

Professional Gunsmithing Test: SHOTGUNS

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REMINGTON 870

1. After a cartridge has been chambered in an 870 shotgun and the action is locked up, what are two ways that the action bar can be released or unlocked so that the shotgun can be cycled/pumped?
 - 1) By inertia after the gun is fired
 - 2) By pushing the action bar lock in.
 - 3) By firing the gun.
 - 4) By manually pushing in the primary cartridge stop.
 - 5) By the carrier dog as the gun locks up.
 - 6) By the recoil after the gun has been fired
 - a. 1 and 2
 - b. 2 and 3
 - c. 1 and 3
 - d. 3 and 5
 - e. 3 and 6
 - f. 2 and 6
2. What gun part acts upon the locking block to unlock the action on an 870 shotgun?
 - a. The disconnecter
 - b. The carrier dog
 - c. The trigger
 - d. The slide assembly
 - e. The action bar lock
 - f. The action bar
3. The slide assembly holds the locking block closed in an 870 shotgun when the action is closed and locked up.
 - a. True
 - b. False
4. When the 870 shotgun is locked up, the locking block is engaged in...
 - a. the top of the receiver.
 - b. the recess on the left side of the barrel.
 - c. the chamber.
 - d. the barrel extension.
 - e. the throat of the barrel.
5. How is the ejector on an 870 shotgun attached to the receiver?
 - a. With two small screws
 - b. The bolt assembly holds the ejector in place.
 - c. It is riveted in place.
 - d. With a slotted tongue and groove.

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6. Will the 870 shotgun still eject a shell if the ejector is missing its spring?
 - a. Yes, if pumped slowly.
 - b. Yes, if pumped rapidly.
 - c. Yes, it will eject just fine because the 870 shotgun does not utilize an ejector spring
 - d. No.

7. Early Remington 870 shotguns utilized a screw in barrel extension.
 - a. True
 - b. False

8. What prevents the barrel of an 870 shotgun from rotating in the receiver when it is in working position?
 - a. Nothing prevents the movement/rotation of the barrel, as the 870 has a free floating barrel.
 - b. The carrier dog
 - c. The ejector
 - d. A protrusion on the magazine follower
 - e. The left leg of the carrier

9. What activates the cartridge stops on an 870 shotgun?
 - a. The cartridges themselves, specifically the rims.
 - b. The cartridge carrier
 - c. The left and right sides of the slide assembly
 - d. The cut-outs on the action bars.

10. The primary cartridge stop on an 870 shotgun is located on the right side of the receiver.
 - a. True
 - b. False

11. The primary cartridge stop on an 870 shotgun is activated after the breech bolt opens and catches the next cartridge in line so that it does not feed two shells at once.
 - a. True
 - b. False

12. The secondary cartridge stop is activated during the last ½ inch of forward travel as the cartridge is chambered and the action locks up.
 - a. True
 - b. False

13. The engagement angle of the cartridge stops to the rim of the cartridge on a Remington 870...
 - a. must be neutral to slightly negative.
 - b. must be slightly negative.
 - c. should be neutral to slightly positive.
 - d. should be extremely positive.

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14. The cartridge stops on an 870 shotgun act as their own spring.
- True
 - False
15. Remington's third style 870 firing pin is interchangeable with the other styles.
- True
 - False
16. The action bar lock on an 870 shotgun is also the disconnecter.
- True
 - False
17. What enables the 870 shotgun to be pumped after the gun is fired?
- Recoil disconnects the action bar lock from the action bar.
 - Inertia causes the carrier dog to trip the disconnecter and frees the action bar lock from the action bar
 - The hammer plunger moves the disconnecter/action bar lock out of engagement with the action bar
 - A cam on the left side of the hammer moves the disconnecter forward and down, which disconnects the action bar lock from the action bar.
18. Bob refers to a shooter that cycles a pump shotgun extremely fast as a squirrel. In an extreme case, a squirrel can cause the cartridge to blow out by causing the gun to unlock as ignition occurs. How does Bob suggest that you "squirrel proof" your 870 shotgun?
- Increase the gap between the action bar lock and the end of the action bar by filing one or both of the parts. The gap should be between .075" to .100".
 - Change the engagement angle of the ends of the action bar and the action bar lock to slightly positive, so that it requires the shooter to push forward the forend slightly so the action bar lock can then move down.
 - TIG weld a small titanium plate to the bottom of the slide assembly to add weight and friction to slow down how fast the shotgun can be cycled.
 - All of the above.

MOSSBERG 500

19. How can excessive headspace frequently be corrected?
- Replace locking block latch
 - Replace locking block and/or bolt
 - Shorten magazine tube
 - Screw barrel further into receiver
20. If the headspace cannot be corrected by the above method, what is another way to correct it without replacing any parts?
- Deepen the throat of the barrel
 - Move the bolt forward in the receiver
 - Set the barrel back
 - none of the above

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21. What is the best way to remove the magazine tube from the receiver?
- Remove pins and pull out
 - It doesn't come out
 - Put receiver in a smooth-jawed vice and unscrew magazine tube with a strap wrench
 - Put front of tube in smooth-jawed vice and unscrew receiver from tube
22. What can be done to prevent someone who is quick (a squirrel) from opening the action before or while the cartridge is firing?
- Make engagement angle of slide lock to slide negative
 - Make engagement angle of slide lock to slide positive
 - Install a stronger hammer spring
 - Lighten hammer
23. The gun will not open after firing unless the action slide lock release is pressed. The action slide lock spring is on top of its pin in the hammer. How can the cause of this problem be corrected? Choose the two best answers.
- install a longer slide release spring
 - make the original spring longer by straightening it out some
 - install a stronger spring
 - install a steel cross pin hammer
- 1 and 2
 - 1 and 4
 - 2 and 4
 - 3 and 4
24. How can you tell if the elevator (carrier) is straight?
- Look at it; if the insides of the legs are shiny, it is straight
 - Lift it up in the receiver; if straight, it will stay in that position when released
 - Lift it up in the receiver; when released, it should drop back down
 - Lay it on a surface plate to determine straightness
25. If you find a Mossberg 500 which is completely assembled but the elevator has come out of its sockets, you should check: (Choose the two best answers)
- the tension of the elevator legs
 - the elevator for straightness
 - for stripped threads
 - all of the above
- 1 and 2
 - 1 and 3
 - 2 and 3
 - 4 and 3

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ITHACA 37

26. How should the stock be bedded?
- 100% wood to metal fit on the outer edge of the stock
 - With a small fiber cushion between the stock and receiver
 - Firm bedding on the rear of the trigger guard and relieved at the outer edges of the stock
 - Epoxy bed 100% where wood touches metal, including rear tang, and nowhere else
27. What does Ithaca consider the minimum trigger pull weight to be?
- 3 pounds
 - 5 pounds
 - 7 pounds
 - 4.5 pounds
28. When pumped, the gun feeds two cartridges out of the magazine one behind the other. How would you correct this?
- Increase the engagement of the primary cartridge stop
 - Increase the engagement of the secondary cartridge stop.
 - Increase the lift of the primary cartridge stop
 - Increase the forward travel of the secondary cartridge stop
29. What raises the back of the bolt to lock it into the receiver?
- The action bar
 - A dog on the action bar
 - The slide pin
 - The cam on the bolt carrier

STEVENS/SAVAGE 67/SAVAGE 30

30. Give two things about this gun's ejector that makes it better than most.
- does not break under tension
 - spring loaded
 - machined into bolt face
 - has a shelf that limits left movement of the case
- 1 and 2
 - 1 and 3
 - 3 and 4
 - 2 and 4
31. Give three possible cures for a misfiring Savage 30.
- Install a stronger hammer spring
 - Install a stronger firing pin spring
 - Lighten the firing pin
 - Increase the positive protrusion of the firing pin
2. and 4. above
 - 2., 3. and 4. above
 - 1., 3. and 4. above
 - 1., 2. and 3. above

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32. How should the carrier be removed from the trigger plate?
- Drive out the retaining pin
 - Remove the retaining screws
 - Pull the carrier forward and off
 - Spread the legs of the carrier and lift it off
33. The carrier screws have backed out of the trigger plate and into the receiver. How would you remove the trigger plate? (Give the two best answers)
- spread the receiver with a miniature screw jack
 - drill a hole in the receiver & screw the carrier pivot back into place and plug the hole
 - give the trigger guard a firm jerk down & rearward
 - cut off the screw heads with a thin hacksaw blade between the trigger plate and receiver
- 1 and 4
 - 1 and 3
 - 1 and 2
 - 2 and 4
 - 2 and 3
34. The above procedure (Question 33.) was necessary because the carrier pivot screws were not staked or Loctited into place.
- True
 - False

WINCHESTER MODEL 12

35. A Winchester Model 12 comes into your shop to be cleaned and checked out. You test the bolt for wear in the locking system and find that there is more than 3/16" play (up and down movement) in the bolt when it is locked up. How would you correct this?
- Spring-load the bolt upward
 - Weld up the peg on the action bar, normalize and fit as necessary
 - Weld up the cam on the bolt carrier
 - Build up the locking surface in the receiver and normalize
36. A customer brings in a Winchester Model 12 with which he just shot his radiator. He claims that he just closed the action and it went off. You test the gun by pumping the gun and pulling the trigger with the bolt one inch from being closed, then let go of the trigger and finish closing the bolt. The gun fires as soon as the gun locks up. What is the problem?
- Negative engagement angle between the action bar and the action bar lock
 - Positive engagement angle between the action bar and the action bar lock
 - The disconnecter is engaging too soon
 - The action bar lock is not lifting the hammer off the trigger

WINCHESTER 1200 and 1400

37. When replacing the magazine tube and throat on the Winchester 1200/1400, how do you know when they are seated correctly?
- The magazine tube stops moving forward
 - The receiver will ring when tapped
 - There is a distinct change in the sound the slide hammer makes
 - The magazine throat will click when it seats

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WINCHESTER Model 97

38. What part acts as the locking block on a Winchester Model 97?
- the cartridge stop
 - the bolt carrier
 - the cartridge carrier
 - the carrier dog
39. The cartridge feeding system of the Model 97 utilizes...
- a primary cartridge stop and a secondary cartridge stop.
 - two primary cartridge stops.
 - no cartridge stops per se, as the front of the cartridge carrier acts as the cartridge stop.
 - the bottom of the bolt carrier as the primary cartridge stop and a secondary cartridge stop.
40. How are the cartridge stops turned off on a Winchester Model 97?
- The only cartridge stop is the front tip of the carrier and it is pivoted out of the way, thus turned off, when the shotgun is cycled/pumped.
 - The cartridge carrier turns the cartridge stops off when the gun is pumped.
 - The action bars turn the cartridge stops off when they move rearward during cycling.
 - the action bar turns off the secondary cartridge stop and the bottom of the bolt carrier turns off the primary cartridge stop when the shotgun is pumped.
41. If shooting a Model 97 that is locked up with a cartridge in the chamber and another cartridge in the magazine, when you fire the shell in the chamber and cycle the gun with the trigger still pulled to the rear, will the gun fire when it locks closed?
- No, this would be a safety hazard indicating that the firing pin has too much absolute protrusion.
 - No, this could not occur unless the disconnecter was broken or missing.
 - Yes, the shotgun is designed to fire in this manner.

Browning BPS

42. How is the trigger group held into the receiver of a Browning BPS?
- With two pins
 - With a screw and a pin
 - With a pin
 - With a screw
43. How many action bars does the BPS have?
- one
 - two
 - none

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44. The extractor on the BPS shotgun is located...

- a. on the right side of the bolt.
- b. on the left side of the bolt.
- c. on the bottom of the bolt.
- d. on the top of the bolt.

45. What type of spring is the BPS's sear spring?

- a. Coil spring
- b. Torsion spring
- c. Flat spring
- d. V spring

Benelli Nova

46. The Nova shotgun utilizes what type of locking system?

- a. Tipping bolt
- b. Rotating bolt
- c. Locking block
- d. Roller lock

47. The cartridge stops on a Benelli Nova act as their own spring.

- a. True
- b. False

48. Which of the two statements below best describe the action lock system of a Benelli Nova.

- a. The Nova utilizes an action bar locking system.
- b. The Nova utilizes an action/bolt locking system.

49. What turns the cartridge stops on and off on a Nova shotgun?

- a. The bolt carrier
- b. The cartridge carrier
- c. The carrier latch
- d. The action bars

50. If one of the action bars was to break around its notches on a Nova shotgun and you could not get a replacement part, what would be the best way to fix it?

- a. TIG weld the broken piece back on, fit and case harden.
- b. Weld on a replacement piece of 4140 oil hardening steel in a non-stressed area forward of the break. Then cut and fit the new bar with notches.
- c. Make a replacement action bar out of a piece of water hardening steel to completely replace the broken action bar. Fit the new part and case harden.
- d. Simply use JB Weld to join the two pieces back together, then fit and screw back onto the forend.

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51. What makes the Nova's ejector unique?
- The ejector will never break because it is spring loaded.
 - The ejector is self-cocking and spring loaded. The bolt's forward action cocks the ejector and the rearward movement of the action bars trip the ejector sear to pivot the empty or live round out the ejector port.
 - The ejector's spring-loaded action allows the use of various cartridge lengths.
 - The ejector works like any other fixed ejector, however its spring-loaded action operates like a forward assist to push a cartridge into a dirty tight chamber.
52. When the gun is fired, the Nova's mainspring plunger rises and pushes on the action/bolt lock, pushing it down in the front to free the bolt to be cycled/pumped and up in the rear, thus breaking the connection of the trigger/trigger bar to the sear to disconnect the fire control system.
- True
 - False

BROWNING A-5

53. The gun jams every time it is fired with ammo in the magazine. The empty is in the ejection port and the live round out of the magazine is on the carrier and pushing up on the empty. The gun ejects well when fired with none in the magazine. What would cause this?
- The cartridge stops are timed too fast
 - The ejector throw is too short
 - The cartridge stops are timed too slow
 - The ejector is defective or missing
54. The gun jams every time it is fired with ammo in the magazine. The empty is in the ejection port and the live round out of the magazine is on the carrier and pushing up on the empty. The gun does not eject well when fired with none in the magazine, but it does try to eject. What could cause this?
- The cartridge stops are timed too fast
 - The ejector throw is too short
 - The cartridges stops are timed too slow
 - The ejector is defective or missing
55. By at least how much must the leading edge of the ejector hook clear the bolt face?
- 1/16"
 - 1/8"
 - 3/16"
 - Does not matter as long as it clears the bolt face
56. What does the locking block latch do besides lock the locking block?
- Assists the firing pin from short cycling
 - Self-adjusting for headspace
 - It is part of the first primary cartridge stop
 - None of the above
57. By what is the safety sear deactivated?
- The locking block
 - The back of the bolt
 - The trigger
 - The link

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58. The following picture of the brake system setup for heavy 2.75 inch loads is _____.



- a. correct
- b. incorrect

59. How would you fit a new style locking block into an old style A-5 bolt?

- a. Thin down the tongue of the locking block making certain that the front of the locking block bears against the front inside of the bolt
- b. Locking blocks are replaced only with matching bolts
- c. The new style locking block cannot be fitted to the old style bolt
- d. No fitting is required

60. You cannot check the headspace with the barrel and bolt out of the receiver.

- a. True
- b. False

61. The gun fires, ejects and the bolt closes, but on an empty chamber. The live round that was in the magazine is now lying on the ground at the shooter's feet. How would you correct this?

- a. Time the primary cartridge stops
- b. Time the secondary cartridge stops
- c. Re-cut the carrier and carrier latch so that their engagement is positive
- d. Re-time the carrier

62. Magazine surge isn't a problem on the Browning A-5 because _____.

- a. the gun has an interceptor latch
- b. the gun has a follower latch
- c. the second primary cartridge stop is turned off when the barrel is in the forward position
- d. the carrier release button has not been pushed

63. The gun is loaded but the locking block is stuck and has not locked into the barrel extension. The safety sear has been removed. If the trigger is pulled (the safety is off), the gun will blow up.

- a. True
- b. False

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64. The gun is loaded but the locking block is stuck and has not locked into the barrel extension. The safety sear has been removed. If the trigger is pulled (the safety is off), the gun will not blow up; why?
- Shotguns don't blow up
 - The bolt has enough weight to retard the opening process
 - The trigger can't be pulled without the safety sear in the gun
 - The locking block blocks the firing pin until it is in locked position
 - The gun will blow up
65. The ejector is 3/16" past the bolt face. How would you correct this?
- File the notch and case harden
 - Set the barrel back
 - You do not; 1/8" is minimum
 - b. and c. above
66. What is acting as a cartridge stop when the bolt and barrel have moved 1-1/2" rearward?
- The second primary cartridge stop
 - The carrier latch
 - The locking block latch
 - None of the above
67. What is acting as a cartridge stop when the bolt is closing on a cartridge?
- The carrier latch
 - The bottom of the bolt
 - The cartridge stop
 - The carrier
68. The brake system must be properly set for the type of load being fired so that the _____
- recoil spring doesn't coil and bind
 - barrel and bolt won't break out the back of the receiver
 - gun won't cycle too fast
 - gun won't short cycle
1. and 3. above
 2. and 3. above
 2. and 4. above
 3. and 4. above
69. What four things could allow a cartridge to get out of the magazine prematurely?
- inadequate engagement of the second primary cartridge stop
 - inadequate engagement of the secondary cartridge stop
 - negative engagement on the second primary cartridge stop
 - the groove in the barrel extension is too short
 - the barrel returns too quickly
- 1., 2., 3. and 4. above
 - 1., 3., 4. and 5. above
 - 1., 2., 3. and 5. above
 - 2., 3., 4. and 5. above

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70. What two things could you do to prevent two cartridges from coming out of the magazine, one right behind the other?

- 1) Put more arch in the carrier latch
 - 2) Re-cut the cartridge stop to a positive angle
 - 3) Re-cut the front of the carrier latch to a positive angle
 - 4) Put a plug in the magazine
- a. 1. and 3. above
 - b. 1. and 4. above
 - c. 2. and 3. above
 - d. 1. and 2. above

71. What makes the barrel move backward when the gun is fired?

- a. Newton's Third Law
- b. Hot flaming gases
- c. Inertia, when the gun stops recoiling
- d. Magic

72. If the bolt handle overrides the carrier-dog on the forward stroke when the gun is fired, it will...

- a. full auto
- b. go closed on an empty chamber or case
- c. drop the live round on the ground
- d. extract and eject but the bolt will remain open until the release button is pressed

73. What will happen if the forend wears and allows the barrel assembly to move forward until the end of it goes 1/8" past the front edge of the ejection port?

- a. It won't eject
- b. It won't feed; it won't fire
- c. The safety sear will break off
- d. The operating handle will hit the edge of the ejection port and cause several problems

74. Assuming that the front notches of the hammer and trigger are good, how would you fix the problem of the gun firing again when you let go of the trigger?

- a. Increase the distance between the primary and secondary sear notches of the trigger
- b. Decrease the distance between the primary and secondary sear notches of the trigger
- c. Re-cut the secondary sear notch to positive
- d. Put in the firing pin return spring

REMINGTON 1100 AUTO, 58 & 870

75. How would you correct excessive headspace in a Remington Model 870 or 1100, assuming that the barrel and extension are perfect?

- a. Install and oversize bolt
- b. Install a "CR" oversize locking block
- c. Set the barrel back
- d. Bush the chamber

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76. A customer brings you a Remington Model 1100, complaining that he can only shoot it as a single shot. He says with one round in the chamber and two in the magazine he fires the gun. It fires and ejects, but the bolt stays locked in the open position. There is only one cartridge in the magazine and the other loaded round is on the ground next to him. What is the cause of this problem?
- Interceptor latch failed
 - Second Primary cartridge stop failed
 - Carrier latch failed
 - Gun couldn't malfunction as described
77. A Remington 1100 comes in for repair, it won't feed. You test fire, the gun fires and ejects, the bolt locks back and the cartridge that was next in the magazine is now lying on the carrier. Which one of the below answers **would not** fix the problem?
- weak magazine spring
 - sticking magazine follower
 - bent extractor
 - cartridge stop timed too fast
 - carrier latch spring is too strong
78. The old style action spring followers are made of aluminum.
- True
 - False
79. The difference in the old and new barrel seals is that the new style is made from self-sealing silicon bronze.
- True
 - False
80. What is wrong with shortening the sear spring? (The fire control of the 1100 is practically identical to the Remington 870)
- Reduces the trigger pull too much
 - Gives more felt stack-up
 - Spring will unwind off its seats
 - Spring won't reliably return the trigger
81. Bob says Never use oil on the piston assembly of a Remington 1100 or 58.
- True
 - False
82. How are the cartridge stops in a Remington 1100, 878, 870 or 58 removed?
- Remove the pin and they fall out
 - Place a screwdriver between the frame and the cartridge stop and jerk rearward rapidly
 - Drive them out with a punch
 - Remove the retaining screw and pull them out

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Beretta AL391

83. Which statement below best describes an AL391's gas system?
- The AL391's gas system is a self-adjusting piston system that utilizes high pressure short duration gas seals.
 - The AL391's gas system is a nonadjustable dual compression piston system.
 - The AL391's gas system is an adjustable direct impingement system that directs gas through a gas tube to cycle the bolt.
 - The AL391's gas system is an adjustable high pressure long duration piston system that utilizes three gas holes, each greater in diameter, allowing a variety of high and low based rounds to be fired in any order
84. The AL391's trigger system utilizes...
- just a primary sear with slightly positive engagement with the hammer.
 - a primary sear with positive engagement with the hammer and a secondary sear with neutral engagement with the hammer.
 - a primary sear with neutral engagement with the hammer and a secondary sear with positive engagement with the hammer.
 - a primary sear with slightly positive engagement with the hammer and a secondary sear with positive engagement with the hammer.
 - a striker system similar to most bolt action rifles.
85. The AL391 shotgun utilizes a dual action bar assembly for reliability.
- True
 - False

Remington Versa Max

86. The Remington Versa Max is...
- a direct impingement shotgun.
 - an inertia operated shotgun.
 - a gas-piston operated shotgun.
 - long recoil operated shotgun.
 - short recoil operated shotgun.

WINCHESTER Model 50/59

87. When reassembling a Winchester Model 50 or 59, how many turns must you back the buffer away from the inertia rod?
- 1
 - 2-1/2
 - 3-1/2
 - 5

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Benelli M1, M3

88. The feeding system of a Benelli M1 utilizes...
- a two primary cartridge stops.
 - a carrier latch/cartridge stop.
 - a primary cartridge stop and a secondary cartridge stop.
 - one primary cartridge stop and a separate carrier latch
89. The carrier latch/cartridge stop on a Benelli M1 is turned off by the cartridge drop lever (carrier release button) when the hammer falls. (True or False).
- True
 - False because the primary cartridge stop and the carrier latch are two different parts.
90. Why would the hammer falling on a Benelli M1 cause the carrier latch/cartridge stop to be turned off by the cartridge drop lever (carrier release button)?
- It wouldn't because it does not work that way!
 - Because the hammer/mainspring plunger moves the cartridge drop lever out of the way of the carrier latch/cartridge stop, thus turning it off.
 - Because the hammer itself acts upon the cartridge drop lever.
 - Because the hammer itself moves the carrier latch/cartridge stop, thus turning it off.
91. The primary and secondary cartridge stops on a Benelli M1 are one in the same.
- True
 - False
92. Can a Benelli M1's carrier latch/cartridge stop be activated (turned on) by a cartridge?
- Yes
 - No
93. Which one of the statements below is correct regarding the Benelli M1's trigger system?
- The trigger system consists of a primary and secondary sear, both of which have to have positive engagement between the hammer and the sear.
 - The trigger system consists of a primary sear only.
 - The trigger system has a primary sear with positive engagement with the hammer and a secondary sear with negative engagement with the hammer.
 - The trigger system has a safety sear as well as primary and secondary sear.
94. When the hammer is cocked on a Benelli M1 and the gun is at rest with the finger off of the trigger, the hammer is engaged with...
- the primary sear.
 - the secondary sear.

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95. If your Benelli M1 doubles or goes "full auto" you are in violation of Federal Law! What could cause this problem?
- Negative primary sear engagement with the hammer.
 - The secondary sear lets go of the hammer too soon.
 - both a and b.

Benelli M4

96. When a Benelli M4 is fired, what moves the bolt assembly rearward?
- The gas entering the bolt carrier's gas key.
 - The pistons moving rearward and pushing on the front of the bolt carrier.
 - When the barrel extension moves rearward, the bolt assembly moves with it.
 - Gas vented from the barrel travels through the gas hole, into the gas chamber and directly pushes the operating rod rearward. The operating rod, being connected to the bolt assembly moves it rearward.

PIVOT BARRELS

Browning Superposed

97. If the full cock notch on one of the hammers of a Superposed or its sear became negative through extreme wear, would the gun double if the hammer slipped out of engagement with the sear?
- Yes because there is no safety notch on the hammer.
 - No because the sear would be caught by the safety notch in the hammer.
98. The Browning Superposed utilizes a single selective trigger, which only allows the top barrel to be fired first.
- True
 - False
99. Much of the reliability of the Superposed is because of the heat treating of the V-type mainsprings.
- True
 - False
100. What happens when a shooter beats the inertia block when firing a Browning Superposed?
- The shotgun doubles because the inertia block has allowed the sear to connect with the hammer too quickly and the recoil from the first shot causes the shooter to repull the trigger for the second time.
 - The shooter pulls the trigger two times so quickly that the gun misfires on the second shot because the inertia block could not reconnect the sear to the hammer fast enough.
 - The shotgun misfires on the second shot when the inertia block can't reconnect the sear to the hammer because of the impulse wave caused by the recoil of the first shot. The shooter's height and weight will cause this condition.
 - None of the above because there is no way to beat the inertia block shooting a Superposed.

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101. When should an oversized hinge pin be used in a Superposed shotgun?
- When there is up and down movement between the receiver and the barrels when the gun is closed and locked up.
 - When there is fore and aft movement between the receiver and the barrels when the action is closed.
 - When the forend gets wobbly from excessive wear.
 - The design of the Superposed's receiver will not allow the use of an oversized hinge pin.
102. What design feature makes the Browning Superposed a good duck gun? (Choose the correct answer from below).
- The location of the hinge pin and the hinge pin bite, which is found near the bottom of the gun, allows the barrels to open up really far.
 - The location of the hinge pin and the hinge pin bite, which is found near the bottom of the gun, allows the barrels to open just enough to be able to place a shell in the chamber of the bottom barrel.
103. If your Superposed had up and down movement between the receiver and the barrels when the action was closed, what could that indicate?
- Excessive wear or damage to the locking block.
 - Excessive wear or damage on the hinge pin or hinge pin bite.
 - That the forend latching system was damaged.
104. When you open the action of a Browning Superposed, or any shotgun like it, both hammers should cock before you can load the bottom barrel.
- True
 - False
105. A Browning Superposed comes in with the complaint of misfiring. You test fire and find that the top barrel frequently misfires. When it does, it is always the second barrel to be fired and the trigger pull is about 12 pounds. If the top barrel is fired first it never misfires and the trigger pull is about 2 pounds. What is causing this?
- the top barrel's hammer is falling into the safe notch when the bottom barrel is fired
 - after firing the bottom barrel, its sear moves up and over, pushing on the unfired hammer and sear
 - the vibration of firing the bottom barrel allows the top barrel's mainspring guide to slide down on the hammer
 - after firing the first barrel, the trigger can go higher and it hits the mainspring before tripping the top barrel's sear
- 1
 - 1 and 3
 - 1 and 4
 - 3 and 4

Professional Gunsmithing Test: SHOTGUNS

106. How would you correct the above (Q105) problem?

- a. Adjust the trigger limiter so that it can't go as high
- b. Put a spacer between the two sears
- c. Re-cut the top barrel's sear system so that it is positive
- d. Deepen the notch in the hammer that retains the mainspring guide

107. A Browning Superposed comes into your shop with the complaint of doubling. It doubles when the owner shoots it but not when his friends shoot it. Why do you know that the owner is probably beating the inertia block? Select the two best answers.

- 1) the owner is very large
 - 2) there are safety notches on superposed hammers
 - 3) the gun doesn't double for everyone
 - 4) it is easy to beat the Browning inertia block
-
- a. 1 and 4
 - b. 2 and 3
 - c. 2 and 4
 - d. 3 and 4



Superposed Hammer

108. On a double gun with selective automatic ejectors, what happens so that only the fired barrel ejects?

- a. The inertia of the barrel being fired is heaviest on that barrel, setting its ejector trip rod
- b. The connector moves the ejector trip rod of the barrel being fired
- c. Pressure from the fired barrel's cocking rod is transmitted to the ejector sear, firing it as a predetermined time
- d. The falling or cocking hammer moves a part that sets or trips the fired barrel's ejector

109. What is a primary extraction cam?

- a. The device that pushes the extractor into the case
- b. The device that breaks the fired case free from the chamber walls
- c. The cam that stops the opening of the barrels
- d. The cam that pulls the firing pin out of the fired primer

Professional Gunsmithing Test: SHOTGUNS

110. A customer brings you his H & R Topper single barrel shotgun, coil mainspring type, which misfires. You check and find that the firing pin protrusion is okay and the firing pin return spring does not seem too strong. If you push the hammer forward when it is in the rebound position, it will go forward until it almost touches the retracted firing pin before the trigger stops its forward movement. When in the rebound position the face of the hammer clears the back of the firing pin about $\frac{1}{4}$ in. If you pull the hammer back about .375" from rebound position, the trigger falls into the full cock notch of the hammer. From full cock position, the hammer can be pulled back another .375" before it hits the frame and stops. Which of the following must be done to correctly repair this shotgun? Choose the correct answers.

- 1) lengthen the trigger by welding it up and refitting
 - 2) bend the mainspring guide rod up in the center
 - 3) bend the mainspring guide rod down in the center
 - 4) install a stronger mainspring
 - 5) weld up the full cock notch of the hammer and re-cut it so that it is farther from the safety notch and re-harden
- a. 1 and 3
 - b. 3 and 4
 - c. 2 and 4
 - d. 2 and 3
 - e. 2 and 5

111. Same as above except that the gun has a flat mainspring. Choose the correct answers.

- 1) weld to lengthen or install a longer trigger
 - 2) install a stronger mainspring
 - 3) file some off the front lobe of the hammer
 - 4) weld up the full cock notch of the hammer and re-cut it so that it is farther from the safety notch and re-harden
 - 5) weld up to lower the rear lobe of the hammer and re-harden
- a. 1 and 2
 - b. 2 and 3
 - c. 3 and 4
 - d. 3 and 5
 - e. 4 and 5

112. In a hammer fired, single shot shotgun, with a coil mainspring, hammer rebound is sluggish and unresponsive. There is a blank area in the hammer's travel where there is no forward or rearward force against the hammer. If pushed forward a little it stays there, if pulled back a little it stays there also. Which one of the following would not cure this problem?

- a. cut some out of the center of the hammer yoke
- b. build up with weld to lengthen the upper and lower ends of the yoke
- c. install a stronger mainspring
- d. build up with weld to widen up and down the yoke and re-harden
- e. weld up the hammer cut-out for the yoke and re-cut it so that it is narrower

Professional Gunsmithing Test: SHOTGUNS

113. Which of the following might correct a forend that comes off when the shotgun is fired? The forend has a plunger catch system. Choose the correct answers.

- a. Install a stronger plunger spring
- b. Make and install a new plunger that is longer than the original from the retaining pin cut forward
- c. Lengthen the cutout in the plunger for the retaining pin rearward
- d. Change the shape of the end of the plunger from

this:



to this:



- e. Change the shape of the notch in the forend lug

from this:



to this:



- f. All of the above
- g. None of the above

114. If a customer brought in his Savage Model 311, with a spring catch system, claiming that the forend falls off when he shoots it. Which one of the answers below would not correct the problem?

- a. straighten the forend spring some
- b. inlet the barrels deeper into the forend wood
- c. install a stronger forend spring
- d. raise the position of the forend spring notch in the forend lug

115. You are given a Webley and Scott double barreled shotgun for repair. This gun has protrusions on the barrel lug that mate into recesses in the frame. Someone has run a reamer into one of the chambers, and now the headspace of that barrel is excessive. Which of the following would be the best way to correct the excessive headspace?

- a. Install and fit an oversize hinge pin
- b. Peen the forend iron where it contacts the forend lug
- c. Weld up the rim cut of the bad chamber and rechamber
- d. Bush the chamber with a 3" long bushing and rechamber
- e. Press fit and Loctite a short bushing in the defective chamber and adjust the headspace with a chambering reamer

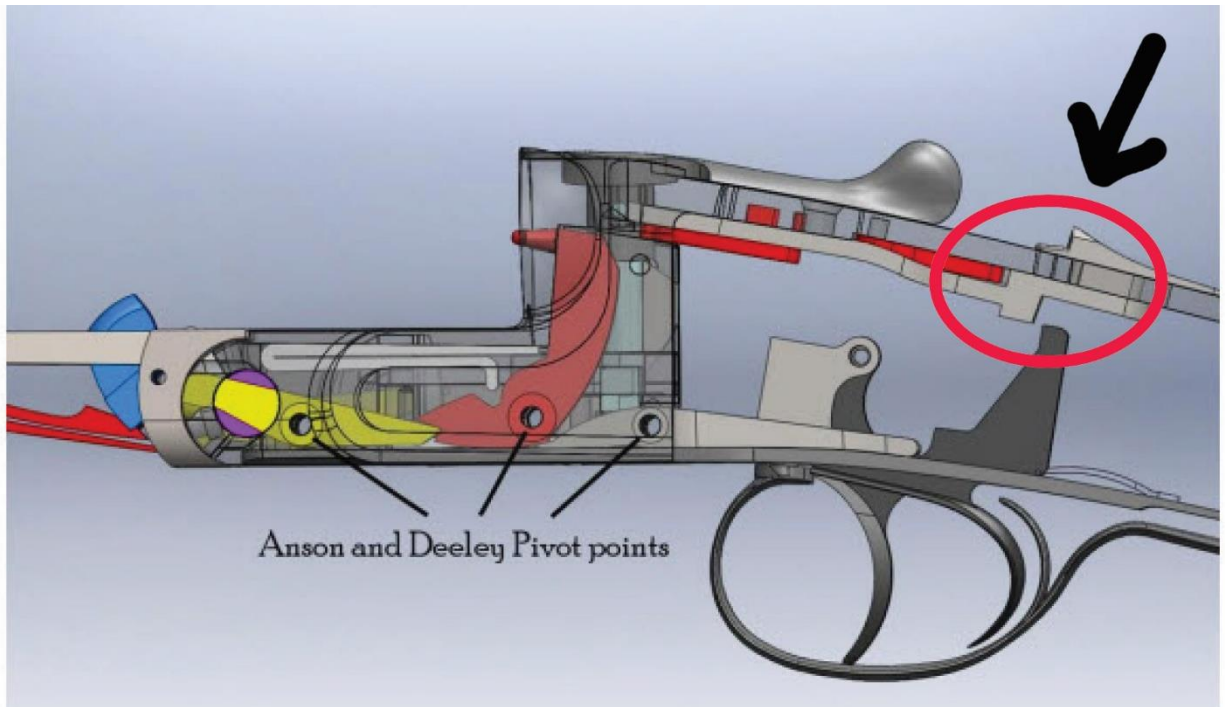
Professional Gunsmithing Test: SHOTGUNS

116. Same as the last question except that it is a cheap shotgun and the mating surfaces in the barrel lug and the receiver don't touch. Which two of the fixes below must be done to correct this problem?
- 1) install and fit a new hinge pin (oversize)
 - 2) peen the forend iron where it contacts the forend lug
 - 3) weld up the rim cut of the bad chamber and rechamber
 - 4) bush the chamber with a 3" long bushing and rechamber
 - 5) press fit and Loctite a short bushing in the defective chamber and adjust the headspace with a chambering reamer
- a. 1 and 2
 - b. 1 and 5
 - c. 2 and 3
 - d. 3 and 4
 - e. 4 and 5
117. Which of the following would stop up and down movement of a forend on a double shotgun that has the plunger release catch system?
- a. Bend the forend lug down
 - b. Install a thicker forend latch or weld up to thicken the engaging area of the existing latch
 - c. Weld up the forend lug where it contacts the forend iron
 - d. Weld up or peen the forend iron where it contacts the forend lug
 - e. Deepen the notch in the forend lug
118. Which of the following might cure a forend with a plunger release catch system in which the latch is just barely engaging in the forend lug and the forend falls off when fired? Choose the best three answers from below.
- 1) lengthen the slots in the forend latch for retaining screws rearward
 - 2) thicken by welding the engaging area of the forend lug
 - 3) inlet the barrels deeper into the forend
 - 4) file off some of the engaging area of the forend lug, possibly decreasing its angle at the same time
 - 5) thin the engaging surface of the forend latch
- a. 1, 2 and 3
 - b. 1, 3 and 4
 - c. 3, 4 and 5
 - d. 1, 4 and 5
 - e. 1, 3 and 5
119. What should be done to repair a Savage Model '94 that has a gap of .045" at the joint of the standing breech and the barrel (there is no up and down movement of the barrel in the receiver, just fore and aft movement)?
- a. Install and fit an oversize hinge pin
 - b. Peen the forend iron at the junction of the forend iron and the forend lug
 - c. Push out the old worn hinge pin and push in a new factory replacement hinge pin
 - d. Install an oversize locking block or weld up and re-treat the old locking block
 - e. Peen the barrel bite until there is firm contact with the locking lug

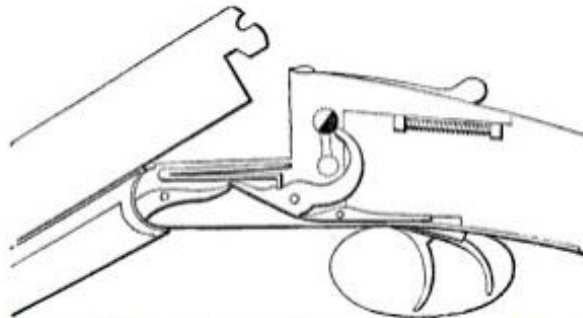
Professional Gunsmithing Test: **SHOTGUNS**

120. Which of the following is the best method of repairing a broken firing pin that is integral with the hammer?
- Build up with weld, shape and fit the tip and re-harden the hammer
 - Silver solder a new tip on the hammer
 - Drill a hole in the hammer and silver solder a proper size piece of spring wire in the hole
 - Drill a hole almost through the hammer and soft solder a proper size piece of spring wire into the hole
 - Drill out the hammer for the new tip and soft solder or silver solder a piece of drill rod or tool steel in place
121. What is the maximum allowable positive protrusion of a shotgun firing pin?
- .050"
 - Never more than the diameter of the firing pin
 - .100"
 - .065"
 - Never more than 1/4 of the primer diameter
122. What are the maximum diameter and protrusion limits of the firing pin of a modern shotgun?
- .085"
 - .085" diameter .075" protrusion
 - .100" diameter .065" protrusion
 - .075" diameter .085" protrusion
 - .080" diameter .080" protrusion

Professional Gunsmithing Test: SHOTGUNS



Note how safety engages over the top of the triggers to stop them from being pulled



Note how triggers lift sear tails, disengaging sear noses from hammer notches

123. Anson & Deeley style boxlocks and their variations comprise the majority of today's side by side shotguns. Notable exceptions would be the L. C. Smith guns. Which of the following could allow an Anson & Deeley type double gun to fire when a trigger is pulled and the safety is in the 'on' position? Choose three correct answers from below.

- 1) weak safety spring
 - 2) 30 degree angle on the mating surface of the triggers where they contact the safety
 - 3) safety cross-pin **or block** not fully engaged on the triggers
 - 4) improper sear and/or hammer notch angles
 - 5) .004" sear engagement in hammer notch
-
- a. 1, 2 and 3
 - b. 2, 3 and 4
 - c. 3, 4 and 5
 - d. 2, 4 and 5
 - e. 2, 3 and 5

Professional Gunsmithing Test: SHOTGUNS

124. Assuming that the notches on the hammers are deep enough, how would you increase the sear engagement on an Anson & Deeley style shotgun?
- Weld up, refit and harden the sear
 - Bend the sear tail down
 - Bend the sear tail up
 - Install stronger sear spring
125. Which one of the following would cure an Anson & Deeley style shotgun in which the safety moves to the 'off' position when the triggers are pulled a couple of times?
- decrease the angles of the top of the triggers to make it less negative
 - bend the top part of the safety forward
 - increase the angle of the top of the triggers
 - bend the top part of the safety rearward
 - straighten the safety spring a bit to make it a little longer
126. A box lock can be best described as a self-contained action with its "lock" or working parts inside the receiver.
- True
 - False
127. How are the hammers cocked on a common Anson & Deeley box lock type of shotgun?
- By using your thumb to physically cock each hammer.
 - When the action is opened, the forend iron pulls the cocking arms/bars down, thus cocking the hammer
128. How can you fix a double shotgun with a firing pin hole that is .155" in diameter...? Choose two correct answers from below.
- TIG up the hole and re-drill to fit a smaller diameter firing pin tip
 - make a larger firing pin to fit the hole
 - bush the hole with a 8 x 40 screw
 - bush the hole with a headed bushing
 - make a large firing pin to fit the large hole then put a normal sized tip on it
- 1 and 2
 - 2 and 3
 - 2 and 4
 - 4 and 5
 - 1 and 4
129. A customer brings you his grandfather's old double barrel shotgun, it has a .025" gap between the barrels and the standing breech. The gun is of a modern design, and if repaired correctly would be safe to shoot. He would like to be able to use it. How would you go about correcting this problem?
- Weld or peen the forend where it contacts the forend lug
 - Install and fit an oversize locking block
 - Bush the chamber
 - Install and fit an oversize hinge pin
 - Install a thicker forend latch

Professional Gunsmithing Test: SHOTGUNS

130. Which of the following repairs would probably be employed to repair a double gun which has a gap between the barrels and the standing breech and a gap or looseness at the barrels and the water plate? Choose two correct answers from below.

- 1) weld or peen the forend where it contacts the forend lug
- 2) install and fit an oversize locking block
- 3) bush the chambers
- 4) install and fit an oversize hinge pin if necessary
- 5) install a thicker forend latch

- a. 1 and 3
- b. 2 and 3
- c. 2 and 4
- d. 2 and 5
- e. 3 and 5

131. Which of the following methods could be used to correct a gap of .020" between the forend iron and the front radius of the receiver? The barrels are not loose on the receiver. Choose two correct answers from below.

- 1) install and oversize hinge pin
- 2) weld up the forend iron where it contacts the forend lug
- 3) install an oversize locking block
- 4) peen the forend iron at the contact point with the forend lug
- 5) install a stronger forend latch spring

- a. 1 and 5
- b. 2 and 4
- c. 2 and 5
- d. 4 and 5
- e. 3 and 4

132. Which two of the answers below might cure this doubling problem? The gun has double triggers and it frequently doubles when the front trigger is pulled first. The trigger pull of the front trigger is five pounds, the trigger pull of the rear trigger is one pound. Trigger travel before the hammer falls is 1/4" on both triggers. The gun doubles with anyone who shoots it. This is a side by side gun.

- 1) bend the left sear tail up
- 2) make the left hammer notch positive
- 3) make the engaging surface of the sear positive
- 4) install a stronger spring for the left sear
- 5) bend the front trigger to the right and the rear trigger to the left

- a. 1 and 2
- b. 1 and 5
- c. 2 and 3
- d. 3 and 4
- e. 4 and 5

Professional Gunsmithing Test: SHOTGUNS

133. Which of the following might cure the doubling problem in this A & D type shotgun? The gun doubles only when the rear trigger is pulled first. The trigger pull weight is 3 lbs. for the front trigger and 4 lbs. for the rear trigger. Trigger travel before the hammer falls is 1/32" front trigger and 1/4" rear trigger. Choose two correct answers from below.

- 1) bend the left sear tail up
 - 2) bend the right sear tail up
 - 3) decrease the angle of the right hammer notch
 - 4) file some off the front trigger so that there is more clearance between the front trigger and the right sear tail
 - 5) bend the right sear tail down
- a. 1 and 3
 - b. 2 and 3
 - c. 2 and 4
 - d. 4 and 5
 - e. 3 and 5

134. Which of the following might be the cause of this problem in an A & D type shotgun? When closed rapidly it frequently goes off. The safety button is in the 'on' position. Choose two correct answers from below.

- 1) finger hit the trigger when the gun was being closed.
 - 2) there is 1/4" play between the safety cross pin and the triggers
 - 3) there is not enough sear engagement in the hammer notch
 - 4) the sear spring is not strong enough
 - 5) the hammer to sear engagement angles are negative
- a. 1 and 2
 - b. 2 and 4
 - c. 2 and 5
 - d. 3 and 4
 - e. 3 and 5

135. A right-handed man brings in his double shotgun with double triggers. It frequently doubles on him but only if he pulls the front trigger first. The trigger pull weight is 6 lbs. for both triggers. Trigger travel before hammer release is 1/4" for both hammers. The gun does not double for the owner's friend. Choose two of the following answers that could be the cause and/or partial cure for this problem?

- 1) improper sear angle' left sear
 - 2) the owner's finger is slipping off the front trigger
 - 3) not enough sear engagement
 - 4) bend the rear trigger to the left
- a. 1 and 2
 - b. 2 and 3
 - c. 2 and 4
 - d. 3 and 4

Professional Gunsmithing Test: SHOTGUNS

136. Which of the following would tighten a forend with a plunger release system which moves forward and back on the barrels? Choose two correct answers from below.

- 1) weld up the forend lug and refit
 - 2) weld up the forend iron behind where it contacts the forend lug and refit
 - 3) peen the forend iron behind where it contacts the forend lug
 - 4) weld up the forend latch at its contact point and refit
 - 5) make and fit a thicker forend latch
- a. 1 and 3
 - b. 2 and 3
 - c. 2 and 5
 - d. 3 and 4
 - e. 4 and 5

137. Which of the following would tighten a forend with a plunger release system that is loose up and down?

- a. Weld up the forend lug and refit
- b. Weld up the forend iron where it contacts the forend lug and refit
- c. Peen the forend iron behind where it contacts the forend lug
- d. Weld up the forend latch at its contact point and refit
- e. Make and fit thicker forend latch

138. If a locking block for a shotgun was made of oil-hardening steel and drawn back to a purple color, it would _____. (Hint: When heating steel, the color purple is reached before the color blue.)

- a. Be too brittle and could break in half
- b. Wear rapidly
- c. Bend
- d. Be soft and would gall in the barrel bite
- e. Stretch until, in time, the gun could not be opened

139. Which of the following could be a cure of a Browning Superposed which doubles on its owner? It does not matter which barrel is fired first. It does not double for the owner's son. Choose two correct answers from below.

- 1) lighten the inertia block return spring
 - 2) lighten the inertia block
 - 3) make the inertia block travel farther rearward
 - 4) install a stronger inertia block return spring
- a. 1 and 3
 - b. 2 and 3
 - c. 2 and 4
 - d. 3 and 4

Professional Gunsmithing Test: SHOTGUNS

140. Which of the following would tighten a shotgun which has barrels that are loose in their receiver (up and down)? Choose two correct answers from below.

- 1) fit an oversize hinge pin
 - 2) peen the barrel bites
 - 3) peen the barrel lug at the hinge pin cut
 - 4) install an oversize locking block
 - 5) peen the forend iron
-
- a. 1 and 2
 - b. 2 and 3
 - c. 3 and 4
 - d. 1 and 5
 - e. 2 and 4

The following questions are not answered specifically in the videos, but can be answered with some critical thinking. For help, watch Ken Brooks "Pro Course Shotgun Test" videos numbers 001 – 005 in the "In the Classroom" section of the GCA website. He specifically addresses the test questions in a series of videos covering all of the sections of the tests. This is a huge resource.

141. Which of the following could be the cause of a locking block that just barely moves back far enough to allow the barrels to open, yet when closed the locking block is engaging the barrel bites only 1/32 of an inch?

- a. A weak top lever spring
- b. The groove in the locking block for the top lever connector is too wide
- c. The groove in the locking block is too long; the back of the locking block is too short
- d. The engaging extension of the top lever connector is broken off
- e. The automatic safety return spring is jamming the lock block

142. Which of the following could cause a top lever to stay in full open or right position? Choose the correct answers.

- 1) the top lever spring is too short
 - 2) the top lever spring was inlet too deep into stock
 - 3) the fit of the top lever connector extension and the locking block is too close
 - 4) the locking block is bent
 - 5) the top lever front arch is mismatched with the mating surface in the receiver
 - 6) All the above
 - 7) None of the above
-
- a. 6
 - b. 7
 - c. only 1
 - d. 1 and 3 only!
 - e. only 5

143. Which one of the following will not cure a top lever spring that keeps coming out of the top lever?

- a. solder the spring in place
- b. glue a piece of wood in the stock under the top lever spring
- c. replace the top lever spring with a longer one
- d. weld up the cut in the top lever so that the spring sticks out farther
- e. lengthen the working leaf of the spring by welding and re-heat treating

Professional Gunsmithing Test: **SHOTGUNS**

144. When should the top barrel of an over/under cock?

- a. As soon as it clears the top of the receiver
- b. Exactly when the lower barrel does
- c. Just after the ejectors eject
- d. Just before the lower barrel can be loaded
- e. When the barrels are about half open