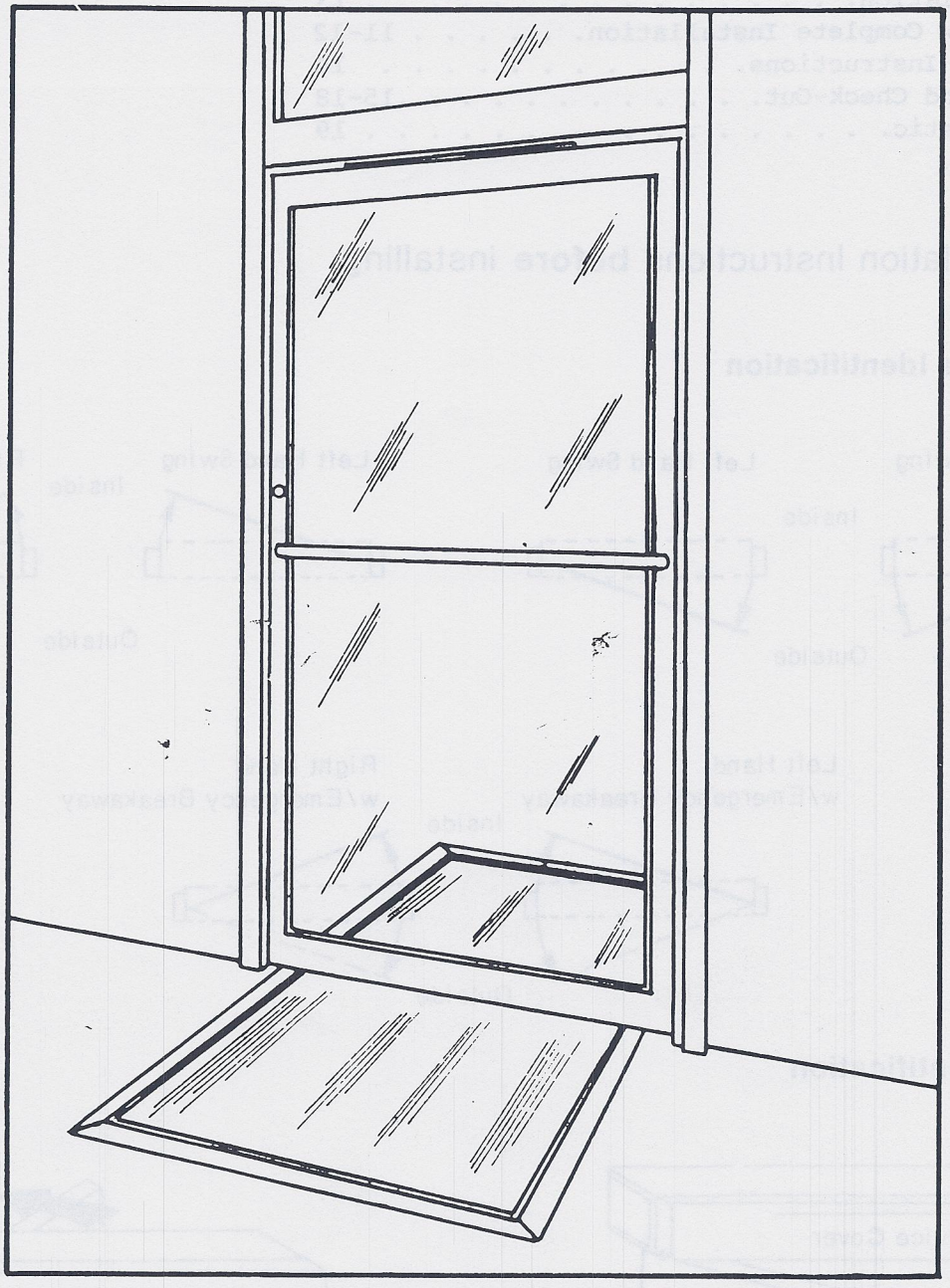
Installation Instructions

Automatic Door Operators

Series 4500 Electrohydraulic

by Keane Monroe Corporation



Keane Monroe - Opening Doors for People

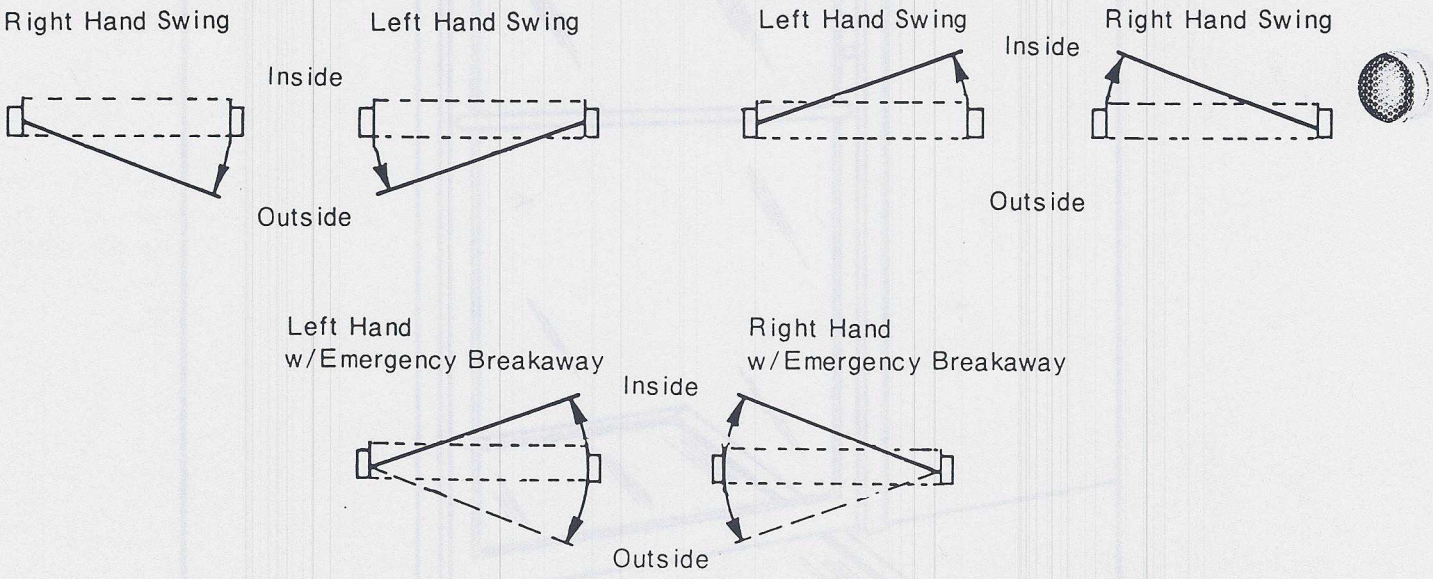
Keane Monroe Corporation
P.O. Box 1071
Monroe, North Carolina 28110
Telephone (704) 289-5581

Index

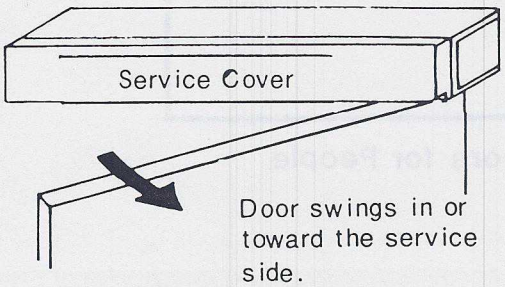
January 4, 1982

Read Installation Instructions **before** installing.

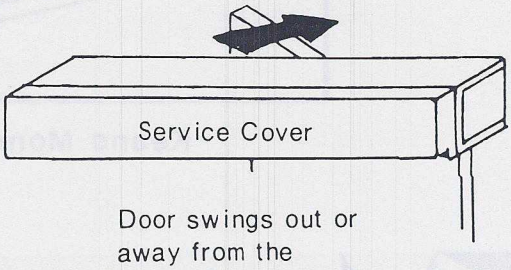
Hand of Door Identification



Operator Identification



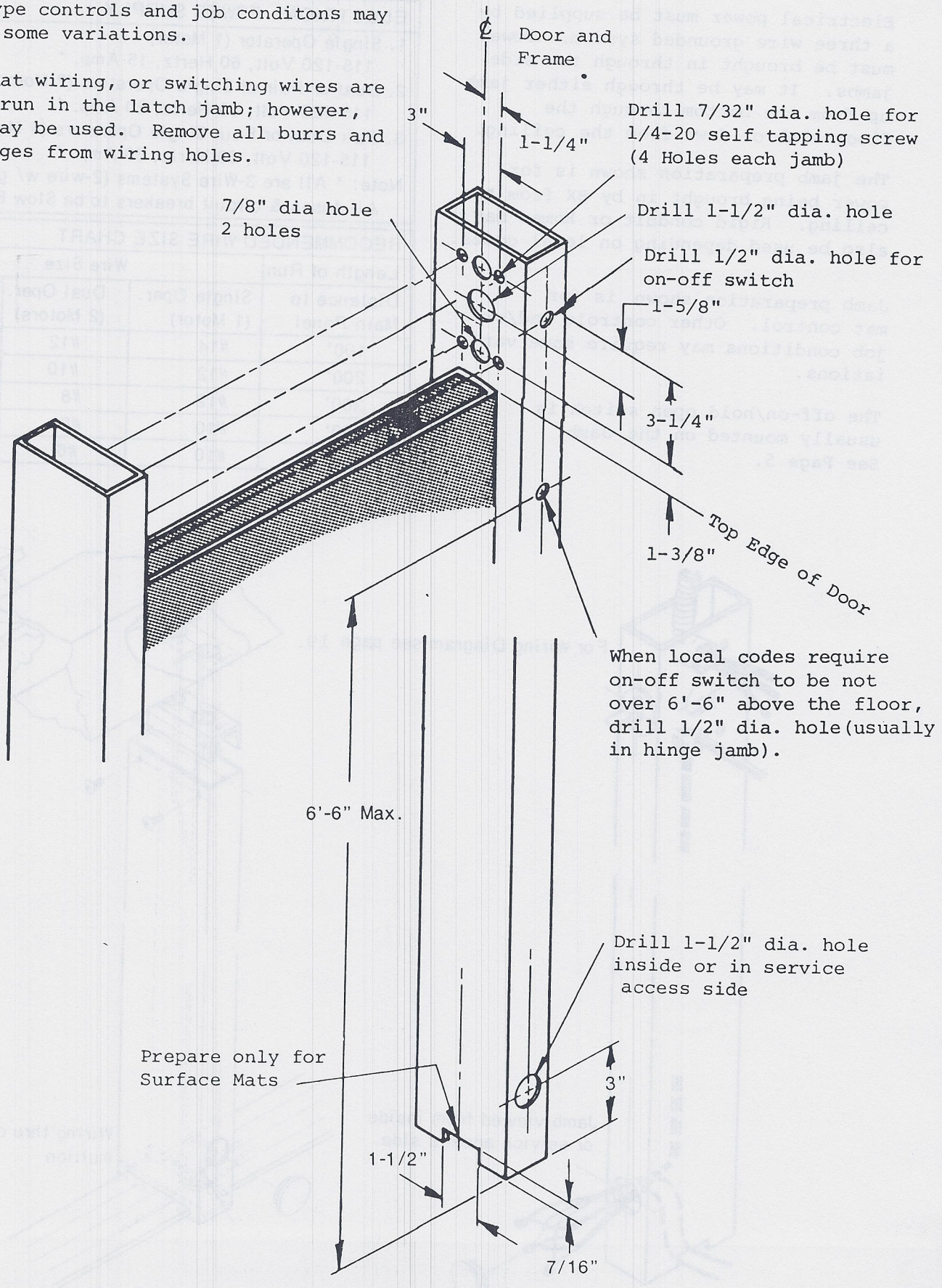
Viewed from Inside or Service Access Side



Jamb Preparation

Jamb preparation shown is for header bracket mounting, electrical wiring and mat controls. Other type controls and job conditons may require some variations.

Power, mat wiring, or switching wires are usually run in the latch jamb; however, either may be used. Remove all burrs and sharp edges from wiring holes.



Electrical Preparation

Preparation of Inside Face of Jamb

Electrical power must be supplied by a three wire grounded system. Power must be brought in through the side jambs. It may be through either jamb up from the bottom through the floor slab or down from the ceiling.

The jamb preparation shown is for power being brought in by BX from the ceiling. Rigid conduit or Romex may also be used depending on local codes.

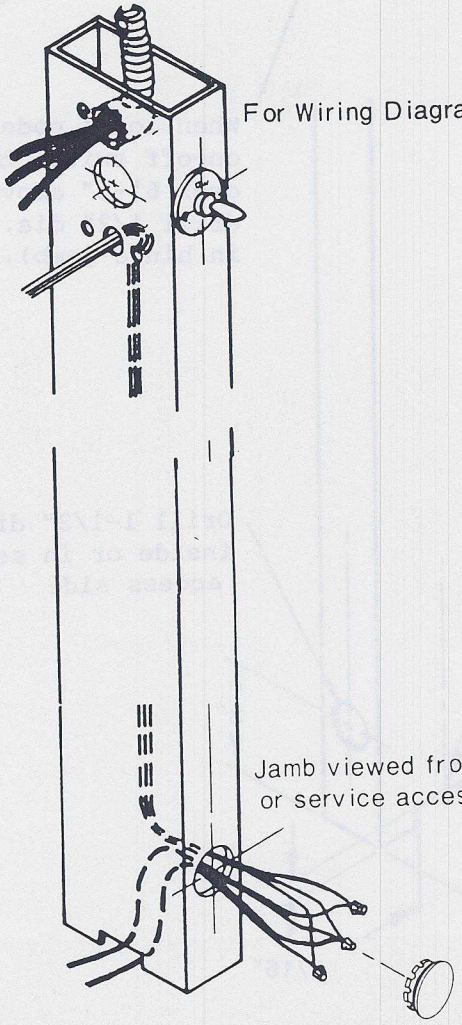
Jamb preparation shown is for mat control. Other controls and/or job conditions may require some variations.

The off-on/hold open switch is usually mounted on the Jamb. See Page 5.

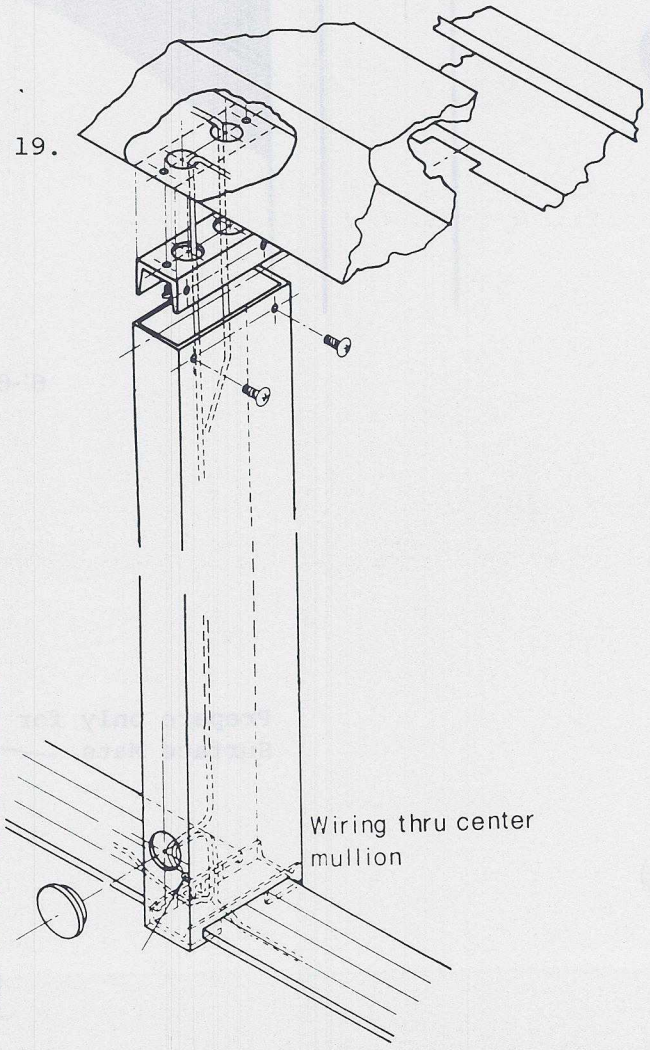
ELECTRICAL POWER SUPPLY
1. Single Operator (1 Motor) 115-120 Volt, 60 Hertz, 15 Amp. *
2. Dual or Pair of Single Operators (2 Motors) 115-120 Volt, 60 Hertz, 20 Amp. *
3. Pair Dual or Four Single Operators (4 Motors) * 115-120 Volt, 60 Hertz, 30 Amp. *
Note: * All are 3-Wire Systems (2-wire w/ ground). All fuses & circuit breakers to be Slow Blow Type.

RECOMMENDED WIRE SIZE CHART			
Length of Run	Wire Size		
Distance to Main Panel	Single Oper. (1 Motor)	Dual Oper. (2 Motors)	Pr. Duals (4 Motors)
100'	#14	#12	#10
200'	#12	#10	#8
300'	#12	#8	#6
400'	#10	#8	#6
500'	#10	#6	#4

For Wiring Diagram see page 19.



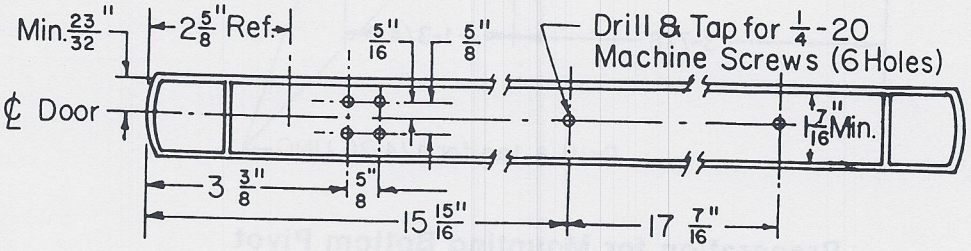
Jamb viewed from inside or service access side.



Wiring thru center mullion

Preparation for Mounting Door Arm for Doors with 1" or 7/8" Deep Top Channel.

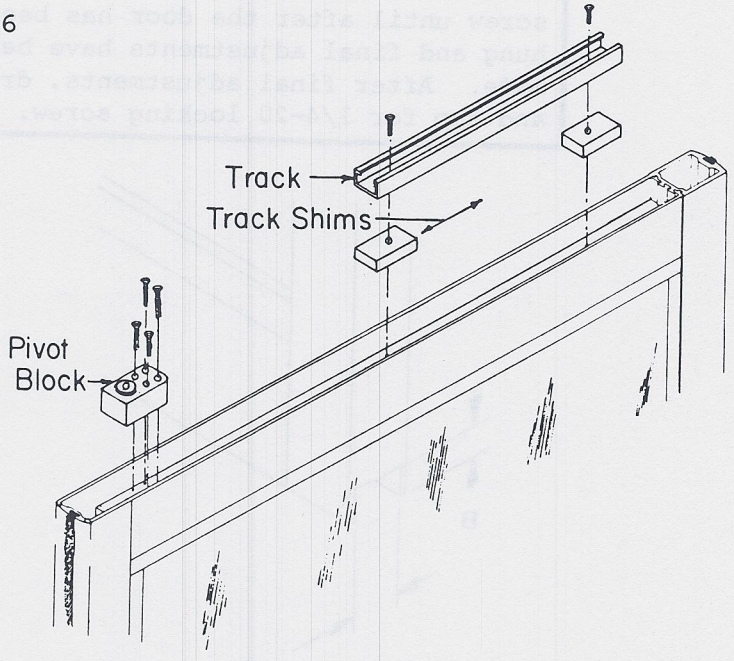
Drill and tap for 1/4-20 Machine Screw (6 holes) as shown below.



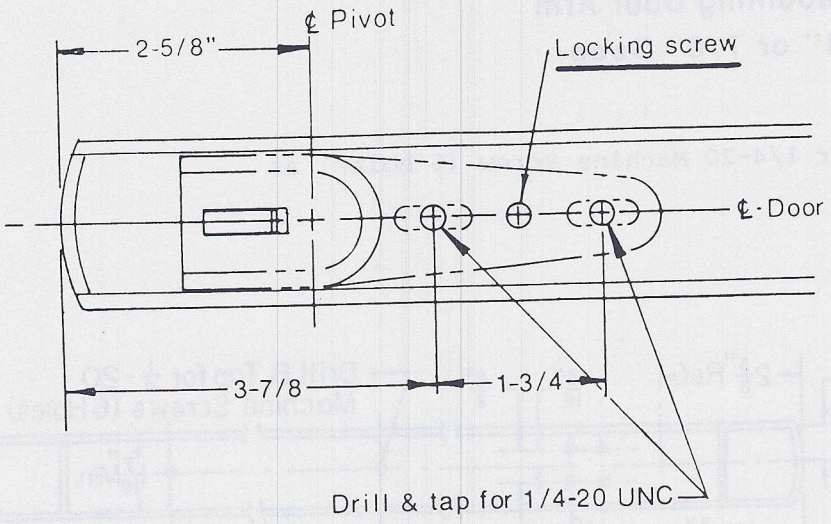
Alternate for Channels Deeper than 1"

For door channels deeper than 1" add filler or shim to make depth of 1".

Depth for track only is 11/16



Door Preparation

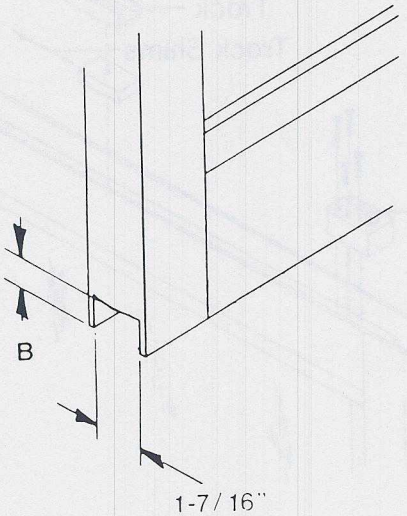


Preparation for Mounting Bottom Pivot

Locate and drill & tap 2 holes for 1/4-20x1/2" long Phillips Round Head Machine screws as shown above. Cut slot in bottom heel of door, dimension "B" being from bottom of door to bottom of channel. Width, 1-7/16" minimum.

The bottom pivot is adjustable to accommodate bottom rails with channel depths from 7/8" minimum to 1-9/16" maximum.

Do not drill and tap for the locking screw until after the door has been hung and final adjustments have been made. After final adjustments, drill and tap for 1/4-20 locking screw.



Frame and Header Installation

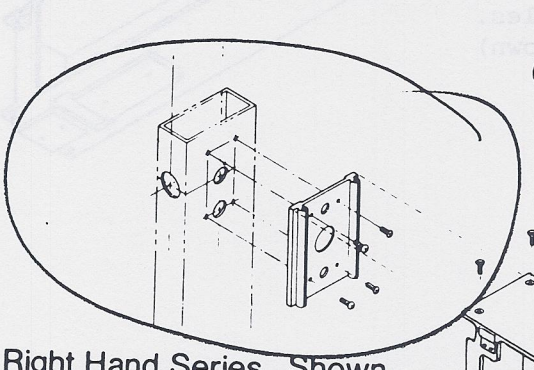
Erect automatic entrance package in entrance opening to door and frame manufactureers instructions. Check frame to be sure it is square and plumb.

An allowance of 1/8" around the door and 3/16" between threshold and bottom of door should be maintained.

Mount the end brackets to the side jambs using the 1/4-20 self tapping screws furnished. (4 per bracket)

Before installing the header, be sure the power leads are long enough to reach the control for hook-up. Also, while installing the header, be careful in routing the wires around the operator to be sure they will not be interferred with during the operation of the unit, or will not be pinched when the header is bolted in place.

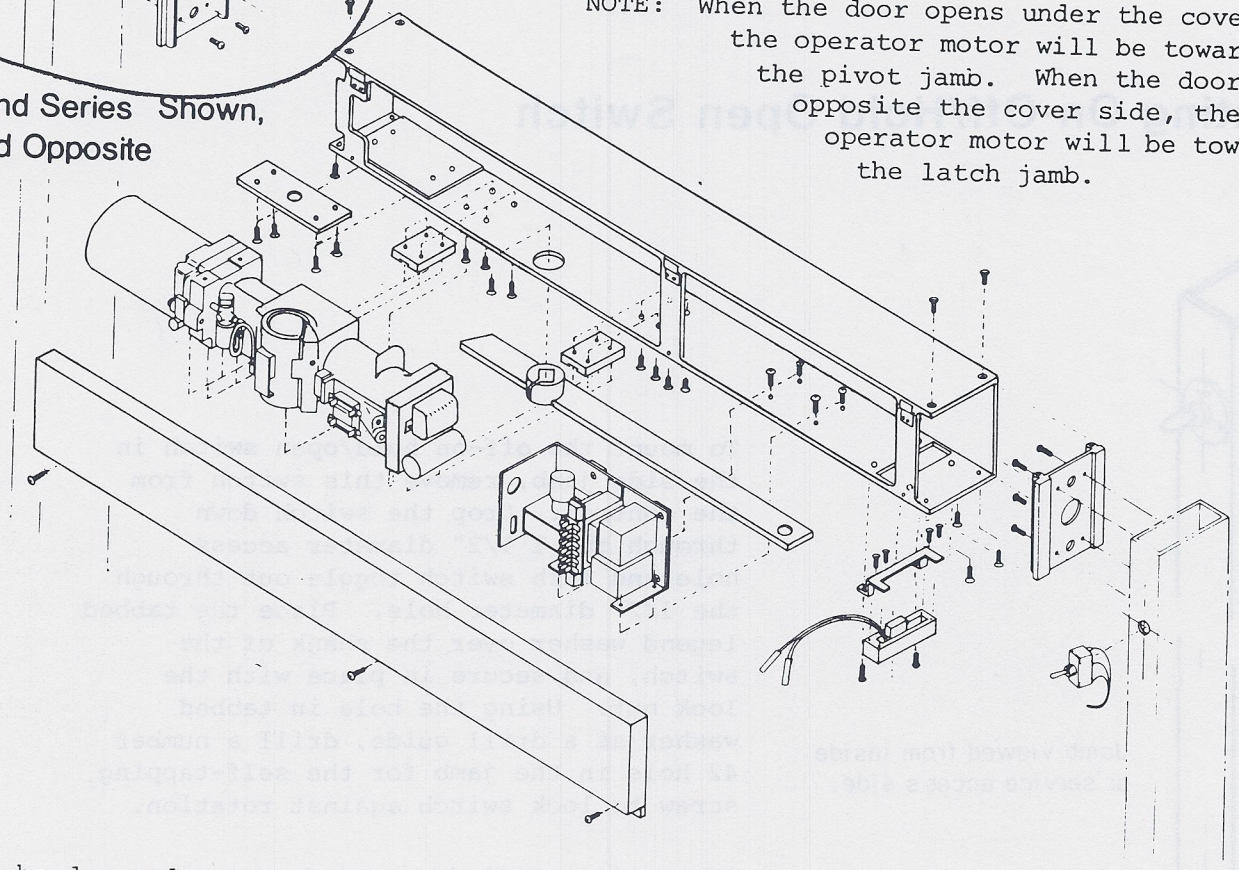
The header may now be slipped over the end brackets and secured in place with 1/4-20x3/4" Flat Head Machine Screws (4 per end).



Right Hand Series Shown,
t Hand Opposite

Operator Installation

NOTE: When the door opens under the cover the operator motor will be towards the pivot jamb. When the door opens opposite the cover side, the operator motor will be towards the latch jamb.



The header and operator are shipped separately, and the header is usually installed less operator.

The operator may, however, be installed in the header before the header is installed in the frame.

First remove filler block as shown on page 5, to expose (four) 4 operator mounting holes. The operator is placed in the header with the pinion above the large hole in the bottom of the header and the two rubber pads down. Pads should be installed on the operator from the factory.

Operator Installation

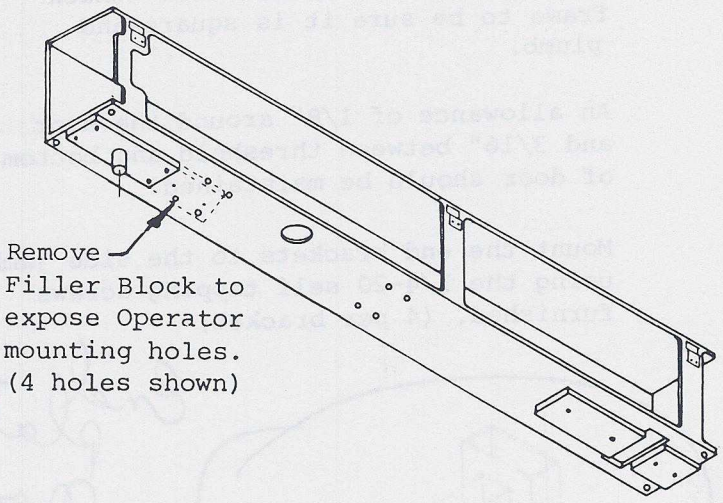
Fasten the shock mount pads of the operator to the header with eight 10-32 machine screws furnished.

NOTE: The 10-32 machine screws should be fastened securely to the shock mount pads with the heads flush with the bottom of the header.

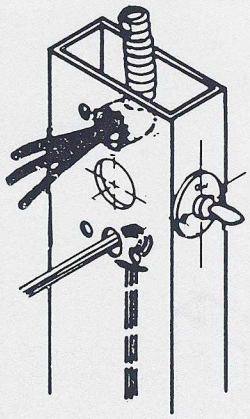
Replace filler block.

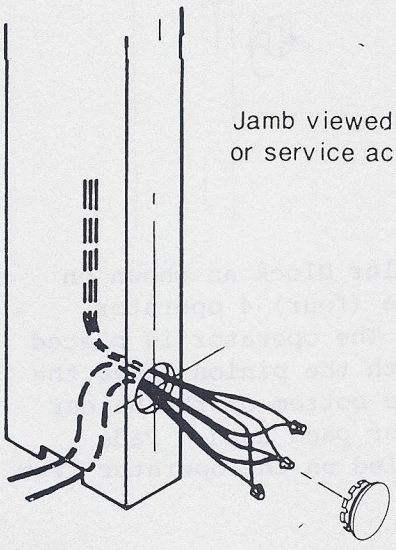
Place control in the header matching the four holes in the header with the holes in the angle. Fasten with 10-32 machine screws furnished.

NOTE: Control is always on latch jamb side.



Mounting On-Off/Hold Open Switch





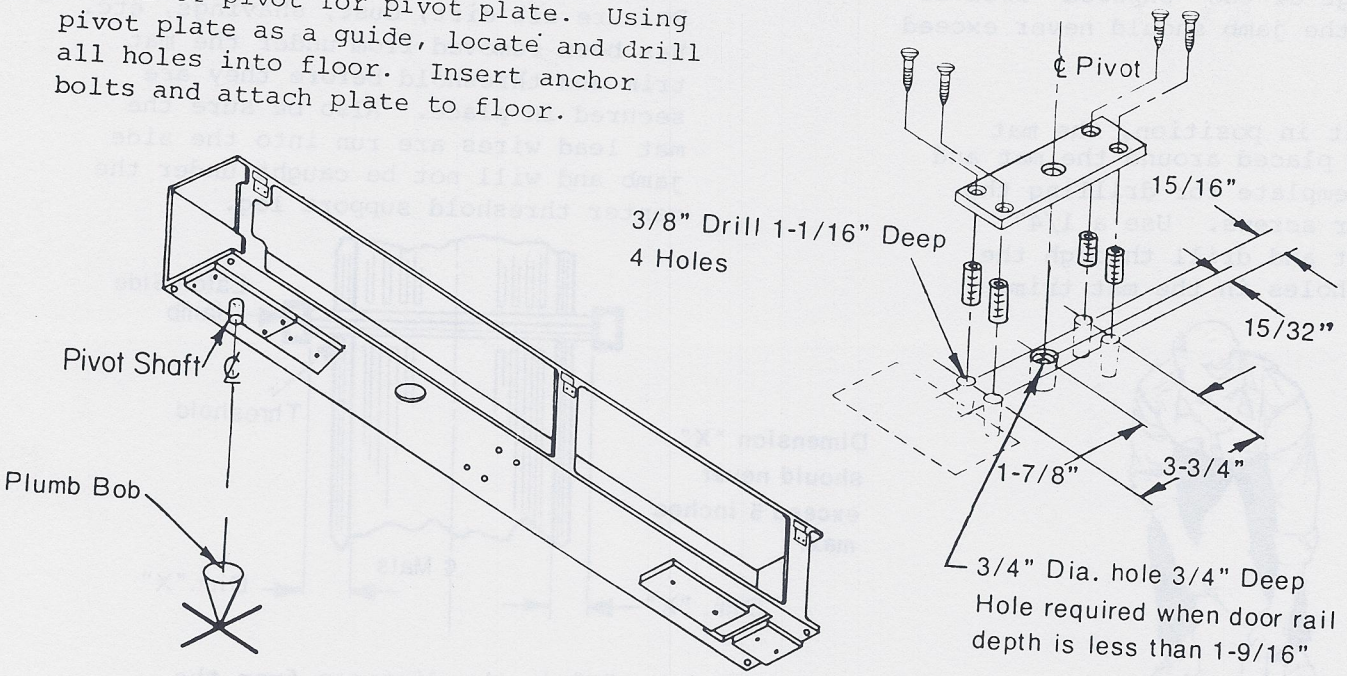
Jamb viewed from inside or service access side.

To mount the off-on hold/open switch in the side jamb, remove this switch from the control. Drop the switch down through the 1 1/2" diameter access hole and fish switch toggle out through the 1/2" diameter hole. Place the tabbed legend washer over the shank of the switch, and secure in place with the lock nut. Using the hole in tabbed washer as a drill guide, drill a number 42 hole in the jamb for the self-tapping screw to lock switch against rotation.

After the switch is mounted reconnect wires

Bottom Pivot Preparation

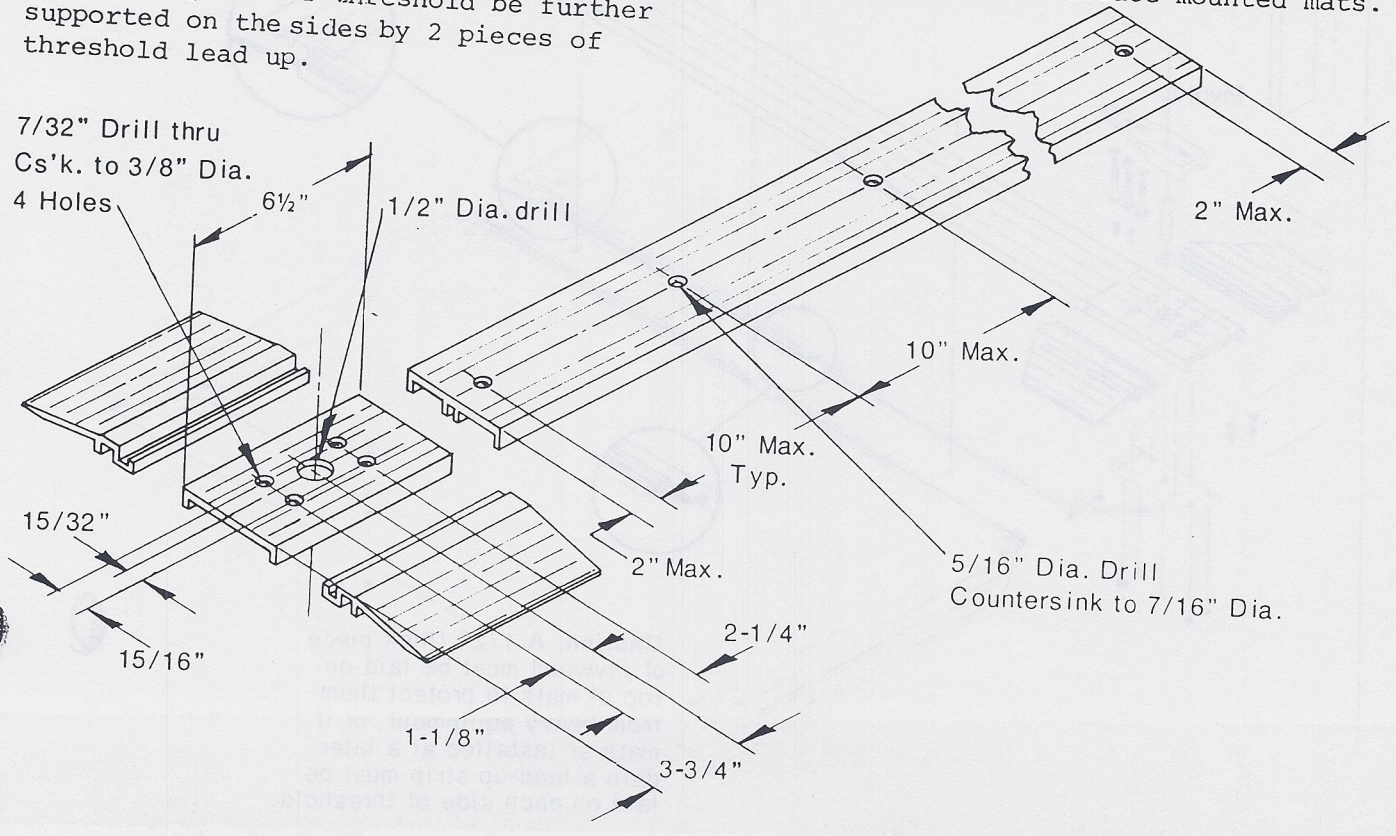
Drop plumb bob from center line of pivot shaft to floor. Mark floor. This is center of pivot for pivot plate. Using pivot plate as a guide, locate and drill all holes into floor. Insert anchor bolts and attach plate to floor.



Threshold Preparation

The threshold furnished in the mat trim kit is 48" long. The center support leg will have been milled off the bottom on one end. Cut off 6 1/2" of this end and prepare this short peice to receive the bottom pivot. It is also recommended that this piece of threshold be further supported on the sides by 2 pieces of threshold lead up.

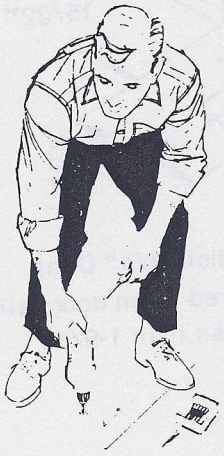
The balance of the threshold should be cut to length and drilled and counter sunk on center for attachment to the floor for the surface mounted mats.



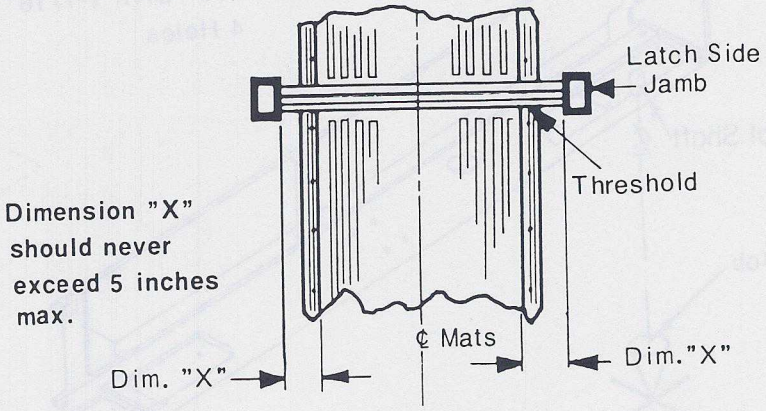
Installation of Floor Control Mats

Position mats under threshold and center between jambs. Caution: The distance from the edge of the "exposed" area of the mat to the jamb should never exceed 5 inches.

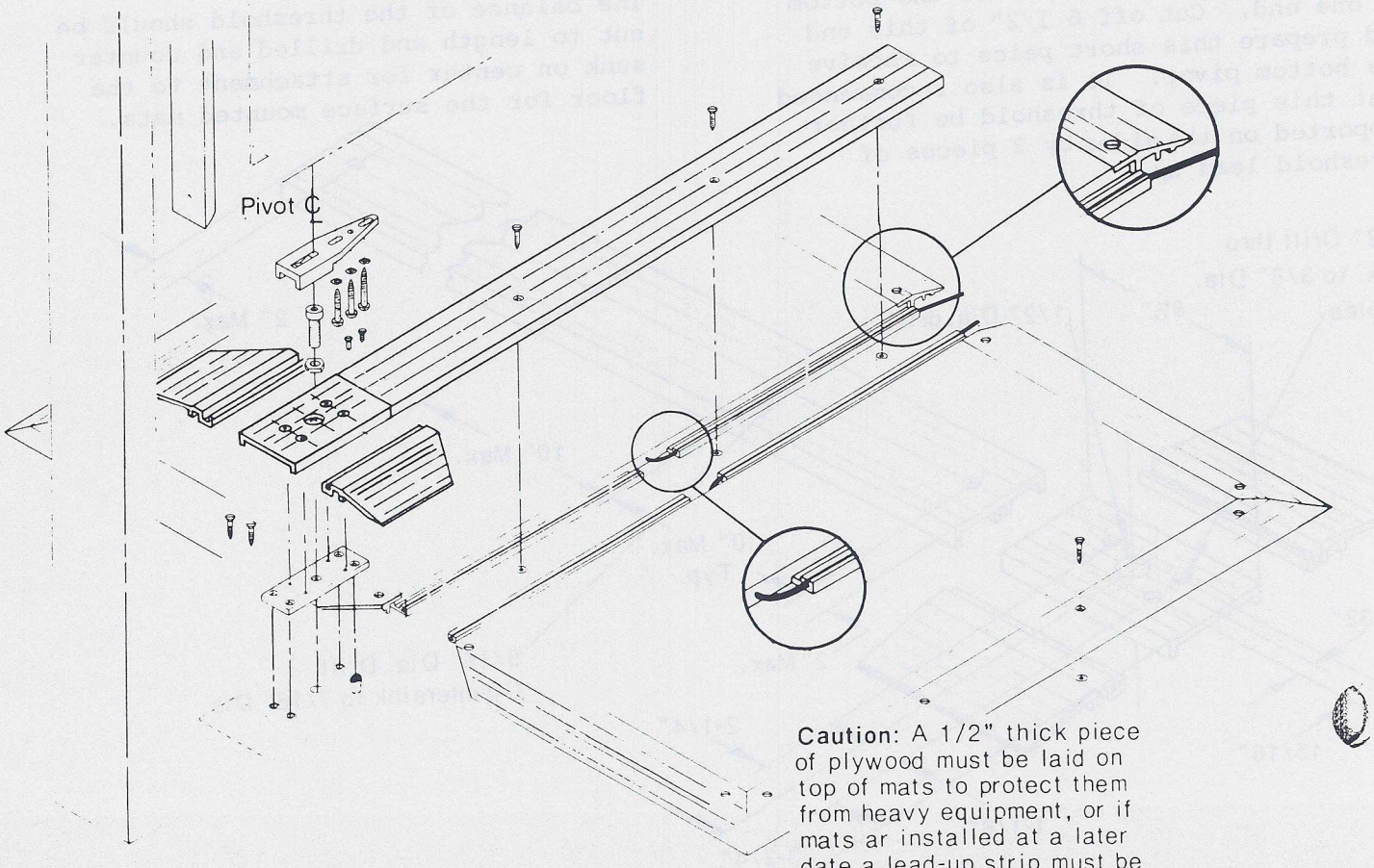
With the mat in position, the mat trim may be placed around the mat and used as a template for drilling the floor anchor screws. Use a 1/4" masonary bit and drill through the predrilled holes in the mat trim.



Caution: Place the mat lead wires into the wire groove on the end of the mats. Be sure the wires are out of the way before any drilling is performed. Be sure all dirt, dust, shavings, etc. has been removed from under the mat trim and threshold before they are secured in place. Also be sure the mat lead wires are run into the side jamb and will not be caught under the center threshold support leg.



Dimenison "X" is the distance from the edge of the exposed area of the mat to the jamb. Dimension "X" should never exceed 5 inches.



Caution: A 1/2" thick piece of plywood must be laid on top of mats to protect them from heavy equipment, or if mats ar installed at a later date a lead-up strip must be laid on each side of threshold.

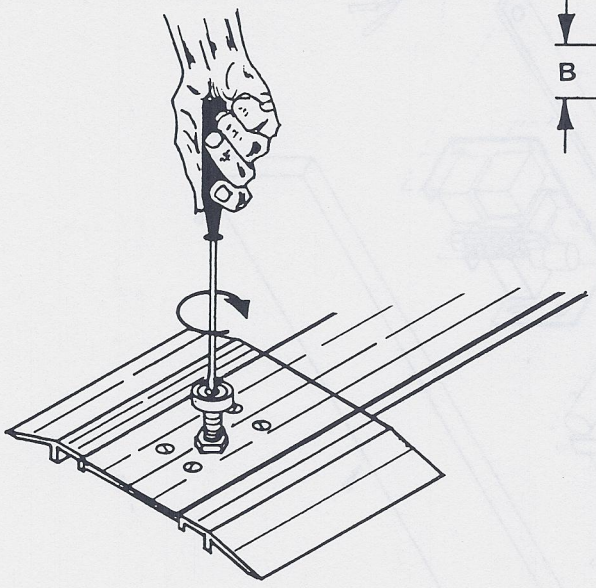
To Set Height of Bottom Pivot

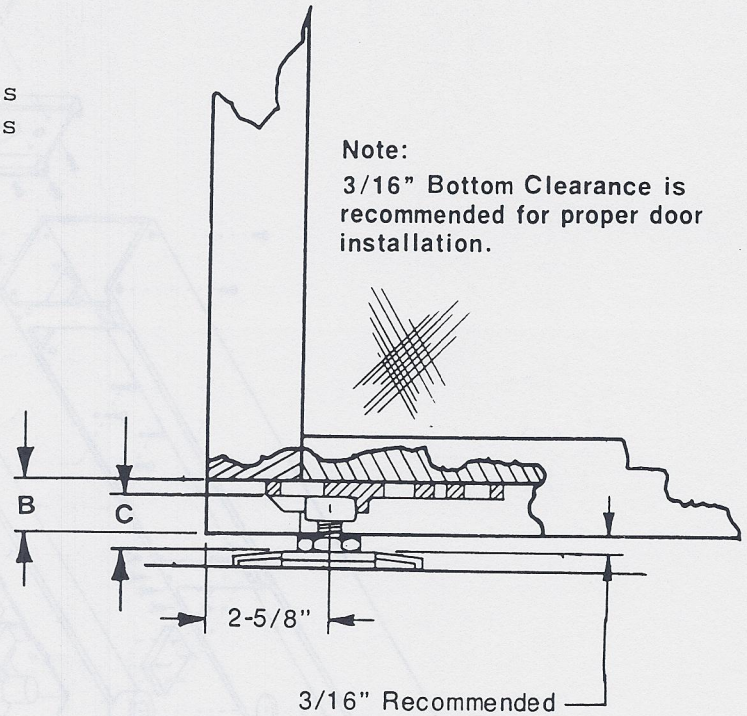
Measure depth of bottom door channel. This will be dimension "B".

Subtract 1/16" from dimension "B". This will be dimension "C". Dimension "C" is the top distance from the top of the pivot to the top of the threshold (or finished floor if no threshold).

Turn Bottom Pivot Shaft up or down as needed to meet "C" dimension. (See Fig.

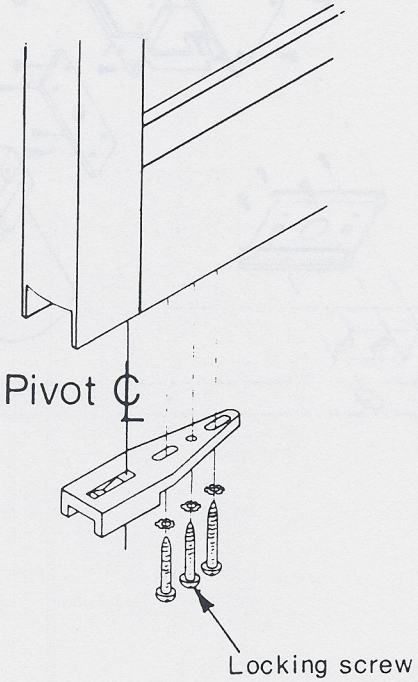
Lock Bottom Pivot Shaft with 3/4" lock nut.



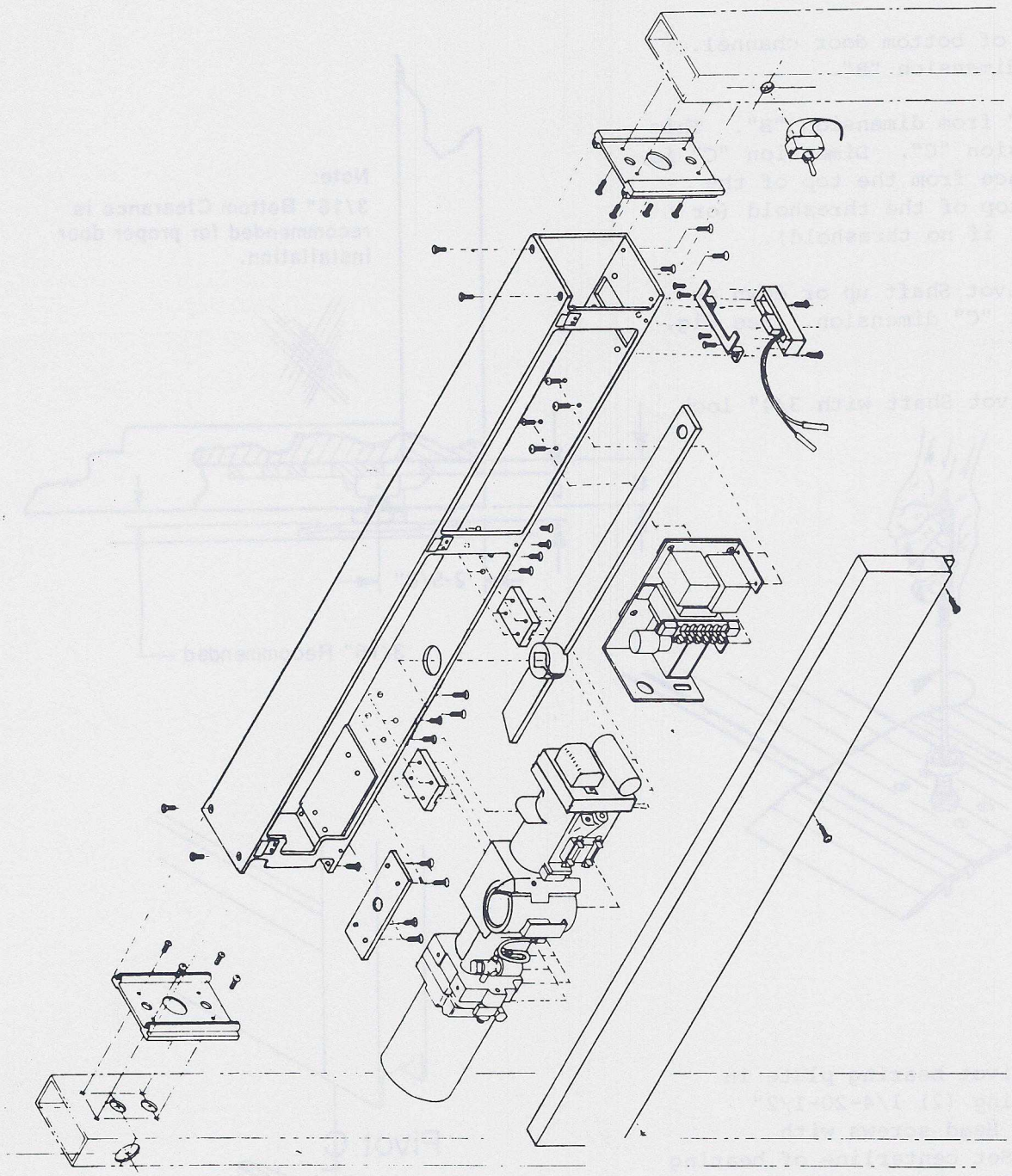


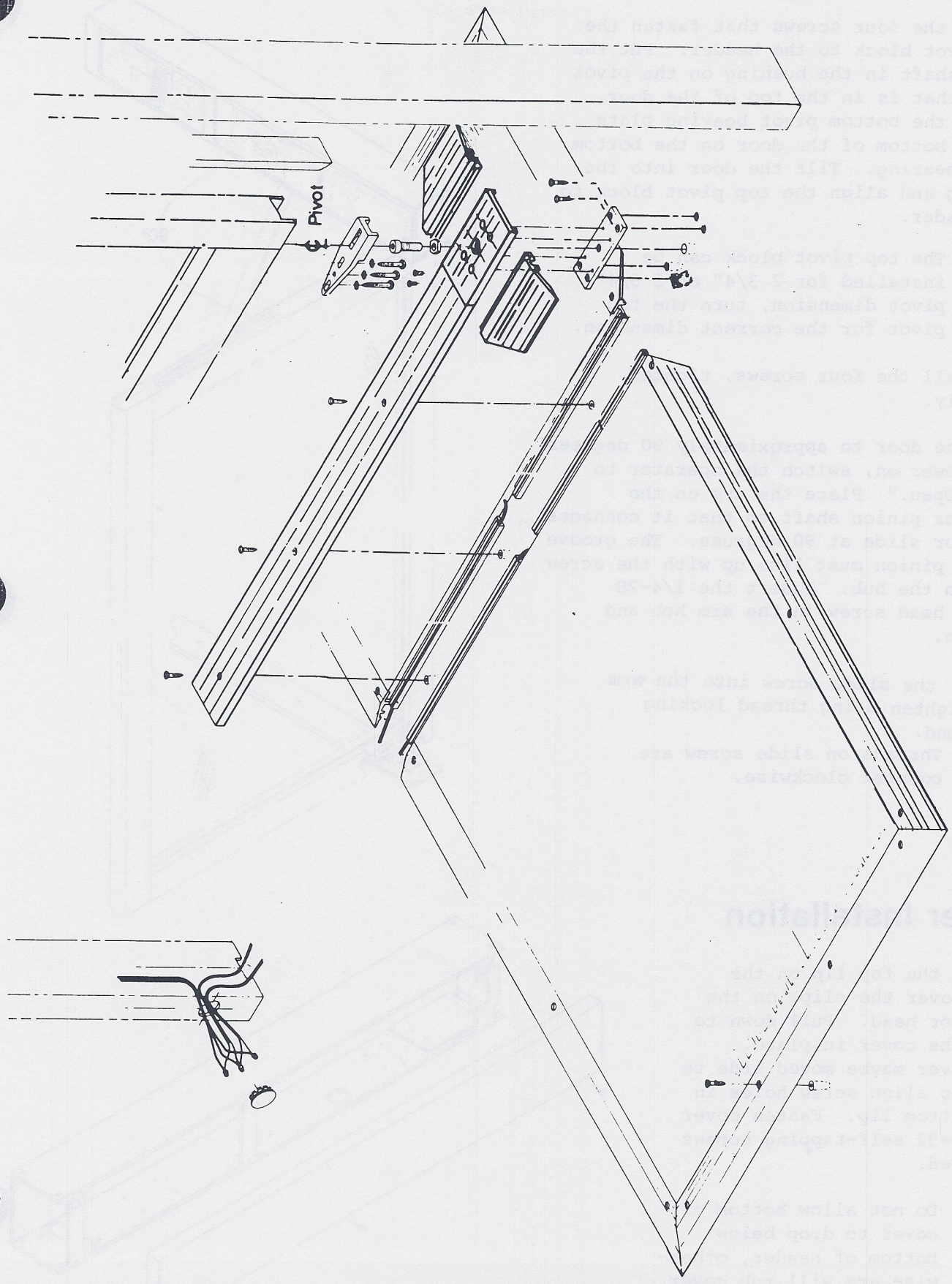
Note:
3/16" Bottom Clearance is recommended for proper door installation.

Mount bottom pivot bearing plate in bottom rail using (2) 1/4-20-1/2" Phillips Round Head screws with lockwashers. Set centerline of bearing socket 2-5/8" from heel of door. Tighten screws enough to make final adjustment with door installed in position. Do not dirll and tap for locking screw until all final adjustments to the door have been made.



Exploded View of Complete Installation




Pivot

Door Installation

Remove the four screws that fasten the top pivot block to the header. Put the pivot shaft in the bushing on the pivot block that is in the top of the door. Engage the bottom pivot bearing plate in the bottom of the door on the bottom pivot bearing. Tilt the door into the opening and align the top pivot block to the header.

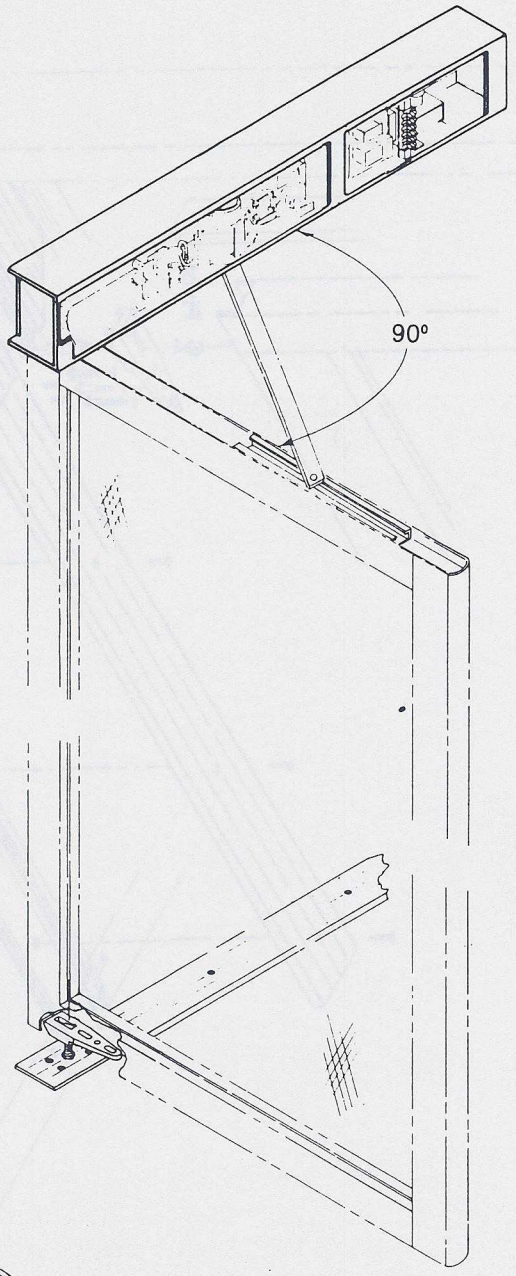
NOTE: The top pivot block can be installed for 2 3/4" or 3 3/4" pivot dimension, turn the top pivot for the correct dimension.

Reinstall the four screws, tighten securely.

Open the door to approximately 90 degrees. With power on, switch the operator to "Hold Open." Place the arm on the operator pinion shaft so that it connects the door slide at 90 degrees. The groove in the pinion must line up with the screw hole in the hub. Insert the 1/4-28 socket head screw in the arm hub and tighten.

Thread the slide screw into the arm and tighten using thread locking compound.

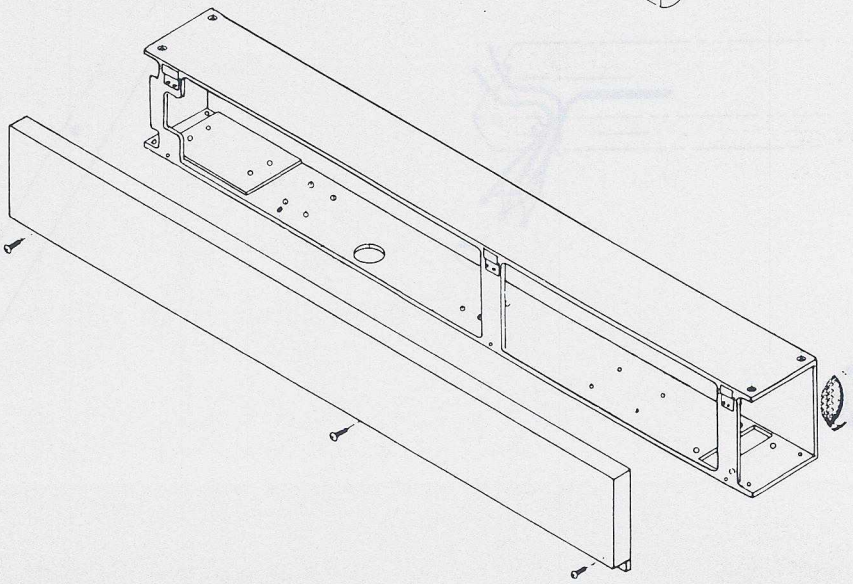
NOTE: Threads on slide screw are counter clockwise.



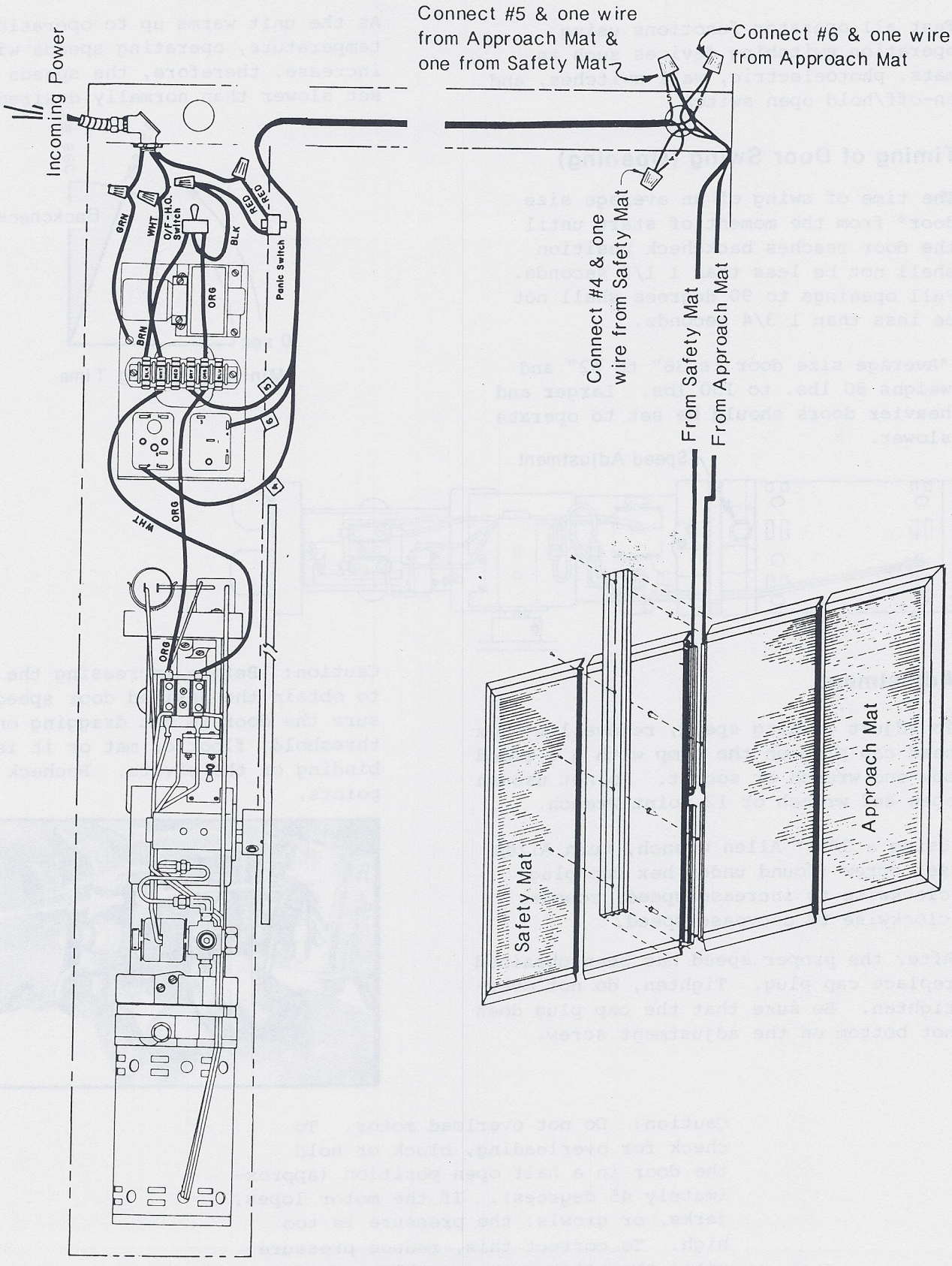
Cover Installation

Insert the top lip on the cover over the clips on the operator head. Pull down to snap the cover in place. The cover maybe moved side to side to align screw holes in the bottom lip. Fasten cover with 6-32 self-tapping screws provided.

NOTE: Do not allow bottom of cover to drop below bottom of header, otherwise arm will rub cover.



Field Wiring Instructions



Adjustment and Checkout
Speed and Pressure

Important

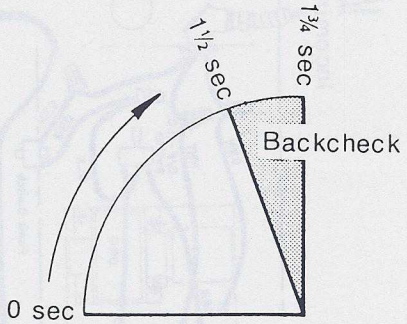
Test all operator functions using operation switching devices such as mats, photoelectric, wall switches, and on-off/hold open switch.

Timing of Door Swing (Opening)

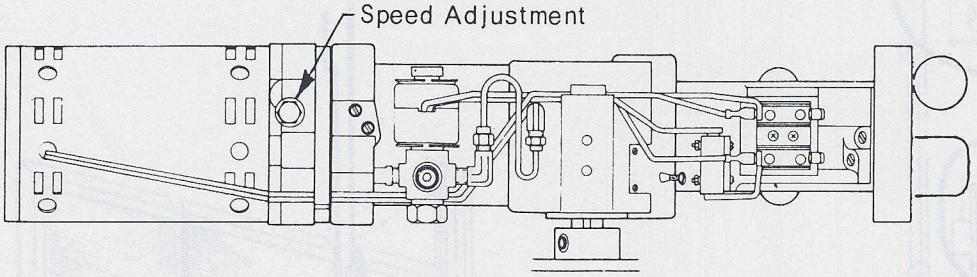
The time of swing of an average size door* from the moment of start until the door reaches backcheck position shall not be less than 1 1/2 seconds. Full openings to 90 degrees shall not be less than 1 3/4 seconds.

*Average size door is 36" to 42" and weighs 80 lbs. to 150 lbs. Larger and heavier doors should be set to operate slower.

As the unit warms up to operating temperature, operating speeds will increase, therefore, the speeds must be set slower than normally desired.



Minimum Opening Time



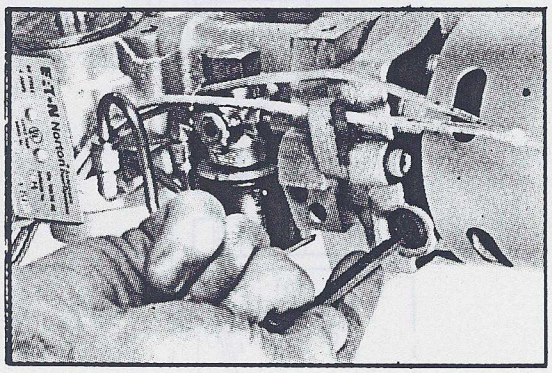
Adjustment

To adjust opening speed, remove 1/2" hex head cap plug on the pump with a 6 sided box end wrench or socket. Do not use an open end wrench or 12 point wrench.

Using a 3/16" Allen wrench, turn Allen set screw (found under hex cap plug) clockwise to increase speed, counter clockwise to decrease speed.

After the proper speed has been obtained replace cap plug. Tighten, do not over-tighten. Be sure that the cap plug does not bottom on the adjustment screw.

Caution: Before increasing the pressure to obtain the desired door speed, be sure the door is not dragging on the threshold, floor or mat or it is not binding on the pivots. Recheck these points.

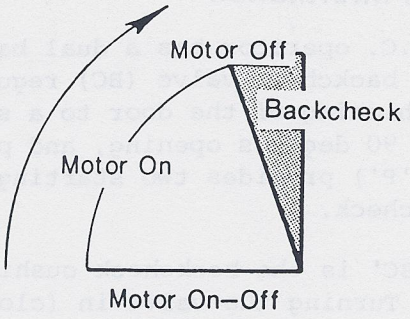


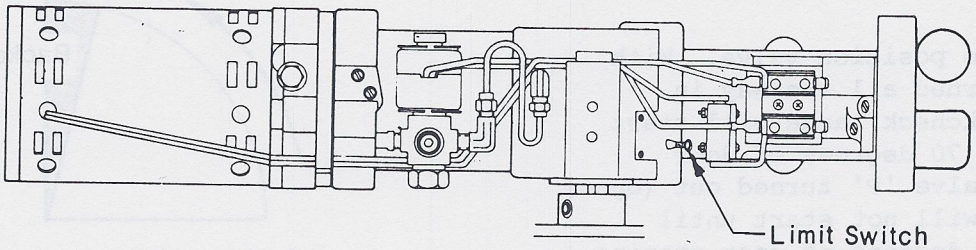
Caution: Do not overload motor. To check for overloading, block or hold the door in a half open position (approximately 45 degrees). If the motor lopes, jerks, or growls, the pressure is too high. To correct this, reduce pressure until the motor runs smoothly.

Adjustment and Checkout
Limit Switch

Function of Limit Switch

The operation of the motor is to open the door, Not to hold it open. The limit switch is to shut off the motor after opening the door into the backcheck position. The actual point of shut off will vary depending on the weight of the door and the degree of backcheck. The heavier the door or the greater the speed, the sooner the motor will shut off. The door should stop smoothly at 90 degrees of opening.





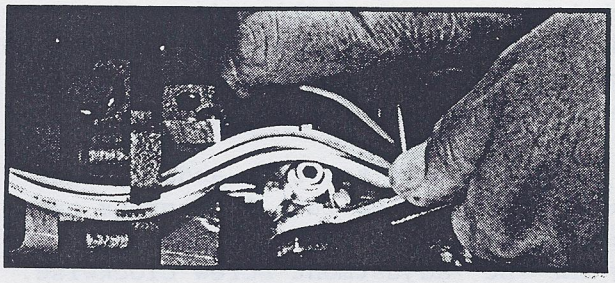
Adjustment

To adjust: Turn the adjustment screw on the limit switch counterclockwise to decrease motor run. To increase the motor run turn it clockwise. It may be necessary to adjust the backcheck when adjusting the limit switch.

Note: Cam follower and limit switch must have free movement before accurate adjustment can be attained.

Caution: With an improper adjustment of the limit switch and an overrun of the motor, the piston of the operator may travel to the end of the cylinder and bottom. This may cause too much pressure against the solenoid valve. Should the door not close with the power off, the solenoid valve is locked. Caution: Do not force the door closed. Should the solenoid lock, support the body of the solenoid valve and turn the 3/4" brass cap nut counterclockwise not more than 1 1/2 turns. This will permit the pressure in the valve to drop sufficiently to let the door close. Retighten cap nut.

After the door is closed, readjust the limit switch turning the screw counterclockwise to cut off the motor sooner. Also the opening speed must be reduced by turning the speed adjustment screw counterclockwise to slow the opening speed.



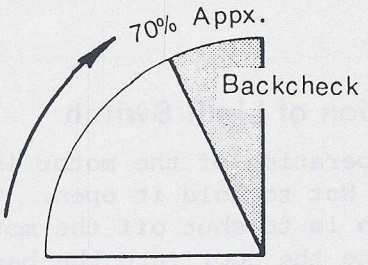
Adjustment and Checkout
Backcheck

General Information

The K.M.C. operator has a dual backckeck system; backcheck valve (BC) regulates the cushioning of the door to a smooth stop at 90 degrees opening, and positioning valve('P') provides two starting positions of backcheck.

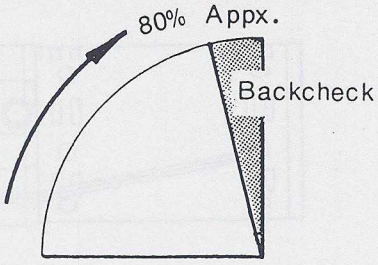
Valve 'BC' is the backcheck cushioning valve. Turning the valve in (clockwise) invreases backcheck. Turning the valve out (counterclockwise) decreases back-check).

Valve 'P'is a two position valve. With the valve 'P' turned all the way in (closed) the backcheck range will start at approximately 70 degrees of door opening. With valve 'P' turned out (open) backcheck range will not start until approximately 80 degrees of door opening.

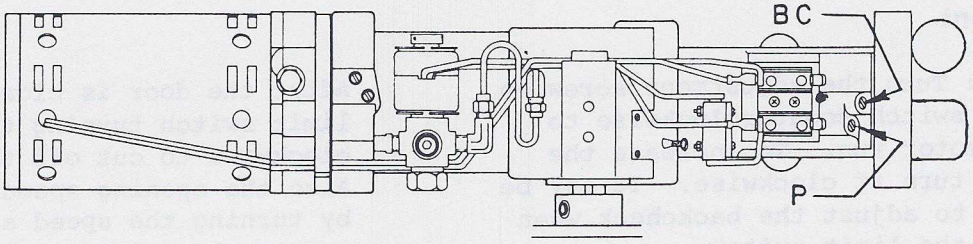


Position 'P' Valve Closed

Do Not Force the adjustment valves beyond a seated position. To open 'P' valve, turn adjustment screw counterclockwise until the head is just flush with the surface of the body.



Position 'P' Valve Open



In the opening cycle, if the doors seem to labor as it reaches the start of backcheck, turn the 'BC' adjustment screw 1/8 turn counterclockwise to decrease the backcheck. Repeat the procedure until a smooth operation is attained.

If the door opens too fast and 'bounces' when it reaches the full 90 degrees open position, increase the backcheck by turn-ing the 'BC' adjustment screw clockwise. NOTE: It may be necessary to reset the limit switch after making the backcheck adjustments.

Heaver and larger doors require greater back-check and the limit switch must be set so the motor will shut off sooner.

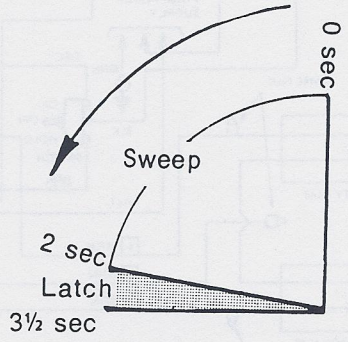
Adjustment and Checkout
Sweep and Latch

Door Closing Control

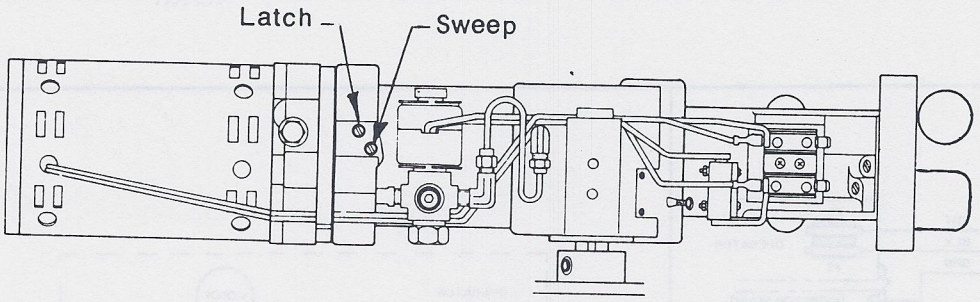
The closing speed of the door is controlled by the Sweep Valve which controls the major portion of the closing and the Latch Valve which controls the final portion to latching of the door.

Timing of Door Swing (Closing)

Time required for the sweep speed shall not be less than 2 seconds and the latch speed (last 12" of door travel) shall not be less than 1 1/2 seconds. When you make adjustments to one, you may find it necessary to adjust the other.



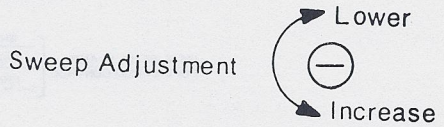
Minimum Closing Time



Adjustment

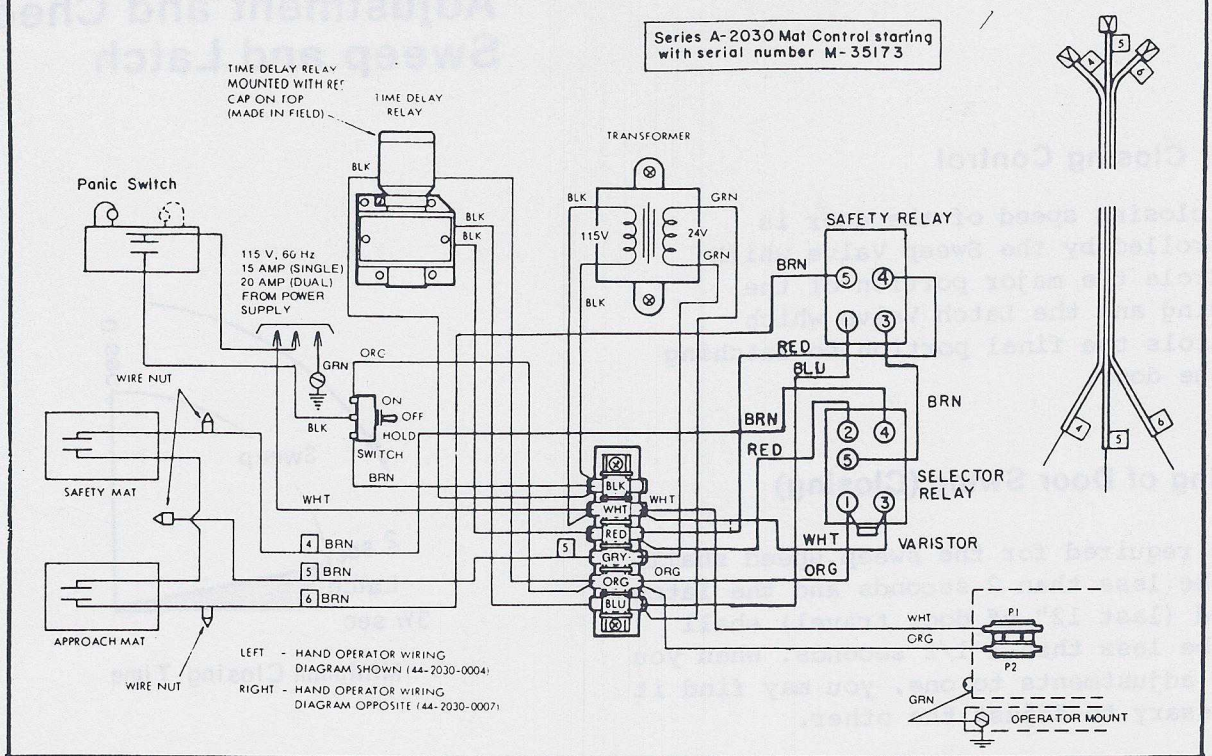
To adjust either the sweep or latch speed, turn the adjustment screw clockwise to lower the speed and counterclockwise to increase the speed. Move the valve 1/8 to 1/4 of a turn at a time. Recheck door operation after each adjustment. Set adjustments so door comes to a smooth stop without bouncing.

NOTE: The Latch adjustment valve is the valve closest to the motor.



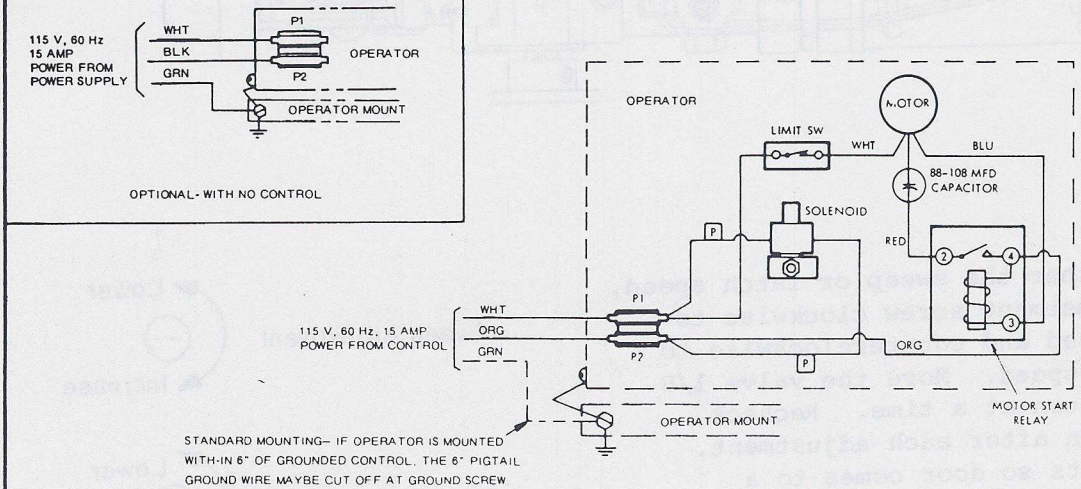
DO NOT SCALE

Series A-2030 Mat Control starting with serial number M-35173



	A-2030 Mat Control Wiring Diagram - Handed	Keane Monroe Corporation P.O. Box 1071 Monroe, North Carolina 28110 Telephone (704) 289-5581	Door Control Products by Keane Monroe Corporation Template Drawing No: WD-4A Date: 12-15-81

Printed in U.S.A.



	Wiring Diagram for Slave Operator	Keane Monroe Corporation P.O. Box 1071 Monroe, North Carolina 28110 Telephone (704) 289-5581	Door Control Products by Keane Monroe Corporation Template Drawing No: WD-5 Date: 12-15-81

Printed in U.S.A.