

AMMUNITION MAINTENANCE INSTRUCTIONS

ADVANCE INFORMATION No. 9-S

AMMUNITION FOR SP 122 mm MULTI BARREL

ROCKET LAUNCHER BM 21 GRAD (USSR)

SECTION 2 — CARTRIDGES ZP1, ZP2 and NZP.

INTRODUCTION

Cartridges ZP1, ZP2 and NZP, of Russian origin, are used for measuring wind velocity. These Cartridges are fired from Rifle, VR 2 WM to measure ballistic wind in rocket flight phase. It is necessary to take into account the influence of wind both in range and line of flight of 122 mm multi barrel Rocket during active phase of trajectory. The rifle is oriented in the vicinity of launcher BM 21 GRAD (USSR) position. Cartridges are fired upwards with the help of rifle. Fall of lead balls are located and mean point of impact is measured from the rifle. The wind speed is determined from the tables given in the range table. Direction of wind is determined from the graduation on the rifle.

2. Cartridges ZP1, and ZP2 are used during day time and cartridge NZP is used during night. Cartridges ZP1 and ZP2 are similar in construction with the exception that Cartridge ZP1 holds 1g of propellant charge whereas Cartridge ZP2 holds 2g of it. Cartridge NZP is also similar in construction to the above cartridges, only difference being that it is closed by an aluminium tube holding a semi spherical lead ball at the top. The aluminium tube houses a tracer composition and pellet for tracing its path during night and easy location of its fall.

DESCRIPTION

Cartridges ZP1 & ZP2

Plate 'J'

3. The body is made of paper tube of length 56 mm and diameter 21 mm. It is strengthened by a brass cup of height 10 mm and

diameter of 23 mm at the base. The cap chamber houses a percussion cap over which an anvil with two firing channels is placed. The cap is filled with cap composition weighing about 0.15g.

Cartridges ZP1 & ZP2 are filled with single base propellant charge, in flake form, weighing about 1g. and 2g. respectively. One millboard disc, one paper cylinder, one felt disc, two millboard discs and one lead ball tied up with a red tape are placed over the propelling charge. The tape is passed through a central hole in the lead ball and is wound around the tape itself. The above Cartridges are closed by millboard disc painted appropriately & its edges are turned over. The total mass of filled Cartridges ZP1, and ZP2 is approx. 42g and 44g. respectively.

Cartridge NZP

Plate K

4. It is filled with single base propellant charge, in flake form, weighing about 2g. One perforated millboard disc, five millboard washers, one felt washer, one steel washer and one paper cylinder are placed over the propellant charge. The Cartridge is closed by an aluminium tube holding a millboard disc and a semi spherical lead ball at the top. The tube, having two windows diametrically opposite, is filled with about 1.5g of tracer composition and assembled with tracer pellet weighing approx. 5g. A red tape is wound up at the lower end of the aluminium tube with three fillings. The total mass of filled cartridge is approx. 46g.

Action

5. On firing, the cap of ZP1 or ZP2 Cartridge ignites the propellant charge, which in turn ejects the lead ball. However in case of Cartridge NZP, the cap ignites the propellant charge which in turn ignites the tracer composition & pellet of aluminium tube. At the same time aluminium tube is also ejected. The fall of the lead ball/aluminium tube is located and mean point of impact measured.

PACKAGE

6. The ammunition is packed in hermetically sealed steel containers. Any sharp instrument can be used to cut open the steel container. Each container is packed either with 72 rounds of ZP1/ZP2 or 60 rounds of NZP. Four containers, are packed in one wooden box.

MARKING AND STENCILLING

7. (a) On Ammunition (as shown against each)

ZP1 — 3 П-1

ZP2 — 3 П-2

NZP — Н 3 П

Year of manufacture is embossed at the base of Cartridge.

(b) On Package

Inner Steel container for ZP1, ZP2

Front

ВСКРЫВАТЬЗДЕСЬ

3 П-1

6—72

СОКОЛ $\frac{158}{71}$ Р

P 26844 - 1248 - 2

CASE W 1

GROSS MASS 24.5 Kgs.

NET MASS 12.5 Kgs.

Outer package for NZP

Front

Н 3 П

5 - 72

240 ШТСОКОЛ $\frac{40}{72}$ Р

БРУТТО 23.5 КГ

Side

GROSS MASS 23.5 Kgs.

NET MASS 11 Kgs.

8. For identification, mill board disc on the top of Cartridge ZP1 and ZP2, is painted green and red respectively. Cartridge NZP is identified by dome shaped top.

72 ШТ

Inner steel container for NZP

Top Lid

Вск РЫ БАТЬ

3 П Есб

Н 3 П

5—72

СОКОЛ $\frac{40}{72}$ Р

80 ШТ

Outer package for ZP1 and ZP2

Front

3 П-1

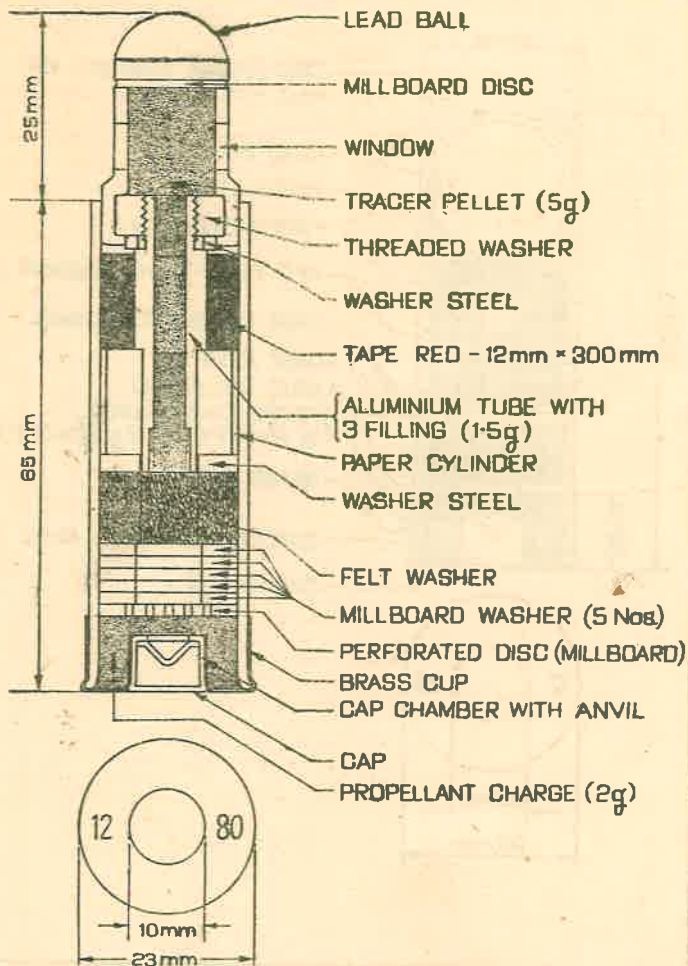
6 — 72

288 ШТ СОКОЛ $\frac{158}{71}$ Р

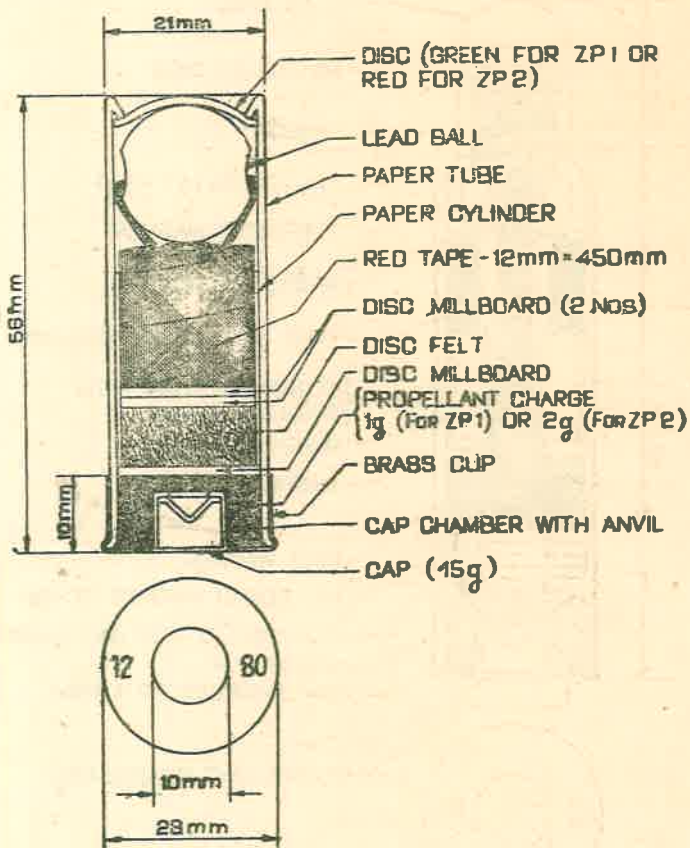
БРУТТО 24 КГ

Side

26844



CARTRIDGE NZP



CARTRIDGE ZP 1/ZP 2