

CODE OF PRACTICE
AIRGUN RANGE CONSTRUCTION

INTRODUCTION

Unlike cartridge ranges, which require a Range Safety Certificate to be issued by the Ministry of Defence, there is no inspection and certification requirement for airgun ranges.

It is essential therefore that those responsible for the construction and conduct of shooting on airgun ranges should be competent and qualified to undertake the task. We detail below criteria which should be followed in all cases depending on the type of range being used. The information is taken from Joint Services Publication 403 Vol. II (Range Construction) issued by the Ministry of Defence.

01. Definition. Air guns are defined as rifles or pistols which fire a lead pellet by the release of a spring driven piston inside a sealed air chamber or which use a compressed air (or other gas) cylinder. Air guns of 0.177 or 0.22 inch calibre are not to exceed the Home Office muzzle energy limits of:

- a. Air rifles: 12 ft/lbs (16.26 Joules)
- b. Air pistols: 6 ft/lbs (8.13 Joules)

02. Aim. This document describes the design and construction required for air guns to be fired on existing and temporary ranges. It covers:

- a) Introduction
- b) Danger areas
- c) Design
- d) Construction
 - i. Existing 25m indoor rimfire ranges
 - ii. Temporary indoor ranges
 - iii. Range in a Vehicle
 - iv. Tent range
 - v. Open NDA ranges
 - vi. Firing Outdoors
- e) Communications
- f) Maintenance

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DANGER AREA

06. Indoor Ranges The principal dangers from air guns are pellets bouncing back from striking a hard or reflective surface, such as the rubber anti-splash curtain of a rimfire range.

07. Danger Area. The danger area is shown in Figure 1.

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DESIGN

11. Criteria. Ranges on which air guns are fired should conform to the requirements of this Document.

The normal engagement distance for air guns is 6 yards or 10 metres. Target centre height for National Small-bore Rifle Association (NSRA) competition is 1400 mm (± 200 mm) firing from the standing posture. Targets should be mounted so that the target centre produces a depressed line of sight (LoFS).

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CONSTRUCTION

EXISTING 25 m INDOOR RIMFIRE RANGES

16. Bounce-back. 25 m indoor ranges used for air gun shooting require an essential modification to ensure that the anti-splash curtain or the bullet catcher does not cause pellet bounce-back. The anti-splash curtain must be removed or a separate pellet stop set up in front of the curtain.

17. Bullet Catcher. The existing angled plate and sand bullet catcher designs are safe for use.

However, flat plate bullet catchers may cause pellet bounce-back and should be covered with a suitable material or replaced with a purpose-designed pellet stop.

18. Pellet Stop Materials. Only materials such as timber, low grade plywood, or soft particle board should be used. Rigid material is set at 45° (800 mils) to deflect pellets downwards to the range floor and a soft protective material is placed on the floor below the deflector. Suitable for trapping pellets are soft fibrous materials which yield when struck and do not suffer undue damage. Examples are:

a) A heavy blanket or canvas sheet hanging loosely from a wire stretched across the range.

The density of the blanket or sheet can be improved by spraying it with water.

b) Sheets of rubberised horsehair 50 mm thick backed with 10 mm thick plywood, chipboard or similar material.

c) Softwood sheets built up to 50- 75 mm thick and backed as at sub-paragraph b above.

19). Pellet Stop Size The minimum size for a pellet stop is calculated by adding a safety angle of 4.5° (80 mils) to the LoFS horizontally, on each flank and vertically:

a) Height. the pellet stop extends from the floor to a point at least 4.5° (80 mils) above the highest LofS.

b) From each flank LofS an angle of 4.5° (80 mils) projected from the firing point establishes the minimum width.

20. Targetry. Only penetrable or light fall-when-hit targets should be used. Targets should be mounted on pellet catchers, soft board, light cellular plastics or on wires stretched across the pellet stop. Light pins or rubber bands are used to secure the targets as drawing pins with large heads are hazardous. Target retrieval systems require careful design so that no part of it within the pellet stop area causes bounce-back.

21. Lighting. Target lighting can be provided by fluorescent strip lights with a reflector behind, halogen or ordinary light bulbs. They may be set on the range floor with an angled baffle to deflect pellet strike or suspended above the bullet catcher height. Ideally the lighting on the target should be between 700 and 1000 lux.

22. Firing Positions. Firers to be spaced at least 1 m apart. The most suitable firing position is standing, if necessary supported by a bench or table set at the appropriate height. However, kneeling or prone may be undertaken. When adopting the prone firing posture at any range, the firer must be at least 300 mm off the range floor.

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TEMPORARY INDOOR RANGES

26. Construction. When a purpose built range is not available, any room or building may be adapted to a temporary range. The fabric or cladding of all normal buildings will contain an air gun pellet. It requires only the openings, such as windows and vents, to be covered and all down-range doors to be bolted from the inside. Openings should be covered with:

a) Range Sides. 5 mm thick plywood, dense particle board or similar material.

b) Direct Line of Fire. 10 mm thick plywood or dense particle board.

27. Pellet Stop and Firing Point. The pellet stop and firing point are the same as in paragraph 18 and 19.

28. Clear Line of Sight. Care is required to ensure that there are not obstructions, such as columns, partitions or fixtures, near the LofS. A clear height of at least 600 mm above the LofS at the firing point and 250 mm above the LofS at the target is essential. Sides must provide a minimum of 500 mm clearance from each flank LofS.

29-30. Spare.

RANGE IN A VEHICLE

31. General. A range mounted in the back of a vehicle is often required for displays and recruiting purposes. Firing is normally from the standing position with firers leaning into the range protected

structure. The minimum range may be reduced to 5 m but extreme care has to be taken to prevent pellet bounce-back.

32. Construction. To stop pellets leaving the range, the sides and top of the structure are either 5 mm thick plywood, dense chip or particle board, or 1 mm thick mild steel (MS) sheet. The end wall in the direct line of fire (LofF) is 10 mm thick board as above or 3 mm thick MS. The height of the top or roof from the range floor is not to be less than 1 m. A pellet stop as described in paragraph 18 covers the complete back wall.

33. Targetry and Lighting. A target retrieval system is used. Targets and target mounting are the same as stated in paragraph 20. If lights are required, they are recessed into the roof with an angled baffle to stop the edges causing bounce-back.

34-35. Spare.

TENT RANGE

36. Pellet Stop and Targetry. The pellet stop may be constructed with straw bales or with the materials specified in paragraph 18. The dimensions are to be in accordance with paragraph 19. Targets and target mountings are the same as paragraph 20. If straw bales are to be used extreme care should be taken to regularly inspect for wear. They are not as durable as other materials.

37. Sides and Roof. Consideration must be given to protecting the sides and roof of the tent against wild shots. Any ricochet inducing surfaces between the firing points and the target are to be protected.

38. Firing Positions. Firers to be Spaced at least 1 m apart. The most suitable firing position is standing, if necessary supported by a bench or table set at the appropriate height. However, kneeling or prone may be undertaken. When adopting the prone firing posture at any range, the firer must be at least 300 mm off the range floor.

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OPEN NO DANGER AREA RANGES

41. Stop Butt Height.

10 m Range. On an open 10 m no danger area (NDA) range where the LofS in the standing position is either horizontal or depressed, a stop butt height of 2.31 m is required to cater for a maximum competition target centre height of 1400 mm (± 200 mm).

42. Stop Butt Width. The stop butt has to be wide enough to cover the intervals between firers and the 4.5° (80 mils) safety angle from each flank LofS. At 10 m the latter will be 800 mm, which in practice should be increased to 1 m to allow an extra measure of safety for the wind effect on pellets and at increased ranges it will be greater.

43. Firing Point. To retain the depressed LofS from the prone and kneeling positions, a raised firing point 300- 450 mm high should be constructed and the target centre height set between 300 and 600 mm above the range floor.

44. Although a stop butt wall is provided care should be taken over sitting of the range. Accidental discharge may involve the pellet passing over the "wall". Consideration should be given to operating a full danger area template, see paragraph 46

45. Spare

FIRING OUTDOORS WITHOUT STOP BUTT

46. When firing outdoors without No Danger Area structures the danger area template at Figure 1 is to be applied.

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COMMUNICATIONS

51. A means of summoning the emergency services, ideally a telephone, is to be available.

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MAINTENANCE

56. As well as normal range maintenance requirements, air guns create the additional tasks of:

a) Lead. After each use pellets are to be removed and the range cleaned to prevent a build-up of lead contamination. Lead is to be disposed of as contaminated waste.

b) Pellet Stop. The pellet stop requires (careful inspection to ensure that it will not cause bounce-back.

c) Hygiene. The firers, as they handle lead pellets are to be instructed on the danger of lead poisoning and to observe strict hygiene in eating drinking and smoking. In addition hand washing facilities should be available.

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Figure 1 is available at <http://www.dohoo.clara.net/hsrc/fieldtgt.htm>