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Supersedes Drawing No.ADRDE/1460-02 (b)

**GOVERNMENT OF INDIA
MINISTRY OF DEFENCE**

SPECIFICATION

ON

**SUB – ASSY OF SPRING FOR AUXILIARY SPRING
PTA-R PARACHUTE**

(DS Cat No. NIV)

ISSUED BY

**THE CONTROLLER,
CONTROLLERATE OF QUALITY ASSURANCE (GS),
ASHOK PATH,
KANPUR – 208 004**

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ASHOK PATH, KANPUR - 208 004
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RECORD OF AMENDMENTS

Amendment Srl. No.	Date dd/mm/yy	Details of Amendment	Amendment carried out by (Name & Date)

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0.0 FOREWORD

0.1 This specification has been prepared by Controllerate of Quality Assurance (General Stores), Kanpur on behalf of the Director General Quality Assurance, Ministry of Defence, New Delhi.

0.2 This Specification Supersedes Drg No. ADRDE/1460-02 (b).

0.3 This specification shall be used to guide procurement, manufacture & Quality Assurance of the store for which it is intended.

0.4 The Quality Assurance Authority for the store covered by this specification is the Controller, Controllerate of Quality Assurance (General Stores), Ashok Path, Kanpur-208 004. Enquiries regarding this specification related to technical or any other contractual conditions shall be referred to the Quality Assurance Authority named in the purchase document viz. tender or contract.

0.5 This Specification is a live document and is, therefore, likely to undergo changes. Any major change in design should have the approval of General Staff/Users, financial concurrence in the form of DGQA approval. Thus, it may involve some price difference. Therefore, a specification issued holds good only for the supply order for which it is issued.

1.0 SCOPE

1.1 This specification covers the requirements of Sub Assy of Spring for Auxiliary Spring PTA-R Parachute,(DS Cat No. NIV) and provides guidance to contractors/suppliers, manufacturers, Quality Assurance Agencies and stockiest/ indenters etc.

2.0 RELATED SPECIFICATIONS AND DOCUMENTS

Sl. No.	Specification No.	Title / Subjects
(a)	BS 5216-1975	Specification Steel Spring Music wire.
(b)	IS: 280:2006 Amd-1 Reaffirmed-2010	Mild Steel
(c)	IS: 1572-1986 Amd-1 (Reaffirmed-2010)	Electroplated Coatings of Cadmium on iron and Steel.

(d)	IS: 2102 (Pt-I)-1993 (Reaffirmed-2008)	General Tolerances: Part 1 Tolerances for linear & angular dimensions without individual tolerance indications.
(e)	IS: 2500 (Pt-I)-2000 Amd-1 (Reaffirmed-2011)	Sampling Inspection procedures: Part 1 Attribute sampling plans indexed by Acceptable Quality Limit (AQL) for lot-by-lot inspection.
(f)	IS: 2771(Pt-1)-1990 Amd-3 (Reaffirmed-2008)	Corrugated Fibre Board Boxes General requirements.
(g)	IS: 4185-1989 (Reaffirmed 2010) and Suppl Schedule No. CIGS/SS/185(b)	Adhesive paper tape
(h)	IS: 4905-1968 Amdt.1 (Reaffirmed-2011)	Methods for Random sampling.
(j)	IS: 13262-1992 Amdt-1 (Reaffirmed -2008)	Pressure sensitive adhesive tape with plastic base.
(k)	JSS: 7530-01:2014 (Revision No. 3)	Label Carton 50x25 mm
(l)	JSS 8135-10:2004(Amd-1) (Revision No.1) , (Reaffirmed 2011)	Polypropylene Strapping 12 mm wide.
(m)	JSS: 9330-02:2008 (Revision No. 2)	Polythene Film 0.04 mm thick.
(n)	0.89mm thick of average Bursting Strength 775 KPa based on at least 5 tests.	Label Card Board 45 x 25 mm with tie-on-tag.

2.2 Copies of any other reference documents such as Specification/Drawing/Instructions/Guides etc. can be obtained on payment from the addresses as shown below:-

Specification		Source
I.S. Series		Director General, Bureau of Indian Standards, Manak Bhawan, 9, Bahadur Shah Zafar Marg, New Delhi-110 002. Or his Regional Offices at Bombay, Calcutta, Madras and other branch offices. Or its Regional Establishments
JSS Series		The Director Directorate of Standardisation, Standardisation Documentation Centre 'J' Block, Room No. 05, Nirman Bhavan, P.O, New Delhi-110 011

3.0 STANDARD PATTERN

3.1 Standard Pattern of Sub Assy of Spring for Auxiliary Spring PTA-R Parachute (DS Cat No. NIV) held by the Purchase Officer shall constitute the standard as regards any particulars or properties, not noted or defined in this specification.

4.0 MATERIAL

4.1 The item shall be manufactured from the following materials:-

Sl. No.	Store / Component	Material Grade	Specification
(a)	Body (Spring)	Steel Spring Music wire \varnothing 3.4	BS: 5216-1975 (REF-M)
(b)	Ferrule	Mild Steel 0.996 mm thick sheet	IS-280

5.0 PROCESSING

5.1 Sub Assy of Spring for Auxiliary Spring PTA-R Parachute shall be manufactured to the shape and design as shown in the relevant plates attached to this specification.

5.2 Sub Assy of Spring for Auxiliary Spring PTA-R Parachute shall be Cadmium plated to a minimum thickness of 0.012 mm (min). and chromate passivated to IS :1572 Fe/Cd-12 CA. The plating shall be even and uniform throughout. The plating shall not peel off the Auxiliary Spring shall be finished smooth before being plated.

5.3 Embrittlement Release – After Cadmium Plating and prior to Chromate passivation the Auxiliary Spring shall be maintained at a temperature of 150°C - 200°C for half an hour min. to remove Hydrogen Embrittlement.

5.4 All edges/Hard corners to be Round-off.

6.0 DIMENSIONS AND TOLERANCES

6.1 Dimensions

6.1.1 The store shall conform to the dimension shown in the plate attached to this specification.

6.2 Tolerances:- Tolerance shall be applied wherever mentioned in plate attached to specification.

6.2.1 Unless otherwise specified, general tolerances to IS: 2102 (Pt-I)-1993 (Reaffirmed 2008) as given below shall apply.

Tolerance	Class	
Designation	Description	Applicable on Components/Parts
C	Medium	For complete store except where shown in Drawing.

7.0 WORKMANSHIP AND FINISH

7.1 The general workmanship and finish shall be of a high standard and similar to sealed pattern.

7.2 Surface of Sub Assy of Spring for Auxiliary Spring PTA-R Parachute shall be free from pits, burrs, chipping, blisters, base surface dent marks and deformation.

7.3 All the sharp edges shall be removed.

7.4 Sub Assy of Spring for Auxiliary Spring PTA-R Parachute shall be Cadmium Plated and Chromate Passivated conforming to IS:1572.

8.0 PRE-INSPECTION BY PRODUCER

8.1 Manufacturers/contractors must satisfy themselves first that the store manufactured are in accordance with the contract and fully conform to the specification, by carrying out thorough pre-inspection of each lot/batch before actually tendering the same for inspection to the Quality Assurance Officer nominated under the terms of the contract.

8.2 A declaration by the Contractor that necessary pre-inspection tests have been carried out on the stores tendered and the same are fit for inspection and test shall be rendered along with the challan. The declaration shall include the method followed in pre-inspection showing features checked/tested and will have the test certificate attached to the challan / declaration.

8.3 If the quality assurance officer finds that pre inspection of the consignment, as required above not been carried out, the consignment is liable for rejection.

9.0 QUALITY ASSURANCE

9.1 On Examination of samples taken from any portion of the consignment or during surveillance inspection, shall conform to the requirement when tested in accordance with the methods mentioned against each in this specification.

10.0 SAMPLING PROCEDURE

10.1 The suppliers shall arrange the units of the homogeneous lot in such a way that all the units are easily accessible to the Quality Assurance Officer to enable him to draw samples from any portion of the homogeneous lot.

10.2 Sampling of stores shall be done adopting appropriate sampling method as per IS: 4905-1968 Amdt.1 (Reaffirmed-2011) so that samples drawn as per Table-1 and II given for assessing various quality requirements, are truly representative of the lot.

10.3 Scale of Sampling

10.3.1 The number of sample-units to be drawn for assessing the quality of the store, characteristic wise, should be in accordance with the Table I for dimensional/non destructive/visual inspection and Table II for detailed laboratory testing.

11.0 CRITERIA FOR CONFORMITY

11.1 All the sample units as specified in Table I and II are required to be tested / inspected irrespective of the rejection number ($= Ac+1$) being achieved earlier.

11.2 The Quality Assurance Officer shall draw samples as per Table I for dimensional/nondestructive/visual inspection to assess the quality of the lot. If the quality of the lot indicates conformity to the standard as laid down in Table I, sampling for laboratory testing will be done. Otherwise the lot shall be straightway rejected.

11.3 Sampling for Laboratory Testing

11.3.1 If the lot is considered conforming to the quality standards as specified in Table I, sampling for laboratory tests shall be carried out as per Table II and the samples shall be subjected to the laboratory tests.

11.4 Bulk Sentencing

11.4.1 If the laboratory test report indicates that the lot does not conform to the standards as specified in Table II, the whole lot shall be rejected.

11.4.2 The lot shall be considered conforming to the specified quality if the number of defective units observed in the sample is not more than the respective acceptance number of each class of defects.

11.4.3 When the sample size equals to the lot size, do 100% Quality Assurance.

11.4.4 The number of sample units to be sampled for laboratory testing should be a multiple of the number of Characteristics / tests which can not be carried out simultaneously on the same sample units.

11.5 Sampling and Formation of Lot

11.5.1 The delivery shall be visually inspected by the Quality Assurance Officer at the spot in the first instance to ascertain its homogeneity in respect of nature, size, shape, source and year of manufacture. If it is homogeneous, the delivery shall be treated as one lot. If not, it shall be segregated by the supplier into separate groups so that each group which is homogeneous within itself forms a lot.

11.6 Sampling Tables

Table I
Sampling Plan for Visual Inspection
(Based on General Inspection Level II, AQL 4%)

Lot Size Sample unit	Sample Size (n)	Acceptance Number (Ac)
Up to 50	8	1
51 to 90	13	1
91 to 150	20	2
151 to 280	32	3
281 to 500	50	5
501 to 1200	80	7
1201 to 3200	125	10
3201 to 10000	200	14

Table II
Sampling Plan for Laboratory Testing, AQL 2.5%

Lot Size Sample unit	Physical tests level S-3			Chemical tests level S-2		
	Sample Size (n)	Acceptance Number (Ac)	Rej No. (Re)	Sample Size (n)	Acceptance Number (Ac)	Rej No. (Re)
Up to 50	3	0	1	3	0	1
51 to 90	5	0	1	3	0	1
91 to 150	5	0	1	3	0	1
151 to 280	8	0	1	5	0	1
281 to 500	8	0	1	5	0	1
501 to 1200	13	1	2	5	0	1
1201 to 3200	13	1	2	8	0	1
3201 to 10000	20	1	2	8	0	1

- Note:-
- i) When the sample size equals lot size do 100% inspection/non-destructive testing with zero acceptance number.
 - ii) The rejection number (Re) will always be one more than the acceptance number (Ac).
 - iii) Level S-3 for Physical test (Individual sample to be tested).
 - iv) Level S-2 for Chemical test (Individual sample to be tested).

Source:- IS: 2500(Pt-1)-2000 Amd-1 (Reaffirmed-2011): (Sampling Inspection Procedures).

12.0 TESTS

12.1 Physical Tests:- Design, shape and dimensions.

12.2 Chemical Tests:- Chemical analysis, thickness of plating/coating. Cadmium plating on Auxiliary Spring.

12.3 The store shall be finally chrome passivated after Cadmium plating.

12.4 Compression Test :- 100% of Sub Assy of Spring for Auxiliary Spring shall be fully compressed under a load not less than 118 N (12 Kg) and more than 141 N (15 Kg). After being maintained above compressed position under such load for a period of 10 minutes. Spring will show no permanent set on complete removal of load and the joints shall remain undamaged.

3.0 MARKING

13.1 Marking by the Supplier

13.1.1 The store shall be legibly and indelibly marked with:-

- (a) Manufacturer's name, initials or recognized trade mark.
- (b) The year of manufacture.
- (c) D. S. Catalogue Number of the store.

13.2 Marking by the Quality Assurance Officer

13.2.1 Each accepted store shall be legibly and indelibly marked using stencil plate or Rubber / Steel stamp of letter size 6 mm depending upon the size of the store/component.

13.2.2 In case of small components, where steel stamping or stenciling is not possible, the rubber acceptance mark shall be stamped on individual packages containing the items for this purpose, each package shall be sealed by a continuous piece of gummed tape such that ends overlap each other. Acceptance marks shall be affixed on the joint of the tape end partly covering the package.

13.3 The final rejections may be marked by Quality Assurance Officer by stamping the letter 'X' on both sides of the manufacturer's marking thus:-

NIV
X Firm's Name X
Year

14.0 PACKING AND PRESERVATION

14.1 Packing Materials

Sl. No.	Material	Conforming to
(a)	Corrugated Fibre Board Boxes, General Requirements.	IS: 2771(Pt-1)-1990 Amd-3 (Reaffirmed-2008)
(b)	Adhesive paper tape	IS: 4185-1989 (Reaffirmed 2010) and Suppl Schedule No. CIGS/SS/185(b)
(c)	Pressure Sensitive adhesive tape with plastic base	IS: 13262-1992 , Amdt- 1 (Reaffirmed -2008)
(d)	Label carton 50X25 mm	JSS: 7530-01:2014 (Revision No.3)
(e)	Polypropylene Strapping 12 mm wide	JSS 8135-10 : 2004
(f)	Polythene Film 0.04 mm thick	JSS: 9330-02:2008 (Revision No 2)
(g)	Label Card Board 45 x 25 mm with Tie-on-Tag	0.89mm thick of average Bursting Strength 775 KPa based on at least 5 tests.

14.2 Method of Packaging

14.2.1 Each Sub Assy of Spring for Auxiliary Spring PTA-R Parachute shall be packed separately in a polythene 0.04 mm thick bag of suitable size & heat sealed to form a unit pack. Each unit pack shall be tied with a label Card board 45 x 25 mm bearing D. S. Cat No., Nomenclature of the store and stamped with Acceptance marks. 10 Nos. of unit pack shall be packed in corrugated fibre board box dully lined with polythene film of suitable size. The empty space if any in the box shall be filled in with paper cuttings to prevent movement of the contents during transit. The flap of box packed with store shall then be closed with pressure sensitive adhesive tape with plastic base. Finally the box shall be strapped suitably spaced at two places lengthwise & two places widthwise.

14.2.2 Mass of any fibre board box, shall not exceed 25 kg. In order to maintain the limit of mass, the number of items in the package may be altered at the discretion of the SQAQO.

14.3 Marking on Package

14.3.1 Each final package shall be legibly and indelibly marked as under:-

- i) D.S. Cat. No. and designation of the store.
- ii) Qty packed, preceded by the abbreviation 'QTY'.
- iii) Name and address of the consignee as given in the contract.
- iv) Mass of the package in Kilogram preceded by the abbreviation 'Kg'.
- v) Number of the individual package and total number of packages in the consignment i.e. 1 of 4, 2 of 4, 3 of 4 and 4 of 4 when the consignment consists of 4 packages.
- vi) Consignor's name, initials or recognised Trade Mark.
- vii) Month and year of packing.
- viii) A/T, S/O or Extract No. and Date.
- ix) I/Note No. and Date.

15.0 TECHNICAL LITERATURE / DOCUMENTS

15.1 Illustrated spare parts list History sheet/maintenance manual shall be supplied with each store wherever required/ demanded.

16.0 **WARRANTY**

16.1 Except as other wise provided in the invitation to the tender, the contractor / seller hereby declares that the goods, stores, articles sold /supplied to the purchaser under this contract shall be of the best quality and workmanship and new in all respect and shall be strictly in accordance with the specifications and particulars contained /mentioned in the contract. The contractor /seller hereby guarantee that the said goods / stores /articles would continue to conform to the description and quality aforesaid for period of twelve months from the date of delivery of the said goods /stores /articles to the purchaser for 15, months from the date of shipment /dispatch from the contractors works which is earlier and not with standing the fact that the purchaser (Inspector) may have inspected and / or approved the said goods /stores /articles, if during the aforesaid period of 12 /15 months the said goods /stores / articles, be discovered not to conform to the description and quality aforesaid or not giving satisfactory performance or have deteriorated and the decision of the purchaser in the behalf shall be final and binding on the contractor/seller to rectify/replace by acceptable goods/stores/articles, or such portion or portion there of as is found to be defective by the purchaser in the discretion on the application made there of by the contractor/seller, and in such as event the above mentioned warranty period shall apply to the goods/stores/articles rectified/replaced from the date of rectification/replacement there of, otherwise the contractor/seller shall pay to the purchaser such compensations as determined by the purchaser as may arise by reason of the breach of the warranty there in contained.

17.0 **DEFENCE STORES CATALOGUE NUMBER**

17.1 The stores covered by this specification shall bear the following DS Cat No.:-

Sl. No.	DS Cat No.	Nomenclature
i)	NIV	Sub Assy of Spring for Auxiliary Spring PTA-R Parachute

18.0 **DRAWINGS / SKETCHES**

18.1 Two sheet of Drg. is attached to the specification.

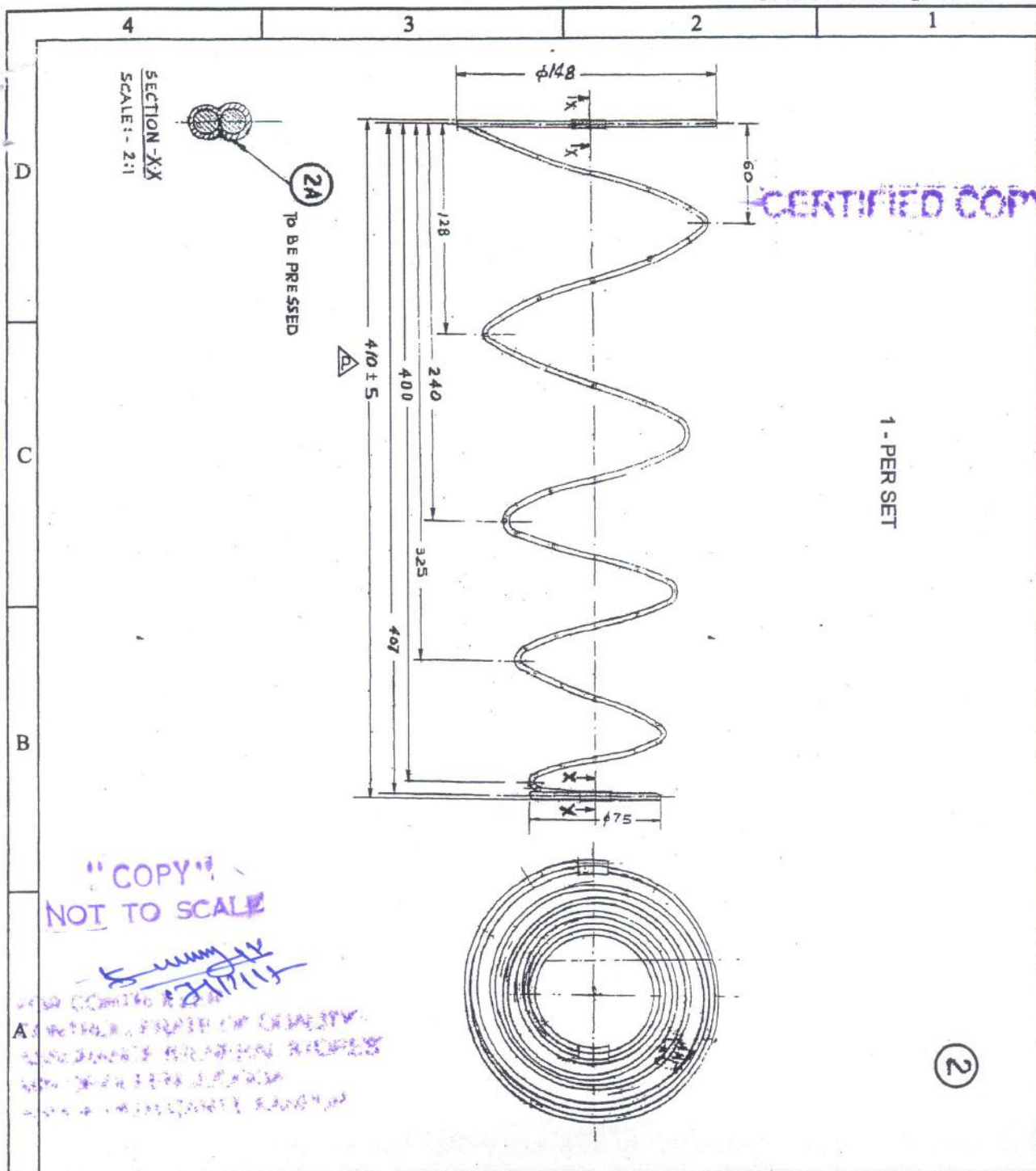
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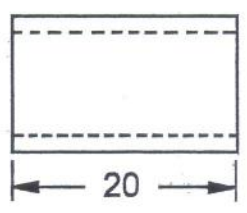
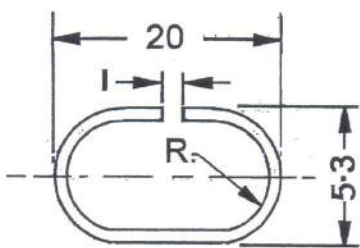
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 (P. D. ARYA) JTO (D)	DATE	NAME	C.Q.A.(G.S.) MINISTRY OF DEFENCE (DGQA) KANPUR
	DGN.		
PASSED BY:- GO/GS-2	DRN.	P. D. ARYA	SUB ASSY. OF SPRING FOR AUXILIARY SPRING PTA - R PARACHUTE
	CHD.	P. D. ARYA	
APPROVED BY:- DC/GS-2	TRD.	P. D. ARYA	 ALL DIMENSIONS ARE IN mm. PLATE ATTACHED TO SPECN. No.CQA(GS)/US/563
	COMP.		
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	CHD.	P. D. ARYA	
APPROVED BY:- DC/GS-2	TRD.	P. D. ARYA	ALL DIMENSIONS ARE IN mm. PLATE ATTACHED TO SPECN. No.CQA(GS)/US/563
	COMP.		
TOLERANCE IS:2102 (Pt-I) MEDIUM			FERRULE AUXILIARY SPRING FOR PTA - R PARACHUTE
SCALE : ---			