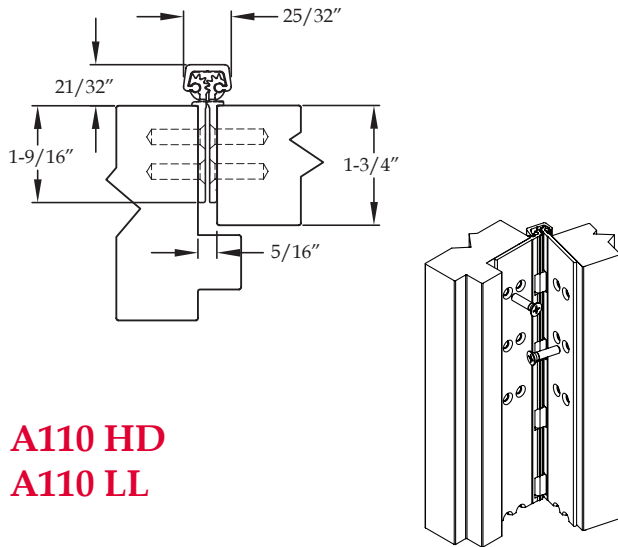


## Full Concealed



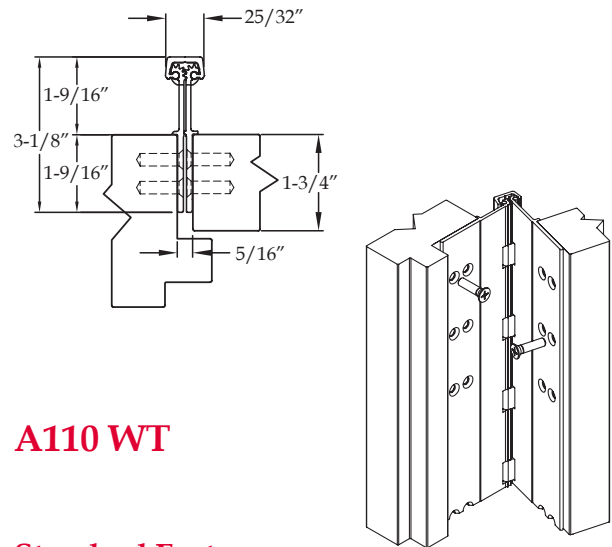
### A110 HD A110 LL

#### Standard Features

- Full concealed, heavy duty
- No door inset, flush mount
- 48" door width maximum
- 450 lbs. door weight maximum
- "LL" model for doors up to 1,000 lbs. (lead-lined staggered hole pattern)
- **Fasteners:** 12-24 x 7/8" undercut self-drilling, thread-forming tek machine screws
- **Standard lengths:** 79", 83", 85", 95" and 120"
- **Finishes:** Clear, dark bronze and black anodized
- **Fire Rating**
  - Approved for use on metal swinging type fire doors rated up to and including 90 minutes (Specify "FR" option for 3 hour rating)
  - Approved for use on wood swinging type fire doors rated up to and including 60 minutes (Specify "FR" option for 90 minute rating)

#### Options Available

- See pages F-7 to F-8 for option availability and details



### A110 WT

#### Standard Features

- Full concealed, heavy duty
- No door inset, flush mount
- Wide throw for applications that need extra clearance for the door or the frame
- 48" door width maximum
- 450 lbs. door weight maximum
- **Fasteners:** 12-24 x 7/8" undercut self-drilling, thread-forming tek machine screws
- **Standard lengths:** 79", 83", 85", 95" and 120"
- **Finishes:** Clear, dark bronze and black anodized
- **Fire Rating**
  - Approved for use on metal swinging type fire doors rated up to and including 90 minutes (Specify "FR" option for 3 hour rating)
  - Approved for use on wood swinging type fire doors rated up to and including 60 minutes (Specify "FR" option for 90 minute rating)

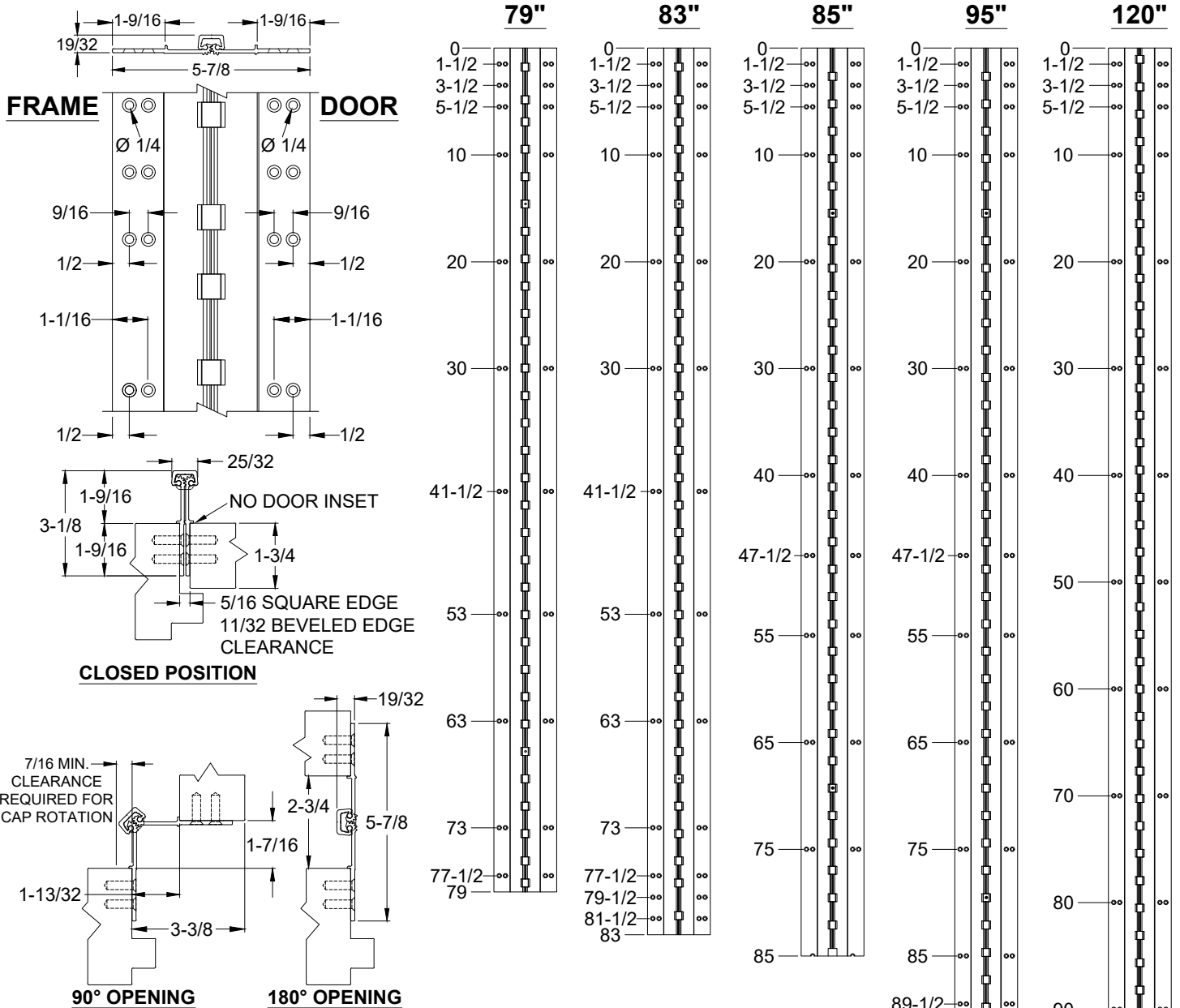
#### Options Available

- See pages F-7 to F-8 for option availability and details



# A110WT HDLL - ALUMINUM GEARED HINGE, WIDE THROW, FLUSH MOUNT, FULL CONCEALED

- HINGES ARE SUPPLIED WITH LEAD-LINED MOUNTING HOLES FOR ADDITIONAL SUPPORT AS STANDARD



- NOTES:**
1. HINGES CUT TO CUSTOM LENGTH ARE CUT FROM THE BOTTOM.
  2. ALL DIMENSIONS ARE IN INCHES.
  3. ALL DIMENSIONS ARE TO CENTERLINE OF HOLES.



## STANDARD HINGE SIZES & SCREW DETAIL

| NOMINAL DOOR HEIGHT                           | 6'8"   | 7'0" | 7'2" | 8'0" | 10'0" |    |
|---|--|------|------|------|-------|----|
| ACTUAL HINGE LENGTH                           | 79"  | 83"  | 85"  | 95"  | 120"  |    |
| MODEL: HDLL = HEAVY DUTY (HD) LEAD-LINED (LL) | HDLL   | HDLL | HDLL | HDLL | HDLL  |    |
| FRAME   | 12-24 x 3/4" PHILLIPS FLAT HEAD, UNDERCUT, SELF DRILLING, THREAD FORMING TEK MACHINE SCREW | 22   | 26   | 22   | 30    | 34 |
| DOOR  | 12-24 x 3/4" PHILLIPS FLAT HEAD, UNDERCUT, SELF DRILLING, THREAD FORMING TEK MACHINE SCREW | 22   | 26   | 22   | 30    | 34 |

A110WT-ALUMINUM GEARED HINGE-03.DWG



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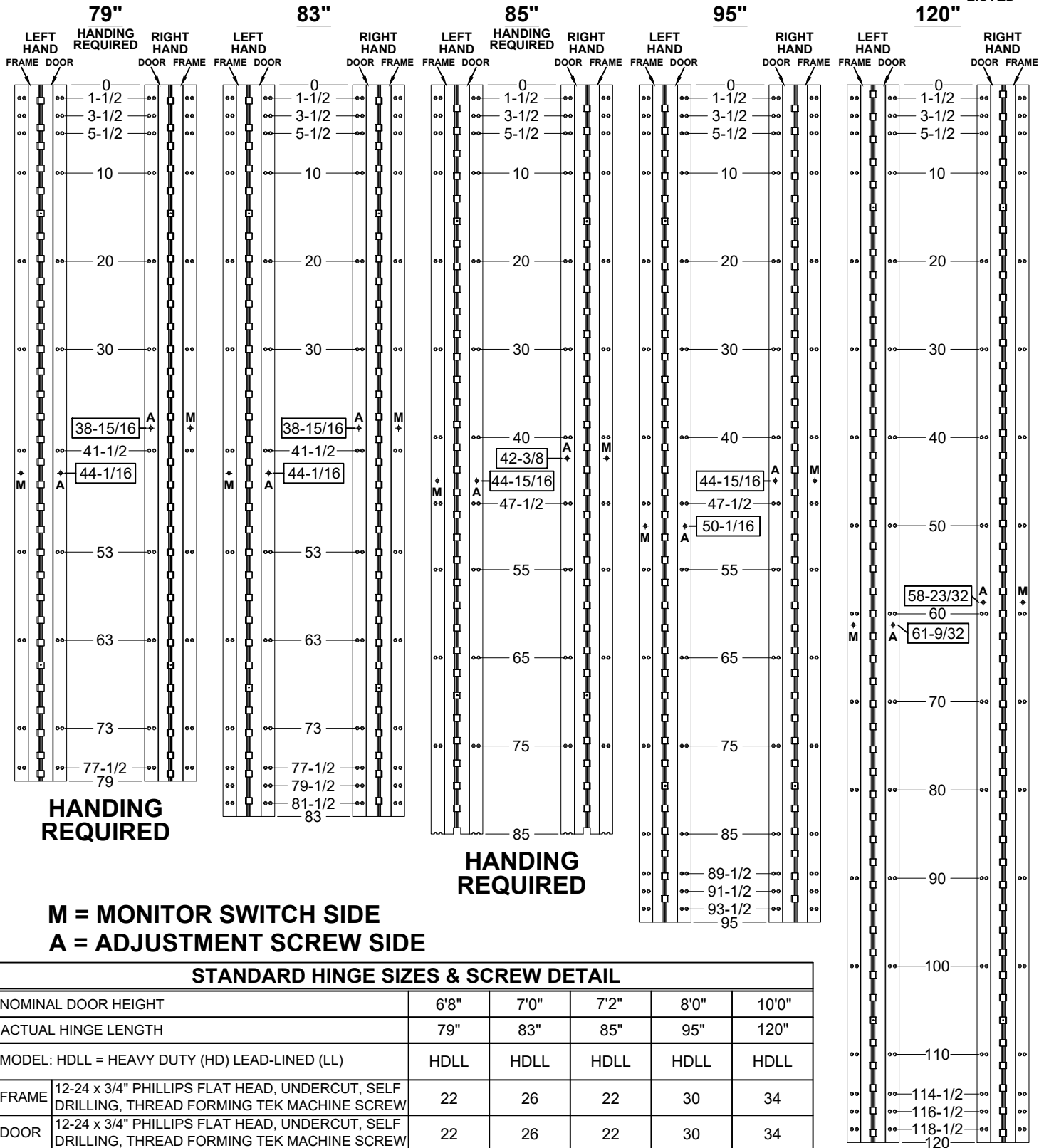
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**A110WT**  
**ALUMINUM GEARED HINGE**

PAGE 1 OF 1  
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**A110WT HDLL - ALUMINUM GEARED HINGE, WIDE THROW, FLUSH MOUNT, FULL CONCEALED**

- HINGES ARE SUPPLIED WITH LEAD-LINED MOUNTING HOLES FOR ADDITIONAL SUPPORT AS STANDARD
- "ES" OPTION, CONCEALED ELECTRIFICATION



A110WT-ES OPTION, CONCEALED ELECTRIFICATION-1-03



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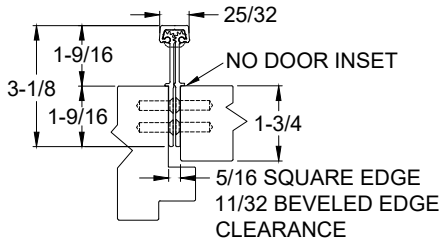
**A110WT - "ES" OPTION**  
**CONCEALED ELECTRIFICATION**

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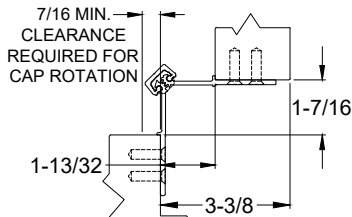
PAGE 1 OF 2  
REVISED 9-23-20

**A110WT HDLL - ALUMINUM GEARED HINGE, WIDE THROW, FLUSH MOUNT, FULL CONCEALED**

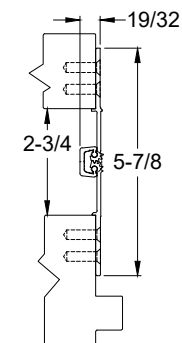
- HINGES ARE SUPPLIED WITH LEAD-LINED MOUNTING HOLES FOR ADDITIONAL SUPPORT AS STANDARD
- "ES" OPTION, CONCEALED ELECTRIFICATION



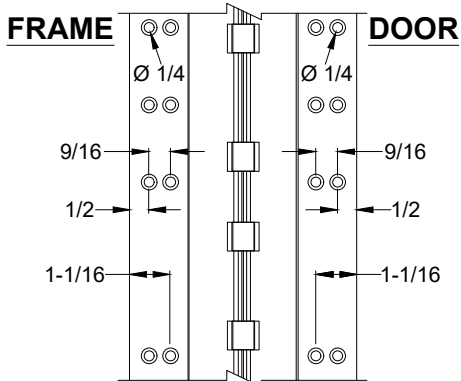
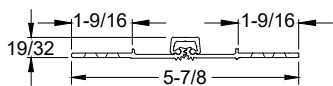
**CLOSED POSITION**



**90° OPENING**

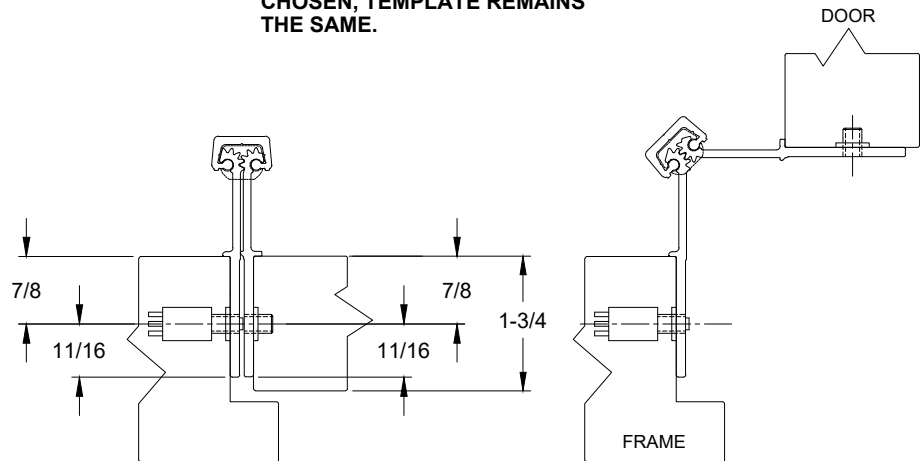


**180° OPENING**



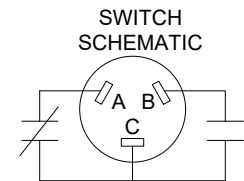
**NOTES:**

1. HINGES CUT TO CUSTOM LENGTH ARE CUT FROM BOTTOM OF HINGE.
2. SPECIFY HANDING WHEN ORDERING.
3. IF "M" OPTION (MOVEABLE PANEL) OR "R" OPTION (REMOVABLE PANEL) IS CHOSEN, TEMPLATE REMAINS THE SAME.

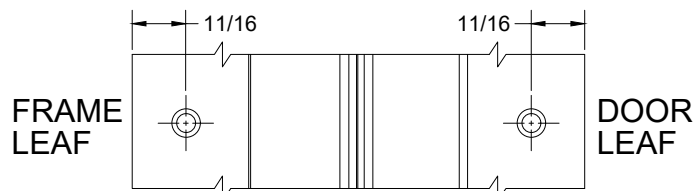
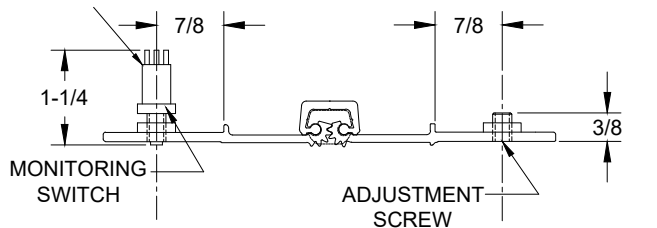


**EXPOSED MONITOR SWITCH VIEW, LEFT HAND SHOWN**

NOTE: 5/8" DIA. HOLE REQUIRED IN JAMB FOR MONITORING SWITCH AND A 7/16" DIA. HOLE FOR CLEARANCE OF ADJUSTMENT SCREW



A & C = NORMALLY CLOSED  
B & C = NORMALLY OPEN

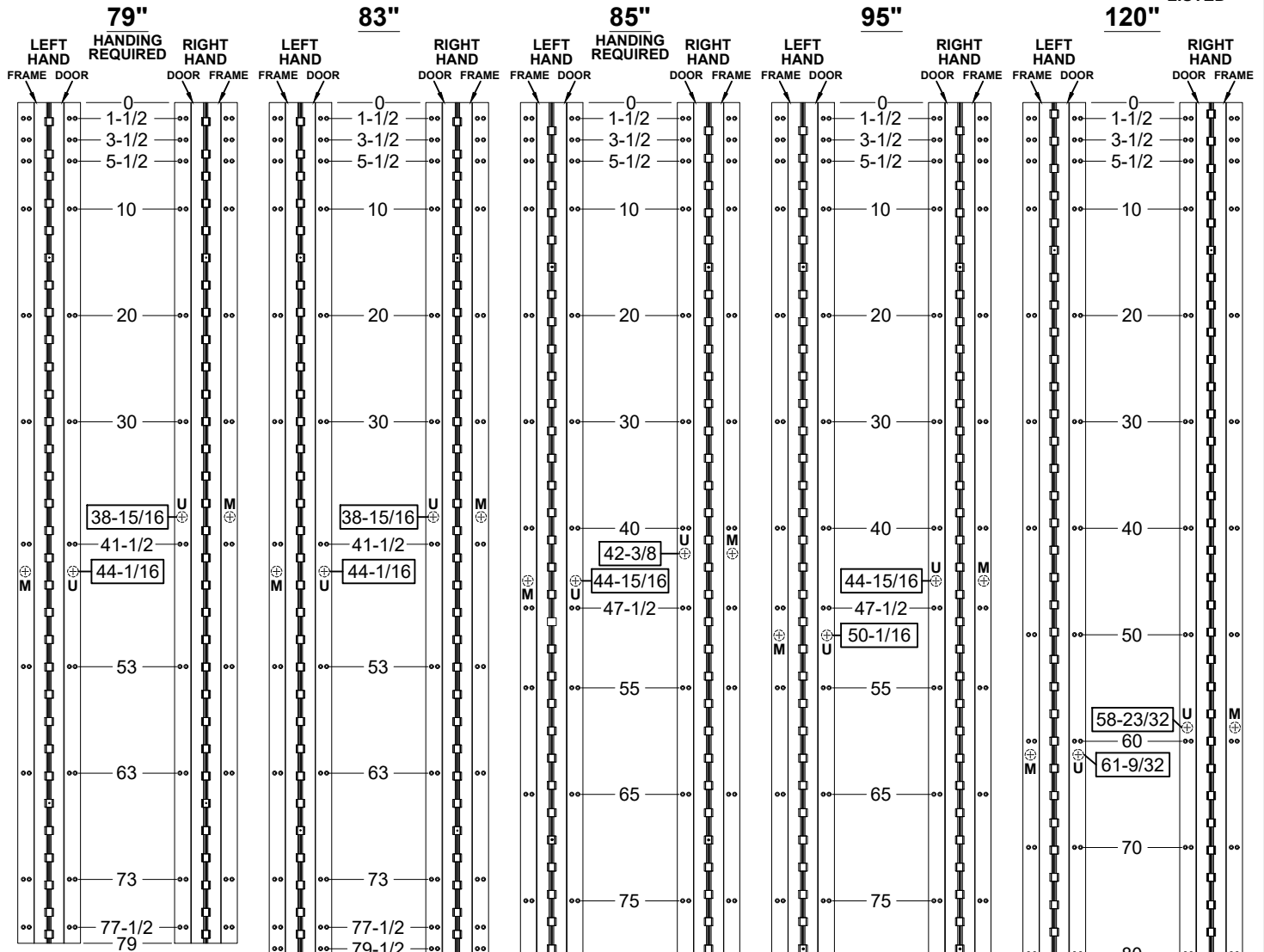


**EXPOSED MONITOR SWITCH VIEW**

A110WT-ES OPTION, CONCEALED ELECTRIFICATION-2-03

**A110WT HDLL - ALUMINUM GEARED HINGE, WIDE THROW, FLUSH MOUNT, FULL CONCEALED**

- HINGES ARE SUPPLIED WITH LEAD-LINED MOUNTING HOLES FOR ADDITIONAL SUPPORT AS STANDARD
- "EM" OPTION, CONCEALED ELECTRIFICATION



**HANDING REQUIRED**

**HANDING REQUIRED**

**M = MONITOR SWITCH SIDE  
U = MAGNET SIDE**

**STANDARD HINGE SIZES & SCREW DETAIL**

|   |  |      |      |      |       |
|---|--|------|------|------|-------|
| NOMINAL DOOR HEIGHT                           | 6'8"   | 7'0" | 7'2" | 8'0" | 10'0" |
| ACTUAL HINGE LENGTH                           | 79"  | 83"  | 85"  | 95"  | 120"  |
| MODEL: HDLL = HEAVY DUTY (HD) LEAD-LINED (LL) | HDLL   | HDLL | HDLL | HDLL | HDLL  |
| FRAME   | 12-24 x 3/4" PHILLIPS FLAT HEAD, UNDERCUT, SELF DRILLING, THREAD FORMING TEK MACHINE SCREW |      |      |      |       |
| DOOR  | 12-24 x 3/4" PHILLIPS FLAT HEAD, UNDERCUT, SELF DRILLING, THREAD FORMING TEK MACHINE SCREW |      |      |      |       |

A110WT-EM OPTION, CONCEALED ELECTRIFICATION-1-03.DWG



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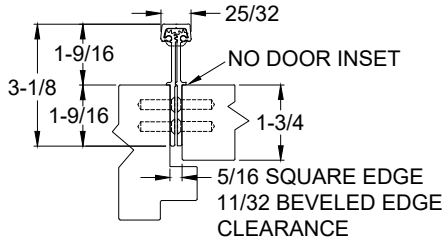
**A110WT - "EM" OPTION  
CONCEALED ELECTRIFICATION**

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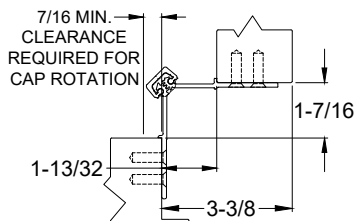
PAGE 1 OF 2  
REVISED 9-23-20

**A110WT HDLL - ALUMINUM GEARED HINGE, WIDE THROW, FLUSH MOUNT, FULL CONCEALED**

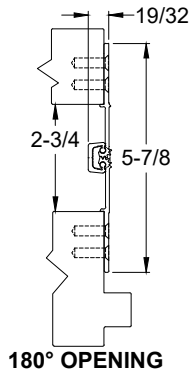
- HINGES ARE SUPPLIED WITH LEAD-LINED MOUNTING HOLES FOR ADDITIONAL SUPPORT AS STANDARD
- "EM" OPTION, CONCEALED ELECTRIFICATION



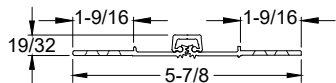
**CLOSED POSITION**



**90° OPENING**

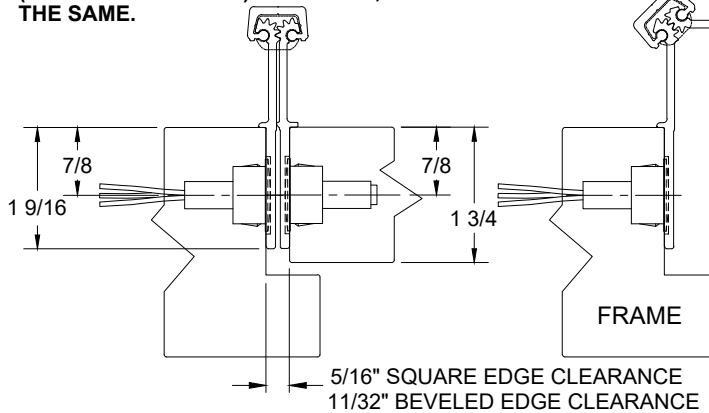


**180° OPENING**



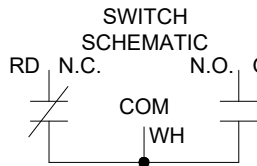
**NOTES:**

1. HINGES CUT TO CUSTOM LENGTH ARE CUT FROM BOTTOM OF HINGE.
2. SPECIFY HANDING WHEN ORDERING.
3. IF "M" OPTION (MOVEABLE PANEL) OR "R" OPTION (REMOVABLE PANEL) IS CHOSEN, TEMPLATE REMAINS THE SAME.

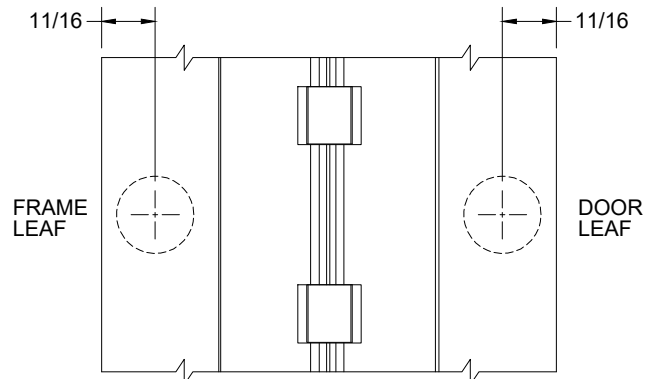
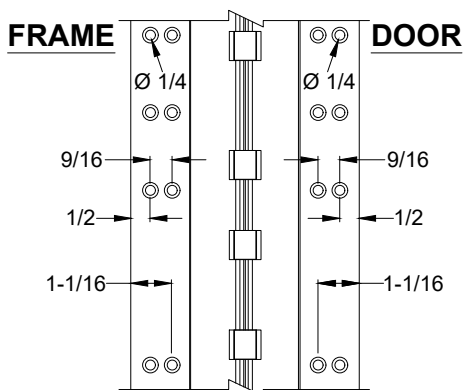
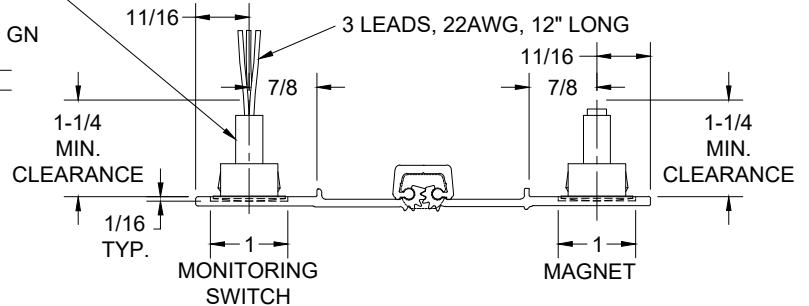


**MAGNETIC MONITOR SWITCH VIEW, LEFT HAND SHOWN**

NOTE: 7/8" DIA. MIN. CLEARANCE HOLE REQUIRED IN DOOR & FRAME FOR MONITORING SWITCH AND MAGNET



ELECTRICAL CONFIG.: SPDT  
 MAX. INITIAL CONTACT RESISTANCE : 0.140 OHM  
 MAX. CONTACT RATING: 5 WATT  
 MAX. SWITCHING VOLTAGE: 175 VDC  
 MAX. SWITCHING CURRENT: 0.25 AMP



**MAGNETIC MONITOR SWITCH VIEW**

A110WT-EM OPTION, CONCEALED ELECTRIFICATION-2-03.DWG



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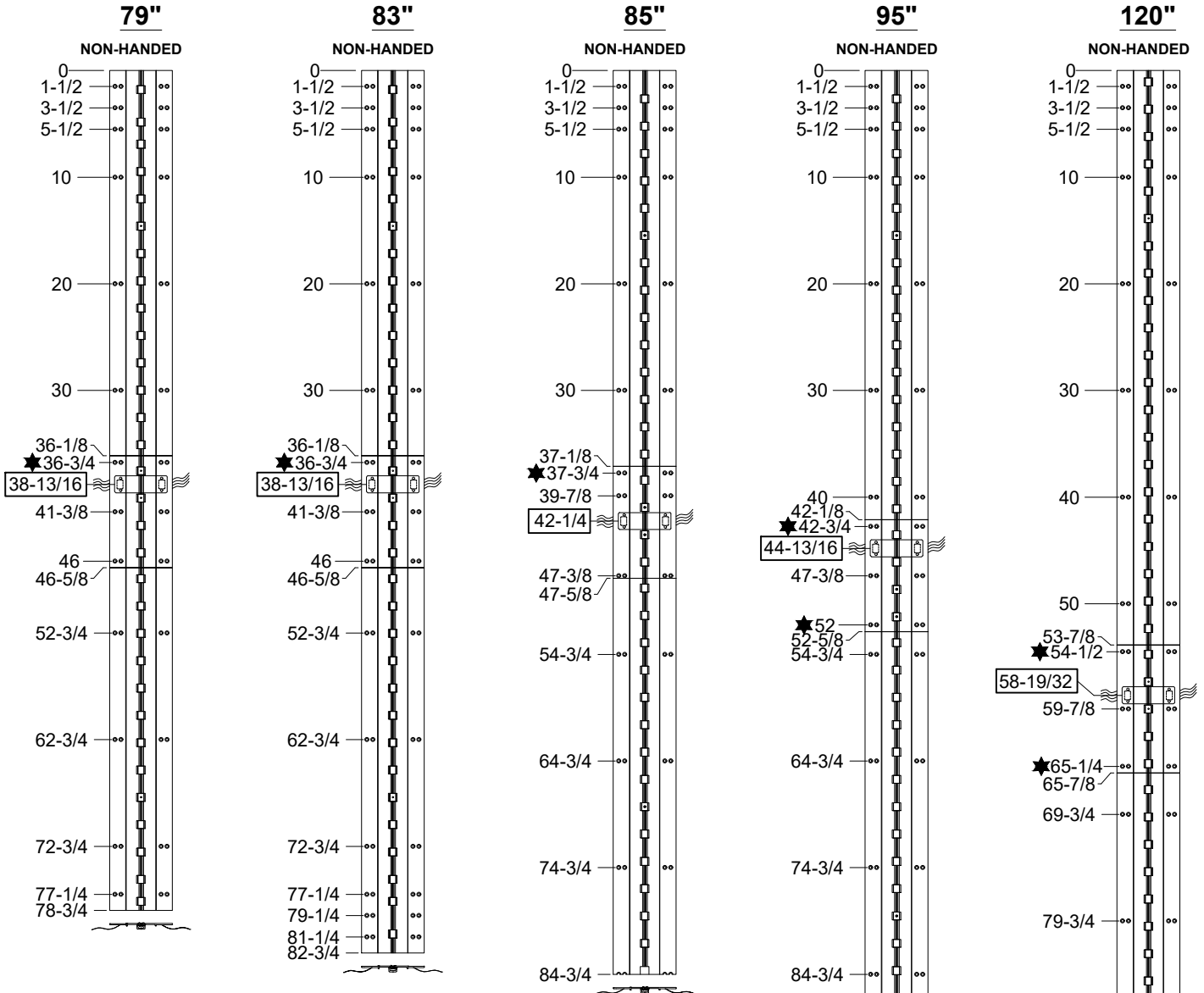
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**A110WT - EA OPTION, EASY ACCESS CONCEALED ELECTRIFICATION,  
ALUMINUM GEARED HINGE, WIDE THROW, FLUSH MOUNT, FULL CONCEALED**



- "R" REMOVABLE OPTION, FOR ELECTRICAL MODIFICATION



# 12 WIRE STANDARD

R = REMOVABLE, (3) INDIVIDUAL HINGES, THRU WIRE  
CAN BE REMOVED TO ACCESS WIRES.

★ = MANUFACTURING TO ADD (8) COUNTERSINK THRU HOLES FOR #12 FLAT HEAD SCREW.

### STANDARD HINGE SIZES & SCREW DETAIL

| NOMINAL DOOR HEIGHT                           | 6'8"   | 7'0"    | 7'2"    | 8'0"    | 10'0"    |    |
|---|--|---------|---------|---------|----------|----|
| ACTUAL HINGE LENGTH                           | 78-3/4"  | 82-3/4" | 84-3/4" | 94-3/4" | 119-3/4" |    |
| MODEL: HDLL = HEAVY DUTY (HD) LEAD-LINED (LL) | HDLL   | HDLL    | HDLL    | HDLL    | HDLL     |    |
| FRAME   | 12-24 x 7/8" PHILLIPS FLAT HEAD, UNDERCUT, SELF DRILLING, THREAD FORMING TEK MACHINE SCREW | 26      | 30      | 24      | 34       | 38 |
| DOOR  | 12-24 x 7/8" PHILLIPS FLAT HEAD, UNDERCUT, SELF DRILLING, THREAD FORMING TEK MACHINE SCREW | 26      | 30      | 24      | 34       | 38 |

A110WT-EA & R, ELECTRICAL MODIFICATION WITH REMOVABLE OPTION-1-01.DWG



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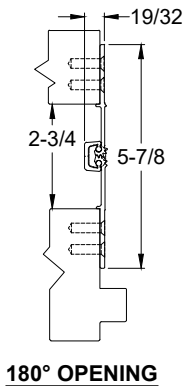
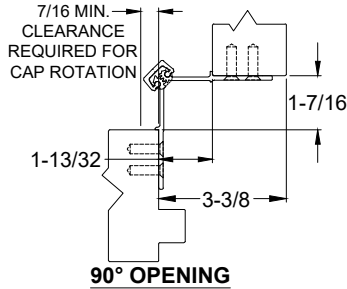
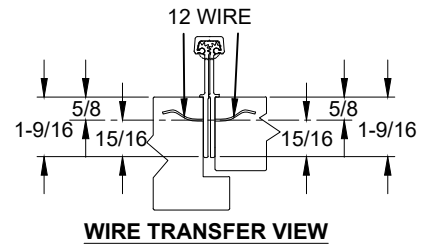
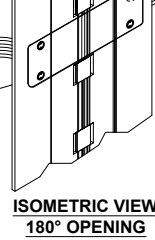
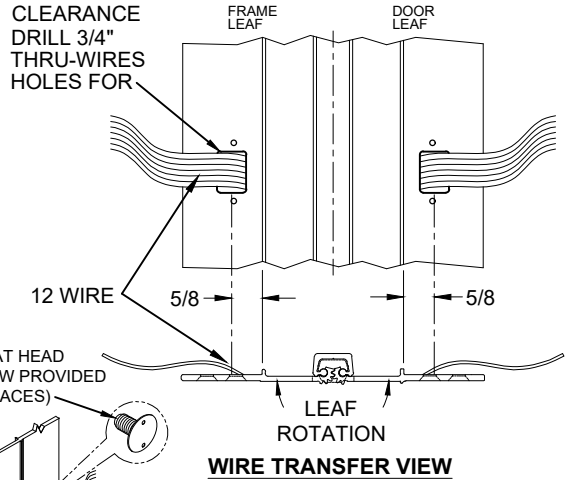
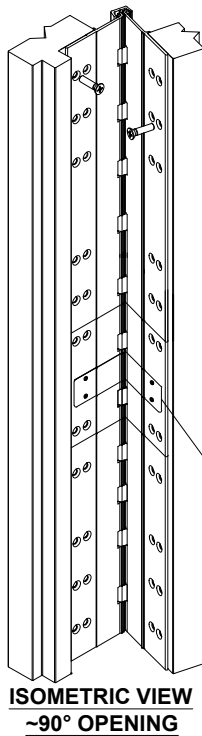
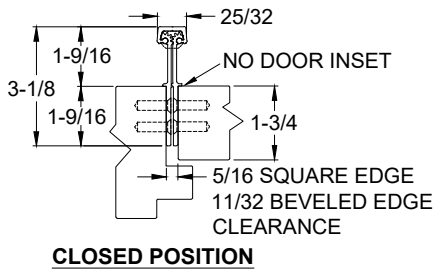
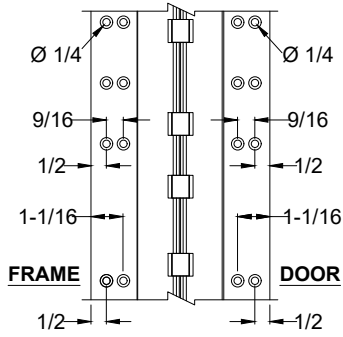
**A110WT - "EA" & "R" OPTION  
FOR ELECTRICAL MODIFICATION**

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**A110WT - EA OPTION, EASY ACCESS CONCEALED ELECTRIFICATION,  
ALUMINUM GEARED HINGE, WIDE THROW, FLUSH MOUNT, FULL CONCEALED**

- "R" REMOVABLE OPTION, FOR ELECTRICAL MODIFICATION



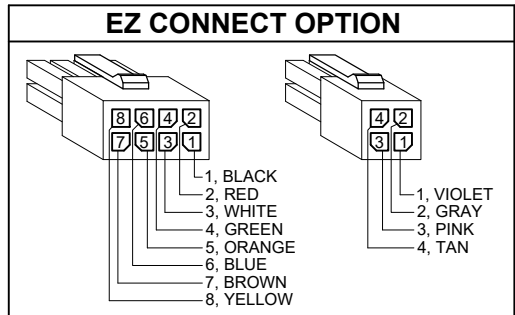
**NOTES:**

1. MOLEX CONNECTOR OPTION AVAILABLE - SUFFIX "EZ".

\* SPECIFY ELECTRIFIED HARDWARE MANUFACTURER FOR CONNECTOR COMPABILITY

**SPECIFICATION:**

- DESCRIPTION:** SINGLE CONDUCTOR #22 AWG MINIATURE HOOK-UP WIRE FOR APPLICATIONS REQUIRING EXTREME FLEXIBILITY.
- CONDUCTOR:** #22 AWG 168/44 (0.002") SOFT BARE COPPER LHL.
- INSULATION:** PROPRIETARY FORMULATION PVC 0.010" NOM. WALL MEETS VW-1 FLAME REQUIREMENT.
- DIAMETER:** 0.053" ± 0.003".
- RESISTANCE:** 16.7 OHMS MAX. @ 20°C, PER 1000 FT.
- VOLTAGE RATING:** 600 VOLTS RMS, DEPENDING ON SPECIFICATION.
- AVAILABLE AS RoHS COMPLIANT.**



A110WT-EA & R, ELECTRICAL MODIFICATION WITH REMOVABLE OPTION-2-01.DWG



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**A110WT - "EA" & "R" OPTION  
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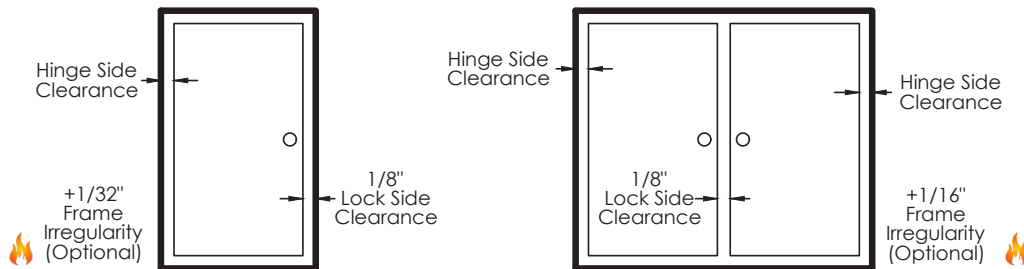


## Door Clearance Chart Squared Edge

| Single Door - Squared Edged |  |                 |   |                     |   |                                |   |
|-----------------------------|--|-----------------|---|---------------------|---|--------------------------------|---|
| Hinge Model                 |  | Hinge Thickness | + | Lock Side Clearance | + | *Frame Irregularity (OPTIONAL) | = Square Edged Door Undersized (Single) |
| Full Concealed              | A110, A110WT, A111<br>A111WT, A120, A140,<br>A150, A160, A240, A260,<br>A270, A410 | 5/16"           | + | 1/8"                | + | 1/32"                          | = 15/32"                                |
|                             | A130, A135   | 13/16"          | + | 1/8"                | + | 1/32"                          | = 3 1/32"                               |
| Half Surface                | A211, A213, A450, A460,<br>A520, A530, A540, A550                                  | 3/16"           | + | 1/8"                | + | 1/32"                          | = 1 1/32"                               |
| Full Surface                | A210, A570, A571, A575   | 1/16"           | + | 1/8"                | + | 1/32"                          | = 7/32"                                 |

Single Door

Pair of Doors



| Pair of Doors - Squared Edged |  |                        |   |                     |   |                                |                                       |
|-------------------------------|--|------------------------|---|---------------------|---|--------------------------------|---------------------------------------|
| Hinge Model                   |  | Hinge Thickness (Pair) | + | Lock Side Clearance | + | *Frame Irregularity (OPTIONAL) | = Square Edged Door Undersized (Pair) |
| Full Concealed                | A110, A110WT, A111<br>A111WT, A120, A140,<br>A150, A160, A240, A260,<br>A270, A410 | 5/8"                   | + | 1/8"                | + | 1/16"                          | = 13/16"                              |
|                               | A130, A135   | 1-5/8"                 | + | 1/8"                | + | 1/16"                          | = 1-13/16"                            |
| Half Surface                  | A211, A213, A450, A460,<br>A520, A530, A540, A550                                  | 1/4"                   | + | 1/8"                | + | 1/16"                          | = 7/16"                               |
| Full Surface                  | A210, A570, A571, A575   | 1/8"                   | + | 1/8"                | + | 1/16"                          | = 5/16"                               |

\* 1/16" Frame Irregularity Allowance, Optional and included in all Total Door Undersize for single and pairs of doors

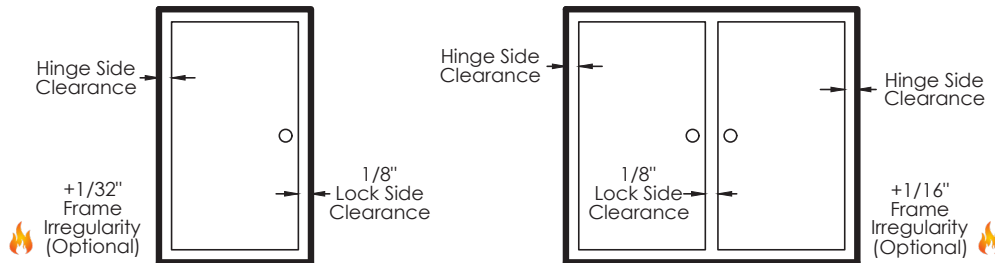
Frame irregularity not permitted by NFPA80

## Door Clearance Chart Beveled Edge

| Single Door - Beveled Edged |  |                 |   |                     |   |                                 |   |                        |   |  |
|-----------------------------|--|-----------------|---|---------------------|---|---------------------------------|---|------------------------|---|--|
| Hinge Model                 |  | Hinge Thickness | + | Lock Side Clearance | + | * Frame Irregularity (OPTIONAL) | + | Beveled Door Clearance | = | Beveled Edged Door Undersized (Single) |
| Full Concealed              | A110, A110WT, A111, A111WT, A120, A140, A150, A160, A240, A260, A270, A410 | 5/16"           | + | 1/8"                | + | 1/32"                           | + | 1/32"                  | = | 1/2"                                   |
|                             | A130, A135   | 13/16"          | + | 1/8"                | + | 1/32"                           | + | 1/32"                  | = | 1"                                     |
| Half Surface                | A211, A213, A450, A460, A520, A530, A540, A550                             | 3/16"           | + | 1/8"                | + | 1/32"                           | + | 1/32"                  | = | 3/8"                                   |
| Full Surface                | A210, A570, A571, A575   | 1/16"           | + | 1/8"                | + | 1/32"                           | + | N/A                    | = | 7/32"                                  |

Single Door

Pair of Doors



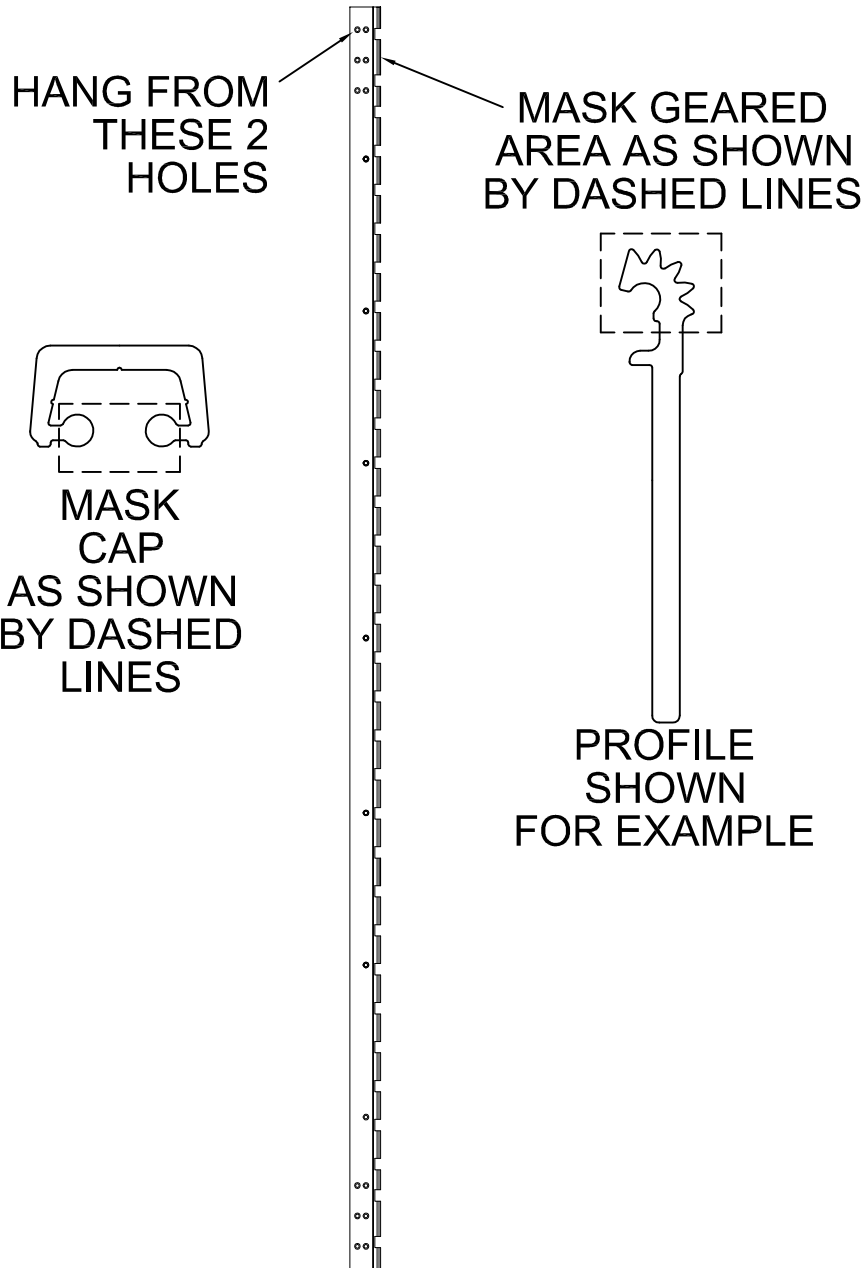
| Pair of Doors - Beveled Edged |  |                        |   |                     |   |                                 |   |                        |   |                                      |
|-------------------------------|--|------------------------|---|---------------------|---|---------------------------------|---|------------------------|---|--------------------------------------|
| Hinge Model                   |  | Hinge Thickness (Pair) | + | Lock Side Clearance | + | * Frame Irregularity (OPTIONAL) | + | Beveled Door Clearance | = | Beveled Edged Door Undersized (Pair) |
| Full Concealed                | A110, A110WT, A111, A111WT, A120, A140, A150, A160, A240, A260, A270, A410 | 5/8"                   | + | 1/8"                | + | 1/16"                           | + | 1/16"                  | = | 7/8"                                 |
|                               | A130, A135   | 1-5/8"                 | + | 1/8"                | + | 1/16"                           | + | 1/16"                  | = | 1-7/8"                               |
| Half Surface                  | A211, A213, A450, A460, A520, A530, A540, A550                             | 1/4"                   | + | 1/8"                | + | 1/16"                           | + | N/A                    | = | 7/16"                                |
| Full Surface                  | A210, A570, A571, A575   | 1/8"                   | + | 1/8"                | + | 1/16"                           | + | N/A                    | = | 5/16"                                |

\* 1/16" Frame Irregularity Allowance, Optional and included in all Total Door Undersize for single and pairs of doors

Frame irregularity not permitted by NFPA80

# POWDER COAT MASKING

**MUST HANG PART  
AS SHOWN TO PREVENT  
PART FROM BENDING  
BY THE CUTOUT**



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POWDER COAT MASKING-00.DWG

POWDER COAT MASKING

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ANSI/BHMA A156.26-2017 Certified Continuous Hinges

Edge Mounted-Barrel Type-Stainless Steel-Grade 1

ABH Model Number(s): A500, A505, A515

Edge Mounted-Gear Type-Aluminum-Grade 1

ABH Model Number(s): A110(HD/LL), A110WT(HD/LL), A111(HD/LL),  
A111WT(HD/LL), A130HD, A140(HD/LL), A150(HD/LL), A160(HD/LL),  
A240(HD/LL), A260(HD/LL), A270(HD/LL), A410(HD/LL)

Full Surface Mounted-Barrel Type-Stainless Steel-Grade 1

ABH Model Number(s): A502, A512

Full Surface Mounted- Gear Type- Aluminum-Grade 1

ABH Model Number(s): A210HD, A570HD, A571HD

Half-Surface Mounted-Barrel Type-Stainless Steel-Grade 1

ABH Model Number(s): A503

Half-Surface Mounted- Gear Type- Aluminum-Grade 1

ABH Model Number(s): A211HD, A213HD, A450HD, A460HD, A530HD, A540HD,  
A550HD

Half Mortise Mounted-Barrel Type-Stainless Steel-Grade 1

ABH Model Number(s): A504, A506

Half Mortise Mounted- Gear Type- Aluminum-Grade 1

ABH Model Number(s): A520HD

Swing Clear Edge Mounted-Barrel Type-Stainless Steel-Grade 1

ABH Model Number(s): A510, A511, A526, A529

Swing Clear Edge Mounted- Gear Type- Aluminum-Grade 1

ABH Model Number(s): A410(HD/LL), A211HD

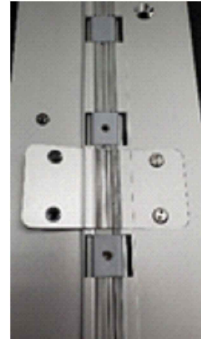
HD-denotes Heavy Duty Hinge

LL-denotes Heavy Duty hinge with extra screw holes to accommodate the lead in lead lined doors

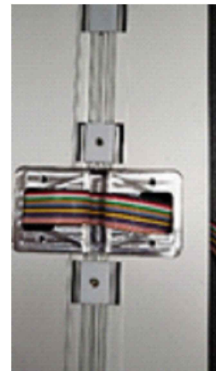
# EA THRU-WIRE REPLACEMENT INSTRUCTIONS

## Removal of Old Wires

1. Turn off Power to avoid shock.
2. Remove (4) #6 Spanner Flat Head Screws from the covers on the face of each hinge leaf.



3. Remove (2) covers to expose the wires.



4. Pull wires through opening and disconnect from power source and electrified hardware.



# EA THRU-WIRE REPLACEMENT INSTRUCTIONS

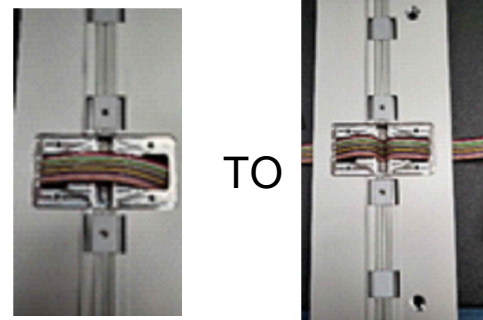
## Installation of New Wire Ribbon

**All wire connections must follow local codes and/or ABH Manufacturing's Minimum Requirements\*\* to ensure proper and lasting connections**

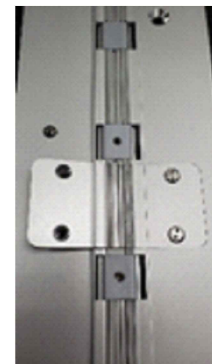
**\*\*ABH requires the use of wire nuts and electrical tape or Crimp Connectors when connecting wires to their source or supplied EZ Connectors**

1. Connect wire to the power source (FRAME SIDE) and pass wires back through hinge and frame opening.
2. Connect wires on DOOR side to electrified hardware and pass wires back through the hinge and door opening.

3. Excess Wire Ribbon should then be folded into the void of the cap.



4. Once wires are properly connected, line up the Thru-Wire Face plate gears and fasten with (4) #6 Spanner Flat Head Screws, making sure the plates sit flush to the face of the hinge leaves.



5. Turn Power back on

# INSTALLATION INSTRUCTIONS FOR FULL CONCEALED HINGES

A110HD/LL, A111HD/LL, A130HD, A135HD, A140HD/LL, A150HD/LL, A160HD/LL  
A240HD/LL, A260HD/LL, A270HD/LL, A280HD/LL & A410HD/LL

- A. All uncut standard length hinges are non-handed and can be used for right or left hand doors.
- B. Standard length hinges are supplied slightly shorter than nominal door height to accommodate threshold and carpeting clearances.

## CUTTING THE HINGE TO FIT

- Keep hinge in the closed position
- Determine **HANDING** if required. Not all hinges will become handed after cutting.
- Cut one end of the hinge only. Cut end will be installed at the bottom (Six-hole pattern remains at the top)
- Use a Metal Cutting Saw cut through the gear cap first.

**Note:** If cut length interferes with a set screw bearing remove it and switch it with a plain bearing above the cut location.

## FRAME PREP

With the hinge in the open position

1. Locate the top of the hinge 1/8" below the header

With the frame leaf flange tight against the frame

2. Mark or Center Punch hole locations

**Note:** If using wood screws drill a 5/32" pilot hole

**DO NOT ATTACH HINGE TO FRAME AT THIS TIME**

## ATTACH THE HINGE TO THE DOOR

4. Position Door Leaf on door. Door leaf alignment flange or door leaf lip must be seated against door edge.
5. Align the top end of the hinge to be absolutely flush with the top of the door.
6. Mark or Center Punch hole locations
7. Using the provided Self Drilling/Thread Forming Screws and the proper drive bit please proceed to attach the hinge to the door

**Note:** If using wood screws drill a 5/32" pilot hole.

## ATTACHING DOOR TO FRAME

8. Position door 90 degrees to frame
9. Shim door to the proper height to line up the screw holes in hinge frame leaf with the marks at the top of the frame.
10. Install two screws at the top of the hinge to hold in place
11. Remove shim and align the remaining holes. Install two additional screws in the middle and at the bottom.
12. Check door for proper swing and clearance before installing remaining screws, making necessary adjustments.
13. Install the remaining fasteners after any adjustments are made.

## REINFORCING AND RIVNUTS

- No reinforcing is necessary except on extremely high-frequency, extremely heavy or extra-wide doors.
- Rivnuts are recommended for use in the frame when the door exceeds 450lbs.

**Note:** RIVNUTS are **not** to be used with Fire Rated Hinges

## PAIRS OF DOORS WITH MULLIONS

- If the mullion is between the doors, install as single doors.
- If the mullion is behind the doors, install as a double doors.

## GROUT/SLUSHED-IN FRAMES

It is recommended that a mudguard be installed behind the frame for ease of installation. Do not use self-drill screws with grouted steel frames without a mudguard. If no mudguard has been used, drill holes through frame and remove grout for screw clearances. Do not oversize hole.

| SCREW DETAIL |  |
|--------------|--|
| FRAME        | 12-24 x 3/4" PHILLIPS FLAT HEAD, UNDERCUT, SELF DRILLING, THREAD FORMING TEK MACHINE SCREW |
| DOOR         | 12-24 x 3/4" PHILLIPS FLAT HEAD, UNDERCUT, SELF DRILLING, THREAD FORMING TEK MACHINE SCREW |

**Note:** #12 x 1-1/2" FLAT HEAD UNDERCUT WOOD SCREWS AVAILABLE UPON REQUEST

The following actions will void any warranty, expressed or implied.

- Failure to Install the hinge according to ABH's specifications and requirements
- Use of Fasteners other than those supplied with the hinge.
- Unauthorized field modifications including removing any of the bearings, altering the original finish or painting the hinge.