

2300 OPERATING/APPLICATION/INSTALLATION INSTRUCTIONS

GENERAL

The **POWER ACCESS**® Model 2300 is an automatic door opener designed for opening and closing side hinged residential doors - both exterior and interior. It is simple and unique in design and is not intended for heavier duty commercial situations. The unit consists of a 115 volt gear motor, friction clutch and electronics that is feature packed including a radio receiver as well as a transformer capable of providing "one shot" 24vdc power to release an electric strike (lock). The unit comes with a 9-foot power cord for plugging into a 115-volt receptacle.

The **POWER ACCESS**® Model 2300 can be retrofitted to most residential side hinged doors for power opening and power closing – or the door can be opened and closed manually. The model 2300 unit can be door mounted on the pull side of the door (right or left) with the arm attached to the top of the doorframe. This door mount application will meet most of the front door situations where the door opens in and the door opener is protected from the outside weather. The minimum back clearance requirement from the face of the back of the door is 3 -inches. The arm assembly consists of a friction clutch arm that is attached to the motor shaft and the other end to an adjustable threaded regular forearm (p/n 2413) that in turn connects to the doorframe by means of an adjustable shoe.

The same model 2300 can also be jamb mounted to the top of the wall above the door frame on the push side of the opening (not on the pull side) with the motor shaft facing down and the shoe of the adjustable forearm extension attached to the door by means of the shoe. The arm for the jamb mount application requires an extended forearm (p/n 2414), which has a longer threaded portion with lock nut to meet deeper reveals (up to 7"). If a unit is ordered for jamb mount it will come with the longer forearm extension.

It is important to note that field changing from one model to another or one hand to another can usually be done in about 15 minutes. The hand is always determined by standing on the "push" side of the door and observing on which side of the door the hinges are located – a door with hinges on the right requires the right hand configuration – door with hinges on the left requires the left hand configuration. **Door mount models are also handed from the push side of the door even though the unit is installed on the pull side.**

The basic model 2300 will cover the following four applications:

2300DR right hand door mount on pull side of the door
2300DL left hand door mount on pull side of the door

2300JR right hand jamb mount (above the door) on push side *
2300JL left hand jamb mount (above the door) on push side *

***The jamb mount model cannot be mounted to the side jamb or on the pull side of the door. Also it is not recommended that the 2300 jamb mount unit be used on an out swinging exterior door because the external forces might cause the door to drift closed when not under power.**

OPERATION

A momentary dry contact signal from any source initiates the opening cycle. One leg of the clutch arm assembly is keyed onto the gear motor shaft and the other leg is attached to the door or door frame depending on the type of installation. An installation template for unit location and the arm shoe location is supplied with each unit.

If a strike is not needed a blank latch strike plate (p/n 2460 supplied in the parts kit) may be installed on the jamb lock faceplate to prevent the door latch from engaging when closed. If security is required, a 24 vdc electric strike (lock) may be installed and interfaced with the operator. If no latching is employed, it may be necessary for you to supply some resistance so the door will stay shut in the closed position. Some aids in this regard are weather stripping, a cabinet door type magnet device or a ball detent with sufficient spring tension to hold the door closed.

The printed circuit board (PCB) has many adjustable features (see table of circuit board features). The basic features are an adjustable time hold open (AUTO CLOSE) timer that will hold the door open from 0-30 seconds before the door automatically closes. There is also an adjustable timer to control the length of time to close the door (CLOSE ADJ) before the motor shuts off – thus allowing for door closing time to be tuned into the door application. If the door is closing and the opener receives an operate signal the door will stop and return to the open position and again time out, before returning to the closed position. A signal to open followed by a signal to close feature is also available.

APPLICATION

The three basic factors that determine the feasibility of an application are: (a) the door geometry, (b) the force required to open and close the door and (c) the volume of traffic.

Geometry – In the case of the door mount application, the unit frame with motor shaft facing upward must be mounted laterally in the correct relationship to the door hinge edge of the door and flush to the top of the door (see template). Minimum clearance above the top of the door is 2" so the top of the clutch hub will not hit an obstruction. (An additional " of clearance is needed for a total of 3" so the clutch arm may be removed, if necessary, without removing the unit). The arm shoe will be mounted on the jamb above the door (see template).

In the case of the jamb mount application, the opener with the motor shaft downward must be mounted laterally in the correct relationship from the hinge side of the doorframe and flush with the bottom of the doorframe. With the aid of the installation template you will be able to locate the proper position of the unit on the top of the doorframe and the arm shoe location on the face of the door. A minimum of 8" of clearance is required from the bottom of the overhead of the doorframe to accommodate the height of the unit.

Opening and Closing Forces – At the start of the opening cycle the pounds of force at the leading edge of the door is about 18-20 pounds and as the door opens the force decreases. Conversely as the door closes the forces reverse from low to high. In most residential applications this force is adequate for opening and closing an exterior door. In cases where a greater force is needed an arm with 20 plus pounds is available. Standard butt hinges void of any springs should be used and if there is an existing door closer it needs to be removed.

The round donut type magnet which comes in an envelope taped to the back of the unit should be placed under the friction arm about an 1/8th of an inch from the hub. As the arm opens and the magnetic field approaches the magnetic switch “velcroed” to the top of the motor plate, it will shut the power off to the motor so it coasts to a stop at about full open.

It is recommended that a doorstop be installed on all applications to prevent the door from traveling beyond 90 degrees on a manual or power opening. On the closing cycle the time to **CLOSE ADJ** pot needs to be adjusted to be sure the door gets fully closed (and latched if a strike is used). If the motor still runs after it is fully closed, the **CLOSE ADJ** pot should be adjusted CCW to shorten the closing time.

Volume of Traffic – Traffic volume is not a factor for concern with the model 2300 residential unit. The gear motor has had extensive rapid cycling life testing. The fixed door opening and closing speed of approximately seven to eight seconds is a comfortable speed for those with varying movement abilities.

Controls – Several types of activating controls are available to meet many application situations. Most applications will use one of our remote wireless transmitters where it might be “velcroed” to the chair and/or interfaced with some ECU equipment. The standard unit comes with a Linear radio receiver installed and wired into the PCB (with the same 300 MHz frequency and 10 rocker arm type dip switch that we have been using for over 20 years).

Electric Strikes – are used when the door being automated has a latch or deadbolt for securing the door when it is closed. A strike is installed in the doorframe and aligned with the latch or deadbolt. The strike is wired to the door opener, so when the unit receives a signal to open, it automatically releases the door. The transformer on the PCB is sized so as to be able to provide a “one shot” of 24-vdc power to release the strike that is wired to the unit main circuit board. On some installations the strike keeper may not release when signaled because of pressure from the latch on the strike keeper. In these cases a physical adjustment of the strike keeper may be needed. In most cases we recommend our preload strike (p/n 4560S) that can release with pressure on the keeper. We supply 12 feet of low voltage wire that is already connected to the terminals on the PCB with the other end for field connecting to the terminals on the strike.

Printed Circuit Board Features - There are a many features built into the circuit board - most of which are not likely to be used in the typical residential application. If the application calls for a 24-vdc strike, then two low voltage wires need to be run from the strike to the strike terminals on the board (a two slot screw terminal strip). The unit also has an adjustable potentiometer (CLOSE ADJ) timer that regulates the amount of time the door will remain open (0-30 seconds). The factory setting is about six seconds. Normally if the door is pushed to the full open position manually, it will stay there until it gets a signal and will then close. If the slide switch #1 on the circuit board is set for “on” it will result in the door closing automatically if it is manually opened to the full 90 degrees.

The two slide switches and a six slot screw terminal strip on the circuit board for achieving different control functions. These functions are described in the table called *MODEL 2300 PRINTED CIRCUIT BOARD FEATURES*.

INSTALLATION INSTRUCTIONS

DOOR MOUNT MODEL 2300D

Remove the unit from the carton and make sure that accessory items ordered were included in the shipment. Review the material packed with each unit. The friction clutch arm is shipped in place on the motor shaft with the regular forearm attached to the other end of it. The magnetic switch is “*velcroed*” in place on top of the motor mounting plate. The round magnet to activate the magnetic switch should be placed on the under side of the clutch arm. (near or within a fraction of an inch of the hub and centered on the arm). The magnet is shipped in an envelope taped to the back of the unit. The purpose of the magnet and the magnetic switch is to shut the motor off as the door is approaching full open so it will come to a soft stop at about 90 degrees.

The door mount unit mounts to the face of the door (as the name implies). A right hand door mount unit (model 2300DR) will mount to the left top of the pull side of the door 3" from the edge of the hinged side of the door. The shaft of the motor will be pointing up with the power cord coming out of the left side of the unit towards the hinged edge of the door. Conversely a left hand door mount (model 2300DL) will mount to the right top of the door on the pull side of the door 9" from the right edge of the door. The shaft of the motor will be pointing up with the power cord coming out of the right side of the unit.

See template in the instruction envelope for proper unit bracket location and arm shoe location. The temporary door mount template can be taped to the face of the door primarily for locating the mounting holes of the unit housing and the shoe of the threaded portion of the arm. With the template you will be able to locate where holes need to be:

The top part of the motor mounting plate should be flush with the top of the door or down a maximum of " from the top of the door.

9" from the right edge of the door as you face the door for a door mount left 2300DL

3" from the left edge of the door as you face the door for a door mount right 2300DR.

Check to be sure the unit is horizontal with the top of the door and frame.

Note: the measurement from the door edge is to the straight edge of the frame (not the tab legs- see template).

It is recommended that at least four mounting screws be used. (preferably on the outer rows so as to maximize the chances of achieving a solid mounting). The selection of which holes will depend on the design of the face of the door and it is important that the holes used back onto a flush surface of the face of the door. The 1/4" pre drilled holes in the back of the cabinet are sized for the four thru bolts provided with each unit in the hardware kit. Also included are four wood screws that might be suitable for mounting the unit on many doors.

Review the relationship between the face of the door and the jamb above the door. If the face of the jamb is flush with the door, then the arm shoe will probably be able to go onto a flat jamb surface. A flat surface is preferable for mounting the shoe. If there is a curved molding with a gradual slope the shoe will work because of the shoes ability to be pivoted to different angles. Also the threaded arm should be on the same plane as the clutch arm.

After the unit has been affixed to the door move the clutch arm that is already attached to the motor shaft (with 2 set screws one of which lines up with the shaft key) to a 90-degree position (arm perpendicular to the door). Locate the proper shoe location on the face of the jamb and attach the shoe with the two screws provided. See the following for the proper shoe location:

The shoe should be 15 " from the right edge of the door as you face the door for a **door mount left 2300DL** to the location of the vertical centerline of the shoe on the frame above the door. Now mark the horizontal line of the shoe holes and the hole locations so that the shoe location will result in the threaded arm being on a parallel plane with the clutch arm, but at a higher elevation.

The shoe should be 16" from the left edge of the door as you face the door for a **door mount right 2300DR** to the location of the vertical centerline of the shoe on the frame above the door. Now mark the horizontal line of the shoe holes and the hole locations so that the shoe location will result in the threaded arm being on a parallel plane with the clutch arm, but at a higher elevation.

Then adjust the length of the arm (by means of the threaded portion of the arm) so that the two arms can be attached together with the _" machine screw provided, and set the nut on the threaded arm. Open and close the door manually a few times to be sure the arm adjustments are correct and that the door hits a door stop when open so as to prevent over travel of the door past 90 degrees.

If a strike is installed, connect the 12' of wiring that we supply with the strike to the strike terminals on the circuit board and the terminals on the strike. If a strike is not involved and the door hardware has a spring latch, the blank faceplate should be installed so that the opener can open the door.

The unit has been factory tested for the proper location of the magnetic switch and the magnet under the arm that activates the switch. On the opening cycle, the magnet activates the magnetic switch so the motor will shut off at about 75 to 80 degrees of full open and the door will coast to a soft stop. We have found that the magnet position, once established, will not move and therefore does not require the use of an adhesive.

Material hardware kit supplied with each unit consisting of:

- (4) 1 _ _ x 3/8_ thru bolts (if needed) - for attaching unit to door
- (6) #10 -1 _ " metal/wood screws - (4) for attaching unit to door or jamb and (2) for attaching arm shoe to door or jamb
- (1) Blank strike plate
- (1) Hinge doorstop

JAMB MOUNT MODEL 2300J

Remove the unit from the carton and make sure that accessory items ordered were included in the shipment. Review the material packed with each unit. The friction clutch arm is shipped in place on the motor shaft with the regular forearm attached to the other end of it. The magnetic switch is “*velcroed*” in place on top of the motor mounting plate. The round magnet to activate the magnetic switch should be placed on the under side of the clutch arm. (near or within a fraction of an inch of the hub and centered on the arm). The magnet is shipped in an envelope taped to the back of the unit. The purpose of the magnet and the magnetic switch is to shut the motor off as the door is approaching full open so it will come to a soft stop at about 90 degrees.

The jamb mount unit mounts to the face of the jamb (as the name implies). A right hand jamb mount unit (model 2300JR) will mount to the **right top of the push side** of the door 3" from the edge of the hinged side of the door. The shaft of the motor will be pointing down with the power cord coming out of the right side of the unit towards the hinged edge of the door. The Allen screws that hold the friction clutch in place on the motor shaft have had “Loctite” applied to be sure the screws do not come loose over a period of time. Also the screw and lock washer that connect the two arms to each other had “Loctite” applied at the factory because they are in an up side position.

See template in the instruction envelope for proper unit bracket location and arm shoe location. The temporary jamb mount template can be pinned or taped to the face of the door primarily for locating the mounting holes of the unit housing and the shoe of the threaded portion of the arm. With the template you will able locate where holes need to be:

The bottom part of the motor mounting plate should be flush with the top of the door or up a maximum of " from the bottom of the doorframe.

9" from the left edge of the door as you face the door for a jamb mount left 2300JL

3" from the right edge of the door as you face the door for a jamb mount right 2300JR.

Check to be sure the unit is horizontal with the top of the door and frame.

Note: the above measurement is from the door edge to the straight edge of the frame (not the tab legs see template).

It is recommended that at least four mounting screws be used preferably on the outer rows so as to maximize the chances of achieving a solid mounting. The selection of holes will depend on the design of the face of the jamb above the door and it is important that the holes used back onto a flush surface of the jamb. The 1/4" pre drilled holes in the back of the cabinet are sized for the four thru bolts provided with each unit in the hardware kit. Also included are four wood screws that might be suitable for mounting the unit on many types of doors.

After the unit has been affixed to the jamb move the clutch arm that is already attached to the motor shaft (with 2 set screws one of which lines up with the shaft key) to a 90-degree position (arm perpendicular to the door). Locate the proper shoe location on the face of the jamb and attach the shoe with the two screws provided.

See the following for the proper shoe location:

The shoe should be 16” from the right edge of the door as you face the door for a **jamb mount right 2300JR** to the location of the vertical centerline of the shoe. Now mark the horizontal line of the shoe holes and the hole locations so that the shoe location will result in the threaded arm being on a parallel plane with the clutch arm, but at a lower elevation.

The shoe should be 15 “from the left edge of the door as you face the door for a **jamb mount left 2300JL** to the location of the vertical centerline of the shoe. Now mark the horizontal line of the shoe holes and the hole locations so that the shoe location will result in the threaded arm being on a parallel plane with the clutch arm, but at a lower elevation.

Then adjust the length of the arm (by means of the threaded portion of the arm) so that the two arms can be attached together with the inch machine screw provided, and set the nut on the threaded arm. Open and close the door manually a few times to be sure the arm adjustments are correct and that the door hits a door stop when open so as to prevent over travel of the door past 90 degrees.

If a strike is installed, connect the 12' of wiring that we supply with the strike to the strike terminals on the circuit board and the terminals on the strike. If a strike is not involved and the door hardware has a spring latch, the blank faceplate should be installed so that the opener can open the door.

The unit has been factory tested for the proper location of the magnetic switch and the magnet under the arm that activates the switch. On the opening cycle, the magnet activates the magnetic switch so the motor will shut off at about 75 to 80 degrees of full open and the door will coast to a soft stop. We have found that the magnet position, once established, will not move and therefore does not require the use of an adhesive.

Material hardware kit supplied with each unit consisting of:

- (4) 1 x 3/8 thru bolts (if needed) - for attaching unit to door
- (6) #10 – 1 “ metal/wood screws - (4) for attaching unit to door or jamb and (2) for attaching arm shoe to door or jamb
- (1) Blank strike plate
- (1) Hinge doorstop

Changing the hand in the field – a) reroute the power cord so that it exits the unit closest to the hinge side of the door and- b) reverse the two motor leads on M1 and M2 so the motor will run in the opposite direction (blue lead nearest to the hinge side of door and also it is nearest the motor). To go from door mount to jamb mount or vice versa simply invert the unit and follow the proper installation directions. When going to jamb mount be sure to use "loctite" on the two Allen screws that secure the friction clutch shaft to the motor shaft by loosening the Allen screws and applying “Loctite” and then retighten . Also apply “Loctite” to the screw and lock washer to be sure it will not loosen during operation in the up side down operating position.

MODEL 2300 PRINTED CIRCUIT BOARD FEATURES

TERMINAL	FUNCTION	DESCRIPTION
COM	Common	Input wiring "Common" connection
O	Open & Hold	On momentary signal it will cause an opening, or a stop and reverse to open if closing. <i>Door will time out and close if Dip Switch #2 is "off".</i> <i>If activated and maintained, door will open and stay there.</i>
C	Close Input	N/A
SB	Single Button Input	Duplicates radio input. The following is the same for radio input: - a signal will always cause an opening except at the fully open position.
L/I	Lock/Inhibit	When activated, the door will <u>emergency stop</u> and remain stopped until the signal is removed. If the door is at rest, either open or closed, it will not accept a signal as long as SL is activated. If L/I is activated while opening, the door will stop. If the CLOSE TIMER (Dip Switch #2) is "off", and L/I is released, the timer will time out and the door will close. If L/I is activated during a closing cycle, the door will stop and await another signal. <i>This will meet the conditions of a safety mat application</i>
TH	Timer Hold Open	If maintained will prevent automatic close. If there is a momentary contact it will reset the close timer and the timer will again begin timing when contact is released. (This could be used with a safety mat application where the only concern is on the closing cycle as it does not prevent an opening.)
Dip Switch #1 (MOCT)	Manually Open Close Timer	When switch is "on" and door is opened manually to full open, door will time out and automatically close. When switch is "off" the door is manually opened to full open it will stay open until a new signal is received.
Dip Switch #2 (CTOFF)	Close Timer Off	When Dip Switch #2 set to "on", it will inhibit the close timer and the door will remain open <u>until</u> a signal button, radio or close input is received. <i>This will meet the conditions of PTO/PTC</i>

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