

POWER ACCESS

CORPORATION

MODEL 4300

TECHNICAL INFORMATION

GENERAL

The Power Access Model 4300 opener converts most side hinged doors to power operation. The **jamb mount model 4300** mounts to the jamb on the "push" (non-swing) side of the door (see fig. 1) while the door closer mounts on the other side (pull).

For residential applications where the outside door usually opens in, the **door mount model 4300D** should be considered. The door mount opener is designed to be installed up side down at the top of the inside of the door (see fig. 2). With this application the opener is mounted on the inside of the door protected from vandalism and the elements.

Note - for a door mount application be sure to check that the clearance behind the door, when it's open, is at least 8-1/2", thus permitting the door to open the full 90 degrees.

An **inverted jamb mount model 4300V** is available for extra high doors where there is limited clearance above the door frame.

The standard jamb mount application accommodates reveals from 1/2" to 4-11/2" (distance from the back of the unit to the face of the door - see top view of drawing 4214 on page 9). For applications where the reveal is greater than 4-1/2", but less than 9-1/2", the **extended arm model 4300X** is available. (see top view on drawing 4260 - page 10).

Whenever possible, the opener should be mounted indoors to protect it from the elements and vandalism. When the unit must be outside, it must be protected from the elements. If outside temperatures drop below freezing the **low temperature model 4300LT** should be specified.

Left and right hand models are available - and the hand must be indicated when ordering. The hand is determined by standing on the "push" (non-swing) side of the door and observing on which side of the door the hinges are located - a door with hinges on the right requires a right hand unit - a door with hinges on the left requires a left hand unit. ***Door mount models are also handed from the push side even though they are installed on the pull side.***

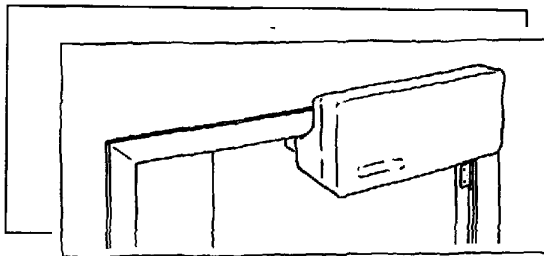


Fig. 1 4300R

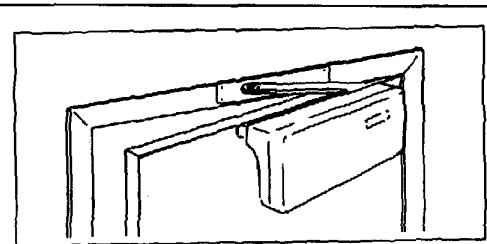


Fig. 2 4300DL

The Model 4300 incorporates durable long life components for trouble-free, dependable service. The unit has a number of important safety features - both electrical and mechanical. The door can

be opened manually, independent of the opener, because the concealed, wheeled arm of the opener does not attach to the door.

A built-in safety circuit senses load changes and automatically stops the door in the event it meets an obstruction while opening. After timing out, the arm will automatically retract. The safety circuit potentiometer needs to be adjusted for each application. For additional protection, there is an externally mounted circuit breaker (3 ampere) as well as a thermally protected drive motor.

Since the opener arm does not attach to the door, a door closing device is required; such as, a concealed or surface mounted door closer - or, in some special cases, spring hinges. If a surface closer is used it must be on the opposite side of the door from the opener. (The LCN Super Smoothee[†] series is an excellent closer for outdoor applications, particularly where below zero winter temperatures may occur.)

OPERATION

An instantaneous dry contact signal from a control initiates the opening cycle. An electro-mechanical linear actuator pivots an arm with an attached roller that moves along the top face of the door and pushes it open. The door remains open for 0-30 seconds, depending on the setting of the adjustable timed hold open (THO) device. On closing, the arm retracts and a standard door closing device closes the door.

A blank latch strike plate (supplied with each unit) on the jamb prevents the door from latching when closed. If security is required, an electric strike may be interfaced with the operator.

Standard openers with the "THO" feature that receive an operate signal on the closing cycle, will stop and return to the open position and again time out, before returning to the closed position.

Openers may be ordered with a PC board #5410 which has a "signal to open/signal to close" feature. With this feature the door will open upon receiving the first signal and remain open until receiving a second signal. If a signal is received while closing, the opener will stop and return to the open position to await the next signal. If the door meets an obstruction while opening, it will stop and await the next signal, and then close.

APPLICATION

The three basic factors that determine the feasibility of an application are: (a) the door geometry, (b) the force required to open the door and (c) the volume of traffic. All of these items must be taken into account before attempting to install the Model 4300 on a door.

- A. Geometry - The opener must be mounted in the correct relationship to the door hinge. When the door is in the open position, the opener is located laterally so

2

a greater than a 90 degree opening will occur. If the opener is mounted too far from the face of the door, there may not be enough mechanical force to fully open the door. (See drawings 4214 and 4260).

Drawing 4214 - Illustrates the typical application of a hinge hung door where the jambs are 4-

1/2" wide to 7-1/2" wide. The reveal (distance from the back of the unit to the face of the door) should not exceed 4-1/2". For reveals greater than 4-1/2," but less than 9-1/2", you may use the "deep reveal" model.

Note - the ceiling height should be at least 6" above the top of the door for clearance. If not, the ceiling might be notched or an inverted unit might be used if head clearance is not a problem - (see drawing 4261).

Drawing 4260 - Illustrates a deep reveal application for dimensions between 4-1/2" and 9-1/2"

Drawing 4261 - Illustrates the application of an inverted unit. No clearance is required above the top of the jamb, but this arrangement is not recommended for standard height doors because the door opening clearance would be reduced by about 9 inches.

Drawing 4262 - Illustrates an application with a shallow reveal that uses the P/N 4531 shallow reveal mounting bracket to provide a mounting surface for the opener.

Drawing 4264 - Illustrates the positioning of the opener with respect to the door pivot and off-set hinged doors. It also shows how to determine lateral location for any application.

Drawing 4269 - Illustrates a door mount application (typical of a residential front door) where the opener must be on the "pull" side of the door with the arm rolling against the top of the jamb. Minimum side clearance of 8-1/2" (i.e. the clearance behind the opened door) is required so that the opener may be located close to the hinge point to permit the door to open to 90 degrees.

Drawing 4265D - Illustrates the wiring to the printed circuit board, including proper control hookup. Also shown is the internal wiring to the various components.

Glass doors do not present a problem except in the case where the upper rail of the door is so narrow as to cause the roller to bear directly on the glass. In this case, the scuff plate P/N 5616NH (bearing plate) should be affixed to the top of the door.

- B. Opening Forces at the start of the cycle can be adjusted to exert about 60-80 pounds of force on the latch edge of the door. As the door opens, the mechanical advantage steadily decreases as the roller moves across the face of the door - to about 15 - 20 pounds at the latch edge when the door is open. Door forces can be measured with a spring scale to determine if they exceed the capability of the opener. (Generally, if the door can be opened manually without excessive force,

3

the opener will be able to push the door open without any problem). In the event that the door opening resistance exceeds the above forces, there are a number of things that can be done to reduce the forces on the door. In some cases it is possible to adjust the closer force (without reducing its ability to properly close the door) or replace the closer with one having a softer spring. Mounting the opener closer to the face of the door also will help. When any of these steps are taken, it may be necessary to alter the lateral location of the opener so that the door is not opened significantly beyond, or less than, 90 degrees. Drawing 4264 on page 13 shows the procedure for properly locating the opener.

- C. The Model 4300 has been designed for use primarily on low traffic, secondary doors. It can also be used on many entrance doors, but because of its design and slower opening speed, (7-8 seconds) the Model 4300 is not suitable, and should not be used, for high traffic rate applications where all traffic or high rates of traffic would be using the door automation.

Most entrance doors being considered, are to be automated to provide accessibility for handicapped, elderly or burdened individuals. Steps should be taken to limit use to these individuals and have the general pedestrian traffic use the door manually. This can be best be done by locating controls (wall or post) slightly out of the mainstream of traffic, or providing radio control to specified users.

NOTE: FOR APPLICATIONS WHERE THE UNIT IS LOCATED ON THE OUTSIDE OF A SECURED DOOR AND IS EXPOSED TO POSSIBLE TAMPERING - THE ON/OFF TOGGLE SWITCH SHOULD BE DISCONNECTED AND THE UNIT SHOULD BE HARWIRED.

- D. Controls - Several types of controls are available in wired and/or wireless modes. The most commonly used control is the wireless push/plate. When using wireless controls with the Model 4300 series opener a 4470 receiver must also be ordered. In addition to wall mounted controls (surface or flush), there are post mounted, hand held, keyless programmable, sip and puff, ECU interface and others to meet specific user needs.
- E. Electric Strikes - are used when the door being automated has a latch or deadbolt that will be used to secure the door. A strike is installed in the door frame, lined up with the latch or deadbolt. Strikes are wired to the door opener. When the opener receives a signal to open the door, it automatically unlocks the door.
- F. Door closing devices - The 4300 opener is used in conjunction with independent door closers. Some doors in commercial buildings have concealed closers, however most closers are the surface mounted type which frequently have to be relocated or changed. Power Access carries a selection of LCN closers to meet most needs.

4

INSTALLATION INSTRUCTIONS

JAMB MOUNT MODEL 4300

- A. Prop the door in the open position - usually a little over 90 degrees - to allow for compression of the roller and play in the linkage.
- B. Cycle the unit so that the arm of the opener is in the full open position - about 105 degrees. This is done by removing cover, supplying temporary power to unit and giving the unit an operate signal across the low voltage terminals marked SW IN" WHT and BLK, or if unit is setup with a receiver, give it a signal with a wireless control. Turn toggle switch to off and disconnect the power when the arm is in the full open position.

**CYCLING THE UNIT WHEN IT IS UNMOUNTED IS POTENTIALLY DANGEROUS AS HANDS AND OTHER OBJECTS COULD GET CAUGHT IN THE MECHANISM.
PLEASE EXERCISE CAUTION.**

- C. Install slide mounting bracket to upper part of the jamb (hinge side) with (2) #10 1-1/2" sheet metal screws provided. Next, slide unit onto slide mounting bracket until arm roller is snug against the propped open door. Install the remaining (3) #10 1-1/2" sheet metal screws through appropriate holes in opener frame into underside of door frame header. If door frame is metal it is suggested that hole locations be marked with unit on the bracket, then remove unit, drill pilot holes and again slide unit onto bracket and secure with the sheet metal screws. In some cases riv nuts should be used with metal frame to assure a stable installation.

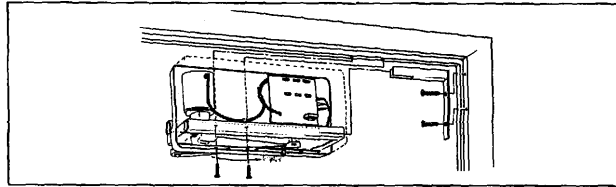


Fig. 3

- D. Install stainless steel scuff plate on door with the #8 x 1/2" sheet metal screws provided - as shown in drawing. Manually open door to be sure it opens to desired location (usually slightly more than 90 degrees) and moves freely. If the door binds, plane where necessary or shim the hinges. In the case of a heavy door with old hinges, replace with ball bearing type.
- E. If necessary replace the latch strike plate with the blank plate provided. If security is required, an electric strike may be interfaced with the opener control circuit.
- F. When using wall switches or touch controls, drill a small hole in the jamb or wall near the point where the power cord from the unit is located - and a small hole through the back cover of the opener to permit routing of the low voltage wire from the controls to the unit.
- G. Thought should be given to control location to achieve desired objectives. In order to reduce usage of the opener to only those needing it, the controls should be located slightly out of the general traffic path. Wall mounted controls must be

5

mounted so that the door to be powered is visible from the control location. Wireless Wall Controls simplify the installation because interconnecting wiring is not necessary.

- H. Electrical hook up can now be completed. Drawing 4265D illustrates the necessary wiring information. Be sure that the opener is provided with a 115 VAC grounded outlet - or hard wired in accordance with local codes. **Note** - for applications when the unit is located on the outside of a door in a public area and it is to be interfaced with an electric lock, the on/off switch should be disconnected and the unit should be hard wired.
- I. When power is first turned on you will hear unit cycle once. There are only two field adjustments on the unit printed circuit board. First is the "time hold open" (see step 2 and the second adjustment is for sensitivity (see step 3). This safety feature is to stop the arm from opening the door when the door hits an obstruction on the opening cycle. The unit is now ready to be tested and adjusted.
1. Signal for unit to open - (opening cycle takes about seven seconds).

2. Set the "time hold open" potentiometer to desired time (0-30 seconds -clockwise for more time). See drawing 4265D (Page 15) Unit comes preset with approximately a 7 second hold open. **Note** - the electronic timer which governs the hold open time starts its timing cycle when the opening cycle begins - thus a 7 second hold open, is in addition to the 7 second opening time for a total of 14 seconds.
3. Set the load sensitivity adjustment to the proper position for the particular application.(The location of the sensitivity potentiometer is on the circuit board next to the transformer - see drawing 4265D - Page 15). By turning the small brass screw counterclockwise to the minimum setting you will be at the most sensitive setting (door probably won't open). Turn the screw clockwise in increments until the door achieves a full open position. The door should be manually stopped during opening cycle to be sure the motor stops and recycles to the closed position. Note: the load sensitivity potentiometer has an adjustment range of 24 turns and a clicking sound will be heard at either end of the range.
4. If a safety carpet is being used, hook the carpet leads to the inhibit (INH) terminals and check its operation with the unit. If someone is on the carpet the door will not open or close depending on the door position. If the door is moving and someone steps on the carpet and remains on it, the door will complete the cycle and then will be inoperative until the safety mat is cleared. These inhibit terminals can also be used to interface with an elevator or lift safety circuitry.
5. The Model 4300 can be interfaced with an electric strike system: The strike output from the P.C. board is 115 VAC and is powered on the opening and closing cycle. Transformers for a variety of strike requirements are available and can be factory mounted in the unit. They come with a 10 foot, 2 wire lead to power the strike - either AC or DC. (AC strikes emit a buzz when operating while DC strikes are silent.)

6. Two or more units may be hooked up to be used simultaneously from one input by wiring the black and white switch terminals in parallel. In the case of radio control output, one receiver can be used with the units wired as above. Note - when two or more units with radio controls are installed in the same vicinity - and are to operate independently - be sure to set different codes for each door system so that only the proper unit(s) will respond to a given signal. (This is done by matching the code on the receiver in the unit and the code on the circuit board in the transmitter or wall control.)

J. Reinstall cover by means of (2) hex head screws securely tightened to avoid vibration noise.

DOOR MOUNT MODEL 4300D

For a door mount installation, the following steps should be followed:

1. Be sure there will be at least 8-1/2" clearance behind the door to accommodate the unit so that door will be able to open to a full 90 degrees.
2. Install the #4590 door mount bracket (which is packed with each door mount unit) to the top of the door 2" down from the center line of where the roller will roll against the horizontal part of the door jamb and, laterally, right to the edge of the door - or the door will not open to the full 90 degrees. Note - the door mount arm opens to about 112 degrees - 7 degrees more than the standard jamb mount door arm which opens to 105 degrees.
3. Unless the door is a solid core type or quite sturdy it might be advisable to use "through bolts" to secure the mounting bracket to the door.
4. The unit is secured to the bracket using the slotted holes to allow for some adjustment. See drawing #4269. It may be necessary to drill new holes on the bracket or extend the slotted holes depending on the situation. C clamps or vise grips are handy for temporarily securing the unit to the bracket.
5. Be sure to provide a strain loop on the power cord coming out of the unit so as to reduce wire fatigue from the cord flexing as door opens and closes.

Follow the above steps "E" through "J" to complete the installation.

MAINTENANCE

The opener requires very little maintenance.. Once a year, the actuator screw should be wiped down and lubricated with a 90 lb. grease. Remove excess grease to prevent slinging.