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TECHNICAL NOTE 106: THE TRUTH ABOUT PERFORMANCE INFO IN MARKETING ADS

I. BACKGROUND:

Marketing advertisements generally contains three types of information (regardless of the product being marketed). The three types are:

1. Pictures, drawings, etc. that provide a visual representation of one or more features of the product;
2. Facts and data on the physical characteristics and features of the product;
3. Facts and data on the performance of the product.

Potential customers, in order to make knowledgeable choices among competing products, need to understand the basis for the information provided in marketing advertisements. This Technical Note is intended to help potential customers do exactly that.

II. FACTS:

A. Facts about Pictures, Drawings, and Other “Visual” Ads

Manufacturers use videos, pictures, drawings, etc. to convey, visually, facts about the item that would be difficult to transmit in words. It would be practically impossible to describe the colors and body contours of a 2012 Camaro in words to a potential buyer. A picture is truly worth a thousand words.

Typically, videos, pictures, drawings and other visual components of advertising are honest representations of the product. A close inspection of the video/picture/drawing by the customer should provide him with a realistic visual interpretation of the product or feature.

The “setting” into which the product is placed in the ad may not, however, be completely realistic. (You probably won’t end up in bed with a super model simply by changing your brand of toothpaste or shampoo!!!! Really!!!!)

And obviously the videos, pictures, drawings and other visual components will be framed from the best perspective, accentuating the positives of the products while downplaying portrayal of anything less than positive. But, generally speaking, “what you see is what you get”.

B. Facts about Physical Characteristics and Features

Physical characteristics and features of products are normally well portrayed in marketing literature. Physical characteristics (such as weights, lengths, heights) are very uniform from one sample of a product to the next sample. So are features. (If an auto is claimed to have power windows and a V-8 engine, it is easy to determine that it does.) Because there is little variation in physical characteristics and features from sample to sample, all customers will receive EXACTLY the same product (as far as physical characteristics and features are concerned.)

C. Facts about Performance

It is particularly difficult for a manufacturer to adequately describe performance data to prospective customers. This is true for several reasons.

First, performance data tends to vary from one sample to the next sample and from one test to the next.

Second, performance data varies based on how the product is used. That's why gas mileage claims always include the "Your mileage may vary." disclaimer.

Third, the performance being claimed is very dependent on the test conditions and other underlying criteria of the claim. Most advertising does not include adequate specific technical information regarding the basis and underlying conditions to allow a customer to comparison shop. Only in those instances where government regulations have mandated a common, consistent basis among competitors can consumers easily compare performance of competing products. EPA mileage is an example of a government-mandated common basis, but, again, "Your mileage may vary."

Fourth, performance is generally a result of the "total system" not just a result of the product being sold.

Far too often, consumers who attempt to compare performance data are unknowingly comparing "apples to oranges".

Up to this point in the Tech Note, I've used non-firearm examples in order to demonstrate the universal nature of the facts I'm describing. Because this Tech Note will be read primarily by those interested in firearms, now let's turn to firearm examples of performance.

Typical firearm performance data includes reliability, durability, and accuracy. Let's look at accuracy as an example. (By "accuracy", we mean some measure of group size, not center of impact of the group.)

Accuracy in marketing ads is often listed in Minutes Of Angle. But, listing the accuracy of a firearm as "1 MOA" is completely meaningless unless much more information is provided.

As with all other performance data, accuracy varies from one sample to another of the same model of firearm. So, is the "1 MOA" the accuracy of the most accurate sample, the average sample, or the worst sample????? And, if you conducted the test several times on one particular firearm, you'd see variations in the results. Is the "1 MOA" the result of the best test, the average test, or the worst test??????

The accuracy criteria chosen may also depend on the nature of the customer. If your customer is the U.S. Army, the Army will demand that EVERY firearm that they buy meets the accuracy requirement. So, the accuracy requirement must be generous enough to assure that a very, very high percentage of the firearms will meet the requirement. If your accuracy criteria were based on the performance of the “average” firearm, ½ of the firearms you build would fail the test and be rejected by the Army. (Not a profitable situation.) On the other hand, if, for commercial customers, you advertised the accuracy performance of your “worst firearm” and its “worst test” the accuracy number would appear so bad compared to your competitors that you’d have difficulty selling your firearms.

Let’s use a specific example to further illustrate the point.

Let’s say that three manufacturers (Companies AAA, BBB, and CCC) each produce 1000 M16A1 rifles. All three companies test their rifles under identical conditions. Each rifle is fired one 10-shot group with M855 military ball ammunition from a return-to-battery rest in a benign indoor range. Based on the testing, each company writes a marketing ad.

Company AAA claims that their rifles fire groups as small as 1.5 MOA. {Best case}

Company BBB claims that, on the average, their rifles fire groups of 2.2 MOA. {Average case}

Company CCC claims that every one of their rifles will shoot groups smaller than 4.8 MOA. {Worst case}

If you were going to purchase a rifle, which company’s rifle would you choose. (You don’t get to “hand select” the rifle. You just get a random rifle from that manufacturer.)

The reality is that the rifles built from all three manufacturers are probably all quite similar. In order to guarantee that all 1000 rifles will meet or better 4.8 MOA (Company CCC’s claim), the average rifle needs to shoot about 2.2 MOA (Company BBB’s claim) and the best rifles probably shoot about 1.5 MOA (Company AAA’s claim.)

In fact, the Army required that EVERY M16A1 rifle delivered to them meet 4.8 MOA. In order to meet that requirement, manufacturers found that they needed to produce rifles that averaged about 2.2 MOA, and that their best rifles would often shoot about 1.5 MOA.

As with accuracy, most other performance parameters are also dependent on the “total firearm system”. Accuracy, reliability and durability are all greatly influenced by ammunition, the shooter, the mounting system, and both internal and external environment.

Then, too, there are several methods for measuring accuracy. The two most common are “extreme spread” and “mean radius”. And, regardless of the method you choose, the quantitative results will be dependent on the number of shots in the group. Five-shot groups will nearly always have larger MOA numbers than three-shot groups. Likewise, ten-shot groups will be bigger than five-shot groups.

Again using accuracy as an example of a performance characteristic, let’s look at how accuracy is a result of the “total firearm system.” Accuracy is NOT simply determined by the firearm. Accuracy is a function of:

- the firearm
- the ammunition
- the sighting system
- the skill of the shooter
- the mounting system
- environmental conditions (both internal to the firearm and external to it)

Let's take a short look at how each of these subsystems can contribute to the overall accuracy of the firearm system.

Firearm: Many features in the firearm can combine to determine the firearm's effect on accuracy. Some of the more obvious are: dimensions and tolerances in the barrel, including the chamber; bedding of the receiver in the stock; weight and quality of trigger pull.

Ammunition: Quality and consistency are the two keys to the accuracy potential of the ammunition. Tight tolerances in bullet and case dimensions and quantity of propellant are particularly important.

Sighting System: The sighting system determines how repeatably the shooter can aim the firearm. Obviously telescopic sights can be aimed more repeatably than can iron sights. And, high magnification scopes can be aimed more precisely than lower powered scopes. On the other hand, firing the firearm from a mounting system that returns the rifle exactly into the same battery position after each shot eliminates any aim error caused by the sighting system.

The Shooter: The shooter's skill, technique, experience, and eyesight are, perhaps, the largest contributors to group size. The shooter's effect on accuracy can be minimized by using a good mounting system, and nearly eliminated if a "return to battery" rest is employed.

Mounting System: Mounting systems can vary from hand held to having the firearm mounted in a very sophisticated spring loaded return-to-battery rest. It is nearly impossible to obtain reasonable, repeatable accuracy results without a very good mount for the firearm. Good sandbags from a solid concrete bench are the minimum requirements.

Environmental Conditions: To obtain optimum accuracy test results, the external environment must be very benign. In other words, the effects of wind, mirage, sunlight, etc. must be insignificant. And the internal environment of the firearm must be very good. (A dirty, fouled barrel is not a good internal environment!! So an appropriate firearm cleaning regimen must be employed.)

Hopefully, now you understand that claiming a "1 MOA" accuracy for a rifle in marketing literature is meaningless unless much more information is provided. A truly meaningful accuracy claim would be something like: "The average firearm of this type will fire a five-shot group averaging 1 MOA extreme spread when fired ten five-shot targets with Remchester M123 cartridges at a range of 100 yards in an enclosed test range free of drafts and mirage, with ambient temperature in the range held between 60 degrees and 80 degrees F. ??? Firing will be conducted from a return-to-battery machine

rest. Thorough cleaning using effective cleaning equipment must be conducted at the beginning of the test and after each 20 rounds thereafter.”

See why manufacturers don't try to include such details in their marketing ads??? And, even if one manufacturer did provide such info, unless all other manufacturers provided their data on exactly the same basis, you'd still be comparing apples to oranges.

So, in reality, any comparison of the performance claims in the marketing literature of two competing manufacturers is practically impossible. In firearms, this is true regardless of whether the performance is accuracy, reliability, durability, interchangeability, or any other performance parameter.

III. SUMMARY:

It is relatively easy for a prospective customer to compare the visual characteristics, physical characteristics, and features of two similar products. However, it is much more difficult to compare the performance characteristics. Only if the performance claim of the two products is based on identical tests and test protocols controlling the entire system can somewhat reasonable comparisons be made.

So, the logical question is: “How does ArmaLite present our performance data in our marketing ads?”

In our commercial marketing ads, we believe that is reasonable and fair to prepare our ads based on average performance of our firearms.

However, some military and law enforcement contracts require that we GUARANTEE that EVERY FIREARM sold will meet the claimed performance. In such cases, we must quote the worst case performance data.

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