

## **Review of M-11/Nine Magazines: Zytel, PAM 2 and ZMAG**

by Eric M ("Eric" of UziTalk) - included on [www.MAC-11.info](http://www.MAC-11.info) by permission

### **INTRODUCTION**

This article constitutes my review of the most common standard-sized magazines for the SWD M-11/Nine (and related) SMGs, namely the Cobray Zytel, Recon Ordnance PAM 2 and recently, Shockwave ZMAG which have capacities of 30-32 rounds. I describe what I like **and what I don't like about each magazine. Since I come from a test engineer background, I** feel compelled to assign a numerical rating to each one. These are purely subjective based on what is important to me. Your ratings may, and probably would, differ.

Unlike the Uzi where the OEM factory mags usually function flawlessly, the SWD M-11/Nine (which I will hereafter refer to incorrectly as the M-11) was sold with polymer Zytel magazines which had problems. The main problem was that the polymer feed lips would wear out or become deformed and the mag would cease to feed reliably. This drove a demand for either better mags (PAM 2 and ZMAG) or modifications to the M-11 to allow it to use a better existing mag such as the STEN mags.

### **BOTTOM LINE UP FRONT**

I gave the ZMAG the highest rating of the group because it is the most user friendly and works flawlessly for brass ammo without any modification or tweaking. I hope Marty from Shockwave does not get mad at me but I still consider that there is room for improvement with the ZMAGs and since they are the only ones still in production, I would love to see a ZMAG upgrade kit that would change out the spring and follower for more robust designs. I still consider my Recon Ordnance PAM 2 mags to be the most reliable for all types of ammo and the most durable but they are not as user friendly as the ZMAGs and some required tweaking the feed lips to make them reliable. I am probably an exception, but I still like the original Zytel magazines after they have been modified with steel feed lips and once that mod is accomplished, I consider them as reliable for brass ammo as the ZMAGs or PAM 2s.

**Orig.  
Zytel**

**New  
Zytel**

**Recon  
Ord  
PAM 2**

**Shockwave  
ZMAG**



2015 10

Orig. Zytel    New Zytel    PAM 2    ZMAG



Note: both Zytels show non-standard witness holes that I drilled in sides of magazine.

2015 10 02

Orig. Zytel    New Zytel    PAM 2    ZMAG



2015 10 02



## ACKNOWLEDGEMENTS

I want to thank Jerry Prasser of Recon Ordnance, Richard Lage of Lage Manufacturing and Marty Ewer of Shockwave Technologies and all other MAC entrepreneurs for their support of the M-11/Nine (and similar) platforms because without their contributions, my M-11s would be curiosities residing mostly in a safe. With their contributions, the M-11 is a great subgun that seriously competes with my favorite gun, the Uzi. The Uzi is still my favorite, but not by much.

## MY RATINGS

I view the 32 round IMI Uzi mags as being the gold standard for 9mm SMG mags. The Uzi mags are double feed and the M-11 mags are single feed and there can never be a truly **"apples to apples" comparison between the two types. But to the extent possible, I have** tried to compare the M-11 mags against the Uzi mags.

In order to establish a rating scale, I set a baseline of zero points for a hypothetical basic M-11 mag that feeds brass ammo fairly well but has no other desirable characteristics or enhancements that the Uzi mag does. I set the rating for the Uzi mag at 100 points. From my point of view (and aside from the double feed design), the Uzi mag has eleven enhancements or characteristics over a hypothetical basic M-11 mag. I have weighted the desirable characteristics differently in a such a way that if a mag had all the desirable

features, it would add up to a 100 point rating like the Uzi. Here are my list of enhancements or desirable characteristics that could be applied to an M-11 mag along with my personal, completely subjective point values (weighted to total 100) :

SMG Magazine Desired Characteristics:

Note: A very important and desirable characteristic would be corrosion resistance but I did not attempt to measure this and it is not considered in the ratings.

1. Reliable - 15
2. Durable - 15
3. Feeds steel case ammo - 15
4. Reasonably easy to load - 10
6. Mag stop - 10
7. Drops free - 5
5. Easy to disassemble - 5
8. Witness hole for last round - 5
9. Additional witness holes - 5
10. Witness holes on the left - 5 (I am right handed. This would, of course, be different for a left handed person.)
11. Round capacity beyond 30 - 5 points per additional round

TOTAL (for 32 Rnd Uzi) = 100

## MY ACTUAL REVIEWS

### 1. COBRAY ZYTEL MAGAZINES

**Rating = 35 for stock OEM mag**

**Rating = 50 for mag with steel feed lip inserts**

**Rating = 65 for mag with steel feed lips and drilled witness holes**

Eric's Rating Details:

1. Reliable = 0/15, Not reliable due to feed lips wearing or deforming but very reliable (15 points) with steel lips installed.
2. Durable = 0/15, Body not durable due to plastic construction (might break if run over or stepped on) but polymer follower is solid.
3. Feeds steel case ammo = 0/15, Rounds often tend to nose down in mag, after loading approx. 24 rounds.
4. Reasonably easy to load = 10/10, Require the least amount of force to load of all test mags.
6. Mag stop = 10/10
7. Drops free = 0/10, None dropped free from my guns except 2 of the cut-down, half-height mags.
5. Easy to disassemble = 5/5, **No tools required to disassemble. It's easier to use a flat blade to raise tab on baseplate but not req'd.**
8. Witness hole for last round = 0/5, Stock mag has no witness holes. I've drilled witness holes at 10, 20, 30 and 32 in my mags.
9. Additional witness holes = 0/5
10. Witness holes on the left = 0/5
11. Each round beyond 30 @ 5 each = 10, Capacity is 32 rounds.

## Comments:

Zytel mags have been the subject of much criticism (Zytel is a registered trademark of DuPont and is basically nylon). I will say up front that I like the Zytels as long as they have the steel feed lips modification installed. I have modified all of my Zytels. I like them even better with witness holes drilled in them. I have drilled witness holes in several of mine to show 10, 20, 30 and 32 rounds. I like them because they are the easiest to load and are **lightweight on top of that. I have used them since I've had M-11s (more than a decade) and for most of that time, I could only compare them to PAM2s. So, by "easy to load", I mean** easy compared to the PAM 2s. They feed brass ammo reliably which for a long time is all that I shot. In the last few years as the cost of ammo has doubled and tripled, I have shot a lot of Russian steel cased ammo, typically TulAmmo from Walmart because it has been cheaper particularly compared to WWB which I do prefer. Unfortunately, the Zytels do not like the steel cased stuff very well due to its higher coefficient of friction and I can only load **about 24 rounds before the bullets might start to "nose down" in the mag (i.e. the spring doesn't have enough force to always push the bullets tightly up against the mag lips** because of the increased friction in the mag). This video clip demonstrates the issue:

<http://www.youtube.com/watch?v=FAtnALur3RE>

Loading a Zytel mag may cause it to swell slightly resulting in a tighter fit. I have heard this as being an issue for others but I have never been really adversely affected by it. My mags **don't drop freely anyway but are not hard to slide out. Since I don't shoot competitively, I don't care if they drop freely as long as they're not too tight but I know this is important to some folks.**

**There are two kinds of "Cobray" Zytel magazines** - the original OEM version and a recent (since maybe 2008) issue of Zytels that are nearly identical to the originals. There is also a Zytel mag made by ProMag which appears similar to the others but was not tested. The original Zytels feature a logo that appears to have been part of the original injection molding. The newer Cobray Zytels have a logo that appears to have been heat stamped on after the body was formed in much the same way that cattle are branded. The older logo features a snake with a globe in the center of the snake. The globe has several latitude and longitude lines. The new logo features a snake with a globe and a single latitude and single longitude line - perhaps it is not a globe but a crosshair sight. The more significant difference is that the original followers have long legs that would tend to serve an anti-tilt function. The new followers have very short legs and would seem to be more susceptible to misfeeds due to the follower tilting. For the spring force tests, I tested 2 of the new Zytels **and 8 of the older Zytels. For the "drop free from mag well" tests, I tested all 26 of my Zytel magazines in two M-11/Nine SMGs.**



**Likes:** Lightweight, easy to load, easy to disassemble, polymer follower is solid (very durable), can be cut in half to make a half-height mag which works great for bench shooting and sighting in.

**Dislikes:** Need to install steel lips, doesn't feed more than about 24 steel case rounds reliably.

Material: Black Polymer

Spring: 28 Coils of 0.049 - 0.050" wire diameter (16 gauge) weighing 18 grams.

Capacity: 32 rounds.

Weight: Original versions weigh approx. 3.4 ounces (96 grams) each. Newer versions weigh approx. 3.0 ounces (86 grams) mainly due to the smaller follower.

Dimensions:

Height - 9"

Length - 1.36" long (front to rear)

Width - 0.98" wide at the rear; 0.76" wide at the front.

Drop free from mag well on release?

Gun 1: Of 22 full size Zytels tested, none dropped completely free. Of the four half-height Zytel mags tested, 2 dropped free. This is a little surprising since the half-heights were made by cutting down full size mags and should be the same width.

Gun 2: Of 22 full size Zytels and 4 half-height Zytels tested, none dropped free and they were all a tight fit.

**Average force required to depress follower 6" (dithering to eliminate stiction): 7.1 lbs.**

**Average force required to hold follower depressed 6" (holding still): 7.0 lbs.**

Average vertical force required to load 30th brass round: 10 lbs.

NOTE: There was no appreciable difference in spring force tests between the original Zytel mags and the newer version Zytel mags.

## **2. RECON ORDNANCE P.A.M. 2 MAGAZINES**

**Rating = 65**

**Eric's Rating Details:**

1. Reliable - 10/15, I knocked off 5 points because some mags need their feed lips tweaked, **but once done, they're good.**
2. Durable - 15/15, Probably more durable than an Uzi mag, actually.
3. Feeds steel case ammo - 15/15, This is why I like PAM 2s, despite the difficulty in loading them.
4. Reasonably easy to load - 0/10, Uhh, no. Not easy to load.
6. Mag stop - 0/10
7. Drops free - 5/5
5. Easy to disassemble - 5/5, I can slide the base plate off most of mine without using tools.
8. Witness hole for last round - 5/5
9. Additional witness holes - 0/5
10. Witness holes on the left - 0/5
11. Each round beyond 30 @ 5 each - 10

Total: 65

### **Comments:**

Magazines made for the Argentine Pistola Ametrelladora Modelo 2 (PAM 2) SMG have been modified to fit and function with the M-11 and are sold by Recon Ordnance Company. They are made entirely from heavy duty steel. Most of mine have a serial number stamped on the rear of the magazine **and a few have "RECON ORD" stamped on the front of the mag.**

## *Serial Number on Aft Side of Recon Ord PAM 2 Magazine*



PAM 2 mags are built like a tank. There is no question of durability here. They hold 32 rounds, have a witness hole so you know when the mag is full (but there are no intermediate witness holes), and all of mine drop freely from the gun I usually shoot. Most of them work fine without any tweaking and are easy to disassemble. Some mags need their feed lips tweaked. PAM 2s have the greatest variability in terms of fit and function. There are differences in size and weight and presentation of the bullet in the feed lips, hence some need tweaking and **some don't. There are also two problems all PAM 2 mags share:** They are hard to load and they do not have a mag stop. To get the 30th or 32nd round loaded, you are looking at applying over 30 pounds of force, depending on how much **random "stiction" is involved.** PAM 2 mags have a lot of stiction. It is no fun to load a PAM 2 mag. Since there is no mag stop, you need to be at least somewhat careful to not over-insert them and thereby damage your ejector rod. This has never been a problem for me, but could be for some, especially in competition or under stress. However, a properly tweaked (if necessary) PAM 2, once loaded, will not fail to push even steel case ammo to the top of the mag. They have very strong springs and I have never really needed to lubricate them. I have lubricated them, but I never felt I really needed to.

**Likes:** Very durable, reliably feeds steel-cased ammo, easy to disassemble (no tools usually required).

**Dislikes:** Very hard to load, no mag stop.

Material: Steel

Spring: 23 Coils of 0.058 - 0.060" wire diameter (15 gauge) weighing 24 grams.

Capacity: 32 rounds.

Weight: In my tested sample of six mags, the weight ranged from 250 to 280 grams for an average of 266 grams or 9.4 oz.

Dimensions:

Height -8.56"

Length - 1.36" long (front to rear)

Width - 0.90" wide at the rear. Approx. 0.79" wide at the front.

Drop free from mag well on release?

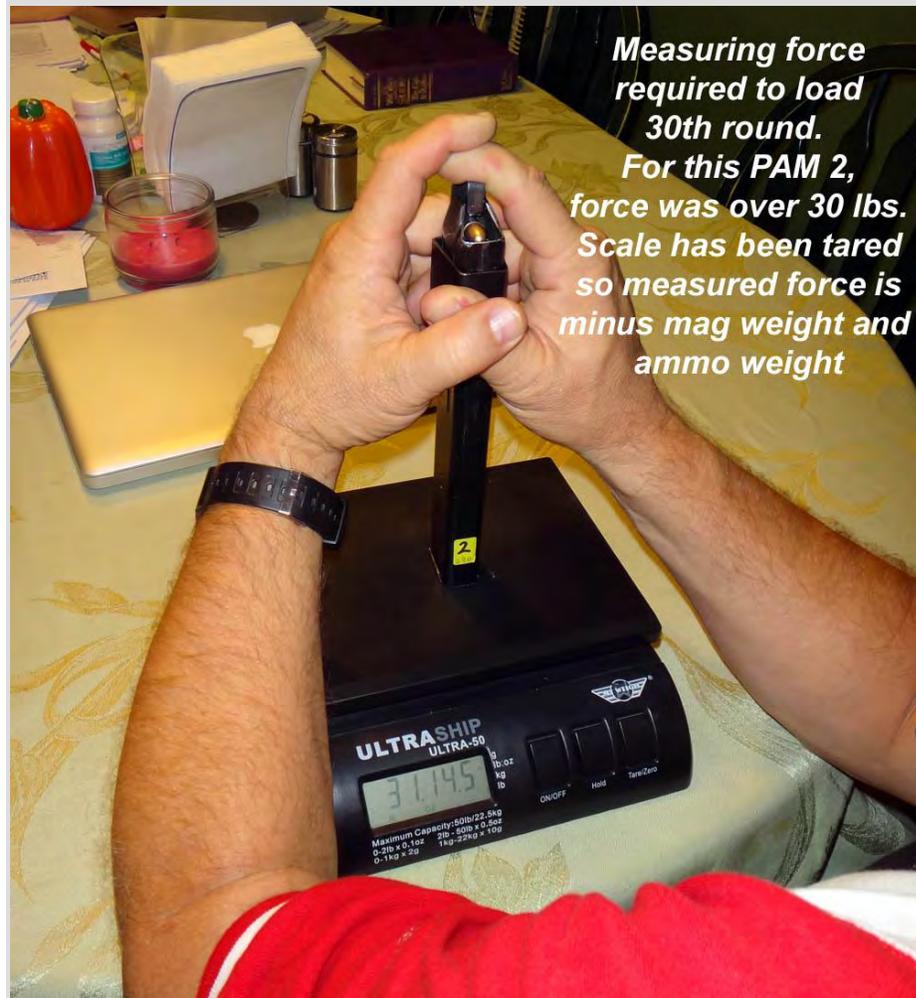
Gun 1: Of 6 PAM 2s tested, all dropped completely free

Gun 2: Of 6 PAM 2s tested, 4 dropped completely free

Average force required to depress follower 6" (dithering to eliminate stiction): 16.5 lbs.

Average force to hold follower depressed 6" (holding still): 14.6 lbs.

Average vertical force required to load 30th brass round: 30.3 lbs.



### 3. SHOCKWAVE TECHNOLOGIES ZMAG MAGAZINES

**Rating = 75**

Eric's Rating Details:

1. Reliable - 15/15, Completely reliable with brass case ammo.
2. Durable - 10/15, Durable body but plastic follower seems less durable than others. **If my house burns down, they won't survive.**
3. Feeds steel case ammo - 10/15, Does need lube for steel case ammo.
4. Reasonably easy to load - 10/10
6. Mag stop - 10/10
7. Drops free - 5/5 (Most of my wider 1st gen. mags dropped from one of my guns. I'm guessing 2nd gen. mags would all drop)
5. Easy to disassemble - 0/5, Requires a hammer and punch to remove base plate.
8. Witness hole for last round - 5/5
9. Additional witness holes - 5/5
10. Witness holes on the left - 5/5
11. Each round beyond 30 @ 5 each - 0

Total: 75



## Comments:

Shockwave Technologies in Salt Lake City developed and in 2014 began selling their ZMAG, designed specifically for the M-11/Nine SMG. The magazine body is steel with a polymer follower. All of my ZMAGs are from the first production run which I understand fit fine in most M-11s but were a tight fit for some M-11s. Due to complaints about a tight fit, **subsequent production ZMAGS were slightly narrower and should fit anybody's M-11.**

My ZMAGs fit fine in my M-11s although they do not drop all the way free from the gun I shoot the most. They are easier to insert and remove than the Zytels which were originally made for the gun. The ZMAGs functioned perfectly with brass ammo right from the start. They choked on steel case TulAmmo right from the start due to the higher friction with the polymer coated steel casings. At first, I sprayed inside the mags with silicone because it has worked well for other mags. It did not work on the ZMAGs. So, I sprayed them with TriFlow, a wet Teflon based lube. That worked for several loadings over a several month period but then on the same day, a few of the ZMAGs started choking again on the TulAmmo. I cleaned them out with alcohol and sprayed 4 of them with Mil-Comm's TW25B and **4 more mags with Blast Dry Lube with PTFE (a dry "Teflon" based lube recommended by the manufacturer, i.e. Marty).** Although TW25B is my preferred lubricant and is what the USAF uses in the very demanding environment of the M61A1 Vulcan gatling gun, the spray version did not seem to work well for the ZMAGs. Although 3 of the mags fed steel rounds fine, one of the mags still choked on them. This video clip demonstrates the issue: <http://www.youtube.com/watch?v=HyCmtrwflNE>

I did not try the synthetic grease version of TW25B that I use for the M-11 itself. For now, the Blast Dry Lube with PTFE seems to work fine as did the TriFlow. I may post an update in a few months to comment on the longer term results using the Dry Lube with PTFE.

The ZMAG is a great option but there are a couple of areas where I would like to see the ZMAGs changed. I would like to see a metal or thicker polymer follower and a more heavy **duty spring. It's possible the ZMAGs will never need a new follower or spring but the plastic walls of the follower are only about 0.042" thick and the spring contains the least amount of metal of the group.** The ZMAG spring is similar in gauge and number of coils to the Uzi but feeding a single feed mag is harder. I believe a heftier spring would resolve the issue of feeding steel case ammo. Perhaps Shockwave could offer a heftier spring and more robust follower as an upgrade kit. I would buy several.

That said, a look at my M-11/Nine range box is a good indicator of which mags I prefer to use. My range box comfortably holds 14 full size mags (plus 2 half-height mags which are good for sighting in from the bench). For many years, I carried 8 Zytels and 4 or 6 PAM 2s. Beginning late last year, I started carrying 4 Zytels, 4 PAM 2s, and 4 or 6 ZMAGs. Recently, that has changed. I now carry 8 ZMAGs, and a mix of 4 or 6 Zytels and PAM 2s. I usually load up all the mags I intend to use before I leave the house. It used to be that if I would load **anything on the spot at the range, it would be a Zytel because it's so much easier than a PAM.** Now, I tend to load a ZMAG.

**Likes:** Fairly easy to load, very convenient witness holes, mag stop.

**Dislikes:** Even after lubrication, performance with steel case ammo is not always assured. Hard to disassemble (need hammer and punch to slide off base plate). Need hammer to slide plate back on. Spring and follower may be completely fine but seem less robust than others.

Material: Steel

Spring: 18 Coils of 0.051 - 0.053" wire diameter (16 gauge) weighing 13 grams.

Capacity: 30 rounds.

Weight: In my tested sample of eight mags, the weight ranged from 232 to 236 grams for an average of 234 grams or 8.25 oz.

**Dimensions: The ZMAG magazines measure approx. 7.94" tall x 1.37" long (front to rear) x 0.93" wide at the rear. The front side of the magazine is approx. 0.79" wide.**

Drop free from mag well on release? (Note: these were all wider 1st generation production ZMAGs)

Gun 1: Of 8 ZMAGs tested, none dropped completely free

Gun 2: Of 8 ZMAGs tested, 5 dropped completely free

**Average force required to depress follower 6" (dithering to eliminate stiction): 10.9 lbs.**

**Average force to hold follower depressed 6": 9.8 lbs.**

Average vertical force required to load 30th brass round: 16 lbs.

As an afterthought, I did some checks of the 32 round Uzi mags just for reference. These will not work in a stock M-11/Nine

#### **4. IMI UZI MAGAZINES**

**Rating = 100**

**Eric's Rating:**

1. Reliable - 15/15, Completely reliable with brass ammo.
2. Durable - 15/15, Very durable.
3. Feeds steel case ammo - 15/15, no extra lube needed for steel case ammo.
4. Reasonably easy to load - 10/10
6. Mag stop - 10/10
7. Drops free - 5/5
5. Easy to disassemble - 5/5, Most of mine do not require any tools except a bullet to disassemble.
8. Witness hole for last round - 5/5
9. Additional witness holes - 5/5
10. Witness holes on the left - 5/5
11. Each round beyond 30 @ 5 each - 10

Total: 100

#### **Comments:**

Uzi mags are all steel and very reliable and very durable.

Likes: Works equally well for brass and steel cases. Witness holes for 10, 20 and 32 rounds **on left side. Can be loaded without a loader (I use an Uzi LULA loader BUT it's not required).**

Dislikes: None.

Material: Steel

Spring: 17 1/2 Coils of 0.050 - **0.052" wire diameter (16 gauge) weighing 14 grams.**

Capacity: 32 rounds.

Weight: Original versions weigh approx. 8.0 ounces (224 grams) each.

Dimensions:

Height - **8"**

Length - **1.31" long (front to rear)**

Width - **0.81" wide at the rear**

Drop free from mag well on release?

Gun 1: Of 4 Uzi mags tested, 4 dropped completely free.

Gun 2: Of 4 Uzi mags tested, 4 dropped completely free.

**Average force required to depress follower 6" (dithering to eliminate stiction): 11.9 lbs.**

**Average force required to hold follower depressed 6" (holding still): 11.0 lbs.**

Average vertical force required to load 30th brass round: 14.3 lbs.

## **CONCLUSION:**

If you buy an M-11/Nine and for simplicity only want to worry about one type of magazine and don't want to do any modification or tweaking of the magazine, I recommend **Shockwave's ZMAG. If you only shoot brass, it is the most user friendly (witness holes, mag stop, easy to load) and you don't need to worry about anything else. If you don't mind some level of tweaking and don't need your mag to drop free in a subgun competition, applying steel feed lips (available very inexpensively from Lage Manufacturing) to a Zytel can produce a magazine that is generally very reliable for brass ammo. You can drill your own witness holes and have pretty much the same functionality of a ZMAG with a capacity of 2 more rounds. If you want an extremely durable, very reliable mag that will feed any kind of ammo without even needing lubrication, consider the PAM 2. You may need to tweak the feed lips with a Dremel tool and/or hammer and if you want a mag stop, you'd need to add it with some JB Weld or something.**

When I go to the range and shoot full auto, if there are any youth around, I assume they **are saying to their dads, "Why can't we have a gun like that?" I like to give them an opportunity to shoot my subguns but I prefer to just give them a mag with cheap Russian ammo and I don't want to be embarrassed by a failure of the magazine to properly feed the gun.** So I tend to hand them a PAM 2 loaded with TulAmmo. I also like to be able to shoot from the bench with a half-height Zytel. So I will always still have in my range box some PAM 2s and some Zytels even though today, most of them are ZMAGs.