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# From The Loading Bench

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## Save Those M118 Bullet Pulls



New arsenal bullets and clean M118 pulls were checked for runout with a dial indicator and then accuracy tested at 300 yds.

**H**IGHPOWER competitors sometimes obtain pulled military match bullets, accumulated as a by-product from substituting 168-gr. commercial match bullets for the M118 full-metal-jacketed bullet in 7.62 mm Match ammunition. Making "Mexican-Match," as competitors call it, is an easy way to get more consistent accuracy, but the improvement may not always be as dramatic as some shooters believe. Neither are the pulled M118 bullets (often discarded by military teams and passed on to civilian teams for practice ammunition) all that bad.

Substituting good 168-gr. bullets, such as the Sierra for M118, may give noticeably better groups (particularly in 12"-twist barrels which only marginally stabilize the M118 bullet), but average or better lots of M118 bullets (those having an acceptance Mean Radius of 2.4" or less at 600 yds.) are not significantly different

TABLE I

Accuracy Of Selected M118 Bullets At 300 Yds. From 10"-Twist Barrel  
Ten consecutive five-shot groups each sample

Sample	Mean ES									
A) Arsenal M118 lot 12069	2.78	—	58	68	80	83	88	99	99	99
B) Non-concentric M118, not sorted	2.71	—	—	59	74	78	84	99	99	99
C) NC M118 bullets sorted by weight	2.63	—	—	—	66	71	78	98	98	99
D) Unselected M118 pulled bullets	2.50	—	—	—	—	54	64	95	96	98
E) Arsenal M118 lot 60-20	2.46	—	—	—	—	—	59	94	95	97
F) Concentric M118 bullets not sorted	2.39	—	—	—	—	—	—	91	92	95
G) Control 168 Sierra 41.0 IMR-4895	2.01	—	—	—	—	—	—	—	52	65
H) Concentric M118 sorted by weight	1.99	—	—	—	—	—	—	—	—	61
I) Control 168 Sierra 41.0 IMR-4064	1.92	—	—	—	—	—	—	—	—	—

All M118 handloads in LC cases, W120 primers with 41.0 grs. IMR-4064

Entries in body of table show the probability (percent) that the sample giving the smaller mean extreme spread is truly more accurate than the sample giving the larger mean extreme spread, based on ten 5-shot groups with each.

Sample A 2.78  
Sample B 2.71  
Sample C 2.63  
Sample D 2.50  
Sample E 2.46  
Sample F 2.39  
Sample G 2.01  
Sample H 1.99  
Sample I 1.92





## Go ahead, Mr. Dillon, make my day.

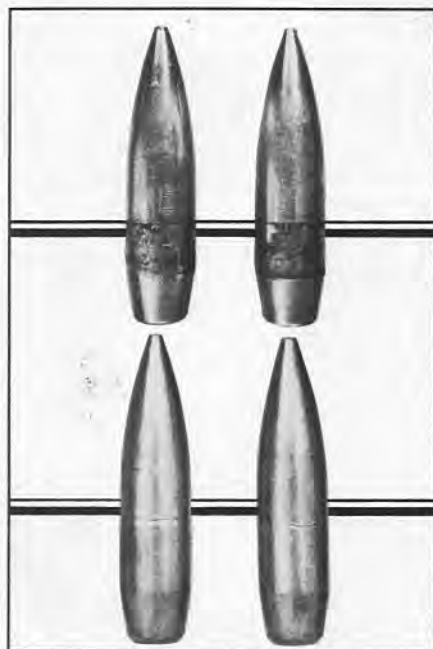
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M118 bullets pulled with an RCBS collet (top) and by a Bonanza puller (lower pair) were accurate despite cosmetic blemishes.

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rel. Military teams have long favored 10"-twist barrels for shooting M118 ammunition, and firing done by the Technical Staff to date, using a variety of barrels, supports this conclusion, which is reinforced by stability calculations. The gyroscopic stability factor of typical M118 fired from a 12"-twist barrel such as the M14 is about 1.3, but when fired from a 10"-twist barrel at the same velocity, it is about 1.9-2.0. Army ballisticians agree that the ideal range of gyroscopic stability for accuracy with production bullets and barrels of average quality is from 1.5 to 2.0. The 1.3 value of M118 ammunition fired in the 12"-twist M14 barrel is marginal. The 168-gr. Sierra used in the M852 Match cartridge is better stabilized in standard 12"-twist M14 barrels, being about 1.7. More nearly optimum bullet stability as well as improved bullet quality are factors contributing to the superior accuracy of the current National Match M852 over M118 ammunition. (See *American Rifleman*, August, 1983, p.48).

Shooters who have spent any time weighing and sorting M118 bullets are often amazed they shoot as well as they do, given their weight variation and lack of concentricity. Although shooters popularly refer to the M118 (and cal. .30 M72) bullets as 173 grs., their average weight is more like 175 grs. Pulling down a can of LC '79 Match ammunition, washing off the asphalt mouth sealant, and weighing the bullets, 87% fell between 175.0 and 176.0 grs. Only 7% were lighter than 175 grs., with none less than 173.7, and only 6% were heavier than 176 grs., with none over 176.4 grs. Extreme weight variation of 460 bullets was 2.7 grs. This is typical for M118 bullets of current production.

New boxed M118 bullets, all of one lot, were checked for weight variation and showed a similar pattern, with 81% of 350 bullets weighing between 175.0 and 175.6 grs. These bullets were also spun on a dial indicator to measure runout and to sort the bullets for subsequent testing. Of 350 bullets checked, 52% were "concentric" and had total indicated runout less than .0005", 40% were "nonconcentric" between .0005" and .0010", while 8% were so-called "bananas" more than .0010" out of round.

I wondered how much variation could be expected in mixed lots of pulled bullets competitors might get, compared to the new bullets and pulls we checked from the same lot or can of ammunition. Checking over 1000 cleaned pulls from several sources, they weren't significantly different in runout or weight variation from bullets out of the same lot or can of ammunition. Generally, the mixed lot pulled bullets didn't shoot any worse either.

To get an indication of the inherent accuracy of M118 pulls compared to handloads with new M118 bullets, or arsenal ammunition, over 1300 rounds were fired at 300 yds., using a bench-rest type bolt-action rifle with two barrels; one barrel was 12" twist, the other 10" twist. Both barrels were cut rifled with four grooves, 22" long and chambered with the same reamer, approximating the M14 NM rifle chamber. Control handloads with 168-gr. Sierras indicated that accuracy was equal, though the 10"-twist barrel gave better results with M118 Match bullets. Results of the firing tests are summarized in the accompanying tables. **Table I** is a composite of testing in the 10"-twist barrel, which includes experiments with bullets selected for runout and weight variation. **Tables II and III** show data for 10"- and 12"-twist barrels with pulled bullets.

The 10"-twist barrel was more accurate with M118 bullets than the 12"-twist barrel. Bullets pulled with either RCBS collet or a Bonanza "grabber" shoot about as well as M118 arsenal ammo out of the box. Some powder differences reflected in particular load preferences by barrel are suggested, but scatter in the data, possibly related to lot-to-lot variations in the mixed pulled bullets, prevents any conclusive correlation based on the limited firing done.

Rather than going through all the effort to sort and weigh bullets, substituting a commercial match bullet of known consistent accuracy is the easiest approach if you must build your confidence. To justify the effort to spin and sort M118 bullets, you would have to know they were from a good lot, and even at that the effort is questionable, because bullets from a good lot of M118 will shoot accurately, and probably not different from good commercial match bullets. The fellow having access to quantities of pulled M118 bullets or M118 arsenal ammunition is better off with a 10"-twist barrel, given a choice. —C.E. HARRIS



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