**Installation Instructions**

**Regular Arm Installation**
Closer on door on hinge (pull) side of door  
See Page 2

**Top Jamb Installation**
Closer on frame on opposite to hinge (push) side of door  
See Page 3

**Parallel Arm Installation**
Closer on door on opposite to hinge (push) side of door  
See Page 4

NOTE: For special applications a separate door and frame preparation template is packed with these instructions

Use this instruction sheet for installation sequence and closer adjustments only

- It is recommended that the door on which the door closer will be installed be hung on ball bearing hinges. Door must swing freely
- A separate door stop, supplied by others, is recommended to prevent damage to the door closer, closer arm, or to the door, frame or adjacent walls.
- Door and Frame must be properly reinforced, or use of special fasteners employed, to prevent the mounting screws from pulling out.
- All dimensions are given in inches with corresponding metric dimensions (mm) in parenthesis.

**Components:**

- Spring Power Adjustment Screw  
  (1/8 Hex Drive)  
  1681 Only
- "BC" Valve
- Pinion Cap
- Closer Size Stamp
- Connecting Rod
- Regular Arm/Top Jamb Shoe
- Main Arm
- Main Arm Screw
- Optional Cover 1600P
- Forearm Screw
- 1618A Soffit Plate
  Used with Parallel Arm Closers Only
- Connecting Rod
- Arm Slide
- 1680 Series Sized Closers
- 1681 Series Multi-Sized Closers
- Non Hold Open Models
- Sizes (Sizes 3 & 4)
  1683BC 1684BC
- Multi-Sized (Sizes 1 thru 6)
  1681
**Regular Arm Installation**

**Installation Sequence**

- Select door opening angle using template above. Mark 4 holes on door for closer and 2 holes on frame for arm shoe.
- Prepare door and frame for fasteners See “Preparation for Fasteners” below.
- 1681 Models Only. Set approximate closing power using “Power Adjustment Chart” below right. Closer power is set at mid range from factory.
- Install closer with “S” and “L” adjustment valves toward hinge edge of door. If using optional cover see “Cover” instructions.
- Mount arm shoe to frame face.
- Install main arm onto closer pinion shaft, indexing main arm mark “S” with pinion flat as shown at right. Fasten with arm screw.

**Preparation for Fasteners**

<table>
<thead>
<tr>
<th>Fasteners</th>
<th>Door or Frame</th>
<th>Drill-Sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Drilling Screw</td>
<td>Aluminum or Metal</td>
<td>No drill required</td>
</tr>
<tr>
<td></td>
<td>Wood</td>
<td>3/16” (4.30 mm) Pilot hole required</td>
</tr>
<tr>
<td>1/4” - 20 machine screw</td>
<td>Metal</td>
<td>Drill: #7 (0.201” dia.) Tap: 1/4” - 20</td>
</tr>
<tr>
<td>Sleeve nuts and bolts</td>
<td>Metal</td>
<td>9/32” (7 mm) through; 3/8” (9.5 mm) door face opposite to closer</td>
</tr>
<tr>
<td></td>
<td>Aluminum or Wood</td>
<td>3/8” (9.5 mm) through</td>
</tr>
<tr>
<td>Through-bolts and grommet-nuts</td>
<td>All</td>
<td>9/32” (7 mm); 3/8” (9.5 mm) dia. x 3/8” (9.5 mm) deep on door opposite to closer</td>
</tr>
</tbody>
</table>

**Door Closer Adjustment**

**Adjustment Chart**

<table>
<thead>
<tr>
<th>Adjustment</th>
<th>Number of Turns Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1681</td>
<td></td>
</tr>
<tr>
<td>EXTERIOR</td>
<td>Regular Arm Top Jamb</td>
</tr>
<tr>
<td></td>
<td>Regular Arm Top Jamb</td>
</tr>
<tr>
<td></td>
<td>Parallel Arm</td>
</tr>
<tr>
<td></td>
<td>FULL 360° TURNS OF ADJUSTMENT WRENCH</td>
</tr>
<tr>
<td>INTERIOR</td>
<td>Regular Arm Top Jamb</td>
</tr>
<tr>
<td></td>
<td>Parallel Arm</td>
</tr>
</tbody>
</table>

*30 FULL (360°) TURNS MAXIMUM AVAILABLE = 8 Turns As Shipped

**Side Elevation**

- Do not scale drawing.
- Right hand door shown.
- Dimensions are in inches (mm).

**Typical Installation**

- Open door to allow connecting rod to be inserted into arm slide. Insert rod and close door. Preload main arm by rotating away from hinge until forearm is perpendicular (90° angle) to door. Secure with forearm screw.
- Screw pinion cap onto pinion shaft by hand or with a Phillips screw driver - DO NOT OVERTIGHTEN. Skip this step if optional cover is used.
- Adjust closer.
**Top Jamb Installation Using 1687 Dropplate**

**Installation Sequence**

- Select door opening angle using template above. Mark 4 holes on frame face for Drop Plate and 2 holes on door for arm shoe.
- Prepare door and frame for fasteners. See “Preparation for Fasteners” at bottom of Page 2.
- 1681 Models Only. Set approximate closing power using “Power Adjustment Chart” at bottom of Page 2.
- Mount Drop Plate to frame.
- Install closer to Drop Plate with “S” and “L” adjustment valves toward hinge edge of door. If optional cover is used see “Cover” instructions.
- Mount arm shoe to door.
- Install main arm onto closer pinion shaft, indexing main arm mark “S” with pinion flat as shown at right. Fasten with arm screw.
- Open door to allow connecting rod to be inserted into arm slide. Insert rod and close door. Preload main arm by rotating away from hinge until forearm is perpendicular (at 90° angle) to door. Secure with forearm screw.

**Door Closer Adjustment (Continued)**

“DA” suffix (Delayed Action) is an optional feature. A separate instruction will be packed with these instructions showing valve locations and adjustment procedures.

**Closing Speed Control**

- **CAUTION:** DO NOT BACK VALVES OUT OF CLOSER OR A LEAK WILL RESULT

Attention: Adjust Closing Speed Time to between 4 to 7 seconds from 90°. Use of the door by handicapped, elderly or small children may require greater closing time.

**Unit Adjustment**

- Valve “S” controls sweep range.
- Valve “L” controls latch range.

**Opening Door Control**

- **CAUTION:** DO NOT BACK VALVES OUT OF CLOSER OR A LEAK WILL RESULT

- Backcheck (“BC”) valve controls the hydraulic resistance to door opening in backcheck range. NEVER close this valve completely – it is not to provide a positive stop.
Installation Sequence

- Select door opening angle using template above. Mark 4 holes on door for closer or 1688 Drop Plate and 4 holes on frame for soffit plate.
- Prepare door and frame for fasteners. See “Preparation for Fasteners” bottom of Page 2.
- **1681 Models Only.** Set closing power using “Power Adjustment Chart” at bottom of Page 2.
- **Mount 1688 Drop Plate … only if required.**
- Install closer with “S” and “L” adjustment valves toward lock edge of door. If optional cover is used see “Cover” instructions.
- Mount soffit plate to frame.
- Install main arm onto closer pinion shaft. Rotate pinion 45° toward hinge edge of door to align main arm letter “3” (right hand) or “2” (left hand) with pinion flat. Fasten with arm screw.
- Fasten forearm to soffit plate. Adjust forearm length to set arm elbow about 1-1/2” (38mm) from door when connected to main arm. Tighten forearm screw.
- Screw pinion cap onto pinion shaft by hand or with a Phillips screw driver - DO NOT OVER TIGHTEN. Skip this step if optional cover is used.
- Adjust closer. See Closer Adjustments on Pages 2 and 3.

**Cover**

Thread in screws before mounting closer. Leave enough gap between the head of the screw and the closer to slide the cover on. Slide the cover over the closer and secure the mounting screws after the closer has been mounted and adjusted.

**To identify your model:**

3=1603BC  1-6=1601
4=1604BC