

.45 ACP shot cartridges – making dies, case forming and loading

What makes the Harris shot cartridge stand out from other handgun shot cartridges the cartridges were designed to cycle a Colt 1911 type handgun where previous shot cartridges, including those made by the US military, had to be hand cycled through the gun. Harris also used of .410 shotgun shot-cup type of wad to the solved the problem of 'leading' of the barrel.

Ammunition made in accordance with Harris and Buschow fed and cycled several single stack Colt 1911 type handguns. It would not feed in the only Para-Ordnance double stack gun tried.

A caution, the cartridge length is the same after firing as before and care should be take using this ammunition in a handgun with an extended ejector. If the case is not ejected from the gun, as the slide moves forward the case may be crushed downwards and the extended ejector damaged.

References:

Anyone embarking on a project to make shot cartridges should first obtain copies of these articles. The authors give detailed instructions about loading techniques and load information.

C.E. HARRIS

Shotshells for .45 Auto
American Rifleman
September, 1971

Handloading Shotshell for .45 ACP Handgun Hunters
American Rifleman
April, 1976
reprinted in
The .45 Automatic
National Rifle Association

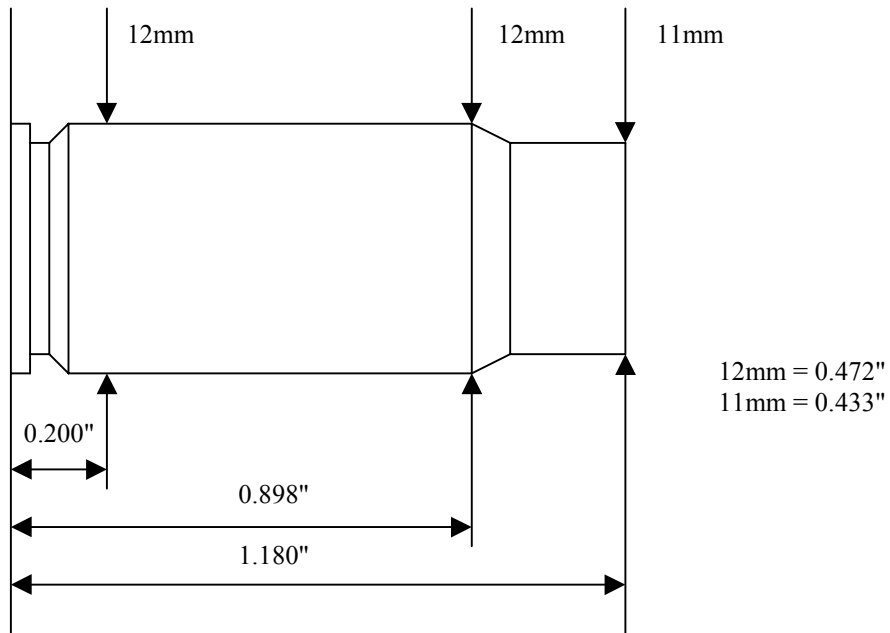
.45 Shot Load Malfunction
American Rifleman
April, 1977

Instructions for loading the .45 ACP Shotshell
published on the Internet 1993
may still be available

OLIVER C. BUSCHOW

Making and Loading .45 ACP Shotshells
Handloader
Number 80, July-August 1979

Cartridge case dimensions for the .45 ACP shot cartridge

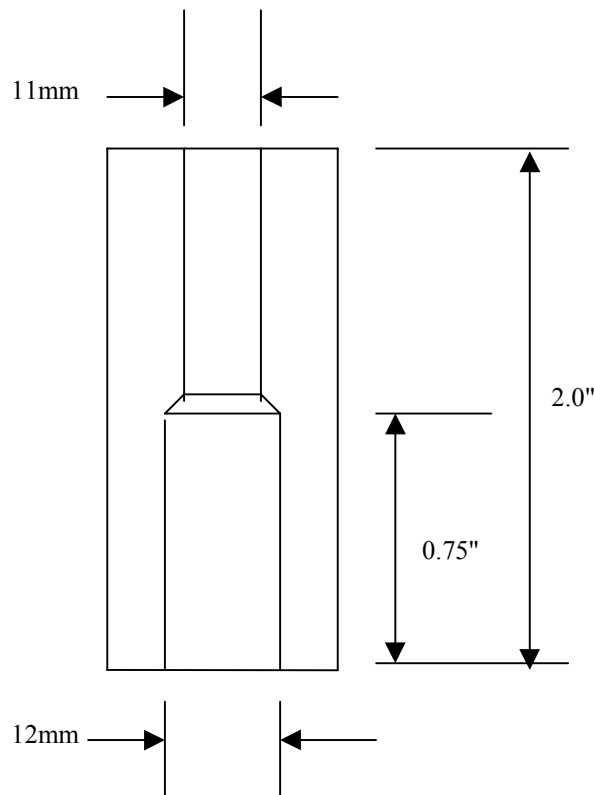


Cartridge case is of bottle-neck design and made from .308 Winchester cases for the wide and deep extractor groove required by the Colt 1911 extractor.

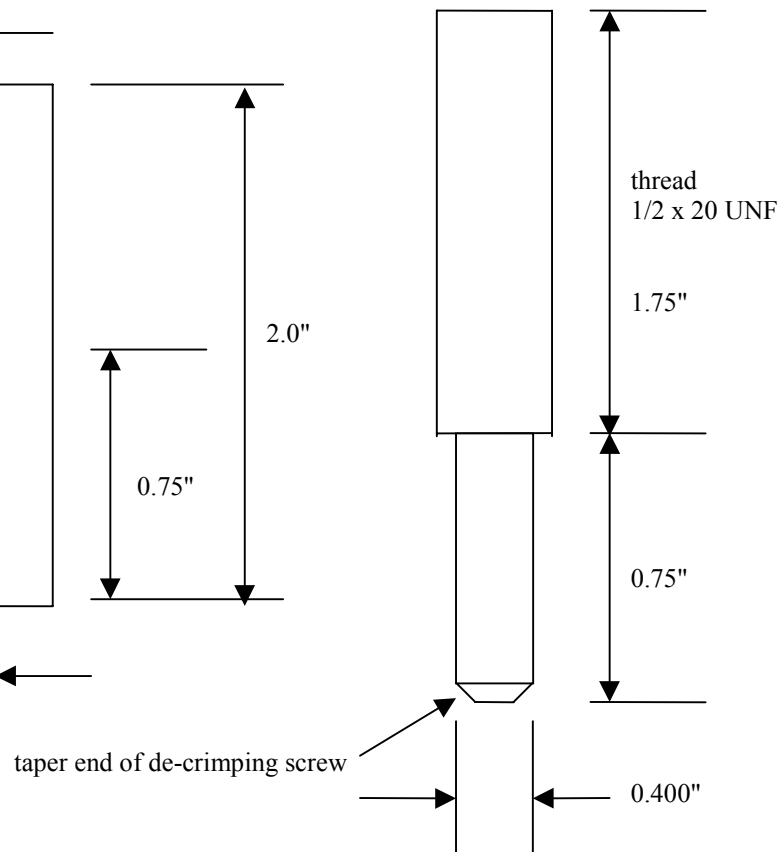
Loaded cartridges will have a roll crimp at the case mouth to retain the over-shot wad.

.45 ACP shot cartridge dies

Cross-section of case forming and sizing die



De-crimping screw for Pacific de-priming die



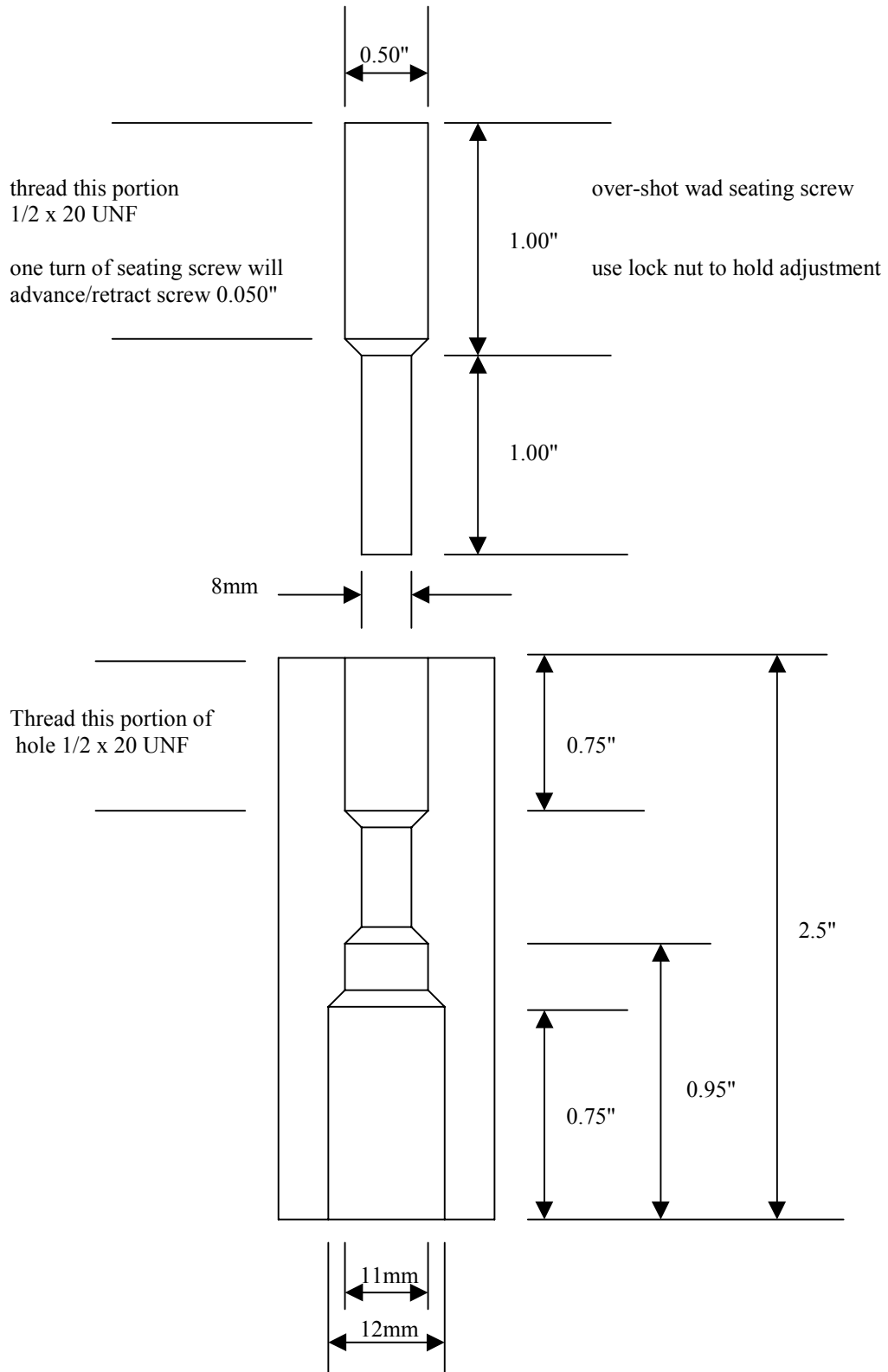
Notes on dies

1. Die bodies are made from cold rolled steel and threaded the standard 7/8" x 14 UNF.
2. Steel was left un-hardened as wear was not considered to be of importance - 50 cartridge cases will last a long time.
3. Chambers in the dies were drilled not reamed with the final drills of metric size as these were nearest to the required diameters. The chambers were polished to smooth out the rough surface left by the drills. A mirror finish is not required.
4. Polish the internal shoulder of both dies to round corner over.
5. Make a small radius on mouth of the die where case enters the die to ease case entry.
6. Depth of chamber portion of case forming die is cut 'short' to allow die to be adjusted to set back case shoulder.

Case length to shoulder	0.898"
Less depth of shell holder	0.125"
Gives theoretical depth of chamber	0.773"
Actual depth of chamber	0.750"
7. To de-prime the fired cases I use an old Pacific 38-357 die with a length of 2.75". After cases are de-primed the primer knockout screw is replaced with the de-crimping screw that removes any residue crimp left after the cartridge was fired. A combined de-priming and de-crimping screw could be made - just never bothered.

.45 ACP shot cartridge dies

Cross-section of over-shot wad seating and crimping die





.45 Shot Shell

Case forming and loading

Assuming that you have either made a set of loading dies or purchased a set (expensive!), forming cases and loading ammunition is not difficult but it is time consuming.

Case selection

The extractor for the 1911 handgun is designed to work with a case that has a deep, wide extraction groove. Unless you are prepared to alter the extractor groove of another case, the .308 Winchester family of cartridges is the only readily available case with a wide and deep extractor groove. Use commercial rather than military cases as suggested by Buschow.

Case forming

Both Harris and Buschow describe their case forming method, mine varies a little in that I use two trim operations. Rather than trim to final length before case sizing I prefer to final trim after case sizing – just a personal preference as a case may lengthen or shorten during the forming process.

1. Cut cases off to a length of 1.25” – I use a pipe cutter.
2. Trim case to 1.20” to remove turn-in made by pipe cutter
3. Chamfer inside and out of case mouth.
4. Clean swarf from case.
5. Lubricate case and run in to case forming die.
6. Trim case to final length of 1.180”
7. Chamfer inside and out of case mouth.
8. Clean swarf from case.
9. Wash and dry cases to remove lubricant.
10. Tumble cases to clean and make ‘em shiny.

When setting up the case forming die made to my design, allow about an 1/8” between the bottom of the die and the shell holder when the ram is in the up position. Size a case and try it in your handgun. If it won’t fully enter the chamber, it shouldn’t, set the die lower and size the case again. Repeat this procedure until the case freely enters the chamber but no further than a loaded ball round. The easiest way of following this size and try procedure is to have the barrel out of the handgun and measure case to chamber fit off the barrel hood.

Loading – preparations

Shot containing wads

Both Harris and Buschow specify Remington SP140 wads while I used Winchester WAA-41 wads (because I couldn't find any Remington wads at the time). I have no pressure data but Harris does, so follow his recommendation. Whichever wad you choose to use, trim the petals of the wads for an overall length for the wad of 0.750”

Over shot wads

Harris and Buschow diverge here in their loading components. Harris used an overshot wad made from plastic “sheet protectors” while Buschow used a Lyman .38 copper gas check. I’ve tried both methods and found little to choose between them except for the cost. I made a wad cutting punch and used 0.010” thick plastic sheet to make over shot wads 0.400” in diameter.

Loading - procedure

Priming – cases are primed in the usual manner except that care should be taken to ensure primers are seated to the bottom of the primer pocket. Large pistol primers are not as “tall” as large rifles primers and, as the shot cartridge cases are formed from rifle cases, the primer pocket will be deeper than the large pistol primer is “tall”. This should not cause a problem as most 1911's have sufficient firing pin protrusion for reliable ignition.

Powder charging – nothing unusual here

Over powder wad seating – the plastic wad is seated on the powder firmly using a wood dowel. A wad-seating die could be made but I see little advantage in using one. Take care when inserting the wad in to the case mouth that the gas sealing skirt of the wad is not damaged.

Shot charging – make a dipper that will measure the correct amount of shot or weigh each charge. Some powder measures will handle the small size shot.

Crimping – the fun part. Thing to remember here is that the over shot wad seating and crimping die works the same as a bullet seating and crimping die. The wad seating screw pushes the shot charge in to the case while the internal shoulder of the die forms a roll crimp at the case mouth. Using the die is a matter of trial and error until the correct adjustments for both the die and wad seating screw are obtained.

For the Harris over-shot wad the roll crimp is over the plastic wad while for the Buschow wad the roll crimp is in to the gas check leaving about 0.015” of the gas check protrudes from the case after the crimping process.

Re-loading fired shot cartridges has a couple of extra steps. The cases have to be de-primed of course and the cases also need to be de-crimped. The roll crimp is not completely removed from the case mouth when the cartridge is fired and it is necessary to remove any residue crimp from the case to allow a new shot-cup wad to be inserted in the case. The case mouth is sized up to remove the crimp and then sized down so that the case neck will fit in the rifled portion of the barrel.

..... David

Source	Case	Primer	Powder	Wad	Shot charge	Velocity	Pressure
Harris	Remington -Peters	Remington 2 ½	Winchester 231 6.2 grains	Remington SP410	103 grains #9 128 pellets	1248	14,880 cup note 1
Harris	Winchester	Remington 2 ½	Winchester 231 6.2 grains	Remington SP410	103 grains #9 128 pellets	1303	14.670 cup note 1
Buschow note 2	note 3	large pistol note 4	Winchester 231 6 grains	Remington SP410	115 grains #9 135 – 145 pellets		
Tucker	Remington -Peters	Federal 150	Winchester 231 6 grains	Winchester WAA-41	105 grains # 9 approx 130 pellets		

Notes:

1. Harris notes that the maximum average working pressure for .45 ACP cartridge is 18,000 cup
2. Buschow gives several loads but this is his preferred load.
3. Buschow does not specify make of cartridge case but recommends commercial .243, .308 and .358 cases. He cautions against military 7.62 NATO cases as these cases are thicker and the resulting thick neck walls make inserting the wad difficult without damaging the gas seal skirt of the wad.
4. Buschow does not specify make of primer but notes *no difference in performance amongst brands of large pistol primers.*