



PAKISTAN NAVY SPECIFICATION 16/2021
PROMULGATION DATE: 30 MARCH 2022

SHOULDER BADGES OF DRESS **NO 1 & 3 AND BLACK JERSEY FOR** **MCPO's, FCPO's AND CPO's**

This document is the property of the Pakistan Navy and its use is authorized for personnel in the course of their Inspection, Quality Assurance, Stowage, and Issuance on need to know basis. The unofficial retention or destruction of this document is an offence.

Prepared by:

Directorate of Indigenous
Technical Development (South)
ITD Wing, Naval Research &
Development Institute (NRDI)
at NSSD, Area West Wharf Road
KARACHI

Tel: 021 48508410
Fax: 021 99214765
Email: ditd-s@paknavy.gov.pk

PROMULGATION ORDER

1. This specification is hereby approved and promulgated for information, guidance and compliance by all concerned.
2. Details contained in the specification are to be studied and implemented with due regard to 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.

<u>CONTENTS</u>	
<u>DESCRIPTION</u>	<u>PAGE NO</u>
Promulgation Order	ii
Suggestions for Amendment	ii
Table of content	iii
Record of Changes/ Amendements	iv
<u>Details</u>	
Designation	1
Usage	1
Introduction	1
Scope	1
Related Documents	1
Definitions & Abbreviations	2
Technical Details	2
Technical Drawing	2
Manufacturing Guidelines	2
Quality of Workmanship and finishing	3
Testing	3
Quantity of Bulk Representative Samples from Lot/ Batches	3
Tender Sample	3
Advance Sample	3
Inspection	4
Stamping of Accepted/ Rejected Stores by Inspector	5
Packing and Preservation Details	5
Identification Label	6
Packing List	6
Marking of Stores	6
Delivery	7
<u>Annexes:</u>	
A. Definitions & Abbreviations	8
B. Technical Details	9
C. Technical Drawings	13
D. Guideline for Inspection – General Defects	16
E. Acceptable Quality Levels (AQLs)	18
F. Feed Back Form	20
Blank page	21

RECORD OF CHANGES /AMENDMENT

**PN SPECIFICATION NO 16/2021
(SHOULDER BADGES MCPO's, FCPO's and CPO's)**

0101. DESIGNATION

1. Shoulder Badges of Dress No. 1 & 3 and Black Jersey for MCPO's, FCPO's and CPO's.

0102. USAGE

1. These shoulder Badges will be worn at Dress No. 1 & 3 and Black Jersey by MCPO's, FCPO's and CPO's of Pakistan Navy.

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. This specification supersedes and replaces PN spec no. NS/B/002/82 dated 26 June 1982.

2. This specification booklet includes 06 Annexes and consists of 25 pages, including the cover.

0104. SCOPE

1. This specification covers the technical/ manufacturing requirements of Shoulder Badges of Dress No. 1 & 3 and Black Jersey for MCPO's, FCPO's and CPO's of Pakistan Navy. It defines and lays down the quality, standards, and details of materials, workmanship and finish. It also defines procedure of sampling, testing, inspection acceptance/ rejection, marking, preservation, packing and delivery etc. of Shoulder Badges.

2. The supplier/ manufacturer shall comply in every respect with the terms of this specification and ensure that the stores 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.	ISO-13934-01	Breaking Strength min (Kgs)
c.	ISO-3801	Weight/ Sq. meter in grams
d.	ISO 7211/1	Type of weave
e.	ISO 7211/2	Number of treads/ Inch
f.	ISO 7211/5	Determination of linear density

g.	ISO 105-E01	Color fastness to water
h.	ISO 105-B02/BS 1006	Color fastness to Light
j.	ISO 105 D01	Color Fastness to Dry Cleaning
k.	ISO-105-X12	Color Fastness to Rubbing
l.	ISO 105-E02	Color fastness to sea water
m.	ISO 105-E04	Color Fastness to Perspiration
n.	ASTM D 8136	Thickness of sheet
p.	ASTM E 1085	Metal analysis

0106. DEFINITIONS & ABBREVIATIONS

- Definitions for the terms used in this standard are given at Annex A to this specification.

0107. TECHNICAL DETAILS

- The Technical Details of Shoulder Badges of Dress No. 1 & 3 and Black Jersey for MCPO's, FCPO's and CPO's are mentioned at Annex B to this specification.

0108. TECHNICAL DRAWING

- All dimensions of Shoulder Badges in the form of drawing is given at Annex C.

0109. MANUFACTURING GUIDELINES

- The Shoulder Badges of Dress No. 1 & 3 and Black Jersey for MCPO's, FCPO's and CPO's 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.
- Base fabric should be properly stitched with PC Twill interlining at front and back while maintaining fine edges across the PVC supporting sheet to give a firm look.
- The sewing/ stitching thread should match with the Base cloth i.e. Pantone 19-4007 TCX.
- Manufacturer is liable to pay all the testing charges.
- Dye maker should be used to manufacture crescent and star and should be gold plated/ coated and neatly buffed.
- Sewing shall be securely finished off.
- Shoulder Badges of MCPO's is manufactured in way that Crescent and Star with Anchor inside the Crescent below Star. Red, Blue and Red ribbon are stitched as per Annex C.
- Shoulder Badges of FCPO's/ CPO's are manufactured in way that Two/ One Star (Four Edged) with embossed Anchor surrounded by laurel leaves and circle all

round. Red, Blue and Red ribbon is stitched as per Annex C.

0110. QUALITY OF WORKMANSHIP AND FINISHING

1. The Workmanship and finish of Shoulder Badges shall be equal to sealed pattern. It shall be best of class and to the entire satisfactory of the Inspector.
2. The Shoulder Badges 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 05 x samples of Shoulder Badges of each type along with accessories 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 may also be conducted in order to check its suitability.

0112. QUANTITY OF BULK REPRESENTATIVE SAMPLES FROM LOT/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 to be approved by TSR Committee.
2. For each contract 05 x samples of Shoulder Badges for “each category” shall be supplied by the manufacturer at the time of tendering along with samples of materials used in manufacturing of Shoulder Badges for inspection as follows:

a.	Base Cloth	03 meter
b.	Stitching thread	50 gms
c.	Interlining Cloth	03 meter
d.	Tape Composite	03 meter
e.	Supporting Sheet	0.5 meter
f.	Crescent and Star	05 each type

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 & D and approved by CINS. The minimum quantities required are 05 x samples of each type along with samples of materials used in manufacturing of Shoulder

Badges 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 One % of the contract or 05 x samples of each type along with samples of accessories/ materials for inspection and testing.
3. The approval Tender, advance or pre-production sample, authorizes the commencement of bulk production but does not relieve the suppliers/ manufactures from compliance with all the provisions of this specification.
4. One 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 manufacture 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.
7. Internal/ external inspection will be carried out by the manufacturer prior call for Naval Inspection at firm premises.

0115. INSPECTION

1. **Bulk Representative Sample.** (B/R) random sampling will be carried out as per procedure/ criteria 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 Shoulder Badges.** 100% of the offered store shall be inspected. The guide lines for such examination/ inspection are listed at Annex D Stage inspection of Shoulder Badges may be carried out as considered appropriate by CINS.
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 Shoulder Badges shall be examined for the correctness of material, shape, design, dimension, size, workmanship and finish.
 - b. Shoulder Badges shall be inspected especially for stitching and finishing, weaving defects, defective shape, discoloration/ fading, pinholes. Stitching and dimensions of Shoulder Badges 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 5% of any delivery, 20% of those examined from bulk supply are found NOT CONFORMING to this specification in respect of the pattern, 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. Shoulder Badges with major defects as described in Annex D of this specification will be rejected.
5. 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:
- Stamping of Accepted Stores.** The acceptable Shoulder Badges shall be stamped with Inspector's Individual Acceptance Mark's at appropriate place or as per instructions of inspecting officer. The stamping shall be legible.
 - Stamping of Rejected Stores.** The rejected Shoulder Badges shall be marked with Inspector's Rejection Mark to avoid re-submission by the supplier.
 - 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.
- Packing Details.** The store when ordered to be delivered 'PACKED' shall be packed as following instructions:
 - Each Shoulder Badge shall be packed in butter paper, then in a suitable box in neat and tidy condition.
 - 500 x Shoulder Badges (each type) shall be further packed in a thick card board box.
 - Each card board box packing shall be securely and properly

packed with packing list.

0118. IDENTIFICATION LABEL

1. Each Badges 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 manufacture.
- 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 along with the challan, which include complete details about the store i.e. Pattern No., Description of stores, size, quantity, contract No., and date, Challan No. date 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.
- (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 item shall be delivered in good quality and fulfilling all the requirements of PN specification.
2. The store shall be delivered in brand new, clean and dry condition.

XXXXXSDXXXX

MUHAMMAD AFSAR
Captain Pakistan Navy
Director

Annexes:

A. Definitions & Abbreviation	08
B. Technical Details	09
C. Technical Drawings	13
D. Guideline for Inspection – General Defects	16
E. Acceptable Quality Levels (AQLs)	18
F. Feed Back Form	20

ANNEX A TO
PN SPECIFICATION NO. 16/2021
PROMULGATION DATE 30 MAR 22

DEFINITIONS & ABBREVIATIONS

1. **CINS:** Chief Inspector of Naval Stores.
2. **DITD:** Directorate of Indigenous Technical Development.
3. **DNS:** Directorate of Naval Store.
4. **PN CSD:** Pakistan Navy Clothing Store Depot.
5. **PN CTA:** 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.

ANNEX B TO
PN SPECIFICATION NO. 16/2021
PROMULGATION DATE 30 MAR 22

TECHNICAL DETAILS

S NO	TESTS	METHODS	REQUIREMENT
1.	BASE FABRIC MATERIAL SPECIFICATION		
a.	Material	AATCC 20A	80% ± 02% Polyester 20% ± 02% Cotton
b.	Weight/sq. meter in grams	ISO-3801	145 ± 05 gsm
c.	Thread/ Inch (1) Warp (2) Weft	ISO 7211/2	75 ± 02 20 ± 02
d.	Color (Pantone)	Visual analysis	19-4007 TCX
2.	BASE FABRIC PERFORMANCE TESTING		
a.	Breaking Strength min (Kgs) (50mmx200mm B.G) (1) Warp (2) Weft	ISO-13934-01	32 ± 02 Kg 11 ± 02 Kg
b.	Color fastness to Water (1) Change in shade (2) Staining (a) Wool (b) Acrylic (c) Polyester (d) Nylon (e) Cotton (f) Acetate	ISO 105-E01	4 or better 4 or better 4 or better 4 or better 4 or better 4 or better 4 or better
c.	Color fastness to light	ISO 105-B02/BS 1006	4 or better
d.	Color Fastness to rubbing (1) Change in shade (2) Staining	ISO-105-X12	4 or better 4 or better
e.	Color Fastness to perspiration (1) Change in shade (2) Staining (a) Wool (b) Acrylic (c) Polyester (d) Nylon (e) Cotton (f) Acetate	ISO 105-E04	Acid Alkali 4 or better 4 or better 4 or better 4 or better 4 or better 4 or better 4 or better
f.	Color Fastness to sea water	ISO 105-E02	Acid Alkali

	(1) Change in shade (2) Staining (a) Wool (b) Acrylic (c) Polyester (d) Nylon (e) Cotton (f) Acetate		4 or better 4 or better 4 or better 4 or better 4 or better 4 or better	
--	---	--	--	--

3. LINING CLOTH MATERIAL SPECIFICATION

a.	Material	AATCC 20A	70% ± 02% Polyester 30% ± 02% Cotton
b.	Weight/ Sq. Meter in grams	ISO-3801	210 ± 05 gm
c.	Thread/inch (1) Warp (2) Weft	ISO 7211/2	118 ± 02 57 ± 02
d.	Weave	ISO 7211/1	Twill (1x2)
e.	Color (Pantone Shade)	Visual analysis	19-4007 TCX
f.	Linear Density (1) Warp (2) Weft	ISO 7211/5	21 ^s 21 ^s

4. LINING CLOTH PERFORMANCE TESTING

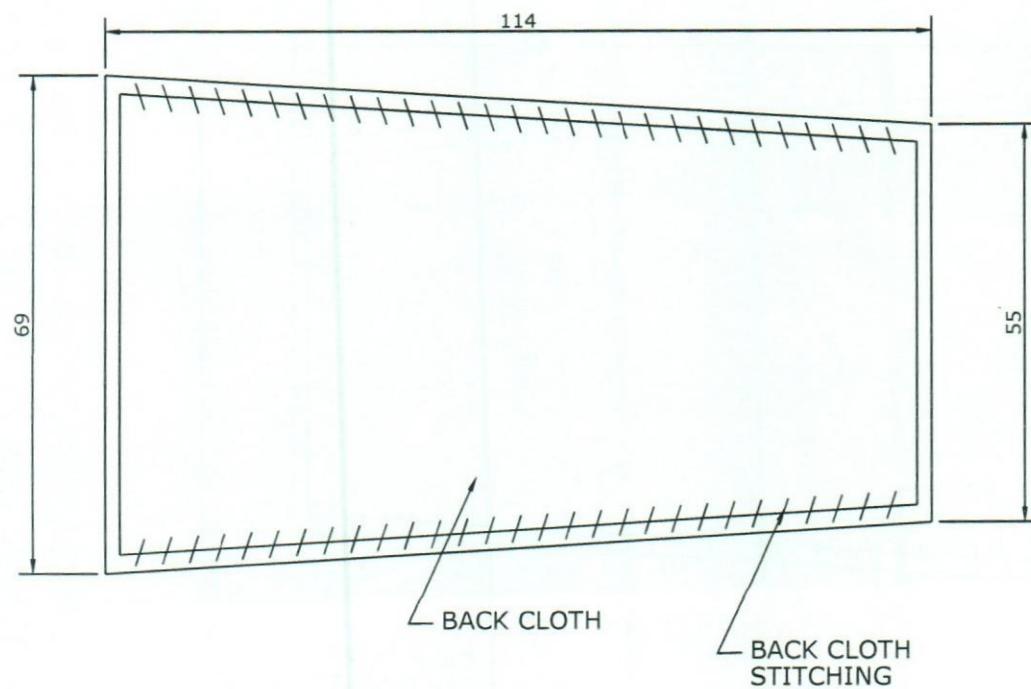
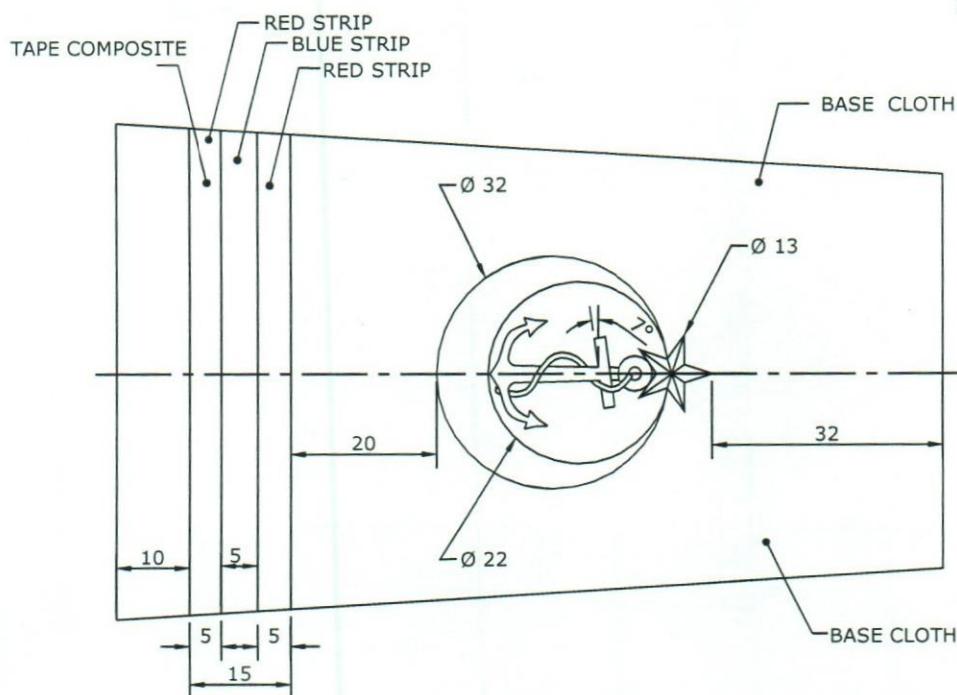
a.	Breaking Strength min (Kgs) (50mmx200mm B.G) (1) Warp (2) Weft	ISO-13934-01	128 ± 05 Kg 65 ± 05 Kg
b.	Color fastness to Water (1) Change in shade (2) Staining (a) Wool (b) Acrylic (c) Polyester (d) Nylon (e) Cotton (f) Acetate	ISO 105-E01	4 or better 4 or better 4 or better 4 or better 4 or better 4 or better
c.	Color fastness to rubbing (1) Change in shade (2) Staining	ISO-105-X12	4 or better 4 or better
d.	Color fastness to Sea Water (1) Change in shade (2) Staining (a) Wool (b) Acrylic (c) Polyester (d) Nylon (e) Cotton	ISO 105-E02	4 or better 4 or better 4 or better 4 or better 4 or better

	(f) Acetate		4 or better
e.	Color Fastness to perspiration (1) Change in shade (2) Staining (a) Wool (b) Acrylic (c) Polyester (d) Nylon (e) Cotton (f) Acetate	ISO 105-E04	Acid Alkali 4 or better 4 or better 4 or better 4 or better 4 or better 4 or better 4 or better
5.	TAPE COMPOSITE MATERIAL SPECIFICATION		
a.	Material	AATCC 20A	Polyester
b.	Thickness	Physical analysis	15 ± 1 mm
c.	Shade (1) Red stripes (2) Blue stripes	Visual analysis	19-1662 TCX 19-3815 TCX
d.	Dimensions (1) Width of Red stripes (2) Width of Blue stripes	Physical analysis	5 ± 0.1 mm 5 ± 0.1 mm
e.	Weight/ mtr in gram	ISO-3801	± 0.5 gm
6.	STITCHING THREAD SPECIFICATION		
a.	Material	AATCC 20 A	Polyester
b.	Construction	Visual analysis	02 cord each single
c.	Shade (Pantone) Black- Anthracite	Visual analysis	19-4007 TCX
7.	SUPPORTING SHEET		
a.	Material	AATCC 20 A	Polyvinyl Chloride (PVC)
b.	Thickness	ASTM D 8136	0.59 ± 0.01mm
c.	Dimension	Physical analysis	Length = 24" ± 0.1" Width = 18" ± 0.1"
8.	MATERIAL COMPOSITION OF CRESCENT STAR & ONE STAR THROUGH XRF ANALYZER		
a.	Material Composition (1) Silver (2) Bismuth (3) Cobalt (4) Chromium (5) Copper (6) Iron (7) Magnesium (8) Manganese (9) Nickel (10) Lead	Min%	Max%
		>1.32	
		0.41	0.47
		0.21	0.25
		0.7	0.8
		4.98	5.59
		0.32	0.46
		6.04	7.44
		0.07	0.08
		0.32	0.46
		>1.20	

(11)	Silicon	3.39	4.07
(12)	Tin	0.50	0.56
(13)	Titanium	0.07	0.08
(14)	Vanadium	>0.14	
(15)	Zinc	>14.4	
(16)	Aluminum	-----Remainder-----	
b.	Coating Color	The material shall be Gold Plated/ coated.	

TECHNICAL DRAWING

ANNEX C TO
PN SPECIFICATION NO 16/2021



1385

NOTE:
FOR FURTHER DETAILS SEE STOCK/APPROVED SAMPLE

DITD KARACHI

TITLE:
SHOULDER BADGE (MCPO)

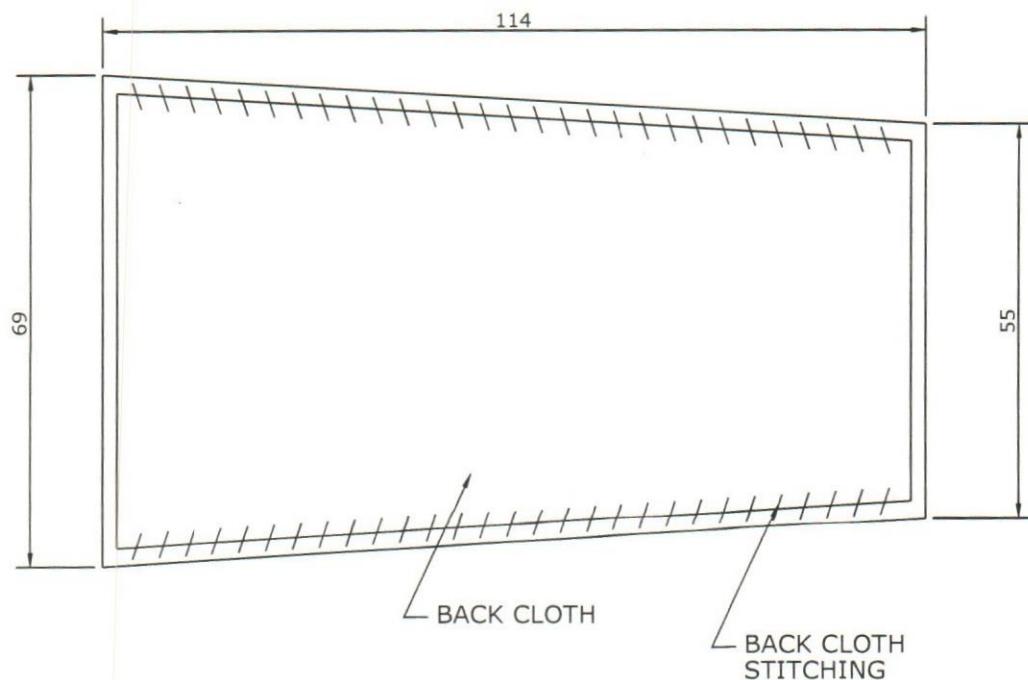
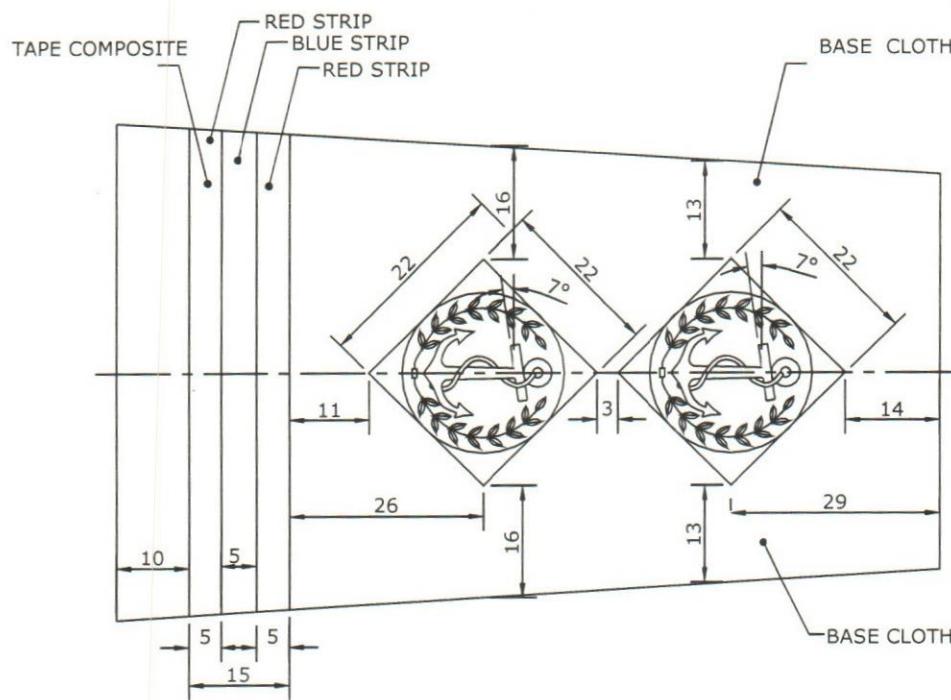
DWG.NO.	TD-2578/2021	DIMENSIONS: mm
---------	--------------	----------------

DATE:	29-04-2021	SCALE: NTS
-------	------------	------------

DRAWN BY	CHECKED BY	APPROVED BY
--SD-- ADNAN NISAR D/MAN	--SD-- LT CDR SANA KANWAL SO, TEXTILE	--SD-- CAPTAIN M. AFSAR DID

TECHNICAL DRAWING

ANNEX C TO
PN SPECIFICATION NO 16/2021



DITD KARACHI

TITLE:
SHOULDER BADGE (FCPO)

DWG.NO.	TD-2577/2021	DIMENSIONS: mm
DATE:	29-04-2021	SCALE: NTS

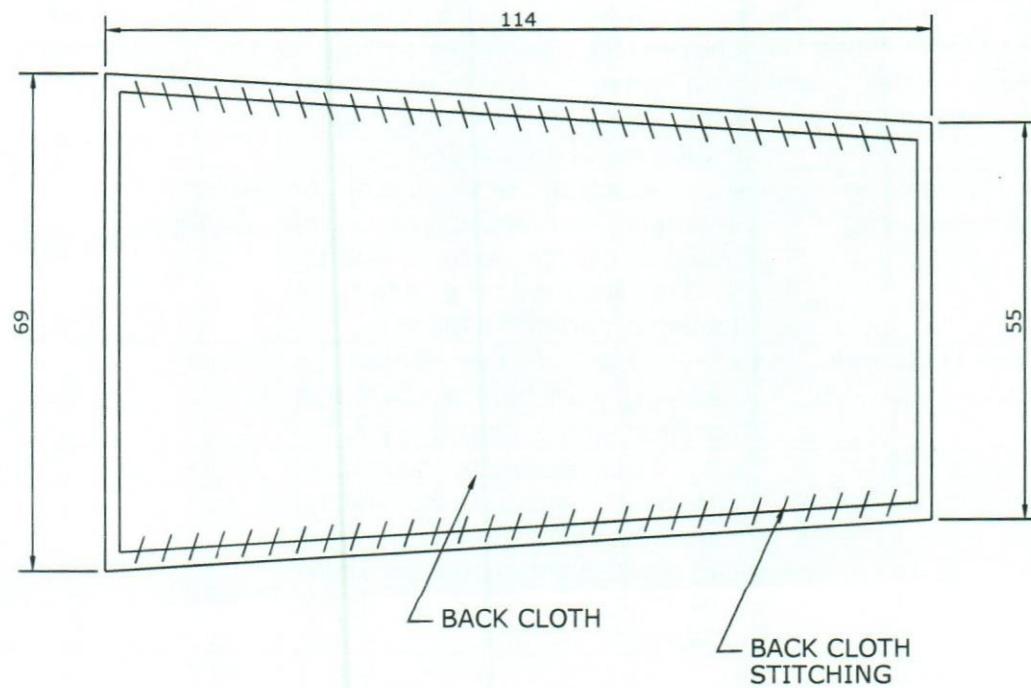
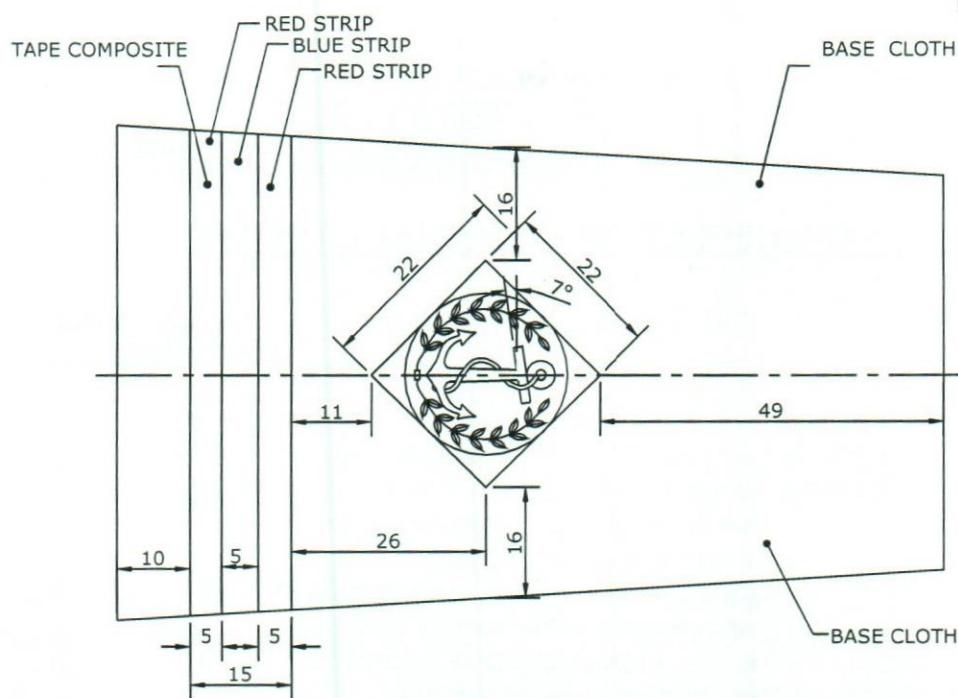
DRAWN BY --SD-- ADNAN NISAR D/MAN	CHECKED BY --SD-- LT CDR SANA KANWAL SO TEXTILE	APPROVED BY --SD-- CAPTAIN M. AFSAR DID
--	---	---

NOTE:
FOR FURTHER DETAILS SEE STOCK/APPROVED SAMPLE

1384

TECHNICAL DRAWING

ANNEX C TO
PN SPECIFICATION NO 16/2021



DITD KARACHI

TITLE:
SHOULDER BADGE (CPO)

DWG.NO.	TD-2576/2021	DIMENSIONS: mm
---------	--------------	----------------

DATE:	28-04-2021	SCALE: NTS
-------	------------	------------

DRAWN BY	CHECKED BY	APPROVED BY
----------	------------	-------------

--SD--

ADNAN NISAR
D/MAN

LT CDR
SANA KANWAL
SO TEXTILE

--SD--

CAPTAIN
M. AFSAR
DID

1383

NOTE:

FOR FURTHER DETAILS SEE STOCK/APPROVED SAMPLE

ANNEX D TO
PN SPECIFICATION NO. 16/2021
PROMULGATION DATE 30 MAR 22

GUIDELINE FOR INSPECTION – GENERAL DEFECTS

<u>S.No</u>	<u>Defects</u>	<u>Possible Cause</u>	<u>Type of Defects Major/Minor</u>
1.	FABRIC		
a.	Barre: horizontal stripes of uniform or variable width in Fabric or periodic lateral irregularity	<ul style="list-style-type: none"> Possible due to lower tension in one of the feeders, loops formed in the knitted cycle initiated by that particular feeder were slightly larger than the rest thus causing an embossed appearance in the form of stripes. Individual yarns differ w.r.t count properties or structure. Different course Length. 	Major
b.	Skewed fabric: The shape of the fabric is distorted. Wales and courses are angular.	<ul style="list-style-type: none"> 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.	Foreign Fly between loops of constructed fabric	<ul style="list-style-type: none"> Unclean environment or improper maintenance of machine can cause fly to end up in the knitting zone where it becomes part of the fabric. 	Major if it is visible.
d.	Thin Yarn/ Thick yarn	<ul style="list-style-type: none"> One of the feeder is receiving yarn from a spool that has finer yarn or coarser yarn. 	Major
e.	Horizontal band of different color on bottom	<ul style="list-style-type: none"> This happens due to a change of bobbin in the knitting machine. Different lots of yarn can have slight shade variations which can produce shade differences in fabric. 	Major
f.	Laddering: Vertical stripes can be observed as longitude lineal gap in fabric	<ul style="list-style-type: none"> Continued knitting with a broken needle. Incorrect closing of the hook by the latch. Shift latches and needles. 	Major
g.	Deliberate cut placed in fabric	A rib defect occurred during knitting which was detected by QC who placed a cut on the defect to ensure that the garment	Major

		does not go through further stages.	
h.	Hole: Crack of yarn or breakage	<ul style="list-style-type: none"> 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. PRE-TREATMENT			
a.	Pinhole	<ul style="list-style-type: none"> The presence of 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. DYEING			
a.	Shade difference	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> This occur due to spill of oil, ink, food, drinks on the garment. 	If it is easily washable then minor.
4. STITCHING			
a.	Seam puckering: gathering of a seam either just after sewing or after laundering.	<ul style="list-style-type: none"> Due to uneven stitching on to plies of fabric, improper thread tension, wrong sewing thread etc. 	Minor when it is not visible
b.	Open Seam or broke seam: Portion of garment that has not been covered by sewing thread.	<ul style="list-style-type: none"> Due to improper handling of the part/ piece of fabric, improper setting and timing between needle and looped or rook etc. 	Major
c.	Broken Stitch: Non continuous Sewing thread	<ul style="list-style-type: none"> Due to improper timing or machine usage. 	Minor
d.	Drop stitched/ skipped Stitched Irregular stitching along the seam	<ul style="list-style-type: none"> It appears due to improper handling of cut pieces or machine usage. 	Minor

ANNEX E TO
PN SPECIFICATION NO. 16/2021
PROMULGATION DATE 30 MAR 22

ACCEPTABLE QUALITY LEVELS (AQLS)

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>	Finished Shoulder Badges							
			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

3. If the inspector have time constrain then AQL is beneficial/ helpful in inspection of whole lot/ offered store. It safe time, cost and give effective/ statistical result of product

/offered store. e.g. If inspector needs 1 minute to check the item , the quantity to be inspected is 2,500 items then it took 42 hours to check the whole consignment/ offered store. It means 26 days approx. for one store. Calculation is as follows:

$$\frac{1 \text{ min} \times 1 \text{ hr}}{1 \text{ item} \times 60 \text{ min}} \times 2,500 \text{ items} = 42 \text{ hrs} \cong 02 \text{ days}$$

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

$$\frac{1 \text{ min} \times 1 \text{ hr}}{1 \text{ item} \times 60 \text{ min}} \times 2,00 \text{ items} = 3.33 \text{ hrs} \cong \text{half quarter od a day}$$

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.

ANNEX F TO
PN SPECIFICATION NO. 16/2021
PROMULGATION DATE 30 MAR 22

FEED BACK FORM

Unit Name: _____

Item Description#: _____

Issue/Problem occurred: _____

PN SPEC #: _____

Possibility to resolve Issue: _____

Any Other Remarks: _____

Note:

- It's good to give feedback for improvement in any clothing Item.
- Recurring problem will also be intimated through this form.

Name Stamp

COUNTERSIGNED By CO/Admin Authority

Name Stamp

BLANK PAGE

PN SPECIFICATION 16/2021