to ensure compliance of quality assurance parameters during production/ final internal inspection.

0115. **INSPECTION**

1. Bulk Representative Sample. (B/R) random sampling will be carried out as per rules in vogue.
2. Bulk Inspection. Bulk inspection will be carried out after satisfactory completion of Visual Examination and Testing of B/R Sample as per Annex B, C and D.
3. Inspection of Trade Arm Badges for NI Branch. 100% of the offered store shall be inspected. The guide lines for such examination/ inspection are listed at Annex D Stage inspection of Trade Arm Badges for NI Branch may be carried out as considered appropriate by CINS and approved sample may be obtained from PNCSD.
4. Inspection/ Acceptance and Rejection of stores. Inspection/ acceptance is to be carried out to the entire satisfaction of Chief Inspector of Naval Stores or as per instruction/ procedure laid down in unit/ department Standing Order.
  - a. The Trade Arm Badges for NI Branch shall be examined for the correctness of material, shape, design, dimension, size, workmanship and finish.
  - b. Trade Arm Badges for NI Branch shall be inspected especially for stitching and finishing, weaving defects, defective shape, discoloration/ fading, pinholes. Stitching, dimensions and embroidery of Nava Trade Arm Badges for NI Branch are to be especially checked.
  - c. CINS reserves the right to reject the whole supply in case, upon examination, material or packing of any sample or portion of the consignment is found NOT CONFORMING to this specification. All stores and packing NOT fully in accordance with this specification shall be rejected.
  - d. If on examination of 05% of any delivery, 20% of those examined from bulk supply are found NOT CONFORMING to this specification in respect of the pattern,

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dimensions, workmanship and finish, the whole consignment may be rejected without any compromise.

e. All stores and packing NOT fully in accordance with this specification shall be rejected.

f. Trade Arm Badges for NI Branch with major defects as described in Annex D of this specification will be rejected.

5. Responsibility for Inspection. The supplier is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. PN reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

6. Responsibility for Compliance. The inspection set forth in this specification shall become a part of the supplier's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to PN for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements. However, this does not authorize submission of known defective material, either indicated or actual, nor does it commit PN to acceptance of defective stores (material).

7. Replacement by the Contractor. The supplier/ manufacturer is responsible for replacement of the consignment or any part thereof whenever it is found to be not conforming to this specification or does not curtain its quality till the useful life of an item. The supplies so tendered in replacement, shall be subjected to testing/ inspection and acceptance by the Inspecting Officer.

8. Responsibility for Safety. The supplier/ manufacturer is wholly responsible for the safety of supplies during inspection, storage at firm's premises, proper packing, dispatch and delivery up to consignee.

9. The CINS is the authority in all matters pertaining to Inspection.

**0116. STAMPING OF ACCEPTED/ REJECTED STORES BY THE INSPECTOR**

1. While stamping of accepted/ rejected stores, following instructions are to be followed:

a. Stamping of Accepted Stores. The acceptable Trade Arm Badges for NI Branch shall be stamped with Inspector's Individual Acceptance Mark's on inside of the quarter right side or as per instructions of inspecting officer. The stamping shall be legible.

b. Stamping of Rejected Stores. The rejected Arm Badges shall be marked with Inspector's Rejection Mark to avoid re-submission by the supplier.

c. The Inspector is the authority in all matters pertaining to inspection.

**0117. PACKING AND PRESERVATION DETAILS**

1. Preservative treatment and quality of packing shall be examined/ tested as the inspector may consider necessary in order to determine whether they conform to this specification.

a. Packing Details. The store when ordered to be delivered 'PACKED' shall be packed as following instructions:

- (1) Each Arm badge shall be packed in neat and tidy condition in standard polyethylene.
- (2) 100 x Arm badges (same type) shall be further packed in a thick Boxboard.
- (3) Each Box Board packing shall be securely and properly packed with packing list.

**0118. IDENTIFICATION LABEL**

1. Each Trade Arm Badge for NI Branch shall bear following minimum information written on polyethylene packing:

- a. Item name/ item description with size and NSN/ Patt No.
- b. Contract number and Date.
- c. Year of manufacturing.
- d. Firm's name, initials, or trade mark.
- e. Batch no.

**0119. PACKING LIST**

1. Firm is bound to provide a packing list of store offered for inspection alongwith the challan, which include complete details about the store i.e. Pattern No., description of stores, size, quantity, contract No. and date, Challan No. and I/Note No. or voucher no. and date, consignee, manufacturer/ firm's name, date of packing and packer's signature, QA certificate /Lab test report from any accredited lab.

**0120. MARKING OF STORES**

1. In addition to any special marking required by contract or order, the marking of packages shall be stenciled with quick drying Black ink/ Paint in accordance with Specification No. NS/MISC/002/80 with clearly defined characters as described below:

a. On Front and Top:

- (1) Consignee Address.
- (2) Contract No and date.
- (3) Description of Stores Packed and NSN/Patt No.

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- (4) Stowage / Stacking Instructions.
  - (5) Quantity of the Item packed.
  - (6) Signature along with stamp of Packaging Manager/ rep of firm.
- b. On Back:
- (1) Manufacturers name / Firm's name.
  - (2) Voucher No. or inspection note no. and date.
  - (3) The No. of individual Package and the total No of Packages in the consignment joined by the word 'of' e.g. 2 of 300.
  - (4) Weight of the package.
  - (5) Month and year of packing.
  - (6) Destination i.e. Railway station/ (Navy).

0121. **DELIVERY**

1. The consignment of store will be delivered in accordance with the terms of contract.
2. The store shall be delivered in brand new, clean and dry condition.
3. The contractor/ manufacturer is fully responsible for the safety of the supplies during inspection, stage inspection, storage at firm's and consignee premises, proper packing, dispatch and delivery up to consignee.

XXXXXSDXXXXX

**MOAZZAM ARIF**  
Captain Pakistan Navy  
Director

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ANNEX A TO

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TERMS & DEFINITIONS

1. CINS: Chief Inspector of Naval Stores.
2. DITD: Directorate of Indigenous Technical Development.
3. DNS: Directorate of Naval Store.
4. PNCSD: Pakistan Navy Clothing Store Depot.
5. PNCTA: Pakistan Navy Central Testing Authority.
6. Inspector. The term inspector shall include the "inspection Authority", inspecting officer and their representatives, duly authorized for the purpose of discharging inspection duties involved.
7. Inspection Authority. Chief Inspector of Naval Stores (CINS). His verdict in respect of Sealed Inspection matters is to be taken as final.
8. Inspecting Officer. An officer nominated by the CINS for carrying out inspection of stores supplied by the supplier, against a specified contract or order, in accordance with the particulars stipulated therein.
9. Acceptance Quality Level (AQL). It represent allowable limit/ tolerance of defects or non-conformities in an offered store/ lot/batch. It represent in percentage, also known as Allowable Quality Limits.
10. Minor Defects. They are small insignificant issues that don't affect the function or form of the item. Highest tolerance of AQL has been set for minor defects.
11. Major Defects. They would likely result in product return but don't poses safety risk. AQL tolerance depend upon the description/ quality of finished product.

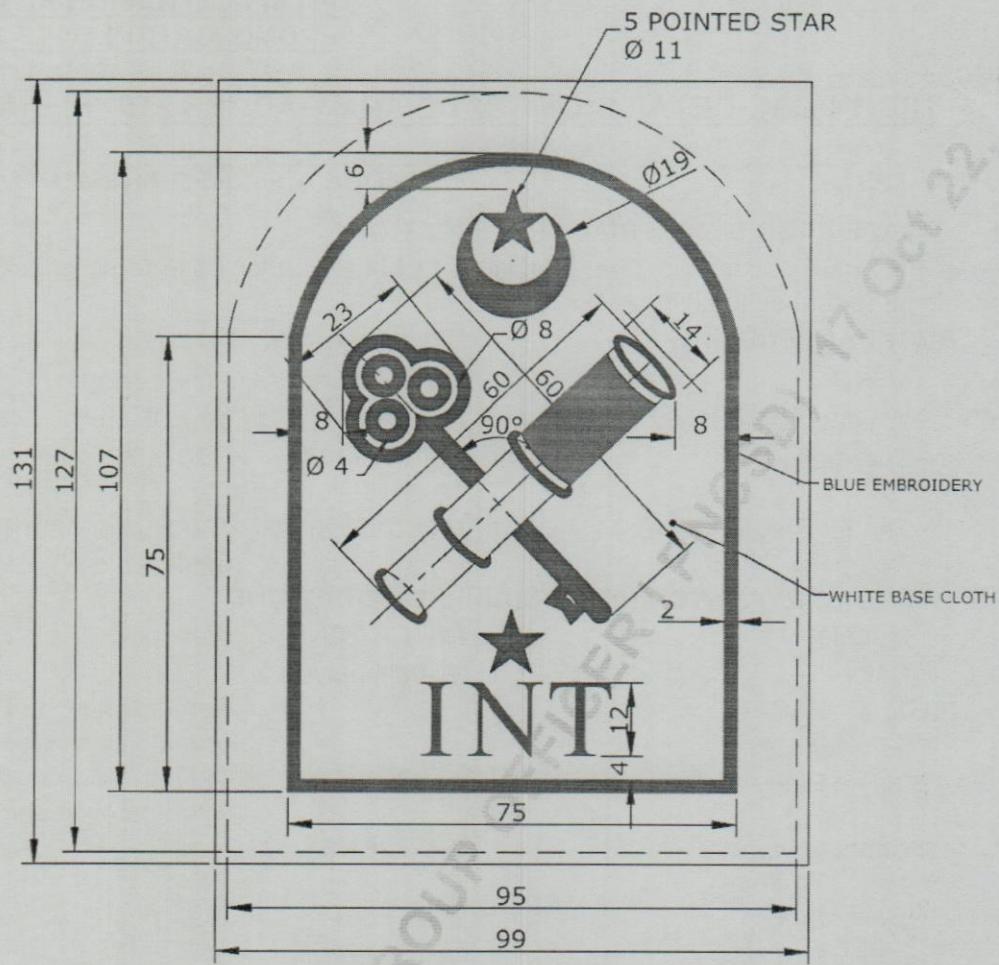
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### TECHNICAL DETAILS OF TRADE ARM BADGES FOR NI BRANCH

S NO	TESTS	METHODS	REQUIREMENT
1.	<b>BASE FABRIC MATERIAL SPECIFICATION</b> Refer PN Specifications No. 04/2020 Dated 11 May 2022 for Base fabric specification and its performance testing.		
2.	<b>BUCKRAM/ FUSSING</b>		
a.	Material	AATCC 20A	PC Buckram
b.	Weight/sq. Meter	ISO 3801	40 ± 05 gms
c.	Thickness	ASTM D 1874-70-2015	0.20 ± 0.05 mm
d.	Shade (Berger Value)	ISO 105 J03	130 ± 05 or match with fabric
3.	<b>EMBROIDERY/ STITCHING THREAD SPECIFICATIONS</b>		
a.	Material	AATCC 20A	Viscose
b.	Color 1) White 2) Blue	Visual analysis	Berger Value: 160 ± 05 or match with fabric 19-3952TCX or match with approved sample
c.	Count of yarn 1) White 2) Blue	ISO 7211/5	2/24 2/24
d.	Balance of twist	Visual analysis	02
e.	Direction of twist	Visual analysis	S
f.	Breaking strength	ASTM D 2256	0.30 kg ± 0.05 kg (At 18" BG)
g.	Color fastness to washing 1) Change in Shade 2) Staining	ISO 105 C-10 C(3)	GS 4 or better
h.	Color fastness to water 1) Change in shade 2) Staining	ISO 105 E 01	GS 4 or better

## TECHNICAL DRAWING

ANNEX C TO  
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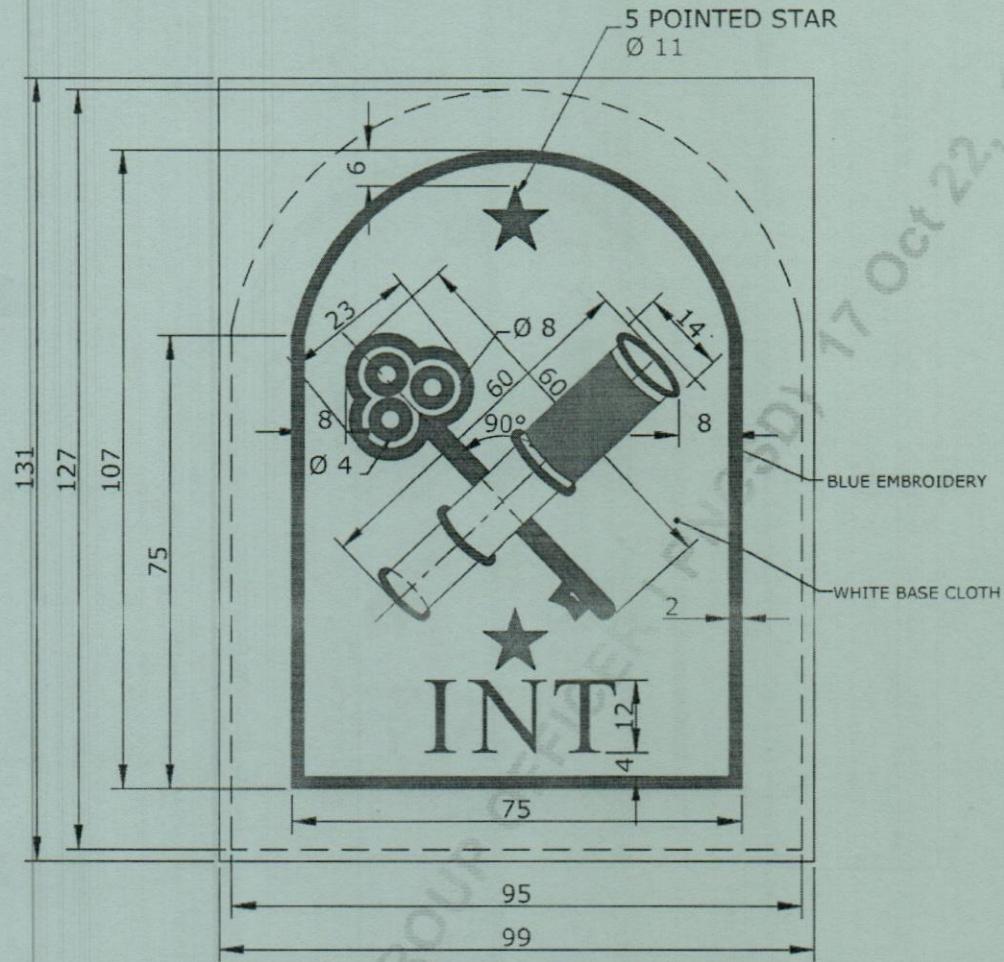


1463

<b>DITD KARACHI</b>		
TITLE:		
<b>ARM BADGES (INTA-IV)</b>		
DWG.NO. TD-2655/2022		DIMENSIONS: mm
DATE: 20-06-2022		SCALE: N.T.S
DRAWN BY  xxx SD xxx  ADNAN NISAR D/MAN		CHECKED BY  xxx SD xxx  LT CDR SANA KANWAL SO TEXTILE
		FINALIZED BY  xxx SD xxx  CAPTAIN MOAZZAM ARIF
		DID

# TECHNICAL DRAWING

ANNEX C TO  
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1462

DITD KARACHI

TITLE:

ARM BADGES (LINTT)

DWG.NO.	TD-2654/2022	DIMENSIONS: mm
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DATE:	20-06-2022	SCALE: N.T.S
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DRAWN BY	CHECKED BY	FINALIZED BY
----------	------------	--------------

xxx SD xxx

ADNAN NISAR  
D/MAN

xxx SD xxx

LT CDR  
SANA KANWAL  
SO TEXTILE

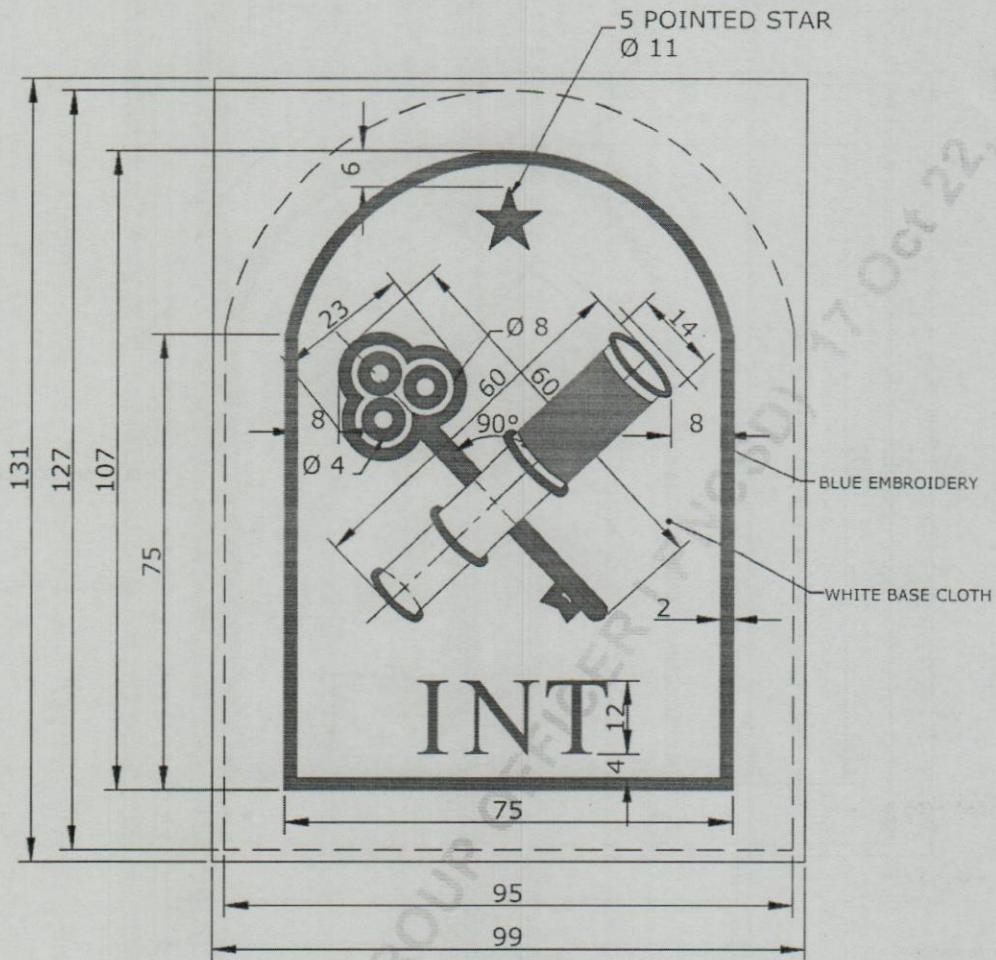
xxx SD xxx

CAPTAIN  
MOAZZAM ARIF  
DID

NOTE:  
FOR FURTHER DETAIL SEE STOCK/APPROVED SAMPLE

# TECHNICAL DRAWING

ANNEX C TO  
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1461

NOTE:  
FOR FURTHER DETAIL SEE STOCK/APPROVED SAMPLE

DITD KARACHI

TITLE:  
**ARM BADGES (INTT-I)**

DWG.NO.	TD-2653/2022	DIMENSIONS: mm
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DATE:	20-06-2022	SCALE: N.T.S
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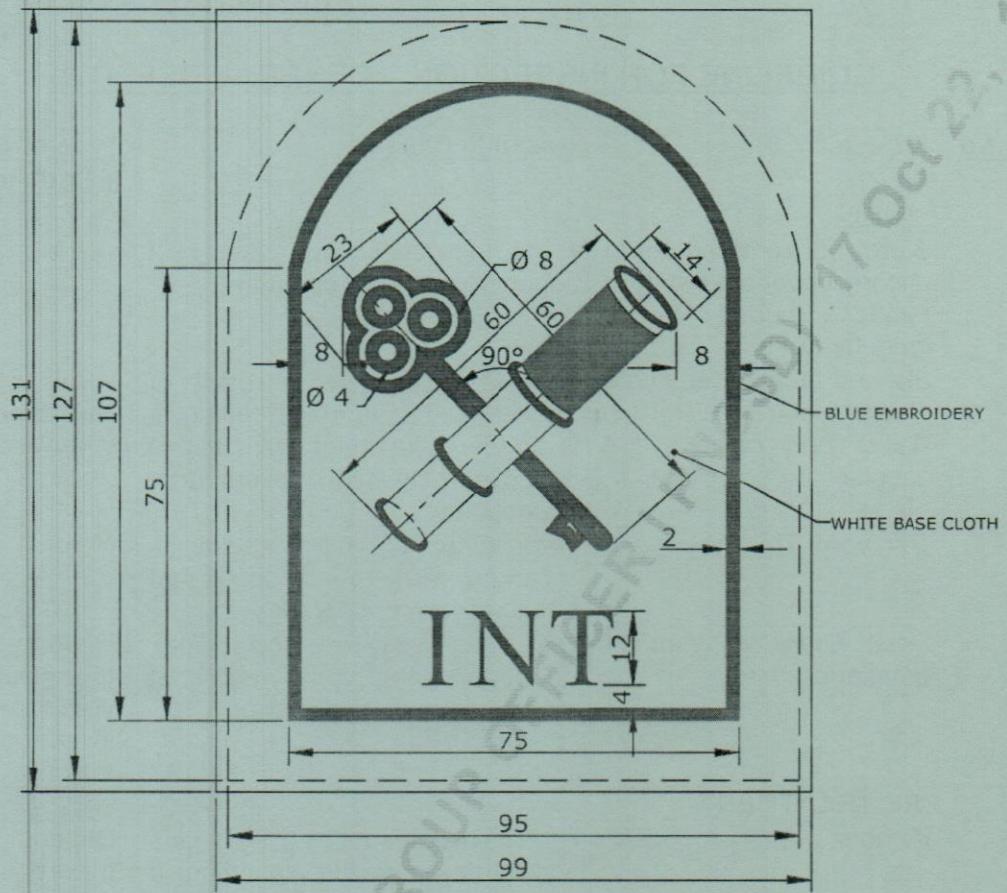
DRAWN BY	CHECKED BY	FINALIZED BY
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xxx SD xxx	xxx SD xxx	xxx SD xxx
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ADNAN NISAR D/MAN	LT CDR SANA KANWAL SO TEXTILE	CAPTAIN MOAZZAM ARIF DID
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# TECHNICAL DRAWING

**ANNEX C TO  
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1460

DITD KARACHI		
TITLE: ARM BADGES (INTT-II)		
DWG.NO.	TD-2652/2022	DIMENSIONS: mm
DATE:	20-06-2022	SCALE: N.T.S
DRAWN BY  xxx SD xxx  ADNAN NISAR D/MAN	CHECKED BY  xxx SD xxx  LT CDR SANA KANWAL SO TEXTILE	FINALIZED BY  xxx SD xxx  CAPTAIN MOAZZAM ARIF  DID

ANNEX D TOPN SPECIFICATION NO.09/2022PROMULGATION DATE 13 OCT 22GUIDELINE FOR INSPECTION – GENERAL DEFECTS

<u>S.No</u>	<u>Defects</u>	<u>Possible Cause</u>	<u>Type of Defects Major/Minor</u>
1.	<b>FABRIC</b>		
a.	Barre: horizontal stripes of uniform or variable width in Fabric or periodic lateral irregularity	• Individual yarns differ w.r.t count properties or structure.	Major
b.	Skewed fabric: The shape of the fabric is distorted. Wales and courses are angular.	• This can be a result of uneven take down roller setting. It is a generic feature of circular knits because of the spiral movement of the needles.	Within allowable limit then minor otherwise major.
c.	Thin yarn/ Thick yarn	• One of the feeder is receiving yarn from a spool that has finer yarn or coarser yarn.	Major
d.	Hole: Crack of yarn or breakage	• High yarn irregularity, poorly lubricated yarn, weak knot or slub present in yarn.	Depend upon the size. If it's visible and larger in size then its major.
2.	<b>PRE-TREATMENT</b>		
a.	Pinhole	• The presence of $\text{Fe}^{2+}$ ions accelerates peroxide bleaching. If the fabric has just residue on it or localized iron contamination the bleaching process will damage the fibers causing a hole.	Depend upon the frequency of the fault, if it occur frequently then its major.
3.	<b>DYEING</b>		
a.	Shade difference	• This occur due to the variation in dye or dyeing procedure. • Improper cutting of pieces, bundling and numbering. • Different batch mixing.	Major
b.	Stain of oil, food, drink, ink etc.	• This occur due to spill of oil, ink, food, drinks on the garment.	If it is easily washable then minor.
4.	<b>STITCHING</b>		
a.	Seam puckering: gathering of a seam either just after sewing or after	• Due to uneven stitching on to plies of fabric, improper thread tension, wrong sewing thread etc.	Minor when it is not visible

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	laundering.		
b.	Open Seam or broke seam: Portion of garment that has not been covered by sewing thread.	<ul style="list-style-type: none"> <li>• Due to improper handling of the part/ piece of fabric, improper setting and timing between needle and looped or rook etc.</li> </ul>	Major
c.	Broken Stitch: Non continuous Sewing thread	<ul style="list-style-type: none"> <li>• Due to improper timing or machine usage.</li> </ul>	Minor
d.	Drop stitched/ skipped Stitched Irregular stitching along the seam	<ul style="list-style-type: none"> <li>• It appears due to improper handling of cut pieces or machine usage.</li> </ul>	Minor

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**ACCEPTABLE QUALITY LEVELS (AQLS) MATERIALS AND FINISHED  
ARM BADGES**

1. Acceptable Quality Level (AQL) is maximum average defective items in a lot or limit/ percentage of defective items in product/ offered store. It is expressed in a percentage. Number of average defective items is determined by following formula:

$$\text{Average defective item} = \frac{\text{No.of defective item found during inspection}}{\text{Total no.of item to be inspected}} \times 100$$

2. AQL process: it is used for inspection of finished product by the QC professionals. AQL standard is depend on the quality of the product to be inspected, random sampling, and experience of inspector Following AQL table is used to determine lot size/ offered store quantity, least No. of sample to be inspected, AQL%, and acceptance & rejection points:

<u>Lot/Batch Size</u>	<u>Sample Size</u>	<u>Materials</u>		<u>Finished Arm Badges</u>					
				Critical Defects		Major Defects		Minor Defects	
		<u>Ac</u>	<u>Re</u>	<u>Ac</u>	<u>Re</u>	<u>Ac</u>	<u>Re</u>	<u>Ac</u>	<u>Re</u>
2 - 8	2	0	1	0	1	0	1	0	1
9 ~ 15	3	0	1	0	1	0	1	0	1
16 ~ 25	5	0	1	0	1	1	2	1	2
26 ~ 50	8	0	1	0	1	1	2	1	2
51 ~ 90	13	1	2	1	2	1	2	2	3
91 ~ 150	20	1	2	1	2	2	3	3	4
151 ~ 280	32	2	3	2	3	3	4	5	6
281 ~ 500	50	3	4	3	4	5	6	7	8
501 ~ 1200	80	5	6	5	6	7	8	10	11
1201 ~ 3200	125	7	8	7	8	10	11	14	15
3201 ~ 10000	200	10	11	10	11	14	15	21	22
10001 ~ 35000	315	14	15	14	15	21	22	21	22
35001 ~ 150000	500	21	22	21	22	21	22	21	22
150001 ~ 500000	800	21	22	21	22	21	22	21	22
500001 ~ Over	1250	21	22	21	22	21	22	21	22

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3. If the inspector have time constrain then AQL is beneficial/ helpful in inspection of whole lot/ offered store. It save time, cost and give effective/ statistical result of product/ offered store, e.g. If inspector needs 5 minutes to check the item , the quantity to be inspected is 2,500 items then it took 208 hours to check the whole consignment/ offered store. It means 26 days approx. for one store. Calculation is as follows:

$$\frac{5 \text{ min} \times 1 \text{ hr}}{1 \text{ item} \times 60 \text{ min}} \times 2,500 \text{ items} = 208.33 \text{ hrs} \cong 26 \text{ days}$$

After Implementing AQL standard so the sample taken from the lot/ offered store is 200 items/ sample:

$$\frac{5 \text{ min} \times 1 \text{ hr}}{1 \text{ item} \times 60 \text{ min}} \times 200 \text{ items} = 16.66 \text{ hrs} \cong 02 \text{ days}$$

4. Quality parameters/ AQL limits may be defined by Inspecting Authority (if deemed appropriate) and communicate to the manufacturer, so the manufacturer set their quality levels (AQL limits) accordingly for their internal audit. Therefore, good quality product is ready for inspection.

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ANNEX F TO

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FEED BACK FORM

Item Designation: \_\_\_\_\_

Pattern #: \_\_\_\_\_

Parent Equipment: \_\_\_\_\_

PN SPEC #: \_\_\_\_\_

Problem Faced: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Technical Solution: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Financial Effect (if any): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name Stamp

COUNTERSIGNED

Name Stamp

PN SPECIFICATION NO 09/2022

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