

# Survey of Semi-Auto Roller-lock HK Trigger Units



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## 1. Overview of the factory HK91 trigger



The factory HK roller-lock trigger has a rather heavy trigger pull from 9 to 11 lbs, depending on how well it has been 'broken in'. The factory trigger was set to be very heavy in order to meet German military drop-safety standards.

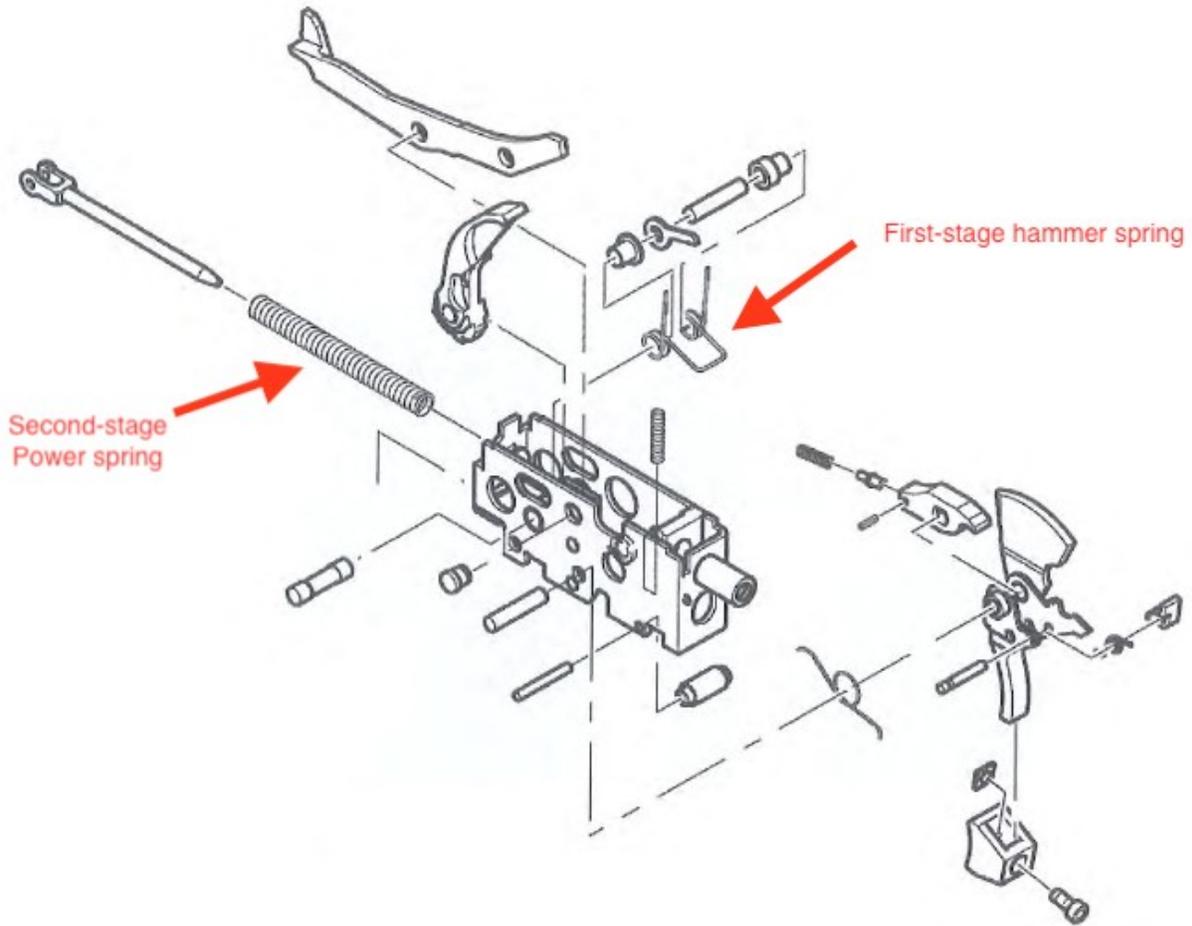
The trigger is a two-stage trigger, with about 3mm of travel on the first stage. After that, the trigger pull is hard and gritty, for about another 3mm before the hammer drops, with about another 3mm of after-travel and a very positive, and forceful reset.

## 2. Overview of the PSG1 factory trigger



The PSG1 trigger is a major departure from the standard HK91 G3 type trigger. It utilizes a dual hammer spring system. The first hammer spring is very light, and is easy to overcome, giving the PSG1 trigger its 2-3lb pull.

After the hammer is released, a second spring kicks in adding to the power behind the hammer in order to avoid light primer strikes.



PSG1 Trigger Diagram [1]

The trigger pull has a very short 1mm take up, a very light bit of creep, and then a very crisp break.

While an all-around excellent trigger, the main down side of the system is the dual-stage hammer spring. When empty, to charge the weapon, the force of the extra power hammer spring must be overcome, in addition to the resistance of the locking lugs. This makes cocking a PSG1 even more cumbersome than the G3.

### 3. The “Springfield-modified” HK trigger unit



The “Springfield” modified trigger is a match trigger job performed by Bill Springfield [2]. Typically such trigger packs are modified HK91, or G3 trigger packs that have been converted to semi-auto.

Springfield’s modification represents the entry-level to an upgraded HK trigger, but the work is quite good, and he is able to get the HK trigger pull-weight down to between 5 and 6lbs.

The grittiness and creep of the stock HK trigger is removed, and the break is very crisp and clean.

## 4. The Williams Set Trigger



The Williams set trigger [3] is another modification that can be performed on a standard HK trigger pack.

It creates a third, middle position on the selector, as seen above, labeled “set.”

The ordinary trigger pull of the Williams’ modification reduces the trigger pull to 5-6lbs, just as the Springfield modification does. When in the ‘set’ position, pulling the trigger does not release the hammer, instead a slight tactile click is felt. At this point, the selector is moved to the normal fire position where it will have a reduced pull of about 2.5 lbs for a single shot. After firing, the trigger is reset and will again have the ordinary 5-6lb pull.

In both modes, the creep is essentially non-existent and the break is very crisp and clean.

## 5. The HK SG1 Set Trigger



The SG1 trigger is a factory-issue HK set trigger as supplied on the HK G3/SG1. The SG1 set trigger is capable of both full-auto, semi-auto and set-trigger operation.

In semi-auto mode, pressing the black button behind the trigger activates 'set mode' where the trigger will have about a 2 lb trigger pull, and in normal mode it has about a 5.5lb pull.

In both modes, the travel of the trigger is greatly reduced; there is very little take up, and no creep in either mode.

While somewhat rare, and rather expensive – the SG1 trigger is often regarded as the finest trigger available for the roller-lock series of guns. It does feel a little strange, however, because the trigger sits a little farther forward than does an ordinary HK trigger, however it is quite easy to get used to.

## 6. The Franklin Binary Trigger



The Franklin Armory binary trigger [4] has three modes of operation. Safe, semi-auto, and “binary” mode. In binary-mode, the trigger is a fire-on-pull, and fire-on-release trigger mechanism. It is not considered a machine gun trigger because both shots require a deliberate action on the part of the shooter. Having pulled the trigger, if the user wants to ‘cancel’ the second shot, all that is needed is to place the weapon on safe.

In semi-auto mode, the initial take-up stage of the Franklin trigger is not as light as the stock HK91 trigger, and its rather gritty. Once the wall is hit, the trigger has only a small amount of creep and breaks surprisingly well at about 4.5 lbs.

While not quite up to the same standard and feel as the Springfield, or Williams triggers, it is a rather good after-market trigger in its own right without even taking into consideration the “binary” mode of the trigger.

With the stock, factory-provided selector levers, there is a minor nuisance involved when trying to use both levers on the gun as an ambidextrous pack. The levers are a bit long for this function, and the lever on the trigger-finger side will get in the way and obstruct the trigger finger just a little bit.

However both levers are not needed for operation, and of course one or both levers could be cut down and shortened. There are also after market selectors available to mimic the traditional HK shape.

## 7. Table of trigger-pull weights

Trigger system	Max pull (kg)	Min pull (kg)	Avg pull (kg)	Avg pull (lbs)	Price
SG1 trigger (set mode)	1.08	0.97	1.02	2 lbs 4.1 oz	\$950.00
SG1 trigger (normal mode)	2.75	2.31	2.56	5 lbs 10.3 oz	\$950.00
PSG1 trigger	1.36	1.19	1.27	2 lbs 13oz	\$700.00
Williams trigger (set mode)	1.34	1.09	1.17	2 lbs 9.4 oz	\$400.00
Williams trigger (normal mode)	2.54	2.24	2.42	5 lbs 5.4 oz	\$400.00
Springfield trigger	2.74	2.52	2.67	5 lbs 14.4 oz	\$170.00
Franklin Arms binary	2.4	1.9	2.19	4 lbs 13.1oz	\$610.00
Stock HK91 trigger	4.21	3.88	4.05	8 lbs 14.9 oz	\$0.00

Match Trigger	Avg pull (kg)	Price
SG1 trigger (set mode)	1.02	\$950.00
PSG1 trigger	1.19	\$700.00
Williams trigger (set mode)	1.09	\$400.00

Ordinary Trigger	Avg pull (kg)	Price
SG1 trigger (normal mode)	2.56	\$950.00
Williams trigger (normal mode)	2.42	\$400.00
Springfield trigger	2.67	\$170.00
Franklin Arms binary	2.19	\$610.00
Stock HK91 trigger	4.05	\$0.00

The testing to obtain this information was done by the author. The methodology was to use a Wheeler digital trigger pull gauge, and average the pulls over 10 attempts for all trigger groups / modes.

## 8. References

1. PSG1 Trigger Diagram [PSG1 Maintenance Instruction Manual](#). Page 14, figure 20
2. For information on Bill Springfields services see <http://triggerwork.net/>
3. For information on Williams Set triggers, see <http://www.williamstriggers.com/>
4. Franklin Armory BFS HK trigger <https://franklinarmory.com/franklin-armory-bfsiii-hk-c1-for-hk-91-93-mp5/>