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TM 30-240

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

SOVIET PROJECTILE IDENTIFICATION GUIDE (U)

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HEADQUARTERS,
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SECTION I (C)
GENERAL

1. (C) Purpose

This manual is intended to aid in the identification of Soviet artillery projectiles. Accordingly, it explains methods of analyzing projectile fragments, discusses markings and coloring systems, and contains dimensional drawings coupled with brief descriptions of Soviet projectiles. In addition, the manual offers a means of establishing the probable identity of the weapon from which a given projectile has been fired, by listing the weapons known to fire the projectile, and by including a table of the significant characteristics of Soviet artillery weapons.

2. (C) Scope

a. Information in this manual pertains to Soviet artillery (including mortar) projectiles ranging in caliber from 37 through 305 millimeters; however, information on cartridge cases, primers, propellants, etc., is not included, and fuzes are covered only superficially.

b. Projectile markings and coloring systems, and the identification of projectiles from their fragments, are discussed in detail.

c. Critical dimensions of projectiles are given in a series of tables arranged for rapid reference, and common types of Soviet rotating bands and seats are illustrated with their pertinent dimensions. These data were obtained from examination of the actual projectiles.

d. Markings, dimensions, rotating band design, and sectional views of specific Soviet projectiles are shown in individual drawings made from the actual projectiles.

e. A table of Soviet artillery weapons and their significant characteristics gives limited information relative to the capabilities of the various types of guns, howitzers, and mortars. In general, data contained in this table have not been verified by U.S. Army firing tests.

f. A table expressing equivalent measurements in decimals and fractions of an inch, and a transliteration table for the Russian alphabet, are included as appendixes to this manual.

g. The information in this manual is not complete in every respect; from time to time new projectiles will be found, and appropriate supplementary pages will be added to those already contained herein.

h. It is requested that corrective or additional information pertinent to this manual be submitted to: Commanding Officer, **U.S. Army Foreign Science and Technology Center, Arlington Hall Station, Washington 25, D.C.**

3. (C) References

The textual portion of this manual is based on data collected from many sources, including intelligence reports and various foreign documents.

SECTION II (C)

IDENTIFICATION OF SOVIET PROJECTILES AND PROJECTILE FRAGMENTS

4. (C) General Basis of Fragment Analysis

The caliber of a projectile, as well as the model of weapon from which it was fired, can be determined in the majority of cases by a visual and dimensional analysis of recovered duds or fragments. The internal and external dimensions of a projectile, and such basic elements as the rotating band and band seat, vary sufficiently between calibers and types to form the basis for an accurate method of identification. The probability of error in this method is negligible, since Soviet artillery projectiles are well made and, within the same caliber-and-type group are almost invariably uniform in their dimensions.

a. Fragments. Projectile caliber is best determined from duds; next best, from undeformed or slightly deformed fragments of low order bursts. High order detonation tends to distort and stretch fragments; therefore, thick base sections, particularly those including rotating bands, are most informative and permit the speediest identification. With experience, however, caliber can be accurately determined from small fragments of high order bursts.

b. Rotating Bands and Band Seats.

(1) *Number, type, and keying designs.* The number, type, and dimensions of rotating bands, as well as the pattern and dimensions of the keying design on the band seat or on the inner surface of the rotating band, give important evidence as to caliber and type of projectile. The keying design is also generally indicative of nationality.

(2) *Engraving of band by gun tube rifling.* The width of land plus groove, engraved in the rotating band by the gun tube rifling, is a good indication of caliber. This width, land plus groove, is termed "r" in the following formula for determining the caliber of a projectile:

$$C=\frac{rN}{\pi},$$

where C=caliber of projectile, N=number of lands or grooves, and π=3.1416. The use of this formula is exemplified below:

> A recovered projectile has 32 grooves; each groove measures 4.418-mm and each land measures 4.418-mm. The "r" factor is therefor equal to 8.836-mm. Applying the formula,
>
> $$C=\frac{8.836\times 32}{\pi}=90\text{-mm}$$

c. Markings and Openings. On the body of the projectile or on projectile fragments will be found bits of paint, stenciling, stampings, openings, threading, fuze adapters, base plugs, etc. These are important clues to the properly trained and equipped investigator.

d. Fuzes. Soviet fuzes and their fragments must be considered with caution, since the same fuze may be used with projectiles of several different calibers. For example, the Soviet Model PTM fuze is used with HE projectiles of 100-mm, 122-mm, and 152-mm caliber. Fuzes may be made of different materials. The Soviets are known to use various types of fuzes made from

plastics, steel, iron, brass, and aluminum. Individual fuzes may usually be identified by differences of external characteristics such as dimensions, contours, openings, etc.

e. Craters. The size of craters is to some extent indicative of caliber. However, crater size is generally an unreliable indication, since it is dependent on too many variable factors. For example, a 76-mm HE projectile fuzed for short delay will produce a larger and deeper crater in loose earth than will an 85-mm HE projectile fuzed for instantaneous action. Again, crater size will vary with the type of soil encountered even when identical projectiles and fuze settings are used.

5. (C) Markings System

a. History. Prior to 1938, each Soviet munitions manufacturing arsenal and loading plant used its own system for identification markings. The resultant lack of uniformity in markings created considerable confusion within the supply and using agencies. In 1938 the Soviets corrected this situation by adopting a uniform markings system and organizing the artillery supply system into three separate departments. Each department was made responsible for the supply of specified items of artillery and given a numerical designation; this department number is included in the official identification code of the artillery items for which the department is responsible, as explained in *b* below. The three departments are listed below:

(1) *Department 52.* The "Department of Artillery Equipments." Responsible for the supply of all artillery weapons, mounts, fire control instruments, and related equipment, excepting ammunition.

(2) *Department 53.* The "Department of Fixed Ammunition, Projectiles, Fuzes, and their Packing." Responsible for the supply of all fuzes, projectiles, and fixed complete rounds, as well as the packing for these items.

(3) *Department 54.* The "Department of Charges and Cases." Responsible for the supply of all powder bags and propellants, and all cartridge cases except those for fixed ammunition, as well as the packing for these items.

b. The Identification Code. Identification codes are used in Departments 52, 53, and 54 in order to designate various artillery items briefly and, at the same time, clearly. The codes follow a pattern common to all three departments, and may be distinguished from other markings by virtue of this pattern. They consist of certain combinations of Arabic numerals and letters of the Russian alphabet, and may be full or shortened. The full code designation consists of three components, separated by dashes, which appear within the designation in the order named: first, a group of two numerals, identifying the department responsible for the supply of the item concerned (*a* (1), (2), and (3) above); second, a group of one to four letters of the Russian alphabet, designating the item by type; and third, a group of three numerals which identify the individual item or model, and which are sometimes followed by one to four Russian letters giving additional information on the item. The shortened code is usually to be found on the item itself, and consists only of the second and third components. The omission of the first component from the shortened code is not apt to lead to confusion, since the supplying agency can generally be identified merely from observation of the item. *For example,* guns obviously fall under Department 52, projectiles under Department 53, and powder bags under Department 54. In the following examples of both full and shortened code designations of artillery items it should be borne in mind that, in most cases, the shortened code appears on the item and/or its packing, and that the same Russian letters have entirely different meanings when used by the different supply departments, or when in different positions within the same designation.

(1) *Items under Department 52.*

Full code: 52–II–353 Shortened: II–353
52, the first component, identifies the supplying agency: Department 52.
II, the second component, designates the item by type: a gun.

353, the third component, identifies the model:

(35) means the item is a member of the 35th group of artillery weapons, which consists of 76-mm guns other than antiaircraft guns; (3) means the item is a member of the 3d series of models in that group. Thus, the item is the 76-mm Divisional Gun, Model 1902/30, or one of the weapons having the same ballistic characteristics.

(2) *Items under Department 53.*

Full code: 53–БП–353А Shortened: БП–353А

53, the supplying agency: Department 53.

БП, the type of item: an HEAT (БП) projectile.

353А, the model: (353) for the 76-mm Divisional Gun, Model 1902/30, or its ballistic equivalent; (А) a cast iron projectile.

(3) *Items under Department 54.*

Full code: 54–Б–534 Shortened: Б–534

54, the supplying agency: Department 54.

Б, the type of item: propellant in bag, for insertion into cartridge case.

534, the model: for the 152-mm Howitzer, Model 1909/30, or its ballistic equivalent.

c. Identification Code Symbols for Projectiles. The identification code of a projectile is usually stenciled in black paint between the bourrelet and the rotating band, as shown in figure 1 and in the projectile illustrations of section V. The symbols which appear in the three components of the code are listed and explained below.

(1) *In the first component.* The first component in the code designation of a projectile is the number 53. This number identifies the supplying agency, Department 53. In practice, as previously noted, this component is usually omitted from the marking on the item.

(2) *In the second component.* This component consists only of Russian letters and identifies the projectile by type. An exception to the rule is the code designation for an HVAP (arrowhead) projectile; in this case, the standard code for an armor-piercing projectile is supplemented by the letter "П," which follows the Arabic numerals in the *third component.* Thus, БР–365 is an AP–T projectile, but БР–365П is an HVAP–T. It must be remembered that the meanings given for the following list of Russian letters are valid *only* when the letters appear in the second component of the code designation for a projectile.

А_____ Propaganda (leaflet).
Б_____ Armor-piercing.
БЗ_____ Armor-piercing incendiary.
БЗР_____ Armor-piercing incendiary tracer.
БП_____ High-explosive antitank.
БК_____ **High-explosive antitank, as applied to recoiless ammunition.**
БР_____ Armor-piercing tracer.
Г_____ Concrete-piercing.
Д_____ Smoke.
З_____ Incendiary.
О_____ Fragmentation.
ОЗ_____ Fragmentation incendiary.
ОЗР_____ Fragmentation incendiary tracer.
ОР_____ Fragmentation tracer.
ОФ_____ Fragmentation high-explosive.
ОФР_____ Fragmentation high-explosive tracer.
ОХ_____ Fragmentation gas.
ПГ_____ **High-explosive antitank, as applied to infantry-launched antitank grenades.**
ПУ_____ Target practice.
Р_____ Tracer.
С_____ Illuminating (star).
Ф_____ High-explosive.
Х_____ Gas.
Ш_____ Canister or ball shrapnel.
Щ_____ Canister or bar shrapnel.

(3) *In the third component.* The third component consists of three Arabic numerals which are sometimes followed by one to four Russian letters. The numerals

identify the model of the projectile by identifying the weapon or weapons in which the ammunition can be fired. The below-listed numbers of the third component have been found on projectiles used in the weapons named. However, documentary evidence does not indicate that all projectiles with the same number are actually fired in all the weapons associated with the number. For example, the projectile ОФ–350 is known to be fired in 76-mm Mountain Guns (Howitzers) M1909 and M1938, but projectile БР–350А appears to be fired only in the latter of the two models. Following the list of numbers which appear in the third component is a list of Russian letters; the meanings given for these letters are valid *only* when the letters appear after the numbers in the third component.

Numbers	*Meaning*
167	37-mm AA Gun M1939.
240	45-mm AT Guns M1932, M1937, and M1942.
271	57-mm AT Guns M1941 and M1943 (ZIS–2); Assault Gun ASU–57; 57-mm Auxiliary Propelled AT Gun.
281	57-mm AA Guns S–60 and S–68.
343	76-mm Regimental Gun (Howitzer) M1927.
350	76-mm Divisional Guns M1902/30, M1936 (F–22), M1939 (USV), and M1942 (ZIS–3); Tank Guns M1939 (F–32), M1940 (F–34), M1941 (ZIS–5), M1941M; and D–56T; Regimental Guns (Howitzers) M1927 and M1943; Mountain Guns (Howitzers) M1909 and M1938; SP Support Gun M1942/43 (SAU–76).
352	76-mm Mountain Gun (Howitzer) M1909.
353	76-mm Divisional Guns M1902/30, M1936 (F–22), M1939 (USV), and M1942 (ZIS–3); Tank Guns M1939 (F–32), M1940 (F–34), M1941 (ZIS–5), M1941M and D–56T; Regimental Guns (Howitzers) M1927 and M1943; SP Support Gun M1942/43 (SAU–76).
354	76-mm Divisional Guns M1902/30, M1936 (F–22), M1939 (USV), and M1942 (ZIS–3); Tank Guns M1939 (F–32), M1940 (F–34), M1941 (ZIS–5), M1941M and D–56T; Regimental Guns (Howitzers) M1927 and M1943; Mountain Guns (Howitzers) M1909 and M1938; SP Support Gun M1942/43 (SAU–76).
361	76-mm Divisional Guns M1902/30, M1936 (F–22), M1939 (USV), and M1942 (ZIS–3); Tank Guns M1939 (F–32), M1940 (F–34), M1941 (ZIS–5); M1941M and D–56T; SP Support Gun M1942/43 (SAU–76).
365	85-mm AA Guns M1939 and M1944; Tank Guns M1943 (D–5T85) and M1944 (ZIS–S53); SP Assault Gun M1943 (D5–S85) and (D5–S85A); Field Gun D–44; Auxiliary Propelled AT Gun D–48.
367	85-mm AA Guns M1939 and M1944; Field Gun D–44; Tank Gun M1944; Auxiliary Propelled AT Gun D–48.
412	100-mm Field (AT) Gun M1944 (BS–3); SP Assault Gun M1944 (D–10S); Tank Gun M1944 (D–10T).
420	107-mm Corps Guns M1910/30 and M1940 (M–60).
422	107-mm Corps Guns M1910/30 and M1940 (M–60).
460	122-mm Howitzers M1910/30 and M1938 (M–30); Corps Guns M1931 and M1931/37 (A–19); Tank Gun M1943 (D–25); SP Assault Guns M1944 (D–25S) and M1931/44 (A–19S); SP Howitzer M1938 (M–30).
462	122-mm Howitzers M1910/30 and M1938 (M–30); Corps Guns M1931 and M1931/37 (A–19); Tank Gun M1943 (D–25); SP Assault Guns M1944 (D–25S) and M1931/44 (A–19S); SP Howitzer M1938 (M–30).
471	122-mm Corps Guns M1931 and M1931/37 (A–19); Tank Gun M1943 (D–25); SP Assault Guns M1944 (D–25S) and M1931/44 (A–19S).
501	152-mm Howitzer M1909/30.
530	152-mm Howitzers M1909/30, M1938 (M–10), and M1943 (D–1); Gun-Howitzer M1937 (ML–20); SP Assault Gun M1937/43 (ML–20S); Guns M1910/34 and M1935 (BR–2).
533	152-mm Howitzers M1909/30, M1938 (M–10), and M1943 (D–1).
540	152-mm Guns M1910/34 and M1935 (BR–2); Gun-Howitzer M1937 (ML–20); SP Assault Gun M1937/43 (ML–20S).
542	152-mm Gun M1910/34; Gun-Howitzer M1937 (ML–20); SP Assault Gun M1937/43 (ML–20S).
551	152-mm Gun M1935 (BR–2).
620	203-mm Howitzer M1931 (B–4).
621	203-mm Howitzer M1931 (B–4).
674	280-mm Mortars (Howitzers) M1914/15 (Schneider) and M1939 (BR–5).
724	305-mm Howitzer M1915.

Numbers	*Meaning*
832	82-mm Battalion Mortars M1937 (82–BM 37), M1941 (82–BM 41), and M1943 (82–BM 43).
841	107-mm Mountain-Pack Regimental Mortar M1938.
843	120-mm Regimental Mortars M1938 and M1943.
852	160-mm Mortars M1943 and M–160.

Note. Where meanings are doubtful, letters in the list below are followed by an asterisk (*).

Letters	*Meaning*
А*	Projectile of English design (when no black band appears above the rotating band on the projectile).
А	Cast iron projectile (in conjunction with a black band above and adjacent to the rotating band on explosive projectiles).
А	Ballistic cap electrically welded to projectile (in conjunction with a black band above and adjacent to the rotating band on armor-piercing projectiles).
АГ*	Cast iron projectile (in conjunction with a black band above rotating band on explosive projectiles), using a series "Г" fuze.
АМ*	Cast iron projectile (in conjunction with a black band above rotating band), using a mechanical igniferous fuze.
Б	Projectile with ballistic cap.
В	Disruptive fuze.
Д*	Uses a series "Д" fuze (applies only to cannon projectiles).
Д	Ten-finned (applies only to mortar projectiles).
К	Improved model of original projectile.
Л*	Improved model of original projectile.
М*	Uses a mechanical igniferous fuze.
Н*	Improved model of original projectile.
П	Hypervelocity armor-piercing (when the symbol for an AP projectile, "Б," appears in the second component of the code).
Р	Projectile designed by Rosenberg (designer's name).
СП	Solid shot (when the symbol for an AP projectile, "Б," appears in the second component of the code).
Т	Igniferous fuze.
У	Uses a series "УГТ" fuze.
У	A reduced propellent charge.
Ф	Projectile of French design.
Ш	A six-finned projectile (applies only to mortar projectiles).
Я	Projectile of Japanese design.

d. Other Projectile Markings. In addition to the identification code, various other markings usually appear on the projectile. These give information on the filler, weight classification, fuze, lot number, year of manufacture, steel smelt number, manufacturing arsenal, inspection by the arsenal, acceptance by the army, etc. The symbols conveying such information are usually stenciled on the projectile in black paint. The typical arrangement of markings on a projectile is shown in figure 1.

(1) *Symbols identifying explosive fillers.*

А	Amatol.
А–40	Amatol (60% ammonium nitrate, 40% TNT).
А–80	Amatol 80/20 (80% ammonium nitrate, 20% TNT).
АТ–40	Amatol 40/60 (40% amatol, 60% TNT).
АТ–90	Amatol 90/10 (90% amatol, 10% TNT).
АТФ–40	TNT (60% TNT, 40% ammonium nitrate).
А–IX–1	**94% RDX, 6% wax.**
А–IX–2	73% RDX, 23% aluminum, 4% wax.
Г	Hexogen (cyclonite, or RDX).
ДБ	Dinitrobenzol.
ДБТ	Dinitrobenzol and TNT.
К–1	70% TNT, 30% dinitrobenzol.
К–2	80% TNT, 20% dinitrobenzol.
М	Picric acid.
Т	Trotyl (TNT).
Т–80	80% TNT, 20% RDX.
ТГ	TNT and hexogen (numbers following denote percentage of TNT).
ТГ–30	30% TNT, 70% hexogen.
ТГ–50	**50% TNT, 50% hexogen.**
ТЦ–42	**TNT/dinitronaphthalene.**
ТДУ	TNT with aluminum powder.
ТС	TNT sulfite.
Ш	Schneiderite.
ШТ	Schneiderite and TNT.

(2) *Symbols identifying chemical fillers.* The following symbols were in use during World War II, and may still be encountered.

Р–4	White phosphorus.
Р–5	Mustard gas.
РС	Lewisite gas.
РЮ	Phosgene gas.
Р–15	Adamsite gas.

(3) *Weight classification symbols.* These symbols indicate the percentage by which the

projectile is above or below the standard weight (norm). They are usually stenciled on the projectile body just above the rotating band.

Symbol	Variation from norm
ТЖ	More than 3% above.
++++	From 2.33% to 3% above.
+++	From 1.66% to 2.33% above.
++	From 1.0% to 1.66% above.
+	From 0.33% to 1.0% above.
Н	From 0.33% above to 0.33% below.
-	From 0.33% to 1.0% below.
--	From 1.0% to 1.66% below.
---	From 1.66% to 2.33% below.
----	From 2.33% to 3.0% below.
ЛГ	More than 3.0% below.

6. (C) Coloring System

a. History. In 1938, the Soviet system of color marking projectiles was simplified. The earlier system, not described in this manual, is obsolete.

Note. Soviet ammunition manufactured prior to 1938 may still be used in other countries. Accordingly, projectiles may be found which do not correspond to the current color marking system, but that are marked according to the pre-1938 color system. When found, such projectiles should be reported to the proper authorities for identification and subsequent examination.

b. Current Projectile Coloring System. In peacetime, Soviet artillery projectiles of caliber 76-mm and larger are normally painted gray, with appropriate identifying color bands. Shrapnel projectiles are exceptions to the rule; ball shrapnel is painted yellow, while bar shrapnel is khaki. During wartime, all projectiles are left unpainted except for identifying color bands on certain types. These unpainted projectiles are sand scoured, have the color band (if any) and other pertinent identifying markings applied, and are then coated with a heavy grease as a protection against the elements.

c. Identifying Color Bands. Projectile color bands are used in both peacetime and wartime. These bands are usually located between the bourrelet and the rotating band, and identify the projectile as to its type, and the method of manufacture. Color bands, their meanings, and their locations on the projectiles, are given below.

(1) *Below the bourrelet.*

Red	Incendiary, armor-piercing incendiary, and armor-piercing incendiary tracer projectiles.
Blue	Concrete-piercing projectiles.
Black	Smoke projectiles.
White	Illuminating (star) projectiles.
Yellow	Ball shrapnel projectiles.
Khaki	Bar shrapnel projectiles.
Green	Gas projectile (one band indicates nonpersistent gas, two bands indicate persistent gas).

(2) *Above the rotating band.*

Black	Cast iron projectile (not to be confused with smoke projectiles, which have a black band below the bourrelet).

d. Projectiles without Color Bands. The following types of projectiles are normally left unpainted in wartime, are painted gray in peacetime, and have no color bands in either case (unless the projectile is of cast iron, when a black band appears just above the rotating band):

Fragmentation.
Fragmentation high-explosive.
High-explosive.
Armor-piercing (without incendiary element).
Armor-piercing tracer (without incendiary element).
High-explosive antitank (HEAT).
Hypervelocity armor-piercing (HVAP).

e. Extent of Coloring System. It is not definitely known whether the described coloring system applies to all types of projectiles. Dark green fragmentation projectiles for 85-mm AA guns, and fragmentation high-explosive projectiles for 122-mm howitzers, each type manufactured since 1938, have been examined. Neither caliber bore identifying color bands. However, it is believed that the color marking system explained above is universal throughout the Soviet Army, and that the dark green projectiles were probably painted after leaving the arsenal, for protection against rust or corrosion.

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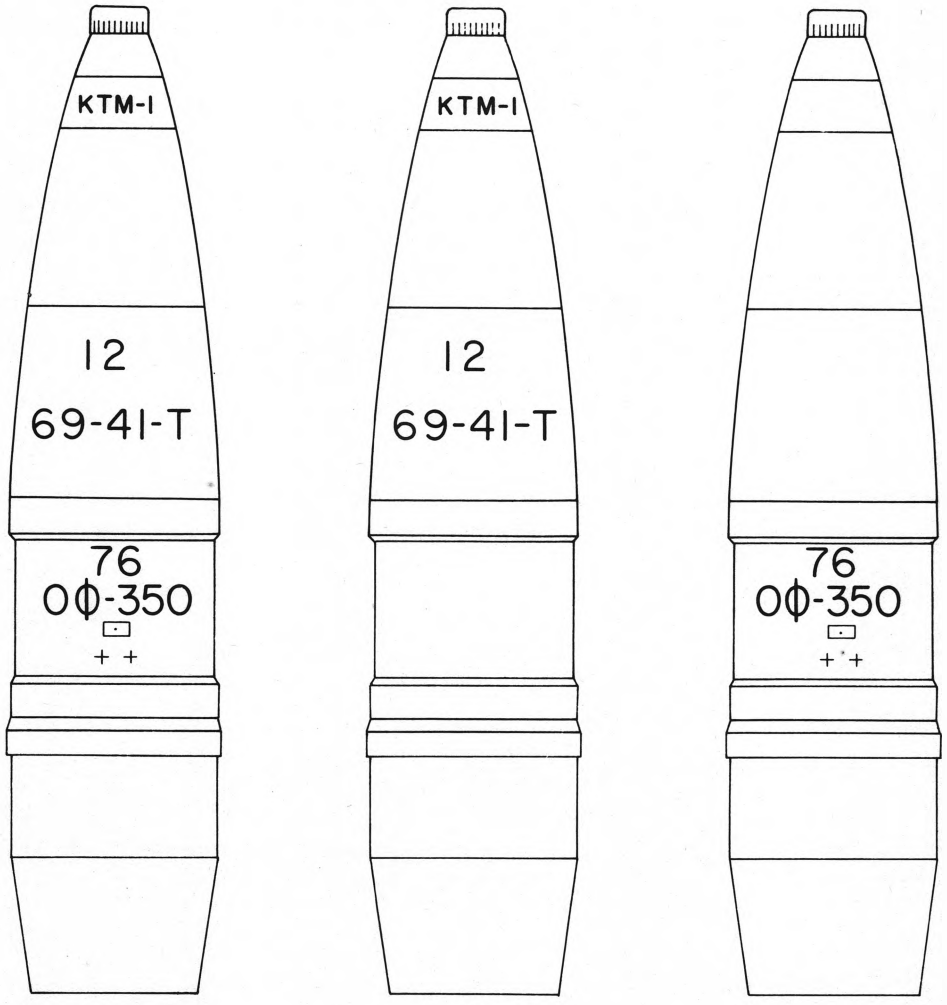
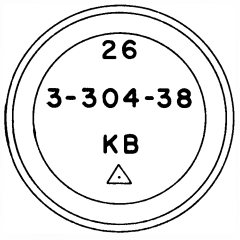


a
COMPOSITE

b
OBVERSE

c
REVERSE



d
BASE

Figure 1. (C) *Soviet projectile marking system.*

A.—Composite View

In the composite view, all markings are shown as though they appeared on one side of the projectile; in reality, some of the markings appear on the obverse, others on the reverse side of the projectile, as illustrated in B and C. In section *V*, projectile markings are shown only in composite views.

B.—Obverse Side of Projectile

KTM-1—Fuzed with the Model KTM-1 point detonating fuze
12—Number of loading plant
69—Lot number of loaded projectile
41—Year of loading of projectile (1941)
T—Indicates explosive filler is TNT

C.—Reverse Side of Projectile

76—Identifies caliber of projectile as 76mm
OΦ-350—Identification code: (OΦ) fragmentation high-explosive projectile; (350) for 76-mm guns of the 35th group
⊡—Inspection stamp indicating projectile has been inspected at arsenal
++—Weight classification symbol; indicates the projectile is from 1.0% to 1.66% above standard weight

D.—On Base

On some separate-loading or semifixed ammunition, markings may be found on the base of the projectile, as below—
26—Identifying number of manufacturing arsenal
3—Lot number of projectile
304—Projectile series identifying number
38—Year of manufacture of projectile
KB—Inspector's stamp
⚠—Army acceptance stamp

Figure 1 (C)—Continued.

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SECTION III (C)

THE READY REFERENCE IDENTIFICATION SYSTEM

7. (C) Basis for This System

Any two projectiles of different type and caliber, of necessity have certain differences in size and shape. This is particularly true of Soviet artillery projectiles, and in one instance Soviet projectiles of the same type and caliber are known to be entirely different in size and shape. (This is the case of early and late model HE projectiles; the blunt, rounded nose and ogive of the former contrast greatly with the pointed nose and long, uniformly tapering ogive of the latter.) However, even projectiles of similar type, shape, and calibers normally have appreciable differences in certain respects, such as weight, filler, wall thickness, fuze well, base plug, etc. By breaking down a projectile into its significant or critical dimensions and components, as shown in figure 2, and arranging these in a series of tables, as shown in section IV, identification by systematic elimination or selection is possible. The proper use of the tables will result in the correct identification of the projectile, and in some instances the firing weapon, with the aid of clues furnished from a small fragment or two.

8. (U) Tools and Instruments

a. List of Equipment.

(1) Rule, steel, flexible, 12-inch, graduated in millimeters and inches, 3-fold type.

(2) Calipers, firm-joint, outside, 10-inch. Alternative: calipers, micrometer, outside, set.

(3) Protractor, semicircular, 8-inch. Alternative: protractor, bevel, 2 protractor head, with combination square.

(4) Compass, drawing.

(5) Template (fig. 3).

b. Template.

(1) A simple template (fig. 3) for measuring the diameter of artillery projectiles can be made in the field. It can be constructed from aluminum or similar metal stock, stamped, and milled to the desired segment diameters in millimeters by local ordnance facilities.

(2) The template can differentiate fairly well between projectiles of similar calibers, but is less accurate than a diameter measurement. However, the simplicity of construction and ready procurement of the template are definite advantages.

9. (U) Description of Ready Reference System

a. The ready reference system consists of a series of tables, and should be used in conjunction with the drawings and projectile descriptions in section V. The tables contain listings of known critical dimensions, and other significant identifying information, arranged systematically by subject. The most significant characteristic in each table is listed in the first column following the projectile identification code.

b. Drawings of all projectiles in section V are arranged by caliber and type. The tables in section IV list the caliber in millimeters in the first column, while the second column gives the type of projectile. The following abbreviations are used to denote the type of projectile:

AP	Armor-piercing.
AP-T	Armor-piercing tracer.
APHE	Armor-piercing high-explosive.
APHE-T	Armor-piercing high-explosive tracer.
API	Armor-piercing incendiary.
API-T	Armor-piercing incendiary tracer.
HEAT	High-explosive antitank (shaped charge).

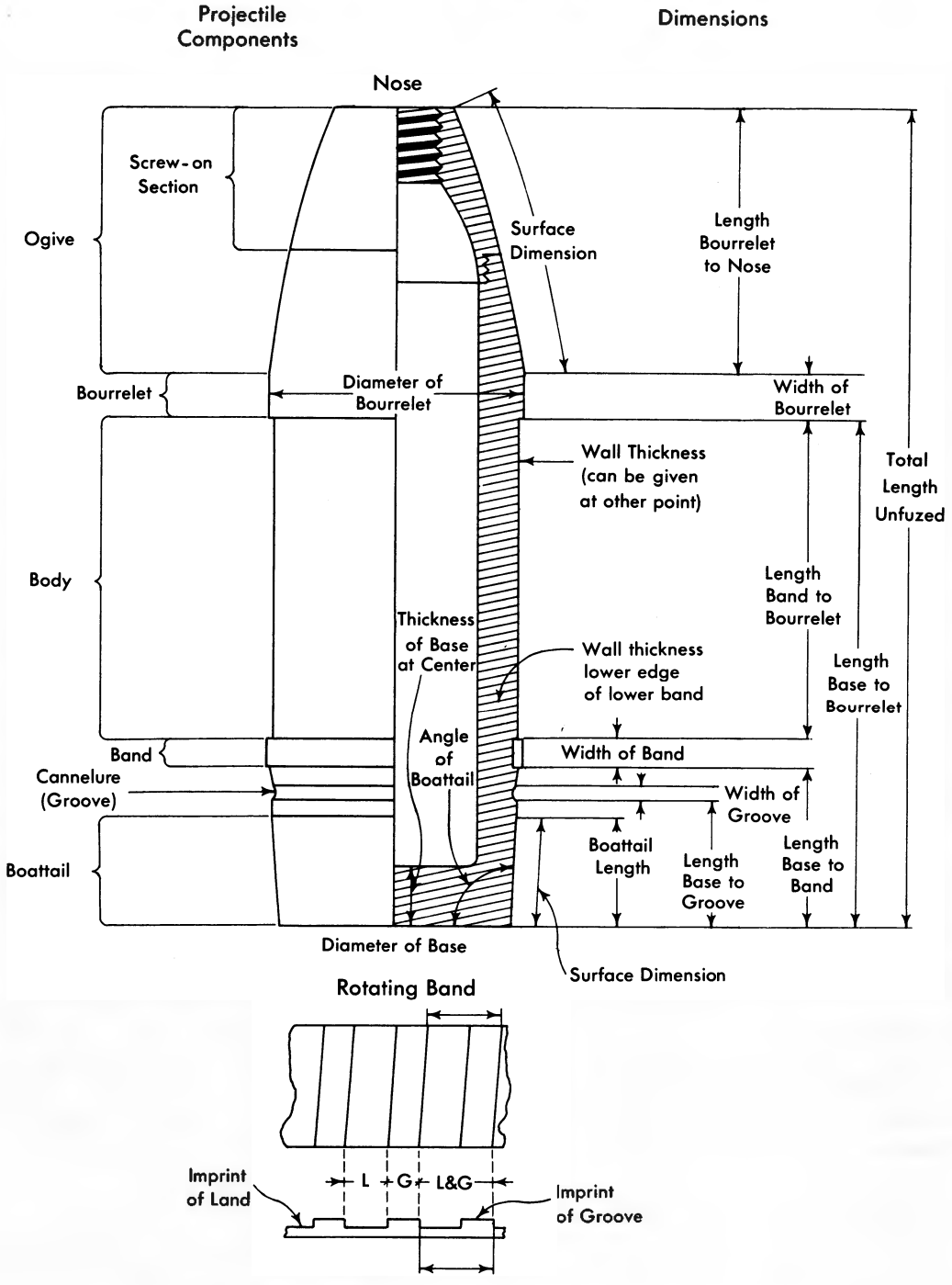

Figure 2. (C) *Typical projectile (critical measurements and components).*

HVAP	Hypervelocity armor-piercing.
HVAP-T	Hypervelocity armor-piercing tracer.
CP	Concrete-piercing.
Frag	Fragmentation.
Frag-T	Fragmentation tracer.
Frag-HE	Fragmentation high-explosive.
HE	High-explosive.
HE-Gas	High-explosive/gas.
Can	Canister.
Shrap	Shrapnel.
Prop	Propaganda.

c. All projectile drawings in section V are identified by figure number. Drawings will be made of new types of projectiles identified subsequent to the publication of this manual, and should be inserted in their proper place, by caliber and type. Such additional drawings will be given an appropriate number. For instance, the drawing of a new 45-mm fragmentation projectile would be inserted immediately following figure 11, and would be numbered "Figure 11.1."

10. (C) Use of Ready Reference System

a. General. To identify a projectile or projectile fragment, turn to the table in section IV giving details of any critical characteristics noted or dimensions measured. Scan the appropriate column and check the listings having characteristics and dimensions similar to those noted on the unidentified projectile or fragment. By checking the secondary columns, and by reference to other tables, possibilities may be eliminated. Reference may then be made to drawings in section V by noting figure numbers listed in the right-hand column of each table. Examples 1 and 2, below, illustrate the use of the tables in identifying fragments.

b. Example 1. A fragment including most of the projectile base has been recovered. Its critical dimensions have been determined:

Diameter of base	2.65 in.
Wall thickness at center of base	1.03 in.
Width of rotating band seat	0.46 in.
Wall thickness at upper edge of rotating band.	0.72 in.

(1) Next, from the ready reference tables index in paragraph 13 it is found that table X, entitled *Projectile Diameter*, appears in paragraph 24. Investigation of the "Base diameter" column in table X reveals that only three projectiles have a base diameter of 2.65 inches: the 85-mm fragmentation projectiles O–365, O–365 (2-piece), and O–365K.

(2) Then, from the tables index (par. 13) it is found that table XI, *Wall thickness*, appears in paragraph 25. Turning to this table and reading down the column headed "Center of base," the figure 1.03

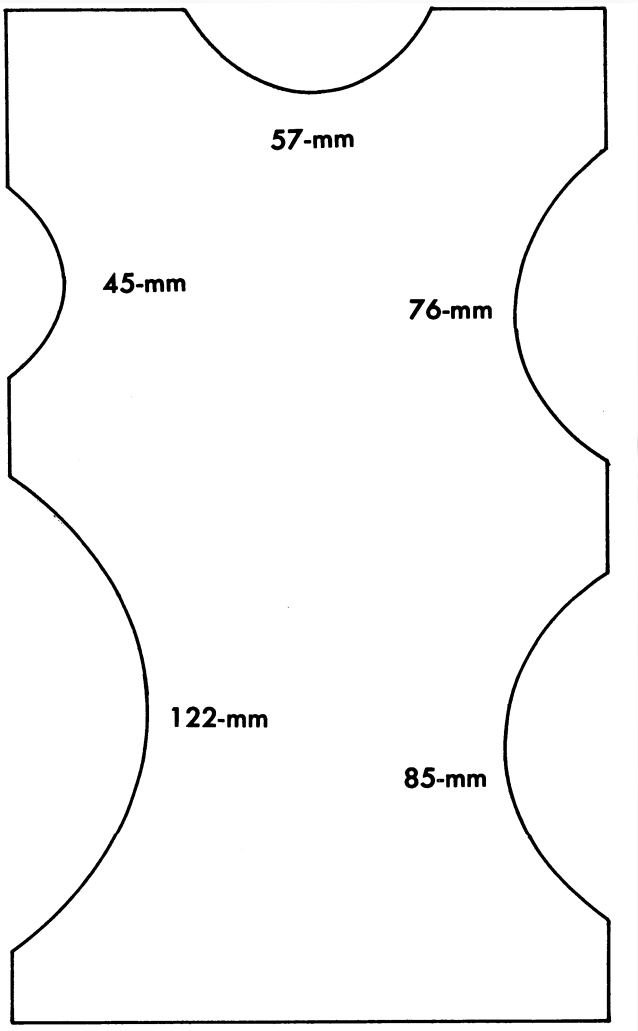

Figure 8. (C) *Template.*

746-026 O - 64 - 2

is found. As only O–365 has a center-of-base wall thickness of 1.03 inches, O–365 (2-piece) and O–365k are automatically eliminated. In the right-hand column of table XI reference is made to figure 37, which is a drawing of the 85-mm fragmentation projectile O–365. From this drawing it is noted that the other two dimensions ("width of rotating band seat" and "wall thickness at upper edge of rotating band") agree. Thus, the fragment is identified as part of the 85-mm fragmentation projectile O–365. From the data adjoining the drawing it is evident that this projectile is used in the M1939 and M1944 AA guns, the M1943 and M1944 tank guns, the M1943 self-propelled assault gun, the field gun D–44; and the Auxiliary-propelled ATgun D–48. Information on these weapons may be found in table XIV.

c. Example 2. Another fragment has been recovered. This fragment has been distorted by the burst so that its measured dimensions are not too accurate. Its measurements are—

Two rotating band seats—width of each	0.45 in.
Distance between rotating band seats	0.24 in.
Surface length, band to top of bourrelet	3.89 in.
Surface length, bourrelet to nose	2.51 in.

(1) Using the tables index (par. 13) as in the above example, the *Rotating Band and Seat* table (table IV) is found to appear in paragraph 18. In the column headed "Width of rotating band seat," the measurement 0.45 inch is sought. As this measurement does not appear, and since the fragment may have been distorted, any listed projectile having two rotating bands with a seat width close to 0.45 inch is sought. Seven such projectiles are found, but by checking the column headed "Distance between bands" all but five of these, the 85-mm projectiles O–365, O–365 (2-piece), O–365K, БР–365, and БР–365К, are eliminated. These five have band seat widths varying from 0.43 to 0.48 inch, and distances between bands varying from 0.20 to 0.23 inch.

(2) Next, using the tables index, table VI, *Ogive*, is found to appear in paragraph 20, and the column headed "Surface length bourrelet to nose" is examined for the figure 2.51 inches. The figure 2.56 opposite the 85-mm fragmentation projectile O–365 is the only one reasonably close. The right-hand column in the table refers to the projectile drawing, figure 37; it is noted from the drawing that the remaining dimension ("surface length, band to top of bourrelet") closely agrees. Thus, the fragment is identified as part of the 85-mm fragmentation projectile O–365, fired from the M1943 self-propelled Assault gun, the M1943 and M1944 tank guns, the M1939 and M1944 AA guns, the field gun D–44; and the auxiliary-propelled ATgun D–48. Information on these weapons may be found in table XIV.

11. (C) Determination of Caliber by Geometric Analysis of Fragments

a. General. The geometric method of determining caliber is based on the problem of circumscribing a circle about a triangle. To attain accurate results by this method, the following conditions must prevail:

(1) The fragment must exceed half an inch, as measured around the circumference of the projectile.

(2) The fragment must be from that portion of the projectile between the rotating band and the bourrelet. In the case of a nonboattail (square base) projectile, the fragment may be from any portion between the bourrelet and the base.

(3) The fragment selected should not be distorted, if possible. If only slight distortion is present, the results will be

fairly accurate and will give a close approximation of the caliber.

b. Example (fig. 4). A suitable fragment which meets the above conditions has been recovered. To determine its approximate caliber, proceed as follows:

(1) Select two points ("A" and "B") as far apart as possible on the circumference of the projectile fragment.

(2) Measure the distance between the two points with dividers, or any other suitable instrument, and plot this measurement on paper (a and b, fig. 4).

(3) Select a third point ("C") on the arc fixed by the two points "A" and "B", and measure the distance from point "A" to point "C." Using this distance as the radius, swing an arc about point "A" on the paper (b, fig. 4).

(4) Measure the distance on the fragment from point "B" to point "C." Using this distance as the radius, swing an arc about point "B" on the paper.

(5) Mark the intersection of the two arcs. This is the plot of point "C."

(6) Draw the triangle thus formed, using the points "A," "B," and "C" as the vertices. Erect perpendicular bisectors to the two longest sides of the triangle (d, fig. 4).

Note. To construct a perpendicular bisector of a line, set off a radius greater than one-half of the length of the line; with this radius, swing arcs (one on each side of the line) from each end of the line. The line connecting the two points of intersection of the arcs is the perpendicular bisector (c, fig. 4).

(7) Measure the distance from the point of intersection of the two perpendicular bisectors to any one of the vertices of the triangle. Multiply this distance by two, and the result is the diameter of the projectile from which the fragment came.

12. (C) Determination of Caliber from Rotating Band Seat Fragments

a. General. World War II experience has shown that the most readily identified type of fragment is that which includes a portion of the rotating band seat. It will frequently be possible to identify a fragment of this type very quickly by direct comparison with the illustrations in figures 5 through 8, or with the detailed drawings in section V. The keying design of the band seat will also be impressed on the inner surface of the rotating band; however, it is necessary to take into account the likelihood of distortion of rotating bands, which are made of soft metal. It should also be noted that projectiles of different calibers often have the same keying design on the band seat, although the dimensions of the design and seat will vary in the different calibers. Attention is further called to the fact that some band seats are undercut, so that the soft metal rotating band fits into the seat to form a dovetail joint; thus, the width of such a band seat is greater at its base (toward the interior of the projectile body) than at the surface of the projectile body.

b. Rotating Band Seats as Indications of Nationality. The rotating band seat and the method of keying the rotating band to the seat are, in many instances, indicative of the nationality and origin of the weapon using the projectile. Figures 5 through 8 show views of various types of band seats and keying methods used by foreign powers. These figures should not be understood to mean invariably that only the country designated in the illustration uses that particular band seat and keying method, since the same types are sometimes used by more than one country.

c. Soviet Rotating Band Seats. An examination of Soviet artillery projectiles indicates that the vertically indented band seat predominates in Soviet artillery ammunition. This is a simple, reliable, and relatively easy method of seating rotating bands. The number of rotating bands may vary from one or two for light and medium caliber projectiles, to triple and quadruple bands for heavy caliber projectiles. The number of vertical indentations per inch may vary from approximately twelve to twenty-four. Soviet band seats having 12, 13, 16, 17, 18, 19, 22, and 23 indentations per inch are known to be used in present-day projectile construction. The arrange-

ment of the indentations may vary from single rows under small caliber projectile bands, to double rows under medium and large caliber bands. The length of the individual indentation may vary from 0.05 inch in a double-row arrangement, to as much as one-half to three-quarters of an inch in a single-row arrangement. Some Soviet projectiles with one wide and one narrow rotating band have been examined; in such cases, the seat for the wide band was found to have a double row of indentations, and that for the narrow band, a single row of indentations. All Soviet 85-mm projectiles have been found to have two rotating bands with double rows of indentations under each band, while 100-mm projectiles have one wide band with a double row of indentations, and one narrow band with a single row of indentations. The 57-mm projectiles may have one band with a single row of indentations, or two bands with a single row of indentations under each band.

d. Rotating Band Seats on Soviet 57-mm, 85-mm, and 100-mm Projectiles. Particular attention is invited to the design of band seats on Soviet 57-mm, 85-mm, and 100-mm projectiles, as shown in the respective projectile drawings in section V. These projectiles are used in modern high-velocity antitank, tank, and self-propelled guns, and the rotating bands are seated in a manner which enables them to withstand high initial velocities without being stripped from the projectile.

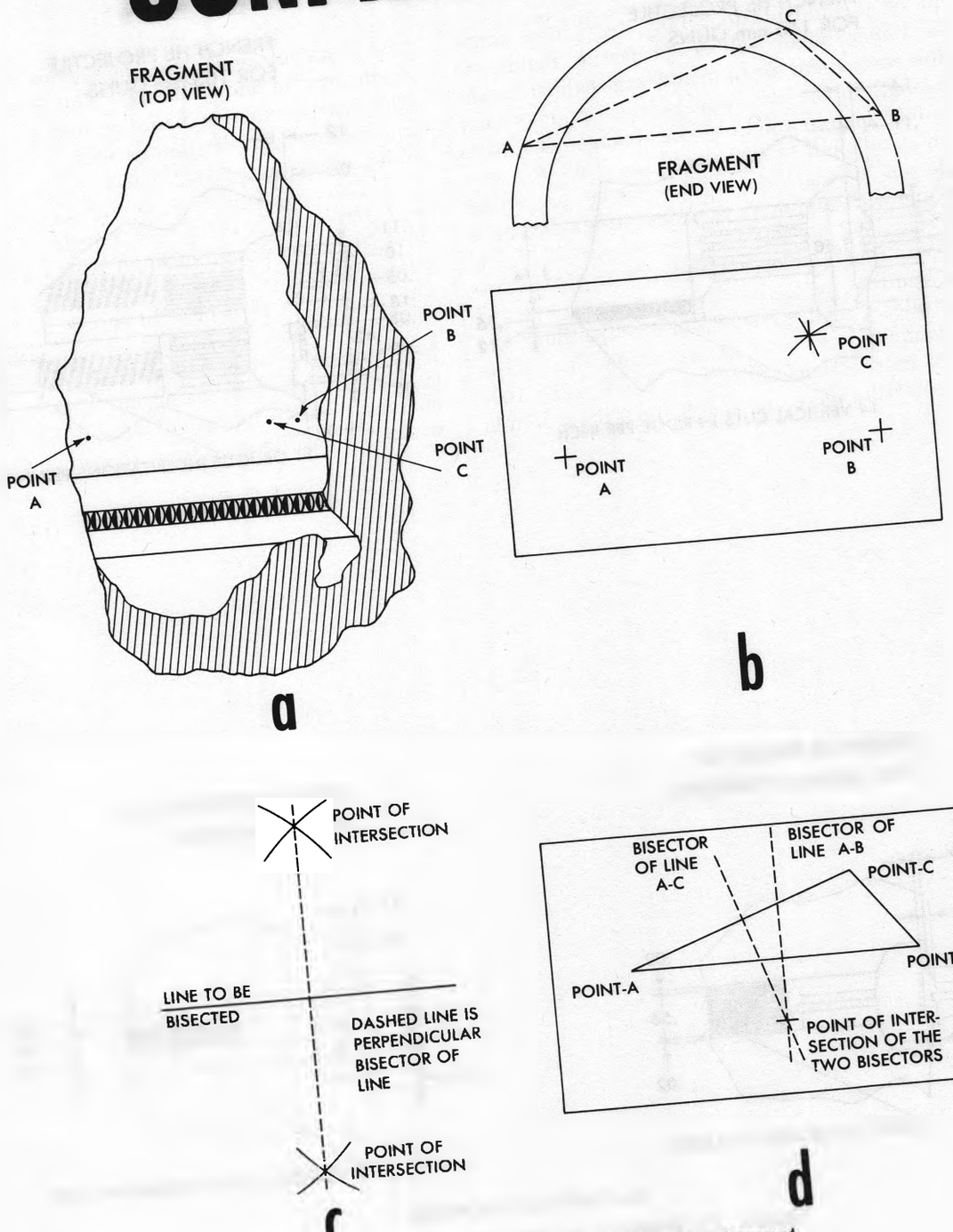

Figure 4. (C) *Determining projectile caliber from fragment.*

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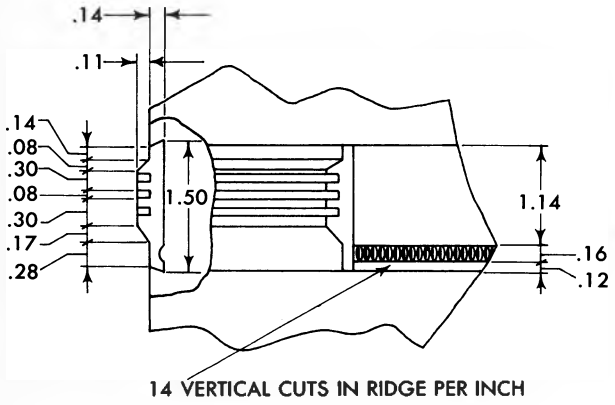
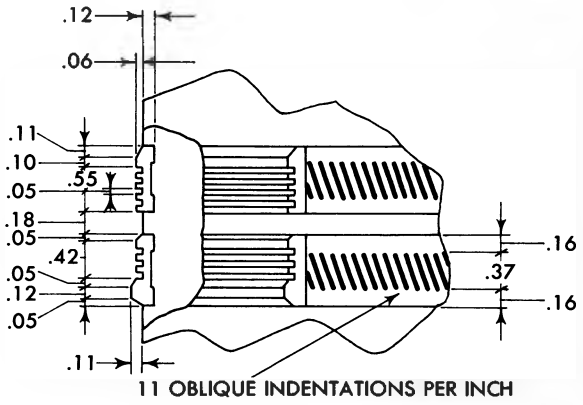
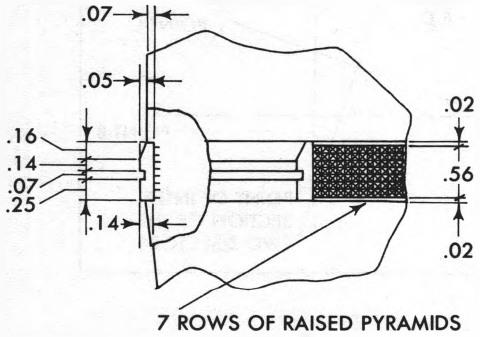
FRENCH HE PROJECTILE
FOR 155-mm GUNS



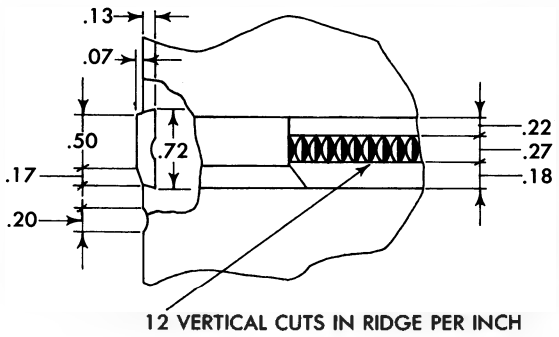
FRENCH HE PROJECTILE
FOR 105-mm GUNS



POLISH HE PROJECTILE
FOR 100-mm HOWITZERS



SOVIET HE PROJECTILE
FOR 76-mm GUNS

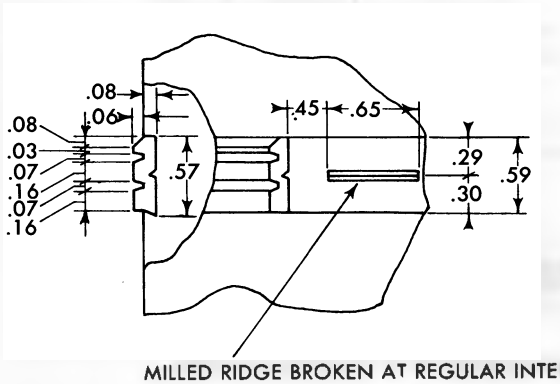


ALL DIMENSIONS IN INCHES

Figure 5. (C) *Rotating bands and seats of various countries—I.*

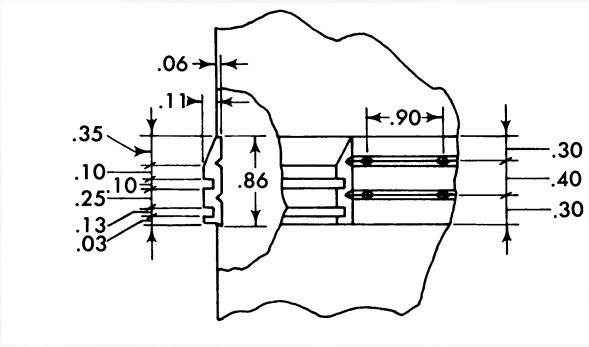
CONFIDENTIAL

DUTCH HE PROJECTILE
FOR 75-mm GUNS

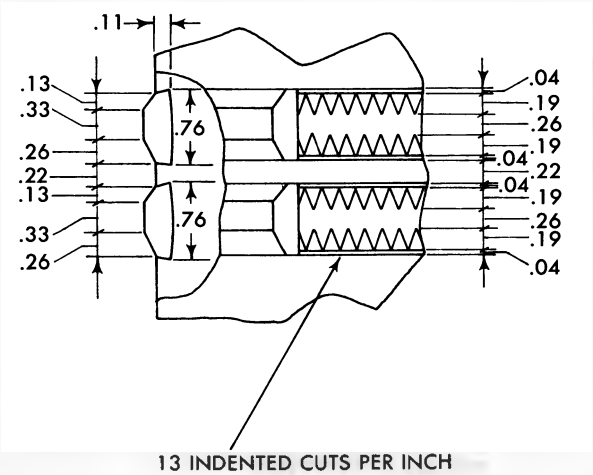


MILLED RIDGE BROKEN AT REGULAR INTERVALS

JAPANESE HE PROJECTILE
FOR 80-mm GUNS

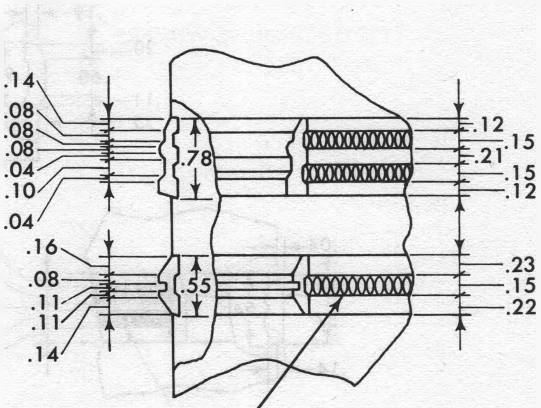


GERMAN AP PROJECTILE
FOR 105-mm GUNS



13 INDENTED CUTS PER INCH

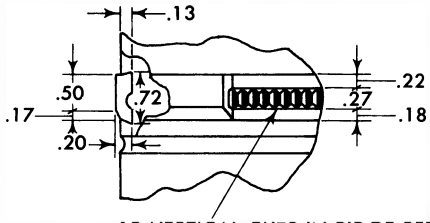
CZECH AP PROJECTILE
FOR 83.5-mm GUNS



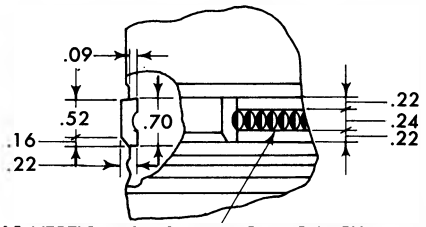
18 VERTICAL CUTS IN RIDGE

ALL DIMENSIONS IN INCHES

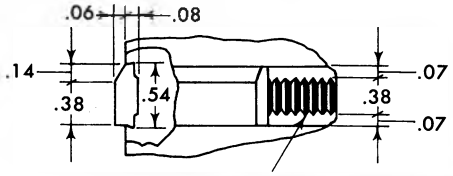
Figure 6. (C) *Rotating bands and seats of various countries—II.*



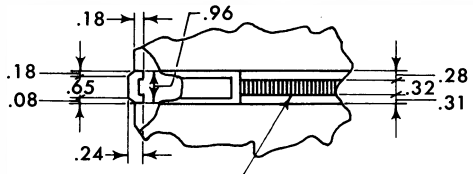
12 VERTICAL CUTS IN RIDGE PER INCH
FOR 76-mm GUNS



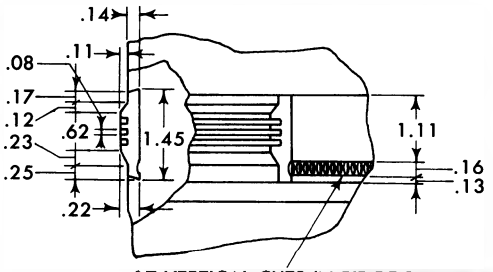
13 VERTICAL CUTS IN RIDGE PER INCH
FOR 76-mm GUNS



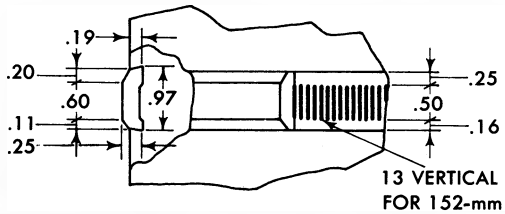
22 VERTICAL INDENTATIONS PER INCH FOR 76-mm GUNS



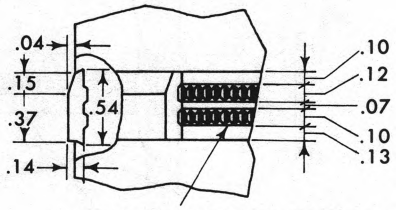
16 VERTICAL INDENTATIONS PER INCH
FOR 152-mm GUNS



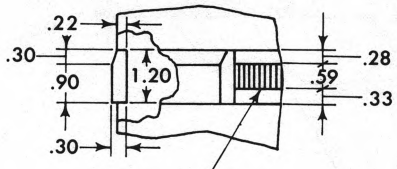
17 VERTICAL CUTS IN RIDGE PER INCH
FOR 122-mm GUNS



13 VERTICAL INDENTATIONS PER INCH
FOR 152-mm GUNS



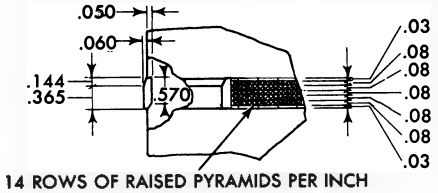
18 VERTICAL INDENTATIONS PER INCH
FOR 76-mm GUNS



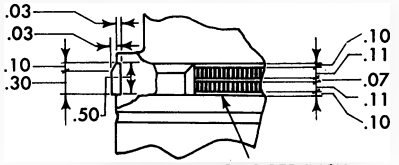
17 VERTICAL INDENTATIONS PER INCH
FOR 203-mm HOWITZERS

ALL DIMENSIONS IN INCHES

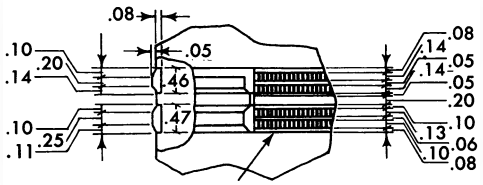
Figure 7. (C) *Soviet rotating bands and seats—I.*



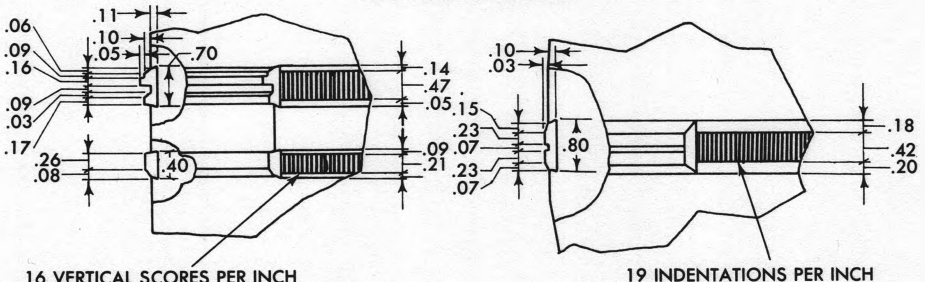
14 ROWS OF RAISED PYRAMIDS PER INCH
FOR 76-mm GUNS



18 INDENTATIONS PER INCH
FOR 76-mm GUNS

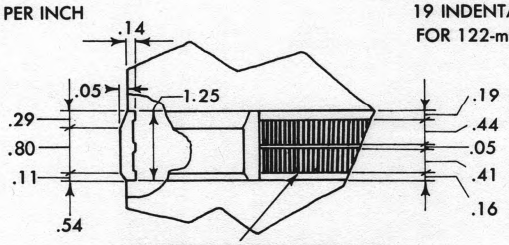


18 VERTICAL SCORES PER INCH
FOR 85-mm TANK GUNS

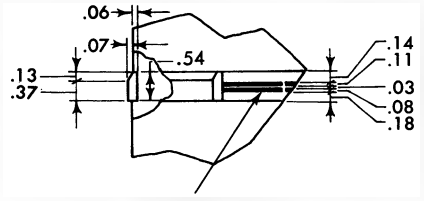


16 VERTICAL SCORES PER INCH
FOR 100-mm GUNS

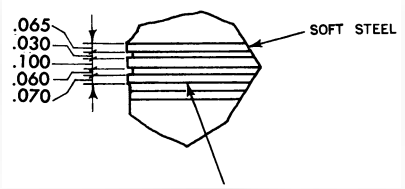
19 INDENTATIONS PER INCH
FOR 122-mm GUNS



18 VERTICAL SCORES PER INCH
FOR 122-mm GUNS



MILLED RIDGE AT
REGULAR INTERVALS
FOR 76-mm GUNS
(COPY OF BRITISH DESIGN)



ROTATION BANDS
FOR 45-mm AT GUNS
M1937/1942

ALL DIMENSIONS IN INCHES

Figure 8. (C) *Soviet rotating bands and seats—II.*

CONFIDENTIAL

SECTION IV (C)
READY REFERENCE TABLES

13. (U) Index

The following is an index to the ready reference tables in this section.

14. (U) Conversions

a. To convert Millimeters to Inches.

Multiply by 0.03937: 20-mm×0.03937=0.7874 in.

b. To Convert Inches to Millimeters.

Multiply by 25.4: 20 in.×25.4=508-mm.

c. To Convert Fractions of an Inch to Decimals.

See appendix II.

d. To Convert Mils to Degrees.

Multiply by 0.05625: 20 mils×0.05625=1° 7′ 30″.

e. To Convert Degrees to Mils.

Multiply by 17.8:9 degrees×17.8=160 mils.

15. (C) Table I. Base Plug

Projectile			Diameter of plug (in.)	Thickness of plug (in.)	Length of threaded portion (in.)	Figure No.
Caliber (mm)	Type	Soviet identification code				
37	Frag-T	ОР-167	0. 97	0. 30	0. 22	9
37	AP-T	БР-167	0. 896	0. 876	0. 52	10
45	HVAP-T	БР-240П	0. 983	0. 402	0. 27	13
57	AP-T	БР-271СП	1. 25 (aprx.)	1. 65 (aprx.)	1. 0 (aprx.)	15
57	HVAP-T	БР-271П	0. 945	0. 805	0. 40	19
76	AP-T	БР-350	2. 286	0. 86	0. 57	26
76	AP-T	БР-350А	2. 25	0. 67	0. 40	27
76	AP-T	БР-350Б	2. 27	0. 82	0. 45	29
76	API-T	БЗР-350Б	2. 286	0. 87	0. 58	30
100	AP-T	БР-412Б	1. 06	NA	1. 06	44
122	HE	Ф-460	4. 095	1. 225	0. 925	48
122	AP-T	БР-471Б	2. 661	1. 336	1. 133	53
122	Prop	А–[1]	4. 76	0. 80	0. 45	56
130	AP	Б–[1]	3. 532	1. 325	1. 015	57
130	Frag-HE	ОФ–[1]	3. 727	1. 177	----	58
152	CP	Г-530	4. 32	1. 47	1. 05	60
203	CP	Г-620	5. 42	1. 93	1. 35	62
280	CP	Г-674	7. 67	----	----	63

[1] Third component of identification code unknown.

16. (C) Table II. Boattail

Projectile			Surface length	Diameter (in.)		Angle (mils)	Figure No.
Caliber (mm)	Type	Soviet identification code		Base	Top		
37	Frag-T	ОР-167	0. 43	1. 25	1. 437	142	9
37	AP-T	БР-167	0. 30	1. 28	1. 432	142	10
45	AP	Б-240	0. 60	1. 524	1. 766	231	12
45	AP-T	БР-240	0. 75	1. 43	1. 767	160	14
57	AP-T	БР-271CN	0. 17	2. 12	2. 20	106	15
76	Frag	О-350А	1. 90	2. 33	2. 951	160	23
76	Frag-HE	ОФ-350	1. 95	2. 34	2. 94	142	24
76	Frag-HE	ОФ-350А	2. 05	2. 30	2. 95	142	25
76	AP-T	БР-350	0. 70	2. 58	2. 947	36	26
76	AP-T	БР-350А	0. 73	2. 55	2. 951	71	27
76	AP-T	БР-350Б	0. 72	2. 734	2. 95	160	28
76	AP-T	БР-350Б	0. 79	2. 775	2. 94	106	29
76	API-T	БЗР-350Б	0. 75	2. 63	2. 947	53	30
76	HEAT	БП-353А	1. 37	2. 62	2. 92	71	31
76	HEAT	БП-350М	1. 94	2. 407	2. 948	178	32
85	Frag	О-365 (2-piece)	1. 75	2. 81	3. 30	----	36
85	Frag	О-365	2. 92	2. 807	3. 30	142	37
85	Frag	О-365К	1. 75	2. 807	3. 30	142	38
85	AP-T	БР-365	1. 73	2. 80	3. 297	142	39
85	AP-T	БР-365К	1. 70	2. 725	3. 295	160	40
100	HE	Ф-412	1. 40	3. 47	3. 890	----	42
100	AP-T	БР-412	1. 43	3. 590	3. 896	106	43
100	AP-T	БР-412Б	1. 38	3. 46	3. 89	----	44
122	Frag-HE	ОФ-471Н	1. 80	4. 00	4. 76	----	49
122	Frag-HE	ОФ-462	3. 26	3. 73	4. 75	142	50
122	Frag-HE	ОФ-462	3. 222	3. 56	4. 755	160	51
122	Frag-HE	ОФ-471Н	1. 87	4. 15	4. 764	160	52
122	AP-T	БР-471Б	1. 77	4. 234	4. 754	142	53
122	HEAT	БП-460А	0. 44	4. 647	4. 745	----	54
122	Prop	А- [1]	0. 80	4. 648	4. 760	----	56
130	AP	Б- [1]	2. 14	4. 400	5. 065	142. 4	57
130	Frag-HE	ОФ- [1]	2. 175	4. 460	5. 069	----	58
152	Frag-HE	ОФ-540	3. 04	5. 00	5. 99	160	59
152	CP	Г-530	0. 30	4. 92	5. 93	160	60
203	CP	Г-620	5. 47	6. 24	7. 89	160	62
280	CP	Г-674	7. 90	8. 528	10. 941	----	63

[1] Third component of identification code unknown.

17. (C) Table III. Cannelure

Caliber (mm)	Type	Soviet identification code	Number	Width (in.)	Distance from base (in.)	Figure No.
37	Frag-T	ОР-167	2	0.18; 0.17	0.56; 0.98	9
37	AP-T	БР-167	2	0.167; 0.186	0.298; 0.717	10
45	Frag	О-240	1	0.10	4.45	11
45	AP	Б-240	1	0.122	0.975	12
45	HVAP-T	БР-240П	2	0.15; 0.08	0.24; 0.48	13
45	AP-T	БР-240	2	0.177; 0.085	0.863; 1.140	14
57	AP-T	БР-271СП	1	0.145	0.806	15
57	Frag	О-271У	1	0.196	3.101	17
57	AP-T	БР-271	1	0.152	0.703	18
57	HVAP-T	БР-271П	1	0.22	0.30	19
76	HE	Ф-354Ф	1	0.146	0.427	20
76	HE	Ф-354Ф	1	0.111	0.419	21
76	HE	Ф-354Г	1	0.095	0.395	22
76	AP-T	БР-350	1	0.20	1.068	26
76	AP-T	БР-350А	1	0.15	1.17	27
76	AP-T	БР-350Б	1	0.15	1.1	28
76	AP-T	БР-350Б	1	0.20	1.1	29
76	API-T	БЗР-350Б	1	0.21	1.10	30
76	HEAT	БП-353А	3	0.19; 0.19; 0.16	1.71; 2.06; 2.93	31
76	HVAP-T	БР-354П	1	0.211	0.443	33
76	Shrap	Ш-354Г	1	0.127	0.411	34
85	Frag	О-365 (2-piece)	2		1.75	36
85	Frag	О-365	2	0.229; 0.211	2.752; 3.119	37
85	Frag	О-365К	2	0.213; 0.224	1.768; 2.129	38
85	AP-T	БР-365	1	0.21	2.136	39
85	AP-T	БР-365К	1	0.154	2.150	40
85	HVAP-T	БР-365П	2	0.21; 0.21	0.33; 0.69	41
100	AP-T	БР-412Б	2	0.12	7.31	44
203	CP	Г-620	1	0.20	6.00	62
280	CP	Г-674	1	0.23	8.43	63

18. (C) Table IV. Rotating Band and Seat

Projectile			Type of band	Width of rotating band seat (in.)	Number of bands	Distance between bands (in.)	Knurling indentations (per in.)	Figure No.
Caliber (mm)	Type	Soviet identification code						
37	Frag-T	ОР–167	Copper	0.48	1		28	9
37	AP-T	БР–167	do	0.50	1		24	10
45	Frag	О–240	do	0.504	1		18	11
45	AP	Б–240	do	0.57	1		20	12
45	HVAP-T	БР–240П	Steel		3	0.06; 0.03		13
45	AP-T	БР–240	Copper	0.53	1		16	14
57	AP-T	БР–271СП	do	0.43; 0.44	2	0.142	16	15
57	Frag	О–271	do	0.49	1		18	16
57	Frag	О–271У	do	0.44; 0.44	2	0.15	18	17
57	AP-T	БР–271	do	0.47; 0.63	2	0.15	18	18
57	HVAP-T	БР–271П	Steel		6	0.075		19
76	HE	Ф–354Ф	Copper	0.46	1		14	20
76	HE	Ф–354Ф	do	0.56	1		13	21
76	HE	Ф–354Г	do	0.54	1		[1]	22
76	Frag	О–350А	do	0.57	1		16	23
76	Frag-HE	ОФ–350	do	0.54	1		18	24
76	Frag-HE	ОФ–350А	do	0.54	1		22	25
76	AP-T	БР–350	do	0.50	1		18	26
76	AP-T	БР–350А	do	0.52	1		18	27
76	AP-T	БР–350Б	do	0.51	1		16	28
76	AP-T	БР–350Б	do	0.52	1		16	29
76	API-T	БЗР–350Б	do	0.53	1		18	30
76	HEAT	БП–353А	do	0.70	1		13	31
76	HEAT	БП–350М	do	0.54	1		18	32
76	HVAP-T	БР–354П	do	0.50	1		18	33
76	Shrap	Ш–354Г	do	0.55	1		28	34
85	Frag	О–365 (2-piece)	do	0.43; 0.46	2	0.20	18	36
85	Frag	О–365	do	0.46; 0.43	2	0.233	18	37
85	Frag	О–365К	do	0.48; 0.44	2	0.23	18	38
85	AP-T	БР–365	do	0.43; 0.43	2	0.225	18	39
85	AP-T	БР–365К	do	0.47; 0.46	2	0.207	18	40
85	HVAP-T	БР–365П	do	0.47; 0.48	2	0.19	18	41
100	HE	Ф–412	do	0.40; 0.70	2	0.833	16	42
100	AP-T	БР–412	do	0.336; 0.675	2	0.787	18	43
100	AP-T	БР–412Б	do	0.38; 0.68	2	0.88	16; 18	44
122	HE	Ф–460	do	0.80	1		24	48
122	Frag-HE	ОФ–471Н	do	1.18	1		20	49
122	Frag-HE	ОФ–462	do	0.80	1		19	50
122	Frag-HE	ОФ–462	do	0.79	1		14	51
122	Frag-HE	ОФ–471Н	do	1.25	1		21	52
122	AP-T	БР–471Б	do	1.25	1		18	53
122	HEAT	БП–460А	do	0.814	1		12	54
122	Shrap	Ш–462	Copper	0.80	1		19	55
122	Prop	А–[2]	do	0.82	1		16	56
130	AP	Б–[2]	do	0.875	1		17	57
130	Frag-HE	ОФ–[2]	do	0.875	1		17	58

[1] Two ridges.
[2] Third component of identification code unknown.

Projectile			Type of band	Width of rotating band seat (in.)	Number of bands	Distance between bands (in.)	Knurling indentations (per in.)	Figure No.
Caliber (mm)	Type	Soviet identification code						
152	Frag-HE	ОФ–540	do	0. 91	1		13	59
152	CP	Г–530	do	0. 96	1		16	60
203	CP	Г–620	do	1. 20	1		17	62
280	CP	Г–674	do	1. 31	1		18	63

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19. (C) Table V. Bourrelet

Projectile			Diameter of bourrelet (in.)	Width of bourrelet (in.)	Distance rotating band to bourrelet (in.)	Distance bourrelet to nose (in.)	Figure No.
Caliber (mm)	Type	Soviet identification code					
37	Frag–T	ОР–167	1. 451	0. 346	0. 422	1. 45	9
37	AP–T	БР–167	1. 450	0. 229	1. 064	3. 400	10
45	Frag	О–240	1. 763	0. 417	2. 508	0. 184	11
45	AP	Б–240	1. 767	0. 385	0. 921	3. 890	12
45	HVAP–T	БР–240П	1. 767	0. 15	1. 040	2. 409	13
45	AP–T	БР–240	1. 769	0. 400	0. 845	3. 910	14
57	AP–T	БР–271СП	2. 239; 2. 238	0. 475; 0. 470	1. 440	4. 755	15
57	Frag	О–271	2. 240	0. 513	3. 211	1. 116	16
57	Frag	О–271У	2. 238	0. 51	3. 228	1. 098	17
57	AP–T	БР–271	2. 238	0. 690	1. 429	4. 542	18
57	HVAP–T	БР–271П	2. 238	0. 225	1. 210	2. 805	19
76	HE	Ф–354Ф	2. 980	0. 912	6. 533	1. 536	20
76	HE	Ф–354Ф	2. 977	0. 794	6. 674	1. 807	21
76	HE	Ф–354Г	2. 981	----------	6. 505	--------	22
76	Frag	О–350А	2. 991; 2. 990	0. 425; 0. 525	2. 145	5. 310	23
76	Frag–HE	ОФ–350	2. 98	0. 50	2. 58	5. 22	24
76	Frag–HE	ОФ–350А	2. 98	0. 55	2. 50	5. 14	25
76	AP–T	БР–350	2. 995	0. 638	2. 364	5. 807	26
76	AP–T	БР–350А	2. 995	0. 530	2. 632	7. 157	27
76	AP–T	БР–350Б	2. 993	0. 800	2. 200	5. 667	28
76	AP–T	БР–350Б	2. 993	0. 705	2. 295	5. 618	29
76	API–T	БЗР–350Б	2. 994	0. 649	2. 360	5. 680	30
76	HEAT	БП–353А	2. 98	0. 84	3. 82	3. 78	31
76	HEAT	БП–350М	2. 990	0. 50	3. 003	3. 83	32
76	HVAP–T	БР–354П	2. 983	0. 357	1. 528	3. 396	33
76	Shrap	Ш–354Г	2. 985	1. 109	4. 253	1. 490	34
82	Frag	О–832	3. 202	1. 353	--------	1. 568	35
82	**Frag**	О–881А	**3. 217**	**0. 63**	--------	**1. 93**	**35. 1**
82	**HEAT**	БК–881	**3. 219**	**2. 88**	--------	**3. 03**	**35. 2**
40/80	**HEAT**	ПГ–2	**3. 16**	**3. 00**	--------	**6. 05**	**35. 3**
85	Frag	О–365 (2-piece)	3. 361	0. 67	3. 33	7. 33	36
85	Frag	О–365	3. 341	0. 67	3. 194	2. 54	37
85	Frag	О–365К	3. 341	----------	3. 232	--------	38
85	AP–T	БР–365	3. 340	----------	2. 188	--------	39
85	AP–T	БР–365К	3. 340	0. 756	2. 106	3. 747	40
85	HVAP–T	БР–365П	3. 340	0. 256	2. 96	4. 579	41
100	HE	Ф–412	3. 930	0. 768	4. 903	7. 253	42
100	AP–T	БР–412	3. 930	0. 941	3. 012	4. 160	43
100	AP–T	БР–412Б	3. 93	1. 00	3. 53	6. 96	44
107	Frag–HE	ОФ–841А	4. 19	2. 15	--------	2. 61	45
107	**Frag–HE**	ОФ–883А	**4. 20**	**1. 50**	--------	**2. 96**	**45. 1**
107	**HEAT**	БК–883	**4. 20**	**1. 57**	--------	**2. 57**	**45. 2**
120	HE	Ф–843	4. 700	2. 084	--------	4. 838	46
120	Frag–HE	ОФ–843	4. 69	2. 00	--------	3. 26	47
122	HE	Ф–460	4. 769	0. 858	10. 287	5. 795	48
122	Frag–HE	ОФ–471Н	4. 795	0. 70	6. 95	10. 28	49
122	Frag–HE	ОФ–462	4. 80	1. 50	6. 65	6. 11	50
122	Frag–HE	ОФ–462	4. 791	0. 828	6. 749	7. 795	51

Projectile			Diameter of bourrelet (in.)	Width of bourrelet (in.)	Distance rotating band to bourrelet (in.)	Distance bourrelet to nose (in.)	Figure No.
Caliber (mm)	Type	Soviet identification code					
122	Frag-HE	ОФ-471Н	4. 794; 4. 795	1. 205; 0. 830	6. 886	10. 258	52
122	AP-T	БР-471Б	4. 796	0. 972	2. 667	9. 271	53
122	HEAT	БП-460А	4. 787	0. 744	5. 935	3. 43	54
122	Shrap	Ш-462	4. 78	1. 50	7. 775	6. 40	55
122	Prop	А- [1]	4. 805	0. 90	6. 68	10. 90	56
130	AP	Б- [1]	5. 107	1. 225	5. 525	9. 397	57
130	Frag-HE	ОФ- [1]	5. 107	0. 937	5. 750	9. 397	58
152	Frag-HE	ОФ-540	5. 99	0. 81	7. 13	13. 14	59
152	CP	Г-530	5. 99	0. 75	6. 19	12. 28	60
160	HE	Ф-852	6. 29	5. 125	----	6. 025	61
203	CP	Г-620	7. 96	1. 07	7. 43	18. 90	62
280	CP	Г-674	10. 993	1. 63	10. 40	28. 84	63

[1] Third component of identification code unknown.

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20. (C) Table VI. Ogive

Projectile			Surface length bourrelet to nose (in.)	Surface length screw-on section (in.)	Diameter at base of screw-on section (in.)	Figure No.
Caliber (mm)	Type	Soviet identification code				
37	Frag-T	ОР-167	1. 47			9
37	AP-T	БР-167	3. 45			10
45	Frag	О-240	0. 21			11
45	AP	Б-240	4. 08			12
45	HVAP-T	БР-240П	2. 43	1. 83	1. 325	13
45	AP-T	БР-240	4. 00			14
57	AP-T	БР-271СП	4. 95			15
57	Frag	О-271	1. 16			16
57	Frag	О-271У	1. 16			17
57	AP-T	БР-271	4. 640			18
57	HVAP-T	БР-271П	3. 0	2. 50	1. 772	19
76	HE	Ф-354Ф	1. 58	0. 70	2. 195	20
76	HE	Ф-354Ф	1. 93	0. 63	1. 830	21
76	HE	Ф-354Г	3. 10		2. 655	22
76	Frag	О-350А	5. 40			23
76	Frag-HE	ОФ-350	5. 33	2. 58	2. 46	24
76	Frag-HE	ОФ-350А	5. 31			25
76	AP-T	БР-350	6. 05			26
76	AP-T	БР-350А	7. 53			27
76	AP-T	БР-350Б	5. 93			28
76	AP-T	БР-350Б	6. 0			29
76	API-T	БЗР-350Б	5. 83			30
76	HEAT	БП-353А	3. 95	3. 40	2. 90	31
76	HEAT	БП-350М	4. 03	3. 49	2. 79	32
76	HVAP-T	БР-354П	3. 70			33
76	Shrap	Ш-354Г	1. 50	0. 30	2. 67	34
82	Frag	О-832	1. 82			35
82	Frag	О-881А	2. 15			35. 1
82	HEAT	БК-881	3. 25			35. 2
40/80	HEAT	ПГ-2	6. 50			35. 3
85	Frag	О-365 (2-piece)	5. 65	0. 96	2. 52	36
85	Frag	О-365	2. 56			37
85	Frag	О-365К	5. 78			38
85	AP-T	БР-365	4. 40			39
85	AP-T	БР-365К	4. 20			40
85	HVAP-T	БР-365П	4. 83	3. 55	2. 50	41
100	HE	Ф-412	7. 47			42
100	AP-T	БР-412	4. 65			43
100	AP-T	БР-412Б	6. 96			44
107	Frag-HE	ОФ-841А	2. 85	0. 92	2. 58	45
107	Frag-HE	ОФ-883А				45. 1
107	HEAT	БК-883				45. 2
120	HE	Ф-843	5. 05	0. 92	2. 519	46
120	Frag-HE	ОФ-843	3. 38	0. 90	2. 53	47
122	HE	Ф-460	6. 05			48
122	Frag-HE	ОФ-471Н	10. 28			49
122	Frag-HE	ОФ-462	6. 44	2. 43	2. 88	50

Projectile			Surface length bourrelet to nose (in.)	Surface length screw-on section (in.)	Diameter at base of screw-on section (in.)	Figure No.
Caliber (mm)	Type	Soviet identification code				
122	Frag-HE	ОФ-462	8. 0			51
122	Frag-HE	ОФ-471Н	10. 37			52
122	AP-T	БР-471Б	9. 52			53
122	HEAT	БП-460А	3. 58			54
122	Shrap	Ш-462	6. 025	1. 61	3. 40	55
122	Prop	А- [1]	6. 00			56
130	AP	Б- [1]	9. 397			57
130	Frag-HE	ОФ- [1]	6. 397			58
152	Frag-HE	ОФ-540	13. 21	4. 21	3. 57	59
152	CP	Г-530	12. 91			60
160	HE	Ф-852	6. 025		3. 53	61
203	CP	Г-620	19. 37			62
280	CP	Г-674	29. 28			63

[1] Third component of identification code unknown.

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21. (C) Table VII. Nose

Projectile			Exterior diameter of fuze hole (in.)	Wall thickness at bottom of thread (in.)	Length of threaded portion (in.)	Number of threads (in.)	Figure No.
Caliber (mm)	Type	Soviet identification code					
37	Frag-T	ОР-167	1. 02			18	9
45	Frag	О-240	1. 40	0. 16	0. 67	10	11
57	Frag	О-271	1. 40	0. 513	1. 48	10	16
57	Frag	О-271У	1. 40	0. 495	1. 608	10	17
76	HE	Ф-354Ф	0. 91	0. 57	0. 553	13	20
76	HE	Ф-354Ф	0. 91	0. 42	0. 538	13	21
76	HE	Ф-354Г	1. 25	0. 21	1. 30	10	22
76	Frag	О-350А	1. 40	0. 22		10	23
76	Frag-HE	ОФ-350	1. 40	0. 31	0. 89	10	24
76	Frag-HE	ОФ-350А	1. 40	0. 25	0. 75	10	25
76	HEAT	БП-353А	0. 58	0. 21	0. 26	26	31
76	HEAT	БП-350М	0. 58	0. 24	0. 341	26	32
76	Shrap	Ш-354Г	1. 35	0. 13	1. 48	6	34
82	Frag	О-832	1. 40	0. 34	0. 576	10	35
82	**Frag**	О-881А	**1. 562**	**0. 40**	**0. 625**	**10**	**35. 1**
82	**HEAT**	БК-881	**1. 562**	**0. 20**	**0. 625**	**10**	**35. 2**
40/80	**HEAT**	ПГ-2	**1. 125**				**35. 3**
85	Frag	О-365 (2-piece)	1. 42			10	36
85	Frag	О-365	2. 03	0. 55	1. 21	9	37
85	Frag	О-365К	1. 40	0. 35	0. 93	10	38
100	HE	Ф-412	1. 42	0. 25	0. 774	10	42
107	Frag-HE	ОФ-841А	1. 41	0. 65	0. 95	17	45
107	**Frag-HE**	ОФ-883А		**0. 60**	**0. 625**	**10**	**45. 1**
107	**HEAT**	БК-883			**0. 625**	**10**	**45. 2**
120	HE	Ф-843	1. 41	0. 36	0. 553	18	46
120	Frag-HE	ОФ-843	1. 41	0. 70	1. 02	16	47
122	HE	Ф-460	1. 42	0. 98	1. 63	10	48
122	Frag-HE	ОФ-471Н	1. 457	0. 32		10	49
122	Frag-HE	ОФ-462	1. 42	0. 42	0. 93	10	50
122	Frag-HE	ОФ-462	1. 42	0. 37	0. 82	10	51
122	Frag-HE	ОФ-471Н	1. 42	0. 22	0. 85	10	52
122	HEAT	БП-460А	1. 40	0. 144		10	54
122	Shrap	Ш-462	2. 28	0. 55	0. 98	9	55
122	Prop	А-[1]	2. 28	0. 55	0. 98	9	56
152	Frag-HE	ОФ-540	1. 42	0. 11	0. 75	10	59
160	HE	Ф-852	1. 41		1. 70	10	61

[1] Third component of identification code unknown.

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22. (C) Table VIII. Fuze

Projectile			Model fuze	Location and type	Material	Major diameter (in.)	Figure No.
Caliber (mm)	Type	Soviet identification code					
37	Frag-T	ОР-167	МГ-8	Nose—PD	Steel	1. 17	9
45	Frag	О-240	КТМ-1	Nose—PD	do	1. 56	11
45	AP	Б-240	МД-2	Base—BD	do	1. 14	12
45	AP-T	БР-240	МД-5	Base—BD	do	1. 14	14
57	Frag	О-271	КТМ-1	Nose—PD	do	1. 56	16
57	Frag	О-271У	КТМ-1	Nose—PD	do	1. 56	17
57	AP-T	БР-271	МД-5	Base—BD	do	1. 14	18
76	HE	Ф-354Ф	АД	Nose—PD	Brass	1. 24	20
76	HE	Ф-354Ф	АД-2	Nose—PD	do	1. 24	21
76	HE	Ф-354Г	3ГТ	Nose—PD	Steel	1. 61	22
76	Frag	О-350А	КТМ-1	Nose—PD	do	1. 56	23
76	Frag-HE	ОФ-350	КТМ-1	Nose—PD	do	1. 56	24
76	Frag-HE	ОФ-350А	КТ-1	Nose—PD	do	1. 60	25
76	AP-T	БР-350	МД-5	Base—BD	do	1. 14	26
76	AP-T	БР-350А	МД-5	Base—BD	do	1. 14	27
76	AP-T	БР-350Б	МД-6	Base—BD	do	1. 29	28
76	AP-T	БР-350Б	МД-7	Base—BD	do	1. 14	29
76	API-T	БЗР-350Б	МД-5	Base—BD	do	1. 14	30
76	HEAT	БП-353А	БМ	Nose—PD	Brass	0. 70	31
76	HEAT	БП-350М	БМ	Nose—PD	do	0. 70	32
76	Shrap	Ш-345Г	22ПГ	Nose—TSQ	Aluminum	2. 52	34
82	Frag	О-832	М-1	Nose—PD	Steel	1. 57	35
82	**Frag**	О-881А	ГК-2	**Nose—PD**	**Aluminum**	**1. 56**	**35. 1**
82	**HEAT**	БК-881	ГК-2	**Nose—PIBD**	**do**	**1. 56**	**35. 2**
40/80	**HEAT**	ПГ-2	ДК-2	**Base—BD**	**do**	**1. 13**	**35. 3**
85	Frag	О-365 (2-piece)	КТМ3-1	Nose—PD	Steel	1. 53	36
85	Frag	О-365	Т-5	Nose—Time	Aluminum	2. 50	37
85	Frag	О-365К	КТМ-1	Nose—PD	Steel	1. 56	38
85	AP-T	БР-365	МД-5	Base—BD	do	1. 29	39
85	AP-T	БР-365К	МД-8	Base—BD	do	1. 29	40
100	HE	Ф-412	РГМ	Nose—PD	do	1. 57	42
100	AP-T	БР-412	МД-8	Base—BD	do	1. 29	43
100	AP-T	БР-412Б	МД-8	Base—BD	do	0. 94	44
107	Frag-HE	ОФ-841А	ГВМ3-7	Nose—PD	do	1. 57	45
107	**Frag-HE**	ОФ-883А	ГК-2	**Nose—PD**	**Aluminum**	**1. 56**	**45. 1**
107	**HEAT**	БК-883	ГК-2	**Nose—PIBD**	**do**	**1. 56**	**45. 2**
120	HE	Ф-843	ГВМ3	Nose—PD	Steel	1. 57	46
120	Frag-HE	ОФ-843	ГВМ3	Nose—PD	do	1. 57	47
122	HE	Ф-460	РГМ	Nose—PD	do	1. 57	48
122	Frag-HE	ОФ-471Н	РГМ-2	Nose—PD	do	1. 56	49
122	Frag-HE	ОФ-462	РГМ	Nose—PD	do	1. 57	50
122	Frag-HE	ОФ-462	Д-1	Nose—TSQ	Brass	1. 57	51
122	Frag-HE	ОФ-471Н	РГМ	Nose—PD	Steel	1. 57	52
122	AP-T	БР-471Б	МД-8	Base—BD	do	1. 29	53
122	HEAT	БП-460А	В-229	Nose—PD	Plastic	1. 58	54
122	Shrap	Ш-462	Т-6	Nose—TSQ	Aluminum	1. 37	55
122	Prop	А-[1]	Т-6	Nose—TSQ	do	1. 37	56
130	AP	Б-[1]	МР-3	Base—BD	Steel	1. 438	57
130	Frag-HE	ОФ-[1]		Nose—PD	do	1. 60	58
152	Frag-HE	ОФ-540	РГМ	Nose—PD	do	1. 57	59
152	CP	Г-530	КТД	Base—BD	do	2. 56	60
160	HE	Ф-852	ГВМ3-7	Nose—PD	do	1. 57	61
203	CP	Г-620	КТД	Base—BD	do	2. 56	62
280	CP	Г-674	КТД	Base—BD	do	2. 56	63

[1] Third component of identification code unknown.

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23. (C) Table IX. Projectile Length

Projectile			Base to band upper edge (in.)	Rotating band to top of bourrelet (in.)	Bourrelet to nose (excluding adapter) (in.)	Total unfuzed length (in.)	Total fuzed length (in.)	Figure No.
Caliber (mm)	Type	Soviet identification code						
37	Frag-T	ОР-167	1. 74	0. 768	1. 45	4. 31	6. 81	9
37	AP-T	БР-167	1. 505	1. 293	3. 400	6. 545	----------	10
45	Frag	О-240	5. 057	2. 925	0. 184	8. 166	9. 820	11
45	AP	Б-240	1. 581	1. 306	3. 890	6. 777	7. 255	12
45	HVAP-T	БР-240П	1. 088	1. 190	2. 409	5. 07	----------	13
45	AP-T	БР-240	1. 730	1. 245	3. 785	6. 760	8. 05	14
57	AP-T	БР-271СП	1. 801; 2. 378	1. 910	4. 755	9. 043	9. 543	15
57	Frag	О-271	4. 718	3. 724	1. 116	9. 558	11. 212	16
57	Frag	О-271У	4. 128; 4. 718	3. 798	1. 098	9. 554	11. 208	17
57	AP-T	БР-271	1. 71; 2. 281	2. 119	4. 542	9. 024	10. 100	18
57	HVAP-T	БР-271П	1. 720	1. 435	2. 805	5. 960	6. 310	19
76	HE	Ф-354Ф	2. 034	7. 445	1. 536	11. 015	12. 489	20
76	HE	Ф-354Ф	2. 033	7. 468	1. 807	11. 308	12. 803	21
76	HE	Ф-354Г	1. 958	--------	--------	11. 463	12. 293	22
76	Frag	О-350А	3. 900	2. 670	5. 310	11. 88	13. 95	23
76	Frag-HE	ОФ-350	3. 89	3. 08	5. 22	12. 19	14. 26	24
76	Frag-HE	ОФ-350А	3. 91	3. 05	5. 14	12. 10	14. 01	25
76	AP-T	БР-350	2. 181	3. 002	5. 807	10. 975	12. 018	26
76	AP-T	БР-350А	2. 20	3. 162	7. 157	12. 502	13. 545	27
76	AP-T	БР-350Б	2. 175	3. 000	5. 667	10. 842	11. 842	28
76	AP-T	БР-350Б	2. 197	3. 000	5. 618	10. 815	11. 825	29
76	API-T	БЗР-350Б	2. 194	3. 009	5. 680	10. 883	11. 959	30
76	HEAT	БП-353А	2. 93	4. 66	3. 78	12. 21	12. 87	31
76	HEAT	БП-350М	3. 859	3. 503	3. 83	12. 125	12. 785	32
76	HVAP-T	БР-354П	1. 435	1. 885	3. 396	6. 716	----------	33
76	Shrap	Ш-354Г	2. 002	5. 362	1. 197	8. 854	10. 733	34
82	Frag	О-832	----------	--------	1. 568	10. 850	12. 693	35
82	**Frag**	О-881А	----------	--------	**1. 93**	**21. 01**	**23. 95**	**35. 1**
82	**HEAT**	БК-881	----------	--------	**3. 03**	**23. 97**	**26. 91**	**35. 2**
40/80	**HEAT**	ПГ-2	----------	--------	**6. 05**	**19. 77**	**19. 77**	**35. 3**
85	Frag	О-365 (2-piece)	3. 82	4. 00	5. 65	13. 47	15. 15	36
85	Frag	О-365	4. 914	3. 86	2. 54	11. 32	16. 352	37
85	Frag	О-365К	3. 912	--------	--------	13. 558	15. 243	38
85	AP-T	БР-365	3. 894	--------	--------	10. 477	11. 467	39
85	AP-T	БР-365К	3. 894	2. 862	3. 747	10. 503	11. 918	40
85	HVAP-T	БР-365П	2. 302	3. 22	4. 579	10. 097	----------	41
100	HE	Ф-412	3. 982	5. 671	7. 253	16. 906	19. 136	42
100	AP-T	БР-412	4. 732	3. 953	4. 160	12. 845	14. 245	43
100	AP-T	БР-412Б	5. 08	3. 53	6. 96	14. 48	15. 89	44
107	Frag-HE	ОФ-841А	----------	--------	2. 61	19. 57	[1] 21. 95	45
107	**Frag-HE**	ОФ-883А	----------	--------	**2. 06**	**17. 49**	**20. 43**	**45. 1**
107	**HEAT**	БК-883	----------	--------	**2. 57**	**20. 64**	**23. 58**	**45. 2**
120	HEAT	Ф-843	----------	--------	4. 838	26. 722	29. 505	46
120	Frag-HE	ОФ-843	----------	--------	3. 26	22. 94	25. 83	47
122	HE	Ф-460	1. 526	11. 145	5. 795	18. 466	20. 738	48
122	Frag-HE	ОФ-471Н	11. 23	7. 65	10. 28	21. 51	23. 88	49
122	Frag-HE	ОФ-462	4. 32	8. 15	6. 11	18. 58	20. 89	50

See footnotes at end of table.

Projectile			Base to band upper edge (in.)	Rotating band to top of bourrelet (in.)	Bourrelet to nose (excluding adapter) (in.)	Total unfuzed length (in.)	Total fuzed length (in.)	Figure No.
Caliber (mm)	Type	Soviet identification code						
122	Frag-HE	ОФ–462	4. 388	7. 577	7. 795	19. 760	22. 143	51
122	Frag-HE	ОФ–471Н	3. 588	7. 716	10. 258	21. 562	23. 792	52
122	AP-T	БР–471Б	3. 598	3. 639	9. 271	16. 508	17. 910	53
122	HEAT	БП–460А	3. 081	6. 679	3. 43	13. 19	14. 51	54
122	Shrap	Ш–462	1. 550	7. 775	2. 40	13. 69	18. 74	55
122	Prop	А– [2]	2. 36	7. 58	6. 00	15. 94	20. 84	56
130	AP	Б– [2]	3. 875	5. 750	9. 397			57
152	Frag-HE	ОФ–540	4. 48	7. 94	13. 14	25. 56	27. 80	59
152	CP	Г–530	4. 52	6. 94	12. 28	23. 74	23. 74	60
160	HE	Ф–852			6. 025	36. 20	38. 64	61
203	CP	Г–620	7. 40	8. 50	18. 90	34. 80	34. 80	62
280	CP	Г–674	9. 93	12. 03	28. 84	50. 80	50. 80	63

[1] When with shipping cap, overall length is 22.06 inches.
[2] Third component of identification code unknown.

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24. (C) Table X. Projectile Diameter (External)

Projectile			Base diameter (in.)	Bourrelet diameter (in.)	Nose diameter (excluding adapter) (in.)	Figure No.
Caliber (mm)	Type	Soviet identification code				
37	Frag-T	ОР-167	1. 25	1. 451	0. 43	9
37	AP-T	БР-167	1. 28	1. 450		10
45	Frag	О-240	1. 747	1. 763	1. 56	11
45	AP	Б-240	1. 524	1. 767		12
45	HVAP-T	БР-240П	1. 830	1. 767	0. 235	13
45	AP-T	БР-240	1. 43	1. 769		14
57	AP-T	БР-271СП	2. 12	2. 238; 2. 239		15
57	Frag	О-271	2. 202	2. 240	1. 56	16
57	Frag	О-271У	2. 198	2. 238	1. 56	17
57	AP-T	БР-271	2. 20	2. 238		18
57	HVAP-T	БР-271П	2. 18	2. 238		19
76	HE	Ф-354Ф	2. 950	2. 980	2. 195	20
76	HE	Ф-354Ф	2. 949	2. 977	1. 830	21
76	HE	Ф-354Г	2. 949	2. 981	2. 655	22
76	Frag	О-350А	2. 33	2. 990; 2. 991	1. 56	23
76	Frag-HE	ОФ-350	2. 34	2. 98	1. 56	24
76	Frag-HE	ОФ-350А	2. 30	2. 98	1. 60	25
76	AP-T	БР-350	2. 58	2. 995		26
76	AP-T	БР-350А	2. 55	2. 995		27
76	AP-T	БР-350Б	2. 734	2. 993		28
76	AP-T	БР-350Б	2. 775	2. 993		29
76	API-T	БЗР-350Б	2. 63	2. 994	0. 409	30
76	HEAT	БП-353А	2. 62	2. 98	0. 70	31
76	HEAT	БП-350М	2. 407	2. 990	0. 70	32
76	HVAP-T	БР-354П	2. 940	2. 983		33
76	Shrap	Ш-354Г	2. 944	2. 985	2. 67	34
82	Frag	О-832		3. 202	1. 565	35
82	**Frag**	О-881А	**1. 22**	**3. 217**	**1. 56**	**35. 1**
82	**HEAT**	БК-881	**1. 22**	**3. 219**	**1. 56**	**35. 2**
40/80	**HEAT**	ПГ-2	**1. 75**	**3. 16**	**0. 625**	**35. 3**
85	Frag	О-365 (2-piece)	2. 65	3. 361	1. 53	36
85	Frag	О-365	2. 65	3. 341	2. 50	37
85	Frag	О-365К	2. 65	3. 341	1. 53	38
85	AP-T	БР-365	2. 80	3. 340		39
85	AP-T	БР-365К	2. 725	3. 340		40
85	HVAP-T	БР-365П	3. 295	3. 340		41
100	HE	Ф-412	3. 47	3. 930	1. 57	42
100	AP-T	БР-412	3. 590	3. 930		43
100	AP-T	БР-412Б	3. 46	3. 93		44
107	Frag-HE	ОФ-841А		4. 19	2. 58	45
107	**Frag-HE**	ОФ-883А	**1. 60**	**4. 20**	**2. 61**	**45. 1**
107	**HEAT**	БК-883	**1. 60**	**4. 20**	**1. 56**	**45. 2**
120	HE	Ф-843		4. 700	2. 519	46
120	Frag-HE	ОФ-43		4. 69	2. 53	47
122	HE	Ф-460	4. 742	4. 769	1. 57	48
122	Frag-HE	ОФ-471Н	4. 00	4. 795	1. 56	49
122	Frag-HE	ОФ-462	3. 73	4. 80	2. 88	50

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Projectile			Base diameter (in.)	Bourrelet diameter (in.)	Nose diameter (excluding adapter) (in.)	Figure No.
Caliber (mm)	Type	Soviet identification code				
122	Frag-HE	ОФ–462	3. 56	4. 791	1. 57	51
122	Frag-HE	ОФ–471Н	4. 15	4. 794; 4. 795	1. 57	52
122	AP-T	БР–471Б	4. 234	4. 796		53
122	HEAT	БП–460А	4. 647	4. 787	1. 58	54
122	Shrap	Ш–462	4. 764	4. 78	3. 40	55
122	Prop	А–[1]	4. 65	4. 805	2. 51	56
130	AP	Б–[1]	4. 40	5. 107	3. 532	57
130	Frag-HE	ОФ–[1]	4. 46	5. 107	2. 62	58
152	Frag-HE	ОФ–540	5. 00	5. 99	3. 57	59
152	CP	Г–530	4. 92	5. 99	0. 45	60
160	HE	Ф–852		6. 29	3. 54	61
203	CP	Г–620	6. 24	7. 96	0. 81	62
280	CP	Г–674	8. 528	10. 993	0. 841	63

[1] Third component of identification code unknown.

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25. (C) Table XI. Wall Thickness

Projectile			Center of base (in.)	Upper edge of rotating band (in.)	Bourrelet (in.)	Bottom of threading at nose (in.)	Figure No.
Caliber (mm)	Type	Soviet identification code					
37	Frag-T	ОР–167		0. 25	0. 27		9
45	Frag	О–240	0. 333	0. 421	0. 17	0. 16	11
45	AP	Б–240		0. 494			12
45	HVAP-T	БР–240П	0. 15	0. 27	0. 49	0. 34	13
45	AP-T	БР–240		0. 474			14
57	Frag	О–271	0. 592	0. 475	0. 513	0. 513	16
57	Frag	О–271У	0. 606	0. 455	0. 495	0. 495	17
57	HVAP-T	БР–27П	0. 460	0. 275	0. 644		19
76	HE	Ф–354Ф	0. 595	0. 458		0. 57	20
76	HE	Ф–354Ф	0. 62	0. 51	0. 38	0. 42	21
76	HE	Ф–354Г	0. 46	0. 40	0. 40	0. 21	22
76	Frag	О–350А	0. 655	0. 691	0. 691; 0. 597	0. 22	23
76	Frag-HE	ОФ–350	0. 68	0. 54	0. 54	0. 31	24
76	Frag-HE	ОФ–350А	0. 69	0. 52	0. 52	0. 25	25
76	AP-T	БР–350		0. 73			26
76	AP-T	БР–350А		0. 58			27
76	AP-T	БР–350Б		0. 972			28
76	AP-T	БР–350Б		0. 715			29
76	HEAT	БП–353А	0. 52	0. 48	0. 28	0. 12	31
76	HEAT	БП–350М		0. 39	0. 31	0. 24	32
76	Shrap	Ш–354Г	0. 38	0. 29	0. 20	0. 13	34
82	Frag	О–832			0. 38	0. 34	35
82	**Frag**	О–881А			**0. 40**	**0. 40**	**35. 1**
82	**HEAT**	БК–881			**0. 25**	**0. 20**	**35. 2**
40/80	**HEAT**	ПГ–2			**0. 083**		**35. 3**
85	Frag	О–365 (2-piece)	1. 00	0. 72	0. 72	0. 58	36
85	Frag	О–365	1. 03	0. 72	0. 72	0. 55	37
85	Frag	О–365К	0. 95	0. 73	0. 73	0. 35	38
100	HE	Ф–412	0. 978	0. 73	0. 72	0. 25	42
100	AP-T	БР–412		1. 444			43
100	AP-T	БР–412Б					44
107	Frag-HE	ОФ–841А			0. 50	0. 65	45
107	**Frag-HE**	ОФ–883А			**0. 55**	**0. 60**	**45. 1**
107	**HEAT**	БК–883					**45. 2**
120	HE	Ф–843			0. 40	0. 36	46
120	Frag-HE	ОФ–843			0. 74	0. 70	47
122	HE	Ф–460	1. 225	0. 57	0. 58	0. 42	48
122	Frag-HE	ОФ–471Н	1. 09	0. 78	0. 65	0. 32	49
122	Frag-HE	ОФ–462	1. 15	0. 70	0. 47	0. 29	50
122	Frag-HE	ОФ–462	1. 026	0. 75	0. 62	0. 37	51
122	Frag-HE	ОФ–471Н	1. 10	0. 95	0. 659; 0. 915	0. 22	52
122	AP-T	БР–471Б		1. 430			53
122	HEAT	БП–460А	0. 989	0. 753			54
122	Shrap	Ш–462	0. 770	0. 55	0. 470	0. 223	55
122	Prop	А– [1]	0. 77	0. 55	0. 57	0. 223	56
130	AP	Б– [1]	1. 777				57
130	Frag-HE	ОФ– [1]	0. 375	1. 149	1. 188	1. 188	58
152	Frag-HE	ОФ–540	1. 23	1. 01	0. 83	0. 25	59
152	CP	Г–530		0. 94	0. 77		60
160	HE	Ф–852	0. 525		0. 620		61
203	CP	Г–620		1. 27	0. 92		62

[1] Third component of identification code unknown.

26. (C) Table XII. Thread Count

Projectile			Fuse seating (per in.)	Adapter pocket (per in.)	Screw-on section of ogive (per in.)	Base plug (per in.)	Figure No.
Caliber (mm)	Type	Soviet identification code					
37	Frag-T	ОР-167	18			24	9
37	AP-T	БР-167				16	10
45	Frag	О-240	10				11
45	AP	Б-240	16				12
45	HVAP-T	БР-240П			18	32	13
45	AP-T	БР-240	16				14
57	AP-T	БР-271СП				16	15
57	Frag	О-271	10				16
57	Frag	О-271У	10				17
57	AP-T	БР-271	16				18
57	HVAP-T	БР-271П			10	17	19
76	HE	Ф-354Ф	13	13			20
76	HE	Ф-354Ф	13	13			21
76	HE	Ф-354Г	10		12		22
76	Frag	О-350А	10				23
76	Frag-HE	ОФ-350	10		13		24
76	Frag-HE	ОФ-350А	10				25
76	AP-T	БР-350	16			13	26
76	AP-T	БР-350А	16				27
76	AP-T	БР-350Б	18				28
76	AP-T	БР-350Б	16			13	29
76	API-T	БЗР-350Б	16			13	30
76	HEAT	БД-353А	26		16		31
76	HEAT	БЦ-350М	26		16		32
76	Shrap	Ш-354Г	6				34
82	Frag	О-832	10				35
82	**Frag**	О-881А	**10**				**35. 1**
82	**HEAT**	БК-881	**10**		**20**		**35. 2**
85	Frag	О-365 (2-piece)	10		8		36
85	Frag	О-365	9				37
85	Frag	О-365К	10				38
85	AP-T	БР-365	18				39
85	AP-T	БР-365К	18				40
85	HVAP-T	БР-365П			9		41
100	HE	Ф-412	10				42
100	AP-T	БР-412	18				43
100	AP-T	БР-412Б	14				44
107	Frag-HE	ОФ-841А	10	17			45
107	**Frag-HE**	ОФ-883А	**10**				**45. 1**
107	**HEAT**	БК-883	**10**				**45. 2**
120	HE	Ф-843	10	18			46
120	Frag-HE	ОФ-843	10	16			47
122	HE	Ф-460	10			12	48
122	Frag-HE	ОФ-471Н	10				49
122	Frag-HE	ОФ-462	10				50
122	Frag-HE	ОФ-462	10				51
122	Frag-HE	ОФ-471Н	10				52

See footnote at end of table.

Projectile			Fuse seating (per in.)	Adapter pocket (per in.)	Screw-on section of ogive (per in.)	Base plug (per in.)	Figure No.
Caliber (mm)	Type	Soviet identification code					
122	AP-T	БР-471Ъ	18			13	53
122	HEAT	БП-460А	10		13		54
122	Shrap	Ш-462	9				55
122	Prop	А- [1]	9	6	6	25	56
130	AP	Б- [1]	6	8			57
130	Frag-HE	ОФ- [1]	10				58
152	Frag-HE	ОФ-540	10		13		59
152	CP	Г-530	5			8	60
160	HE	Ф-852	10	10	12		61
203	CP	Г-620	5			7	62
280	CP	Г-674	5				63

[1] Third component of identification code unknown.

27. (C) Table XIII. Fins (Finned Projectiles)

Projectile			Number of fins	Maximum diameter of fins (in.)	Thickness of fins (in.)	Number of rows of vents	Figure No.
Caliber (mm)	Type	Soviet identification code					
82	Frag	О-832	6	3. 235	0. 085	3	35
82	Frag	О-881А	4	3. 217	0. 103	6	35. 1
82	HEAT	БК-881	4	3. 217	0. 103	6	35. 2
40/80	HEAT	ПГ-2	6	4. 61	0. 083	0	35. 3
107	Frag-HE	ОФ-841А	8	4. 19	0. 10	3	45
107	Frag-HE	ОФ-883А	8	4. 20	0. 103	6	45. 1
107	HEAT	БК-883	8	4. 20	0. 103	6	45. 2
120	HE	Ф-843	12	4. 701	0. 088	3	46
120	Frag-HE	ОФ-843	12	4. 57	0. 09	3	47
160	HE	Ф-852	10	6. 3	0. 123	6	61

SECTION V (C)
PROJECTILE DATA AND ILLUSTRATIONS

28. (C) General

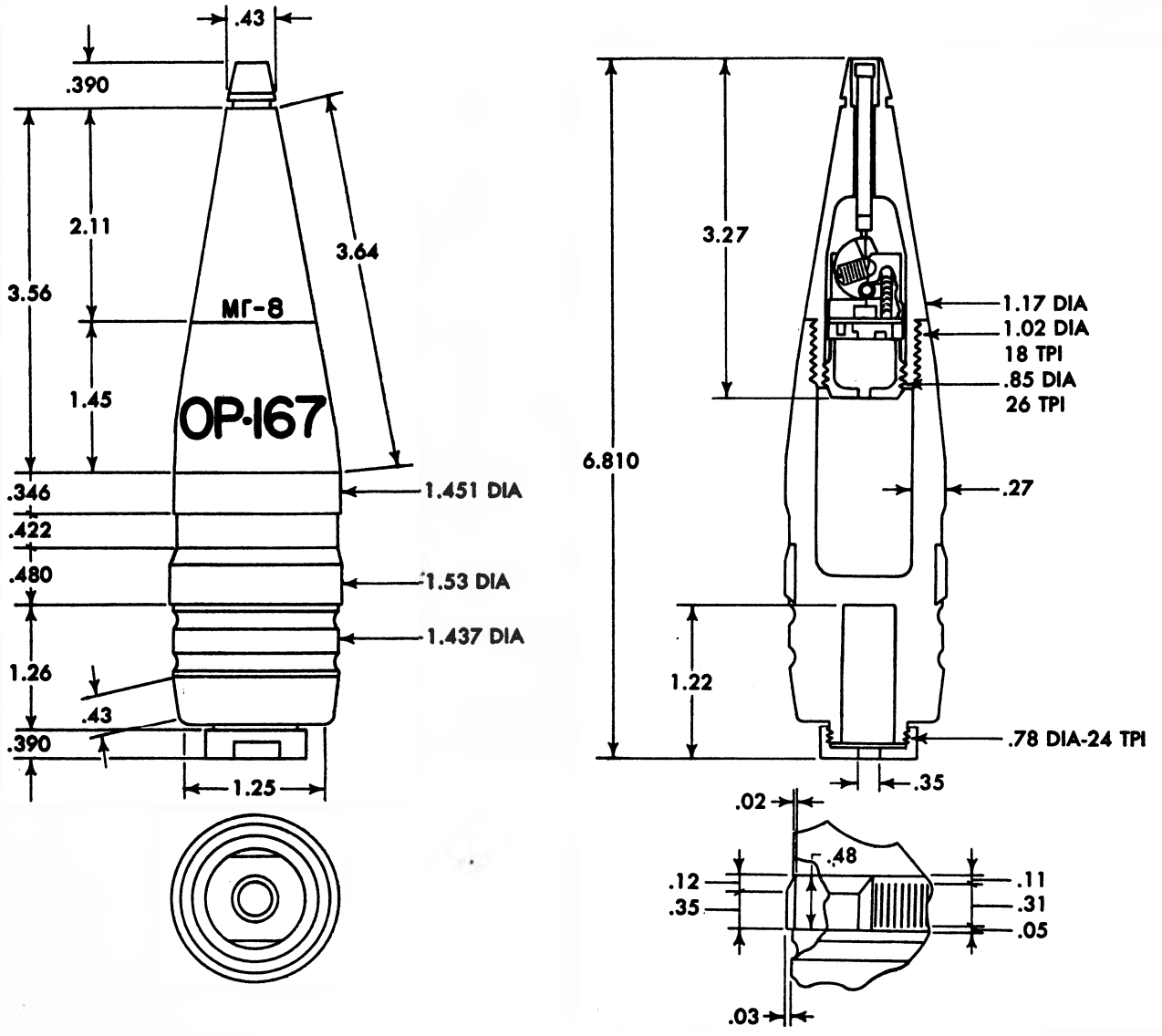
a. The drawings in this section show side, sectional, and base views of Soviet artillery projectiles, as well as enlarged cutaway views of their rotating bands and band seats. Appropriate critical dimensions have been given in each view, whenever possible. The illustrations were prepared only after a careful physical examination of the actual projectile in question. The data appearing on the drawings are sufficiently accurate to permit identification of the projectiles from their fragments, provided the recommended procedure for analyzing fragments is closely followed.

Note. The side view of each projectile is a composite view, in that it shows all markings as though they appeared on one side of the projectile; in reality, some of the markings appear on one side and others on the opposite side. At a, figure 1 illustrates the composite view of the same projectile whose individual sides are drawn in their true aspect in b and c, figure 1.

b. With each projectile illustration are data giving additional information on the projectile and identifying the weapon or weapons in which it is known to be used. (Only weapons established by documentary evidence as firing a given projectile have been listed as "known using weapons" for that projectile.) This material was taken from such various sources as Soviet ordnance documents, intelligence reports, ordnance technical intelligence publications, etc., and is believed to be reliable.

c. Information on significant characteristics and performance of Soviet artillery weapons is contained in table XIV.

d. The discovery of Soviet projectiles which are not listed in this manual should be promptly reported to the proper authorities. Specimens obtained should then be forwarded by the most expeditious means to the Commanding General, ATTN: **STEAP–FI,** Aberdeen Proving Ground, Md.



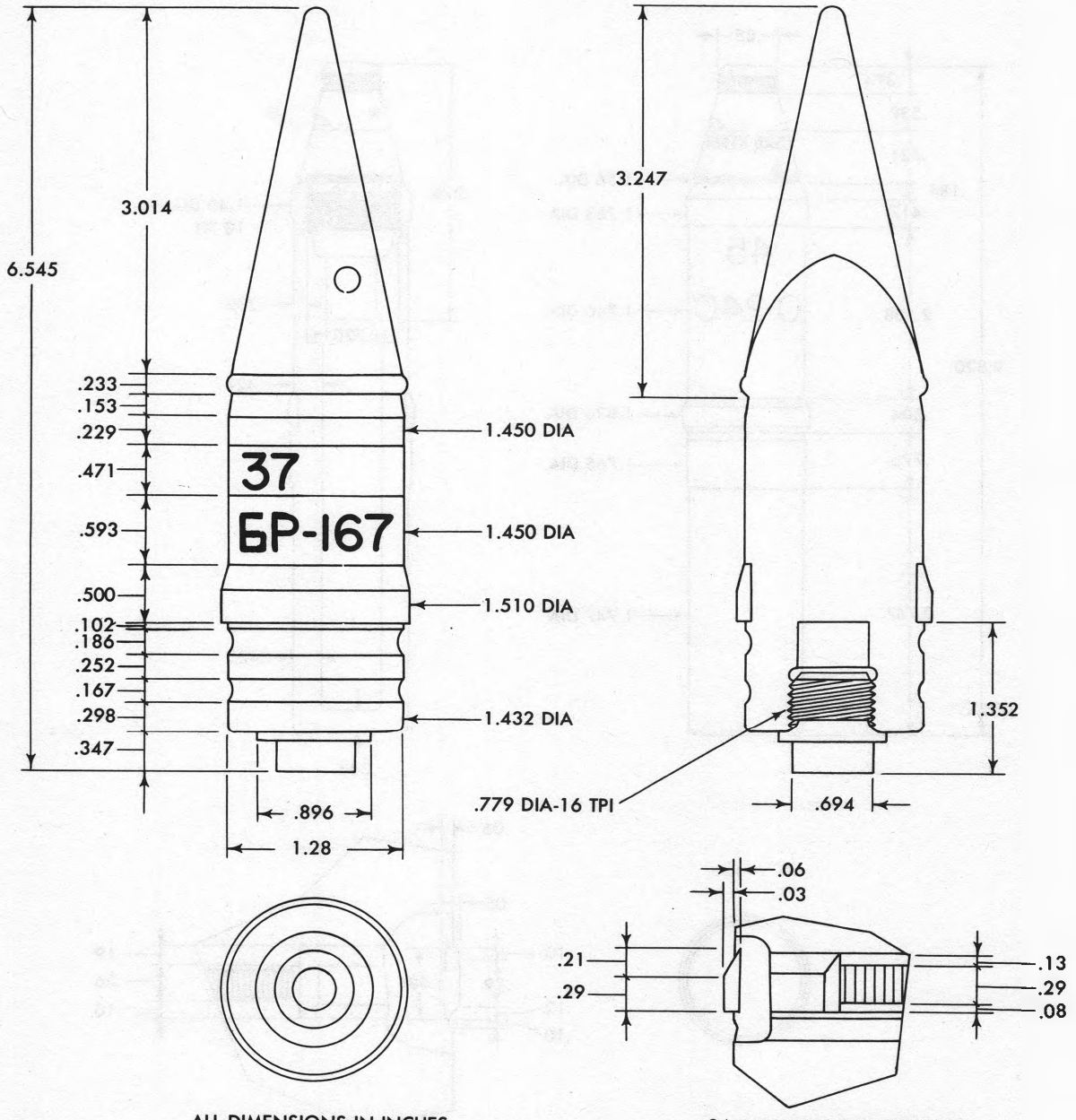
ALL DIMENSIONS IN INCHES

Caliber: 37-mm
Identification code: OP–167
Type: Fragmentation tracer (Frag-T)
Weight (fuzed): 1.60 lb.
Bursting charge: 0.077 lb. TNT
Fuze: Model МГ–8 point detonating

28 INDENTATIONS PER INCH

Known using weapon: AA Gun M1939, SP AA Gun SU–37, and aircraft gun Model N
Remarks: Also uses Models МГ–37 and А–37У point detonating fuzes. When used by aircraft guns, a shorter case and lighter propelling charge are used

Figure 9 (CONFIDENTIAL). *37-mm fragmentation tracer (Frag-T)* (U).



ALL DIMENSIONS IN INCHES

24 INDENTATIONS PER INCH

Caliber: 37-mm
Identification code: БР–167
Type: Armor-piercing tracer (AP–T)
Weight: 1.7 lb.
Bursting charge: None
Fuze: None

Known using weapon: AA Gun M1939 and SPAA Gun SU–37

Remarks: This projectile also may be found with two break-off grooves (1.325 diameter) at bourrelet. The projectile is boattailed. (See table II)

Figure 10. (C) *37-mm armor-piercing tracer (AP-T).*

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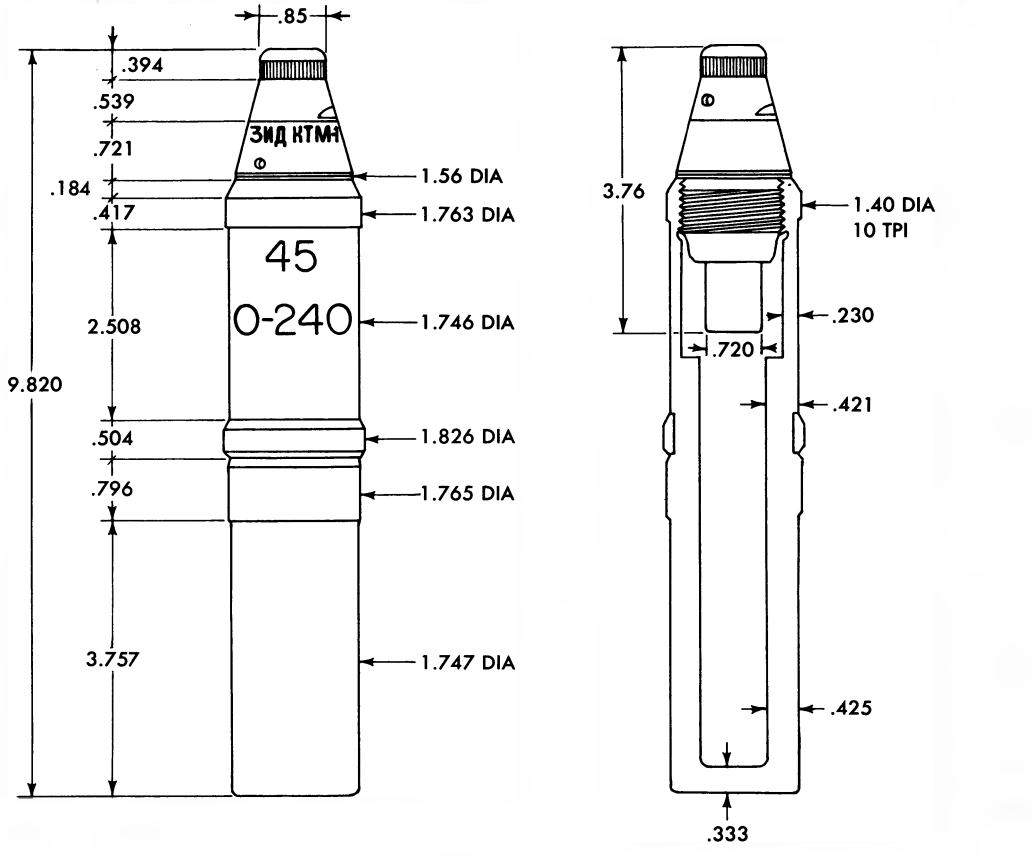

ALL DIMENSIONS IN INCHES

18 INDENTATIONS PER INCH

Caliber: 45-mm
Identification code: O–240
Type: Fragmentation (Frag)
Weight (fuzed): 4.71 lb.
Bursting charge: 0.26 lb. TNT

Fuze: Model KTM–1 point detonating
Known using weapon: AT Guns M1932, M1937, and M1942
Remarks: Also uses Models KT–1 and KTM3–1 point detonating fuzes

Figure 11. (C) *45-mm fragmentation (Frag).*

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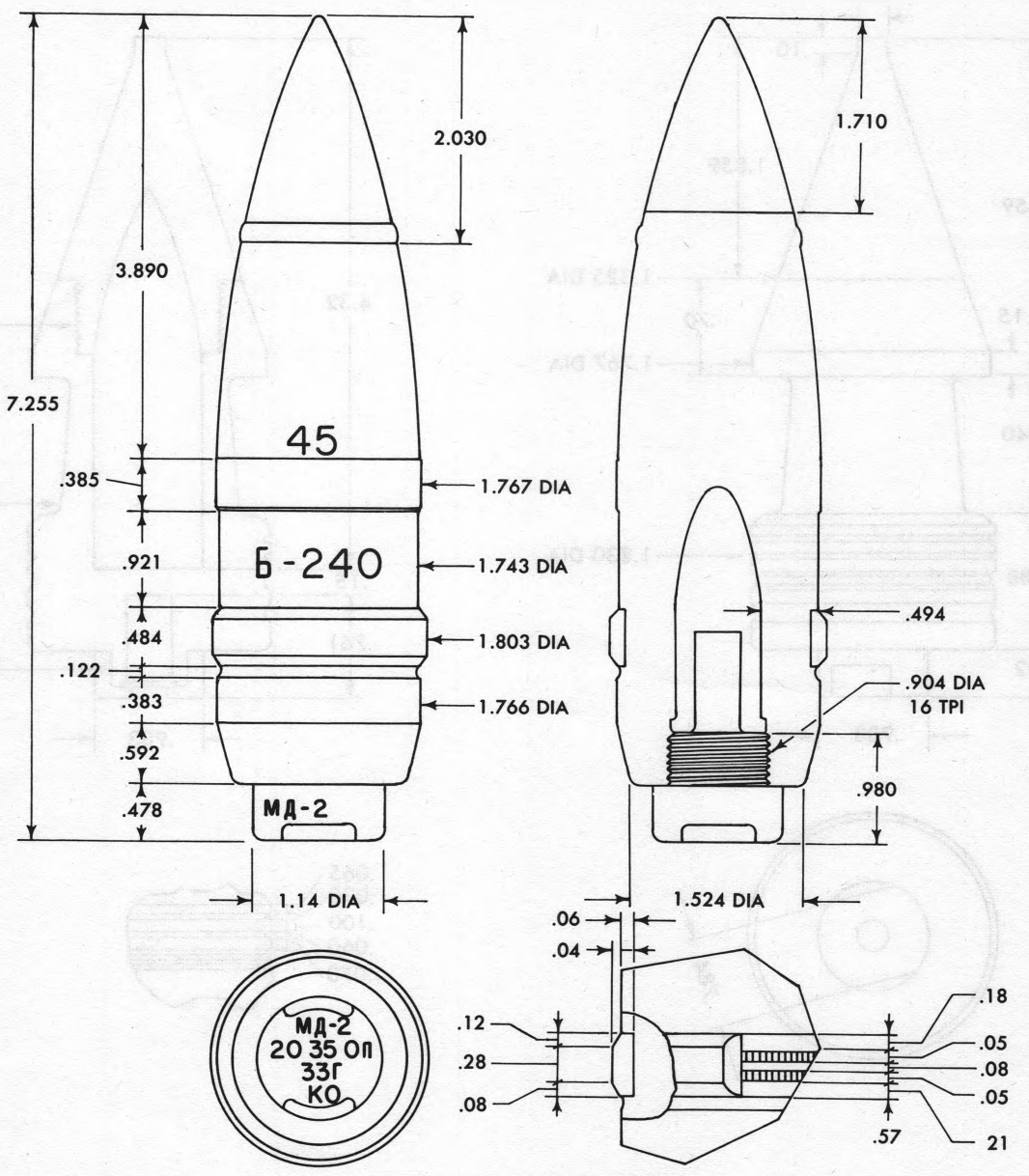


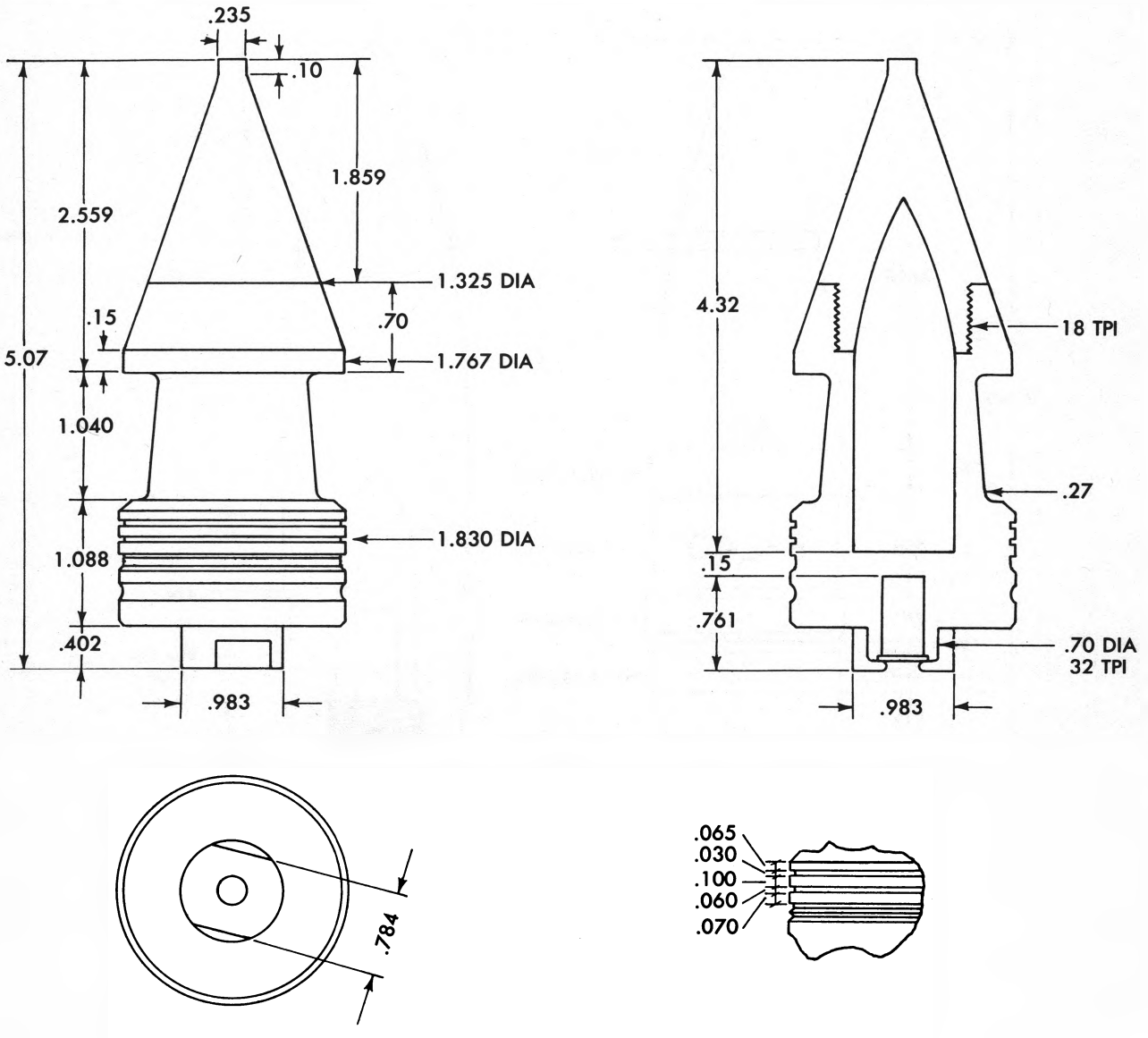
ALL DIMENSIONS IN INCHES

20 INDENTATIONS PER INCH

Caliber: 45-mm
Identification code: Б–240
Type: Armor-piercing (AP)
Weight (fuzed): 3.15 lb.
Bursting charge: 0.04 lb. tetryl/TNT

Fuze: Model МД–2 base detonating
Known using weapon: AT Guns M1932, M1937, and M1942.
Remarks: Also uses Models МД–5 and МД–7 base detonating fuzes

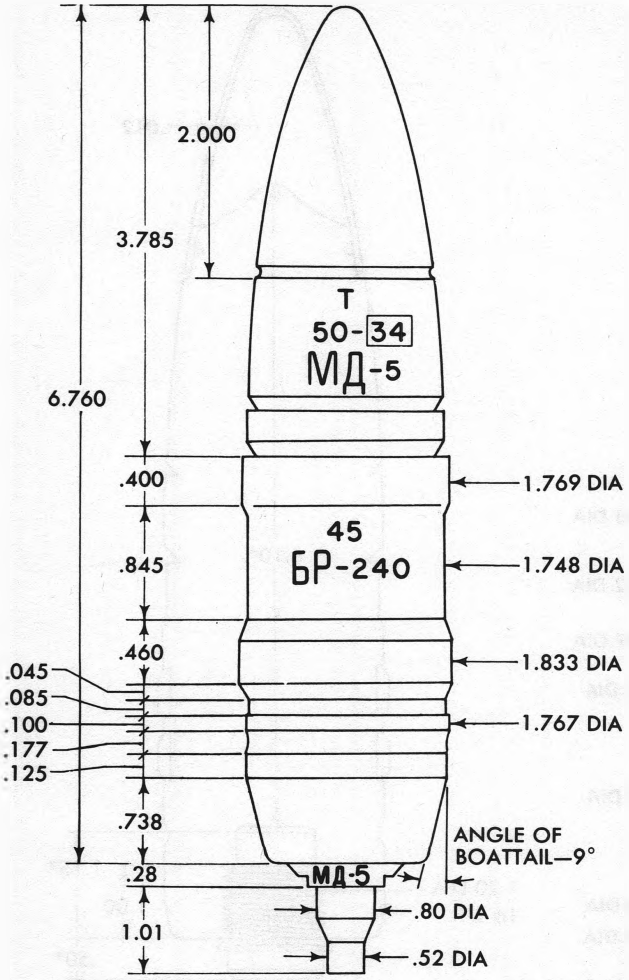
Figure 12. (C) *45-mm armor-piercing (AP).*

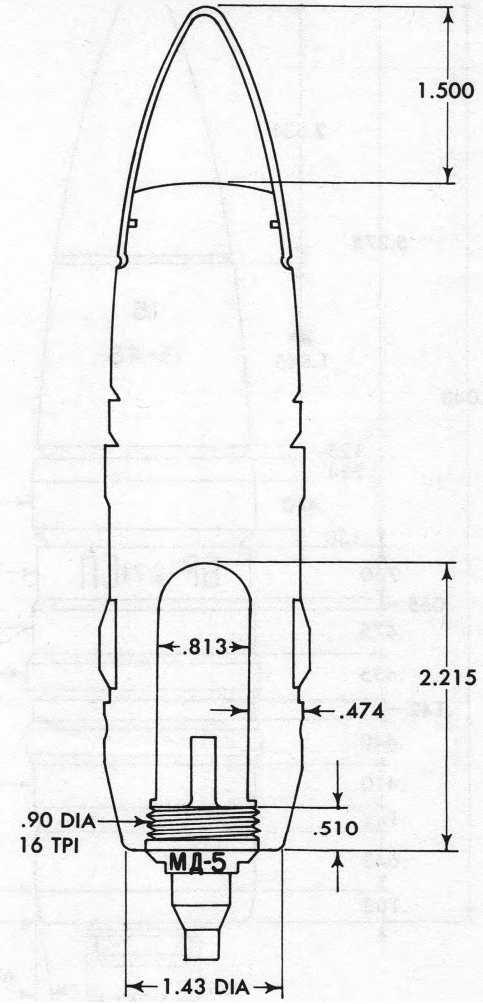


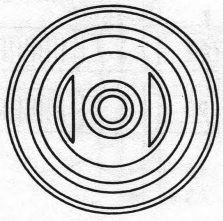
ALL DIMENSIONS IN INCHES

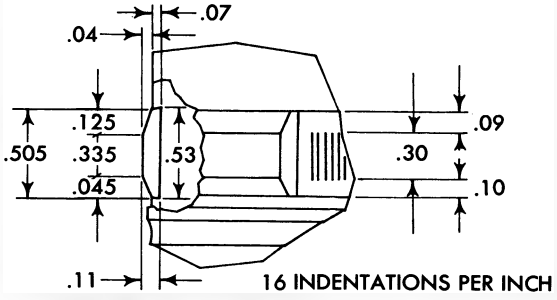
Caliber: 45-mm
Identification code: БР-240П
Type: Hypervelocity armor-piercing tracer (HVAP-T)
Weight: 1.88 lb.
Bursting charge: None
Fuze: None
Known using weapon: AT Guns M1932, M1937, and M1942
Remarks: Has tungsten carbide core weighing 0.56 lb. Rotating band is mild steel, instead of copper

Figure 13. (C) *45-mm hypervelocity armor-piercing tracer (HVAP-T).*







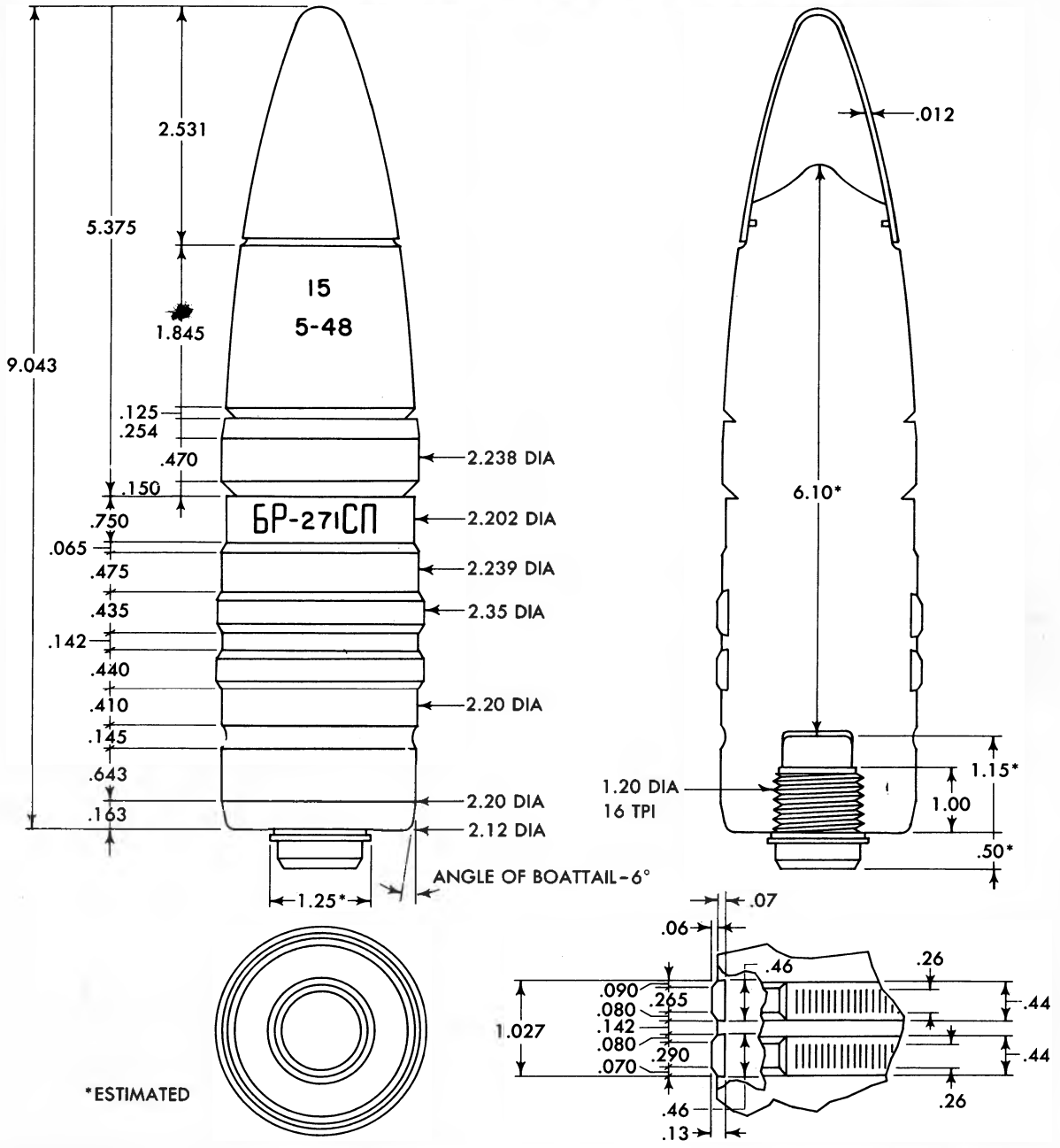


ALL DIMENSIONS IN INCHES

Caliber: 45-mm
Identification code: БР–240
Type: Armor-piercing tracer (AP-T)
Weight (fuzed): 3.15 lb.
Bursting charge: 0.045 lb. TNT

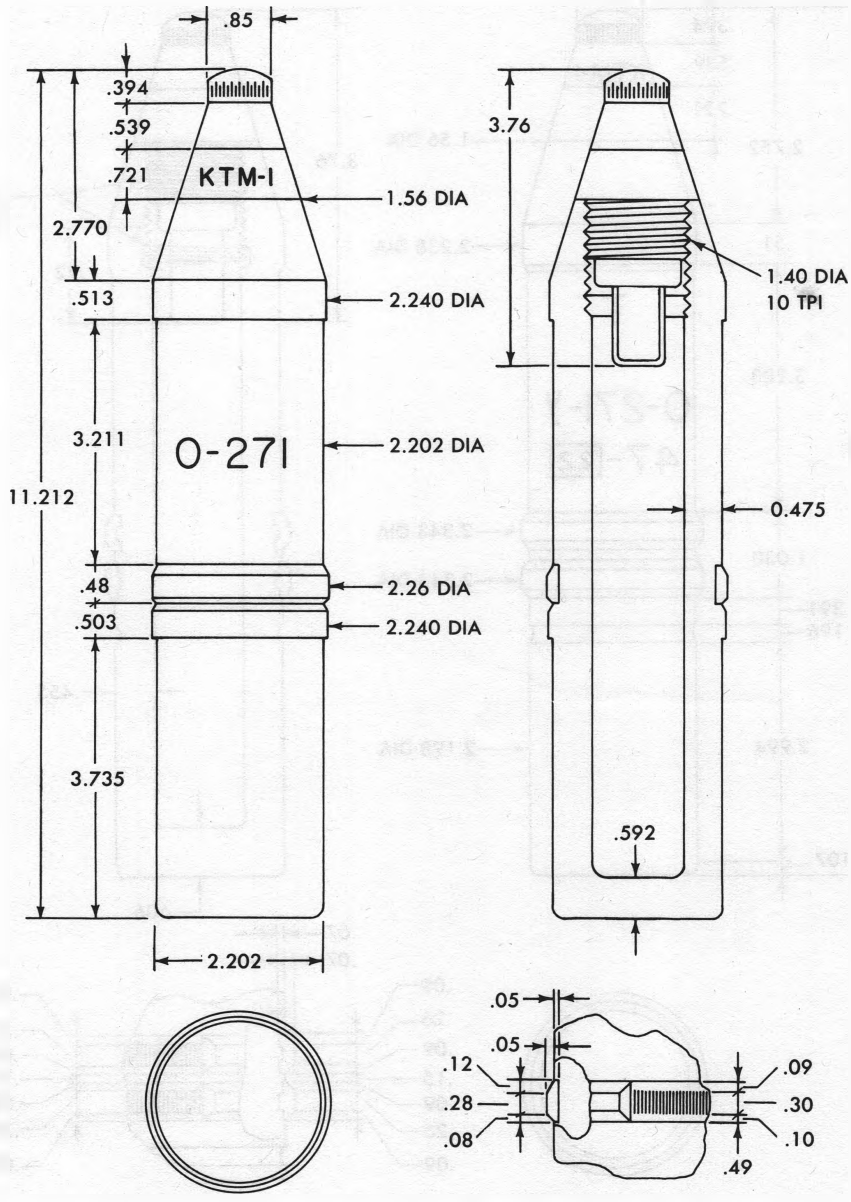
Fuze: Model МД–5 base detonating
Known using weapon: AT Guns M1932, M1937, and M1942; Tank Gun M1934
Remarks:

Figure 14. (C) *45-mm armor-piercing tracer (AP-T).*



Caliber: 57-mm
Identification code: БР-271СП
Type: Armor-piercing tracer (AP-T)
Weight: 6.92 lb.
Bursting charge: None (solid shot)
Fuze: None
Known using weapon: AT Guns M1941 and M1943 (ZIS-2), APAT and ASU-57
Remarks: Weight of tracer: 0.28 lb.

Figure 15. (C) *57-mm armor-piercing tracer (AP-T).*



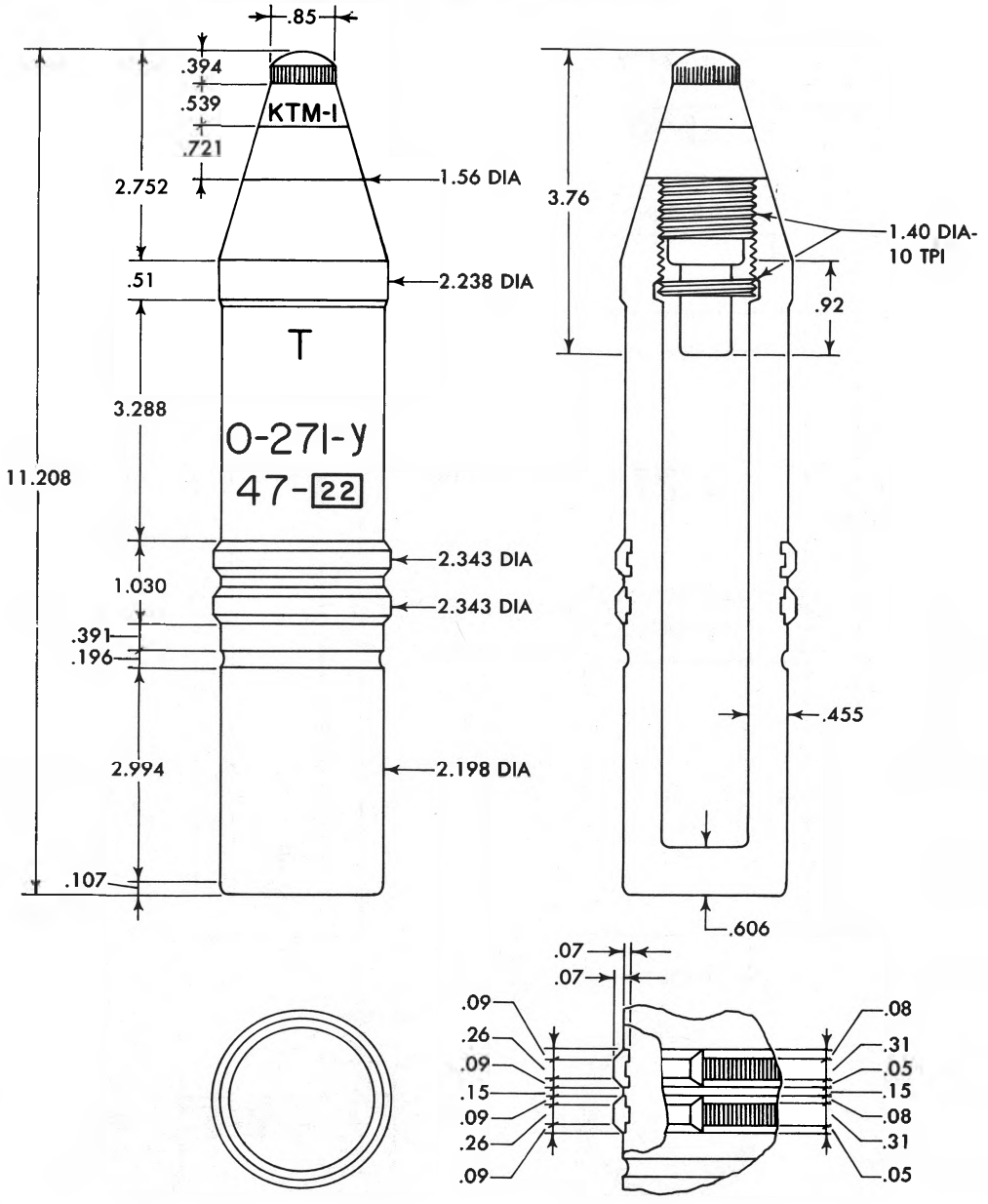
ALL DIMENSIONS IN INCHES

18 INDENTATIONS PER INCH

Caliber: 57-mm
Identification code: O–271
Type: Fragmentation (Frag)
Weight (fuzed): 8.11 lb.
Bursting charge: 0.48 lb. TNT

Fuze: Model KTM–1 point detonating
Known using weapon: AT Guns M1941, M1943 (ZIS–2), APAT and ASU–57
Remarks: Also uses Model KT–1 point detonating fuze

Figure 16. (C) *57-mm fragmentation (Frag)—I.*



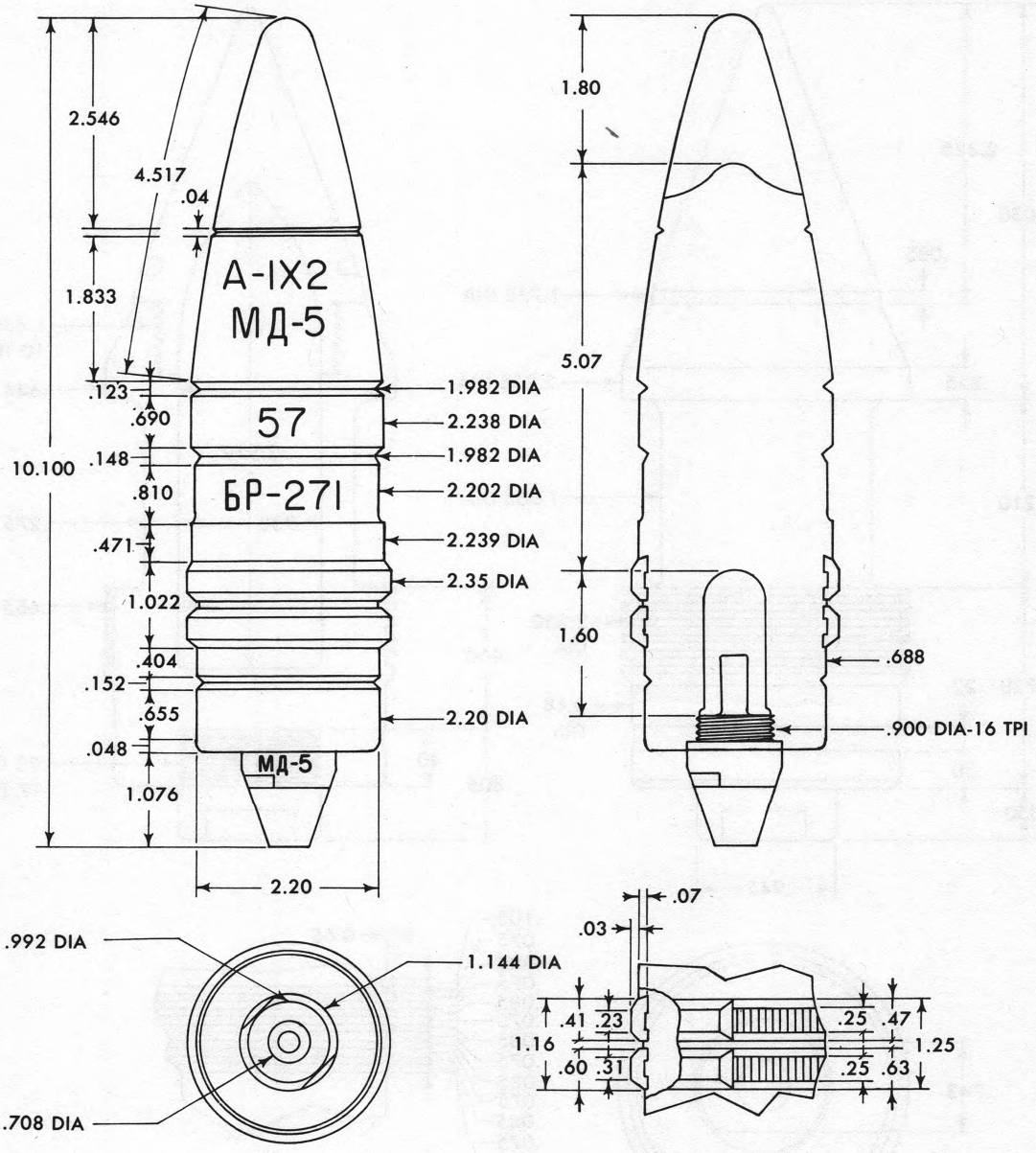
ALL DIMENSIONS IN INCHES

18 INDENTATIONS PER INCH

Caliber: 57-mm
Identification code: O–271Y
Type: Fragmentation (Frag)
Weight (fuzed): 8.11 lb.
Bursting charge: 0.48 lb. TNT
Fuze: Model KTM–1 point detonating

Known using weapon: AT Guns M1941, M1943(ZIS–2), APAT and ASU–57
Remarks: This projectile is the same as the O–271, except that it has two rotating bands, whereas the O–271 has one

Figure 17. (C) *57-mm fragmentation (Frag)—II.*



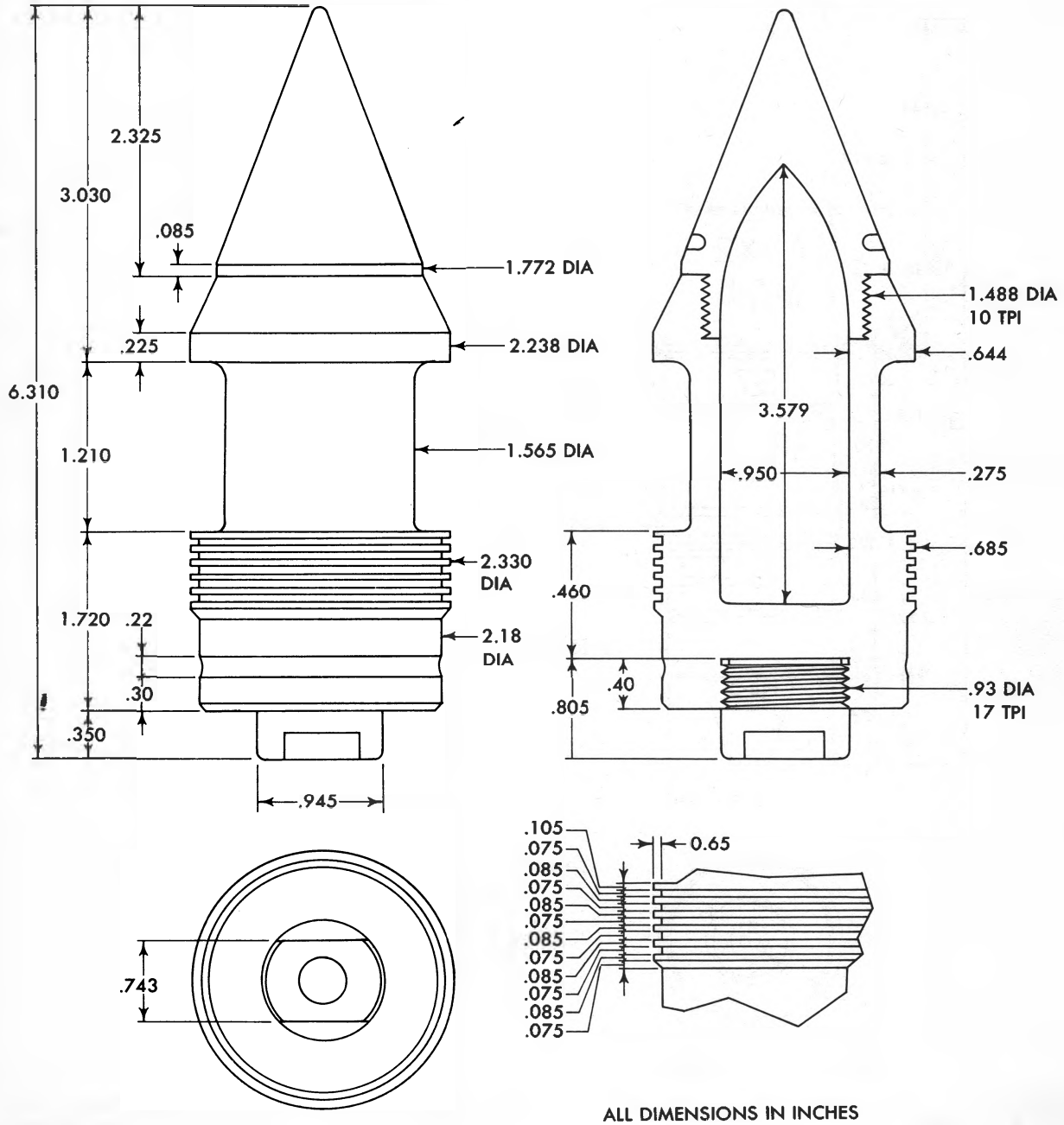
ALL DIMENSIONS IN INCHES

18 INDENTATIONS PER INCH

Caliber: 57-mm
Identification code: БР–271
Type: Armor-piercing tracer (AP-T)
Weight (fuzed): 6.93 lb.
Bursting charge: 0.084 lb. RDX, aluminum, and wax
Fuze: Model МД–5 base detonating
Known using weapon: AT Guns M1941, M1943 (ZIS–2), APAT and ASU–57

Remarks: The significance of the red color band on the projectile is unknown. Although a red band normally designates an incendiary filler, the stenciled code and filler markings on the illustrated shell indicate that it is an armor-piercing tracer round with an HE filler, rather than an API-T type

Figure 18. (C) *57-mm armor-piercing tracer (AP-T).*



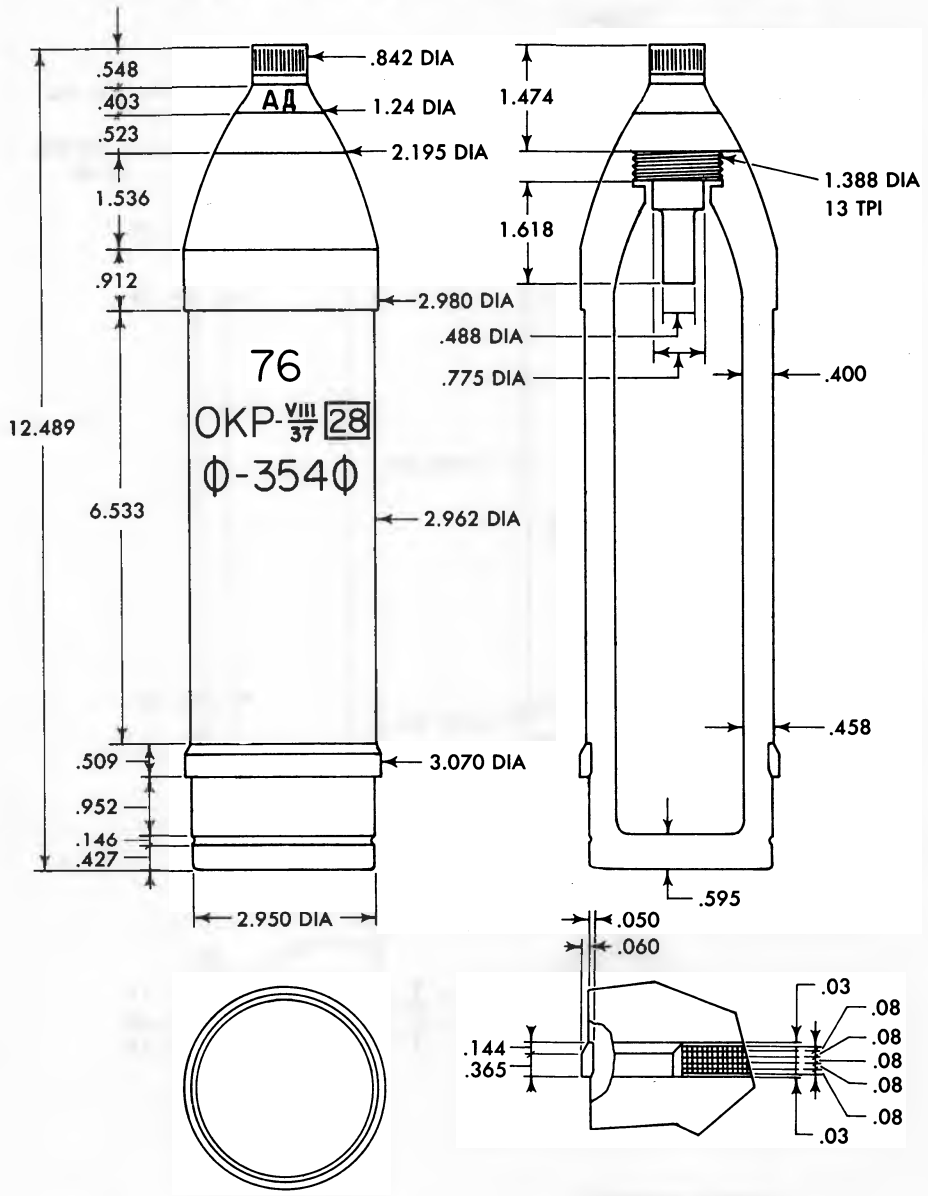
ALL DIMENSIONS IN INCHES

Caliber: 57-mm
Identification code: БР-271П
Type: Hypervelocity armor-piercing tracer (HVAP-T)
Weight: 3.946 lb.
Bursting charge: None

Fuze: None
Known using weapon: AT Guns M1941, M1943 (ZIS-2), APAT and ASU-57

Remarks: Weight of core: 1.124 lb.

Figure 19. (C) *57-mm hypervelocity armor-piercing tracer (HVAP-T).*



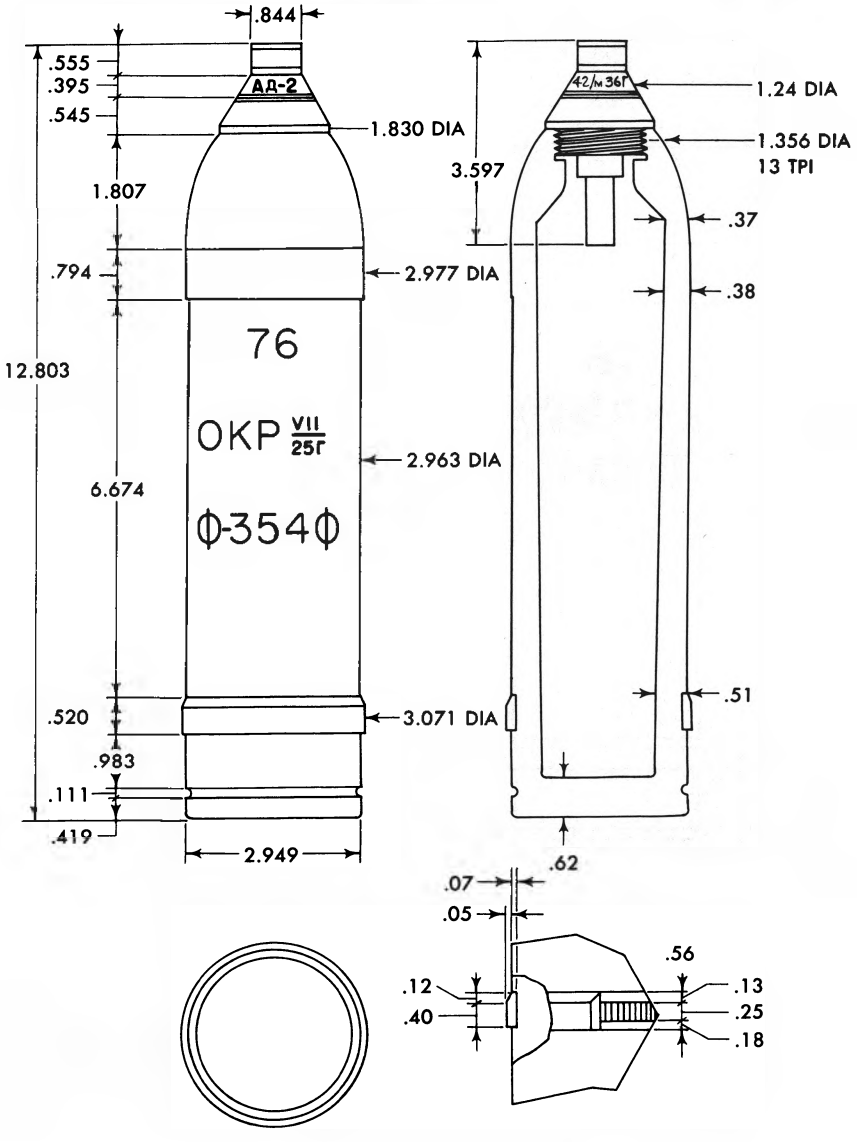
ALL DIMENSIONS IN INCHES

14 ROWS OF RAISED PYRAMIDS PER INCH

Caliber: 76-mm
Identification code: Ф-354Ф
Type: High-explosive (HE)
Weight (fuzed): 14.13 lb.
Bursting charge: 1.75 lb. TNT
Fuze: Model АД point detonating
Known using weapon: Regimental Gun (Howitzer) M1927; Divisional Guns M1902/30, M1936 (F-22), M1939 (USV), M1942 (ZIS-3); Tank Guns M1939 (F-32), M1940 (F-34), M1941 (ZIS-5), M1941M, D-56T; SP Gun M1942/43 (SAU-76)

Remarks: Also uses Model АД-2 point detonating fuze. This is an older projectile of French design and is not likely to be encountered; however, its loading date of 1937 (see drawing) indicates it may still be in use

Figure 20. (C) *76-mm high-explosive (HE)—I.*



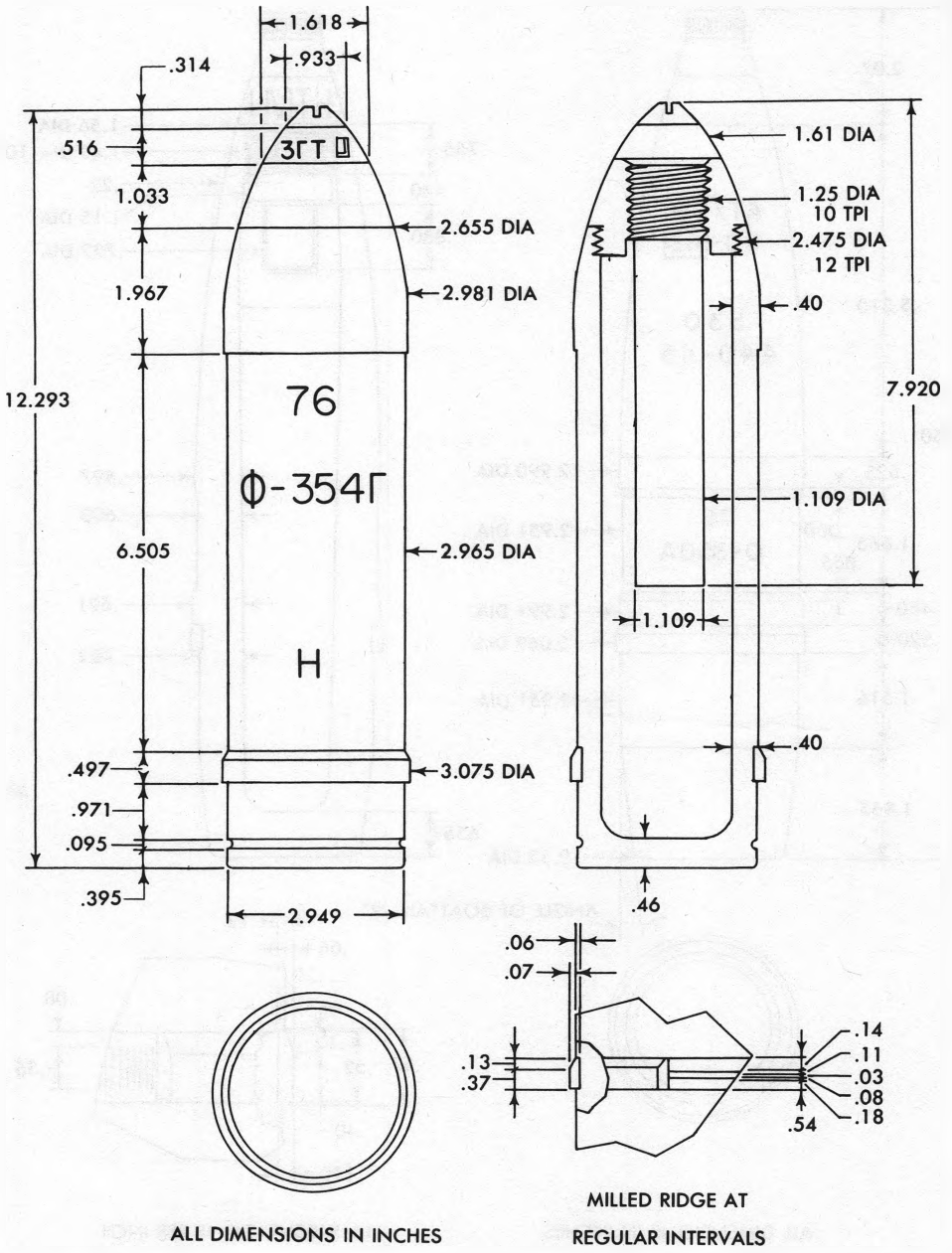
ALL DIMENSIONS IN INCHES

13 INDENTATIONS PER INCH

Caliber: 76-mm
Identification code: Ф-354Ф
Type: High-explosive (HE)
Weight (fuzed): 14.13 lb.
Bursting charge: 1.73 lb. Schneiderite
Fuze: Model АД-2 point detonating
Known using weapon: Regimental Gun (Howitzer) M1927; Divisional Guns M1902/30, M1936 (F-22), M1939 (USV), M1942 (ZIS-3); Tank Guns M1939 (F-32), M1940 (F-34), M1941 (ZIS-5), M1941M, D-56T; SP Gun M1942/43 (SAU-76).

Remarks: Also uses Model АД point detonating fuze.
This is an older projectile of French design and is not likely to be encountered; however, the manufacturing date 1925 (see drawing) indicates it may still be in use

Figure 21. (C) *76-mm high-explosive (HE)—II.*



Caliber: 76-mm
Identification code: Ф-354Г
Type: High-explosive (HE)
Weight (fuzed): 14.33 lb.
Bursting charge: 1.73 lb. TNT
Fuze: Model 3ГТ point detonating
Known using weapon: Regimental Gun (Howitzer) M1927; Mountain Gun (Howitzer) M1909; Divisional Guns M1902/30, M1936 (F-22), M1939 (USV), M1942 (ZIS-3); Tank Guns M1939 (F-32), M1940 (F-34), M1941 (ZIS-5), M1941M, D-56T; SP Gun M1942/43 (SAU-76)
Remarks:

Figure 22. (C) *76-mm high-explosive (HE)—III.*

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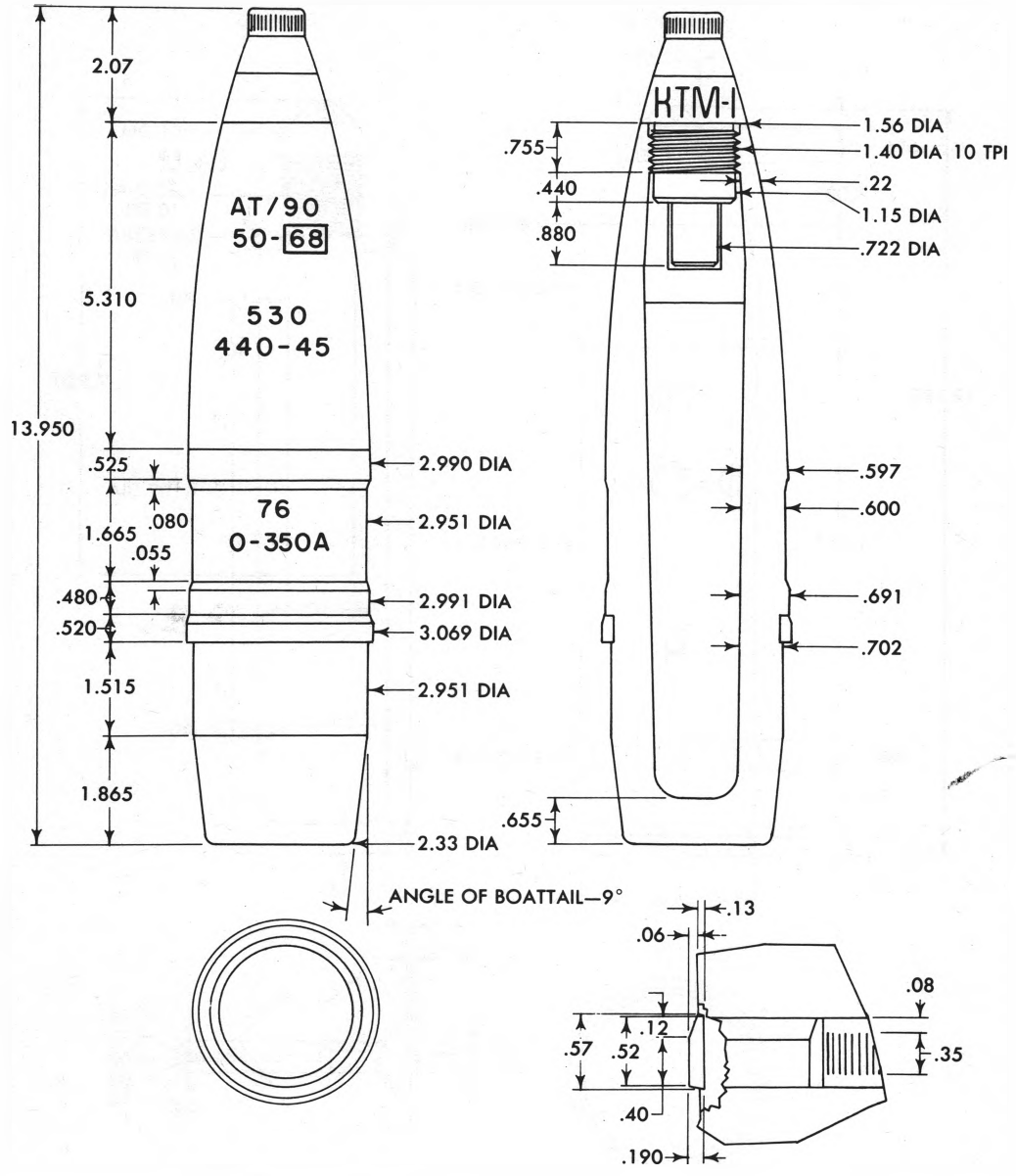

ALL DIMENSIONS IN INCHES

16 INDENTATIONS PER INCH

Caliber: 76-mm
Identification code: O–350A
Type: Fragmentation (Frag)
Weight (fuzed): 13.69 lb.
Bursting charge: 1.08 lb. amatol/TNT
Fuze: Model KTM–1 point detonating
Known using weapon: Mountain Gun (Howitzer) M1938; Divisional Guns M1902/30, M1936 (F–22), M1939 (USV), M1942 (ZIS–3); Tank Guns M1939 (F–32), M1940 (F–34), M1941 (ZIS–5), M1941M, D–56T; SP Gun M1942/43 (SAU–76)

Remarks: Also uses Models KT–1 and KTM3–1 point detonating fuzes

Figure 23. (C) *76-mm fragmentation (Frag).*

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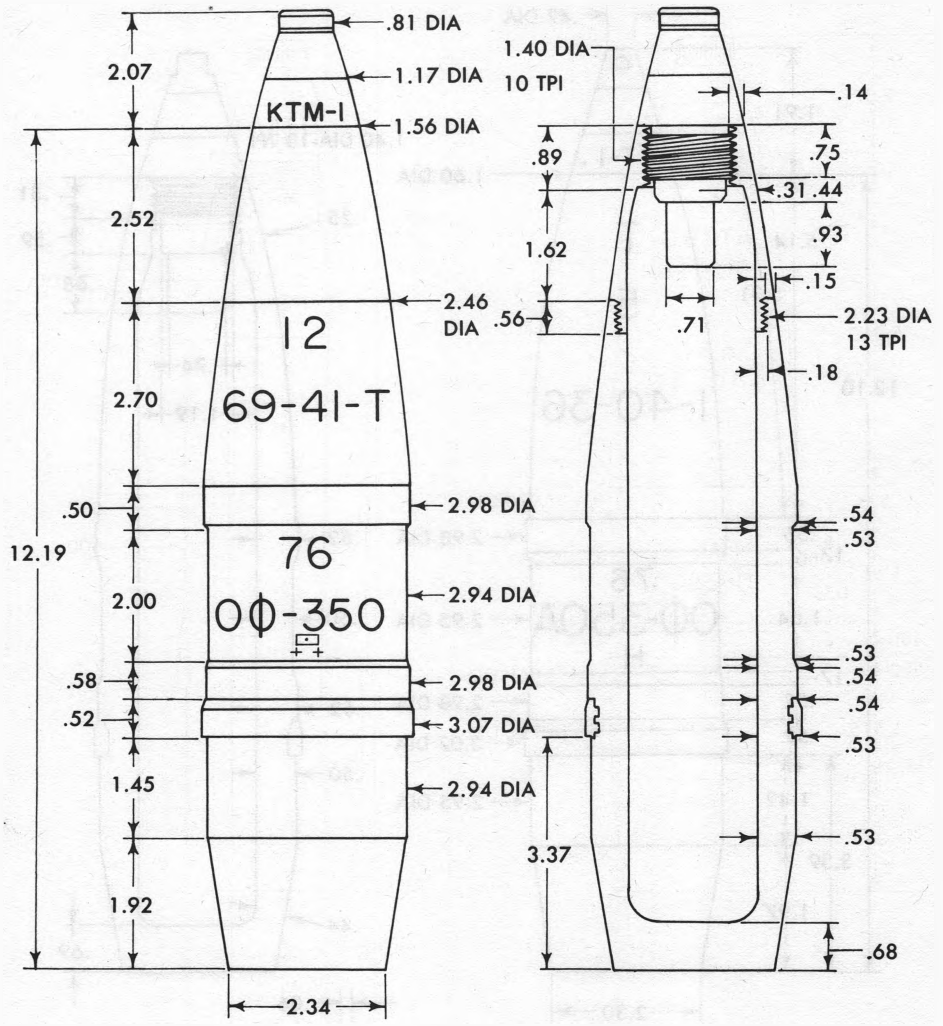
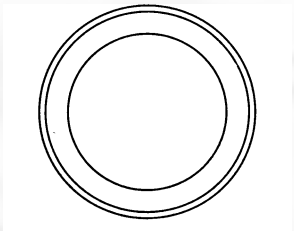
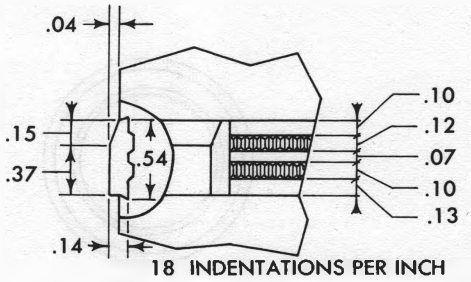




ALL DIMENSIONS IN INCHES



18 INDENTATIONS PER INCH

Caliber: 76-mm
Identification code: OΦ–350
Type: Fragmentation high-explosive (Frag-HE)
Weight (fuzed): 13.67 lb.
Bursting charge: 1.57 lb. TNT

Fuze: Model KTM–1 point detonating
Known using weapon: All 76-mm guns and howitzers, except antiaircraft guns
Remarks: Also uses Models KT–1 and KTM3–1 point detonating fuzes

Figure 24. (C) *76-mm fragmentation high-explosive (Frag-HE)—I.*

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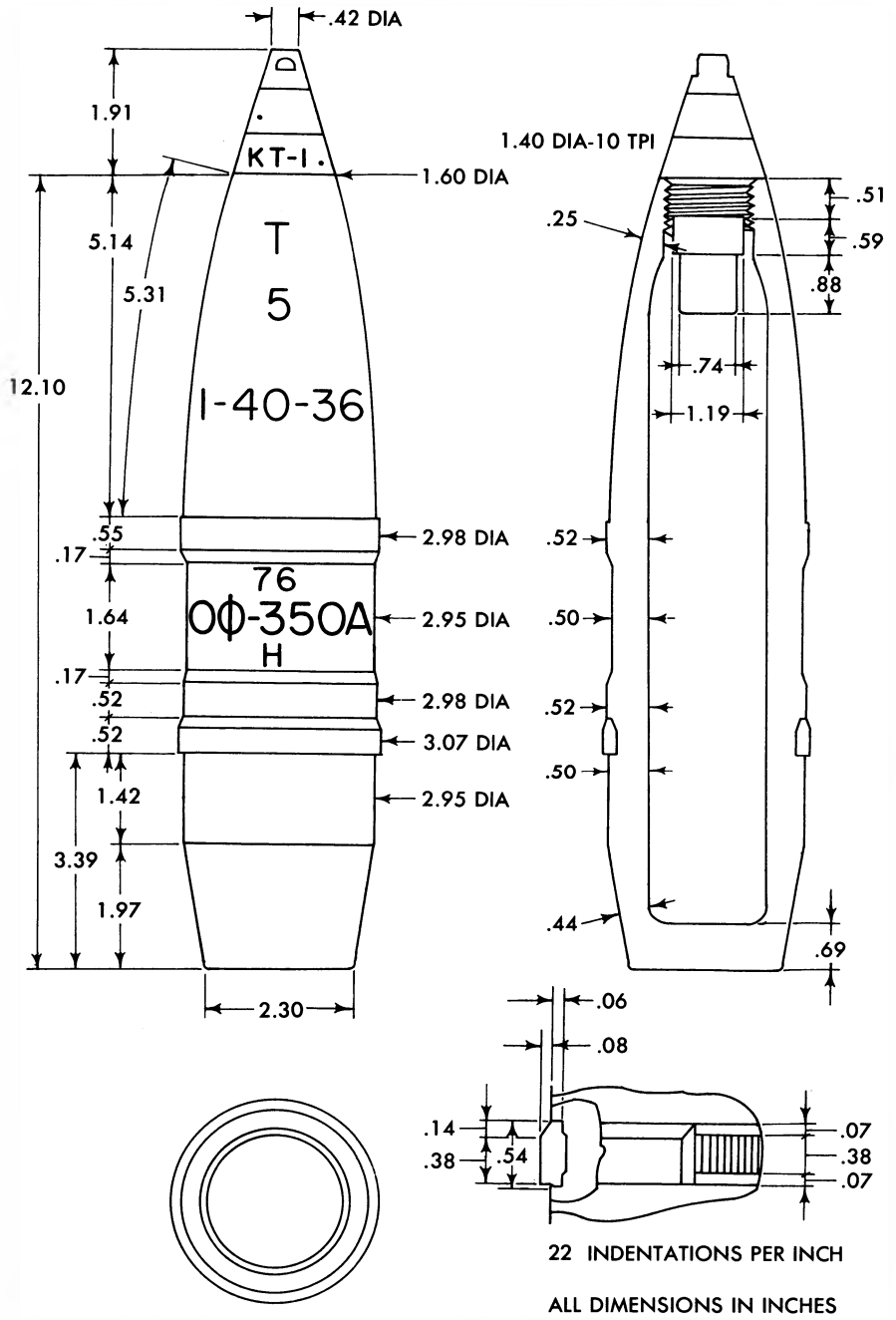

Caliber: 76-mm
Identification code: OΦ–350A
Type: Fragmentation high-explosive (Frag-HE)
Weight (fuzed): 13.69 lb.
Bursting charge: 1.57 lb TNT

Fuze: Model KT–1 point detonating
Known using weapon: All 76-mm guns and howitzers, except antiaircraft guns
Remarks: Also uses Models KTM–1 and KTM3–1 point detonating fuzes.

Figure 25. (C) *76-mm fragmentation high-explosive (Frag-HE)—II.*

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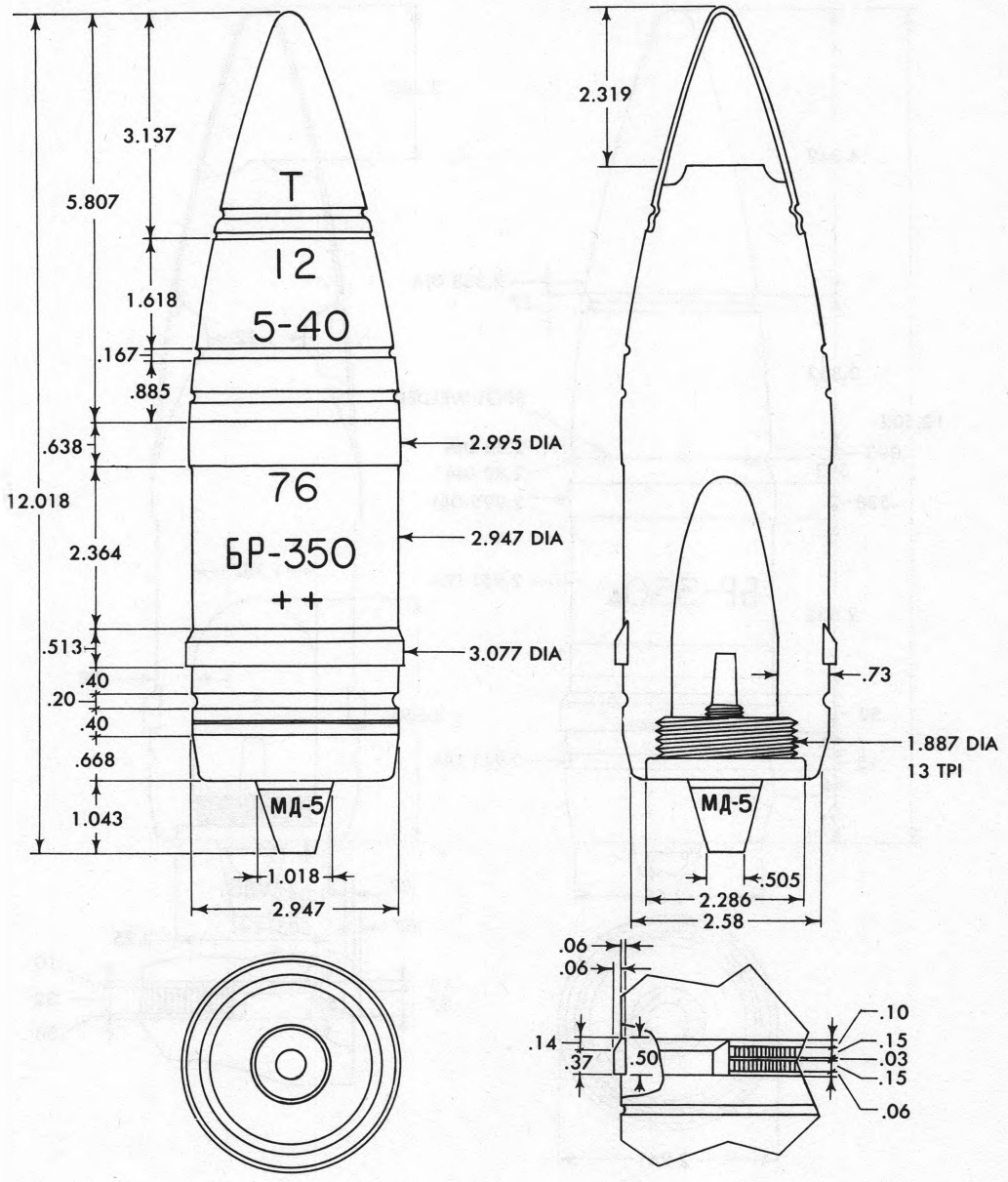

ALL DIMENSIONS IN INCHES

18 INDENTATIONS PER INCH

Caliber: 76-mm
Identification code: БР–350
Type: Armor-piercing tracer (AP-T)
Weight (fuzed): 14.33 lb.
Bursting charge: 0.34 lb. TNT
Fuze: Model МД–5 base detonating
Known using weapon: Regimental Guns (Howitzers) M1927 and M1943; Divisional Guns M1902/30, M1936 (F–22), M1939 (USV), M1942 (ZIS–3); Tank Guns M1939 (F–32); M1940 (F–34), M1941 (ZIS–5), M1941M, D–56T, SP Gun M1942/43 (SAU–76)

Remarks: Other 76-mm AP–T projectiles are shown in figures 27, 28, and 29.

Figure 26. (C) *76-mm armor-piercing tracer (AP-T)—I.*

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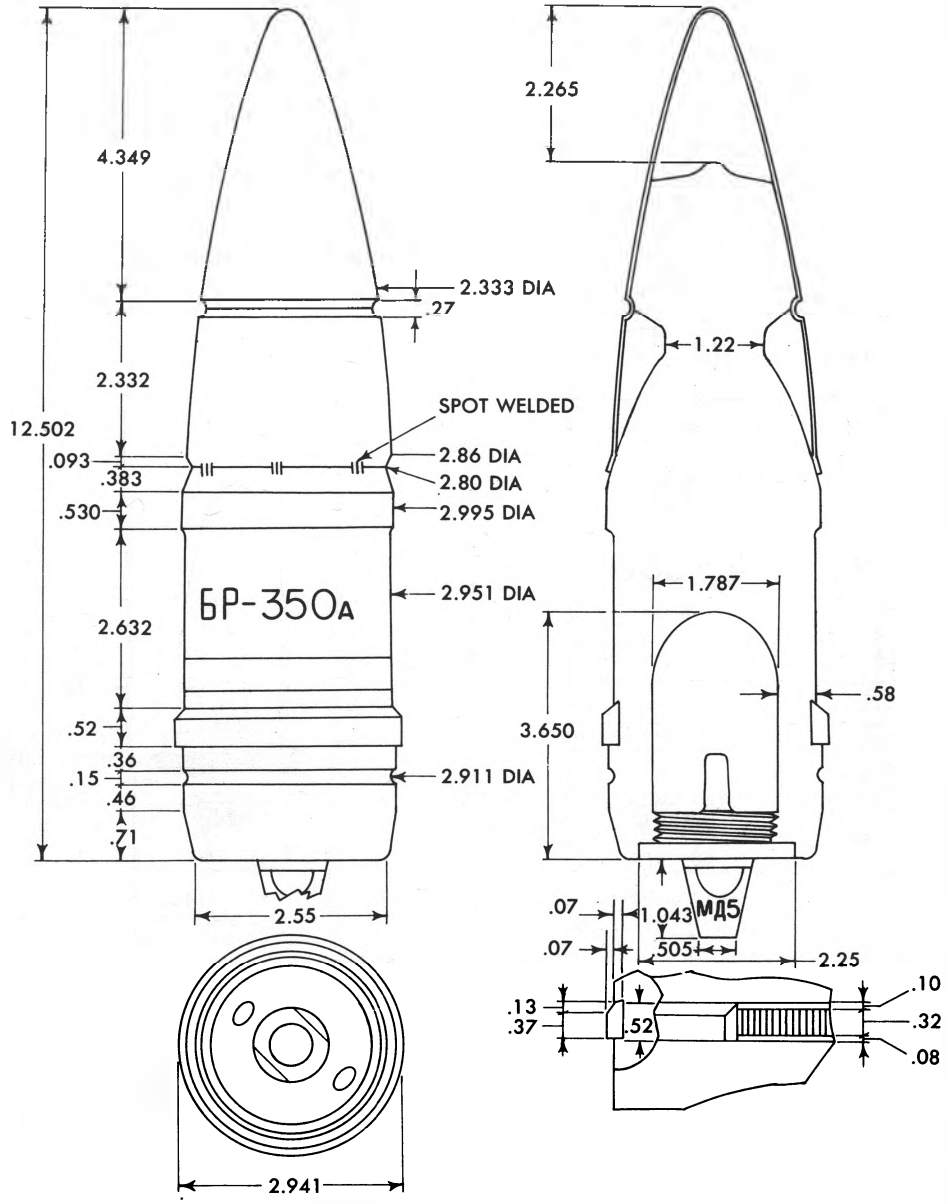


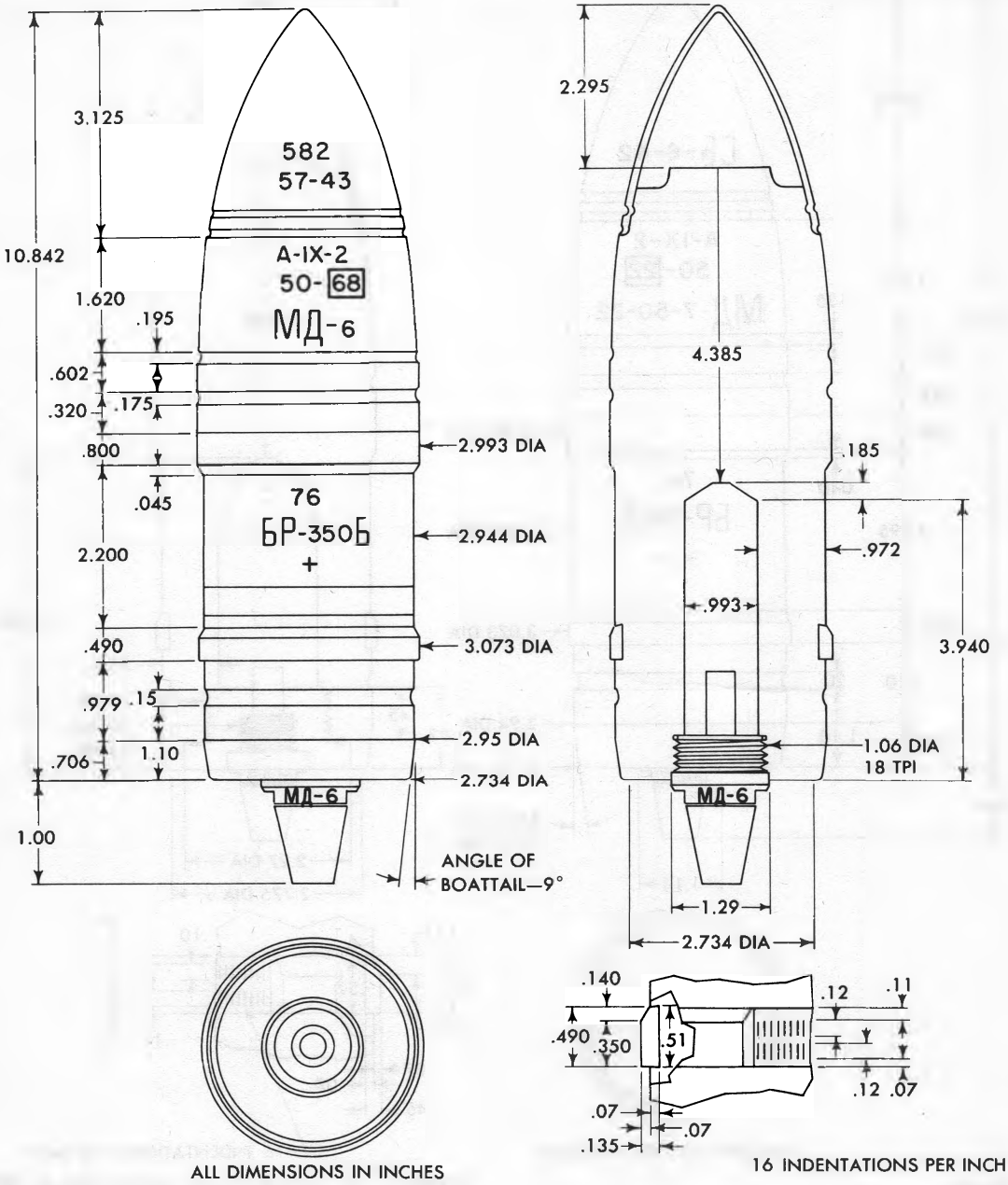
ALL DIMENSIONS IN INCHES

18 INDENTATIONS PER INCH

Caliber: 76-mm
Identification code: БР-350А
Type: Armor-piercing tracer (AP-T)
Weight (fuzed): 13.89 lb.
Bursting charge: 0.34 lb. TNT
Fuze: Model МД-5 base detonating
Known using weapon: Mountain Gun (Howitzer) M1938; Divisional Guns M1902/30, M1936 (F-22), M1939 (USV), M1942 (ZIS-3); Tank Guns M1939 (F-32), M1940 (F-34), M1941 (ZIS-5), M1941M, D-56T; SP Gun M1942/43 (SAU-76)

Remarks: Other 76-mm AP-T projectiles are shown in figures 26, 28, and 29

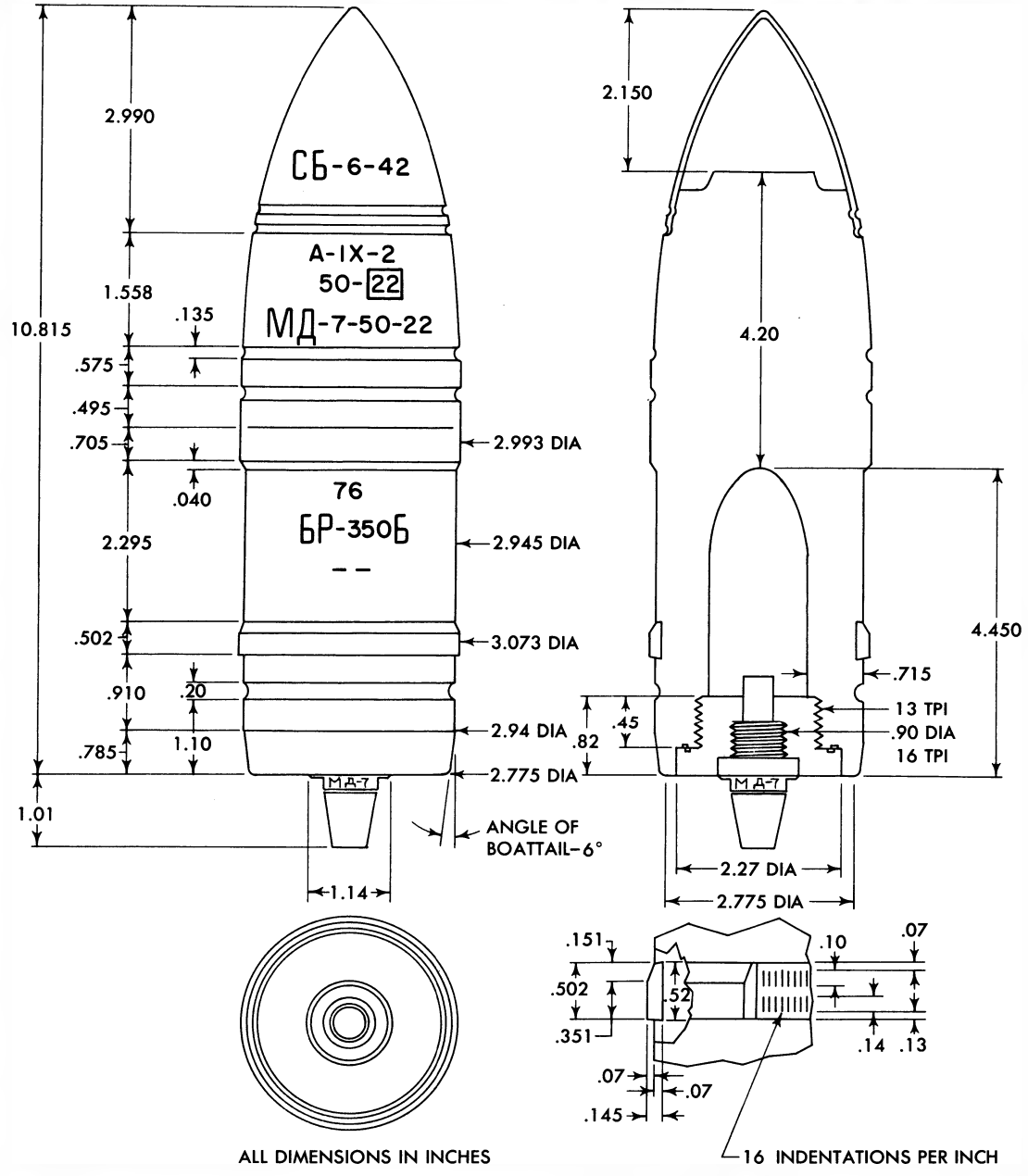
Figure 27. (C) *76-mm armor-piercing tracer (AP-T)—II.*



Caliber: 76-mm
Identification code: БР-350Б
Type: Armor-piercing tracer (AP-T)
Weight (fuzed): 14.33 lb.
Bursting charge: 0.14 lb. RDX, aluminum, and wax
Fuze: Model МД-6 base detonating
Known using weapon: Divisional Guns M1902/30, M1936 (F-22), M1939 (USV), M1942 (ZIS-3); Tank Gun M1939 (F-32), M1940 (F-34), M1941 (ZIS-5), M1941-M, D-56T; SP Gun M1942/43 (SAU-76)

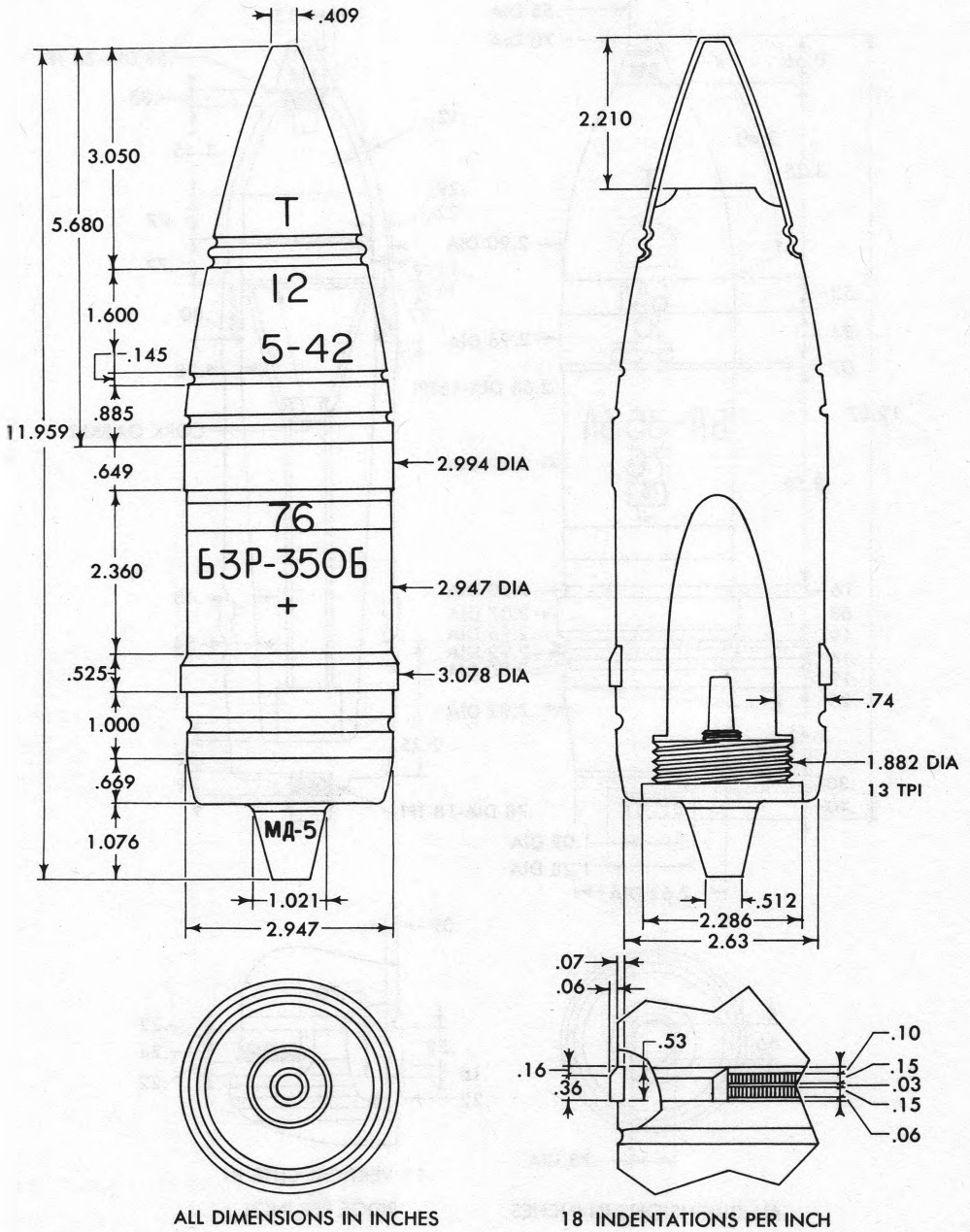
Remarks: A ½-in.-wide red color band may appear above the rotating band on this projectile. Other 76-mm AP-T projectiles are shown in figures 26, 27, and 29

Figure 28. (C) *76-mm armor-piercing tracer (AP-T)—III.*



Caliber: 76-mm
Identification code: БР–350Б
Type: Armor-piercing tracer (AP-T)
Weight (fuzed): 14.31 lb.
Bursting charge: 0.13 lb. RDX, aluminum, and wax
Fuze: Model МД–7 base detonating
Known using weapon: Divisional Guns M1902/30, M1936 (F–22), M1939 (USV), M1942 (ZIS–3); Tank Guns M1939 (F–32), M1940 (F–34), M1941 (ZIS–5), M1941M, D–56T; SP Gun M1942/43 (SAU–76).
Remarks: Also uses Model МД–5 base detonating fuze. This projectile, using the Model МД–5 or МД–7 fuze, has been found with and without the base fuze adapter. A ½-in.-wide red color band may appear above the rotating band. Other 76-mm AP-T projectiles are shown in figures 26, 27, and 28

Figure 29. (C) *76-mm armor-piercing tracer (AP-T)—IV.*

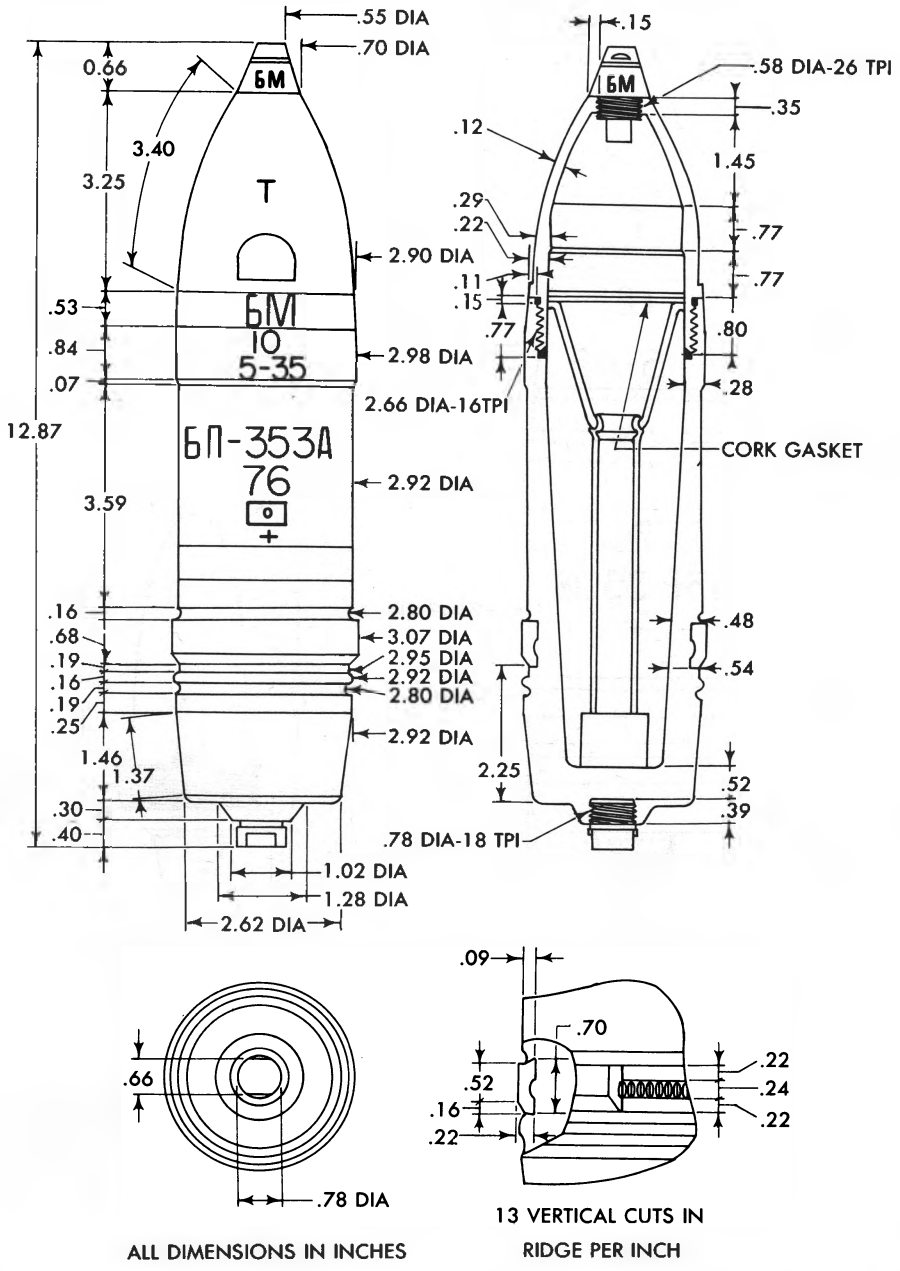


Caliber: 76-mm
Identification code: БЗР–350Б
Type: Armor-piercing incendiary tracer (API-T)
Weight (fuzed): 14.30 lb.
Bursting charge: 0.26 lb. TNT, w/incendiary pellet
Fuze: Model МД–5 base detonating

Known using weapon: Divisional Guns M1902/30, M1936 (F–22), M1939 (USV), and M1942 (ZIS–3); Tank Guns M1939 (F–32), M1940 (F–34), M1941 (ZIS–5), M1941M, D–56T; SP Gun M1942/43 (SAU–76)
Remarks:

Figure 30. (C) *76-mm armor-piercing incendiary tracer (API-T).*

CONFIDENTIAL

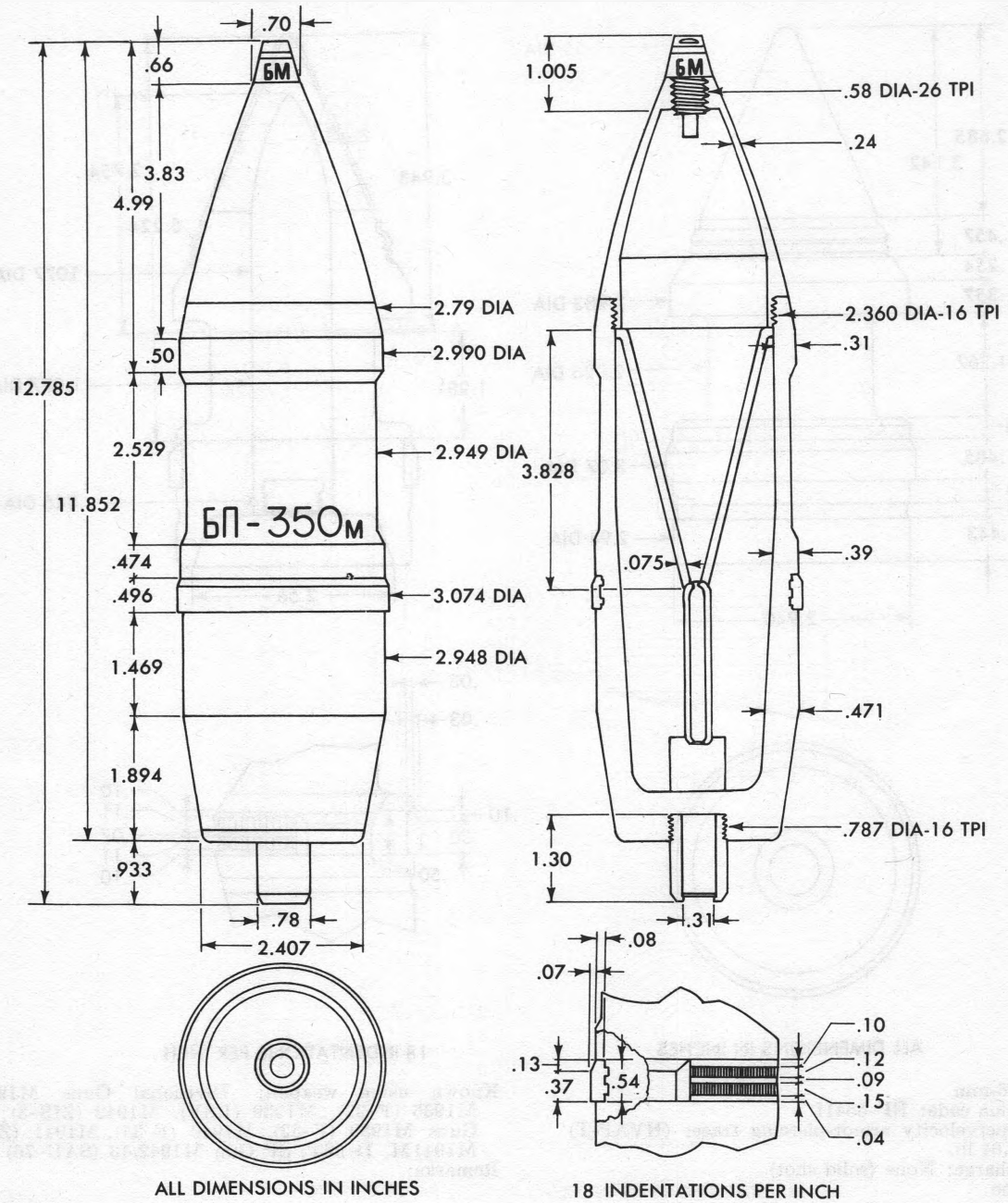


Caliber: 76-mm
Identification code: БП-353А
Type: High-explosive antitank (HEAT)
Weight (fuzed): 11.93 lb.
Bursting charge: 1.37 lb. TNT
Fuze: Model БМ point detonating

Known using weapon: Regimental Guns (Howitzers) M1927, M1943; Divisional Guns M1902/30, M1936 (F-22), M1939 (USV), and M1942 (ZIS-3); Tank Guns M1939 (F-32), M1940 (F-34), M1941(ZIS-5), M1941M, D-56T; SP Gun M1942/43 (SAU-76)
Remarks: Is supplied with removable tracer element

Figure 31. (C) *76-mm high-explosive antitank (HEAT)—I.*

CONFIDENTIAL



ALL DIMENSIONS IN INCHES

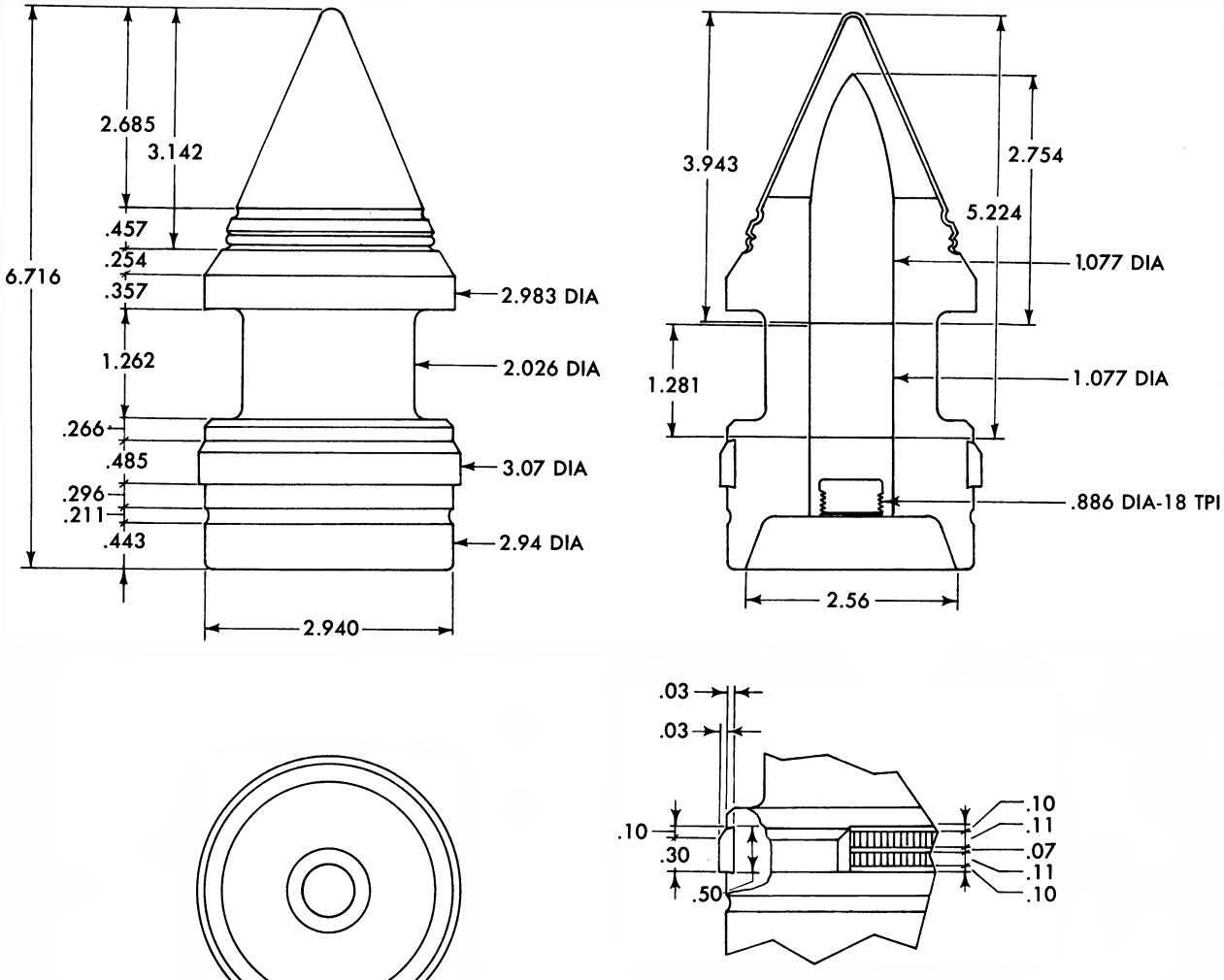
18 INDENTATIONS PER INCH

Caliber: 76-mm
Identification code: БП–350М
Type: High-explosive antitank (HEAT)
Weight (fuzed): 11.93 lb.
Bursting charge: 1.14 lb. cast TNT
Fuze: Model БМ point detonating

Known using weapon: Regimental Guns (Howitzers) M1927, M1943; Divisional Guns M1902/30, M1936 (F–22), M19 9 (USV), and M1942 (ZIS–3); Tank Guns M1939 (F–32), M1940 (F–34), M1941 (ZIS–5), M1941M, D–56T; SP Gun M1942/43 (SAU–76)
Remarks: Is supplied with removable tracer element

Figure 32. (C) *76-mm high-explosive antitank (HEAT)—II.*

CONFIDENTIAL



ALL DIMENSIONS IN INCHES

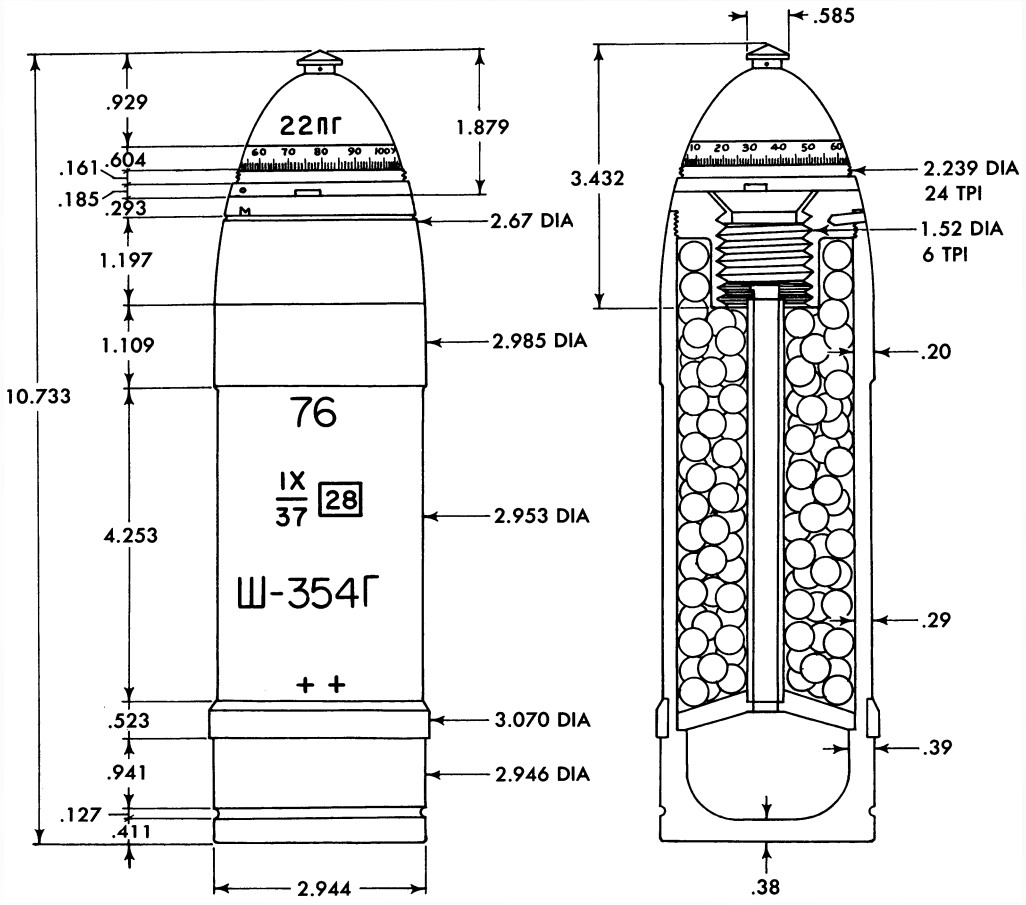
18 INDENTATIONS PER INCH

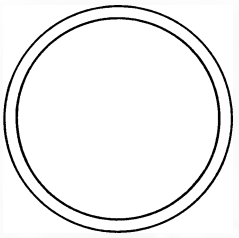
Caliber: 76-mm
Identification code: БР-354II
Type: Hypervelocity armor-piercing tracer (HVAP-T)
Weight: 6.64 lb.
Bursting charge: None (solid shot)
Fuze: None

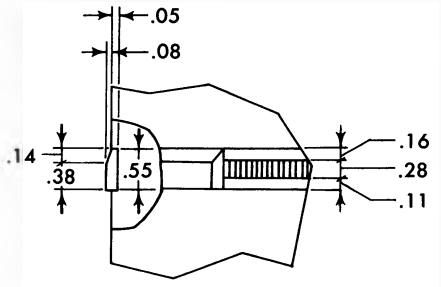
Known using weapon: Divisional Guns M1902/30, M1936 (F-22), M1939 (USV), M1942 (ZIS-3); Tank Guns M1939 (F-32), M1940 (F-34), M1941 (ZIS-5), M1941M, D-56T; SP Gun M1942/43 (SAU-76)
Remarks:

Figure 33. (C) *76-mm hypervelocity armor-piercing tracer (HVAP-T).*

CONFIDENTIAL





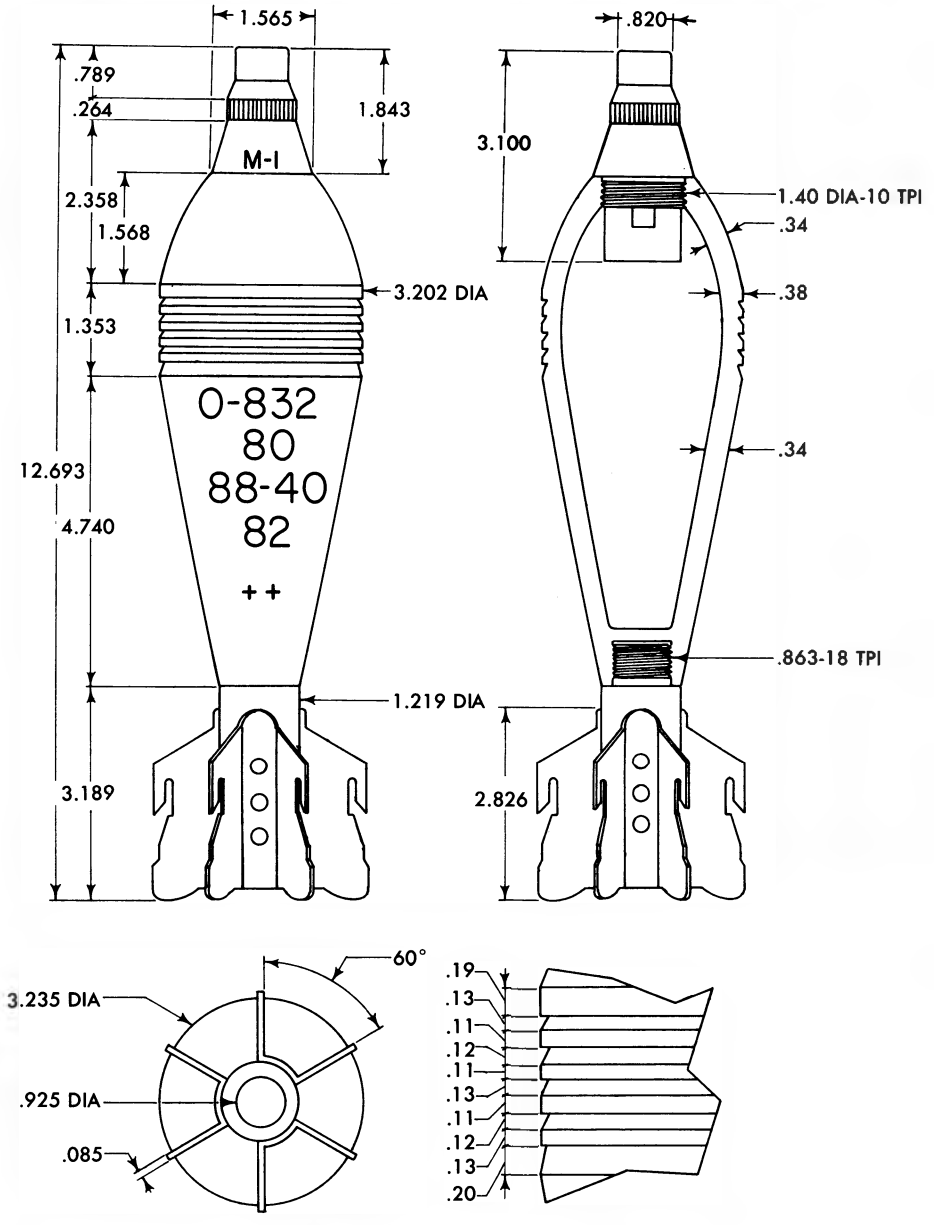


ALL DIMENSIONS IN INCHES

28 INDENTATIONS PER INCH

Caliber: 76-mm
Identification code: III–354Г
Type: Shrapnel (Shrap)
Weight (fuzed): 14.55 lb.
Bursting charge: .187 lb. black powder
Fuze: Model 22IIIГ TSQ
Known using weapon: Divisional Guns M1902/30, M1936 (F–22), M1939 (USV), M1942 (ZIS–3); Tank Guns M1939 (F–32), M1940 (F–34), M1941 (ZIS–5); SP Gun M1942/43 (SAU–76)
Remarks: In reality, the fuze illustrated above has two time rings rather than one. The flash tube locking nut in the base of the adapter has been omitted from the drawing

Figure 34. (C) *76-mm shrapnel (Shrap).*

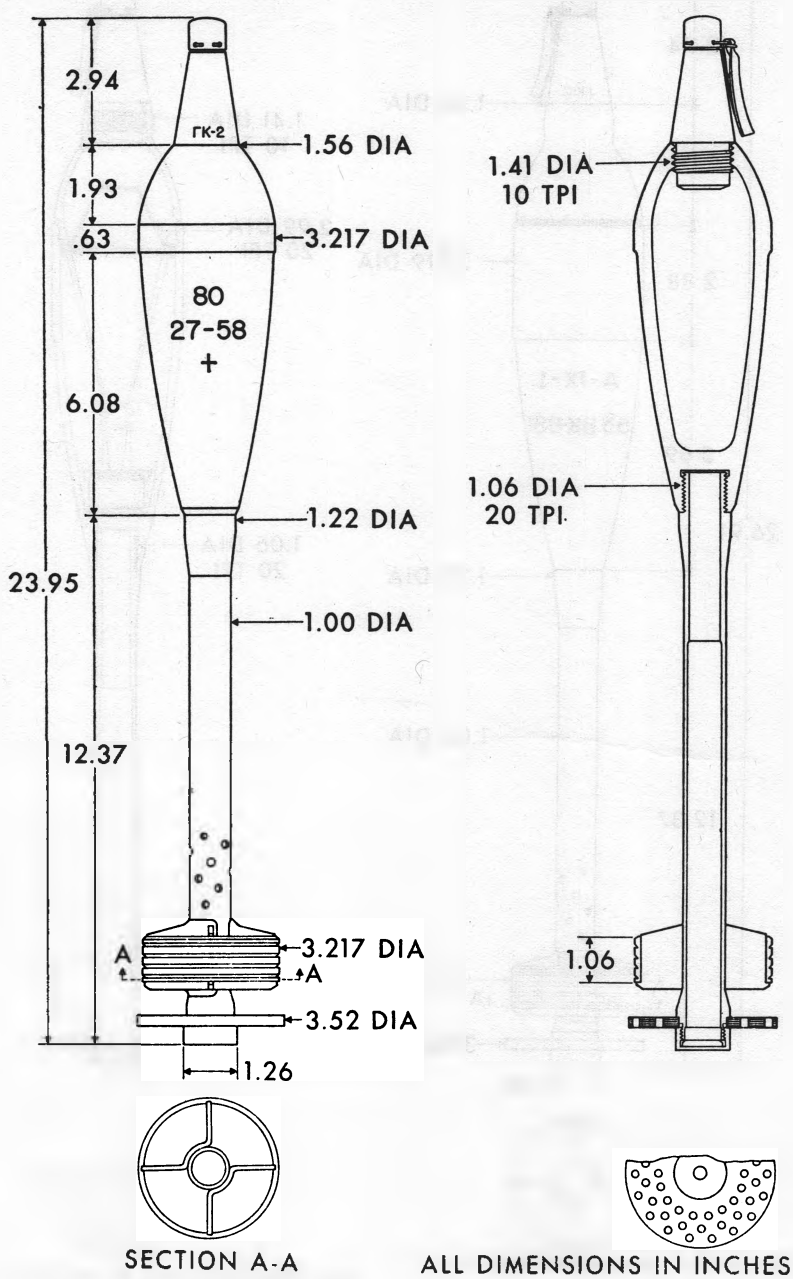


ALL DIMENSIONS IN INCHES

Caliber: 82-mm
Identification code: O–832
Type: Fragmentation (Frag)
Weight (fuzed): 7.50 lb.
Bursting charge: 0.88 lb. Schneiderite
Fuze: Model M–1 point detonating
Known using weapon: Battalion Mortars M1937 (82–BM 37), M1941 (82–BM 41), and M1943 (82–BM 43)
Remarks: Also uses Models M–2, M–3, M–4, MII–82, and MII point detonating fuzes

Propelling charge consists of the base charge (a shotgun-type shell) and six increments, weighing a total of 498 grains

Figure 35. (C) *82-mm fragmentation (Frag) (mortar).*

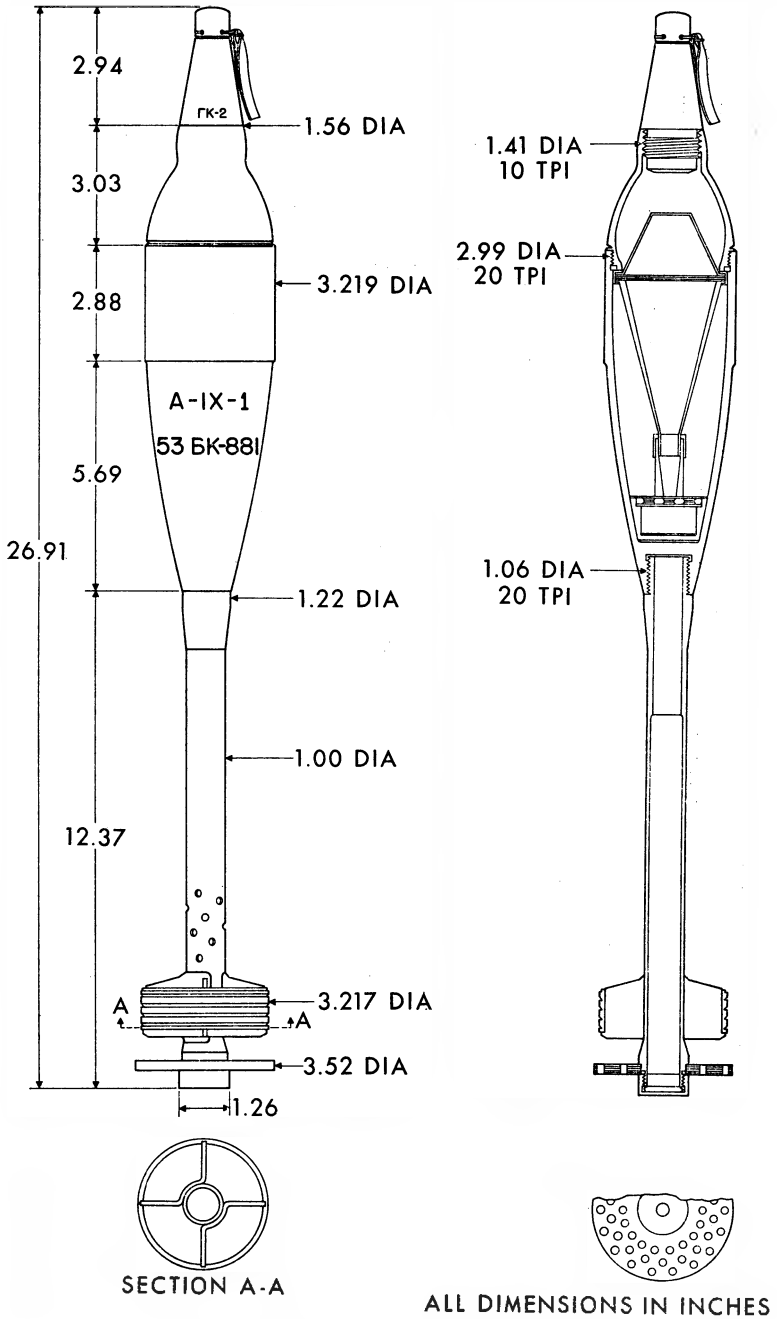


Caliber: 82-mm
Identification code: O-881A
Type: Fragmentation (Frag)
Weight (fuzed): 8.58 lb.

Bursting charge: 1.025 lb. TNT/dinitronaphthalene
Fuze: Model ГК-2 point detonating
Known using weapon: Recoilless Gun B-10
Remarks: Dinitronaphthalene is a smoke intensifier

Figure 35.1 (CONFIDENTIAL). (Added) *82-mm fragmentation (Frag) (recoilless)* (U).

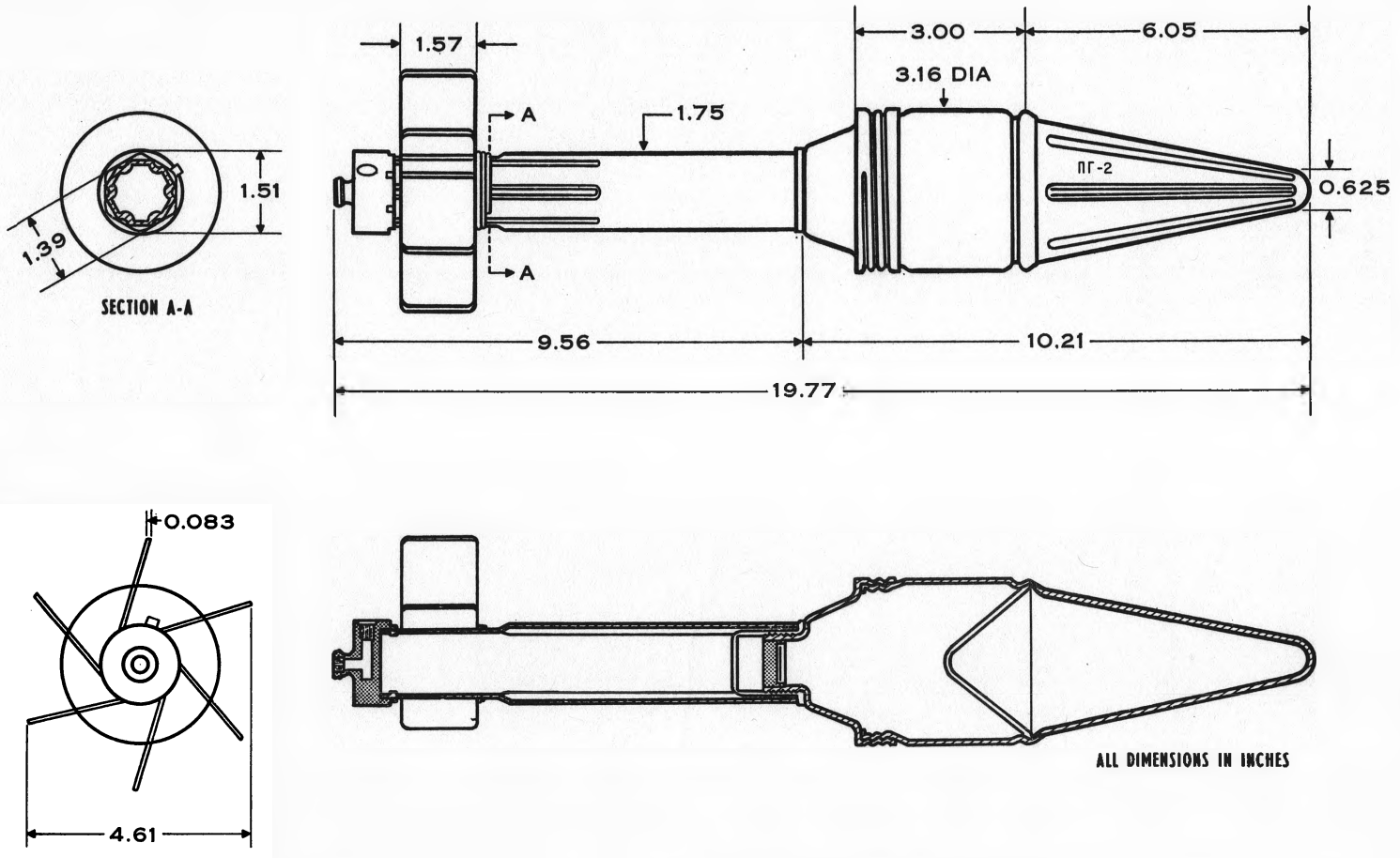
CONFIDENTIAL



Caliber: 82-mm
Identification code: БК–881
Type: High-explosive antitank (HEAT)
Weight (fuzed): 8.53 lb.

Bursting charge: 1.02 lb. RDX
Fuze: Model ГК–2 PIBD
Known using weapon: Recoilless Gun B–10
Remarks:

Figure 35.2 (CONFIDENTIAL). (Added) *82-mm high-explosive antitank (HEAT) (recoilless)* (U).

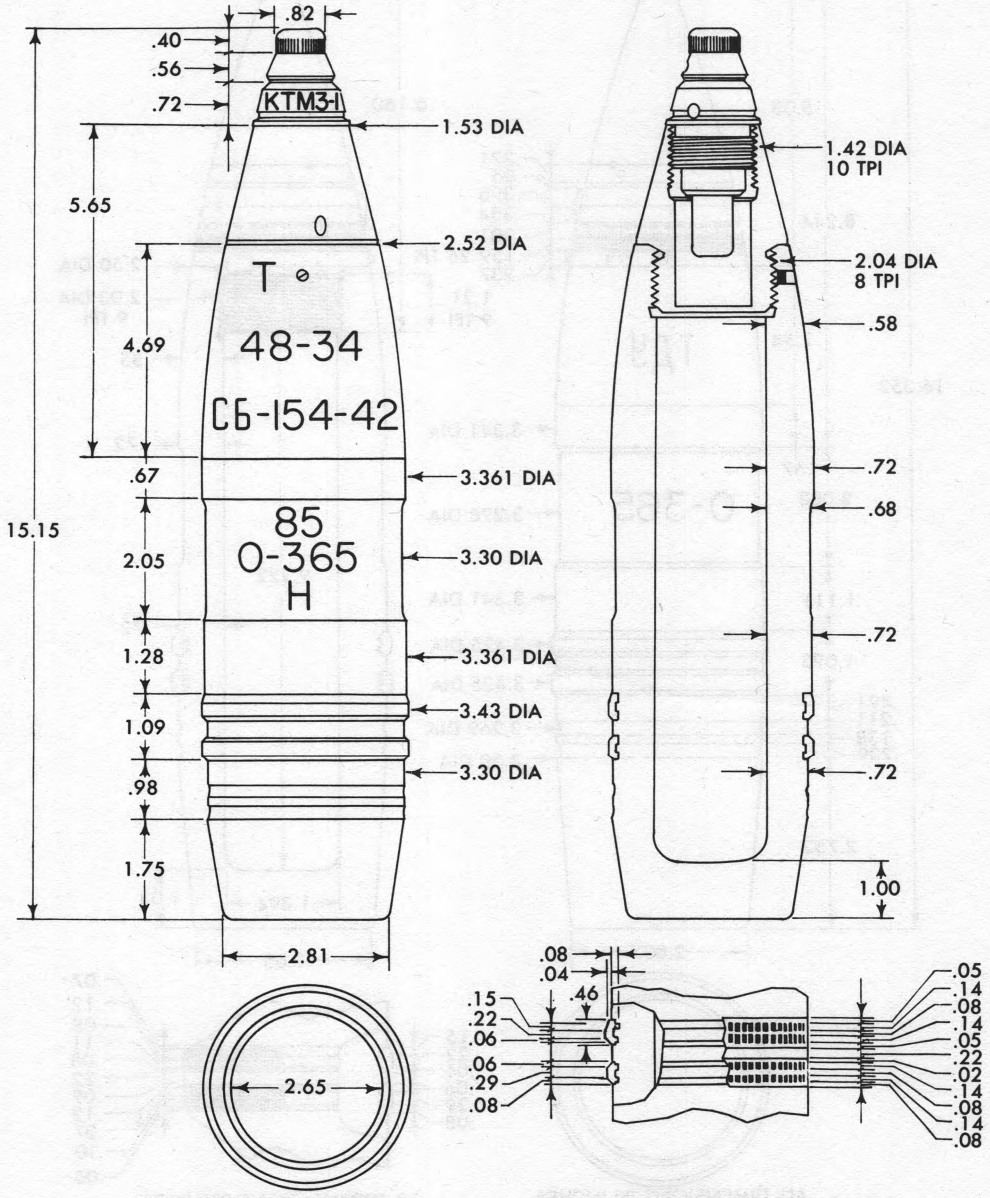


Caliber: 40/80-mm
Identification code: ПГ–2
Type: High-explosive antitank (HEAT)
Weight (fuzed): 3.57 lb.
Bursting charge: 1.25 lb. RDX/A1

Fuze: Model ДК–2 base detonating
Known using weapon: Antitank Grenade Launcher Model RPG–2.
Remarks: Although the launcher has a 40-mm bore, the projectile head has an 80-mm diameter.

Figure 35.3 (UNCLASSIFIED). (Added) *40/80-mm high-explosive antitank (HEAT)* (U).

CONFIDENTIAL



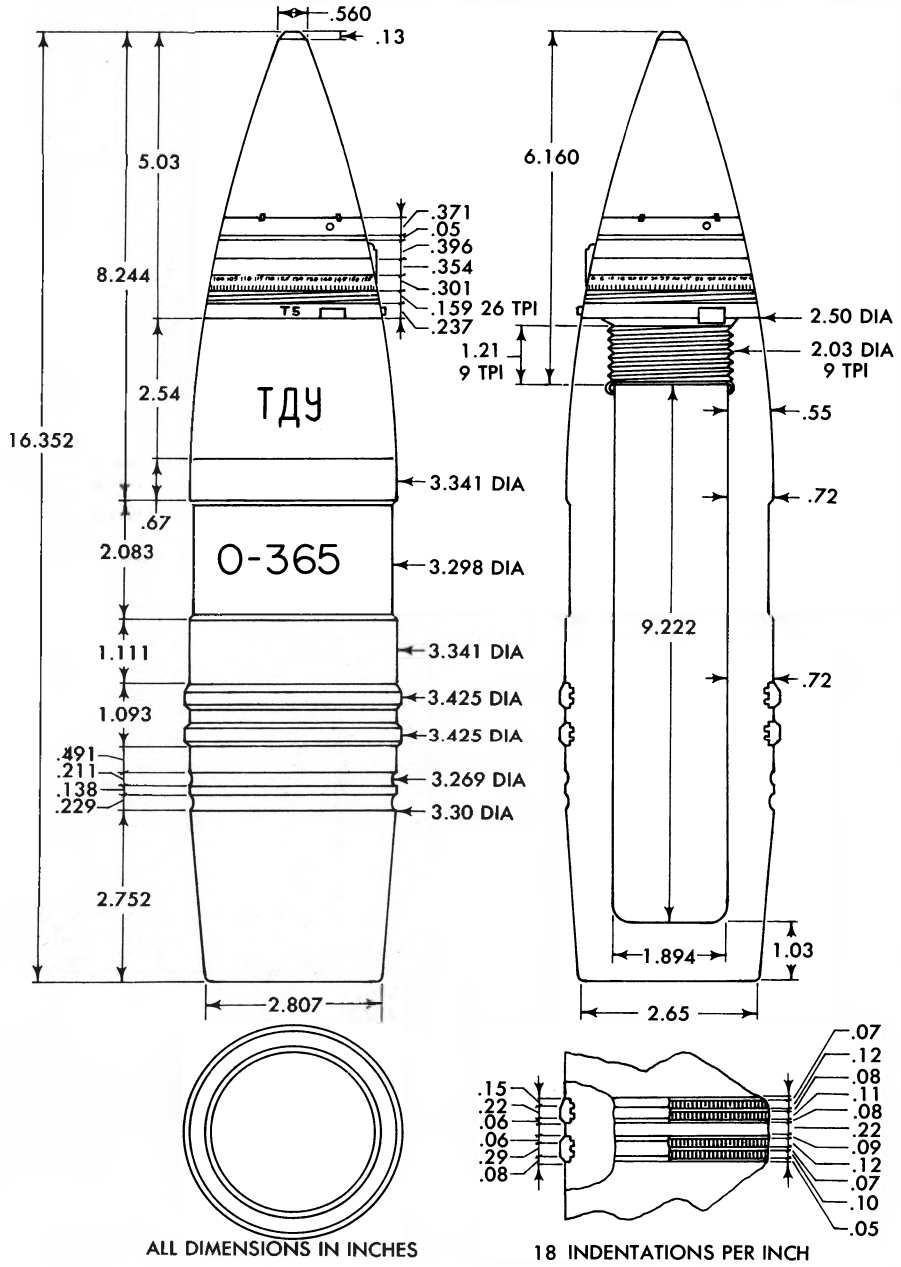
ALL DIMENSIONS IN INCHES

18 INDENTATIONS PER INCH

Caliber: 85-mm
Identification code: O–365 (2-piece)
Type: Fragmentation (Frag)
Weight (fuzed): 21.11 lb.
Bursting charge: 1.71 lb. TNT
Fuze: Model KTM3–1 point detonating

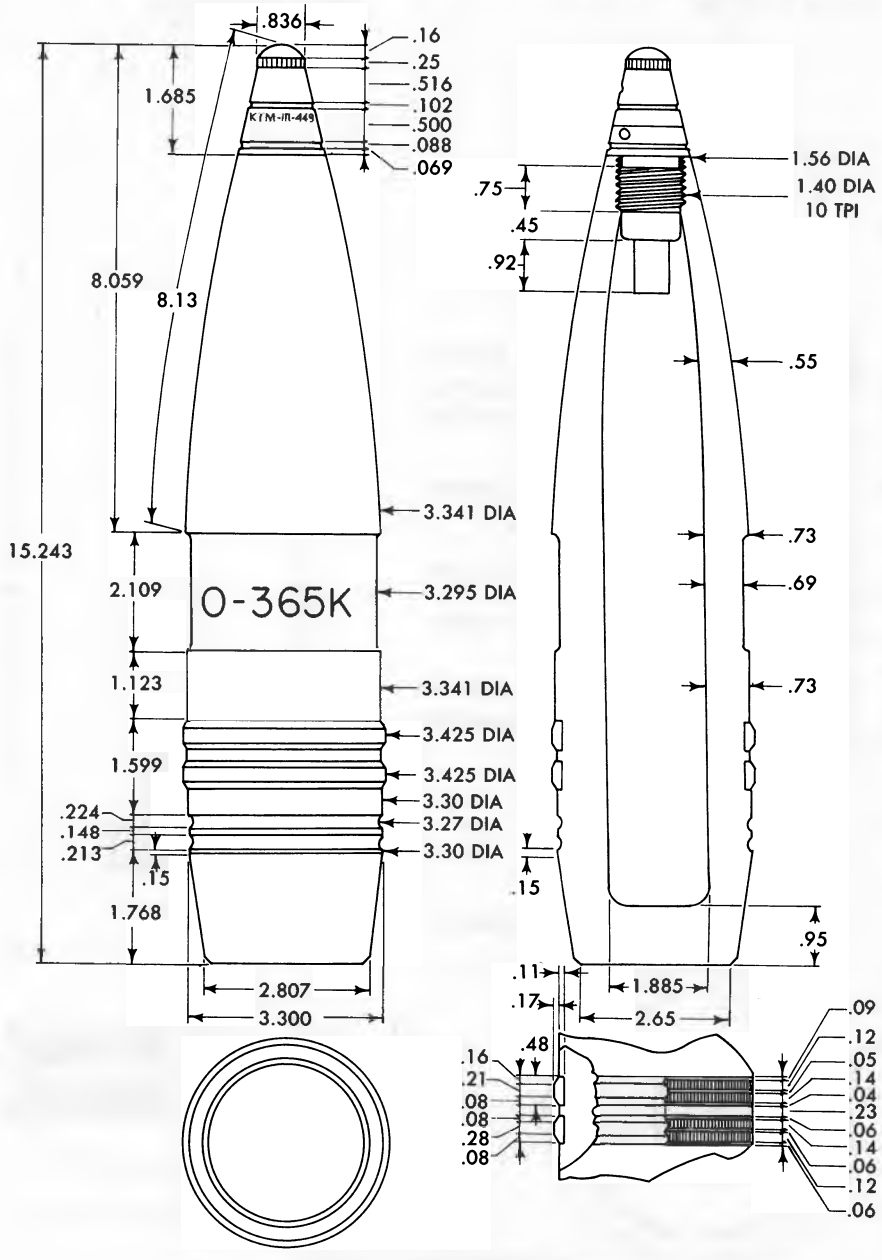
Known using weapon: AA Guns M1939 and M1944; Tank Guns M1943 (D–5T85), M1944 (ZIS–S53); SP Gun M1943 (D5–S85 and D5–S85A); Field Gun D–44; and Auxilliary-propelled AT Gun D–48
Remarks:

Figure 36. (C) *85-mm fragmentation (Frag)—I.*



Caliber: 85-mm
Identification code: O–365
Type: Fragmentation (Frag)
Weight (fuzed): 20.3 lb.
Bursting charge: 1.42 lb. TNT
Fuze: Model T–5 time fuze
Known using weapon: AA Guns M1939 and M1944; Tank Guns M1943 (D–5T85), M1944 (ZIS–S53); SP Gun M1943 (D5–S85 and D5–S85A); Field Gun D–44 and Auxiliary-propelled AT Gun D–48
Remarks: A black color band about 1½ inches wide appears on the nose of the Model T–5 fuze and its shipping cap (not shown above). Also uses Model T–11 time fuze.

Figure 37. (C) *85-mm fragmentation (Frag)—II.*



ALL DIMENSIONS IN INCHES

18 INDENTATIONS PER INCH

Caliber: 85-mm
Identification code: O–365K
Type: Fragmentation (Frag)
Weight (fuzed): 21.2 lb.
Bursting charge: 1.71 lb. TNT
Fuze: Model KTM–1 point detonating

Known using weapon: AA Guns M1939 and M1944; Tank Guns M1943 (D–5T85), M1944 (ZIS–S53); SP Gun M1943 (D5–S85 and D5–S85A); Field Gun D–44 and Auxiliary-propelled AT Gun D–48
Remarks:

Figure 38. (C) *85-mm fragmentation (Frag)—III.*

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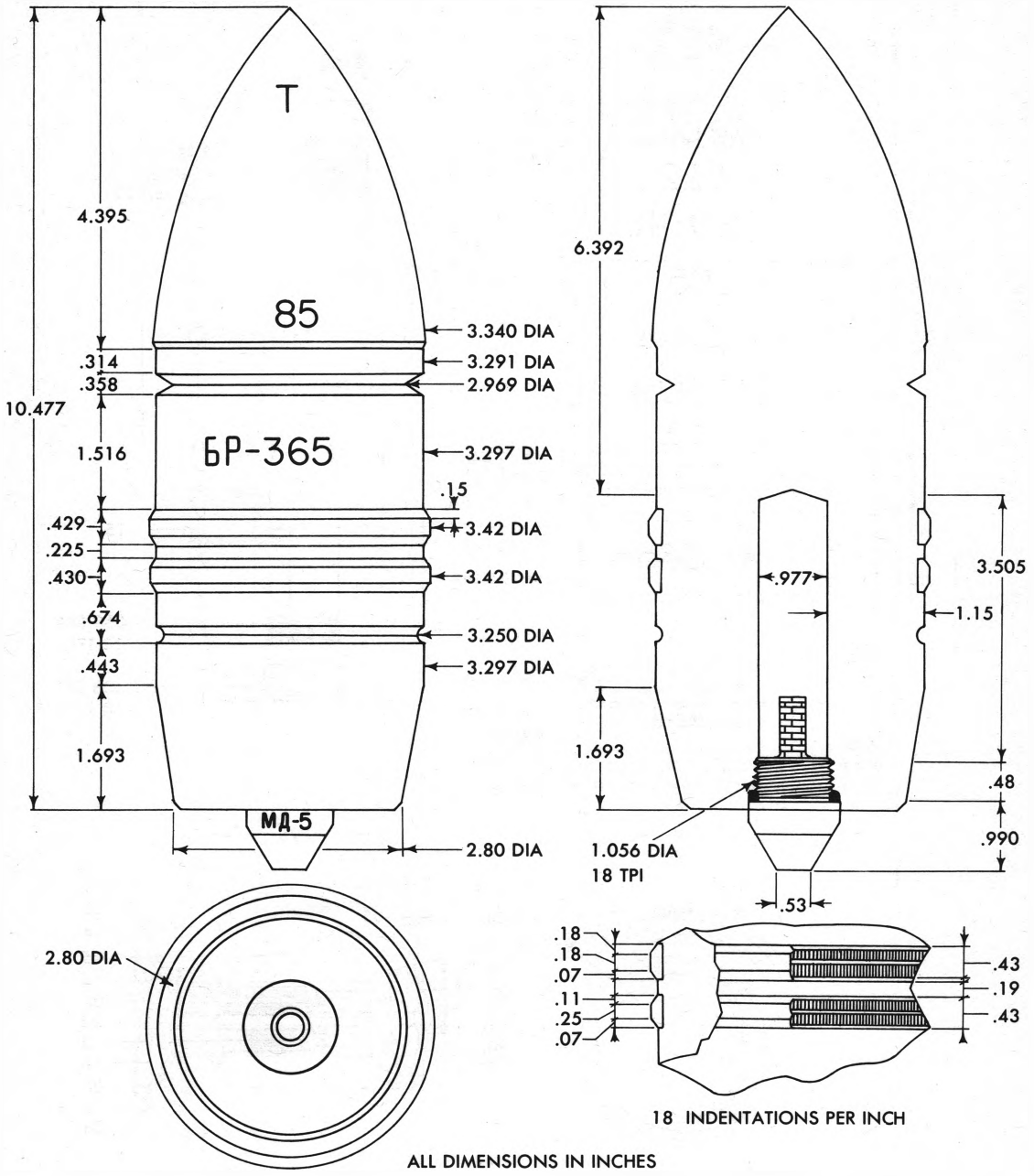
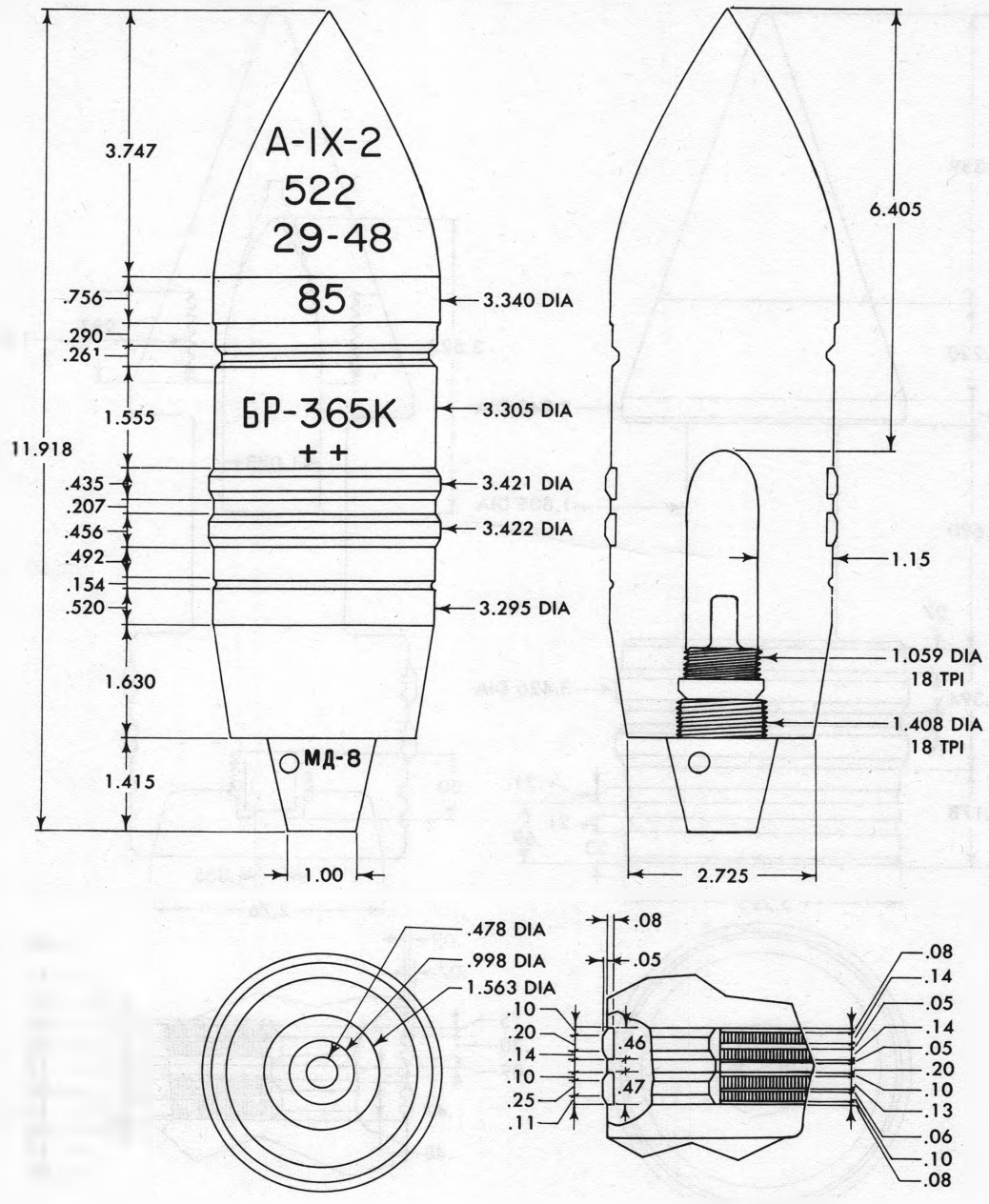


Caliber: 85-mm.
Identification code: БР–365
Type: Armor-piercing tracer (AP-T)
Weight (fuzed): 20.27 lb.
Bursting charge: 0.15 lb. RDX, aluminum, and wax
Fuze: Model МД–5 base detonating

Known using weapon: AA Gun M1939; Tank Guns M1943 (D–5T85), M1944 (ZIS–S53); SP Gun M1943 (D5–S85 and D5–S85A); Field Gun D–44; and Auxiliary-propelled AT Gun D–48.

Remarks: This projectile is also found with a Model МД–8 fuze, in which case the cavity is machined differently and has different dimensions.

Figure 39. (C) *85-mm armor-piercing tracer (AP-T)—I.*



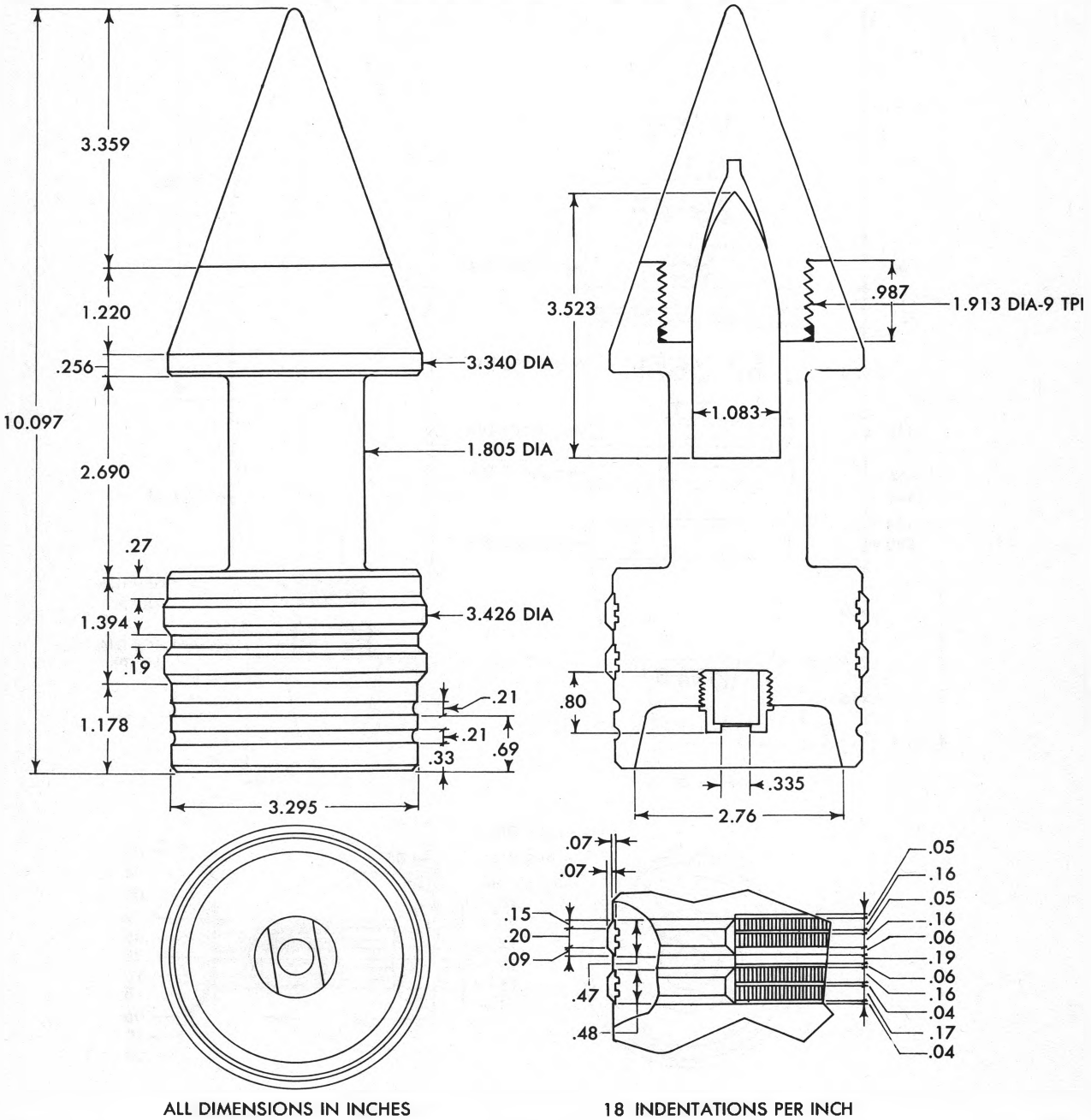
ALL DIMENSIONS IN INCHES

18 INDENTATIONS PER INCH

Caliber: 85-mm
Identification code: БР–365К
Type: Armor-piercing tracer (AP-T)
Weight (fuzed): 20.64 lb.
Bursting charge: 0.11 lb. RDX, aluminum, and wax
Fuze: Model МД–8 base detonating

Known using weapon: AA Gun M1939; Tank Guns M1943 (D–5T85), M1944 (ZIS–S53); SP Gun M1943 (D5–S85 and D5–S85A); Field Gun D–44; and Auxiliary-propelled AT Gun D–48.
Remarks:

Figure 40. (C) *85-mm armor-piercing tracer (AP-T)—II.*



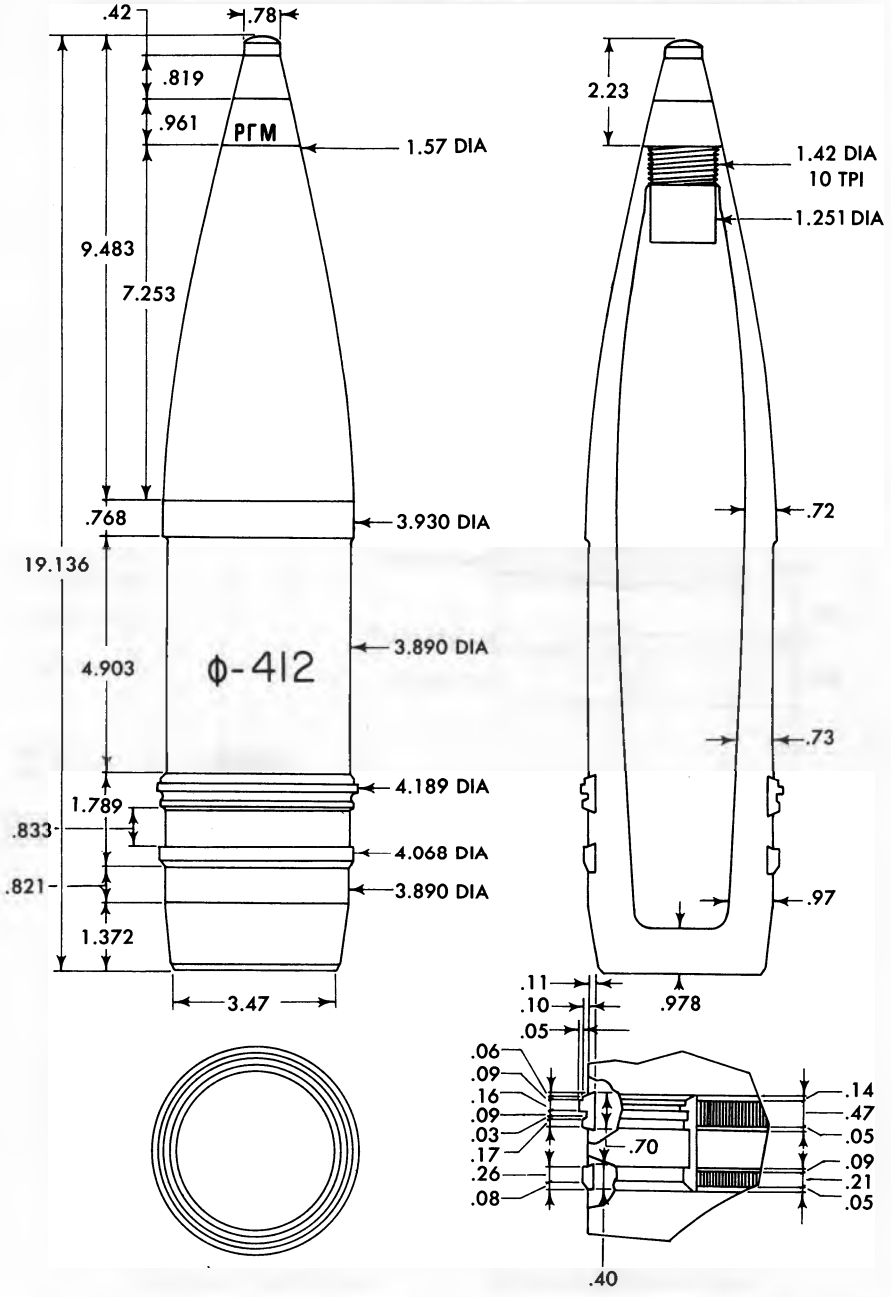
ALL DIMENSIONS IN INCHES

18 INDENTATIONS PER INCH

Caliber: 85-mm
Identification code: БР-365П
Type: Hypervelocity armor-piercing tracer (HVAP-T)
Weight: 11.0 lb.
Bursting charge: None
Fuze: None

Known using weapon: AA Gun M1939; Tank Guns M1943 (D-5T85), M1944 (ZIS-S53); SP Gun M1943 (D5-S85 and D5-S85A); Field Gun D-44; and Auxiliary-propelled AT Gun D-48.
Remarks: Has tungsten carbide core.

Figure 41. (C) *85-mm hypervelocity armor-piercing tracer (HVAP-T).*



ALL DIMENSIONS IN INCHES

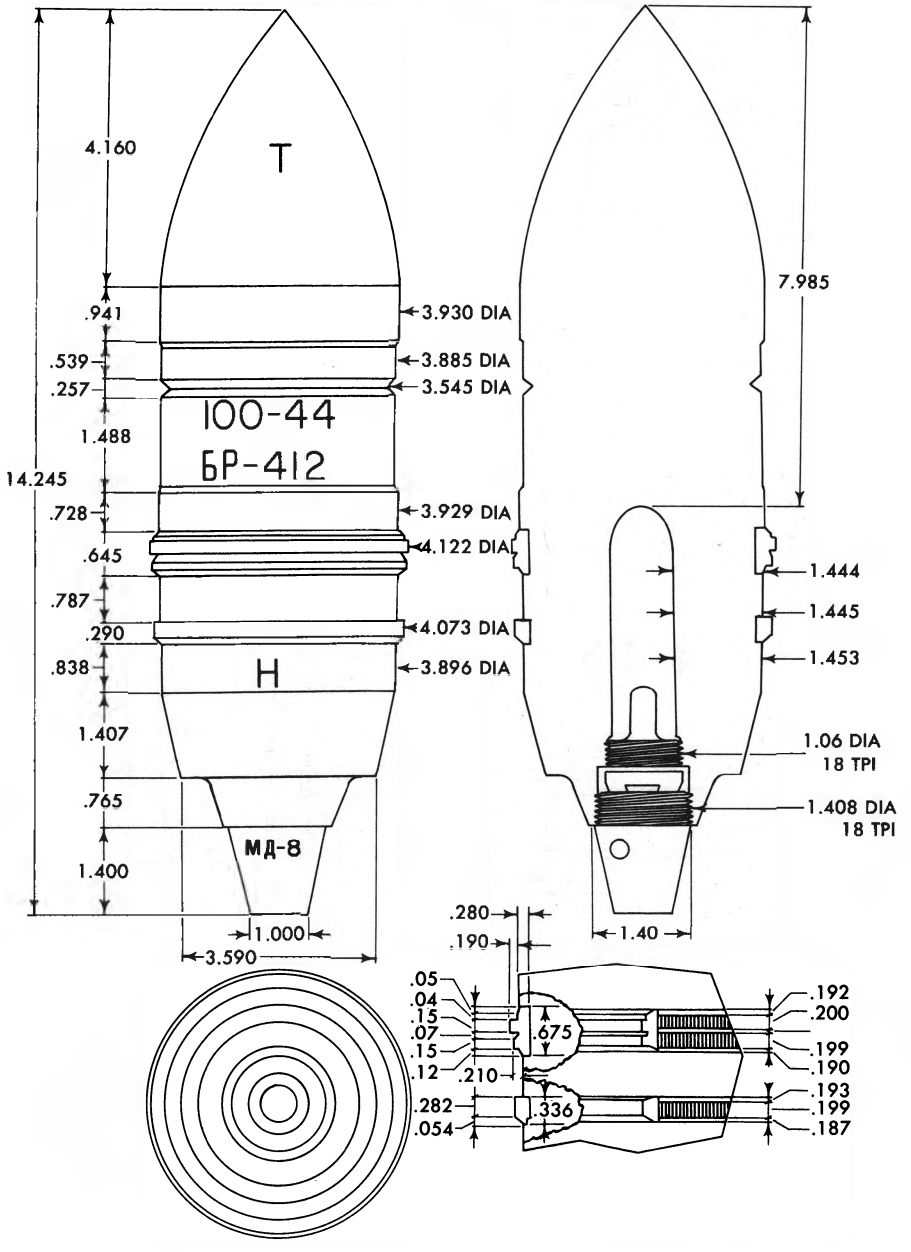
16 INDENTATIONS PER INCH

Caliber: 100-mm
Identification code: Φ–412
Type: High-explosive (HE)
Weight (fuzed): 35.05 lb.
Bursting charge: 4.76 lb TNT

Fuze: Model PГМ point detonating
Known using weapon: Field (AT) Gun M1944(BS–3), SP Assault Gun M1944 (D–10S); Tank Gun M1944 (D–10T)
Remarks:

Figure 42. (C) *100-mm high-explosive (HE).*

CONFIDENTIAL



ALL DIMENSIONS IN INCHES

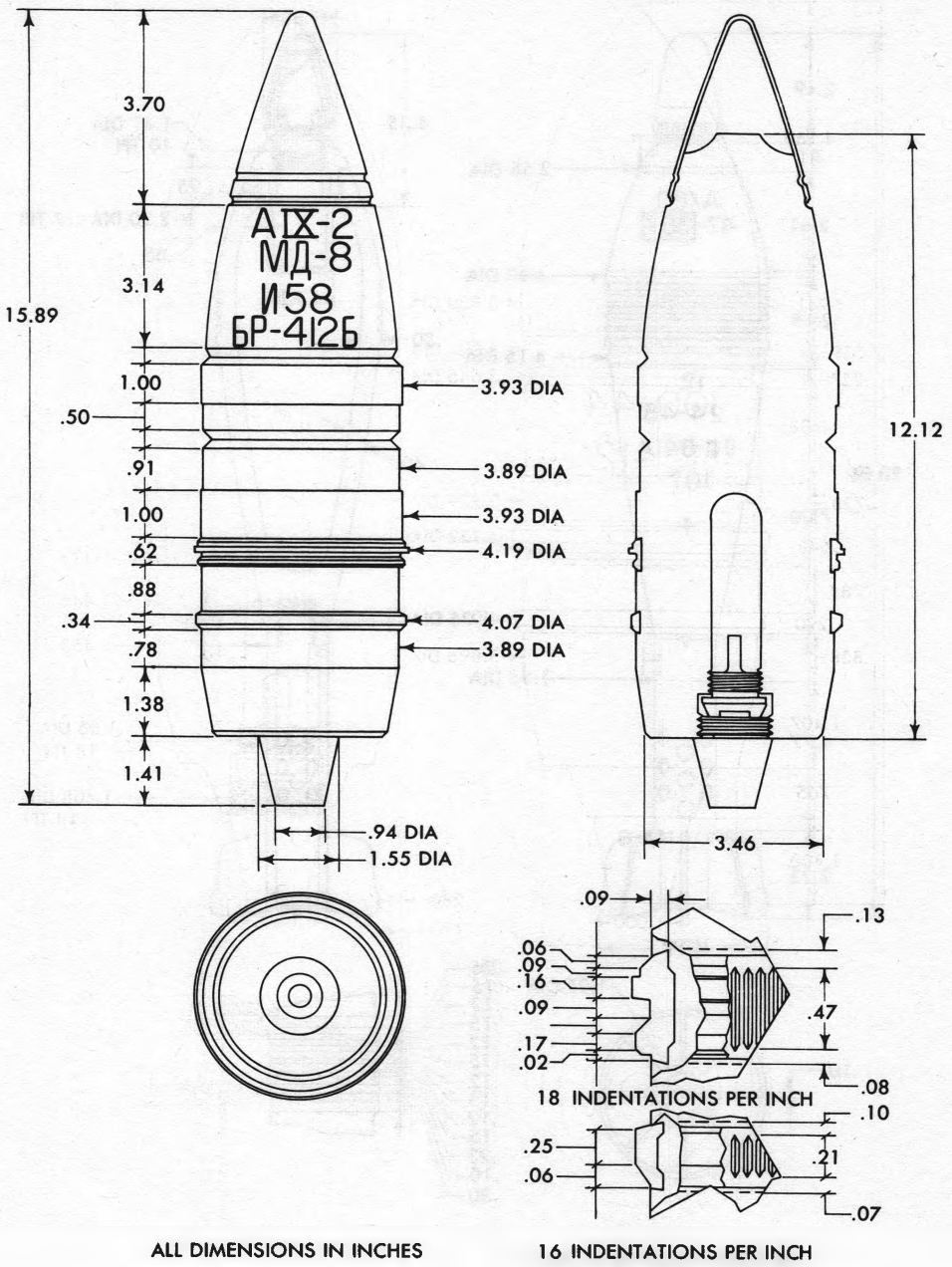
18 INDENTATIONS PER INCH

Caliber: 100-mm
Identification code: БР-412
Type: Armor-piercing tracer (AP-T)
Weight (fuzed): 34.59 lb.
Bursting charge: 0.124 lb. RDX, aluminum, and wax

Fuze: Model МД-8 base detonating
Known using weapon: Field (AT) Gun M1944 (BS-
SP Assault Gun M1944 (D-10S); Tank Gun M19
(D-10T)
Remarks:

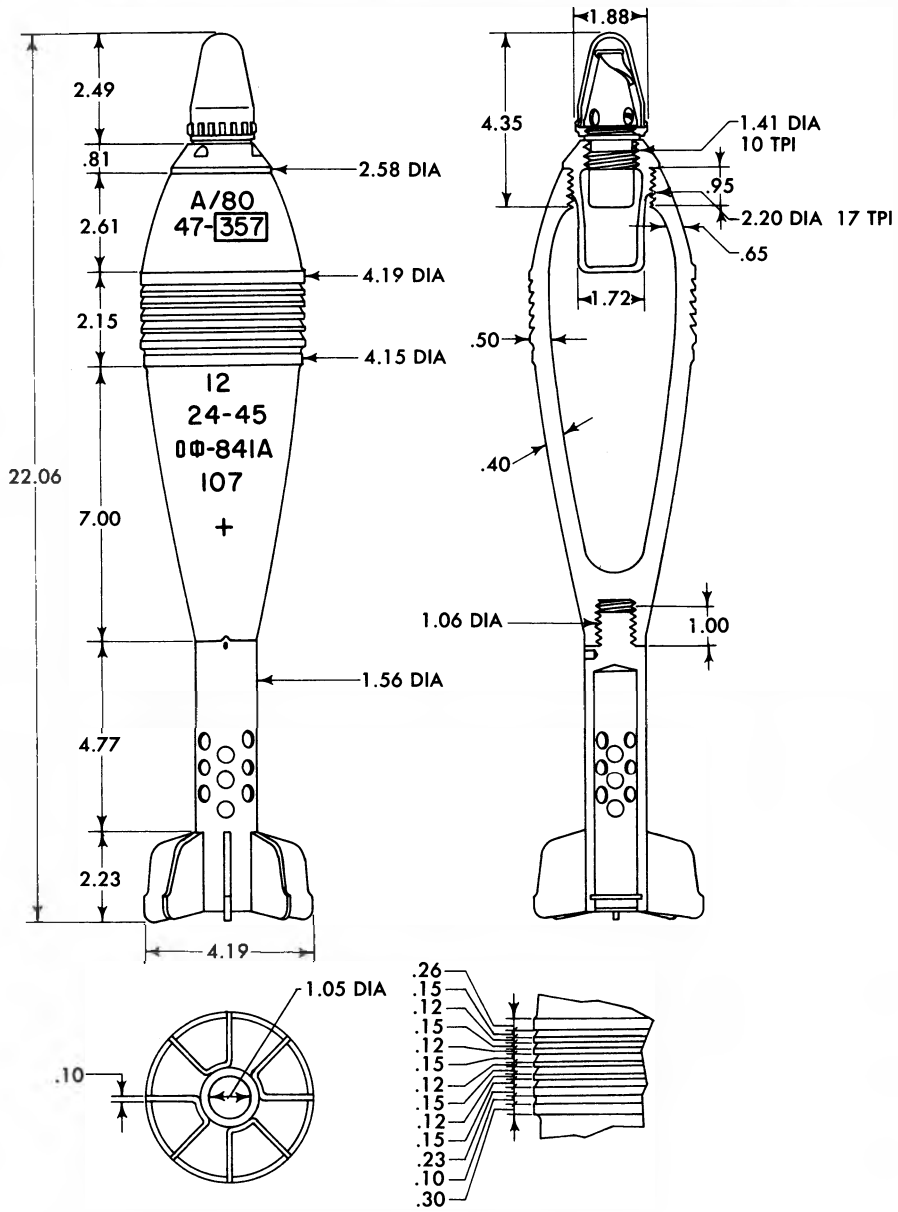
Figure 43. (C) *100-mm armor-piercing tracer (AP-T).*

CONFIDENTIAL



Caliber: 100-mm
Identification Code: БР–412Б
Type: Armor-piercing tracer (ballistic-capped) (AP-T)
Weight (fuzed): 35.0 lb.
Bursting Charge: 0.124 lb. RDX, aluminum, and wax
Fuze: Model МД–8 base detonating
Known Using Weapon: Field (AT) Gun M1944 (BS–3); SP Assault Gun M1944 (D–10S); Tank Gun M1944 (D–10T); and AA Gun KS–19
Remarks:

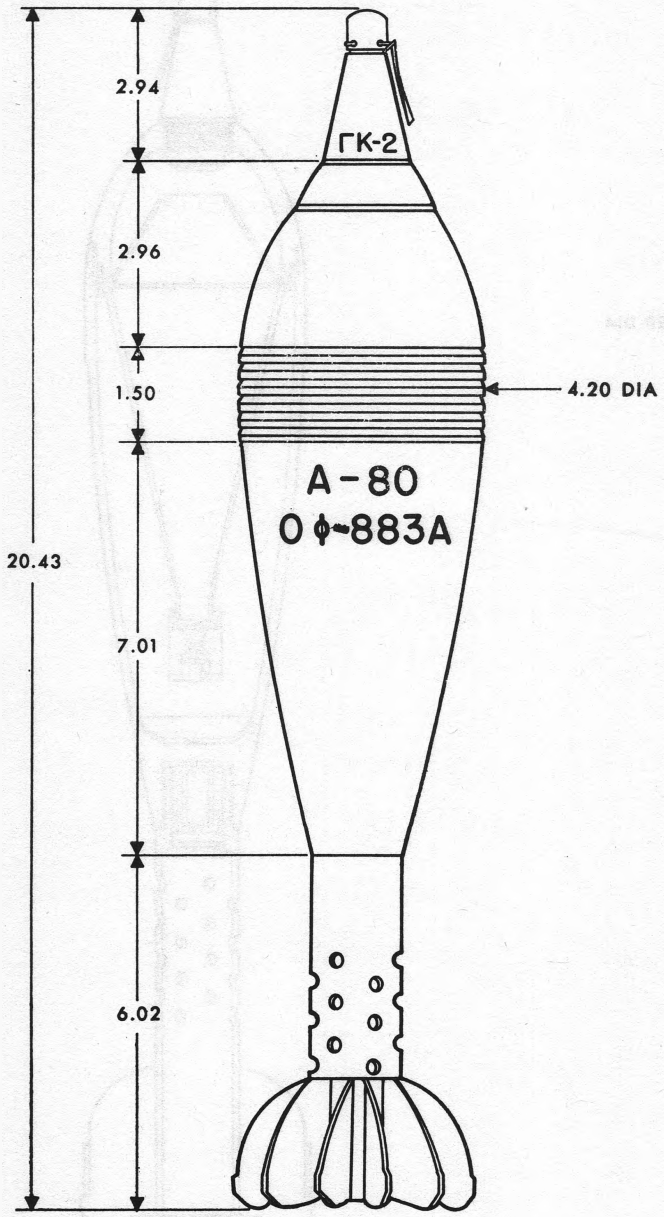
Figure 44. (C) *100-mm armor-piercing tracer (ballistic-capped) (AP-T).*

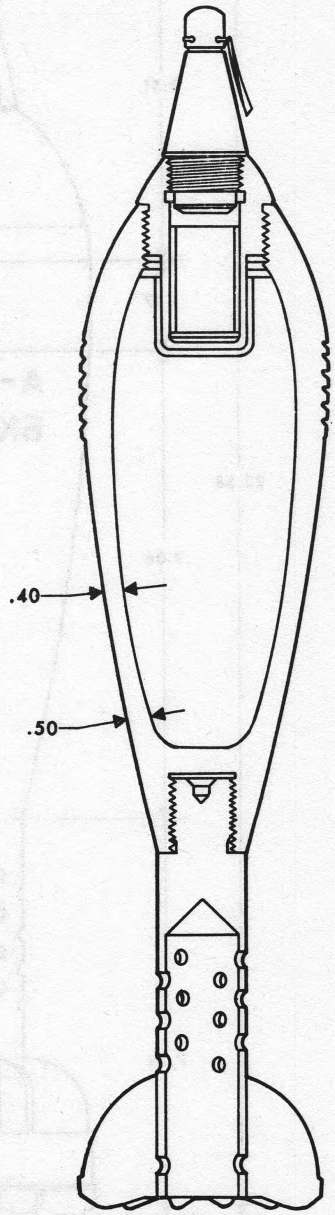


ALL DIMENSIONS IN INCHES

Caliber: 107-mm
Identification code: ОФ–841А
Type: Fragmentation high-explosive (Frag-HE)
Weight (fuzed): 20.00 lb.
Bursting charge: 2.20 lb. amatol/TNT
Fuze: Model ГВМ3–7 point detonating
Known using weapon: Mountain-Pack Regimental Mortar M1938
Remarks: Also uses Models ГВМ3 and ГВМ3–1 point detonating fuzes

Figure 45. (C) *107-mm fragmentation high-explosive (Frag-HE) (mortar).*



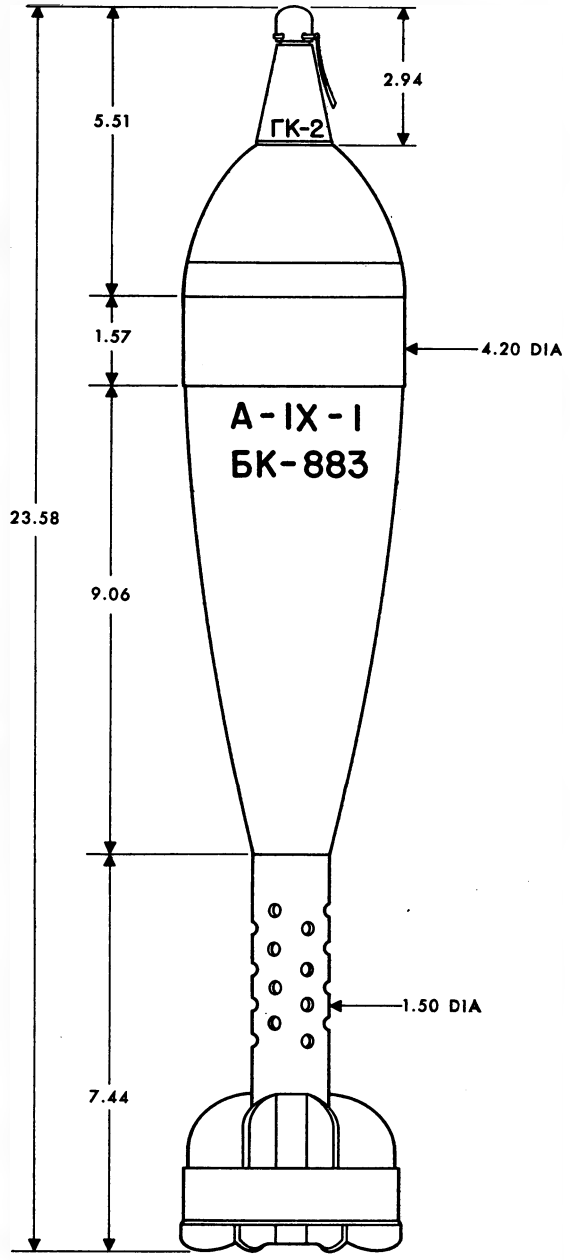


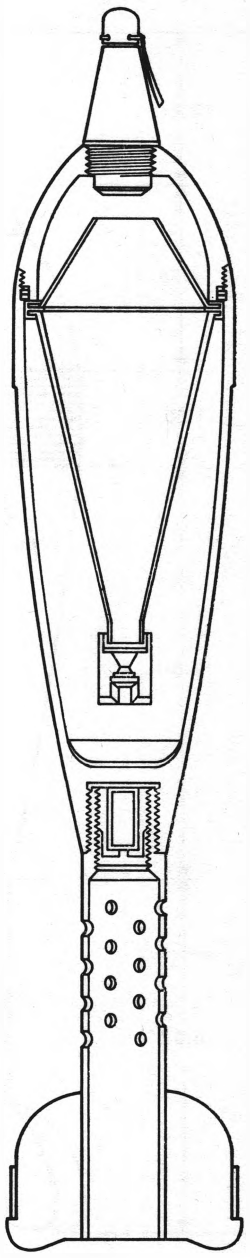
Caliber: 107-mm
Identification code: OΦ–883A
Type: Fragmentation high-explosive (Frag-HE)
Weight (fuzed): 18.72 lb.

Bursting charge: 4.6 lb. A/80 (amatol 80/20)
Fuze: Model ГК–2 point detonating
Known using weapon: Recoilless Gun B-11
Remarks: The projectile is also marked on the reverse side with "107-mm."

Figure 45.1 (CONFIDENTIAL). (Added) *107-mm fragmentation high-explosive (Frag-HE) (recoilless)* (U).

CONFIDENTIAL

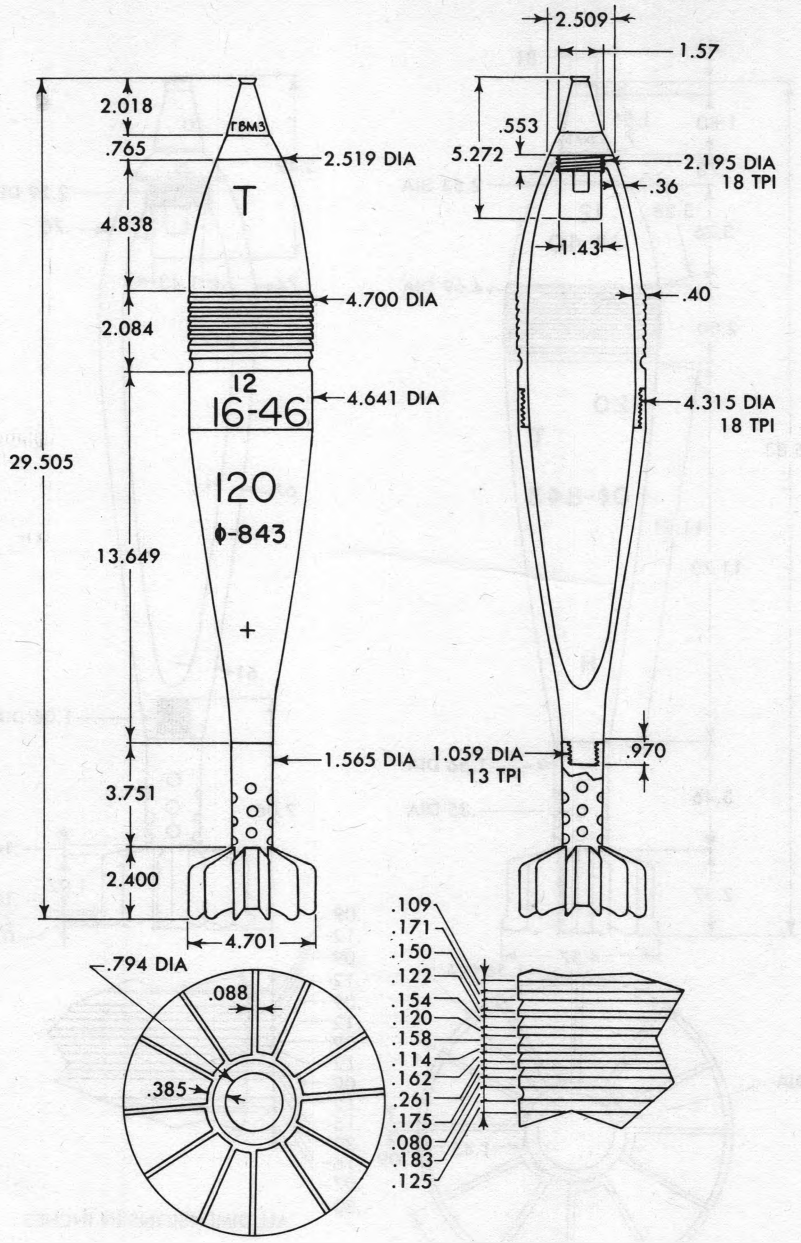




Caliber: 107-mm
Identification code: БК-883
Type: High-explosive antitank (HEAT)
Weight (fuzed): 16.53 lb.

Bursting charge: 3 lb. RDX/A1
Fuze: Model ГК-2 PIBD
Known using weapon: Recoilless Gun B-11
Remarks: The projectile is also marked on the reverse side with "107-mm."

Figure 45.2 (CONFIDENTIAL). (Added) *107-mm high-explosive antitank (HEAT) (recoilless)* (U).



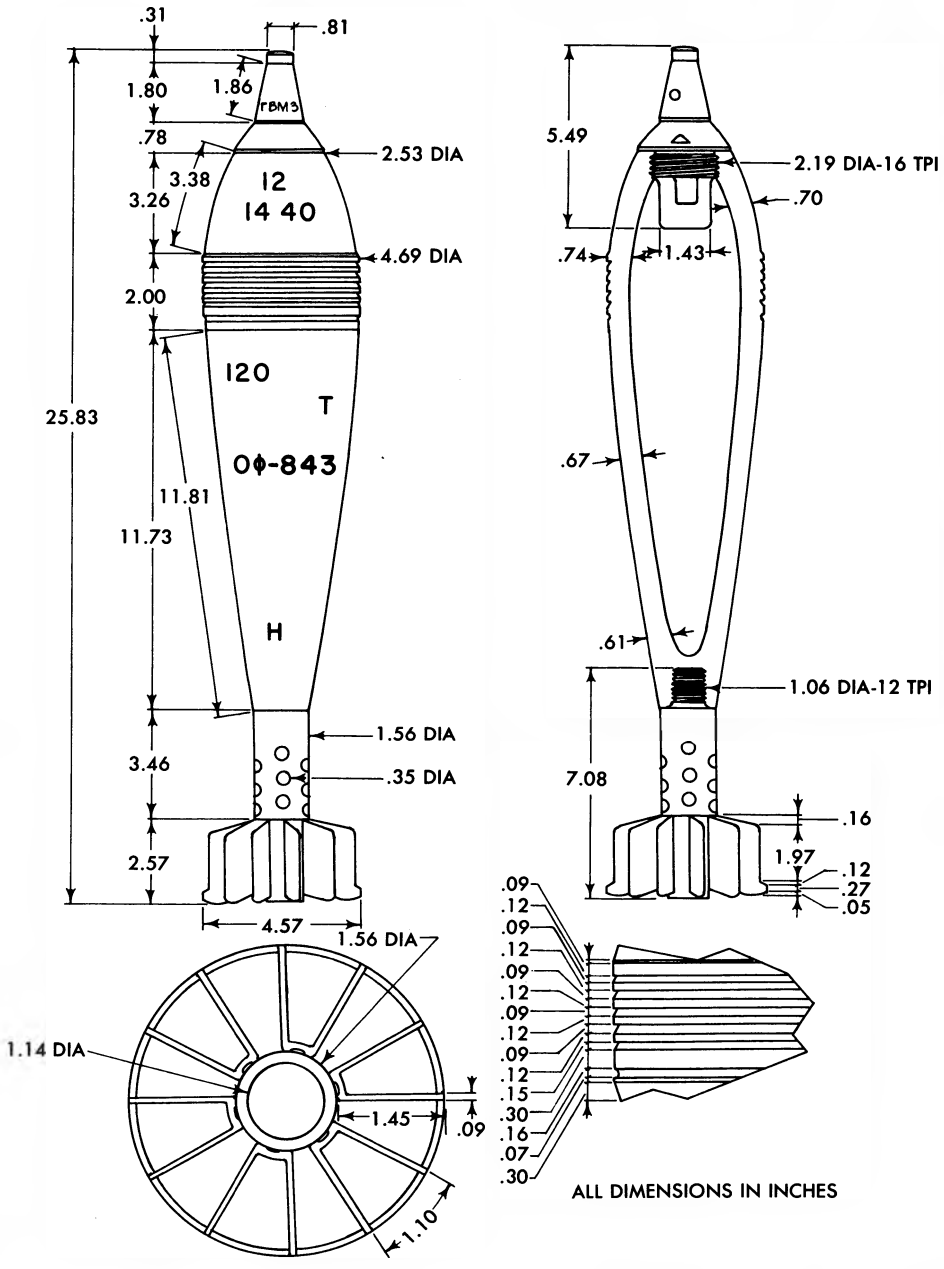
ALL DIMENSIONS IN INCHES

Caliber: 120-mm
Identification code: Φ–843
Type: High-explosive (HE)
Weight (fuzed): 36.23 lb
Bursting charge: 8.6 lb. TNT
Fuze: Model ГВМ3 point detonating

Known using weapon: Regimental Mortars M1938 and M1943
Remarks: Also used Model M–1 point detonating fuze
Propelling charge consists of the base charge (a shotgun-type shell) and 4 increments weighing 70 grams each

Figure 46. (C) *120-mm high-explosive (HE) (mortar).*

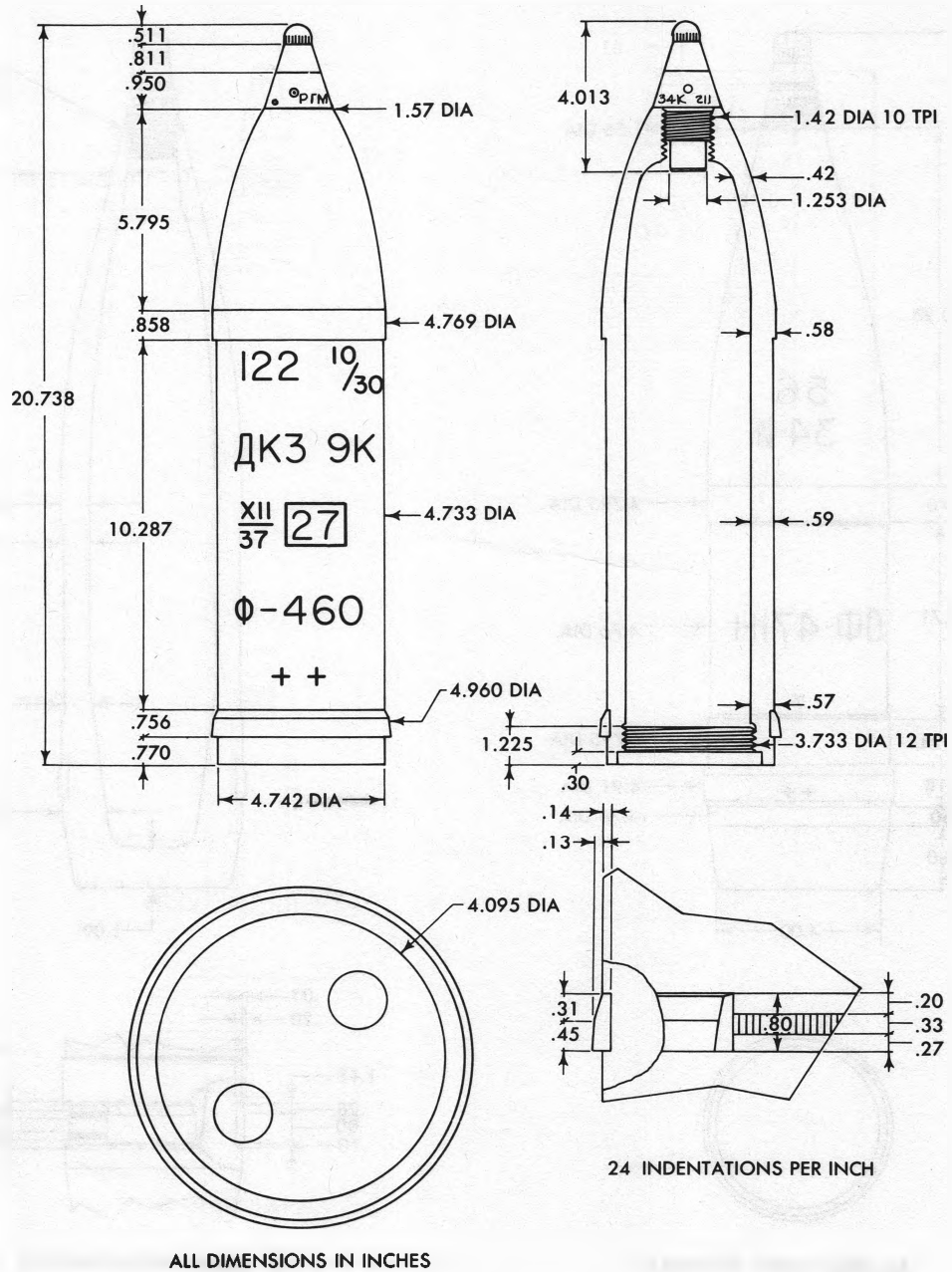
CONFIDENTIAL



Caliber: 120-mm
Identification code: ОФ–843
Type: Fragmentation high-explosive (Frag-HE)
Weight (fuzed): 35.28 lb.
Bursting charge: 5.90 lb. TNT

Fuze: Model ГВМ3 point detonating
Known using weapon: Regimental Mortars M1938 and M1943
Remarks: Also uses Models M–1 and M–4 point detonating fuzes

Figure 47. (C) *120-mm fragmentation high-explosive (Frag-HE) (mortar).*

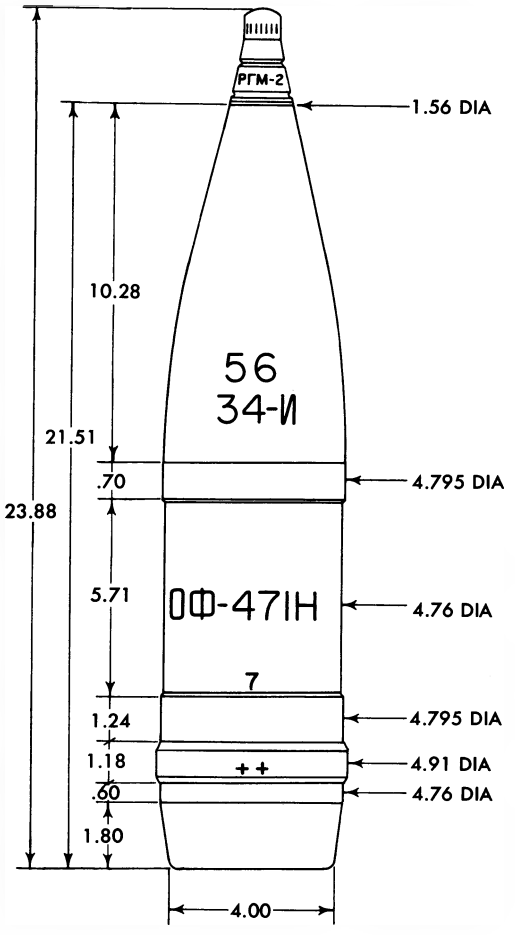


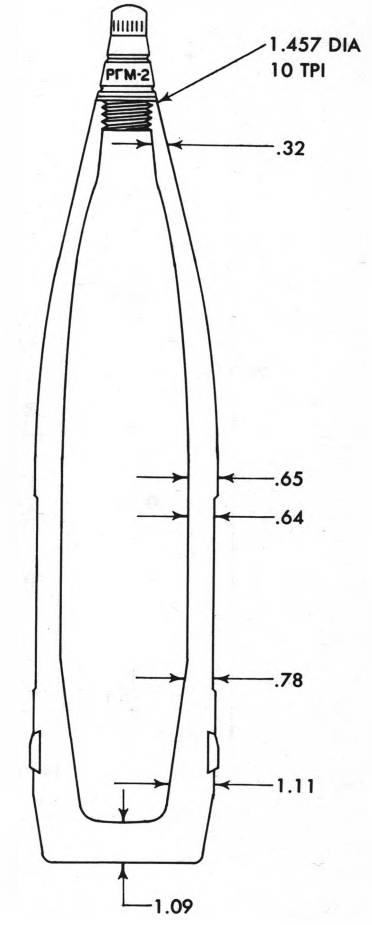
ALL DIMENSIONS IN INCHES

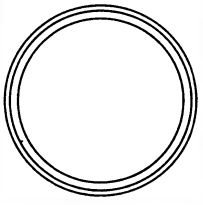
Caliber: 122-mm
Identification code: Ф–460
Type: High-explosive (HE)
Weight (fuzed): 49.94 lb.

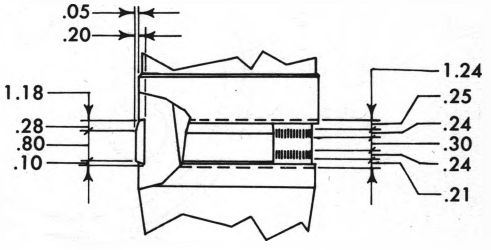
Bursting charge: 10.61 lb. TNT
Fuze: Model РГМ point detonating
Known using weapon: Howitzer M1910/30
Remarks: Also uses Model РГ–6 point detonating fuze

Figure 48. (C) *122-mm high-explosive (HE).*









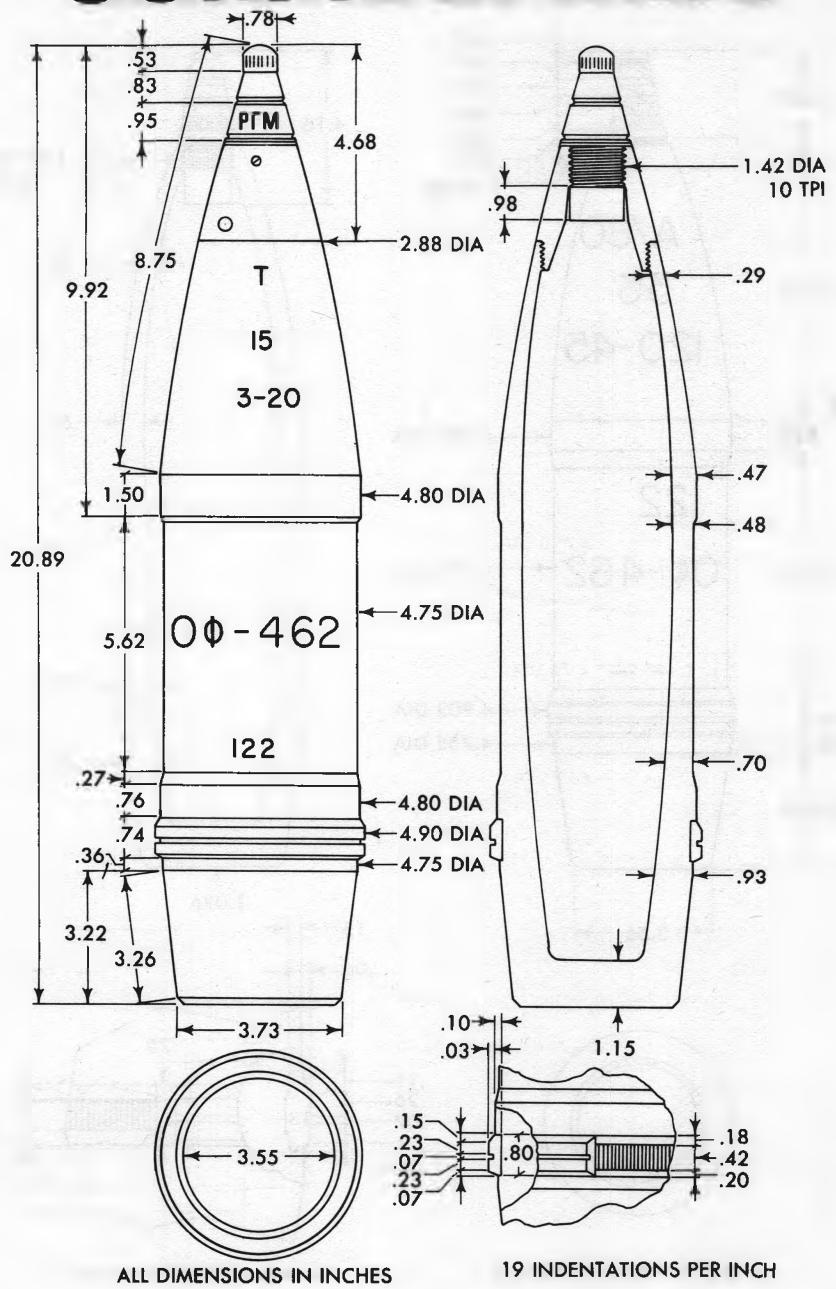
ALL DIMENSIONS IN INCHES

20 INDENTATIONS PER INCH

Caliber: 122-mm
Identification code: ОФ–471Н
Type: Fragmentation high-explosive (Frag-HE)
Weight (fuzed): 55 lb.
Bursting charge: 7.41 lb. TNT
Fuze: Model РГМ–2 point detonating

Known using weapon: Corps Guns M1931, M1931/37 (A–19); Tank Gun M1943 (D–25); SP Assault Guns M1944 (D–25S), M1931/44 (A–19S)
Remarks: Other 122-mm Frag-HE projectiles are shown in figures 50, 51, and 52. Also uses Models РГМ and РГМ–6 point detonating fuzes

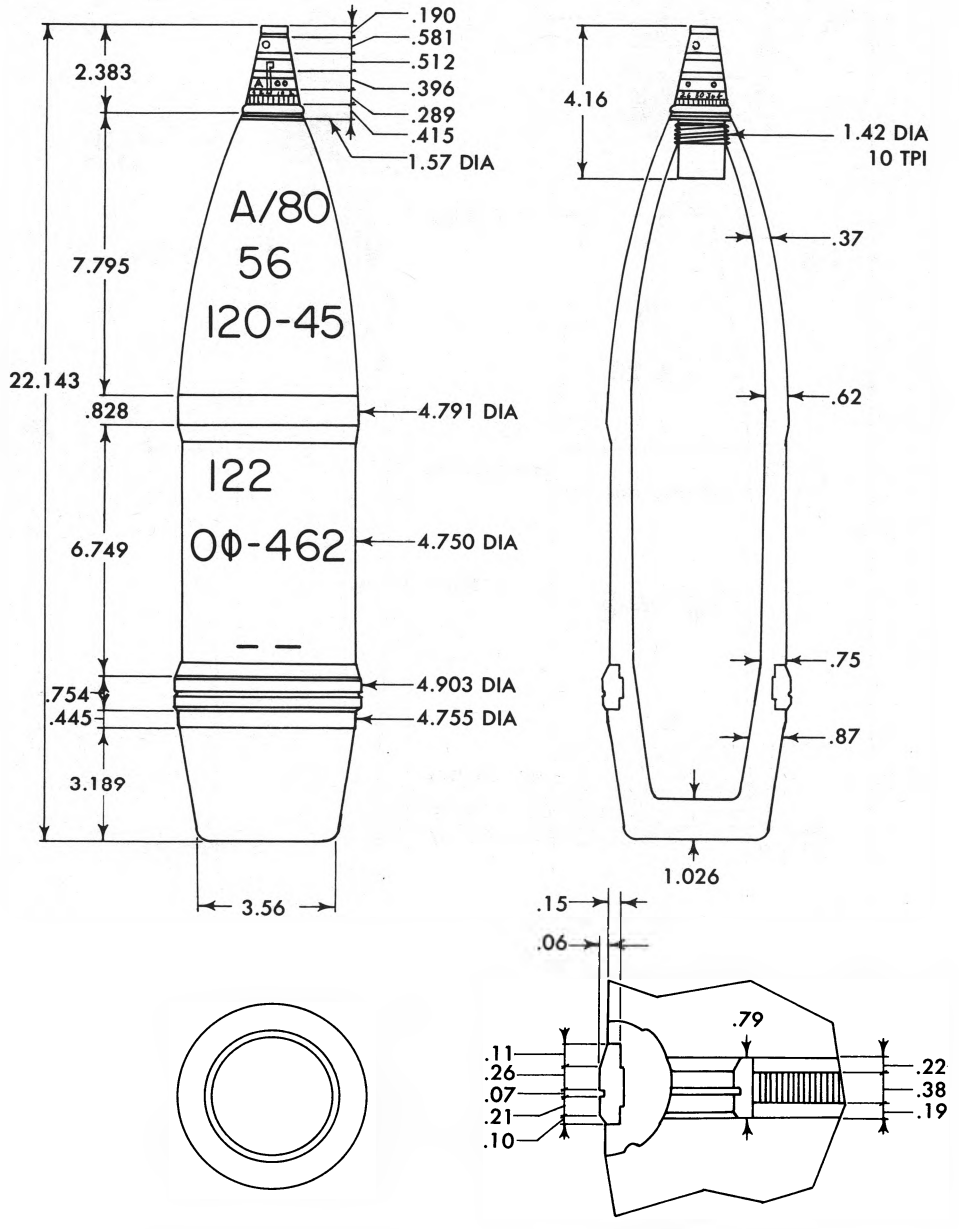
Figure 49. (C) *122-mm fragmentation high-explosive (Frag-HE)—I.*



Caliber: 122-mm
Identification code: ОФ–462
Type: Fragmentation high-explosive (Frag-HE)
Weight (fuzed): 47.98 lb.
Bursting charge: 8.10 lb. TNT
Fuze: Model РГМ point detonating

Known using weapon: Howitzers M1910/30, M1938 (M–30); Corps Guns M1931, M1931/37 (A–19); SP Assault Guns M1944 (D–25S), M1931/44 (A–19S); SP Assault Howitzer M1938 (M–30)
Remarks: Also uses Models РГ–6, РГМ–2, and Д–1 point detonating fuzes.
The Soviets consider this a "two-piece" projectile. Other 122-mm Frag-HE projectiles are shown in figures 49, 51, and 52.

Figure 50. (C) *122-mm fragmentation high-explosive (Frag-HE)—II.*



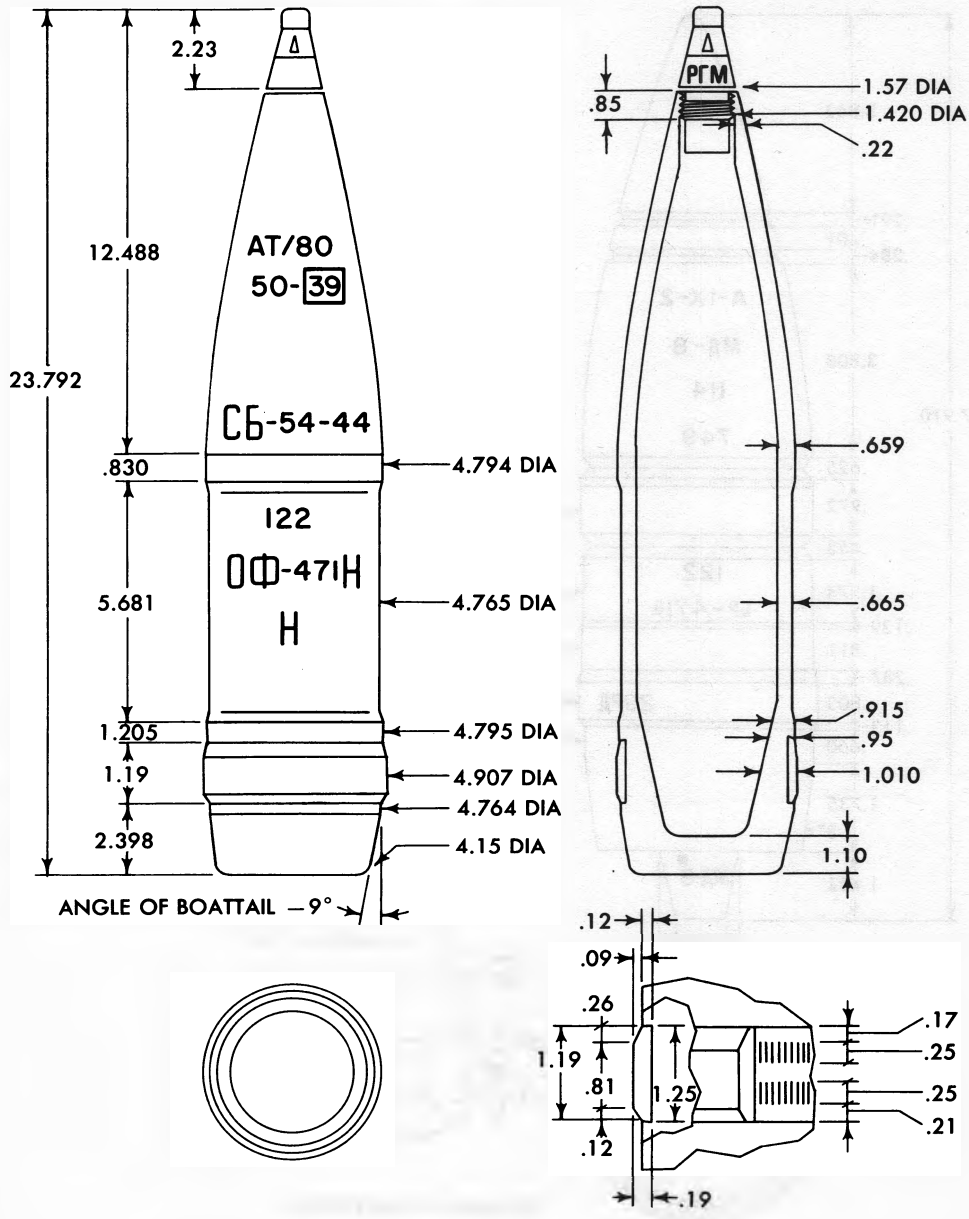
ALL DIMENSIONS IN INCHES

14 INDENTATIONS PER INCH

Caliber: 122-mm
Identification code: OΦ–462
Type: Fragmentation high-explosive (Frag-HE)
Weight (fuzed): 47.84 lb.
Bursting charge: 8.10 lb. amatol 80/20
Fuze: Model Д–1 TSQ

Known using weapon: Howitzers M1910/30, M1938 (M–30); Corps Guns M1931, M1931/37 (A–19); SP Assault Guns M1944 (D–25S), M1931/44 (A–19S); SP Assault Howitzer M1938 (M–30)
Remarks: Also uses Models РГ–6, РГМ and РГМ–6 point detonating fuzes
Other 122-mm Frag-HE projectiles are shown in figures 49, 50, and 52.

Figure 51. (C) *122-mm fragmentation high-explosive (Frag-HE)—III.*



ALL DIMENSIONS IN INCHES

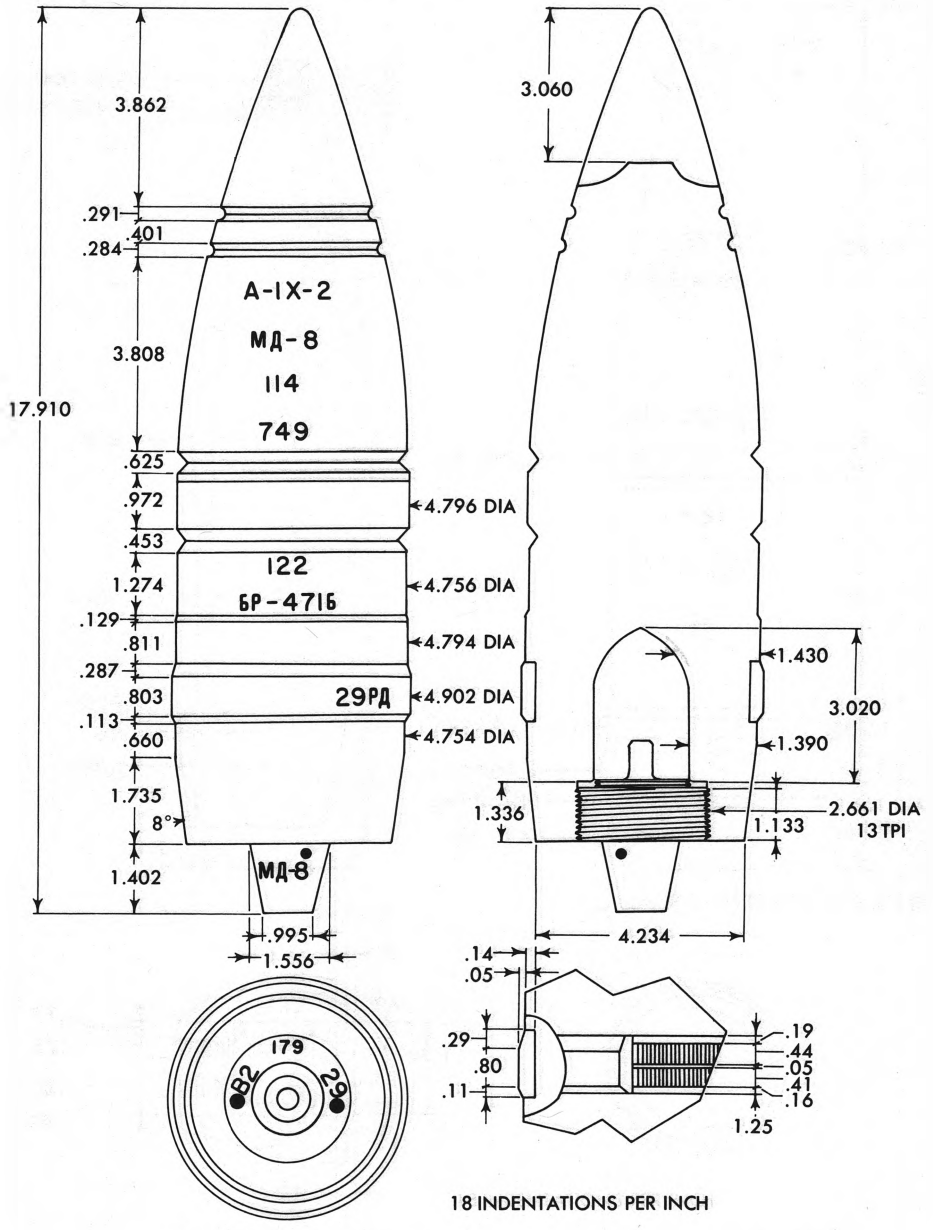
21 INDENTATIONS PER INCH

Caliber: 122-mm
Identification code: ОФ–471Н
Type: Fragmentation high-explosive (Frag-HE)
Weight (fuzed): 56.16 lb.
Bursting charge: 10.71 lb. amatol/TNT
Fuze: Model РГМ point detonating

Known using weapon: Corps Guns M1931, M1931/37 (A–19); SP Assault Gun M1931/44 (A–19S)
Remarks: This is a one-piece projectile. Also uses Model Д–1 point detonating combination fuze. For additional 122-mm Frag-HE projectiles, see figures 49, 50, and 51

Figure 52. (C) *122-mm fragmentation high-explosives (Frag-HE)—IV.*

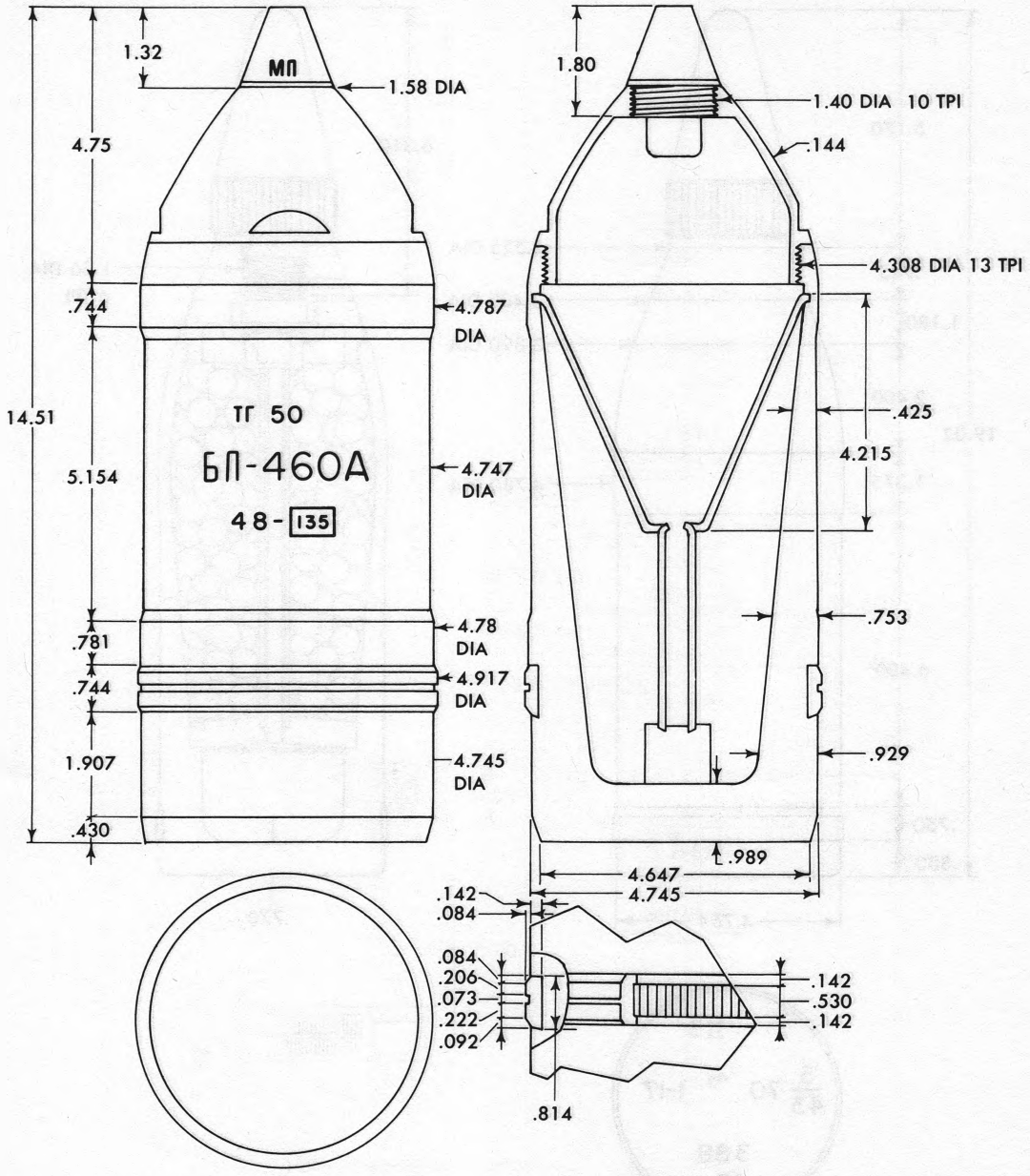
746-026 O - 64 - 7



ALL DIMENSIONS IN INCHES

Caliber: 122-mm
Identification code: БР-471Б
Type: Armor-piercing tracer (AP-T)
Weight (fuzed): 55.12 lb.
Bursting charge: 0.36 lb. RDX, aluminum, and wax
Fuze: Model МД-8 base detonating
Known using weapon: Corps Guns M1931, M1931/37 (A-19); Tank Gun M1943 (D-25); SP Assault Guns M1944 (D-25S), M1931/44 (A-19S)
Remarks: Also uses Models ДР-1 and ДР-5 base detonating fuzes

Figure 53. (C) *122-mm armor-piercing tracer (AP-T).*



ALL DIMENSIONS IN INCHES

12 INDENTATIONS PER INCH

Caliber: 122-mm
Identification code: БП-460А
Type: High-explosive antitank (HEAT)
Weight (fuzed): 29.20 lb.
Bursting charge: 3.19 lb. cyclotrol
Fuze: Model B-229 point detonating

Known using weapon: Howitzers M1910/30, M1938 (M-30); Corps Guns M1931, M1931/37 (A-19); SP Assault Guns M1944 (D-25S), M1931/44 (A-19S); SP Assault Howitzer M1938 (M-30)

Remarks: The Model MII plastic fuse shown above used only in an inert condition in this projectile, as a shipping plug. The fuze actually fired in this round is the Model B-229

Figure 54. (C) *122-mm high-explosive antitank (HEAT).*

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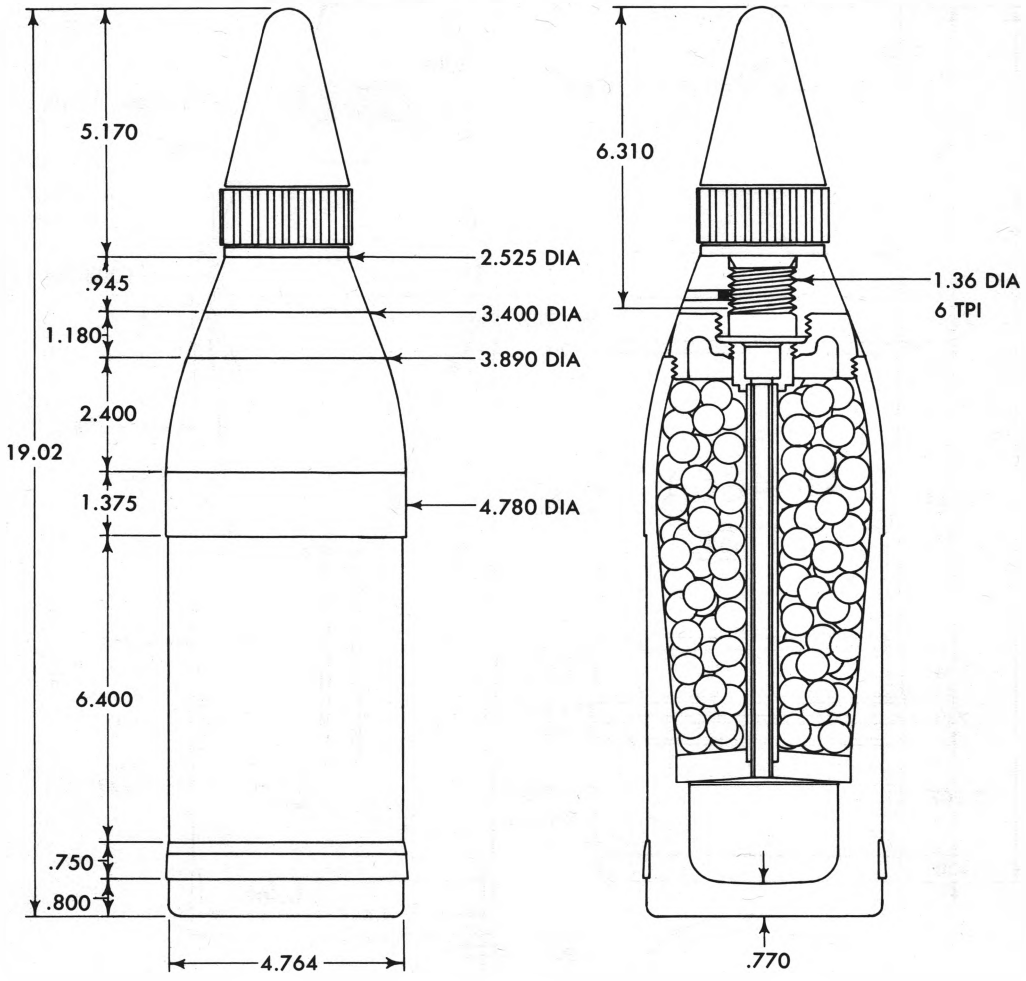

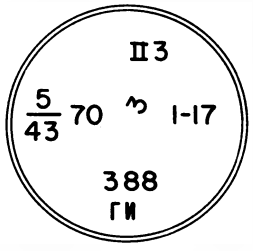

ALL DIMENSIONS IN INCHES

Caliber: 122-mm
Identification code: III–462
Type: Ball shrapnel (Shrap)
Weight (fuzed): 51.25 lb.
Bursting charge: 0.60 lb. black powder
Fuze: Model T–6 TSQ

Known using weapon: Howitzers M1919/30, M1938 (M–30); Corps Guns M1931, M1931/37 (A–19); Tank Gun M1943 (D–25); SP Assault Guns M1944 (D–25S), M1931/44 (A–19S); SP Assault Howitzer M1938 (M–30)
Remarks: May be encountered with other models of time fuzes

Figure 55. (C) *122-mm shrapnel (Shrap).*

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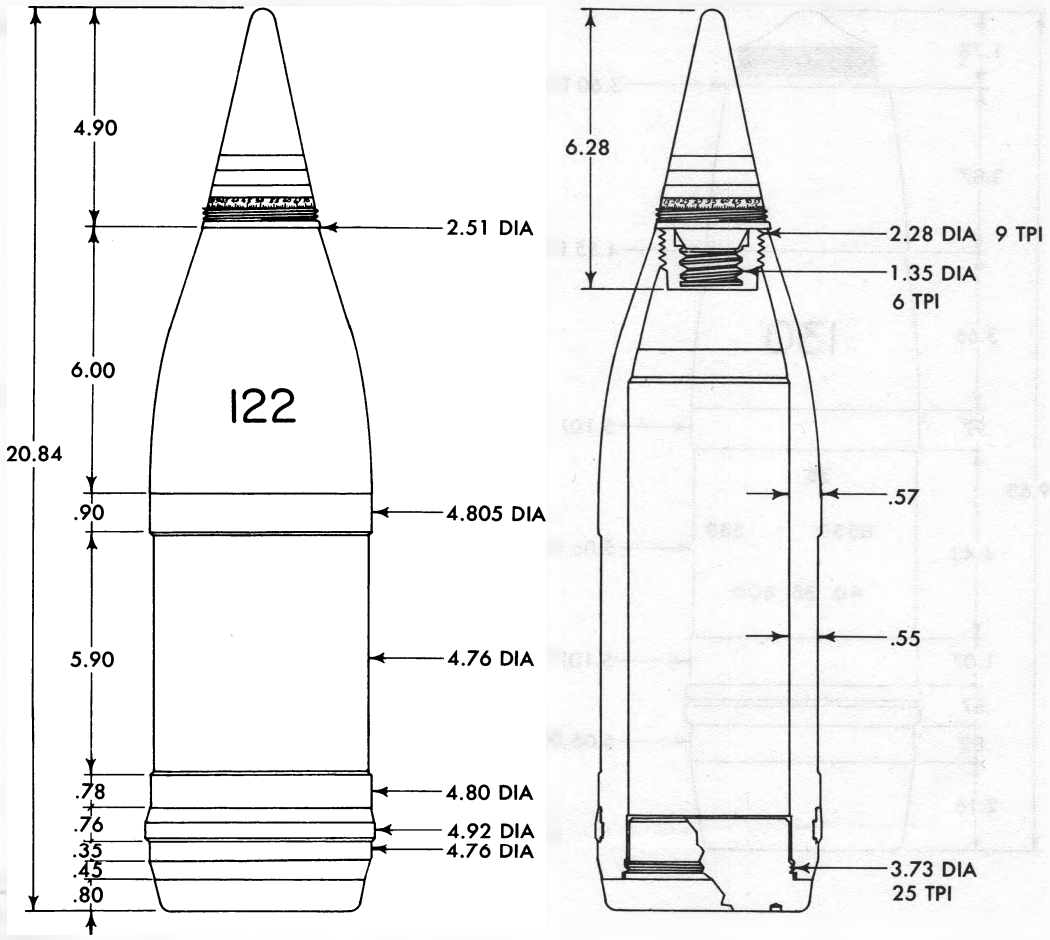

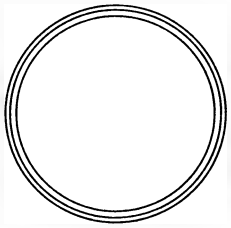

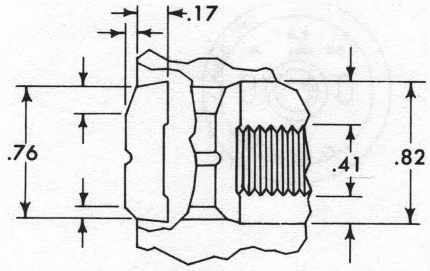

ALL DIMENSIONS IN INCHES

16 INDENTATIONS PER INCH

Caliber: 122-mm
Identification code: A–[1]
Type: Propaganda (Prop)
Weight (fuzed): 50 lb. aprx

Ejection charge: Black powder
Fuze: Model T-6 TSQ
Known using weapon: Howitzer M1938 (M-30)
Remarks:

Figure 56. (C) *122-mm propaganda (Prop).*

[1] Third component of identification code unknown.

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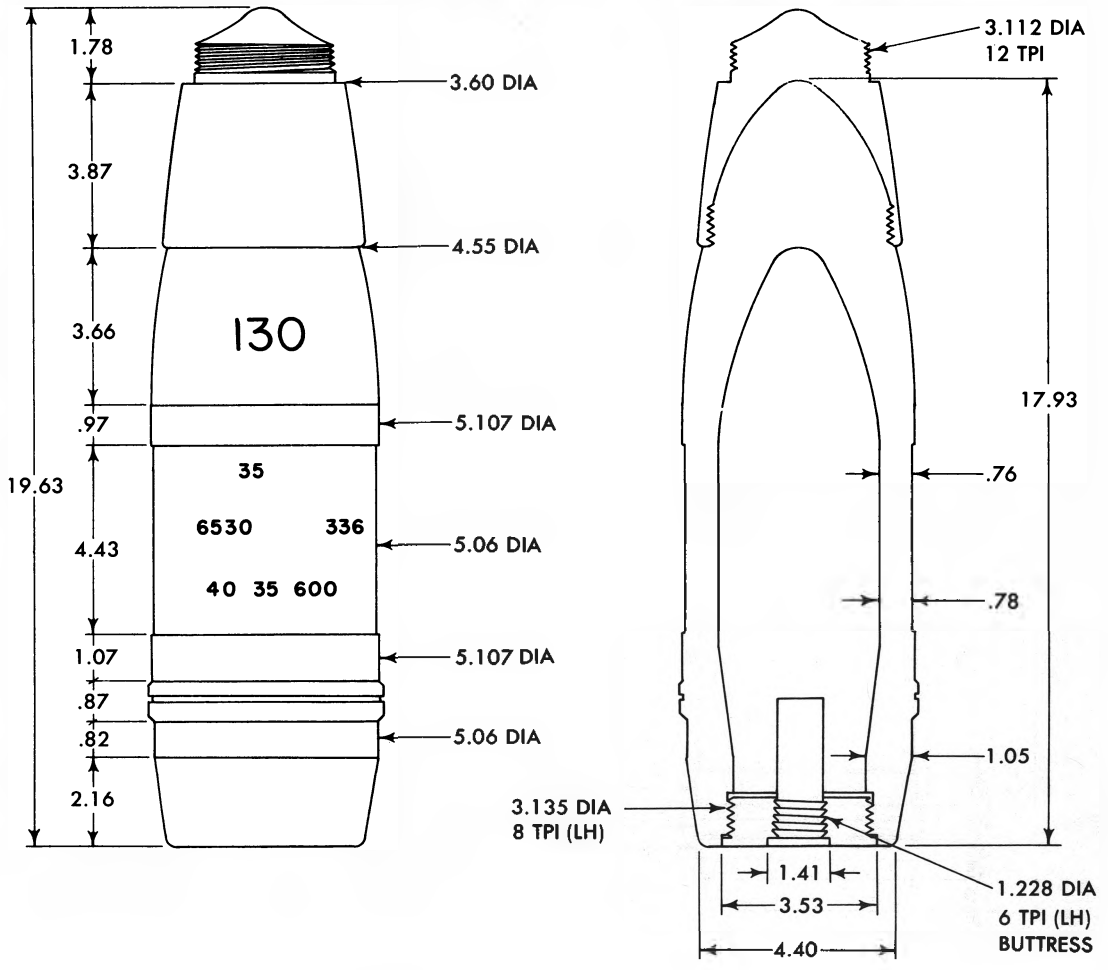
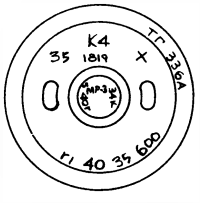
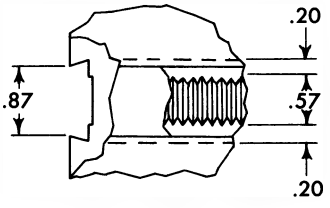






ALL DIMENSIONS IN INCHES

17 INDENTATIONS PER INCH

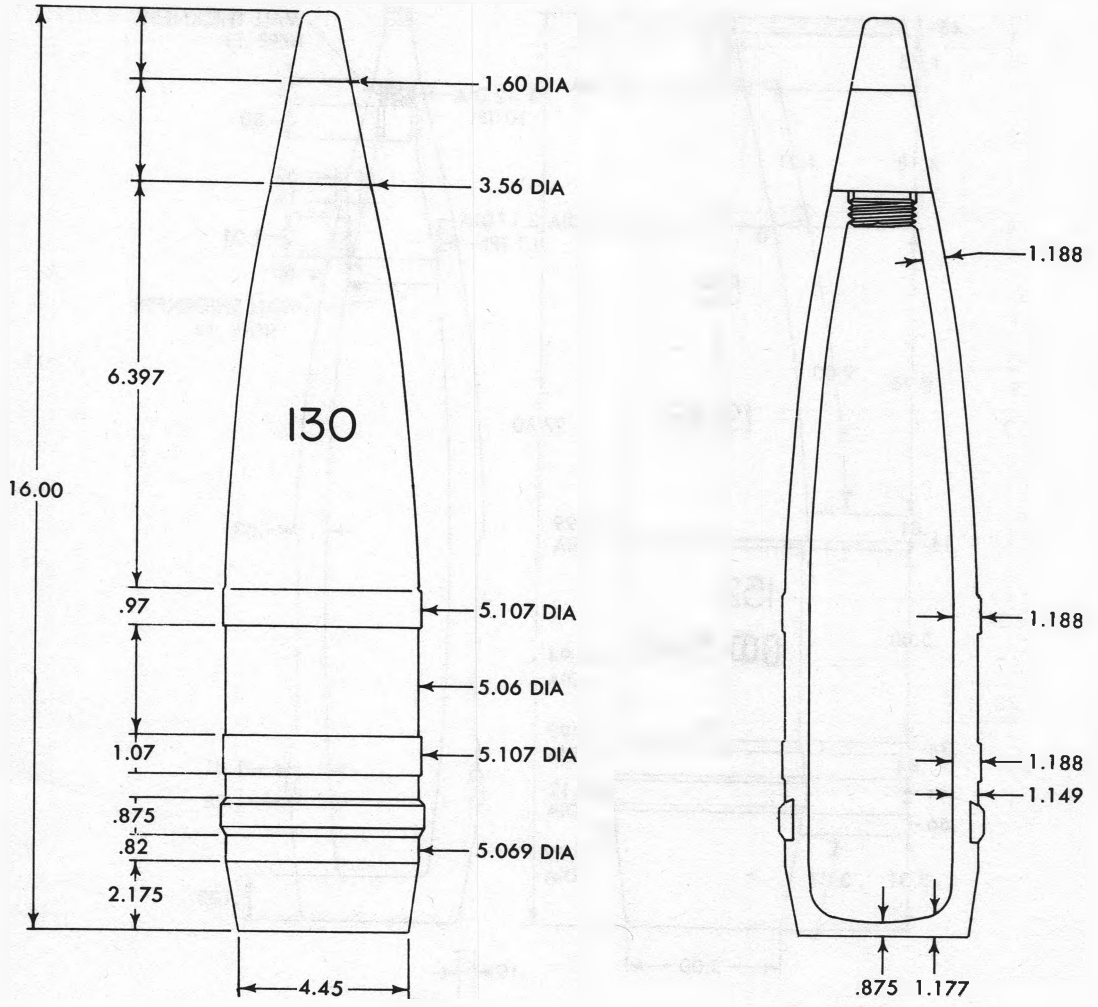
Caliber: 130-mm
Identification code: Φ–[1]
Type: Armor-piercing (AP)
Weight (fuzed): 74.1 lb.
Bursting charge: 3.50 lb. TNT

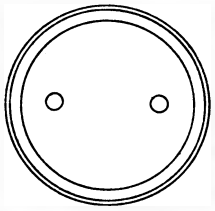
Fuze: Model MP–3 base detonating
Known using weapon: Naval Gun and, possibly, Field Gun M–46
Remarks: Projectile is illustrated without windshield

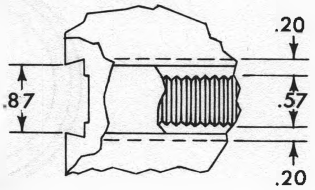
Figure 57. (C) *130-mm armor-piercing (AP).*

[1] Third component of identification code unknown.

CONFIDENTIAL







ALL DIMENSIONS IN INCHES

17 INDENTATIONS PER INCH

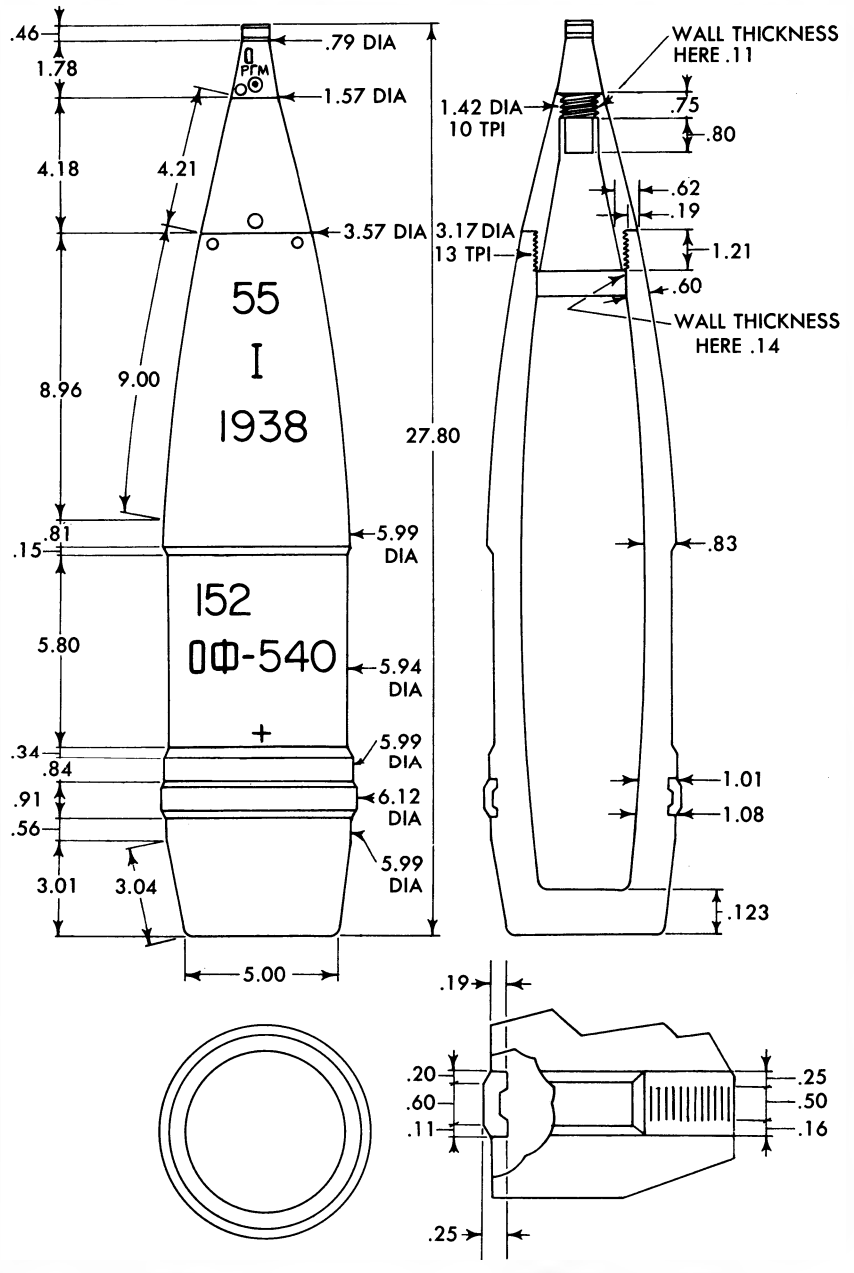
Caliber: 130-mm
Identification code: OΦ–[1]
Type: Fragmentation high-explosive (Frag-HE)
Weight (fuzed): 74 lb.
Bursting charge: TNT

Fuze:
Known using weapon: Naval Gun; Field Gun M–46; AA Gun (M–55)
Remarks:

Figure 58. (C) *130-mm fragmentation high-explosive (Frag-HE).*

[1] Third component of identification code unknown.

CONFIDENTIAL



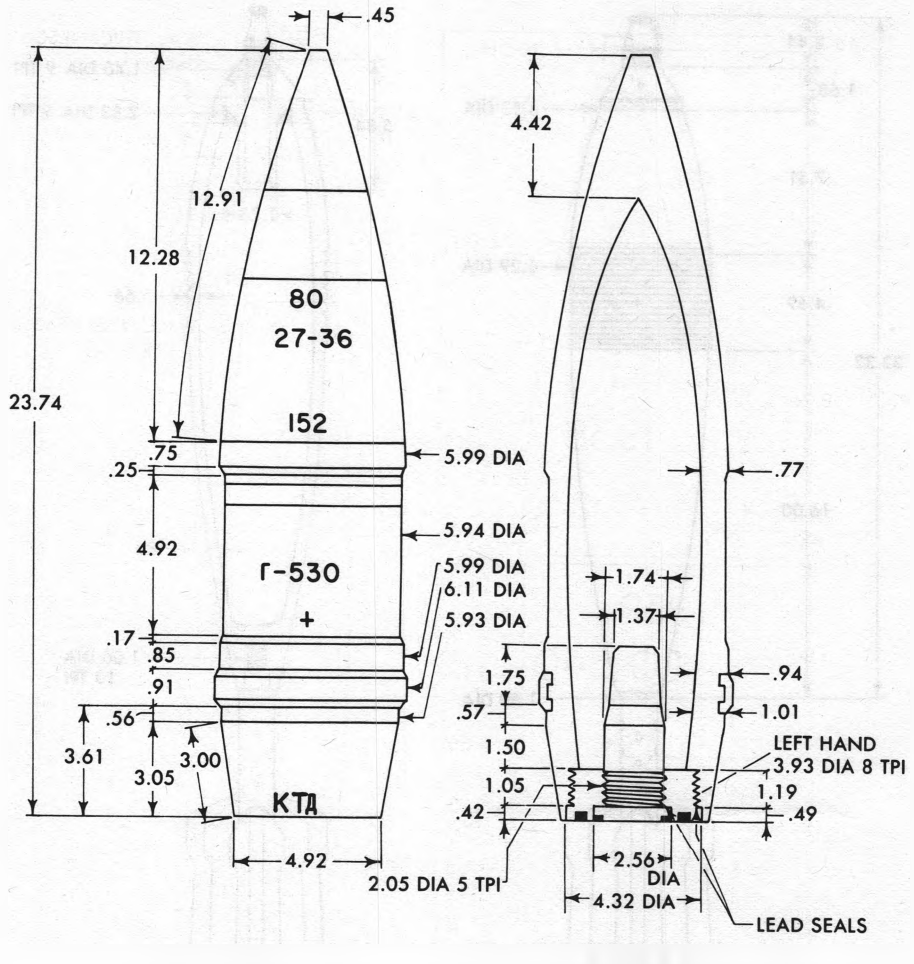
ALL DIMENSIONS IN INCHES 13 INDENTATIONS PER INCH

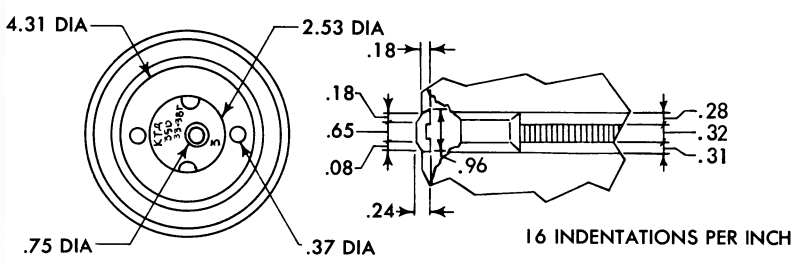
Caliber: 152-mm
Identification code: ОФ–540
Type: Fragmentation high-explosive (Frag-HE)
Weight (fuzed): 96.50 lb.
Bursting charge: 14.25 lb. TNT
Fuze: Model РГМ point detonating

Known using weapon: Guns M1910/34, M1935 (BR–2); Gun-Howitzer M1937 (ML–20); SP Assault Gun M1937/43 (ML–20S)
Remarks: Also uses Models Д–1, РГМ–2, and РГ–6 point detonating fuzes.

Figure 59. (C) *152-mm fragmentation high-explosive (Frag-HE).*

CONFIDENTIAL



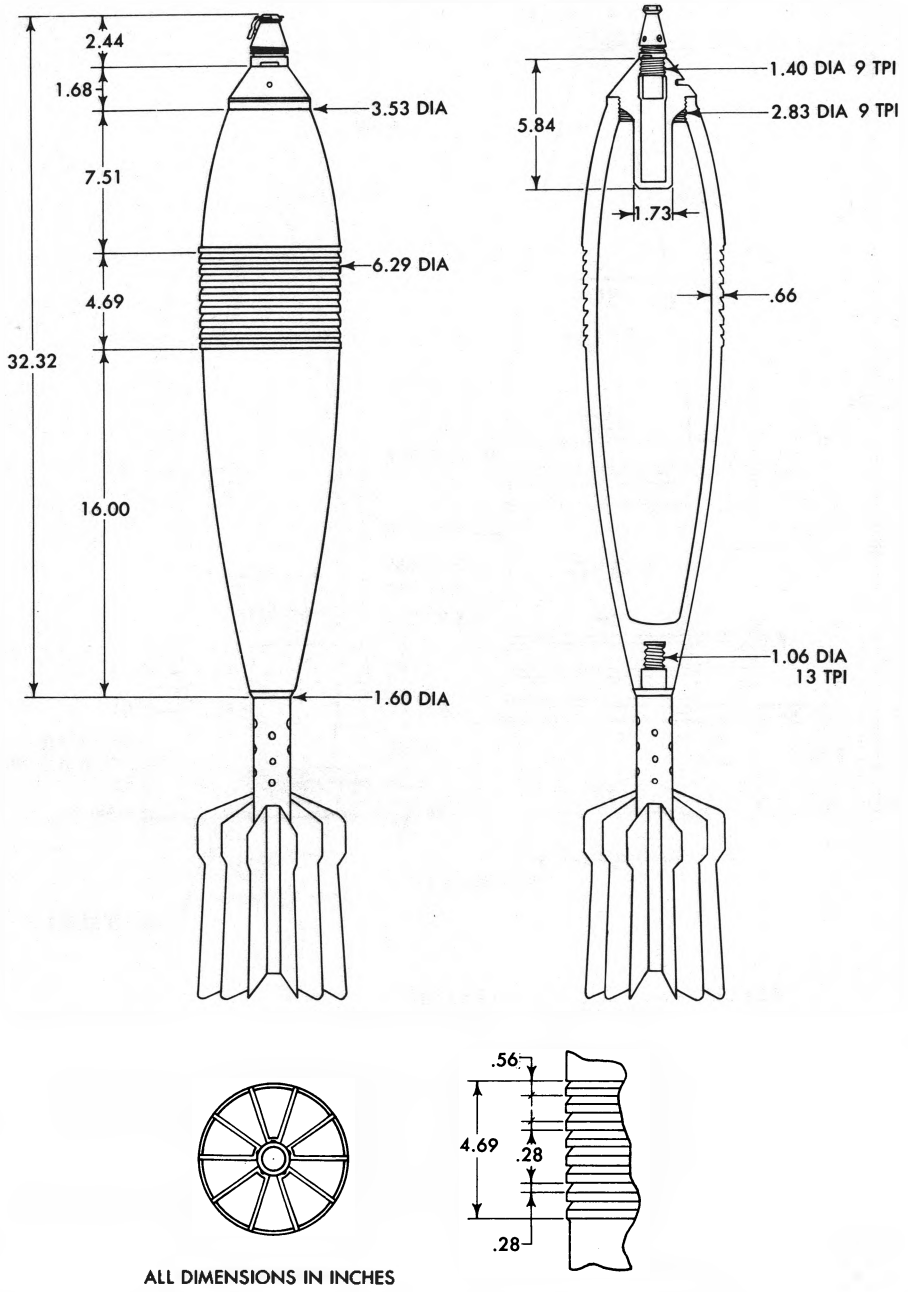


ALL DIMENSIONS IN INCHES

Caliber: 152-mm
Identification code: Г-530
Type: Concrete-piercing (CP)
Weight (fuzed): 88:20 lb.
Bursting charge: 11.25 lb. TNT
Fuze: Model КТД base detonating.

Known using weapon: Howitzers M1909/30, M1938 (M-10), M1943 (D-1); Guns M1910/34, M1935 (BR-2); Gun-Howitzer M1937 (ML-20); SP Assault Gun M1937/43 (ML-20S)
Remarks: Also uses Model КТД-2 base detonating fuze

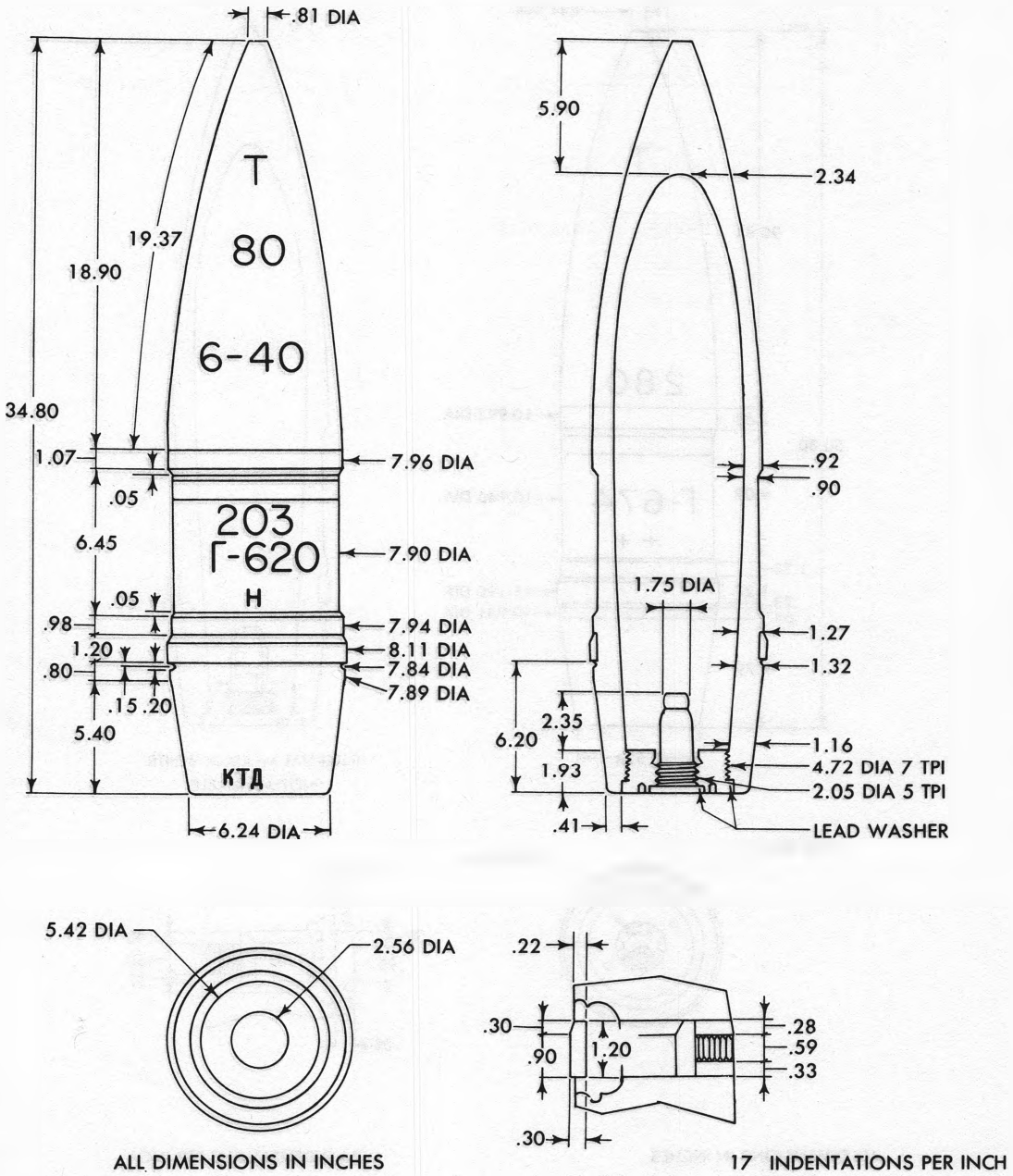
Figure 60. (C) *152-mm concrete-piercing (CP).*



Caliber: 160-mm
Identification code: Φ–852
Type: High-explosive (HE)
Weight: 88 lb.

Bursting charge: 16.28 lb. TNT
Fuze: Model ГВМ3–7 point detonating
Known using weapon: Mortars M1943, M–160
Remarks:

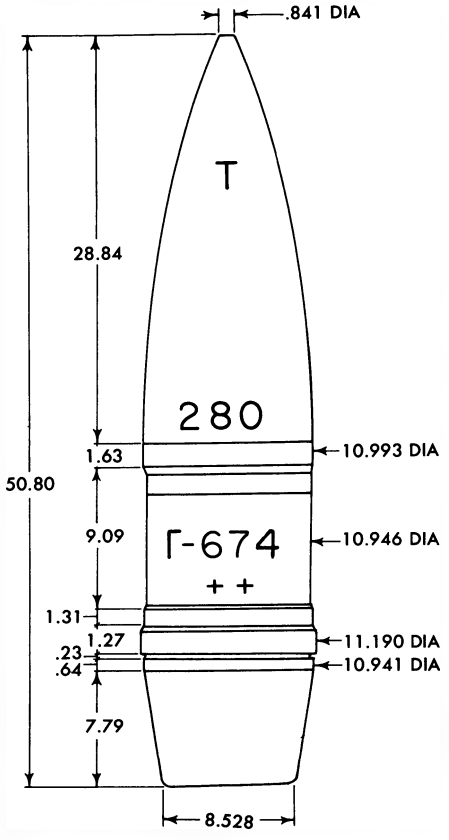
Figure 61. (C) *160-mm high-explosive (HE).*

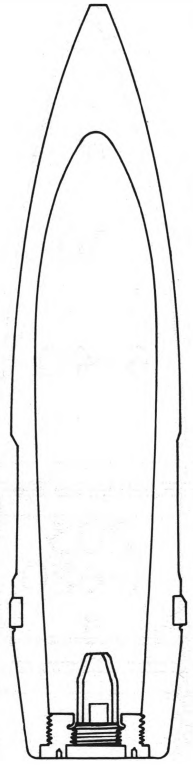


Caliber: 203-mm
Identification code: Г–620
Type: Concrete-piercing (CP)
Weight (fuzed): 220.48 lb.

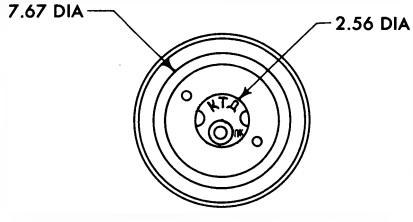
Bursting charge: 33.86 lb. TNT
Fuze: Model КТД base detonating.
Known using weapon: Howitzer M1931 (B–4)
Remarks: Also uses Model КТД–2 base detonating fuze

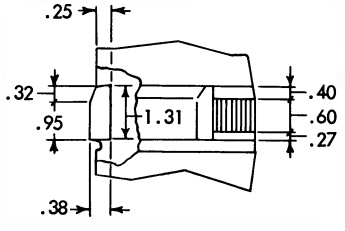
Figure 62. (C) *203-mm concrete-piercing (CP).*





INTERNAL MEASUREMENTS
NOT AVAILABLE





ALL DIMENSIONS IN INCHES

18 INDENTATIONS PER INCH

Caliber: 280-mm
Identification code: Г-674
Type: Concrete-piercing (CP)
Weight (fuzed): 632 lb.
Bursting charge:
Fuze: Model КТД base detonating

Known using weapon: Mortars (Howitzers) M1914/15 Schneider, M1939 (BR-5)
Remarks: Model КТД fuze is bore safe, can be set for short and long delay. No instantaneous action. Must be set on "РК" (ПК), for transportation.

Figure 63. (C) *280-mm concrete-piercing (CP).*

SECTION VI (C)

SOVIET ARTILLERY WEAPONS

Table XIV (CONFIDENTIAL). *Weapons Characteristics Chart* (U)

Nomenclature	Maximum range (yd.)	Muzzle velocity (ft./sec.)	Projectile weight (lb.)	Maximum rate of fire (r.p.m.)	Maximum elevation (deg.)	Maximum depression (deg.)	Maximum traversing (deg.)	Transport	Number of lands and grooves
Gun, AA, 25-mm, M1940	6,562 yd. (horizontal); 14,764 ft. (vertical).	2,986, Frag-I-T; 2,953, AP-T.	0.63, Frag-I-T; 0.65, AP	240–250 (practical: 100).	+85	−10	360	Towed	(?)
Gun, AA, 37-mm, M1939	8,748 yd. (horizontal); 19,685 ft. (vertical).	2,887, HE-T; 2,887, AP-T; 3,150, HVAP-T.	1.61, HE-T; 1.70, AP-T; 1.37, HVAP-T.	160–180	+85	−5	360	do	16
Guns, AT, 45-mm, M1932, M1937.	4,812	1,090, HE; 2,493, APHE-T; 3,500, HVAP-T.	4.74, HE; 3.15, APHE-T; 1.91, HVAP-T.	25–30	+25	−8	60	do	16
Gun, AT, 45-mm, M1942	5,468	1,125, HE; 2,690, AP-T; 3,510, HVAP-T.	4.72, HE; 3.15, AP-T; 1.88, HVAP-T.	30	+25	−8	60	do	16
Gun, AA, 57-mm, S–60	13,120 yd. (horizontal); 28,870 ft. (vertical).	3,281 HE, AP-T	6.17 HE; 6.92, AP-T	105–120	+87	−4	360	do	24
Gun, AA, SP, 57-mm, (Twin).	13,120 yd. (horizontal); 28,870 ft. (vertical).	3,281 HE, AP-T	6.17, HE; 6.92, AP-T	105–120	+85	−5	360	Self-propelled	24
Gun, APAT, 57-mm	~~7,658 (HE)~~ (est.) 8 shoomiCKS	2,296, HE; 3,248, AP-T; 4,167, HVAP-T.	8.27, HE; 6.92, AP-T; 3.85, HVAP-T.	15 (est.)	+25	−5	56	Auxiliary-propelled on battlefield.	24
Gun, Assault, 57-mm, ASU–57.		2,300, HE; 4,000, HVAP-T (est.)	8.27, HE; 6.92, AP-T; 3.85, HVAP-T (est.).	15 (est.)				Self-propelled; airborne.	24
Guns, AT, 57-mm, M1941, M1943 (ZIS–2).	9,100	2,296, HE; 3,248, AP-T; 4,167, HVAP-T.	9.26, HE; 6.92, AP-T; 3.78, HVAP-T.	25	+25	−5	56	Towed	24
Guns, AA, 76-mm, M1931, M1931/33, M1938.	15,316 yd. (horizontal); 30,513 ft. (vertical).	2,667, HE; 2,667, AP-T; (?), HVAP-T.	14.57, HE; 14.57, AP-T; 6.72, HVAP-T.	15–20	+82	−3	360	do	28
Gun (Howitzer), Regimental, 76-mm, M1927.	9,143	1,270, HE; 1,214, AP-T; (?), HEAT.	13.67, HE; 14.33, AP-T; 11.94, HEAT.	15–20	+20	−6	6	do	24
Gun (Howitzer), Regimental, 76-mm, M1943.	4,593	863, HE; 787, HEAT	13.67, HE; 11.94, HEAT	14	+25	−8	60	do	24
Gun (Howitzer), Mountain, 76-mm, M1909.	7,655	1,250, HE; 935, Shrap	13.67, HE; 14.33, Shrap	1–15	+18	−6	2	Towed or packed	24
Gun (Howitzer), Mountain, 76-mm, M1938.	11,045	1,624, HE; 1,575, AP-T; (?), Shrap.	13.67, HE; 13.89, AP-T; 14.33, Shrap.	14	+65	−8	10	Towed	32
Gun, Divisional, 76-mm, M1902/30.	14,850	2,316, HE; 2,254, AP-T; 3,510, HVAP-T, (?), HEAT.	13.67, HE; 14.33, AP-T; 6.61, HVAP-T; 11.68, HEAT.	8	+37	−5	2	do	32
Gun, Divisional, 76-mm, M1936 (F–22).	14,850	2,316, HE; 2,254, AP-T; 3,510, HVAP-T; (?), HEAT.	13.67, HE; 14.33, AP-T; 6.61, HVAP-T; 11.68, HEAT.	12–18	+75	−5	60	do	32
Gun, Divisional, 76-mm, M1939 (USV)	14,545	2,231, HE; 2,444, AP-T; 3,166, HVAP-T; (?), HEAT.	13.67, HE; 14.33, AP-T; 6.72, HVAP-T; 11.68, HEAT.	25	+45	−6	60	do	32
Gun, Divisional, 76-mm, M1942 (ZIS–3).	14,545	2,231, HE; 2,041, AP-T; 3,167, HVAP-T; (?), HEAT.	13.67, HE; 14.33, AP-T; 6.72, HVAP-T; 11.68, HEAT.	25	+37	−5	54	do	32
Gun, Tank, 76-mm, M1940 (F–34).		2,041, APHE-T; 3,166, HVAP-T.	14.33, APHE-T; 6.72, HVAP-T.		+30		360	T34/76 tank	32
Gun, Tank, 76-mm, M1941 (ZIS–5).		2,041, APHE-T; 3,166, HVAP-T.	14.33, APHE-T; 6.72, HVAP-T.		+25		360	KV–76 tank	32

Table XIV (CONFIDENTIAL). *Weapons Characteristics Chart* (U)—Continued

Nomenclature	Maximum range (yd.)	Muzzle velocity (ft./sec.)	Projectile weight (lb.)	Maximum rate of fire (r.p.m.)	Maximum elevation (deg.)	Maximum depression (deg.)	Maximum traversing (deg.)	Transport	Number of lands and grooves
Gun, SP, 76-mm, M1942/43 (SAU-76).	14,545	2,231, HE; 2,041, AP-T; 3,167, HVAP-T; (?), HEAT.	13.67, HE; 14.33, AP-T; 6.72, HVAP-T; 11.68, HEAT.	8-10	+15	−5		Self-propelled (SU-76 SP support gun).	32
Launcher, Grenade, Antitank, 40/80-mm, RPG-2.	165	276	3.57 HEAT.	4-6	+90	0	360	Hand-carried.	0
Gun, Recoilless, 82-mm, B-10.	4 890 (indirect) 430 (direct).	1,050	8.58 Frag; 8.53 HEAT.	5-6	+35	−20	360	Towed or carried.	0
Mortars, Battalion, 82-mm, M1937 (82-BM 37) M1941 (82-BM 41), M1943 (82-BM 43).	3,320	690 (?)	7.30, HE.	25	+85	+45	10	Hand-carried or hand-towed.	0
Guns, AA, 85-mm, M1939, M1944.	16,950 yd. (horizontal); 34,461 ft. (vertical).	2,625, HE: 2,625, AP-T; 3,379, HVAP-T.	20.30, HE; 20.28, AP-T; 10.92, HVAP-T.	15-20	+82	−3	360	Towed	24
Gun, APAT, 85-mm, D-48.	17,000	2,625, HE; 2,625, AP; 3,380, HVAP.	21, HE; 21, AP; 11, HVAP.	20	+35	−5	54	Auxiliary-propelled short distances and on battlefield, towed for long road marches.	24
Gun, Field, 85-mm, D-44.	17,100	2,600	21, HE; 21, APHE-T; 11, HVAP-T.	15	+35	−5	54	Towed	24
Gun, Tank, 85-mm, M1943 (D-5T85).	16,950	2,598, APHE-T; 3,379, HVAP-T.	20.28, APHE-T; 11.02, HVAP-T.		+23			KV-85 tank.	24
Gun, Tank, 85-mm, M1944 (ZIS-S53).	5,796	2,598, APHE-T; 3,379, HVAP-T.	20.28, APHE-T; 11.02, HVAP-T.		+25	−5	360	T34/85 tank.	24
Gun, SP, 85-mm, M1943 (D5-S 85 and D5-S 85A).	10,498	2,598, HE; 3,379, HVAP-T.	20.28, HE; 11.02, HVAP-T.	8	+25	−5	20	Self-propelled (SU-85 SP assault gun).	24
Gun, AA, 100-mm, KS-19.	23,000 yd. (horizontal); 50,000 ft. (vertical).	2,953	35, HE.	15	+85	−3	360	Towed	
Gun, Field, 100-mm, M1955.	23,000 (est.)	2,953 (est.)	35, HE; 34, AP-T (est.)	8 (est.)	+45 (est.)	−5 (est.)	60 (est.)	Towed	
Gun, Field (AT), 100-mm, M1944 (BS-3).	22,965	2,625, HE; 2,750, AP-T; (?), HEAT; 3,467, HVAP-T.	35.05, HE; 34.61, AP-T; 22.50, HVAP-T; (?), HEAT.	8-10	+40	−5	55	Towed	40
Gun, SP, 100-mm, M1944 (D-10S).	15,316	2,953, HE.	35.05, HE.	6	+17	−2	16	Self-propelled (SU-100 SP assault gun).	40
Mortar, Regimental, Mountain-Pack, 107-mm, M1938.	6,892	863, HE; 991, HE; 991, Smoke; 991, Cml.	17.42, HE; 19.84, HE; 20.72, Smoke; 20.72, Cml.	15	+80	+45	3	Packed or towed (limber).	0
Gun, Recoilless, 107-mm, B-11.	7,300 (indirect) 500 (direct).	1,312	18.72 Frag-HE; 16.53 HEAT.	4-5	+45	−10	35	Towed	0
Gun, Corps, 107-mm, M1910/30.	17,630	2,198, HE; 2,149, AP-T	37.87, HE; 41.45, AP-T	6-7	+37	−5	6	Horsedrawn or towed.	32
Gun, Corps, 107-mm, M1940 (M-60).	19,083	2,198, HE; 2,149, AP-T	37.88, HE; 41.45, AP-T	6	+44	−6	60	Towed	40
Mortars, Regimental, 120-mm, M1938, M1943.	6,564	890, ?	37.36 HE		+80	+45	6	Packed or towed (limber).	0

Howitzer, 122-mm, M1910/30.	9,780	1,194, HE; (?), HEAT	47.85, HE; 29.20, HEAT	6	+43	−3	4°41′	Horsedrawn or towed	36
Howitzer, 122-mm, M1938 (M-30).	12,904	1,690, HE; 1,690, HEAT	47.97, HE; 29.20, HEAT	5–6	+65	−3	50	Towed	36
Gun, Corps, 122-mm, M1931.	22,747	2,625, HE; 2,625, AP-T; (?), CP; (?), HEAT.	55.12, HE; 55.12, AP-T; 48.51, CP; 29.19, HEAT.	5–6	+45	−2	56	Towed (limber)	44
Gun, Corps, 122-mm, M1931/37 (A–19).	22,747	2,625, HE; 2,625, AP-T; 2,625, CP; (?), HEAT.	55.12, HE; 55.12, AP-T; 48.51, CP; 29.19, HEAT.	5–6	+65	−2	58	Towed (limber)	44
Gun, Field, 122-mm, D–74.	24,000 (est)	2,650, HE (est)	48, HE; 48, APHE-T; 55, CP (est).	6 (est)	+50 (est)	−2 (est)	60 (est)	Towed	
Gun, Tank, 122-mm, M1943 (D–25).	10,940	2,562, APHE-T; (?), HEAT.	55.12, APHE-T; 29.19, HEAT.		+20	−3	360	Self-propelled (JS–1, JS–2, and JS–3 tanks).	44
Howitzer, SP, 122-mm, M1938 (M–30).		(?), HEAT	29.19, HEAT		+25			Self-propelled (SU–122 SP howitzer).	36
Gun, SP, 122-mm, M1944 (D–25S).	10,940	2,562, HE; (?), HEAT	55.12, HE; 29.19, HEAT	3–6	+15	−4	11	Self-propelled (JSU–249 SP gun).	44
Gun, SP, 122-mm, M1931/44 (A–19S).	13,000	2,625, HE; 1,870, HE; 2,625, CP; (?), HEAT.	55.12, HE; 47.97, HE; 55.12, CP; 29.19, HEAT.	3	+15	−4	11	Self-propelled (JSU–122 SP gun).	44
Gun, AA, 130-mm, M55	26,500 yd. (horizontal); 55,000 ft. (vertical) (est).	3,100 (est)	73.6, HE (est)	10–12 (est)	+80	−5	360	Towed	
Gun, Field, 130-mm, M46.	30,000	3,050	74, HE; 74.1, AP	5	+46	−2	50	Towed	
Gun-Howitzer, 152-mm, D–20.	18,800	2,200, HE; 2,150, CP (est)	107, HE; 105, CP (est)	4	+63	−2	60	Towed	28
Howitzer, 152-mm, M1909/30.									36
Howitzer, 152-mm, M1938 (M–10).	13,560	1,667, HE; 1,667, CP; 1,417, SAP; (?), HEAT.	88.18, HE; 88.18, CP; 112.58, SAP.	4	+65	−1	50	Towed (limber)	48
Howitzer, 152-mm, M1943 (D–1).	13,560	1,667, HE; 1,667, CP; 1,417, SAP; (?), HEAT.	88.18, HE; 88.18, CP; 112.58, SAP; (?), HEAT.	4	+63°30′	−3	35	Towed	48
Gun-Howitzer, 152-mm, M1937 (ML–20).	18,880	2,149, HE; 1,968, AP-T; 2,198, CP (w/88.18-lb. proj.).	96.05, HE; 107.54, AP-T; 88.18, CP; 123.46, CP.	4	+65	−2	58	Towed (limber)	48
Gun, 152-mm, M1910/34	18,881	1,811, HE; 1,968, AP-T; 2,198, CP (w/88.18-lb. proj.).	96.03, HE; 107.54, AP-T; 88.18, CP; 123.46, CP.	1–2	+45	−4	56	do	
Gun, 152-mm, M1935 (BR–2).	29,527	2,887, HE; (?), HE; (?), SAP; (?), CP.	96.78, HE; 107.80, HE; 113.54, SAP; 88.18, CP.	½	+60	0	8	Tractor-drawn	32 or 48
Gun, SP, 152-mm, M1937/43 (ML–20S).	9,846	925, HE; 2,149, HE; 2,198, CP; (?), CP.	84.17, HE; 96.05, HE; 88.18, CP; 123.46, CP.	2–3	+20	−3	10	Self-propelled (JSU–152 SP gun-howitzer).	48
Mortar, 160-mm, M1943	5,468		88, HE	3	+85	+45		Towed	0
Mortar, 160-mm, M160	8,800	1,125, HE	90.7, HE	3	50		24	Towed	0
Gun-Howitzer, 203-mm, M55.	32,000 (est)	2,600 (est)	225, HE; 240, CP (est)	3–4 (est)	+50 (est)	−2 (est)	44 (est)	Towed	
Howitzer, 203-mm, M1931 (B–4).	19,712	1,900, HE; 1,805, CP	217.70, HE; 220.46, CP	⅓	+60	0	8	Tractor-drawn (2 loads).	64
Gun, 210-mm, M1939 (BR–17).	32,966 (HE); 31,332 (AP).	2,624, HE; 2,484, AP; 2,493, CP.	297.62, HE; 328.48, AP; 339.51, CP.	⅓	+50		22	Tractor-drawn (3 loads).	64
Mortar, 240-mm, M–240	10,600	1,190	288, HE	1	+50		17	Towed	0
Mortar (Howitzer), 280-mm, M1939 (BR–5).	11,505	1,378, HE; 1,168, HE; (?), CP.	442.46, HE; 542.33, HE; 632.06, CP.	¼	+60	0	8	Tractor-drawn (2 loads).	88
Howitzer, 305-mm, M1940 (BR–18).	17,935 (HE); 14,220 (CP).	1,740, HE; 1,345, CP	728.32, HE; 1,025.14, CP	⅓	+77	0	360	Tractor-drawn (3 loads).	(?)

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APPENDIX I (U)

TRANSLITERATION TABLE FOR THE RUSSIAN ALPHABET

Russian		*English*		*Russian*		*English*	
А	а	A	a	Р	р	R	r
Б	б	B	b	С	с	S	s
В	в	V	v	Т	т	T	t
Г	г	G	g	У	у	U	u
Д	д	D	d	Ф	ф	F	f
Е	е	Ye, E	ye, e [1]	Х	х	Kh	kh
Ж	ж	Zh	zh	Ц	ц	Ts	ts
З	э	Z	z	Ч	ч	Ch	ch
И	и	I	i	Ш	ш	Sh	sh
Й	й	Y	y	Щ	щ	Shch	shch
К	к	K	k	Ъ	ъ	(″)	(″)
Л	л	L	l	Ы	ы	Y	y
М	м	M	m	Ь	ь	(′)	(′)
Н	н	N	n	Э	э	E	e
О	о	O	o	Ю	ю	Yu	yu
П	п	P	p	Я	я	Ya	ya

[1] ye initially, after vowels, and after ъ, ь; e elsewhere. When written as ё in Russian, translate as yё or ё. Use of diacritical marks is preferred, but such marks may be omitted when expediency dictates.

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APPENDIX II (U)

DECIMALS TO FRACTIONS, IN INCHES

Fraction	Decimal	Fraction	Fraction	Decimal	Fraction
1/64	.0156		33/64	.5156	
	.0312	1/32		.5312	17/32
3/64	.0468		35/64	.5469	
	.0625	1/16		.5625	9/16
5/64	.0781		37/64	.5781	
	.0937	3/32		.5937	19/32
7/64	.1094		39/64	.6094	
	.125	1/8		.625	5/8
9/64	.1406		41/64	.6406	
	.1562	5/32		.6562	21/32
11/64	.1719		43/64	.6719	
	.1875	3/16		.6875	11/16
13/64	.2031		45/64	.7031	
	.2187	7/32		.7187	23/32
15/64	.2344		47/64	.7344	
	.25	1/4		.75	3/4
17/64	.2656		49/64	.7656	
	.2812	9/32		.7812	25/32
19/64	.2969		51/64	.7968	
	.3125	5/16		.8125	13/16
21/64	.3281		53/64	.8281	
	.3437	11/32		.8438	27/32
23/64	.3594		55/64	.8594	
	.375	3/8		.875	7/8
25/64	.3906		57/64	.8906	
	.4062	13/32		.9062	29/32
27/64	.4219		59/64	.9219	
	.4375	7/16		.9375	15/16
29/64	.4531		61/64	.9531	
	.4687	15/32		.9687	31/32
31/64	.4844		63/64	.9843	
	.5	1/2		1.0	32/32

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OWC (5)
WSMR (2)

NG: None.
USAR: None.
For explanation of abbreviations used, see AR 320–50.

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