Safer Garage Door Openers

by Sal Alfano

Numerous injuries have spawned new safety regs for motorized openers. To avoid liability, know the rules and use a professional installer.

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Until recently, the biggest problem with installing and repairing an automatic garage door opener was plowing through the 12 pages of instructions and figuring out what to do with the leftover parts. But the situation changed significantly as of January 1, 1993. That's the date new regulations went into effect requiring manufacturers to include additional safety devices on all automatic openers. The federal regulations are directed specifically at manufacturers, but there are important implications for small builders who are asked to install or service garage door openers as part of their construction projects. And at least three states — Minnesota, New York, and California — have passed legislation that deals directly with installation and servicing.

Entrapment

Garage doors are the largest moving component you're likely to find in a private residence. Part of the convenience of an automatic opener is that the door opens and closes, unattended, at the touch of a button or through a remote infrared signal. But the tradeoff for convenience is increased danger of someone getting trapped under a closing door.

Guidelines for automatic openers have been developed by Underwriters Laboratory (UL), a not-for-profit corporation that evaluates products with respect to safety. Despite the fact that compliance is voluntary and UL "listing" is not the same as "approval" or "certification," the standards UL develops are widely recognized as authoritative. In 1982, UL added new requirements to a standard called UL 325 (Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems). The new standard required an automatic garage door opener to be equipped with entrapment protection — a means of stopping a closing door and reversing its direction on contact with an object obstructing the door's travel.

Nevertheless, between 1982 and 1988, the Consumer Products Safety Commission reported 48 fatalities among children between the ages of 2 and 14 who were trapped under garage doors operated by automatic openers. The vast majority of cases involved openers manufactured before the new UL standards were devised. UL 325 was revised again in 1988 to include a requirement for "timed reversal" — an opener had to reverse a door that didn't close within 30 seconds of a "down" command.

But the standards were still voluntary until early 1990, when Minnesota and California (and soon after, New York) passed laws requiring all residential garage door openers to comply with UL 325 by January 1, 1991. Then in November of 1990, the UL 325 standard became part of the federal Consumer Product Safety Improvement Act. Partly to take advantage of technology advances in sensing devices and microprocessor logic boards, UL continued to work on the UL 325 standard, and the 1990 federal law also specified that, effective January 1, 1993, all residential garage door openers would comply with whatever entrapment protection provisions had by that time been added to UL 325.

UL 325

UL adopted the current UL 325 standard in October of 1992. This standard is a long, technical document, but its overall effect on new garage door openers boils down to requirements for several methods of reversing a closing door, requirements for disabling the use of remote controls under certain circumstances, new warning and identification labels, and new requirements for the instructions supplied with the openers.

Door reversal. The new UL 325 standard also incorporates the 1988 timed reversal requirement. With respect to the 1982 contact reversal provision, the standard states that an automatic opener must reverse a closing door within two seconds of

Buyer's Guide to Automatic Garage Door Openers

Most companies take a good-better-best approach to marketing, and an external entrapment protection device is just one of the things you need to think about when choosing an automatic garage door opener.

Springs. Start with the garage door. Contrary to common belief, the opener motor doesn't lift the door — the springs do. If the garage door is difficult to open manually, a big motor won't help it, but new springs probably will. An extra-heavy door should be outfitted with torsion springs, which are much stronger and more durable than extension springs.

Motors. Most manufacturers equip their openers with either 1/3-hp or 1/2-hp motors (a few also have 1/4-hp models). For basic opening and closing of the garage door, the smallest motor available will work fine. If you want a better deal on additional features, including a longer motor warranty, choose a 1/2-hp model.

Figure A. *The Formula 1 from Lift-Master uses a steel-reinforced belt drive that is quieter than a chain.*

Drive loop. Most openers move the door with a full loop of bicycle chain. But some inexpensive models use chain only to engage the drive gears, making up the rest of the drive loop with steel cable, which is more likely to break.

Two companies — Genie and Moore-O-Matic — use a one-piece screw drive. They claim that it transfers torque better from the motor, runs more quietly and more smoothly, and is less likely to break down because it has fewer working parts. Lift-Master has introduced a model driven by a steel-reinforced rubber belt (see Figure A), which the manufacturer claims is both strong and quiet. Alliance Manufacturing also has a belt-drive model.

The Miracle opener takes a unique approach that's well-suited to low overhead garages (see Figure B). The opener attaches directly to the door and operates by means of a drive wheel that rides in the track. The control panel mounts separately on the wall or ceiling.

Drive reduction. To transfer torque from the motor to the drive loop, most models use a series of gears driven by bicycle chain, which is reliable and easy to repair. To reduce noise, some companies use a V-belt, which is quiet but less durable, or direct drive, which is quiet and durable but more expensive to repair.

Figure B. *The motor of the Miracle opener mounts to the door on a special replacement bracket that positions the drive wheel to ride on the garage door track. It requires no clearance beyond the path of the door to operate.*

Rail. The opener head is connected to the door header by the rail or channel, which also supports the drive loop and carriage. Tubular rails are thin — sometimes not much heavier than a shower curtain rod — and can easily bend. Some do-it-yourself models use a two-piece or three-piece steel T-rail, chiefly because it fits nicely in a small package. But the best rails are the one-piece steel T-rails you can get only from an authorized dealer.

Electronics. The revolution in safety features made possible by microprocessors has also upped the ante of available features. These days, openers do a lot more than open and close the garage door. Most models are equipped with a light (some have two) that turns on with the opener, and turns off automatically after a delay of several minutes. Many companies offer a "keyless lock" — a programmable electronic keypad that lets you operate the opener without a key or remote control. You can also get multi-function controls that use X-10 technology to turn on lights and appliances in the house from a pushbutton pad in the garage.

Many of the advanced features are standard on higher-priced 1/2-hp models, but they are usually offered as options on low-end products.

— *S.A.*

contact with an obstruction — defined as a 1-inch-high object — and raise it to its full open position (unless it meets an obstruction on the way up, in which case the opener must stop the door altogether).

Effective January 1, 1993, UL 325 requires a third method of entrapment protection. It gives manufacturers a choice between requiring constant pressure on the control button to close the door, or equipping the opener with an external entrapment protection sensor, such as a photoelectric eye or sensing edge. The external sensor must reverse a closing door when it encounters an obstruction, and the opener must monitor the external sensor and the wiring to it so that if it fails, a closing door will open and an open door will not close. Additionally, the contact reversing and timed reversing features must continue to function and the remote transmitter may only *open* the door.

Labels. UL 325 also requires manufacturers to mark the opener with a warning to the user or installer to check the reversing system after making any adjustment to the opener. Manufacturers must also provide a label, to be placed next to the push button control of the opener, warning the operator of the danger of entrapment.

Instructions. Finally, manufacturers must provide two sets of safety instructions, one for installers and one for consumers.

External Sensing Devices

As a result of these changes, most manufacturers now include a photoelectric sensing system as a part of their automatic opener product line, and at least two — Stanley and Raynor — also offer a sensing edge. Some companies produce their own equipment, others use third-party vendors, but in every case the sensing devices work only with an opener from the same manufacturer.

Photoelectric sensors use a transmitter mounted at one end of the door opening to send a constant signal to a receiver at the other end. If the beam is interrupted while the garage door is closing, the opener immediately reverses the door. If the beam is out of focus or there's a short in the wiring to it, the opener disables the "close" function of any remote controls. In these circumstances, many openers still allow you to close the door, but only by holding down the push button continuously.

Photoelectric sensors have the advantage of operating without physical contact. They are fastened to the garage framing or to the door tracks, not to the door. The disadvantage is that they protrude into the garage and, to meet requirements, they must be mounted 6 inches above the floor where they can be knocked out of adjustment easily. The beam can also be blocked by a buildup of dirt or dust, or by the nests and webs of insects and spiders.

Sensing edges fasten to the bottom edge of the door and usually consist of a flexible, waterproof sheath surrounding two or more continuous electrical conductors. The conductors are normally separated, but they make contact if the sheath compresses against an object, triggering the same logic board functions as a photoelectric eye.

A sensing edge operates only by coming in contact with an object or person, but it's sensitive enough to work with very little pressure and at any angle. A sensing edge is also less likely than a photoelectric eye to go out of adjustment. But the flexible sheath may be degraded by exposure to ultraviolet light and freeze-thaw cycles. Ice buildup under the door may also cause a sensing edge to activate prematurely, and if the sheath freezes to the floor, it can be torn off when the door opens.

Installation And Service

By now you may be wondering: If the federal law mandating compliance with UL 325 is directed specifically to manufacturers, why do builders need to know so much about it? There are two answers. First, manufacturers in every state except Minnesota, New York, and California are allowed to deplete their existing inventory of openers even though they may not comply with the new UL 325 standard (they must still comply with the 1988 version, however). Second, laws in Minnesota, New York, and California make it a part of the installer's responsibility to perform

the UL reversal test, to apply warning labels, and to give the homeowner the consumer version of the operating instructions.

Depending on where you work, you may be liable if an opener you install or repair causes injury to the user. You may even be liable as a general contractor if a professional installer to whom you subcontract the work fails to comply with state laws regarding testing, labeling, and depleting inventory.

Existing inventory. Effective January 1, 1993, dealers in New York and Minnesota may sell and install only those openers that comply with the new UL 325 standard. In California, dealers may sell and install openers that comply with the 1988 version of the UL 325 standard until June 30, 1993. After that, all openers sold and installed must comply with the latest version of UL 325.

New York and Minnesota. While there are no federal restrictions on repairing or replacing older residential openers, New York and Minnesota require service personnel who repair a residential opener either to render it in compliance with the 1988 UL 325 standard (contact and timed reversal) or to post a warning label and notify the homeowner in writing as to its noncompliance. Service personnel must also provide the homeowner with instructions on installation, operation, and maintenance (the Minnesota law omits this requirement), and must provide warning labels concerning proper testing of the safety devices.

California. The California law has the same requirements for providing printed instructions and warning labels about testing, but only requires an approved warning label if the opener does not comply with provisions for contact reversal (timed reversal isn't mentioned). However, California law prohibits re-installation of a noncompliant opener on a new or replacement garage door.

What Does It All Mean?

Because the federal law is directed at manufacturers, it will have the effect of improving the safety features on all automatic garage door openers manufactured after January 1, 1993. However, since existing inventory of noncompliant openers is not regulated by the federal law or by most states, you should determine whether or not the product being installed on your project complies with the new standard.

Check the label. A new opener and its packaging should be stamped with the date of manufacture, and all openers manufactured after January 1, 1993 should comply with UL 325. But because some products manufactured earlier also comply, also look for the UL label. And if the opener isn't listed by UL, look for a label indicating that it complies with UL 325.

Hire a pro. If you're asked to provide or repair an automatic opener, the safest thing to do is to hire a professional to do the work. Professional installers are trained in the testing procedures and labeling requirements. They can determine whether or not an opener is working properly and follow the required procedures if it is not.

Don't retrofit. Merely adding a photoelectric eye or a sensing edge to an existing noncompliant opener is not enough. That's because the UL standard requires the opener to monitor the status of any external sensing device and if it fails, to disable the remote control. The logic boards in older openers won't perform this function. And there is not yet a "universal" sensing device with separate controls that can be used to retrofit any older openers.

Don't do any favors. If homeowners asks you to install an opener they have purchased, briefly explain the new regulations and refer them to a professional installer. If you are asked to repair or simply to "check" an existing opener, it's best if you let the owner do it. Tell the owner to follow the testing procedures in the installation instructions that came with the opener. Homeowners can also call the Door Operator Dealer Association hotline (800/727-2338) for more information. ■

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Sources of Supply

Alliance Manufacturing Company
22790 Lake Park Blvd.
Alliance, OH 44601
216/829-3600

Allister Door Control
P.O. Box 2109
West Chester, PA 19382
800/441-9300

Ambass-a-dor
166 Gould Ave.
Paterson, NJ 07533
800/234-5969

Challenger
P.O. Box 880
Green Brook, NJ 08812
908/563-1300

The Genie Company
2850 Gilchrist Rd.
Akron, OH 44305
216/829-3600

Lift-Master
845 Larch Ave.
Elmhurst, IL 60126
800/323-2276

Miracle
248 Broad Ave.
Palisades Park, NJ 07650
800/526-4772

Moore-O-Matic
2055 Corte Del Nogal
Carlsbad, CA 92002
800/835-5666, 800/826-1313

Overhead Door Corporation
6750 LBJ Freeway, Suite 1200
Dallas, TX 75240
800/929-3667

Raynor Garage Doors
East River Rd., Box 448
Dixon, IL 61021
800/545-0455

Stanley Door Systems
1225 East Maple
Troy, MI 48083
313/528-1400

Wayne Dalton
4576 County Rd. 160
Mt. Hope, OH 44660
216/674-7015

Windsor Door
P.O. Box 8915
Little Rock, AR 72219
501/562-1872