

Slide 1

The 788 Safety System came under criticism a while ago and that prompted an intensive look at it. The basic complaint was how the inadvertent movement of the safety lever was possible.

Slide 2

The main reasons behind this ^{are} the size of the safety button itself and the relatively low safe off forces associated with it. When we speak of low forces, we mean the amt. of force it takes to push it from the safe on position to the safe off position. The

present production made rifles have a ^{2 1/2} 1 3/4 lb safe off force. ^{Note also how the button had to be filed at the rear to obtain}

~~This is a problem out in production~~
~~make was to increase the safety off force~~
— SLIDE 3 — ~~The first step to~~

When the rifle is held by the ~~finger~~ ^{gr} the fleshy part of the hand between the thumb & the index finger comes in close to the safety

button when the safe is in the safe or posit
Here in this view it is clearly seen how close it.

— Slide 4 —

If the rifle is slung over the shoulder, the
rotation of the gun up to this position causes the
same part of the hand to actually come in
contact with the rear portion of the safety
button. Now, if the amt. of force exerted on
the button is higher than the ²⁰~~15~~ lb safe off
force, the safety lever will move to the safe off
position. Although this style of carry is not one
that is common with a rifle, we still have to
be concerned with it because an accidental discharge
could result ~~because~~ ^{since} the person may think the

... ..

The first step to make was to increase the safety off force. To accomplish this with any degree of consistency, the two main components of the safety detent system, namely the safety detent plunger and the spring, had to be looked at separately. As an initial choice, the safety detent plunger was chosen to determine its effect on the safe off forces. Various angles on the plunger were investigated.

Slide 5. Here we can see 2 different angles that ^{were} investigated and their effects on the safe off force. By decreasing the cone angle there is an increase in the amt. of surface area that contacts the safety lever. More surface area generates more surface friction and an increase in safe off force is the result. An increase of 99% of surface area

resulted in an increase of 39% in the safe off force.

Samples were then made and sent to the test lab for evaluation. Dry cycle testing was performed and results indicated no loss in safe off force and no

part failure or wear. ^{1100 90°} Now that the plunger was checked it was on to step 2. The second part of this investigation was the safety detent plunger spring.

Again this was studied independently.

— Slide # 6. —

The existing spring was analyzed and compared to the safe off forces. The spring force at the working length played a role in this force. Here on this slide we can see that the spring load at the working distance was equivalent to the safe off force.

For this next part we will move on to the

provide an adequate safe off force. The proposed spring has a load of 2.85 lbs. at its working distance. When samples of these springs were assembled into rifles with the current plunger, a safe off force of 3.0 lbs was the result. ~~So now the~~ pieces start to fit together. The safety detent plunger does have an effect on the safe off force but not as much as the spring behind it. The ~~original~~ current spring and plunger together gave us an off force of 2.0 lbs. ^(.2 from the plunger and 1.75 from the spring) The proposed system together gives an off force of ~~3.0~~ ^{3.75} lbs, .75 from the plunger and $2.85 \pm .2$ from the spring.

Here we can visually see the difference in the parts. Note the difference in the nose angle on the plunger & the overall length of the spring. There was no cost increase on these parts.
 .020 springs) — Slide # 8 —

The final part of this project was to redesign

possible movement of its location was desired. By changing to a one piece design, a cost savings could be realized. By moving the location of the button forward, the inadvertent movement problem could also be reduced. By changing to this one piece design, a cost reduction of 5¢ per gun could be realized. ~~This may not seem like much but when it really set out to do ^{increase} ~~it was accomplished~~, with no cost ~~increase~~.~~

— Slide 9 —

So ^{in summary} ~~overall~~, I have gone from a 2 piece design safety lever to a one piece design. The safety off force has been increased from 2.0 lbs average up to 4.0 lbs average and all at a cost minus. Here we see what the increased safety lever.

looks like on the rifle. There is adequate clearance under the button to prevent it from interfering with the wood, another problem that was resolved in this safety lever redesign program.

~~- Future Work -~~

Summary Slide

NEED MORE VISUAL AIDS

SUMMARY

- ONE PIECE DESIGN SAFETY LEVER
- INCREASED SAFETY OFF FORCE
- IMPROVED LOCATION OF SAFETY BUTTON
- COST SAVINGS

MODEL 788 SAFETY IMPROVEMENTS

- INCREASED SAFETY OFF FORCE
- IMPROVED LOCATION OF SAFETY BUTTON
- ONE PIECE DESIGN SAFETY LEVER
- COST SAVINGS

1) Subject arrived in the room on 7:30 in the morning
instructed over the radio system.

2) ~~Subject~~ Distress performed in 3 stages

- 1st The incident that started the work
- 2nd The circumstances that followed
- 3rd The solution to the problem

3) Let's learn Plumber
Case Study

4) Let's learn Se...
O.H.L.
W.H.

5) Safety Analysis
2 pages - Safety Data

6) Let's learn Se...
O.H.L.
W.H.
Safety Data

7. Tell about the Potential Problem

8) View of Safety of the rifle
Sight in " location

9) Rifle held by grip
location of hand & trigger

10) Rifle held by trigger
location of hand & trigger

11) The safety investigation
report had to be made at individual

12) Investigation stages

3 - 3 parts

plunger
carriage
line

13) Look at Plunger first

14) Note down Carriage & the rest
of the rifle

15) Empty Tank Spillage

Don't ~~hesitate~~ to look at

1) The concern

- 1) w.b.
- 2) -old
- 3) fire
- 4) size of hole

2) Spill level change

- 1) One side change
- 2) change location of bottom

3) Ground level

- 1) One side change
- 2) change location
- 3) change angle of bottom

16) The possible solution to this complaint

17) Current vs. Proposed

- 1) location = upside
- 2) change cone angles

21) The proposed water level

the same as the old
the same as the old

the [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]

Summary

See [unclear] ~~12~~ 12 lbs + 4 lbs.

1) M. 755 Cover Slide

with cover of a - safety

2) M. 752 3 stage of presentation

3) Plunger

4) Spring

5) Lever

6) on top of safe slide

7) 3 stage Potential Problem

8) Safety button on gun

9) Holding on by grip

10) Slung over shoulder

11) 3 Stage Safety investigation

12) Investigation Stages

13) Plunger investigation

14) Plunger comparison 120° vs 100°

15) Investigation stage - Spring

16) Safety Cover

- 17) Investigation Stages - Seven
- 18) Comparison of 1st layers.
- 19) Presentation - Solution
- 20) Comparison of current vs proposed
- 21) Comparison of 2 layers
- 22) Two layers on map
- 23) Improvements slide