

Dimple Lock Invasion!

By Bosnianbill

There has been a large migration in the lock formats being produced in the world today compared to what was produced some 10 to 15 years ago. This article reflects my personal observations after living and traveling in Europe over the past 20+ years.

Until fairly recently dimple locks were few and far between in the U.S. Aside from a couple of top-end and expensive producers like Mul-T-Lock, everyone else produces pin tumbler locks. Ten years ago that was also the situation in most of Europe as well. In those ten years, most of the people in Europe have moved away from pin tumblers and are now using dimple-type locks. Today in Europe the lowly pin tumbler is considered a poor man's lock and they are usually stuck on the bottom shelf of the local hardware store. The more popular (and expensive) dimple locks, perceived to be better quality and more secure, are found on the eye level shelves. Virtually all new European construction comes with dimple locks as well. The dimple design is so popular that many of the best-selling padlocks are also dimple keyed. In this article I will explore this 10-year transition period, share my personal perceptions of different dimple locks, and discuss marketing methods and trends that will increase the American demand for dimple locks and subsequently demand that you improve your dimple lock skills.

Technology-wise, it is apparent to me that pin tumblers have pretty much peaked. Yeah, there are some really high security locks out there using a variety of technologies like angled pins (Medeco), side bars (many manufacturers), regional biting (Primus, CES, etc). In reality, these technologies are actually very, very secure in almost all applications – even in Europe. But they *look* like old technology – and appearances can be everything to the uninformed consumer. To the uninitiated the high security cut keys look the same as they have for the past 100 years. At about the same time this transition to dimple locks began, the popularity of lock picking as a sport was peaking in Europe. These sport pickers publicly announced a well-known technique called “bumping” and the media went crazy. Suddenly people realized that the locks they'd been depending on forever were no longer secure and began to panic. Recognizing a marketing opportunity (called “fear”) some of the largest European manufacturers began aggressively marketing a “new” technology, (which had actually been on the shelves for many years).

While apparently ignoring the fact that dimple locks were just as susceptible to bumping as “regular” locks, these smarter lock manufacturers began to market several “levels of security”, and continue to do so to this day. The timing of the bumping announcement combined with aggressive marketing quickly influenced Europeans to migrate to dimple locks as the “new, more secure” option. Today, about 70% of European doors have dimple locks. Because Abus is the largest European lock manufacturer and supplies the vast majority of these (and as it is widely copied by many manufacturers) we'll use their products for our comparisons.

In my view, marketing and fear have always played a major role in our lock decisions – this is no more evident than with Master Lock Corporation. Master scored a marketing coup when they ran the commercial showing their locks surviving a high-powered bullet strike without opening. To the average American, this was an amazing feat that validated Master's “high security-ness” and one we've continued to believe for the past 20+ years. Master continues to reinforce that belief in their “Tough Under Fire” logo (figure 1). Never mind that few, if any criminals actually shoot their way through locks. Why should they make all that noise when almost all Master locks have the same four-pin core that can be raked open in about 30 seconds? Most criminals don't walk around blasting Master locks open. They rake them open, cut them with bolt cutters or simply bypass the lock. The fact is that the power of marketing influenced the American opinion for an entire generation – the low security nature of the simple 4-pin cores is conveniently buried under Master's marketing blitz. Using a similar model, European manufacturers convinced the European community that



Figure 1

dimple locks were far superior to those old, bump-prone pin tumbler locks – specifically, **their** dimple locks. Let’s take a look at how Abus did this in Europe and that should give us an indication of how it’ll play out here in the U.S.



Figure 2

Abus security products are the European equivalent of our Master Lock in terms of popularity. The difference is that Abus actually produces some very secure locks, as well as other security products for domestic, commercial, and mobile security. (Oddly, many Europeans will answer “Masterlock” when asked about their preference for a good, high quality padlock. When Americans are asked which country has an excellent reputation for engineering, technology and precision machining, they inevitably respond “Germany”.) Clearly, the Europeans fell for Master’s 20-year long propoganda while Americans accept that everything German is the finest quality. This belief is what Abus has been exploiting as they move into the U.S. marketplace. American’s belief in German quality is how Abus will catapult themselves into the U.S. market and they reinforce that belief by including the words “Security Tech Germany” beneath their logo (figure 2).

The U.S. is at another competitive disadvantage because there are virtually no producers of dimple locks, making them pretty rare here. Most Americans have never even **seen** a dimple lock, so the first time they see one their reaction is “Holy crap! **This** is one secure lock!”, without understanding how the locks work. It looks weird, complicated and high tech, so it **must** be better than what we have, right? Abus understands this, and as the largest manufacturer and supplier of dimple locks in the world, they are uniquely positioned to flood the U.S. with their products, dominate the marketplace and probably kill off any American competitors. By the time U.S. lock makers figure out the game and spool up production capacity, it’ll all be over but the crying. Abus has the product, manufacturing capability, engineering know-how, distribution network and a ready market into which they can double or triple their market share. Knowing that, let’s take a look at their current offerings and evaluate their vulnerabilities. While we’re focusing on Abus in the next few paragraphs, please understand that most European lock makers produce very similar products with identical features. In that respect, Abus is a “generic” that represents all the dimple lock makers.

If nothing else, Abus understands human nature and psychology. One of the really smart things they’ve done is establishing a scale ranging from 1 to 10 that indicates the “protection standard” to “help you decide on the appropriate level of security for your application” (figure 3). Uh, huh. Read: “Time to pick”. I’ve found that the 1-3 takes about 3 minutes or less on the average to defeat. The 4-6 takes about 10 minutes, and 7-9 about an hour, usually more. The 10 is reserved for disc detainer locks that, for the average criminal, are for all practical purposes unpickable. Yes, there are specialized disc detainer tools and a handful of people on the planet that can actually use them, but the average criminal will simply avoid disc detainer locks altogether. Most lock buyers know nothing about lock design, pick resistance, or bypass technologies to they’ll probably gravitate to the higher numbers because nobody’s wife will let them buy a 3 when a 9 is available... Naturally, the higher the number the higher the cost – so Abus understands that economics plays an important role in American decision making. Let’s see what we’ll get for our money.



Figure 3

The entry-level dimple lock in figure 4 contains six active pins and four passive pins. In these basic models the passive pins are pretty much irrelevant because most manufacturers use the same shells and keyways for all their locks. To pick this you only have to pick the six pins on the bottom. Unfortunately, you'll need specialized dimple picking tools because the keyway is quite restrictive. Six pins with six possible depth settings means there are a little over 46,000 possible combinations, making it rakable. These mid-level security models cost around \$35. Many other manufacturers produce clones with identical features.



Figure 4



Figure 5



If you want a little higher level of security you actually have three choices, the EC750 (rated 9), EC850 (both rated 7) and the EC950 (rated 8). These are similar to figure 5 and have the same shell and layout as the mid-security model but the four passive pins are now active, meaning there are 10 active pins that must all be picked. The only difference between the models is the two rated 8 have an anti-drill pin. Any criminal wanting to pick through this class of cylinders better bring a specialized dimple pick set and a lunch. 10 pins, 6 depth settings = 1 million possible keys. These models cost in the range of \$40-\$75. Again, other manufacturers have identical products in this price range as well.

At the top of the dimple lock security heap you'll find locks equivalent to the Abus XP2S shown in figure 6. You'll notice the internals of this class of lock have up to three separate axes of pins, at the 12, 3, and 6 o'clock positions. Oh yeah, there are 12 pins with 6 depth settings...almost 3 million combinations. Some of these also contain sidebars, making picking pretty difficult, even for very experienced pickers. Depending on the manufacturer these are usually priced above \$100 and up. In Europe, this is the most popular level of security and is found on most homes.



Figure 6

You can see the number of pins, pin layout, and other security features determine whether a dimple lock is "pickable". Most dimple locks **are** pickable, if only we can gain access to the pins. That's our biggest problem: pin access. Naturally, lock designers know this and design keyways to block our access to pins. Fortunately, manufacturers have pretty much settled on a few common keyways that all the manufacturers share. Since Abus is the most prolific producer, most copy their older, out of patent keyways – exactly as we have done here in the U.S. with the SC1, SC4, Y1, etc. Below are some closeups of common keyways so you can see how the warding partially blocks access to the pins.



Figure 7

This Euro-cylinder in figure 7 actually isn't too bad. The six pins are pretty accessible and the wardings aren't too restrictive. You'd probably have best results attacking these pins by placing your tool on the left. First, however, I'd try a rake since there is plenty of room to fit one in the keyway. There are no security pins in these locks and on the Abus security scale I'd give them a 4.



Figure 8

You can see the keyway in figure 8 is a little more restrictive but you could probably attack the six pins from either side. Like the Baton, there's plenty of room to start off with a rake and hope the bitting isn't too crazy. If the raking doesn't work, move to the straight flag and finish setting the unset pins. Tolerances on this lock are a little tighter but with no security pins I'd still give this one a 4.



Figure 9

This Bosca's keyway (figure 9) is very similar to the Oxford in figure 8 except it is a little tighter on the left side. You'd probably have better luck attacking first with a rake, following up with a flat or partial flag positioned on the right side. This inexpensive six-pin Spanish lock is similar to the two above but with slightly better quality, so I'd give it a 5.



Figure 10

This ISEO cylinder in figure 10 shows one of the most typical keyways and is a very common lock in Europe. Clearly, the designers intend to deprive us access to the pins – and they have almost succeeded. Obviously, there's no room for a rake and, with almost all security pins, it would be a waste of time anyway. There's still enough room on either the right or left to insert your flag and access the pins. Once you've set as many as you can with the flag, you can go back in with the curved flag to finish setting the pins that you couldn't push down far enough with the flag. Mental mapping is the key to success with this lock as you switch tools because without it, you'll find yourself oversetting pins that you already set. This is a pretty tough lock with tight tolerances and security pins. It comes in both 6 and 7 pin models. I'd put it at 7 or 8.



Figure 11

In figure 11 you can see the most common keyway you'll find – either in Europe – or as these locks gain foothold, in the U.S. This keyway cannot be raked. It is much too restrictive and contains almost all mushroom or spool security pins. Making matters worse, as the security rating increases you'll have to deal with one or more rows of pins – sometimes up to three different rows. This class of lock can have between 6 and 12 pins depending on the model. The best way to attack this lock is with the curved flag placed on the left side. First you'll have to set the bottom pins because you can't access the other two rows while they're in the way. Once they're set, you can attack any other pins located at the 9 or 12 o'clock positions. Often only the bottom six pins are security pins (mushrooms and spools) and the side and top pins are normal. Unfortunately, there's no way to tell which version of the lock you're facing because the front stamps are identical for all locks from security level 6 through 9. You'll just have to jump in and feel your way around. This lock is the XP2S, rated 9 and... I've not yet been able to pick it...

Well, I hope I've helped you get a jump on dimple locks. Make no mistake, they will invade the U.S. exactly the same way they took over Europe – it's just a matter of time – and not much of it. Knowing this, now is a good time to familiarize yourself with dimple locks and the various ways to defeat them.