1. **Doors and Locks**
   
   **A. Finish Hardware**
   
   i. The basic finish of hardware shall be US26D satin stainless steel. Interior Hinges and all other hardware as listed in the hardware schedule shall be US26D satin chrome. Door closures shall be sprayed lacquer to match. All other hardware shall be as listed in the hardware schedule.
   
   ii. Interior butts shall be as listed.
   
   **B. Hinges and Pivots**
   
   i. Exterior butts shall be solid stainless steel. Butts on all out swinging exterior doors shall be furnished with non-removable pins (NRP).
   
   ii. Interior butts shall be as listed.
   
   iii. All standard height (6'-8'') doors should have a min. of 3 hinges per leaf. Doors larger/heavier should have a min. of 4 hinges.
   
   iv. Any/All doors requiring elec. power (i.e. card readers, etc.) must be furnished with EPT (electrical power transfer) Mfg. by Von Duprin to transfer elec. from frame to door. -No Exceptions-
   
   **C. Keying**
   
   i. All locks and/or cylinders are to be furnished by Best Access Systems in order to accommodate an I/C (interchangeable) core.
   
   **D. Lock Sets**
   
   i. Shall be Best 9K lever locks (dorm, storeroom, classroom functions) unless otherwise specified.
   
   ii. Acceptable Substitutions-NONE
   
   **E. Exit Devices**
   
   i. All devices shall be Von Duprin 99 series in types and functions specified. All devices must be listed under “Panic Hardware,” have labels attached, and be in strict accordance with Underwriters Laboratories. Pulls and dummy trim shall be as listed in the Hardware Schedule.
   
   ii. All Alum. Exterior entrances should be equipped with either rim panics with Keyed removable mullions or surface vertical rods. This would be applicable to pairs of doors only. No Exceptions unless otherwise warranted/required.
   
   iii. Acceptable Substitutions-NONE
F. Door Closures
   i. All closures shall be LCN 4041 series having nonferrous covers, forged steel arms, separate valves for adjusting back check, closing and latching cycles and adjustable spring power to provide a full range of sizes 2-6. Closures shall be furnished extra-duty parallel arms (EDA) mounted on all doors opening into corridors or other public spaces and shall be mounted to permit 180 degrees door swing wherever wall conditions permit. Furnish with non-hold open arms unless otherwise indicated.
      a. Acceptable substitutions-NONE
   ii. All auto equalizer closers shall not prevent the door from being used in an Emergency condition.

G. Trim and Plates
   i. Kick plates, mop plates, and armor plates, shall be .050 gauge with US32D Satin stainless steel finish. Unless shown in the hardware schedule otherwise, kick plates shall be 8” high, mop plates shall be 4” high, and armor plates shall be 38” high. Kick and armor plates shall be 2” less full width of door. Mop plates shall be 1” less full width of door.
   ii. Push plates, pull plates, door pulls and miscellaneous door trim shall be shown in the hardware schedule.

H. Door Stops
   i. Door stops shall be furnished for all doors to prevent damage to doors or Hardware from striking adjacent walls or fixtures. Wall bumpers equal to Rockwood 409 or 411 series are preferred, but where not practical furnish floor stops to Rockwood 440/442 series. Where conditions prohibit the use of either wall or floor-type doorstops, furnish surface mounted overhead stops equal to Glynn-Johnson GJ560 series.

I. Threshold and Weather strip
   i. Thresholds and weather strip shall be as listed in the hardware schedule.

J. Door Silencers
   i. Furnish rubber door silencers equal to Ives 20 for all new interior hollow Metal frames, 2 per pair and 3 per single doorframe.
K. Installation
   i. Care shall be exercised not to mar or damage adjacent work.
   ii. Provide secure lockup for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items which are not immediately replaceable, so that the completion of the work will not be delayed by hardware losses both before and after installation.
   iii. See Card Access System listed in Electrical Section F.
   iv. See Adjusting and Cleaning listed in the General Requirements Section J. Contractor shall adjust all hardware in strict compliance with manufacturer’s instructions. Prior to turning project to owner, contractor shall clean and make any final adjustments to the finish hardware.

L. Fail Safe Door Hardware
   i. All card access doors are to be “fail safe” unless otherwise specified by the college.

M. Access Panels
   i. All access panel doors shall be equipped to accept an I/C (interchangeable) core pinned to the college key system.
GENERAL NOTES:

1. Fabrication of required material for this project will proceed only after receipt signed approval by the architect. Also a signed and approved copy of the finish hardware schedule and all necessary templates will be required.

2. a) Doors and frames shall be properly reinforced, drilled and tapped for mortised hardware in accordance with the finish hardware schedule. Function holes shall be provided at the factory for locksets and exit devices. Trim mounting holes for hardware are to be drilled and tapped when required in the field by others.
   b) All doors and frames shall be properly reinforced for surface mounted hardware in accordance with the finish hardware schedule. Drilling and tapping for attaching of surface mounted Hardware shall be done in the field by others.

3. Doors and frames shall be thoroughly cleaned, phosphatized and receive one coat of baked on prime coat.

4. a) All frames shall be supplied with jamb anchors per sheet
   b) All frames shall be supplied with base anchors per sheet

5. All frames shall be supplied with three rubber silencers per strike jamb for single openings and two per head for double openings.

6. All glass and caulking shall be supplied and installed in the field by others.

7. All finish hardware shall be supplied by

8. All doors and frames shall be marked with

9. The hardware column on the door and frame schedule sheets is for manufacturing purposes. The headings are designated after receipt of the approved hardware schedule furnished by the hardware supplier.

10. The hardware locations indicated on the door and/or frame elevation sheets are Ceco standard locations for the majority of builder's hardware. Special type hardware such as deadlocks, exit devices, etc., will also be located in accordance with Ceco's standard locations for that specific hardware item and not at locations per the paper hardware templates received unless it is specifically advised by the Architect.

11. When hollow metal is used in conjunction with aluminum, plastic laminate, structural steel and/or wood products, it will be the responsibility of the general contractor to coordinate all hardware locations.
GENERAL NOTES CONTINUED:

12. EXTERIOR HOLLOW METAL FRAMES SHALL BE:
   A. 16 GAUGE GALVANIZED STEEL (A60)
   B. SET UP, ARCWELDED, GROUND SMOOTH, AND PRIME PAINTED

13. INTERIOR HOLLOW METAL FRAMES SHALL BE:
   A. 16 GAUGE COLD ROLLED STEEL
   B. SET UP, ARCWELDED, GROUND SMOOTH, AND PRIME PAINTED

14. FRAMES WHICH ARE WELDED SHALL BE FURNISHED WITH TEMPORARY SPREADER
    BARS FOR STABILITY DURING SHIPMENT. THESE SHIPPING BARS ARE NOT TO BE
    USED AS SPREADER BARS WHILE SETTING FRAMES. IT IS THE RESPONSIBILITY OF
    THE INSTALLER TO PROVIDE SPREADER BARS FOR THE PROPER INSTALLATION OF
    FRAMES.

15. EXTERIOR HOLLOW METAL DOORS SHALL BE:
    A. 16 GAUGE GALVANIZED (A60) STEEL
    B. POLYURETHANE CORE (EXCEPT FULL GLASS THRULITE)
    C. UNDERCUT 3/8" 

16. INTERIOR HOLLOW METAL DOORS SHALL BE:
    A. 18 GAUGE COLD ROLLED STEEL
    B. HONEYCOMB CORE
    C. UNDERCUT 3/4"

17. PLEASE VERIFY ALL:
    A. JAMB DEPTHS
    B. ANCHOR DETAILS
    C. SIDELITE AND BORROWED LITE DIMENSIONS
    D. HOLLOW METAL DOOR LITE SIZES AND LOCATIONS
**GENERAL**

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<th>FIRE RATINGS</th>
<th>SF = Standard frame</th>
<th>CF = Custom (conventional) Frame</th>
<th>DS = Drywall Standard Frame</th>
<th>DC = Drywall Conventional Frame</th>
<th>DE = Double Egress Frame</th>
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<tr>
<td>TB</td>
<td>DA = Double Acting</td>
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<td>CM = Communicating</td>
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**SECTION OR DETAIL**

- ABO = ALUMINUM BY OTHERS
- CIBO = CHANNEL IRON BY OTHERS
- CO = CASED OPENING
- DA = DOUBLE ACTING (SINGLE)
- D = DOUBLE (PAIR)
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**PROJECT**
LENHERT BUILDING
CAPITOL DOOR AND HARDWARE COMPANY
774 CORPORATE CIRCLE
NEW CUMBERLAND, PA 17070

**JOB #**
CDH 1090

**DATE**

**DRAWN BY**
C.M.H.

**REVISION**

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**PROJECT**
LENHERT BUILDING

**CAPITAL DOOR AND HARDWARE COMPANY**
774 CORPORATE CIRCLE
NEW CUMBERLAND, PA 17070

**DATE**

**DRAWN BY**
C.M.H.

**REVISION**

**SHEET**
7 OF 27
<table>
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**PROJECT**
LENHER BUILDING

**CAPITOL DOOR AND HARDWARE COMPANY**
774 CORPORATE CIRCLE
NEW CUMBERLAND, PA 17070

**JOB #**
CDH 1090

**DATE**

**DRAWN BY**
C.M.H.

**REVISION**

**SHEET**
8 OF 27
** SERIES SF STEEL FRAMES **

(FIRE DOOR FRAMES MUST COMPLY WITH PROCEDURES OF LABELING AGENCY)

Series SF frames are available as shown for three sided frames or as stick sections for transoms, sidelites, and borrowed lite frames. Furnished with one coat of neutral color primer paint. Primer paint has been tested in conformance with ANSI A224.1–1990.

** CECO DOOR PRODUCTS **
A United Dominion Company

** SERIES SF (for 1-3/4" DOOR) **

** PROFILES **

** DEPTHS **

<table>
<thead>
<tr>
<th>STANDARD DEPTHS (In addition to 5-3/4&quot;)</th>
<th>SPECIAL DEPTHS</th>
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<tbody>
<tr>
<td>Dim. G = 4-3/4&quot;</td>
<td>Dim. G = 4-1/2&quot; thru 10-1/4&quot; (in 1/8&quot; increments)</td>
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<tr>
<td>Dim. G = 6-3/4&quot;</td>
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<td>Dim. G = 6-3/4&quot;</td>
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<td>Dim. G = 8-3/4&quot;</td>
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** HINGE SPACING **

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<th>7-2</th>
<th>7-10</th>
<th>8-0</th>
<th>9-0</th>
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<tr>
<td>DIMENSION A</td>
<td>B</td>
<td>C</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>A</td>
<td>B</td>
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<td>10&quot;</td>
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** OPTIONAL FACE DIMENSIONS:**

4" face head with 2" face jambs.

** STANDARD FRAMES HAVE THE FOLLOWING HINGE PREP QUANTITY:**

7"–6" HIGH OR SMALLER: (3) HINGE PREPS
HIGHER THAN 7"–6": (4) HINGE PREPS

** VERTICAL SECTION **

** LOCK STRIKE PREPARATION **

** HINGE PREPARATION **

** HORIZONTAL SECTION **

** LABELING AGENCIES **

Underwriters Laboratory
Warnock Hersey
Factory Mutual
FIRE TESTS
UBC 7-2, UL10B, UL10C
See Tech Data Manual for additional information.

** SERIES SF STEEL FRAMES FOR HAND & SWING See Door Schedule **

** SERIES SF STEEL FRAMES FOR ANCHORAGE See Door Schedule & Anchor Sheet (DO NOT USE WS, WS, OR F/S TYPE) **
16 Ga. Steel

VERTICAL SECTION

NOMINAL DOOR OPENING WIDTH
SINGLE SWING ELEVATION

HORIZONTAL SECTION

NOMINAL DOOR OPENING WIDTH
DOUBLE SWING ELEVATION

WELDED CORNERS
TYPE

* Welded corner types with "V" prefix do not utilize corner tabs.

Series CF/0 DEPTHS

DIM B 3" THRU 9-3/4"

C.R. steel is standard.
ASTM A525 galvanized steel is optional.

SERIES/PROFILE CF/0
CASED OPENING FRAMES
## JAMB ANCHORS

<table>
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<th>Model</th>
<th>Description</th>
<th>Notes</th>
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<tr>
<td>WMA</td>
<td>Wire Masonry Anchor</td>
<td>(For 2&quot; thru 8-3/4&quot; Depths)</td>
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<tr>
<td>MT</td>
<td>Mounting, for special depths and oversize frames</td>
<td>(For 6-3/4&quot;, 7-3/4&quot;, and 8-3/4&quot; Depths)</td>
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<tr>
<td>WS</td>
<td>Wood Stud Anchor</td>
<td>(Used also for Metal Stud Walls)</td>
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<tr>
<td>MS</td>
<td>Metal Stud Anchor</td>
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<tr>
<td>FFA</td>
<td>Fixed Floor Anchor</td>
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### Wire Masonry Anchor
- Snap-in type
- Available on special order only

### Mounting, for special depths and oversize frames
- Available on special order only

### Wood Stud Anchor
- Snap-in type
- Used also for Metal Stud Walls

### Metal Stud Anchor
- Welded

### Fixed Floor Anchor
- Anchor is attached to frame in the field by means of SMS

## FLOOR ANCHORS

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<td>Yoke and Strap Masonry Anchor</td>
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<td>EO</td>
<td>Existing Opening Anchor (Optional)</td>
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<tr>
<td>WSZS</td>
<td>Wood Stud &quot;Z&quot; Strap Anchor</td>
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<td>MSZ1</td>
<td>Metal Stud &quot;Z&quot; Anchor</td>
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<td>SLFA</td>
<td>Sidelite Floor Anchor</td>
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<tr>
<td>ADJ/STUD</td>
<td>Adjustable Anchor for Stud Walls</td>
<td>3-3/4&quot; thru 8-3/4&quot; depth</td>
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<td>MSZ2</td>
<td>Metal Stud &quot;Z&quot; Anchor</td>
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<tr>
<td>SFA</td>
<td>Special Size Floor Anchor</td>
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### Yoke and Strap Masonry Anchor
- Welded

### Existing Opening Anchor (Optional)
- Designate wall configuration so that proper pocket can be provided
- 5/8" wide

### Wood Stud "Z" Strap Anchor
- Used where standard anchor is not applicable
- Setup anchor and bend toplines to grip stud

### Metal Stud "Z" Anchor
- Designate wall configuration so that proper pocket can be provided

### Special Size Floor Anchor
- Anchor may be continuous or two piece as shown.
FRAME INSTALLATION
MASONRY and STUD WALLS

JOBSITE STORAGE: Store frames off the ground on wood runners or skids. Do not store directly on the ground. Cover frames with tarpaulin or plastic but do insure that adequate ventilation is provided to eliminate moisture condensation. When frames are to be fully grouted and when plaster or mortar contain "anti-freeze" agents, the inside of the frames should be coated with a bituminous, water-resistant paint by the installation contractor.

ASSEMBLY of FRAME

BEND CORNER TABS TOWARD INSIDE OF FRAME
CORNER ASSEMBLY
CORNER TABS
HEAD
SLOTS FOR CORNER TABS
SLOTS FOR JAMB TABS

JAMB TABS
JAMB

Install rubber silence before frame is setup to avoid grout plugging holes.

PLUMBING FRAME

SQUARING THE FRAME
The installer should use wood spreaders (as described at right), a carpenters level (the longer the better), and a carpenters square (the bigger the better). Set the frame in the desired location. Level head and plumb jambs. Shim under jambs if necessary.

SPREADER
Typical wood spreader must be square and made from lumber at least 1" thick. Length of spreader equals door opening width at the head. Cut clearance notches for frame stops as shown. Spreader must be nearly as wide as frame depth for proper installation.
MASONRY WALL CONSTRUCTION

BRACING THE FRAME

NOTE: If frame is received setup and welded, remove and discard the temporary metal supports that are tack welded to jambs at sill before starting installation.

Brace the frame as shown or shore to ceiling. Do not brace in the direction of intended wall. Plumb and square jambs. Set spreader. Attach jambs to floor through floor anchor.

INSTALLING THE FRAME

Set and plumb frame. Install jamb anchors at hinge levels as wall is laid up. (3 anchors for heights to 7'-2" -- one more anchor per jamb for each additional 2 feet of height or fraction thereof.) Grout frame in the area of the anchors. A second spreader should be used at mid-point of opening to maintain the door opening dimension. Continually check plumb and square as wall progresses.

CHECK: The difference between diagonals measured from opposite corners should not exceed 1/16".

WOOD or METAL STUD WALL CONSTRUCTION

ROUGH STUD OPENING

ADD 3/8" TO OVERALL FRAME WIDTH
ADD 1/2" TO OVERALL FRAME HEIGHT

1. Build the rough opening in wall allowing 3/16" clearance between upright stud and frame jamb and 1/8" clearance between header and top of door frame.*

2. Insert jamb anchors in frame throat and top into place with a hammer. Place at hinge location and directly opposite on strike jamb. Position anchors also at sill.

3. Place frame in rough opening.

4. Set spreader and level frame. Shim jambs if necessary.

*If you choose to erect door frame before wall framing: brace frame and anchor at sill per masonry procedure above, then butt studs to door frame.

INSTALLING THE FRAME

5. Square and fasten top anchors to stud on ONE JAMB ONLY. Check plumb and square of door frame and continue to fasten balance of anchors to studs. Repeat on opposite jamb.

6A. If your anchor looks like Det. A, fasten anchor to metal stud thru web of channel using suitable fastener for sheet metal.

6B. If your anchor looks like Det. B, bend anchor tabs around stud and fasten tabs with suitable fastener.

7. Maintain necessary clearance between frame returns and stud for inserting wall board. Do not install wall board until you are sure that frame is plumb and square.
MODEL 115 FIRE DOOR LIGHT FRAMES

ORDER INFORMATION:
ORDER SIZE = INSIDE DIMENSION OF FRAME, as illustrated (W x H)
CUTOUT SIZE = ORDER SIZE + 1-1/2", as illustrated
GLASS SIZE = ORDER SIZE + 3/4", as illustrated

UL & WHI LISTED
Meets UL108 requirements for NEGATIVE PRESSURE
and
UL10C & UBC 7-2 (1997) requirements
for POSITIVE PRESSURE
For details refer to AMS Listing Specifications.
Fire Tested with NO glazing compound, tape, or intumescent.

STD SPECS: 18 GA. CRS with BEIGE PRIMER

SPECIALS:
18 GA. GALVANIZED
18 GA. STAINLESS STEEL
SPECIAL COLORS
VEENIER WRAPPED

CROSS SECTION VIEW

PHILLIPS DRIVE #8-32
FLAT HEAD SCREW
INSTALL ON SECURED
SIDE OF DOOR

MOUNTING HOLES
11" LENGTH OR LESS:
1 HOLE CENTERED
OVER 11":
3" MAX. FROM CORNERS,
11-5/16" MAX. CENTERS

LISTED GLAZING MATERIAL
(not included)

LISTED GLAZING MATERIAL
(not included)

FRAME AND GLASS
SUPPORTS (included).
MUST BE USED FOR PROPER
INSTALLATION: TWO REQUIRED.

GLASS NOTE: For non-fire door applications we recommend 1/4" tempered glass.
If laminated glass is used, thin glazing and light torque on screws
is required to prevent glass breakage.

Phone (715) 223-6324 ALL METAL STAMPING, INC. FAX (715) 223-3352
411 W. Spruce St., Abbotsford, Wisconsin 54405
(A = B + C)

A. UNDERCUT = DISTANCE FROM BOTTOM OF DOOR TO BOTTOM OF FRAME
B. FLOOR COVERING TREATMENT = VARIES
C. CLEARANCE = 3/4" (STANDARD)
1-3/4" REGENT (R) DOOR
# Full Mortise Hinges

Plain Bearing • Standard Weight • Template
For use on Medium Weight Doors Requiring Low Frequency Service
(Not for use with Door Closer)

**1279**
Steel with steel pin ANSI A8133

**1191**
Brass with brass pin ANSI A2133
Stainless Steel with stainless steel pin ANSI A5133

Five knuckle non-rising removable pin with button tip and plug.
Specify screw requirements.

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<th>Hinge Size</th>
<th>Gauge of metal</th>
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<th>Screw Size</th>
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<th>Avg weight per case (lbs)</th>
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<td>Millimeters</td>
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<td>$\frac{1}{8}$ x 32</td>
<td>$\frac{3}{4}$ x 8</td>
</tr>
<tr>
<td>2½ x 2½</td>
<td>64 x 64</td>
<td>0.089</td>
<td>6</td>
<td>$\frac{1}{8}$ x 32</td>
<td>$\frac{3}{4}$ x 8</td>
</tr>
<tr>
<td>3 x 3</td>
<td>76 x 76</td>
<td>0.097</td>
<td>6</td>
<td>$\frac{1}{8}$ x 24-1</td>
<td>$\frac{3}{4}$ x 8</td>
</tr>
<tr>
<td>3½ x 3½</td>
<td>89 x 89</td>
<td>0.119</td>
<td>6</td>
<td>$\frac{1}{8}$ x 24-1</td>
<td>$\frac{3}{4}$ x 8</td>
</tr>
<tr>
<td>4 x 4</td>
<td>102 x 102</td>
<td>0.129</td>
<td>8</td>
<td>$\frac{1}{8}$ x 24-1</td>
<td>1&quot; x 12</td>
</tr>
<tr>
<td>4½ x 4</td>
<td>114 x 102</td>
<td>0.134</td>
<td>8</td>
<td>$\frac{1}{8}$ x 24-1</td>
<td>1¼ x 12</td>
</tr>
<tr>
<td>4½ x 4½</td>
<td>114 x 114</td>
<td>0.134</td>
<td>8</td>
<td>$\frac{1}{8}$ x 24-1</td>
<td>1¼ x 12</td>
</tr>
<tr>
<td>5 x 4</td>
<td>127 x 102</td>
<td>0.145</td>
<td>8</td>
<td>$\frac{1}{8}$ x 24-1</td>
<td>1¼ x 12</td>
</tr>
<tr>
<td>5 x 4½</td>
<td>127 x 114</td>
<td>0.145</td>
<td>8</td>
<td>$\frac{1}{8}$ x 24-1</td>
<td>1¼ x 12</td>
</tr>
<tr>
<td>5 x 5</td>
<td>127 x 127</td>
<td>0.145</td>
<td>8</td>
<td>$\frac{1}{8}$ x 24-1</td>
<td>1¼ x 12</td>
</tr>
<tr>
<td>5 x 5½</td>
<td>152 x 114</td>
<td>0.160</td>
<td>10</td>
<td>$\frac{1}{8}$ x 24-1</td>
<td>1½ x 14</td>
</tr>
<tr>
<td>6 x 5</td>
<td>152 x 127</td>
<td>0.160</td>
<td>10</td>
<td>$\frac{1}{8}$ x 24-1</td>
<td>1½ x 14</td>
</tr>
<tr>
<td>6 x 6</td>
<td>152 x 152</td>
<td>0.160</td>
<td>10</td>
<td>$\frac{1}{8}$ x 24-1</td>
<td>1½ x 14</td>
</tr>
</tbody>
</table>

# Ball Bearing • Standard Weight • Template
For use on Medium Weight Doors or Doors Requiring Medium Frequency Service

**BB1279**
Steel with steel pin ANSI A8112

**BB1191**
Brass with brass pin ANSI A2112
Stainless Steel with stainless steel pin ANSI A5112

Five knuckle two ball bearings non-rising removable pin with button tip and plug.
Specify screw requirements.

<table>
<thead>
<tr>
<th>Hinge Size</th>
<th>Gauge of metal</th>
<th>Number of holes</th>
<th>Screw Size</th>
<th>Quantity</th>
<th>Avg weight per case (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inches</td>
<td>Millimeters</td>
<td>Machine</td>
<td>Wood</td>
<td>Box</td>
<td>Case</td>
</tr>
<tr>
<td>3½ x 3½</td>
<td>89 x 89</td>
<td>0.119</td>
<td>6</td>
<td>$\frac{1}{8}$ x 10-24</td>
<td>$\frac{1}{2}$ x 9</td>
</tr>
<tr>
<td>4 x 4</td>
<td>102 x 102</td>
<td>0.129</td>
<td>8</td>
<td>$\frac{1}{8}$ x 12-24</td>
<td>$\frac{1}{2}$ x 12</td>
</tr>
<tr>
<td>4½ x 4</td>
<td>114 x 102</td>
<td>0.134</td>
<td>8</td>
<td>$\frac{1}{8}$ x 12-24</td>
<td>$\frac{1}{2}$ x 12</td>
</tr>
<tr>
<td>4½ x 4½</td>
<td>114 x 114</td>
<td>0.134</td>
<td>8</td>
<td>$\frac{1}{8}$ x 12-24</td>
<td>$\frac{1}{2}$ x 12</td>
</tr>
<tr>
<td>5 x 4</td>
<td>127 x 102</td>
<td>0.145</td>
<td>8</td>
<td>$\frac{1}{8}$ x 12-24</td>
<td>$\frac{1}{2}$ x 12</td>
</tr>
<tr>
<td>5 x 4½</td>
<td>127 x 114</td>
<td>0.145</td>
<td>8</td>
<td>$\frac{1}{8}$ x 12-24</td>
<td>$\frac{1}{2}$ x 12</td>
</tr>
<tr>
<td>5 x 5</td>
<td>127 x 127</td>
<td>0.145</td>
<td>8</td>
<td>$\frac{1}{8}$ x 12-24</td>
<td>$\frac{1}{2}$ x 12</td>
</tr>
<tr>
<td>5 x 5½</td>
<td>152 x 114</td>
<td>0.160</td>
<td>10</td>
<td>$\frac{1}{8}$ x 14</td>
<td>$\frac{1}{2}$ x 14</td>
</tr>
<tr>
<td>6 x 5</td>
<td>152 x 127</td>
<td>0.160</td>
<td>10</td>
<td>$\frac{1}{8}$ x 14</td>
<td>$\frac{1}{2}$ x 14</td>
</tr>
<tr>
<td>6 x 6</td>
<td>152 x 152</td>
<td>0.160</td>
<td>10</td>
<td>$\frac{1}{8}$ x 14</td>
<td>$\frac{1}{2}$ x 14</td>
</tr>
</tbody>
</table>

Hinge testing conforms to ANSI A156.1. Furnished with screw hole locations that conform to standards approved by ANSI A156.7.

**Ph.** 1-800-325-9995 or 1-314-772-4400 • **Fax** 1-800-782-0149 or 1-314-772-0744

**“THE FIRST FAMILY OF SUPERIOR HARDWARE”**
# Full Mortise Hinges

**Ball Bearing • Heavy Weight • Template**

For use on Heavy Weight Doors or Doors Requiring High Frequency Service

**BB1168**  
Steel with steel pin ANSI A8111

**BB1199**  
Brass with brass pin ANSI A2111  
Stainless Steel with stainless steel pin ANSI A5111

Five knuckle four ball bearings non-rising removable pin with button tip and plug. Specify screw requirements.

<table>
<thead>
<tr>
<th>Hinge Size</th>
<th>Gauge of metal</th>
<th>Number of holes</th>
<th>Screw Size</th>
<th>Machine</th>
<th>Wood</th>
<th>Quantity</th>
<th>Avg weight per case (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Millimeters</td>
<td></td>
<td></td>
<td>Box</td>
<td>Case</td>
<td>Steel</td>
<td>SSteel/Brass</td>
</tr>
<tr>
<td>4½ x 4</td>
<td>114 x 102</td>
<td>0.180</td>
<td>8</td>
<td>½ x 12-24</td>
<td>1¼ x 12</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>4½ x 4½</td>
<td>114 x 114</td>
<td>0.180</td>
<td>8</td>
<td>½ x 12-24</td>
<td>1¼ x 12</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>5 x 4</td>
<td>127 x 102</td>
<td>0.190</td>
<td>8</td>
<td>½ x 12-24</td>
<td>1¼ x 12</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>5 x 4½</td>
<td>127 x 114</td>
<td>0.190</td>
<td>8</td>
<td>½ x 12-24</td>
<td>1¼ x 12</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>5 x 5</td>
<td>127 x 127</td>
<td>0.190</td>
<td>8</td>
<td>½ x 12-24</td>
<td>1¼ x 12</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>6 x 4½</td>
<td>152 x 114</td>
<td>0.203 Steel &amp; Brass</td>
<td>10</td>
<td>⅛ x ⅛-20</td>
<td>1½ x 14</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>6 x 5</td>
<td>152 x 127</td>
<td>0.203 Steel &amp; Brass</td>
<td>10</td>
<td>⅛ x ⅛-20</td>
<td>1½ x 14</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>6 x 6</td>
<td>152 x 152</td>
<td>0.203 Steel &amp; Brass</td>
<td>10</td>
<td>⅛ x ⅛-20</td>
<td>1½ x 14</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>8 x 6</td>
<td>203 x 152</td>
<td>0.203 Steel &amp; Brass</td>
<td>16</td>
<td>⅛ x ⅛-20</td>
<td>1½ x 14</td>
<td>3 each</td>
<td>12 each</td>
</tr>
<tr>
<td>8 x 8</td>
<td>203 x 203</td>
<td>0.203 Steel &amp; Brass</td>
<td>16</td>
<td>⅛ x ⅛-20</td>
<td>1½ x 14</td>
<td>3 each</td>
<td>12 each</td>
</tr>
</tbody>
</table>

---

**Ball Bearing • Heavy Weight • Template • Wide Throw**

For use on Heavy Weight door or doors Requiring High Frequency Service

**BB1168 – Wide Throw**  
Steel with steel pin ANSI A5111

**BB1199 – Wide Throw**  
Brass with brass pin ANSI A2111  
Stainless Steel with stainless steel pin ANSI A5111

Five knuckle four ball bearings non-rising removable pin with tip and plug. Specify Screw Requirements.

<table>
<thead>
<tr>
<th>Hinge Size</th>
<th>Gauge of metal</th>
<th>Number of holes</th>
<th>Screw Size</th>
<th>Machine</th>
<th>Wood</th>
<th>Quantity</th>
<th>Avg weight per case (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Millimeters</td>
<td></td>
<td></td>
<td>Box</td>
<td>Case</td>
<td>Steel</td>
<td>SSteel/Brass</td>
</tr>
<tr>
<td>4½ x 5</td>
<td>114 x 127</td>
<td>0.180</td>
<td>8</td>
<td>½ x 12-24</td>
<td>1¼ x 12</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>4½ x 6</td>
<td>114 x 152</td>
<td>0.180</td>
<td>8</td>
<td>½ x 12-24</td>
<td>1¼ x 12</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>4½ x 7</td>
<td>114 x 178</td>
<td>0.180</td>
<td>8</td>
<td>½ x 12-24</td>
<td>1¼ x 12</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>4½ x 8</td>
<td>114 x 203</td>
<td>0.180</td>
<td>8</td>
<td>½ x 12-24</td>
<td>1¼ x 12</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>5 x 6</td>
<td>127 x 152</td>
<td>0.190</td>
<td>8</td>
<td>½ x 12-24</td>
<td>1¼ x 12</td>
<td>3 each</td>
<td>12 each</td>
</tr>
<tr>
<td>5 x 7</td>
<td>127 x 178</td>
<td>0.190</td>
<td>8</td>
<td>½ x 12-24</td>
<td>1¼ x 12</td>
<td>3 each</td>
<td>12 each</td>
</tr>
<tr>
<td>5 x 8</td>
<td>127 x 203</td>
<td>0.190</td>
<td>8</td>
<td>½ x 12-24</td>
<td>1¼ x 12</td>
<td>3 each</td>
<td>12 each</td>
</tr>
</tbody>
</table>

Hinge testing conforms to ANSI A156.1. Furnished with screw hole locations that conform to standards approved by ANSI A156.7.

Phone: 1-800-325-9995 or 1-314-772-4400 • Fax: 1-800-782-0149 or 1-314-772-0744

"THE FIRST FAMILY OF SUPERIOR HARDWARE"
**SPECIFICATIONS - 9K SERIES**

Certifications - ANSI A156.2, Series 4000 Grade 1 Federal Specifications FF-H-106C/Gen. Listed by Underwriter's Laboratories for use on 3 Hr, A label single swinging doors. GYJT builders hardware single point locks or latches. **Note:** Proper door preparation is mandatory or all warranty and liability for the product is voided.

**Material** - Lever handles are a high-quality zinc alloy. Trim components are brass or bronze. Critical latch and chassis components are brass, corrosion-treated steel, or stainless steel.

**Finish** - BHMA US DESCRIPTION

<table>
<thead>
<tr>
<th>BHMA</th>
<th>US</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>605</td>
<td>3</td>
<td>Bright Brass</td>
</tr>
<tr>
<td>606</td>
<td>4</td>
<td>Satin Brass</td>
</tr>
<tr>
<td>611</td>
<td>9</td>
<td>Bright Bronze</td>
</tr>
<tr>
<td>612</td>
<td>10</td>
<td>Satin Bronze</td>
</tr>
<tr>
<td>613</td>
<td>10B</td>
<td>Oxidized Satin Bronze,Oil Rubbed</td>
</tr>
<tr>
<td>618</td>
<td>14</td>
<td>Bright Nickel Plated</td>
</tr>
<tr>
<td>619</td>
<td>15</td>
<td>Satin Nickel Plated</td>
</tr>
<tr>
<td>622</td>
<td>19</td>
<td>Flat Black</td>
</tr>
<tr>
<td>625</td>
<td>26</td>
<td>Bright Chromium Plated</td>
</tr>
<tr>
<td>626</td>
<td>26D</td>
<td>Satin Chromium Plated</td>
</tr>
</tbody>
</table>

**Chassis** - 2-1/16” diameter to fit 2-1/8” hole in door (Conforms to ANSI A115.2)

**Lever handles** - Body is approximately 1-5/8” in diameter; Handle is approximately 4-3/4” long (from center-line of chassis). #14 and #15 levers conform to California Administrative Code Title 19 and Title 24. All three styles of levers conform to the Illinois Accessibility Standard.

**Projection on Door** - Approximately 2-3/4” when mounted on 1-3/4” door.

**Roses** - "C"- 3” Convex  
"D"-3-1/2” Convex  
"K"-3” Convex - no ring  
"L"- 3-1/2” Convex - no ring

**Latch** - 9/16” throw. Front 2-1/4” x 1-1/8” beveled. 3/4” throw optional (See Order Procedure below).

**Backset** - 2-3/4” standard, 3-3/4” and 5” available.

**Strike** - STK: Conforms to ANSI A115.3 (2-3/4” x 1-1/8” with curved lip & box). S3: Conforms to ANSI A115.2 for 1-3/4” doors (4-7/8” x 1-1/4” with curved lip).

**Door Thickness** - Available for 1-3/4” to 2-1/4” doors. Spacer available for 1-3/8” doors.

**Mounting** - In addition to standard door preparation (ANSI A115.2 for 1-3/4” doors), two additional holes are needed for thru-bolts. Thru-bolts require two 5/16” diameter holes located at 12 o’clock and 6 o’clock. A drill jig is provided to insure accuracy of the holes. (see page 6B.11).

**Products covered by one or more of the following patents:**

**U.S.**
D290,085 4,437,695 4,428,212 4,843,852 4,313,558 4,428,570 4,262,507 4,495,178 4,779,908 5,116,170

**Canada:**
1,184,773 1,194,057 1,229,358 1. Other products patent pending.

---

**ORDER PROCEDURE**

*9K Lever Handle Cylindrical*

<table>
<thead>
<tr>
<th>STEP 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>K</th>
<th>STK</th>
<th>626</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backset</td>
<td>Core Housing</td>
<td>Function Code</td>
<td>Lever Style</td>
<td>Rose Style</td>
<td>Strike Package</td>
<td>Standard Finishes</td>
<td>Options</td>
</tr>
<tr>
<td>O-keyless</td>
<td>7-7 pin housing accepts all Best cores.</td>
<td>14-curved return</td>
<td>15-contour angle return</td>
<td>16-curved no return</td>
<td>ANSI</td>
<td>611 612</td>
<td></td>
</tr>
<tr>
<td>page 6B.6-8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ANSI</td>
<td>613 618</td>
<td></td>
</tr>
<tr>
<td>626</td>
<td>619 625</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>626</td>
<td>(For all available finishes see above)</td>
<td>626</td>
<td>AL-abrasive lever</td>
<td>LL-lead lined</td>
<td>SH-security head screws</td>
<td>3/4&quot;-3/4&quot;throw latch</td>
<td>(NOT specify inside (I), outside(O), or both (B) for AL,TL options)</td>
</tr>
</tbody>
</table>
CYLINDRICALS - LEVERS

9K SERIES - FEATURES

9K Exploded View

Lever by knob trim variations available - allows for versatile applications.

New slotted key release cam and locking lug assembly increase torque resistance, to deter forced entry. Under attack, allows fail-safe egress on the inside lever and key override.

Stronger retractor springs provide resistance to lever sag.

Torsion spring (vs. compression) mounted in hub - helping to prevent lever sag and allows for a smoother, "snappier" operation of the lockset.

Thru-bolt mounting studs with improved levers which reinforces torque resistance.

Heavier rose liner material making the 9K more attack resistant.

Rose locking pin and rose assembly design improved providing more torque resistance. Also prevents locking pin from twisting and bending under attack.

Bigger locking lug provides increased torque resistance.

No exposed keeper hole in exterior lever - adds security.

O/S sleeve machined from alloy steel that provides additional reinforcement in locking lug slot.

Interchangeable core allows for quick re-keying and customized masterkeying.

Hub, sideplate and studs are investment cast into one piece and made of a hardened steel alloy with a shrouded locking lug, guaranteeing higher quality and increased torque resistance.

---

9K CYLINDRICAL - OPTIONS

ABRASIVE LEVERS

Besides complying with a wide variety of handicapped codes and ordinances, Best Lock lever handles are available with a special abrasive feature. Abrasive strip on the lever immediately identifies warnings on doors to hazardous areas for the blind. **TO ORDER:** Designate choice of abrasive lever - AL option on Step 8 of order procedure (page 6B.3).

Note: Abrasive strip is available on all levers, however **NOT** on #14 and #16 levers in 613 finish.

TACTILE LEVERS

Tactile levers may be used in areas where improved grip is required or as a warning in hazardous or safety first areas. Grooves are machined into the back of the hand grasp portion of the lever to improve grip and/or to provide a sensory warning. This option can be used for Blind, Safety, or Handicapped applications. **TO ORDER:** Designate "TL" on step 8 of order procedure (page 6B.3).
## Cylindricals - Levers

### K Series - Function Descriptions

#### Single Keyed Functions

<table>
<thead>
<tr>
<th>Description</th>
<th>Latch Operated By</th>
<th>Outside Lever Locked By</th>
<th>Outside Lever Unlocked By</th>
<th>Inside Lever Locked By</th>
<th>Inside Lever Unlocked By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corridor Lock AB</td>
<td>Rotating the inside lever, R</td>
<td>Pushing the inside button, R</td>
<td>Turning the key in the outside lever, OR</td>
<td>Cannot be locked</td>
<td>Always unlocked</td>
</tr>
<tr>
<td>F81</td>
<td>Rotating the outside lever—only when the inside push button is out.</td>
<td>Pushing and turning the inside button.</td>
<td>Turning the button keeps the outside lever locked until the button is turned back.</td>
<td>Cannot be locked</td>
<td>Always unlocked</td>
</tr>
<tr>
<td>Storeroom Lock D</td>
<td>Turning the key in the outside lever, OR</td>
<td>Cannot be unlocked</td>
<td>Key block feature is released by</td>
<td>Cannot be locked</td>
<td>Always unlocked</td>
</tr>
<tr>
<td>F86</td>
<td>Rotating the inside lever.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Station Lock E</td>
<td>Rotating the inside lever, OR</td>
<td>Pushing the inside button, OR</td>
<td>Turning the key in outside lever OR</td>
<td>Cannot be locked</td>
<td>Always unlocked</td>
</tr>
<tr>
<td>F92</td>
<td>Rotating the outside lever—only when the inside push button is out, OR</td>
<td>Pushing and turning the inside button.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hotel Guest Room Lock H</td>
<td>Turning the key in the outside lever.</td>
<td></td>
<td>Turning the key in the outside lever OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F93</td>
<td>Removing the core with a control key and using a special emergency key.</td>
<td>Always fixed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hotel Guest Room Lock HJ</td>
<td>Rotating the inside lever, OR</td>
<td>Key block feature is released by</td>
<td></td>
<td>Cannot be locked</td>
<td>Always unlocked</td>
</tr>
<tr>
<td></td>
<td>Turning the key in the outside lever—only when the inside push button is out, OR</td>
<td>Rotating the inside lever, OR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Removing the core with a control key and using a special emergency key.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom Lock R</td>
<td>Rotating the inside lever, OR</td>
<td>Turning the key in the outside lever.</td>
<td>Turning the key in the outside lever.</td>
<td>Cannot be locked</td>
<td>Always unlocked</td>
</tr>
<tr>
<td>F84</td>
<td>Turning the key in the outside lever, OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dormitory Lock T</td>
<td>Rotating the inside lever, OR</td>
<td>Turning the key in the outside lever.</td>
<td>Turning the key in the outside lever.</td>
<td>Cannot be locked</td>
<td>Always unlocked</td>
</tr>
<tr>
<td>F90</td>
<td>Rotating the outside lever when not locked by key or push button.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Pushing the inside button displays an "occupied" indicator in the outside lever and blocks all operating keys.

*Pushing the inside button blocks all operating keys, but no "occupied" indicator is displayed.

#### Double Keyed Functions

<table>
<thead>
<tr>
<th>Description</th>
<th>Inside Lever Locked By</th>
<th>Inside Lever Unlocked By</th>
<th>Inside Lever Locked By</th>
<th>Inside Lever Unlocked By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corridor lock C</td>
<td>Turning the key in the inside lever.</td>
<td>Turning the key in the inside lever.</td>
<td>Cannot be locked</td>
<td>Always unlocked</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 9K SERIES FUNCTIONS

<table>
<thead>
<tr>
<th>Function &amp; Diag.</th>
<th>Description</th>
<th>Outside lever</th>
<th>Inside lever</th>
<th>Locked by</th>
<th>Unlocked by</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSI No.</td>
<td>Operated by</td>
<td>Locked by</td>
<td>Unlocked by</td>
<td>Locked by</td>
<td>Unlocked by</td>
</tr>
<tr>
<td><strong>Storeroom Lock</strong></td>
<td>Rotating the outside lever when not locked by key, QR</td>
<td>Turning the key in the inside lever, QR</td>
<td>Turning the key in the outside lever</td>
<td>Turning the key in the inside lever, QR</td>
<td>Turning the key in the outside lever</td>
</tr>
<tr>
<td>G F91</td>
<td>Rotating the inside lever when not locked by key.</td>
<td>Turning the key in the outside lever</td>
<td>Turning the key in the outside lever</td>
<td>Turning the key in the outside lever</td>
<td>Turning the key in the outside lever</td>
</tr>
</tbody>
</table>

*Turning the key in either the inside or the outside, locks or unlocks both sides.*

| **Communicating Lock** | Turning the key in the inside lever, QR | Turning the key in the outside lever |
| S F80 | Turning the key in the outside lever. | Turning the key in the outside lever. |

*Turning the key in either lever, locks or unlocks its own lever independently.*

| **Institutional Lock** | Turning the key in the inside lever, QR | Turning the key in the outside lever |
| W F87 | Turning the key in the outside lever. | Turning the key in the outside lever. |

<table>
<thead>
<tr>
<th><strong>Keyless Functions</strong></th>
<th>Privacy Lock</th>
<th>Passage Lock</th>
<th>Exit Lock</th>
<th>Patio Lock</th>
<th>Exit Lock</th>
<th>Single Dummy Trim</th>
<th>Double Dummy Trim</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSI No.</td>
<td>Rotating the inside lever, QR</td>
<td>Rotating the inside lever, QR</td>
<td>Rotating the inside lever.</td>
<td>Rotating the inside lever, QR</td>
<td>Rotating the inside lever.</td>
<td>This is a single, surface-mounted lever for an inactive door or a non-latching door.</td>
<td>This is a thubolt mounted pair of matching levers for an inactive door or a non-latching door.</td>
</tr>
<tr>
<td>L F76</td>
<td>Rotating the outside lever only when the inside push button is out.</td>
<td>Cannot be locked</td>
<td>Always unlocked</td>
<td>Cannot be locked</td>
<td>Always unlocked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N F75</td>
<td>Rotating the outside lever.</td>
<td>Cannot be locked</td>
<td>Always unlocked</td>
<td>Cannot be locked</td>
<td>Always unlocked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NX F75</td>
<td>Rotating the outside lever.</td>
<td>Cannot be locked</td>
<td>Always unlocked</td>
<td>Cannot be locked</td>
<td>Always unlocked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P F77</td>
<td>Rotating the outside lever—only when the inside push button is out.</td>
<td>Rotating the inside lever, QR</td>
<td>Cannot be locked</td>
<td>Always unlocked</td>
<td>Always unlocked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>Rotating the inside lever.</td>
<td>Cannot be locked</td>
<td>Always unlocked</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# CYLINDERS

## 1E SERIES - CYLINDERS

### 1E MORTISE CYLINDER

Standard mortise applications require use of Best's 1E Series cylinders with standard 1E-C4 cam. Best cylinders may be altered to function with other manufacturers' locks by use of different cams (see page 9.8) and different cylinder rings (see page 9.9).

Special cylinder variations are available for most applications (see pages 9.4 & 9.5).

Best cylinders are machined from brass or bronze bar stock and are available in a variety of finishes. Additional security is provided by a set screw that mounts diagonally in the cylinder wall and when tightened, holds the cylinder securely in the housing. Best mortise cylinders feature the Best interchangeable core and may be masterkeyed into any existing Best system. Contact your local Best Representative for information on special cylinder applications not listed in this catalog.

### CYLINDER DIAMETER - 1-5/32"

To Order: see below. Example: 1E74-C4-RP3-626

<table>
<thead>
<tr>
<th>CYLINDER NOMENCLATURE</th>
<th>DIMENSION “A”</th>
<th>DOOR THICKNESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1E-64</td>
<td>1-1/8”</td>
<td>1-5/8” to 2-1/4”</td>
</tr>
<tr>
<td>1E-74</td>
<td>1-1/4”</td>
<td>1-7/8” to 2-1/2”</td>
</tr>
</tbody>
</table>

Products covered by one or more of the following patents.

4,437,695 4,633,690 4,616,394

### HOW TO ORDER:

<table>
<thead>
<tr>
<th>CYLINDER DIAMETER</th>
<th>CORE HOUSING</th>
<th>FUNCTION CODE</th>
<th>STANDARD MORTISE LENGTH CODE</th>
<th>CAM OR SPINDLE</th>
<th>RINGS</th>
<th>STANDARD FINISHES</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1E-1-5/32&quot;</td>
<td>6-dummy 6-6 pin housing accepts all Best cores</td>
<td>2-rim 4-mortise* 6-tapered mortise</td>
<td>Blank-standard 22-1-3/8&quot; 24-1-1/2&quot; etc. up to 96-6&quot; (see page 9.4 and 9.5)</td>
<td>C4-standard cam C181-Adams Rite MS cam S2-standard spindle (special cams see page 9.8)</td>
<td>RP-rim cylinder RPI-tapered cyl. RP2-6 pin mortise RP3-7 pin mortise RP4-3E mortise (special rings see page 9.9)</td>
<td>605 606 610 612 613 625 626</td>
<td>MC-marine construction</td>
</tr>
</tbody>
</table>

* For additional special mortise cylinders, see pages 9.4 and 9.5.

### 1E RIM CYLINDER

Standard rim cylinder applications require the use of Best's 1E rim cylinder series. Best rim lock cylinders are interchangeable with other manufacturers' rim locks. Best rim cylinders are machined from solid bar stock and are available in a variety of finishes. The standard package for the Best rim cylinder includes cylinder, 1E-R3 and 1E-R5 rings, 1E-S2 spindle, clamp plate and clamp plate screws. Best rim cylinders feature the Best interchangeable core and may be masterkeyed into any existing Best system.

### CYLINDER DIAMETER - 1-5/32"

To Order: see page 9.2 example: 1E72-S2-RP-626

<table>
<thead>
<tr>
<th>CYLINDER NOMENCLATURE</th>
<th>DIMENSION “A”</th>
<th>DOOR THICKNESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1E-62</td>
<td>1-3/16”</td>
<td>1&quot; to 2-3/4&quot;</td>
</tr>
<tr>
<td>1E-72</td>
<td>1-11/32&quot;</td>
<td>1-1/4” to 3&quot;</td>
</tr>
</tbody>
</table>

**
CABINET LOCKS

SERIES

5E-3/4" CYLINDER

5E UTILITY CYLINDER LOCK

SPECIFICATIONS

The 5E utility cylinder lock fits standard 3/4" diameter cylinder installations such as wood or metal desks, file cabinets, vending machines, utility and storage cabinets, elevators and security alarm control panels. The complete 5E assembly includes a combined 3/4" cylinder with cam, hex nut, lock washer and spacer collar.

Maximum Mounting Surface Thickness:

5E utility cylinder locks may be mounted on surfaces with the following maximum thickness:

5E6 - 11/16", 5E7 - 27/32"

Keying -

May be keyed individually, keyed alike or masterkeyed into a new or existing Best standard masterkeyed security system.

Service -

5E cylinders may be recombinated and serviced on-site.

Special service equipment is available (see Service Equipment Section of Best catalog).

Material -

Cylinder and body parts brass; keys nickel silver; cam plated steel.

Finish -

626 satin chrome only

5E COMBINATING AND SERVICE ACCESSORIES

<table>
<thead>
<tr>
<th>NOMENCLATURE</th>
<th>ITEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-8049</td>
<td>5E 3/4&quot; Hex Nut</td>
</tr>
<tr>
<td>A-21068</td>
<td>Cam Screws</td>
</tr>
<tr>
<td>A-4845</td>
<td>5E capping block</td>
</tr>
<tr>
<td>5ED261</td>
<td>5E thread tap - 3/4&quot; x #24</td>
</tr>
<tr>
<td>5ED253</td>
<td>5E 3/4&quot; metal punch and die set (elab)</td>
</tr>
<tr>
<td>5ED254</td>
<td>5E cap depressor</td>
</tr>
<tr>
<td>5ED262</td>
<td>Slide cap - 6 pin</td>
</tr>
<tr>
<td>5EC56</td>
<td>Slide cap - 7 pin</td>
</tr>
<tr>
<td>5EC7</td>
<td>5E springs</td>
</tr>
</tbody>
</table>

CAM MOTION AND DEGREE OF ROTATION

When ordering 5E cylinders, specify the cam motion type and degree of rotation. Available cam motion types are listed below. Different type motions are limited to different degrees of key rotations.

**Type A** - Direct motion - Key and cam rotation is direct. Key may be removed in locked position only. Motion is 360 degrees right or left.

**Type B** - Limited motion - Key and cam rotation is direct. Key may be removed in locked position only. Motion is limited to 90 degrees or 180 degrees right or left.

**Type C** - Lost motion. Cam rotates 90 degrees right or left. Key rotates 360 degrees. Key removal with cam in locked or unlocked position.

**Type D** - Throw member drive - Key and drive motion is direct. Key may be removed in locked position only. Motion is 360 degrees right or left.

DETERMINE RING LENGTH

A spacer collar may be required to position the cam for proper lock operation. The spacer collar is installed between the 5E cylinder head and the mounting surface. To determine the proper length of the spacer collar, add together the desired distance from the cam to the inside of the mounting surface ("A" above) to the measured thickness of the mounting surface ("B" above). Then, subtract this total from: 31/32" when installing a 5E6, or 1 1/8" when installing a 5E7. The remainder is the collar length, which is illustrated.

To properly order spacer collars, designate the following nomenclature for the length desired:

<table>
<thead>
<tr>
<th>LENGTH</th>
<th>NOMENCLATURE</th>
<th>TO ORDER SEPARATELY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/16&quot;</td>
<td>R701</td>
<td>5E-R701</td>
</tr>
<tr>
<td>1/8&quot;</td>
<td>R702</td>
<td>5E-R702</td>
</tr>
<tr>
<td>3/16&quot;</td>
<td>R703</td>
<td>5E-R703</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>R704</td>
<td>5E-R704</td>
</tr>
<tr>
<td>3/16&quot;</td>
<td>R705</td>
<td>5E-R705</td>
</tr>
<tr>
<td>5/16&quot;</td>
<td>R706</td>
<td>5E-R706</td>
</tr>
<tr>
<td>7/16&quot;</td>
<td>R707</td>
<td>5E-R707</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>R708</td>
<td>5E-R708</td>
</tr>
</tbody>
</table>
MORTISE AND RIM CYLINDERS
with Dust Cover

SPECIFICATIONS

Diameter: 1 1/8"
Length: Mortise-6 pin-1 1/4"
     Mortise-7 pin-1 3/8"
     Rim-6 pin-1 3/4"
     Rim-7 pin-1 3/8"
Material: Solid brass or bronze
Cam: Standard 1E-C4 cam (see page 9.4 1E series)
supplied unless otherwise specified.
Rings: Ring packages are supplied standard as follows
       (unless otherwise specified):
       Mortise 6 pin: RP2 ring package (see page 9.2)
       Mortise 7 pin: RP3 ring package (see page 9.2)
       Rim 6 and 7 pin: RP ring package (see page 9.2)
To Order: Designate "B4" on step "C" of order procedure
          (page 9.2). Example: 1E-7B4-C4-RP3-626

SLABBED CABINET
MORTISE CYLINDER
Direct Motion Cam

SPECIFICATIONS

Diameter: 1 1/8", slabbed,
      threaded to the head
Length: 6 pin-1 1/6"
      7 pin-1 5/8" From head to cam
Material: Solid brass or bronze
Cam: C228 - cabinet cylinder cam standard. Cam
     prevents key from being withdrawn in unlocked position.
Rings: The RP2 ring package is supplied standard for 6-
      pin and 7-pin unless otherwise specified (page 9.2)
To Order: Designate "D4" on step "C" of order procedure
          (page 9.2). Example: 1E-7D4-C228-RP3-626
To Order with a utility cam lengths from 1/4" - 3 1/3"
1ESPL-7-A9884 x A14154 x (specify cam length) x finish
1 3/4" cylinder length (RH) 1ESPL-7-A10623 x C228
      (LH) 1ESPL-7-A10624 x C228
2 2/3" cylinder length (RH) 1ESPL-7-A8774 x C228

STANDARD MORTISE CYLINDER
Lost Motion Cam

SPECIFICATIONS

Diameter: 1 1/8"
Length: 6 pin-1 1/6"
      7 pin-1 5/8"
Material: Solid brass or bronze
Cam: 1E-C230 - cam supplied standard 1E-C230 is cam
     1E-C4 (page 9.2) set up for lost motion. Specify cylinder
     handing as for hand and side of door.
Examples: RHO (Right Hand Outside); RHI (Right Hand Inside);
          LHO (Left Hand Outside); LHI (Left Hand Inside).
Rings: The RP2 ring package is supplied standard for 6-
      pin and 7-pin unless otherwise specified (page 9.2)
To Order: Designate "F4" on step "C" of order procedure
          (page 9.2). Example: 1E-7F4-C230-RP3-626-RHO

SQUARE HEAD MORTISE
CYLINDER-WRENCH RESISTANT
For use in Narrow Stile Doors

SPECIFICATIONS

Diameter: 1 1/8"
Length: 6 pin-1 1/4"
      7 pin-1 5/32"
Material: Solid brass or bronze
Cam: As specified on order (see page 9.8 for cams available)
Rings: Package includes special 5/8" slip ring
To Order: Designate "C4" on step "C" of order procedure
          (page 9.2).
Example: 1E-7C4-C181-R1010 (5/8" length) - 626
Other length rings are available.

SLABBED CABINET
MORTISE CYLINDER
Lost Motion Cam

SPECIFICATIONS

Diameter: 1 1/8"
Length: 6 pin-1 1/6"
      7 pin-1 5/8"
Material: Solid brass or bronze
Cam: C229 - cam supplied unless otherwise specified
     (1E-C229, when ordered separate from unit).
     Specify hand: FH or LH
Rings: The RP2 ring package is supplied standard for
      6-pin and 7-pin unless otherwise specified (page 9.2)
To Order: Designate "E4" on step "C" of order procedure
          (page 9.2). Example: 1E-7E4-C228-RP3-626-RH
Special Length: 1 1/4" cylinder length RH-1ESPL-7-A9580
                LH-1ESPL-7-A9577
                2 1/4" cylinder length RH-1ESPL-7-A8813
                LH-1ESPL-7-A8812

HOTEL/MOTEL MORTISE CYLINDER
Shifting Cam

SPECIFICATIONS

Diameter: 1 1/8"
Length: Mortise 6 pin-1 1/6"
      Mortise 7 pin-1 1/52"
Material: Solid brass or bronze
Cam: C258 or cam supplied as specified (see page 9.8)
Rings: The RP2 ring package is supplied standard for
       6-pin and 7-pin unless otherwise specified (page 9.2)
To Order: Designate "G4" on step "C" of order procedure
          (page 9.2).
Example: 1E-7G4-C258-RP3-626
6000 SERIES
PUSH-PULL LATCH

- Non-handed (except for engraved models). SEE NOTE BELOW.*
- Push/pull latch can be mounted with the handles up, down or horizontal without any modification.
- Available with 2 3/4", 5" or 7" backset latches.
- Standard or ASA strike.
- Includes all required fasteners.
- Compact non-handed covers provide maximum clearance between the handle and door.
- UL listed for all fire doors.
- Available in BHMA finishes.
- Lead lining is available.
- Available latch bracket for Roller to Push Pull conversion.
- Meets ADA requirements.

Visit our web site at http://www.abhmfg.com
Architectural Builders Hardware Mfg., Inc.
500 Crossen Ave.
Elk Grove Village, IL 60007
847.437.9901; FAX 800.9FAXABH (932.9224)

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* When ordering engraved models, add the letter P after the numbers shown below and designate hand.
NOTE:
BEFORE MOUNTING PUSH AND PULL HANDLES, CAM PIN MUST BE ROTATED TOWARD SIDE INDICATED BY ARROW STAMPED ON BASE

<table>
<thead>
<tr>
<th>SCREW DETAIL</th>
<th>WOOD DOOR</th>
<th>METAL DOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUSH/PULL HANDLE</td>
<td>(4) 10-32 X 2-3/4&quot; PAN HD. M.S.</td>
<td>(4) 10-32 X 2-3/4&quot; PAN HD. M.S.</td>
</tr>
<tr>
<td></td>
<td>(4) 10/32 NUT</td>
<td>(4) 10/32 NUT</td>
</tr>
<tr>
<td>COVER</td>
<td>(4) 8-32 x 3/8&quot; F.H.M.S.</td>
<td>(4) 8-32 x 3/8&quot; F.H.M.S.</td>
</tr>
<tr>
<td>LATCH</td>
<td>(2) #8 X 3/4&quot; F.H.W.S.</td>
<td>(2) 6-32 x 3/8&quot; F.H.M.S.</td>
</tr>
<tr>
<td>STD STRIKE</td>
<td>(2) #8 X 3/4&quot; F.H.W.S.</td>
<td></td>
</tr>
<tr>
<td>ASA STRIKE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PATENT PENDING

Visit our web site at http://www.abhmfg.com
Architectural Builders Hardware Mfg., Inc.
500 Crossen Ave.
Elk Grove Village, IL 60007
847.437.9901; FAX 800.9FAXABH (932.9224)
VON DUPRIN®
98/99 Rim Devices

98 and 99 rim devices for all types of single doors and double doors with mullion, UL listed for accident hazard installations. Covers stock hollow metal doors with 86 or 161 cutouts.

FEATURES
- Nonhanded
- Field sizeable
- $\frac{3}{8}"$ (19mm) throw, latch bolt
- Latch bolt deadlocking
- Eight popular finishes
- Hex key dogging

DIMENSIONS

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Touchbar height to finished floor</td>
<td>39\frac{3}{16}&quot; (95mm) at center</td>
</tr>
<tr>
<td>Touchbar projection —</td>
<td></td>
</tr>
<tr>
<td>neutral</td>
<td>3\frac{3}{16}&quot; (77mm)</td>
</tr>
<tr>
<td>depressed</td>
<td>3\frac{1}{4}&quot; (78mm)</td>
</tr>
<tr>
<td>Center case</td>
<td>8&quot;×2\frac{1}{4}&quot;×2\frac{1}{4}&quot; (203mm×57mm×70mm)</td>
</tr>
<tr>
<td>Device length — Short 3'</td>
<td>2'6&quot; to 3' (762mm to 914mm) door size</td>
</tr>
<tr>
<td>Long 4'</td>
<td>3'1&quot; to 4' (940mm to 1219mm) door size</td>
</tr>
</tbody>
</table>

OUTSIDE TRIM

Standard
990NL-R/V
990TP-R/V
990DT
110NL-MD
991K-R/V
992L-R/V

Optional
990EO
698NL-R/V
696TP-R/V
696DT
697NL-R/V
697TP-R/V
697DT
KP992L-R/V
994L-R/V
110NL-WD
392-7

For complete outside trim information, see pages 18-19.

STRIKES AND FASTENERS

Device is furnished with standard 299 strike in dull black finish. All necessary fasteners are included. Optional strikes and finishes are available. For strike applications, dimensions, and minimum door stile information refer to pages 22, 23.

A combination of fasteners are included for surface mounting and through bolting to trim on 1\frac{1}{4}" (44mm) and 2\frac{1}{4}" (57mm) thick doors.

DEVICE OPTIONS

Electric latch retraction, page 24
Pneumatic latch retraction, page 27
Electric rim device, page 25
Request to exit switch, page 26
Latch bolt monitoring, page 26
Signal switch, page 26
Cylinder dogging, page 30
Double cylinder, page 27

For How-To-Order Information on all devices, see page 35.
VON DUPRIN®
98/99 Additional Information

NOMENCLATURE

CD — Cylinder Dogging
E — Electric Locking
EL — Electric Latch Retraction
LX — Latch Bolt Monitoring
PL — Pullman Latch
PN — Pneumatic Latch Retraction
RX — Request to Exit Switch
SS — Signal Switch

98 — 98 Series
99 — 99 Series

27 — Surface Mounted Vertical Rod Device
47 — Concealed Vertical Rod Device
48 — Concealed Vertical Rod Device
57 — Three Point Latch Device
75 — Mortise Lock Device

DT — Dummy Trim
EO — Exit Only
K — Knob
L — Lever
NL — Night Latch
NL-OP — Night Latch Cylinder Assembly
TL — Turn Lever
TP — Thumbpiece

F — Fire Exit Device

BE — Blank Escutcheon
WDC — Wood Door Concealed
2 — Double Cylinder
LBR — Less Bottom Rod
VON DUPRIN®
98/99 Additional Information

FINISHES

<table>
<thead>
<tr>
<th>Color*</th>
<th>US Number</th>
<th>BHMA Number</th>
<th>A, B, E</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brass, Polished</td>
<td>US3</td>
<td>BHMA605</td>
<td>Plated</td>
<td>Brass, Polished US3, BHMA605</td>
<td>Buffed Anodized</td>
</tr>
<tr>
<td>Brass, Satin</td>
<td>US4</td>
<td>BHMA606</td>
<td>Plated</td>
<td>Brass, Dull US4, BHMA606</td>
<td>Anodized</td>
</tr>
<tr>
<td>Bronze, Satin</td>
<td>US10</td>
<td>BHMA612</td>
<td>Plated/Anodized Bronze, Dull US10, BHMA612</td>
<td>Anodized</td>
<td></td>
</tr>
<tr>
<td>Chrome, Polished</td>
<td>US26</td>
<td>BHMA625</td>
<td>Plated</td>
<td>Stainless Steel, Polished US26, BHMA629</td>
<td>Buffed Anodized</td>
</tr>
<tr>
<td>Chrome, Satin</td>
<td>US26D</td>
<td>BHMA626</td>
<td>Plated</td>
<td>Stainless Steel, Satin US26D, BHMA630</td>
<td>Anodized</td>
</tr>
<tr>
<td>Stainless Steel, Satin</td>
<td>US32D</td>
<td>BHMA630</td>
<td>Stainless Steel</td>
<td>Stainless Steel, Satin US32D, BHMA630</td>
<td>Anodized</td>
</tr>
<tr>
<td>Aluminum, Anodized</td>
<td>US28</td>
<td>BHMA628</td>
<td>Painted</td>
<td>Stainless Steel, Satin US32D, BHMA630</td>
<td>Anodized</td>
</tr>
<tr>
<td>Duranodic Dark Bronze</td>
<td>313</td>
<td></td>
<td>Painted</td>
<td>Wood grain vinyl**</td>
<td>Anodized</td>
</tr>
</tbody>
</table>

Touch Bar Options — Knurled — Black vinyl — Walnut grain vinyl — Embossed "Push", brass, bronze or stainless steel

*US32D Finish — available on Series 98, consult factory.
**US10B available, consult factory.
DUMMY PUSH BAR

The 330 grooved and 350 smooth dummy push bars are designed as a companion unit for all 98 or 99 devices. The touch bar is rigid and non-functioning. A push/pull operation can be accomplished by using 990DT, 696DT, or 697DT trim.

To order, specify:
1. 330 or 350.
2. Size, 3' or 4' (914mm or 1219mm).
3. Finish, see page 35.

CYLINDER DOGGING — CD

Cylinder dogging is available on all 98/99 devices to replace the standard hex key dogging. Furnished, not installed. Unit requires a standard 1 1/4" (32mm) mortise cylinder.

To order, specify:
1. Prefix CD, example CD99NL.

CYLINDER DOGGING KIT — CDK

For field conversion, a cylinder dogging conversion kit is available. Order: 33/99CDK or 35/98CDK, specify finish.

HEX KEY DOGGING KIT — HDK

For field conversion, a hex key dogging conversion kit is available. Order: 33/99HDK or 35/98HDK, specify finish.

GLASS BEAD KIT

Glass bead conversion kits are available for all 99 Series devices for use on doors with raised glass beads. Each kit consists of 1/4" (6mm) shim sets.

To order, specify:
1. 99GBK.
2. Device type (rim, mortise, surface vertical and concealed vertical rod.)
3. Wood door, when used with concealed vertical.

COVER PLATES KIT — 997 KIT

For 99 rim device, kit contains inside and outside plates for hinge stile cutouts, an inside plate for the lock stile, and necessary screws. Plates are designed to cover cutouts required by most existing exit device installations. Specify finish.

CYLINDERS

Cylinders are not furnished with device or trim and must be specified when ordering. Rim, surface vertical rod, and concealed vertical rod exit devices use rim type cylinders. Mortise lock exit devices and series 370 controls use mortise type cylinders.
SUPER SMOO THEE®
SURFACE MOUNTED CLOSER

Specify finish (F), hand (H), size (S), and cylinder function (C)
where indicated.

**CYLINDER**

4040-3071 Cylinder Assembly F,S,C

- **SIZE:** 1
  - 4041-3071 cylinder adjustable from size 1 thru 6.
- **CYLINDER FUNCTION:** Regular, Delay.
  - -3071 regular cylinder provides all normal functions.
  - -3071DA cylinder provides delayed closing action from
    maximum opening until approximately 70°.

**COVER**

4040-72 Standard Cover F

- Includes (2) 4040-31, -163 and -164.

4040-72LL Lead Lined Cover F

- Includes (2) 4040-31-163 and -164.

4040-72MC Metal Cover F,H

- Includes (2) 4040-31.

**INDIVIDUAL PARTS**

- **Parts for 4040-72**
  - Cover
  - Parts for 4040-72LL
  - Lead Lined Cover

- **Cover**
  - 4040-31 Cover Screw (2) F
  - 4040-163 Arm Inserts F
  - 4040-164 Screw Inserts (2) F
  - 4040-159 Arm Screw F

---

INGERSOLL-RAND
ARCHITECTURAL HARDWARE

© 1997 LCN Closers
SUPER SMOOTHIE®
SURFACE MOUNTED CLOSER

Specify finish (F) and hand (H) where indicated.

**COMPLETE ARM**
4040-3077EDA Extra Duty Arm
Includes 4040-159 and -201.

- 3077EDA

**COMPLETE ARM**
4040-3049EDA Extra Duty Arm
Includes 4040-159.

- 3049EDA

**COMPLETE ARM**
4040-3077EDA-62G Extra Duty Arm
Includes 4040-159 and -201.

- 3077EDA-62G

**COMPLETE ARM**
4040-3049EDA-62G Extra Duty Arm
Includes 4040-159.

- 3049EDA-62G

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LCN Division
Ingersoll-Rand Company
P.O. Box 100
Princeton, IL 61356-0100
800/526-2400 Fax: 800/248-1460
SUPER SMOOTHEE®
SURFACE MOUNTED CLOSER

Specify finish (F) and hand (H) where indicated.

**COMPLETE ARM**
4040-3077CNS Cush-N-Stop Arm
Includes 4040-159.

**COMPLETE ARM**
4040-3049CNS H Cush-N-Stop Arm
Includes 4040-159.

**COMPLETE ARM**
4040-3077SC Spring Cush Arm
Includes 4040-159.

**COMPLETE ARM**
4040-3049SC H Spring Cush Arm
Includes 4040-159.
HEAVY DUTY 9 SERIES
Surface Mount - Interior or Exterior Doors

Standard Features

Face mounted
1-handed
4 track design
Use on exterior or interior doors
Recommended for high traffic, heavy use installations
Heavy shock absorber spring provides 5°-7° compression before dead stop

/off knob on hold open models
 friction stay or hold open function

Complete screw packet allows for installation in wood or metal door and frame

Security areas torx screws, tissional

Standard architectural finishes in metal slide block and shock lock

0° maximum opening

3/4" minimum door thickness

Option available for doors being used with electromechanical closers

Floor closer with dead stop

Mount on pull side of door use packet 5458 LH or 5459 RH

Opening Chart (in inches)

<table>
<thead>
<tr>
<th>Butts Offset Pivots</th>
<th>Center Hung Pivots</th>
<th>Friction</th>
<th>H.O.</th>
<th>Stop</th>
</tr>
</thead>
<tbody>
<tr>
<td>28-1/16-33</td>
<td>30-1/16-36</td>
<td>9-216</td>
<td>9-226</td>
<td>9-236</td>
</tr>
<tr>
<td>33-1/16-38</td>
<td>36-1/16-41</td>
<td>9-316</td>
<td>9-326</td>
<td>9-336</td>
</tr>
<tr>
<td>38-1/16-43</td>
<td>41-1/16-46</td>
<td>9-416</td>
<td>9-426</td>
<td>9-436</td>
</tr>
<tr>
<td>43-1/16-48</td>
<td>46-1/16-50</td>
<td>9-516</td>
<td>9-526</td>
<td>9-536</td>
</tr>
</tbody>
</table>

Put hung only on this size door.

ANSI No.

Shipping Weight
4.5 lbs.

Friction H.O. Stop

C02511 C02541
Doorplates

Kickplates are an attractive means of protecting a door surface from scufing due to heavy traffic. A range of heights is available to provide protection from damage by floor cleaning operations, stretchers, industrial carts and trucks. Plates are available in all architectural finishes plus a variety of plastic materials.

**Standard Features:**
- All Plates individually packed with screws.
- Stainless Steel 18-8 Phillips head sheet metal screws plated to match.
- Nominal Thickness:
  - Metal Plates -.050".
  - Plastic Plates -.125".
- All Architectural Finishes available up to 48" x 48" except US26D (626) which has a maximum height of 12".
- Westinghouse Micarta® Plastic Laminate is in stock in the following colors:
  - #90M52 Gray, #52M33 Sand.
  - #92M16 Pearl Black, #90M21 Chocolate Brown, #92M90 Cool White. B4E is standard.
- Kydex 160 Heavy Duty PVC/Acrylic Alloy Plastic is stocked in the following colors: #72010 Chocolate Brown, #52001 Pewter Gray, #52000 Calcutta Black, #72005 Beige, #72047 Cocoa.
- Compliance with BHMA ANSI A156.6 Standards:
  - Metal Armorplate = J101
  - Metal Kickplate = J102
  - Metal Mopplate = J103
  - Plastic Armorplate = J105
  - Plastic Kickplate = J106
  - Plastic Mopplate = J107.

Doorplates are commonly used for protective purposes; for best protection mount plates flush with the bottom of the door. If plates are used primarily for aesthetic reasons (i.e. Brass Kickplates), it may be desirable to mount them up to 1" from the bottom of the door.

**Optional Features:**
- Beveled 3 or 4 edges, specify "B3E" or "B4E".
- Machine Screws or Spanner Head Screws.
- Cut outs for Locks, Louvers, or Windows.
- Stainless Steel is available in the following guages: US22(0.038"), US18(0.050"), US16(0.062"), US11(0.125"").
- Aluminum, Brass, and Bronze are available in the following guages: B&516(0.050"), B&514(0.064"), .125", .188".

**Ordering Instructions:** Specify Rockwood Kickplate Height x Width x Finish Code x Thickness. Add Any Options such as B3E.

- Weight: Metal 8" x 34" = 4.0 lbs., Plastic 8" x 34" = 1.9 lbs.
U. L. Listed
Flush and Surface Bolts

#550 and #555 flush bolts are listed for use on A, B, C, D, and E labeled metal doors. Standard rod length is 12". Other lengths are available to order. #554 rabbet piece is designed to fill the mortise gap in rabbeted doors when using our #555. Rabbeted strikes and guides are quoted on request.

#557 flush bolt is U.L. listed for all types of labeled wood fire doors. Door strength is maintained by a reinforcing plate. Simple installation instructions are enclosed in each box. Please specify if door thickness is other than 1¾".

#580 and #581 heavy duty surface bolts are U.L. listed for use on the inactive leaf of a pair of labeled fire doors. The bolt is 1¾" thick x ¾" wide with 1½" throw. It is packed with both top and bottom strike and ms and sms. Sex bolts available, please specify when ordering.

<table>
<thead>
<tr>
<th>No.</th>
<th>Size</th>
<th>Finishes</th>
<th>Weight</th>
<th>ANSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>550</td>
<td>6½ x 1⅛</td>
<td>all architectural</td>
<td>1.7 lbs./2</td>
<td></td>
</tr>
<tr>
<td>554</td>
<td>6½ x ¾</td>
<td>all architectural</td>
<td>4.1 lbs./10</td>
<td>w/555 L14101</td>
</tr>
<tr>
<td>555</td>
<td>6¾ x 1&quot;</td>
<td>all architectural</td>
<td>1.5 lbs./2</td>
<td>L14251,L14081</td>
</tr>
<tr>
<td>557</td>
<td>6¾ x 1&quot;</td>
<td>all architectural</td>
<td>1.7 lbs./2</td>
<td></td>
</tr>
<tr>
<td>580</td>
<td>8&quot; bolt</td>
<td>zinc, bronze, chrome, brass</td>
<td>5.3 lbs./5</td>
<td>L84161</td>
</tr>
<tr>
<td>581</td>
<td>12&quot; bolt</td>
<td>zinc, bronze, chrome</td>
<td>6.8 lbs./5</td>
<td></td>
</tr>
</tbody>
</table>
1600 Series Coordinators

This non-handed coordinator (with companion filler) is designed to become an integral part of the door frame and when painted with the frame becomes virtually invisible. It is engineered to prevent damage in case of abnormal force against the door that is held open. Stock sizes available for quick shipment are

- #1660 (60" opening),
- #1672 (72" opening), and
- #1696 (96" opening).

Fillers are usually supplied pre-cut from the factory. Note: If "S" dimension is other than ¾", advise the factory.

The 1600 Series coordinators are manufactured in three different housing lengths to coordinate the full range of door sizes:

- **1600 Series**—for jamb opening widths (A + B dimension) from 54" through 96". E dimension, 52".
- **NX1600 Series**—for jamb opening widths (A + B dimension) from 44" through 76". E dimension, 42".
- **L1600 Series**—for unusual widths and special conditions (minimum jamb opening: 66"), E dimension, 60".

**Determining Coordinator Item Number:**
Active door widths A plus inactive door width B equals the last two or three digits of all 1600 Series coordinator item numbers. See examples at bottom right.

**Mounting Brackets**

#1601AB and #1601C mounting brackets are used for stop applied hardware. Their use prevents the inadvertent disabling of the coordinator by fasteners passing through the housing.

### Range of Sizes

<table>
<thead>
<tr>
<th>Range of Sizes</th>
<th>Series No.</th>
<th>Door Leaf</th>
<th>Widths</th>
<th>Sum of</th>
<th>Item No. Equals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Active (Dim. A)</td>
<td>Inactive (Dim. B)</td>
<td>Dim. A + B</td>
<td>Series No. Plus Sum A + B</td>
</tr>
<tr>
<td>54&quot; thru 96&quot; (Dim. A + B)</td>
<td>16</td>
<td>36&quot;</td>
<td>36&quot;</td>
<td>72&quot;</td>
<td>1672</td>
</tr>
<tr>
<td>44&quot; thru 76&quot; (Dim. A + B)</td>
<td>NX16</td>
<td>24&quot;</td>
<td>24&quot;</td>
<td>48&quot;</td>
<td>NX1648</td>
</tr>
<tr>
<td>66&quot; (Min. jamb opening) or greater</td>
<td>L16</td>
<td>54&quot;</td>
<td>42&quot;</td>
<td>96&quot;</td>
<td>L1696</td>
</tr>
</tbody>
</table>

---

**Carry Bars**

#1100 carry bars are recommended for use on all openings with astragals except when the inactive door is equipped with automatic flush bolts. Carry bars are available in standard architectural finishes as well as prime coat steel.
1842/1942
Automatic Flush Bolts

The #1842 is U.L. listed for use on the inactive leaf of a pair of A, B, C, D, and E labeled metal doors. The #1942 is U.L. listed for use on the inactive leaf of a pair of B, C, D, and E labeled wood covered composite doors. The patented non-handed cam triggering device is the heart of this smooth-acting mechanism; only five pounds of force is required to drive a pair of bolts allowing door closing devices to perform at maximum efficiency. An override feature prevents damage to doors or bolts should the bolt heads be prevented from penetrating either the top or bottom strikes. The bolts are adjustable for unusual clearance or conditions and have a thermal lock that automatically locks the inactive door under high heat conditions due to fire. Sold in pairs.

1845/1945
Combination Flush Bolts

The combination flush bolt uses one automatic flush bolt for the bottom of the door and a constant self-latching flush bolt for the top of the door. When the active leaf is opened, the bottom automatic flush bolt is opened. However the inactive leaf stays latched at the top until it is manually released by depressing the plunger on the bolt face. The top bolt engages each time the inactive door is closed. The #1845 is U.L. listed for use on A, B, C, D, and E labeled metal doors. The #1945 is U.L. listed for use on B, C, D, and E labeled wood covered composite doors. Sold in sets.

Dust Proof Strike

#1880 dust proof strike is designed specifically for use with our automatic flush bolts. Use it wherever dirt clogging a strike hole is a problem.
Gate Latch, Door Guard & Silencers

Our #600 and #602 secret gate latch is single acting, reversible and supplied with a dummy knob.

Our #603 and #604 security door guards are easier to use than a chain door guard and eliminates the marring of the door frame caused by chain door guards.

The #605 edge guard is designed to protect the door or frame from marring when used in conjunction with a #603 or 604 door guard.

The #608 and #609 are rubber door silencers for metal and wood frames respectively.

<table>
<thead>
<tr>
<th>No.</th>
<th>Material</th>
<th>Size</th>
<th>Finishes</th>
<th>Weight</th>
<th>ANSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>Aluminum</td>
<td>Case: 2&quot; x 2½&quot;</td>
<td>Sprayed Aluminum</td>
<td>1.5 lbs./6</td>
<td>*****</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Strike: 2&quot; x 2¼&quot;</td>
<td>Brass, Bronze, Black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>602</td>
<td>Brass</td>
<td>Case: 2&quot; x 2¾&quot;</td>
<td>Dull Brass, Bronze</td>
<td>3.4 lbs./6</td>
<td>*****</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Strike: 2&quot; x 2¾&quot;</td>
<td>Dull Chrome</td>
<td></td>
<td></td>
</tr>
<tr>
<td>603</td>
<td>Aluminum</td>
<td>Jamb Plate: 25/32&quot; x 2½&quot;</td>
<td>Dull Chrome</td>
<td>4.2 lbs./10</td>
<td>L33042</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Strike Plate: 31/32&quot; x 2½&quot;</td>
<td>Polished Brass, Antique Brass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>604</td>
<td>Brass</td>
<td>Jamb Plate: 11/16&quot; x 2½/16&quot;</td>
<td>Polished Brass</td>
<td>4.4 lbs./10</td>
<td>L13042</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Strike Plate: 11/16&quot; x 1/16&quot;</td>
<td>Dull Chrome</td>
<td></td>
<td></td>
</tr>
<tr>
<td>605</td>
<td>Brass</td>
<td>1½&quot; x 1&quot; x ½&quot; return</td>
<td>same as above</td>
<td>0.3 lbs./10</td>
<td>*****</td>
</tr>
<tr>
<td>608</td>
<td>Gray Rubber</td>
<td>⅛&quot; diameter x ½&quot;</td>
<td></td>
<td>1.3 lbs./500</td>
<td>L03011</td>
</tr>
<tr>
<td>609</td>
<td>Gray Rubber</td>
<td>½&quot; x ½&quot;</td>
<td></td>
<td>1.3 lbs./500</td>
<td>L03021</td>
</tr>
</tbody>
</table>

E7

revised 4/95
Wall Bumpers

#400 - #405 feature a solid forged brass housing with a concealed in the bumper attachment. The backplate fully distributes the impact of the door to prevent damage to the wall.

#406 - #411 are wrought prassembled wall bumpers with concealed-in-the-bumper fastening. All of these Rockwood wall bumpers feature a non-yellowing low durometer rubber bumper that softly cushions the door knob. And the metal backplate is designed to distribute the impact of door contact to protect the wall surface.

See page F7 for Poly Pack box quantities.
Push Plates

Push plates are available in all architectural finishes, clear plastic and Westinghouse Micarta® laminate plastic. The most popular variations and sizes are shown on this page, but any size may be obtained by special order. Push plates are supplied with Phillips oval head stainless steel sheet metal screws, plated to match. #70, #71 and #75 have four beveled edges; #73 and #74 have square edges on the sides and rounded edges on top and bottom, with four beveled edges available as a no cost option.

Standard sizes:
A = 3" x 12"
B = 3½" x 15"
C = 4" x 16"
E = 6" x 16"
F = 8" x 16"

To order, specify plate number followed by size designation and finish, i.e. 70B US32D or for non-standard size 70 (width x height) and finish.

OPTIONAL FEATURES:
Adhesive mounting. Specify push plate number "x scotch mount." The push plate will have a 1/16" thick double face foam tape applied to the back side and will have no screw holes.

Engraving. On plates 4" wide or wider it is possible to engrave "PUSH", "PULL", "MEN" or "WOMEN". Please indicate the copy you require and see page A12 for standard engraving location.

Cylinder and turn knob cutouts. Specify the push plate number "x C/C" for cut for cylinder and "x C/TK" for cut for turn knob. See page A12 for standard locations and sizes.

Rounded corners. Specify plate number "x RC".

Two rounded corners. Specify plate number "x 2RC".

Rounded ends. Specify plate number "x RE".

<table>
<thead>
<tr>
<th>No.</th>
<th>Material</th>
<th>Weight*</th>
<th>ANSI</th>
<th>Suffix For End Modifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>.050 wrought</td>
<td>1.0 lbs.</td>
<td>J301</td>
<td>RC = rounded corners</td>
</tr>
<tr>
<td>71</td>
<td>.062 wrought</td>
<td>1.2 lbs.</td>
<td>J301</td>
<td>2RC = 2 rounded corners (not shown)</td>
</tr>
<tr>
<td>73</td>
<td>.125 wrought</td>
<td>2.2 lbs.</td>
<td>J304</td>
<td>RE = rounded ends</td>
</tr>
<tr>
<td>74</td>
<td>.188 wrought</td>
<td>3.8 lbs.</td>
<td>J304</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>.125 plastic</td>
<td>.5 lbs.</td>
<td>J304</td>
<td></td>
</tr>
</tbody>
</table>

*For 4" x 16"
BF SERIES
DOOR PULLS

This selection of door pulls provides the 2 1/2" clearance we recommend for the upper limb impaired. Push plates are available for door protection as well as for indicating which side of the door to push on.

RECOMMENDED LOCATIONS ON DOOR:

<table>
<thead>
<tr>
<th>No.</th>
<th>Material</th>
<th>CTC</th>
<th>Overall</th>
<th>Projection</th>
<th>Clearance</th>
<th>Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>BF107</td>
<td>3/4&quot; diameter</td>
<td>8&quot;</td>
<td>8 3/4&quot;</td>
<td>3 1/4&quot;</td>
<td>2 1/2&quot;</td>
<td>3/4&quot;</td>
</tr>
<tr>
<td>BF110</td>
<td>1&quot; diameter</td>
<td>8&quot;</td>
<td>9&quot;</td>
<td>3 1/2&quot;</td>
<td>2 1/2&quot;</td>
<td>1&quot;</td>
</tr>
<tr>
<td>BF111</td>
<td>1&quot; diameter</td>
<td>10&quot;</td>
<td>11&quot;</td>
<td>3 1/2&quot;</td>
<td>2 1/2&quot;</td>
<td>1&quot;</td>
</tr>
<tr>
<td>BF112</td>
<td>1&quot; diameter</td>
<td>12&quot;</td>
<td>13&quot;</td>
<td>3 1/2&quot;</td>
<td>2 1/2&quot;</td>
<td>1&quot;</td>
</tr>
</tbody>
</table>

See standards quoted on back 4.13.9

BF690 SERIES
TACTILE SIGNAGE

BF690M  BF690W  BF690R
10 1/2" high  12" high  12" high

Economical molded plastic sign is adhesive mounted in blue with raised letters and braille translation. Offers complete compliance in an inexpensive sign.
Finish Designations:
A  Aluminum mill finish
B  Architectural bronze (brass)
C  Clear anodized aluminum
D  Dark bronze anodized aluminum
G  Gold anodized aluminum
**Product Name**
59 Series 4 1/2” Square Door Activator Switches

**Manufacturer**
MS Sedco
8701 Castle Park Drive
Indianapolis, IN 46256
Phone: (800) 842-2545
(317) 842-2545
Fax: (800) 849-3387
(317) 849-3387
Email: custsvc@mssedco.com
www.mssedco.com

**Product Description**

**BASIC USE**
The 59 Series door activator switches are designed to provide reliable activation of any automatic door.

The 59 Series features 4" square face plates in either stainless steel or blue powder coated aluminum with etched and paint filled legends. A 4 1/2" square formed stainless steel back plate eliminates possible wall damage from standard use.

Designed as a universal switch, the 59 Series fit single-gang or 2-gang electrical boxes with no adapters necessary. A surface mounting box is also available.

Each unit is quality built utilizing heavy gauge stainless steel, aircraft quality rivets and screws, durable finishes and the most reliable microswitch in the industry.

**Technical Data**
- 4" x 4" All Active Face Plate
- 4 1/2" x 4 1/2" Formed Stainless Steel Back Plate
- UL Listed "Cherry Switch", SPDT, Mcm., 15 Amp @ 125V AC
- Fits single or 2-gang Electrical Box or MS Sedco #1015 Surface Mounting Box
- Radio Control Versions Available

**DIMENSIONS**
See Reverse

**APPLICABLE STANDARDS**
American National Standards Institute (ANSI) - Building Hardware Manufacturers Association (BHMA) - ANSI/BHMA A156.19.

**APPROVALS**
UL (Cherry Switch)

**Installation**
The 59 Series Switch is easy to install.

**Hardwired Applications:**
Mount to a standard single or 2-gang electrical box at the desired wall location. Remove the face plate from the switch assembly. Connect the necessary signal wires to the appropriate switch contacts (COM & N.O. are standard). Secure the switch assembly to the electrical box and reattach the face plate.

**Wireless Applications:**
Mount a TX-323 Transmitter and surface mounting box in the desired location. Program the
STANLEY
Access Technologies

MAGIC-ACCESS™

Swing Door

Installation and Tune-In Manual
GENERAL INFORMATION

POWER REQUIRED—117 V.A.C. 15 AMP. SERVICE FOR 1-2 OPERATORS
DEDICATED 20 AMP. SERVICE FOR 3-4 OPERATORS

IN OR OUT
This operator mounting is designed symmetrically which enables the operator to be changed from an out to an in type by moving the mounting plate from the "back" of the operator to the "front".
NOTE: THIS DOES NOT CHANGE THE HAND OF THE OPERATOR.

POWER CLOSE ACCESSORY BOARD #313150
This accessory will supplement the closing spring holding force by applying a small reverse voltage to the motor when the door is closed.

VISIBLR

FOR ALL TYPES OF DOOR APPLICATIONS THE HEADER MUST MEASURE 3" LARGER THAN THE DOOR OPENING WIDTH. THIS PROVIDES 1 1/2" OVERLAP ON BOTH JAMBS WHICH IS USED FOR MOUNTING.

USE OF RIV-NUTS
1. Locate mounting holes using the header template.
2. Drill (4) holes with Q drill and insert riv-nuts.
3. Secure header to jamb with 1/4-20 screws provided.

IN-HEADER

Door must have min. 5/6" top web. 1/2" min. bottom web.
Door must be rear mounting

NOTE: Header must be level for proper operation of door.
OPERATOR INSTALLATION • VISIBLE

Install operator in header with four (4) mounting screws provided.

Make electrical connections as shown in electrical section.

DOOR ATTACHMENT • IN

IN DOOR ATTACHMENT (NO BREAKOUT)

<table>
<thead>
<tr>
<th>PIVOT TYPE</th>
<th>REVEAL</th>
<th>&quot;D&quot; DIM</th>
<th>&quot;X&quot; DIM</th>
<th>TRACK LENGTH</th>
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<tr>
<td>BUTT HUNG</td>
<td>0</td>
<td>13-1/4</td>
<td>9</td>
<td>15-3/8</td>
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<tr>
<td>OFFSET PIVOT</td>
<td>0</td>
<td>13-1/4</td>
<td>9</td>
<td>15-3/8</td>
</tr>
</tbody>
</table>

1. Jump the signal terminals. Turn power on.
2. The operator spindle will rotate to the full open position.

MOUNT SLIDE TRACK

Locate mounting holes, refer to proper chart.
Secure end brackets with wood screws.
Insert slide block.
Snap track into end blocks as shown. Secure in place with 5/16-18 screws provided.
Place door arm pivot pin into slide block.
With the door in the 90° position, attach door arm to operator as shown.

NOTE: Set screws are located at either end of the slide block. Tighten these screws to eliminate rattle of the block in the track. Do not over tighten.
DOOR ATTACHMENT • IN
CONTINUED

IN DOOR ATTACHMENT (NO BREAKOUT)

<table>
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<tr>
<th>PIVOT TYPE</th>
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<th>&quot;X&quot; DIM</th>
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<tr>
<td>2-3/4 CTR PIVOT</td>
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<td>13-1/4</td>
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<tr>
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IN DOOR ATTACHMENT (WITH BREAKOUT)

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<td>2-3/4 CTR PIVOT</td>
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<td>6-1/2</td>
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<tr>
<td>3-3/4 CTR PIVOT</td>
<td>0 - 4</td>
<td>20-7/8</td>
<td>7-1/2</td>
<td>23</td>
</tr>
</tbody>
</table>

MOUNT SLIDE TRACK
1. Turn power on, jump the signal terminals. 2. The operator spindle will rotate to the full open position.

1. Locate mounting holes refer to proper chart.
2. Center punch and drill .332 DIA. holes (Q Drill) for riv-nuts.
3. Install riv-nuts as previously shown.
4. Secure end brackets with ¼-20 screws provided.
5. Insert slide block.
6. Snap track into end blocks as shown. Secure in place with ¼-18 screws provided.
7. Place door arm pivot pin into slide block.

BREAKOUT SWITCH - POSITIVE STOP (OPTIONAL)

1. PREPARE HEADER TO INSTALL BREAKOUT SWITCH - STOP.
2. INSTALL MOUNTING BRACKET.
3. INSTALL SWITCH - STOP AND WIRE AS SHOWN.
Locate centerline of bracket on door (Use chart) The door must have a positive stop in the closed position.

1. Turn power on. Jump the signal terminals.

2. The operator spindle will rotate to the full open position.

3. With the door in the 90° position, attach door arm to operator as shown.
NOTE: Holes and riv-nuts are prelocated and installed on some jambs. If you must locate mounting hole, use the template found on the last page of this instruction booklet and proceed as follows:

1. Locate bottom of header on jambs. Jambs must be vertical and parallel. Bottom of header is determined by adding bottom door clearance, door height plus clearance. Level bottom of header to this mark.

2. Center the template on the jamb. Punch holes on jamb through template (tape template in place). Locate holes on other jamb.

3. Drill holes in jamb for riv-nuts. Note the 1" hole is drilled in the jamb opposite the pivot.

NOTE: Header must be level for proper operation of door.

IN-HEADER DOOR PREPARATION

MOUNT BOTTOM PIVOT AND THRESHOLD

1. Remove backing from bottom pivot template. Apply to bottom web of door as shown.

2. Template door pivot, must be located on door properly.

3. Drill and tap 3 holes for 1/4-20 screws provided.

4. Position threshold centerline on centerline of jamb. Centerline of pivot must be 3¾" away from jamb. Mark screw holes, drill and fasten to floor.
IN-HEADER DOOR PREPARATION

NOTE: You may decide to drill a 1/2" dia. access hole through the door to tighten or loosen the door arm screw.

1. Drill (4) 3/32 dia. ("Q" drill) holes previously located.
2. Insert the 1/4-20 steel riv-nuts provided. Make sure they are properly seated.

WARNING - DO NOT SUBSTITUTE ALUMINUM RIV-NUTS.

NOTE: A) Long riv-nut for 1/4" thick top web. B) Short riv-nut for 1/8" thick top web.

DO NOT INSTALL DOOR ARM AT THIS TIME.

OPERATOR INSTALLATION

1. Turn power on. Jump the signal terminals.
2. The operator spindle will rotate to the full open position.
3. Secure the door arm to the operator spindle in the 90° position.
4. Place the heel of the door on the bottom pivot.
5. Straighten the door into position under the door arm previously attached to the operator.
6. Slide the 1/16" shim plate into position over the riv-nut heads.
7. Secure the door arm to the top of the door with the fasteners supplied.
8. Check to make sure the shim is in the proper position.
9. Tighten all screws.
10. Install the positive stop or breakout stop at this time.
VISIBLE

CENTERLINE

3/8"

1-1/2"

3-3/4"

1-1/4" Min.

DRILL #7 (.201 DIA.) HOLES C‘SINK 3/8" DIA. (2 HOLES)

1. Install mounting bracket as shown.
2. If breakout switch is installed, wire as shown.

BREAKOUT SWITCH - POSITIVE STOP (OPTIONAL)

#10-24 X 1/2" FL. HD MACHINE SCREW

CUT OUT

MOUNTING BRACKET

SPACER WASHERS

#10-24 X 1-1/4" FL. HD MACHINE SCREW

BREAKOUT SWITCH

IN-HEADER

1. Install mounting bracket or one-piece positive stop as shown.
2. If breakout switch is installed, wire as shown.

BREAKOUT SWITCH

POSITIVE STOP
LECTRICAL

CAUTION: TURN POWER OFF BEFORE MAKING ADJUSTMENTS

ON/OFF SWITCH CONNECTOR

AC POWER CONNECTOR

CONTROL TERMINAL

1) Connect power to the 3-pin connector provided.

IMPORTANT: Install grounding lugs to header with screws and lock washers provided. See wiring schematic on back cover.

Plug connector to control board as shown.

2) Install on-off switch in end cap (away from spindle end of operator). Screw switch into end cap and attach connector to circuit board.

3) Attach activating control to board.

a) For push button, push plate, mat or radio control, attach to terminals 1 & 3.

b) For radio control power 24VAC, attach to terminals 3 & 4.

INE-IN and ADJUSTMENT

Set stall hold, open speed and open check to mid-range.

Set close speed to mid-range (see above for location).

TURN ON POWER.

Operate Door - adjust opening and closing speed to a minimum travel time of 3 seconds for the 75° of travel. Adjust the open check speed for each stop.

Adjust operator timer as required TDI 4-30 sec. from operate signal to full open to full close.

5) Set motor torque to hold the door open against closing spring.

a) Maintain operate signal for approximately 15 seconds. The stall LED will turn on. Hold control is now active.

6) Adjust the reversal response when the door meets an obstruction. Turn the sens control clockwise until the door reverses momentarily after hitting the obstruction.

7) Magic-Touch - Set the S2 switch to the on position. Set the opening cycle timer by adjusting TD2 (1.5 - 10 seconds).
Adjust open check and close check cams as shown.

1. Loosen set screw and rotate cam until check area is in proper location.

2. After adjustment has been made, secure cams with set screws.
SCHEMATIC DIAGRAM

IMPORTANT: Install grounding lugs to header with screws and lock washers provided.
INSTRUCTION MANUAL FOR THE INSTALLATION AND ADJUSTMENT
OF THE 4600 SERIES ELECTRONIC LOW ENERGY DOOR OPERATOR

The 4600 Series electric Auto-Equalizer series combines all door operator and
door control functions in one package. This versatile, easy-to-install system is low
maintenance and offers the following features:

- Top jamb mounting on either side of an interior door allows 90° of power opening.
  (Mounting for exterior door on the inside only.)
- Manual opening up to 170° (4630) or 100° (4640).
- Easy access to on / off and hold open switches.
- Quiet, reliable operator delivers consistent performance.
- No expensive service contracts or periodic maintenance required.
- Fail safe operator acts as a standard door closer in event of power outage.
- Low energy operator does not require guard rails or safety mats.
- Advanced, easy-to-install controller module allows independent adjustment of:
  » Door Opening Speed  » Delay / Trigger Time for Sequential Option
  » Door Opening Force  » Electric Strike Delay Time
  » Hold Open Time      » 90° Slow Down
  » Alternate Action Timeout » Safety Scanner Lockout Time

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Pg. 3 ..... Install Mounting Plate
Pg. 4 ..... 4630 Template
Pg. 5 ..... 4640 Template
Pg. 6 ..... Installing Closer Assembly
Pg.7-8... 4600 Series Arm Installation
Pg. 9 ..... Closer Regulation & Power Adjustment
Pg. 10 ..... Controller Installation
Pg. 11 ..... Electrical Connections
Pg.12-13.. Typical Wiring
Pg.14 ..... Auxiliary Electrical Device Wiring
Pg.15 ..... Controller Setting Adjustment
Pg. 16-17.. Controller Programming
Pg.18 ..... Basic Operation & Cover Installation
Pg.19 ..... Illustrated Parts List
This installation instruction sheet is a valuable reference and should not be discarded. It should be given to building owner or maintenance supervisor after installation is complete.

GENERAL INFORMATION

The 4600 series Auto-Equalizer® is designed to meet the following codes & standards:

- ANSI A156.19, section 2.1
- ANSI A117.1, section 4.13.11 requirements.
- ADA law section 4.13.12
- UL listed for use on labeled doors.
- Complies with UL & NEC requirements for Class 1 (high voltage) & Class 2 (low voltage) by providing separate conduit connections for each.

Both the 4631 & 4642 are non-handed, non-sized door operators that provide all the standard features of a heavy duty LCN door closer; including independent adjustment of backcheck, main speed and latch speed functions as well as adjustable closing power: 4631 (size 1 to 4) / 4642 (size 2 to 5). Both models are shipped with LCN's "Ultra X" all-weather hydraulic fluid for reliable operation at a wide range of temperatures. Requirements for installation are as follows:

- The 4631 is designed for pull side installation on the top jamb and requires a minimum door width of 36" and a 2" min. head frame. Top rail of door must be 1 1/8" min. and butt hinge size should not exceed 5". Maximum pull side reveal of 1/8".

- The 4642 is designed for push side installation on the top jamb for both standard and flush ceiling conditions. It requires a minimum door width of 36" and a 1 3/4" min. head frame. Top rail of door must be at least 1 3/4" and butt hinge size should not exceed 5". The 4642 accommodates reveals up to 4 1/2". For reveal depths of 4 1/2" - 8", requires 4642 L (Long Arm). For reveal depths greater than 8" - consult factory.

 ELECTRICAL INFORMATION: The 4600 series can accommodate both surface and concealed wiring applications. It requires 120VAC supplied to the operator. Maximum AC current load is 1.5 amps. A built-in 12VDC & 24VDC power supply (rated for 1 amp combined current load) can power peripheral actuators, electronic strikes or mag-lock devices. The 4600 series is compatible with all LCN 7900 series actuators and scanners. High-security card readers or keypads may also be used as actuators. The 4600 series will accept inputs from a wide variety of security systems, allowing security personnel to regulate accessability. A 4600 will accept a fire alarm input to deactivate unit when fire alarm is triggered. A circuit breaker and resettable fuses protect high-voltage inputs and low-voltage output circuits, respectively. To ensure proper electrical functions, installation should be made when temperature is between 35° F up to 120° F.

The 4600 series installation has three sections:

Section 1 - Fastening mounting channel to frame / electrical connections.
Section 2 - Installing closer body & arm assembly
Section 3 - Installation of controller and adjustment of settings.

Follow all instructions carefully. Failure to do so may result in personal injury or property damage. Use extreme caution when dealing with high voltage. High voltage connections should be made by a qualified professional. If you have any questions, call LCN at 800 - 526 - 2400.
NOTICE: The following procedures involve electrical connections and running conduit for both high & low voltage wiring. **Electrical power must be disconnected** during the installation of the 4600 series door operator. It is also important to examine the proper template for your installation to determine the mounting channel position and correct conduit location.

**SECTION 1 - SECURING MOUNTING PLATE ASSEMBLY TO FRAME**

**NOTE:** Before beginning installation, determine which conduit connection option is to be used.

**CONCEALED WIRING:** Both high & low voltage conduit lines should be run to door frame and made accessible through two holes to be drilled in frame per proper template on page 4 or 5.

**SURFACE WIRING:** Mounting channel must be mounted to frame **BEFORE** running high & low voltage conduit lines to the operator.

1. Prepare door and frame per template on page 4 for 4630 / page 5 for 4640. Be sure all holes are located correctly before drilling and/or tapping. Mounting surface of frame must be vertically level. Conduit access holes in frame are for **CONCEALED WIRING ONLY**! If using concealed wiring option, see step 2 below. **FOR SURFACE WIRING,** proceed to step 3.

2. Refer to correct template to determine proper location for conduit. Remove appropriate conduit plugs, exposing conduit holes in back of mounting channel, as shown in **Fig. 1.** Attach 1/2" conduit to mounting channel, as shown in **Fig. 2.** Place mounting channel into position on frame. Once mounting channel is in position and flush on frame, insert fasteners and tighten securely.

**LOW VOLTAGE CONNECTIONS**

**Fig. 1**

**HIGH VOLTAGE CONNECTIONS**

**END CAP REMOVED FROM THIS END**

**NOTE:** The conduit set-up shown is for a 4630 mounting. Conduit location will vary with other mountings.

**LOW VOLTAGE CONNECTIONS**

**HIGH VOLTAGE CONNECTIONS**

**END CAP REMOVED FROM THIS END**

**LOW VOLTAGE**

**HIGH VOLTAGE**

3. Position mounting channel on frame, connect conduit and tighten securely.

**CONDUIT THROUGH TOP OF MOUNTING CHANNEL:**
After mounting plate is attached to frame, run 1/2" conduit to access holes in top of mounting channel. Conduit should be connected to channel as shown here in **Fig. 3.**

**HIGH VOLTAGE CONNECTION**

**LOW VOLTAGE CONNECTION**

**Fig. 3**
1. Voltage supplied to frame must correspond to voltage of operator.
2. Maximum butt size is 5".
3. Minimum door width is 36".
4. Auxiliary stop recommended at maximum opening point (170°).
5. Locate operator and track from center line of swing clear hinge pin if used.
6. Consult factory if door is hung on pivots or wide throw hinges.
7. Reinforcing per ANSI/SDI-100 recommended for hollow metal doors and frames.
8. Overall operator size: 33 1/2" X 4 3/8" X 5 3/16".
1. VOLTAGE SUPPLIED TO FRAME MUST CORRESPOND TO VOLTAGE OF OPERATOR.
2. MAXIMUM BUTT SIZE IS 5".
3. MINIMUM DOOR WIDTH IS 36".
4. MAXIMUM STOP THICKNESS IS 5/8".
5. MAXIMUM REVEAL DEPTH IS 4 1/2". UP TO 8" REVEALS WITH LONG ARM OPTION, CONSULT FACTORY.
6. AUXILIARY STOP RECOMMENDED AT MAXIMUM OPENING POINT (100°).
7. LOCATE OPERATOR & SHOE FROM CENTERLINE OF PIVOT POINT IF DOOR IS HUNG ON SWING CLEAR HINGES.
8. CONSULT FACTORY IF DOOR IS HUNG ON PIVOTS OR WIDE-THROW HINGES.
9. REINFORCING PER ANSI/SDI-100 RECOMMENDED FOR HOLLOW METAL DOORS & FRAMES.
10. OVERALL OPERATOR SIZE: 33 1/2" x 4 3/8" x 5 3/16".

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**Table of Measurements**

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**Additional Notes**

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<td>850</td>
<td>857</td>
<td>873</td>
<td>900</td>
<td>915</td>
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SECTION 2 - INSTALLING CLOSER ASSEMBLY

1. At this point of the installation, the mounting channel assembly should be attached securely to door frame. All electrical connections at the unit should be hooked up, but **UNPOWERED**.

2. CLOSING FORCE ADJUSTMENT: (See Fig. 4). Turn spring adjustment nut clockwise the required number of turns to match door width as shown in Tables 1 & 2. Maximum adjustments: 14 turns clockwise.

<table>
<thead>
<tr>
<th>TABLE 1</th>
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<tr>
<td><strong>INTERIOR DOOR</strong></td>
<td><strong>EXTERIOR DOOR</strong></td>
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<tr>
<td>MAXIMUM DOOR WIDTH</td>
<td>MAXIMUM DOOR WIDTH</td>
</tr>
<tr>
<td>NUMBER OF TURNS</td>
<td>NUMBER OF TURNS</td>
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<tr>
<td>36&quot;</td>
<td>36&quot;</td>
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<td>2 TURNS C.W.</td>
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<td>48&quot;</td>
<td>42&quot;</td>
</tr>
<tr>
<td>2 TURNS C.W.</td>
<td>7 TURNS C.W.</td>
</tr>
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</table>

**NOTE:** Do not allow any form of lubricant to come into contact with any part of clutch assembly.

Mount closer to mounting channel assembly. Closer and clutch gear coupler's should mesh loosely as shown in Fig. 5 above. Line closer mounting holes up with holes in stand-offs attached to mounting channel. Fasten with (4) 1/4 - 20 x 2 5/16" machine screws provided and tighten securely.

4. It is extremely important that closer is properly aligned with motor/clutch assembly.
4630 SERIES ARM ASSEMBLY INSTALLATION

Fig. 6

NOTE: Right hand door shown, left hand will be opposite.

30°

5/16" LOCK WASHER
EXTENSION
SHAFT SPACER
ARM SET SCREW
ARM ASSY
TRACK PLUG
ROLLER
END CAP

(2) 1/4 - 20 x 1 1/2" M.S.
OR
(2) No. 14 x 2 1/2" W.S.

1. Insert (4) track plugs into bottom of track, as shown in Fig. 6 above. Remove track end cap, insert track roller and replace end cap.

2. Mount track assembly to door, attaching securely with either (2) 1/4-20 x 1 1/2" machine screws or (2) No. 14 x 2 1/2" wood screws provided.

3. Locate SHAFT EXTENSION, LOCK WASHER, SPACER & ARM SHAFT SCREW in fastener box. Fit arm and spacer onto shaft extension. Place lock washer into the shaft extension so it locates between closer shaft and shaft extension. Place wrench on top closer shaft and rotate approx. 30°, as shown above. Fit arm assembly over closer shaft and fasten with arm shaft screw as shown in Fig. 6 above.

4. Open door partially. Pull closer arm away from frame. Fit hole in end of arm over the stud of track roller. Tighten arm set screw, attaching arm to track.

5. Proceed to REGULATION INFORMATION on page 9.
NOTE: Left hand door shown, Right hand will be opposite.

Locate SHAFT EXTENSION, LOCK WASHER & ARM SHAFT SCREW in fastener box. Fit arm onto shaft extension. Place lock washer into shaft extension so it will rest between closer shaft and shaft extension. Fit arm assembly over closer shaft so main arm is positioned at approx. 90° to operator assembly and fasten with arm shaft screw, as shown in Fig. 7 above.

Attach rod & shoe assembly to door with (2) 1/4 - 20 x 5/8" machine screws or (2) No. 14 x 1 1/2" wood screws provided. The longer end of shoe should point towards hinge edge, as shown above.

Open door partially, insert rod into forearm tube, then close the door.

Insert arm set screw into rod and finger tighten. Preload arm to 90°, as shown in Fig. 8 above. Holding arm in this position, place a wrench on arm set screw and tighten securely.

Proceed to REGULATION INFORMATION on page 9.
CLOSING SPEED ADJUSTMENT: (See Fig. 9)
The hydraulic regulation of the 4600 series has
been adjusted prior to shipment. Open door to at
least 90°, and observe closing of door. Make sure
the spring power and closing speed are adequate.
If adjustments are necessary, use 3/32 allen key
provided and refer to door diagram shown in Fig. 9.
Turn MAIN SPEED & LATCH SPEED screws
clockwise to slow door speed, counter-clockwise
to increase speed. The installation of the controller
will make the MAIN and LATCH SPEED regulating
screws inaccessible.

2. BACKCHECK ADJUSTMENT:
Backcheck slows the door swing as it approaches
full opening. Increase the backcheck setting only if
necessary. Adjust by turning BACKCHECK screw
clockwise by quarter turns. DO NOT USE AN
ABRupt BACKCHECK SETTING.

FOR 4640 SERIES ONLY: To adjust for additional
closing power at latch:

A. Remove forearm set screw and open door,
separating rod from forearm tube.
B. Remove shoe screws and flip shoe 180° as
shown in Fig. 10 at right. Re-attach shoe to
door.
C. Re-assemble arm, as in steps 3 & 4 on page 8.

LOCATING CAUTION / AUTOMATIC DOOR DECAL

1. Locate one decal on each side of door, near latch area. Decal must
be located a 58" (+/- 5") from the floor to the center line of the sign.
The decal location must be visible without interference from door trim
or auxiliary door hardware.

2. Clean the 6" x 6" area where decal is to be placed. Apply decal by
removing the backing and "rolling" it onto door. This will help prevent
air bubbles from being trapped under decal.
SECTION 3 - INSTALLATION & ADJUSTMENT OF CONTROLLER BOARD

**NOTE:** Be sure electrical power source is disconnected.

**MOUNT CONTROLLER TO OPERATOR ASSEMBLY:** Locate controller assembly in shipping carton. Position the controller as shown in Fig. 11. Slide onto mounting plate assembly, guiding cut-outs in controller onto mounting pins as shown.

Once the front of controller is fitted onto pins, push entire controller into position, as shown in Fig. 12. With controller in proper position, insert (1) unpainted #8 - 32 x 3/8" flat head screw into bottom of mounting plate, as shown.

**NOTE:** For adjustments to door closer regulating screws, controller must be removed. Do this by: Removing power to operator, unplugging the electrical connections, removing screw, tilting controller away from operator and disengaging controller from mounting pins. Follow steps 1 & 2 above to reattach.

**WIRING CONNECTIONS:**

There will be 3 keyed wiring harness connectors shipped in the hardware box. The first is a ribbon cable connector. It should be fitted into receptacles on rear board assembly and the controller as shown in CONNECTION #1 of Fig. 13.

The second connector is a 2 wire lead for the 120 VAC power and should be fitted firmly into into receptacles on rear board assembly and the controller as shown in CONNECTION #2 of Fig. 13.

The third connector is for the motor / clutch. The connector should be fitted firmly into receptacle on the controller as shown in CONNECTION #3 of Fig. 13.

**Electrical power can now be safely supplied to the 4600 series operator.** The controller settings have been pre-set prior to shipment. Adjustment information is detailed on pages 15-17. It will be necessary for the 4600 series door operator to be functional while adjustments and settings are made. Trigger actuator device(s) and check to make sure that door opens freely. Arm assembly motion and door travel should not make contact or have interference with any object.
LOW VOLTAGE (CLASS 2 NEC) ELECTRICAL CONNECTIONS

SINGLE DOOR WIRING CONNECTIONS

<table>
<thead>
<tr>
<th>FUNCTION</th>
<th>TERMINAL</th>
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<tr>
<td>Actuator - Normal Input (N.O.)</td>
<td>16 &amp; 17 or 18 &amp; 19</td>
</tr>
<tr>
<td>Actuator - Sequential Input (N.O.)</td>
<td>8 &amp; 19</td>
</tr>
<tr>
<td>Actuator - Alternate Action (N.O.)</td>
<td>15 &amp; 17</td>
</tr>
<tr>
<td>Actuator - Continuous (N.O.)</td>
<td>6 &amp; 17</td>
</tr>
<tr>
<td>Sequential Output</td>
<td>9</td>
</tr>
<tr>
<td>Stop Side Safety (N.O.)</td>
<td>19 &amp; 20</td>
</tr>
<tr>
<td>Swing Side Safety (N.O.)</td>
<td>19 &amp; 21</td>
</tr>
<tr>
<td>Fire Alarm Contact (N.C.)</td>
<td>13 &amp; 14 (Fire Shunt)</td>
</tr>
<tr>
<td>Auxiliary Relay Contacts (5 amp max)</td>
<td>10 - Common</td>
</tr>
<tr>
<td>E.S. Relay Contacts (5 amp max)</td>
<td>11 - N.O.</td>
</tr>
<tr>
<td></td>
<td>12 - N.C.</td>
</tr>
<tr>
<td></td>
<td>22 - Common</td>
</tr>
<tr>
<td></td>
<td>23 - N.O.</td>
</tr>
<tr>
<td></td>
<td>24 - N.C.</td>
</tr>
<tr>
<td>12V DC &amp; 24V DC Negative*</td>
<td>2, 4, 13, 17, &amp; 19</td>
</tr>
<tr>
<td>12V DC Positive*</td>
<td>5 &amp; 7</td>
</tr>
<tr>
<td>24V DC Positive*</td>
<td>1 &amp; 3</td>
</tr>
</tbody>
</table>

* Note: 1 Amp max load between 12V and 24V DC outputs
SIMULTANEOUS PAIR WIRING CONNECTIONS

ANY NORMALLY OPEN DRY CONTACT ACTUATOR

SEQUENTIAL WIRING CONNECTIONS - SIMULTANEOUS VESTIBULE

ANY NORMALLY OPEN DRY CONTACT ACTUATOR

SEQUENTIAL ACTUATOR

VESTIBULE ACTUATOR

SEQUENTIAL ACTUATOR

SEQUENTIAL WIRING CONNECTIONS - INDEPENDENT VESTIBULE

ANY NORMALLY OPEN DRY CONTACT ACTUATOR

VESTIBULE ACTUATOR

SEQUENTIAL ACTUATOR

VESTIBULE ACTUATOR

SEQUENTIAL ACTUATOR
WIRING INFORMATION FOR ELECTRONIC LATCHING DEVICES

12V or 24V power supply by others

FAIL SAFE LATCHING DEVICE

- 12V / 24V POWER SUPPLY BY OTHERS

CONTROL INPUT

FAIL SECURE LATCHING DEVICE

- 12V / 24V POWER SUPPLY BY OTHERS

CONTROL INPUT

WIRING INFORMATION FOR ELECTRIC STRIKE / MAG-LOCK SYSTEM

* Capacitor and diode are taped to the inside of the operator cover.

24V DC

+ FAIL SECURE STRIKE

12V DC

+ FAIL SECURE STRIKE

24V DC

+ FAIL SAFE STRIKE OR MAG-LOCK

12V DC

+ FAIL SAFE STRIKE OR MAG-LOCK

FOR ADDITIONAL WIRING INFORMATION CONTACT LCN CLOSERS ELECTRICAL APPLICATIONS DEPT. AT 800 - 526 - 2400
Consult diagram above. Each setting / indicators labeled #1 - #10, which correspond with numbers below. Adjustments for #3 & #4 are made with a small flat blade screwdriver. Turn clockwise to increase speed / force or counterclockwise to decrease speed / force. Controller functions are preset before shipment. **Adjustments should be made only if necessary.** Factory pre-set positions are shown on controller label.

1. **ON / OFF SWITCH** - Allows operator to be turned on & off without disconnecting power. NOTE: Internal circuit breaker is reset by turning unit off then back on.

2. **HOLD OPEN SWITCH** - Provides option to keep door in hold open position (fire alarm signal will override).

3. **OPENING SPEED** - Adjusts opening speed of door. Most installations will be within ANSI 156.19 specifications at maximum adjustment (see TABLE 3 on pg. 18). Large, heavy doors and / or strong door closer backcheck settings may require a slower speed adjustment for proper operation. As a general rule, a slower door speed and use of an auxiliary door stop will provide smoother operation. Max. opening speed to 90° is 5 seconds.

4. **OPENING FORCE** - Adjusts amount of force the door exerts when opening (15 lbs. max). Normal adjustment is for door to open 90° or encounter an auxiliary door stop, where motor will stop. If clutch slips more than 1/4 turn when door stops, adjust OPENING FORCE down until there is minimal or no clutch slippage. If OPENING FORCE is increased too much, it may overpower clutch & motor. Motor will stop running after 15 seconds. It will then go into HOLD OPEN DELAY and cycle through the closing sequence.

5. **TIME DISPLAY** - Displays a numeric value relating to the timing adjustment indicated on the mode display. 16 = Approximately 5 Seconds.

6. **UP BUTTON** - Increases time display number or change from (OFF to ON) when in programming mode.

7. **DOWN BUTTON** - Decreases time display number or change from (ON to OFF) when in programming mode.

8. **MODE BUTTON** - Advances through programming setups indicated on Mode Indicator.

9. **OPERATING INDICATORS** - Displays operating information about internal functions and external hardware.

10. **MODE INDICATION** - When programming, indicates the program mode currently being displayed.
CONTROLLER PROGRAMMING MODES

- **HOLD OPEN TIME**: Adjusts the amount of time door stays open after reaching the 90° position.
- **90° SLOW DOWN TIME**: The time from start of door movement to a transition at approximately 70°, when door opening speed is reduced.
- **ONE SHOT INPUT (OFF/ON)**: If off, hold open delay starts upon last activation input signal. If on, hold open delay starts upon first activation input signal and ignores all others.
- **EXTERIOR MODE (OFF/ON)**: If off, door stops and hold open timer starts after door encounters first restriction. If on, door will pause for 1 second upon first restriction (wind), then try to open again. Hold open timer starts after door encounters second restriction.
- **E.S. DELAY**: Controls the time between activation signal and actual door movement. Allows time for electric latching hardware to release before door starts to open. Default time should only be adjusted when using electric latching hardware.
- **E.S. 3 SECOND POWER (OFF/ON)**: If off, E.S. Relay is powered entire time door is open. Releases when door starts to close. If on, E.S Relay is powered for only 3 seconds after door is activated, then releases.
- **SEQUENTIAL DELAY**: Controls the time from first door activation to second door activation during sequential door application. Should only be adjusted for sequential door application.
- **ALTERNATE ACTION TIME**: Controls the time the door will remain open after an alternate action input is received. Provides an automatic second input to close the door if a second alternate action input is not received within the preset time. Should only be set if using alternate action door application.
- **LOCKOUT TIME**: Controls the time that a safety scanner input is ignored during door closing. Should only be set if safety scanners are used.
CONTROLLER PROGRAMMING

Apply power to operator after all components are installed. Controller will perform a self diagnostics and Display will show an Error Code if error is present. If no error is present, operator will be in RUN Mode ("POWER" Operating Indicator Light "ON") and the Display will be blank.

Normal Operating Mode = Power and Safety Clear indicators on controller lit.

ERROR CODES:
- E01 = Non-functional Microprocessor
- E02 = No 12V and 24V power supplies
- E03 = Motor / Clutch not plugged in or open coil. Resistance values (Clutch 1200 ohms) (Motor 40 to 70 ohms)
- E04 = Continuous activation signal upon power up or when leaving programming mode.

If (H.O./ALT. Action) indicator on controller is lit, check hold open switch on end cap. Must be off.
If (NORMAL/SEQ.) indicator on controller is lit, check for mis wired or stuck actuator switch. Must be N.O. contacts.

To enter programming mode, press MODE button.

- HOLD OPEN TIME indicator will be lite and display will show programmed time To change time, press UP or DOWN button respectively. Adjustment 0 to 999. Default 16 To continue programming mode, press mode button.

- 30° SLOW DOWN TIME indicator will be lite and display will show programmed time. To change time, press UP or Down button respectively. Adjustment 0 to 26. Default 9 To continue programming mode, press mode button.

- ONE SHOT INPUT indicator will be lite and display will show programmed state. To change state, press UP or DOWN button respectively. Adjustment ON/OFF. Default OFF To continue programming mode, press mode button.

- EXTERIOR MODE indicator will be lite and display will show programmed state. To change state, press UP or DOWN button respectively. Adjustment ON/OFF. Default ON To continue programming mode, press mode button.

- E.S. DELAY indicator will be lite and display will show programmed time To change time, press UP or DOWN button respectively. Adjustment 0 to 16. Default 0 To continue programming mode, press mode button.

- E.S. 3 SECOND POWER indicator will be lite and display will show programmed state. To change state, press JP or DOWN button respectively. Adjustment ON/OFF. Default ON To continue programming mode, press mode button.

- SEQUENTIAL DELAY indicator will be lite and display will show programmed time To change time, press UP or DOWN button respectively. Adjustment 0 to 100. Default 0 To continue programming mode, press mode button.

- ALTERNATE ACTION TIME indicator will be lite and display will show programmed time To change time, press JP or DOWN button respectively. Adjustment 0 to 3. Default 0 = No Time Out, 1 = 10 Minute Time Out, 2 = 20 Minute Time Out, 3 = 30 Minute Time Out To continue programming mode, press mode button.

- LOCKOUT TIME indicator will be lite and display will show programmed time To change time, press UP or DOWN button respectively. Adjustment 0 to 66. Default 20 To exit programming mode, press mode button to return to RUN mode (display blank). Programming is now complete. Activate operator to check that all function and timings are correct. Setting can be changed at any time by pressing Mode Button to scroll to the desired Program Mode.

Note: Controller will automatically exit Programming Mode and return to run Mode after 15 seconds with no input from MODE, UP or DOWN buttons.

TO REST BACK TO FACTORY DEFAULTS: HOLD DOWN THE MODE BUTTON WHILE TURNING POWER TO OPERATOR "OFF" THEN BACK "ON" USING THE ON/OFF SWITCH ON OPERATOR END CAP.
TABLE 3 (below) lists the maximum door opening speeds specified by ANSI 156.19 for Low - Energy Door Operators. 4630/4640 max. opening speed to 90° is 5 seconds. If weight of door is unknown, use TABLE 4 to determine approximate door weight.

TABLE 3

<table>
<thead>
<tr>
<th>MAXIMUM DOOR WEIGHT IN POUNDS</th>
<th>FASTEST OPENING TIME 0° to 80°</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DOOR WIDTH IN INCHES</td>
</tr>
<tr>
<td>100 lbs.</td>
<td>3.0 sec</td>
</tr>
<tr>
<td>125 lbs.</td>
<td>3.5 sec</td>
</tr>
<tr>
<td>150 lbs.</td>
<td>3.5 sec</td>
</tr>
<tr>
<td>200 lbs.</td>
<td>4.0 sec</td>
</tr>
</tbody>
</table>

TABLE 4

<table>
<thead>
<tr>
<th>TYPE OF DOOR</th>
<th>WEIGHT PER SQ. FT.</th>
<th>TYPICAL 3'-0&quot;x7'-0&quot; DOOR WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Solid Core Wood</td>
<td>5.5 lbs</td>
<td>115 lbs</td>
</tr>
<tr>
<td>- 20 Ga. Flush Hollow Metal</td>
<td>- Aluminum x 1/4&quot; Glass</td>
<td>7.0 lbs</td>
</tr>
<tr>
<td>- Mineral Core Door</td>
<td>- 16 Ga. Flush Hollow Metal</td>
<td>- Aluminum x 1&quot; Glass</td>
</tr>
</tbody>
</table>

BASIC OPERATION INFORMATION

NOTE: If fire alarm contacts are activated at any time during the opening cycle or while in hold open, the 4600 series Door Operator will override any function and close the door immediately. All power door functions are stopped until the fire alarm contacts are deactivated.

When triggered by actuator switch:

1. - Controller checks for optional swing-side safety sensor input. If activated, opening cycle is aborted.
2. - If sequential actuator inputs are used then the A - B SEQUENTIAL DELAY timer is started.
   - Auxiliary and E.S. relay contacts are triggered
3. - Opening cycle starts after ELECTRIC STRIKE DELAY times out.
4. - Motor & clutch are activated.
5. - If sequential actuator inputs are used then the A - B SEQUENTIAL DELAY output will signal.
6. - Controller monitors the motor during opening cycle for door obstructions that exceed the preset OPENING FORCE setting. If an obstruction is encountered, controller will pause opening cycle for one second, then attempt to open door again (SECOND CHANCE feature).
   - Opening cycle resumes until power opening range is reached or a second obstruction is sensed.
   - Opening door encounters BACKCHECK range of door closer. A strong BACKCHECK setting will cause controller to act as though it hit an obstruction, triggering the SECOND CHANCE feature. Some experimentation with OPENING FORCE, OPENING SPEED & BACKCHECK settings may be necessary for applications where wind and / or air pressure problems occur.
   - Controller goes into HOLD OPEN DELAY mode for preset amount of time.
   - The controller will maintain the hold open mode as long as an actuator input signal is present. The HOLD OPEN DELAY mode timer is reset with each additional actuator input signal. With each additional sequential actuator input a sequential output signal is sent.
7. - Controller checks for optional push-side safety sensor input. If activated, the operator will hold door open until sensor de-activates.
8. - Controller releases door for closing cycle. Closing cycle is controlled by door closer assembly.

COVER INSTALLATION

Depending on conduit option used and hand of door, remove proper knock - outs from operator cover. NOTE: If concealed conduit option is being used, do not remove conduit knock - outs.

. Align cover with operator and guide into position as shown here in Fig. 14. Attach cover to the operator using (2) painted # 8 - 32 x 3/8" flat head machine screws, as shown.

Fig. 14
4630/4640 REPLACEMENT PARTS LIST INFORMATION

When ordering replacement parts remember to specify Model (4640 or 4630) in front on the desired part #. Also specify Color / Finish when required.

4631 ARM PARTS

- 4630 - 61 SHAF T SPACER
- 4630 - 159 ARM SHAFT SCREW
- 4630 - 141 TRACK PLUG
- 4630 - 3077T ARM ASSY.
- 4630 - 3034 ROLLER
- 4630 - 3038 TRACK ASSY.
- 4630 - 30 ARM SET SCREW
- 4630 - 73 END CAP

4642 ARM PARTS

- 4640 - 159 ARM SHAFT SCREW
- 4640 - 83 ARM SET SCREW
- 4640 - 79 ROD & SHOE
- 4640 - 3077 MAIN ARM
The Possibilities Are Endless With

STANLEY

Dura-Glide®

2000 & 3000 Series

Sliding Doors
HISTORY
The Stanley Works, established in 1843, is proud of our over 150 year tradition of excellence. In 1930, Stanley introduced the first automatic door to the market. Sixty five+ years later, Stanley Access Technologies remains the leader in technology, reliability and customer satisfaction.

QUALITY
Our commitment to quality is easily defined by the BVQI International Standard Organization (ISO) 9001 certification we proudly display. We were the first and remain the only Automatic Door manufacturer in the United States to have earned ISO 9001 certification. Our manufacturing facilities are located in Farmington, CT, USA.

Idler pulley has an easy to adjust belt tension device.

Our fiberglass reinforced toothed timing belt prevents slippage, ensuring smooth operation.

Electric Interface Board offers single electric interface for ease of installation and service.

Optional Solenoid Lock provides additional security.

Proven Reliability
• Microprocessor controller continually monitors the doors’ position at every point during the opening and closing cycle.
• Special logic provides:
  • safety logic — prevents doors from closing too soon.
  • safety search circuitry — automatically reverses the door if it comes into contact with anything during the opening or closing cycle.
  • check speeds — monitors opening and closing.
• All products undergo rigid environmental stress testing as well as life cycle testing which exceeds 1 million cycles.
RESEARCH & DEVELOPMENT
Stanley supports on-going new product development and improvements. Our state-of-the-art microprocessor technology is indicative of the emphasis we place on creating and maintaining a competitive edge.

CUSTOMER SERVICE
Our specially trained staff is experienced in all phases of business including invoicing, shipping procedures, finance/credit issues as well as in-depth product knowledge.

MANUFACTURING
We have incorporated the "Demand Flow Technology (DFT)" process into our state-of-the-art manufacturing facilities. The "DFT" process enables us to maintain the highest degree of flexibility and control over our production schedule giving us the ability to react immediately to customer demand.

Simple Installation Easy to Service
- Factory adjusted and tested. All operator components are fully tested prior to shipping to ensure quick installation.
- Preassembled for easy installation. All components on the DG6000 & DG3000 Series are assembled in the header at the factory. Once on site, simply mount the assembly and hang your door panels.
- Built in microprocessor. Eliminates the need for unnecessary adjustments and service calls.
- Specially trained service staff. Offers technical support on our complete product line.
Once your automatic door system is installed, its lifetime value and performance—not to mention your satisfaction and ease of mind—depend on a cost-effective program of regular inspections, reliable maintenance and, when needed, prompt and expert service. That’s why Stanley Magic-Door, Inc. is your best choice for planned maintenance packages. We have North America’s largest and best trained network of service technicians who not only have the technical expertise and resources to maintain and quickly service our products, but other brands as well. And they’re available 24 hours a day. Stanley Magic-Door, Inc. also offers a complete range of Retrofitting and Remodeling programs, for both manual and automatic doors.

FOR SERVICE, CALL TOLL-FREE 1-888-DOOR-444

**Specifications**

**DG2000 & DG3000 Series**

*Common features of Stanley Dura-Glide® Sliding Doors—All models available in bi-part (double sliding) or single slide configuration.*

- Header Dimension: 6” width x 8” height
- Stanley door packages are individually engineered to fit your job requirements.
- Standard Package Height: 7’ - 8’
- Standard Package Width: Single Slide-up to 9’, Bi-Part-up to 14’

**Microprocessor Controller**

- Adjustable Opening & Closing Speed
- Adjustable Distance & Speed of Breaking
- Adjustable Reduced Opening
- Adjustable Time Delay
- Auto Reverse on Obstruction
- Slow Speed Search for Obstruction

- 1/8 HP DC Gear Driven Motor
- Electrical Requirements: 120vac, 5 amp min.
- Fiberglass Reinforced Toothed Timing Belt
- Maximum Panel Weight - Up to 400lb (with heavy duty option)
- Door Panels that can be used — Glass, Aluminum, Wood, Metal or Custom

The range of speed is based upon the size and weight of the door:

- Opening Speeds - .5’ - 2.5’ per sec.
- Closing Speeds - .5’ - 1.5’ per sec.

Clear Door Opening Typical Width: 3’ - 6’

Type Approved CE/UL/TUV/cUL

**(System is disabled when panels breakout)**

- **DG 2000** — External Sliding Panels Only
- **DG 3000** — Full or All Panels Breakout

**Safety/Security**

**Safety System**

The Stanley Safety System provides the safest, most comprehensive pedestrian zone coverage available consisting of:

- **2 SU-050 Motion Detectors**
- **1 Stan-Guard® Threshold Sensor**

Our SU-050 Motion Sensor offers both bi-directional and uni-directional coverage. Capable of detecting all motion, fast or slow, in both directions. The SU-050 also incorporates a built in choice of wide or narrow zone coverage.

The Stan-Guard® Threshold Sensor is an active, infra-red presence detector which detects people or objects directly under the header and holds the door open until the threshold area is clear.

![Safety System Diagram](image)

**Solenoid Electric Lock (Option)**

Offers the security and protection of an electric lock located in the header. Our Solenoid Locking System is available in both Fail Secure and Fail Safe modes. In both styles, the locks are always activated.

**Fail Secure:** Upon loss of power, the doors remain in the locked position providing security against theft or vandalism. Emergency egress can be accomplished by using a panic exit device.

**Fail Safe:** Upon loss of power, the doors unlock allowing for emergency egress from the building.

**Battery Back-Up (Option)**

Upon loss of power, our battery back-up will either open or close doors for one cycle.

**Rotary Switch**

*Option* Six position Rotary Switch and 6 position Key Switch options are available as either factory installed or as a retrofit kit. The 6 positions are: automatic, closed & locked, open, reduced opening/one way, reduced opening/2 way traffic), one way (full open).

Stanley Access Technologies offers two convenient ways to access drawings & specifications on our complete product offering. Our Architectural Specifier is available on CD ROM or in hard copy binder format.

**Access Technologies**

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