

# ORDERING A COMMERCIAL DOOR OPERATOR

## Get it right the first time

By Roy Bardowell, CDDC

Believe it or not, commercial door operator (CDO) manufacturers are the experts on door automation, and they want you to have an easy and seamless experience with your operator installation. If you want to install a safe system and profit from it, you need to order the right CDO for each job.

Manufacturers have designed and engineered CDOs to operate most types of commercial or industrial doors. Since the use of each commercial door is unique, there are thousands of configurations of operators to cover most uses. All in all, a manufacturer can build and configure more than 150,000 versions of CDOs.



Because of this extreme diversity of CDO applications and models, the ordering process has become quite complex. Consequently, manufacturers have created tech support centers to help installers order the correct operator for a door. You can do yourself a huge favor by tapping into these experts for advice.

Ordering the right CDO for a specific door involves many door factors and calculations. To make matters even more complicated, most manufacturers produce two lines of commercial door operators that sometimes compete against each other. Choosing the right line is an important first step in the ordering process.

### The two basic lines of CDOs

For the first 50 years of commercial operator production, all CDOs employed high-torque capacitor-start motors or 3-phase motors. The early operators were made with strength and durability in mind and were truly continuous and heavy-duty operators.

In the 1990s, a residential operator company decided to transfer their residential circuitry, relays, and residential motor onto a

commercial operator platform. They marketed this new type of operator as a cheaper alternative to the beefier continuous-duty operator. Thus, the limited-duty operator was born.

### Limited-duty CDOs

With a few exceptions, limited-duty operators typically come in only one configuration: 1/2 HP, 120VAC, single phase, and 60 Hz. Light-duty operators have a few aliases: limited duty, intermittent duty, restricted duty, and medium duty. The medium-duty term is simply a marketing ploy. “Medium duty” sounds like it might be a higher level than light duty, but make no mistake. They are all the same type of operator.

Most limited-duty operators employ a PSC (Permanent Split Capacitor) motor, which

can be found on most AC residential operators. It usually has a built-in thermal switch that will interrupt the motor power when it overheats. A limited-duty

operator is perfect for 8' x 8' dock doors or other lighter doors that will operate only a few times a day.

The introduction of DC motors to residential door operators has made the PSC motor obsolete. In the next decade, all residential door operators will most likely employ only DC motors. So the days of overheating motors that shut off will probably be a thing of the past.

Now, with this information about the two lines as important background, let's talk about ordering the right CDO.

### Six major factors

When ordering a CDO, the six major factors to consider are door type, door size, door weight, shaft size, door duty, and electrical energy. Don't even try to order a CDO without having this information ready.

**1 Door type.** Different types of doors use different means to connect to an operator. For sectional doors using standard-lift hardware, order a commercial trolley operator that will connect to the top panel with a set of door arms. For a sectional door with high-lift or vertical-lift hardware, order a jackshaft operator (aka side-mount) that connects via two sprockets and a roller chain. [To learn more about sprockets and chain, see DASMA Technical Data Sheet 381.]

“**A single incorrect detail could delay the job and cut into your profits.**”

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Jackshaft operators can be connected to any door that has a shaft as the driving element. That includes rolling doors, rolling grilles, high-speed fabric doors, or multi-leaf doors.

So, when you order the CDO, provide the door type. The CDO producer will then provide you with the correct connecting sprockets and hardware so that the door can be safely automated.

**2 Door size.** The door height tells the CDO manufacturer how much hand chain should be supplied. The door width dictates the proper length of a safety edge, if ordered with the operator. Both the height and width together provide the door's square footage, which helps to determine the door weight.

**3 Door weight.** Any commercial door must be well balanced before you install an operator on it. Even so, you need to plan for the day when the door slips out of balance. So heavier doors will require more operator horsepower. After you determine the door's weight, consult the CDO manufacturer's HP selection table to order the correct horsepower.

**4 Shaft size.** Most sectional doors use a 1" torsion shaft with a 1/4" keyway. Shaft size

exceptions are found in rolling steel curtain doors and security grilles. Depending on the manufacturer and the width of the rolling door or grille, there are a dozen or more shaft sizes used in the industry. Rolling door shaft sizes start at 1" diameter and can go all the way up to 3" diameter on extremely large rolling doors.

You must never guess on the shaft size. If you guess wrong, the operator's door sprocket will not slide over the door shaft. This will stop your installation, and the manufacturer will have to send out the correct sprocket. An expensive courier delivery will add to your cost.

Note: Rolling sheet doors (like those used on storage buildings) use special sprockets that are bolted directly to the drum-wheel. When ordering the CDO, you must mention that you need an electric operator kit (EOK). If the operator manufacturer does not carry the correct EOK, you may have to get it from the sheet door manufacturer. The EOK bolts directly to the drum wheel at the end of the door and will most likely be driven with #41 roller chain for a manual chain hoist or a

limited-duty jackshaft operator.

**5 Door duty.** This means the door's expected number of cycles per day. Counting the cars that use the door can give you some idea of daily usage. If necessary, it's okay to estimate this number. Storefront grilles in malls may only run one cycle per day, while apartment buildings may have the most daily cycles.

I know of a few apartment buildings in Toronto that see more than 500 cycles per day. That equates to 182,500 cycles per year. Since 100,000-cycle springs may only last five months, the best alternate system is counterweights. When ordering the CDO for such a situation, you must mention that it is a high-cycle application. This ensures that you will receive an operator built for the rigors of extreme use.

**6 Electrical energy.** In North America, electricity is generated in many energy levels, and CDO manufacturers build operators to work on all of them. Electrical energy in buildings is described in three fragments: voltage, phase, and hertz.

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America is 120V, single phase, and 60 Hz. Other voltage options are 208V, 220V, and 230V (all available in single or 3 phase) and 440-460V (3 phase). Canada also has 575V (3 phase). International markets generate voltages not found in North America, so beware if you sell a CDO offshore.

If you want a heavy-duty, durable commercial operator and 3-phase power is available in the building, then order an operator that works on 3-phase power. These motors are like the Energizer bunny. They keep on running!

Once you have determined these six factors, you are ready to call in your order. Be aware that your CDO manufacturer might have more questions for you. Whatever you do, order it right the first time, because a single incorrect detail could delay the job and cut into your profits. Worse yet, it could create an unsafe installation. ■

*In the door industry for 45 years, Roy Bardowell is arguably the industry's most experienced CDO (Commercial Door Operator) technician and trainer. In 2017, he received IDA's Jerry R.*

## Special note about trolley operators

The preferred CDO for sectional doors using standard-lift tracks is a drawbar-type operator or a similar push-pull operator system. Most experienced installers know this. Nevertheless, there has been some confusion on the rail length of trolley operators. Installers sometimes dictate the rail length, but this is not necessary, and it can lead to problems.

Let's say that John orders a model T-211 operator, and he specifies 12' rails. But does he want an operator for a 12'-high door, or does he want an operator with custom-cut rails? Manufacturers know that *the rails for trolley operators on a sectional door must be 2'-3' longer than the door height.*

So, if John's door is 12' high, those 12' rails will be incorrect. It would be better if John could provide the door height and let the manufacturer supply the correct rails.

Exception: If your door has a backroom restriction, you will need to reduce the overall length of the rail and operator system. In that case, tell the manufacturer the exact backroom measurement, and they will provide the right stuff.

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