

## **Electrical**

### **Exterior Lighting (26 56 00)**

For questions regarding this section contact: Physical Plant  
[mvadney@albany.edu](mailto:mvadney@albany.edu)

#### **Part 1 – General**

- This section covers fusing and electrical connections to walkway and roadway lighting. All walkway and roadway lights must be connected to the 3 Phase 277/480 volt feed with T&B connectors and each walkway or roadway light must be individually fused. The use of T&B Connectors allows for a safe and quick means of removing a bad string (phase of lighting) from system to enable remediation to short circuits. Individually fusing the poles protects the entire circuit from opening due to a short at the pole head.

#### **Part 2 – Preferred Products or equivalent**

- Thomas & Betts Disconnects (T&B Connectors)
- Bussmann In Line Fuse Holders
- Ferraz Shawmutt In Line Fuse Holders

#### **Part 3 – Execution**

- Always crimp line side of roadway light feed into Male T&B Connector Females used for downstream lighting phases.
- In Line fuses are crimped with fuse holder end on load side of light feed as per manufacturer's directions.
- Always use insulated rubber boots supplied on both T&B connectors and Fuse Holders.
- Roadway and walkway lights must always remain functional to assure public safety if removals from circuitry are required a temporary feed must be supplied to keep remaining lights functional.
- Any work on building, roadway or walkway lights must be clearly communicated and coordinated through a University representative prior to construction startup.
- The Power Plant must be notified prior to any work on exterior lighting.

# TRON<sup>®</sup> In-Line Fuse Holders

## HEB Series Single-Pole Breakaway & Non-Breakaway for 1<sup>3</sup>/<sub>32</sub>" x 1 1/2" Fuses



### Non-Breakaway Fuse Holders

See page 2 for breakaway holders

Catalog Symbol: HEB

### Description:

Water resistant, single-pole non-breakaway in-line fuse holders for 1<sup>3</sup>/<sub>32</sub>" x 1 1/2" midget fuses. Typical fuse types: BAF, DCM, FNM, FNQ and KTK.

### Ratings:

Volts: 600V (or less)

Amps: Up to 30A\*

### Agency Information:

(1)UL Recognized, Guide IZLT2, File E14853

(2)CSA Certified, Class 6225-01, File 47235

(3)CE

Coupling Nut Torque: 10-20lb-in.

### Part Number Explanation

Example: HEB-AK

- HEB = Holder series
- A = Loadside terminal (copper crimp for #12 solid copper wire)
- K = Lineside terminal (copper setscrew for two #6 solid copper wires)

### Part Number Selection

From the table on page three, select the combination of desired loadside and lineside terminals for the application (define terminal type, wire size, number of wires per terminal and whether the terminal accepts solid and/or stranded conductors). Then in the right hand two columns, select either the non-breakaway or breakaway holder part number to order.

### Available Part Numbers

HEB-AA<sup>(1)</sup> (2) (3), HEB-AB<sup>(2)</sup>, HEB-AC<sup>(2)</sup>,  
HEB-AD<sup>(2)</sup>, HEB-AE<sup>(2)</sup>, HEB-AJ, HEB-AK, HEB-AL, HEB-AR,  
HEB-AY, HEB-BA<sup>(2)</sup>, HEB-BB<sup>(2)</sup>, HEB-BC<sup>(2)</sup>, HEB-BD<sup>(2)</sup>,  
HEB-CC<sup>(2)</sup>, HEB-DD<sup>(2)</sup>, HEB-JJ, HEB-JK, HEB-JL, HEB-JY,  
HEB-LL, HEB-NN, HEB-PP<sup>(2)</sup>, HEB-QQ<sup>(2)</sup>, HEB-RR<sup>(2)</sup>,  
HEB-SS, HEB-TT<sup>(2)</sup>, HEB-ZA.











### Insulating Boots

For insulating boots, see page 2. Insulating boots are not included with non-breakaway holders and must be ordered separately. They come standard with the breakaway holders.

When insulating boots are utilized, extra heat retention requires that fuses are sized at a minimum of 200% of the RMS load current.

\*Amp rating limited by conductor size.

### Specification Data - Non-Breakaway & Loadside Breakaway

Terminal Type	Conductor Data Size	Conductor Data			Catalog Symbol Load & Line (2) & (3)
		No. Per Terminal	Solid	Stranded	
<b>Copper Crimp</b>  	#12 to #8	1	•	•	A
	#12	2	•	•	
	#10	2	•	•	B
	#6	1	•	•	
	#8	2	•	•	C
	#4	1	—	•	
	#6	2	•	•	D
	#2	1	—	•	
	#4	2	•	•	E
	#20 to #18	1	•	•	
<b>Copper Setscrew</b>  	#12 to #3	1	•	•	J
	#12 to #3	2	•	•	K
<b>Solid Copper Terminal for Aluminum Wire Connector</b>  	#8 to #12	1	•	—	S
	#10 to #4	1	—	•	
<b>Aluminum Crimp</b>  	#8	1	—	•	N
	#6	1	•	—	
	#6	1	—	•	P
	#4	1	•	—	
	#3, #4	1	—	•	Q
	#2	1	•	—	
	#1, #2	1	—	•	R
#1/0	1	—	•	T	
<b>Aluminum Setscrew</b>  	#12 to #2	1	•	•	L
	#12 to #2	2	•	•	Y

## Breakaway Fuse Holders

Catalog Symbol: HEB

### Description:

Single-pole breakaway in-line fuse holders for  $1\frac{1}{32}$ " x  $1\frac{1}{2}$ " midget fuses. Typical fuse types: BAF, DCM, FNM, FNO AND KTK.

### Ratings:

Volts: 600V (or less)

Amps: Up to 30A\*

### Agency Information:

(1)UL Recognized, Guide IZLT2, File E14853

(2)CSA Certified, Class 6225-01, File 47235

(3)CE

Coupling Nut Torque: 10-20lb-in.

### Part Number Explanation

Example: HEB-AW-RYC

- HEB = Holder series
- AW = Loadside terminal (copper crimp for #12 solid copper wire)
- RYC = Lineside terminal (copper setscrew for two #6 solid copper wires)

### Part Number Selection

From the table on page three, select the combination of desired loadside and lineside terminals for the application (define terminal type, wire size, number of wires per terminal and whether the terminal accepts solid and/or stranded conductors). Then in the right hand two columns, select either the non-breakaway or breakaway holder part number to order.

### Available Part Numbers

#### Breakaway Units:

(Includes fuse holder, breakaway part and insulating boots):







HEB-AW-RLA, HEB-AW-RLC-A<sup>(1)</sup> (2) (3), HEB-AW-RLC-B, HEB-AW-RLC-C, HEB-AW-RLC-J, HEB-AW-RYA, HEB-AW-RYC, HEB-BW-RLC-A, HEB-BW-RLC-B, HEB-BW-RYC, HEB-JW-RLC-J, HEB-JW-RYC, HEB-KW-RLC-J, HEB-KW-RYC, HEB-LW-RLA, HEB-LW-RLC-J, HEB-LW-RYA

**Fuse Holder Only:** HEB-AW<sup>(2)</sup>, HEB-BW<sup>(2)</sup>, HEB-DW<sup>(2)</sup>, HEB-JW, HEB-LW

**Breakaway Part:** RLC-A, RLC-B, RLC-C, RLC-J, RYC, RLA, RYA

## Specification Data - Lineside Breakaway

### Breakaway Receptacles

Terminal Type	Conductor Data				Catalog Symbol
	Size	No. Per Terminal	Solid	Stranded	
<b>Copper Crimp</b> 	#12 to #8	1	•	•	-RLC-A
	#6	1	•	•	-RLC-B
	#4	1	•	•	-RLC-C
<b>Copper Setscrew</b> 	#12 to #2	1	•	•	-RLC-J
		#12 to #2	2	•	•
<b>Aluminum Setscrew</b> 	#12 to #2	1	•	•	-RLA
		#12 to #2	2	•	•
<b>Solid Breakaway</b> 	<b>(Required with Breakaway Receptacle)</b>			<b>W</b>	

### Insulating Boots



Part Numbers	Type
<b>2A0660</b>	Single conductor
<b>2A0661</b>	Two conductor

Two insulating boots come standard with the breakaway holders (example: HEB-AW-RLC-A). The insulating boots are not included with the non-breakaway holders (example: HEB-AA) or the individual pieces of the breakaway holders (example: HEB-AW, RLC-A). Two insulating boots must be ordered for each holder when ordering them separately. When insulating boots are utilized, extra heat retention requires that fuses are sized at a minimum of 200% of the RMS load current.

\*Amp rating limited by conductor size.

# For HEB Holders Only

Directions: To select complete holder P/N, work from left to right starting with loadside terminal options and then lineside terminal options. Then determine breakaway or non-breakaway style.

Loadside Terminal					Lineside Terminal					Available P/N's	
Terminal Type	Wire Size	No. of Wires per Terminal	Solid Wire	Stranded Wire	Terminal Type	Wire Size	No. of Wires per Terminal	Solid Wire	Stranded Wire	Non-Breakaway P/N (Boots not included)	Breakaway P/N (Boots included)
Copper Crimp	#12 to #8 #12	1 2	Y Y	Y Y	Copper Crimp	#12 to #8 #12	1 2	Y Y	Y Y	HEB-AA <sup>(1)(2)</sup> (3)	HEB-AW-RLC-A <sup>(1)(2)</sup> (3)
Copper Crimp	#12 to #8 #12	1 2	Y Y	Y Y	Copper Crimp	#6 #10	1 2	Y Y	Y Y	HEB-AB <sup>(2)</sup>	HEB-AW-RLC-B
Copper Crimp	#12 to #8 #12	1 2	Y Y	Y Y	Copper Crimp	#4 #8	1 2	N Y	Y Y	HEB-AC <sup>(2)</sup>	HEB-AW-RLC-C <sup>(4)</sup>
Copper Crimp	#12 to #8 #12	1 2	Y Y	Y Y	Copper Crimp	#2 #6	1 2	N Y	Y Y	HEB-AD <sup>(2)</sup>	N/A
Copper Crimp	#12 to #8 #12	1 2	Y Y	Y Y	Copper Crimp	2/0 #3	1 2	N N	Y Y	HEB-AE <sup>(2)</sup>	N/A
Copper Crimp	#12 to #8 #12	1 2	Y Y	Y Y	Copper Setscrew	#12 to #3	1	Y	Y	HEB-AJ	HEB-AW-RLC-J
Copper Crimp	#12 to #8 #12	1 2	Y Y	Y Y	Copper Setscrew	#12 to #3	2	Y	Y	HEB-AK	HEB-AW-RYC
Copper Crimp	#12 to #8 #12	1 2	Y Y	Y Y	Aluminum Setscrew	#12 to #2	1	Y	Y	HEB-AL	HEB-AW-RLA
Copper Crimp	#12 to #8 #12	1 2	Y Y	Y Y	Aluminum Setscrew	#12 to #2	2	Y	Y	HEB-AY	HEB-AW-RYA
Copper Crimp	#12 to #8 #12	1 2	Y Y	Y Y	Aluminum Crimp	#1, #2	1	N	Y	HEB-AR	N/A
Copper Crimp	#6 #10	1 2	Y Y	Y Y	Copper Crimp	#12 to #8 #12	1 2	Y Y	Y Y	HEB-BA <sup>(2)</sup>	HEB-BW-RLC-A
Copper Crimp	#6 #10	1 2	Y Y	Y Y	Copper Crimp	#6 #10	1 2	Y Y	Y Y	HEB-BB <sup>(2)</sup>	HEB-BW-RLC-B
Copper Crimp	#6 #10	1 2	Y Y	Y Y	Copper Crimp	#4 #8	1 2	N Y	Y Y	HEB-BC <sup>(2)</sup>	N/A
Copper Crimp	#6 #10	1 2	Y Y	Y Y	Copper Crimp	#2 #6	1 2	N Y	Y Y	HEB-BD <sup>(2)</sup>	N/A
Copper Crimp	#4 #8	1 2	N Y	Y Y	Copper Crimp	#4 #8	1 2	N Y	Y Y	HEB-CC <sup>(2)</sup>	N/A
Copper Crimp	#2 #6	1 2	N Y	Y Y	Copper Crimp	#2 #6	1 2	N Y	Y Y	HEB-DD <sup>(2)</sup>	N/A
Copper Crimp	#20, #18	1	Y	Y	Copper Crimp	#12 to #8 #12	1 2	Y Y	Y Y	HEB-ZA	N/A
Copper Setscrew	#12 to #3	1	Y	Y	Copper Setscrew	#12 to #3	1	Y	Y	HEB-JJ	HEB-JW-RLC-J
Copper Setscrew	#12 to #3	1	Y	Y	Copper Setscrew	#12 to #3	2	Y	Y	HEB-JK	HEB-JW-RYC
Copper Setscrew	#12 to #3	1	Y	Y	Aluminum Setscrew	#12 to #2	1	Y	Y	HEB-JL	N/A
Copper Setscrew	#12 to #3	1	Y	Y	Aluminum Setscrew	#12 to #2	2	Y	Y	HEB-JY	N/A
Aluminum Setscrew	#12 to #2	1	Y	Y	Aluminum Setscrew	#12 to #2	1	Y	Y	HEB-LL	HEB-LW-RLA
Aluminum Crimp	#8 #6	1 1	N Y	Y N	Aluminum Crimp	#8 #6	1 1	N Y	Y N	HEB-NN	N/A
Aluminum Crimp	#6 #4	1 1	N Y	Y N	Aluminum Crimp	#6 #4	1 1	N Y	Y N	HEB-PP <sup>(2)</sup>	N/A
Aluminum Crimp	#3, #4 #2	1 1	N Y	Y N	Aluminum Crimp	#3, #4 #2	1 1	N Y	Y N	HEB-QQ <sup>(2)</sup>	N/A
Aluminum Crimp	#1, #2	1	N	Y	Aluminum Crimp	#1, #2	1	N	Y	HEB-RR <sup>(2)</sup>	N/A
Aluminum Crimp	1/0	1	N	Y	Aluminum Crimp	1/0	1	N	Y	HEB-TT <sup>(2)</sup>	N/A
Solid Terminal for aluminum connector	#8 to #12 #10 to #14	1 1	Y N	N Y	Solid Terminal for aluminum connector	#8 to #12 #10 to #14	1 1	Y N	N Y	HEB-SS	N/A

(1) UL Recognized, Guide IZLT2, File E14853

(2) CSA Certified, Class 6225-01, File 47235

(3) CE

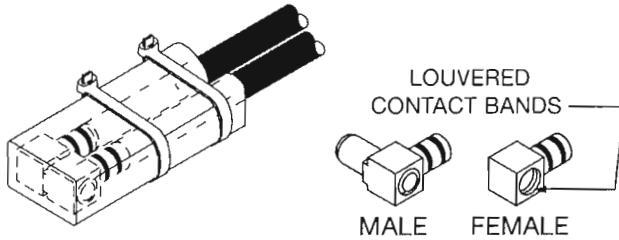
(4) HEB-AW-RLC-C is for (1) #4 stranded wire only.

Contact your local Cooper Bussmann representative for other possible terminations not listed.

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## MOTOR DISCONNECTS INSTALLATION INSTRUCTIONS



High Conductivity Copper Color-Coded to match Installing Die.

TIE 1 TIE 2	WIRE SIZE AWG	CATALOG NUMBERS		BOOT NO. & CABLE TIE
		FEMALE	MALE	
	#16-14	MD1614F-0	MD1614M-0	MDBOOT-0 TY24M (2)
	#16-14 #12-10 #8 #6	MD1614F-1 MD1210F-1 MD8F-1 MD6F-1	MD1614M-1 MD1210M-1 MD8M-1 MD6M-1	MDBOOT-1 TY24M (2)
	#12-10 #8 #6 #4 #2 #1	MD1210F-2 MD8F-2 MD6F-2 MD4F-2 MD2F-2 MD1F-2	MD1210M-2 MD8M-2 MD6M-2 MD4M-2 MD2M-2 MD1M-2	MDBOOT-2 TY24M (2)
	#2 #1 #1/0 #2/0 #3/0 #4/0	MD2F-3 MD1F-3 MD10F-3 MD20F-3 MD30F-3 MD40F-3	MD2M-3 MD1M-3 MD10M-3 MD20M-3 MD30M-3 MD40M-3	MDBOOT-3 TY242M (2)
	#4/0 #250 kcmil #350 kcmil #500 kcmil	MD40F-4 MD250F-4 MD350F-4 MD500F-4	MD40M-4 MD250M-4 MD350M-4 MD500M-4	MDBOOT-4 TYHT28M (2)

MDBOOT-0  
MDBOOT-1  
MDBOOT-2  
MDBOOT-3  
MDBOOT-4

- Flame Retardant Formulation
- Abrasion Resistant RATM600
- 90°C (Body Sizes -0, -1, -2, -3)
- 125°C (Body Size -4)

Sealant available, Catalog Number  
MDBOOT-SEAL

**CAUTION:** CHECK MOTOR ROTATION BY BUMPING MOTOR. CORRECT ROTATION IF NECESSARY.

### — INSTALLATION HINTS —

- Always install the female lug on line leads and the male lug on the motor leads for 600V and less, female on both line leads and motor leads for the 5KV connection.
- Always use the smallest body size for the lug possible for the largest wire in the junction box. Line leads are usually the largest.
- Store the boots and bolts from the junction box in a re-closeable plastic bag. Use a Ty-Rap® cable tie or tape the bag to the conduit.

D. Always put Kopr-Shield® protectant or similar substance on the 480V lugs before connecting the lugs and always place a little Kopr-Shield® protectant or similar substance on the lugs before placing on the boots.

E. **IMPORTANT:** After fully inserting the male pin into the female barrel on the 600V connectors or inserting the double male pin between the two female connectors on the 5KV connections, make sure you install the boot that matches the size and voltage for your application.

F. **IMPORTANT:** properly seat connectors by fully inserting motor connectors to the bottom of the boot. On the 600V connectors, install the first tie just under the connectors seated in the boot. The second tie should be installed between the first tie and bottom of the boot.

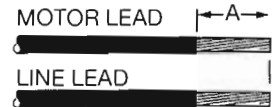
Kopr-Shield® is a registered trademark of JET-LUBE, INC.

## INSTALLATION INSTRUCTIONS

**WARNING**  
NOT FOR DISCONNECTING ENERGIZED CIRCUITS.

### STEP 1

Select connectors as needed for motor and line wire sizes. Be sure to specify connectors within the suitable size groups. Size groups may not be inter-mated. Connectors within each group may be mated. (MD1210F-2 mated with MD2M-2).



### STEP 2

Dress the wires to pigtail with the motor leads.

### STEP 3

Crimp connectors with any T&B installing tool as follows:  
WT2000, WT1300, WT130A  
Installs #16 through #10  
\*TBM20S installs #8 to #2  
TBM5, TBM5S, TBM6, TBM6S,  
TBM8, TBM8S, TBM62BSCR,  
TBM25S, &TBM6BSCR  
\*Requires (2) crimps

WIRE SIZE AWG	WIRE STRIP LENGTH A ±1/32
16-14	3/8
12-10	3/8
8	7/16
6	1/2
4	1/2
2	17/32
1	9/16
1/0	9/16
2/0	5/8
3/0	11/16
4/0	3/4
*4/0	1
250 kcmil	1-1/8
350 kcmil	1-1/8
500 kcmil	1-5/16

\*Body Size -4

### STEP 4

Push male pin into female barrel until fully inserted.

### STEP 5

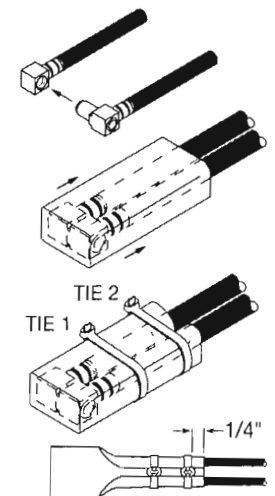
Slide insulator onto pigtailed connectors until it stops.

### STEP 6

Fasten the first tie at the middle of insulator, tightening snugly. Fasten the second tie 1/4" from end of boot as shown, and tighten. Cut excess tie.

### STEP 7

Dress lead assemblies into junction box.





## DOUBLE MALE DISCONNECTS INSTALLATION INSTRUCTIONS

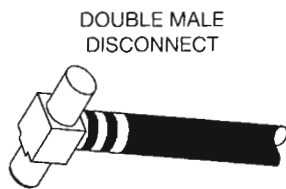


**WARNING**  
NOT FOR DISCONNECTING ENERGIZED CIRCUITS.

### INSTALLATION INSTRUCTIONS

#### STEP 1

Select connectors as needed for motor and line wire sizes. Be sure to select connectors within the suitable size groups. Size groups may not be inter-mated. Connectors within each group may be mated. (MD1210F-2 mated with MD2M-2).

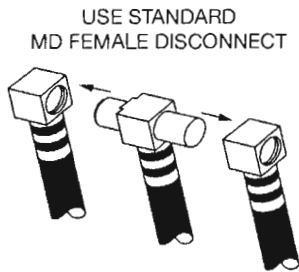


#### STEP 2

Dress the wires to pigtail with the motor leads.

#### STEP 3

Crimp connectors with any T&B installing tool as follows:  
WT2000, WT1300, WT130A  
Installs #16 through #10  
\*TBM20S installs #8 to #2  
TBM5, TBM5S, TBM6,  
TBM6S, TBM8, TBM8S,  
TBM62BSCR, TBM25S, &  
TBM6BSCR  
\*Requires (2) crimps

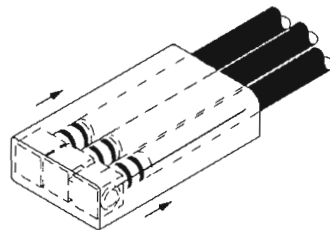


#### STEP 4

Push male pin into female barrel until fully inserted.

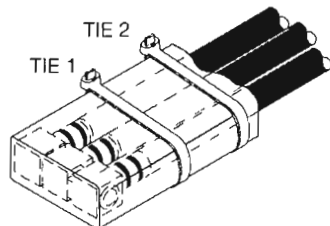
#### STEP 5

Slide insulator onto pigtailed connectors until it stops.



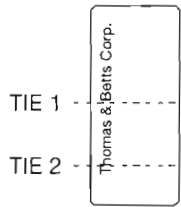
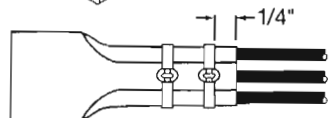
#### STEP 6

Fasten the first tie at middle of insulator, tightening snugly. Fasten the second tie 1/4" from end of boot as shown, and tighten. Cut excess tie.



#### STEP 7

Dress lead assemblies into junction box.



BLACK TY-RAP® CABLE TIE  
STABILIZED NYLON

MDBOOT-0  
MDBOOT-1  
MDBOOT-2  
MDBOOT-3

- Flame Retardant Formulation
- Abrasion Resistant RATM600
- 90°C

WIRE SIZE AWG	CATALOG NUMBERS	BOOT NO. & CABLE TIE
	MALE	
#16-14	M2D1614M-0	MDBOOT-1
#12-10 #8 #6	M2D1210M-1	M2DBOOT-1 TY242M (2)
	M2D8M-1	
	M2D6M-1	
#12-10 #8 #6 #4 #2 #1	M2D1210M-2	M2DBOOT-2 TY242M (2)
	M2D8M-2	
	M2D6M-2	
	M2D4M-2	
	M2D2M-2	
#2 #1 #1/0 #2/0 #3/0 #4/0	M2D2M-3	M2DBOOT-3 TY26M
	M2D1M-3	
	M2D10M-3	
	M2D20M-3	
	M2D30M-3	

**NOTE:** Some catalog numbers shown above have suffixes: i.e. XXXXXG (indicating special packaging). All crimp setting for these parts are the same as for the base numbers.

**WARRANTY:** Thomas & Betts sells this product with the understanding that the user will perform all necessary tests to determine the suitability of this product for the user's intended application. Thomas & Betts warrants that this product will be free from defects in materials and workmanship for a period of two (2) years following the date of purchase. Upon prompt notification of any warranted defect, Thomas & Betts will, at its option, repair or replace the defective product or refund the purchase price. Proof of purchase is required. Misuse or unauthorized modification of the product voids all warranties.

**Limitations and Exclusions:** THE ABOVE WARRANTY IS THE SOLE WARRANTY CONCERNING THIS PRODUCT, AND IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE SPECIFICALLY DISCLAIMED. LIABILITY FOR BREACH OF THE ABOVE WARRANTY IS LIMITED TO COST OF REPAIR OR REPLACEMENT OF THE PRODUCT, AND UNDER NO CIRCUMSTANCES WILL THOMAS & BETTS BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES.

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