PASSFIRE.COM

Log Out

Volume 2, Issue 4

AUTOPSY

5" Lidu Crossette Canister Shell

Manufacturer:	*Lidu*
Shell Weight:	*1241g*
Lift Charge:	*90g 3FA black powder*
Burst Charge:	*252g KP on Rice Hulls, approx 10:1*
Shell Type:	*5" oriental canister*
Time Fuse:	*Dual chinese, 3 sec delay time*
Shell O.D.:	*4-1/2"*
Shell Height:	*5-1/2" w/lift cup, 4" without*
Wall Thickness:	*3/16"*
Cup Set:	*2" deep x 4-3/8" I.D. x 1/8" wall thickness*
Crossette Count:	*28*

Figure 2: Thin bottom disk pealed open to reveal lift charge and filler.

Figure 3: Stripped away paste layer shows cylindrical strawboard

Old Methods Die Hard:
It is rare that products of any sort ever take on major design changes from one model to the next. Products usually exhibit minor improvements that slowly evolve the design over many generations. This can be due to the large amount of retooling and retraining of workers required for a radical change in process, or simply from an inability to conceptualize too far beyond what currently exists. This observation clearly holds true for this first generation of oriental canister shells.

Perhaps because this manufacturer did not have access to the methods of making European style canister shells, or could not retool for such a different method, these canister shells are constructed exactly like ball shells! The only difference is that the hemispheres were pressed into a cylindrical mold instead of a spherical one.

Two strawboard cups of equal size are loaded as separate halves just like a ball shell would be. One "hemi" is double fused with piped time fuse just like ordinary Lidu ball shells. One side is loaded inside of a tissue paper liner so that the tissue may be folded over the loaded shell to prevent the contents from falling out when it is inverted onto the other half, as seen in Figure 4.

The inserts for this shell, which were silver crossettes, were loaded in the opposite orientation than that used for a traditional canister shell. As a result, only 28 of them could be fit inside the shell instead of the 33 that would fit by stacking them vertically. Each "hemispheres".

Figure 4: Shell loaded as typical for ball shells.

Figure 5: Placement of crossettes in second layers.

Figure 6: Closeup of KP burst charge.

half contained two rows of inserts, with the bottom row containing two central inserts that the middle rows did not have. This was probably done with the hope of achieving a round spread of crossettes in all directions.

The two halves were loaded with a burst charge of KP coated very thickly onto rice hulls. There was no central burst core, instead all empty space not consumed by the inserts was loaded with break charge the way a ball shell would be.

Continuing with the ball shell procedure, the two halves were put together and held with a band of tape, which can be seen in the cutaway in Figure 3. This assembly was then strip pasted to about 1/16" thickness. The shell was not spiked in any way, only pasted with strips of paper that ran the whole length of the shell from top center to bottom center. These strips were tapered at the top and bottom ends to prevent a conical pile-up of paper.

A string loop for supporting the leader when loading was made by running cotton twine around the shell a few times and tying it off at the bottom. The excess at the top was twisted to form the loop.

The lift cup was a rather interesting bit of over-engineering. A very strong ring of cardboard about 1-1/2" tall and 1/8" thick was attached onto the time fuse end via more strip pasting. The lift charge was loaded into a tissue liner that was glued to the bottom of the shell, then folded around the lift. The remaining empty space was filled with some type of cotton seed filler that resembled a rat's nest. The purpose of this filler is unknown and seems unnecessary. A rather thin strawboard disk was placed over the bottom and held into place with two sheets of 30lb paper pasted over the end.

It is apparent from the lift cup design that the walls of the lift cup are designed to stay attached to the shell when it is fired, helping to reduce the buildup of junk in the bottom of the mortar. Thus the walls are very thick to prevent them from blowing apart, and the bottom is very thin so that it blows out on lift.

The end result is essentially a ball shell that is in the shape of a cylinder! There was no spiking, no end disks, no pleated paper, and the concept of rolling sheets of paper around the shell instead of strips seems to be strictly avoided. The shell was also bottom fused, perhaps not realizing the increased risk of a blow-through from the higher lift pressures that occur with cylinder shaped shells.

Having seen these shells break, they definitely need improvement. As can be expected when using methods that were developed for a different shell geometry, the shell does not yield equal confinement in all directions and often results in bow tie or hose breaks. If oriental shell manufacturers continue to try their hand at canister shells, it will be interesting to watch them reinvent the wheel as their designs evolve.

Mail Passfire.com