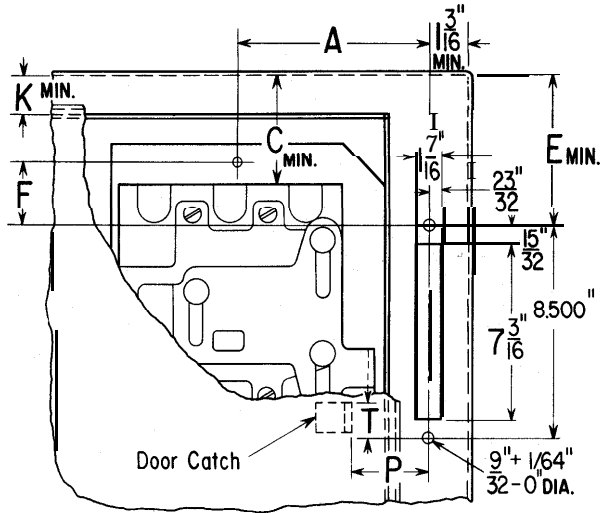
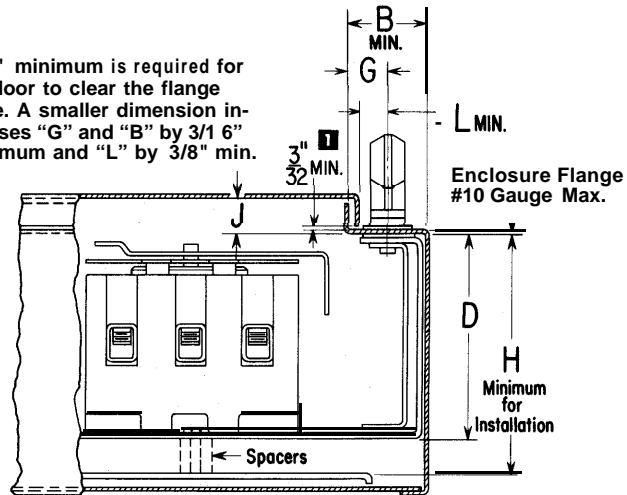


# FLANGE MOUNTED CIRCUIT BREAKER OPERATORS FOR 100, 225 AND 400 AMPERE FRAMES

## ENCLOSURE CONSTRUCTION



3/32" minimum is required for the door to clear the flange plate. A smaller dimension increases "G" and "B" by 3/16" minimum and "L" by 3/8" min.



Circuit Breaker				Dimensions in Inches															
Frame Size			Maximum Current Rating (Amperes)	A	B	C		D	E		F	G		H	J	K	L	P	T
Amperes	Westinghouse	ITE				ITE	WEST.		ITE	WEST.		MIN.	MAX.						
<b>WITHOUT DOOR HARDWARE</b>																			
100	EB, EHB, FB	E, EF, EH	70	4 <sup>5</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>4</sub>	2	2	4 <sup>15</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>2</sub>	2 <sup>7</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>16</sub>	6 <sup>3</sup> / <sub>8</sub>	7/8	—	5/8	2 <sup>1</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>16</sub>
			150	4 <sup>5</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>4</sub>	4	4	4 <sup>15</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>2</sub>	4 <sup>7</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>16</sub>	6 <sup>3</sup> / <sub>8</sub>	7/8	—	5/8	2 <sup>1</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>16</sub>
225	JA, KA	FJ	225	3 <sup>7</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>4</sub>	5	5	5 <sup>15</sup> / <sub>16</sub>	5 <sup>13</sup> / <sub>16</sub>	5 <sup>13</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>16</sub>	8 <sup>3</sup> / <sub>8</sub>	7/8	—	5/8	2 <sup>1</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>16</sub>
400	LB, LBB, HLB	—	400	3 <sup>7</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>4</sub>	—	6	6 <sup>15</sup> / <sub>16</sub>	—	6 <sup>13</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>16</sub>	8 <sup>3</sup> / <sub>8</sub>	7/8	—	5/8	2 <sup>1</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>16</sub>
<b>SMALL &amp; INTERMEDIATE ENCLOSURES WITH DOOR HARDWARE</b>																			
100	EB, EHB, FB	E, EF, EH	70	4 <sup>5</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>16</sub>	2	2	4 <sup>15</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>8</sub>	7/8	1 <sup>1</sup> / <sub>16</sub>	5/8	2 <sup>5</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>8</sub>	
			150	4 <sup>5</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>16</sub>	4	4	4 <sup>15</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>2</sub>	4 <sup>7</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>8</sub>	7/8	1 <sup>1</sup> / <sub>16</sub>	5/8	2 <sup>5</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>8</sub>	
225	JA, KA	FJ	225	3 <sup>7</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>16</sub>	5	5	6 <sup>15</sup> / <sub>16</sub>	5 <sup>13</sup> / <sub>16</sub>	5 <sup>13</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>8</sub>	6 <sup>7</sup> / <sub>8</sub>	7/8	1 <sup>1</sup> / <sub>16</sub>	5/8	2 <sup>5</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>8</sub>	
400	LB, LBB, HLB	—	400	3 <sup>7</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>16</sub>	—	6	6 <sup>15</sup> / <sub>16</sub>	—	6 <sup>13</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>8</sub>	6 <sup>7</sup> / <sub>8</sub>	7/8	1 <sup>1</sup> / <sub>16</sub>	5/8	2 <sup>1</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>16</sub>	
<b>LARGE ENCLOSURES WITH DOOR HARDWARE</b>																			
100	EB, EHB, FB	E, EF, EH	70	4 <sup>5</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>4</sub>	2 <sup>5</sup> / <sub>16</sub>	4 <sup>15</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>8</sub>	5/8	2 <sup>1</sup> / <sub>4</sub>	1 <sup>9</sup> / <sub>16</sub>	
			150	4 <sup>5</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>16</sub>	4	4	4 <sup>15</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>2</sub>	4 <sup>7</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>8</sub>	5/8	2 <sup>1</sup> / <sub>4</sub>	1 <sup>9</sup> / <sub>16</sub>	
225	JA, KA	FJ	225	3 <sup>7</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>16</sub>	5	5	6 <sup>13</sup> / <sub>16</sub>	5 <sup>13</sup> / <sub>16</sub>	5 <sup>13</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>8</sub>	8 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>8</sub>	5/8	2 <sup>1</sup> / <sub>4</sub>	1 <sup>9</sup> / <sub>16</sub>	
400	LB, LBB, HLB	—	400	3 <sup>7</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>16</sub>	—	6	6 <sup>15</sup> / <sub>16</sub>	—	6 <sup>13</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>8</sub>	8 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>8</sub>	5/8	2 <sup>1</sup> / <sub>4</sub>	1 <sup>9</sup> / <sub>16</sub>	

## INSTRUCTIONS

NOTE: The circuit breakers are not supplied with these kits and are shown only for convenience.

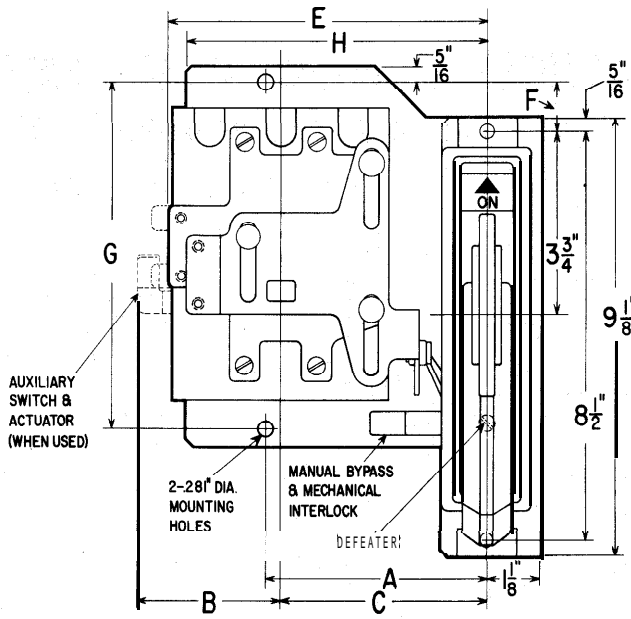
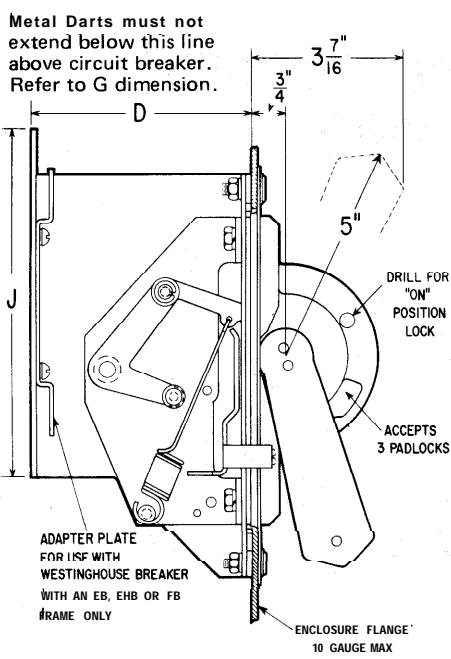
1. Select the table which applies to your enclosure.
2. Determine the enclosure flange width "B" and the mounting depth "H" to ensure the cabinet is at least as large as these minimum values.
3. Refer to N.E.C. for required wire bending space, Dimension "C". The minimum value given for "C" is the minimum wire bending space for the maximum wire size that can be connected to each circuit breaker for its current rating.

4. Provide slot and mounting holes on the right hand flange as indicated.
5. Provide spacer brackets for the circuit breaker mounting plate as shown. Typical spacer brackets are shown on Page 2. Please note notch and clearance holes required for slide assembly.
6. Locate door catch using "P" and "T". NOTE: With enclosures using door hardware disregard the door catch supplied with operating mechanism. Instead, use door catch furnished with door hardware, and refer to Page 4 for additional door catch instructions.

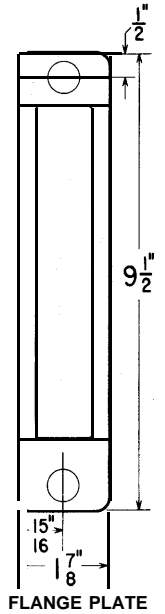
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## OPERATOR AND SLIDE MECHANISM

Metal Darts must not extend below this line above circuit breaker. Refer to G dimension.

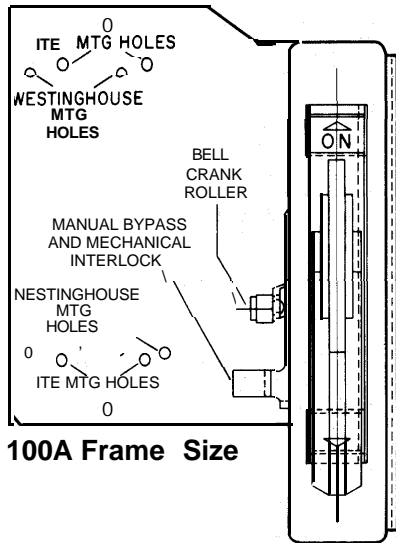


**100A Frame Size Shown**

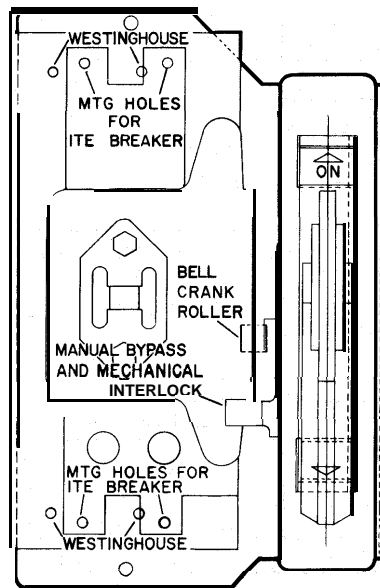


**FLANGE PLATE**

## CIRCUIT BREAKER MOUNTING



**100A Frame Size**



**225A and 400A Frame Size**

## DIMENSIONS

Circuit Breaker			Dimensions in Inches											
Frame Size			A	B		C		D	E		F	G	H	J
Amperes	Westinghouse	ITE		ITE	WEST	ITE	WEST		ITE	WEST.				
100	EB,EHB,FB	E,EF,EH	4 <sup>5</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>8</sub>	4 <sup>15</sup> / <sub>16</sub>	6 <sup>9</sup> / <sub>16</sub>	6 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>4</sub>	7 <sup>13</sup> / <sub>16</sub>
225	JA, KA	FJ	3 <sup>7</sup> / <sub>8</sub>	—	—	3 <sup>7</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>8</sub>	6 <sup>15</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>8</sub>	7	1 <sup>3</sup> / <sub>4</sub>	10 <sup>7</sup> / <sub>8</sub>	6	11 <sup>1</sup> / <sub>2</sub>
400	LB,LBB,HLB	—	3 <sup>7</sup> / <sub>8</sub>	—	—	3 <sup>7</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>8</sub>	6 <sup>15</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>8</sub>	7	1 <sup>3</sup> / <sub>4</sub>	10 <sup>7</sup> / <sub>8</sub>	6	11 <sup>1</sup> / <sub>2</sub>

## INSTALLATION INSTRUCTIONS

### Operating Mechanism

NOTE: For ease of assembly it might be advisable to install the circuit breaker operator and then the circuit breaker.

1. Remove nuts and washers from flange plate.
2. Place the operating mechanism into the enclosure with the operating handle in the 'Off' position. Tilt the assembly under the flange and at the same time bring the handle through the slot provided.
3. Place flange plate studs through the holes in the flange and mechanism frame while holding the assembly against the under side of flange. Secure assembly to flange.
4. Attach operating mechanism mounting bracket firmly to the enclosure mounting plate surface. See line drawing Page 1 (Bolts and spacers are furnished by user).

NOTE: It is recognized that holes in the enclosure mounting plate surface used to secure the circuit breaker operating mechanism can be located previous to installation. Refer to line drawings on Page 2.

### Circuit Breaker Operator Mechanism and Slide Mechanism

1. Place the circuit breaker Operating Mechanism handle in the "ON" position by first pushing the defeater by-pass lever upward and then moving the operator handle from "OFF" to "ON".
2. Place circuit breaker toggle lever in the "ON" position.
3. Place circuit breaker Slide Mechanism on top of breaker so that the slide bushings seat in the breaker mounting holes, the toggle lever is through the slide slot and the slot for receiving the bellcrank roller is oriented 90° clockwise from the line side of the circuit breaker terminals, as illustrated on Page 2.

NOTE: Loosen adjustment plate screws on slide mechanism, when provided.

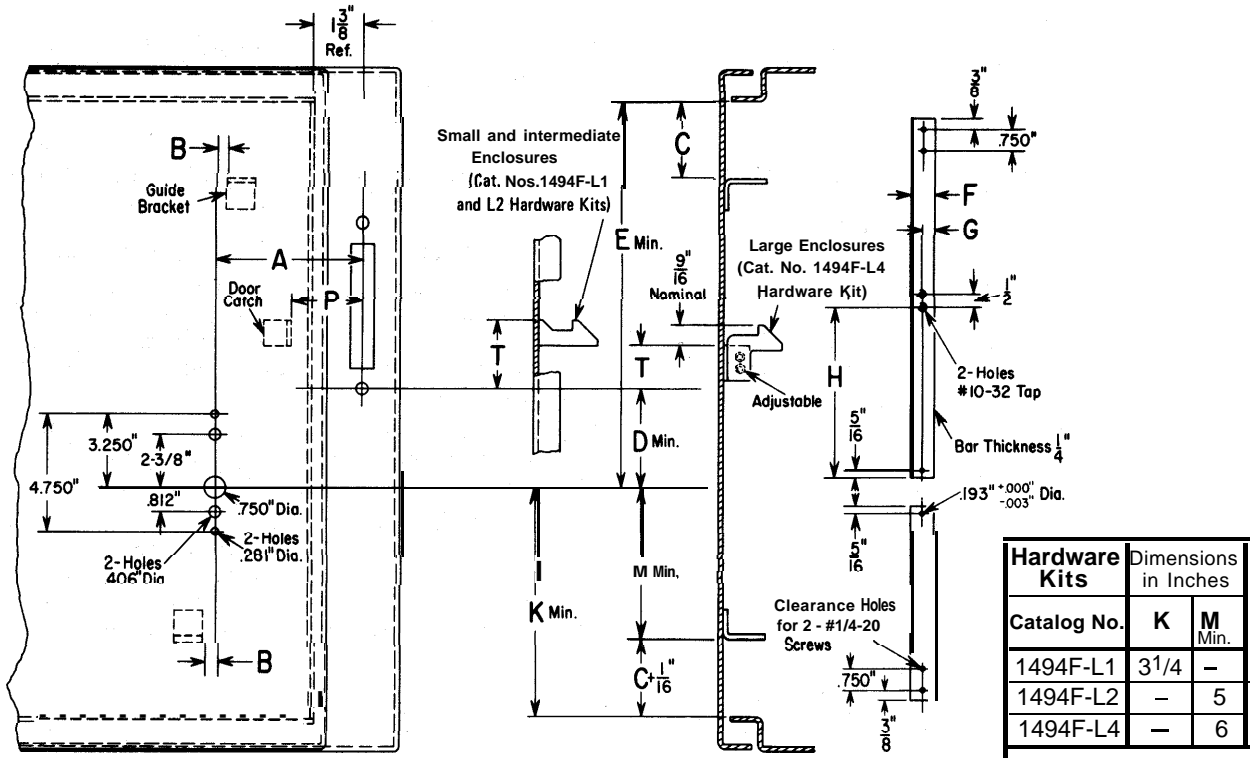
4. Insert the long mounting screws into the circuit breaker mounting holes.
5. WESTINGHOUSE BREAKER WITH EB, EHB, or FB FRAME ONLY. Secure adapter plate provided with Slide Mechanism Kit, onto the mounting bracket, as illustrated on Page 2.
6. Position circuit breaker assembly obtained in steps 3 and 4 so that the breaker line terminals are toward the "ON" direction of the Operating Mechanism handle and the bellcrank roller (operating mechanism) is in the bellcrank slot (slide mechanism).
7. Align the four circuit breaker mounting screws with the proper tapped holes in the Operating Mechanism frame mounting surface. See illustrations on Page 2 for ITE and Westinghouse mounting.
8. CAUTION: Position circuit breaker so that mounting screws are perpendicular to mounting surface and secure the breaker to Operating Mechanism frame by tightening the mounting screws.

NOTE: The circuit breaker can be secured onto the Operator Mechanism mounting frame either before or after the Operator Mechanism has been secured to the enclosure flange.

9. ITE BREAKER WITH FJ FRAME AND WESTINGHOUSE BREAKER WITH JA FRAME ONLY. Adjust the drive plate on the slide, per instructions provided on Slide Mechanism.
10. Move Operator Mechanism handle from "ON" to "OFF" and then from "OFF" to "ON" to ensure proper mechanical and electrical operation.
11. CAUTION: Place Operator Mechanism handle in "OFF" position before installation of wiring, for maximum safety.

# Allen-Bradley HMIs

# DOOR AND HARDWARE CONSTRUCTION



Hardware Kits	Dimensions in Inches	
	K	M Min.
1494F-L1	3 1/4	—
1494F-L2	—	5
1494F-L4	—	6

Circuit Breaker			Dimensions in Inches										
Frame Size		Maximum Current Rating (Amperes)	A	B	C	D	E		F	G	P	T	
Amperes	Westinghouse   ITE						ITE	WEST.					
<b>SMALL AND INTERMEDIATE ENCLOSURES 1</b>													
100	EB, EHB, FB	E, EF, EH	70	3 7/8	3/8	3 1/16	3	13 3/4	13 3/16	1/2	1/4	2 5/32	2 1/8
			150	3 7/8	3/8	3 1/16	3	15 1/4	15 3/16	1/2	1/4	2 5/32	2 1/8
225	JA, KA	FJ	225	3 7/8	3/8	3 1/16	3	17 1/16	17 1/16	1/2	1/4	2 5/32	2 1/8
400	LB, LBB, HLB	—	400	3 7/8	3/8	3 1/16	3	—	18 1/16	1/2	1/4	2 5/32	2 1/8
<b>LARGE ENCLOSURES 2</b>													
100	EB, EHB, FB	E, EF, EH	70	4	1/2	3 1/16	3 3/8	13 1/8	13 1/8	5/8	5/16	2 1/4	1 9/16
			150	4	1/2	3 1/16	3 7/8	14 7/8	14 13/16	5/8	5/16	2 1/4	1 9/16
225	JA, KA	FJ	225	4	1/2	3 1/16	3 1/8	16 3/16	16 3/16	5/8	5/16	2 1/4	1 9/16
400	LB, LBB, HLB	—	400	4	1/2	3 1/16	3 1/8	—	17 3/16	5/8	5/16	2 1/4	1 9/16

- 1 Use with Hardware Kits 1494F-L1 (top and side latching); 1494F-L2 (top and bottom latching); and 1494F-L3 (side latching accessory for 1494F-L2);
- 2 Use with Hardware Kit 1494F-L4 (top, side and bottom latching).

### GUIDELINES

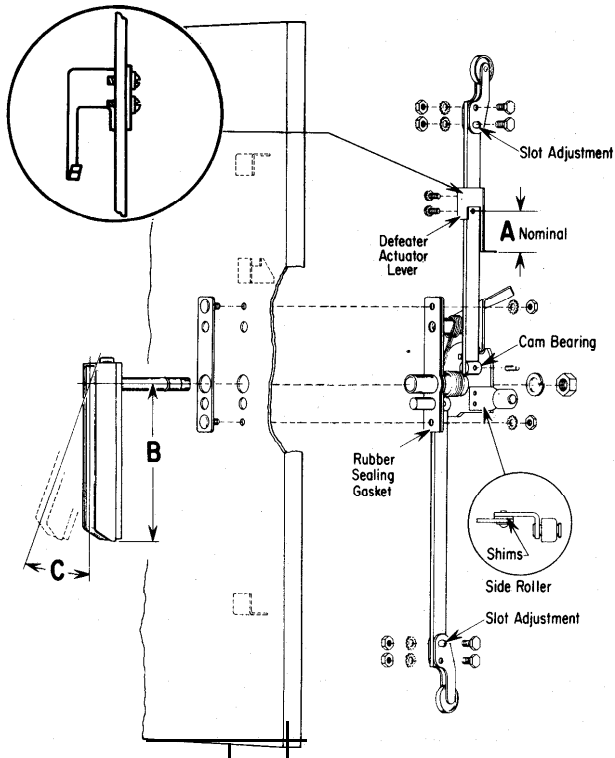
**Small Enclosures:** 30" high or less with 2 or 3 point latching. **Intermediate Enclosures:** 30" thru 48" high with 3 point latching. **Large Enclosures:** Above 48" high with 3 point latching.

### INSTRUCTIONS

1. Check all minimum enclosure and door dimensions required for installation. Refer to Page 1 and above.
2. Select the dimensions from above which apply to the roller latching arrangement to be installed. **NOTE:** Door catch supplied with operating mechanism is not to be used with these door hardware kits.
3. Locate holes in door to secure handle assembly.
4. Determine Dimensions "B" and "C" to locate locking bar guide bracket(s).
5. Locate door catch using "P" and "T" dimensions. Location varies with each hardware kit. On 1494F-L4 hardware kits, attach the adjustable catch after the support bracket is located. **NOTE:** Door catch and guide bracket(s) are made with projections for welding

6. Establish the length of the top locking bar by measuring Dimensions "E" and subtracting 3/4" for Kits L1 and L2; subtract 1-1/8" for Kit L4. Determine the length of the bottom locking bar by measuring Dimension "K" and subtracting 3/4" for Kit L2; subtract 1-1/8" for Kit L4. Dimension "H" is determined by measuring Dimension "D" and adding 3-3/4" for Kits L1 and L2; add 3-5/8" for Kit L4. Locate, drill, and tap holes where necessary. **NOTE:** These standard mill rectangular locking bars are not supplied with these kits.
7. The door locking hardware assembly can now be attached to the door.

## INSTALLATION OF DOOR HARDWARE KITS



Enclosure Size	Hardware Kits	Dimensions in Inches			Degrees
	Catalog No.	A	B	C	
Small and Intermediate	1494F-L1	1 $\frac{7}{32}$	4	65	
	1494F-L2				
	1494F-L3				
Large	1494F-L4	1 $\frac{5}{16}$	6	75	

### INSTRUCTIONS

#### Locking Bar(s) and Handle Assembly

Using the roller latching arrangement to be installed and the locking bar(s) prepared as specified on Page 4 proceed as follows:

1. Insert cam bearing(s) into the cam plate hole(s), insert locking bar(s) in the cam bearing slot(s) and secure by using the pin(s) provided. See above. **NOTE:** An alternate method requires using the screw(s) and nut(s) also provided.
2. Remove door handle and cover plate from the handle assembly. **NOTE:** Rubber sealing gasket should not be removed from assembly.
3. Slide locking bar(s) attached to the cam assembly through the slot in the guide bracket(s) located on the enclosure door.
4. Insert cover plate studs through holes in door and secure to cam assembly.
5. Replace handle.

**NOTE:** An alternate method of assembly requires that the handle assembly be installed first and then attach locking bar(s) to the cam plate.

#### Roller Assembly and Defeater Actuator Lever

1. Attach top roller assembly and bottom roller assembly (when used) to the locking bar(s). A slotted hole on roller assembly provides adjustment to insure proper gasket sealing when enclosure dimensional variations are encountered.
2. Fasten side roller assembly (when used) to the cam plate using various shims supplied. Nominal enclosure dimensions will require one (1) 1/8" shim.
3. Attach the defeater actuator lever to the upper locking bar. Refer to inset for assembled view as seen from inside of enclosure. The two screws should be located near the center of the adjustment slot. Refer to Dimension "A". Further adjustment may be required after disconnect switch is installed.

#### Door Hardware Adjustments

With the operating handle mechanism secured to the flange in the "Off" position and the door hardware attached to the door proceed as follows:

1. Close enclosure door and slowly turn the handle to the right (counterclockwise) until the first notch on the cam plate is engaged. At this point positive gasket seal should be obtained with proper roller adjustment. When seal is obtained further adjustment to the defeater actuator lever may be required if the operator mechanism handle can be moved to the "On" position.
2. Rotate door handle further to the right. Relocate defeater actuator lever if necessary, so that the operating handle mechanism "On" position occurs well before the fully latched (vertical) door handle position.
3. With the operating handle in the "Off" position, turn recessed door defeater screw, hold and simultaneously turn handle to the left and pull. Door should open.
4. Close door, turn door handle to fully latched position and place disconnect switch in "On" position. Turn recessed door defeater screw, hold and at the same time turn door handle to the left and pull. Door should open only partially. Maintain force on handle and turn recessed defeater screw in cabinet flange. The door should now open.
5. Close door and rotate door handle to the fully closed position. Pull out handle padlocking bar. Insertion of a 3/16" minimum to 3/8" maximum lock hasp should prevent against movement of the door handle.

**ALLEN-BRADLEY**

Milwaukee, Wisconsin 53204



Allen-Bradley HMIs