

FIREPOWER

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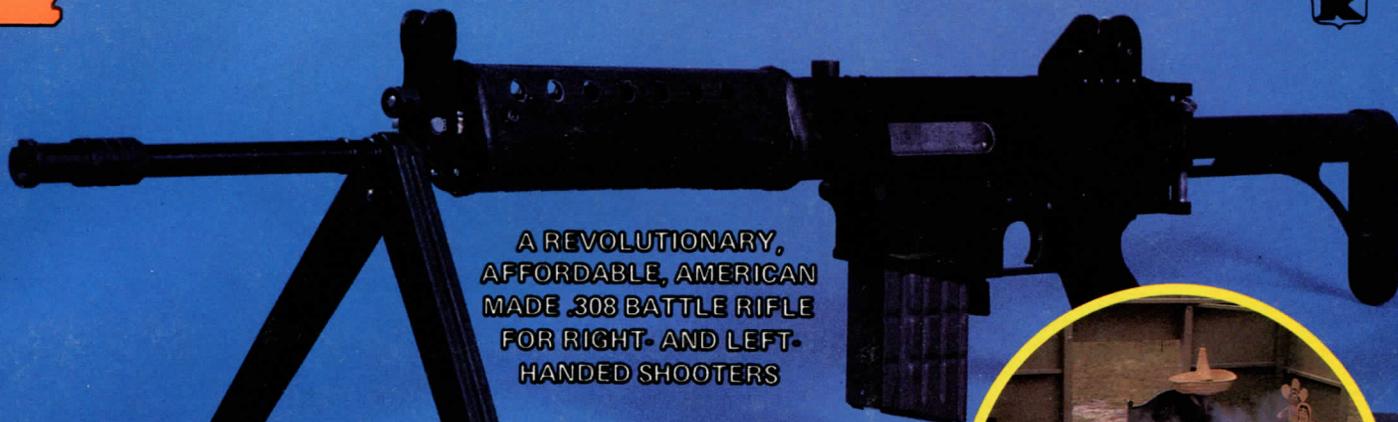
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**EXCLUSIVE
FIRST REPORT**

HAC-7 .308



A REVOLUTIONARY,
AFFORDABLE, AMERICAN
MADE .308 BATTLE RIFLE
FOR RIGHT- AND LEFT-
HANDED SHOOTERS

FULL AUTO:

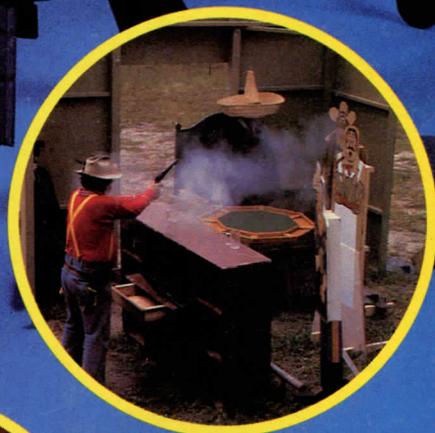
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(SEE INSIDE FRONT COVER)



HOLLOWAY ARMS'



HAC-7

A REVOLUTIONARY NEW .308 BATTLE RIFLE AVAILABLE IN RIGHT- AND LEFT-HANDED VERSIONS

By Gary Hill

The history and development of self-loading rifles and carbines during the last 50 years may be looked upon in retrospect as a time of intensive research and "team development" in the field of firearms design. The pressures and necessities for better weapons just prior to World War II had designers competing earnestly to have their designs accepted and produced. In some instances the team development concept, when coupled with unrealistic military demands, specifications, and official red tape, created delays in production and delivery of the finished weapons which affected the overall combat efficiency and performance of the units awaiting them. In other cases it appears that politics controlled whether or not some designs were accepted, even at the risk of denying acceptance of the better-designed weapon.

In the postwar years, firearms designers continued their quest in trying to find the perfectly balanced combination of ingredients necessary to produce the ideal infantry rifle. These years saw many new designs, all the way from those that were very good at the time to those which never seemed to fit in and which were doomed to failure and rejection from the start. Some designs were obsolete by the time they reached final production stages and were quickly left behind. As was the case with many of these weapons, the designers themselves never really understood the rigors, strain, and abuse inflicted upon weapons in intensive warfare. Their designs often reflected this lack of understanding, and the short life span of these weapons, proves the case. At times soldiers have abandoned their own weapons in favor of captured enemy

rifles or sub guns which functioned more reliably.

There were many other designers who did understand the realities of warfare and were able to incorporate their professional military armory training and experiences into their designs. Among these notables we find Garand, Schmeisser, Tokarev and Stoner. Others such as Johnson and Kalashnikov were able to draw upon their actual combat experiences in offering improved weapon designs.

With the great variety of weapons produced over the years, certain desirable features of individual mechanisms have been recognized relative to their reliability and function. When possible, these features have been combined and incorporated into newly designed and manufactured weapons. Some of these recent offerings have been over-engineered, the important features of simple and durable construction being replaced with complicated and expensively produced mechanisms. Most *FIREPOWER* readers will agree that after having spent a rather large sum of money to purchase one of these rifles, the last thing he wants is to have to worry about its having problems due to its "complicated mechanism". Often these weapons are used for defensive or survival purposes, and reliability must be a key feature. It was with this in mind that I was anxious to test and evaluate the new HAC-7 Battle Rifle introduced at the Fort Worth and Dallas Gun Show last November.

The HAC-7 is manufactured by a newcomer in the arms industry, Holloway Arms Company of Fort Worth, Texas. This rifle and its carbine version, the HAC-7C, are gas operated, 7.62x

51mm (.308) caliber pieces designed by Bob Holloway, president of H.A.C., in an effort to provide the best possible weapon by combining time-proven concepts with new, more user-oriented features. *Most importantly, they are available in both right- and left-hand actions.*

Holloway's involvement in this offering is a direct result of his many years of experience in active combat as a soldier in the U.S. Army Special Forces in Southeast Asia, and as a member of the Rhodesian Army in the post-Vietnam years. Holloway noted the deficiencies of the 5.56mm after extensive use, and felt the 7.62 NATO round would be a better choice for introduction in a new weapon. Having had the opportunity at various times to fire, and in many cases use, military weapons spanning half a century's production in combat, certain key features became apparent which he would note and later draw upon and use in combination with a few ideas of his own. His advanced training in weapons at the Special Forces Weapons School also helped him to analytically compare one gun to another, noting both the good and bad features of each.

Some references are already being made to the HAC-7 as the "American FN-FAL" in response to the HAC-7's general lines which resemble those of the legendary Belgian-made battle rifle. Recalling various modern and vintage weapons he had used previously, Holloway feels the FN is, without a doubt, the best balanced rifle ever. The carrying surfaces are orthopedically arranged in such a manner that the weapon "fits" very well. The HAC-7 reflects this configuration and is an extremely



With the general overall appearance of the HAC-7, it's no wonder it's already being referred to as the "AmericanFN". Developer Bob Holloway has served under many commanders, and has used many different weapons. In his own design he adopted what he thought were the best attributes of each.

comfortable weapon to hold and fire. Of special importance to Holloway, the gun had to be user maintainable, allowing it to be field stripped and taken down with a cartridge head as a wrench, with everything else being assembled with push pins so that no special tools would be necessary for field stripping. While this is a common feature on almost all combat shoulder weapons today, it is still one that shouldn't be overlooked in any new designs.

In designing the HAC-7 with the knowledge of the various mechanisms that he wanted to use, Holloway chose to abandon the 30-odd year old stamped sheet metal construction technique which we have become so accustomed to these days in favor of fully machined parts being produced on computer programmed and numerically controlled (NC) machinery. This type construction results in higher efficiency, a better quality control environment and lower manpower requirements, all of which reduce overhead and net labor costs. All components can be manufactured on conventional or NC machinery, without complicated tooling or difficult machining operations. This straightforward approach to design and manufacturing is important because it keeps the total cost of the weapon down, maintains quality, and ensures reliability in functioning.

My approach to this article is from a manufacturing and quality standpoint, one that would hardly be undertaken by most writers. But being a tool and die maker by trade and a Class II firearms manufacturer by avocation, I am

naturally interested and experienced in what is required to achieve the quality workmanship that goes into well-made parts. When I first laid eyes on the HAC-7 at the Dallas Gun Show, I was highly impressed by the quality and craftsmanship displayed in the weapon.

Experience with products bearing the "Made in U.S.A." label has on many occasions made me notice the apparent diminishing standards in quality of products, firearms and otherwise, which are being produced and accepted today in this country. Not many things bother me quite so much as buying a product lauded as being "Made In America By Americans", only to find it to be a piece of junk. Happily, the HAC-7 is a good example of the combination of pride and craftsmanship of manufacturing which indeed earns it the distinction of being "Made In America" and all the quality that was once implied by such.

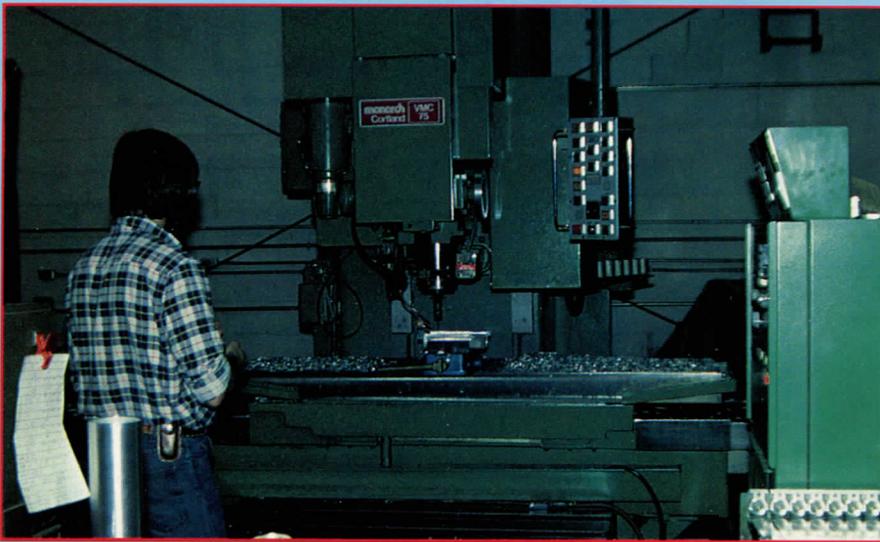
When I asked Bob Holloway how he went about designing a rifle, he replied: "Start with a cartridge and work your way out." His choice of cartridges, the 7.62 NATO, was picked because of its good penetrating capabilities and versatility in loadings. An increased public and military interest in that round, and a growing dissatisfaction with the 5.56mm round, also affected his decision.

The rate of twist used in production HAC-7/7C barrels was established at 1 in 10", which is the current standard in most .308 caliber weapons. His primary market for this rifle is the civilian and survivalist who will probab-

ly hand load and desire the option of being able to load bullets heavier than those normally used in 1 in 12" barrels.

The bolt and locking mechanism used in the HAC-7 is similar to those of the World War II German FG-42 and American M60, and was chosen for its strength and ease of manufacture. Tipping bolts as used in the FN-FAL were considered but found to be very expensive to manufacture. Roller locking mechanisms were also considered but were rejected because of the necessity of having the bolt and carrier assembly heavy enough to delay properly before opening. The extra weight in the carrier and bolt assemblies increases the felt recoil upon firing because of the heavier mass slamming rearward, thus reducing user controllability. A two lug, 60° rotating bolt which locks into the barrel extension upon closing of the bolt carrier was chosen for this weapon. The bolt carrier is basically the M16/AR-15 design built on a larger scale. The 22° rotation, eight lug M16 type bolt was discarded as being unnecessarily expensive to manufacture, and a complete 90° rotating bolt was rejected as it causes too much friction to achieve the extra 5-10% surface area on the locking areas. Total surface locking area at 60° rotation is approximately 90-95%. Both bolt lugs are approximately .400" x .400" deep. Material for construction is heat treated and stress relieved 4140. In using a locking system of 60° rotation combined with the overall length of the 7.62 round it was found that the bolt carrier would move about 1.200" rearward before the bolt head completely unlocked from the barrel extension. This gap would allow the front of the top cartridge in the magazine to pop up into the cavity. Then as the bolt continued to recoil rearward, the bolt head shoulder would catch on the shoulder of the cartridge case and would proceed to ram the cartridge back down into the magazine. This same effect to a much lesser degree occurs in the M16. Close examination of the shoulder of a cartridge cycled in an M16 will reveal a small nick where the bolt head bumped the cartridge downward.

This led Holloway to develop the Reciprocating Feed Plate (RFP) which basically is a narrow plate attached to the bottom of the bolt carrier. The express purpose of the RFP is to fill in the gap experienced when the bolt carrier and bolt cycle back and forth, thereby preventing the top cartridge in the magazine from wobbling and yawing around. The RFP keeps the rounds flat



State-of-the-art machining techniques such as are possible on this numerically controlled milling machine are the key to production. Among other things, they make production of both right- and left-handed versions economically feasible.

and in proper position in the magazine. Feeding is smoothed out enormously and reliability of the weapon is impressive. The development of the RFP is important and significant, and I expect to see it or derivations of it incorporated in future designs which may use a similar bolt type and carrier assembly.

A gas system which takes gas off of the barrel ahead of the hand guard was chosen because of the gas "preload effect". As soon as the bullet leaves the case the air in the barrel compresses ahead of the bullet and begins to load the gas mechanism before the bullet ever passes the gas block. Components of the gas system are constructed of 17-4 stainless steel, which provides excellent corrosion resistance, high

fatigue strength, and excellent resistance to galling and seizing. The gas system is designed to be easily taken apart by the user with the rimmed head of a cartridge.

The trigger and hammer assembly are patterned after that of the M1 Garand, providing a double sear-hook type engagement on the hammer. The design is reliable, with other guns such as the U.S. M14 and Ruger Mini-14 using this same type trigger-hammer assembly. The firing pin used is of the M16 type. The extractor is based on the M60 design and is very strong.

Disassembly of the weapon is similar to the M16/AR-15 in that the upper and lower receiver halves share a common pivot pin in the front of each half. A single push-pin above the grip

assembly is depressed with a bullet, and pulling the pin until it stops releases the halves for field stripping. In the case of the HAC-7, there are no small cotter pins to lose as was common with the M16.

The stock design, being similar to that of the FN, is very comfortable. It is straight-lined and the center of the stock sits approximately 1/4" below the center of the bore. This provides a reduction in upward roll and enables the user to experience virtually zero muzzle climb and very little torque. The material chosen for manufacturing the grip, hand guard, and buttstock (where applicable) is Rynite 430, a 30% glass resin modified polyethylene terephthalate. This material provides improved impact resistance and is heat resistant in the extremes occurring during heavy firing. Surface finish is similar to that of the M16 hand guard.

The steel parts used in both models are of 4140, and are Parkerized to a matte black finish. The upper and lower receivers are hard anodized 7075-T6 aluminum, the same material used in the M16/AR-15 upper and lower receivers. The M16/AR-15 receiver uses forgings which lose approximately 40% of their strength when forged. The upper and lower receivers of the HAC-7/7C are made of extruded bar stock which picks up about 10% strength in extruding, approaching a tensile strength of 83,000-93,000 psi, which compares to the strength of mild steel. The anodizing process used on all the aluminum parts leaves a non-glare matte black finish to a depth of .004". This material is tough, and as an example of this, one of the steel screws for mounting the scope base on one weapon was overtorqued, stripping the threads on the screw, but not damaging the internal threads of the anodized aluminum receiver.

There are a number of excellent, standard features which are all included in the base price of the weapon. Both rifle and carbine versions come with a folding alloy stock which folds toward the right side of the receiver (on right-handed models). The basic appearance of the stock is similar to that of the FN Paratrooper model folding stock. The lock-up upon opening the HAC stock is positive and fast. A wide tapered engagement provides a solid, rigid structure which exhibits no side play or movement when locked.

The front sight is a post type, adjustable for elevation. It is based on the M16/AR-15 sight using a spring loaded retaining pin that is depressed with a bullet tip to allow rotation of the

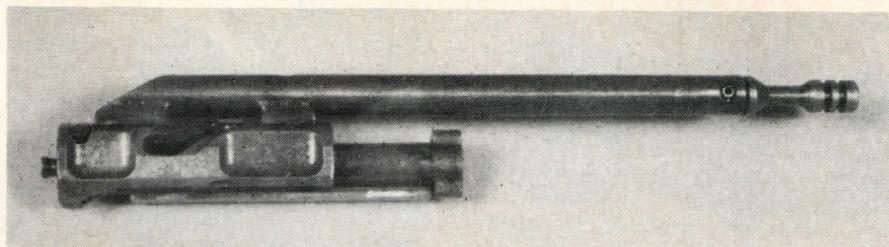


Shown for size comparison are (top to bottom) HAC-7C, AR-15, HK-91 and M14.

sight up or down. Protective ears prevent damage to the post during rough handling. The rear sight is a two-position, L-shaped flip aperture type which simulates that of the M16/AR-15. It is adjustable for windage, being locked in position with a spring-loaded pin and detent. The slip sight features two apertures; a large aperture for quick, close range work and a smaller one for long range work. Factory setting for both will be 250 meters.

The gas system features a four position regulator which allows adjustment for various types of ammunition which may be encountered in the civilian and military surplus market. For example, PMC ammo was found to burn irregularly at times, showing high pressure on the primers and stretching cases excessively. Portuguese military surplus was also found to be "hot", which caused badly bent cases until the gas was regulated accordingly. A single position gas regulator would force the user to accept the rough extraction and bent cases, or he would have to change his ammunition. The four position adjustment allows use of all types of ammunition within the general operating pressures required by the gun and aids in controllability by reducing muzzle rise. The gas cylinder is placed above the barrel to keep the center of gravity of the weapon in line with the axis of the barrel. As a result of this and the excellent stock configuration, the shooter can experience virtually zero muzzle climb upon firing. Rapid firing and quick target acquisition are easily accomplished using this weapon.

A separate gas cut-off arranged cross-axis to the barrel is also provided which allows the shooter to block the entry of gas into the cylinder. To cut off the gas, a case rim is inserted into a mating slot and the case turned 90°. This blocks the gas and is a feature that is used when firing manually as a



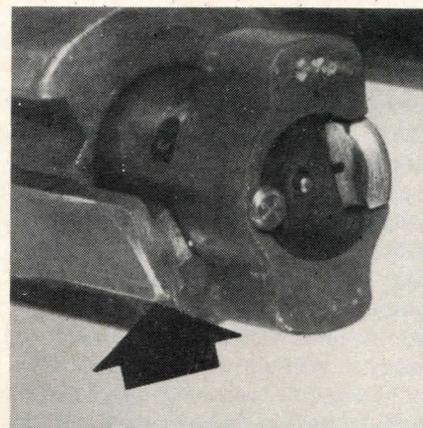
Holloway has unashamedly imitated proven designs as can be seen in the bolt carrier. He seems to recognize one of the main keys to good firearms design: retain that which works and change that which doesn't.

straight-pull bolt action rifle. With the gas cut-off turned to the off position, the charging handle can be pulled rearward and released, loading a live cartridge and cocking the trigger mechanism. Upon firing, the charging handle is manually pulled rearward again, ejecting the empty case, then released to again chamber another live round. This technique is often employed when using a sound suppressor for sniper work. This is also the procedure when launching rifle grenades or flares from the muzzle brake/flash suppressor.

The charging handle is located high on the left side (right side on left-handed actions) of the upper receiver and is readily accessible to both right- and left-handed shooters. The magazine release is located directly behind the magazine at the bottom of the lower receiver. Release is fast and locking is positive. The ambidextrous release is easily accessible to both right- and left-handed shooters, a feature which allows shooters to change magazines without changing their hand positions on the grip. This would be an important feature in an actual combat situation.

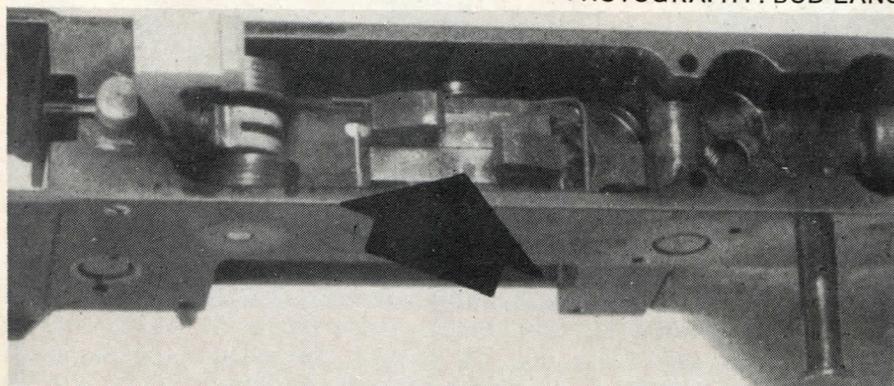
The selector switch and bolt release have been designed to be reversible for the convenience of both right- and left-handed shooters. They are readily accessible and function positively. In choosing to incorporate a reversible bolt release, AR-10 magazines were originally used in prototype work and testing

because the tail of the magazine follower slides up and down in a slot inside the rear of the magazine. That allows the top of the follower on either side to actuate the bolt hold open device. Holloway's practical experience using H&K G3's in Rhodesia dictated his incorporation of a bolt lock into the HAC-7. "The G3's didn't have bolt locks and you didn't know when the chamber was empty until you pulled the trigger and it went 'click', which is not a good feeling since you probably had a good reason to pull the trigger in the first place. That leaves you having to count your rounds, which in combat is easy to forget, and you find yourself pulling magazines out that you think are close to running dry and stuffing them back inside your shirt." (Editor's Note: standard European practice for battle rifles without a bolt hold open is to use a tracer as the last round to signal the need for a magazine change).



Two lug bolt rotates 60°. With each lug measuring .400" x .400", this unit should prove capable of handling even the hottest overloads. Note the Reciprocating Feed Plate [RFP] (arrow) and M60 type ejector.

The HAC-7/7C comes with two 20 round magazines standard, with optional 2, 5 and 8 round versions available. As noted earlier, AR-10 magazines were used in prototype work and testing and will work in the HAC-7, but the Holloway all-steel units should give better performance. The HAC magazines have



Hammer and trigger assembly are definitely patterned after the Garand style, a proven winner for over 50 years.

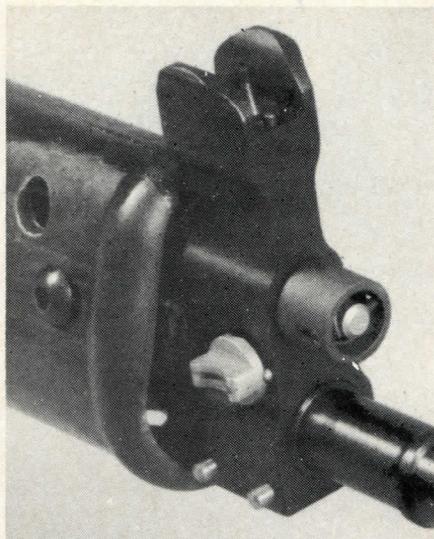
PHOTOGRAPHY: BUD LANG

been designed to tighten up the gap between the follower tail and magazine slot, the stop lug on the rear of the magazine has been made twice the thickness of that of the AR-10 to improve strength. The magazine is also being constructed of 4140 steel at about 45-C Rockwell hardness to greatly improve rigidity. This duplicates material used in M14 magazines, known for their ruggedness and durability.



Safety and bolt release are positioned similar to the AR-10/AR-15 design and are located right where you want them. All close-up photos were taken of a left-handed action. With one of every six Americans being a southpaw, a battle rifle designed with them in mind is a welcome sight.

An adjustable muzzle brake/flash suppressor is included in both versions, which has an unusual feature in being adjustable to accommodate right- and left-handed shooters. The device has three ventilating slots milled lengthwise into the O.D., 60° apart for a total of 120° when measured from the upper to the lower slot. The slots are oriented on the rifle in such a manner to divert exhaust gases into the vectors left or right, according to shooter choice. For a right-handed shooter, the center slot would be at about the 2 o'clock position because upon firing his body will rotate to the right with the center of the body being the axis. For a left-handed shooter the center slot would be oriented at approximately 10 o'clock. These slots work to counteract much of this roll and can be individually adjusted to the shooter's preference. The muzzle brake/flash suppressor can also be used in emergencies requiring a wire cutting device. To use the unit as a wire cutter on barbed or concertina wire commonly employed by military units, align the wire to be cut into the two notches on the muzzle brake. Holding slight tension against the wire with the rifle, fire the weapon which will cut the wire cleanly. Although this would not be done



Again drawing upon actual experience under combat conditions, Holloway has installed a separate gas regulator for different loads. There is also a complete cut-off for grenade launching or silenced sniper applications, thus alleviating the need of trying to remember which regulator setting was employed before switching to the single shot, specialized mode.

by most civilian owners, many current and ex-military personnel have used this technique upon entanglement in wire under fire.

Also included as a standard feature, the upper receiver is drilled and tapped to accept a HAC scope base. A later version will be offered with the scope

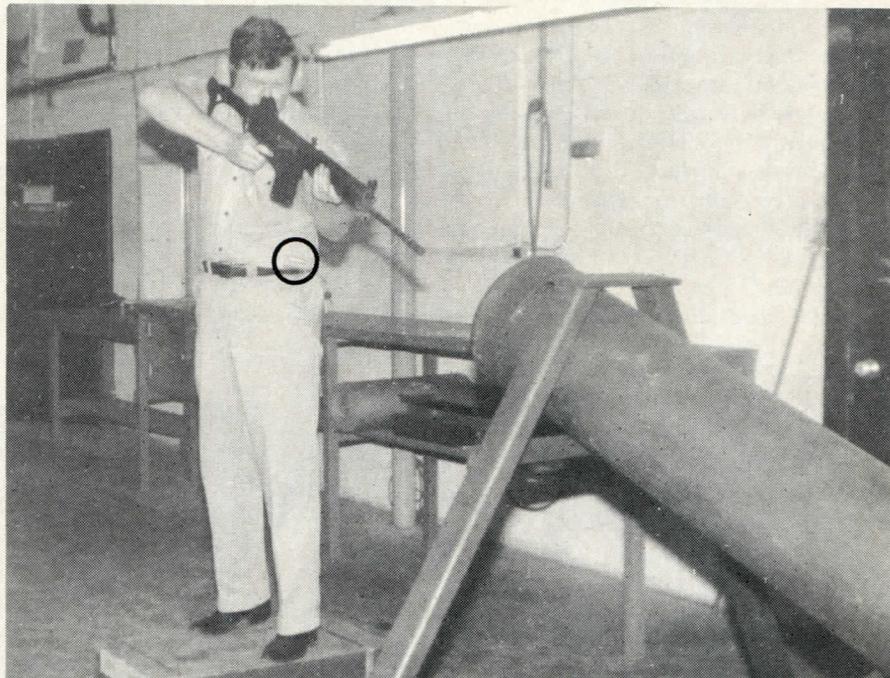
base permanently epoxy-bonded and screw-attached to the upper receiver. Also included as standard items are a rot-resistant nylon sling and a protective muzzle cap.

The trigger guard is hinged so the weapon may be used in the winter while wearing gloves, without having to attach a special winter trigger. The guard pins are simply removed, allowing good access to the trigger.

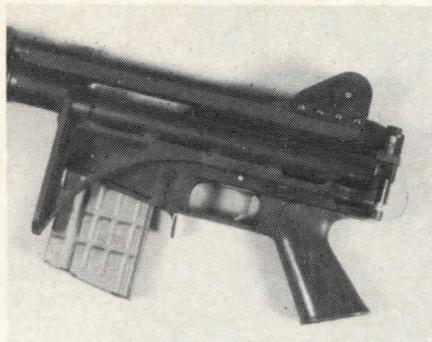
The gun is packed at the factory in a corrugated cardboard box which features a padded insert made of open-celled foam, featuring precision die-cut pockets for the rifle, magazines and sling. This provides excellent protection and possibly could be incorporated with a hard case for permanent storage. This is the best shipping box I have ever seen come in from a gun company.

Because the parts are manufactured on NC equipment, an inverse function command can be programmed which will allow the production of mirror-image or reversed parts. This has permitted manufacture of the HAC-7 and 7C weapons in a pure left-handed configuration. The bolt and bolt carrier are made in the inverse function, as well as the upper receiver. Other appropriate parts in the assembly are also reversed.

HAC will offer heavy-barreled sniper versions with barrel lengths of 20" and 24". These barrels will be straight diameter bull barrels and can be ordered



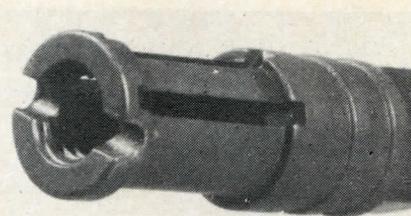
Bob Holloway test firing one of the original HAC-7 prototypes. In production, all guns are test fired and signed off by an inspector. Note empty case in the air and lack of muzzle rise. When a man who has actually been in combat sets out to design a battle rifle, the final result is somewhat different than the "think tank" weapons that have dominated the scene for years.



Even with the stock folded all controls are accessible, making the HAC-7 a good close quarters weapon.

in two different configurations; one being a straight bull barrel and the other a straight bull barrel with six flutes milled in the surface of the barrel to reduce the weight. Selective fire versions available to law enforcement agencies and other qualified buyers should be available about the time this article appears in print. The price increase for the selective fire version has been estimated at around \$85.00.

On the occasions where I have witnessed and participated in test firing, I was impressed by the functional reliability of this gun. The only misfires I witnessed were with Israeli military surplus ammo (not to be confused with the Sampson ammo imported by IMI), which also would not function in my HK-91. For controllability and comfort comparisons, an HK-91 and a U.S. M14 were fired alongside the HAC-7. Out of these weapons, the best controllability was achieved when firing the HAC-7. The price for either the HAC-7 or 7C is approximately \$650.00 which, based on today's economic structure, is very reasonable, especially when considering the quality built into this rifle. On several occasions I visited the manufacturing facilities over a six week period and witnessed construction of the individual components. I saw very systematic organization and I was able to freely inspect parts in various stages of completion which I found to be of very good quality. All facets of the manufacturing process were carefully



Muzzle brake can be adjusted for either right- or left-handed shooters and will hold the gun level during rapid firing, with only a slight increase in muzzle flash. Here again, Holloway feels it is more important to be able to hit your target than to try to hide an additional 10% of the muzzle flash. The slot at the front of the muzzle brake can also be found on HK-91/93 flash suppressors, is used to twist barbed or concertina wire tightly so that it can be shot in two should the shooter be caught under fire when facing these obstructions.

controlled with the primary emphasis being on product quality.

Holloway Arms Company moved into their new machining facility in the summer of 1983 and within a few months has been able to produce finished weapons which under anyone's standards would be quite an accomplishment. Although their plans for this weapon are primarily for civilian and survivalist applications, there is also a very important military value to it. Each step of the design and manufacture is based on practical military experience in which reliability was a critical factor. The HAC-7 achieves that reliability and is built on sound manufacturing techniques which would be acceptable to any army. The tactical need for a 7.62 NATO weapon is being considered now by the U.S. Army for special applications and Holloway Arms will be shipping test model 7's to Special Operations at Fort Bragg, North Carolina.

Future plans call for the company to produce a 5.56mm version of the HAC-7 as well as a 10 shot, box magazine fed 12 gauge automatic shotgun which will be gas operated, using the same basic mechanism as the HAC-7 rifle. Many other components will also be interchangeable. Optional versions of the HAC-7 and 7C weapons will be offered in .243 and 7mm-08 calibers.

I was very impressed with the overall performance and quality of the HAC-7 and find it refreshing to see some good old fashioned American ingenuity at work.

We are currently scheduling a full test of a production gun, and if it fares as well as we expect, the HAC-7 should be a real winner.

FIREPOWER ANALYSIS

Weapon:	HAC-7 and HAC-7C.
Manufacturer:	Holloway Arms Company, 3959 Vickery Blvd., Fort Worth, Texas 76107.
Caliber:	7.62x51mm (.308 Winchester).
Type Of Operation:	Gas operation, 4 position regulator, separate gas cut-off.
Type Of Fire:	Semi-auto, or selective fire as option to qualified buyers.
Type Of Feed:	Detachable box magazine.
Locking System:	Rotating bolt (60° rotation, 95% surface contact of bolt lugs to barrel nut).
Overall Length:	Model 7 Standard: 43" w/stock extended, 33" folded. Model 7C Carbine: 39" w/stock extended, 29" folded.
Barrel:	20" on Standard, 16" on Carbine, both are 1 in 10" twist with 6 groove rifling.
Cyclic Rate For Select Fire Model:	650 to 700 rounds per minute.
Muzzle Brake/Flash Suppressor:	3 slots, 60° apart (120° total). Adjustable for both right- and left-handed shooters. Slots for cutting barbed wire milled into front edge.
Magazine:	20 shot box standard; 2, 5 and 8 shot magazines available. 4140 steel construction.
Buttstock:	Fixed Stock: Straight line M16 design manufactured from DuPont® Rynite 430, impact and heat resistant plastic. Folding Stock: Paratrooper style, welded tubular construction, positive lock-up and release.
Bolt Hold-Open Device:	Yes, easily accessible, reversible.
Sights, General Description:	Front: Post, adjustable for elevation, excellent wing protection. Rear: Flip type with two apertures, adjustable for windage, excellent wing protection.
Handguard And Grip:	Material: DuPont® Rynite 430, impact/heat resistant. Comfort: Excellent, very light surface texture. Heat Dissipation: Front hand guard well ventilated. Good dissipation in semi-auto, good dissipation in full auto/short bursts.
Ejection Port:	Excellent location, no accountable brass damage upon ejection.
Safety/Selector Switch:	Easy access, positive reversible functioning.
Weight Empty:	Model 7 Standard: 8 lbs., 12 oz.; Model 7C Carbine: 8 lbs., 8 oz.
Overall Handling:	Very good to excellent. Easy access and manipulation of all controls. Very comfortable and orthopedically arranged stock, grip and hand guard. Low bore axis provides excellent firing controllability and reduced recovery time after each shot.