ERMCO COMPONENTS

Made in USA

5 -50 kVA Circuit Breakers for Distribution Transformers

ECI, ERMCO Components Inc.
1607 Industrial Road
Greeneville, TN 37745 Phone:
(423) 638-2302 Toll Free: (877)
267-1855 Fax (423) 636-6492

Breakers are available as “Standard Class” and "Custom Class : which allow for variation of the top lead lengths, terminal holes and marketings

STANDARD CLASS BREAKERS FEATURES:

Lower Leads (braided copper with terminal).

- Length is from edge of contact bar to center line of terminal hole.
- Lower Lead do not have insulating sleeve

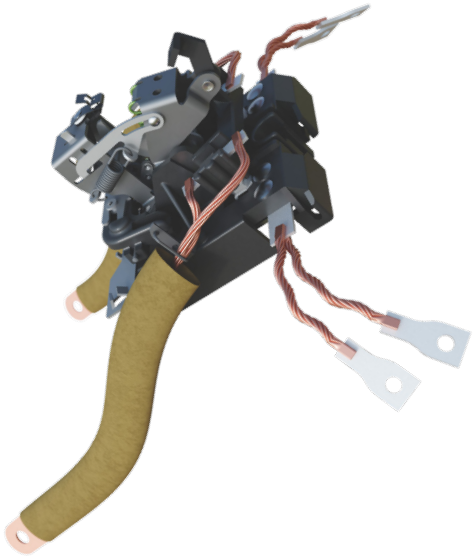
Upper Leads (Braided copper without terminal)

- Length is measured from restraining staple to the end of the lead.
- Leads do not have connection identification.
- Leads do not have paper insulation sleeve

OPTIONS AVAILABLE:

Types

- AHT-1 (T-1), Thermal trip control.
- T-12, Thermal and Magnetic trip control.



Styles Combination Options

- Without light switch or emergency overload.
- With light switch and emergency overload. Includes wire and spring (if required).
- Breaker
- Breaker on Bracket
- Trip Temps
- Emergency and Non Emergency Operating Handle
- Pad, Pole short, Pole Long or Brass Handle assembly
- Flat or Round surface mounting

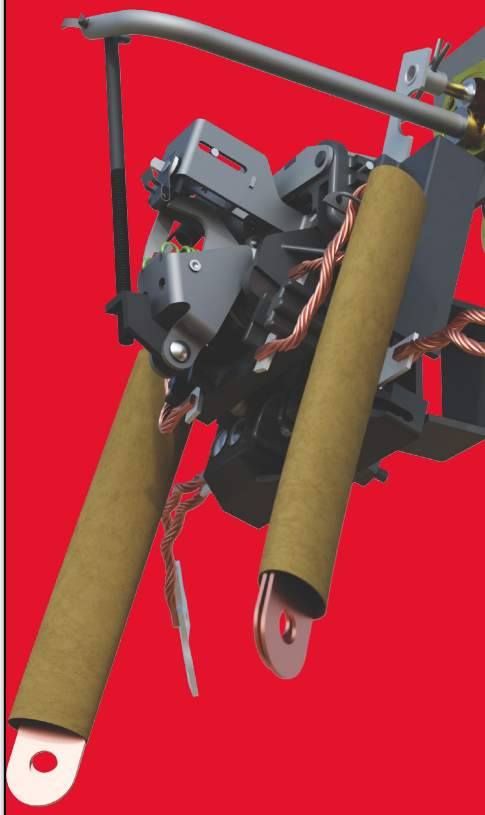
CUSTOM CLASS BREAKERS

Customer Breakers are available in all combinations of Standard Breakers style with the addition of customer upper lead lengths and terminations

- Upper lead is the combination of copper braid and copper strap.
- Length of copper braid is 6.50 inches.
- Additional lead length is 0.050 inch thick by 1.0 inch wide copper strap welded to the copper braid.
- Units with single braided lead have a single strap welded to the lead
- Units, 10 and 15 kVA, with two braided leads have both leads welded to a single strap
- Units 25 kVA and higher with two braided leads have a strap welded to each lead.
- Lead lengths are available in one inch increments from 8.00 inches to 25.00 inches from the restraining staple to the center line of the connection hole.
- Copper strap has 0.406 or 0.531 inch diameter connection hole.
- Copper strap is embossed with "A" and "D" connection identification letters.
- Upper Leads are provided with paper insulation

Design Advantages

- **Preadjusted** – No linkage adjustments are required by the transformer manufacture.
- **Order breaker on a bracket as a complete kit** – One catalog number supplies the breaker, bracket, linkage, and operating handle.
- **Special contact material** to reduce arcing and eliminate the possibility of contacts welding in service.
- **High interrupting capability** to successfully clear bolted secondary faults without contacts welding.
- **Rigidly interlocking contacts** to give simultaneous interruption of both breaker circuit contacts.



For more information contact
Componentssuport@ermco-eci.com
or call (423)638-2302
www.ermco-eci.com

Interrupting Ratings and Watts Loss

Interrupting Ratings

Type Breaker	Secondary Voltage					
	120		240		480	
	Number of Shots					
	1	5	1	5	1	5
	Fault Current (Amp RMS Symmetrical)					
AHT-1 5-10 kVA	4,000	4,000	4,000	4,000	4,000	4,000
AHT-1 15-25 kVA	10,000	7,000	10,000	7,000	4,000	4,000
T-12	20,000	11,000	20,000	11,000	14,000	7,000

Watts Loss

Identification Stamp	Standard Catalog Number	Transformer kVA		Average Tested Watts Loss at 85°C Add 10% for Guarantee	
		120/240 Volt Secondary	240/480 Volt Secondary	120/240 Volt Secondary	240/480 Volt Secondary
Type AHT-1 (T-1)					
212G01	7561ZF3299	5	10	5	2
182G01	7561ZF4499				
212G02	7561ZF3399	7.5	15	7	4
182G02	7561ZF4599				
212G03	7561ZF3499	10	- -	6.5	- -
182G03	7561ZF4699				
212G04	7561ZF3599	15	- -	8.5	- -
182G04	7561ZF4799				
212G05	7561ZF3699	25	50	17.5	- -
182G05	7561ZF4899				
212G06	7561ZF5199	- -	25	- -	11
182G06	7561ZF5999				
212G07	7561ZF5299	- -	37.5	- -	14
182G07	7561ZF6099				
Type T-12					
213G06	7561ZF8799	25	50	17.5	- -
213G03	7561ZF9799				
185G06	7561ZF8899				
185G03	7561ZF9899				
213G04	7561ZF8399	37.5	75	23	- -
213G01	7561ZF9399				
185G04	7561ZF8599				
185G01	7561ZF9599				
213G05	7561ZF8499	50	100	40	- -
213G02	7561ZF9499				
185G05	7561ZF8699				
185G02	7561ZF9699				

Feature Table

Standard Class Circuit Breaker without Light Switch and Emergency Overload									
	Transformer kVA		Ampere Rating	Lower Lead Length (inches)	Top Leads				Details
Catalog Number	120/240 Volt Secondary	240/480 Volt Secondary			Number of Leads	Lead Size **	Length (inches)	Lead	
Type AHT-1 (T-1) Thermal Trip Only									
7561ZF3299	5	10	21	2.1	1	7/150	6.50	Figure 5	See Page 10
7561ZF3399	7.5	15	31	2.1	1	7/150	6.50		
7561ZF3499	10	- -	42	2.1	2	7/150	6.50		
7561ZF3599	15	- -	63	2.1	2	7/150	6.50		
7561ZF3699	25	50	104	2.1	2	7/7/37	6.50		
7561ZF5199	- -	25	52	2.1	2	7/150	6.50		
7561ZF5299	- -	37.5	78	2.1	2	7/150	6.50		
Type T-12 Thermal and Magnetic Trip									
7561ZF8799	25	50	104	2.1	2	7/7/37	6.50	Figure 5	See Page 10
7561ZF9799	25	50	104	2.1	2	7/7/37	1.70 *	Figure 4	
7561ZF8399	37.5	75	156	4.1	2	7/7/37	6.50	Figure 5	
7561ZF9399	37.5	75	156	4.1	2	7/7/37	1.70 *	Figure 4	
7561ZF8499	50	100	208	4.1	2	7/7/37	6.50	Figure 5	
7561ZF9499	50	100	208	4.1	2	7/7/37	1.70 *	Figure 4	

Standard Circuit Breaker with Light Switch and Emergency Overload									
	Transformer kVA		Ampere Rating	Lower Lead Length (inches)	Top Leads				Details
Catalog Number	120/240 Volt Secondary	240/480 Volt Secondary			Number of Leads	Lead Size **	Length (inches)	Lead	
Type AHT-1 (T-1) Thermal Trip Only									
7561ZF4499	5	10	21	2.1	1	7/150	6.50	Figure 5	See Page 10
7561ZF4599	7.5	15	31	2.1	1	7/150	6.50		
7561ZF4699	10	- -	42	2.1	2	7/150	6.50		
7561ZF4799	15	- -	63	2.1	2	7/150	6.50		
7561ZF4899	25	50	104	2.1	2	7/7/37	6.50		
7561ZF5999	- -	25	52	2.1	2	7/150	6.50		
7561ZF6099	- -	37.5	78	2.1	2	7/150	6.50		
Type T-12 Thermal and Magnetic Trip									
7561ZF8899	25	50	104	2.1	2	7/7/37	6.50	Figure 5	See Page 10
7561ZF9899	25	50	104	2.1	2	7/7/37	1.70 *	Figure 4	
7561ZF8599	37.5	75	156	4.1	2	7/7/37	6.50	Figure 5	
7561ZF9599	37.5	75	156	4.1	2	7/7/37	1.70 *	Figure 4	
7561ZF8699	50	100	208	4.1	2	7/7/37	6.50	Figure 5	
7561ZF9699	50	100	208	4.1	2	7/7/37	1.70 *	Figure 4	

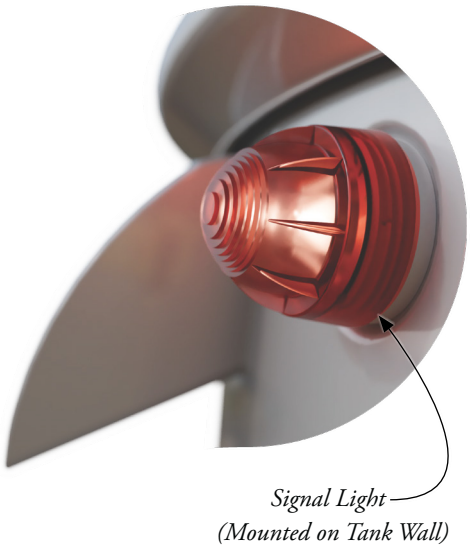
* Upper leads have terminals with 0.281 diameter hole.

** Individual wires 0.005 inch diameter.

- Upper leads do not have terminal or insulating tubes unless noted by *.
- Lower leads have terminal with 0.281 diameter hole.
- Lower leads do not have insulating tubes.
- Custom breakers with varying top lead lengths are available. See page 1 for Custom Breaker description and limitations.

Optional Features
(Standard Circuit Breaker / Breaker on a Bracket Assembly)

- Breaker Light Switch
- Signal Light (Mounts to Tank Wall)
- Emergency Overload

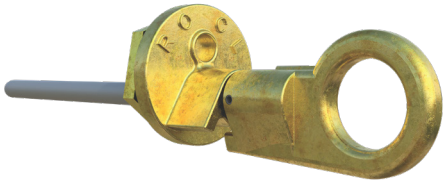
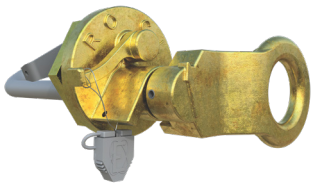
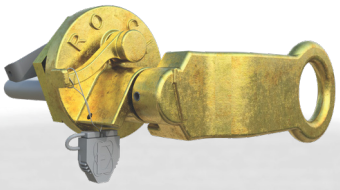
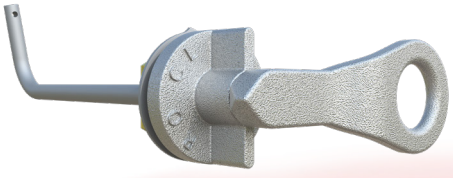


Signal Light
(Mounted on Tank Wall)

Optional Features
(Breaker on a Bracket Assembly)

- Bracket for Mounting to Flat Surface and Curved Surface (See page 22-24)
- Bracket for Mounting to Lid of Submersible Transformer (See page 25-27)

Operating Detail
(Available with Breaker on a Bracket Assembly)

Emergency	Non-Emergency
 **Pad Handle Assembly**	 **Pad Handle Assembly**
 **Short Pole Handle Assembly**	 **Short Pole Handle Assembly**
 **Long Pole Handle Assembly**	 **Brass Handle Assembly**

Calibration Details

Breaker kVA		Ultimate Rise	Type	Bimetal Resist OHMS/CM FT = G	Trip Temperature = °C			
120/240	240/480				Normal Light	Emergency	Breaker Normal	Emergency
5	10	1	T-1	500	120°	135°	145°	160°
7.5	15	1	T-1	250	120°	135°	145°	160°
10	- -	1	T-1	150	125°	140°	150°	165°
15	- -	1	T-1	70	128°	143°	153°	168°
- -	25	1	T-1	150	140°	155°	165°	180°
- -	37.5	1	T-1	50	135°	150°	160°	175°
25	50	1	T-1/T-12	30	135°	150°	160°	175°
37.5	75	2	T-12	30	135°	150°	160°	175°
50	100	2	T-12	20	135°	150°	160°	175°

All breakers can be adjusted to 110° C trip temperature

Recalibration to New Trip Temperature

$$INEW = IOLD \sqrt[1.692]{\frac{T2 - T0}{T1 - T0}}$$

INEW = New calibration current
IOLD = Old calibration current
T2 = New trip temperature C°
T1 = Old trip temperature C°
T0 = Oil temperature C°

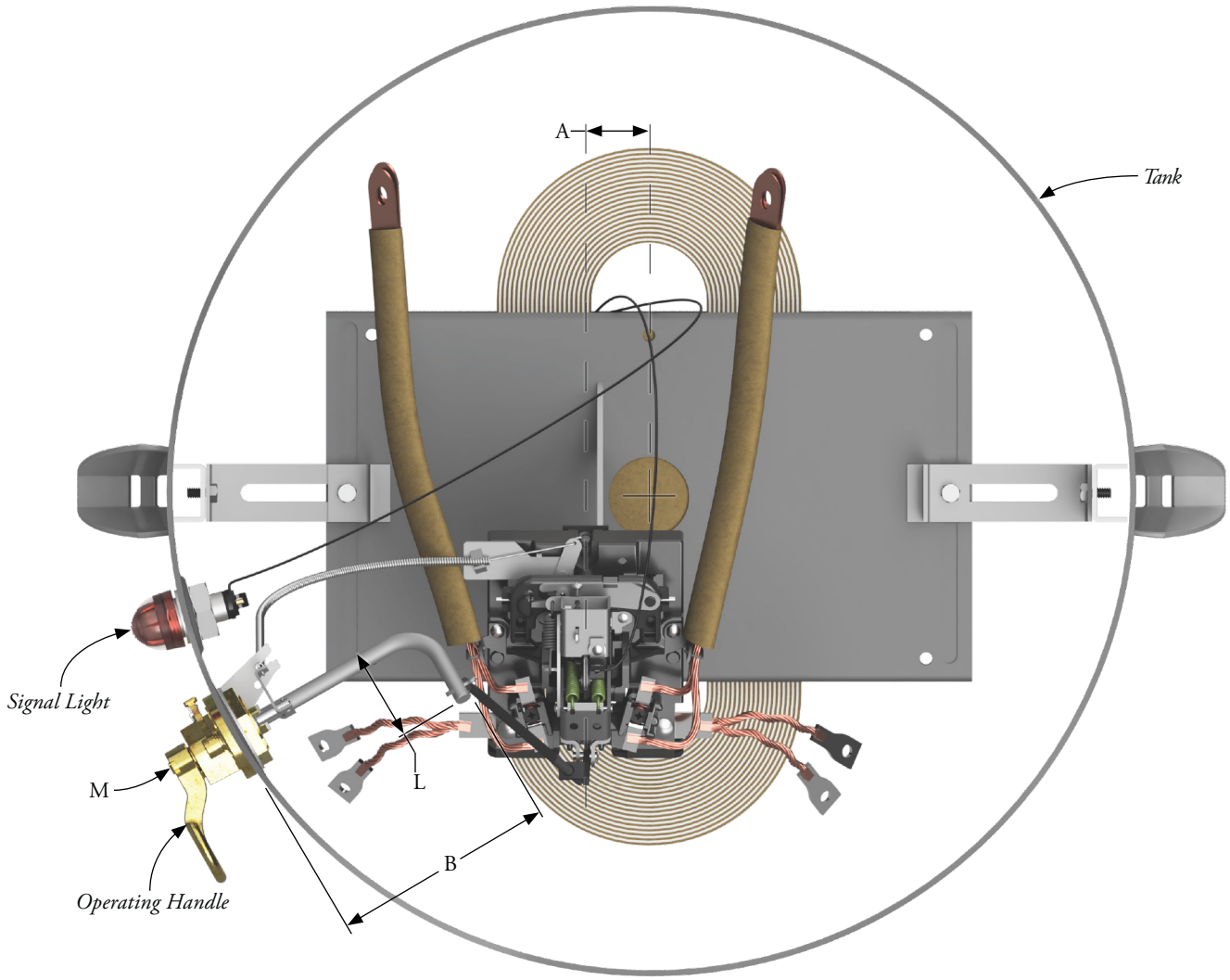
ULTIMATE RISE CALC

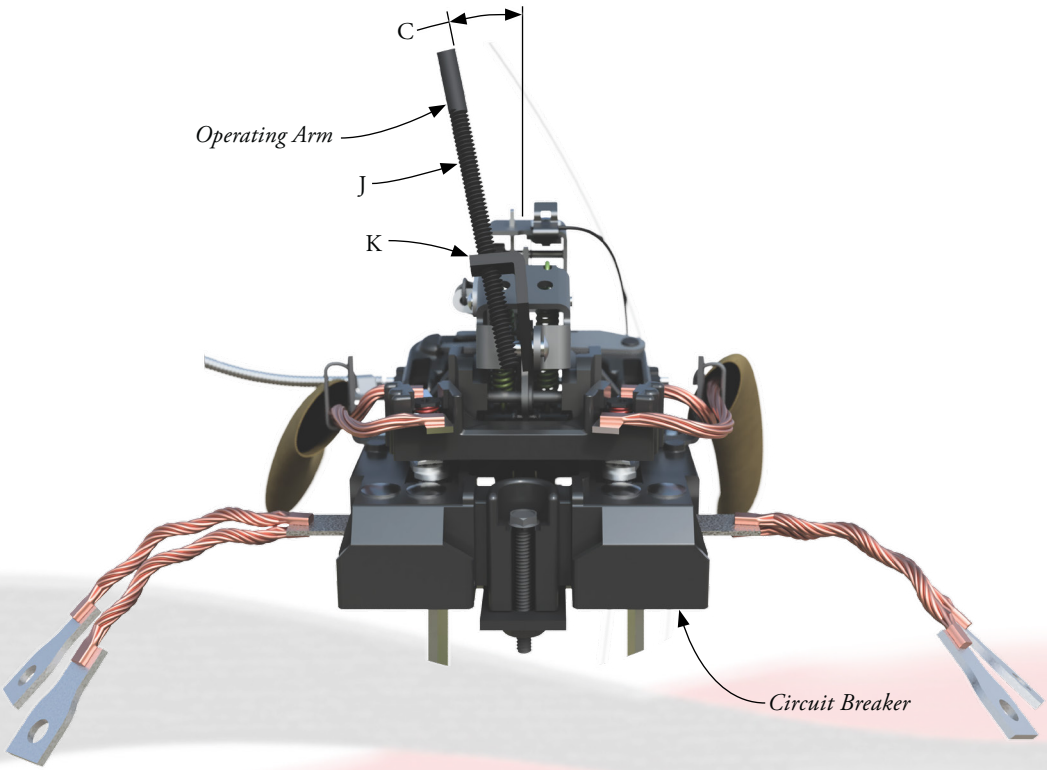
$$\text{(1) } TU = 28 \left(\frac{G}{30}\right)^{.845} \left(\frac{I}{200}\right)^{1.692}$$

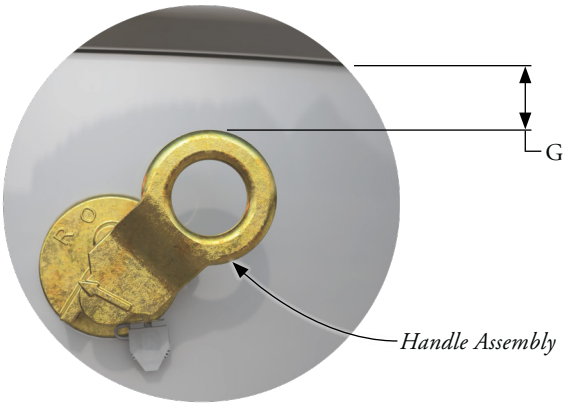
$$\text{(2) } TU = 8.73 \left(\frac{G}{20}\right)^{.845} \left(\frac{I}{200}\right)^{1.692}$$

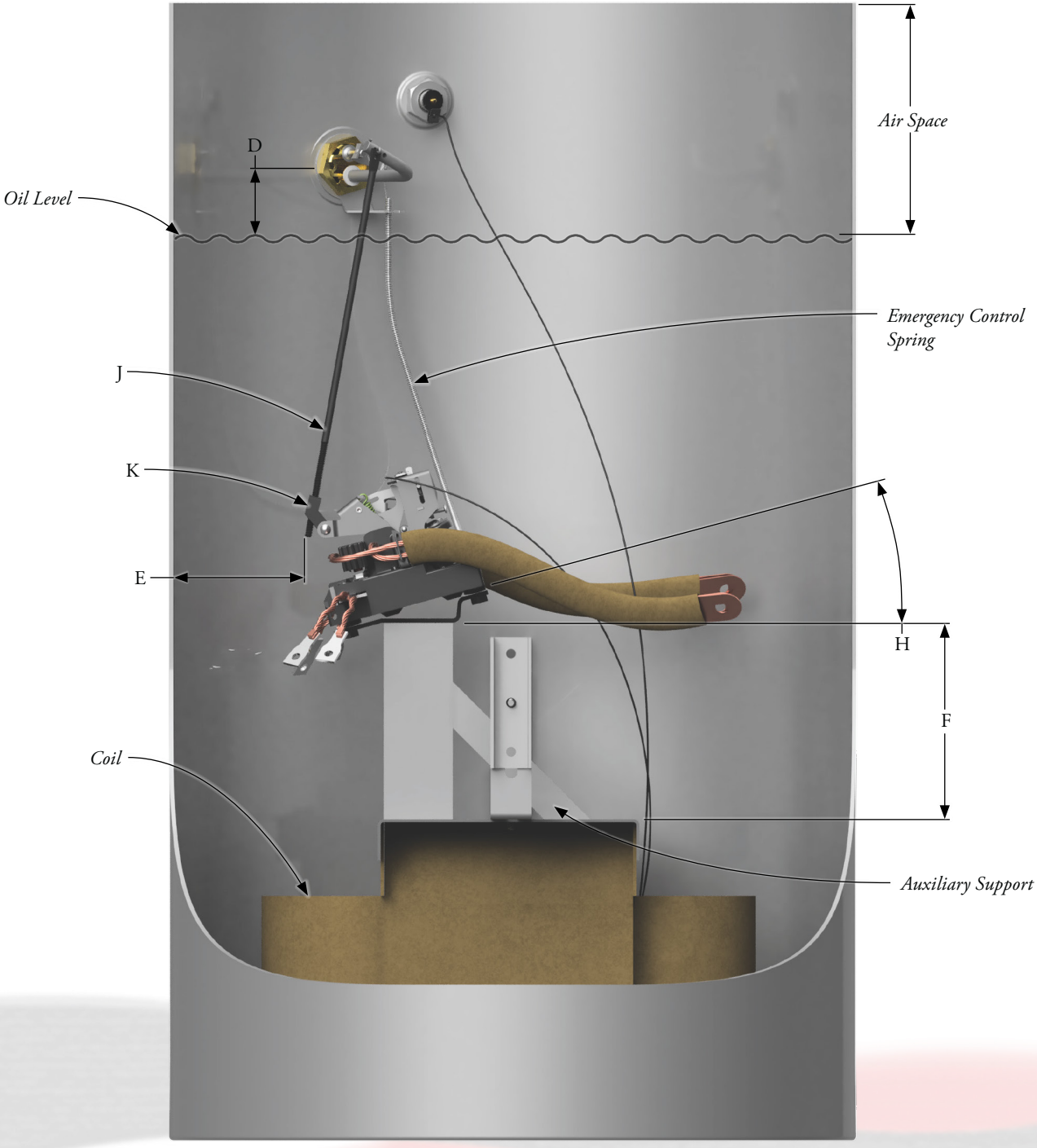
Circuit Breaker Application

A. As tank diameter increases the circuit breaker is moved to left to keep the operating arm length under 7.50" for "B" dimension.
B. Maximum of 7.12" for operating shaft. Preferable to use one of the other lengths shown in catalog. (See Operating Detail Catalog)
C. A 5° maximum tilt of arm from vertical for operation. The wobble in the link is only 5° either side of vertical centerline.
D. Indicates operating handle should be above oil level to insure that gasket leak would not lower the oil level.
E. Arm should not extend through the link so far that it can hit the tank wall during breaker operation.
F. An auxiliary support of some type should be added when the support exceeds 6.00" inches tall, otherwise the inherent wobble of the support might keep the breaker from resetting during cocking operation.
G. When handle is in the up position there should be sufficient hand clearance to a tank rim.
H. Due to the location of the active arc of rotation of the operation lever on the breaker, great caution must be taken to insure the motion will approximate a tangential pull to cock the breaker mechanism. Figure 1 and 2 point out the maximum and minimum requirements of breaker location in relation to operating arm on handle assembly.
I. -
J. This arm previously came in (2) sizes:
    1. For AHT-1 it was a steel rod of Ø0.193 with a rolled thread of #12-28 to screw into link on circuit breaker operating lever.
    2. For the T-12 a steel rod of Ø0.219 with a rolled thread of 0.250-20 To screw into link on circuit breaker operating lever. As of January 1976, the rod has been standardized to use the Ø0.219 with a 0.250-20 rolled thread on both AHT-1 and T-12 breakers.
K. This is the operating lever link. Previously it had a #12-28 thread for AHT-1 and a 0.25-20 thread for T-12 circuit breakers. As of January 1976 the operating link will use a 0.25-20 Thread with the 5° wobble from side to side and free rotation in the other plane.
L. The offset dimension of the operation shaft (crank) increases when the long leg of the shaft increases. This is due to clearances in bearing and spring action of shaft. (See Operating Detail Catalog) for M dimension and shaft length.
M. For emergency overload hookup to operating handle plus hole size and shape in tank for operation handle bearing (See Operating Detail Catalog). For detailed signal light data (See Signal Light Catalog).
N. The flat or tilted support should be at least 0.188" thick and 1.00" wide and flat to insure when the mounting screws are used, the plastic base of the breaker is not subjected to a constant bending force.


A
Tank
Signal Light
M
L
B
Operating Handle


C
Operating Arm
J
K
Circuit Breaker


G
Handle Assembly


Air Space
D
Oil Level
Emergency Control Spring
J
K
E
H
F
Coil
Auxiliary Support

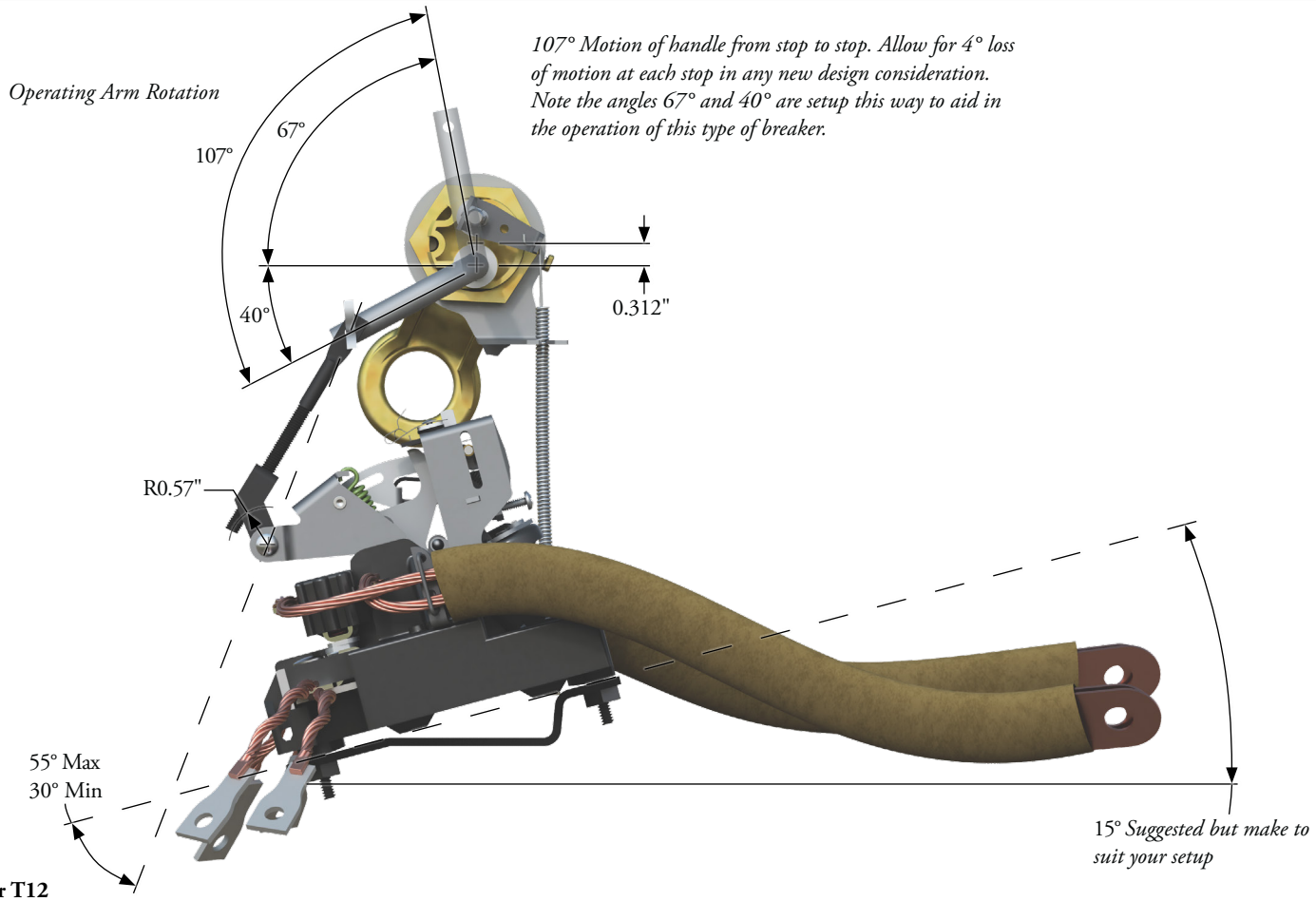


Figure 1
AHT-1 or T12

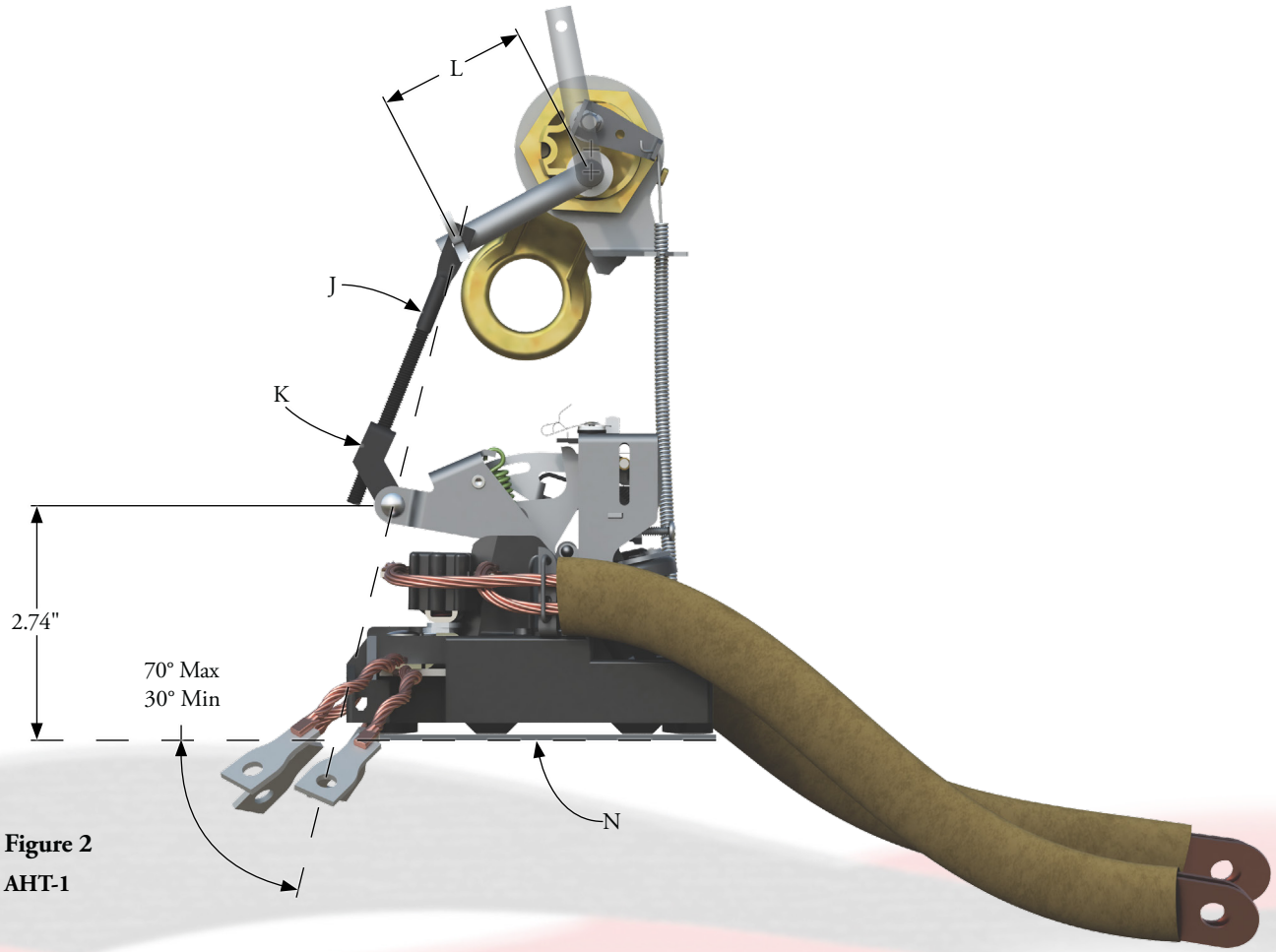
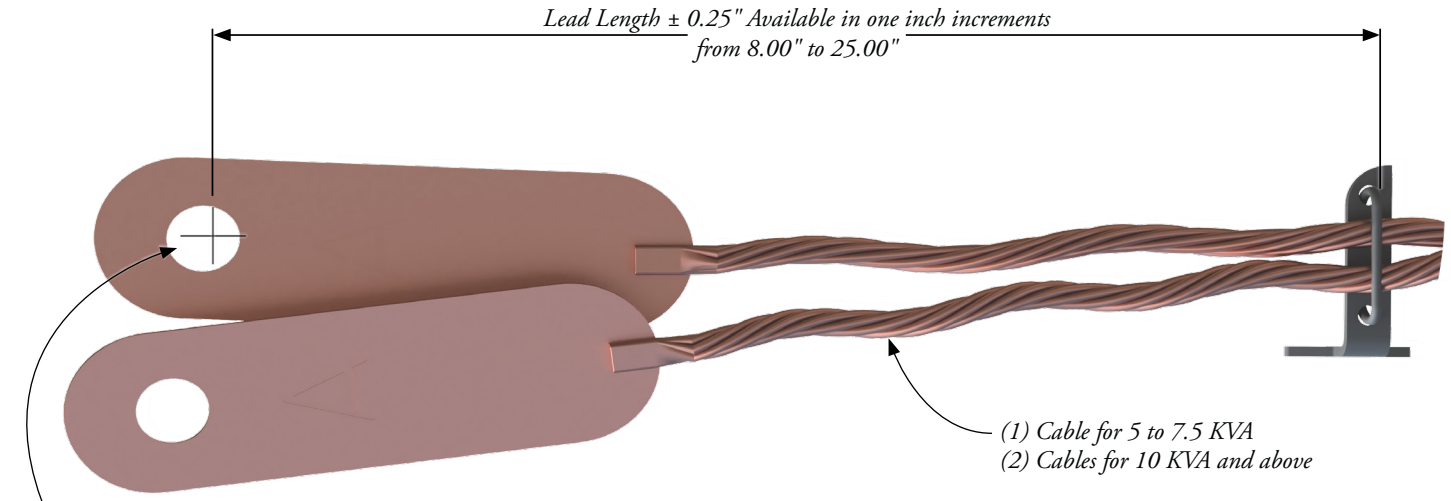


Figure 2
AHT-1



Ø0.406 *hole size for 5, 10 and 15 KVA models*
Ø0.531 *hole size for 25, 37.5 and 50 KVA models*

Available holes size options:
- *Ø0.575"*
- *Ø0.625*

Figure 3
Top Lead with Copper Strap

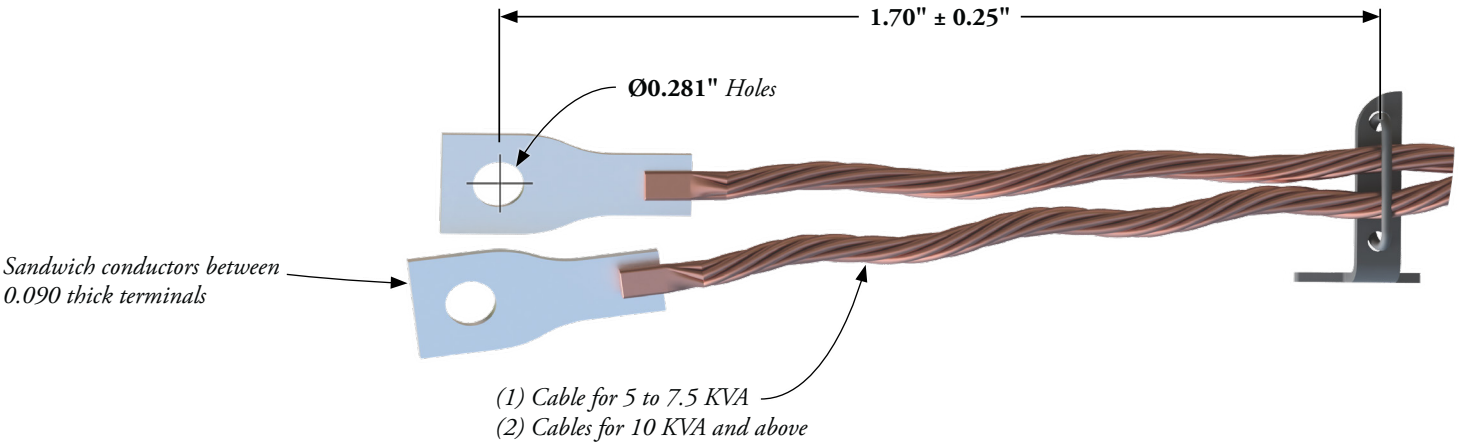


Figure 4
Top Lead with Terminal

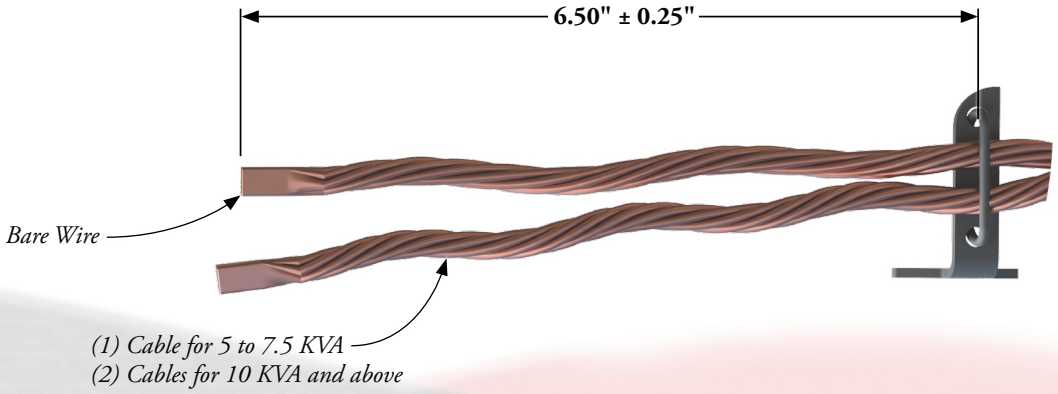


Figure 5
Top Lead

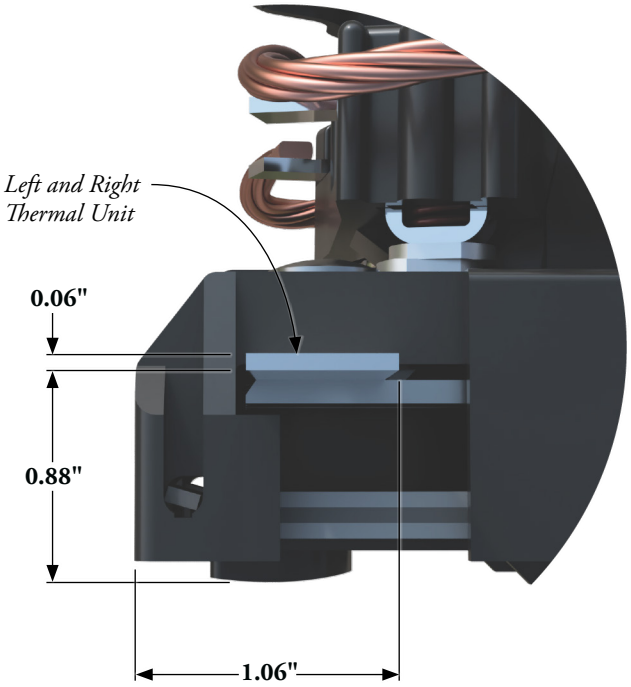


Figure 6

AHT-1 and T-12
Thermal Unit Location

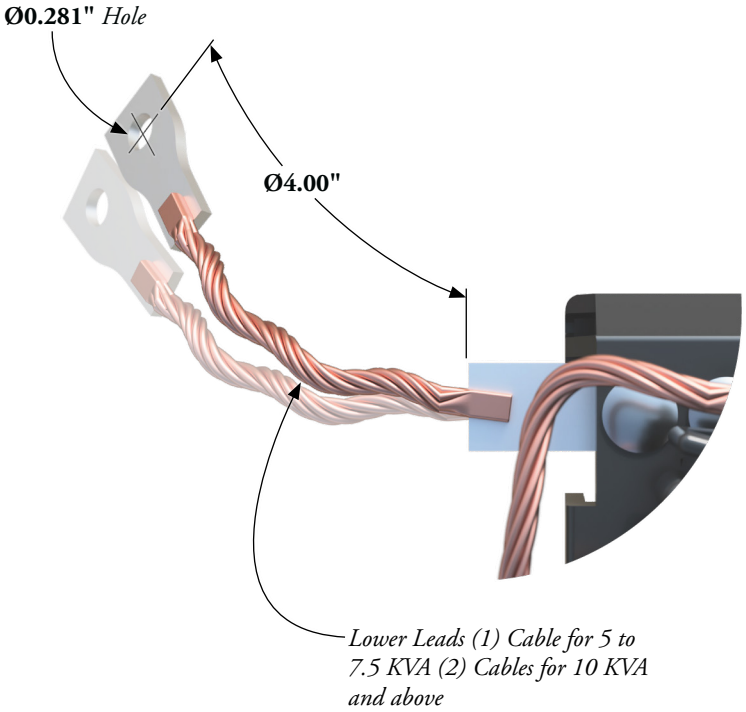


Figure 7

AHT-1 and T-12
Lower Lead Details

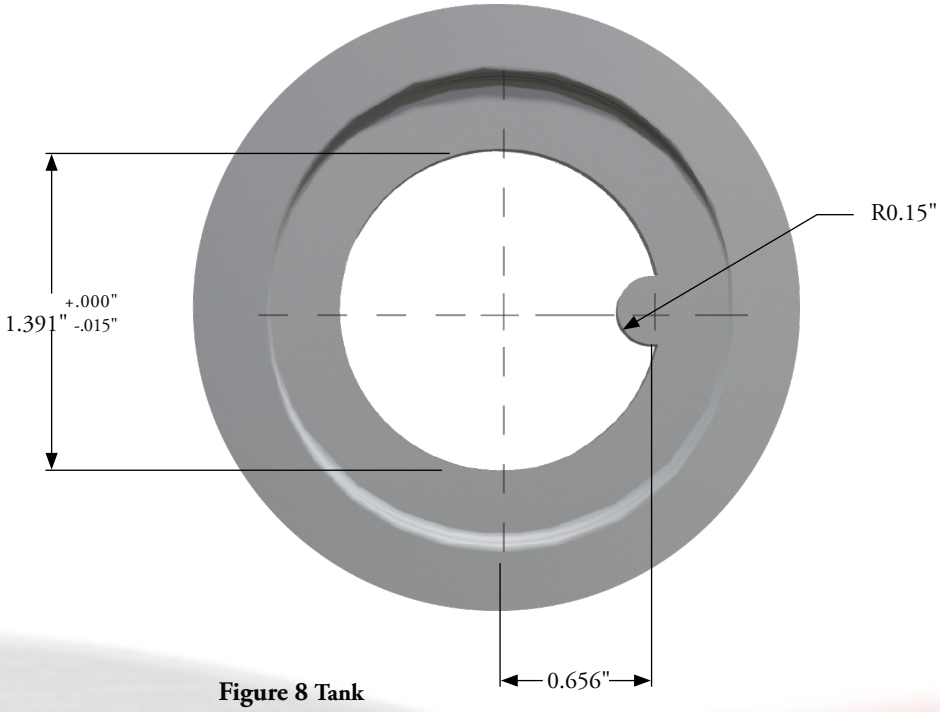
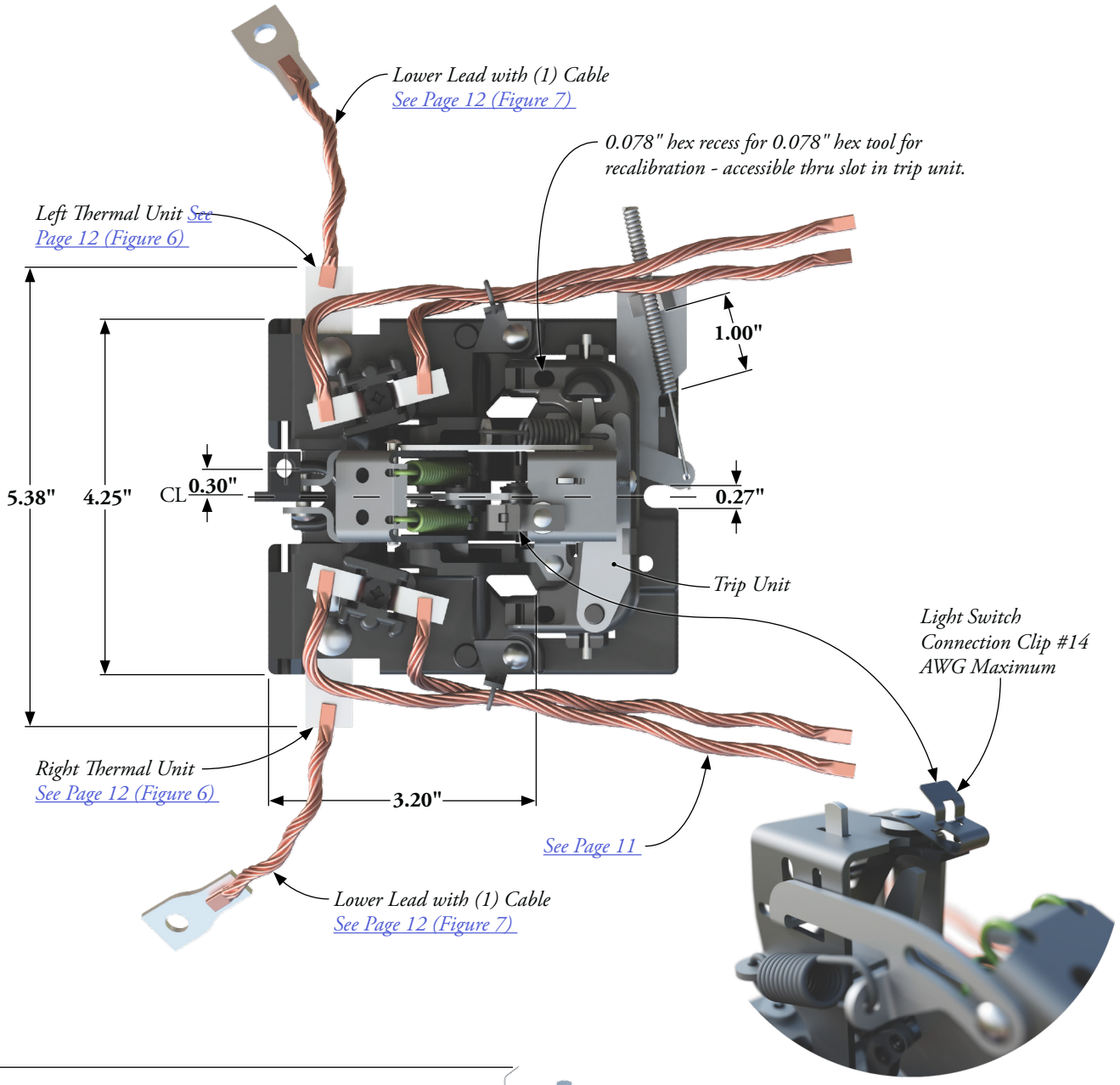
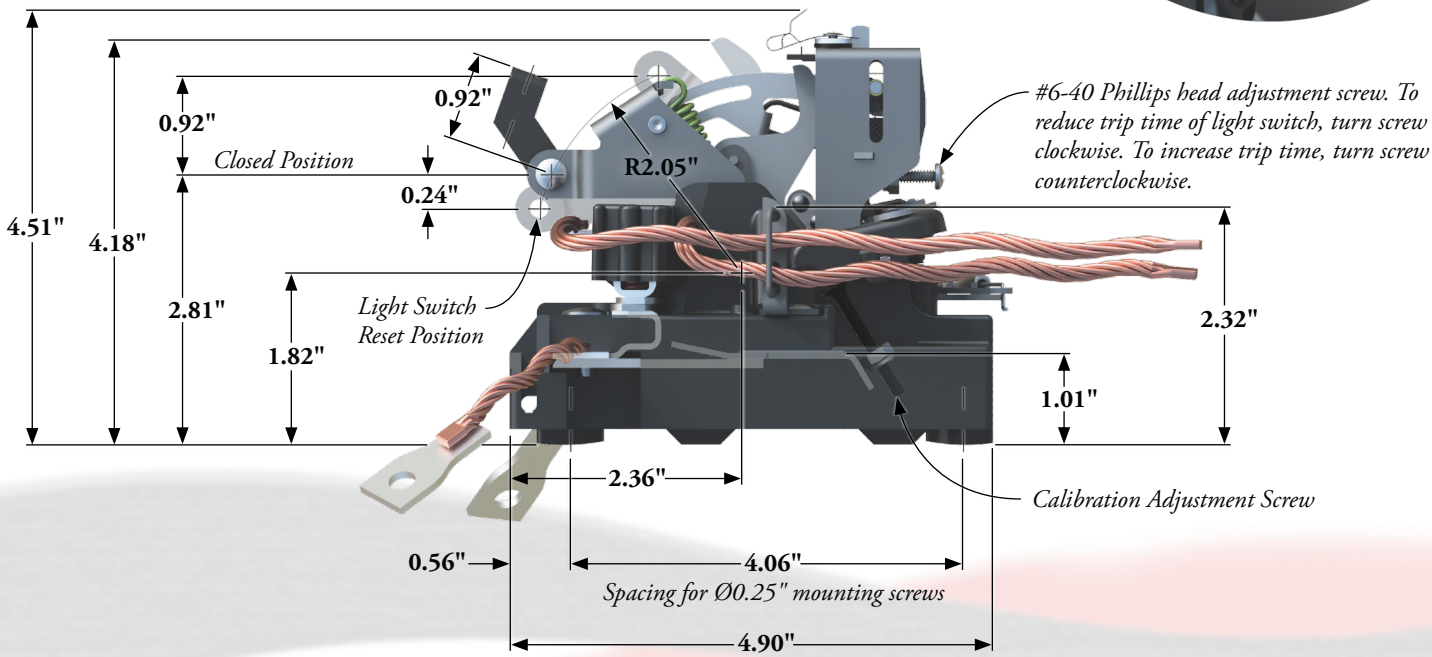
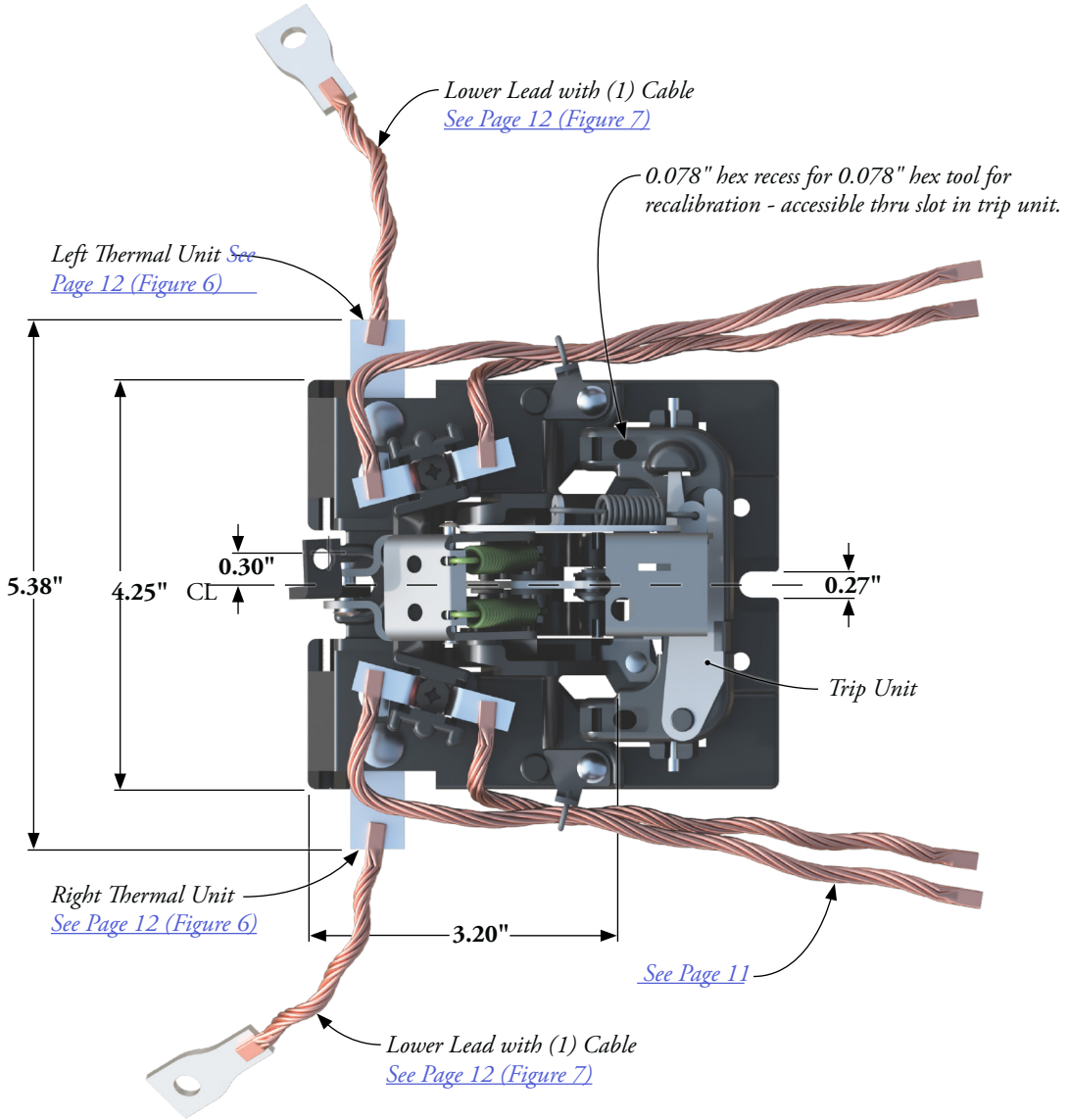
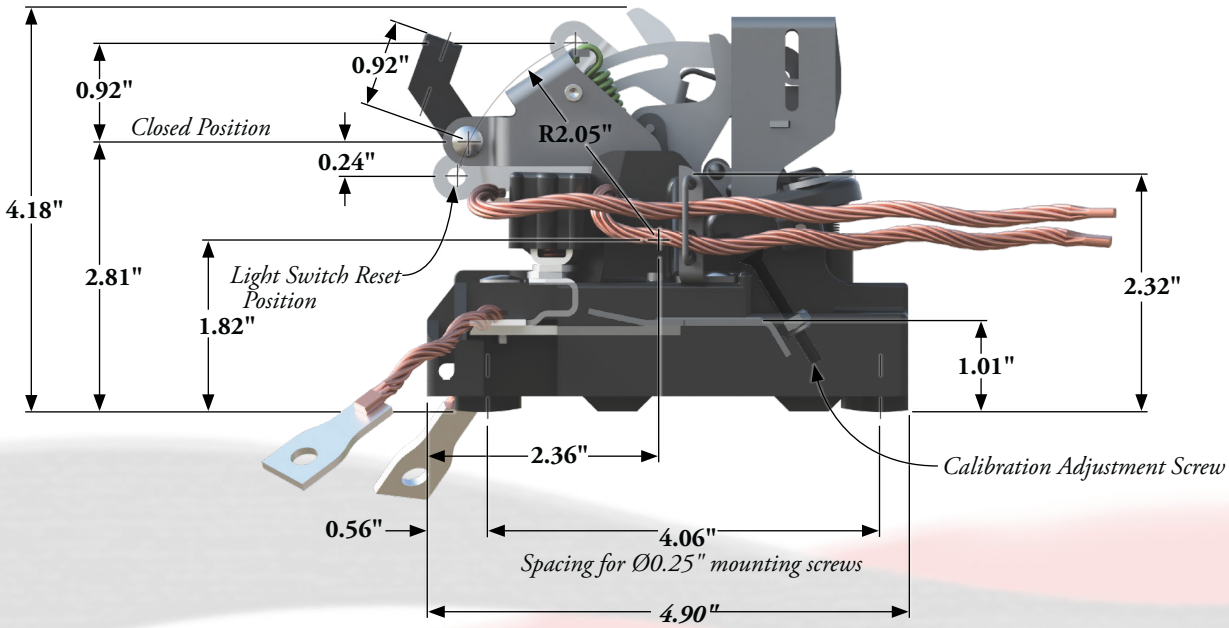


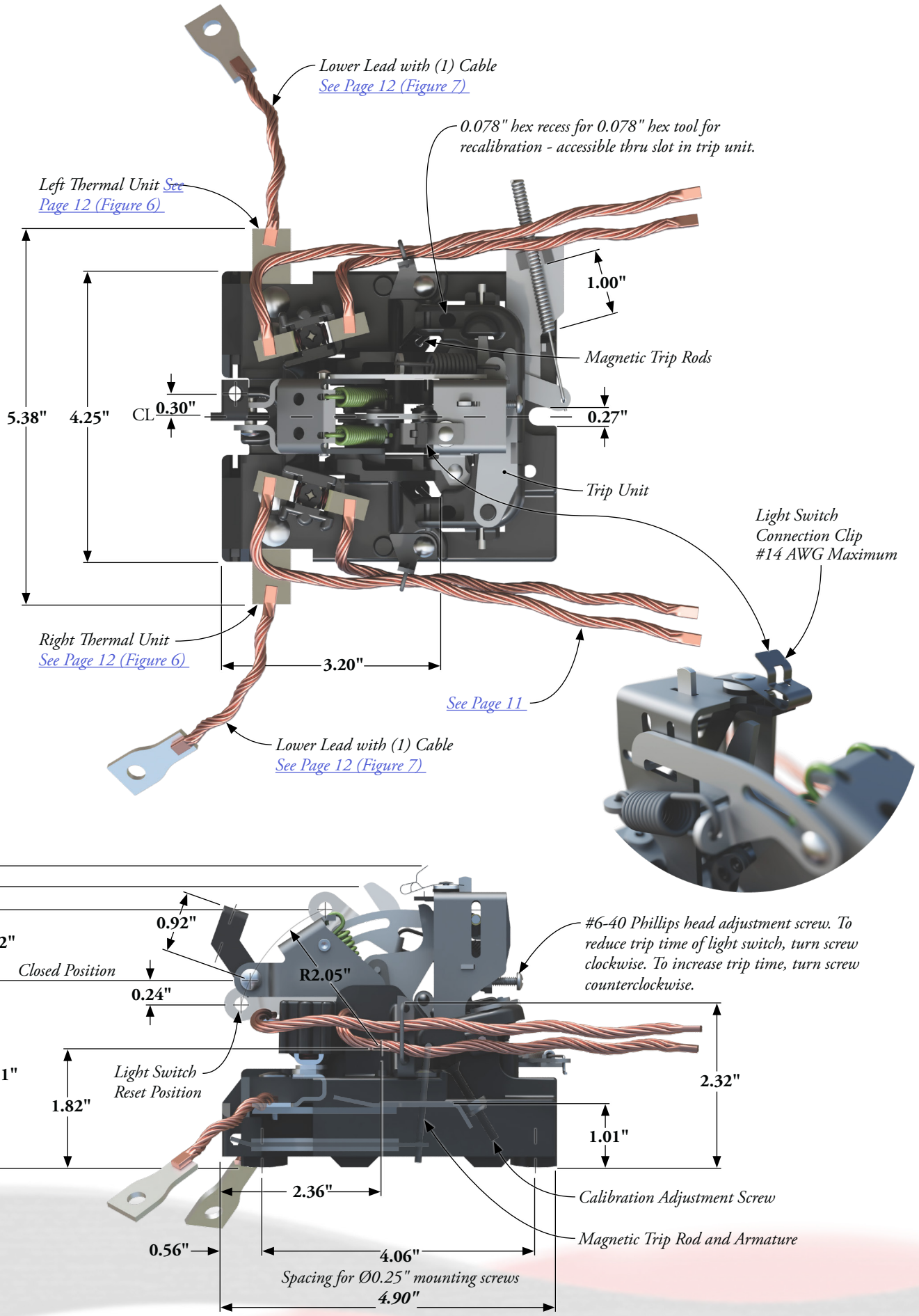
Figure 8 Tank
Hole Details

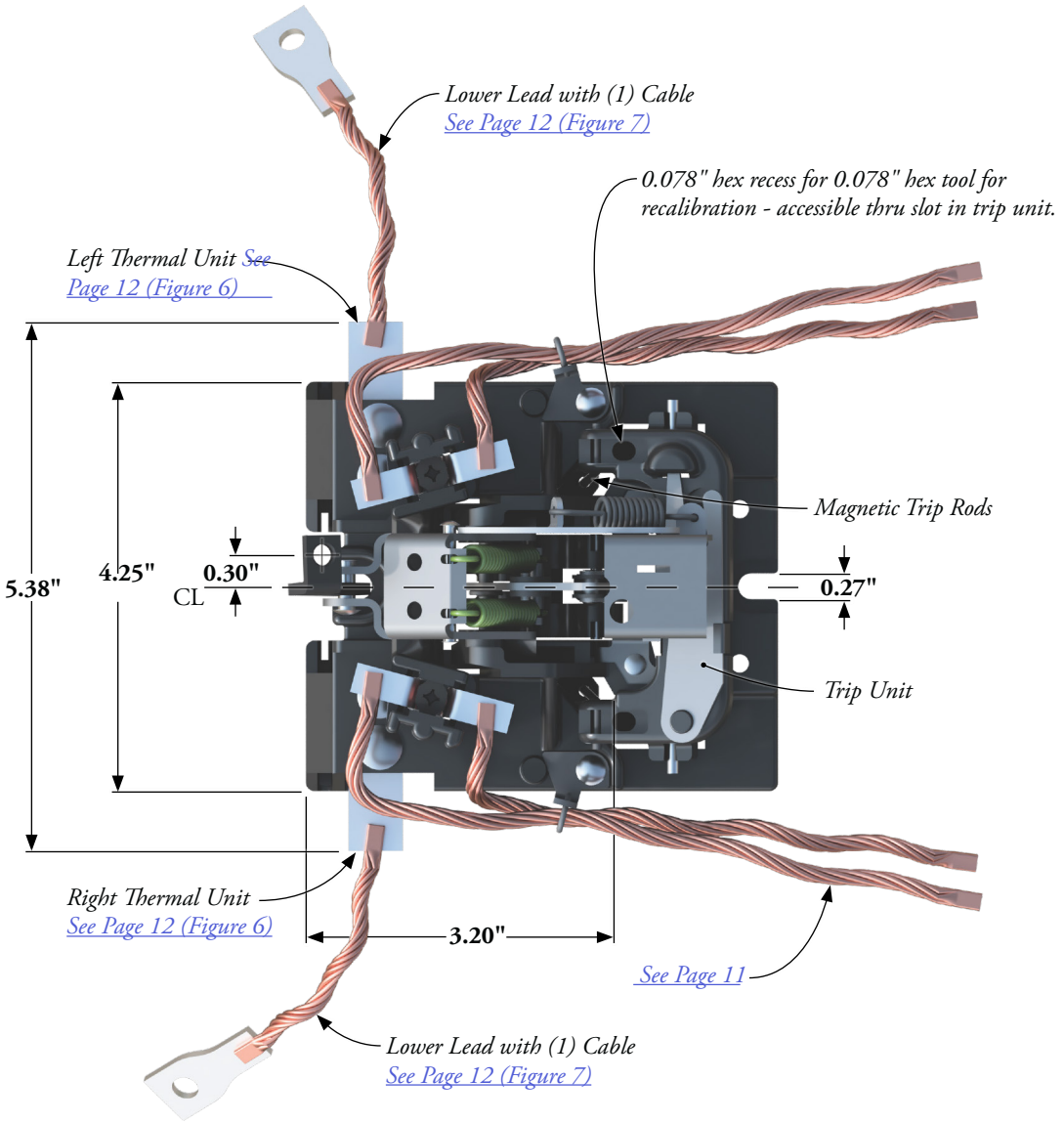

Lower Lead with (1) Cable
See Page 12 (Figure 7)
0.078" hex recess for 0.078" hex tool for recalibration - accessible thru slot in trip unit.
Left Thermal Unit See Page 12 (Figure 6)
1.00"
5.38"
4.25"
CL
0.30"
0.27"
Trip Unit
Light Switch Connection Clip #14 AWG Maximum
Right Thermal Unit See Page 12 (Figure 6)
3.20"
See Page 11
Lower Lead with (1) Cable
See Page 12 (Figure 7)

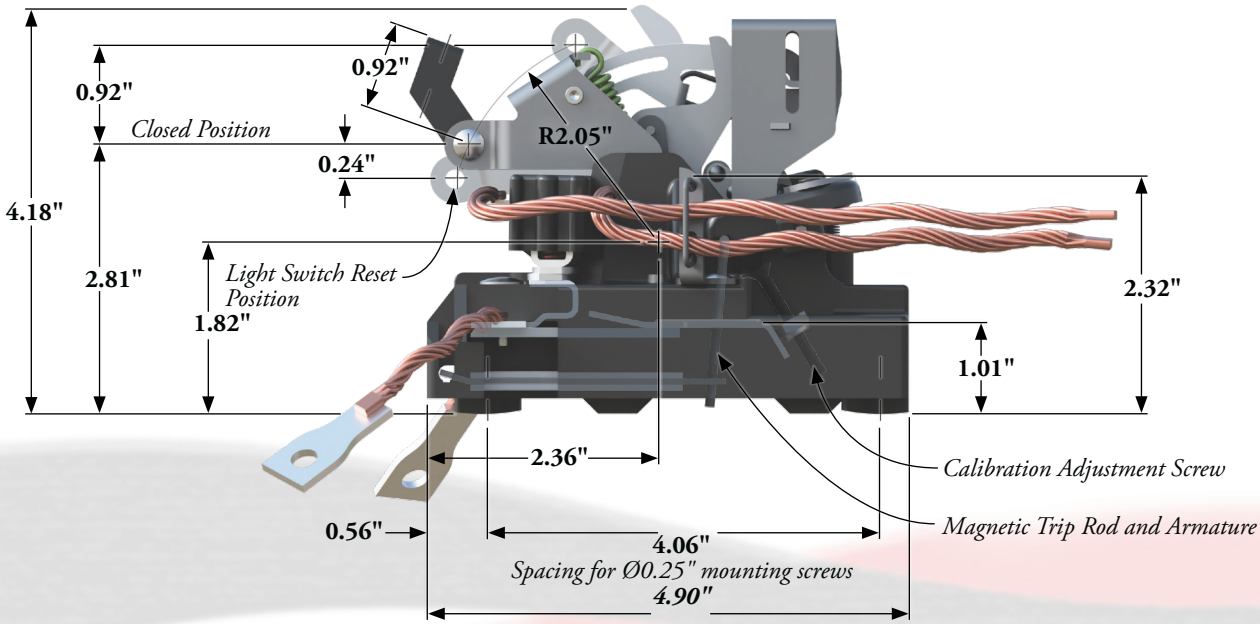

0.92"
0.92"
Closed Position
0.24"
R2.05"
#6-40 Phillips head adjustment screw. To reduce trip time of light switch, turn screw clockwise. To increase trip time, turn screw counterclockwise.
4.51"
4.18"
2.81"
1.82"
Light Switch Reset Position
2.32"
1.01"
2.36"
Calibration Adjustment Screw
0.56"
4.06"
Spacing for Ø0.25" mounting screws
4.90"

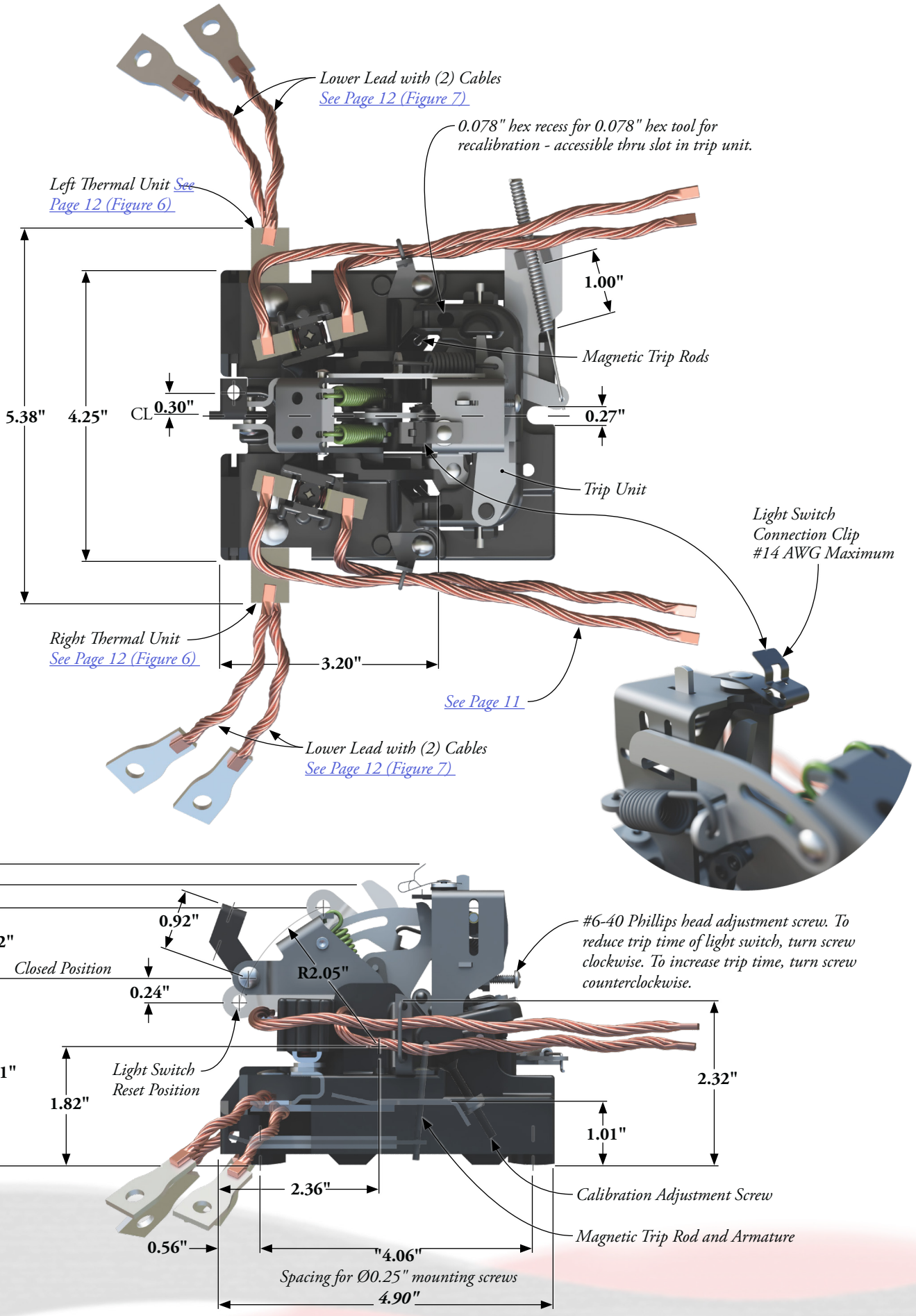

Lower Lead with (1) Cable
See Page 12 (Figure 7)
0.078" hex recess for 0.078" hex tool for recalibration - accessible thru slot in trip unit.
Left Thermal Unit See Page 12 (Figure 6)
5.38"
4.25"
CL
0.30"
0.27"
Trip Unit
Right Thermal Unit
See Page 12 (Figure 6)
3.20"
See Page 11
Lower Lead with (1) Cable
See Page 12 (Figure 7)

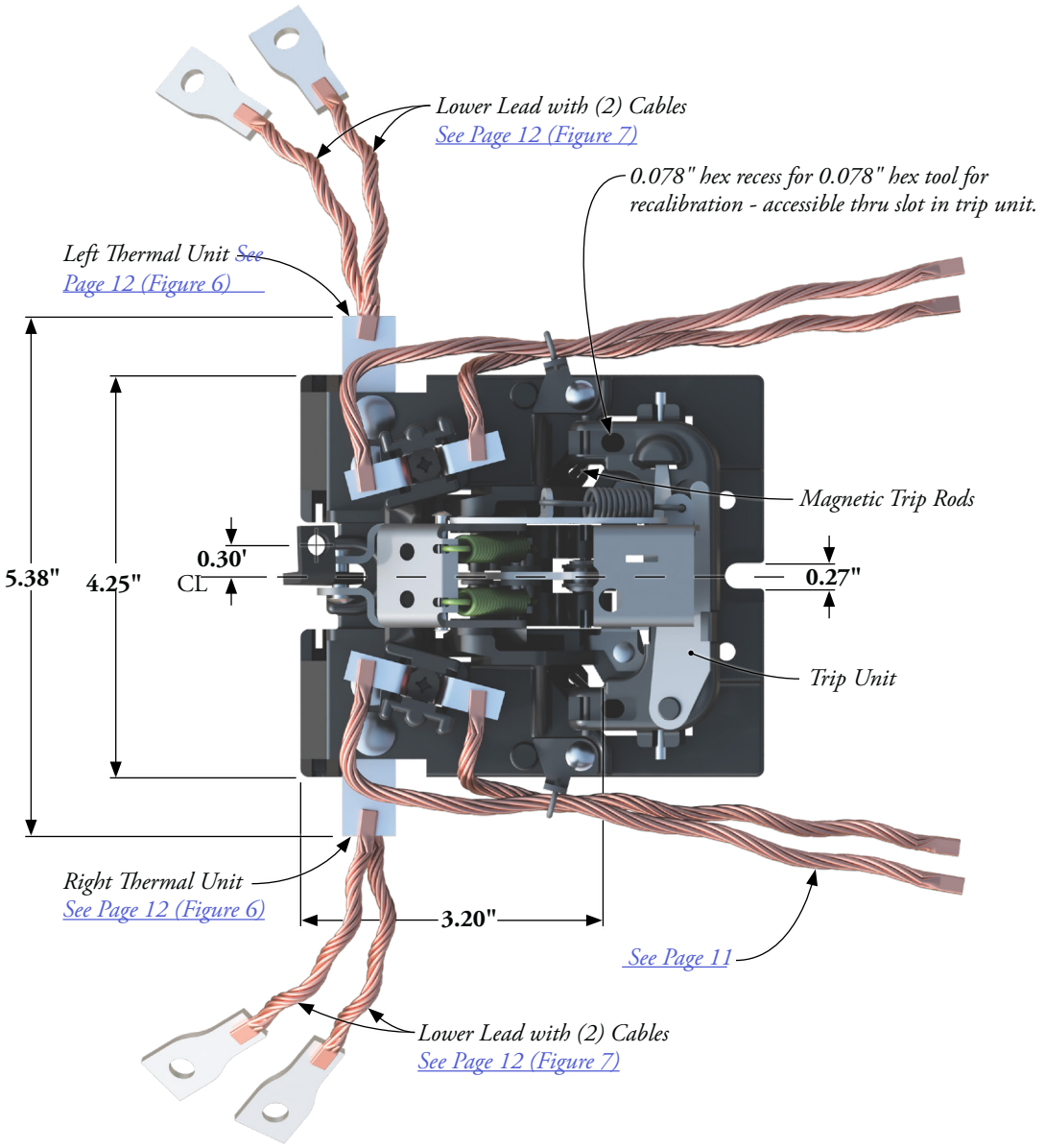

0.92"
0.92"
Closed Position
R2.05"
0.24"
4.18"
2.81"
Light Switch Reset Position
1.82"
2.32"
1.01"
2.36"
Calibration Adjustment Screw
0.56"
4.06"
Spacing for Ø0.25" mounting screws
4.90"

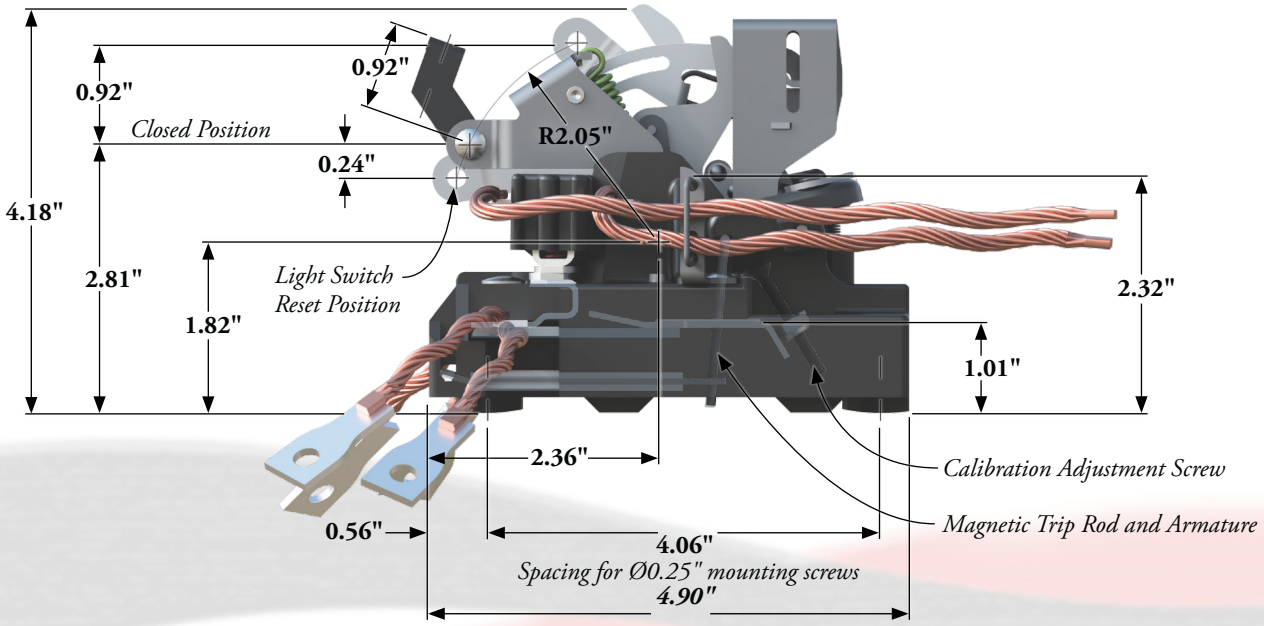

Lower Lead with (1) Cable
See Page 12 (Figure 7)
0.078" hex recess for 0.078" hex tool for recalibration - accessible thru slot in trip unit.
Left Thermal Unit See Page 12 (Figure 6)
1.00"
Magnetic Trip Rods
5.38"
4.25"
CL
0.30"
0.27"
Trip Unit
Light Switch Connection Clip #14 AWG Maximum
Right Thermal Unit See Page 12 (Figure 6)
3.20"
See Page 11
Lower Lead with (1) Cable
See Page 12 (Figure 7)
0.92"
0.92"
Closed Position
0.24"
R2.05"
#6-40 Phillips head adjustment screw. To reduce trip time of light switch, turn screw clockwise. To increase trip time, turn screw counterclockwise.
4.51"
4.18"
2.81"
1.82"
Light Switch Reset Position
2.32"
1.01"
2.36"
Calibration Adjustment Screw
Magnetic Trip Rod and Armature
0.56"
4.06"
Spacing for Ø0.25" mounting screws
4.90"


Lower Lead with (1) Cable
See Page 12 (Figure 7)
0.078" hex recess for 0.078" hex tool for recalibration - accessible thru slot in trip unit.
Left Thermal Unit See Page 12 (Figure 6)
Magnetic Trip Rods
5.38"
4.25"
0.30"
CL
0.27"
Trip Unit
Right Thermal Unit See Page 12 (Figure 6)
3.20"
See Page 11
Lower Lead with (1) Cable
See Page 12 (Figure 7)


0.92"
0.92"
Closed Position
R2.05"
0.24"
4.18"
2.81"
Light Switch Reset Position
1.82"
2.32"
1.01"
2.36"
Calibration Adjustment Screw
Magnetic Trip Rod and Armature
0.56"
4.06"
Spacing for Ø0.25" mounting screws
4.90"


Lower Lead with (2) Cables
See Page 12 (Figure 7)
0.078" hex recess for 0.078" hex tool for recalibration - accessible thru slot in trip unit.
Left Thermal Unit See Page 12 (Figure 6)
1.00"
Magnetic Trip Rods
5.38"
4.25"
CL
0.30"
0.27"
Trip Unit
Light Switch Connection Clip #14 AWG Maximum
Right Thermal Unit See Page 12 (Figure 6)
3.20"
See Page 11
Lower Lead with (2) Cables
See Page 12 (Figure 7)
0.92"
0.92"
Closed Position
0.24"
R2.05"
#6-40 Phillips head adjustment screw. To reduce trip time of light switch, turn screw clockwise. To increase trip time, turn screw counterclockwise.
4.51"
4.18"
2.81"
1.82"
Light Switch Reset Position
2.32"
1.01"
2.36"
Calibration Adjustment Screw
Magnetic Trip Rod and Armature
0.56"
"4.06"
Spacing for Ø0.25" mounting screws
4.90"


Lower Lead with (2) Cables
See Page 12 (Figure 7)
0.078" hex recess for 0.078" hex tool for recalibration - accessible thru slot in trip unit.
Left Thermal Unit See Page 12 (Figure 6)
Magnetic Trip Rods
0.30'
CL
5.38"
4.25"
0.27"
Trip Unit
Right Thermal Unit
See Page 12 (Figure 6)
3.20"
See Page 11
Lower Lead with (2) Cables
See Page 12 (Figure 7)


0.92"
0.92"
Closed Position
R2.05"
0.24"
4.18"
2.81"
Light Switch
Reset Position
1.82"
2.32"
1.01"
2.36"
Calibration Adjustment Screw
Magnetic Trip Rod and Armature
0.56"
4.06"
Spacing for Ø0.25" mounting screws
4.90"

AHT-1 AND T-12 CIRCUIT BREAKER OPERATION AND ADJUSTMENT

Preliminary factory adjustment of the breakers is expected to give signal light contact continuity under the following four conditions:

1. When the cocking lever is moved beyond the open position.
2. When the cocking lever is moved beyond the closed position.
3. When the trip bar is moved, but before the breaker contacts are tripped.
4. When the breaker has tripped completely.

To achieve these conditions, the position of the two signal light contacts and the calibrating screw are factory preset. To obtain light indication from the reset position, the cocking lever must be moved toward the light tower when the contacts are open. To obtain light indication from the closed position, the cocking lever must be moved toward the contacts when the contacts are closed. This allows the light switch operation to be checked outside the tank.

Following this preliminary adjustment, the breakers are calibrated and packaged.

To obtain the same conditions when the breaker is installed in a transformer requires the correct amount of free travel at each end of the operating handle motion.

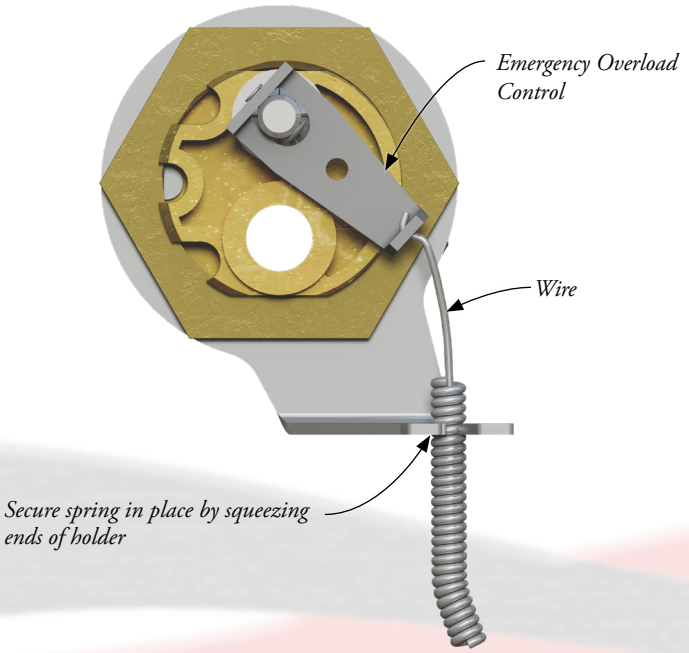
Obtaining the correct free travel is often a cut-and-try procedure due to variation in the handle location, breaker location and tank dimensions. To facilitate this adjustment the following steps may prove useful.

1. Bolt breaker to support, tighten screws firmly and back off the screw under the trip bar 1/2 turn.
2. Install the operating handle assembly in the tank and tighten the clamping nut until the gasket stop bottoms out. Further tightening is undesirable.
3. Position the operating handle to align the yellow arrow with the “R” on the bearing, allowing about 1/4” clearance between the handle stop and the bearing stop. Position breaker in the cocked position with the contacts open.
4. Screw the connecting rod (link arm) in to the cocking lever until the holes in the rod and operating arm mate. Insert a cotter pin in the holes, hold cotter pin in place and move the operating handle to check for the following operations:
   a. Close and open the breaker.
   b. Close breaker, trip light contact manually (avoid tripping main breaker contacts). Reset light by moving operating handle to the “L” position.
   c. Trip breaker contacts and try resetting the breaker. A properly adjusted breaker will have approximately 1/4” of travel left between the handle and bearing stops.

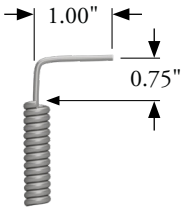
If breaker fails to operate properly, adjust connecting rod until the above operating conditions are obtained.

5. Install cotter pin permanently; avoid binding between rod and lever.
6. Install signal light in tank wall; tighten clamping nut only enough to compress the gasket. Avoid over-tightening.
7. Position calibration control mechanism (overload lever) on the breaker at the "normal" position. Insert the preformed end control wire into the breaker overload lever and thread the control cable (sheath) into the support on the breaker and lock the connection by pinching the support around the cable sheath.
8. Position the calibration control mechanism (overload lever) on the breaker in the "normal" position. Hold the control assembly lever on the operating handle bearing in the "normal" position. Thread the control cable through the hole in the cable support and lock the connection by pinching the support around the cable sheath. Twist the control wire into and around the emergency overload control lever as shown below.
9. Connect signal light winding to terminal on the breaker.
10. Connect signal light winding to the signal light.
11. For breakers without emergency overload and signal light, the following procedure is recommended to make the breaker assembly adjustment in the transformer tank:
    a. Place breaker in the cocked position with the contacts open.
    b. Adjust threaded connecting rod (link arm) so that the yellow arrow on the operating handle is aligned with the "O" on the bearing.
    c. Check breaker for proper reset and close operations. Adjust connecting rod (link arm) to achieve proper operation, if required.

Extension Spring Support



Primary Bending of Wire



Standard Operating Instruction Guide

The circuit breaker operating handle and position indicator are shown in Figure 1. Transformers are shipped with the circuit breakers closed. To open the low voltage circuit manually, move the handle so that the pointer moves from “C” (closed) to “O” (open), at which point the circuit is open. Verify that the circuit breaker is latched in the “open” position. All breakers on a bracket and non-standard operating handles will work in reverse order - "C" (open) to "O" (closed).

To insure that the discharge of the static charge, which is sometimes present in the low voltage winding due to capacitance, it is recommended that the low voltage be grounded after opening the circuit breaker until the high voltage is disconnected.

To close the breaker after a manual opening move the handle so the arrow points towards “C”. If the breaker has been tripped it is necessary to move the arrow towards “R” to reset the breaker before closing the breaker by moving the arrow towards “C”. If a fault exists or and excessive load exists at the time the breaker is closed, the breaker will reopen even though the operating handle is held in the “C” (closed) position. To reset the signal light, rotate the handle to “L” (light), and then return to “C” (close). If the light fails to go out, the transformer is still overheated.

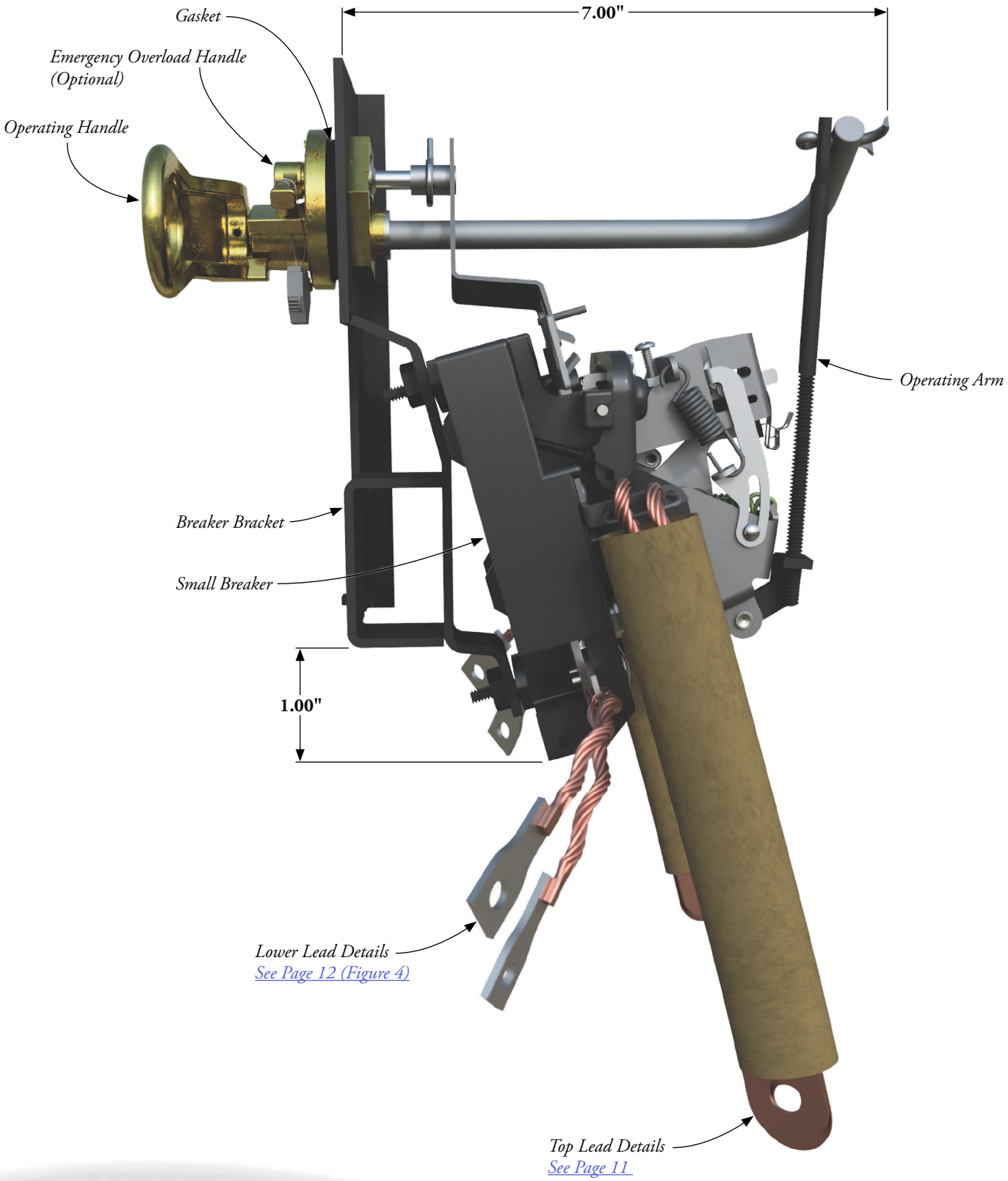
Provision is made for checking the signal light bulb when the transformer is in service, to do this, rotate the handle to “L” (light” and the light should come on. If it does not, the bulb should be replaced. The bulb is a standard six-volt, GE bulb No. 44, and is replaceable from outside the transformer and by removing the signal light lens. After checking return the operating handle to “C”. Faulty bulbs should be replaced, since operating the transformer with a faulty bulb or without a bulb may result in radio noise.

Some circuit breakers are equipped with emergency overload devices, which can be used to restore service following a circuit breaker operation due to overload. With the emergency lever in the normal position, the breaker will trip at its normal settings as calibrated at the factory. Moving the lever in clockwise direction (see raised position in Figure 1) increases the setting so that a higher temperature is required to trip the breaker. This emergency setting provides extra load capacity and still permits manual breaker operation, and also retains short circuit protection of the transformer. It is important that the emergency setting be used only when and as long as absolutely necessary, because its use will result in a reduction of transformer life.

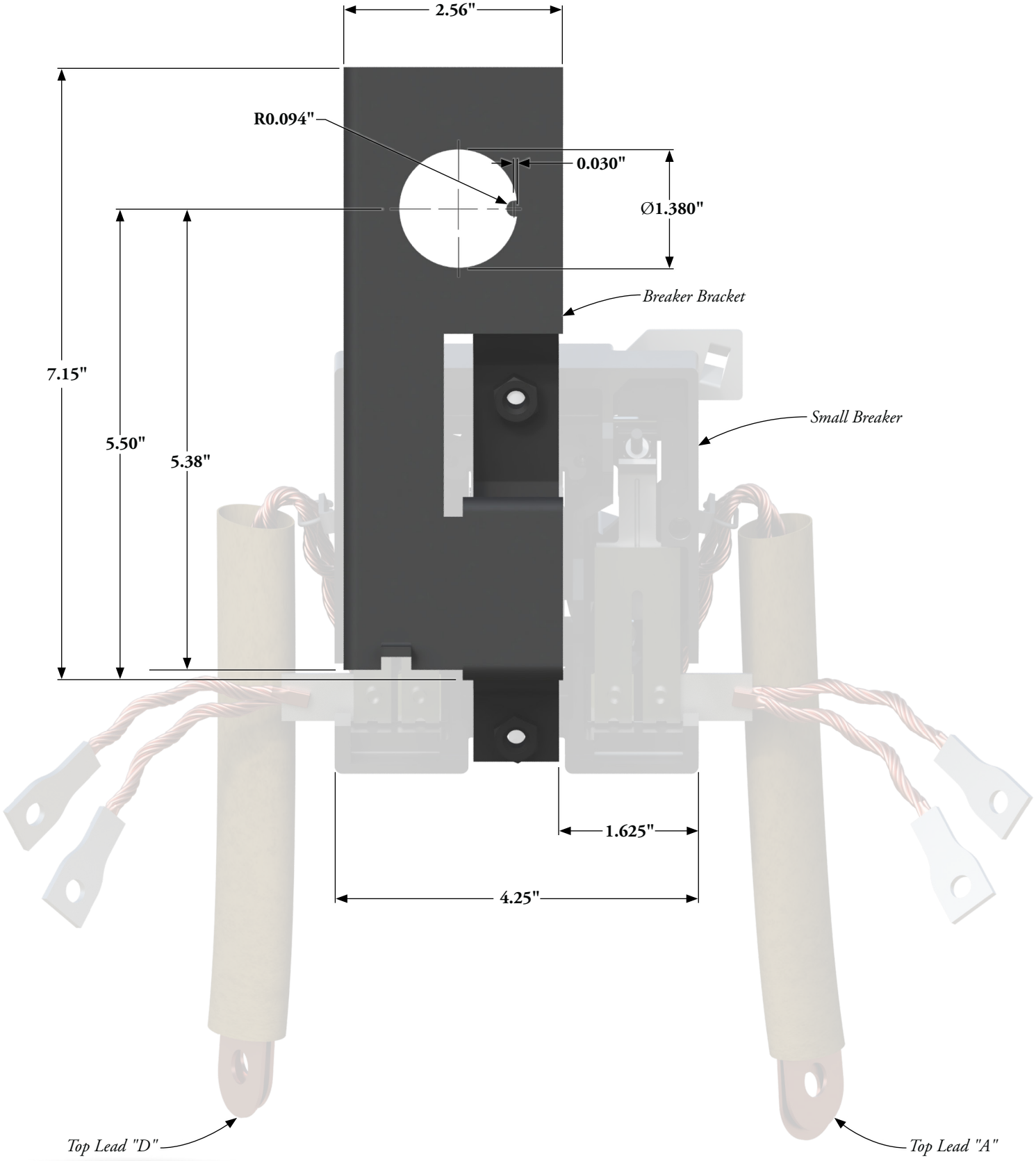
A meter seal is provided on the emergency lever to prevent tampering. It is recommended that a new seal be applied when it is returned to the normal position after emergency operation.

Figure 9
Breaker Position Indicator

Small Breaker on a Bracket Dimensions and Details



Small Breaker on a Bracket Details and Dimensions



Small Breaker on a Bracket Assembly Configurations

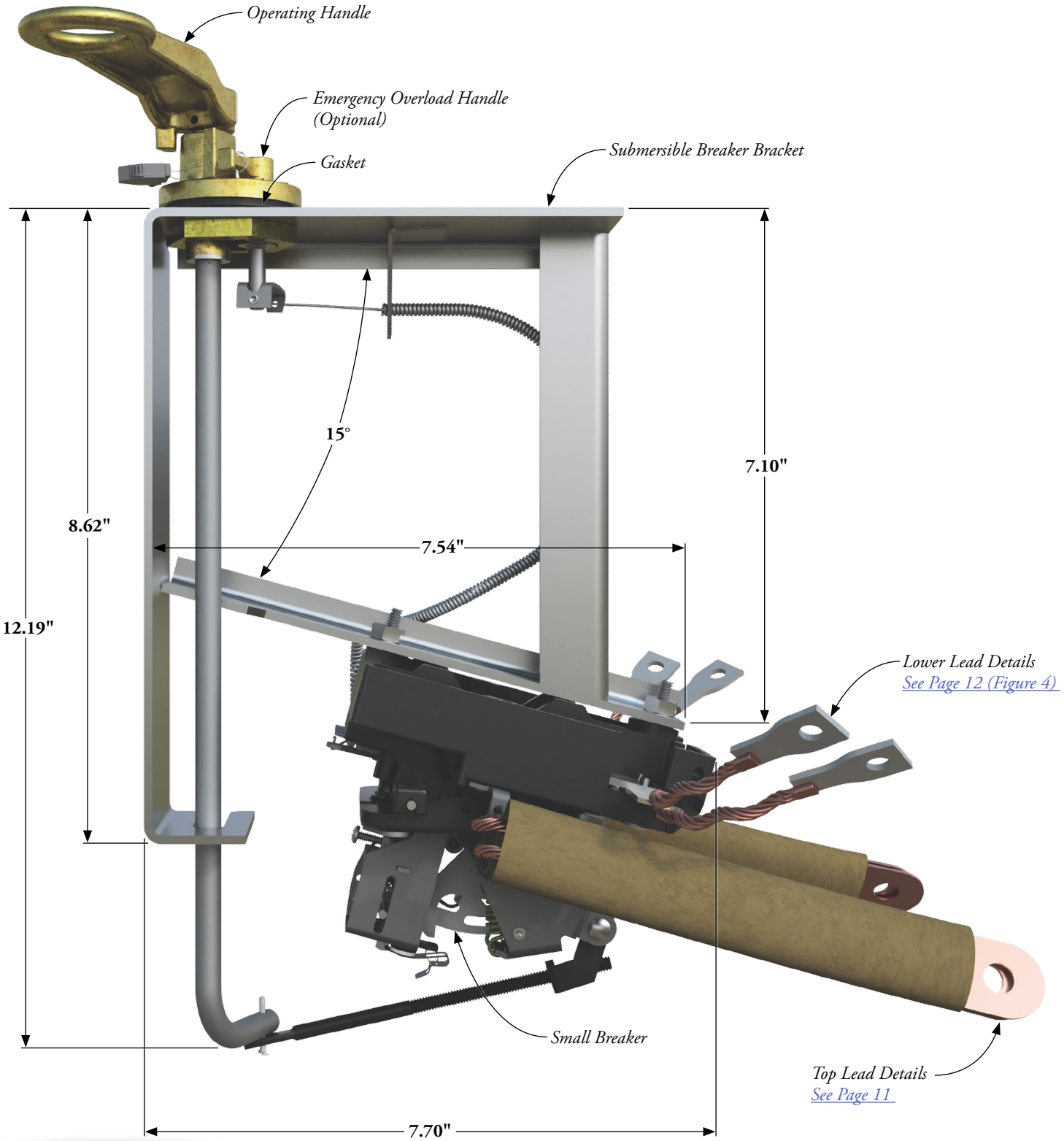
Catalog Number	KVA	Trip Temp	Voltage	Signal Light		Lead Length		Internal Number	Handle Type	Curve GES6301A
				Emergency	Bulb Asm.	"A"	"D"			
7561ZH2099	10	110		Yes	Yes	13	13	2501K066G32	Small Pole	10
7561ZH2399	7.5	110		Yes	Yes	13	13	2501K066G33	Small Pole	7.5
7561ZH2499	37.5	160		Yes	Yes	13	13	2501K066G22	Small Pole	37.5
7561ZH2599	50	160		Yes	No	8	13	2501K066G23	Small Pole	50
7561ZH2699	10	150		Yes	No	8 15		2501K066G23	Small Pole	10
7561ZH2799	15	153		Yes	No	8	15	2501K066G30	Small Pole	15
7561ZH2899	5	120		Yes	Yes	13 13		2501K066G31	Small Pole	5
7561ZH2999	7.5	145		Yes	No	8	13	2501K066G59	Small Pole	7.5
7561ZH3099	50	130		No	No	8	17	2501K066G23	Small Pole	50
7561ZH3199	7.5	110		No	No	13	13	2501K066G34	Small Pole	7.5
7561ZH3299	10	110		No	No	13	13	2501K066G35	Small Pole	10
7561ZH3399	37.5	110		No	No	13	13	2501K066G36	Small Pole	37.5
7561ZH3499	10	110		No	No	13	13	2501K066G22	Small Pole	10
7561ZH3599	50	110		No	No	8	17	2501K066G34	Small Pole	50
7561ZH3699	25	120		No	No	13	13	2501K066G30	Small Pole	25
7561ZH3899	50	160		Yes	No	9	15	2501K066G34	Small Pole	50
7561ZH3999	15	110		Yes	Yes	13	13	2501K066G30	Small Pole	15
7561ZH4099	25	160		Yes	No	8	15	2501K066G33	Small Pole	25
7561ZH4899	37.5	160		Yes	No	13	13	2501K066G34	Pad	37.5
7561ZH4999	50	160		Yes	No	13	13	2501K066G36	Pad	50
7561ZH5299	50	160		Yes	Yes	6T	6T	2501K066G35	Small Pole	50
7561ZH5399	25	110		No	No	13	13	2501KO66G34	Small Pole	25
7561ZH6099	5	145		Yes	Yes	6	6	2501K066G22	Small Pole	5
7561ZH6199	10	150		Yes	Yes	6	6	2501K066G33	Small Pole	10
7561ZH6299	25	160		Yes	Yes	6	6	2501K066G41	Small Pole	25
7561ZH6399	50	160		Yes	Yes	6	6	2501K066G31	Small Pole	50
7561ZH6499	37.5	160		Yes	Yes	6	6	2501K066G32	Small Pole	37.5
7561ZH6599	37.5	110	120/240	Yes	Yes	8	16	2501K066G33	Small Pole	37.5
7561ZH8099	25	160		Yes	No	13	13	2501K066G30	Small Pole	25
7561ZH8199	25	110		Yes	No	8	15	2501K066G32	Small Pole	25
7561ZH8299	25	110		Yes	Yes	13	13	2501K066G23	Small Pole	25
7561ZX0199	5	145		Yes	Yes	12	12	2501K066G51	Small Pole	5
7561ZX0299	25	110		Yes	Yes	13	13	2501K066G23	Small Pole	25
7561ZX0399	25	140		Yes	Yes	6T	6T	2501K066G23	Small Pole	25
7561ZX0499	37.5	148		Yes	Yes	6T	6T	2501K066G52	Small Pole	37.5
7561ZX0599	10	150		Yes	Yes	12	9	2501K066G53	Small Pole	10
7561ZX0699	15	153		Yes	Yes	12	9	2501K066G54	Small Pole	15
7561ZX0799	25	160		Yes	Yes	12	9	2501K066G55	Small Pole	25
7561ZX0899	37.5	148		Yes	Yes	13	13	2501K066G51	Small Pole	37.5
7561ZX0999	50	130		Yes	Yes	6T	6T	2501K066G51	Small Pole	50
7561ZX1099	37.5	110		Yes	Yes	13	13	2501K066G50	Small Pole	37.5
7561ZX1199	50	110		Yes	Yes	8	8	2501K066G34	Small Pole	50
7561ZX1299	5	110		Yes	Yes	13	13	2501K066G56	Small Pole	5
7561ZX1399	10	130		Yes	Yes	13	13	2501K066G31	Small Pole	10
7561ZX1499	25	130		Yes	Yes	13	13	2501K066G34	Small Pole	25
7561ZX1799	15	130		Yes	Yes	13	13	2501K066G57	Small Pole	15
7561ZX1899	50	110		Yes	Yes	8	8	2501K185G19	Small Pole	50
7561ZX1999	25	120		Yes	Yes	13	13	2501K182G55	Small Pole	25
7561ZX2099	15	153		Yes	Yes	13	13	2501K182G04	Small Pole	15
7561ZX2199	15	120		Yes	Yes	13	13	2501K182G38	Small Pole	15
7561ZX2299	5	110		Yes	Yes	6T	6T	2501K182G15	Small Pole	5
7561ZX2399	5	150		Yes	Yes	13	13	2501K182G58	Small Pole	5
7561ZX2499	10	150		Yes	Yes	13	13	2501K182G03	Small Pole	10
7561ZX2599	15	153		Yes	Yes	13	13	2501K182G04	Small Pole	15
7561ZX2699	25	160		Yes	Yes	13	13	2501K182G05	Small Pole	25

Small Breaker on a Bracket Assembly Configurations

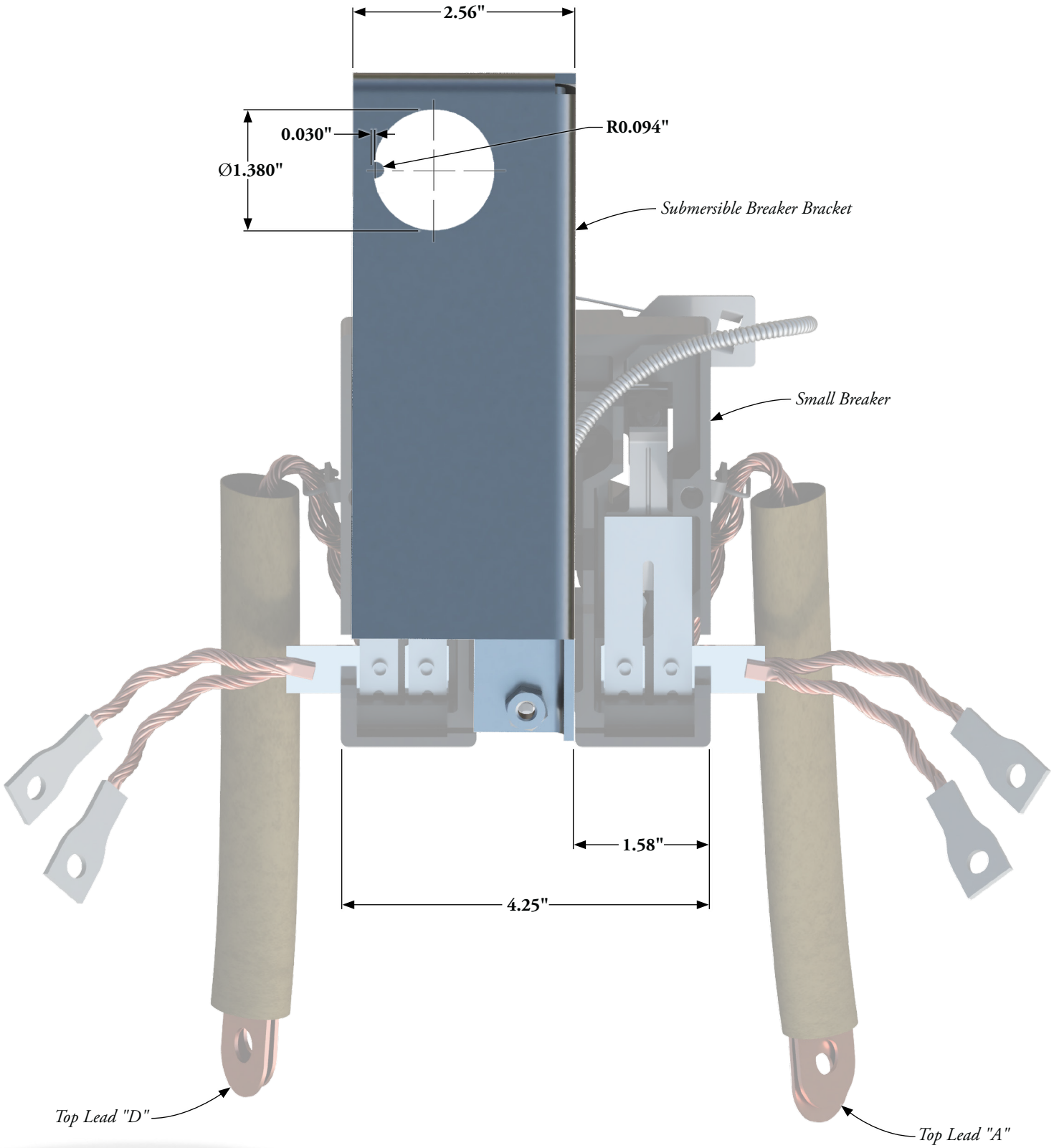
Catalog Number	KVA	Trip Temp	Voltage	Signal Light		Lead Length		Internal Number	Handle Type	Curve GES6301A
				Emergency	Bulb Asm.	"A"	"D"			
7561ZX2899	25	160		Yes	Yes	6T	6T	2501K182G12	Small Pole	25
7561ZX2999	37.5	140		Yes	Yes	8	8	2501K185G22	Small Pole	37.5
7561ZX3099	50	120		Yes	Yes	13	13	2501K185G13	Small Pole	50
7561ZX3199	10	120		Yes	Yes	13	13	2501K182G13	Small Pole	10
7561ZX3299	10	110		Yes	Yes	13 13		2501K182G45	Small Pole	10
7561ZX3399	15	140		Yes	Yes	13	13	2501K182G51	Small Pole	15
7561ZX3499	37.5	120		Yes	Yes	13	13	2501K185G24	Small Pole	37.5
7561ZX3599	50	130		Yes	Yes	13	13	2501K185G23	Small Pole	50
7561ZX5299	50	110		Yes	Yes	13	13	2501K185G46	Small Pole	50
7561ZX5399	37.5	130		Yes	Yes	13	13	2501K185G47	Small Pole	37.5
7561ZX5599	50	160		Yes	Yes	13	13	2501K185G51	Small Pole	50
7561ZX5699	37.5	160		Yes	Yes	6T	6T	2501K185G01	Small Pole	37.5
7561ZX5799	50	160		No	No	6T	6T	2501K213G02	Small Pole	50
7561ZX5899	15	150		No	No	6	6	2501K212G03	Small Pole	15
7561ZX5999	50	160		Yes	No	13	13	2501K185G05	Small Pole	50
7561ZX6099	15	153		No	No	13	13	2501K212G04	Small Pole	15
7561ZX6199	25	160	120/240	Yes	No	13	13	2501K182G05	Pad	25
7561ZX6299	15	150		Yes	No	13	13	2501K182G03	Pad	15
7561ZX6399	37.5	160		Yes	Yes	13	13	2501K185G04	Small Pole	37.5
7561ZX6499	15	153		Yes	No	13	13	2501K182G04	Pad	15
7561ZX6599	37.5	160		Yes	No	13	13	2501K185G04	Pad	37.5
7561ZX6699	50	160		Yes	No	13	13	2501K185G05	Pad	50
7561ZX6799	15	110		Yes	Yes	8	14	2501K182G45	Small Pole	15
7561ZX6899	15	120		Yes	Yes	8	14	2501K182G38	Small Pole	15
7561ZX6999	25	130		Yes	Yes	8	15	2501K182G72	Small Pole	25
7561ZX7099	50	130		Yes	Yes	8	16	2501K185G23	Small Pole	50
7561ZX7199	25	120		Yes	Yes	8	15	2501K182G55	Small Pole	25
7561ZX7299	10	150		Yes	Yes	13	13	2501K182G03	Small Pole	10
7561ZX7399	10	150		No	No	13	13	2501K212G03	Small Pole	10
7561ZX7499	25	110		Yes	Yes	15	15	2501K182G57	Pad	25
7561ZX7599	50	160		No	No	6	6	2501K213G16	Small Pole	50
7561ZX7699	25	160		Yes	Yes	13	13	2501K182G05	Small Pole	25
7561ZX7799	25	160		No	No	13	13	2501K212G05	Small Pole	25
7561ZX7899	25	140		Yes	Yes	8	15	2501K182G70	Small Pole	10
7561ZX7999	37.5	153	240/480	Yes	Yes	8	16	2501K182G04	Small Pole	15
7561ZX8099	50	148		Yes	Yes	8	17	2501K185G55	Small Pole	25
7561ZX8199	50	160		No	No	13	13	2501K213G05	Small Pole	50
7561ZX8299	10	110		Yes	Yes	8	13	2501K182G45	Small Pole	10
7561ZX8399	15	110		Yes	Yes	8	13	2501G182G69	Small Pole	15
7561ZX8499	10	120		No	No	8	13	2501K212G33	Small Pole	10
7561ZX8599	25	120		No	No	8	13	2501K212G34	Small Pole	25
7561ZX8699	50	130		No	No	8	15	2501K213G45	Small Pole	50
7561ZX8799	25	110		Yes	Yes	8	14	2501K182G57	Small Pole	25
7561ZX8899	37.5	110		Yes	Yes	8	15	2501K185G18	Small Pole	37.5
7561ZX8999	5	110	120/240	Yes	Yes	13	13	2501K182G44	Small Pole	5
7561ZX9199	50	130		Yes	Yes	8	17	2501K185G23	Small Pole	50
7561ZX9299	50	160		Yes	No	8	15	2501K185G51	Small Pole	50
7561ZX9399	25	160		Yes	No	8	15	2501K182G05	Small Pole	25
7561ZX9499	7.5	120		Yes	Yes	13	13	2501K182G59	Small Pole	7.5
7561ZX9599	37.5	160		Yes	No	8	15	2501K185G04	Small Pole	37.5
7561ZX9699	15	110		Yes	Yes	8	15	2501K182G69	Small Pole	15
7561ZX9899	25	110		Yes	Yes	8	15	2501K182G57	Small Pole	25

Consult Factory for other Breaker Configurations

Small Breaker on Submersible Bracket Details and Dimensions



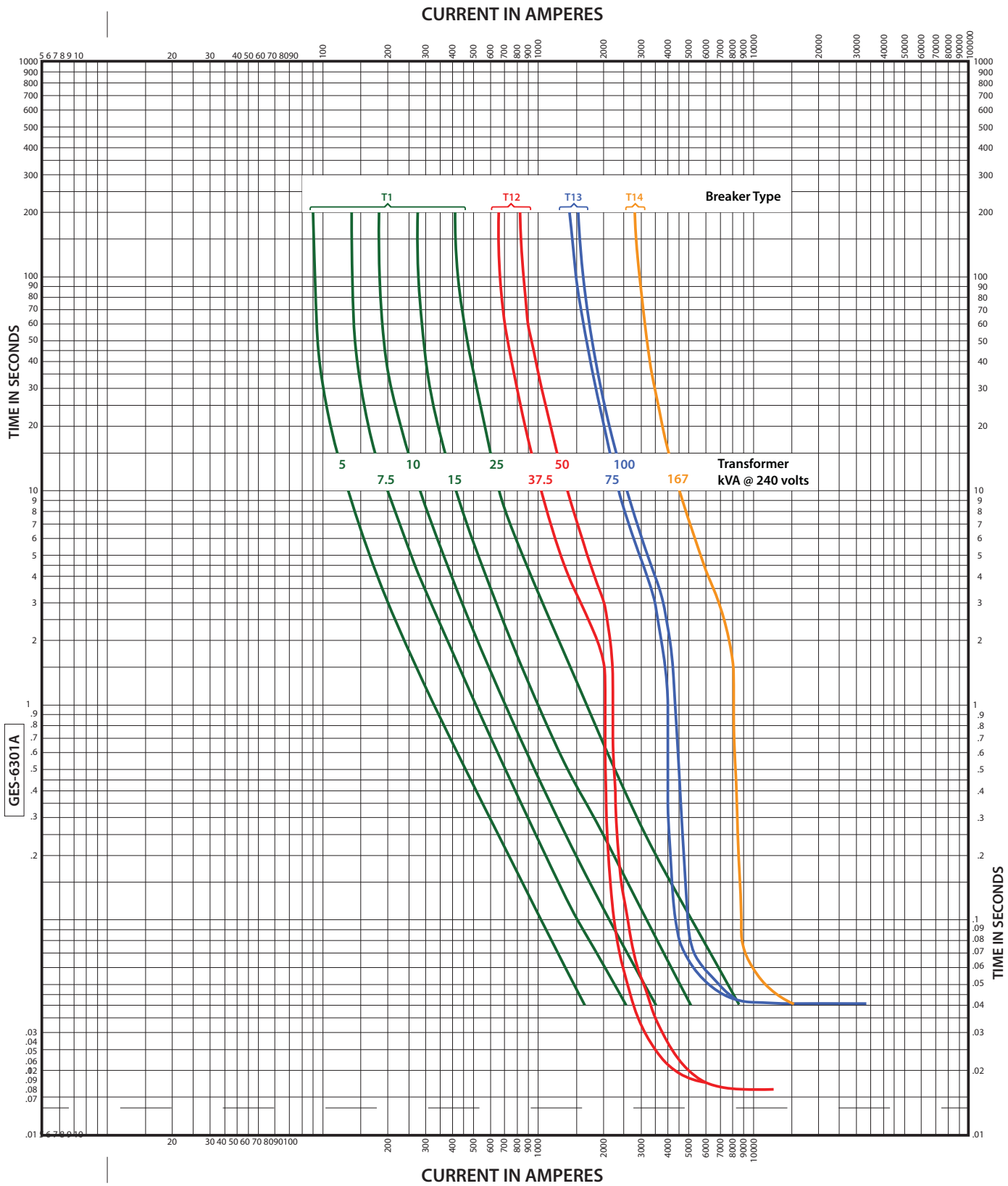
Small Breaker on Submersible Bracket Details and Dimensions



Small Breaker on a Submersible Bracket Assembly Configurations

Catalog Number	KVA	Trip Temp	Voltage	Signal Light		Lead Length		Internal Number	Handle Type	Curve GES6301A
				Emergency	Bulb Asm.	"A"	"D"			
7561ZZ0299	25	110	120/240	Yes	Yes	7	7	2501K182G57	Long Pole	25
7561ZZ1099	37.5	110		Yes	Yes	7	7	2501K185G18	Long Pole	37.5
7561ZZ1899	50	110		Yes	Yes	2	2	2501K185G19	Long Pole	50

Consult Factory for other Breaker Configurations



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5, 10, 15, 25, 37.5, 50, 75, 100, 167
Max. Voltage Rating - Volts
480
Frequency Ratings
50-60 Hertz

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TYPES T-1, T-12, T-13, T-14

For Type HSBA Single-Phase
Distribution Transformers

Total-clearing Time-current Curves

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