

# Bump proof locks

- GEGE pExtra
- Anker 3800
- Kaba Penta
- M&C Antiklop
- Ikon WSW
- Abloy Disklock
- Abloy Protec
- Medeco Biaxial
- EVVA MCS
- EVVA DUAL
- Kaba Gemini S
- EVVA DPI  
(Modulair)
- EVVA 3KS
- Kaba Quattro S
- ...



# Discussed Bump proof locks

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## Modified Pin tumbler systems (kinetic energy can be transferred)

- CES => pin tumbler
- Gege pExtra => pin tumbler
- M&C => pin tumbler
- Kaba Penta / Quattro S / Gemini S => pin tumbler/dimple

## Special lockingsystems:

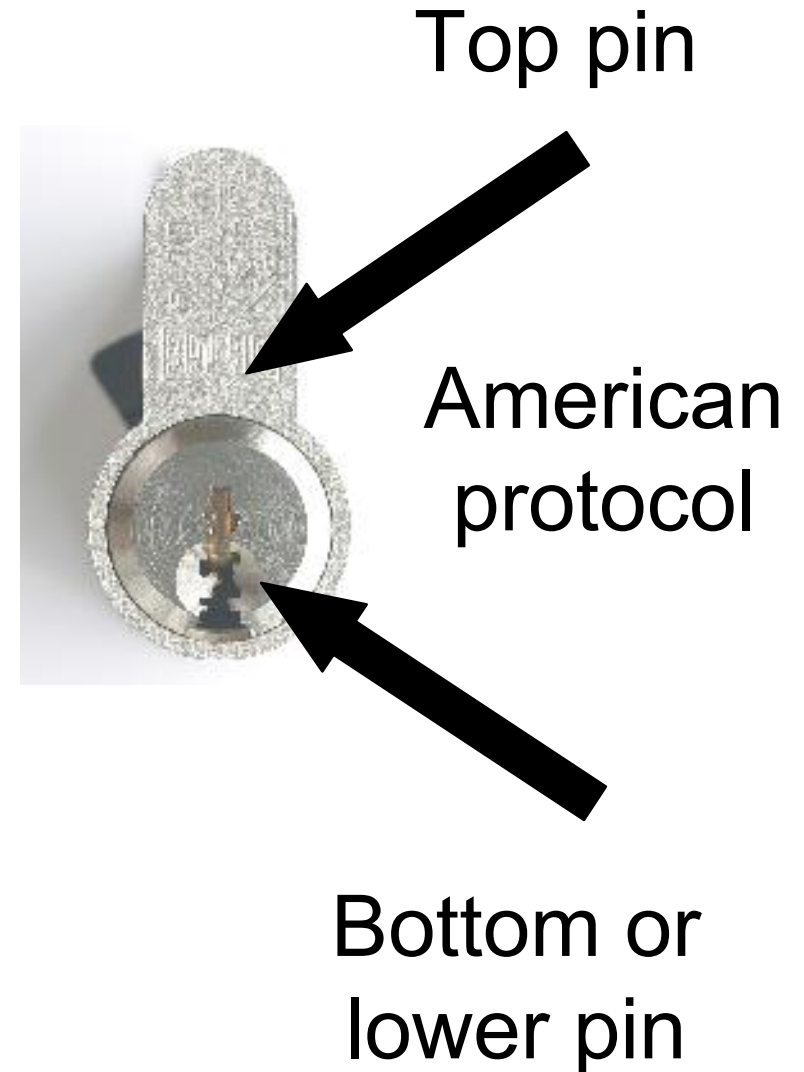
- Abloy Protec => disc-system
- EVVA 3KS => slider-system
- Medeco Biaxial => sidebar system
- Ikon Sperwellen => fingerpins / sidebar system
- EVVA MCS Magnetic Code System => Magnetic-system

\* see Toool-website for a complete list of bump proof cylinders.

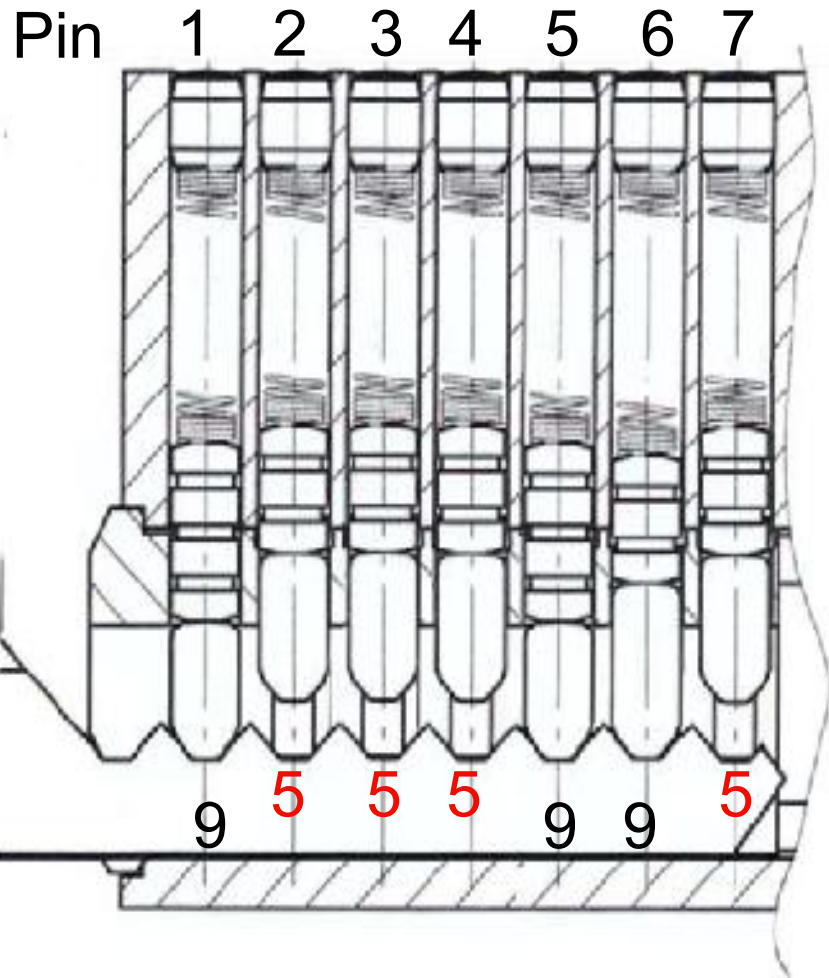
# How do you make a lock bump proof?

## Counter measures

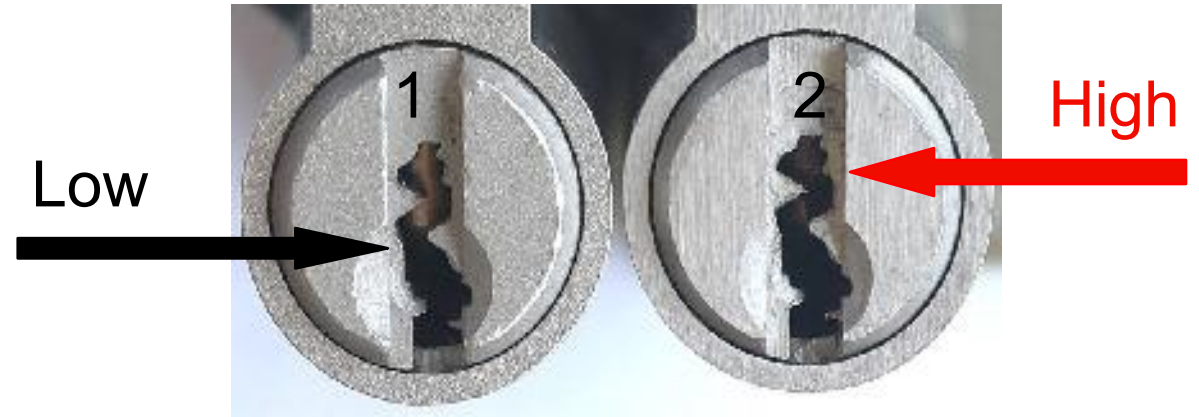
- Create gap between bumpkey and bottom pins.
- Create gap between top pin and bottom pin
- Second line of “trap pins”
- Shape of bottom pins
- Shape of top pins
- Use non pin tumblers (sliders, discs, magnets)
- Sidebar mechanism
- ...



# CES VA5 / VB7 (Carl-Eduard-Schulte)



**CES VB7(1)**

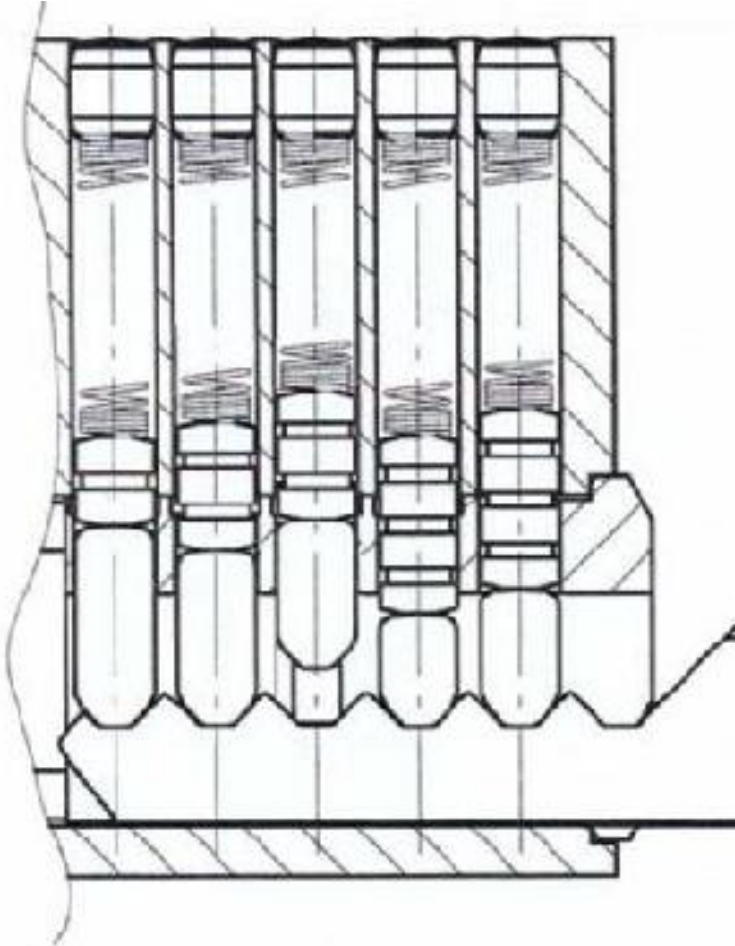


**frontview keyways**

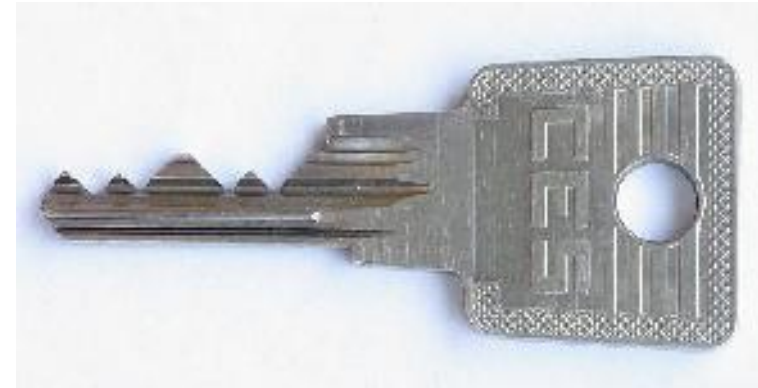
Pins VB7(1) bumpkey		Pins VB7(2) bumpkey	
1. Low	9-cut	1. High	5-cut
2. High	5	2. Low	9
3. High	5	3. High	5
4. High	5	4. High	5
5. Low	9	5. Low	9
6. Low	9	6. Low	9
7. High	5	7. High	5

# CES VA5

Pin 5 4 3 2 1



CES VA5

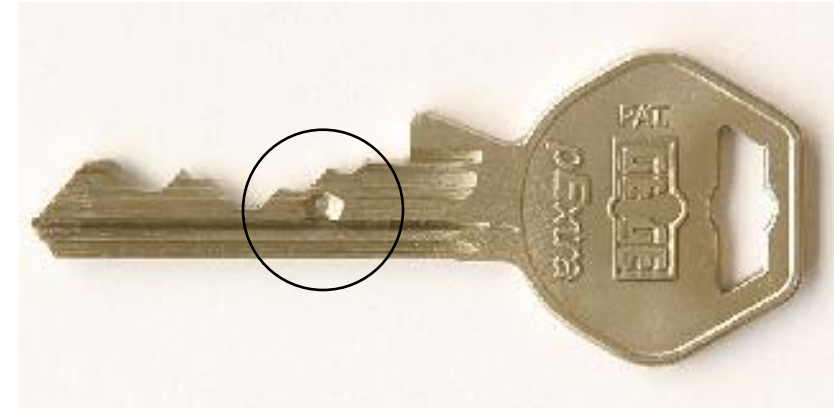
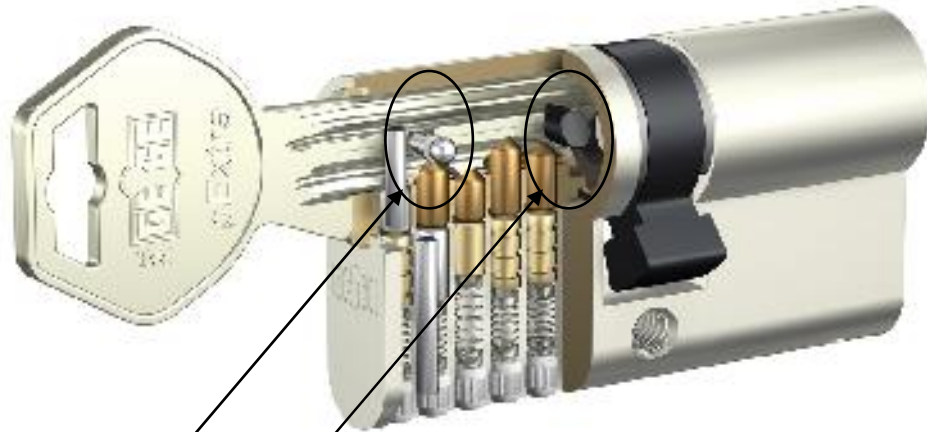


VA5 key



CES picked?

# Gege pExtra Cutaway view



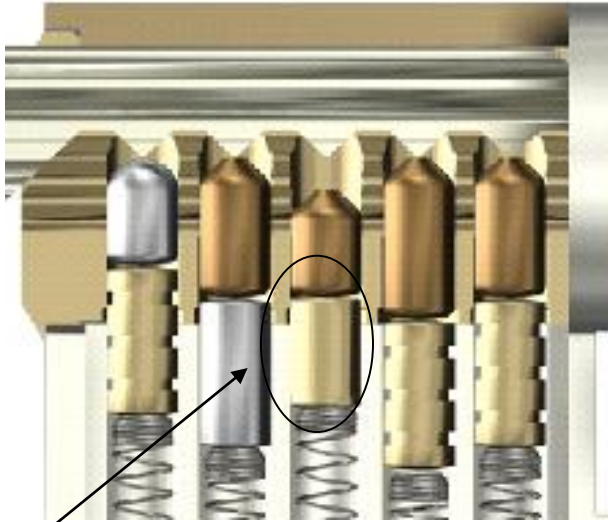
**Passive  
pin**

**Passive  
slider**

## Security features:

- Restricted key profile
- Special mushrooms to frustrate lockpicking
- Undercut => Easy entrie protection 1
- Passive slider => Easy entrie protection 2
- Passive pin => Easy entrie protection 3
- Rapid pin (bumpkey protection)

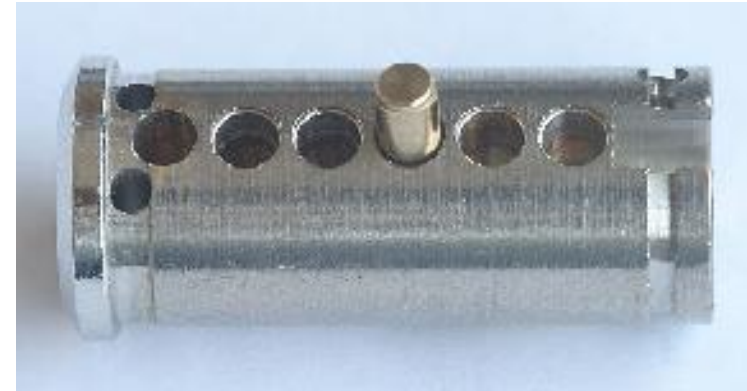
# Gege pExtra Bumpkey protection



The centering pin (Rapid pin) prevents one of the tumbler pins from making contact with the bumping key.



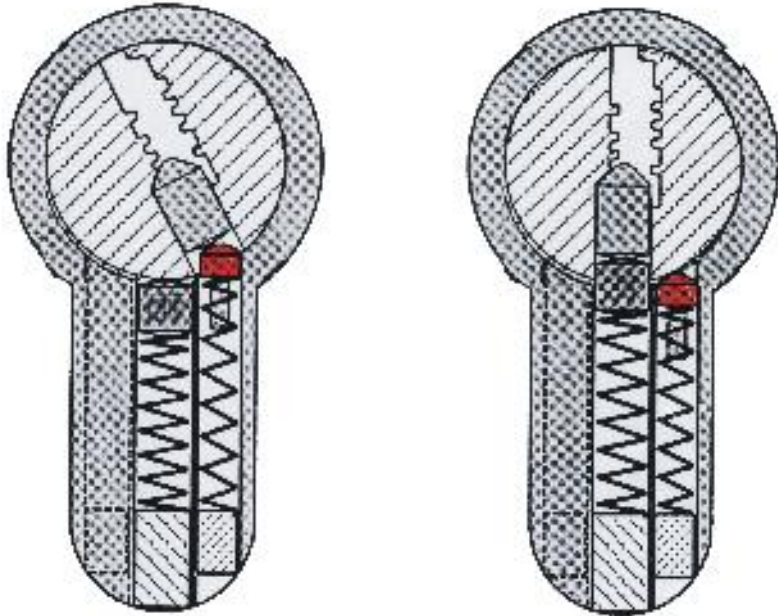
Rapid pins



Plug + rapid pin

# M&C Antiklop (Mitchel & Collin)

How does it work?



What we tried:

- push back the trap pins
- twister
- thread

Security features:

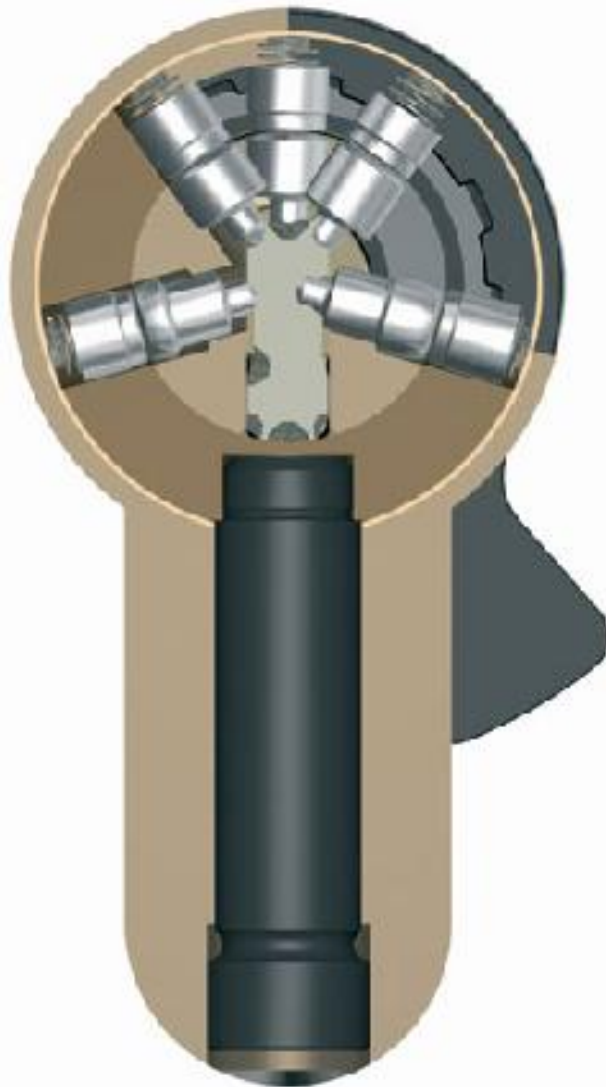
- 5 or 6 pins
- two rows of trap pins  
(bumping safety pins)



Blocked M&C cylinder with  
thread



# Kaba Penta Frontview



## Security features:

- Up to 22 pin pairs
- 5 rows arranged radially
- dimple holes and pins made with <math>< 0.01\text{ mm}</math> tolerances
- extremely drill-resistant
- pull-out protection (>15.000 Newton)
- Protected against impression method

# Kaba Penta Bump protection

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A factory  
made Kaba  
bumpkey



A used  
bumpkey



That's why,  
The pins!

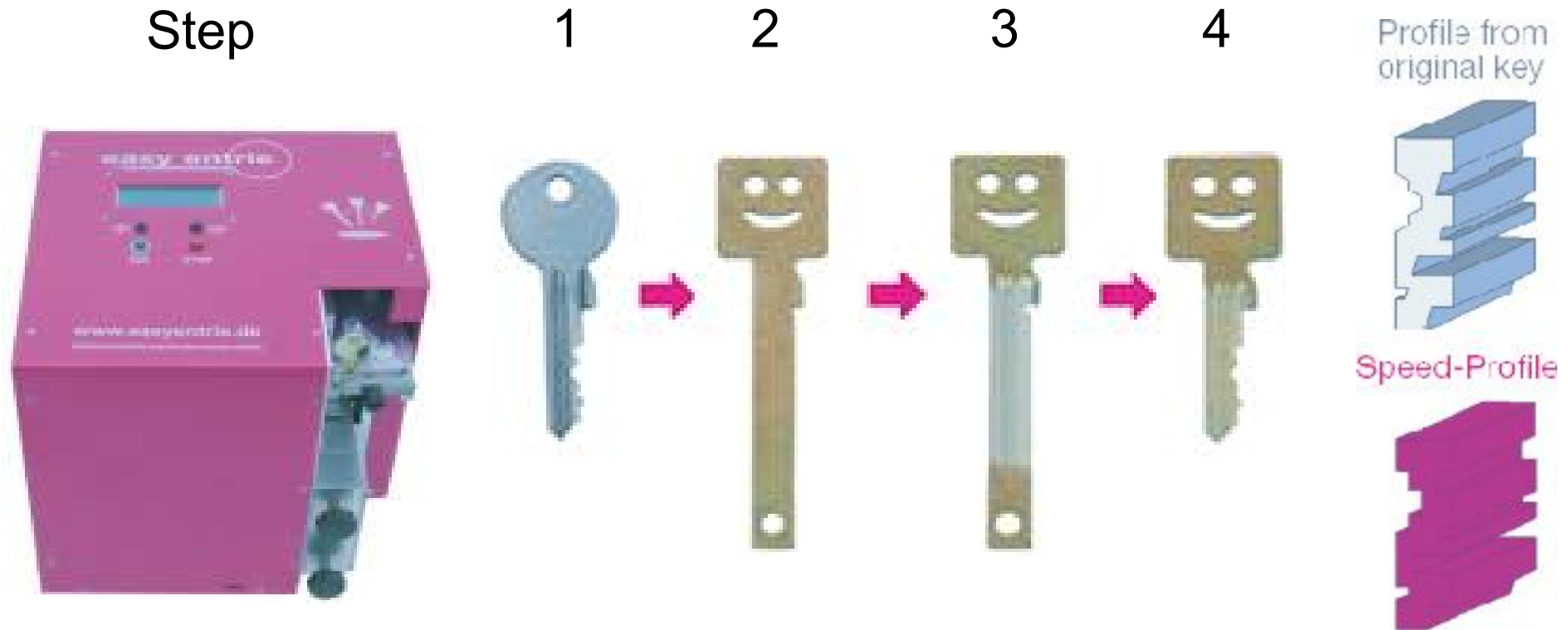
# Extra security features

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Features a security cylinder should have:

- Security card
- Key copy protection
- Drill protection
- Pull out protection (corkscrew)
- Manipulation proof
- Great number of different keys
- Special mechanism
- ...

# Easy entrie (key profile-cutting-unit)



**Start cutting key profiles yourself!**

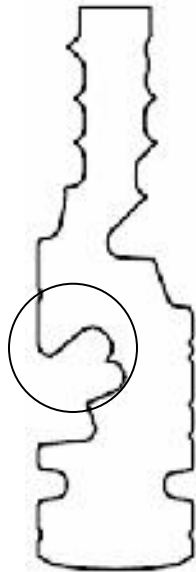
**With this profile-cutting-unit, quick, easy, inexpensive.**

# Easy entrie GEGE pExtra manipulated keys

Keyway



Frontview Keys



Original  
key



Easy entrie  
key 1

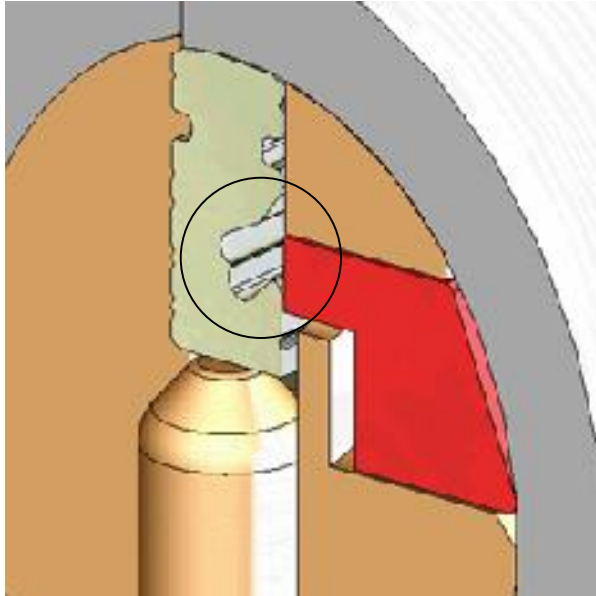


Easy entrie  
key 2

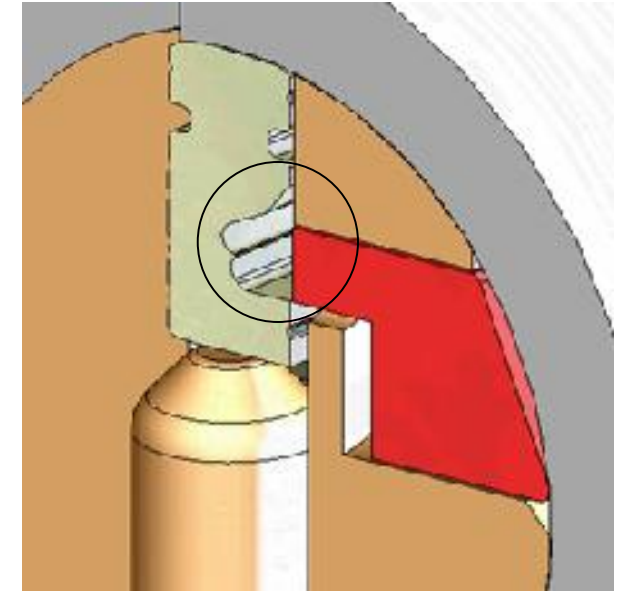
pExtra = Patented Profile System with Extra Protection

# Gege pExtra – How does the Passive Slider work.

Original  
key



Easy entrie  
key 2



# Kaba Penta Pull out protection



Penta  
cutaway view



Keyway



Broken screw

# More info about these locks on the Toool website

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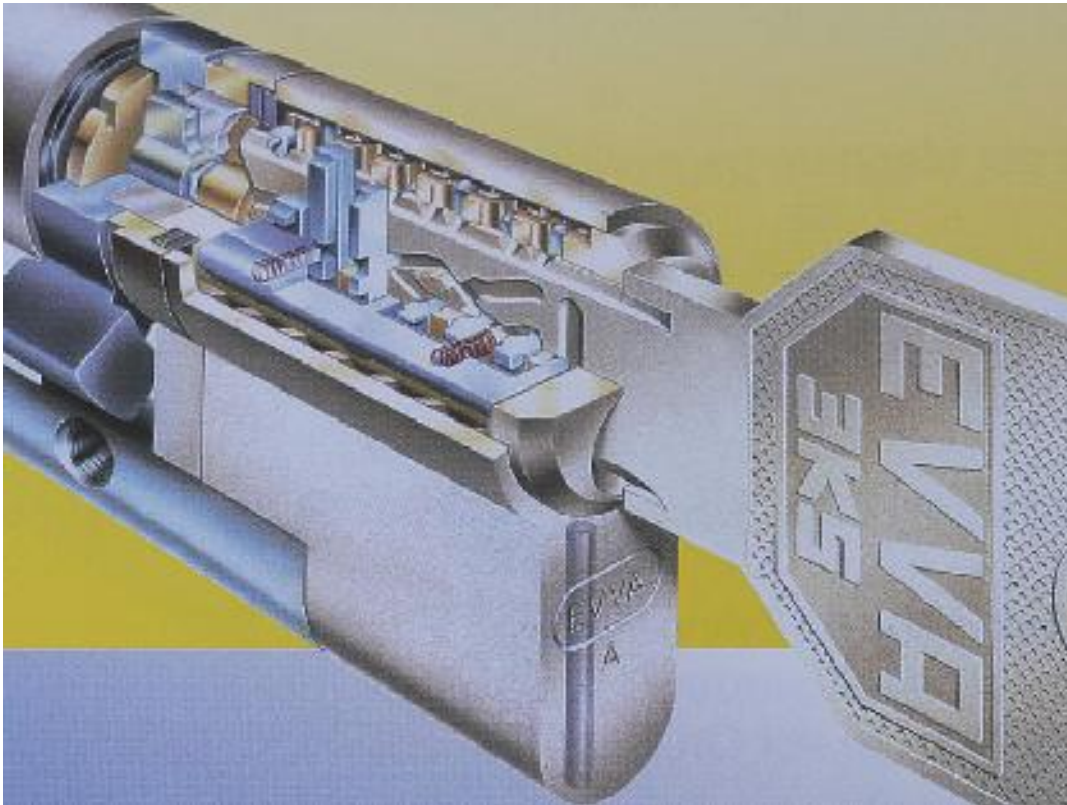
# Abloy Protec Cutaway view



## Security features:

- rotating disc cylinder
- 11 discs ( 1.97 biljoen comb.)
- Virtually pickproof  
(DBS => Disc Blocking System)
- durable and reliable operation

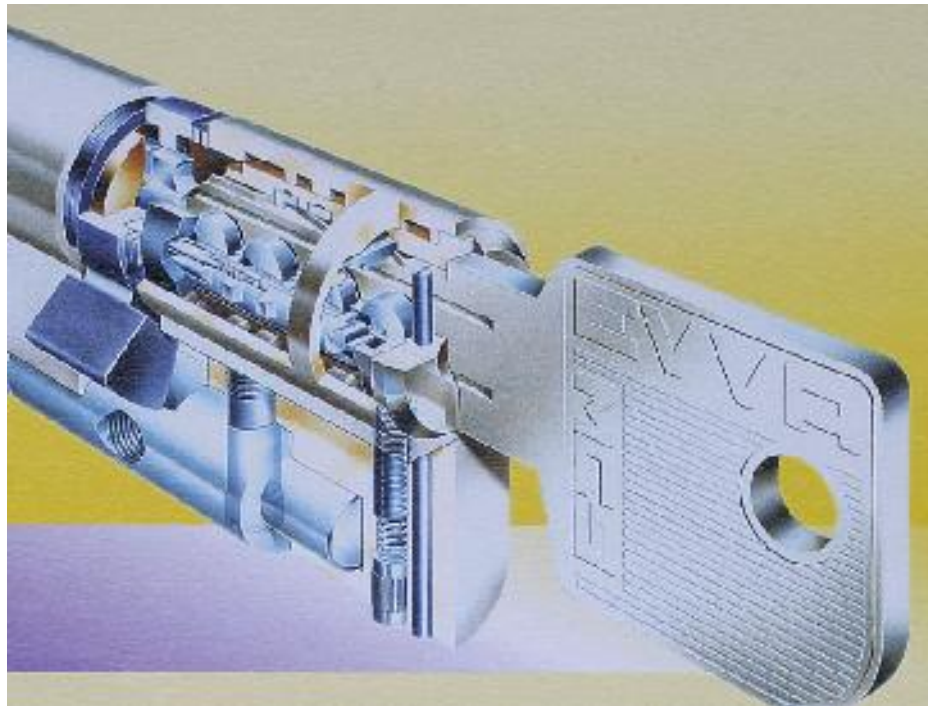
# EVVA 3 KS Cutaway view



## Security features:

- 12 springless sliders
- 2 separate lockingbars
- Additional bottom bar
- Copy proof key
- Manipulation proof
- Great number of different keys  
(30.000.000.000.000, 30 biljoen)

# EVVA MCS Magnetic Code System



## Security features:

- 3 locking systems
- 2 mechanical
- 1 magnetic (Samarium-Cobalt 5)
- Additional sliders (7)
- Copy proof key
- Manipulation proof
- Great number of different keys  
(299.000.000.000.000.000.000.000.000)