

# THE PROFESSIONAL CDO TECHNICIAN: *WHAT IT TAKES*

By Roy Bardowell, CDDC

If your company is installing and servicing commercial door operators (CDOs), then you must employ a well-trained, knowledgeable, and experienced technician. The well-trained tech will reduce service time by finding and fixing the problem faster. He can also help train other techs who have less knowledge and experience.

During my many years as a commercial operator troubleshooter, I have spoken with a number of bright individuals who have a good understanding of CDOs. They pursue further training wherever available and have extensive experience troubleshooting these operators.

Unfortunately, these individuals are the exception. Most of the phone calls I field are from inexperienced technicians who use a trial-and-error technique. They are often poorly trained and have little experience. They do not represent your company well.

So, to help you bring your techs up to speed, here are my six must-haves for any professional CDO technician.

## No. 1 MUST-HAVE SAFETY PRACTICES

The CDO technician must be familiar with electrical safety and always use specific safety procedures when working on CDOs. Electricity can injure and kill. The cover story of the winter 2014 issue of this magazine carried an eye-opening story of a \$21 million lawsuit that involved an electrician who was permanently paralyzed in an accident involving a commercial door operator. *The sad fact is that door operator personnel*



*have died on the job from falling, crushing, shock, and electrocution.*

Your technicians can get training on a variety of door- and operator-related topics at the International Door Association Expo and at their regional events around the USA and Canada. Watch for these seminars and have your technicians attend as often as possible.

These workshops often include safety training; they cost very little and are sometimes free.

## No. 2 MUST-HAVE ELECTRICAL KNOWLEDGE

CDO techs must have some electrical knowledge. They do not need to be licensed electricians, but they do need a good understanding of electricity. Licensed electricians are good at bending conduit and pulling wire, but they do not know why an operator has two relays or four limit switches.

*Incorrect power applied to a door operator is a common reason for job failure.* Consequently, CDO techs need to know the difference between all the voltages that are applied to CDOs. Most of these operators are 115 VAC single-phase. Other voltages are 208/230 VAC single-phase, 208/230 VAC three-phase, and 460 VAC three-phase, and in Canada you will find 575-625 VAC three-phase power.

No operator will work with more than one voltage listed above. Techs can modify operators in the field and change the power by swapping components that have fixed voltages, but they should consult the factory first.

Most operators employ a 24 VAC

secondary power for controls and accessories. The technician should also understand amperage and various currents drawn by the single- and three-phase motors. The technician should be able to read a line-type wiring diagram and be familiar with the electrical components. My advice is: *If you don't understand electricity and circuits, then you have no business messing with them.*

## No. 3 MUST-HAVE MULTIMETER



CDO techs must have a multimeter and know how to use it. The tester should be a digital type with an LCD and should have measurements for volts-AC, volts-DC, OHMs with a 20,000-ohm maximum, continuity with beeper, and may employ a clip-on amp meter (ammeter).

I do not recommend spending over \$50 on a multimeter. One thing is for sure: *You cannot troubleshoot an operator without a multimeter.*

## No. 4 MUST-HAVE WIRING ABILITY

CDO techs must know how to wire controls and accessories, and they should be familiar with normally open and normally closed contacts. Specifically, they should know how to modify the wiring from C2 to B2 to

# ROY'S TOP THREE REASONS FOR CDO TROUBLESHOOTING FAILURE



- 1 Incorrect wiring of a control or device.
- 2 Incorrect power applied to a door operator.
- 3 Incorrect wire gauge.

T-type wiring, and they should know how to wire contacts or switches in parallel or series wiring. For example, wiring two open buttons to an operator requires *parallel* wiring. Wiring two or more stop buttons to an operator requires *series* wiring.

Technicians should know how to connect a variety of common devices such as photo-eyes, radio control receivers, control stations, safety edges that include fail-safe versions, and different key switches. *Incorrect wiring of a control or device to the commercial door operator is the most common reason for faults and job failure.*

## NO. 5 MUST-HAVE KNOWLEDGE OF WIRE RATINGS

CDO techs must understand wire ratings and gauging. A great tool is a motor amperage guide and a low-voltage amperage table. Although gauging wire is usually the job of the electrician, I often find wiring with the wrong gauge of wire.

The wiring inside the electrical enclosure is made up of 16-, 14-, or 12-gauge wire. A CDO requires the correct gauge of wire to power the motor and other components

without a voltage drop. So the minimum gauge of wire used to connect your pushbutton or photo-eye should be no smaller than the wire inside the enclosure.

*Do not use telephone or bell wire to power controls. Incorrect wire gauge is the third most common reason for faults and job failure.*

## NO. 6 MUST-HAVE PROPER TOOLS

Finally, the CDO technician must have the proper tools. Here is my list of must-have tools.

- Good solid ladder
- Digital multimeter
- Wiring and cutting tools
- 100' extension cord
- Cordless drill
- Test station O/C/S
- 18" wires w/alligator clips
- Proper lighting
- Operator wiring diagrams
- Exploded views
- Tech-line phone numbers
- Proper lighting
- Faston terminals
- Electrical tape

I highly recommend that dealers purchase a commonly sold operator and keep it in a designated training area with a pushbutton

station, radio control, and photo-eye connected to it. You can examine the circuits by temporarily removing one wire at a time and observing the results. It's a great way to learn and teach troubleshooting techniques.

Commercial operator service can be an important part of the profitability of your business. By keeping your staff well trained, you ensure a professional operation, safe practices, and most of all, customers who learn to trust you for excellent work. ■

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