Dry-Well Fuseholder for Current Limiting Fuses

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

The growth in dead-front pad-mount transformers requires a method of placing dead-front type current-limiting fuses within the transformer. ERMCO Components' dry-well fuseholder design is suited to both single and three phase pad-mount applications.

BEYOND THE STANDARD

The trend towards higher system voltage, increased load density, and larger substations has caused higher fault current potentials on the distrbution system and the need to interrupt those higher currents when a fault exists. Current-limiting fusing provides both a high interrupting current rating and limits the peak value of current and the amount of energy to within acceptable levels for protection of the transformer.

Improved Design

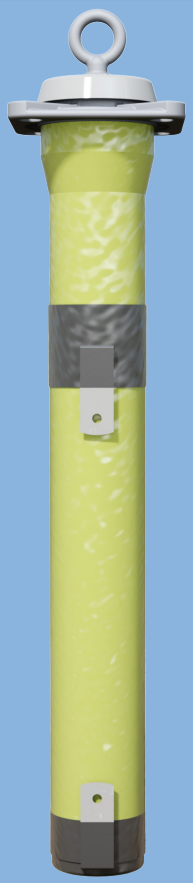
Housing - The dry-well housing consists of filament-wound glass tubing with a resin-rich outer surface. This outer surface serves as the barrier against oil permeation through the tubing wall. (See Figures 2-4 on page 2).

Dry-well fuseholder location - In padmounted transformer applications, the dry-well fuseholder is mounted on the transformer front plate, below the oil level. Because the current-limiting fuses that these fuse-holders are designed to accept will not function properly if exposed to transformer oil, the interior of the fuseholder must remain oil tight.

Non-loadbreak fuseholders

Non-loadbreak fuseholders for padmounted transformer applications are available at 8.3, 15.2, and 21.1 kV (125 kV BIL), both standard and submersible construction. The 21.1 kV (150 kV BIL) rating is available in standard construction only. The applicable device ratings are listed in Table 1.

For those applications where an interlocked loadbreak switch is not used in conjunction with the non-loadbreak fuseholder, an important feature of the non-loadbreak fuseholder is an integral warning nameplate to warn against operation while energized, and safety support that must be moved to gain access to the fuse (see Figure 6 on page 4). This optional warning nameplate assembly is available from ERMCO Components, Inc.



Dry-well Fuseholder Test Report

For more information about the Dry-well Fuseholder, contact your Ermco Components representative or call (877) 267-1855

Dry-well Fuseholder for Current-limiting Fuse Details

Table 1 Non-Loadbreak - Standard and Submersible				
Line to Ground	8.3 kV	15.2 kV	21.1 kV	21.1 kV**
Impulse Withstand	95 kV	125 kV BIL	125 kV BIL	150 kV BIL
Corona Extinction	11 kV	19 kV	26 kV	26 kV
Momentary Current (without fuse)	10,000 Amps*	10,000 Amps*	10,000 Amps*	10,000 Amps*
Continuous Current (without fuse)	160 Amps*	160 Amps*	160 Amps*	160 Amps*
Max Fault Current Interrupting Ability	EQUAL TO FUSE RATING			

rms Symmetrical* * Not available in submersible design*

Figure 1 (8.3, 15.2, or 21.1 kV)

Typical non-loadbreak fuseholder warning nameplate assembly.

(See page 4 for details)

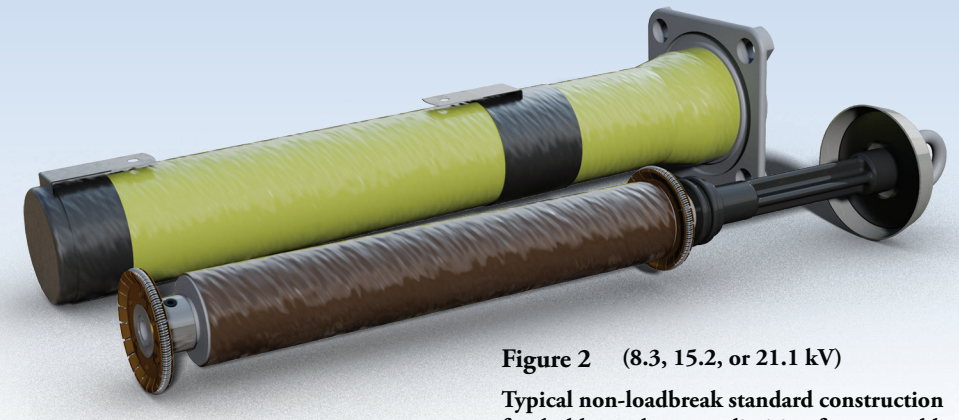


Figure 2 (8.3, 15.2, or 21.1 kV)

Typical non-loadbreak standard construction fuseholder and current-limiting fuse assembly.
- Fuse not included

(See pages 6-7 for details)

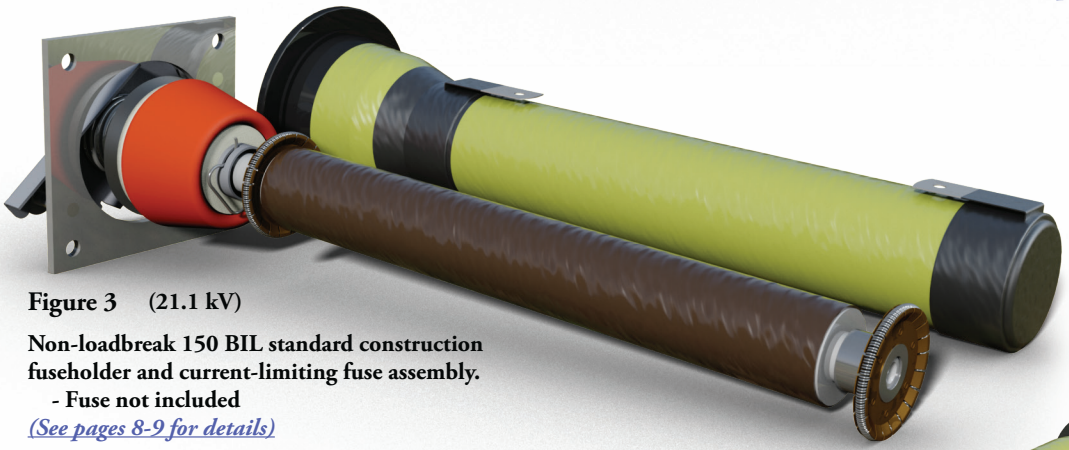


Figure 3 (21.1 kV)

Non-loadbreak 150 BIL standard construction fuseholder and current-limiting fuse assembly.
- Fuse not included

(See pages 8-9 for details)

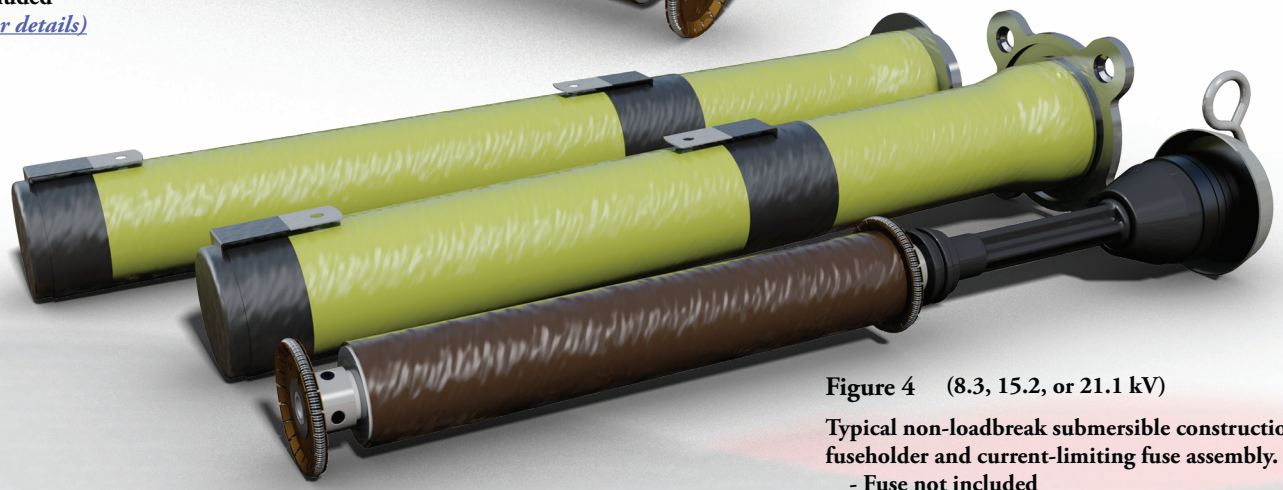


Figure 4 (8.3, 15.2, or 21.1 kV)

Typical non-loadbreak submersible construction fuseholder and current-limiting fuse assembly.
- Fuse not included

(See pages 10-13 for details)

Ordering Information and Details

Non-Loadbreak					
Aluminum Flange Canister Assembly Drawout Rod Assembly with Plated or Stainless Steel Cap					
Catalog Number	kV	BIL	Fuseholder Cap	Description	
7559ZC8399	21.1	125 kV	Plated Steel	Typical non-loadbreak standard construction fuseholder and current limiting fuse assembly	For more information see pages 6 and 7
7559ZG8399	21.1	125 kV	Stainless Steel		
7559ZC8499	15.2	125 kV	Plated Steel		
7559ZG8499	15.2	125 kV	Stainless Steel		
7559ZC8599	8.3	95 kV	Plated Steel		
7559ZG8599	8.3	95 kV	Stainless Steel		

Note: Aluminum flange canister units listed above replaced the plastic flange canister units effective approximately April 1, 1988. Aluminum flange units are direct replacements for plastic flange units.

Non-Loadbreak				
Plastic Flange Canister Assembly Drawout Rod Assembly with Plated Steel Cap				
Catalog Number	kV	BIL	Description	
7559ZC2599	21.1	150 kV	Typical non-loadbreak standard construction fuseholder and current limiting fuse assembly	For more information see pages 8 and 9

Submersible-Non-Loadbreak					
4 Bolt Stainless Steel Flange Canister Assembly Drawout Rod/Plug Assembly with Stainless Steel Cap					
Catalog Number	kV	BIL	End Cap Stud 0.250-20-2B	Description	
7509ZE0199	8.3	95 kV	No	Typical non-loadbreak submersible construction fuseholder and current limiting fuse assembly	For more information see pages 10 and 11
7509ZE3199	8.3	95 kV	Yes		
7509ZE0299	15.2	125 kV	No		
7509ZE3299	15.2	125 kV	Yes		
7509ZE0399	21.1	125 kV	No		
7509ZE3399	21.1	125 kV	Yes		

Submersible-Non-Loadbreak					
Stainless Steel Flange Canister Assembly (Welded to Tank) Drawout Rod/Plug Assembly with Stainless Steel Cap					
Catalog Number	kV	BIL	End Cap Stud 0.250-20-2B	Description	
7559ZE1199	8.3	95 kV	No	Typical non-loadbreak standard construction fuseholder and current limiting fuse assembly	For more information see pages 12 and 13
7559ZE2199	8.3	95 kV	Yes		
7559ZE1299	15.2	125 kV	No		
7559ZE2299	15.2	125 kV	Yes		
7559ZE1399	21.1	125 kV	No		
7559ZE2399	21.1	125 kV	Yes		

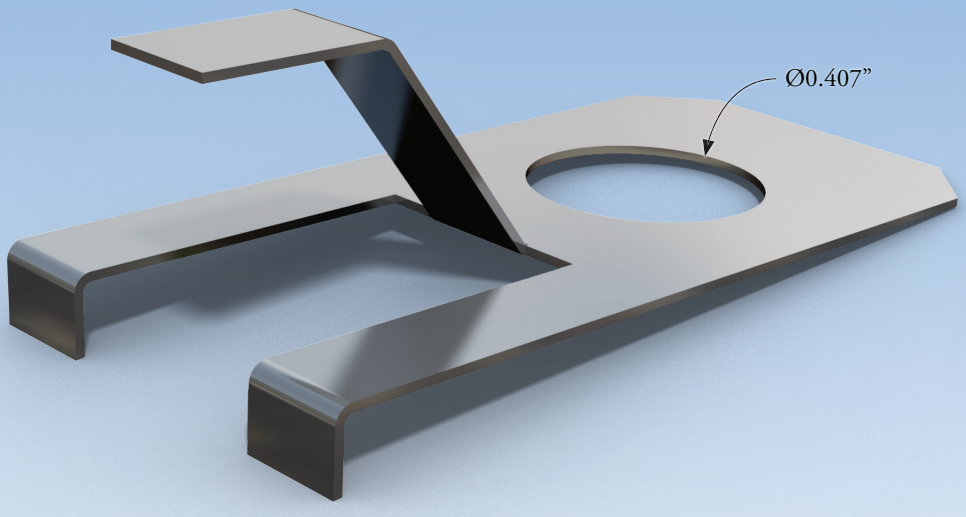


Figure 5
Grounding Spring

Replacement Part		
Catalog Number	**Description**	**Material**
7285ZA1499	**Grounding Spring**	**Stainless Steel**

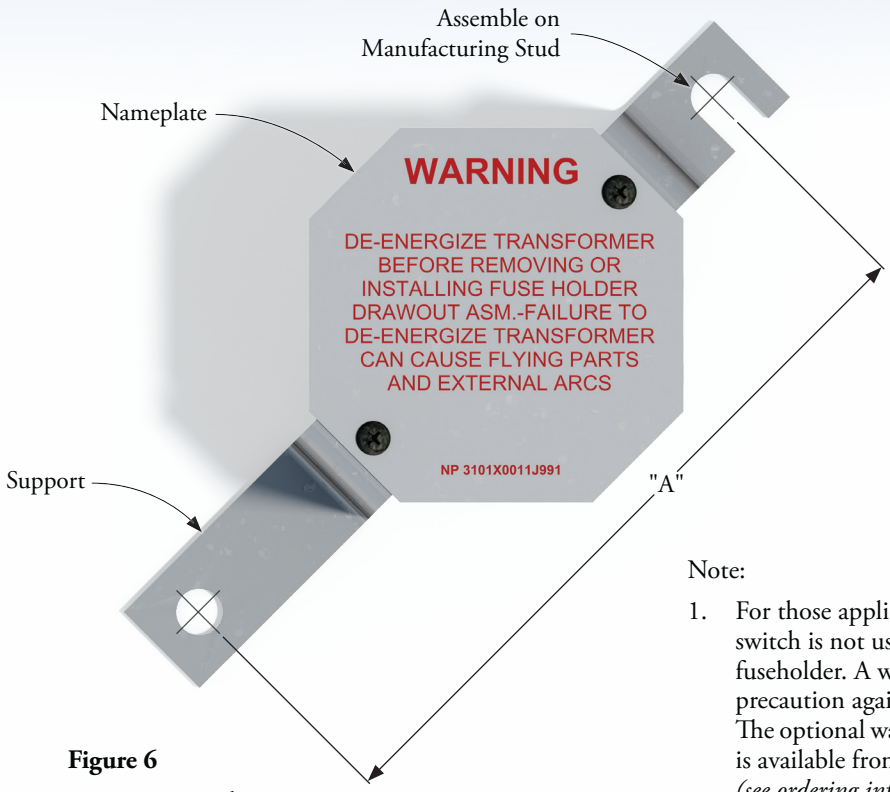


Figure 6
Warning Nameplate

Note:

1. For those applications where an interlocked loadbreak switch is not used in conjunction with the non-loadbreak fuseholder. A warning nameplate should be used as a precaution against energized operation of the fuseholder. The optional warning nameplate (w/bracket) shown above is available from ERMCO Components, Inc. *(see ordering information below).*

Accessories		
Catalog Number	**"A"**	**Description**
7559ZC2099	**5.48"**	**Warning Nameplate**
7559ZC2199	**6.79"**	

Fuse Adapter Details and Ordering Information

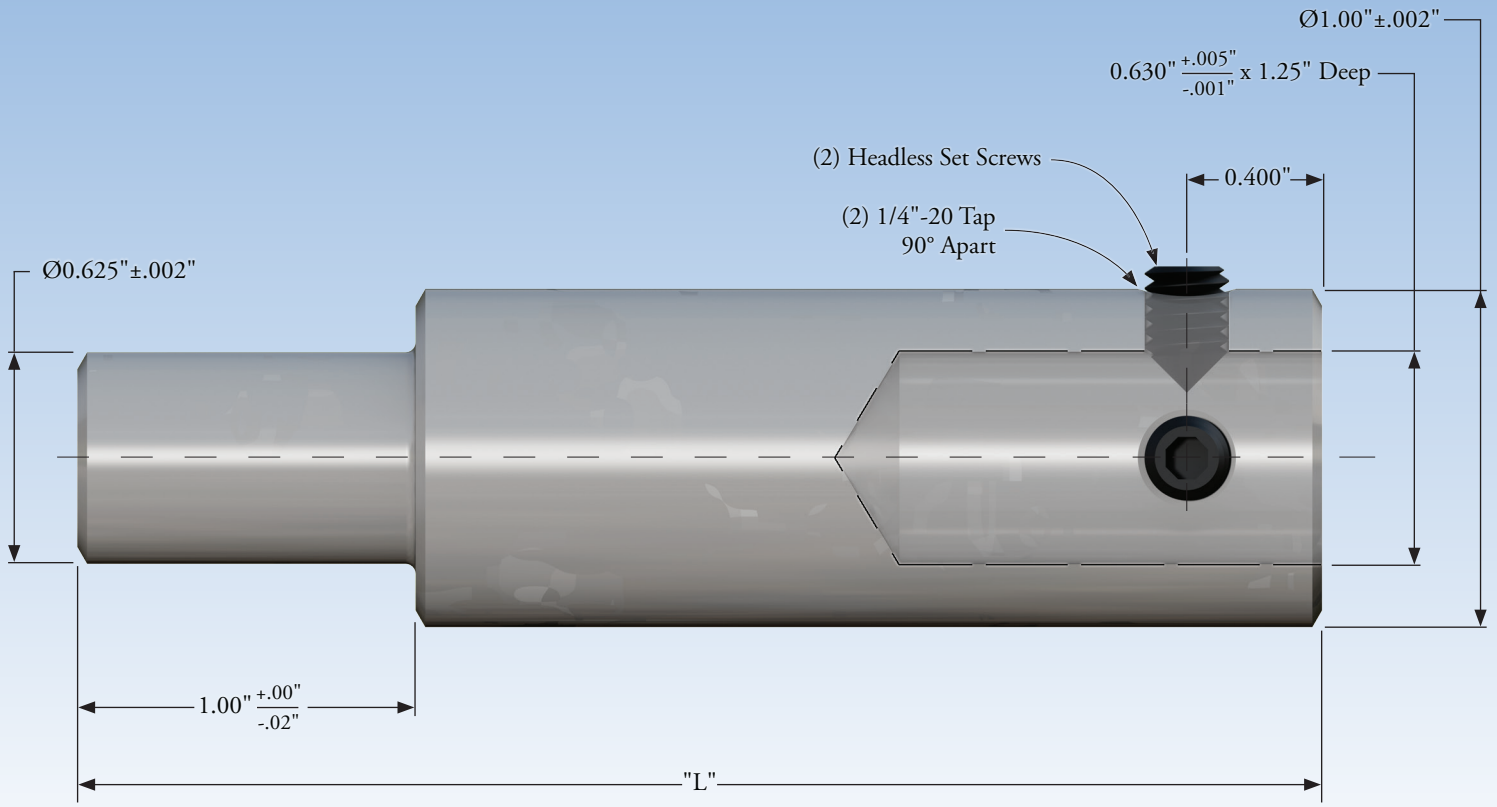
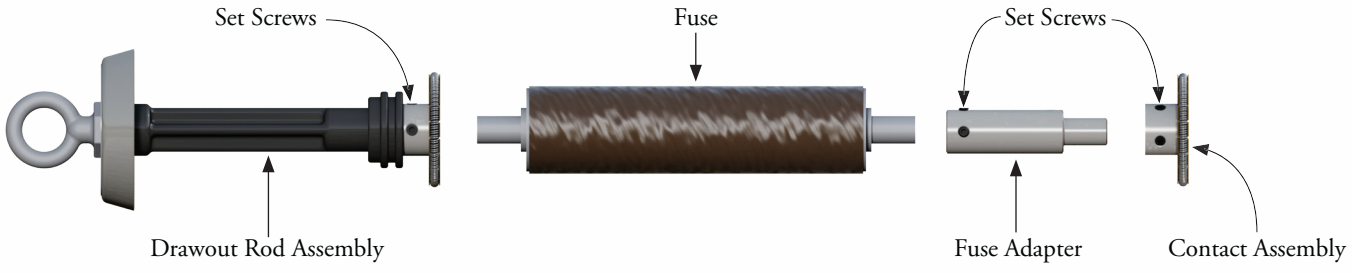


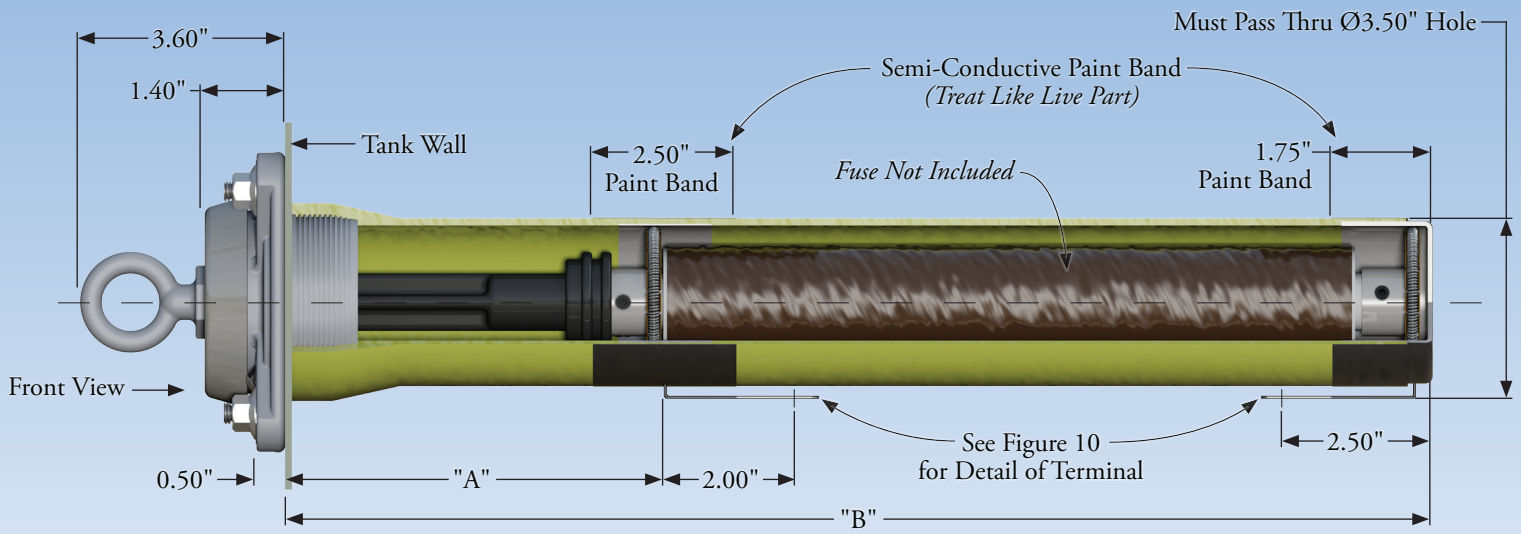
Figure 7
Fuse Adapter

Accessories			
Catalog Number	**"L"**	**Application**	**Finish**
7559ZB6099	**8.00"**	**8.3 to 23 kV**	**None**
7559ZB6199	**3.68"**	**15.2 to 23 kV**	
7559ZB6299	**5.18"**	**8.3 to 15.2 kV**	

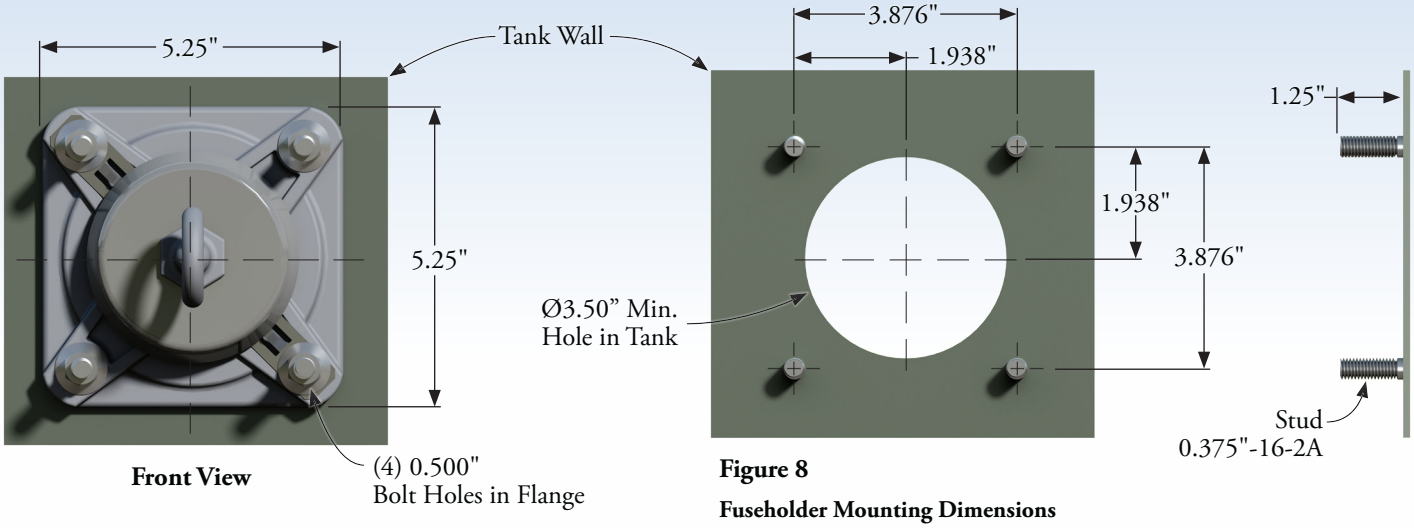


Note:

1. Assemble fuse adapter (when required) to bottom of fuse as shown above.
2. A vent hole on centerline and perpendicular to the long axis may be added at vendor's option
3. Apply Loctite to set screws as necessary.



Side View *(Section)*



Front View

Figure 8

Fuseholder Mounting Dimensions

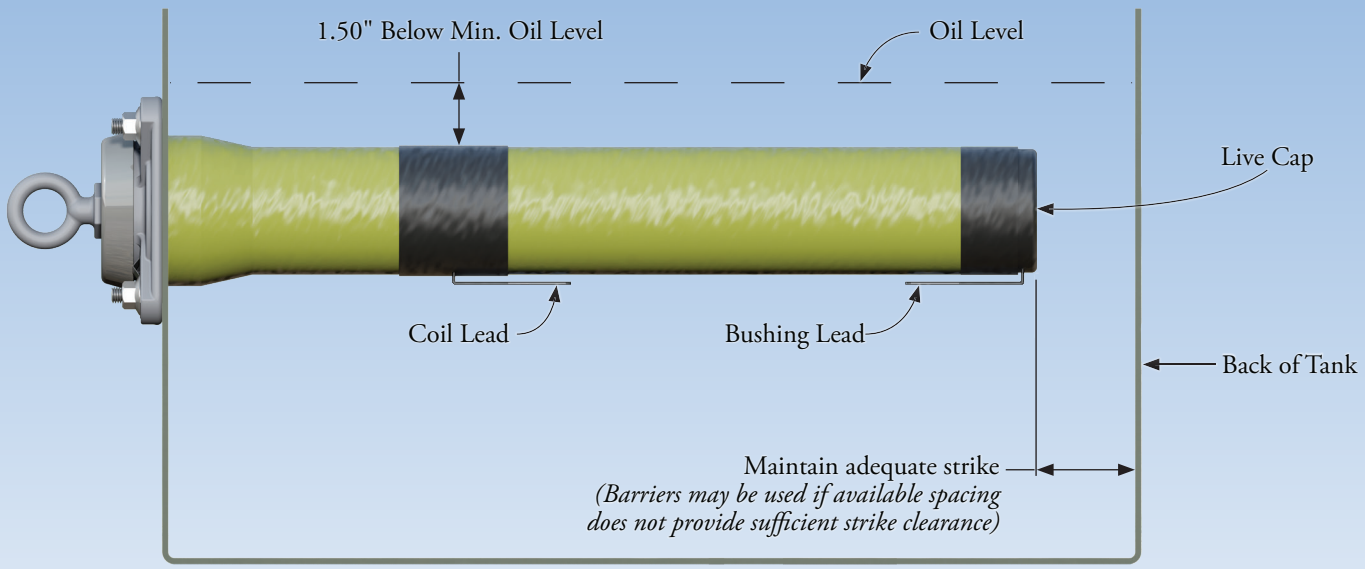
Engineering Data			
Fuseholder Cap	**Catalog Number**		
Plated Steel	**7559ZC8399**	**7559ZC8499**	**7559ZC8599**
Stainless Steel	**7559ZG8399**	**7559ZG8499**	**7559ZG8599**
"A"	**6.68"**	**6.68"**	**5.58"**
"B"	**22.84"**	**20.04"**	**14.44"**
Max Voltage Rating	**21.1 kV**	**15.2 kV**	**8.3 kV**
BIL	**125 kV**	**125 kV**	**95 kV**
HIPOT	**50 kV**	**40 kV**	**34 kV**
Corona Extinction	**26 kV**	**19 kV**	**11 kV**
Continuous Current Rating (Unfused)	**160 A**	**160 A**	**160 A**
Momentary Current Rating (Unfused)	**10,000 A RMS SYM (10 Cycles)**	**10,000 A RMS SYM (10 Cycles)**	**10,000 A RMS SYM (10 Cycles)**
Acceptable Fuses (Cooper or HiTech) (Must Be Ordered Seperately)	**23 kV - All Sizes Thru 25 A**	**15.5 kV - All Sizes Thru 40 A**	**2.8 & 4.3 kV - All Sizes Thru 100 A 5.5 kV - All Sizes Thur 75 A 8.3 kV - All Sizes Thru 40 A**

Note:

1. For those applications where an interlocked loadbreak switch is not used in conjunction with the non-loadbreak fuseholder. A warning nameplate should be used as a precaution against energized operation of the fuseholder. The optional warning nameplate (w/bracket), shown on page 4, Figure 6, is available from ERMCO Components Inc. (7559ZC2099)

	Replacement Parts			
Catalog Number	**Drawout Rod**	**Contact Assembly**	**Gasket**	**Grounding Spring**
7559ZC8399	**7559ZC1199**	**7559ZB3999**	**7559ZB4099**	**7285ZA1499***
7559ZG8399	**7559ZE4299**			
7559ZC8499	**7559ZC1199**			
7559ZG8499	**7559ZE4299**			
7559ZC8599	**7559ZC1299**			
7559ZG8599	**7559ZC2699**			

***See page 4 for more information**



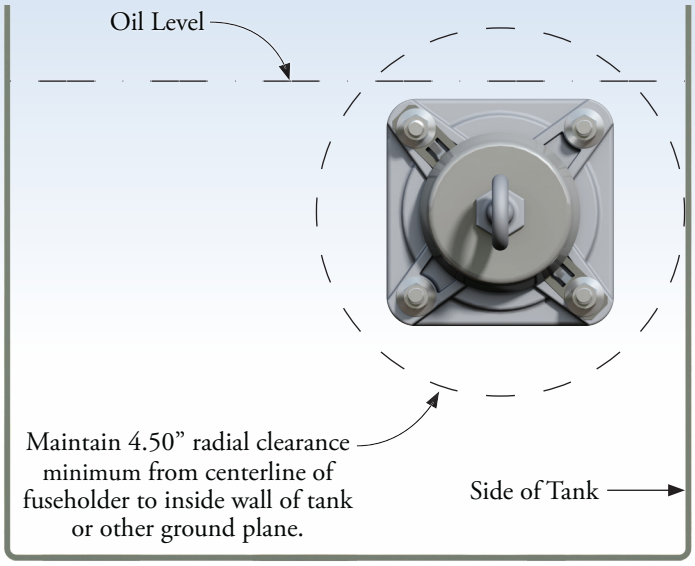


Figure 9
General Fuseholder Application

Notes:

1. Pockets up to 1.50" in depth can be used without adversely affecting impulse withstand.
2. If application requires pocket depth in excess of 1.50" care should be taken to avoid adversely affecting impulse withstand.

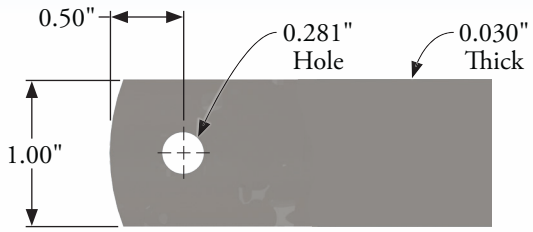


Figure 10
Detail of Terminal

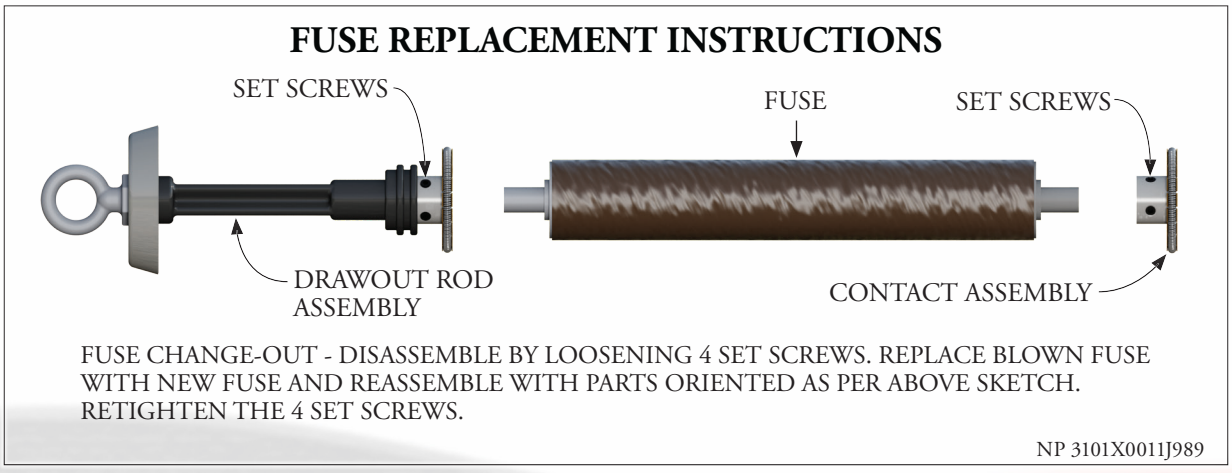
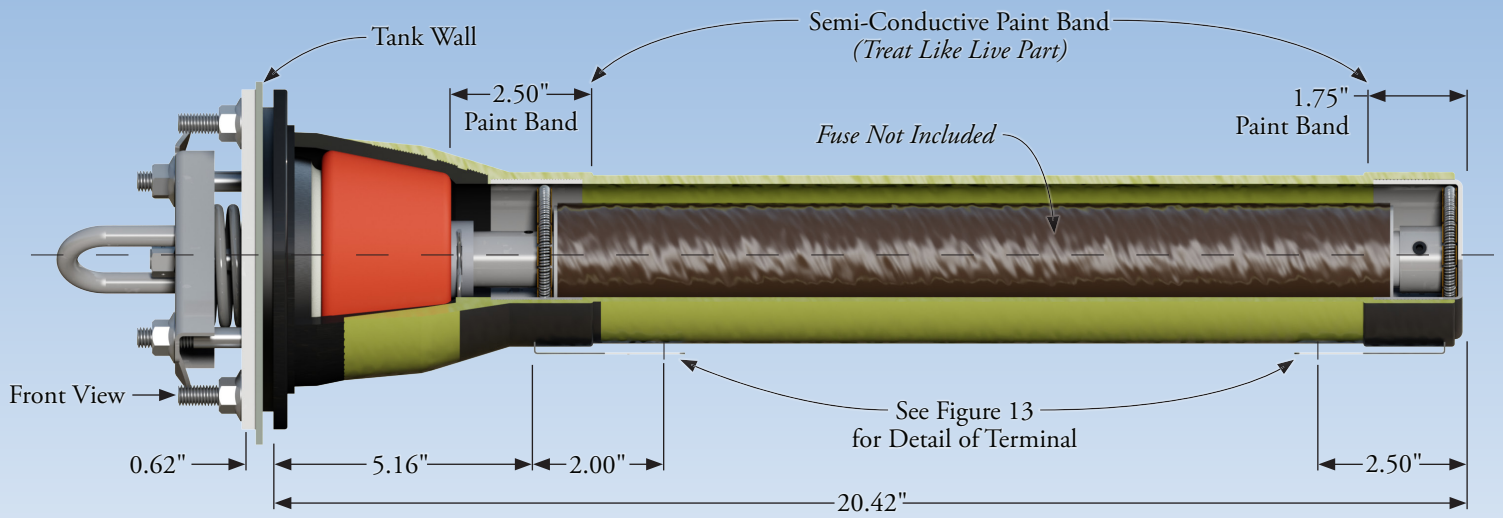
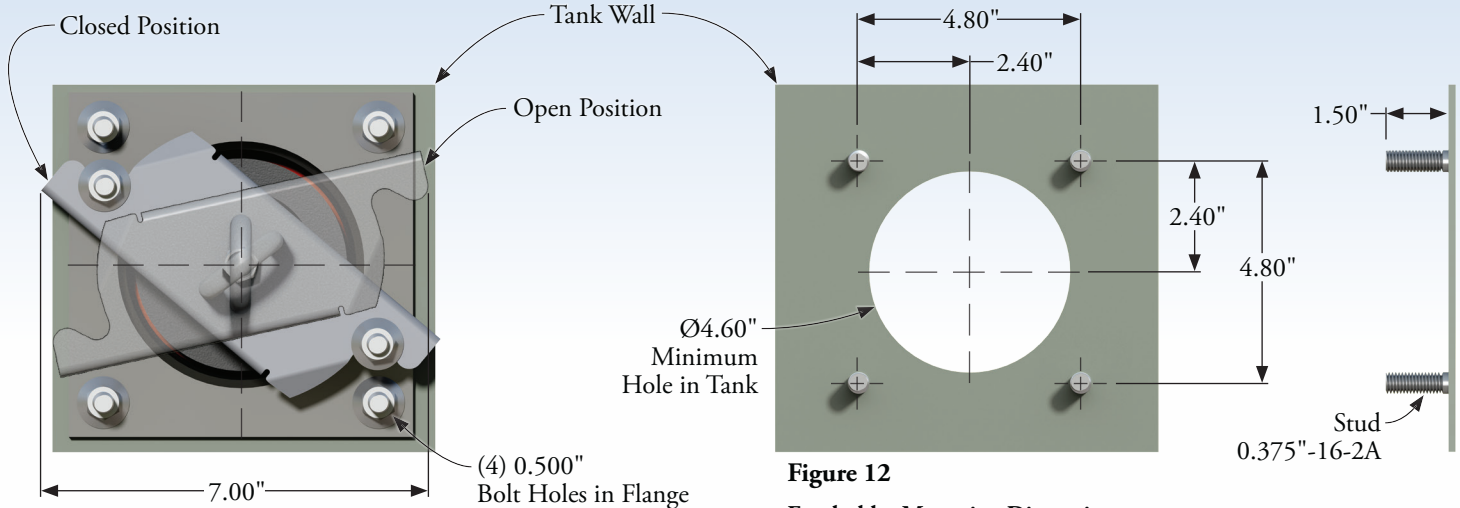


Figure 11
Decal *(Standard-Non-Loadbreak)*



Side View *(Section)*



Front View

Figure 12

Fuseholder Mounting Dimensions

Engineering Data	
Plastic Flange Canister	
Catalog Number	**7559ZC2599**
Max Voltage Rating	**21.1 kV (LN/GND)**
Max Voltage Rating	**36.6 kV (LN/LN)**
BIL	**150 kV**
HIPOT	**50 kV**
Corona Extinction	**26 kV**
Continuous Current Rating (Unfused)	**160 A**
Momentary Current Rating (Unfused)	**10,000 A RMS SYM (10 Cycles)**
Acceptable Fuses (Cooper or HiTech) **(Must Be Ordered Seperately)**	**23 kV - All Sizes Thru 25 A**

Note:

1. For those applications where an interlock loadbreak switch is not used in conjunction with the non-loadbreak fuseholder. A warning nameplate should be used as a precaution against energized operation of the fuseholder.
   The optional warning nameplate (w/bracket), shown on page 4, Figure 6, is available from ERMCO Components Inc. (7559ZC2199).

2. Silicon grease should be applied to the drawout rod assembly gasket before installing in the drywell tube.

Catalog Number	Replacement Parts
7539ZB3999	Contact Assembly
7559ZB5399	Plug & Channel Assembly (w/Gasket)
7559ZB5499	Gasket
7559ZB5699	Piston Assembly (w/Spiral & Retaining Springs)
7559ZB5799	Plug, Channel, Gasket, & Flange

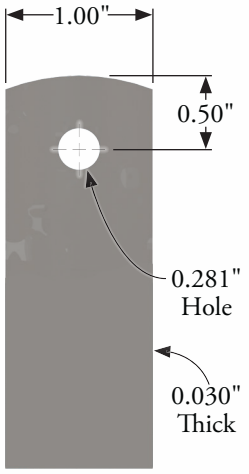
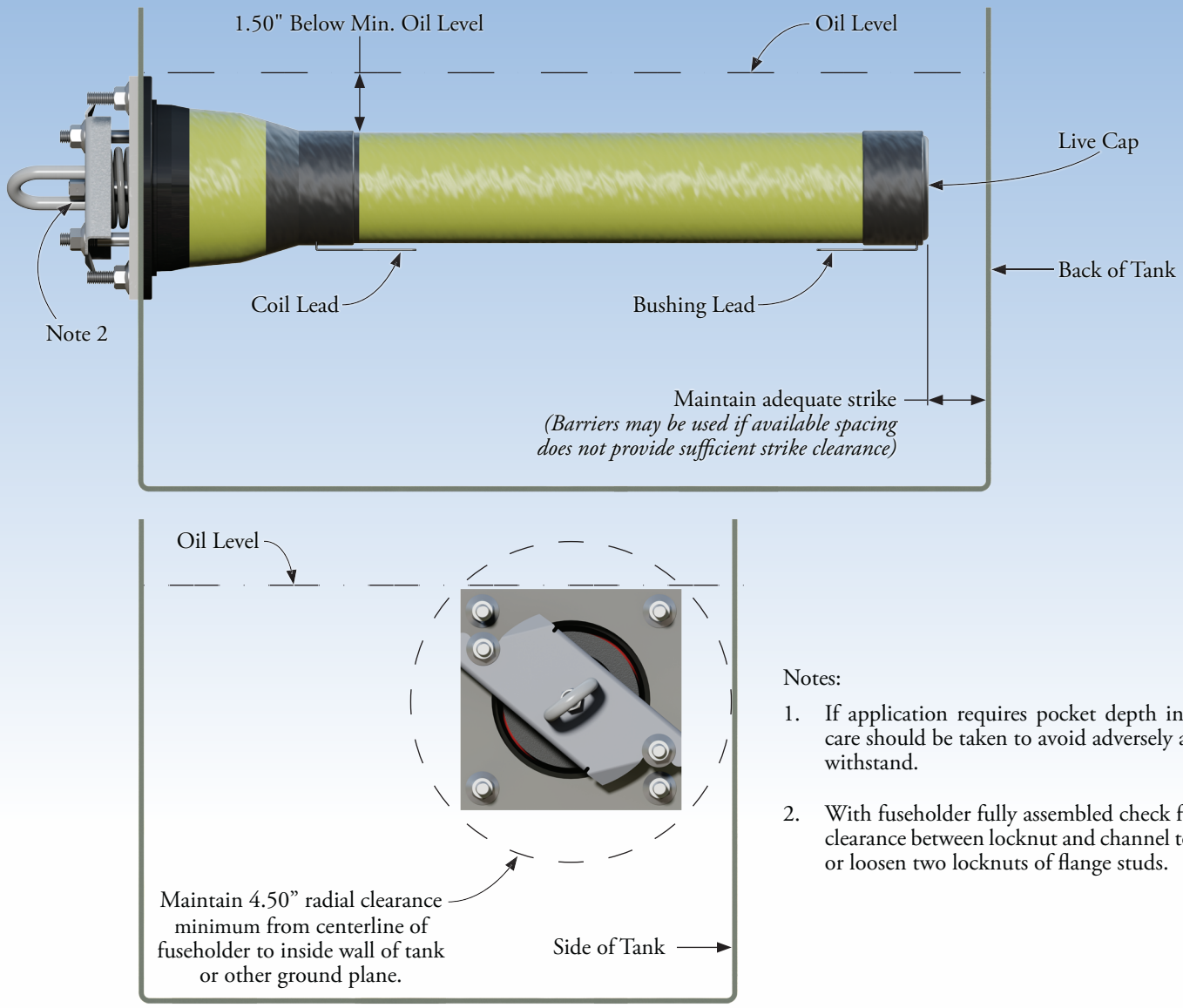


Figure 13

Detail of Terminal



Notes:

1. If application requires pocket depth in excess of 1.50" care should be taken to avoid adversely affecting impulse withstand.

2. With fuseholder fully assembled check for approx. 0.10" clearance between locknut and channel to adjust, tighten, or loosen two locknuts of flange studs.

Figure 14

General Fuseholder Application

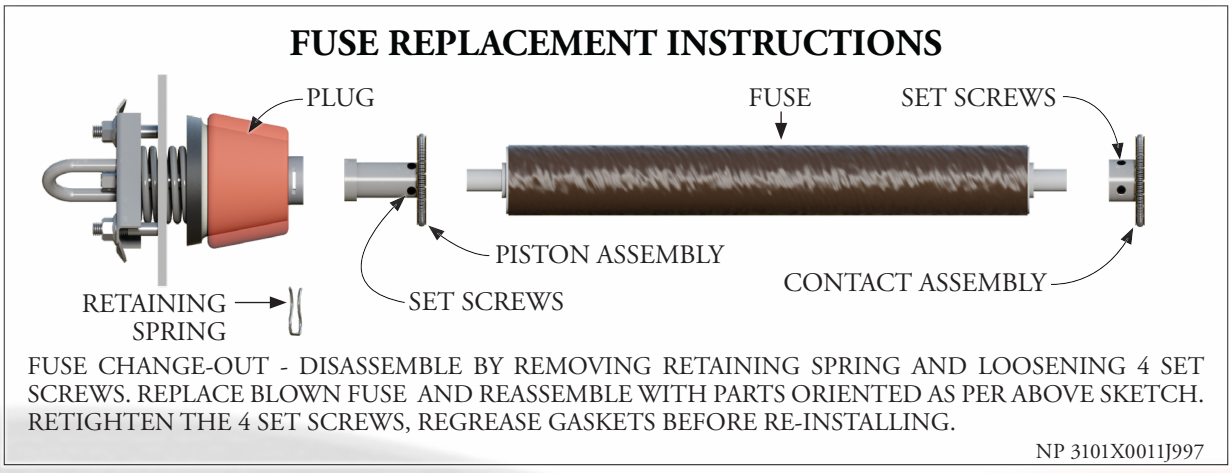
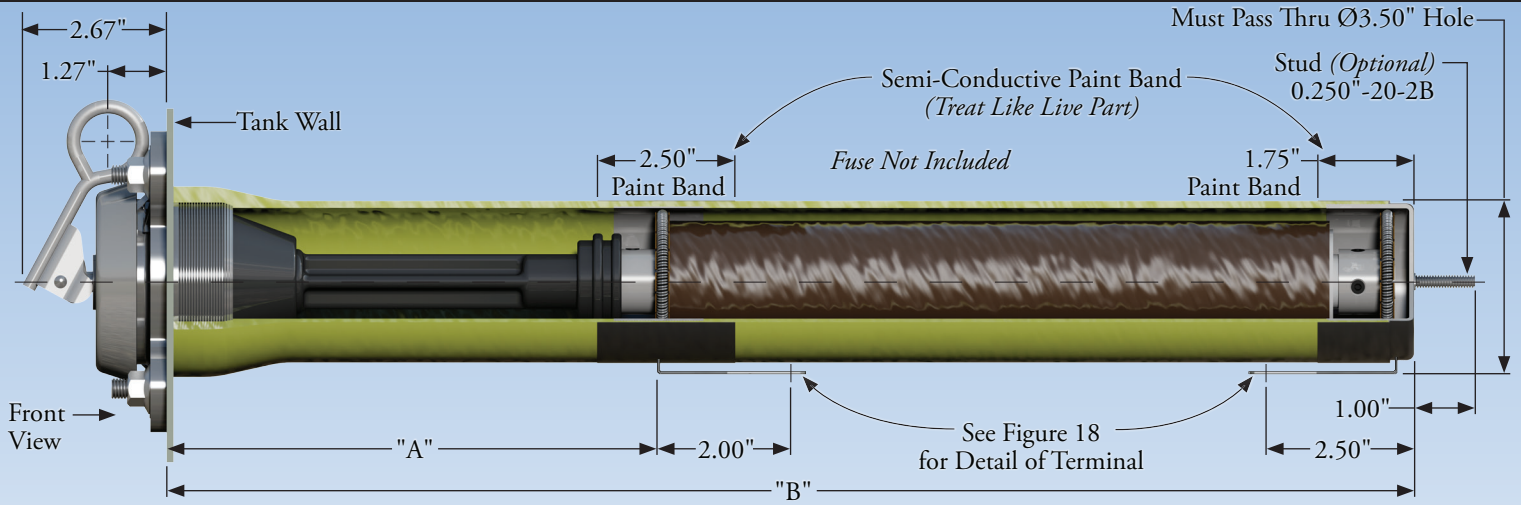


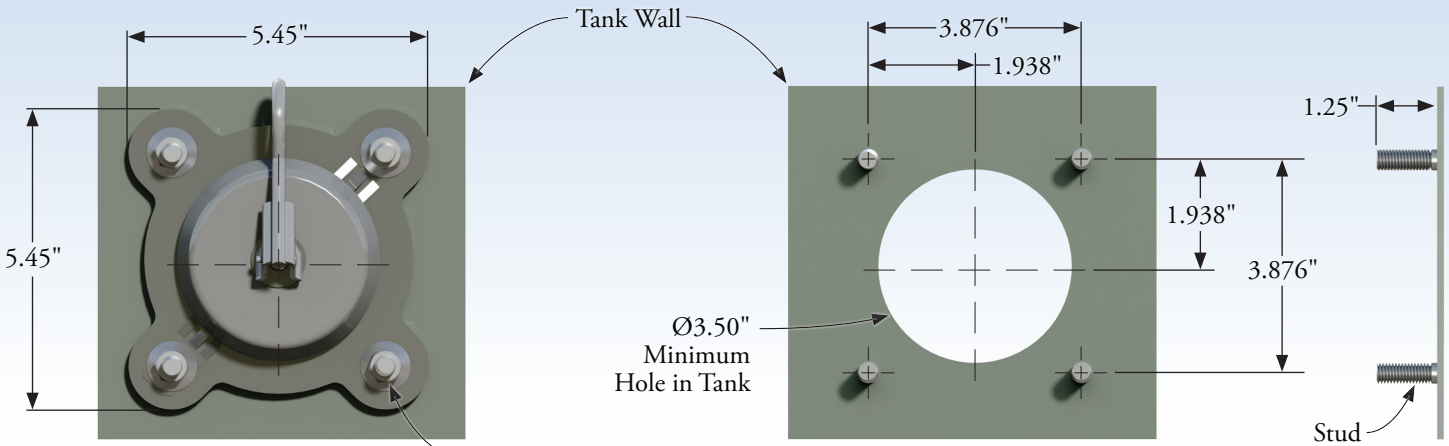
Figure 15

Decal *(Dielectric Plug)*

Submersible-Non-Loadbreak Details and Ordering Information



Side View *(Section)*



Front View

Figure 16

Fuseholder Mounting Dimensions

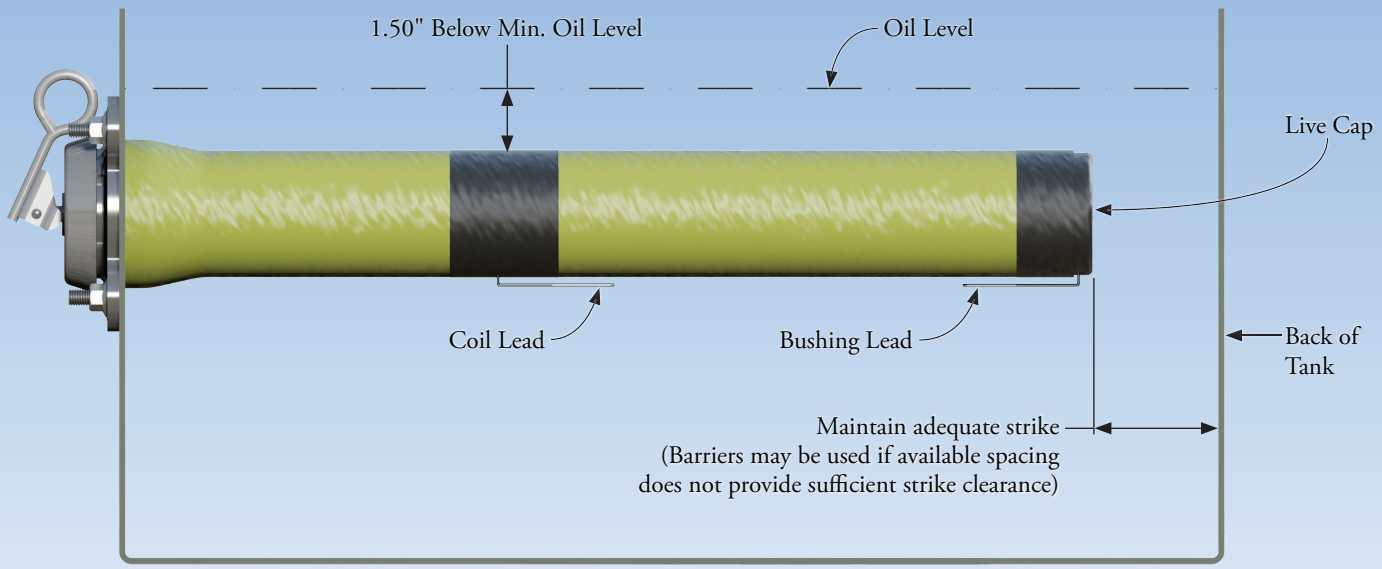
Engineering Data			
All Flanges Stainless Steel	**Catalog Number**		
W/O Stud	**7509ZE0199**	**7509ZE0299**	**7509ZE0399**
With Stud (0.250-20-2B	**7509ZE3199**	**7509ZE3299**	**7509ZE3399**
"A"	**8.91"**	**8.91"**	**8.91"**
"B"	**18.27"**	**22.57"**	**25.53"**
Max Voltage Rating	**8.3 kV**	**15.2 kV**	**21.1 kV**
BIL	**95 kV**	**125 kV**	**125 kV**
HIPOT	**34 kV**	**40 kV**	**50 kV**
Corona Extinction	**11 kV**	**19 kV**	**26 kV**
Continuous Current Rating (Unfused)	**160 A**	**160 A**	**160 A**
Momentary Current Rating (Unfused)	**10,000 A RMS SYM (10 Cycles)**	**10,000 A RMS SYM (10 Cycles)**	**10,000 A RMS SYM (10 Cycles)**
Acceptable Fuses (Cooper or HiTech) (Must Be Ordered Seperately)	**2.8 & 4.3 kV - All Sizes Thru 100 A 5.5 kV - All Sizes Thur 75 A 8.3 kV - All Sizes Thru 40 A**	**15.5 kV - All Sizes Thru 40 A**	**23 kV - All Sizes Thru 25 A**

Note:

1. For those applications where an interlock loadbreak switch is not used in conjunction with the non-loadbreak fuseholder. A warning nameplate, shown on page 4, Figure 6, should be used as a precaution against energized operation of the fuseholder.

Catalog Number	Replacement Parts
7559ZB3999	**Contact Assembly**
7559ZB4099	**Gasket**
7559ZE4099	**Drawout Rod Assembly**
7559ZE4199	**Drawout Rod and Contact Assembly**
7285ZA1499*	**Grounding Spring**

***See page 4 for more information**



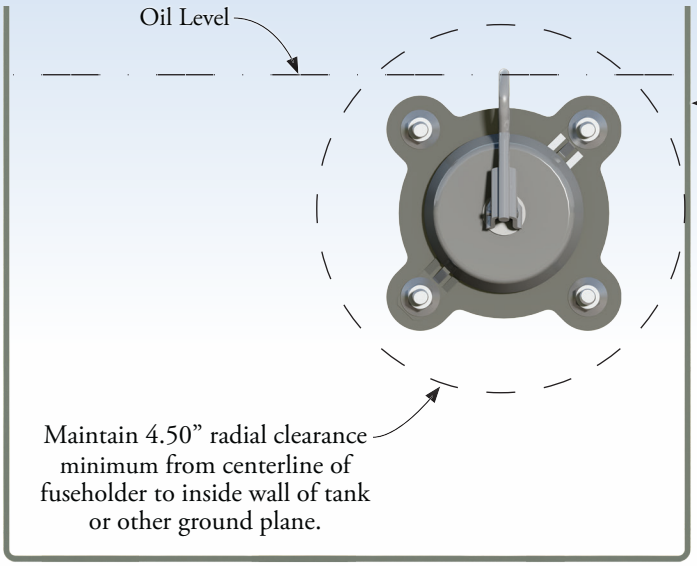


Figure 17

General Fuseholder Application

(See Figure 21 for Vertical Mounting)

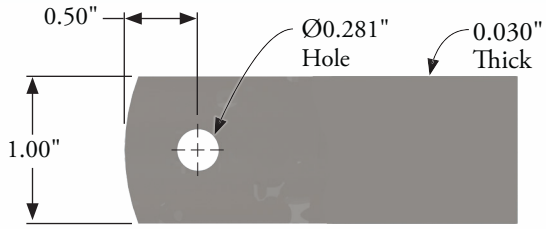


Figure 18

Detail of Terminal

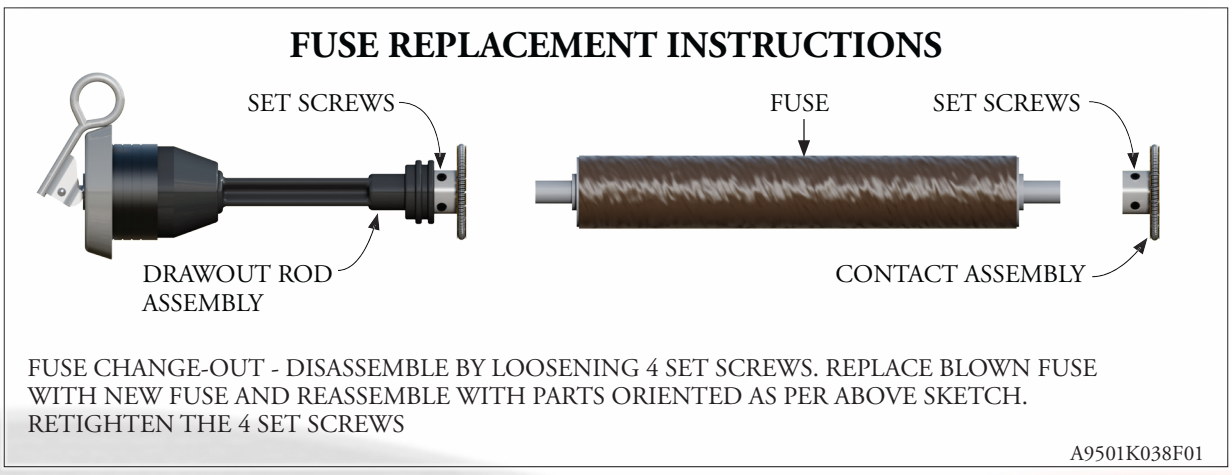
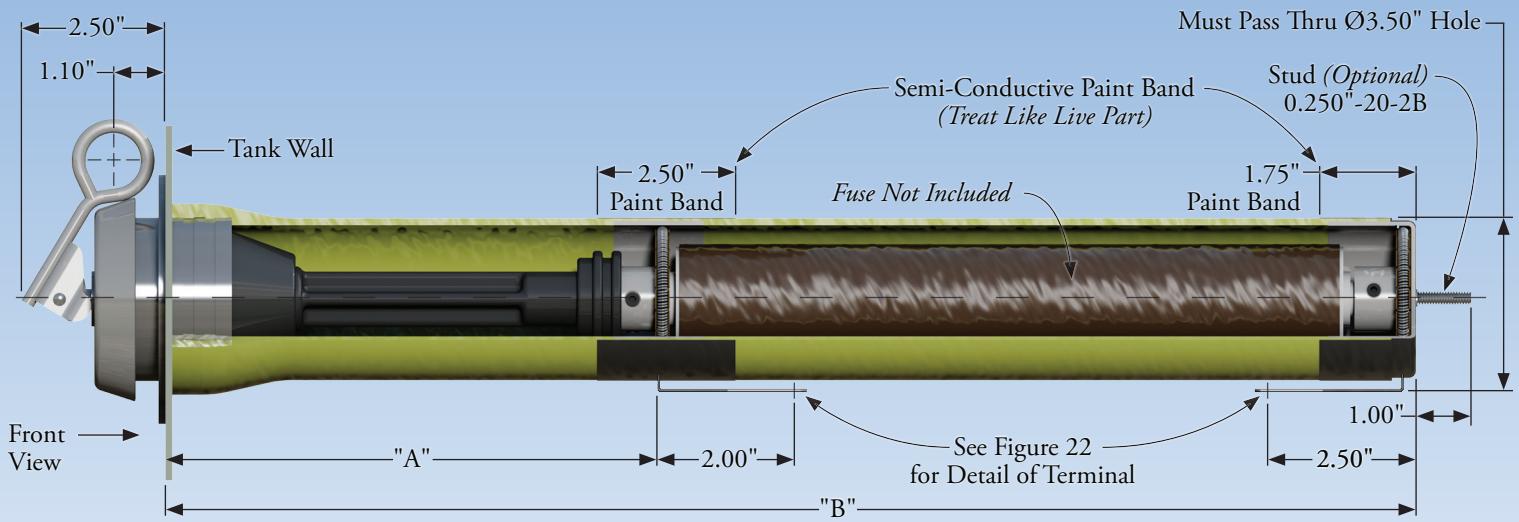


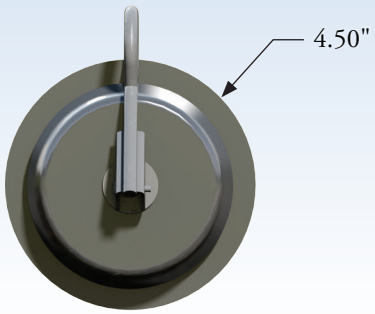
Figure 19

Decal *(Submersible-Non-Loadbreak)*

Submersible-Non-Loadbreak Details and Ordering Information



Side View *(Section)*



Front View

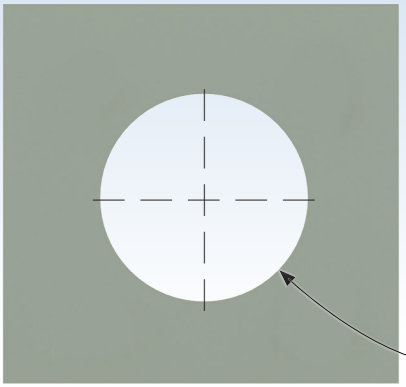


Figure 20

Fuseholder Mounting Dimensions

Engineering Data			
	Catalog Number		
W/O Stud	7559ZE1199	7559ZE1299	7559ZE1399
With Stud (0.250-20-2B	7559ZE2199	7559ZE2299	7559ZE2399
"A"	8.91"	8.91"	8.91"
"B"	18.27"	22.57"	25.53"
Max Voltage Rating	8.3 kV	15.2 kV	21.1 kV
BIL	95 kV	125 kV	125 kV
HIPOT	34 kV	40 kV	50 kV
Corona Extinction	11 kV	19 kV	26 kV
Continuous Current Rating (Unfused)	160 A	160 A	160 A
Momentary Current Rating (Unfused)	10,000 A RMS SYM (10 Cycles)	10,000 A RMS SYM (10 Cycles)	10,000 A RMS SYM (10 Cycles)
Acceptable Fuses (Cooper or HiTech) (Must Be Ordered Seperately)	2.8 & 4.3 kV - All Sizes Thru 100 A 5.5 kV - All Sizes Thur 75 A 8.3 kV - All Sizes Thru 40 A	15.5 kV - All Sizes Thru 40 A	23 kV - All Sizes Thru 25 A

Note:

1. For those applications where an interlock loadbreak switch is not used in conjunction with the non-loadbreak fuseholder. A warning nameplate, shown on page 4, Figure 6, should be used as a precaution against energized operation of the fuseholder.

2. Use adequate heat sinks when welding to prevent localized hot spots and resulting stress in the drywell.

Catalog Number	Replacement Parts
7559ZB3999	Contact Assembly
7559ZE4099	Drawout Rod Assembly
7559ZE4199	Drawout Rod and Contact Assembly

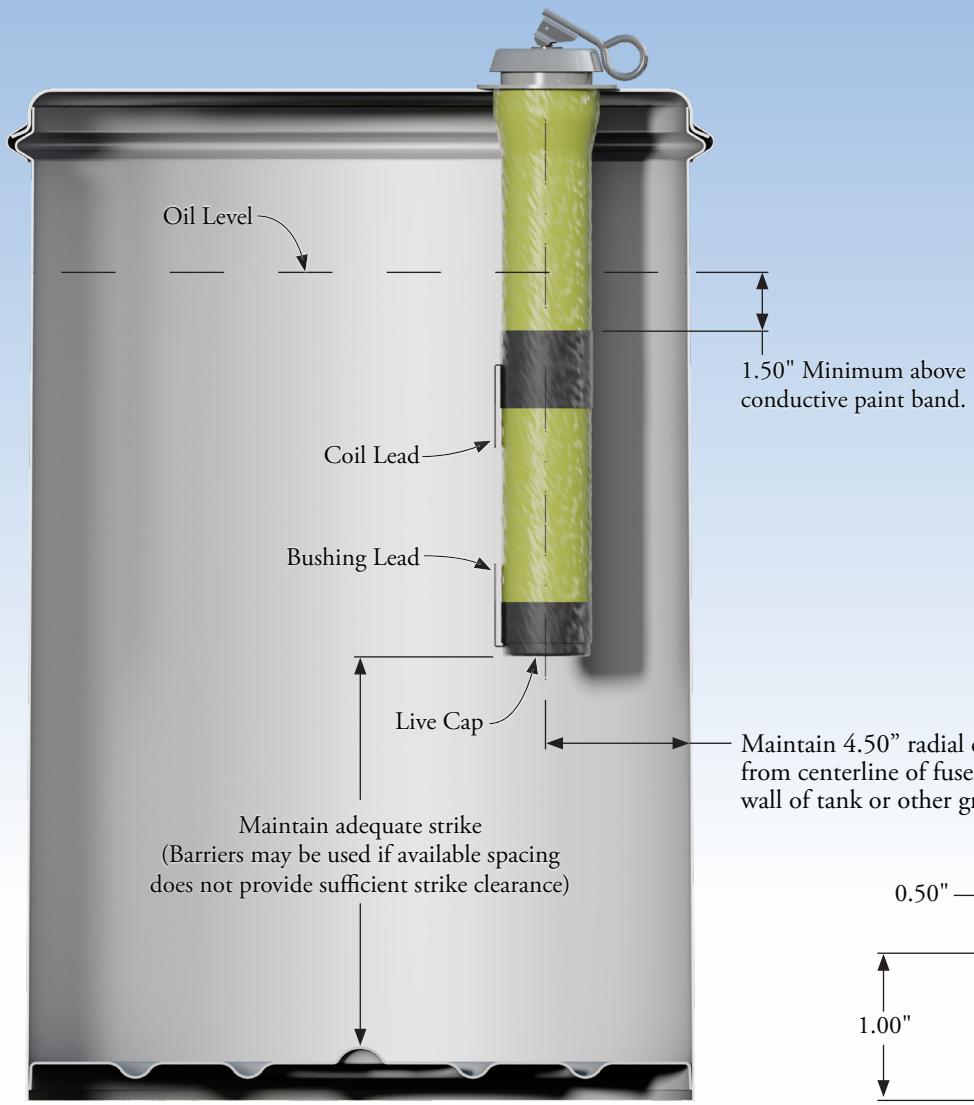


Figure 21

General Fuseholder Application
(See Figure 17 for Horizontal Mounting)

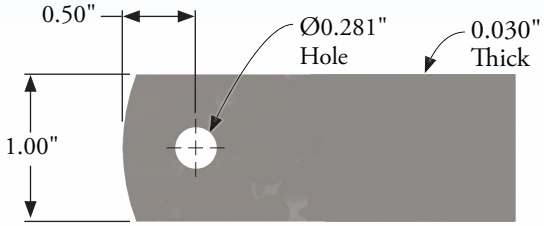


Figure 22

Detail of Terminal

FUSE REPLACEMENT INSTRUCTIONS

FUSE CHANGE-OUT - DISASSEMBLE BY LOOSENING 4 SET SCREWS. REPLACE BLOWN FUSE WITH NEW FUSE AND REASSEMBLE WITH PARTS ORIENTED AS PER ABOVE SKETCH. RETIGHTEN THE 4 SET SCREWS

A9501K038F01

Figure 23

Decal *(Submersible-Non-Loadbreak)*