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**QUALITY ASSURANCE PLAN OF
SPRING HELICAL COMPRESSION,
DRG. NO. 5360-040480/ GCF-MN 5501(C)**

Prepared and published by



Gun Carriage Factory
A Unit of Ordnance Factory Board,
Government of India, Ministry of Defence,
Jabalpur (MP) 482011



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QAP/ATP

This quality plan is a general guide to meet the quality requirements of product. It consists of applicable procedures (describing production processes, inspection & testing instructions), applicable workmanship standards, the measurement tolerances acceptable, the description of material standards and so forth. It also mentions the list of documents, test certificates that will be submitted by firm to GCF along with finished component.

1. Nomenclature & Drawing No. : SPRING HELICAL COMPRESSION, 5360-040480/ GCF-MN 5501(C)

2. Material & Condition : As per Standard given in drawing.

2.1 Test/Checks and Acceptance criteria for Material.

S N	TEST/CHECK	PARAMETER	ACCEPTANCE
1	Chemical composition	composition	As per Standard
2	Mechanical properties	Tensile Strength	As per Standard
		Yield Stress	As per Standard
		% Elongation	As per Standard
		Hardness	As per Standard
	Izod Min. (Impact Test)	As per Standard	

Note – The entire raw material required for manufacture of the store shall be procured as far as possible in bulk to meet the entire quantity. These materials shall be initially tested for chemical composition and mechanical properties before undertaking of manufacture of component.

2.2 Manufacturer to supply one test piece along with bulk supply. (Factory may check chemical and mechanical properties whenever required)

3. Method of manufacture * : Machining & other operations as per process. During and after machining, all dimensions and surface finish should be maintained as per specified drawing.

4.0 Inspection: Following methodology is to be followed for inspection.

4.1 Mode of Inspection & Sample Size/Selection:

(a) **At Firm Premises:** Inspection by the manufacturer for 100% quantities of lot size.

(b) **At receipt End:** Inspection by MID/QC (GCF Rep.) at receipt at GCF. Sample selection as per existing IS standard 2500 part-II, 1965.

4.2 Visual Inspection

S.NO.	DETAILS OF FEATURE	ACCEPTANCE CRITERIA
A	All Sharp Edges & Burrs	To be rounded off/chamfered and burrs to be removed
B	Chattering Marks on Thread	If applicable, Not allowed on thread
C	Tool Marks and Scratches	Not allowed
D	Complete surface of the machined component should be free from rust/pit marks	Rust /pit marks not allowed

4.3 Dimensional Inspection: all dimensions (critical, major & minor in nature) & geometrical features of drawings are to be covered in check sheet and should be duly inspected by concerned quality control section. Components, having dimensions as per drawing, should only be accepted by inspectorate. No deviation in dimension or in geometrical feature is permitted.

5. Other Test on Semi-finished/finished Component.

5.1 Details of tests /check on Semi-finished/ finished items and acceptance criteria:

S No.	TEST / CHECK	SAMPLE SIZE	ACCEPTANCE CRITERIA
A	Hardness Test (In process Inspection)	100%	If applicable, Hardness Within Specified hardness Range as per Standard.
B	Load Test	100%	As per drawing

6. List of Documents:

(To be submitted by firm along with finished component during factory end inspection)

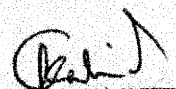
- (1) Dimensional Acceptance I-note checked by QC (Firm) with check-sheet as per Para 4.3. (Sample-100%)
- (2) Heat treatment I-note with hardness values as per 5.1 Sl. No. (A), if applicable.
- (3) NABL/Govt. approved Lab certificate required for material that includes chemical composition and mechanical properties (tensile strength, Yield strength, Elongation, Impact strength as per Izod & Hardness).

7. Important Note:

Final authority of acceptance is based on the Fit for Trial (FFT) report.

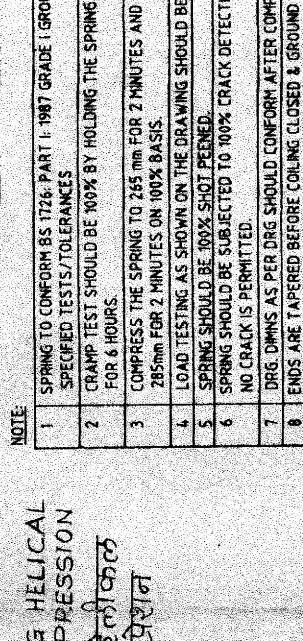
Date:-31/12/2019


 Approved By
 Group Officer
 (QC Section)

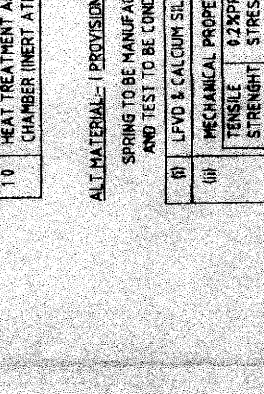

 Prepared By
 JWM/SC

FOR TENDER ONLY

* SPRING HELICAL COMPRESSION
रिंग हेलिकल कंप्रेशन



FREE LENGTH mm. 585¹⁴
(AFTER SATISFYING ALL STIPULATED TEST)



MATL: ESR/VLD SAE 8660H, GROUND BAR MANUFACTURE
PROTECTIVE FINISH - ONE COAT BLACK PAINT

NOTE:-

1. THIS DOCUMENT IS THE PROPERTY OF THE GOVT. OF INDIA
M. OF D. AND IS ISSUED FOR THE PURPOSE OF DEVELOPING
/MANUFACTURING STORES REQUIRED FOR DEFENCE USE.
2. IT MUST NOT BE REPRODUCED/DISCLOSED TO ANY THIRD PARTY
OR USED FOR ANY CIVIL PURPOSE
3. IT MUST RETURNED TO THE ISSUE AUTHORITY WHEN THE PURPOSE
OF ITS ISSUE HAS BEEN SERVED
4. DRAWING ARE SUBJECT TO CHANGE 3
PILOT SAMPLES ARE REQUIRED
TO BE SUBMITTED TO INSPECTION PRO
TRIAL MACHINING AND FITMENT.
APPROVAL FOR BULK MANUFACTURE
WILL BE ACCORDED ON
SATISFACTORY MACHING TRIAL AND
ACCEPTANCE OF FINISHED TRIALS.

DRG. NO.	GCF-MN 5501(C)
REV.	29.11.18
DRG/ VETT/UC	24.11.18
GCF/SC/281/DRG/VETT/UC	24.11.18

DRG. NO.	GCF/SC/281/DRG/VETT/UC
REV.	10.3.16
DRG/ VETT/UC	10.3.16
GCF/SC/281/DRG/VETT/UC	10.3.16

DRG. NO.	GCF/SC/281/DRG/VETT/UC
REV.	9.5.12
DRG/ VETT/UC	9.5.12
GCF/SC/281/DRG/VETT/UC	9.5.12

DRG. NO.	GCF/SC/281/DRG/VETT/UC
REV.	24.11.17
DRG/ VETT/UC	24.11.17
GCF/SC/281/DRG/VETT/UC	24.11.17

ALL MATERIAL - I PROVISIONAL SUBJECT TO REVIEW

SPRING TO BE MANUFACTURED ACCORDING TO GOST - 4959-79 6G.60C2x4
AND TEST TO BE CONDUCTED AS PER THE DRAWING SPECIFICATION.

(i) LFVD & CALCIUM SILICIDE TREATED

(ii) MECHANICAL PROPERTIES -

TENSILE STRENGTH Kg/mm ²	0.2% PROOF STRESS Kg/mm ²	ELONGATION 5.65/%	IZOD IMPACT VALUE kgf-m/m	HARDNESS HRC
900-905	170-184	6.0 min	0.8 min	51-54

(iii) INCLUSION RATING -

THE STEEL SHOULD BE TESTED AS PER IS 4163-1982 AND THE RATING TO CONFORM TO:-

INCLUSION	THICK (max)
SULPHIDE	0.5
ALUMINA	1.0
SILICATES	0.5
GLOBULAR OXIDE	1.0

(C) DC. NO. 19.4.4-4, W.D.T. 7.9.15

(B) DRG. NO. 281/DRG/VETT/UC 24.11.18

(A) CONDUCTED AS PER DRAW. APPROB. 25.8.09

(E) DC. NO. 186991-W.D.T. 5.1.05

GEN. TOL. NOT SPECIFIED	16.3.16
DRG. VETT/UC	24.11.18
DRG. NO.	281/DRG/VETT/UC
CONDUCTED AS PER DRAW. APPROB.	25.8.09
DC. NO.	186991-W.D.T. 5.1.05

GEN. TOL. NOT SPECIFIED	DATE
	25.8.09

GEN. TOL. NOT SPECIFIED	DATE
	21.10.11
	19.4.11
	7.7.10
	25.8.09

INDEX	GCF/SC/281/DRG/VETT/UC
	GCF/SC/281/DRG/VETT/UC
	GCF/SC/281/DRG/VETT/UC
(A)	GCF/SC/281/DRG/VETT/UC
	GCF/SC/281/DRG/VETT/22
CERTIFICATION No. STD.CELL	
DATE	
APPROVED	

DRG. NO.	GCF-MN 5501(C)
SHEET NO.	1 OF 1 SHEETS