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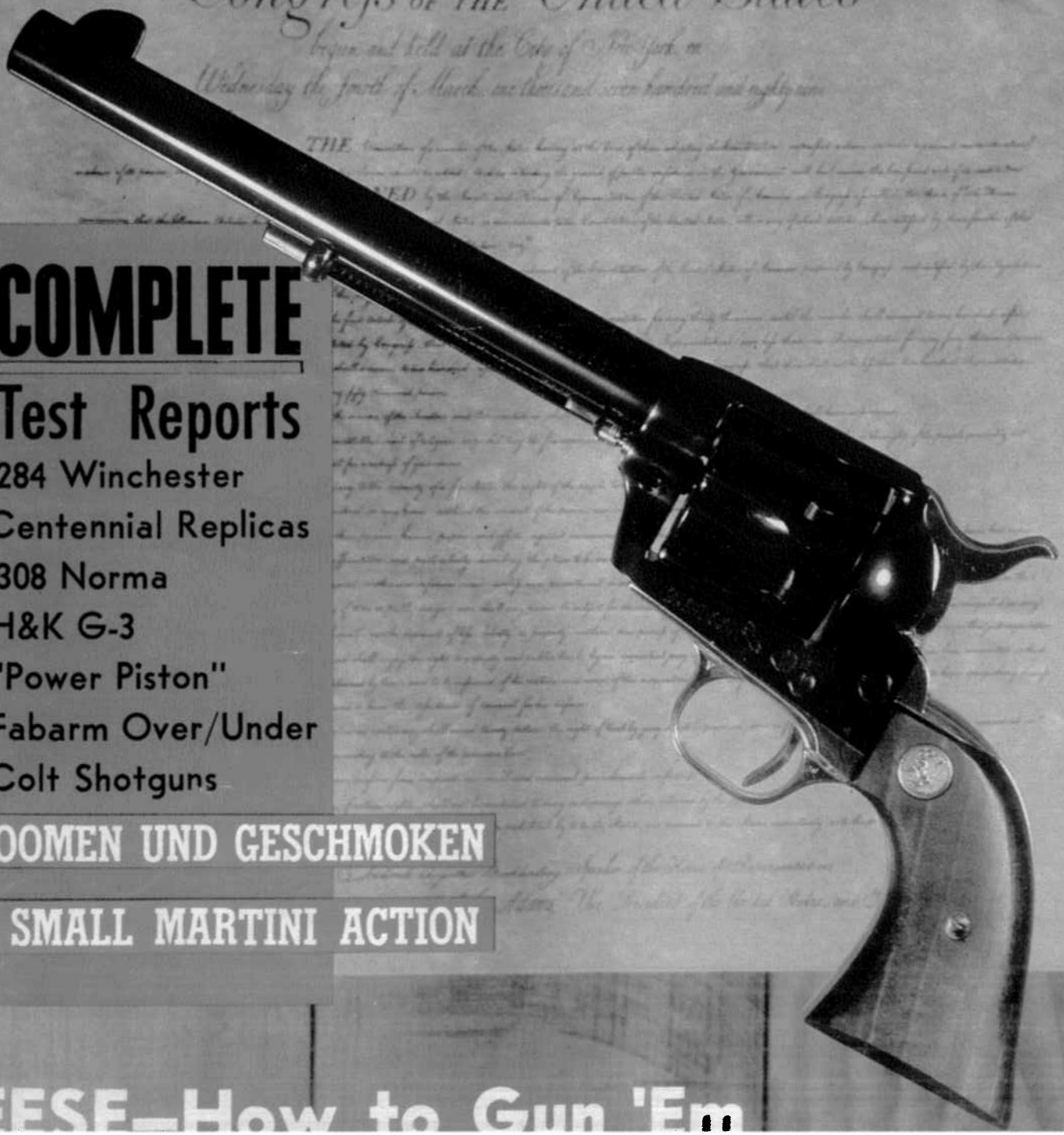

7 COMPLETE Test Reports

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THE SMALL MARTINI ACTION

GEESE—How to Gun 'Em

BY CAPT. GEORGE C. NONTE JR.

TECHNICAL EDITOR

A full report on the commercial version of West Germany's assault rifle--the CETME

NONTE TESTS THE H&K G-3

HITLER FOULED things up. The more we learn about the latter days of World War II, the more we realize that without Mr. Schicklegruber the German war machine might have gone on longer than it did.

The St.G. 45M is a good example. Fortunately, Hitler did not press for production of this fine military rifle.

Back in the latter days of the war, E. Vorgrimmler, of the famed Mauser Werke, came up with an unusual hesitation-locked design for an economically produced military automatic rifle. But it never got into German production. A few years later, it appeared (along with Herr Vorgrimmler) in Spain as the CETME Assault Rifle.

Chambered for a pair of special CETME 7.62mm and 7.92mm cartridges, it was tested by various countries but not adopted. The cartridges utilized were very long, sharply pointed, aluminum bullets which were partially covered with copper alloy jackets to engage the rifling. They were necessarily light and possessed marginal energy.

Standardization of the 7.62mm NATO cartridge by western powers killed any future the CETMES may have had, and the gun was redesigned for the NATO round. It was eventually adopted in this form as the standard Spanish infantry rifle.

West Germany, in the market for a modern assault rifle to arm its growing army, tested a number of new designs. These included the FN and the CETME. The CETME won out after extensive field tests and is now manufactured for the German government by Heckler & Koch, Oberndorf/Neckar. Thus, oddly enough, the old StG. 45M comes home almost 20 years later to the country of its origin and to the site (Oberndorf) of the great Mauser plant that spawned it.

The West German government has allowed Heckler & Koch to manufacture a limited quantity of these rifles for commercial sales. It is designated the H&K G-3 and has been redesigned for semi-automatic fire only. Aside from this change, it is identical to the standard selective-fire model used by the Germans.

Basically, the H&K G-3 is a fixed barrel, delayed blow-back, reciprocating bolt,

detachable box magazine, semi-automatic military rifle with raised line of sight and two-piece stock. Basic structures—receiver, back plate, loading mechanism housing, trigger housing and magazine—are welded assemblies composed of steel stampings.

Many other small parts are stampings and castings to reduce production costs. Less than 20 parts require any machining. Wire springs are used throughout. Field disassembly is accomplished with only a loaded (or dummy) cartridge.

A Test Report

The G-3 action is an unusual choice for a full-power military cartridge because it is not positively locked in the usual meaning of the term. Locking is by two small rollers housed in the bolt head, cammed outward into recesses in the barrel extension. The rollers are held in this position by a wedge-shaped locking piece attached to the bolt carrier riding inside the hollow bolt.

This sytem functions as follows: At the instant of firing, the rollers are held solidly in barrel extension recesses by the locking piece, locking the bolt. As chamber pressure builds up, the case head exerts pressure on the bolt face, transmitting this thrust to the rollers. The rollers seat on inclined planes and tend to move rearward and into the bolt under this pressure, but are prevented from doing so immediately by the locking piece which sticks down between them.

The shape of this piece forms cam surfaces with a specific relationship to inclined planes in the barrel extension. This relationship is such that pressure on the bolt causes the rollers first to force the locking piece rearward, which then leaves a path clear by which the rollers move rearward and into the bolt. Once the rollers have cleared the barrel extension recesses, the bolt and carrier are free to move back.

Since the locking piece is attached to the heavy bolt carrier, considerable inertia must be overcome before the rollers are free. The carrier must move approximately 3/16 to 1/4 inch before the bolt can unlock. Overcoming the resistance of the various planes, movement of the rollers, locking piece and carrier consume sufficient time for the bullet to leave the barrel before the bolt is free to travel rearward. Residual chamber pressures and the inertia of the already moving carrier supply energy for extraction, cocking, ejection and compression of the recoil spring.

This type of action provides no slow starting primary extraction to loosen the case in the chamber. The empty case is literally jerked from the chamber while residual pressure is still fairly high. Unless compensation for this rough treatment is provided, cases are likely to develop torn-off rims and separations. The CETME design overcomes this by the use of a fluted chamber.

Longitudinal grooves are formed in the chamber walls. They are deepest at the neck, fading out completely about 5/16 inches from the case rim. Powder gas flows back along these grooves to form

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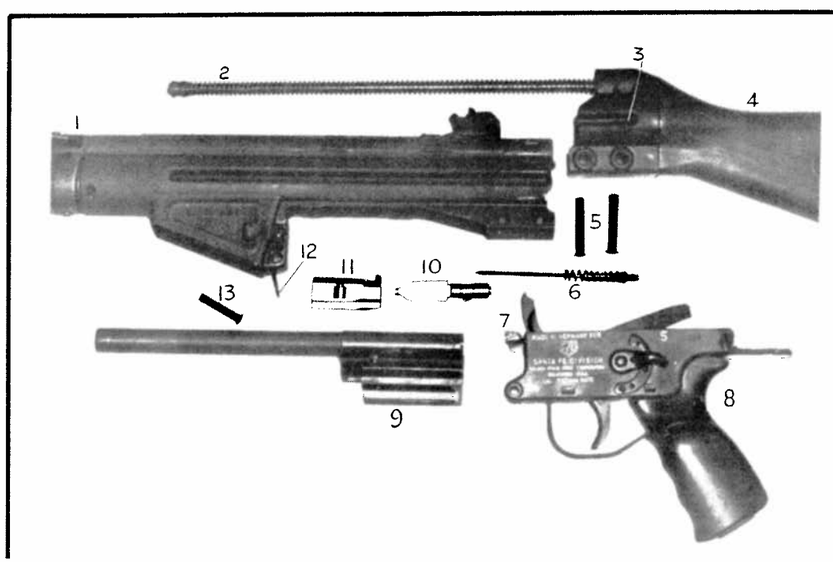

1. Receiver
2. Recoil spring
3. Back plate
4. Butt stock
5. Back plate retaining pins
6. Firing pin and spring
7. Hammer
8. Trigger housing group
9. Bolt carrier
10. Locking piece
11. Bolt
12. Magazine catch
13. Trigger housing retaining pin

The H&K G-3

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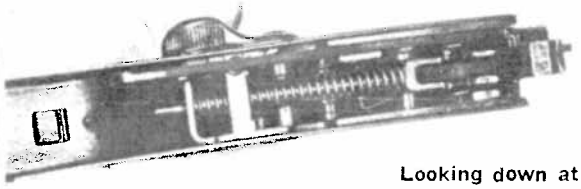
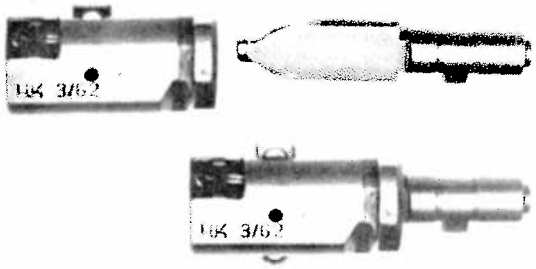


Looking down at the G-3 trigger housing group, hammer forward. Note extensive use of stampings, springs.



Above: Bolt with locking piece withdrawn, bolt retracted. Below: locking piece forward, rollers in.

Cases fired from G-3. Two on left are commercial .308, right are military. Military failed to clear gun. Note deep engraving.

As sold in the U.S., the G-3 is marked specifically for Golden State Arms. Ammo is U.S. tracer.

a high pressure gas cushion between the case and chamber walls. No gas actually escapes into the action. This prevents the case from clinging tightly to the walls, as happens with smooth chambers. It also reduces the strain of extraction on the case, allowing so-called "power extraction" without case failure.

The G-3 has 12 such flutes and the fired cases are clearly marked by them. Cases of a specific hardness are required for fluted chambers. Harder cases will function well, but those softer than intended will flow out into the flutes in spite of the gas cushion, causing failures to extract or short recoil malfunctions. Soft cases may be used in an emergency by oiling them lightly. Therefore, this type of design requires more exacting ammunition manufacture.

Designs providing positively locked actions and slow initial extraction are much more tolerant of variations in pressures and case characteristics. Both the M14 rifle and M60 machine gun in use by the U. S. armed forces possess both the above desired features.

The G-3 has a few other features not often encountered. A tube projects forward of the receiver, above the barrel, looking like a conventional top-mounted gas cylinder. It houses an operating handle attached to a tube which contacts the front of the recoil spring. The handle protrudes through a slot in the left side of this tube and is held folded down against the tube by a spring and detent. The action is opened by unfolding the handle and pulling it to the rear with one's left hand.

If it is desired to lock the action open, the handle is turned into a notch at the rear limit of its travel. Otherwise, allow the handle to go free, and the recoil spring will drive carrier bolt forward into battery. During firing, the handle stays at rest in its folded position. There is no device to automatically hold the bolt open when the last round has been fired.

The front sight is of the hooded type and is mounted on the barrel at the front of the tube housing the handle. A rear sight with an open 100-meter battle sight and apertures for 200, 300, and 400 meters is fitted to the upper rear of the receiver. Zeroing adjustment for windage is provided by Phillips head screws. Rotating the sight head allows any of the four elevation settings to be used, and a spring detent holds them in place.

Barrel is conventional, round, with four grooves, right hand, approximately 12-inch twist. A modified prong-type flash suppressor is screwed on the muzzle, held in place by a wire spring detent, easily removed by hand. Various military accessories, such as blank adapter, rifle grenade and bayonet, may be fitted to the muzzle.

The G-3 was shot extensively on our local ranges with both military 7.62mm and commercial .308 Winchester ammunition. Accuracy was adequate for normal military use by today's standards. At 50 yards, fast aimed semi-automatic fire produced 10 round groups of 3 inches. Firing 20 aimed rounds as rapidly as possible gave 4½-inch groups.

This exercise causes the slender barrel to get quite hot, but the tubular wood fore-end prevents any discomfort to the shooter. At 165 yards, with U.S. military ammo, we were able to get fairly consistent hits on one-gallon cans, using the 200-meter aperture, and holding just a wee bit high.

Functioning was excellent with 150- and 180-grain commercial sporting loads, and with several similar handloads. Ejection was violent with 180-grain loads, the spent cases landing as far as 16 yards to the right front of the gun and rising ten feet or more in the air on their way. These cases were deeply dented by striking the front of the ejection port on their way out.

One lot of U.S. 7.62mm military ammunition caused many failures to eject. The cases appeared to be too soft for this type action and were very heavily marked by the fluting. Spraying oil down into filled magazines corrected this trouble quickly. So long as the ammo was oiled lightly, functioning was perfect, though messy.

Some 400 rounds were fired, during which time the gun ingested a fair amount of sand, dirt and dust. Though no cleaning was done, it continued to function correctly, except with the one lot of ammunition.

Workmanship is good, the stampings being of better quality than similar arms. It will digest handloads without difficulty, though I suspect that the fluted chamber and violent extraction will shorten case life. This should present no problems with once-fired military 7.62mm brass becoming plentiful. Cases formed from .30-06 brass function well, even though they vary dimensionally from the 7.62mm.

The G-3 is available from Golden State Arms, Dept ST, 386 Green St., Pasadena, Calif. The price is $225, including leather sling, instruction booklet and one magazine.