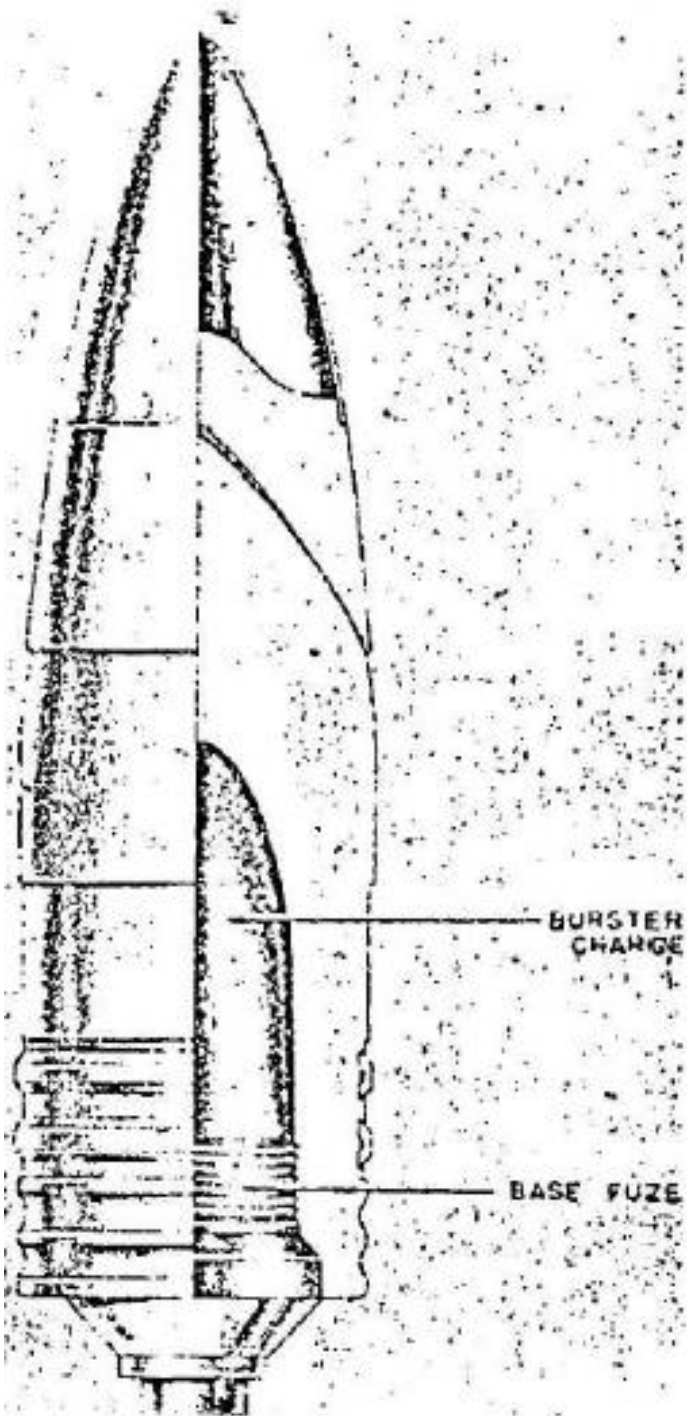


**A. P. C. PROJECTILE, TYPE 39, 88-MM**  
**GERMAN NOMENCLATURE: Pzgr. Patr.**  
**Panzergranate Patrone 39). (See fig. 424.)**



**EMPLOYMENT:** 8.8-cm Flak. 41 (Flugabwehrkanone 41). Antiaircraft Gun 41.

**COMPLETE ROUND:**  
45.5 inches, over-all length.  
46.0 pounds, total weight.

**PROJECTILE,** painted black with white tip.  
13.5 inches, over-all length.  
1.937 inches, distance from base to band.  
0.469 inch, width of rotating bands.  
Two, number of rotating bands.  
3.437 inches, diameter of base.  
22.44 pounds, total weight.  
2.12 ounces, Cyclonite bursting charge.  
Tracer present in fuze.

**CARTRIDGE CASE** (German nomenclature 8.8-cm Flak. 41 (fixed)).  
33.687 inches, over-all length.  
3.562 inches, diameter of neck.  
4.094 inches, diameter of shoulder.  
4.844 inches, diameter of base.  
11.91 pounds, tubular Gudol propellant.  
C/22 primer.

**FUZE:** Base detonating fuze—Bd. Z. r 8.8-cm (unmarked).

**REMARKS:** This is the "small cavity" type of German APCBCHE with Cyclonite bursting charge and a spring-loaded fuze.

Figure 424—A. P. C. Projectile, Type 39, 88-mm  
Pzgr. Patr. 39

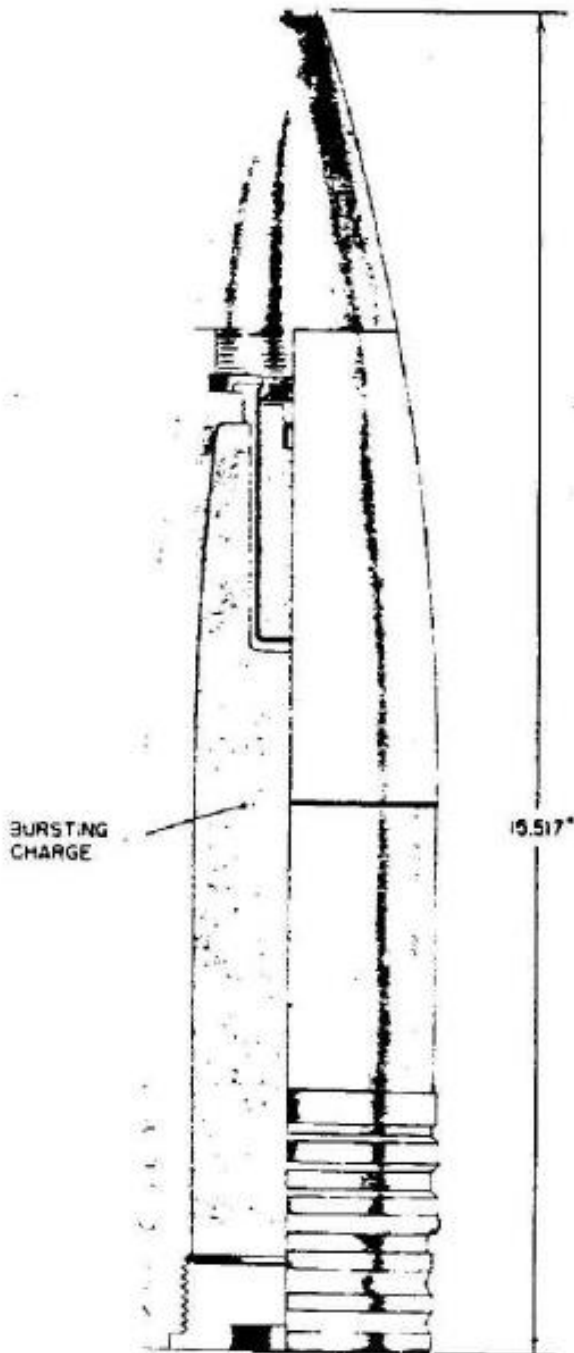


Figure 425—H. E. Projectile, Type L/4.5, 88-mm  
Sprgr. Patr. L/4.5 (Kz.)

### H. E. PROJECTILE TYPE L/4.5, 88-MM

**GERMAN NOMENCLATURE:** Sprgr. Patr. L/4.5 (Kz) (Sprenggranate Patrone Ladung/4.5 [Kopfzunder]). (See fig. 425.)

**EMPLOYMENT:**

- 8.8-cm Flak 18 (Flugabwehrkanone 18), Anti-aircraft Gun 18.
- 8.8-cm Flak 36 (Flugabwehrkanone 36), Anti-aircraft Gun 36.
- 8.8-cm Flak 37 (Flugabwehrkanone 37), Anti-aircraft Gun 37.

**PROJECTILE, painted yellow or green:**

- 15.51 inches, over-all length. 1.375 inches, distance from base to rotating band.
- 0.531 inch, width of lower rotating band.
- 0.469 inch, width of upper rotating band.
- Two, number of rotating bands.
- 3.446 inches, diameter of bourrelet.
- 3.447 inches, diameter of base.
- 20.35 pounds, total weight.
- 1.9 pounds, weight of bursting charge.
- 40/60 Amatol, type of bursting charge.
- C/98 booster.
- No tracer is present.

**CARTRIDGE CASE (German nomenclature 6347 (fixed)):**

- 22.4 inches, over-all length.
- 3.625 inches, diameter of neck.
- 3.812 inches, diameter of shoulder.
- 4.02 inches, diameter of base.
- 11.625 pounds, weight of case.
- 5.03 pounds, weight of propellant.
- Tubular Diglycol, type of propellant.
- C/12 nA primer.

**FUZE:** Nose percussion fuze—A. Z. 23/28 or Mechanical time fuze—Zt. Z. 3/30.

**PACKAGING:**

- Three rounds in wicker basket—123.0 pounds.
- One round in metal cylinder—47.3 pounds.

**REMARKS:** All three weapons employ the same cartridge case.

There are two types of this projectile. One has a screwed-in base plate and a bursting charge in a cardboard container. The other has a solid base and is poured filled.



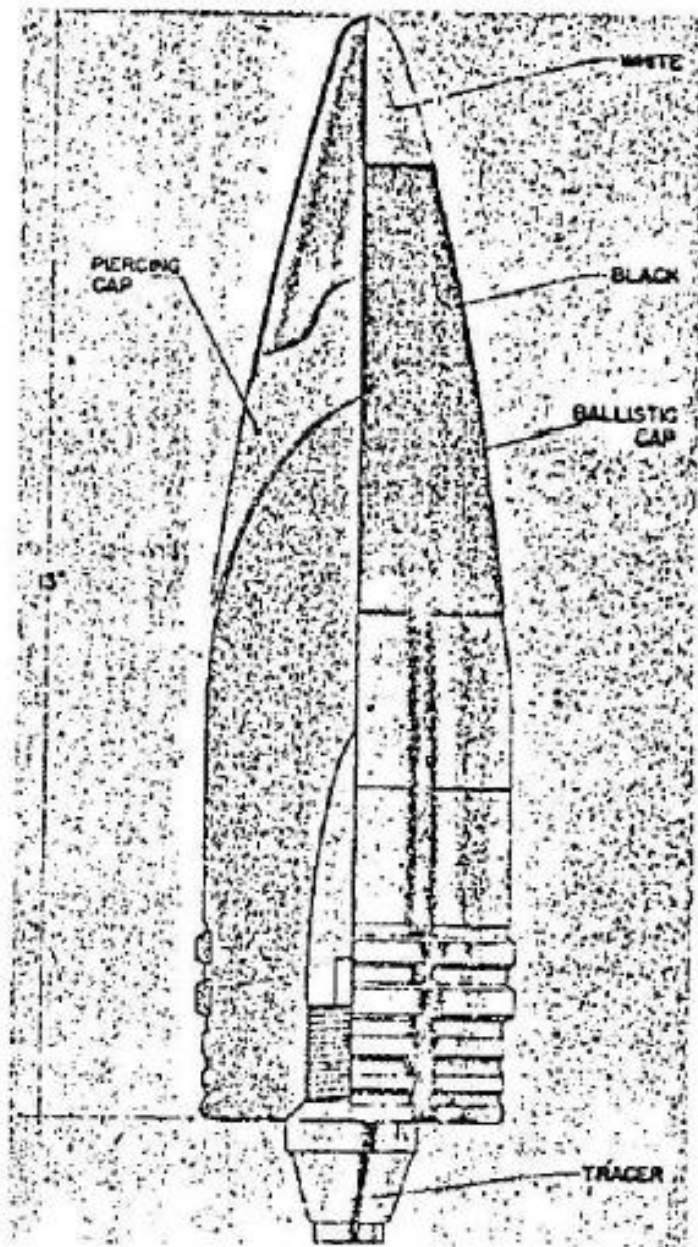


Figure 426—A. P. Projectile for 88-mm Antitank Gun, 8.8 cm Pzgr. Patr. 41

### A. P. PROJECTILE FOR 88-MM ANTITANK GUN

**GERMAN NOMENCLATURE:** 8.8-cm Pzgr. Patr. 41 (Panzergranate Patrone 41). (See fig. 426.)

**EMPLOYMENT:**

8.8-cm Flak 36 (Flugabwehrkanone 36), Anti-aircraft Gun 36.

8.8-cm Flak 41 (Flugabwehrkanone 41), Anti-aircraft Gun 41.

**PROJECTILE:** 13.0 inches, over-all length without fuze.

1.375 inches, distance from rotating bands to base.

0.48 inch, width of rotating bands.

3.45 inches, diameter of base.

22.8 pounds, total weight.

**CARTRIDGE CASE** (German nomenclature 8.8 cm Flak 41):

33.625 inches, over-all length.

3.55 inches, diameter of neck.

4.1 inches, diameter of shoulder.

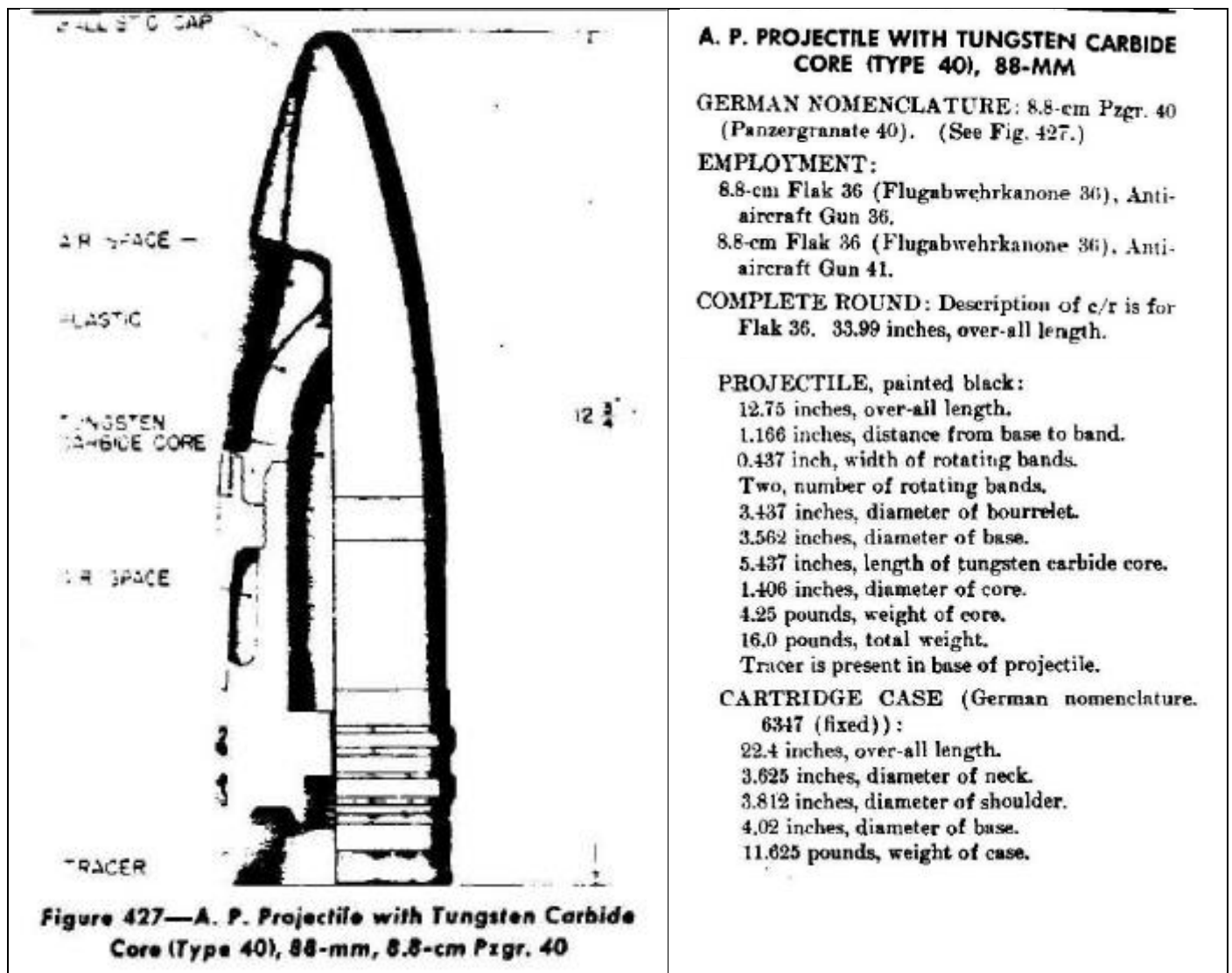
4.65 inches, diameter of base.

5.38 kg. weight of propellant.

Type of propellant—Tubular Diglycol.

C/22 electric primer.

**FUZE:** Bd. Z. 5127.



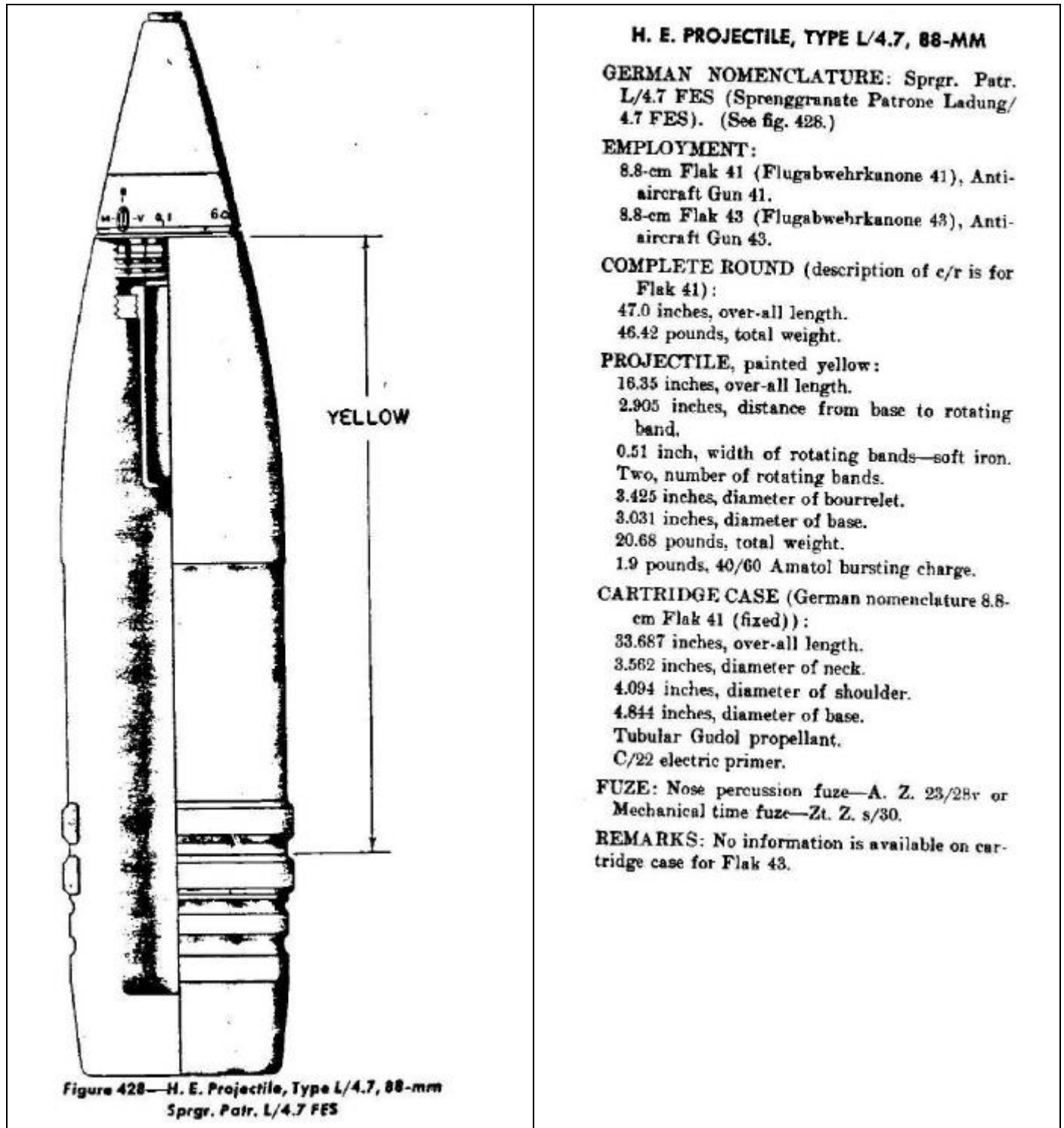


Figure 428—H. E. Projectile, Type L/4.7, 88-mm Sprgr. Patr. L/4.7 FES

**H. E. PROJECTILE, TYPE L/4.7, 88-MM**

**GERMAN NOMENCLATURE:** Sprgr. Patr. L/4.7 FES (Sprenggranate Patrone Ladung/4.7 FES). (See fig. 428.)

**EMPLOYMENT:**

- 8.8-cm Flak 41 (Flugabwehrkanone 41), Anti-aircraft Gun 41.
- 8.8-cm Flak 43 (Flugabwehrkanone 43), Anti-aircraft Gun 43.

**COMPLETE ROUND** (description of c/r is for Flak 41):

- 47.0 inches, over-all length.
- 46.42 pounds, total weight.

**PROJECTILE**, painted yellow:

- 18.35 inches, over-all length.
- 2.905 inches, distance from base to rotating band.
- 0.51 inch, width of rotating bands—soft iron.
- Two, number of rotating bands.
- 3.425 inches, diameter of bourrelet.
- 3.031 inches, diameter of base.
- 20.68 pounds, total weight.
- 1.9 pounds, 40/60 Amatol bursting charge.

**CARTRIDGE CASE** (German nomenclature 8.8-cm Flak 41 (fixed)):

- 33.687 inches, over-all length.
- 3.562 inches, diameter of neck.
- 4.094 inches, diameter of shoulder.
- 4.844 inches, diameter of base.
- Tubular Gudol propellant.
- C/22 electric primer.

**FUZE:** Nose percussion fuze—A. Z. 23/28v or Mechanical time fuze—Zt. Z. s/30.

**REMARKS:** No information is available on cartridge case for Flak 43.



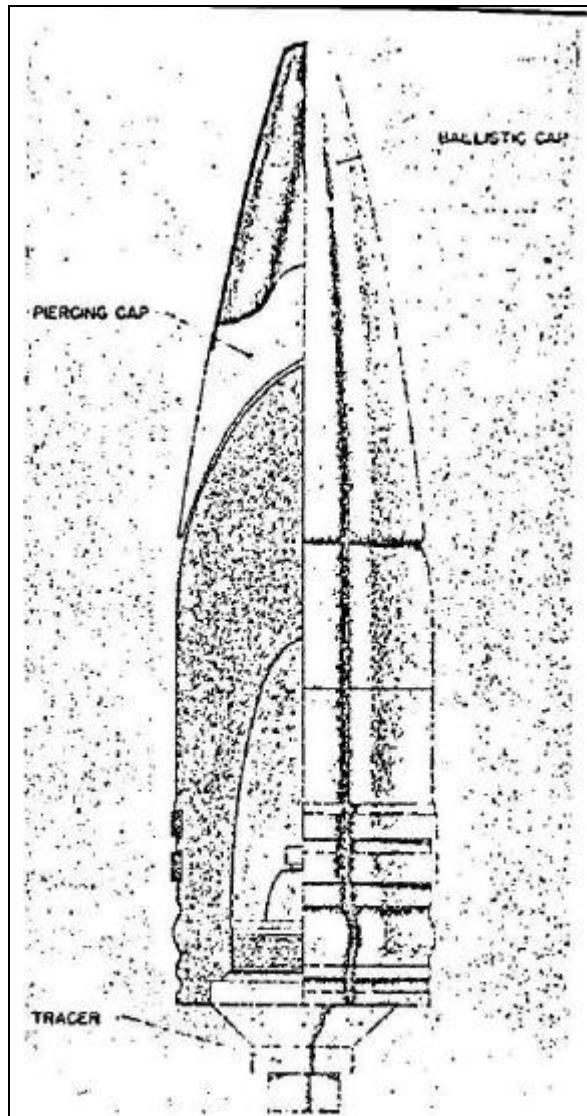


Figure 429—A. P. C. Projectile for A. A. Gun 18,  
88-mm Pzgr. Patr. m. Bd. Z.

**A. P. C. PROJECTILE FOR A. A. GUN 18,  
88-MM**

**GERMAN NOMENCLATURE:** Pzgr. Patr. m. Bd. Z. (Panzergranate Patrone mit Boden Zunder). (See fig. 429.)

**EMPLOYMENT:**

- 8.8-cm Flak 18 (Flugabwehrkanone 18), Anti-aircraft Gun 18.
- 8.8-cm Flak 36 (Flugabwehrkanone 36), Anti-aircraft Gun 36.
- 8.8-cm Flak 37 (Flugabwehrkanone 37), Anti-aircraft Gun 37.

**COMPLETE ROUND:**

- 34.25 inches, over-all length.
- 35.9 pounds, total weight.

**PROJECTILE painted black:**

- 13.25 inches, over-all length.
- 0.469 inch, width of bimetallic rotating bands.
- Two, number of rotating bands.
- 3.437 inches, diameter of base.
- 20.75 pounds, total weight.
- 5.5 ounces, weight of bursting charge.
- TNT/WAX, type of bursting charge.
- Tracer is present in fuze.

**CARTRIDGE CASE (German nomenclature 6347 (fixed)):**

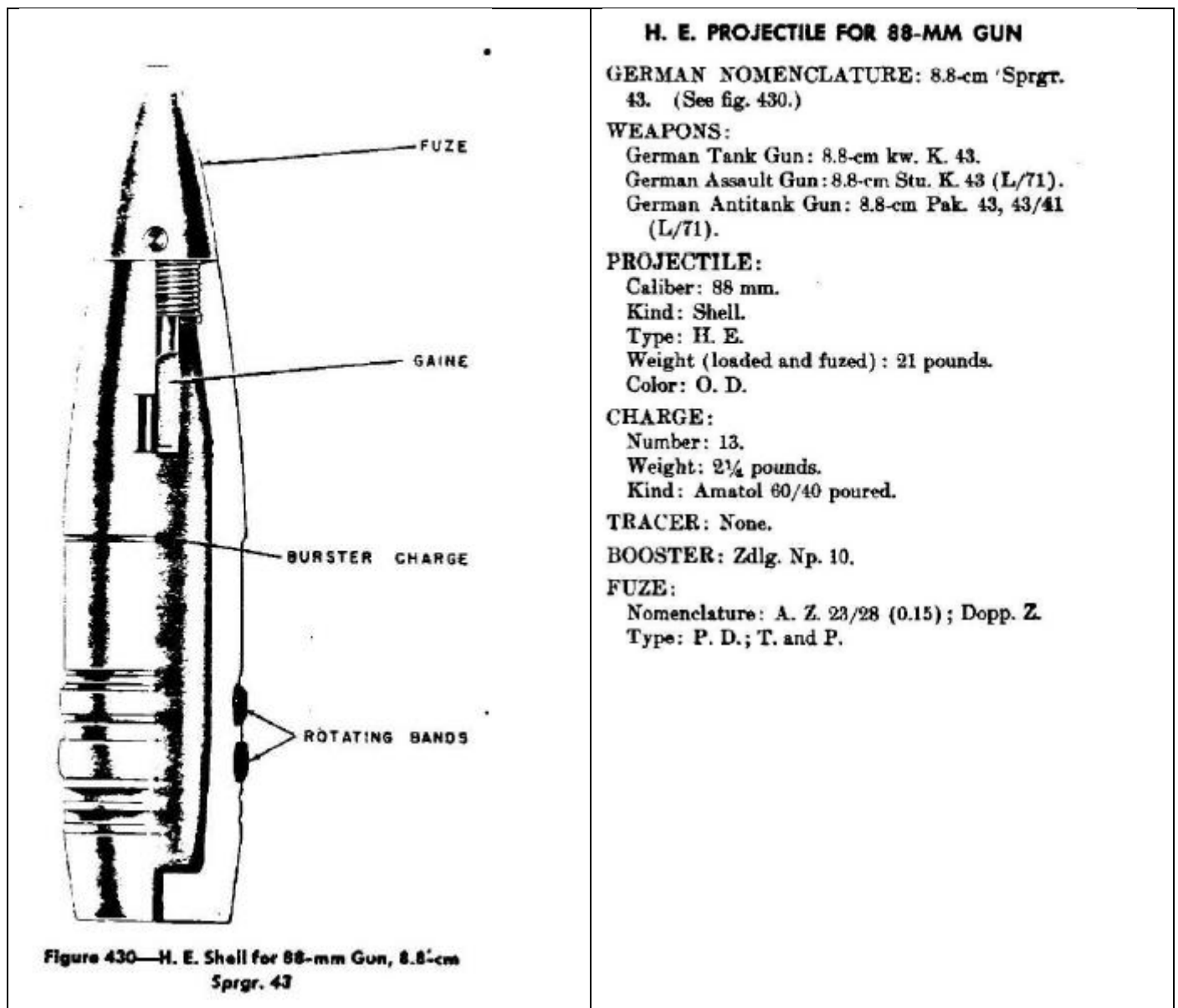
- 22.4 inches, over-all length.
- 3.625 inches, diameter of neck.
- 3.812 inches, diameter of shoulder.
- 4.02 inches, diameter of base.
- 5.65 pounds, weight of propellant.
- Tubular Diglycol, type of propellant.

**FUZE:** Base detonating fuze—Bd. Z. f. 8.8-cm.

**PACKAGING:** Three rounds to a wicker basket.

One round to a metal container.

**REMARKS:** This projectile is the large cavity design of German A. P. C.



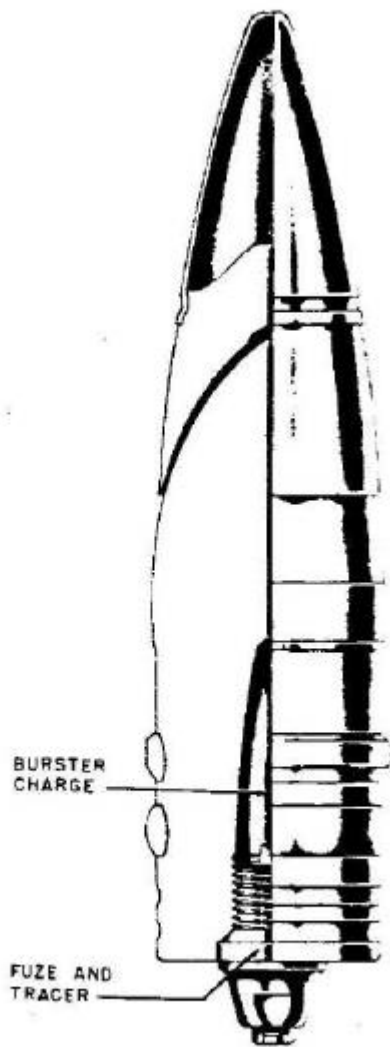


Figure 431—A. P. Projectile for 88-mm Gun, 8.8-cm Pzgr. 39/43

### A. P. PROJECTILE FOR 88-MM GUN

GERMAN NOMENCLATURE: 8.8-cm Pzgr. 39/43. (See fig. 431.)

#### WEAPONS:

German Antitank Gun: 8.8-cm Pak. 43.

German Antitank Gun: 8.8-cm Pak. 43/41 (L/71).

German Tank Gun: 8.8-cm Kw. K. 43.

German Assault Gun: 8.8-cm Stuka 43 (L/71).

#### PROJECTILE:

Caliber: 88 mm.

Kind: Shell.

Type: Armor piercing.

Weight (loaded and fuzed): 22.8 pounds.

Color: Black with white nose.

#### CHARGE:

Number: 92.

Weight: 0.3 pound.

Kind: Cyclonite/wax (990/10) pressed in blocks wrapped in waxed paper.

TRACER: Yes, in fuze.

BOOSTER: Integral with fuze.

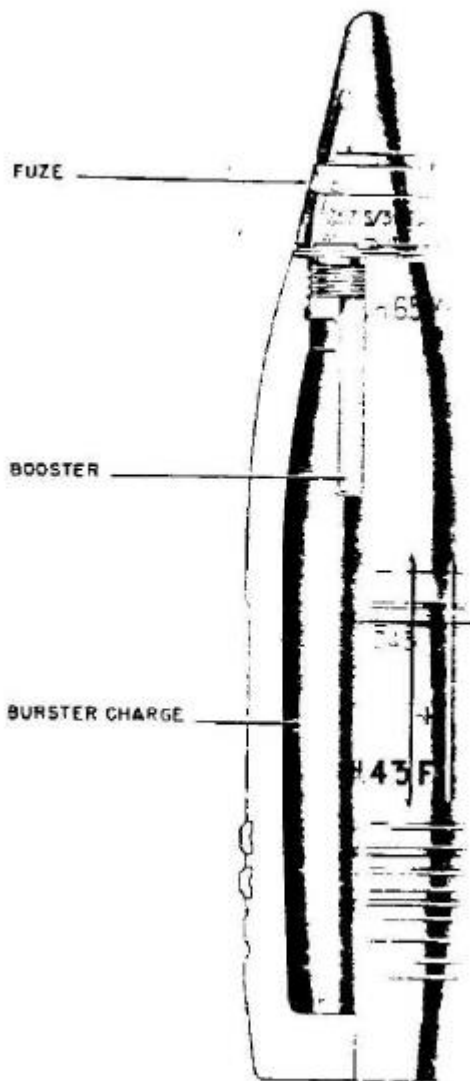
#### FUZE:

Nomenclature: Bd. Z. 5127.

Type: B. D.



**GERMAN NOMENCLATURE:** 8.8-cm Sprgr.  
Flak 41. (See fig. 432.)



**Figure 432—H. E. Projectile for 88-mm Gun,  
8.8-cm Sprgr. Flak 41**

**WEAPONS:**

German A. A. Gun: 8.8-cm Flak 41.

**PROJECTILE:**

Caliber: 88 mm.

Kind: Shell.

Type: H. E.

Weight (loaded and fuzed): 20½ pounds.

Color: Yellow with black markings.

**CHARGE:**

Number: 13.

Weight: 1½ pounds.

Kind: Amatol 60/40 poured.

**TRACER:** None.

**BOOSTER:** Np 10.

**FUZE:**

Nomenclature: Zt. Z. S/30 Fg 1.

Type: Time.

**REMARKS:**

Note 1.—FES rotating band.

Note 2.—Controlled fragmentation.

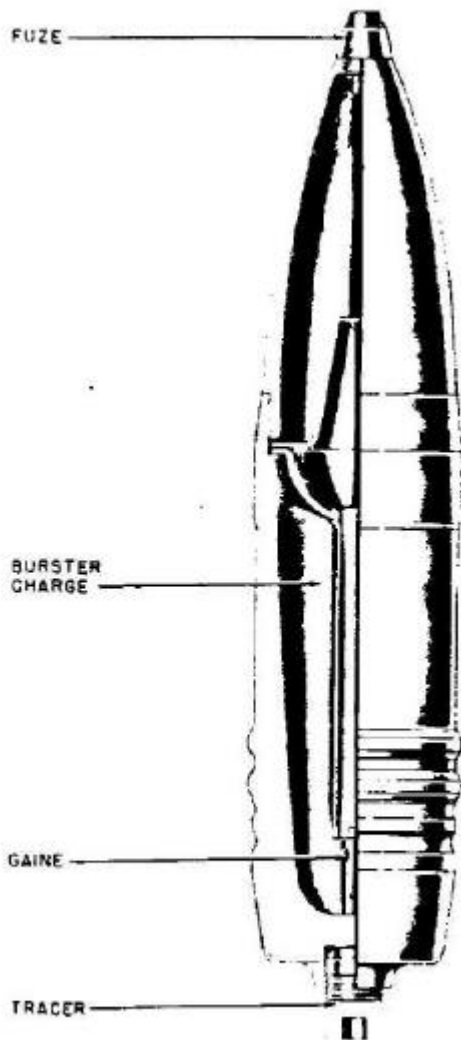


Figure 433—Hollow Charge Projectile for 88-mm Tank Gun, 8.8-cm Gr. 39 H.L.

**HOLLOW CHARGE PROJECTILE FOR 88-MM TANK GUN**

**GERMAN NOMENCLATURE:** 8.8-cm Gr. 39 H. L. (See fig. 433.)

**WEAPONS:**

German Tank Gun: 8.8-cm Kw. K 36 (L/56).

**PROJECTILE:**

Caliber: 88 mm.

Kind: Shell.

Type: Hollow charge.

Weight (loaded and fuzed): 17 pounds.

Color: O. D.

**CHARGE:-**

Number: 91.

Weight: 2 pounds.

Kind: Cyclonite/wax (95/5) pressed in blocks wrapped in waxed paper.

**TRACER:** Yes.

**BOOSTER:** None.

**FUZE:**

Nomenclature: A. Z. 38.

Type: P. D.

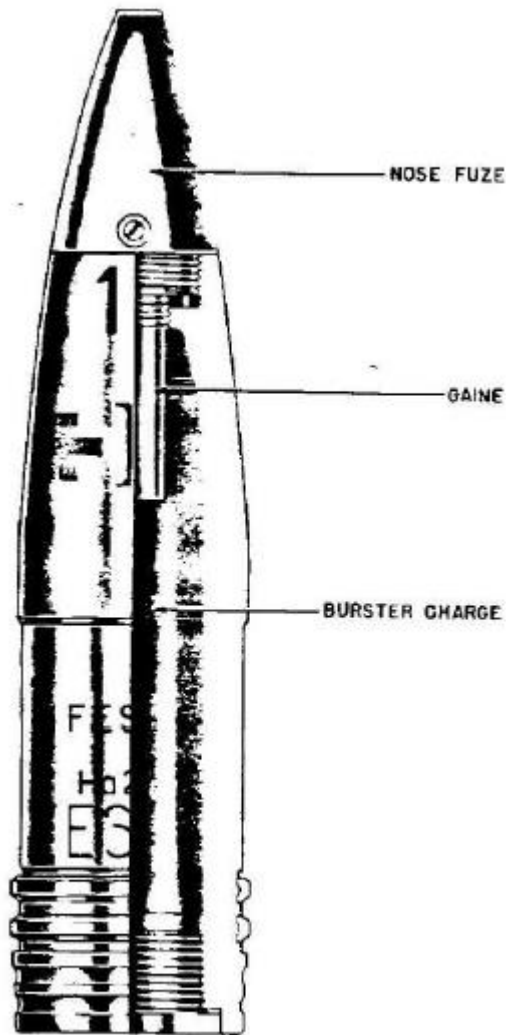


Figure 434—H. E. Shell for 88-mm Gun, 8.8-cm Sprgr. L/4.5

### H. E. PROJECTILE FOR 88-MM GUN

GERMAN NOMENCLATURE: 8.8-cm Sprgr., L/4.5. (See fig. 434.)

#### WEAPONS:

German Tank Gun: 8.8-cm Kw. K 36.  
German A. A. gun: 8.8-cm Flak 18.  
German A. A. Gun: 8.8-cm Flak 36.  
German A. A. Gun: 8.8-cm Flak 37.  
Modified Russian A. A. Gun: 18.5/8.8-cm Flak 39 (r).

#### PROJECTILE:

Caliber: 88 mm.  
Kind: Shell.

Type: H. E.

Weight (loaded and fuzed): 20.5 pounds.

Color: Yellow.

#### CHARGE:

Number: 13.

Weight: 2 pounds.

Kind: Amatol 60/40 poured.

TRACER: None.

BOOSTER: Wlf Np 10.

#### FUZE:

Nomenclature: A. Z. 23/28.

Type: P. D.

#### REMARKS:

NOTE 1.—FES rotating band.



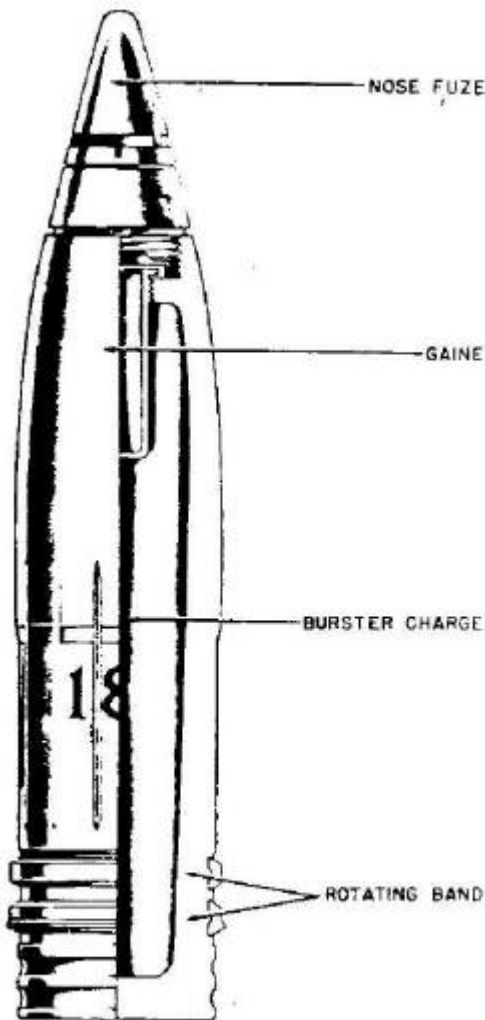


Figure 435—High Explosive Projectile for 88-mm A. A. Guns, 8.8-cm Sprgr. L/4.5 Zt.Z.

**GERMAN NOMENCLATURE:** 8.8-cm Sprgr. L/4.5 Zt. Z (Controlled Fragmentation). (See fig. 435.)

**WEAPONS:**

German Tank Gun: 8.8-cm Kw. K. 36 (L/56).

German A. A. Gun (Modified Russian): 8.5/8.8-cm Flak 39 (r).

German A. A. Guns 8.8-cm Flak 18. 36, 37.

**PROJECTILE:**

Caliber: 88 mm.

Kind: Shell.

Type: H. E.

Weight (loaded and fuzed): 21 pounds.

Color: Yellow.

**CHARGE:**

Number: 13.

Weight: 2 pounds.

Kind: Amatol 60/40 poured.

**TRACER:** None.

**BOOSTER:** Gr. Zdlg. C/98 Np.

**FUZE:**

Nomenclature: Zt. Z. S/30.

Type: Time.

**REMARKS:**

NOTE 1.—Shell has a circumferential groove just to rear of bourrelet, and 15 longitudinal grooves, equally spaced, extending from rotating band to just forward of bourrelet. Assumed purpose of grooves is to control fragmentation. Grooves may vary slightly between different shells.

NOTE 2.—Rotating bands for this shell may be KPS or soft steel (FES), with two different contours.

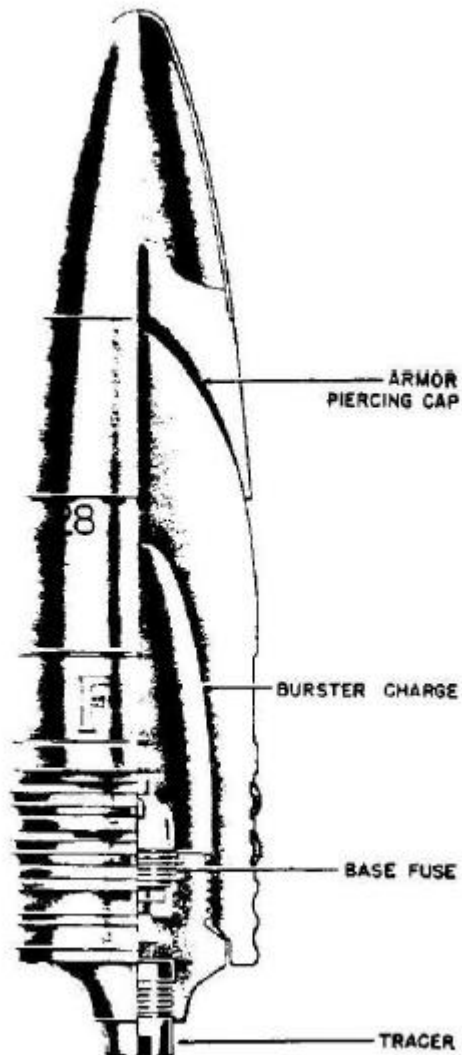


Figure 436—Armor-Piercing Projectile for 88-mm Gun, 8.8-cm Pzgr.

**ARMOR PIERCING PROJECTILE FOR 88-MM GUN**

**GERMAN NOMENCLATURE:** 8.8-cm Pzgr.  
(See fig. 436.)

**WEAPONS:**

German A. A. Guns: 8.8-cm Flak 18, 36, 37.  
German A. A. Gun (Modified Russian) 8.5/8.8-cm Flak 39 (r).

**PROJECTILE:**

Caliber: 88 mm.  
Kind: Projectile.  
Type: Armor-piercing.  
Weight: 21 pounds (loaded and fuzed).  
Color: Black with red markings.

**CHARGE:**

Number: 28.  
Weight:  $\frac{1}{3}$  pound (approximately).  
Kind: TNT/WAX (90/10) and PETN/WAX (90/10) pressed in blocks in aluminum container.

**TRACER:** Yes, but no number.

**BOOSTER:** Integral with charge.

**FUZE:**

Nomenclature: Bd. Z. f. 8.8-cm Pzgr.  
Type: B. D.

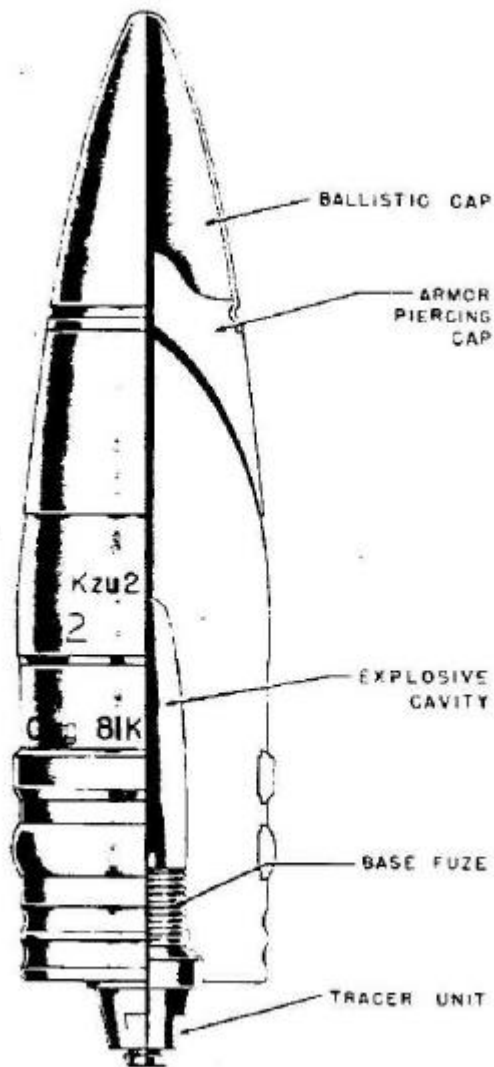


Figure 437—A. P. Projectile for 88-mm Gun, 8.8-cm Pzgr. 39/1

**A. P. PROJECTILE FOR 88-MM A. A. GUN**  
**GERMAN NOMENCLATURE: 8.8-cm Pzgr. 39/1. (See fig. 437.)**

**WEAPONS:**

- German Antitank Gun: 8.8-cm Pak. 43.
- German Antitank Gun (self propelled): 8.8-cm Pak. 43/41 (L/71).
- German Tank Gun: 8.8-cm Kw. K. 43.
- German Antitank Gun (Self propelled): 8.8-cm Stu. K. 43 (L/71).

**PROJECTILE:**

- Caliber: 88 mm.
- Kind: Projectile.
- Type: A. P.

Weight: 22½ pounds (loaded and fuze).  
Color: Black with red markings and white tip at nose.

**CHARGE:**

- Number: 92.
- Weight: ¼ pound.
- Kind: Cyclonite/wax (90/10) pressed in blocks wrapped in waxed paper.

**TRACER:** Yes. Marked "L".

**BOOSTER:** Integral with charge.

**FUZE:**

- Nomenclature: Bd. Z. 5127.
- Type: B. D.

**REMARKS:** FES rotating band.



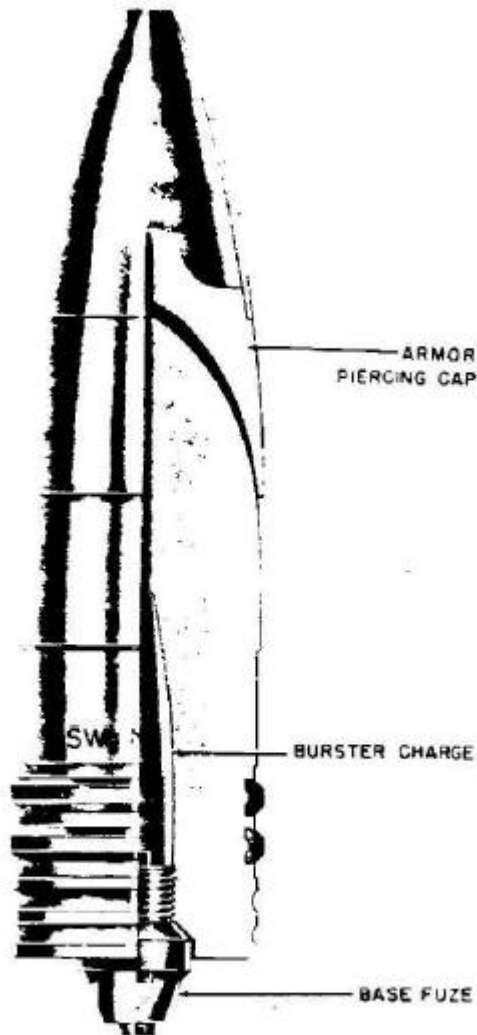


Figure 438—A. P. Projectile for 88-mm Gun, 8.8-cm Pzgr. 39

**ARMOR PIERCING PROJECTILE FOR 88-MM GUNS**

**GERMAN NOMENCLATURE:** 8.8-cm Pzgr. 39. (See fig. 438.)

**WEAPONS:**

German A. A. Guns: 8.8-cm Flak 18, 36, 37.

German Tank Gun: 8.8-cm Kw. K. 36 (L/56).

German A. A. Gun (Modified Russian): 8.5/8.8-cm Flak 39 (r).

**PROJECTILE:**

Caliber: 88 mm.

Kind: Projectile.

Type: Armor-piercing.

Weight: 22 pounds (loaded and fuzed).

Color: Black with red markings.

**CHARGE:**

Number: 92.

Weight: ¼ pound.

Kind: Cyclonite/wax (90/10) pressed in blocks wrapped in wax paper.

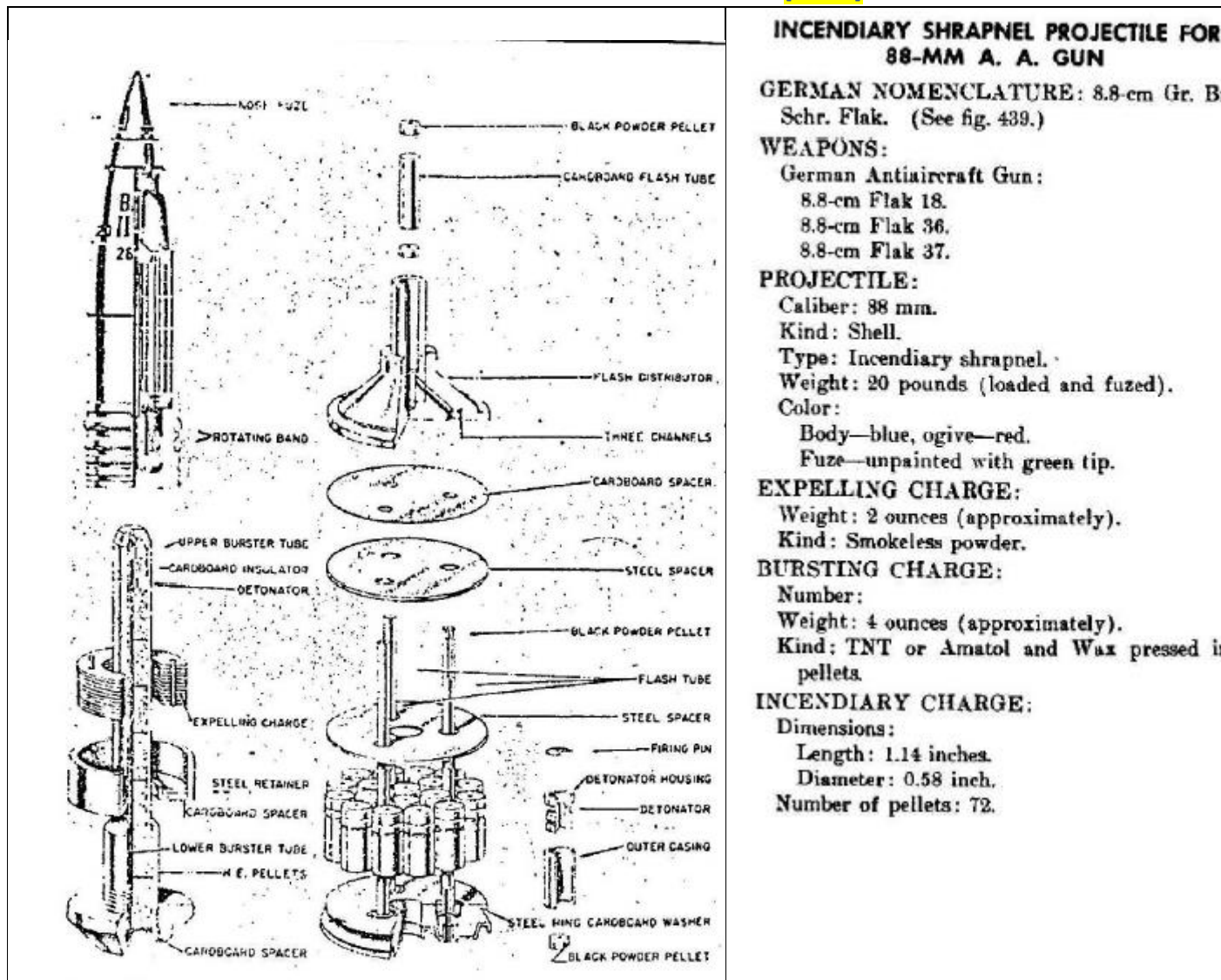
**TRACER:** Yes, marked "AB."

**BOOSTER:** Integral with charge.

**FUZE:**

Nomenclature: Bd. Z. 5103 or Bd. Z. 5103/1.

Type: B. D.



**INCENDIARY SHRAPNEL PROJECTILE FOR 88-MM A. A. GUN**

**GERMAN NOMENCLATURE:** 8.8-cm Gr. B Schr. Flak. (See fig. 439.)

**WEAPONS:**  
 German Antiaircraft Gun:  
 8.8-cm Flak 18.  
 8.8-cm Flak 36.  
 8.8-cm Flak 37.

**PROJECTILE:**  
 Caliber: 88 mm.  
 Kind: Shell.  
 Type: Incendiary shrapnel.  
 Weight: 20 pounds (loaded and fuzed).  
 Color:  
 Body—blue, ogive—red.  
 Fuze—unpainted with green tip.

**EXPPELLING CHARGE:**  
 Weight: 2 ounces (approximately).  
 Kind: Smokeless powder.

**BURSTING CHARGE:**  
 Number:  
 Weight: 4 ounces (approximately).  
 Kind: TNT or Amatol and Wax pressed in pellets.

**INCENDIARY CHARGE:**  
 Dimensions:  
 Length: 1.14 inches.  
 Diameter: 0.58 inch.  
 Number of pellets: 72.

Figure 439—Incendiary Shrapnel Shell for 88-mm A. A. Gun, 8.8-cm Gr. Br. Schr. Flak

**Composition:**  
 Barium nitrate, 48 percent.  
 Magnesium alloy, 24.6 percent.  
 Aluminum alloy, 24.6 percent.  
 Acid insoluble, 2.8 percent.

**TRACER:** None.  
**BOOSTER:** None.  
**FUZE:**  
 Nomenclature: Zt. Z. S/30 Kurz.  
 Type: Time.