= 28 cm SK L / 40 gun =

The 28 cm SK L / 40 was a German naval gun that was used in World War I and World War II by two classes of German pre @-@ dreadnought battleships . It was the first large German naval gun to use a horizontal sliding block breech design rather than the interrupted screw more commonly used in guns of this size ; it was also the last large German naval gun to load all its propellant in a single case . It was adapted for land service after the pre @-@ dreadnoughts began to be disarmed beginning in 1916 . Four guns served on coast defense duties on the island of Wangerooge during World War I on fixed mounts . During World War II these guns were transferred to Brest . Others were used in railway mountings in both World Wars .

= = Description = =

The 28 cm SK L / 40 gun weighed 45 @.@ 3 tonnes (44 @.@ 6 long tons ; 49 @.@ 9 short tons) , had an overall length of 11 @.@ 2 meters (36 ft 9 in) and its bore length was 10 @.@ 401 meters (34 ft 1 @.@ 5 in) . Although designated as 28 cm (11 in) , its actual caliber was 28 @.@ 3 centimeters (11 @.@ 1 in) . Early guns , possibly designated as the 28 cm K L / 40 , were built using the older hoop method of construction , but later guns used more modern built @-@ up techniques with an inner gun tube and several outer jackets . It was the first large German naval gun to use Krupp 's horizontal sliding block , or " wedge " , as it is sometimes referred to , breech design rather than the interrupted screw used commonly used in heavy guns of other nations . This required that the propellant charge be loaded in a metal case (usually brass) which provides obduration ? it seals the breech to prevent escape of the expanding propellant gas . The 28 cm SK L / 40 was the last large German naval gun to load all its propellant in a single case ; later guns required a fore charge in addition to the main charge in the cartridge case .

= = = Naval turrets = = =

These guns were used in twin gun turrets as the main armament of the Braunschweig- and Deutschland @-@ class pre @-@ dreadnoughts . The Drh.L. C / 01 turret was used by the Braunschweig- and Deutschland @-@ class battleships , one twin gun turret at each end . Its guns could depress 4 ° and elevate 30 ° and could traverse about 150 ° on either side of the centerline . It could fire a 240 kg (530 lb) L / 2 @.@ 6 armor @-@ piercing shell to a maximum range of 18 @,@ 830 meters (20 @,@ 590 yd) at maximum elevation . These ships stowed 85 rounds per gun . The rate of fire for both types of turrets was about 2 rounds per minute .

= = = Land mountings = = =

Beginning in 1916 some guns were adapted for use ashore . One obvious change made for land service was the placement of a large counterweight just forward of the trunnions to counteract the preponderance of weight towards the breech . This , although heavy , was simpler than adding equilibrators to perform the same function . It was fitted with a hydro @-@ pneumatic system to absorb the recoil from firing and to return the gun to its firing position , ready for the next round . The first four guns were placed in Bettungsschiessgerüst (firing platform) (BSG) mountings in 1917 for coast defense duties as part of " Batterie Graf Spee " on the island of Wangerooge . These were a semi @-@ portable mount that could be emplaced anywhere after several weeks of labor to prepare the position . It rotated on a pivot at the front of the mount and the rear was supported by rollers resting on a semicircular rail and was sometimes equipped with a gun shield . The gun 's rate of fire in these mounts was about one round per five minutes .

Other guns from the battleships were put on railroad mountings as the 28 cm SK L / 40 " Bruno " and used as railway guns .

= = = Ammunition = = =

Before and during World War I , the gun used about 73 kg (161 lb) of RP C / 12 (Rohr @-@ Pulver ? tube powder) propellant that was a mix of nitrocellulose , nitroglycerin and small amounts of other additives with a calorific value of 950 and an uncooled explosion temperature of 2975 kelvins . In World War II , it was replaced by RP C / 38 that substituted diethylene glucol dinitrite for the nitroglycerine which had a calorific value of 810 and an uncooled explosion temperature of 2495 K. This had the virtue of being harder to ignite , lessening the risk of a catastrophic fire or explosion , and reduced the erosive effects of the gaseous propellant on the gun 's bore . Sources differ on the amount of RP C / 38 used by the gun during World War II ; Campbell says 70 kg (154 lb) , but Hogg says 67 kg (148 lb) .

These guns mounted fired two types of shells during World War I : armor @-@ piercing (AP) L / 2 @.@ 6 and high explosive (HE) L / 2 @.@ 9 types . During World War II , the guns fired a wider variety of shells , including high explosive L / 2 @.@ 9 , L / 4 @.@ 3 , and L / 4 @.@ 1 shells and a heavy HE L / 4 @.@ 4 projectile ; the AP and HE rounds weighed 240 kg (529 lb) , while the heavy projectile weighed 284 kg (626 lb) .

Due to the greater elevation available in the BSG mount , the Sprgr L / 4 @.@ 4 m . Bdz. u . Kz . (mit Haube) had a maximum range of 27 @,@ 750 m (30 @,@ 350 yd) .

= = = = Armor penetration = = = =

One source credits the Pzgr L / 2 @.@ 6 shell with the ability to penetrate 160 millimeters (6 @.@ 3 in) of side armor at 12 @,@ 000 meters (13 @,@ 000 yd) .

= = History = =

= = = Naval guns = = =

The Treaty of Versailles allowed the Germans to retain four pre @-@ dreadnoughts , although only two , Schleswig @-@ Holstein and Schlesien , were rearmed with their original 28 cm SK L / 40 guns . The former fired the first shots of World War II when she began bombarding Polish defenses on the Westerplatte on 1 September 1939 while the latter also participated in the Polish Campaign . However both ships were relegated to training duties shortly afterwards .

= = = Coast defense guns = = =

Some of the 28 cm SK L / 40 guns were transferred to the German Army from the Navy (Kaiserliche Marine) when the pre @-@ dreadnoughts began to be disarmed and relegated to training duties in 1916 after the Battle of Jutland had proved that they were not suitable for contemporary naval combat . The first four guns , formerly used on SMS Lothringen , were placed in BSG mountings in 1917 for coast defense duty as part of " Batterie Graf Spee " on the island of Wangerooge .

During World War II only seven guns were used on as coast defense duties on BSG mountings . The four guns of " Batterie Graf Spee " had survived World War I and were transferred to Brest , France in 1940 .

= = = Railway guns = = =

Approximately twenty other guns from the battleships were put on railroad mountings as the 28 cm SK L / 40 " Bruno " and used as railway guns . A number were kept by the Kaiserliche Marine and used on coastal defense duties , but the others were used by the Heer in more traditional roles as long @-@ range heavy artillery . Surviving weapons were used by the Germans in World War II as coast defense duties .