The Four Types of Locks

by Deviant Ollam

Event Name

XXXX-XX-XX

http://deviating.net/lockpicking
Who am i ?
Who am i?
Who am I?

- auditing
- assessments
- research
- trainings
Who am i?

- The Core Group
  - auditing
  - assessments
  - research
  - trainings

- TOOOL
  - workshops
  - public lectures
  - lockpick village
  - contests & games
Who am i?
Who am i ?
Who am i?
But on to locks...
But on to locks…  ... why do they matter?
All your hard work here...
All your hard work here... gets undermined here
The Lowest Grade of Lock...

a.k.a. “The Locks That You Are Probably Using”
Pin Tumbler Locks
Pin Tumbler Locks
Pin Tumbler Locks
Pin Stacks
Key Operation
Bitting Too Low
Bitting Too High
In a Perfect World
In the Real World
In the Real World
In the Real World
Lifting Picking
Wafer Locks
Wafer Locks
Wafer Locks
Wafer Locks
Raking & Jiggling
Shimming
Bumping
Bumping
Pick Guns
Bump Key Attack

“Pull” Method
Bump Key Attack

“Push” Method
Bump Key Attack

“Push” Method
Where are you using these weak locks?
Outdoor “Rugged” Locks
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Outdoor “Rugged” Locks
Desk Drawers & Filing Cabinets
Power Panels
Sensitive Wiring
Sensitive Wiring
Sensitive Wiring
Why are most locks this bad?
It’s a Problem of Standards

- American National Standards Institute
- Classification A156
- No Covert Security Ratings At All

- American Society for Testing Materials
- Classification F883
- Toughest Rating is only 15 minutes
Many Times, Picking is Instantaneous
You Need a Response Window
One Step Up...

“Pick Resistant” Locks
Advanced Keyways

- Simple…
  - straight and wide
Advanced Keyways

- Simple… straight and wide
- Medium… straight but narrow
Advanced Keyways

- Simple… straight and wide
- Medium… straight but narrow
- Complex… thinner and curvy
Advanced Keyways

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- Harder… lots of angles
Advanced Keyways

- Simple… straight and wide
- Medium… straight but narrow
- Complex… thinner and curvy
- Harder… lots of angles
- Fiendish… overlapping wards
Un-Shimmable Padlocks
Pick Resistant Pins
Pick Resistant Pins
Pick Resistant Pins
Pick Resistant Pins
Pick Resistant Pins
Bump-Resistant Pins

Top Gapping
Bump-Resistant Pins

Anti-Bump Driver Pin
The Next Step Up...

“High Security” Locks
Side Pin

Schlage Everest

- pin springs
- driver (top) pins
- key (bottom) pins
- plug
- check pin spring
- check pin
- specialized key

specialized key

pin springs

check pin spring

check pin
Schlage Everest

photos courtesy of Matt Blaze
Side Pin

Schlage Everest

photos courtesy of Matt Blaze
Schlage Everest

specialized “finger tensioner”
modified Everest key
Side Bars

- Similar to side pins
- Restrict plug movement
- Harder to pick than pin stacks
Side Bars

Finger Pins
Side Bars

Finger Pins
Side Bars

Finger Pins
Schlage Primus
Side Bars

Sliders
Sliders
Side Bars

Rotating Pins
Side Bars

Rotating Pins
Medeco Locks

Medeco plug exposed, key pins rotating to align sidebar cuts

Top View

Side View
Medeco locks certainly not “unpickable”
- Can be picked
- Can be bumped
- Numerous weaknesses

“Open in 30 Seconds”
- Marc Tobias
- Tobias Bluzmanis
Rotating Disks

- Sometimes Very Good Security
  - Mimics a safe lock
- Difficult To Pick
  - Takes much time and great skill
  - Specialized tools required
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- Two-in-One Tool
  - Manipulates disks individually
  - Decodes cut positions

Barry Wels picking a rotating disk lock with Mike Glasser
The Highest Grade...

Dare we say “unpickable” locks?
Specialized Rotating Disks

- Abloy Protec
  - Not just rotating disks
  - Disk blocking mechanism

- “Unpickable?”
  - Closest I ever come to using that word
  - Two-in-one tools cannot be used
Certain Magnetic Locks

- **Miwa**
  - Japanese company
  - Array of magnetic pins
  - Simple North / South

- **Evva MCS**
  - Austrian company
  - Axial-rotated magnets
  - Interaction with sidebar
Evva Magnetic Code System

- Possibly the most duplication-resistant lock
No Known Attack or Bypass
What About Safes?

photo courtesy of Don the Shadow
What About Safes?
What About Safes?

S&G 8400
What About Safes?

photo courtesy of Barry Wels
What About Safes?
But what about destructive entry?
There's one upshot... you know it happened
The scarier risk is non-destructive entry
Different locks for different purposes
1. Basic Locks

No special protections
No bypassing resistance

Unskilled Attacker – basic tools & techniques, under 5 minutes
Skilled Attacker – basic tools & techniques, under 5 minutes
2. Resistant Locks

Some pick-resistant pins (possibly tighter keyway)
Bump resistant, Zero potential of shimming or over lifting
Unskilled Attacker – basic tools & techniques, more than 5 minutes
Skilled Attacker – basic tools & techniques, under 5 minutes
3. High Security Locks

Advanced pick resistance, possibly wholly new mechanisms
Zero potential of shimming or over lifting or bumping
Unskilled Attacker – no chance in less than 30 minutes
Skilled Attacker – special tools & techniques, at least 5 minutes
4. “Unpickable” Locks

Advanced pick resistance, possibly wholly new mechanisms
No potential of shimming or over lifting / Bump resistance
Unskilled Attacker – no chance at all
Skilled Attacker – highly special tools & techniques, at least 30 minutes
(and quite possibly a lot of disturbance created)
Protecting against force or finesse?
A New Physical Security Framework

- Three Types of Secured Area
  - External Access
  - Internal Access
  - Sensitive Access

- Which Locks Go Where…?
A New Physical Security Framework

- **Basic Locks**
  - Utterly unacceptable
  - Should be *removed*, in my view
  - False sense of security
  - Inevitable “cross-contamination”
“Cross Contamination” with Locks
“Cross Contamination” with Locks
“Cross Contamination” with Locks
"Cross Contamination" with Locks
“Cross Contamination” with Locks
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“Cross Contamination” with Locks
A New Physical Security Framework

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A New Physical Security Framework

- **External Access**
  - Personnel Doors
  - Wiring / Utilities
  - Susceptible to Vandals & Thugs

- **High Security Locks Should Be Required**
A New Physical Security Framework

- **Internal Access**
  - Office Doors
  - Closets
  - Protecting Privacy & Supplies, not Data

- **Pick Resistant Locks Are Acceptable**
A New Physical Security Framework

- **Sensitive Access**
  - Server Racks
  - Networking Equipment
  - Any Termination-Worthy Data

- "Unpickable" Locks Should Be Used
To Me, a “Proper” Lock Should...

✓ Be Totally Immune to Zero-Skill Attacks

✓ Resist Skilled Tactics for Thirty Minutes

✓ Leave Behind Clear Signs of Tampering
Security is only as effective

... as the people behind it
Social Engineering
Social Engineering

![Hamburger and Sprite bottle](image_url)
Stop
Social Engineering Preparedness

Stop

Challenge
Social Engineering Preparedness

Stop

Challenge

Authenticate
Social Engineering Preparedness

Stop
Challenge
Authenticate
Social Engineering Preparedness

Stop  Challenge  Authenticate

... then you follow this with “Reward”
Social Engineering
Social Engineering
Forensic Evidence
Forensic Evidence
Forensic Evidence
Forensic Evidence – 250 uses
Forensic Evidence – 1,500 uses
Forensic Evidence - 5,000 uses
Forensic Evidence – 250 uses
Forensic Evidence – 1,500 uses
Forensic Evidence – 5,000 uses
Forensic Evidence
Forensic Evidence
Forensic Evidence
Forensic Evidence
Forensic Evidence
Forensic Evidence – picking
Forensic Evidence – raking
Forensic Evidence – both
Forensic Evidence – ugh
Forensic Evidence – wow
Forensic Evidence
Forensic Evidence – pin sides
Forensic Evidence
Forensic Evidence
Forensic Evidence – tail cam
Forensic Evidence
Forensic Evidence
Forensic Evidence
Forensic Evidence

[Diagram of a lock with a key inserted.]
Forensic Evidence
Forensic Evidence
Forensic Evidence – bumping
Forensic Evidence – bumping
Forensic Evidence
Forensic Evidence
Forensic Evidence
Sometimes *major* insurance implications

Suspect something fishy?
- Don’t compromise the scene
- Contact a professional
- Forensic Locksmith vs. Yellow-Pages Locksmith

Having newer locks matters
- Age makes for a mess, internally
- Also… your locks should be updated as a matter of routine

The facts are out there!
So Which Locks are Which?

- **“Unpickable”**
  - **ABLO**Y Protec (rotating disks)
  - **EVVA** MCS (magnetic)
  - **MUL-T-LOCK** MT5 and MT5+
  - **KABA**MAS (electronic safe dials)

- **High Security**
  - **ABUS** Granit & Diskus (rotating disk)
  - **ASSA** Twin (counter-milling, finger pins)
  - **EVVA** 3KS (sliders), DPI (new models)
  - **SCHLAGE** Primus (if upgraded properly)

- **Resistant**
  - **AMERICAN** Padlocks (heavy duty models)
  - **BEST** Interchangeable Cores (modern models)
Thank you so much.

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http://enterthecore.net              http://toool.us