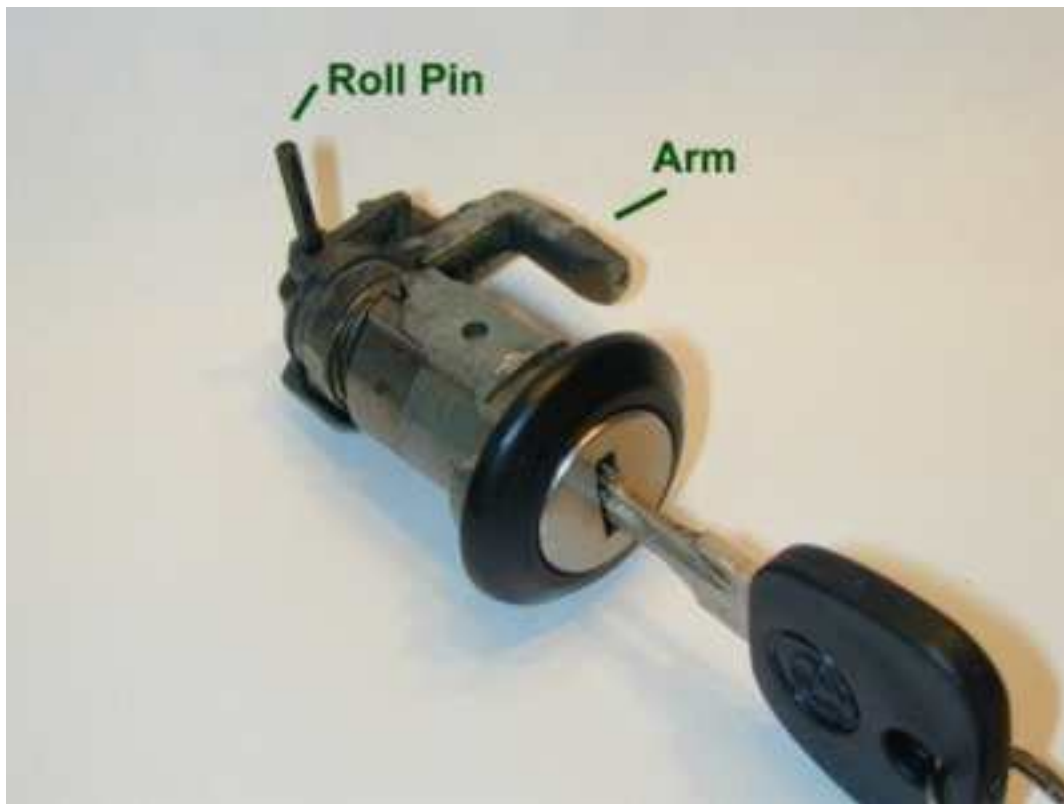


BMW e30 Driver's Lock Cylinder repair

When you turn the key in the driver's door, or push/pull the locking knob from inside the car, the latch mechanism is mechanically locked or unlocked. In addition, the electric lock motor will be mechanically pushed or pulled into action at which point it sends a signal triggering the central locking control module to power all the lock motors.

With the key in the driver's door and door closed, you should always be able to mechanically lock or unlock the driver's door, regardless of whether or not the central locking system is working properly on the other doors.

The arm on the lock cylinder should rotate up or down as you turn the key 45 degrees in either direction. That arm engages and lifts/lowers the same mechanism within the door latch mechanism, as does the lock knob inside the door when it is pulled/pushed.



BMW E30 door lock

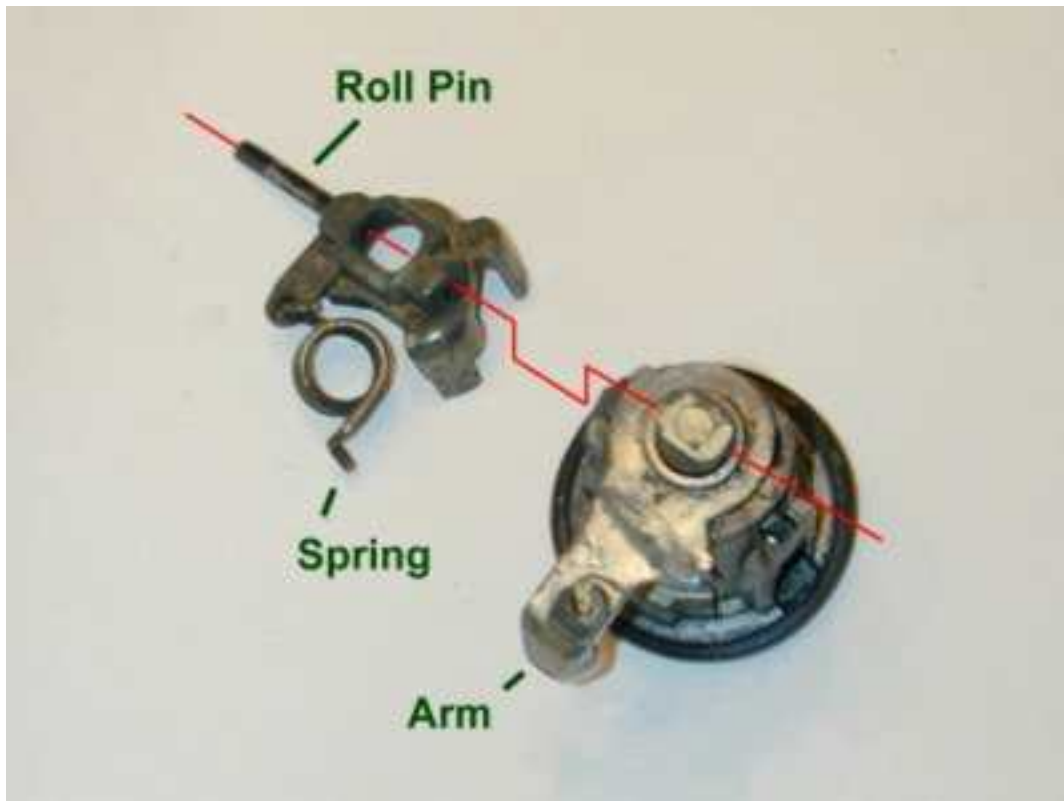
Note the roll pin is shown partially removed. The arm is meant to move only through 45 degrees each way. When turning the key to the 90-degree double locked position, the arm does not move down any further. Only the piece with the roll pin through it turns with the lock cylinder shaft all the way to 90 degrees. The little coiled spring then clicks over to securely hold the arm in position. When you withdraw the key in the 90 degree position,

the cylinder barrel locks in that position, the spring mechanically holds the arm down, and nothing is going to unlock that door until you put the key back in. My central locking system is still screwed up, so for the moment I've simply pulled the fuse on it (Fuse #27).

When I got my 86 325, the driver's door would unlock fine with the key, but sometimes it would not lock. It felt like the key mechanism had gone soft. Sometimes it would catch and lock normally. Other times it would click all the way over to the 90-degree (double lock) position without locking the door at all. I could see the inside knob hadn't gone down, leaving the door unlocked. The only solution to that problem is to buy a replacement lock cylinder.

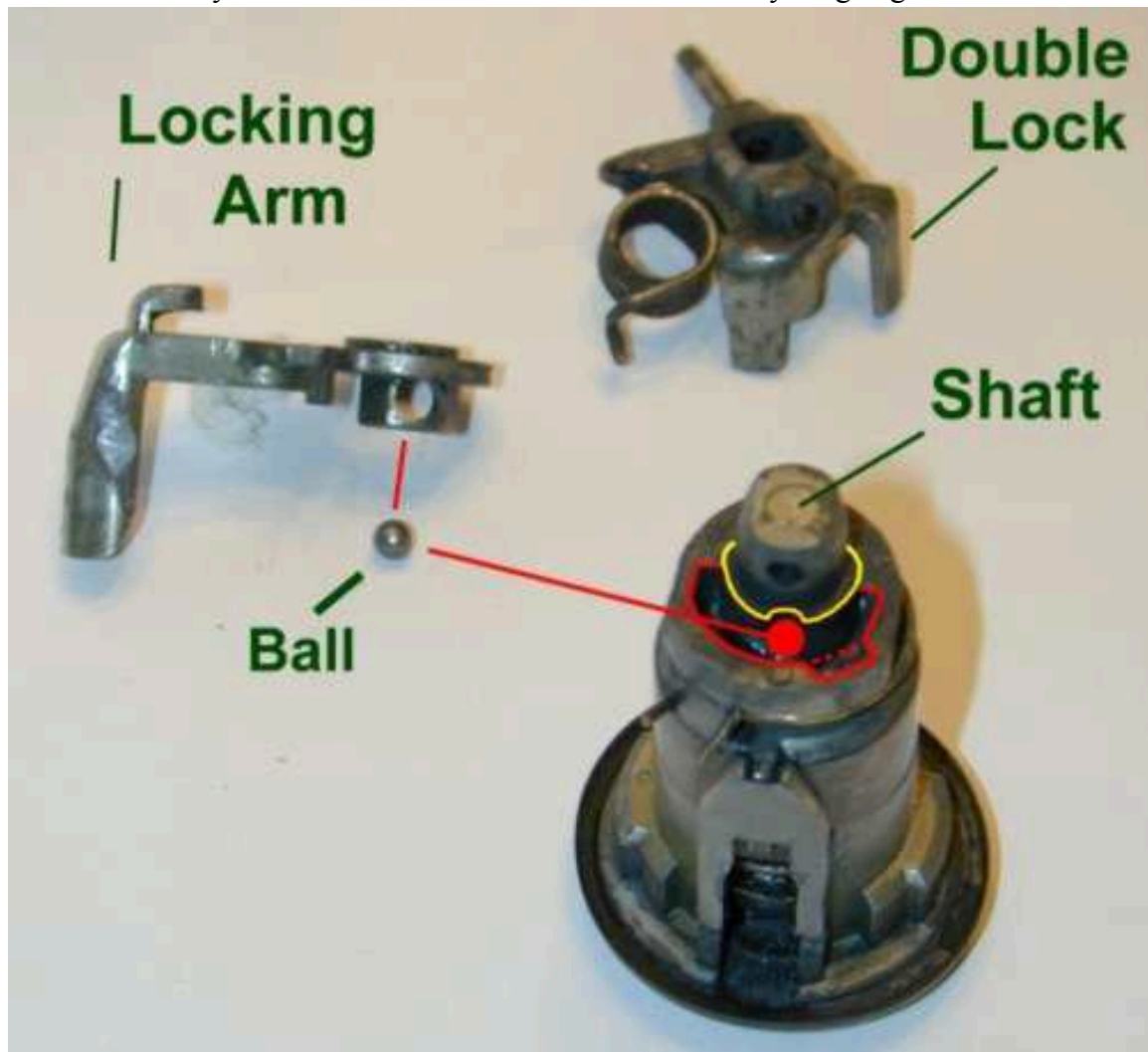
Now that I know how, I could probably do it again in half an hour. But the first time, following the instructions in Bentley, it took me most of an afternoon to get the old cylinder out.

To disassemble the lock cylinder, once you have it out of the car, you only need to drive out the roll pin that keeps the double lock mechanism attached to the lock cylinder shaft. I used a hammer and small nail to push the pin out. The piece with the spring still attached is the mechanical double lock gizmo. You can see that it has a squared hole that fits on the squared end of the lock shaft. It always turns with the key. The piece with the arm on it has a round hole fitting over the lock shaft. It looks like it rotates independently on the lock shaft.



BMW E30 door lock internal mechanism

Slowly lift the arm piece off the lock shaft, being careful not to lose sight of the tiny ball that will certainly fall out and roll into the darkest corner of your garage...



BMW E30 lock mechanism

That tiny ball was the cause of the problem with my door lock. The lock shaft has a small notch in it (yellow line) in which the ball is held. In that position the ball locks the arm mechanism securely to the lock shaft. The arm is then forced to rotate with the lock shaft. The ball normally rides around in a narrow track (red outline).

When the key is turned 45 degrees to unlock, or 45 degrees to lock, the locking arm is forced by the ball to move with the shaft. When the key is turned further to the 90-degree double lock position, the ball drops into a widened cutout slot. When that happens the locking arm disengages from the lock shaft. The square end of the lock shaft continues to turn the double lock mechanism though, which clicks over so that the spring holds the locking arm in place. At least that's the theory.

The problem is that the hard ball bearing refuses to sit nicely in its intended slot. Over time it wears its own groove into the soft lock shaft and escapes.



Close

up of bmw e30 door lock

Instead of properly locking the arm mechanism to the shaft, the ball slides out of its slot and allows the arm mechanism to rotate loose on the lock shaft.

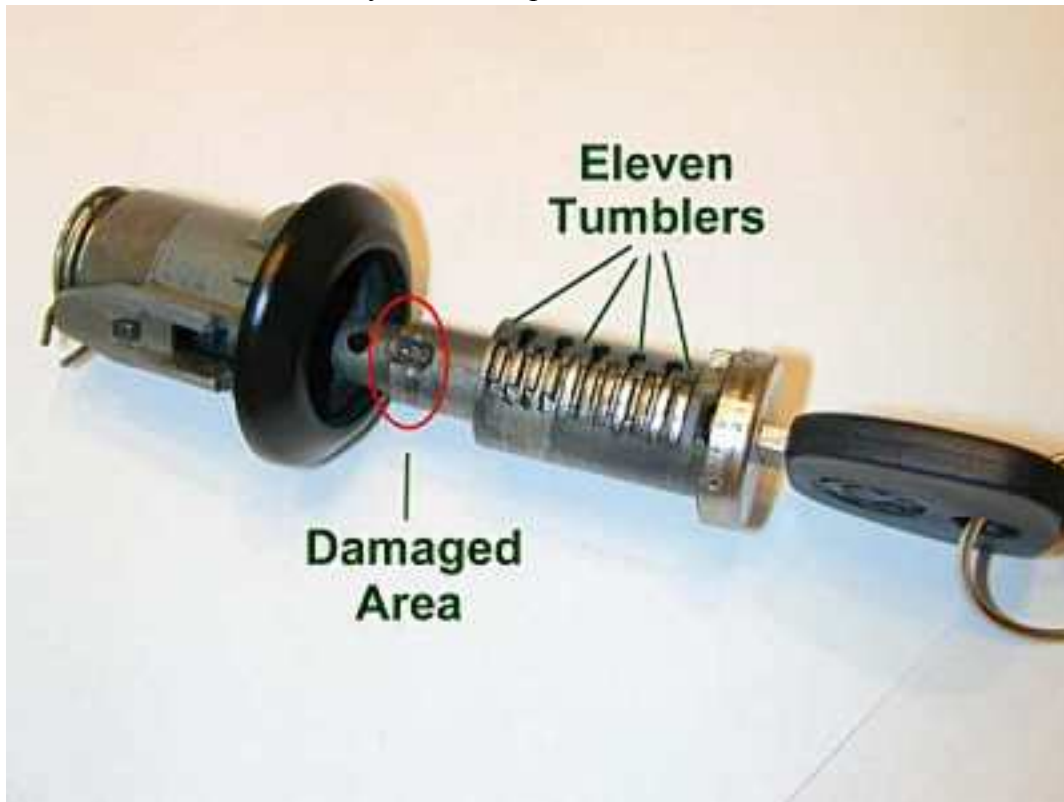
Note how the groove is only worn off to one side. When I turn the key to unlock the door, it works perfectly. But when I turn the key to lock the door, sometimes the ball pops out of its seat and smears off to the left. The key turns the shaft, but the shaft does not move the locking arm far enough to activate the lock.

I bought a new replacement door lock cylinder from Bavarian Autosport <http://www.bavauto.com/>. The new improved lock cylinder has a cylindrical roller in place of the old style spherical ball. It works like a charm! (Be sure to ask for the correct lock cylinder. Apparently you can buy the cylinder with or without the double lock mechanism that comes with central locking.)

However the new replacement cylinder also comes with a new pair of keys, which of course won't work in your old ignition, passenger door, or trunk lock. You may actually like having a second set of keys. But if you prefer to continue using your old single key for everything, all you have to do is swap your old tumblers into the new lock cylinder.

CAUTION: Read everything before trying this!

When the key is fully inserted into the lock, the tumblers are drawn flush with the surface of the barrel. With the key in the lock, and after the roll pin is removed, you can pull the lock barrel clean out of the cylinder to expose the eleven tumblers.



BMW E30 door lock tumblers

CAUTION: With the barrel extracted, do not pull the key out all at once. The tumblers are spring loaded! My cylinder was gummed up with very old grease, so everything was pretty much glued together. But in theory, if you suddenly pull the key out, you could end up with eleven tiny tumblers, being fired into orbit by eleven tiny springs, to land after re-entry in eleven far away locations in the very darkest extremities of your garage (or maybe even in your lawn, if your garage door happens to be open at the time). Not that I would ever admit to having any personal experience with that sort of thing of course...



BMW E30 door lock with labeled tumblers

One other thing to watch out for. The tumblers come out on alternating sides, top and bottom, five on one side, six on the other.



Close up of bmw e30 door lock tumblers

Pull the key out very slowly, one notch at a time, pausing to catch or lift out each tumbler and spring as it comes free. Lay the tumblers out in order, label them, document each step with photos, whatever it takes, just be absolutely certain that you can put them all back in the same order or you'll be doing a lot of trial and error later on...

Put everything back together the way you found it, and Bob's your uncle.

I can lock and unlock my driver's door now. And someday soon I will also figure out why my power locks still don't work...

Ferdinand Trauttmansdorff