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HANDBOOK

FOR

9-PR. R.M.L. GUNS OF 6-CWT. & 8-CWT.

(LAND SERVICE).

1889.

**DEFENCE
INFORMATION SERVICES**
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DEFENCE INFORMATION SERVICES

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Price One Shilling.

PROJECTILES.

(Plate VI.)

		<i>Weight</i>	
		Lb .	Oz
	{Common... { empty.. Common... empty	8	91/2
	{Mark V. { filled with 7'5 oz. bursting charge ..	9	1
Shells,	{		
	{*Shrapnel {filled with 63 mixed metal bullets,}		
	{Mark VIII. {28 at 18 per lb., and 35 at 34 per } {lb., and 12 drams bursting charge }	9	12
Shot	{ t Case, Mark IV., filled with 110 mixed metal bullets, } {at 162 per lb., clay and sand }	19	10 ¼

INSTRUCTIONS FOR THE PREPARATION OF SHELLS AND THE EXAMINATION OF FILLED SHELLS.

(See Regulations for Magazines, &c., 1887.)

FILLING AND SECURING SHELLS. *Shells, R.M.L., Common.*

Remove the plug from the fuze-hole, insert the leather funnel, and pour in the bursting charge; the shell should be tapped with a mallet or a piece of wood to ensure its being completely filled, just leaving room for the fuze if it is to be fazed with a time fuze, this can be ascertained by inserting a piece of wood the same size as the fuze; after filling the shell carefully wipe every portion of powder from the fuze-hole, insert the wad, fuze-hole, G.S., with the side on which the shalloon is cemented downwards, i.e., neat the powder; drive it in with the " Drift, G.S.," as far as the shoulder on the drift will allow, and then screw in the fuze or plug as may be required.

* Shrapnel shell can be utilised as case shot. for distances up to 100 yards, by loading the reverse way, and firing them without fuze or plug.
 t The shot, when placed in axletree boxes, should be packed with oakum to prevent their being damaged in travelling.

Shells, R.M.L. Shrapnel.

Remove the plug from the fuze-hole, and after seeing that the fuze-hole is clear of any dirt, &c., insert the leather funnel and pour in the bursting charge. This must be done gradually, for if the whole of the powder is put in at once the tube will probably become choked. Shake the shell from side to side on its base, until the whole of the bursting charge has passed down the tube, taking care that none of the powder is left at the bottom of the socket. Drop in the "Primer Shrapnel shell," and, by means of the driver screw Shrapnel large III, screw it tightly into the tube, and then screw in the fuze or plug as may be required.

FIXING PLUGS AND FUZES.

When plugs or metal fuzes are screwed into shells they will be lubricated with Field's grease No. 3, if for home service or British North America; Price's composite grease will be used at all other stations.

DISTINGUISHING MARKS.

All shrapnel shell will be painted with a red tip 1 inch deep. All filled shell will have a red band, 2 inch wide, painted around the head, 1½ inches from the top. In the case of shrapnel, this band will be 2 inch below the red tip. They will also be marked with the date of filling, and except (when filled by Royal Artillery), the monogram of station. The colour of the paint will be red on a black ground, or black on a red ground. Projectiles which are to be used for practice only will be marked with a yellow band round the head.

EXAMINATION *of* FILLED SHELLS.

Whenever it may be considered necessary to examine the interior of filled shells, and it is found that the powder is caked from the effects of damp, the common shells, will be emptied, cleaned out, and re-filled; the Shrapnel, will be exchanged.

'Shells, Common, filled with Loose Powder.

Remove the fuze-hole plug, pass the "hook G. S. wads" through the hole in the centre of the wad, and draw the wad out of the fuze-hole: if the powder charge is in a serviceable condition, insert a new papier-mâché wad, and replugin the shell as directed in instructions for filling. If the powder charge is found to be caked from the effects of damp, empty the shell and clean it out. If the powder is so caked that it will not run out of the shell, or if any powder remains adhering to the interior of the shell, fill the shell with boiling water and allow it to stand for about five minutes, then pour out the water and fill up again with boiling water. After standing for 15 minutes more, the shell may be emptied, using the copper scrapper for shells to facilitate the removal of the wetted powder. The scraper must not be applied until after 15 minutes have elapsed after the second quantity of boiling water has been poured in. When the shell is perfectly dry, refill with serviceable powder.

Shells, Shrapnel.

Remove the fuze-hole plug, unscrew the primer with, the " driver screw Shrapnel large Mark III," and lift out the primer with the " pincers Shrapnel primers "; turn the shell nose downwards, and if the powder charge flows out and is serviceable, refill and replace primer and plug; the shell should be well shaken if the powder does not come out quite freely, as a portion of the powder may possibly be jammed in the tube; if the powder cannot be extracted as above, being caked from the effects of damp, &c., the primer and plug will be replaced, and steps taken for the exchange of the shell.

FUZES.

(Plates VII and VIII.)

Percussion R.L.	No. 7. (Marks II, II* and III.)
Time, Wood M.L.,	15-secs., No. 41. (Mark II)

DESCRIPTION OF FUZES.

Percussion R.L. No. 7. (Marks II, II and III.)*

The body is of gun-metal; both body and top are cast in one piece, and the bottom is screwed in. A square hole in the head fits the key by which it is screwed into the shell. This fuze fits G.S. gauge.

The safety-pin (of double twisted wire) passes through the head of the fuze, and is kept in its place by the two ends being opened out slightly, so as to bind themselves in a conical cup, as shown in the Plate. A thin disc of brass is then fitted over the ends, and soldered to keep the fuze water-tight. The head of the safety-pin is fitted with a loop of string, by which it is withdrawn. The pin is not to be withdrawn until the shell is placed in the gun.

When the safety-pin is withdrawn, the hole - through which it passed, if left open, would probably admit of the passage of the flash from the discharge of the gun into the interior of the fuze, and so a premature burst would take place. To guard against this, a small lead pellet slides freely in a recess cut in the head and closed by a thin brass disc soldered on flush with the top of the fuze. When the shell is rammed home, the pellet sets back, and so closes the safety-pin hole.

The percussion arrangement consists of a steel needle, fixed point down in the centre of the top on the inside, and a lead pellet containing in its head a cap of detonating composition. The pellet is kept in position by a gun-metal guard, which rests on two feathers on the outside of the pellet. On the shock of discharge, the guard sets back, shearing off the feathers, and on graze or impact, the guard and pellet fly forward together, bringing the cap in contact with the needle, and thereby firing the fuze.

Mark III fuze, which will supersede Mark II, has a shield of copper placed over the top of the lead pellet to prevent the brass safety-pin from indenting the soft metal of the pellet, and thereby allowing the detonator to approach too close to the needle.

Mark II* are Mark II fuzes altered to Mark III pattern.

Fuse, Time, Wood, 15 sees., M.L. No. 41. (Mark II)

Is made of beech wood, with a composition channel bored almost the whole length of the centre of the fuze. This channel is lined with paper, and driven with 2 inches of slow-burning composition. Above this is an 0.6-inch pellet of mealed powder, having a hole bored down its centre to a depth of 0.4 inch. There are six powder channels bored parallel to the composition channel, connected at the bottom by a quick-match placed in an annular groove and pressed into the bottom of each channel. The last hole is bored through and threaded with quick-match. The numbers on the paper scale are reversed, so that they read correctly when the fuze is being bored. Each side hole is marked on the index paper with a dot of yellow paint. The head of the fuze is closed by a gun-metal plug, round the pin of which quick-match is looped and led through two fire-holes to a groove. This groove is covered by a copper and tape band which must be removed before firing.

PREPARING FUZES.

Fuzes, Time, Wood, 15 secs., M.L.

These fuzes are prepared for any desired time of flight by boring through the side-hole corresponding to the required time into the composition.

When using the hook-borer place the fuze in the hook of the hookborer in the proper position for boring the required hole: * enter the bit into the side-hole, screwing up until the bit has entered as far as the borer will allow, taking care to press the fuze with the fingers so as to ensure its bedding fairly in the hook.

Unscrew, and when the bit is quite clear, remove the fuze from the hook. The length of the bit is so regulated that, when placed in the handle, it will enter sufficiently far into the composition when screwed down to the shoulder. If the bit should become unserviceable the handle must be detached from the shank and the tightening screw unscrewed, the square hole in the hook being made for that purpose. Care must be taken when substituting another bit that it is properly placed in the handle, and that the tightening screw firmly presses upon it, for if any space be left between the handle and the head of the bit the end will not enter a sufficient depth into the composition. The borer should be occasionally examined and cleaned. The operation of preparing the fuze and fixing it in the shell takes, on an average, about 15 seconds; with a little practice these operations may be performed in a shorter time.

Fuzes, Percussion, R.L.

These fuzes require no preparation except the removal of the safety-pin; they are screwed firmly into the fuze-hole by means of the "Key, plug, G.S.," or "Key fuze universal."

The safety-pin must not be removed until the shell is placed in the muzzle of the gun.

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* The hook is conical to fit the fuze.

FIRING FUZES.

Fuzes, Time, Wood, M.L.

The fuzes are fixed in the fuze-hole by screwing the fuze round by hand until it is held firmly in the fuze-hole ; the fuze must not be nn. capped until the shell is placed in the muzzle of the gun. The fuzes are "uncapped" by taking hold of the small end of the copper band, which is left exposed, and unwinding from left to right smartly, so as to thoroughly detach the band from the head of the fuze, and to leave the priming fully exposed.

Wad, fuze-hole, G.S.

When fixing fuzes in shells having a wad in the fuze-hole, it is not necessary to remove the wad, as the explosion of the fuze is sufficient to force it into the shell if using percussion fuzes; and if using wood time fuzes, the wad is driven into the shell in the operation of fixing the fuze.

EXTRACTING WOOD FUZES.

Apply the fuze-extractor to the head of the fuze and unscrew.

CHARGES.

Service, silk cloth or serge	1 3/4 lb. R.L.G.2 powder.
Exercise, silk cloth	1 lb. Blank R.L.G. or L.G. powder. DIRECTIONS

FOR MAKING UP CARTRIDGES.*

*(See Regulations for Magazines, &c., 1887.)**Filling.*

Care will be taken to see that the empty cartridges are thoroughly dry before being filled, and the proper charge will be carefully weighed out and inserted in the bag by means of the "Funnel, cartridge." Cartridges will be choked by drawing together the month of the cartridge into several plaits with a nickel silver needle, threaded with three strands of worsted for serge cartridges, or with silk twist, doubled, for silk cloth cartridges; after drawing together the month of the cartridge, three turns will be taken round the plaits, and the choke thus formed will be further secured by passing the needle three times through it, alternately above and below the turns, thereby stitching down the turns round the choke at two points equidistant from each other.

Cartridges are supplied filled for field guns (*vide* Equipment Regulations, 1881, § 249).

Hooping

The cartridges will be made up to their proper lengths and diameters by means of hoops, which should be drawn tight so as to make a firm cartridge, as follows:-

Draw the braid through the serge or silk cloth until the knot of the loop comes home to the serge or silk cloth, the single end being already passed through the loop from underneath, pass the single end to one side of and under the loop, then draw the hoop tight, and keep it so by placing the forefinger of the left hand firmly on the loop; bring the running end between itself and the loop, and draw tight the single bend thus formed, *taking care that the bend bites on the loop and not on the single end*, otherwise the knot will slip. The maintenance of the proper form of the cartridge depends on the hooping being thus secured.

After choking and hooping the ends of the choke are cut off to a convenient length (not to exceed half the diameter of the cartridge).

Finished Cartridges.

All cartridges will be very carefully examined and gauged as to length and diameter previous to packing.

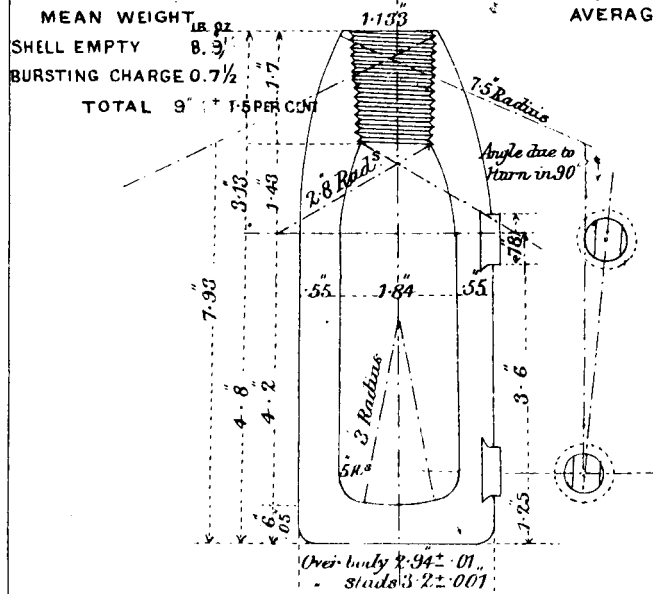
Tube.

Tube friction copper short.

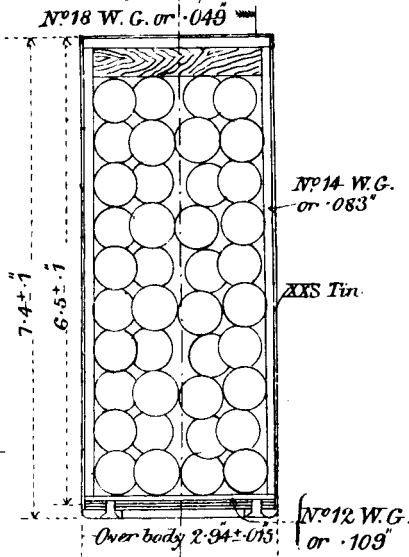
Tube friction copper solid drawn.

The present store of the former pattern will be first used up.

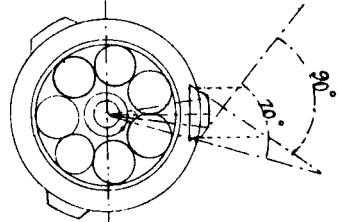
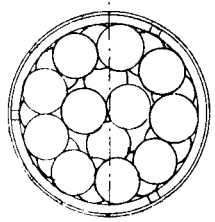
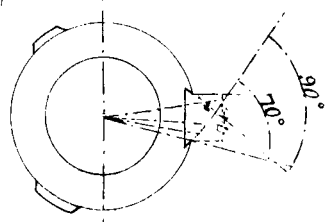
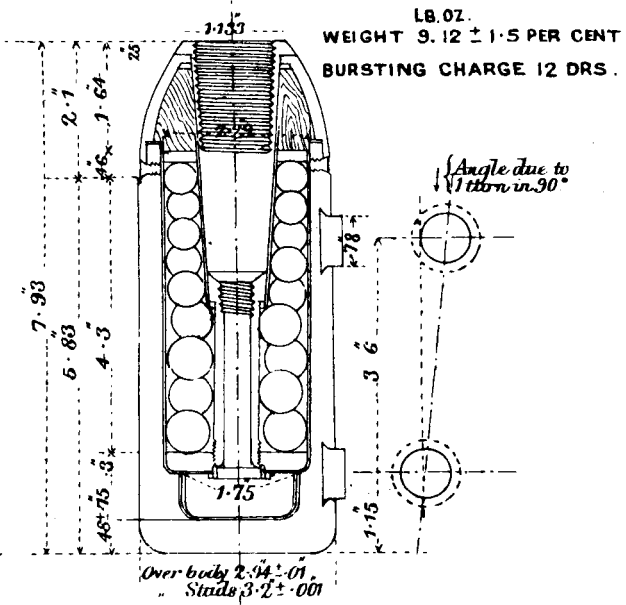
SHELL R.M.L. COMMON 9 PR V.



SHOT R.M.L. CASE 9 PR IV.
AVERAGE WEIGHT 9 LBS. 10 ½ OZS ± 6 OZS



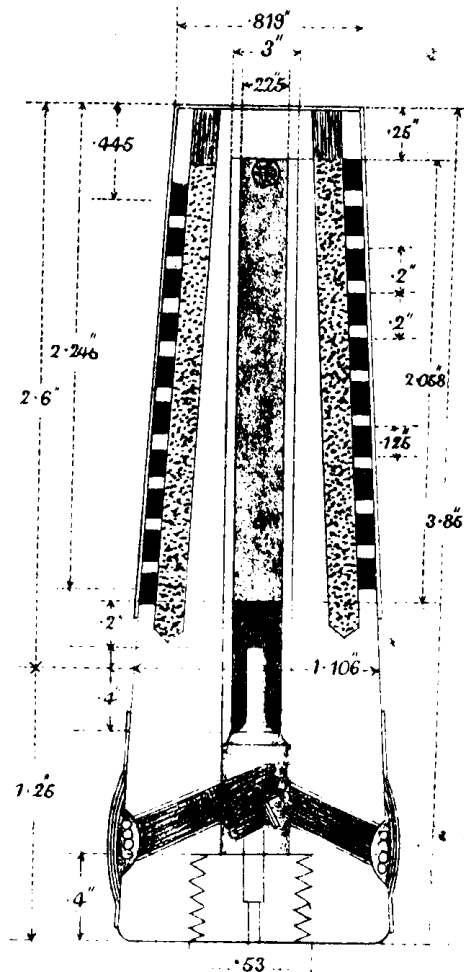
SHELL R.M.L. SHRAPNEL 9 PR VIII.



FUZE, TIME WOOD, M.L. 15 SECONDS.

MARK II.

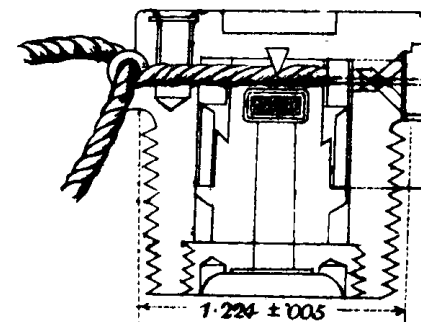
FULL SIZE.



	30	29.5	29	28.5	28
27.5	27	26.5	26	25.5	25
24.5	24	23.5	23	22.5	22
21.5	21	20.5	20	19.5	19
18.5	18	17.5	17	16.5	16
15.5	15	14.5	14	13.5	13
12.5	12	11.5	11	10.5	10
9.5	9	8.5	8	7.5	7
6.5	6	5.5	5	4.5	4
3.5	3	2.5	2	1.5	1

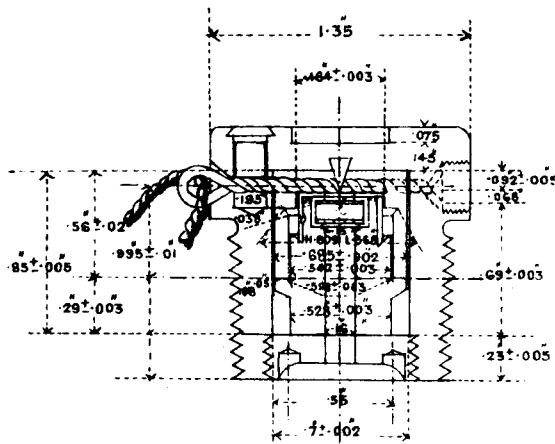
FUZE, PERCUSSION, R. L. II.

MARK II.

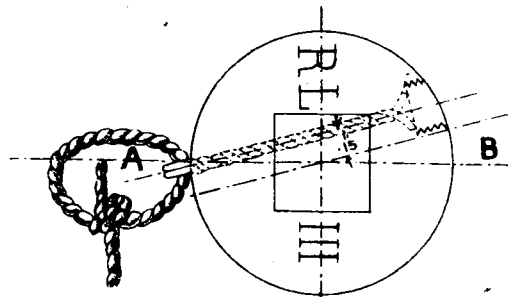


DANGFRIELD LITH 22 BEDFORD ST COVENT GARDEN 5669.

FUZE PERCUSSION R. L. N° 7 MARK III.
FULL SIZE.



SECTION AT A.B.



PLAN.