

INSTALLATION TIPS

By Roy Bardowell, CDDC

Specs, rules, guidelines, observations, and common data on residential operators

A few months ago, I was called to job where the homeowner claimed his newly installed door operator would only open his seven-foot high door six feet. I thought this would be an easy repair simply by adjusting the up limit or maybe the open force was set to low. The worst case would be a broken torsion spring. Regardless of how I adjusted the limits I could only achieve less than enough travel to fully open the door.

This is when I got down to basics. Even though the homeowner insisted his garage door was 7-feet high, it looked wrong, so I got out my trusty tape measure and measured 7-feet, 6-inches. The guy couldn't believe it until he saw for himself. He asked, "is your tape measure accurate". I chuckled, but not too loudly. He said the installer of his operator said the door was 7-feet high. I told him "seven feet is the norm, but there are exceptions and you have one".

The door height measured exactly 90-inches high (7'6"). Then I measured the rail which measured 99 inches long. Boom! There's the problem. T-bars for a 7-foot door should be 111 inches long. It's a pretty simple calculation. Most trolley type operators require a rail that is 2 feet (24") more than the door height. When you get to commercial sectional doors using a drawbar type operator you will need rails that are 3 feet more than the door height. At this home an unexperienced installer assembled the rail to an operator for a seven-foot-high door and installed it on a 7'6" high door. There are no

rails made for a 7' 6" high door, so you must employ a rail for the next common door height. When I told the homeowner his door needed the rail for an 8-foot high door he wanted to know if the repair and parts were free? I'm pretty sure he thought I was scamming him. Of course, I said, "NO", but told him to call the original installing company and ask them to make it right, since it was them who goofed; where they promptly told him to take a leap. "The warranty had expired."

Wanting to make the guy happy and not think door guys were crooks, I told him I would fix the problem for my cost. All I had to do is take down the operator and swap out the rail for the proper one. Then remount the head a little further back with new perforated angle. I went the extra mile by buying a belt rail to provide a little less noise than he had before.

Overall, I spent about 90 minutes to make the door right and acquired a lifelong customer. The guy even tipped me after the job was done. The guy wanted to know why it was done wrong to begin with, which I didn't have an answer. I can say that the installing company charged about \$100.00 more than I would and has been in our industry magazines exposed as a Bad Bob. This is what happens when you're taught how to scam and oversell first and good training takes a back seat. Operator specifications are readily available, but sometimes ignored which has led to problems. Honestly, most of my repairs are to correct an incorrect installation.

Just for example how many installers install a 1/2 HP motor on every door regardless if it is well balanced or not. When I started installing operators in 1972, residential door operators were powered only with a 1/4 or 1/3 HP motor and they opened doors perfectly, all day long for many years. Installing a 1/2 or 3/4 HP on a well-balanced residential door is a waste of power, electricity, a waste of money, and completely unnecessary.



Plain & simple—if a door cannot be manually operated easily, then fix the door so it can be manually operated easily. Easily is by using one arm. Installing a 3/4 HP or more powerful to lift a broken door is irresponsible and dangerous. Even operators using a 1/4 HP motor will exhibit hundreds of pounds of downward pressure. It only takes five pounds to choke off a person's windpipe. If a power outage occurs and someone releases the heavy door it will be like a huge guillotine which can injure, crush or kill someone underneath the door.

Believe me this has happened before and more than once.

So, more power is not always the best choice. When Ryobi® started selling door operators at The Home Depot with a 2 HP rated motor, I was scared that someone would be seriously injured by the over-powered opener and bone crushing door.

Specs, rules, guidelines, observations, and common data on residential door operators:

- ❖ Regardless of whether the operator has an AC or DC motor the operator will plug into a standard house 120-volt receptacle. Most residential door operator manufacturers provide a 4 to 6-foot power cord which will reach most outlets in the garage ceiling if the electrical contractor responsible for the house electrical placed the outlet correctly. Electrical contractors who wire homes have historically been confused by the placement of the operator outlet. Many new homes are pre-wired for an operator and miss-place the pushbutton wires in the wall too low. Everyone should know the pushbutton should be placed higher than 5-Feet above a standing surface. The push-button or wall console must be higher than 60 inches from a standing surface.



A standing surface could be the floor or from a stair. If the button was pre-wired and lower than 60-inches, ignore that and make it right, even if you have to place the bell wire on the wall and ceiling with staples. Safety over-rides looks! ALL THE TIME!

- ❖ If the garage has no available power outlets which is rarely the case, it is NOT your responsibility to wire and provide one. It is the responsibility of the homeowner to call in a licensed electrician and supply the power receptacle. Most times there is a light in the middle of the garage and a homeowner may think this will suffice. Although there will be 120-volts at the light, it is on a switch which can be turned off. Too many times I have found the outlet seven feet back from the header forcing me to supply a 6-foot extension cord which is not recommended. I guess the electricians think the operator for a 7-foot door will be only seven feet long. If a seasoned doorman can make this mistake, then any other person can and will—Murphy's law.
- ❖ Some operator manufacturers can provide a slightly longer power cord that would reach a misplaced ceiling outlet and you should carry one or two units with the longer cord just for these weird garages.
- ❖ Federal law dictates that all residential door operators sold in the US must be evaluated, approved, and meet the requirements of the Underwriters Laboratories (UL) 325 safety standard.
- ❖ All residential door operators are provided with a set of photo sensors that pulse infrared light. Many believe the photo

beam is a straight line like a laser, but in reality, the beam is pulsing like a strobe.



Infrared light is invisible to the naked eye, but surrounds us all day within the regular light spectrum from the sun. The receiver sensor can fault if it gets direct sunlight. This usually happens during sunrise or sunset when the sun is on the horizon. One of the sensor units emits a pulse of light and the other sensor looks for it and counts the pulses. If you suspect solar interference, you can test the sensor by blocking the sunlight hitting the sensor. Most of the time it will be the RX which is affected. If blocking the sunlight permits the door to close, you can cut a piece of cardboard to form into a shade and tape it to the sensor or reverse both the TX and RX sensors.

The unit that transmits light will be called the TX and the unit that receives the light pulses is known as the RX. Most manufacturers pulse at 7-10 times per second. This is known as the PULSE CODE and is the reason why photo-

sensors are product brand specific and not universal. If the receiver is looking for 7 pulses per second and sees only 6, it will think there is an obstruction and reverse the door. Even a leaf blowing through the invisible beam can be detected and change the pulse count received at the RX.

Both sides must be installed no higher than six-inches from the floor. This is known as the six-inch rule, which now applies to every operator including commercial and gate operators.

- ❖ On hollow metal doors it is best to install a structural angle or an ARB bracket so the operator has a strong point to lift the door from. Actually, the support should be provided on every steel door. Make it a habit!



At minimum supply a 21-inch piece of punched angle and screw it vertically from the center hinge between the third and top panel to the top section. Homeowners who install their own operator usually forget this important structural component. Always have an ARB door bracket with you in case you visit a garage with a damaged top section.

- ❖ Most operator motor heads are 10 inches wide. If your new operator head is around

the same it may line up with the support angles already bolted to the ceiling saving you time on the installation.

- ❖ The overall length of an operator and rail for a seven-foot high door will be approximately 124 inches long. This can vary by manufacturer, but it will only vary by a few inches.
- ❖ On a sectional door, the curved arm connects to the door bracket, but on a one-piece door the straight arm connects to the door bracket and the curved arm connects to the trolley. With sectional doors set the down limit so the straight arm is angled slightly back toward the motor head when the door is closed. With your left shoulder next to the door the straight arm should point at 1 o'clock, and no more. Pointing it more will cause you to lose power at start.



- ❖ Operators with dual lighting on the sides such as the Guardian 628 are superior to one light in your face when you drive into a garage at night. After-all you really want to provide light where people exit the car and walk.

- ❖ If you want to electrically operate a door over 7 feet high you will need to use the rail for the next length up, (8'). This must be observed even if the door is only 3 inches over seven feet high. So, doors that are slightly higher than 7 feet need an operator rail for an 8-foot door. Price and plan the job accordingly. A nine-foot high door needs the rail for a 10-foot door. Consult the factory if not sure.

- ❖ Chain drives are strongest and the most durable.

Belts are quieter, but weaker than chain, and more expensive.

Screw drives are less efficient than chain or belt drives. They are inefficient because of the extreme friction produced. This is why screw trolleys continuously fail or wear out. The friction destroys them quickly.

- ❖ Remotes and wireless keypads transmit on low power RF which stands for RADIO FREQUENCY. And must be approved by the rules and regulations of the FCC (Federal communications commission under CFR 47 article 15.

47 C.F.R. 15.5 contains a general provision that says; devices may not cause interference and must accept interference from other sources. It also prohibits the operation of devices once the operator is notified by the FCC that the device is causing interference.

Basically article 15 says our remotes cannot produce any interference that may affect other wireless devices, but must accept interference from other RF transmitters.

It is due to this standard we sometimes have interference in our radio devices. It is a federal rule!

- ❖ When you attach the red release handle to the trolley, ensure the handle or knob is only 72 inches from the floor so children can reach it.



- ❖ Most residential door operator manufacturers provide the more secure rolling code for their remotes with millions of potential codes. The rolling code changes with each operation and even if someone grabbed or copied the code, it would be useless to them.

- ❖ Make sure all wires are secured well and not breached by a staple.

Shorted wires are a common issue. If the homeowner claims the door has opened on its own, check the wires. Most of the time the problem will be a short by a staple. On dry days everything will be fine, then after a rain storm, the humidity goes up and the damp staple shorts the circuit. You should also inspect the wires behind the pushbutton. If you come across an old fashion key-switch you

should convince the homeowner it compromises their security and offer the more secure keypad.

- ❖ Remotes on car visors also compromise security. In warmer climates people sometimes leave the car window open a few inches where someone can reach in and steal the remote or walk up to a car parked in the driveway and press on the remote button with a stick and open the garage door. The best way to prevent this and enhance their security is to upgrade the customer to mini keychain remotes.



Then the mini remote goes with the person's keys in their pocket, or purse and typically brought inside the home every night.

- ❖ See the table for CORRECT rail lengths

GARAGE DOOR HEIGHT	OPERATOR RAIL LENGTH
7-foot high door	9 feet, 3 inches
7-foot, 3-6 inches	9 feet, 9 inches
7-foot, 6-10 inches	10 feet, 3 inches
8-foot high	10 feet, 3 inches
9 or 10-foot high door	11-12 feet long

Roy Bardowell, CDDC, served as Operations Manager at Guardian Access & Door Hardware until 2014. He has been in the door and operator industry since 1973 and is known as one of the industry's most experienced operator technicians and trainers. Roy received the IDEA Commitment to Excellence award in 2008 and IDA's Jerry R. Reynolds Volunteer Service Award in 2017. Contact him at roythedoorman@gmail.com