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08-1100 Doors & Frames O&M

Maintenance
of
Steel Door and Frame
Assemblies



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Maintenance of Steel Door and Frame Assemblies

1 Introduction

This document is intended to serve as a general outline of maintenance activities needed for standard steel doors and frames. Maintenance will be, for the most part, associated with the accessories and hardware attached to the door and frame.

Maintenance of any product is important and necessary to obtain the maximum benefits of product service and longevity. Steel door and frame assemblies are not different. In fact, in some cases where the door and frame assembly is used as a “fire rated” barrier or a “leakage rated” smoke barrier, proper maintenance is crucial. Basic maintenance to ensure the proper functioning of the assembly is imperative and well worth the effort to provide for human life safety.

2 Areas to be inspected

The following items should be periodically checked. The frequency with which these checks are performed must be established at the discretion of the building owner, insurance company, labeling authority (as applicable), and maintenance service. Since doors in different areas of a building access service different traffic, the frequency of periodic inspections would occur respectively.

Hinges

Check all hinges for loose attaching screws, hinge pin wear or other notable defects. Service the hinges or remove defective parts and replace per the manufacturer's recommendations. The door should always swing freely and smoothly without obstruction from the opened to latched (when latching device is used) position.

Locksets, panic devices, fire exit hardware

Check all locksets for loose attaching screws, latch wear or other notable defects. Service the lockset or remove defective parts and replace per the manufacturer's recommendations. The door should always latch freely and smoothly without obstruction. Self latching devices should always function freely and smoothly

as the door swings into the closed position. Additional force should not be needed to achieve latching. Silencers (mutes) should be replaced when latch operation is compromised by wear.

Strike plate

The strike plate should be firmly attached to the frame or inactive leaf of a pair of doors. Check for loose screws and/or other notable defects. Service or remove and replace per the manufacturer's instructions.

Closing devices

Check all closing devices for loose attaching screws, linkage arm and pin wear, **fluid leakage** or other notable defects. Service the device or remove defective parts and replace following the manufacturer's recommendations. The primary and secondary closing speed adjustments should also be set and maintained in accordance with the manufacturer's recommendations. The device should allow the door to operate freely and smoothly throughout its entire swing range and positively latch (if so equipped) or remain in the closed position.

Flush bolts

Check all flush bolts for loose attaching screws, rod bolt adjustment and strike plate (on both door and frame if so equipped) attachment. Service the devices or remove defective parts and replace following the manufacturer's recommendations. The rod bolts should retract, extend and engage the strike or keeper hole freely and smoothly for both manual and/or automatic flush bolts.

Glass lights

The glazing material should be checked for cracks and/or missing pieces of glazing. The glazing mounting frame should be checked to assure all attaching screws (if used) are tight and the unit is securely attached to the door. Service the glass light or remove defective parts and replace by following the manufacturer's recommendations. Also be sure to use approved safety

glass in appropriate applications/locations, **or fire rated glass and glazing in fire doors, windows or lights.**

Door and frame finish

A general visual inspection of the door and frame finish should be periodically conducted. Any excessive finish defects should be repaired and repainted. Adequate protection is needed to help prevent the product from rusting prematurely and shortening its service life. Certification labels present shall not be painted over during any repainting.

Fire Door/Smoke Door Assemblies

Fire rated and/or smoke control assemblies are specified and installed to meet “safety to life code requirements.” It is imperative that these assemblies receive regularly scheduled maintenance checks for all of the above items. Additionally, for the assembly to serve its purpose of stopping fire and/or smoke propagation it must function freely with the ability to positively latch in the closed position. Therefore, propping or block-

ing these doors in an open position is in violation of intended use and purpose as established in building codes. These doors must not be obstructed in any fashion preventing them from functioning as intended.

Gasketing/weatherstripping

A visual and operational inspection is periodically necessary for gasketed or weatherstripped areas such as perimeter seals, threshold seals, door bottoms, silencers, mutes, etc. Inspect for signs of deterioration such as splitting, cracking or deforming of flexible components. Install replacement components as needed.

To inspect operational integrity, position gasketing to create proper contact along the door's entire perimeter. The test for proper contact is usually done with common paper. The paper should be firmly held in place by inserting it between the door and gasket and then closing the door. If the paper is not firmly held in place, the seal is inadequate. The paper test should be conducted along the entire perimeter.

Related Documents:

- NFPA 80 Standard for Fire Doors and Other Opening Protectives, Chapter 5
- NFPA 105 Standard for Smoke Door Assemblies and Other Protective Openings
- SDI-122 Installation and Troubleshooting Guide for Standard Steel Doors and Frames

AVAILABLE PUBLICATIONS

Specifications

- ANSI/SDI A250.6** Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames
- ANSI/SDI A250.8** Specifications for Standard Steel Doors and Frames (SDI-100)
- ANSI/SDI A250.14** Hardware Preparation in Steel Doors and Steel Frames
- SDI-108** Recommended Selection & Usage Guide for Standard Steel Doors
- SDI-118** Basic Fire Door, Fire Door Frame, Transom/Sidelight Frame, and Window Frame Requirements
- SDI-128** Guidelines for Acoustical Performance of Standard Steel Doors and Frames
- SDI-129** Hinge and Strike Spacing
- SDI-133** Guideline for Specifying Steel Doors & Frames for Blast Resistance
- SDI-136** Guideline for Specifying Windstorm Products

Test Procedures

- ANSI/SDI A250.3** Test Procedure & Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames
- ANSI/SDI A250.4** Test Procedure & Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors
- ANSI/SDI A250.10** Test Procedure & Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames
- ANSI/SDI A250.13** Testing and Rating of Severe Windstorm Resistant Components for Swinging Door Assemblies for Protection of Building Envelopes (Not applicable for FEMA 320/361 or ICC-500 Shelters)
- SDI-113** Standard Practice for Determining the Steady-State Thermal Transmittance of Steel Door and Frame Assemblies
- SDI-131** Accelerated Physical Endurance Test Procedure for Steel Doors

Construction Details

- ANSI/SDI A250.11** Recommended Erection Instructions for Steel Frames
- SDI-110** Standard Steel Doors & Frames for Modular Masonry Construction
- SDI-111** Recommended Details for Standard Steel Doors, Frames, Accessories and Related Components
- SDI-122** Installation Troubleshooting Guide for Standard Steel Doors & Frames

Miscellaneous Documents

- SDI-112** Zinc-Coated (Galvanized/Galvannealed) Standard Steel Doors and Frames
- SDI-117** Manufacturing Tolerances for Standard Steel Doors and Frames
- SDI-124** Maintenance of Standard Steel Doors & Frames
- SDI-127** Industry Alert Series (A-L)
- SDI-134** Glossary of Terms for Hollow Metal Doors and Frames
- SDI-135** Guidelines to Measure for Replacement Doors in Existing Frame Openings



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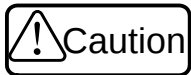
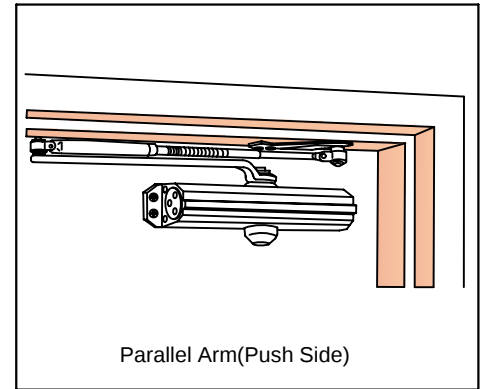
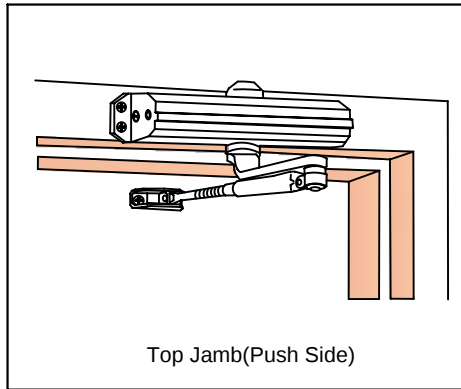
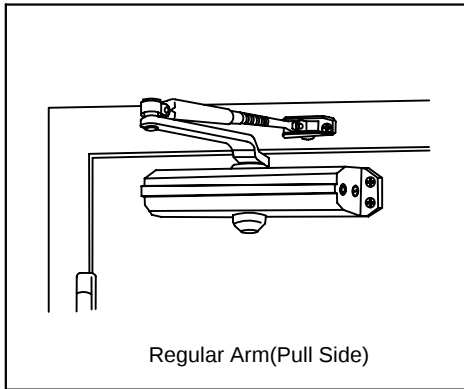
STILES

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DC914 SERIES DOOR CLOSERS

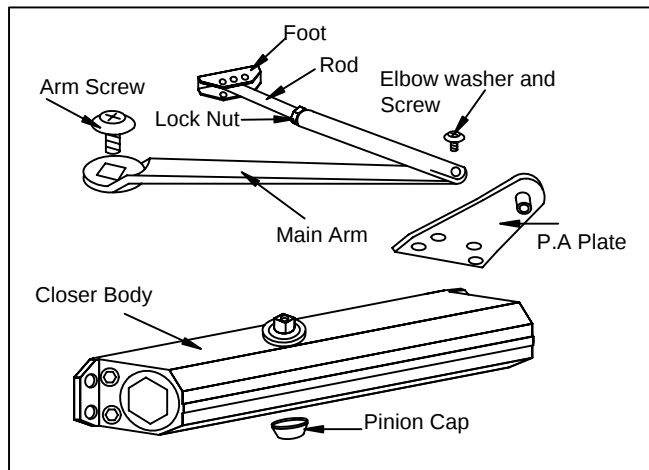
INSTALLATION INSTRUCTIONS

Installation Selection



PLEASE READ THIS INSTRUCTION CAREFULLY BEFORE INSTALLATION; WE **WON'T BE RESPONSIBLE FOR ANY RESULTS WHICH ARE CAUSED BY IMPROPER INSTALLATION.**

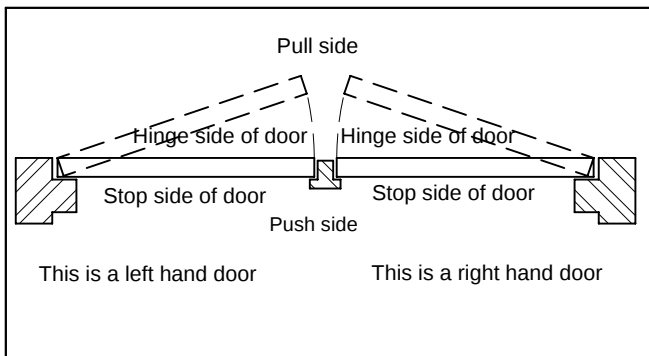
SPARE PARTS OF CLOSERS



POWER SIZE 1 TO 4 SETTING AND DOOR WIDTH

Regular & Top Jamb Closers						Parallel Arm Closers	
Maximum Size of Door							
Closer Size	Interior	Exterior Inswing	Exterior Outswing	Closer Size	Interior	Exterior Outswing	Full 360° Turns
1	28"			1			-4 Turns C.C.W
2	36"			2	30"		0 Turn
3	42"	30"	36"	3	36"	30"	4 Turns C.W
4	48"	36"	42"	4	42"	36"	12 Turns C.W

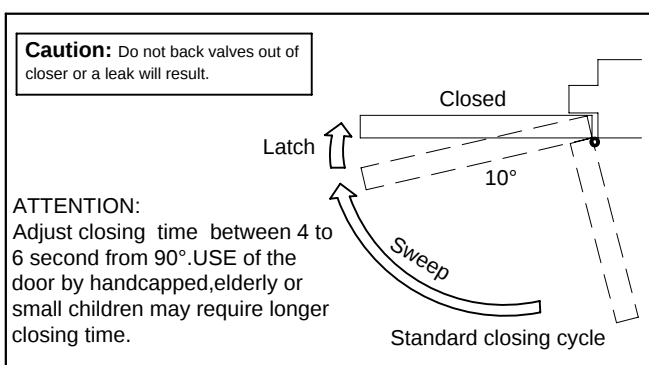
HOW TO TELL HAND OF DOOR.



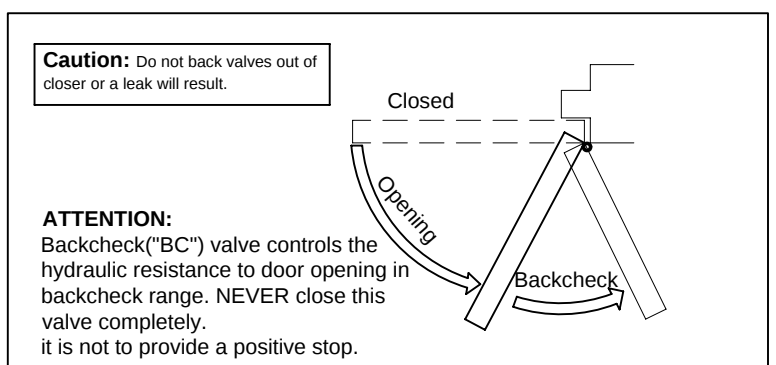
POWER SIZE 2 TO 5 SETTING AND DOOR WIDTH

Regular & Top Jamb Closers						Parallel Arm Closers	
Maximum Size of Door							
Closer Size	Interior	Exterior Inswing	Exterior Outswing	Closer Size	Interior	Exterior Outswing	Full 360° Turns
2	36"			2	30"		-4 Turns C.C.W
3	42"	30"	36"	3	36"	30"	0 Turn
4	48"	36"	42"	4	42"	36"	4 Turns C.W
5	54"	42"	48"	5	48"	42"	12 Turns C.W

DOOR CLOSING CONTROL

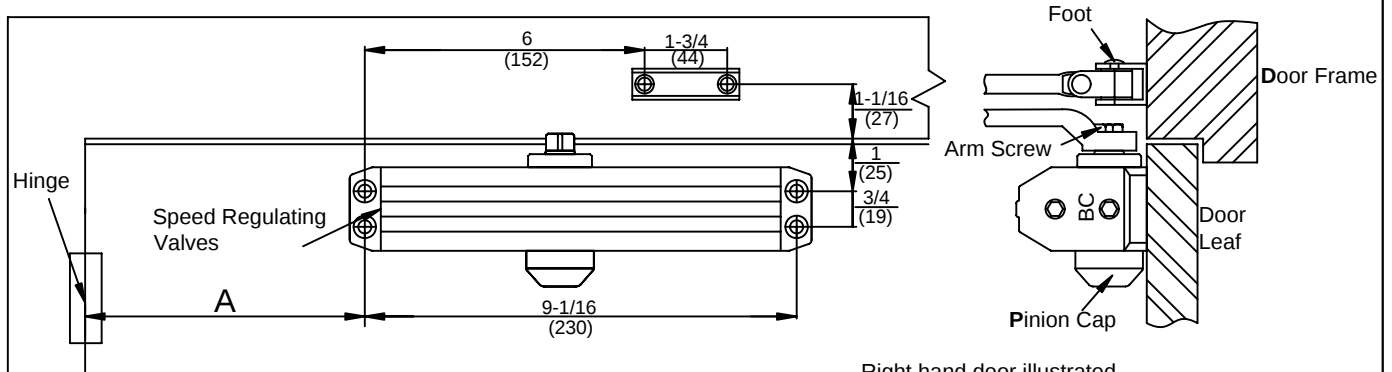


DOOR OPENING CONTROL



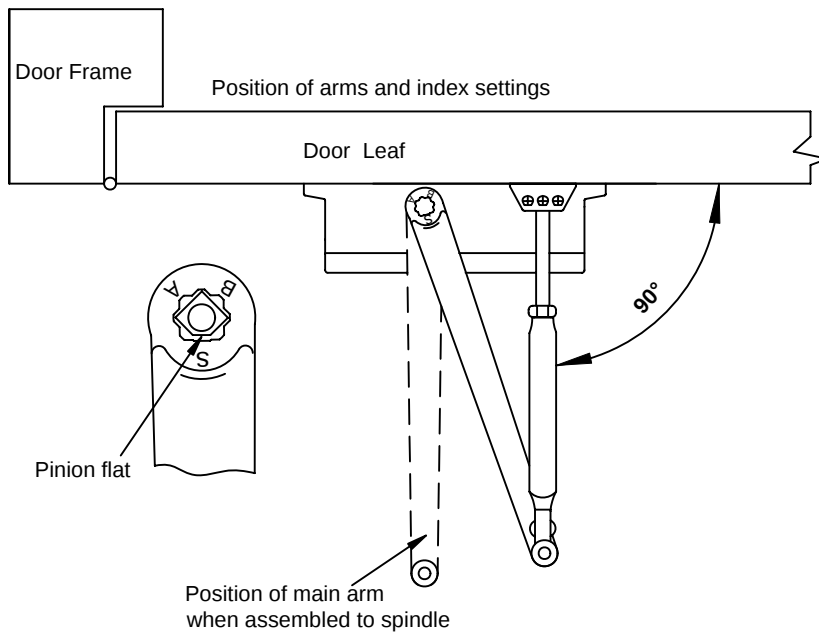
REGULAR ARM(PULL SIDE)

TECHNICAL DIMENSIONS



Dimension Model No.:	Dimension "A"		Opening Angle
	Inch	mm	
900 Series	6	152	120°
	3-1/2	89	180°

Right hand door illustrated same dimensions apply to left hand door. Measured from hinge Center. Dimensions are in inches (mm) Not To Scale

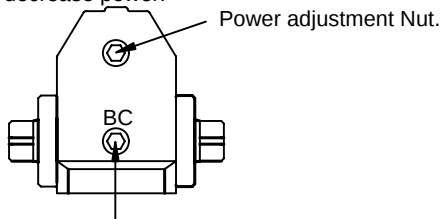


INSTALLATION STEPS:

1. Select opening degree of the door. USE Dimensions as shown to drill mounting holes on door leaf and frame.
2. Assemble main arm to closer pinion spindle.
3. Attach the closer body to door leaf with speed regulating valves toward hinge.
4. Attach the foot and rod to the door frame.
5. Adjust length of the forearm to position forearm at right angle to the door leaf when connected to main arm at elbow. USE Washer and screw provided to secure pivot connection. Tighten locknut on forearm.
6. Snap pinion cap over spindle at bottom of closer.
7. Adjust closer.

POWER SIZE AND BACK CHECK ADJUSTMENT

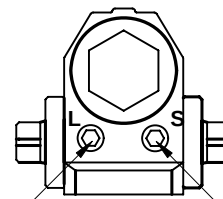
Adjust the spring power as per chart on page 1. DO NOT exceed the maximum turns. The spring power has been preset on size 2 in factory. Turn this screw clockwise to increase or counter clockwise to decrease power.



Turn BC regulating valve clockwise to strengthen or counter clockwise to reduce the intensity. NEVER close this valve completely.

SWEEP AND LATCHING SPEED ADJUSTMENT

Turn speed regulating valve colockwise to slow down or counter clockwise to speed up door movement.



This vavle controls latching speed

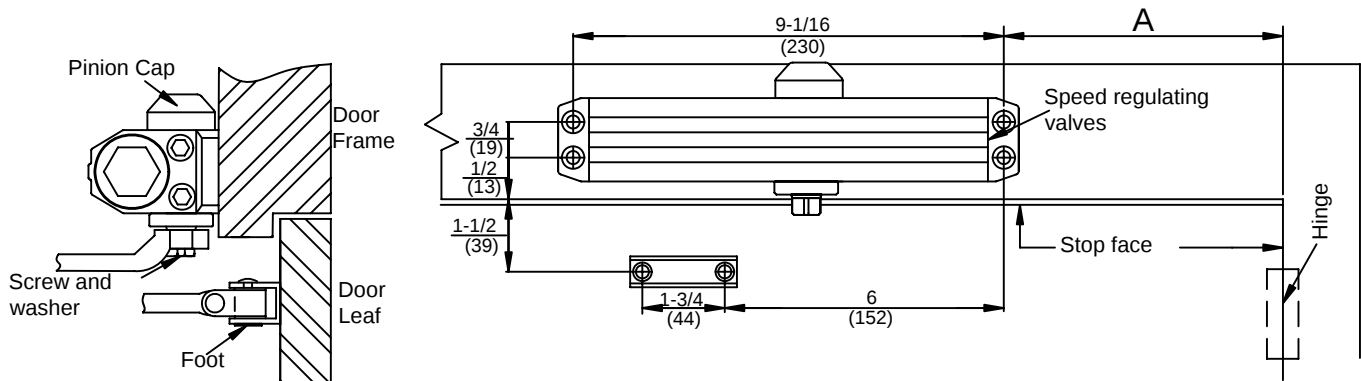
This vavle controls sweep speed



IMPROPER INSTALLATION MAY RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE. FOLLOW ALL INSTRUCTIONS CAREFULLY PLEASE.

TOP JAMB MOUNTING (PUSH SIDE)

TECHNICAL DIMENSIONS:



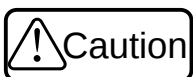
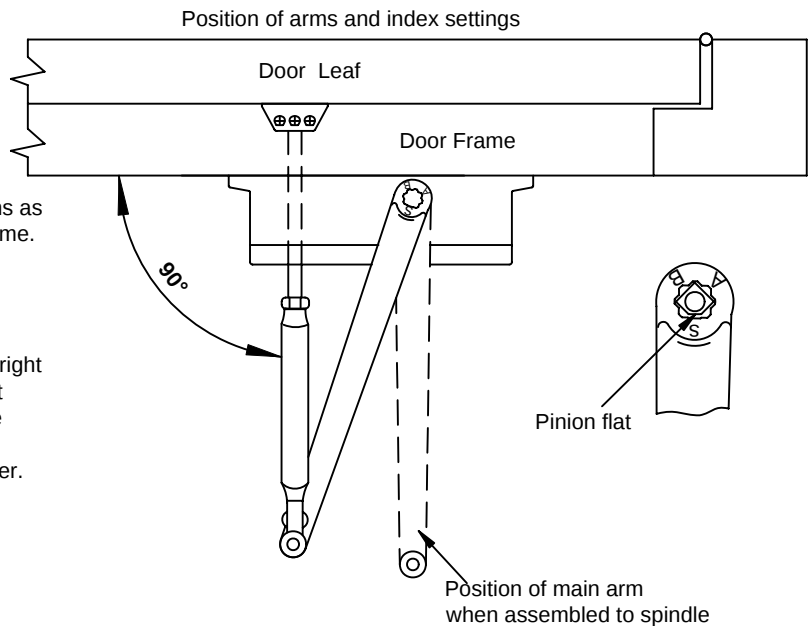
Dimension Model No.:	Dimension "A"		Opening Angle
	Inch	mm	
900 Series	6	152	120°
	3-1/2	89	180°

Right hand door illustrated
same dimensions apply to
left hand door.
Measured from hinge Center.

Dimensions are in inches
(mm)
Not To Scale

INSTALLATION STEPS:

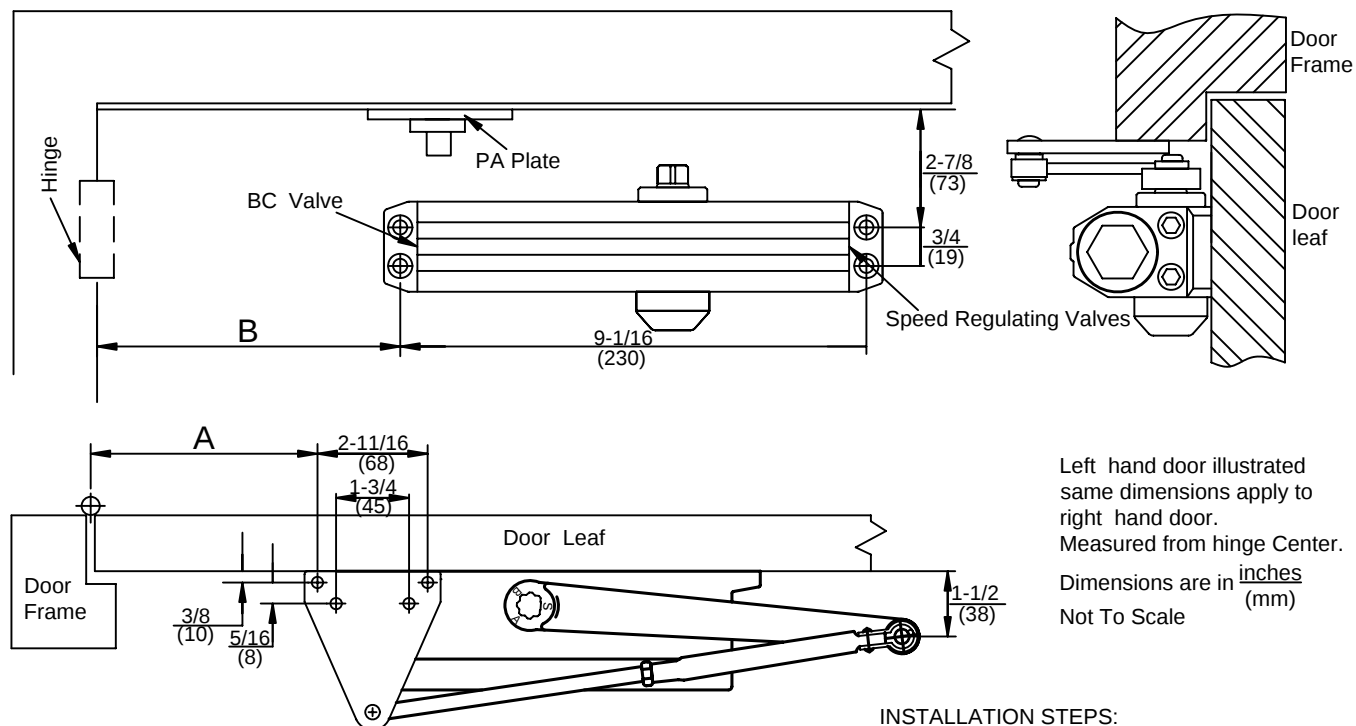
1. Select opening degree of the door. USE Dimensions as shown to drill mounting holes on door leaf and frame.
2. Assemble main arm to the closer spindle.
3. Attach the closer body to door frame with speed regulating valves toward the hinge.
4. Attach the foot and rod on the door leaf.
5. Adjust length of the forearm to position forearm at right angle to the frame when connected to main arm at elbow. USE Washer and screw provided to secure pivot connection. Tighten locknut on forearm.
6. Snap pinion cap over spindle at bottom of the closer.
7. Adjust closer. (Same to Page 2)



IMPROPER INSTALLATION MAY RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.
FOLLOW ALL INSTRUCTIONS CAREFULLY PLEASE.

PARALLEL ARM MOUNTING (PUSH SIDE)

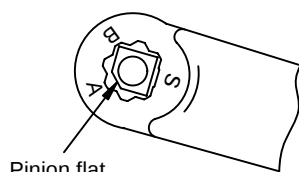
TECHNICAL DIMENSIONS:



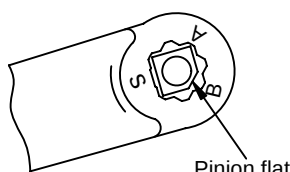
INSTALLATION STEPS:

1. Select opening angle of the door. USE dimensions shown in chart and illustration above to drill mounting holes on door frame and leaf.
2. Attach closer to door leaf with speed regulating valves away from hinge.
3. Attach PA plate to top frame as shown.
4. Remove foot from forearm as shown and discard it.
5. Install main arm on pinion shaft, Rotate pinion 45° toward hinge edge of door to align main arm letter "B" (Right hand door) or "A" (Left hand door) with pinion flat. Fasten with arm screw.
6. Fasten forearm to PA plate.
7. Adjust forearm length to set the arm elbow about 1-1/2" (38mm) from door when connected to main arm. USE washer and screw provided to secure pivot connection. Tighten locknut.
8. Snap pinion cap over spindle at bottom.
9. Adjust closer. (Same to Page 2)

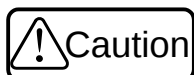
Dimension: Model No.:	Dimension "A"		Dimension "B"		Opening Angle
	Inch	mm	Inch	mm	
900 Series	7-3/4	197	6-1/8	156	130°
	5-3/4	146	4-1/8	105	180°



Pinion flat
For left hand door



Pinion flat
For right hand door



IMPROPER INSTALLATION MAY RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE. FOLLOW ALL INSTRUCTIONS CAREFULLY PLEASE.



L100 SERIES GRADE 2 LEVER LOCKS

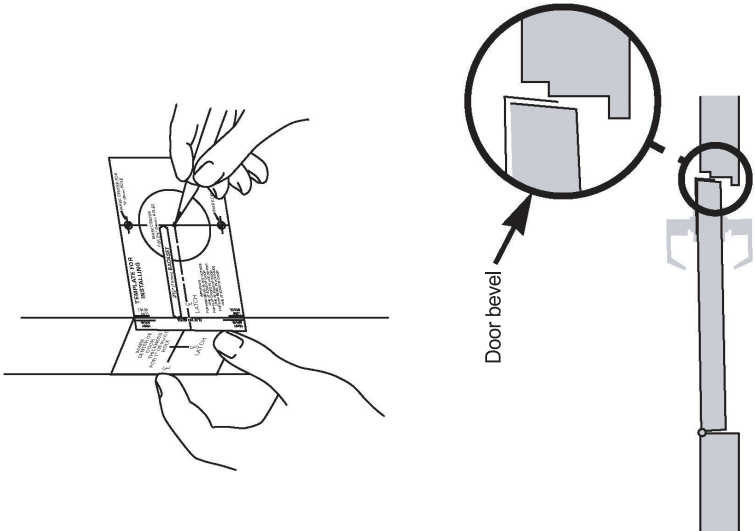
Instructions For Installing Cylindrical Leverset

Removable Through-Bolts are provided and recommended for use on high traffic doors.

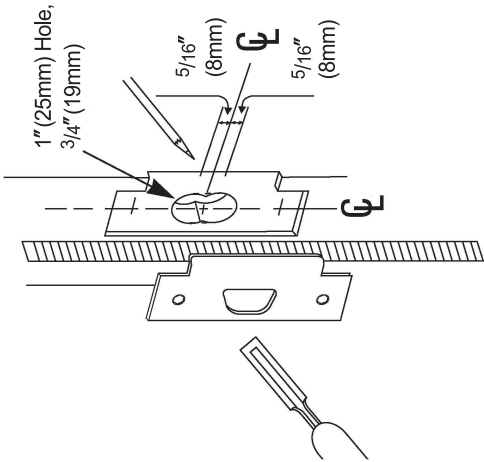
NOTE : Accurate door preparation is essential for proper functioning of this lock. Follow template and instructions carefully.

The anti - sagging mechanism of handle in cylindrical leverset has a patent pending in the U.S. and foreign countries.

Door and jamb preparation

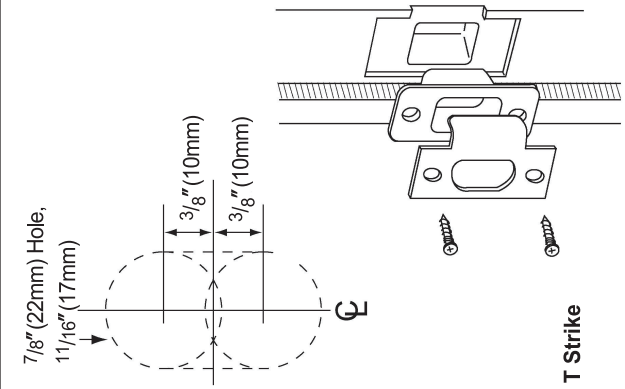


4. Install strike



ASA Strike - Standard

- A. Mark vertical line and heightline on jamb exactly opposite center of latch hole.
- B. Drill (2) 1" (25mm) holes, 3/4" (19mm) deep, 5/16" (8mm) above and below heightline.
- C. Use strike plate to pattern for cutout. Clean out hole and install strike.



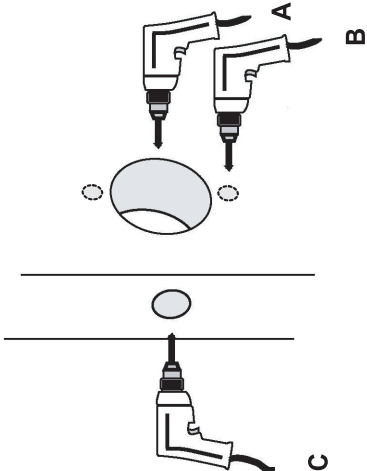
T Strike

- A. Mark vertical line and heightline on jamb exactly opposite center of latch hole.
- B. Drill (2) 7/8" (22mm) holes, 1 1/16" (17mm) deep, into doorjamb as shown.
- C. Mortise a cutout for the strike. Use strike as a pattern for the mortise.
(Strike should fit flush with the doorjamb.)

1. Mark door

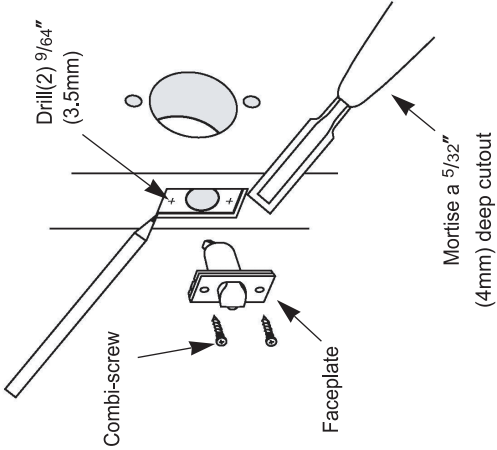
- A. Check lock for proper backset before marking.
NOTE :Through- Bolts are provided and recommended for use on high frequency doors.
- B. Detach stub.
- C. Fold template at correct marking for door bevel (high or low bevel, or flat).
- D. Position template at correct height (recommended height for centerline is 38" (97cm) from floor).
- E. Mark center for 2 1/8" (54mm) hole.
- F. Also mark for (2) 5/16" (8mm) holes for through-bolt type.
NOTE :Do not mark (2) 5/16" holes for locks No through-bolt type.
- G. Use stub to mark center of door thickness.
HINT :For retrofitting existing lock holes, fold template in half to position for the mounting screw.

2. Drill holes



- A. Drill a 2 1/8" (54mm) hole through door (from both sides to avoid damaging door).
- B. Drill (2) 5/16" (8mm) holes for through-bolt
NOTE :Do not drill the (2) 5/16" (8mm) holes for locks No through - bolt type
- C. Drill a 1" (25mm) or 7/8" (22mm) (depending on latch housing diameter) in door edge.

3. Install latch

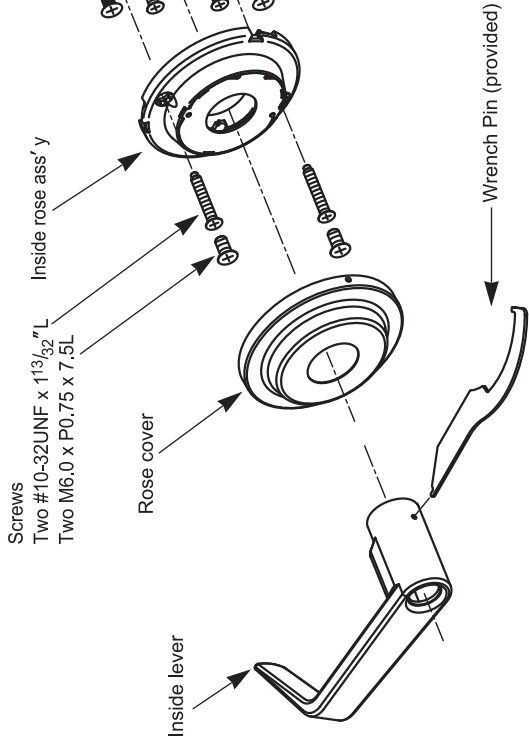


- A. Insert latch into hole.Trace around faceplate
- B. Chisel out wood until faceplate fits flat with door edge.
- C. Drill (2) 9/64" (3.5mm) holes and secure latch unit with combi-screws supplied.
- D. Fasten latch to door so that beveled side of latchbolt faces jamb.

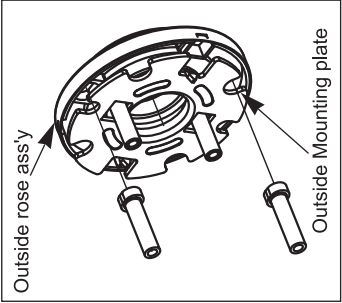
5. Disassemble inside trim

Lock Installation

Must use "M6.0 x P0.75 x 7.5L" If thru bolts is not installed.
Must use " #10-32UNF x 1 13/32" L" (packed with removable thru bolt) in installing thru bolt.



- A. Disassemble inside lever.
- B. Twist inside rose cover to remove.
- C. Disassemble inside rose assembly.



THROUGH - BOLT

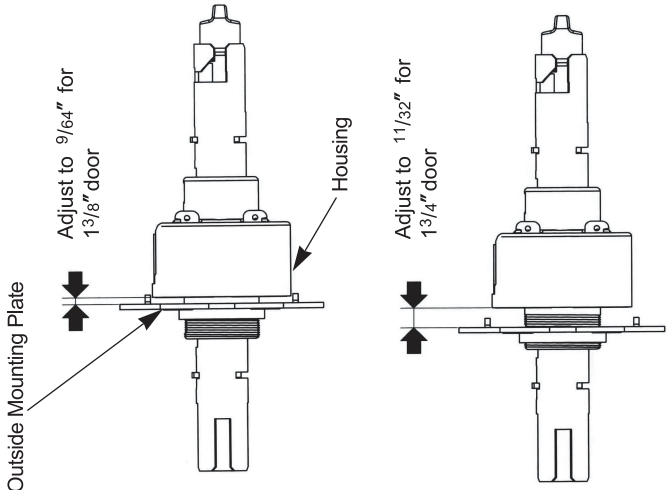
MAKE SURE INSTALL THRU BOLTS BEFORE LOCK INSTALLATION

Through- Bolts are provided and recommended for use on high traffic doors.
See Step2.

- D. Disassemble inside mounting plate.
- E. Insert the removable thrubolts(provided) into the outside rose ass'y.

6. Adjust for door thickness

LOCKSET IS FACTORY PRESET FOR 1 3/4" (45mm) DOORS.
See step 6. to center chassis in door or to change adjustment of other door thicknesses



ADJUSTMENT FOR DOOR THICKNESS

It can be adjusted for door thickness range from 1 3/8" up to 2"
For adjustment of door thickness, follow step 11, then :

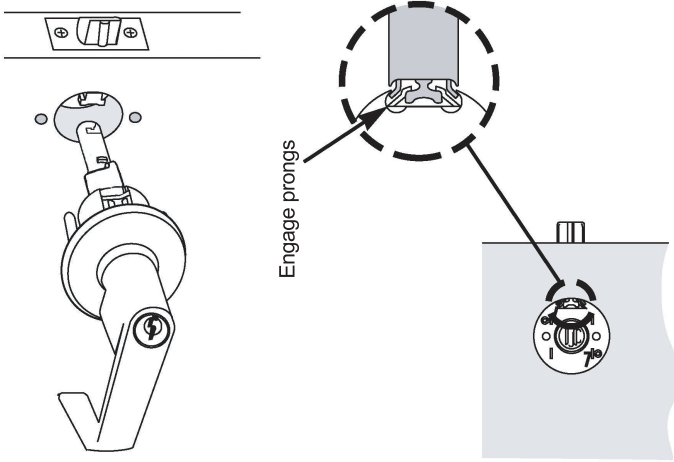
A. Adjust outside mounting plate for proper door thickness. At final position, the screw post hole must be in line with holes in lockbody.

B. Slide outside rose ass'y with rose cover onto spindle with the wider notch at inside diameter in line with lever catch.

The screw posts will enter the holes pre-aligned between outside mounting plate and lockbody.

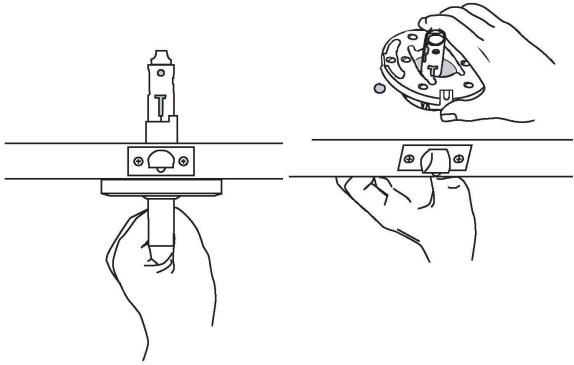
NOTE: See Step 11, must be done if you have to make adjustments for door thickness

7. Install outside lock unit



IMPORTANT : Place outside lock unit into position. Make sure that latch prongs engage chassis housing, and retractor engages latch bar

8. Install mounting plate.



CAUTION : When using power screwdriver for installation, set to minimum torque setting.

Drill (4) 9/64" (3.5)mm holes

Two #10-32UNF x 1 13/32"L screws

Combi Screws

NOTE 1 : Two #10-32UNF x 1 13/32"L

NOTE 2 : Two M6.0 x P0.75 x 7.5L screws

A. Hold outside unit in place.

B. Put mounting plate into position on chassis.

C. Place mounting plate. Tighten it to lock body with two #10 - 32UNF x 1 13/32"L screws.

D. Drill (4) 9/64" (3.5mm) holes and secure the mounting plate with four combi-screws supplied.

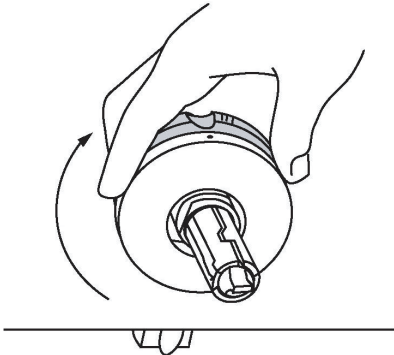
(THIS MUST BE DONE TO FIRMLY ANCHOR LOCK TO DOOR-ESPECIALLY WHEN THRU-BOLTS ARE NOT USED)

E. Place inside rose ass'y. Tighten it to lock body with screws supplied.

NOTE 1 : Two #10 - 32UNF x 1 13/32"L (★) screws can be used for outside through - bolt type only.

NOTE 2 : Two M6.0 x P0.75 x 7.5L screws can be used for no through - bolt type only.

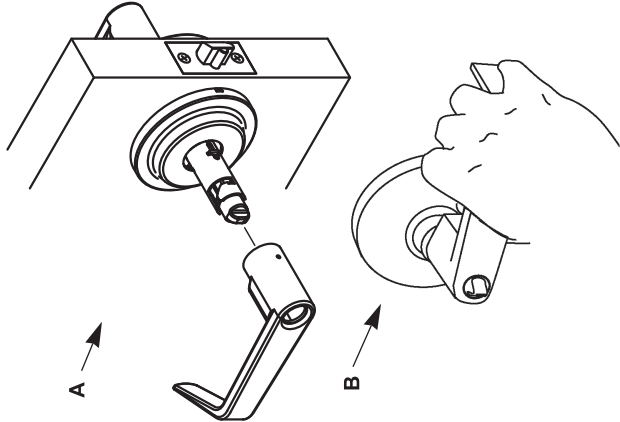
9. Install inside rose assembly



A. Align dimples on rose with grooves in inside rose assembly.

B. Place rose against door and rotate clockwise until dimples snap into slots next to the grooves.

10. Install inside lever



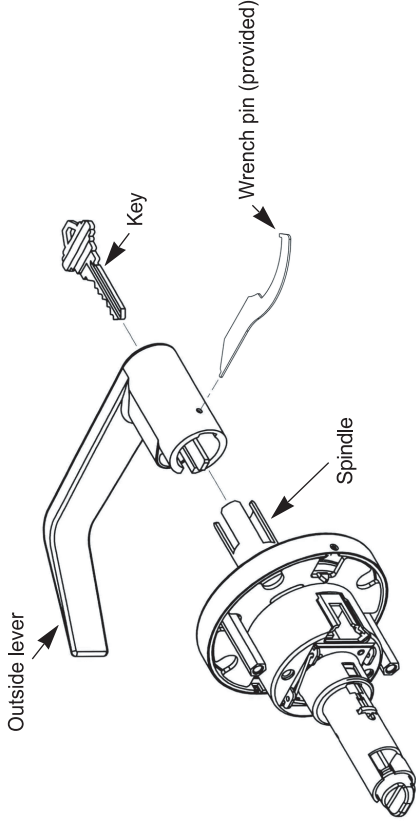
A. Slide inside lever onto spindle.
Push lever completely into place. (Pull on lever to make sure that catch is fully engaged.)

B. Test operation of lock to make sure you have followed instructions correctly.

How to remove & reassemble outside lever

11. Remove outside lever

NOTE: Required if you re-key the lock or adjust the door thickness (See Step 6)



A. Insert key into cylinder. Insert wrench pin(provided) into hole in lever. Turn key one - quarter turn and push pin to depress lever catch. Slide the lever from spindle.

12. Reassemble outside lever

Reverse Step 11 to reassemble levers.

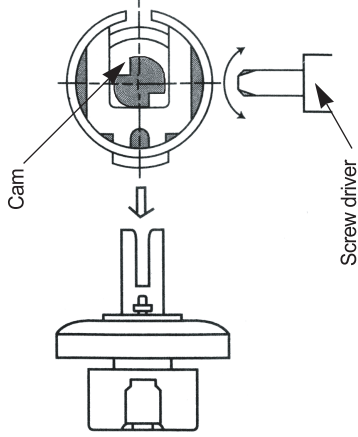
A. To reassemble. Put a cylinder and key in lever.

B. Push cylinder further in until it engages retractor.

C. Turn key 90° clockwise and hold a key.

D. Depress lever catch and push lever (Not key) in until it clicks then release a key.

CAUTION FOR CLASSROOM FUNCTION



(1) Locking: Turn key counter-clockwise. Return to take a key out.

(2) Unlocking: Turn key clockwise. Return to take a key out.

Make sure to turn cam counter clockwise with a screw driver as far as it will go before reassembling of cylinder to prevent mis-positioning of cam for classroom function.