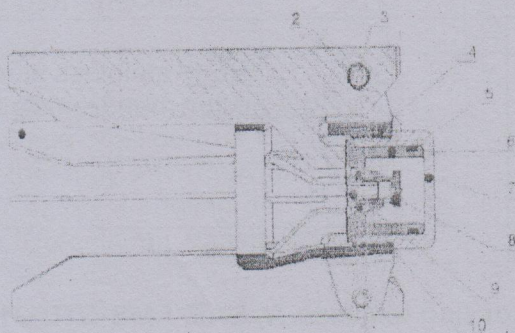
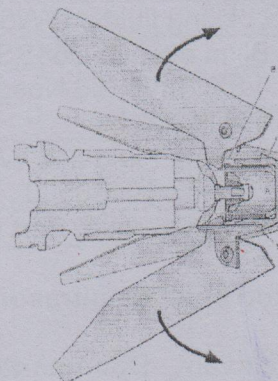


QUALITY ASSURANCE PLAN (QAP)
FOR FIN ASSEMBLY HEDP PART NO. 1183786.



- 1 Fin (6x)
- 2 Fin bushing (6x)
- 3 Blind rivet (6x)
- 4 Fin holder
- 5 O-ring
- 6 Plunger
- 7 Plunger holder
- 8 Valve
- 9 Throttling orifice
- 10 O-ring



- 1 Plunger
- 2 Cylinder

A Space
 B The plunger is forced forward unfolding the fins

- 1.1 Store/ Component: FIN ASSEMBLY PART NO. 1183786
 1.2 End Store: 84mm HEDP 502 Ammn.
 1.3 Critical/Non Critical: Critical
 1.4 Lot / Batch size if specified: 1000 Nos. or multiple of 1000 Nos.
 1.5 Inspection/ tests: Examination of materials, Fitment trial/critical examination, dimensional analysis.
 1.6 Assembly Drawing No: 05210424 (TRD 2.1.4509)

1.7 List of Components/parts-

Sl. No.	Name of Components	TRD no.	Technical specification
A	Fin Assy HEDP, Part No. - 01183786	TRD 2.1.4509	
B	Fin Holder, Part no. 04102306	TRD 3.2.2629	Blank for fin holder TS no. 813613, Dt- 06/02/2015 & Drg. no. 304056955 (TRD 1.2.2628) EN755-2,AN7075-T6** or Blank:Pos.2
C	Fin (06 Nos.) Part no. 05210110	TRD 2.2.2618	EN485-2,ENAW-2014 T6 alt ENAW 7075T6
D	Fin Bushing (06 Nos.), Part no. 06426761	TRD 1.2.2659	SS-EN 10088-3.1.4305-AT(3)
E	Plunger Holder assembly, Part no. 1183785	TRD 2.2.2589	
i	Plunger, Part no. 05210423	TRD 2.2.2594	ENAW 7075-T6
ii	Throttling Orifice, Part no. 05210112	TRD 2.2.2593	EN 10088-3.1.4523+A
iii	Valve, Part no. 06414112	TRD 2.2.2614	EN 10088-3.1.4305-AT
iv	Plunger Holder, Part no. 06414113	TRD 2.2.2619	EN 755-2 EN-AN 7075-T6

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v	O ring 21 x 2 mm, Part no. 06414114		Ethylene Propylene Diene Monomer rubber (EPDM)
vi	O ring 7.1 x 1.6 mm, Part no. 06415234		Nitrite Butadine Rubber (NBR)
vii	Locking fluid 243W53-9005-13		
F	Blind rivet SSD64SSBS 4.8X11mm (06 Nos.), Part no. 06414116		Body-stainless steel Alloy mandrel- stainless steel
G	Locking Fluid 243 W53-9005-13, Part no. 10345590		
H	Silicon grease, Part no. 6412155		

**** The Rod shall be ultrasonic tested according to Class-A, SAE-AMS-STD-2154.**

1.8 Relevant Documents

In addition to this technical specification, the following apply:

- Acceptance Test Procedure for 84mm HEDP-502- 301322774, Date- 20/04/2021, Issue-4.
- Sampling procedure and tables for inspection by attributes: MIL-STD-105/ IS-2500.
- Product specification- 301092337, Date- 21-01-2010.

1.9 Description of product

The fin assembly HEDP is a part of the warhead for Carl Gustaf Ammunition 84mm HEDP 502. The fin assembly HEDP stabilizes the shell after muzzle exit. The fin assembly is made of light alloy.

Before firing the fins are folded inside the cartridge case. They unfold when the shell leaves the barrel and are wrapped-off when hitting e.g. a bunker. When the shell travels in the bore, the propellant gases enter through the valve, building up an overpressure in space (A) between the plunger (1) and the cylinder (2). The valve is designed so as to confine the propellant gases in the space (A). When the shell leaves the muzzle, the overpressure built up in the cylinder forces the plunger forwards, unfolding the fins.

2.0 Product Specifications

2.1 Component parts

All components shall comply with the applicable technical documents.

2.2 Dimension

The dimensions specified in the drawing shall be considered as maximum dimensions and shall not be exceeded.

When delivered as a component, the details shall meet the requirements for the complete ammunition, functioning within the temperature range -40°C to +60°C.

2.3 Inspections

Visual inspection of package and fin assembly marking (i.e. Nomenclature, Lot no., Qty, consigner, consignee etc.) Dimensional and visual inspection of component.

Sampling procedure: ISO 2859

General inspection level: II, Normal

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2.3.1 VISUAL INSPECTION, PACKAGE

Activity of inspection	A Q L	Acceptance/ Rejection criteria				Inspection method/ Equipment
		n	□n	Acc	Rej	
Critical defects not permissible- The package shall be free from visual defects that may adversely affect the function, safety, handling and transport of fin assy. Defects not classified to be judged when necessary. Incorrect type marking.		3	3	0	1	Package
Minor defects- The package shall be marked in accordance with the applicable marking drawing. Indistinct marking.	4.0	3 3	3 6	0 1	2 2	Double sampling
The package shall be free from visual defects that may adversely affect the storage and transport of the fin assy.	2.5	3 3	3 6	0 1	2 2	Double sampling

2.3.2 VISUAL INSPECTION, FIN ASSEMBLY

Activity of inspection	A Q L	Acceptance/ Rejection criteria				Inspection method/Equipment
		n	□n	Acc	Rej	
After riveting the mandrel head shall be removed.						
The fin assembly should be free from visual defects that may adversely affect the functioning, safety etc of ammunition.	1.0	125 125	125 250	2 6	5 7	Double sampling Defects not permitted
The fin assembly should be free from contaminants or other foreign materials.	1.0	125 125	125 250	2 6	5 7	
The fin shall fold out with their own weight.	1.0	125 125	125 250	2 6	5 7	
Plunger movement should be smooth.	1.0	125 125	125 250	2 6	5 7	
Fin opening angle should be 12° from horizontal. Opening angle of all the 06 fins should be uniform.	1.0	125 125	125 250	2 6	5 7	
Rivet screw hole should be clear without obstruction.						Double sampling

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Cutting angle of all the fins should be equal and uniform.						
Fin assy is marked in accordance with the marking drawing (if applicable)	4.0	125	125	0	1	
Incorrect marking:		125	125	7	11	
Indistinct marking:		125	250	18	19	
Dimensional inspection, Fin Assy HEDP	2.5	125	125	5	9	Double sampling
120 ± 0.18		125	250	12	13	Calliper (Altimeter)
M35 x 1.5 – 7H	2.5	125	125	5	9	Thread gauge
		125	250	12	13	

3.0 Functioning- Live firing for MPI/Accuracy

Type of test	Lot size	Functioning test series	
		Sample size	Conditioning temperature
Pilot lot	500	15	05 rds. at +60°C 05 rds. at +21°C 05 rds. at -40°C
Type testing lot (1 st , 3 rd & 5 th subsequent OT lot)	2000 + proof samples	24	08 rds. at +60°C 08 rds. at +21°C 08 rds. at -40°C
Other OT lots	2000 + proof samples	08	08 rds. at +21°C

4.0 Miscellaneous: -

Sub components meeting the requirements:

- Material Compatibility for sub components and their following parameters:
 - Mechanical properties
 - Chemical Composition

Documentation generally follows the basic quality control plan outlines in the referenced document. However, several reports and records required as per the defined inspection and testing scope. These include, but are not limited to:

- Material Check – Control of alloy. Inspection of Material certificate – Per Heat no. – Applies for whole batch
- Tensile Test – Check the material the mechanical properties – Per Heat no. – qty 10 pcs
- Hardness check – According to technical specification 00813613 – Per Heat no. – qty 10 pcs
- Ultrasonic test – According to SAE-ASM-STD-2154
- Dimensional check (FAI) – Full dimensional report – qty 10 pcs
- Surface treatment – Material specification 301080674 – applies for whole batch.

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- Visual inspection – Check parts for visual defects, cracks, blisters etc. – qty 10 pcs
- Firing tests – which is Function and Safety critical,
 - (qty 08+08 Rounds) at temperature range -40 to +60°C, to observe correct fin function mechanism and correct flying properties of the complete round
- Surface treatment and ultrasonic test reports
 - 3rd party material analysis and certification if any

1. Detailed Observation for Fin Assy and subcomponents

Part No. / Description	Remarks / Documentation Required
01183786 – E – Fin Assembled	Function and visual check report
01183785 – L – Plunger Holder Assembled	Function and visual check report
06414113 – G – Plunger Holder	Material analysis (3 rd party), Ultrasonic test (3 rd party) Surface treatment (supplier/in-house & 3 rd Party), Dimensional (FAI 10 pcs) & visual check (supplier/in-house & 3 rd party)
05210423 – D – Plunger	Material analysis (3 rd party), Ultrasonic test (3 rd party) Surface treatment (supplier/in-house & 3 rd Party), Dimensional (FAI 10 pcs) & visual check (supplier/in-house & 3 rd party)
05210112 – H – Throttling Orifice	Dimensional (FAI 10 pcs) & visual check (supplier/in-house & 3 rd party)
06414112 – C – Valve	Dimensional (FAI 10 pcs) & visual check (supplier/in-house & 3 rd party)
06414114 – O – Ring 21x2MM EPDM 70 Shore Black	Analysis report to be provided to meet the requirement
06415234 – O – Ring 7.1x1.6MM Nitrile 70 Shore A	Analysis report to be provided to meet the requirement
06412155 – Silicone Grease	Material test report must be provided to meet its requirement.
10345590 – Locking Fluid 234 W53-9005-13	
06420622 – D – Blank for Fin Holder HEDP	
04102306 – G – Fin Holder HEDP	
05210110 – F – Fin	
06426761 – B – Fin Bushing	
06414116 – Blind Rivet SSD64SSBS 4.8x11MM	

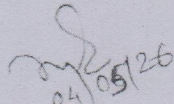
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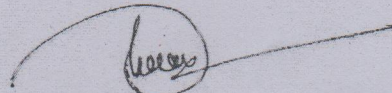
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5.0 General Information-

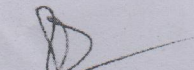
The supplier shall offer OFK or his authorized representative located at different stations free of cost, all reasonable/ related facilities (including test equipments/ gauges/ proof ranges) for satisfying himself during auditing that the stores are being manufactured strictly in accordance with the governing specifications/and the environment and for this purpose OFK or his authorized representative must have free access to the suppliers work premises, his processing facilities, assembly lines, test beds at all times during the auditing as well as run of the contract. The supplier is requested to notify OFK of all the subcontractors engaged by him and ensure their quality to execute and realize the specific order. The supplier shall also make arrangements with outside agencies wherever becomes imperative to execute the supply of materials/ Items as per its QAP.


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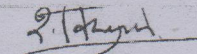
N.K. SHRIVASTAVA/ JWM (T)


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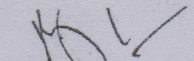
PUNJAB RAO PARKHE/ JWM (T)


06/05/26
DO/R&D

RAJ MOHAN RAM/ MANAGER


OIC/R&D

RAJENDRA VISHWAKARMA/ JWM (T)


JWM/R&D

BABLU KUMAR/ JWM (T)