



## VISION AND GLASSES



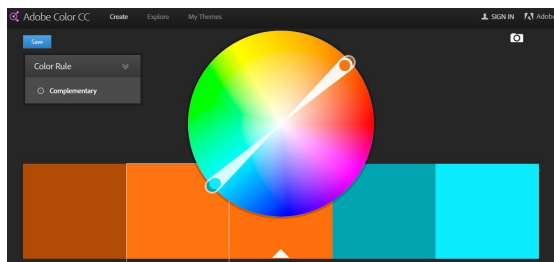
## LENS DETAILS

- Must accentuate the Clay's colour - Orange / Crimson is good - "calms down" blues and greens
- Non reflective coating stops reflections



## EFFECTS OF LENS COLOUR

"Greys" out the Complimentary colour



## HEARING PROTECTION

- You will sustain hearing damage when shooting without hearing protection
- Compulsory to wear hearing protection on Registered Clay Ranges

## DECIBELS: Measure of Sound Intensity

The decibel is a logarithmic function

- 10 dB increase in noise level mean that it has 10 times more "noise"
- 20 dB means 100 times more
- Earmuffs have a dB reduction rating

## HEARING PROTECTION

- Standard ear muffs or plugs



- Nice to have electronic ear muffs - can hear what is going on around you



## QUALITY



## SHOTGUN CONFIGURATION

- Under and Over
- Side by side
- Single barrel- single shot, pump or semi auto



## SHOTGUN CONFIGURATION

- Under and over has the advantage that there is less muzzle lift when shooting the bottom barrel
- Helps for second shot

## SHOTGUN CONFIGURATION

- Weight of gun about 7 to 8 lbs
- Balance approximately at the hinge pin



## LENGTH OF BARRELS

- Minimum allowed for Clays is 26 inches
- Length of barrel affects speed of swing
- Length of barrel affects "stability"
- 28 inch is a good all round compromise

## SHOTGUN RIB

- Can be wide or narrow  
Personal choice, but should be non-reflective
- Ventilated rib helps disperse heat haze
- Type of bead is a personal preference
- Remember this is not a target gun



### SHOTGUN OPTIONS

- Single or double triggers
  - Can also get trigger that fires on release
- Fixed choke or replaceable choke
- Automatic ejectors or manual



### SHOTGUN TRIGGERS

- Triggers
  - Generally about 4 pounds pull
  - Must be crisp
  - Triggers can be wide or narrow – personal preference

### SHOTGUN TECHNICAL

- Automatic or Manual Safety
- Selector combined with Safety or on trigger



### SHOTGUN PISTOL GRIP

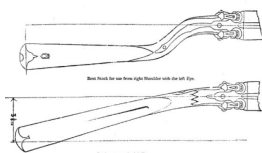
#### Type of grip

- Pistol grip
- Straight



### SHOTGUN FIT

- Length of pull
- Drop at heel
- Drop at Comb
- Cast off



### SHOTGUN FIT

- All these dimensions are essential for correct fit
- Your eye is the "back sight"
- Head must be on exactly the same place on the stock each time
- Poorly fitting shotgun is like using a scope with a loose reticule

### SHOTGUN FIT

- The gun fit determines how much Rib you see
- The amount of Rib you want to see will be dependant on the Discipline you shoot

### SHOTGUN FIT

- Want to see "more" Rib for Trap - rising bird
- Sporting and Skeet will see "less" Rib



### SHOTGUN FIT

- Fit is a function of your body type
- Will alter if you loose or gain weight
- Will alter if you change thickness of clothing - be consistent

### SHOTGUN FIT

- Remember a factory built shotgun is made for the "average" person
- Variables are length of arm, depth of chest, cheekbone height, length of neck...
- You **MUST** ensure that it fits you

### HAND POSITION

- Left hand will affect speed of swing
- Decide where to hold fore end and keep it there



### CLAY GUN vs FIELD GUN

- If you specialise in a Discipline you may have to have a dedicated shotgun for that
- May want a lighter Field Gun
- More toys !

### THE CHOKES

- This is a constriction at the end of the barrel to "focus" the shot
- The objective is to match the required pattern density with distance to Clay
- Constriction is normally between 0 and 0.040 inch



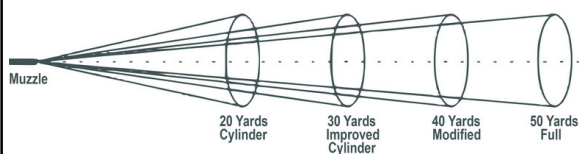
### THE CHOKES

#### Full Choke - Most Constriction

- $\frac{3}{4}$  Choke
- $\frac{1}{2}$  Choke
- $\frac{1}{4}$  Choke

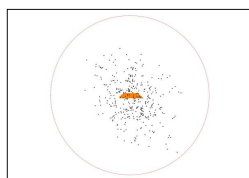
#### Cylinder - Least Constriction

### THE CHOKES

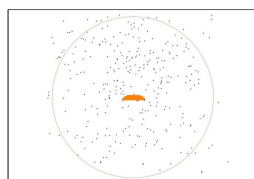


### THE CHOKES

- Result is measured as % of shot in a 30 inch circle
- Results will vary between guns and ammunition
- Need to test on a pattern board



Full choke at 20m



Cylinder choke at 20m

### CHOICE OF CHOKE

- Much overrated  
- especially at the initial stages
- $\frac{1}{4}$  and  $\frac{1}{4}$  would be a good start

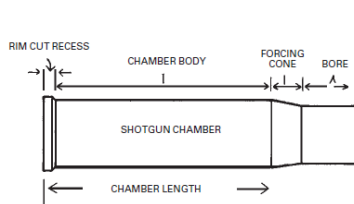
## THINGS TO DISCUSS

- Forcing Cone and Back Boring
  - Not of great consequence at initial stages

## FORCING CONE

- A restriction is required from the case diameter to barrel (or wad) diameter
- Some forcing cones are gradual, some sharp - alleged to alter "felt" recoil

## FORCING CONE



Standard shotgun chamber with short forcing cone.



## BACK BORING

- Opening out the barrel between forcing cone and choke
- May (or may not) improve pattern

## CLEANING AND STORAGE

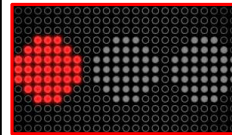
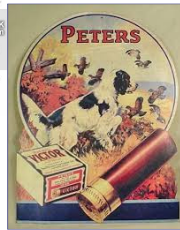
- Barrels should be cleaned of all plastic and lead after use
- Firing pin springs must be released - against resistance.
- Hinge joint and ejectors lubricated - probably grease is best



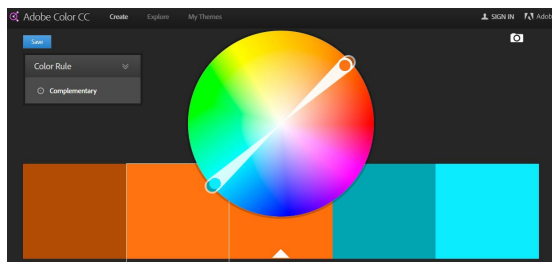
## SUMMARY

- Glasses
- Hearing protection
- Gun mechanisms
- Gun fit
- Chokes
- Other details
- Cleaning and storage

## BREAK



## EFFECTS OF LENS COLOUR



## BACK TO BASICS Cartridges and Shot



## WHAT IS A 12 GAUGE?

- The Gauge is the number of lead spheres, each of which is the diameter of the barrel, required to make up 1 pound
- A 12 gauge has an internal diameter of .725 inches or just over 18mm

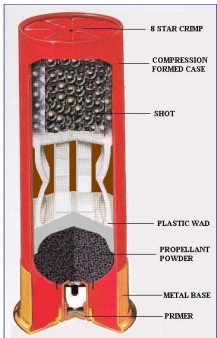


## WHAT DOES A CARTRIDGE COMPRISE OF?

- A case
- A primer
- Gunpowder
- A wad
- Shot



### HOW IT WORKS



- Pull trigger
- Hammer strikes the primer which "detonates"
- This ignites the gun powder
- Rapid expansion of gas
- Forces the wad and shot out the barrel



### WHAT PRESSURES ARE INVOLVED?

- About 8 000 psi or 540 bar
- Rifle pressures are about 50 000 psi or 3 400 bar
- Scuba bottle is about 200 bar
- Tires about 30 psi or 2 bar

### SIZE OF SHOT

- There are many different classification systems for shot
  - English
  - American
  - Spanish etc
- Simplest is to use shot diameter in mm

### SIZE OF SHOT

- **Larger the number**  
the smaller the shot
- No 3 shot is bigger than No 9 shot
- Shot size varies from about 2mm diameter (No 9) to 9mm (000 Buckshot)

### SHOT DEFORMATION

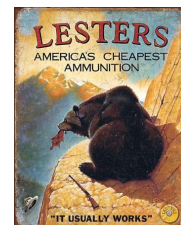
- Forcing cones, plastic wads and hard shot are there to minimise shot deformation
- Shot is made from lead and antimony - about 3 to 8 %
- Shot deformation will cause inconsistent shot patterns

### SHOT DEFORMATION

- Current ammunition with plastic wad generally has improved patterning quality over older paper wad
- Can get "denser" patterns from the same choke

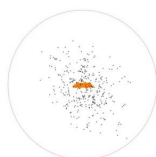
### EFFECT OF DIFFERENT AMMUNITION

- In South Africa supply of ammunition can be erratic - SA is very small portion of the world market
- Quality does matter



### EFFECT OF DIFFERENT SHOTGUNS

- Patterns from the same ammunition may differ from gun to gun (even with similar chokes)
- Use the pattern board



### SHOT PERMITTED IN CLAY TARGET SHOOTING

- Only shot size No 7 (or 2.6mm in diameter), and smaller (ie larger number) may be used on clay ranges  
Look on CTSASA website for details per discipline
- This is due to the 300m safe area required by SABS regulations and to keep the Competition "fair"

### TYPICAL VELOCITIES

- Velocity between about 1 050 ft/sec to 1 400 ft/sec
- Will probably see the difference in lead on a clay range
- Stick to one velocity

### LOSS OF VELOCITY

Round shot has poor aerodynamic qualities:

- Will lose about 25% of velocity in first 20m
- Will lose about 40% of velocity in first 40m

### SHOT TRAVEL

Maximum distance is at about 30° to the horizontal

- Shot No 7½ will travel about 200m
- Shot No 1 will travel about 350m

### DIFFERING LOADS

- The load (eg 24 grams) refers to the amount of shot in the case
- In Skeet 21 grams is adequate
- Beware of recoil and flinching from heavy loads

### RECOIL

- Recoil will affect your shooting
- "Excessive" recoil will cause your muscles to tense up in anticipation



### RECOIL vs FELT RECOIL

Felt recoil will be dependent on

- Fit of gun
- Load
- Mass of gun
- Type of action - semi auto

Felt recoil will "decrease" if the recoil can be extended over a longer period of time

### SHOT DROP

Shot will drop about 3 to 4 inches at 40m

- Not really a factor

### SHOT STRING

- Shot pattern is 3 dimensional as it has length as well as width
- This is due to a variety of factors - pellet deformation, first in the queue etc



### MISFIRES

Be aware of no-powder loads and squib loads

- If a shot "sounds" different - check the barrel for obstruction
- If you fire a shot with the wad stuck in the barrel, something will get damaged !

### SUMMARY

- Ammunition and Shot sizes
- Velocity
- Recoil
- Shot string
- Misfires
- Pattern Board

### PRACTICAL TEST

- Pattern board
  - Aim at centre
    - Test gun fit
    - Test chokes
    - Test ammunition / shot size

